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OFFICIAL GAZETTE
UNITED STATES
PATENT OFFICE

VOL NO 1069

WASH. D. C.

AUGUST

1986

BELL + HOWELL

Publication Products

1986

Vol. 1069 Number 1

OFFICIAL GAZETTE

of the

UNITED STATES PATENT AND TRADEMARK OFFICE

Route to:

PATENTS

August 5, 1986

U.S.
DEPARTMENT
OF COMMERCE

Patent
and
Trademark
Office

PUBLISHED WEEKLY BY AUTHORITY OF CONGRESS

OFFICIAL GAZETTE of the UNITED STATES PATENT AND TRADEMARK OFFICE

August 5, 1986 Volume 1069 Number 1

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The following are mailed under direction of the Superintendent of Documents, Government Printing Office, Washington, D.C., 20402, to whom all subscriptions should be made payable and all communications addressed:

THE OFFICIAL GAZETTE (PATENT SECTION), issued weekly.
THE OFFICIAL GAZETTE (TRADEMARK SECTION), issued weekly.
GENERAL INFORMATION concerning PATENTS.
GENERAL INFORMATION concerning TRADEMARKS.

COPIES OF PATENTS are furnished by the Patent and Trademark Office at $1.50 each; PLANT PATENTS in color, $6.00 each; copies of TRADEMARKS at $1.00 each. Address orders to the Commissioner of Patents and Trademarks, Washington, D.C., 20231.

Printing authorized by Section 11(a)3 of Title 35, U.S. Code P.T.O.

PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty (PCT) Information

For information concerning the PCT member countries see the notice appearing in the *Official Gazette* at 1052 O.G. 52 on Mar. 26, 1985.

For use of the European Patent Office as Searching Authority for PCT applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52 on Sept. 28, 1982.

Certain domestic PCT fees for international applications have been changed effective Oct. 5, 1985 in the rule change notice titled "Revision of Patent Fees" published at 1057 O.G. 24 on Aug. 20, 1985.

The Search fee of the European Patent Office has been changed as of Feb. 9, 1986 and is announced in the *Official Gazette* at 1061 O.G. 30 on Dec. 31, 1985.

International PCT fees have been changed effective Jan. 1, 1986 and were announced in the *Official Gazette* at 1061 O.G. 30 on Dec. 31, 1985.

Note that the amount of the international search fee for the European Patent Office and the amounts of the International PCT fees will change effective June 1, 1986. For information on these fee changes see the notice appearing in the *Official Gazette* at 1065 O.G. 41 on Apr. 29, 1986.

The current schedule of PCT fees is as follows:

Transmittal fee:	170.00
Search Fee	
U.S. Patent and Trademark Office as Searching Authority	
—No corresponding prior U.S. national application filed	420.00
—Corresponding prior U.S. national application filed	250.00
European Patent Office as Searching Authority	
if paid before June 1, 1986	830.00
if paid on or after June 1, 1986	930.00
International fees	
Basic fee (first 30 pages):	
if paid before June 1, 1986	325.00
if paid on or after June 1, 1986	375.00
Basic Supplemental fee (for each page over 30):	
if paid before June 1, 1986	6.00
if paid on or after June 1, 1986	7.00
Designation fee for the first 10 national or regional offices:	
if paid before June 1, 1986	80.00
if paid on or after June 1, 1986	90.00
Designation fee for 11th and subsequent designations	No charge

DONALD J. QUIGG,
Assistant Secretary and Commissioner of Patents and Trademarks.

Mar. 31, 1986.

Notice of Maintenance Fees Payable

Title 37, Code of Federal Regulations, Section 1.362(d), effective Nov. 1, 1984, provides that maintenance fees may be paid without surcharge for a six-month period beginning 3, 7, and 11 years after the date of issue of patents based on applications filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(k) or (l), as amended effective Oct. 5, 1985. If the maintenance fee is not paid in a patent requiring such payment the patent will expire on the 4th, 8th or 12th anniversary of the grant.

Attention is drawn to the patents which were issued on Aug. 9, 1983, for which maintenance fees due at 3 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,397,043 through 4,398,304
Reissue Patents based on the above identified patents.

No maintenance fees are required for design or plant patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

The current amounts of the maintenance fees due at 3 years and six months are set forth in 37 CFR 1.20(e) and (h), as amended effective Oct. 5, 1985, which are reproduced below:

37 CFR §1.20 Post-issuance fees

"(e) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant . . . $ 225.00"

"(h) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Aug. 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant:
By a small entity (§1.9(f)) . . . . . $ 225.00
By other than a small entity . . . . . $ 450.00"

The amounts of the surcharges as amended effective Oct. 5, 1985, are set forth in 37 CFR 1.20 (k) and (l) which are reproduced below:

"(k) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982 . . . . . $ 110.00"

"(l) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Aug. 27, 1982:
By a small entity (§1.9(f)) . . . . . $ 55.00
By other than a small entity . . . . . $ 110.00"

Section 1.20 paragraph (m) as amended as a result of enactment of Public Law 98–622 effective Nov. 8, 1984, is reproduced below:

"(m) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee where the delay in payment is shown to the satisfaction of the Commissioner to have been unavoidable . . . . . $ 500.00"

Notice of Expiration of Patents Due to Failure to Pay Maintenance Fees

35 U.S.C. 41 and 37 CFR 1.362(g) provide that if the required maintenance fee and any applicable surcharge are not paid in a patent requiring such payment, the patent will expire at the end of the 4th, 8th, or 12th anniversary of the grant of the patent depending on the first maintenance fee which was not paid.

According to the records of the Office, the patents listed below have expired due to failure to pay the required maintenance fee and any applicable surcharge.

PATENTS WHICH EXPIRED MAY 18, 1986 DUE TO FAILURE TO PAY MAINTENANCE FEES

Patent Number	Serial Number	Issue Date
4,329,742	06/218,915	5/18/82
4,329,754	06/216,445	5/18/82
4,329,855	06/234,798	5/18/82
4,329,936	06/218,385	5/18/82
4,329,942	06/235,047	5/18/82
4,330,018	06/224,735	5/18/82
4,330,073	06/218,058	5/18/82
4,330,118	06/240,883	5/18/82
4,330,127	06/239,768	5/18/82
4,330,257	06/237,678	5/18/82
4,330,271	06/224,383	5/18/82
4,330,341	06/230,319	5/18/82
4,330,351	06/223,988	5/18/82
4,330,399	06/222,158	5/18/82
4,330,417	06/287,893	5/18/82
4,330,428	06/268,802	5/18/82
4,330,509	06/266,225	5/18/82
4,330,520	06/217,541	5/18/82
4,330,536	06/237,238	5/18/82
4,330,540	06/230,043	5/18/82
4,330,570	06/257,028	5/18/82
4,330,580	06/255,891	5/18/82
4,330,583	06/231,857	5/18/82
4,330,615	06/247,606	5/18/82
4,330,632	06/219,689	5/18/82
4,330,638	06/237,744	5/18/82
4,330,642	06/245,578	5/18/82
4,330,653	06/228,137	5/18/82
4,330,664	06/258,124	5/18/82

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.19(a)).

4,419,301, Re. S.N. 830,291, Filed Dec. 12, 1985, Cl. 261/118, METHOD AND APPARATUS FOR TREATING FLUENT MATERIALS, John E. Nahra, Owner of Record: *Dasi Industries, Inc., Washington, D.C.,* Attorney or Agent: Roland T. Bryan, Ex. Gp.: 135

4,434,959, Re. S.N. 837,703, Filed Mar. 6, 1986, Cl. 244/215, AIRFOIL FLAP ASSEMBLY WITH FLAP TRACK MEMBER, Peter K. C. Rudolph, Owner of Record: *Boeing Co., Seattle, Wash.,* Attorney or Agent: Robert B. Hughes, Ex. Gp.: 315

4,463,107, Re. S.N. 808,268, Filed Dec. 12, 1985, Cl. 521/137, POLYMER/POLYOL COMPOSITIONS HAVING IMPROVED COMBUSTION RESISTANCE, Donald W. Simroth, et al., Owner of Record: *Union Carbide Corp., Danbury, Conn.,* Attorney or Agent: Eugene C. Trautlein, et al., Ex. Gp.: 153

4,541,877, Re. S.N. 854,125, Filed Apr. 21, 1986, Cl. 148/101, METHOD OF PRODUCING HIGH PERFORMANCE PERMANENT MAGNETS, Hans H. Stadelmaier, et al., Owner of Record: *North Carolina State University, Raleigh, N.C.,* Attorney or Agent: Floyd A. Gibson, Ex. Gp.: 111

4,569,692, Re. S.N. 863,655, Filed May 15, 1986, Cl. 75/235, LOW THERMAL EXPANSIVITY AND HIGH THERMAL CONDUCTIVITY SUBSTRATE, Sheldon H. Butt, Owner of Record: *Olin Corp., New Haven, Conn.,* Attorney or Agent: Howard M. Cohn, et al., Ex. Gp.: 223

REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19(a)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

3,540,070, Reexam. No. 90/001,043, Requested: June 27, 1986, Cl. 15/83, PIVOTABLE SECTION FOR BOTTOM OF HOPPER ON SWEEPING MACHINE, Neil F. Brown, Owner of Record: *G. H. Tennant Co., Minneapolis, Minn.,* Attorney or Agent: R. D. Langford, Ex. Gp.: 240, Requester: Hako Minuteman, Inc., Chicago, Ill.

3,820,178, Reexam. No. 90/001,031, Requested: June 11, 1986, Cl. 441/111, SWIMMING AIDS, Mona L. Bentley, Owner of Record: *M. Bentley Belts Ltd., Johannesburg, S. Africa,* Attorney or Agent: Robert J. Patch, Ex. Gp.: 310, Requester: Lyon & Lyon, Los Angeles, Calif.

4,004,892, Reexam. No. 90/001,034, Requested: June 17, 1986, Cl. 428/652, COOKWARE FABRICATED FROM COMPOSITES OF COPPER, ALUMINUM AND STAINLESS STEEL, John B. Ulam, Owner of Record: *Clad Metals, Inc., Canonsberg, Pa.,* Attorney or Agent: Buell, Ziesenheim, et al., Ex. Gp.: 110, Requester: Pechiney, Boite Postale 787–08, rue Balzac, 75008 Paris Cedex 08, France

4,039,228, Reexam. No. 90/001,039, Requested: June 19, 1986, Cl. 384/312, TILTING PAD BEARING, John Repose, Owner of Record: *DeLaval Turbine, Inc., Trenton, N.J.,* Attorney or Agent: Hopgood, Calimafde, et al., Ex. Gp.: 240, Requester: Owner

4,048,654, Reexam. No. 90/001,040, Requested: June 20, 1986, Cl. 358/144, STEREOPHONIC TELEVISION SOUND TRANSMISSION SYSTEM, Carl R. Wegner, Owner of Record: *Telesonics, Inc.,* Attorney or Agent: Eugene M. Cummings, Ex. Gp.: 260, Requester: Zenith Electronics Corp., Glenview, Ill.

4,056,375, Reexam. No. 90/001,035, Requested: June 19, 1986, Cl. 55/381, GAS FILTER ELEMENT, Wolfgang Ringel, et al., Owner of Record: *Firma Carl Freudenberg, Weinheim, West Germany,* Attorney or Agent: Felfe & Lynch, Ex. Gp.: 130, Requester: Owner

4,058,998, Reexam. No. 90/001,033, Requested: June 17, 1986, Cl. 72/84, CONTAINERS, Jozel T. Franek, et al., Owner of Record: *Metal Box Ltd., Reading, England,* Attorney or Agent: Ronald St. Onge., Ex. Gp.: 320, Requester: Owner

4,200,703, Reexam. No. 90/001,036, Requested: June 20, 1986, Cl. 525/357, PROCESS FOR THE MANUFACTURE OF HEAT-STABLE NUCLEAR-BROMINATED POLYSTYRENES, Klaus Diebel, et al., Owner of Record: *Chemische Werke Huels, A.G., Marl, Germany,* Attorney or Agent: Millen & White, Ex. Gp.: 150, Requester: Owner

4,328,257, Reexam. No. 90/001,030, Requested: June 9, 1986, Cl. 427/34, SYSTEM AND METHOD FOR PLASMA COATING, Erich Muehlberger, et al., Owner of Record: *Electro-Plasma, Inc., Irvine, Calif.,* Attorney or Agent: Fraser & Bogucki, Ex. Gp.: 150, Requester: Vidas & Arrett, Minneapolis, Minn.

4,346,427, Reexam. No. 90/001,037, Requested: June 20, 1986, Cl. 361/173, CONTROL DEVICE RESPONSIVE TO INFRARED RADIATION, Kitson Blissett, et al., Owner of Record: *Blissett, Dunbar, et al., Swampscott, Mass.,* Attorney or Agent: Gerard F. Dunne, Ex. Gp.: 260, Requester: Robin, Blecker, et al., New York, N.Y.

4,381,331, Reexam. No. 90/001,038, Requested: June 23, 1986, Cl. 428/224, NON-STICKING PLY END TURN-OVER BLADDER AND METHOD OF MANUFACTURE THEREOF, James L. Johnson, Owner of Record: *McCreary Tire & Rubber Co., Indiana, Pa.,* Attorney or Agent: Walter J. Blenko, Ex. Gp.: 150, Requester: Owner

4,451,524, Reexam. No. 90/001,041, Requested: June 23, 1986, Cl. 428/213, POLYPROPYLENE STRAP AND METHOD OF MANUFACTURING THE SAME, Hiroyuki Matsumoto, Owner of Record: *Tsukasa Kasei Kabushiki, Tokyo, Japan,* Attorney or Agent: Oblon, Fisher, et al., Ex. Gp.: 150, Requester: Signode Corp., Glenview, Ill.

4,503,007, Reexam. No. 90/001,042, Requested: June 23, 1986, Cl. 264/210, POLYPROPYLENE STRAP AND METHOD OF MANUFACTURING THE SAME, Hiroyuki Matsumoto, Owner of Record: *Tsukasa Kasei Kabushiki, Tokyo, Japan,* Attorney or Agent: Oblon, Fisher, et al., Ex. Gp.: 150, Requester: Signode Corp., Glenview, Ill.

4,551,331, Reexam. No. 90/001,032, Requested: May 21, 1986, Cl. 424/195, EASILY DISPERSIBLE DIETARY FIBER PRODUCT AND METHOD FOR PRODUCING THE SAME, Richard E. Rudin, Owner of Record: *S. C. Johnson Co. & Son, Inc., Racine, Wis.,* Attorney or Agent: Pat. Dept. for S. C. Johnson & Son, Ex. Gp.: 120, Requester: Schering-Plough Corp., Madison, N.J.

Service by Publication

A petition to cancel the registration identified below having been filed, and the notice of such proceedings sent by registered mail to registrant at the last known address having been returned by the Postal Service as undeliverable, notice is hereby given that unless the registrant listed herein, its assigns or legal representatives, shall enter an appearance within thirty days of this publication, the cancellation will be proceeded with as in the case of default.

Gamon -Calmet Industries, Inc., Newark, N.J., Reg. No. 502,456, for the mark "WATCH DOG", Canc. No. 15,371.

ERMA S. BROWN,
Administrator
of the Trademark Trial
and Appeal Board.
For MARGARET M. LAURENCE,
Assistant Commissioner
for Trademarks.

PATENT NOTICES

Certificates of Correction for the Week of Aug. 5, 1986

PLT. 5,720	4,545,684	4,570,912	4,579,980
Re. 32,079	4,546,392	4,570,913	4,580,245
D. 280,556	4,548,024	4,571,232	4,581,190
D. 280,557	4,548,120	4,571,295	4,581,235
D. 281,116	4,548,210	4,571,357	4,581,283
4,162,959	4,549,376	4,571,401	4,581,360
4,310,343	4,550,479	4,571,648	4,581,661
4,315,934	4,551,328	4,571,737	4,581,697
4,373,048	4,551,464	4,572,130	4,582,281
4,385,074	4,551,683	4,572,666	4,582,569
4,409,326	4,551,988	4,572,675	4,582,699
4,423,223	4,552,697	4,572,732	4,582,761
4,424,401	4,553,102	4,572,788	4,582,787
4,432,453	4,553,237	4,572,959	4,582,933
4,445,164	4,553,245	4,573,145	4,582,958
4,447,445	4,554,218	4,573,382	4,582,982
4,456,709	4,554,313	4,573,434	4,583,535
4,462,864	4,555,258	4,573,706	4,583,758
4,463,089	4,555,622	4,574,295	4,583,814
4,464,497	4,555,868	4,574,335	4,583,900
4,467,437	4,556,700	4,574,828	4,583,902
4,469,565	4,557,181	4,575,134	4,583,969
4,471,044	4,558,010	4,575,467	4,584,016
4,473,461	4,559,200	4,575,482	4,584,021
4,475,965	4,560,008	4,575,946	4,584,216
4,492,073	4,561,249	4,576,117	4,584,596
4,494,531	4,561,390	4,576,200	4,584,812
4,495,700	4,561,754	4,576,370	4,585,065
4,497,772	4,562,148	4,576,802	4,585,377
4,503,183	4,562,646	4,577,634	4,585,486
4,503,706	4,563,212	4,577,823	4,585,594
4,506,763	4,563,567	4,578,055	4,585,647
4,519,833	4,563,680	4,578,072	4,585,695
4,520,139	4,564,576	4,578,319	4,585,741
4,520,742	4,565,467	4,578,448	4,585,743
4,522,735	4,565,504	4,578,534	4,585,772
4,526,958	4,565,553	4,578,691	4,585,935
4,528,661	4,565,678	4,578,772	4,586,314
4,530,891	4,566,072	4,578,776	4,586,428
4,531,004	4,566,715	4,578,861	4,586,430
4,537,373	4,566,851	4,579,019	4,586,672
4,538,682	4,566,947	4,579,240	4,586,676
4,538,738	4,566,981	4,579,260	4,586,905
4,542,382	4,567,594	4,579,638	4,587,121
4,542,449	4,568,614	4,579,658	4,587,337
4,544,464	4,569,459	4,579,714	4,587,431
4,544,666	4,569,749	4,579,751	4,588,338
4,544,923	4,569,833	4,579,820	4,588,889
4,545,111	4,569,927	4,579,890	4,589,129
4,545,431	4,570,701	4,579,924	4,589,762

Disclaimers

Des. No. 283,488.—*James T. Stevens,* San Antonio, Tex. PACKAGING CONTAINER FOR AN ELECTRICAL SWITCH. Patent dated Apr. 22, 1986. Disclaimer filed Apr. 11, 1986, by the assignee, *Power Controls Corp.*

The term of this patent subsequent to Dec. 3, 1999 has been disclaimed.

3,428,088.—*Frank W. Bell,* Avon, Ohio. FAUCET VALVE MIXING NOTCH. Patent dated Feb. 18, 1969. Disclaimer filed July 22, 1985, by the assignee, *Stanadyne, Inc.*

Hereby enters this disclaimer to claims 1–4 of said patent.

3,872,883.—*Donald L. Bianchetta,* Coal City and *Francis X. Hufeld,* Joliet, Ill. SPOOL-TYPE RELIEF VALVE. Patent dated Mar. 25, 1975. Disclaimer filed Jan. 11, 1985, by the assignee, *Caterpillar Tractor Co.*

Hereby enters this disclaimer to claim 1 of said patent.

3,916,963.—*Lawrence D. McIntosh,* Chicago, Ill. AUTOMATIC DRINK DISPENSER. Patent dated Nov. 4, 1975. Disclaimer filed May 14, 1986, by the assignee, *The Cornelius Co.*

Hereby enters this disclaimer to claims 7, 8 and 19 of said patent.

4,118,515.—*Gunter Rommele,* Riehen and *Ruth Hagemann,* Basle, Switzerland. PREPARATION OF A STABILIZED PAPAIN SOLUTION. Patent dated Oct. 3, 1978. Disclaimer filed Jan. 29, 1985, by the assignee, *Novo Industri A/S.*

Hereby disclaims the remaining term of said patent.

4,147,431.—*Joseph K. Mann,* Palo Alto, Calif. APPARATUS AND METHOD FOR MEASURING PRESSURES AND INDICATING LEAKS WITH OPTICAL ANALYSIS. Patent dated Apr. 3, 1979. Disclaimer filed May 23, 1986, by the assignee, *Varian Associates, Inc.*

Hereby enters this disclaimer to claims 1, 3, 5–19, 21 and 23–30 of said patent.

4,180,967.—*Aloys Greive,* Munster/Westfalen and *Aloys Horstmann,* Greven, Germany. CABLE-TWISTING TWO YARNS. Patent dated Jan. 1, 1980. Disclaimer filed Mar. 20, 1986, by the assignee, *Palitex Project-Co. GmbH.*

Hereby enters this disclaimer to the remaining term of said patent.

4,233,896.—*Paul H. Hamisch, Jr.,* Franklin, Ohio. LABEL PRINTING AND APPLYING APPARATUS. Patent dated Nov. 18, 1980. Disclaimer filed June 6, 1986, by the assignee, *Monarch Marking Systems, Inc.*

Hereby enters this disclaimer to claim 2 of said patent.

4,361,473.—*Chung Chang Young,* Natick, and *John P. Willis,* Sudbury, Mass. POTASSIUM ION-SELECTIVE MEMBRANE ELECTRODE. Patent dated Nov. 30, 1982. Disclaimer filed May 28, 1986, by the assignee, *Nova Biomedical Corp.*

Hereby enters this disclaimer to claims 12–14 of said patent.

4,439,760.—*James R. Fleming,* Indianapolis, Ind. METHOD AND APPARATUS FOR COMPILING THREE-DIMENSIONAL DIGITAL IMAGE INFORMATION. Patent dated Mar. 27, 1984. Disclaimer filed Dec. 9, 1985, by the assignee, *Bell Telephone Laboratories, Inc.*

Hereby enters this disclaimer to claims 1, 8, 10, 15, 16, 17 and 18 of said patent.

4,488,483.—*Yuji Kohara,* Tokyo, Japan. MULTICOLOR ROTARY PRINTING PRESS. Patent dated Dec. 18, 1984. Disclaimer filed Apr. 25, 1986, by the assignee, *Kabushiki Kaisha Tokyo Kikai Seisakusho.*

Hereby enters this disclaimer to all claims of said patent.

4,517,366.—*Ronnie R. Crenshaw,* Dewitt and *Aldo A. Algieri,* Fayetteville, N.Y. INTERMEDIATES FOR PREPARING 3,4-DIAMINO-1,2,5-THIADIAZOLES. Patent dated May 14, 1985. Disclaimer filed Nov. 20, 1985, by the assignee, *Bristol-Myers Co.*

Hereby enters this disclaimer to claim 6 of said patent.

4,526,911.—*Larry G. Boxall, William M. Buchta* and *Arthur V. Cooke,* Baltimore, *Dennis C. Nagle,* Catonsville, and *Douglas W. Townsend,* Glen Burnie, Md. ALUMINUM CELL CATHODE COATING COMPOSITION. Patent dated July 2, 1985. Disclaimer filed June 10, 1986, by the assignee, *Commonwealth Aluminum Corp.*

Hereby disclaims the term of this patent subsequent to Aug. 20, 2001.

4,533,211.—*Gary C. Bjorklund,* Los Altos, and *Glenn T. Sincerbox,* San Jose, Calif. FREQUENCY MULTIPLEXED OPTICAL SPATIAL FILTER BASED UPON PHOTOCHEMICAL HOLE BURNING. Patent dated Aug. 6, 1985. Disclaimer filed June 2, 1986, by the assignee, *International Business Machines Corp.*

Hereby enters this disclaimer to claims 1, 2, 4–6, 8 and 9 of said patent.

4,544,469.—*Larry G. Boxall, William M. Buchta* and *Arthur V. Cooke,* Baltimore, *Dennis C. Nagle,* Catonsville, and *Douglas W. Townsend,* Glen Burnie, Md. ALUMINUM CELL HAVING ALUMINUM WETTABLE CATHODE SURFACE. Patent dated Oct. 1, 1985. Disclaimer filed June 10, 1986, by the assignee, *Commonwealth Aluminum Corp.*

The term of this patent subsequent to Aug. 20, 2001 has been disclaimed.

4,573,081.—*Jereld R. Reeder,* Indianapolis, Ind. FREQUENCY SELECTIVE VIDEO SIGNAL COMPRESSION. Patent dated Feb. 25, 1986. Disclaimer filed Apr. 7, 1986, by the assignee, *RCA Corp.*

Hereby enters this disclaimer to claims 1–10 of said patent.

4,585,590.—*Verlan H. Van Rheenen,* Portage, Mich. CYANOHYDRIN PROCESS. Patent dated Apr. 29, 1986. Disclaimer filed June 2, 1986, by the assignee, *The Upjohn Co.*

Hereby enters this disclaimer to claim 7 of said patent.

Dedications

Des. No. 244,462.—*Cleo D. Mathis,* South El Monte, Calif. WHIRLPOOL JET NOZZLE FOR BATHTUBS AND THE LIKE. Patent dated May 24, 1977. Dedication filed Dec. 18, 1981, by the *inventor.*

Hereby dedicates to the Public the entire remaining term of said patent.

3,893,127.—*Michael Kaplan,* Princeton, N.J. ELECTRON BEAM RECORDING MEDIA. Patent dated July 1, 1975. Dedication filed Mar. 7, 1986, by the assignee, *RCA Corp.*

Hereby dedicates to the Public the remaining term of said patent.

4,569,364.—*George J. Keller, Laguna Miguel* and *Takashi Yanagi,* Monterey Park, Calif. VARIABLE FLOW SELF-CLEANING LIQUID DISTRIBUTION ELEMENT AND LIQUID DISTRIBUTION ASSEMBLY EMPLOYING A PLURALITY OF SUCH ELEMENTS. Patent dated Feb. 11, 1986. Dedication filed May 5, 1986, by the assignee, *Fractionation Research, Inc.*

Hereby dedicates to the Public the entire remaining term of said patent.

Disclaimers and Dedications

4,475,550.—*Paul W. Bremer; Ross L. Bremer* and *P. Levon Pentecost,* Jacksonville, Fla. HALO FOR STEREOTAXIC APPLICATIONS. Patent dated Oct. 9, 1984. Disclaimer and Dedication filed May 23, 1986, by the assignee, *Bremer Orthopedics, Inc.*

Hereby disclaims and dedicates to the Public the remaining term of said patent.

4,571,187.—*Bernard Weissman,* New York, N.Y. DENTAL POST FOR RETENTION OF A PROSTHETIC SUPERSTRUCTURE. Patent dated Feb. 18, 1986. Disclaimer and Dedication filed June 4, 1986, by the assignee, *IPCO Corp.*

Hereby disclaims and dedicates to the Public claims 8, 16 and 19 through 23 of said patent.

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*Collection organized by subject matter.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

JAMES E. DENNY, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF July 5, 1986

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, AND ENGINEERING, GROUP 110—D. E. TALBERT, Director	4-01-85
ORGANIC CHEMISTRY AND BIOTECHNOLOGY, GROUP 120—C. E. VAN HORN, Director	2-22-84
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 130—R. F. WHITE, Director	4-01-85
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY, STOCK MATERIALS AND COMPOSITIONS, GROUP 150—J. O. THOMAS, Director	10-12-84
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—G. GOLDBERG, Director	4-18-84
SPECIAL LAWS ADMINISTRATION, GROUP 220—K. L. CAGE, Director	4-11-84
INFORMATION PROCESSING, STORAGE, AND RETRIEVAL, GROUP 230—E. LEVY, Director	11-21-83
PACKAGES, CLEANING, TEXTILES, AND GEOMETRICAL INSTRUMENTS, GROUP 240—E. E. KUBASIEWICZ, Director	2-13-85
ELECTRONIC AND OPTICAL SYSTEMS AND DEVICES, GROUP 250—S. S. MATTHEWS, Director	3-30-83
COMMUNICATIONS, MEASURING, TESTING AND LAMP/DISCHARGE GROUP, GROUP 260—S. G. KUNIN, Director	9-26-83
DESIGN, GROUP 290—K. L. CAGE, Director	2-06-84
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director	7-12-83
MATERIAL SHAPING, ARTICLE MANUFACTURING AND TOOLS, GROUP 320—S. N. ZAHARNA, Director	12-24-84
MECHANICAL TECHNOLOGIES AND HUSBANDRY PERSONAL TREATMENT INFORMATION, GROUP 330—R. E. AEGERTER, Director	8-18-83
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 340—D. J. STOCKING, Director	7-31-84
GENERAL CONSTRUCTIONS, PETROLEUM AND MINING ENGINEERING, GROUP 350—A. L. SMITH, Director	7-01-85

Expiration of patents: The patents within the range of numbers indicated below expire during June 1986, except those which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents ..... Numbers 3,452,362 to 3,458,862, inclusive

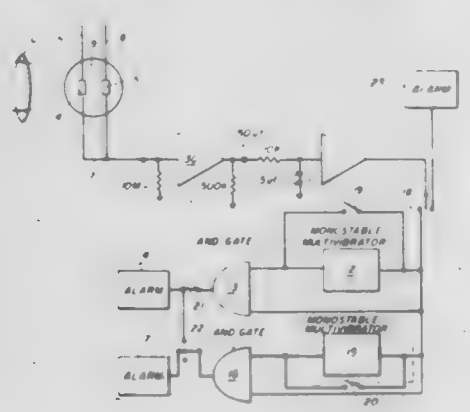
Plant Patents ..... Numbers 2,897 to 2,913 inclusive

REEXAMINATIONS

AUGUST 5, 1986

Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination.

B1 3,631,434 (544th)
PASSIVE INTRUSION DETECTOR
Frank Schwartz, Stamford, Conn., assignor to Barnes Engineering Company, Stamford, Conn.
Reexamination Request No. 90/000,785, May 17, 1985.
Reexamination Certificate for Patent No. 3,631,434, issued Dec. 28, 1971, Ser. No. 864,842, Oct. 8, 1969.
Continuation-in-part of Ser. No. 564,391, Jul. 11, 1966, abandoned. This application May 17, 1985, Ser. No. 864,842
Int. Cl.[4] G08B *13/18;* H01J *39/00*
U.S. Cl. 340—567



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–13** is confirmed.

1. A purely passive device for detection of moving intruders by self-radiation in the infrared, comprising in combination,

a. single stationary infrared-detecting system having two infrared-detecting elements connected in output opposition and located adjacent to each other in substantially the same plane,

b. a single, unitary stationary optical means for imaging a target onto the plane of the detecting elements whereby the image of the moving target in the field of view of the optics does not move unless the target does, in which case, however, the image of the target will move across one or both detecting elements.

c. electronic processing and amplifying circuits coupled to the output of the detecting elements and including a differentiating circuit, the differentiating circuit having a time constant so that it responds to frequencies relatively slow compared to low audio frequencies, whereby a target image moving slowly across at least one detecting element produces an output signal, and

d. alarm means actuated by said signal.

B1 3,716,065 (545th)
HAIRPIECE
Paul V. Finamore, Chicago, Ill., assignor to World of Wigs Mfg. Co. Inc., Chicago, Ill.
Reexamination Request No. 90/000,750, Apr. 1, 1985.
Reexamination Certificate for Patent No. 3,716,065, issued Feb. 13, 1973, Ser. No. 75,604, Sep. 25, 1970.
Filed Apr. 1, 1985, Ser. No. 75,604
Int. Cl.[4] A41G *5/00*
U.S. Cl. 132—53

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

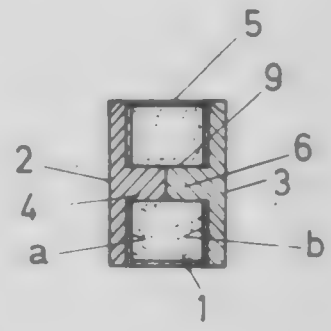
The patentability of claim **1** is confirmed.

1. A hairpiece comprising a first thin, flexible sheet member of premolded plastic material having a predetermined contour and peripheral dimensions conforming substantially with a given surface area of a user's head, a plurality of adjacently positioned hair strands extending from the outer surface of said sheet member so as to afford in the aggregate the appearance of natural hair, each strand comprising a given length having sections thereof penetrating said first sheet member at adjacently spaced intervals and extending outwardly from said sheet member, the intermediate portion of each of said strands underlying said first sheet member, said first flexible sheet



member providing the sole means from which the hair strands extend, adhesive means securing the intermediate portions of said strand in flush association with the undersurface of said first sheet member, a second relatively thin, flexible plastic sheet member preformed to the contour of the user's scalp and superimposing the intermediate strand portions, the outer margins of said first and second sheet members being stitched together and a plurality of adjacently spaced hair strands knotted to said margin and so disposed as to effectively conceal the aforesaid stitches.

B1 4,021,891 (546th)
MAGNETIC LOCK CLOSURE
Tamao Morita, Tokyo, Japan, assignor to Application Art Laboratories Co., Ltd., Tokyo, Japan
Reexamination Request No. 90/000,596, Jul. 20, 1984.
Reexamination Certificate for Patent No. 4,021,891, issued May 10, 1977, Ser. No. 462,174, Apr. 18, 1974.
Filed Jul. 20, 1984, Ser. No. 462,174
Int. Cl.[4] A44B *21/00, 17/00*
U.S. Cl. 24—303



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **5** and **6** are cancelled.

Claims **1–4**, **7** and **8** are determined to be patentable as amended.

1. A magnetic lock closure for use with handbags and similar containers comprising:

[magnetic] *a single permanent magnet* means for supplying magnetic attraction having a first side and a second side of opposite polarities and a hole therethrough between said two sides;

a first ferromagnetic [material means] *plate-shaped body* rigidly secured to said first side of said [magnetic] *magnet* means over said hole for centering the force of the magnetic attraction of said [magnetic] *magnet* means; [and]

a second ferromagnetic [material means] *plate-shaped body* removably positioned against said second side of said [magnetic] *magnet* means for contacting and being attracted to said first ferromagnetic [means] *plate-shaped body* through said hole, said second ferromagnetic [material means comprised of] *plate-shaped body formed as*:

a plate *means* adjacent said second side of said [magnetic] *magnet* means over said hole, and

a rod [the shape of said hole] *means extending from said plate means* rigidly [attached to said plate] *secured against substantial movement transverse to the plane of said plate means,* [extending through] *said rod means adapted to extend into* said hole and contacting said first ferromagnetic [material means] *plate-shaped body*, whereby said second ferromagnetic [material means] *plate-shaped body* is magnetically attracted and connected to said first ferromagnetic [material means] *plate-shaped body* through said hole[.]*; and*

a non-ferromagnetic cover having a central opening adapted to be substantially in register with said hole in said magnet means, said non-ferromagnetic cover superimposed at least over substantially the entire surface of said second side of said magnet means without substantially interfering with the magnetic attraction through said central opening, and to substantially protect the covered portion of said magnet means.

B1 4,302,440 (548th)

EASILY-SWALLOWED, POWDER-FREE AND GASTRIC-DISINTEGRABLE ASPIRIN TABLET THINLY-COATED WITH HYDROXYPROPYL METHYLCELLULOSE AND AQUEOUS SPRAY-COATING PREPARATION THEREOF

Phillip M. John, East Greenbush; Raymond J. Belanger, Rensselaer, and Myron Paikoff, Colonie, all of N.Y., assignors to Sterling Drug Inc., New York, N.Y.

Reexamination Request No. 90/000,831, Aug. 8, 1985.
Reexamination Certificate for Patent No. 4,302,440, issued Nov. 24, 1981, Ser. No. 174,249, Jul. 31, 1980.
Filed Aug. 8, 1985, Ser. No. 174,249
Int. Cl.[4] A61K *9/36*
U.S. Cl. 424—35

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **6**, **8**, **11**, **14**, **15**, **21** and **23** are cancelled.

Claims **1**, **2**, **10**, **12**, **13**, **16–20**, **22** and **24** are determined to be patentable as amended.

1. [The] *In a* method for preparing [an] *aspirin tablets coated with hydroxypropyl methylcellulose,* [easily-swallowed, powder-free, gastric-disintegrable and thinly-coated aspirin tablet which does not have the characteristic aspirin taste and does not produce the esophageal discomfort of an uncoated aspirin tablet and which does not disintegrate in the stomach materially slower than the uncoated aspirin tablet,] *the uncoated tablets of which are relatively soft, fragile and whose surfaces and edges are easily damaged by the attrition encountered in conventional coating pans, which have not been specially treated or reformulated to increase hardness or durability to withstand breakage during film-coating manipulations and which have fine detail in embossed face designs and logos, the improvement* which comprises [aqueous spray-coating] *a one-step method, applicable for commercial production, of spraying a 2% to 15% by weight solution of* hydroxypropyl methylcellulose *in water containing about 15% to 25% w/w of glyceryl triacetate as plasticizer based on the weight of hydroxypropyl methylcellulose* onto all exterior surfaces of [an] *uncoated* aspirin [tablet] *tablets, which have been dedusted and preheated, to provide a slick shiny transparent film of hydroxypropyl methylcellulose with plasticizer without loss of fine detail in embossed face designs and logos, the resulting coated tablets being easily-swallowed, powder-free, gastric-disintegrable and thinly-coated, not having the characteristic aspirin taste, not producing the esophageal discomfort of uncoated aspirin tablets and not disintegrating in the stomach materially slower than the uncoated aspirin tablets,* the amount of hydroxypropyl methylcellulose being between 0.5 and 2.0 parts by weight per 100 parts by weight of the aspirin tablet.

B1 4,308,306 (547th)

FABRIC CONDITIONING PRODUCTS

Ernst Stähli, Olten, Switzerland, assignor to Lever Brothers Company, New York, N.Y.

Reexamination Request No. 90/000,699, Dec. 24, 1984.
Reexamination Certificate for Patent No. 4,308,306, issued Dec. 29, 1981, Ser. No. 168,236, Jul. 10, 1980.
Continuation of Ser. No. 940,090, Sep. 6, 1978, abandoned. This application Dec. 24, 1984, Ser. No. 168,236
Int. Cl.[4] B32B *3/00;* **D06N** *7/04*
U.S. Cl. 428—141

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentabiity of claims **4** and **5** is confirmed.

Claim **2** is cancelled.

Claims **1** and **3** are determined to be patentable as amended.

New claims **6** and **7** are added and determined to be patentable.

1. A fabric conditioning product for the conditioning of fabrics in a tumble dryer during the dryer cycle of a fabric laundering operation, said product comprising a substrate in flexible sheet form *having two opposite faces* and a layer of fabric conditioning formulation [on] *completely covering* at least one major surface *of at least one face* of the substrate, said layer having an exposed surface area and said layer including at least one region occupying between about 5% and about 50% of said exposed surface area, which region, before use of the product in a tumble dryer, has a reduced constant depth such that the layer presents a visually perceivable uneven surface of sharply defined configuration, *which provides a guide to the amount of formulation remaining on the product after use,* said fabric conditioning formulation having a softening point of between about 35° C. and about 80° C.

B1 4,351,172 (549th)

CYLINDER LOCK MECHANISM

Kaarlo Martikainen, Mastotie, Finland, assignor to Oy Wartsila AB, Helsinki, Finland

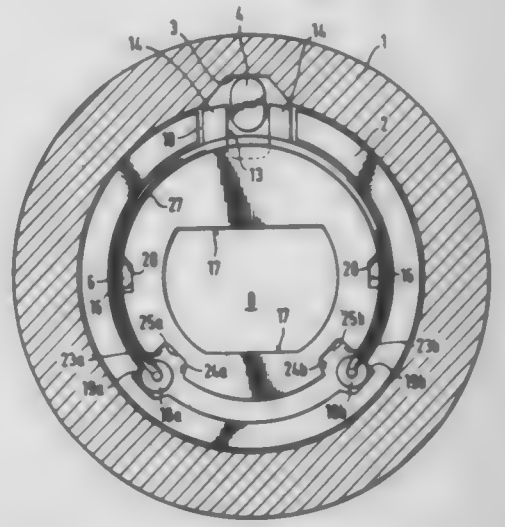
Reexamination Request No. 90/000,896, Oct. 31, 1985.
Reexamination Certificate for Patent No. 4,351,172, issued Sep. 28, 1982, Ser. No. 181,803, Aug. 27, 1980.
Filed Oct. 31, 1985, Ser. No. 181,803
Claims priority, application Finland, Sep. 7, 1979, 792797
Int. Cl.[4] E05B *29/02*
U.S. Cl. 70—366

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claim 1 is determined to be patentable as amended.

Claims 2–22, dependent on an amended claim, are determined to be patentable.

1. A key operated cylinder lock including a hollow stationary cylinder housing enclosing a turnable power transmission element and a locking bar having a position locking the turning movement of said power transmission element relative to said cylinder housing, further a set of discs including a number of locking discs turnable by means of combination surfaces on a key of said lock, said locking discs being turnable, by the turning movement of said key, from an initial key insertion position to a releasing position, in which said power transmission element is released from its locked connection to the cylinder housing, the key of the lock being arranged to directly transmit a turning force to a number of locking discs only in a direction from said initial position to said releasing position, *one or several members turnable with the key in both directions* the returning of these locking discs to their initial position being arranged to be carried out by means of a separate return bar, receiving turning power from said key through *said* one or several members turning with key, said lock comprising means for guiding said return bar and said guiding means including



means for allowing said return bar to move in the circumferential as well as in the radial direction of said lock.

STATUTORY INVENTION REGISTRATIONS

PUBLISHED AUGUST 5, 1986

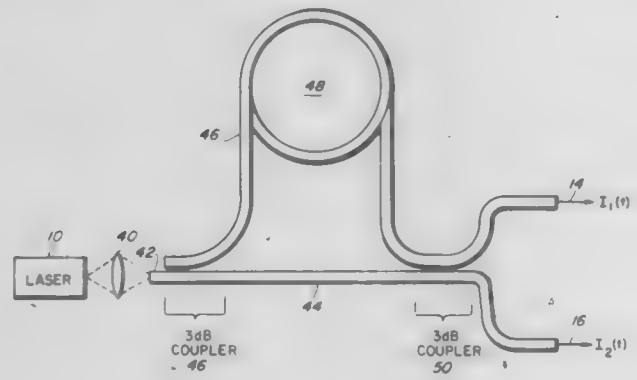
A statutory invention registration is not a patent. It has the defensive attributes of a patent but does not have the enforceable attributes of a patent. No article or advertisement or the like may use the term patent, or any term suggestive of a patent, when referring to a statutory invention registration. For more specific information on the rights associated with a statutory invention registration see 35 U.S.C. 157.

H96

INTENSITY MODULATED LIGHT SOURCE

Henry F. Taylor, Alexandria, Va., assignor to United States of America, Washington, D.C.

Filed Sep. 13, 1982, Ser. No. 417,826
Int. Cl.[4] H03K *13/02*; G02B *5/14, 5/174*
U.S. Cl. 332—7.51 **12 Claims**



1. A device for producing intensity modulated light over a broad frequency range comprising:

a frequency-tunable light source;

a control line for varying the frequency of said light source with time in a desired manner such that light of a first frequency f_1 is provided by said light source at a first time and light of a second frequency f_2, different from said first frequency, is provided by said light source at a second time; and

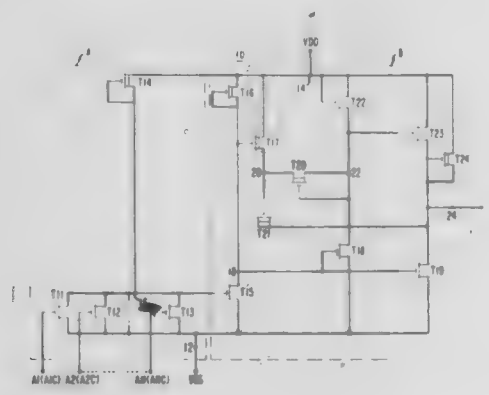
an interferometer with different optical path lengths disposed to receive said first frequency light from said light source and to interfere that light with said second frequency light emitted from said light source at said second time, resulting in an intensity modulated light signal at the beat frequency of $|f_1-f_2|$.

H97

ROW-ADDRESS-DECODER-DRIVER CIRCUIT

Kevin J. O'Connor, Center Valley, Pa., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Dec. 21, 1982, Ser. No. 451,786
Int. Cl.[4] G11C *8/00*
U.S. Cl. 365—230 **15 Claims**



1. Circuitry comprising:

a first inverter circuit having an input terminal and an output terminal;

a second inverter circuit having an input terminal and an output terminal;

a third inverter circuit having first and second input terminals and an output terminal;

a first capacitor circuit means having first and second terminals;

a potential setting circuit means coupled to the first terminal of the capacitor circuit means for selectively setting the potential thereof to a first preselected level;

the input terminal of the first inverter circuit being coupled to a circuitry input terminal;

the output terminal of the first inverter circuit being coupled to the input terminal of the second inverter circuit and to the first input terminal of the third inverter circuit;

delay circuit means being coupled by a first terminal to the output terminal of the first inverter circuit and being coupled by a second terminal to the second terminal of the capacitor circuit means; and

a coupling/decoupling switching device having a control terminal and first and second output terminals, the first output terminal thereof being coupled to the first terminal of the capacitor circuit means and the second output terminal thereof being coupled to the second input terminal of the third inverter circuit and to the output terminal of the second inverter circuit and the control terminal thereof being connected to a potential source that allows an increase in potential on the first terminal of the capacitor circuit means to be coupled to the second output terminal of the switching device, and wherein said second inverter includes a switching device (T22, T220) that is connected to the output terminal of said second inverter and to a voltage source (VDD) that tends to bias said coupling/decoupling switching device towards conduction.

H98

HEAT-DEVELOPABLE COLOR PHOTOGRAPHIC MATERIAL

Yoshiharu Yabuki; Kozo Sato; Shinsaku Fujita; Koichi Koyama; Hiroshi Hara, and Hideki Naito, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Oct. 11, 1983, Ser. No. 540,737
Claims priority, application Japan, Oct. 8, 1982, 57-177148
Int. Cl.[4] G03C *1/40, 5/54*
U.S. Cl. 430—203 **44 Claims**

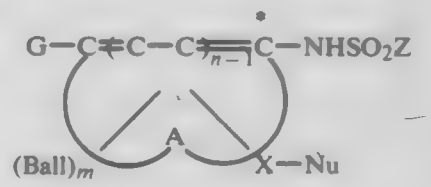
1. A heat-developable color photographic material, comprising:

a support having thereon:

a light-sensitive silver halide;

a hydrophilic binder; and

a dye releasing redox compound represented by the following general formula (I):



(I)

wherein G represents —OR^1 or —NHR^2; R^1 represents a hydrogen atom or a hydrolyzable group; R^2 represents a hydrogen atom or an alkyl group containing from 1 to 50 carbon atoms; Z represents an image forming dye group; A represents one or more carbon atoms nitrogen atoms, and/or oxygen atoms necessary for forming a substituted or unsubstituted aromatic ring; Ball represents an organic immobilizing group bound directly or through a linking group to the aromatic ring, and when two Ball groups

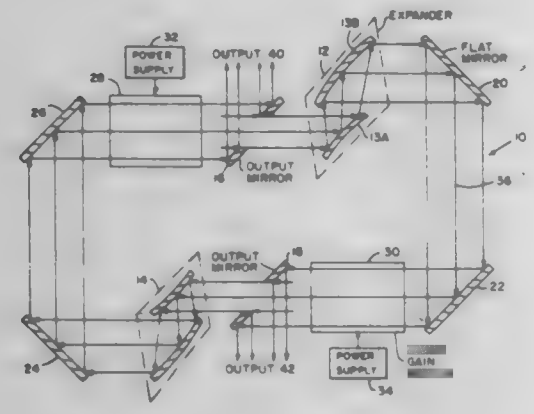
exist, they may be the same or different from each other; m represents an integer of 1 or 2; X represents a divalent organic group containing from 1 to 8 atoms and X with a nucleophilic group (Nu) is capable of forming a 5- to 12-membered ring together with an electrophilic center (the carbon atom marked with *) which is formed by oxidation; Nu represents a nucleophilic group; and n represents an integer of 1 or 2, said dye-releasing redox compound providing a color image of high density.

H099

MODULAR UNSTABLE RING RESONATOR WITH MULTIPLE OUTPUT COUPLERS

Robert W. Jones; Charles M. Cason, III, and James F. Perkins, all of Huntsville, Ala., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed May 24, 1984, Ser. No. 613,481
Int. Cl.[4] H01S *3/08, 3/081*
U.S. Cl. 372—108 **9 Claims**



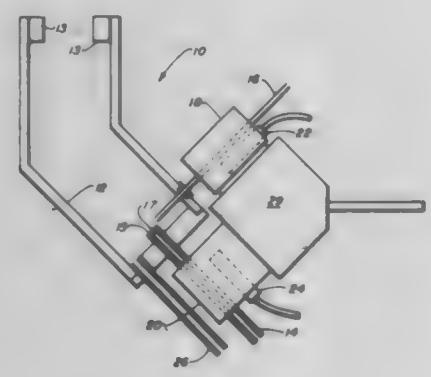
1. A modular unstable ring resonator consisting of: a plurality of beam turning mirrors, spaced apart and disposed for providing a circuitous optical path that forms the boundary of an area; a plurality of pairs of laser gain medium modules and beam expander modules, at least one pair of said plurality of pairs being disposed between adjacent ones of said beam turning mirrors in said optical path, and a plurality of beam output means for providing mutually coherent output beams, one of said beam output means being disposed between the laser gain medium module and beam expander module of each pair of said laser gain medium modules and beam expander modules.

H100

APPARATUS FOR NEBULIZING PARTICULATE LADEN SAMPLES OF LUBRICATING OILS

Medona B. Denton, Tucson, Ariz., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Continuation-in-part of Ser. No. 445,401, Nov. 30, 1982, abandoned. This application Sep. 27, 1984, Ser. No. 655,135
Int. Cl.[4] B05B *1/24*
U.S. Cl. 239—133 **4 Claims**



1. An oil nebulizer for nebulizing particulate laden samples of used lubricating oils of varying viscosity to provide uniform aerosols which are suitable for introduction into an inductively coupled plasma atomic emission spectrophotometer comprising:

a. a chamber having a first inlet means for receiving particulate laden used lubricating oils at a predetermined flow rate;

b. said chamber having a second inlet means for receiving gas at a predetermined flow rate and at a predetermined pressure;

c. said second inlet means being an enclosed hollow channel having means at one end for receiving said gas, the opposite end of said hollow channel having a restricted orifice opening through said opposite end in axial alignment with said hollow channel and a grove in alignment with said first inlet means intersecting said orifice; and

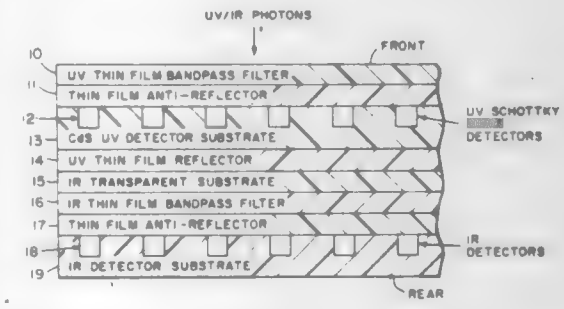
d. said first and second inlet means being positioned substantially at right angles to each other and said second inlet means being positioned substantially a forty-five degree angle to the horizontal so that oil from said first means will enter said vertical groove and flow in front of said orifice opening.

H101

ULTRAVIOLET AND INFRARED FOCAL PLACE ARRAY

Clifford G. Walker, Huntsville, Ala., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Oct. 1, 1984, Ser. No. 655,791
Int. Cl.[4] H01L *31/00*
U.S. Cl. 357—30 **1 Claim**



1. In a device comprising a plurality of first detectors arranged in a plane so as to constitute a first layer; said first detectors detecting a first band of radiation; a plurality of second detectors arranged in a plane so as to constitute a second layer; said second detectors detecting a second band of radiation; said first and second layers being arranged one on top of the other; said device senses radiation which flows through said first layer into said second layer; said plurality of first detectors being substantially transparent to said second band of radiation; said plurality of first and second detectors each constitute an array of detectors in its layer; a front end optics for focusing incoming radiation onto said first and second layers; said first band of radiation is ultraviolet; said second band of radiation is infrared; said plurality of first detectors are cadmium sulfide ultraviolet detectors arranged in a thin film substrate; and said plurality of second detectors are infrared detectors arranged in a thin film substrate.

H102

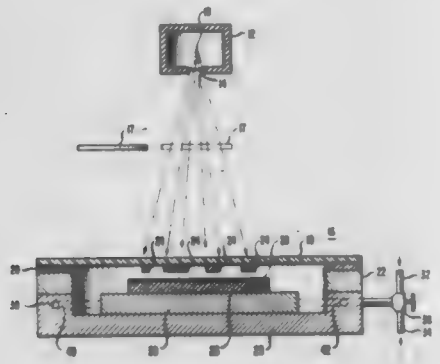
CONTROLLING RESOLUTION OF EXPOSED RESIST IN DEVICE LITHOGRAPHY

Michael Rubinstein, New Providence, and Vladimir Starov, Berkeley Heights, both of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Nov. 9, 1984, Ser. No. 669,773
Int. Cl.[4] C03C *5/16*
U.S. Cl. 430—311 **17 Claims**

1. A method of making microminiature devices comprising the steps of

selectively irradiating a negative X-ray-sensitive-resist-coated workpiece with X-rays in a controlled atmosphere in which radiation-initiated laterally propagating cross-linking reactions continue in the resist even after radiation no longer impinges on the resist,



and, immediately after irradiation of the resist, quenching said laterally propagating reactions by exposing the just-irradiated resist to an atmosphere that contains at least 10 volume percent oxygen.

H103

NOVEL POLY(VINYLAZIDE)

Everett E. Gilbert, Morristown, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Mar. 14, 1985, Ser. No. 711,892
Int. Cl.[4] C08F *8/30;* C06B *45/10*
U.S. Cl. 525—331.5 **6 Claims**

1. In an improved process of making poly(vinylazide) from poly(vinylchloride) and sodium azide, the improvement consisting of making said poly(vinylazide) acceptable for use in large caliber weapon systems by heating said poly(vinylazide) having the form of a gel in the presence of an excess of sodium azide with stirring at 60° C. for 24 hours, and then heating at 85° C. for 96 hours producing a poly(vinylazide) product containing between about 0.1 and 1.4 percent chlorine by weight.

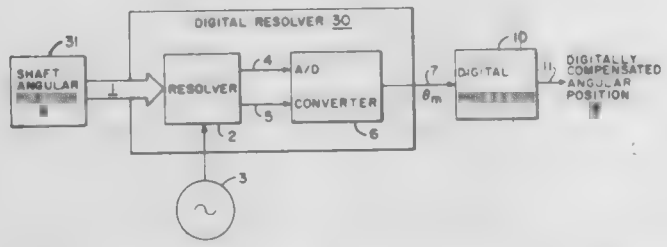
5. Poly(vinylazide) having the formula—$(CH_2CHN_3)_6(CH_2CHCl)_4(CH{=}CH)_1$—.

H104

DIGITAL RESOLVER COMPENSATION TECHNIQUE

James C. Hung, and Stephen T. Hung, both of Knoxville, Tenn., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jun. 3, 1985, Ser. No. 740,695
Int. Cl.[4] H03M *1/00;* G05D *23/275;* G06G *7/19*
U.S. Cl. 340—347 SY **2 Claims**



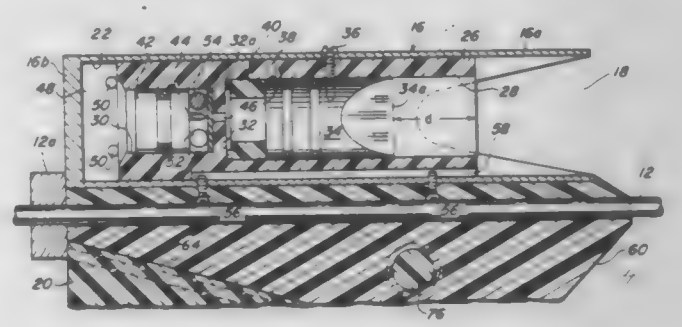
1. In a system utilizing a digital resolver for reading angular position and which has error outputs due to imperfection of the system, the improvement comprising a method of determining the error characteristics of the system, representing this error characteristic in a Fourier series and utilizing a compensation means attached to an output of the system for inserting said Fourier series therein to compensate for the errors of the digital resolver.

H105

LIGHTWEIGHT HYDRAULICALLY FIRED MINESWEEPING CUTTER

Paul F. Gould, and William A. Everritt, both of Panama City, Fla., assignors to The United States of America as represented by the secretary of the Navy, Washington, D.C.

Filed Jul. 5, 1985, Ser. No. 751,831
Int. Cl.[4] B63B *9/03;* F42B *3/00*
U.S. Cl. 89—1.14 **4 Claims**



1. A mine mooring cable cutter device for use on a sweep wire, said device comprising:

a tubular metal cutter body defining a lumen closed at one end of the body and opening in a V-shaped recess at the other end that is engageable by a mooring cable;

an erecting vane formed of plastic material attached to and extending laterally from said body for holding said body in a predetermined attitude; said erecting vane comprising a vane element defining therein a longitudinal channel adapted to receive a sweep wire, a guide rail formed in said vane and having an angle of divergence relative to said channel, a generally triangular gate member slidably mounted on said guide rail for sliding movement therealong between open and closed positions relative to said channel, and latch means for releasably holding said gate member in said closed position;

a plastic barrel member carried in said body lumen and having an outer end portion exposed in said recess for engagement and movement by a mooring cable, said barrel member having an axial bore in said outer end portion;

a chisel disposed in said axial bore of said barrel member and having a cutting edge disposed a predetermined distance within said end portion;

explosive charge means disposed in said axial bore for propelling said chisel;

said barrel member being releasably held against movement relative to said body by a shear element so as to shear said element and move abruptly upon a predetermined force exerted on said barrel member by a mine mooring cable;

said chisel being releasably held against movement relative to said barrel member by a shear element so as to shear said element and move abruptly upon a predetermined force exerted on said chisel by said explosive charge, said barrel member having another axial bore in its inner end portion separated from the first mentioned axial bore by wall means;

a piston disposed in said other axial bore of said barrel member;

a firing pin mounted on said piston;

said barrel member, said piston and said closed end of said body defining a chamber;

an opening through said body member into said lumen for flooding said chamber with water prior to firing, said opening being closed by said barrel member upon said movement relative to said body so that water in said chamber acts on said piston to drive said firing pin through said wall means to fire said explosive charge solely by the force of said mooring cable acting against said barrel member, whereby said chisel is accelerated through said predetermined distance before impacting and severing said mooring cable without backing of said cable by anvil means.

H106

NOVEL ENERGETIC SULFATE SALTS AND A PROCESS FOR THEIR PREPARATION

Everett E. Gilbert, Morristown, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Aug. 21, 1985, Ser. No. 767,994
Int. Cl.[4] C06B *31/42*
U.S. Cl. 149—56 32 Claims

1. A novel 2,4,6-trinitrobenzene derivative containing R_1, R_2 and R_3 attachments in the 1,3 and 5-positions respectively wherein

(a) R_1 is a substituent selected from the group consisting of $-CH_2CH_2OSO_3NH_4$ and $-CH_2CH_2CH_2OSO_3NH_4$;

(b) R_2 is a substituent selected from the group consisting of $-H$, $-CH_3$, $-CH_2CH_3$, $-C(CH_3)_3$, $-CH(CH_3)_2$, $-CH_2Pi$, $-CH_2CH_2Pi$, $-CH_2CH_2OSO_3NH_4$ and $-CH_2CH_2CH_2OSO_3NH_4$ wherein Pi is an aryl, alkyl or alkylaryl group of up to about 12 carbon atoms and

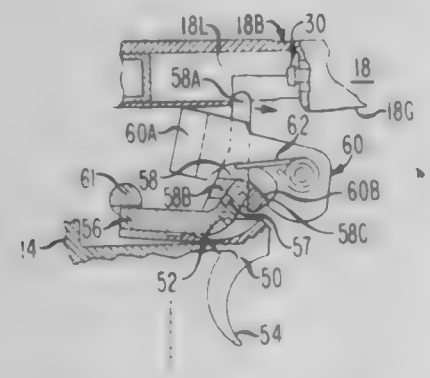
(c) R_3 is a substituent selected from the group consisting of $-H$, $-CH_3$, $-CH_2CH_3$, $-C(CH_3)_3$, $-CH(CH_3)_2$, $-CH_2Pi$, $-CH_2CH_2Pi$, $-CH_2CH_2OSO_3NH_4$ and $-CH_2CH_2CH_2OSO_3NH_4$ wherein Pi is an aryl, alkyl or alkylaryl group of up to about 12 carbon atoms.

H107

TRIGGER MECHANISM

Kevin T. Bauer, Warwick, N.Y., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Sep. 19, 1985, Ser. No. 777,793
Int. Cl.[4] F41D *11/02*
U.S. Cl. 89—149 10 Claims



1. A trigger mechanism for an automatic weapon comprising:

a receiver;

a bolt mechanism reciprocatably mounted in said receiver and biased to slide from a recoiled position to a firing position;

a hammer positioned alongside said bolt mechanism and pivotally mounted on said receiver for reciprocating between a retracted and a striking position;

bias means attached to said hammer for urging it into a striking position;

a trigger rotatably mounted on said receiver; and

catch means connected between said trigger and said hammer for releasably holding said hammer, said catch means being operable to retract said hammer in response to rotation of said trigger, said bolt mechanism including:

stop means for engaging said hammer and holding said bolt mechanism at said recoiled position, said catch means being operable to release said bolt mechanism from said stop means by retracting said hammer; and

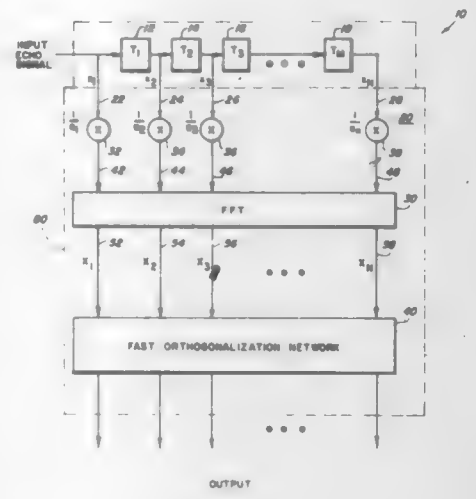
toggle means positioned for engaging said catch means and causing it to release said hammer as said bolt mechanism arrives at said firing position.

H108

RADAR DOPPLER PROCESSOR USING A FAST ORTHOGONALIZATION NETWORK

Karl Gerlach, Dunkirk, Md., assignor to The Government of the United States, Washington, D.C.

Filed Oct. 15, 1985, Ser. No. 786,982
Int. Cl.[4] G01S *13/28*
U.S. Cl. 343—5 FT 2 Claims



1. A radar doppler processor using a fast orthogonalization network, comprising:

a radar echo signal input;

M, M=N−1, Tap delay lines, for obtaining a set of N consecutive samples of said radar echo signal input, sampled at a rate of the radar system's pulse repetition rate;

N digital multipliers to apply a weighting function, $1/a_n$, to each of said N consecutive samples, wherein

$$a_n = \frac{\sin\left[\frac{\pi}{N}\left(n - \frac{N+1}{2}\right)\right]}{\frac{\pi}{N}\left(n - \frac{N+1}{2}\right)}, \quad n = 1, 2, \ldots, N;$$

a N-point Fast Fourier Transform network for dividing the weighted samples into a set of doppler frequency subband signals and generating a separate subband output signal for each of the subbands; and

a fast orthogonalizing network to orthogonalize each of said subband output signals to eliminate cross-correlations between all output signals.

H109

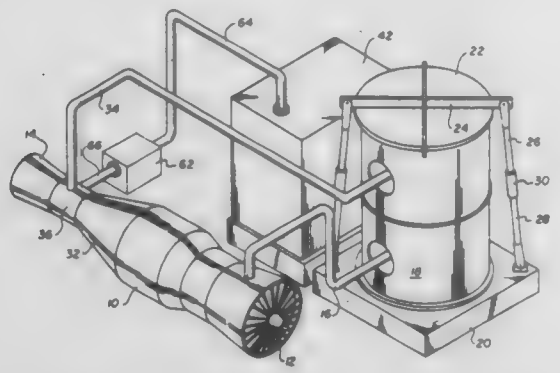
SMOKE GENERATOR

Christian S. Gardner, Edgewood, and Eric J. Boschert, Riverdale, both of Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Continuation of Ser. No. 577,462, Feb. 6, 1984, abandoned. This application Nov. 14, 1985, Ser. No. 798,077
Int. Cl.[4] B05B *1/24*
U.S. Cl. 239—129 5 Claims

1. A smoke, obscurant generation system, having a turbine jet engine, comprising (i) a fog source of oil comprising a means for pumping oil having a pipe output means connected to the exhaust port of said jet engine; and (ii) a power, smoke generator comprising a container having powder therein, including an input line connected to an air pressure source, an outlet line connected to the exhaust port of said jet engine, and means for discharging to atmosphere powder exiting said container through said outlet line, said container having a bottom and inclined walls to reduce the size of said bottom,

said input and said outlet lines terminating in said container near said bottom, said input line end taking the form of a ring



around the container funnel bottom to create a localized fluidized bed.

H110

TRACKING OF AIR MASS MOVEMENT

Irving F. Barditch, Baltimore, and Orville C. Bowersox, Frederick, both of Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Nov. 14, 1985, Ser. No. 799,531
Int. Cl.[4] C12Q *1/02, 1/24, 1/04, 1/085*
U.S. Cl. 435—29 5 Claims

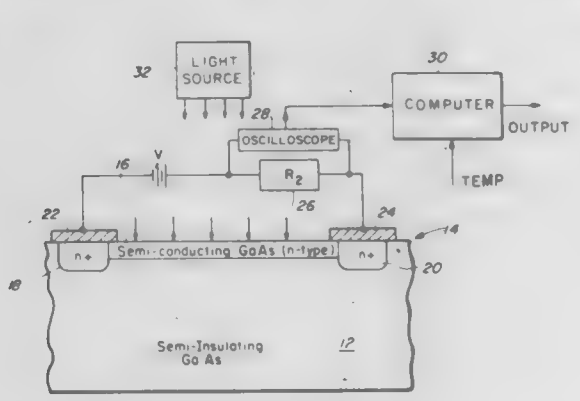
1. In a method of monitoring the movement of an air mass comprising releasing a tracer entity into the atmosphere at a given location, collecting a sample of the ambient air at a different location and analyzing the sample of the collected air for the presence of the tracer entity, the improvement which comprises employing *Bacillus thurengiensis* as the tracer entity and conducting the analysis by performing a culture on the collected sample in a medium capable of supporting *Bacillus thurengiensis* growth.

H111

GALLIUM ARSENIDE MATERIAL AND PROCESS EVALUATION BY MEANS OF PULSED PHOTOCONDUCTANCE IN TEST DEVICES

Larry D. Flesner, La Jolla, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 21, 1985, Ser. No. 806,573
Int. Cl.[4] G05B *23/00*
U.S. Cl. 324—158 D 4 Claims



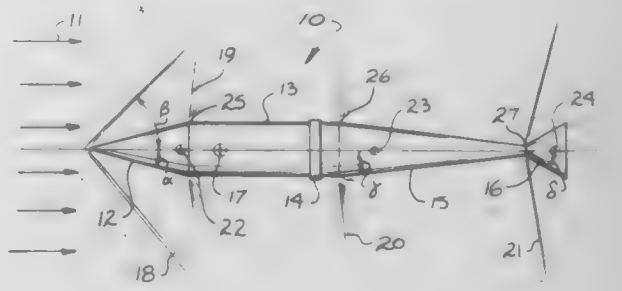
1. A method for determining characteristics of a substrate of semi-insulating gallium arsenide comprising the steps of:
forming an n-channel on said surface of said gallium arsenide substrate;
forming first and second contacts to said n-channel on said gallium arsenide substrate;
applying a voltage to said first and second contacts;
illuminating said n-channel with a set of light pulses from a light source;
measuring the time dependent conductance of said n-channel.

H112

PROJECTILE STABILIZER

William F. Donovan, Aberdeen, and Michael Nusca, Baltimore, both of Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Continuation of Ser. No. 595,099, Mar. 30, 1984. This application Jan. 3, 1986, Ser. No. 820,482
Int. Cl.[4] F42B *13/00, 13/24, 15/00*
U.S. Cl. 102—501 16 Claims



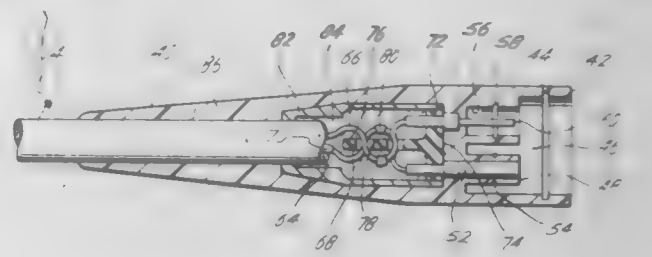
1. A projectile comprising:
a forward nose section;
a main body connected to said nose section at one end of said main body, said main body having a maximum diameter; a reversed taper stabilizer section connected to said main body at an opposite end of said main body, having a rearwardly decreasing diameter; and
a tail stabilizer section connected to said reversed taper stabilizer section, having a rearwardly increasing diameter, said tail stabilizer section having a maximum diameter at most equal to said maximum diameter of said main body.

H113

WATERBLOCK AND STRAIN RELIEF FOR ELECTRICAL CONNECTORS

William McNeel, 9411 Neff, Houston, Tex. 77036

Filed Jan. 27, 1986, Ser. No. 822,373
Int. Cl.[4] H01R *13/58*
U.S. Cl. 339—105 5 Claims



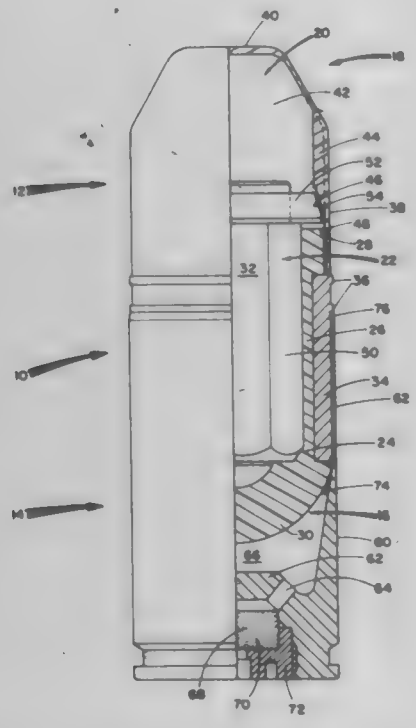
1. A watertight connector assembly, including a first and a second connector, each having at least one end receiving a cable having at least two stranded conductors therein, and another end for engaging said other connector in a watertight arrangement, comprising:
(a) strain relief means disposed within each of said connectors and having said stranded conductors laced therethrough.
(b) at least two contacts disposed within said strain-relief means, each connected to one of said conductors, said contacts and strain-relief means arranged within said connector so that said contacts are disposed in said end of said connector for engaging said other connector; and
(c) water block means within said connector for preventing moisture from entering therein.

H114

PRACTICE PROJECTILE ASSEMBLY

Richard M. Quintavalle, Freeland, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jan. 29, 1986, Ser. No. 824,327
Int. Cl.[4] F42B *11/16*
U.S. Cl. 102—513 12 Claims



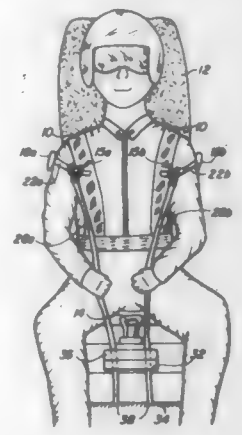
1. A practice projectile assembly, which comprises:
a base member;
a windshield member formed of a frangible material and defining a cavity;
a signal powder disposed in said cavity of said windshield member; and
a piston member positioned within a chamber formed by joining said base member and said windshield member, said signal powder being disposed between said piston member and said windshield member.

H115

ARM RESTRAINT SYSTEM FOR HARNESS MOUNTING

Daniel L. Lorch, Holland, Pa., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 3, 1986, Ser. No. 831,029
Int. Cl.[4] B64D *11/06, 17/30, 25/02*
U.S. Cl. 244—122 A 6 Claims



1. An arm restraint system for an aircraft ejection seat occupant wearing a parachute harness, comprising:
a pair of ribbons attachable at their one ends to the harness at either side between the occupant's waist and shoulders and at their other ends to the back of the harness at either side over the occupant's femur socket joints;
securing means attachable to the harness for slidably routing each of said ribbons behind the occupant's arms and over the pectoral muscles; and
deploying means operatively connected to said ribbons for pulling and keeping said ribbons taut about the occupant's upper arms and forearms during seat ejection, said deploying means automatically disengaging upon separation of the occupant from the seat.

REISSUES

AUGUST 5, 1986

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 32,219

PORTABLE CERVICAL COLLAR

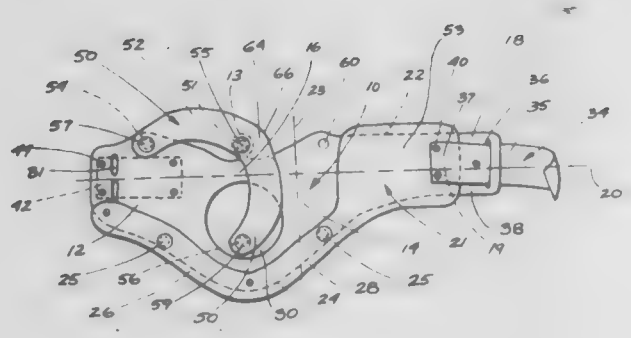
Geoffrey C. Garth, 334 Colorado Pl., Long Beach, Calif. 90814

Original No. 4,413,619, dated Nov. 8, 1983, Ser. No. 311,959, Oct. 16, 1981. Application for reissue Feb. 10, 1984, Ser. No. 578,979

Int. Cl.[4] A61F *5/08*

U.S. Cl. 128—76 R

10 Claims



1. A cervical collar formed entirely of [a stiff, flexible flat plastic sheet band having an asymmetrical configuration comprising]:

(a) an elongated neck encircling band formed *entirely* of [said] stiff, flexible *plastic* sheet material having front, [and back] side *and opposite side* portions;

(b) a chin support brace, also formed entirely of stiff flexible plastic sheet material having a generally C-shape including fastening means located on each end of said brace;

(c) said chin support brace fastening means being engageable with cooperative attachment means located at least on opposite [sides] *side portions* of said neck encircling band such that when said band is formed into said collar at least one of said fastening means is allowed to align with a respective attachment means thus bowing said brace thereby enabling said brace to obtain an upwardly inclined, conically convex chin rest supported along its' entire length by the upper edge of the front portion of said band and projecting forwardly therefrom;

(d) collar retention means carried at each end of said band and mutually cooperative to retain said band in its collar configuration.

Re. 32,220

LANCE MOUNTED SPRAY APPARATUS

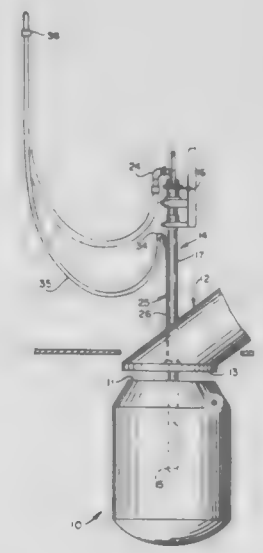
Leo L. Meinert, Baden, and Nicholas M. Rymarchyk, Wexford, both of Pa., assignors to Pullman Berry Co., Harmony, Pa.

Original No. 4,386,763, dated Jun. 7, 1983, Ser. No. 309,646, Oct. 8, 1981. Application for reissue Aug. 6, 1984, Ser. No. 637,888

Int. Cl.[4] C21C *5/32*

U.S. Cl. 266—158

15 Claims



1. [For] *In* a steelmaking [operation] *apparatus* including a metal refining vessel having an upper open mouth portion normally positioned upwardly and receiving a vertically moveable gas blowing lance, *and*

means for moving said lance relative to said vessel through said mouth portion, *and*

a hood and duct structure including a hood portion disposed over said mouth portion for gathering fumes emanating from said vessel, *and*

said hood duct having opening means accommodating movement of said lance [the improvement comprising], *and*

a cooling fluid distribution means supportd on said lance for movement therewith and being constructed and arranged to direct cooling fluid into contact with the fumes emanating from said vessel, *and*

said cooling fluid distribution means comprising a spray ring assembly adapted to direct streams of fluid in a generally outward direction, *and*

said spray ring assembly including a plurality of nozzles, *and*

a manifold member supporting said nozzles to direct fluids outwardly from said manifold member for suppressing and cooling of gases emanating from said vessel, *and*

[said plurality of nozzles being interchangeable to achieve a variety of different spray patterns and flow rates,]

[including] *the improvement comprising* means for supporting said [spry] *spray* ring *assembly* on said lance for accommodating lengthwise thermal expansion of said lance relative to said spray ring.

PLANT PATENTS

GRANTED AUGUST 5, 1986

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

5,776

CARNATION PLANT NAMED WINSOME

William E. Duffett, Salinas, and Walter H. Jessel, Jr., Fremont, both of Calif., assignors to Yoder Brothers, Inc., Barberton, Ohio

Filed Nov. 15, 1984, Ser. No. 671,889
Int. Cl.[4] A01H *5/00*
U.S. Cl. Plt.—71 1 Claim

1. A new and distinct cultivar of *Dianthus caryophyllus, Linn.*, named Winsome, as described and illustrated, and particularly characterized as to uniqueness by the combined characteristics of miniature or spray type, commercial double form, 6.0 to 8.0 cm. flower diameter, lavender (red-purple) color, 16 to 18 weeks for response, 10 to 12 flowers and buds per stem, 5 to 8 cm. peduncle length, rigid peduncle strength, 86 to 90 cm. plant height, and strong, spice fragrance.

5,777

CHRYSANTHEMUM PLANT NAMED DEEP LUV

William E. Duffett, Salinas, Calif., assignor to Yoder Brothers, Inc., Barberton, Ohio

Filed Nov. 28, 1984, Ser. No. 675,648
Int. Cl.[4] A01H *5/00*
U.S. Cl. Plt.—76 1 Claim

1. A new and distinct cultivar of *Chrysanthemum morifolium*, Ramat., plant named Deep Luv, as described and illustrated, and particularly characterized as to uniqueness by the combined characteristics of flat capitulum form; decorative capitulum type; red purple ray floret color; diameter across face of capitulum ranging from 9 to 11 cm. at maturity; uniform eight week flowering response; short plant height, and semi-spreading branching pattern.

PATENTS

GRANTED AUG. 5, 1986

ERRATA

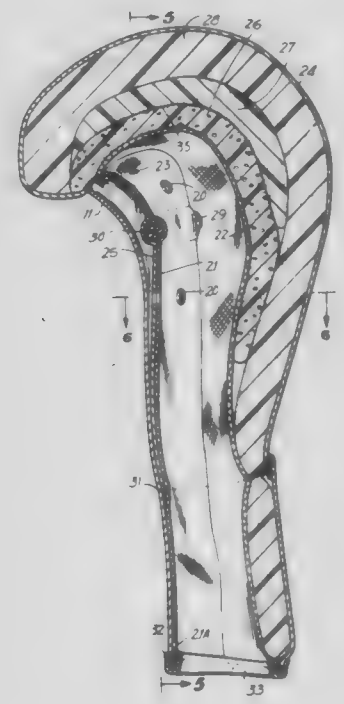
For CLASS	See PATENT NO.
101–415	4,603,641
384–044	4,603,922
384–007	4,603,923
373–060	4,604,135
514–002	4,604,234
530–387	4,604,235
530–307	4,604,236
530–307	4,604,237
530–307	4,604,238
530–317	4,604,239
540–114	4,604,240
540–145	4,604,241
558–260	4,604,242
558–388	4,604,243
558–320	4,604,244
075–247	4,604,259
204–157	4,604,274
281–037	4,604,312

PATENTS

GRANTED AUGUST 5, 1986

GENERAL AND MECHANICAL

4,603,439
BOXING GLOVE
John C. Golomb, Brooklyn, N.Y., assignor to Everlast World's Boxing Headquarters Corp., New York, N.Y.
Continuation of Ser. No. 599,537, Apr. 12, 1984, abandoned, which is a continuation of Ser. No. 543,103, Oct. 18, 1983, abandoned, which is a continuation of Ser. No. 290,822, Aug. 7, 1981, abandoned. This application Dec. 10, 1984, Ser. No. 679,620
Int. Cl.[4] A41D *13/10*
U.S. Cl. 2—18 **12 Claims**



1. In a boxing glove including an inner glove having a principal pocket for receiving the user's hand and fingers and a second pocket for receiving the user's thumb, an outer shell generally encompassing and secured to the inner glove with a space defined between corresponding parts of the inner glove and outer shell, and a quantity padding secured in said space, said outer shell defining a back side and an opposite palm side, the improvement comprising a web of flexible sheet material encompassing said thumb and at least part of said palm side and secured to said boxing glove, and said second pocket being bendable relative to said principal pocket and relative to said web, said principal pocket being bendable about a first axis, said second pocket being bendable about a second axis generally perpendicular to the first axis.

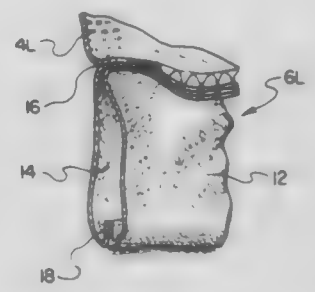
4,603,440
SPORT JERSEY
James M. Hale, 21100 Lemarsh, Chatsworth, Calif. 91311
Filed Sep. 19, 1984, Ser. No. 652,748
Int. Cl.[4] A41B *1/00*
U.S. Cl. 2—115 **3 Claims**

1. A jersey, comprising:

a jersey formed from an open weave material and having a pair of sleeves extending to the vicinity of the wearer's wrists, and

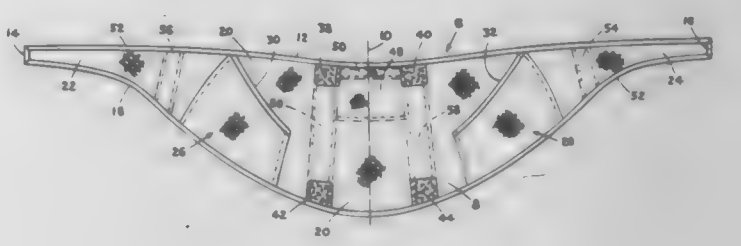
a pair of cuffs attached to the ends of the respective sleeves and adapted to extend over the wearer's wrists,

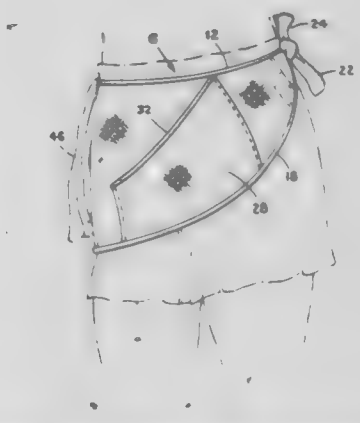
each cuff comprising an inner resilient layer dimensioned to resiliently bear against the wearer's wrist, the inner layer comprising a terry cloth having a weight in the approximate range of 10 to 10.5 ounces per yard, the terry cloth having an absorbent, uncut pile adapted to absorb perspiration running down the wearer's arm, and an outer resilient layer of a ribbed material, the ribbed material having a weight in the approximate range of 8–8.5 ounces per yard and being characterized by an air porous weave that enables a flow of air to the inner terry cloth layer to dry and cool the terry cloth layer,



the inner and outer layers of each cuff being formed from separate pieces of material which are seamed together along opposite edges of the cuff and mutually unattached between the seams, each cuff being joined to the end of a respective sleeve by a seam which is common to one of the seams joining the inner and outer layers.

4,603,441
SPORT GARMENT FOR WOMEN
Lois M. Richter, 69 W. Brother Dr., Greenwich, Conn. 06830
Filed Aug. 2, 1985, Ser. No. 761,862
Int. Cl.[4] A41D *1/14*
U.S. Cl. 2—211 **11 Claims**





1. A sport garment for women, said garment having an outer side and an inner side and comprising a fabric piece having a maximum dimension perpendicular to a centerline, an upper edge extending both ways from said center line from a first end of said garment to a second end of said garment, a lower edge including a curved central portion defining a central garment portion symmetrical with respect to said centerline and having a center of curvature above said lower edge, and first and second end portions extending from said central portion to said first and second garment ends and defining first and second garment end portions, respectively, first and second pockets on said central garment portion on the outer side of said garment and symmetrical with respect to said centerline and spaced therefrom, each said pocket having an opening generally facing said upper edge, said garment being wearable with said end

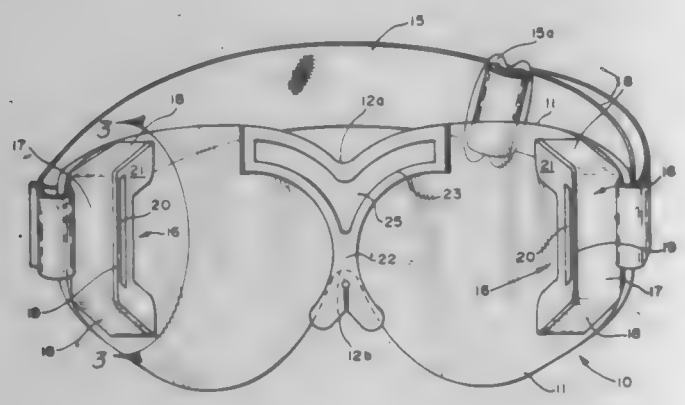
portions releasably joined to each other about a wearer's waist with said inner side confronting the wearer's body with said central portion on that hip of the wearer selected by the wearer and with one of said pockets on the front of the wearer's body and accessible to that hand of the wearer selected by the wearer, said opening of each said pocket being oriented diagonally upward from the end thereof adjacent said centerline to the end thereof remote from said centerline.

4,603,442

SINGLE LENS GOGGLE

Kenneth E. Barfield, 1283 E. South Temple, Salt Lake City, Utah 84102

Filed Dec. 28, 1984, Ser. No. 687,572
Int. Cl.[4] A61F *9/02*
U.S. Cl. 2—447 **14 Claims**



1. A single lens goggle comprising, a single lens formed from a clear shatter resistant plastic material adapted to cover a wearer's eye socket areas extending to and over the wearer's temple areas, said lens being shaped to encourage bending across a vertical center thereof; means for securing a strap means to said lens ends to maintain the goggle across the wearer's face; a nose bridge mount means formed from a soft flexible material secured to said lens across the vertical center thereof and formed to provide a nose bridge engaging rest on one end thereof with a nose bridge pad receiving channel formed in the other; a nose bridge pad formed from a soft flexible material to have a shape that conforms to said nose bridge mount channel internal dimensions to form an interference fit of said pad within said channel so as to be removably mounted in said channel; temple pad mount means formed from a soft flexible material that are secured to said lens, one mount to each lens end area; and temple pads, each formed from a soft flexible material that are each shaped to cover a goggle wearer's temple area providing a lens support point at each temple area, each pad including a hole formed therethrough to receive one of said temple pad mounts fitted therein forming a interference fit so as to be removably mounted on said temple pad mounts.

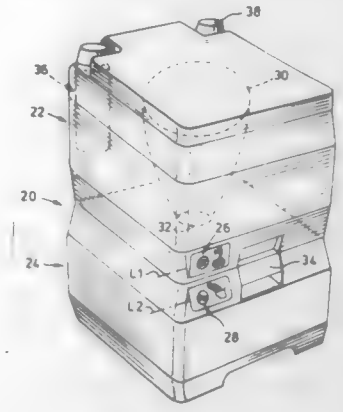
4,603,443

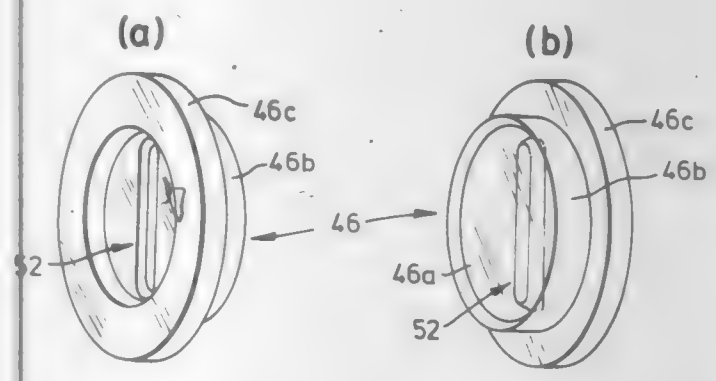
TOILET WITH SIGHT GAUGE

John M. Stewart, Ontario, Canada, assignor to Sanitation Equipment Limited, Concord, Canada

Filed Oct. 9, 1984, Ser. No. 658,939
Int. Cl.[4] E03D *1/00, 3/00, 5/00*
U.S. Cl. 4—314 **5 Claims**

1. A toilet which includes a bowl for receiving waste and at least one tank forming either a holding tank for receiving waste from the bowl, or a reservoir for containing flushing liquid to be delivered to the bowl, wherein the tank has an external wall which is provided with a liquid level indicator visible at the exterior of the toilet and comprising a sight gauge in the form of an at least partially transparent disc-shaped insert having a centre portion of circular shape received in a complementary opening in a wall of the tank, and a surrounding flange sealed to said wall, said insert being positioned in said wall with its centre at a height selected to substantially coincide with a critical liquid level in the tank at which the tank should be refilled where the tank is a reservoir or at which the tank should be emptied where the tank is a waste holding tank, said insert being adapted to permit the level of liquid in the tank to be observed from externally of the toilet at said critical level and sufficiently in advance of said level to provide a user with a warning that the critical level is being approached, said insert





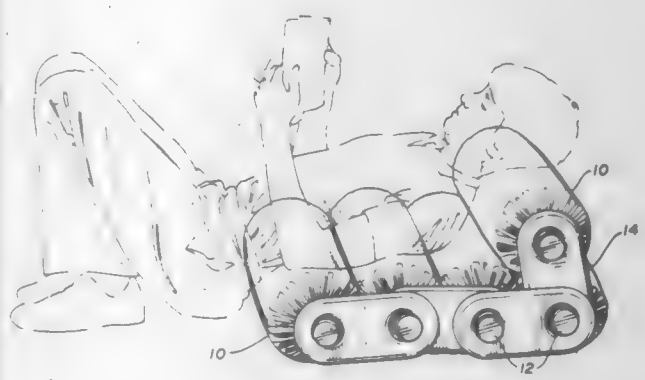
being made of a translucent material preventing clear viewing of the interior of the tank, and being provided with a highlight formed by an elongate strip of reduced thickness compared with the remainder of the insert, said strip being oriented so that the surface of liquid in a tank extends transversely of the strip, and being dimensioned to permit the liquid level in the tank to be clearly viewed through the highlight.

4,603,444

CONVERTIBLE FURNITURE APPARATUS

Bevan D. Suits, 2200 S. Aldrich, Minneapolis, Minn. 55405

Filed Oct. 15, 1984, Ser. No. 660,731
Int. Cl.[4] A47C *20/00*
U.S. Cl. 5—431 **6 Claims**



1. An article of manufacture convertible into a number of reclining and sitting positions, comprising:

a plurality of parallel resilient cushioning bolster elements defining an occupant supporting area;

a corresponding plurality of spindles, each of which extends longitudinally through a respective bolster element and wherein the end of each spindle defines a pair of adjacent

annular grooves for respectively receiving adjacent links, and

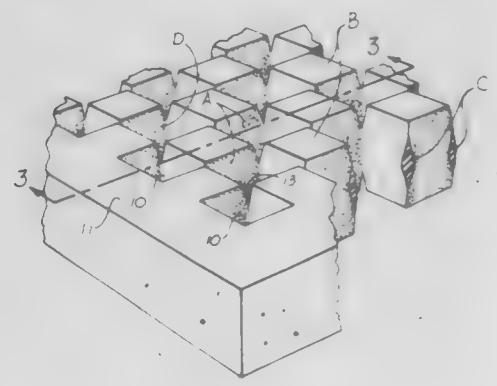
a plurality of links apertured to fit over the spindle ends with overlapping ends extending between the ends of adjacent spindles and rotatably joining the spindles and bolster elements to each other in any one of a number of selectable relative positions for reclining and sitting, the links being constructed and arranged to interconnect the ends of the spindles such that the resilient bolsters are compressed against each other whereby they exert force tending to maintain the elements in assembly.

4,603,445

SUPPORT PAD AND METHOD OF MANUFACTURE

Donald C. Spann, Greenville, S.C., assignor to Span-America Medical Systems, Inc., Greenville, S.C.

Filed Sep. 9, 1983, Ser. No. 530,519
Int. Cl.⁴ A47C *27/14*
U.S. Cl. 5—481 **2 Claims**



1. A foam pad, comprising:

a foam block having upper and lower surfaces;

a plurality of upstanding four-sided projections integrally associated in checkerboard patterns on both of said surfaces of said block, and having planar apex surfaces;

a generally flat surface on at least one surface of said block, said flat surface being defined by said planar apex surfaces;

a plurality of generally four-sided voids, defined by said block, on each side of a plurality of said projections and extending completely through said block;

connecting foam portions integrally joining corners of said projections, at points thereof beneath said flat surface, to corners of adjacent projections; and

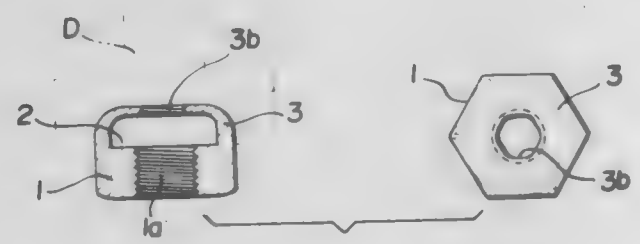
said projections having planar sidewalls slightly slanted from being perpendicular to said flat surface, and said connecting foam portions having quadralateral cross-sections in a plane perpendicular to said flat surface.

4,603,446

METHOD OF MAKING LOCK NUTS

Kunihiko Ozawa, 39-6, Tsurukawa 4, Machida, Tokyo, Japan

Filed Jun. 4, 1985, Ser. No. 741,270
Int. Cl.⁴ B21D *53/24*
U.S. Cl. 10—86 A **2 Claims**



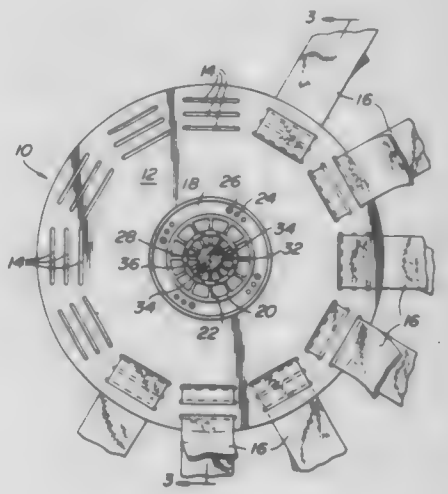
1. A method of making a lock nut comprising the steps of providing a polygonally-shaped blank with a plurality of flat side surfaces and an axial threaded through bore, forming a cylindrical recess of larger diameter than the through bore in one end portion of the blank, removing material from the exterior of said one end portion to provide said one end portion with a continuous annular rim of substantially uniform thickness and an outer surface with a plurality of sloping surfaces tapering outwardly from said annular rim to define a crown portion on said nut having thicker portions at apices of said flat sides and thinner portions along said flat sides between said apices in said crown portion, compressing the crown portion inwardly with differential deformation of the thinner and thicker portions to provide a central opening in the crown portion substantially aligned with the through bore, threading the opening in conformity with the through bore, and further compressing the crown portion with differential deformation of the thinner and thicker portions to reduce the diameter of the opening and provide same with a profile which is distorted from a circle toward a polygon conforming substantially to the polygonal shape of the nut.

4,603,447

DISK TYPE BRUSH

Carl C. Beer, Philadelphia, Pa., assignor to Sherman Industries, Inc., Palmyra, N.Y.

Filed Feb. 19, 1985, Ser. No. 703,170
Int. Cl.⁴ B24D *13/06, 13/10;* B60S *13/06*
U.S. Cl. 15—97 B **11 Claims**



1. A brush comprising generally elongated non-rigid brush elements arranged around the circumference of a circular disk, means integral with the disk for frictionally securing the brush elements to the disk consisting of a plurality of openings through the disk adjacent the outer rim of the disk and arranged in groups of at least two radially-spaced openings, the groups being at spaced intervals around the circumference of the disk, and coupling means adjacent the center of the disk for coupling the disk to a drive means for rotating the disk.

4,603,448

ROTARY ELECTRIC TOOTHBRUSH

Frederic H. Middleton; David V. Mollenhoff, both of Madison; Theodore L. Taylor, Manitowoc, and Thomas N. Vaughn, Columbus, all of Wis., assignors to MTV Associates, Madison, Wis.

Filed Jun. 7, 1985, Ser. No. 742,198
Int. Cl.⁴ A46B *13/02*
U.S. Cl. 15—22 R **17 Claims**

1. A rotary electric toothbrush comprising:

a. a power handle having a foot and a motor, the motor having a rotatable power shaft;

b. means for supplying electrical power to the motor;

c. a longitudinally extended brush stem attached to the power handle at a point remote from the foot and extending therefrom to terminate at a stem head;

d. a brush cartridge attached to the stem head and extending therefrom to terminate at a toothbrush head, so that "headward" indicates a direction toward the toothbrush

head and "footward" indicates a direction toward the foot, the brush cartridge including at least one generally cylindrical brush the longitudinal axis of which is oriented approximately headward-to-footward;

e. a drive shaft extending from the power handle to the brush, the headward end of the drive shaft including means for engaging the brush and transmitting to it the motion of the drive shaft; and



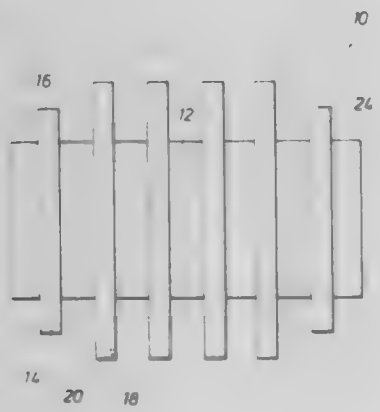
f. transmission means for transmitting the motion of the power shaft to selectively cause the drive shaft alternatively to rotate about its longitudinal axis or to move parallel thereto in a reciprocating manner, whereby a user of the electric toothbrush may direct power from a single motor selectively to cause the brush to rotate about its longitudinal axis and, alternatively, to move in a reciprocating manner parallel thereto.

4,603,449

UNITIZED PIG BODY FOR PARAFIN REMOVAL

Kenneth M. Knapp, 1209 Hardy St., Houston, Tex. 77020

Filed May 3, 1985, Ser. No. 730,271
Int. Cl.[4] B08B *9/04*
U.S. Cl. 15—104.06 R **11 Claims**



1. A unitized paraffin scrapping pig comprising an elongate body having a leading end disc which is undergaged, at least two intermediate discs on said body which are overgaged, and wherein said leading disc is at least about 90 durometer and said leading disc is at least about 20 durometer harder then said intermediate discs.

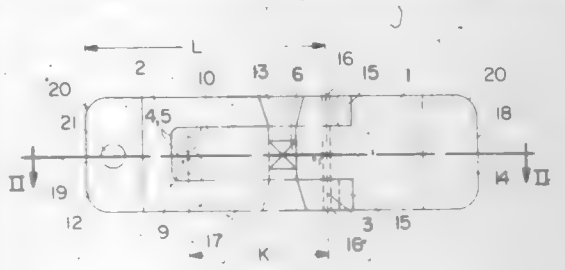
4,603,450

FRAME FOR A FLOOR WIPER

Rainer Osberghaüs, Duesseldorf; Bernfrid Scheller, Pulheim; Roland Schunter, Lorch-Waldhausen; Franz Kresse, Hilden, and Helmut Schell, Monheim, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Fed. Rep. of Germany

Filed Jan. 11, 1985, Ser. No. 690,787
Claims priority, application Fed. Rep. of Germany, Jan. 12, 1984, 3400871; Mar. 30, 1984, 3411858
Int. Cl.[4] A47L *13/258*
U.S. Cl. 15—147 A **13 Claims**

1. In a frame for a floor wiper comprising a flat frame shape equipped with a handle socket, which frame is designed to be introduced at its longitudinal ends into the end pockets of a replaceable mop, consisting of two frame members foldable towards one another about a pivot pin extending substantially parallel to the bottom surface of said flat frame shape and lockable in the fully extended or open position by a lock means, the improvement consisting essentially in that one of the two frame members has a T-shape and the other frame member has a U-shape, said T-shape and said U-shape adapted to form a substantially rectangular plate flat frame shape, said pivot pin



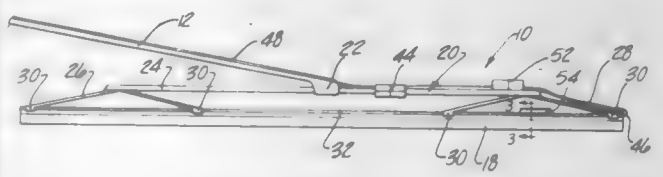
extending substantialy perpendicularly to the longitudinal direction of the arms of the T-shape and the U-shape of said two frame members, and said lock means comprises a permanent magnet and counter-plate forming a permanent magnet clamp.

4,603,451

HEATED WINDSHIELD WIPER ASSEMBLY

Robert O. VanSickle, 25538 New York St., Dearborn Heights, Mich. 48125

Filed Apr. 29, 1985, Ser. No. 728,195
Int. Cl.[4] A46B *9/04*
U.S. Cl. 15—250.07 **12 Claims**



1. A heated windshield wiper assembly adapted to be mounted on the wiper arm of a motor vehicle, said wiper assembly comprising:

a flexible wiper blade;

a wiper blade supporting assembly wherein said supporting assembly demountably supports said wiper blade;

a heating element secured to said supporting assembly, said heating element extending substantially the length of said supporting assembly;

means for pivotally securing said supporting assembly to said motor vehicle wiper arm;

means for conducting electrical power from the power source of said motor vehicle to said heating element;

first temperature responsive means for detecting the ambient air temperature, said first temperature responsive means secured to said blade supporting assembly; and

second temperature responsive means for detecting the temperature of said heating element.

4,603,452

DETACHABLE HINGE WITH CONVENIENTLY RELEASABLE HINGE FLAPS

Peter M. Paciorek, Fort Worth, Tex., assignor to General Dynamics Corporation, Fort Worth, Tex.

Filed Jan. 22, 1985, Ser. No. 693,063
Int. Cl.[4] E05D *5/12, 7/12*
U.S. Cl. 16—262 **18 Claims**

1. An easily separable hinge device of conventional appearance, in which the hinge flaps may be hingedly connected together, or disconnected within limited working space by only short axial movement of the hinge pin, comprising:

first and second hinge flaps for attachment to structures to be hinged together;

each flap having tube-like knuckle means with longitudinally adjacent gap means in castellated formation with said knuckle means;

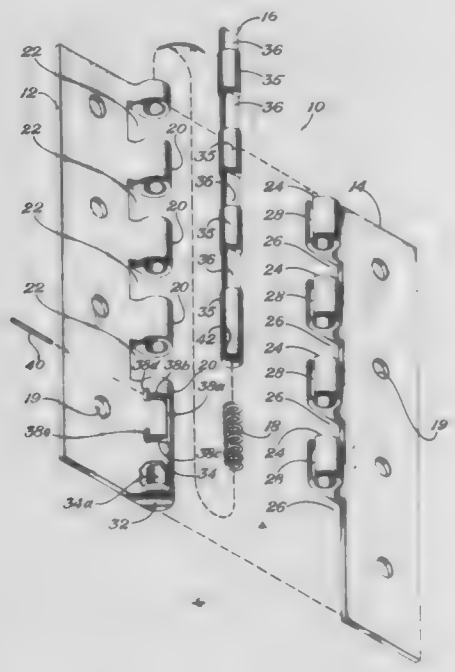
the knuckle means of one of the flaps adapted to be interdigitated and axially aligned with knuckle means of the other flap;

the knuckle means of one of the flaps provided with longitudinal slot means opening through one side thereof;

hinge pin means positionable in and pivotable in knuckle means of both of said flaps for hingedly holding one flap to the other;

said hinge pin being formed along its length with flat and cylindrical portions slidable in said knuckle means;

said slot means adapted to slide transversely of said pin over said flat portions thereof positioned in gap means of said



first hinge flap to position said slotted knuckle means around the hinge pin and axially align the knuckle means of both flaps or to separate said slotted knuckle means from said pin and said first flap;

said hinge pin being axially slidable in said knuckle means between a first or unlocked position in which said flat portions are positioned in the gap means of one of the flaps whereby the knuckle means of the flaps may be brought into alignment, and a second or locked position in which said cylindrical portions are within said slotted knuckle means whereby said flaps are prevented from being separated at all pivotal positions of the flaps.

4,603,453

DEVICE FOR ATTACHING A DETECTABLE SHOPLIFTING PREVENTION BODY

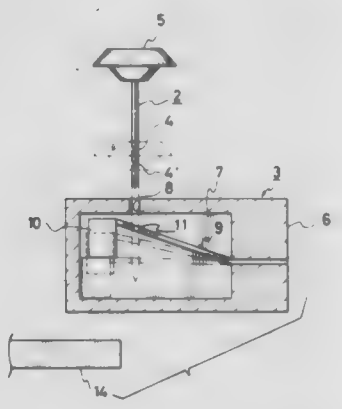
Ryuzo Yokoyama, Hiroshima, Japan, assignor to Kabushiki Kaisha Yokoyama Seimitsu Kousakusho, Hiroshima, Japan

Filed Mar. 4, 1985, Ser. No. 707,805

Claims priority, application Japan, Mar. 3, 1984, 59-30113[U]

Int. Cl.⁴ A44B *9/00;* **G08B** *21/00*

U.S. Cl. 24—155 R **5 Claims**



1. A device for attaching a detectable shoplifting prevention body to a commodity, comprising:

a non-magnetically attractive hollow body;

a first hole in a wall of said hollow body, said first hole having a center line;

a resilient plate positioned in the hollow of said body and having a first end fixed to said body, said plate being normally resiliently positioned such that said plate entends from said first end towards said wall at an oblique angle to said wall;

a magnetically attractive core in said hollow body and fixed to a second end of said plate;

a pin having a grip member and being sized to fit through said first hole, said pin having at least one small diameter portion near an end thereof and groove means along the length thereof;

a second hole in said plate, said second hole being sized to permit passage of said pin when the length of said plate entends substantially perpendicular to an axis of said pin, wherein said resilient plate will flex toward said groove means for locking said pin to said housing, said second hole being positioned such that when said plate is in said normal position, an edge of said pin closest to said core is positioned between said center line of said first hole and said core and sufficiently close to said center line of said first hole that said pin cannot fit into said second hole; and

a detectable body having a third hole sized to permit passage of said pin.

4,603,454

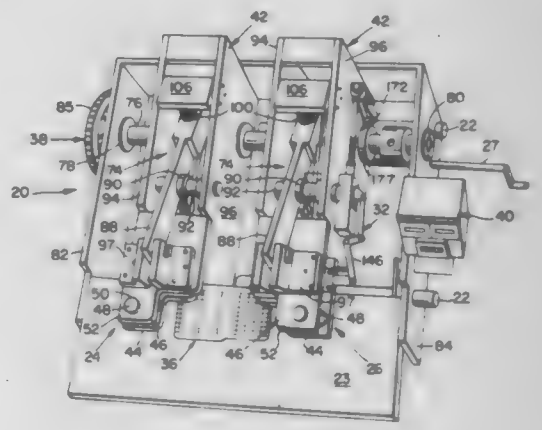
HINGE FORMING AND ATTACHING APPARATUS

Alex P. Janssen, Jr., P. O. Box 43, Earlysville, Va. 22936, and Alexander P. Janssen, 28 Old Farm Rd. Belair, Charlottesville, Va. 22901

Continuation of Ser. No. 430,246, Sep. 30, 1982, abandoned. This application May 7, 1984, Ser. No. 607,597

Int. Cl.⁴ B21D *53/40;* **B21K** *13/02;* **B23P** *19/00*

U.S. Cl. 29—11 **12 Claims**



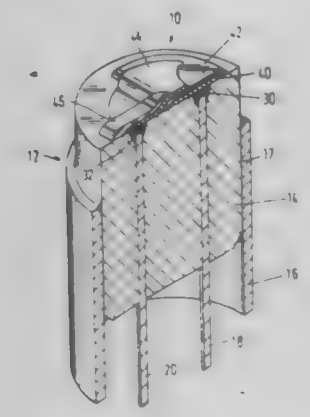
1. Apparatus for forming a hinge and for affixing it to an article, said apparatus comprising: means for feeding a strip of metallic material in a first rectilinear path to a first station; means at said first station for forming a hinge blank having a pair of spaced apart legs from said strip and for partially forming a hinge barrel at the opposite end of said blank from said legs; means for transfering said blank from said first station in a second rectilinear path oriented at right angles to said first path to a second station and then to a third station; means at said second station for bending said hinge legs generally normal to the hinge body and for effecting a further partial formation of the hinge barrel; and means at said third station for completing the formation of the hinge barrel, driving the hinge legs through an article as aforesaid theretofore located at said third station, and bending said hinge legs toward said article to clinch said hinge thereto.

4,603,455

METHOD FOR MAKING A THIN-FILM HUMIDITY SENSOR FOR MEASURING ABSOLUTE HUMIDITY

Wolfgang Woest, Rheinfelden; Rainer Silbermann, and Frank Hegner, both of Schopfheim, all of Fed. Rep. of Germany, assignors to Endress u. Hauser GmbH u. Co., Fed. Rep. of Germany

Division of Ser. No. 564,212, Dec. 22, 1983, Pat. No. 4,530,030.
This application Apr. 19, 1985, Ser. No. 724,913
Claims priority, application Fed. Rep. of Germany, Apr. 12, 1983, 3313150
Int. Cl.[4] H01G *4/06*
U.S. Cl. 29—25.42 8 Claims



1. Method of making a thin-film humidity sensor for measuring absolute humidity, characterized in that in a bushing body (14) of electrically insulating material at least two axial bores (22, 24) are formed spaced apart from each other which widen towards the end face of the bushing body (14), that in each bore a lead-through conductor (18) is disposed so that it projects into the widening (26, 28), that each lead-through conductor (18, 20) is connected to the bushing body (14) by means of brazing solder (30, 32) which fills the widening (26, 28), that the end face (34) of the bushing body (14) together with the brazing solder (30, 32) disposed in each widening (26, 28) is ground plane and polished, that to a portion of the end face (34) a metal layer forming the base electrode (40) is applied so that said layer is electrically connected to the brazing solder (30) disposed in a widening (26) and does not cover the brazing solder (32) disposed in another widening (28), that on the metal layer (40) a moisture-sensitive dielectric layer (42) is formed, and that a further metal layer forming the top electrode (44) is applied to the portion of the end face (34) not covered by the base electrode (40) and to at least a portion of the moisture-sensitive layer (42) in such a manner that said further layer is electrically connected to the brazing solder (32) disposed in the other widening (28).

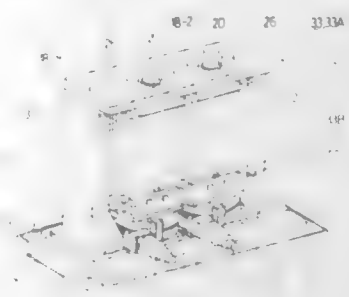
4,603,456

MACHINING EQUIPMENT FOR PRODUCTION LINES

Minoru Hiroyasu; Hitoshi Hashimoto; Susumu Yamada; Masaki Miyanaka, and Hideharu Koizumi, all of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

PCT No. PCT/JP82/00230, § 371 Date Feb. 3, 1983, § 102(e) Date Feb. 3, 1983, PCT Pub. No. WO82/04414, PCT Pub. Date Dec. 23, 1982
PCT Filed Jun. 16, 1982, Ser. No. 466,357
Claims priority, application Japan, Jun. 15, 1981, 56-93359
Int. Cl.[4] B23Q *39/04*
U.S. Cl. 29—33 P 11 Claims

1. Machining equipment for a production line, comprising:
a base;
a frame mounted on said base;
at least one horizontal rotary table mounted on said base;
means for indexing said horizontal rotary table;
a support member fixed at a lower portion thereof to said horizontal rotary table and rotatably supported at an upper portion thereof to said frame concentrically with the center of rotation of said horizontal rotary table;
a pair of holding rail members mounted on said support member;
said holding rail members being adapted to hold a pallet type jig, being vertically spaced from each other, and extending in a horizontal direction;



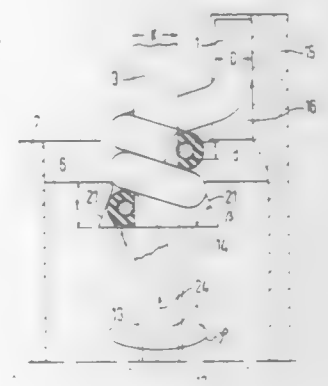
a spindle head for machining a workpiece on said jig;
means for controlling said spindle head;
a conveyance line adapted to convey said jig; and
means for transferring said jig between said conveyance line and said holding rail members.

4,603,457

METHOD AND DEVICE FOR MAKING A WRAPPED JOINT

Ernst F. Lechner, Erlangen, and Peter Vache, Heroldsbach, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Aug. 12, 1982, Ser. No. 407,595
Claims priority, application Fed. Rep. of Germany, Aug. 12, 1981, 31319549
Int. Cl.[4] H01R *43/00*
U.S. Cl. 29—33 F 11 Claims



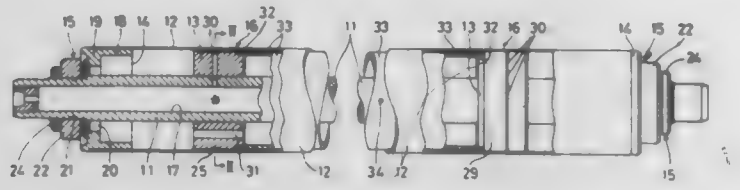
1. Device for performing a method of forming an electrically conductive wire-wrap connection between a wire and a metallic pin, having a stationary guide sleeve with a rotating wrapping insert received therein for guiding a wire to be wrapped in a continuous elongated channel, and formed with a central bore-hole wherein a pin is received, comprising an end face formed on the wrapping insert and facing the pin, said end face being formed with a transverse slot wherein the elongated channel terminates, and which widens at least section wise towards the bottom of said transverse slot, said transverse slot having a depth greater than the diameter of the wire.

4,603,458

ROLLER SUPPORTED BY A PNEUMATIC BEARING

Nobuyuki Hirohata, Yakayama, Japan, assignor to Sanko Kikai Co., Ltd., Wakayama, Japan

Filed Mar. 13, 1985, Ser. No. 711,208
Claims priority, application Japan, Sep. 14, 1984, 59-193660
Int. Cl.[4] B21B *31/08, 27/00;* B60B *7/04*
U.S. Cl. 29—130 9 Claims



1. A roller comprising:

a fixed shaft having a longitudinally extending central axis and a longitudinally extending central passage for directing air longitudinally therethrough;

an outer cylinder having a thin wall having a cylindrical inner surface, covering said fixed shaft in radially spaced relation thereto, to prevent distortion of said outer cylinder;

annular members fastened to said fixed shaft, having peripheral surfaces spaced from the inner surface of said outer cylinder so as to define very narrow gaps therebetween in fluid communication inside said outer cylinder with both of said opposite ends of said outer cylinder, said annular members having annular grooves on said peripheral surfaces, said shaft and said annular members having holes therein providing fluid communication between said annular groves and said central passage;

a flow regulator means for adjusting an amount of air flowing out of both of said opposite ends of said outer cylinder; and

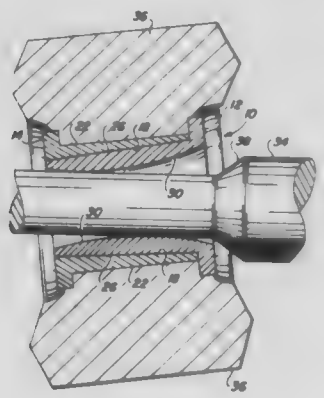
means, including porous sheet material in said gap surrounding said peripheral surfaces of said annular members, for distributing air jetting from said annular groove into said gaps with even pressure distribution in said gaps, whereby the air in said gaps defines air bearings rotatively supporting said outer cylinder.

4,603,459

ROCKER BUSHINGS FOR PIVOTAL MOVEMENT

James C. Buchanan, 2500 21st St. #42, Winter Haven, Fla. 33881

Filed Nov. 12, 1985, Ser. No. 797,260
Int. Cl.[4] B21B *31/08;* F16C *25/00*
U.S. Cl. 29—130 18 Claims



1. A bushing for a shaft mounted roller structure adapted to bear the weight of a boat or the like, said bushing comprising:

(a) a first and second member being of annular cross-section, surrounding the shaft and supporting the roller;

(b) each annular member having a longitudinal portion of annular cross-section throughout the length thereof, and terminating at a radially outwardly extending stop flange of increased radial thickness with respect to the radial thickness of the longitudinal portion.

(c) said first member having an inner bearing surface between said first member and the shaft;

(d) said second annular membef having a radial thickness for contacting and receiving the longitudinal portion of the first annular member to provide an adequate support thereof, between said first and second annular members; and

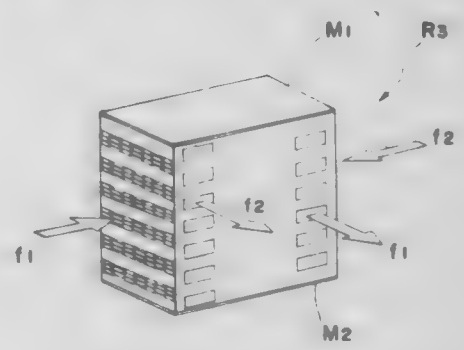
(e) said second member having an outer forming support surface between said second member and the roller.

4,603,460

METHOD FOR MANUFACTURING A HEAT EXCHANGER

Nobuyuki Yano, Hirakata; Takashi Inami, Suita; Mitsuru Ieki, Tsuzuki, and Masao Wakai, Kasugai, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd. and Matsushita Seiko Co., Ltd., both of Osaka, Japan

Filed Sep. 26, 1984, Ser. No. 654,673
Claims priority, application Japan, Sep. 30, 1983, 58-183383
Int. Cl.[4] B21D *53/02;* B23P *15/26;* B31D *3/02;* B32B *7/14*
U.S. Cl. 29—157.3 V 11 Claims



1. A method of manufacturing a heat exchanger, comprising the steps of:

forming patterns of a bonding material on sheets;

after said step of forming patterns, laminating the sheets so that the bonding material on the sheets bonds the faces of successive sheets together to form a laminate;

expanding the laminate in a circular direction generally perpendicular to the faces of the sheets into an expanded state in a cylindrical configuration, so as to form flow passages between bonded portions in non-bonded portions of successive sheets; and

after said step of expanding the laminate, fixing the laminate in the expanded state;

said step of forming patterns including the step of forming patterns of the bonding material such that flow passages on opposite sides of each sheet after said step of expanding the laminate are in heat exchanging relationship with each other; and each of the flow passages formed in said step of expanding communicate with the exterior of the laminate at opposite ends thereof.

4,603,461

GARAGE DOOR SPRING STRETCHER

Jerald R. Whippie, 1113 W. Workman Ave., West Covina, Calif. 91790, and John F. Hartman, 1380 Calle Galante, San Dimas, Calif. 91773

Filed Dec. 18, 1984, Ser. No. 682,982
Int. Cl.[4] B23P *19/04*
U.S. Cl. 29—227 10 Claims

1. A spring extending device comprising an elongate frame with upper and lower ends, inner and outer sides and oppositely disposed lateral sides, a spring engaging saddle at the inner side of the frame engageable with an exterior side of an elongate helical tension spring on an axis parallel with and spaced inward of the frame, an elongate flexible spring-engaging girdle with one end anchored at one side of the frame and extending inwardly laterally and outwardly about a spring

adjacent said inner side of the frame and releasable connecting means at the other side of the frame releasably connecting the other end portion of the girdle to the frame, a windlass carried by the frame and including an elongate laterally extending drum with opposite ends rotatably supported at opposite sides of the frame, a ratchet wheel at one end of the drum, an elongate pawl with one end pivotally connected to a side of the frame and having a dog at its other end releasably engaging the



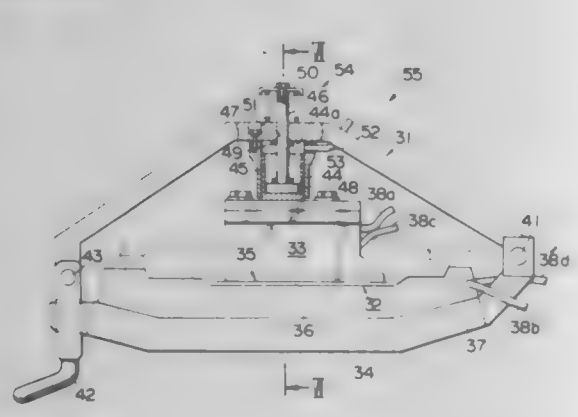
ratchet wheel, a drive head at one end of the drum accessible at the exterior of the frame, an elongate flexible tow line with one end portion connected with and wound about the drum and having a free end portion extending longitudinally from the frame and a tow line connector on the free end of the tow line to connect with a reactive structure spaced from that end of the frame disposed in the direction a related spring is to be extended.

4,603,462

JOINING JIG FOR VEHICLE BODY PANELS

Takumi Kondo, Fukuoka, Japan, assignor to Nissan Motor Co., Ltd., Japan

Filed Feb. 8, 1984, Ser. No. 578,263
Claims priority, application Japan, Feb. 15, 1983, 58-24441
Int. Cl.⁴ B25B *5/14*
U.S. Cl. 29—281.1 **9 Claims**



1. A joining jig for use in joining adjoining panels of an automotive vehicle body comprising:

a first contact section having a first contact base member, and a first contact member formed with a first contact surface which is contactable with an inside face of a joint section of the adjoining panels and said first contact member also being operatively connected to said first contact base member;

a second contact section having a second contact base member and a second contact member formed with a second contact surface which is contactable with an outside face of the joint section, said second contact base member being connectable with said first contact base member;

first biasing means including a hydraulic cylinder connected to said first contact base member and a hollow piston movably disposed in said hydraulic cylinder, said hollow piston being connected to said first contact member, said hollow piston defining therein a hydraulic pressure chamber for hydraulic fluid, said first biasing means providing a first biasing force for contacting said first and second contact surfaces with the corresponding faces of the joint section when operated by admitting hydraulic fluid into said hydraulic pressure chamber to act on said piston in a first direction to push said piston out of said cylinder; and

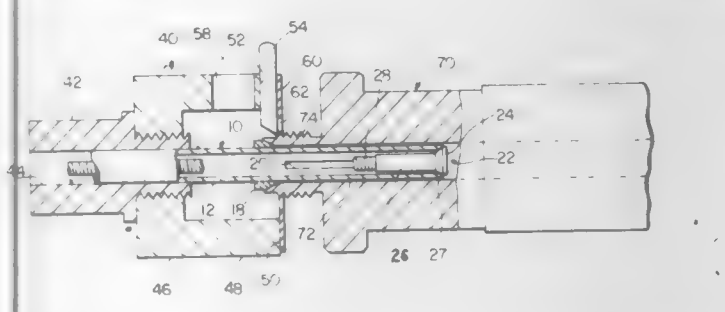
second biasing means including a first spring means disposed within said hydraulic pressure chamber for biasing said piston in said first direction, said second biasing means further including a second spring means disposed outside of said hydraulic pressure chamber for biasing said piston in a second direction opposite said first direction, said second spring means having a lower biasing force than that of said first spring means, said second biasing means biasing said first and second contact surfaces into contact with the corresponding faces of the joint section prior to the operation of said first biasing means.

4,603,463

IN SITU REPAIR OF A FAILED COMPRESSION FITTING

Ronald R. Wolbert, McKees Rocks, and Walter G. Jandrasits, Pittsburgh, both of Pa., assignors to The United States of America as represented by the Department of Energy, Washington, D.C.

Filed Aug. 5, 1985, Ser. No. 762,489
Int. Cl.⁴ B23P *6/00, 6/04*
U.S. Cl. 29—402.07 **9 Claims**



1. A method for the in situ repair of a failed compression fitting comprising the steps of:

inserting a portion of a guide tube coaxially in the bore of the fitting;

locking the guide tube coaxially in the bore of the fitting such that a portion of the guide tube extends coaxially from the fitting;

sliding a close fit dethreading device coaxially on the portion of the guide tube against the threads of the fitting;

cutting the threads from the fitting using the dethreading device;

removing the dethreading device and guide tube from the dethreaded fitting;

inserting a new fitting onto the dethreaded fitting with the body of the new fitting overlaying the dethreaded portion; and

welding the main body of the new fitting to the main body of the old fitting whereby the new threaded portion of the new replacement fitting is precisely coaxial with the old threaded portion.

6. An apparatus for the in situ repair of a failed compression fitting comprising:

a guide mandrel which is precisely coaxially aligned with the base of the fitting including

a. a guide tube having a distal end which is inserted in the base of the fitting and a proximal end which extends

from the fitting, said guide tube being sized to closely fit within the bore,

b. a tapered ferrule which is located about said guide tube adjacent said distal end and tapering toward said distal end for engaging the end of the fitting,

c. a plurality of slots in said guide tube extending longitudinally from said ferrule to said distal end, and

d. an expander means for expanding the distal end of said guide tube to lock said distal end in the bore of the fitting; and

a detreading device which is coaxially received on said guide tube, said dethreading device including

a. a guide bushing which is coaxially received on said guide tube in a close sliding fit in order to precisely align said dethreading device coaxial with said guide tube,

b. a cutting tool which extends radially for cutting the threads from the fitting as said dethreading device is rotated, and

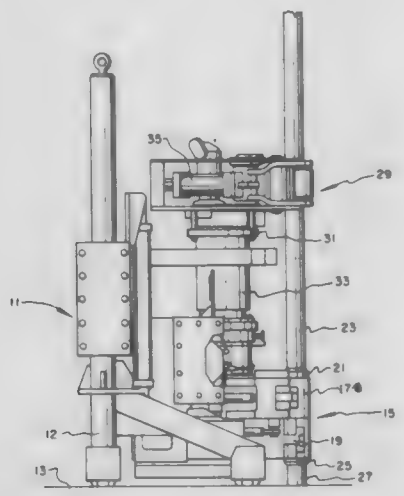
c. an adjusting means for adjusting said cutting tool radially according to the height of the threads on the fitting to be cut.

4,603,464

STAND JUMPING AND STABBING GUIDE DEVICE AND METHOD

Roger Smith, Jr., Georgetown, and Harry D. Hebard, Burnet, both of Tex., assignors to Hughes Tool Company, Houston, Tex.

Filed Mar. 11, 1985, Ser. No. 710,730
Int. Cl.[4] B21D *39/03*
U.S. Cl. 29—428 **7 Claims**



1. A well tool, comprising:

a movable carriage;

a torque wrench assembly, mounted on the carriage for movement therewith, and for applying torque to make up and break out connections between two pipe sections;

a spinner, mounted on the carriage for movement therewith, and having clamping cylinders for spinning one pipe section relative to the other;

power means for raising and lowering the spinner relative to the carriage; and

means for automatically opening the clamping cylinders of the spinner whenever the spinner is moved by external forces to a selected position relative to the power means.

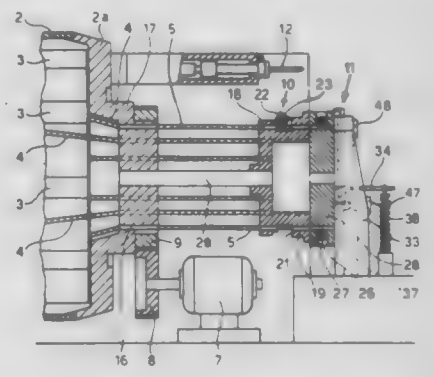
4,603,465

MACHINE FOR MARKING ELECTRIC WIRES

Carlo Bretti; Franco Sermidi, and Medardo Agnelli, all of Milan, Italy, assignors to Eurosab S.R.L., Milan, Italy

Filed Sep. 7, 1984, Ser. No. 648,313
Claims priority, application Italy, Sep. 8, 1983, 22818 A/83
Int. Cl.[4] B23P *23/00*
U.S. Cl. 29—564.6 **13 Claims**

1. A machine for marking electric wires and the like, by means of rings provided with marking symbols, said marking rings being disposed in the form of a marking tube and being joined together by weakened breaking portions, said machine comprising: a frame; a rotary supported magazine for the marking tubes and supported on the frame; means carried by the frame for guiding and feeding, by one ring at a time, any one of the marking tubes towards a ring delivery point; a hollow needle movably carried on the frame; a gripping and tearing device mounted on the frame for breaking off each single ring in said delivery point, said gripping and tearing



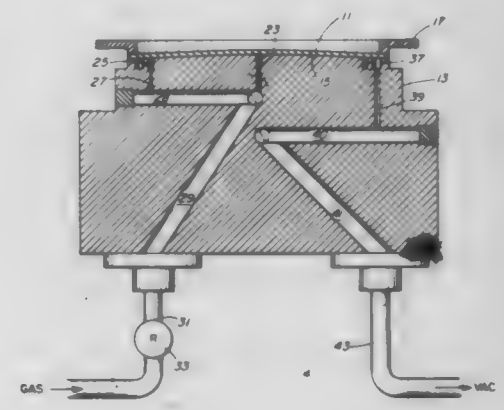
device being movable with respect to the hollow needle, from a ring-gripping position to a second position in which the gripped ring is aligned with the needle; means carried by the frame for moving said gripping and tearing device toward and away from the needle; means carried on the frame for moving the needle along its axis, the needle being movable from a backward position to a forward position with respect to the ring-gripping and tearing device; and means for transferring the marking rings from the needle onto a wire, the end of which wire has been inserted into the hollow needle.

4,603,466

WAFER CHUCK

Morgan J. Morley, Menlo Park, Calif., assignor to GCA Corporation, Andover, Mass.

Filed Feb. 17, 1984, Ser. No. 581,058
Int. Cl.[4] F28F *13/00*
U.S. Cl. 29—569 R **5 Claims**



5. Apparatus for holding a semiconductor wafer during high energy treatment in a vacuum environment, said apparatus comprising:

a circular plate having a domed face;

means for clamping a wafer aligned with said plate to distort the wafer into close proximity with the domed face of said plate whereby an interstitial space is formed between the wafer and said domed face of said plate;

around the periphery of the face of said plate, an annular groove;

in said plate first, port means for connecting said annular groove to vacuum pumping means; and

in said plate, second port means for providing a mobile gas under controlled pressure to said interstitial space between said wafer and the domed face of said plate, said

second port means comprising a central opening and a second annular groove which is inboard of the first said annular groove whereby said vacuum pump means connected to said first port means prevents leakage of said mobile gas to the atmosphere.

4,603,467

METHOD OF MANUFACTURING CHIP-TYPE ALUMINUM ELECTROLYTIC CAPACITOR

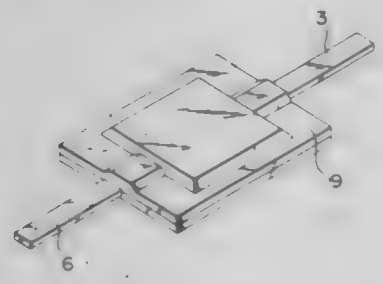
Shinichi Kaneko, Nagai, Japan, assignor to Marcon Electronics Co., Ltd., Nagai, Japan

Filed May 13, 1985, Ser. No. 733,260

Claims priority, application Japan, May 25, 1984, 59-107045; May 25, 1984, 59-107046

Int. Cl.⁴ H01G *9/00*

U.S. Cl. 29—570 **12 Claims**



1. A method of manufacturing a chip-type aluminum electrolytic capacitor, comprising the steps of:

welding a first thin external lead having conductivity to a first flat electrode foil;

covering the entire surface of the first flat electrode foil with an insulating spacer;

welding a second thin external lead having conductivity to a second flat electrode foil;

covering an upper surface of said insulating spacer with the second flat electrode foil, and so covering the first flat electrode foil with said second flat electrode foil, so that said insulating spacer is interposed between said first and second flat electrode foils;

impregnating said insulating spacer with an electrolytic solution, thereby providing a capacitor element; and

covering and integrally sealing at least said surfaces of the first and second flat electrode foils with a synthetic resin insulating laminate film.

4,603,468

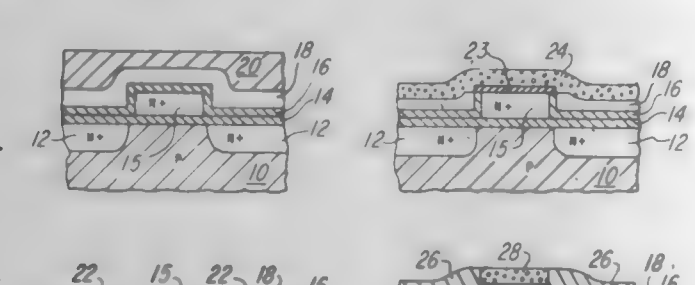
METHOD FOR SOURCE/DRAIN SELF-ALIGNMENT IN STACKED CMOS

Hon W. Lam, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Sep. 28, 1984, Ser. No. 656,055

Int. Cl.⁴ H01L *21/90, 21/76*

U.S. Cl. 29—571 **9 Claims**



1. A process for fabricating a self-aligned stacked CMOS structure, comprising the steps of:

(a) fabricating source and drain regions having a first conductivity type in a substrate having a second conductivity type;

(b) fabricating a gate region on the surface of the substrate having a sidewall oxide;

(c) forming a first insulating layer containing a dopant of the second conductivity type on the surface of said substrate with an upper surface of the gate region exposed;

(d) forming a second insulating layer over said exposed surface of said gate;

(e) forming a polycrystalline silicon layer over the first and second insulating layers; and

(f) causing dopant from the first insulating layer to diffuse into the polycrystalline layer thereover to form heavily doped upper source and drain regions in the polycrystalline silicon, the portion of the polycrystalline layer therebetween being relatively lightly doped.

4,603,469

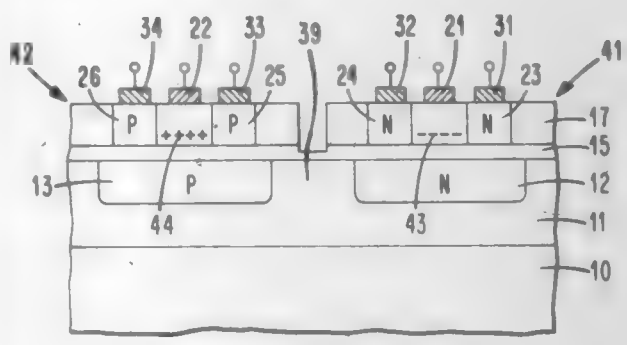
FABRICATION OF COMPLEMENTARY MODULATION-DOPED FILED EFFECT TRANSISTORS

Craig A. Armiento, Burlington, and Peter E. Norris, Cambridge, both of Mass., assignors to GTE Laboratories Incorporated, Waltham, Mass.

Filed Mar. 25, 1985, Ser. No. 715,698

Int. Cl.⁴ H01L *21/20, 21/265*

U.S. Cl. 29—571 **6 Claims**



1. The method of fabricating a complementary pair of modulation-doped field effect transistors comprising

depositing a first layer of undoped semiconductor material on a substrate, said first layer of undoped semiconductor material being of single crystal structure and having a surface,

introducing N-type conductivity imparting material into a first region of said first layer at said surface, and introducing P-type conductivity imparting material into a second region of said first layer at said surface;

depositing an epitaxial second layer of undoped semiconductor material on said surface of said first layer to form a spacer layer having an interface with said first layer at said surface thereof and having a surface spaced therefrom;

depositing an epitaxial third layer of undoped semiconductor material on the surface of said spacer layer to form an undoped third layer of semiconductor material having an interface with said spacer layer of semiconductor material at said surface thereof and having a surface spaced therefrom, the semiconductor material of the third layer having a band gap less than the band gap of the semiconductor material of said first layer;

placing first and second gate members on said surface of said third layer overlying portions of said first and second regions, respectively, said first and second gate members forming rectifying barriers with the undoped semiconductor material of said third layer;

introducing N-type conductivity imparting material into spaced apart first and second zones of said third layer extending from the surface of the third layer to said spacer layer and overlying portions of said first region, and introducing P-type conductivity imparting material into spaced apart third and fourth zones of said third layer

extending from the surface of the third layer to said spacer layer and overlying portions of said second region; and applying ohmic contacts to the first and second N-type zones and to the third and fourth P-type zones.

4,603,470

METHOD OF MAKING PLURALITY OF SERIES CONNECTED SOLAR CELLS USING MULTIPLE GROOVE FORMING PROCESSES

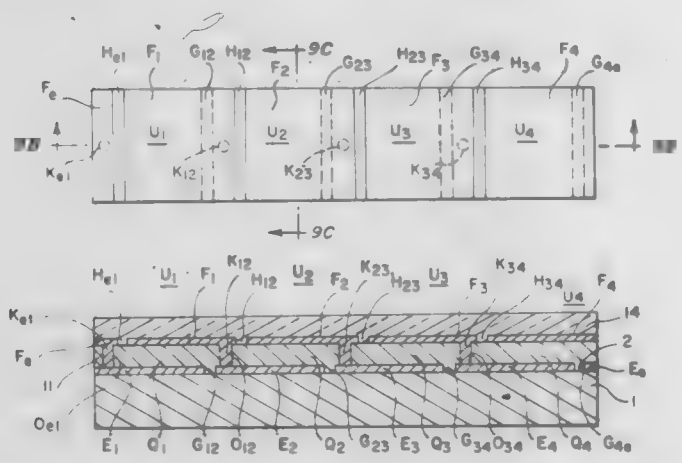
Shunpei Yamazaki, Tokyo, Japan, assignor to Semiconductor Energy Lab. Co., Tokyo, Japan

Division of Ser. No. 630,063, Jul. 12, 1984. This application Apr. 5, 1985, Ser. No. 720,291

Claims priority, application Japan, Jul. 13, 1983, 58-128270; Oct. 31, 1983, 58-204441; Mar. 26, 1984, 59-57713

Int. Cl.[4] H01L *21/263, 31/06*

U.S. Cl. 29—572 12 Claims



1. A method of manufacturing a photoelectric conversion device which is provided with a plurality of series-connected semiconductor transducers U_1, U_2, . . ., comprising steps of:

(a) forming a first conductive layer on a substrate having a length extending in the direction of said series connected transducers and a width extending in a direction substantially perpendicular to said length, said substrate having an insulating surface;

(b) scribing the first conductive layer by a first laser beam to cut therein a plurality of sequentially arranged first isolation grooves G_{12}, G_{23}, . . ., by which a plurality of sequentially arranged first electrodes E_1, E_2, . . . are formed on the substrate, said first isolation grooves respectively extending in the width direction of the substrate;

(c) forming a non-single-crystal semiconductor laminate member on the substrate to cover the plurality of first electrodes E_1, E_2, . . . and to fill the plurality of first isolation grooves G_{12}, G_{23}, . . .;

(d) digging in the non-single-crystal semiconductor laminate member by a second laser beam, contact grooves O_{12}, O_{23}, . . . to expose therein the first electrodes E_1, E_2, . . . locally to the outside on the side of the first isolation grooves G_{12}, G_{23}, . . ., respectively;

(e) forming on the non-single-crystal semiconductor member second electrodes F_1, F_2, . . . having respective contact portions K_{12}, K_{23}, . . . extending to respectively connect the second electrodes F_1, F_2, . . . to the first electrodes E_2, E_3, . . . through the contact portion K_{12}, K_{23}, . . . where said second electrodes F_1, F_2, . . . are respectively separated by second isolation grooves H_{12}, H_{23}, . . . ;

(f) in the step of scribing the first conductive layer through using the first laser beam, there is cut in the first conductive layer third isolation groove(s) which extend along the direction of arrangement of the semiconductor transducers U_1, U_2, . . . such that the third isolation groove (s) are substantially orthogonal to the first isolation grooves and in which is exposed side(s) of the first electrode E_i (where i=1, 2, . . .) extending along the direction of arrangement of the semiconductor transducers U_1, U_2, ...

4,603,471

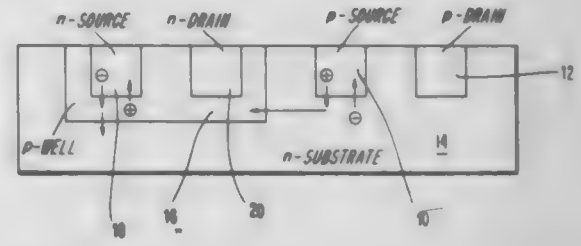
METHOD FOR MAKING A CMOS CIRCUIT HAVING A REDUCED TENDENCY TO LATCH BY CONTROLLING THE BAND-GAP OF SOURCE AND DRAIN REGIONS

Robert J. Strain, San Jose, Calif., assignor to Fairchild Semiconductor Corporation, Cupertino, Calif.

Filed Sep. 6, 1984, Ser. No. 647,743

Int. Cl.[4] H01L *21/425, 21/265*

U.S. Cl. 29—576 B 6 Claims



1. In a CMOS integrated circuit comprising complementary NMOS and PMOS transistors formed on a substrate, a method for reducing the tendency of the circuit to latch comprising the step of implanting ions into the source region of each of the NMOS and PMOS transistors, said ions being of a material having an energy gap which is lower than the energy gap of the material forming the substrate.

4,603,472

METHOD OF MAKING MOS FETS USING SILICATE GLASS LAYER AS GATE EDGE MASKING FOR ION IMPLANTATION

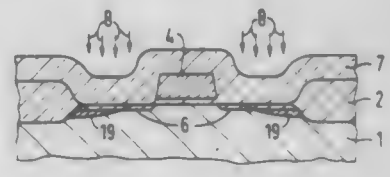
Ulrich Schwabe, Munich; Erwin P. Jacobs, Vaterstetten, and Franz Neppl, Munich, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

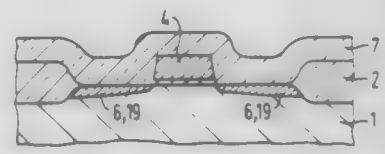
Filed Jan. 24, 1985, Ser. No. 694,295

Claims priority, application Fed. Rep. of Germany, Apr. 19, 1984, 3415002

Int. Cl.[4] H01L *29/95, 21/283, 21/225*

U.S. Cl. 29—576 B 9 Claims





1. In a method for the manufacture of a large scale integration (LSI) MOS field effect transistor wherein a gate electrode is generated on a doped silicon substrate, source/drain regions are formed by ion implantation using said gate electrode as an implantation mask and wherein the source/drain regions are shielded by means of an oxide layer extending to the sidewalls of said gate electrode whereby the diffusion of the implanted source/drain regions under the gate electrode area is reduced, the improvement which comprises:

applying a readily flowable boron phosphorus silicate glass layer at a temperature below 900° C. as a gate edge masking for the source/drain ion implantation after formation of said gate electrode, said silicate glass layer being applied by deposition from vapor phase, the thickness of said layer being such that it acts as a mask at the sidewalls of said gate electrode during the subsequent source/drain implantation step to a specific spacing from said gate but thereafter loses its masking effect and is than only sufficiently thick enough in the region remote from the edge of

said gate so that the dopant ions are still implanted into the zone near the surface under said silicate glass layer.

4,603,473

METHOD OF FABRICATING INTEGRATED SEMICONDUCTOR CIRCUIT

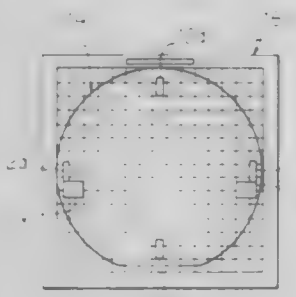
Takashi Suemitsu, and Takashi Niriki, both of Kofu, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Oct. 12, 1983, Ser. No. 541,317

Claims priority, application Japan, Oct. 13, 1982, 57-179354

Int. Cl.⁴ H05K *3/06*

U.S. Cl. 29—578 **4 Claims**



1. A method of fabricating an integrated semiconductor circuit device having a plurality of layers of circuit patterns, comprising

forming the circut pattern of at least one of said layers and at least one target mark for a photomask by a direct exposure method using an electron beam, and

forming the circuit pattern of at least one of the remaining layers by a light exposure method using the photomask positioned by means of said target mark.

4,603,474

COLLECTOR FOR AN ELECTRIC MACHINE AND METHOD FOR ITS PRODUCTION

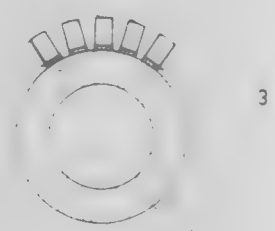
Jens Gobrecht, Gebenstorf, and Claus Schüler, Widen, both of Switzerland, assignors to BBC Brown, Boveri & Company Limited, Baden, Switzerland

Filed May 17, 1984, Ser. No. 611,514

Claims priority, application Switzerland, Jun. 3, 1983, 3071/83

Int. Cl.⁴ H01R *43/06, 39/04;* **H02K** *1/26*

U.S. Cl. 29—597 **9 Claims**



1. A collector for an electric machine, comprising:

a rotationally symmetrical central sintered ceramic body having a jacket surface; and

radially positioned surface-oxidized metallic segments disposed on said jacket surface, said segments separated from each other by an interspace and bonded to said jacket surface by means of a eutectic intermediate layer.

7. A method for producing a collector for an electric machine, comprising:

initially sintering a rotationally symmetrical ceramic body having a jacket surface;

surface-oxidizing a plurality of metallic segments;

disposing the surface-oxidized segments around the jacket surface of the ceramic body;

exerting a radially acting press-on pressure on the ceramic body and the segments;

heating the ceramic body and the segments with pressure exerted thereon in a furnance to a temperature required for generating a metal/metal-oxide eutectic such that said ceramic body is eutectically bonded to said metal segments; and

cooling down to room temperature the bonded ceramic body and metallic segments.

4,603,475

ELECTRIC PLUG CONNECTOR AND METHOD OF MANUFACTURING

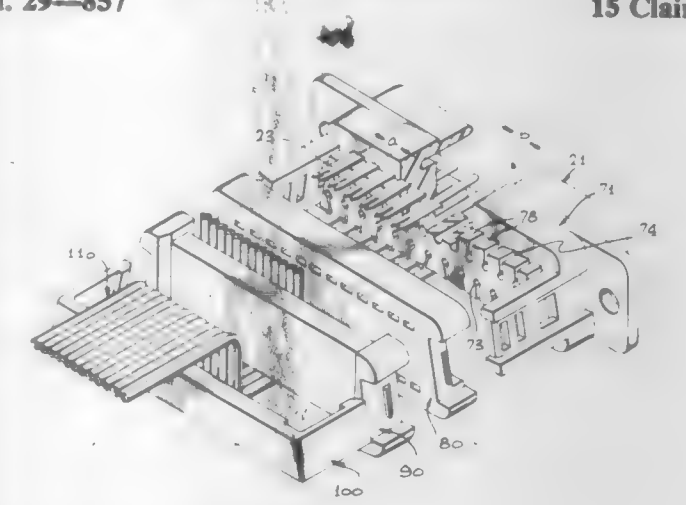
Günter Schützle, Heilbronn, Fed. Rep. of Germany, assignor to Allied Corporation, Morris Township, Morris County, N.J.

Continuation of Ser. No. 295,775, Aug. 24, 1981, abandoned. This application Apr. 19, 1985, Ser. No. 724,060

Claims priority, application Fed. Rep. of Germany, Aug. 29, 1980, 3032585

Int. Cl.⁴ H01R *43/00, 11/20*

U.S. Cl. 29—857 **15 Claims**



1. A method of manufacturing an electrical connector for a flat cable, comprising the steps of: forming an insulating body with contact chambers therein; forming a plurality of contact elements, each contact element having a contact part for contacting with other connectors and extending along a first major axis, a connecting part for coupling to the flat cable and extending along a second major axis which is essentially parallel to said first axis, and a middle part connecting the contact part and the connecting part and extending along a third major axis which is essentially perpendicular to said first axis; inserting said contact elements into said contact chambers; and bending the connecting part of each contact element after insertion of each contact element into said contact chambers about the intersection of said connecting part and said middle part of said contact element.

8. An electrical connector for a flat cable, the connector comprising: a plurality of contact elements and a insulating body having chambers therein for receiving the contact elements, said contact elements being preformed prior to insertion in said chambers, each contact element having a contact part for contacting other connectors, a connecting part for coupling to the flat cable and a middle part connecting the contact part and the connecting part, said connecting part being formed by first prebending the connected parts to one of two predetermined initial positions and by bending about an axis which is essentially parallel to a major axis of the contact part after the associated contact element is received in its associated contact chamber, said contact chambers being arranged with major axes parallel to each other and along at least oen straight line, each contact chamber including a groove leading radially to an outer surface of the insulating body for receiving the middle part of the contact element and wherein the connecting part which is bent to its initial position projects radially out of the groove after the contact element is inserted in its respective contact chamber, the outer surface including specially inclined surfaces for limiting the distance the connecting part may be

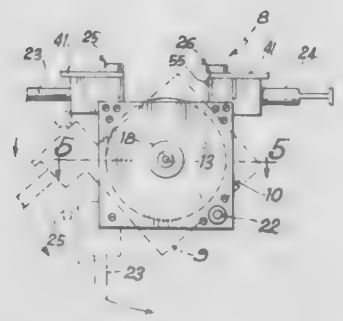
forced during a pressing operation, the inclination of the inclined surface being selected such that the connecting part after being forced against the inclined surface thereafter springs back to its final desired position.

4,603,476

METHOD FOR HANDLING HARNESS WIRE

John W. Tarbox, 13096 Caminito Del Rocio, Del Mar, Calif. 92014

Filed Mar. 8, 1984, Ser. No. 587,455
Int. Cl.[4] H01R *43/04*; B21F *3/00*; B23C *1/00*
U.S. Cl. 29—863 6 Claims



1. A method for performing at least in part the preparation of wire for harness forming and the actual forming thereof, utilizing a wire spool cartridge with a leading end gripper which is rotatable about the axis of said spool to wind a wire thereon, said method comprising the following steps:

(a) with a wire loader, engaging the first loaded end of a length of wire in said leading end gripper;

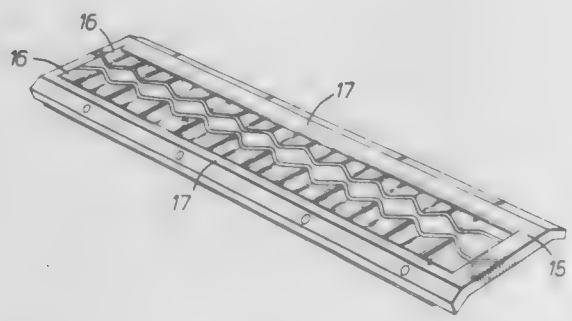
(b) with said loader, spinning said gripper around the axis of said spool until said length of wire is substantially wrapped onto said spool.

4,603,477

SAFETY RAZORS

John F. Francis, Woking, England, assignor to The Gillette Company, Boston, Mass.

Filed Feb. 6, 1985, Ser. No. 698,941
Claims priority, application United Kingdom, Feb. 27, 1984, 8405044
Int. Cl.[4] B26B *21/18, 21/28*
U.S. Cl. 30—50 5 Claims



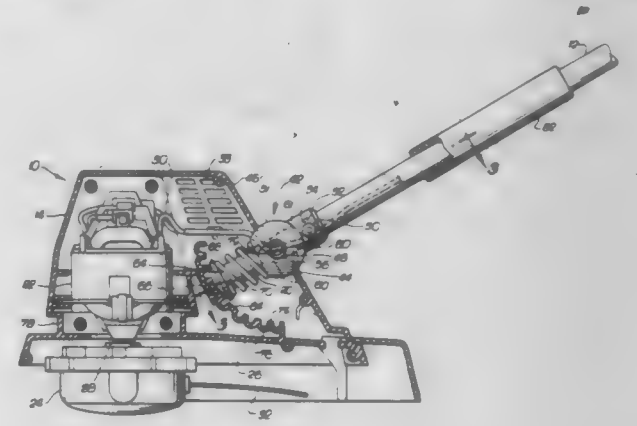
1. A safety razor comprising a pair of opposed blade means having respective sharpened cutting edges directed toward each other with a gap therebetween, each of said sharpened cutting edges being of undulating form so as to have alternating peaks and troughs, wherein each said blade means has a marginal edge portion formed with corrugations extending transversely to the length of the edge and a substantially planar facet intersecting said corrugations over the full depth thereof to define a continuous undulating sharpened cutting edge.

4,603,478

TRIMMER WITH ADJUSTABLE HANDLE

Kenneth K. Anderson, Moorpark, Calif., assignor to Allegretti & Company, Chatsworth, Calif.

Filed Aug. 13, 1984, Ser. No. 639,816
Int. Cl.[4] A01D *55/18*
U.S. Cl. 30—276 28 Claims



1. A trimmer, comprising:

a housing;

a motor mounted within said housing;

a handle tube having one end mounted to said housing for pivoted movement with respect to said housing;

a collar mounted for rotation on said housing, said collar having a bore for axially slidably receiving said handle tube, said handle tube being pivotally movable with respect to said housing upon rotation of said collar with respect to said housing;

means for limiting axial sliding movement of said handle tube within said collar; and

means on said housing for releasably locking said handle tube against pivoted movement with respect to said housing at a selected one of a plurality of positions of adjustment; said limiting means

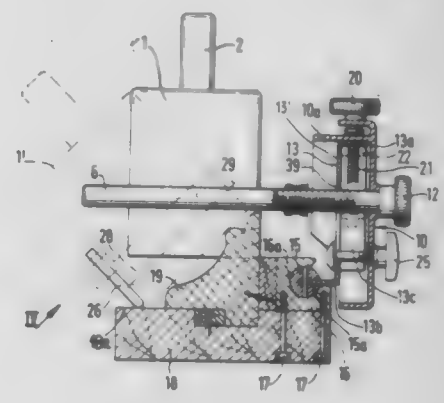
including a bolt for rotatably mounting said collar and said handle tube to said housing, said bolt being inserted through a pair of oppositely facing holes formed transversely in said collar and a pair of oppositely facing axially elongated slots in said handle tube, thereby to permit rotation of said collar and said handle tube with respect to said housing, as well as limited axial movement of said handle tube with respect to said bolt and collar.

4,603,479

GUIDE MEANS FOR MANUAL PLANING TOOLS

Otto Bergler, Mühlacker-Lomersheim, Fed. Rep. of Germany, assignor to Black & Decker Overseas AG, Vaduz, Liechtenstein

Filed May 11, 1984, Ser. No. 609,131
Claims priority, application Fed. Rep. of Germany, May 24, 1983, 3318747; Sep. 17, 1983, 3333624
Int. Cl.[4] B27C *1/10*
U.S. Cl. 30—475 16 Claims



1. An apparatus for guiding, relative to a workpiece, a hand-

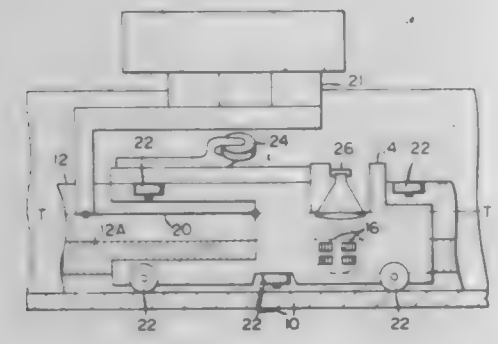
held planing or milling tool of the type having a rotary driven cutter, said apparatus comprising a holder for carrying the tool; first adjustment means for varying the position of the holder relative to the tool; a guide rail fixable in position relative to the workpiece; a running part carried by said holder and movably guided on said guide rail; and second adjustment means for varying the position of said running part relative to said holder, said holder including a web portion having rods projecting therefrom for connection with the tool, said holder including means forming a guide path extending orthogonally to both said guide rail and said rods; a connecting piece connected to said holder and movable adjustably within said guide path; said connecting piece carrying said running part; said holder being arranged for pivoting movement relative to said guide rail, said connecting piece comprising a metal plate including first and second legs and a portion engageable with said means forming a guide path, said second adjusting means comprising an adjusting member mounted on said holder and engageable with said first leg for adjusting the relative position of said connecting piece relative to said holder in two directions; and spring means for opposing adjustment in one of said directions; said second leg carrying said running part.

4,603,480

LINEAR SCALE TYPE DISPLACEMENT MEASURING INSTRUMENT

Seiji Sakagami, Kawasaki, Japan, assignor to Mitutoyo Mfg. Co., Ltd., Tokyo, Japan

Filed May 14, 1985, Ser. No. 733,760
Claims priority, application Japan, May 22, 1984, 59-103467
Int. Cl.⁴ G01B *11/04*
U.S. Cl. 33—125 R **12 Claims**



1. A linear scale type displacement measuring instrument comprising: a hollow elongate case extending in a direction of linear movement of relatively movable members and fixed to one of the relatively movable members, said case having a neutral plane including the longitudinal axis of the case; a main scale secured to the inner surface of the case in the longitudinal direction thereof and offset from the longitudinal axis of said case; a carriage connected to the other of the relatively movable members and movable along said main scale in the longitudinal direction thereof; a connecting mechanism connecting said carriage to the other of the relatively movable members; index scale held by the carriage and opposed to the main scale; and a detector for converting a displacement value of relative movement between said main scale and said index scale into an electric signal;

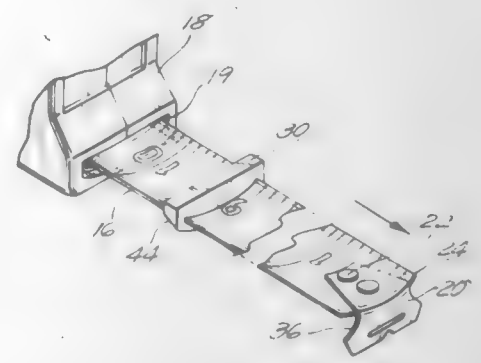
one end of said connecting mechanism being connected to said carriage and the other end of said connecting mechanism being connected to the other of the relative movable members within neutral planes of the case as a whole including said main scale mounted therein, and said connecting mechanism being capable of permitting said carriage to change the posture thereof such that said index scales can be held in states of perpendicularly intersecting the normal line of the surface of a warp of said main scale.

4,603,481

BUMPER INDICATOR

Howard Cohen, Plainview, and Alois Dauer, Middle Island, both of N.Y., assignors to Irwin Measuring Tool Co., Patchogue, N.Y.

Filed Sep. 19, 1984, Ser. No. 652,315
Int. Cl.⁴ G01C *3/10*
U.S. Cl. 33—138 **17 Claims**



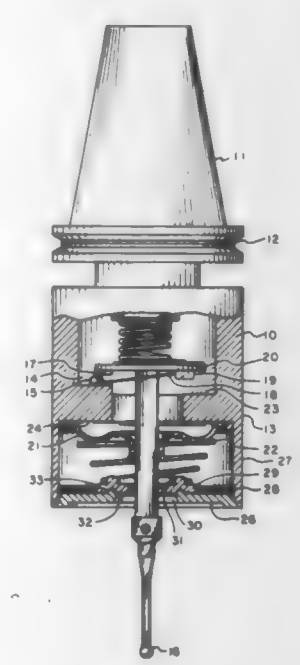
1. A bumper indicator for use with a measuring rule including a casing, a tape having markings thereon wound within the casing for extension and retraction therefrom and including a free end extending from the casing with a tape hook thereon and a tape retraction mechanism for automatically retracting the tape into the casing, said bumper indicator comprising a one-piece resilient bumper having front and rear surfaces and a transverse slit formed therein, said slit having a configuration selected to be generally complementary to the cross-sectional configuration of the tape rule on which it is to be mounted and being dimensioned to frictionally engage the tape rule and remain in a relatively fixed position relative to markings on the tape when the tape rule is extended while slidably receiving the tape rule to permit the tape rule to pass freely therethrough under the influence of the tape retraction mechanism when the bumper is engaged against the casing; said bumper also having top and bottom edges; said rear surface of the bumper facing away from the tape hook and being chamfered from a position below the slit to said bottom edge.

4,603,482

PROBE SHIELD

Robert F. Cusack, Grosse Pointe Park, Mich., assignor to Valeron Corporation, Northlake, Ill.

Filed Dec. 30, 1985, Ser. No. 814,936
Int. Cl.⁴ G01B *7/02*
U.S. Cl. 33—169 R **4 Claims**



1. Touch probe apparatus comprising:
a housing;
a stylus movable with respect to the housing and extending

from a mounting end located within the housing through a first aperture in a front wall of the housing to a stylus contact end located exteriorly of the housing;

the improvement comprising;

an extension of said housing beyond the front wall thereof;

a second front wall including a second aperture through which said probe extends terminating said extension;

a first resilient seal means surrounding said stylus to seal said first aperture against the entry of foreign matter;

a disc including an aperture through which said stylus projects encircling said stylus and located between said first front wall and said second front wall in contact with said second front wall;

and resilient spring means operative to maintain said disc in contact with said second front wall interior surface;

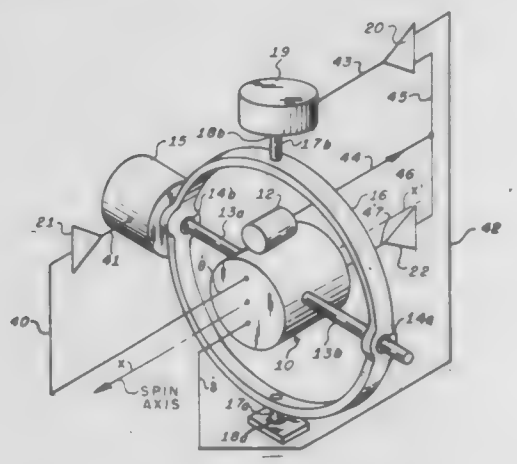
said disc means further ensuring against the entry of foreign matter.

4,603,483

THERMAL GRADIENT COMPENSATOR FOR FLUID ROTOR GYROSCOPIC APPARATUS

Willis G. Wing, Glen Head, N.Y., assignor to Sperry Corporation, New York, N.Y.

Filed Oct. 29, 1984, Ser. No. 666,004
Int. Cl.[4] G01C *19/02*
U.S. Cl. 33—324 **17 Claims**



1. In a gyroscopic apparatus comprising a housing, a fluid mass, means for containing said fluid mass within said housing, drive means for spinning said containing means about an axis thereof, thereby also spinning said fluid mass about a fluid axis, and means communicating with said fluid mass for detecting an angular difference between said spin axis of said fluid and said spin axis of said containing means, the improvement comprising:

means for providing a tilt signal representative of an angular difference between said spin axis of said containing means and an essentially horizontal axis; and

means responsive to said tilt signal for heating said fluid mass to provide a predetermined thermal gradient along said fluid spin axis.

4,603,484

LEVEL SENSING APPARATUS PROVIDING OUTPUT SIGNALS COMPATIBLE WITH DIGITAL APPARATUS

Thomas Strothmann, 5405 S. Camino de la Tierra, Tucson, Ariz. 85746

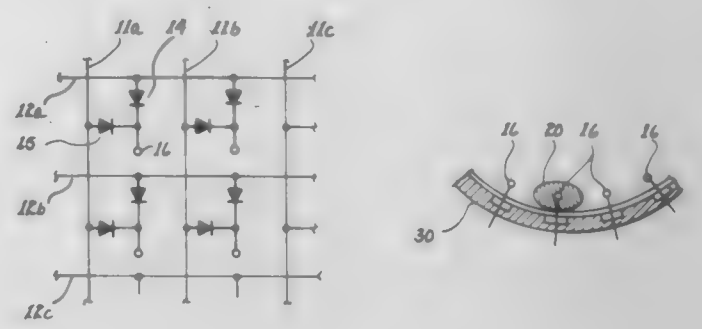
Filed Mar. 4, 1985, Ser. No. 707,747
Int. Cl.[4] G01C *9/06*,
U.S. Cl. 33—366 **16 Claims**

1. An electronic level sensor comprising:

a curved surface having a varying radius of curvature;

a conducting material free to move on said curved surface, said conducting material reaching a position on said surface determined by a deviation of said surface from a predetermined orientation;

a plurality of first electrodes having a pre-established relationship with said curved surface, wherein said first electrodes are electrically coupled in a first array, said first electrodes also being coupled in a second array; each of said electrodes of said first array designating a first parameter with respect to said surface position, each of said electrodes of said second array designating a second parameter with respect to said surface position; and



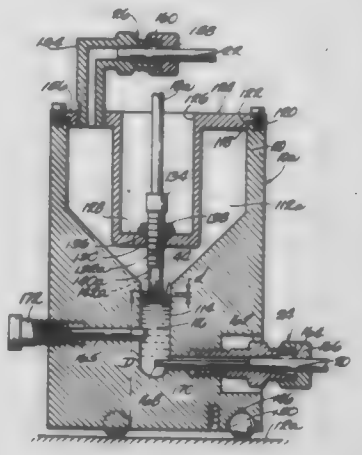
at least one second electrode, said conducting material completing a conducting path between said at least one second electrode and a one of said first electrodes, each of said conducting paths establishing a surface position.

4,603,485

LEVELING APPARATUS

Lyle D. Ostby, Brookfield, Wis., assignor to Kearney & Trecker Corporation, West Allis, Wis.

Filed Sep. 23, 1985, Ser. No. 778,788
Int. Cl.[4] G01C *5/04*
U.S. Cl. 33—367 **18 Claims**



6. Apparatus for measuring the vertical difference between first and second generally horizontal surface portions comprising:

a pool of electrically conductive fluid having a first pool portion on said first surface portion and a second pool portion on said second surface portion;

means for establishing a first inductive field adajacent to said first pool portion and a second inductive field adjacent to said second pool portion;

means for sensing said first inductive field at a position located a first distance from the surface level of said first pool portion and generating a first signal representing said first distance;

means for sensing said second inductive field at a position located a second distance from the surface level of said second pool portion and generating a second signal representing said second distance; and

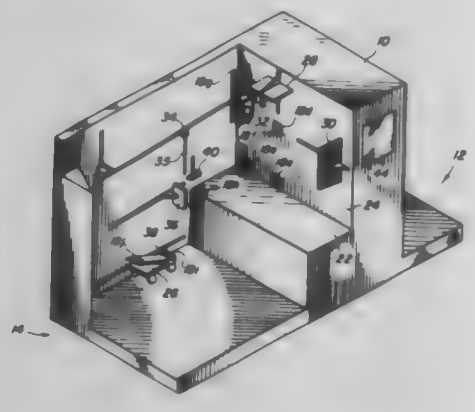
means for processing said first and second signals to provide a third signal representing the difference between said first and second distances and the vertical distance between said first and second surface portions.

4,603,486

AUTOMATED ANTHROPOMETRIC DATA MEASUREMENT SYSTEM

William F. Moroney, Chalfont, Pa.; James C. Bartholomew, Burke; Clifford M. Cagle, Reston, both of Va., and Robert E. Hughes, Albuquerque, N. Mex., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 17, 1985, Ser. No. 788,371
Int. Cl.[4] A61B *5/10*
U.S. Cl. 33—512 6 Claims



1. An anthropometric data measurement system for screening an aviator for subsequent assignment to a particularly suitable aircraft, comprising in combination:

a first measuring assembly for determining the aviator's stature;

a second measuring assembly including a seat, having a seat pan portion and a seat back portion, and a pedal assembly for determining the aviator's sitting height, shoulder height sitting, shoulder width, functional arm reach, buttock-knee length, functional leg reach, and knee height sitting;

a display and control panel for assisting an operator in the correct placement of the aviator and selecting the respective anthropometric feature to be measured;

a positioning aid observable by the aviator for assisting him in maintaining a position required for the respective anthropometric feature to be measured;

system controller means for collecting the measurements determined by said first and second measuring assemblies, comparing the collected measurements to a predetermined set of upper and lower limits, performing data reasonability checks and outputting said collected measurements when they fall within said predetermined set of upper and lower limits; and

archival means for storing the measurements output from said system controller means.

4,603,487

METHOD OF COMPENSATING A PROFILING DIRECTION OF A PROFILING MACHINE

Yuso Matsunata, Hiroshima, Japan, assignor to Mitsubishi Jukogyo Kabushiki Kaisha, Japan

Filed Nov. 22, 1985, Ser. No. 801,050
Int. Cl.[4] G01B *7/28*
U.S. Cl. 33—551 3 Claims

1. In a method of controlling a profiling machine including:

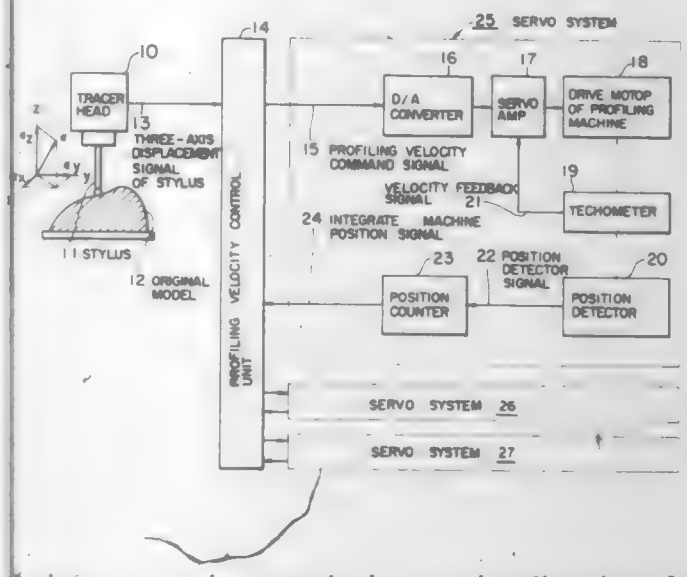
a tracer head capable of tracing an original model and for supplying a displacement signal detected by a stylus to a profiling velocity control unit;

a servo system including a drive system for driving the profiling machine on the basis of a profiling velocity command signal produced from the control unit, a detector for detecting a position of the profiling machine and a machine position counter for integrating an output signal of the detector to supply the integrated signal to the control unit; and

a control unit for calculating the profiling velocity command signal on the basis of the displacement signals for three axes and an output of the counter to supply the command signal to the drive system;

a method of correcting a profiling direction of the profiling machine, comprising steps of:

calculating a distance between a current position of the machine obtained by tracing the model in a plane of axes x and y and an ideal profiling locus in the plane of axes x and y defined by a given profile angle;



calculating a correction quantity in a moving direction of the profiling machine in the plane of axes x and y on the basis of the distance; and

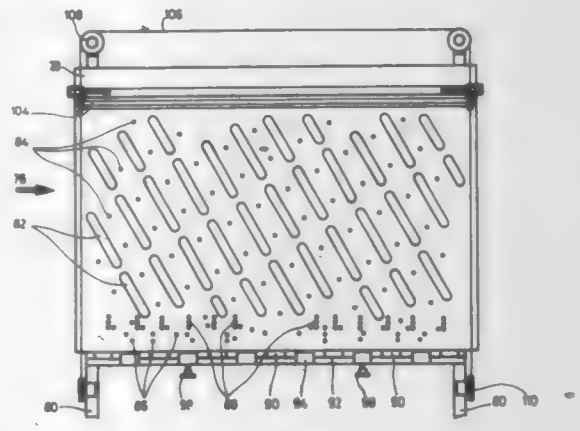
supplying a velocity command signal on the basis of a corrected moving direction to the servo system from the control unit.

4,603,488

PROCESS AND APPLIANCES FOR THE PRE-SETTING OF CUTTING AND EJECTION TOOLS IN A CUTTING PRESS FOR BOX BLANKS

Jacques Nassoy, 14, rue Capitaine Dumont, St. Quentin, and Bernard Protin, 3, ch. Croix Etienne, F-21600 Sennay, both of France

Division of Ser. No. 345,354, Feb. 3, 1982, Pat. No. 4,510,667.
This application Feb. 15, 1985, Ser. No. 702,330
Claims priority, application France, Feb. 3, 1981, 81 02006
Int. Cl.[4] B23B *49/02*
U.S. Cl. 33—562 8 Claims



1. An apparatus for producing centering holes and mounting holes in a cutting form having cutting rules and in at least one ejection board of a platen press, said apparatus comprising a pre-mounting template being provided on its lower edge with a fixed rectilinear stop on which one of the cutting rules of the cutting form is receivable, a horizontal bar with a support surface being mounted on the template adjacent the stop, means for adjusting the support surface relative to the stop, said template having a pair of centering hole guides and a pattern of distributed mounting hole guides so that with a cutting form on the stop, centering holes and mounting holes can be drilled into the cutting form and by positioning a board

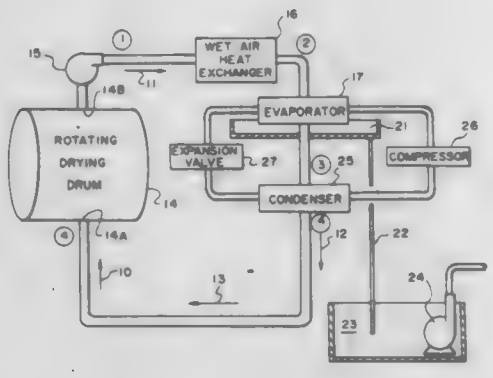
on the support surface, centering holes can be formed that are aligned with the centering holes on the cutting form.

4,603,489

HEAT PUMP CLOSED LOOP DRYING

Michael Goldberg, 118 Page Rd., Bedford, Mass. 01730

Filed Oct. 5, 1984, Ser. No. 657,896
Int. Cl.[4] F26B *21/08*
U.S. Cl. 34—77 **4 Claims**



1. Drying apparatus comprising,

drying chamber means for receiving items to be dried having an air inlet and an air outlet,

heat pumping means comprising evaporating means for allowing refrigerant to evaporate, condensing means for receiving compressed refrigerant, compressing means for compressing evaporated refrigerant from said evaporating means and delivering compressed refrigerant to said condensing means and expansion means for intercoupling said condensing means and said evaporating means to form a closed heat pump system,

means for delivering relatively moist air to said evaporating means for removing moisture therefrom and delivering substantially all the air incident on said evaporating means to said condensing means for delivering heat to said incident air from said condensing means,

means for coupling substantially all the air from said condensing means to the inlet of said drying chamber means to provide heated dehumidified air for removing moisture from items to be dried therein,

means for extracting moist air from said drying chamber means through said air outlet,

means for intercoupling the air outlet of said drying chamber means with the input to said evaporating means,

wet air heat exchanging means coupled to the means for intercoupling said air outlet and evaporating means inlet for withdrawing heat from the moist air passing therethrough and having a heat withdrawing capacity at least equal to the energy input to said heat pumping means,

and blower means for circulating said air through said drying chamber means.

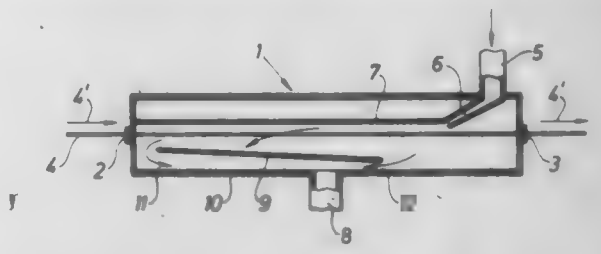
4,603,490

ARRANGEMENT FOR THE TREATMENT OF A MOVING MATERIAL WEB

Anders E. Hilmersson, Helsingborg, and Helge Andersson, Lund, both of Sweden, assignors to Tetra Pak International AB, Lund, Sweden

Filed May 31, 1984, Ser. No. 615,819
Claims priority, application Sweden, Jun. 3, 1983, 8303139
Int. Cl.[4] F26B *13/02*
U.S. Cl. 34—155 **9 Claims**

1. An arrangement for the treatment of a moving material web comprising a chamber, a web inlet and a web outlet for defining a web path through the chamber, a gas inlet and a gas outlet for a gas flow, said gas outlet being situated at the opposite side of the web path in relation to the gas inlet and a baffle plate extending along said web path between said gas outlet and the web path, the baffle plate being arranged at an angle to said web path, said gas outlet being located in a first wall of said chamber, the ends of the baffle plate defining first and second gas discharge gaps between the baffle plate and said first wall, said first gap being greater than said second gap, said



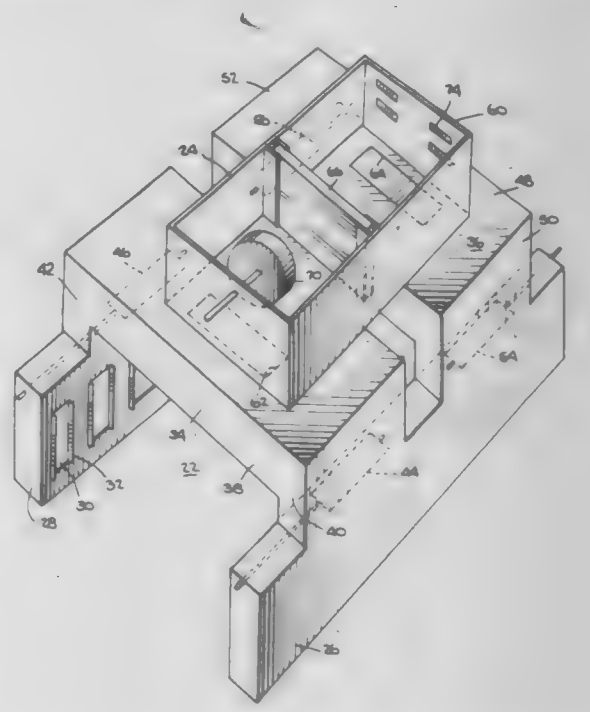
first gap being spaced further from said gas inlet than said second gap, whereby these gaps cause a greater part of the gas flow to pass through said first gap than through said second gap when said material web is moving along said web path.

4,603,491

REVERSIBLE CROSS FLOW DRYING OR CURING OVEN

Robert E. Hengle, and William F. Granfors, both of Cleveland, Ohio, assignors to FECO Engineered Systems, Inc., Cleveland, Ohio

Continuation of Ser. No. 491,716, May 5, 1983, abandoned. This application Dec. 6, 1984, Ser. No. 678,969
Int. Cl.[4] F26B *9/02*
U.S. Cl. 34—191 **4 Claims**



1. A reversible cross flow drying or curing oven comprising:

an oven housing having opposed side walls defining a drying or curing chamber therebetween for receiving articles to be dried or cured,

first and second ducts disposed along the respective opposite side walls of said housing and having openings for supplying air into and receiving air from said oven chamber,

a crossover air supply duct within said oven overlying the curing chamber and connected by supply passageways at opposite ends to said first and second ducts for supplying air thereto,

damper means located between the supply passageways and the first and second ducts,

a crossover air return duct within said oven adjacent the air supply duct overlying the curing chamber and connected by return passageways at opposite ends to said first and second ducts for receiving air therefrom,

a damper means located between the return passageways and the first and second ducts,

a cupola housing overlying the air supply and air return ducts, said cupola defining a chamber for receiving return

air from the return duct, having means for conditioning the return air, and means for recirculating the air to the air supply duct for return to the curing chamber,

and means for periodically opening and closing an air supply damper and an air return damper to periodically reverse the flow of air across said oven chamber.

4,603,492

INSERT CONTAINER FOR FREEZE-DRYING PLANTS
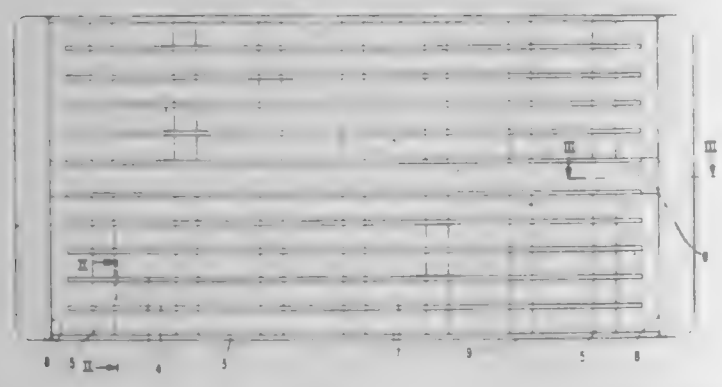
Klaus D. Koch, Bremen; Johann Brunssen, Osterholz-Scharmbeck, and Helmut Sieling, Hambergen, all of Fed. Rep. of Germany, assignors to HAG-GF Aktiengesellschaft, Bremen, Fed. Rep. of Germany

Filed Mar. 25, 1985, Ser. No. 715,800

Claims priority, application Fed. Rep. of Germany, Apr. 12, 1984, 3413856

Int. Cl.⁴ F26B *25/10, 5/06, 13/30*

U.S. Cl. 34—237 **3 Claims**



3. An insert container for freeze-drying plants comprising two opposed end walls (**8**), two opposed side walls (**3**) and a plurality of vertical ribs subdividing the insert container into parallel compartments, characterized by:

(a) vapor-pervious tubes (**5**) extending transversely of the traversing the ribs (**4**);

(b) said side walls (**3**) provided with depressions; and

(c) contacting side walls (**3**) of two adjacent insert containers (**1**) forming a channel (**12**) for discharge of water vapor.

4,603,493

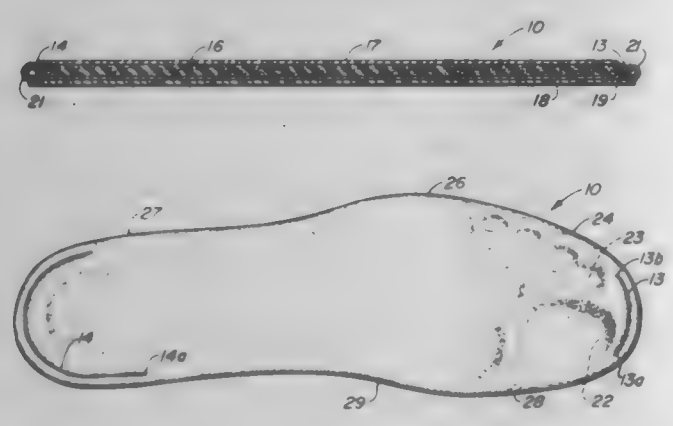
INSOLE WITH MOLDABLE MATERIAL

Gary A. Eston, 352 Bofin, Foster City, Calif. 94404

Filed Sep. 24, 1984, Ser. No. 653,569

Int. Cl.⁴ A43B *13/40*

U.S. Cl. 36—44 **14 Claims**



1. An insole for an item of footwear having a medial and a lateral side and comprising:

a shoeboard having a profile which generally conforms to the outline of the foot of a wearer and flexible to bend with the footwear item;

a soft, flexible innersole piece above the shoe board;

a mass of flexible, moldable, nonsetting material contained between the shoe board and the innersole piece, for causing the innersole piece to conform to the bottom of the foot of a wearer of the footwear;

connection means for securing the shoe board and the innersole piece together so as to contain and seal the nonsetting material between them, comprising an overlap of the innersole piece over the shoe board around its periphery, the overlap being tucked under the shoe board and glued to the underside thereof, and stitching from the innersole down through the shoe board, the stitching being inward a short distance from the edge of the insole and being in one general arc in front of the wearer's first toe and in another generally arcuate pattern at the heel, thereby preventing the moldable nonsetting material from excessive molding and migration beyond the stitching in those locations;

the innersole piece being free of stitching at the forefoot on either side of the ball of the foot, and at the cuboid bone at the lateral midfoot back to just forward of the heel, whereby the nonsetting material is allowed to mold and flow out to the periphery of the insole in these areas.

4,603,494

NON-SKID IRONING BOARD COVER

David Lehrman, c/o The Ironees Company, Front & Venango St., Philadelphia, Pa. 19134

Filed Mar. 15, 1985, Ser. No. 711,683

Int. Cl.⁴ D06F *83/00*

U.S. Cl. 38—140 **11 Claims**

1. A cover for an ironing board or pressing machine which has an ironing surface and side skirts when covering the ironing board or pressing surface of the pressing machine and comprises a fabric at least a portion thereof having a coating of an acrylic polymer composition which (1) provides a non-skid surface at room temperature, (2) prevents the article being ironed or pressed from falling off the ironing or pressing surface, and (3) is stable at ironing or pressing temperatures.

4,603,495

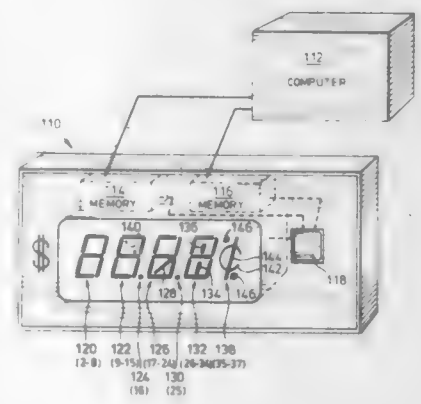
ALPHANUMERIC DISPLAY MODULES

John K. Stevens, 8 Alexander Street, Brampton, Ontario, Canada L6V 1H6

Filed Sep. 19, 1984, Ser. No. 652,040

Int. Cl.⁴ G09F *3/04*

U.S. Cl. 40—451 **13 Claims**



1. An alphanumeric display module comprising at least four display cells which from left to right as viewed by an observer are:

(a) first and second cells which are figure eight cells having seven selectable elements, each cell having two spaced vertical sides each of two elements disposed one above the other, having horizontal top and bottom sides each of one element, and having a horizontal cross-bar of one element disposed between the top and bottom elements;

(b) a third cell which is a figure eight cell having in addition a right upwardly inclined diagonal selectable element from the bottom left corner of the cell to the upper right

corner at the junction of the cross-bar element and the lower right vertical element;

(c) a fourth cell which is a figure eight cell having in addition two additional equal vertical selectable elements extending from top to bottom of the cell one above the other parallel to the vertical side elements and at least approximately midway between the vertical side elements; and

(d) respective electric control leads connected to the cell elements for selective energization thereof;

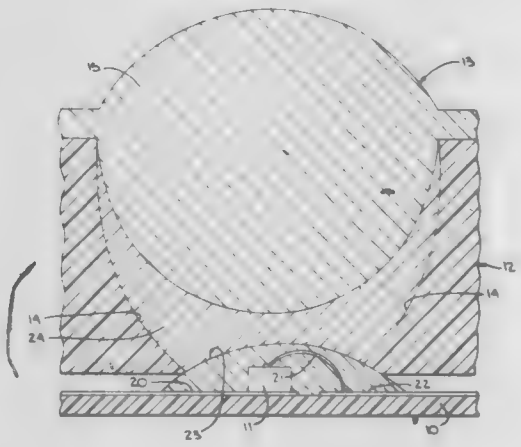
the display module including in addition a fifth cell to the right of the fourth cell, as viewed by an observer, the fifth cell comprising an upward right inclined oblique stroke element, a pair of simultaneously controllable period elements which together with the oblique element constitute a percentage sign, and a C-shaped element straddling the oblique element and constituting therewith a cents sign, and respective electric control leads connected to the oblique element, the pair of period elements and the C-shaped element for selective energization thereof.

4,603,496

ELECTRONIC DISPLAY WITH LENS MATRIX

William J. Latz, New Berlin; Thomas J. Mandler, Grafton, both of Wis., and Jason C. S. Lai, Taipei, Taiwan, assignors to Adaptive Micro Systems, Inc., Butler, Wis.

Filed Feb. 4, 1985, Ser. No. 698,021
Int. Cl.[4] G09F *13/00*
U.S. Cl. 40—547 **3 Claims**



1. An electronic display which comprises:

a printed circuit board having a plurality of light emitting devices mounted to its front surface and arranged in a pattern;

a reflector matrix disposed over the front surface of the printed circuit board and having a plurality of openings formed therethrough which are aligned with the light emitting devices in said pattern to provide a light pipe which extends forward from each light emitting device, each said light pipe being concave opening away from the light emitting device with a smaller open end adjacent to the printed circuit board and a larger open end opposite from the printed circuit board;

a lens matrix disposed over the front surface of the reflector matrix and having a plurality of lenses which are aligned with the light pipes in said pattern to provide a lens over the forward end of each light pipe, each said lens having front and rear convex surfaces, said rear convex surface extending into the corresponding light pipe and filling the larger opening of the light pipe;

a potting compound filling each light pipe between the printed circuit board and the lens matrix; and

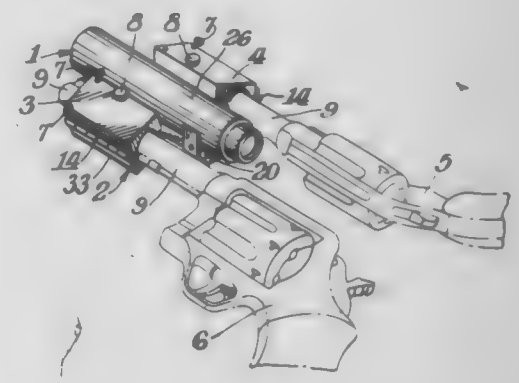
wherein the side surfaces of said potting compound contact and are defined by the light pipe and the front surface of the potting compound contacts and is defined by the lens.

4,603,497

MEANS FOR SECURING AND ALIGNING THE BARRELS OF TWO PISTOLS SUBSTANTIALLY PARALLEL

Arthur G. Crimmins, Jr., Tillamook, Oreg., assignor to Joan M. Crimmins, Lansdale, Pa.

Filed Mar. 5, 1984, Ser. No. 586,207
Int. Cl.[4] F41C *27/00*
U.S. Cl. 42—106 **4 Claims**



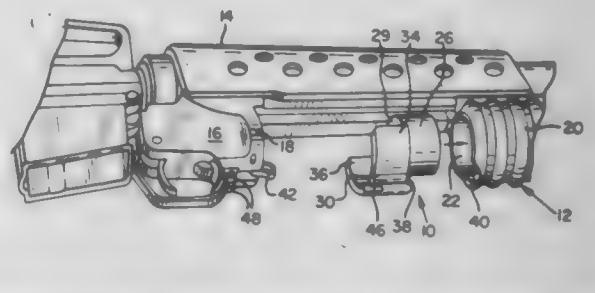
1. The combination, with two conventional pistols, each having a barrel, a hand grip and a trigger, of means, comprising a support member fixedly securing both pistols in substantially parallel alignment whereby each pistol is aimed at substantially a single point on a target by an operator using one hand on one hand grip and the other hand on the other hand grip, permitting manipulation of the trigger of each pistol for simultaneous or successive firing.

4,603,498

EXTERNALLY VISIBLE SAFETY DEVICE FOR GRENADE LAUNCHER

David A. Johnson, 3432 Tanglewood Way, Salem, Oreg. 97302

Filed Oct. 4, 1985, Ser. No. 784,526
Int. Cl.[4] F41C *17/08*; F41F *1/00*
U.S. Cl. 42—105 **14 Claims**



13. In combination with a breech loading firearm including structure defining a firing chamber for receiving a cartridge to be fired, said firing chamber defining a breech opening, and said firearm further including a breech block for selectively closing said breech opening and structure defining a passageway communicating in a radial direction between the interior of said firing chamber and the exterior of said firearm when said breech is closed by said breech block, an externally visible safety device, comprising:

(a) chamber plug means of a size which fits within said firing chamber, for preventing entry of a cartridge into said firing chamber;

(b) an indicator located in a position visibly exposed externally of said firearm; and

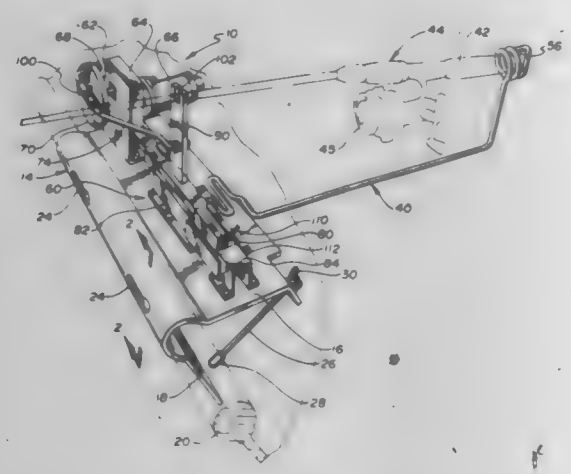
(c) connector means extending between said chamber plug and said indicator, for connecting said chamber plug with said indicator, said connector means being of a size and shape which fits within said passageway, and being small enough not to interfere with the closing of the breech of said firing chamber structure by said breech block.

4,603,499

HORIZONTAL FISHING ROD MOTION CONTROL

Anthony Simborski, 14140 Germanium St. NW., Anoka, Minn. 55303

Filed Jul. 1, 1985, Ser. No. 750,926
Int. Cl.[4] A01K *97/10*
U.S. Cl. 43—19.2 11 Claims



1. A motor driven trolling device comprising:

(a) a frame, including means for mounting said frame to a gunwale of a boat,

(b) motor driven crank means for providing rotation to a crank, said means being mounted to said frame and including a motor means providing rotation to a crank of said crank means;

(c) slider means journaled to said frame and being constructed and arranged such that a slider bar of said means may move back and forth in a straight line, said slider bar further including a lever means extending vertically from said slider bar, said lever means including a pivot link for attachment to a connecting rod pivotally linked to said crank means and lever means such that movement of said crank creates rectilinear movement of said slider bar, said lever means further including shaft holder means for releasably holding a shaft of a fishing rod thereto; and

(d) fishing rod butt holder means for securing a butt end of a fishing rod to said butt holder means, said means including a rod holder detachably affixed at one end to said frame and having a fishing rod butt end receiving means at the other end such that a fishing rod may be held approximately perpendicularly to said slider bar by said butt end receiving means and shaft holder means so that rotation of said crank causes the free end of a fishing rod so held to move back and forth with said slider bar.

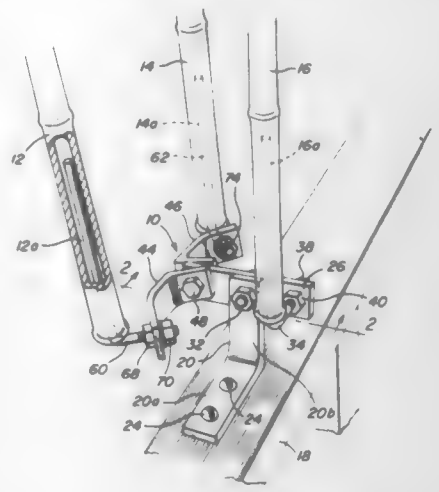
4,603,500

FISHING POLE HOLDER

James A. Harrison, Sr., Rte. 1, Box 757-J, Bartow, Fla. 33830

Filed Oct. 26, 1984, Ser. No. 665,731
Int. Cl.[4] A01K *97/10*
U.S. Cl. 43—21.2 9 Claims

1. A fishing pole holder comprising a plurality of elongate pole pins for receipt in corresponding longitudinally extending bores formed from the butt ends of respective fishing poles, and articulated support means for mounting the pins in upright angularly adjustable positions on a suitable support such as the rail of a fishing boat or the like, wherein each pole pin has an elongate portion for receipt in a respective bore, a base portion bent at an angle to the elongate portion, and means for securing the base portion to the support means for angular adjustment of the respective pin about the axes of the base portion, wherein the support means comprises a bar, means for supporting the bar in substantially horizontal position, means for pivotally securing the elongate portion of a first pole pin at one end of the bar, a pair of transversely extending brackets at the other end of the bar, and means for pivotally securing the elongate



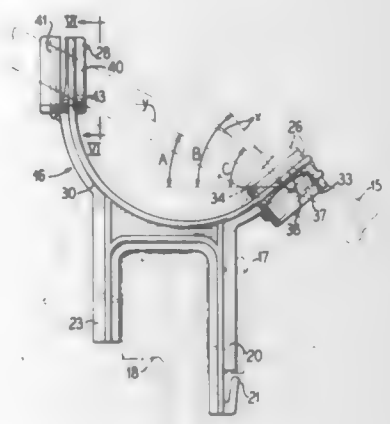
portions of second and third pole pins to the respective brackets.

4,603,501

OAR LOCK POLE HOLDER

Donald C. Radcliff, 850 S. Lorraine Rd., Wheaton, Ill. 60187

Filed Jan. 24, 1985, Ser. No. 694,293
Int. Cl.[4] A01K *97/10*
U.S. Cl. 43—21.2 9 Claims



1. A fishing rod support for retaining and positioning a fishing rod in a desirable orientation for catching fish comprising:

a mounting means to detachably mount said fishing rod support in a desired location;

a support loop, means being of a sufficient size to freely receive a fishing rod handle therein, and including offset diametrically opposed gripping areas;

a forked rest means spaced from said support loop means and adapted to cradle an extending portion of said fishing rod handle at a predetermined inclined angle; and

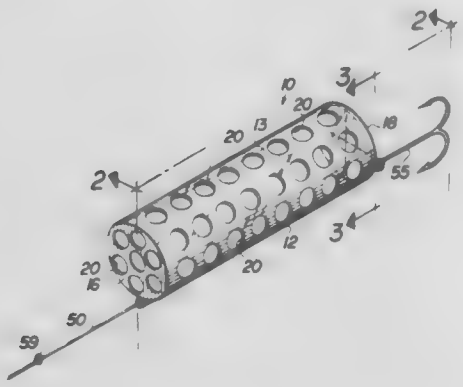
means to interconnect said support loop means and said forked rest means in an aligned and predisposed angular relationship relative to one another, said support loop means comprises a pair of semi-circular portions interconnected in an axial offset orientation thereby defining said opposed gripping areas and having an axis extending at an inclined angle substantially greater than said predetermined inclined angle, whereby when said fishing rod handle is inserted into said support loop means and said extending portion of said handle is cradled by said forked rest means at said predetermined inclined angle, said opposed gripping areas of said support loop means make gripping contact with said fishing rod handle.

4,603,502

FISHING LURE ASSEMBLY

Richard MacDonald, Naples, Fla., assignor to Margaret H. MacDonald, Naples, Fla.

Filed Nov. 14, 1985, Ser. No. 798,045
Int. Cl.[4] A01K *97/04*
U.S. Cl. 43—41 **15 Claims**



1. A fishing lure structure of the type primarily designed to retain and display a live bait fish substantially adjacent a hook assembly for the attraction of a larger fish thereto, said assembly comprising:

(a) a housing having a substantially elongated configuration and a hollow interior portion extending along the length thereof, said hollow interior portion defining a chamber in which the bait fish is retained,

(b) said chamber including both a transverse and longitudinal dimension sufficient to retain and allow free movement of the live bait fish therein,

(c) said housing further including an elongated, lateral wall disposed in surrounding relation to said chamber,

(d) said housing having two end walls formed at opposite ends of said lateral wall and disposed in substantially tranverse relation to the length of said housing,

(e) resiliently segmented entrance means for providing access into and out of said chamber being formed on and at least partially defining one of said end walls, said entrance means structured to facilitate entrance into said chamber and resist exiting therefrom,

(f) said lateral wall formed from a transparent material, whereby said bait fish is displayed, and including a plurality of apertures formed in said lateral wall, said plurality of apertures disposed and dimensioned to allow water to fill said housing and freely flow into and out of said chamber, and

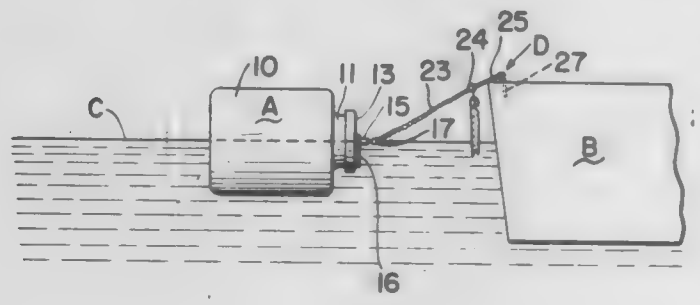
(g) connecting means secured to said housing for attachment of said lure assembly to a fishing line.

4,603,503

PORTABLE BAIT CONTAINER

James P. Haney, 340 Park Dr., Canonsburg, Pa. 15317

Filed Sep. 13, 1985, Ser. No. 775,813
Int. Cl.[4] A01K *97/04*
U.S. Cl. 43—56 **14 Claims**



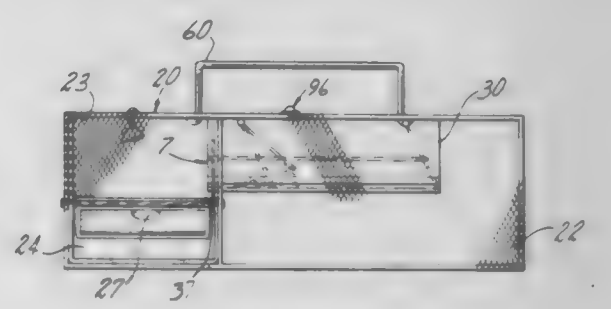
1. A portable bait container that is floatable on its side within a body of water which comprises, an elongated floatable body for carrying live bait in water therein, said body having an open end portion, a lid mounted on said open end portion, said lid having water and air circulating hole portions and a bait inserting and removing open portion in a balanced relation in a lower half portion thereof, a closure member carried by said lid for opening and closing movement with respect to said open portion, and said lid being weighted when said closure member is in a closed position with respect to said open position to align the lower half portion of said body in a substantially longitudinally floatable relation within the body of water.

4,603,504

MOUSETRAP

Orestes L. Llanos, 3330 NW. 99th St., Miami, Fla. 33147

Filed Mar. 25, 1985, Ser. No. 715,915
Int. Cl.[4] A01M *23/04, 23/06*
U.S. Cl. 43—76 **3 Claims**



1. A trap for rodents, comprising:

A. a housing covered by mesh wire of suitable characteristics to keep the animal in while at the same time allows it to see through said housing walls;

B. an entrance compartment defined within said housing having an entrance and an exit;

C. an off-center balance member positioned within said entrance compartment and having adequate dimensions to fit exactly within said entrance compartment, and said member having sufficient weight means mounted to its shorter portion so that it overcomes the opposite longer portion thereby keeping said entrance open in the normal position and closing it when the animal walks in past the center of said balance member;

D. a one-way tunnel compartment connected to said exit so that said animal can go through it when said balance member is in the closed position, and said tunnel including a first door adjacent to said exit and second one-way door at a point sufficiently beyond said first door to allow the animal within both doors;

E. latch means for holding said balance member in closed position and releasable by said animal as it moves said second one-way door and said latch means includes an upwardly extending latch member pivotally mounted on the side edge of said balance member that is closer to said tunnel and said second one-way door further includes an elongated linkage arm that extends towards said latch member and engageable with it to maintain said balance member in closed position and capable of releasing it when said second one-way door is moved by the animal thereby resetting said balance member; and

F. storage compartment means connected to said second one-way door so that animals may be accumulated therein as they go through said second door.

4,603,505

PORTABLE ELECTRONIC INSECT CONTROLLER

Lance Millard, 2820 E. 36th Ct., Des Moines, Iowa 50317

Filed May 26, 1983, Ser. No. 498,925
Int. Cl.[4] A01M *1/22, 1/04*
U.S. Cl. 43—112 **15 Claims**

1. A portable electronic insect controller, comprising:

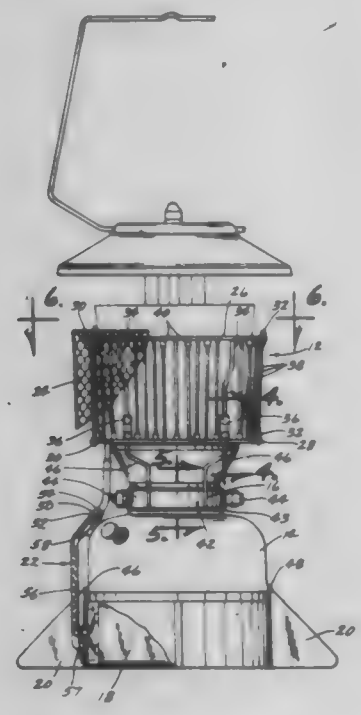
an electrified grid means being alternately polarized with a

high voltage in association with a light producing camping lantern for electrocuting insects when they move within close proximity of the grid;

a power supply means for supplying a controlled source of electrical energy to the grid;

a base for supporting the camping lantern and housing the power supply means;

said grid means including a bottom and top ring, said rings being substantially parallel to each other, spaced apart and



including bars, said bars extending upward from the bottom ring and downward from the top ring in a spaced arrangement and electrically isolated from each other;

said grid means further including a grid bracket, said bracket engaging the rings and the lantern to securely hold the rings and bars in a fixed position; and

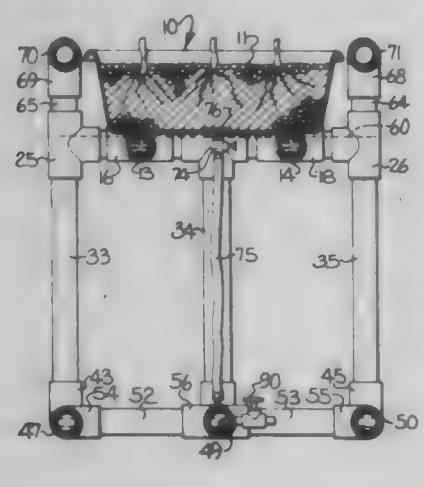
a safety interconnect means for electrically connecting the power supply means to the grid means and preventing the refueling of the lantern without disconnecting the grid means from the power supply means.

4,603,506

HYDROPONIC PLANT GROWING DEVICE

George P. Powell, Jr., 205 Brandywine Rd., Charlotte, N.C. 28209

Filed Nov. 5, 1984, Ser. No. 668,574
Int. Cl.[4] A01G *31/00*
U.S. Cl. 47—62 9 Claims



1. A hydroponic plant growing device comprising

a rectangular plant growing tray including side and end walls, a bottom wall, and an open top, said plant growing tray being adapted to contain an inert aggregate providing a plant growing bed in which the root system of the plants is embedded,

a tubular support frame positioned beneath said plant growing tray and providing a support for retaining said plant growing tray in a horizontal position thereon, said tubular support frame including spaced-apart upper tubular horizontal frame members on which said bottom wall of said plant growing tray is supported, spaced-apart lower tubular horizontal frame members, and vertical tubular frame members having upper and lower ends communicatively connected to the corresponding upper and lower tubular horizontal frame members, said tubular frame members collectively defining a closed storage chamber containing a fluid growing solution, said storage chamber containing a sufficient volume of growing solution to fill but not overflow said plant growing tray,

fluid growing solution drain and supply tube means communicatively connected between said bottom wall of said plant growing tray and said tubular frame members defining said storage chamber,

pressurized air supply means communicatively connected with said fluid growing solution storage chamber, and

control means operatively associated with said pressurized air supply means and being operable to activate said pressurized air supply means and force the fluid growing solution from said fluid growing solution storage chamber and upwardly through said drain and supply tube means into said plant growing tray, said control means also being operable to deactivate said pressurized air supply means and permit the fluid growing solution to drain from said growing tray and back through said fluid growing solution drain and supply tube means and into said tubular frame members defining said fluid growing solution storage chamber.

4,603,507

MULTI-TIER MULTI-UNIT POT HANGER ASSEMBLY

Paul W. Nelson, 28108 Mountain Meadow Rd., Escondido, Calif. 92026

Filed Feb. 5, 1981, Ser. No. 231,590
Int. Cl.[4] A47G *7/02*
U.S. Cl. 47—67 5 Claims



1. A multi-tier multi-unit pot hanging assembly for hanging a plurality of planter pots in a vertically tiered arrangement comprising in combination:

a first hanger member for hanging from an overhead rack, and at least one second hanger member for hanging from said first hanger member;

said first hanger member defined by a first loop having, a first horizontal arm integral with and extending outwardly from one side of said first loop, and an upwardly extend-

ing first vertical arm extending upward from the outer end of said first horizontal arm at an angle of less than 90 degrees to the plane of sid first loop and having a first hook at the upper end thereof terminating at a point coaxial of said loop and adapted to hook over an overhead rail, said first loop extending outward from said first horizontal arm in a horizontal plane for receiving and supporting a planter pot in an upright position; and

said second hanger member defined by a second loop having an upwardly extending second vertical arm extending upwardly from one side of said loop at an angle of less than 90 degrees to the plane of said second loop for supporting said second loop in a horizontal plane for receiving and supporting a planter pot in an upright position and said second vertical arm terminating in a second hook at the upper end at a point substantially coaxial of said second loop for hooking on the outwardly extending first horizontal arm of said first hanger member and thereby position said second loop offset from the axis of said first loop.

4,603,508

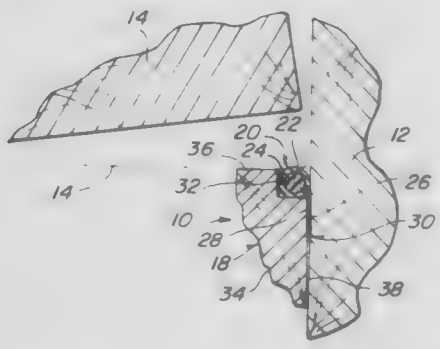
WEATHER STOP

Robert C. Gunther, 292 Rose Ave., Staten Island, N.Y. 10306

Filed Jun. 10, 1985, Ser. No. 743,311

Int. Cl.[4] E06B *7/16*

U.S. Cl. 49—493 **6 Claims**



1. A weather stop, mounted to a jamb of a door which comprises:

(a) a door stop having a side surface facing the door against which the door directly abuts, a perpendicular side facing the jamb, a square groove at the corner between said two sides disposed where said door stop meets said jamb and said door, and

(b) a cylindrically shaped resilient weather strip seated into said square groove and protruding beyond both said side surfaces for providing a snug weather proof seal both against the jamb and the door, means for securing said weather strip in said groove so that when the door is closed into the protrusion facing the door, a tight seal is formed with the door and the protrusion facing the jamb forms a tight seal around the jamb.

4,603,509

MAGNETIC ATTRACTION SYSTEM GRINDING METHOD

Masanori Kunieda, Tokyo; Hiromichi Hiramatsu; Toshiro Higuchi, both of Yokohama, and Takeo Nakagawa, 223-4 Ichinotsubo, Nakahara, Kawasaki, all of Japan, assignors to Aida Engineering, Ltd., Sagamihara and Takeo Nakagawa, Kawasaki, both of, Japan

Filed Feb. 13, 1984, Ser. No. 579,877

Claims priority, application Japan, Mar. 4, 1983, 58-35612

Int. Cl.[4] B24B *1/00*

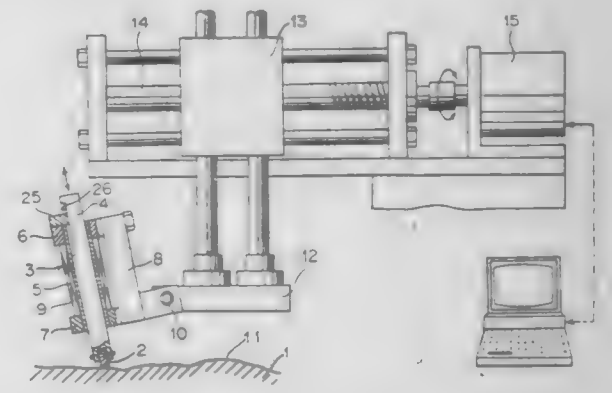
U.S. Cl. 51—31 **19 Claims**

1. A magnetic attraction system grinding method comprising:

providing a grinding tool having a movable magnetic circuit forming means with an end juxtaposed with respect to a workpiece;

providing a magnetic material bonded grindstone on the end of the magnetic circuit forming means;

contacting the grindstone with the surface of the workpiece to be ground;



producing a magnetic circuit by the magnetic circuit forming means between the grinding tool and the workpiece to generate a grinding pressure of the grindstone on the surface to be ground; and

producing relative movement between the grinding tool and the surface to be ground while maintaining said grinding pressure.

4,603,510

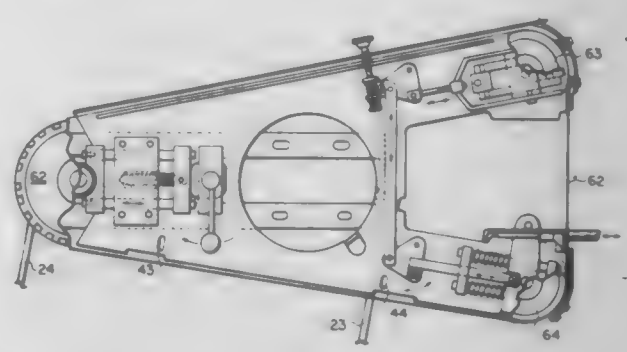
MULTIPLE POSITION BELT GRINDER

Aaron P. Rasmussen, 9606 Candy La., La Mesa, Calif. 92041

Filed Aug. 27, 1984, Ser. No. 644,392

Int. Cl.[4] B24B *21/20*

U.S. Cl. 51—148 **15 Claims**



1. A belt grinder comprising:

a base, a pair of longitudinally spaced support members extending upwardly from said base, said support members having aligned apertures in them that define a major longitudinal pivot axis;

a power train housing positioned between said upwardly extending support members, said housing having an axis of rotation;

means for pivotally mounting said housing to said upwardly extending support members with the axis of rotation of said housing being in alignment with said major longitudinal pivot axis of said support members;

a machine head assembly having a bottom frame that is attached to the top of said housing, a drive wheel and at least two idler wheels supported at predetermined spaced positions on the top surface of said bottom frame member, a closed loop abrasive belt passing around the outer periphery of said drive and idler wheels, said drive wheel and two idler wheels defining a belt line geometry that determines the path for said closed loop abrasive belt to pass from said drive wheel to a first one of said idler wheels, from one of said idler wheels to another of said idler wheels, and from said another of said idler wheels to said drive wheel said belt lines between said drive wheel and said idler wheels forming an angle there between:

means for maintaining said angle substantially constant while said belt line between said idler wheels moves substan-

tially parallel to its starting position during adjustments of said idler wheels nearer to and farther from said drive wheel responsive to decreases and increases in the length of said closed loop abrasive belt due to stretching and changing temperatures;

means for pivoting said power train housing substantially through 360 degrees; and

means for locking said power train housing at predetermined positions throughout its 360 degree range of pivotal motion.

4,603,511

GRINDING ROBOT

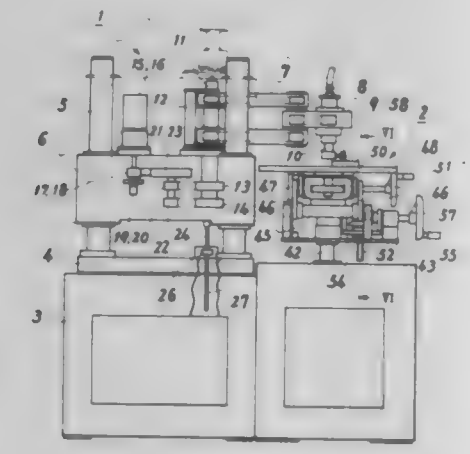
Isamu Komatsu, Sagamihara, and Kenkichi Serizawa, Yamato, both of Japan, assignors to Aida Engineering Limited, Sagamihara, Japan

Filed Oct. 22, 1984, Ser. No. 663,700

Claims priority, application Japan, Nov. 15, 1983, 58-214661; Dec. 28, 1983, 58-245973; Dec. 31, 1983, 58-246443

Int. Cl.[4] B24B *49/00*

U.S. Cl. 51—165.71 **5 Claims**



1. A grinding robot having an abrasive tool for conducting the grinding work on a workpiece, and having a table device for holding the workpiece, and having a playback system to grind a three-dimensional curved-surface, comprising:

a first arm being horizontally oscillatable around a vertical axis portion; said first arm having a head;

a second arm pivoted to, and horizontally oscillatable to, said head of said first arm; said second arm having a head;

a fluid cylinder attached perpendicularly to said head of said second arm;

an abrasive tool attached to a bottom portion of said fluid cylinder for free movement in an ascendable direction and in a descendable direction, said abrasive tool being turnable relative to said bottom portion of said fluid cylinder.

4,603,512

APPARATUS FOR LAPPING A FACET ON A TIP OF A WORKPIECE

Eric F. Cave, Indianapolis, Ind., and James J. Cowden, Beverly, Mass., assignors to RCA Corporation, Princeton, N.J.

Filed Dec. 24, 1984, Ser. No. 685,723

Int. Cl.[4] B24B *9/16*

U.S. Cl. 51—229 **8 Claims**

1. An apparatus for lapping a facet on a tip of a workpiece by setting said tip down on a surface of a rotating scaife comprising:

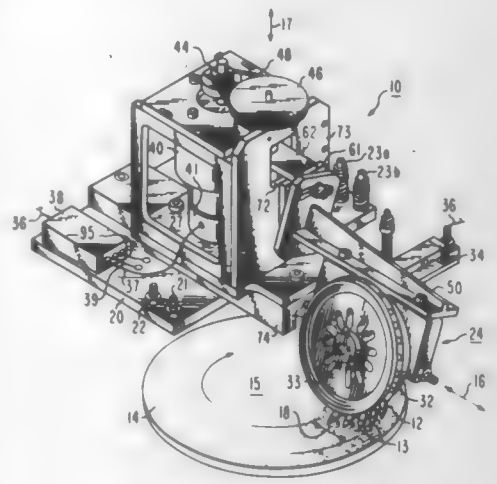
(a) a platform positioned in fixed relation adjacent said scaife;

(b) means connected to said platform for movable supporting a carriage for reciprocal movement in a horizontal direction parallel to a first generally horizontal axis and in a vertical direction that is parallel to a second axis substantially orthogonal to said first axis;

(c) turret means for carrying one or more of said workpieces rotatable about another axis to sequentially position a workpiece over said surface, pivotal means connecting said turret means to said carriage to pivot said turret means about said first generally horizontal axis;

(d) said pivotal means including adjustable torque means for setting the tip of a selected workpiece on said scaife surface at an angle as said carriage is moved in a downward vertical direction, and for controlling the pressure applied to said tip as it is passed against said scaife surface;

(e) sensing means connected to said carriage for sensing an



angular displacement of said workpiece holder about said first axis relative to a predetermined reference position and for generating a displacement signal indicative for said angular displacement; and

(f) means responsive to said displacement signal for lifting said carriage thereby to lift said workpiece tip from the surface of said scaife when said tip has been provided with a facet having a predetermined angle corresponding to said angular displacement.

4,603,513

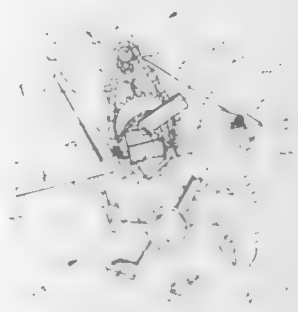
MOTOR DRIVEN FEED SHARPENER

Charles J. Murphy, R.R. #4, Abilene, Kans. 67410

Filed Nov. 28, 1984, Ser. No. 675,957

Int. Cl.[4] B24B *3/36*

U.S. Cl. 51—250 **6 Claims**



1. A motor driven feed sharpener for sharpening feed chopping knives and the like mounted on a feed chopper, the sharpener comprising:

a drive motor connected to a drive shaft, the motor mounted on a sharpener housing;

a stoneholder shaft connected to the drive shaft and rotated thereby, the stoneholder shaft extending along the length of the top of the stoneholder and having a cam mounted thereon;

a tubular stoneholder slidably mounted in the sharpener housing, the stoneholder having an elongated sharpening stone mounted on the bottom thereof, the cam disposed inside the stoneholder and engaging the stoneholder for raising and lowering the holder in the sharpener housing; and

a mounting plate disposed above the feed chopping knives,

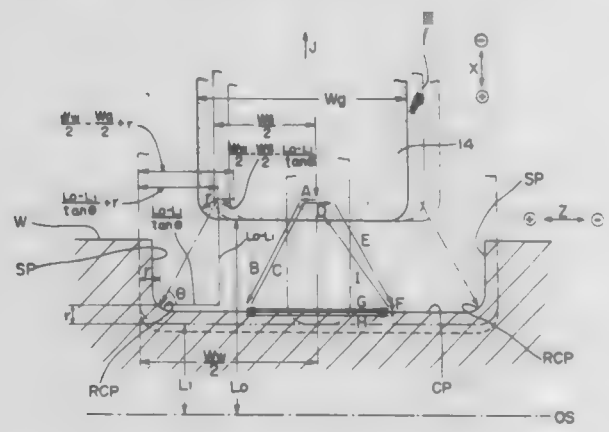
the mounting plate receiving the sharpener housing thereon, the mounting plate having an elongated opening therein for receiving the bottom of the stone when the stoneholder is lowered by the cam.

4,603,514

METHOD OF GRINDING A WORKPIECE HAVING A CYLINDRICAL PORTION AND SHOULDER PORTIONS

Ikuo Suzuki, Chiryu, and Yukio Oda, Kariya, both of Japan, assignors to Toyoda Koki Kabushiki Kaisha, Kariya, Japan

Filed Feb. 1, 1985, Ser. No. 697,441
Claims priority, application Japan, Feb. 17, 1984, 59-27235
Int. Cl.⁴ B24B *1/00, 19/12*
U.S. Cl. 51—281 C **6 Claims**



1. A method of grinding a workpiece having a cylindrical portion and a couple of shoulder portions extending at right angles from the opposite ends of said cylindrical portion, said method comprising the steps of:

(a) rotating said workpiece about the axis of said cylindrical portion;

(b) rotating a cylindrical grinding wheel with a width smaller than the space between said shoulder portions, about an axis parallel with the axis of said cylindrical portion;

(c) effecting relative movements between said grinding wheel and said workpiece along a first oblique path inclined to one direction with respect to the rotational axis of said cylindrical portion by simultaneously moving said grinding wheel and said workpiece respectively in radial and axial directions of said cylindrical portion, so as to simultaneously grind one of said shoulder portions and a part of said cylindrical portion; and

(d) effecting relative movements between said grinding wheel and said workpiece along a second oblique path inclined to the other direction with respect to the rotational axis of said cylindrical portion by simultaneously moving said grinding wheel and said workpiece respectively in said radial and axial directions, so as to simultaneously grind the other of said shoulder portions and another part of said cylindrical portion.

4,603,515

VACUUM BLAST ADAPTER FOR BOMBS

Robert L. Gilmore, Las Vegas, Nev., and George E. Lander, Bolling AFB, D.C., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

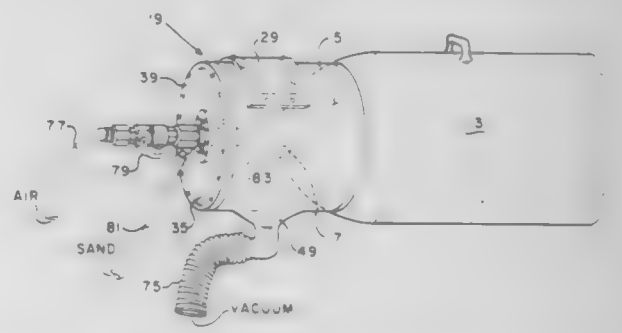
Filed Dec. 22, 1980, Ser. No. 219,397
Int. Cl.⁴ B24C *9/00*
U.S. Cl. 51—424 **3 Claims**

1. A vacuum blast adapter for use with an air/abrasive carrying line for removing corrosion from the interior of a bomb booster well, the interior of the bomb booster well being exposed to surrounding ambient air by a booster well opening, said vacuum blast adapter comprising:

a body portion of substantially cylindrical configuration;

an annular rubber seal on the forward end of said body portion for contacting the outer surface of said bomb booster well adjacent said bomb booster well opening and providing a vacuum type seal between said bomb booster well and said body portion of said adapter;

means on the rearward end of said body portion for permitting the sealable insertion of said air/abrasive carrying line therethrough in order for said air/abrasive carrying line to protrude through said body portion and into said interior of said bomb booster well in order to guide abrasive into the interior of said bomb booster well, said sealable insertion permitting means including an annular rubber seal positioned against the rearward end of said body portion, a large plastic disc with a central cut out therein positioned against said annular seal, a pair of smaller plastic discs having central cut outs therein positioned one on each side of said large plastic discs, a rubber disc having a small opening therein positioned between one of said small plastic discs and said large plastic disc, and a metal flange pressed tightly against said large plastic disc with said rubber seal providing a vacuum



tight seal therebetween, said air/abrasive carrying line being positioned through the small opening in said rubber disc;

a transparent window disposed in the upper surface of said body portion, said window being vacuum-tightly sealed to prevent the entrance of said ambient air into the interior of said body portion, thereby allowing the close observation of said insertion of said air/abrasive carrying line into said bomb booster well opening and the observation of the entire vacuum blasting operation; and

means for recovering all of the used abrasive from said body portion for reuse, said abrasive recovering means including a cut out portion in the lower surface of said body portion of said adapter, an abrasive recovery funnel with the larger end thereof fixedly attached adjacent said cut out portion, and a vacuum line attached to the smaller end of said funnel for drawing the used abrasive out of said body portion of said adapter thereby preventing any of the abrasive from escaping into said ambient air surrounding said body portion of said adapter.

4,603,516

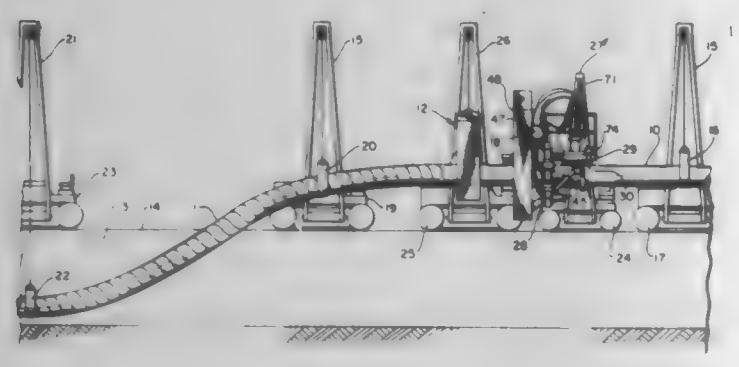
SELF PROPELLED PIPE BLAST CLEANER CAPABLE OF TRAVEL ALONG A PIPELINE SUPPORTED OVER THE DITCH

Joseph H. Hoffman, Plano, Tex., assignor to Resource Engineering and Manufacturing Corp., Tulsa, Okla.

Filed Apr. 2, 1984, Ser. No. 595,661
Int. Cl.⁴ B24C *3/06*
U.S. Cl. 51—425 **20 Claims**

1. A self propelled pipe blast cleaner capable of travel along a pipeline supported over a ditch comprising: a self propelled cart with support rollers for movement along the top of the pipe of the pipeline being blast cleaned; variable speed drive means on said cart for driving said cart along the pipe including rollers of said support rollers; a blast cabinet mounted on said cart and surrounding said pipe for blast cleaning work along said pipe; a plurality of airless abrasive material particle blast wheels contained within said blast cabinet for abrasive material particle blast cleaning of the outer surface of said pipe as said cart is propelled along said pipe; and a blast abrasive material particle reclaiming and circulation system including a reservoir for feeding abrasive material particles to the airless

blast wheels; wherein said blast cabinet surrounding the pipe has front and rear openings for passage of the pipe therethrough; wherein a first seal structure including a first seal housing is provided at said front opening and a second seal structure including a second seal housing is provided at said rear opening in said blast cabinet; said seal structures bridging on opening gap between the cabinet and the outer surface of the pipe, respectively, at each of said front and rear openings; said reclaiming and circulation system including abrasive material particle elevator means with elevator housing means mounted on said cart and extending generally from the lowermost extent of the self propelled pipe blast cleaner to the top thereof; piping passage means extending from the bottom of said blast cabinet downwardly to the bottom of said elevator housing means for passage of abrasive material particles that fall to the bottom of the blast cabinet to the bottom of said elevator housing means; said reservoir being mounted below the top of said elevator means and in communication with said elevator means for delivery of abrasive particles lifted by said elevator means to said reservoir means; and a feed line means



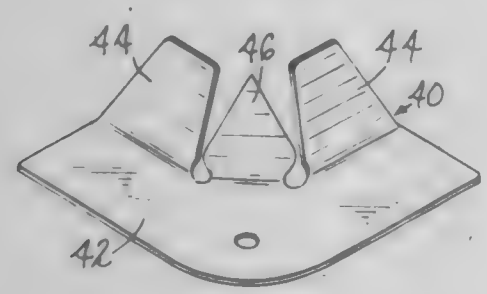
from said reservoir means to each of said airless abrasive material particle blast wheels for gravity feeding of blast abrasive material particles to each of said airless blast wheels; said reservoir means being a reservoir cabinet mounted above the level of the uppermost airless blast wheel; said feed line means including a plurality of gravity flow feed lines, one line extended to each airless blast wheel from the bottom of said reservoir cabinet; an air wash gravity type separator in the upper portion of said reservoir cabinet with air flow inlet means and air suction outlet means; said blast abrasive material particle reclaiming and circulation system being a substantially sealed system including said blast cabinet so that said air suction outlet means draws a vacuum lowering the pressure below atmospheric pressure within the particle reclaiming and circulation system in addition to drawing air input from said air flow inlet means for the air wash gravity type separator; and wherein said abrasive material particle elevator means includes two opposite side vertical elevators each with a housing enclosing a bottom driven belt and belt mounted cup type elevator.

4,603,517

CORNER PATCH SUPPORT

George W. Lyons, Jr., Madison, Conn., assignor to The Bilco Company, New Haven, Conn.

Filed Jan. 18, 1985, Ser. No. 692,529
Int. Cl.[4] E04D *13/14*
U.S. Cl. 52—60 **7 Claims**



1. A corner patch support for heat sealable plastic patches used to cover corner base gaps arising from the use of flashing applied to the intersection of a planar surface with the walls of a housing erected on the surface, said flashing having upper and lower substantially planar portions adapted to bear upon and be sealable to the surface and the walls and an intermediate angular connecting portion, said support being adapted to fill a gap in said flashing arising at the intersection of the walls, said support comprising:

a base adapted to overlie the planar surface at the gap;

angled supports extending from said base adapted to bear upon the intermediate flashing portions adjacent to the gap; and

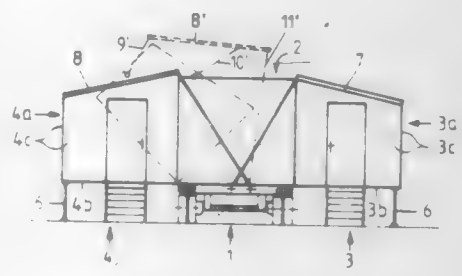
an angled corner extending from said base and configured to fit into and substantially fill the portion of the gap lying between the adjacent intermediate flashing portions, the corner patch suport further having a coating adapted to supply a firm tacking point for said patch, whereby the patch can be sealed thereto so that a substantially smooth transition is made from the flashing portions on one side of the gap to the corresponding flashing portions on the other side of the gap and said patch is firmly supported in a leak-free fashion.

4,603,518

COLLAPSIBLE MOBILE BUILDING

Walter Fennes, Hauptstrasse 115a, A-2372 Giesshübl, Austria

Filed Mar. 28, 1985, Ser. No. 716,893
Claims priority, application Fed. Rep. of Germany, Apr. 2, 1984, 3412048
Int. Cl.[4] E04B *1/343, 7/16;* B60P *3/34*
U.S. Cl. 52—66 **20 Claims**



1. A collapsible building, comprising a first unit having a first side and a second side; a second unit including a base portion and a roof which is separable from said base portion; a joint pivotally connecting said base portion to said first unit for movement about a horizontal axis which is adjacent to and extends along one side of said first unit so that said base portion is movable through a plurality of intermediate positions between an upright first position adjacent to said one side of the first unit and a second position in which one of said units is at least substantially within the confines of the other of said units; and guide means for imparting to said roof a movement along a predetermined path relative to said base portion and in response to movement of said base portion so that the roof is located at a level above the base portion in the first position and above said first unit in the second position of said base portion, the movement of said roof having a component in a direction transversely of said axis.

4,603,519

GEODESICALLY REINFORCED HONEYCOMB STRUCTURES

Hyok S. Lew, 7890 Oak St., Arvada, and Michael Stranahan, P.O. Box 15, Woody Creek, both of Colo. 80005

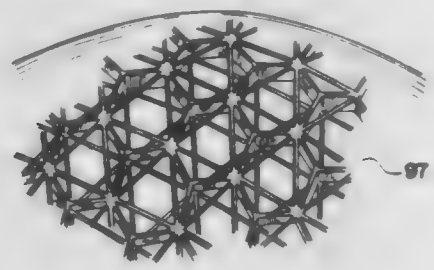
Filed Dec. 17, 1984, Ser. No. 682,675
Int. Cl.[4] E04B *1/32*
U.S. Cl. 52—81 **11 Claims**

1. A geodesically reinforced hexagonal honeycomb structure comprising in combination:

(a) a plurality of elongated structural members having a

substantially slender cross section connected together to form a hexagonal network of said hexagonal honeycomb structure; and

(b) a plurality of reinforcing elongated structural members arranged into a triangular network superimposed to said hexagonal network wherein each triangle of said triangular network includes three reinforcing elongated structural members disposed within each hexagonal cell of said hexagonal network, and each corner of each triangular cell is connected to alternate corners of said each hexagonal cell;



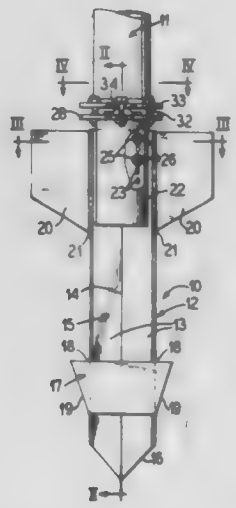
wherein adjacent triangular cells included in said triangular network are connected to each other in a corner-to-corner pattern.

4,603,520

POST MOUNTING ANCHOR BASE

Robert F. Deike, Cheyenne, Wyo., assignor to Construction Robotics, Inc., Chicago, Ill.

Filed Jan. 22, 1985, Ser. No. 693,372
Int. Cl.[4] E04B *1/00*
U.S. Cl. 52—98 11 Claims



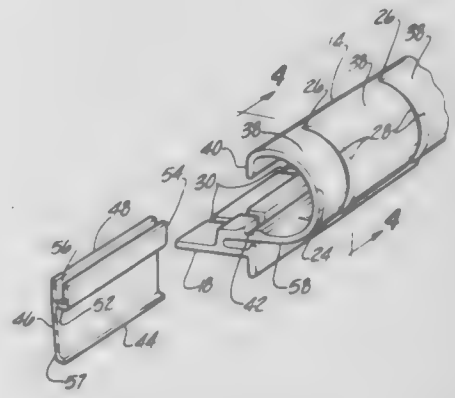
1. An adjustable break away mounting for posts on ground anchors which comprises a leg adapted to be driven upright into the ground to provide a ground anchor, an anchor plate overlying said leg and having depending means overlapping said leg, said leg and said depending means having preformed cooperating fastener receiving holes adapted to register at a plurality of locations, fasteners in selected registering holes fixedly securing the depending means to position the anchor plate at a selected level to control height of the anchor plate relative to the ground, said anchor plate having a central raised dome portion, a post having a base plate on the bottom thereof tiltably supported on said dome portion, shear bolts drawing the post base plate into clamped engagement with the domed portion of the anchor plate, means accommodating rotation of the post base plate relative to the anchor plate whereby the height, tilt, and rotation of the post relative to the leg is selectively controlled and the shear bolts will fracture upon impact of the post to cleanly separate the post from the leg.

4,603,521

SWIMMING POOL COPING AND CLIP

Jack Engelhart, Clio, Mich., assignor to Quality Pool Mfg. Co., Clio, Mich.

Filed Nov. 3, 1983, Ser. No. 548,458
Int. Cl.[4] E02D *27/00*
U.S. Cl: 52—102 15 Claims



1. A swimming pool coping for use on a swimming pool which includes a pool wall face, said coping comprising at least one somewhat resilient foldable coping piece comprising:

an inward piece portion lying generally inward of a first vertical plane substantially contiguous to said pool wall face; an outward piece portion lying generally outward of said first vertical plane; means forming at least one notch in said inward piece portion; and means forming a corresponding number of relief cuts in said outward piece portion, one each opposite each of said notches; wherein said piece is sufficiently deformable to permit the folding of said piece at each of said at least one notch and said corresponding cut;

wherein said coping piece further comprises a longitudinally extending wall portion attached to said outward piece portion and substantially contiguous to said pool wall face;

wherein said inward piece portion comprises a plurality of semi-cylindrical segments disposed parallel to said longitudinally extending wall portion;

wherein said coping piece further comprises a longitudinally extending flange disposed somewhat coplanar with said longitudinally extending wall portion, joining said segments;

wherein said coping piece comprises means forming an upwardly facing groove therein between said inward and outward piece portions, disposed substantially near said first vertical plane, and wherein said flange extends downwardly towards said groove means; and

wherein said coping comprises a plurality of abuttable coping piece ends, and at least one clip slidably engageable with adjacently disposed coping piece ends so as to simultaneously splice said abutting coping piece ends together and align said upwardly facing groove means and said downwardly extending flanges on said abutting piece ends.

4,603,522

HINGEABLE CONNECTION DEVICE FOR THRU THE SLAB CONNECTIONS IN FOLDABLE BUILDING CONSTRUCTION

Delp W. Johnson, 240 Oakview Dr., San Carlos, Calif. 94070

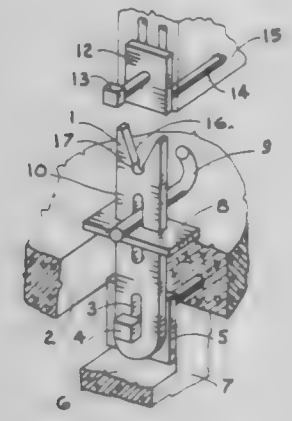
Filed Aug. 12, 1983, Ser. No. 522,574
Int. Cl.[4] E04B *1/344;* E04G *21/14*
U.S. Cl. 52—125.4 20 Claims

1. In the method of constructing buildings with folding slabs, a connection device for connecting overlying ceiling slabs to the hinged edge of the underlying wall slabs after said slabs have been cast, said connection comprising,

at least one access slot thru said ceiling slab, minimum width of said slot equal to the thickness of said wall slab, and said

access slot located in said ceiling slab according to the footprint location of said hinge edge of said wall slab in the erected building, and in addition,

an elongated connecting member, said member less in width than said access slot, and thickness of said wall; and said member capable of being installed from above said overlying slab down thru said access hole to engage a pivot means located in edge of said underlying wall slab, and in addition,



a restraining means provided to limit the vertical movement of said elongated member from passing downward all the way thru said access slot, and;

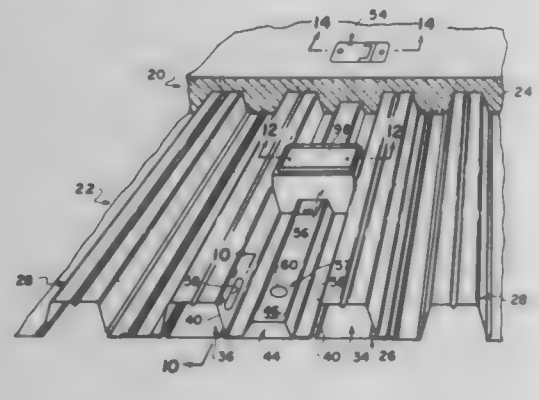
means provided in said elongated device to permit said overlying slab to move upward, and then said elongated member to engage said pivot means, and to elevate said pivot means and permit said wall to rotate to a vertical dependent position, and lowering said ceiling slab causes said wall to come to bear on a supportive surface, and said elongated member to guide said ceiling slab to a precise position bearing on said wall.

4,603,523

UNDERFLOOR ACCESS HOUSING

Raymond E. Albrecht, Sewickley, and Paul L. Haskins, Aliquippa, both of Pa., assignors to H. H. Robertson Company, Pittsburgh, Pa.

Filed Jun. 20, 1984, Ser. No. 622,481
Int. Cl.[4] E04B *5/48*
U.S. Cl. 52—221 **12 Claims**



1. An access housing in combination with a metal cellular flooring unit, said flooring unit providing generally parallel enclosed cells separated by troughs, each of said cells presenting a crest and webs depending therefrom and connected to valleys forming part of said troughs, said housing spanning between the crests of two of said cells and comprising:

a top wall having an access opening:

distinct perimeter walls including end walls depending toward the webs of said two of said cells and side walls depending toward the flooring unit, said side walls extending into the region between said two of said cells and having lower perimeter edges contoured to match the contour of that portion of said flooring unit in the region between the crest of two of said cells;

the webs of said two of said cells having generally vertically presented slots;

flexible connecting means presented by said end walls, engaging said slots and connecting said housing to said flooring unit; and

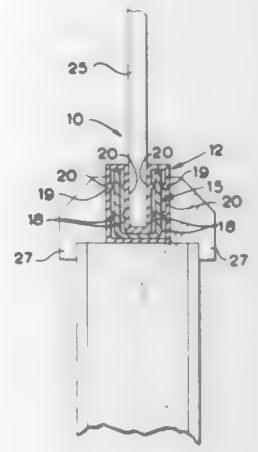
defectable means provided by each of said side walls, engaging a surface of said flooring unit intermediate of said two of said cells, being deflected, and urging said housing upwardly relative to said flooring unit to maintain said connecting means engaged in said slots.

4,603,524

FIRE RESISTANT GLAZING SYSTEM

Robert Mann, Exeter, England, assignor to Lorient Polyproducts Ltd., Exeter, England

Filed Jul. 25, 1984, Ser. No. 634,416
Claims priority, application United Kingdom, Jul. 28, 1983, 8320324
Int. Cl.[4] E06B *1/04;* **E04C** *2/54;* **E04F** *19/02*
U.S. Cl. 52—232 **9 Claims**



1. A glazing strip for mounting a pane, the strip including an extrusion of U-shape cross-section to define a channel for receiving a marginal edge portion of the pane to be mounted, the extrusion being hollow to define a U-shaped void in which is housed intumescent material, the intumescent material being in the form of a U-shaped strip which partially fills the void to define a cavity between the intumescent strip and the internal side walls of the extrusion.

4,603,525

STORAGE VESSEL

Stuart D. Byers, and John F. Clark, both of Mississauga, Canada, assignors to Crophandling Systems Limited, Mississauga, Canada

Filed Jul. 25, 1983, Ser. No. 516,987
Claims priority, application Canada, Mar. 22, 1983, 424161
Int. Cl.[4] E04B *1/32*
U.S. Cl. 52—245 **1 Claim**

1. A cylindrical storage vessel for water and other fluids which create high hydrostatic pressures, comprising:

a vertical cylindrical wall having a thickness formed of a plurality of flangeless plates, each of substantially the same height, and each being substantially rectangular and having series of holes in margins which are contiguous with its respective upper margin, lower margin right-hand and left-hand edge margins edges; and a horizontal foundation;

each of said plates having a lower portion and an upper portion, and an inner surface and an outer surface;

said storage vessel being assembled by fastening said plates together using headed fasteners passing through holes in at least two overlapping plates, in each instance;

where said vessel comprises a plurality of rows of plates, where each successive higher row of plates is placed so that at least a lower outer surface portion of each row

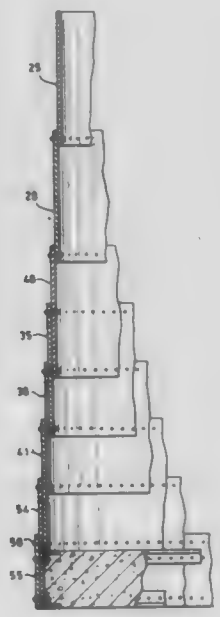
contacts a higher inner surface portion of a next successive lower row of plates;

said vessel being so constructed that in its lower portion the wall thickness thereof comprises at least two thicknesses of said plates, where said plates are placed in the following manner:

a first row of plates is a lowermost row in said a lower portion of said vessel, there are a plurality of intermediate rows of plates in said lower portion of said vessel, and there is an uppermost row of plates in said lower portion of said vessel;

each of said plates in each intermediate row of plates is placed so that its upper inner surface is in surface-to-surface contact with at least the a lower half of the a lower outer surface of a next successive higher row of plates, and its lower outer surface is in surface-to-surface contact with at least an upper half and upper inner a next successive lower row of plates;

the left-hand and right-hand edges of each of said plates in each row of plates are marginally staggered with respect to the left-hand and right-hand edges of each of the plates in the next successive higher and lower rows of plates, respectively; so that for each row of plates the upper portion of the right-hand edge of each plate thereof is in edge-to-edge contact with the lower portion of the left-hand edge of a plate in the next successive higher row of plates;



and in said lower portion of said vessel, from the upper margin of said lowermost row of plates to the lower margin of said uppermost row of plates in said lower portion of said vessel, the successive rows of plates are so placed that there are three thicknesses of plates at each the upper margin of a first lower row of plates; comprising said upper margin, an intermediate portion of the first next successive higher row of plates, and the lower margin of the second next successive higher row of plates;

where said fasteners pass through said series of holes in said upper margin of the first lower row of plates, and thence through a series of holes in the intermediate portion of the first next successive higher row of plates, and thence through said series of holes in said lower margin of said second next successive higher row of plates; and also through the series of holes at the right-hand and left-hand margins of said plates, and such additional holes near the right-hand and left-hand margins in the upper and lower portions thereof as are necessary to accommodate said fasteners passing through said three thicknesses of plates at said margins;

and where the wall of said vessel in its upper portion above said lower portion comprises only a single thickness of plates except where the marginal edges of the plates in any one row marginally overlap the edges of the next contiguous plates in that same row, and where the upper margins of the plates in any one row marginally overlap the bottom margins of the plates in the next successive higher row of plates.

4,603,526

GROUND SECURING DEVICE

Jean-Jacques Bollmann, Löwenstrasse 29, CH-8021 Zürich 1, Switzerland

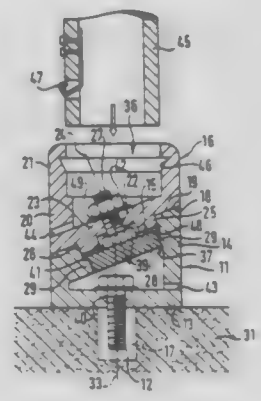
PCT No. PCT/CH84/00193, § 371 Date Oct. 15, 1985, § 102(e) Date Oct. 15, 1985, PCT Pub. No. WO85/03731, PCT Pub. Date Aug. 29, 1985

PCT Filed Dec. 10, 1984, Ser. No. 793,072

Claims priority, application Switzerland, Feb. 16, 1984, 746/84; European Pat. Off., Oct. 10, 1984, 84112151.0

Int. Cl.[4] E02D *27/42*

U.S. Cl. 52—296 **9 Claims**



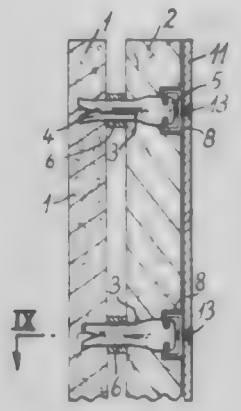
1. A base support for fastening a pole standing off from a foundation, provided with a base member or an anchor body having below a base wall being attachable in relation to a foundation by a central anchor bolt or a connecting bolt and rotatable around a first rotation axis which is substantially perpendicular to the foundation, above it an all around running side wall and on the top an access opening surrounded by a ring-shaped bearing surface proceeding transversally to the base wall and showing such a dimension that through the access opening the anchor bolt is insertable and accessible, and with a pole supporting member presenting at the top a connecting area for the pole, below an all around running side wall and at its bottom a mounting wall having a ring-shaped supporting surface which is complementary to the bearing surface, whereby the mounting wall is provided with a central boring for permitting a rotation around a second rotation axis proceeding perpendicular to the bearing or supporting surface, whereby the central boring serves for passing through a stud bolt which has a perpendicular position to the bearing or supporting surface and secures the mounting wall to the base wall, thus establishing a firm axial clamp joint between the bearing and the supporting surface, the stud bolt being axially braced against the mounting wall and accessible through an access opening in the upper region of the pole supporting member, characterized in that radially outside the access opening (**15**), between the base wall (**13**) and the mounting wall (**23**), an axial, dynamically balanced insert connection (**25**, **26**), is provided being concentric to a second rotation axis (**24**), and that the central stud bolt (**27**) is fastened at the base member in the peripheral area of the access opening, still radially inside the insert connection (**25**, **26**), however, by a screw joint (**37**, **37'**, **37''**), being accessible and operatable from above.

4,603,527

PREFABRICATED WALL FOR THE CONSTRUCTION OF HOUSES AND BUILDINGS

Antoine Vercelletto, Mamers, France, assignor to Enterprise Vercelletto, Mamers, France

Filed Jun. 12, 1984, Ser. No. 620,082
Claims priority, application France, Jun. 21, 1983, 83 10232
Int. Cl.[4] E04B *2/02*
U.S. Cl. 52—410 7 Claims



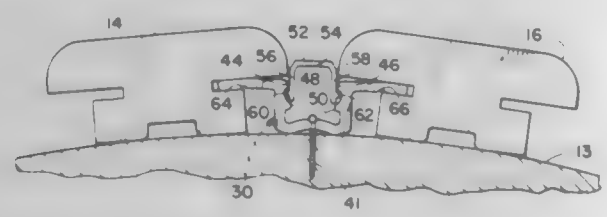
1. A prefabricated wall constituted by two panels respectively of concrete and of insulating material, said panels being joined together by means of a series of coupling elements so as to leave an air gap between said panels, each coupling element being carried at one end by the concrete panel, engaged at the other end through the insulating panel and joined on the other side of said insulating panel to a retaining member placed against the corresponding face of said panel, wherein the coupling elements consist of anchors each having a head remote from the end which is embedded in the concrete panel, said head being provided with notches adapted to permit resilient attachment of a sectional member having a generally U-shaped cross-section and constituting a retaining member for a series of coupling anchors in aligned relation, said retaining member being placed astride the corresponding heads of the coupling anchors, said anchors being disposed in planes at right angles to the axis of the corresponding retaining member whilst the notches are formed in the edges of the anchor heads for receiving fastening flanges provided on the side portions of said retaining member, and spacers carried by the coupling elements and in contact both with the concrete panel and with the insulating panel thereby to maintain said air gap.

4,603,528

PANEL INSTALLATION

Helmut Sigerist, Fort Langley, Canada, assignor to Venturetech Enterprises, Inc., Vancouver, Canada

Filed Jul. 2, 1985, Ser. No. 751,066
Int. Cl.[4] E04C *1/34*
U.S. Cl. 52—464 6 Claims



1. A panel installation on a supporting surface which comprises:

multiple panel pieces having front and back sides one piece beside an adjacent piece and their said front sides facing outwardly, the pieces having essentially parallel opposed side margins, said pieces having slots extending along each of their opposite margins indented laterally inwardly from the margins and said pieces having a shoulder defined at each side margin located between the slot which extends along the margin and the front side of the piece, the shoulders of adjacent pieces being laterally spaced from each other,

an elongate anchoring element of generally U-shaped cross section securing adjacent pieces through said margins to said surface, said anchoring element having a base web which is adjacent said surface and opposed upstanding flange portions joined to said base web along opposite margins of the base web to define a receptor channel which faces outwardly from said surface, said anchoring element further having wing flanges joined to said upstanding flange portions forming the top of the element and said wing flanges being disposed below the shoulders of adjacent pieces, the wing flanges extending laterally outwardly and fitting within the slots of adjacent panel pieces, and

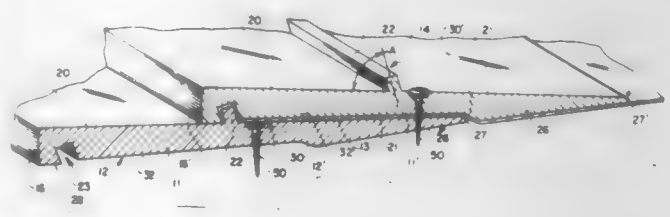
an elongate cover strip having a top, a bottom, and opposed sides mounted with the sides thereof frictionally seated within the receptor channel defined by said anchoring element and the top thereof filling the space between shoulders of adjacent pieces.

4,603,529

ROOFING SYSTEM

Duane Cronenwett, and Robert W. Gottfried, both of 911 N. Railroad Ave., West Palm Beach, Fla. 33401

Filed May 1, 1984, Ser. No. 605,848
Int. Cl.[4] E04B *1/00*
U.S. Cl. 52—536 14 Claims



10. In a roofing system, wherein a plurality of roof members are arranged to nest with respect to each other, the improvement which comprises a plurality of overlapping roof members constituting at least an upper roof member and a lower roof member, each of the roof members having a pair of generally wedge-shaped sections including a first section and a second section joined by an intermediate section, wherein the first section of the lower roof member is received substantially beneath the second section of the upper roof member, the intermediate section of the lower roof member having an upwardly-projecting flange formed thereon, and the second section of the upper roof member including a generally thickened forward portion having a bottom surface formed with a groove therein, wherein the flange on the lower roof member is received within the groove on the upper roof member with a relatively snug fit therebetween.

4,603,530

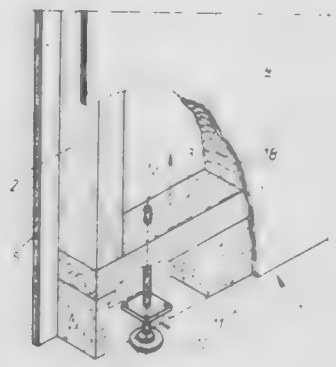
WALL ELEMENT

Karl Glockenstein, Mautner Markhofgasse 94, 1110 Wien, Austria

Filed Apr. 1, 1982, Ser. No. 364,252
Claims priority, application Austria, Apr. 7, 1981, 1610/81; Apr. 7, 1981, 1611/81; Apr. 7, 1981, 1612/81
Int. Cl.[4] E04B *5/58*
U.S. Cl. 52—741 3 Claims

1. A method of installing a prefabricated wall element, in particular for interior walls of buildings, which comprises providing a frame structure and cover plates having sufficient inherent thickness and being attached over both sides of the frame structure with projecting free edges, said frame structure including at least two frame parts which are slidable one into another, said cover plates being fixed to only one of said frame parts in prefabricated manner, and at least one other frame part which is not fixed to the cover plates and which is slidably arranged in relation to said free edges formed by both

cover plates according to a required maximum cutting distance, cutting the free edges of the cover plates projecting



beyond said frame structure to conform to dimensions of a room in which said wall element is being installed, and thereafter securing said other frame part to said cover plates.

4,603,531

STRUCTURAL PANELS

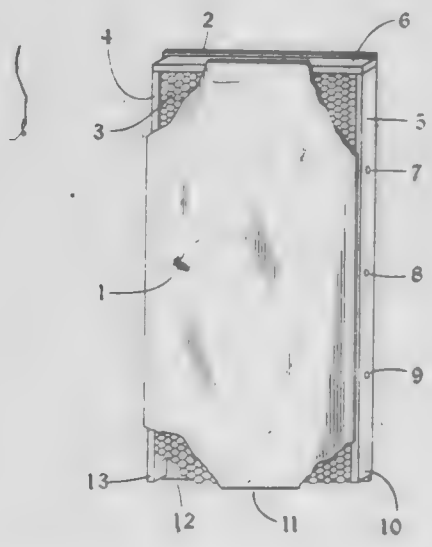
Henry R. Nash, 171 Walnut Ave., Arcadia, Calif. 91006

PCT No. PCT/US83/00403, § 371 Date Nov. 19, 1984, § 102(e) Date Nov. 19, 1984, PCT Pub. No. WO84/03728, PCT Pub. Date Sep. 27, 1984

PCT Filed Nov. 19, 1983, Ser. No. 675,925

Int. Cl.⁴ E04C *2/34*

U.S. Cl. 52—806 **4 Claims**



1. A structural panel for use in the building industry utilizing foundation plates comprising:

(a) two vertical support members having upper and lower ends,

(b) an upper horizontal member secured to said two vertical support members with glue,

(c) a covering sheet on either side of said vertical support members and said upper horizontal member, attached to said vertical support members and said horizontal member with glue said covering sheet on either side extend downward beyond the lower ends of the vertical support members such a distance that when the lower ends of the vertical support members rest upon the foundation plate the lower ends of the covering sheets are approximately one centimeter (⅜ inch) above the foundation, and

(d) a honeycomb core which is glued to both of said covering sheets.

3. A method of constructing structural panels for use in the building industry utilizing foundation plates, which comprises the steps of:

(a) gluing two vertical support members to an upper horizontal member forming a structure having a first and second side with an upper and lower end;

(b) gluing a first covering sheet to the first side of the two vertical support members and the horizontal member;

(c) gluing a honeycomb core to the first covering sheet;

(d) gluing a second covering sheet to the second side of the two vertical support members and the horizontal member and to the honeycomb core said first and second covering sheets are glued to said two vertical supports such that their lower surfaces extend downward beyond the lower ends of the vertical support members such a distance that when the lower ends of the vertical support members rest upon the foundation plate the lower ends of the covering sheets are approximately one centimeter (⅜ inch) above the foundation.

4,603,532

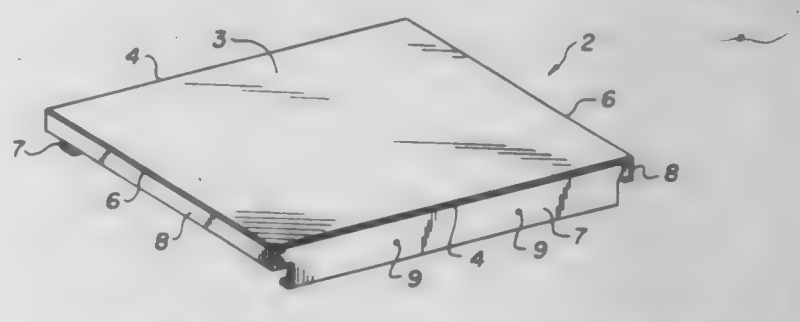
MODULAR BUILDING CONSTRUCTION

John Watson, North Vancouver, Canada, assignor to Structural Design Services, North Vancouver, Canada

Filed Nov. 6, 1985, Ser. No. 795,674

Int. Cl.⁴ E04C *2/38*; E04B *5/02*

U.S. Cl. 52—830 **3 Claims**



1. A metallic floor panel having top, sides and ends with the sides being longer than or equal in length to the ends, the panel comprising:

a flat upper surface;

end channels attached to the upper surface at each end;

side channels attached to the upper surface at each side;

the side channels extending further from the upper surface than the end channels;

major ribs, generally parallel to the ends of the panel and extending the width of the panel;

minor ribs arranged between the major ribs and between the major ribs and the end channels;

the end channels having lower surfaces generally parallel to the top surface to enable mounting of the panel to a main beam of a building.

4,603,533

APPARATUS FOR MANUFACTURING DISCRETE LAYERED UNITS FROM A WEB

Carroll Musick, 97 Union St., Erwin, Tenn. 37650

Continuation-in-part of Ser. No. 248,486, Mar. 27, 1981, Pat. No. 4,479,295. This application Jul. 13, 1983, Ser. No. 513,175

Int. Cl.⁴ B65B *13/18*

U.S. Cl. 53—117 **24 Claims**

1. An apparatus for folding a web of material into a serpentine configuration comprising:

a chute for receiving the web of material;

feed means for feeding the web in an initial feed path toward the chute at a selected feed rate;

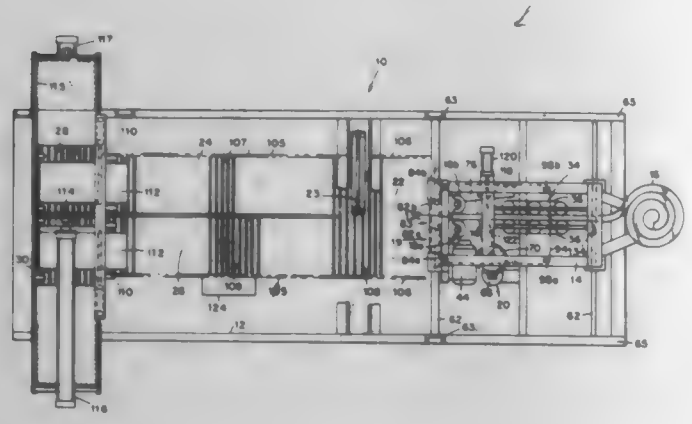
means for reciprocating said feed means at a selected reciprocation rate in a transverse direction generally perpendicular to the initial feed path;

surface defining means disposed between said feed means and said chute;

an aperture defined in said surface defining means for admitting the web therethrough and into said chute;

means for moving said aperture at the selected reciprocation rate in a reciprocal motion to follow the motion of said

feed means so that said feed means; said surface defining means and said aperture operate cooperatively to fold the



web in the chute and said surface defining means urges the folded web into and through the chute.

4,603,534

APPARATUS FOR WRAPPING ARTICLES, ESPECIALLY CIGARETTE GROUPS

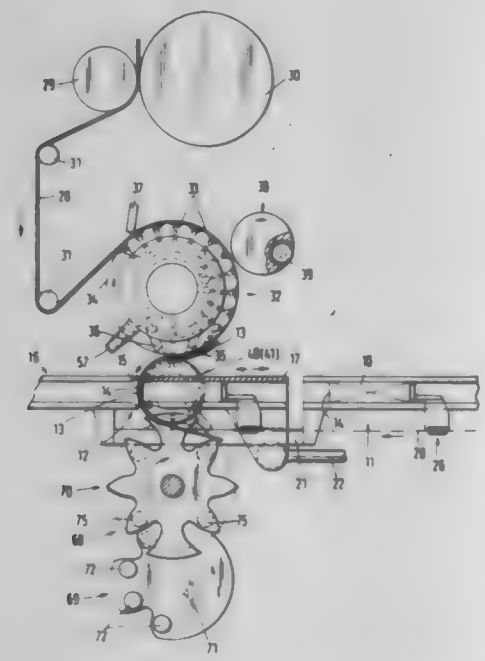
Heinz Focke, Verden, Fed. Rep. of Germany, assignor to Focke & Co., (GmbH & Co.), Verden, Fed. Rep. of Germany

Filed Oct. 30, 1984, Ser. No. 666,516

Claims priority, application Fed. Rep. of Germany, Nov. 9, 1983, 3340408

Int. Cl.[4] B65B *19/24*

U.S. Cl. 53—231 **11 Claims**



1. An apparatus for wrapping articles conveyed in a first transport direction in a blank of material which is severed from a sheet of said material comprising:

first endless conveyor means adapted to hold said sheet material by suction and to cut said sheet material into desired blank portions;

second endless conveyor means adapted to transfer said cut sheet material from said first endless conveyor means and to retain said blank portion on the surface thereof in at least two lateral edge regions and to rotate said blank to a position which is transverse to the direction of transport of the article; and

means for pulling said blank from said second endless conveyor means and wrapping said blank around the article in a U-shaped manner, the improvement wherein:

said first endless conveyor means is driven to rotate continuously and said second endless conveyor means is driven intermittently between a rotational phase and a standstill phase, whereby during said standstill phase said means for pulling the blank operates to remove the blank from said second endless conveyor.

4,603,535

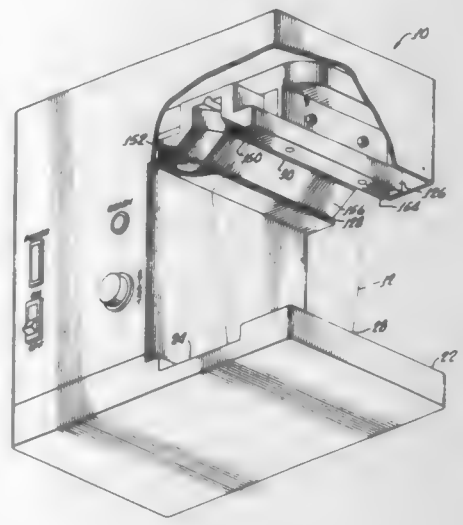
PORTABLE SEALING DEVICE

Stephen K. Schultheis, Laguna Hills, Calif., assignor to Container Development Company, Costa Mesa, Calif.

Filed May 28, 1985, Ser. No. 738,478

Int. Cl.[4] B65B *7/16*

U.S. Cl. 53—373 **23 Claims**



1. Apparatus for sealing plastic coated paperboard cartons comprising:

a frame;

a fixed jaw mounted to said frame;

a movable jaw;

means for heating said fixed and movable jaws;

means for mounting said movable jaw to said frame for enabling controlled movement of said movable jaw from a spaced apart relationship with said fixed jaw to a position for providing sufficient pressure to sealable portions of a carton disposed between the fixed and movable heated jaws to cause sealing of said sealable portions;

means for moving said movable jaw; and

temperature regulation means connected in an operative relationship with the heating means for enabling said carton sealable portions to remain adjacent to said fixed jaw after sealing thereof without causing unsealing of said carton sealable portions.

4,603,536

APPARATUS FOR FORMING A WEB OF FILM INTO A TUBULAR SHAPE IN A FORM, FILL AND SEAL PACKAGING MACHINE

Roland de la Poype, Paris, France, assignor to Societe D'Etude et D'Application Industrielle de Brevets, Villejuif, France and Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Feb. 1, 1985, Ser. No. 697,532

Int. Cl.[4] B65B *9/08, 61/18*

U.S. Cl. 53—410 **12 Claims**

11. A process for creating a flexible container comprising the steps of:

feeding a web of film into a form, fill and seal packaging machine;

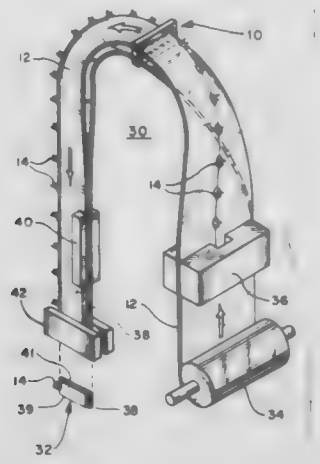
attaching fitments to the web of film while the film in a substantially flat condition;

passing the web of film with attached fitments through a channel with a cut out;

sealing an end of the web of film;

sealing a side of the web of film;

filling the web of film with a product;
sealing a second side of the web of film;



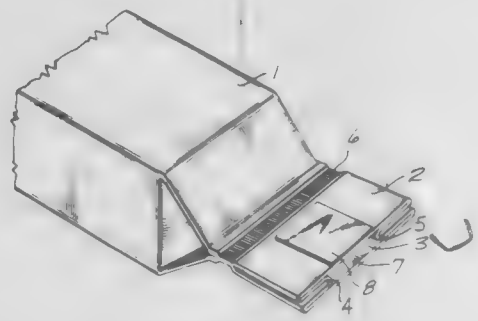
creating an oblique weld between a fitment and a side weld; and
severing the web of film into an individual package.

4,603,537

METHOD FOR MAKING A BAG WITH A BAG MOUTH CLOSURE

Vincent C. Pace, Bellevue, Wash., assignor to Formost Packaging Machines, Inc., Woodinville, Wash.

Division of Ser. No. 440,898, Nov. 12, 1982. This application Mar. 25, 1985, Ser. No. 715,427
Int. Cl.⁴ B65B *9/06, 61/00*
U.S. Cl. 53—415 **3 Claims**



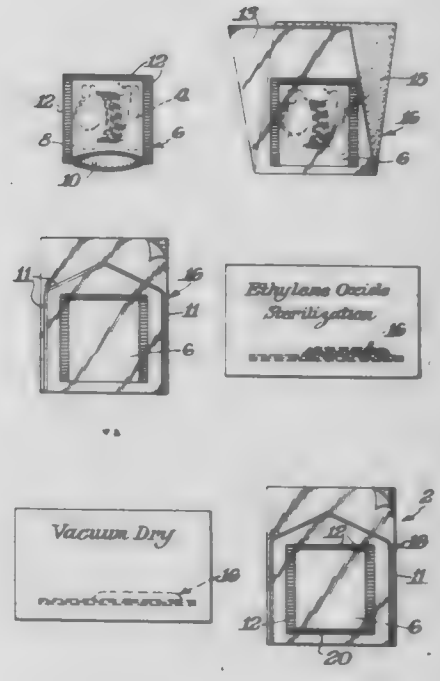
1. The process of making reclosable bags which comprises moving bag-making sheet material lengthwise, adhesively applying to such bag-making sheet material stiffening patches at predetermined intervals lengthwise of the direction of movement of the bag-making sheet material, forming the bag-making sheet material into a tube, inserting into the tube between the stiffening patches product to be packaged, sealing the tube at both sides of each patch to form spaced seals with each seal located adjacent to a stiffening patch and between such patch and adjacent product received in the tube, severing the tube along a cutting line between a seal and an adjacent stiffening patch carried by the bag material to form two adjacent ends of two adjacent bags with the seal adjacent to such cutting line entirely on the adjacent end of a first bag and the adjacent stiffening patch carried entirely by the adjacent end of a second bag, thereby enabling subsequent parting of the parts of the seal of the second bag between the stiffening patch carried thereby and the product in such second bag and thereby opening the second bag to afford access to the product therein through the bag end carrying the stiffening patch and enabling manual bending of the stiffening patch carried by such bag end and the sheet material to which such stiffening patch is applied about a straight line parallel to the ends of the second bag for reclosing the end of the second bag carrying the stiffening patch.

4,603,538

METHOD OF PREPARING A DOUBLE STERILE PACKAGE

William H. Shave, Amityville, N.Y., assignor to Pfizer Hospital Products Group, Inc., New York, N.Y.

Filed Nov. 15, 1984, Ser. No. 671,727
Int. Cl.⁴ B65B *31/02, 55/10, 55/18*
U.S. Cl. 53—425 **4 Claims**



1. A method of preparing a sterile double package including (1) a generally rectangular sealed inner package containing a sterile surgical article and comprising two opposed sealable layers of material sealed adjacent their peripheries and (2) a generally rectangular sealed outer package totally surrounding said inner package and comprising two opposed sealable layers of material sealed adjacent their peripheries with at least one of said opposed layers being vapor permeable, said inner package not being constrained from movement within said outer package, comprising the steps of

(a) inserting a surgical article into said inner package, said inner package being sealed on three sides and open on the fourth side;

(b) inserting said inner package between said opposed layers of said outer package, with no more than three sides of said layers of the outer package being sealed, and then sealing the remaining sides of the outer package to totally enclose the inner package to form a double package;

(c) sterilizing the contents of the outer package by perfusion of a sterilizing gas through said vapor permeable layer thereof;

(d) removing gas vapors through vacuum, and,

(e) sealing the fourth side of the inner package adjacent the periphery thereof through the outer package,

with the conditions of the sealing operation of said step (e) and the materials of said opposed layers of said inner and outer packages being such that neither layer of said outer package is sealed to the adjacent layer of said inner package and said opposed layers of said outer package are not further sealed together during the sealing operation of said step (e).

4,603,539

METHOD AND APPARATUS FOR AUTOMATICALLY FRAMING SLIDES IN A FRAMING APPARATUS

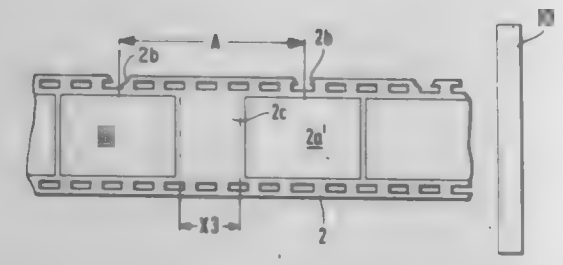
Herbert Müssig, Murnau, and Claus Pohl, Eschenlohe, both of Fed. Rep. of Germany, assignors to Geimuplast Peter Mundt GmbH & Co. KG., Farchant, Fed. Rep. of Germany

Filed Sep. 30, 1983, Ser. No. 537,449

Claims priority, application Fed. Rep. of Germany, Oct. 5, 1982, 3236845

Int. Cl.[4] B65B *63/00*

U.S. Cl. 53—435 10 Claims



1. A method for automatically framing slides in a framing apparatus in which the slides are subjected at a framing station at the leading end of the slide film passing through the filming apparatus to a framing cycle which comprises individual severing of slides together with introduction in a ready-positioned frame and subsequent transmission of the framed slide to a storage box, wherein the position of the individual slides on the film is detected by an automatic film scanning apparatus of a control device which controls the relationship of the film feed to the severing apparatus of the framing station in the sense of arranging the lines of cut in a correct relationship to the images of the individual slides, said method comprising:

providing a slide film having a plurality of individual slides with consecutive individual slides intended to be in spaced relationship at a predetermined spacing defined by spacer strips therebetween having an intended predetermined width along the slide film, and with at least one marginal notch for each slide and intended to have a predetermined reference position with respect to an associated slide to enable it to be used as a frame marking detectable by a film scanning means,

measuring the passing slide film for the spacing between successive marginal notches,

comparing the measured spacing between notches with a reference notch spacing value corresponding to a normal notch spacing between successive notches,

sensing whether a spacer strip is present for each notch in a predetermined spacing tolerance range measured from the predetermined reference position, and

cutting the film between successive slides only if the measured marginal notch spacing corresponds with the given notch spacing reference value resulting from correct operation of the notching apparatus and correct feeding of the slide film in the camera, and if a spacer strip has been sensed and has a width that corresponds with the predetermined spacing tolerance range between consecutive slides.

4,603,540

APPARATUS FOR MAKING PACKAGING BAGS

Georg Kopp, Uhwiesen, Switzerland, assignor to SIG Schweizerische Industrie-Gesellschaft, Neuhausen am Rheinfall, Switzerland

Filed Jun. 20, 1984, Ser. No. 622,743

Claims priority, application Switzerland, Jun. 20, 1983, [illegible]

Int. Cl.[4] B65B *9/02*

U.S. Cl. 53—546 20 Claims

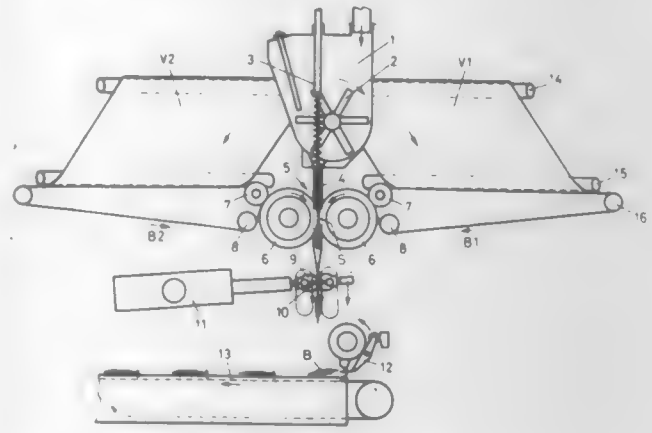
1. In an apparatus for making sealed packages from two superposed, sealable flexible wrapper sheets, comprising

(a) first and second support rings each having a peripheral guiding surface of outwardly convex circumferential course; said support rings being radially adjacent for guiding respective first and second wrapper sheets towards one another into a superpositioned alinged relationship;

(b) means defining a plurality of radial grooves on the guiding surface of each said support ring;

(c) first and second sealing discs supported coaxially with said first and second support rings, respectively, at opposite sides thereof; each sealing disc having a peripheral working surface; on each side of the first and second support rings one of said first sealing discs and one of said second sealing discs forming a sealing disc pair for longitudinally pressing and sealing together said first and second wrapper sheets along opposite edge zones thereof, whereby opposite longitudinal seams are formed in the superposed running sheets parallel to a running direction thereof;

(d) means for rotatably supporting said sealing discs;



(e) first and second sheet deflecting rollers situated radially adjacent and upstream of the respective said first and second support rings as viewed in said running direction for defining loop-around paths for said first and second wrapper sheets on the respective said first and second support rings;

(f) first and second shaping means carried on the respective first and second support rings for shaping said first and second wrapper sheets immediately upstream of said sealing discs;

(g) transverse sealing means situated downstream of said sealing discs for sequentially providing transverse seams on said sheets; and

(h) cutting means for severing the sealed sheets into predetermined lengths whereby packages of defined dimensions are obtained.

4,603,541

PACKAGING MACHINE

Emmerich Medwed, Wolfertschwenden, Fed. Rep. of Germany, assignor to Multivac Sepp Haggenmuller KG, Fed. Rep. of Germany

PCT No. PCT/EP85/00045, § 371 Date Sep. 26, 1985, § 102(e) Date Sep. 26, 1985, PCT Pub. No. WO85/03488, PCT Pub. Date Aug. 15, 1985

PCT Filed Feb. 7, 1985, Ser. No. 783,228

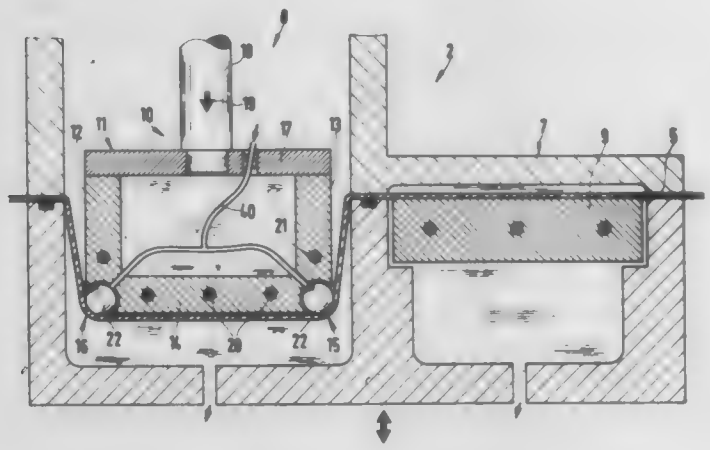
Claims priority, application Fed. Rep. of Germany, Feb. 9, 1984, 3404619

Int. Cl.[4] B65B *47/04;* B29C *51/08, 51/30*

U.S. Cl. 53—561 6 Claims

1. Packaging machine comprising a molding station for molding a container from a material web by means of a molding die provided with at least one side wall, a bottom area and an edge area therebetween, rotatably supported roll or roller bodies in the edge area and a support securing the roll or roller body against falling out and having a mounting, wherein the roll or roller body is disposed in an emerged or retracted manner such that part of the surface thereof forms part of the edge area, characterized in that the support (24) comprises a friction bearing (31) having a bearing seat (38) adapted to the

shape of the roll or roller body (22) and that a channel (39) having one end opening into the bearing seat (38) and the other



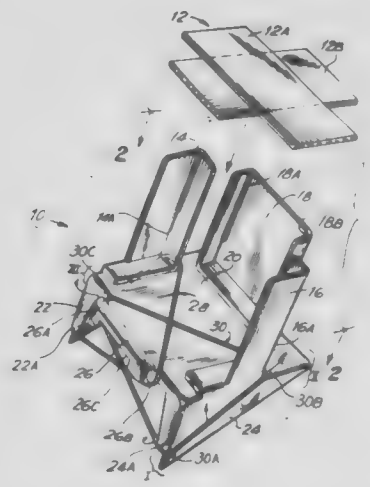
end connectable with a conduit (40) for supplying gaseous medium is provided within the support (24).

4,603,542

BOOKLET CRISS-CROSS STACKING FIXTURE

Eli Reiter, Dix Hills, and Joseph R. Robson, Smithtown, both of N.Y., assignors to General Aero Products Corp., Copiague, N.Y.

Filed Nov. 5, 1984, Ser. No. 668,204
Int. Cl.[4] B65B *27/08;* B65H *33/08*
U.S. Cl. 53—585 6 Claims



1. A fixture for facilitating the development of a criss-cross stack of interleaved articles of a predetermined configuration, comprising:

a cradle having a planar upper surface oriented at an acute angle to the horizontal and a forward supporting wall between said planar upper surface and the horizontal,

a pair of opposed side posts substantially perpendicular to said upper surface for supporting one group of said articles oriented in a first direction,

a rear wall member for supporting a second group of said articles oriented in a second direction, said articles comprising substantially rectangular members corresponding to said predetermined configuration and having opposite side and end edges, each of said members having a longitudinal axis parallel to said side edges, said first direction of said one group of said articles comprising even alternate ones of said members having said longitudinal axis thereof aligned, said second direction of said second group of said articles comprising odd alternate ones of said members having said longitudinal axis thereof aligned and also perpendicular to said longitudinal axis of said even alternate ones of said members, each of said pair of opposed side posts comprising a side wall portion and a back wall portion substantially perpendicular to said side wall portion, thereby defining a corner edge portion therebetween, said side wall portions being spaced apart to accommodate said end edges of said odd alternate ones of said members therebetween along said corresponding longitudinal axis thereof, and said rear wall portions being aligned with each other to define a discontinuous supporting surface for one of said side edges of said members,

projecting means on said forward wall defining multiple holding positions thereon, said projecting means comprising a flange portion attached to said forward supporting wall, said flange portion having a first corner edge and an opposite second corner edge, said forward wall having first and second corner legs extending between said planar upper surface and said horizontal and thereby defining said acute angle, and

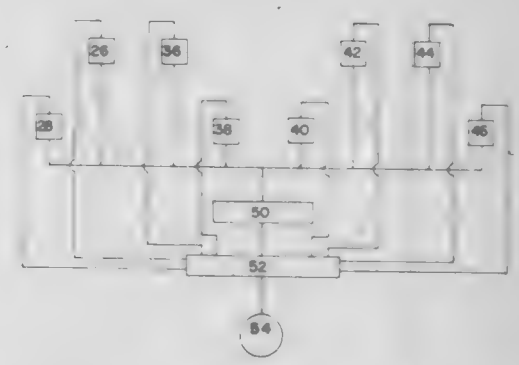
retaining means initially occupying inactive positions on said upper surface and around said projecting means during the loading into said cradle of said articles, and for subsequently occupying stabilizing positions around said stack during removal of said articles from said cradle, each of said forward wall corner legs including a discontinuous surface to define a corner receiving area for said retaining means.

4,603,543

COTTON HARVESTER HARVESTING ROTOR SPEED MONITOR

Charles R. Cornell, Naperville, Ill., assignor to J. I. Case Company, Racine, Wis.

Filed Aug. 1, 1984, Ser. No. 636,518
The portion of the term of this patent subsequent to Apr. 1, 2003, has been disclaimed.
Int. Cl.[4] A01O *46/08*
U.S. Cl. 56—10.2 5 Claims



1. A cotton harvester with a plurality of harvesting rotors having a rotor speed monitor system comprising:

rotor revolutional speed counting means;

averaging means to determine the average rotational speed of the combined rotors;

alarm means activated by a predetermined differential rotational speed of rotor from the average rotational speed of said combined rotors; and

alarm deactivating means deactivating the alarm when the average rotor rotational speed of said rotors is below a predetermined level.

4,603,544

LITTER RETRIEVING MACHINE

Wesley D. Hayhurst, Tulia, Tex., assignor to Proficient Systems, Inc., Dallas, Tex.

Filed Jan. 28, 1985, Ser. No. 695,799
Int. Cl.[4] A01D *46/00*
U.S. Cl. 56—328 R 2 Claims

1. A litter retrieving machine comprising:

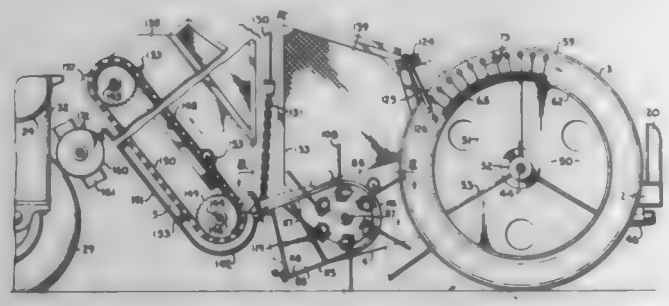
(a) a framework for movement over a ground surface;

(b) a ground engageable rotating drum mounted in said framework and having opposite end rings secured together by a plurality of channel members extending between said rings and forming a drum circumference;

(c) said channel members being generally C-shaped with opposed, inwardly extending flanges defining a slot therebetween and with a connecting web;

(d) said connecting web being crowned toward said slot and having a radius of curvature greater than the radius of curvature of said drum;

(e) a plurality of fingers mounted to said drum for engagement and retrieval of litter and having bases slidably received in said channel members and finger shafts projecting outwardly through said slots, said bases being trapped



in said channel members and urged toward said flanges by said web;

(f) stripper means for removing said litter from between said fingers;

(g) conveyor means for transporting said litter from said stripper means; and

(h) a hopper mounted in said framework and communicating with said conveyor means.

4,603,545

YARN TWISTING AND WINDING APPARATUS

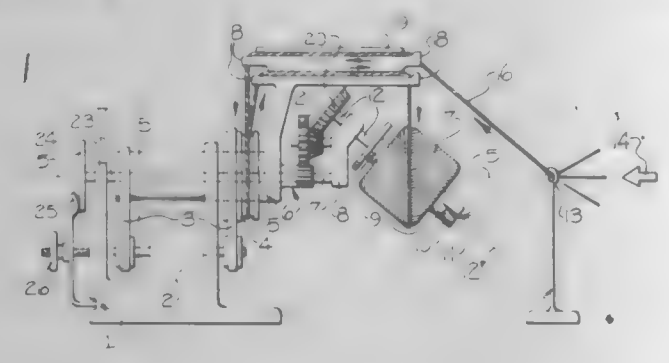
Georg Siebert, Hückeswagen, Fed. Rep. of Germany, assignor to Artec Design GmbH, Fed. Rep. of Germany

Filed Aug. 14, 1985, Ser. No. 765,707

Claims priority, application Fed. Rep. of Germany, Aug. 16, 1984, 3430046; Jul. 20, 1985, 3525996

Int. Cl.[4] B65H *54/66;* D01H *7/50*

U.S. Cl. 57—68 **22 Claims**



1. A yarn twisting and winding apparatus adapted to produce a yarn ball, and which includes yarn takeup means comprising a yarn support spindle (12) which defines a spindle axis (12'), a yarn twisting flyer (19) mounted for rotation about said yarn support spindle and so as to define a central axis (15), and flyer drive means (2,3,5) for rotating said flyer about said central axis, characterized in that said yarn takeup means includes means (7,8) mounting said yarn support spindle such that said spindle axis is angularly disposed with respect to said central axis and such that said yarn support spindle is rotatable about both said central axis and said spindle axis, and drive transmission means (20,21,29) operatively connected to said flyer drive means for concurrently rotating said yarn support spindle about said central axis and said spindle axis.

4,603,546

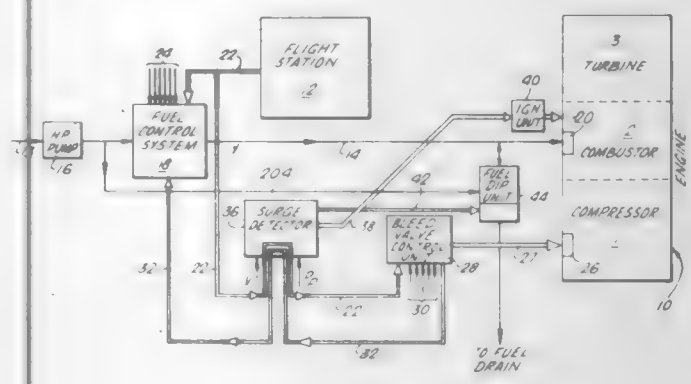
CONTROL SYSTEMS FOR GAS TURBINE AEROENGINES

Brian J. Collins, Box 63, Mickleover, England, assignor to Rolls-Royce Limited, London, England

Filed Jul. 16, 1985, Ser. No. 755,433

Int. Cl.[4] F02C *9/18, 9/52*

U.S. Cl. 60—39.02 **12 Claims**



1. A method for automatically controlling compressor surge conditions in a gas turbine aeroengine, comprising in automatic sequence the steps of:

(a) continuously monitoring the valve of the pressure at a predetermined location in the compressor;

(b) detecting the onset of compressor surge conditions by detecting occasions when the ratio of the first derivative with respect to time of the monitored pressure to the monitored pressure itself is less than a predetermined reference value; and

(c) initiating action to control the surge whenever the onset of surge conditions is detected.

4,603,547

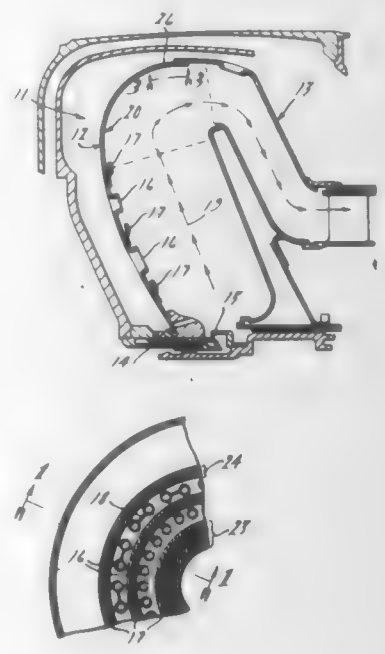
CATALYTIC RELIGHT COATING FOR GAS TURBINE COMBUSTION CHAMBER AND METHOD OF APPLICATION

William C. Pfefferle, Middletown, N.J., and Michael J. Bak, Walled Lake, Mich., assignors to Williams Research Corporation, Walled Lake, Mich.

Filed Oct. 10, 1980, Ser. No. 195,787

Int. Cl.[4] F02C *7/262*

U.S. Cl. 60—39.02 **24 Claims**



1. A gas turbine combustion chamber having a wall with an inner surface exposed to the combustion chamber flame, and a coating of a catalytic material on said surface over a large enough area thereof to cause reignition of the fuel-air mixture after flame-out.

13. A method of facilitating reignition after flame-out in a

gas turbine combustion chamber, comprising the step of applying a catalytic coating to the inner surface of said combustion chamber over a sufficient area to facilitate reignition of the fuel-air mixture in the event of a flame-out.

4,603,548

METHOD OF SUPPLYING FUEL INTO GAS TURBINE COMBUSTOR

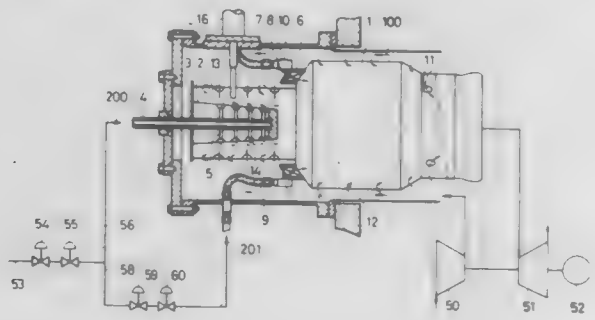
Yoji Ishibashi; Isao Sato, both of Hitachi; Fumio Kato, Toukai; Takashi Ohmori, and Noriyuki Hayashi, both of Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 6, 1984, Ser. No. 647,658

Claims priority, application Japan, Sep. 8, 1983, 58-164164

Int. Cl.[4] F02C *9/00*

U.S. Cl. 60—39.06 **9 Claims**



1. A method for supplying a fuel for a gas turbine combustor of the type which introduces high pressure air and a fuel thereinto and combusts the fuel and air to generate a high temperature turbine operating gas, and which includes a first stage combustion chamber having a first stage fuel supply means and an air supply means each disposed upstream of said combustor, and a second stage combustion chamber having a second stage fuel supply means and an air supply means each disposed downstream of said first stage fuel supply means, the method comprising the steps of supplying the fuel only from said first stage fuel supply means to only operate said first stage combustion chamber from the start of operation of said gas turbine until the gas turbine combustor is in a low output range; and supplying in a step change such that a fuel flow rate changes more rapidly than in normal load control the fuel from said second stage fuel supply means to be at a predetermined flow rate and at the same time, decreasing in the step change substantially the same quantity of the fuel, that is being supplied from said first fuel supply means, when the second stage fuel is to be supplied and wherein the second stage fuel to be supplied in a step change into the second combustion chamber is excessively charged above a predetermined value for a short period of time and, at the same time, the first stage fuel to be decreased in the step change is excessively reduced below a predetermined value.

4,603,549

EXPLOSION TYPE ROTARY TURBINE ENGINE

Hans G. Albrecht, Oberdorfstr. 5, D-5441 Hirten, Fed. Rep. of Germany

Filed Feb. 21, 1985, Ser. No. 703,839

Claims priority, application Fed. Rep. of Germany, Feb. 21, 1984, 3406187; Feb. 2, 1985, 3503563

Int. Cl.[4] F02C *5/12*

U.S. Cl. 60—39.161 **12 Claims**

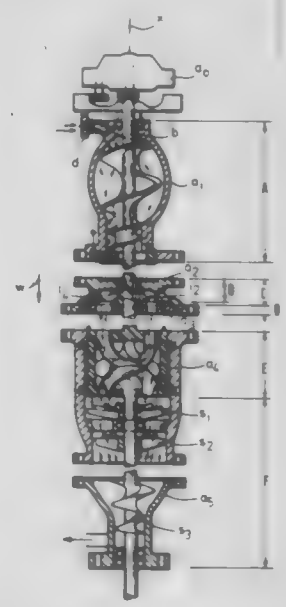
1. A turbine engine comprising:

a housing extending along an axis and having relative to an axial throughput direction an upstream housing section forming a supercharging chamber, a middle housing section forming a plurality of angularly spaced combustion chambers having radially inwardly open intake sides, and a downstream housing section, the housing having at the upstream section an intake and at the downstream section an outlet;

a shaft extending along the axis through the sections of the housing and supported in the housing for rotation in a predetermined rotational sense about the axis, the shaft forming a passage having an upstream end opening axially into the supercharging chamber downstream of the intake and a downstream end opening radially on the shaft level with the intake sides of the combustion chambers, the shaft fitting the housing at the combustion chambers so as to block the intake sides of all but the intake side angulary aligned with the downstream end of the passage;

means including a rotary-action fan rotationally fixed to the shaft in the supercharging chamber for advancing and compressing air from the intake in the direction on rotation of the shaft, whereby the compressed air can pass through the shaft passage into whichever chamber is angularly aligned with its downstream end;

means for introducing fuel and heat into the combustion chambers for mixing with air entering these chambers via the passage from the supercharging chamber and for exploding this mixture and producing high-pressure gases;



a valve plate fixed in the housing and formed with axially throughgoing ports aligned with and opening axially into the respective combustion chambers;

a rotor piston fixed on the shaft having an upstream face and at least one axially throughgoing tube having

an upstream end open at the upstream face;

a downstream end opening downstream into the downstream housing section and trailing the upstream end angularly in the rotational sense, and

a nonaxial intermediate connecting portion extending between the upstream and downstream tube ends, the upstream end being brought into axial fluid-communication alignment with each valve port on each rotation of the shaft about the axis, whereby the high-pressure gases escape from the combustion chambers through the ports and pass into the tube of the piston to convert axial movement of the gases into rotary movement of the shaft; and

an axial-throughput turbine fan on the shaft in the downstream housing section.

4,603,550

EXHAUST PARTICLE REMOVING SYSTEM FOR AN INTERNAL COMBUSTION ENGINE

Motohiro Shinzawa, Yokosuka, Japan, assignor to Nissan Motor Company, Limited, Japan

Filed Feb. 28, 1985, Ser. No. 706,795

Claims priority, application Japan, Mar. 8, 1984, 59-42895

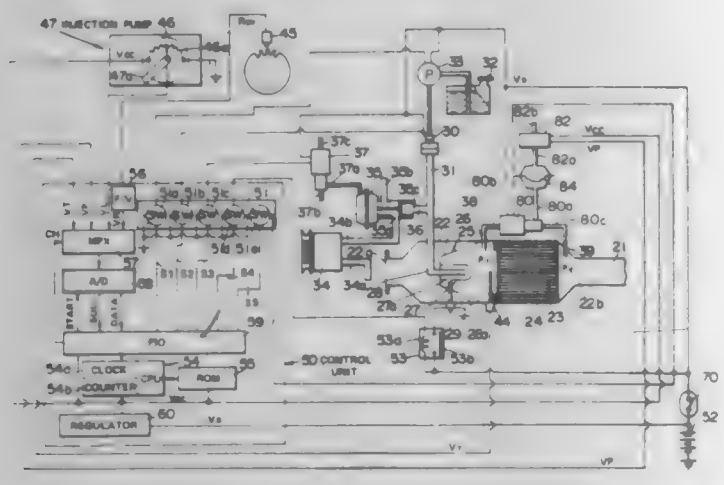
Int. Cl.[4] F01N *3/02*

U.S. Cl. 60—274 **6 Claims**

1. An exhaust particle removing system for an internal combustion engine, comprising:

(a) a filter disposed in an engine exhaust passage for trapping particles suspended in exhaust gas;

(b) a burner for burning off the particles deposited on the filter;
(c) means for sensing the pressure in the exhaust passage at a point upstream of the filter;
(d) means for sensing the pressure in the exhaust passage at a point downstream of the filter;
(e) means for determining whether or not the sensed upstream pressure is lower than a preset level;
(f) means for, when the sensed upstream pressure is not lower than the preset level, deducing the degree of clogging of the filter on the basis of the sensed upstream and downstream pressures;



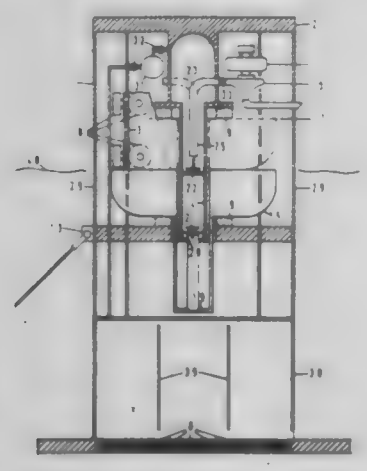
(g) means for, when the sensed upstream pressure is lower than the preset level, measuring a time elapsed since the moment at which the sensed upstream pressure dropped below the preset level;
(h) means for, when the sensed upstream pressure is lower than the preset level, deducing the degree of clogging of the filter on the basis of the time elapsed and the sensed upstream and downstream pressures obtained immediately prior to the moment at which the sensed upstream pressure dropped below the preset level; and
(i) means for controlling the burner on the basis of the deduced degree of clogging of the filter.

4,603,551

WAVE POWER CONVERTER

Peter Wood, 5 Budworth Close, Birkenhead, Merseyside, L43 9TJ, United Kingdom

PCT No. PCT/GB83/00307, § 371 Date Jul. 25, 1984, § 102(e) Date Jul. 25, 1984, PCT Pub. No. WO84/02162, PCT Pub. Date Jun. 7, 1984
PCT Filed Nov. 29, 1983, Ser. No. 637,047
Claims priority, application United Kingdom, Nov. 29, 1982, 8233949
Int. Cl.⁴ F03B *13/12*
U.S. Cl. 60—496 **15 Claims**



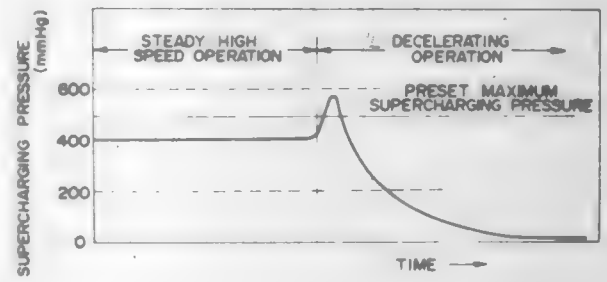
1. A wave power converter for producing energy comprising:
(a) a relatively static floatable platform for floating in water;
(b) a floating motivator buoy, said motivator vertically reciprocating relative to said platform in response to passing waves in said water;
(c) a pump, said pump comprising:
(i) a cylinder barrel mounted to said platform;
(ii) a slidable piston, said piston reciprocating in said barrel with the movement of said motivator buoy;
(iii) a water inlet located below water level, said inlet having a first non-return valve to allow water into said pump on the downward movement of said motivator buoy; and,
(iv) a water outlet located above water level, said outlet having a second non-return valve for discharging water from said pump on the upward movement of said motivator buoy;
(d) an above-water pressurized container coupled to said water outlet, said container being partially filled with a compressible medium;
(e) a water powered turbine coupled to said container, said container supplying pressurized water to said turbine;
(f) a submersible hollow ballasted caisson anchored to said platform; and,
(g) means for filling said caisson with air so as to raise said caisson.

4,603,552

SAFETY DEVICE FOR TURBOCHARGED ENGINE

Yoshinobu Kido, Hiroshima, Japan, assignor to Toyo Kogyo Co., Ltd., Hiroshima, Japan

Filed Mar. 1, 1984, Ser. No. 585,006
Claims priority, application Japan, Mar. 2, 1983, 58-34816
Int. Cl.⁴ F02B *37/00*
U.S. Cl. 60—605 **13 Claims**



1. A safety device for a turbocharged engine which is provided with a turbocharger compriing a turbine disposed in the exhaust passage and a blower disposed in the intake passage and connected with the turbine by way of a rotary shaft and in which the throttle valve is disposed in the intake passage downstream of the blower, said safety device comprising an engine protective means for controlling the maximum supercharging pressure in the intake passage, at least one pressure sensor for detecting the supercharging pressure downstream of the blower, and a control circuit which actuates said engine protective means when the supercharging pressure detected by the pressure sensor continues to be higher than a preset supercharging pressure for a predetermined time interval, said control circuit including means for generating said predetermined time interval, said means for generating said predetermined time interval shortening said time interval as the difference between the detected supercharging pressure and said preset supercharging pressure increases.

4,603,553

BALLISTIC COLD WATER PIPE

Stuart L. Ridgway, Santa Monica, Calif., assignor to R & D Associates, Marina del Rey, Calif.

Filed Dec. 11, 1984, Ser. No. 680,352
Int. Cl.⁴ F03G *7/04*
U.S. Cl. 60—641.7 **20 Claims**

1. An ocean thermal energy type conversion system for use

near a large body of water having relatively cold water at a considerable depth beneath the surface thereof, comprising:

a source of warm water;

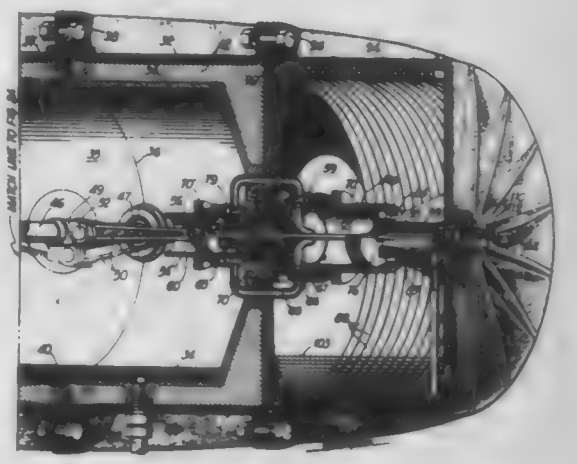
means for generating power from the difference in temperature between said warm water and said cold water; and

means for bringing said cold water up from the depths of



said body of water; said means including (1) a relatively straight pipe extending down into said body of water, (2) means for initially emptying said pipe of water, (3) nozzle means for directing a stream of water up into said pipe at high velocities with said stream spaced from the side walls of said pipe, and (4) means for collecting said water in the vicinity of the surface of said body of water.

mechanically linked with the high pressure piston and in selective and separate fluid communication with both the



condenser and the high pressure piston and cylinder assembly.

4,603,554

METHOD AND APPARATUS FOR EXTRACTING USEFUL ENERGY FROM A SUPERHEATED VAPOR ACTUATED POWER GENERATING DEVICE

Ralph J. Lagow, Anahuac, Tex., assignor to Thermal Engine Technology, Houston, Tex.

Filed Oct. 25, 1984, Ser. No. 664,792

Int. Cl.[4] F01K *11/00, 21/00*

U.S. Cl. 60—670 19 Claims

1. A power generating device comprising:

a source of superheated vapor;

a working shaft;

a high pressure piston and cylinder assembly located at least in part in a high pressure vessel containing superheated vapor, said high pressure piston being operatively linked to the working shaft and said high pressure piston and cylinder assembly being in selective fluid communication with the source of super-heated vapor; and

a final stage expansion piston and cylinder assembly located within the confines of a condenser for condensing the superheated vapor, said final stage expansion piston being

4,603,555

APPARATUS FOR CONTAINING AN ENERGY STORAGE FLYWHEEL

Rayner M. Mayer, Yateley, England, assignor to The British Petroleum Company p.l.c., London, England

Filed May 7, 1984, Ser. No. 607,630

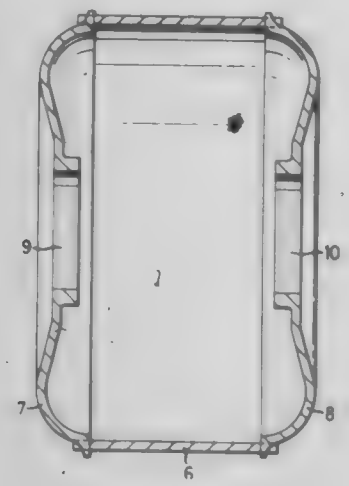
Claims priority, application United Kingdom, May 21, 1983, 8314142

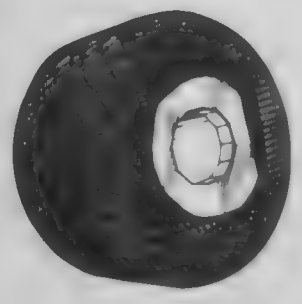
Int. Cl.[4] F15B *7/10*

U.S. Cl. 60—721 19 Claims

1. Apparatus suitable for containing a rotatable body which apparatus comprises at least two parts which together define a housing within which the rotatable body can be rotated chracterized in that the parts are secured together by a length of a high tensile strength tape which is wrapped around the parts to provide at least one layer of tape, overlapping at its edges, which envelops and is in contact with at least 50% of the surface area of the housing such that a point loading caused by the impact of the rotatable body, or a part thereof, with the inner surface of the housing is transformed into a loading over

the surface of the parts wrapped with tape, said housing being mounted and enclosed within a casing which is able to main-





tain a partial vacuum within the housing and means for maintaining the partial vacuum.

4,603,556

CONTROL METHOD AND APPARATUS FOR AN AIR CONDITIONER USING A HEAT PUMP

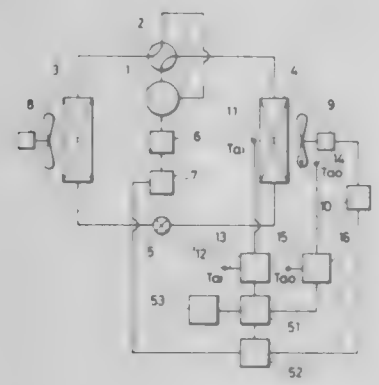
Kazutaka Suefuji; Hiromu Yasuda; Masakatsu Hayashi; Tetsuya Arata; Kensaku Oguni; Shigeaki Kuroda, all of Shimizu; Akira Atsumi, Niihari; Kyuhei Ishibane, Shimizu; Hirokiyo Terada, Shizuoka; Takao Senshu, Niihari, and Hiroshi Kogure, Sano, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 8, 1985, Ser. No. 709,718

Claims priority, application Japan, Mar. 9, 1984, 59-44896

Int. Cl.[4] F25D *17/00*

U.S. Cl. 62—180 **12 Claims**



1. A control method for an air conditioner using a heat pump, having; a compressor; a variable speed electric motor for driving said compressor; a four-way valve; an expansion device; an outdoor heat exchanger; an indoor heat exchanger; and a variable speed blower for said indoor heat exchanger, comprising the steps of; detecting the temperature of inlet air drawn into said indoor heat exchanger; presetting the desired temperature value of said inlet air; detecting the temperature of outlet air blown from said indoor heat exchanger; presetting the desired higher temperature value of said outlet air temperature;

switching modes between:

the normal mode in which the r.p.m. of said compressor is controlled so that the temperature of said inlet air is made equal to the preset value, and

the hot air blowing mode in which the r.p.m. of said blower for said indoor heat exchanger is controlled while keeping the r.p.m. of said compressor high so that said outlet air temperature is made equal to the preset higher temperature value thereof,

said mode switching being dependent upon the degree of comfort based on the temperature in a room to be air conditioned.

4,603,557

REFRIGERATED-GOODS DISPLAY CASE

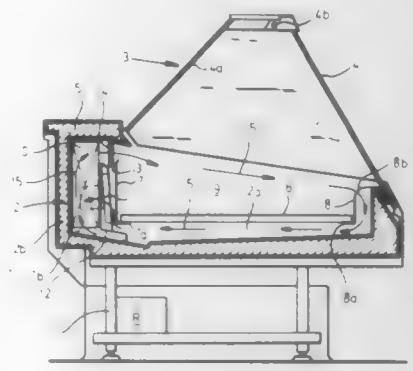
Manfred Halbmann, Mainz-Kostheim, Fed. Rep. of Germany, assignor to Linde Aktiengesellschaft, Wiesbaden, Fed. Rep. of Germany

Filed Dec. 26, 1984, Ser. No. 686,235

Claims priority, application Fed. Rep. of Germany, Dec. 29, 1983, 3347361

Int. Cl.[4] A47F *3/04*

U.S. Cl. 62—255 **12 Claims**



1. A refrigerated-goods display case comprising:

a housing formed with a goods-display compartment having a platform upon which goods are displayed, a front side from which goods on said platform can be viewed, a rear side opposite said front side and a vertical rear wall at said rear side spaced rearwardly of said goods display compartment;

means including a blower in said housing at said rear side and rearwardly of said compartment but forwardly of said wall for circulating a cooling airstream over goods on said platform and along said wall; and

means including a heat exchanger in said housing at said rear side along said wall and rearwardly of said compartment for cooling said airstream, said heat exchanger including a finned planar heat exchanger traversed by a refrigerant and disposed along said wall, the fins of said heat exchanger being separated along the length of said wall into spaced apart finned sections, said means for circulating being located in spaces between said finned sections.

4,603,558

RECEPTACLE FOR MOUNTING IN A FREEZER FOR ASSISTING IN THE DEFROSTING THEREOF

Michael J. McAdams, 12 Drumrallagh Estate, Strabane, County Tyrone, Northern Ireland

Filed Mar. 28, 1984, Ser. No. 594,360

Claims priority, application United Kingdom, Mar. 31, 1983, 8309080

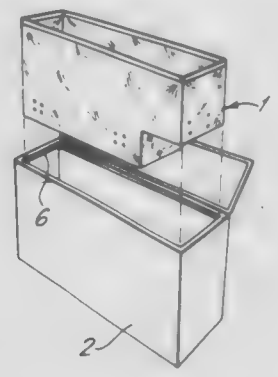
Int. Cl.[4] F25D *21/00*

U.S. Cl. 62—272 **13 Claims**

1. Refrigeration defrosting apparatus comprising

cooling means having a surface adapted to have its temperature lowered by a refrigeration process,

liner means removably mounted adjacent said cooling means and having a first surface snugly conformable to said cooling means surface and an opposite surface adapted to receive frost resulting from said lowered temperature, and



means for removably connecting said liner means to said cooling means, said liner means substantially covering said cooling means surface to prevent communication between said cooling means surface and ambient air, whereby ice resulting from condensation of water vapor in the ambient air is formed on said opposite surface of said liner means.

4,603,559

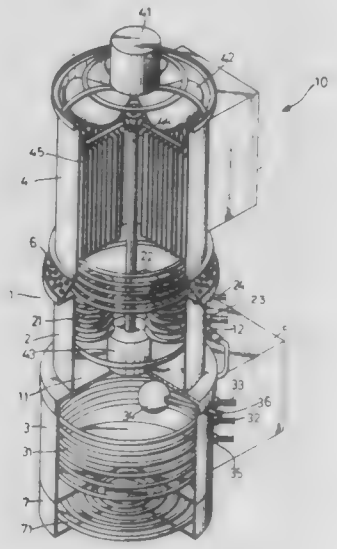
WATER-COOLED AIR CONDITIONER

Ming W. Wu, No. 157, Sec. 1 Chung-Hwa Road, Tainan, Taiwan

Filed Jul. 8, 1985, Ser. No. 752,634

Int. Cl.[4] F25D *17/02*

U.S. Cl. 62—434 **6 Claims**



1. An improved water-cooled air conditioner comprising

a main body;

a condenser with a condensing coil formed therein being disposed in the middle portion of the main body, said condenser furnished with a floating valve, said condenser further provided in the periphery thereof with an inlet and a control valve such that the inlet and the control valve cooperate with the floating valve to regulate the level of water contained in the condenser or to clean the condenser;

an evaporator with a cooling coil received therein being disposed in the lower portion of the main body and separated from said condenser, an expansion valve connecting the cooling coil of the evaporator and the condensing coil of the condenser, said evaporator provided in the interior thereof with a floating valve and at the periphery thereof with an inlet and a control valve such that the floating valve is associated with the inlet and the control valve to regulate the level of water contained in the evaporator;

cooling means being disposed in the upper portion of the main body and communicating with said condenser, said cooling means provided at its center with a sprayer, a water pump disposed to be situated within the water contained in the condenser and being connected to the lower end of the sprayer, a plurality of dissipating plates disposed in the cooling means and located between the upper end of the sprayer and the condensing coil of the condenser, and an electric fan capable of being driven by a motor being disposed on the top of the cooling means and beyond said sprayer.

4,603,560

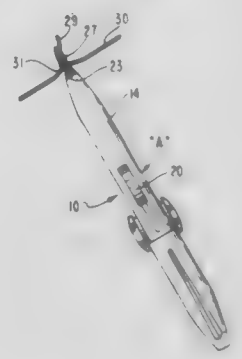
APPARATUS FOR REMOVING SNAGS FROM FABRIC

Eugene E. Pietrowski, 153 Cooper Ave., Iselin, N.J. 08830

Filed May 3, 1984, Ser. No. 606,521

Int. Cl.[4] D04B *3/00*

U.S. Cl. 66—1 R **12 Claims**



1. A snag remover device for extracting snags from the surface of a fabric, comprising:

a hollow housing having an opening on a distal end;

a guide member disposed within said housing; and

a plurality of spaced-apart slide members respectively disposed for slideable movement relative to said guide member between a respective retracted position and a respective operable position, each slide member having a snag extractor on a distal end thereof, each of said snag extractors protruding from said opening in said housing when its corresponding slide member is disposed in said operable position, but wherein there being only one slide member in an operable position at any one time, and hence, only one snag extractor protruding from said housing opening.

4,603,561

CROCHET TOOLS FOR PRODUCING STRIPS ON A CROCHET GALLOON MACHINE

Josef Berger, Hainstrasse 11, Schwaebisch Gmuend-Grossdeinbach, and Johann Berger, Obere Schloss-Strasse 114, Alfdorf, both of Fed. Rep. of Germany

Filed Dec. 9, 1983, Ser. No. 560,003

Claims priority, application Fed. Rep. of Germany, Nov. 27, 1982, 32440146; Nov. 27, 1982, 82333807[U]; European Pat. Off., Nov. 19, 1983, 831115860

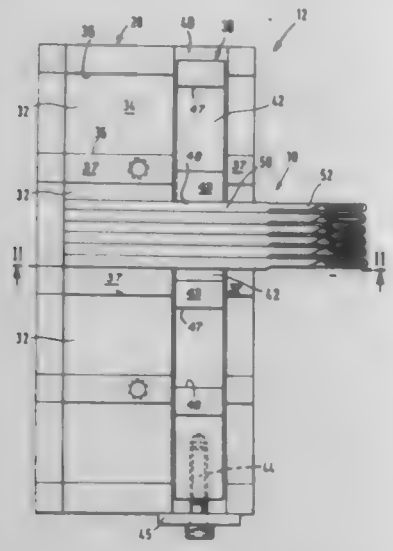
Int. Cl.[4] C03B *15/02*

U.S. Cl. 66—203 **12 Claims**

1. Crochet tools for producing bands on a crochet galloon machine, characterised by the following features:

a needle bar of said crochet galloon machine having a plurality of needles and a clamp device in which needle stems of

said needles are clamped over more than half the length thereof, and;



a knocking-over bar fastened to said machine having a free straight edge which adjoins closely those parts of said needles projecting outwardly beyond said clamp device.

4,603,562

BOBBIN SUPPORTING TEXTILE STRANDS TO BE SUBJECTED TO A HEAT AND/OR WET TREATMENT

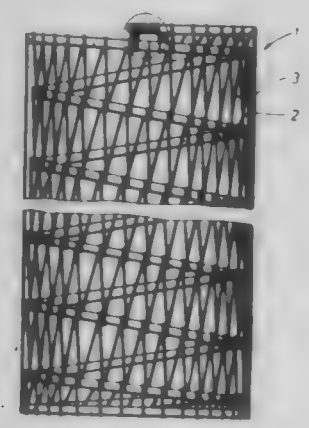
Hans Meyer, and Viggo E. Hartmann, both of Silkeborg, Denmark, assignors to A/S Kaj Neckelmann, Syntetisk Fiber Industri, Silkeborg, Denmark

Filed Aug. 29, 1984, Ser. No. 645,284

Claims priority, application Denmark, Sep. 13, 1983, 4161/83

Int. Cl.⁴ B65H *75/20*; D06B *5/18*

U.S. Cl. 68—198 **14 Claims**



1. A bobbin for supporting textile strands, comprising:

means defining a substantially cylindrical grating, said grating comprising a plurality of grating elements, each of said grating elements defining a slot elongated in the direction of the axis of said cylinder, each said slot having axial ends which are curved with a first diameter, each said slot having a radially outer surface connecting said curved ends, at least a portion of said radially outer surface being directed outward from said curved ends so that an intermediate portion of said outer surface is positioned substantially radially outward of any straight line connecting said curved ends;

connecting means, at least two of said connecting means passing through each of said slots, said connecting means being curved in section with a diameter substantially equal to said first diameter; and

means for biasing said at least two connecting means away from one another in the axial direction,

whereby when said connecting means are biased to said axial ends, said intermediate portion assumes a position radially outward from said connecting means.

4,603,563

MAGNETIC DOOR LOCKING SYSTEM

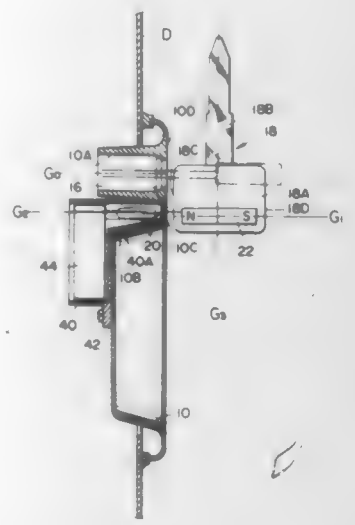
Haruo Mochida, Kanagawa; Keiichi Shimizu, and Shigetami Okuya, both of Tokyo, all of Japan, assignors to Nissan Motor Co., Ltd. and Kokusan Kinzoku Kogyo Kabushiki Kaisha, both of, Japan

Filed Aug. 3, 1983, Ser. No. 519,902

Claims priority, application Japan, Aug. 10, 1982, 57-137841; Aug. 10, 1982, 57-137842

Int. Cl.⁴ E05B *47/00*

U.S. Cl. 70—276 **14 Claims**



1. A magnetic locking system in combination with a door for locking said door to a fixed member comprising:

a key cylinder mounted in said door and adapted to be operatively associated with a door locking mechanism;

a magnetic sensor connected to said door in the vicinity of said key cylinder, said magnetic sensor being adapted to operate when a predetermined magnitude of magnetic force is applied thereto in a direction substantially parallel with a given axis of said magnetic sensor;

control means mounted to said door for locking said door to the fixed member when said magnetic sensor operates; and

a magnet-mounted key means for engagement with said key cylinder to turn the same about its axis and having a key head and magnet piece fixed thereto, said magnet piece having at axially opposed end portions north and south poles, respectively, defining a polar axis and being adapted to apply said predetermined magnitude of magnetic force to actuate said sensor when positioned adjacent said magnetic sensor with the polar axis extending substantially parallel with said given axis of said magnetic sensor;

said magnet piece of said key means being arranged in said key head so that when the key means is operatively engaged with said key cylinder, the polar axis of said magnet piece describes a plane which intersects said given axis of said magnetic sensor as said key means turns the key cylinder about its axis.

4,603,564

LOCK CYLINDER WITH INTEGRATED ELECTROMAGNETIC LOCKING SYSTEM

Arno Kleinhäny, Hinwil, and Walter Gutmann, Wetzikon, both of Switzerland, assignors to Bauer Kaba AG, Wetzikon, Switzerland

PCT No. PCT/CH82/00078, § 371 Date Jan. 31, 1983, § 102(e) Date Jan. 31, 1983, PCT Pub. No. WO82/04459, PCT Pub. Date Dec. 23, 1982

PCT Filed Jun. 15, 1982, Ser. No. 464,504

Claims priority, application Switzerland, Jun. 17, 1981, 4006/81

Int. Cl.⁴ E05B *47/00*

U.S. Cl. 70—277 **5 Claims**

1. A cylinder lock with integrated and independently opera-

ble mechanical and electromagnetic locking mechanisms, comprising:

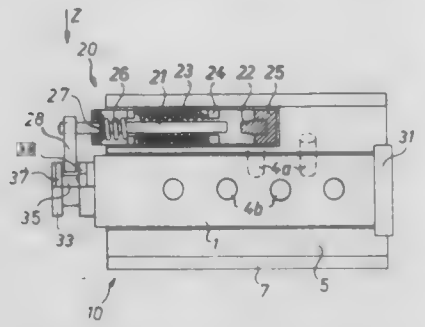
a cylinder housing with a recess defining a main medium plane through a longitudinal axis of said recess;

a solenoid mounted in said recess and having an axially movable, electromagnetically operated armature and a locking member extending from an end of said armature;

a rotor mounted in said housing;

locking means, non-rotatably mounted on said rotor and selectively engagable with said locking member, for permitting or preventing rotation of said rotor in said housing, said locking means including a peripheral free-running slot which receives said locking member to permit rotation of said rotor, and a locking slot which receives said locking member to prevent rotation of said rotor; and

mechanical tumbler means, mounted in said housing in longitudinal medium planes and releasably engagable with said rotor in response to a key, for permitting or preventing rotation of said rotor in said housing independently of said solenoid, said longitudinal medium planes being located at equal angles on opposite sides of said main medium plane.



4,603,565

CYLINDER LOCK EMBODYING AT LEAST TWO ROWS OF TUMBLER PIN BORES AND OPPOSED ROWS OF LOCKING PINS WHICH INTERACT TO PRECLUDE PICKING

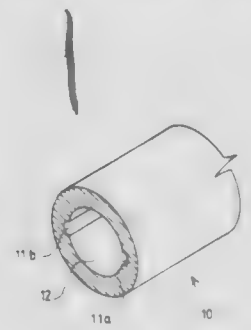
Maximilian E. F. Strassmeir, 25 Lehmann Avenue, Liverpool, New South Wales, Australia 2170

Filed Nov. 17, 1983, Ser. No. 552,505

Claims priority, application Australia, Nov. 23, 1982, PF6936

Int. Cl.⁴ E05B *27/06*

U.S. Cl. 70—358 **13 Claims**



1. A cylinder lock assembly comprising:

a hollow lock body;

a barrel rotatably mounted in the lock body having a keyway extending longitudinally from one end thereof;

a plurality of tumbler pin bores located in said barrel provided in at least two rows wherein each tumbler pin bore communicates with said keyway;

a plurality of tumbler pins wherein each tumbler pin is located in an associated tumbler pin bore;

a multiplicity of locking pin bores located in said barrel in at least two rows wherein each locking pin bore is oriented normal to an adjacent pair of tumbler pin bores contained in an adjoining row and is interposed therebetween;

a multiplicity of locking pins and each said locking pin being located in an associated locking pin bore so that in a locked position each said locking pin engages with an adjacent pair of tumbler pins on opposed sides thereof to thereby prevent rotational movement of the barrel relative to the lock body; and

withdrawal means on each locking pin so as to enable retraction of the locking pins from engagement with the lock body, thereby allowing the barrel to attain an unlocked position permitting rotation relative to the lock body upon insertion of a key in said keyway.

4,603,566

SAFETY LOCK

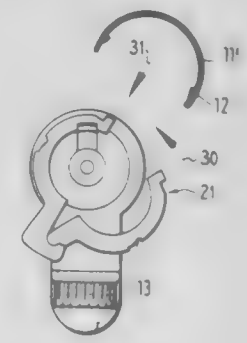
Juergen Kruehn, Berlin, Fed. Rep. of Germany, and Kurt Prunbauer, Herzogenburg, Austria, assignors to Zeiss Ikon AG, Fed. Rep. of Germany

Filed May 17, 1985, Ser. No. 735,793

Claims priority, application Fed. Rep. of Germany, May 19, 1984, 3418680

Int. Cl.⁴ E05B *17/04*

U.S. Cl. 70—380 **18 Claims**



1. In a lock cylinder, an improved lock web ring and retaining means comprising:

a lock web ring divided in a longitudinal direction forming two adjoining halves with a hinge connection between said two halves in the region of a lock web and having a radially projecting peg on each half at a region opposite said lock web; and

a retaining means having a central opening selectively placeable over said pegs to hold said two pegs together in a clamped manner.

4,603,567

PROGRAMMABLE MANUFACTURING SYSTEM FOR LOAD/SUPPORT ARMS FOR MAGNETIC DISK DRIVE DATA STORAGE SYSTEMS

Ronald A. Smith, Los Gatos; James M. Jackson, Menlo Park; Carl L. Lehfeldt, Los Gatos; Leonard P. Cygnarowicz; Khosro Moshfegh, both of San Jose; Kenneth L. Blanchard, Santa Clara, and Kenneth J. Nelson, Fremont, all of Calif., assignors to Ronald A. Smith & Associates, Campbell, Calif.

Filed Jul. 19, 1985, Ser. No. 756,600

Int. Cl.⁴ B21B *37/12*

U.S. Cl. 72—8 **19 Claims**

1. An apparatus for bending a plurality of planar spring elements extending perpendicularly at equally spaced intervals from a longitudinal fret, and shearing only those spring elements meeting a specified thickness, load, and deflection criteria from the fret comprising, in combination,

a. a plurality of walking beam units each having means for engaging and transporting the fret in steps longitudinally, the walking beam units sequentially positioning each extending spring element along the longitudinal fret at a series of stations;

b. a thickness measuring station located between first and second walking beam units having means for measuring the thickness of each planar spring element extending

from the fret and generating a corresponding electrical "thickness" signal;

c. a forming station located betweeen second and third walking beam units having,

(i) a bending means for engaging and forming each planar spring element around a curved mandrel surface, and

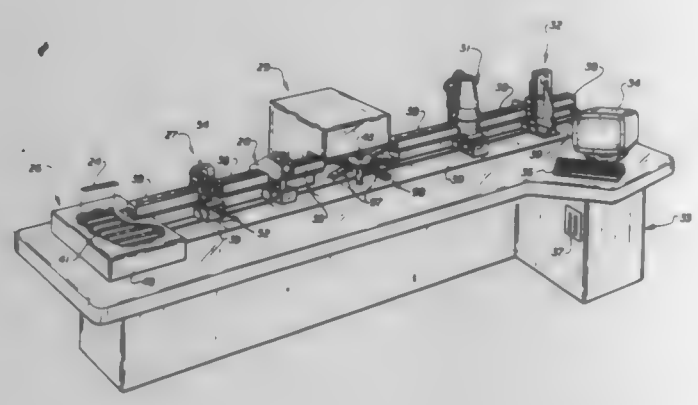
(ii) a first load sensing means engaging the spring element positioned at the forming station after it has been formed around the mandrel surface and released by the bending means for deflecting each spring element to a specified position and for sensing force imparted by each spring element at that deflected position generating a corresponding first electrical "load" signal,

d. an oven station located between the third and fourth walking beam units for stress relieving the fret and spring elements extending along its length,

e. a thermal adjust station located between fourth and fifth walking beam units having,

(i) a second load sensing means engaging each spring element positioned at the adjust station for deflecting each spring element to the specified position, and for continuously sensing force imparted by each so deflected element generating a corresponding second electrical "load" signal, and

(ii) a radiating means thermally heating the deflected



spring element for stress relieving the deflected spring element decreasing the force it imparts to the second load sensing means,

g. a memory controller means receiving "thickness" signals from the measuring station, first "load" signals from the forming station, and second "load" signals from the thermal adjust station for controlling:

(i) an angular extend to which each spring element is formed around the curved mandrel surface by the bending means,

(ii) exposure of each spring element to the radiating means stress relieving each element at the thermal adjust station, thereby, adjusting load imparted by each spring element to the second load sensing means when deflected to the specified position to the specified load if possible,

(iii) engagement and release of each spring element by the first and second load sensing means at their respective stations, and

(iv) stepping of the plurality of walking beam units transporting the fret longitudinally, and

h. a shear station located between fifth and sixth walking beam units having a shear means controlled by the memory controller means for shearing only those spring elements meeting the specified thickness, load and deflection criteria from the fret.

4,603,568

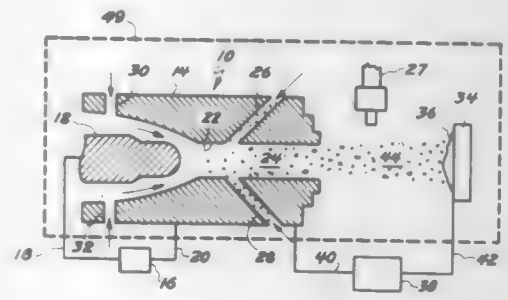
METHOD OF FABRICATING BIMETAL VARIABLE EXHAUST NOZZLE FLAPS AND SEALS

Paul A. Siemers, Clifton Park; Melvin R. Jackson, Schenectady, and Stephen F. Rutkowski, Duanesburg, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed May 30, 1985, Ser. No. 739,345

Int. Cl.[4] B21D *22/00, 31/00, 53/92*

U.S. Cl. 72—47 **9 Claims**



1. A method of forming a generally planar component of a jet engine which comprises,

providing a preformed sheet of a superalloy, coiling the sheet into a tube,

plasma spraying a layer of a superalloy onto said preformed sheet while in the form of a tube,

uncoiling the preformed sheet with the superalloy deposit, and

forming the uncoiled sheet into said generally planar component.

4,603,569

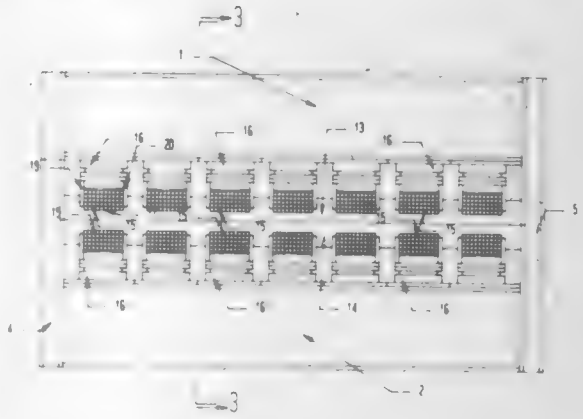
PRESSURE CONTROLLED PLATE MILL

Tadeusz Sendzimir, P.O. Box 1350, Waterbury, Conn. 06720

Continuation-in-part of Ser. No. 632,953, Jul. 20, 1984, abandoned. This application May 15, 1985, Ser. No. 734,469

Int. Cl.[4] B21B *13/14, 29/00, 31/32, 35/08*

U.S. Cl. 72—245 **19 Claims**



1. A mill for rolling flat workpieces, such as plates, sheets, strips and the like, from plastically deformable material, said mill comprising two housings, an upper and a lower backing beam each having its ends attached to said housings, an upper and a lower work roll supported by said upper and lower backing beams respectively, means maintaining the axes of said upper and lower work rolls in the same vertical plane, and means operatively connected to said rolls for rotating said upper and lower work rolls in opposite directions, a plurality of roller-carrying pressure transmitting elements for each of said upper and lower work rolls, the pressure transmitting elements for each roll being disposed between said roll and the adjacent one of said backing beams, each of said pressure transmitting elements of each roll being individually attached to said adjacent backing beam, said pressure transmitting elements of each work roll being evenly spaced along the face of their respective work roll with their rollers in operating contact with adjacent sectors of their respective work roll, said

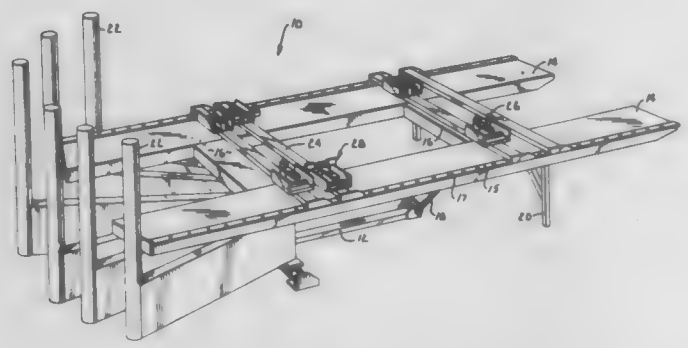
pressure transmitting elements for said upper work roll and said lower work roll being equal in number and opposed, each of said pressure transmitting elements of at least one of said upper and lower work rolls having individually controllable fluid pressure means connected thereto, said pressure transmitting elements transmitting rolling pressure to said sectors of said at least one work roll through said individually controllable fluid pressure means.

4,603,570

UNIVERSAL DEDICATED FIXTURE FOR FRAME STRAIGHTENING RACK

Freddie H. Dehn, Box 63, Excelsior Springs, Mo. 64024

Filed Dec. 12, 1983, Ser. No. 559,639
Int. Cl.[4] B21D *1/12*
U.S. Cl. 72—305 4 Claims



1. A fixture assembly for use in conjunction with a vehicle frame straightening rack and a movable elongated beam adapted to be coupled to both said vehicle and said rack during the straightening operation, said vehicle frame being characterized by a series of alignment openings, said fixture assembly comprising:

flat plate means spanning said beam;

releasable means for locking said flat plate to said beam and for accommodating sliding movement of said flat plate relative to said beam;

first and second guide plates rigid with said flat plate means and extending downwardly from the latter on opposite sides of and in close proximity to said beam;

first and second elongated side braces rigidly coupled with said flat plate means in parallel spaced apart relationship;

first and second elongated keepers rigidly coupled with said first and second side braces and cooperating with the latter to present a closed track;

base plate means slidably received by said track means and held against vertical displacement by said keepers;

arm means rigidly coupled with said base plate means;

sleeve means rigid with one end of said arm means

means for locking said base plate means against movement relative to said flat plate means; and

stanchion means releasably received by said sleeve for rigidly engaging said vehicle framd; and

means for holding said stanchion means rigid relative to said sleeve,

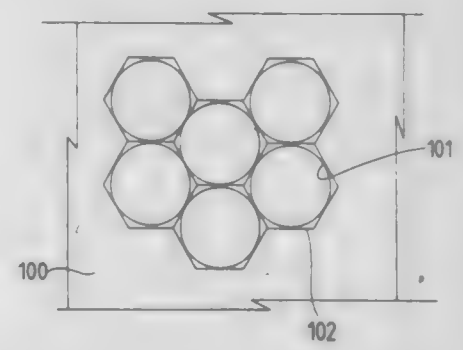
whereby when a straightening force is applied to a portion of said vehicle frame that portion of said vehicle frame engaged by the stanchion means will be held stationary.

4,603,571

APPARATUS FOR DRAWING CIRCULAR CUPS FROM NON-CIRCULAR BLANKS

Ewald J. H. Wessels, Van Rheede, Alexandra Road, Wynberg 7700, South Africa

Filed Apr. 19, 1985, Ser. No. 724,915
Claims priority, application South Africa, Aug. 7, 1984, 84/6126
Int. Cl.[4] B21D *22/00*
U.S. Cl. 72—349 10 Claims



1. An apparatus for drawing a metal cup from a metal sheet, comprising

a blanking means for providing a non-circular blank from a metal sheet,

a first drawing means for drawing a non-circular cup from the non-circular blank in such a way that more stretching takes place in those areas of the blank where the perimeter is closer to the geometrical center of the blank than the stretching which takes place in those areas of the blank where the perimeter is further away from the geometrical center of the blank, and

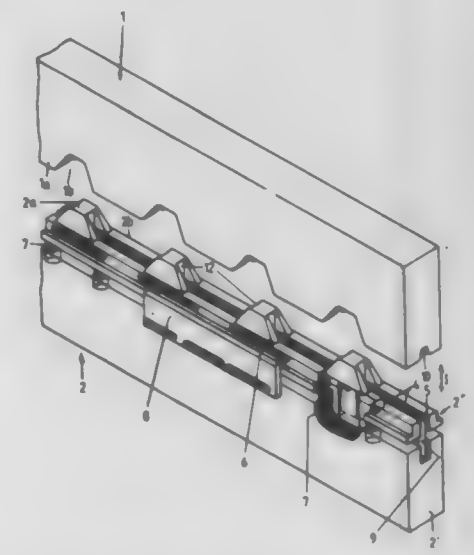
a second drawing means for drawing a circular cup from the non-circular cup.

4,603,572

DEVICE AND METHOD FOR BENDING CORRUGATED PLATES

Jacobus A. T. Van Breukelen, and Theodorus Westerveld, both of Soest, Netherlands, assignors to Dupral B.V., Netherlands

PCT No. PCT/NL83/00035, § 371 Date May 9, 1984, § 102(e) Date May 9, 1984, PCT Pub. No. WO84/00907, PCT Pub. Date Mar. 15, 1984
PCT Filed Sep. 9, 1983, Ser. No. 610,644
Claims priority, application Netherlands, Sep. 9, 1982, 8203509
Int. Cl.[4] B21D *13/02*
U.S. Cl. 72—385 8 Claims



1. A device for bending plates having a corrugated profile, comprising a pair of press beams which are positioned parallel one relative to the other and are mounted to be moved toward and away from each other in a transverse direction, said one or

lower press beam having on its upper edge a series of alternating recesses and extentions which correspond with an exterior valley profile and interior pressed profile respectively, of the plate to be bent, while said second or upper press beam has a series of alternating extentions and recesses which correspond with the interior valley profile and the exterior pressed profile respectively, and in which on the side walls of the recesses in said upper pressed beam, adjacent the junction of said side walls and the bottoms of said recesses, a protruberance is provided to fully engage into a corresponding cut-out in the side wall of the underlying extention of the lower pressed beam when the two pressed beams are brought together, said lower pressed beam having a punch portion at its upper face extending in the longitudinal direction of said face to be fully caught in a corresponding longitudinal groove in the lower faces of the raised portion of the upper pressed beam, wherein the punch portion is moveably mounted between an inoperative position, in which the punch portion has its operative upper edge sunk into a groove extending across all of said recesses of the lower press beam, and an operative position, in which the punch portion has its operative upper edge projecting through said groove upwards beyond the bottoms of the recesses in the lower press beam.

4,603,573

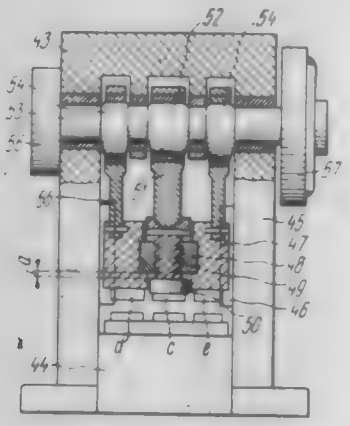
PRESS

Oleg A. Ganago; Anatoly V. Safonov; Boris A. Stepanov; Vadim N. Subich; Alexandr D. Frolov, all of Moscow; Nikolai A. Lobanov, Kolomna; Yakov L. Lumer, Kolomna; Alexei M. Xenofontov, Kolomna; Leonid I. Rudman; Alexandr D. Lebed, both of Kiev; Vasha I. Mamatsashvili, Tbilisi; Valery F. Kljuchnikov, Kolomna; Dzhemal I. Birkadze, Tbilisi; Sergei S. Shklyarman, Kolomna; Nikolai A. Gordeev, Moskovskaya oblast; Vasily Y. Golovin, Voronezh; Alexandr T. Kruk, Voronezh; Ivan F. Yakovenko, Voronezh; Vladimir V. Novikov, Voronezh; Andrei M. Grishkov, Moscow; Valery N. Gorozhankin, Voronezh; Vladmir E. Svistunov, Moscow; Jury A. Bocharov, Moscow, and Jury N. Sergeev, Moscow, all of U.S.S.R., assignors to Moskovskoe Vysshee Tekhnicheskoe Uchilische Imeni N.E. Baumana and Zavod-Vtuz Pri Moskovskom Avtomobilnom Zavode Imeni I.A. Likhacheva, both of Moscow, U.S.S.R.

Division of Ser. No. 507,078, Jun. 23, 1983, Pat. No. 4,559,807. This application Jul. 12, 1985, Ser. No. 754,331

Int. Cl.⁴ B21B *25/00*

U.S. Cl. 72—454 **5 Claims**



1. A press comprising: two crossheads spaced at a distance from one another; uprights interconnecting said crossheads; said crossheads and uprights forming a frame of said press; a ram mounted for translatory motion between said uprights; a nut with a non-self-stopping thread, said nut being built into said ram; another ram mounted for translatory motion between said uprights; a die holder mounted in the second-mentioned ram for translatory motion therewith and for rotation thereabout; a screw rigidly connected to said die holder and cooperating with said nut during translatory motion of the first-mentioned ram and forming a kinematic couple therewith; drive means to enable translatory motion of the die holder, said drive means including an electric motor, a shaft with a first eccentric, a pair of second eccentrics, said second eccentrics being offset circumferentially from said first eccentric, said shaft mounted in one of said crossheads operatively connected to said electric motor, a connecting rod having one end thereof operatively connected to said screw and another end operatively connected to the first eccentric of said shaft; and wherein said first drive includes two connecting rods linked to said first ram, said two connecting rods operatively coupled to respective ones of said second eccentrics; said connecting rods causing said die holder to both translate and rotate relative to said press.

4,603,574

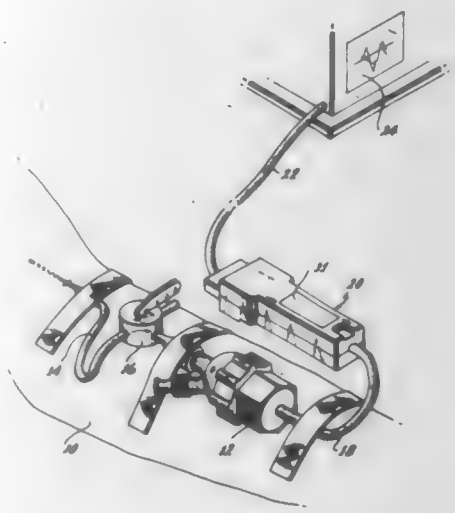
BLOOD PRESSURE TRANSDUCER TESTER

Jacob J. Norman, Westminster, Calif., assignor to American Hospital Supply Corporation, Evanston, Ill.

Filed Jan. 22, 1985, Ser. No. 692,976

Int. Cl.⁴ G01C *25/00*

U.S. Cl. 73—4 R **11 Claims**



1. A blood pressure transducer system, comprising:
(a) a transducer assembly adapted to be attached to a patient and including a transducer having a housing;
(b) electrical testing means for causing said transducer assembly to put out a simulated pressure signal corresponding to a predetermined blood pressure level; and
(c) actuating means located in said transducer for selectively actuating said testing means, said actuating means including a pair of series-connected switches located on opposite sides of said housing.

4,603,575

ELEMENTAL TRACER SYSTEM FOR DETERMINING THE SOURCE AREAS OF POLLUTION AEROSOL

Kenneth A. Rahn, and Douglas H. Lowenthal, both of Narragansett, R.I., assignors to Board of Governors for Higher Education, State of Rhode Island and Providence Plantations, Providence, R.I.

Filed Dec. 27, 1984, Ser. No. 686,655

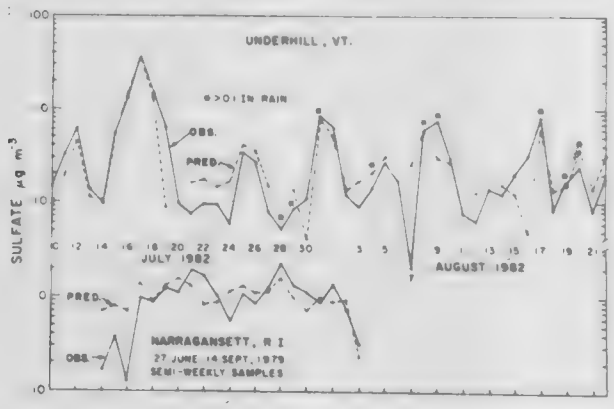
Int. Cl.⁴ G01N *15/06*

U.S. Cl. 73—28 **9 Claims**

1. A method to determine regional sources of pollution aerosol which includes:
(a) selecting empirically a small number of suitable tracer elements which are pollution-derived, associated with submicron-sized particles, and accurately analyzable in the aerosol;
(b) measuring the concentrations of each tracer element in multiple samples of regionally-representative aerosol at multiple sites in each source region whose signature is to be determined;
(c) expressing the measured results as ratios to one of the tracer elements;
(d) defining the elemental signature of the source region as

the collection of elemental ratios and associated standard deviations which best represents that region's aerosol;

(e) determining the source region's signature from modes in the logarithmic frequency distributions of the elemental ratios of samples taken in source region;



(f) measuring the concentrations of each tracer element in multiple samples of an aerosol from a receptor region;

(g) comparing the elemental ratios from the receptor region to the signatures from possible source regions to determine the most probable source region.

4,603,576

APPARATUS FOR PROVIDING FLUID PRESSURE FOR TESTING A SEAL

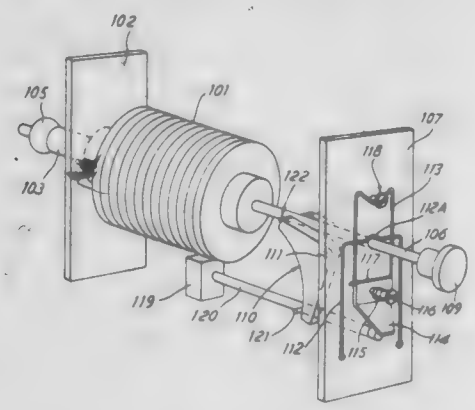
Herbert J. C. Spencer, Ascot, England, assignor to Telspec Limited, Rochester, England

Division of Ser. No. 630,583, Jul. 10, 1984, Pat. No. 4,527,804. This application Dec. 5, 1984, Ser. No. 678,672

Claims priority, application United Kingdom, Jul. 19, 1983, 8319497; Aug. 17, 1983, 8322096

Int. Cl.⁴ G01M *3/28*

U.S. Cl. 73—40 **8 Claims**



1. A device for use in testing the sealing of a space against fluid leakage comprising a body portion defining an orifice to be coupled to said space, a movable member movable with respect to said body portion to convert a mechanical force applied to said movable member into a fluid pressure applied at said orifice, means for biasing said movable member whereby, when said device is coupled to said space, said movable member initially adopts a position of substantial equilibrium with the mechanical force applied thereto substantially balanced by the fluid pressure prevailing within said space, and deviation registering means for registering deviation of said movable member from said initial position of substantial equilibrium as an indication of fluid leakage said deviation registering means comprising determining means for determining movement of said movable member and reset means for establishing a zero position of said determining means corresponding to said position of substantial equilibrium of said movable member.

4,603,577

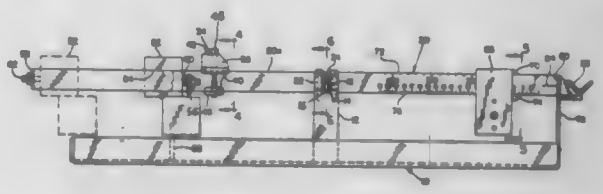
APPARATUS FOR DETERMINING THE SWING INERTIA OF GOLF CLUBS

Louis W. Johnson, and Bruce G. Johnson, both of 2435 Prairie Rd., Eugene, Oreg. 97402

Continuation-in-part of Ser. No. 525,941, Aug. 24, 1983, abandoned. This application Dec. 21, 1984, Ser. No. 684,610

Int. Cl.⁴ G01M *1/12*

U.S. Cl. 73—65 **1 Claim**



1. A scale for weighing golf clubs to determine the swing inertia thereof, said clubs having a head portion, a shaft portion, and a grip portion for receiving the golfer's hands in adjacent gripped relation, said scale comprising

a base,

a balance beam having pivot support on said base,

calibrations on one of said base and beam providing a set of values of swing inertia,

and support means on said balance beam having forward and rearward support portions for supporting a golf club in parallel relation with said balance beam,

said rearward support portion being adjustable along said balance beam and arranged to contact the grip portion of the club and locate the club such that the axis of rotation of a person's normal grip on said grip portion for swinging the club is disposed vertically above the pivotal axis of said balance beam,

said calibrations comprising values determined by multiplying the head weight of the club by the length of the club extending from the said pivotal axis to the center of gravity of the head.

4,603,578

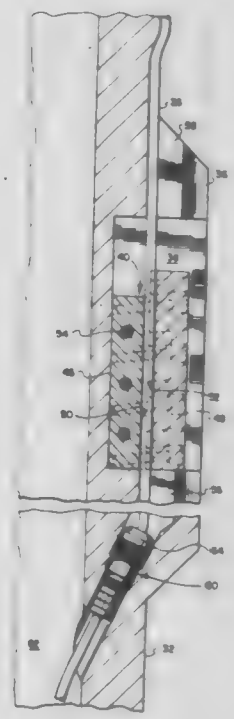
SIDE ENTRY SUB WITH TENSION RELEASE WIRELINE CABLE CLAMP

John W. Stoltz, Fort Worth, Tex., assignor to Gearhart Industries, Inc., Ft. Worth, Tex.

Filed Oct. 10, 1984, Ser. No. 659,251

Int. Cl.⁴ E21B *17/00*

U.S. Cl. 73—151 **11 Claims**



1. A side entry sub, which comprises:

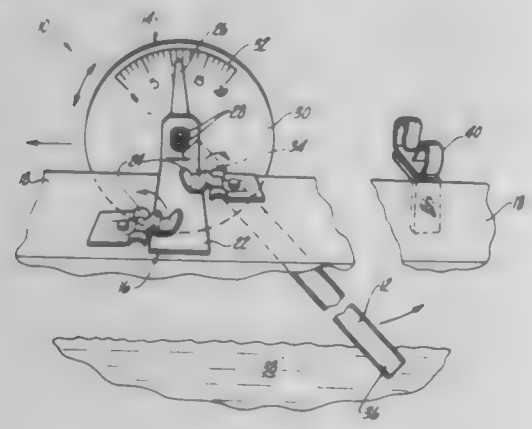
an elongated tubular member having a pair of ends and a cylindrical wall and a longitudinal bore;
a port formed in said wall intermediate said ends for running a cable from the exterior of said tubular member into said longitudinal bore;
and clamp means for preventing movement of said cable axially with respect to said tubular member, said clamp means being releasable responsive to a tension force on said cable greater than a preselected amount to allow said cable to move freely axially with respect to said tubular member with said clamp means being retained with said elongated tubular member after release of said cable.

4,603,579

TROLLING SPEED INDICATOR

Richard L. Shaum, Davison, and Edward A. Burr, Grand Blanc, both of Mich., assignors to Richard L. Schaum, Davison, Mich.

Filed Aug. 31, 1984, Ser. No. 646,645
Int. Cl.⁴ G01P *5/04*
U.S. Cl. 73—186 **4 Claims**



1. An indicator for determining the velocity of a nautical vessel, said indicator comprising:
mounting means for detachably mounting said indicator to the gunnel of the nautical vessel, said mounting means comprising at least one clip secured to the gunnel of the vessel and including a portion biased against said gunnel;
an elongated flange member having first and second ends wherein said first end is secured to said vessel by said biased portion of said clip of said mounting means;
a pointer adjustably fixedly secured parallel to said second end of said flange member;
indicating means rotatably secured to said second end of said flange member, said indicating means comprising a velocity scale disposed on an annular disk wherein said annular disk is axially and rotatably mounted to said second end of said flange member and wherein said annular disk is disposed parallel to and spaced apart from said fixed pointer, and said fixed pointer and said annular disk being mounted on a common shaft whereby calibration can be accomplished by adjusting the rotational relationship between the pointer and the disk; and
an elongated submersible rod having a first end fixedly secured to said annular disk.

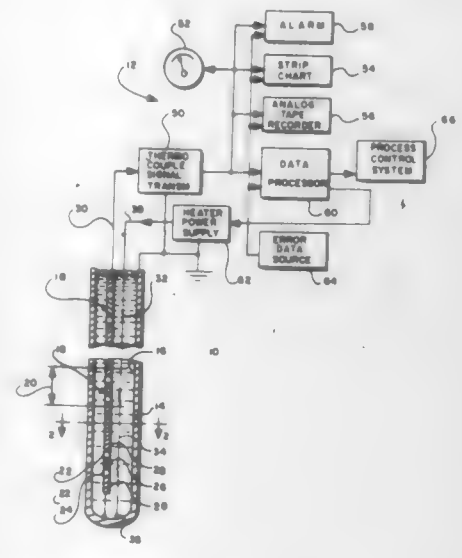
4,603,580

UNICABLE LIQUID LEVEL SENSING SYSTEM

James P. Waring, Rockville, Md., assignor to Scandpower, Inc., Bethesda, Md.

Filed Feb. 20, 1985, Ser. No. 703,437
Int. Cl.⁴ G01F *23/22*
U.S. Cl. 73—295 **8 Claims**

1. In a liquid level monitoring probe having an axially elongated sheathing, an electrically insulating and heat conductive body enclosed by said sheathing, a plurality of temperature sensors respectively embedded in said body within separate, axially spaced measurement zones, each of said sensors having at least two thermocouple junctions, wherein the two thermocouple junctions of each temperature sensor are located in the respective measurement zone, and means within said body for unequally heating the two thermocouple junctions within each respective measurement zone, the improvement comprising,



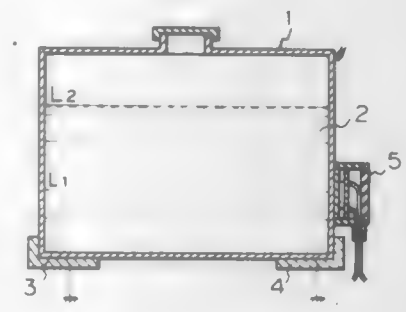
conductor means electrically interconnecting all of the temperature sensors and thereby all of the thermocouple junctions in series for producing a combined output signal and axial heat flow control means operatively connected to said heating means for modifying the combined output signal.

4,603,581

SENSING APPARATUS

Kouichi Yamanoue; Junji Kitagawa; Shigeyuki Akita, all of Okazaki, and Akira Kuno, Oobu, all of Japan, assignors to Nippon Soken, Inc., Nishio and Nippondenso Co., Ltd., Kariya, both of, Japan

Filed Jan. 31, 1985, Ser. No. 697,005
Claims priority, application Japan, Feb. 14, 1984, 59-26839
Int. Cl.⁴ G01F *23/26*
U.S. Cl. 73—304 C **25 Claims**



1. A sensing apparatus for sensing existence of a substance, comprising:
containing means for containing the substance, said containing means being formed of an electrically insulating substance;
electroconductive support means for electrically grounding at least one end of said containing means;
a first electrode member mounted directly on a surface of said containing means;
a second electrode member mounted directly on said surface of said containing means, and arranged at an opposing position a predetermined distance away from and electrically isolated from said first electrode member; and
electric circuit means for detecting a capacitance formed between said first and second electrodes, said electric circuit means being operatively connected to said first and second electrode members and to said ground;
said first and second electrode members being operatively connected by a first capacitance (Ca) formed by a part of said containing means between said first and second elec-

trode members and a second capacitance (Cc) formed by said substance to be sensed between the first and second electrode members in said containing means, and

said electric circuit means outputting a signal in response to changes in said first and second capacitances with respect to a reference capacitance circuit (Cb, Cd) to ground.

4,603,582

INERTIAL DYNAMOMETER SYSTEM AND METHOD FOR MEASURING AND INDICATING GROSS HORSEPOWER

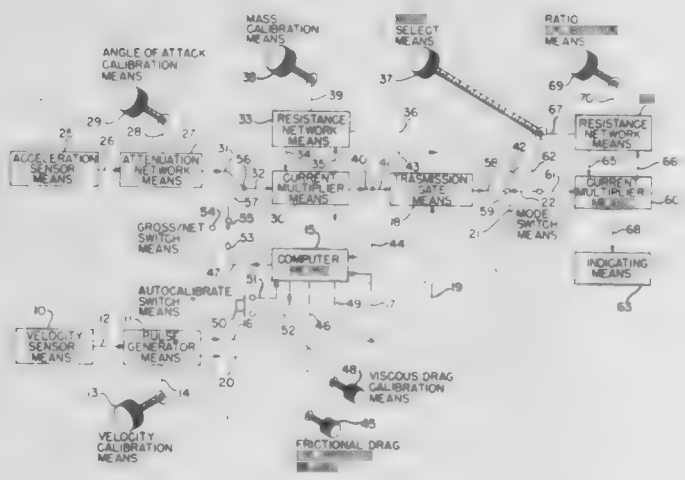
Harold G. Middleton, 418 SW. 159th St., Seattle, Wash. 98166

Filed Apr. 16, 1984, Ser. No. 600,844

Int. Cl.[4] G01M *15/00*

U.S. Cl. 73—511

27 Claims



1. Apparatus, for use in a vehicle having a prime mover, a mass and a direction of motion, for providing instantaneous indication of the gross horsepower output of the prime mover comprising:

(a) means for generating a signal with a value continuously proportional to the instantaneous inertial acceleration of the vehicle, said means having a sensitive axis adjustable to be parallel to the direction of motion of said vehicle;

(b) means for generating a signal with a value continuously proportional to the instantaneous velocity of the vehicle and further comprising means for adjusting said generating means to account for the drive ratio of said vehicle;

(c) means for providing a signal with a value continuously proproportional to the aerodynamic drag of the vehicle and further comprising means for adjusting said means to calibrate said means to accurately represent the aerodynamic characteristics of the vehicle;

(d) means for providing a signal with a value continuously proportional to the friction drag of the vehicle and further comprising means to calibrate said means to accurately represent the frictional drag characteristics of the vehicle;

(e) means for providing a signal with a value continuously proportional to the viscous drag of the vehicle and further comprising means to calibrate said means to accurately reflect the viscous drag characteristics of the vehicle;

(f) means for providing a signal proportional to the mass of the vehicle multiplied by the acceleration of the vehicle;

(g) means for accepting said signals and providing a signal having a value proportional to said gross horsepower;

(h) means for accepting a signal having a value proportional to an operating parameter of said vehicle and providing a visual indication of the value of said signs.

4,603,583

METHOD FOR THE ULTRASONIC TESTING OF FERRITIC PARTS HAVING A CLADDING

Roland Heumüller, Erlangen, Fed. Rep. of Germany, assignor to Kraftwerk Union Aktiengesellschaft, Mülheim, Fed. Rep. of Germany

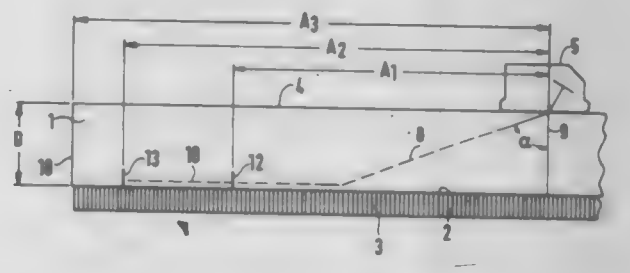
Filed Apr. 1, 1985, Ser. No. 718,062

Claims priority, application Fed. Rep. of Germany, Apr. 6, 1984, 3413097

Int. Cl.[4] G01N *29/04*

U.S. Cl. 73—596

4 Claims



1. Method for the ultrasonic testing of ferritic bodies having a cladding surface for faults in the cladding surface, a surface opposite the cladding surface, a cladding disposed on the cladding surface, an ultrasound transmitter radiating from the surface opposite the cladding surface into the body at an angle relative to the cladding surface, and a receiver disposed on the surface opposite the cladding surface, for receiving reflections emanating from a fault in the body, which comprises radiating longitudinal waves from the transmitter into the body at an angle between 70° and 86° relative to the perpendicular to the cladding surface causing the waves to travel in a direction substantially parallel to the cladding surface in the body.

4,603,584

ACOUSTIC DETECTION OF DEFECTS IN STRUCTURES

Peter M. Bartle, Suffolk, and James C. Needham, Essex, both of England, assignors to The Welding Institute, Cambridge, England

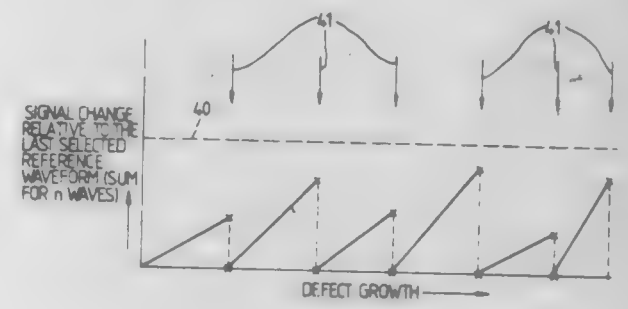
Continuation of Ser. No. 537,654, Sep. 30, 1983, abandoned. This application May 31, 1985, Ser. No. 739,764

Claims priority, application United Kingdom, Oct. 6, 1982, 8228521

Int. Cl.[4] G01N *29/04*

U.S. Cl. 73—599

20 Claims



1. A method of monitoring a structure to which is coupled at least one input transducer and at least one receiving transducer, the method comprising the steps of:

(a) transmitting a non-directional burst of acoustic energy into said structure from said at least one input transducer such that portions of said burst travel along a plurality of different paths through said structure, said paths including a shortest path and a plurality of longer paths;

(b) detecting at said at least one receiving transducer a received wave train resulting from those portions of said burst arriving at said at least one receiving transducer, and

(c) monitoring for any change in said structure after a given time (or event) by repeating said steps (a) and (b) at least once with said coupling of said transducers being essen-

tially unaltered, to detect at least one further received wave train; comparing corresponding portions of said at least one further received wave train with a previously determined at least one reference received wave train; and determining for each said comparison whether a portion of said received wave train differs from a corresponding portion of said reference received wave train, any difference being indicative of the formation or growth of a defect in the overall acoustic path travelled by said acoustic energy.

19. A method of monitoring a structure to which is coupled at least one input transducer and at least one receiving transducer, the method comprising the steps of:

(a) transmitting a non-directional burst of acoustic energy, having an internal frequency of at least 50 kHz, into said structure from said at least one input transducer;

(b) detecting at said at least one receiving transducer a received wave train resulting from those portions of said burst arriving at said at least one receiving transducer, and

(c) monitoring for any change in said structure after a given time (or event) by repeating said steps (a) and (b) at least once with said coupling of said transducers being essentially unaltered, to detect at least one further received wave train; comparing corresponding portions of said at least one further received wave train with a previously determined at least one reference received wave train; and determining for each said comparison whether a portion of said received wave train differs from a corresponding portion of said reference received wave train, any difference being indicative of the formation of growth of a defect in the overall acoustic path travelled by said acoustic energy.

4,603,585

METHOD FOR REPRESENTING ELASTIC PARAMETERS OF OBJECT SURFACES

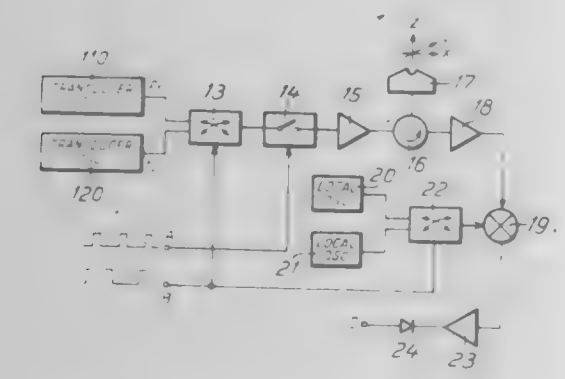
Abdullah Atalar, Ankara, Turkey, assignor to Ernst Leitz Wetzlar GmbH, Wetzlar, Fed. Rep. of Germany

Filed Mar. 15, 1985, Ser. No. 712,110

Claims priority, application Fed. Rep. of Germany, Mar. 17, 1984, 3409929

Int. Cl.⁴ G01N *29/00*

U.S. Cl. 73—606 **18 Claims**



1. A method of representing elastic parameters of the surface of an object comprising the steps for each point of a predetermined pattern of points on said surface of:

(a) directing a first acoustic beam having a first focus position at said each point;

(b) sensing a first reflection signal;

(c) directing a second acoustic beam having a second focus position different from said first focus position at said each point;

(d) sensing a second reflection signal;

(e) deriving a difference signal having a value indicative of the difference between said first and second reflection signals; and

(f) using said difference signal to represent said elastic parameters at said each point.

4,603,586

DELAY LINE CIRCUIT ARRANGEMENT AND ULTRASONIC IMAGING APPARATUS UTILIZING THE SAME

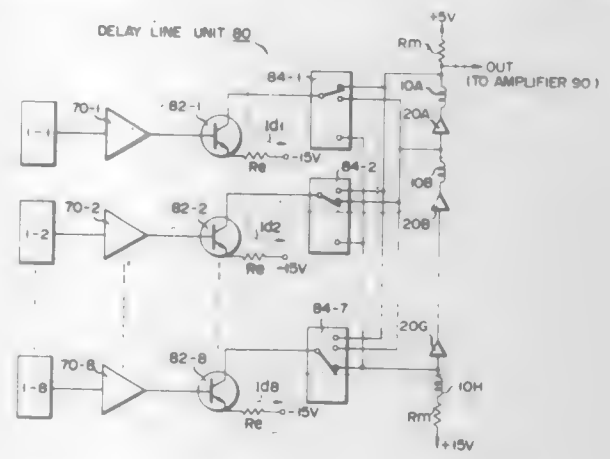
Taketoshi Iida, Tochigi, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jan. 10, 1985, Ser. No. 690,123

Claims priority, application Japan, Jan. 18, 1984, 59-5535

Int. Cl.⁴ G01N *29/00*

U.S. Cl. 73—626 **3 Claims**



1. An ultrasonic imaging apparatus having an improved analogue delay line means, said apparatus comprising:

a plurality of ultrasonic transducer elements for converting ultrasonic echoes received thereby into voltage signals;

a plurality of voltage-current converting means respectively connected to said ultrasonic transducer elements, for converting said voltage signals into current signals proportional thereto;

a plurality of switching means, each having a plurality of input terminals and a single output terminal, for selecting one of said input terminals to be connected with said output terminal, said output terminal being connected to said voltage-current converting means;

analogue delay line means including a plurality of delay lines for delaying said current signals passing therethrough;

a plurality of amplifier means each connected between adjacent delay lines, for compensating for degradation of the amplitudes of said current signals passing through said delay lines;

a plurality of taps derived from said amplifier means to be commonly connected to said input terminals of each of said switching means; and

register means, having one constantly biased end and another end connected to one end of said analogue delay line means and an output, for adding said current signals delayed by said delay lines and producing the resultant signal from said output.

4,603,587

HIGH PRODUCTIVITY VIBRATION TEST FIXTURE SUITED FOR TESTING PRINTED CIRCUIT BOARDS

David V. Kimball, Monrovia, and Charles W. Frost, La Verne, both of Calif., assignors to Kimball Industries, Inc., Monrovia, Calif.

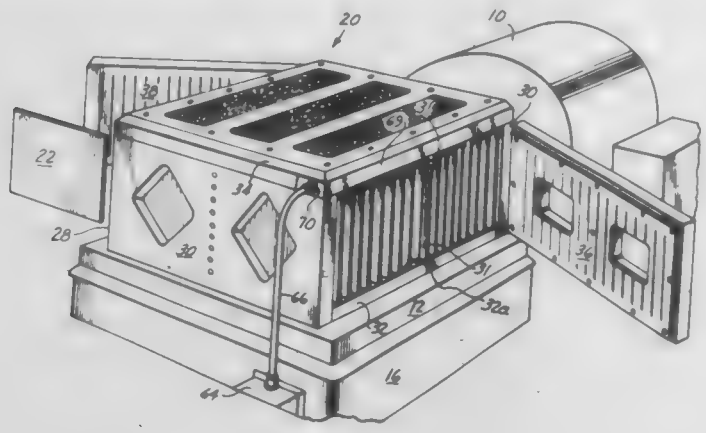
Filed Feb. 19, 1985, Ser. No. 702,949

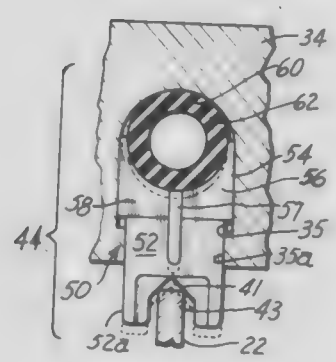
Int. Cl.⁴ G01N *29/00*

U.S. Cl. 73—663 **19 Claims**

1. Vibration fixture for high volume, unskilled labor testing of printed circuit boards or any like peripherally narrow workpiece, said fixture comprising a frame having opposing portions and generally congruent with said workpiece and adapted to relatively loosely peripherally support said workpiece in a first assembled relation for ease of mounting or demounting said workpiece to and from the frame, and workpiece shimming structure comprising a shimming body received by said one portion of said frame and inflatable means acting between said one frame portion and said shimming body

whereby said shimming structure is selectively shiftable relative to an opposing portion of said frame for relatively tightly





peripherally supporting said workpiece in a second rigid assembled relation for faithful transmitting of vibration energy to the workpiece in the inflated condition of said inflatable means.

4,603,588

DEVICE FOR GRIPPING SPECIMENS

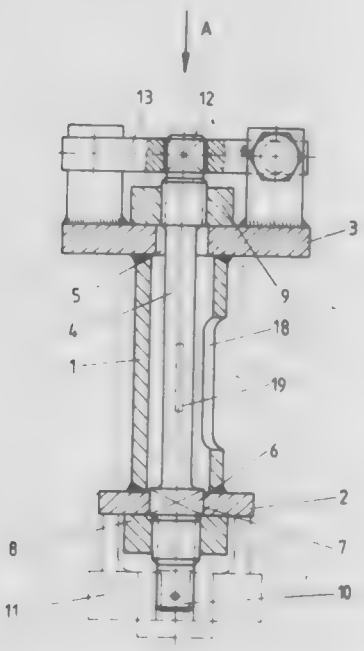
Hans Niermann, Essen; Klaus Köhnen, Mülheim/Ruhr, and Joachim Jorde, Essen, all of Fed. Rep. of Germany, assignors to Krupp Koppers GmbH, Essen, Fed. Rep. of Germany

Filed Jul. 20, 1984, Ser. No. 633,097

Claims priority, application Fed. Rep. of Germany, Dec. 22, 1983, 3346429

Int. Cl.⁴ G01N *3/00*

U.S. Cl. 73—794 **4 Claims**



1. A device for gripping specimens for applying thereto uniaxial or biaxial condition of stress, comprising an upper plate and a lower plate spaced from each other; a spacer extended between said upper and lower plates and respectively connected to said plates, said spacer accommodating a specimen, said specimen having two opposite end portions extended outwardly from said spacer and projecting through and beyond the respective plate, said end portions each having a thread; two nuts screwed on said end portions so that they are brought into attachment with said plates, respectively, one of said end portions having a threaded pin extended outwardly from the respective nut, another of said end portions having a square end extended outwardly from the respective nut; a pulling device attached to said threaded pin to apply to the specimen a predetermined tensile stress; a wrench mounted on said square end; and two bolts positioned on said upper plate and acting on said wrench to apply a predetermined tensional strain to said specimen, said specimen extending through said upper plate with a play, said lower plate having a square opening, said one of said end portions having a square portion which is received in said square opening, said pulling device being supported immediately against said lower plate by pulling one of the end portions having said threaded pin relative to said lower plate;

said device with a specimen gripped therein being insertable into a laboratory or plant installation under corrosive operational conditions so as to test materials under corrosive operational conditions.

4,603,589

ULTRASONIC FLOWMETER

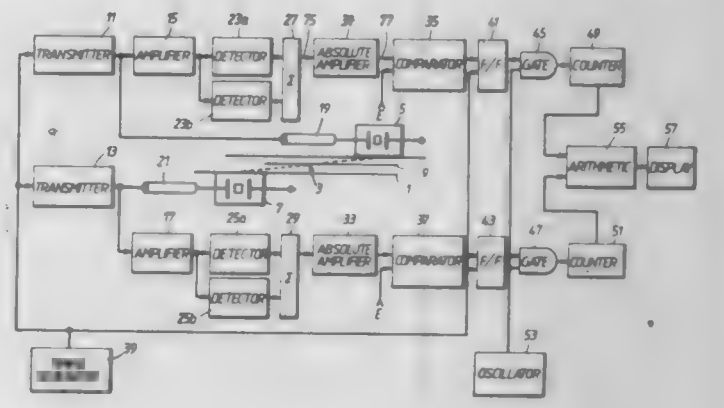
Kaoru Machida, Ootawara, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Dec. 27, 1984, Ser. No. 686,999

Claims priority, application Japan, Dec. 27, 1983, 58-244472; Dec. 27, 1983, 58-244473

Int. Cl.⁴ G01F *1/66*

U.S. Cl. 73—861.28 **5 Claims**



1. An ultrasonic flowmeter, comprising:

means for generating a transmission signal;

ultrasonic transmission means, including a pair of transducers disposed to define therebetween a measuring path through a flowing media, for transmitting an ultrasonic wave across said path and for receiving said ultrasonic wave propagating in said media, said transducers being alternately excited by said transmission signal to transmit said ultrasonic wave;

detector means responsive to a received ultrasonic wave for developing an envelope curve signal indicative of the envelope of said received ultrasonic wave;

means for determining a beginning of said received ultrasonic signal by determining the beginning of said envelope based on said envelope curve signal detected by said detector means; and

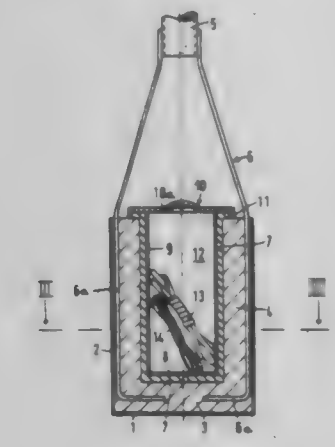
means for developing a signal indicative of the velocity of the flowing media based on a propagation period which is the time interval between exciting of one of said transducers by said transmission signal and the determined beginning of the envelope of the received ultrasonic signal and for developing a signal which is representative of the volume of flow as determined based on said velocity of flow.

4,603,590

METHOD OF AND VESSEL FOR REMOVING SAMPLES FROM A BATH OF MOLTEN METAL

Gotthard Staats, Hemmersdorf, and Horst Thome, Nalbach, both of Fed. Rep. of Germany, assignors to Aktien-Gesellschaft der Dillinger Hüttenwereke, Dillingen, Fed. Rep. of Germany

Continuation of Ser. No. 489,730, Apr. 29, 1983, abandoned.
This application May 29, 1985, Ser. No. 738,776
Claims priority, application Fed. Rep. of Germany, May 4, 1982, 3216554
Int. Cl.[4] G01N *1/12*
U.S. Cl. 73—864.58 18 Claims



1. A method of removing a sample from a killed steel bath having a readily oxidizable constituent, particularly for the purpose of determining the aluminum content of the steel, comprising the steps of immersing a sampling vessel in said bath, said vessel defining a chamber which accommodates an effective amount of a substance having a high affinity for oxygen and a boiling point below the temperature of said bath, and said vessel being provided with a cover having a first portion and a second portion and closing said chamber; eliminating substantially all reactive oxygen from said chamber by destroying said first portion of said cover, introducing an initial part of said sample into said chamber through the opening created by destruction of said first portion, and vaporizing at least part of said substance with said initial part to thereby bind reactive oxygen and/or expel reactive oxygen from said chamber; and admitting the main part of said sample into said chamber subsequent to the eliminating step, the admitting step including destroying said second portion of said cover.

4,603,591

DEVICE RESPONSIVE TO SHOCK FORCES

Richard D. Sibley, Anaheim, and William F. Keller, West Covina, both of Calif., assignors to Koso International, Inc., Santa Fe Springs, Calif.

Filed Nov. 15, 1984, Ser. No. 671,588
Int. Cl.[4] G05G *17/00;* F16K *17/36*
U.S. Cl. 74—2 19 Claims

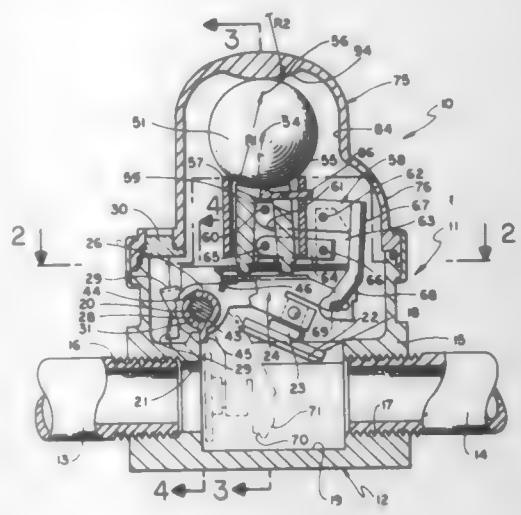
1. A shock responsive device comprising:

a support structure;

a weight adapted to be supported in a predetermined position by said structure and which is displaceable laterally from said position by shock forces;

mechanism for actuating a controlled unit in response to said shock induced lateral displacement of the weight, including an element adapted, upon said lateral displacement of the weight, to be engaged by the weight and moved by the weight in a diredtion to actuate said unit; and

releasable holding means operable by said weight to retain said element against movement in said direction while the weight remains in said predetermined position but adapted to be automatically released by the weight to permit said movement of said element for actuation of the controlled unit upon said lateral displacement of the weight from said predetermined position thereof.

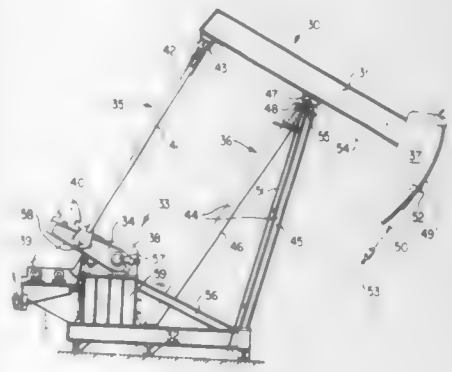


4,603,592

OFF-VERTICAL PUMPING UNIT

Quentin R. Siebold, and Walter Labuhn, both of Calgary, Canada, assignors to Legrand Industries Ltd., Calgary, Canada

Filed Oct. 14, 1983, Ser. No. 542,109
Claims priority, application Canada, Jul. 28, 1983, 433460
Int. Cl.[4] F16H *21/32*
U.S. Cl. 74—41 20 Claims



1. A pumping unit of a walking beam type of class I geometry, having a source of rotary motive power, a crank driven by the source of rotary motive power, a pitman pivotally connected at one end to the crank and pivotally connected at an opposite end to one end of a beam, a beam support for pivotally supporting the beam at a fulcrum, and a horsehead at an opposite end of the beam, said horsehead having a convex arcuate surface for supporting a wire rope sling connectable to a remote pump by means of a polish rod, said pumping unit being arranged to permit relatively efficient pumping of a well having a central axis inclined at an angle to geological vertical in a range from 10° to about 45° in that:

(a) the beam support configuration, the beam support location and angle of inclination to the vertical of a longitudinal axis of the beam support are selected to maintain resultant forces exerted by the beam on the beam support as substantially compressive forces;

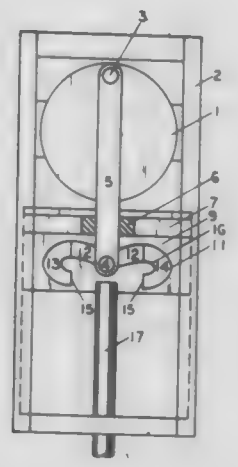
(b) size, configuration and position of the horsehead are selected to avoid excessive wire rope sling wear and excessive lateral movement of the polish rod; and

(c) the position of the fulcrum and length of the beam are selected so that the beam support does not intersect nor interfere with a wellhead.

4,603,593
SYNCHRONIZED SCOTCH YOKE

John E. Clegg, 2320 Keystone Dr., Orlando, Fla. 32806

Filed Feb. 19, 1985, Ser. No. 702,712
Int. Cl.[4] F16H *21/18, 21/22*
U.S. Cl. 74—50 1 Claim



1. A synchronized scotch yoke comprising in general two opposed front and rear cam blocks having two opposed curved recessed cam tracks which engage opposite ends of a reciprocating cam pin and convert the irregular reciprocating linear motion of the cam pin to uniform reciprocating linear motion of the cam blocks, and comprising in particular;

a flywheel (1) mounted in a vertical plane on a shaft occupying a horizontal axis,

a crank pin (3) mounted in the peripheral area of a face of said flywheel,

a connecting rod (5) occupying a vertical axis adjacent to said face of said flywheel, said connecting rod having an upper end, a lower end, and a medial section, said upper end engaging said crank pin,

a cam pin (4) occupying a horizontal axis, said cam pin having a front end, a rear end, and a center, said center engaging said lower end of said connecting rod,

a front cam block (8) having a transverse slot (7) in an upper inside face thereof and having a curved recessed front cam track (10) in a lower inside face thereof,

a rear cam block (9) having a transverse slot (7) in an upper inside face thereof and having a curved recessed rear cam track (11) in the lower inside face thereof,

a horizontal traveler block (6) mounted in said transverse slots, said traveler block having a hole slidably engaging said medial section of said connecting rod,

said front cam track having a flat central section (12), a curved inclined ramp (13) to the left of said central section and a curved inclined ramp (14) to the right of said central section,

said rear cam track having a flat central section (12), a curved inclined ramp (13) to the left of said central section and a curved inclined ramp (14) to the right of said central section,

said curved inclined ramp (13, 14) having terminating lines (15) comprising the extremities of said curved inclined ramps,

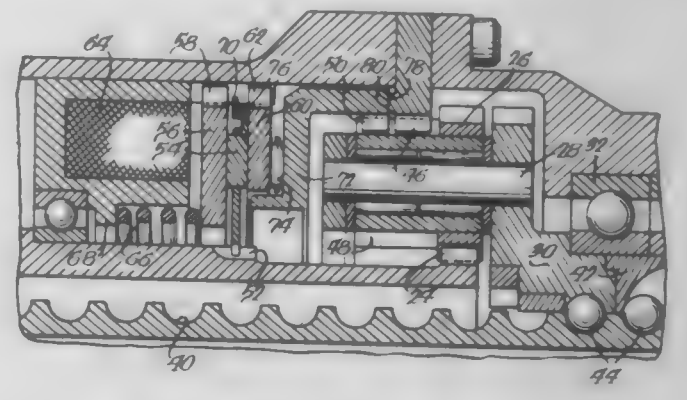
said front cam block and said rear cam block being mounted with said inside faces in contact so that said front cam track and said rear cam track form an enclosed cam track,

said cam pin being mounted inside said enclosed cam track, with said front end of said cam pin traveling in said front cam track and said rear end of said cam pin travelling in said rear cam track.

4,603,594
FAIL SAFE ACTUATOR

Duane H. Grimm, Rockford, Ill., assignor to Sundstrand Corporation, Rockford, Ill.

Filed May 31, 1984, Ser. No. 615,772
Int. Cl.[4] F16H *25/22, 57/10*
U.S. Cl. 74—89.15 14 Claims



7. An actuator comprising:

a motor having a rotary output;

an actuating element mounted for movement through a path;

a gear reduction mechanism, including a rotary element, interconnecting said output and said arm element and operable to move said arm element through said path;

a friction brake element rotatable in response to rotation of said output;

first and second brake reaction elements mounted for independent movement into and out of engagement with said friction brake element and held against rotation;

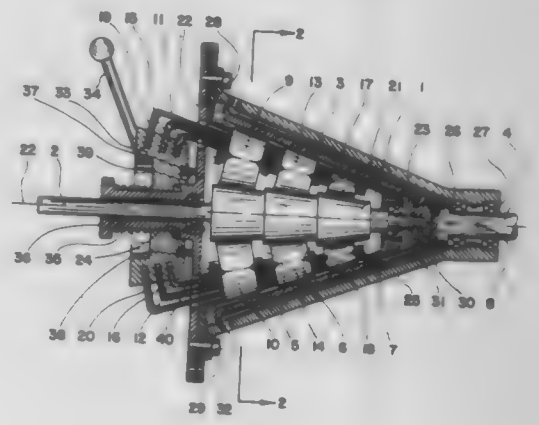
selectively operable control means for moving said first reaction element into or out of engagement with said friction brake element; and

means including a cam associated with said rotary element, for moving said second reaction element into and out of engagement with said friction brake element at at least one predetermined position of said actuating element along said path.

4,603,595
COMMON APEX DOUBLE CONE VARIABLE SPEED MECHANICAL TRANSMISSION

Hyok S. Lew, 7890 Oak St., Arvada, Colo. 80005, and Michael Stranahan, P.O. Box 15, Woody Creek, Colo. 81656

Filed Nov. 23, 1984, Ser. No. 674,501
Int. Cl.[4] F16H *15/16, 15/00, 15/56*
U.S. Cl. 74—191 9 Claims



1. A mechanical transmission device for transmitting power from a first shaft to a second shaft and vice versa comprising in combination:

(a) a first hollow rotating member including an internal conical surface coaxially disposed with respect to said first shaft wherein extension of said internal conical surface converges to a single apex point, said first hollow rotating member nonrotatably coupled to said first shaft;

(b) a second rotating member including a plurality of external conical surfaces disposed in series and coaxially with respect to said second shaft wherein extensions of said plurality of external conical surfaces converge to said single apex point, said second rotating member nonrotatably coupled to said second shaft and rotatably disposed within said internal conical surface included in said first hollow rotating member in a coaxial relationship, wherein a series of conical frustum shell surfaces are provided intermediate said internal conical surface of said first hollow rotating member and said plurality of external conical surfaces of said second rotating member;

(c) a plurality of sets of conical frustum rollers rotatably and nonorbitably disposed within plurality of said conical frustum shell spaces, each set of said conical frustum rollers disposed in each conical frustum shell space of said plurality of conical frustum shell spaces frictionally coupling rotating movements of said first hollow rotating member and said second rotating member when said conical frustum rollers are simultaneously in contact with said internal conical surface of said first hollow rotating member and one of said external conical surfaces of said second rotating member; and

(d) means for selectively establishing a simultaneous frictional contact between one set of said conical frustum rollers and said internal conical surface of said first hollow rotating member and one of said external conical surfaces of said second rotating member;

whereby, rotational motions of said first and second shafts are coupled to one another at various transmission ratios depending on different set of said conical frustum rollers selectively establishing frictional coupling of rotating movements of said first hollow rotating member and said second rotating member.

4,603,596

ACTUATION SYSTEM FOR TRANSMISSION SYNCHRONIZER PROVIDING REGULATED ENGAGEMENT PRESSURE

Teruo Akashi; Hiroshi Ito, and Shigemichi Yamada, all of Toyota, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

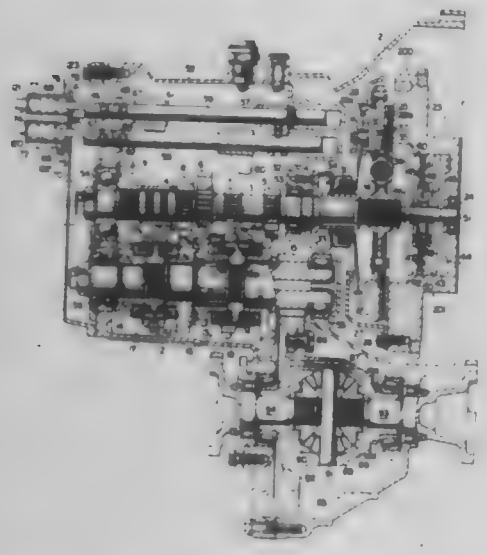
Filed Mar. 8, 1983, Ser. No. 473,218

Claims priority, application Japan, Apr. 23, 1982, 57-68409

Int. Cl.⁴ F16H *5/40, 3/08;* **B60K** *41/02;* **F16D** *21/04*

U.S. Cl. 74—336 R

5 Claims



1. In a transmission for a vehicle, comprising a rotary power input member, a rotary power output member, and a synchronizer for selectively torque-transmittingly connecting said power input member to said power output member, said synchronizer comprising a first rotary member rotatably around an axis and constantly torque-transmittingly connected with said power input member, a second rotary member rotatably around said axis and constantly torque-transmittingly connected with said power output member, a synchronizer sleeve rotatable around said axis and constantly torque-transmittingly connected with one of said first and second rotary members, said synchronizer sleeve being axially movable relative to said one rotary member so far as torque-transmittingly to mesh with the other of said first and second rotary members, and a synchronizer ring rotatable around said axis and torque-transmittingly connected with said one rotary member when said synchronizer sleeve is axially moved toward said other of said first and second rotary members, said synchronizer ring being frictionally engagable with said other rotary member so as to make rotations of said first and second rotary members approach to one another toward synchronization therebetween when frictionally pressed against said other rotary member, an actuation system, comprising:

(a) an actuator which selectively drives said synchronizer sleeve and synchronizer ring together toward and away from said other rotary member so as, when said synchronizer sleeve and synchronizer ring are driven toward said other rotary member, first to engage said synchronizer ring frictionally with said other rotary member and then to engage said synchronizer sleeve as torque-transmittingly meshed with said other rotary member; and

(b) a control system which controls operation of said actuator so as, when said synchronizer sleeve and synchronizer ring are driven toward said other rotary member, to vary the force of frictionally pressing said synchronizer ring against said other rotary member in relation to the difference of rotational speed between said first and second rotary members so that said force of frictional pressing is substantially lower when said difference of rotational speed substantially exists than a final value after said difference of rotational speed has substantially disappeared, wherein said force of frictional pressing is aburptly and substantially increased up to said final value at the time when said difference of rotational speed is reduced substantially to zero.

4,603,597

DRIVE SYSTEM

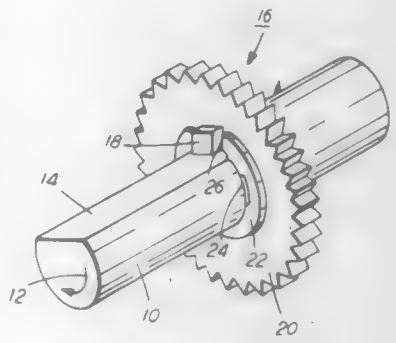
Frank V. Onorati, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Jan. 30, 1985, Ser. No. 696,561

Int. Cl.⁴ F16H *55/17;* **F16B** *7/00, 21/00;* **F16D** *1/00*

U.S. Cl. 74—434

10 Claims



1. A drive system, including:

a shaft member;

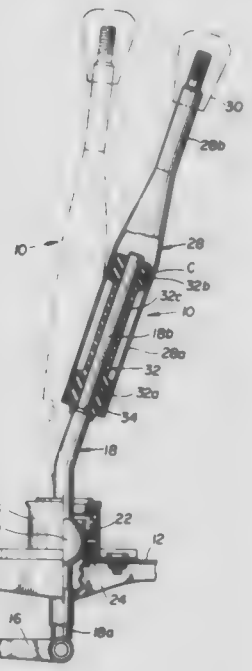
a unitary driven member adapted to be mounted on said shaft member to rotate in unison therewith, said driven member having a protrusion extending outwardly from one surface thereof; and

an annular split retaining ring having opposed free ends defined by the split in the ring, said retaining ring mounted removably on said shaft member with the free ends thereof meshing with the protrusion extending outwardly from said driven member so as to rotate in unison therewith.

4,603,598
SHIFT LEVER

Shinsaku Tsuji, Ebina; Toshimitsu Kimura, Yokohama; Yasushi Asano, and Yasuhito Suzuki, both of Honjo, all of Japan, assignors to Nissan Motor Co., Ltd., Yokohama and Fuji Koko Co., Ltd., Tokyo, both of, Japan

Filed Oct. 5, 1984, Ser. No. 658,233
Claims priority, application Japan, Oct. 13, 1983, 58-189816
Int. Cl.[4] G05G *7/16, 9/12*
U.S. Cl. 74—473 P 10 Claims



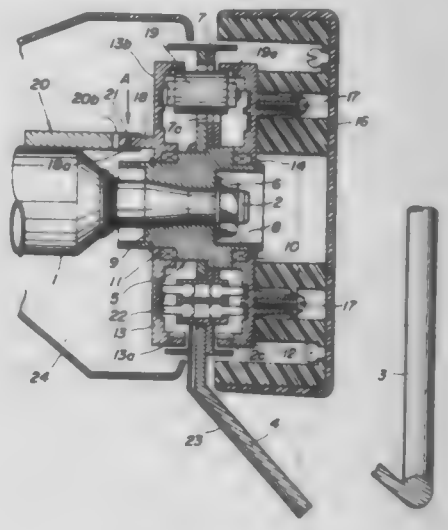
1. A shift lever comprising:
a first lever section having an elongate end portion which is substantially rigid;
a second lever section having an elongate hollow cylindrical portion in which said first lever section end portion is disposed;
first and second elastomeric insulators securely mounted on said first lever section end portion and spaced apart from each other in an axial direction of said first lever end portion;
means for securely connecting said first elastomeric insulator with said second lever section cylindrical portion; and
means forming a clearance between said second elastomeric insulator and said second lever section cylindrical portion.

4,603,599
STEERING SYSTEM EQUIPPED WITH STEERING WHEEL CENTER PAD ANTI-ROTATION MECHANISM

Hideoki Matsuoka, Isehara, Japan, assignor to Nissan Motor Co., Ltd., Japan

Filed May 24, 1985, Ser. No. 737,443
Claims priority, application Japan, May 28, 1984, 59-107994
Int. Cl.[4] B62D *1/10*
U.S. Cl. 74—492 3 Claims

1. A steering system comprising:
a stationary column having an upper end portion;
a steering shaft surrounded by said column and having an upper end portion projecting from the upper end of said column;
a steering wheel having a hub portion at which it is mounted on the upper end portion of said steering shaft for rotation therewith;
said hub portion having an annular flange section and a pair of coaxial upper and lower sleeve sections projecting upwardly and downwardly from the inner periphery of said flange section;
a pair of upper and lower internal gears rotatably mounted on said upper and lower sleeve sections, respectively;
a pinion rotatably mounted on said hub portion and meashed with said upper and lower internal gears;
an anchor leg provided to the lower end of said lower internal gear;
a location arm provided to the upper end of said column;
one of said anchor leg and said location arm having an attaching end formed with a pair of opposed lateral sides which are opposed in the direction perpendicular to the diametrical direction of said lower internal gear;

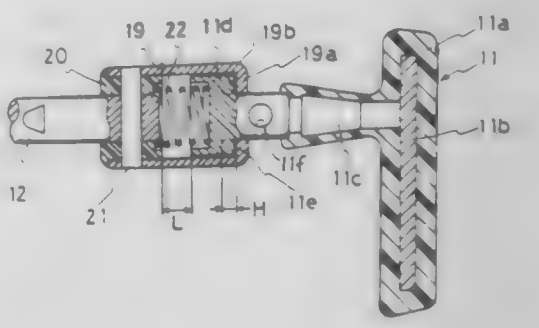


the other of said anchor leg and said location arm having a bifurcated end loosely receiving therewithin said attaching end; and
fastening means for resiliently deforming said bifurcated end and bringing the same into contact with said opposed lateral sides of said attaching end.

4,603,600
PARKING BRAKE OPERATING DEVICE

Takeo Yamazaki, Anjo, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Japan

Filed Jan. 16, 1985, Ser. No. 691,770
Claims priority, application Japan, Feb. 17, 1984, 59-21857[U]
Int. Cl.[4] G05G *5/06*
U.S. Cl. 74—503 11 Claims



1. A parking brake operating device comprising: a plunger mounted on a car body such as to be slidable in the axial direction thereof and rotatable around the axis thereof; a handle attached to one end of said plunger such as to be slidable in the axial direction of said plunger and rotatable around the axis of said plunger; a parking brake actuating cable which is connected to the other end of said plunger such that a parking brake will be actuated when a driver pulls said plunger in the act of pulling said handle; a locking mechanism which inhibits said plunger from returning due to a reaction force of said brake when said plunger is pulled by said driver and which releases said inhibition by a rotation of said plunger; a ring cam surface facing in the direction opposite to the handle pulling force provided on said plunger; a ring cam surface corresponding to said cam surface provided on said handle; a spring for retaining said handle at a predetermined angular position in relation to said plunger by pressing said cam surfaces, thereby to connect said handle with said plunger for unitary rotation only when said handle is pulled; a sleeve coaxially fixed on said

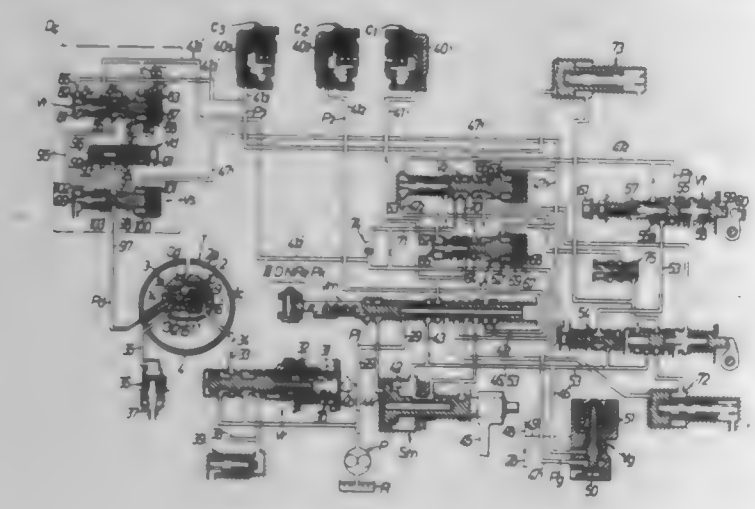
one end of plunger; and a shaft member provided on said handle for inserting into said sleeve so as to be supported; said cam surfaces being provided on an expanded portion at the end of said shaft member and at the opposite position of the end surface on the handle side of said sleeve and said spring being disposed in said sleeve.

4,603,601

DIRECT-COUPLING CONTROLLER FOR A TRANSMISSION HAVING DELAY MEANS FOR TEMPORARILY RELEASING THE CLUTCH DURING SPEED CHANGE

Masao Nishikawa, Tokyo; Shinzo Sakai, Saitama; Yoichi Sato; Wako, and Yukihiro Fukuda, Asaka, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 15, 1984, Ser. No. 641,126
Int. Cl.[4] F16H *47/00;* B60K *41/02*
U.S. Cl. 74—731 6 Claims



1. A direct-coupling controller for a torque converter in a vehicular automatic transmission, the torque converter including an input member provided with a pump rotor and an output member provided with a turbine rotor; the transmission further including a direct-coupling clutch interposed between the input and output members for mechanically coupling them together, the clutch including a hydraulic cylinder for actuation thereof, and an auxiliary transmission including a plurality of stages of gear trains for transmitting the torque of the output member to a drive wheel, each of the gear trains having a hydraulically operated friction element for actuation thereof, each friction element including a hydraulic cylinder;

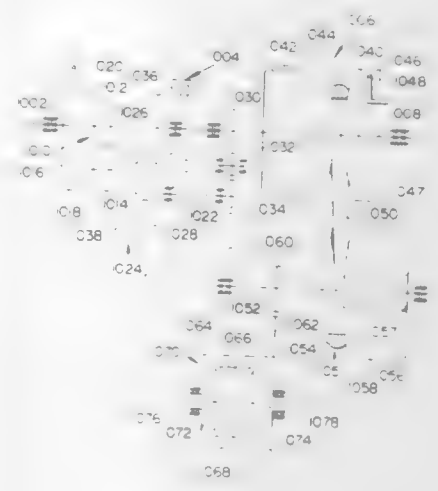
said direct-coupling controller comprising a timing valve interconnecting the hydraulic cylinder of the direct-coupling clutch and the hydraulic cylinder of at least two of the friction elements that are of adjacent operational order; said timing valve having and being movable between a first switching position in which working oil pressure of the hydraulic cylinder of one of the friction elements is supplied to the hydraulic cylinder of the direct-coupling clutch, and a second switching position in which working oil pressure of the hydraulic cylinder of the other of the friction elements is supplied to the hydraulic cylinder of the direct-coupling clutch; said timing valve including a first pilot oil pressure chamber to which is applied oil pressure to move said timing valve to said first switching position and a second pilot oil pressure chamber to which is applied oil pressure to move said timing valve to said second switching position; said first pilot oil pressure chamber being connected to the hydraulic cylinder of said one of the friction elements and the second pilot oil pressure chamber being connected to the hydraulic cylinder of said other of the friction elements, said timing valve including delay means for delaying movement between switching positions for a predetermined period of time after working oil pressure has been applied to said friction elements.

4,603,602

METHOD OF CONTROLLING CONTINUOUSLY VARIABLE TRANSMISSION

Yoshikazu Tanaka; Haruyoshi Kumura, both of Yokohama; Keiju Abo; Hiroyuki Hirano, both of Yokosuka, and Sigeaki Yamamuro, Zushi, all of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Dec. 13, 1983, Ser. No. 560,940
Claims priority, application Japan, Dec. 17, 1982, 57-220089
Int. Cl.[4] B60K *41/12, 41/18*
U.S. Cl. 74—866 7 Claims



1. A method of controlling change in reduction ratio in a continuously variable transmission of a motor vehicle, wherein the rate of change in reduction ratio in the continuously variable transmission with respect to time is adjustable by a shift actuator in response to a speed at which the shift actuator operates, the method comprising the steps of:

detecting operating conditions of the motor vehicle;

determining a desired optimum reduction ratio indicative signal indicative of a target operating position of the shift actuator which corresponds to a desired optimum reduction ratio for the detected operating conditions of the motor vehicle;

generating an actual reduction ratio indicative signal indicative of an actual operating position of the shift actuator;

comparing said actual signal with said desired signal and generating a first signal when an upshift is required and a second signal when a downshift is required;

causing the shift actuator to operate at a first predetermined speed in a first direction in response to the presence of said first signal; and

causing the shift actuator to operate at a second predetermined speed in a second direction which is opposite to the first direction in response to the presence of said second signal;

said first predetermined speed being slower than said second predetermined speed.

4,603,603

ELECTRONIC TRANSMISSION SHIFT CONTROLLER HAVING A CONTROLLED ALIGNMENT VALVE MECHANISM

Michael E. Salmon, Flint, Mich., assignor to General Motors Corporation, Detroit, Mich.

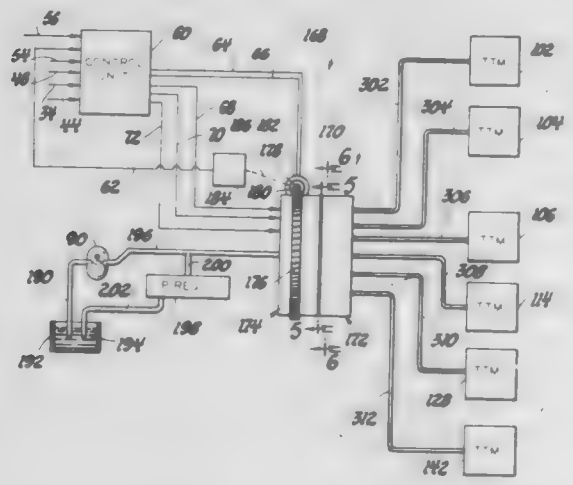
Filed Aug. 26, 1983, Ser. No. 526,657
Int. Cl.[4] B60K *41/22*
U.S. Cl. 74—868 1 Claim

1. In a motor vehicle multigear ratio transmission having a line pressure fluid source and a plurality of fluid operated drive establishing mechanisms selectively actuated according to a predetermined schedule to effect gear ratio shifting, apparatus comprising;

fluid supply means intermittently actuable to connect the line pressure source to a fluid supply passage to thereby affect the fluid pressure therein;

fluid exhaust means intermittently actuable to exhaust fluid from a fluid exhaust passage to thereby affect the fluid pressure therein;

fluid directing means for selectively actuating the drive establishing mechanisms to effect gear ratio shifting by selectively connecting the fluid supply and exhaust passages to the drive establishing mechanisms according to the predetermined schedule, such means including first and second relatively movable members, the first member having a plurality of fluid conducting passages connected to respective drive establishing mechanisms, and the second member having a pair of controlled pressure passages and adjacently disposed line pressure passages adapted to be moved into alignment with respective fluid conducting passages of the first member, the line pressure passages being connected to said fluid pressure source, and valve means connecting said fluid supply and exhaust passages to said pair of controlled pressure passages, said valve means being switchable between first and second positions for interchanging said fluid supply and exhaust passages with said pair of controlled pressure passages, the controlled pressure passages of said second member being located relative to the fluid conducting passages of said first member such that relative movement of said first and second members in one direction while said valve means is moved to the first position operates to successively connect such controlled pressure passages and adjacently



disposed line pressure passages with respective fluid conducting passages of said first member for upshifting said transmission, and relative movement of said first and second member in the opposite direction while said valve means is switched to the second position operates to successively connect such controlled pressure passages and such adjacently disposed line pressure passages with respective fluid conducting passages of said first member for downshifting said transmission, each such upshift and downshift including a transient phase in which the fluid conducting passage of the first member associated with the respective drive establishing mechanism is connected to one of the controlled pressure passages of the second member to thereby permit fluid pressure to be supplied to or exhausted from such drive establishing mechanisms, and a steady state phase in which such fluid conducting passage is isolated or connected to a line pressure passage of the second member so as to maintain the actuation of the drive establishing mechanism brought about in the transient phase; and

shifting means effective when it is desired to shift transmission gear ratios to switch said valve means to the first position and to produce relative movement of said first and second members in said one direction if the desired shift is an upshift, and to switch the valve means to said second position and to produce relative movement of said first and second members in said opposite direction if the desired shift is a downshift.

4,603,604

CREEP-INHIBITING DEVICE FOR AN AUTOMOTIVE VEHICLE EQUIPPED WITH AN AUTOMATIC TRANSMISSION

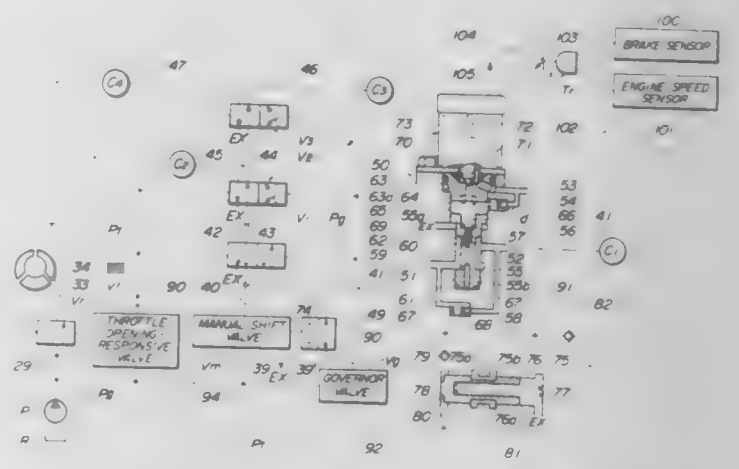
Masao Nishikawa, Tokyo; Yoichi Sato, Wako, and Yukihiro Fukuda, Asaka, all of Japan, assignors to Honda Giken Kogyo K.K., Tokyo, Japan

Filed Feb. 5, 1985, Ser. No. 698,401

Claims priority, application Japan, Feb. 9, 1984, 59-22269; Mar. 16, 1984, 59-50345

Int. Cl.⁴ F16H *47/00*

U.S. Cl. 74—869 **7 Claims**



1. In a creep-inhibiting device for use in an automotive vehicle equipped with an engine, a fluid coupling, a transmission mechanism coupled in series to said fluid coupling and having a frictionally engaging element, and an operating fluid source for supplying an operating fluid to said frictionally engaging element, said device including engine load sensor means for producing a signal fluid having a pressure representative of load applied on said engine, control means interposed between said frictionally engaging element and said operating fluid source, and a fluid line for delivering said signal fluid from said engine load sensor means to said control means, wherein said control means is adapted to control the power transmission capacity of said frictionally engaging element within a range from substantially zero to a predetermined value in dependence on the pressure of said signal fluid supplied thereto, to inhibit creeping of said vehicle when said engine is in a no-load state, the improvement comprising selector valve means arranged in said fluid line, said selector valve means being adapted to assume a first position wherein it allows said signal fluid to flow in both directions from said engine load sensor means to said control means and vice versa when the pressure of said signal fluid is lower than a predetermined value, and to assume a second position wherein it allows said signal fluid to flow in a sole direction from said engine load sensor means to said control means when the pressure of said signal fluid is higher than said predetermined value.

4,603,605

THREAD VISE

Richard E. Miller, 17301 66th Ct., Tinley Park, Ill. 60477

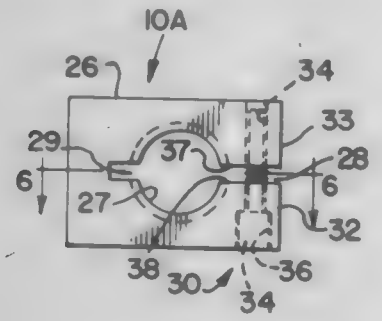
Continuation of Ser. No. 547,627, Nov. 1, 1983, abandoned. This application Jun. 4, 1985, Ser. No. 741,034

Int. Cl.⁴ B25B *13/50*

U.S. Cl. 81—53.2 **7 Claims**

1. A wrench receiving thread cleaning and gripping device adapted to be threaded on and advanced the full exposed length of an externally threaded stud to clean the stud threads and to position the nut at a desired level of the stud which comprises a one piece radially split nut having opposed external sides adapted to receive the jaws of a wrench in non-rotating relation and an internally threaded open ended bore therethrough having threads mating with the threads of the stud to be cleaned and gripped, the split ends of said nut being spaced apart to define a gap therebetween, an internal longitudinal groove through said bore diametrically opposite the gap pro-

viding a reduced thickness bending zone accommodating contraction of the nut around the stud to lock the mating threads of the nut and stud against relatiye rotation, and means for reducing the gap between the split ends of the nut and bending



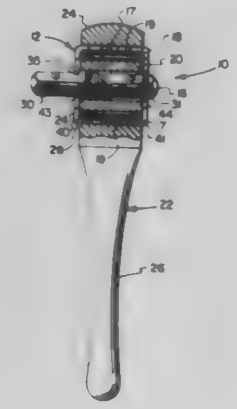
the reduced thickness bending zone to contract the bore of the nut forcing the internal threads into firm mated locked engagement with the threads of the stud without damaging the stud threads when wrench torque is applied to the nut in either clockwise or counterclockwise directions.

4,603,606

UNIDIRECTIONAL DRIVE TOOL CARTRIDGE AND METHOD OF MANUFACTURE

James Headen, Lewisville, Tex., assignor to Radian Tool Corporation, Lewisville, Tex.

Filed Jul. 9, 1984, Ser. No. 629,083
Int. Cl.[4] B25B *13/46*
U.S. Cl. 81—59.1 3 Claims



1. A unidirectional drive cartridge adapted for securement to a force application member for directional torque transmission, comprising:

a housing including first and second thin walled cup members adapted for matingly engaging one another;

a unidirectional clutch mounted within said two-cup housing, said clutch having a central opening extending therethrough;

a torque transmitting drive shaft disposed within said clutch and having front and back portions for extending outwardly of said clutch and a central shoulder portion for containment therein;

means for slidably receiving said drive shaft within said central opening of said clutch to enable selective, slidable, longitudinal positioning of said drive shaft within said receiving means and rotational engagement of said drive shaft by said receiving means;

said drive shaft receiving means being located within said clutch to freely rotate in a first direction and to be constrained by said clutch against rotation in a second opposite direction;

said housing further including front and back faces, each having a central aperture within which said front and back drive shaft portions are located and of a size to engage said shoulder portion of said drive shaft against said faces to constrain it within said receiving means;

said drive shaft being longitudinally located within said housing wherein a torque applied to said housing will be transmitted only in one direction by said drive shaft, and when said drive shaft is longitudinally located in the direction of an opposite face, a torque applied to said housing being transmitted only in an opposite direction;

said drive shaft being of a generally square cross-sectional configuration;

said drive shaft being adapted to receive a socket mounted thereon in secured engagement therewith for the transmission of torque therethrough; and

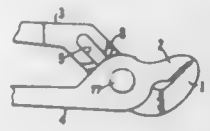
said drive shaft further including socket retainer elements on said front and back portions thereof.

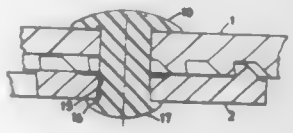
4,603,607

PIVOT CONNECTION FOR SLIP JOINT PLIERS

Bernard P. Schaffner, Jr., Meadville, Pa., assignor to Channellock, Inc., Meadville, Pa.

Filed Feb. 25, 1982, Ser. No. 352,338
Int. Cl.[4] B25B *7/04*
U.S. Cl. 81—414 5 Claims





1. An improved high strength slip joint pliers comprising:

first and second members each having a handle portion connected to shanks extending from mating jaws;

the shank of the jaw of said first member having a slot with a plurality of pivot positions along its length defined by grooves;

said shank of the second member having a circular hole with a cylindrical section on one side surface thereof adjacent said shank of the first member with a circular tapered part facing outwardly from said cylindrical section to an opposite side surface of said shank of the second member, with an angle of taper of said tapered part being a locking taper; and a rib like tongue extending outwardly from said one side surface of said shank of said second member and being adapted to be positioned in any selected one of said pivot positions for adjusting the opening between said mating jaws; and a permanently set, sliding pivot type fastener connection between the shanks of said mating jaws embodying a rivet with a head and shank;

said head overlapping said slot and a portion of the shank extending through the slot and slidable back and forth along the slot;

the remaining portion of said shank extending through the cylindrical section of said circular hole and through said circular tapered part and projecting beyond the shank of said second member; the end of said remaining portion which projects beyond said shank of the second member being headed over the second member forming in one step a round overlapping head like said rivet head and expanded tightly into said circular tapered part and at the same time being expanded into tight engagement around the intersection of said circular tapered part with the outer surface of said second member underlying said overlap-

ping head and further expanded into tight engagement with said cylindrical section of said circular hole and thereby forming a united, permanently set, non-rotatable joint of the shank of said rivet with the shank of said second member, and sliding pivot fastener connection with a spaced clearance of predetermined size between the head of said rivet and said side surface from which said rib extends, thereby enabling said shank of said rivet to be freely slidable back and forth along said slot when said handles of said pliers are rotated to a position in which said rib like tongue and said grooves are disengaged.

4,603,608

REMOTELY-MANIPULATED APPARATUS FOR PERFORMING MAINTENANCE WORK IN SHIELDED CELLS

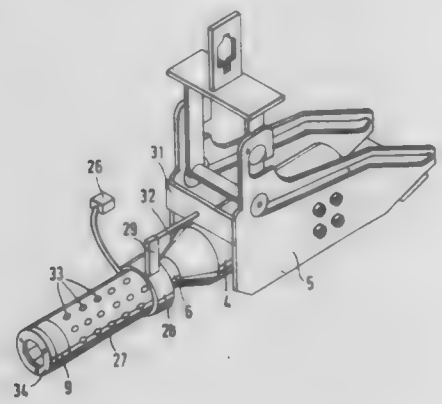
Günther Dudek, Visselhövede, Fed. Rep. of Germany, assignor to Deutsche Gesellschaft für Wiederaufarbeitung von Kernbrennstoffen mbH, Hanover, Fed. Rep. of Germany

Filed Sep. 20, 1984, Ser. No. 652,765

Claims priority, application Fed. Rep. of Germany, Sep. 24, 1983, 3334580

Int. Cl.[4] B25B *19/00*

U.S. Cl. 81—463 9 Claims



1. An apparatus for the remotely-manipulated connection and disconnection of threaded fasteners of a flange joint in a radioactively-ladened cell, the apparatus comprising:

a remotely-controlled wrench including a drive shaft and a holder for engaging the fastener to be connected or disconnected;

an extension shaft disposed between said drive shaft and said holder for connecting said holder to said drive shaft for rotation therewith; and,

energizable magnetic means mounted on said extension shaft for developing a magnetic force for holding the fastener in said holder as the same is disconnected and drawn from a flange of the flange joint.

4,603,609

APPARATUS FOR CUTTING A SHEET-LIKE MEMBER APPLIED TO A SURFACE OF A SEMICONDUCTOR WAFER

Ono Takatoshi, Nagareyama, Japan, assignor to Disco Abrasive Systems, Ltd., Tokyo, Japan

Filed Oct. 17, 1984, Ser. No. 661,691

Claims priority, application Japan, Oct. 21, 1983, 58-197359; Apr. 27, 1984, 59-86557

Int. Cl.[4] B23B *37/00*

U.S. Cl. 82—51 4 Claims

1. An apparatus for melting and cutting a sheet-like member applied to a surface of a semiconductor wafer at the edges of said semiconductor wafer, comprising:

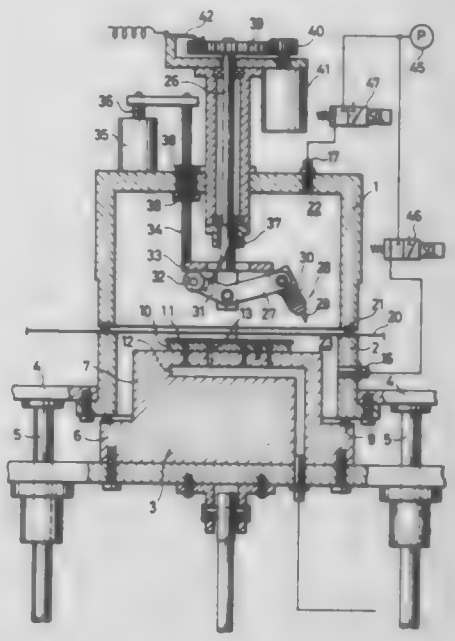
a base, said base including a support for said semiconductor wafer;

support means for said heating rod;

means for heating said heating rod;

means for urging said heating rod relatively against said edges of said semiconductor wafer attached to said means for said rod support means; and

a moving mechanism attached to the end of said support means relatively moving said heating rod along said edges of said semconductor wafer;



whereby said heating rod is relatively moved along said edges of said semiconductor wafer as the former is relatively urged against the latter so that said sheet-like member applied to said semiconductor wafer is melted and cut at said edges of said semiconductor wafer.

4,603,610

SIZING APPARATUS

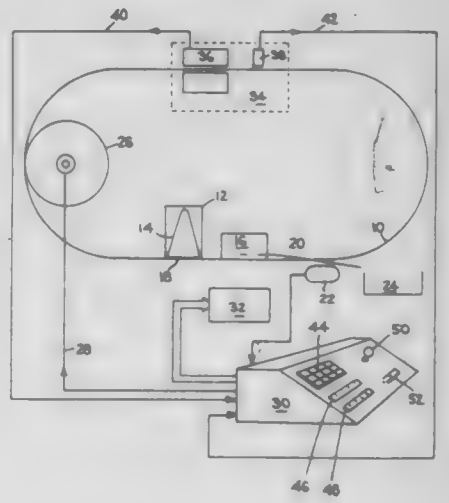
John A. Whitehouse, 8 Old Rectory Close, Mulbarton, Norwich, England

Filed Nov. 15, 1984, Ser. No. 671,516

Claims priority, application United Kingdom, Nov. 15, 1983, 8330422

Int. Cl.[4] B26D *7/30*

U.S. Cl. 83—13 11 Claims



9. A method of controlling the cutting or sawing of a product into uniformly sized portions comprising the steps of:

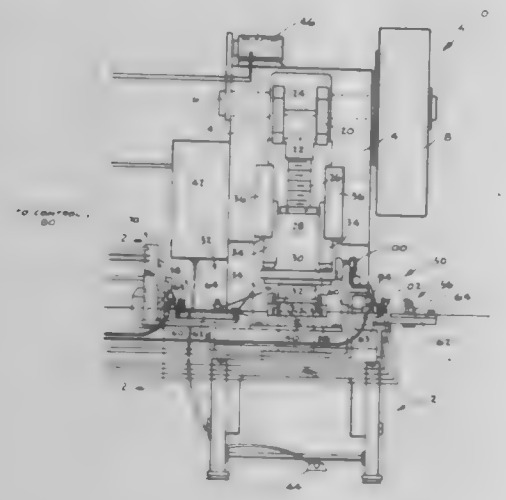
(1) resetting apparatus for accumulating an area signal, to zero;

(2) entering a target weight for each piece to be cut and an assumed density value of the product into a computing means;

(3) moving the face of the product from which slices are to be cut around a closed loop track and past a detection station so that the height of the end face can be sampled at regular intervals and an area signal accumulated corresponding to a summation of all the individual height signals;

(4) multiplying the area signal by a Constant to give the area of the end face of the product, the Constant being proportional to the spacing between the sampling points;
(5) multiplying the area signal by the density value signal to give the weight of a slide of the product of unit thickness;
(6) dividing the numerical target weight value by the unit thickness weight value to obtain a numerical value of the thickness of the cut required to obtain the desired target weight;
(7) generating a control signal proportional to the numerical value of the thickness required;
(8) adjusting a cutting means to remove from the measured end face of the material a slide having the desired thickness;
(9) cutting a slice from the said end face of the product having the desired thickness;
(10) weighing the slice of product to obtain the average weight of the cut pieces;
(11) comparing the average weight with the target weight and producing from the comparison a feedback signal indicating whether the density parameter utilized in the computation of the thickness was correct, and
(12) where a correction in the density value is required, updating the density value in the computing means and restoring the same for use in subsequent depth-of-cut computations.

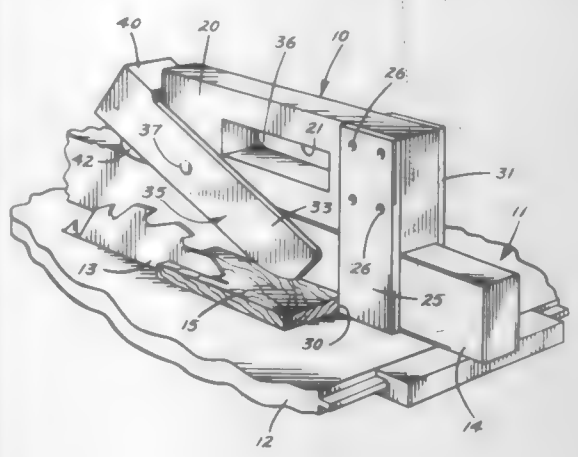
4,603,611
FEED SYSTEM FOR PUNCH PRESS
Dennis R. Ferguson, P.O. Box 767, Willoughby, Ohio 44094
Filed Jul. 6, 1984, Ser. No. 628,393
Int. Cl.[4] B21D *28/02*
U.S. Cl. 83—50 **12 Claims**



8. A method for delivering stock to a punch press, comprising the steps of:
pushing a piece of stock toward the press;
performing punching operations upon the stock after the stock has been delivered to the press;
counting the number of operations performed upon the stock;
comparing the counted number of operations with a first predetermined number; and
pulling the stock away from the press after the number of operations matches the predetermined number.

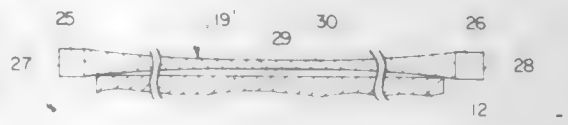
4,603,612
SAFETY ATTACHMENT FOR A TABLE SAW
Richard R. Atkins, 730 N. Lyford Rd., Rockford, Ill. 61107
Filed Dec. 17, 1984, Ser. No. 682,085
Int. Cl.[4] B27B *25/10*
U.S. Cl. 83—425 **9 Claims**

1. An attachment for a table saw having a horizontal table, a blade rotational in a vertical plane and extending upwardly from the table, and a rip rail upstanding from the table and spaced laterally from the blade to guide a piece of stock into and past the blade as the stock is cut by the blade, said attachment comprising a body captivated laterally on the rip rail and adapted to be moved from the front of the rail toward the rear thereof during an active pushing stroke, a leg fixed rigidly to and depending from the trailing end portion of said body and located at a lateral position between said rail and said blade, the leading side of said leg engaging the trailing end of said stock and pushing said stock into said blade during said pushing



stroke, an arm formed separately of said leg and pivotally connected to said body to swing upwardly and downwardly independently of said leg, and means for biasing said arm downwardly to cause the lower end of said arm to press downwardly against the upper side of said stock and to hold said stock downwardly on said table as said stock is pushed into and past said blade by said leg.

4,603,613
HOLLOW FORMED BAND SAW FOR INDUSTRIAL BAND MILL
Harry Wilson, Rte. #5, Box 111, Selinsgrove, Pa. 17870
Continuation-in-part of Ser. No. 535,296, Sep. 23, 1983, abandoned. This application May 23, 1985, Ser. No. 737,090
Int. Cl.[4] B27B *33/06*
U.S. Cl. 83—661 **6 Claims**



1. In an industrial band mill, wherein a driven band saw is mounted on a plurality of wheels, each of which is substantially flat and has a front edge, and at least one of which may constitute a driving wheel, wherein the band saw has inner and outer sides and further has a pair of edges, at least one of which has cutting teeth formed thereon, wherein the edge with the cutting teeth overhangs the respective front edges of the wheels, and wherein means are provided for moving the wheels in a direction substantially away from one another, the improvement wherein the band saw is substantially free of pre-stress in its manufacture prior to use, the band saw being concavely formed on at least its inner side and substantially from edge to edge thereof, wherein the band saw has a cross-sectional thickness which is substantially non-uniform throughout and which decreases substantially uniformly from edge to edge towards the approximate center of the band saw, such that there is reduced mass at the center of the band saw between the edges thereof, wherein a non-uniform radial gap exists between the band saw and each of the wheels when the band saw is first mounted on the wheels, and wherein when the wheels are moved away from one another, the band saw will be stretched and the inner surface of the band saw will become substantially flush against the respective wheels in the operative position of the band saw on the band mill, thereby eliminating the necessity for stressing the band saw by roll tension-

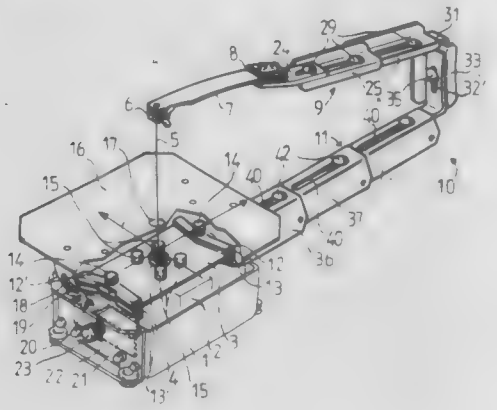
ing or the like during the manufacture thereof; and whereby the reduction of mass replaces the expansion otherwise required by roll tensioning.

4,603,614

ELECTROMAGNETIC JIGSAW

Marcel Charonnat, 34 rue Sambre et Meuse, 75010 Paris, France

Filed May 22, 1984, Ser. No. 612,843
Claims priority, application France, May 25, 1983, 83 08616
Int. Cl.[4] B27B *19/04*
U.S. Cl. 83—752 **9 Claims**



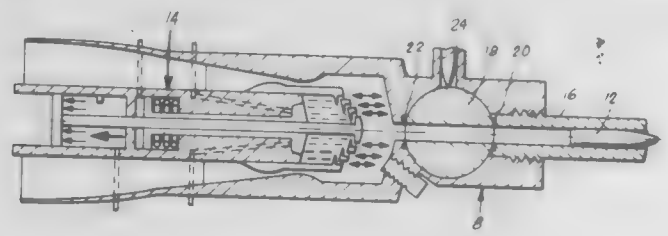
1. An electro-magnetic jig-saw, comprising:
a blade having an upper end and a lower end;
a plate vibrated by an electro-magnet supplied with AC current, the plate having two pairs of opposite edges and the plate being spaced, at rest, from the electro-magnet;
fastening means securing said lower end of the blade to the plate;
at least one inertia mass formed by a weight affixed to the plate; and,
means for varying the spacing between the vibrating plate and the electro-magnet, acting only on a portion of the plate adjacent to said edges.

4,603,615

LIQUID PROPELLANT WEAPON SYSTEM

Eugene Ashley, Burlington, Vt., assignor to General Electric Company, Burlington, Vt.

Filed Jan. 8, 1979, Ser. No. 2,038
Int. Cl.[4] F41F *15/00;* F16K *15/14*
U.S. Cl. 89—7 **10 Claims**



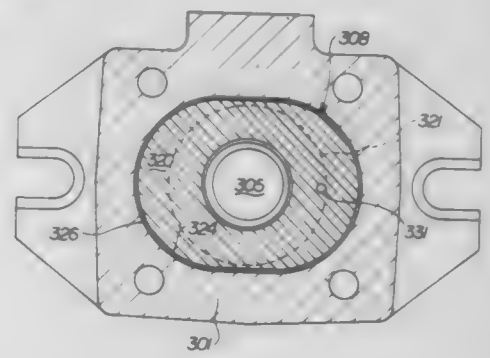
10. A liquid propellant gun having an annular piston disposed between a pumping chamber and a combustion chamber and having a first longitudinal axis comprising:
said annular piston including a valve assembly comprising:
a plurality of transversely overlapping elements disposed in a nested array to define a piston end wall having a pumping chamber face and a combustion chamber face, including:
an outer ring and
a central control rod,
each of said elements having a respective longitudinal axis in common with said first longitudinal axis,
first means biasing said rod to displace said psiton end wall to minimize the volume of said pumping chamber,
second means for applying fluid pressure to said pumping chamber face of said piston end wall and adapted to overcome the bias of said face means to enlarge the volume of said pumping chamber,
third means for applying fluid pressure to said combustion chamber face of said piston end wall and adapted to overcome the pressure of said second means to decrease the volume of said pumping chamber, and
having a mode of operation such
that when said second means applies pressure to said pumping chamber face, said ring and said rod are disposed in a mutually closed disposition and
that when said third means applies pressure to said combustion chamber face, said ring and said rod are disposed in a mutually spaced apart disposition.

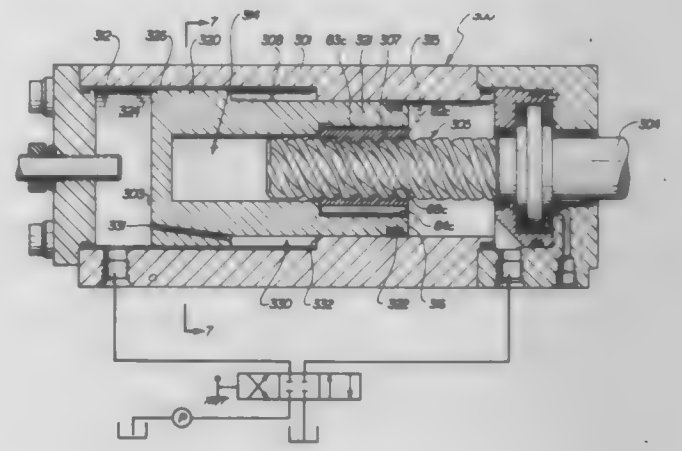
4,603,616

ROTARY ACTUATOR

Theodore S. Zajac, Bay Village, Ohio, assignor to Zaytran Inc., Elyria, Ohio

Continuation-in-part of Ser. No. 497,862, May 25, 1983, abandoned. This application Apr. 30, 1984, Ser. No. 605,656
Int. Cl.[4] F01B *3/00*
U.S. Cl. 92—33 **5 Claims**





1. Apparatus comprising:
a housing having a chamber,
a drive member mounted for rotation in said housing and extending into said chamber,
a piston disposed for axial movement in said chamber,
helical force transmitting means interconnecting said piston and said drive member for rotating said drive member with respect to said piston in response to axial movement of said piston,
port means for communicating fluid pressure to opposite ends of said piston to move said piston axially in opposite directions, respectively,
a fluid seal carried by said piston and sealingly engaging said piston and the surface of said chamber to provide fluid isolation between said opposite ends of said piston,
said housing having a first surface portion for guiding said piston in its axial movement and for preventing rotation of said piston due to the action of said force transmitting means, said first surface portion defining a first portion of

said chamber which is noncircular in its cross-section taken transverse to the axis of said piston, and said housing having a second surface portion defining a second portion of said chamber which is circular in its cross-section taken transverse to the axis of said piston,

said piston having one portion located in said first portion of said chamber and having a noncircular cross section corresponding to the cross-section of said first portion of said chamber, and said piston having another portion located in said second portion of said chamber and having a circular cross-section corresponding to the cross-section of said second portion of said chamber,

said fluid seal being carried by said circular portion of said piston and sealingly engaging said second surface portion of said housing.

4,603,617

MULTI-PART PLUNGER PISTON FOR INTERNAL COMBUSTION ENGINES

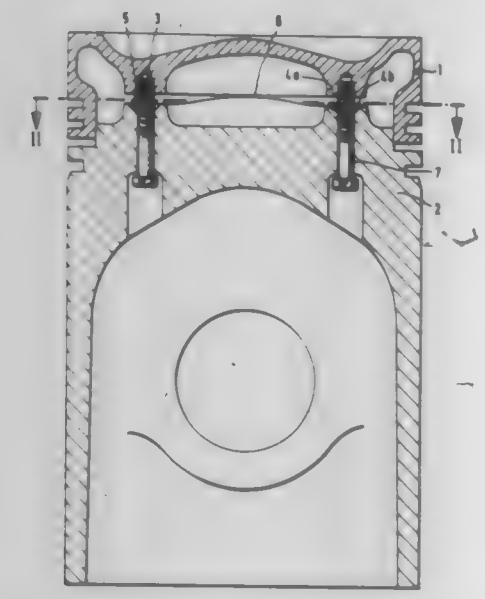
Alois Barth, Stuttgart, and Lothar Wiemann, Weinstadt-Beutelsbach, both of Fed. Rep. of Germany, assignors to Mahle GmbH, Fed. Rep. of Germany

Filed Jun. 18, 1985, Ser. No. 746,068

Claims priority, application Fed. Rep. of Germany, Jun. 27, 1984, 3423559

Int. Cl.⁴ F02F *3/02*

U.S. Cl. 92—216 **4 Claims**



1. In a piston for an internal combustion engine comprising:

(a) a lower piston part having an end wall integral with a cylindrical skirt portion and means for receiving a gudgeon pin for connection of a connecting rod, said lower piston part being formed with a first annular locating surface and a first annular abutment surface lying substantially transversely of the piston axis provided radially inwardly of said first annular locating surface,

(b) an upper piston part serving as the piston head having a second annular locating surface cooperable with said first annular locating surface to ensure relative lateral location of said lower and upper piston parts and having a second annular abutment surface cooperable axially of the piston with said first annular abutment surface, and

(c) screws for bracing said lower and upper piston parts together, said screws passing through bores in said first and second abutment surfaces, the improvement comprising forming at least one of said first and second abutment surfaces with a slightly domed profile in the circumferential direction in the regions of said one abutment surface between the screws, whereby one assembly tightening of the screws effects deformation of the material in the region of the domed surfaces whereby the cooperating first and second abutment surfaces are in engagement over the regions between the screws.

4,603,618

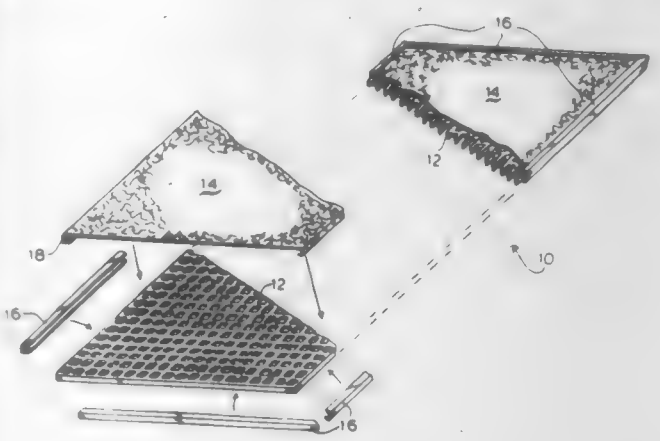
AIR FILTERING AND DISTRIBUTION FOR LAMINAR FLOW CLEAN ROOM

Soltis Charles W., P.O. Box 7328, Houston, Tex. 77248

Filed May 20, 1985, Ser. No. 735,550

Int. Cl.⁴ F24F *7/00*

U.S. Cl. 98—31.5 **15 Claims**



1. An air filtering and distribution structure for use in an environmentally controlled enclosure, said structure comprising:

a first planar section spaced a predetermined distance from one surface of said enclosure, means for diffusing air through the first planar section such that the air is filtered thereby; and

a second planar section spaced a predetermined distance from and generally parallel to said first section, the second planar section comprising a plurality of membrane diffusion panels, each membrane diffusion panel comprising a frame having an open area, and a porous membrane sheet having a predetermined porosity mounted onto and extending over the frame and the open area therein with the porosity providing a predetermined resistance to flow of the air whereby during operation a slight pressure is developed between the first planar section and second planar section causing any leakage of air through the first section to be away from the controlled enclosure so that the membrane diffusion panels cooperate to provide uniform air flow through the second planar section such that the environmentally controlled enclosure achieves higher cleanliness levels for a given filtered air exchange rate than would be obtained without the membrane diffusion panels.

4,603,619

FLUE TERMINAL GAS EXTRACTOR

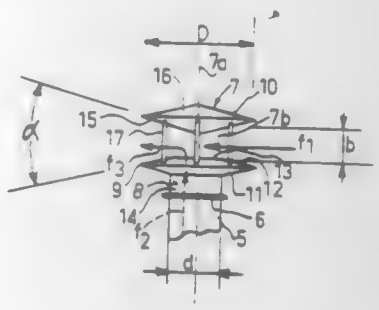
André Amphoux, 12, rue Jules César, 75012 Paris, France

Continuation-in-part of Ser. No. 227,676, Jan. 23, 1981, abandoned. This application Feb. 8, 1983, Ser. No. 464,890

Claims priority, application France, Jan. 25, 1980, 80 01636

Int. Cl.⁴ F23L *17/02*

U.S. Cl. 98—59 **11 Claims**



1. A flue terminal gas extractor mounted at the discharge end of a flue and comprising a lower unit and an upper unit coaxial with said lower unit,

said lower unit comprising a downwardly facing frustoconical lower base having a central opening through which said flue extends, an upwardly facing frustoconical lower bonnet joined at its outer periphery with the outer periphery of said lower base and having a central opening in which the discharge end of the flue terminates, and

said upper unit comprising a downwardly facing conical upper base and an upwardly facing conical upper bonnet joined at their peripheries, and means mounting said upper unit in spaced relation to said lower unit with the distance between the end of said flue and a circular intersection of a projection of said flue with said upper base equal to at least one-fourth the diameter of said flue,

said lower bonnet in combination with said upper base comprising venturi means producing an area of negative pressure on the discharge end of said flue upon a generally horizontal flow of air past said extractor, and said lower base in combination with said upper bonnet comprising means for increasing the height of said negative pressure area, said lower unit and upper unit cooperating to prevent back-flow in said flue.

4,603,620

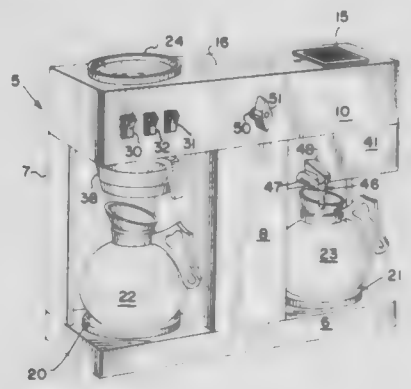
VPS WITH HOT WATER DISPENSER

Donald L. Daugherty, Springfield, Ill., assignor to Bunn-O-Matic Corporation, Springfield, Ill.

Filed Feb. 1, 1985, Ser. No. 697,259

Int. Cl.[4] A47J *31/24, 31/40*

U.S. Cl. 99—300 **6 Claims**



1. A combination beverage brewer and hot water dispenser, comprising:

a body structure;

a hot water supply tank supported by said body structure;

means for periodically introducing cool or cold water into said hot water supply tank to displace hot water therefrom and maintain a supply of hot water therein;

means for supporting a removable brewing funnel from an upper portion of said body structure above a beverage receptacle removably supported on a lower portion of said body structure;

means for conducting hot water displaced from said hot water supply tank to said brewing funnel including a sprayhead supported on said body structure so as to discharge hot water into said brewing funnel and a first hot water tube communicating between the upper portion of said hot water supply tank and said sprayhead;

a hot water dispensing tank supported by said body structure;

a hot water dispensing faucet connected with said hot water dispensing tank for dispensing hot water therefrom;

a second hot water tube in communication with the upper portion of said hot water supply tank and said hot water dispensing tank for conducting hot water displaced from said hot water supply tank to said hot water dispensing tank; and

flow control means for selectively allowing hot water displaced from said hot water supply tank to flow in only a selected one of said first and second hot water tubes.

4,603,621

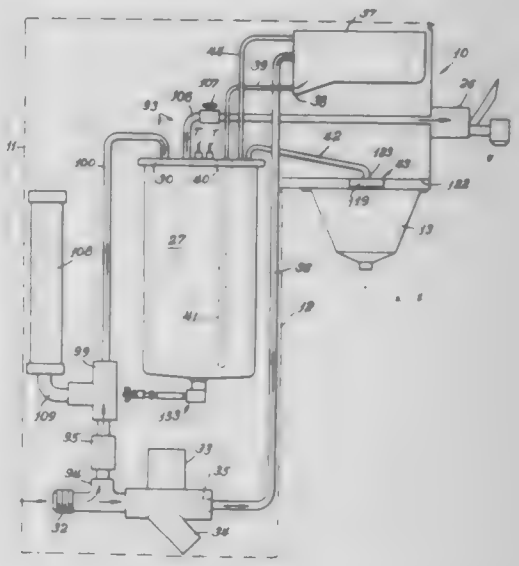
BEVERAGE-MAKING DEVICE

Melvin F. Roberts, Niles, Ill., assignor to Bloomfield Industries, Inc., Chicago, Ill.

Division of Ser. No. 633,417, Jul. 23, 1984. This application Sep. 23, 1985, Ser. No. 778,909

Int. Cl.[4] A47J *31/06*

U.S. Cl. 99—307 **5 Claims**



1. In a beverage-making device of the type generally defined by an upper and lower housing, a hot water container arranged in the lower housing, said hot water container fluidly communicating with outlet means for discharging heated water therefrom and directing the water to a perforate spray disk means, said spray disk means associating with said upper housing at an aperture therethrough whereby discharging water is directed to be dispensed downwardly therefrom, the improvement comprising a spray disk assembly having mounting collar means arranged at said upper housing and including aperture means in fluid communication with said outlet means, said mounting collar means further having a continuous downwardly open side wall, said side wall including at least one engageable slot having a downwardly open portion and a horizontal slot extending therefrom, a perforate spray disk capable of fitting within said continuous side wall, said spray disk having at least one outwardly extending portion capable of engaging said engageable slot, and a flexible gasket arranged within said mounting collar means and capable of forming a seal between said mounting collar means and spray disk upon engagement of the extending portions at said engageable slot, whereby water discharged from said outlet means is constrained to flow through said perforate disk and wherein leakage between the side wall of the mounting collar means and the spray disk is prevented.

4,603,622

FAT FRIER

Reinhold Beck, Bornweg 8, 6296 Mengerskirchen, Fed. Rep. of Germany

Filed Jan. 4, 1985, Ser. No. 688,914

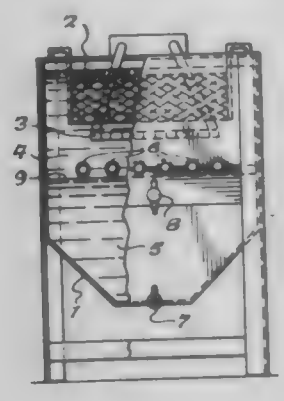
Claims priority, application Fed. Rep. of Germany, Jan. 5, 1984, 3400241; Sep. 1, 1984, 3432246

Int. Cl.[4] A47J *37/12*

U.S. Cl. 99—331 **18 Claims**

1. A fat frier comprising a fat container having an upper zone and a lower zone, said upper zone holding a layer of fat, said lower zone holding a layer of water, the fat and water layers contacting one another to form a fat-water interface, said upper zone including porous container means for holding the material to be fried, and means for heating the fat to frying temperature, means for cooling the heater fat in the region of the fat-water interface to a temperature such that the fat in said

region remains fluid, said frier including means for draining the fat layer disposed directly beneath the fat-water interface, and



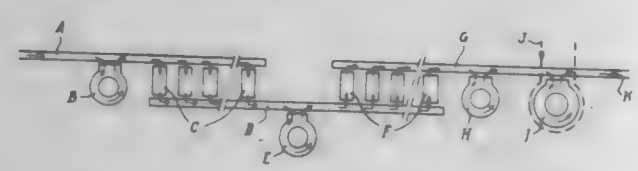
means for draining the water layer disposed at the lowest point of the lower zone of the fat container.

4,603,623

INSTALLATION FOR THE PRODUCTION OF CHEESES

Annick Le Guen, and Joseph Moutarde, both of 15, chemin de la Barre, 42210 Feurs, France

Filed Aug. 29, 1984, Ser. No. 645,355
Claims priority, application France, Aug. 30, 1983, 83 13872
Int. Cl.[4] A01J *25/00*; A23C *19/00*
U.S. Cl. 99—454 5 Claims



1. An installation for the production of cheeses, particularly cheeses having lactic characteristics and cheeses of the soft pasty type, said installation comprising:

a plurality of basins of semi-spherical shape and having uncluttered smooth interiors;

rotary means for metering milk into said basins;

first conveyor means for passing said basins sequentially into said rotary metering means, whereat said basins are filled with milk, and for removing the thus filled said basins from said rotary metering means;

first vertical air-conditioned silos for receiving said filled basins from said first conveyor means and for storing said filled basins for the entire duration of the time required for coagulation of said milk, thereby forming curds in said basins;

rotary means for breaking up said curds in said basins;

second conveyor means for transferring said curd containing basins from said first silos into said rotary curd breaking up means, whereat said curds in said basins are broken, and for removing therefrom said basins containing said broken curds;

second vertical silos for receiving from said second conveyor means and for storing said broken curd containing basins, during which whey separates from said curds;

means for extracting the thus separated whey from said curd containing basins;

rotary molding means for transferring said curds from said basins to molds; and

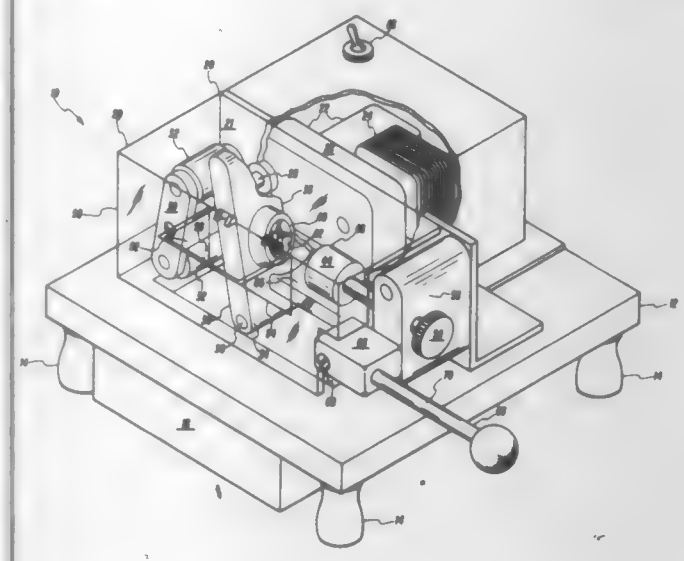
third conveyor means for transferring said basins containing separated curds and whey from said second silos to said extracting means, and for transferring said curd containing basins from said extracting means to said molding means.

4,603,624

MOTORIZED NUTCRACKER

Abraham J. Greenblatt, 6722 Waggoner Dr., Dallas, Tex. 75230

Filed May 16, 1985, Ser. No. 734,978
Int. Cl.[4] A23N *5/00*
U.S. Cl. 99—572 10 Claims



1. A nutcracker apparatus comprising:

a frame including means for supporting first and second jaw containing members thereon;

said first jaw containing member being supported on said frame by pivot means defining a pivot axis displaced from the jaw contained thereon for said first jaw containing member to be oscillated about said pivot axis toward and away from said second jaw containing member, said second jaw containing member being mounted stationary on said frame and facing said first jaw containing member;

means operable for engagement against said first jaw containing member for oscillating said first jaw containing member to move toward said second jaw containing member to effect crushing of a shell enclosed nut positioned between said jaw containing members; and

a nut support member disposed generally below and extending between said first and second jaw containing members in the shell crushing position of said jaw containing members relative to each other for supporting a nut to be crushed between said jaw containing members.

4,603,625

APPARATUS FOR MONITORING THE FULLNESS OF A COMPACTOR

Ronald L. Brown, Vernon, Ala., assignor to Marathon Corporation, Birmingham, Ala.

Filed Jul. 18, 1984, Ser. No. 631,998
Int. Cl.[4] B30B *1/34, 15/18*
U.S. Cl. 100—53 19 Claims

1. A system for monitoring the fullness of a compactor waste receiving container, comprising:

(a) a closed container having a waste receiving aperture;

(b) a compactor unit operably associated with said container and including means for receiving waste to be compacted;

(c) waste compacting ram means associated with said compactor unit aligned with said aperture and adapted for being displaced between a first waste-receiving position and a second waste-compacted position adjacent said aperture;

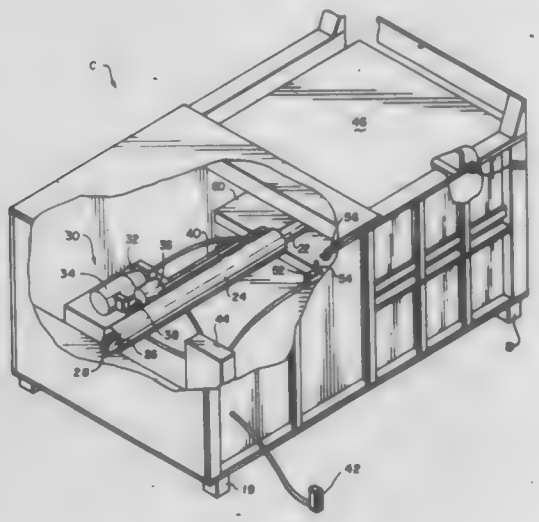
(d) cylinder and piston means associated with said compactor unit and connected to said ram means and adapted for reciprocally displacing said ram means between said first and second position;

(e) fluid supply means operably connected to said cylinder and piston means for supplying pressurized fluid thereto for displacing said ram means;

(f) control means operably associated with said fluid supply

means and adapted for interrupt the supply of pressurized fluid to said cylinder and piston means when said ram means is in said second position for thereby maintaining said ram means in said second position;

(g) fluid pressure-actuated switch means in fluid association with said cylinder and piston means and cooperating with said control means for measuring the fluid pressure of said cylinder and piston means for a pre-selected time period when said ram means is in said second position whereby



said fluid pressure is generated by compacted waste bearing against said ram means and thereby pressurizing said cylinder and piston means proportional to the fullness of said container;

(h) signal means are associated with said switch means for signaling said container fullness; and,

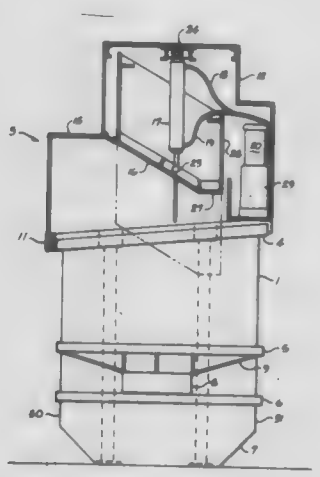
(i) means associated with said fluid supply means for preventing fluid flow from said cylinder and piston means while the fluid pressure is measured by said switch means.

4,603,626

TRASH COMPACTOR

Kenneth L. Nall, 3 Quail Hill Dr., and Floyd B. Littleton, Jr., 102 Boulder Rd., both of Greenville, S.C. 29607

Filed Nov. 9, 1984, Ser. No. 669,678
Int. Cl.[4] B30B *15/30*
U.S. Cl. 100—215 **12 Claims**



1. A trash compactor adapted for compacting trash received in a bin having an open top and slosed side walls and bottom, said compactor comprising:

a fixed support frame defining an area for removably receiving said bin with said bottom thereof positioned horizontally and with said frame horizontally in contact with one of said side walls of said bin;

compacting means, supported by said frame above said area, adapted for compacting trash received within said bin, said compacting means comprising:

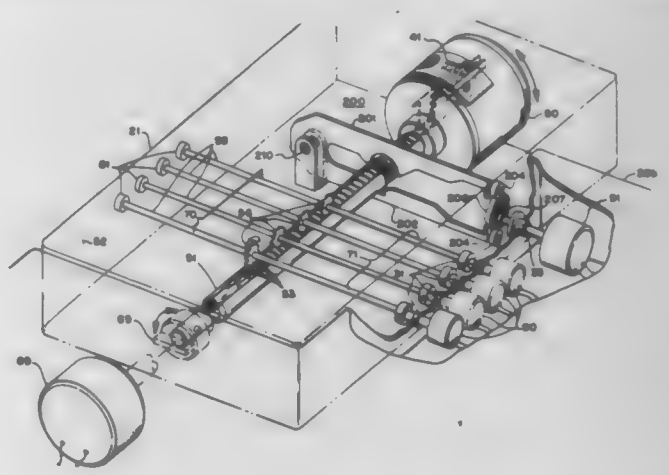
a ram adapted for reciprocal motion, said ram having a single inclined surface for being driven into said bin, and actuating means for controllably driving said ram into said bin, whereby said single inclined surface compacts trash received within said bin and simultaneously imparts a single horizontal force to said bin through said trash such that said bin is held in place against said frame.

4,603,627

ROTARY SHUTTER DEVICE FOR A POSTAL MAILING SYSTEM

Philip Pollak, Jr., Westport, and Keith E. Schubert, West Norwalk, both of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

Filed Mar. 23, 1984, Ser. No. 592,680
Int. Cl.[4] B41L *47/46*
U.S. Cl. 101—91 **8 Claims**



1. A postage meter to be adapted to a mailing machine to form a mailing system, said mailing machine including a driving member, the meter having a housing, the meter including a rotatable drum member, a rod member extending outwardly from the drum member, the rod member having a plurality of moveable racks located axially therein, the improvement comprising a rotary shutter device, the rotary shutter device being connected to the housing of the meter, the rotary shutter device comprising: locking means substantially surrounding the rod member, the locking means further comprising a first bar member which is in mateable engagement with the racks of the postage meter, a second bar member which attachably connected to the first bar member and in mateable engagement with the rod member of the postage meter, the first bar member being in a position above the second bar member, means for biasing the first and second bar members, and a cam member, the cam member being in mateable engagement with the first and second bar members, and a shaft member which is connected to the cam member and is also adapted to engage the driving member of the mailing machine, the locking means in a first position preventing the rod member from rotating and in a second position preventing the racks from being moved.

4,603,628

SELF-INKING STAMP WITH ADJUSTABLE PRINTING MEMBERS

Walter Just, Franz Resl-Strasse 3, A-4600 Wels, Austria

Filed Jun. 26, 1985, Ser. No. 748,761
Claims priority, application Austria, Jul. 26, 1984, 2413/84
Int. Cl.[4] B41J *1/00*
U.S. Cl. 101—105 **3 Claims**

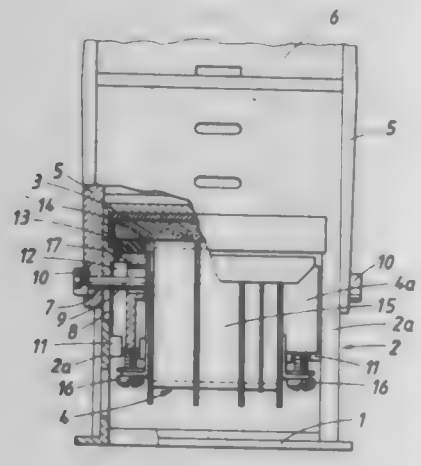
1. In a self-inking stamping device for performing an inking upstroke, comprising

a base part having a depending bearing rim for engaging a surface to be marked, and two mutually opposite end walls, each of which is formed with a cam slot and carries an inwardly protruding pin,

a downwardly exposed ink pad secured to and extending in said base part above said bearing rim,

a stamping insert disposed in said base part below said ink pad and having two mutually opposite ends facing respec-

tive ones of said end walls and provided each with a vertical track in sliding contact with one of said pins, said stamping insert also comprising a pivot extending through said cam slots, a frame pivoted on said pivot, a planar printing plate carried by said frame and formed with an aperture and provided on one side with plate type, a stamping belt unit, which is movably mounted in said frame and carries belt type facing in the same direction as said plate type and protruding through said aperture and screw means for adjusting said stamping belt unit relative to said frame in a direction which is normal to the plane of said printing plate, said stamping insert being movable between an upper position, in which said plate type and said belt type face upwardly and engage said ink pad, and a lower position, in which said plate type and said belt type face downwardly and are disposed adjacent to said bearing rim, and



an actuating member, which has two legs in sliding contact with the outside surfaces of respective ones of said end walls and is vertically movable toward and away from said bearing rim and is formed in said legs with slots, which are transverse to the vertical direction and receive said pivot,

wherein said slots in said legs, said pivot, said cam slots, said tracks and said pins are arranged to cooperate so as to move said stamping insert to said lower and upper positions, respectively, in response to a movement of said actuating member toward and away from said bearing rim,

the improvement residing in that

said frame is formed with slots extending normal to the plane of said printing plate and

said pivot is held wihout backlash in said stamping belt unit and extends through said slots in said frame so that said pivot is adjustable relative to said frame along said slots therein in unison with said stamping belt unit.

4,603,629

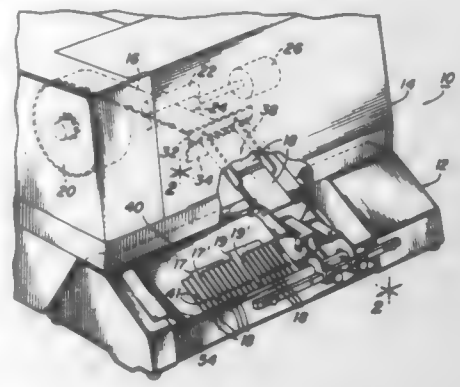
PRINTER WITH AUTOMATICALLY ADJUSTABLE STACKER

Frederick M. Pou, Kettering, Ohio, assignor to Monarch Marking Systems, Inc., Dayton, Ohio

Filed Sep. 5, 1985, Ser. No. 772,863
Int. Cl.[4] B41F *13/56*
U.S. Cl. 101—226 **33 Claims**

1. In a printer-stacker of the type having means for printing data onto a web of sheet stock, means for cutting the web into tags, means for storing data representative of the width and length of the tags to be printed, and a stacker for receiving and stacking the tags, said stacker having a conveyor for receiving said tags and means for advancing said conveyor a predetermined increment each time a tag is produced, the improvement comprising:

means for determining the predetermined increment of advance of said conveyor; and



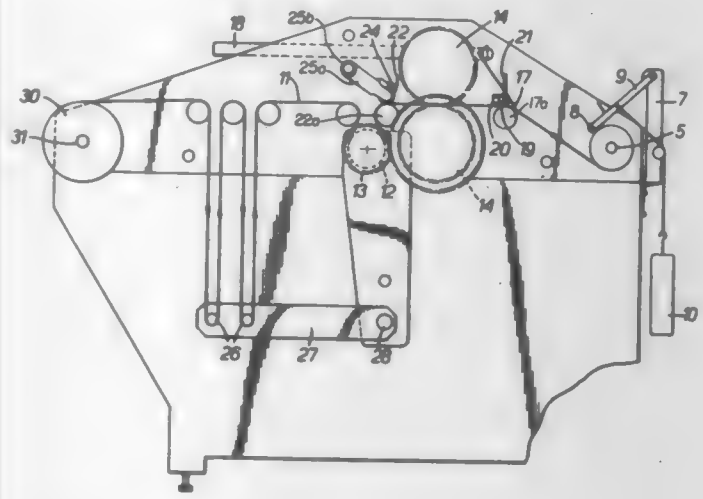
means responsive to the data storing means for altering the predetermined increment of advance as a function of the data stored therein.

4,603,630

MACHINE FOR CONTINUOUSLY PERFORATING WIDE PAPER

Manuel Martinez Llaneza, Madrid, Spain, assignor to Investronica, S.A., Madrid, Spain

Filed Jun. 13, 1984, Ser. No. 620,731
Claims priority, application Spain, Jun. 16, 1983, 523.343
Int. Cl.[4] B41F *13/56*
U.S. Cl. 101—227 **1 Claim**



1. A perforating machine for continuously perforating wide paper comprising:

a pair of lateral holders for supporting all of the elements of said machine so as to thereby insure the exact positioning thereof;

a means for actuating a plurality of perforator heads in response to movement of said paper through a precision mechanized anti-skid roller;

a tension control means for controlling the tension of said paper, said control means having swinging rollers whose movement is detected by a sensor and further having an electromagnet brake for controlling the tension of said paper by controlling the unwinding of a feed roller of said paper;

a means for winding said perforated paper including an electronically controlled direct current motor, said means for winding being arranged so as to cause said direct current motor to smoothly start and stop;

a paper flexing compensation means operatively connected to a winding mandrel for winding said perforated paper, said paper flexing compensation means compensating for flexing of said paper;

a brake means for cutting and separating said perforated paper without jamming or misaligning said paper;

a rotation detector operatively connected to said anti-skid

roller and having a counter means with a manually adjustable selector for stopping said direct current motor when said perforated roll of paper is of a length equal to a preset length which has been manually set by said adjustable selector;

an end of paper marking means including a means for measuring the length of said paper and for making a lateral line on said paper at a preset length corresponding to a value set by its manually adjustable selector, said lateral line corresponding to an end of paper warning;

an additional paper marking means including a rubber stamp carrier roller and an inking pad means for marking another lateral line on said paper during each rotation of said anti-skid roller.

4,603,631

PERFECTING PRINTING PROCESS AND APPARATUS FOR A SHEET-FED OFFSET PRESS

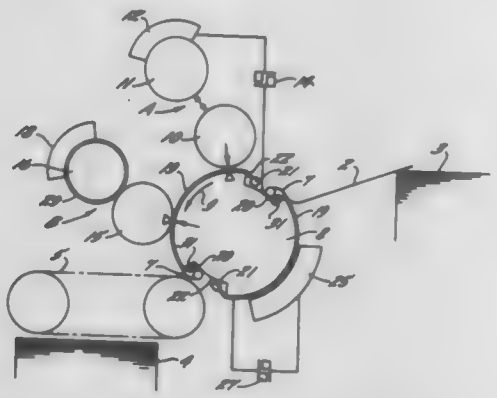
Claus Simeth, Offenbach am Main, Fed. Rep. of Germany, assignor to M.A.N.-Roland Druckmaschinen Aktiengesellschaft, Fed. Rep. of Germany

Filed Jan. 30, 1985, Ser. No. 696,450

Claims priority, application Fed. Rep. of Germany, Jan. 30, 1984, 3403065

Int. Cl.[4] B41F *3/40*

U.S. Cl. 101—229 14 Claims



1. A process for perfecting printing on paper sheets wherein the first side of said sheets is printed by the offset method and the second side of said sheets is printed by direct planography by a 5-cylinder, sheet-fed offset press which comprises an impression cylinder; first and second plate cylinders; first and second blanket cylinders, said first and second blanket cylinders being disposed between said impression cylinder and, respectively, said first and second plate cylinders, the diameter (d) of said first blanket cylinder being slightly less than the dimension corresponding to an integral multiple (n) or reciprocal thereof of the effective diameter (D) of the impression cylinder; first, second, and third means for inking and damping, respectively, said first and second plate cylinders and said impression cylinder; means for selectively transferring ink indicia from said plate cylinder to said first blanket cylinder, which indicia transferring means comprise said first plate cylinder and said first inking and damping means; means for selectively activating said indicia transferring means whereby indicia are transferred selectively from said first plate cylinder to said first blanket cylinder; and first and second means for adjusting the pressure between said impression cylinder and, respectively, said first and second blanket cylinder, said process comprising:

(a) affixing at least one direct planography printing plate on said impression cylinder;

(b) disactivating said indicia transferring means whereby no indicia are transferred to said first blanket cylinder;

(c) adjusting the pressure between said first blanket cylinder and said impression cylinder to a pressure suitable for direct planography;

(d) adjusting the pressure between said second blanket cylinder and said impression cylinder to a pressure suitable for offset printing; and

(e) feeding said paper sheets through said press;

(f) printing the second side of said sheets by direct planography in the printing zone between said first blanket cylinder and said impression cylinder; and

(g) offset printing the first side of said sheets in the printing zone between said second blanket cylinder and said impression cylinder.

4,603,632

INK RETURN SYSTEM FOR PRINTING MACHINES

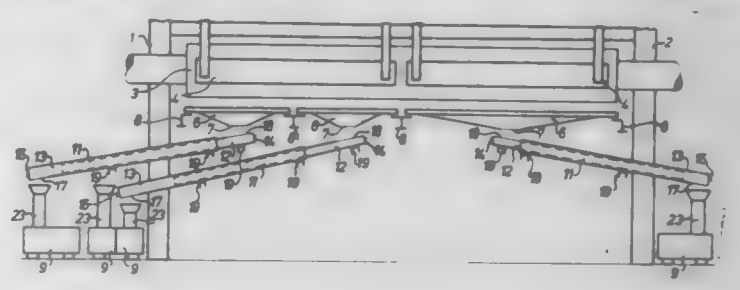
Georg Schneider, Würzburg, Fed. Rep. of Germany, assignor to Koenig & Bauer Aktiengesellschaft, Fed. Rep. of Germany

Filed Sep. 14, 1984, Ser. No. 650,609

Claims priority, application Fed. Rep. of Germany, Sep. 23, 1983, 3334469

Int. Cl.[4] B41F *31/02*

U.S. Cl. 101—364 1 Claim



1. An ink return system for returning surplus ink to an ink receiving tank of an inking unit in a rotary printing machine, said ink return system comprising:

at least a first, generally funnel shaped ink collecting trough underlying said inking unit and receiving said surplus ink from said inking unit, said ink collecting trough including a generally downwardly extending outlet port; and

an adjustably positionable telescoping rigid ink return conduit assembly associated with said first ink collecting trough and having an inner rigid rectangular conduit and an outer rigid rectangular conduit, said inner and outer rigid rectangular conduits being telescopingly associated with each other, said inner and outer rigid rectangular conduits further including clamps for adjustable and removable attachment of said ink return system to side frames of said inking unit, a first end of said inner rigid rectangular conduit having a closed inboard end wall and an ink infeed opening provided in an upper surface of said first end of said inner rigid rectangular conduit, said ink infeed opening being positioned beneath, and being spaced from said outlet port of said ink collecting trough, a second end of said outer rigid rectrangular conduit having a closed outboard end wall and an ink drainage opening provided in a bottom surface of said second end of said outer rigid rectangular conduit, said ink drainage opening being positioned above, and being spaced from said ink receiving tank.

4,603,633

ARRANGEMENT FOR APPLICATION OF LIQUIDS, IN PARTICULAR COATING UNIT FOR A PRINTING PRESS

Johannes M. Schubert, Mainhausen, and Gerhard Geuppert, Eppertshausen, both of Fed. Rep. of Germany, assignors to M.A.N.-Roland Druckmaschinen Aktiengesellschaft, Fed. Rep. of Germany

Filed Jul. 29, 1985, Ser. No. 760,286

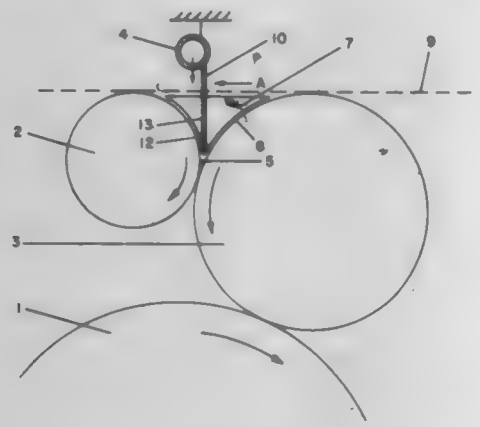
Claims priority, application Fed. Rep. of Germany, Jul. 28, 1984, 3427898

Int. Cl.[4] B41F *31/02*

U.S. Cl. 101—366 5 Claims

1. In an arrangement for application of liquids, such as a coating unit for a printing press for the printing and final coating of sheets including a liquid supply above the gap formed between a metering roller and an applicator roller

interacting therewith, the coating preferably being delivered uniformly by a feed pipe from several openings, with a partition designed to damp vibrations dividing the liquid supply along the length of the rollers, characterized by baffle plates at right angles to the rollers and having edges adapted to conform to the curvature of the roller surfaces to define a communicating gap with the roller surface, said baffle plates being arranged in a fixed position just inboard of the ends of the rolls, and interconnected by a partition having a continuous bottom edge defining a constant communicating gap with the applicator roller, the partition having regularly arranged communicating channels formed therein.

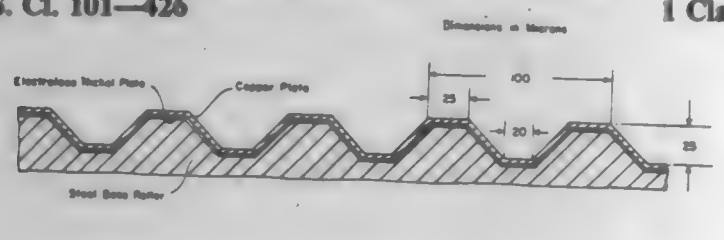


4,603,634

COPPER AND NICKEL LAYERED INK METERING ROLLER

Thomas A. Fadner, LaGrange, Ill., assignor to Rockwell International Corporation, Pittsburgh, Pa.

Division of Ser. No. 698,202, Feb. 4, 1985, Pat. No. 4,567,827.
This application Oct. 21, 1985, Ser. No. 789,851
Int. Cl.[4] B41F *31/06, 31/26;* B41L *27/28*
U.S. Cl. 101—426 **1 Claim**



1. In the process of producing an ink metering roller, the steps comprising:

a. providing an engraved base roller of suitable diameter and length;

b. electroless nickel plating said base roller to provide a thin continuous nickel layer of from 0.3 to 0.5 mil thickness;

c. heat treating said nickel plated base roller at a temperature of from about 200° to 500° F. for a time sufficient to given the nickel layer a hardness of not less than about 50 Rc and

d. copper plating said roller to provide a continuous copper layer of from bout 0.2 to 0.5 mil thickness.

4,603,635

DUAL SAFING FOR BASE ELEMENT FUZE

Jon P. Boudreau, Somerville, Mass., assignor to Avco Corporation, Wilmington, Mass.

Filed Dec. 17, 1984, Ser. No. 682,686
Int. Cl.[4] F42C *15/40*
U.S. Cl. 102—206 **8 Claims**

1. A dual safing and arming mechanism for a fuze to be used with a projectile shell adapted to be propelled into ballistic flight from the barrel of a gun, said mechanism comprising:

a case for housing the fuze mechanism in the base of the shell, said case enclosing frame members to which said fuze mechanisms are secured;

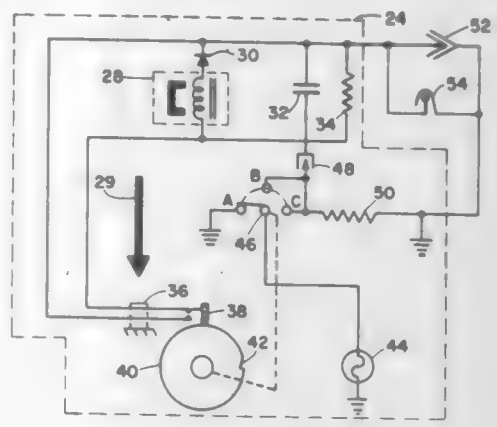
a detonator;

a rotor rotatably secured to said frame members and pivotable between first safety and armed positions, said rotor having said detonator seated therein, said rotor body forming a ground terminal for one side of said detonator, the second side of said detonator being encircuited with the center arm of a rotary switch which rotates in synchronism with said rotor as said rotor moves from first safety to the armed position;

latching means for holding said rotor in first safety condition until the occurrence of the shell firing event, the acceleration of said shell in the barrel of said gun causing release of said rotor for rotation to the armed position under the inducement of spring driving means;

a setback generator for generating a pulse of electricity during the shell firing event;

a capacitor encircuited to receive the electrical charge generated by said setback generator;



a G-switch encircuited between one side of said capacitor and the terminal of the rotary switch reached when said rotor is in the armed condition, the orientation of the G-swtich being such that it is electrically open when said shell accelerates down the gun barrel and is closed when the shell undergoes drag along its ballistic flight path;

impact operable switch means for encircuiting the second side of said capacitor in series with the grounded side of said detonator to fire same and initiate shell explosion at target impact; and

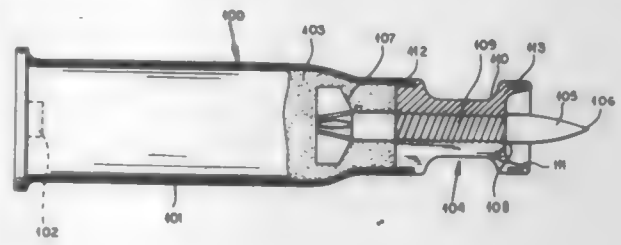
a normally open relay encircuited across said capacitor and inertially movable to the closed state to prevent the charging of said capacitor if said rotor inadvertently rests in the armed position at the firing of the gun.

4,603,636

FORM-LOCKING ARRANGEMENT FOR PROJECTILES

Peter Wallow, Düsseldorf, Fed. Rep. of Germany, assignor to Rheinmetall GmbH, Düsseldorf, Fed. Rep. of Germany

Filed Jul. 19, 1984, Ser. No. 632,434
Claims priority, application Fed. Rep. of Germany, Jul. 20, 1983, 3326131
Int. Cl.[4] F42B *13/16*
U.S. Cl. 102—521 **18 Claims**



1. A form-locking device composed of metal for securing a sabot to a projectile which comprises a sleeve composed of high-strength elements overlapping in an axial direction, said elements defining an external surface of the sleeve provided with formations formfittingly engaging formations of said sabot, each of said elements having a cross section in an axial plane which is generally S-shaped having an inner portion

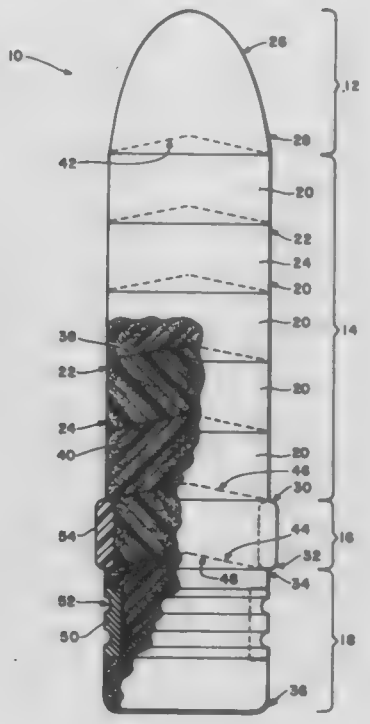
hugging said projectile and an outer portion spaced from said projectile and overlapping an inner portion of an adjacent element, the inner portions of adjacent elements being flush with one another.

4,603,637

VARIABLE DENSITY FRANGIBLE PROJECTILE

James A. Snide, and Edward J. Morrisey, both of Dayton, Ohio, assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Oct. 31, 1984, Ser. No. 666,785
Int. Cl.[4] F42B *9/20*
U.S. Cl. 102—529 7 Claims



1. A frangible practice projectile comprising a nose portion, a forward body portion, an after body portion and a base portion,

wherein each of said portions has a first end and a second end;

wherein the first end of said base portion, the first and second ends of each of said forward and after body portions and the second end of said nose portion include alignment means for mating and alignment with the next adjacent portion;

wherein each of said portions is bonded to the next adjacent portion;

wherein said after body portion has a first outside diameter and each of said base portion, forward body portion and nose portion has a second outside diameter, wherein said first outside diameter is greater than said second outside diameter;

wherein said base portion includes means for crimping a cartridge case thereto; and

wherein said projectile is made of a filled polymeric material wherein the filler is a metallic material selected from the group consisting of metals and metal oxides.

4,603,638

TRAIN SYSTEM WITH VARIABLY TILTING RAIL

Charles S. Dozer, Carlsbad, Calif., assignor to Charles S. Dozer Enterprises, Inc., Carlsbad, Calif.

Continuation of Ser. No. 404,819, Aug. 3, 1982, Pat. No. 4,491,073. This application Dec. 17, 1984, Ser. No. 682,534
The portion of the term of this patent subsequent to Jan. 1, 2002, has been disclaimed.
Int. Cl.[4] B61B *3/02*
U.S. Cl. 104—95 14 Claims

14. In a train system, the combination that comprises

(a) a train car,

(b) support for the car adapted to be guided along a rail having variable angular tilt along its length and relative to horizontal, whereby the support assumes the tilt of the rail, and

(c) a gimbal coupled between the car and support to accomodate rotation of the support relative to the car as the car travels lengthwise of and along the rail, whereby the car remains upright despite variable tilting of the rail along which the car travels,

(d) said rail having a cross section that twists and becomes substantially inverted along its length about a length axis defined by the rail,



(e) and including a hinge associated with the support and located between said rail and a gimbal axis in alignment with the car to accomodate pivoting of the car about only a single transverse hinge axis relative to the rail,

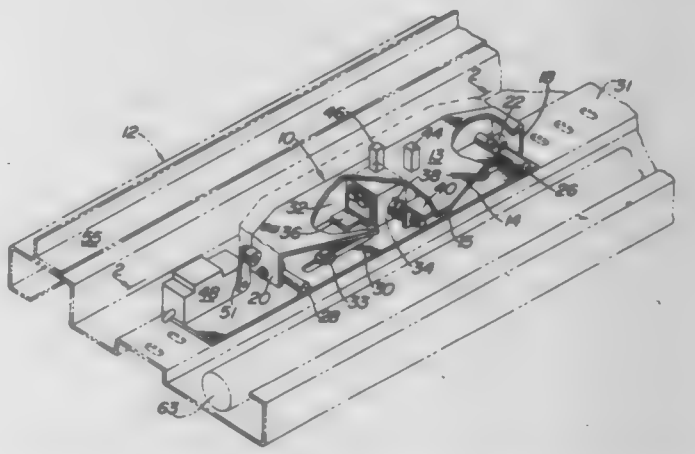
(f) the gimbal including a yoke and a ring portion carried by the yoke and rotatably guided thereby, the hinge carrying the yoke and said single axis of pivoting extending parallel to a plane defined by said ring portion, the gimbal ring, yoke, and hinge axis extending in a common plane.

4,603,639

TRAFFIC CONTROL DEVICE FOR DRIVERLESS VEHICLES

Craig F. Sleep, Bangor, Pa., assignor to SI Handling Systems Inc., Easton, Pa.

Continuation of Ser. No. 328,284, Dec. 4, 1981, abandoned. This application Mar. 20, 1984, Ser. No. 608,315
Int. Cl.[4] B61K *7/02*
U.S. Cl. 104—252 10 Claims



1. A traffic control device for controlling the speed of a driverless vehicle comprising a stationary elongated base plate on which is mounted a cam, said cam having a vertically disposed deceleration surface on a side face thereof for contact with a cam follower on a driverless vehicle, said cam being mounted on said base plate for reciprocation in a horizontal direction perpendicular to the lengthwise dimension of the base plate between an operative position wherein said deceleration surface can cause a driverless vehicle to decrease speed and an inoperative position wherein said cam will not cause said vehicle to decrease speed, guide means on said base plate for guiding said movement of said cam, selectively operable motor means on said base plate for reciprocating said cam along said direction from one of said positions to the other position, said motor means including a cylinder having a piston therein and a piston rod connecting to said piston and to said cam, said piston rod and guide means extending in said direc-

tion, and stop means fixed to and projecting upwardly from said cam and adapted to selectively contact a vehicle whose speed was reduced by contact with said cam surface when the cam is in the operative position and adapted to contact a vehicle to prevent reverse movement thereof when the cam is withdrawn to the inoperative position.

4,603,640

DEVICE FOR INCREMENTALLY IDENTIFYING THE VEHICLE POSITION OF A MAGNET LEVITATION VEHICLE

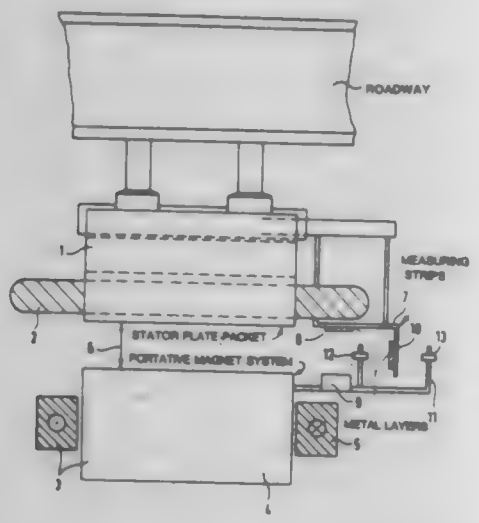
Luitpold Miller, Ottobrunn; Helmut Knöll, Erligheim, and Juergen Meins, Wolfenbuettel, all of Fed. Rep. of Germany, assignors to Thyssen Industrie AG, Fed. Rep. of Germany

Continuation of Ser. No. 464,911, Feb. 8, 1983, abandoned. This application May 28, 1985, Ser. No. 738,887

Claims priority, application Fed. Rep. of Germany, Feb. 10, 1982, 3204615; Mar. 30, 1982, 3211628

Int. Cl.[4] B60L *13/06*

U.S. Cl. 104—282 **23 Claims**



1. A device for incrementally detecting the vehicle position of a magnetic levitation vehicle along a path of travel, comprising:

a plurality of sections which are spaced along the path of travel;

a drive system including a three-phase power supply and a stator plate packet having a slotted surface and a stator winding connected to said three-phase power supply and defining pole spacings;

a portative magnet spaced from said slotted surface of said stator plate packet, said portative magnet electrically excitable and cooperable with said stator to provide levitation and propulsion of the vehicle;

a first measuring strip carried by said stator plate packet and including a first metallic reference surface in a fixed position relative to said stator winding and extending in the direction of travel;

air gap detection means coupled to said first metallic surface for detecting the levitation air gap between said portative magnet and said slotted surface of said stator plate packet, said air gap detection means comprising an inductive sensor including a transmitting coil, a receiving coil and a high frequency generator connected to said transmitting coil to produce a signal to be modulated by said metallic reference surface, a band pass filter connected to said receiving coil, an amplifier connected to said filter, a demodulator connected to said amplifier for demodulating the received signal, an analog/digital converter connected to said demodulator for producing address words in response to the demodulated signals, read only memory means storing air gap information accessed by said addresses and operable to output air gap spacing information, and means operable in response to successive addresses to read the changes in air gap spacing from the information stored in said read only memory means;

a second measuring strip carried by said stator plate packet and extending in the direction of travel and including a second reference surface comprising digital coding in the direction of propagation of an ampere bar wave generated by said stator winding and having a fixed position relative to said stator winding;

code detection means mounted with said air gap detection means and carried by said portative magnet for reading said second reference surface;

said second reference surface carrying said code comprising a sequence of electrically-conductive and electrically-non-conductive elements on said reference surface;

said code detection means comprising inductive sensors operable to emit position indicating signals; and

analysis means for receiving said position indicating signals and providing information including the position of the excitation system relative to the stator winding, the direction of travel, the vehicle velocity, the vehicle location, the position of the section switches, switch location and the phase sequence of the stator winding.

4,603,641

DEVICE FOR REGISTER-MAINTAINING ALIGNMENT OF A FLEXIBLE PRINTING PLATE OF A PLATE CYLINDER OF ROTARY PRINTING MACHINE

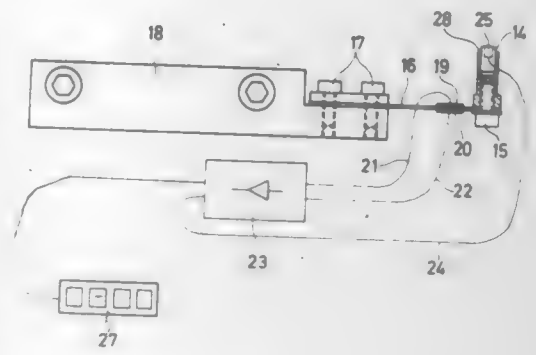
Willi Jeschke, Heidelberg, and Nikolaus Spiegel, Walldorf, both of Fed. Rep. of Germany, assignors to Heidelberger Druckmaschinen AG, Heidelberg, Fed. Rep. of Germany

Filed Oct. 24, 1985, Ser. No. 790,835

Claims priority, application Fed. Rep. of Germany, Oct. 24, 1984, 3438931

Int. Cl.[4] B41F *27/06, 27/12, 33/00*

U.S. Cl. 101—415.1 **7 Claims**



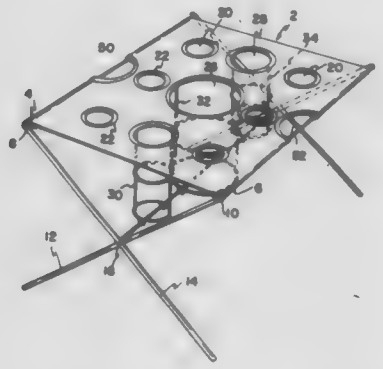
1. Device for register-maintaining alignment of a flexible printing plate of a plate cylinder of a rotary printing machine, the plate cylinder being formed with a cylinder channel, tensioning rails being disposed in the channel and clamping rails for firmly clamping a respective end of the printing plate on the tensioning rails, the tensioning rails being adjustable in peripheral direction of the plate cylinder by tensioning screws, comprising means for scanning the position of the printing plate in vicinity of a leading edge of the printing plate, and electrical display means for indicating the scanned position of the printing plate, said scanning means including sensors respectively engageable in register holes formed in the printing plate in vicinity of the leading edge of the printing plate, when the printing plate is placed upon the plate cylinder, a holder carrying said sensors and extending parallel to the axis of the plate cylinder within the cylinder channel, said sensors being pivotable in peripheral direction of the plate cylinder so that a displacement of the printing plate in peripheral direction of the plate cylinder results in a corresponding deflection of said sensors in said peripheral direction, and a measuring device operatively associated with said sensors for generating signals corresponding to a displacement of the printing plate in said peripheral direction.

4,603,642

FOLDABLE TABLE HAVING STORAGE CAPABILITIES

Harold Brickman, 2911 W. Catalpa, Chicago, Ill. 60625

Filed Nov. 29, 1984, Ser. No. 676,496
Int. Cl.[4] A47B *85/00*
U.S. Cl. 108—25 5 Claims



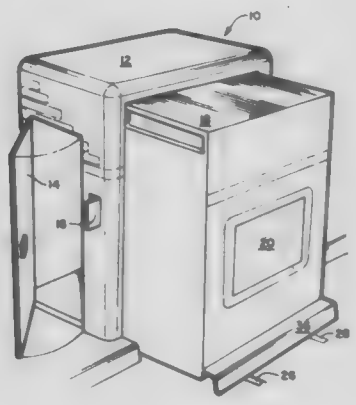
1. In a foldable table comprising a flexible table panel having a plurality of openings therein to accomodate articles for beverage consumption, a pair of legs having portions engaging opposite ends of said table panel and pivoted intermediate their lengths whereby they may spread apart to open the table for use or be brought together to permit storage and transporting the table for use, the improvement comprising open beverage consumption article holders extending downwardly from some of said openings, and a rod extending from one of the leg pivot points to another attached to the bottoms of said article holders.

4,603,643

EXPANDABLE STRUCTURE FOR AUTOMATIC TELLER MACHINES

Edward F. Couvrette, 527 10th Ave., San Diego, Calif. 92101

Filed Jun. 25, 1984, Ser. No. 624,189
Int. Cl.[4] G07G *5/00*
U.S. Cl. 109—24.1 10 Claims



1. An expandable security structure for housing an automated teller machine having customer controls, said structure has front and back adjacent surface areas comprising:

a base member fixed in place adjacent said surface areas;

a first and second section, said first section having a closed rear surface adjacent said back surface area, closed sides and an open surface adjacent said front surface area and a second section housing said automated teller machine, said second section having an open back surface, closed side surfaces and an opening adjacent said front surface area for exposing said customer controls, said second section is nestible within said first section and translatable relative thereto and said automated teller machine is translatable forwardly relative to said opening in said second section between a first operable position wherein one side thereof is substantially flush with the front of said second section and a second servicing position wherein said one side of said automated teller machine is extended exteriorly from said front of said second section;

means for translating said second section relative to said first section between a first automated teller access position wherein the two sections are nested together and a second automated teller servicing position wherein the second section is telescoped outwardly from said first section to a position over said front surface area; and

means for guiding said second section relative to said first section during translation thereof;

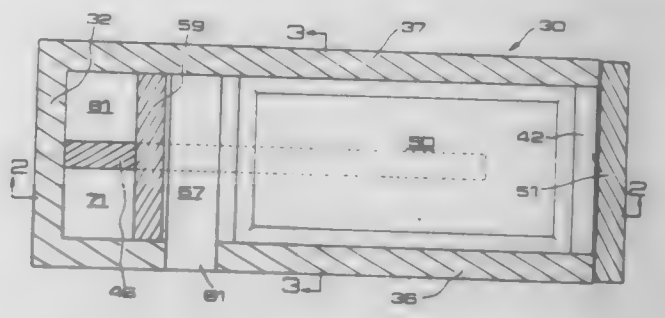
whereby when said sections are in said first nested position entry into the interior of said structure through said door is prevented by the presence of said side surface of said second section positioned beneath said door and when in said telescoped second position said side surface of said second section is translated away from beneath said door said interior of said structure is accessible through said door, the front adjacent surface is inaccessible and the rear adjacent surface remains accessible.

4,603,644

INCINERATOR AND CREMATOR

David R. Brookes, 111A Lakeshore Rd. E., Mississauga, Ontario L5G 1E2, Canada

Filed Jun. 4, 1984, Ser. No. 617,026
Claims priority, application Canada, May 18, 1984, 454735
Int. Cl.[4] F23G *1/00*
U.S. Cl. 110—194 12 Claims



1. Incinerator, having front, side, and back walls, and a roof, comprising:

a receiving chamber for receiving material to be burnt lengthwise through a doorway in the front wall of the incincerator, the floor of the receiving chamber comprising a hearth;

an afterburner chamber, which has walls that define a relatively long, narrow passage;

means for releasing oxygen in copious quantities into one end of the passage;

stack means for discharging gases from the other end of the passage;

the arrangement being such that there is a vigorous blast of oxygen-rich gases in the passage;

an opening in the wall of the passage;

where the opening is so located and arranged:

(a) as to leave the passage still well-defined in the region of the opening;

(b) as to be out of the line of the direct blast of gases in the passage;

(c) that gases outside the passage are drawn into the passage through the opening by the blast of gases in the passage;

having an ember-reducing location to which partly consumed embers in the receiving chamber may be moved;

where the ember-reducing location is just below the said opening, to the extent that gases rising from the location are drawn directly towards and through the opening and into the passage;

where, in a cross-section taken on a vertical longitudinal plane of the incinerator, the ember-reducing location is widely spaced from the outside walls of the incinerator;

and having an ash removal port from which the fully con-

sumed embers, in the form of ash, may be removed from the incinerator;

wherein the ash removal port is in one of the side walls of the incinerator; and wherein said ember-reducing location is an ash-trough, disposed at the back of the hearth, into which embers may be pushed from the doorway.

4,603,645

SEEDER WITH SOWING SHARES

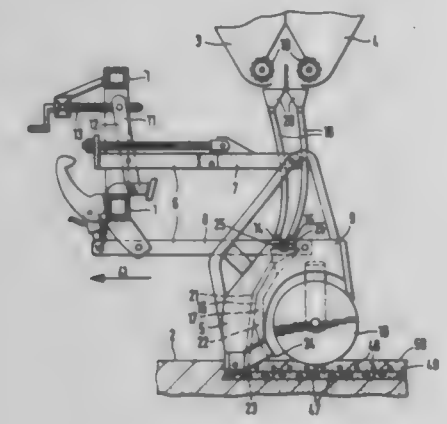
Benno Wiemeyer, Lotte-Halen, Fed. Rep. of Germany, assignor to Amazonen Werke AG H. Dreyer GmbH & Co. KG, Hasbergen- Gaste, Fed. Rep. of Germany

Filed Sep. 4, 1984, Ser. No. 647,076

Claims priority, application Fed. Rep. of Germany, Sep. 8, 1983, 3332352

Int. Cl.[4] B65G *11/00*

U.S. Cl. 111—1 **11 Claims**



1. In a field working, plural material dispensing machine comprising at least two reservoirs for dispensing at least two different materials; soil opening shares for incorporating said plural materials, each sowing share having a body defining at least two separate material inlets and outlets; a supply hose communicating each material inlet of each opener to each reservoir, the improvement comprising: guide valve means for selectively diverting the flow of each respective material from each hose to at least one of said at least two separate material outlets in each share, said guide valve means located between said reservoirs and said at least two material outlets of each share whereby material carried by each hose can be selectively diverted to exit from at least a selected one of said at least two separate material outlets of each respective share.

4,603,646

EMBROIDERY MACHINE FRAMEWORK

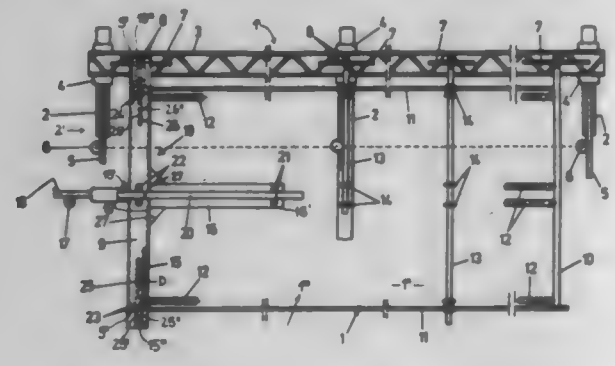
Karl Jenni, Hohenems, Austria, assignor to Aktiengesellschaft Adolph Saurer, Arbon, Switzerland

Filed Oct. 15, 1984, Ser. No. 660,807

Claims priority, application Austria, Oct. 20, 1983, 3735/83

Int. Cl.[4] D05C *9/14*

U.S. Cl. 112—90 **14 Claims**



1. An embroidery machine comprising:

an embroidery framework;

at least one support for supporting the embroidery framework;

said embroidery framework containing a circumferentially closed embroidery frame supported at said at least one support;

said embroidery frame containing at least one side member;

vertical drive means for substantially vertically displacing said embroidery framework;

said at least one support being substantially vertically displaceable by said vertical drive means;

horizontal drive means for substantially horizontally displacing said embroidery frame;

at least one substantially vertically extending guide rail at which said at least one side member of said embroidery frame is guided for displacement in essentially vertical direction;

at least one substantially horizontal bracket projecting from said at least one substantially vertically extending guide rail;

said at least one substantially horizontal bracket and said at least one substantially vertically extending guide rail conjointly forming at least one substantially T-shaped constructional unit essentially resistant to bending;

a stationary machine stand;

said at least one substantially horizontal bracket being substantially horizontally guided at said stationary machine stand; and

said horizontal drive means acting upon said at least one constructional unit comprising said at least one substantially horizontal bracket and said at least one substantially vertically extending guide rail.

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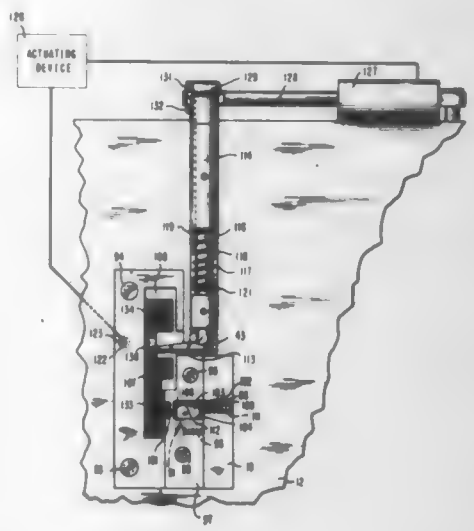
SEWING MACHINE WITH EDGE TRIMMER

Ralph F. Conley, Jr., Miamisburg, and Ricky F. Frye, Waynesville, both of Ohio, assignors to MIM Industries, Inc., Miamisburg, Ohio

Filed Jan. 14, 1985, Ser. No. 691,430

Int. Cl.[4] D05B *65/02*

U.S. Cl. 112—129 **7 Claims**



1. In a chainstitch machine that includes a looper, a looper support, a needle, a needle support to support the needle for reciprocating motion carrying a first thread along a needle path toward and away from the looper as the looper carries a second thread in repetitive oscillations in a looper path close to the needle path, driving mechanism common to both the needle support and the looper support to supply oscillatory force to both of the supports synchronously to form chain stitches of the threads at a stitch-forming location, a knife, and a guide structure to guide movement of the knife close to the needle path and toward the looper path, the invention comprising:

a. an actuating linkage connecting the knife to the driving mechanism and comprising:

(i) a drive shaft oscillating about its axis,

(ii) a bracket extending in a generally lateral direction from the drive shaft,

(iii) a joint having an axis parallel to the axis of the shaft, the joint being movable along the bracket between a first location, in which the axis of the joint is offset from the axis of the drive shaft, and a second location, in which the axis of the joint is substantially closer to the axis of the shaft, the first location corresponding to the operative position of the actuating linkage and the second location corresponding to the inoperative position of the linkage, and

(iv) connecting means connecting the joint to the knife; and

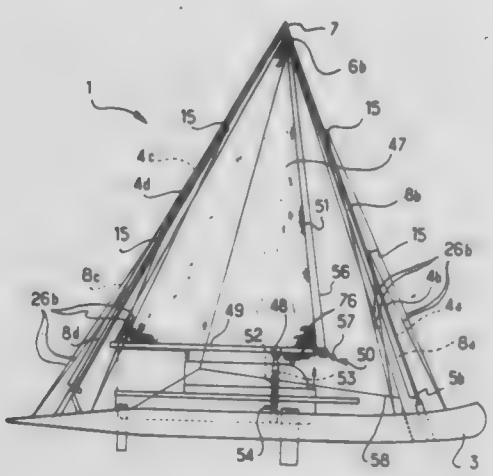
b. control means connected to the actuating linkage to shift the actuating linkage between an operative position, in which the knife is positioned in a trimming location close to the throat plate and the actuating linkage transmits to the knife a reciprocating trimming force that has a predetermined magnitude and is synchronous with the oscillatory force supplied to the needle support and that causes a portion of the knife periodically to enter the stitch-forming location, and an inoperative position in which the knife is retracted from the throat plate and the actuating linkage transmits to the knife a reciprocating force that has a magnitude substantially less than the predetermined magnitude of the trimming force.

4,603,648

WATERCRAFT WITH AT LEAST TWO TWIN HULLS

Jacques Berge, Château d'Areyt, 65400 Préchac, France

Filed May 8, 1984, Ser. No. 608,232
Claims priority, application France, May 9, 1983, 83 07747
Int. Cl.[4] B63H *9/04*
U.S. Cl. 114—39 21 Claims



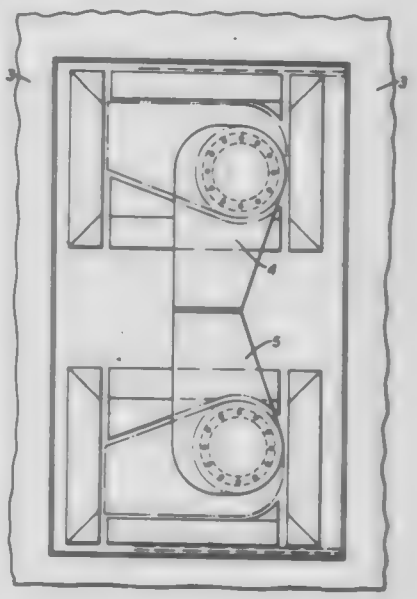
1. A catamaran-type sail boat comprising at least two separate hulls, connecting means between said hulls comprising several inclined mast-like elements, each having an upper end and a lower end, lower connecting means between the lower end of each inclined mast-like element and the respective hull, upper connecting means for connecting together the upper ends of at least some of said masts providing thereby a rigid-type connection between said hulls, deck means secured to said hulls, and further at least some of said inclined mast elements are each provided over at least a portion of their length with a fin rigidly connected to a respective mast element, said lower and upper connecting means respectively of the lower end and the upper end of said inclined mast element provided with said fin allowing the rotation of each of said inclined mast elements around the longitudinal axis thereof, said fin working as a sail.

4,603,649

CLOSEABLE RESTRAINT FOR MAINTAINING A TOW LINE BETWEEN GUIDE PINS ON A BOAT

Per H. Hystad, N-4250 Kopervik, Norway

Filed Jul. 31, 1984, Ser. No. 636,157
Claims priority, application Norway, Aug. 17, 1983, 832963
Int. Cl.[4] B63B *21/02*
U.S. Cl. 114—199 2 Claims



1. A closeable restraint for maintaining a tow line between a pair of guide pins on a boat, comprising:

a rotatable locking member on each of said pins at the upper end thereof, said locking members each being rotatable toward each other to define a barrier across the upper end of said pins when closed, and

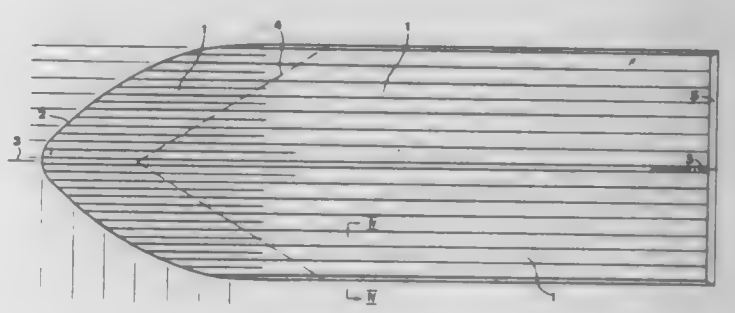
means for raising and lowering each of said pins, rotary means connected to each of said pins and responsive to the movement thereof for opening and closing said barrier; said rotary means each including a stationary member and a tubular segment, each of said tubular segments having a guide groove therein which follows a generally straight vertical path and then a laterally deflected path toward the upper end thereof, said grooves of the tubular segments being mirror images of each other, said stationary member engaging said groove, and causing said tubular segment to rotate as it tracks said groove, one segment clockwise and the other counterclockwise, thereby operating said locking member.

4,603,650

BOAT, THE BOTTOM OF WHICH IS PROVIDED WITH A PLURALITY OF DOWNWARDLY OPENING CHANNELS

Tord Björn, Flöjtvägen 2, S-890 10 Bjästa, Sweden

Filed Oct. 15, 1984, Ser. No. 661,071
Int. Cl.[4] B63B *1/32*
U.S. Cl. 114—288 1 Claim



1. A boat hull having a keel line and a stem, said boat hull including a bottom which has a plurality of downwardly opening channels for receiving air during the forward movement of the boat in order to produce a reduction of the friction between the water and the bottom surface, said channels extending, viewed from above and from below respectively, along their

whole length generally parallel to said keel line in the direction astern from places at said stem above the water surface to places under the water surface, an individual channel being limited laterally by two primarily vertical wall portions and upper surfaces of the channels being primarily horizontal, a certain plurality of adjacent ones of said channels localized on the same side of said keel line and having their upper primarily horizontal surfaces at different levels at the region of said stem merging into a single channel with a common primarily horizontal upper surface in the direction astern, said vertical wall portions which delimit said certain adjacent channels from each other being at least partly formed by a single downwardly projecting projection which where said certain adjacent channels merge into a single channel is gradually reduced in height while the upper surfaces of said certain adjacent channels gradually come closer to the levels of each other.

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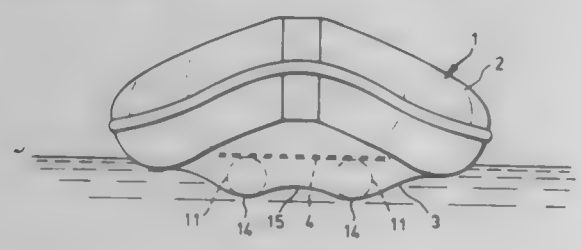
INFLATABLE BOAT

Richard J. A. Harding, Kidwelly, Wales, assignor to Avon Inflatables Limited, Great Britain

Continuation of Ser. No. 106,018, Dec. 21, 1979, abandoned. This application Dec. 14, 1981, Ser. No. 330,591

Int. Cl.⁴ B63B *7/08*

U.S. Cl. 114—345 **9 Claims**



1. A load carrying inflatable boat capable of carrying a plurality of passengers and capable of planing and comprising:

a flexible skin defining the bottom of the boat;

a member having a rigid reaction surface overlying the skin; and

at least one inflatable member between said skin and said reaction surface to define twin inflated parallel keels engaging deepest into the water when the boat is on water, the keels being parallel to the center line of the boat and spaced from it at respective sides thereof, the skin forming a continuously water-contacting planing surface of the boat between the keels, the planing surface having a concave cross-section, the concavity of which is variable in accordance with the loading experienced on water so as to adapt the shape of the water-contacting planing surface to load conditions.

4,603,652

DEVICE FOR FASTENING FLAGS OR THE LIKE TO THEIR STAFF OR THE LIKE AVOIDING WINDING THEREOF

Blandine Thibault, and Delphine Thibault, both of 5, rue Alfred Roll, 75017 Paris, France

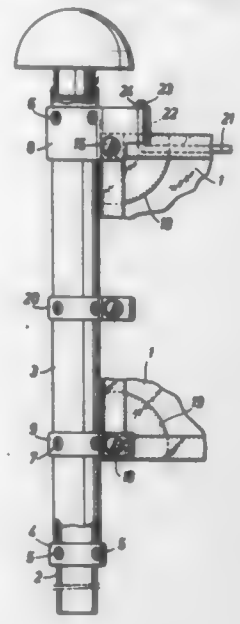
Filed Jul. 9, 1985, Ser. No. 753,080

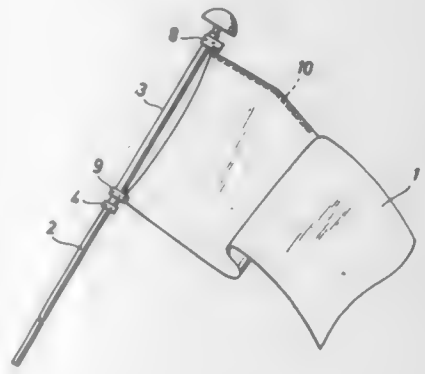
Claims priority, application France, Jul. 9, 1984, 84 10886

Int. Cl.⁴ G09F *17/00*

U.S. Cl. 116—174 **3 Claims**

1. A device for fastening a flag on a staff via a sleeve coaxial to the staff mounted to rotate freely on the staff, the flag being able to exert on the sleeve, under the effect of the wind and/or the weight of the flag, a torque tending to rotate the sleeve and to avoid the flag winding therearound, wherein said device comprises a rod having two ends, a first end being connected to the sleeve so that the rod extends, at least partially, in a plane substantially transverse to the sleeve, the second end of the rod being remote from the sleeve and connected to the flag, whereby the torque exerted by the flag on the sleeve under the effect of the wind and/or of the weight of the flag is increased, and wherein the device further includes a means for retaining the sleeve on the staff, a lower ring and an upper ring for fastening the flag on the sleeve, the upper ring having a passage





parallel to the staff for receiving a pivot part of the rod, the rod being constituted by a bent tube forming the pivot part and tubular extension part, and by a bent rod received in the tubular extension part.

4,603,653

MARINE ANTIFOULING MATERIALS AND MARKERS

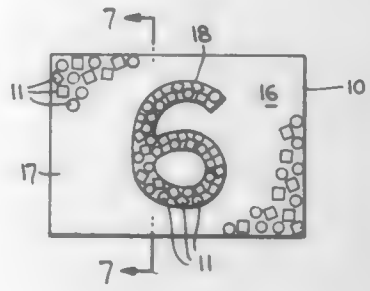
Andrew M. Bews, Edinburgh, Scotland, assignor to United Wire Group, Edinburgh, Scotland

Continuation-in-part of Ser. No. 532,045, Sep. 14, 1983, abandoned. This application Aug. 29, 1985, Ser. No. 770,792

Claims priority, application United Kingdom, Sep. 14, 1982, 8226183

Int. Cl.⁴ B63B *59/04*

U.S. Cl. 116—209 **22 Claims**



1. A marine antifouling material for providing an antifouling surface for use in sea water, comprising a layer of inert, water-insoluble, flexible and extensible elastomeric carrier material having an outer surface and an opposed inner surface and having embedded therein a single layer only of a plurality of copper or copper alloy particles, all of said particles being essentially of the same size in the range of 0.5 to 3.0 mm, the

ratios of the major dimensions of said particles all being in the range of about 0.7 to 1.0, and said single layer having a maximum thickness equal to the size of said particles, all of said particles being exposed at said outer surface of said carrier material to provide a multiplicity of generally evenly sized discrete copper areas in the inert material continuum outer surface, said areas being spaced by 0.5 to 0.75 mm, the total area of the spaced copper areas being between 20 and 40% of the total area of the antifouling surface of said antifouling material, said layer of particles being spaced from the opposed inner surface of said carrier material whereby said inner surface has no copper exposed thereat, and wherein said antifouling surface of said antifouling material is accessible to sea water and the multiplicity of spaced copper areas thereon retard or prevent marine growth on said antifouling surface.

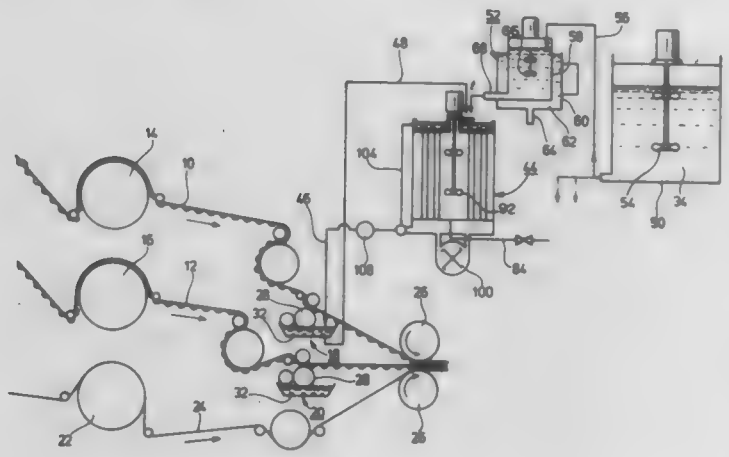
12. A marine identification marker for attachment to a submerged or submersible structure to provide an identification member thereon, said marker comprising a unitary support having a display surface, the display surface including an alphanumeric portion of contrasting color to that of the remainder of said display surface, and wherein either said alphanumeric portion or said remainder, or both are formed from an antifouling material comprising a layer of inert, water-insoluble, flexible and extensible elastomeric carrier material having first and second opposed surfaces and, embedded in said material, a single layer only of a plurality of copper or copper alloy particles, all of said particles being of essentially the same size in the range of 0.5 to 3.0 mm, the ratios of the major dimensions thereof all being the range of about 0.7 to 1.0, and said single layer having a maximum thickness equal to the size of said particles, all of said particles being exposed at said first surface of said carrier material to provide a multiplicity of generally evenly sized discrete copper areas in the inert material continuum surface, said areas being spaced by 0.5 to 0.75 mm, the total area of the spaced metal areas being between 20 and 40% of the total area of said first surface, said layer of particles being spaced from said second surface of said material whereby said second surface has no metal exposed thereat, said carrier material including a coloring pigment dispersed therein, and wherein said second surface of said material is attachable to said structure whereby said first surface of said material is accessible to sea water and the multiplicity of spaced metal areas thereon retard or prevent marine growth on said first surface.

4,603,654

GLUE APPLICATOR FOR CORRUGATOR MACHINES

Kazuo Mori, Kyoto, and Eiichi Isowa, Nagoya, both of Japan, assignors to Isowa Industry Company, Ltd., Nagoya, Japan

Filed Feb. 20, 1985, Ser. No. 703,476
Claims priority, application Japan, Feb. 20, 1984, 59-30898
Int. Cl.[4] B05C *1/08, 1/16*
U.S. Cl. 118—202 **20 Claims**



1. Glue applicator apparatus, for use with a system in which glue disposed within a glue pan is applied to the ridge portions of a corrugated core sheet, comprising:

tank means for holding a stock of said glue;

glue heating means for providing heated glue to said glue pan, including a first upper glue pool chamber into which said glue from said tank means is deposited; a second upper glue pool chamber, separated from said first upper glue pool chamber, from which said heated glue is discharged to said glue pan; a lower glue pool chamber, vertically spaced below said first and second upper glue pool chambers, for transferring said glue from said first upper glue pool chamber to said second upper glue pool chamber; a heat medium chamber, defined between said upper glue pool chambers and said lower glue pool chamber, for containing a heat medium; a first set of vertically extending heat exchanger pipes, interposed between said first upper glue pool chamber and said lower glue pool chamber and extending through said heat medium chamber in a heat exchange relationship with said heat medium disposed within said heat medium chamber, for transferring said glue from said first upper glue pool chamber to said lower glue pool chamber; a second set of vertically extending heat exchanger pipes, interposed between said lower glue pool chamber and said second upper glue pool chamber and extending through said heat medium chamber in a heat exchange relationship with said heat medium disposed within said heat medium chamber, for transferring said glue from said lower glue pool chamber to said second upper glue pool chamber; and a steam inlet feed pipe fluidically connected to said heat medium chamber for providing steam thereinto;

first conduit means for conducting said glue from said tank means to said first upper glue pool chamber of said glue heating means; and

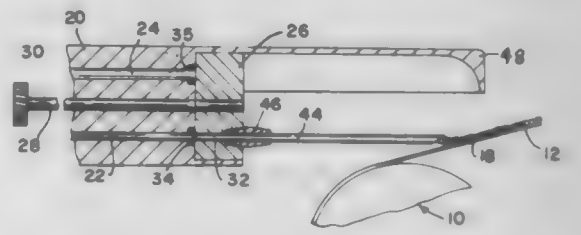
second conduit means for conducting said heated glue from said second upper glue pool chamber to said glue pan.

4,603,655

LIQUID APPLICATOR FOR A PRINTING PRESS

Thomas G. Switall, Wheeling, Ill., assignor to Ryco Graphic Manufacturing, Inc., Wheeling, Ill.

Filed May 13, 1985, Ser. No. 733,386
Int. Cl.[4] B05B *15/02*
U.S. Cl. 118—302 **7 Claims**



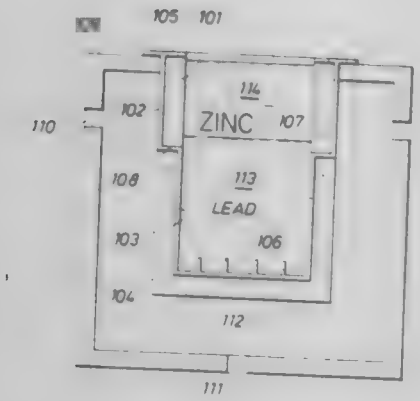
1. An applicator for applying liquid such as glue to a web of paper as it is moving through a printing press, said applicator comprising a body member having separate first and second fluid conduits extending therethrough for connecting to separate liquid and purge fluid sources, a head member mounted for movement relative to said body member, said head member having a fluid conduit therethrough aligned with the first fluid conduit in said body member in a first relative position of said members and aligned with the second fluid conduit in said body member in the second relative position of said members, a fluid dispensing tip mounted on said head member in fluid communication with the fluid conduit through said head member such that when said members are in said first relative position, the outer end of said tip will be positionied in close proximity to the surface of said web of paper, and when said members are in said second relative position, the outer end of said tip will be positioned remote from the surface of the web of paper, and means for effecting movement of said members between said first and second relative positions, whereby said tip may selectively apply liquid to the paper or be purged of liquid remote from the paper.

4,603,656

GALVANIZING APPARATUS

Frederick O. Jaye, Jr., 819 Crossroads Dr., Houston, Tex. 77079

Filed Nov. 9, 1984, Ser. No. 669,809
Int. Cl.[4] B05C *3/02*
U.S. Cl. 118—429 1 Claim



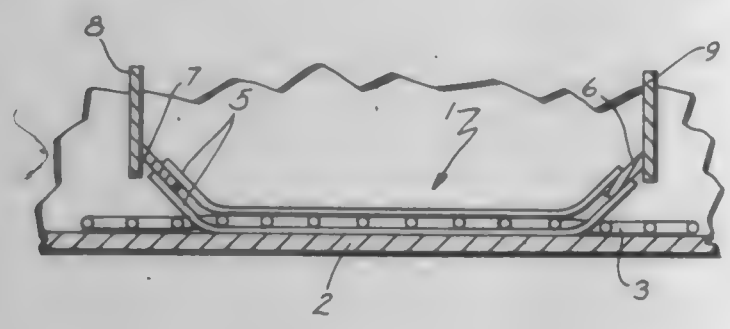
1. Apparatus for galvanizing articles sought to be plated comprising a kettle having a side wall and a bottom wall for containing a molten bath, a refractory material liner within the interior of the kettle adjoining the side wall thereof at the upper portion of the sidewall, firebox means in spaced and surrounding relationship to both the side wall and the bottom wall of the kettle, a plurality of heat exchange fins extending from the bottom wall of the kettle and at least from the exterior of a portion of the sidewall of the kettle, a second plurality of heat exchange fins extending upwardly from the bottom wall and into the interior of the kettle, said side wall including a first and a second section joined one to another by a ledge extending substantially parallel to the bottom wall, a flange connected to the top of the first section being of a diameter substantially in excess of the diameter of the second section, said liner being disposed between said ledge and said flange; said refractory liner being a material selected from the group consisting of alundum, aluminum oxide, bauxite brick, chrome brick, fireclay brick, magnesite brick, silica brick, silicon carbide, and zirconia brick, the bottom wall and the side wall of the kettle being constructed of a high strength steel, said kettle containing a first molten bath and a second molten zinc bath thereabove with the interface between the two baths being maintained in the area of the side wall in contact with the refractory liner, said first molten bath being lead or tin.

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FEED TROUGH FOR POULTRY CAGES, ESPECIALLY PULLET CAGES

Hubert Peckskamp, Lohne, Fed. Rep. of Germany, assignor to USI Agri-Business Company Inc., New Holland, Pa.

Filed Mar. 15, 1985, Ser. No. 712,278
Claims priority, application Fed. Rep. of Germany, Mar. 15, 1984, 3409507
Int. Cl.[4] A01K *39/014*
U.S. Cl. 119—18 16 Claims



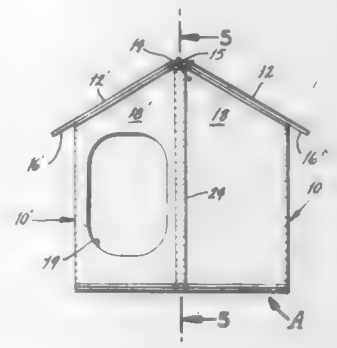
1. A feed trough for poultry battery cages, particularly chick breeding cages, comprising a trough channel with a feed conveyor chain running therein and with a grid disposed thereabove, wherein each grid consists of grid bars extending in a parallel relationship to one another in the longitudinal direction of the trough channel; cross connection means located only at the end regions of said grid bars for supporting said grid bars in said parallel relationship; and support means for supporting the grid bars in one predetermined position within said trough channel.

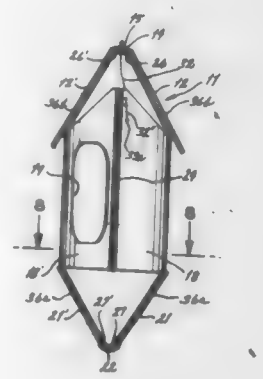
4,603,658

COLLAPSIBLE STRUCTURE

Roger L. Garnsey, 1003 E. Fifth Ave., Monmouth, Ill. 61462

Filed Nov. 29, 1984, Ser. No. 676,083
Int. Cl.[4] E04B *1/343;* A01K *1/00*
U.S. Cl. 119—19 12 Claims





1. A collapsible, easily relocatable structure for erection on a supporting surface, comprising side wall panels, a roof joined to the side wall panels and constituted by a pair of opposed, flat roof panels hingedly joined to the respective side wall panels and hingedly secured centrally, a floor constituted by a pair of flat floor panels hingedly joined to respective lower edges of the side wall panels and including inner edges hingedly secured centrally, opposite ends each comprising a pair of flat end panels hingedly secured to the side wall panels and hingedly secured centrally, and characterized by the structure being collapsible by outward folding of the roof panels, inward folding of each of the pairs of end panels, and outward folding of the floor panels with the hingedly secured inner edges of the floor panels extending beyond and below the side wall lower edges for first contacting the supporting structure when the collapsed structure is lowered to the supporting surface, and means for locking the panels in unfolded configuration for maintaining the shelter in an erected condition.

4,603,659

ADJUSTABLE MUZZLE

Marvin G. Helphrey, 3647 Avocado Blvd., La Mesa, Calif. 92041

Filed Jul. 29, 1985, Ser. No. 759,825
Int. Cl.[4] A01K *25/00*
U.S. Cl. 119—130 5 Claims

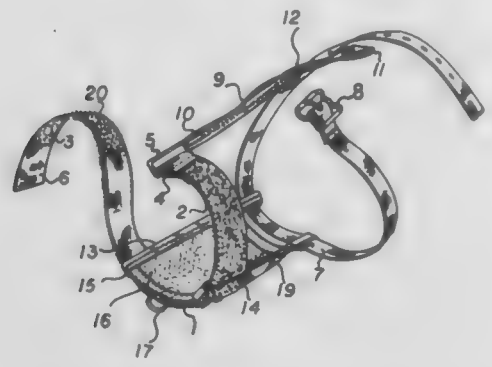
1. A muzzle for dogs comprising:

a loop member for encircling the dog's snout having an adjustable means for securing said loop member around the snout;

a collar member for encircling the dog's neck, having an

adjustable means for securing said member around the neck;

a nose bridge having means for connecting its rear end and front end to said collar and loop members respectively, wherein said means for connecting rear end is adjustable along the length of said nose bridge;



a pair of lateral supports, each having means for connecting its rear end and front end to said collar and loop members respectively, wherein said means for connecting the rear end is adjustable along the length of said lateral supports, and said means for connecting the front end is adjustable along the length of the loop member; and

a web connecting said lateral supports and supporting the chin of the dog.

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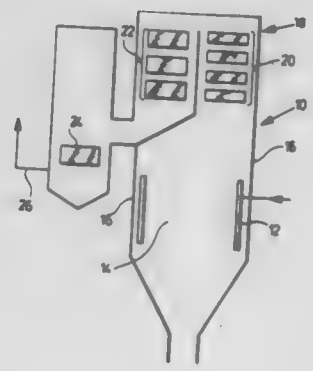
CONVECTION SECTION ASH MONITORING

John R. Wynnyckyj, Kitchener; Edward Rhodes, Waterloo, and Robert Marr, Kitchener, all of Canada, assignors to University of Waterloo, Waterloo, Canada

Division of Ser. No. 583,573, Feb. 24, 1984, Pat. No. 4,556,019. This application Apr. 1, 1985, Ser. No. 718,711

Int. Cl.⁴ F28G *13/00*

U.S. Cl. 122—379 **9 Claims**



1. In a steam generating apparatus comprising a combustion section wherein fuel is burned in an air stream to generate heat and to produce a hot combustion products gas stream, a convection section connected to said combustion section by conveying passage means to permit the flow of said hot combustion products gas stream from said combustion section to said convection section, and heat exchange tubes located in said convection section transverse to the intended direction of gas flow through said convection section so as to contact the hot combustion products gas stream and having steam of temperature lower than that of the hot combustion products gas stream passing therethrough, said heat exchange tubes being arranged in a plurality of banks of said heat exchange tubes, the improvement which comprises:

a temperature detection means provided upstream of each bank of heat exchange tubes and downstream of the last bank to determine the fall in temperature across each bank, each of said temperature detection means being capable of directly measuring the temperature of said hot combustion products gas stream at the locations of said temperature detection means;

means for on-line calculation of a fouling factor (R_F) for each said bank of heat exchange tubes from the difference in temperature thereacross determined by said temperature detection means; and

means for activating soot blowers to effect cleaning of a selected bank of heat exchange tubes in response to a predetermined value of said fouling factor for said selected bank.

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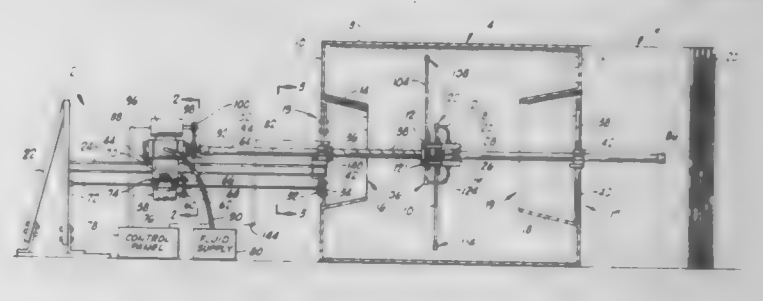
HYDROBLAST CYCLONE CLEANER APPARATUS AND METHOD

Charles R. Nelson, Morris, and Cris R. Lehman, Dwight, both of Ill., assignors to Halliburton Company, Duncan, Okla.

Filed Jan. 2, 1985, Ser. No. 688,221

Int. Cl.⁴ F22B *37/52*

U.S. Cl. 122—392 **19 Claims**



1. An apparatus for cleaning a cyclone with a fluid from a fluid source, said cyclone including a side wall, a first end wall having an inlet opening, a second end wall having an outlet opening, an inlet wall extending inwardly from said first end wall and spaced from said side wall, and an outlet wall extending inwardly from said second end wall and spaced from said side wall, said apparatus comprising:

support means for providing a support adjacent said first end wall;

a carriage movably mounted on said support means;

carriage movement means for moving said carriage toward and away from said first end wall;

conduit means for conducting said fluid into said cyclone;

swivel means, mounted on said carriage, for rotating said conduit means;

fluid lance means, connected to said conduit means for rotational movement therewith, for conducting said fluid from said conduit means;

fluid lance movement means for moving said fluid lance means transversely to said conduit means; and

nozzle means, connectible to said fluid lance means, for creating a selectable one of a longitudinal spray to clean the interior surfaces of said first and second end walls and a transverse spray to clean the interior surfaces of said side wall, said inlet wall and said outlet wall.

4,603,662

FUELS

John H. R. Norton, Johannesburg, and Peter R. Rebello, Hurleyvale, both of South Africa, assignors to AECI Limited, Johannesburg, South Africa

Filed May 2, 1980, Ser. No. 146,367

Claims priority, application South Africa, May 14, 1979, 79/2323

Int. Cl.⁴ F02B *75/12;* **C10L** *1/02*

U.S. Cl. 123—1 A **2 Claims**

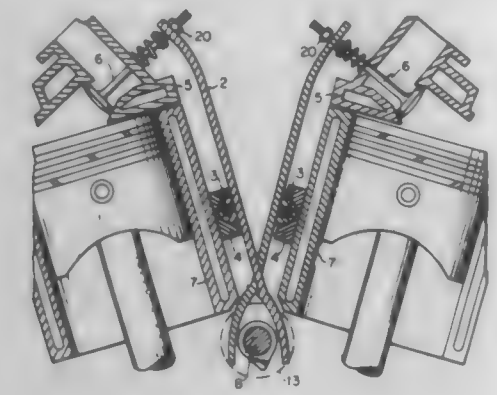
1. A method of running a compression ignition engine having a cylinder, a fuel injector into the cylinder, and an air inlet manifold leading to the cylinder, which method comprises injecting at least one alcohol into the engine through the fuel injector and at least one ether into the engine through the air inlet manifold.

4,603,663

ROCKERARM SYSTEM FOR CONTROLLING VALVES IN AN INTERNAL COMBUSTION ENGINE

Joseph Giocastro, 6428 Metropolitan Ave., Middle Village, N.Y. 11379

Filed Nov. 1, 1983, Ser. No. 547,435
Int. Cl.[4] F01L *1/34*
U.S. Cl. 123—90.17 3 Claims



1. A rocker arm system for an internal combustion engine, comprising, in combination,

at least one engine unit including a cylinder block having a top side and an opposed bottom side and a side wall extending between said top and bottom sides,

a cylinder head mounted to said top side of said cylinder block,

valve means seated in and operatively connected to said cylinder head and movable between open and closed positions, said valve means including biasing means for moving said valve means from said open position to said closed position, said valve means including a valve stem, said valve stem having a stem end and extending to said side wall of said cylinder block, said valve means entering said cylinder head from a position above said cylinder head,

cam means positioned proximate to said side wall of said cylinder block,

arm means rotatably connected to said side wall of said cylinder block and extending between and operatively positioned relative to said cam means and said valve means, said arm means being movable between first and second positions, wherein in said first position said arm means is free of pressure contact with said cam means and said valve means, and in said second position said arm means is in pressure contact with said cam means and with said valve means wherein said valve means has been moved to said open position by said arm means, said arm means being movable from said second position to said first position by said biasing means of said valve means upon release of said arm means from said second position by said cam means, said arm means including an arm member having opposed top and bottom end portions, said arm member being substantially straight in structure and substantially parallel to said side wall of said cylinder block, said top end portion having a bend portion configured to be in perpendicular operative contact with said stem end of said valve stem,

mounting means secured to said side wall of said cylinder block for rotatably connecting said arm means to said cylinder block for movement between said first and second positions,

a crankshaft driven by the piston of said cylinder block positioned proximate to said bottom side of said cylinder block,

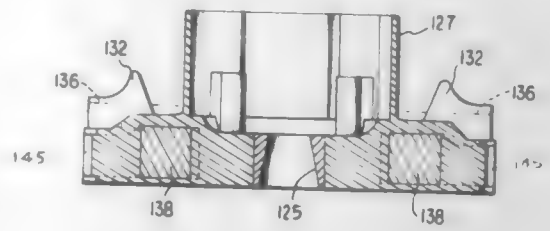
gearing means associated with said crankshaft and with said crankshaft for moving said cam means between said first and second positions so as to operate said arm means and said valve means in timed sequence for operation of said engine.

4,603,664

MAGNETIC STRUCTURE FOR USE IN A CHAIN SAW OR EDGE TRIMMER IGNITION SYSTEM OR THE LIKE

Robert V. Jackson, Los Angeles, Calif., assignor to McCulloch Corporation, Los Angeles, Calif.

Filed Feb. 20, 1985, Ser. No. 703,544
Int. Cl.[4] F02P *1/00*
U.S. Cl. 123—149 D 21 Claims



1. In a magneto ignition system including a flywheel lying in a plane having an axis of rotation perpendicular to said plane of the flywheel and at least one magnetic structure embedded in the periphery thereof, a magnetically permeable core disposed adjacent said flywheel, a coil wound on said core and connected to an ignition circuit so that a voltage waveform is induced in said coil and applied to said circuit each time the magnetic structure passes the coil, said waveform having at least a first positive alternation followed by a negative alternation and then a second positive alternation and where said magnetic structure includes (a) a magnet having first and second end faces and (b) first and second pole pieces where said pole pieces have (i) first portions which respectively engage said end faces and (ii) second portions which respectively include pole faces on said flywheel periphery, the improvement comprising:

said pole pieces being assymetrical in a plane perpendicular to the plane of the flywheel such that the said second portions of the pole pieces have a width in the direction of the axis of rotation of the flywheel in said perpendicular plane which is less than the width in the direction of the axis of rotation of the flywheel in said perpendicular plane of the said first portions thereof to thereby effect concentration of the flux produced by said magnet at said pole faces to thereby permit a reduction in the size of the magnet without substantially lessening the energy in said negative and second positive alternations of the voltage waveform applied to the ignition circuit.

4,603,665

HYPEREUTECTIC ALUMINUM-SILICON CASTING ALLOY

William G. Hesterberg; Raymond J. Donahue, and Benjamin L. Sheaffer, all of Fond du Lac, Wis., assignors to Brunswick Corp., Skokie, Ill.

Filed Apr. 15, 1985, Ser. No. 723,058
Int. Cl.[4] C22C *21/02;* F02F *7/00*
U.S. Cl. 123—195 R 4 Claims

1. An engine block for an internal combustion engine, comprising a cast block composed of a hypereutectic aluminum silicon alloy and having at least one cylinder bore therein, said alloy consisting essentially of 16% to 19% by weight of silicon, 0.4% to 0.7% by weight of magnesium, up to 1.4% by weight of iron, up to 0.3% by weight of manganese, up to 0.37% by weight of copper, and the balance aluminum, said alloy having excellent fluidity, a solidification range of less than 150° F., and having a weight loss of less than 1.0% when exposed for 200 hours at ambient temperature in a 5% sodium chloride solution.

4. A method of casting an engine block, comprising the steps of forming a mold having a plurality of non-metallic cores constructed and arranged to form cylinder bores in the cast engine block, preparing a hypereutectic aluminum-silicon alloy consisting essentially by weight of 16% to 19% of silicon, 0.4% to 0.7% of magnesium, up to 1.4% iron, up to 0.3% of manga-

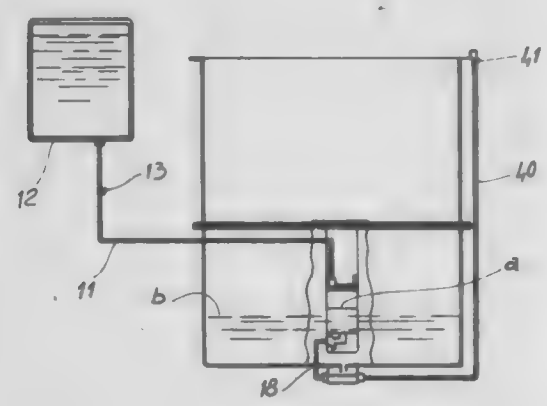
nese, up to 0.37% copper, and the balance aluminum, a solidification range of less than 150° F., and having a weight loss of less than 1% when exposed for 200 hours at ambient temperature in a 5% sodium chloride solution, casting said alloy into the mold and into contact with said cores, and cooling the cast alloy to produce a solidified cast engine block having precipitated silicon crystals substantially uniformly distributed throughout said cast block.

4,603,666

DEVICE FOR MAINTAINING A CONSTANT OIL LEVEL

Giuseppe Martinelli, Via Fratelli Rosselli, 21/3, 20100 - Milano, Italy

Filed May 6, 1985, Ser. No. 731,060
Claims priority, application Italy, May 11, 1984, 20884 A/84
Int. Cl.[4] F01M *1/00*
U.S. Cl. 123—196 S 10 Claims



1. A device for maintaining constant the level of oil in an internal combustion engine, said internal combustion engine having a sump (20), which comprises a constant level reservoir (1), a duct (15) connecting said constant level reservoir to the bottom of the sump, whereby the level within the sump is maintained at the level in the constant level reservoir, a reserve reservoir, (12), positioned at a level higher than the constant level reservoir, outside the sump, duct means (11) for placing said constant level reservoir in communication with said reserve reservoir, float means (21) in said constant level reservoir for controlling flow in said duct means.

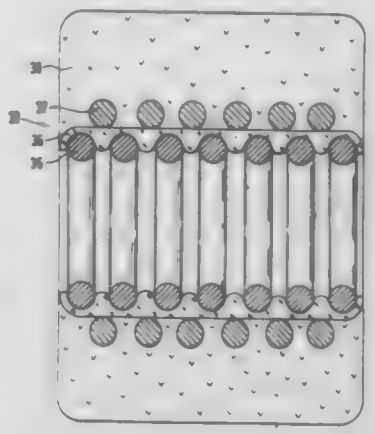
4,603,667

DEVICE FOR FUEL INJECTION IN COMBUSTION CHAMBERS

Werner Grünwald, Gerlingen; Ernst Imhof, Münchingen; Iwan Komaroff, Regensburg; Günther Schmid, Stuttgart, and Kurt Schmid, Ditzingen-Schöckingen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

PCT No. PCT/DE84/00098, § 371 Date Oct. 19, 1984, § 102(e) Date Oct. 19, 1984, PCT Pub. No. WO84/04800, PCT Pub. Date Dec. 6, 1984
PCT Filed Apr. 27, 1984, Ser. No. 672,706
Claims priority, application Fed. Rep. of Germany, May 20, 1983, 3318459
Int. Cl.[4] F23Q *7/00*
U.S. Cl. 123—297 15 Claims

1. Device for fuel injection in combustion chambers of, in particular, selfigniting combustion engines with an injection nozzle and a subsequently switched incandescent wire which has a conduit surrounded by heatable walls through which the injection streams of the fuel can pass through substantially unhindered, characterized in that at the side of the combustion chamber at least two superimposed heating layers (35,37) are



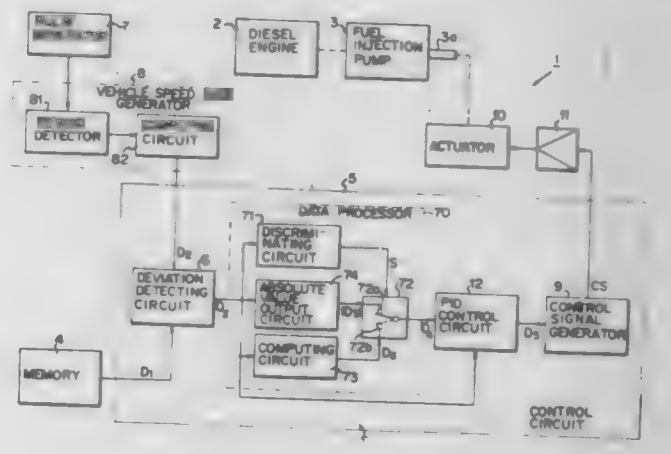
provided and separated from each other by insulation (36) in the conduit of the incandescent wire (20).

4,603,668

APPARATUS FOR CONTROLLING THE ROTATIONAL SPEED OF AN INTERNAL COMBUSTION ENGINE

Masahito Ueno, Higashimatsuyama, Japan, assignor to Diesel Kiki Co., Ltd., Japan

Filed May 3, 1984, Ser. No. 606,700
Claims priority, application Japan, May 4, 1983, 58-77571
Int. Cl.[4] F02D *1/02, 31/00*
U.S. Cl. 123—352 4 Claims



1. An apparatus for controlling the rotational speed of an internal combustion engine by employing a closed loop, comprising:

a first means for producing first data indicative of a target engine speed;

a second means for producing second data indicative of the actual engine speed at each instant;

a deviation detecting means responsive to said first and second data for detecting the amount of deviation of the actual engine speed from the target engine speed and outputting a deviation signal corresponding to said deviation;

a first computing means for computing the absolute value of the deviation;

a second computing means for computing a predetermined function of N degrees ($N \geqq 2$) of the deviation;

means for discriminating the magnitude of the deviation;

a selecting means for selecting either the computed result from the first computing means or the result from the second computing means in response to the result of the discrimination of said discriminating means;

a generating means for generating a control signal in response to the output from said selecting means; and

means responsive to the control signal for adjusting a member for adjusting the speed of the internal combustion engine so that the deviation becomes zero.

4,603,669

FUEL INJECTION PUMP HAVING VOLTAGE VARIATION COMPENSATION

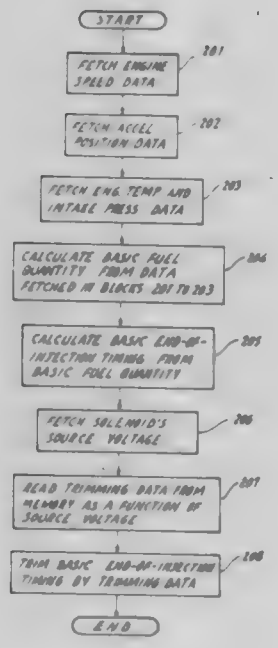
Eiji Takemoto; Masahiko Miyaki, both of Oobu; Hideaki Norimatsu, Toyohashi; Nobuhito Hobo, Inuyama; Yoshihiko Tsuzuki, Toyota, and Yoshimune Konishi, Okazaki, all of Japan, assignors to Nippondenso Co., Ltd., Kariya and Toyota Jidosha Kabushiki Kaisha, Toyota, both of, Japan

Filed Jan. 4, 1985, Ser. No. 688,995

Claims priority, application Japan, Jan. 10, 1984, 59-3287

Int. Cl.[4] F02B *3/00*

U.S. Cl. 123—357 10 Claims



8. A fuel injection pump for an internal combustion engine, comprising:

an enclosure;

pump means including a plunger rotatingly and reciprocally movable in the enclosure to define a compression chamber of variable volume, said pump means coupling said compression chamber to a fuel inlet during an intake stroke of the plunger and connecting the compression chamber to a fuel outlet during a compression stroke of the plunger to thereby initiate injection of fuel to said outlet, said pump means being responsive to the speed of rotation of said engine to pressurize the fuel in said inlet;

means for detecting the speed of said engine;

a source of voltage having a tendency to vary;

soleniod valve means operable when a voltage is applied thereto from said source for providing a pressure relief action of the fuel in said compression chamber to terminate the injection of fuel;

a memory storing trimming data in locations addressable as a function of the detected voltage and as a function of the detected engine speed; and

control means for detecting the voltage of said source and responsive to the initiation of the fuel injection for determining the basic timing at which the fuel injection is to be terminated, reading trimming data out of said memory as a function of said detected voltage and as a function of said detected engine speed, correcting the basic timing in accordance with said trimming data and applying the voltage of said source to said solenoid valve means at said corrected timing to thereby terminate the fuel injection.

4,603,670

METHOD OF AND DEVICE FOR LAMBDA-REGULATION OF FUEL MIXTURE FOR AN INTERNAL COMBUSTION ENGINE

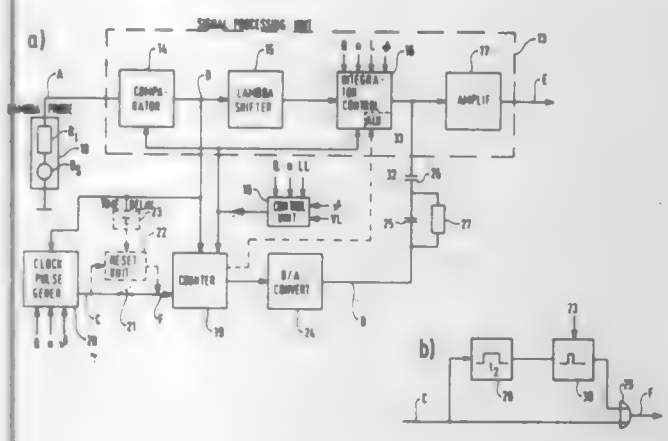
Richard Bertsch, Asperg; Dieter Günther, Murr; Hans Schnürle, Walheim, and Ulrich Steinbrenner, Stuttgart, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jul. 5, 1984, Ser. No. 627,742

Claims priority, application Fed. Rep. of Germany, Jul. 28, 1983, 3327156

Int. Cl.[4] F02D *41/14*

U.S. Cl. 123—440 17 Claims



1. A method of regulating air-fuel ratio in an internal combustion engine including a lambda probe for delivering a lambda signal indicative of proportion of oxygen in exhaust gas of the engine, and a signal processing unit connected to the lambda probe for processing the lambda signal according to an operational characteristic and delivering a control signal for an air-fuel ratio adjuster, the signal processing unit including means for adjusting between at least two changeovers of the lambda signal and after the expiration of an adjustable time period the operational characteristics of the signal processing unit in dependency on operational parameters of the engine such as load, rotary speed, and temperature, the method comprising the steps of comparing time intervals between consecutive change-overs of the lambda signal with successive monitoring time intervals t_1 during each of which the control signal has an increasing or decreasing course and, in the event of detecting an unchanged lambda signal after the expiration of a monitoring time interval t_1, discontinuing the course of the control signal at the end of each successive monitoring time interval the control signal and changing its magnitude in a jump to produce at the output of the signal processing unit a step-like course of the control signal until a change of the lambda signal is detected.

4,603,671

FUEL INJECTOR FOR AN INTERNAL COMBUSTION ENGINE

Toru Yoshinaga, Okazaki; Toshihiko Igashira, Toyokawa; Yasuyuki Sakakibara, Nishio, and Yukihiro Natsuyama, Okazaki, all of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed Aug. 10, 1984, Ser. No. 639,433

Claims priority, application Japan, Aug. 17, 1983, 58-149151; Jun. 25, 1984, 59-129098

Int. Cl.[4] F02M *39/00*

U.S. Cl. 123—467 11 Claims

1. A fuel injector for an internal combustion engine, which comprises:

a body having an axial bore;

a normally closed injection nozzle mounted to said body in alignment with said bore, said injection nozzle being of the differential pressure type including a pressure chamber and a needle valve;

injection fuel supply means in said body for supplying a high

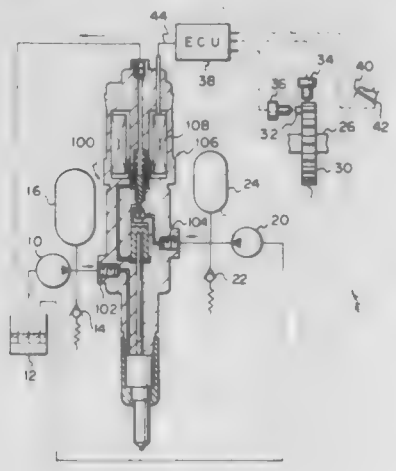
pressure fuel to said pressure chamber of said injection nozzle;

a power cylinder including a piston slidably received in said axial bore to define a working chamber therein, said piston being operative to be moved toward and away from said injection nozzle as said power cylinder is activated and deactivated;

working fuel supply means in said body for supplying a pressurized fuel to said working chamber of said power cylinder;

an electronically controlled solenoid valve placed in said working fuel supply means and selectively operable to close said wording fuel supply means, thereby precluding application of the fuel pressure in said working fuel supply means to said working chamber to deactivate said power cylinder upon energization of said solenoid valve and operable to open said working fuel supply means, thereby allowing transmission of said fuel pressure in said working fuel supply means to said working chamber to activate said power cylinder upon de-energization of said solenoid valve; and

actuating means operatively connected with said piston of the power cylinder for selectively rendering said injection nozzle opened to allow the high pressure fuel in said pressure chamber to be injected through said nozzle as said solenoid valve is energized to deactivate said power cylinder allowing the piston to move away from said injection nozzle, and rendering said injection nozzle



closed to terminate fuel injection as said solenoid valve is de-energized to activate said power cylinder causing the piston to be urged toward the injection nozzle;

the size and construction of said piston of the power cylinder being such that the force applied to said piston by the fuel pressure in said working chamber is substantially greater than the force applied to said actuating means by the fuel pressure in said injection fuel supply means or in said pressure chamber;

wherein said injection fuel supply means includes an injection fuel inlet (202) in said body for receiving an injection fuel pressurized at an ultra-high pressure and an injection fuel passage (227) in said body for communicating said inlet (202) with said pressure chamber, said working fuel supply means including a working fuel inlet (204) in said body for receiving a working fuel pressurized at a high pressure lower than said ultra-high pressure and a working fuel passage (236) in said body for transmitting the high pressure working fuel at said working fuel inlet (204) to said working chamber of said power cylinder, wherein said actuating means includes a valve seat (270) formed in said injection fuel passage (227) in alignment with and transversely of the axis of said piston and a needle valve (274) operated by said piston to become seated on said valve seat (270) to close the working fuel passage (236), and wherein said piston has a pressure receiving area larger than that of said needle valve (274) of said actuating means, the ratio of the pressure receiving area of said piston with respect to the pressure receiving area of said needle valve (274) of the actuating means being larger than the ration of the fuel pressure at said injection fuel inlet (202) with respect to the fuel pressure at said working fuel inlet (204).

4,603,672

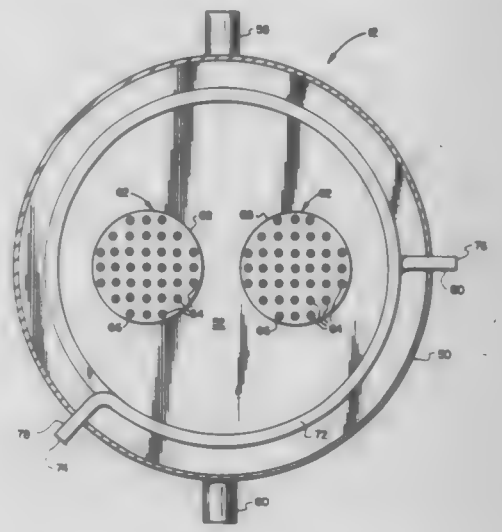
FUEL VAPORIZER FOR INTERNAL COMBUSTION ENGINE

R. W. Keller, 716 Moore La., Dewey, Okla. 74029

Continuation-in-part of Ser. No. 496,600, May 20, 1983. This application Jan. 9, 1985, Ser. No. 690,098

Int. Cl.[4] F02M *31/00*

U.S. Cl. 123—545 3 Claims



1. A fuel vaporizer assembly for vaporizing the fuel/air aerosol mixture produced by a carburetor for delivery to the intake manifold of an internal combustion engine, said fuel vaporizer assembly comprising a housing having sidewalls enclosing a heat transfer chamber, inlet and outlet fittings for circulating heat transfer fluid through said heat transfer chamber, flow dividing means received within said heat transfer chamber for dividing the fuel/air mixture produced by the carburetor into multiple fluid flow streams for delivery into the intake manifold, and an air circulation tube coiled within said heat transfer chamber, the coiled portion of said air circulation tube being exposed to said heat transfer fluid as it is circulated through the heat exchange chamber, said air circulation tube having a first open end portion adapted to receive ambient air flow and having a second open end portion for venting the ambient cooling air out of the air circulation tube and into the surrounding environment.

4,603,673

BREATHER DEVICE IN INTERNAL COMBUSTION ENGINE

Shin Hiraoka; Koji Asanomi, and Ryoji Abe, all of Hiroshima, Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Filed Feb. 28, 1985, Ser. No. 706,643

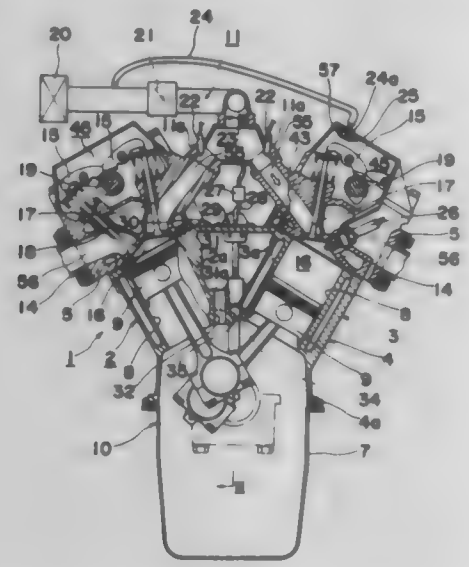
Claims priority, application Japan, Mar. 3, 1984, 59-41663; Mar. 3, 1984, 59-41664

Int. Cl.[4] F02B *25/06*

U.S. Cl. 123—573 16 Claims

1. In a crankcase ventilating system for a V-type, OHC internal combustion engine comprising a substantially hollow engine body structure having a pair of upwardly diverging cylinder banks and a downwardly facing opening, said engine body structure also having a pressure buffer chamber defined between opposed inner walls of the respective cylinder banks and a pair of opposite end walls with respect to the direction of an engine output shaft, said engine body structure further having a plurality of engine cylinders, defined in each of the cylinder banks, and a cam chamber defined therein at a top portion of each of the cylinder banks at a location opposite to the downwardly facing opening; an oil pan secured to the

engine body structure over the downwardly facing opening to define a crankcase; and intake system for the introduction of air into the engine cylinders through an air intake passage; first oil return passages defined in the engine body structure and communicating between each of the cam chambers and the buffer chamber; and a connecting passage means communicating between the buffer chamber and the crankcase, said connecting passage means comprising a blow-dry gas passage, having



one end in communication with the crankcase and the other end in communication with the buffer chamber, an end of said buffer chamber opposite the blow-by gas passage opening at a height above the bottom of said buffer chamber, and a second oil return passage having one end in communication with the crankcase and the other end opening at the bottom of and in communication with the buffer chamber, said other end ofthe blow-by gas passage being located at a level above the bottom of the buffer chamber.

4,603,674

GAS-DIESEL DUAL FUEL ENGINE

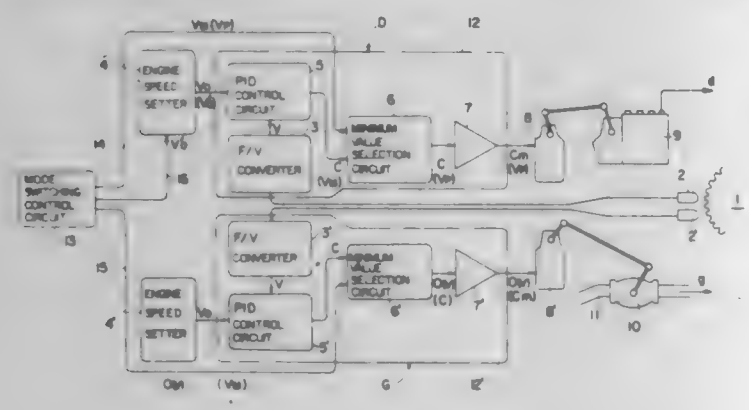
Mitsuo Tanaka, Ibaraki, Japan, assignor to Yanmar Diesel Engine Co., Ltd., Osaka, Japan

Filed Jun. 16, 1982, Ser. No. 389,093

Claims priority, application Japan, Jun. 19, 1981, 56-89486[U]; Jun. 19, 1981, 56-89487[U]; Jun. 19, 1981, 56-89488[U]; Jun. 19, 1981, 56-89489[U]; Jun. 19, 1981, 56-89490[U]

Int. Cl.[4] F02M *39/00*

U.S. Cl. 123—575 1 Claim



1. In a gas-diesel dual fuel engine apparatus having a diesel engine, a diesel fuel supply system including a diesel fuel injection pump, a gaseous fuel supply system including gaseous fuel regulating valve, and a governing and controlling device for governing the speed of said engine and controlling the switch-over of the operation of said engine between a diesel fuel mode and a gaseous fuel mode; the improvement that said governing and controlling device comprises:

(a) first and second electronic governor means adapted to compare a speed signal representing the actual operating speed of said diesel engine with a set speed signal representing the set speed thereof and to perform a proportional plus integral plus differential operation on the basis of the difference therebetween for outputting respective control signals, according to the difference between said two speed signals, for the engine's diesel fuel mode and gaseous fuel mode;

(b) a pair of electric actuator means having respective power amplifier circuits and mechanically connected to said diesel fuel injection pump and said gaseous fuel regulating valve, respectively, for the actuation thereof;

(c) mode switching control means for controlling the switch-over of said governing and controlling device between the engine's diesel fuel operation mode and gaseous fuel operation mode, said mode switching control means being adapted to generate command signals for fully closing said gaseous fuel regulating value when the engine is in the diesel fuel operation mode and for operating said diesel fuel injection pump to feed said diesel engine with a predetermined amount of a diesel fuel as pilot injection fuel when the engine is in the gaseous fuel operation mode; and

(d) signal selecting means connecting said first and second electronic governor means and said mode switching control means to said pair of electric actuator means for selectively delivering said control signals and said command signals, said signal selecting means being controlled by said mode switching control means so that when the engine is in the diesel fuel operation mode, the appropriate control signal is delivered to said electric actuator means connected with said diesel fuel injection pump to operate said pump and the associated command signal is delivered to said electric actuator means connected with said gaseous fuel regulating valve to close said valve, while when the engine is in the gaseous fuel operation mode, the then appropriate control signal is delivered to said electric actuator means connected with said gaseous fuel regulating valve and the then associated command signal is delivered to said electric actuator means connected with said diesel fuel injection pump to operate said pump for the pilot injection;

(e) said signal selecting means comprising first and second minimum value selection circuits which connect said first and second electronic governor means to respective electric actuator means and each of which is adapted to compare the respective control signal from the corresponding electronic governor means with the associated command signal from said mode switching control means and to output only parts of said control signals lower than and equal to said command signals, and said mode switching control means comprising a voltage generating circuit which is adapted to generate a zero voltage signal, a pilot injection signal, a false set speed signal higher than said set speed signal and an upper limit voltage signal respresenting the upper limit of usable voltage, said voltage generating circuit being operable to input said zero voltage signal and said upper limit voltage signal to said second and said first minimum value selection circuits, respectively, when the engine is in the diesel fuel mode so that said gaseous fuel regulating valve is fully closed and said diesel fuel injection pump is operated according to said control signal from said first electronic governor means, said voltage generating circuit being further operable to input said upper limit voltage signal, said false set speed signal and said pilot injection signal to said second minimum value selection circuit, said first electronic governor means and said first minimum value selection circuit, respectively, when the engine is in the gaseous fuel mode so that said gaseous fuel regulating valve is operated according to said control signal from said second electronic governor means and said first electronic governor means outputs a control signal higher than said pilot injection signal by means of an integral action of the proportional plus integral plus differential operation to keep said diesel fuel

injection pump operating to feed said engine with the predetermined amount of pilot injection fuel.

4,603,675

SUPERVISORY AND MONITORING SYSTEM FOR AN ELECTRONICALLY CONTROLLED AUTOMOTIVE FUEL CONTROLLER, AND METHOD

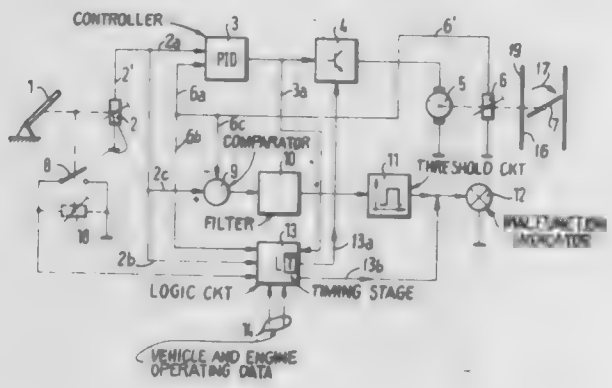
Erich Junginger, Stuttgart; Eberhard Schnaibel, Hemmingen, and Erich Schneider, Kirchheim, all of Fed. Rep. of Germany, assignors to Robert Boech GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jul. 29, 1985, Ser. No. 760,126.

Claims priority, application Fed. Rep. of Germany, Aug. 16, 1984, 3430077; Mar. 21, 1985, 3510173

Int. Cl.[4] F02D *43/00*

U.S. Cl. 123—478 **20 Claims**



1. In an electronic control system for an automotive internal combustion engine (ICE) having

an electronically controllable fuel control element (**7**, **19**; **207**) for the ICE,

an operator controllable controller (**1**);

a command control transducer (**2**) coupled to the operator controllable controller (**1**) and providing a transduced command signal (**2'**);

a positioning motor(**4**,**5**) coupled to the fuel supply control element (**7**, **207**) for positioning thereof;

a fuel position transducer (**6**) coupled to the fuel control element (**7**, **207**) and providing an actual fuel supply signal (**6'**); and

a servo control loop including a servo controller (**3**) coupled to receive as inputs the command signal and the actual fuel supply signal, and providing a control output coupled to the positioning motor (**5**) for positioning of the fuel control element,

the improvement comprising

a supervisory arrangement for supervising and monitoring the operation of said servo control loop and at least one of: said fuel control element, said command control transducer, said positioning motor, said fuel position transducer, and said operator controllable controller, comprising

a signal processing and logic circuit means (**9**, **10**, **13**) coupled (**6***b*, **6***c*) to receive the actual fuel supply signal (**6'**) and processing said signal, said circuit means including

limit means evaluating a characteristic of said actual fuel supply signal with respect to predetermined limits and providing an output when at least one of said predetermined limits is passed.

4,603,676

BOW DRAWBACK MECHANISM

Eugene H. Luoma, 1325 Normanna Rd., Duluth, Minn. 55803

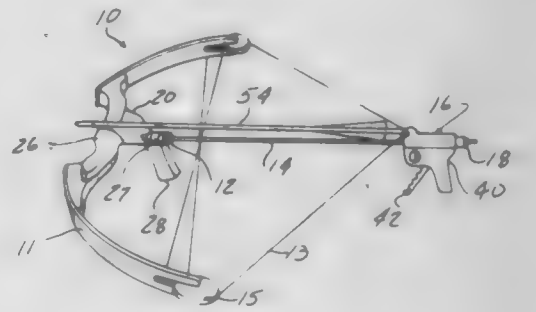
Filed Apr. 17, 1984, Ser. No. 601,231

Int. Cl.[4] F41B *5/00*; F41C *19/00*

U.S. Cl. 124—25 **2 Claims**

1. In a bow having a bow prod, and a bow string coupled to the ends of said prod, an elongated rod fixedly mounted at its forward end to the center of said prod and extending rearwardly from said prod, and a cocking mechanism including a housing mounted on said rod for movement longitudinally of said rod, said mechanism including trigger means operable to releasably couple said string to said housing;

the improvement wherein said cocking mechanism further comprises a cocking plate and a lock lever each having a rod-receiving aperture therethrough dimensioned to accommodate longitudinal sliding movement of said rod relative to the plate and lock lever when the plate and lock lever are disposed perpendicular to the longitudinal axis of said rod and to lock said plate and lock lever to said rod to prevent longitudinal sliding movement of said rod relative thereto when tilted relative to the rod axis, first abutment means in said housing establishing a normal rest position of said cocking plate wherein said cocking plate is perpendicular to the axis of said rod, an actuating lever pivotally mounted in said housing for pivotal movement between a normal position and an actuated position, said actuating lever being engaged with the rearward side of said cocking plate and being operable upon movement from said normal position to said actuated position to tilt said cock-



ing plate into locked engagement with said rod and to urge said cocking mechanism through one step of movement rearwardly relative to said rod and away from said bow prod, second abutment means in said housing establishing a normal rest position of said lock lever wherein said lock lever is tilted into locked engagement with said rod to prevent movement of said cocking mechanism relative to said rod, said second abutment means accommodating movement of said lock lever into perpendicular relation with said rod axis upon rearward movement of said cocking mechanism relative to said rod initiated by movement of said actuating lever into its actuated position and return of said locking lever to its normal rest position to prevent forward movement of said cocking mechanism relative to said rod whereby said cocking mechanism may be advanced rearwardly relative to said rod in step by step movement by successive movements of said actuating lever from its normal to its actuated position and further comprising:

lock button means operable to lock said lock lever in its normal rest position.

4,603,677

ORTHOGONAL DRESSING OF GRINDING WHEELS

Richard H. Gile, R.F.D. #1 Cold River Rd., North Clarendon, Vt. 05759, and Edward C. Bourgoine, 5 McKenzie Dr., Claremont, N.H. 03743

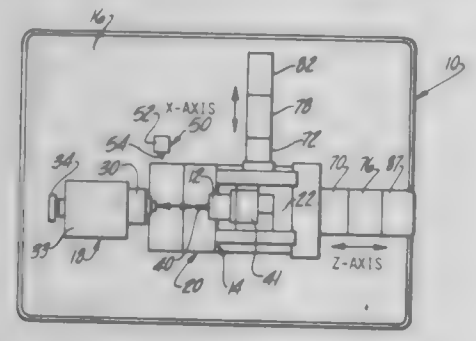
Filed Aug. 29, 1984, Ser. No. 645,373

Int. Cl.[4] B24B *53/00*

U.S. Cl. 125—11 R **6 Claims**

1. In a method for dressing a grinding wheel contour with a dresser having a working section, the steps of relatively traversing in contact the wheel contour and dresser by storing first and second sets of linear slide position data in memory means and providing said first and second sets to respective first and second slide drive means for generating a traversal path corresponding substantially to the wheel contour and rotating the dresser through selected angles during traversal to maintain a plane containing the dresser working section sub-

stantially othogonal to a plane containing a tangent to the wheel contour at dressed locations on the wheel contour by sensing the relative position of the dresser and wheel contour and the angle of the dresser and generating a third set of rotary



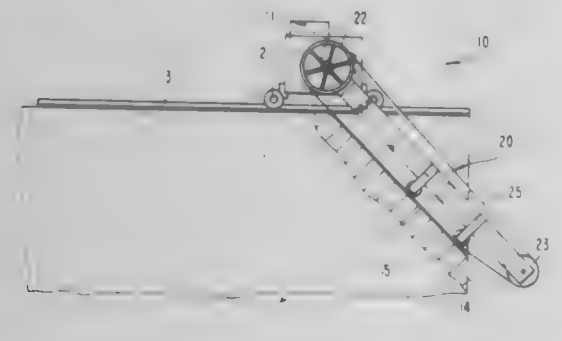
dresser position data for each of the first and second sets and providing said third set to rotary dresser drive means in coordination with each of the first and second sets of linear slide position data used to generate the traversal path.

4,603,678

BELT-CONFIGURED SAW FOR CUTTING SLOTS INTO STONE

Donald D. Fish, Bedford, Ind., assignor to W. F. Meyers Company, Inc., Bedford, Ind.

Filed Oct. 5, 1984, Ser. No. 657,833
Int. Cl.[4] B28D *1/08*
U.S. Cl. 125—21 **19 Claims**



1. A device for cutting a slot in stone comprising:
a main frame;
a jib movably mounted to said frame;
a pair of spaced apart and aligned sheaves being rotatably mounted and with at least one of said sheaves having lateral width and being mounted to said jib;
means on said frame and operably associated with said sheaves being operable to rotate same; and
a continuous flexible belt with a top and opposite sides and extending around and in driven engagement by said sheaves, said belt including a plurality of spaced apart abrasive cutting strips extending across said top and sides of said belt and being flush therewith, said sides defining the width of said belt which is sized greater than said lateral width allowing said one sheave to pass through a slot cut by said belt as said jib moves said belt through said slot.

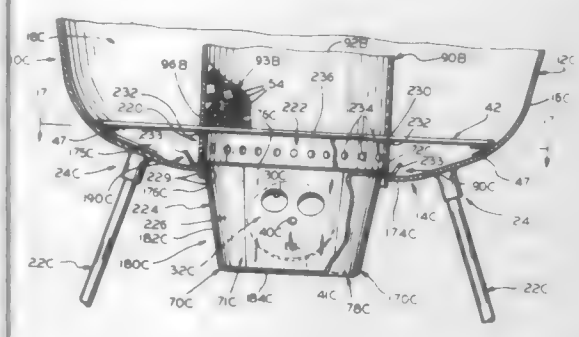
4,603,679

BARBEQUE GRILL WITH PAPER START FACILITY

Ralph Ogden, 1304 Fisher St., Munster, Ind. 46321

Continuation-in-part of Ser. No. 667,152, Nov. 1, 1984, Pat. No. 4,567,876, which is a division of Ser. No. 617,076, Jun. 4, 1984, Pat. No. 4,510,916, which is a continuation-in-part of Ser. No. 502,705, Jun. 9, 1983, abandoned. This application Jul. 25, 1985, Ser. No. 758,705
Int. Cl.[4] A47J *37/00*; F24B *3/00*
U.S. Cl. 126—25 B **12 Claims**

1. In a barbeque grill that includes a receptacle of open top bowl configuration having a central portion centered on same, at a central axis that extends normally of the plane of the receptacle top, with the receptacle defining a floor that is centered on the axis, and including a charcoal support grid and means for removably mounting same in the receptacle above and in operative overlying relation to the receptacle floor, and a food cooking grid and means for removably mounting same above and in operative overlying relation to the charcoal support grid, with the grids being respectively proportioned to be substantially centered on the central axis when mounted in the receptacle in their respective operative relations, and with the grids being disposed normally of the central axis when mounted in the receptacle in their respective operative relations, and means for mounting the receptacle for cooking purposes with the central axis of the receptacle substantially vertically disposed,
the improvement wherein said grill includes:
a tinder receiver located below the level of the charcoal support grid, when the latter is in its said operative relation, and comprising a tinder receiving chamber that is substantially centered on the central axis and that is proportioned transversely of said central axis to receive a tinder charge of predetermined size,
said tinder receiver defining an open container into which the tinder charge may be inserted into said tinder receiving chamber when the grids are removed from the receptacle for charging said tinder receiver with tinder,
said tinder receiver underlying the charcoal support grid across said container thereof when said charcoal support grid is in its operative relation,
a ring bonded to the underside of the charcoal support grid and to be disposed in substantial aligned relation with said container when said charcoal support grid is in its operative relation for forming an upper portion of said tinder chamber,



a combination charcoal receiver and distributing device that is discrete with respect to said grill and comprises an elongate annular sleeve having an open center extending therethrough and open upper and lower end portions defining a charcoal receiving chamber that is open at the upper and lower ends of same and has a central axis extending longitudinally of said sleeve,
said charcoal receiver device lower end being formed to rest on the charcoal support grid in substantially centered relation with said ring, when the charcoal support grid is mounted in the receptacle in its said operative relation,
said charcoal receiver device being proportioned transversely of its central axis to receive in said chamber thereof a charcoal charge that transversely of said charcoal receiver central axis approximates the corresponding dimensioning of said tinder receiver chamber adjacent the upper end thereof,
and means for venting ambient air exterior of said receptacle into said tinder chamber for providing for igniting and supporting combustion of a tinder charge received therein,
said charcoal receiver device having handle means fixed to said sleeve adjacent said upper end thereof for shifting said receiver device lower end relative to and over the charcoal support grid,
whereby, when the grill is to be used for charcoal food cooking, and on removal of both the grids from the receptacle to expose said tinder receiver bowl, the tinder charge may be applied to said tinder chamber and the charcoal grid returned to its operative relation to dispose said ring in substantially centered relation relative to said bowl, whereupon said charcoal receiver device may be rested on the charcoal

grid in substantial vertical alignment with said tinder receiver and with said lower end portion of said charcoal receiver device engaging the charcoal grid above said ring, a charcoal charge may be applied to said charcoal receiver device chamber through said charcoal receiving chamber upper end, and the tinder charge may be ignited through said venting means to effect ignition and burning of the charcoal charge by chimney effect through said charcoal receiver device chamber,

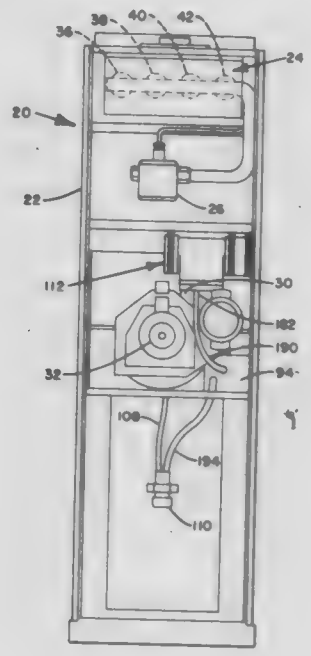
and after the charcoal charge is ignited, the user, facing the grill, may grasp said charcoal receiver device handle means to sufficiently lift same upwardly of the charcoal support grid and shift the lower end of the charcoal receiver device over the charcoal grid, for controlled discharge of the ignited charcoal from said device, and spreading of the charcoal, onto the charcoal grid, after which said charcoal receiver device is moved out of the grill and set to one side, and said cooking grid may be disposed in said operative relation thereof for food cooking purposes over the ignited charcoal.

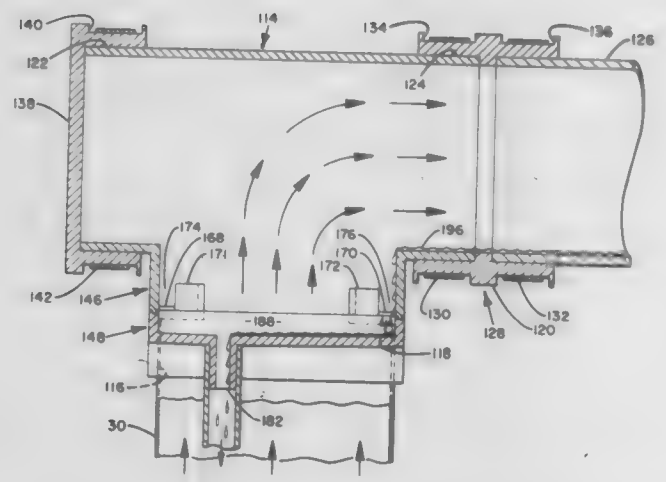
4,603,680

FURNACE INDUCER OUTLET BOX ASSEMBLY

Daniel J. Dempsey, and Kent L. Parker, both of Indianapolis, Ind., assignors to Carrier Corporation, Syracuse, N.Y.

Filed Dec. 10, 1984, Ser. No. 679,839
Int. Cl.[4] F24H *3/00*
U.S. Cl. 126—99 A 5 Claims





1. In a furnace for raising the temperature of circulating air, comprising:

a heat exchanger assembly defining a flow path for a heating fluid and having an inlet and an outlet,

a heating means in proximity to said heat exchanger assembly inlet for supplying the heating fluid,

an inducer draft means having an inducer outlet for drawing the heating fluid through said flow path, said heat exchanger assembly outlet, and said inducer outlet, and

a vent for exhausting the heating fluid,

an inducer outlet box assembly, comprising:

a fluid transfer chamber being directly interconnected in fluid communication between said inducer outlet and said vent, said fluid transfer chamber including a plurality of differently directed openings being individually connectable to said vent, one of said openings being selectively connected to said vent, and

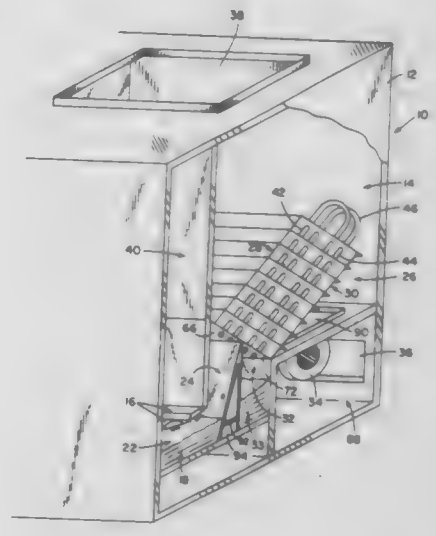
blocking means for selectively closing off the other ones of said chamber openings, whereby said vent can be selectively connected to said chamber in one of a plurality of different directions.

4,603,681

CONDENSING FURNACE WITH CORROSION SUPPRESSION

Lawrence G. Clawson, Dover, Mass., assignor to Raytheon Company, Lexington, Mass.

Filed Oct. 7, 1985, Ser. No. 785,116
Int. Cl.[4] F24H *3/02*
U.S. Cl. 126—110 R 16 Claims



1. An apparatus for heating air, comprising:

a burner;

means coupled directly to said burner for raising the dew point of combustion products from said burner;

a condensing heat exchanger coupled to said dew point raising means, said condensing heat exchanger comprising a first upwardly inclined segment for receiving said combustion products from said raising means and a second segment coupled in series with said first segment; and

a blower for forcing air first across said second segment of said condensing heat exchanger for preheating said forced air and then across said first segment, said forced air being heated by extraction of both sensible heat and heat of condensation from both said first and second segments wherein condensate forming in said first segment flows downwardly in a direction opposite the flow of said combustion products.

4,603,682

THREE-DIMENSIONAL FIREPLACE INSERT

Daniel E. Maziasz, 27630 Parkview #412, Warren, Mich. 48092

Filed Nov. 19, 1984, Ser. No. 673,042
Int. Cl.[4] F24B *1/18*
U.S. Cl. 126—120 6 Claims

1. A three-dimensional fireplace insert adapted to be inserted in the opening of the firebox of a fireplace and to substantially seal said fireplace to substantially prevent the drawing of air therethrough, said fireplace insert having an opening adapted

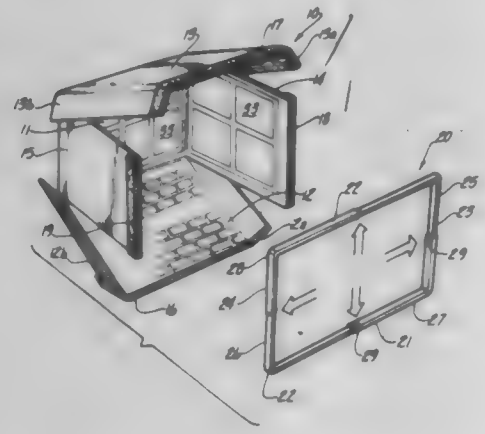
to be positioned adjacent the opening of said firebox and comprising, in combination:

a generally rectangular back wall which is adapted to be positioned in a generally vertical position within said firebox of said fireplace;

a bottom member which is in contact with said back wall adjacent the bottom of said back wall, said bottom member extending forwardly from said back wall and being adapted to substantially span the bottom of said opening of said firebox;

a top member which is in contact with said back wall adjacent the top of said back wall, said top member extending forwardly from said back wall and being adapted to substantially span the top of said opening of said firebox;

a first side member which is in contact with said back wall adjacent one side thereof and with said top member and said bottom member, said first side member extending forwardly from said back wall and being adapted to substantially span one of the sides of said opening of said firebox;



a second side member which is in contact with said back wall adjacent the other side thereof and with said top member and said bottom member, said second side member extending forwardly from said back wall and being adapted to substantially span the other of the sides of said opening of said firebox;

said back wall, bottom member, first side member and second side member being formed from a unitary blank of an organic sheetlike material by the folding of said unitary blank to permit a multiplicity of such fireplace inserts to be shipped and stored in compact stacks;

said fireplace insert defined by said back wall, bottom member, top member, and first and second side members being substantially impervious to the flow of air therethrough; and

an extensible frame disposed within said opening of said three-dimensional fireplace insert to permit said front edges to be accurately positioned with respect to said opening of said firebox.

4,603,683

FIREPLACE INSERT

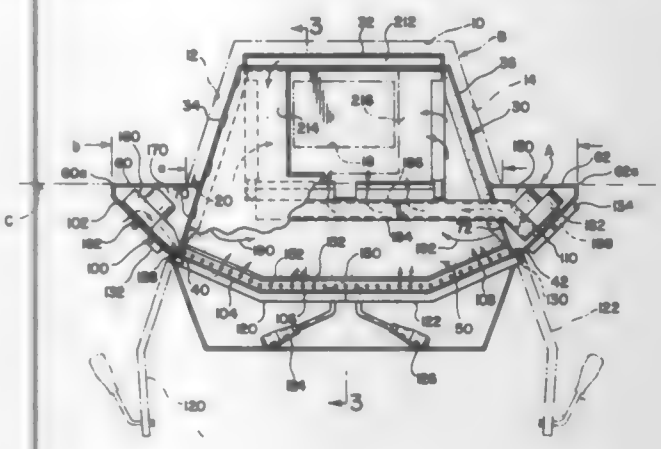
Richard D. Craver, Orrville, Ohio, assignor to Orrville Products, Inc., Orrville, Ohio

Continuation of Ser. No. 613,218, May 23, 1984, abandoned. This application Nov. 4, 1985, Ser. No. 794,278

Int. Cl.[4] F24C *15/12*

U.S. Cl. 126—138 1 Claim

1. In a conversion insert for an existing fireplace cavity having a back wall and outwardly extending lateral walls defining an access opening with a preselected width, said insert having a sheet metal housing with a rear wall, outwardly diverging, spaced side walls extending outwardly from said rear wall, said walls defining a stove portion with a charging opening therebetween, and a face plate extending transversely outwardly from said spaced side walls of said housing to form a closure over said access opening when said insert housing is positioned in said fireplace cavity, said face plate having outboard, generally parallel edges spaced from each other, the improvement comprising: side walls of said housing extending outwardly from said rear wall a substantial distance beyond said face plate whereby said charging opening of said insert housing and a portion of said stove portion are spaced outwardly from said face plate whereby said charging opening is generally between two outer edges of said side walls and is as



large as said access opening of said fireplace cavity, and a pair of door members pivotally movable about the outer edges of said side walls, each of said door members including two generally planar portions with a fixed angle therebetween, said door members defining an outwardly protruding convex front wall having outwardly facing surfaces coplanar with said planar portions of said door members.

4,603,684

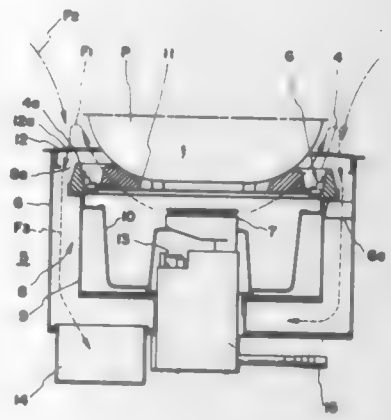
GAS COOKING DEVICE

Ozawa Kazuo, and Yoinara Saburo, both of Tokyo, Japan, assignors to Balibali System Co., Ltd., Tokyo, Japan

Filed Jul. 10, 1985, Ser. No. 753,576

Int. Cl.[4] F24C *15/20*

U.S. Cl. 126—299 R 3 Claims



1. A gas cooking device comprising:

a table body;

a top plate being removably mounted on the table body and having a center and an inner periphery;

a combustion heater being disposed at the center of the top plate and having an outer housing with a center corresponding to the center of the top plate;

a circular gas burner provided at the center of the outer housing;

an inner housing removably disposed within the combustion heater so as to form an exhaust duct with the outer housing;

an annular outer holder being mounted on the inner housing and having an inner periphery and an outer periphery;

an annular inner roaster being supported over the circular gas burner by the outer holder and having an outer periphery;

stepped guide means, provided at the inner periphery of the

outer holder, for setting a vertical position of the inner holder at a selected one of the plurality of stepped levels;

groove means, provided along the outer periphery of the inner roaster, for mating with the stepped guide means of the outer holder;

an exhaust duct inlet provided at the outer periphery of the outer holder; and

a catch plate means, removably provided inside of the inner housing and below the circular gas burner, for receiving leaked food material;

wherein said inner periphery of the top plate extends over the exhaust duct inlet so as to be positioned inside of the outer periphery of the inner roaster when the inner roaster is used for directly cooking food material thereon;

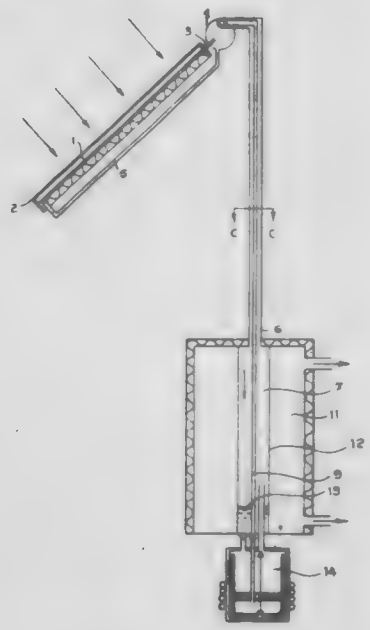
whereby outer gas is not drawn into the exhaust duct so that more smoke and steam instead will be effectively drawn into the exhaust duct.

4,603,685

SOLAR HEATING SYSTEM

Benoît Jean, Boucherville; Benoît Bergevin, and Fernand Rheault, both of Sainte-Julie, all of Canada, assignors to Institut National de la Recherche Scientifique, Canada

Filed Jun. 21, 1983, Ser. No. 506,542
Int. Cl.[4] F24J *2/32, 3/02*
U.S. Cl. 126—433 **12 Claims**



1. A solar water heating system operating in a closed circuit and making use of a change of phase of a working fluid as a heat transfer medium, comprising:

at least one collector to be exposed to sunlight for transmitting radiant solar energy to the working fluid in order to convert said fluid into a liquid-vapour mixture, said collecotr having an inlet and an outlet through which the liquid-vapour mixture exits;

a heat exchanger having an inlet and an outlet, said heat exchanger being of the type that allows free gravity flowing of the liquid that condenses therein;

a hot water storage reservoir connected to the heat exchanger to recover and store the heat extracted from the working fluid in said heat exchanger;

first piping means connecting the outlet of said at least one collector to the inlet of said heat exchanger, said first piping means including a phase-separator mounted thereon adjacent the outlet of said at least one collector to extract the liquid phase from the vapour phase in the liquid-vapour mixture exiting said collector;

second piping means for returning the liquid phase extracted in said phase separator to the inlet of said at least one collector whereby said collector is constantly wet and the heat exchanger is supplied with the working fluid in vapour phase only through said first piping means;

third piping means for connecting the outlet of the heat exchanger to the inlet of said at least one collector through the phase separator and said second piping means; and

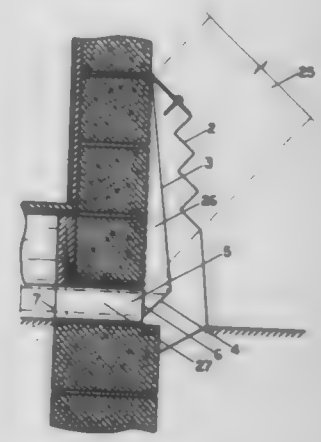
pumping means for returning the working fluid from the heat exchanger to said at least one collecotr through said third piping means, said pumping means being placed below the mean level of the liquid condensing in said heat exchanger to exclusively return the condensed liquid accumulated at the outlet of said heat exchanger to said phase separator through said third piping means wherein said pump comprises two concentric reservoirs spaced from each other so as to define a small volume therebetween, the internal reservoir being made of insulating material and the external reservoir being made of heat conducting material; said external reservoir being closed but connected to the outlet of said heat exchanger by means of a gravity feed pipe provided with an inlet unidirectional valve and also to the third piping means via an outlet unidirectional valve, said external reservoir being further provided with a vapour exhaust valve adapted to equilibrate the pressures between the gravity feed pipe and the pump during filling thereof; internal reservoir further enclosing a mechanism for sampling the liquid to be vaporized.

4,603,686

WALL-MOUNTED CONICAL BEAM CONCENTRATOR

John E. Clegg, 2320 Keystone Dr., Orlando, Fla. 32806

Filed Aug. 28, 1985, Ser. No. 770,126
Int. Cl.[4] F24J *3/02*
U.S. Cl. 126—440 **1 Claim**



1. A wall-mounted conical beam concentrator comprising in general an annular frusto-conical beam concentrator mounted to a concrete-block wall of a circular building, a course of curved glass blocks forming a base of the concrete-block wall, and a circular conical beam concentrator located in a crawl space located below a floor of the circular building; said annular frusto-conical beam concentrator, said curved glass blocks and said circular conical beam concentrator comprising the means by which diffused sunlight is reduced in size to a small concentrated beam which delivers heat to a central heating element located at the center of the circular building as means of heating the crawl space and said floor of the circular building; and comprising in particular;

an annular frusto-conical beam concentrator having four inset convex conical sections which receive diffused sunlight, said annular frusto-conical beam concentrator having a concave conical section which refracts and emits said diffused sunlight to form a concentrated vertical annular beam, said annular frusto-conical beam concentrator further having a concave conical reflective section which reflects said concentrated vertical annular beam to form a concentrated convergent lateral beam which is projected toward the center of the circular building;

a series of curved glass blocks forming the base course of said concrete-block wall, said curved glass blocks having a concentric outer cylindrical section and an inner cylindrical section which transmit said concentrated conver-

gent lateral beam through said crawl space toward the center of the circular building;

a circular conical beam concentrator having an outer annular component lens and an inner annular component lens; said outer annular component lens having a cylindrical section which receives and transmits said concentrated convergent lateral beam, said outer annular component lens having two opposed concave conical sections which refract and emit said concentrated convergent lateral beam to form two concentrated convergent conical beams; said inner annular component lens having two opposed convex conical sections which receive and transmit said two concentrated convergent conical beams, said inner annular component lens having two opposed concave conical sections which refract and emit said two concentrated convergent conical beams to form a second concentrated convergent lateral beam; and

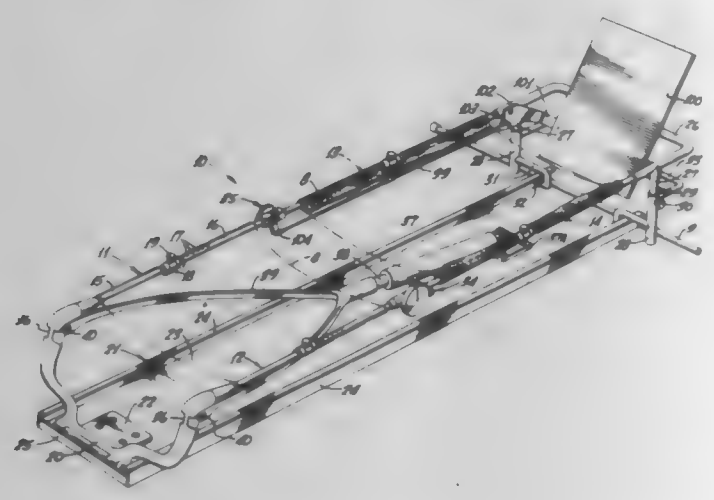
a heating element comprising a vertical metal rod mounted inside said inner annular component lens so as to intercept said second concentrated convergent lateral beam and absorb the heat thereof as means of heating said crawl space and said floor of the circular building.

4,603,687

CONTINUOUS PASSIVE MOTION ORTHOPEDIC DEVICE

Eugene C. Greenwood, 2956 B Peppertree La., Costa Mesa, Calif. 92626

Filed Aug. 8, 1983, Ser. No. 520,916
Int. Cl.[4] A61H *1/02*
U.S. Cl. 128—25 R **18 Claims**



1. A continuous passive motion orthopedic device comprising:

(a) an elongate base;

(b) thigh support means comprising a first pair of substantially horizontally disposed straight rails of telescopically adjustable length having soft material extending therebetween for the thigh to rest on, said rails having first and second ends, each of said first ends being attached to a substantially vertically disposed portion of dog leg configuration whose lowermost extremity is pivotally connected to one end of said base;

(c) calf support means comprising a second pair of substantially horizontally disposed straight rails of telescopically adjustable length having soft material extending therebetween for the calf to rest on, said rails having first and second ends, each of said first ends being pivotably interconnected to the corresponding second end of said first rails, the second ends of said second rails engaging said base and being supported thereby for movement along said base;

(d) linear drive means, one end of said drive means being connected to said base adjacent the end closest the second ends of said second rails, a drive fork having a narrow end connected to the other end of said drive means and a wide end pivotably connected to the vertically disposed portions associated with the first ends of said first pair of rails and

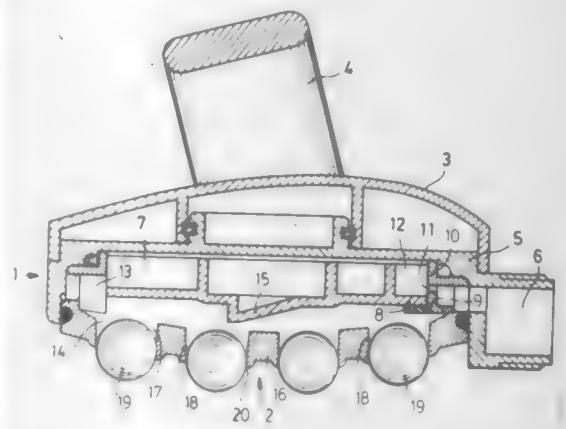
(e) means mounted at the intersection between said thigh and calf support means for generating an electrical command signal to signal said drive means to reverse direction, said signal generating means including adjustable means for setting two different angles between said calf support means and said thigh support means where said drive means will be signalled to reverse direction.

4,603,688

MASSAGE APPARATUS

Helmut Roming, Linberg 27, D-7230 Schramberg 11, Fed. Rep. of Germany

Division of Ser. No. 339,148, Jan. 13, 1982, Pat. No. 4,498,493.
This application Dec. 21, 1984, Ser. No. 684,612
Claims priority, application Fed. Rep. of Germany, Jan. 20, 1981, 3101538
Int. Cl.[4] A61H *15/00*
U.S. Cl. 128—37 **15 Claims**



1. A massage apparatus, comprising:

a casing having a water turbine, the casing having means for attachment to a supply of water for rotating the turbine about an axis, the casing having a working surface with a plurality of openings arranged laterally around said axis, the openings permitting passage of water, the turbine having at least one eccentric projection with an inclined surface directed toward the working surface; and,

a plurality of spherical massage bodies mounted at the openings in the working surface and laterally spaced around the axis defined by rotation of the turbine, the massage bodies being captive in the working surface and individually moveable over a stroke parallel to said axis, the stroke including a range of positions inwardly from an outermost position at which the massage bodies substantially seal the openings from passage of the water, the bodies being urged outwardly by water pressure and urged inwardly by contact with a body part to be massaged whereupon the water passes the massage bodies, and the massage bodies being axially driven outwardly by contact with the eccentric projection when moved inwardly from said outermost position, the massage bodies cooperating directly with the inclined surface of the at least one eccentric projection of the turbine.

4,603,689

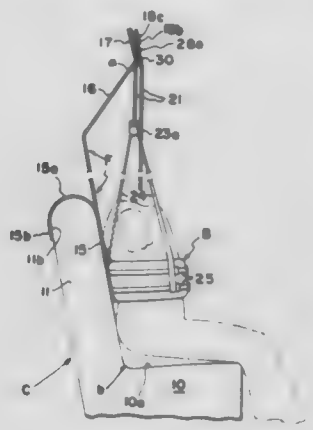
PATIENT OPERATED DEVICE AND METHOD FOR APPLYING TRACTION TO THE LOWER BACK VERTEBRA OF A PATIENT IN A SEATED POSITION

John A. Horner, 211 E. Grove St., Kawkawlin, Mich. 48631

Filed Mar. 15, 1985, Ser. No. 712,189
Int. Cl.[4] A61H *1/02*
U.S. Cl. 128—75 **9 Claims**

1. In a patient operated device for applying traction to the lower spinal area of a patient in a seated position in a chair, the combination with the chair comprising:

a. an elongate, generally vertically extending frame having a generally vertically rearwardly inclined first portion adapted to bear against the rearwardly inclined vertical backrest of a chair having also a generally horizontal seat, a second portion extending vertically forwardly from the upper end of the backrest to a locus spaced above the backrest and approximately vertically above the rear edge of the seat, and a third section extending upwardly from said second section generally at said locus;
b. said frame having a rearwardly projecting downwardly open, generally hook-shaped section adapted to fit over the upper end of the backrest including a portion extending downwardly along the rear surface of the backrest opposite the vertically rearwardly inclined portion;
c. an intermediate support arm movable vertically with respect to said frame;
d. a padded belt adapted to be worn around the lower thoracic area of the patient;
e. flexible strips connecting the belt and support arm;



f. a pulley system supported by the said third portion of the frame;
g. a cable trained around said pulley system and connected to said support arm, the cable having a free end adapted to hang down from the pulley system so as to be graspable by the seated patient whereby it can be pulled downwardly to raise the buttocks vertically off the seat such that the weight of the torso is substantially wholly supported by the belt while the belt and spinal area engage the backrest and the front of the seat engages the legs;
h. and a pair of spring biased, spaced apart, pivotally mounted, releasable grippers mounted on said frame at said locus on opposite sides of said free end of the cable, said grippers being biased to pivot toward said cable to cable gripping position but being offset mounted to be spreadable with a downward movement of said cable along said frame, said frame serving as a guide surface for said cable between said grippers and the cable being removable from said grippers with a forwarding movement thereof to free the cable from gripper locked position.

4,603,690

SLIDING PIVOT KNEE JOINT

Solomon L. Skeen, P.O. Box 644, Opp, Ala. 36467

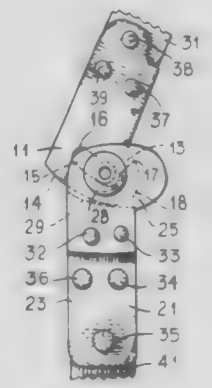
Filed Jul. 10, 1984, Ser. No. 629,559
Int. Cl.[4] A61F *5/00*
U.S. Cl. 128—80 C **2 Claims**

1. A joint structure for use in knee braces and the like, comprising:

upper and lower joint elements; the lower joint element having a ramp member and a pair of furcations, both of the furcations overlapping a concave edge surface of the ramp member; the upper joint element having a head which is received between the furcations for articular motion of the upper joint element relative to the lower joint element; the forward portion of the lower edge surface of the head and said concave edge surface having approximately the same radius of curvature;

the upper joint element having an elongated slot formed within said head; the lower joint element having a pin passing through said slot and connecting said joint elements together, the elongated slot having lower and upper end portions adapted to engage said pin and a central portion having curved edge surfaces with approximately said radius of curvature; the central portion being dimensioned to permit said pin to slide between said slot end portions as said joint elements rotate with respect to each other at the same time the forward portion of the lower edge surface of the head engages the concave edge surface of the ramp member, the pin moving within the slot toward the upper end portion thereof as the angle between the longitudinal axes of the joint elements is increased; the joint structure being locked with respect to any further increase in the angle between the longitudinal axes of the upper and lower joint elements when the pin engages the upper end portion;

the head defining a rearwardly projecting lobe, the outer edge surface of the lobe having a substantially smaller radius of curvature than does the concave edge surface of the ramp member; the lower end portion of the slot being arranged on said upper joint element so that when the pin engages, said lower end portion, the pin is positioned at approximately the center of curvature of the outer edge surface of the lobe; the pin being the center of rotation about which the joint elements can rotate as the angle



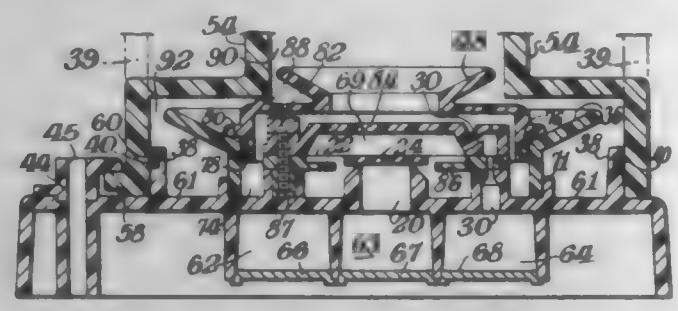
between their longitudinal axes is decreased beyond a limiting angle which is attained when the pin engages the lower end portion of the slot, the limiting angle being substantially less than 180° and being within the range of angles between said longitudinal axes which are traversed as the upper and lower joint elements undergo motions which are encountered when a wearer of the joint structure is using it to approximate a normal walking gait; the upper joint element being rotatable about the pin to decrease the angle between said longitudinal axes even when the lower joint element is stationary once the angle between said longitudinal axes is less than the limiting angle, thereby facilitating a wearer's actions in sitting down;

the forward portion of the lower edge surface being curved downwardly and rearwardly at approximately the same angle to the longitudinal axis of the upper joint element as is the concave edge surface to the longitudinal axis of the lower joint element, so that sliding contact is maintained between substantial sections of the forward portions of the lower edge surface and the concave edge surface when the angle between the longitudinal axes of the joint elements is greater than said limiting angle, thereby preventing an accidental rotation of the joint elements toward each other when the contiguous edge surfaces of the joint elements are not under compression.

4,603,691
PULMONARY VENTILATOR-BELLOWS-ASSEMBLY KIT

Tibor Rusz, 761 West St., Pittsfield, Mass. 01201

Filed Dec. 24, 1984, Ser. No. 685,906
Int. Cl.[4] A61M *16/00*
U.S. Cl. 128—205.15 12 Claims

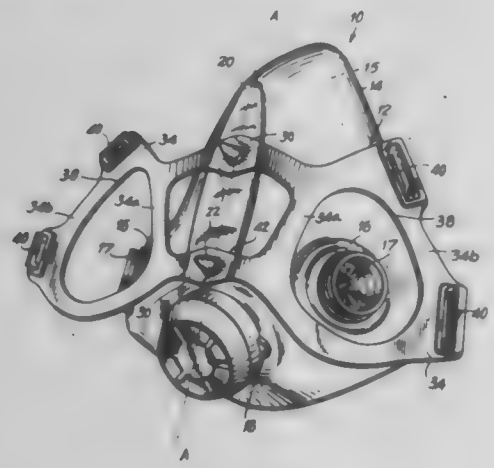


1. A pulmonary ventilator-bellows assembly kit comprising:
(a) a base adapted for being supported on a horizontal platform, said base having an annular main-bellows-mounting portion extending upwardly from a top surface of said base;
(b) a substantially cylindrical main bellows, the open end thereof adapted for being fitted and sealed to said bellows-mounting portion of said base;
(c) a cylindrical main housing having a closed top portion and open bottom portion, said housing being adapted for mounting and sealing to a peripheral region of said base, and for enclosing said main bellows when said main bellows is fitted to said main-bellows-mounting portion of said base;
(d) an annular thin-walled small-bellows adaptor that is adapted for being inserted, seated and sealed to said base within said annular main-bellows-mounting portion;
(e) a substantially cylindrical small-bellows the open end thereof being adapted for being fitted and sealed to said small bellows adaptor; and
(f) a small housing having a closed cylindrical top portion of smaller diameter than that of said main housing, and an enlarged open bottom portion having an inside diameter equal to that of said main housing adapted for mounting and sealing said small housing to said base peripheral region and, for enclosing and locking in place said small bellows when said adaptor is mounted and sealed to said base and said small bellows is fitted to said adaptor.

4,603,692
YOKE FOR THE HARNESS OF A RESPIRATOR

Edward N. Moatesi, Barrington, R.I., assignor to Siebe North, Inc., Charleston, S.C.

Filed May 21, 1984, Ser. No. 612,576
Int. Cl.[4] A62B *7/00*
U.S. Cl. 128—207.11 6 Claims

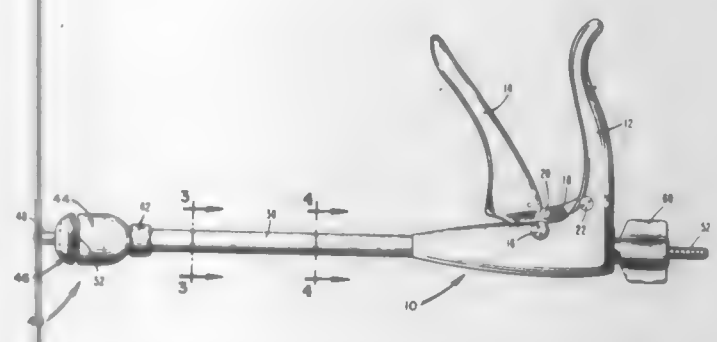


1. A yoke for a respirator, comprised by:
a unitary lamina of stiff plastics material including;
an apertured, substantially trapesoidal medial portion of said lamina for attachment to a front face of a respirator face piece;
apertured substantially trapesoidal wing portions provided by said lamina and extending laterally of said medial portion symmetrically about a line bisecting said medial portion;
hinge portions provided by said lamina and interconnecting the respective said wing portions with said medial portion, said hinge portions being comprised by portions of said lamina of lesser thickness than the remainder of said lamina; and,
strap connection means located at corners of said wing portions remote from said medial portion.

4,603,693
INSTRUMENT FOR CIRCULAR SURGICAL STAPLING OF HOLLOW BODY ORGANS AND DISPOSABLE CARTRIDGE THEREFOR

Robert L. Conta, and Harvey N. Wallach, both of Trumbull, Conn., assignors to United States Surgical Corporation, Norwalk, Conn.

Continuation of Ser. No. 138,877, Apr. 10, 1980, abandoned, which is a division of Ser. No. 967,421, Dec. 7, 1978, abandoned, which is a continuation-in-part of Ser. No. 800,965, May 26, 1977, abandoned. This application Dec. 7, 1981, Ser. No. 328,068
Int. Cl.[4] A61B *17/11*
U.S. Cl. 128—305 5 Claims



1. A two-part disposable surgical stapling cartridge assembly for use with an actuator having first, second, and third relatively movable actuator members for stapling an annular pattern in hollow body organs, comprising:
(1) an anvil-carrying part including (a) a dish-shaped body, (b) an anvil having an annular array of staple-clinching grooves mounted in said dish-shaped body, and (c) first means for removably mounting said dish-shaped body on said first actuator member; and
(2) a staple-carrying part including (a) a staple guide body defining (i) an annular array of staple-holding grooves and (ii) second means for removably mounting said staple-carrying part on said second actuator member, said second means being the sole means associated with said cartridge assembly for retaining said staple-carrying part on said actuator, (b) a staple ejector means movably mounted in and permanently retained by said staple guide body and being contactable by said third actuator member when said staple guide body is mounted on said second actuator member for ejecting staples from said staple-holding grooves in response to actuation of said third actuator member, (c) annular knife means concentric with and inside said annular array of staple-holding grooves, said annular knife means being permanently mounted on said staple ejector means for movement with said staple ejector means for severing said hollow body organs inside the annular array of staples ejected from said staple-holding grooves, and (d) first and second mutually opposed and interfitting detent means respectively defined by said staple guide body and said ejector means for maintaining said staple ejector means and said annular knife means in a predetermined position in said staple guide body

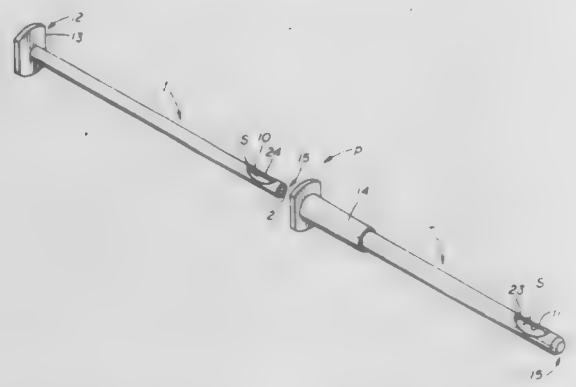
prior to mounting said staple-carrying part on said second actuator member and for preventing accidental relative movement of said staple guide body and said staple ejector means of the type which would cause ejection of the staples from said staple-holding grooves, said detent means being disengaged when said staple guide body is mounted on said second actuator member to allow said third actuator member to move said staple ejector means.

4,603,694

ARTHROSCOPIC SHAVER

C. Ray Wheeler, St. Joseph, Mo., assignor to Richards Medical Company, Memphis, Tenn.

Filed Mar. 8, 1983, Ser. No. 473,242
Int. Cl.[4] A61B *17/32*
U.S. Cl. 128—312 10 Claims



1. A surgical instrument for cutting tissue, the instrument comprising:

an outer tube sized and shaped for insertion through a puncture in the flesh of a body, the outer tube having a side-facing opening therein for the entrance of tissue to be cut;

an inner tube fitted in the outer tube and adapted to rotate relative to the outer tube, the inner tube including a side-facing opening defining a blade adapted to co-act in cutting action with a cooperating edge of the side-facing opening of the outer tube;

the inner tube further including a longitudinal opening on its proximal end adapted for connection to a suction device for drawing fluid and cuttings into the openings and for drawing the fluid and cuttings through the instrument;

means for connecting the inner tube to a drive motor for continuously rotating the inner tube relative to the outer tube so that the blade on the inner tube is moved past the cooperating edge of the side-facing opening in the outer tube;

bearing means at the distal end of the inner and outer tubes for supporting and aligning the inner tube relative to the outer tube;

the bearing means including a first bearing surface projecting into the outer tube and forming an annular space that tapers inwardly away from the inner side surface of the outer tube; and

a second bearing surface at the distal end of the inner tube shaped and dimensioned to overlap and cooperate with the first bearing surface and extend around substantially the entire distal end of the inner tube.

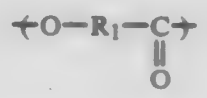
4,603,695

USE OF MOLDED POLYMERIC MATERIAL FOR PREVENTING ADHESION OF VITAL TISSUES

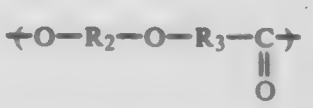
Yoshito Ikada; Shokyu Gen; Yasuhiko Shimizu, all of Uji; Koichi Tamura; Tatsuo Nakamura, both of Kyoto; Sosuke Kimura, Hiroshima; Tsuneo Cho, Hiroshima; Hideki Tadokoro, Hiroshima, and Kazuaki Hori, Hiroshima, all of Japan, assignors to Japan Medical Supply Co., Ltd., Hiroshima, Japan

Filed Jun. 29, 1984, Ser. No. 626,545
Claims priority, application Japan, Jul. 5, 1983, 58-122643
Int. Cl.[4] A61B *17/04*
U.S. Cl. 128—334 R 20 Claims

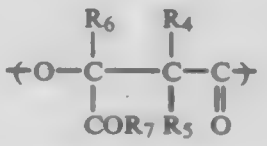
1. A method for preventing adhesion between vital tissues which comprises placing between said tissues a molded material consisting essentially of a biodegradable and absorbable polymer selected from the group consisting of a polyester having repeating units of the formula:



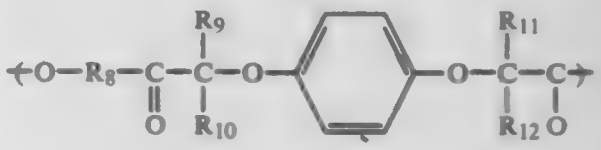
in which R_1 represents a C_1 to C_{10} divalent alkylene group,
a polyester having repeating units of the formula:



in which each of R_2 and R_3 represents a C_1 to C_{10} divalent alkylene group,
a polyester having repeating units of the formula:



in which each of R_4, R_5, and R_6 represents hydrogen or a lower alkyl group, and R_7 represents OR_7' or $NR_7''R_7'''$ in which each of R_7', R_7'' and R_7''' represents hydrogen or a lower alkyl group,
a polyester having repeating units of the formula:



in which R_8 represents a C_1 to C_{10} divalent alkylene group, and each of R_9, R_{10}, R_{11} and R_{12} represents hydrogen or a lower alkyl group,
collagen, an amino acid polymer or chitin.

4,603,696

LEAD CONNECTOR

Thomas E. Cross, Jr., St. Francis, and Gerald J. Hults, Fridley, both of Minn., assignors to Medtronic, Inc., Minneapolis, Minn.

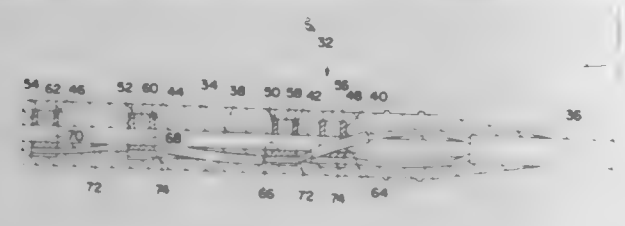
Filed Feb. 14, 1985, Ser. No. 701,466
Int. Cl.[4] A61N *1/36*
U.S. Cl. 128—419 P 6 Claims

1. A connector system for connecting a medical electrical lead to a medical electrical stimulator, comprising:

a first connector member having a first predetermined number of electrical connector surfaces, mutually insulated from one another, mounted linearly along said first connector member such that each of said predetermined number of contact surfaces is spaced a first predetermined

distance from the contact surfaces immediately adjacent thereto and such that said first predetermined number of connector surfaces extends over a second predetermined distance on said first connector member and wherein said first predetermined number is greater than two; and

second connector member means for slideably engaging said first connector member, said second connector member means including a second predetermined number of electrical contact surface means, arranged linearly along said second connector member means, for contacting selected ones of said first predetermined number of electrical contact surfaces on said first connector member when said first connector member is slideably engaged with said second connector means, said second predetermined number being at least equal to said first predetermined number,



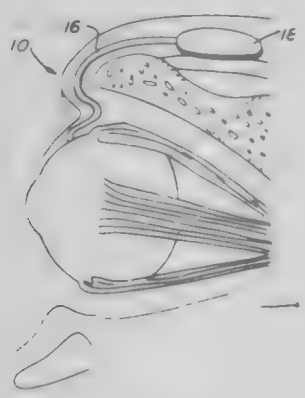
said second connector member means further comprising first and second conductors, wherein each of said second predetermined number of connector surface means is coupled to only one of said first and second conductors and such that each of said second predetermined number of connector surface means is coupled to a different one of said first and second conductors from the connector surface means immediately adjacent to it, said second predetermined number of electrical connector surfaces spaced from one another such that each connector surface means is spaced a multiple of said first predetermined distance from each adjacent connector surface means and such that each connector surface means is spaced a distance greater than said second predetermined distance from any other connector surface means coupled to the same one of said first and second conductors.

4,603,697

SYSTEM FOR PREVENTING OR TREATING OPEN ANGLE GLAUCOMA AND PRESBYOPIA

William Kamerling, 423 W. Clements Bridge Rd., Barrington, N.J. 08007

Filed Jan. 7, 1985, Ser. No. 689,124
Int. Cl.[4] A61N *1/36*
U.S. Cl. 128—421 **18 Claims**



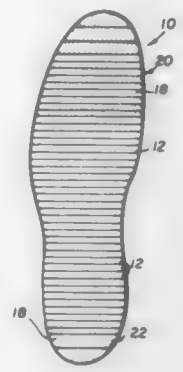
1. Body implantable system for the prevention or treatment of open angle glaucoma by eletrical stimulation of the ciliary muscle of the eye, comprising means for developing an electrical stimulation signal, and means connected to said last-mentioned means for delivering said signal to the longitudinal fibers of the ciliary muscle.

4,603,698

SYSTEM OF PODIATRIC APPLIANCES INDEPENDENTLY ADJUSTABLY SECURABLE ON INNER SOLE-LIKE BASE PLATE

Jaime Guttmann Cherniak, Ave. Tiradentes No. 10, Centro Commercial Dalyn, Ens. Naco, Santo Domingo, Dominican Republic

Filed May 9, 1984, Ser. No. 608,562
Int. Cl.[4] A61F *5/14*
U.S. Cl. 128—603 **18 Claims**



1. A podiatric appliance system, comprising:

a stiffly flexible base plate having an outline approximating that of at least a portion of the length and width of a foot sole, in the manner of a conventional footwear inner sole;

said base plate being more flexible about a series of longitudinally spaced, transversally extending axes thereof, than about longitudinally extending axes thereof;

said base plate including a plurality of strips of stiffly flexible material, each of such a thickness as to be flexible about its own longitudinal axis each not more than six millimeters wide arranged with close spacing of less than one millimeter from strip to strip, in a series in a single layer, with each strip extending transversally of the base plate; and

means flexibly uniting all of said strips, said uniting means being a layer of flexible material to which each of said strips is secured;

means providing a tangible grid of mounting sites on said base plate, extending in a uniform, predetermined pattern on all of at least one face of said base plate;

said mounting sites comprise closely spaced respective small, round holes provided vertically through each of said strips;

each said strip having said holes provided in at least one row of uniformly spaced holes, each of which rows extends lengthwise of the respective strip, which equates to transversally of the base plate;

a podiatric appliance constructed and arranged to have an operative portion thereof positioned in engaging relation with a respective portion of a foot of a wearer;

a mounting base provided on said podiatric appliance;

means providing at least two sets of spatially separated tangible securement sites on said mounting base of said podiatric appliance, said securement sites being constructed and arranged to be selectably juxtaposable in registry with a respective number of said mounting sites on said base plate so that such juxtapositions may be matched to a prescription, recorded or reported; and

respective securement means constructed and arranged for securing said mounting base to said base plate at each place where a said securement site is juxtaposed in registry with a said mounting site;

said securement means comprising a plurality of small U-shaped wires round in transverse cross-section and having respective central portions embedded in said mounting base of said podiatric appliance, each wire having two end portions protruding from said mounting base nearer to the perimeter than to the center of such mounting base, including one end portion at each respective securement site; and

said mounting sites being constructed and arranged to have

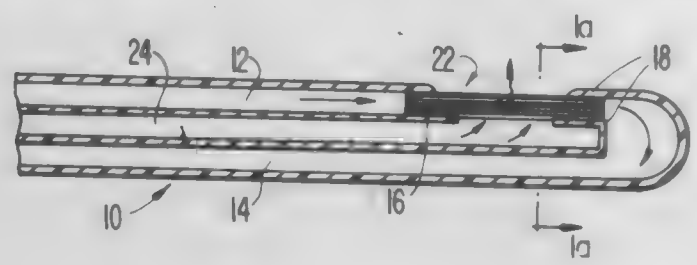
respective ones of said wire protruding end portions inserted downwardly therethrough and bent under said base plate for securing said podiatric appliance on said base plate.

4,603,699

APPARATUS AND METHOD FOR MEASURING OSMOTIC PRESSURE IN SITU

Jacques M. Himpens, P.O. Box 608, North White Plains, N.Y. 10603

Filed Nov. 20, 1984, Ser. No. 673,290
Int. Cl.[4] A61B *5/00*
U.S. Cl. 128—632 **7 Claims**



1. Apparatus for use in a system for measuring osmotic pressure in a bloodstream, said apparatus comprising:

catheter means for insertion in a subject's bloodstream, said catheter means having first and second lumens therein and a port adapted to permit contact of the interior of said catheter with said bloodstream;

at least one tube of a material that is semi-permeable to a fluid of said bloodstream, said tube fluidly connecting said first lumen with said second lumen and extending across said port, the ends of said tube being connected to said first and second lumens, respectively, in airtight and watertight seals; and

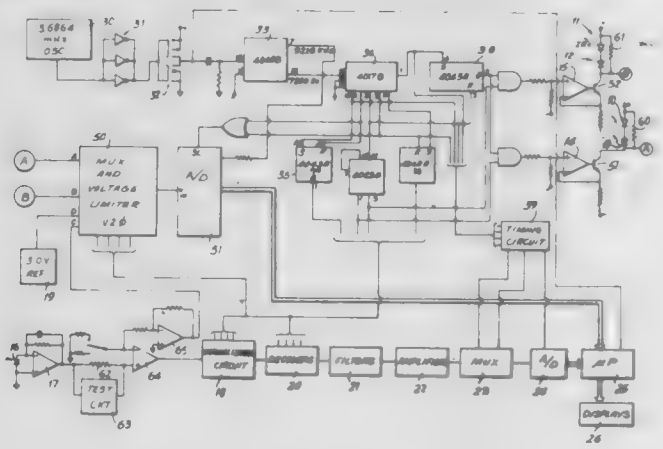
a pressure sensor means for measuring the pressure in said first lumen.

4,603,700

PROBE MONITORING SYSTEM FOR OXIMETER

Robert A. Nichols, and David R. Tobler, both of Thornton, Colo., assignors to The BOC Group, Inc., Montvale, N.J.

Filed Dec. 9, 1983, Ser. No. 559,734
Int. Cl.[4] G01N *33/16*
U.S. Cl. 128—633 **9 Claims**



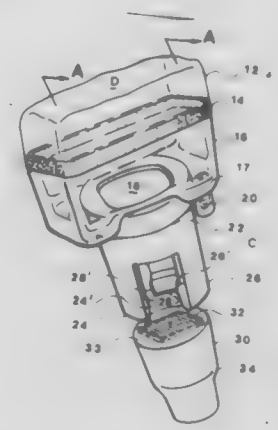
7. A method for monitoring an oximeter wherein at least two light emitting devices of different wavelengths are alternately energized, the light therefrom being received by a light detector for application to a processing circuit for determining the constituents of a tissue between said light emitting devices and light detector, the oximeter including timing means for controlling said light emitting devices, light detector and processing circuit; said method comprising sensing the voltages across said light emitting devices to provide a plurality of first test values at signal valid times, assigning integer values to said test values, in accordance with their amplitude, to provide a plurality of range values, combining said range values, and testing said combined range values to indicate the operability of said oximeter.

4,603,701

STAND-OFF DEVICE WITH SPECIAL FLUID

James N. Chen, Chelmsford, Mass., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Dec. 16, 1983, Ser. No. 562,307
Int. Cl.[4] A61B *10/00*
U.S. Cl. 128—660 **14 Claims**



1. A stand-off device for coupling an acoustic transducer to an animal body having a given acoustic impedance Z_B, comprising:

means defining a chamber having a pliant diaphragm at a side thereof that conforms to the contours of a patient's body, said diaphragm having inner and outer surfaces and having an acoustic impedance Z_D,

means for coupling another side of said chamber to a transducer

liquid including cesium chloride having a given acoustic impedance Z_L contained in said chamber so as to conduct acoustic waves from a transducer when coupled to said chamber to said diaphragm,

the reflection coefficients $(Z_D-Z_L)/(Z_D+Z_L)$ and $(Z_B-Z_D)/(Z_B+Z_D)$ and the thickness of the diaphragm being such that acoustic waves from said transducer that are reflected at the outer and inner surfaces of said diaphragm cancel each other to such an extent that the energy reflected toward the transducer is within 6 db of the energy reflected from these surfaces when the reflection coefficients are equal and the thickness of the diaphragm is precisely an odd number of quarter-wavelengths of the central frequency of the transducer with which the stand-off device is to be used.

4,603,702

CIRCUIT FOR MONITORING CONTACT OF ULTRASOUND TRANSDUCER WITH PATIENT

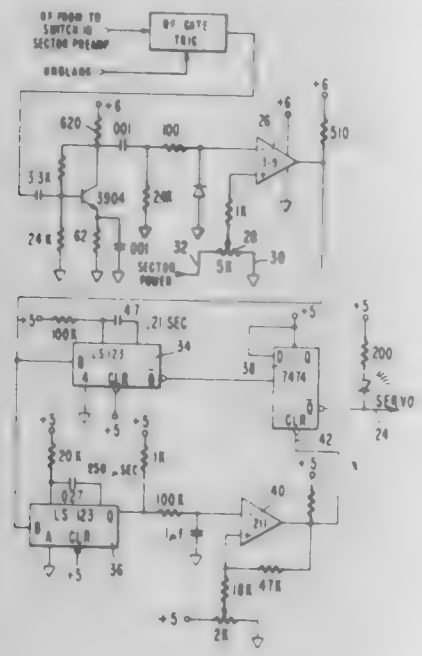
Juin-Jet Hwang, Mesa; Ronald E. McKeighan, Tempe, and Paul M. Jaeger, Mesa, all of Ariz., assignors to Advanced Technology Laboratories, Inc., Bothell, Wash.

Filed Mar. 11, 1985, Ser. No. 710,358
Int. Cl.[4] A61B *10/00*
U.S. Cl. 128—660 **1 Claim**

1. A circuit for monitoring contact of an ultrasound transducer with a patient and for generating an output signal which can be used to operate a timer which measures the amount of time said patient has been exposed to ultrasound energy comprising:

(a) a medical ultrasound scanner of the type comprising an ultrasound transmitter, an ultrasound receiver, and ultrasound scanhead, said ultrasound scanhead being a mechanical scanhead of the type in which at least one ultrasound transducer is mechanically moved within said scanhead and ultrasound energy is transmitted out of said scanhead through an endcap;

(b) monitoring means associated with said ultrasound receiver for monitoring a signal representative of the coupling of said ultrasound scanhead with said patient and for generating an output signal which indicates that said ultrasound transmitter is transmitting ultrasound energy into a patient, said monitoring means being comprised of a circuit which measures the amplitude of any reverberation echo from the endcap of said scanhead by measuring the intensity of the signal which is received by said ultrasound



receiver at a time corresponding to the time it takes for ultrasound energy to travel from said transducer to said endcap and back, and in which said monitoring means compares the intensity of said reverberation echo to a predetermined threshold value; and

(c) means associated with said monitoring means for controlling the mechanical movement of said scanhead when said monitoring means detects a reverberation echo which exceeds said threshold value.

4,603,703

METHOD FOR REAL-TIME DETECTION AND IDENTIFICATION OF NEUROELECTRIC SIGNALS

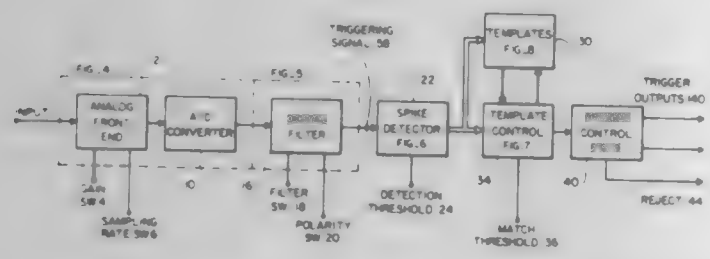
Kevin C. McGill, Palo Alto, and Leslie J. Dorfman, Stanford, both of Calif., assignors to The Board of Trustees of the Leland Stanford Junior University, Stanford, Calif.

Filed Apr. 13, 1984, Ser. No. 599,889

Int. Cl.[4] A61B *5/04*

U.S. Cl. 128—731

21 Claims



1. A method of real time analysis of neuroelectrophysiological signals for detecting and identifying action potentials comprising the steps of digitally filtering the signals using a low-pass differentiator and automatically detecting and identifying the recurring spikes in the filtered signal.

4,603,704

ELECTRODE FOR MEDICAL APPLICATIONS

Konrad Mund, Uttenreuth; Helmut Freller, Roethenbach, and Friedrich Hoerauf, Nuremberg, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

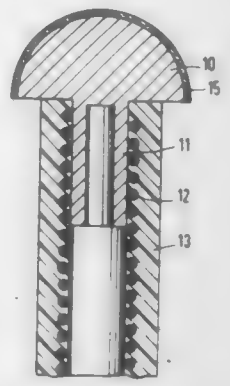
Filed Jan. 11, 1984, Ser. No. 569,832

Claims priority, application Fed. Rep. of Germany, Jan. 11, 1983, 3300668

Int. Cl.[4] A61N *1/04*

U.S. Cl. 128—784

16 Claims



1. An electrode for medical applications comprising an electrically conductive carrier material and a porous layer defining an active region, said porous layer being of a material comprised of at least one compound selected from the group consisting of a carbide, nitride or carbonitride of at least one of the metals titanium, vanadium, zirconium, niobium, molybdenum, hafnium, tantalum or tungsten, said porous layer having a layer thickness between one micron and one hundred microns.

4,603,705

INTRAVASCULAR MULTIPLE ELECTRODE UNITARY CATHETER

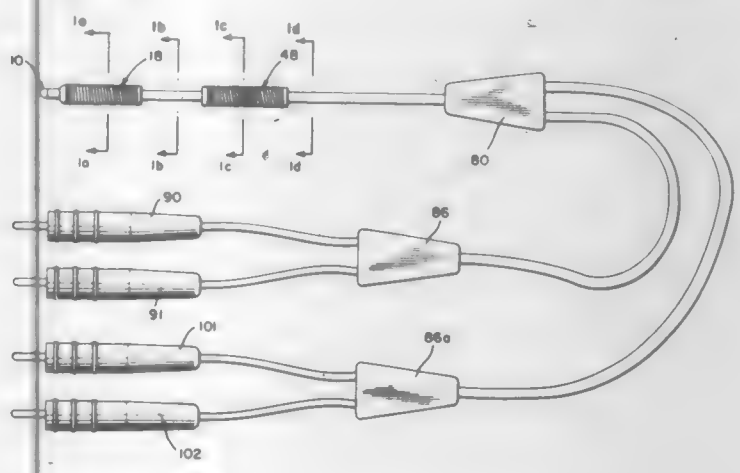
Vernon L. Speicher, Leechburg, and Stanley M. Bach, Jr., Pittsburgh, both of Pa., assignors to Mieczyslaw Mirowski, Owings Mills, Md.

Filed May 4, 1984, Ser. No. 606,948

Int. Cl.[4] A61N *1/05*

U.S. Cl. 128—786

10 Claims



1. An intravacular catheter electrode assembly adapted to operate in a pacing, a cardioverting and a plurality of sensing modes comprising:

an elongated electrically insulated catheter body having a distal end;

a first electrode positioned on said distal end of said catheter body;

a second electrode positioned on said catheter body proximally of said first electrode and spaced a predetermined distance from said first electrode;

a third electrode positioned on said catheter body between and spaced from said first and second electrodes;

first connecting means having a first pair of input/output connectors for configuring said first and third electrodes as a pacing electrode pair during said pacing mode and a first sensing electrode pair during one of said plurality of sensing modes; and

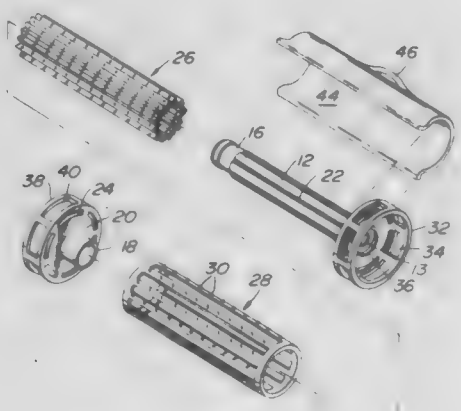
second connecting means having a second pair of input/output connectors for configuring said second and third electrodes as a second sensing electrode pair during a second of said plurality of sensing mode and a cardioverting electrode pair during said cardioverting mode.

4,603,706

HAIR CURLER

Richard Caruso, 7801 Montgomery Ave., Elkins Park, Pa. 19117

Filed Mar. 4, 1983, Ser. No. 471,981
Int. Cl.⁴ A45D *2/26*
U.S. Cl. 132—41 **17 Claims**



1. A hair curler comprising:

a tubular core having a plurality of slots axially disposed around a circumference of the core, the core being open at one end and closed at the other end;

a circular extension disposed at each end of the core, the extension having a diameter greater than the diameter of the core and being coaxial with the core, a length of the extension being substantially less than a length of the core;

a tubular porous substrate surrounding the core and being between the extensions and being in contact with the core; and

a tubular casing having a plurality of slots axially disposed around a circumference of the casing, the slots terminating proximal ends of the casing, the casing surrounding the substrate between the extensions and being in contact with the substrate.

4,603,707

PURGE BLOCK FOR GAS SYSTEMS

Roger J. Gregoire, and Bruce Huling, both of Phoenix, Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Aug. 2, 1983, Ser. No. 519,639
Int. Cl.⁴ F16K *37/00*
U.S. Cl. 137—557 **21 Claims**

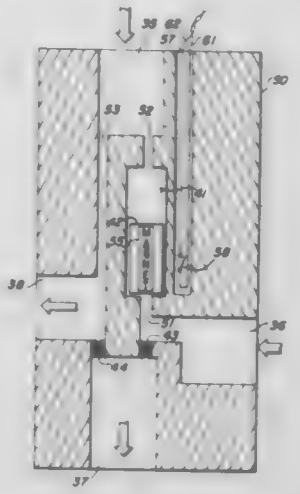
1. An apparatus comprising:

first, second, third, and fourth port means;

fluid conducting means for interconnecting said port means;

said first and second port means serving as fluid inlet ports and said third or fourth port means serving as fluid outlet ports; and

said conducting means interconnecting said first and second ports comprising flow sensing means for detecting which of said first and second ports is at a higher pressure than the other said conducting means also interconnecting said second and third ports, said third and fourth ports, and said first and fourth ports.

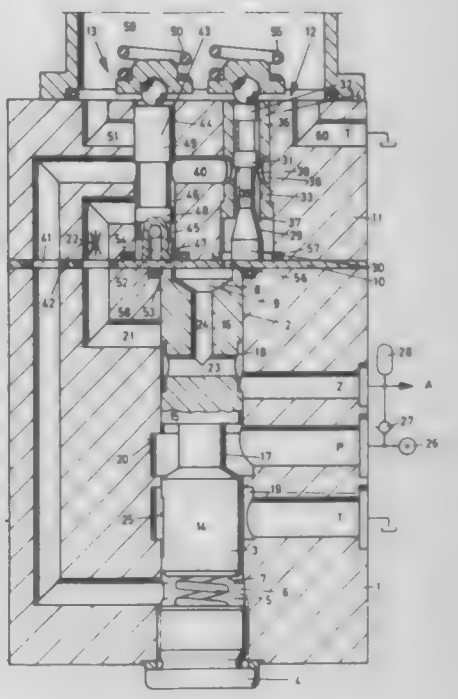


4,603,708

SHUT-OFF VALVE

Hans-Peter Altmann, Wülfrath, Fed. Rep. of Germany

Filed Sep. 13, 1984, Ser. No. 649,943
Claims priority, application Fed. Rep. of Germany, Sep. 22, 1983, 3334189
Int. Cl.⁴ G05D *16/00*
U.S. Cl. 137—116 **8 Claims**



1. A shut-off valve for connecting an inlet feeding a hydraulic system to an outlet when an upper switching pressure is reached in the hydraulic system and for breaking this connection when a lower switching pressure is reached in the hydraulic system, comprising

(a) a main control-piston (3) which, in a first switching position, breaks the connection between the inlet (P) and the outlet (T) and, in a second switching position, makes the said connection;

(b) a restoring spring (5) urging the main control-piston (3) towards the first switching position;

(c) a first effective area (7), on the main control-piston (3) in a first control-chamber (6), which is acted upon by a control-pressure, the value thereof being controlled by a first pilot valve (12) and a second pilot valve (13) and which loads the said first effective area (7) in the same direction as the restoring spring (5);

(d) a second effective area (8) on the main control-piston (3) in a second control-chamber (9), which counteracts the

said first effective area (8), is of the same size, and is subjected permanently to the pressure of the hydraulic system (A);

(e) a first pilot-valve (12) which, when the pressure falls short of the lower switching pressure, opens a connection between the hydraulic system (A) and the first control-chamber (6);

(f) a second pilot-valve (13) which, when the upper switching pressure is exceeded, opens a connection between the first control-chamber (6) and the outlet (T), characterized in that

(g) the first pilot-valve (12) is a seat-valve loaded by a control-spring (55), said first pilot-valve (12) being held open by said control-spring (55) when pressure is below the lower switching pressure and whose seat-surface (29) is exposed permanently to the pressure of the hydraulic system (A) and which, when the lower switching pressure is exceeded, causes the said seat-valve to close tightly;

(h) a second flow-path (21) exists between the hydraulic system (A) and the first control-chamber (6), said second flow path (21) being opened by the main control piston (3) in its first switching position and being closed thereby in the second switching position thereof, said second (21) flow-path also passing through the second pilot-valve (13) and being closed thereby when the upper switching pressure is reached;

(j) the pressure in the second flow-path (21) between the main control-piston (3) and the second pilot-valve (13) serves as the control-pressure for the second pilot-valve (13).

4,603,709

DEVICE IN A VACUUM TRANSPORTATION SYSTEM FOR LIQUIDS, PREFERABLY A VACUUM SEWAGE SYSTEM

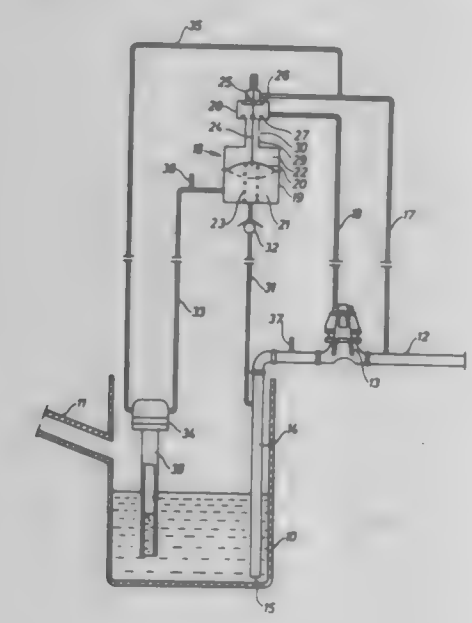
Camiel Huisma, Airdrie, Canada, assignor to Oy Wartsila AB, Helsinki, Finland

Filed Feb. 6, 1985, Ser. No. 698,689

Claims priority, application Sweden, Feb. 10, 1984, 8400707

Int. Cl.[4] F16K *31/12, 31/128*

U.S. Cl. 137—205 7 Claims



1. A vacuum transportation system for liquids comprising a liquid collecting container, a transportation conduit adapted to be maintained under vacuum, a suction pipe having an entrance opening in said container and connecting said container to said transportation conduit, a normally closed pressure/-vacuum valve between said suction pipe and said transportation conduit, said valve having a pressure/vacuum operated control means, a pressure regulating unit capable of providing the control means for said pressure/vacuum valve and for, respectively, opening and closing said valve, a fluid pressure operated actuator responsive to the liquid level in said container, and pressure regulating valve means responsive to a certain pressure drop in said suction pipe occurring due to air entering said suction pipe when the liquid level in said container sinks below the level of the entrance opening of said suction pipe, said regulating means being arranged and connected via a pipe means connected at a point between the entrance opening of said suction pipe and said pressure/-vacuum valve to permit the air entering the entrance opening to act upon said pressure regulating unit for closing said pressure/vacuum valve.

4,603,710

NON-RETURN VALVE

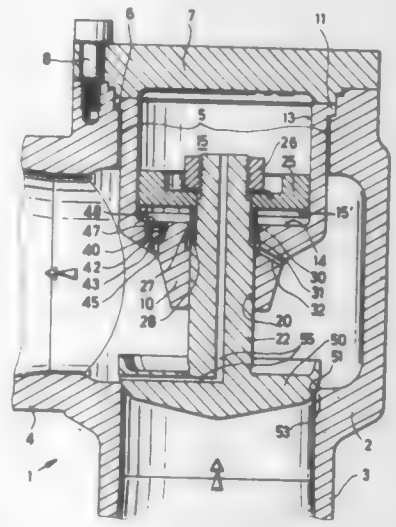
Edelbert Tiefenthaler, Elgg, Switzerland, assignor to Sulzer Brothers Limited, Winterthur, Switzerland

Filed Apr. 26, 1982, Ser. No. 371,804

Claims priority, application Switzerland, May 25, 1981, 3404/81

Int. Cl.[4] F16K *21/10*

U.S. Cl. 137—514.7 11 Claims



1. A non-return valve comprising

a housing defining a chamber and including an inlet connection to said chamber, an installation opening opposite said inlet connection and an outlet connection from said housing chamber;

an insert fixedly mounted within said installation opening to define a second chamber coaxial to said inlet connection;

a movable valve body means including a displaceable piston dividing said second chamber into two coaxial cylinder chambers, a valve spindle secured to said piston and passing through a bore of said insert and a valve disc secured to said spindle for selectively sealing said inlet connection in response to movement of said means from a valve-open position to a valve-closed position;

a first connecting duct communicating said cylinder chamber between said piston and said installation opening with said housing chamber;

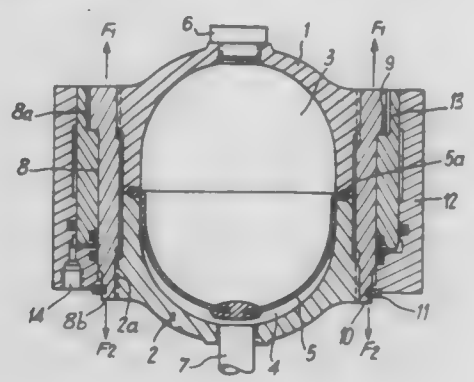
a second connecting duct communicating said cylinder chamber between said piston and said inlet connection with said housing chamber; and

a damping member secured to said movable valve body means for penetrating into said second duct to throttle flow therethrough upon movement of said means into said valve-closed position.

4,603,711
PRESTRESSED HYDRAULIC ACCUMULATOR

Louis C. Porel, Rambervillers Jeanmenil, France, assignor to Hydro Rene Leduc, France

Continuation-in-part of Ser. No. 236,195, Feb. 20, 1981, Pat. No. 4,492,013. This application Oct. 18, 1984, Ser. No. 661,663
Claims priority, application France, Feb. 27, 1980, 80 04313; Apr. 30, 1980, 80 09781
Int. Cl.⁴ F16L *55/04*
U.S. Cl. 138—30 14 Claims



1. An oleopneumatic accumlator comprising:

a first shell having an open end forming a first chamber adapted to receive pressurized gas, and a second shell having an open end forming a second chamber adapted to receive a pressurized hydraulic fluid, a flexible membrane disposed at the open ends of said first and second chamber and forming fluid tight seals therewith;

an elastic metal annular clamping band which is pretensioned along a longitudinal axis prependicular to a diameter of the band by a predetermined amount corresponding to a hydraulic pressure applied to said second chamber at which said first and second shells separate, said band being stretchable primarily in the direction of the pretensioning along said longitudinal axis, said band diameter being oriented parrallel to said open ends;

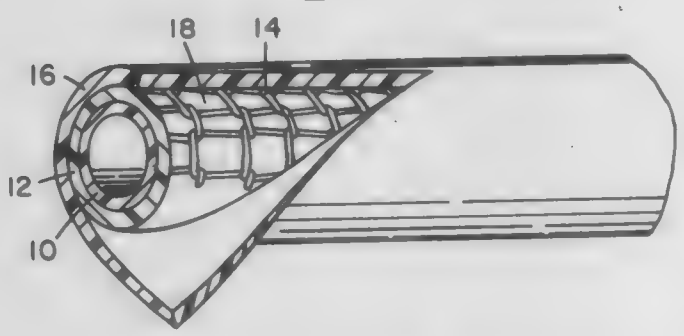
means for affixing said clamping band to said first and second shells to overlie the edges of said open ends thereof while still retaining at least a portion of said pretension to clamp the shells together; and

whereby said shells separate when hydraulic fluid pressure in excess of said predetermined amount of tension is applied to said second chamber.

4,603,712
COMPOUNDED POLYCHLOROPRENE FORMULATION USED AS AN ADHESIVE LAYER IN THE MANUFACTURE OF ELASTOMERIC ARTICLES

Keith M. Krause, Westminster, Colo., assignor to The Gates Rubber Company, Denver, Colo.

Filed Mar. 29, 1985, Ser. No. 717,622
Int. Cl.⁴ F16L *9/14*
U.S. Cl. 138—137 26 Claims



1. A unitary reinforced vulcanized elastomeric hose article for conveying fluids including an inner tube and outer cover, which are composed of dissimilar polymers not readily bondable to one another comprising:

an inner tube made of a material selected from the group consisting of fluoroelastomers, fluoroplastics, polypropylene, polyvinylchloride, polyethylene, chlorinated polyethylene, and acrylonitrile polymers;

an outer heat setting cover made of a material selected from the group consisting of fluoroelastomers, fluoroplastics, polypropylene, polyvinylchloride, polyethylene, chlorinated polyethylene, and acrylonitrile polymers but dissimilar from the material selected for said tube;

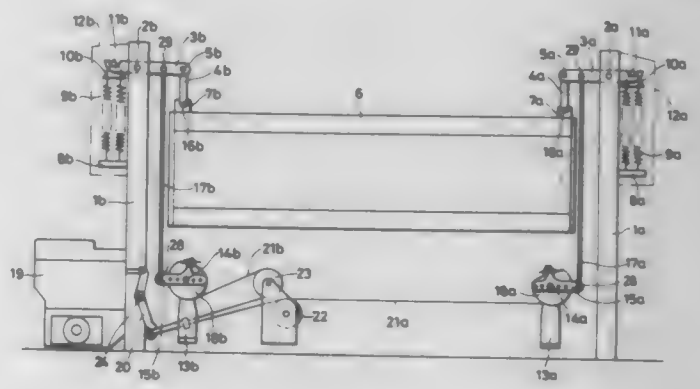
an elastomeric tie gum layer of compounded polychloroprene formulation incorporating a multifunctional amine accelerator and a multifunctional carboxylic acid retarder bonded through vulcanization to said inner tube and cover; and

a reinforcement layer embedded in the hose.

4,603,713
LIFTING DEVICE FOR A HEDDLE FRAME

Hiroshi Takada, Kyoto, Japan, assignor to Murata Kikai Kabushiki Kaisha, Japan

Filed Feb. 24, 1984, Ser. No. 583,128
Claims priority, application Japan, Feb. 28, 1983, 58-33479
Int. Cl.⁴ D03C *13/00*
U.S. Cl. 139—82 6 Claims



1. A lifting device for a heddle frame characterized in that in a motion transmission route between a shedding motion and a heddle frame there are provided a first motion transmission member for increasing an amount of displacement of an operating member moved by the shedding motion and a second motion transmission member for further increasing the amount of displacement of said first motion transmission member, and further characterized in that said motion transmission members are connected to each other by a connection member and the heddle frame is mounted on the second motion transmission member;

a. wherein the first motion transmission member comprises a pivotal lever which is pivoted about a first fixed pivot and a guide plate having a curved peripheral surface mounted on the pivotal lever, and wherein the operating member comprises a cable which is wound on and secured to the peripheral surface of the guide plate;

b. wherein the second motion transmission member comprises a carrier lever pivotably supported on a fixed frame through a second fixed pivot and having first and second ends on opposite sides of the fixed frame, wherein the heddle frame is hung on the first end of the carrier lever through a connector means and, wherein a spring is stretched between the second end of the carrier lever and the fixed frame; and

c. wherein the connection member for connecting the first and second motion transmission members comprises a connection rod, wherein the pivotal lever of the first motion transmission member is positioned below the carrier lever of the second transmission member, wherein the connection portion of the connecting rod to the pivotal lever is positioned away from the first fixed pivot of the pivotal lever from an acting point of the cable on the

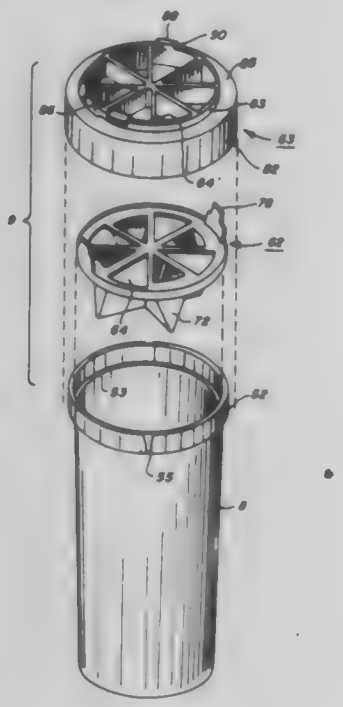
pivotal lever, and wherein the connection portion between the connecting rod and the carrier lever is positioned between the second pivot of the carrier lever and the connection portion between the connector means and the carrier lever.

4,603,714

TONER BOTTLE FOR COPIER/PRINTING MACHINES

Joseph J. Marotta, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Mar. 18, 1985, Ser. No. 712,931
Int. Cl.[4] B65B *1/06*
U.S. Cl. 141—383 7 Claims



1. A toner bottle of the type which fits over the toner inlet in the developer housing of a copier/printing machine to add toner to said machine without spilling or loss, comprising, in combination:

(a) a container for said toner, said container having a toner discharge opening at one end; and

(b) a cover for said container one end, said cover including

(1) a first iris member having at least one aperture therethrough for assembly with said container so as to close said container toner discharge opening except for said aperture,

said first iris member having at least one control tab projecting outwardly therefrom; and

(2) a second iris member having an aperture therethrough corresponding to each aperture in said first iris member, said first and second iris members cooperating with one another to form an iris adapted on predetermined relative rotation between said first and second iris members to align the aperture in said first iris member with the corresponding aperture in said second iris member to enable toner to discharge through said apertures from said container, said apertures when not aligned closing said container toner discharge opening;

said second iris member being sized to fit over said container one end to trap said first iris member therebetween and form said cover with said iris;

said second iris member having a slot for each of said first iris member control tabs, said slot having a predetermined length whereby to limit relative movement between said first and second iris members and establish open and closed positions of said iris;

said second iris member having at least one outwardly projecting locking tab;

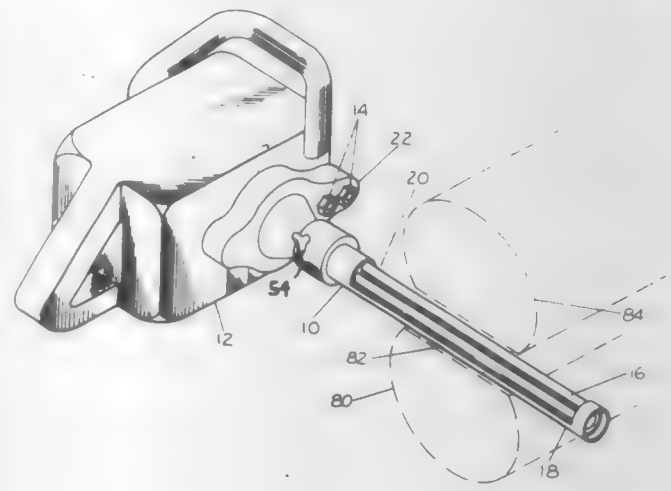
whereby on assembly of said bottle with said housing and rotation of said bottle, said second iris member locking tab is moved into locking engagement with said developer housing to attach said bottle to said developer housing while said first iris member control tab is locked against movement to establish relative movement between said first and second iris members through a distance established by the predetermined length of said slot to bring the apertures in said first and second iris members into alignment with one another and discharge toner from said container into said developer housing.

4,603,715

ATTACHMENT FOR POWER TOOL

Bruce Muehlhauser, Rte. 1, Sandstone, Minn. 55072

Filed Nov. 19, 1984, Ser. No. 672,662
Int. Cl.[4] B27C *9/02*
U.S. Cl. 144—1 E 2 Claims



1. A method of cutting surface of a log into a mirror image of the pre-cut surface of another log comprising,

(a) supporting said log with the pre-cut surface in a horizontal position with the pre-cut surface facing upward,

(b) placing the log to be cut in a position spaced a small distance above and parallel to said pre-cut log,

(c) providing a power driven rotating cutting element including an elongated rotatable cutting element comprising a plurality of elongated cutting elements spaced around the circumference thereof, said cutting element being provided with a coupling device adapted to engage a rotatable power drive means, shield means encircling the circumference of said cutting element, an opening being provided along one side of said shield means to expose one side of said cutting element, said shield means being attached to the stationary body of said drive means and thereby rendered non-rotatable, and having a smooth outer working surface adapted to slide along said pre-cut log, and

(d) sliding the shield along said pre-cut surface from one end to the other, thus causing said rotating cutting element to cut the lower surface of said upper log into a mirror image of said pre-cut log.

4,603,716

MACHINE FOR CONTOURING A WORKPIECE

William J. Rhodes, 3347 Campground Rd., Louisville, Ky. 40211

Filed Oct. 21, 1985, Ser. No. 789,337
Int. Cl.[4] B27C *5/00*
U.S. Cl. 144—134 A 15 Claims

1. A machine for contouring a workpiece comprising:

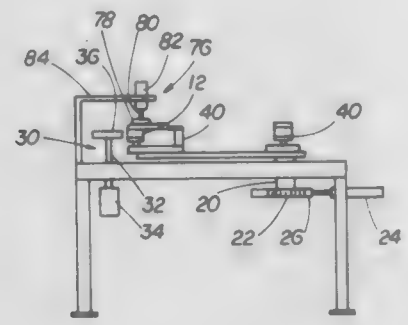
a framework;

a horizontal table mounted to the framework for oscillating movement in a horizontal plane between two predetermined points;

means for stopping movement of the table at two predetermined opposed points on its oscillating movement;

means for reversibly driving the oscillating table operatively connected to the stopping means for reversing the direction of movement of the table when the stopping means stops movement of the table;

workpiece fixture means for holding workpieces to be contoured at two different locations on the table spaced from each other by a distance corresponding to the distance through which the table oscillates; and,



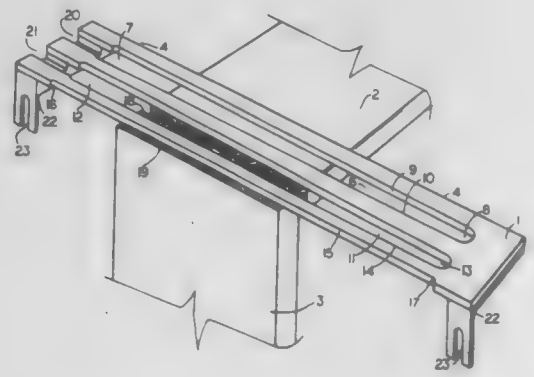
workpiece cutter means mounted to the framework next to the table for contouring the periphery of each workpiece in the fixture means as the table means moves a fixture means into a position at the workpiece cutter means.

4,603,717

SLIDING DOVETAIL TEMPLATE

Donald E. Thomas, Rte. 2, Box 227, Mebane, N.C. 27302

Filed May 16, 1985, Ser. No. 735,828
Int. Cl.⁴ B27C *5/10*
U.S. Cl. 144—144.5 GT **5 Claims**



5. A template for making tapered sliding dovetails in combination with a work positioning structure, comprising:

a plate constructed of a material sufficiently rigid to support a hand-held router, having:

an end;

a first longitudinally extending guide slot such that the opposite edges of said slot are straight and tapered toward each other, and such that said slot is capable of receiving a dovetail cutter;

a second longitudinally extending guide slot having a straight first guide edge, such that said slot is capable of receiving a dovetail cutter; and, a straight second guide edge on said plate;

such that said first and second guide edges are tapered toward each other;

and such that the tapering of the opposite edges of said first longitudinally extending guide slot, of said first guide edge of said second longitudinally extending guide slot and of said second guide edge are all toward the same end of said plate;

and such that the centerline between the opposite edges of first guide slot and the centerline between the first and second guide edges are parallel;

and further comprising a first gap in said plate disposed between said first longitudinally extending guide slot and an edge of said plate, sufficient in size to allow a dovetail cutter to be inserted into said first longitudinally extending guide slot through said first gap;

means on said template for securing said template to a work positioning structure;

a work positioning structure having:

a frame having a horizontal work receiving surface and a vertical work receiving surface;

means on said frame for securing said template to said work positioning structure;

means on said frame for securing a first workpiece to said work positioning structure such that said first workpiece is positioned between said plate and said horizontal work receiving surface; and

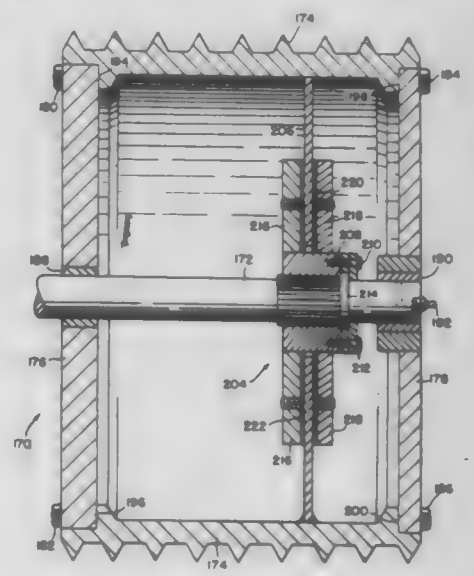
means on said frame for securing a second workpiece to said work positioning structure such that said second workpiece is positioned between said plate and said vertical work receiving surface.

4,603,718

FEED ROLL CONSTRUCTION FOR LOG DEBARKERS

James H. Hutson, Rte. 4, P.O. Box 925, Pell City, Ala. 35125

Continuation of Ser. No. 696,528, Jan. 30, 1985, abandoned, which is a division of Ser. No. 527,814, Aug. 30, 1983, abandoned, which is a continuation-in-part of Ser. No. 430,794, Sep. 30, 1982, abandoned. This application Oct. 29, 1985, Ser. No. 792,243
Int. Cl.⁴ B27L *1/00*; B27B *31/00*
U.S. Cl. 144—208 E **20 Claims**



1. For a log debarker having a rotating debarking mechanism and a first log feed roll positioned on one side of the rotating debarking mechanism and driven by a first drive shaft for feeding logs into the rotating debarking mechanism, a log debarker feed roll assembly comprising:

a second drive shaft,

a pair of spaced members at least one of which is disposed about said second drive shaft,

a second log feed roll connected to said spaced members and disposed at least partially about said second drive shaft,

said second log feed roll including a log engaging surface,

a connecting means positioned between said spaced members for connecting said log feed roll to said second drive shaft for transmitting at least part of the rotation from said second drive shaft to said second log feed roll and permitting slippage therebetween when said log engaging surface encounters excessive resistance to rotation, and

said spaced members at least in part keeping contaminants out of said connecting means.

4,603,719

DRILLING AND COUNTERBORING APPARATUS AND METHOD FOR TOE FASTENING

Max W. Durney, 417 E. D St., Petaluma, Calif. 94952

Filed Oct. 4, 1985, Ser. No. 784,152
Int. Cl.⁴ B27M *1/08*; B27C *1/00*
U.S. Cl. 144—365 **14 Claims**

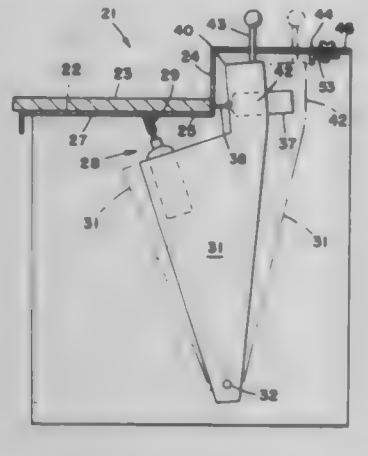
1. Apparatus for forming an obliquely oriented counterbore

in a surface of a workpiece and a fastener receiving bore proximate an edge of said workpiece comprising:

(a) means associated with said apparatus for supporting said workpiece in a position for formation of said counterbore and said bore;

(b) router means movably mounted to said apparatus and oriented with the axis of rotation of the cutting bit of said router means generally perpendicular to the direction of motion of said router means, said router means being mounted for movement progressively inwardly to cut a tapering recess in said surface terminating in a shoulder transverse to said surface proximate and in spaced relation to said edge to form said obliquely oriented counterbore; and

(c) drill means movably mounted to said apparatus and oriented with the axis of rotation generally parallel to the direction of motion of said drill means and generally perpendicular to said axis of rotation of said router means, said drill means being mounted for movement in a direction to drill said bore from said edge into said workpiece a distance and direction causing said bore to communicate with said counterbore.



9. A method of forming an obliquely oriented counterbore in a surface proximate an edge of a workpiece and a connecting fastener receiving bore between said counterbore and said edge comprising the steps of:

advancing router means oriented with the axis of rotation of the cutting bit of said router transverse to said surface in which said counterbore is to be formed and along a path to progressively cut an inwardly tapering counterbore in said surface terminating in a transverse shoulder, and

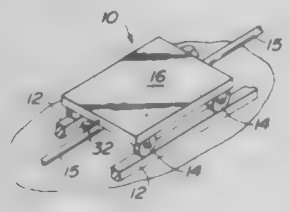
advancing drill means from said edge inwardly in said workpiece until said bore extends to a position which will communicate with said counterbore.

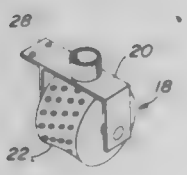
4,603,720

DRIVE WHEEL FOR DRIVERLESS VEHICLE

Charles E. Jacoby, Bethlehem, Pa., assignor to SI Handling Systems Inc., Easton, Pa.

Filed Jun. 29, 1981, Ser. No. 278,768
Int. Cl.⁴ B60C *11/10*; B61B *13/12*
U.S. Cl. 152—209 R **5 Claims**





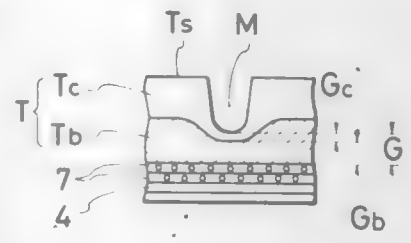
1. Apparatus comprising a drive wheel for a driverless vehicle, said drive wheel having a solid plastic tire portion, said tire portion having an outer peripheral surface adapted for frictional contact with a drive shaft, said tire portion having means for expelling liquid from the surface of a drive shaft, said means including rows of discrete recesses on the outer peripheral surface of said tire portion with each recess being completely surrounded by land area, the space between rows being at least as large as the transverse dimensions of the recesses at said outer peripheral surface of the tire portion.

4,603,721

BASE-CAP TIRE TREAD

Tomohiko Kogure, Minami-ashigara; Ryoji Hanada, and Kazuyuki Kabe, both of Hiratsuka, all of Japan, assignors to The Yokohama Rubber Co., Ltd., Tokyo, Japan

Filed May 22, 1985, Ser. No. 736,729
Claims priority, application Japan, May 31, 1984, 59-109627
Int. Cl.⁴ B60C *11/00*
U.S. Cl. 152—209 R **2 Claims**



1. A pneumatic tire which has on its tread surface a tread pattern formed by grooves and has a tread rubber of a two-layer structure comprising a cap rubber layer and a base rubber layer of which the latter comprises a rubber having a lower heat generating characteristic in comparison to a rubber forming the former, the tire having a value of $(Gc/G)\times(Eb/Ec)$ within the range of from 0.15 to 0.35 when the total thickness of said tread rubber at bottoms of said grooves in the tread pattern is G, the thickness of said cap rubber layer at the same bottoms of the tread pattern grooves as above being Gc, the modulus at 25% elongation of the rubber of said base rubber layer being Ec and that of the rubber of said cap rubber layer being Ec.

4,603,722

TIRE TREAD COMPRISED OF BRANCHED STYRENE-BUTADIENE COPOLYMERS

Noboru Oshima, Suzuka; Isamu Shimizu, Kameyama; Yoshito Yoshimura, Yokkaichi; Tatsuo Fujimaki, Higashimurayama, and Seisuke Tomita, Tokorozawa, all of Japan, assignors to Bridgestone Tire Company and Japan Synthetic Rubber Co., Ltd., both of Tokyo, Japan

Division of Ser. No. 473,394, Mar. 8, 1983, Pat. No. 4,526,934. This application Sep. 28, 1984, Ser. No. 655,288
Claims priority, application Japan, Mar. 19, 1982, 57-42955; Mar. 25, 1982, 57-47946
Int. Cl.⁴ C08F *8/18*
U.S. Cl. 152—209 R **1 Claim**

1. A pneumatic tire comprising a toroidal carcass reinforcement, and a tread portion superimposed about a crown region of said carcass and having a cap/base structure of tread base rubber and tread cap rubber, the improvement wherein said tread base rubber is a rubber composition containing (1) at least 20 parts by weight of branched styrene-butadiene copolymer rubber based on 100 parts by weight of the total rubber content, wherein said branched styrene-butadiene copolymer rubber has a bound styrene content of 3–15% by weight and a vinyl bond content in the butadiene portion of not less than 30% but less than 50%, and is produced by coupling a styrene-butadiene copolymer anion with a tin halide compound and (2) not less than 30 parts by weight of at least one of natural rubber

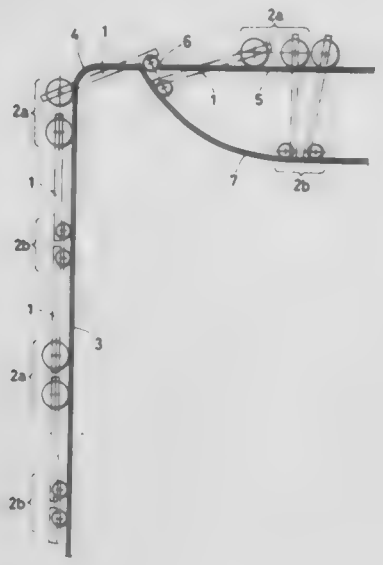
and polyisopropene rubber based on 100 parts by weight of the total rubber content.

4,603,723

SHUTTER

Toshihiko Sugihara, Mihara, Japan, assignor to Kyoritsu Kikai Co., Ltd., Hiroshima, Japan

Filed Sep. 26, 1984, Ser. No. 654,784
Claims priority, application Japan, Oct. 18, 1983, 58-194976
Int. Cl.[4] E06B *9/32*
U.S. Cl. 160—35 15 Claims



4. A shutter capable of repeatedly sliding on guide posts from a closed position to an open position such that said shutter includes a multiplicity of rollers some of which are larger than others, said shutter being stored on support means when in the open position, said shutter comprising:

a plurality of slats having ends and longitudinal edges;

a plurality of roller hinge mechanisms arranged for rolling on said guide posts and said support means; said hinge mechanism comprising

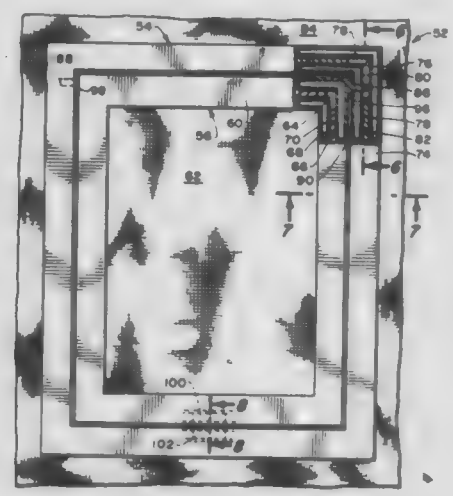
connecting means which includes pairs of larger rollers and pairs of smaller rollers arranged alternately to connect said slats to one another such that said longitudinal edges of said slats are adjacent when said shutter is in the closed position and are separable yet connected when in open positions.

4,603,724

PET DOOR FOR A SCREEN

Michael J. Borwick, Santa Barbara, Calif., assignor to Borwick Innovations, Inc., Goleta, Calif.

Filed Dec. 29, 1980, Ser. No. 221,347
Int. Cl.[4] E06B *7/28*
U.S. Cl. 160—180 4 Claims



1. In combination with a door screen located in a given plane, said door screen having an access opening, a pet door comprising:

a fixed frame forming an enclosed area, said fixed frame being attached only to said screen, said fixed frame comprising a first member and a second member which interfit together securely binding said screen therebetween, said fixed frame being located directly adjacent said access opening with said enclosed area being within said access opening, said first member including an elongated groove formed by a pair of elongated upstanding side wall members, said second member including an elongated protuberance, said elongated protuberance to be located within said elongated groove in a mating male and female arrangement with said upstanding side wall members exerting a continuous bias toward said elongated protuberance and said screen to be located between said side wall members and said elongated protuberance; and

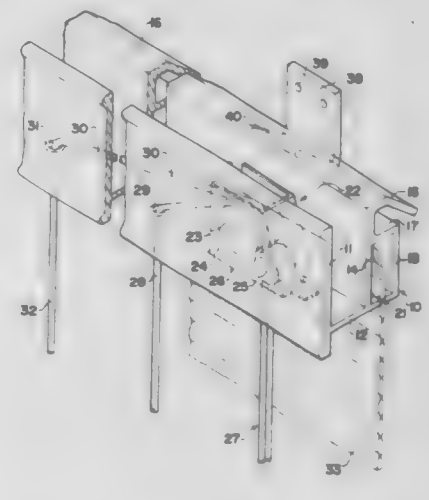
a door mounted on said fixed frame and located within said enclosed area, said door being pivotable on said fixed frame on a pivot axis, said pivot axis being located substantially within said given plane, said door to be movable from a closed position located within said given plane to an open position permitting movement of a domesticated animal through said access opening.

4,603,725

HEADRAIL FOR A WINDOW BLIND

Douglas W. Knight, 1376 Liberty St., Winnipeg, Mantioba, Canada R3S 1A6

Filed Aug. 24, 1984, Ser. No. 643,954
Int. Cl.[4] A47G *5/02*
U.S. Cl. 160—243 4 Claims



1. A headrail for a window bind comprising an integral extruded section defining a first upright wall providing a front valance, a second horizontal wall connected to said first wall adjacent a lower edge thereof, a third upright wall parallel to the first wall and connected to said second wall at an edge thereof so as to define a pulley channel rearwardly of the valance for receiving a cord pulley device for raising and lowering the blind, said third wall extending to a position substantially the same height as an upper edge of the valance, a fourth horizontal wall interconnected with said third wall at an intermediate height thereof, a fifth wall extending downwardly from said fourth wall to a position of the same height as the bottom of the third wall, a pair of flanges extended inwardly toward one another from the bottom edge of the fifth wall and the bottom edge of the third wall so as to define therebetween a slot of reduced dimension relative to the spacing between the third and fifth walls for receiving and clamping the edge of the blind and a sixth wall connected to the top edge of the third wall and extending generally in a direction away from the valance and downwardly for cooperation with an upwardly and forwardly directed hook member whereby the headrail can be attached to a suitable surface for supporting

the blind depending downwardly therefrom rearwardly of the valance and the pulley channel.

4,603,726

METHOD OF MAKING INDIVIDUAL CASTINGS

Hubert Pfannenstiel, Lenggries, and Heinz-Joachim Hübner, Wörthsee, both of Fed. Rep. of Germany, assignors to ESPE Fabrik pharmazeutischer Präparate GmbH, Seefeld, Fed. Rep. of Germany

Filed Nov. 4, 1983, Ser. No. 549,190

Claims priority, application Fed. Rep. of Germany, Nov. 5, 1982, 3240907

Int. Cl.[4] B22C *9/02*

U.S. Cl. 164—35 1 Claim

1. In a method of making relatively small individual independent metal dental castings that are three-dimensional in configuration by building up, in the field of dental engineering, including a positive model of a crown, an inlay, a bridge, the secondary part of a conical crown, telescopic crown, double crown, or a male part for individual attachments, as well as a telescoping anchor, bar attachment, or soldering connection, said method having the improvement therewith comprising steps of:

building up a dental casting model at least partially by photopolymerizing a photopolymerizable compound for hardening in combination therewith;

applying said photopolymerizable compound in a plurality of layers, and individually subjecting each layer to photocuring using visable light in the wave length range of 400–500 nm;

thereafter securing at least one sprue to said casting model;

embedding said dental casting model in a refractory molding compound;

heating said refractory molding compound and said embedded dental casting model to a temperature of 500°–700° C. to melt and/or burn out said dental casting model, free of residue, from said molding compound and to form a mold therein;

introducing molten metal into said mold to form a specific dental casting;

cooling said mold and casting; and

finally removing said dental casting from said mold;

said photopolymerizable compound contains one of the compounds selected from the group consisting of acrylic acid ester and methacrylic acid ester.

4,603,727

FLEXIBLE PERMEABLE VALVE FOR MELT SPINNING PROCESS

Shih C. Hsu, Wellesley, Mass., assignor to GTE Laboratories Incorporated, Waltham, Mass.

Filed Jun. 22, 1984, Ser. No. 623,661

Int. Cl.[4] B22D *39/00, 41/10*

U.S. Cl. 164—133 6 Claims

1. Apparatus for producing chill-cast metal foil comprising

a chill wheel having a chill surface;

a reservoir for holding molten metal, said reservoir having an inside surface and having an orifice for directing the molten metal upon said chill surface;

heating means for maintaining the molten metal above its melting point in said reservoir;

gas permeable molten metal retaining means for retaining the molten metal in said reservoir and for effecting a purging of said orifice with a non-oxidizing purging gas, said gas permeable molten metal retaining means being flexible and conforming to said inside surface of said reservoir, said gas permeable molten metal retaining means being adapted to move to a position covering said orifice or to a position uncovering said orifice; and

means for effecting expulsion of the molten metal contained in said reservoir through said orifice onto said chill surface of said chill wheel to form a chill-cast metal foil.

6. A method for producing a chill-cast metal foil comprising

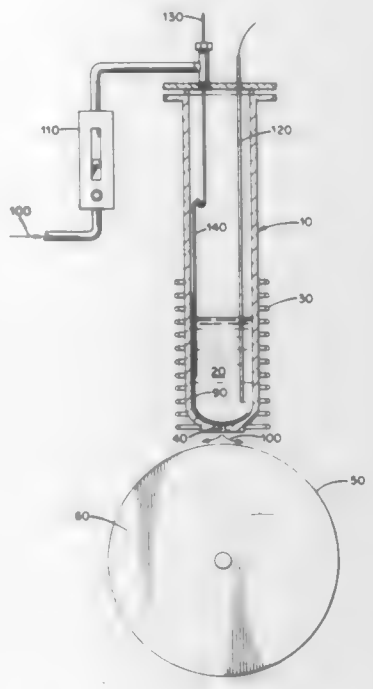
adding a charge of metal into an apparatus for producting chill-cast metal foil; said apparatus comprising

a chill wheel having a chill surface;

a reservoir for holding molten metal, said reservoir having an inside surface and having an orifice for directing the molten metal upon said chill surface;

heating means for maintaining the molten metal above its melting point in said reservoir;

gas permeable molten metal retaining means for retaining the molten metal in said reservoir and for effecting a purging of said orifice with a non-oxidizing purging gas, said gas permeable molten metal retaining means being flexible and conforming to said inside surface of said reservoir, said gas permeable molten metal retaining means being adapted to move to a position covering said orifice or to a position uncovering said orifice; and



means for effecting expulsion of the molten metal contained in said reservoir through said orifice onto said chill surface of said chill body;

purging said reservoir, said metal, and said orifice with a non-oxidizing purging gas;

heating said metal in said reservoir to form a molten metal;

purging of said reservoir and said orifice with said non-oxidizing purging gas, the purging of said orifice occurring by passage of purging gas from the resevoir to the orifice through the gas permeable retaining means; and

removing said gas permeable molten metal retaining means from said orifice effecting a flow of the molten metal through said orifice and impinging of the molten metal on said chill surface of said chill wheel forming a chill-cast metal foil.

4,603,728

APPARATUS FOR OBTAINING IMPROVED DENTAL CASTINGS

Carl H. Rousseau, 1510 Barry St., Clearwater, Fla. 33516

Continuation-in-part of Ser. No. 385,025, Jun. 4, 1982, Pat. No. 4,508,155. This application Apr. 1, 1985, Ser. No. 718,178

The portion of the term of this patent subsequent to Apr. 2, 2002, has been disclaimed.

Int. Cl.[4] B22C *7/02, 9/04, 21/00*

U.S. Cl. 164—237 17 Claims

1. An apparatus for the preparation of a full arch dental casting for a patient from a full arch wax dental pattern using an exothermic investment material which expands upon curing comprising:

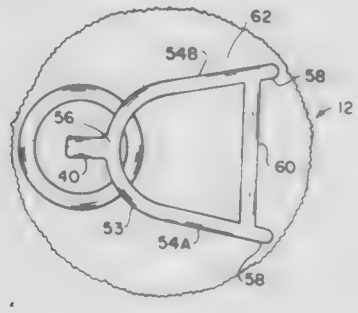
an expandable investment container means having a base means;

said base means defined by a plate having a top and a bottom

surface with a substantially circular lip extending from said top surface;

a sprue former operatively disposed on said base means;

a runner bar means operatively disposed on said sprue former comprising a proximal end portion means and a distal end portion means;



said distal end portion means for receiving the full arch dental pattern and forming a first and second curved configuration portion which together approximate the curved configuration of the jawbone of the patient; and

means for interconnecting said first and second curved configuration portion of minimizing the distortion of the distance between the distal ends of said runner bar means during curing of the exothermic material.

4,603,729

PIPING ASSEMBLY FOR USE IN ROLL SECTION OF CONTINUOUS CASTING LINE

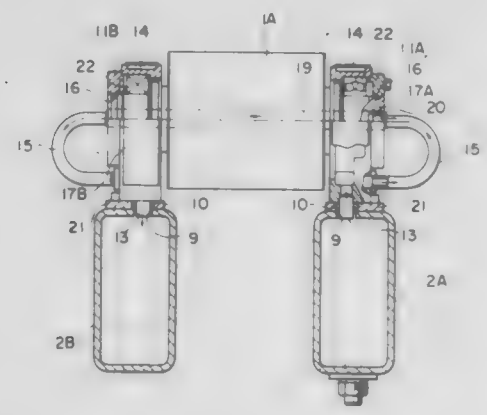
Hiroshi Kawaguchi; Hirofumi Sasaki; Mamoru Nishida, and Shinichi Harada, all of Kobe, Japan, assignors to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan

Filed Apr. 25, 1984, Ser. No. 603,898

Claims priority, application Japan, Jun. 17, 1983, 58-93443[U]; Jun. 17, 1983, 58-93444[U]

Int. Cl.⁴ B22D *11/12*

U.S. Cl. 164—442 **8 Claims**



1. A piping assembly for cooling a roller section in a secondary cooling zone of a continuous casting line, comprising:

a support frame having a plurality of pairs of partition walls formed therein, a cooling inlet and outlet, and a cooling fluid passageway;

a plurality of pairs of bearing boxes mounted on said frame, wherein each of said bearing boxes includes a base portion having a fluid passage in direct communication with said cooling fluid passageway of said frame and wherein each of said bearing boxes includes a shaft hole;

a roller mounted on each of said pairs of bearing boxes and having an axial passageway formed therein for communicating with said fluid passages of said pairs of bearing boxes; and

first and second circulating pipes located on opposite ends of said roller and each having one end secured to an outer wall of said bearing boxes and in communication with said fluid passage and a second end centrally positioned in said shaft hole of said bearing boxes for communicating with the axial passageway of said roller.

4,603,730

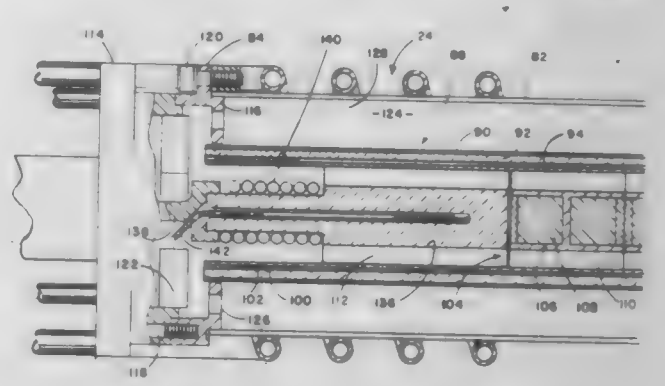
MULTIPLE MODULE FURNACE SYSTEM

Esker K. Davis, La Canada, and William F. Chew, Playa Del Rey, both of Calif., assignors to GTI Corporation, San Diego, Calif.

Filed Jun. 30, 1982, Ser. No. 393,748

Int. Cl.⁴ F27D *9/00*

U.S. Cl. 165—30 **10 Claims**



1. A self-contained furnace module for heating a sample in outer space and a control system therefor, said furnace module and control system being secured to a furnace frame within a space flight vehicle and comprising:

furnace means for heating the sample,

said furnace means having an outer protective tube and an inner heater carrying tube, each of said inner and outer tubes having a cylindrical configuration and being coaxially spaced relative to one another,

thermal insulation disposed between said outer protective and inner heater carrying tubes,

at least one crucible located within and spaced from said inner heater carrying tube of said furnace means for receiving therewithin the sample to be heated,

a plurality of spacer means extending radially from said at least one crucible to said inner heater carrying tube so as to form fluid channels therebetween and provide heat exchange surfaces to dissipate heat developed at said crucible,

means for supplying a cooling fluid surrounding the outer protective tube of said furnace module for providing thermal isolation of said module from the surrounding environment,

means for supplying a heat exchange fluid to the fluid channels formed between said spacer means,

heater means interfaced with said inner heater carrying tube for supplying heat to said crucible,

power supply means for activating said heater means,

sensing means interfaced with said heater means for supplying a signal that is indicative of the temperature developed by said heater means,

signal processing means to receive the temperature indicating signal from said sensing means and control the respective operations of said cooling fluid supply means and said heat exchange fluid supply means, and

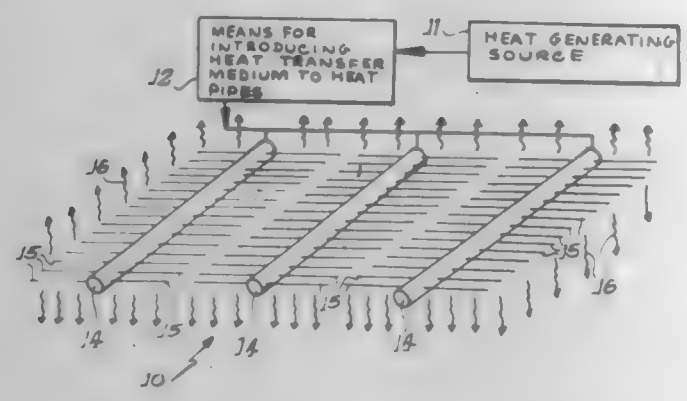
feedback temperature control means interconnected between said signal processing means and said heater means for controlling the operation of said heater means and causing the heating of said furnace means to a particular predetermined temperature for a particular predetermined time.

4,603,731

GRAPHITE FIBER THERMAL RADIATOR

Randall B. Olsen, Olivenhain, Calif., assignor to GA Technologies Inc., San Diego, Calif.

Filed Nov. 21, 1984, Ser. No. 674,052
Int. Cl.[4] F28F *1/30*
U.S. Cl. 165—41 5 Claims



1. A thermal radiating system for use in conjunction with a heat source to dissipate the heat created thereby comprising, in combination:

a heat transfer fluid in thermal contact with the heat source;

at least one heat pipe through which the heat transfer fluid is circulated;

means for circulating the heat transfer fluid through heat pipes; and

a plurality of graphite fibers associated with each heat pipe, the graphite fibers being disposed in substantially parallel co-planar relation to each other, spaced from one another and extending substantially perpendicular to their associated heat pipe, the adjacent fibers being spaced a sufficient distance from each other so that the heat radiated from the fibers substantially radiates into free space.

4. In a thermal radiator for use in outer space to dissipate heat by radiation only, the combination comprising:

an array of at least two heat-conducting conduits disposed in substantially parallel, co-planar relation and each carrying a heat transfer fluid therein;

means including a plurality of elongated graphite fibers associated with each heat-conducting conduit, each fiber associated with each heat-conducting conduit being disposed in substantially perpendicular relation to the conduit and extending in substantially parallel, co-planar relation to every other fiber, the graphite fibers associated with each heat conducting conduit being co-planar with the graphite fibers associated with every other heat conducting conduit in the array and having a small mass per unit area, a high ratio of heat transfer by radiation to the mass thereof, and superior ionizing radiation resistance characteristics.

4,603,732

HEAT MANAGEMENT SYSTEM FOR SPACECRAFT

Richard E. Niggemann, Rockford, Ill., assignor to Sundstrand Corporation, Rockford, Ill.

Filed Feb. 9, 1984, Ser. No. 578,475
Int. Cl.[4] F28D *15/00*; B64G *1/50*
U.S. Cl. 165—41 16 Claims

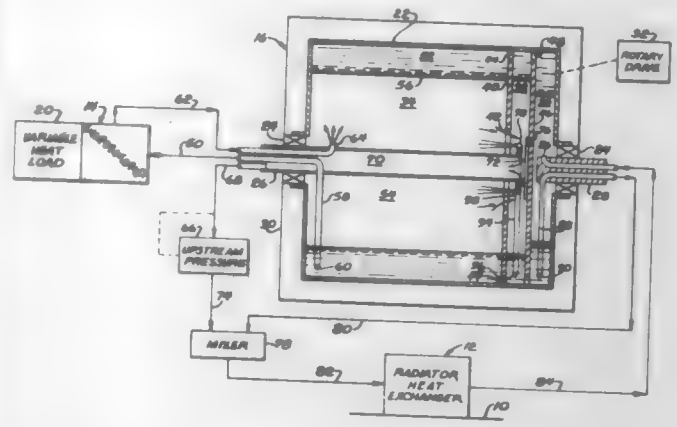
13. A heat management system for use in spacecraft or the like comprising a first heat exchanger of the radiator type for radiating heat into space;

a second heat exchanger for transferring heat from a variable heat load on a spacecraft;

means for establishing a heat exchange fluid flow path between said heat exchangers;

means for regulating fluid flow in said flow path; and

a pump forming part of said flow path comprising a rotary drum driven about an axis at sufficient speed to cause fluid therein in the liquid phase to move radially outwardly and form an annular body of liquid fluid surrounding a body of gaseous fluid with said drum, and a liquid pickup having



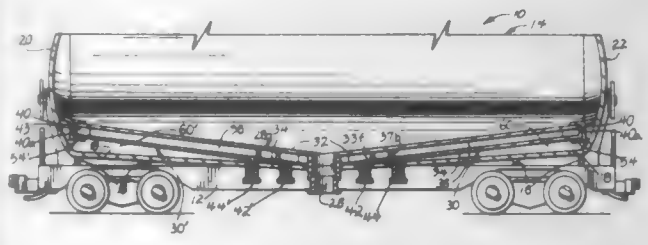
an inlet in said body of liquid fluid and relatively movable relative thereto.

4,603,733

HEATED RAILROAD TANK CAR

Richard Loevinger, P.O. Box 68, Brandon, S. Dak. 57005

Continuation of Ser. No. 454,537, Dec. 30, 1982, Pat. No. 4,476,788, which is a continuation-in-part of Ser. No. 385,869, Jun. 7, 1982, Pat. No. 4,480,370. This application Aug. 24, 1984, Ser. No. 643,867
The portion of the term of this patent subsequent to Oct. 16, 2001, has been disclaimed.
Int. Cl.[4] F28F *9/22*
U.S. Cl. 165—41 3 Claims



1. For use in a combination of a lading carrying tank having a discharge duct and a heat exchanger for heating a congealable lading in said tank, said heat exchanger being formed from two sections extending along a longitudinal axis of said tank and each section including first and second portions, said first portion extending substantially across the lower portion of said tank and sloping downwardly a substantial extent between an end of the tank and the discharge duct, said first portion having a plurality of longitudinally extending flow passages adapted to receive and conduct a heated medium, said second portion being located in the tank in a lower area than said first portion and substantially encompassing in heat exchange relationship said second portion having inlet and outlet port means for the heated medium and forming an extension of said discharge duct, said discharge duct being in said lower area, whereby said heat exchanger through the flow of said heated medium in said plurality of longitudinally extending flow passages, provides sufficient heat to the lading in the lower area of the tank to develop a rolling flow of the lading, said second portion having one of the port means adjacent said discharge duct extension.

4,603,734

HEAT EXCHANGE ELEMENT OF THE AIR-TUBE TYPE

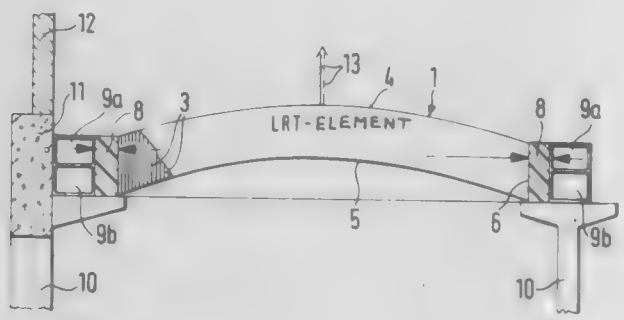
Hermann Heeren, and Wilhelm Wendel, both of Nuremberg, Fed. Rep. of Germany, assignors to M.A.N. Maschinenfabrik Augsburg-Nürnberg Aktiengesellschaft, Nuremberg, Fed. Rep. of Germany

Filed Feb. 7, 1985, Ser. No. 698,933

Claims priority, application Fed. Rep. of Germany, Feb. 8, 1984, 3404376

Int. Cl.[4] F28F *9/00*

U.S. Cl. 165—67 2 Claims



1. A heat exchange element of the air-tube type for a heat exchanger unit; said heat exchange element being connected via flexible connecting lines with liquid supply and withdrawal channels having transition surfaces therebetween and which are otherwise separated from said element; together with said channels, said heat exchange element being supported on a support structure which has a relatively large open space between support members thereof; that dimension of said element measured in the longitudinal direction of said tubes thereof being relatively short; air flow occurring internally through said tubes, and liquid flow occurring externally around said tubes; said heat exchange element being disposed on said support members in such a way that it has a top side and a bottom side, upon one of which air impacts, and from the other of which air exits;

the improvement therewith which comprises: an arched dome on said top side and said bottom side of said heat exchange element being curved in a dish-shaped manner so that absorbing of thermal expansion of said heat exchange element occurs via deformation of said arched dome with which only compressive forces are generated at transition surfaces to liquid supply and withdrawal channels and said compressive forces can be readily absorbed without great difficulty, and said tubes of said heat exchange element being parallel so that when said heat exchange element is disposed on said support members, said tubes of said element extend substantially vertically, and substantially normal to said top side and said bottom side of said element due to elimination of any requirement for disposing said heat exchange element at an incline relative to horizontal relationship as is otherwise necessary for any parallelpipedal heat exchange element; said arched dome also increasing inherent rigidity of said heat exchange element therewith.

4,603,735

DOWN THE HOLE REVERSE UP FLOW JET PUMP

John B. Black, Longview, Tex., assignor to New Pro Technology, Inc., Fort Worth, Tex.

Filed Oct. 17, 1984, Ser. No. 661,937

Int. Cl.[4] E21B *43/00*

U.S. Cl. 166—68 30 Claims

1. A down the hole reverse up flow jet pump in a system operational with circulation fluids pumped from above the earth surface comprising: an in the well down the the hole up flow jet pump; down flow fluid passage means connected to said jet pump and extending up the hole to the well head at the surface; up flow fluid passage means connected to said jet pump and extending up the hole to the well head at the surface; a jet pump elongate body with down flow fluid passage means extended through said body from top to bottom thereof connected to and forming an extension of said down flow fluid passage means connected to said jet pump and extending up the hole to the well head at the surface; fluid flow reversing means mounted on the bottom of said jet pump elongate body; lowering opening means in said body extending from the bottom of said body to a venturi chamber in said body with said lower opening means narrowing from its bottom to its upper exit opening to said venturi chamber for accelerated fluid flow into and through said venturi chamber; said venturi chamber being of greater transverse cross-sectional area that the upper exit opening of said lower opening means; upper opening means in said body extending from said venturi chamber to the top of



said jet pump elongate body with said upper opening means connected to said up flow passage means; and with said jet pump elongate body including venturi transverse inlet side vent means extended from the exterior of said body to said venturi chamber for vacuum effect drawing of well fluids and/or gases from the well casing and a well production zone into the fluid flow stream for passage from the jet pump body to and up said flow fluid passage means to the well head and from the well; and wherein said jet pump elongate body is generally a cylindrical body; said lower opening means in said body is a center opening in the form of a truncated cone narrowing from its larger bottom to its smaller upper exit opening; and with said venturi chamber a centrally located cylindrical chamber.

4,603,736

METHOD OF PRODUCING SIDE-POCKET MANDRELS FREE OF WELDS

Norman Moore, 2 Lisnalinchy Road West, Ballyclare, County Antrim, Ireland

PCT No. PCT/GB83/00224, § 371 Date May 11, 1984, § 102(e) Date May 11, 1984, PCT Pub. No. WO84/01120, PCT Pub. Date Mar. 29, 1984

PCT Filed Sep. 12, 1983, Ser. No. 611,002

Claims priority, application United Kingdom, Sep. 11, 1982, 8225962

Int. Cl.[4] E21B *7/00;* B21D *53/00*

U.S. Cl. 166—117.5 7 Claims



1. A method of producing a side-pocket mandrel comprising:

(A) axially boring a cylindrical metal bar of predetermined length and diameter from each of the two ends thereof to predetermined depths to leave a land between the blind bores;
(B) boring through said land from end to end thereof to provide a bore of smaller diameter than said blind bores and coaxial with or axially offset from but parallel to said blind bores;
(C) machining through said land at least one bore which is symmetrical about a diametrical plane of said smaller bore is of semicircular arch periphery from one end of said land with the plane and parallel flanks thereof penetrating said smaller bore and effectively forming a window of actuate segmental shape in the periphery of the latter, and continues into a full bore of predetermined peripheral shape forming a valve pocket separated from and axially parallel to said smaller bore and emerging from the other end of said land;
(D) forming holes through said bar in a chordal plane and intersecting said valve pocket;
(E) swaging both ends of the bar to provide end lengths of lesser external diameter and axially aligned with said smaller bore;
(F) trueing the bores in said end lengths to match said smaller bore; and
(G) machining an orienting sleeve in the mandrel near one end thereof.

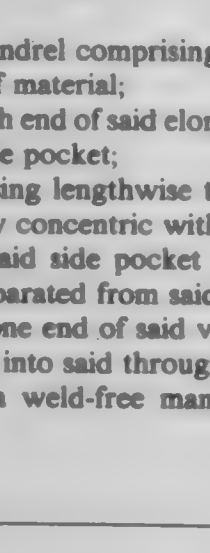
5. A side pocket mandrel comprising:
an elongate block of material;
a swaged end on each end of said elongate block defining the exterior of the side pocket;
a through bore passing lengthwise through said block and being substantially concentric with said swaged ends;
a valve pocket in said side pocket in said elongate block parallel to and separated from said through bore; and
a discriminator on one end of said valve pocket that opens said valve pocket into said through bore,
thereby providing a weld-free mandrel having improved durability.

4,603,737

LINE PROTECTOR

Hugh D. Spikes, P.O. Drawer W, Weatherford, Tex. 76086

Filed Aug. 29, 1985, Ser. No. 770,434
Int. Cl.[4] E21B *17/10*
U.S. Cl. 166—241 9 Claims



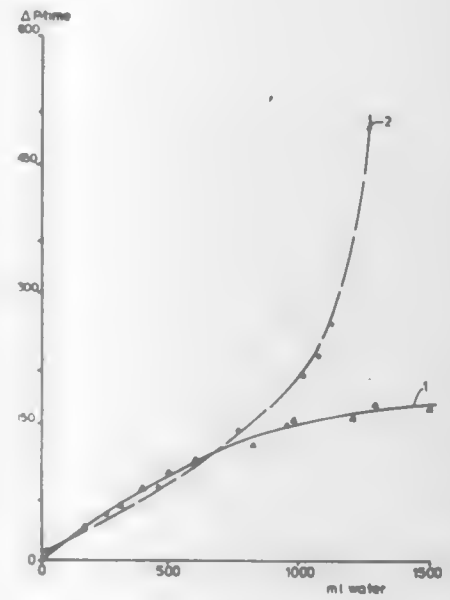
1. A protector for down hole lines which are attached externally to well production tubing in a well bore, said tubing made up of lengths thereof connected together at intervals by coupling collars comprising, in combination:
(1) a first collar encircling a tubing length adjacent the lower end thereof above a coupling collar,
(2) a second collar encircling a second tubing length adjacent the upper end thereof below said coupling collar,
(3) limited opposed portions of said collars axially outwardly formed the entire length of the collar,
(4) an elongate channel for receiving a down hole line fixed at the upper and lower ends thereof to said collars in the outwardly formed portions thereof,
(5) said channel outwardly formed at each end thereof adjacent said collars whereby to provide an elongate central length thereof operative to overlie said coupling collar and
(6) a plurality of beam members connecting said collars together and spacing them apart positioned at intervals thereabout,
(7) at least two of said beam members being rigid, positioned one on each side of said channel and outwardly formed at each end thereof adjacent said collars, whereby to provide outwardly spaced elongate central portions thereof operative to overlie said coupling collar,
(8) said rigid beam members operative to aid in protecting said channel on said tubing string in said well bore.

4,603,738

PROCESS AND MEANS FOR PREVENTING BLOCKAGES OF CRUDE OIL DEPOSITS BY THE FORMATION OF EMULSION DUE TO DEPOSITS OF ASPHALT

Wolfgang Oberkirch; Armand de Montigny, and Hansjürgen Botsch, all of Leverkusen, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jan. 9, 1985, Ser. No. 689,756
Claims priority, application Fed. Rep. of Germany, Jan. 18, 1984, 3401486
Int. Cl.[4] E21B *43/16*
U.S. Cl. 166—275 5 Claims



1. In the injection of flood water into crude oil deposits, the improvement which comprises including in the water a polyorganopolysiloxane-polyoxyalkylene block copolymer of the formula

$$[R^1Si(OSiR_2)_n]_nZ_{m-1}(OR^2)_{m+2}$$

in which
R represents an alkyl group having up to 4 carbon atoms,
R^1 represents the substituent R or a phenyl radical,
R^2 represents a group of the formula

$$R^3(OCH_2CH_2)_x(OCH_2-\underset{\displaystyle CH_3}{\underset{|}{CH}})_y-$$

Z represents —O— or

$$-O-\left[\begin{array}{c} R^3 \\ | \\ C \\ | \\ R^4 \end{array}\right]_p -O-,$$

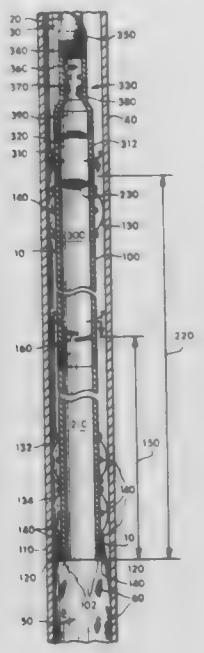
R^3 represents a hydrocarbon radical having up to 4 carbon atoms,
R^4 represents hydrogen or a hydrocarbon radical having up to 4 carbon atoms,
n represents a number from 3 to 30,
m represents a number from 1 to 15,
x, y represent numbers which are selected in each case such that when m, n, and p are fixed, the compound is water-soluble, and $y \leqq 52$ and x and $x+y \leqq 68$,
$p \geqq 2$, but does not exceed the value which makes the compound water-insoluble when m, n, x and y are fixed,
whereby the injection pressure is reduced.

4,603,739

PROCESS FOR CLEANING AN OIL FIELD WELL BORE HOLE USING AN INTERNAL CASING WIPER

Michael E. Krugh, Lafayette, La., assignor to Marathon Oil Company, Findlay, Ohio

Continuation of Ser. No. 459,566, Jan. 20, 1983, Pat. No. 4,515,212. This application Jan. 22, 1985, Ser. No. 693,487
The portion of the term of this patent subsequent to May 7, 2002, has been disclaimed.
Int. Cl.⁴ E21B *31/08, 31/03, 37/00, 37/02*
U.S. Cl. 166—311 **4 Claims**



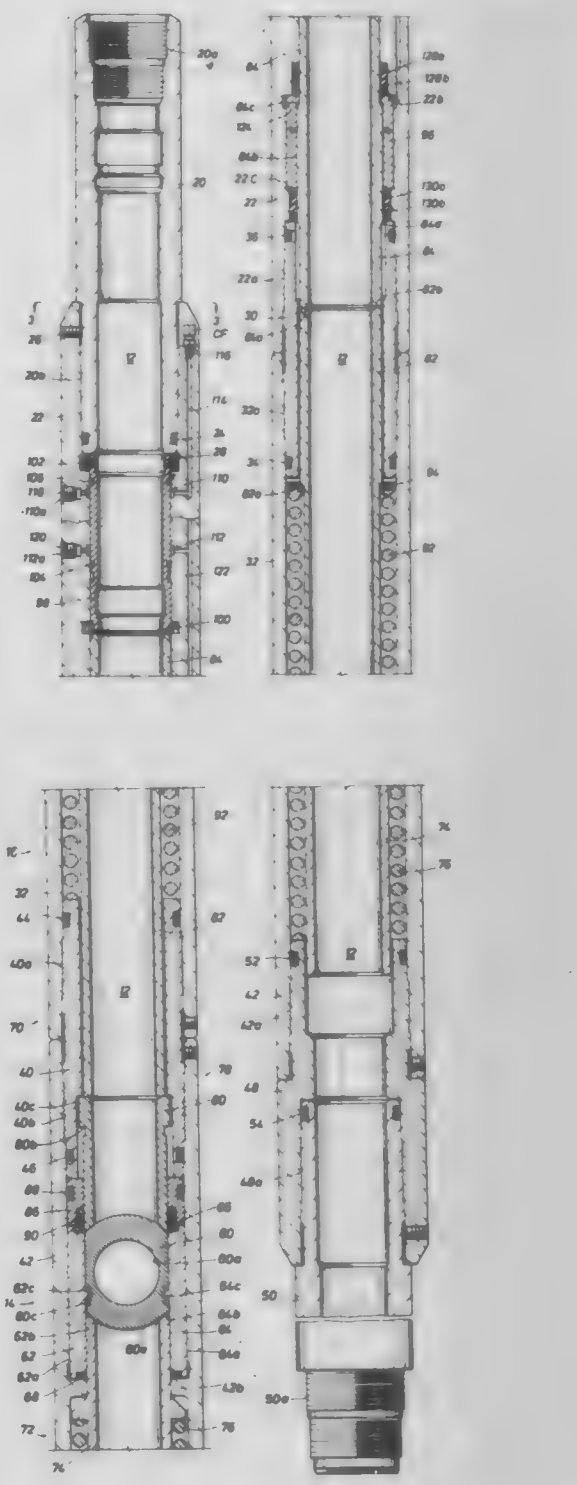
1. A process for removing debris from a cased well bore hole containing a fluid in a substantially static environment comprising the steps of:
continuously lowering a tubular tool into the well bore hole during a collection mode to create relative circulation of the fluid through the tubular tool while;
scraping the debris from the casing of the well bore hole into the fluid by a scraping means affixed to the lower end of the tubular tool;
feeding the debris-containing fluid to the interior of the tubular tool via an opening in the lower end of the tool;
filtering the debris-containing fluid upward across a first filtering means cross-sectionally positioned within the tubular tool;
collecting the debris filtered from the fluid in a collection means positioned below the first filtering means in the tubular tool;
opening a valve, which permits upward flow of filtered fluid through the valve but not reverse downward flow of fluid through the valve and which is positioned cross-sectionally in the tubular tool above the first filtering means and below a port in the upper end of the tool;
expelling the filtered fluid from the interior of the tubular tool via the port which provides fluid communication between the interior of the tool and the well bore hole; and thereafter
continuously raising the tubular tool in the wall bore hole during a retrieval mode while;
closing the valve to substantially prevent downward flow of fluid across the filtering means; and
removing the debris contained in the collection means of the tubular tool from the well bore hole.

4,603,740

SUBSURFACE SAFETY VALVE

Jon L. Edwards, and Mark L. Carter, both of Houston, Tex., assignors to Hydril Company, Los Angeles, Calif.

Filed Aug. 29, 1984, Ser. No. 645,408
Int. Cl.⁴ E21B *34/10*
U.S. Cl. 166—319 **6 Claims**



1. A subsurface safety valve apparatus for use in controlling flow in a well conduit providing a desired fluid flow path in the well for the production of well fluids, including:
a valve housing having means for connecting said valve housing in a well conduit providing the desired fluid flow

path, said valve housing having a flow passage formed therethrough which communicates with the well conduit when connected therewith to form a portion of the well conduit at a desired subsurface location in the well;

flow closure means disposed in said flow passage for movement to and from a closed position for blocking flow of fluid through said flow passage and an open position for enabling flow of fluid through said flow passage;

operator means mounted with said housing for moving said flow closure means longitudinally in said flow passage to and from the open and closed positions, said operator means having an operator sleeve assembly reciprocably disposed in said bore;

said operator means having means for urging said flow closure means to the closed position;

means for sealing said operator sleeve assembly with said housing to form an expansible chamber therebetween, said operator sleeve assembly having a pressure responsive surface exposed to the fluid pressure in said expansible chamber for moving said operator sleeve assembly for moving said flow closure means to the open position;

means for selectively communicating a control fluid pressure into said expansible chamber for moving said flow closure means to the open position when desired;

said means for sealing including a first pair of seals and a second pair of seals, each of said first pair of seals being pressure energized and facing in opposite directions to prevent leakage into or out of said expansible chamber, each of said second pair of seals being pressure energized and facing in opposite directions to prevent leakage into or out of said expansible chamber; and

said housing having a longitudinally split guide ring disposed between said first pair of seals and said second pair of seals for preventing extrusion of said first and second pairs of seals by fluid pressure.

4,603,741

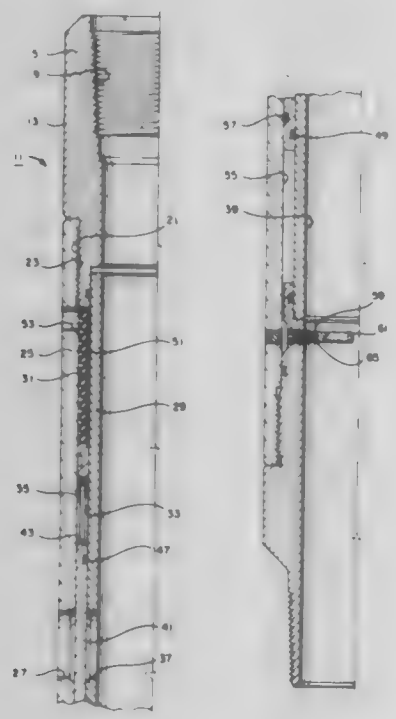
WEIGHT ACTUATED TUBING VALVE

John W. Edgmon, Conroe, Tex., assignor to Hughes Tool Company, Houston, Tex.

Filed Feb. 19, 1985, Ser. No. 703,585

Int. Cl.[4] E21B *34/06*

U.S. Cl. 166—369 **2 Claims**



1. A method of producing well fluids from a well annulus through a tubing conveyed production valve, comprising the steps of:

connecting a tubing sub within a well tubing string, the tubing sub having an outer cylindrical sidewall with at least one opening therein, and having an inner mandrel spaced-apart from said outer cylindrical sidewall to thereby create an annular space between the exterior of said inner mandrel and the interior of said outer cylindrical sidewall, said inner mandrel having at least one opening therein which communicates the interior of said tubing string with said annular space;

positioning a sliding sleeve within said annular space in a first position which closes off said mandrel opening from said annular space;

supporting said sliding sleeve in said first position by filling said annular space below said sliding sleeve with a substantially incompressible fluid;

initially sealing said fluid within said annular space by means of a frangible member which seals off said annular space from said tubing sub interior, the frangible member being positioned to extend within said tubing sub interior in the path of an object dropped through said tubing string;

running the well tubing string containing the production valve into a desired well bore location with said production valve in said first, closed position;

dropping a weight from the well surface, down said tubing interior to sever said frangible member, thereby releasing said support fluid and opening said production valve; and

wherein said tubing string interior is unpressured at the time said valve is opened.

2. A weight actuated, tubing conveyed, production valve, comprising:

a tubing sub having upper and lower connecting ends for installation within a string of tubing extending from the surface within a well bore, said tubing sub having an outer cylindrical sidewall with at least one opening therein;

an inner mandrel spaced apart from said outer cylindrical sidewall to thereby create an annular space between the exterior of said inner mandrel and the interior of said outer cylindrical sidewall, said inner mandrel having at least one opening therein which communicates the interior of said tubing string with said annular space;

a sliding sleeve located within said annular space having at least one opening therein for communicating said tubing interior, annular space and well annulus, said sleeve being movable between a first position which closes off said mandrel opening from said annular space and a second position in which mandrel opening communicates with said annular space, and through said sidewall opening with the exterior of said tubing string;

a coil spring located in said annular space above said sliding sleeve for initially biasing said sliding sleeve toward said open position;

an annular fluid chamber located below said sliding sleeve and initially containing a substantially incompressible fluid for supporting said sliding sleeve within said annular space in said first position;

frangible means initially containing said fluid within said annular space, said frangible means including a frangible portion which extends within the interior of said tubing string in the path of a weight dropped through said tubing string, whereby a weight dropped within said tubing string severs said frangible portion to release said fluid from said annular space and allow said sleeve to move to said second position; and

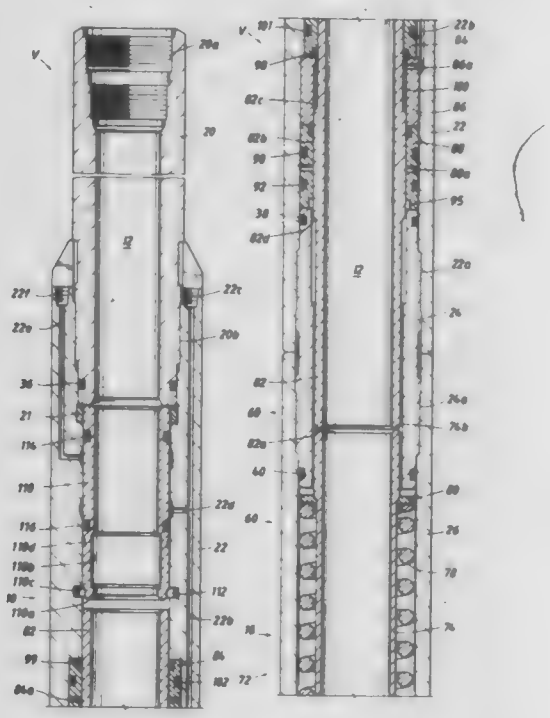
port means for communicating said well annulus with said annular space above said sliding valve, to thereby provide annulus pressure for moving said sliding valve to said open position when said support fluid is released.

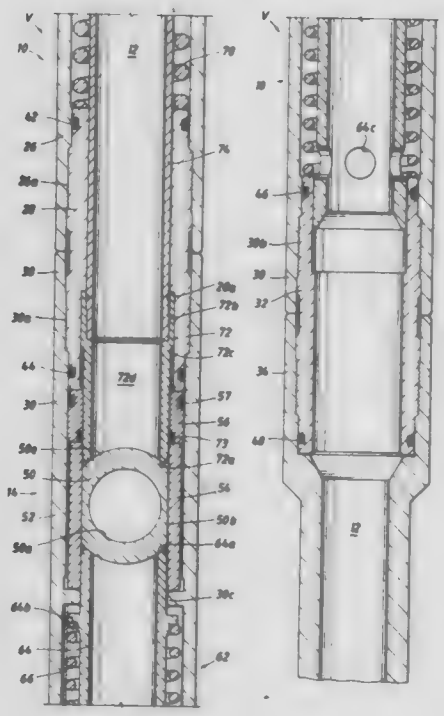
4,603,742

SUBSURFACE SAFETY VALVE

Fred S. Wong, Houston, and Larry F. Grohman, Spring, both of Tex., assignors to Hydril Company, Los Angeles, Calif.

Division of Ser. No. 593,333, Oct. 5, 1983, abandoned. This application Jun. 3, 1985, Ser. No. 740,398
Int. Cl.[4] E21B *34/10*
U.S. Cl. 166—374 2 Claims





1. A method of operating a subsurface safety valve in a well having a single pressure responsive surface for operating the valve to the open position for enabling flow including the steps of:

pressurizing a first control fluid conduit communicating with the pressure responsive surface from exteriorly of the well for operating the valve; and

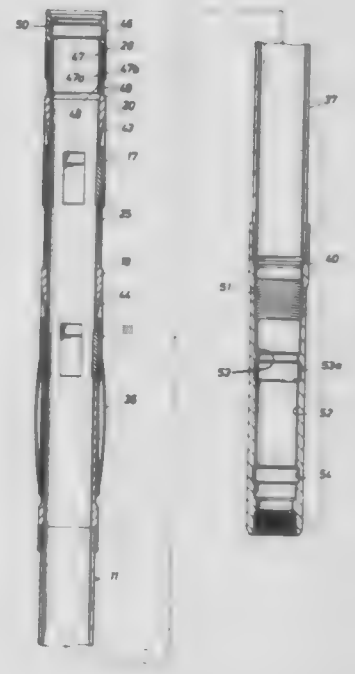
pressurizing a second control fluid conduit communicating with the pressure responsive surface from exteriorly of the well for operating the valve in the event of a malfunction of the first control fluid conduit.

4,603,743

HYDRAULIC/MECHANICAL SETTING TOOL AND LINER HANGER

Hiram E. Lindsey, Jr., Midland, Tex., assignor to MWL Tool & Supply Company, Midland, Tex.

Filed Feb. 1, 1985, Ser. No. 697,231
Int. Cl.[4] E21B *19/10, 43/00*
U.S. Cl. 166—382 32 Claims



1. A liner hanger for use in hanging a liner in a string of pipe in a borehole comprising:

a tubular expander housing having slip expander surfaces disposed circumferentially around said expander housing;

a tubular cage member telescopically received on said expander housing, slip members attached to said cage member and disposed on said expander surfaces, said slip members being movable on said slip expander surfaces from a contracted condition to an extended position relative to the expander housing upon relative movement between said expander housing and said cage member,

said tubular cage member having first internal setting tool locking means in its bore at its upper end; and

said expander housing having means adapted for coupling to a liner and having second internal setting tool locking means in its bore, said first and second internal setting tool locking means being adaptable for cooperation with first and second locking means on a setting tool so that said cage member and expander housing can be releasably held in a contracted conditions relative to one another by a setting tool.

28. A method of setting a liner hanger and attached liner in a wellbore where the liner hanger has expander and slip means releasably held in a contracted condition and movable upon release to an extended condition and said slip means is attached to wall engaging friction means and where a setting tool on a string of tubing is releasably attached to said slips and expander in the liner hanger comprising the steps of:

lowering a liner and liner hanger releasably attached to a setting tool at the end of a string of tubing into a wellbore until the liner engages the bottom of the wellbore;

releasing the slips relative to the expander housing while maintaining the releasable interconnection of the slips and expander with the setting tool;

raising the liner hanger to the location where the liner hanger will be set while maintaining the slips in a retracted condition;

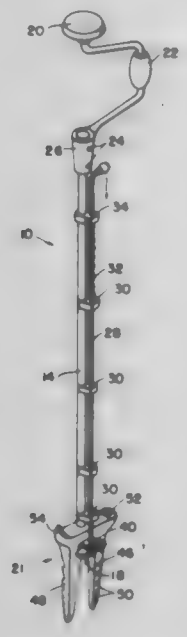
setting the slips by producing relative movement between the slips and expander; and

disconnecting the setting tool from the slips and expander and retrieving the setting tool.

4,603,744
WEED EXTRACTOR DEVICE

Frank L. Ramirez, 1109 S. Lark Ellen, West Covina, Calif. 91791

Filed Nov. 1, 1984, Ser. No. 667,146
Int. Cl.[4] A01B *1/16*
U.S. Cl. 172—25 11 Claims



1. A multi-purpose tool and vegetation extractor, comprising:

an elongated shank having upper and lower end portions,

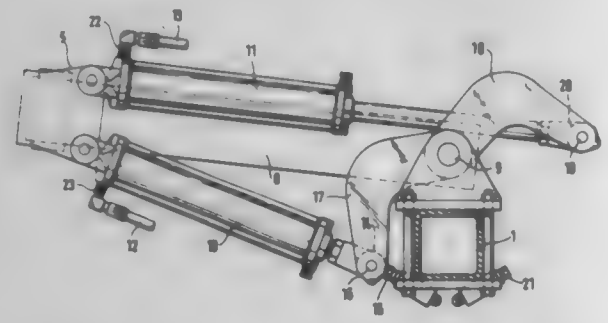
crank means on the upper end portion of the shank for manual rotation of the tool,

a pair of spaced blades extending longitudinally from the lower end portion of the shank, said blades defining generally wedge-shaped edge portions streamlined in the direction of said rotation to facilitate movement through soil upon said rotation of the tool, each of said blades having a reduced lower end portion for insertion into soil, each of the blades also having a plurality of teeth defined at the leading edges of the blades, at least certain ones of said teeth having upwardly facing tooth faces to engage and retain vegetation wrapped about the blades during said rotation.

4,603,745
PLOUGH REVERSING MECHANISM

Jorn Watvedt, Kvernaland, Norway, assignor to Kverneland A/S, Kvernaland, Norway

Filed Dec. 28, 1984, Ser. No. 687,155
Int. Cl.[4] A01B *63/22, 63/34*
U.S. Cl. 172—212 7 Claims



1. A hydraulic reversing mechanism for a reversible plough comprising:

(a) a plough frame;

(b) a lifting arm having first and second ends, said first end being connected to said plough frame;

(c) a shaft attached to said second end of said lifting arm;

(d) first and second hydraulic cylinders, each having a first end attached to said first end of said lifting arm, and each having a piston rod movably disposed at a second end thereof; and

(e) first and second pressure arms rotatably attached at a first end to said first and second piston rods, respectively, and rotatably at a second end to said shaft;

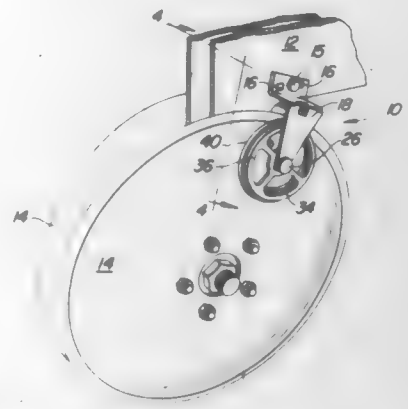
(f) third and fourth hydraulic cylinders connected in parallel with said first and second hydraulic cylinders, respectively, for adjusting the position of a rear wheel of said plough frame as a function of the position of said first and second hydraulic cylinders;

(g) whereby said first hydraulic cylinder initiates rotation of said lifting arm by extending said first piston rod from a retracted position to an extended position, and whereby said second hydraulic cylinder completes rotation of said lifting arm by retracting said second piston rod from an extended position to a retracted position.

4,603,746
DISK BLADE SCRAPER

Barton L. Swales, 1708 E. Fourth St., Coal Valley, Ill. 61240

Filed Jul. 19, 1984, Ser. No. 632,481
Int. Cl.[4] A01B *23/06*
U.S. Cl. 172—559 22 Claims



1. In a scraper mechanism for a disk blade including means for supporting the scraper with respect to the disk blade, said scraper including a hub, a plurality of spokes extending radially from the hub, and a peripheral rim supported by the spokes, the improvement comprising:

a wear ring releasably secured in contacting relationship with said rim, and disposed intermediate said rim and said disk blade, said wear ring being held in planar contact with one side of said disk blade.

4,603,747
APPARATUS FOR REMOVING INTERNAL TILES FROM CHIMNEYS

James M. Golden, P.O. Box 176, Doswell, Va. 23047

Filed Feb. 14, 1985, Ser. No. 701,915
Int. Cl.[4] B23B *45/16;* B08B *1/00*
U.S. Cl. 173—94 8 Claims

1. A heavy duty apparatus for removing the interior tiles from chimneys by rotary impaction comprising:

(a) an electric motor capable of reversing directions of rotation,

(b) a protective frame upon which said motor is mounted,

(c) a drive shaft extending downwardly from said motor to a lowermost extremity,

(d) impact-absorbing clutch means associated with the lowermost extremity of said drive shaft,

(e) an extension shaft axially aligned with said drive shaft, having an upper extremity engaged by said clutch means, and a lowermost extremity,

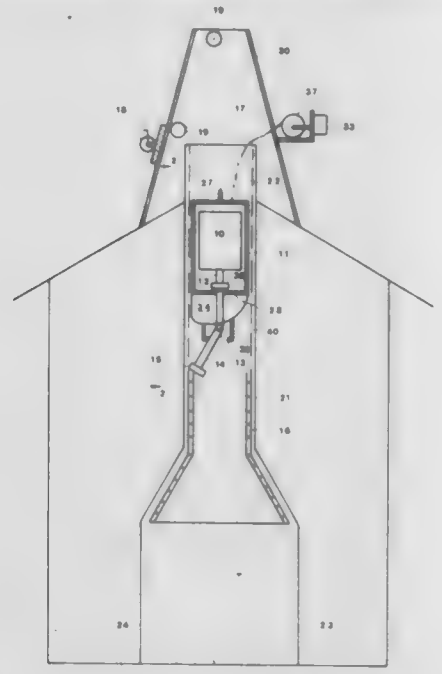
(f) a universal joint associated with the lowermost extremity of said extension shaft,

(g) a pivoted shaft attached to said universal joint and extending downwardly to a lowermost extremity,

(h) weighted impact means associated with the lowermost

extremity of said pivoted shaft and adapted to travel in a circular path extending beyond said frame,

(i) means for vertically lowering and raising said frame, and



(j) electrical control means for starting, stopping and reversing said motor.

4,603,748

HIGH FREQUENCY VIBRATORY SYSTEMS FOR EARTH BORING

Andre M. Rossfelder, La Jolla, and Peter A. Jung, San Diego, both of Calif., assignors to Geomarex, La Jolla, Calif.

Division of Ser. No. 443,069, Nov. 19, 1982, Pat. No. 4,553,443.
This application Mar. 12, 1985, Ser. No. 710,916
Int. Cl.[4] E21B *7/26;* B06B *1/16*
U.S. Cl. 175—19 7 Claims

1. A vibrating system for use in causing a generally vertical pipe to sink into the earth; said system comprising:

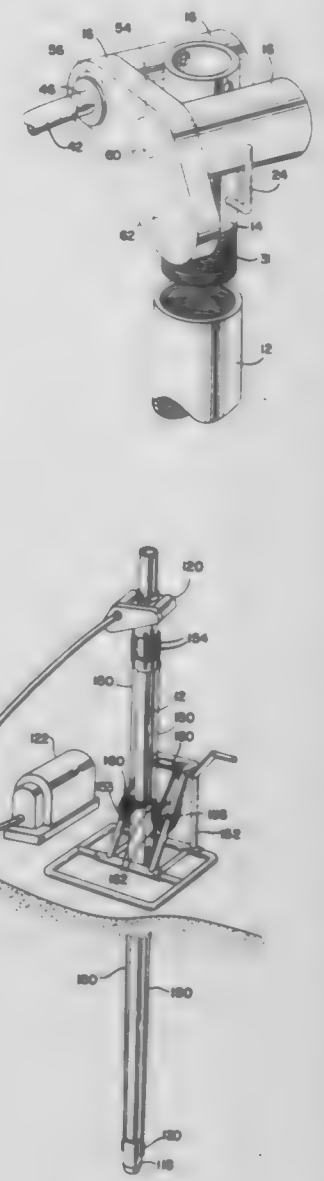
a substantially stationary source of mechanical rotation;

a movable housing particularly adapted for temporary but firm attachment to such generally vertical pipe to transmit vibration at more than 170 hertz to such pipe, and for substantially vertical motion with such pipe through distances of at least several feet while such pipe sinks into the earth;

earth-dissociating means, mounted to the housing, for vibrating such pipe via the housing at more than 170 hertz to dissociate earth particles so that such pipe sinks into the earth;

vertical-motion-accommodating means, interconnecting the substantially stationary source with the earth-dissociating means, for coupling mechanical rotation from the substantially stationary source to power the earth-dissociating means while allowing the housing to move vertically relative to the substantially stationary source; and

a vibration-isolating drive stage, mounted to the movable housing, for transmitting rotation from the vertical-motion-accommodating means to the earth-dissociating means while protecting the vertical-motion-accommodating means and the source from vibration exceeding 170 hertz in the earth-dissociating means and in such pipe.



4,603,749

APPARATUS FOR DOWNWARD DISPLACEMENT OF AN INNER TUBE WITHIN A CORING BARREL

J. Stanley Davis, Sandy, and Steven R. Radford, West Jordan, both of Utah, assignors to Norton Christensen, Inc., Salt Lake City, Utah

Filed Aug. 27, 1984, Ser. No. 644,855
Int. Cl.[4] E21B *10/60, 10/64*
U.S. Cl. 175—250 6 Claims

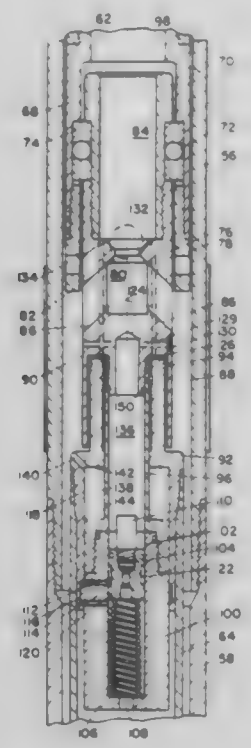
1. An apparatus for providing downward longitudinal displacement in an inner tube with respect to an outer tube in a coring tool comprising:

a cylinder longitudinally fixed with respect to said outer tube, said cylinder having a bypass port defined therethrough and a plurality of conduits defined through said cylinder communicating with the interior of said outer tube to provide a flow path independent of said bypass port through said cylinder, said bypass port having substantially less flow resistance than said plurality of conduits and therefore preferentially diverting hydraulic fluid from said interior of said outer tube above said cylinder to an annular spaced defined between said cylinder and said outer tube;

a primary piston telescopically disposed within said cylinder and forming a sealed and slideable relationship therewith, said piston connected to said inner tube; and

means for selectively closing said bypass port defined in said cylinder to thereby force said hydraulic fluid to flow through said ducts to said interior of said cylinder against

said piston in sealed telescopic relationship with said cylinder,



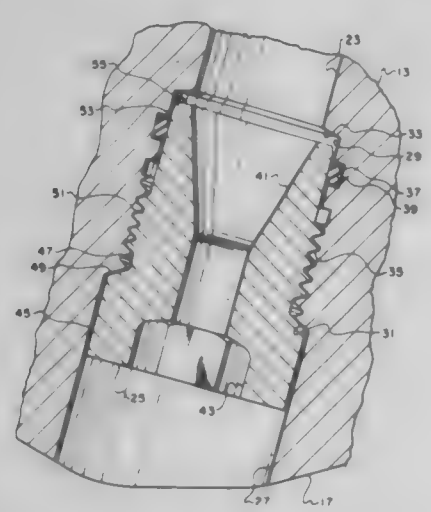
whereby said hydraulic force is applied to said cylinder, and said cylinder is longitudinally displaced downwardly with respect to said outer tube.

4,603,750

REPLACEABLE BIT NOZZLE

Robert B. Sorenson, Houston, Tex., assignor to Hughes Tool Company - USA, Houston, Tex.

Filed Oct. 2, 1984, Ser. No. 656,825
Int. Cl.[4] E21B *10/60*
U.S. Cl. 175—340 **4 Claims**



1. In an earth boring bit having at least one passage for discharging drilling fluid, the improvement comprising in combination:

a lower counterbore section in the nozzle passage extending from the lower end of the passage upwardly, terminating in a downwardly facing lower shoulder;

an upper counterbore section in the passage extending upwardly from the lower shoulder and terminating in a downwardly facing upper shoulder;

a threaded section formed in the upper counterbore section, having its upper end spaced below the upper shoulder a selected distance;

a nozzle having an enlarged lower section for reception in the lower counterbore section and an upper section of smaller diameter for reception in the upper counterbore section, defining an upwardly facing shoulder for sealing engagement with the lower shoulder formed in the bit passage;

the upper section having a threaded section for securing the nozzle to the threaded section formed in the bit passage; and

elastomeric seal means surrounding the nozzle upper section above the threaded section for preventing the entry from above of drilling fluid into the theaded section;

the sealing engagement of the nozzle shoulder with the lower shoulder preventing entry of drilling fluid from below into the threaded section; —

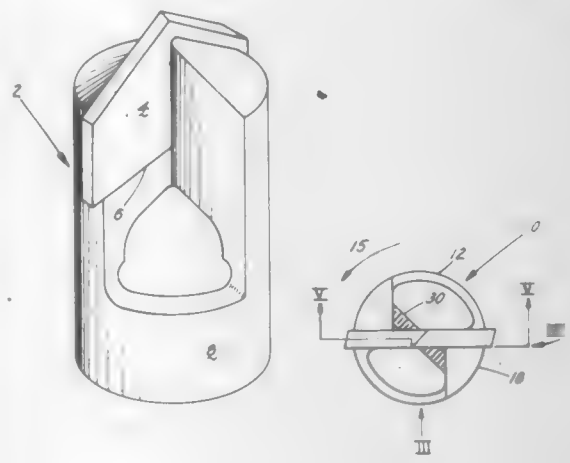
the length of the nozzle upper section being selected so that a clearance exists between the upper end of the nozzle and the upper shoulder when the nozzle is fully made up, assuring sealing contact of the nozzle shoulder with the lower shoulder.

4,603,751

MECHANICALLY FASTENED CENTER VACUUM ROOF DRILL BIT

Robert A. Erickson, Latrobe, Pa., assignor to Kennametal Inc., Latrobe, Pa.

Filed Feb. 16, 1984, Ser. No. 580,825
Int. Cl.[4] E21B *10/46*
U.S. Cl. 175—410 **14 Claims**



1. A center vacuum roof drill bit comprising: a body having an axis of rotation, a seat transverse to said axis of rotation, a periphery and a forward working end; at least one flat-like insert positioned on said seat; means for releasably clamping said insert; said means clamping said insert near the periphery of said body and said clamping means comprising two pairs of oppositely facing walls intersecting said periphery, each pair of walls being diametrically opposed from the other, one wall of said each pair of walls extending axially forward from said seat and the other wall being a planar face of a wedge having a rearwardly tapering locking angle, said wedges being adjacent to said seat.

4,603,752

SPEED AND DIRECTION CONTROL APPARATUS FOR A VEHICLE

Gary C. Chambers, Burdett, and Leonard V. Hychalk, Painted Post, both of N.Y., assignors to Figgie International Inc., Willoughby, Ohio

Filed Dec. 12, 1984, Ser. No. 680,941
Int. Cl.[4] B62D *11/04*
U.S. Cl. 180—6.4 **10 Claims**

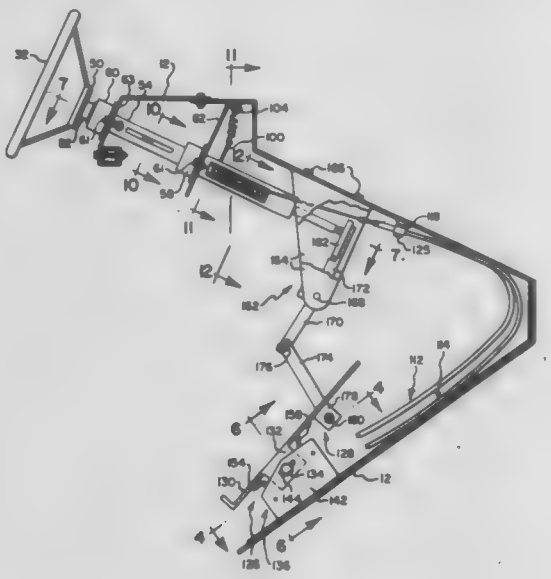
1. Speed and direction control apparatus for a vehicle of the type having a frame, right and left ground engaging wheel means on said frame, right and left motors associated respectively with said right and left wheel means, and right and left variable displacement pumps associated respectively with said right and left motors, each of right and left motors being capable of being driven at varying speeds in forward or reverse directions, and each of the variable displacement pumps being provided with a neutral position to a maximum reverse position to selectively vary the output of said pump between maxi-

mum forward and reverse outputs; said speed and direction control apparatus comprising:

rotatable and telescopic means mounted on said frame, said rotatable and telescopic means including telescopic shaft means capable of being shifted relative to said frame, the rotatable and telescopic means including a rotatable steering column and a shaft, said column being journaled within a portion of the frame for rotation about its axis, and said shaft including a portion mounted within a portion of the steering column for rotational movement with said steering column and also for telescoping movement within the steering column;

mounting means interconnected to said telescopic shaft means for shifting movement therewith and capable of being rotated about an axis upon rotation of said rotatable and telescopic means;

a pair of push-pull cable assemblies, each assembly including a longitudinally movable control cable disposed within a sheath, a first end of each of said sheaths being interconnected to said frame at a first location and a second end of



each of said sheaths being interconnected to said frame at a second location, a first end of each of said control cables being connected to said mounting means in spaced apart locations to either side of said axis in such a manner that when the mounting means is caused to be rotated one of the control cables will be extended relative to its sheath and the other control cable will be retracted relative to its sheath, and a second end of each of said control cables being connected to an associated control arm of a variable displacement pump;

foot pedal means mounted on said frame and including a pedal rockable between forward and reverse positions to either side of a neutral position and pedal centering spring means normally biasing said pedal to its neutral centered position; and

force transmitting means interconnecting said foot pedal means with said telescopic shaft means and capable of shifting the mounting means towards and away from said first location upon corresponding movement of said foot pedal means whereby forward and reverse movement of said control arms can be obtained.

4,603,753

AUTOMATIC RUNNING WORK VEHICLE

Shingo Yoshimura, Sakai; Katsumi Ito, Osaka, and Shigeru Tanaka, Osaka, all of Japan, assignors to Kubota, Ltd., Japan

Filed Dec. 13, 1983, Ser. No. 560,798

Claims priority, application Japan, Aug. 29, 1983, 58-157541; Oct. 5, 1983, 58-187345

Int. Cl.⁴ B62D *1/00*

U.S. Cl. 180—131 **8 Claims**

1. An automatic running work vehicle controllable to follow a series of straight courses for working a surface, comprising:

a body;

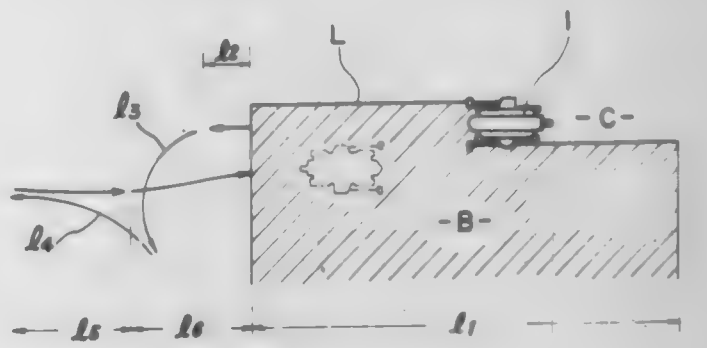
a plurality of steerable wheels;

a plurality of position sensor means mounted transversely on said body for sensing a boundary between worked and unworked areas and for detecting the front and rear ends of said courses;

orientation sensor means mounted on said body for detecting the running direction of said vehicle; and

control means mounted on said body and connected to said position sensor means which detects said front end, rear end of each course and said boundary;

said control means being responsive to the detection of the rear end of one course by said plurality of position sensor means for causing said vehicle to advance the vehicle a



first predetermined distance past the next course at a first predetermined angle, to advance the vehicle at a second predetermined angle a second predetermined distance, and then to advance the vehicle and simultaneously adjust the orientation to match a preselected orientation of said next course;

said control means being further responsive to the detection of the front end of the next course by said plurality of position sensor means for causing said vehicle to translate toward a boundary of the next course without changing its orientation until said boundary is detected and finally return to an original mode in which said vehicle follows the next course upon detection by one of said plurality of position sensor means of the boundary thereof between the worked and unworked areas.

4,603,754

DRIVE SYSTEM FOR ENGINE-DRIVEN LIGHT VEHICLES

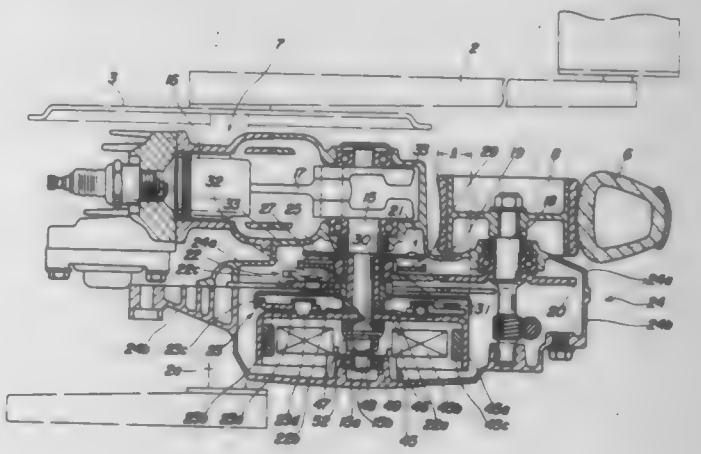
Takushi Matsutoh, Tokyo; Goroei Wakatsuki, Fujimi; Yoshitaka Kitamura, Sakado, and Takeo Ishihara, Asaka, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 8, 1984, Ser. No. 638,759

Claims priority, application Japan, Aug. 10, 1983, 58-145838; Aug. 22, 1983, 58-152737

Int. Cl.⁴ B62M *7/06*

U.S. Cl. 180—221 **8 Claims**



6. A drive system for use in a light vehicle including an

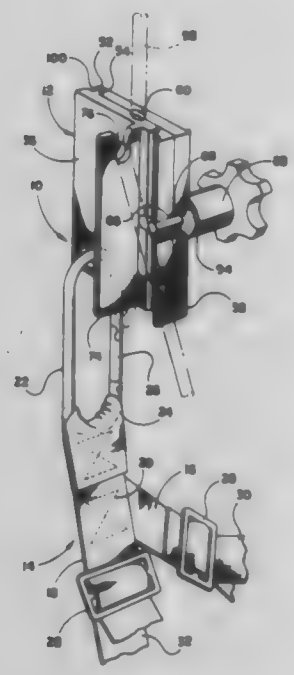
engine having a crankshaft and a wheel, said drive system including a friction roller disposed for frictional engagement with said wheel for transmitting the rotation of said engine to said wheel, said drive system being adapted to transmit the rotation of said wheel to said engine through said friction roller at the start of said engine, said drive system comprising: a drive shaft extending parallel with said crankshaft, said friction roller being supported on said drive shaft to be rotatively driven thereby; a power transmission means interposed between said drive shaft and said crnakshaft, for transmitting the rotation of said drive shaft to said crankshaft with a given ratio of speed change appropriate for starting said engine; a one-way clutch engaging with said power transmission means and adapted to transmit only the rotation of said drive shaft to said crankshaft, whereby the rotation of said drive shaft is transmitted to said crankshaft through said power transmission means and said one-way clutch at the start of the engine; and a platetary gear assembly coupled to said power transmission means and adapted to transmit the rotation of said crankshaft to said drive shaft through said power transmission means with a given reduction ratio, said planetary gear assembly including a centrifugal clutch disposed on said crankshaft for rotation therewith, said centrifugal clutch being adapted to transmit the rotation of said crankshaft to said drive shaft when the rotational speed of said crankshaft exceeds a predetermined value.

4,603,755

RAPPEL LINE CLAMP AND HARNESS

Juergen Meschke, Atlanta, Ga., assignor to Mar-Mex International, Ltd., Atlanta, Ga.

Filed Feb. 4, 1985, Ser. No. 698,038
Int. Cl.[4] A62B *1/14*
U.S. Cl. 182—5 **4 Claims**



1. A rappel clamp comprising:

a first and a second elongated closely opposed juxtaposed plate, said pair of elongated closely opposed juxtaposed plates including opposing and remote sides, said plates defining corresponding first and second longitudinal marginal portions and corresponding first and second transverse end marginal portions;

a substantially full length open ended groove formed in one of the opposing sides of said first longitudinal marginal portions, said groove being partially cylindrical in transverse section;

an outstanding and at least substantially full length rib in the other opposing side of said first longitudinal marginal portions provided with a transversely enlarged outer longitudinal extremity being slidably received and removable from said groove as well as angularly displaceable therein;

full length opposing and registered longitudinal open ended grooves formed in the opposing sides of said plates;

outwardly opening laterally registered slots formed in said second longitudinal marginal portions;

registered transverse outwardly opening slots formed in said second pair of corresponding longitudinal marginal edge portions, a laterally outwardly opening groove formed in said remote side of said first elongated plate, said outwardly opening groove being open at its opposite ends and being generally keyhole-shaped in cross section, said groove outwardly opening into opposite sides of said transverse registered outwardly opening slot at points spaced outward of the inner extremity thereof;

a clamp screw having a first and a second end, one of said ends including means defining a transverse passage therethrough, a pivot pin inserted lengthwise into said laterally outwardly opening groove to a position with said pin spanning said transverse outwardly opening slots, said one end of said screw being loosely received in the laterally outwardly opening slot with said pin rotatbly received through said passage, the other end of said screw having a hand nut threaded thereon, said screw begin disposed with a mid-portion thereof extending through the other outwardly opening slot and said hand nut opposing the other remote side of said plate; and

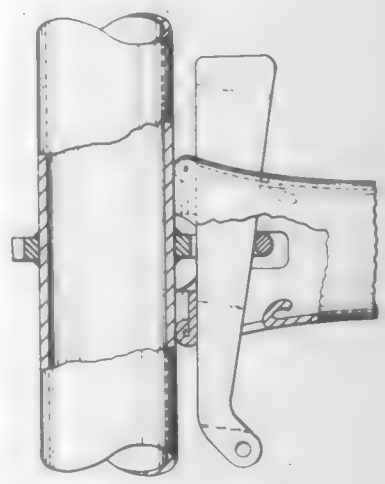
an outstanding flange in one of the remote sides of said plates, said outstanding flange extending longitudinally thereof and is slightly laterally spaced from a position registered with said grooves, the end of said flange facing outwardly of one pair of said transverse end marginal portions having an endwise outwardly opening keyhole-shaped notch formed therein and extending transversely therethrough.

4,603,756

METAL PIPE SCAFFOLDING

Ulrich Layher, Im Lailen 16, D-7129 Güglingen-Eibensbach, Fed. Rep. of Germany

Filed Jul. 20, 1984, Ser. No. 633,098
Claims priority, application Fed. Rep. of Germany, Feb. 29, 1984, 3407425
Int. Cl.[4] E04G *7/30*
U.S. Cl. 182—178 **9 Claims**



1. In a metal pipe scaffolding including vertical scaffold elements formed of cylindrical scaffold pipes locked by wedges, non-vertically extending scaffold elements, and connecting flanges formed of circular discs and provided with bridges for connecting the vertical scaffold elements to non-vertically extended scaffold elements, each non-vertically extending scaffold element being formed of a scaffold pipe by pressing process and having a central plane and including an end portion having deformed wedge-shaped ends which together form a vertically extended straight and smooth supporting surface for supporting a wall of the vertical scaffold element being connected to the non-vertically extended scaffold

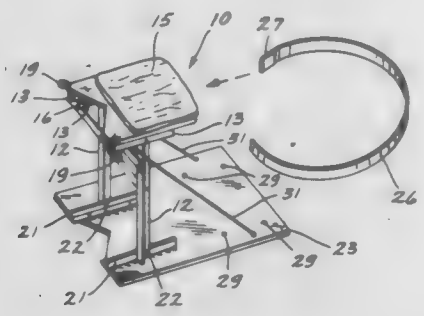
element, said non-vertically extended scaffold element having a front region at said end portion and being formed with at least one slot extended along said central plane and lengthwise of said non-vertically extended scaffold element for engaging therein one of said connecting flanges for connecting the vertical scaffold element, said end portion of the non-vertically extended scaffold element being formed with two diametrically opposite openings for receiving and guiding a respective wedge, said ends being curved inwardly of the non-vertically extended scaffold element and forming deformed rolled-in portions which are connected to each other by a vertical weld seam, said rolled-in portions defining said supporting surface in a horizontal direction as a concavely curved surface which has a radius which corresponds to an outer radius of the pipe of the vertical scaffold element.

4,603,757

TREE STAND

Brian L. Hollinger, 5316 S. 93rd St., Ralston, Nebr. 68127

Filed Nov. 29, 1984, Ser. No. 676,167
Int. Cl.[4] E04G *3/100*
U.S. Cl. 182—187 9 Claims



9. A tree stand comprising:

a frame adapted to be substantially vertically disposed along a tree trunk;

a first tree trunk engaging means attached to a top portion of said frame for engaging a tree trunk at a first vertical level, said first tree trunk engaging means comprising a pair of elongated members pivotally attached intermediate the ends thereof to a top portion of said frame;

a second tree engaging means for engaging said tree trunk at a second vertical level;

fastening means extending around a tree trunk for attaching an upper portion of said frame to the tree trunk;

platform means rigidly attached to said second tree engaging means for permitting a person to stand on said platform when it is disposed in a horizontal disposition;

pivot means for pivotally attaching said second tree engaging means and thereby said platform means to a lower portion of the frame along a substantially horizontal axis, for permitting said second tree engaging means to be movable between a first position in contact with the tree trunk substantially below said horizontal axis and a second position in contact with the tree trunk substantially at the same level as said horizontal axis, said second tree engaging means extending a substantial distance from said horizontal axis whereby pivoting of said platform and said tree engaging means from said first position to said second position causes said frame to be forced outwardly from the tree trunk, thereby tightening the fastening means and causing the tree stand to be more tightly secured to said tree trunk;

stop means operatively attached to said platform preventing said platform from pivoting downwardly beyond a substantially horizontal position;

seat means attached to the end of said elongated members opposite a tree abutting portion of the elongated members; and

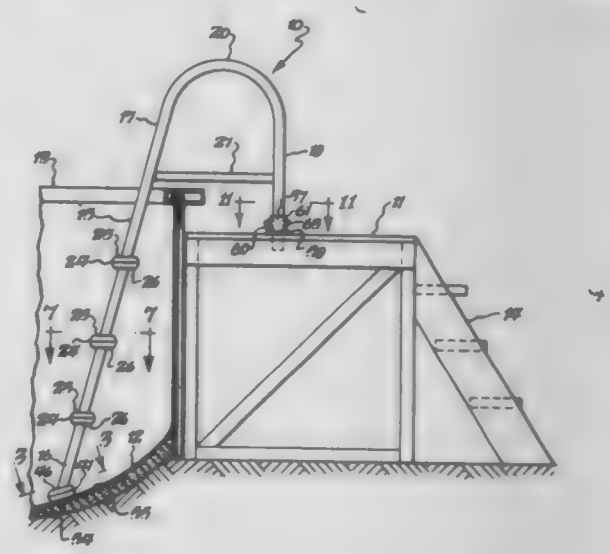
brace means removably attached to said tree abutting portion and to an intermediate part of the frame whereby the seat and first tree abutting portion is selectively secured in a substantially horizontal position for use or, when said brace means is disconnected from said elongated members, said seat and said elongated members can be folded compactly for transportation from place to place.

4,603,758

LADDER CONSTRUCTION

Frederick M. Pettit, 1411 Point Abino Rd. S., Ridgeway, Ontario, Canada L0S 1N0

Filed Jan. 4, 1985, Ser. No. 688,766
Int. Cl.[4] E06C *7/08, 9/02*
U.S. Cl. 182—194 13 Claims



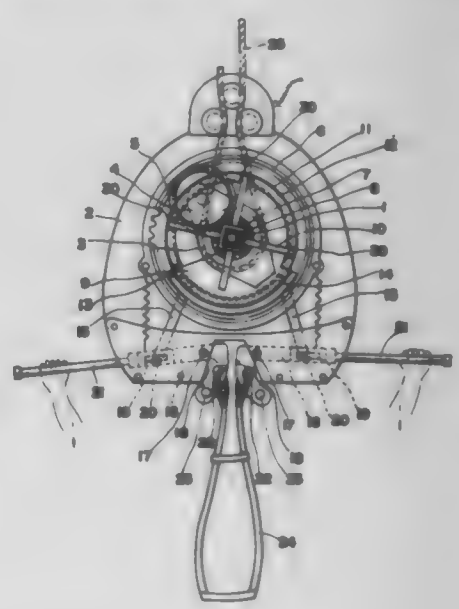
1. A ladder comprising a pair of spaced rails, a plurality of spaced rungs each having a central portion and integral opposite end portions and upper and lower sides, holes extending through said end portions and through said upper and lower sides for receiving said rail, pins extending through said rails and having outer end portions extending beyond said rails, and slot means in said rungs extending outwardly from opposite sides of each of said holes and extending inwardly into said rungs from said lower sides on opposite sides of each of said holes and terminating at bearing areas within said rungs for receiving said outer end portions of said pins with said bearing areas bearing on said outer end portions of said pins.

4,603,759

FIRE ESCAPE DESCENDER

Akio Hamada, 3-8-10, Momoyamadai, Tarumiku, Kobe, Japan

Filed May 20, 1985, Ser. No. 735,937
Claims priority, application Japan, Jan. 28, 1985, 60-11010[U]
Int. Cl.[4] A62B *1/10*
U.S. Cl. 182—234 4 Claims



1. A fire escape descender, comprising:

a base member including a shaft fixed to the base member,

a rotating member rotationally disposed on the shaft, said rotating member being adapted to engage a rope so that the rope and the rotating member are associated together,

a gear mechanism connected to the rotating member to allow the gear mechanism to rotate together with the rotating member,

automatic brake means including a brake drum connected to the base member, a brake actuating member connected to the gear mechanism to rotate together with the gear mechanism, and a brake shoe engaging the brake actuating member so that as the brake actuating member rotates faster, frictional engagement of the brake shoe relative to the brake drum increases,

manual brake means including a brake disc connected to the rotating member to rotate together with the rotating member, and a hand brake shoe movably fixed to the base member adjacent to the brake disc,

manual brake actuating means pivotally connected to the hand brake shoe and including a pair of handle sections, each having a handle and a crooked portion connected to the handle, said crooked portions being pivotally connected to the base member to face relative to each other so that when the handles are lowered down, the hand brake shoe is moved away from the brake disc,

a body support member connected to the crooked portions so that when an escaper is held by the body support member, the manual brake actuating means is automatically operated to engage the hand brake shoe to the brake disc to stop moving of the escape descender relative to the rope until the hand brake shoe is released from the brake disc by operating the handle sections, and

a descender support member connected to the crooked portions so that when the escape descender is hung by means of the descender support member, the hand brake shoe is released from the brake disc to thereby control movement of the rotating member and the rope only by the automatic brake means.

4,603,760

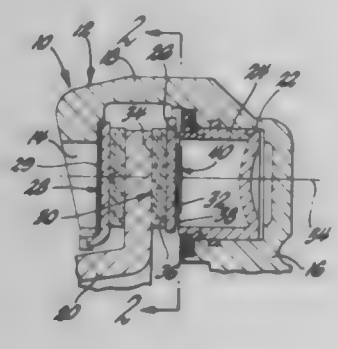
SLOTTED INSULATOR AND DISC BRAKE ASSEMBLY USING SAME

William K. Myers, Centerville, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Sep. 3, 1985, Ser. No. 772,029

Int. Cl.[4] F16D *65/38, 65/78*

U.S. Cl. 188—73.37 14 Claims



1. In a disc brake shoe assembly having a backing plate, a friction pad secured to one side of said backing plate and an insulator formed as a layer and secured to the other side of said backing plate, said insulator having a high pressure area of disc brake actuating member contact subject to high pressure loading during brake actuation, with a portion of said insulator positioned laterally from said high pressure area and subject to no direct pressure loading from the disc brake actuating member during brake actuation:

an arrangement preventing deformation of the insulator because of high pressure loading of said high pressure area by the disc brake actuating member during brake actuation and consequent buckling and detachment of at least a portion of said insulator from said backing plate which results in a decreased insulating function of said insulator, said arrangement comprising:

at least one slot formed through said insulator immediately adjacent but laterally away from said high pressure area, said at least one slot providing a discontinuity in the deformation of the insulator caused by high pressure loading and permitting said laterally away portion of said insulator to remain secured to the backing plate.

4,603,761

FLOATING CALIPER TYPE DISC BRAKE

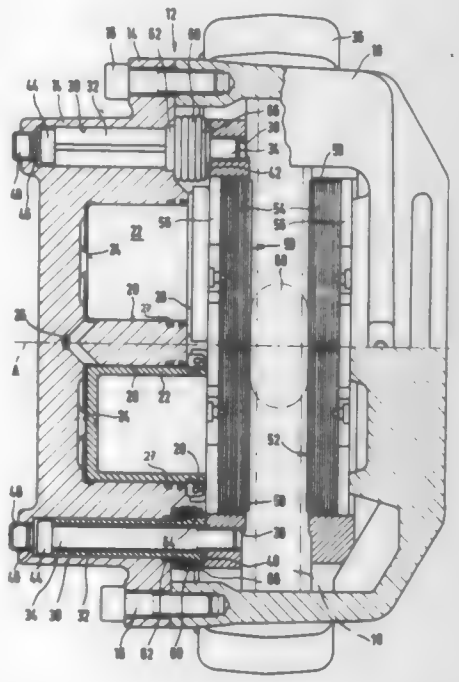
Röhling Bernd-Holger, Andernach, Fed. Rep. of Germany, assignor to Lucas Industries public limited company, Birmingham, England

Filed Aug. 14, 1984, Ser. No. 640,798

Claims priority, application Fed. Rep. of Germany, Aug. 18, 1983, 8323802[U]

Int. Cl.[4] F16D *65/02*

U.S. Cl. 188—73.45 1 Claim



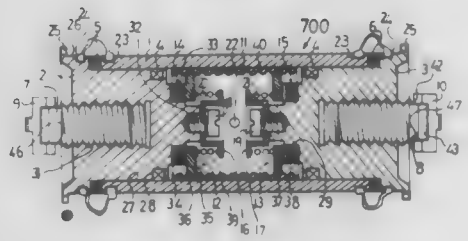
1. A spot type disc brake, comprising a floating caliper (12) supported for displacement on a carrier (36) by a pair of guide pins (32) and corresponding guide bores (30) and straddling a pair of brake pads (50, 52) one of which is adapted to be pressed into contact with a brake disc (10) directly by a brake actuator (20, 22) and the other one by displacement of the caliper (12) caused by the brake actuator, and comprising sealing members (60) for sealing the sliding surfaces of each guide pin (32) and the corresponding guide bore (30) from the outside, each guide pin (32) comprising a collar (66) in the area of the respective end of the guide pin (32) extending from the guide bore (30) toward the brake disc (10), characterized in that the collars (66) form stops which limit the inward movement of th directly operable brake pad (50) in a direction toward the brake actuator, each collar being located relative to the end of a guide pin in a position to protect a respective sealing member (60) against damage which might otherwise be caused by the back-plate (56) of the brake pad (50) during said inward movement thereof.

4,603,762

WHEEL CYLINDER HAVING AN AUTOMATIC CLEARANCE ADJUSTING MECHANISM

Shoji Kajihara, Fujisawa, Japan, assignor to Tokyo-Buhin Kogiyo Co., Ltd., Yamato, Japan

Filed Oct. 25, 1984, Ser. No. 664,814
Claims priority, application Japan, Dec. 28, 1983, 58-199453[U]; Dec. 28, 1983, 58-199454
Int. Cl.[4] F16D *51/00*
U.S. Cl. 188—79.5 R
4 Claims



1. A wheel cylinder having an automatic clearance adjusting mechanism for a drum brake having two pistons arranged to move in axially opposed relation to each other to actuate corresponding shoes of the drum brake, comprising movable guide gears which are rotatable and movable axially with respective ones of said pistons, a fixed guide gear engaged with and adapted to rotatably urge said movable guide gears in response to axial movement of the movable guide gears with the pistons, clutches on said pistons, said clutches contacting respective said guide gears with a mutual pressing force to (1) allow partial rotation of said movable guide gears with respect thereto and (2) require rotation of said pistons with said movable guide gears in one direction when the amount of outward movement of the pistons exceeds a specified value, threaded bars threadedly engaging the respective pistons and responsive to said rotation of said pistons for threaded movement axially in said pistons, and clamping means engaging the corresponding shoe webs and responsive to said threaded relative movement of said pistons and said threaded bar to thereby adjust excess clearance between the shoes and the interior surface of the brake drum.

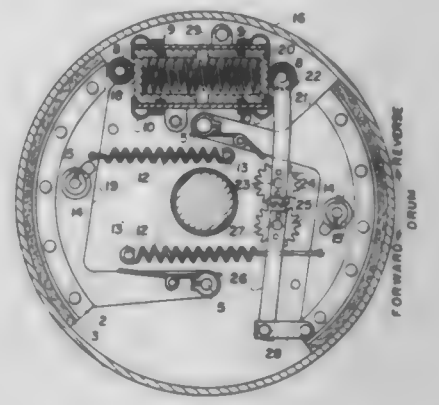
3. A wheel cylinder having an automatic clearance adjusting mechanism for a drum brake having two pistons arranged to move in axially opposed relation to each other to actuate corresponding shoes of the drum brake, comprising a movable guide gear which is rotatable and movable axially with a respective one of said pistons, a fixed guide gear engaged with and adapted to cause said movable guide gear to rotate in response to relative axial movement of the pistons, a clutch on said one piston, said clutch contacting said guide gear with a mutual pressing force to (1) allow partial rotation of said movable guide gear with respect thereto and (2) require relative rotation of said movable guide gear with respect to said pistons in one direction when the amount of outward movement of the pistons exceeds a specified value, threaded bar threadedly engaging said one piston and responsive to the movement of said pistons for threaded rotational movement axially in said one piston, and clamping means engaging the corresponding shoe webs and responsive to said threaded relative movement of said piston and said threaded bar to thereby adjust excess clearance between the shoes and the interior surface of the brake drum.

4,603,763

DRUM BRAKE WITH NEGATIVE FEEDBACK FOR BRAKE SHOE FRICTION COMPENSATION

Stanley J. Mikina, Rte. 2 Berna-Knoll 21, Hendersonville, N.C. 28739

Filed Sep. 25, 1984, Ser. No. 654,223
Int. Cl.[4] F16D *51/24*
U.S. Cl. 188—334
1 Claim



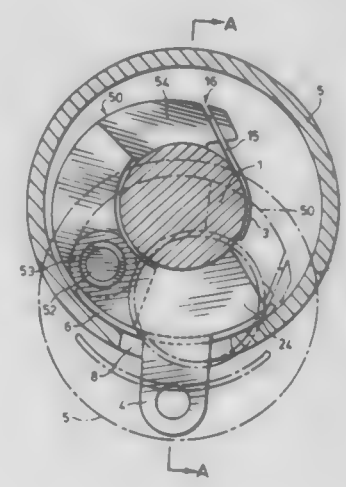
1. A friction brake comprising a rotatable drum, two brake shoes, having linings, each of less than 360° arc and pivoted on pivots on a stationary backplate substantially diametrically opposite each other, the pivots located so as to produce negative feedback moments about the pivots of the sliding friction forces between shoes and drum at both brake shoes in forward rotation of the drum, means for limiting positive feedback moments about the pivots for reverse drum rotation, and a single hydraulic cylinder for applying actuating hydraulic forces on substantially diametrically opposite brake shoe ends including a force transfer linkage for applying the hydraulic force of one piston to the remote shoe end of the corresponding brake shoe, said force transfer linkage comprising levers with engaging gears for reversing the direction of lever rotation, an anti-friction bearing at the said one piston end, and a connecting link between the force transfer levers and the shoe at the toe of said remote shoe end.

4,603,764

BRAKE ACTUATOR FOR BICYCLES AND THE LIKE

Winnett Boyd, 107 Victoria Place, R. R. No. 1, Bobcaygeon, Ontario, Canada K0M 1A0

Filed Nov. 23, 1984, Ser. No. 674,292
Int. Cl.[4] B62L *5/00*
U.S. Cl. 192—5
4 Claims



1. In a device for operating a brake of a pedal operated vehicle, which device comprises a brake operating lever projecting through an opening in a pedal crankshaft housing of the vehicle, two oppositely wound spring coils connected at a bight and concentrically surrounding and frictionally engaging a pedal crankshaft within the housing, and a yoke at an inner end of the lever, said yoke surrounding part of the circumfer-

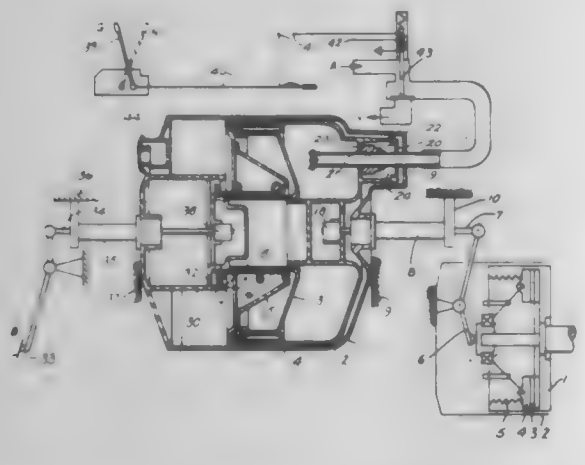
ence of the crankshaft, the improvement wherein a linking means is provided, with a pivotal connection at its one end to the yoke and a connection at its other end to the bight, wherein the yoke and the linking means together surround at least half of the circumference of the crankshaft, wherein the linking means has a friction surface engageable at least with an area of the crankshaft diametrically opposed to the yoke, wherein the bight engages the linking means at a location radially outward of the friction surface and so that the spring coils extend from the bight around the crankshaft in the same direction as the linking means extends from the yoke, namely in the direction of motion of the crankshaft associated with back pedalling, and wherein the lever, the yoke and the linking means of the device are so dimensioned that in its plane of operation it can be folded at the pivotal connection so that it has no dimension greater than the internal diameter of the pedal crankshaft housing but when the yoke partially surrounds the crankshaft an arm of the lever projects through the opening in the housing beyond its outer surface.

4,603,765

MEANS FOR MAINTAINING CLUTCH DISENGAGEMENT WHERE TRANSMISSION IS NEUTRAL

Hermanus G. M. Cruijsen, Mierlo, Netherlands, assignor to Volvo Car B.V., Netherlands

Filed Jul. 2, 1984, Ser. No. 627,074
Int. Cl.[4] B60K *41/22;* F16D *25/00*
U.S. Cl. 192—85 V **7 Claims**



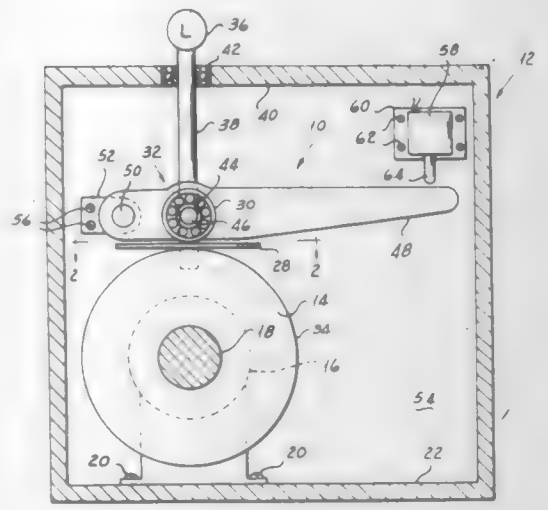
1. In a vehicle having a transmission, a transmission control lever and a mechanical clutch with a manually operable foot control pedal, means for maintaining the vehicle's clutch disengaged while the vehicle is stationary and the transmission is in neutral, said means comprising: a pair of cylinders mounted for reciprocation within said housing; one of said cylinders being mounted within the other and forming a chamber between them; first linkage means connecting said pair of cylinders to said clutch whereby the spring of the clutch holds both of said cylinders toward one end of said housing when the clutch is engaged and said transmission is in gear; second linkage means connecting said clutch pedal to said cylinders; a valve element connected to the transmission control lever; said valve element connecting said chamber to a source of vacuum only when said lever is shifted to place the transmission in neutral; a compression spring interconnecting said second linkage means and the inner one of said cylinders and urging said inner cylinder toward the other end of said housing and said clutch pedal into erected position and expanding said chamber when said clutch is engaged; said inner cylinder being vacuum shifted toward said other end of said housing and compressing said spring to erect said clutch pedal, the vacuum holding the cylinder toward said other end and said clutch disengaged so long as said transmission control lever remains in neutral position.

4,603,766

LEVER OPERATED FRICTION CLUTCH

Benzion Landa, 10045 118th St., Edmonton, Alberta, Canada T5K 1Y1

Filed Aug. 31, 1984, Ser. No. 646,235
Int. Cl.[4] F16D *23/12*
U.S. Cl. 192—99 S **10 Claims**



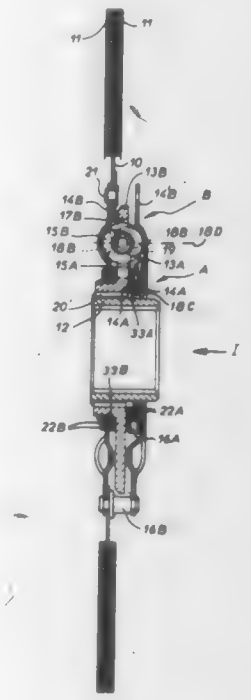
1. A clutch for coupling a prime mover to a load including in combination a first member connected to said prime mover for movement therewith, a second member connected to said load for movement therewith, said first and second members having respective first and second hard surfaces having a low coefficient of friction therebetween, means mounting said members relative to each other with said surfaces in contact, said surface coefficient of friction being such that said second surface slides relative to said first surface with said prime mover in operation without being driven thereby, said second member having a third surface opposite to said second surface, a third member in contact with said third surface, and actuatable means for exerting a force on said third member.

4,603,767

CLUTCH PLATE HAVING TWO STAGE TORSION DAMPING MEANS

Marcel Blond, Savigny-le-Temple, France, assignor to Valeo, Paris, France

Filed Sep. 11, 1984, Ser. No. 649,289
Claims priority, application France, Sep. 14, 1983, 8314609
Int. Cl.[4] F16D *3/44*
U.S. Cl. 192—106.2 **12 Claims**



1. A clutch plate for a friction clutch, said clutch plate comprising a friction disc having friction facings bn opposite

sides thereof and a hub, said friction disc and said hub being mounted for relative angular displacement within a predetermined range, first and second stage torsion damping means coupling said hub and friction disc together, the first stage damping means being lower rated than the second stage damping means, each of said first and second stage damping means comprising a radial flange, two guide washers fixed to each other and disposed on axially opposite sides of the associated flange, resilient means circumferentially interposed between each of said flanges and its associated guide washers, said first stage damping means being operative between said hub and said second stage damping means, said fricton disc being fixed to one of said second stage guide washers, means fastening said first stage guide washers to said second stage damping means, said first stage damping means comprising a unit pre-assembled with said hub and being disposed within the confines of said second stage damping means.

4,603,768

APPARATUS FOR TRANSPORTING PAPER STACKS

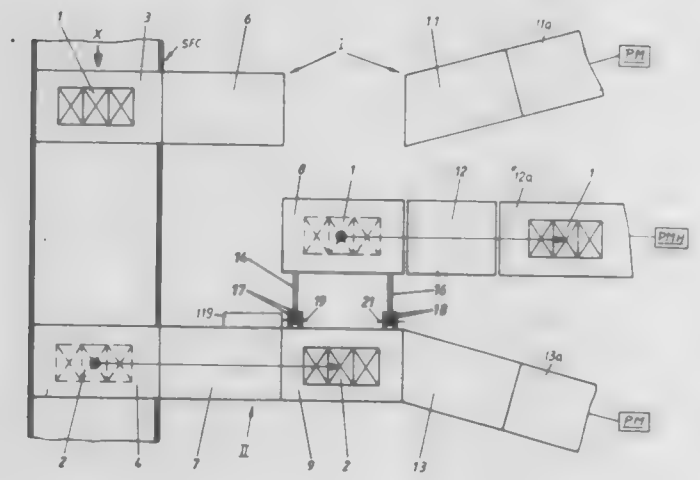
Robert Deutschle, Bokholt-Hanredder, Fed. Rep. of Germany, assignor to E. C. H. Will (GmbH & Co.), Hamburg, Fed. Rep. of Germany

Filed Feb. 2, 1984, Ser. No. 576,193

Claims priority, application Fed. Rep. of Germany, Feb. 4, 1983, 3303712

Int. Cl.⁴ B65G *47/10*

U.S. Cl. 198—369 **17 Claims**



1. Apparatus for transporting stacked sheet-like commodities, particularly paper stacks, from a first station to a second station, particularly from a processing station to a packing station, comprising first and second elongated transporting units respectively including first and second supplying conveyors, first and second intermediate conveyors respectively arranged to receive commodities from said first and second supplying conveyors, and spaced apart first and second receiving conveyors respectively arranged to accept commodities from said first and second intermediate conveyors; means for separably locking said intermediate conveyors to each other for joint movement substantially transversely of said transporting units; powered means for engaging and disengaging said locking means; drive means for moving at least one of said intermediate conveyors transversely of said transporting units; and a third receiving conveyor between said first and second receiving conveyors, each of said intermediate conveyors being movable from a position of register with the supplying and receiving conveyors of the respective transporting unit to a position of register with said third receiving conveyor, said intermediate conveyors being jointly movable between a first end position in which the first intermediate conveyor registers with said first receiving conveyor and the second intermediate conveyor registers with said third receiving conveyor, and a second end position in which said first intermediate conveyor registers with said third receiving conveyor and said second intermediate conveyor registers with said second receiving conveyor, said locking means being disengageable by said powered means to allow for independent movements of said first and second intermediate conveyors into register with said first and second receiving conveyors, respectively.

4,603,769

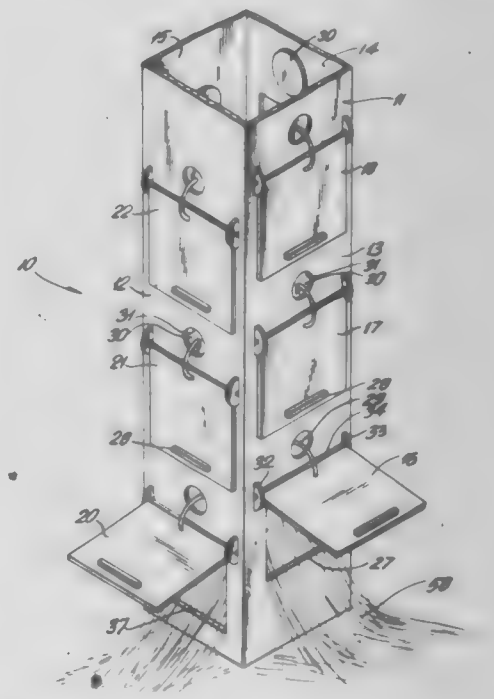
GRAIN CHUTE SYSTEM

Bert Bach, 270 West End Ave., New York, N.Y. 10023, and David Bach, 34 Park La., Minneapolis, Minn. 55416

Filed Jul. 16, 1984, Ser. No. 631,099

Int. Cl.⁴ B65G *11/06, 11/00, 1/00*

U.S. Cl. 193—12 **9 Claims**



1. A grain chute for a silo, the silo being adapted to receive, store and discharge grain, which grain when received contains dust;

the grain chute comprising:

orifice means to receive grain received into the silo;

chute means connected to said orifice means to vertically conduct the grain, said chute means extending from the orifice means to near the bottom of the silo, said chute means consisting of an elongated vertically oriented hollow conduit;

a plurality of door ports in said conduit arranged one above the other for the height of the conduit, and a door associated with each door port;

each of said doors having an air port valve means and the chute means having a plurality of air ports, with each air port of the chute means being closeable by the door valve means when the door is closed and being openable by said door valve means when said door is opened;

door balance means connected to each door to open the said door when the height of the grain in the conduit reaches the said door, so that the grain exits from the chute means only at the lowest door at the level of the grain in the silo and the doors above that opened door remain closed; and

exhaust means to exhaust dust from the conduit while permitting the fall of the grain within the conduit.

4,603,770

RAKE CONVEYOR APPARATUS

Thomas S. Hartness, Rte. 12, Paris Mountain, Greenville, S.C. 29609

Filed Jan. 18, 1984, Ser. No. 571,678

Int. Cl.⁴ B65G *25/10*

U.S. Cl. 198—345 **24 Claims**

1. A rake conveyor apparatus for conveying containers and the like on a container packing machine, said apparatus comprising:

frame means for supporting said apparatus above a surface of a floor;

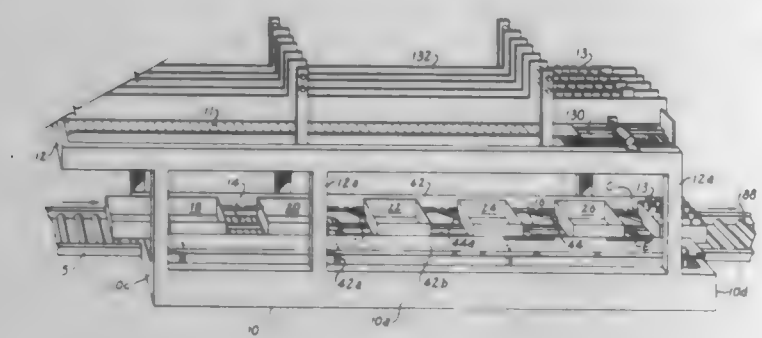
a conveyor platform carried by said frame means on which said containers are supported for conveyance along a conveyor path;

reciprocating elongated rake means carried by said frame means adjacent said conveyor platform;

said elongated rake means having a forward stroke for advancing said containers along said conveyor path and a return stroke which returns said elongated rake means without container engagement;

actuation means for reciprocating said rake means in a reciprocating motion between a forward and return position;

spaced movable rake dog means carried by said rake means at spaced locations along the length of said rake means and



mounted for pivotal movement relative to said rake means between a non-engaging container position and a container engaging position for engaging said containers;

said rake dog means moving to a container engagement position upon said forward stroke of said rake means to engage said containers and advance said containers incrementally to selected positions along said conveyor path;

motion limiting means contacting said rake dog means as said rake dog means moves between said engaging position and said non-engaging position for initially limiting to linear motion the movement of said rake dog means during the return stroke while said rake dog means contacts said motion limiting means.

4,603,771

SORTING INSTALLATION FOR PIECE GOODS

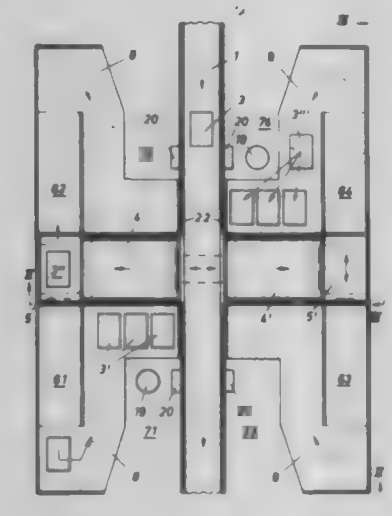
Christian Felder, Dreieichenhain, Fed. Rep. of Germany, assignor to Gebhardt Fördertechnik GmbH, Fed. Rep. of Germany

Filed Apr. 22, 1983, Ser. No. 487,863

Claims priority, application Fed. Rep. of Germany, Apr. 23, 1982, 3215160

Int. Cl.⁴ B65G *37/00*

U.S. Cl. 198—367 **16 Claims**



1. A sorting installation for piece goods, comprising a main conveyor means, a cross conveyor means arranged in the main conveyor means, auxiliary conveyor means connected to the cross conveyor means, reversibly drivable distributor conveyor means disposed at and extending substantially perpendicular to the outlet of the auxiliary conveyor means, opposite ends of said distributor conveyor means being connected with respective sorting stations by intermediate track means, delivery conveyor means coordinated in common to said sorting stations, and feed conveyor means disposed between the sorting stations and said delivery conveyor means, said delivery conveyor means being disposed substantially directly underneath the main conveyor means and said feed conveyor means being disposed substantially directly underneath said auxiliary conveyor means.

4,603,772

SHIFTING DEVICE FOR OBJECTS, SUCH AS EGGS, TO BE HANDLED

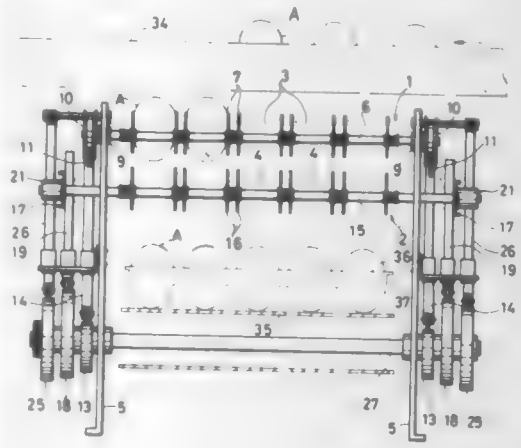
Hiroshi Tomosue, 1855, Shimoyokono, Tuyama City, Okayama Prefecture, Japan

Filed Sep. 7, 1984, Ser. No. 648,219

Claims priority, application Japan, Nov. 7, 1983, 58-209583

Int. Cl.⁴ B65G *47/26*

U.S. Cl. 198—424 **2 Claims**



1. A shifting device for objects, such as eggs, which shifting device is between a discharge conveyor above said shifting device and a receiving conveyor belt said shifting device, said shifting device comprising upper and lower delivery devices spaced vertically in alignment, one above the other, between said conveyors, each of said delivery devices having a pair of parallel spaced rods extending horizontally and parallel to said conveyors, each of said rods having a plurality of support segments juxtaposed and spaced at intervals along said rods, said segments on one of said parallel spaced rods being aligned with said segments on the other of said parallel spaced rods, the aligned pairs of segments on said parallel spaced rods forming said upper and said lower delivery devices forming seats for receiving said objects to be shifted from said discharge conveyor above said shifting device to said receiving conveyor below said shifting device, means for mounting said upper delivery device in fixed position vertically below the discharge end of said discharge conveyor and for mounting said lower delivery device vertically below said upper delivery device and above the receiving end of said receiving conveyor, said mounting means including means for moving said lower delivery device vertically upward toward said upper delivery device for shifting an object in the seat of said upper delivery device to the aligned seat of the lower delivery device and for moving said lower delivery device vertically downward toward said receiving conveyor for shifting an object in the seat of said lower delivery device to said receiving conveyor, means for moving said parallel spaced rods of said upper delivery device outwardly parallel to each other for opening said seats of said upper delivery device for shifting objects in said seats of said upper delivery device to the seats of said lower delivery device when said delivery device is moved vertically upward toward said upper delivery device for said object shifting and for returning said spaced rods parallel inward to close said seats after said objects are shifted and said lower delivery device is moved vertically downward and means for moving said parallel spaced rods of said lower delivery device

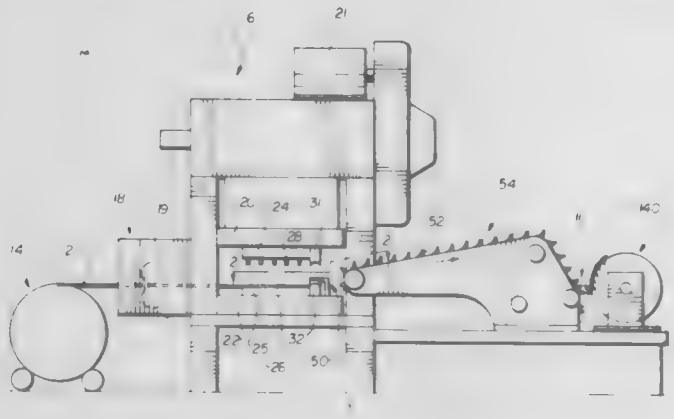
outwardly parallel to each other for opening said seats of said lower delivery device when said lower delivery device is moved vertically downward toward said receiving conveyor for shifting said objects in said seats of said lower delivery device to said receiving conveyor and for returning said spaced rods of said lower delivery device parallel inward to close said seats after said objects are shifted and said lower delivery device is moved vertically upward, said means for opening and closing of said seats on said upper and lower delivery devices and said means for moving said lower delivery device vertically including eccentric cams mounted on a common rotary shaft for coaxial rotation.

4,603,773

APPARATUS FOR ASSEMBLING BLOWER WHEEL BLADES

John S. Ducate, Sr., 129 Brook Valley Rd., Columbia, S.C. 29204

Filed Jun. 29, 1983, Ser. No. 509,108
Int. Cl.[4] B65G *37/00*
U.S. Cl. 198—468.2 8 Claims



1. A blade assembling apparatus for engaging individual elongated blades provided by a blade forming means and assembling a plurality of said blades in a predetermined spaced relationship for securing the blades together to form a centrifugal blower wheel, said apparatus comprising:

blade fixture means for receiving and holding said blades in a predetermined spaced relationship corresponding to the blade spacing in said blower wheel;

conveyor means for conveying said blades from said forming means to said fixture means;

transfer means for transferring individual blades from said forming means to said conveyor means and from said conveyor means to said fixture means; and,

drive means for positioning said conveyor means so as to receive each of said blades from said transfer means and for positioning said fixture means so as to receive each of said blades from said transfer means;

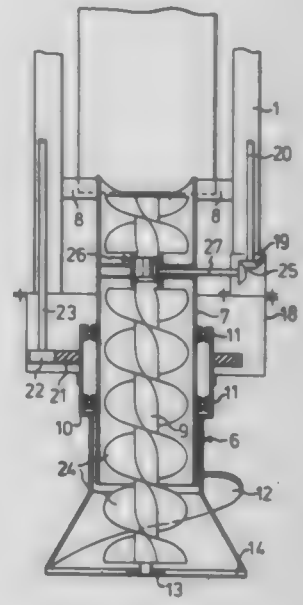
said blade fixture means including at least one holding disc in coaxial relation about a central axis of said fixture means, said holding disc having a plurality of radial projections forming circumferentially spaced slots extending along the periphery of said holding disc so as to receive an inner edge of said blades when said blades are transferred from said conveyor means to said fixture means, resilient means carried by each of said projections and extending into at least a portion of each of said slots, at least one pressure disc adjacent to said holding disc in a coaxially spaced relation about said central axis and having a plurality of radially projecting pressure fingers extending along the periphery of said pressure disc and positioned for overlapping said holding slots, said holding disc and said pressure disc being rotatable relative to each other about said central axis between a first position in which said pressure fingers overlap at least a portion of said holding slots so as to press blades inserted in said holding slots against said resilient means and cause said resilient means to exert a holding pressure on said blades, and a second position in which said overlap provided by said pressure fingers is reduced by an amount sufficient to release said holding pressure and permit removal of said blades from said holding slots.

4,603,774

VERTICAL CONVEYOR FOR BULK GOODS

Olle L. Siwersson, Helsingborg, and Arne E. Wall, Landskrona, both of Sweden, assignors to AB Scaniainventor, Helsingborg, Sweden

Continuation-in-part of Ser. No. 323,796, Nov. 23, 1981, Pat. No. 4,467,910. This application Jul. 16, 1984, Ser. No. 631,184
Claims priority, application Sweden, Nov. 28, 1980, 8008347
The portion of the term of this patent subsequent to Aug. 28, 2001, has been disclaimed.
Int. Cl.[4] B65G *65/16*
U.S. Cl. 198—518 10 Claims



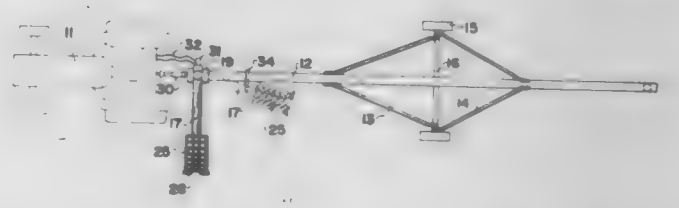
1. A bulk material conveyor comprising a belt conveyor forming a tube in which the bulk material is conveyed in an upward direction from an entrance end at a lower portion of the belt conveyor, a downwardly directed screw conveyor fixedly mounted on the lower portion of the belt conveyor, said screw conveyor having its delivery opening directly connected onto the entrance end of said tube, and a material supplying device at the entrance opening of said screw conveyor, wherein a housing of said screw conveyor is rigidly connected to a frame of said belt conveyor, wherein a screw of said screw conveyor is rotatably mounted, and wherein a pinion is driven by a motor spaced from the entrance end of said belt conveyor for rotating gear means connected to the screw of said screw conveyor.

4,603,775

COUPLING GRAIN AUGERS

Benjamin Plett, Rosenort, Canada, assignor to Westfield Industries Ltd., Rosenort, Canada

Filed Feb. 18, 1983, Ser. No. 467,656
Int. Cl.[4] B65G *33/32*
U.S. Cl. 198—589 6 Claims



6. An auger arrangement comprising a main auger including an auger tube having a feed end and a discharge end, means for supporting the auger tube at an inclination to the horizontal and to alter the elevation of the discharge end, a rotatably

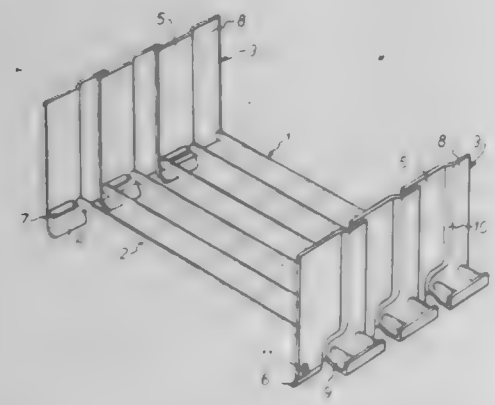
mounted helical auger flight within the tube for transporting particulate material within the tube from the feed end to the discharge end, the flight including an exposed portion at said feed end which projects outwardly from the tube and ground wheels said supporting means; rigid casing means substantially surrounding and enclosing the exposed portion of the flight having closed side walls and an upper wall extending over said exposed portion, means rigidly mounting said casing means on said tube, said upper wall defining an opening which directly vertically overlies said exposed portion for receiving said particulate material therethrough for flowing by graviy on to said exposed portion; a feed auger including an auger tube having a feed end and a discharge end and a rotatably mounted helical auger flight within the tube for transporting particulate material within the tube from the feed end to the discharge end, hopper means at the feed end of the feed auger, a downwardly depending discharge spout at the discharge end of the feed auger and coupling means for mounting said spout on said upper wall, said coupling means comprising a first sleeve coupling portion surrounding the spout which allows rotational movement of the spout relative to the upper surface about a first axis longitudinal of the spout, a first pivot ring coupling portion surrounding said spout and providing pivotal movement of said spout relative to said upper surface about a second axis transverse to said spout, and a second pivot ring coupling portion surrounding said spout and providing pivotal movement of said spout relative to said upper surface about a third axis transverse to said spout and transverse to said second axis, said coupling portions being arranged to maintain said spout against lateral shifting relative to said opening while allowing rotational movement relative thereto about said three axes, whereby said spout extends into said opening for direct unhindered discharge of material onto said exposed portion.

4,603,776

CONVEYOR BELT

Lennart Olsson, Nyhamnslåge, Sweden, assignor to Frigoscandia Contracting AB, Sweden

Filed Nov. 22, 1983, Ser. No. 554,346
Claims priority, application Sweden, Nov. 26, 1982, 8206760
Int. Cl.[4] B65G *21/18*
U.S. Cl. 198—778 **6 Claims**



1. In a conveyor of the type having an endless belt following a path which through part of its length includes a number of superposed, helically extending turns and wherein the belt comprises a plurality of link means of generally U-shaped cross sections which are articulated with one another and relatively adjustable and which respectively include spacing members arranged at opposite lateral ends of a corresponding part of the bottom of the belt, the spacing members each having a substantially upright portion and a laterally extending support portion at the base of the substantially upright portion, the respective support portions of spacing members of link means in overlying turns of the belt being supported upon upper edge portions of the respective substantially upright portions of spacing members of link means in underlying turns of the belt, whereby each overlying turn is supported upon underlying turn, the improvement wherein:

(a) each said spacing member includes a first longitudinal portion and a second longitudinal portion integral with said first longitudinal portion, said first and second longitudinal portions including, respectively, first and second sections of the substantially upright portion of said spacing member,

(b) said first and second sections are longitudinally displaced and laterally offset from one another,

(c) said first longitudinal portion is fixedly connected at two longitudinally spaced points to the corresponding bottom part, said second longitudinal portion being movable relative to the bottom of the belt,

(d) the support portion of said spacing member extends laterally from said first longitudinal portion of said spacing member, and

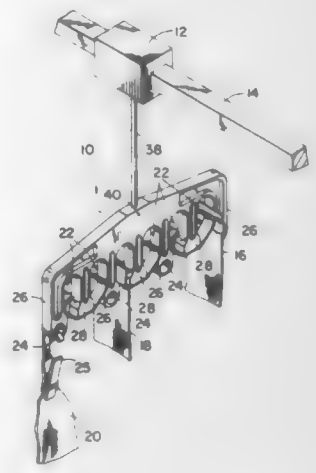
(e) the respective second sections of the upright portions of spacing members on at least one side of said belt have respective flanges projecting downward and laterally inward of said belt, said flanges being disposed to engage respective upper edge portions of the substantially upright portions of underlying spacing members and thereby prevent lateral displacement of the turns of said belt.

4,603,777

CONVEYOR HANGER WITH SPRING CLIP GRIPPER

David R. Pearl, and Lawrence S. Wolfson, both of West Hartford, Conn., assignors to Gerber Garment Technology, Inc., Tolland, Conn.

Filed Sep. 17, 1984, Ser. No. 651,424
Int. Cl.[4] B65G *47/74*
U.S. Cl. 198—803.8 **4 Claims**



1. A hanger for use in a conveyorized system for transporting limp sheet material from work station to work station, said hanger comprising a body having an upper portion and a first portion extending downwardly from said upper portion and a second portion extending downwardly from said upper portion in laterally spaced relation to said first downwardly extending portion, and a gripper associated with said body for releasably holding a unit of work material, said gripper comprising a generally vertically extending stationary gripping surface on said first downwardly extending body portion, said stationary gripping surface generally facing said second downwardly extending body portion and having a curved lower end portion curving somewhat toward said second downwardly extending body portion so as to have an upwardly facing component, and an elongated spring clip attached at a given point along the length thereof to the lower end of said second downwardly extending body portion, said lower end of said second downwardly extending body portion and said point at which said spring clip is attached thereto being located below said curved lower end portion of said gripping surface and said clip having an inclined portion bridging the space between said downwardly extending body portions which inclined portion extends upwardly from its said point of attachment to said lower end of said second downwardly extending body portion and toward said curved lower end portion of said gripping surface on said first downwardly extending body portion, said clip further having a curved end portion adjacent said inclined

portion which curved portion has a curvature generally matching that of said curved end portion of said stationary gripping surface, said clip being further of such size and shape that said curved end portion thereof at least nearly engages said curved end portion of said fixed gripping surface when no work unit is inserted in said gripper, said spring clip being made of a resilient spring material so as to resiliently resist movement of said curved end portion of said clip away from said curved end portion of said fixed gripping surface, the inclination of said inclined portion of said clip upward from its point of attachment to said first downwardly extending body portion and toward said gripping surface causing a downward force exerted on said curved end portion of said clip by a unit of work material inserted between said curved end portion and said gripping surface to urge said curved end portion toward said gripping surface to more tightly grip said unit of work material, and said inclination of said inclined portion further causing an upwardly directed force exerted on said inclined portion during the upward insertion of a unit of work material into said gripper to urge said curved end portion of said clip away from said gripping surface to ease said insertion.

4,603,778

DETECTION OF DEFECTS IN CONVEYOR BELTS

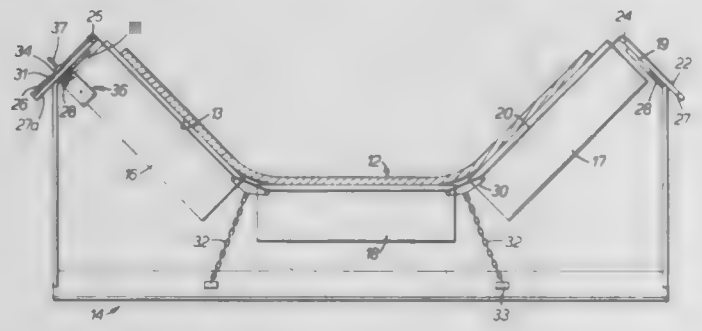
Dennis W. Thompson, 19 Gandawarra Crescent, Newman, Western Australia, Australia, assignor to Dennis W. Thompson, Newman, Australia

Continuation of Ser. No. 671,021, Nov. 13, 1984, which is a continuation of Ser. No. 435,411, Oct. 20, 1982. This application Oct. 23, 1985, Ser. No. 790,419

Claims priority, application Australia, Oct. 26, 1981, PF1295

Int. Cl.[4] B65G *43/02, 43/06*

U.S. Cl. 198—810 **11 Claims**



1. In a belt conveyor installation, apparatus for detecting a defect in the conveyor belt when it is moving, comprising line holding means for holding a line substantially taut in a position extending across and in close proximity to a surface of the conveyor belt, which surface moves past the line during operation of the conveyor; and

trigger means, responsive both to loss of tension and to increased tension in said line caused by disturbance of the line by a protrusion from said surface arising from said defect, for initiating a reaction to such disturbance.

4,603,779

GLASSWARE PACKAGE

George Meyers, and David C. Mueller, both of Ashland, Ohio, assignors to The Garber Company, Ashland, Ohio

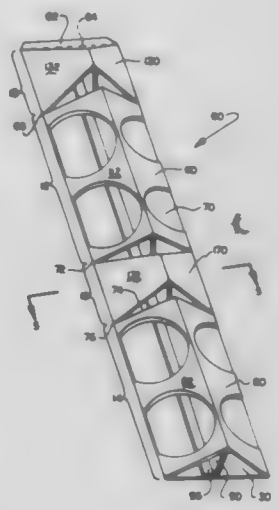
Continuation of Ser. No. 488,535, Apr. 25, 1983, abandoned. This application May 28, 1985, Ser. No. 738,508

Int. Cl.[4] B65D *85/44*

U.S. Cl. 206—426 **11 Claims**

1. A package for displaying glassware, said package comprising a top wall and a bottom wall, said top and bottom walls each having retaining means for retaining the glassware within the package, and a pair of beam means interposed between said top and bottom walls for resisting relative movement of said top wall toward said bottom wall, each of said beam means comprising an end wall panel interconnected with said top and bottom walls and a pair of support panels extending inwardly of said end wall panels and abutting said retaining means, each of said support panels having first and second opposite edges, and said support panels being interconnected with opposite sides of said end wall panel along first edges of said support panels and being secured to each other adjacent second edges thereof at a location spaced apart from said end wall panel, said beam means including means for securing said support panels to each other, said securing means comprising a pair of securing panels each attached to a respective support panel at the second edge thereof, and means for securing said support panels to said end wall panel at a location spaced inwardly along said end wall panel and for supporting said support panels in a position spaced inwardly from said end wall panel, said means for securing said support panels to said end wall panel comprising a panel attached to one of said securing panels.

7. A blank which is foldable into a package for displaying glassware, the package having top and bottom walls and a pair of end walls, said blank comprising a longitudinally extending sheet of foldable material having a series of first score lines extending transversely to the longitudinal extent of said sheet and defining a series of panels comprising a bottom wall panel, a first end wall panel, a top wall panel, a second end wall panel, and an attachment panel, said sheet further including a pair of



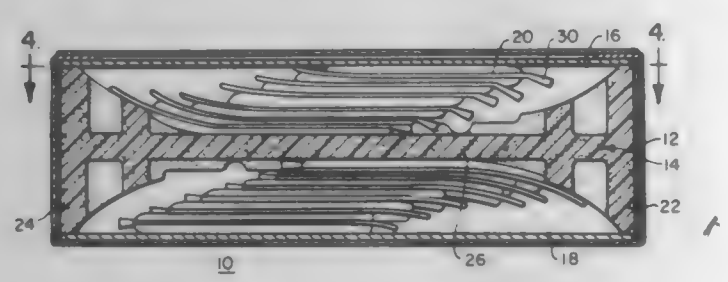
retaining panels foldably interconnected to opposite sides of each of said top and bottom wall panels along second score lines extending generally perpendicularly to said first score lines, each of said retaining panels including means defining openings for receiving and retaining the glassware, a plurality of support panels each foldably interconnected to each one of said end wall panels along one of a series of third score lines on opposite sides of each of said end wall panels, said support panels being foldable inwardly along said third score lines and being sized abut said retaining panels and to abut each other along sides of said support panels opposite from said end wall panels when said blank is folded into the package to form with said end wall panels a pair of beam means interposed between said top and bottom walls for resisting relative movement of said top wall toward said bottom wall, a plurality of securing panels each foldably interconnected with each of said support panels along a side of said support panels opposite from said end wall panels and sized to secure said support panels to said end wall panels at a location spaced inwardly along said end wall panels from said support panels and adapted to support said supoort panels in a position spaced inwardly from said end wall panels to form said beam means, when said blank is folded into the package, and a plurality of panels for securing said securing panels to respective end walls.

4,603,780

CARTON FOR HOUSING FRAGILE CONTAINERS

Joseph K. Duffy, Lake Forest; Mark L. Thoene, Ingleside, and Cathy M. Combs, Antioch, all of Ill., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Dec. 12, 1984, Ser. No. 680,854
Int. Cl.[4] B65D *81/02, 81/16*
U.S. Cl. 206—591 15 Claims



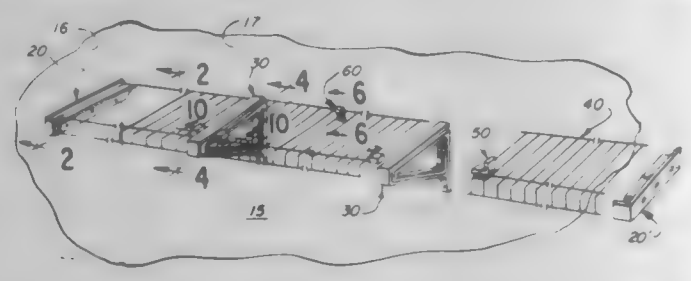
1. A carton for fragile frozen product containers comprising:
energy absorbing insert means for absorbing impact forces to the carton, the fragile frozen product containers being located on opposite sides of the energy absorbing insert means;
two rigid plates located on opposite sides of the energy absorbing insert means for compressing the frozen product containers against the energy absorbing insert means; and
packaging means for surrounding the energy absorbing insert means, the frozen product containers, and rigid plates, and forcing the rigid plates against the frozen product containers towards the energy absorbing insert means.

4,603,781

SHELF ASSEMBLY

Delvin R. Ryan, Jr., Lake Forest, Ill., assignor to SEVKO, Inc., Deerfield, Ill.

Filed Oct. 5, 1983, Ser. No. 539,262
Int. Cl.[4] A47F *5/08*
U.S. Cl. 211—90 2 Claims



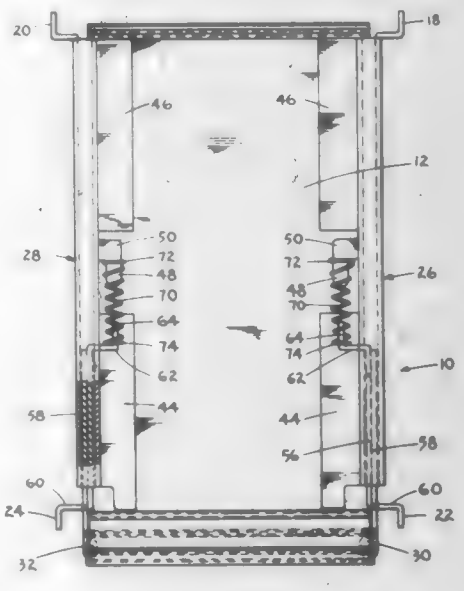
1. A shelf assembly attachable to an associated wall or walls, said assembly comprising:
a plurality of parallel spaced platform members and a plurality of spaced frame members fixedly connected to said platform members so as to define a generally rectangular grid-like shelf member, each of said frame members extending normal to said platform members, each said frame member having distal ends extending beyond the outermost platform members;
a pair of shelf end support brackets, each said bracket having means for freely supporting the distal ends of said frame members so as to support said shelf in a generally horizontal plane when said support brackets are secured to said wall or walls;
each of said end support brackets including an elongated base member having a first generally planar surface for juxtaposition with said wall, and a flange integrally formed therewith and extending generally outwardly therefrom, said flange being provided with a platform surface adapted to receive and support one said of said distal ends of said frame members of said shelf in a plane parallel to the plane of said platform surface on said flange and;
said shelf member further including a guide member parallel to said frame members and disposed in a different plane, said guide member also having distal ends extending beyond said platform members,
each said flange of said end support bracket being provided with a slot therein adapted to receive the adjacent distal end of one said guide member thereby to prevent relative motion between said shelf member and said end bracket when said shelf member is disposed thereon,
each said slot being disposed at the forward portion of one end bracket, said slot including a front wall extending above the platform surface of said flange, to conceal the distal ends of said guide member and said frame members, providing a finished appearance to said assembly.

4,603,782

ADJUSTABLE SHELF ASSEMBLY

Jay G. Fenwick, Albert Lea, Minn., assignor to R. J. Reynolds Tobacco Company, Winston-Salem, N.C.

Filed Apr. 12, 1985, Ser. No. 722,622
Int. Cl.[4] A47F *5/00*
U.S. Cl. 211—153 21 Claims



1. An adjustable shelf assembly useable with a rack frame having a plurality of spaced, slotted frame members, said adjustable shelf assembly comprising:
a generally planar rectangular shelf pan defined by a front edge, a rear edge, and spaced side edges;
fixed shelf support tabs spaced along said rear edge of said shelf pan, said fixed shelf support tabs being receivable in selected slots in first ones of the frame members;
slideable shelf support tabs spaced along said front edge of said shelf pan, said slideable shelf support tabs being receivable in selected slots in second ones of the frame members;
means to bias said slideable shelf support tabs toward said front edge of said shelf pan; and
actuating means for moving each of said slideable shelf support tabs away from said front edge of said shelf pan against said bias means, said actuating means including an actuating button positioned between a ticket snap on channel and a spaced, ticket support cover secured to said ticket snap on channel, said ticket snap on channel being secured to said front edge of said shelf pan whereby said slideable shelf support tabs are disengagable from the slots in said second ones of the frame members.

4,603,783

DEVICE ON HOISTING MACHINERY FOR AUTOMATIC CONTROL OF THE MOVEMENT OF THE LOAD CARRIER

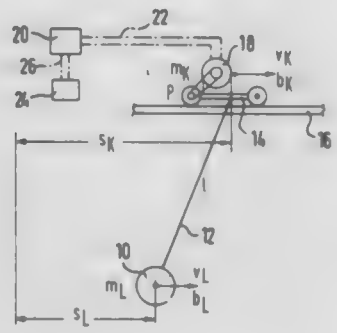
Hans Tax, Munich, and Herbert Kürz, Putzbrunn, both of Fed. Rep. of Germany, assignors to BETAX Gesellschaft für Beratung und Entwicklung technischer Anlagen mbH, Munich, Fed. Rep. of Germany

Continuation of Ser. No. 756,557, Jul. 17, 1985, abandoned, which is a continuation of Ser. No. 477,223, Mar. 21, 1983, abandoned. This application Nov. 21, 1985, Ser. No. 800,895

Claims priority, application Fed. Rep. of Germany, Mar. 22, 1982, 3210450

Int. Cl.[4] B66C *19/00*

U.S. Cl. 212—132 13 Claims



1. Device for hoisting machinery for atuomatically controlling the movement of a load carrier and for steadying the pendulum-type motion of a load suspended from said load carrier which motion occurs during acceleration or braking of the load carrier during the corresponding acceleration time interval or braking time interval, comprising a load carrier traction motor, a signal transmitter for sending control signals for controlling the movement of said load carrier traction motor, a signal progression for controlling the traction motor corresponds to a load carrier acceleration progression (b_K) symmetrical to the center (T/2) of the interval with maximum acceleration values ($b_K(0)$) at the beginning and end of the interval and smaller minimum acceleration values between the values at the beginning and end of the interval, the signal progression produced by said signal transmitter (**24**) corresponds to a load carrier accelearion (b_K) monotonically decreasing or increasing between said maximum acceleration values ($b_K(0)$), and when the following relationship applies to load carrier acceleration (b_K):

$$b_K = \frac{v_N}{n \cdot T_o}\left(1 + \left(\frac{1}{\pi} - \frac{T_o^2}{4\pi^2}\right)\frac{4\pi^2}{T_o^2} \cdot \cos\left(\frac{2\pi t}{T_o}\right)\right)$$

where V_N is the difference in velocity before and after acceleration or braking, l represents the pendulum length of the load, g is the acceleration due to gravity, and n represents a whole number, and T_o is the period (natural oscillation time of the pendulum) to which the following relationship applies:

$$T_o = \sqrt[3]{\frac{v_N}{n \cdot b_K(0)} \cdot \frac{1}{\pi} \cdot 4\pi^2}$$

4,603,784

NURSING BOTTLE SYSTEM

Wei C. Chang, 145 4th Ave., Mt. Vernon, N.Y. 10550

Filed Dec. 31, 1985, Ser. No. 815,451

Int. Cl.[4] A61J *9/00;* B65D *23/00*

U.S. Cl. 215—11 R 13 Claims

1. A nursing bottle system, comprising:

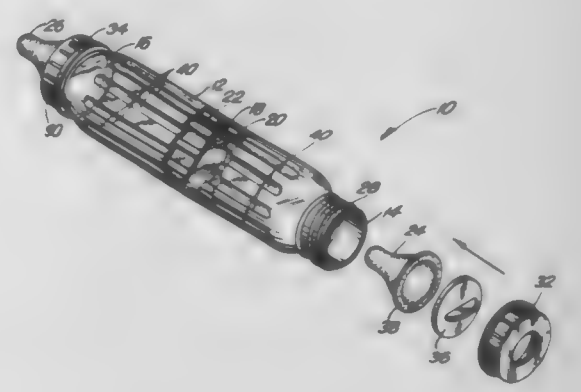
an integrally formed generally cylindrical container body of plastics material;

a dividing wall integrally formed with and extending perpendicular to the axis of said container body, for dividing the interior space of said body into first and second container portions which are liquid tightly sealed from one another;

a pair of nipples each adapted to be fitted in sealing relation to a corresponding open end of said container body; and

cap means associated with each of said nipples for securing said nipples to the correspondg open ends of said container body in a selected one of a first configuration in which the nipple faces inwardly into the corresponding open end of said container body and said body can be placed in a standing position on said cap means, and a second configuration in which the nipple faces outwardly from the corresponding open end of said container body for delivering a liquid food from the associated container portion to an infant;

wherein two different liquid foods can be carried by said container body each in a corresponding one of said first



and said second container portions, to be fed selectively to the infant when the cap means associated with the container portion in which the selected liquid food is carried is placed in the second configuration.

4. A nursing bottle system, comprising:

first and second generally cylindrical container bodies of plastics material, each having an open top end and a closed bottom wall;

a pair of nipples each adapted to be fitted in sealing relation to the open end of a corresponding one of said container bodies;

cap means associated with each of said nipples for securing said nipples to the open ends of said container bodies; and

fastening means for detachably joining said first and said second container bodies axially to one another with their closed bottom walls in confronting relation, so that two different liquid foods can be carried by said first and said second container bodies when joined to one another, and said liquid foods can be fed selectively to an infant when said container bodies are either joined or detached from one another.

4,603,785

TAMPER INDICATING CLOSURE

Peter P. Gach, Evansville, Ind., assignor to Sunbeam Plastics Corp., Evansville, Ind.

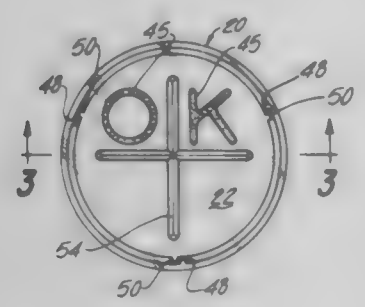
Filed Nov. 19, 1984, Ser. No. 673,013

Int. Cl.[3] B65D *55/02*

U.S. Cl. 215—230 9 Claims

1. A tamper indicating closure for a container having a threaded neck forming an opening comprising, in combination: a cup shaped cap.member made from clear plastic material having internal threads to engage with threads on the neck of said container; a disc member having a friction generating means for engagement with said neck; cooperating drive means including a drive post on said cap member engagable with a lug on said disc member, indicia applied to the first one of the inside of the top of said cap member or the top of said

disc member in a manner to be clearly visible through said cap member, and radially extending wiper means on the other of the inside of the top of said cap member or the top of said disc member in contact with the first one of the inside of the top of said cap member or the top of said disc member, whereby upon initial rotational movement of said closure in a closing direction, said cap and said insert members move as a unit, the



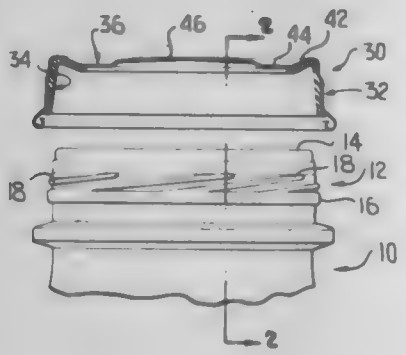
cooperating drive post and lug being in engagement, and said friction generating means engages the neck of said container, said indicia remaining undisturbed, and upon rotational movement of said closure member in an opening direction said cap member will move relative to said disc member, and said wiper moves across said indicia and said indicia is distorted or partially removed by said wiper passing over thereover, indicating an initial opening of the closure has been made.

4,603,786

PRESS-ON CLOSURE FOR RESEALABLE GLASS FINISH

Frank H. Lecinski, Jr., Harwood Heights, and William J. Thomas, Bolingbrook, both of Ill., assignors to Continental White Cap, Inc., Northbrook, Ill.

Filed Apr. 2, 1985, Ser. No. 719,160
Int. Cl.⁴ B65D *53/00*
U.S. Cl. 215—318 **18 Claims**



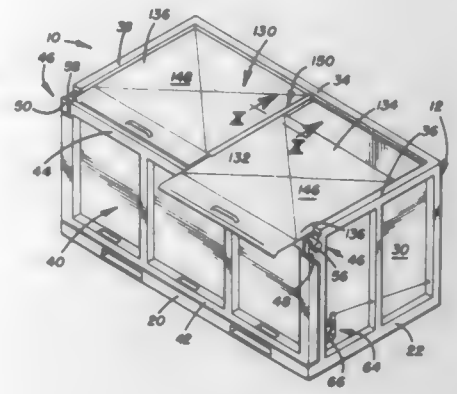
1. A resealable press-on closure for containers of the type having a neck finish including threads, said closure comprising a shell including an end panel and a depending skirt, and a plastisol compound liner extending a major portion of said skirt and at least partially across said end panel, said liner including an end seal portion and a thread forming portion, said closure being improved by said plastisol compound being a closed cell foam structure having a related percent puff range and hardness ratio wherein when said closure is applied a thread impression will be formed in the said compound thread forming portion wherein a resultant opening torque will be equal to or less than a reapplication strip torque, said percent puff ranging between 50 and 80%, and said hardness having a Shore "A" hardness range of between 50 and 70.

4,603,787

MULTI-USE JOB BOX

Larry Essary, 1663 Corte De Pons, San Jose, Calif. 95124,

Filed Oct. 1, 1985, Ser. No. 782,521
Int. Cl.⁴ B65D *88/00*
U.S. Cl. 220—1.5 **8 Claims**



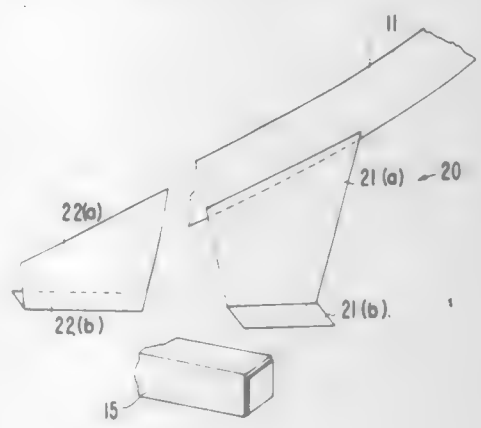
1. A multi-use job box, comprising:
an open top open front box-like structure having a generally rectangular base having a front edge, a pair of lateral edges and a back edge, a generally rectangular back wall and a pair of generally rectangular side walls, the back wall and the side walls proceeding upwardly generally perpendicularly from respective edges of the base to respective upper portions a substantially equally spaced distance above the base;
a front panel of generally the same size and shape as the back wall, the front panel having a lower edge and a upper edge;
mounting means for pivotally mounting the front panel adjacent the upper edge to the upper portions of each of the sidewalls with the front panel pivotable to close the open front of the box-like structure;
holding means for releasably holding the lower edge of the front panel adjacent to the front edge of the base;
remote releasing means for operator remote releasing of the holding means; and
fastening means for fastening the box-like structure to a lifting device.

4,603,788

FREIGHT CONTAINER FOR FLOWABLE MATERIALS

Helmut Gerhard, Weitefeld, Fed. Rep. of Germany, assignor to Westerwalder Eisenwerk Gerhard GmbH, Fed. Rep. of Germany

Filed Aug. 24, 1984, Ser. No. 643,856
Claims priority, application Fed. Rep. of Germany, Aug. 24, 1983, 3330561
Int. Cl.⁴ B65D *88/06, 88/12, 90/00*
U.S. Cl. 220—1.5 **20 Claims**



16. A freight container for flowable materials comprising:
a tank having reinforcing rings extending circumferentially around the tank,

a pair of end frames supporting said tank, the corners of each end frame being provided with corner fittings, and

diagonal members having their outer ends connected to respective corner fittings of said end frames and their inner ends joined to respective ones of said reinforcing rings via transition pieces,

each transition piece being composed of two brackets having first surfaces seated on the respective diagonal member and second surfaces extending to the two opposite sides of the respective reinforcing ring, said first and second surfaces being angularly inclined with respect to one another;

wherein the second surfaces of said brackets increase in width from said diagonal members towards the respective reinforcing rings.

4,603,789

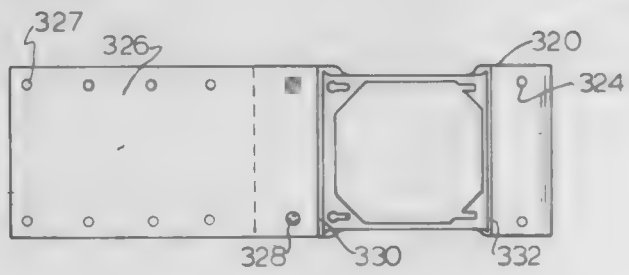
EXTENSION BRACKET FOR MOUNTING ELECTRICAL OUTLET BOX

Lewis B. Medlin, Sr., P.O. Box 127, Blue Ridge, Va. 24064

Continuation-in-part of Ser. No. 750,264, Jul. 1, 1985, Pat. No. 4,572,391. This application Dec. 24, 1985, Ser. No. 813,258

Int. Cl.[4] H02G *3/08*

U.S. Cl. 220—3.9 16 Claims



1. A single electrical outlet box stud offset mounting assembly, comprising:

(a) a square outlet box having integrally joined base and sidewalls formed with a selected number and size of knock-out discs and on the outer edge of each sidewall of one opposed pair of said sidewalls having at least one inwardly-directed, laterally-spaced screw receiving tab with a threaded hole and positioned to provide at least one pair of diagonally opposite said tabs overlying an interior chamber formed by said box;

(b) a dry wall ring having a central opening and a peripheral plate flange with screw clearance openings arranged for being mated to said tab threaded holes;

(c) a mounting bracket comprising an L-shaped unitary mounting bracket formed of a single piece of stiff sheet material, including:

(i) first and second contiguous rectangular plate portions in right angular relation at a first end of said bracket, said first plate portion being sufficiently wide to substantially equal the width of the interior space of the wall on which said bracket is installed to thereby serve as a stiffening member for said bracket; and

(ii) a plate body portion extending outwardly from said second plate portion having:

(aa) at an outer end a third rectangular flat plate end portion in the same plane as the plane of said second plate portion, said third plate end portion being adapted for securement to one end surface of an extension plate and having a pair of holes formed therein for receiving a mating pair of fasteners to effect said securement;

(bb) between said third plate portion and second plate portion having a fourth rectangular plate portion in a plane offset from and substantially parallel to the plane of said second and third plate portions by an amount substantially equal to the thickness of a said dry wall ring flange, said fourth plate portion plane being established by parallel offsets formed on both sides of said fourth plate portion;

(cc) an opening in said fourth plate portion substantially defined by opposed straight parallel upper and lower and opposed straight parallel right and left side edges and corner edges formed in said fourth plate portion around said opening, said opening being sized to register with the interior chamber of said box with the width of said opening being substantially equal to the spacing between a tab on one of said sidewalls and the opposite tab on another of said sidewalls;

(dd) a first pair of laterally spaced screw slots matable with at least one of said tabs located adjacent a selected edge of said fourth plate portion opening;

(ee) a second pair of laterally spaced screw slots matable with at least one other of said tabs extending from a second selected edge of said fourth plate portion opening opposite said first selected edge of said fourth plate portion opening, said second slots having a depth sufficient for at least limited box mounting adjustment on said bracket in the direction in which said slots are oriented and being positioned opposite to said first pair of slots; and

(ff) a flange ring turning surface established by the spacing of said right and left edges of said opening from the said respective offsets on either side thereof and formed such that when a selected screw clearance opening on said dry wall ring rotates around a screw installed in a selected one of said tab threaded holes as another diagonally opposite selected said screw clearance opening is positioned to engage another diagonally opposite screw in another diagonally opposite said tab threaded hole, the bottom surface of said dry wall ring is able to slide on said fourth plate portion;

(d) a plurality of screws adapted for being loosely fitted in said slots and for being secured in said tab threaded holes; and

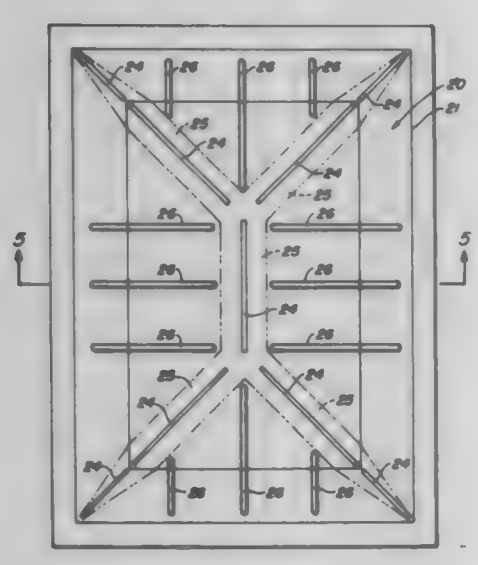
(e) a rectangular extension plate formed of a single piece of flat stiff sheet material with a stiffening arm at one end in right angular relation and sufficiently wide to substantially equal the width of the interior space of the wall on which said bracket is installed and having a plurality of sets of pairs of holes spaced lengthwise thereof located and adapted for receiving fasteners to secure an opposite end of said plate to the front surface of a stud utilizing one selected pair of said holes to establish the distance by which said bracket is offset from said stud and to secure said one end to said bracket third plate portion utilizing another selected pair of said holes in said plate mating a pair of holes in said bracket third plate portion,

whereby when a said bracket has the third plate portion thereof secured to said one end of said extension plate and the opposite end of the extension plate is in turn secured to the front surface of a construction stud and fasteners are installed to perfect the securement and an electric outlet box is positioned adjacent the inner side of said fourth plate portion of said bracket in position with respect thereto so that the interior of said respective electric outlet box is accessible through the respective said fourth plate portion opening adjacent thereto and a dry wall ring is fixed to the other side of said fourth plate portion, said first plate portion tend to stiffen said bracket, said stiffening arm tends to stiffen said plate and said slots enable said outlet box, bracket and dry wall ring to be held in operative position with screws passed through said slots and secured in said tab-threaded holes with said tabs being oriented to mate with selected edges surrounding the respective said opening adjacent said box and whereby the outer surface of the flange of said ring is maintained when said screws are tightened in substantially the same plane as the outer surface of said second and third plate portions of said bracket on which said ring is mounted.

4,603,790
TENSIONED RESERVOIR COVER, RAINWATER RUN-OFF ENHANCEMENT SYSTEM

Dennis H. Gerber, Los Gatos, Calif., assignor to Burke Industries, Inc., San Jose, Calif.

Filed Mar. 11, 1985, Ser. No. 710,167
Int. Cl.[4] B65D *88/38*
U.S. Cl. 220—219 2 Claims



1. A rainwater run-off enhancement system for tensioned reservoir covers comprising:

a. a flexible cover member of substantially fluid impervious material of sufficient area to cover said reservoir;

b. means connecting the perimeter of said cover member to the perimeter of said reservoir;

c. sump weighting means positioned with respect to said cover member at the pre-selected positions;

d. a plurality of cover sump portions formed in said cover by said weighting means, each of said sump portions being defined, narrow, elongated and interconnected and having generally vertical sidewalls in tension and having a selected location for all working fill levels of said reservoir;

e. a plurality of generally horizontal cover portions formed in said cover by said weighting means, each of said horizontal cover portions having a selected geometric shape and positioned at a selected location for all working fill levels of said reservoir and all of said horizontal cover portions are in tension in at least two different horizontal directions of sufficient magnitude to permit workmen to traverse all portions of said horizontal cover portions for all working fill levels with said horizontal cover remaining substantially planar in sustaining the weight of the workmen;

f. said horizontal cover portions are bordered by said reservoir perimeter and said sump portions and cover substantially all of the surface of said reservoir for all working fluid level conditions;

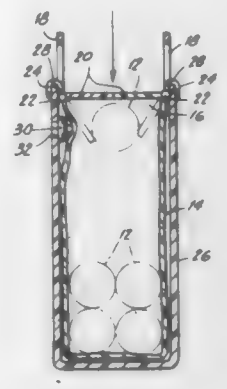
g. a plurality of rain enhancement elongated weight means having a lineal per foot weight substantially less than the per lineal foot weight of said sump weighting means;

h. said rain enhancement weight means are positioned with respect to said tensioned horizontal cover portions so as to form elongated depressions terminating adjacent said cover sump portions for directing surface water into said sump portions.

4,603,791
REFUND BOTTLE AND CAN BAG

Stuart Spierer, and George Spector, both of 233 Broadway, Rm. 3615, New York, N.Y. 10007

Filed Jan. 31, 1985, Ser. No. 697,053
Int. Cl.[4] B65D *25/16, 37/00;* G06M *7/04*
U.S. Cl. 220—404 6 Claims



1. A disposable bag adapted to be removably mounted in a container having a rim, comprising:

(a) a body of thin flexible sheet material having an opening at top end to form a mouth, said body being wide and long enough to accomodate refund bottles of a two liter size;

(b) a pair of handles extending upwardly from opposite sides of said mouth of said body so that said body can be carried;

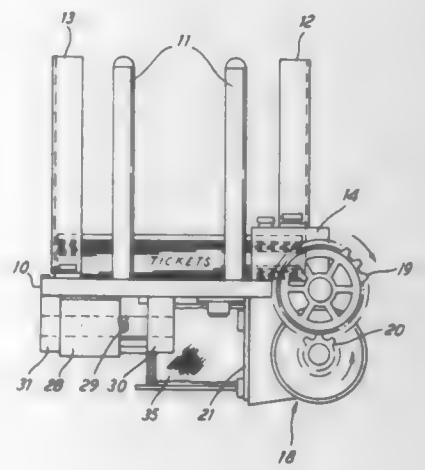
(c) a pair of trap doors, each said trap door hingeably affixed to said mouth of said body below one of said handles and extending inwardly half way across said mouth;

(d) a pair of hook members, each said hook member affixed to said hinge of one of said trap doors and extending outwardly away from said mouth of said body.

4,603,792
TICKET ISSUING MACHINE WITH PRODUCT DISPENSER

Royston D. Molineux, 6 The Firs, Bexley, Kent, England

Filed Jul. 12, 1984, Ser. No. 630,230
Claims priority, application United Kingdom, Jul. 21, 1983, 8319683
Int. Cl.[4] G01F *11/16*
U.S. Cl. 221—96 7 Claims



1. A ticket dispensing machine for application to a product dispensing apparatus, said machine comprising

(a) support means for a stack of tickets,

(b) a ticket drive roller,

(c) an electric motor drivably coupled to said roller,

(d) striker means adapted to engage an edge of the end ticket of the stack,

(e) means for driving said striker means in a direction to convey said ticket towards said roller,

(f) a sensor capable of initiating a signal on detecting the presence of a product being dispensed,

(g) electric circuit means connected to said sensor to activate said electric motor thereby to dispense said ticket from the machine on receipt by said circuit means of an input signal initiated by said sensor,

(h) timing means to actuate the motor and the striker drive means after a predetermined period from commencement of sensing of the presence of the product, said timing means being adapted to actuate the motor and the striker drive means only when the predetermined period exceeds a preselected value, and

(i) means for automatically repositioning said striker means to be available for dispensing the next ticket when required.

4,603,793

COUPLING DEVICE FOR CONNECTING A MATERIAL OUTLET TO A PACKING

Leif E. Stern, Fattershus, Lund, Sweden (225 90)

PCT No. PCT/SE81/00002, § 371 Date Dec. 10, 1981, § 102(e) Date Dec. 10, 1981, PCT Pub. No. WO81/01992, PCT Pub. Date Jul. 23, 1981

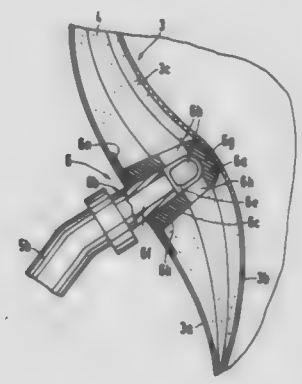
Continuation of Ser. No. 333,860, Dec. 10, 1981, abandoned.

This PCT application Jan. 9, 1981, Ser. No. 738,907

Claims priority, application Sweden, Jan. 10, 1980, 8000199

Int. Cl.[4] B65D *35/56*

U.S. Cl. 222—105 1 Claim



1. A coupling device for connecting a material discharge to a pliable packing, comprising:

packing coupling means positioned entirely within opposing walls of the packing; and

material discharge coupling means engagable with said packing coupling means when said packing is suspended;

wherein said packing coupling means includes a first ring of elastic material attached along an inner surface of a first opposing wall of the packing, said first ring provided with a gripping portion for retainable engagement of the material discharge coupling meahs, and a second ring spaced from the plane of the first ring and extending into the interior of the packing, said second ring connected to said first ring by means of a plurality of spaced legs;

wherein the legs extend obliquely from the first ring to the second ring, the packing coupling being thereby divergent from the first to the second ring;

wherein the first ring of elastic material is attached along an annular surface thereof to an unbroken portion of the first opposing wall;

wherein the second ring of the packing coupling has a planar surface facing the inner surface of the packing wall opposite the wall to which the first ring is attached;

wherein the first and second rings of the packing coupling are planar and extend parallel to each other;

wherein the material discharge coupling means includes a grip portion having peripheral teeth and a conically tapered shape for engagement with the gripping portion of the packing coupling means;

wherein engagement of the material discharge coupling means breaks the surface of the first opposing wall; and

wherein the legs of the packing coupling are connected to the inner edge of the second ring, said second ring having a substantially larger outer diameter than the first ring.

4,603,794

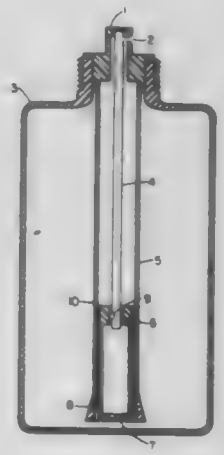
PRESSURE MULTIPLYING DISPENSER

Henry S. DeFord, and Owen R. Moss, both of Kennewick, Wash., assignors to Battelle Development Corporation, Columbus, Ohio

Filed Mar. 29, 1985, Ser. No. 717,412

Int. Cl.[4] B65D *37/00*

U.S. Cl. 222—207 12 Claims



1. A dispensing apparatus for delivering fluid from a source of fluid when subjected to a positive pressure comprising:

(a) an actuator cylinder having inlet means for inletting fluid communicating with the source of fluid and an outlet end connectable to orfice means for delivering the fluid to the atmosphere,

(b) an actuator piston slideable onto a fixed position delivery tube and the actuator piston being slideable within the actuator cylinder from a first position near the inlet means to a second position toward the outlet end, the piston being hollow and having at least one fluid inlet orifice communicating with the actuator cylinder inlet means when the actuator piston is in the first position but not when the actuator piston is in the second position, and

(c) the fixed position delivery tube having an exit end for delivering the fluid from the actuator piston to the orifice means connected to the outlet end of the actuator cylinder and having an entrance means communicating with the actuator piston for delivering fluid from the actuator piston to the delivery tube such that the interior of the delivery tube is in communication with the fluid in the actuator piston when the actuator piston is in its second position but not when the actuator piston is in its first position.

4,603,795

CENTER UNLOADING BIN FOR STORING FREE-FLOWING GRANULAR MATERIAL WITH SIDE CONVEYOR DISCHARGE

Timothy C. Bonerb, P.O. Box 200, North Conway, N.H. 03860, and Vincent C. Bonerb, P.O. Box 2016, Buffalo, N.Y. 14219

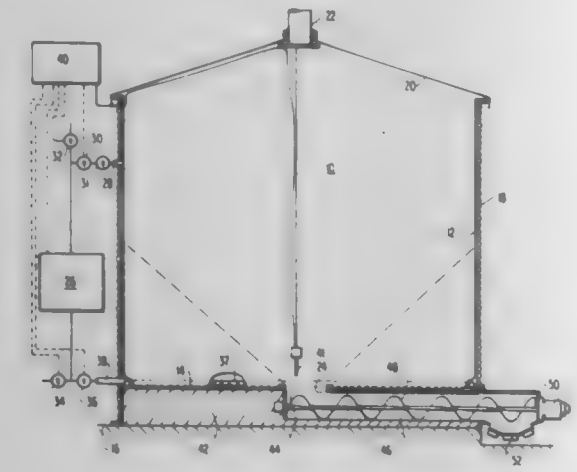
Continuation-in-part of Ser. No. 257,604, Apr. 27, 1981, Pat. No. 4,421,250, which is a continuation-in-part of Ser. No. 307,089, Sep. 30, 1981, Pat. No. 4,449,646. This application Mar. 12, 1982, Ser. No. 357,589

Int. Cl.[4] B65D *88/62*

U.S. Cl. 222—262 6 Claims

1. A bin for storing and discharging free-flowing granular material on a bottom capable of supporting the weight of the stored free-flowing granular material, the bin including a flexible inflatable fluid impervious double-walled cup-shaped bag having a bottom with a central discharge opening and side walls, the top of the side walls of the cup-shaped bag being always above the maximum height of material in the bin after it has discharged by gravity through a central discharge open-

ing to assume its angle of repose, a rigid outer bin wall, means to inflate a space between the double walls of the bag, with the improvements comprising; means defining a hollow space discharge well in the bottom center of the bin above the level of the support floor, the central discharge opening in the bot-



tom of the cup-shaped bag attached to the means defining a hollow space discharge well in the bottom of the bin, a conveyor extending from the hollow space discharge well bottom center of the bin to outside and through the bin side wall means and above the level of the support floor.

4,603,796

CLOSING AND FILLING UNIT FOR A TANK CONTAINING A FLUID UNDER PRESSURE

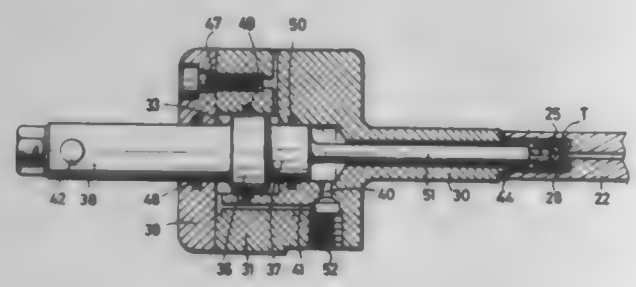
Jean-Louis Joly, Bazemont, and Bernard Lallemant, Verneuil, both of France, assignors to Societe Nationale Industrielle et Aerospatiale, France

Filed May 9, 1985, Ser. No. 732,426

Claims priority, application France, May 18, 1984, 84 07764

Int. Cl.[4] B65D *83/00*; F16K *31/00*

U.S. Cl. 222—400.7 **9 Claims**



1. A closing and filling unit for a tank containing a fluid under pressure, said unit comprising in combination: a piston valve having a body and a closure piston in said body and provided with axial openings, and a device for actuating said valve comprising a rotatable and slidable element and means for utilizing the pressure of said fluid when filling and emptying the tank so as to urge said element into engagement with the closure piston, said device being detachably fixed to the body of the valve.

4,603,797

BOW WINDER

Joseph S. Gallo, Sr., 58 Peach St., Walpole, Mass. 02081

Filed Dec. 23, 1985, Ser. No. 812,276

Int. Cl.[4] A41H *43/00*

U.S. Cl. 223—46 **19 Claims**

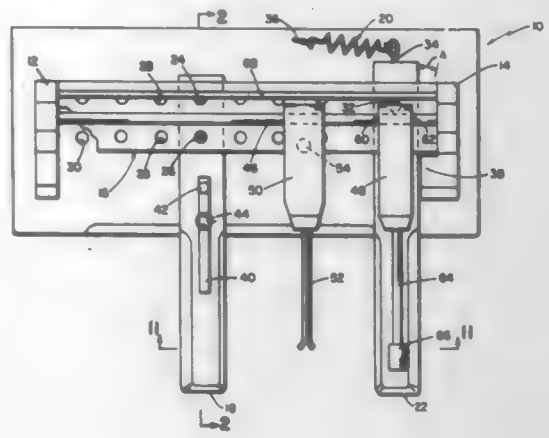
1. Apparatus for winding bows from ribbon , comprising

a base,

first and second arms about which said ribbon may be wound in a plurality of loops, said arms being supported on said base,

a rotatable joint for supporting said second arm on said base so that it is capable of rotation toward said first arm,

spring means for resisting rotation of said second arm toward said first arm,



said rotatable joint and spring means being capable of permitting said second arm to rotate toward said first arm sufficiently to allow said loops of ribbon to be drawn together midway between said arm in forming a bow

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4,603,798

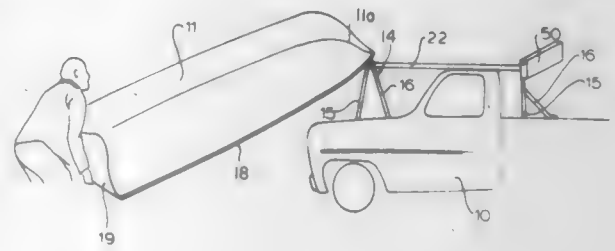
CAR TOP CARRIER

Wayne D. Griswold, 914 Screenland Dr., Burbank, Calif. 91505

Filed Sep. 2, 1983, Ser. No. 529,047

Int. Cl.[4] B60P *3/10*

U.S. Cl. 224—310 **6 Claims**



1. A vehicle top boat carrier comprising:

a first support assembly adapted to be secured to the front of a vehicle including a single point support member having a pivotal securing means at a level corresponding approximately with the top of the vehicle;

a pair of support members securable to the vehicle at a distance rear of the first support, extending upward to at least the level of the top of the vehicle and laterally spaced to engage and support the gunwales of a boat;

whereby a pointed prow boat may be carried on said vehicle with the bow region secured to said front support at the pivotal attachment, and the gunwale portions providing three point support for the boat;

wherein said pivotal securing means includes pivot means installable in an upward direction to provide pivoting of the boat thereabout during loading and unloading thereof and said securing means is reversible with the boat in place to provide a positive lock for the bow of the boat.

4,603,799

FORWARD FEED ASSEMBLY FOR CONTINUOUS FORWARD FEED OF OPEN TUBULAR FABRIC UNDER CONTROLLED TENSION

Jean E. Schaerer, Apartment 243, 800 Clark Blvd., Bramalea, Ontario, Canada L6T, 2E8

Filed Dec. 21, 1984, Ser. No. 685,020

Claims priority, application Switzerland, Dec. 30, 1983, 6983/83

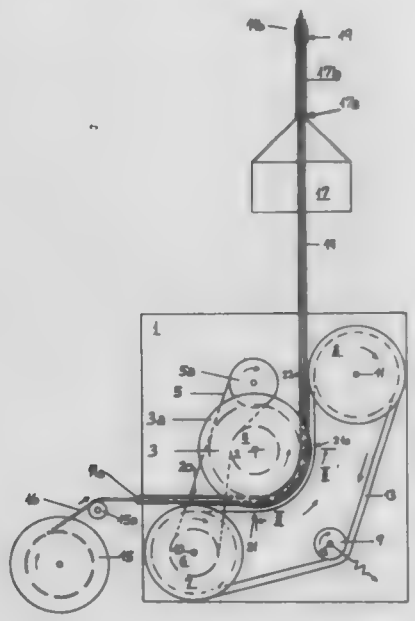
Int. Cl.[4] B65H *20/02, 20/06*

U.S. Cl. 226—171 **2 Claims**

1. A forward feed assembly for continuous forward feed of open tubular fabric to a subsequent processing station comprising:

an elongated curved guide mandrel over which the open tubular fabric passes,

pulley means on one side of the curved guide mandrel operable to drivingly engage the fabric, said guide mandrel curving through at least about 90° around a portion of the circumference of the pulley means, and



endless belt drive means on an opposite side of the curved guide mandrel to drivingly engage the fabric at the same fabric engaging speed as the pulley means as the fabric passes over the curved guide mandrel around the pulley means and to retain the curved guide mandrel in position around the pulley means.

4,603,800

APPARATUS FOR TRANSPORTING SHEETS OF PACKAGING MATERIAL

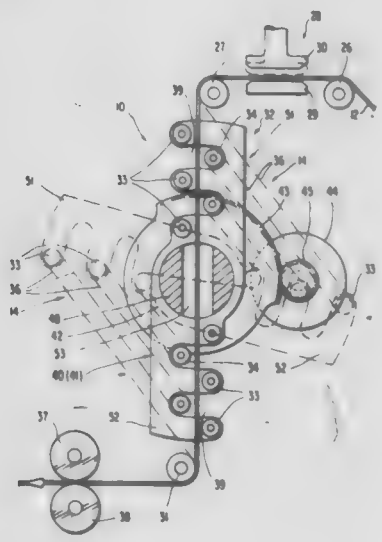
Heinz Focke, and Kurt Liedtke, both of Verden, Fed. Rep. of Germany, assignors to Focke & Co., (GmbH & Co.), Verden, Fed. Rep. of Germany

Filed Mar. 14, 1985, Ser. No. 711,871

Claims priority, application Fed. Rep. of Germany, Mar. 22, 1984, 3410470

Int. Cl.⁴ B65H *20/34*

U.S. Cl. 226—119 **6 Claims**



1. Apparatus for transporting sheets of material, said apparatus including means for temporarily storing at least one of said sheets of material **(12)**, said temporary storing means comprising:

a supply rocker **(10)** which includes a looping roller carrier **(32)**, a plurality of looping rollers **(33)** mounted on said looping roller carrier, a plurality of fixed counter rollers **(34)** positioned relative to said looping rollers such that said sheet of material can pass between said looping rollers and said counter rollers, and a pivot bearing **(42)** which includes a rotatable axle **(48)**; and

means for pivoting said looping roller carrier **(32)** about said pivot bearing **(42)** to thereby cause said looping rollers to move relative to said counter rollers to permit said sheet of material to either run in a straight line between said looping rollers situated on one side thereof and said counter rollers situated on the other side thereof or run in a looped path between said looping rollers and said counter rollers, depending on the position of said looping roller carrier;

wherein said looping roller carrier is comprised of first and second pivot arm portions **(51,52)** extending in opposite directions from said pivot bearing **(42)**, each of said pivot arm portions having mounted thereon a plurality of looping rollers, associated fixed counter rollers being provided for the looping rollers of each of said first and second pivot arm portions; and

wherein said rotatable axis **(48)** is connected to said looping roller carrier **(32)** to rotate therewith, and includes a slit-shaped passage **(53)** through which said sheet of material may pass regardless of the position of said looping roller carrier.

4,603,801

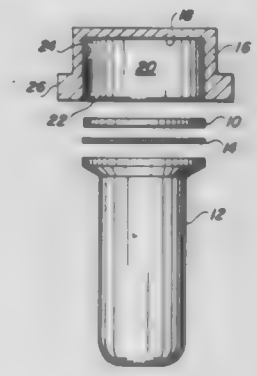
DIFFUSION BONDING OF MECHANICALLY HELD COMPONENTS BY HOT ISOSTATIC PRESSURE

Chung-Chu Wan, Northridge, and Glenn W. Brown, Rancho Palos Verdes, both of Calif., assignors to The Garrett Corporation, Los Angeles, Calif.

Filed Jul. 24, 1984, Ser. No. 633,817

Int. Cl.⁴ B23K *20/02, 20/16*

U.S. Cl. 228—194 **5 Claims**



1. In a hot isostatic pressing operation utilizing a pressure transmitting medium, the method of isolating a cladding-substrate seam comprising the steps of:

preforming a cladding to a substrate to form a workpiece;

interference fitting a seam isolator about the cladding-substrate seam;

submerging the workpiece into the pressure transmitting medium contained within a deformable container; and

subjecting said container and workpiece to hot isostatic pressing conditions.

4,603,802

VARIATION AND CONTROL OF BOND FORCE

John A. Kurtz; Donald E. Cousens, both of Saco, and Mark D. Dufour, Portland, all of Me., assignors to Fairchild Camera & Instrument Corporation, Cupertino, Calif.

Filed Feb. 27, 1984, Ser. No. 584,084

Int. Cl.⁴ B23K *1/06, 20/10*

U.S. Cl. 228—1.1 **18 Claims**

1. An improved lead wire ball bonding machine having a movable bonding head comprising an elongate tool holder and a capillary bonding tool secured in the tool holder for ball bonding the end of a lead wire held in the bonding tool to a die pad of an integrated circuit chip and for wedge bonding a segment of the lead wire spaced from the ball bond to a lead

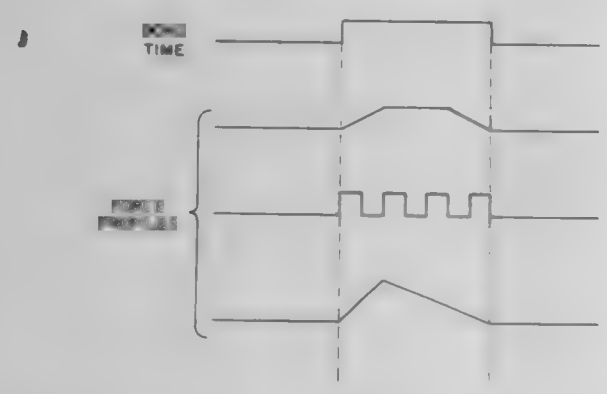
frame finger during successive ball bond wedge bond cycles, bond force means for applying first bond force at the bonding tool during ball bonding and for applying second bond force at the bonding tool during wedge bonding, bonding machine logic control means generating control signals for initiating and timing steps in the ball bond wedge bond cycle, wherein the improvement comprises:

said bond force means comprising solenoid means coupled to the bonding head for appiying said first and second bond forces to the bonding tool for ball bonding and wedge bonding respectively during successive ball bond wedge bond cycles;

solenoid control circuit means coupled to said solenoid means and constructed and arranged to actuate said solenoid by delivering a first current having a first current amplitude profile for applying said first bond force with a first force profile during ball bonding to die pads and by delivering a second current having a second current amplitude profile for applying said second bond force with a second force profile during wedge bonding to lead frame fingers;

and processor means coupled to the solenoid control circuit means to provide programmed variation in the first current amplitude profile and first force profile of the first bond force for different die pads of an integrated circuit chip and for providing variation in the second current amplitude profile and second force profile of the second bond force for different lead frame fingers.

11. An improved lead wire ball bonding machine having a movable bonding head comprising an elongate tool holder and



a capillary bonding tool secured in the tool holder for ball bonding the end of a lead wire held in the bonding tool to a die pad of an integrated circuit chip and for wedge bonding a segment of the lead wire spaced from the ball bond to a lead frame finger during successive ball bond wedge bond cycles, bond force means for applying first bond force at the bonding tool during ball bonding and for applying second bond force at the bonding tool during wedge bonding, bonding machine logic control means generating control signals for initiating and timing steps in the ball bond wedge bond cycle, wherein the improvement comprises:

said bond force means comprising variable linear drive means coupled to the bonding head for applying said first and second bond forces to the bonding tool for ball bonding and wedge bonding respectively during successive ball bond wedge bond cycles;

control circuit means coupled to said variable linear drive means and constructed and arranged to actuate said variable linear drive means by delivering a first current having a first current amplitude profile for applying said first bond force with a first force profile during ball bonding to die pads and by delivering a second current having a second current amplitude profile for applying said second bond force with a second force profile during wedge bonding to lead frame fingers;

and processor means coupled to the control circuit means to provide variation in the first current amplitude profile and first force profile of the first bond force for different die pads of an integrated circuit chip and for providing variation in the second current amplitude profile and second force profile of the second bond force for different lead frame fingers.

4,603,803

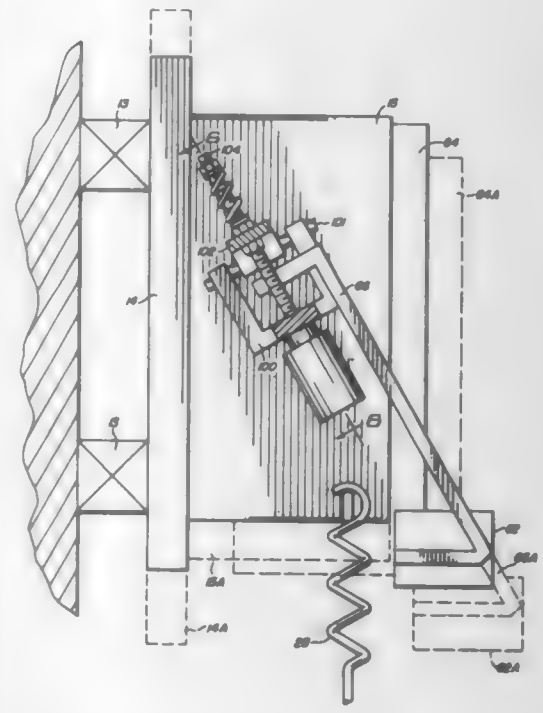
WIRE BONDING APPARATUS

Lo Kwan Chan, and Wai Sau Li, both of Hong Kong, Hong Kong, assignors to ASM Assembly Automation, Ltd., Kowloon, Hong Kong

Continuation of Ser. No. 410,945, Aug. 24, 1982, abandoned. This application Apr. 2, 1985, Ser. No. 718,936

Int. Cl.[4] **B23K** *37/02*

U.S. Cl. 228—4.5 **4 Claims**



1. A wire-feed and wire-tear mechanism for a wire-bonding apparatus, comprising:

transducer means for providing a bonding force on an end surface of a bonding probe including a transducer horn provided with an orthogonally mounted bonding probe;

bond force solenoid means operably coupled to said transducer means for pivoting said transducer means and controlling the pressure applied to said end surface of said bonding probe;

wire source means operably coupled to said transducer means for supplying wire to said end surface along a diagonal axis at an acute angle from a vertical axis;

diagonally movable clamp means having a releasable clamp provided with a translation axis parallel to said diagonal axis of said wire being supplied to said end surface for movement in a reciprocal direction with said wire and for feeding and tearing said wire; and

solenoid actuated separate feed and separate tear drive means operably coupled to said clamp means for causing said clamp means to move forward and backward with respect to said end surface of said bonding probe parallel to said diagonal axis of said wire for feeding said wire and tearing said wire during a bonding procedure.

4,603,804

AUTOMATIC SOLDERING APPARATUS

Kota Takeda, Tokyo, and Tsugunori Masuda, Saitama, both of Japan, assignors to Kabushiki Kaisha Tamura Seisakusho, Tokyo, Japan

Filed Apr. 25, 1984, Ser. No. 603,778

Claims priority, application Japan, Apr. 30, 1983, 58-77169

Int. Cl.[4] **B23K** *1/08*

U.S. Cl. 228—40 **6 Claims**

1. Automatic apparatus whereby solder is applied to leads that project downwardly from the bodies of workpieces such as integrated circuit devices, each said body having a front

end, a rear end and a pair of opposite side surfaces, said apparatus being cooperable with a magazine wherein a plurality of said workpieces are lengthwise slidably confined in a row with a rear end of each workpiece adjacent to a front end of another, said apparatus being characterized by:

A. track means comprising a plurality of fixed substantially parallel rods cooperating to define a path along which workpieces are confined to motion lengthwise of the rods, said rods being so arranged that

(1) at least one of said rods is at a lowermost level for slidable support of workpieces thereon, and

(2) at least two of said rods are at a higher level and are laterally spaced apart by a distance to slidably engage opposite side surfaces of workpieces between them that are supported on said at least one rod, and

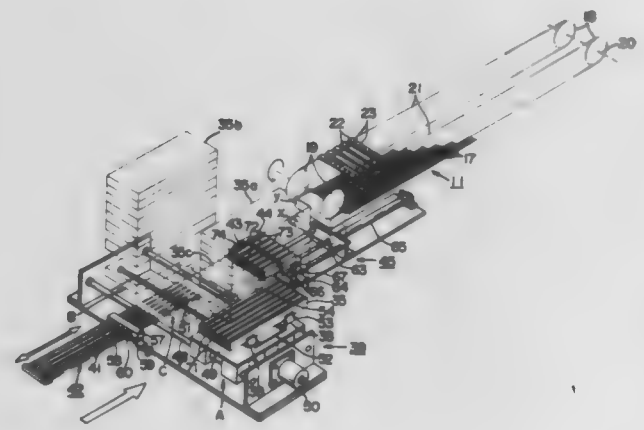
(3) said rods are so spaced apart that said leads on the workpieces can project downward between them;

B. workpiece propelling means comprising

(1) an endless carrier,

(2) rotary carrier supporting and drive means around which said endless carrier is trained for motion in an orbit that has a stretch portion which is above and substantially parallel to said rods and wherein said carrier moves in a forward direction, and

(3) a plurality of transportation pins carried by said endless carrier for orbital movement therewith, said pins being



spaced apart at intervals along said carrier and each being disposed to project down between rods of said track means when moving in said stretch portion, for engagement against the rear end of a workpiece to push the same forwardly along the track means;

C. a fluxing unit downwardly adjacent to said track means for fluxing leads of workpieces moved therepast along said track means;

D. a soldering unit downwardly adjacent to said track means, spaced in said forward direction from said fluxing unit, for applying solder to leads of workpieces moved therepast along said track means;

E. magazine holder means for readily removably fixing a magazine loaded with workpieces in a position to the rear of said track means;

F. pusher means for pushing workpieces in a row in said magazine forwardly toward said track means through successive distance increments, each of which is substantially equal to the length of a workpiece; and

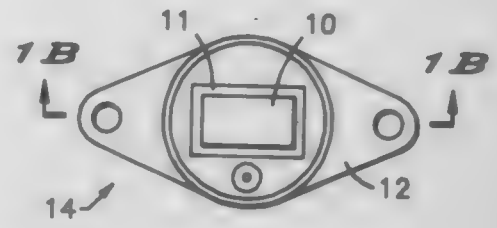
G. workpiece separating means located between said magazine holder means and said track means, adapted to receive workpieces pushed out of a magazine by said pusher means and to carry them one by one to a position in which each is aligned with said track means and is in the orbit of a transportation pin that will push it along the track means.

4,603,805

METHOD FOR ENHANCING THE SOLDERABILITY OF NICKEL LAYERS

William O. Rogers, Tempe, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed May 20, 1985, Ser. No. 736,156
Int. Cl.[4] B23K *1/20*
U.S. Cl. 228—123 10 Claims



1. A process for improving the solderability of objects coated with a nickel and phosphorus mixture, comprising:

providing an object having thereon a nickel coating which contains phosphorus;

heating said coated object in an oxidizing atmosphere to a temperature of at least 347° C. for a time exceeding two minutes; and

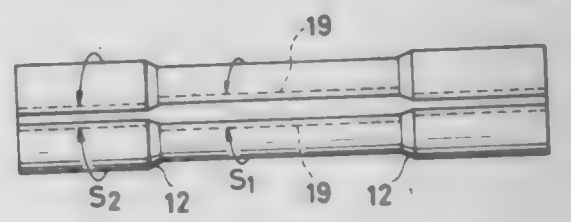
thereafter heating said coated object in a reducing atmosphere to a temperature of at least 300 degrees C.

4,603,806

METHOD OF MANUFACTURING METAL PIPE WITH LONGITUDINALLY DIFFERENTIATED WALL THICKNESS

Kazuo Watanabe; Hiromi Seki; Kenji Yamada, all of Kitakyushu, and Yoshito Tsuyama, Tokyo, all of Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Aug. 7, 1984, Ser. No. 638,615
Claims priority, application Japan, Aug. 11, 1983, 58-145637; Aug. 11, 1983, 58-145638; Aug. 11, 1983, 58-145639; Jan. 18, 1984, 59-5516; Jan. 18, 1984, 59-5517.
Int. Cl.[4] B23K *28/02*
U.S. Cl. 228—152 8 Claims



1. A method of manufacturing a metal pipe with longitudinally differentiated wall thickness comprising:

preparing a rectangular metal plate having opposite longitudinal edges which abut a thicker portion of said plate, a thinner portion of said plate and a transition portion of said plate between said thicker and thinner portions, said transition portion having a thickness intermediate the thickness of said thicker portion and the thickness of said thinner portion, the thickness of said plate in said thicker portion being greater than the thickness of said plate in said thinner portion;

reducing the width of said plate along each edge of said thinner portion of said plate with respect to the width of said thicker portion of said plate prior to bending said plate into a tubular shape with said edges abutting each other;

removing a portion of said plate along each edge of said plate on either side of said transition portion such that the width of said plate beyond said transition portion towards said thinner portion of said plate is greater than the width of said thinner portion of said plate and the width of said plate beyond said transition portion towards said thicker

portion of said plate is less than the width of said thicker portion of said plate, the width of said plate in said transition portion being intermediate the width of said plate on either side of said transition portion;

forming said metal plate which has a reduced width along each edge of said thinner portion into a tubular shape with said edges abutting each other; and

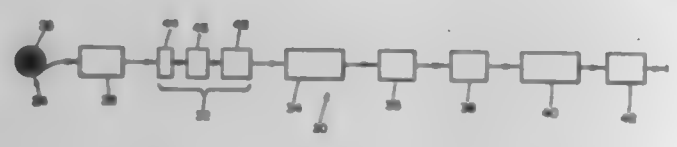
welding together the abutted edges of said plate to form a metal pipe.

4,603,807

MILL FOR ROLL FORMING A FLUTED TUBE

Theodore H. Krengel, Flossmoor, Ill., assignor to Allied Tube & Conduit Corporation, Harvey, Ill.

Filed Jun. 1, 1984, Ser. No. 616,281
Int. Cl.[4] B23K *31/00*
U.S. Cl. 228—152 6 Claims



1. A tubing mill for roll forming a strip of metal into a fluted tube having alternating, longitudinally extending, substantially continuous high and low portions on its outside surface, said mill comprising:

feed means for supplying a generally planar strip of metal;

embossing means for forming said high and low portions on both the surface of said strip to be formed into the outside surface of said tube and the surface of the strip to be formed into the inside surface of said tube;

breakdown means for sequentially transversely bending said strip from its generally planar condition, said breakdown means comprising roller means having a gripping surface for engaging one of said surfaces of said strip and having alternating high and low portions shaped to mate with those of said strip so that the high and low portions of said gripping surface make substantially full surface contact with their corresponding high and low portions on said one surface of said strip;

closure means for bringing together the lateral sides of the bent portion of said strip;

welding means for welding said lateral sides together; and

coating means for applying a coating to the outside surface of the welded tube, said mill further comprising downstream of said coating means a means for applying tension to said tube whereby said breakdown means and said means for applying tension cooperate to prevent substantial sagging of the tube therebetween.

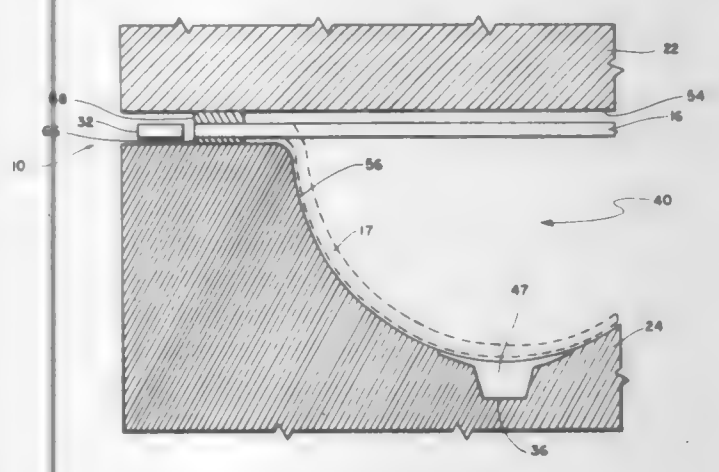
4,603,808

SUPER PLASTIC FORMING METHOD WITH HEAT TREATED SEALS

George W. Stacher, Westminster, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Jul. 16, 1984, Ser. No. 631,376
Int. Cl.[4] B23K *31/00*
U.S. Cl. 228—265 2 Claims

1. A method of making metallic sheet structure by superplastic forming, which comprises: providing one or more metallic sheets, where at least one of said sheets possesses superplastic properties; providing first and second forming members which sandwich said one or more sheets, said first forming member having a cavity therein which defines a surface similar to the shape of said sheet structure desired to be formed; positioning one seal between said one or more sheets and said first forming member, and positioning a second seal between said one or more sheets and said second forming member, said seals being made of a seal material that is free of substances that will volatilize at superplastic forming conditions for said at least one sheet, said seal material being nonmetallic and maintaining structural integrity at high temperaturees and pressures of said forming conditions; applying compressive forces across said forming members to seal said cavity; bringing said at least one sheet to within a temperature range at which it exhibits superplastic characteristics; and applying pressure to said at least



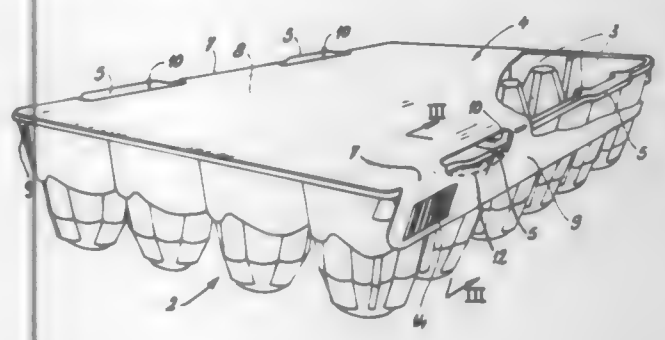
one sheet to superplastically form said at least one sheet into said cavity wherein said seal material is flaked graphite that has been heat treated to a temperature in excess of the superplastic forming temperature to be used for said at least one sheet to remove volatile contaminants therefrom.

4,603,809

PACKAGE WITH A BASE AND A COVER, ESPECIALLY FOR FOODSTUFFS SUCH AS EGGS

Alain Villotte, Paris, and Alain Jacquart, Ferriere la Grande, both of France, assignors to Seprosy Societe Europeenne pour la Transformation des Produits de Synthese, Paris, France

Filed Feb. 21, 1985, Ser. No. 703,887
Claims priority, application France, Feb. 24, 1984, 84 03332
Int. Cl.[4] B65D *1/00*
U.S. Cl. 229—2.5 EC 12 Claims



1. A package comprising:

a rectangular container having an upwardly open mouth formed with a pair of longitudinal edges and a pair of transverse edges, each of said longitudinal edges being formed along a rim of a respective longitudinal wall each of which is provided along the respective longitudinal edge with at least one outwardly extending projection, said longitudinal walls diverging upwardly and outwardly toward said mouth;

a cover extending over said mouth and composed of a flat relatively stiff material, said cover being formed with a pair of mutually parallel fold-score lines spaced apart by a distance greater than the lengths of said transverse edges, said cover being of a width greater than the width of said mouth whereby said cover has strips along its opposite longitudinal edges delimited by said fold-score lines, each of said fold-score lines being formed with a window adapted to receive a respective one of said projections; and

respective tongues projecting from each of said strips into the respective windows and adapted to be braced against an underside of the respective projection to hold the

respective strip in a downwardly and inwardly inclined orientation generally along a respective one of said longitudinal walls of said container.

4,603,810

METHOD AND APPARATUS FOR THE ACCELERATION OF SOLID PARTICLES ENTRAINED IN A CARRIER GAS

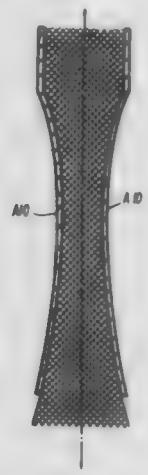
Francois Schleimer; Clement Burton; André Bock, and Jean Peckels, all of Esch, Luxembourg, assignors to Arbed S.A., Luxembourg, Luxembourg

Filed Mar. 8, 1984, Ser. No. 587,540

Claims priority, application Luxembourg, Mar. 11, 1983, 84686

Int. Cl.[4] C21B *7/16*; C21C *5/32*

U.S. Cl. 239—1 16 Claims



1. A device for accelerating solid particles entrained in a carrier gas through a duct, the carrier gas flowing at subsonic speeds, said duct including exit section means terminating at an opening, the interior cross-section of said exit section means varying from a nominal value to a larger value over at least about 5 meters upstream from said opening whereby the subsonic velocity of said carrier gas increases at an approximately linear rate and whereby the velocity of said solid particles substantially approaches the velocity of said carrier gas at said opening.

4,603,811

INJECTION UNIT ASSOCIATED WITH EACH CYLINDER OF A MULTICYLINDER DIESEL ENGINE

Leopold Rollenitz, Kirchstetten; Harald Schmidt, Vienna; Otto Freudenschuss, Vienna, and Josef Morell, Vienna, all of Austria, assignors to Steyr-Daimler-Puch AG, Vienna, Austria

Filed May 10, 1984, Ser. No. 608,977

Claims priority, application Austria, Jun. 6, 1983, 2055/83

Int. Cl.[4] F02M *47/02*

U.S. Cl. 239—90 4 Claims

1. A fuel injection unit associated with each engine cylinder of a multi-cylinder diesel engine having an injection nozzle and an injection pump disposed in a common elongated housing, said injection unit actuated by cam means via a rocker lever and a longitudinally adjustable tappet, said injection pump comprising,

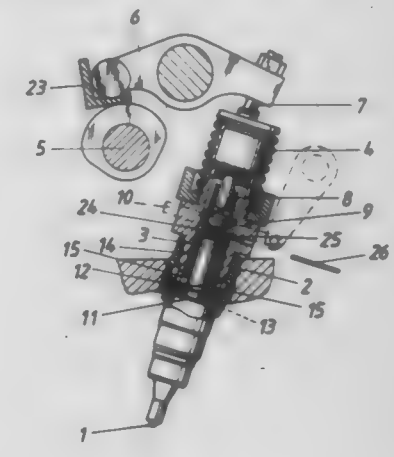
a pump cylinder having at least one fuel passage passing transversely therethrough,

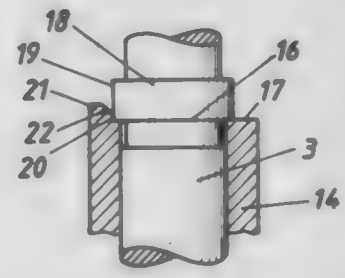
a rotatable pump piston disposed within said pump cylinder, said pump piston having a piston head with two inclined control edges, said control edges longitudinally spaced from each other on said piston head, said control edges cooperating with said fuel passage for receiving fuel into said pump cylinder and for injecting fuel into its associated engine cylinder via said injection nozzle,

said pump cylinder and said pump piston including adjustment means for simultaneously adjusting the longitudinal and rotational orientation of said pump piston relative to said pump cylinder upon installation of said fuel injection unit in its associated engine cylinder, said adjustment means comprising,

a first stop face located on said pump piston,

a second stop face located on said pump cylinder, said first and second stop faces extending transversely to the longitudinal axis of said pump cylinder, said first and second stop faces abutting against each other to fix the longitudinal position of said pump piston relative to said pump cylinder upon installation of said fuel injection unit in its associated engine cylinder,





a first engagement surface located on said pump piston, and

a second engagement surface located on said pump cylinder, said first and second engagement surfaces being substantially parallel to the longitudinal axis of said pump cylinder, said first and second engagement surfaces abutting against each other to fix the rotational orientation of said pump piston relative to said pump cylinder upon installation of said fuel injection unit in its associated engine cylinder.

4,603,812

FOAM-GENERATING PUMP SPRAYER

Paul R. Stoesser; John E. Cuzic, both of Midland, and John W. McLaren, Beaverton, all of Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation of Ser. No. 301,797, Sep. 14, 1981, Pat. No. 4,463,905, which is a continuation-in-part of Ser. No. 919,595, Jun. 27, 1978, abandoned. This application May 21, 1984, Ser. No. 612,196

The portion of the term of this patent subsequent to Aug. 7, 2001, has been disclaimed.

Int. Cl.[4] B05B *1/26*, *11/00*

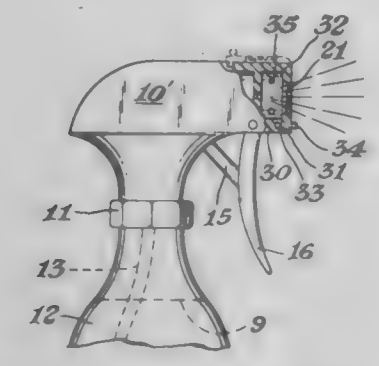
U.S. Cl. 239—329 17 Claims

1. A hand-held, foam-spraying apparatus for producing a foam comprising a liquid matrix containing discrete air bubbles and comprising in cooperative combination:

(a) a trigger-operated hand dispensing pump, including an atomizing nozzle, for drawing a foamable liquid from a container and ejecting it into the atmosphere through the atomizing nozzle, thereby forming a spray from such liquid and projecting the spray in a predetermined pattern outwardly from the atomizing nozzle, and

(b) foam-forming means operatively associated with the dispensing pump for producing foam from the spray using

air external to the apparatus and without substantially modifying the predetermined spray pattern, the foam-forming means consisting essentially of (1) a screen having a size generally in the range of about 60 to 200 mesh U.S. Sieve Series and being retained in the path of the spray a distance from the atomizing nozzle which is suitable for producing the result of a relatively dry foam, and (2)



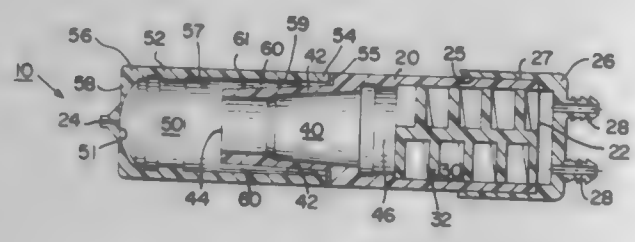
means for introducing air into the spray so that the spray is permitted to foam upon contact with the screen; the foam-forming means permitting the passage of substantially all the spray therethrough without contact except by the screen and being effective for generating a relatively dry foam having reduced tendency to drip when deposited on a vertical surface.

4,603,813

DOUBLE BACK SPRAY NOZZLE

Gregory J. Luegering, Morris, Ill., assignor to Insta-Foam Products, Inc., Joliet, Ill.

Filed Jun. 29, 1984, Ser. No. 626,332
Int. Cl.[4] B05B 7/04
U.S. Cl. 239—399 **7 Claims**



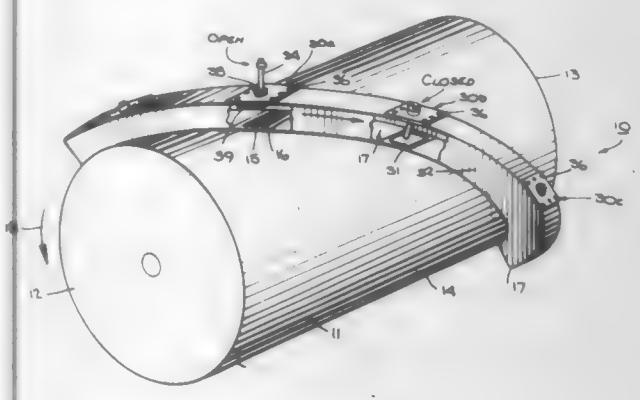
1. An expansion control mixing and dispensing nozzle adapted for attachment to an associated two-component liquid dispensing gun for mixing and dispensing liquid foamable products, said nozzle having a generally cylindrical exterior surface and comprising, in combination, a mixing chamber, a mixing chamber outlet tube and an outlet tube cover and nozzle discharge element, said mixing chamber having an axially extending, continuous side wall having inner surface portions defining at least a part of said mixing chamber, an end wall closing off the axially inner end of said mixing chamber and including a pair of spaced apart inlet ports for receiving the individual liquid components of said mixture, means disposed within said inner surfaces of said mixing chamber sidewalls for imparting a swirling action to expanding foamable materials passing through said mixing chamber, said mixing chamber outlet tube having axially inner and outer annular edge surfaces defining respectively a tube inlet communicating with the interior of said mixing chamber and tube outlet having a reduced cross-sectional area in relation to said tube inlet, said tube further including a radially outwardly continuous tube surface extending toward and meeting said axially outer edge surface of said tube outlet, said outlet tube cover and nozzle discharge element including an axially inner margin terminating in an end portion affixed to an outer part of said mixing chamber side wall, an axially outer margin having its edge portion joined to an inner end face cover surface closing off said tube cover and having spaced apart, longitudinally extending side walls defining a product discharge slot, and generally cylindrical, axially extending radially inwardly directed sidewall portions extending between said axially inner and outer ends of said tube cover and discharge element to define a pre-discharge chamber adjacent the axially outer end of said cover and discharge element, and an annular auxilliary chamber lying between said axially inner margin of said inwardly directed tube cover sidewalls and said radially outwardly directed tube surface of said outlet tube.

4,603,814

SYSTEM FOR DISCHARGING ROTARY MILLS

James C. Mehltretter, Allendale; Winfred L. Woodard, III, Midland Park; John J. Orlando, Rivervale, all of N.J., and Charles B. Goodrich, Daytona Beach, Fla., assignors to Inco Alloys International, Inc., Huntington, W. Va.

Filed Mar. 15, 1985, Ser. No. 712,704
Int. Cl.[4] B02C 17/18
U.S. Cl. 241—30 **26 Claims**



1. A discharge system of a batch-type, rotary grinding mill, which mill is operable under seal to the atmosphere, comprising:

(a) a rotatably mounted shell having two ends and an outer side wall, means to rotate the shell, a plurality of grinding media within the shell, at least one discharge port through the outer side wall of the shell, and blocking means securable to each discharge port for preventing passage of the grinding media outwardly through said discharge port;

(b) closure means for sealing each discharge port;

(c) at least one discharge chute sealably secured to the outer side wall of the shell to receive discharge material from the shell, said chute having at least one entry port, each entry port being aligned with a discharge port and sealably covering the discharge port relative to the atmosphere, said chute spiraling adjacent to the outer wall of the shell and traversing the outer wall of the shell from one end to the other, and said chute having an unloading port;

(d) a rotatable hollow trunnion mounted axially at one end of the shell, said trunnion having a receiving and discharge end, the receiving end being adapted to receive discharge material from the unloading port of the discharge chute;

(e) conveyor means in the hollow trunnion for advancing material to the discharge end of the trunnion;

(f) non-rotating delivery means sealably mounted to the discharge end of the rotatable hollow trunnion, said delivery means being sealable to the atmosphere and serving as a passageway for discharge material from the trunnion out of the mill; and

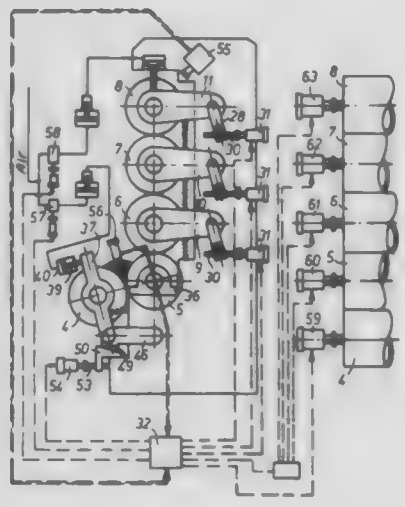
(g) sealable unloading means for removing the discharge material from the mill under seal to the atmosphere.

4,603,815

CONTROLLED OPERATION CHOCOLATE REFINER

Sergio Ripani, and Giulio Serafini, both of Milan, Italy, assignors to Carle & Montanari S.p.A., Milan, Italy

Filed Mar. 1, 1984, Ser. No. 585,297
Claims priority, application Italy, Jun. 29, 1983, 21857 A/83
Int. Cl.[4] B02C *4/04*
U.S. Cl. 241—36 3 Claims



1. A refiner for mixtures and suspensions having non-Newtonian rheological characteristics, such as chocolate, inks, and paints, comprising, carried in a frame, a pair of feeding rollers for feeding in a chocolate paste to be refined, and a plurality of refining rollers and actuators therefor, and means effective to cause a pressure change on the supports for the refining rollers; characterized in that it comprises in combination:

(a) means effective to produce a change in the crowning of the refining rollers;

(b) means effective to produce a change in the crowning of one feeding roller;

(c) means effective to produce a speed change in said refining rollers;

(d) means effective to produce a change in the pressure on the refining rollers;

(e) first and second gauge means for measuring pilot chocolate parameters of viscosity and thickness, respectively, whereby either one or both of the measured values are utilized for controlling corrective actions; and

(f) a microprocessor control unit responsive to signals indicative of either one or both of the measured values of said parameters, for centrally controlling corrective actions on the operation to be applied to said means effective to produce a change in either one of a combination of the crowning, the speed, and the pressure on the refining rollers and on a feeding roller, thereby providing proper refining of various types and mixtures of chocolate, irrespective of the starting physical and chemical characteristics thereof, and as same vary during refiner operation.

4,603,816

ROTARY SHREDDER

Martin H. Panning, Thiensville, Wis., assignor to Blower Application Company, Germantown, Wis.

Filed Oct. 1, 1982, Ser. No. 432,183
Int. Cl.[4] B02C *1/00*
U.S. Cl. 241—266 12 Claims

1. A rotary shredder, comprising:

first and second cooperating shredding rotors rotatably mounted adjacent to one another and each rotating about an axis, each rotor includes a plurality of axially spaced ripper blades positioned so that the blades of one rotor are located adjacent to the blades of the other rotor; and

drive means in driving engagement with said rotors to bidirectionally rotate each rotor about its axis during a normal shredding cycle while shredding material by the relative rotational oscillatory motion between said rotors and during at least a portion of said cycle said first and second rotors rotate in the same direction so that said first



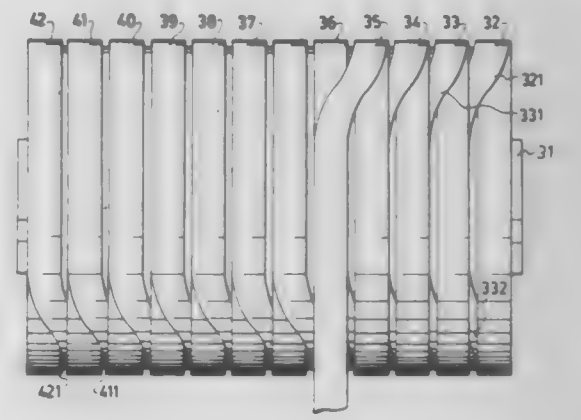
rotor advances while simultaneously said second rotor retracts to shred material fed therebetween.

4,603,817

PACKAGE OF TAPE

Lawrence J. O'Connor, 6027 Southboine Dr., Winnipeg, Manitoba, Canada R3R 0B5

Division of Ser. No. 462,558, Jan. 31, 1983, Pat. No. 4,477,035.
This application Jul. 12, 1984, Ser. No. 630,199
Claims priority, application United Kingdom, Feb. 4, 1982, 8203185
Int. Cl.[4] B65H *18/28*
U.S. Cl. 242—1 18 Claims



1. A package of tape comprising a right circular cylindrical winding surface having tape wound around an axis thereof while traversing axially relative to said package repeatedly to form a pair of separate axially spaced end positions on the package resulting from repeatedly winding said tape spirally to form a plurality of separate spiral windings of at least two full turns, and a helical traverse disposed between each separate spiral winding to connect the spiral winding to another position on said package such that each spiral winding forms a right circular cylindrical step at a respective one of the end positions of increased radial height relative to the radial height of said another position which has not been increased, said another position including further wraps of tape to build the radial height thereof up to said step, wherein each helical traverse from said end position to said another position is arranged such that it is angularly spaced from the preceding underlying helical traverse from said end position to said another position and the height of each step being such that substantial deformation of the tape and interference with said traverse are avoided as the tape descends from said step and such that the helical traverses are sufficiently frequent to interlock said end position with said another position at spaced locations throughout its radial and angular dimension to provide the package with stability and resistance to telescoping or collapse.

4,603,818

BOBBIN INSERTING DEVICE

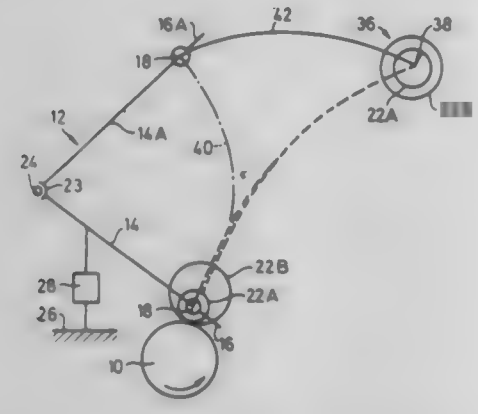
Rudolf Luz, Horgen, and Günter Gärtner, Lucerne, both of Switzerland, assignors to Rieter Machine Works, Ltd., Winterthur, Switzerland

Filed May 18, 1984, Ser. No. 611,676

Claims priority, application United Kingdom, May 20, 1983, 8313994

Int. Cl.[4] B65H *67/04, 54/22*

U.S. Cl. 242—35.5 A 9 Claims



1. In a yarn handling machine, the combination comprising

a cradle mechanism having a pair of parallel arms for receiving a bobbin therebetween and being movable along a first path of movement between a bobbin transfer location and a yarn winding position; and

a bobbin inserting device including a bobbin gripper for engaging a bobbin at a bobbin collection position and a carrier movable along a second fixed path of movement for moving said gripper from said collection position through said transfer location to said yarn winding position, said gripper being movably mounted on said carrier to move with said cradle mechanism during joint movement of said cradle mechanism and said carrier from said transfer location to said yarn winding position.

4,603,819

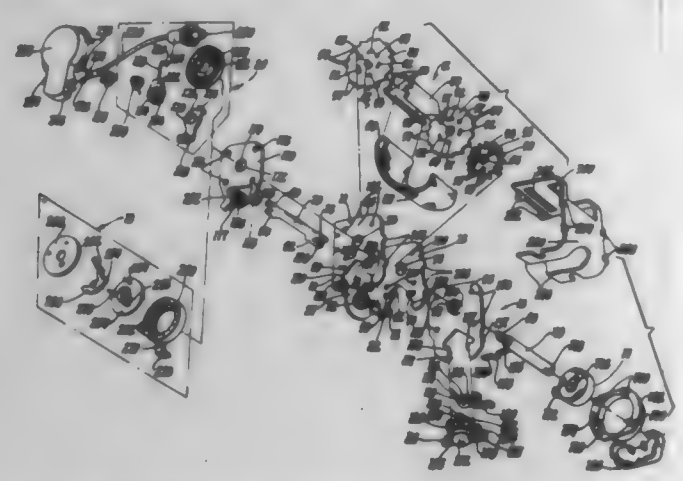
SEAT BELT RETRACTOR

Richard D. Loose, Birmingham, and Joseph W. Struck, Sterling Heights, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Continuation of Ser. No. 580,375, Feb. 22, 1984, abandoned, Continuation-in-part of Ser. No. 487,977, Apr. 25, 1983, abandoned. This application Oct. 15, 1985, Ser. No. 788,090

Int. Cl.[4] B60R *22/38, 22/40*

U.S. Cl. 242—107.4 A 4 Claims



1. A seat belt retractor comprising:

a belt reel;

a frame having a base wall adapted for attachment on a vehicle body and first and second spaced apart side walls with aligned apertures for receiving a reel shaft to rotatably mount the belt reel between the side walls;

a generally planar support member adapted to abut against one of the frame side walls on the face thereof opposite the belt reel and carry a control mechanism operative to control rotation of the belt reel relative to the frame;

a cover adapted to abut against the support member and enclose the control mechanism; and

wherein each of said first and second side walls and said support member have similarly configured and aligned apertures therethrough and wherein said cover has plug-in securing elements matingly configured and aligned with the apertures of the first and second side walls and the support member whereby to enable interchangeable and optional utilization of said support member and the control mechanism carried thereby on either of said first and second side walls of the retractor frame.

4,603,820

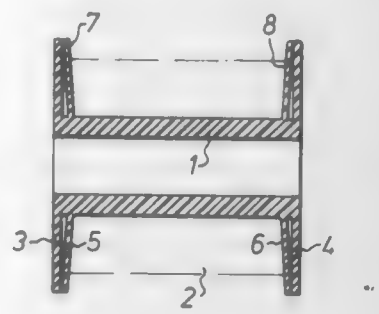
THREAD REEL

Stig E. E. Olofsson, Angantyrvägen 36, S-182 64 Djursholm, Sweden

Filed Mar. 5, 1985, Ser. No. 708,468

Int. Cl.[4] B65H *75/14, 75/28, 65/00*

U.S. Cl. 242—118.4 7 Claims



1. A thread reel comprising a cylindrical part (1) having an outer flange (3) (4) integral with each end of said cylindrical part, an inner flange (5) integral with said cylindrical part and spaced from and adjacent to one (3) of said outer flanges, the spacing between said adjacent inner (5) and outer (3) flanges being somewhat greater than the thickness of the thread to be wrapped about said cylindrical part of said thread reel, said inner flange being of sufficiently flexible construction whereby its peripheral edge (7) is pressed into contact with the outer flange (3) by the thread as said thread is wrapped around the cylindrical part (1) of the reel between said outer flange (4) and said inner flange (5) to substantially the height of said inner flange (5).

4,603,821

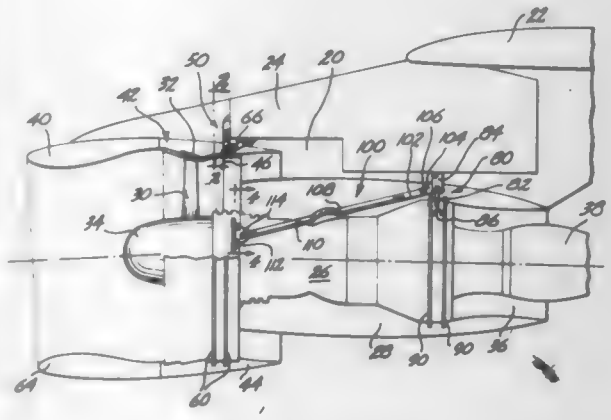
SYSTEM FOR MOUNTING A JET ENGINE

John L. White, Bellevue, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Dec. 30, 1983, Ser. No. 567,221

Int. Cl.[4] B64D *27/18*

U.S. Cl. 244—54 10 Claims



1. A system for securing a jet propulsion engine to an air-

craft, the engine having a core assembly, a fan powered by the core assembly and a fan casing enclosing the engine fan, said securing system comprising:

first means extending between the fan casing and the aircraft for securing the fan casing against lateral and vertical movement relative to the aircraft;

second means for securing the fan casing against pitch movement relative to the aircraft during normal operation of the aircraft, said second securing means comprising substantially rigid fan casing link means oriented generally longitudinally relative to the engine to transmit forces imposed on the fan casing along a vector component extending longitudinally relative to the engine, said fan casing link means connected at one end to the aircraft at a location longitudinally spaced from the location of the connection between the first securing means and the aircraft and connected at the opposite end closely adjacent the location of the connection between the first securing means and the fan casing; and,

third means for securing the engine core assembly to the aircraft to retain the engine against lateral, vertical and torsional movement relative to the aircraft, said third securing means includes an elongate thrust yoke disposed generally longitudinally relative to the engine axis of rotation, said thrust yoke having a forward end portion secured to a forward portion of the engine core assembly at locations relative to the diametrical center of the engine axis of rotation toward the circumferential location at which said fan casing link means is connected to the fan casing.

4,603,822

AFT ENGINE MOUNT

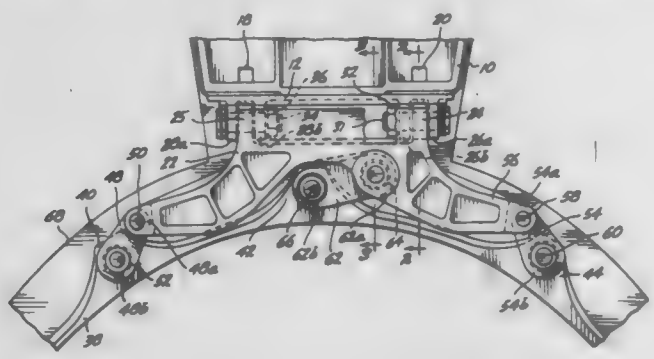
Wan T. Chee, Bellevue, Wash., assignor to The Boeing Company, Seattle, Wash.

PCT No. PCT/US83/01931, § 371 Date Dec. 8, 1983, § 102(e) Date Dec. 8, 1983, PCT Pub. No. WO85/02596, PCT Pub. Date Jun. 20, 1985

PCT Filed Dec. 8, 1983, Ser. No. 578,072

Int. Cl.[4] B64D *27/00*

U.S. Cl. 244—54 **11 Claims**



1. In an aircraft having a jet engine mounted to and beneath a wing thereof wherein said engine is a predetermined distance from said wing and wherein further said engine is mounted on a strut affixed to said wing, a low-profile engine mount assembly attachable to said strut and said engine to hold said engine on said strut, said engine mount assembly constructed and arranged to occupy a minimum portion of the distance between said engine and said wing so as to provide the maximum strut vertical dimension so as to keep said engine mount within the contour of a cowl surrounding said engine, said engine mount assembly including a yoke assembly having a first arm and a second arm,

yoke-mounting means for mounting said yoke assembly to said strut so as to permit pivotal movement of said yoke about an axis substantially orthogonal to the axis of said engine, and

means for mounting said first and second arms of said yoke assembly to said engine including a mounting ring affixed to said engine, first link means pivotally attached at a first end thereof to said first arm and pivotally attached at a second end thereof to said mounting ring, second link means pivotally attached at a first end thereof to said second arm and pivotally attached at a second end thereof to said mounting ring, said first ends of said first and second links being pivotable about axes substantially parallel to said engine axis and said second ends of said first and second links being substantially universally pivotable.

4,603,823

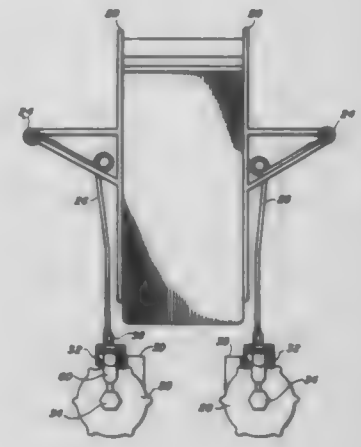
AIRSPEED SENSING PRESSURE VALVE SYSTEM

Peter Ayoub, Bryn Mawr, Pa., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jul. 2, 1984, Ser. No. 627,307

Int. Cl.[4] B64D *17/54*

U.S. Cl. 244—122 AE **3 Claims**



1. A pressure-sensitive device for selectively delaying deployment of a parachute in an ejection seat system of an aircraft having a gas powered catapult, said pressure-sensitive device comprising in combination:

an ejectable seat frame;

first sensing means attached to said seat frame responsive to static air pressure for determining the aircraft's altitude at the time of ejection;

second sensing means including a pair of pitots attached to opposite sides of said seat frame responsive to dynamic airstream pressure;

mode select means including a pair of sensors attached to opposite sides of said seat frame and connected to receive the static and dynamic pressures from said first and second sensing means, for comparing the static and dynamic pressures received and for selectively delaying the deployment of the parachute should the difference between the static and dynamic pressures fall below a predetermined value;

arming means, connected between the catapult and said mode select means, for preventing actuation of said mode select means until such time that said second sensing means is exposed to dynamic airstream pressure; and

storing means for storing a maximum dynamic airstream pressure, said storing means including a pair of pressure-sensitive check valves each connected between respective ones of said pitots and sensors.

4,603,824

WING SLAT ANTI-ICE AIR DUCT SYSTEM WITH IMPROVED SLIDE BEARINGS AND AIR SEAL

Richard C. McArdel, Kirkland, Wash., assignor to The Boeing Company, Seattle, Wash.

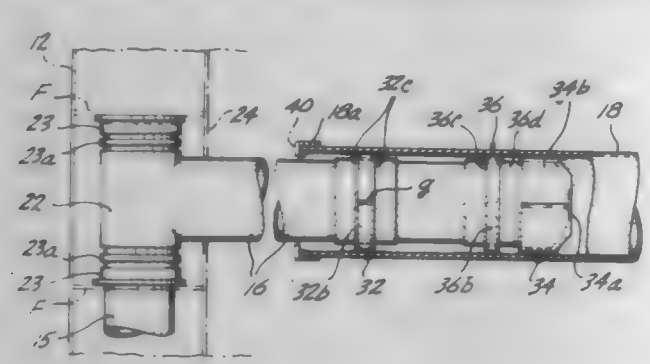
Filed Aug. 12, 1983, Ser. No. 522,661

Int. Cl.[4] B64D *15/04;* **B64C** *21/04*

U.S. Cl. 244—134 B **2 Claims**

1. In an anti-icing duct means for aircraft retractable/deployable wing slats wherein the leading edge of the aircraft wing houses a longitudinal main supply duct carrying pressur-

ized anti-icing air and the leading edge of the slat houses a longitudinal spray duct for distributing anti-icing air against the slat, and wherein the duct means comprises telescoping transfer ducts interconnected between the supply duct and the spray duct, and wherein the transfer ducts comprise an inner duct having one end telescopically received within one end of an axially aligned outer duct, and wherein slide bearing means are fixedly mounted on the exterior of the inner duct along the portion thereof that remains within the outer duct throughout retraction and deployment of the wing slat, and wherein the slide bearing means slidably engages and supports the interior wall of the outer duct, and wherein air seal means are fixedly mounted to the exterior of the inner duct and slidably engage the interior wall of the outer duct throughout deployment and



retraction of the wing slats, an improved bearing means including:

two annular slide bearings fixedly mounted on the inner duct for sliding engagement with the interior of the outer duct at positions spaced-apart lengthwise on the inner duct, one slide bearing being located at the end of the inner duct positioned within the outer duct, the other slide bearing being located so as to lie inside the end of the outer duct when the inner and outer ducts are in slat deployed position, each of said annular slide bearings comprising:

(i) a pair of flanged retainer elements affixed to the inner duct;

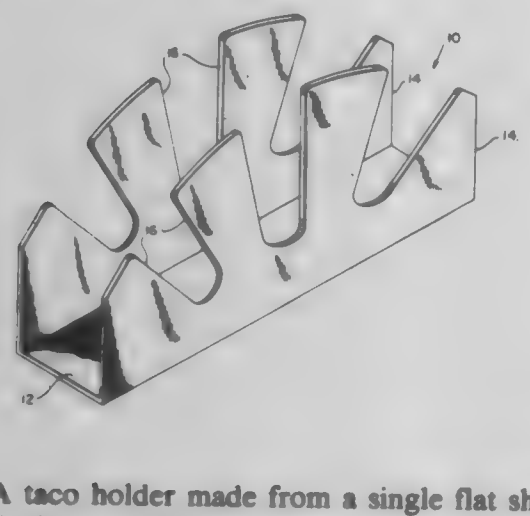
(ii) split-ring slider elements of low-friction synthetic material enclosed between each pair of retainer elements.

4,603,825

TACO HOLDER

Howard J. Kotliar, 9-28 Pond View, East Patchogue, N.Y. 11772

Filed Jun. 14, 1984, Ser. No. 620,487
Int. Cl.[4] A45D *19/04*
U.S. Cl. 248—174 4 Claims



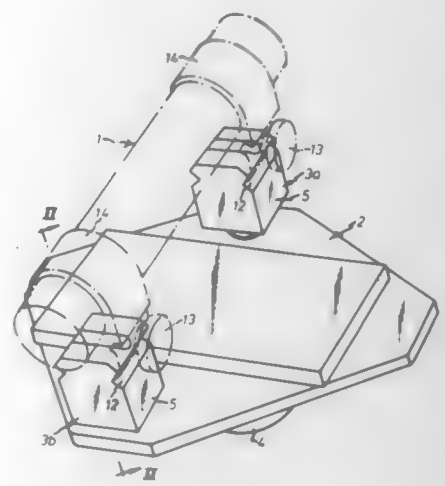
1. A taco holder made from a single flat sheet of material folded along previously prepared fold lines comprising an extended flat portion having a pair of side walls coextensive with the length of said flat portion and means formed in each of said side walls to permit exposure of said taco to grasping by the fingers of the eater of said taco down to the last mouthful thereof while at the same time maintaining upright support of said taco, said formed means consisting of radially extending slots of varying width and depth to accommodate fingers extending from the upper edges of said walls to points close enough to said flat member to support a single mouthful of said taco.

4,603,826

MEANS FOR ADJUSTING A SIGHTING INSTRUMENT IN RELATION TO A SUPPORT

John A. I. Ekstrand, Utteröd 1, S-240 33 Löberöd, Sweden

Filed May 8, 1984, Ser. No. 608,245
Int. Cl.[4] A47B *96/06*
U.S. Cl. 248—205.1 1 Claim



1. Adjustable mounting apparatus for adjusting a sighting instrument in relation to a support means, said apparatus comprising a pair of hollow support blocks for supporting said sighting instrument at two longitudinally spaced points, each supporting block having groove means at opposite sides thereof for cooperation with a clamping device for securing said sighting instrument to said block, each block also having a chamber with an open end disposed so as to face said support means, and further having associated means for connecting said block to said support means in adjustable spaced relation to said support means, said associated connecting means including compressible spring means mounted within said chamber and projecting through said open end thereof for resiliently supporting said block in spaced relation to said support means, and adjustable compression screw means for adjusting the degree of compression of said spring means, said screw means extending from said support means into a threaded bore which extends into said block from the base of said chamber, said screw means being threadably received in said bore and said spring means constituting an elastic spacer between said support block and said support means, whereby adjustment of said screw means effects a change in the angle between the longitudinal axis of said sighting instrument and a selected plane fixed relative to said support means.

4,603,827

SHEET METAL MOUNTING DEVICE

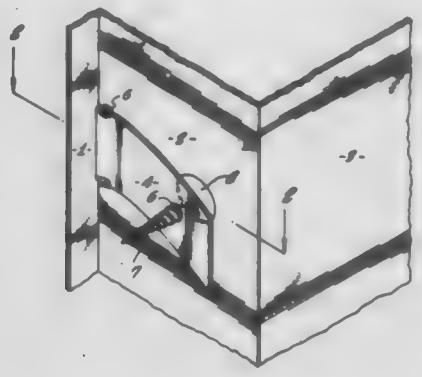
Robert Greenberg, Los Angeles, Calif., assignor to Bobrick Washroom Equipment, Inc., North Hollywood, Calif.

Filed Apr. 15, 1982, Ser. No. 368,522
Int. Cl.[4] F16M *13/00*
U.S. Cl. 248—542 11 Claims

1. A device for in combination with a sheet metal insert for permanently securing said insert into a framed rough wall cavity of varying dimensions which device comprises:

one or more tabs, each tab being rigidly attached to a point on the outside of the periphery of the insert and extending to another portion within the cavity along the outside of the insert, each tab further containing a means for attaching the extending end tab to the framed wall cavity said

tabs being sufficiently rigid to support the insert and sufficiently flexible to permit adjustable spacing between the



attachment to the insert and the attachment to the frame; and

a means to access the tab from the inside of the insert.

4,603,828

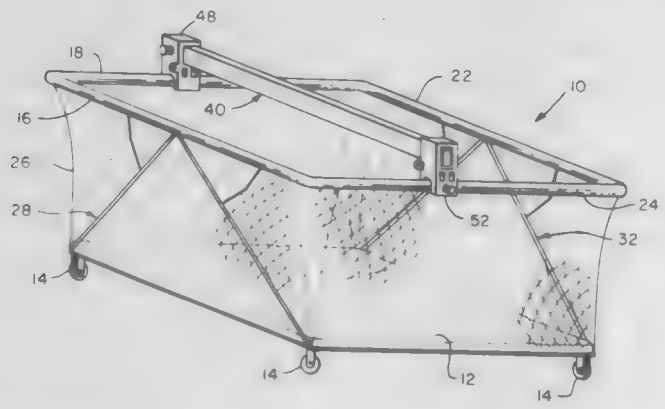
KINDER BAR AND KINDER GROW

Owen E. Farley, Jr., 29 Continental Dr., Centereach, N.Y. 11720, and Gerard T. Hopkins, 24 Heritage La., Natick, Mass. 01760

Filed Mar. 25, 1985, Ser. No. 715,840

Int. Cl.[4] F16M *13/00*

U.S. Cl. 248—542 **4 Claims**



1. Toy holder and exercise bar apparatus for use with playpen and the like having spaced side rails comprising a rod member of hollow, rectangular construction, a side rail bracket for each of the ends of said rod member for mounting on each of said spaced side rails, each said bracket consisting of a main body having an opening therethrough to accommodate one end of said rod member, means on said main body to accommodate a first screw member threaded therethrough to engage and lock said rod member against movement, a U-shaped portion extending from said main body to overlap one of said side rails for supporting said rod member on said side rail, means on said U-shaped portion to accommodate a second screw member threaded therethrough to engage the side rail so as to lock said apparatus against movement, said means to accommodate a second screw member being located on the side of said bracket away from the opposite side rail, and a pair of tab members mounted on opposite sides of each bracket flush with the side facing the opposite side rail with an opening through each of said tab members to accommodate a screw member, said side having a flat surface, thereby permitting said apparatus to be utilized within a closet or other compartment as a hanger for clothes and the like, each bracket being mounted on an oppositely facing wall, with the tabs and adjoining flat surface being flush against said wall supported by said screw members and said rod member supported at the ends thereof by each of said brackets.

4,603,829

SYSTEM FOR FIXEDLY MOUNTING A CASE OR THE LIKE BOX-SHAPED ARTICLE

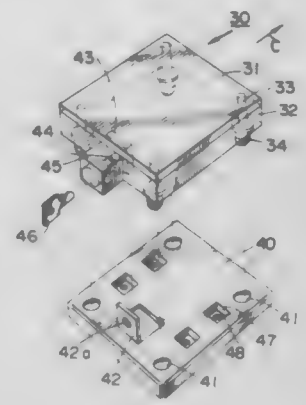
Noboru Koike, Sagamihara; Hidenari Kitamura, Hachioji, and Tsuneo Tomita, Kunitachi, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Aug. 31, 1984, Ser. No. 646,106

Claims priority, application Japan, Aug. 31, 1983, 58-135912[U]

Int. Cl.[4] F16M *3/00*

U.S. Cl. 248—553 **9 Claims**



6. In a system for fixedly mounting a case or the like box-shaped article, the improvement comprising:

in combination a case or the like and a mounting base, engaging means for engaging one surface of the case to one surface of the mounting base, and

displacing means for displacing the case relative to the mounting base after the former is placed on the surface of the latter so that the former is firmly engaged to the latter, said displacing means including a pressure actuated piece disposed at the force end of the mounting base and a tongue disposed on the case at a position located opposite to said pressure actuated piece and adapted to come into pressure contact with a surface of the pressure actuated piece.

4,603,830

SPRING MOUNTING APPARATUS

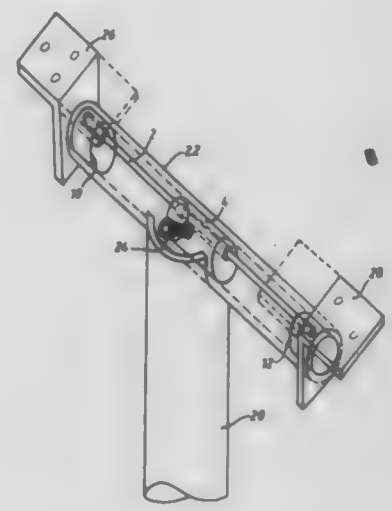
Klaus Franck, Hanover, Fed. Rep. of Germany, assignor to Wilkhahn Wilkening and Hahne GmbH & Co., Bad Munder, Fed. Rep. of Germany

Filed Sep. 10, 1984, Ser. No. 648,477

Claims priority, application Fed. Rep. of Germany, Sep. 28, 1983, 3335148

Int. Cl.[4] F16M *13/00*

U.S. Cl. 248—575 **6 Claims**



1. Spring mounting apparatus for a pair of relatively tiltable members, said apparatus comprising a pair of spaced apart, coaxial bearings; an intermediate bearing interposed between

the bearings of said pair; means mounting the bearings of said pair on one of said members; means mounting the intermediate bearing on the other of said members and coaxially with the bearings of said pair; means restraining the intermediate bearing from rotation; and at least one elongate spring rod spanning all of said bearings and being journaled in at least the intermediate bearing for rotation relative thereto about its own axis, the axis of said rod being spatially offset relative to the axes of said bearings.

4,603,831

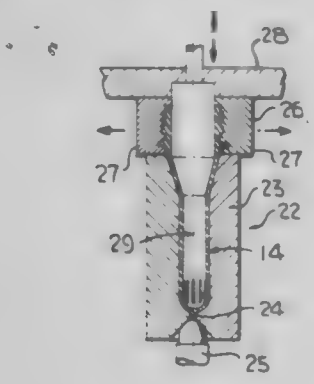
MOLD CORE MEMBER FOR USE IN A MOLD UNIT FOR INJECTION MOLDING A PLASTIC MATERIAL PREFORM FOR A BLOW MOLDED CONTAINER

Suppayan M. Krishnakumar, Nashua, N.H.; Kenneth F. M. Friendship, Clarendon Hills, Ill.; Gautam K. Mahajan, Nashua, N.H., and John F. E. Pocock, Neu-Isenburg/Hessen, Fed. Rep. of Germany, assignors to The Continental Group, Inc., Stamford, Conn.

Division of Ser. No. 97,603, Nov. 27, 1979. This application Sep. 20, 1982, Ser. No. 420,061

Int. Cl.[4] B29C *45/03, 49/06*

U.S. Cl. 249—144 6 Claims



1. In a mold unit for injection molding a plastic material preform for a blow molded container wherein the preform has an internal arrangement of longitudinally extending ribs, a mold core member having a lower portion terminating in an end portion, said lower portion of said core member defining only that portion of the preform which becomes a bottom of the resultant bottle, and an arrangement of longitudinally extending rib defining grooves of limited longitudinal extent formed only in said core member lower portion, said grooves having londitudinally open lower ends.

4,603,832

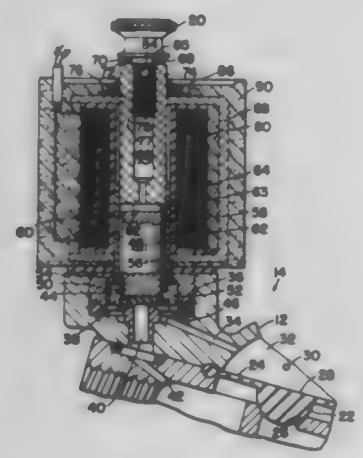
SOLENOID ACTUATOR WITH BLEED SCREW

Dennis R. Sjoquist, Yorba Linda, Calif., assignor to Evolutionary Concepts, Inc., San Dimas, Calif.

Filed Jun. 7, 1985, Ser. No. 742,519

Int. Cl.[4] F16K *31/385, 31/40*

U.S. Cl. 251—30.02 12 Claims



1. A solenoid actuator for controlling a pressure diaphragm valve by relieving the closing pressure thereof maintained at a first valve seat thereof including:

an armature positioned to normally close the first valve seat;

a coil positioned to move said armature to open the first valve seat to relieve the closing pressure on the pressure diaphragm valve;

manual relief means in communication with the closing pressure acting on the pressure diaphragm valve whereby said manual relief means upon manual actuation relieves the closing pressure on the pressure diaphragm valve and thus allows it to open, said manual relief means including:

a hollow threaded body having:

a shoulder surface; and

a bleed screw positioned in said hollow threaded body having:

a bleed screw relief passageway therethrough in communication with the closing pressure acting on the pressure diaphragm valve; and

means for sealing said bleed screw relief passageway; and

a hollow housing in which said armature is slidably positioned and in which said hollow threaded body is fixed.

4,603,833

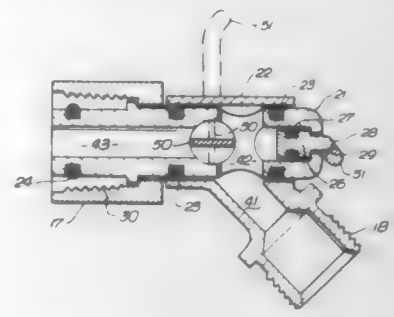
INLET VALVE FOR BREATHING APPARATUS SECOND STAGE REGULATORS

Tony Christianson, 120 8th St., Manhattan Beach, Calif. 90266

Filed Jun. 14, 1982, Ser. No. 388,176

Int. Cl.[4] F16K *35/00, 35/02, 31/143*

U.S. Cl. 251—94 2 Claims



1. An inlet valve for use with a breathing regulator second stage which is connectable to a source of breathable gas, comprising:

a valve body having a passage therethrough, said body containing a flow-closing valve in said passage, and being connectable in the gas circuit to said second stage,

a control member for said valve extending externally of of said body,

a detent member attached to said body and having an element projecting externally to said body and being urged into an orientation in which said element retains said control member with said valve in the open, flow enabling position, and wherein said detent member comprises:

a piston in said body having an end within said passage and exposed to the inlet gas pressure therein, said piston having an element projecting through an opening in said body and situated so that said control member will be retained with the valve in the open, flow enabling position when said piston element is urged outwardly of said body by pressure of gas from said source.

4,603,834

MOUNTING OF DISK IN A DISK VALVE

Fred W. Hendrick, Long Beach, Calif., assignor to Smith International, Inc., Newport Beach, Calif.

Filed Mar. 19, 1984, Ser. No. 591,022

Int. Cl.[4] F16K *47/00*

U.S. Cl. 251—121 19 Claims

1. An orifice valve comprising:

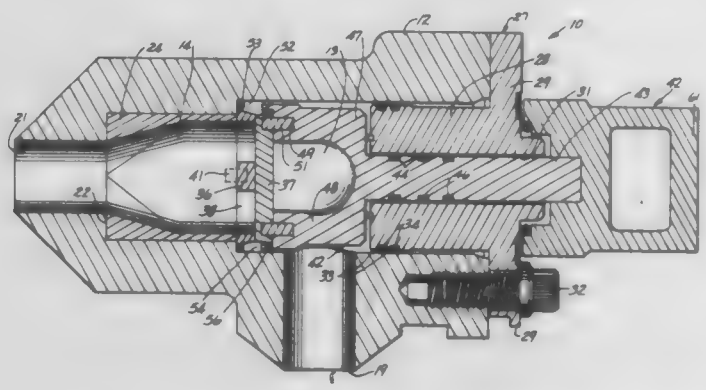
a valve body defining coaxial, adjoining upstream and

downstream chambers, said upstream chamber having a generally cylindrical larger transverse cross-sectional area than the downstream chamber, the downstream chamber having an oblong transverse cross-section, to thereby form an annular shoulder having a generally circular outer perimeter defined by the configuration of the upstream chamber and a generally oblong inner perimeter defined by the configuration of the downstream chamber;

a pair of diametrically opposite blind holes in the shoulder, each of the holes being generally at a position wherein the distance between the inner perimeter and the outer perimeter of the shoulder is at a maximum;

a stationary downstream disk mounted in the upstream chamber against the shoulder comprising a pair of fluid openings through the downstream disk and a pair of blind holes, each of the holes being in direct communication with a blind hole in the shoulder;

a rigid pin disposed in each blind hole in the shoulder of the valve body and extending into a directly communicating blind hole in the downstream disk to thereby prevent rotation of the downstream disk;



a rotatable upstream disk mounted in the upstream chamber in face-to-face engagement with the downstream disk comprising a pair of fluid openings through the upstream disk which can be aligned with the fluid openings in the downstream disk and a pair of blind holes extending into the upstream disk from the face of the upstream disk remote from the downstream disk;

an operator member for rotating the upstream disk comprising:

a handle outside of the valve body;

a stem fixedly attached to the handle and extending from the handle through the valve body and into the upstream chamber; and

a disk engaging member fixedly attached to the stem having at least one surface adjacent the upstream disk and a pair of blind holes extending into the disk engaging member from said surface, each of the holes being in direct communication with a blind hole in the upstream disk; and

a rigid pin disposed in each blind hole in the upstream disk and extending into a directly communicating blind hole in the disk engaging member.

4,603,835

SHUTTER MECHANISM

Charles F. deMey, II, West Redding, Conn., assignor to The Perkin-Elmer Corporation, Norwalk, Conn.

Filed Nov. 9, 1983, Ser. No. 549,952

Int. Cl.⁴ F16K *31/44*

U.S. Cl. 251—215 **11 Claims**

1. A shutter mechanism comprising:

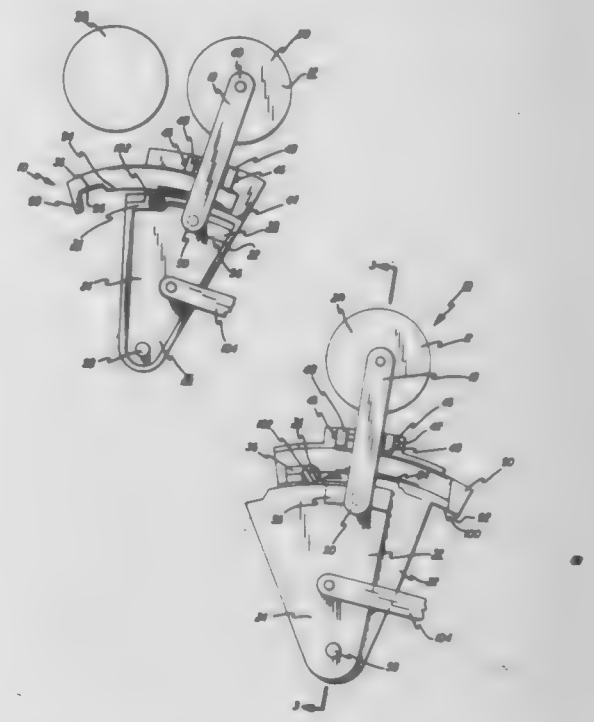
a shutter control member;

means for rotating said shutter control member between a first position and a second position;

a shutter carrier plate;

means for interlocking said shutter carrier plate with said shutter control member during a first portion of the rotation of said member between said first and said second position;

means for releasing said shutter carrier plate from said shutter control member during a second portion of said rotation between said first and said second positions;



a shutter plate, said shutter plate being pivotable in a plane different than the rotation plane of said shutter control member; and

means for engaging said shutter plate with said shutter control member during said second portion of said rotation of said member during which said shutter plate is pivoted against a wall whereby a port can be covered.

4,603,836

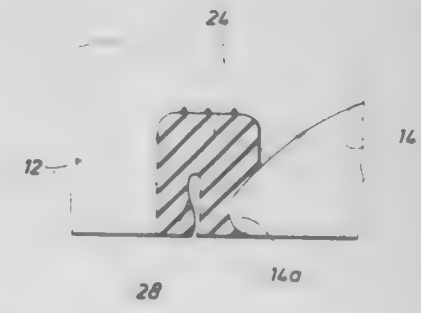
BALL VALVE WITH PRELOADED SEALS AND METHOD OF MANUFACTURE

Richard Godfrey, 21819 Lake End, Kingwood, Tex. 77339

Filed Mar. 18, 1985, Ser. No. 712,765

Int. Cl.⁴ F16K *5/06*

U.S. Cl. 251—315 **3 Claims**



1. A rotary valve, comprising

a rotary member having

an outer surface forming at least a segment of a sphere,

a passage through to opposite sides of the segment, and

an annular recessed surface in the segment abutting and surrounding one end of the passage,

a flow passage member adjacent to said rotary member comprising at least a segment of a sphere in slidable contact with the segment of the sphere of said rotary member, the flow passage of said flow passage member being aligned with said rotary member passage when said rotary member passage is in its open position, said flow passage of said flow passage member having an inside perimeter no larger than the inside perimeter of said rotary member passage, and

a resilient annular seal rigidly affixed between said rotary member and said flow passage member with its inside

perimeter being substantially the same dimension as said flow passage of said flow passage member, said seal having an inside perimeter cleft which allows axial closing flexing thereof when said rotary member is rotated to its closed position and allows axial opening flexing of said seal into said annular recessed surface when said rotary member is rotated to its open position.

4,603,837

TAP OR VALVE

Peter L. Steer, Surrey, England, assignor to Craig Medical Products, Limited, England

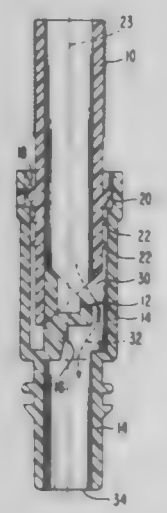
Filed Jul. 25, 1985, Ser. No. 758,911

Claims priority, application United Kingdom, Aug. 15, 1984, 8420700

Int. Cl.[4] F16K *31/00*

U.S. Cl. 251—352

5 Claims



1. A tap or valve which includes a first tube and a second tube which are relatively rotatable about a common axis, each of said first and second tubes having a portion of its wall cut away, said portion extending around only a part of the periphery of the respective tube, and one of said first and second tubes being rotatable relative to the other between an "open" position in which the apertures defind by the cutaway portions overlap partly or wholly and a "closed" position in which the aperture defined by a cutaway portion of each of said first and second tubes is overlapped by a portion of the wall of the other of said first and second tubes, wherein said second tube is mounted internally of a third external tube and said first tube fits relatively rotatably within the external tube while said second tube fits snuggly, but relatively rotatably, within said first tube.

4,603,838

BALL VALVE SEAT

H. Gotch, Sunbury, United Kingdom, assignor to Grundy (Teddington) Limited, Middlesex, England

Filed Aug. 13, 1985, Ser. No. 765,250

Claims priority, application United Kingdom, Aug. 13, 1984, 8420518

Int. Cl.[4] F16K *39/00;* F16L *55/18*

U.S. Cl. 251—361

9 Claims

1. A ball valve seat comprising:

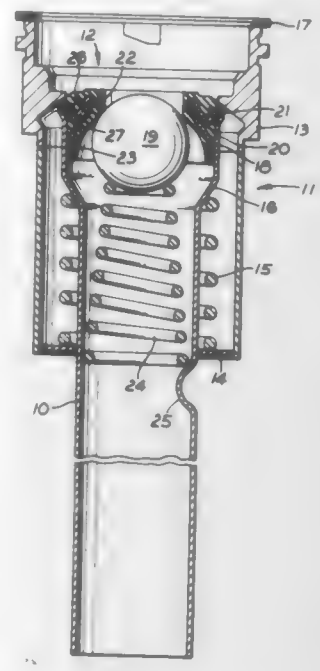
a. a first annular reinforcement member;

b. a second annular reinforcement member;

c. said first annular reinforcement member further comprising a skirt portion and a narrower-diameter neck portion;

d. said second annular reinforcement member being in the form of a ring and having in the region of its inner periphery a groove to accept the neck portion of said first annular reinforcement member; and

e. an annular resilient body serving to maintain said first annular reinforcement member and said second annular reinforcement member in a predetermined relationship with said second annular reinforcement member extending radially outward of the first annular reinforcement member over the outer periphery of its skirt portion.



4,603,839

DEVICE FOR TRANSPORT OR DISPLACEMENT OF ELONGATED OBJECTS IN PARTICULAR, AS WELL AS A PULLING OR TRACTION WHEEL COMPRISED IN SAID DEVICE

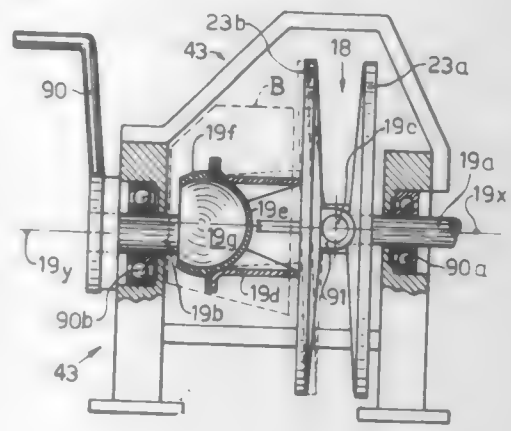
Uno Ekman, and Leif Hjert, both of Vänersborg, Sweden, assignors to Igelfors Bruks AB, Finspång, Sweden

Filed May 27, 1983, Ser. No. 499,143

Int. Cl.[4] A01K *73/06;* B66D *1/30*

U.S. Cl. 254—329

16 Claims



2. An apparatus for longitudinally displacing elongated objects, comprising:

a first shaft rotatable about a first axis of rotation;

a second shaft having a second axis of rotation, said second axis of rotation intersecting said first axis of rotation at an angle, said second axis of rotation comprising a generatrix of a cone of revolution, said cone having a vertex at said intersection of said first and second axis, the top (apex) angle of said cone being equal to said angle between said first and second axes;

a first disc secured to said first shaft, said first disc having a first, substantially conical surface;

a second disc rotatable about said second axis of rotation, said second disc having a second substantially conical surface substantially opposing said first substantially conical surface of said first disc, said first and second substantially conical surfaces defining therebetween an interspace having a substantially V-shaped cross section and extending substantially circumferentially around said discs;

means for rotating said first and second discs together; and

means for rotating said second axis of rotation around the axis of revolution of said cone.

4,603,840

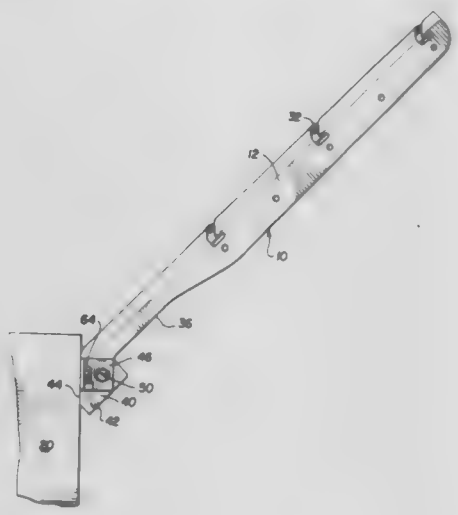
FENCE SUPPORT MEMBER

Frank Simkin, 2 Candlemaker Ct., Baltimore, Md. 21208

Filed Jan. 9, 1985, Ser. No. 690,590

Int. Cl.[4] E04H *17/00*

U.S. Cl. 256—11 **20 Claims**



1. A fence support member to attach to a structural member having a straight side surface comprising:

an elongated support arm having means for receiving and engaging wire strands, and,

fastening means for fastening said support arm to the structural member,

said fastening means being received by the support arm,

said support arm having a first end which is designed to abut the straight side surface of said support member,

said first end having first and second abutment surfaces, said abutment surfaces being located on the edge of the first end of said support arm,

said first and second abutment surfaces being at an acute angle with each other and being designed to selectively abut the straight side surface of the structural member,

said first and second abutment surfaces being designed and arranged such that when said first abutment surface is in abutment with the straight side surface, the support arm forms a first angle with the structural member, and when the second abutment surface is in abutment with the straight side surface, the support arm forms a second angle with the structural member,

said fastening means including a pair of brackets, one bracket positioned on each side of the support arm.

4,603,841

LADLE SUPPORT MACHINE

Werner Scheurecker, and Alois Scheinecker, both of Linz, Austria, assignors to Voest-Alpine International Corporation, New York, N.Y.

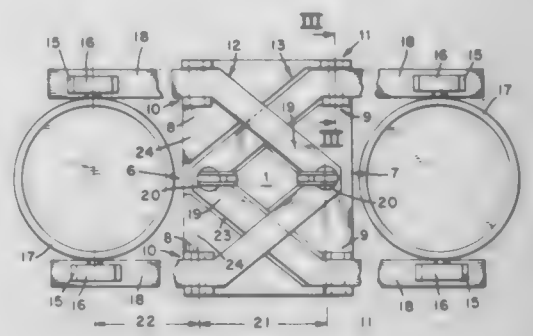
Filed Jun. 14, 1984, Ser. No. 620,880

Int. Cl.[4] C21B *3/00*

U.S. Cl. 266—44 **25 Claims**

21. A method for operating a ladle at a ladle support tower in a continuous casting plant comprising sensing the inclination of a ladle support disposed at a ladle support arm with an inclination measurement sensor, where the ladle support arm has the shape of a yoke surrounding the rotatable column and having a U-shaped planar projection and where two support arms are running about in parallel and each extending an end of the yoke with a ladle support disposed near an end of each support arm and where a support means for each support arm is disposed between the ladle support and the yoke for supporting the support arm on the side of the column disposed toward the corresponding ladle;

feeding the signal from the inclination measurement sensor to a control provision; and



actuating a motion of the ladle support with the control provision.

4,603,842

METHOD OF SLIDING GATE VALVE OPERATION

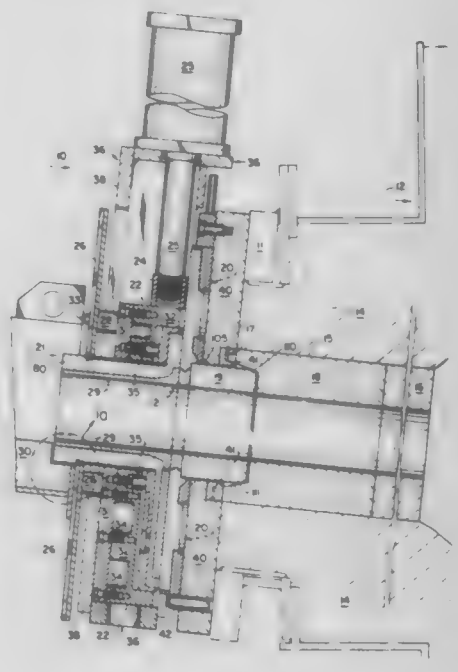
Patrick D. King, Rantoul, Ill., assignor to Flo-Con Systems, Inc., Champaign, Ill.

Division of Ser. No. 602,828, Apr. 23, 1984. This application May 16, 1985, Ser. No. 734,493

The portion of the term of this patent subsequent to Feb. 18, 2003, has been disclaimed.

Int. Cl.[4] F16K *51/00*

U.S. Cl. 266—44 **7 Claims**



1. The method of operating a valve which is secured to the side portion of a container for molten metal, in which the valve has a stationary refractory surface having an orifice in open communication with and adjacent a tap opening in the furnace having a substantially horizontal axis, and in which a slide gate is movably mounted in a carrier having means for applying a pressure face to face relationship to the stationary plate, and in which an erosion pocket is formed between the slide gate and refractory surface at the respective closure edges of each in the direction of shut-off, comprising the steps of:

closing the slide gate by moving the same upwardly against the stationary plate,

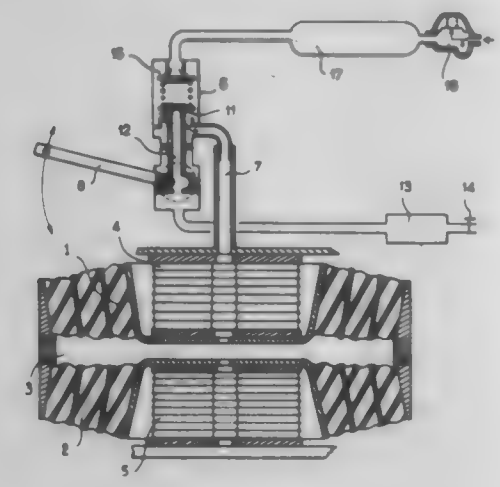
whereby said erosion pocket faces downwardly when the shut-off is completed permitting drainage of the erosion pocket wherein said refractory surface is a removable plate.

4,603,843

RUBBER MOUNT WITH ELASTIC CONTROL

Jean-Pierre Bechu, Courbevoie, France, assignor to Caoutchouc Manufacture et Plastiques, France

Filed Apr. 23, 1984, Ser. No. 603,157
Claims priority, application France, Apr. 22, 1983, 83 06613
Int. Cl.[4] F16F *13/00*
U.S. Cl. 267—35
13 Claims



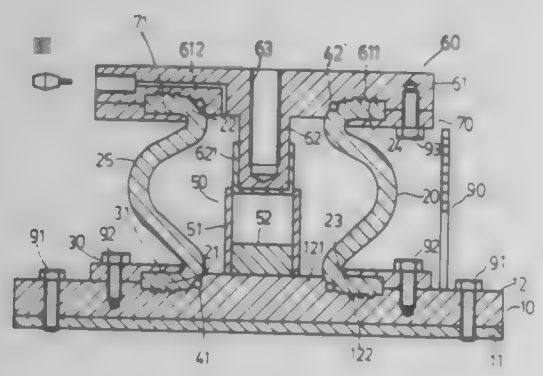
1. A pneumatic vibration insulation arrangement for a load, the arrangement comprising means defining a variable volume chamber means for supporting at least a portion of an air load, means for supplying a pressure to said variable volume chamber means for supporting a remainder of the load including first enclosure means providing a supply pressure to said variable volume chamber means, second enclosure means providing at least one of a modulated pressure or a pressure adapted to be slowly brought to atmospheric pressure to said variable volume chamber means, means for selectively communicating said first and second enclosure means with said variable volume chamber means in such a manner that upon establishing communication between the variable volume chamber means and at least one of the first and second enclosure means, a predetermined pressure is applied to said variable volume chamber means so as to provide for a predetermined vibration damping of the load.

4,603,844

CUSHION ISOLATOR

Thomas Chen, No. 6, Lane 164, Yuan Da Rd., Sec. 1, Yuanlin Chunghwa, Taiwan

Filed Oct. 30, 1984, Ser. No. 666,545
Int. Cl.[4] F16F *9/04*
U.S. Cl. 267—118
6 Claims



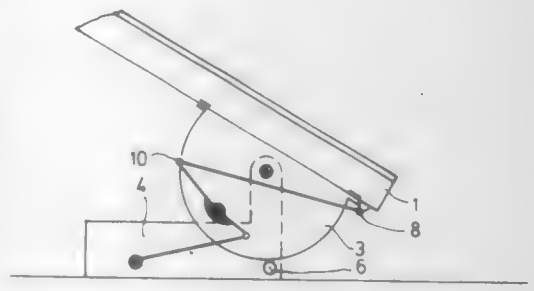
1. A cushion isolator comprising:
(a) a base body;
(b) a supporting plate;
(c) a hollow, flexible drum having upper and lower flanges disposed between the base body and the supporting plate;
(d) first means to attach the lower flange to the base body;
(e) second means to attach the upper flange to the supporting plate;
(f) a passage defined by the supporting plate and communicating between an exterior surface of the supporting plate and an interior space within the hollow, flexible drum;
(g) valve means connected to the passage to control the flow of a pressurized gas into the interior of the hollow, flexible drum;
(h) a hollow guide sleeve attached to the base body and extending into the interior of the hollow, flexible drum;
(i) a cushion of flexible material disposed on the base body within the hollow guide sleeve;
(j) a cylindrical member attached to the supporting plate and extending into the interior of the hollow, flexible drum in alignment with the hollow guide sleeve, a distal end of the cylindrical member being slidably received in the hollow guide sleeve such that, during extreme compression of the hollow flexible drum, the distal end of the cylindrical member contacts the cushion of flexible material; and,
(k) pressure gauge means to indicate the pressure of the gas in the interior of the hollow, flexible drum.

4,603,845

X-RAY UNIT WHICH CAN BE SWIVELLED ABOUT A HORIZONTAL AXIS

Walter Schmedemann, Tangstedt, Fed. Rep. of Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 4, 1984, Ser. No. 596,783
Claims priority, application Fed. Rep. of Germany, Apr. 18, 1983, 3313994
Int. Cl.[4] H01J *37/20*
U.S. Cl. 269—323
4 Claims



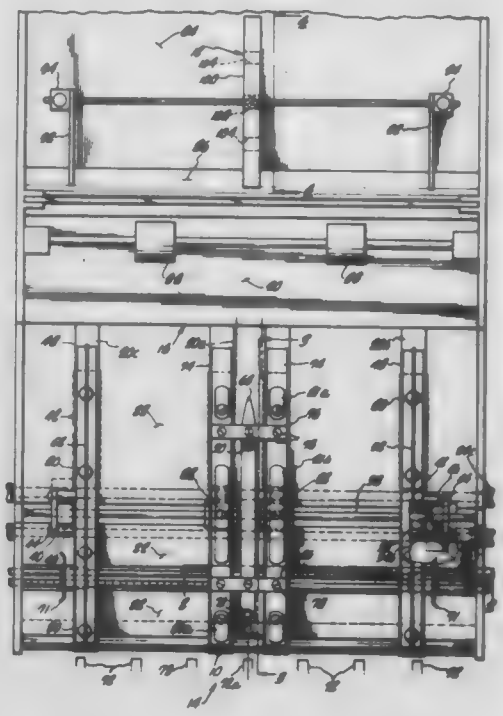
1. An examination table comprising:
a pedestal having a horizontal axis;
a guide pivotably mounted on the pedestal to be swiveled about the horizontal axis;
a table top supporting frame having a longitudinal direction transverse to the horizontal axis, said frame being slidably mounted on the guide for sliding in the longitudinal direction; and
a lever arrangement for linking the swivel motion of the guide to the longitudinal motion of the table top supporting frame;
characterized in that the lever arrangement comprises:
a two-arm lever pivotably mounted on the guide at a bearing spaced from the horizontal swivel axis, said two-arm lever having first and second opposite ends;
a first rod having first and second opposite ends, the first end being pivotably connected to the first end of the two-arm lever, the second end being pivotably connected to the pedestal; and
a second rod having first and second opposite ends, the first end being pivotably connected to the table top supporting frame, the second end being pivotably connected to the second end of the two-arm lever.

4,603,846

DUAL-STREAM ENVELOPE FEEDER

Kevin Miles, Rancho. Cucamga, Calif., assignor to Micheal Miles; Alfred Dubler; Rick Diebold and David Dubler, all of Ontario, Calif.

Filed Oct. 3, 1984, Ser. No. 657,373
Int. Cl.[4] B65H *9/04*
U.S. Cl. 271—2 11 Claims



1. A dual-stream feeder for a sheet feeding printing press, the press having a conveyor section receiving separate sheets from stack feeding means and opposed reciprocating jogging means at opposite sides of the conveyor section for lateral movement of the sheets from opposite sides toward a register path over a register board on the conveyor section, the feeder comprising:

(a) register means for defining a laterally fixed spacing between two streams of the sheets, the register means comprising an elongated member having opposite parallel sides separated by the fixed spacing; and

(b) means for fastening the register means to the register board between the joggers,

wherein the jogging means can move corresponding sheets laterally into contact with the sides of the register means, positioning the sheets in lateral registration at the fixed spacing.

4,603,847

BANK NOTE PROCESSING MACHINE EQUIPPED WITH A CASSETTE FOR ACCOMMODATING BANK NOTES

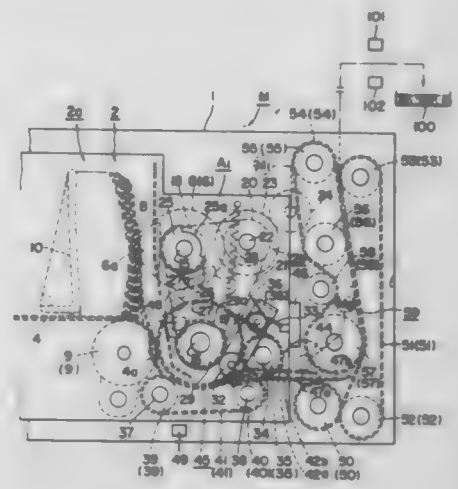
Koichi Oota, and Tsuguo Mizoro, both of Himeji, Japan, assignors to Glory Kogyo Kabushiki Kaisha, Hyogo, Japan

Filed Jun. 13, 1984, Ser. No. 620,209
Claims priority, application Japan, Jun. 20, 1983, 58-93339[U]
Int. Cl.[4] B65H *1/02*
U.S. Cl. 271—10 5 Claims

1. A bank note processing machine in which at least one cassette for accommodating bank notes is detachably loaded, the foremost one of the bank notes in the cassette being fed out one by one by feeding means provided in the cassette, the fed out band note being thereafter conveyed by bank note conveying means to the outlet of the machine, which comprises:

(a) at least one cassette having therein a bank note accommodating portion, at least one feed roller, having a dispensing portion in an angular range about its axis, gate means for forming a gate gap for permitting one bank note to pass therethrough, a first bank note conveying means for receiving a bank note having passed through the gate gap to convey to a second bank note conveying means formed in the main body of the machine, a first driven rotary means to which a driving force is transmitted from the main body of the machine to rotate the feed roller and the gate means, a second driven rotary means to which a driving force is transmitted from the main body thereof to drive the first bank note conveying means, and lock means for locking the feed roller responsive to the cassette being detached from the main body of the machine;

(b) first rotary drive means provided on the main body thereof and connected with the first rotary driven means when the cassette is loaded in the main body thereof;



(c) second rotary drive means provided on the main body thereof, connected with the second driven rotary means when the cassette is loaded in the main body thereof and controlled independently of the first rotary drive means; and

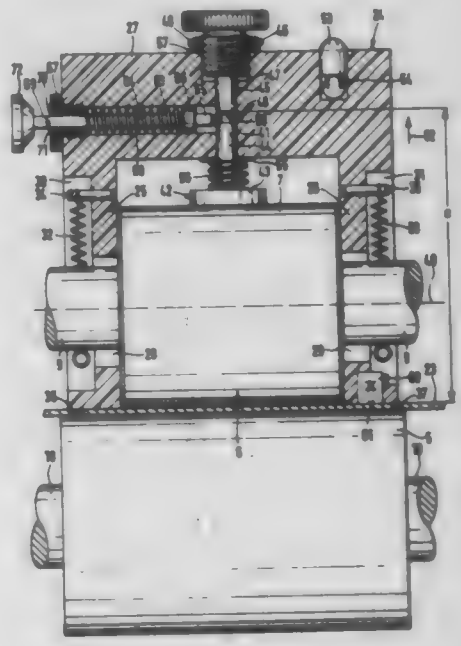
(d) lock release means for releasing the lock means in order to permitting the feed roller to rotate when the cassette is loaded in position in the main body thereof.

4,603,848

SHEET SEPARATOR INCLUDING PASSAGE GAP ADJUSTING MECHANISM FOR SEPARATING SHEETS OF VARIOUS THICKNESSES FROM A STACK OF SHEETS

Wilhelm Markgraf, Tennenbronn; Werner Lehmann, Gutach, and Rainer Fecker, Furtwangen, all of Fed. Rep. of Germany, assignors to Mathias Bäuerle GmbH, Fed. Rep. of Germany

Filed Mar. 29, 1985, Ser. No. 717,881
Claims priority, application Fed. Rep. of Germany, Apr. 4, 1984, 3412574
Int. Cl.[4] B65H *3/52*
U.S. Cl. 271—125 18 Claims



1. A sheet separator for a sheet feeder, comprising: a friction cylinder; drive means for rotating said friction cylinder; a

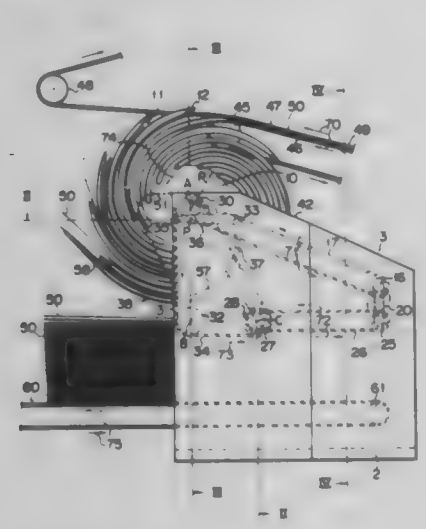
retaining member mounted for radial movement relative to said friction cylinder and provided with a braking surface having a high coefficient of friction and forming with said friction cylinder a passage gap which is adjustable to the thickness of a sheet to be separated; a carrier connected to and supporting said retaining member; gap adjustment means connected to said carrier and said retaining member for adjusting a width of the passage gap; a bracket mounted on said carrier and movable radially relative to said friction cylinder, said bracket having a contact surface which can be applied in said passage gap against said friction cylinder; a checking element movably mounted to said bracket and engaged with said retaining member; a signal switch associated with said checking element for changing its switching state at a selected position of said retaining member relative to said contact surface; and a switching circuit connected to the signal switch for indicating its change in switching state.

4,603,849

PAPER-SHEET DIVIDING APPARATUS

Kunihiko Nakamura, and Takashi Koshiyouji, both of Yokohama, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Aug. 24, 1983, Ser. No. 526,137
Claims priority, application Japan, Sep. 3, 1982, 57-152552
Int. Cl.⁴ B65H *29/40, 31/32, 33/16*
U.S. Cl. 271—186 **16 Claims**



1. A paper-sheet dividing apparatus comprising:

(a) a blade wheel including a rotating shaft and a plurality of first blades each having a paper-sheet receiving surface and extending outwardly from a peripheral vicinity of the rotating shaft;

(b) inserting means for putting each of the paper sheets into a space formed between two adjacent first blades;

(c) means for discharging the paper sheets from the spaces;

(d) stacking means for piling the paper sheets discharged from the spaces;

(e) a second blade having a paper-sheet supporting surface of the same shape as that of the paper-sheet receiving surfaces of the first blades;

(f) supporting means for rotatably supporting the second blade which is substantially coaxial with the first blades at a stop position; and

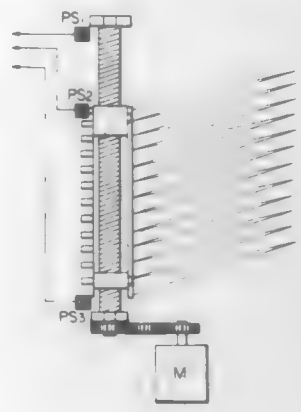
(g) a further means for rotating the second blade at the same rotating speed as that of the first blades from the stop position to a discharging position and thereafter moving the second blade away from the rotating shaft of the blade wheel.

4,603,850

CONTROLLING METHOD FOR A SORTER

Tatumi Horiuchi, Hachioji, Japan, assignor to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Oct. 20, 1982, Ser. No. 435,615
Claims priority, application Japan, Oct. 28, 1981, 56-173353
Int. Cl.⁴ B65H *39/10*
U.S. Cl. 271—288 **4 Claims**



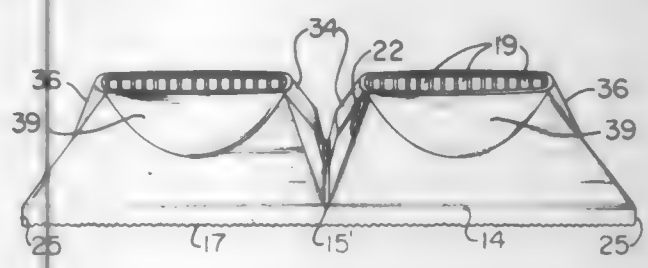
1. In a copying machine with a reciprocal sorter having movable bins capable of collating in upward and downward directions through a number of bins corresponding to a selected number of copies set for copying originals, the improvement comprising a detecting means for generating a signal in response to a change of the number of copies during the collating operation and an automatic means for returning the movable bins to a specific standard position in response to the signal.

4,603,851

PORTABLE EXERCISING DEVICE

Brian Russell, 11715 Keough Dr., Northglenn, Colo. 80233

Filed Jul. 22, 1985, Ser. No. 757,299
Int. Cl.⁴ A63B *23/04*
U.S. Cl. 272—96 **14 Claims**



1. A portable, self-contained unit adapted for in-place exercising and strenthening the lower extremeities of the human body, comprising:

a pair of pad members each composed of a resilient, compressible material;

common base means composed of resilient compressible material uniting said pad members in juxtaposed relation to one another whereby to define a common groove between said pad members, said pad members and said base being of unitary construction and said compressible material being of substantially uniform density throughout said pad members and said base;

each said pad member having an upper foot-engaging surface integral with each said pad member, each said pad member being generally rectangular in horizontal cross-section and having downwardly divergent side and end walls extending continuously from said upper foot-engaging surface to said common base, said side and end walls interrupted by generally convex bulge portions extending the substantial length of each of said sidewalls and end walls, said convex portions being integral with said pad members and sloping downwardly from said upper foot-engaging surface, whereby said bulges improve the lateral

stability of the pad members in response to lateral deflection imparted to said pad members.

4,603,852

MAT FOR SPORTS AND ATHLETICS

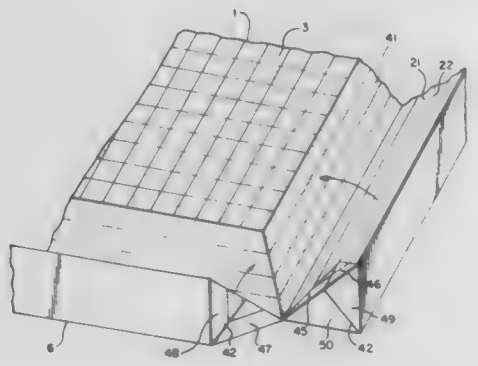
Hans-Ulrich Breitscheidel, Siegburg, and Rudolf Kautz, Hennef, both of Fed. Rep. of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Fed. Rep. of Germany

Filed Oct. 4, 1983, Ser. No. 538,785

Claims priority, application Fed. Rep. of Germany, Oct. 4, 1982, 3236633

Int. Cl.[4] A63B *5/02;* B32B *3/26*

U.S. Cl. 272—109 20 Claims



1. A mat for sports and athletics which comprises a core layer made of an elastic foam material provided on the topside with a skin-compatible top material and on the underside with a skidproof layer, the core layer having side rims extending from the top side to the underside which are continuously beveled, and the top material being provided with projecting border portions having a width corresponding to twice the thickness of the mat and projecting beyond the topside of the core layer; on the inside of the projecting border portion two equal-sized, wedge-like ridges for forming the lateral border are arranged side-by-side and bonded to the projecting border portion and extend in parallel to the side of the mat, said ridges having the cross-section of an isosceles right triangle, a height corresponding to half the thickness of the mat and being made of an elastic foam material; and the projecting border portions of the top material being extended with the ridges over the surfaces of the side rims to the underside of the mat, and the resulting joint gaps are sealed whereby the lateral border is produced along the periphery of the mat.

4,603,853

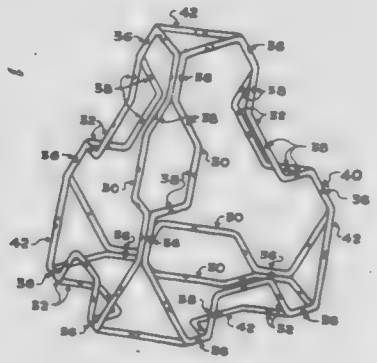
MODULAR FRAME STRUCTURE AND BUILDING SYSTEM

Edward W. Satterthwaite, 2107 Spruce St., Philadelphia, Pa. 19103

Filed Aug. 26, 1983, Ser. No. 526,643

Int. Cl.[4] A63B *9/00*

U.S. Cl. 272—113 14 Claims



1. A system of interconnectable building modules, each module comprising:

a triangular wall element having a base leg and two standing legs, the legs each defining a longitudinal axis, and the wall element defining a plane, the base leg and the standing legs being elongated members joinable at their ends to one another in an isosceles triangle having an angle of about fifty-five degrees between the longitudinal axis of said base leg and the longitudinal axes of each said standing leg and having an angle of about seventy degrees between the longitudinal axes of said two standing legs, the standing legs each having a connection hole oriented perpendicular to the respective longitudinal axes of the standing legs and oriented at 60 degrees to a plane defined by said isosceles triangle, and the base leg having a connection hole oriented perpendicular to the longitudinal axis of said base leg and oriented at forty-five degrees to said plane of said triangle, four said triangular wall elements forming a substantially tetrahedral building module when connected using coextensive connection holes, the four triangular wall elements being connected in a tetrahedron, said four wall elements defining a base plane, two sloping planes and a fourth plane perpendicular to said base plane, said elements, attached to one another along coextensive base legs, said base legs and said standing legs each further having at least one facewise-connecting hole oriented perpendicular to the respective longitudinal axis of said legs and perpendicular to the plane of said triangular element, whereby the triangular element is connectable in register directly to an additional triangular element placed thereupon, and whereby the tetrahedral building module can be attached to other tetrahedral building modules to form structures.

4,603,854

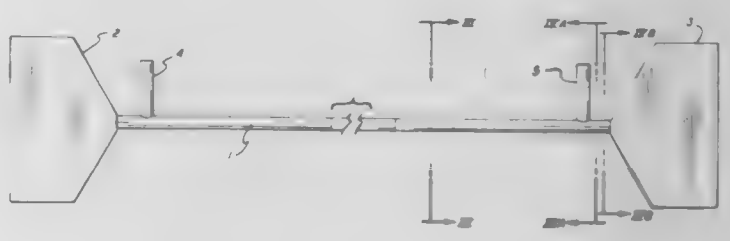
TRUNK-TWIST EXERCISE DEVICE

Frank Krausz, 405 Commonwealth Ave., Boston, Mass. 02215

Filed Jun. 7, 1984, Ser. No. 618,187

Int. Cl.[4] A63B *21/00*

U.S. Cl. 272—116 7 Claims



1. A trunk-twist exercise device which consists of a shaft having blades mounted at either end thereof and two handles attached to said shaft, each handle being closer to the end of said shaft than its mid point and being mounted with its axis perpendicular to the axis of the shaft, wherein the angle between the axis of the handles and the plane of the blades is adjustable.

4,603,855

VARIABLE EXERCISE APPARATUS

Leslie W. Sebelle, P.O. Box 1661, Honolulu, Hi. 96806

Filed Jan. 2, 1981, Ser. No. 222,164

Int. Cl.[4] A63B *21/00*

U.S. Cl. 272—117 34 Claims

1. An exercise apparatus comprising

a frame having a pair of spaced upright stanchions,

a carriage supported by each of said stanchions for substantially vertical positioning,

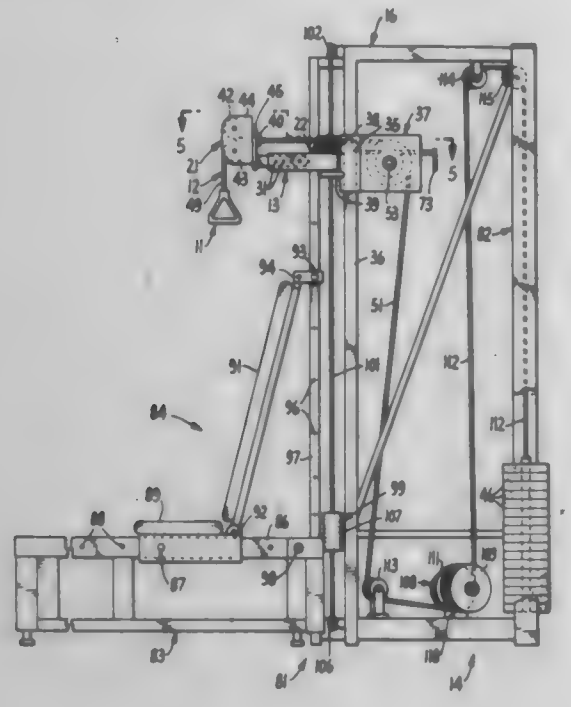
a telescoping arm carried on each of said carriages for movement therewith and having an end pivotably secured thereto,

a cable running along each of said arms,

pulley means on said arms supporting said cables for longitudinal movement relative to said arms,

a manually engageable handle on the end of each of said

cables adjacent to the distal end of the associated one of said arms,



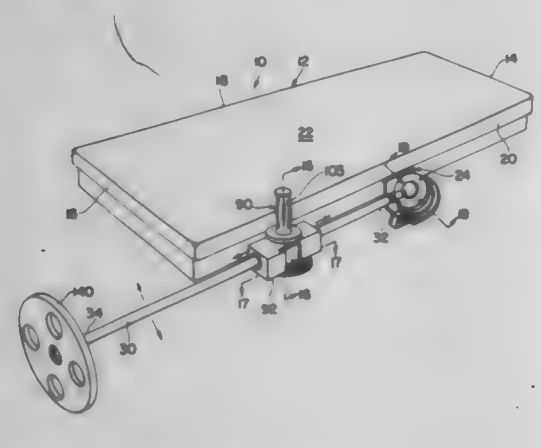
and weight means on the other end of said cables for resisting pulling of said cables toward said distal end of said arms.

4,603,856

EXERCISING DEVICE

Russell D. Fiore, 9 Raymond St., Lincoln, R.I. 02865

Filed Oct. 2, 1984, Ser. No. 656,958
Int. Cl.[4] A63B *21/00*
U.S. Cl. 272—131 20 Claims



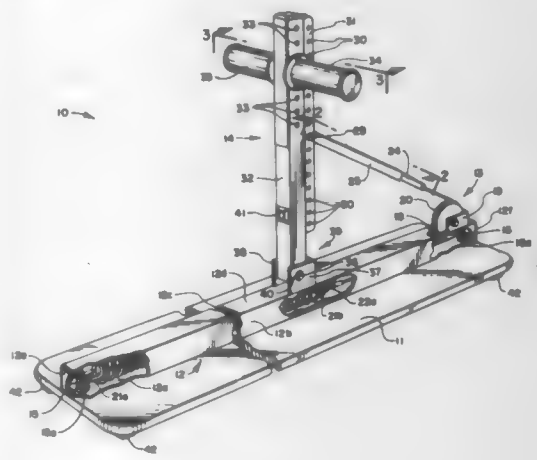
1. An upper extremity exercising device for use with a support for a human exerciser including a substantially planar surface for supporting one of the shoulders of the exerciser and defining a lateral plane, said exercise device comprising a rigid elongated member having upper and lower ends, means for operatively connecting said lower end with said support at a position substantially laterally adjacent said planar surface exerciser, means comprising a lower resistance unit for pivotally supporting said lower end such that said member may simultaneously transcribe arcs of substantially 180 degrees in planes substantially parallel and normal to said lateral plane, said supporting means further including means for adjusting the resistance to pivotal movement of said member such that both the human effort needed to transcribe such arcs can be progressively increased or decreased dependent on exercise requirements and the position of said member may be alternatively fixed with respect to said support, and an upper resistance unit including a handle assembly for grasping by the exerciser and supported for longitudinally slidable movement on said member intermediate the upper and lower ends thereof, said handle assembly being adapted for said slidable movement while said member simultaneously pivotally moves with respect to said support, said handle unit having means for adjusting the resistance to sliding movement on said member such that the human effort needed to move said unit can be progressively increased or decreased dependent on exercise requirements and the position of said unit may be alternatively fixed with respect to said member.

4,603,857

SPRING EXERCISE DEVICE

Max C. Chipman, 1938 N. 275 West, Orem, Utah 84101, and George R. Horton, 1340 E. 130 North, Springville, Utah 84663

Filed Feb. 10, 1984, Ser. No. 578,850
Int. Cl.[4] A63B *21/04*
U.S. Cl. 272—136 8 Claims



1. An exercise device comprising
a base;
a spring housing extending centrally across the base, whereby portions of the base extend outwardly from opposite sides of the housing;
a spring in the housing having one end thereof fixed to the base at one end of the housing;
a pulley carried by an opposite end of the housing and rotatable into the housing
a pivot arm having one end thereof pivotally mounted to the housing intermediate the ends thereof;
a cable having one end fixed to the other end of the spring, in the housing passed around the pulley, and its other end connected to the pivot arm intermediate the length thereof; and
handle means connected to and projecting from the pivot arm.

4,603,858

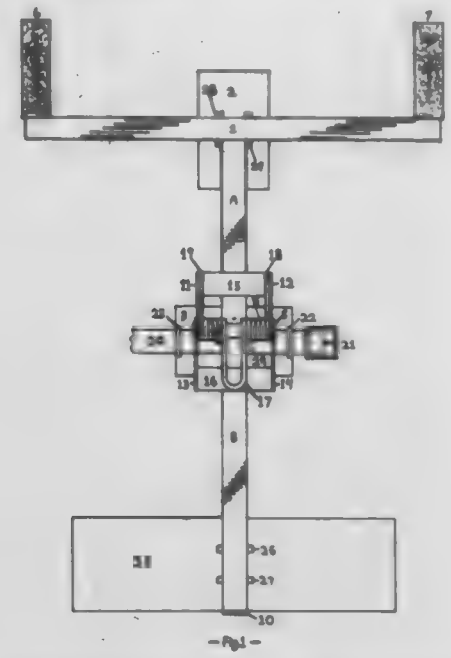
ABDOMINAL EXERCISER

Edward J. Reehil, 215 5th Ave., Bradley Beach, N.J. 07720

Filed Nov. 5, 1984, Ser. No. 668,413
Int. Cl.[4] A63B *23/02*
U.S. Cl. 272—137 6 Claims

1. An abdominal exercise device comprising two oppositely extending elongated structural member means; the opposing ends of said structural member means being pivotally joined to pivotal resistance means tending to pivot and hold said elongated structural member means in substantially the same plane; the free ends of said elongated structural member means each having a body contact member means attached thereto, with a third body contact member means attached to one of the elongated structural member means adjacent the pivotal resistance means and overlying the opposed ends with all said body contact member means lying in substantially the same plane; said third body contact member means having means for fastening said third body contact member means to the waist of an operator whereby, with the third body contact member means at the abdomen of the operator and the other two body contact

member means at the chest and thighs respectively, the operator can do abdominal exercises, sit-ups, and leg lifts by pivoting



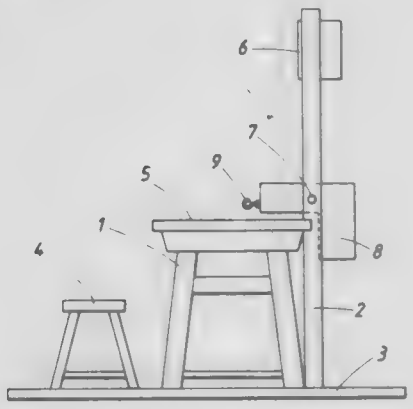
the elongated structural member means against the opposition of the pivotal resistance means.

4,603,859

IMPLEMENT FOR HEAVY ATHLETICS

Matthias Schnaitl, Gundertshausen 9, A- 5142 Eggelsberg, Austria

Filed Oct. 4, 1984, Ser. No. 657,782
Claims priority, application Austria, Oct. 6, 1983, 3542/83
Int. Cl.[4] A63B *21/04*
U.S. Cl. 272—142 7 Claims



1. An athletic training and competitive implement which comprises:

a frame;

a housing mounted on said frame;

a rigid elongated tensile element guided in said housing for linear displacement in a given direction parallel to a longitudinal dimension of said tensile element and having one end located externally of said housing and another end disposed internally of said housing;

means for pivotally mounting said housing on said frame for tilting movement about an axis perpendicular to said direction;

means on said one end of said tensile element for enabling same to be tractively displaced by a trainee or a competitor;

a tension-restoring spring in said housing engaging said other end of said tensile element and stretched upon longitudinal extension of said tensile element from said housing in said direction;

an electronic force-measuring sensor in said housing for generating an output signal representing tensile force;

a digital display device electronically connected to said force-measuring sensor for displaying a value of said output signal;

means continuously connecting said spring to said sensor to exert on said sensor a force which, in accordance with a predetermined characteristic, depends continuously on the movement of said one end and thereby enabling said display to continuously depict tensile force generated in said spring and applied to said tensile element; and

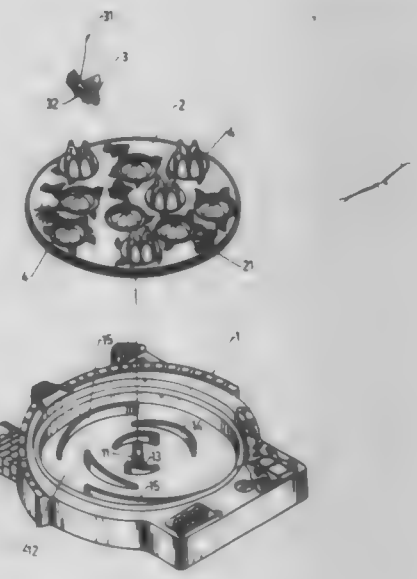
damping means operatively connected to said tensile elements and extending along said spring for braking movement of said tensile element in a direction opposite to the direction of said tensile force.

4,603,860

TOY OF HONEY-GATHERING BEE

Shinn-Hsiung Wey, No. 223, Yeong Fu Road, Tainan, Taiwan

Filed May 7, 1985, Ser. No. 731,463
Int. Cl.[4] A63F *9/00*
U.S. Cl. 273—1 GD 3 Claims



1. A kind of toy of honey-gathering bee including, a stationary pan on which at least a pair of rails with their surfaces rising up and down in the same direction are set; in said each rail is bored a ditch on whose outside wall is cut vertical convex stripes; in the higher part of said each rail is burried a permanent magnet possessing a different polarity for the same pair of rails;

a turning plate, to be placed on said stationary pan, including

a plurality of cavities, bored in said plate itself, located along the ways of said rails, which have a wider upper part than the lower part and a notch cut in the bottom and wall in order to pass on said rails;

a flower in each cavity which will open (or blossom) or close up according to the high or low surface of said rail; and

a magnetic pistil, placed inside said flower, which will turn over if its underside polarity is the same as that of the magnet in said rails when said flower is passing on said magnet of said rails; and

a honey-gathering bee with a permanent magnet hidden in its abdomen, fastened to a fishing rod with a string and used for angling up said magnetic pistil while said petals of said flower are opened widely.

4,603,861

BOWLING BALL

Walter Arnott, 720 Carrollwood Village, #305, Gretna, La. 70053

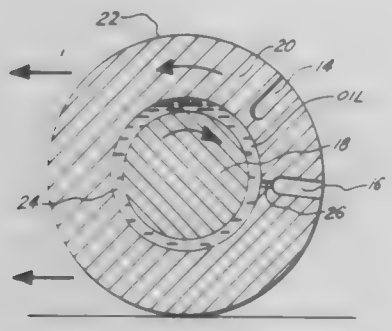
Filed Sep. 17, 1984, Ser. No. 650,882
Int. Cl.[4] A63B *37/00, 37/08*
U.S. Cl. 273—63 R 8 Claims

1. A bowling ball comprising:

a homogeneous non-hollow solid core in the shape of a sphere;

a mantle in the shape of a sphere having an inner surface

surrounding said core and generally concentric with said core and presenting a substantially spherical surface on which said ball rolls; and



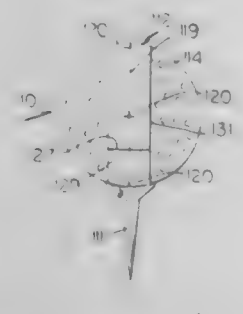
a layer of lubricant between said core and mantle for facilitating independent rotation of said core and mantle.

4,603,862

GOLF BALL WITH ALIGNMENT MARKER

Richard M. Chen, 51-25 Goldsmith St., Elmhurst, N.Y. 11373

Division of Ser. No. 321,572, Nov. 16, 1981, Pat. No. 4,432,551, which is a continuation-in-part of Ser. No. 282,054, Jul. 10, 1981, Pat. No. 4,441,716. This application Feb. 17, 1984, Ser. No. 581,231
Int. Cl.[4] A63B *69/36*
U.S. Cl. 273—183 C 12 Claims



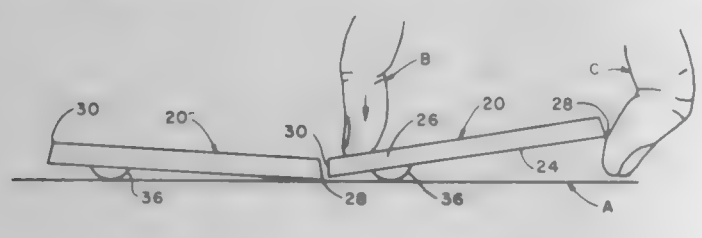
1. A golf alignment marking device comprising: in combination, a marking member and a conventionally sized golf ball, said marking member being formed with an adhesive on a first surface and being formed with an impact mark forming material on the second surface, said member comprising a center line on the second surface, said member being adhesively applied to the surface of said golf ball so that the centerline is coincident with the circumference of the golf ball, whereby when the golf ball and marking member combination is aligned on a tee with the center line aligned at the back, and the golf ball and member combination is impacted by a golf club face, an impact mark is produced in relation to the centerline, so that ball flight deviation from the centerline is determined in reading the impact mark relationship to the centerline.

4,603,863

TILTABLE GAME PIECES FOR USE WITH BOARD GAMES

William D. Meyer, 2816 Sutton Blvd., Maplewood, Mo. 63143

Filed Dec. 17, 1984, Ser. No. 682,248
Int. Cl.[4] A63F *3/00*
U.S. Cl. 273—282 7 Claims



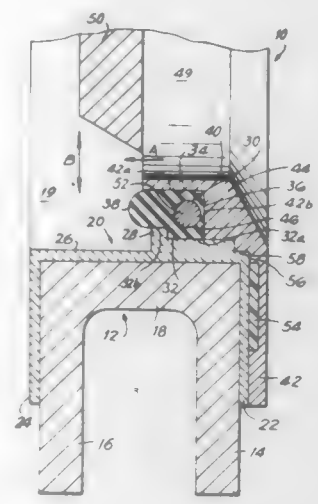
7. In a game comprising a plurality of playing pieces, each of said playing pieces including an upper portion having an upper surface with a playing indicia thereon and defined by an outer periphery, and supporting means including a playing surface thereon adapted to support said plurality of playing pieces adjacent one another on said playing surface during playing of the game, the improvement comprising fulcrum means on each playing piece opposite from the upper portion, said fulcrum means including less than three spaced projections, each projection being located away from the center of the piece and adjacent said outer periphery such that said projections are in contact with said playing surface when said playing piece is disposed on said playing surface, each projection being spaced inwardly a sufficient distance from the outer periphery and projecting downwardly from the playing piece toward said playing surface so that application of a force directed downwardly against said upper surface adjacent said outer periphery in the area between the outer periphery and at least one of the projections causes said playing piece to pivot about said at least one of the projections thereby causing downward pivoting of said playing piece adjacent to said at least one projection toward said playing surface and causing upward pivoting of said playing piece on the opposite side of said at least one projection to a position facilitating grasping of said playing piece for removal of said playing piece from said playing surface.

4,603,864

SEALING ARRANGEMENT FOR KNIFE GATE VALVES

George S. Raftis, Pittsburgh, Pa., assignor to Red Valve Company, Inc., Carnegie, Pa.

Filed Jun. 14, 1985, Ser. No. 744,692
Int. Cl.[4] F16J *15/12;* F16K *3/22*
U.S. Cl. 277—12 4 Claims



1. In a knife gate valve for controlling the flow of a pressurized medium along a path, a sealing arrangement comprising:

(a) a valve body having an internal flow-through passage which extends along an axis;

(b) a liner having upstream and downstream annular flange portions and an annular liner portion located between the flange portions, all of the liner portions engaging and being mounted on the valve body, said liner portion circumferentially bounding, at least in part, the passage and having an annular stop extending radially inwardly into the passage;

(c) an annular seat of sealing material and having a generally L-shaped cross-section, said seat having an outer stepped surface mounted on and sealingly engaging the stop and the liner portion, an inner surface located radially inwardly of the outer stepped surface, an upstream surface located upstream of the stop, and a downstream sealing surface located downstream of the stop;

(d) a retainer ring having an annular upstream flange engaging the upstream flange portion of the liner, and a retaining portion having an axially-extending surface sealingly engaging the inner surface of the seat and a radially-

extending surface sealingly engaging the upstream surface of the seat, said retaining portion and said liner bounding a cavity in which the seat is securely retained against removal during the flow of the medium, said retaining portion bounding an internal flow-through section extending along the axis; and

(e) a knife gate mounted on the body intermediate the flow-through passage and the flow-through section for movement between a fully-open position in which the gate is remote from the seat, and a fully-closed position in which the gate sealingly engages the sealing surface of the seat.

4,603,865

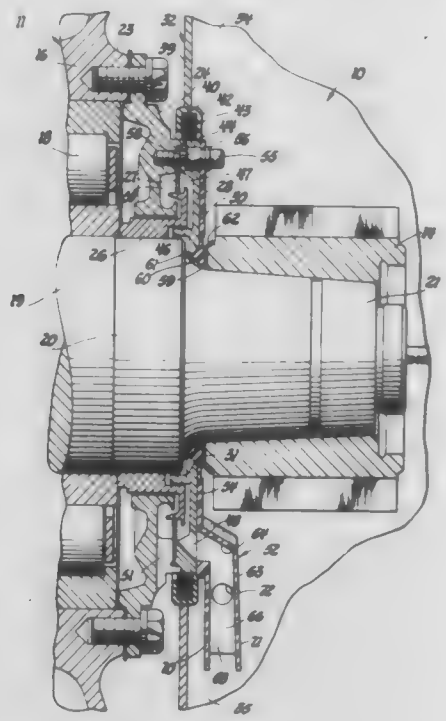
DRIVE MOTOR GEAR LUBRICANT SEAL FOR LOCOMOTIVES AND THE LIKE

Paul R. Bien, Downers Grove, Ill., assignor to General Motors Corporation, Detroit, Mich.

Filed Feb. 25, 1985, Ser. No. 704,758

Int. Cl.[4] F16J *15/34, 15/447;* F16H *57/02*

U.S. Cl. 277—12 **6 Claims**



1. A unitary seal in combination with a motor and drive gear system having a motor frame with attached gear case enclosing a pair of engaged drive gears and containing lubricant for lubrication of the gears, the motor having a shaft opening and a surrounding seal plate open to the gear case interior and through which extends a motor shaft carrying one of said gears spaced adjacent said seal plate, said seal plate including at least one inner drain opening below the shaft opening and communicating directly with the gear case interior to return lubricant passing through the shaft opening to the gear case, said inner drain opening being connected internally through a labyrinth seal with external drain openings outside the gear case to exhaust lubricant passing the labyrinth seal,

said unitary seal comprising

a flat body mountable on the seal plate within the gear case and having an opening for the motor shaft, said body extending into close radial spacing with said shaft,

locating means in said body for locating said body on said seal plate, around said motor shaft opening,

a flexible annular sealing lip around said seal opening on a front side of said body and extending outward into close relation with the adjacent end of the shaft-carried gear to limit the flow of lubricant from the gear case into the motor opening, and

means defining an enclosed duct depending from the bottom and front side of said body within the gear case, said duct including a drain opening through the back of said body and aligned with said seal plate inner drain opening and an opening at the bottom of said duct communicating with said gear case interior, said duct permitting the discharge of lubricant from the seal plate drain opening to the gear case interior while tending to block the flow of lubricant thrown or forced up by rotation of the gears from entering the seal plate drain opening and being forced through the labyrinth seal to the external drain, thereby reducing the loss of lubricant from the gear case during operation.

4,603,866

SHAFT AND RADIALLY-SEALING RING WITH COLD FLEXED SEAL DISK

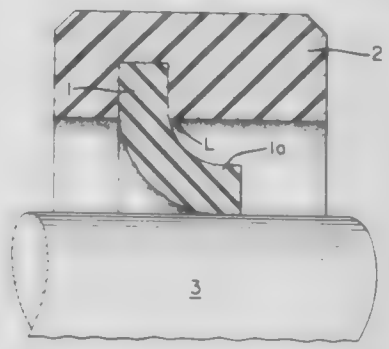
Dieter Fuchs, Riedstadt, and Wolfgang Schmitt, Viernheim, both of Fed. Rep. of Germany, assignors to H. Weissenfeld-Richters, Weinheim, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 775,470, Sep. 12, 1985. This application Dec. 20, 1985, Ser. No. 811,896

Claims priority, application Fed. Rep. of Germany, Jan. 15, 1985, 3501065

Int. Cl.[4] F16J *15/32*

U.S. Cl. 277—152 **16 Claims**



1. A shaft and seal ring combination made by the process comprising:

providing the shaft;

cold flexing the inside of an annular, planar disk of non-elastomeric plastic about the shaft, the disk having a thickness of form about 0.8 to about 2 mm and, before being cold flexed about the shaft, an inside diameter of from about 1 to about 6 times the thickness of the disk less than the diameter of the shaft; and

sealingly attaching a stiffening ring about the outside of the disk, the line of the innermost sealing attachment between the stiffening ring and the disk being from about 1.1 to about 4 times the thickness of the disk from the surface of the shaft.

4,603,867

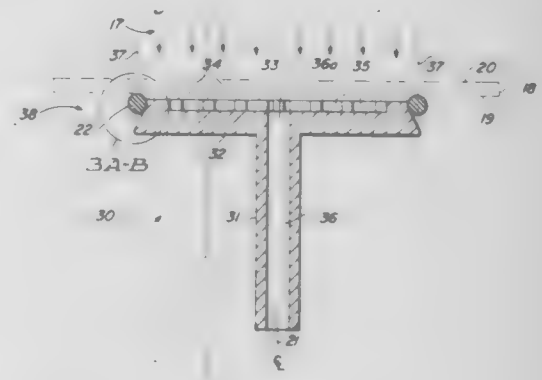
SPINNER CHUCK

Richard R. Babb, Apache Jct., and Howard A. Kirschler, Tempe, both of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Apr. 2, 1984, Ser. No. 596,207

Int. Cl.[4] B23B *31/30*

U.S. Cl. 279—3 **16 Claims**



8. A method for spinning a wafer comprising:

providing a wafer chuck having a peripheral seal holding groove with a conical skirt below said groove;

providing in said groove a moveable circular seal for con-

tacting and sealing against said wafer and said wafer chuck, wherein a portion of said seal protrudes from a first surface of said chuck;

placing a wafer on said seal above said first surface;

applying a pressing force to said wafer in a direction toward said first surface;

moving said seal, in contact with said wafer and said wafer chuck, downwards over said conical skirt without substantially crushing said seal while simultaneously radially stretching said seal to provide an opposing force for sealing and for automatically restoring said seal to its position prior to said applying step after spinning is stopped; and

spinning said chuck and said wafer.

4,603,868

ROLLER SKATE UNDERCARRIAGE WITH ADJUSTABLE ROLLERS

Ernst Schütz, Adlikerstrasse 79, CH-8105 Regensdorf, Switzerland

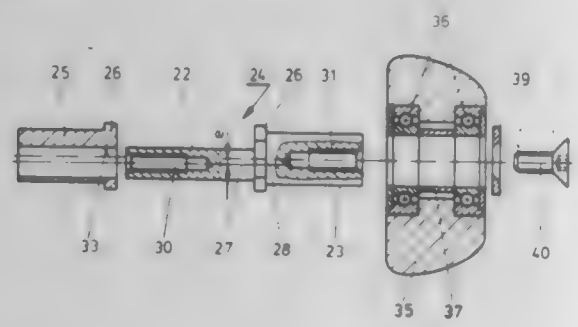
Filed Aug. 18, 1983, Ser. No. 524,244

Claims priority, application Switzerland, Apr. 25, 1983, 2210/83

Int. Cl.[4] A63C *17/18*

U.S. Cl. 280—7.13

6 Claims



1. A roller skate undercarriage for being attached to a skate which includes an upper structure, the undercarriage comprising:

a roller carriage including means for supporting skate rollers thereon; and attachment means for detachably fastening the carrier to the upper structure of the skate;

the means for supporting rollers comprising holes in the carrier each for receiving a roller axle, and roller axles being received in the holes in the carrier; rollers being carried on the roller axles;

the roller skate undercarriage further comprising a hub supported on the axle outward of the carrier; a respective one of the rollers being received on the hub; the hub having an axis which is parallel to and offset from the axis of the axle, such that rotative adjustment of the hub with respect to the axle adjusts the height of the roller supported on the hub with respect to the carrier;

a pair of hubs for each axle, the hubs of the pair being located on the opposite sides of the carrier; each hub carrying a respective one of the rollers on it;

one of the hubs of a pair thereof on an axle being rotatably adjustable with respect to the axle independently of the other hub, whereby each roller of a pair thereof is individually adjustable in height with respect to the carrier.

4,603,869

HELICOPTER GROUND HANDLING WHEEL ASSEMBLY

Eugene O. Maxwell, 120 Coin, Fort Worth, Tex. 76140

Filed Nov. 13, 1984, Ser. No. 670,567

Int. Cl.[4] B64F *1/04*

U.S. Cl. 280—11

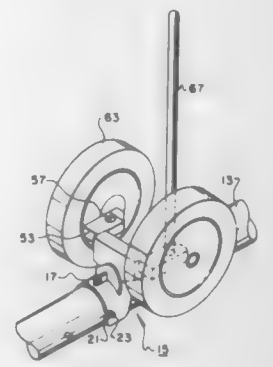
3 Claims

1. In a ground handling wheel assembly for coupling to a skid of a helicopter, each of the skids having locking pins protruding laterally outward from opposite sides, an improved means for securing the wheel assembly to the skid, comprising in combination:

a cradle having a downwardly facing channel for reception over the skid and having a slot on each side for receiving one of the locking pins;

a pivot pin extending across the top of the cradle parallel with the axis of the channel;

a cam mounted to the pivot pin for rotation therewith, and extending through an aperture in the top of the cradle for engaging the top of the skid;



an arm coupled to the pivot pin and extending laterally outward for selectively rotating the pivot pin and thereby the cam to an overcenter stop position wedging against the top of the skid; and

a knob coupled to the arm, the knob having a stop surface that contacts the cradle to locate the cam in the desired overcenter stop position, the knob being positionable along the length of the arm to selected positions, each of which varies the angle of the arm with respect to the cradle when the stop surface engages the cradle, thereby varying the desired overcenter position to accommodate variations in skid diameters.

4,603,870

KNEELING OR SITTING SLED

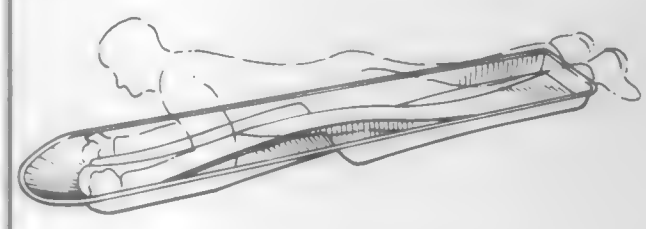
F. Javier Monreal, 4242 Barker Hill Rd., Jamesville, N.Y. 13078

Continuation-in-part of Ser. No. 615,116, May 30, 1984, abandoned. This application Jul. 2, 1985, Ser. No. 751,599

Int. Cl.[4] B62B *13/04*

U.S. Cl. 280—18

1 Claim



1. A recreational lightweight snow sled comprising an elongated body molded from a single piece of plastic sheeting material and being four to five feet in length, fifteen to twenty four inches in width, and four to five inches in height, said sled having a bottom portion, a pair of longitudinally extending parallel side portions, a rear portion interconnecting the aft ends of said side portions, and a front portion interconnecting the front ends of said side portions, said front portion having a forwardly extending contoured shape, said bottom portion having a longitudinally extending middle section and a longitudinally extending lateral section along each side of said middle section, said middle section being eight to ten inches wide at each end and tapering to a width of four to six inches at its midpoint, said middle section being progressively curved upwardly from a lowest point at each end to a raised hump at its midpoint, said hump extending three to five inches above the bottom surface of the sled, each said lateral section being four to six inches wide at its midpoint and tapering to a width of

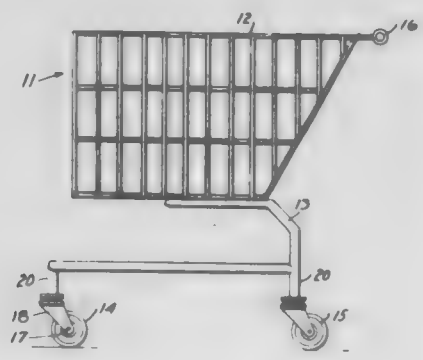
three to four inches at each end, each said lateral section being progressively curved upwardly from its front end to its midpoint while remaining below the height of said middle section, and a knee pocket in the form of a curved depression located directly behind the midpoint of each lateral section and extending three to five inches below the highest point of said lateral section, said lateral section rising progreessively upwardly from said knee pocket to the rear end of said lateral section while remaining below the height of said middle section, wherein said sled may accommodate a user while in a sitting position, a kneeling position, or a prone position.

4,603,871

WHEEL FOR SHOPPING CART OR THE LIKE

Samuel J. McNeill, Redondo Beach, Calif., assignor to Fred N. Schwend, Mira Loma, Calif., a part interest

Continuation-in-part of Ser. No. 740,756, Jun. 3, 1985, abandoned. This application Jul. 26, 1985, Ser. No. 760,758
Int. Cl.[4] B62B *39/00*
U.S. Cl. 280—33.99 C **12 Claims**



1. A wheel for restraining free rolling movement of a shopping cart or the like from a parked position, said wheel comprising

bearing means for mounting said wheel on said cart or the like for rotation about an axis,

means on said wheel forming a cavity surrounding said bearing means,

said cavity extending concentrically about said axis,

flowable weighting material in said cavity,

said material being effective to flow under the influence of gravity to the bottom of said cavity,

said material only partially filling said cavity, and

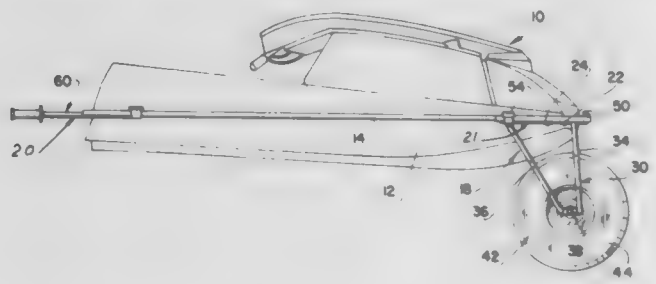
projections on said wheel extending into said cavity and into the path of movement of said material whereby to restrain rolling movement of said wheel.

4,603,872

JET-SKI DOLLY

Peder S. White, 345 University Dr., L2, Costa Mesa, Calif. 92626

Filed May 8, 1985, Ser. No. 731,870
Int. Cl.[4] B62B *1/20*
U.S. Cl. 280—47.13 B **4 Claims**



1. A dolly apparatus arranged to be removably mounted to a jet-ski vehicle having a peripheral overhang for the transporting thereof, comprising:

a framework adapted to be removably attached to the bow of said jet-ski vehicle;

means mounted on said framework for removably attaching said framework to said bow;

at least one wheel rotatably mounted to said framework;

handle means arranged to be removably mounted adjacent the rear of said jet-ski vehicle;

removable mounting means affixed to said handle means for removably mounting said handle means to said jet-ski vehicle;

said framework comprising:

a carriage bar formed to fit the configuration of said bow of said jet-ski vehicle; and

wheel-support struts fixedly secured to said carriage bar, and arranged to receive and support said wheel therebetween;

and wherein said removable attaching means comprises:

a nose stud mounted to said carriage bar and positioned to engage said peripheral overhang disposed about said jet-ski vehicle; and

a pair of hook members fixedly secured to said carriage bar, and formed to engage said peripheral overhang;

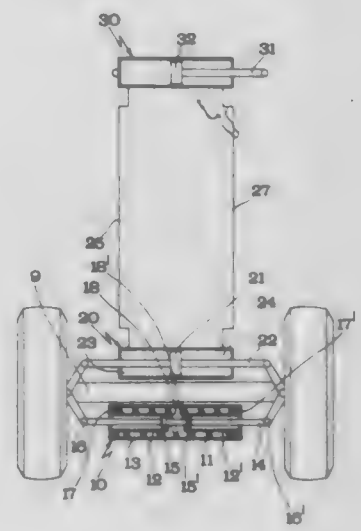
wherein said handle means comprises a pair of elongated handlebars, said removable mounting means being mounted on each of said handlebars, and each of said removable mounting means comprises a hook member mounted adjacent one end of said handlebar for locking engagement with said overhang and a latching tongue positioned adjacent the opposite end of said handlebar for engagement with said overhang when upward force is applied to said handlebar.

4,603,873

DEVICE FOR STRAIGHT TRAVELING STABILIZATION AND CHANGE OF ATTITUDE ON PREDETERMINED PATHS FOR VEHICLE AXLES

Roberto Perlini, Corso Venezia 93, S. Bonifacio, Italy

Continuation of Ser. No. 391,184, Jun. 23, 1982, abandoned. This application Aug. 21, 1985, Ser. No. 767,698
Claims priority, application Italy, Nov. 5, 1981, 68427 A/81
Int. Cl.[4] B62D *13/00*
U.S. Cl. 280—94 **6 Claims**



1. A device for straight traveling stabilization and modification of attitude on predetermined paths for vehicle axles, comprising a permanent elastic energy loading unit connected to an axle and exerting a force on steerable wheels supported by said axle, a shifting actuator connected to the axle and operative, when actuated, to exert on said steerable wheels supported by said axle forces of greater intensity than the force exerted by said permanent elastic energy loading unit and a control member for said shifting actuator, responsive to variations in the traveling attitude of the main steering system of the vehicle, characterized in that said permanent elastic energy loading unit and said shifting actuator are mounted on said axle to act directly on said steerable wheels supported by said axle, said

permanent elastic energy loading unit is operative to exert on said steerable wheels supported by said axle a stabilizing force greater than external forces acting on said wheels and said control member is constituted by a hydraulic cylinder hydraulically connected to said shifting actuator by means of two fluid lines which establish a direct communication between said control member and said shifting actuator, said hydraulic cylinder being connected to the main steering system of the vehicle whereby fluid pressure in said hydraulic cylinder is generated by said variations in the traveling attitude of the main steering system and the amount of steering of said steerable wheels supported by the axle is controlled by and graduated in conformity with the amount of steering of said main steering system.

4,603,874

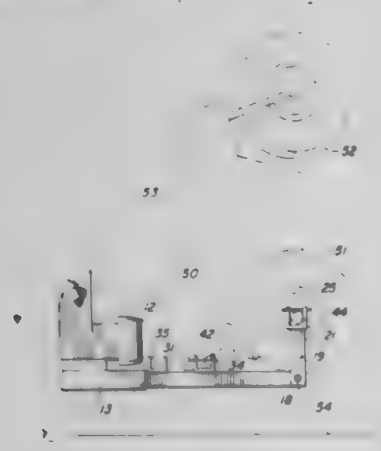
HITCH-BORNE VEHICLE TRANSPORT

Darrell L. Merrill, 18428 N. 32 Dr., Phoenix, Ariz. 85023

Filed Jul. 17, 1985, Ser. No. 755,852

Int. Cl.[4] B60R *9/10*

U.S. Cl. 280—402 **19 Claims**



1. A hitch-borne vehicle transport for releasably bearing the entire weight of a vehicle upon a box-end trailer hitch receiver, said vehicle having at least one pair of coaxial wheels separated by an axle, said vehicle having a graspable body member in spaced relationship to said axle, said hitch-borne vehicle transport comprising:

cantilever means for supporting said vehicle in spaced relationship to said box-end trailer hitch receiver, said cantilever means having an anterior end and a posterior end, said anterior end releasably capturable within said box-end trailer hitch receiver;

a transverse bar having a first end, a second end and a pivot surface intermediate said first and second ends, said transverse bar pivotingly supported adjacent said pivot surface by said cantilever means adjacent said posterior end, said transverse bar orthogonal said cantilever means, said transverse bar substantially parallel said axle;

a first hoist bar having a clevis end a first junction end, said first hoist bar attached at said first junction end to said first end of said transverse bar, said first hoist bar rotatable about said first junction in a plane parallel said cantilever means;

a second hoist bar having a clevis end and a second junction end, said second hoist bar attached at said second junction end to said second end of said transverse bar, said second hoist bar rotatable about said second junction end in a plane parallel said cantilever means, said second hoist bar parallel said first hoist bar;

first clevis means attached at said clevis end of said first hoist bar for releasably capturing said axle adjacent a first of said pair of coaxial wheels of said vehicle;

second clevis means attached at said clevis end of said second hoist bar for releasably capturing said axle adjacent a second of said pair of coaxial wheels of said vehicle;

means adjacent said pivot surface for selectedly resisting pivoting of said transverse bar with respect to said cantilever means; and

third clevis means attached to said cantilever means intermediate said anterior and posterior ends for releasably capturing said graspable body member of said vehicle.

4,603,875

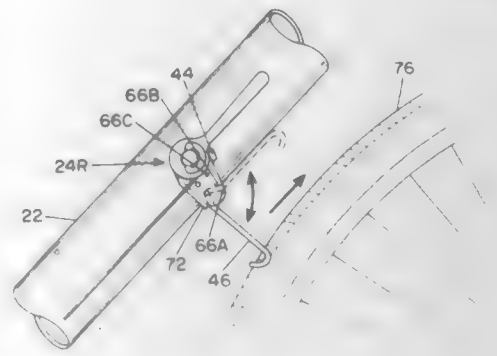
BICYCLE FRONT WHEEL HOLDER

Matthew S. Boughton, Danbury, and Mark T. La Plante, Ridgefield, both of Conn., assignors to Canondale Corporation, Georgetown, Conn.

Filed Aug. 26, 1985, Ser. No. 769,554

Int. Cl.[4] B62H *3/04*

U.S. Cl. 280—272 **12 Claims**



1. A bicycle front wheel holder for holding the front wheel of a bicycle in fixed rotational position relative to the bicycle frame and for keeping the front wheel from turning, comprising:

a wire form member having a first free end and a second free end and a loop in its mid-section spaced-apart from its first and second free ends;

a first bracket member connected to the right shifter boss on the down tube of a bicycle and having means for pivotally receiving the first free end of the wire form member; and

a second bracket member connected to the left shifter boss on the down tube of a bicycle and having means for pivotally receiving the second free end of the wire form member;

said receiving means mounting the wire form member such that it extends away from the down tube and firmly contacts the front wheel to keep it from rotating and turning when the wire form member is in a first pivotal position relative to the bracket members, and extends away from, and is free of contact with, the front wheel when the wire form member is in a second pivotal position relative to the bracket members.

4,603,876

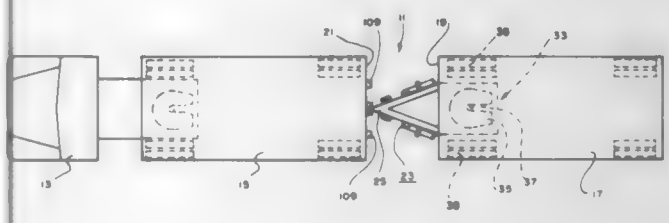
TRAILER CONVERTOR ASSEMBLY

Paul E. Gray, 911 Stratford, West Memphis, Ark. 72301

Filed Dec. 31, 1984, Ser. No. 688,060

Int. Cl.[4] B62D *53/00*

U.S. Cl. 280—474 **9 Claims**



1. A trailer convertor assembly for connecting the front of a trailing trailer to the rear of a leading trailer, the leading trailer including spaced-apart first and second bumpers on the rear thereof, said assembly comprising:

(a) a dolly including a body member having a forwardly projecting tongue for being pivotally attached to the rear of the leading trailer for allowing said dolly to pivot about a generally vertical axis and having a hitch for being

pivotally attached to the front of the trailing trailer, and including wheel means for rollably supporting said body member;

(b) an elongated first strut member having a first end pivotally attached to said body member of said dolly on one side of said vertical axis and having a second end, said first strut member being movable between a first position in which said second end thereof is located remote from the rear of the leading trailer so as not to hinder free pivotal movement of said dolly about said vertical axis and a second position in which said second end thereof is located so as to engage the first bumper of the leading trailer to limit pivotal movement of said dolly about said vertical axis while providing at least a small amount of clearance between the first bumper and said second end of said first strut member when the leading trailer is substantially directly in front of the trailing trailer;

(c) an elongated second strut member having a first end pivotally attached to said body member of said dolly on the other side of said vertical axis from said first strut member and having a second end, said second strut member being movable between a first position in which said second end thereof is located remote from the rear of the leading trailer so as not to hinder free pivotal movement of said dolly about said vertical axis and a second position in which said second end thereof is located so as to engage the second bumper of the leading trailer to limit the pivotal movement of said dolly about said vertical axis while providing at least a small amount of clearance between the second bumper and said second end of said second strut member when the leading trailer is substantially directly in front of the trailing trailer;

(d) a first brace member having a first end pivotally attached to said body member of said dolly and having a second end attached to said first strut member at a point between said first and second ends of said first strut member when said first strut member is in said second position;

(e) a second brace member having a first end pivotally attached to said body member of said dolly and having a second end attached to said second strut member at a point between said first and second ends of said second strut member when said second strut member is in said second position; and

(f) adjustment means for allowing the distance between said second ends of said first and second strut members to be varied for allowing said assembly to be used with leading trailers having bumpers on the rear thereof spaced apart varying distances.

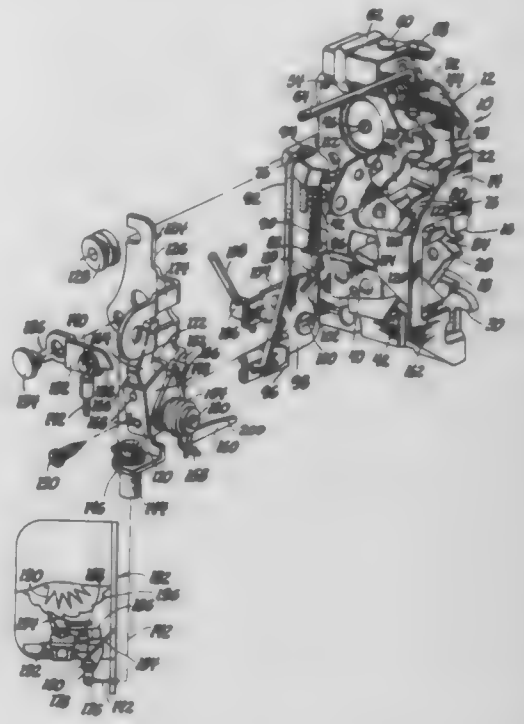
4,603,877

CONTROL MEANS FOR OCCUPANT RESTRAINT BELT SYSTEM

John A. Espinoza, Redford; Jeffrey L. Konchan, Warren, and Ronald P. Rimbey, Utica, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Apr. 15, 1985, Ser. No. 723,438
Int. Cl.[4] B60R *22/34*
U.S. Cl. 280—807 **5 Claims**

1. In combination with a vehicle body closure mounting a restraint belt retractor having disabling means for disabling operation of the retractor, a door latch including a latch bolt releaseable for movement to latched and unlatched positions, inside operating means and outside operating means each operable to effect release of the latch bolt, control means comprising, operating means for actuating the disabling means, latch bolt position sensing means movable to actuating and non-actuating positions, means on the sensing means engageable by the latch bolt during movement of the latch bolt from latched position to unlatched position to move the sensing means to actuating position, connecting means movable to coupling and uncoupling positions with respect to the inside and the outside operating means, the connecting means operably coupling each of the inside and the outside operating means to the operating means in the coupling position thereof and operably uncoupling each of the inside and the outside operating means to the operating means in the uncoupling position thereof, and means actuated by the latch bolt position sensing means when



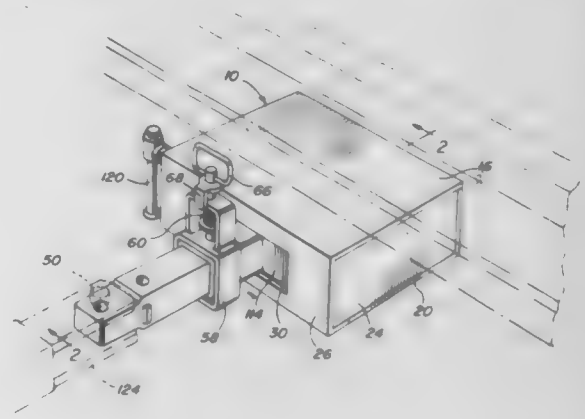
the latch bolt position sensing means is in the actuating position thereof to maintain the connecting means in the uncoupling position and block movement thereof to coupled position.

4,603,878

AUTOMATIC LOCKING AND CENTERING WIDE RANGE TOW HITCH

Hoke Smith, Jr., Rt. 1 Box 247, Americus, Ga. 31709

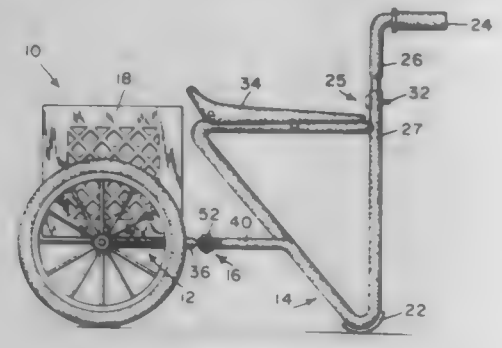
Filed Nov. 20, 1984, Ser. No. 673,771
Int. Cl.[4] B60D *1/00*
U.S. Cl. 280—478 A **12 Claims**



1. A wide range tow hitch including a base portion for support from the forward end of a vehicle to be towed or the rear end of a towing vehicle, said hitch including an elongated hitch bar assembly having first and second ends, mounting means mounting said second hitch bar end, intermediate its opposite ends, from said base portion for guided front-to-rear lengthwise extension and retraction relative to said base portion and for angular displacement of said rear hitch bar end about an upstanding axis, shiftable forward and rearward with said hitch bar second end, relative to said base portion between opposite limit positions of angular displacement relative to said base portion, bias means yieldingly biasing said second hitch bar end toward a central position between the front and rear limit positions thereof, first latch means operative to releasably latch said second hitch bar end relative to said base portion in a center position of angular displacement between said opposite limit positions of angular displacement, said first end of said hitch bar assembly being mounted from said second end of said hitch bar assembly for front to rear and oscillatory shifting

therewith relative to said base portion and for front to rear lengthwise guided shifting relative to said second end between forward and rearward limit positions of shifting thereof, and second latch means operative to releasably latch said first end of said hitch bar assembly in said rearward limit position relative to said second end of said hitch bar assembly.

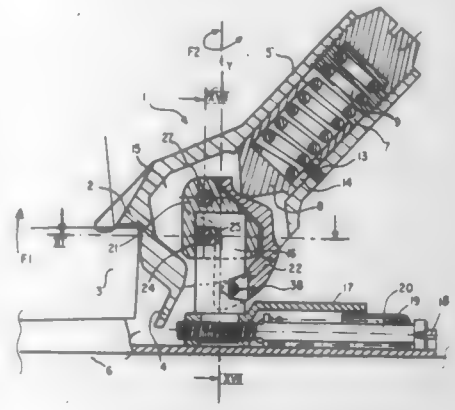
4,603,879
UTILITY CART
Roger J. Morrissette, P.O. Box 1399, Southbridge, Mass. 01550
Filed Jul. 27, 1984, Ser. No. 634,890
Int. Cl.[4] B62B *1/20*
U.S. Cl. 280—652 **3 Claims**



1. Cart comprising:
(a) a first frame portion,
(b) a storage compartment which is supported on the first frame portion,
(c) a pair of wheels which are mounted on the first frame portion on opposite sides of the storage compartment for rotation about a horizontal axis, said wheels forming two support points for said cart,
(d) a second frame portion which is operatively connected to said first frame portion so that said second frame portion lies substantially in a plane which is at a right angle to said axis, said second frame portion having a support foot which forms a third support point for said cart for supporting said cart when it is stationary, said second frame portion is pivotally connected to said first frame portion for movement between and operative position in which said second frame portion is located with said plane to an inoperable position in which said second frame portion lies in a plane which is parallel with said axis and adjacent said storage compartment so that said cart defines a more compact configuration for storage, said pivotal connection including releasable locking means for locking said second frame portion in said operative position,
(e) a handle which is mounted on the second frame portion and which is vertically spaced from said foot for lifting said foot from the ground to enable the cart to be pushed or pulled on said wheels, and
(f) a seat mounted on the second frame portion so that it is located vertically between said handle and said support foot and horizontally between said handle and said storage compartment.

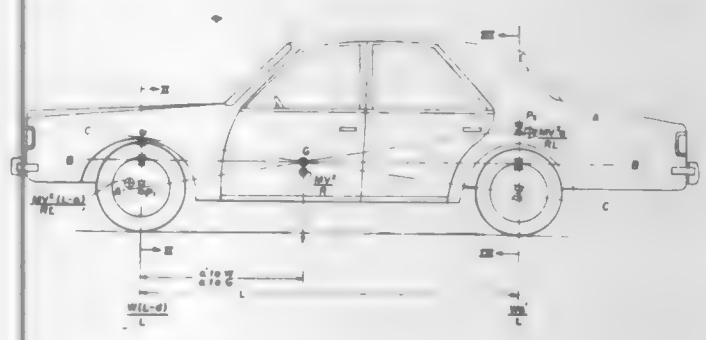
4,603,880
SKI BINDING
Georges P. J. Salomon, Annecy, France, assignor to Salomon S.A., Annecy, France
Filed Dec. 7, 1981, Ser. No. 328,144
Int. Cl.[4] A63C *9/084*
U.S. Cl. 280—628 **37 Claims**

1. A ski safety binding adapted to maintain one end of a ski boot or shoe secured to a ski, said binding comprising:
(a) a jaw adapted to secure the sole of a shoe or boot to said ski, when said binding is in the locked position;
(b) a pivot adapted to be secured to said ski;
(c) a rotatable element mounted pivotably on said pivot; and
(d) a body comprising a housing, an elastic system in said housing, and a movable element in said housing and adapted to be biased against a rocker by said elastic system, said rocker being pivotably mounted relative to said rotatable element, wherein said pivot comprises a support surface integral therewith, adapted to support said rocker during pivoting of said rotatable support element around said pivot, wherein the bias of said movable element



against said rocker is adapted to bias said jaw against said sole when said binding is in the locked position, wherein said housing and said movable element and said elastic system pivot vertically in response to vertical pivoting of said jaw.

4,603,881
VEHICLE SUSPENSION
Stanley J. Mikina, 4782 Coquina Key Dr. SE., St. Petersburg, Fla. 33705
Filed Feb. 11, 1985, Ser. No. 700,594
Int. Cl.[4] B62D *17/00*
U.S. Cl. 280—675 **6 Claims**



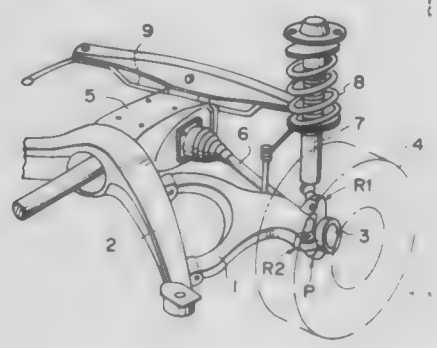
1. In a vehicle consisting of sprung and unsprung masses, the combination of struts and support springs for the weight of the sprung mass, an axis defined by pivots between sprung and unsprung masses, with a front pivot approximately midway between the wheels and near the vertical and horizontal planes through the front axles, with a rear pivot lying in an axis through the front pivot and in a plane through the center-of-gravity of the sprung mass, with said plane parallel to the centrifugal force vector through the center-of-gravity of the sprung mass, and with said rear pivot positioned approximately midway between the rear wheels, means for transmitting the centrifugal force component on the front pivot to the front wheels and ground, and means for transmitting the centrifugal force component on the rear pivot to the rear wheels and ground.

4,603,882

VEHICLE REAR SUSPENSION MECHANISM

Takao Kijima, and Jiro Maebayashi, both of Hiroshima, Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Continuation-in-part of Ser. No. 489,106, Apr. 27, 1983, Pat. No. 4,526,400, and Ser. No. 489,132, Apr. 27, 1983, Pat. No. 4,536,007, and Ser. No. 489,492, Apr. 28, 1983, Pat. No. 4,530,513. This application Nov. 2, 1984, Ser. No. 667,688
The portion of the term of this patent subsequent to Jul. 2, 2002, has been disclaimed.
Int. Cl.[4] B60G *3/26, 7/00*
U.S. Cl. 280—701 23 Claims



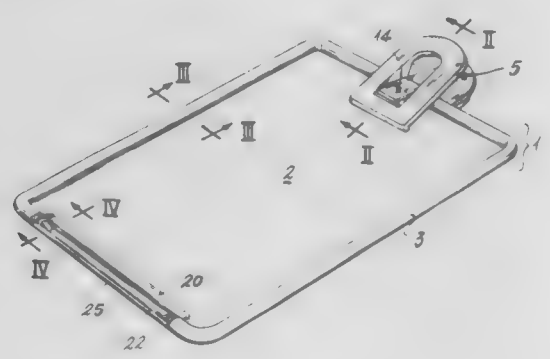
1. A vehicle rear suspension mechanism comprising:
a suspension member connected with a vehicle body;
wheel hub means supporting a rear wheel having a wheel center plane for rotation about a rotating axis; and
connecting means for connecting said wheel hub means with said suspension member, said connecting means including ball joint means having a pivot center located forwardly of and below the rotating axis of the rear wheel and connecting said wheel hub means to said suspension member pivotably about the pivot center, first resilient means located between said wheel hub means and said suspension member rearwardly of and above the rotating axis of the rear wheel, and second resilient means located between said wheel hub means and said suspension member forwardly of and above the rotating axis of the rear wheel.

4,603,883

PAPER SHEET CARRYING BOARD PROVIDED WITH CLIP AND CLOSABLE SEAT FOR CONTAINING WRITING ARTICLES

Raul Barbieri, and Giorgio Marianelli, both of Via Faruffini 13, 20149 Milan, Italy

Filed May 8, 1985, Ser. No. 731,989
Claims priority, application Italy, Jun. 28, 1984, 22420/84[U]
Int. Cl.[4] B32B *3/06*
U.S. Cl. 281—45 12 Claims



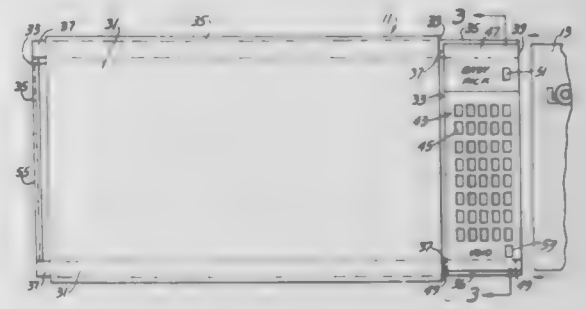
1. A sheet carrying board comprising:
a flat surface;
a raised edge at least partly surrounding said flat surface;
a clip provided on at least one side portion of said raised edge;
an article-containing seat provided in said raised edge and closable.

4,603,884

LOTTO TICKET MARKING GUIDE

David Burton, 11645 Hubbell, Detroit, Mich. 48227

Filed May 23, 1985, Ser. No. 737,100
Int. Cl.[4] B42D *15/00;* G09B *11/04*
U.S. Cl. 283—1 A 3 Claims



1. A marking guide for a lotto ticket having a plurality of laterally arranged imprinted wager sections, with each section having a plurality of longitudinally spaced imprinted boxes in a row and in a plurality of laterally spaced rows, with numerical indicia imprinted in each box, comprising an elongated flattened sleeve open at one end and including top and bottom surfaces;
an elongated channel guide strip having spaced opposed inturned guide flanges nested and secured within said sleeve and projected outwardly of one end thereof providing a marking guide support and a lotto ticket entrant opening in said guide strip between said flanges;
an apertured guide block of a stiff material transversely spanning said guide strip and at its ends mounted upon and secured to said flanges upon said marking guide support;
said guide block having therethrough a plurality of longitudinally spaced rectangular slots in a row and in a plurality of laterally spaced rows corresponding to and adapted for juxtaposition over the rows of boxes of any wager section;
said lotto ticket adapted for lateral projection into said entrant opening so that one of said wager sections underlies said guide block;
whereby the ticket holder by applying a marker through preselected slots corresponding to a preselected series of indicia fills in the corresponding underlying boxes of said wager section;
and on longitudinal incremental advancing of said ticket into said channel guide successive underlying wager sections, respectively;
said wager sections being arranged side by side and with the corresponding slots in said guide block being aligned with the respective rows of boxes of said wager sections.

4,603,885

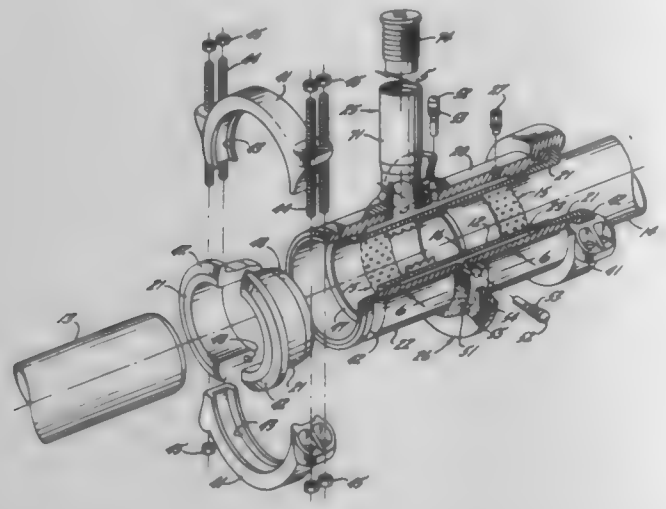
APPARATUS AND STRUCTURE FOR JOINING PIPE

Lee A. Archer, Asheville, N.C., assignor to Akzona Incorporated, Asheville, N.C.

Division of Ser. No. 276,134, Jun. 22, 1981, Pat. No. 4,488,346. This application Aug. 1, 1984, Ser. No. 636,767
Int. Cl.[4] F16L *21/00*
U.S. Cl. 285—18 5 Claims

1. A pipe joint, comprising two abutted ends of pipe of given diameter; a sleeve interfacing with and surrounding the ends, the yield strength of the sleeve being less than the yield strength of the ends; means for temporarily applying a propellant force substantially along the length of the outer surface of said sleeve and means for containing said propellant force above the sleeve, said propellant force being sufficient to collapse the sleeve around the pipe to form a seal, but insufficient to permanently distort the pipe; and keys embedded in the sleeve and pipe ends at their interface, said keys being dimensioned so as not to enter the surface of said pipe a distance

greater than the allowable surface discontinuity for rating said pipe, the size and number of said keys per unit area times the



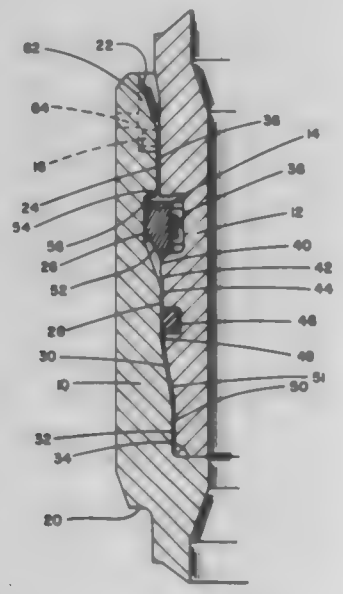
ultimate strength of the pipe material being less than the unit area force exerted by said propellant force.

4,603,886

SNAP TYPE PIPE CONNECTOR

Joseph W. Pallini, Jr., Houston, Tex., and David J. Rohweller, Ventura, Calif., assignors to Vetco Offshore, Inc., Ventura, Calif.

Filed Mar. 26, 1984, Ser. No. 592,508
Int. Cl.[4] F16L *55/00*
U.S. Cl. 285—24 18 Claims



1. A pin and box snap type pipe connector for large diameter pipe comprising:

a box member having a first cylindrical inside diameter portion adjacent the outboard end of said box member, an intermediate cylindrical inside diamter portion of lesser diameter than said first inside diamter portion at an intermediate location, and a last cylindrical inside diameter porton of still lesser diameter at the inboard end of said box member, an internal landing shoulder at the inboard end of said box member, said box member having an internal circumferential lock ring groove outboard of said intermediate inside diameter portion and adapted to receive a lock ring;

a pin member adapted to fit within said box member and having a first cylindrical outside diameter portion adjacent the inboard end of said pin member, an intermediate cylindrical outside diameter portion of lesser diameter than said first outside diameter at an intermediate location, a last cylindrical outside diameter portion of a lesser diameter than said intermediate outside diameter adjacent the outboard end of said pin member, an end face for abutting said box shoulder;

an external circumferential lock ring groove in said pin between said first and said outside intermediate diameter portions;

an outwardly biased split lock ring sized to fit within said lock ring grooves;

means for contracting said lock ring to permit release;

there being a first, intermediate, and last clearance between corresponding cylindrical portions of said pin and box when said end face abuts said shoulder; and

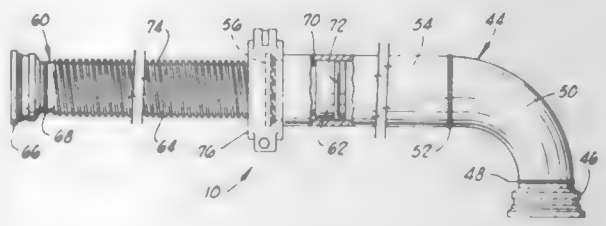
the diameters sized such that said intermediate clearance is less than both said first and last clearances.

4,603,887

RIGID ADJUSTABLE LENGTH ASSEMBLY

Terry D. Mayfield, and William D. Kendrick, both of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.

Filed Oct. 1, 1984, Ser. No. 656,396
Int. Cl.[4] F16L *27/12*
U.S. Cl. 285—32 13 Claims



1. An adjustable length manifold assembly, comprising:

a rigid outer body having a bore defining a first hollow interior region;

a rigid inner body having an outer wall defining a second hollow interior region for communicating with said first hollow interior region, said outer wall having a first thread defined thereon; and

connector means for connecting said inner body with said outer body so that said inner body is rigidly held in a selectable position relative to said outer body, said connector means having an interior semicircular surface portion with a second thread defined thereon for engaging with said first thread of said inner body and said connector means being rotatable, in a first state of retention on said body, relative to said inner body for adjusting the relative positions of said inner and outer bodies and said connector means being fixed, in a second state of retention on said outer body, relative to said inner body, said connector means including:

a first yoke having a first semicircular surface and a second semicircular surface offset from said first semicircular surface;

a second yoke having a third semicircular surface and a fourth semicircular surface offset from said third semicircular surface;

hinge means for pivotally connecting said first and second yokes so that said first and third semicircular surfaces are aligned, thereby defining a first semicircular engagement surface for engaging a first portion of said outer wall of inner body, and so that said second and fourth semicircular surfaces are aligned, thereby defining a second semicircular engagement surface for engaging a second portion of said outer body; and

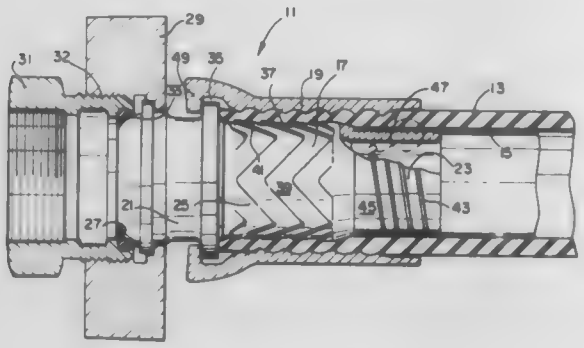
closure means for closing said first and second yokes to a selectable one of said first and second states of retention.

4,603,888

END FITTING

Richard L. Goodall, and Paramjit Singh, both of Chestertown, Md., assignors to Dixon Valve & Coupling Company, Chestertown, Md.

Filed Sep. 18, 1985, Ser. No. 777,350
Int. Cl.[4] F16L *9/14*
U.S. Cl. 285—55 **5 Claims**



1. An end fitting assembly for rubber steam hoses with metal liners of interlocking construction comprising

a stem having an outer end portion, an intermediate portion and an inner end portion,

said intermediate portion and inner end portion being received within the hose,

zig-zag serrations formed on and circumferentially around the outer surface of the intermediate portion of the stem contacting and retaiing the inside of a rubber hose,

rib-type hand spirals formed on the outer surface of the stem's inner end portion so that the metal liner of interlocking construction is screwed onto the spirals for retention of the metal liner on the stem and preventing the metal liner from being pulled off the stem,

and clamping means for clamping the rubber hose against the zig-zag serrations of the intermediate portion of the stem for sealing the end fitting against the escape of steam, and for clamping the rubber hose against the metal liner and the metal liner against the spirals and stem inner end portion to provide added retention of the metal liner from being pulled off the stem,

the length of the stem inner portion in relation to the length of the clamping means being such that a portion of the metal liner is always between the stem and the clamping means to provide extra retention and safety against pull out.

4,603,889

DIFFERENTIAL PITCH THREADED FASTENER, AND ASSEMBLY

James W. Welsh, 6460 Printwood, San Diego, Calif. 92117

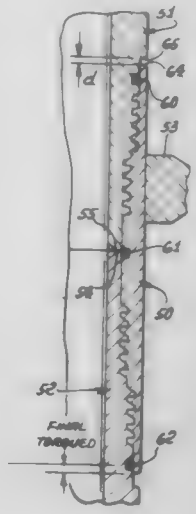
Continuation-in-part of Ser. No. 335,230, Dec. 28, 1981, Pat. No. 4,479,666, which is a continuation of Ser. No. 101,204, Dec. 7, 1979, Pat. No. 4,310,181. This application Aug. 1, 1983, Ser. No. 519,021
Int. Cl.[4] F16L *55/00*
U.S. Cl. 285—175 **8 Claims**

1. In combination,

(a) upper and lower pipes and a tubular connector interconnecting said pipes so that the connector and pipes extend in coaxial relation,

(b) the upper pipe having two stepped external pin thread, and the lower pipe having two stepped external pin threads, the connector having two stepped upper box threads meshing with the upper pipe pin threads, and two stepped lower box threads meshing with the lower pipe pin threads,

(c) the connector upper box threads having first load flanks which face in one axial direction, and the connector lower box threads having second load flanks which face in the opposite axial direction, the first flanks defining a first pitch and the second flanks defining a second pitch, said pitches being different and characterized in that after the upper pipe endwise bottoms on the lower pipe and when the connector is rotated, the first flanks tighten against the upper pin threads and the second flanks tighten against the lower pipe threads,



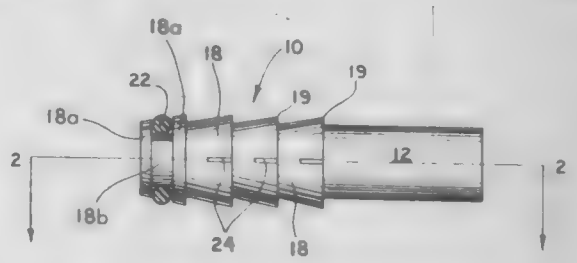
(d) the connector having an outer diameter along its length, which is substantially flush with the outer diameter defined by said pipes, and the connector having an inner diameter along its length which is everywhere less than the inner diameter defined by said pipes.

4,603,890

BARBED TUBING CONNECTOR

Robert Huppee, 1910 Thierry, Brossard, Quebec, Canada J4W 2M8

Filed Dec. 6, 1984, Ser. No. 679,001
Int. Cl.[4] F16L *33/00*
U.S. Cl. 285—239 **8 Claims**

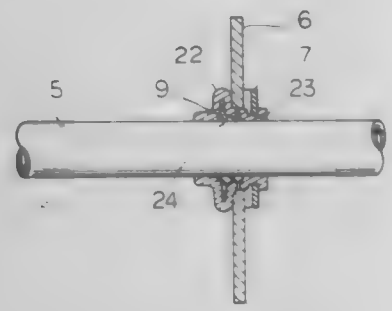


8. A tubing connector for sealingly engaging the end portion of a flexible and somewhat elastic tubing adapted to carry a pressurized fluid, said connector comprising a rigid tubular body having a free end for insertion into said tubing, an endmost barb at said free end and additional, longitudinally spaced apart frusto-conical barbs protruding from the outer surface of said body, all of said barbs being concentric and flaring away from said body free end, the frusto-conical surface of said endmost barb having a peripheral groove and an O-ring engaging said groove and protruding outwardly from said frusto-conical surface, said barbs adapted to be inserted into and expand said tubing end portion, said O-ring then sealing said tubing over said connector and preventing fluid pressure build-up in the portion of said tubing surrounding said barbs, whereby said barbs can resist pull-out of the tubing from said connector.

4,603,891
HOSE MIDWAY HOLDER

Takeshi Miyazaki, Inazawa, and Kenji Sugiyama, Gifu, both of Japan, assignors to Toyoda Gosei Co., Ltd., Nishikasugai, Japan

Filed Aug. 28, 1984, Ser. No. 645,153
Claims priority, application Japan, Aug. 29, 1983, 58-133321[U]
Int. Cl.[4] F16L *5/00*
U.S. Cl. 285—205 6 Claims

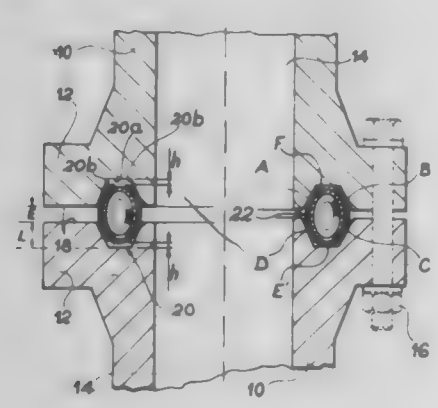


1. A mounting device for fitting about a hose, said device being comprised of a generally tubular member cut to a predetermined length, said tubular member being axially deformed to define a radially outwardly extending flanged portion and a radially extending interior chamber, the outer circumference of said flanged portion having at least one flat exterior face defined by a cordal plane extending therethrough, said interior chamber having at least one inwardly recessed interior wall portion, means defining a communication port between said chamber and the outside of said device and filler material injected through said port means into said interior chamber to fill said chamber and to bond to the hose, so that relative motion between said hose and said device is prevented by said filler material in cooperation with said hose and said at least one inwardly recessed interior wall portion.

4,603,892
TIGHT CONNECTION DEVICE

Claude Abbes, St. Etienne; Raymond De Villepoix, Donzére, and Christian Rouaud, Bourg St. Andeol, all of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Mar. 21, 1985, Ser. No. 714,264
Claims priority, application France, Apr. 5, 1984, 84 05380
Int. Cl.[4] F16L *17/06*
U.S. Cl. 285—336 13 Claims

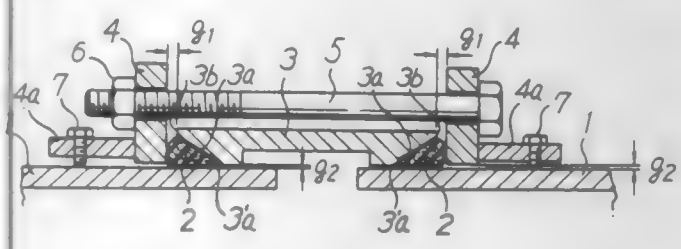


1. A tight connecting assembly comprising:
(a) two flanges having opposing faces and opposing grooves in said opposing faces, each one of said opposing grooves being trapezoidal in cross-section and having a bottom and two sides;
(b) means for fastening said two flanges together; and
(c) a flexible joint disposed in said opposing grooves, said flexible joint comprising:
(i) at least one annular hollow elastic metal core, said at least one annular hollow elastic metal core having an oval cross-section in its rest state, said oval cross-section having a major axis and a minor axis, one of said axes being located in the plane of symmetry of said flexible joint, and
(ii) at least one flexible envelope surrounding said at least one annular hollow elastic metal core except for an opening located on one of said axes of said oval cross-section,
said flexible joint being sized, shaped, and positioned so that, when said tight connecting assembly is assembled, said flexible joint is in tight contact with said two sides of each of said opposing grooves and abuts said bottom of each of said opposing grooves.

4,603,893
PIPE COUPLING JOINT

Saburo Takahashi, Kobe, Japan, assignor to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 24, 1984, Ser. No. 685,467
Int. Cl.[4] F16L *17/02*
U.S. Cl. 285—342 6 Claims



1. A pipe coupling for joining first and second pipes end-to-end, comprising:
a cylindrical middle ring having a longitudinal axis and having first and second mating middle ring surfaces at respective opposite first and second longitudinal ends of said middle ring, said first and second mating middle ring surfaces respectively including
first and second conical clamping faces facing toward said axis and extending in opposite axial directions at respective first and second acute angles with respect to said axis,
first and second annular step surface portions respectively radially inward of said first and second conical clamping faces, extending radially outward at respective angles to said axis which are respectively substantially greater than said first and second acute angles, so as to respectively intersect said first and second conical clamping faces, and
first and second axially spaced apart elastic annular packings respectively disposed at said opposite ends and facing said first and second mating middle ring surfaces, each having an annular inclined mating surface inclined so as to mate with a respective one of said first and second clamping faces, and each having a radially inner surface for facing the outer surfaces of the first and second pipes; and
means for urging said first and second packings toward each other while respectively on the first and second pipes to be joined, with said center ring therebetween surrounding the first and second pipes, so as to seal said first and second packing on the first and second pipes, said means including first and second axially spaced apart cylindrical clamping rings disposed so that said first and second packings and said middle ring are disposed therebetween;
said first and second packings respectively opposing said first and second clamping rings, each of said first and second packings further including
an annular radially outer surface extending from a radially outer edge of said annular inclined mating surface radially inwardly and axially toward the one of said first and second clamping rings opposed thereto,
a clamping ring engaging surface extending radially inwardly from an end of said annular radially outer surface opposite said radially outer edge, and
an annular packing step surface angled to mate with a re-

spective one of said first and second annular step surface portions of said middle ring;

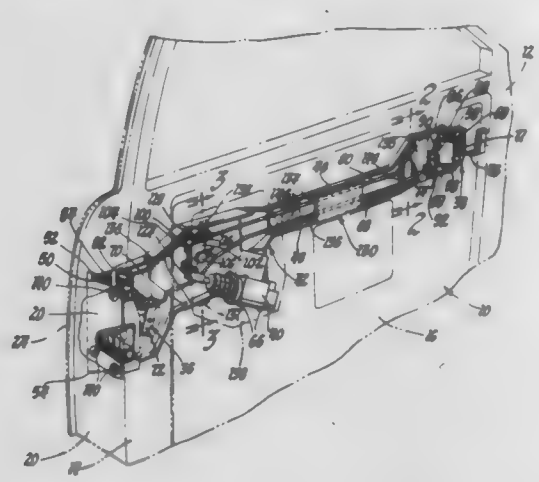
said first and second clamping rings being movable axially toward each other so as to engage the respective clamping ring engaging surfaces of said first and second packings with respective spaces between said first and second clamping rings and the mating ring surfaces opposed thereto, said spaces being directly above and exposed to the radially outer surfaces of said first and second packings.

4,603,894

LOCK AND HANDLE MODULE FOR VEHICLE DOOR

Joseph M. Osenkowski, Detroit, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Mar. 22, 1984, Ser. No. 592,357
Int. Cl.[4] E05C *3/26*
U.S. Cl. 292—216 1 Claim



1. In a longitudinal extending vehicle body door hingedly mounted on a vehicle body and having a door lock assembly mounted on a transverse extending rear wall of the free swinging end of the door for latching the door in the closed position and an inside handle assembly located longitudinally forward and remote from the door lock assembly and connected to the door lock assembly by a fixed length inside handle connecting rod for enabling a vehicle occupant to unlatch the door lock assembly from inside the occupant compartment and said inside handle assembly having a lock handle connected to the door lock assembly by a lock to lock and unlock the door lock assembly, the improvement comprising:

a stamped metal frame having a transverse extending rear end wall adapted to abut against the transverse extending rear end wall of the door and a longitudinally extending forward end portion adapted to reach forwardly to a location providing occupant accessible mounting of the remote inside handle assembly, said frame having top and bottom edges with integral stiffening flanges projecting therefrom and at least said upper flange overlying the connecting rod;

first means attaching the door lock assembly on the transverse extending rear end wall of the frame and second means independent from the first means attaching the inside handle assembly on the forward end portion of the frame to establish the relative mounting locations of the door lock assembly and the inside handle assembly at a fixed length longitudinal spaced apart relationship relative one another so that attachment of the fixed length connecting rod therebetween reliably effects unlatching movement of the door lock assembly upon operator actuation of the inside handle assembly independently of mounting of the door lock assembly and inside handle assembly on the vehicle door;

means attaching the frame on the vehicle door so that the transverse extending rear end wall of the frame and the door lock assembly mounted thereon are mounted upon the transverse extending rear end wall of the door and the inside handle assembly is mounted upon the door remote from the door lock and at a predetermined consistent fixed length spacing therefrom to assure proper operation of the door lock assembly by the remote inside handle; and

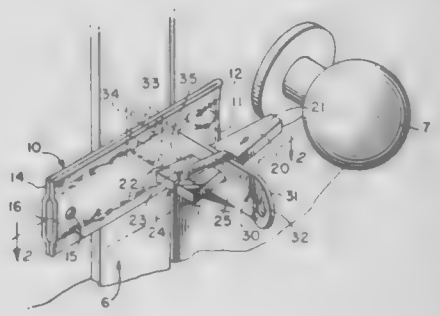
a cover mounted on the integral stiffening flanges of the frame and cooperating therewith to substantially enclose the lock rod to prevent tampering with the lock rod and unauthorized entry into the vehicle.

4,603,895

COMBINATION PADDED SECURITY LOCK AND CARRIER THEREFOR

Albert Langenbahn, 704 S. Morgan, Mason City, Ill. 62664

Filed Jul. 25, 1984, Ser. No. 634,326
Int. Cl.[4] E05C *19/18*
U.S. Cl. 292—295 7 Claims



1. A combination padded security lock and carrier therefor for use with a hinged door assembly, said door assembly comprising a door provided with a knob-releasable spring latch cooperating with a door jamb provided with a striker plate, said striker plate being provided with a latch receiving aperture in alignment with said spring latch, said padded security lock comprising:

a lock bar having first and second flat surfaces and at least one tang adjacent to an end of said lock bar, and an aperture in the opposite end thereof, said at least one tang off-standing perpendicularly from said first surface and extending in a longitudinal direction and being adapted for emplacement in said latch receiving aperture, said lock bar being interposable between said door and said jamb as said door is closed with said first surface in abutment with said jamb so that said tang is retained in said latch aperture, a smooth surface tapered key element, said lock bar being provided with a longitudinally extending slot means extending from said first surface to said second surface arranged to receive said tapered key element;

a lock body comprising an open ended elongated sleeve member having surface areas and a heel element encapsulated in a pocket in a closed end thereof, said lock body being provided with a transverse slot means juxtaposed said heel element and arranged to receive said lock bar normal thereto so as to abut said door when closed;

said tapered key element adapted to be positioned in a horizontal direction in said longitudinal slot means in said lock bar in abutting parallel relation with said lock body including said heel element with said lock body and said heel element between said tapered key element and said door with one end of said tapered key element forced against said heel element so as to protect said door from marring by said tapered key element while serving to lock said door, said tapered key element having an extensible retention means secured thereto and extendable over said lock bar to urge said tapered key element into said longitudinal slot whereby the key element is urged into a positive locking position whereby undesired opening of said door would be prevented should said door be shaken in an attempt to dislodge said padded security lock.

4,603,896

METHOD AND GRIPPING HEAD FOR GRIPPING A LAYER OF CONTAINERS ARRANGED ON A PLANE

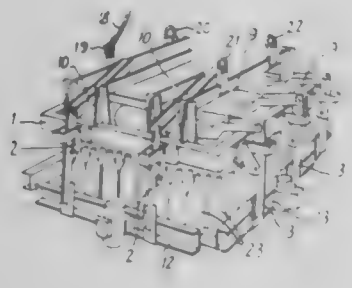
Jackie Vasseur, and Roger Vasseur, both of Dunkerque, France, assignors to S.A. Atecmi, Grand Synthe, France

Filed Oct. 26, 1984, Ser. No. 664,967

Claims priority, application France, Oct. 28, 1983, 83 17506; Jul. 9, 1984, 84 11258

Int. Cl.[4] B66C *1/04, 1/44*

U.S. Cl. 294—2 16 Claims



4. A head for gripping a layer of containers (23), placed upright on a plane so as to cause said containers to occupy a rectangular area on the plane in such a way that the containers are aligned and bear against each other so as to form rows of containers and these rows are offset in a longitudinal direction from each other by a distance such that, in a transverse direction of the layer, the containers are disposed in a quincunx arrangement, comprising means for movably supporting the head for handling thereof and positioning of the head with respect to the layer of containers to be gripped, said head including a frame (1), four mobile jaws (12 to 15) associated with the frame (1), piston and cylinder means (6, 7) operably connected for actuating said jaws (12 to 15) to cause said jaws to surround the layer of containers (23) on four sides of the layer at the level of the container bodies and nip the surface of the outer containers of the layers, and vibrator means (17) operably connected for vibrating said jaws upon actuation of said vibrator means.

4,603,897

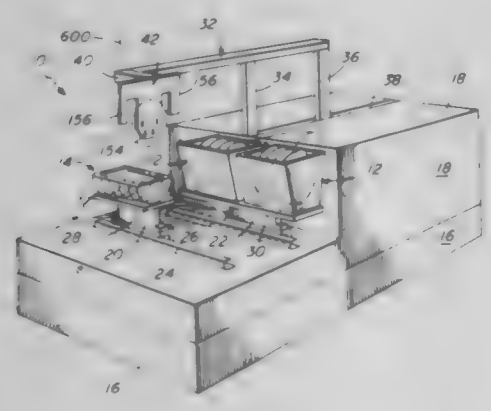
VACUUM PICKUP APPARATUS

Richard F. Foulke, Carlisle, and Kenneth A. Winchell, Melrose, both of Mass., assignors to Poconics International, Inc., Woburn, Mass.

Filed May 20, 1983, Ser. No. 496,460

Int. Cl.[4] B65G *17/32*

U.S. Cl. 294—64.1 10 Claims



1. Apparatus for transporting an object, said apparatus comprising

an engagement element with a plurality of openings in a flat surface, a first said opening being on one side of an axis passing through said element, and a second said opening being on another side of said axis,

suction means for providing a below-atmospheric pressure at said openings for the purpose of adhering said object to said engagement element,

transport means for transporting said engagement element relative to said object to bring said openings close enough to a flat engagement surface of said object to enable suction engagement of said object at said openings,

said transport means including means for rotating said engagement element about an axis parallel to said flat surface,

position detection means for sensing the relative position of said object and said engagement element,

sensing means for sensing suction engagement at said openings, and

processing means including

engagement-failure-detection means responsive to said sensing and position detection means for detecting when suction engagement has occurred at said first opening but has not occurred at said second opening despite said engagement element having been transported toward said object a distance sufficient to enable said engagement, and

control means responsive to said engagementfailure-detection means for providing a control signal to said transport means to rotate said engagement element to bring said second opening closer to said object.

4,603,898

APPARATUS FOR INHIBITING FOREIGN MATERIAL FROM BEING DEPOSITED ON REAR WINDOW OF A MOTORCAR

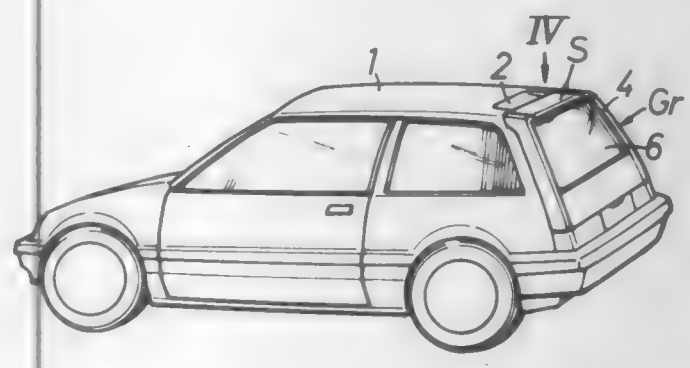
Masakazu Udagawa, Fujimi; Masaaki Saito, Wako; Shingo Segawa, Kawagoe, and Masahiro Noda, Tokyo, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 23, 1984, Ser. No. 643,520

Claims priority, application Japan, Aug. 24, 1983, 58-130913[U]; Aug. 24, 1983, 58-130915[U]; Aug. 24, 1983, 58-130918[U]

Int. Cl.[4] B62D *37/02*

U.S. Cl. 296—91 33 Claims



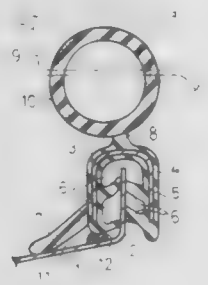
1. An apparatus for inhibiting foreign material from being deposited on a rear window of a motorcar comprising a first inclined air introduction surface extending in a rearward and downward direction from a rear laterally middle part of an upper surface of a body roof, a second inclined air introduction surface formed on a laterally middle part of a rear window frame and extending rearwardly from said first inclined air introduction surface in a continuous and flush manner and an air flow control plate fixedly mounted on said second inclined air introduction surface on the rear window frame so as to allow air introduced into both the first and second inclined air introduction surfaces to flow along an upper surface of a rear windshield fitted to the rear window frame, said air flow control plate having an upper surface located flush with the upper surface of the body roof and an upper surface of the rear window frame, and having an upper half and a lower half, said lower half having a plurality of legs projecting downwardly from a lower surface thereof, said legs being fixedly secured to the second inclined air introduction surface.

4,603,899

WEATHER STRIP

Tadanobu Iwasa, Aichi, Japan, assignor to Toyoda Gosei Co., Ltd., Nishikasugai, Japan

Filed Jul. 29, 1985, Ser. No. 760,248
Claims priority, application Japan, Jul. 31, 1984, 59-162324
Int. Cl.[4] B60R *13/06*
U.S. Cl. 296—154 11 Claims



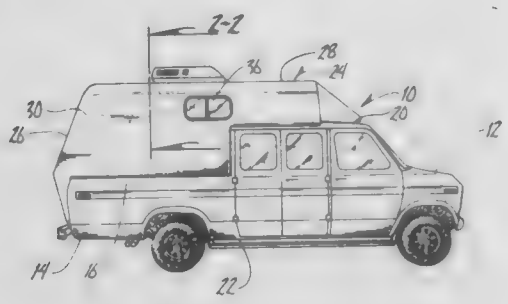
1. A weather strip comprising:
(a) a main body;
(b) said main body having a water passage; and
(c) a water flow promoting member provided in said water passage, forming an integral part of said main body and containing a hydrophilic material.

4,603,900

UPPER BED STRUCTURE FOR A RECREATIONAL VEHICLE

John N. Dodgen, Fort Dodge, Iowa, assignor to Dodgen Industries, Inc., Humboldt, Iowa

Filed Jan. 14, 1985, Ser. No. 691,392
Int. Cl.[4] B60P *3/38*
U.S. Cl. 296—156 1 Claim



1. In combination with a van vehicle having an interior compartment, a rearward end and a forward end, and an upper portion,

a storage compartment in the upper portion of said van adjacent its rearward end comprising a horizontal deck having forward and rearward ends and opposite side edge portions, and a panel structure hinged to the forward end of said deck and having opposite side edge portions,

means on said panel structure for releasably rigidly securing said panel structure in a vertical position,

horizontal ledge means extending substantially continuously along each side of said interior compartment at the level of said horizontal deck for supporting said horizontal deck along the side edge portions thereof, such that the area beneath the horizontal deck is substantially free from obstructions, and whereupon said panel structure can be pivoted to a horizontal position with its side edge portions resting on said ledge means to provide an auxiliary deck portion coplanar with said horizontal deck,

door means on said panel structure for providing access to said storage compartment when said panel structure is secured in said vertical position, said door means having a supporting surface less than that of said panel structure, and being located inwardly away from the perimeter of said panel structure, and

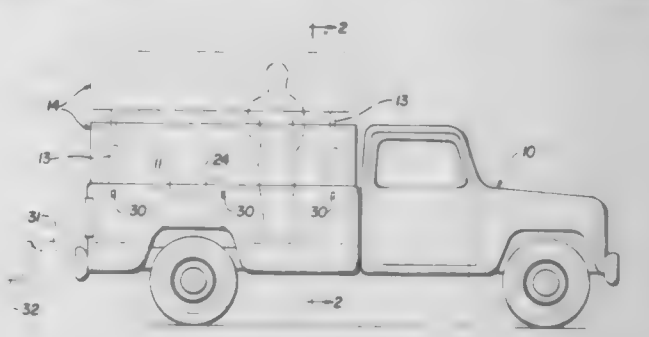
mattress means in said storage compartment to substantially cover said horizontal deck and said auxiliary deck to create a bed means thereon, said mattress means including a single mattress component that covers said door means and said panel structure.

4,603,901

LIFTABLE TOP FOR PICKUP TRUCKS

Kenneth B. McIntosh, Rte. 1, Box 479, Rockvale, Tenn. 37153, and Clyde Howard, Rte. 11, Sulphur Springs Rd., Murfreesboro, Tenn. 37130

Filed Dec. 18, 1984, Ser. No. 682,860
Int. Cl.[4] B60P *3/34*
U.S. Cl. 296—165 4 Claims



1. In a pickup truck or like vehicle, a cargo box having side walls and hollow side board mounts within the side walls, vertical axis screw jacks having bases installed within said side board mounts, a camper top for said cargo box, drive motors for the screw jacks operatively coupled to said jacks and being fixedly attached to the camper top, whereby the camper top is bodily supported on and raised and lowered by the screw jacks, the screw jacks and drive motors being four in number and being disposed adjacent to the four corners of the cargo box and camper top, and opposite side bottom horizontal longitudinal flanges on the camper top, said drive motors comprising horizontal axis motors, gearing operatively connecting the shafts of said motors with said screw jacks, and brackets fixedly holding said motors on the camper top and being secured to said flanges.

4,603,902

FOLDABLE HIGH CHAIR

Kevin Maloney, Columbus, Ind., assignor to Cosco, Inc., Columbus, Ind.

Filed Feb. 21, 1984, Ser. No. 581,977
Int. Cl.[4] A47C *4/00*
U.S. Cl. 297—35 22 Claims

1. A foldable high chair having a use position wherein an occupant can occupy the chair and a folded position wherein the chair can be folded for storage comprising

a seat having a base portion and a back portion,

a frame including a front leg and a rear leg for supporting the seat,

a first pivot means for pivotally coupling the base portion to the front leg,

a second pivot means for pivotally coupling the base portion to the rear leg,

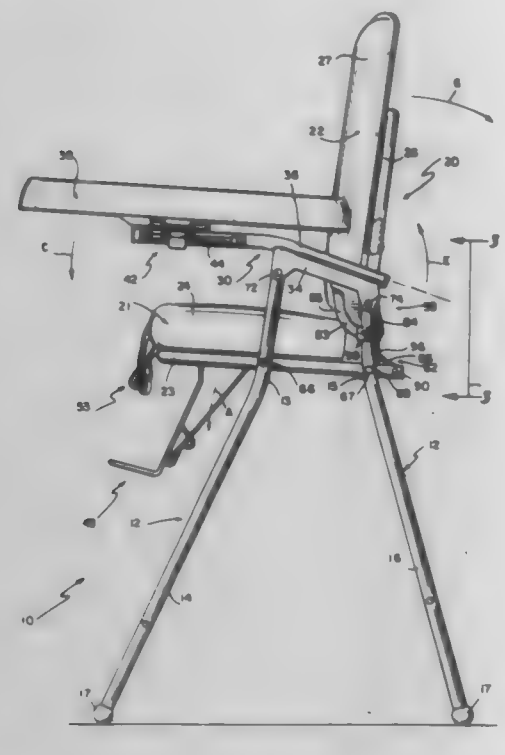
a third pivot means for pivotally coupling the back support portion to the rear leg,

a link means for coupling the back support portion to the base portion,

a fourth pivot means for pivotally coupling the link means to the base portion, and

a fifth pivot means for pivotally coupling the link means to the back support portion,

the frame, seat, pivot means and link means cooperating to pivot the base portion in one direction and to pivot the



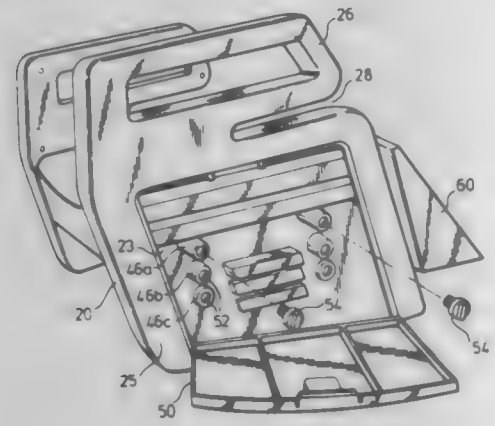
back support portion in an opposite direction away from the base portion.

4,603,903

ADJUSTABLE CAR SEAT

Jerry N. Moscovitch, Toronto, Canada, assignor to BoPeep Nursery Products Limited, Toronto, Canada

Filed Aug. 21, 1984, Ser. No. 642,843
Claims priority, application Canada, Jun. 14, 1984, 456573
Int. Cl.[4] A47D *1/10*
U.S. Cl. 297—250 **23 Claims**



1. An adjustable child's seat for use in association with a base on which the seat may be placed, such as the seating means of a vehicle having seat belts affixed to the vehicle, or a table, wherein said child's seat comprises:

a bench;

side pedestals on each of two opposite sides of the bench;

releasable support means supporting the bench on each pedestal at any of a plurality of vertically spaced-apart positions; and

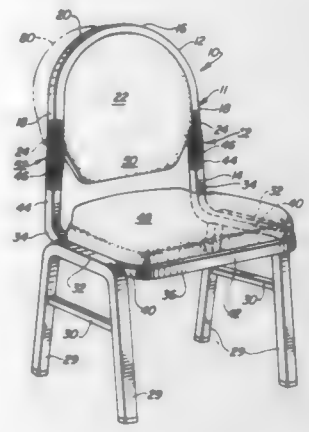
spacer means laterally spacing the pedestals at any one of a plurality of predetermined distances apart, said releasable support means and spacer means so constructed to narrow the lateral spacing of the pedestals when said bench is supported therebetween at upper positions and to widen the lateral spacing of the pedestals when said bench is supported therebetween at lower positions; and fastening means for fastening said pedestals to the bench.

4,603,904

CHAIR WITH ARTICULATED, FLEXIBLE SPRING BACKREST

Thomas H. Tolleson, and Steve B. Hartzog, both of Morristown, Tenn., assignors to Shelby Williams Industries, Inc., Morristown, Tenn.

Filed Aug. 12, 1985, Ser. No. 764,557
Int. Cl.[4] A47C *3/00*
U.S. Cl. 297—296 **16 Claims**



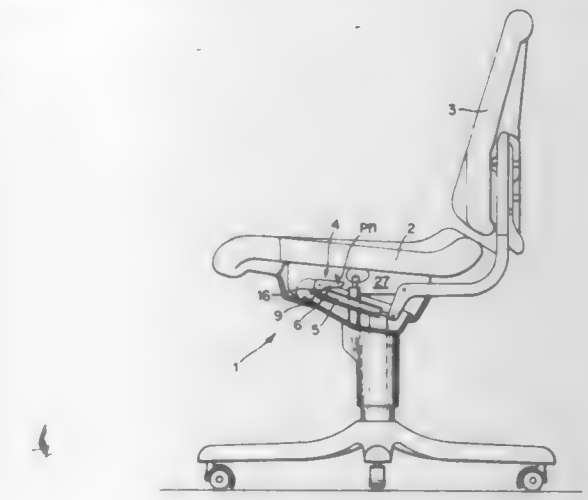
1. A chair comprising, a seat assembly which includes a support frame and depending leg members, a lower backrest frame part having a pair of spaced apart frame members upstanding relative to the seat support frame, an upper backrest frame part having a pair of spaced apart depending frame members arranged in registry with the upstanding frame members, said frame members being hollow with open extremities, and spring members secured between each registered pair of frame members to provide an articulated, flexible spring backrest for the chair, each spring means including a molded plastic support strut with an elongate passageway therein, a substantially non-extensible flexible member disposed within said passageway and means securing said flexible member at each end of said passageway so as to maintain the strut under longitudinal compression and limit the elongation thereof when a force is exerted on the backrest.

4,603,905

CONTROL MECHANISM FOR AN ADJUSTABLE CHAIR OR THE LIKE

Felix Stucki, Thunstetten, Switzerland, assignor to Girsberger Aktiengesellschaft, Bützberg, Switzerland

Filed Sep. 24, 1984, Ser. No. 653,924
Claims priority, application Fed. Rep. of Germany, Sep. 23, 1983, 3334424
Int. Cl.[4] A47C *1/022*
U.S. Cl. 297—300 **26 Claims**



1. A control mechanism for a seating article having at least one adjustable component, particularly a seat or a back rest, which is connected with a biasing element, especially an air spring, convertible between a first condition in which the

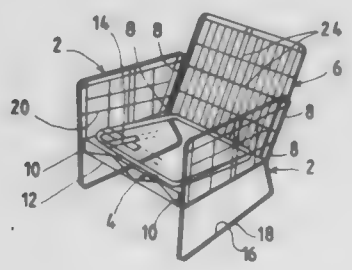
biasing element offers a higher first resistance to adjustment, and a second condition in which the biasing element offers a lower second resistance to adjustment, said control mechanism comprising a control element for converting the biasing element between its first and second conditions; a coupling unit for transmitting force between said control element and the biasing element, said coupling unit having a first locked position in which the biasing element is in its first condition, and a second locked position in which the biasing element is in its second condition, and said coupling unit being designed to alternately assume said first and second locked positions in response to movement of said control element; relatively rotatable first and second shafts one of which is connected with said control element and the other of which is designed to operate said biasing element, said coupling unit constituting a junction between said shafts and said coupling unit comprising cooperating first and second elements which are respectively fast with said first and second shafts; and an arresting element movable to and from an arresting position in which said arresting element arrests said first element and thereby holds said coupling unit in one of said locked positions.

4,603,906

SEPARABLE PIECE OF FURNITURE

Lars Mathiesen, St. Kongensgade 110B, DK-1264 Copenhagen, Denmark

Filed May 6, 1985, Ser. No. 731,016
Claims priority, application Denmark, May 11, 1984, 2381/84
Int. Cl.[4] A47C *7/00*
U.S. Cl. 297—440 9 Claims



1. A separable piece of furniture comprising a first and a second panel element which are joinable edge to edge in a separable manner, characterized in that the first panel element is provided with a freely protruding coupling part, which is outwardly wound first to one and then to an opposite side so as to form mutually opposed sinuosities, and that the edge portion of the second panel element as connected with said coupling part includes two parallel pipe holding portions, which are cast substantially apart just sufficiently to enable the coupling part to be inserted, relatively, into and through the clearance between the holding portions and, by a relative rotation of the two panel elements about one of the holding portions as hereby being rested in the outermost of said sinuosities, enable the other of said holding portions to be brought into a butting engagement with the innermost sinuosity of the coupling part.

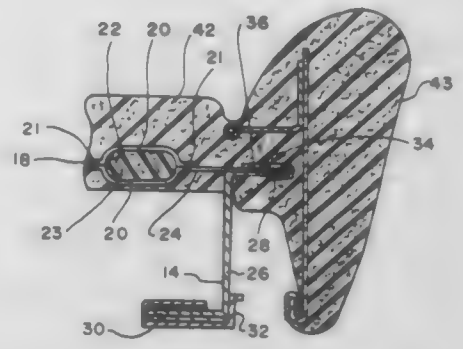
4,603,907

J-CLIP MOUNTING SYSTEM FOR LOAD BEARING SEAT MEMBERS

Duane W. Witzke, Logan, Ohio, assignor to Hoover Universal, Inc., Ann Arbor, Mich.

Filed Nov. 30, 1983, Ser. No. 556,482
Int. Cl.[4] A47C *7/02*
U.S. Cl. 297—452 5 Claims

1. In a vehicle seat which includes a frame having a cushion portion, said cushion portion including a pair of side rails having upright portions and upper flanges which extend outwardly from each other, a load carrying web adapted to be mounted on and extend between said side rails, a foam body on said frame and extended upwardly from and secured to said web and mounting members secured to said web and mounted on said upper flanges, said mounting members constituting the sole support for said web on said frame for maintaining said web in tension on said flanges, said mounting members com-



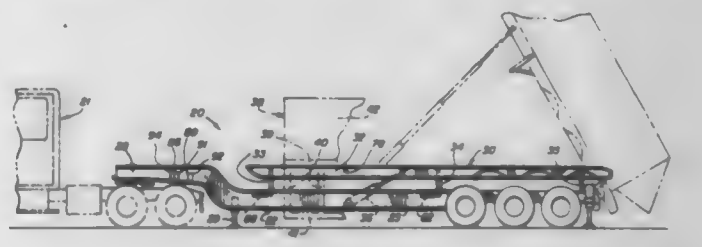
prising substantially continuous strips secured to opposite edges of said membrane, each of said strips being of a return bent upon itself shape in cross section and being hooked over one of said flanges.

4,603,908

HYDRAULIC LIFT DECK UPLOCK MECHANISM

Leslie A. Weaver, Monticello, Ind., assignor to Eugene A. LeBoeuf, Gary, Ind.

Filed Sep. 27, 1984, Ser. No. 655,850
Int. Cl.[4] B60P *1/34*
U.S. Cl. 298—17 R 15 Claims



12. A tractor drawn trailer for use with pallet frame units adapted to carry high tonnage loads, said trailer comprising the combination of:

(a) a main support frame including means for direct connection to a tractor;

(b) a lift deck mounted in superimposed relation on said main frame and adapted to support a pallet frame unit;

(c) a plurality of hinge panels pivotally connected at their lower ends to said main support frame and at their upper ends to said lift deck constraining the latter to be raised and lowered in generally parallel relation with the former;

(d) single acting fluid actuator means for elevating said lift deck to raised transport position wherein each said hinge panel has been arrested approximately 5 degrees short of vertical orientation;

(e) valve means for draining pressure fluid from said single acting actuator means to cause said lift deck to descend by gravity to lowered loading position;

(f) uplock means including a pair of toggle links interposed between one said hinge panel and said lift deck, said pair of toggle links being pivotally interconnected;

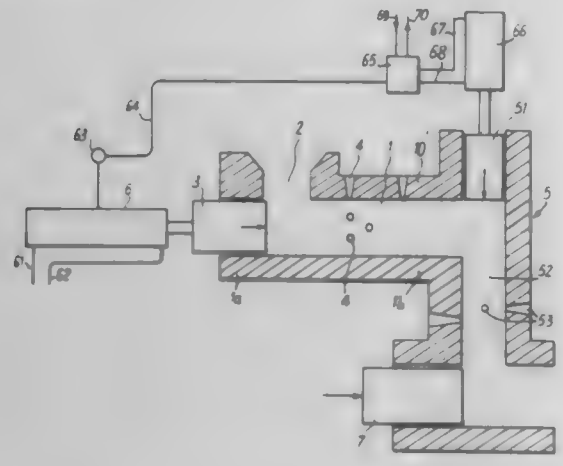
(g) said pair of pivotally interconnected links being constructed and arranged so that they define a self-locking relationship when said lift deck is in a raised transport position, and can be shifted to an unlocked relationship to permit departure from said raised transport position toward lowered loading position; and

(h) a power actuator for moving said links of said uplock means into and out of their self-locking relationship.

4,603,909
DEVICE FOR SEPARATING PHASES FOR RIGID MULTIPHASE MATERIALS

Gwénolé Le Jeune, Rue du Vignoble, 44450 St Julien de Concelles, France

Filed Mar. 30, 1983, Ser. No. 480,615
Int. Cl.[4] B30B *9/06*
U.S. Cl. 299—7 10 Claims

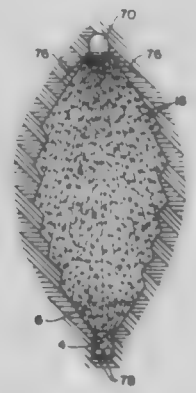


1. A device for separating the liquid phase form the solid phase of rigid multiphase materials such as bituminous schists, domestic waste and vegetables, said device comprising a cylindrical longitudinal chamber (1) having orifices (4) in its cylindrical wall, said chamber having an inlet end (1*a*) and an outlet end (1*b*), the inlet end having a lateral loading opening (2), a first axial compression piston (3) mounted within said cylindrical longitudinal chamber (1) at said inlet end and being operated by a hydraulic jack (6), the volume of the chamber being substantially greater than the stroke volume of the first axial compression piston (3) to permit the compacted material to remain in the chamber for a time interval substantially greater than one cycle; whereby, the material therein are exposed to compression pressure during a number of cycles which enables the fluid material to be extracted in the desired proportion, and the outlet end being open and equipped with an extrcation and metering system (5) responsive to the pressure in the hydraulic jack (6) operating said first axial compression piston (3) so as to maintain a minimum pressure in the chamber even during the return stroke of the first axial compression piston 3.

4,603,910
METHOD OF BLASTING ROCK CAVERNS WITH LARGE CROSS-SECTIONAL AREA

Per Lanéus, Vallingby, Sweden, assignor to JCC Construction Company AB, Stockholm, Sweden

Filed Mar. 21, 1984, Ser. No. 591,683
Claims priority, application Sweden, Mar. 23, 1983, 8301601
Int. Cl.[4] E21D *13/02*
U.S. Cl. 299—13 6 Claims

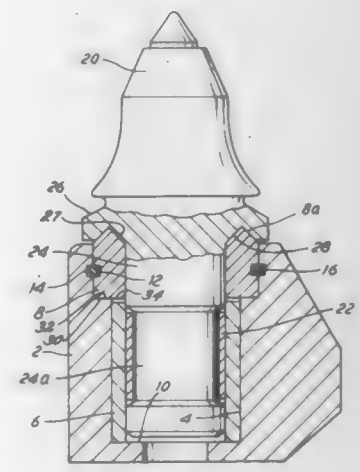


1. A method of blasting essentially elongated rock caverns with a large cross-sectional area, preferably for the storage of liquids such as water and oil, comprising carrying through intersection blasting in accordance with the sublevel stoping method from at least one drift near the bottom of the intended rock cavern, to produce at least one upwardly widening part section of said cavern, and forming said cavern to its final cross-section by excavating rock above this part section through successive drilling and blasting of rock layers, said drilling comprising fan-shaped downwardly directed drilling to obtain an essentially lentiform cross-section of said cavern above said part section, the side walls of which at least partially lie outside the greatest cross-sectional width of said part section.

4,603,911
PICK HOLDING ARRANGEMENTS

Leslie W. Hindmarsh; Robert G. Knight, and Gerald J. Sanders, all of Nuneaton, United Kingdom, assignors to Santrade Ltd., Lucerne, Switzerland

Filed Mar. 7, 1984, Ser. No. 587,224
Claims priority, application United Kingdom, Mar. 10, 1983, 8306641
Int. Cl.[4] E21C *35/18*
U.S. Cl. 299—91 8 Claims



1. A holding arrangement for a cutter pick of the type comprising a rearwardly open, forwardly tapering recess, said holding arrangement comprising:

a pick box containing a forwardly open bore defining a front-to-rear extending longitudinal axis and including a radial shoulder,

a sleeve disposed within and lining at least a portion of said bore and sized to receive therein a shank of the pick, said sleeve being rotatable about said axis to permit rotation of the pick about said axis; and

a thrust ring extending into a front end of said bore and retained therein against axial dislodgement, said thrust ring arranged to closely fit said pick and said bore to impede the passage of foreign matter into said bore, said thrust ring including a front end face and a rear radial surface bearing against said shoulder for resisting axial inward forces applied thereagainst by the pick during a cutting action, and a radially extending portion extending into the path of said sleeve for preventing axial dislodgement thereof,

said front end face defined by a first portion extending radially outwardly and axially forwardly, and a second portion extending radially inwardly and axially forwardly, said first and second portions converging forwardly in V-shape to engage first and second forwardly converging surfaces of said recess formed in said pick.

4,603,912

BRUSH MANUFACTURING MACHINE

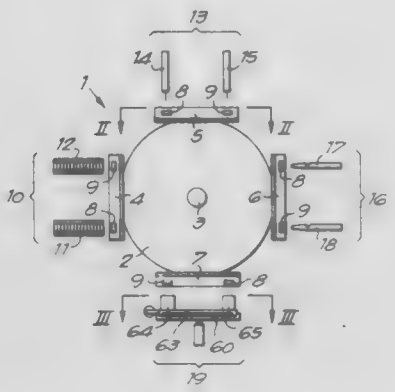
Leonel P. Boucherie, Roeselare-Rumbeke, Belgium, assignor to Firma G.B. Boucherie, Belgium

Continuation of Ser. No. 470,951, Mar. 1, 1983, abandoned. This application Jun. 13, 1985, Ser. No. 744,301

Claims priority, application Belgium, Mar. 4, 1982, 2/59614

Int. Cl.[4] B25B *1/20, 11/00*

U.S. Cl. 300—2 **8 Claims**



1. A machine for manufacturing a plural faced brush wherein manufacturing operations are performed on individual faces of a brush body comprising:

(a) a brush body carrier;

(b) clamping means mounted on the brush body carrier including two clamping components disposed in line with each other having means for engaging ends of the brush body attached to axially movable pins;

(c) means for moving the pins axially such that the clamping components are moved toward or away from each other so as to clamp the brush body therebetween;

(d) indexing means to turn the pins, the clamping components and the brush body engaged therein through an angle of less than 360° and to subsequently hold the brush body stationary so as to permit manufacturing operations to be separately performed on each face of the brush body; and,

(e) means to transport the brush body carrier between a plurality of manufacturing operation stations.

4,603,913

APPARATUS FOR STORING AND MANIPULATING BUNDLES OF BRISTLES IN BRUSH MAKING MACHINES

Benno Dörflinger, and Walter Steinebrunner, both of Todtnau, Fed. Rep. of Germany, assignors to Anton Zahoransky, Todtnau, Fed. Rep. of Germany

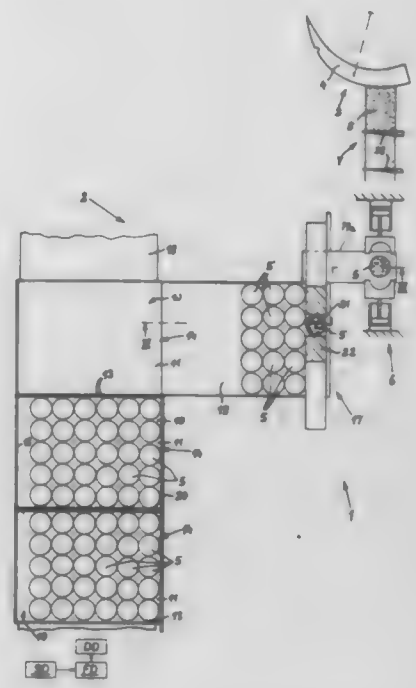
Filed Jan. 16, 1985, Ser. No. 691,897

Claims priority, application Fed. Rep. of Germany, Jan. 21, 1984, 3402051

Int. Cl.[4] A46D *1/04*

U.S. Cl. 300—7 **26 Claims**

1. In a brush making machine wherein bristles are confined in at least one magazine and the supply of bristles must be replenished at intervals by the admission of batches of arrayed bristles, apparatus for storing bundles of wrapped batches of bristles an for delivering such batches to the magazine, comprising a source of bundles including at least one support for maintaining a set of neighboring bundles in substantially upright positions; means for receiving bundles from said source, including a singularizing device arranged to accept discrete bundles from said source; and means for unwrapping the



batches of bristles between said singularizing device and said magazine.

4,603,914

AXIALLY ADJUSTABLE VEHICLE WHEEL COVER

Trevor J. Brown, Rochester, and Eugene S. Dipzinski, Sterling Heights, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Mar. 4, 1985, Ser. No. 708,006

Int. Cl.[4] B60B *7/04, 7/06*

U.S. Cl. 301—37 P **5 Claims**



1. The combination comprising, a vehicle wheel having an annular retention flange, a wheel cover of plastic material having an annular retention flange provided with a plurality of annularly spaced axially and radially extending projections, an annular retention band provided with a plurality of axially extending openings, each respective to and receiving a projection of the cover flange therethrough, cooperating means on the band and on the projections frictionally interengageable to lock the band to the retention flange of the cover, retaining means on the band releasably engageable with the retention flange of the wheel to releasably retain the cover to the wheel, the openings of the band having a greater axial extent than the axial extent of the respective projections and permitting movement of the cover relative to the band, the cover being adjustable relative to the wheel after engagement of the retaining means of the band with the retention flange of the wheel upon the application of a force to the cover sufficient to overcome the frictional force of the cooperating means on the band and on the projections.

4,603,915

WHEEL COVER WITH A WIRE SPRING RING

Harald M. Heintz, Weinstadt, Fed. Rep. of Germany, assignor to Daimler-Benz Aktiengesellschaft, Fed. Rep. of Germany

Filed Mar. 7, 1984, Ser. No. 586,974
Claims priority, application Fed. Rep. of Germany, Apr. 28, 1983, 3315342
Int. Cl.[4] B60B *7/06*
U.S. Cl. 301—37 P 16 Claims



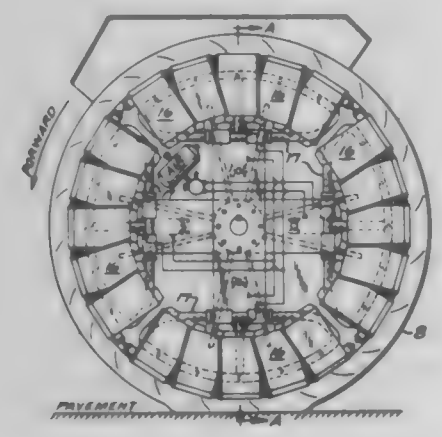
1. A wheel cover comprising a wire ring, at least two guide means, said wire ring being received in the installed condition by said guide means secured at the wheel cover, said guide means being operable to engage in corresponding recesses of a wheel rim, the wire ring being constructed as prestressed bending spring and having in the unstressed condition a non-circular circumference formed by more than one ring section, some of the sections being coordinated one to each of the guide means with the remaining sections disposed therebetween, and the bending spring attaining a shape at least approximating a circle after being clamped into the guide means of the wheel cover and after mounting of the wheel cover on the wheel rim.

4,603,916

LIGHTWEIGHT RETRACTABLE TRACK-WHEEL FOR AGRICULTURAL TRACTORS AND THE LIKE

Thorvald G. Granryd, 1260 N. Western Ave., Lake Forest, Ill. 60045

Filed Nov. 2, 1984, Ser. No. 667,572
Int. Cl.[4] B60B *15/12, 15/06;* A01B *33/02, 63/02*
U.S. Cl. 301—45 18 Claims



1. A retractable drive system for a rubber tired vehicle having a power driven tire and a driving member for the power driven tire, said retractable drive system comprising

a frame having a first disc member, a second plate member and a hub operatively connected to said first and second members to form a rigid structure,

said hub being adapted to be secured to a driving member of a power driven wheel,

said first member including at least two series of anchor means for forming points of securement,

said second member including at least two pivot means for forming a pivotal connection,

at least two drive propulsion assemblies, each of said assemblies including a length of wire rope,

said wire rope being mounted upon one of said at least two series of anchor means for rotational movement relative thereto,

said drive propulsion assemblies also including a supporting member, said supporting member being mounted upon one of said at least two pivot means for rotational movement relative thereto,

said drive propulsion assemblies further including a series of ground engaging spades mounted on said length of wire rope in a position to be movable between ground engaging and ground avoiding contact, each of said ground engaging spades having a lug portion, a base portion, a mounting portion and an end portion,

coupling means for fixedly securing said mounting portion of each of said ground engaging spades onto said length of wire rope such that rotational movement of said wire rope will move said ground engaging spades between said ground engaging and ground avoiding contact, and

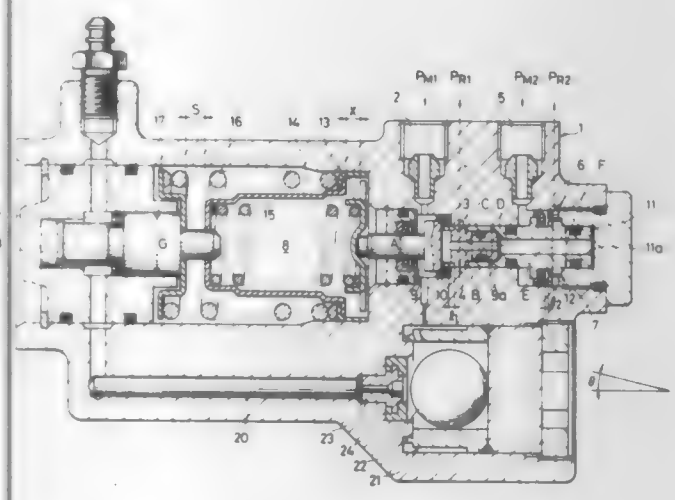
actuating means for applying and retracting said series of ground engaging spades of said at least two drive propulsion assemblies.

4,603,917

HYDRAULIC PRESSURE CONTROL VALVE FOR DUAL BRAKE CIRCUIT

Teruhisa Kohno, Hyogo, Japan, assignor to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Jun. 26, 1984, Ser. No. 624,863
Claims priority, application Japan, Jul. 1, 1983, 58-120878
Int. Cl.[4] B60T *8/26, 17/18*
U.S. Cl. 303—6 C 4 Claims



1. In a fluid pressure controlling valve for a dual path brake system including a pressure reducing valve for outputting an input fluid pressure of a first fluid system and a follower valve connected in series with said pressure reducing valve for outputting a fluid pressure of a second fluid system substantially equal to that of said first fluid system and following said output fluid pressure of said first fluid system, said follower valve having a first pressure receiving portion receiving the fluid pressure of said first fluid system in a valve opening direction and a second pressure receiving portion for receiving an output fluid pressure of said second fluid system in a valve closing direction and having an area equal to that of said first pressure receiving portion, the improvement wherein said follower valve comprises a fluid pressure responsive plunger having a central passage formed therethrough, said fluid pressure responsive plunger having an annular portion functioning as said first pressure receiving portion, and a valve head provided centrally of said plunger, an annular valve seat disposed around said fluid pressure responsive plunger and being adapted to provide selected fluid communication between an

inlet of said second fluid system and an output of said second fluid system by selective contact with said valve head, a third pressure receiving portion being provided at a stepped portion defined between said first pressure receiving portion and said valve head, for applying the input pressure of said second system in the valve opening direction of said follower valve, said follower valve having an end portion constituting a fourth pressure receiving portion for receiving the input pressure of said first fluid system via said central passage, and said second pressure receiving portion being provided at a second stepped portion defined between said valve head and said fourth pressure receiving portion for applying the output pressure of said second fluid system in the valve closing direction of said follower valve, said pressure receiving areas of said first, second, third and fourth pressure receiving portions being such that $a=b$, $c=d$, and $b \leqq c$, where a, b, c and d represent the pressure receiving areas of said first, second, third and fourth receiving portions, respectively.

4,603,918

HYDRAULIC DUAL-CIRCUIT TANDEM MASTER BRAKE CYLINDER

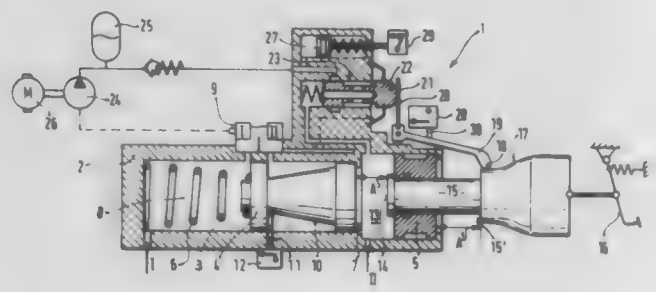
Heinz Leiber, Oberriexingen, and Hannes Bertling, Vaihingen, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Continuation of Ser. No. 375,899, May 7, 1982, abandoned. This application Dec. 19, 1984, Ser. No. 682,824

Claims priority, application Fed. Rep. of Germany, Dec. 18, 1981, 3150120; Mar. 24, 1982, 3210735

Int. Cl.⁴ B60T *8/02, 11/20, 13/14*

U.S. Cl. 303—6 R **5 Claims**



1. A hydraulic dual-circuit tandem master brake cylinder for vehicle brake systems having a closed brake circuit and an open brake circuit, the closed brake circuit including: a brake piston which serves to pressurize said closed brake circuit, and the open brake circuit including: a main brake cylinder, an annular piston member in said brake cylinder, and a foot actuated pedal push rod, said foot-actuated pedal push rod including a small diameter portion that extends through said annular piston member and extends into a fluid pressure chamber for said open brake circuit, a larger diameter portion that includes a control contour surface and which includes a frontal shoulder on the pedal side of said annular piston member between said annular piston and said control contour surface, and a brake-pressure-generating piston end face in said chamber which is larger than said small diameter portion of said pedal push rod, said annular piston member and said piston end face of said pedal push rod forming a rear wall in said fluid pressure chamber, a slide control valve means actuated by said control contour surface of said larger diameter portion of said pedal push rod, and said pedal push rod actuates said annular piston member in said open brake circuit and said brake piston in said closed brake circuit in the event of a pressure failure.

4,603,919

DUAL CONTROL PRESSURE MEDIUM BRAKE SYSTEM

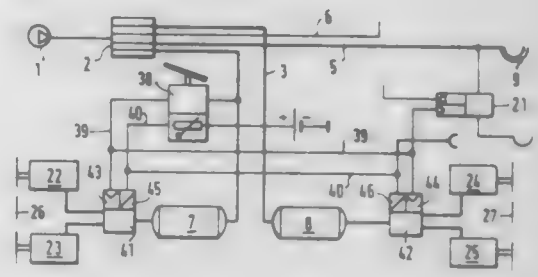
Ingolf Granel, Vaihingen/Enz; Günter Kulke, Esslingen; Egbert Müller, Hochdorf, and Werner Stumpe, Kornwestheim, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Sep. 3, 1982, Ser. No. 415,614

Claims priority, application Fed. Rep. of Germany, Nov. 12, 1981, 3144961

Int. Cl.⁴ B60T *15/18*

U.S. Cl. 303—6 R **5 Claims**



1. A dual control pressure-medium brake system including at least two brake circuits, a pressure-medium source for each brake circuit, a dual control valve in each brake circuit which controls a pressure medium flow through a pressure medium control chamber for each brake circuit, each separate dual control valve comprising at least two control chambers, a control medium directed to each of said at least two control chambers to control said pressure medium in each brake circuit when the brakes are activated, each of said at least two control chambers of said dual control valves are controlled with control media from different brake circuits.

4,603,920

HYDRAULIC PRESSURE CONTROL DEVICE FOR USE IN VEHICLE ANTI-SKID BRAKING SYSTEM

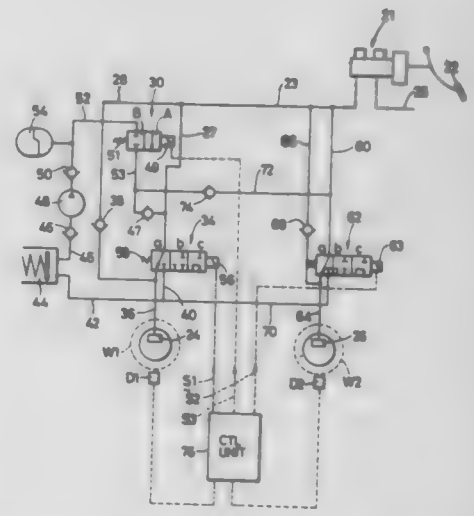
Hiromi Otsuki; Ryoichi Matsuura; Hiroshi Fujinami; Shinichi Hori, all of Anjo; Yoshihisa Nomura, Toyota, and Hiroyuki Oka, Susono, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Nov. 2, 1984, Ser. No. 667,221

Claims priority, application Japan, Nov. 4, 1983, 58-208026

Int. Cl.⁴ B60T *8/02*

U.S. Cl. 303—10 **4 Claims**



1. A hydraulic pressure control device in a vehicle anti-skid braking system, comprising:

(a) a brake master cylinder operable for producing a fluid pressure;

(b) wheel brake actuating cylinder means for applying a braking force dependent on said fluid pressure to a wheel;

(c) fluid pressure supply passage means connected between

said brake master cylinder and said wheel brake actuating cylinder means;

(d) directional control valve means disposed in said fluid pressure supply passage means for supplying the fluid pressure from said brake master cylinder to said wheel brake actuating cylinder means in a pressure-increasing braking mode and for disconnecting said wheel brake actuating cylinder means from said brake master cylinder and guiding the fluid pressure from said wheel brake actuating cylinder means to an outlet of the directional control valve means to reduce the braking force on said wheel in a pressure-decreasing anti-skid control mode;

(e) control means for generating a command signal in response to deceleration of said wheel as it is braked in the normal braking mode and applying said command signal to said directional control valve means to initiate the pressure-decreasing anti-skid control mode;

(f) reservoir means connected to said outlet of the directional control valve means for temporarily storing the fluid pressure from said outlet as a low-pressure fluid in said pressure-decreasing anti-skid control mode;

(g) fluid pressure pump means connected to said reservoir means for pumping the low-pressure fluid from said reservoir means as a high-pressure fluid;

(h) accumulator means connected to said fluid pressure pump means for accumulating the high-pressure fluid from said fluid pressure pump means; and

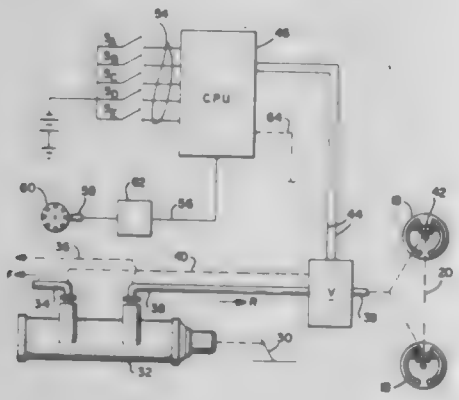
(i) solenoid-operated pressure control valve means connected between said accumulator means and said fluid pressure supply passage means coupled to an inlet of said directional control valve means, said solenoid-operated pressure control valve means being shiftable under the control of said generating control means between a closed position to cut off communication between said accumulator means and said fluid pressure supply passage means when said directional control valve means is in said pressure-decreasing anti-skid control mode and an open position to allow the high-pressure fluid to be supplied from said accumulator means to said directional control valve means when the directional control valve means enters from said pressure-decreasing anti-skid control mode into said pressure-increasing braking mode.

4,603,921

BRAKE PROPORTIONING SYSTEM

John V. Liggett, Troy, Mich., assignor to Rockwell International Corporation, Pittsburgh, Pa.

Filed Jun. 6, 1985, Ser. No. 741,646
Int. Cl.[4] B60T *13/00, 8/18*
U.S. Cl. 303—6 C **7 Claims**



1. A process of proportioning multi-axle brake efforts for a passenger vehicle having a driver seat, one or more passenger seat or seats and a load-carrying space, wherein the brake effort on at least one axle is proportioned in predetermined relationship with respect to the brake effort on at least one other axle of the vehicle, comprising:

(a) sensing the presence of loads exceeding a selected threshold at at least the passenger and luggage-carrying space locations of the vehicle and generating electrical load presence signals representative of each such presence;

(b) processing said load presence signals to drive a predetermined finite number of brake proportion control signals corresponding to a predetermined number of brake proportion settings depending upon the location and number of the sensed load presences;

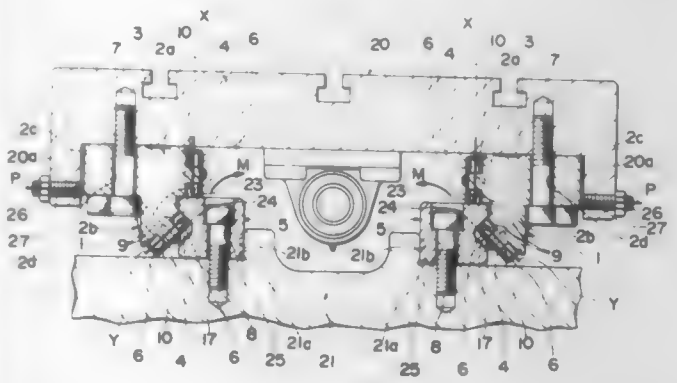
(c) transmitting said brake proportion control signals to an electrically controlled brake proportion means in the brake operating circuit of the vehicle to thereby regulate the proportional effort applied by the brakes on different vehicles axles in response to brake effort applied by a vehicle operator.

4,603,922

ROLLER BEARING FOR LINEAR SLIDING MOVEMENT

Hiroshi Teramachi, 34-8, Higashitamagawa 2-chome, Setagaya-ku, Tokyo, Japan

Filed Oct. 21, 1985, Ser. No. 789,865
Claims priority, application Japan, Oct. 27, 1984, 59-226595
Int. Cl.[4] F16C *29/06*
U.S. Cl. 384—44 **2 Claims**



1. A roller bearing for linear sliding movement comprising a sliding block having a horizontal portion and a suspending portion suspended from the base end thereof and formed with a loading groove and a non-loading groove constituting a loading area and a non-loading area of an infinate roller track way respectively at the top end of the horizontal portion and at the lower end of the suspending portion, a pair of roller guides mounted at the top end of the horizontal portion and at the lower end of the suspending portion of said sliding block respectively and constitute the infinate roller track in combination with said loading groove and non-loading groove formed at the top end of the horizontal portion and at the lower end of the suspending portion, a raceway block having upper and side rolling faces opposing to the respective loading grooves formed at the top end of the horizontal portion and at the lower end of the suspending portion of said sliding block and a plurality of rollers circulating through each of the infinite roller track formed at the top end of the horizontal portion and at the lower end of the suspending portion of said sliding block in combination with said roller guides and receiving the load between each of the loading grooves on the side of the sliding block and each of the rolling faces on the side of the raceway block, in which said raceway block is perforated with mounting holes through which fixing bolts are passed and formed with said upper rolling face and the side rolling face relative to the mounting hole generally is perpendicular to the upper surface of the horizontal portion, a load acting line extended between the upper rolling face and the loading groove formed at the top end of the horizontal portion of the sliding block is directed in perpendicular to the upper surface of said horizontal portion, while another load acting line extended between the side rolling face and the loading groove formed at the lower end of the suspending portion of said sliding block opposing to the side roller face is slanted upwardly relative to the vertical line in perpendicualr to the upper surface of said horizontal portion and, upon fixing the sliding block to a movable body, preloading is applied by exerting an urging force from

the side of the movable body to the side of the horizontal portion.

4,603,923

INNER RACE FOR A SWASHPLATE MECHANISM

Horst Döppling; Steffen Hertrich; Walter Pöschl; Joachim Ritter, and Karl Sill, all of Herzogenaurach, Fed. Rep. of Germany, assignors to INA Walzlager Schaeffler KG, Fed. Rep. of Germany

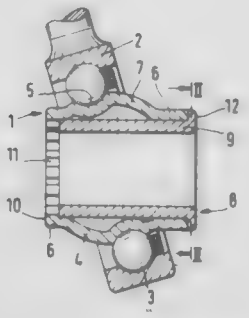
Filed Dec. 17, 1984, Ser. No. 682,603

Claims priority, application Fed. Rep. of Germany, Jan. 11, 1984, 3400635

Int. Cl.[4] F16C *31/04*

U.S. Cl. 384—7

10 Claims



1. In a swashplate mechanism comprising an inner race having on its outer surface a ball groove extending at an angle to its longitudinal axis and an outer race surrounding the inner race and having a ball groove in its bore and a ring of balls rolling in the grooves of the inner and outer races, the improvement comprising the inner race is formed as a tubular sheet-metal element with a ball groove formed without metal removal, the sheet-metal element having substantially constant wall-thickness over its entire length, and being smaller at its two end portions than at its central portion, the inner race being provided with a hub bush in its bore to receive a shaft, the hub bush being connected to the sheet-metal element in the area of its end portions, the hub bush having a radially outwardly extending flange at least at one end bearing against the end face of the sheet-metal element.

4,603,924

MULTIPLE STRIP SUPPORT FOR WIRE MARKING ELEMENTS TO BE APPLIED ON CABLES AND TERMINALS

Ivana Piana, and Silvano Piana, both of Genoa, Italy, assignors to Grafoplast S.p.A., Italy

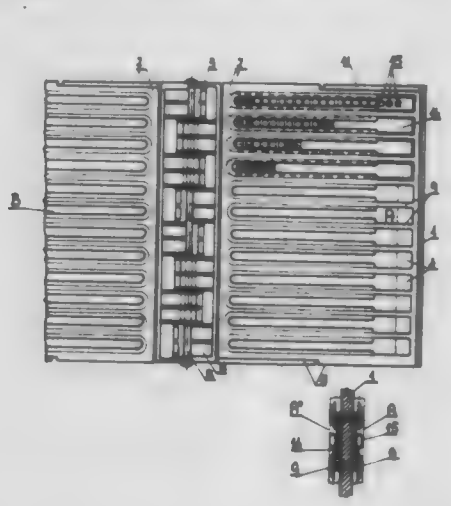
Filed May 29, 1984, Ser. No. 614,820

Claims priority, application Italy, Jul. 23, 1983, 12587 A/83

Int. Cl.[4] A47B *97/02;* G09F *3/00*

U.S. Cl. 312—183

6 Claims



1. A support for multiple strips, comprising a casing having identical upper and lower faces with transverse grooves and hole means therein, lug means on at least one side of said casing and forming female hinge parts, and wall means covering each face of said casing, said wall means each having a plurality of transverse webs forming a plurality of slits therebetween, said webs having a T-section along part of their length and a square section along another part of their length, said webs extending into said grooves, said wall means having pin means arranged to enter said hole means to obtain registry of said wall means with its associated casing, said female hinge parts of one casing being operable to cooperate with said female hinge parts of another said casing to hingedly connect one said casing to another said casing.

4,603,925

PERSONAL COMPUTER STORAGE CABINET

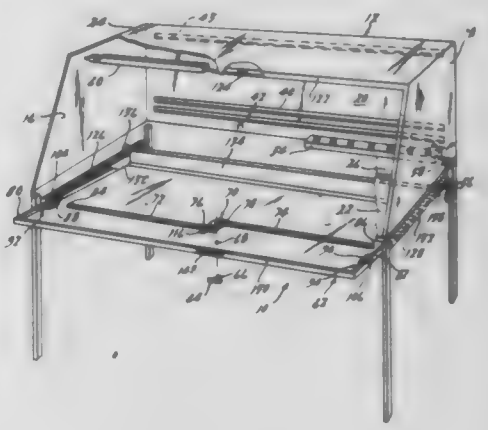
Pablo Cuevas-Cumming, Walled Lake, Mich., assignor to Chrysler Corporation, Highland Park, Mich.

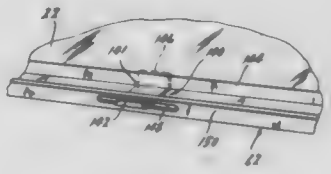
Filed Jul. 25, 1985, Ser. No. 758,943

Int. Cl.[4] A47B *17/00;* E05D *15/58*

U.S. Cl. 312—196

4 Claims





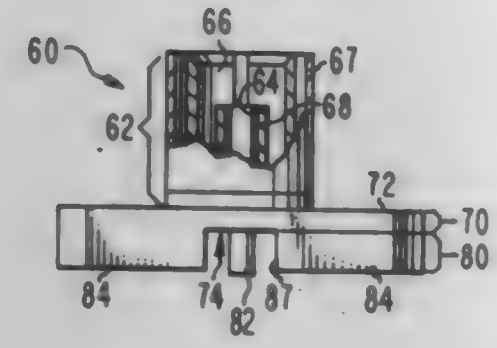
1. A personal computer storage cabinet comprising a cabinet portion having side panels, a back panel, a bottom panel and a top panel defining an enclosed storage space having a front access opening for personal computer equipment, a retractable door movable from a closed position in which it covers the access opening to an open position stored beneath the cabinet portion in which it uncovers the access opening to permit operation of personal computer equipment stored within the cabinet, said door having an upper edge and a lower edge, a pinion rotably mounted on each end of the lower door edge, an elongated gear rack mounted under each pinion beneath, and spaced from, the cabinet bottom panel, each of said gear racks being in engagement with its respective pinion and extending from the front to the rear of the cabinet portion, said door being pivotable about the pinions and movable by means of said pinions in the gear racks to its open and closed positions, support means provided on the cabinet portion to engage the door for retaining the door in its open position, and locking means on the door adjacent the upper edge thereof cooperating with engagement means on the cabinet portion for locking the door in its closed position, said support means on the cabinet portion comprising a bracket secured to the underside of the cabinet portion, said bracket including a portion extending forwardly of the cabinet portion and terminating in an upturned end portion, said retractable door having a flange on the upper edge, said flange having opening means to receive said forwardly extending bracket portion to support the upper edge of the door when the door is moved to its open position stored beneath the cabinet portion, said upturned end portion of the bracket preventing inadvertent release of the door.

4,603,926

CONNECTOR FOR JOINING MICROSTRIP TRANSMISSION LINES

Gerald H. Nesbit, Voorhees Township, Camden County, and Alireza Afrashteh, Cuts-Neck, both of N.J., assignors to RCA Corporation, Princeton, N.J.

Filed Dec. 29, 1983, Ser. No. 566,905
Int. Cl.[4] H05K *1/00*
U.S. Cl. 339—17 C 12 Claims



1. A connector half for coupling microwave signals between a mating coaxial connector half and a strip transmission line of the type having a dielectric substrate with a relatively narrow strip conductor on a face side thereof and a relatively broad ground conductor on a back side thereof, said connector half comprising:

a body portion having a conductive outer portion and an aperture therethrough;

a coaxial connector portion adjacent to one side of said body portion, said coaxial connector portion including a linear inner conductor and an outer conductor which is electrically continuous with said conductive outer portion;

said linear inner conductor extending linearly from within said coaxial connector portion through said aperture and beyond said body portion without contacting said conductive outer portion for making electrical contact with said narrow strip conductor on said substrate, when said connector half is mounted on said face side of said strip transmission line substrate; and

a stand-off portion adjacent to a second, opposite, side of said body portion for, when positioned over said strip transmission line, spacing said body portion a predetermined distance from said strip transmission line substrate, said stand-off portion being configured with a gap through which said inner conductor extends and within which said relatively narrow strip conductor mat, while spaced from said stand-off portion, extend between said body portion and said strip transmission line substrate to be in electrical contact with said inner conductor, said stand-off portion of a material and configured in the region about said gap to form an intermediate RF transmission line with said linear extension of said inner conductor to match the characteristic impedance of said coaxial connector portion and the characteristic impedance of said strip transmission line structure;

said body portion and said stand-off portion together configured to provide an electrical connection between said outer conductor and said relatively broad ground conductor, when said connector half is mounted on said face side of said strip transmission line substrate;

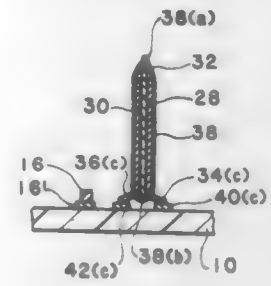
said stand-off portion including an electrically conductive surface bordering a portion of said gap and extending from said body portion for substantially said predetermined distance, said electrically conductive surface being serpentine and including a central portion which is concave toward said inner conductor and end portions which are convex toward said inner conductor.

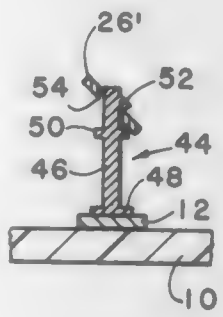
4,603,927

SURFACE MOUNTED BUSSING DEVICE

John R. Gardner, Mesa, Ariz., assignor to Rogers Corporation, Rogers, Conn.

Filed Jul. 12, 1984, Ser. No. 630,027
Int. Cl.[4] H01R *9/09, 31/08*
U.S. Cl. 339—17 C 10 Claims





6. An apparatus for mounting electrical components on a circuit board comprising:

electrically conductive stud means, said stud means including mounting means adapted to be mounted on connection pads located at the surface of a circuit board to effect electrical and mechanical connection therewith;

said stud means including means to electrically and mechanically mount an electrical component thereon;

said stud means including;

a base portion, said base portion being electrically and mechanically mountable on said connection pads of said circuit board; and

a substantially vertical stem portion extending from said base portion;

and wherein said electrical component includes at least one mounting hole therethrough and wherein said stud means mounting means includes;

a substantially horizontal cross member disposed on said stem portion; and

latch means disposed on said stem portion and spaced from said cross member;

said stem portion communicating through said mounting holes wherein said latch means effects a snap fit with said electrical component.

4,603,928

BOARD TO BOARD EDGE CONNECTOR

William R. Evans, Mooresville, N.C., assignor to AMP Incorporated, Harrisburg, Pa.

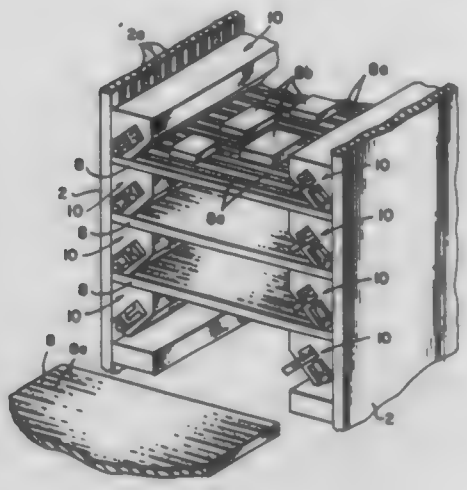
Filed Mar. 20, 1985, Ser. No. 713,970
Int. Cl.[4] H01R *9/09, 13/63.5*
U.S. Cl. 339—17 LM 13 Claims

2. A board to board connector apparatus for interconnecting discrete electrically conductive paths on a mother board to corresponding electrically conductive paths on a daughter board; comprising:

a laterally disposed resilient connecting element having discrete laterally disposed electrically conductive paths on the exterior thereof disposable in opposition to corresponding electrically conductive paths on both the mother and the daughter boards;

a longitudinally extending housing attachable to one of the mother and daughter boards and having an opening at one of its longitudinally spaced ends: and

at least two camming members relatively mutually longitudinally shiftable and longitudinally insertable into the housing through the opening, with the resilient connecting element being affixed to one camming member, relative longitudinal movement between the two camming elements imparting transverse movement of the connecting element and the one camming substantially perpendicular to the longitudinal extent of the housing toward both the mother and daughter boards bringing the discrete conductive paths on the connecting element into surface contact with the corresponding discrete conductive paths on the mother and daughter boards.

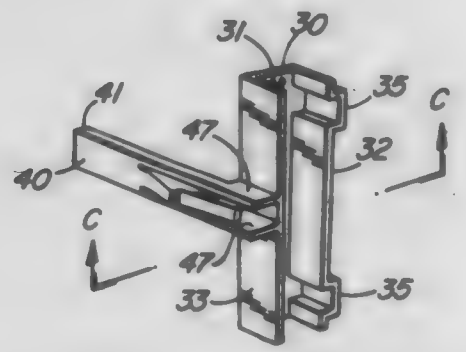


4,603,929

CONNECTOR SHROUD

Michael H. Fitzpatrick, Sunnyvale, Calif., assignor to Northern Telecom Limited, Montreal, Canada

Filed Feb. 13, 1985, Ser. No. 701,286
Int. Cl.[4] H05K *1/00*
U.S. Cl. 339—17 C 13 Claims



3. A connector shroud for assembly with a plurality of elongated connector elements being anchored in a circuit board back plane and protruding beyond back and front surfaces of the back plane in a pattern for coupling with female connectors, the connector shroud comprising, a base including a flat body including side and end portions and a plurality of apertures extending therethrough, the apertures being arranged in said pattern for accepting the elongated connector elements, a keyway being defined in a side wall extending from one of the side portions normal to the flat body portion, the keyway being for mating with a complementary keying formation in a first female connector to permit discriminatory coupling with the elongated connector elements adjacent one surface of the back plane, the connector shroud being characterized by:

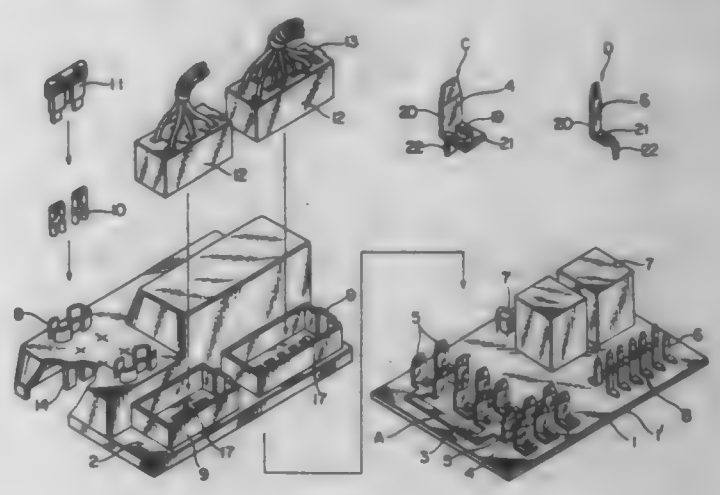
a key member extending normal to the flat body portion in a direction opposite to that of the side wall, in assembly the key member extending through an opening in the circuit board back plane and being for cooperating with a complementary keying structure associated with a second female connector different from said first female connector to permit discriminatory coupling of the elongated connector elements adjacent another surface of the back plane.

4,603,930

INTERCONNECTION APPARATUS FOR WIRING HARNESSES

Mitsuru Ito, Kuwana, Japan, assignor to Tokai Electric Wire Company Limited and Sumitomo Electric Industries Ltd., both of, Japan

Filed Jul. 2, 1984, Ser. No. 626,695
Claims priority, application Japan, Jul. 5, 1983, 58-122642
Int. Cl.[4] H01R *9/09*
U.S. Cl. 339—17 R 6 Claims



1. In an interconnection apparatus for wiring harnesses including a wiring board including a single-layer insulating board and a cover fitted over the wiring board to cover the same, the improvement wherein said wiring board comprises branch conductive path means formed by a busbar mounted on said insulating board and having a predetermined pattern including a plurality of tab contact members adapted to be connected to branch circuit means of the wiring harness, functional component circuit means formed by a plurality of functional components mounted on said insulating board and positioned on said wiring board to be fitted within the periphery of said cover, and printed wiring circuit means formed on said insulating board and interconnecting said branch conductive path means and said functional componenent circuit means, each of said tab contact members being formed into an L-shape and having a first leg extending parallel to said insulating board and in circuit with said printed wiring circuit means and a second terminal leg extending perpendicularly to said wiring board, said cover including a plurality of press pieces disposed to engage said first legs of said L-shaped tab contact members and restrain them relative to the insulating board to restrain them upon removal of an attached connector.

4,603,931

ANTI-THEFT DEVICE FOR APPLIANCES WITH ELECTRICAL AC POWER CORDS

Samuel H. Ruffman, 1800 Selby Ave., #2, West Los Angeles, Calif. 90025

Filed Dec. 14, 1984, Ser. No. 681,599
Int. Cl.[4] H01R *13/44*
U.S. Cl. 339—37 17 Claims

1. Anti-theft device for securing a power plug against removal from an electrical power outlet comprising:

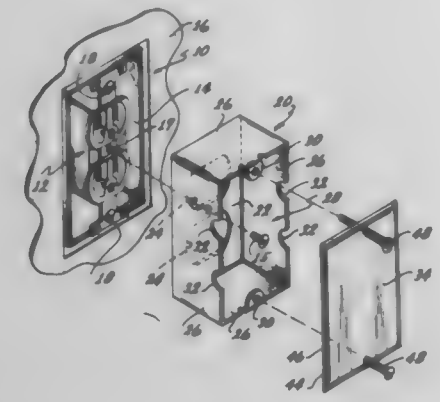
an enclosure of electrically conductive material having a face plate wall apertured to allow insertion of at least one power plug into an electrical power outlet covered by said face plate wall, a plurality of side walls, and an open side;

means for securing said face plate wall over an electrical power outlet;

a cover for closing said open side;

means for fastening said cover to said enclosure; and

one or more openings defined between said cover and at least one of the side walls, each said opening being dimensioned to allow passage of an electrical power cord but to prevent passage of a power plug attached to the cord within the enclosure, each said opening being defined by



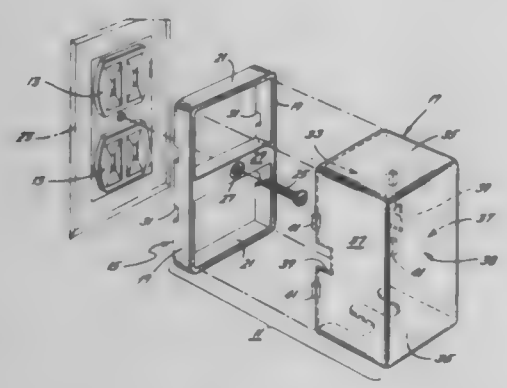
unprotected relatively sharp edges so as to cut into the electrical insulation of a power cord passing through the opening upon attempted forced removal of the power plug from the enlosure and thereby create a short circuit to deter theft.

4,603,932

ELECTRICAL OUTLET COVER

Karen H. Heverly, 894 Village Cir., Blue Bell, Pa. 19422

Filed Jan. 10, 1985, Ser. No. 690,299
Int. Cl.⁴ H01R *13/44*
U.S. Cl. 339—39 **9 Claims**



1. A protective covering for an electrical outlet having plug receptacles and a cover plate and screw, comprising:

a box-like cover positionable over said outlet plug receptacles which includes a rectangular box haivng an open face, closed top, bottom and side faces and a closed outer face, said open face being positionable to seat over said plug receptacles and said top, bottom and side faces being of a size to fit neatly within said rectangular frame dimensions:

a rectangular frame seatable against, and attached to, said cover plate having a center rib, said rib being positionable over the cover plate screw position;

a hole through said center rib in alignment with the cover plate screw hole when said frame is positioned over said plug receptacles;

a plurality of cutout openings in said frame; and

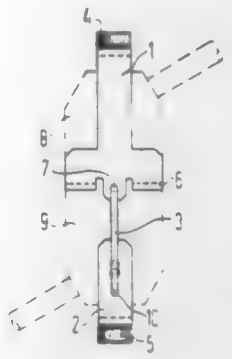
a plurality of outwardly protruding tabs on said side faces for holding said box-like cover against said frame being in position to extend into said side face cutout openings when said box is positioned within said frame wherein each side face of said rectangular box contains a cutout opening of a size and position to permit each said side face to fit over said center rib when said rectangular box is positioned within said frame.

4,603,933

PLUG COUPLING HAVING PLUG PROTECTION

Leopold Hoer, Augsburg, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jan. 31, 1985, Ser. No. 697,029
Claims priority, application Fed. Rep. of Germany, Feb. 29, 1984, 3407446
Int. Cl.⁴ H01R *13/639*
U.S. Cl. 339—75 P **5 Claims**



1. A plug coupler for preventing undesired disconnection of first and second connector parts, comprising:

a first U-shaped part for embracing the first connector part and including a base, a first locking screw extending through said base and a pair of legs extending from said base;

a pair of hook members each including a first end hook section pivotally connected to a respective leg and a second end hook section; and

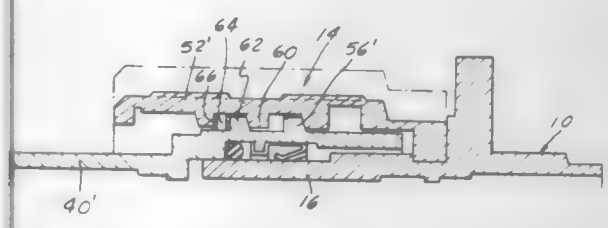
a second U-shaped part for embracing the second connector part and including a base, a second locking screw extending through said base and a pair of legs extending from said base and connected to said second end hook sections.

4,603,934

FACE SEAL PRESSURE APPARATUS FOR ELECTRICAL CONNECTORS

Edgar Burns, Los Angeles, Calif., assignor to G & H Technology, Inc., Santa Monica, Calif.

Filed Apr. 15, 1985, Ser. No. 723,192
Int. Cl.⁴ H01R *13/625*
U.S. Cl. 339—90 R **9 Claims**



1. An electrical connector comprising:

a receptacle portion;

a plug portion adapted to mate with the receptacle portion;

each of the plug receptacle portions having aligned mating contact members positioned on a mating face located on the respective plug portion and receptacle portion;

a locking ring surrounding the plug portion and receptacle portion and having a threaded interiorly facing surface;

a threaded exteriorly facing surface on the one of the plug and receptacle portions positioned adjacent the locking ring, to move the plug portion and receptacle portion into a mated position upon rotation of the locking ring in a first direction; and

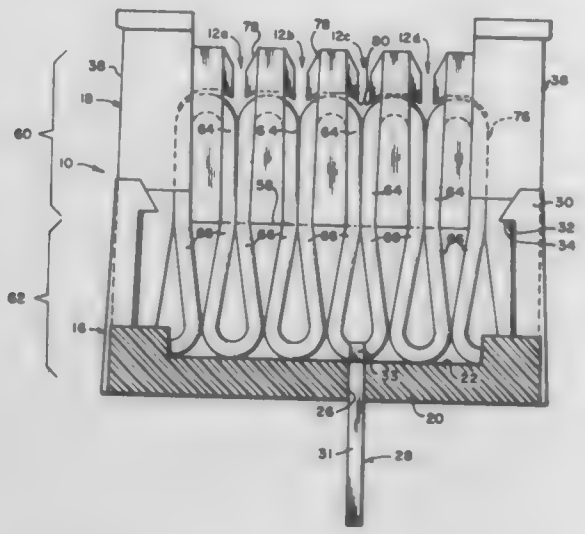
a face seal biasing spring positioned between at least one thread on each of the threaded interiorly facing surface and the threaded exteriorly facing surface.

4,603,935

MULTIPLE ELECTRICAL CONNECTOR BLOCK WITH IMPROVED WIRE WRAP PINS

Robert H. Knickerbocker, Cheshire, Conn., assignor to The Siemon Company, Watertown, Conn.

Filed Sep. 29, 1983, Ser. No. 537,070
Int. Cl.[4] H01R *9/00*
U.S. Cl. 339—97 P 16 Claims



1. A block for housing a plurality of electrically conductive wire-formed connector elements of the type having oppositely facing and interconnected upper and lower rows of loops, the block including:

a retainer section, said retainer section having opposite first and second surfaces;

a plurality of latitudinal rows of spaced slots extending into said retainer section from said first surface;

at least some of said spaced slots of said retainer section being provided with apertures, said apertures each being positioned so as to be disposed under about the center of a lower loop of one of said wire-formed connector elements, said apertures commuicating with said retainer section second surface;

at least one elongated electrically conductive pin means, said pin means being positioned and retained within one of said apertures of said spaced slots, portions of said pin means extending outwardly beyond both of said first and second surfaces of said retainer section, said portion of said pin means extending from said first surface of said retainer section having notch means to form mechanical and electrical contact with the center of a lower loop of one of said wire-formed connector elements;

a main body section connected to said retainer section first surface.

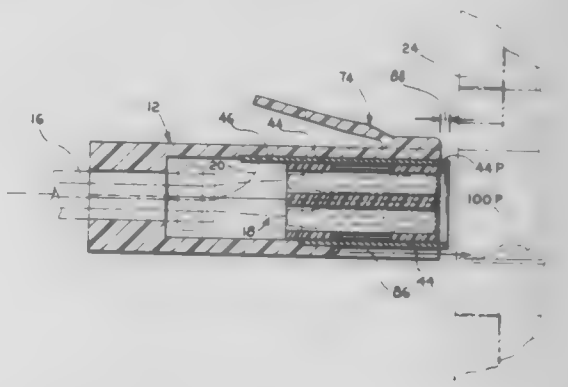
interior of the casing having a substantially rectangular recess for receiving said shielding member;

a resilient latch pivotally mounted to the exterior of the casing;

a cutout formed on one surface of the dielectric casing to expose a portion of one of the annular rectangular sides of the shielding member;

a receptacle having a substantially rectangular recess for receiving the terminal, said receptacle further including a latch camming surface and an abutment surface;

a ground connection contact mounted on an inner surface within the recess of the receptacle and projecting into the volume of said recess, said ground connection contact being in a position registrable with the cutout formed in the casing when the terminal is fully inserted into the receptacle;



movement of the terminal into the recess of the receptacle causing the latch to engage the camming surface and to pivot with respect to the terminal casing to facilitate introduction of the terminal into the receptacle, the latch upon clearing the camming surface resiliently snapping into latched engagement against the abutment surface of the receptacle to hold the terminal in a locked position within the receptacle recess, said locked position being the position where the ground connection contact is registrable with the cutout formed in the casing so that the ground connection contact is in electrical engagement with the portion of the shielding member exposed by said cutout whereby at said locked position the shielding member portion exposed by said cutout is located entirely within the recess of the receptacle and said electrical engagement is achieved completely within the recess of the receptacle.

4,603,936

ELECTRICAL CONNECTOR FOR A SHIELDED CABLE

Paul R. Jagen, Mechanicsburg, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 19, 1983, Ser. No. 562,967
Int. Cl.[4] H01R *13/648, 13/652*
U.S. Cl. 339—143 R 5 Claims

1. A connector for a cable of the type having a plurality of conductors and a shield comprising:

a dielectric housing with an array of openings for receiving the ends of each of the conductors;

a shielding member formed of electrically conductive material in the shape of a substantially rectangular annular can, said shielding member surrounding the dielectric housing and being electrically connectable to the shield of the cable;

a dielectric casing surrounding the shielding member to form a plug-like terminal of a substantially rectangular cross-section shape along a major portion of its length, the

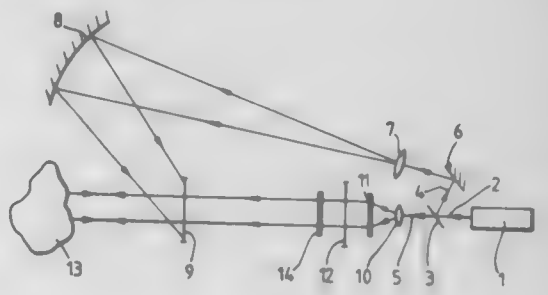
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4,603,937

HOLOGRAPHY

James R. Copp, Braxted Park, Witham, Essex CM8 3XB, England

Filed Jun. 5, 1984, Ser. No. 616,949
Claims priority, application United Kingdom, Jun. 6, 1983, 8315427
Int. Cl.[4] G03H *1/12*
U.S. Cl. 350—368 7 Claims



1. A method of producing holographs of a subject on a laser light-sensitive emulsion which includes irradiating the laser light-sensitive emulsion with a reference beam of laser light, and with an object beam of laser light reflected from a scale representation of a subject, wherein the energy distribution

across the laser light incident upon the scale representation varies in accordance with a partially transmitting optical element or elements depicting the subject from the same apparent viewpoint as the object beam irradiates the scale representation.

4,603,938

METHOD OF PRODUCING INLINE HOLOGRAM LENS

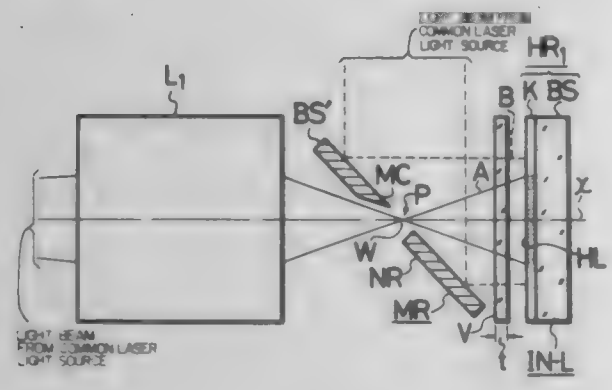
Chiaki Kojima, Yokohama; Kayoko Hasegawa, Kamakura, and Kousuke Miyahara, Yokohama, all of Japan, assignors to Sony Corporation, Tokyo, Japan

PCT No. PCT/JP81/00332, § 371 Date Jul. 8, 1983, § 102(e) Date Jul. 8, 1983, PCT Pub. No. WO83/01845, PCT Pub. Date May 26, 1983

PCT Filed Nov. 13, 1981, Ser. No. 527,578

Int. Cl.⁴ G02B *5/32, 27/14*

U.S. Cl. 350—3.72 9 Claims



1. A method of producing an inline hologram lens using first and second interfering wave beams from a common source comprising the steps of employing an optical lens element receiving the first wave beam for radiating a spherical wave beam therefrom, providing a full reflection mirror having a small window formed therein, irradiating said spherical wave beam through the small window of said full reflection mirror with no spherical aberration onto a hologram record medium as a subject wave beam, and, simultaneous with said subject wave beam, irradiating the second wave beam onto said hologram record medium as a reference wave beam by reflecting the second wave beam with said full reflection mirror.

4,603,939

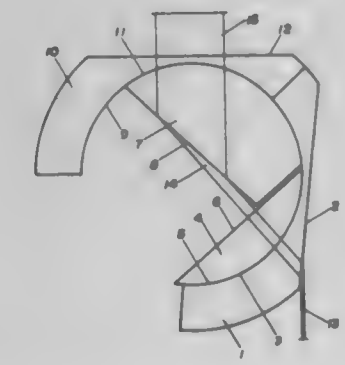
REVOLVING MAGNIFYING PRISMS

John E. Clegg, 2320 Keystone Dr., Orlando, Fla. 32806

Filed Aug. 24, 1984, Ser. No. 643,854

Int. Cl.⁴ G02B *5/04*

U.S. Cl. 350—6.4 1 Claim



1. Revolving magnifying prisms comprising in general a lower stage consisting of four cylindrical members which can be revolved independently of each other, each member having a planar face which either transmits or refracts a light beam projected through the prisms as means of magnifying the beam in one dimension, and comprising an upper stage consisting of four cylindrical members identical to the four members of the lower stage but revolved 90° on the vertical axis of the prisms as means of magnifying the beam in the other dimension, and each lower and upper stage comprising in particular when revolved to positions of maximum magnification;

a cylindrical member (1) comprising a longitudinal segment of a hollow cylinder having a planar face (2) which refracts an incipient beam (13), forming a refracted beam (14), and having an opposed concave cylindrical face (3) which emits said refracted beam (14),

a cylindrical member (4) comprising a longitudinal segment of a whole cylinder mounted inside said cylindrical member (1) and having a convex cylindrical face (5) adjoining said concave cylindrical face (3) so as to transmit said refracted beam (14), and having an opposed planar face (6) which emits said refracted beam (14),

a cylindrical member (7) comprising a longitudinal segment of a whole cylinder mounted inside a cylindrical member (10) and having a planar face (8) which refracts said refracted beam (14), forming a refracted beam (15), and having an opposed convex cylindrical face (11) which transmits said refracted beam (15), and

said cylindrical member (10) comprising a longitudinal segment of a hollow cylinder having a concave cylindrical face (9) adjoining said convex cylindrical face (11) so as to transmit said refracted beam (15), and having an opposed planar face (12) which emits said refracted beam (15).

4,603,940

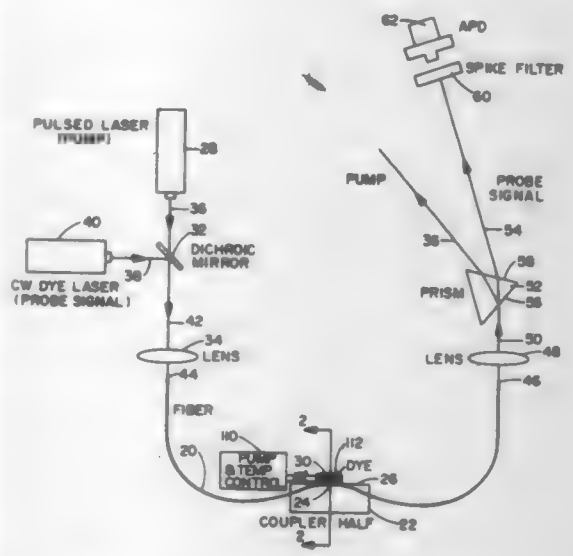
FIBER OPTIC DYE AMPLIFIER

Herbert J. Shaw, Stanford; Michel J. F. Digonnet, Palo Alto; Ralph A. Bergh, Atherton; Wayne V. Sorin, Stanford, and Brian H. Kolner, Menlo Park, all of Calif., assignors to Board of Trustees of the Leland Stanford Junior University, Stanford, Calif.

Filed Aug. 30, 1983, Ser. No. 527,946

Int. Cl.⁴ G02B *6/26, 6/36, 6/10*

U.S. Cl. 350—96.15 30 Claims



1. A light amplification apparatus for amplifying light at a first wavelength in response to optical pumping by light at a second wavelength, said amplifier comprising:

a monomode optical fiber having a core and a cladding, said fiber arcuately mounted and having a portion of said cladding removed on one side of said fiber over a predetermined region to provide a surface on said cladding which is sufficiently close to said core exclusively at said one side of said fiber to allow evanescent field penetration at said surface of light propagating in said fiber at said first and second wavelengths; and

a liquid dye solution, in communication with said surface, for exposure to the evanescent field of said light at said first and second wavelengths, said solution having a peak absorption wavelength which substantially matches said second wavelength and a peak emission wavelength which substantially matches said first wavelength, such that said solution absorbs light energy at said second

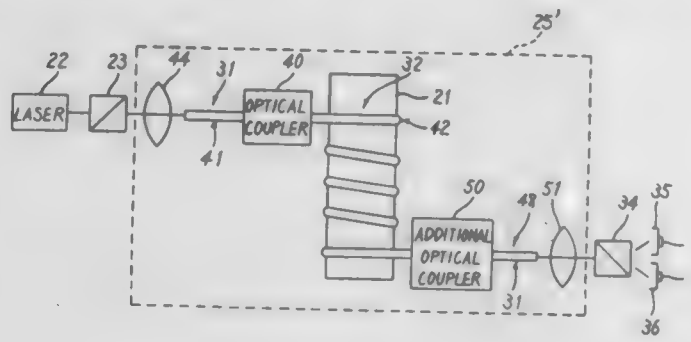
wavelength to excite dye molecule in said solution to a higher energy state, said light at said first wavelength stimulating emission of light energy by the exited dye molecules at said first wavelength to cause amplification of said light at said first wavelength.

4,603,941

POLARIZATION-MAINTAINING FIBER SYSTEM AND METHOD OF MANUFACTURING THE SAME

Yoshimasa Fujii, Tokyo; Yoshinobu Mitsuhashi, Ibaraki, and Osamu Koike, Tokyo, all of Japan, assignors to Agency of Industrial Science and Technology and Hoya Corporation, both of Tokyo, Japan

Filed Sep. 26, 1983, Ser. No. 535,656
Claims priority, application Japan, Sep. 27, 1982, 57-167946; Sep. 27, 1982, 57-167947; Sep. 27, 1982, 57-167948
Int. Cl.[4] G02B *6/26*
U.S. Cl. 350—96.15 13 Claims



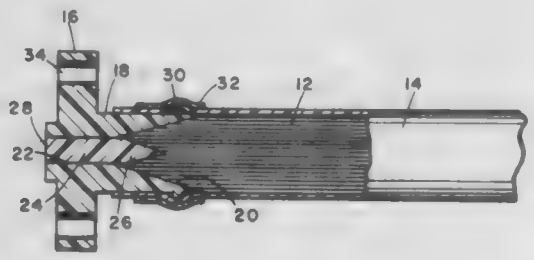
1. An optical fiber system comprising:
a first polarization-maintaining fiber having a first longitudinal axis, a first plane along said first longitudinal axis, and a second plane orthogonal to said first plane to define a first orthogonal coordinate system in cross section;
a second polarization-maintaining fiber having a second longitudinal axis, a third plane of polarization along said second longitudinal axis, and a fourth plane orthogonal to said third plane to define a second orthogonal coordinate system in cross section; and
coupling means for coupling said first polarization-maintaining fiber to said second polarization-maintaining fiber with said first longitudinal axis matched to said second longitudinal axis and with said first orthogonal coordinate system azimuthally offset from said second orthogonal coordinate system.

4,603,942

FLEXIBLE, DIELECTRIC MILLIMETER WAVEGUIDE

Yu-Wen Chang, Rancho Palos Verdes; Phillip T. Kan, Fullerton, and Oakley G. Ross, Upland, all of Calif., assignors to General Dynamics, Pomona Division, Pomona, Calif.

Filed Oct. 11, 1983, Ser. No. 540,479
Int. Cl.[4] G02B *5/14*
U.S. Cl. 350—96.24 13 Claims



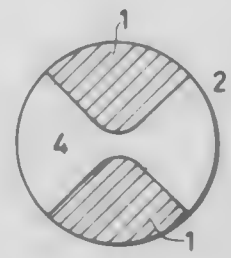
6. A flexible dielectric millimeter waveguide comprising:
a flexible cable comprising:
a flexible sheath, and
a plurality of flexible fibers of dielectric material encased within said sheath; and
a termination flange connected to at least one end of said cable, said termination flange comprising:
a rigid body member having a generally circular radial flange portion and a generally cylindrical extension portion extending coaxially from said flange portion, said body member having a generally cylindrical bore extending coaxially through said flange portion and said extension portion, said bore terminating in said extension portion at an end opposite said flange portion is a generally conical-shaped opening, said extension portion having a radial ridge about the exterior thereof adjacent said end with said conical-shaped opening;
a generally cylindrical plug having one end flush with said flange portion and an opposite end being conical-shaped and extending within the region defined by said conical-shaped opening, said plurality of fibers abutting said conical-shaped end of said plug and said conical-shaped opening, said sheath extending about the exterior of said extension portion between said ridge and said flange portion; and
a collar mounted about said sheath overlapping said ridge, said collar securely engaging said sheath with said ridge and extension portion.

4,603,943

STRUCTURE OF AN OPTICAL FIBER

Takanori Okoshi, Tokyo, Japan, assignor to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Jul. 6, 1983, Ser. No. 511,356
Claims priority, application Japan, Jul. 6, 1982, 57-117408
Int. Cl.[4] G02B *6/10, 6/16*
U.S. Cl. 350—96.30 3 Claims



1. An optical fiber having a central axis comprising a central core having a first refractive index positioned on said axis, a cladding having a second refractive index lower than said first refractive index surrounding said core, and tunnel means extending parallel to the axis of said fiber comprised of two portions disposed on opposite sides of said core between said core and said cladding.

4,603,944

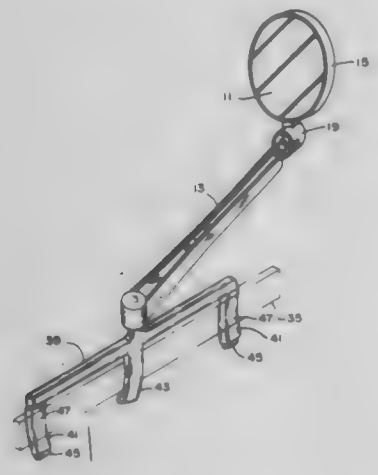
OPTICAL DEVICE FOR AN INDIVIDUAL

John W. Greenlaw, Walnut Creek; Gary R. Schlueter, Castro Valley, and Karsten Kettlitz, San Leandro, all of Calif., assignors to Karsten Kettlitz, San Leandro and Gary Schlueter, Castro Valley, both of, Calif.

Filed Aug. 27, 1984, Ser. No. 644,529
Int. Cl.[4] G02B *7/02, 7/18*
U.S. Cl. 350—252 7 Claims

1. An optical device for an individual comprising
an extension bar having a holder for an optical glass mounted at one end thereof with an optical glass mounted therein,
an adjustable connection between said extension bar and said optical glass holder including a ball formed on the end of said bar, a receptacle formed on the peripheral edge of said holder, and a socket formed to encapsulate at least a portion of the ball formed on said bar and to fit within the receptacle formed in said holder in captured relation

thereof, said socket including a rounded internal configuration to mate with the ball on said bar and slots formed in the longitudinal sides of said socket extending from the open end thereof to permit the sides of said socket to expand when the ball on said bar is pushed into said socket, the external configuration of said socket being formed to mate and fit snugly within the receptacle on said holder, said receptacle including a retaining lip formed adjacent to the internal peripheral edge thereof for retaining said socket in said receptacle after said socket has been pushed into said receptacle beyond said retaining lip,



a second adjustable connection on said extension bar similar to the one interconnecting said optical glass holder to said extension bar, said second adjustable connection disposed at the opposite end of the extension bar from said ball, swivel post axes of the adjustable connections being disposed at right angles to each other,

means engaged with the second adjustable connection for securing the end of said extension bar opposite from said optical glass holder to a support member worn on the head of a wearer.

4,603,945

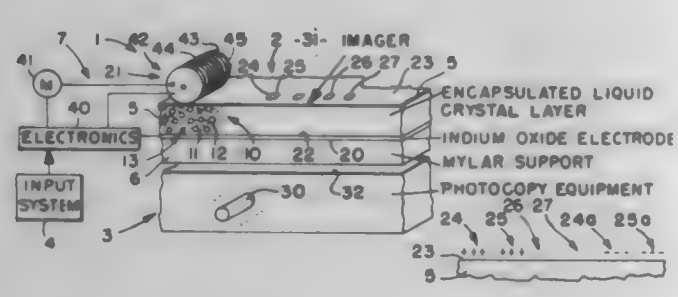
LIQUID CRYSTAL GRAPHICS IMAGER AND METHOD

James L. Fergason, Atherton, Calif., assignor to Manchester R & D Partnership, Pepper Pike, Ohio

Filed Mar. 2, 1984, Ser. No. 585,884

Int. Cl.[4] G02F *1/13*

U.S. Cl. 350—331 R **49 Claims**



1. An imager, comprising:

liquid crystal means having an alterable optical function for affecting the transmission, scattering or absorption of light incident thereon.

support means for supporting said liquid crystal means in sheet-like layout,

said liquid crystal means being responsive to a prescribed input to alter such optical function to form characteristics of an image, such prescribed input comprising an electric field,

input means for selectively applying such prescribed input to respective portions of said liquid crystal means, and

said liquid crystal means having a memory function for temporarily storing such characteristics after termination of a direct input thereto by said input means, said memory function comprising charge storage.

15. An image copying apparatus comprising:

copier means for copying an image, and

image means for forming characteristics of such image, including

image forming and storing means for forming in real time characteristics of an image in response to a prescribed input and for temporarily storing such characteristics for a time adequate for said copier means to copy the same, such prescribed input comprising an electric field, and

scanning means for scanning said image forming and storing means to apply such characteristics thereto,

said image forming and storing means having charge storage capability to provide memory to store such characteristics,

said copier means to make a copy of an image represented by the characteristics formed and stored by the image forming and storing means.

49. An image forming method comprising applying respective charge inputs to selected areas of a sheet-like liquid crystal material, storing such applied charge inputs by such sheet-like liquid crystal material, and using such stored charge to affect the transmission, scattering or absorption of incident light thereby to form characteristics of an image.

4,603,946

REFLECTION CONTROLLABLE VIEW MIRROR DEVICE FOR MOTOR VEHICLE OR THE LIKE

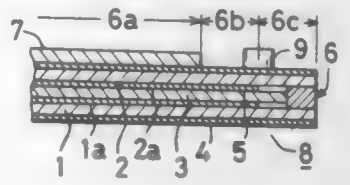
Shigeru Kato; Junichi Nakaho, and Makoto Shibahara, all of Aichi, Japan, assignors to Kabushiki Kaisha Tokai Rika Denki Seisakusho, Aichi, Japan

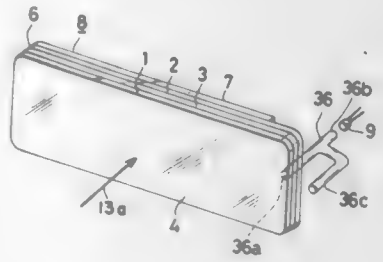
Filed Sep. 22, 1983, Ser. No. 534,604

Claims priority, application Japan, Sep. 29, 1982, 57-147510[U]; Sep. 30, 1982, 57-149940[U]; Apr. 30, 1983, 58-66626[U]; Apr. 30, 1983, 58-66625[U]; May 18, 1983, 58-74960[U]

Int. Cl.[4] G02F *1/13;* G02B *5/08*

U.S. Cl. 350—331 R **5 Claims**





1. A reflection controllable rear view mirror device having an electro-optical means, the transmittance of which varies in accordance with voltage applied thereto to change a quantity of light passing therethrough, and a mirror means mounted on the electro-optical means for reflecting said light, comprising:

(A) a photo-sensitive means for simultaneously receiving both light passing through the electro-optical means and light, the quantity of which is not varied by the electro-optical means,

said photo-sensitive means producing electric signals, the magnitude of which signals correspond with the summation of the light passing through the electro-optical

means and the light, the quantity of which is not varied by the electro-optical means, and

(B) a control circuit for controlling voltage applied to the electro-optical means so that the magnitude of the electric signals produced by the photo-sensitive means may become equal to a predetermined value.

4,603,947

INDICATING DEVICE HAVING SPACER ELEMENT DISTRIBUTION TO COMPENSATE FOR EXPANSION

Holm Baeger, Schwalbach, and Bernd Preiss, Hofheim, both of Fed. Rep. of Germany, assignors to VDO Adolf Schindling AG, Frankfurt am Main, Fed. Rep. of Germany

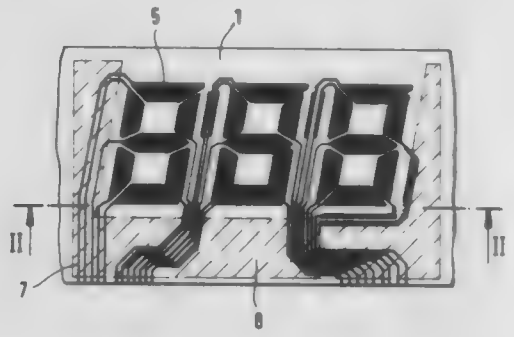
Filed Feb. 21, 1984, Ser. No. 581,770

Claims priority, application Fed. Rep. of Germany, Mar. 2, 1983, 3307333

Int. Cl.[4] G02F *1/13*

U.S. Cl. 350—344

11 Claims



1. In an indicating device, particularly a liquid crystal display, having a fluid which can be switched between two optically different states and which fills a cell chamber formed between two transparent support plates which are parallel to each other, the support plates being held at a predetermined distance apart by a plurality of spacer elements of given size, and the support plates being each provided with an electrically conductive layer, which layers are located opposite each other, the improvement wherein

said spacer elements are dispersed about a part of said chamber and being omitted from the remainder of said chamber, thereby permitting the volume of the cell chamber to be variable corresponding to a temperature-dependent change in the volume of the fluid contained therein.

3. In an indicating device, particularly a liquid crystal display, having a fluid which can be switched between two optically different states and which fills a cell chamber formed between two transparent support plates which are parallel to each other, the support plates being held at a predetermined distance apart by a plurality of spacer elements of given size, and the support plates being each provided with an electrically conductive layer, which layers are located opposite each other, the improvement wherein

the volume of the cell chamber is variable corresponding to a temperature-dependent change in the volume of the fluid contained therein,

the optically switchable fluid has a temperature coefficient of expansion, and the material of which the spacer elements is made has a temperature coefficient of expansion which is approximately the same as the temperature coefficient of the optically switchable fluid.

4,603,948

LARGE-APERTURE WIDE-ANGLE ZOOM LENS SYSTEM

Toshihiro Imai, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

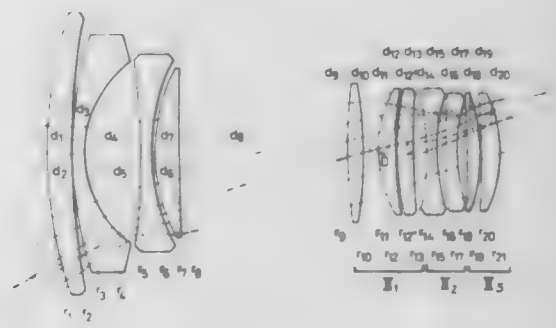
Filed Jan. 16, 1984, Ser. No. 571,116

Claims priority, application Japan, Jan. 18, 1983, 58-5290; Aug. 3, 1983, 58-141141

Int. Cl.[4] G02B *13/04, 15/14*

U.S. Cl. 350—426

16 Claims



1. A large-aperture wide-angle zoom lens system comprising a front diverging lens group and a rear converging lens group, and adapted for zooming by varying an airspace reserved between said front diverging lens group and said rear converging lens group having a positive meniscus lens component on the foremost position wherein the object side surface is convex, said converging lens group being composed of a first positive subgroup comprising at least two positive lens components, a second negative subgroup comprising at least two negative lens components and a third positive subgroup comprising at least two positive lens components, said large-aperture wide-angle zoom lens system satisfying the following conditions (1) through (4):

$$0.1 < K < 0.6 \left(K = \frac{r_2 - r_1}{r_1 + r_2} \right) \quad (1)$$

$$0.12 < \frac{D}{f_R} < 0.3 \quad (2)$$

$$0.8 < \frac{r_{17}}{f_w} < 1.8 \quad (3)$$

$$0.6 < \frac{r_{15}}{r_{17}} < 1.5 \quad (4)$$

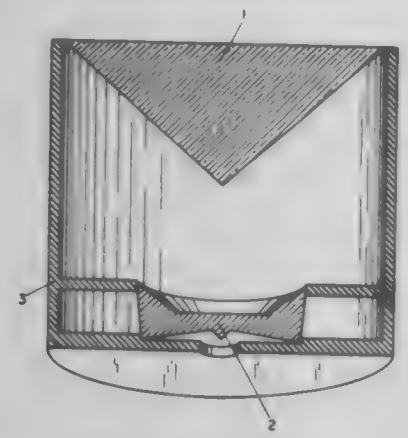
wherein the reference symbols r_1 and r_2 represent radii of curvature on both the surfaces of the positive meniscus lens component arranged on the object side in said front diverging lens group, the reference symbol r_{15} designates radius of curvature on the image side surface of the lens component arranged on the object side in the second subgroup of said rear converging lens group, the reference symbol r_{17} denotes radius of curvature on the image side surface of the lens component arranged on the image side in the second subgroup of said rear converging lens group, the reference symbol D represents thickness of the lens component arranged on the image side in the first subgroup of said rear converging lens group, the reference symbol f_R designates focal length of said rear lens group and the reference symbol f_w denotes focal length of the zoom lens system as a whole at its wide position.

4,603,949

CONICAL BEAM CONCENTRATOR

John E. Clegg, 2320 Keystone Dr., Orlando, Fla. 32806

Filed Oct. 2, 1984, Ser. No. 657,093
Int. Cl.[4] G02B *13/18, 17/08*
U.S. Cl. 350—432 1 Claim



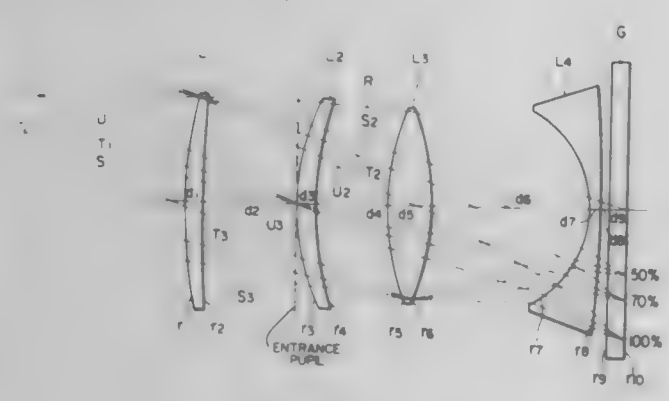
1. A conical beam concentrator LRLT-RT:C comprising;
an upper component lens RT having a planar section which receives and transmits into said upper component lens a circular whole incipient beam, and having a convex conical section which refracts and emits from said upper component lens said circular whole incipient beam, forming a convergent-divergent conical concentrated beam;
a lower component lens LRLT mounted below said upper component lens and having a concave conical section which receives and transmits into said lower component lens said convergent-divergent conical concentrated beam, having a concave conical reflective section which reflects said convergent-divergent conical concentrated beam, forming a convergent conical beam, having a concave conical section which refracts and emits from said lower component lens said convergent conical beam, forming a convergent lateral beam in a horizontal plane, and having a convex conical reflective section which reflects said convergent lateral beam, forming a circular whole concentrated beam which is emitted parallel to the vertical optic axis of the lenses; and
a cylindrical casing serving as mounting means and aligning means of said upper component lens and of said lower component lens.

4,603;950

PROJECTION LENS

Makoto Uehara, Tokyo, and Satoshi Mogami, Machida, both of Japan, assignors to Nippon Kogaku K. K., Tokyo, Japan

Filed Jan. 16, 1984, Ser. No. 570,769
Claims priority, application Japan, Jan. 21, 1983, 58-7394
Int. Cl.[4] G02B *13/18, 9/34*
U.S. Cl. 350—432 12 Claims



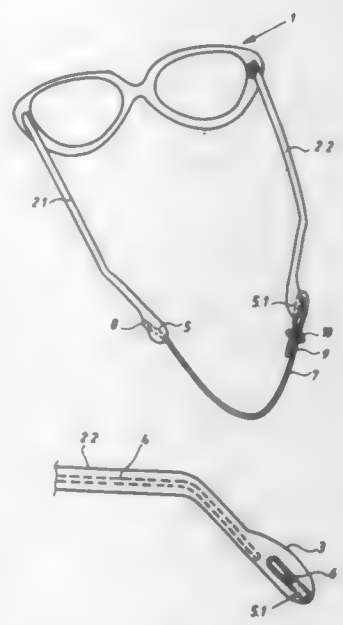
1. A projection lens for enlargedly projecting an image onto a screen, comprising, in succession from the screen side:
a first lens having a positive refractive power;
a second lens having a positive refractive power and having meniscus shape convex to the screen, said second lens being disposed substantially at the entrance pupil position of the entire system and having the function of chiefly correcting the balance of coma,
a biconvex third lens having a positive refractive power; and
a fourth lens having a negative refractive power and having its surface of sharper curvature facing to the screen.

4,603,951

SPECTACLE FRAME WITH SECURING BAND

Rainer Beck, Oelde, and Alfons Schülte, Beckum, both of Fed. Rep. of Germany, assignors to Eugen Beck, KG, Oelde, Fed. Rep. of Germany

Continuation of Ser. No. 419,588, Sep. 17, 1982, abandoned. This application May 20, 1985, Ser. No. 736,515
Claims priority, application Fed. Rep. of Germany, Sep. 19, 1981, 8127522[U]; Feb. 6, 1982, 8203188[U]
Int. Cl.[4] G02C *2/00*
U.S. Cl. 351—156 7 Claims



1. Spectacle frame having a removable elastic safety band attached to temples of the frame designated a first temple and a second temple, fastening means for the safety band in the form of an elastic string at the end region near the ear of each of the two temples, a single elongated hole with an inlet opening and an exit opening in each temple in which hole the exit opening is, at least in the second temple, of drop-shaped configuration, said exit opening having a longitudinal axis extending approximately parallel to the temple and a pointing end directed towards the ear end of the temple, said safety band having a free end guided through the hole forming essentially an U-shaped loop running toward the ear end of the temple with the vertex of the U located in the tip of the exit opening, whereby pulling of the free end of the loop toward the ear end of the temple clamps the vertex of the U in said pointing end of the exit opening, and pulling of the free end of the loop in a direction away from the ear end unclamps the vertex of the U permitting adjustment of the length of the safety band.

4,603,952

PROFESSIONAL STEREOSCOPIC PROJECTION

John R. Sybenga, 2009 S. M Extension, Oskaloosa, Iowa 52577

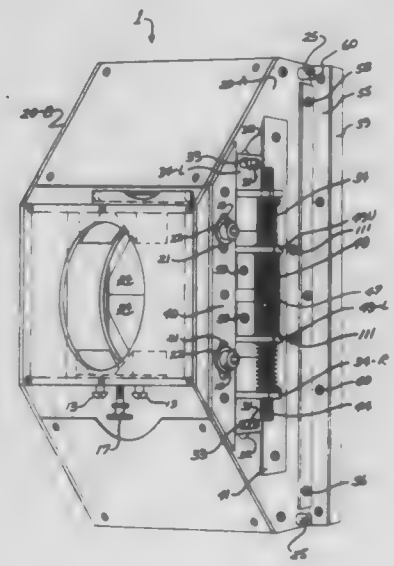
Filed Apr. 18, 1983, Ser. No. 486,035
Int. Cl.[4] G03B *35/02*
U.S. Cl. 352—65 9 Claims

1. An improved apparatus for the presentation of stereoscopic images utilizing program material in which the right and left eye stereo pair images are contained upon a single strip of transparency film, such as motion picture film, said images situated in a one-above-the-other configuration, to be projected upon a viewing screen surface by conventional and unaltered projection equipment utilizing an ordinary projec-

tion lens system to be used in conjunction with my invention comprising a combination of:

(a) an attaching means with two upright side walls, a horizontal top wall, and a horizontal bottom wall formed as one unit with two protruding members rigidly attached to the central innermost portion of said top wall and facing downwardly, said protruding member being suitably fashioned to form a means capable of receiving a cylindrically shaped object, such as a projection lens barrel, a movable plate member adjacent to said bottom wall, an adjusting means utilizing a rotatable threaded rod member introduced upwardly through said bottommost wall and in contact with the underside of said movable plate so as to apply force to and cause movement of said movable plate toward or away from the said upper receiving surface thereby providing a means for receiving and grasping a said cylindrically shaped object,

(b) a housing assembly comprising two upright side walls, a top wall, a bottom wall, and a front wall containing suitable openings, the rear of said housing assembly being slidably fitted onto said upright side walls of said attaching means in a manner allowing a vertical sliding motion of said housing assembly relative to stationary said attaching means, said slidable motion thereby provides a means to adjust and align said housing assembly so as to be concentric with the longitudinal axis of said cylindrically shaped object being so grasped by said receiving and grasping means,



(c) a securing means to arrest said sliding motion at any position,

(d) a "V" shaped member extending horizontally and affixed between said upright side walls of said housing assembly and bearing two optical reflecting mirrors so aligned with the closed end of said "V" configuration pointing rearwardly and with the reflecting surfaces of said mirrors facing outwardly with said reflecting surfaces fixed at an angle of 92 degrees,

(e) a shaft member suspended rotatably within and between the uppermost portion of said upright side walls of said housing and attached to and bearing the frontmost edge of another reflecting mirror member, the reflecting surface of said mirror member facing frontwardly,

(f) a second identical shaft member also suspended rotatably within and between the lowermost portion of said upright side walls of said housing assembly, also attached to and bearing the frontmost edge of an identical second reflecting mirror member orientated invertedly to the first said rotatably suspended mirror, but with reflecting surface also facing frontwardly,

(g) a second set of shaft members affixed to the rearmost edge of each said rotatably suspended mirror members, one end of each said second shaft member extending through suitable openings in one said upright side wall of said housing assembly,

(h) a mirror reflecting angle adjusting means attached to the outside central portion of one said upright side wall of said housing assembly and comprising of a cylindrically shaped micrometer roller member mounted rotatably but captively between a top and a bottom "L" shaped mounting bracket members which are affixed to said upright side wall, a rotatable threaded rod member mounted lengthwise and midway within said roller member by means of a suitably threaded hole, said threaded hole also containing a means to arrest the turn-on-thread rotary motion of said threaded rod member, said threaded rod member having left hand threading on one end and right hand threading on the other end to suit a top and a bottom "T" shaped members movably but captively mounted on said upright side wall, one of which has left hand threaded receptacle and the other having right hand threaded receptacle, said "T" shaped members each containing angular slot into which said protruding ends of each said rearwardmost mirror bearing shaft engages thereby providing a means for precisely adjusting the reflective angles of said mirrors in an opposidly fashion and in exact unison by the same degree simultaneously, and also providing a means for attaining an independent adjustment of said reflecting angles, also achieved in unison, but relative to and between the rotational angularity of said rotatably suspended mirror members, said independent adjustment accomplished by manipulation of said means to arrest said turn-on-threads rotary motion of said threaded rod member situated within said cylindrically shaped micrometer roller member to a different rotational position for arrestment thereby providing a means to alter the placement in a vertical fashion of respective said left and right eye stereo pair images upon said viewing screen,

(i) an additional mirror orientating adjustment means not related to, and with a distinct purpose from the first said adjustment means, said additional mirror orientation means comprising of an eccentric extension member rotatably affixed to, and provided with a means to arrest said rotation at any position, one end of each said rotatably suspended mirror bearing shaft members, said eccentric members being used to complete the suspension of one end of each said rotatably suspended mirror bearing shaft member within and between said upright side walls of said housing assembly, thereby providing a means for imparting a horizontal tilting adjustment to said rotatably suspended mirror bearing shafts, the degree of said horizontal tilting adjustment being dependent upon the rotational position of said eccentric member, said horizontal tilting adjustment provides a means to independently control the placement in a horizontal fashion of said respective left and right eye stereo pair images upon said viewing screen surface,

(j) a rectangular shaped front wall plate containing a top and a bottom openings, and flange members affixed to the outtermost front surface edges of said front wall plate, said flange members being capable of receiving and retaining other members constituting polarizing or other appropriate light filtering mediums, a centrally located screw member to retain and register said filter mediums in place upon said front wall, said front wall being mounted adjacent to and in front of said housing assembly in a vertical position with said openings being located at the top and bottom portions and aligned with the reflective areas of said rotatably suspended mirrors contained within said housing assembly,

(k) a leveling indicator device adjustably attached in a convenient location upon the body of the invention,

(l) a suitable chemical bonding substance, such as commercially available silicone glue, used to affix said reflecting mirror and other suitable members to their said respective bearing members, thereby providing a means to avoid a prolifera of labor intensive mechanical mounting components, said chemical substance also serving a dual function of absorbing kinetic energy thereby providing a means for protecting fragile or vibration sensitive members.

4,603,953

FLASH DEVICE

Isao Watanabe, Kanagawa, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

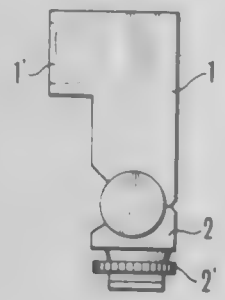
Filed Mar. 15, 1984, Ser. No. 590,065

Claims priority, application Japan, Mar. 28, 1983, 58-44688[U]

Int. Cl.[4] G03B *15/05*

U.S. Cl. 354—126

2 Claims



1. A flash device which can be mounted on an accessory shoe part of a camera body, comprising:

(a) a mounting part for mounting said flash device on said accessory shoe part of the camera body;

(b) a stationary part formed integrally with said mounting part, wherein a display part is arranged at a first position close to said mounting part of the stationary part and an operation member of the flash device is arranged at a second position which is spaced away from the mounting part a greater distance than the first position; and

(c) a body part turnably connected to said stationary part, wherein a light emitting part is provided at said body part, said body part being turnable from a usable position to an unusable position relative to the stationary part and having an end portion of the body part located at a position which is higher than the first position and which is positionable to cover the second position when the body part is at a usable position relative to the stationary part, said end portion of the body part being shifted to a position higher than the second position when the body part is at the unusable position.

4,603,954

SYNCHRONIZING DEVICE FOR FLASH PHOTOGRAPHY

Akira Egawa, and Takanori Kodaira, both of Tokyo, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

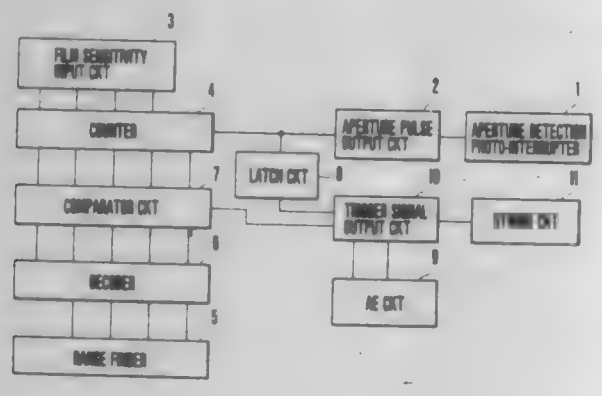
Filed Dec. 19, 1984, Ser. No. 683,400

Claims priority, application Japan, Dec. 22, 1983, 58-242679; Dec. 29, 1983, 58-250263; Dec. 29, 1983, 58-250266

Int. Cl.[4] G03B *15/05*

U.S. Cl. 354—137

8 Claims



1. A flash control device for flash photography, comprising:

(a) distance information transfer means for transferring information of distance to an object;

(b) film sensitivity information transfer means for transfering film sensitivity information;

(c) aperture information transfer means for transferring aperture opening information;

(d) flash control means for producing a flash signal for flash photography in response to a predetermined state of an output of said aperture information transfer means relative to an output of said distance information transfer means and an output of said film sensitivity information transfer means; and

(e) prevention means for preventing said flash signal from being produced by said flash control means until the aperture opening information reaches a predetermined value.

4,603,955

DATA TRANSMISSION BETWEEN INTERCHANGEABLE LENS AND A CAMERA BODY

Yasuyuki Haneishi, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

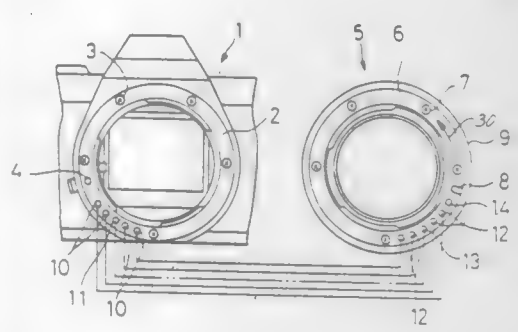
Filed Jan. 18, 1985, Ser. No. 692,730

Claims priority, application Japan, Jan. 20, 1984, 59-5307[U]; Jan. 23, 1984, 59-6316[U]

Int. Cl.[4] G03B *17/00*

U.S. Cl. 354—286

18 Claims



1. In a camera having a camera body and an interchangeable lens engageable with the camera body, the improvement comprising:

a lens mount having a first flat surface;

an electrically conductive camera mount having a second flat surface;

means for engageably securing the lens mount to the camera mount by rotation of the lens mount relative to the camera mount with the flat surfaces of the lens mount and camera mount in abutting relationship;

a first electrical contact in the lens mount movable normal to the first surface;

spring means for urging the first contact out of the first surface;

a stationary second electrical contact in the camera mount, the second contact opening toward the second surface without protruding therefrom in alignment with the first contact when the lens mount is secured to the camera mount so the first contact normally bears against the second contact;

means for insulating the second contact from the camera body;

means for alternately connecting and disconnecting the second contact electrically to and from the camera mount through the first contact;

a plurality of third contacts in the camera mount movable normal to the second surface;

one or more stationary insulative regions in the lens mount opening toward the first surface without protruding therefrom in alignment with one or more of the respective third contacts so the one or more of the respective third contacts bear against the respective one or more insulative regions when the lens mount engages the camera mount;

means responsive to rotation of the lens mount as the lens mount is secured to the camera mount for wiping foreign matter from the second contact; and

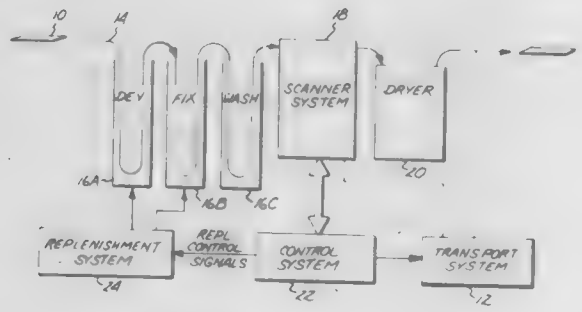
means for disabling the wiping means when the second contact is connected to the camera mount.

4,603,956

FILM-WIDTH AND TRANSMITTANCE SCANNER SYSTEM

Richard W. Baker, Anoka, Minn., assignor to Pako Corporation, Minneapolis, Minn.

Filed Nov. 16, 1984, Ser. No. 671,954
Int. Cl.⁴ G03D *13/00*; G01N *21/84*; G01B *11/04*
U.S. Cl. 354—298 **21 Claims**



1. A replenishment control for a processor of continuous tone film in which the film is transported along a film transport path, the replenishment control comprising:

means for scanning a light spot across at least a portion of the film transport path;

means for providing a sensor signal which is a function of intensity of the light spot after the light spot has passed through the film transport path;

means for periodically sampling the sensor signal during each scan to produce a plurality of sample values for each scan;

means for converting each sample value to a density value;

means for summing the density values to produce an integrated density value; and

means for producing a replenishment control signal as a function of the integrated density value.

4,603,957

SWITCH STATE DETECTING APPARATUS FOR A CAMERA

Nobuyuki Suzuki, Kanagawa, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 13, 1985, Ser. No. 701,094
Claims priority, application Japan, Feb. 13, 1984, 59-24680
Int. Cl.⁴ G03B *7/00, 17/00*
U.S. Cl. 354—410 **16 Claims**



1. A photographing apparatus comprising:

(a) an operation member for selecting use or non-use of the photographing apparatus;

(b) switch means which changes its switch state in accordance with an operation of the photographing apparatus other than the operation of the photographing apparatus whose use or non-use of the photographing apparatus is selected by the operation member;

(c) a detecting circuit for delivering an electrical signal for detecting the state of the switch so as to detect the state of the switch means; and

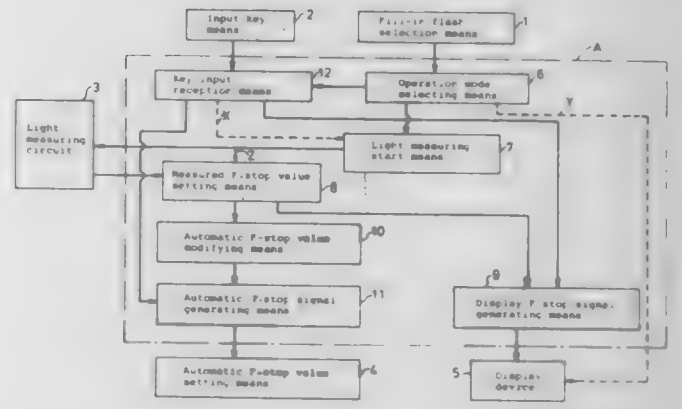
(d) a control circuit for making the delivery per unit time of the electrical signal from the detecting circuit when the use of the photographing apparatus is selected different from that when the non-use is selected.

4,603,958

AUTOMATIC ELECTRONIC FLASH

Yuji Maruyama, and Katsumi Horinishi, both of Suita, Japan, assignors to West Electric Company, Ltd., Osaka, Japan

Filed Nov. 13, 1984, Ser. No. 671,126
Claims priority, application Japan, Nov. 15, 1983, 58-215613; Mar. 13, 1984, 59-47637
Int. Cl.⁴ G03B *15/02*
U.S. Cl. 354—414 **8 Claims**



1. An automatic electronic flash comprising:

key input means for inputting photographing data such as F-stop value,

key input reception means for outputting electric signals responding to input operation by said key input means,

fill-in flash selection means for selecting fill-in flash photographing when a photographic scene has a rear lighting,

display means for displaying a display F-stop value to be set on a camera to be used with automatic electronic flash,

an automatic F-stop value setting circuit for setting an automatic F-stop value responding to an F-stop selection signal,

a light measuring circuit for measuring brightness of scene and issuing a brightness signal responding to said measurement.

operation mode selecting means for selecting an ordinary mode for photographing ordinarly lighted scene and a fill-in flash mode for photographing a rear-lighted scene responsive to the output of said fill-in flash selection means,

light measuring start means for setting starting time of light measuring in said fill-in flash mode,

measured F-stop value setting means for setting measured F-stop value, being based on said brightness signal, film sensitivity and shutter speed of said camera, to produce a measured F-stop value signal,

display signal generating means for generating display F-stop value signal being based on said measured stop signal, in case of a rear light photographing and on said outputted electric signal of said key input reception means in case of an ordinarily lighted scee, to actuate said display means,

automatic F-stop value modifying means for generating a first automatic F-stop value signal which modifies said measured F-stop value signal to a value lower by 1–2 EV than said display stop value signal, and

automatic F-stop signal generating means for generating a second automatic F-stop value signal which corresponds to said first automatic F-stop value signal in said automatic F-stop value modifying means and to said outputted electric signal of said key input reception means in case of a usual photographing and sets said automatic F-stop value setting circuit.

4,603,959

PHOTOGRAPHIC INFORMATION GENERATING APPARATUS FOR CAMERA

Hisatoshi Takahata, Sakura, Japan, assignor to Nippon Kogaku K. K., Tokyo, Japan

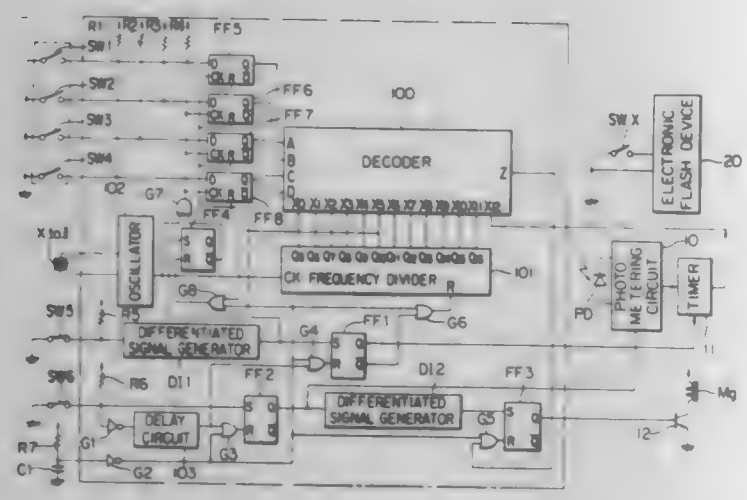
Filed Sep. 14, 1984, Ser. No. 650,854

Claims priority, application Japan, Sep. 20, 1983, 58-145654[U]

Int. Cl.[4] G03B *15/05*

U.S. Cl. 354—420

7 Claims



1. A camera which initiates exposure by driving of a shutter, comprising:

(a) timer means for counting plural times respectively in response to driving of the shutter, the timer means generating an output signal each time the respective times are counted;

(b) setting means for setting exposure information for controlling a shutter speed and for generating an output signal corresponding to the exposure information;

(c) control means for controlling shutter speed in accordance with output signal from said timer means and output signal from said setting means;

(d) latch means for latching the output signal from said setting means in response to the driving of said shutter, said control means controlling said shutter in accordance with latched output signal; and

(e) releasing means for releasing a latching operation of the output signal from said setting means by said latch means, in response to output signal from said timer means at a time when said timer means counts a predetermined time of said plural times.

4,603,960

METHOD FOR AND APPARATUS FOR DETERMINING AN OPTIMUM GRADATION PARAMETER FOR DEVELOPING AERIAL PHOTOGRAPHS

Ulrich Zeth; Heinrich Klose; Günther Voss, and Peter Winkler, all of Jena, German Democratic Rep., assignors to Jenoptik Jena G.m.b.H., Jena, German Democratic Rep.

Continuation-in-part of Ser. No. 340,489, Feb. 16, 1982, abandoned. This application Oct. 30, 1984, Ser. No. 666,398

Claims priority, application German Democratic Rep., Apr. 2, 1981, 229118

Int. Cl.[4] G03B *7/08, 39/00*

U.S. Cl. 354—432

6 Claims

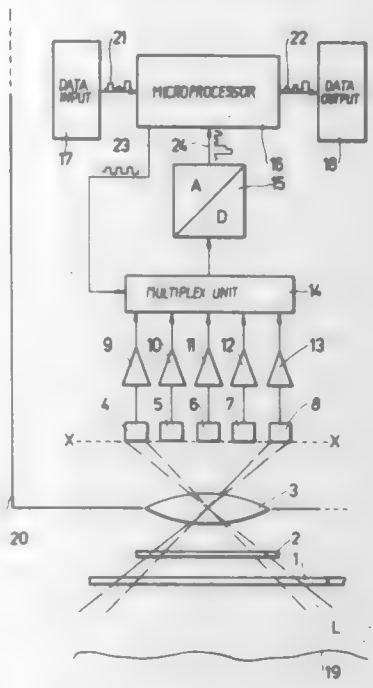
1. A method for determining an optimum gradation parameter for use in developing aerial photographs comprising the steps of

adapting the spectral sensitivity of an array of photodetectors to that of a film material used,

detecting brightness information of terrain objects at a plurality of points and converting said brightness informations into corresponding signals by said array of photodetectors,

cyclically sampling said photodetectors at a preselected clock-pulse frequency to obtain measuring signals,

selecting from a sequence of sampled measuring signals a maximum signal value E max indicative of a maximum brightness and a minimum signal value E min indicative of a minimum brightness of a sampling cycle,



subjecting both the sequence of maximum signal values and the sequence of minimum signal values to a smoothing operation, and determining a gradation value γ from said smoothed maximum and minimum signal values according to the relationship

$$\gamma = \frac{\Delta s}{lg\left(\frac{E_{max}}{E_{min}}\right)}$$

for later use in a development of a film material exposed simultaneously with determining the respectively associated gradation value γ, wherein Δs is the optimal density value of the film material.

4,603,961

DEVELOPMENT SYSTEM

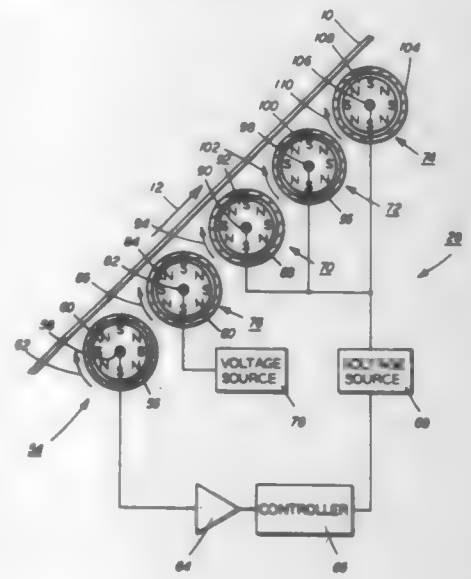
Jeffrey J. Folkins, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Jun. 13, 1985, Ser. No. 744,184

Int. Cl.[4] G03G *15/09*

U.S. Cl. 355—3 DD

10 Claims



1. An electrophotographic printing machine of the type

having a photoconductive member with at least one electrostatic latent image recorded thereon, wherein the improvement includes:

means for supporting a developer material closely adjacent to the photoconductive member;

means, coupled to said supporting means, for generating a control signal as a function of the electrical potential on the photoconductive member;

first means for developing the electrostatic latent image;

first means for electrically biasing said first developing means to a substantially fixed electrical bias;

second means for developing the electrostatic latent image, said first developing means being interposed between said second developing means and said supporting means; and

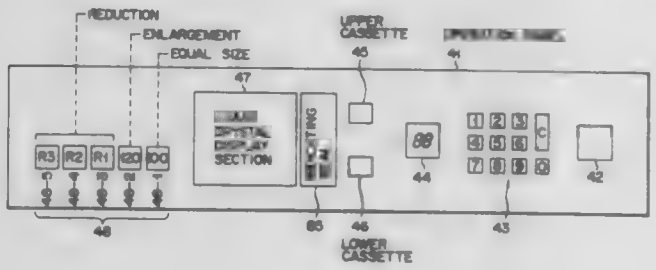
second means, responsive to the control signal from said generating means, for electrically biasing said second developing means.

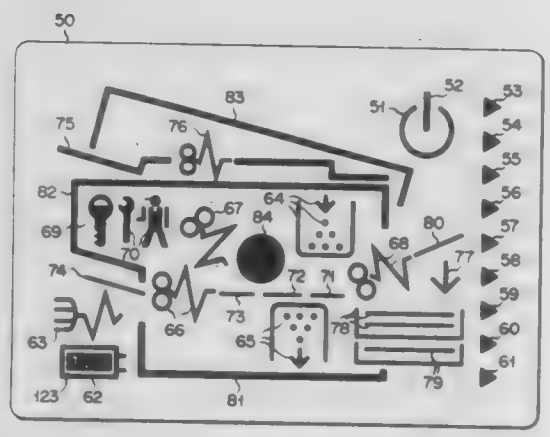
4,603,962

IMAGE FORMING APPARATUS WITH A DISPLAY DEVICE FOR MATCHING THE IMAGE SIZE WITH THE COPYING SHEET SIZE

Hitoshi Dekura, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Apr. 23, 1984, Ser. No. 602,690
Claims priority, application Japan, Apr. 26, 1983, 58-73383
Int. Cl.[4] G03G *21/00*
U.S. Cl. 355—3 R 2 Claims





1. An image forming apparatus comprising:

means for selecting one cassette which is detachably loaded in said image forming apparatus, each of said cassettes holding a plurality of copying sheets having a specified size and a specified feeding direction of said sheets;

means for detecting said specified size and said specified feeding direction of said sheets contained in said selected cassette;

means for selecting an operation mode in response to which a required image forming magnification factor is selected; and

display means for displaying operation conditions of said image forming apparatus, said display means including:

a display panel section including a plurality of first light-emitting indicating units for indicating the type of cassette selected, and a plurality of second light-emitting indicating units for indicating when said selected operation mode is mismatched with said selected cassette; and

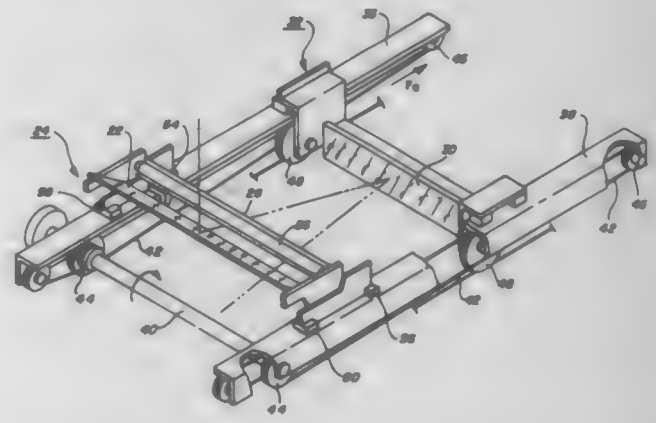
an indicating section including a plurality of symbols arranged to correspond to said first light-emitting indicating units, each of said symbols indicating the size of the copying sheets contained in said selected cassette, and a plurality of instructions in the form of characters arrranged to correspond to said second light-emitting indicating units, said instructions instructing an operator to replace said selected cassette when one of said second light-emitting indicating units is activated.

4,603,963

OPTICAL SCANNING CARRIAGE

John H. Hinton, Ontario; William T. Foti, Caledonia, and Philip J. Giguere, Rochester, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Oct. 15, 1984, Ser. No. 660,766
Int. Cl.[4] G03G *15/04*
U.S. Cl. 355—8 1 Claim



1. An optical scanning system in which an original document on a transparent document support is incrementally scanned by a plurality of movable optical components located beneath said support and a flowing light image of said document is projected upon a photosensitive member, said system including:

a pair of ferrous-containing guide members mounted parallel to each other and in a plane parallel to and beneath said document support, the top surface of said guide members being coated with a polyethylene material,

a scanning carriage adapted for sliding contact along said guide members by means of at least a first and second magnet, each magnet in contact with a respective guide member, whereby, during carriage motion, said magnets create an attractive magnetic field between said carriage and said guide member so as to maintain a uniform sliding contact between carriage and guide member.

4,603,964

PHOTORECEPTOR CHARGING SCOROTRON

Gregory B. Swistak, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Oct. 22, 1984, Ser. No. 663,633
Int. Cl.[4] G03G *15/02*
U.S. Cl. 355—14 CH 3 Claims

1. In a xerographic type copying or printing apparatus having a movable photoreceptor; exposure means for exposing the photoreceptor to create a latent electrostatic copy image on the photoreceptor; developing means for developing the copy image; and transfer means for transferring the developed image to a copy substrate material; the combination of:

(a) an elongated generally U-shaped shield having a conductive back plate with non-conductive side members, said shield being supported in spaced relation with said photoreceptor with the open side of said U-shaped shield facing said photoreceptor, the longitudinal axis of said shield being substantially perpendicular to the direction of photoreceptor movement;

(b) at least one corona emitting wire in said shield adapted when actuated to emit ions for charging the photoreceptor, the axis of said corona wire being substantially per-

pendicular to the direction of movement of said photoreceptor with the axial length of said corona wire being substantially equal to the operating width of said photoreceptor;

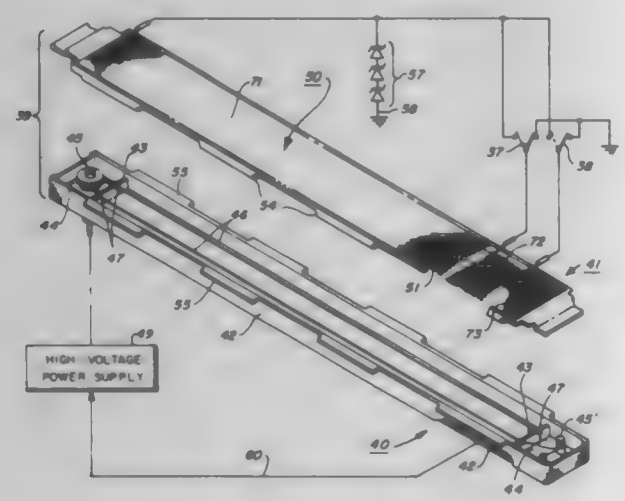
(c) means to apply a potential between said corona wire and said back plate whereby said corona wire emits said ions;

(d) grid means interposed between said corona wire and said photoreceptor for controlling the passage of ions from said corona wire to said photoreceptor;

(e) means for electrically separating said grid means into a succession of grid segments, each of said grid segments having a predetermined axial length for controlling charging of a corresponding area of said photoreceptor by said corona wire;

(f) a source of potential for biasing said grid segments to control the flow of ions from said corona wire to said photoreceptor;

(g) means coupling a predetermined first one of said grid



segments to said potential source whereby on actuation of said machine an area of said photoreceptor corresponding to the length of said first grid segment is charged, and

(h) control means for coupling selected ones of the remaining grid segments to said potential source in response to second image sizes being produced whereby to correlate the area of said photoreceptor charged by said charging means with the second image size being produced;

said control means including switch means associated with each of the remaining ones of said grid segments, said switch means serving when actuated to a first switch condition to couple the grid segment associated therewith to said potential source whereby actuation of one or more of said switch means to said first switch condition couples succeeding ones of said grid segments to said potential source whereby to increase the area of said photoreceptor charged by said charging means;

(i) said second image sizes being larger than said first image size.

4,603,965

APPARATUS AND METHOD FOR MAKING COLOR PHOTOGRAPHIC PRINTS

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Filed Jun. 28, 1985, Ser. No. 750,379
Int. Cl.⁴ G03B *27/80, 27/62*
U.S. Cl. 355—38 **28 Claims**

1. A color printing apparatus comprising:

a light chamber having a number of light sensors therein, each sensor being responsive to light of a particular color;

a light source;

means for directing a light beam along a path from the light source toward the light chamber;

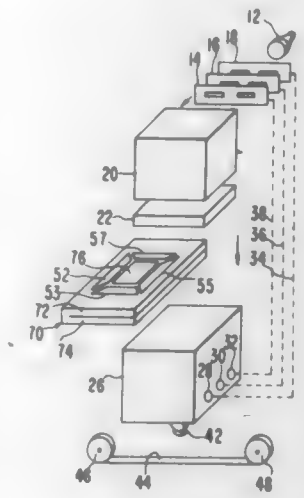
a negative carrier across the light beam for holding a negative to be printed;

a lens coupled with the light chamber for directing light out of the same;

a color paper strip aligned with the lens for receiving light therefrom for exposure of the color paper strip to form the image of a negative held by the carrier;

a number of actuatable color filters between the light source and the color paper strip, said filters being coupled to respective sensors for actuation thereby; and

means coupled with the light chamber for providing addi-



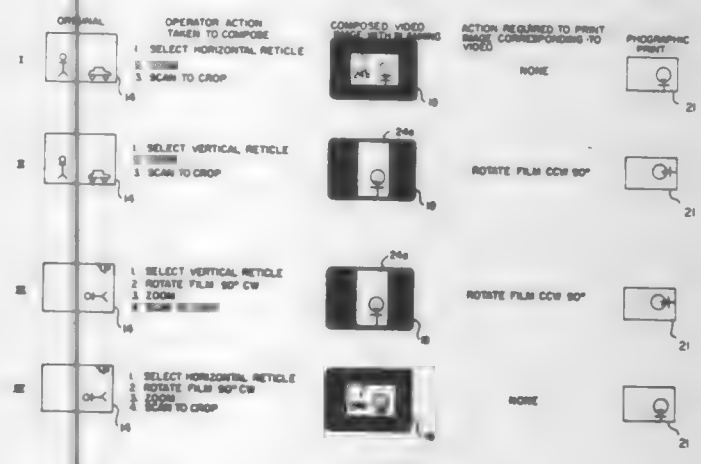
tional, at least partially filtered light thereto for mixture with the light passing through the negative, whereby the sensors will respond to the total light in the light chamber in a manner to cause respective filters to be actuated such that the resulting color print will more nearly approach the color density and balance achieved with a color print made from a master negative.

4,603,966

FILM VIDEO PLAYER/PRINTER WITH CROPPING CONTROL

Scott A. Brownstein, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 28, 1985, Ser. No. 770,121
Int. Cl.⁴ G03B *13/28;* **H04N** *7/18*
U.S. Cl. 355—45 **9 Claims**



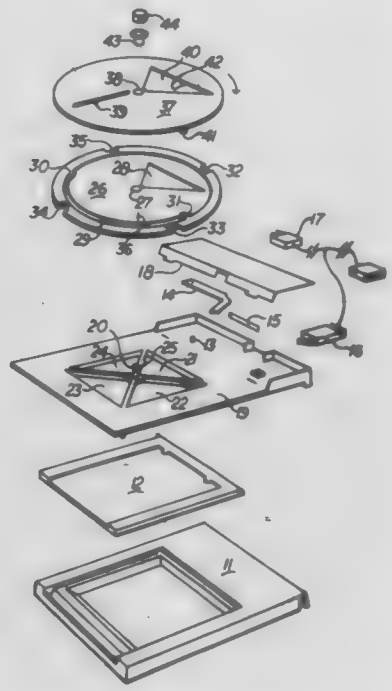
1. In a film video player having photographic printer means for making an optical print corresponding to a film image displayed on a video monitor, the improvement comprising:

electronic display means for displaying a rectangular reticle on said monitor within the border of the image displayed, the perimeter of the reticle encompassing the portion of the film image displayed that is to be printed.

4,603,967
ROTARY-DISC TEST PRINTING EASEL

John T. Virtanen, 9 Haldon Ave. Apt. 334, Toronto, Ontario, Canada M4C 4P5

Filed Mar. 11, 1983, Ser. No. 474,276
Int. Cl.[4] G03B *27/58*
U.S. Cl. 355—72 6 Claims

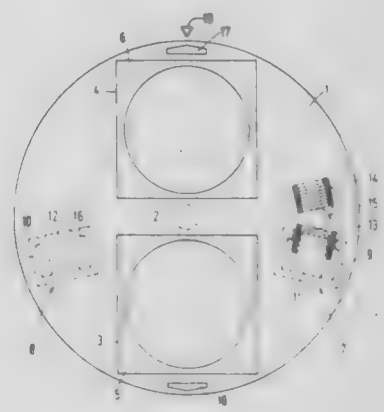


1. A lighttight apparatus adapted to enclose and allow an economic size cutting of light-sensitive photographic color printing paper to be test exposed for color evaluation in an optional number of two or more step-divided segments of the paper, by projecting a beam of light through a color negative positioned in a standard color printing enlarger, onto the said sheet of photographic paper, positioned on the easel of said apparatus, through triangular shaped window apertures formed in mated pairs of rotatable disc sets adapted to be set in registered position by multiply utilized step shaped registration slots formed on the circumferential edge of the one disc of a pair of said disc sets, with the said light-sensitive paper enclosed therein automatically covered over as the aperture openings of said mated pairs of discs are rotatively advanced to the said registered stop positions between steps of exposing individual segments of the said paper; said apparatus comprising a lighttight, light-sensitive paper storage means, forming a paper-safe base member, fitted with a hingeable lighttight cover easel having a recessed top surface plane on which to place and expose a sheet of photographic paper in registered position, with the light-sensitive paper stored inside said paper-safe base member protected from exposrue to light; said base member further comprising a paper holding platen to be hingeably and removably attached; said platen having a reinforcing rib formed on the bottom surface plane, enclosing divided segments of a centrally positioned window opening; said reinforcing rib interrelating with the curb, provided by the recessed surface plane of said easel, to form a lighttight seal; said paper holding platen further including a mechanical enclosure positioned on the top rear surface plane, having fittings formed therein on which to assemble and allow the free movement and interaction of a spring triggered pivotal pawl, steel spring and an optional plug-in lever operated electrical current switch adapter, fitted to an electrical cord , to which an electric light bulb is attached, connected to an electric power source adapted to be switched off and on automatically, by means of the pawl interacting with the circumferential edge and step formed aperture setting slots of said disc sets as the top disc of said pairs of disc sets is rotated, at and between said aperture setting slots, causing said pawl to interact with the lever of said current switch to allow said light bulb to be integrated with the aperture stepped, test exposing function of the said disc sets of the invention; said platen further comprising a snap-on cap, to allow said disc sets to be attached, interchanged and freely rotated about a vertical axle post formed on bridge members dividing segments of said window opening forming a lighttight, rotatably stepped aperture disc, paper exposing cover means.

4,603,968
DEVICE FOR EXCHANGING MASKS

Robert H. Munnig Schmidt, Drachten, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed May 7, 1985, Ser. No. 731,634
Claims priority, application Netherlands, May 9, 1984, 8401476
Int. Cl.[4] G03B *27/62*
U.S. Cl. 355—75 3 Claims

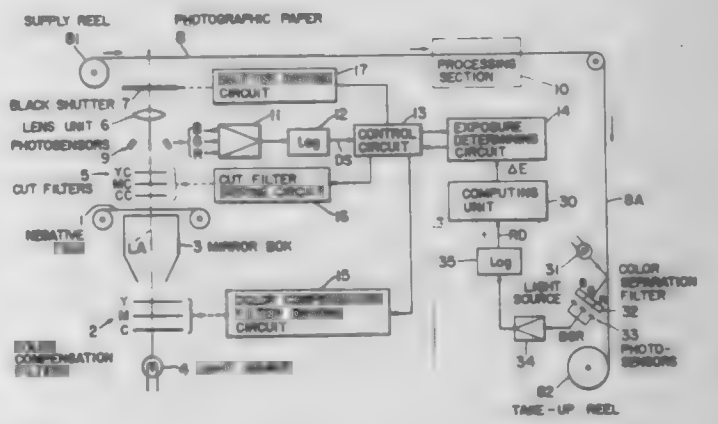


1. A device for exchanging masks used in the photolithographic treatment of semiconductor devices, in which device supporting places for a number of masks are present on a rotatable disk, the disk bringing one of the mask supporting places in a position desired for photolithographic treatment, which position can be determined by means of a detector, which, after a position-servo-system has been switched into circuit, supplies a detector signal to this system and thus controls the adjustment of the disk, characterized in that for rotation of the disk two electromagnetic movement systems are present each comprising a magnet and a coil, wherein either the pair of magnets or the pair of coils is fixedly arranged and the other pair is provided on the turntable and is rotatable therewith, a current connection is present for the coils and means is provided for supplying a constant current to the coils.

4,603,969
METHOD FOR SETTING CONDITIONS IN PHOTOGRAPHIC PRINTING

Takaaki Terashita, Kaisei, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Feb. 4, 1985, Ser. No. 697,841
Claims priority, application Japan, Feb. 6, 1984, 59-19587; Apr. 4, 1984, 59-67170
Int. Cl.[4] G03B *27/32, 27/80*
U.S. Cl. 355—77 4 Claims



1. A method for setting conditions in a photographic printing system in which an exposure amount for a photographic

paper is controlled by inserting and removing color compensation filters in a photographic printing light path, which comprises the steps of:

measuring a light amount with a photosensor by inserting and removing the color compensation filters from the light path;

calculating a correction amount D_1 for light source variations in comparison with a reference value on the basis of the light amount measurement;

calculating a control amount D_2 needed to effect a desired density for a photographic paper on the basis of a difference value determined from a previously stored standard negative film density $\overline{U}$ and the calculated correction amount D_1;

storing the correction amount D_1 and the control amount D_2;

respectively changing the standard negative film density $\overline{U}$, the correction amounts D_1 and the control amount D_2 in accordance with respective detected variations thereof; and

controlling the inserting and removing of the color compensation filters so that an amount of light corresponding to an exposure reference value which impinges on the photographic paper is equal to an exposure reference value which is obtained by combining the difference value and the control amount D_2.

4,603,970

APPARATUS FOR INHIBITING COPYING OF CONFIDENTIAL DOCUMENTS

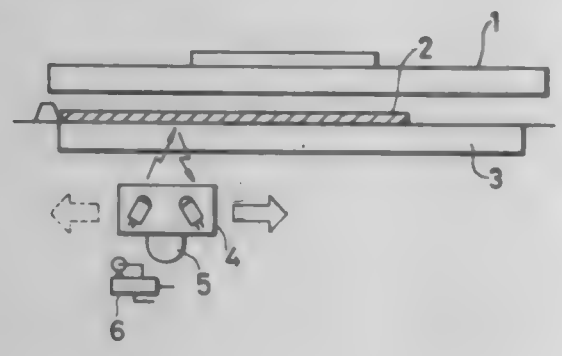
Koichi Aota; Katsuhiko Ishikawa, and Naoki Yokoi, all of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Jun. 30, 1983, Ser. No. 509,510

Claims priority, application Japan, Jul. 9, 1982, 57-118672; Jul. 29, 1982, 57-131268

Int. Cl.⁴ G03B *27/52*

U.S. Cl. 355—133 **8 Claims**



1. An apparatus for inhibiting the copying of information on a manuscript sheet treated with an infrared ray-absorbing agent, said apparatus comprising:

scanning means for scanning said sheet for infrared ray-absorbing regions;

comparison means for comparing an output of said scanning means to a reference level; and

means responsive to an output of said comparison means for determining the size of detected infrared ray-absorbing regions and for preventing the copying of the information upon the detection of the presence of an infrared ray-absorbing region greater than a predetermined size.

4,603,971

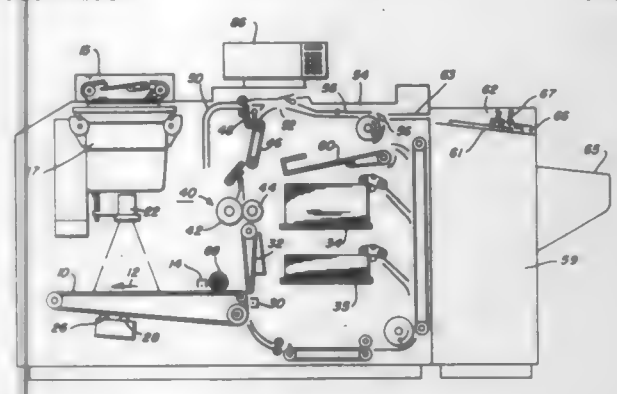
FINISHER MODE SWITCHING

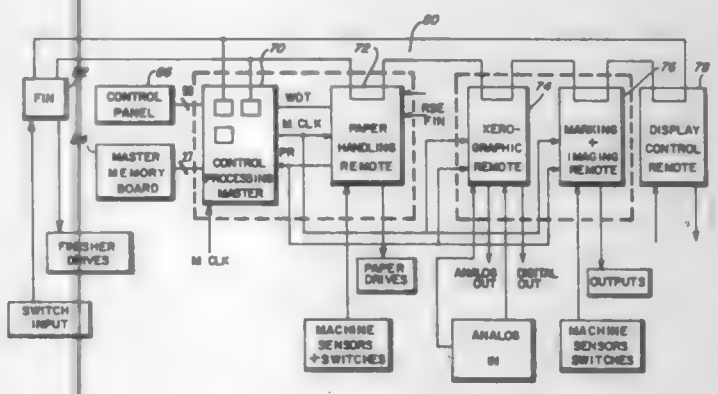
William P. Kukucka; Robert L. Sklut, both of Webster, and John F. Gauronski, Rochester, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Sep. 17, 1984, Ser. No. 651,500

Int. Cl.⁴ G03G *15/00, 21/00*

U.S. Cl. 355—133 **8 Claims**





1. In a reproduction machine having a photosensitive member and a plurality of operating components including a finisher and a control panel cooperating with one another and the photosensitive member in time periods determined by pitches to produce impressions on copy sheets, the finisher including a staple mode to staple a set of copy sheets together and a bind mode to bind a set of copy sheets together, the method of changing from the staple mode to the bind mode or from the bind mode to the staple mode comprising the steps of:

initiating a mode change at the control panel while the machine is operating in either the bind mode or the staple mode,

determining if the present mode or the previous mode was a bind mode,

delaying the feeding of copy sheets in the finisher for a first given time period,

delaying the mode change initiation by a second time period different from said first given time period, and

resuming operation of the finisher in the new mode.

4,603,972

DISTANCE MEASUREMENT

Graham L. Adams, London, England, assignor to International Standard Electric Corporation, New York, N.Y.

Filed Jun. 28, 1984, Ser. No. 625,410

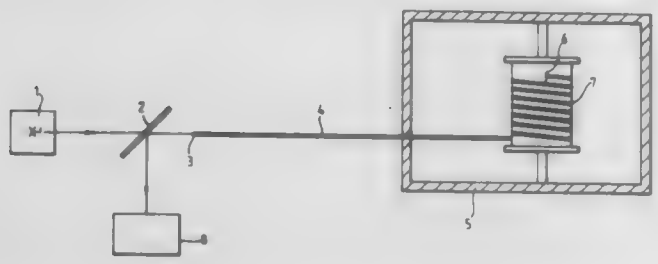
Claims priority, application United Kingdom, Jul. 7, 1983, 8318471

Int. Cl.⁴ G01C *3/08*

U.S. Cl. 356—4 **3 Claims**

2. An instrument for determining the change in distance between a datum point and a body in relative movement away from that datum point, wherein an optical fibre, having an end secured to the datum point, extends to the body which carries the remainder of the fibre coiled for paying-off as the distance increases, wherein means are provided at one end of the fibre to measure changes in optical attenuation of the fibre, and

wherein distance changes are determined from the measure of the decrease in fibre attenuation resulting from a reduction of



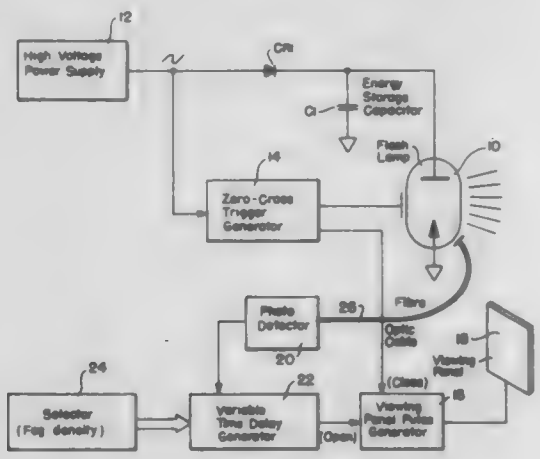
its bending losses as progressively more of the coil is paid-off with increasing separation.

4,603,973

VISIBILITY ENHANCEMENT SYSTEM

Robert P. Crow, 15464 Hamner Dr., Los Angeles, Calif. 90077

Filed Jan. 26, 1984, Ser. No. 574,063
Int. Cl.[4] G01C *3/08;* H04N *7/00*
U.S. Cl. 356—5 17 Claims



1. A system for direct viewing an object through a diffusive medium located between the system and the object, said system including: an electric flash lamp for projecting successive flashes of light through the medium to the object to be reflected by the object; viewing means adapted to be interposed between the eyes of the viewer and the object and through which the object is directly observed by the viewer; said viewing means including an electro-optic shutter to permit the object to be viewed through the viewing means only when the shutter is open; first electric generator means connected to the flash lamp for introducing trigger pulses to the flash lamp to cause the flash lamp to project successive flashes of light each having a time duration of twice the light propagation time to a predetermined maximum range of the system; and second electric generator means coupled to said first generator means to introduce gate pulses to said optical shutter to cause the shutter to close before the initiation of each flash of said successive flashes of light and to open a predetermined time after the cessation of each flash of said successive flashes of light corresponding to twice the light propagation time to a selected cut-off distance of the system.

4,603,974

RETICLE USED IN SEMICONDUCTOR DEVICE FABRICATION AND A METHOD FOR INSPECTING A RETICLE PATTERN THEREON

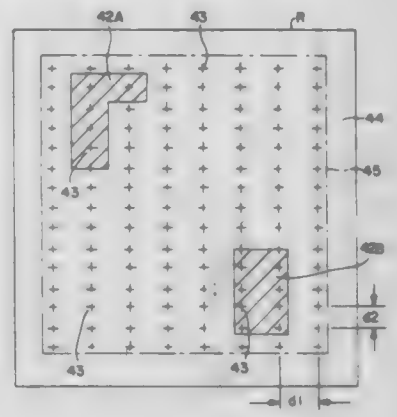
Shougo Matsui, Sagamihara, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Feb. 27, 1985, Ser. No. 706,316
Claims priority, application Japan, Mar. 5, 1984, 59-41584
Int. Cl.[4] G01B *11/00*
U.S. Cl. 356—394 10 Claims

1. A reticle applied to a patterning process for fabricating a semiconductor device comprising:

a reticle substrate;

a reticle pattern formed in an actual pattern-region on a surface of said reticle substrate; and



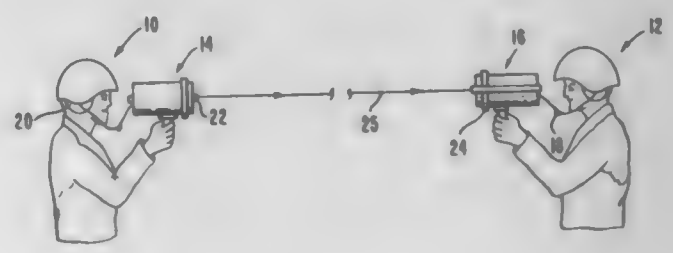
a reference pattern formed in said actual pattern-region on said surface with said reticle pattern, the reference pattern having a size less than a resolution limit of a reduction exposure performed in said patterning process.

4,603,975

APPARATUS AND METHOD FOR NIGHTTIME AND LOW VISIBILITY ALIGNMENT OF COMMUNICATORS

Robert J. Cinzori, Santa Barbara, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Continuation of Ser. No. 130,637, Mar. 17, 1980. This application Apr. 29, 1982, Ser. No. 373,075
Int. Cl.[4] G01B *11/26;* G01C *1/00;* H04B *9/00*
U.S. Cl. 356—152 9 Claims



1. Apparatus for aligning a hand-held communication unit including a laser transmitter and a detector sensitive to incoming IR radiation containing encoded information, said communication means including focusing means for directing said incoming IR radiation to said detector, said apparatus comprising:

(a) means for determining the location of said radiation upon said detector, and for generating an electrical signal responsive thereto; said detector comprising a plurality of independent detector portions;

(b) electroluminescent means responsive to said electrical signal, said electroluminescent means comprising a plurality of electroluminescent devices arranged in a pattern coresponding to the geometry of said detector, so that there may be illuminated thereby a pattern indicative of the location of said transmission upon said detector;

(c) means for combining the electrical signal from each detector portion to provide an output signal for further processing to extract said encoded information;

(d) said apparatus further including a monocular having an eyepiece, said monocular being mounted with respect to said communication unit so that its movement directly affects the pointing direction of said unit; and

(e) said eyepiece having a reticle defining a plurality of eyepiece segments, each of said segments having both an electroluminescent device and a detector portion associated therewith.

4,603,976

OPTICAL MARK RECOGNITION APPARATUS

Günter Fetzer, Gundelfingen, and Jürgen Erdmann, Waldkirch, both of Fed. Rep. of Germany, assignors to Erwin Sick GmbH Optik-Elektronik, Waldkirch, Fed. Rep. of Germany

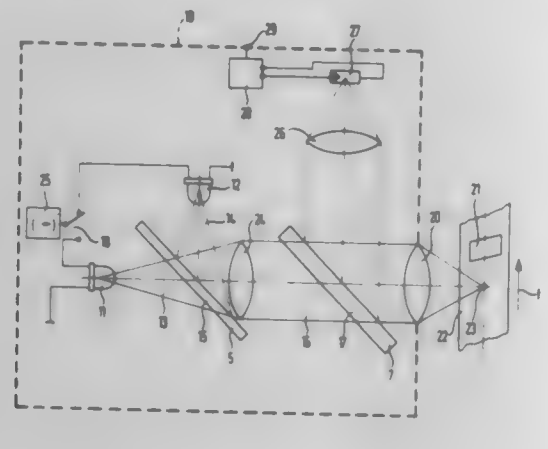
Filed Jun. 6, 1983, Ser. No. 501,723

Claims priority, application Fed. Rep. of Germany, Nov. 15, 1982, 3242219

Int. Cl.[4] G01J *3/46;* G06K *7/12*

U.S. Cl. 356—402

10 Claims



1. In optical mark recognition apparatus comprising:

a light transmitter for transmitting a beam of light along a first optical path to a carrier bearing optical recognition marks,

a light receiver and photoreceiver, said light receiver directing light remitted from said carrier and said marks to said photoreceiver, and said photoreceiver providing an electrical signal representative of said remitted light, and

electronic processing means, connected to receive said electrical signal, for generqting a mark recognition signal,

the improvement characterized in that said light transmitter comprises:

a plurality of fixed light sources disposed in separate and distinct locations from one another, each said source providing light of a different characteristic spectral composition for accentuating the contrast between marks and carriers of different characteristic colours;

means in fixed disposition with respect to said light sources defining a plurality of optical paths having said first optical path in common for directing light from said light sources to said carrier, whereby said plurality of fixed light sources and optical paths define a plurality of independent modes of operation of said apparatus for enhancing the contrast of a plurality of mark-carrier colour combination, whereby said apparatus is continuously operable in each said mode for reading a succession of marks; and

switch means for selecting and energizing a light source from said plurality of fixed light sources to operate for successive mark readings, thereby selecting one of said modes of operation, said switch means energizing one and only one light source throughout the selected mode of operation.

4,603,977

MICROMOTILITY METER

James L. Bennett, Haslett, and Ralph A. Pax, Mason, both of Mich., assignors to Research Corporation, New York, N.Y.

Filed Oct. 31, 1984, Ser. No. 666,931

Int. Cl.[4] G01N *21/00*

U.S. Cl. 356—436

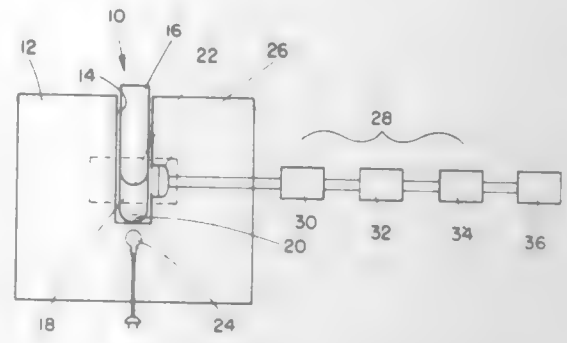
33 Claims

1. A micromotility meter for evaluating the movement of helminths in solution, said meter comprising:

(a) a dark chamber for receiving a transparent container containing a test solution and a plurality of helminths in said solution, said solution defining a meniscus at a side wall of the container,

(b) a light source for directing light upwardly through said solution meniscus,

(c) photodetector means for collecting light refracted by said meniscus, said photodetector means generating a first signal that is modulated by variations in the refracted light caused by movement of the helminths,



(d) means responsive to said modulated first signal to provide an index of motility of the helminths.

4,603,978

LAMINATED BASE ELEMENT FOR A WRISTWATCH USING HOT MELT ADHESIVE FOIL

Fritz Brenk, Forlenweg, Fed. Rep. of Germany, assignor to Timex Corporation, Waterbury, Conn.

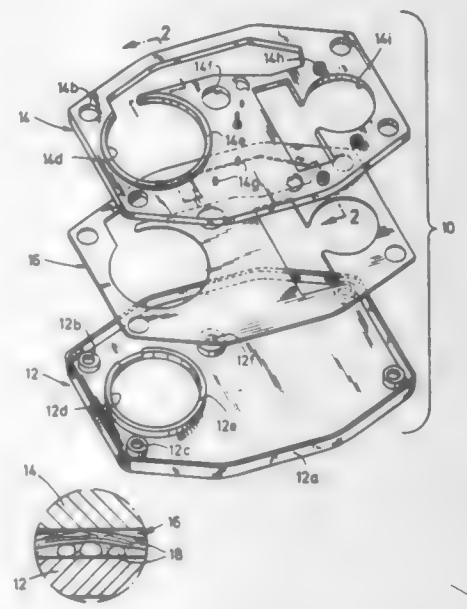
Filed Jun. 25, 1984, Ser. No. 624,171

Claims priority, application Fed. Rep. of Germany, Apr. 29, 1983, 3315634

Int. Cl.[4] G04B *37/00*

U.S. Cl. 368—317

5 Claims



1. A base element of simultaneously serving the purpose of a movement plate and a caseback for a wristwatch, said base element comprising of an outer plate, an inner plate, and an foil of thermoplastic plastics material arranged between them, said plates being bonded together in one piece by said thermoplastic material, said foil having spacer elements embedded in the thermoplastic material of said foil, whereby a minimum distance is defined between said plates by said spacer elements.

4,603,979

PROCEDURE AND MEANS FOR MEASURING THE INTERNAL FRICTION OF LIQUID SUBSTANCES

Aarre Matilainen, Lohkopellontie 1 A 8, 00650 Helsinki, and Mauri Laukkala, Haukilahdenranta 23 B 5, 02170 Espoo, both of Finland

PCT No. PCT/FI84/00011, § 371 Date Sep. 26, 1984, § 102(e) Date Sep. 26, 1984, PCT Pub. No. WO84/03146, PCT Pub. Date Aug. 16, 1984

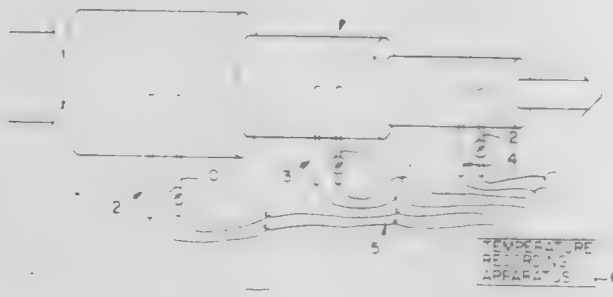
PCT Filed Feb. 1, 1984, Ser. No. 662,425

Claims priority, application Finland, Feb. 7, 1983, 830410

Int. Cl.[4] G01N *25/00*

U.S. Cl. 374—54

5 Claims



1. A method of measuring flow friction of a liquid substance with high internal friction and viscosity, such as molten plastic mix, said liquid substance flowing in a special flow measuring sleeve having a flow area, and said liquid substance having a flow velocity, said method comprising the steps of;

stepwise increasing said flow velocity by stepwise reducing said flow area of said measuring sleeve,

mounting a thermometer in the flow of said liquid substance upstream of the reduced flow area and mounting a thermometer in the flow of said liquid substance within the reduced flow area or areas,

measuring temperature changes caused by an increase of flow friction within said reduced flow area or areas,

and using said temperature changes to determine the flow friction of said liquid substance.

4,603,980

METHODS OF MEASURING TEMPERATURE AND ELECTRICAL RESISTIVITY IN A MOLTEN GLASS STREAM

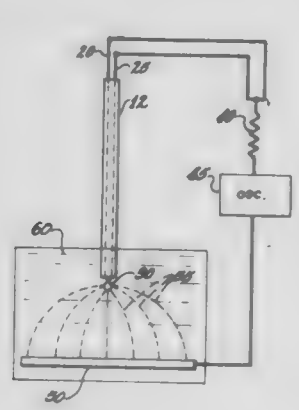
James I. Berg, Granville, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Continuation-in-part of Ser. No. 576,841, Feb. 3, 1984, abandoned. This application Aug. 2, 1985, Ser. No. 761,997

Int. Cl.[4] C03B *5/24;* G01K *7/02;* G01N *27/14*

U.S. Cl. 374—179

4 Claims



1. A method of measuring the temperature and electrical resistivity of a molten glass stream using a signal generating means, a signal detector means with the improvement comprising: measuring simultaneously at substantially the same location the temperature and the electrical resistivity of said glass stream by using a pair of electrodes with extreme disparity in sizes between said pair of electrodes with a sensor electrode of said pair of electrodes having a diameter of 2 mm to 10 mm, a return electrode of said pair of electrodes having a surface area of at least 100 times that of said sensor electrode, said sensor electrode comprising as the conductor wires of a thermocouple having only the junction exposed to contact with said molten glass stream and with a signal sent from said signal generating means through said pair of electrodes to said detector means.

4,603,981

DEVICE FOR REGULATING OR LIMITING AT LEAST ONE TEMPERATURE VALUE OR A TEMPERATURE RANGE OF RADIATION OR CONTACT HEATERS OF ELECTRIC COOKING APPARATUS

Karl Lieberth, Strasshof, Austria, assignor to Electrovac, Fabrikation elektronischer Spezialartikel Gesellschaft m.b.H., Vienna, Austria

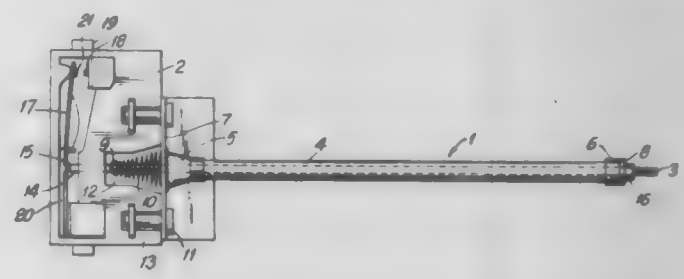
Filed Oct. 19, 1984, Ser. No. 662,871

Claims priority, application Austria, Nov. 4, 1983, 3903/83

Int. Cl.[4] G01K *1/08*

U.S. Cl. 374—210

6 Claims



1. In a device for switching electric power in the operation of a heating element for regulating at least one temperature range in electric cooking apparatus, wherein at least one temperature sensor is provided for activating a switching element of the device for regulating the temperature, the sensor having a rod of high thermal expansion which is disposed in a tube of low thermal expansion, the tube being held between holding elements, the improvement comprising

a support member adjoining each end of the tube and surrounding the rod, the holding elements respectively adjoining said support members, said support members being positioned in seriatim along an axis of the tube between the adjoining holding element and an end surface of the tube, each said support member having a coefficient of thermal expansion α_1 which is smaller than a coefficient of thermal expansion α_2 of the adjoining holding element and larger than the coefficient of thermal expansion α_3 of the tube.

4,603,982

MOLDED BEARING

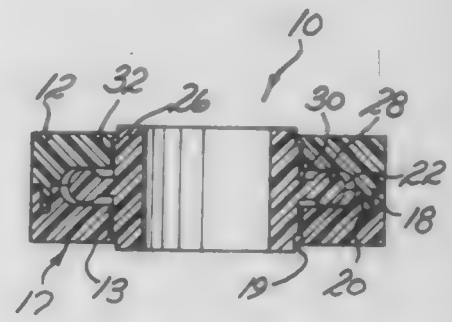
Patrick E. Dittrich, South Bend, Ind., assignor to Auscilla Plastics, Inc., South Bend, Ind.

Filed Feb. 21, 1985, Ser. No. 704,006

Int. Cl.[4] F16C *17/00, 33/20, 13/00*

U.S. Cl. 384—129

5 Claims



1. A bearing comprising an outer race which includes first

and second symmetrical race parts, an interior channel formed with said outer race, and an inner sleeve member positioned within said outer race and including a plurality of protrusions extending radially from said inner sleeve into said interior channel of the outer race, each protrusion being generally spherical in shape and including a web extending from each protrusion to said sleeve, each web being of lesser dimension than the diameter of each protusion wherein said protrusions are filled freely within said outer race interior channel, said protrusions constituting load bearing means for allowing free rotation of said sleeve member within said outer race.

4,603,983

AXIAL SHIFT ARRANGEMENT FOR TWO-ROW ANGULAR-CONTACT BEARING

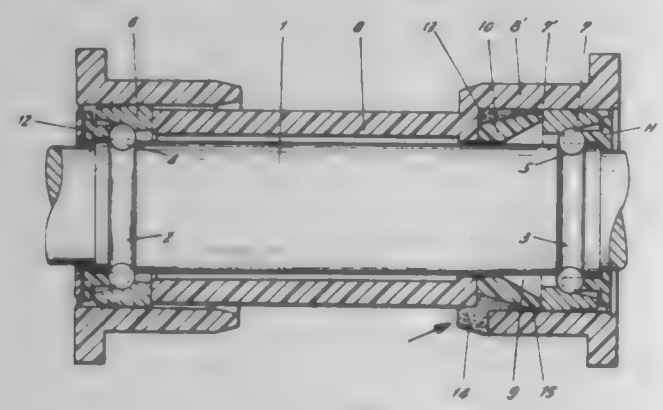
Heinrich Hofmann, Schweinfurt, and Günter Markfelder, Üchtelhausen, both of Fed. Rep. of Germany, assignors to FAG Kugelfischer Georg Schafer (KgaA), Fed. Rep. of Germany

Filed Nov. 14, 1985, Ser. No. 798,176

Claims priority, application Fed. Rep. of Germany, Dec. 22, 1984, 3447150

Int. Cl.⁴ F16C *19/18*

U.S. Cl. 384—512 **13 Claims**



1. A two-row angular contact bearing on a shaft, comprising

a first and a second inner race being defined in and around the shaft at axially spaced locations along the shaft; a first and a second outer ring disposed around and having respective first and second races around the respective first and second inner rings; bearing rolling members rollingly supported between each inner race and the race of the respective outer ring;

a bushing around the shaft and extending between the first and the second outer rings and holding the outer rings apart; the bushing having a radially extending shoulder located between the outer rings and located nearer to the first outer ring, and the shoulder defining for the bushing a radially enlarged end section which extends from the shoulder and extends past and surrounds the first outer ring; the shoulder of the bushing being so placed axially with respect to the first outer ring that a free space is defined inside the enlarged end section of the bushing between the shoulder and the first outer ring;

an axial spring in the free space for urging the first outer ring away from the second outer ring; the spring being shaped in the free space for defining in the free space an open region which extends from the shoulder to the first outer ring;

a hardening material disposed in the open region for hardening and for thereby rigidifying and fixing the spacing between the bushing shoulder and the first outer ring.

4,603,984

APPARATUS AND METHOD FOR THE REDUCTION OF PRINTING OFFSET IN BIDIRECTIONAL PRINTING DEVICES

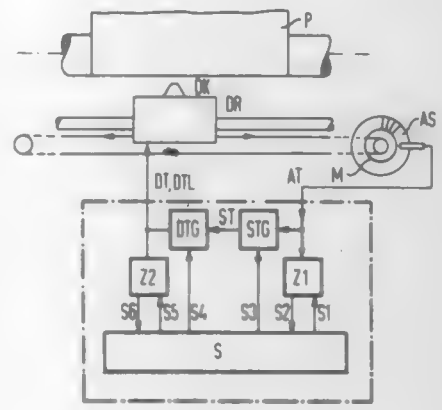
Hermann Ullenboom, Deisenhofen, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Oct. 31, 1984, Ser. No. 666,735

Claims priority, application Fed. Rep. of Germany, Nov. 3, 1983, 3339787

Int. Cl.⁴ B41J *3/12*

U.S. Cl. 400—121 **4 Claims**



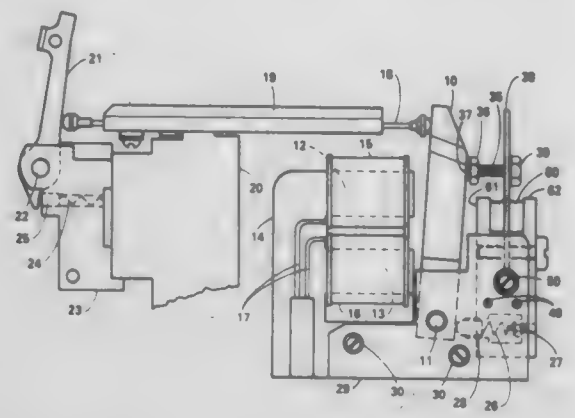
1. A method for the reduction of printing offset in successive print lines in a bidirectional dot-matrix printer having a sensing element for producing scan clock signals and means for deriving print clock signals from said scan clock signals, comprising the steps of providing at least one further print clock signal at the end of each print line beyond the last print clock signal which corresponds to printing information, initiating the braking of the printer carriage after the last of said further print clocks, and after reaccelerating said print carriage in the opposite direction counting said further print clock cycles before generation of print clocks which are coincident with printed information.

3. Apparatus for reducing printing offset in successive print lines in a dot-matrix printer having a bidirectional carriage and sensing means for generating the scan clock signals, and means for deriving print clock signals from said scan clock signals, a first counter connected to receive said scan clock signals and to count cycles thereof, and a second counter connected to receive said print clock signals and count cycles thereof, comprising in combination; a control unit connected to said first and second counters, a control clock generator connected to said first counter and to said control unit, and a print clock generator connected to said control clock generator and to said control unit, said control unit producing a first control signal connected to said first counter after the start of movement of the printer carriage, said first counter counting said scan clock signals for defining an acceleration phase of said printer carriage, said first counter providing a control signal to said control unit when a constant printing speed is reached, said control unit producing further control signals for controlling operation of said control clock generator, said print clock generator and said second counter, said second counter providing a control signal to said control unit at the end of each print line after the last printing position of a line has been reached, said control unit responding to said control signal from said second counter for disabling said control clock generator, said print clock generator, and said first counter after a predetermined interval.

4,603,985
BACKSTOP AND DAMPING APPARATUS FOR ACTUATOR

Edward F. Helinski, Johnson City, and Ho C. Lee, Endicott, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 21, 1984, Ser. No. 622,827
Int. Cl.[4] B41J *9/42*
U.S. Cl. 400—167 7 Claims



1. An apparatus such as a print hammer having an actuator means including an actuator element moveable to effect operation such as printing,

said actuator element having a forward movement and a rebound movement,

a base member;

an improved stop mechanism for establishing an at-rest position and for damping the rebound energy of said actuator element comprising,

cantilever means comprising

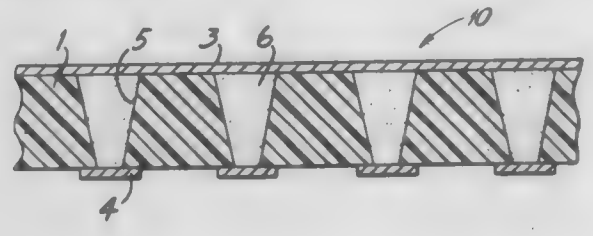
a first cantilever beam secured at one end to said base member and having fixedly attached at its free end one end of a second cantilever beam in which said first and second cantilever beams have parallel bending axes relative to said base member and a backstop member supported by said second cantilever beam at a location between said bending axes whereby components of motion of the free ends of said first and second cantilever beams counteract each other to nullify components of motion normal to the direction of motion of said actuator element upon impact with said backstop member by said second cantilever beam, said second cantilever beam extending generally parallel with said first cantilever beam and towards said secured end and the backstop carried by the free end of the second cantilever beam lying in the path of motion of said actuator element to be impacted by said actuator element on rebound, and

a damping material secured by said base member with the free end of said second cantilever beam embedded in said dampening material to limit the movement of said free end of said second cantilever beam.

4,603,986
INK PROJECTING TYPEWRITER RIBBON

George R. Simpson, 275 Central Park West, New York, N.Y. 10024

Filed Jun. 8, 1981, Ser. No. 271,378
Int. Cl.[4] B41J *31/09*
U.S. Cl. 400—241.2 9 Claims



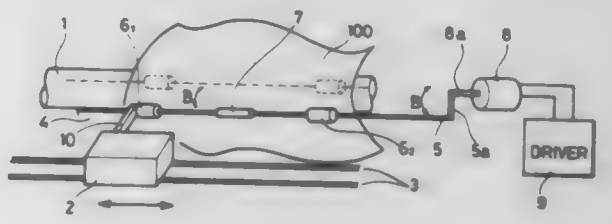
1. A colorant transfer medium for printing discrete marks on a receiving surface, said medium comprising a carrier, a colorant, and a vapor producing material responsive to the application of energy,

wherein the improvement comprises an array of a plurality of spots each including colorant and vapor producing material, wherein the vapor producing material comprises a chemically reactive material which, responsive to the application of said energy, produces a vapor by chemical reaction which rapidly propels the colorant toward the receiving surface.

4,603,987
RECORDING MEMBER PRESSING DEVICE IN A PRINTER

Masaaki Kuranishi; Susumu Nonaka, both of Yamatokoriyama; Koichi Furukawa, Kashihara, and Fumio Siozaki, Tenri, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Feb. 20, 1985, Ser. No. 703,595
Claims priority, application Japan, Feb. 20, 1984, 59-31009
Int. Cl.[4] B41J *13/036, 13/20*
U.S. Cl. 400—639.1 9 Claims



1. In a printer including a platen rotatably provided around a first axis and a plurality of recording member pressing rollers rotatably provided around a second axis parallel with the first axis in which a recording member is forwarded to a printing position around the platen faced with a printing head and is pressed on the platen by the recording member pressing rollers, said recording member pressing rollers being movable into and out of a recording member pressing position, a recording member pressing device comprising:

memory means for storing location information of at least one of the pressing rollers as a function of the size of the recording member;

recording member size detecting means for detecting the size of the recording member;

read-out means responsive to the recording member size detecting means for reading out the location information stored in said memory means; and

locating means responsive to the read-out means for slidably moving the at least one of the pressing rollers along the second axis and setting the said pressing rollers into the said pressing position.

4,603,988
ATTACHING DEVICE FOR A PLATEN BODY IN A PRINTER

Hideaki Takenoya, and Fumiyuki Mishima, both of Tokyo, Japan, assignors to Janome Sewing Machine Co., Ltd., Tokyo, Japan

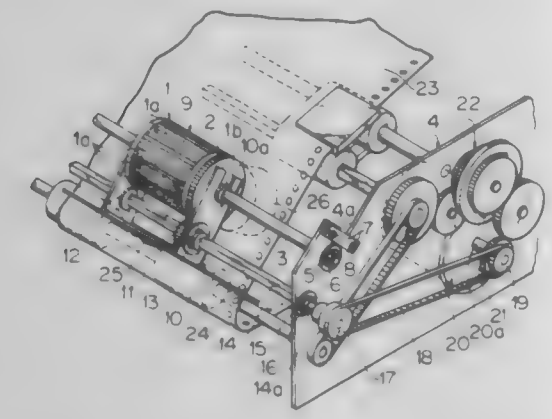
Filed Jun. 7, 1984, Ser. No. 618,212
Claims priority, application Japan, Jun. 17, 1983, 58-92113[U]
Int. Cl.[4] B41J *27/02*
U.S. Cl. 400—649 3 Claims

1. An attaching device for a platen body of a printer of the type in which the platen body having two ends is mounted on a platen shaft and arranged opposite to a printing head and the platen shaft is extended between two spaced frames and the platen body has ink containing elements of different colors of the ink and is shiftable along the platen shaft together with the printing head while the platen body is rotatable about the platen shaft for changing a color of printing with a printing paper being transported between the printing body and the

printing head so that the printing head may hit the platen body via the printing paper, the attaching device comprising:

(a) a guide shaft (**14**) extended in parallel with said platen shaft between said spaced frames and being rotatable;

(b) guide means (**10**) including a U-shaped guide member mounted on said guide shaft and being shiftable therealong, said U-shaped guide member having a pair of arms arranged opposite to each other and engaging said two ends of said platen body, each of said arms having an end formed with a first groove (**10***a*) opened at said end of



each arm, said platen shaft being received in one of said grooves at each end of said platen body;

(c) a gear (**2**) secured to one end of said platen body; and

(d) a drive gear (**11**) mounted on said guide shaft for rotation therewith and connected to one arm of said U-shaped guide member, said drive gear engaging said gear secured to one end of said platen body;

(e) each of said frames having a second groove (**4***a*), said second groove being opened at one end thereof, said platen shaft being received also in said second grooves.

4,603,989

COSMETIC CONTAINER CONSTRUCTION

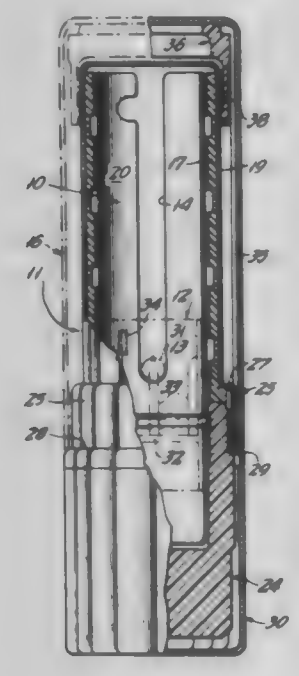
Walter T. Ackerman, Watertown, and Edward F. Klimeck, Waterbury, both of Conn., assignors to Risdon Corporation, Naugatuck, Conn.

Continuation-in-part of Ser. No. 538,908, Oct. 4, 1983, Pat. No. 4,514,102. This application Feb. 19, 1985, Ser. No. 702,620

The portion of the term of this patent subsequent to Apr. 30, 2002, has been disclaimed.

Int. Cl.⁴ B43K *21/08, 23/00*

U.S. Cl. 401—78 **18 Claims**



1. In a swivel lipstick or the like container wherein a central carrier member has a cam follower engaged to propulsion cams of inner and outer tubular members which are relatively rotatable to develop propel/repel displacement of the carrier member, the improvement wherein the inner tubular member is of metal and has a radially outward circumferential formation between an elongate upper propulsion-cam portion and a lower cylindrical base portion, wherein a molded-plastic adaptor member includes a deformable cylindrical skirt in axially overlapped permanent assembly to said circumferential formation to thereby define a plastic base shoulder of said inner tubular member, wherein the outer tubular member includes a sleeve of molded plastic with an elongate bore having a cam formation in running clearance with the upper portion of said inner tubular member, and wherein the outer tubular member integrally includes a radially outward flange having a lower surface in thrust-bearing engagement with said base shoulder, and a cylindrical metal collar having a bore in force-fitted radially squeezing assembly to the outer surface of said cylindrical skirt and thus also to the inner tubular member, said collar including at its upper end a radially inward flange in axially locating relation with the upper surface of the flange of said outer tubular member.

4,603,990

MECHANICAL PENCIL WITH REFILL CARTRIDGE

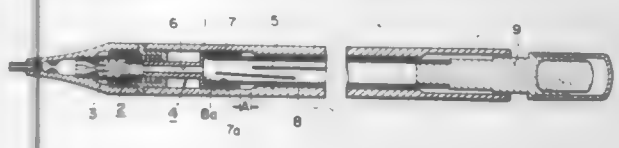
Ken Yamamoto, Kawagoe, Japan, assignor to Kotobuki & Co., Ltd., Kyoto, Japan

Filed Jul. 11, 1983, Ser. No. 512,538

Claims priority, application Japan, Oct. 15, 1982, 57-156911[U]

Int. Cl.⁴ B43K *21/00, 21/20*

U.S. Cl. 401—85 **5 Claims**



1. A mechanical pencil having an outer pipe with forward and rearward portions, said outer pipe having a bore formed with a first inside height and diameter and a bore formed with a second inside diameter, said second inside diameter being constricted to a diameter smaller than said first inside diameter to facilitate ease of loading of replacement cartridges, the pencil comprising a lead feed mechanism fitted in the outer pipe, a lead guide connected to the lead feed mechanism and having an abbreviated cylindrical cartridge reception bore of a height and diameter which is practically the same as the bore formed with the first inside diameter of the outer pipe and having a beveled receiving lip, and a cylindrical cartridge slidably mounted from the rearward portion of the outer pipe and adapted to be detachably fitted in a telescoping relationship within the cartridge reception bore of the lead guide to present a continuous supply of leads to said lead guide and having a friction fit with the rearward portion of the outer pipe to maintain the cartridge securely and operably within the pencil, said cartridge having an outside diameter which is practically the same as the second inside diameter of the outer pipe and the inside diameter of the cartridge reception bore to provide a close fit between the cartridge and the outer pipe and being axially detachable from said outer pipe by moving the same in an axial direction with respect thereto.

4,603,991

CONNECTOR FOR PROPELLING PENCIL

Ken Yamamoto, Saitama, Japan, assignor to Kotobuki & Co., Ltd., Kyoto, Japan

Filed Aug. 10, 1982, Ser. No. 406,965

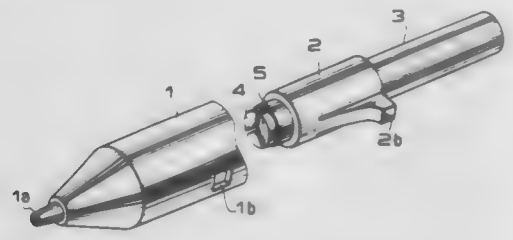
Int. Cl.⁴ B43K *21/24*

U.S. Cl. 401—86 **2 Claims**

1. A mechanical pencil comprising:

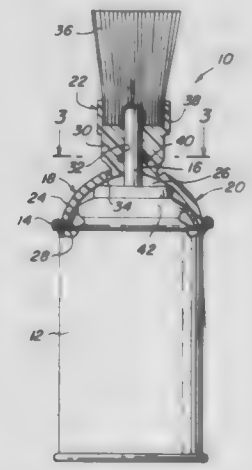
an outer cylinder (**1**) of a unitary cylindrical synthetic resin-molded structure having at least one engaging hole (**1***b*)

formed in the wall of the front portion thereof and a form suitable for being gripped between a user's fingers;
a lead pipe (3) slidably contained within the outer cylinder (1);
a lead chuck (4) fixed to the extremity of the lead pipe (3);
a chuck fastening tube (5) movably fitted on the head of the lead chuck (4);



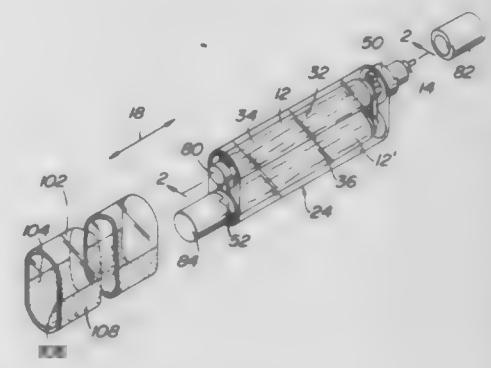
an engaging member (2) adapted to abut the rear end of the chuck fastening tube (5) to restrict the movement of the chuck fastening tube (5); and
a spring disposed resiliently between an inner flange (2*a*) formed in the extremity of the engaging member (2) and the lead pipe (3); wherein
at least one protrusion (2*b*) for engaging the engaging hole (1*b*) is formed in the periphery of the rear portion of the engaging member (2).

4,603,992
AEROSOL SHAVING BRUSH
James P. Kavoussi, 1401 80th St., Brooklyn, N.Y. 11228
Filed Jan. 23, 1985, Ser. No. 694,140
Int. Cl.[4] A46B *11/02*
U.S. Cl. 401—190 **2 Claims**



1. An aerosol shaving brush attachment for conventional aerosol shaving cream container having a top rim and a shaving cream dispensing nozzle therein, said attachment comprises:
(a) a housing having a lower portion and an upper portion, said lower portion defining a dome-like member having a hollow chamber therein with edge of said dome-like member being proportioned to engage and remain in complete contact with said top rim of said container for removably mounting said housing on said container, whereby said hollow chamber of said dome-like member of said housing completely covers the top of said container at all times during installation and use preventing dirt and dust from entering thus keeping said nozzle in a sanitary condition, said upper portion defining a complete cylindrical member having a vertical aperture therethrough to receive said nozzle of said container, said cylindrical member having a lower annular groove at the junction with said dome-like member allowing said cylindrical member to manually flex said nozzle in any angular direction to dispense shaving cream from said container while the dome-like member remains onto said top rim; and
(b) a plurality of brush bristles secured to and projecting from the top of said cylindrical member adapted to receive said shaving cream from said nozzle of said container into interior of said brush bristles.

4,603,993
INFORMATION REEL SYSTEM
Hae-Ryong Jung, 3230 Brookmede Rd., Ellicott City, Md. 21043
Filed Dec. 5, 1984, Ser. No. 676,801
Int. Cl.[4] B43K *29/00;* **G09F** *3/00*
U.S. Cl. 401—195 **19 Claims**

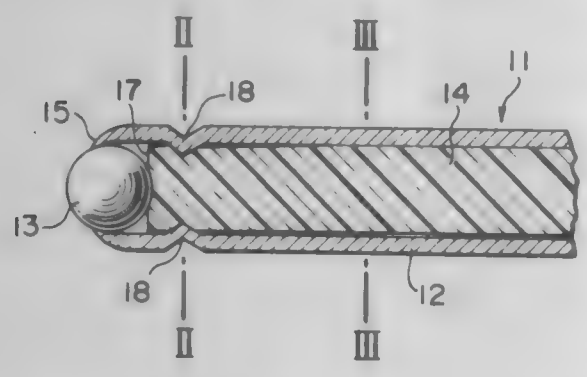


1. An information reel system for displaying information contained therein, comprising:
(a) a longitudinally extended substantially transparent housing;
(b) sheet material having opposing surfaces with informational indicia formed thereon;
(c) upper reel means extending in said longitudinal direction and rotatably coupled to said housing;
(d) lower reel means extending in said longitudinal direction and rotatably coupled to said housing, each of said upper and lower reel means including a respective upper and lower sheet attaching axle member, each of said axle members being secured to one end of said sheet material, said axle members being rotatively displaceable; and,
(e) means for coupling said upper and lower reel means each to the other for (1) providing a predetermined rotational displacement of each of said upper and lower reel means responsive to a predetermined rotational force applied to at least one of said upper and lower reel means, and, (2) longitudinally restraining displacement of each of said upper and lower reel means, said means for coupling including a pair of polygonally contoured reel axle members matingly insertable within said respective sheet attaching axle members and a pair of spring members adapted to matingly engage a respective reel axle member and being laterally deformable responsive to said predetermined rotational force to provide said predetermined rotational displacement of said upper and lower reel means.

4,603,994
BALL-HOLDER OF A BALL-POINT PEN
Yoshinobu Mitsuda; Tai Inami, and Koji Mori, all of Soka, Japan, assignors to Pentel Kabushiki Kaisha, Tokyo, Japan
Filed Apr. 29, 1982, Ser. No. 373,260
Claims priority, application Japan, Apr. 30, 1981, 56-62732[U]
Int. Cl.[4] B43K *7/00, 7/10*
U.S. Cl. 401—209 **10 Claims**

1. A ball-holder of a ball-point pen, comprising: a metallic tube having a reduced diameter portion at one end thereof, a writing ball rotatably held in the reduced diameter portion, and a synthetic resin rod inserted into the said metallic tube so as to form a ball seat at one end thereof, said metallic tube having two inward projections which hold the rod therebetween and two expanded portions expanded in opposite directions to each other along an imaginary line perpendicular to an

imaginary line connecting the two inward projections, the inward projections and the expanded portions being positioned



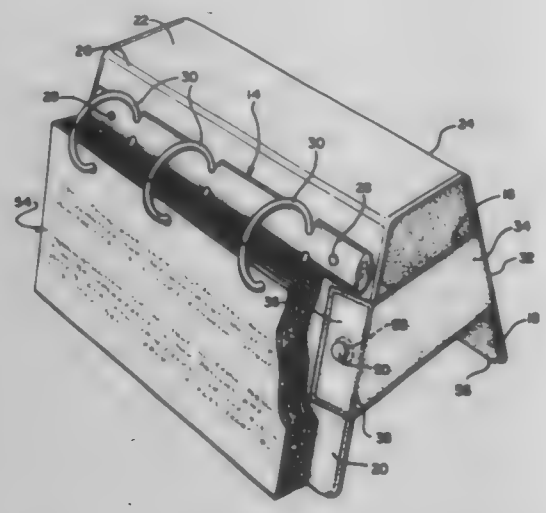
close to the ball seat and being formed by press-deforming of the metallic tube from two opposite directions.

4,603,995

EASEL BINDER

James J. Vilona, Campbell, Calif., assignor to John S. Fosse, Woodstock, Ill.

Filed Jan. 24, 1985, Ser. No. 694,619
Int. Cl.[4] B42D *3/00, 3/16;* B42F *13/00*
U.S. Cl. 402—73 6 Claims



1. A binder for books and the like comprising: a rigid front cover panel; a rigid back cover panel; a rigid spine panel hingedly connected to said front cover panel and to said back cover panel; page-mounting means secured to the inside of a selected one of said cover panels; brace means hingedly connected adjacent one of the top and bottom edges of a first one of said cover panels and including a rigid, swingable medial panel of trapezoidal shape and and end panel hingedly connected to the otherwise free end of said medial panel; first fastener means mounted on said end panel; and second fastener means cooperatively, releasibly interengageable with said first fastener means, mounted on the inside surface of a second one of said cover panels, whereby said front, back and spine panels may be reversibly configurated into pyramidal form for use as an easel and said fastener means engaged to preserve said pyramidal form.

4,603,996

STRUCTURE FOR TEE JOINT

Kuang P. Chen, No. 1, Lane 189, Sec. 6, Yen Ping N. Rd., Taipei, Taiwan

Filed May 21, 1985, Ser. No. 736,611
Int. Cl.[4] F16B *7/00*
U.S. Cl. 403—7 1 Claim

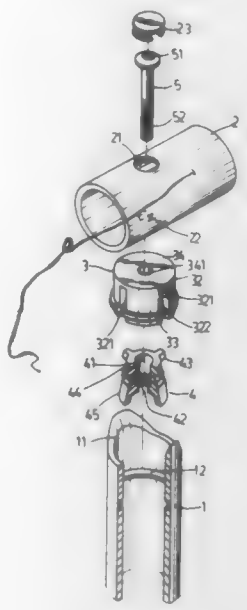
1. A structure for a tee joint comprising:

a bolt;

a first tube member with one end shaped to form a saddle-shaped recess, and being internally provided with an annular groove near said recessed end;

a second tube member provided with a first hole and a second hole for passing said bolt, the connecting line of the centers of said two holes vertically passing the central axis of said second tube member, the first hole being greater in diameter than the second hole, said recessed end of said first tube being shaped to fit the contour of said second tube member;

a substantially cylindrical housing formed by resilient material, with one end opened and the other end closed, said closed end being centrally provided with an aperture for passing the front end of said bolt, said housing being peripherally provided with a substantially annular external flange formed as an integral part of said housing, the shape and size of said flange corresponding to said annular groove, said housing being further provided with four equidistantly spaced narrow slots axially extending a length from one opened end, the outer diameter of the unflanged major portion of said housing corresponding to the inner diameter of the ungrooved major portion of that interior of said first tube member, said first tube member and said housing being such that the latter can be deformably and resiliently pushed into the former in position so that the latter's flange fits into the former's groove;



a substantially frustal plug member having a smaller top end and a bigger bottom end, centrally provided with a bore which is at least partly internally threaded for engaging with said bolt, the top end of said plug member being provided with four equidistantly spaced protuberences corresponding to said slots and which can be axially guided in the latter, said protuberance extending radially a length corresponding to the thickness of the substantial portion of the top end of said plug, the top end of said plug having an outer diameter smaller than the inner diameter of said housing, while the bottom end of said plug having an outer diameter slightly greater than the inner diameter of the housing, the height of said plug being such that the whole plug can be received inside said housing;

the structure being characterized in that at least two opposite grooves are provided with retaining means cooperating with the corresponding protuberances to hold said plug and said housing together, said retaining means comprising check means provided at the entry end of the corresponding slots which make the entry portion of a slot slightly narrower than the remaining portion thereof, and that each of said protuberances has a trapezoidal section and axially tapers toward the top end of said plug member.

4,603,997

SUPPORT RING FOR A TORSIONAL VIBRATION BALANCER WHICH CAN BE FASTENED TO A SHAFT

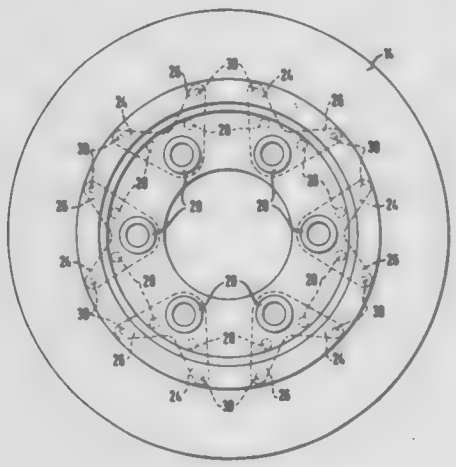
Werner Hundt, Munich, and Bernd Wagner, Höhr-Grenzhausen, both of Fed. Rep. of Germany, assignors to Metzeler Kautschuk GmbH, Munich, Fed. Rep. of Germany

Filed Feb. 4, 1985, Ser. No. 697,844

Claims priority, application Fed. Rep. of Germany, Feb. 3, 1984, 3403858

Int. Cl.[4] F16D *1/00*

U.S. Cl. 403—228 19 Claims





1. Support ring assembly, comprising a support ring formed of synthetic material to be fastened on a shaft for a balancer of torsional vibrations, said support ring having lateral surfaces and a plurality of openings formed therein, and a plurality of metal fastening bushings disposed in said openings, sand bushings having end surfaces aligned with said lateral surfaces, said bushings being distributed about said support ring along a circle, and said bushings including means for locking said bushings into said support ring, said locking means being in the form of at least one wing-shaped outwardly-directed projection each having a relatively large area as compared to the remainder of said bushing.

4,603,998

SHAFT CONNECTION MECHANISM

Helmut Bober, Neunkirchen-S.; Theo Buthe, Lohmar; Karl Coenen, Hennef; Norbert Fartmann, Siegburg; Klaus Herbertz, Lohmar-Algert; Franz-Heinz Koch, Hennef-Happers.; Horst Kretschmer, Cologne; Clemens Nienhaus, Lohmar; Peter Schardt, Neunkirchen-S.; Jürgen Schibrowski, Lohmar, and Willi Schmandt, Siegburg, all of Fed. Rep. of Germany, assignors to Jean Walterscheid GmbH, Lohmar, Fed. Rep. of Germany

Filed Nov. 5, 1984, Ser. No. 668,291

Claims priority, application Fed. Rep. of Germany, Nov. 5, 1983, 3340130

Int. Cl.[4] F16B *7/00*

U.S. Cl. 403—322 5 Claims

1. A shaft connection mechanism particularly for securing a slip-on hub to the power takeoff shaft of a tractor comprising:

spline means interposed between said slip-on hub and said power takeoff shaft;

radial apertures formed in said slip-on hub;

blocking members guided radially in said radial apertures;

groove means in said power takeoff shaft adapted to have said blocking members engage therein;

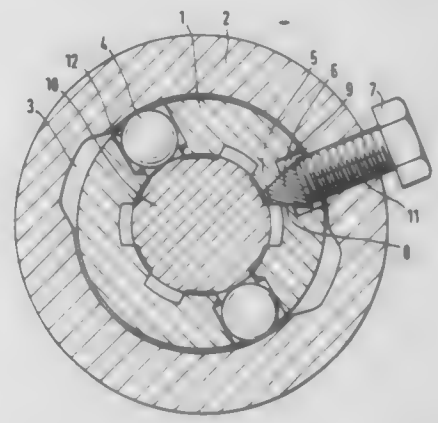
a control ring supported on said slip-on hub, said control ring having pockets for receiving therein said blocking members;

a peripheral spring interposed between said slip-on hub and said control ring, said control ring being supported on said slip-on hub against the force of said peripheral spring so as to be rotatable relative thereto to a limited extent;

an axially extending groove formed in said slip-on hub, said groove having a trapezoidal configuration which widens radially outwardly of said hub and which is open toward the inside of said hub;

a radial bore extending radially from said groove outwardly of said hub;

a threaded bore in said control ring arranged to be angularly aligned with said radial bore in said slip-on hub when said



pockets in said control ring are angularly unaligned with said blocking members;

a clamping wedge having a trapezoidal configuration generally conforming to the configuration of said axially extending groove, said wedge being engaged within said groove; and

a pressure screw threadedly engaged within said threaded bore and operative to place said control ring in locked position by engagement against said clamping wedge when said threaded bore is angularly aligned with said radial bore in said hub.

4,603,999

APPARATUS FOR MIXING AND SPREADING COATINGS ON SURFACES

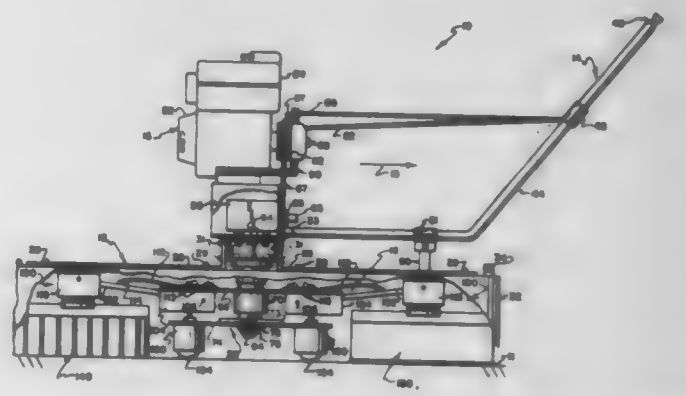
Alexander Laditka, #C-10 4741 Dalebridge Rd., Warrensville Hts., Ohio 44128

Continuation-in-part of Ser. No. 408,484, Aug. 16, 1982, Pat. No. 4,477,203. This application Sep. 16, 1983, Ser. No. 532,742

The portion of the term of this patent subsequent to Oct. 16, 2001, has been disclaimed.

Int. Cl.[4] E01C *19/22*

U.S. Cl. 404—112 14 Claims



1. A manually translated rotary tool apparatus for forming a coating composition on a traffic surface by mixing and spreading previously applied ingredients deposited thereon and for smoothly spreading the same thereover irrespective of the lateral traffic surface dimensions, comprising:

a frame having vertically directed thrust bearing means about a vertical axis of rotation,

power drive means carried on the frame means on the upper

side thereof and including a drive shaft extending through said bearing to the frame underside,

carriage means disposed about said axis and including a thrust bearing receiving said drive shaft for supporting the frame and drive means thereby, said carriage means including a plurality of ball wheels providing traffic surface support thereby to permit manual translation of said apparatus in any lateral direction with respect to the traffic area undergoing treatment,

a plurality of tool arms connected to and extending radially from said shaft,

a surface-engaging tool connected to each said arm at its distal end whereby said tools will rotate in a horizontal plane upon rotation of said drive shaft by said power means thereby to effect treatment of the traffic surface,

means mounting each said tool arm for pivotal motion in a vertical plane with respect to said drive shaft and with respect to said tool connected thereto to accommodate irregularities in the treated surface while maintaining the orientation of the tool with respect thereto as said tool arms undergo pivotal vertical motion during orbiting rotation, and,

means yieldably biasing said tool arms downwardly to maintain said tool in contact with the treated surface.

4,604,000

METHOD FOR REMOVING SLUDGE OR MUD FROM THE BOTTOM OF A WATER AREA

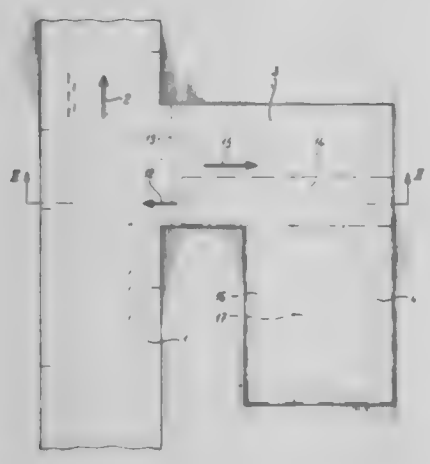
Reijer N. van Weezenbeek, Torenweg 14, 3535 NS Rockanje, Netherlands

Filed Mar. 16, 1984, Ser. No. 590,463

Claims priority, application Netherlands, Mar. 18, 1983, 8300990

Int. Cl.[4] E02F *3/88*

U.S. Cl. 405—52 7 Claims



1. Method for removing mud deposited upon the bottom of a water area in which flow, if occurring, at least temporarily is slight or absent, such that solid particles present in the water are deposited in the form of a layer which in times of flow is substantially maintained, which mud layer is removed by making use of water jets, said method comprising liquidizing the mud layer by means of jet nozzles inserted directly into the mud layer only to an extent sufficient to make a thick liquified flowable pulp of the mud but insufficient to cause the mud to again mix with upper layers of the surrounding water, with the water leaving said nozzles is transferred into a thick liquefied condition that the mud substance liquefied in this way being capable of flowing under the influence of its difference in specific mass with respect to the water; flowing the liquidized mud towards a place at a level lower than the upper limit of the mud layer and preferably at the level of the original bottom or lower, at which place a mud carrying flow exits or is generated.

4,604,001

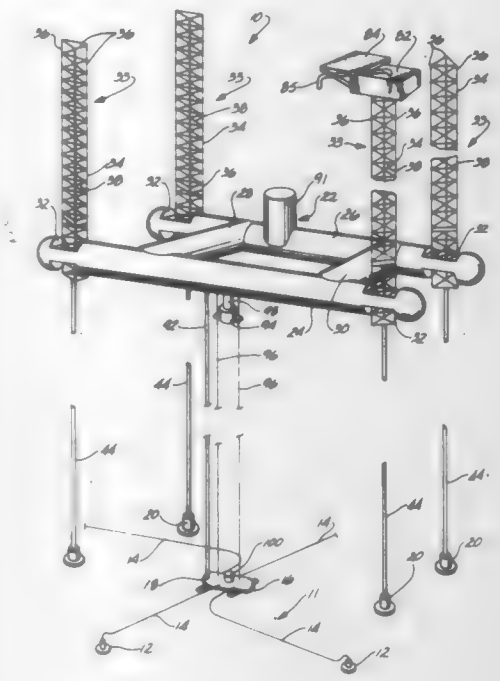
JACKDOWN TENSION LEG PLATFORM

Sherman B. Wetmore, Westminster, Calif., assignor to Global Marine Inc., Houston, Tex.

Filed Mar. 8, 1984, Ser. No. 587,591

Int. Cl.[4] B63B *21/50;* B63C *11/34;* E02B *17/08;* E21B *7/128*

U.S. Cl. 405—224 27 Claims



1. An operations facility useful over an underwater site comprising:

a positively buoyant, fully submersible hull structure;

a plurality of connectors each disposed on the hull for movement vertically relative to the hull, each connector including means at its lower end for connecting the connector to an anchor disposed at the site; and

means coupled between the hull and the connectors at the hull for moving each connector to attach the lower end with the anchor and thereafter for moving the hull downwardly along the connected connectors to submerge the hull to a desired depth wholly below the water surface and to tension the connectors.

4,604,002

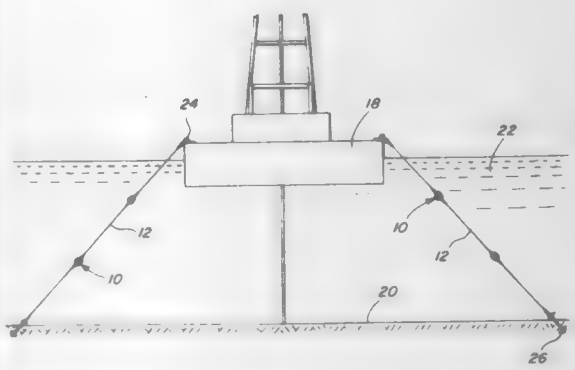
PENDANT LINE CONNECTING LINK

Archie J. Lowery, Marrero, La.

Filed Nov. 10, 1983, Ser. No. 550,498

Int. Cl.[4] B63B *21/50;* F16G *15/04*

U.S. Cl. 405—224 2 Claims



2. In combination, a plurality of lengths of wire rope each having an eye on each end thereof to enable a selected number of lengths to be connected to form a pendant line extending from a drilling barge to an anchor device in the seabed and disconnected for winding on a reel for transport and storage, a connecting link interconnecting the eye on adjacent lengths of wire rope, said connecting link comprising a pair of substantially identical U-shaped members, each having a pair of gener-

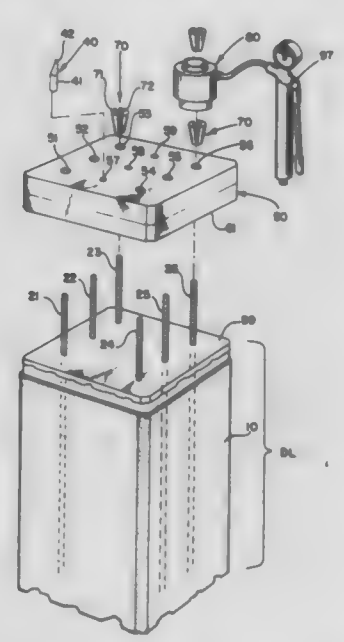
ally parallel legs and a curved web, the free end of one leg having a pair of spaced apertured lugs, the free end of the other leg including a single apertured lug received between the spaced lugs when the U-shaped members are assembled to form a generally oval-shaped link, a connecting pin extending through the apertured lugs on the free ends of the legs and a lock pin interconnecting the connecting pin and at least one of the U-shaped members, said lugs having parallel surfaces with the single lug substantially filling the space between the pair of spaced lugs, said connecting pin including a peripheral groove adjacent each end thereof, said lock pin being received in a hole extending through the single lug in perpendicular relation to the aperture through the lug, the central portion of the hole intersecting the central portion of the aperture and in registry with the groove in the connecting pin, said lock pin having a central portion received in said groove in the connecting pin thereby retaining the connecting pin assembled with the lugs, said hole in the single lug being adjacent the juncture of the single lug and leg with the central portion of the hole including a continuous surface engaging the central portion of the lock pin opposite to the surface of the lock pin received in the groove for providing continuous support for the lock pin in opposed relation to the connecting pin, said lock pin being a longitudinally split tubular pin of resilient material having a diameter slightly larger than the hole for frictional, self-locking retention of the lock pin in the hole, said single lug having a thickness substantially less than the thickness of the free end of the leg to form shoulders at the inner end of the single lug, said pair of lugs having remote outer surfaces generally flush with the outer surfaces of the leg, said pair of lugs having a constant thickness substantially the same as the width of the shoulders, the innermost surfaces on the pairs of lugs being spaced apart with the portion of the connecting pin extending between the innermost surfaces on the pairs of lugs being completely exposed, the radius of curvature of the inner surface of the web being slightly larger than one-half the distance between the innermost surfaces on the pair of lugs, the free ends of the pair of lugs being disposed closely adjacent to the shoulders and the free end of the single lug being disposed closely adjacent the portion of the leg between the pair of lugs.

4,604,003

METHOD AND APPARATUS FOR RETENSIONING PRESTRESSED CONCRETE MEMBERS

Ronald A. Francoeur, 59 Elm St., Salisbury, Mass. 01950, and Verne L. Schellhorn, P.O. Box 199, 32987 Highway 1 South, Gualala, Calif. 95445

Continuation of Ser. No. 437,899, Feb. 22, 1983, abandoned.
This application Jun. 27, 1985, Ser. No. 750,047
Int. Cl.[4] E02D *5/10*; E04C *3/26, 5/08*
U.S. Cl. 405—256 **13 Claims**



1. A method of retensioning the development length of pre-tensioned strands embedded in and bonded to the concrete of an elongated, prestressed concrete member comprising the steps of:

(1) exposing any unexposed ends of said pre-tensioned strands at one end of the prestressed concrete member,

(2) covering said one end of said concrete member with a plate having holes therein through which the ends of said pre-tensioned strands can pass,

(3) applying retaining wedges between the ends of said pre-tensioned strands and said plate, and

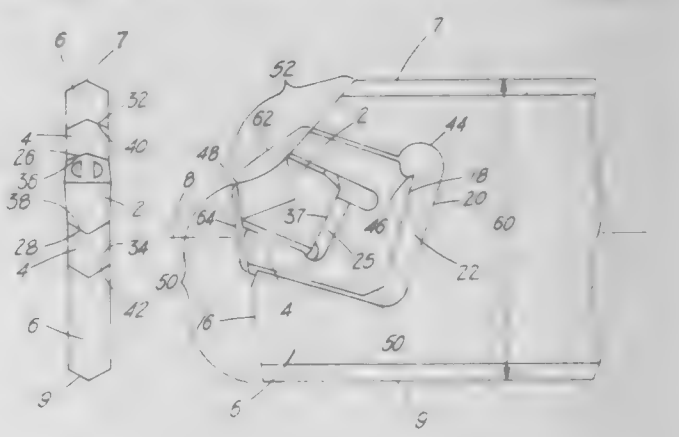
(4) retensioning each pre-tensioned strand by applying a predetermined amount of tension to the end of each such strand and maintaining said tension between the end of said pre-tensioned strand and said plate by said retaining wedges.

4,604,004

CUTTING TOOL ASSEMBLY

William D. Armbrust, Cary, N.C., assignor to Kennametal Inc., Latrobe, Pa.

Continuation of Ser. No. 356,833, Mar. 10, 1982, abandoned.
This application Dec. 3, 1985, Ser. No. 805,246
Int. Cl.[4] B26D *1/00*
U.S. Cl. 407—110 **26 Claims**



1. A cutting tool assembly comprising: a hard wear resistant insert having a forward cutting portion, a shim and a blade body having a longitudinal axis, said shim having a rearwardly extending recess for receiving said insert, said insert resting against the rear portion of said shim recess, said shim recess tapering toward the open end of said shim recess to springingly hold said insert, said blade body having a downwardly and rearwardly extending recess on a first end for receiving said shim and insert, said blade body recess also being inclined to said longitudinal axis of said blade body, said blade body recess tapering toward said blade body to wedgingly hold said shim and insert.

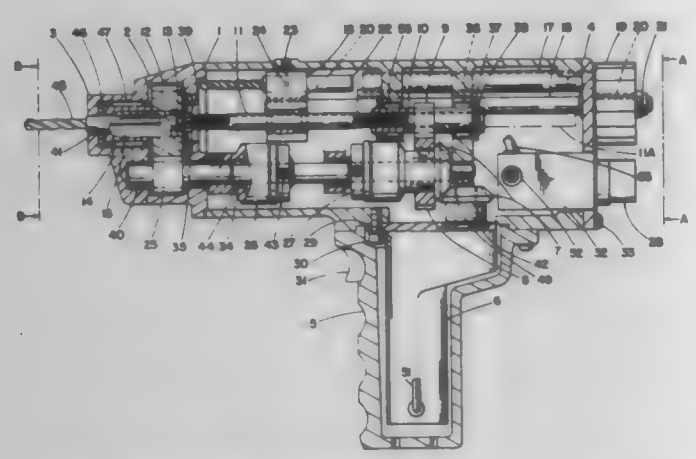
17. A shim and insert for use in a cutting tool assembly comprising: a hard wear resistant insert and a shim, said insert having a forward cutting portion, a seating portion directly opposed to said cutting portion, an upper peripheral edge and a lower peripheral edge; said shim having an upper arm of substantially uniform cross section and a rearwardly extending recess for receiving said insert, said recess having an upper portion, a lower portion and a rear portion; the upper and lower portions of said shim recess engaging the upper and lower peripheral edges, respectively, of said insert, said recess tapering the open end of said recess to springingly hold said insert, said shim having a longitudinal slot extending rearward of said recess, and when said shim and insert are fully engaged, the seating portion of said insert rests against the rear portion of said shim recess, said shim having a land portion of reduced cross sectional thickness rearward of said rear portion of said shim recess, said land being the bottom of a notch formed between said shim and said seating portion of said insert when said shim recess receives said insert.

4,604,005

PORTABLE SELECTOR DRILL

Norman Russ, Box 508, Norwich, Conn. 06360

Filed Feb. 8, 1985, Ser. No. 699,906
Int. Cl.[4] B23B *45/00*
U.S. Cl. 408—35 4 Claims



1. An electrically energizable portable drilling device comprising:

a frame defining a handle portion and including a hollow housing body with a front and rear end,

an electrically energizable motor in said frame and having an output shaft,

a collet chuck rotatably supported in said frame at the front end of said housing body for rotation on a central axis,

an elongated ram reciprocably mounted in said frame and oriented in axial alignment with said central axis of said rotatably mounted collet chuck for movement between rearward and forward positions,

drive means provided between said motor output shaft and said collet chuck to rotate the latter in response to rotation of said motor output shaft,

converting means provided between said drive means and said ram to cause linear movement of said ram in at least one axial direction in response to rotation of said motor output shaft,

cartridge means rotatably mounted in said frame housing body such that one of several drill bit openings defined in said cartridge means can be aligned with said axial direction of movement of said ram and a drill bit in said one cartridge opening moved forwardly into said collet chuck by said linear ram movement said cartridge means provided between said front and rear ends of said housing body and said ram movable through said carriage opening to so position a bit in said collet chuck.

4,604,006

DRILLING MACHINE HAVING ELECTROMAGNETIC BASE

Mitihiro Shoji, and Toshio Mikiya, both of Tokyo, Japan, assignors to Nitto Kohki Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 401,984, Jul. 26, 1982, abandoned. This application Nov. 12, 1985, Ser. No. 796,530
Claims priority, application Japan, Nov. 20, 1981, 56-186473; Feb. 17, 1982, 57-23741
Int. Cl.[4] B23B *47/24*
U.S. Cl. 408—76 1 Claim

1. In a drilling machine having a frame, an electromagnetic base integrally mounted at the lower portion of said frame and being capable of electromagnetic fixation on a workpiece, an electric drill integrally mounted on said frame and provided with an annular cutter which is rotated by a driving motor, a power circuit for applying an electric current to the driving motor of the electric drill and the electromagnetic base, and a power switch means for actuating the power circuit, the improvement which comprises:

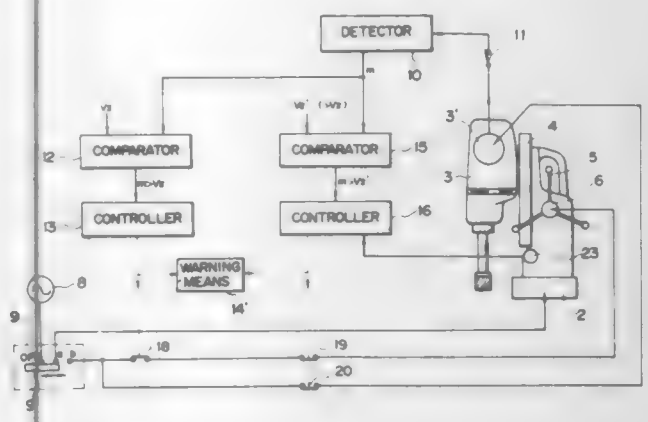
a detector means, connected to the driving motor, for detecting a load value from said electric drill;

a first control system connected to the detector means and composed of a first means for comparing the load value fed from said detector means with a prescribed first variable reference level and a first controlled means for issuing an instruction when the load value becomes larger than the first variable reference level;

a second control system connected to the detector means and composed of a second means for comparing the load value fed from said detector means with a prescribed second variable reference level higher than said first variable reference level and a second controller means for issuing an instruction when the load value becomes larger than the second variable reference level;

a single warning device connected between the first controller means and the second controller means, said warning device being actuated upon reception of the instruction issued from one of the first controller means of the first control system and the second controller means of the second control system;

a first switch means, interposed between the power circuit and the electric drill, for cutting off the supply of the electric current to the electric drill upon reception of the instruction issued from the second controller means of the second control system;



an automatic feed motor arranged in the frame and adapted to vertically advance the electric drill toward the workpiece;

a second switch means, interposed between the power circuit and the feed motor, for cutting off the supply of the electric current to the feed motor upon reception of the instruction issued from the first controller means of the first control system;

a change-over switch, separated from the power switch means and interposed between the electric drill and the detector means, whereby manual operation can be carried out when the change-over switch is opened;

a manually operated control handle means, attached to the frame, for vertically advancing the electric drill toward the workpiece;

a limit switch provided within the frame and connected in parallel to the second control system, said limit switch being actuated to be opened to cut off the supply of the electric current to the electric drill and the feed motor when a boring work comes to an end; and

signal means, connected in series to the limit switch and operated by an electric current fed through the limit switch, for indicating the boring work has come to the end.

4,604,007

CUTTING TOOL

Luke Hall, Missouri City, and Jerry M. Multop, Stafford, both of Tex., assignors to Progressive Technology, Inc., Stafford, Tex.

Filed Feb. 1, 1985, Ser. No. 697,205
Int. Cl.[4] B23C *1/16*
U.S. Cl. 409—89 20 Claims

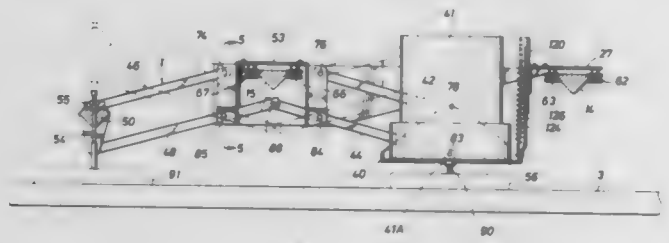
1. Shaping means for shaping a work piece, comprising cutting means for rotatably cutting said work piece,

stylus means for engaging and tracing a pattern exhibited on a paper and the like, and

support means for maneuvering said cutting means in alignment with said stylus means, including

first shorter and longer strut members each pivotally connected adjacent at one end with said stylus means,

second shorter and longer strut members each pivotally connected adjacent at one end with said cutting means, and



linking means pivotally interconnected with the other ends of said first and second shorter strut members and at points between the ends of said first and second longer strut members,

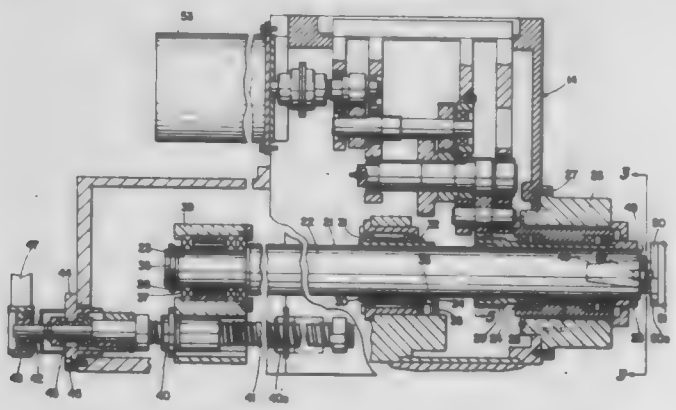
said first and second longer strut members further being pivotally and slidably interconnected adjacent the other ends thereof.

4,604,008

METAL WORKING MACHINE HAVING POLYGON TOOL SUPPORT BAR

Kendall F. Bone, Cincinnati, Ohio, assignor to Cincinnati Milacron Inc., Cincinnati, Ohio

Filed Jul. 12, 1984, Ser. No. 630,151
Int. Cl.[4] B23C *1/027*
U.S. Cl. 409—231 **5 Claims**



1. A machine tool, comprising:

a machine base;

a carrier movably supported on said base;

a cutting tool support bar journalled in said carrier for rotation about a longitudinal bar axis, said support bar being axially slidable during rotation thereof, and said support bar having

a cutting tool-receiving first surface and

a second surface of polygon cross-sectional geometry formed around said longitudial bar axis;

drive means for rotating said bar, said drive means comprising, in part, means cooperatingly formed to, and matingly engaged with, said second surface of said bar, said drive means located proximal to a carrier face defining a point of exit of said bar with respect to said carrier, and

means for axially moving said bar with respect to said drive means and said carrier;

wherein said polygon cross-sectional-geometry of said second surface comprises

a center, coincident with said longitudinal bar axis;

a closed perimeter formed, in part, by a plurality of symmetrically spaced, identical, curved segments, at least one of said segments having a radius-of-curvature extending to the segment from a point of origin spaced from said center; and

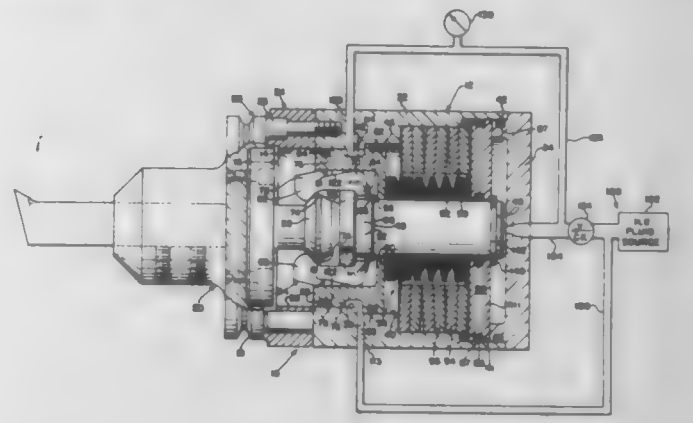
a pressure angle at the point of contact of said second surface with said drive means during rotation, said pressure angle having a tangent value greater than the coefficient of friction between said second surface of said cutting tool support bar and said drive means.

4,604,009

TOOL RETENTION MECHANISM

M. Richard Tennerstedt, Wilmette, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.

Filed Jul. 12, 1985, Ser. No. 754,098
Int. Cl.[4] B23C *5/26*
U.S. Cl. 409—233 **10 Claims**



1. A tool retention mechanism for clamping a tool holder knob, comprising a housing having an internal compartment communicating with an opening through said housing, a rod member supported lengthwise in said compartment and having its outer end disposed ajacent said housing opening, knob clamping assembly including a circular array of claw fingers pivotally mounted on said outer end of said rod member and moveable between an open position and a knob clamping position, first piston means slidably disposed in said compartment for movement between a retract position and an extend position, said first piston means including finger engaging means for retaining claw fingers at said knob clamping position when said first piston means moves to said extend position, second piston means for moving said rod member lengthwise of said comparment between a load and unload positions, first spring bias means for exerting a force on said rod member away from said housing opening, second spring bias means for exerting a force on said finger engaging means towards said housing opening, and fluid control means for selectively driving said second piston means from said load position to said unload position to overcome the force exerted by said first spring bias means and for driving said first piston means from said extend position to said retract position to overcome the force exerted by said second spring bias means, and for selectively releasing the driving force on said second piston means to permit said first bias means to return to said retract position and for releasing the driving force on said first piston means to permit said second spring bias means to return said knob clamping assembly to said knob clamping position.

4,604,010

DRAW BAR TYPE FLANGE MOUNTED TOOL HOLDER

Derek G. Reeves, LaSalle, Canada, assignor to VSI Corporation, Pasadena, Calif.

Filed Jul. 26, 1984, Ser. No. 634,531
Int. Cl.[4] B23B *31/02;* B23Q *3/12*
U.S. Cl. 409—233 **2 Claims**

1. A tool holder for use with a mounting system including a spindle having a central axial bore and a draw bolt positioned centrally in the upper end of the spindle bore, said holder comprising:

A. a central main body portion;

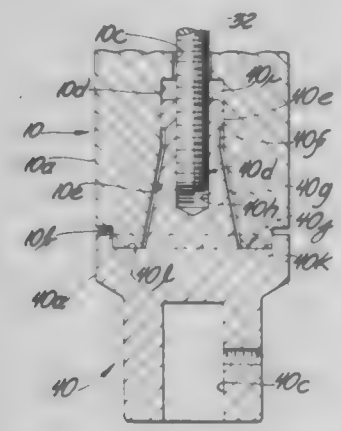
B. a lower portion extending fixedly downwardly from said central main body portion and including attachment means for central coaxial receipt of the shank of a suitable tool;

C. means defining an annular recess in the upper end of said main body portion for seating coaction with a pilot portion on the lower end of the spindle;

D. a reduced diameter neck portion extending fixedly upwardly from said upper end of said central portion, concentrically within said annular recess, sized to pilot upwardly into the central bore of the spindle and having a threaded central bore opening at the upper end of said neck portion for threading coaction with the lower end of the draw bolt;

E. said reduced diameter neck portion being frusto-conical and tapering inwardly toward the upper end thereof;

F. said tool holder being for use with a spindle whose central axial bore includes a lower frusto-conical portion tapering outwardly toward an opening in the lower face of the spindle and having a taper approximating that of said neck



portion of said tool holder and the diameter of said neck portion at its base being less than the diameter of the frusto-conical lower portion of the spindle bore at the lower face of the spindle, whereby, with the pilot portion of the spindle seated in said recess in said upper end of said central main body portion, an annular space remains between the confronting frusto-conical surfaces on the tool holder neck portion and on the spindle;

G. said annular recess comprising an annular groove in said upper end of said central main body portion having its inner radius defined by the base of said neck portion and its outer radius defined by a generally axially extending annular shoulder surface concentric with said axis; and

H. the central axial bore of the spindle further including an upper cylindrical portion having a diameter approximating the diameter of the upper end of the lower frusto-conical portion of the spindle central bore and said reduced diameter neck portion including a cylindrical head portion at the upper end thereof sized to pilot upwardly into the cylindrical portion of the central axial bore of the spindle.

4,604,011

METHOD AND APPARATUS FOR EDGE-PLANING SHEET METAL

Helmut Rungger, Roitham; Erwin Fuchs, Altmünster, and Johann Knoll, Schörfling, all of Austria, assignors to Dr. Techn. Ernst Linsinger & Co. GmbH, Steyrermühl, Austria

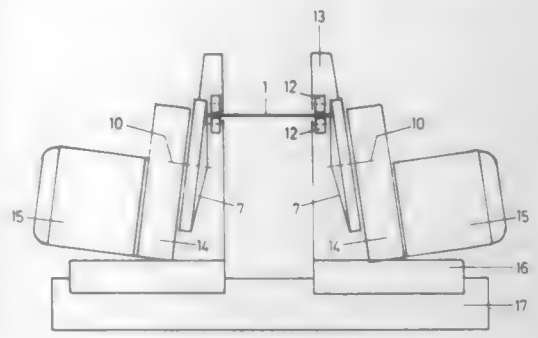
Continuation of Ser. No. 485,416, Apr. 15, 1983, abandoned. This application Nov. 5, 1985, Ser. No. 794,966

Claims priority, application Fed. Rep. of Germany, Feb. 8, 1983, 3304201

Int. Cl.[4] B23C *3/12*

U.S. Cl. 409—138 **6 Claims**

4. An apparatus for machining a work piece of sheet or sheet-like configuration by means of cutting elements disposed on rotating milling tools, comprising a conical tool having a conical angle α in the range of about 150° to about 180° and including a jacket, cutting elements disposed on said jacket of said conical tool such that each cutting element engaging said work piece is located in the plane of machining, and the axis of



said conial tool is inclined by a relatively small angle δ about an axis perpendicular to the plane of the work piece.

4,604,012

TOOL CLAMPING DEVICE FOR A SPINDLE HEAD

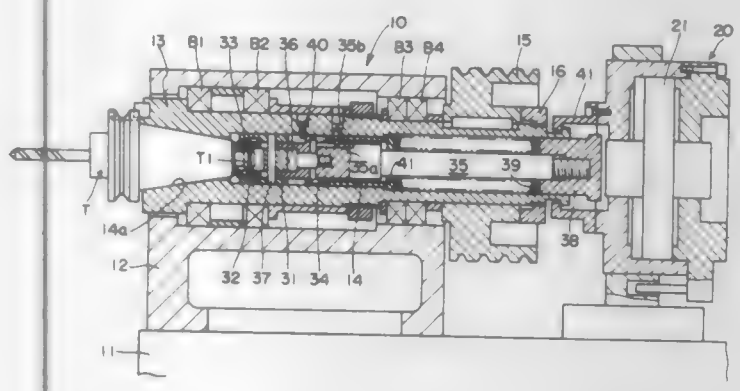
Hisamitsu Kawasaki, Kariya, and Yukio Kato, Nagoya, both of Japan, assignors to Toyoda Koki Kabushiki Kaisha, Kariya, Japan

Filed Jan. 25, 1984, Ser. No. 573,619

Claims priority, application Japan, Feb. 3, 1983, 58-16615

Int. Cl.[4] B23B *31/26, 31/10*

U.S. Cl. 409—233 **3 Claims**



1. A tool clamping device used in a machine tool for clamping on a tool spindle a tool holder being inserted into a tapered bore of said tool spindle, by pulling a pull stud of said tool holder, comprising:

a guide bush slidably received in a through bore formed in said tool spindle for movement in an axial direction thereof and formed with an annular groove at an internal surface of its front end portion close to said tapered bore;

a hollow retainer slidably received in the bore of said guide bush for axial movement relative thereto and formed at its front end portion close to said tapered bore with a plurality of ball retaining holes extending in the radial direction;

a plurality of balls retained in said ball retainer holes for allowing said pull stud to come into and go out from a bore of said retainer when said ball retaining holes face said annular groove, but for preventing said pull stud from going out from the bore of said retainer when said ball retaining holes face the internal surface of said guide bush other than said annular groove;

drive means including a single actuator for forwarding and retracting said guide bush within said through bore, a connecting member received in the bore of said retainer and axially movable relative thereto, a pin extending through an axial slot formed in said retainer and integrally connecting said connecting member and said guide bush, a draw bar coupled to said connecting member and movable back and forth in an axial direction thereof within the through bore of said tool-spindle, and draw bar drive means including said single actuator for forwarding and retracting said draw bar in the axial direction thereof;

engagement means for enabling said retainer to be retracted together with said guide bush when said guide bush is further retracted from the state in which said ball retaining

holes face the internal surface of said guide bush other than said annular groove; and

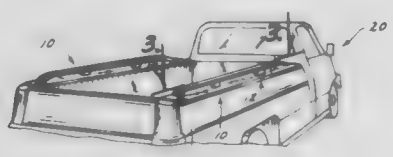
position control means for preventing retraction of said retainer until said ball retaining holes are brought into such a state as to face the internal surface of said guide bush other than said annular groove, but for allowing reraction of said retainer when said retainer is enabled by said engagement means to be retracted together with said guide bush, including a spring for pushing said retainer in the forward direction, and a stopper fixed in said tool spindle for regulating the forward end position of said retainer.

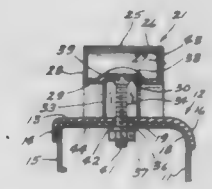
4,604,013

VEHICLE SIDE RAIL ASSEMBLY

Dennis L. Elwell, Johnston, and Robert L. Sills, Polk City, both of Iowa, assignors to Dee Zee Manufacturing, Des Moines, Iowa

Filed Jan. 14, 1985, Ser. No. 691,414
Int. Cl.[4] B60P *7/06*
U.S. Cl. 410—106 **7 Claims**





1. A side rail assembly for attachment to a side panel of a pick-up truck or like vehicle, the side panel having an upper wall with at least one opening formed therein for attachment purposes, the side rail assembly comprising:

(a) tread plate means formed to fit over the side panel upper wall and having at least one opening adapted to register with at least one of the respective upper wall openings;

(b) side rail means having a center portion spaced from said tread plate means;

(c) spacer means disposed between said tread plate means and side rail means in nested engagement with said side rail means whereby said spacer means and side rail means are locked together against relative rotational movement about a common axis; and

(d) means insertable through said registered openings for fastening said tread plate means, side rail means and spacer means together and to the side panel upper wall.

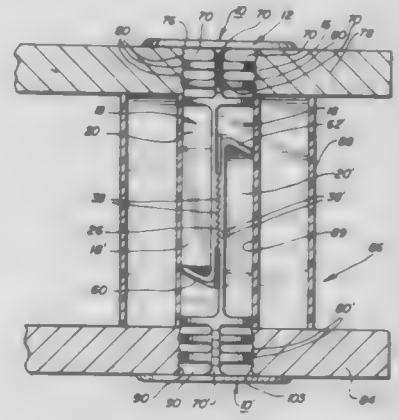
4,604,014

PALLET FASTENER

Francis G. Frano, Hoffman Estates, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.

Filed Jul. 12, 1984, Ser. No. 630,157
Int. Cl.[4] F16B *21/07, 21/08*
U.S. Cl. 411—338 **14 Claims**

1. A two-part fastener made of resilient material comprising a pair of identical fastening devices, each of said fastening devices including a head and shank, said shank having an elongate symmetrically-shaped body having a longitudinal central axis, said shank intergally formed at one end with said head in a normal relation to said longitudinal axis, said shank including a pair of leg members disposed along said longitudinal axis in diametrically opposed relation to each other, each of said leg members having two relatively thin planar wall elements joined together along there radial inward edge and angularly disposed in a V-shaped configuration, the outer end portion of said leg members spaced apart laterally a distance sufficient to embracingly receive the pair of leg members of said identical fastener, and a plurality of tooth formations pointing in the direction of said head from the outer wall surface of one of said two V-shaped wall elements for each of



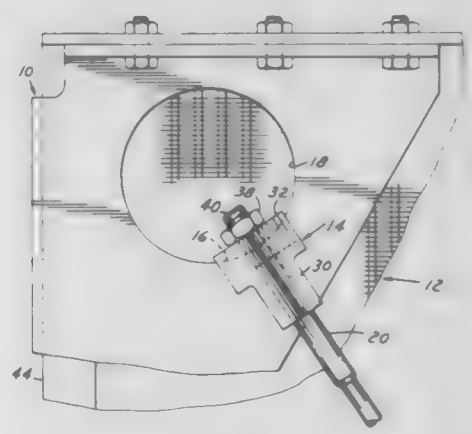
said leg members, the projection of said tooth formations from said outer wall surface being selected to cause the plurality of mating teeth to ratcher together in an interlocking relation as said pair of identical fastening devices are brought together such that the portion of each of said one of said thin planar wall elements which carry said plurality of tooth formations flex in a circumferential direction during the ratcheting action.

4,604,015

MEANS FOR RETAINING A RADIATOR RIGID

Thomas A. Lesniak, South Bend, Ind., assignor to McCord Heat Transfer Corporation, Walled Lake, Mich.

Filed Mar. 8, 1984, Ser. No. 587,424
Int. Cl.[4] F16B *43/02*
U.S. Cl. 411—537 **3 Claims**

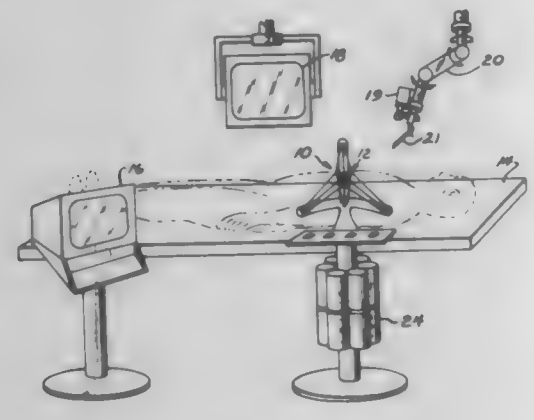


1. For use on an engine cooling radiator including sets of oppositely disposed corner gusset plates and side channels, means for retaining said radiator rigid, said means comprising an arcuate edge portion formed on each of one of said sets of oppositely disposed corner gusset plates and side channels, a sleeve mounted on each of said arcuate edge portions, each of said sleeves including a body, a longitudinal bore formed through said body, a ledge formed adjacent one end of said body, an arcuate-shaped groove formed in said ledge, said arcuate-shaped groove having a radius matching the radius of said arcuate edge portion and being slidably mounted thereon, said arcuate-shaped groove opening in a direction generally parallel to the longitudinal axis of said sleeve whereby said sleeve may be hooked over said arcuate edge to hold said corner gusset plates in tension, a rod having threaded ends extended through aligned bores of said sleeves, and a nut threadedly secured on each threaded end against said adjacent sleeve.

4,604,016
MULTI-DIMENSIONAL FORCE-TORQUE HAND CONTROLLER HAVING FORCE FEEDBACK

Stephen A. Joyce, 1163 W. Eddy, Chicago, Ill. 60657

Filed Aug. 3, 1983, Ser. No. 520,056
Int. Cl.[4] B25J *3/00*
U.S. Cl. 414—7 10 Claims

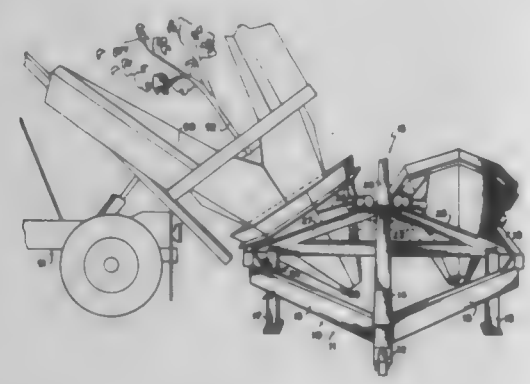


1. A controller for remotely manipulating objects including:
(a) a cursor having a line attachment member for retaining control lines in spaced relationship and a handle means connected thereto for repositioning the attachment member;
(b) a cursor support means surrounding the cursor having a plurality of means adapted to receive control lines for movement therethrough;
(c) a plurality of control lines each connected at a first end to the line attachment member and at a second end adapted for connection to a controlled apparatus, the cursor and attachment member being suspended within the cursor support means by said plurality of control lines, each line directed through the receiving means of the support means wherein movement of the cursor handle means correspondingly actuates the controlled apparatus.

4,604,017
TREE TRANSPORTER

Terrence E. Boehm, Box 201, Allan, Saskatchewan, Canada S0K 0C0

Filed Jun. 17, 1985, Ser. No. 745,073
Claims priority, application Canada, Jun. 25, 1984, 457365
Int. Cl.[4] B60P *3/00*
U.S. Cl. 414—23 14 Claims

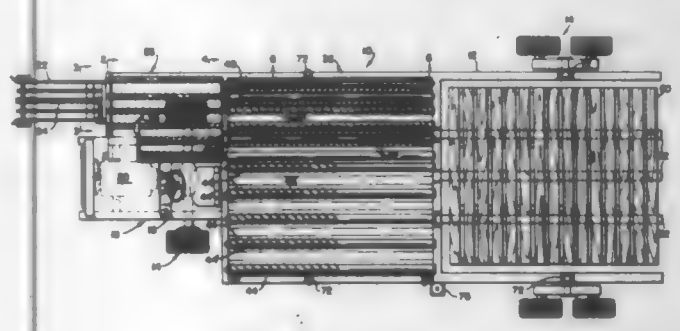


10. Apparatus for transporting trees comprising a framework having a first longitudinal beam, a second longitudinal beam, means mounting the beams in parallel spaced relation with the second on a level higher than the first and a plurality of transverse beams spaced along the length of the first and second beams so as to form a plurality of rectangular framed cells, ground wheels on which the framework can be supported for transport, a plurality of buckets each having a planar open mouth and a peripheral wall arranged to provide an axis of the bucket which lies at right angles to the plane of the mouth and shaped to receive the root section of a tree, mounting means at opposed positions on the outer surface of the peripheral wall of each bucket for mounting the bucket on the framework and mounting receiving means on the framework for receiving the mounting means of the respective bucket, the mounting receiving means having a first portion on the first beam and a second portion on the second beam at the diagonally opposite position on the cell, the mounting means being arranged on the bucket such that the bucket is pivotal relative to the mounting receiving means about a pivot axis so that the pivot axis is inclined to the plane of the mouth and passes through the peripheral wall of the bucket at two points one of which is spaced from the mouth by a greater distance than the other, so that the axis is inclined to the horizontal whereby the end of the bucket adjacent the second beam is higher than the other end and such that the axis is inclined relative to the first beam whereby the bucket can be pivoted from a loading position wherein the bucket axis faces outwardly from the first beam for receiving the tree root section to a transport position in which the bucket axis lies in a plane substantially parallel to the first and second beams.

4,604,018
HAY BALE LOADER

Marvin F. Kruse, Rte. 3, Box 178, Tecumseh, Nebr. 68450

Filed Aug. 29, 1984, Ser. No. 645,405
Int. Cl.[4] A01D *87/12;* B65G *57/24*
U.S. Cl. 414—44 11 Claims



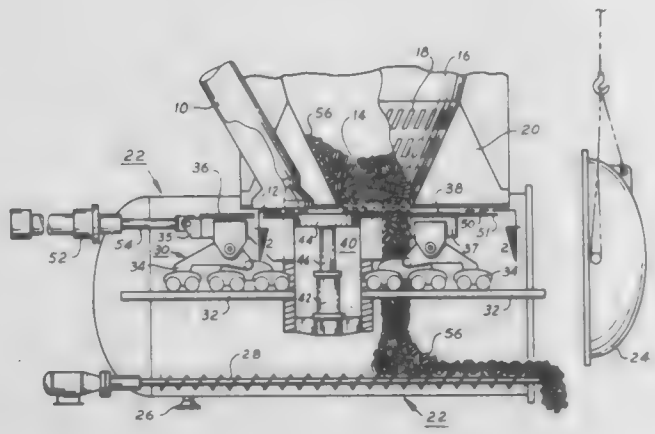
1. A machine for handling rectangular objects which is adapted to pick up hay bales individually from a field and assemble a plurality of said bales in a stack on a pallet carried thereby comprising:
a frame having a forward portion, a central portion and a rear portion, wheel means supporting said frame and directional drive means coupled thereto for movement thereof in a predetermined horizontal direction;
pick-up conveyor means mounted on the forward portion of said frame for picking up successively individual bales from a field and depositing them in forward portion of said frame;
manipulator means disposed adjacent said pick-up means for receiving each bale and for longitudinally orienting each bale selectively transverse to the direction of travel or parallel thereto;
accumulator means disposed in the central portion of said frame for receiving each bale from the manipulator means and for assembling each bale, successively, into a layer wherein each bale is disposed in a predetermined longitudinal orientation transverse or parallel to the direction of travel;
removal bale support means carried by the rear portion of said frame for successively receiving layers of bales;
carriage means movable between the rear and central portions of said frame for successively securing an assembled layer of bales on said accumulator means, raising said layer vertically, translating said layer rearwardly, lowering said layer onto said support means and holding said layer on said support means whereby a predetermined number of successive layer will be assembled on said support one on top of another in a stack and held in place as said machine moves in the predetermined horizontal direction.

4,604,019

SYSTEM FOR REMOVING SOLIDS FROM A SOLIDS UPFLOW VESSEL

Roland F. Deering, Brea, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Filed Jul. 24, 1984, Ser. No. 633,806
Int. Cl.[4] F23K 3/00.
U.S. Cl. 414—187 14 Claims



1. An apparatus for removing solids from a solids upflow vessel through a bottom solids inlet to said upflow vessel, said vessel being mounted adjacent to a solids feed chute having a solids outlet in substantially the same horizontal plane as said bottom solids inlet and spaced from said bottom solids inlet, which apoaratus comprises:

(a) a carriage positioned below said solids upflow vessel and said solids feed chute, said carriage carrying a substantially horizontal plate means for preventing flow of solids from said feed chute through said solds outlet and from said upflow vessel through said bottom solids inlet, said plate means containing (1) a first hole through which solids can be introduced into said upflow vessel through said bottom solids inlet, (2) a second hole through which solids can be removed from said upflow vessel through said bottom solids inlet and (3) a means for opening and closing said second hole, said carriage being further provided with means for movement in a horizontal direction between first and second stationary positions;

(b) carraige actuator means for horizontally reciprocating said carriage between said first and said second stationary positions;

(c) a structural means for supporting said carriage in its horizontal movement between said first and said second stationary positions; and

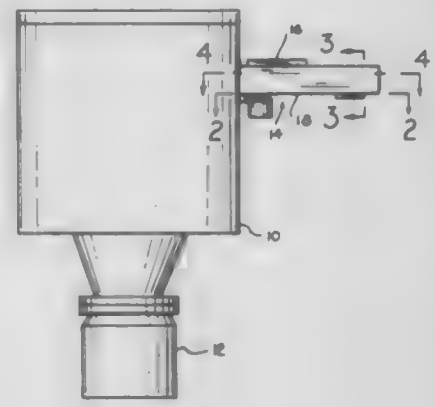
(d) means for vertically feeding solids through said first hole in said plate means into said upflow vessel through said bottom solids inlet, said feeding means being mounted on said carriage such that said feeding means is aligned with and immediately below both said first hole and the solids outlet of said feed chute while at least a portion of said second hole in said plate means is immediately below the bottom solids inlet to said upflow vessel when said carriage is in said first stationary position, and said feeding means is aligned with and immediately below both said first hole and the bottom solids inlet to said upflow vessel while a portion of said plate means is immediately below the solids outlet of said feed chute when said carriage is in said second stationary position, and wherein said second hole is located in said plate means such that when at least a portion of said second hole is immediately below the bottom solids inlet to said upflow vessel and at least a portion of said second hole is uncovered, solids can flow from said upflow vessel outside the confines of said feeding means until said upflow vessel is substantially empty of solids.

4,604,020

INTEGRATED CIRCUIT WAFER HANDLING SYSTEM

Guillermo L. Toro Lira, Mountain View, and Earl M. Jensen, San Jose, both of Calif., assignors to Nanometrics Incorporated, Sunnyvale, Calif.

Filed Mar. 26, 1984, Ser. No. 593,287
Int. Cl.[4] B25J 3/00
U.S. Cl. 414—217 3 Claims



1. In combination with a vacuum chamber, a handling system for transfering wafer discs from a position at atmospheric pressure to and from the interior of the vacuum chamber with minimum loss of vacuum from said chamber, said handling system comprising:

a sealable gate through the side wall in the vacuum chamber, said gate having a width suitable to pass a disc therethrough;

a substantially rectangular sealable exterior chamber having a sealable top door, a first end of said exterior chamber being attached and sealed to the exterior side wall of said vacuum chamber and around the opening of said gate;

a moveable disc carrier horizontally mounted on tracks in the inner walls of said exterior chamber, said tracks being aligned parallel with an axis normal to said vacuum chamber side wall at said sealable gate, said carrier having a first end section adjacent said sealable gate for supporting a wafer disc, and supporting at its second end a first magnet positioned adjacent an enclosing interior surface of a thin floor of said exterior chamber, said disc carrier including a pair of disc engaging pins located at the lead end of said disc carrier, said pins being vertically moveable by a solenoid beneath the disc carrying surface for engaging and releasing the leading edge of a disc;

a motor driven endless drive means located outside of said exterior chamber and having a linear section parallel with said normal axis, the linear section of said drive means being coupled to a second magnet located adjacent the outer enclosing surface of said thin floor of said exterior chamber, said second magnet being magnetically coupled to said first magnet for linearly moving said disc carrier along its tracks in response to corresponding movement of said drive means; and

a stage within said vacuum chamber for removing a wafer disc from the end section of said disc carrier, said stage having a disc stop with a disc contacting leading edge conforming to the shape of a disc and a pair of slots spaced to receive said pair of disc engaging pins, said stage having a pair of spaced disc engaging members moveable in slots radially extending outward at an angle from said disc stop toward said gate in response to forces exerted against a slideable member on said stage by the inward movement of the leading end of said disc carrier end section, said disc engaging member being spring biased for grasping two substantially equally spaced points on the disc periphery upon the withdrawal of said disc carrier leading end, said spring bias provided by a spring coupled between a first pulley and a stationary member on said stage, each of said engaging members being attached to a cable passing through said first pulley, a second pulley at the extreme

outward end of said slot, and to the slideable member on said stage.

4,604,021

LIFTING BEAM MANIPULATOR ASSEMBLY FOR FORGING PRESSES

Eberhard Werner, Leverkusen, Fed. Rep. of Germany, assignor to Eumuco Aktiengesellschaft für Maschinenbau, Leverkusen, Fed. Rep. of Germany

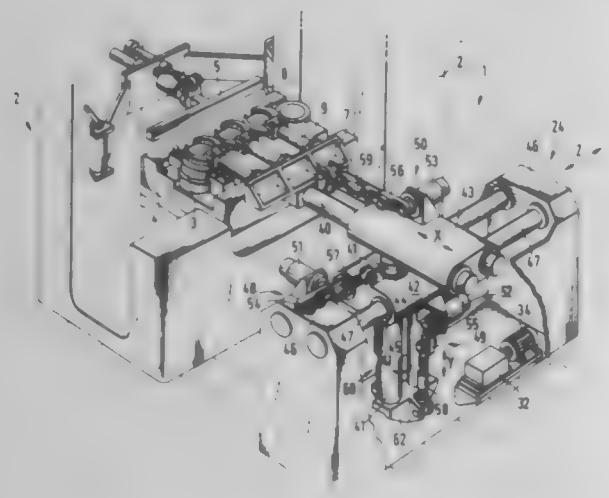
Filed Dec. 6, 1983, Ser. No. 558,733

Claims priority, application Fed. Rep. of Germany, Dec. 8, 1982, 3245317

Int. Cl.[4] B65H *1/00*; B21D *43/10*

U.S. Cl. 414—226

16 Claims



1. An article handling assembly including a lifting beam manipulator for a forging press which has a plurality of work stations and a spraying mechanism for said work stations, said assembly comprising:

(a) plural workpiece grasping means for carrying workpieces;

(b) means for effecting movement of the plural workpiece grasping means, sequentially along and outside of the work stations of the forging press and for moving the plural workpiece grasping means into and out of the work stations of the forging press;

(c) means for moving the spraying mechanism into the work stations of the forging press;

(d) said movement effecting means including an individual drive assembly to separately and individually effect each movement of the workpiece grasping means along three axes of movement; and

(e) each individual drive assembly including a separate and individual transport member and a hydraulic rotary piston cylinder connected thereto to effect said movement of each transport member,

(f) the hydraulic rotary piston cylinder includes a crank arm fitted with a connecting arm, and

(g) each said crank and rod combination carries out a pivot angle of 180°.

4,604,022

TRUNK LOADING DEVICE FOR BUSINESS MACHINES AND THE LIKE

Elroy E. Bourgraf, Cincinnati, Ohio, assignor to Ferno Washington, Inc., Wilmington, Ohio

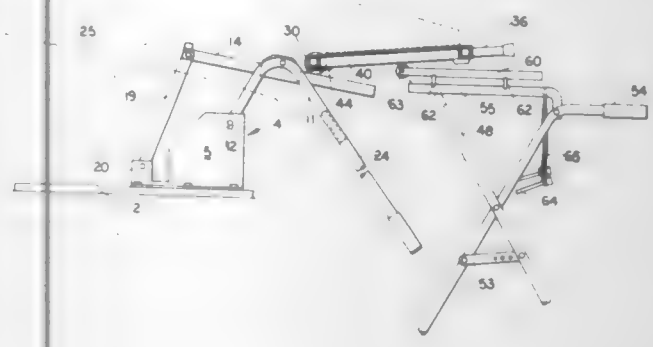
Filed Apr. 2, 1984, Ser. No. 595,978

Int. Cl.[4] B60R *5/04*; B65G *67/00*

U.S. Cl. 414—340

14 Claims

1. Lifting mechanism for transferring bulky articles to and from the trunk of a vehicle, said lifting mechanism comprising a base adapted to be seated on the floor of the trunk, a lift platform overlying said base, sets of lever arms pivotally interconnected said base and said lift platform, bracket means projecting upwardly from said base on each side of said lift platform, a first set of said lever arms having angularly related linear end portions joined by a curved central portion, the lever arms in said first set being pivotally connected to said bracket means at pivot points spaced upwardly from said base and pivotally connected to said lift platform at their curved central portions, a second set of lever arms, the lever arms in said second set being linear and pivotally connected at one end to said bracket means in close proximity to said base and pivot-



ally connected at their opposite ends to said lift platform, said lift platform being movable from a storage position in which it is seated on said base to an elevated position in which the lift platform projects outwardly from the trunk of the vehicle, and detachable handle means engagable with said first set of said lever arms, whereby said first set of lever arms may be moved by said handle means to raise and lower said lift platform.

4,604,023

SHAKEOUT APPARATUS

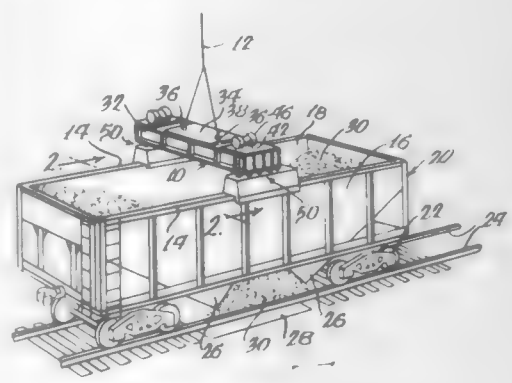
Albert Musschoot, Barrington, Ill., assignor to General Kinematics Corporation, Barrington, Ill.

Filed May 31, 1984, Ser. No. 615,771

Int. Cl.[4] B65G *67/24*

U.S. Cl. 414—375

9 Claims



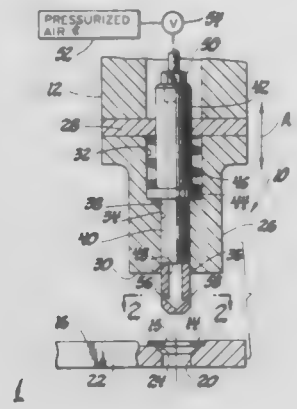
1. A shakeout apparatus for loosening material in a loaded car comprising a frame, a pair of motors mounted on the opposite end portions of said frame, at least one eccentric weight mounted on the output shaft of each motor, a pair of hammers resiliently carried by said frame, spring means suspending said hammers from said frame, means for independently driving said motors and eccentrics whereby the eccentrics will self-synchronize, said motors and eccentric weights forming a single mass system having a natural frequency close to the operating speed of said motors when said hammers are in contact with the car; said frame, spring means and hammers forming a two mass system having a natural frequency above the operating speed of the motors when said hammers break contact with the car whereby the combined alternating single mass system and two mass system produce high frequency, low amplitude vibrations in the car for loosening material in the car.

4,604,024

WASHER PICK UP AND PLACEMENT TOOL

David K. Edwards, Eaton, and John H. Kramer, Miamisburg, both of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Nov. 26, 1984, Ser. No. 674,690
Int. Cl.[4] B65G *47/90*
U.S. Cl. 414—592 3 Claims



1. A washer pick-up and placement tool adapted to be connected to an arm of a manipulator and to be moved from a first station where said tool picks up a washer to a second station where said tool places said washer on a shaft, said tool comprising a housing having one end thereof fixed to said arm and having a free end, a bore extending through said housing from said one end to said free end of said housing, a rod member mounted in said bore for relative sliding movement between a first position and a second position and having a portion thereof extending out of said free end of said housing, a passage formed in said rod member, a source of pressurized air connected to said passage, a pair of nozzles connected to said passage and located on opposite sides of said portion of said rod member extending out of said free end of said housing, said nozzles being angled so as to provide air flow in the form of a pair of air jets towards said free end of said housing, and means operatively connected to said rod member for maintaining the latter in said first position when said tool is at said first station so as to permit said nozzles to be inserted into a hole in said washer and cause the air flow emanating from said nozzles to strike the bottom surface of said washer to thereby lift said washer onto the rod member and be held thereon, said means serving to cause said rod member to be located in said second position when said tool is moved to the second station and the rod member is pressed against said shaft so as to locate the rod member relative to the housing whereby the air flow emanating from said nozzles is directed away from said free end of the housing to impinge upon the top surface of said washer and release the washer from the rod member and place it on the shaft.

4,604,025

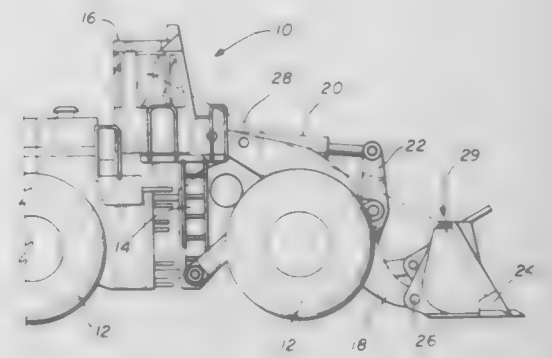
POSITION INDICATOR FOR A MATERIAL HANDLING ELEMENT OF A MACHINE

Ezzat A. Hammoud, Libertyville, Ill., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Oct. 9, 1984, Ser. No. 659,058
Int. Cl.[4] B66F *11/00*
U.S. Cl. 414—698 4 Claims

1. In a mobile material handling machine including a material handling element and an operator's control station which provides a line of sight between an operator positioned thereat and the material handling element, the improvement comprising:

a plate having an edge and an upper surface and a lower surface and being pivotally attached to said material handling element in line with the operator's line of sight from said station toward said element, said plate having first indicia means on its edge, second indicia means on its top surface and third indicia means on its bottom surface, said first indicia means being in line with the operator's line of sight when said material handling element is positioned at a predetermined angle relative to said operator's control station, said second or third indicia means being in line



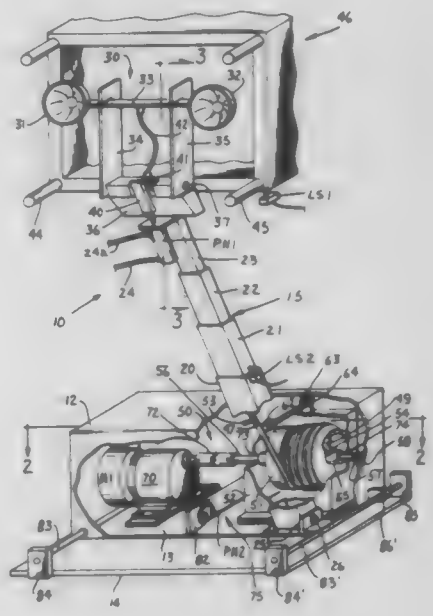
with the operator's line of sight when the material handling element is inclined relative to said predetermined angle in respectively first or second directions.

4,604,026

TELESCOPING PARTS MANIPULATOR

Keith Barrett, Langwarrin, Australia, assignor to Dart Industries Inc., Northbrook, Ill.

Filed Dec. 14, 1983, Ser. No. 561,418
Claims priority, application Australia, Mar. 1, 1983, PF8254
Int. Cl.[4] B25J *11/00*
U.S. Cl. 414—728 26 Claims



1. A method for engaging and removing a molded article from a molding machine, comprising the steps of:

detecting the opening of the molding machine and providing a mold opening signal in response to the opening of the mold;

extending a telescoping extensible and retractable arm into the space between the mold halves in response to the mold opening signal;

engaging the molded article in the molding machine with workpiece engaging means carried by the arm;

retracting the arm and the molded article carried by the workpiece engaging means out of the space between the mold halves; and

releasing the molded article at a work station remote from the mold.

17. A workpieee manipultor, comprising:

a base portion,

an extensible arm mounted at one end to said base portion and comprising a plurality of tubular telescoping members extensible and retractable along a longitudinal axis,

cable means housed within said telescoping members having one end attached to the innermost one of said tubular members,

cable drum means for spooling the other end of said cable means,

drum driving means for rotating said drum means in one direction for winding said cable means and in the other direction for unwinding said cable means, said arm extending as said cable means unwinds and retracting as said cable means winds, and

workpiece engaging means mounted to the upper end of said arm for engaging with a workpiece,

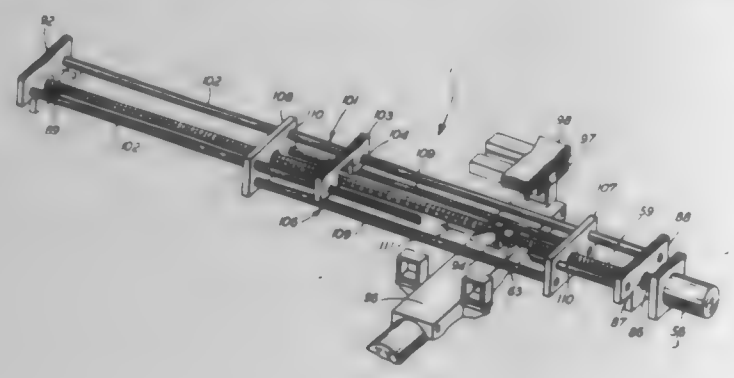
wherein said cable means pushes said innermost one of said tubular members to extend said arm and pulls said innermost one of said tubular members to retract said arm.

4,604,027

MANIPULATOR OF ARTICLES AND METHODS OF MOVING ARTICLES OVER AN EXTENDED DISTANCE

Alan R. Becker, Coopersburg; Richard A. McCorkle, Allentown; Robert A. Miller, Easton, and Gary J. Plessl, Allentown, all of Pa., assignors to AT&T Technologies, Inc., Berkeley Heights, N.J.

Filed Jun. 21, 1984, Ser. No. 622,902
Int. Cl.⁴ B65G *25/00*
U.S. Cl. 414—749 **1 Claim**



1. A manipulator comprising:

a manipulator head (16) mounted for movement over a predetermined first distance;

first means (59) for moving the manipulator head along such first distance, such moving means extending longitudinally over at least such first predetermined distance and into engagement with such manipulator head at an intermediate position along such first distance, such engagement dividing the moving means into first and second portions;

means, mounted for movement in the direction of the longitudinal extent of and in supportive engagement with the first and second portions of said first moving means, for supporting said first moving means, said supporting means being capable of shifting the supportive engagement with the first moving means in the direction of a movement of the manipulator head within such first distance to support the longer of the first and second portions of the first moving means in a central position thereof, such that none of the first portions of the first moving means exceeds an undesirably long supported length;

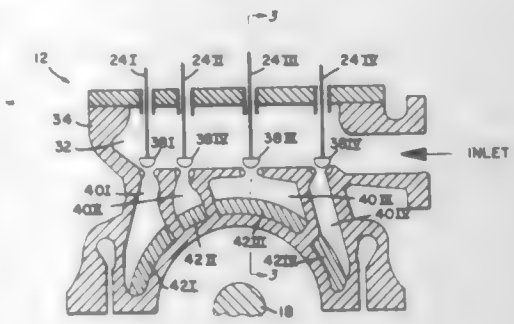
a fixed frame structure including first and second end support brackets (88,92) located at one and the other end of such first distance, respectively, and guide rails (102) mounted to each of the first and second end support brackets and extending there between over said first distance, said guide rails being centrally supported by a fixed center support (103) mounted to said fixed frame structure, and wherein said means for supporting said moving means comprises a frame including two traveling support brackets (107,108), a first one of said traveling support brackets being movably mounted to the guide rails on one side of the center support and the second one being movably mounted to the guide rails on the other side of the center support, each of the traveling support brackets slidably engaging said first moving means to support said first moving means in a plane perpendicular to the longitudinal extent of the moving means, said traveling support brackets being spaced by longitudinal supports (109) of a length such that one of the traveling support brackets becomes located in proximity to the center support when the other of the traveling support brackets is located in proximity to the respective one of the first and second end support brackets.

4,604,028

INDEPENDENTLY ACTUATED CONTROL VALVES FOR STEAM TURBINE

Thomas L. Yeaple, Lynn; James B. Wagner, Peabody, and Donald H. Hall, Middleton, all of Mass., assignors to General Electric Company, Lynn, Mass.

Filed May 8, 1985, Ser. No. 731,691
Int. Cl.⁴ F01D *17/18*
U.S. Cl. 415—38 **1 Claim**



1. A turbine system comprising:

a turbine;

a control valve system for feeding a compressible fluid to said turbine including at least first, second and third control valves for independently controlling admission of said compressible fluid to respective first, second and third nozzle groups in said turbine; said first nozzle group having a substantially smaller number of nozzles than either of said second or third nozzle groups; said second nozzle group having a number of nozzles intermediate the number of nozzles in said first and third nozzle groups; and, the sum of the nozzles in the first and second nozzle groups containing at least as many nozzles as said third nozzle group; and,

a control system including means for producing first, second and third independent control signals for respectively positioning said first control valve in a governing position while independently controlling said second and third control valves in fully open or fully closed positions; whereby transfer is made from a first condition in which said second control valve is fully open and said third control valve is fully closed while said first control valve is partly open to a second condition supplying the same amount of said compressible fluid to said turbine in which said first and second control valves are fully closed and said third control valve is fully open to provide improved operating efficiency.

4,604,029

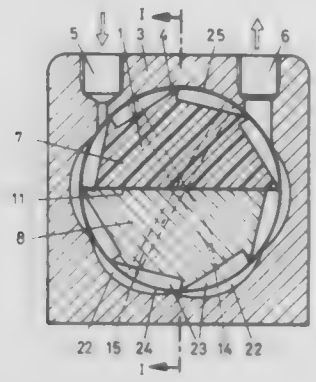
COMPRESSED-AIR VIBRATOR WITH TURBINE DRIVE

Willy Fink, Waltalingen, Switzerland, assignor to Findeva AG, Oerlingen, Switzerland

Filed Mar. 21, 1984, Ser. No. 591,766
Claims priority, application Switzerland, Apr. 20, 1983, 2128/83
Int. Cl.⁴ F01D *1/36;* F16H *33/00*
U.S. Cl. 415—92 **4 Claims**

1. In a compressed-air vibrator with a turbine drive, including an unbalanced cylindrical rotor, a closed housing having a cylindrical chamber, said rotor being rotatably supported within said chamber, an inlet opening in said housing for the inlet of compressed air into said chamber, and a discharge opening in said housing for the exit of air from said chamber; the improvement comprising in that said rotor is constituted of

at least two segments of differing specific weights, at least one said segment being constituted of metal and at least one said segment being constituted of a plastic material, each said segment forming respectfully one-half of said rotor, the rotational axis of said rotor being located to extend along the contact surface between said two segments.

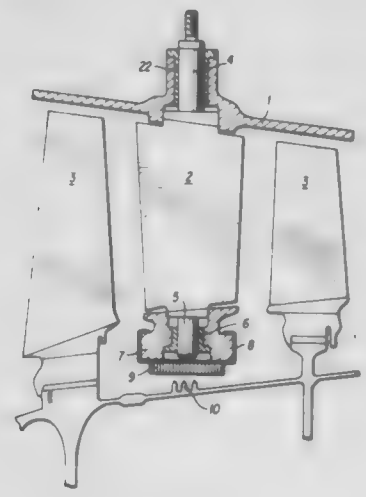


4,604,030

COMPRESSOR WITH VARIABLE INCIDENCE STATOR VANES

Jacky Naudet, Bondoufle, France, assignor to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation S.N.E.C.-M.A., Paris, France

Filed Nov. 27, 1984, Ser. No. 675,214
Claims priority, application France, Dec. 7, 1983, 83 19538
Int. Cl.[4] F01D *11/02;* F04D *29/56*
U.S. Cl. 415—126 8 Claims



1. A turbo machine comprising:

a casing having annulus means,

a rotor in said casing and having rotor blades in at least one annular array,

a stator in said casing and having vanes of variable incidence in at least one annular array, the vanes being in operative relationship with at least one said array of rotor blades, each said vane having means defining a shoulder at its radially inner end,

bearing means carried by the annulus means and receiving the stator vanes for variation of the angle of incidence thereof, each stator vane including pivot means engaged in the bearing means, the annulus means also including a plurality of sectors,

sealing means intended to limit leakage losses between the stator and the rotor and being mounted to each sector, and

adjustment means for the stator vanes distributed between the sectors,

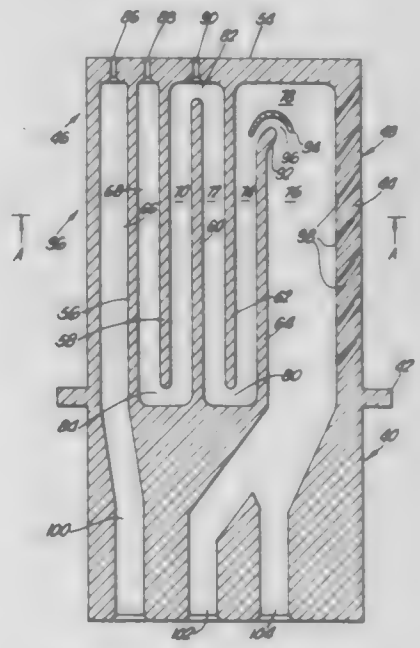
wherein the bearing means comprise means defining a bush at the location of each adjustment means, each said bush including an external screw thread, and internally screw-threaded seating means receiving the bush in screw-threaded relationship, wherein relative angular motion of each bush relative to the corresponding seating serves in cooperation with the shoulder to adjust the radial location of the corresponding sector, and means for locking the bush in the adjusted radial location on completion of said adjustment.

4,604,031

HOLLOW FLUID COOLED TURBINE BLADES

Roger W. Moss; Michael H. Coney, and David A. Richardson, all of Derby, England, assignors to Rolls-Royce Limited, London, England

Filed Aug. 27, 1985, Ser. No. 769,702
Claims priority, application United Kingdom, Oct. 4, 1984, 8425092
Int. Cl.[4] F01D *5/18*
U.S. Cl. 416—97 R 5 Claims



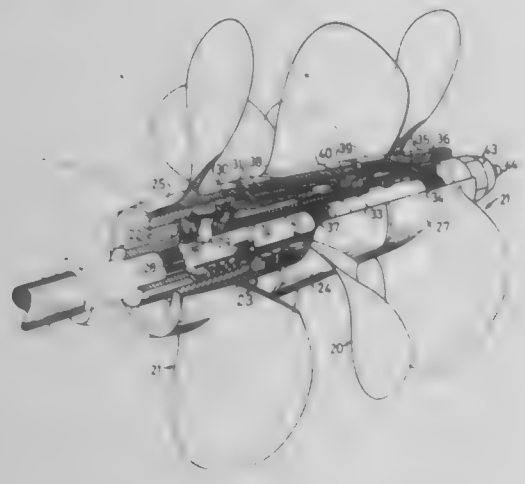
1. A hollow fluid cooled turbine blade comprising a root, a platform and an aerofoil, the aerofoil having at least two longitudinally extending passages for the flow of cooling fluid, at least one turning passage where the cooling fluid is turned from the first longitudinally extending passage into the second longitudinally extending passage, a wall being positioned between and separating the longitudinally extending passages, said wall having an aerodynamically shaped end portion adjacent said turning passage, said aerodynamically shaped end portion of said wall being arranged at an angle with respect to the remainder of said wall to increase the turning radius and said aerodynamically shaped end portion of said wall extending towards a second wall defining an opposing boundary of said first passage, a turning vane having a relatively large turning radius being spaced from said aerodynamically shaped end portion of said wall to define a passage therebetween, said passage between said aerodynamically shaped end portion of said wall and said turning vane converging in the direction of flow from said first longitudinally extending passage to said second longitudinally extending passage, said turning vane extending around said aerodynamically shaped portion of said wall towards said second longitudinally extending passage so as to direct cooling fluid flowing from said first passage into said second passage through said converging passage formed between said aerodynamically shaped end portion of said wall and said turning vane substantially parallel to said wall, said turning vane directing the cooling fluid flowing around said turbine vane substantially parallel to the cooling fluid leaving said converging passage so as to reduce separation of the boundary layer of the cooling fluid from said wall in order to reduce pressure losses in said turning passage.

4,604,032

ROTOR DEVICE

Lennart H. Brandt, Fjärås, and Heinz Pichl, Upsala, both of Sweden, assignors to AB Volvo Penta, Gothenburg, Sweden

Filed Jun. 20, 1984, Ser. No. 622,658
Claims priority, application Sweden, Jun. 22, 1983, 8303593
Int. Cl.[4] B63H *5/10;* B64C *11/48*
U.S. Cl. 416—128 10 Claims



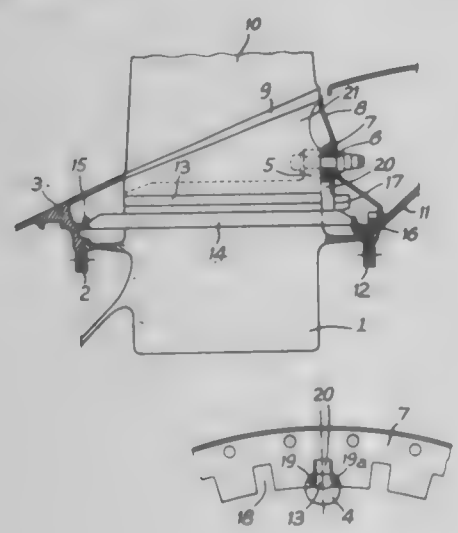
1. In a rotor device having at least three coaxial bladed rotors, a shaft, and a planetary gear system including at least one sun gear carried by said shaft, at least one planet gear meshing with said sun gear and carried by a planet gear carrier, and a gear ring meshing with said planet gear, said rotors having blades to impart a flow to a fluid when rotating or to be rotated by a flowing fluid, the improvement wherein a number of N said rotors are drivingly connected to said gear ring and a number of N+1 said rotors are drivingly connected to said planet gear carrier thereby causing N said rotors to rotate in a direction counter to the rotational direction of said shaft and N+1 said rotors to rotate in the same direction as said shaft.

4,604,033

DEVICE FOR LOCKING A TURBINE BLADE TO A ROTOR DISK

Jean M. Surdi, Melun, France, assignor to S.N.E.C.M.A., Evry, France

Filed Jun. 11, 1985, Ser. No. 743,599
Claims priority, application France, Jun. 14, 1984, 84 09286
Int. Cl.[4] F01D *5/32*
U.S. Cl. 416—220 R 8 Claims



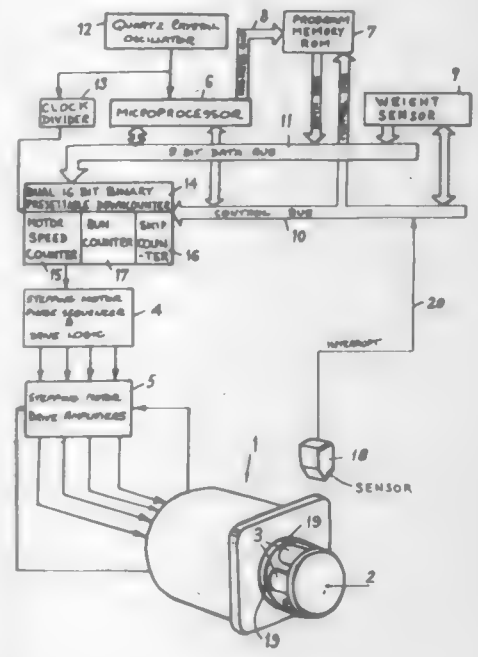
1. A device for locking a turbine blade to a rotor disk rotatable about a central axis comprising:
(a) a plurality of slots defined by the periphery of the rotor disk, each slot having a base and a dovetail shaped cross-section;
(b) a locking ring defining a plurality of inwardly opening notches;
(c) attachment means to removably attach the locking ring to a downstream side of the rotor disk such that each notch is aligned with a slot;
(d) a foot portion on the turbine blade slidably retained in each slot, the foot portion having an axial projection extending downstream of the rotor disk; and
(e) a block inserted between the foot portion of the blade and the base of the slot to move the blade in a radial direction such that the axial projection enters the notch to lock the blade in position on the rotor disk.

4,604,034

PERISTALTIC PUMPS

Peter G. Wheeldon, Guildford, and John Kent, Byeworth, Nr Petworth, both of England, assignors to Peritronic Medical Industries plc, London, England

Filed May 2, 1984, Ser. No. 606,016
Claims priority, application United Kingdom, May 3, 1983, 8312069
Int. Cl.[4] F04B *49/00, 49/10;* A61F *2/54*
U.S. Cl. 417—18 5 Claims



1. In a peristaltic pump which is adapted to apply a peristaltic action in a succession of peristaltic cycles to a delivery tube disposed in said pump for pumping a fluid flow through said delivery tube, and which includes rotary means arranged to be driven by stepping motor means, the improvement consisting in control apparatus adapted to reduce the dwell period in each said peristaltic cycle, during which dwell period reduced fluid flow would normally occur, thereby to achieve more uniform flow of said fluid being pumped, said control apparatus comprising:
(a) means for producing electrical timing pulses,
(b) adjustable speed pulse counting means responsive to said timing pulses and connected to provide drive pulses for said stepping motor means in response to counting predetermined trains of said timing pulses,
(c) processing means for controlling said speed pulse counting means, whereby said stepping motor means is operated at a speed which drives said pump at a predetermined pumping rate,
(d) indexing means associated with said rotary means and defining a predetermined position of said rotary means, and
(e) sensing means for detecting said indexing means,
(f) said processing means being responsive to said sensing means detecting said indexing means to adjust said speed pulse counting means to increase the speed of said stepping motor means for a predetermined skip period after which skip period said processing means is adapted to reset said speed pulse counting means to operate said stepping motor means at said speed corresponding to said

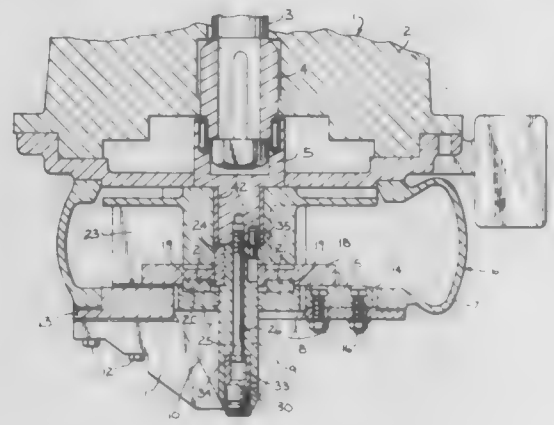
predetermined pumping rate until next detection of said indexing means, whereby said processing means is adapted to regulate said speed pulse counting means alternately to provide drive pulses at repetition rates corresponding to said predetermined pumping rate and said increased skip rate.

4,604,035

SUBMERSIBLE PUMP HAVING FRANGIBLE DRIVE CONNECTION

James R. Roberts, Grayslake, Ill., assignor to A. O. Smith Harvestore Products, Inc., Arlington Heights, Ill.

Filed Jan. 2, 1985, Ser. No. 688,258
Int. Cl.[4] F04B *9/00*; F16D *9/00*; F03B *13/00*
U.S. Cl. 417—319 **8 Claims**



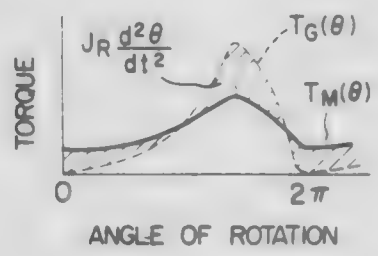
1. In a submersible motor pump unit, a pump casing, an impeller disposed within the casing, a pump shaft connected to the impeller, a motor having a motor shaft, said pump shaft and said motor shaft being disposed in end-to-end relation, shear pin means interconnecting said shafts, one end of said motor shaft having an axial threaded opening, said pump shaft having an axial passage, a bolt slidably disposed in said passage, one end of said bolt having a head and the opposite one end of said bolt projecting outwardly of said passage and being threaded in said axial opening, and means to prevent rotation of said bolt relative to said pump shaft, fracture of said shear pin means and continued rotation of said motor shaft causing said bolt to unthread from said axial opening and moving axially relative to said pump shaft.

4,604,036

TORQUE CONTROL APPARATUS FOR ENCLOSED COMPRESSORS

Masatsune Sutou, Ota, and Yoshihisa Uneyama, Tochigi, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 17, 1984, Ser. No. 641,675
Claims priority, application Japan, Sep. 9, 1983, 58-146963
Int. Cl.[4] F04B *49/00, 49/06, 49/10*; F25B *1/04*
U.S. Cl. 417—18 **7 Claims**



1. A torque control apparatus for a compressor, the torque control apparatus comprising:

first detecting means for detecting information on a load applied to the compressor;

second detecting means for detecting a rotational position of a rotating portion of the compressor;

first control means for calculating a magnitude of a load torque and a generation time thereof applied to said compressor in dependence upon a first output from said first detecting means and a second output from said second detecting means applied to said first control means;

an AC power source means; and

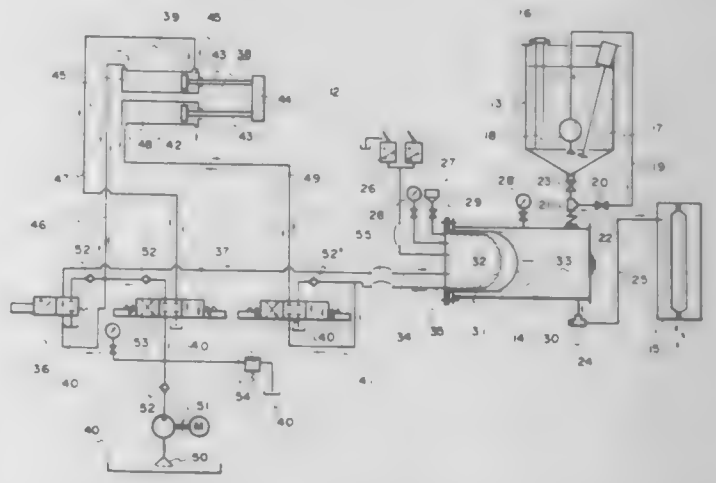
second control means connected between said power source means and said compressor for controlling an output from said power source means applied to a motor for driving said compressor in response to said magnitude of the load torque thereby controlling an output torque of said motor.

4,604,037

SLURRY PUMPING APPARATUS FOR SOLID-LIQUID SEPARATION

Takesi Hoya, 997-8, Oaza Bushi, Iruma-shi, Saitama-ken, Japan

Filed Dec. 17, 1984, Ser. No. 682,333
Claims priority, application Japan, Sep. 21, 1984, 59-196757
Int. Cl.[4] F04B *43/06*
U.S. Cl. 417—394 **7 Claims**



1. In a slurry pumping apparatus including a hydraulic pressure source, and a diaphragm pump, interposed between a solid-liquid separator and a slurry tank, and connected to an oil tank, the diaphragm pump having a hydraulic pressure chamber connected to a supply/discharge pump through changeover valve means, the improvement comprising: said supply/-discharge pump comprising a fluid supply pump and a fluid discharge pump which are mechanically connected together such as to be operable as one unit, said fluid discharge pump having its suction/discharge chamber connected through a suction/discharge passage to a first changeover valve communicating with said oil tank and the hydraulic pressure chamber of said diaphragm pump, said fluid supply pump having a first pressurizing chamber connected to said oil tank through a second changeover valve, and a second pressurizing chamber connected to said oil tank and to the hydraulic pressure chamber of said diaphragm pump.

4,604,038

REMOTELY OPERABLE PERISTALTIC PUMP

Robert R. Belew, Huntsville, Ala., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Mar. 8, 1985, Ser. No. 709,255
Int. Cl.[4] F04B *43/12*
U.S. Cl. 417—475 **20 Claims**

1. A compact peristaltic pump device having multiple flow channels comprising:

a housing frame having a rear frame member and a front frame member with integral side frame members spaced apart and carried between said rear and front frame members;

a central shaft assembly carried between said side frame members having a central shaft rotatably carried by said side frame members;

a rotating roller assembly rotatably carried by said central shaft assembly;

a plurality of circumferentially spaced rollers carried about said roller assemblies;

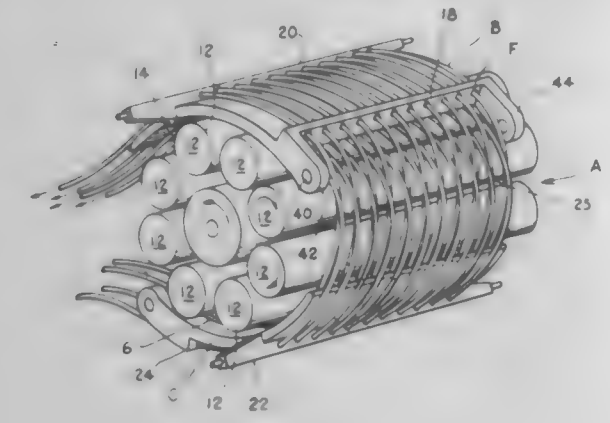
first rotary drive means for rotating said roller assembly about said central shaft;

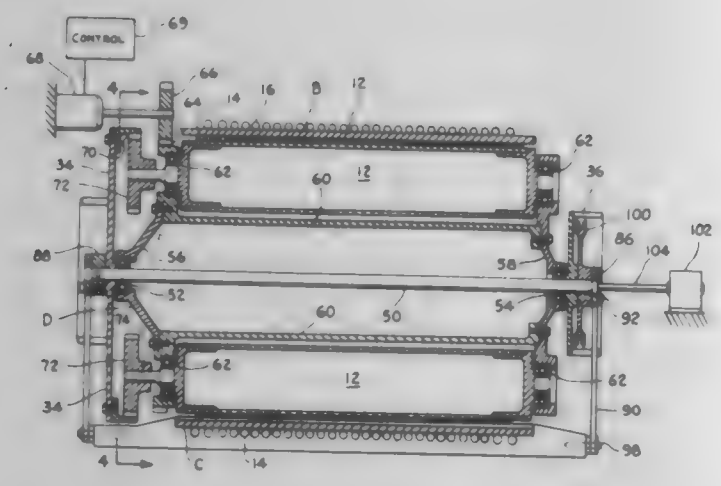
second rotary drive means for rotating each one of said rollers individually on said roller assembly as said roller assembly is driven about said central shaft;

an upper pressure shoe plate carried by said housing frame generally above said roller assembly;

a lower pressure shoe plate moveably carried by said housing frame generally below said roller assembly in diametrically opposing relation to said upper pressure shoe plate;

means for mounting a first number of flexible tubes in a side by side arrangement between said roller assembly and said





upper pressure shoe plate generally along the length of said upper pressure shoe plate to provide multiple parallel flow channels;

means for mounting a second number of flexible tubes between said roller assembly and said lower pressure plate in a side by side arrangement generally along the entire length of said lower pressure shoe plate to provide multiple parallel flow channels;

said mounting means including guide means for interlacing said first and second number of flexible tubes with one another so that said first number of flexible tubes are guided along an outside surface of said lower pressure shoe plate, and said second number of flexible tubes are guided along an outside surface of said upper pressure shoe plate with said first and second number of flexible tubes crossing between each other at said rear frame member of said frame housing.

4,604,039

SCROLL TYPE FLUID COMPRESSOR WITH AXIAL CLEARANCE ADJUSTING CONSTRUCTION

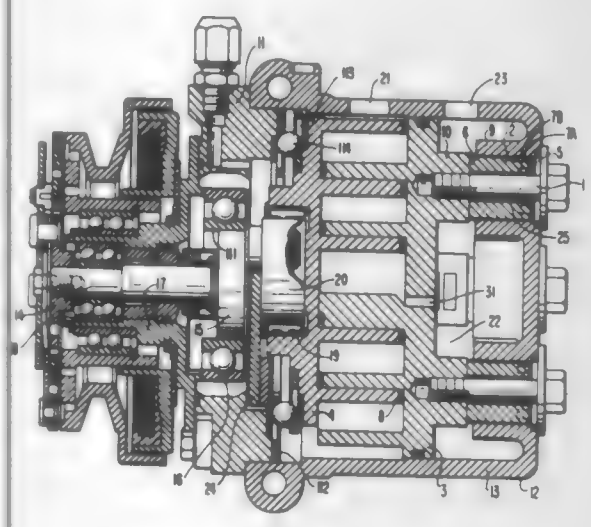
Kiyoshi Terauchi, Isesaki, Japan, assignor to Sanden Corporation, Japan

Filed Jul. 30, 1985, Ser. No. 760,640

Claims priority, application Japan, Jul. 31, 1984, 59-158627

Int. Cl.[4] F04C *18/04, 29/00*

U.S. Cl. 418—55 5 Claims



1. A scroll type fluid compressor comprising:

a housing;

a fixed scroll fixedly disposed within said housing and having a first circular end plate from which a first wrap extends into the interior of said housing;

an orbiting scroll having a second circular end plate from which a second wrap extends, said first and second wraps interfitting at an angular and radial offset to form a plurality of line contacts which define at least one pair of sealed off fluid pockets;

said first end plate having a plurality of first threaded apertures facing said housing to adjustably fix said first end plate to said housing;

said housing having a plurality of second threaded apertures corresponding in number and position to said first apertures;

a sleeve having external screw threads adjustably threaded into each of said second threaded apertures so that the inner end surface of said sleeves presses against said first end plate to adjust the axial clearance between both said scrolls; and

a threaded member passing through said sleeves and threadedly fixed to said first threaded apertures, so that said fixed scroll is adjustably fixed within said housing.

4,604,040

DISPLACEMENT MACHINE HAVING A HOUSING AND PISTON WITH SPIRAL WALLS

Hans Baumgartner, Viersen; Manfred Brandstadter, Dusseldorf, and Rainer Sudbeck, Wassenberg, all of Fed. Rep. of Germany, assignors to Pierburg GmbH & Co., KG, Neuss, Fed. Rep. of Germany

Filed Mar. 1, 1985, Ser. No. 707,075

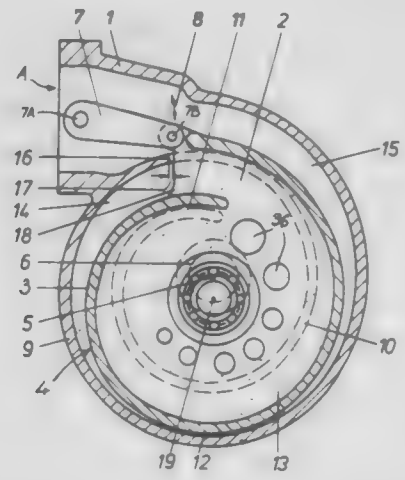
Claims priority, application Fed. Rep. of Germany, Mar. 3, 1984, 3407939

Int. Cl.[4] F01C *1/04, 19/00*

U.S. Cl. 418—55 3 Claims

1. A displacement machine for a fluid comprising a housing including a spiral wall, a displacement body including a spiral wall engaged with said spiral wall of said housing to form chambers therewith, said spiral wall of said displacement body extending over an angle greater than 360° to provide overlapping first and second ends, said displacement body further including a transverse disc from which said spiral wall extends axially on both sides of said transverse disc, means connected

to said displacement body to rotate the same along a closed circular path, and a crank arm pivotably connected to said housing at a first pivot axis and to said displacement body at a second pivot axis in the region of said spiral wall of said displacement body, said second pivot axis being spaced from the center of rotation of said closed circular path to cause said displacement body to undergo reciprocal movement along an open path at said second pivot axis, said transverse disc having a radial terminal edge extending between said overlapping first and second ends of said spiral wall of said displacement body,



said spiral wall of said housing having a slot in which said disc is received, said spiral wall of said housing having a bounding edge for said slot facing said terminal edge of said disc in spaced relation therewith, said terminal edge of said disc having a shape corresponding to the path of movement of said terminal edge of said disc relative to said bounding edge upon movement of said displacement body so that the distance between said terminal edge of said disc and said bounding edge remains substantially constant at least during one-half of the travel of said displacement body along said closed circular path.

4,604,041

ROTARY VANE PUMP

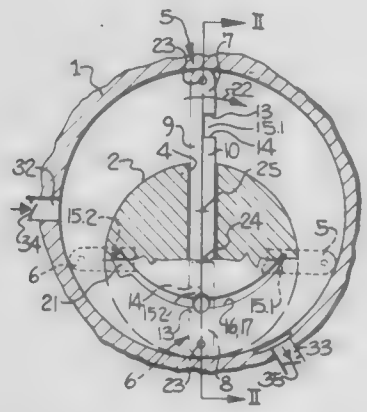
Siegfried Hertell, and Robert Lange, both of Radevormwald, Fed. Rep. of Germany, assignors to Barmag Barmer Maschinenfabrik Aktiengesellschaft, Remscheid, Fed. Rep. of Germany

Filed Apr. 9, 1985, Ser. No. 721,325

Claims priority, application Fed. Rep. of Germany, Apr. 9, 1984, 3413299; Jun. 26, 1984, 3423426

Int. Cl.⁴ F04C *18/00, 29/00*

U.S. Cl. 418—82 **16 Claims**



1. A rotary vane pump adapted for use as a vacuum pump in an automobile or the like, and which comprises

a cylindrical housing having a fluid inlet and a fluid outlet,

a cylindrical rotor eccentrically mounted for rotation within said housing, with the rotational axes of the housing and rotor defining a dead center plane and with the surfaces of the housing and rotor being closely adjacent to each other at a bottom dead center position which lies along said dead center plane, said rotor including a slot extending along the axial direction thereof and diametrically therethrough,

a pair of overlying vanes slideably mounted in said slot for radial movement with respect to each other and said slot during rotation of said rotor, each of said vanes having a generally hook-like outline in cross section and comprising a shank portion having a bottom edge at one end thereof and a laterally offset head portion at the other end thereof, with said head portion having a width which is approximately the same as the width of said rotor slot and twice the width of said shank portion, and with said shank portions of said pair of vanes overlying each other within said slot with said head portions at respective opposite ends of said slot and so as to define a hook space between each head portion and the bottom edge of the other vane, and with said rotor and vanes being dimensioned so that each hook space enters the slot during the portion of each rotation of said rotor between about 90° before said bottom dead center position and 90° after said bottom dead center position, and

means for providing a fluid in each hook space during that portion of each rotation of said rotor between said bottom dead center position and the point at which the hook space leaves the slot, and means for pressurizing the fluid provided in each hook space during said portion of each rotation so as to assist in moving the head portion and the associated vane radially outwardly.

4,604,042

APPARATUS FOR PRODUCING ANISOTROPIC MAGNETS

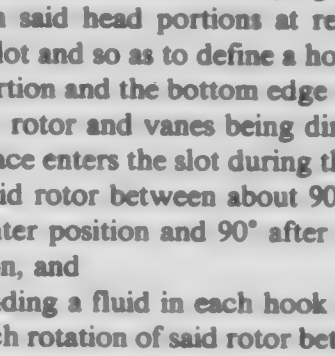
Shigeho Tanigawa; Shuichi Shiina, and Kimio Uchida, all of Kumagaya, Japan, assignors to Hitachi Metals, Inc., Tokyo, Japan

Filed Jun. 7, 1984, Ser. No. 618,183

Claims priority, application Japan, Jun. 8, 1983, 58-102127; Jun. 29, 1983, 58-117857; Jun. 29, 1983, 58-117864; Aug. 11, 1983, 58-147137; Aug. 26, 1983, 58-155975

Int. Cl.⁴ B28B *17/00*

U.S. Cl. 425—3 **13 Claims**



1. A mold for producing an anisotropic magnet comprising:

a mold body;

a cavity having a longitudinal axis for molding a composition essentially consisting of magnetic powder and a binder in the presence of an anisotropically oriented magnetic field;

a plurality of first magnet means arranged around said molding cavity circumferentially with respect to said cavity axis for providing magnetic fluxes constituting said magnetic field;

a plurality of yokes each provided between said cavity and each of said first magnetic means for flowing said magnet flux into said cavity; and

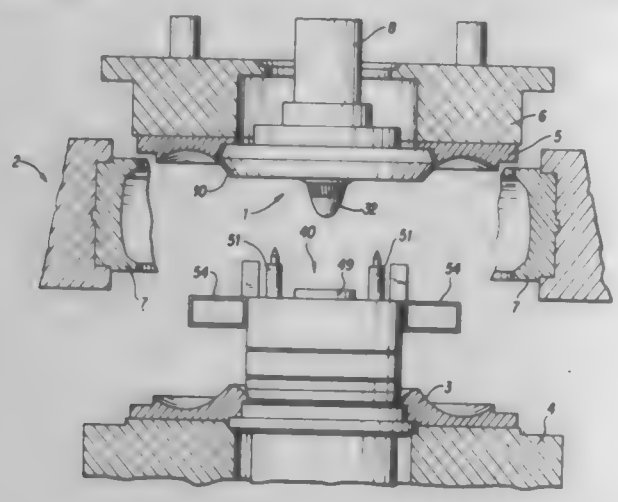
second magnet means provided on both sides of said yokes for preventing the leakage of said magnetic fluxes in the circumferential direction.

4,604,043

EXTRACTOR UNIT FOR TIRE VULCANIZING MOULDS AND DEVICE FOR RAPIDLY DISASSEMBLING IT FROM A VULCANIZING PRESS

Augusto Pizzorno, Milan, and Bruno Salvadori, Cormano, both of Italy, assignors to Pirelli Coordinamento Pneumatici S.p.A., Italy

Filed Oct. 15, 1985, Ser. No. 787,042
Claims priority, application Italy, Nov. 7, 1985, 23481 A/84
Int. Cl.[4] B29H *5/02*
U.S. Cl. 425—182 17 Claims



1. A centering extractor unit for pneumatic tire vulcanizing moulds, suitable to be assembled on and operated by a driving mechanism of a press for vulcanizing pneumatic tires, comprising a body having a substantially annular shape to be connected to a mobile shaft of said driving mechanism, and a plurality of laminae radially movable with respect to said body to be led from a first configuration in which they are housed at an interior region of said body to a second configuration in which they radially project from said body, said connection between the extractor unit and said shaft being effected through first connecting means comprising a first set of radial teeth obtained on said shaft and a second set of radial teeth obtained on said body and able to cooperate with said teeth of the first set to block the body with respect to the shaft in consequence of a relative rotation between said elements, characterized by the fact that said body comprises first blocking means, alternatively and freely movable from a non-interference position to an interference position, simultaneously with both said sets of teeth in position of mutual cooperation.

4,604,044

INJECTION BLOW MOLDING APPARATUS

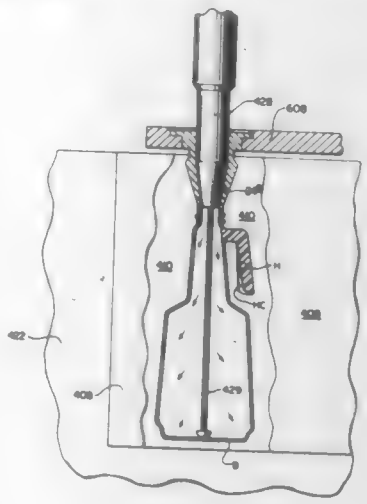
Robert X. Hafele, Baton Rouge, La., assignor to Hoover Universal, Inc., Ann Arbor, Mich.

Continuation of Ser. No. 228,272, Jan. 26, 1981, abandoned, which is a division of Ser. No. 71,301, Aug. 30, 1979, Pat. No. 4,280,805. This application Aug. 17, 1984, Ser. No. 641,794
Int. Cl.[4] B29C *49/06*
U.S. Cl. 425—525 2 Claims

1. Apparatus for use in blow molding a bottle, said bottle having a main lower portion, an upwardly extending tapering neck portion at the upper end of said main portion, and an open end at the upper end of said neck portion, said apparatus being useable to blow mold said bottle from a closed lower end perform, said preform having a substantially vertical side wall, an upper end and an integral injection molded handle attached at one point to said side wall, said apparatus comprising:

(a) a vertically split blow mold defining a blow mold cavity having walls defining a main portion, a tapered neck portion, and an open upper end corresponding in shape to the shape of said bottle, said split blow mold further defining a handle cavity communicating with said blow mold cavity at a single point located in said tapered neck portion and below said open upper end of said blow mold cavity,

(b) said blow mold cavity being dimensioned to enclose said preform when the upper end of said preform is supported in the upper end of the blow mold cavity so that the cavity walls defining said tapered neck portion of said blow mold cavity are spaced outwardly from said inclined relative to the preform wall, and said point of attachment of said injection molded handle to said preform is enclosed within said split blow mold, and



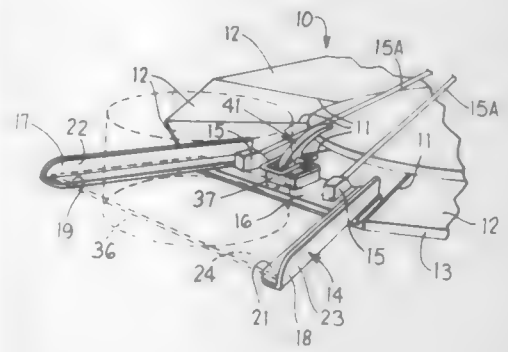
(c) said handle cavity being configured to enclose said integral handle and being dimensioned to allow said integral handle to move outwardly in response to outward movement of said preform side wall into conformity with said tapered neck cavity portion during the blow molding of said preform.

4,604,045

MOLD MOUNTING AND RELEASABLE CLAMP THEREFOR

John W. Black, Hickory Corners, Mich., assignor to Standex International Corporation, Salem, N.H.

Filed Oct. 10, 1984, Ser. No. 659,377
Int. Cl.[4] B29C *45/06*
U.S. Cl. 425—575 1 Claim



1. A mold housing support apparatus for supporting a mold housing means, said mold housing means having a mold cavity therein, comprising:

base means;

quick connect and disconnect means for releasably securing said mold housing means to said base means, said quick connect and disconnect means including:

first and second elongate support members secured at one end to said base means and cantilevered horizontally outwardly from said base means, said support members each having a horizontal support surface, and, an upstanding guide wall so that both of said horizontal support surfaces are located between said guide walls, said guide walls further being oriented to diverge in a direction away from said base means at an acute angle;

positive stop means on said base means for limiting the extent to which said mold housing means can move toward said upstanding guide walls;

said mold housing means having a bottom wall, said mold

housing means further having oppositely facing sidewall means thereon converging in a direction toward said base means parallel to said upstanding guide walls when said mold housing means is oriented adjacent said base means and between said upstanding guide walls, said mold housing means being supported on said horizontal support surfaces for movement toward and away from said positive stop means, said mold housing means having inlet means thereon adapted to be aligned with injection nozzle means on an injection molding means when said mold housing means engages said positive stop means;

an upstanding hook means fixedly mounted on said mold housing means or said base means;

toggle lever means fixedly mounted on the other of said mold housing means or said base means, said toggle lever means having an elongate first lever with a handle at one end and being pivotally supported at an opposite end to facilitate movement of said handle between first and second positions about a first axle generally perpendicular to a bisector of said acute angle defined by said diverging guide walls, and a second lever pivotally secured to said first lever for movement about a second axle at a first location thereon intermediate said first axle and said handle, said second lever having gripping means thereon adapted to grip said upstanding hook means at a second location, said first lever, when at said first position, enabling said gripping means to grip said upstanding hook means, and when approaching said second position causing a straight line extending through said first and second axles to be first oriented on one side of said first axle and effect a movement of said mold means toward said base means and a limiting engagement of said mold housing with said positive stop means to effect an alignment of said inlet means with said injection nozzle means upon a continued movement of said second lever until said straight line intersects said first axle thereby bringing said sidewall means into tighter engagement with said positive stop means so that further movement of said first lever will cause a yieldable tensioning of said second lever until said straight line passes to the opposite side of said first axle whereat said first lever will be held in said second position by the tension on said second lever.

4,604,046

DIRECT IGNITION GAS BURNER CONTROL SYSTEM

Carl J. Mueller, 7063 Stinger Pl., St. Louis, Mo. 63129; Bernard T. Brown, 4601 Skyridge Dr., St. Louis, Mo. 63128; Dennis M. Rippelmeyer, 217 Koenigsmark, Waterloo, Ill. 62298, and John S. Haefner, P.O. Box 221, Hillsboro, Mo. 63050

Division of Ser. No. 296,818, Aug. 27, 1981, Pat. No. 4,444,551.
This application Jan. 16, 1984, Ser. No. 571,336
Int. Cl.[4] F23N *5/00*
U.S. Cl. 431—2 4 Claims

1. An improved method for operating a direct ignition gas burner control system which includes a burner, two electrically operated valves connected fluidically in series with the burner, an electrical resistance igniter, and a microcomputer, comprising the steps of:

energizing the igniter;

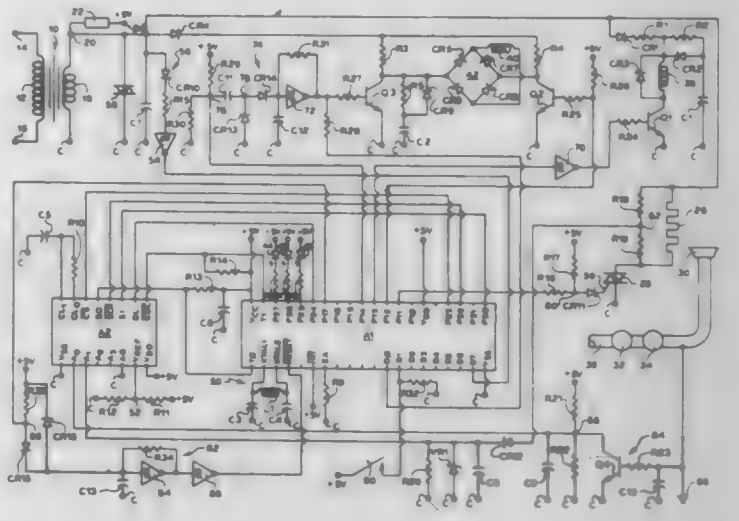
opening both valves so as to enable flow of gas to said burner and ignition thereof;

detecting burner flame and continuing said flow of gas to said burner as long as said burner flame exists;

closing one of said valves;

determining if said burner flame still exists and providing an indication of valve leakage if said burner flame still exists;

closing the other of said valves; and



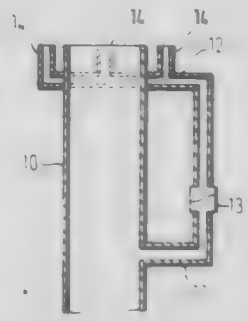
reversing order of closing said valves on alternate burner cycles.

4,604,047

FLARE FOR AND METHOD OF FLARING HIGH VELOCITY GAS

Leslie M. F. Coulthard, Sutton Coldfield, England, assignor to GKN Birwelco Limited, Halesowen, England

Filed Mar. 15, 1984, Ser. No. 589,735
Claims priority, application United Kingdom, Mar. 19, 1983, 8307687
Int. Cl.[4] F23D *14/58*
U.S. Cl. 431—5 12 Claims



1. In a method of flaring flammable gas supplied at high pressure from a supply and released at high velocity from a tip of an open pipe flare, wherein a quantity of gas at lower pressure and lower velocity than said supply is burnt at or adjacent the tip of said flare in one or more further outlets adapted to produce flares of sufficient size and energy to establish continuous ignition of the high velocity gas up to a considerable distance above the tip, the steps of:

deriving a quantity of gas from said supply upstream of the tip of the flare;

expanding the derived quantity of gas to a pressure lower than said high pressure;

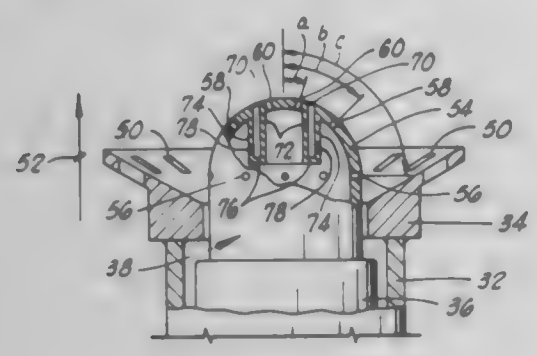
utilizing said expanded derived gas to provide at least a part of said lower pressure, lower velocity gas; and

mixing at least a part of said withdrawn gas with at least part of a stream of low pressure flammable gas, from a source independent of the high pressure supply, to provide at least part of said lower pressure, lower velocity gas.

4,604,048
METHODS AND APPARATUS FOR BURNING FUEL WITH LOW NO_x FORMATION

Robert E. Schwartz, and Roger K. Noble, both of Tulsa, Okla., assignors to John Zink Company, Tulsa, Okla.

Filed May 6, 1985, Ser. No. 731,080
Int. Cl.[4] F23C *5/00*
U.S. Cl. 431—8 12 Claims



1. In a burner apparatus for combusting a fuel-air mixture wherein fuel is discharged from at least one nozzle disposed within a chamber, air is caused to flow into the chamber whereby it mixes with the fuel and the resulting fuel-air mixture is ignited and combusted, the improvement whereby the formation of nitrogen oxides is inhibited comprising:

said nozzle having one or more ignition orifices disposed therein positioned to discharge a first portion of said fuel therethrough whereby said fuel mixes with air and provides an ignition zone adjacent said nozzle;

one or more primary combustion orifices disposed in said nozzle positioned to discharge a second portion of said fuel therethrough whereby said fuel is distributed in a turbulent pattern which causes said fuel to mix with a rate of air in excess of that required for the stoichiometric burning thereof and to burn in a primary combustion zone; and

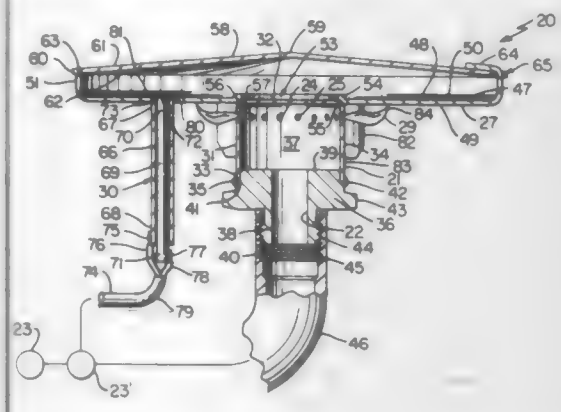
one or more secondary combustion orifices surrounded by a fuel discharge recess, the secondary orifices and recess being disposed in said nozzle interiorly of said primary combustion orifices and positioned to discharge the remaining portion of said fuel therethrough in the form of high velocity jets of fuel shielded by slower moving fuel whereby said fuel is distributed within and downstream of said primary combustion zone, is mixed with air from said primary combustion zone diluted with combustion products and is burned in a secondary combustion zone substantially isolated from direct contact with incoming air by said primary combustion zone.

4,604,049
DUAL RATE BURNER CONSTRUCTION AND METHOD OF MAKING THE SAME

Jay R. Katchka, Cypress, and Gilbert Schultz, Long Beach, both of Calif., assignors to Robertshaw Controls Company, Richmond, Va.

Filed Aug. 26, 1985, Ser. No. 769,572
Int. Cl.[4] F23H *5/10*
U.S. Cl. 431—80 20 Claims

1. In a dual rate burner construction comprising a burner housing means having inlet means for receiving fuel from a source thereof and outlet means through which said fuel can issue to produce flame means exterior to said burner housing means when said issued fuel has been ignited, a flame spreader means carried by said burner housing means for spreading said flame means into a desired heating pattern thereof for a heating purpose when said fuel is being directed into said inlet means at a full rate of flow thereof and for directing said flame means into a desired standby pattern thereof when said fuel is being directed into said inlet means at a standby rate of flow thereof, and a flame sensing means carried by said construction for detecting the presence of said flame means, the improvement wherein said flame sensing means is carried by said flame

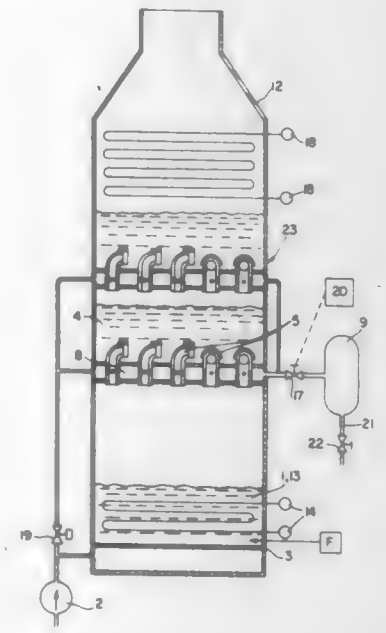


spreader means in a spaced relation to said burner housing means.

4,604,050
METHOD OF CLEANING NOZZLES IN A FLUIDIZED BED

Erik A. Henriksson, Linköping, Sweden, assignor to Stal-Laval Turbin AB, Finspong, Sweden

Filed Feb. 28, 1984, Ser. No. 584,511
Claims priority, application Sweden, Mar. 2, 1983, 8301148
Int. Cl.[4] B01J *8/28*
U.S. Cl. 431—121 6 Claims



1. In a fluidized bed heating plant which comprises a first chamber means containing a first bed, said first chamber means including a floor defined by upper and lower spaced apart bottom plates which provide a plenum space therebetween; a second chamber means containing a second bed, said second chamber means being in communication with said lower bottom plate; and a plurality of combustion gas passage means extending between said upper and lower bottom plates and communicating said second chamber means with said first chamber means, each of said plurality of combustion gas passage means including at least one hole communicating with said plenum space, the improvement wherein said fluidizing bed heating plant includes supply means for supplying a continuous flow of air to said plenum space so that said air will continuously flow into each of said plurality of combustion gas passage means through said at least one hole and mix with the combustion gas flowing therethrough into said first chamber means, tank means containing a pressurized gas, a fluid line connecting said tank means with said plenum space and a valve in said fluid line, the intermittent opening of said valve causing said pressurized gas to flow into said plenum space and into each of said plurality of combustion gas passage means to generate a pressure-energy shock wave in the combustion gas flowing therethrough, thus causing any impurity particles

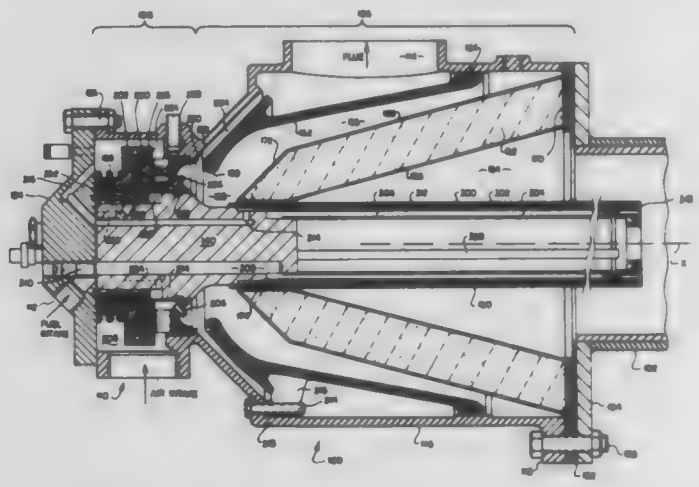
lodged in each of said plurality of combustion gas passage means to become dislodged and conveyed into said first chamber means, and a control means connected to said valve to automatically control the opening and closing of said valve.

4,604,051

REGENERATIVE BURNER

Theodore E. Davies, Hudson; Dennis E. Quinn, Brunswick, both of Ohio, and James E. Watson, Southgate, Mich., assignors to Gas Research Institute, Chicago, Ill.

Filed Aug. 16, 1984, Ser. No. 641,331
Int. Cl.⁴ F23D *11/44*
U.S. Cl. 431—166 **42 Claims**



1. A regenerative burner operable in fire and flue modes comprising:

a burner shell having first and second internal chambers, said first chamber being disposed on the flame axis of said burner and said second chamber surrounding the radial perimeter of said first chamber;

a gas permeable annular regenerative bed separating said first and second chambers such that gas flow between said first and second chambers must travel through said regenerative bed in a generally radial direction with respect to said flame axis;

means for supplying combustion air to said second chamber when said burner is in said fire mode and for exhausting products of combustion from said second chamber when said burner is in said flue mode; and

means for supplying fuel in the vicinity of said flame axis for mixing with combustion air to support combustion when said burner is in said fire mode.

4,604,052

DUAL-WATER MIXTURE FUEL BURNER

Thomas D. Brown, Finleyville; Douglas P. Reehl, Pittsburgh, and Gary F. Walbert, Library, all of Pa., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

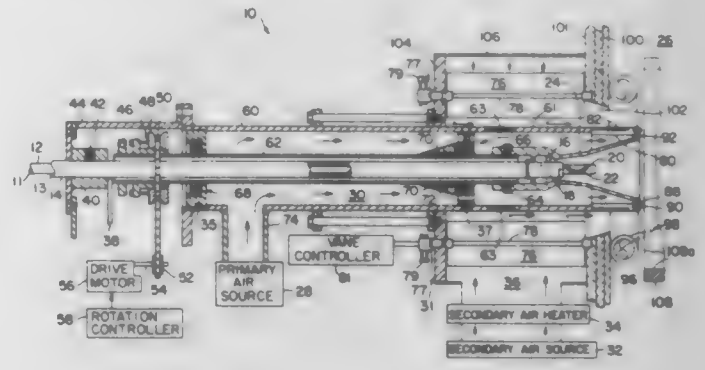
Filed Apr. 29, 1985, Ser. No. 728,358
Int. Cl.⁴ F23D *11/04*
U.S. Cl. 431—168 **19 Claims**

1. A coal-water mixture fuel burner coupled to a combustion chamber comprising:

a rotating cup having a first open narrow end, a second open expanded end and a tapered inner portion positioned therebetween, wherein the second expanded end of said rotating cup is positioned adjacent to and in communication with an aperture in the combustion chamber;

first inner conduit means connected to a coal-water mixture fuel source and having a first end positioned within the first open narrow end of said rotating cup for directing said coal-water mixture fuel within said rotating cup; and

second outer conduit means connected to a source of steam and coaxially positioned about said first inner conduit means along a portion of the length thereof and including a first end positioned within the first open narrow end of said rotating cup and along the length of said first inner conduit means for directing said steam flow onto the tapered inner portion of said rotating cup for facilitating



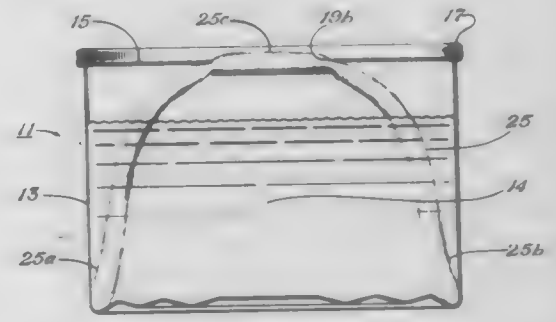
the flow of the coal-water mixture fuel along said rotating cup and its discharge in a collection of fine particles therefrom into the combustion chamber.

4,604,053

FOOD WARMING CARTRIDGE

Rudolpho de la Rosa, 2639 Tanglewood, Grapevine, Tex. 76051

Filed Mar. 25, 1985, Ser. No. 715,678
Int. Cl.⁴ F23D *3/24*
U.S. Cl. 431—320 **8 Claims**



1. A food warming cartridge with liquid fuel, comprising in combination:

a liquid fuel container having a lid with a generally rectangularly shaped aperture therein;

a generally rectangularly shaped wick having at least one end submersed in the fuel, a central section of the wick in contact with a lower side of the lid and which blocks the aperture; and retainer means for retaining the wick in contact with the lower side of the lid and holding the central section in a generally flat position parallel with the plane of the lid whereby a side of the central section is exposed so that an exposed side has the shape of the aperture.

4,604,054

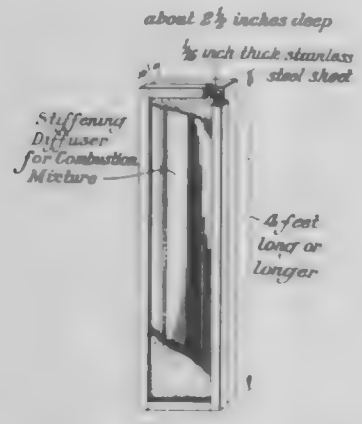
RADIANT HEATING

Thomas M. Smith, 1415 Golf Rd., Cinnaminson, N.J. 08077

Continuation-in-part of Ser. No. 435,412, Oct. 20, 1982, abandoned, and a continuation-in-part of Ser. No. 567,270, Dec. 30, 1983, abandoned, and a continuation-in-part of Ser. No. 628,989, Jul. 9, 1984, and a continuation-in-part of Ser. No. 592,793, Mar. 23, 1984. This application Jul. 8, 1985, Ser. No. 752,904
Int. Cl.⁴ F23D *13/12*
U.S. Cl. 431—328 **4 Claims**

1. A gas-fired burner having a ceramic fiber mat held across the mouth of a rectangular elongated sheet metal burner body at least twice as long as it is wide and at least two feet long, to leave a shallow combustion mixture plenum about three-eighths to about one inch deep and having side walls between the mat and the back wall of the body, a rigidifying partition extending across essentially the entire plenum and welded at

essentially all of its periphery to the interior of the plenum walls to divide the plenum into front and back compartments, and a combustion mixture inlet connected to the back compartment, the partition having spaced openings for passing combustion mixture from the back compartment to the front compartment.

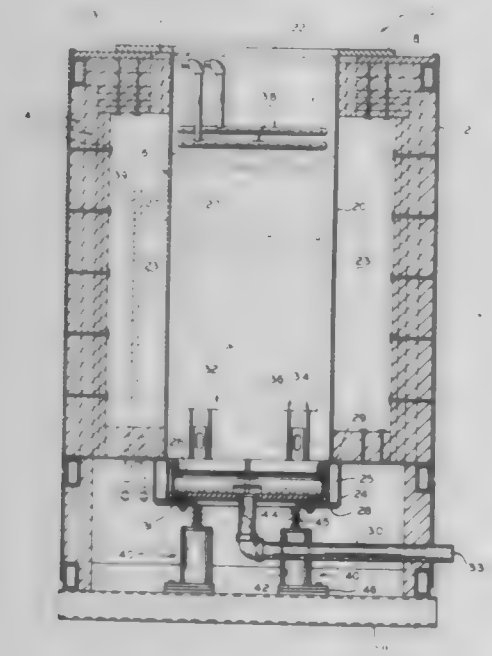


4,604,055

LIP-HUNG RETORT FURNACE

Peter B. Mackenzie, Fonthill, Canada, assignor to Can-Eng Holdings, Ltd., Canada

Filed Jun. 3, 1985, Ser. No. 740,749
Int. Cl.⁴ C21D *9/00*
U.S. Cl. 432—58 **8 Claims**



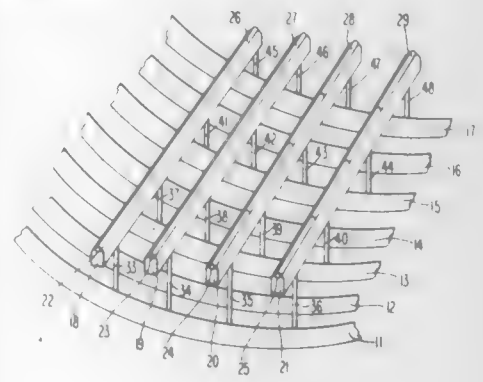
1. A fluidized bed furnace comprising:
a furnace housing including an outer shell;
a furnace base and an outer top plate secured to the respective lower and upper ends of said furnace housing;
a vertical retort having an opened upper end and an opened lower end, said retort being disposed in an opening formed in said outer top plate and extending downwardly into the center of said furnace housing;
heat insulating material disposed between said outer shell and said vertical retort;
a retort base assembly being adapted for closing the lower end of said vertical retort;
upper support means for supporting the upper end of said vertical retort on top of said outer top plate so as to permit downward growth only during thermal expansion;
said upper support means including an annular flange formed integrally with the sidewalls of said retort at the upper end thereof and being adapted to be fixedly mounted to the outer surface of the outer top plate;
lower support means interposed between the lower surface of said retort base assembly and the upper surface of said furnace base for supporting substantially all the weight of said retort, the weight of the load of a fluidizable media, and the weight of a load of material to be heat treated; and
said lower support means including at least one resilient support device consisting of a block member, a coiled spring, a guide rod, and lower shims, wherein on end of said block member is adapted to receive one end of said guide rod, the other end of said guide rid being attached to said retort base assembly, said lower shims being in contacting engagement with the other end of said block member for bearing against the upper surface of sand furnace base, said coiled spring being disposed in surrounding relationship with said guide rod, the ends of said coiled spring being in contacting engagement for bearing against the lower surface of said retort base assembly and the upper surface of said block member respectively.

4,604,056

VACUUM FURNACE SYSTEM HEARTH

William R. Jones, 3 Hillcraft Way, Telford, Pa. 18964

Filed Mar. 1, 1985, Ser. No. 707,217
Int. Cl.⁴ F23D *23/00*; F27B *9/14*
U.S. Cl. 432—249 **4 Claims**



1. A hearth arrangement to be used in a hot zone of a vacuum furnace, which vacuum furnace has an opening to pass work pieces therethrough and which hot zone has heat generating means therein, comprising in combination: a plurality of support bars formed of material which has good tensile strength at high temperatures and low thermal expansion, each of said support bars formed to have an upper surface and a lower surface and each having a depth dimension therebetween, each of said support bars further formed to have a longitudinal groove along its upper surface; a plurality of molybdenum bar support rods, with a different group thereof respectively secured to the lower surface of a different associated one of said support bars, said molybdenum bar support rods formed to hold its associated support bar free of coming in contact with said heating generating means; and a plurality of load support rods formed of molybdenum and coated with titanium nitride and each of said support rods formed to rotatably fit into said groove of an associated support bar.

4,604,057

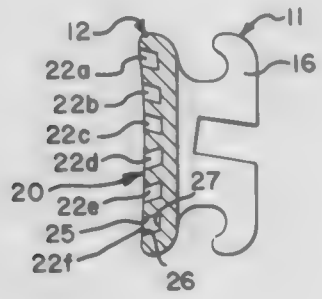
CAST ORTHODONTIC APPLIANCE

John E. Viglietti, Sheboygan, Wis., assignor to American Orthodontics Corporation, Sheboygan, Wis.

Filed Jul. 3, 1985, Ser. No. 751,903
Int. Cl.⁴ A61C *7/00*
U.S. Cl. 433—9 **7 Claims**

1. In a cast orthodontic appliance adapted to be bonded to a tooth with a bonding material including a pad portion having a bonding surface and an appliance portion extending from the pad portion, said bonding surface being curved to conform to a tooth surface receiving a bonding material to bond the appliance to a tooth,
the improvement being in the bonding surface which includes a plurality of lingually opening parallel grooves,
said grooves having substantially parallel opposed side

walls, the axes of the grooves as defined by said side walls on opposite sides of the midline of the appliance diverging



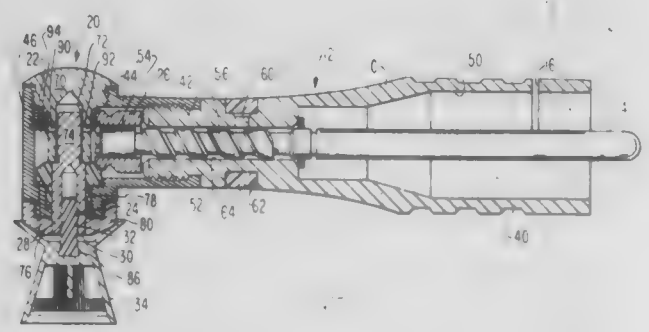
outwardly from each other, whereby a greater tooth surface bonding area is provided to interconnect the bracket and tooth through the bonding material.

4,604,058

DENTAL APPLIANCE

Leo Fisher, Denver, and Atilla Weiser, Westminister, both of Colo., assignors to Teledyne Industries, Inc., Denver, Colo.

Division of Ser. No. 438,048, Nov. 1, 1982, Pat. No. 4,486,175.
This application Sep. 14, 1984, Ser. No. 650,424
Int. Cl.[4] A61C *1/14*
U.S. Cl. 433—127 **3 Claims**



1. A dental appliance comprising:
an elongated hollow tube;
an elongated drive shaft supported within said tube for axial rotation;
means for coupling one end of said tube to a handle and for coupling one end of said shaft to a source of rotary power;
a head joined to the other end of said tube and defining an interior cavity;
a hub mounted in said cavity for rotation about an axis disposed at an angle with respect to said shaft;
motion translating means disposed in connection with said cavity for transmitting rotary force from said shaft to said hub;
an opening defined in said head and leading outwardly from said cavity, a portion of said hub being accessible through said opening;
means effectively defined in said hub for securing a dental attachment thereto in a location beyond said opening from said cavity;
means for creating a seal between said opening and said hub in order to prevent fluid flow therethrough,
a threaded segment included in said securing means;
and means defining at least a pair of respectively-different thread patterns in said segment.

4,604,059

DENTAL COMPOSITIONS, FIRED DENTAL PORCELAINS AND PROCESSES FOR MAKING AND USING SAME

Irving Klaus, Santurce; Warren Herbstman, Isla Verde, and Jairo Lopez, La Riviera, all of P.R., assignors to Excelco International, Inc., Santurce, P.R.

Filed Jan. 4, 1985, Ser. No. 688,746
Int. Cl.[4] A61C *5/00*
U.S. Cl. 433—217.1 **20 Claims**

1. A process for making a fired, etched dental porcelain for bonding to a dental substrate, said process comprising the steps of providing a dental porcelain composition comprised of a powder dental porcelain frit material and a second material which is selectively chemically etchable from a fired dental porcelain prepared from the composition and which, upon firing of the composition, maintains a separate phase with respect to said powder dental porcelain frit material; forming said dental porcelain composition into a predetermined shape having a dental porcelain surface for attachment to a dental substrate; firing the dental porcelain composition in the predetermined shape so that the second material in the composition is maintained in the fired dental porcelain as said separate phase; and chemically etching said dental porcelain surface with a chemical etching material which selectively removes said second material from said dental porcelain surface to increase the porosity of such dental porcelain surface so as to provide enhanced bonding of said dental porcelain surface to a dental substrate.

11. A process for tooth repair comprising the steps of providing a fired dental porcelain comprising a fired composition including a powder dental porcelain frit material and a second material which is selectively chemically etchable from said fired dental porcelain and which maintains a separate phase with respect to said powder dental porcelain frit material upon such firing, wherein said fired dental porcelain has a dental porcelain surface shaped to be bonded to a surface of a tooth to be repaired and said dental porcelain surface is chemically etched with a chemical etching material to remove second material therefrom to increase the porosity of said dental porcelain surface and thereby provide enhanced bonding of said dental porcelain surface to such a surface of a tooth; and bonding said etched dental porcelain surface of the fired dental porcelain to a surface of a tooth to be repaired.

4,604,060

DENTAL POST SYSTEM

Bernard Weissman, New York, N.Y., assignor to Ipco Corporation, White Plains, N.Y.

Filed May 14, 1985, Ser. No. 733,958
Int. Cl.[4] A61C *5/08*
U.S. Cl. 433—221 **42 Claims**

1. A dental post system for use in preparing a dental restoration, comprising:
a dental core;
an elongated cylindrical post having a lower anchoring portion for secured retention within a cement prepared bore in a tooth stub, and an upper end portion for projecting from the tooth stub to be received within an aperture in said dental core, the restoration being disposed on said dental core;
interlock means for securing said dental core onto said upper end portion of said cylindrical post to prevent both axial lift-off as well as rotational displacement between said dental core and said cylindrical post; and
a laterally extending shoulder portion being provided on said cylindrical post between said lower anchoring portion and said upper end portion to define stop means for engaging said dental core to prevent insertion of said lower anchoring portion into said aperture of said dental

core so that said dentral core is positioned on said upper end portion at a predetermined location to permit coac-



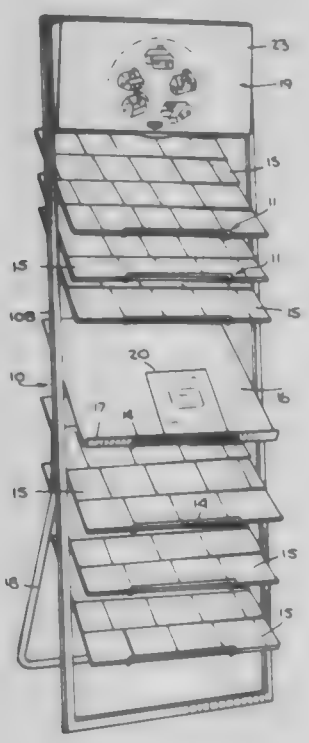
tion between said interlock means and said upper end portion.

4,604,061

DISPLAY RACK AND COLOR SELECTION ASSEMBLY

Reginald Willcocks, 1 Joel Place, Port Washington, N.Y. 11050, and Marvin Zaro, 405 E. 63rd St., New York, N.Y. 10021

Filed Apr. 4, 1985, Ser. No. 719,826
Int. Cl.[4] G09B *25/04*
U.S. Cl. 434—74 **9 Claims**



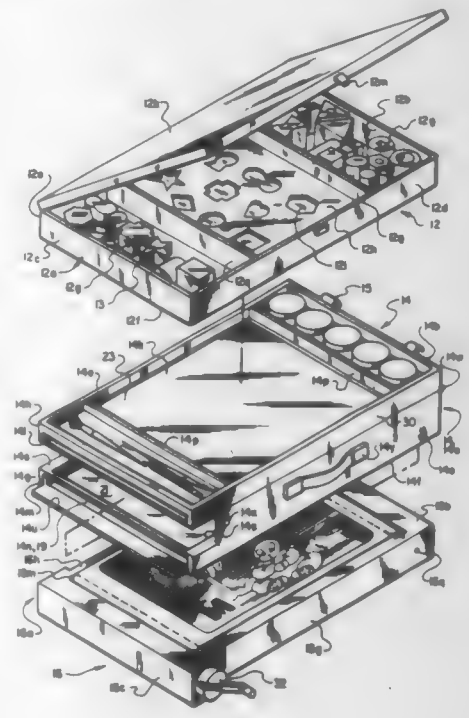
1. A display rack and color selector assembly comprising:
A. a rack having shelves on which are supported removable sample boards carrying roof shingles in different colors; and
B. a color selector including a front panel on whose face is a radial array of typical homes in different architectural styles, the roof in each picture being notched out to define a window whose geometry matches that of the roof, and a rotatable color wheel mounted behind the panel, the wheel being divided into segments, each having a shingled surface whose color corresponds to that of a respective sample, whereby a homeowner by inspecting a pictured home whose style is similar to that of his own, can then turn the color wheel to bring into registration with the roof window thereof, the segments of the wheel and thereby see how the pictured home looks when its roof is covered with shingles in any one of the different sample colors.

4,604,062

DRAWING/TRACING/TEMPLATE APPARATUS

Margaret H. Woods, 811 Loma Vista Pl., Santa Paula, Calif. 93060

Filed Jul. 29, 1985, Ser. No. 759,895
Int. Cl.[4] G09B *11/04*
U.S. Cl. 434—88 **12 Claims**



1. A drawing/tracing/template apparatus comprising:
A. a template/block assembly further comprising:
(a) a first rigid rectangular structure having a template compartment,
(b) a removable master template having a plurality of cutouts and sized to fit into said template compartment,
(c) a plurality of blocks sized to fit into said cutouts in said master template,
B. a drawing/tracing assembly further comprising a second rigid rectangular structure having outside perimeter dimensions that allows said first rigid rectangular structure to be stacked and be locked in place, by a locking means, to the top of said second rigid rectangular structure, with said second rigid rectangular structure having:
(a) a shallow drawing/tracing area covered on top with a first transparent panel,
(b) a combination left side panel/entry section further having:
(1) a master drawing slot into which is inserted an art master that can be viewed through said first transparent panel,
(2) a light panel/paper roller entry and exit port,
C. a light panel/paper roller assembly further comprising a third rigid rectangular structure having outside perimeter dimensions that allows it to be inserted into and extracted from the light panel/paper roller entry and exit port on said combination left side panel/entry section with said third rigid rectangular structure having:
(a) a light compartment covered on top with a translucent panel,
(b) a set of lights internally located within said light compartment,
(c) a left compartment housing a left paper roll spool that is rotatably attached,
(d) a right compartment housing a right paper roll spool that is rotatably attached,
(e) a paper roll incorporating a set of art masters where one end of roll is attached to said left paper roll spool and other end of paper is pulled over the top of said

translucent panel and attached to said right paper roll spool, and

(f) means to simultaneously rotate said paper roll spools to control the position of the art master being viewed over said translucent panel.

4,604,063

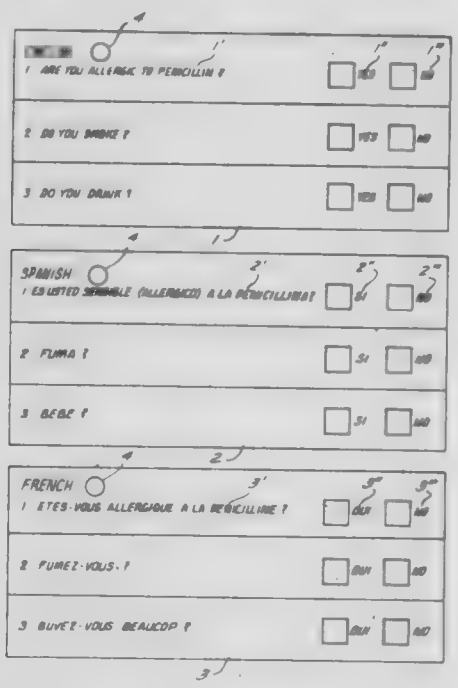
SYSTEM FOR AND A METHOD OF TRANSLATION

Simon Gurmarnik, 650 Mix Ave., Hamden, Conn. 06514

Filed Oct. 29, 1984, Ser. No. 666,097

Int. Cl.[4] G09B *19/08*

U.S. Cl. 434—157 **12 Claims**



1. A system for translation between a plurality of languages, comprising a plurality of carriers each corresponding to one language and including a plurality of questions and a plurality of answer choices to said questions; and transfer means interposable between said carriers, said questions on each of said carriers being located at the same questions locations, and said answer choices on each of said carriers being located at the same answer choices locations, so that when at least two carriers corresponding to two languages are overlaid with one another, similar questions are overlaid in both carriers and similar answer choices are overlaid in both carriers, so that when one person gave an answer to a question on one of said two carriers and therefore in one of said two languages, said given answer is transferred by said transfer means to said underlying carrier, whereby another person identifies the answer and the question on the other of said two carriers in the other of said languages, since said answer choices and said questions are located at the same questions locations and answer choices locations on said other carrier.

4,604,064

PORTABLE DEMONSTRATOR FOR ELECTRONIC EQUIPMENT

Douglas A. Boehm, Hoffman Estates, and David M. Ylinen, Lake Zurich, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed May 22, 1984, Ser. No. 612,939

Int. Cl.[4] G09B *5/06*

U.S. Cl. 434—224 **15 Claims**

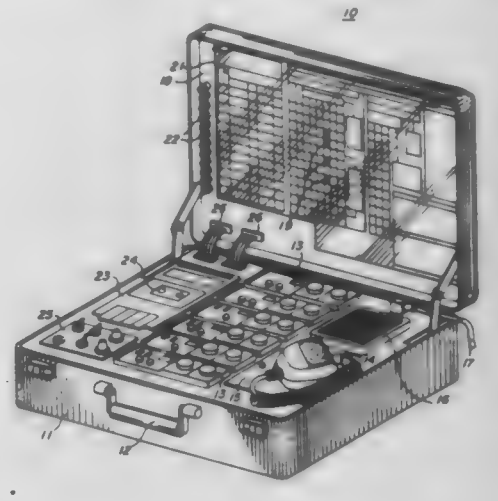
1. A portable hand-carried audio-visual demonstration apparatus for simulating the operation of particularized radio communications equipment, said demonstration apparatus comprising in combination:

means for controlling at least one representative portion of said radio communications equipment to be demonstrated;

visual display means, coupled to said communications equipment control means, and including selected indicators for displaying the simulated operation of said communications equipment in response to the manipulation of said control means;

portable housing means for containing said communications equipment control means with said display means; and

audio reproduction means for providing pre-recorded voice



instruction in the simulated operation of said communications equipment,

whereby said voice instruction directs operator manipulation of said control means which, in turn, effects a corresponding operational and visual response in said display means.

4,604,065

TEACHING OR AMUSEMENT APPARATUS

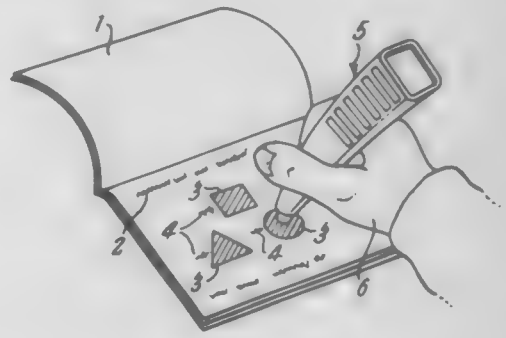
Stephen O. Frazer, and Martin P. Riddiford, both of London, England, assignors to Price/Stern/Sloan Publishers, Inc., Los Angeles, Calif.

Continuation of Ser. No. 478,680, Mar. 25, 1983. This application Jan. 23, 1985, Ser. No. 697,973

Claims priority, application United Kingdom, Oct. 25, 1982, 8230363

Int. Cl.[4] G09B *7/06*

U.S. Cl. 434—331 **26 Claims**



1. Apparatus for use in amusement, manual coordination, teaching, educational evaluation and related purposes, said apparatus comprising a substrate for use in conjunction with a manually manipulatable infra-red emitting and infra-red reflectance measuring device; said substrate comprising:

a sheet of material having determined transparency and reflectivity to infra-red illumination and having opposed major planar surfaces;

printed matter in any desired organization applied to at least one of said major planar surfaces of said substrate in printings of infra-red transparent inks in selected screen densities to provide coloring on said surface of desired color, hue and intensity;

selected portions of said printed matter including at least one printing of infra-red transparent ink and an additional printing in a carbon black infra-red absorptive ink in a sufficiently small screen of dots to minimize visually observed discoloration and graying of said infra-red transparent ink, and to minimize visual detection of the pres-

ence of said carbon black ink dots, but, sufficient to cause a detectable drop in infra-red reflectance at said selected portions when said selected portions are illuminated with infra-red light; and.

other portions of said printed matter including screens of said printing of blue, red, and yellow infra-red transparent inks in blue, red and yellow ink combinations simulating the visually observed discoloration and graying of said selected portions caused by the presence of said carbon black ink dots in said selected portions, and, to simulate dots of infra-red transparent non-carbon black ink substantially matching said dots of infra-red absorptive carbon black ink in visually observed discoloration and light absorptance characteristics, whereby;

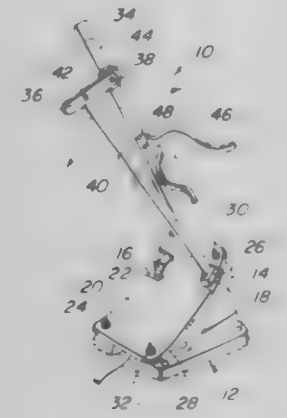
casual visual inspection of said substrate will fail to reveal differences in the composition of the inks used in the printing of the respective selected portions and said other portions, but, scanning of said printed substrate with said infra-red emitting and reflectance measuring device will enable differentiation by said device between said selected portions and said other portions.

4,604,066

HAND CONTROL FOR FOOT CONTROL TROLLING MOTOR

Christian R. Davatz, 900 E 8th St., Cherryvale, Kans. 67335

Filed Sep. 9, 1985, Ser. No. 774,132
Int. Cl.[4] B60L *15/20*
U.S. Cl. 440—7 **4 Claims**



1. A hand control for a foot control of a trolling motor on a boat, said foot control of the type having a steering pedal, a three speed control knob and an on-off motor switch, said hand control comprising:

(a) a base shoe having a cut out area on one side for said three speed control knob and a guide member on opposite side, said base shoe removably mounted to said steering pedal;

(b) an elongated stationary rod affixed to and extending upwardly from said base shoe so as to manually operate by hand said steering pedal;

(c) an arm pivotally mounted to upper portion of said stationary rod and extending outwardly from said stationary rod; and

(d) an elongated movable rod pivotally mounted to said arm and extending downwardly through said guide member to contact said on-off motor switch so that when said arm is activated by said hand movable rod will operate said on-off motor switch.

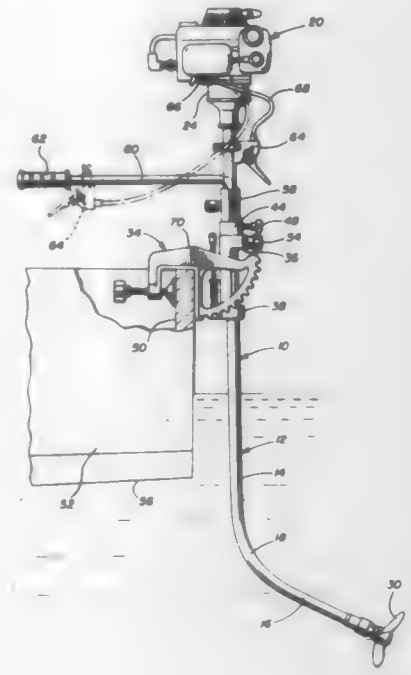
4,604,067

METHOD AND APPARATUS FOR CONVERTING LINE TRIMMER INTO A TROLLING MOTOR

Jimmy C. Roberts, P.O. Box 285, Sumterville, Fla. 33585

Filed Nov. 20, 1984, Ser. No. 673,773
Int. Cl.[4] B63H *21/26*
U.S. Cl. 440—49 **6 Claims**

1. The method of converting a line trimmer into an outboard trolling motor and wherein the trimmer includes and elongated tubular housing having relatively angulated opposite end portions joined by the smoothly curved intermediate length portion, and elongated flexible drive shaft extending through and journalled from said housing, a drive motor mounted on one end portion of said housing including rotary output shaft drivingly coupled to the corresponding end of said drive shaft, a handle mounted on said one end portion and spaced from said drive motor, and a trimmer line spool head removably threadingly mounted on the other end of said drive shaft remote from said motor, said method including the steps of unthreading said





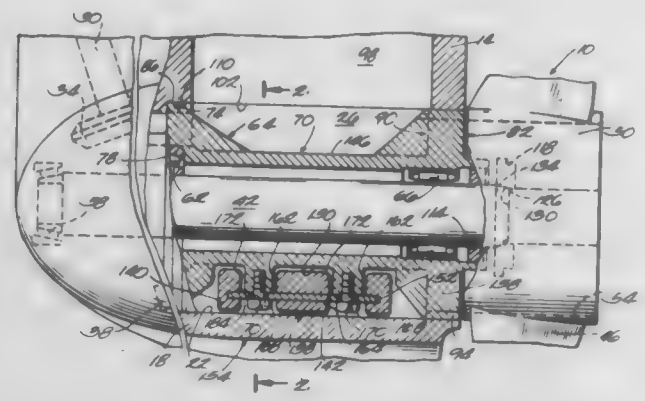
head from the last mentioned end of said drive shaft, threadingly mounting a marine screw-type propeller on said last mentioned end in lieu of said head, removing said handle from said one end portion, providing a boat supportable mount for said one end portion of said housing and rotatably mounting said housing one end portion from said mount, with said housing one end portion disposed in upstanding position, for angular displacement relative to said mount about an axis at least closely paralleling the center axis of said housing one end portion.

4,604,068

MARINE PROPULSION DEVICE LOWER UNIT INCLUDING PROPELLER BEARING MEMBER ANODE

Douglas B. Guinn, Shorewood, Wis., assignor to Outboard Marine Corporation, Waukegan, Ill.

Filed Sep. 10, 1984, Ser. No. 648,575
Int. Cl.[4] B63H *1/00*
U.S. Cl. 440—76 11 Claims



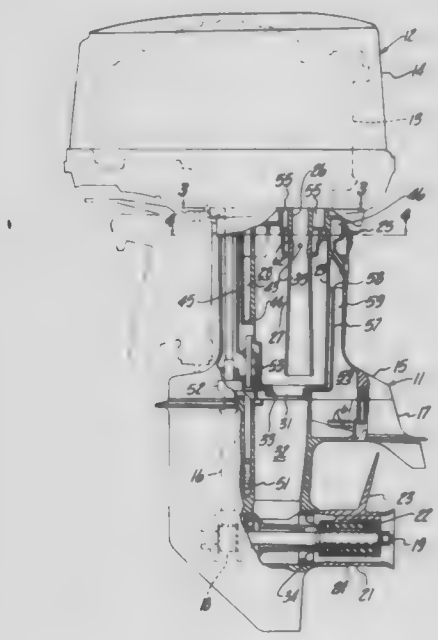
1. A lower unit for a marine propulsion device, which lower unit comprises a lower portion, an open area inside said lower portion, an opening located in said lower portion and communicating said open area with the environment outside of said lower portion, a sacrificial anode passable through said opening, and means operably accessible from outside of said lower portion for releasably securing said sacrificial anode in said open area after the passage of said sacrificial anode through said opening.

4,604,069

EXHAUST SILENCER STRUCTURE FOR OUTBOARD ENGINES

Michihiro Taguchi, Hamamatsu, Japan, assignor to Sanshin Kogyo Kabushiki Kaisha, Japan

Filed Jul. 24, 1984, Ser. No. 633,792
Claims priority, application Japan, Jul. 28, 1983, 58-136829
Int. Cl.[4] B63H *21/38*
U.S. Cl. 440—88 15 Claims



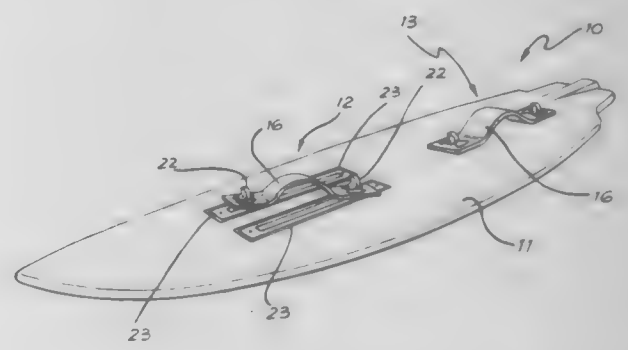
1. In an exhaust system for an outboard motor or the like having a drive shaft housing and a lower unit adapted to be at least partially submerged in the water, an internal combustion engine having a coolant jacket and an exhaust gas outlet, a high speed exhaust gas discharge normally positioned below the water level, a slow speed exhaust gas discharge normally positioned above the water level, a high speed exhaust system for delivering exhaust gases from said engine exhaust gas outlet to said high speed exhaust gas discharge, including a main expansion chamber formed at least in part in said drive shaft housing and an exhaust pipe extending from said exhaust gas outlet and opening into said main expansion chamber, and a slow speed exhaust system for delivering exhaust gases from said engine exhaust gas outlet to said slow speed exhaust gas discharge and including a water chamber formed in said drive shaft housing through which exhaust gases must pass from said exhaust gas outlet to said slow speed exhaust gas discharge, means for supplying coolant from said engine coolant jacket to said water chamber, the improvement comprising said slow speed exhaust system including a plurality of expansion chambers separate from said main expansion chamber and through which exhaust gases pass from said engine exhaust gas outlet to said slow speed gas discharge and means for delivering coolant from said engine coolant jacket to said slow speed exhaust gas discharge for cooling the exhaust gases delivered to the atmosphere from said slow speed exhaust gas discharge.

4,604,070

SKI BOARD HAVING ANGULARLY ADJUSTABLE BINDING

Bruce C. McKee, and Mitchell S. Ross, both of 65 Bungan Head Road, Newport, New South Wales 2106, Australia

Continuation of Ser. No. 573,953, Jan. 25, 1984, abandoned. This application Dec. 10, 1985, Ser. No. 807,202
Claims priority, application Australia, Jan. 28, 1983, PF7824
Int. Cl.[4] A63C *15/06*
U.S. Cl. 441—70 9 Claims



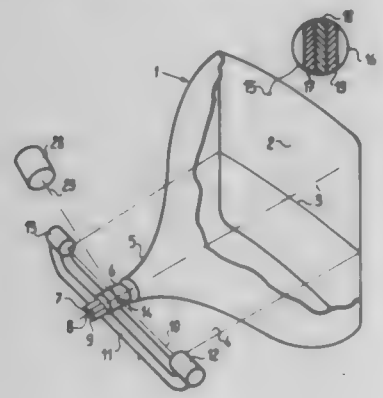
1. A ski board comprising an elongated ski body having an upper surface upon which a rider stands in use of the board, a first foot engaging means located generally centrally of the said surface and adapted to receive a foot of the rider so that the foot extends at least partly transverse of said surface; a second foot engaging means rearward of said first foot engaging means and adapted to engage the other foot of the rider so that said other foot extends at least partly transverse of said surface; each engaging means including an elongated flexible strap; first and second securing means attaching the ends of each strap to said surface at spaced locations so that the straps form loops within which the user's feet are located; and wherein the first securing means adjustably attaches the ends of the strap of said first securing means to said surface at locations spaced transversely of the board, with the ends of the strap of said first securing means being movably attached to said surface, the angle of the strap being independently movably adjustable relative to the longitudinal axis of the board to enable the user's foot engaged therein to be angularly adjustable as it extends generally transverse of the board.

4,604,071

PROCESS FOR ALIGNING AND CENTERING AN ASSEMBLY OF ELECTRON-GUNS ON A COLOR TELEVISION TUBE AND DEVICE FOR CARRYING OUT THE PROCESS

Claude Poss, Grottaferrata, Italy, assignor to Videocolor, Montrouge, France

Filed Jun. 19, 1984, Ser. No. 622,331
Claims priority, application France, Jun. 21, 1983, 83 10240
Int. Cl.[4] H01J *9/42*
U.S. Cl. 445—4 20 Claims



15. In a combination color television tube having an electro-luminescent screen and a neck extending therefrom, contiguous luminophorous element bands formed vertically on the inner surface of the electro-luminescent screen, a gun assembly having three guns placed to the rear of the neck and along the longitudinal axis from the center of the screen for striking the luminophorous element bands with three beams, the gun assembly further including marker means, a method for aligning and centering the gun assembly to the luminophorous element bands for canceling a positioning error formed therebetween, the method comprising:

placing two optical means on opposing sides of the gun assembly for forming a symmetry plane perpendicular to the bands and itnersecting the gun assembly;

defining from the perpendicular relationship between the symmetry plane and the bands a reference marker corresponding to an alignment value for proper convergence of the three beams;

projecting a luminous beam onto the marker means of the gun assembly for establishing an angle between the luminous beam and the symmetry plane, the angle being representative of the positioning error;

sensing, via analyzer means located along the symmetry plane, at least one image from the marker means;

contrasting the at least one of the images with the alignment value for determining a positioning error value; and

positioning the gun assembly in response to the positioning error value for canceling the positioning error angle between the symmetry plane and the luminous beam on a real-time basis.

4,604,072

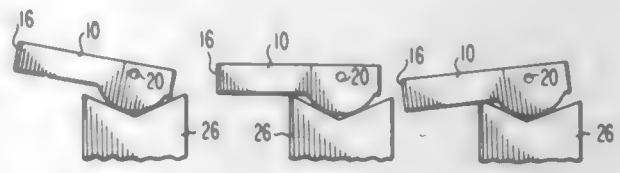
METHOD FOR ENGAGING SUPPORT STUDS INTO SHADOW MASK SPRING APPARATUS

Gerald M. Allardyce, Avoca, Pa., assignor to RCA Corporation, Princeton, N.J.

Filed Jul. 3, 1984, Ser. No. 627,534
Int. Cl.[4] H01J *29/07*
U.S. Cl. 445—30 1 Claim

1. A method for placing a shadow mask assembly into a CRT panel having studs, said method comprising:

engaging a circualr arcuate edge of a shadow mask spring having a stud receiving hole at the center of curvature of said edge with a locator having a concave top surface; and



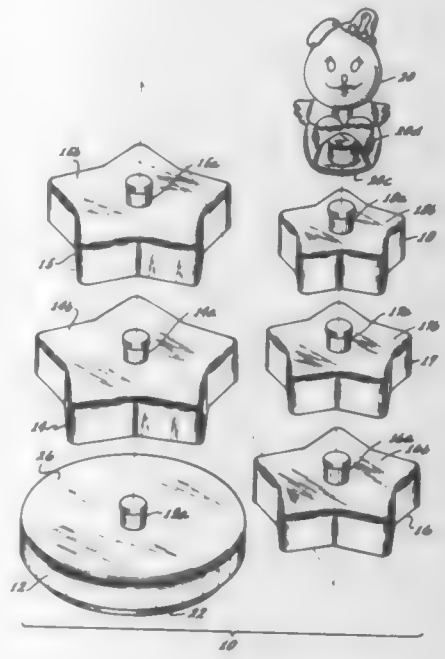
moving said locator to thereby move said panel assembly until said spring hole receives a stud.

4,604,073

TAKE-APART ROCKING STACK TOY

James R. Livesey, Fountain Valley; William Hart, Palos Verdes Estates, and Harold A. Hartleben, Los Angeles, all of Calif., assignors to Mattel, Inc., Hawthorne, Calif.

Filed Dec. 19, 1984, Ser. No. 683,736
Int. Cl.[4] A63H *33/04, 13/38*
U.S. Cl. 446—117 8 Claims



1. In a toy, the combination comprising:

a hollow base member having a generally spherically shaped bottom surface means configured for rocking engagement with a supporting surface and an upper generally planar surface having a generally centrally located upwardly extending post means formed integrally therewith for providing a coupling extension, said generally spherically shaped bottom surface means including a substantially spherically shaped surface and generally centrally located substantially flattened portion on said substantially spherically shaped surface;

a plurality of other hollow members, each of said other hollow members having generally parallel surfaces, one of said surfaces having a generally centrally positioned post means extending therefrom for providing a coupling extension configured generally identical to the post means of said hollow base member, and the other of said surfaces having formed generally centrally therein a generally cup-shaped socket means configured for mating engagement with one of said post means and removably stacking each of said other hollow members to another of said other hollow members in order to allow a number of said other hollow members to be supported on said hollow base member and rocked by said spherically shaped bottom surface means; and

a figure member having a base portion with a generally cup-shaped socket means formed therein for mating engagement with one of said post means and removeably assembling said plurality of other hollow members in

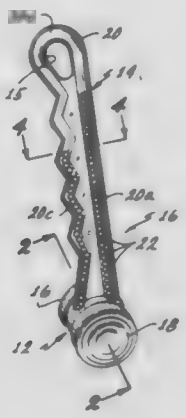
generally interlocking relation, said hollow base member having a wall thickness greater than the wall thickness of each of said other hollow members, said wall thickness of said other hollow members varying in size so that at least two of said other hollow members have different size wall thickness and said other hollow members are capable of being stacked upon one another in order of descending wall thickness size.

4,604,074

PUSH TOY

T. Scott Engle, Manhattan Beach, and Jeffrey B. Poznick, La Crescenta, both of Calif., assignors to Mattell, Inc., Hawthorne, Calif.

Filed Aug. 30, 1985, Ser. No. 771,544
Int. Cl.[4] A63H *29/08*
U.S. Cl. 446—171 **15 Claims**



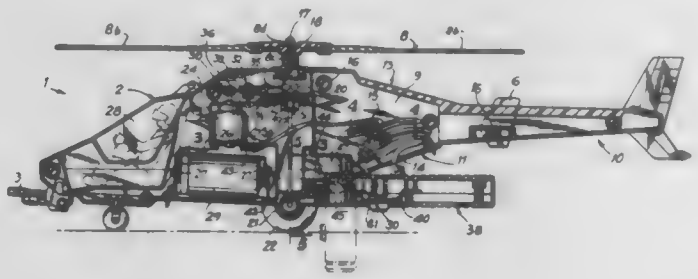
1. In a push toy, the combination comprising:
housing means;
at least one wheel rotatably coupled to said housing means and adapted for engaging a surface;
handle means coupled to said housing means for enabling an operator to move said at least one wheel on a surface with said handle means in a generally upright position;
at least partially transparent continuous conduit means on said handle means;
impeller means coupled for rotation upon rotation of said at least one wheel, said impeller means communicating with a portion of said conduit means;
a number of spherical elements movably positioned within said conduit means, the number of such elements and the configuration of said conduit means enabling, upon rotation of said impeller means, the movement of said spherical elements within said conduit means.

4,604,075

TOY HELICOPTER WITH A CONTROL UNIT

Lawrence D. Richards, Huntington Station, N.Y., and Johnny S. C. Yuen, West Point, Hong Kong, assignors to Arco Industries, Harbour City, Hong Kong

Filed May 22, 1985, Ser. No. 736,954
Int. Cl.[4] A63H *27/00*
U.S. Cl. 446—232 **4 Claims**



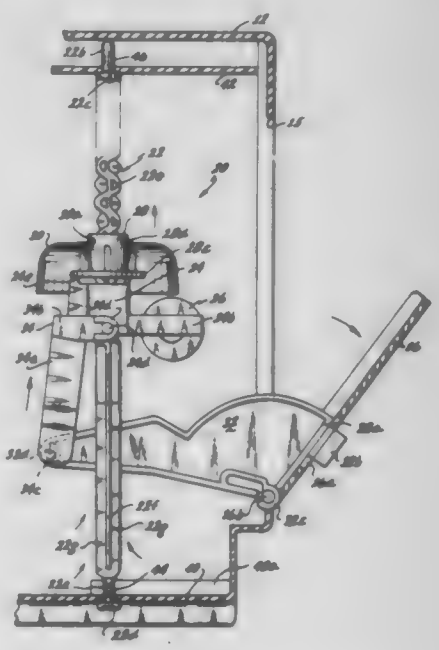
1. A toy helicopter which comprises:
(a) a housing;
(b) a rotor blade attached to a top portion of a driving shaft which extends vertically through said housing;
(c) a motorized means for rotating said rotor blade connected to said driving shaft;
(d) a self-contained control unit removably insertable into said housing and having a switch mechanism connected to a first conductor end of a wire cord, and a second conductor end of said wire cord being connected to said motorized means, said control unit when inserted in said housing having a first position whereby said control unit is in a plane parallel to a plane of said rotor blade and said control unit activates an electrical circuit of said motorized means causing the toy helicopter to travel along a horizontal surface, and a second position whereby said control unit is in a plane perpendicular to said plane of said rotor blade and activates said electrical circuit permitting control of the toy helicopter by hand, and said control unit takes a third position when removed from said housing whereby said control unit is remote from the toy helicopter.

4,604,076

TOY STOVE WITH SIMULATED TIMER

Raymond M. St. Pierre, Hawthorne, Calif., assignor to Mattel, Inc., Hawthorne, Calif.

Filed May 22, 1985, Ser. No. 736,998
Int. Cl.[4] A63H *3/52, 5/00*
U.S. Cl. 446—418 **22 Claims**



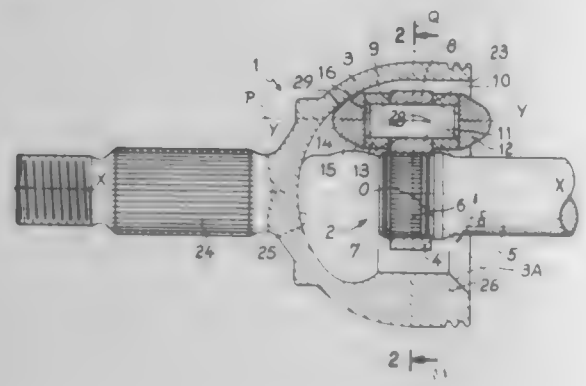
1. In a toy stove, the combination comprising:
an enclosure having an opening simulating an oven opening;
a door hingedly coupled to said enclosure for closing and providing access through said opening;
bell means mounted within said enclosure;
timer means mounted within said enclosure; and
actuating means within said enclosure interoperatively interconnecting said door, said timer means and said bell means for enabling actuation of said bell means a predetermined time after closing of said door.

4,604,077

CONSTANT-SPEED TRIPOD JOINT HAVING AN AXIAL RETENTION

Michel A. Orain, Conflans Sainte Honorine, France, assignor to Glaenzer Spicer, Poissy, France

Continuation of Ser. No. 473,434, Mar. 9, 1983, abandoned. This application Mar. 12, 1985, Ser. No. 710,525
Claims priority, application France, Mar. 15, 1982, 82 04318
Int. Cl.[4] F16D *3/20, 3/30*
U.S. Cl. 464—111 9 Claims



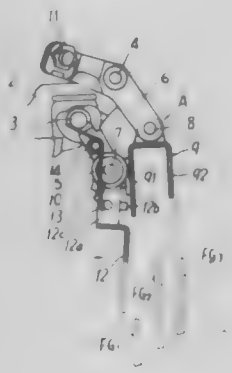
1. A constant-speed tripod joint comprising:
a bell element provided internally with three pairs of tracks, each said track having a configuration such that a center line thereof is curved;
a tripod element axially fixed within said bell element and having an axis of rotation, said tripod element having three arms extending radially outward therefrom, each said arm having a pivot axis parallel to said axis of rotation;
each said arm having rotatably and slidably mounted thereon a roller engaging a respective said pair of tracks;
each arm having means for mounting each said roller for pivotal movement about only a respective single axis which extends substantially parallel to said axis of rotation of said tripod element and which comprises said pivot axis of the respective said arm; and
said tripod element being axially retained in said bell element by said rollers bearing along edge portions of the respective said tracks and by contact of each said roller with a respective point of an inner spherical surface of said bell element.

4,604,078

THREE-STAGE SPEED CHANGE FRONT DERAILLEUR

Masashi Nagano, Izumi, Japan, assignor to Shimano Industrial Company Limited, Osaka, Japan

Filed Mar. 22, 1985, Ser. No. 714,914
Claims priority, application Japan, Mar. 29, 1984, 59-63013
Int. Cl.[4] F16H *7/00*
U.S. Cl. 474—80 5 Claims



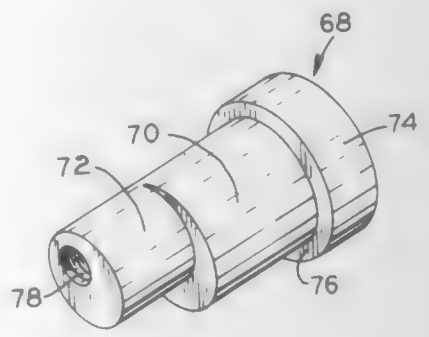
1. A three-stage speed change front derailleur for shifting a driving chain to one of three speed change stages respectively corresponding to three front chain gears of different diameter comprising:
a fixing member, a pair of linkage members, and a movable member provided with an inner guide plate, an outer guide plate and a shift plate, said shift plate functioning with said inner guide plate to shift said driving chain to a middle speed change stage and being positioned below said inner guide plate so as to serve to shift said driving chain from a smaller diameter front chain gear to a middle diameter front chain gear, said shift plate being pivoted to said movable member in relation of being swingable between a speed change operating position where said chain can be shifted by said shift plate to said middle diameter chain gear and a position where said shift plate moves away from said speed change operating position as said movable member moves from a position corresponding to said middle speed change state toward a position of shifting a chain to a larger diameter front chain gear, said front derailleur having biasing means for biasing said shift plate toward said speed change operating position.

4,604,079

SPEED CHANGER FOR ELECTRIC MOTOR

Kenneth D. Parrish, R.R. #4, Decatur, Ind. 46733

Filed Nov. 6, 1984, Ser. No. 668,744
Int. Cl.[4] F16H *7/14*
U.S. Cl. 474—114 15 Claims



1. A motor speed changer assembly for a motor having an output shaft, an end face and a plurality of throughbolts extending through said end face, said assembly comprising;
mounting base means adapted for mounting on said end face;
a plurality of apertures in said base, said apertures arranged to align generally axially parallel with said throughbolts;
a jackshaft rotatably mounted on said base and arranged with its axis parallel to said output shaft;
a pair of pulleys, one each of said pulleys being mounted respectively on said output shaft and jackshaft;
a belt connecting said pulleys;
a plurality of fastener means for fastening said base to said end face, each fastener comprising a cylindrical portion rotatably received in one of said apertures, shoulder means at one end of said cylindrical portion for abutting an end surface of said base and an eccentric portion connected to said cylindrical portion opposite said shoulder and secured to said through bolt ends.

4,604,080

TOOTHED DRIVE BELT

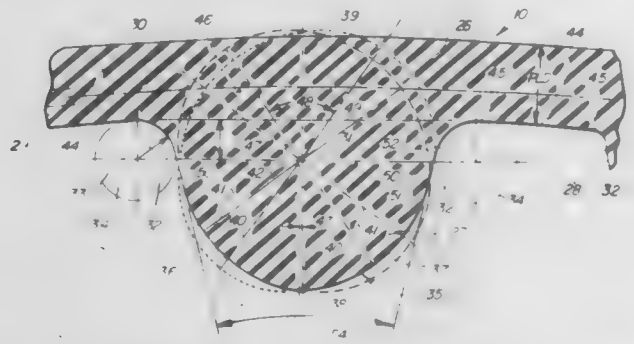
Takahide Mizuno, Kobe, Japan, assignor to Mitsuboshi Belting Ltd., Japan

Filed Oct. 11, 1984, Ser. No. 660,009
Claims priority, application Japan, Oct. 12, 1983, 58-157501[U]; Oct. 12, 1983, 58-157502[U]; Oct. 13, 1983, 58-158780[U]; Oct. 17, 1983, 58-161108[U]
Int. Cl.[4] F16G *1/28;* F16H *7/02*
U.S. Cl. 474—153 19 Claims

1. Drive means comprising:
a pulley having a radially outwardly opening belt-engagement groove defined by an annular series of alternating grooves and teeth, each of the grooves having an inner root being defined in cross section by a circular arc defining said root of the grooves and having opposite outer

ends, a pair of straight lines extending one each outwardly from said opposite outer ends of the root arcs and having outer distal ends, and a pair of circular entrance arcs extending one each outwardly from said distal ends of the straight lines, the teeth between said grooves having tip surfaces, each tip surface being defined by a straight line interconnecting opposed ends of the circular entrance arcs of the grooves at the opposite sides of the tooth; and

a drive belt having a longitudinally extending series of alternating grooves and teeth at a constant pitch, each belt tooth defining a centerline and being defined in longitudi-



nal cross section by a tip surface defined by a pair of elliptical arcs meeting at said centerline of the tooth and defining outer ends, said elliptical arcs defining elipses having long and short axes, the long axes of the ellipses defining the elliptical arcs being at equal and opposite angles to the centerline of the tooth, and opposite flanks defined by circular arcs extending one each from the outer ends of the elliptical arcs, said pulley grooves and belt teeth comprising means for causing backlash between said belt teeth and said pulley groove in static engagement to increase linearly from the belt tooth flank to the belt tip face.

4,604,081

TOOTHED BELT

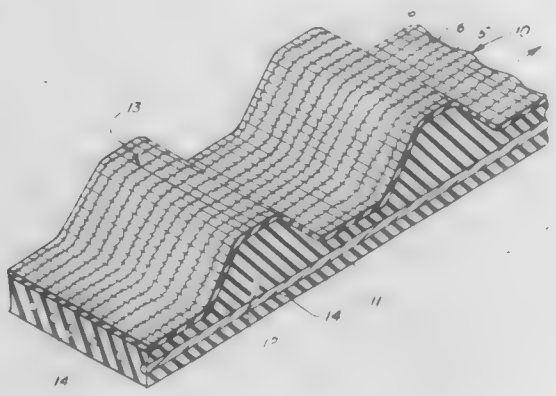
Satoshi Mashimo, Akashi; Masayuki Tanaka; Yoshio Yamaguchi, both of Kobe, and Takashi Kinoshita, Hyogo, all of Japan, assignors to Mitsuboshi Belting Ltd., Japan

Filed Oct. 4, 1984, Ser. No. 657,739

Claims priority, application Japan, Oct. 7, 1983, 57-188795

Int. Cl.⁴ F16G *1/28*

U.S. Cl. 474—205 **17 Claims**



1. In a toothed belt having longitudinally spaced teeth and defining a pitch line, the improvement comprising

a fabric adhered to the belt on said teeth including warp and weft yarns, said weft yarns having a configuration providing a preselected elasticity and being formed of polyamide synthetic resin having a limiting viscosity of greater than approximately 1.30.

4,604,082

V-BELT MECHANISM

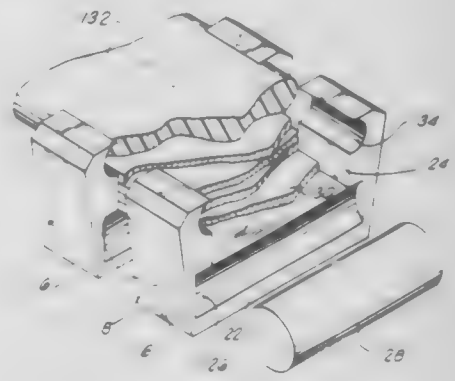
Torao Hattori, Saitama, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 27, 1983, Ser. No. 536,252

Claims priority, application Japan, Sep. 29, 1982, 57-168434

Int. Cl.⁴ F16G *1/21*

U.S. Cl. 474—242 **2 Claims**



1. A V-belt assembly comprising

a pulley having a V-groove with a coating of resilient material, and

a V-belt for engagement with said pulley, said V-belt including a continuous loop of a tension member having a thin metal tension member and a flexible tension member and a plurality of spaced blocks of metal having inclined faces, said blocks slidably mounted on said tension member, and

a roller positioned between adjacent sides of said spaced blocks to space said blocks during engagement with said pulley.

4,604,083

MACHINE FOR MANUFACTURING FOLDED BOXES

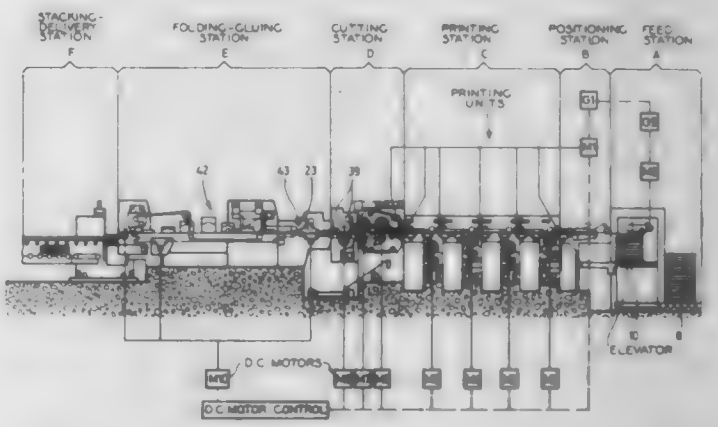
Jean J. Barny, Lausanne, and Roger Roch, Cossonay-Ville, both of Switzerland, assignors to Bobst SA, Lausanne, Switzerland

Filed Feb. 10, 1984, Ser. No. 578,862

Claims priority, application Switzerland, Feb. 21, 1983, 944/83

Int. Cl.⁴ B31B *49/00*

U.S. Cl. 493—34 **6 Claims**



1. A machine for manufacturing folded boxes with sheet material, comprising:

a plurality of successive stations operating in synchronism, including a feed station, a centering station, a printing station, a cutting station, a folding and gluing station and a stacking and delivery station;

said feed station including stack receiving means for holding a stack of sheets, stack feeding means for feeding a stack to said stack receiving means, stack centering means for centering a received stack with respect to the center line of the machine, and first feed means for feeding the uppermost sheet of the stack to said centering station;

said centering station including set centering means for centering a sheet with respect to the center line, and

second feed means for feeding a centered sheet to said printing station;

said printing station comprising a plurality of selectively operable printing units including printing cylinders positioned to print on the bottom surface of a sheet;

said cutting station comprising first and second successively operating cutting units for slotting a sheet along predetermined fold lines and for cutting a sheet to a predetermined form, said second cutting unit mounted for movement to a non-working position;

said folding and gluing station comprising a telescopic conveyor to be extended into the working space of said second cutting unit when the same is in its non-working position, a folder for folding a sheet along the predetermined fold lines, and a gluer for gluing together opposite transverse marginal portions of a folded sheet to form a box form;

said stacking and delivery station comprising stacking means for stacking the box forms, counting means for counting the stacked forms, and stack conveying means for conveying a stack out of the machine in response to said counting means reaching a predetermined count;

a plurality of D.C. motors connected to and driving said stations in synchronism;

lateral shifting means in each of said stations;

a plurality of asynchronous A.C. motors connected to and operable to shift said lateral shift means at each of said stations; and

a machine control system including a program and data processing control circuit for storing and processing operating parameters of the machine, a register control circuit for sensing sheet registration and producing corresponding data, a D.C. control circuit connected to said D.C. motors for controlling synchronism and registration, and an A.C. control circuit connected to said A.C. motors for controlling lateral sheet displacement.

4,604,084

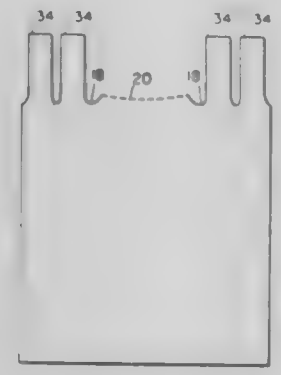
THERMOPLASTIC BAG, BAG PACK AND METHOD OF MAKING THE SAME

Timothy W. Pistner, Fairport, N.Y., assignor to Mobil Oil Corporation, New York, N.Y.

Division of Ser. No. 672,756, Nov. 19, 1984, Pat. No. 4,562,925. This application May 29, 1985, Ser. No. 738,800

Int. Cl.[4] F16G *13/02*

U.S. Cl. 493—226 4 Claims



1. A method for forming a thermoplastic film handled sack comprising:

(a) forming a collapsed thermoplastic film tube, heat-sealed transversely at each end thereof;

(b) folding opposite sides of the sealed tube toward but spaced from each other, along lines perpendicular to said heat-seals; and

(c) removing, from one end of the folded structure, sufficient film to form a bag mouth opening and a pair of single-film handle loops at opposite ends of said bag mouth opening.

4,604,085

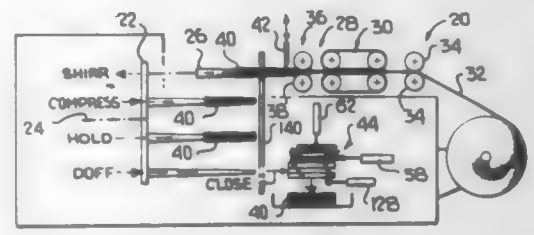
SAUSAGE CASING AUTOMATIC CLOSING METHOD

Thomas W. Martinek, Covington, Ind., assignor to Teepak, Inc., Oak Brook, Ill.

Continuation of Ser. No. 94,270, Nov. 14, 1979, Pat. No. 4,475,895. This application May 4, 1984, Ser. No. 587,347

Int. Cl.[4] A22C *13/00*

U.S. Cl. 493—259 10 Claims



1. A method of handling a strand of shirred food casing with a device comprising a strand gripper, first and second carrier means for the strand gripper, said first and second carrier means being integral with one another, the second carrier means being movable relative to the first carrier means, said strand gripper being mounted on the second carrier means and comprises a pair of axially elongated jaws, said strand handler including first drive means for moving the first and second carrier means and the strand gripper in a first direction, and a second drive means for moving the second carrier means and strand handler in a second direction, which method comprises the steps of spacing the axially elongated jaws of the strand gripper sufficiently to form a strand receptacle, doffing the strand from a shirring mandrel into said receptacle, moving the jaws together to grip the strand, aligning the jaws and a terminal end of the strand with an end closure mechanism, forming an end closure at the terminal end of the strand, and thereafter opening the jaws of the strand gripper sufficiently to release the strand.

4,604,086

MULTIFUNCTION CENTRIFUGE

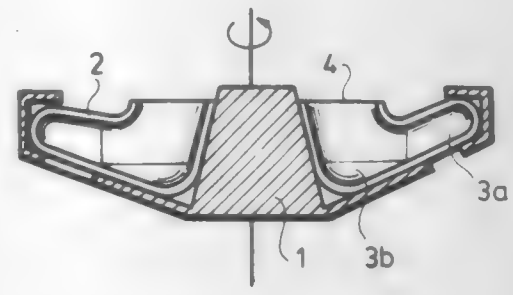
Éva Benko, Budapest; István Csabankó, Esztergom; Anikó Porkoláb; Zsolt Szabó, both of Budapest, and Gábor Takács, Pomáz, all of Hungary, assignors to "Labor" Muszeripari Muvek, Hungary

Filed Jan. 23, 1985, Ser. No. 693,732

Claims priority, application Hungary, Jan. 26, 1984, 319/84

Int. Cl.[4] B04B *5/02*

U.S. Cl. 494—16 2 Claims



1. A multifunction centrifuge comprising a rotor rotatable about a vertical axis and at least two centrifuge bowls disposed about the rotor, the improvement consisting in that the centrifuge bowls are rigidly connected to the rotor by bracket-like retaining walls thereof and each centrifuge bowl has an outer centrifugation chamber of sack-like or cylindrical shape having a constant cross-section with an outwardly facing bottom and an inner gravitational chamber connected to said outer chamber for bidirectional free communication, said gravitational chamber lying lower than the said outer chamber.

4,604,087

AQUEOUS HUMOR DRAINAGE DEVICE

Neil H. Joseph, 54 Hereford Road, London W.2., England

Filed Jun. 21, 1985, Ser. No. 747,409

Claims priority, application United Kingdom, Feb. 26, 1985, 8504905

Int. Cl.[4] A61M *27/00*

U.S. Cl. 604—9

14 Claims



1. A device of one piece construction for draining aqueous humor from an eye composed entirely of supple, biologically inert material, the device comprising a drainage body for distributing drained aqueous humor over a relatively large area comprising a band having a width of at least 5 mm, and a length sufficient for the band to pass substantially around, and be sutured to, the sclera of said eye in an equatorial position; a drainage tube integrally and firmly fixed to the drainage body and of sufficient length that an end thereof may be safely disposed within the anterior chamber of said eye; and a pressure gradient limiting slit valve means having a predetermined opening pressure disposed directly proximate to the area of fixation of the drainage tube to the drainage body establishing a direct route of aqueous humor flow between the interior of the drainage tube and a surface of the drainage body, whereby excessive intraocular pressure may be relieved by the controlled drainage of aqueous humor from the anterior chamber of said eye.

4,604,088

INSTRUMENT FOR INDIRECT TREATMENT WITH A HOT AIR FLOW AND MOXA SMOKE

Friedrich Nottbohm, Am Reisenbrook 24 a, D-2000 Hamburg 67, Fed. Rep. of Germany

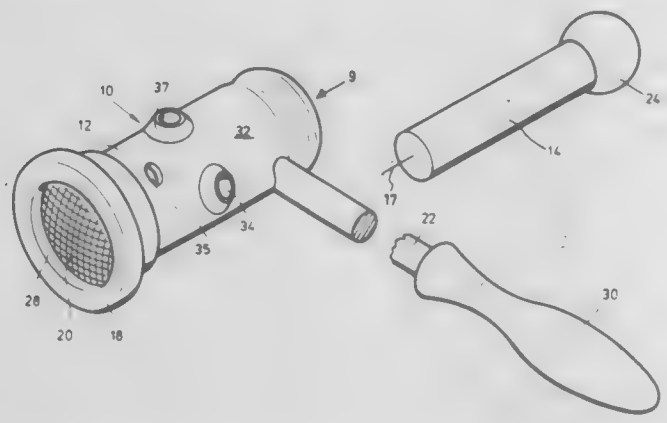
Filed Mar. 23, 1984, Ser. No. 592,558

Claims priority, application European Pat. Off., Jun. 25, 1983, 83106228.6; Fed. Rep. of Germany, Sep. 15, 1983, 3333271

Int. Cl.[4] A61B *17/36*

U.S. Cl. 604—24

6 Claims



1. An instrument for the indirect self-treatment of chronic pain problems by humans with a hot mixture of air and moxa smoke, particularly head and back pains, said instrument comprising a hollow smoke chamber for receiving a moxa herb rolled in the form of a cigar and having a central opening provided in one end thereof through which it is possible to insert the moxa cigar into the smoke chamber together with means for holding the moxa cigar in the smoke chamber in a precise fitting manner, the opposite end of the smoke chamber having an enlarged opening therein closed by a removable cap which has a protective grid, said smoke chamber having a plurality of further openings around the periphery thereof between the two said ends for the supply of combustion air to the moxa cigar while burning, and a handle secured to the smoke chamber to facilitate handling of the instrument while it is hot during treatment, and wherein the means for holding the moxa cigar in the first mentioned central opening within the hollow smoke chamber in a precise fitting manner comprises a removable and slidable elongated plunger rod forming a press fit with said first mentioned central opening and having a pin formed on the end thereof for attaching and securing the end of a moxa cigar thereto for insertion of the moxa cigar with its opposite free end lit and burning into the hollow interior of the smoke chamber via the first mentioned central opening and for retention of the burning free end of the moxa cigar at a set safe distance from the protective grid.

4,604,089

PRESSURE REGULATED IRRIGATION SYSTEM FOR ARTHROSCOPY

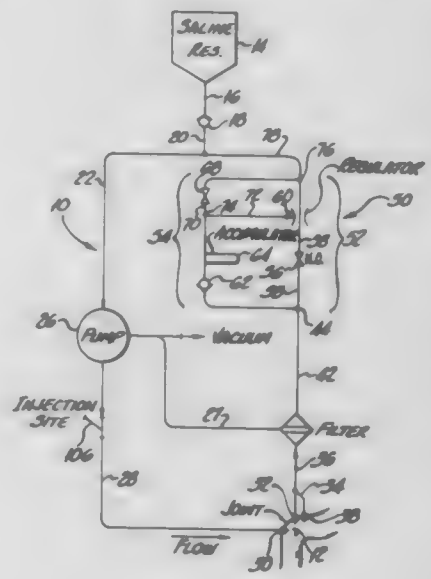
John A. Santangelo, East Freetown, and Charles B. Worrick, III, Hanson, both of Mass., assignors to Codman & Shurtleff, Inc., Randolph, Mass.

Filed Aug. 15, 1983, Ser. No. 523,312

Int. Cl.[4] F16K *1504;* A61B *17/32*

U.S. Cl. 604—30

18 Claims



6. A pressure regulated irrigation system comprising:

means for providing access to and egress from the irrigation site;

means in fluid communication with said access and egress means for providing a closed loop fluid circuit about the irrigation site;

means for connecting a reservoir of irrigation fluid into said circuit;

pump means in fluid communication with and connected in series with said reservoir connection means; and,

a pressure regulation circuit in fluid communication with and connected in series with said pump means and said reservoir connection means, said pressure regulation circuit including an operator first input means for elevating the pressure in said irrigation site to a desired level in response to an operator first input signal and for maintaining said pressure at said desired level when said operator first input signal is terminated; and,

said pressure regulation circuit further including an operator second input means for reducing the pressure at said irrigation site in response to an operator second input signal and for maintaining said pressure at said reduced level when said second input signal is terminated;

wherein said pressure regulation circuit includes a flow restriction branch and a pressure accumulation branch connected in parallel with said flow restriction branch;

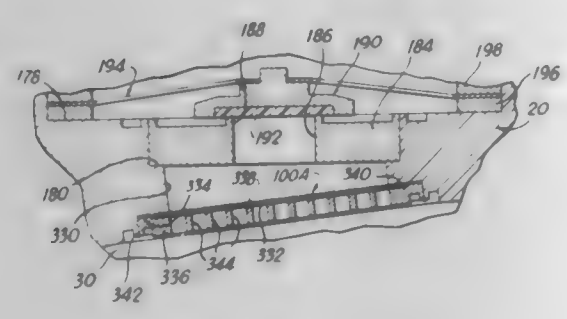
said flow restriction branch including said operator first input means and a pressure regulator downstream of and connected in series with said operator first input means;

said pressure accumulation branch including said operator second input means, a pressure accumulation means upstream of and connected in series with said operator second input means and a check valve means upstream of and connected in series with said pressure accumulation means;

means for transmitting a signal representative of the pressure in said pressure accumulation branch to control said pressure regulator in said flow restriction branch; and,

said pressure regulator including a diaphragm-operated pressure regulator and said means for transmitting a signal representative of the pressure in said pressure accumulation branch including a conduit connected to the donwstream side of said pressure accumulator and in fluid communication with said diaphragm of said diaphragm-operated pressure regulator.

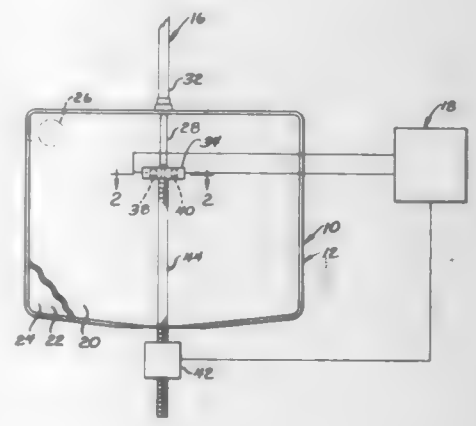
4,604,090
COMPACT IMPLANTABLE MEDICATION INFUSION DEVICE
Robert H. Reinicke, Mission Viejo, Calif., assignor to Consolidated Controls Corporation, El Segundo, Calif.
Filed Nov. 22, 1983, Ser. No. 554,197
Int. Cl.[4] A61M *1/00*
U.S. Cl. 604—118 22 Claims



1. An implantable medication infusion unit, comprising a flat generally disc shaped manifold having a shallow recess on one face thereof, a flexible circular diaphragm secured at its periphery to the edge of said recess to form with said one face of said manifold a medication reservoir, means accessible from the exterior of said unit through a first penetrable septum mounted in the other face of said manifold for filling said medication reservoir, said last named means including a fill check valve, a pulsatile pumping unit mounted in said manifold and including an inlet check valve mounted in said manifold, a second penetrable septum mounted in said manifold, means defining a chamber beneath said second penetrable septum, and a passage in said manifold interconnecting said chamber and said reservoir, whereby the space between said fill check valve and said inlet check valve may be evacuated through said penetrable second septum.

4,604,091
Patent Not Issued For This Number

4,604,092
LIQUID DRAINAGE SYSTEM WITH VERTICAL MOVABLE LIGHT EMITTER AND DETECTOR
Brian H. Silver, Skokie, Ill., assignor to The Kendall Company, Boston, Mass.
Continuation of Ser. No. 484,109, Apr. 11, 1983, abandoned.
This application Jan. 29, 1983, Ser. No. 823,828
Int. Cl.[4] A61M *5/005*
U.S. Cl. 604—246 10 Claims



1. A liquid drainage system comprising:

a container having a cavity to receive the liquid;

an associated light emitter and light detector being changeable between a first state with the light from the emitter impringing upon the detector, and a second state with the light form the emitter passing away from the detector dependent upon the presence of liquid in the container between the emitter and detector; and

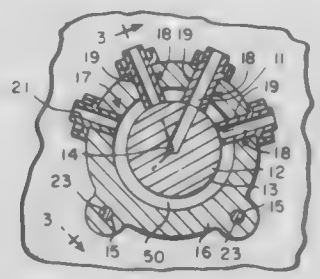
means for moving the emitter and detector vertically along the container comprising means for housing the light emitter and light detector in fixed relationship to one another, a vertical threaded shaft arranged alongside the container, the housing means being mounted on top of the threaded shaft, and stepper motor means located beneath and in fixed relationship to the container, the vertical shaft being rotatable by the stepper motor means whereby upon energization of the stepper motor means, the housing and threaded shaft are caused to travel vertically alongside the container.

4,604,093

APPARATUS AND METHOD FOR ADMINISTERING MULTIPLE FLUID INFUSIONS

Eric W. Brown, Redondo Beach, and Henry T. Tai, Pacific Palisades, both of Calif., assignors to I-Flow Corporation, Redondo Beach, Calif.

Filed Jun. 12, 1984, Ser. No. 619,847
Int. Cl.[4] A61M *5/14*
U.S. Cl. 604—248 25 Claims



1. A valve demountable on a control apparatus for automatically providing selective communication between one of a plurality of available fluid sources and a catheter tube, the valve comprising:

a hollow cylindrical housing having a plurality of input sites for connection with said fluid sources;

a core member, rotatably engaged within said housing, having a planar surface on each end and an output passageway extending through said core member from an access hole in a circumference of said core member to an output hole in one of said planar surfaces connected to said catheter tube, said circumference of said core member sealing said input sites such that fluid is prevented from escaping from said input sites except when said access hole is aligned with one of said input sites to provide communication between said input site and said output passageway;

conduit means for directing fluid from one of said input sites around said remaining input sites so that said fluid from said one of said input sites is in communication with said access hole whenever said access hole is positioned between two adjacent input sites; and

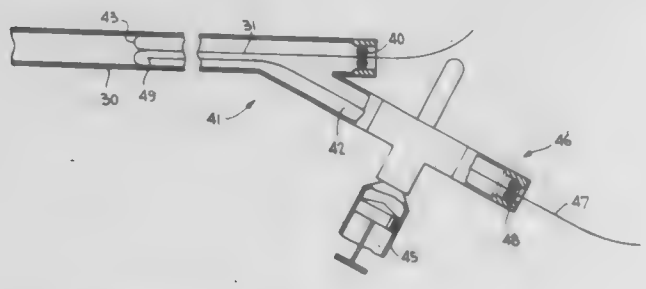
gear means coupled to said core member for transmitting rotational movement from said control apparatus to said core member.

4,604,094

TOPOSCOPIC CATHETER AND METHOD OF FABRICATION

Daniel R. Shook, Gaithersburg, Md., assignor to The United States of America as represented by the Secretary of the Department of Health and Human Services, Washington, D.C.

Filed Sep. 6, 1984, Ser. No. 647,728
Int. Cl.[4] A61M *25/00*
U.S. Cl. 604—271 34 Claims



1. A catheter assembly comprising:

a primary catheter in the form of an elongated hollow tube having an interior wall and an open distal end;

an everting catheter disposed within said primary catheter and having an open head end facing away from said distal end of said primary catheter and secured to the interior wall of said primary catheter; and

means for selectively everting said everting catheter along said interior wall in a direction toward and out through the open distal end of said primary catheter;

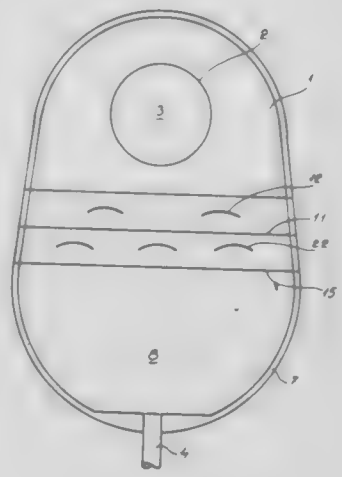
wherein said open head end of said everting catheter is secured to said interior wall along a predetermined length of said interior wall which is recessed from said distal end of said primary catheter.

4,604,095

RETURN VALVE FOR A BAG FOR COLLECTING LIQUID EXCRETIONS FROM THE HUMAN BODY

Peter Samuelsen, Rungsted Kyst, Denmark, assignor to Coloplast A/S, Denmark

Filed Dec. 30, 1983, Ser. No. 567,059
Claims priority, application Denmark, Jan. 4, 1983, 10/83
Int. Cl.[4] A61M *1/00*
U.S. Cl. 604—323 4 Claims



1. In a bag for collecting liquid excretions from a body comprising coupling means for attachment to fastening means placed around an opening in the body, a drainage inlet for a liquid collection reservoir, a first return valve means of plural films having an inner and outer face, said valve means being located between the drainage inlet and the reservoir in the shape of at least one film flap resting against a film wall and having a downward-facing opening, and reservoir means for collecting said liquid excretions, the improvement which comprises:

(a) means for diverting the flow of said liquid excretions between the drainage inlet and the reservoir means;

(b) a second return valve means of plural films having an inner and outer face located downstream from and in series with the direction of flow of the first return valve means, the second return valve means being in the shape of at least one film flap resting against a film wall and having a downward-facing opening into said reservoir means;

(c) an intermediate fluid-collecting chamber between the first and second return valve means; and

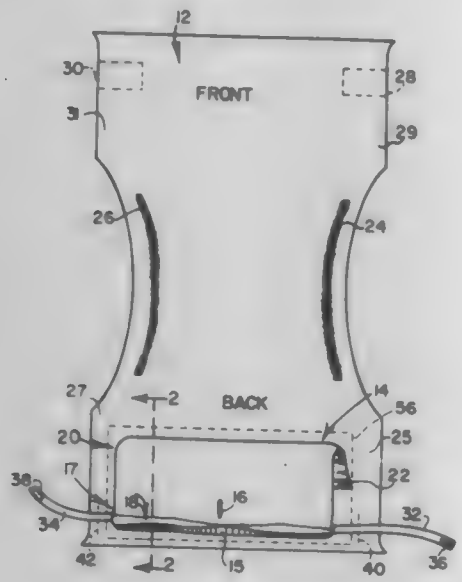
(d) by-pass passage means, formed by discontinuous horizontally extending bonds between an outer face of the upstream first return valve means and the inner face of the second valve means and in its open position for receiving liquid from the reservoir and directing it into the intermediate chamber between the first and second return valve means whereby to return the liquid to the reservoir means exteriorly of the outer faces of the first and second valve means and therefore avoid backup of body excretions.

4,604,096

DISPOSABLE DIAPER WITH INTEGRAL DISPOSAL SYSTEM

Raymond S. Dean, Medford, and William A. Barabino, North Reading, both of Mass., assignors to Physiological Research Associates, N. Reading, Mass.

Filed Aug. 26, 1985, Ser. No. 770,226
Int. Cl.[4] A61F *13/16*
U.S. Cl. 604—385 A 20 Claims



1. A diaper assembly with integral disposal system, comprising:

a disposable diaper;

an envelope integrally carried on the outside of said diaper and having a mouth for receiving said diaper when soiled; and

strap means for engaging a section of said diaper with another section of said diaper to secure said diaper on a wearer in a use configuration and restricting the mouth of said envelope in a disposal configuration.

4,604,097

BIOABSORBABLE GLASS FIBERS FOR USE IN THE REINFORCEMENT OF BIOABSORBABLE POLYMERS FOR BONE FIXATION DEVICES AND ARTIFICIAL LIGAMENTS

George A. Graves, Jr., Bellbrook, and Binod Kumar, Centerville, both of Ohio, assignors to University of Dayton, Dayton, Ohio

Filed Feb. 19, 1985, Ser. No. 702,526
Int. Cl.[4] C04B *33/24, 35/44*
U.S. Cl. 623—11 15 Claims

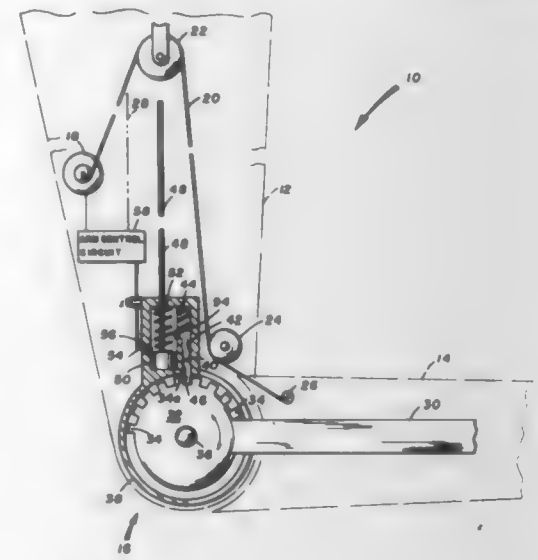
1. A spun or drawn glass fiber, which is bioabsorbable and useful in the area of medical implants, comprising calcium oxide (CaO) and phosphrous pentoxide (P_2O_5).

4,604,098

PROSTHETIC ELBOW WITH A MOTOR-DRIVEN RELEASE MECHANISM

Woodrow Seamone, Rockville, and John H. Loveless, Westminster, both of Md., assignors to The Johns Hopkins University, Baltimore, Md.

Filed Jul. 17, 1984, Ser. No. 631,705
Int. Cl.[4] A61F *2/58*
U.S. Cl. 623—60 32 Claims



1. A prosthetic arm having:

a forearm;

an elbow joint having a locking means and an engageable means which is engaged by the locking means to prevent bending of the elbow;

an upper arm connected to the forearm via the elbow joint;

a motor connected mechanically to drive the forearm relative to the upper arm about the elbow joint;

an actuable withdrawing means connected to withdraw the locking means from engagement with the engageable means;

a drive circuit connected electrically to the motor for regulating operation thereof;

a switching means connected to the withdrawing means, and which is closed upon initial actuation of the withdrawing means;

a pulsing circuit connected electrically to be triggered upon closure of the switching means and to generate a pulsed output to the motor via the drive circuit when so triggered, such that the elbow is bent slightly;

wherein further actuation of the withdrawing means disengages the locking means from the engageable means.

4,604,099

PROCESS FOR PRINTING CELLULOSE-CONTAINING TEXTILE MATERIAL WITH FOAM-CONTAINING REACTIVE DYES AND ADDITION OF (METH) ACRYLAMIDE POLYMERS

Hans-Ulrich Berendt, Allschwil, and Paul Schäfer, Riehen, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Jan. 23, 1985, Ser. No. 694,189

Claims priority, application Switzerland, Jan. 30, 1984, 415/84; May 18, 1984, 2457/84

Int. Cl.[4] D06P *1/52, 3/66*

U.S. Cl. 8—477 23 Claims

1. A process for printing cellulose-containing textile material with a reactive dye which process comprises printing the textile material with a foamed aqueous preparation containing at least one reactive dye, at least one foaming agent and a homopolymer or co-polymer of acrylamide or methacrylamide; or a graft polymer obtained from an adduct of an alkylene oxide on an at least trihydric aliphatic alcohol having 3 to 10 carbon atoms and acrylamide or methacrylamide, and subsequently fixing the dye by a heat treatment.

4,604,100

PROCESS FOR THE PREPARATION OF GRANULAR DYE FORMULATIONS FROM POLYETHYLENE GLYCOL MELT

Dieter Schneider; Heinz Knies, both of Grenzach-Wyhlen, and Gerhard Kaudela, Fischingen, all of Fed. Rep. of Germany, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Mar. 11, 1985, Ser. No. 710,785

Claims priority, application Switzerland, Mar. 15, 1984, 1289/84

Int. Cl.[4] B01J *2/28;* C09B *67/42*

U.S. Cl. 8—526 17 Claims

1. A process for the preparation of a granular dye formulation, which process comprises:

a. preparing a fluid mixture comprising: (i) melted polyethylene glycol and (ii) a water-containing dye containing at least 5 percent water by weight of the weight of said dye;

b. preparing granules from the fluid mixture of step (a); and

c. if necessary, adjusting the water content of the fluid mixture of step (a) prior to preparing the granules of step (b) until the viscosity is sufficient to permit atomization or tabletting of said fluid mixture.

4,604,101

AFTER TREATMENT OF ANIONIC DYEINGS, PRINTINGS AND OPTICAL BRIGHTENINGS ON TEXTILE FIBERS

Bruno Kissling, Hagendorf, and Tibor Robinson, Basel, both of Switzerland, assignors to Sandoz Ltd., Basel, Switzerland

Filed Feb. 21, 1985, Ser. No. 703,699

Claims priority, application Fed. Rep. of Germany, Feb. 24, 1984, 3406631

Int. Cl.[4] D06L *3/12;* D06M *15/54;* D06P *1/39*

U.S. Cl. 8—551 19 Claims

1. A process for the after-treatment of hydroxy group- or nitrogen-containing textile fibres which have been dyed or printed with an anionic dyestuff or brightened with an anionic optical brightener comprising the step of treating the dyed, printed or brightened fibres, simultaneously or sequentially, with

(A) a polymeric reaction product of a monofunctional or polyfunctional amine having one or more primary and/or secondary and/or tertiary amino groups with cyanamide, dicyandiamide, guanidine or bisguanidine in which up to 50 mole percent of the cyanamide, dicyandiamide, guanidine or bisguanidine may be replaced by a dicarboxylic acid or a mono- or di-ester thereof, said product (A) containing at least one free hydrogen atom linked to a nitrogen atom, and

(B) a quaternary polyalkylene polyamine which is a water-soluble reaction product of an N,N-tetraalkylalkylenediamine with a dihaloalkane, or of a secondary alkylamine with an epihalohydrin.

4,604,102

FUEL COMPOSITIONS

Edward F. Zaweski, and Leonard M. Niebylski, both of Baton Rouge, La., assignors to Ethyl Corporation, Richmond, Va.

Filed Nov. 25, 1985, Ser. No. 801,300

Int. Cl.[4] C10L *1/18*

U.S. Cl. 44—57 13 Claims

1. Distillate fuel for indirect injection compression ignition engines containing, in an amount sufficient to minimize coking, especially throttling nozzle coking in the prechambers or swirl chambers of indirect injection compression ignition engines operated on such fuel, at least the combination of (i) organic nitrate ignition accelerator and (ii) an esterified cyclic dehydration product of sorbitol which, when added to said fuel in combination with said organic nitrate ignition accelerator minimizes said coking.

4,604,103

DEPOSIT CONTROL ADDITIVES—POLYETHER POLYAMINE ETHANES

Curtis B. Campbell, Rodeo, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Continuation of Ser. No. 403,607, Jul. 30, 1982, abandoned. This application Dec. 16, 1985, Ser. No. 809,101

The portion of the term of this patent subsequent to Mar. 20, 2001, has been disclaimed.

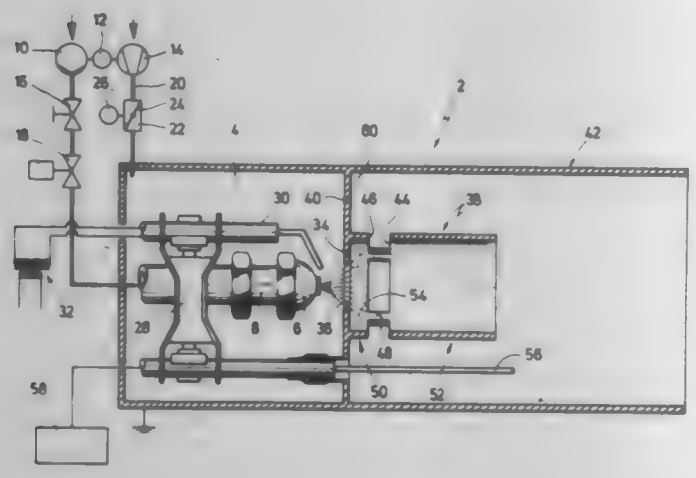
Int. Cl.[4] C10L *1/22*

U.S. Cl. 44—72 5 Claims

1. A fuel composition comprising a major portion of hydrocarbon boiling in a gasoline range, and from 30 to about 10,000 ppm of hydrocarbyl polyoxyalkylene polyamine ethane of molecular weight from about 300 to about 2500 having the formula

$$R\text{-}(OCH_2CH)_x\text{-}OCH_2CH_2\text{-}NR''R'''$$
$$\quad\quad\quad

said upstream portion comprises a solid wall between said shield and said radial passage, wherein the axial length of said solid wall is between 0.1-multiple to 0.6-multiple of the inner diameter of the downstream portion of the mixing tube,



a substantially cylindric flame tube whose upstream end is sealingly connected with the end wall of the combustion air supply means, wherein the mixing tube is positioned within said flame tube in an annularly spaced relationship thereto.

4,604,105

FLUIDIZED BED GASIFICATION OF EXTRACTED COAL

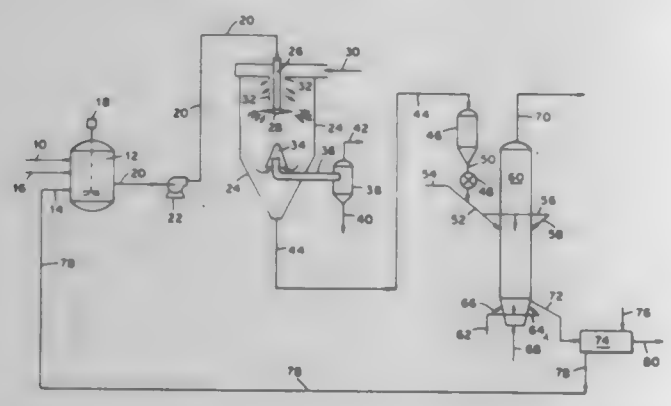
Dolores C. Aquino, Houston, Tex.; Philip L. DaPrato, Westfield, N.J.; Toby R. Gouker, Baton Rouge, La., and Peter Knoer, Houston, Tex., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jul. 6, 1984, Ser. No. 628,079

Claims priority, application European Pat. Off., Aug. 24, 1983, 68757

Int. Cl.[4] C10J *3/54*

U.S. Cl. 48—197 R **10 Claims**



1. A process for the fluidized bed gasification of carbonaceous solids, comprising:

introducing a slurry of carbonaceous solids to an extraction zone operated at atmospheric pressure to contact an aqueous solution at a pH above 13.5, which includes a water-soluble gasification catalyst comprising an alkali metal hydroxide or a mixture of an alkali metal hydroxide with at least one alkali metal salt, at a temperature of about 65° C. to about 110° C. for a sufficient length of time to extract bitumens from said solids into said aqueous solution;

removing water from said aqueous solution by flash drying a slurry effluent from said extraction zone to dry said carbonaceous solids, while simultaneously redepositing said extracted bitumens onto said carbonaceous solids and impregnating said carbonaceous solids with said catalyst; and

gasifying said carbonaceous solids at an elevated pressure and temperature in a fluidized gasification zone, wherein the density of the fluidized bed in said gasification zone is maintained at a value above about 160 kg/m^3.

4,604,106

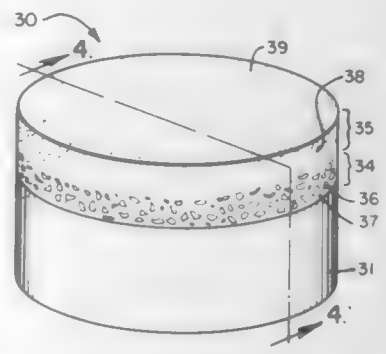
COMPOSITE POLYCRYSTALLINE DIAMOND COMPACT

David R. Hall, Provo, Utah, assignor to Smith International Inc., Irvine, Calif.

Continuation-in-part of Ser. No. 600,399, Apr. 16, 1984, Pat. No. 4,525,178. This application Apr. 29, 1985, Ser. No. 728,177

Int. Cl.[4] B24D *7/14*

U.S. Cl. 51—293 **24 Claims**



1. A composite polycrystalline body for engaging a work material comprising:

a first layer with at least one exposed surface adapted for contacting the work material, said first layer comprising diamond crystals pressed under sufficient heat and pressure to create polycrystalline diamond material in which adjacent diamond crystals are bonded together; and

a second layer which is joined at an interface with the first layer and comprising a mixture of diamond crystals and precemented carbide pieces pressed under sufficient heat and pressure to create composite polycrystalline material in which adjacent diamond crystals are bonded together to create polycrystalline diamond material which is bonded to the precemented carbide pieces, and in which second layer the polycrystalline diamond material and the precemented carbide pieces are interspersed in one another.

4,604,107

LOW TEMPERATURE SEPARATION OF FLUIDS BY FORMATION OF PHASES HAVING DIFFERENT DENSITIES

Peter S. Burr, Munich, Fed. Rep. of Germany, assignor to Linde Aktiengesellschaft, Wiesbaden, Fed. Rep. of Germany

Filed Nov. 9, 1984, Ser. No. 669,974

Claims priority, application Fed. Rep. of Germany, Nov. 10, 1983, 3340631

Int. Cl.[4] B01D *5/00*

U.S. Cl. 55—17 **14 Claims**

1. A process for the separation of a homogeneous, sour gas-containing fluid mixture comprising:

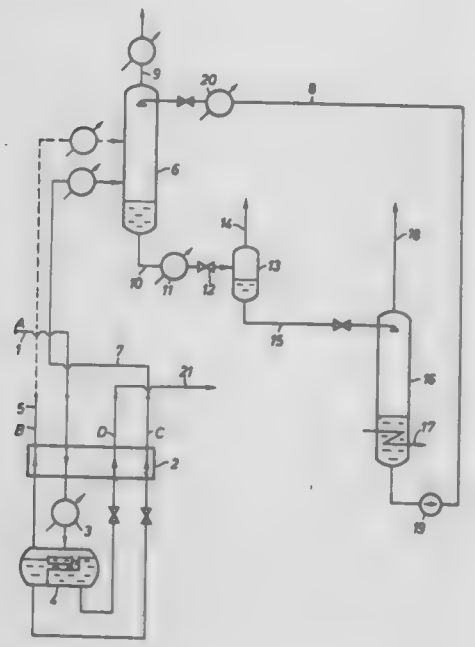
cooling the homogeneous mixture to an effective temperature sufficient to obtain:

(a) a first phase reduced in sour gas and having a low density,

(b) a second phase enriched in sour gas and having a higher density than the first phase,

(c) a third phase containing sour gas and having a higher density than the first and second phases; at least two of the aforementioned phases being liquid phases in equilibrium;

separating the phases (a), (b) and (c) in correspondence with their densities;



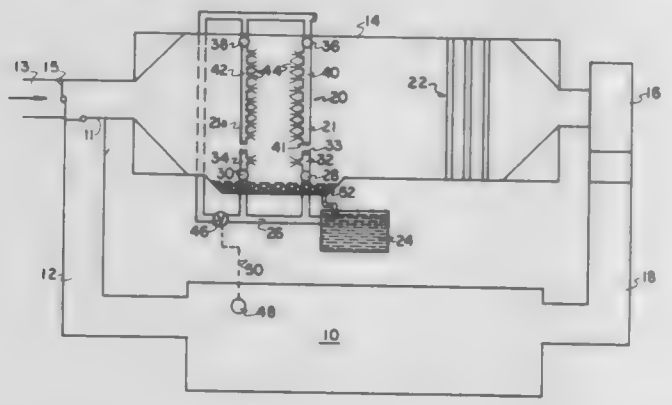
further subjecting at least one of phases (a), (b) and (c) for further separation and/or purification processes.

4,604,108

AIR WASHER AND METHOD

Worth B. Cotton, Jr., Greensboro, N.C., assignor to Industrial Air, Inc., Greensboro, N.C.

Filed Nov. 30, 1981, Ser. No. 325,703
Int. Cl.⁴ B01D *3/04*
U.S. Cl. 55—20 **5 Claims**



1. A spray washer apparatus of the type placed in the return air stream which is moving from a served work area to an air treatment area, of which the spray washer forms a part thereof, before being returned to the work area, said apparatus comprising:

(a) a chilled water source;

(b) at least one bank of spray nozzles connected to said water source, said nozzles receiving chilled water from said source and atomizing said water into said return air stream;

(c) said bank of nozzles being divided into a first upper set of nozzles, and a second lower set of nozzles;

(d) means for dividing the water from said water source into two paths, a first path being directed to said upper set of nozzles and a second path being directed to said lower set of nozzles; and a temperature sensing device in the work area;

(e) a throttling valve positioned in the path between said source of chilled water and said upper set of nozzles for automatically reducing water pressure to said upper set of said nozzles responsive to said temperature sensing device, the water pressure to said upper set being reduced without affecting the water pressure provided to said lower set of nozzles;

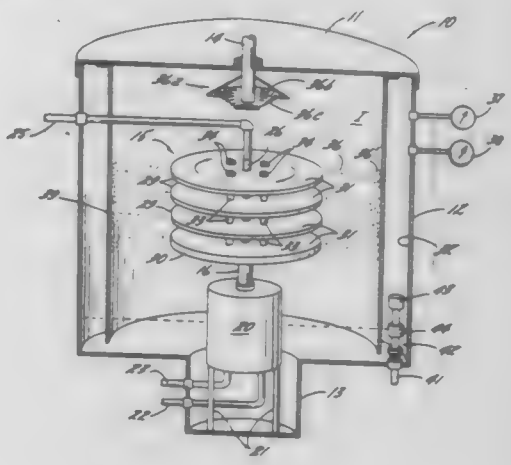
(f) whereby said upper set of nozzles may be throttled or closed during minimum spray conditions while simultaneously delivering water to said lower nozzles at sufficient pressure to atomize the water into said air stream.

4,604,109

FLUID PURIFIER

Evan E. Koslow, Westport, Conn., assignor to Pall Corporation, Glen Cove, N.Y.

Continuation-in-part of Ser. No. 538,229, Oct. 3, 1983, abandoned. This application Nov. 20, 1984, Ser. No. 673,490
Int. Cl.⁴ B01D *19/02*
U.S. Cl. 55—52 **17 Claims**



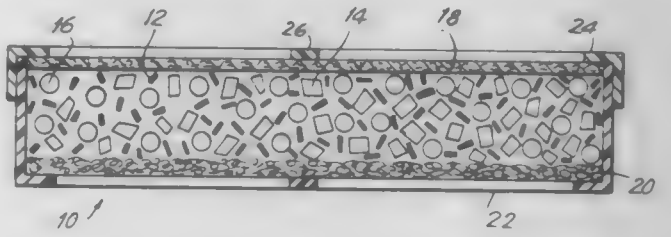
1. A device for separating a substantial fraction of a volatile contaminant from a contaminated fluid, said device comprising a vacuum chamber, the internal space of which may be at least partially evacuated; means for dispersing the contaminated fluid into small droplets including at least one rotating plate disposed within the vacuum chamber and having a continuous surface and means for introducing the contaminated fluid onto the surface of the plate, said introducing means including means disposed generally concentrically with respect to the plate for directing a flow of fluid onto the surface of the plate; and wall means spaced from the rotating plate against which the small droplets impinge and merge to form a purified fluid, the distance between the edge of the rotating plate and the wall menas yielding a sufficient droplet residence time to permit a fraction of a volatile contaminant to be separated from the contaminated fluid as the droplets travel between the edge of the rotating plate and the wall means.

4,604,110

FILTER ELEMENT, FILTER, AND METHOD FOR REMOVING ODORS FROM INDOOR AIR

Stephen E. Frazier, Orlando, Fla., assignor to General Time Corporation, Norcross, Ga.

Continuation-in-part of Ser. No. 601,946, Apr. 19, 1984, Pat. No. 4,534,775, which is a continuation of Ser. No. 354,030, Mar. 2, 1982, abandoned. This application Feb. 28, 1985, Ser. No. 707,119
Int. Cl.⁴ B01D *53/04*
U.S. Cl. 55—74 **42 Claims**



1. An air filter element for removing odors from indoor air consisting essentially of a single layer of a dry mixture of silica gel, activated carbon and a zeolite.

19. An air filter element for removing odors from indoor air consisting essentially of:

a. a first layer of silica gel impregnated with a liquid for inhibiting the growth of microorganisms, said liquid comprising the product obtained by contacting grapefruit pulp with a non-toxic polyhydric alcohol to form a reaction product, and separating said reaction product from said pulp residue, said liquid being present in an amount from about 5 to 50% by weight of the combined weight of said silica gel and said liquid; and

b. a dry second layer of zeolite, active carbon, silica gel or mixtures thereof.

4,604,111

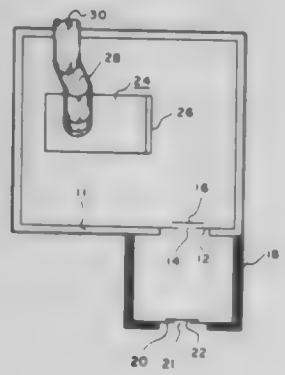
PARTICULATE CONTAMINATION CONTROL METHOD AND FILTRATION DEVICE

Anthony Natale, 450 S. Fork Landing Rd., Maple Shade, N.J. 08052

Continuation of Ser. No. 323,730, Nov. 23, 1981, abandoned. This application May 20, 1985, Ser. No. 735,716

Int. Cl.[4] B01D *46/42*

U.S. Cl. 55—97 **17 Claims**



1. A method of establishing a negative pressure environment within an existing building for removing dangerous solid materials from the building, said method comprising:

(1) defining an enclosed space within said building using existing wall structure to define at least a portion of said enclosed space;

(2) establishing at least one flow path for air to enter said enclosed space;

(3) continuously evacuating air from said enclosed space through a filter means to remove dangerous solid materials from said evacuated air and to establish a negative air pressure in said enclosed space so that air exiting said space passes through said filter means; and

(4) sealing said flow path against air exiting from said air space to the exterior of said enclosed space in the event of loss of negative air pressure in said enclosed space.

8. A system for establishing a favorable environment for removing dangerous solid materials, said system comprising:

wall means enclosing a defined air space within a building, said wall means including at least one inlet for air to enter said air space and an outlet for air to exit from said air space;

filter means for filtering air in said air space;

air moving means for producing a negative air pressure within said air space and for drawing air into said space through said inlet and for moving air through said filter means in advance of moving air through said outlet; and

sealing means for sealing said inlet against air exiting from said air space to the exterior of said air space in the event of loss of negative air pressure in said air space.

4,604,112

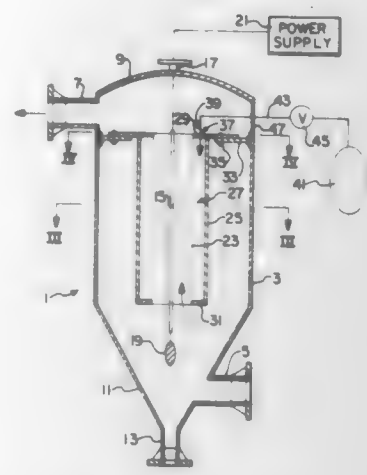
ELECTROSTATIC PRECIPITATOR WITH READILY CLEANABLE COLLECTING ELECTRODE

David F. Ciliberti, Murrysville Boro, and Thomas E. Lippert, Murrysville, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Oct. 5, 1984, Ser. No. 657,920

Int. Cl.[4] B03C *3/80*

U.S. Cl. 55—117 **10 Claims**



1. In an electrostatic precipitator having a housing for the flow of gases containing particulate matter therethrough, at least one discharge electrode and at least one collecting electrode positioned in a spaced relationship to the discharge electrode to effect a corona discharge therebetween, and a feed line to said housing and discharge line from the housing to effect passage of said flow of gases through said housing between said discharge electrode and collecting electrode, to cause migration of particulate matter in said gas towards the collecting electrode for collection on the collecting surface of the collecting electrode facing the discharge electrode, the improvement wherein:

said discharge electrode is a wire electrode;

said collecting electrode is a coaxial tubular porous electrode surrounding said wire electrode;

means are provided to effect a flow of gas through the porous collecting electrode from the side of the collecting electrode opposite said collecting side to dislodge collected solids therefrom, comprising an impervious tube surrounding said collecting electrode to form an annular chamber therebetween;

means are provided for sealing the chamber at the ends of said coaxial tubes; and

means are provided for injecting a pressurized flow of gas into said annular chamber for passage through said porous collecting electrode.

4,604,113

DEODORIZING APPARATUS

Saburo Takano, Tokyo, Japan, assignor to Kabushiki Kaisha Sansi Estate, Tokyo, Japan

Filed Oct. 27, 1983, Ser. No. 545,854

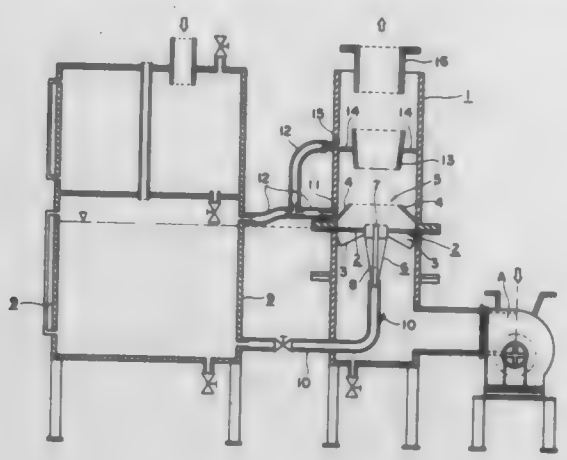
Claims priority, application Japan, Oct. 27, 1982, 57-188128

Int. Cl.[4] B01D *54/14*

U.S. Cl. 55—201 **9 Claims**

1. A deodorizing apparatus, comprising a hollow cylindrical body, a deodorizing-swirling section comprising a swirl-forming plate which is transversely arranged inside of the hollow cylindrical body and is equipped with a plurality of fixed blades each being spaced from one another and radially and obliquely arranged, and a frusto-conical swirl-receiving member provided adjacent to the swirl-forming plate inside of the hollow cylindrical body and having a discharge opening in a side thereof remote from a side thereof adjacent the swirl-forming plate, a deodorizing liquid supply means having one open end opening at a central portion of the swirl-forming plate into the deodorizing-swirling section, a deodorizing liquid tank to which is connected an opposite end of the de-

odorizing liquid supply means, and means for forcibly feeding a gas to be deodorized into the deodorizing-swirling section in an axial direction of the hollow cylindrical body, such that the fed gas is swirled by the action of the radially and obliquely arranged blades, and the deodorizing liquid is fed through said



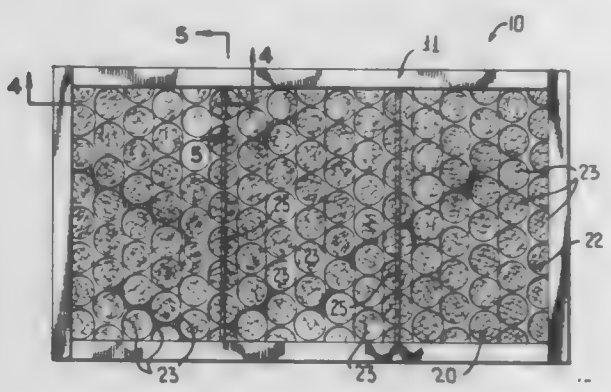
open end of the deodorizing liquid supply means from the deodorizing liquid tank by a sucking action of the swirled gas, thereby bringing the deodorizing liquid into contact with the gas to be deodorized and performing the deodorization of the gas.

4,604,114

FRAGRANT SCENTED AIR FILTER

Robert Ward, P.O.Box 1076, Stephenville, Tex. 76401

Filed Aug. 14, 1985, Ser. No. 765,443
Int. Cl.[4] B01D *39/02*
U.S. Cl. 55—279 13 Claims



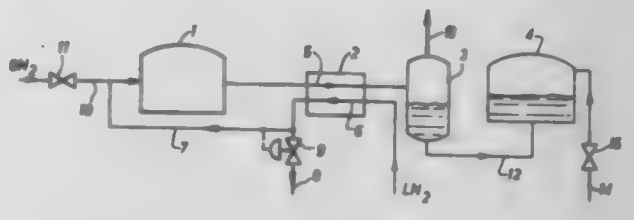
1. A fragrant scented air filter particularly adapted for use in conjunction with interior building heating/air conditioning systems comprising a generally polygonal frame of a U-shaped inwardly opening cross section, a pad of air permeable/porous fibrous filtering material having a polygonal peripheral edge portion bordered by said frame, said frame including a bight and a pair of opposite legs, means sandwiched between said pad and one of said legs for providing generally planar support of said pad against deflection/defibrillation thereof under the influence of air flow through said filter, and at least two solid rods of fragrant scented material spanning said frame in embedded relationship to said pad and in spaced relationship to each other whereby air can freely pass the same with minimum velocity reduction and maximum fragrance absorption.

4,604,115

METHOD AND INSTALLATION FOR TREATING A STORAGE SITE

Michel Bonneton, Grenoble, and Bernard Marchal, Echirolles, both of France, assignors to L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude, Paris, France

Filed Mar. 19, 1985, Ser. No. 713,627
Claims priority, application France, Mar. 23, 1984, 84 04536
Int. Cl.[4] F25J *3/02*
U.S. Cl. 62—11 17 Claims



1. A method for treating a storage site, and in particular for purging and rendering inert a tank, comprising minimizing the loss of time and maximizing the recovery of a gaseous product, otherwise resulting from conventional purging, by expelling a said gaseous product contained in said site by injecting nitrogen therein, effecting an indirect heat exchange between the gas issuing from said site and liquid nitrogen so as to partly condense said gas, and injecting into said site gaseous nitrogen resulting from said vaporization of liquid nitrogen.

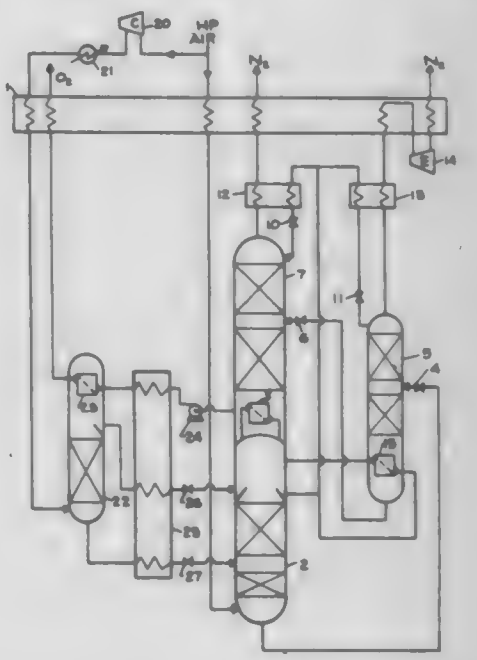
9. An installation comprising: means for treating a storage site, and in particular for purging and rendering inert a tank, sufficient to minimize the loss of time and to maximize the recovery of a gaseous product, otherwise resulting from conventional purging, including a phase separator; a storage vessel communicating with the phase separator; and an indirect heat exchanger comprising first passageways for connection on the upstream side of the heat exchanger to said site and connection on the downstream side of the heat exchanger to the separator, and second passageways connected on the upstream side of the heat exchanger to a source of liquid nitrogen and for connection on the downstream side of the heat exchanger to said site.

4,604,116

HIGH PRESSURE OXYGEN PUMPED LOX RECTIFIER

Donald C. Erickson, 627 Ridgely Ave., Annapolis, Md. 21401

Continuation-in-part of Ser. No. 416,980, Sep. 13, 1982, Pat. No. 4,433,989. This application Feb. 27, 1984, Ser. No. 583,817
Int. Cl.[4] F25J *3/04*
U.S. Cl. 62—13 15 Claims



1. A cryogenic distillation process for producing oxygen comprising:

(a) withdrawing gaseous oxygen at a product pressure of up to about 10 ATA from a latent heat exchanger;
(b) supplying a fraction of air that has been cleaned and cooled to near its dewpoint at an elevated pressure that is at least approximately 2½ times the oxygen product pressure to an elevated pressure rectification column;
(c) rectifying the elevated pressure air to a liquid N_2 overhead product and an oxygen enriched liquid bottom product;
(d) refluxing the elevated pressure rectifier by indirect heat exchange in said latent heat exchanger with boiling pressurized liquid oxygen, whereby said gaseous oxygen at product pressure is obtained;
(e) supplying said liquid nitrogen, said oxygen enriched liquid, plus a remaining fraction of air at a high pressure that is at least 2 ATA lower than said elevated pressure to a cryogenic distillation apparatus;
(f) distilling said fluids from step (e) so as to obtain low pressure liquid oxygen;
(g) pressurizing said low pressure liquid oxygen for use in step (d), while precluding the requirement for a mechanical gaseous oxygen compressor.

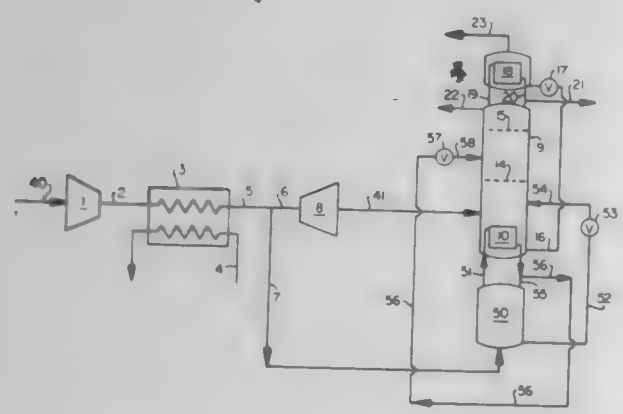
10. An apparatus for producing pressurized gaseous oxygen comprising:
(a) a means designed for providing split supply pressure air, one fraction at a high pressure, and the remaining fraction at an elevated pressure which is at least 2 ATA higher than said high pressure;
(b) an elevated pressure rectifier which rectifies the elevated pressure air fraction to liquid N_2 and oxygen enriched liquid;
(c) a means for pressurizing liquid oxygen;
(d) a reflux condenser for the elevated pressure rectifier which gasifies the pressurized liquid oxygen;
(e) a cryogenic distillation apparatus which is supplied the high pressure air fraction and the liquid N_2 and oxygen enriched liquid from the elevated pressure rectifier and which produces the liquid oxygen which is pressurized in the means for pressurization;
(f) a means designed for withdrawing said gasified pressurized liquid oxygen at a product pressure of up to about 10 ATA, said means including means for precluding a mechanical gaseous oxygen compressor.

4,604,117

HYBRID NITROGEN GENERATOR WITH AUXILIARY COLUMN DRIVE

Harry Cheung, Kenmore, N.Y., assignor to Union Carbide Corporation, Danbury, Conn.

Filed Nov. 15, 1984, Ser. No. 671,940
Int. Cl.⁴ F25J *3/02*
U.S. Cl. 62—25 **15 Claims**



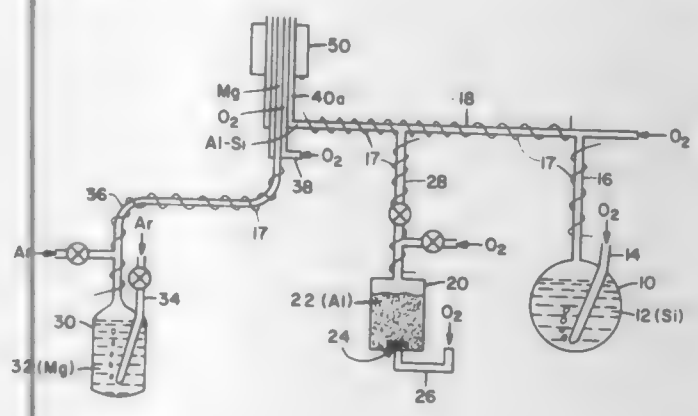
1. A process for the production of nitrogen at relatively high yield and purity by cryogenic rectification of feed air comprising avoiding the need to employ a full scale double column by the steps of:
(a) introducing the major portion of the feed air into a main rectification column which is operating at a pressure in the range of from 35 to 145 psia, and wherein feed is separated into nitrogen-rich vapor and oxygen-enriched liquid;
(b) introducing a minor portion of the feed air into a prefractionation zone at a pressure greater than that at which the main column is operating, and wherein the minor portion is separated into a nitrogen-enriched vapor fraction and an oxygen-enriched liquid fraction;
(c) condensing at least some of the nitrogen-enriched vapor fraction by indirect heat exchange with the oxygen-enriched liquid produced in the main column;
(d) introducing at least some of the resulting condensed nitrogen-enriched fraction, as reflux liquid and additional feed, into the main column at a point at least one tray above the point where the major portion of the feed air is introduced into the main column;
(e) condensing a first portion of the nitrogen-rich vapor by indirect heat exchange with vaporizing oxygen-enriched liquid;
(f) passing at least some o the resulting condensed nitrogen-rich first portion to the main column at a point at least one tray above the point where the condensed nitrogen-enriched fraction is introduced into the main column; and
(g) recovering a second portion of the nitrogen-rich vapor as product nitrogen.

4,604,118

METHOD FOR SYNTHESIZING MGO—AL_2O_3—SIO_2 GLASSES AND CERAMICS

Peter L. Bocko, Painted Post; William J. Wein, Corning, and Charles E. Young, Watkins Glen, all of N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed Aug. 13, 1985, Ser. No. 765,199
Int. Cl.⁴ C03B *37/07*
U.S. Cl. 65—3.12 **8 Claims**

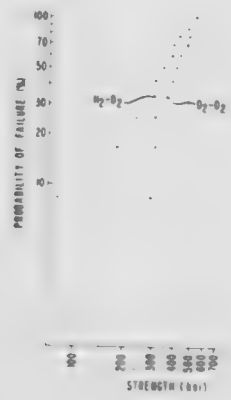


1. A method for synthesizing a vapor deposited MgO—Al_2O_3—SiO_2 oxide product which comprises the steps of:
(a) generating and supplying to a flame oxidation burner vapors of each of $SiCl_4$, an aluminum halide, and a magnesium organometallic compound, the aluminum halide vapors and magnesium organometallic vapors being supplied in separate vapor streams;
(b) injecting the vapors into an oxidizing combustion flame supported by the burner, the aluminum halide and organometallic magnesium vapors being expelled from the burners into the flame in separate vapor streams, and an interposing shield gas stream, free of both aluminum halide and magnesium organometallic vapors, being expelled into the flame between the streams containing the aluminum halide and magnesium organometallic vapors; and
(c) collecting the MgO—Al_2O_3—SiO_2 particulate oxidation product resulting from combustion of the vapors by the flame.

4,604,119
METHOD FOR FUSION SPLICING OPTICAL FIBER

Jane F. Kuhl, Atlanta, and William A. Vicory, Duluth, both of Ga., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Jan. 24, 1984, Ser. No. 573,142
Int. Cl.[4] C03B *23/20*
U.S. Cl. 65—4.21 7 Claims



1. Method for producing a composite optical fiber by end-to-end fusing a first optical fiber to a second optical fiber, the method comprising

(a) aligning an end of the first optical fiber with an end of the second optical fiber,

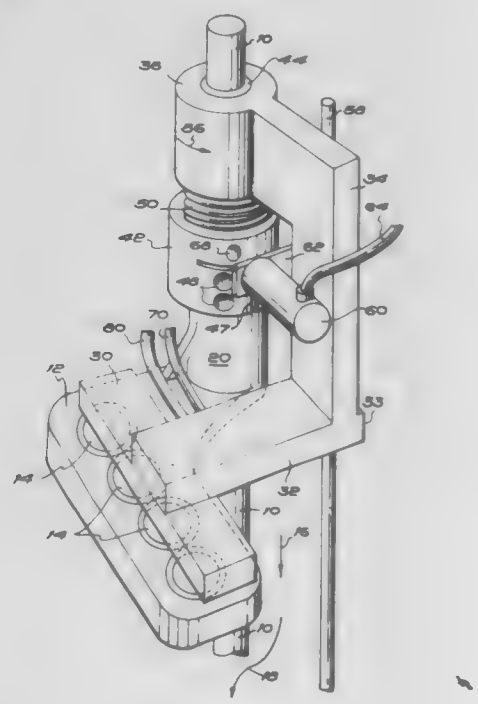
(b) heating the aligned fiber ends to a fusion temperature by exposing the aligned fiber ends to a flame produced by combustion of a gas mixture comprising at least one species of oxidizing gas and at least one species of reducing gas, with at least 10% by volume of the total amount of reducing gas present in the mixture being deuterium, and

(c) fusing the aligned fiber ends.

4,604,120
METHOD AND APPARATUS FOR LUBRICATING AND MOULDING GLASS PARISONS

Roy Brown, Dronfield, England, assignor to Graphoidal Developments Limited, Dronfield, England

Filed Dec. 21, 1984, Ser. No. 684,920
Claims priority, application United Kingdom, Dec. 23, 1983, 8334407
Int. Cl.[4] C03B *40/02*
U.S. Cl. 65—26 12 Claims



10. A method of moulding glass parisons in blank moulds of a glass forming machine of a type comprising closable blank moulds defining at least one mould cavity, and at least one arm system comprising an arm and an operating shaft fast with said arm for moving said arm to an operative position over the closed blank moulds; said method comprising fitting said machine with apparatus comprising:

a carrier structure with inlet means for lubricant, spray outlet means for discharging lubricant spray onto said blank moulds and duct means connecting said inlet means with said spray outlet means;

supporting means for supporting said carrier structure on said glass forming machine so that said carrier structure is movable between at least one inoperative position and a discharge position over the closed position of said blank moulds for spraying lubricant from said spray outlet means into said at least one mould cavity;

coupling means selectively operable to couple said carrier structure to said arm system whereby, as said arm system moves said arm to the operative position thereof, said arm system also moves said carrier structure from said inoperative position into said discharge position for spraying lubricant;

said coupling means alternatively operating to uncouple said carrier structure from said arm system whereby, as said arm system moves said arm to the operative position thereof, said arm system moves without said carrier structure, and leaves said carrier structure in a said inoperative position thereof;

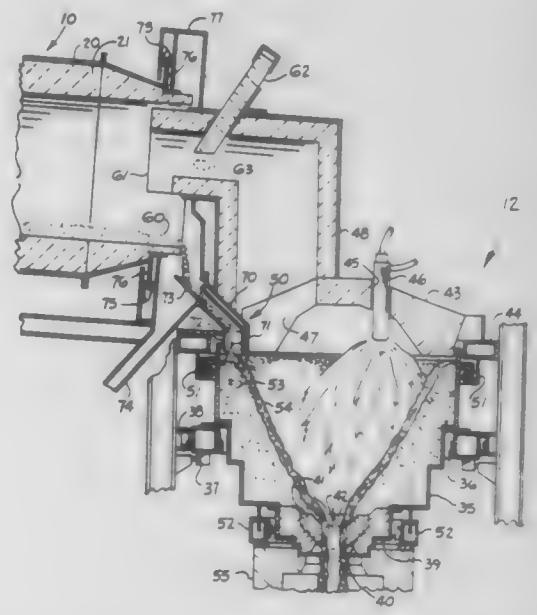
repeatedly and regularly performing a moulding cycle which includes dropping a gob of molten glass into the cavity, closing the cavity, blowing in air to form the parison, opening the blank moulds and carrying away the parison; during which cycles said carrier structure is uncoupled from said arm system, and said arm system moves without said carrier structure, leaving said carrier structure in a said inoperative position thereof;

periodically performing a lubrication cycle which comprises the steps of operating said coupling means to couple said carrier structure to said arm system, operating said arm system to move said carrier structure and spray outlets with said arm to a position over the closed blank moulds, spraying lubricant into said at least one mould cavity from said spray outlets, and returning said spray outlets and carrier structure to a said inoperative position.

4,604,121
METHOD OF PRETREATING GLASS BATCH

Henry M. Demarest, Jr., Natrona Heights; Joseph M. Matesa, Plum Boro, and Gerald E. Kunkle, New Kensington, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Continuation of Ser. No. 519,950, Aug. 3, 1983, abandoned. This application Jul. 2, 1985, Ser. No. 750,989
Int. Cl.[4] C03B *5/10*
U.S. Cl. 65—27 9 Claims



1. A method of melting glass comprising: continuously feeding glass batch material constituting substantially the entire

pulverulent portion of the glass batch to a pretreating vessel, passing a substantially nitrogen-free gas through the pretreating vessel, agitating the batch materials in the pretreating vessel so as to contact the material with the gas being passed through the pretreating vessel and to purge entrapped nitrogen from the materials, and continuously passing the treated materials while being maintained substantially nitrogen-free to a liquefying vessel where the batch materials are liquefied by means of a heat source that does not introduce substantial amounts of nitrogen into the vessel.

4,604,122

METHOD OF SENSING GOBS OF MOLTEN GLASS

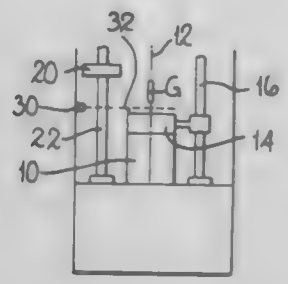
René Keller, Zurich, Switzerland, assignor to Emhart Industries, Inc., Farmington, Conn.

Filed Sep. 25, 1985, Ser. No. 780,058

Claims priority, application United Kingdom, Sep. 28, 1984, 8424614

Int. Cl.[4] C03B 5/24

U.S. Cl. 65—29 6 Claims



1. A method of sensing gobs of molten glass as they pass along a path which leads to a mould arrangement of a glassware forming machine, the method comprising transmitting ultrasonic radiation towards a point on the path so that, when the radiation arrives at the point while a gob is occupying the point, the radiation is reflected by the gob towards a detector which detects the reflected radiation, comparing one or more parameters of the radiation detected by the detector with an equal number of expected parameters for radiation which has been reflected by a gob at said point on the path, and producing a signal indicating the presence of a gob if the or each parameter is consistent with its equivalent expected parameter.

4,604,123

PROCESS AND INSTALLATION FOR HEATING A CHANNEL CONTAINING GLASS BY MEANS OF OXYFUEL FLAMES

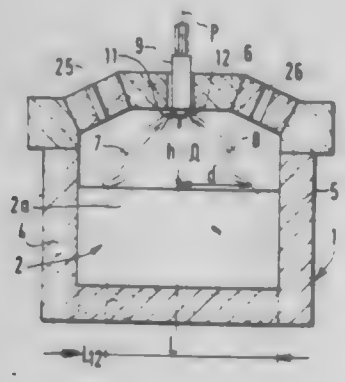
Marc Desprez, Courbevoie, and Serge Laurenceau, Versailles, both of France, assignors to L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude, Paris, France

Filed Jul. 3, 1985, Ser. No. 752,157

Claims priority, application France, Jul. 4, 1984, 84 10597

Int. Cl.[4] C03B 5/225

U.S. Cl. 65—134 7 Claims



1. A process for heating a vaulted channel in which flows a stream of molten glass in the direction of at least one forming machine, comprising heating longitudinal marginal zones of an upper surface of the stream of glass by means of curtains of flames which issue from oxyfuel burners and are directed from approximately the middle of the vaulted channel towards said marginal zones, and maintaining the direction of all of the flames within the channel away from the channel vault to thereby prevent the direct heating of said vault by said flames, said flames terminating at the point of impact with the glass.

5. An installation for heating a channel in which flows a stream of molten glass in the direction of at least one forming machine, said channel comprising a vault, at least one group of oxyfuel burners carried by said vault and connected to a source of oxygen and to a source of fuel gas, said burners being oriented in such manner as to produce curtains of flames directed from approximately the middle of the vaulted channel towards longitudinal marginal zones of an upper surface of the stream of molten glass, said flames terminating at a point of impact with the glass, and means defining at least one opening associated with each curtain of flames, said opening having such dimensions that an overpressure of gas of a few millimeters of water is maintained above the molten glass so as to avoid entry of air.

4,604,124

APPARATUS FOR MANUFACTURING OF TEMPERED, BENT GLASS SHEETS

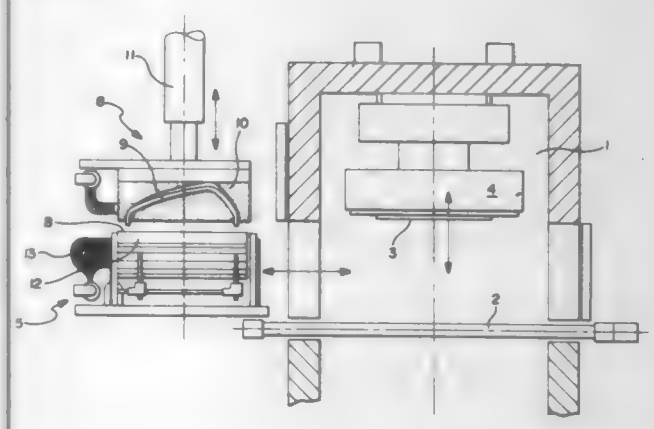
Gottfried Strauss, Heiligenhaus, Fed. Rep. of Germany, assignor to Glasstemp of Toledo, Inc., Perrysburg, Ohio

Filed Feb. 26, 1985, Ser. No. 705,915

Claims priority, application Fed. Rep. of Germany, Feb. 28, 1984, 3407173

Int. Cl.[4] C03B 23/03

U.S. Cl. 65—273 5 Claims



1. Apparatus for manufacturing tempered, bent glass sheets, comprising:

(a) a horizontal continuous conveyor for transporting a planar glass sheet into a heating device for softening the glass sheet;

(b) a vacuum lifting device for lifting the softened glass sheet from the conveyor within the heating device;

(c) a bending device, having adjustable bending supports, said bending device being movable in a horizontal direction into the heating device beneath the lifted glass sheet,

(d) a bending die located outside the heating device and movable vertically for positioning above the bending device after the bending device carries the softened glass sheet out of the heating device; and

(e) coolant segments in the bending device as well as in the bending die for cooling the bent glass sheet, said coolant segments being connectable to a fluid supply pipe to introduce cooling fluid into the cooling segments.

4,604,125

SOLID COMPOSITION OF ORGANIC FERTILIZER AND OF ORGANO-MINERAL FERTILIZER

Andrea Robertiello, Rome, and Leonello Angelini, Monterotondo, both of Italy, assignors to Eni-Ente Nazionale Idrocarburi, Rome, Italy

Filed Jun. 11, 1984, Ser. No. 619,038
Claims priority, application Italy, Jun. 15, 1983, 21633 A/83
Int. Cl.[4] C05F *5/00*
U.S. Cl. 71—26 2 Claims

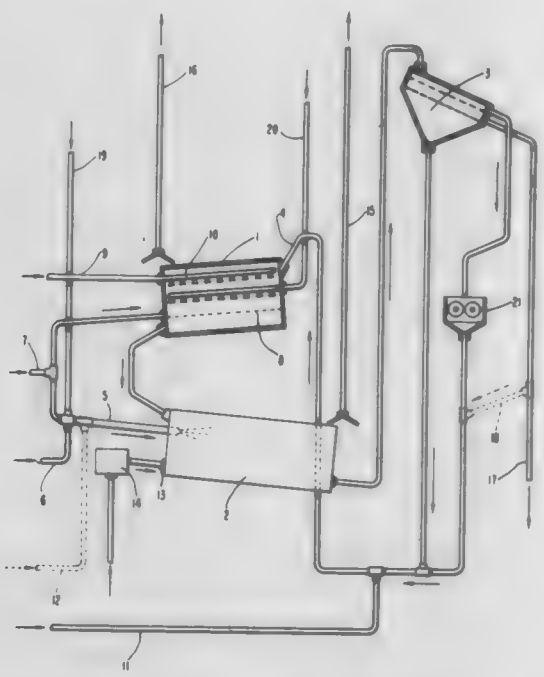
1. A solid composition of organic fertilizer, comprising the solid product obtained from the desalting of a vinasse, said desalting having been conducted by contacting the vinasse having a solids content of 45 to 65% by weight with an acid consisting of phosphoric acid having a specific gravity from 1.50 to 1.69 kg/l in an amount from 2.7 to 3.4 kg per kilogram of potassium in the vinasse, in an organic solvent consisting essentially of ethanol, the ethanol being present in an amount from 10 to 25 parts by volume per 100 parts by volume of the vinasse, said solid product containing a quantity of organic nitrogen of at least 1.5% by weight, a quantity of phosphorous expressed as P_2O_5 of at least 4% by weight, a quantity of potassium expressed as K_2O of at least 5% by weight, and a quantity of organic carbon of at least 8% by weight.

4,604,126

NP/NPK FERTILIZER GRANULES COMPRISED OF AMMONIUM PHOSPHATE

Philippe Moraillon, Saint-Germain-en-Laye, France, assignor to Generale des Engrais S.A., Neuilly-sur-Seine, France

Filed Apr. 28, 1981, Ser. No. 258,460
Claims priority, application France, May 5, 1980, 80 09952
Int. Cl.[4] C05B *7/00*
U.S. Cl. 71—34 39 Claims



1. A continuous process for the production of solid particulates comprising ammonium phosphate, said process comprising: introducing recycled dried product and liquid and solid feedstocks into a mixing zone; passing the resulting mixtures into a drying zone through which passes a flow of gas; simultaneously introducing an acidic liquid and an ammoniacal fluid into a confined and elongate reaction zone to partially neutralize said acidic liquid by said ammoniacal fluid and to produce a jet of reaction mixture comprising slurry and water vapor, said confined and elongate reaction zone being arranged and constructed so as to directly openly communicate into said drying zone so as to project said reaction mixture comprising slurry and water vapor onto the wet solid product which emanates from said mixing zone and to simultaneously dry the product resulting therefrom; and then collecting the resulting dry product at the outlet of the drying zone.

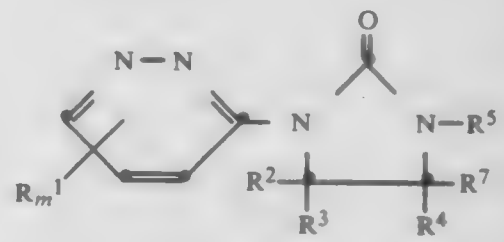
4,604,127

HERBICIDAL PYRIDAZINYLIMIDAZOLIDINONE COMPOUNDS

Riaz F. Abdulla, Greenfield, and Jack G. Samaritoni, Knightstown, both of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Continuation-in-part of Ser. No. 631,655, Jul. 17, 1984, abandoned. This application May 15, 1985, Ser. No. 734,365
Int. Cl.[4] A01N *43/58;* C07D *237/20, 237/22, 237/12*
U.S. Cl. 71—66 39 Claims

1. A compound of the formula (I):

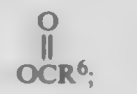


(I)

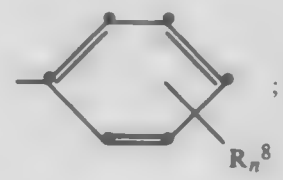
wherein

each R^1 independently is halo, C_1–C_8 alkyl, C_1–C_6 alkoxy, C_2–C_6 alkenyl, C_2–C_6 alkynyl, C_3–C_6 cycloalkyl, (C_1–C_3 alkyl)C_3–C_6 cycloalkyl, (C_1–C_3 alkoxy)C_1–C_8 alkyl, adamantyl, phenyl, halo-substituted phenyl, (phenyl)C_1–C_8 alkyl, phenoxy, or (phenoxy)C_1–C_8 alkyl;

R^2 is hydrogen, hydroxy, C_1–C_6 alkyl, C_1–C_6 alkoxy, or



wherein R^6 is C_1–C_{15} alkyl, C_2–C_{15} alkenyl, C_2–C_{15} alkynyl, C_3–C_6 cycloalkyl, di(C_1–C_6 alkyl)amino, di(phenyl)amino, naphthyl, (C_1–C_6 alkyl)(phenyl)amino, or



;

wherein each R^8 independently is halo, C_1–C_6 alkyl, C_1–C_6 alkoxy, halo(C_1–C_6 alkyl), cyano, nitro, acetyl, phenyl, benzoyl, phenoxy, phenylthio, (C_1–C_6 alkyl)thio, CF_3O, CF_3S, or carboxy, optionally esterified with C_1–C_6 alkanol;

R^3 is hydrogen or C_1–C_6 alkyl;

R^4 is hydrogen, hydroxy, C_1–C_6 alkyl, or



or R^3 and R^4 together form a double bond;

R^5 is hydrogen, C_1–C_6 alkyl, C_1–C_6 alkoxy, or benzyl;

R^7 is hydrogen or C_1–C_6 alkyl; and m and n are independently integers from 0 to 3.

13. A method of inhibiting the growth of unwanted vegetation which comprises contacting the vegetation or the soil in which the vegetation is growing with a herbicidally-effective amount of a compound of claim 1.

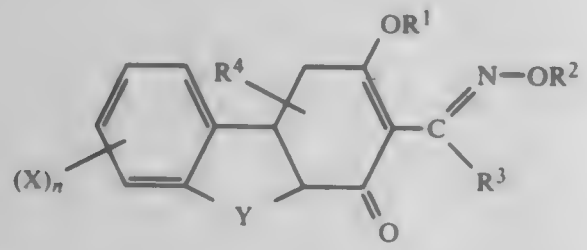
38. A method of inhibiting the growth of unwanted aquatic vegetation which comprises contacting the vegetation or the water in which the vegetation is growing with a herbicidally-effective amount of a compound of claim 1.

4,604,128
HERBICIDAL CYCLOHEXANE-1,3-DIONE DERIVATIVES

Keith G. Watson, Blackburn North; John D. Wishart, Mordialloc; Graeme J. Farquharson, Carlton; Graham J. Bird, Ascot Vale, and Lindsay E. Cross, Maribyrnong, all of Australia, assignors to ICI Australia Limited, Melbourne, Australia

Filed Sep. 10, 1985, Ser. No. 774,525
Claims priority, application Australia, Sep. 25, 1984, PG7297
Int. Cl.[4] C07D *335/04, 221/12, 311/80;* A01N *43/00, 43/40, 33/08;* C07C *131/00*
U.S. Cl. 71—88 13 Claims

1. A compound of formula I,



I

wherein:

Y is a linking group selected from the group consisting of: $—(CH_2)_l—$; $—CH(CH_3)—$; $—C(CH_3)_2—$; $—CH(CH_3)CH_2—$; $—G(CH_2)_m—$; $—CH_2GCH_2—$; $—C(G)(CH_2)_m—$; $—GC(G)—$; and $—NHC(G)—$;

wherein:

G is selected from oxygen and sulfur;

l is an integer selected from 1 to 3; and

m is zero or an integer selected from 1 and 2;

n is zero or an integer selected from 1 to 4;

X, which may be the same or different, are independently selected from the group consisting of: halogen; nitro; cyano; C_1 to C_6 alkyl; C_1 to C_6 alkyl substituted with halogen or cyano; hydroxy; C_1 to C_6 alkoxy; C_1 to C_6 alkylthio; sulfamoyl; N—(C_1 to C_6 alkyl)sulfamoyl; N,N-di(C_1 to C_6 alkyl)-sulfamoyl; the group $—(CH_2)_pC(=A)Z$ wherein p is zero or one, A is selected from oxygen and sulfur, and Z is selected from the group consisting of hydrogen, hydroxy, C_1 to C_6 alkoxy, C_1 to C_6 alkylthio, amino, N-(C_1 to C_6 alkyl) amino, N,N-di(C_1 to C_6 alkylamino, N-(C_1 to C_6 alkanoyl)amino, C_1 to C_6 alkyl, and C_1 to C_6 haloalkyl; the group $—NR^5R^6$ wherein R^5 and R^6 are independently selected from the group consisting of hydrogen, C_1 to C_6 alkyl, C_2 to C_6 alkanoyl, C_2 to C_6 haloalkanoyl, C_1 to C_6 alkylsulfonyl, and benzoyl; the group $—NHC(=B)NR^7R^8$ wherein B is selected from oxygen and sulfur and R^7 and R^8 are independently selected from hydrogen and C_1 to C_6 alkyl; and the group $—(CH_2)q—$ which bridges two adjacent carbon atoms of the benzene ring and wherein q is an integer selected from 3 or 4;

R^1 is selected from the group consisting of: hydrogen; an acyl group; and an inorganic or organic cation;

R^2 is selected from the group consisting of: C_1 to C_6 alkyl; C_2 to C_6 alkenyl; C_2 to C_6 haloalkenyl; C_2 to C_6 alkynyl; C_3 to C_6 haloalkynyl; and substituted C_1 to C_6 alkyl wherein the alkyl group is substituted with a substituent selected from the group consisting of halogen, C_1 to C_6 alkoxy, C_1 to C_6 alkylthio, phenyl and substituted phenyl wherein the benzene ring is substituted with from one to three substituents selected from the group consisting of halogen, C_1 to C_6 alkyl, C_1 to C_6 haloalkyl, C_1 to C_6 alkoxy, and C_1 to C_6 alkylthio;

R^3 is selected from the group consisting of: C_1 to C_6 alkyl; C_1 to C_6 fluoroalkyl; C_2 to C_6 alkenyl; C_2 to C_6 alkynyl; and phenyl; and

R^4 is selected from the group consisting of: hydrogen; halogen; cyano; C_1 to C_6 alkyl; and (C_1 to C_6 alkoxy) carbonyl.

10. A herbicidal composition comprising as active ingredient a herbicidally effective amount of a compound as defined according to claim 1 and an inert carrier therefor.

4,604,129
INFLUENCING PLANT GROWTH

Eberhard P. Schott, Neustadt; Volker Fischer, Wessental; Johann Jung, Limburgerhof, and Henning Rosebrock, Stetten, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Continuation of Ser. No. 388,516, Jun. 15, 1982, abandoned. This application Aug. 14, 1984, Ser. No. 640,237
Claims priority, application Fed. Rep. of Germany, Jun. 23, 1981, 3124497
Int. Cl.[4] A01N *43/90*
U.S. Cl. 71—76 5 Claims

1. A process for reducing the stem length of rice or Indian corn plants, which comprises: soaking the seeds of the plants in a dressing liquid containing an effective amount of a polycyclic, nitrogen-containing compound selected from the group consisting of 5-(4-chlorophenyl)-3,4,5,9,10-pentaazatetracyclo-[5,4,1,$0^{2,6}$,$0^{8,11}$]-dodeca-3,9-diene and 5-(4-bromophenyl)-3,4,5,9,10-pentaazatetracyclo-[5,4,1,$0^{2,6}$,$0^{8,11}$]-dodeca-3,9-diene, and thereafter planting the treated seeds.

4,604,130
HERBICIDAL N-[PYRIMIDINE AMINOCARBONYL]ISOTHIAZOLE SULFONAMIDES

Rafael Shapiro, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

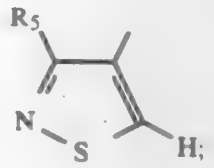
Continuation-in-part of Ser. No. 478,146, Mar. 30, 1983, abandoned. This application Aug. 13, 1984, Ser. No. 639,942
Int. Cl.[4] A01N *43/02;* C07D *401/00, 403/00*
U.S. Cl. 71—90 21 Claims

1. A compound of the formula:

$QSO_2NHCONHA$

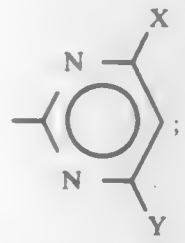
where

Q is



R_5 is Cl, C_1–C_3 alkoxycarbonyl or C_1–C_3 alkyl;

A is



X is CH_3, OCH_3, OCF_2H, OC_2H_5, or CH_2OCH_3; and

Y is CH_3, OCH_3 or OCF_2H;

and agriculturally suitable salts thereof.

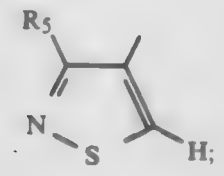
11. A method for controlling the growth of undesired vegetation comprising applying to the locus of such vegetation an agriculturally effective amount of a compound of claim 1.

16. A compound of the formula:

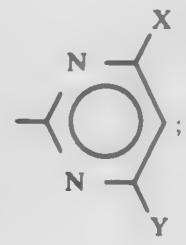
$QSO_2NHCONHA$

where

Q is



R_5 is Cl, C_1–C_3 alkoxycarbonyl or C_{1-3} alkyl;
A is



X is cyclopropyl;
Y is CH_3, OCH_3 or OCF_2H; and
agriculturally suitable salts thereof.

20. A method for controlling the growth of undesired vegetation comprising applying to the locus of such vegetation an agriculturally effective amount of a compound of claim **16**.

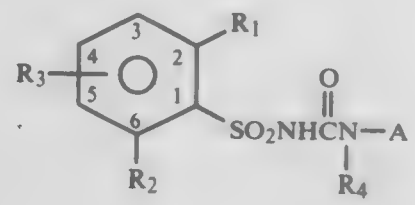
4,604,131

HERBICIDAL SULFONAMIDES

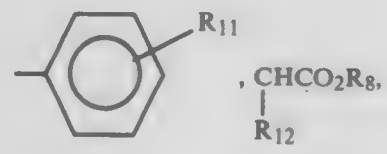
Mary A. Hanagan, Blue Bell, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 520,801, Aug. 5, 1983, abandoned. This application Jul. 12, 1984, Ser. No. 628,259
Int. Cl.[4] **C07D** *251/16, 251/46, 251/18;* **A01N** *43/70*
U.S. Cl. 71—90 **27 Claims**

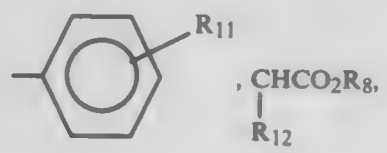
1. A compound of the formula:



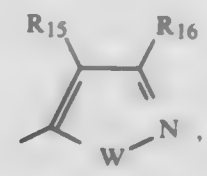
wherein
R_1 is $S(O)_nR_5$, CF_3, NR_6R_7, CO_2R_8, $SO_2NR_9R_{10}$,



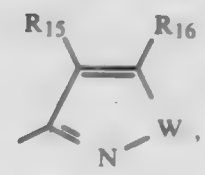
OSO_2R_{13}, CH_2OR_{14} or Q;
R_2 is $S(O)_mR_5$, CF_3, NR_6R_7, CO_2R_8, $SO_2NR_9R_{10}$,



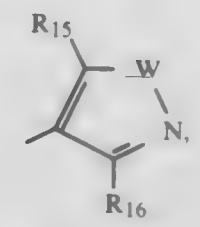
OSO_2R_{13}, CH_2OR_{14} or Q;
R_3 is H, Cl, F, Br, CH_3, OCH_3 or CF_3;
R_4 is H or CH_3;
R_5 is C_1–C_3 alkyl;
R_6 and R_7 are independently CH_3 or CH_2CH_3;
R_8 is C_1–C_3 alkyl, $CH_2CH{=}CH_2$, CH_2CH_2Cl or $CH_2CH_2OCH_3$;
R_9 is CH_3 or OCH_3;
R_{10} is C_1–C_3 alkyl;
R_{11} is H, Cl, Br, F, CH_3 or OCH_3;
R_{12} is H or CH_3;
R_{13} is C_1–C_3 alkyl or CF_3;
R_{14} is C_1–C_3 alkyl or CF_2H;
n is 0, 1 or 2;
m is 0 or 1;
Q is



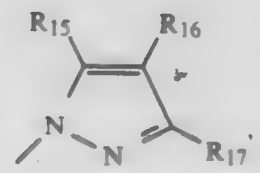
Q-1



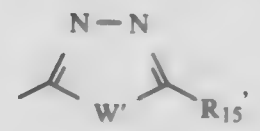
Q-2



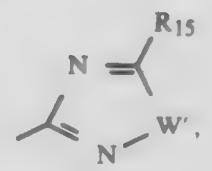
Q-3



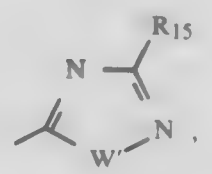
Q-4



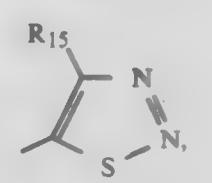
Q-5



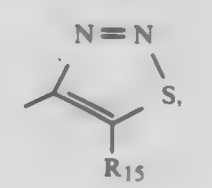
Q-6



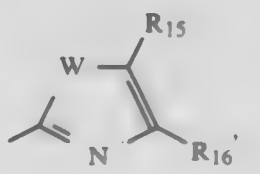
Q-7



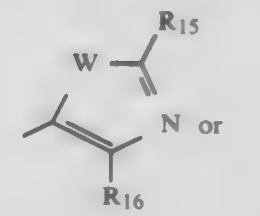
Q-8



Q-9

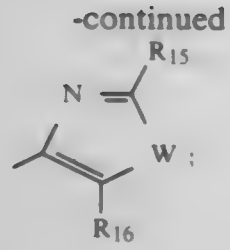


Q-10

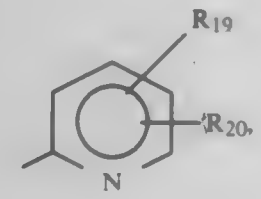


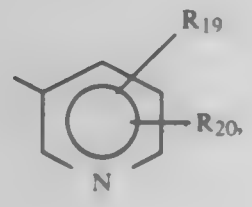
Q-11

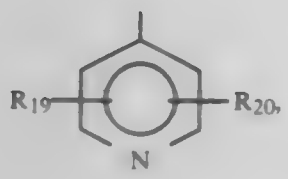
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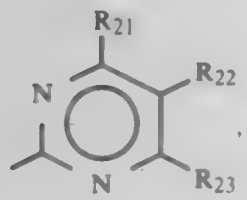
Q-12 

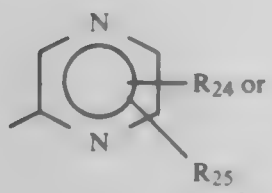
W is O, S or NR_{18};
W' is O or S;
R_{15}, R_{16}, R_{17} and R_{18} are independently H or CH_3;
Q is also

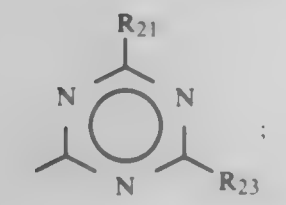
Q-13 

Q-14 

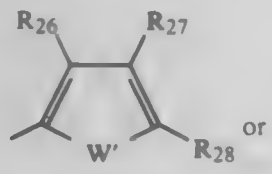
Q-15 

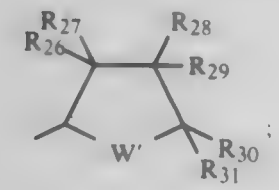
Q-16 

Q-17 

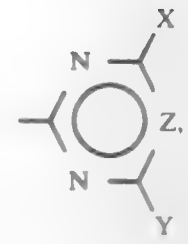
Q-18 

R_{19}, R_{20}, R_{22}, R_{24} and R_{25} are independently H or CH_3;
R_{21} and R_{23} are independently H, CH_3 or OCH_3;
Q is also

Q-19 

Q-20 

R_{26}, R_{27}, R_{28}, R_{29}, R_{30} and R_{31} are independently H or CH_3;
A is

A-1 

Z is N;
X is CH_3, OCH_3, OCH_2CH_3, or OCF_2H;
Y is H, NH_2, $NHCH_3$, $N(CH_3)_2$, CH_3, CH_2CH_3, CF_3, CH_2OCH_3, $CH_2OCH_2CH_3$, $O(C_1$–C_3 alkyl), SCH_3, $O(C_3$–C_4 alkenyl), $O(C_3$–C_4 alkynyl), OCH_2CF_3, OCH_2CH_2F, OCH_2CH_2Cl, OCH_2CH_2Br or OCF_2H;
and agriculturally suitable salts thereof; provided that
(a) when either one of R_1 or R_2 is CF_3, then the other is also CF_3;
(b) R_1 and R_2 are not simultaneously CO_2R_8;
(c) when either one of R_1 or R_2 is $SO_2NR_9R_{10}$, then the other must not be $S(O)_nR_5$, $S(O)_mR_5$, CH_2OR_{14} or NR_6R_7;
(d) when R_9 is OCH_3, then R_{10} is CH_3;
(e) when either one of R_1 or R_2 is CO_2R_8, then the other must not be $S(O)_nR_5$, $S(O)_mR_5$ or NR_6R_7;
(f) the total number of carbon atoms in R_{26} to R_{31} combined is equal to or less than four;
(g) when X or Y is OCF_2H, then R_2 is Q; and
(h) R_1 cannot be CO_2R_8 when R_2 is OSO_2R_{13}.

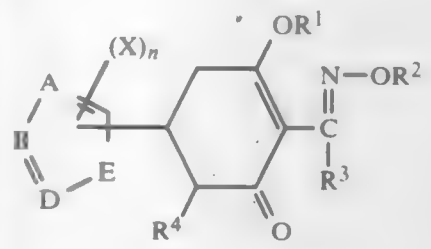
4,604,132

HERBICIDAL 5-(HETERO-SUBSTITUTED) CYCLOHEXANE-1,3-DIONE DERIVATIVES

Richard J. Conway, Essendon; Keith G. Watson, Box Hill North, and Graeme J. Farquharson, Reservoir, all of Australia, assignors to ICI Australia Limited, Melbourne, Australia

Filed Apr. 27, 1984, Ser. No. 604,967
Claims priority, application Australia, May 6, 1983, PF9198
Int. Cl.[4] C07D *277/24, 263/34;* A01N *43/00, 43/02*
U.S. Cl. 71—90 **10 Claims**

1. A compound of the formula I

I 

wherein:
A and D are CH and B is N;
E is selected from oxygen and sulfur:
X, which may be the same or different, are independently selected from the group consisting of C_1 to C_6 alkyl, C_1 to C_6 alkoxy, C_1 to C_6 alkylthio, halogen, amino, N-(C_1 to C_6 alkyl)amino, N,N-di(C_1 to C_6 alkyl)amino, C_2 to C_6 alkenoyl, phenyl, C_1 to C_6 alkyl substituted with a substituent selected from the group consisting of halogen, nitro, hydroxy, C_1 to C_6 alkoxy and C_1 to C_6 alkylthio, sulfamoyl, N-(C_1 to C_6 alkyl)sulfamoyl and N,N-di(C_1 to C_6 alkyl)-sulfamoyl;
R^1 is selected from the group consisting of: hydrogen; C_2 to C_6 alkanoyl; benzoyl and and the alkali metals, the alkaline earth metals, the transition metals, the ammonium ion and the tri- and tetra-(alkyl)ammonium ions wherein alkyl is selected from C_1 to C_6 alkyl and C_1 to C_6 hydroxyalkyl;
R^2 is selected from the group consisting of: C_1 to C_6 alkyl, C_2 to C_6 alkenyl, C_2 to C_6 alkynyl, C_1 to C_6 haloalkyl, C_2 to C_6 haloalkenyl and C_2 to C_6 haloalkynyl;
R^3 is selected from C_1 to C_6 alkyl;

R^4 is selected from hydrogen, halogen and (C_1 to C_6 alkoxy)-carbonyl; and
n is zero or an integer selected from 1 and 2.

4,604,133

HERBICIDAL SULFONAMIDE INNER SALTS

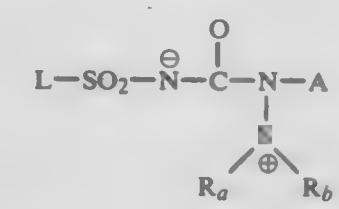
Chi-Ping Tseng, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 551,004, Nov. 16, 1983, Pat. No. 4,484,939, which is a continuation-in-part of Ser. No. 467,650, Feb. 18, 1983, abandoned. This application Nov. 13, 1984, Ser. No. 670,967

Int. Cl.[4] **C07D** *251/18, 251/52, 251/46;* **A01N** *43/70*

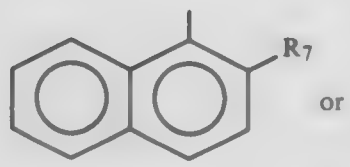
U.S. Cl. 71—90 **14 Claims**

1. A compound of the formula:

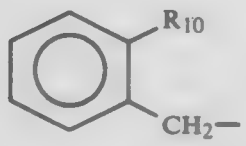


wherein
R_a is CH_3 or CH_2CH_3;
R_b is CH_3 or CH_2CH_3;
L is

L-1



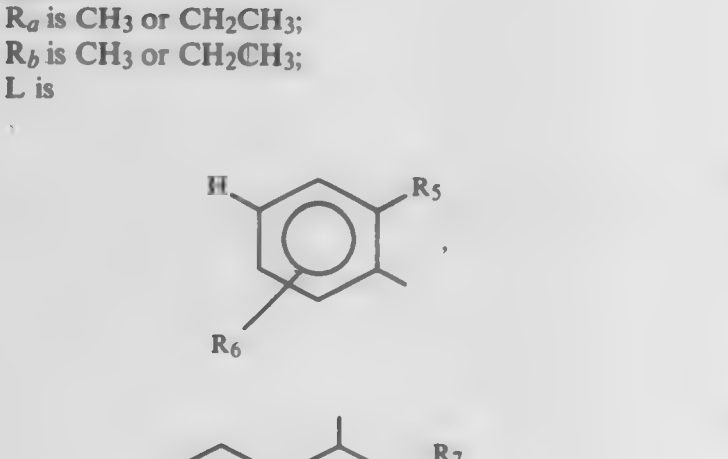
or



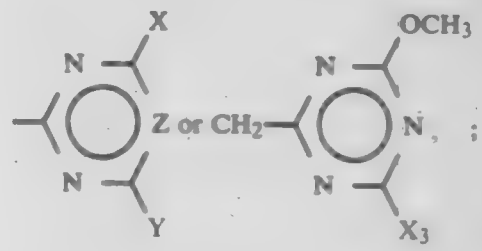
L-2

L-7

R_5 is C_1–C_4 alkyl, C_1–C_4 alkoxy, $OCH_2CH_2OCH_3$, F, Cl, Br, NO_2, CF_3, CO_2R_{19}, $SO_2NR_{20}R_{21}$, $SO_2N(OCH_3)CH_3$, OSO_2R_{22}, $S(O)_nR_{23}$, WCF_3, $WCHF_2$, C_3–C_4 alkenyloxy, C_3–C_4 alkynyloxy, C_1–C_2 alkyl substituted with OCH_3 or OCH_2CH_3, C_6H_5,

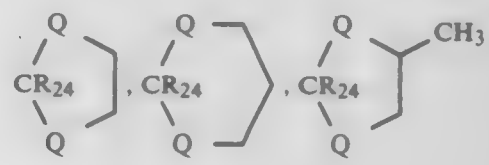


R_6 is H, F, Cl, Br, CF_3, CH_3, OCH_3, SCH_3 or OCF_2H;
R_7 is H, CH_3, OCH_3, F, Cl, Br, OSO_2CH_3 or $S(O)_nCH_3$;
R_{10} is Cl, NO_2, CO_2CH_3, $CO_2CH_2CH_3$, $SO_2N(CH_3)_2$, OSO_2CH_3, SO_2CH_3, $SO_2CH_2CH_3$, OCH_3 or OCH_2CH_3;
R_{19} is C_1–C_4 alkyl, $CH_2CH_2OCH_3$, CH_2CH_2Cl or $CH_2CH{=}CH_2$;
R_{20} is C_1–C_3 alkyl;
R_{21} is C_1–C_3 alkyl;
R_{22} is C_1–C_3 alkyl or $N(CH_3)_2$;
R_{23} is C_1–C_3 alkyl or $CH_2CH{=}CH_2$;
n is 0 or 2; and
W is O, S or SO_2;
A is



A-1 A-6

X is CH_3, OCH_3, OCH_2CH_3, OCF_2H, CH_2F or CF_3;
Y is H, CH_3, OCH_3, OCH_2CH_3, CH_2OCH_3, $CH_2OCH_2CH_3$, $N(CH_3)_2$, CH_2CH_3, CF_3, SCH_3, $OCH_2CH{=}CH_2$, $OCH_2C{\equiv}CH$, OCH_2CF_3, $OCH_2CH_2OCH_3$, CH_2SCH_3, OCF_2H, SCF_2H, $CR_{24}(QCH_3)_2$,



or $CR_{24}(QCH_2CH_3)_2$; Q is O or S;
R_{24} is H or CH_3;
Z is N;
X_3 is CH_3 or OCH_3; provided that
the total number of carbon atoms of R_{20} and R_{21} is less than or equal to four.

4,604,134

POLLEN SUPPRESSANT COMPRISING A FUSED PYRIDAZINE

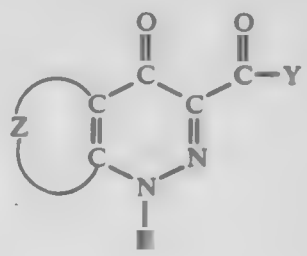
Jeffrey N. Labovitz, Palo Alto, and Lawrence Fang, Daly City, both of Calif., assignors to Lafarge Coppee, Paris, France

Filed Sep. 14, 1983, Ser. No. 532,020

Int. Cl.[4] **A01N** *43/58;* **C07D** *237/28*

U.S. Cl. 71—92 **13 Claims**

10. A pollen-suppressing composition, comprising:
(1) an amount sufficient to suppress pollen production in a wheat plant of at least one compound of



where
Z represents a divalent organic radical of the formula —CH=CH—CH=CH—, or said radical in which an H of Z is replaced with
(a) a halogen atom with the proviso that no more than three H or Z are replaced by fluorine;
(b) a C_1–C_4 alkyl, C_1–C_4 alkoxy, C_1–C_4 alkanoyl, cyano, nitro, hydroxy, or trihalomethyl group; or
(c) a group of the formula $-NR^1R^2$ wherein R^1 and R^2 independently represent a hydrogen atom or a C_1–C_4 alkyl group;
Y is Y^1R^3 or NR^4R^5 wherein Y^1 is oxygen or sulfur; R^3 is

hydrogen, C_1–C_4 alkyl, C_1–C_4 alkoxyalkyl, cyclohexylmethyl, halogenated C_1–C_4 alkyl, phenyl, or benzyl; and R^4 and R^5 are independently selected from the group consisting of hydrogen, C_1–C_4 alkyl or C_1–C_4 alkyl substituted with carboxyl or C_1–C_4 alkoxycarbonyl; and

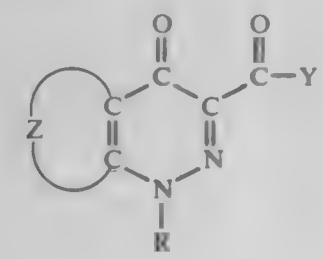
R represents phenyl, naphthyl, or phenyl or naphthyl substituted with one to three substituents selected from the group consisting of halogen, trihalomethyl, C_1–C_4 alkoxy, C_1–C_4 alkyl, and cyano;

or a salt thereof;

(2) in combination with an inert agronomically acceptable carrier.

13. A method of producing hybrid seeds from a self-pollenizing gramineous plant, which comprises:

(1) sterilizing the male anthers of a female parent plant with a compound of the formula



where

Z represents a divalent organic radical of the formula —CH=CH—CH=CH—, or said radical in which an H or Z is replaced with

(a) a halogen atom;

(b) a C_1–C_4 alkyl, C_1–C_4 alkoxy, C_1–C_4 alkanoyl, cyano, nitro, hydroxy, or trihalomethyl group; or

(c) a group of the formula NR^1R^2 wherein R^1 and R^2 independently represent a hydrogen atom or a C_1–C_4 alkyl group;

Y is Y^1R^3 or NR^4R^5 wherein Y^1 is oxygen or sulfur; R^3 is hydrogen, C_1–C_4 alkyl, C_1–C_4 alkoxyalkyl, cyclohexylmethyl, halogenated C_1–C_4 alkyl, phenyl, or benzyl; and R^4 and R^5 are independently selected from the group consisting of hydrogen, C_1–C_4 alkyl, or C_1–C_4 alkyl substituted with carboxyl or C_1–C_4 alkoxycarbonyl; and

R represents C_1–C_4 alkyl, phenyl, naphthyl, or phenyl or naphthyl substituted with one to three substituents selected from the group consisting of halogen, trihalomethyl, C_1–C_4 alkoxy, C_1–C_4 alkyl, and cyano;

or a salt thereof; and

(2) pollenating said female parent with pollen from an untreated male parent, thereby producing said hybrid seed.

4,604,135

APPARATUS AND PROCESS FOR THE METALLURGICAL AFTERTREATMENT OF PREMELTED METALS

Karl-Heinz Heinen; Wolfgang Glitscher, and Heinz Zörcher, all of Siegen, Fed. Rep. of Germany, assignors to Krupp Stahl AG, Bochum, Fed. Rep. of Germany

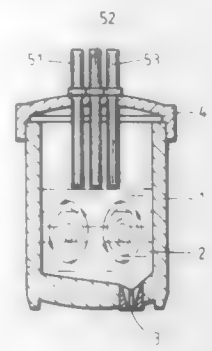
Filed May 29, 1985, Ser. No. 738,918

Claims priority, application Fed. Rep. of Germany, Jul. 4, 1984, 3424510

Int. Cl.⁴ C21C *5/52*

U.S. Cl. 373—60 **5 Claims**

1. An apparatus for refining molten steels, after smelting in a separate vessel, comprising: a cylindrical ladle for receiving molten steel, and at least one non-consumable electrode passing through said cover for heating the molten steel via electric arcs, wherein the at least one electrode consists of a continuously cast steel billet having a composition corresponding to



the analysis of the metal melt, the apparatus intended for aftertreatment of premelted metals.

4,604,136

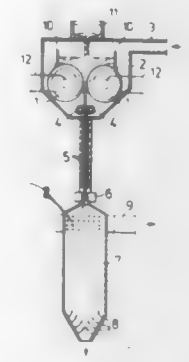
METHOD AND AN APPARATUS FOR SUBDIVISION OF AND HEAT RECOVERY FROM A LIQUID SLAG

Bruno Bergkvist, Täby; Martti Kölhi, Stenhamra; Erik Strandell, Lidingö, and Christer Svemar, Upplands-Väsby, all of Sweden, assignors to AB Svensk Alunskifferutveckling, Stockholm, Sweden

Filed May 30, 1984, Ser. No. 615,879

Int. Cl.⁴ F27D *15/02*

U.S. Cl. 75—24 **9 Claims**



1. A method of sub-dividing and recovering heat from a liquid slag comprising:

rolling the liquid slag between at least two cooled briquetting rolls, controlling the temperature of and distance between the rolls so as to obtain a cohesive slag slab with shaped briquettes having a solidified surface layer and a melted central layer, cooling the briquetted slab to a temperature whereat the portions of the shaped slab between the briquettes themselves crack up, whereby the briquettes are automatically separated from each other and recovering heat from the separated briquettes.

4,604,137

METHOD AND APPARATUS FOR CONTROLLED MELT REFINING

Katsuhiko Yamada, Hyogo, Japan, assignor to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Sep. 18, 1985, Ser. No. 777,136

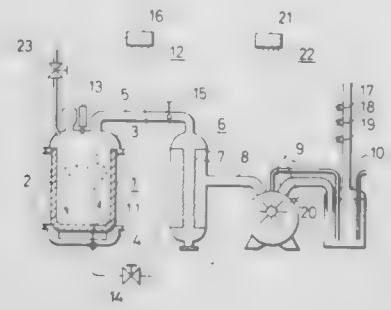
Claims priority, application Japan, Sep. 18, 1984, 59-196191

Int. Cl.⁴ C21C *5/52*

U.S. Cl. 75—49 **5 Claims**

1. A method of controlled melt refining comprising: (a) covering the surface of a semi-killed molten steel in a ladle with a basic slag which either is non-oxidizing or contains not more than 5% of FeO; (b) maintaining the pressure of the atmosphere above the melt in the range of 30–150 Torr; (c) blowing an inert gas into the ladle from the bottom; and (d) maintaining the height of the boiling melt in terms of gas holdup ($\Delta H/H$) within the range of 0.1–0.5 by controlling the pressure

at which the inert gas is blown and/or by adjusting a vacuum exhaust valve, ΔH being the difference in height between the



surface of the boiling melt and a quiet melt, and H being the height of the quiet melt.

4,604,138

PROCESS FOR REFINING HOT METAL

Erich Höffken; Wolfram Florin, both of Dinslaken, and Rudolf Hammer, Dinslaken-Eppinghoven, all of Fed. Rep. of Germany, assignors to Thyssen Stahl AG, Duisburg, Fed. Rep. of Germany

Filed Sep. 11, 1985, Ser. No. 774,632

Claims priority, application Fed. Rep. of Germany, Sep. 22, 1984, 3434894

Int. Cl.[4] C21C *5/34*

U.S. Cl. 75—51.6 3 Claims

1. In the production of steel of low phosphorus content from hot metal having a phosphorus content up to 0.2% by weight, wherein a refining gas comprising oxygen is top-blown onto a steel-producing melt and an inert stirring gas is blown into the melt, the improvement which comprises employing a melt having a manganese content of less than 0.2% by weight, adding lime to the melt and continuing refining down to a final phosphorus content of at most 0.005% by weight in the steel at the end of blowing, without a change of slag, whereby the steel is simultaneously decarburised and dephosphorised.

4,604,139

DUAL COLOR INK COMPOSITION

Keiko Shioi, Daito, and Yukito Shoji, Suita, both of Japan, assignors to Sakura Color Products Corp., Osaka, Japan

Filed Feb. 2, 1982, Ser. No. 344,933

The portion of the term of this patent subsequent to Dec. 25, 2001, has been disclaimed.

Int. Cl.[4] C09D *11/00*

U.S. Cl. 106—23 16 Claims

1. An ink composition for writing on an absorbent or pervious writing surface to provide a writing (composed of an inner portion of a first color with substantial outer contour portions therearound of a second color,) which composition comprises:

a first colorant,

a second colorant and

a vehicle,

said first colorant being dispersed throughout said vehicle and having a particle size sufficiently large so as to substantially not permeate or be absorbed into said writing surface and

said second colorant being a dyestuff dissolved throughout said vehicle, being capable of substantially permeating or being absorbed into said writing surface and diffusing into the area on said surface proximate to said writing,

whereby said second colorant forms said outer contour portions around said inner portion of said first colorant.

4,604,140

FOUNDRY SANDS DERIVED FROM SERPENTINE AND FOUNDRY MOLDS DERIVED THEREFROM

Jean M. Lalancette; Jean P. Chevalier-Bultel, both of Sherbrooke, and Luc Desrosiers, Rock Forest, all of Canada, assignors to Societe Nationale de l'Amiante, Quebec, Canada

Filed Apr. 26, 1984, Ser. No. 604,039

Int. Cl.[4] B23B *7/28*

U.S. Cl. 106—38.9 2 Claims

1. A granular product suitable for use as foundry sands and obtained from asbestos tailings calcined at a temperature of from 1250° to 1450° C., said asbestos tailings having an MgO:-SiO_2 ratio greater than 1.0, the granules constituting the granular product being characterized by having a thermal expansion at 1000° C. of not more than 1.0% and a particle size of between −20 to +200 mesh (Tyler), the granules being further characterized by being made up mainly of particles of enstatite bonded by gruenerite and fayalite, and substantially unreactive to basic oxides present in the cast metal.

4,604,141

SLIP CASTING MOLD

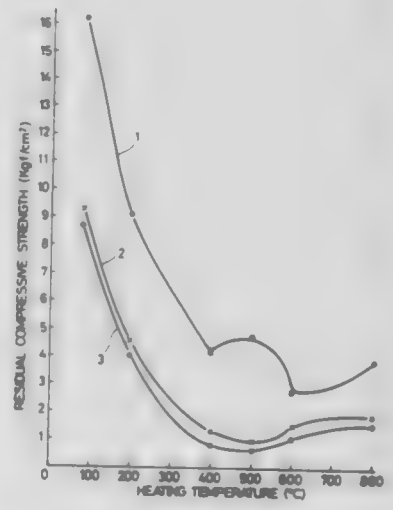
Tatsuo Natori, Kashiwa; Hideo Nakae, Tokyo; Akihide Watanabe, and Takashi Shimaguchi, both of Ibaraki, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 12, 1984, Ser. No. 599,483

Claims priority, application Japan, Apr. 15, 1983, 58-65372; Sep. 14, 1983, 58-168120

Int. Cl.[4] B29C *33/00*

U.S. Cl. 106—38.35 4 Claims



1. A slip casting mold consisting essentially of a gypsum mold, wherein said gypsum mold contains 2 to 20 parts by weight of a water-insoluble and water-absorbing vegetable cellulose and 0.05 to 2.00 parts by weight of impure gelatin, per 100 parts by weight of gypsum, whereby addition of the impure gelatin to the mold containing a water-insoluble and water-absorbing vegetable cellulose raises the initial strength of the mold while improving the collapsing property of the mold after heating at a temperature of at least 400° C.

4,604,142

INVESTMENTS FOR DENTAL CASTING

Hiroshi Kamohara; Shohei Hayashi, both of Tokyo, and Nobukazu Ohi, Fuchu, all of Japan, assignors to G-C Dental Industrial Corp., Tokyo, Japan

Filed Jun. 10, 1985, Ser. No. 743,159

Claims priority, application Japan, Jul. 6, 1984, 59-138942

Int. Cl.[4] B22C *1/08*

U.S. Cl. 106—38.51 2 Claims

1. An investment material for dental casting, in which 2 to 5 parts by weight of natural starch are added to 100 parts by weight of a mixture of hemihydrate gypsum, quartz and/or cristobalite.

4,604,143

DEMOLITION FACILITATING AGENT

Yuichi Suzukawa; Waichi Kobayashi, and Satoshi Ohtaka, all of Ube, Japan, assignors to Ube Industries, Ltd., Yamaguchi, Japan

Continuation of Ser. No. 533,887, Sep. 20, 1983, abandoned, which is a continuation of Ser. No. 376,238, May 7, 1982, abandoned. This application Apr. 24, 1985, Ser. No. 726,284
Claims priority, application Japan, May 19, 1981, 56-74195
Int. Cl.[4] C04B *7/04*
U.S. Cl. 106—89 **8 Claims**

7. A demolition-facilitating aqueous slurry for durable structures, comprising:

(A) 100 parts by weight of a mixture in the form of fine particles, consisting essentially of

(1) 95 to 99% by weight of a clinker consisting of (a) 78 to 97% by weight of free CaO crystals, (b) 3 to 22% by weight of free 3CaO SiO_2 crystals and (c) 0 to 10% by weight of an impurity, said clinker having been produced at a sintering temperature of at least 1200° C.;

(2) 1 to 5% by weight, of at least one gypsum anhydride ($CaSo_4$);

(B) 0.4 to 4 parts by weight of a cement water-reducing agent; and

(C) sufficient water to form a pourable slurry.

4,604,144

PROCESS FOR CLEANING A CIRCUIT BOARD

Ching-Ping Wong, Lawrence Township, Mercer County, N.J., assignor to AT&T Technologies, Inc., Berkeley Heights, N.J.

Filed Sep. 11, 1985, Ser. No. 774,674
Int. Cl.[4] C23G *1/02, 1/14*
U.S. Cl. 134—28 **10 Claims**

1. A method of cleaning a circuit board subsequent to soldering with a water soluble flux which comprises:

(1) washing the board in an aqueous detergent solution,

(2) rinsing the board with water,

(3) washing the board in an aqueous solution of a low molecular weight mono or dicarboxylic acid, and then

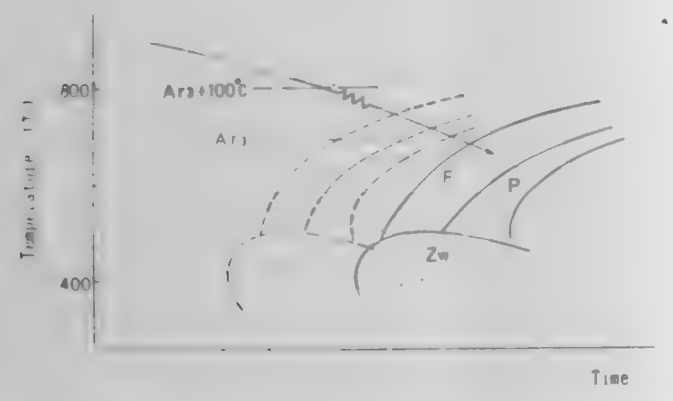
(4) rinsing the board with water.

4,604,145

PROCESS FOR PRODUCTION OF STEEL BAR OR STEEL WIRE HAVING AN IMPROVED SPHEROIDAL STRUCTURE OF CEMENTITE

Susumu Kanabara, and Kenji Aihara, both of Amagasaki, Japan, assignors to Sumitomo Metal Industries, Ltd., Osaka, Japan

Filed Jul. 19, 1984, Ser. No. 632,234
Claims priority, application Japan, Jan. 13, 1984, 59-4614; Jan. 13, 1984, 59-4615; Jan. 24, 1984, 59-9500
Int. Cl.[4] C21D *9/52*
U.S. Cl. 148—12 B **7 Claims**



1. Process for producing a steel bar or steel wire, which comprises:

heating a steel containing less than 2% of C at a temperature higher than the Ac_1 point of the steel;

rough working the heated steel;

finish working the rough-worked steel within a temperature range between Ar_1 and Ar_3 or Arcm with a reduction ratio of at least 20%; and

cooling the finish-worked steel at a cooling rate of lower than 60° C./minute to a temperature lower than 500° C.;

thereby providing a steel bar or steel wire having a spheroidal cememtite structure.

4,604,146

PROCESS FOR MANUFACTURING HIGH TENSILE STEEL WIRE

Akira Aida, Kitakyushu; Tetsu Ohno, Nishinomiya; Takashi Fukuda; Kenji Aihara, both of Kitakyushu; Takuo Mizoguchi, Yukuhashi; Syozi Nishimura, and Katsuyoshi Kajiyama, both of Kitakyushu, all of Japan, assignors to Sumitomo Metal Industries, Ltd., Osaka, Japan

Continuation of Ser. No. 319,070, Nov. 6, 1981, abandoned. This application Nov. 7, 1983, Ser. No. 563,322
Claims priority, application Japan, Nov. 8, 1980, 55-157276; Sep. 2, 1981, 56-139187
Int. Cl.[4] C21D *9/52*
U.S. Cl. 148—12 B **8 Claims**

1. A Process for manufacturing a high tensile steel wire, characterized by comprising the steps of:

pre-cooling a hot-rolled steel rod to a temperature between 750°–900° C. by means of a cooling apparatus provided between a group of intermediate rolling mills and a group of finishing rolling mills in a hot rolling line for steel rod;

finishing rolling the thus pre-cooled steel rod;

quenching the hot-rolled steel rod to a temperature of 700° C. or lower to provide supercooled austenite;

then finish-cooling the thus quenched rod to provide a martensitic structure;

drawing the resulting steel rod with roller dies without descaling to form a wire; and

warm straightening the resulting steel wire to produce a steel wire having a tensile strength of at least 110 kgf/mm^2.

4,604,147

METHOD OF MANUFACTURING PERMANENT MAGNETS

Helmut Brandis, and Wolfgang Spyra, both of Krefeld, Fed. Rep. of Germany, assignors to Thyssen Edelstahlwerke AG, Krefeld, Fed. Rep. of Germany

Filed Sep. 17, 1984, Ser. No. 651,237
Claims priority, application Fed. Rep. of Germany, Sep. 23, 1983, 3334369
Int. Cl.[4] H01F *1/02*
U.S. Cl. 148—102 **2 Claims**

1. A method of manufacturing a permanent magnet comprising forming a workpiece of an alloy having the following composition by weight:

Chromium	22.5 to 25.5%
Cobalt	15.0 to 17.5%
Molybdenum	2.0 to 4.0%
Silicon	0.1 to 0.8%
Oxygen	less than 0.10%
Effective carbon	less than 0.06%
Remainder	iron and unavoidable impurities,

where effective carbon is defined as carbon content plus 0.86 times nitrogen content,

and subjecting the workpiece to:

(a) a homogenising annealing for 15 minutes to 3 hours at 1230° C. to 1280° C., followed by quenching in liquid; then to

(b) a treatment comprising treating the workpiece for 10 to 30 minutes at 720° C. to 740° C., followed by the application for 10 to 120 minutes in a preferred axial direction of a magnetic field of 80 to 240 kA/m at a temperature of

630° C. to 650° C., followed by cooling in air; and subsequently to

(c) an age-hardening treatment in the following stages:

(ci) maintaining the workpiece at 590° C. to 625° C. for 0.25 to 10 hours

(cii) maintaining the workpiece at 555° C. to 585° C. for 0.5 to 30 hours, and

(ciii) maintaining the workpiece at 500° C. to 540° C. for 0 to 50 hours; thereby to form a permanent magnet which has the following properties, measured in the direction of magnetisation;

coercive field strength $_BH_C$ at least 50 kA/m;

remanence Br at least 1.2 T; and

energy value $(BH)_{max}$ at least 39 kJ/m^3.

4,604,148

METHOD OF INCREASING THE PHASE STABILITY AND THE COMPRESSIVE YIELD STRENGTH OF URANIUM-1 TO 3 WT. % ZIRCONIUM ALLOY

Robert C. Anderson, Crossville, Tenn., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Nov. 22, 1983, Ser. No. 554,487

Int. Cl.^{4} C21D *1/00*

U.S. Cl. 148—132 **3 Claims**

1. A method for increasing the phase stability and the compressive yield strength of a corrosion resistant uranium-1 to 3 wt. % zirconium alloy comprising the steps of reducing the thickness of a homogeneous ingot of the alloy by upset forging, rolling the forged ingot into a plate, heating the plate in vacuum to a temperature about the gamma transformation temperature and water quenching the plate to ambient temperature with said alloy exhibiting alpha prime and equilibrium alpha plus delta phases, the improvement comprising the steps of cold rolling the plate after said quenching to further reduce the thickness of the plate, aging the cold rolled plate at a first temperature, thereafter aging the cold rolled plate at a second temperature higher than said first temperature for converting alpha prime phase into additional equilibrium alpha and delta phases, and cooling said plate to ambient temperatures.

4,604,149

PROCESS FOR HARDENING ELONGATE METAL ELEMENTS

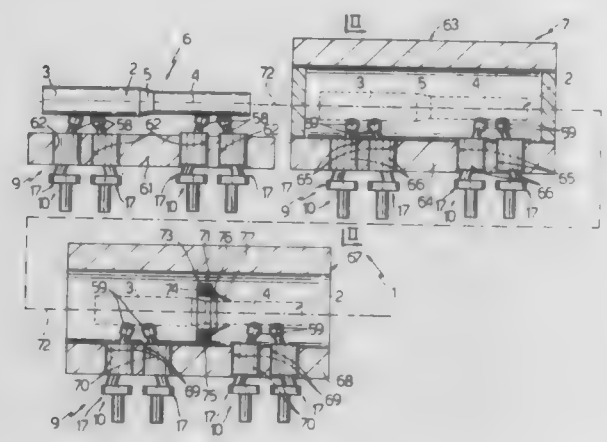
Vanfrido Olivotto, Turin, Italy, assignor to Olivotto S.p.A., Turin, Italy

Filed Mar. 22, 1985, Ser. No. 714,937

Claims priority, application Italy, Apr. 20, 1984, 67405 A/84

Int. Cl.^{4} C21D *1/00*

U.S. Cl. 148—153 **12 Claims**



1. A process for hardening elongated metal elements, in particular both solid and tubular rectilinear circular section bars, having constant or variable section, and of extended length, characterized by the fact that it comprises the steps of:

positioning each said element (2) to be hardened on a conveyer device (9) extending through a heating station (7) and a hardening, cooling station (8), and comprising a succession of rotatable support and advance means (17) individually adjustable in position and direction substantially transverse to said element (2), and individually operable in a controllable manner to impart to each point of said element (2) displacements having a controllable velocity along a respective cylindrical helix maintained, by means of said control of said rotatable support and advancement means in a direction transverse to said element, always substantially coaxial with an axis of advancement (72) of the element (2) along said conveyer device (9), the pitch of said helix being adjustable from point to point of said conveyer (9) between a value of zero and an infinite value;

advancing each said element (2) within said heating station (7) by means of said conveyer (9);

maintaining each said element (2) within said heating station (7) for a predetermined time imparting to it, by means of said rotatable support and advancement means (17), at least a rotation about said axis of advancement (72);

providing, within said cooling station (8), at least one current of heat exchange fluid substantially transverse to said axis of advancement (72); and

advancing each said element (2) through said current of fluid imparting to the points thereof displacements according to respective said cylindrical helices; at least one of the variables constituted by the velocity of said displacements and the pitch of said helices being varied, during the traverse of said current, according to the mass distribution along the element (2) itself.

4,604,150

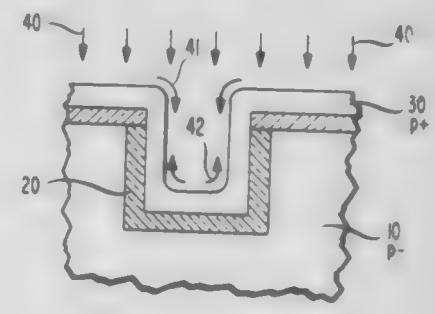
CONTROLLED BORON DOPING OF SILICON

Albert M. Lin, Allentown, Pa., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Jan. 25, 1985, Ser. No. 694,806

Int. Cl.^{4} H01L *21/385*

U.S. Cl. 148—188 **11 Claims**



1. A method of making a semiconductor device by steps comprising doping a vertical surface of a silicon body with boron characterized in that said doping is accomplished by steps comprising:

forming a layer of silicon dioxide on said vertical surface;

forming a layer of silicon on said silicon dioxide on said vertical surface, and on a horizontal surface adjacent thereto;

implanting boron into the horizontal portion of said layer of silicon, wherein the vertical portion of said layer of silicon is not substantially implanted thereby;

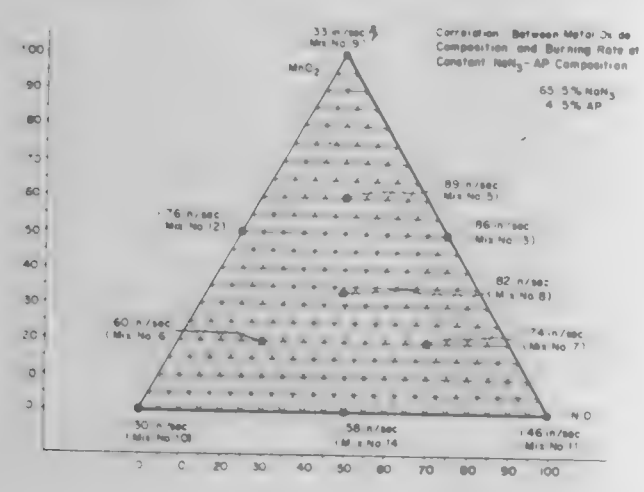
heating said layer of silicon in a dry ambient to redistribute a portion of the implanted boron into said vertical portion of said layer of silicon;

and heating said layer of silicon in an ambient comprising water molecules to oxidize at least a portion of said layer of silicon and substantially promote the transfer of a portion of the boron from said layer of silicon through said layer of silicon dioxide and into said silicon body.

4,604,151
METHOD AND COMPOSITIONS FOR GENERATING NITROGEN GAS

Gregory D. Knowlton, Chandler, and John F. Pietz, Mesa, both of Ariz., assignors to Talley Defense Systems, Inc., Mesa, Ariz.

Filed Jan. 30, 1985, Ser. No. 696,285
Int. Cl.[4] C06B *35/00*
U.S. Cl. 149—35 27 Claims



1. A solid composition for generating nitrogen gas free from noxious and toxic impurities consisting essentially of a mixture of

(a) an alkali metal azide;

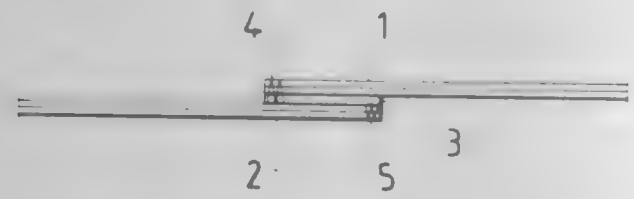
(b) a primary oxidizer consisting essentially of at least a stoichiometric amount of a metal oxide containing sufficient available oxygen to substantially fully oxidize the alkali metal of the azide, said metal oxide being selected from the group consisting of oxides of iron, nickel, manganese, copper, cobalt, titanium, and tin; and

(c) an ammonium perchlorate burn rate enhancer for enhancing the burn rate of the mixture of said alkali metal azide and said primary oxidizer and present as about 1 to 15 weight percent of the composition.

4,604,152
METHOD OF MAKING A STITCHED AND BONDED SEAM

Lasse Liukko, Mariankatu 16 B 18, SF-15110 Lahti, Finland

Filed Sep. 11, 1984, Ser. No. 649,840
Claims priority, application Finland, Sep. 12, 1983, 833260
Int. Cl.[4] B32B *31/12, 7/08*
U.S. Cl. 156—93 4 Claims

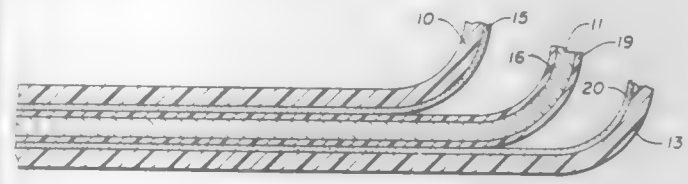


1. A method of making a seam in laminated textile fabric, comprising the steps of separately stitching along the edges of a pair of sheets of fabric with reinforcing stitching, positioning the edge portions of the sheets in lapping relation and offsetting the stitched edges from each other, interposing a layer of thermoadhesive material between the lapping edges, maintaining the lapping edges free of interconnected stitching, and heating the thermoadhesive material to melt said thermoadhesive material and penetrate the molten thermoadhesive material into the fabric and into the stitching to provide a tight and waterproof seam.

4,604,153
METHOD OF MANUFACTURING FIGURES FROM A LAMINATED TAPE AND APPLYING THE SAME TO A DESIRED MEDIUM

Kenneth M. Melbye, Stillwater, Minn., assignor to Kroy Inc., Scottsdale, Ariz.

Continuation of Ser. No. 339,481, Jan. 15, 1982. This application Sep. 5, 1984, Ser. No. 647,806
Int. Cl.[4] B44C *1/10*
U.S. Cl. 156—235 1 Claim



1. A method of manufacturing figures of desired shape from a laminated tape having a top film layer and a bottom carrier layer and applying the same to a desired medium, said method comprising the steps of:

cutting at least one figure of desired shape from said top film layer of a segment of laminated tape to form at least one cut-out figure having an outwardly disposed top surface and a bottom surface, said bottom surface being provided with adhesive properties and being secured to said carrier layer by said adhesive properties;

removing said top film layer from said segment of laminated tape except for that portion comprising said cut-out figures;

placing a segment of adhesive backed transfer tape onto said cut-out figures so that said segment of adhesive backed transfer tape adheres to said top surface of said cut-out figures with an adhesive force greater than that between the bottom surface of said cut-out figures and said carrier layer;

removing said cut-out figures from the laminated tape via the transfer tape in aligned form as a result of the greater adhesive force between said transfer tape and the top surface of said cut-out figures than between the bottom surface of said cut-out figures and said carrier layer;

positioning the transfer tape with said cut-out figures adhered thereto in aligned form with respect to the desired medium; and

transferring said cut-out figures from the transfer tape to the desired medium by adhering the bottom surface of said cut-out figures to said medium and removing said transfer tape from the top surface of said cut-out figures.

4,604,154
APPARATUS AND METHOD FOR GUIDING PLASTIC LABELS TO A LABEL-WRAPPING STATION

Harold R. Fosnaught, Perrysburg, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

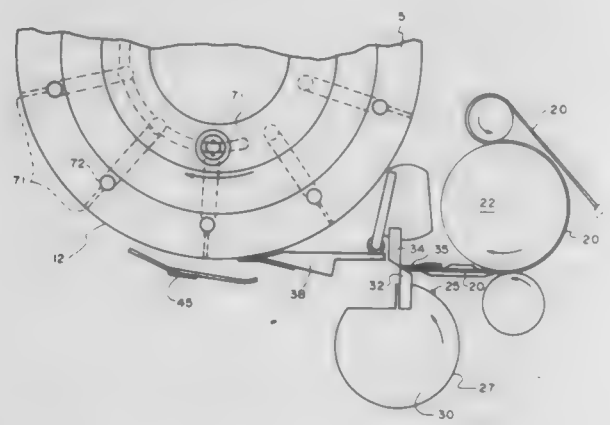
Filed Nov. 28, 1983, Ser. No. 555,788
Int. Cl.[4] B65C *3/16, 9/18*
U.S. Cl. 156—264 6 Claims

1. An apparatus for feeding a coextruded polystyrene label stock regardless of curling to a label-wrapping station for cutting and wrapping a length of the label stock around a container, the label being a sheet and having an outer solid polystyrene layer and an inner foam layer for contact with the container, the apparatus comprising:

means for transporting the label sheet with its length axis substantially parallel to the horizontal; a first label guide means for guiding the sheet towards the label-wrapping station by pushing against one side of the sheet, a rotating member located on the other side of the sheet, the rotating member including a knife for cutting the sheet into labels on the periphery of the member and a turning bar behind the knife on the periphery, the turning bar, after the label

is cut from the sheet, pushing against the sheet from the side opposite the first guide means to turn the label from its path into a second guide means, the knife thus rotating and contacting the sheet to cut the sheet into desired lengths of label sheets to form labels and each label is positively guided into the second guide means, the second guide means guiding each of the cut label sheets into a rotating vacuum drum, the second guide means being so constructed and arranged that the label is applied directly to the vacuum drum for rotating the label around its periphery to the label-wrapping station; and a third means for guiding the sheet to the label-wrapping station including a final feed guide to move the label into the vacuum drum for a positive placement and guidance of the label even during start-up regardless of curling of the label.

5. A method of feeding to a label-wrapping station a polystyrene label sheet stock comprising a solid polystyrene layer and a foam polystyrene layer, regardless of the amount of curl, the method comprising the steps of:



A. transporting the sheet to the wrapping station with the length axis of the sheet substantially parallel to the horizontal;

B. guiding the sheet with a primary feed guide towards a rotating member with a knife for cutting the sheet into labels;

C. pushing against one side of the sheet as the sheet is moving with the primary feed guide;

D. cutting the sheet into desired lengths to form labels with the knife while the sheet is moving;

E. pushing against the cut sheet on the other side of the sheet with a turning bar located on the rotating member;

F. turning the cut label from its path after being pushed by the primary guide towards a secondary guide means and steering the label;

G. steering the label towards a rotary vacuum drum with the secondary guide means and placing the label on the drum periphery; and

H. finally guiding the label around the periphery of the drum with a final guide means to supply the moving label to the wrapping station regardless of curl of the label.

4,604,155

METHOD OF MAKING A MULTI-LAYERED PRESSURE HOSE UTILIZING INTERNAL FLUID PRESSURE

Patrick N. McKiernan, Lurgan, Northern Ireland, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Sep. 16, 1982, Ser. No. 418,919
Int. Cl.⁴ F16L *11/04*
U.S. Cl. 156—287 **12 Claims**

2. In a method for producing filamentary reinforced elastomeric hose including:

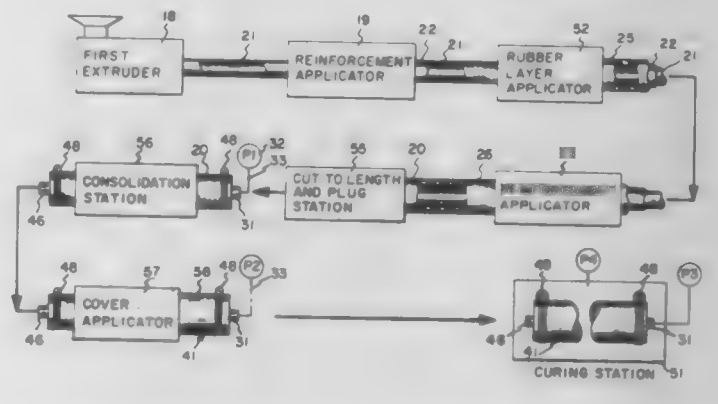
(a) providing an uncured tubular structure having a bore and including a tubular layer of uncured elastomeric material having superposed thereon and in contact therewith a tubular braided layer of textile filaments,

(b) causing uncured elastomeric material to become present in the interstices of the tubular braided layer, and

(c) curing the structure,

the improvement which comprises:

(i) plugging an end of said uncured structure and introducing pressurized gas into the bore of the uncured structure and maintaining gas pressurization therein for a time sufficient to force uncured elastomer material into the interstices of the braided layer, and thereafter releasing the gas pressure,



(ii) applying a cover layer of uncured elastomer material, and

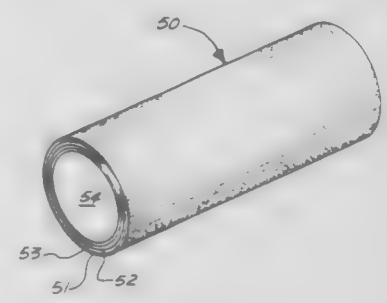
(iii) curing the covered structure at a predetermined temperature exceeding room temperature and a predetermined pressure exceeding atmospheric pressure whilst maintaining pressure in the bore of the covered structure at a predetermined level above that applied to the exterior of the covered structure.

4,604,156

METHOD OF FABRICATING A CYLINDRICAL MULTILAYER SCREEN

Garland E. Raley, and Dean M. Spear, both of Terre Haute, Ind., assignors to Ethyl Corporation, Richmond, Va.

Division of Ser. No. 534,359, Sep. 21, 1983, Pat. No. 4,543,299.
This application Jan. 10, 1985, Ser. No. 690,330
Int. Cl.⁴ B32B *31/12*
U.S. Cl. 156—294 **10 Claims**



1. A method of making a relatively thick cylindrical metal screen for vacuum perforation of plastic film wherein the holes in the screen have substantially straight walls perpendicular to the surface of the screen, comprising stacking and bonding together two or more matched relatively thin cylindrical metal screens diametrically one inside the other, each of said relatively thin metal screens having a plurality of holes therein which have substantially straight walls and which are perpendicular to the surface of their respective relatively thin cylindrical metal screen.

4,604,157

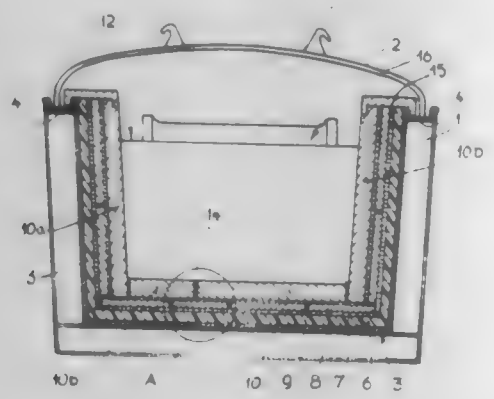
ACID PICKLING TANK FOR METAL STRIPS

Pierre M. Damiron; Jean-Luc Legoupil, both of Paris, and Jacques Brosson, Riom, all of France, assignors to Clecim, Paris, France

Filed May 15, 1985, Ser. No. 734,207
Int. Cl.⁴ C23F *1/02*
U.S. Cl. 156—345 **7 Claims**

1. Acid pickling tank for metal strips with a width equal to at least 0.50 m, comprising a metal casing in the form of a

vessel of a great length and with a uniform cross-section, incorporating two side walls, two end walls and a plane bottom, the said vessel being supported by an external structure and covered internally with a layer of rubber, the said rubber layer being itself internally lined with an inner layer made of an acid-resistant material, the said inner layer in contact with the



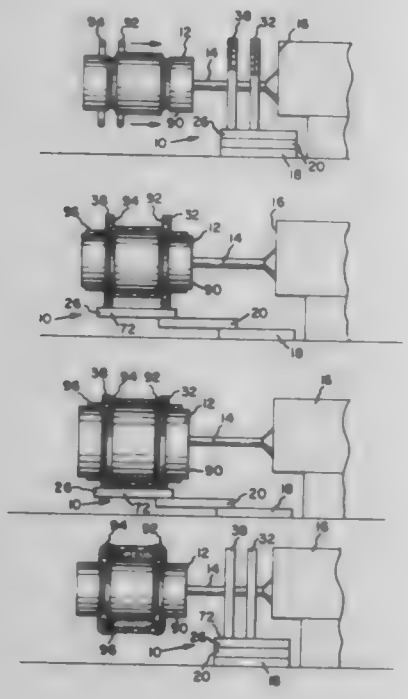
acid consisting of slabs laid side by side, of such dimensions that the bottom of the tank is covered in the width direction by at most three slabs and that the side and end walls are covered over their entire height by a single slab, the said slabs consisting of a natural rock of volcanic origin which has a total SiO_2 and Al_2O_3 of at least 60%, a porosity of between 6 and 30% and a relative density of less than 3.

4,604,158

APPARATUS AND METHOD FOR STORING AND POSITIONING BEAD CORES FOR TIRE BUILDING

Henry D. Broyles, Akron, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Jan. 31, 1985, Ser. No. 697,022
Int. Cl.⁴ B29D *30/32*
U.S. Cl. 156—403 **5 Claims**



1. Apparatus for storing and positioning annular tire bead cores in the building of a tire on an expandable tire building drum mounted on a generally horizontal drum drive shaft supported at one end by a drum drive housing characterized by:

(a) a beam member slidably mounted for movement along said tire building drum;

(b) means for moving said beam member between a bead core positioning location under said drum and a storage position at the inboard end of said drum;

(c) an annular outboard bead core holder having an outboard carriage slidably mounted on said beam member;

(d) means for moving said outboard carriage on said beam member between an outboard bead core positioning location on said drum and a storage location at the outboard end of said beam member in said storage position;

(e) an annular closed inboard bead core holder slidably mounted on said beam member;

(f) means for moving said inboard bead core holder on said beam member between an inboard bead core positioning location on said drum and a storage location at the outboard end of said beam member in said storage position;

(g) said annular outboard bead core holder having two half sections mounted on said outboard carriage for transverse opening movement and means for spreading said half sections to provide clearance for movement over the tire on said drum from said outboard bead core positioning location to said storage position whereby after removal of the tire said bead cores may be moved over said drum and through said outboard bead core holder to positions between said inboard and said outboard bead core holders so that said inboard bead core may be placed and held on said inboard bead core holder; and

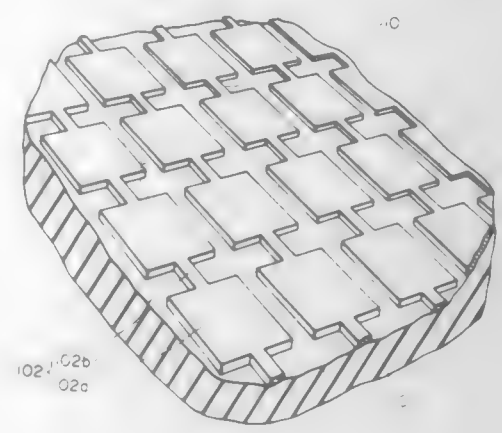
(h) said two half sections of said bead core holder being mounted for transverse closing movement and means to contract said half sections after said outboard bead core is positioned between said inboard and said outboard bead core holders so that said outboard bead core may be placed and held on said outboard bead core holder.

4,604,159

METHOD OF FORMING A LARGE NUMBER OF MONOCRYSTALLINE SEMICONDUCTOR REGIONS ON THE SURFACE OF AN INSULATOR

Yutaka Kobayashi; Akira Fukami, both of Hitachi, and Takaya Suzuki, Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 13, 1984, Ser. No. 620,023
Claims priority, application Japan, Jun. 13, 1983, 58-105275
Int. Cl.⁴ C30B *13/20*
U.S. Cl. 156—617 R **35 Claims**



1. A method of forming a large number of monocrystalline semiconductor regions on a surface of an insulator, the monocrystalline semiconductor regions having a uniform orientation, comprising the steps of:

(a) forming a large number of island regions and connecting regions, the connecting regions connecting said island regions lying in a predetermined direction, the island and connecting regions being formed on said surface of said insulator, said island regions being made of a polycrystalline or amorphous semiconductor, said connecting regions acting to thermally connect the island regions; and

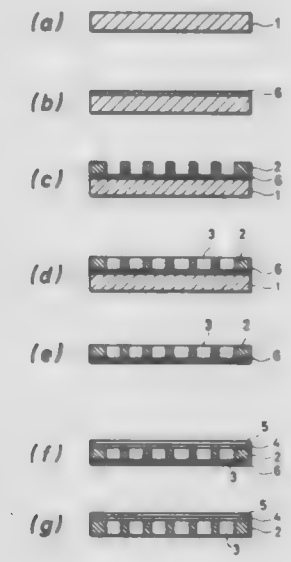
(b) melting and regrowing said island regions sequentially in said predetermined direction to form the monocrystalline semiconductor regions having said uniform orientation.

4,604,160

METHOD FOR MANUFACTURE OF PRINTED WIRING BOARD

Kanji Murakami, Mito; Haruo Akahoshi; Mineo Kawamoto, both of Hitachi; Motoyo Wajima; Yoichi Matsuda, both of Hitachi; Kyoji Kawakubo, Naka; Minoru Kanechiku, Katsuta; Toyofusa Yoshimura, Naka, and Makoto Matsunaga, Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 8, 1985, Ser. No. 689,802
Claims priority, application Japan, Jan. 11, 1984, 59-3152
Int. Cl.[4] C23F *1/02;* B44C *1/22;* B05D *5/12;* C25D *5/02*
U.S. Cl. 156—630 18 Claims



1. A method for the manufacture of a printed wiring board, characterized by comprising the following steps in the order mentioned:

(1) the step of applying a metallic film on a substrate,

(2) the step of forming a plating resist on said metallic film except the portion intended for the formation of a conductor circuit,

(3) the step of plating said metallic film surface covered with said plating resist thereby forming a conductor circuit,

(4) the step of separating said metallic film, said conductor circuit, and the said plating resist jointly from said substrate,

(5) the step of transferring them to an insulating substrate, and

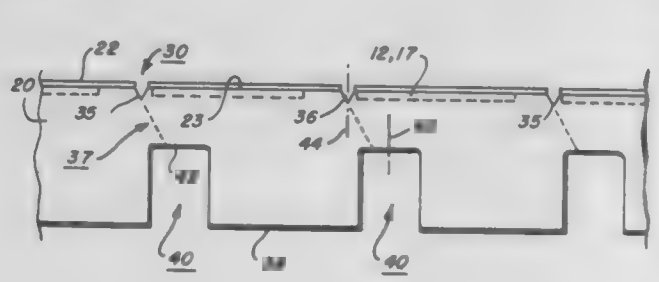
(6) the step of removing said metallic film so transferred by etching.

4,604,161

METHOD OF FABRICATING IMAGE SENSOR ARRAYS

Mehdi N. Araghi, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed May 2, 1985, Ser. No. 729,705
Int. Cl.[4] H01L *21/306;* B44C *1/22;* C03C *15/00, 25/06*
U.S. Cl. 156—645 5 Claims



1. A method of fabricating a high resolution sensor array or chip capable of being abutted against other like arrays to form a longer array without image loss or distortion at the array junctions, comprising the steps of:

(a) etching a small V-shaped groove in one side of a (100) silicon wafer defining the chip end, the walls of the V-shaped groove paralleling the (111) crystalline plane of the wafer;

(b) forming a relatively wide groove in the opposite side of the wafer, the axis of the said wide groove being parallel to and offset from the axis of the V-shaped groove by an amount such that the (111) crystalline plane in which one wall of the V-shaped groove lies intercepts said wide groove at substantially the midpoint of said groove;

(c) applying a downward bending force to the wafer proximate the V-shaped groove along the (111) plane so that the wafer fractures and pivots about the bottom of said wide groove with the fracture extending from the bottom of the V-shaped groove to said wide groove whereby to provide a uniformly flat precisely controlled end for the chip; and

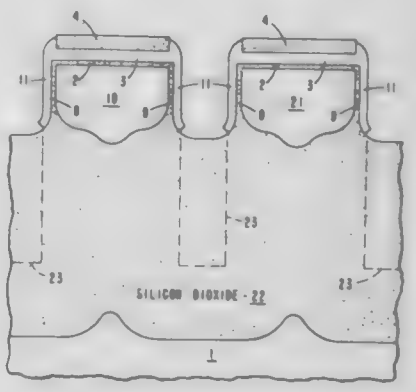
(d) forming the opposite end of the chip in the same manner to provide an array having uniformly flat precisely controlled ends for butting with like ends of other arrays to form a longer array.

4,604,162

FORMATION AND PLANARIZATION OF SILICON-ON-INSULATOR STRUCTURES

Zbigniew P. Sobczak, Colorado Springs, Colo., assignor to NCR Corporation, Dayton, Ohio

Continuation of Ser. No. 641,646, Aug. 17, 1984, abandoned, which is a continuation of Ser. No. 503,997, Jan. 13, 1983, abandoned. This application Dec. 23, 1985, Ser. No. 812,531
Int. Cl.[4] H01L *21/308, 21/312, 21/318*
U.S. Cl. 156—657 11 Claims



1. A process for fabricating planarized silicon insulator structures on a semiconductor wafer, comprising the steps of:

etching a monocrystalline silicon substrate to form islands of silicon having defined perimeters;

capping the tops and sides of the silicon islands with oxidation masks;

anisotropically etching deeper into the monocrystalline silicon substrate between the capped island and with no material undercut of the capped islands to increase the relative height of the islands;

oxidizing the lateral walls of silicon formed by the anisotropic etch until the capped silicon is electrically isolated from the silicon substrate;

depositing a dielectric layer to a thickness greater than the height of the islands;

forming a planarized polymer layer over the dielectric layers;

simultaneously etching the polymer and dielectric layers to remove polymer and dielectric material at substantially equal rates until the polymer layer is absent; and

simultaneously etching the dielectric layer and the electrically isolated silicon to remove dielectric material and silicon at substantially equal rates.

4,604,163
VISCOSITY MODIFIERS FOR GRAFTED STARCH POLYMER SOLUTIONS

Donald N. Van Eenam, Des Peres, Mo., assignor to Monsanto Company, St. Louis, Mo.

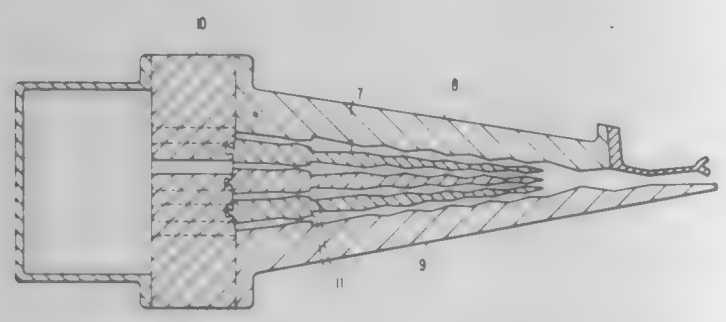
Division of Ser. No. 585,461, Mar. 2, 1984, which is a continuation-in-part of Ser. No. 500,211, Jun. 2, 1983, abandoned. This application Oct. 17, 1985, Ser. No. 788,360
Int. Cl.[4] D21H *3/28*
U.S. Cl. 162—175 **5 Claims**

1. A fibrous substrate having been prepared with a solution comprised of from between about 20 and about 35 percent on a solids basis of a graft polymer comprised of from about 70 to about 30 weight percent of a starch substrate, about 30 to about 70 weight percent of vinyl polymeric segments and a viscosity reducing amount cinnamic acid material.

4,604,164
FLOW RESTRAINING ELEMENTS IN THE HEADBOX OF A PAPER MACHINE

Haruyoshi Fujiwara, and Tetsuo Makino, both of Mihara, Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 30, 1985, Ser. No. 696,431
Int. Cl.[4] D21F *1/02*
U.S. Cl. 162—343 **8 Claims**



1. In a headbox for a paper making machine, the headbox having a iop plate and a bottom plate defining a chamber therebetween, a perforated plate connected to an inlet end of said top plate and an inlet end of said bottom plate to form an inlet of said chamber, said top plate and said bottom plate approaching each other at an outlet end spaced from said inlet end to form an outlet of said chamber, and a plurality of flow-restraining elements disposed one above another in said chamber to define a plurality of flow paths spaced one above another in said chamber, said flow restraining elements extending from said inlet to said outelt, having free ends at said outlet, and being removably connected at one end thereof to said perforated plate, the improvement wherein;

each of said flow restraining elements has an upper surface and a lower surface which approach each other until they meet at said free end in a downstream direction away from said perforated plate toward said outlet end,

said upper and lower surfaces each having a surface portion having corrugated patterns which are symmetrical with respect to each other and formed by a cross section perpendicular to said downstream direction, which alternately gradually increases and decreases along the length of said flow restraining elements to said free end so as to define alternating portions of increased and reduced cross section, such that the increased cross sections gradually decrease in said downstream direction and the decreased cross sections gradually decrease in said downstream direction, said cross sections varying sufficiently gradually between successive portions of increased and reduced cross section so as to resist warping during variable temperature use,

said upper surface and said lower surface defining an angle of 1° to 15° therebetween,

said free ends of said flow restraining elements being formed from a flexible material selected from the group of flexible material consisting of rubber and plastic, said material having a low modulus of elasticity and a specific gravity of about 1.0 so as to be easily deformable,

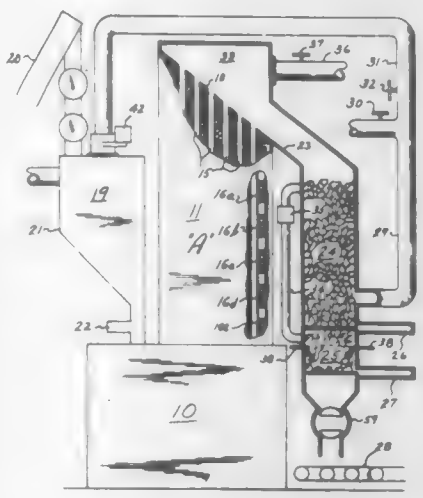
each of said flow restraining elements being provided with an upper recessed protion on said upper surface and a lower recessed portion on said lower surface, said upper and lower recessed portions being respectively defined by an upper wall on said upper surface and a lower wall on said lower surface which are substantially perpendicular to said downstream direction, said flow restraining element being arranged in said chamber with said recessed portions adjacent one another to create an abruptly enlarged area in each of said paths between adjacent flow restraining elements, said recessed portions being located between said perforated plate and said surface portions of said flow restraining elements having said corrugated patterns, and

said flow restraining elements being positioned in said chamber with said corrugated patterns symmetrical with respect to each other, whereby the flow paths between adjacent flow restraining elements have cross-sectional configurations which gradually increase and gradually decrease, thus causing liquid which flows between said flow restraining elements in said downstream direction to have a speed which decreases and increase to create a stirring effect on the liquid.

4,604,165
APPARATUS FOR PROCESSING BULK MATERIALS BY INDUCTION

Albert Calderon, 1065 Melrose St., Bowling Green, Ohio 43402

Continuation-in-part of Ser. No. 401,620, Jul. 26, 1982, abandoned, Ser. No. 229,317, Jan. 29, 1981, Pat. No. 4,389,283, Ser. No. 209,831, Nov. 24, 1980, Pat. No. 4,376,033, Ser. No. 166,172, Jul. 7, 1980, Pat. No. 4,494,984, Ser. No. 153,159, May 27, 1980, abandoned, and Ser. No. 131,137, Mar. 17, 1980, Pat. No. 4,468,197, said Ser. No. 229,317, is a continuation-in-part of Ser. No. 201,699, Oct. 29, 1980, abandoned, which is a continuation-in-part of Ser. No. 921,760, Jul. 3, 1978, abandoned. This application Feb. 11, 1983, Ser. No. 465,687
Int. Cl.[4] C10B *1/04, 19/00*
U.S. Cl. 202—113 **29 Claims**



1. Apparatus for the processing of a material that heats poorly or not at all by induction comprising the following:

(a) means for charging said material;

(b) a plurality of adjacent tubular comaprtments whose walls are formed of a substance which is capable of being heated directly by induction, each compartment defining therewithin a space for receiving a charge of said material;

(c) insulating means immediately surrounding the walls of each adjacent compartment, said insulating means being formed of a (substance that does not heat by induction;

(d) induction coil means surrounding said plurality of compartments with said plurality of compartments commonly sharing said induction means and said induction coil means not individually surrounding any of said compart-

ments, said induction coil means directly heating the walls of said compartments while said walls in turn effect the heating of said material contained within said compartments; and

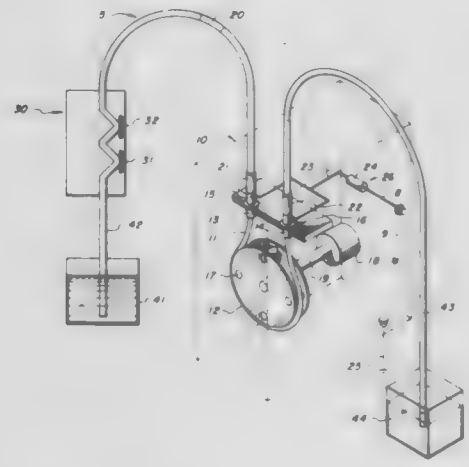
(e) means for discharging said material from said plurality of compartments.

4,604,166

APPARATUS AND PROCESS FOR REDUCING PERISTALTIC PUMP NOISE IN A HIGH IMPEDANCE ELECTROCHEMICAL MEASURING SYSTEM

Melvin S. Weinberg, Nashua, N.H.; Alan D. Cormier, Newburyport, Mass., and Ronald L. Jones, Newton, N.H., assignors to Amdev, Inc., Haverhill, Mass.

Filed Aug. 28, 1984, Ser. No. 645,018
Int. Cl.[4] G01N *27/46*
U.S. Cl. 204—1 T **18 Claims**



1. An improved high impedance electrochemical measruing system having reduced peristaltic pump noise, said system including a high impedance measuring electrode for analyzing a fluid sample, a peristaltic pump having an elastomeric tubing streteched over rollers, and a fluid conduit extending from a first end of said elastomeric tubing to said measuring electrode, said rollers being movable over said elastomeric tubing for moving said fluid sample through said fluid conduit between said pump and said measuring electrode, said improvement comprising:

a nonconductive fluid segment having a first impedance, said fluid segment being disposed in said fluid conduit for electrically isolating said pump and said measuring electrode; and

an AC capacitive ground having a second impedance less than said first impedance, said AC capacitive ground being electrically connected to said fluid sample adjacent said first end of said peristaltic tubing for damping the peristaltic pump noise generated by said pump without significantly affecting the response time or precision of said measuring electrode.

4,604,167

SILVER PLATING SOLUTION AND SILVER PLATING PROCESS AND PRETREATMENT SOLUTION THEREFOR

Shinichi Wakabayashi, and Masako Takoh, both of Nagano, Japan, assignors to Shinko Electric Industries Co., Ltd., Nagano, Japan

Filed Jan. 26, 1984, Ser. No. 574,253
Int. Cl.[4] C25D *3/46, 5/34*
U.S. Cl. 204—29 **6 Claims**

1. A pre-dipping solution for preventing the immersion deposition of silver on a suface of copper or copper alloy in an electrolytic plating process for plating silver onto a copper or copper alloy surface, comprising a cyclic thion compound selected from the group consisting of 2-thiobarbituric acid, 2-thiouramil, 4-thiouramil, 3-thiourazol and 3-aminorhodanine, and an alkali metal citrate or phosphate.

2. An electrolytic plating process for plating silver onto a surface of copper or copper alloy, comprising treating the copper or copper alloy surface with a cyclic thion compound selected from the group consisting of 2-thiobarbituric acid, 2-thiouramil, 4-thiouramil, 3-thiourazol and 3-aminorhodanine and plating the copper or copper alloy surface in an electrolytic plating solution containing an alkali metal silver cyanide.

4,604,168

PRETREATMENT FOR ELECTROPLATING MINERAL-FILLED NYLON

Sonya W. Liu, Warren, and James H. Lindsay, Fenton, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Dec. 20, 1984, Ser. No. 684,268
Int. Cl.[4] C25D *5/54*
U.S. Cl. 204—30 **4 Claims**

1. A method of preparing a surface of molded mineral-filled nylon for electroplating thereon, comprising the steps of:

exposing said surface to a plasma glow discharge so as to etch, and increase the bonded oxygen content of, said surface without substantially increasing the mineral content thereof;

vacuum depositing a thin film of bonding metal onto said etched and oxygen-enriched surface, said bonding metal being selected from the group consisting of chromium and titanium;

vacuum depositing a thin film of nickel onto said bonding metal before significant oxidation of said bonding metal occurs, said nickel film serving to substantially prevent oxidation of said bonding metal before and after subsequent metallizing steps; and

before significant oxidation of said nickel occurs, vacuum depositing a thin film of copper onto said nickel to substantially prevent oxidation of said nickel and enhance the electrical conductivity of the surface for subsequent electroplating operations.

4,604,169

PROCESS FOR METAL PLATING A STAINLESS STEEL

Shoji Shiga, Utsunomiya; Takayuki Hayakawa, Nikko, and Yasuo Kamiyama, Imaichi, all of Japan, assignors to Furukawa Electrical Company, Ltd., Tokyo, Japan

Filed Jul. 1, 1985, Ser. No. 750,215
Claims priority, application Japan, Jul. 9, 1984, 59-141973; Jul. 9, 1984, 59-141972
Int. Cl.[4] C25D *5/12, 5/26, 5/36*
U.S. Cl. 204—34 **9 Claims**

1. A process for metal plating a stainless steel material comprising (1) a first step of subjecting the stainless steel material to an electrolysis treatment using the stainless steel material as a cathode in an aqueous solution consisting essentially of free HCl in an amount at least 30 g/l and at least one species of Ni and Co ions in an amount at least 0.1 g/l; (2) a second step of metal plating the same by Ni or an alloy of Ni in a weakly acidic Ni plating bath; and (3) a third step subsequently plating the same by a noble metal or an alloy thereof.

4,604,170

MULTI-LAYERED DIAPHRAGM FOR ELECTROLYSIS

Haruhisa Miyake; Manabu Suhara; Yoshio Sugaya, and Hirofumi Horie, all of Yokohama, Japan, assignors to Asahi Glass Company Ltd., Tokyo, Japan

Filed Nov. 25, 1985, Ser. No. 802,054
Claims priority, application Japan, Nov. 30, 1984, 59-251736
Int. Cl.[4] C25B *1/34, 1/46, 13/02*
U.S. Cl. 204—98 **9 Claims**

1. A multi-layered diaphragm for electrolysis, which comprises a porous layer of a fluorine-containing polymer having a pore diameter of from 0.05 to 10 μm, a porosity of from 30 to 95% and a thickness of from 30 to 450 μm and with its interior and anode-side surface being hydrophilic, and an ion exchange

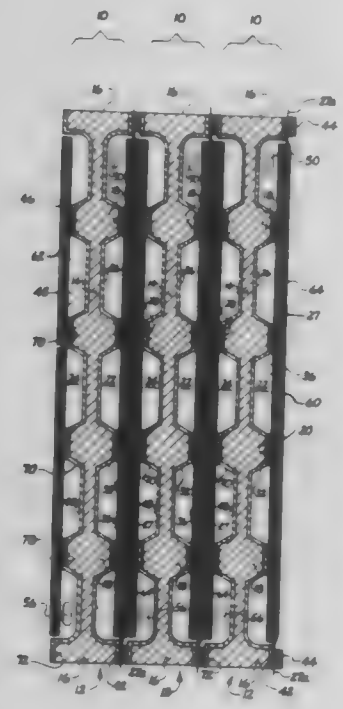
resin layer supported on the cathode side thereof and having a thickness thinner than the porous layer but of at least 5 μm and an ion exchange capacity of from 0.5 to 2.0 meq/g dry resin, the total thickness being from 35 to 500 μm.

4,604,171

UNITARY CENTRAL CELL ELEMENT FOR FILTER PRESS, SOLID POLYMER ELECTROLYTE ELECTROLYSIS CELL STRUCTURE AND PROCESS USING SAID STRUCTURE

Gregory J. E. Morris, Lake Jackson; John R. Pimlott, Sweeny; Richard N. Beaver, Angleton; Hiep D. Dang, Lake Jackson, and Sandor Grosshandler, Houston, all of Tex., assignors to The Dow Chemical Company, Midland, Mich.

Continuation of Ser. No. 682,738, Dec. 17, 1984, abandoned.
This application Sep. 9, 1985, Ser. No. 774,255
Int. Cl.[4] C25B *1/46, 13/02*
U.S. Cl. 204—98 **50 Claims**



1. In a cell structure used in forming a bipolar electrode, filter press, solid polymer electrolyte, electrolytic cell unit, which unit is capable of being combined with other cell units to form a plurality of electrolysis cells;

each of said electrolysis cells having at least one planarly disposed solid polymer electrolyte membrane separating the anode compartment and cathode compartment;

said cell structure having a central barrier which physically separates an anode compartment of an electrolysis cell located on one side of the barrier from a cathode compartment of an adjacent electrolysis cell located on the opposite side of the barrier;

each of said electrolysis cells at least having an anode component and a cathode component, wherein at least one of such components is electrocatalytically active and is embedded in or bonded to the solid polymer electrolyte membrane;

said central barrier electrically connecting the anode component of one side of said structure to the cathode component on the opposite side of said structure;

said anode and cathode compartments having a peripheral structure around their periphery to complete the physical definition of said compartments;

said cell structure also having an electrical current transfer means associated with it for providing electrical current paths through the central barrier from its adjacent cathode compartment to its adjacent anode compartment;

and which cell structure includes anode component and cathode component stand-off means for maintaining the anode component and cathode component of the two electrolysis cells adjacent to the central barrier at a predetermined distances from the central barrier;

the improvement which comprises:

the central barrier, the anode and cathode compartment peripheral structures, the anode component stand-off means, the cathode component stand-off means, and at least part of the electrical current transfer means all being integrally formed into a unitary central cell element made from a single casting of a castable metal; and, further

said castable metal being electrically conductive so as to be the part of the electrical current transfer means which transfers electricity through the central barrier from the adjacent cathode compartment to the adjacent anode compartment; and

said unitary central cell element being formed in such a fashion so as to provide the structural integrity required to physically support the contents of the adjacent electrolyte compartments as well as to support the associated electrolysis cell appurtenances which are desired to be supported by the unitary central cell element; and

said anode component stand-off means and that part of the electrical current connecting means located in the unitary central cell element on the anode side of the central barrier being combined into a multiplicity of anode component bosses projecting a predetermined distance outwardly from the central barrier into the anode compartment adjacent to the central barrier, said anode component bosses being capable of being mechanically and electrically connected either directly or indirectly to the anode component of said anode compartment; and

said cathode component stand-off means and that part of the electrical current connecting means located on the cathode side of the central barrier beinig combined into a multiplicity of cathode component bosses projecting a predetermined distance outwardly from the central barrier into the cathode compartment adjacent to the central barrier, siad cathode component bosses being capable of being mechanically and electrically connected either directly or indirectly to the cathode component; and

said anode component bosses being spaced apart in a fashion such that fluids can freely circulate throughout the totality of the adjacent anode compartment, and, likewise, said cathode component bosses being spaced apart in a fashion such that fluids can freely circulate throughout the totality of the adjacent cathode compartment;

at least one of said electrode components comprising:

an interconnected, electrically conductive, electrocatalytic material bonded to or embedded in the solid polymer electrolyte membrane; and

a hydraulically permeable current collector electrically connected to said electrically conductive material and to said electrode bosses.

24. A process of electrolyzing sodium chloride brine comprised of passing electricity through a series of electrolysis cells whose cell structures are comprised of adjoining unitary cell elements like those defined in claim **1**.

4,604,172

PROCESS FOR THE ELECTROLYSIS OF SODIUM CHLORIDE

Rolf Hengel, Burgkirchen, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Aug. 6, 1985, Ser. No. 762,930
Claims priority, application Fed. Rep. of Germany, Aug. 8, 1984, 3429182
Int. Cl.[4] C25B *1/14*
U.S. Cl. 204—98 **4 Claims**

1. A process for the electrolysis of an aqueous solution of sodium chloride in electrolytic cells divided into an anode chamber and a cathode chamber by a cation exchanger membrane of a perfluorinated polymer with carboxyl groups, wherein the cation exchanger membrane comprises a copolymer which is composed of recurring units of

$$-CF_2-CF_2- \text{ and } -CF_2-CF(-O-CF_2-CF_2-COONa)-$$

and has an ion exchange capacity of 1.55 to 1.74 m-equivalents/g of dry polymer in the H^+ form and a longitudinal expansion at room temperature, caused by saponification of the ester form in 25% by weight aqueous potassium hydroxide solution at 90° C. over a period of 12 hours, of between 3.2 and 6.0%.

4,604,173

LOW OXYGEN OVERVOLTAGE LEAD ANODES

Antonio Nidola, and Oronzio de Nora, both of Milan, Italy, assignors to Oronzio de Nora Impianti Elecctrochimici, S.p.A., Milan, Italy

Division of Ser. No. 568,766, Jan. 6, 1984, Pat. No. 4,548,697. This application Aug. 7, 1985, Ser. No. 763,384
Claims priority, application Italy, Feb. 14, 1983, 19565 A/83
Int. Cl.[4] C25C *1/00*; C25B *1/02*
U.S. Cl. 204—105 R **12 Claims**

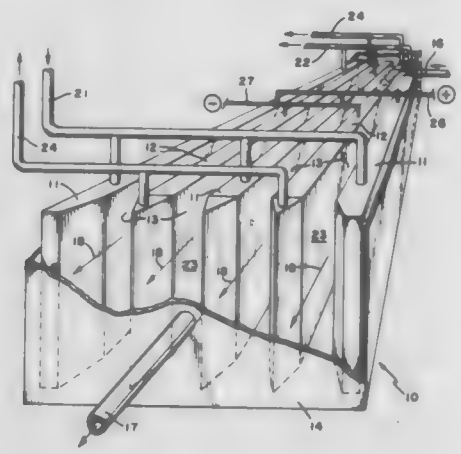
1. In the process of electrowinning a metal from an aqueous solution of a sulphate thereof, the improvement of using as oxygen evolving anode an activated catalytic antimony-free lead base anode having improved oxygen overvoltage prepared by contacting the antimony-free lead base with a molten bath of at least one hydrated salt belonging to the group of nitrates and persalts of a member selected from the group of cobalt, iron, and nickel at a temperature lower than the melting temperature of said antimony-free lead base and for a time sufficient to activate the surface and obtain said activated catalytic lead base anode and wherein said lead base exhibits improved oxygen overvoltage as a consequence of the process by which it was prepared.

4,604,174

HIGH FLOW ELECTROFILTRATION

James M. Bollinger, Stamford, and Peter R. Klinkowski, Norwalk, both of Conn., assignors to Dorr-Oliver Incorporated, Stamford, Conn.

Filed Apr. 30, 1985, Ser. No. 728,957
Int. Cl.[4] C02F *1/46*
U.S. Cl. 204—151 **28 Claims**



18. A process for dewatering a slurry in an electrically augmented crossflow filter device, said electrically augmented crossflow filter device comprising a housing, a narrow, elongated feed-product channel within said housing, a feed inlet at one extremity of said feed-product channel, said feed-product channel defined in part by a pair of opposed walls, a filtrate channel lying parallel to said feed-product channel and contiguous with a first of said walls, said first wall comprising a filter medium, an electrode element of a first polarity in said filtrate channel, a filtrate outlet for withdrawing filtrate from said filtrate channel, an electrolyte channel lying parallel to said feed-product channel and contiguous with the second of said walls, said second wall comprising an ion-pervious member, an electrode element of a second polarity in said electrolyte channel, means for passing an electrolyte solution through said electrolyte channel to immerse said electrode element therein in a flowing stream of electrolyte, means for establishing a pressure differential between said feed-product channel and said filtrate channel across said first wall and means for establishing an electric field perpendicular to the axis of said feed-product channel between said electrode elements, comprising:

pumping slurry into said feed-product channel;

maintaining a velocity of said slurry in said feed-product channel sufficient to inhibit deposition of solids from said slurry on the walls of said channel;

establishing an electric field perpendicular to the axis of said feed product channel between the opposed electrode elements located in said filtrate channel and said electrolyte channel;

withdrawing filtrate;

continuously circulating electrolyte through said electrolyte channel whereby the electrode therein is immersed in electrolyte; and

withdrawing a slurry enriched in solids content from said feed-product channel.

4,604,175

PROCESS FOR REGENERATION OF IRON-COPPER CHLORIDE ETCHING SOLUTION

Jury I. Naumov, ulitsa Grubbe, 10, kv. 1; Dmitry K. Juzefovich, Moskovskoe shosse, 13, kv. 42; Valentina S. Epifanova, poselok Podnovie, 156, kv. 1; Vladimir I. Kucherenko, ulitsa Sverdlova, 93, kv. 77; Valery N. Flerov, ulitsa Kovalikhinskava, 30, kv. 80, all of Gorky; Anatoly M. Praporov, ulitsa Belovezhskava, 77, kv. 159, Moscow; Vladimir P. Shustov, ulitsa Grizhina, 23, korpus 5, kv. 67, Moscow; Alexel E. Sychev, prospekt Zagorskogo, 5, kv. 43, Moscow; Georgy V. Korolev, ulitsa Korolenko, 19a, kv. 9, Gorky; Evgeny P. Kotov, ulitsa Nedelina, 34, kv. 7, and Yan N. Derevyanko, ulitsa 2 Pugachevskava, 4, korpus 2, kv. 136, both of Moscow, all of U.S.S.R.

Continuation of Ser. No. 447,530, Dec. 7, 1982, abandoned. This application Jun. 18, 1984, Ser. No. 621,529
Int. Cl.[4] C02F *1/46*
U.S. Cl. 204—151 **8 Claims**

1. A process for regeneration of an iron-copper chloride etching solution in an electrolyzer having electrodes comprising:

initially dividing said iron-copper chloride etching solution into at least two separate streams;

supplying the first stream into the electrolyzer in a first zone between a cathode and an anode, said anode being made of a porous material having pores permeable to elemental chlorine, and said first stream being introduced at a rate ensuring laminary flow of said iron-copper chloride etching solution along the surface of the electrodes;

supplying the second stream into said electrolyzer in a second zone between the anode and the shell of the electrolyzer at a rate ensuring turbulent flow of said iron-copper chloride etching solution along the surface of the anode;

electrochemically reducing ions of bivalent copper to metallic copper on the cathode;

electrochemically oxidizing ions of bivalent iron to ions of trivalent iron on the anode, whereby elemental chlorine is formed which diffuses through pores of the anode into the second zone and oxidizes ions of bivalent iron in said second zone.

4,604,176

METHOD OF IMPROVING MAGNETORESISTIVE EFFECT IN THIN MAGNETIC FILM

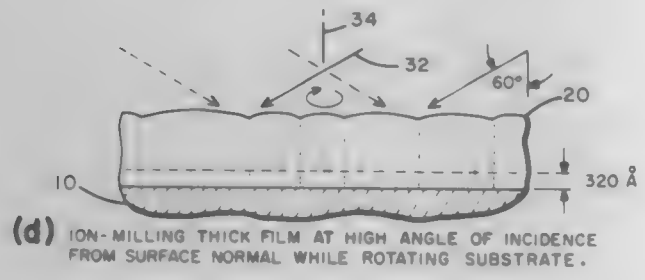
Maynard C. Paul, Bloomington, Minn., assignor to Sperry Corporation, New York, N.Y.

Filed Mar. 30, 1984, Ser. No. 595,228
Int. Cl.[4] H01F *10/02*
U.S. Cl. 204—192 M **8 Claims**

1. In a thin film magnetic film the method of improving its magnetoresistive effect, comprising:

forming a thin magnetic film upon a suitable substrate, initially said film consisting of separated grains, at a temperature that is in the range of approximately 300° C. to 320° C.;

increasing the thickness of said thin magnetic film until the thin magnetic film becomes continuous, with the boundary height between grains substantially greater than a pre-determined thin magnetic film thickness;



(d) ION-MILLING THICK FILM AT HIGH ANGLE OF INCIDENCE FROM SURFACE NORMAL WHILE ROTATING SUBSTRATE.

rotating said substrate about an axis that is perpendicular to the plane of said substrate;

directing an ion beam upon said thin magnetic film at an angle with respect to the normal to the plane of said substrate; and

ion-milling said thin magnetic film to said predetermined thin magnetic film thickness in a manner that modifies the usual grain structure for a film of that thickness.

4,604,177

ELECTROLYSIS CELL FOR A MOLTEN ELECTROLYTE

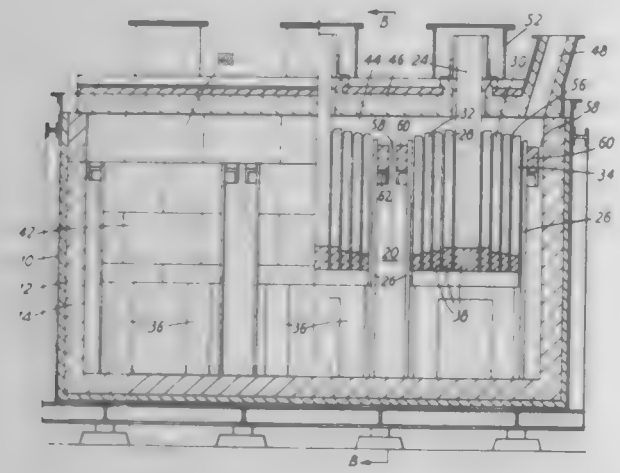
Olivo G. Sivilotti, Kingston, Canada, assignor to Alcan International Limited, Montreal, Canada

Division of Ser. No. 513,234, Jul. 13, 1983, Pat. No. 4,514,269. This application Feb. 11, 1985, Ser. No. 700,293

Claims priority, application United Kingdom, Aug. 6, 1982, 8221665

Int. Cl.⁴ C25C *3/04, 3/22*

U.S. Cl. 204—244 **4 Claims**



1. An electrolyte cell for the production of a metal by electrolysis of a molten electrolyte which is more dense than the metal, comprising,

an electrolysis chamber **16** including at least one electrode assembly of a anode **24** having a major face and also at least one other face selected from an end face and a bottom face, one or more intermediate bipolar electrodes **28, 30, 32, 34** arranged facing not only the major face of the anode but also at least one other face of the anode, and a cathode **26** having a front face facing an intermediate bipolar electrode and a back face, the electrodes defining electrolysis regions between them, and a gas collection space **44** above the assembly,

a metal collection chamber **18** in communication with the top and bottom of the electrolysis regions, but screened from the gas collection space,

a duct **20** defined by the back face of the cathode and leading to the metal collection chamber and to the gas collection space to cause gas to separate and electrolyte/metal mixture to flow to the metal collection chamber,

the one or more intermediate bipolar electrodes having top edges arranged to permit electrolyte/metal mixture rising from the electrolysis regions to spill out over the bipolar electrodes and cathode and into the duct,

and means **22**, for maintaining the surface of the electrolyte/metal mixture at a substantially constant level.

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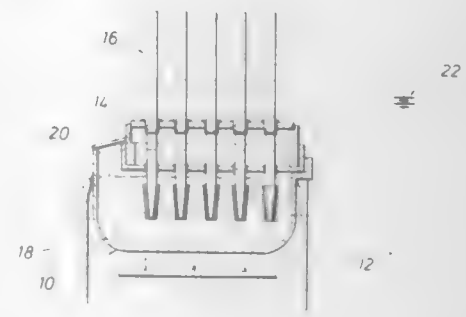
ANODE

Dale R. Fiegener, and Felix J. Broussard, both of Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Mar. 1, 1985, Ser. No. 707,312

Int. Cl.⁴ C25C *7/02;* **C25B** *11/12*

U.S. Cl. 204—286 **19 Claims**



1. A sacrificial anode comprising an elongate graphite anode body having first and second end faces and first and second similar threaded graphite connector means connecting to said body to support a similar graphite anode body, said connector means having:

(a) collar means with an internal axially hollow passage;

(b) separate headed pin means received in said collar means for securing said pin means thereby at the head;

(c) said collar means having a thread of one hand for engagement with the thread of said body; and

(d) said pin means having a threaded extending portion to join to a second and similar body wherein the threads are of the opposite hand.

4,604,179

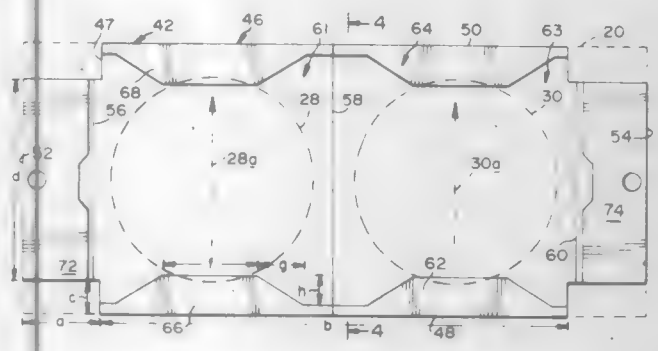
SPUTTERING-SYSTEM BAFFLE

Atef Eltoukhy, San Jose, and Rick C. Price, Fremont, both of Calif., assignors to Trimedia Corporation, Fremont, Calif.

Filed Feb. 28, 1985, Ser. No. 706,737

Int. Cl.⁴ C23C *15/00;* **H01J** *37/08*

U.S. Cl. 204—298 **7 Claims**



1. In a sputtering apparatus having a target adapted to sputter a crystalline material on a substrate surface, to form a thin film thereon, and means for moving the substrate linearly, and without rotation, in a front-to-back direction below such target, successively through front and back deposition regions along a path which is offset from the front-to-back centerline of the target, a baffle for achieving a substantially isotropic

grain structure in the sputtered crystalline material, comprising:

front and back shields positioned between the target and the moving means, for limiting deposition of sputtered material onto the substrate carried on the moving means, predominantly to substrate regions which directly underlie the target, and

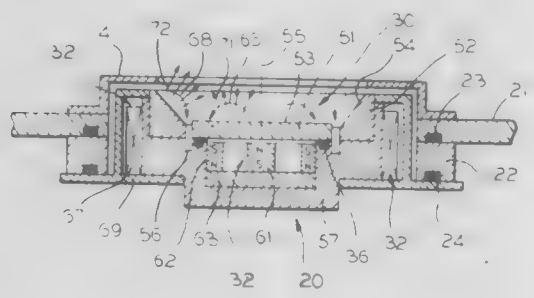
a pair of baffle strips (a) positioned above either side of the substrate, with such in the front deposition region, to effect substantially symmetrical, unhindered side-to-side sputtering of material onto the substrate in such front deposition region, and (b) extending between the two shields in a generally front-to-back direction.

4,604,180

TARGET ASSEMBLY CAPABLE OF ATTAINING A HIGH STEP COVERAGE RATIO IN A MAGNETRON-TYPE SPUTTERING DEVICE

Yohichi Hirukawa; Toshiyuki Nozaki, and Naokichi Hosokawa, all of Tokyo, Japan, assignors to Anelva Corporation, Tokyo, Japan

Filed Jan. 18, 1985, Ser. No. 692,837
Claims priority, application Japan, Jan. 20, 1984, 59-8939
Int. Cl.[4] C23C *15/00*
U.S. Cl. 204—298 **18 Claims**



1. A target assembly for use in a sputtering device comprising holding means for holding at least one object in a face to face relationship with said target assembly, and electric field producing means for producing an electric field between said target assembly and said holding means, said at least one object being covered with a layer at a step coverage ratio defined in relation to steps left on said at least one object, said target assembly comprising:

a first target made of a predetermined material having a planar surface surrounded by a circular periphery and having a center axis perpendicular to said planar surface, a said planar surface being kept substantial parallel to said at least one object;

a second target made of said predetermined material having an inner periphery adjacent to and concentric with said circular periphery, an outer periphery placed outside said inner periphery relative to said planar surface, and a sloping surface extending between said inner and outer peripheries so that said outer periphery is nearer said holding means than said inner periphery;

a first magnet which is magnetically coupled to said first target for producing a first part of a magnetic field which locally intersects said electric field to sputter said planar surface; and

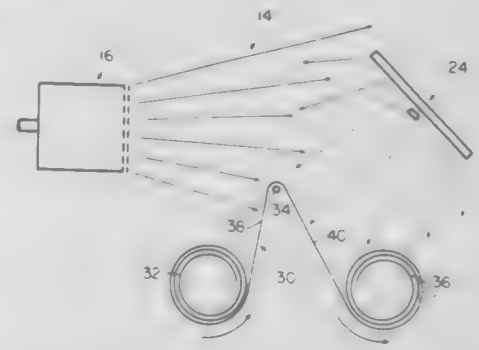
a second magnet which is magnetically coupled to said second target for producing a second part of said magnetic field which locally intersects said electric field to sputter said sloping surface and to form said layer of the predetermined material on said at least one object with a cooperation of said first and said second parts of said magnetic and said electric fields so that said step coverage ratio becomes substantially uniform on each step of said at least one object.

4,604,181

APPARATUS FOR PRODUCING OXIDATION PROTECTION COATINGS FOR POLYMERS

Michael J. Mirtich, North Olmsted; James S. Sovey, Strongsville, and Bruce A. Banks, Olmsted Township, Cuyahoga County, all of Ohio, assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Division of Ser. No. 649,330, Sep. 14, 1984, Pat. No. 4,560,577.
This application Jul. 31, 1985, Ser. No. 761,235
Int. Cl.[4] C23C *14/46*
U.S. Cl. 204—298 **8 Claims**



1. Apparatus for coating a polymeric material with an oxidation protecting film comprising

an ion beam source for furnishing an ion beam for cleaning a surface of said polymeric material, and

a sputter target mounted such that a beam of ions from an ion source can bombard said target for ion sputter coating said ion beam cleaned surface with a mixture of metal oxide and polymer to form said oxidation protecting film, said sputter target comprising

a first portion of a metal oxide material, and

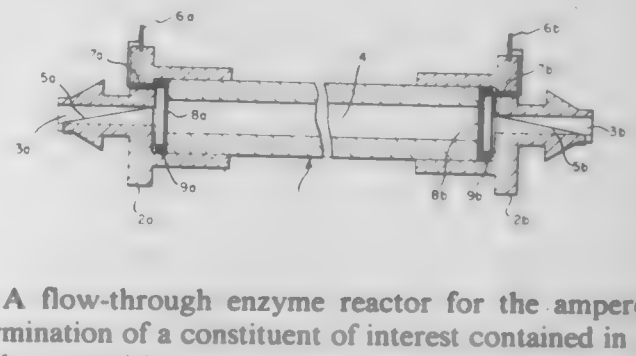
a second portion of a polymer material having a low oxidation rate.

4,604,182

PERFLUOROSULFONIC ACID POLYMER-COATED INDICATOR ELECTRODES

James L. Seago, Bear, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 523,168, Aug. 15, 1983, Pat. No. 4,517,291.
This application Jan. 29, 1985, Ser. No. 696,196
Int. Cl.[4] C12Q *1/54*
U.S. Cl. 204—403 **11 Claims**



1. A flow-through enzyme reactor for the amperometric determination of a constituent of interest contained in a liquid sample, comprising:

a first and a second end member, each having an internal chamber communicable with a source and a sink, respectively, of said liquid sample, said first and second chambers each having disposed therein a noble metal wire having coated thereon a thin film of a perfluorosulfonic acid polymer, said wires being externally connectable to electronic circuitry, said end members being made from an insulating material; and

a central member having an internal chamber adapted to contain an immobilized oxidase enzyme, said chamber in communication with said internal chambers of said end members, said central chamber being separated from each of said end chambers by a foraminous septum, said septum being capable of containing the immobilized enzyme

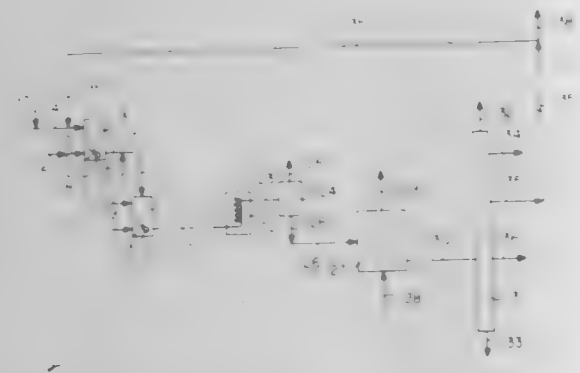
within the central chamber, said central chamber being made from an inert, electrically conductive material.

4,604,183

CATALYTIC PROCESS FOR HYDROCONVERSION OF SOLID CARBONACEOUS MATERIALS

Edward H. Edelson, Maple Shade; Edward I. Stiefel, Bridgewater; Russell R. Chianelli, Somerville, all of N.J., and Catherine L. Coyle, Karlsruhe, Fed. Rep. of Germany, assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Jun. 6, 1985, Ser. No. 741,993
Int. Cl.[4] C10G *1/00*
U.S. Cl. 208—420 19 Claims



1. An improved process for hydroconverting solid carbonaceous materials comprising:

(a) forming a feed mixture of a solid carbonaceous material and an ammonium and/or hydrocarbyl substituted ammonium salt of a metal-sulfur analog of cubane or a mixture of such analogs which metal has hydrogenation catalytic activity when used as a sulfide;

(b) subjecting this mixture to hydroconversion at a temperature within the range from about 500° to about 900° F. at a total pressure within the range from about 500 to about 7000 psig and with a hydrogen partial pressure within the range from about 400 to about 5000 psig; and

(c) recovering a normally liquid product from the conversion effluent.

4,604,184

MODIFIED COAL-TAR PITCH

Samuel Cukier, Toronto, and Henry A. F. L. Kremer, Thornhill, both of Canada, assignors to Domtar Inc., Montreal, Canada

Continuation-in-part of Ser. No. 552,252, Nov. 16, 1983, Pat. No. 4,517,072, which is a continuation of Ser. No. 264,294, May 18, 1981, abandoned. This application Feb. 4, 1985, Ser. No. 698,022
Int. Cl.[4] C10C *1/18, 3/08*
U.S. Cl. 208—22 2 Claims

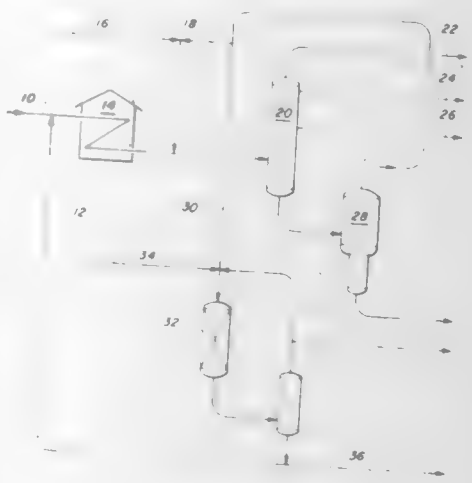
1. A coal-tar pitch material, obtained by the process which consists in mixing an undistilled coaltar material with a solvent which consists of at least one of the following n-methyl-2-pyrollidone and the fraction of a coal-tar distillate which boils between 100° and 350° C., said mixing being carried out at a temperature such as to form a solvent-dissolved fraction and a solvent-undissolved fraction, separating and removing said solvent-undissolved fraction of said undistilled coal-tar material, said undissolved fraction containing Q.I. having a high content of ash-forming impurities and using said solvent-dissolved fraction to produce coal-tar material with a decreased Q.I. and lower impurities by distilling said solvent-dissolved fraction of said undistilled coal-tar material to obtain from said solvent-dissolved product a pitch material having a toluene insoluble content of over 20%, a beta resin content of over 15%, a quinoline insoluble content of less than 5% and ash content of less than 0.1%.

4,604,185

CO-PROCESSING OF STRAIGHT RUN VACUUM RESID AND CRACKED RESIDUA

James R. McConaghy, Jr., and Ardis L. Anderson, both of Ponca City, Okla., assignors to Conoco Inc., Ponca City, Okla.

Filed Jul. 2, 1985, Ser. No. 750,968
Int. Cl.[4] C10G *47/32*
U.S. Cl. 208—56 4 Claims



1. A process for simultaneously processing straight run vacuum resid and cracked residuum to produce distilled products and a 1,000° F.+ fraction in an amount of not more than the sum of 40 volume percent of the 1,000° F.+ material in the straight run vacuum resid and the 1,000° F.+ fraction of the cracked residuum, said process comprising:

(a) combining a partially hydrogenated donor diluent solvent with said vacuum resid;

(b) subjecting said combined vacuum resid and solvent to hydrogen donor diluent cracking under conditions at which at least 60 volume percent of the fraction of said resid boiling above 1,000° F. is converted to material boiling below 1,000° F.;

(c) combining the effluent from said donor diluent cracking step with quench material selected from the group consisting of cracked residuum, vacuum gas oil and mixtures thereof in an amount sufficient to substantially prevent coke formation at the donor diluent cracking furnace outlet;

(d) combining with said effluent from said donor diluent cracking step a cracked residuum in an amount of from 3 to 100 volume percent of said straight run vacuum resid; a part or all of which cracked residuum may have been utilized as the quench material in step (c);

(e) subjecting said effluent cracked residuum, quench material and cracked residuum to fractionation to produce distilled products and a fractionator bottoms stream;

(f) subjecting said fractionator bottoms stream to vacuum distillation to produce a residual product and a vacuum gas oil stream comprised in part of the aromatic components of said cracked residuum;

(g) subjecting at least a part of said vacuum gas oil stream to a catalytic hydrogenation step to produce a partially hydrogenated hydrogen donor diluent product;

(h) utilizing at least a part of said partially hydrogenated hydrogen donor diluent product as the solvent in step (a); and

(i) recovering distilled product streams and a 1,000° F.+ product stream in an amount of not more than the sum of 40 volume percent of the 1,000° F.+ material in said straight run vacuum resid and the 1,000° F.+ fraction of the cracked residuum.

4,604,186

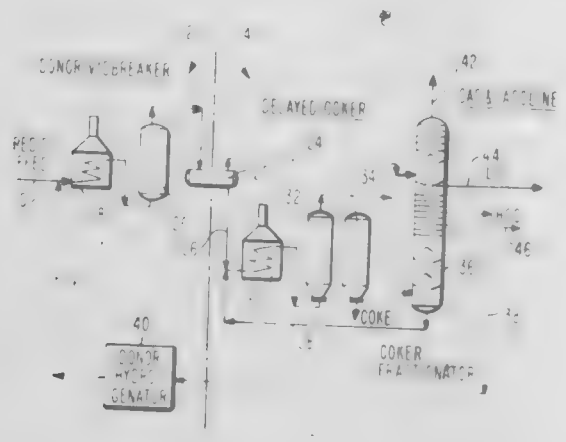
PROCESS FOR UPGRADING RESIDUUMS BY COMBINED DONOR VISBREAKING AND COKING

Irvin H. Lutz, and Thomas M. Wilson, both of Houston, Tex., assignors to DM International Inc., Tulsa, Okla.

Continuation of Ser. No. 617,502, Jun. 5, 1984, abandoned. This application Nov. 6, 1985, Ser. No. 795,713

Int. Cl.[4] C10G *55/04*

U.S. Cl. 208—50 **28 Claims**



1. A process for upgrading petroleum residuums to more valuable products comprising the steps of

mixing a hydrogenated aromatic donor fraction with the petroleum residuums to form a vis breaker feed;

donor visbreaking the visbreaker feed in a thermal visbreaker to crank heavy hydrocarbons into lighter products wherein the hydrogenated fraction in the visbreaker feed reacts to donate hydrogen to prevent formation of coke and reduce the quantity of coke precursors;

coking a coker feed including substantially all of the high boiling portion and substantially all of the aromatic donor fraction of the effluent from the visbreaker in a coker under nonpremium coker conditions to produce coke and overhead products whereby the reduction of coke precursors by the donor visbreaking reduces the quantity of coke product and increases the quantity of overhead productd;

fractionating the overhead products from the coker in a fractionater to produce one or more light product fractions, and an aromatic donor recycle fraction; and

hydrogenating the aromatic donor recycle fraction from the fractionator to form the hydrogenated donor formation for the visbreaker feed.

4,604,187

HYDROCRACKING WITH RARE EARTH-CONTAINING Y ZEOLITE COMPOSITIONS

John W. Ward, Yorba Linda, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Continuation of Ser. No. 569,238, Jan. 9, 1984, Pat. No. 4,565,621, which is a division of Ser. No. 327,611, Dec. 4, 1981, Pat. No. 4,429,053. This application Jun. 3, 1985, Ser. No. 740,537

The portion of the term of this patent subsequent to Jan. 21, 2003, has been disclaimed.

Int. Cl.[4] C10G *47/18, 47/20, 65/12*

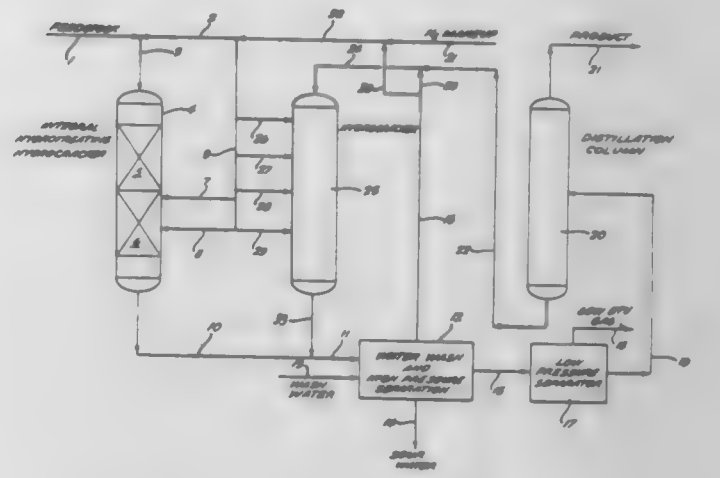
U.S. Cl. 208—59 **20 Claims**

1. A process for hydrocracking a hydrocarbon feedstock to produce a product of lower average boiling point which process comprises contacting said hydrocarbon feedstock with molecular hydrogen under ammonia-deficient hydrocracking conditions in the presence of a catalyst comprising an intimate mixture of a porous refractory oxide component and a type Y crystalline aluminosilicate zeolite containing a rare earth metal and a Group VIII hydrogenation metal, said zeolite having been prepared by a process comprising:

(a) cation-exchanging a type Y crystalline aluminosilicate zeolite with rare-earth containing cations;

(b) calcining the resultant rare earth-exchanged zeolite in the presence of water vapor at a water vapor partial pressure of a least about 0.2 p.s.i.a.;

(c) ion-exchanging the calcine zeolite from step (b) with ammonium ions; and



(d) ion-exchanging the ammonium-exchanged zeolite from step (c) with Group VIII metal-containing cations.

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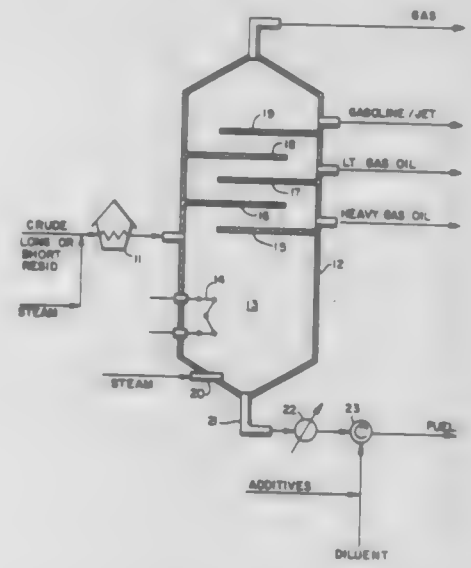
THERMAL UPGRADING OF RESIDUAL OIL TO LIGHT PRODUCT AND HEAVY RESIDUAL FUEL

Tsoung Y. Yan, Philadelphia, Pa., and Paul Shu, Princeton Junction, N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 522,136, Aug. 11, 1983, abandoned. This application Jan. 16, 1985, Ser. No. 691,798

Int. Cl.[4] C10G *9/00*

U.S. Cl. 208—106 **24 Claims**



1. The method of upgrading residual oil boiling in the range of 1050° F.+ comprising:

thermally cracking said residual oil at a temperature of 650°–900° F., a pressure of 0–100 psig, and a residence time of 0.1 to 5 hours at the highest severity in the range between about 1,000–18,000 seconds, as expressed in equivalent reaction time at 800° F., sufficient to convert at least about 50 wt. % of the residual oil to light products, substantially without the formation of solid coke;

recovering separate fractions of light product and emulsifiable heavy bottom product which has a fusion temperature below about 150° C. and a quinoline-insoluble content between about 10 wt. % and 30 wt. % and wherein the highest severity is determined by a functional relationship between the asphaltene content of the residual oil feedstock and the heavy bottom product yield and quinoline-insoluble content in accordance with the followinng:

wt. % asphaltenes · $\frac{\text{wt \% quinoline} - \text{insolubles}}{\text{wt \% bottom product yield}}$ =

a value ranging between 6 and 12.

4,604,189

HYDROCRACKING OF HEAVY FEEDS WITH DISPERSED DUAL FUNCTION CATALYST

Francis J. Derbyshire, State College, Pa., and Philip Varghese, Voorhees, N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Dec. 24, 1984, Ser. No. 685,589

The portion of the term of this patent subsequent to Apr. 8, 2003, has been disclaimed.

Int. Cl.⁴ C10G *47/20*

U.S. Cl. 208—111 **20 Claims**

19. In a process for hydroconverting a heavy natural or synthetic oil charge stock by reacting the oil with hydrogen in the presence of a solid, acidic catalyst after adding to the oil a thermally decomposable metal compound of a metal of Group IVB, VB, VIB, VIIB or VIII of the Periodic Table of Elements, the compound being added in an amount equivalent to 10 to 950 ppm, calculated as the elemental metal, based on the oil feed, the improvement comprising adding a zeolite having an alpha value of at least 1 and a Constraint Index of less than 1 without active metal on the catalyst, to the oil feed having a Conradson carbon content in excess of 1 weight percent, and hydroconverting the oil with the added acidic zeolite catalyst in a hydroconversion zone to convert at least 25 percent of the Conradsen carbon content to lighter materials to form an upgraded oil product.

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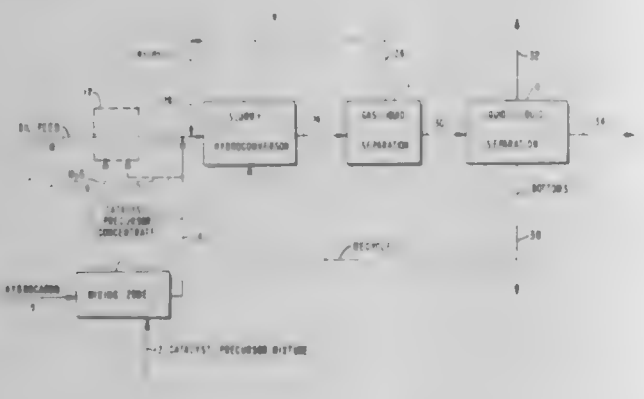
HYDROCRACKING WITH CHROMIC ACID AND AN ALIPHATIC POLYHYDROXY COMPOUND

Roby Bearden, Jr., and Clyde L. Aldridge, both of Baton Rouge, La., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Division of Ser. No. 728,485, Apr. 29, 1985, Pat. No. 4,567,167. This application Aug. 5, 1985, Ser. No. 762,764

Int. Cl.⁴ C10G *47/12*

U.S. Cl. 208—112 **8 Claims**



1. A process for hydroconverting a hydrocarbonaceous oil chargestock to produce a hyroconverted hydrocarbonaceous oil product which comprises: reacting said hydrocarbonaceous oil chargestock with hydrogen at a hydrogen partial pressure ranging from about 50 to about 5000 psig, in the presence of a catalyst at hydroconversion conditions, including a temperature ranging from about 500° to about 1000° F., said catalyst having been prepared by the steps which comprise:

(a) adding a water soluble aliphatic polyhydroxy compound to an aqueous solution of chromic acid (CrO_3);

(b) introducing at least a portion of the mixture resulting from step (a) into said hydrocarbonaceous oil chargestock; and

(c) heating the mixture resulting from step (b) in the presence of a hydrogen sulfide-containing gas at conditions to produce a slurry comprising a solid chromium-containing catalyst.

4,604,191

REMOVAL OF ARSENIC, VANADIUM, AND/OR NICKEL COMPOUNDS FROM PETROLIFEROUS LIQUIDS

Richard H. Fish, Berkeley, Calif., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Continuation-in-part of Ser. No. 597,627, Apr. 6, 1984, Pat. No. 4,518,490, Division of Ser. No. 699,886, Feb. 8, 1985, Pat. No. 4,552,854. This application May 17, 1985, Ser. No. 735,228

The portion of the term of this patent subsequent to May 21, 2002, has been disclaimed.

Int. Cl.⁴ C10G *25/00*

U.S. Cl. 208—251 R **11 Claims**

1. Process comprising removing contaminant containing at least one of the group of arsenic, vanadium and nickel from petroliferous liquids by contacting said liquid at an elevated temperature of at least about 20° C. with a polystyrene-divinylbenzene polymer crosslinked with up to about 20% divinylbenzene and which polymer contains up to about 30% by weight of catechol ligands.

4,604,192

POWDER CLASSIFIER

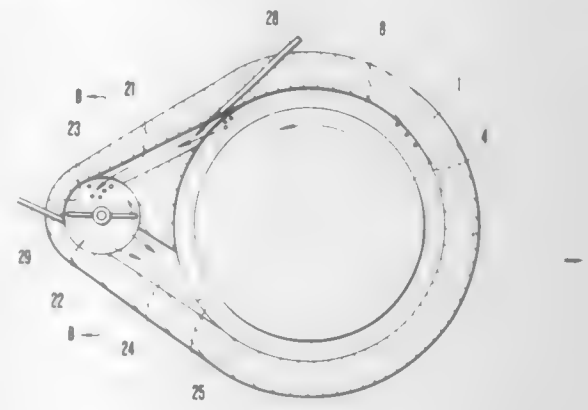
Yukiyoshi Yamada; Shin Doi, both of Saitama, and Masayuki Yasuguchi, Kanagawa, all of Japan, assignors to Nisshin Flour Milling Co., Ltd. and Nisshin Engineering Co., Ltd., both of Tokyo, Japan

Filed May 10, 1984, Ser. No. 609,094

Claims priority, application Japan, May 18, 1983, 58-87327; Apr. 16, 1984, 59-76383

Int. Cl.⁴ B07B *7/083*

U.S. Cl. 209—144 **5 Claims**



1. In a powder classifier having:

a horizontally rotating turbine-like classifying rotor with an outer circumference;

a circular passage encompassing the outer circumference of the rotor and having the classifying rotor centered therein; and

an inlet means, positioned above the classifying rotor in the circular passage, for feeding powder thereinto, said powder having a coarse portion and a fine portion;

an improvement comprising:

duct means, connected at one end to the circular passage and extending therefrom in a direction approximately tangential to the circular passage, for discharging a flow of air, the coarse portion of the powder, and the fine portion of the powder from the classifying rotor;

means, connected at an opposite end of the discharging duct means, for precipitating the coarse portion of the powder from the flow of the air and the fine portion of the powder; and

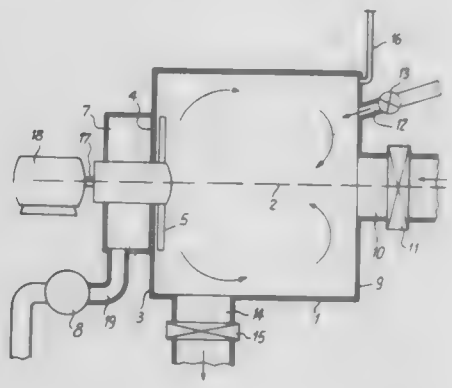
duct means, connected at one end to the precipitating means and connected at an opposite end to the circular passage, for recirculating the flow of the air and the fine portion of the powder to the classifying rotor.

4,604,193

METHOD AND APPARATUS FOR SORTING OUT A MIXTURE OF PAPER PULP AND CONTAMINANTS

Jean-Pierre J. Lamort, Saint Lumier en Champagne, France, assignor to E et M Lamort S.A., France

Filed Mar. 23, 1984, Ser. No. 592,525
Claims priority, application France, Mar. 25, 1983, 83 04929
Int. Cl.[4] B07B *1/04*
U.S. Cl. 209—273 5 Claims



1. A batch processing device for washing and separating contaminants from a mixture including paper pulp comprising:

a container having an approximately horizontal axis and first and second opposed ends, said horizontal axis running through said ends, said container further having upper and lower sides;

an approximately vertical wall having perforations therein disposed at said first end;

a stirrer for sitrring said mixture without shredding said paper pulp, disposed inside said container, and in front of said perforated wall, said stirrer including blades in a shape of a spiral, said blades roatating in a plane parallel to said plate a short distance therefrom, said blades having a hydrodynamic foil profile adapted for generating a depression in front of said perforated wall upon rotational passage of said blades at each passing of the blades, and having a leading edge shaped as a Bernouli spiral with a constant angle of 30°;

said pulp container further having a pulp inlet means coupled to a valve and disposed in said second end for conducting pulp into said container;

a chamber for the recovery of paper pulp, located across said perforated wall from said stirrer;

a pump, coupled to said chamber, for withdrawing material therefrom;

water inlet means coupled to a valve and coupled to said container for directing water thereinto;

vent means coupled to said container for allowing air into said container; and

an opening disposed in said lower side of said container, coupled to a valve for the removal of said contaminants from said container.

4,604,194

WATER CONDITIONER VALVE AND SYSTEM

Melvin E. Entingh, 3249 Dryden Rd., Dayton, Ohio 45439

Filed Dec. 4, 1984, Ser. No. 678,601
Int. Cl.[4] C02F *1/44*
U.S. Cl. 210—98 5 Claims

1. A water conditioner system for producing product water from supply water received from a water supply source, comprising:

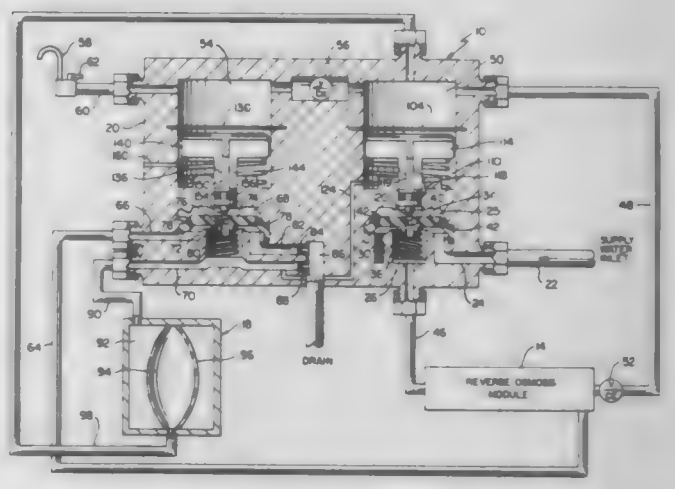
water filter means, the water filter means including means for receiving supply water and means for producing and discharging product water and for discharging brine water, the water filter means having a water supply inlet passage and a product water outlet passage and a brine water outlet passage,

a water container, a movable wall within the water container and separating the water container into a first portion and a second portion,

a product water outlet conduit, the product water outlet conduit being operable and closeable, the product water outlet conduit being normally closed,

a valve housing, the valve housing being provided with a water supply inlet passage and a water supply outlet passage, there being a first cavity within the housing and joining the water supply inlet passage to the water supply outlet passage, a first valve within the first cavity and positioned to control flow of water between the water supply inlet passage and the water supply outlet passage, spring means urging the first valve to an open position, the first valve being provided with a main orifice therethrough and an auxiliary orifice therethrough, a first closure member, the first closure member being movable into the main orifice to close the main orifice of the first valve,

the housing also being provided with a third passage and a fourth passage, there being a second cavity leading from the third passage to the fourth passage, a second valve within the second cavity and positioned to control water flow between the third passage and the fourth passage, spring means urging the second valve to an open position, the second valve being provided with a main orifice and an auxiliary orifice,



the housing also being provided with a fifth passage and a sixth passage, a check-valve separating the fifth and sixth passages, means joining the sixth passage to the product water outlet conduit,

first piston means, means responsive to product water pressure in the fifth passage for operation of the first piston means, means responsive to operation of the first piston means for operation of the first closure member,

second piston means, means responsive to pressure of product water in the sixth passage for operation of the second piston means, means responsive to operation of the second piston for controlling operation of the second closure member,

first conduit means, the first conduit means joining the water supply outlet passage of the housing to the water supply inlet passage of the water filter means, second conduit means, the second conduit means joining the product water outlet passage of the water filter means to the fifth passage of the housing, third conduit means, the third conduit means joining the brine water outlet passage of the water filter means to the third passage of the housing,

fourth conduit means, the fourth conduit means joining the fifth passage of the housing to the second portion of the water container, fifth conduit means, the fifth conduit means joining the first portion of the water container to the fourth passage of the housing,

wherein supply water flows into the water supply inlet

passage of the housing and supply water flows through the first cavity into the supply water outlet passage and from the supply water outlet passage through the first conduit means to the water filter means, product water flowing from the product water outlet passage of the water filter means through the second conduit means to the fifth passage of the housing, product water flowing from the fifth passage into the fourth conduit means and into the second portion of the water container, product water also flowing from the fifth passage into the sixth passage and into the product water outlet conduit,

the product water when sufficient in volume and pressure operating the second piston and moving the second closure member into the main orifice of the second valve to close the main orifice of the second valve, wherein water flow through the auxiliary orifice within the second cavity forces the second valve to close communication between the third passage of the housing and the fourth passage of the housing, thus preventing flow of brine water to the water container, increased pressure of the product water in the fifth passage operating the first piston and moving the first closure member into the main orifice of the first valve to close the main orifice of the first valve member, wherein water flow through the auxiliary orifice in the first valve within the first cavity forces the first valve to close communication between the first passage and the second passage, thus preventing water flow from the water supply source to the water filter means,

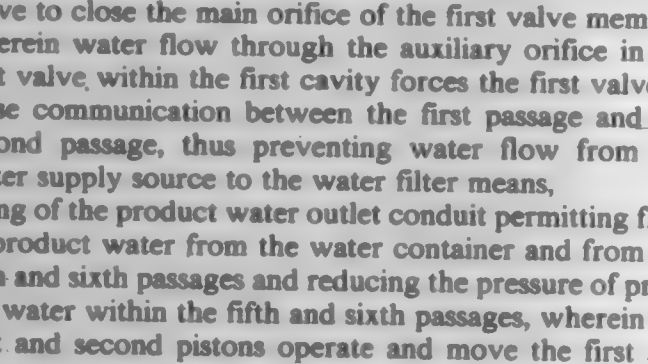
opening of the product water outlet conduit permitting flow of product water from the water container and from the fifth and sixth passages and reducing the pressure of product water within the fifth and sixth passages, wherein the first and second pistons operate and move the first and second closure members from the first and second valves, permitting the first and second valves to move to open position and permit flow of supply water through the water supply inlet passage and through the supply water outlet passage and into the water filter means, for additional flow of brine water from the water filter means and into the first portion of the water container thus applying pressure upon the movable wall within the water container and forcing product water to flow from the water container and through the fifth and sixth passages and into the product water outlet conduit.

4,604,195

FILTER PRESS FOR THICKENING CELLULOSE PULP OR SLUDGE

Tuomo Lintunen, Savonlinna, Finland, assignor to Enso-Gutzeit Oy, Helsinki, Finland

Filed Apr. 23, 1984, Ser. No. 603,136
Claims priority, application Finland, Apr. 22, 1983, 831387
Int. Cl.[4] B01D *33/04*
U.S. Cl. 210—131 **9 Claims**



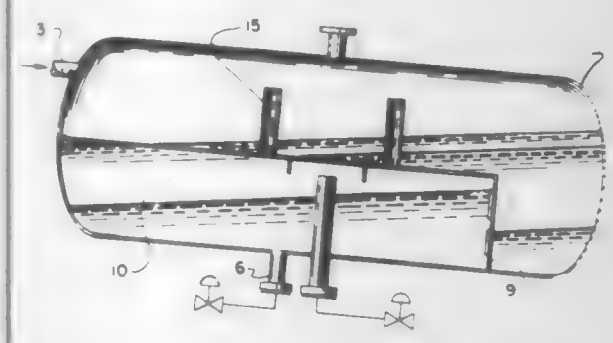
1. A filter press for thickening a material by removing liquid from the material, the press comprises a wire unit including a pair of oppositely disposed filtercloths in closely spaced relation and forming a passage therebetween having an inlet end and an outlet end for conducting a web of the material to be thickened through the press, and wall means for forming a feedbox for directing the material to be thickened into the inlet end of the wire unit, the feedbox comprises an elongated throat separate from said wire unit and arranged within said feedbox and having a feed direction for passing the material through the feedbox into the wire unit inlet end, said throat comprises a plurality of surfaces extending in the feed direction of the material and defining the cross-section of said throat transverse of the feed direction, at least one of said surfaces extending in the feed direction and between said wall means being perforate for removing liquid from the material passing through the throat and directing the liquid into the feedbox for thickening the material passing through the throat before it is passed into the inlet end of the wire unit of the filter press, said perforate surface having a water penetration capacity much higher than said filtercloths and at least one of said surfaces forming said throat being pivotally mounted in said feedbox for movement relative to the other surfaces of said throat for varying the size of the transverse cross-section of said throat.

4,604,196

MARINE SEPARATOR FOR FLUIDS OF DIFFERENT DENSITIES

Neely E. Lowrie, Tulsa, and Mitchel L. Rooker, Sand Springs, both of Okla., assignors to Combustion Engineering, Inc., Windsor, Conn.

Filed Jul. 16, 1985, Ser. No. 755,520
Int. Cl.[4] B01B *17/028*
U.S. Cl. 210—136 **7 Claims**



1. A separation system for a plurality of fluids having different densities and subject to marine motions, including,

a cylindrical separator vessel extending horizontally and having an inlet to receive a plurality of fluids having different densities,

a substantially flat and horizontal table/baffle mounted internally and extended a major length of the vessel and parallel the vessel axis to receive and spread the fluids from the inlet to a well formed at one end of the vessel by a substantially vertical plate sealed to the table and extending down to the bottom of the vessel,

a liquid-packed compartment formed between the underside of the table and substantially vertical plate and the lower wall of the vessel,

at least one check valve mounted through the vertical plate between the well and the compartment to allow one-way flow of at least one fluid into the compartment from the well,

an outlet conduit through the table communicating the compartment to the area above the table for the removal of the fluid of lesser density from the compartment,

outlets from the compartment near the center of the compartment length for the separated fluids having the greater density,

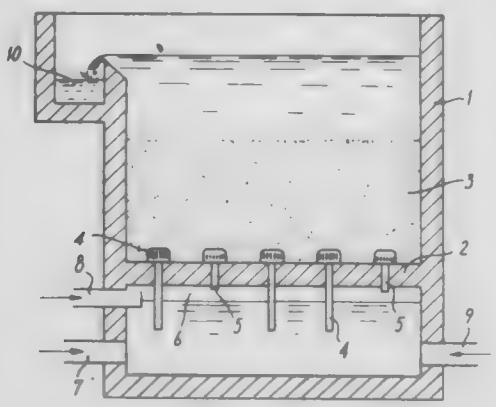
and an outlet through the vessel wall above the table for the fluid having the lessor density.

4,604,197

SUBMERGED FILTER FILLED WITH GRANULAR MATERIAL

Robert Louboutin, Crespières, and Jean Gibaud, Paris, both of France, assignors to Degremont, Hauts de Seine, France

Filed Dec. 28, 1984, Ser. No. 687,427
Claims priority, application France, Jan. 2, 1984, 84 00008
Int. Cl.[4] C02F *3/06;* B01D *23/20*
U.S. Cl. 210—150 3 Claims



1. A submerged filter comprising:

a container having a bottom and a floor positioned above said bottom, said bottom and floor defining a chamber;

a filter mass comprising granular material supported by said floor within said container, liquid to be treated and treating gas passing upwardly through said filter mass during normal operation of said filter, and washing water and gas passing upwardly through said filter mass during a washing operation thereof;

means for introducing liquid to be treated into said chamber during said normal operation;

means for introducing washing water into said chamber during said washing operation;

means for introducing into said chamber gas at a first flow rate as said treating gas during said normal operation and at a second flow rate greater than said first flow rate as said washing gas during said washing operation;

a plurality of first nozzles extending through said floor and leading from said chamber to said granular material, each said first nozzle including first opening means for, during said normal operation, passing said liquid to be treated from said chamber into said granular material and for, during said washing operation, passing said washing gas from said chamber into said granular material, and each said first nozzle further including second opening means for, during said normal operation, passing said liquid to be treated from said chamber into said granular material and for, during said washing operation, passing said washing water from said chamber into said granular material;

a plurality of second nozzles extending through said floor and leading from chamber to said granular material for, during said normal operation, passing said treating gas from said chamber into said granular material, each said second nozzle comprising a tube extending through and above said floor and having a passage, a cup-shaped member above said floor and covering an upper end of said tube, and openings extending through said cup-shaped member; and

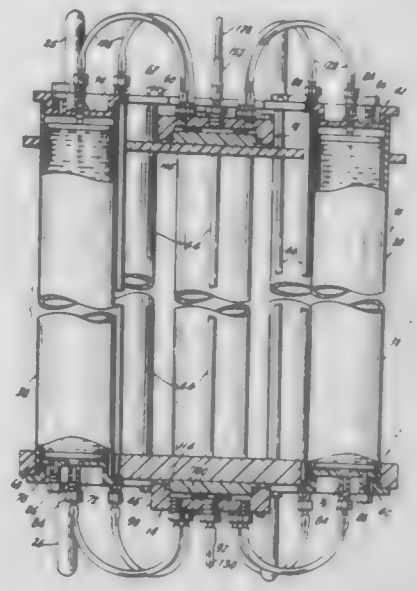
said second nozzles having means for, during said normal operation with said treating gas introduced into said chamber at said first flow rate, creating a gas cushion within said chamber below said floor sufficient to prevent said liquid to be treated from entering said second nozzles and to ensure that said first and second opening means of said first nozzles are maintained submerged in said liquid to be treated, and for, during said washing operation with said washing gas introduced into said chamber at said second flow rate, creating an increased size gas cushion within said chamber below said floor sufficient to prevent submerging of said first opening means of said first nozzles in said washing water, said cushion creating means comprising, for each said second nozzle, a restriction within said passage of said tube, said restriction defining a valve, and a valve member positioned above said seat and movable away therefrom by said gas passing upwardly through said tube.

4,604,198

MULTICARTRIDGE CHROMATOGRAPHY CARTRIDGE HOUSING

Nils Dailey; Vishva Rai, both of Wallingford; Kenneth Southall, Westerfield, and Timothy J. Webster, Norfolk, all of Conn., assignors to AMF Inc., White Plains, N.Y.

Filed May 18, 1984, Ser. No. 611,662
Int. Cl.[4] B01D *15/08*
U.S. Cl. 210—198.2 20 Claims



1. A multicartridge housing for cylindrical chromatographic cartridges, each cartridge effective for the chromatographic separation of a fluid passing radially therethrough, said housing comprising:

support means;

a plurality of cartridge holders secured to said support means, each of said cartridge holders being structured and sized to surround a cartridge therein and a volume surrounding the cartridge, said volume in fluid communication with said cartridge for radial distribution of the fluid through the cartridge;

an inlet fluid manifold means for distributing the fluid being separated to each of said holders for passage of the fluid radially through the cartridges therein; and

an outlet fluid manifold means for consolidating the fluid from the holders after passage of the fluid radially through the cartridges therein.

4,604,199

FILTERING COLUMN

Kenzaburo Yoritomi, Chibashi, Japan, assignor to Suomen Sokeri Oy, Espoo, Finland

Filed Apr. 10, 1985, Ser. No. 721,792
Claims priority, application Japan, Apr. 12, 1984, 59-073299
Int. Cl.[4] B01D *23/18*
U.S. Cl. 210—293 5 Claims

1. A filtering column which comprises:

a bottom having reciprocally arranged peaks and troughs formed therein and spaced apart at constant intervals;

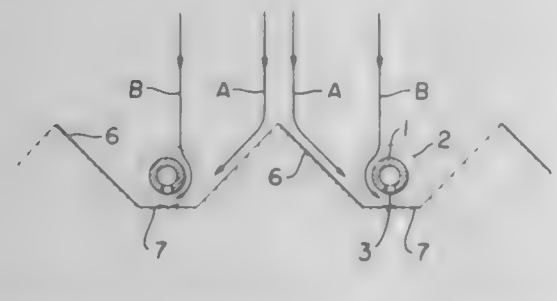
a plurality of branched pipes having small holes in their undersides uniformly therealong, said pipes lying in said troughs on the bottom;

filter means covering said respecting branch pipes said troughs having sides sloping downwardly to said respective branched pipes to afford smooth fluid flow thereto

and the sides of adjacent troughs intersecting to form said peaks;

gathering pipes connected to said branched pipes; and

an outlet connected to the gathering pipes said gathering



pipes being connected to said branched pipes at locations such that the differences in the lengths of the flow courses from said branched pipes to said outlet are slight, such that a uniform flow rate is achieved without substantial back-mixing.

4,604,200

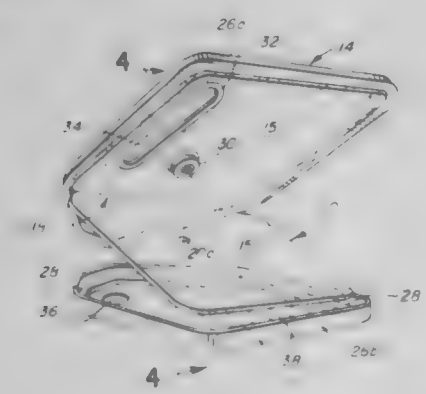
FLUID FILTER WITH UNIFORM SPACING

Ronald C. Machart, Jr., Oak Lawn, Ill., assignor to IGC, Inc., Bridgeview, Ill.

Filed Jun. 6, 1985, Ser. No. 741,751

Int. Cl.[4] B01D *27/06*

U.S. Cl. 210—314 **12 Claims**



1. A filter element for use in fluid filters which include a housing, for receiving the filter element in a folded condition, comprising a generally thin, flat body shaped for receipt within the housing defining two body portions when in said folded condition, said body having a fold line generally intermediate opposed ends thereof whereby the body is folded upon itself about said fold line in a substantially predetermined manner, and said fold line being formed by a double-line indentation comprising a pair of generally parallel fold lines to facilitate precise, substantially predetermined, folding and alignment of said opposed ends and generally uniform spacing of said body portions within said housing, providing improved fluid flow through the fluid filter.

4,604,201

FILTER

Hans Müller, Erlenbach, Switzerland, assignor to Dr. Müller AG, Männedorf, Switzerland

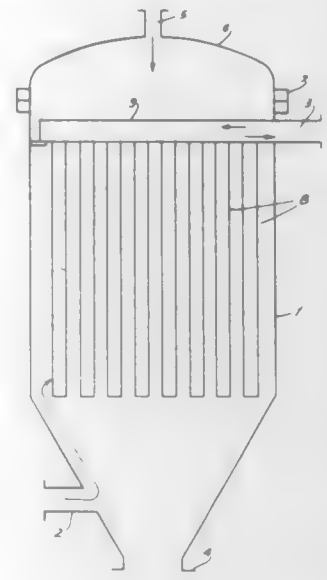
Continuation of Ser. No. 097,877, Nov. 27, 1979, abandoned, which is a continuation of Ser. No. 896,437, Apr. 14, 1978, abandoned. This application Aug. 3, 1981, Ser. No. 289,526

Claims priority, application Switzerland, Apr. 28, 1977, 5259/77; Nov. 15, 1977, 1390/77

Int. Cl.[4] B01D *23/00*

U.S. Cl. 210—323.2 **6 Claims**

1. A filter for hard substances-containing liquid, particularly an alluvial filter, comprising a pressure vessel, and a plurality of candle-like filter elements accommodated in said vessel and vertically suspended therein, each of said filter elements including a rigid supporting body having a hollow central tube extending along the elongation of said body, said central tube having a top end and a bottom end and being enclosed over the periphery thereof and open only at said top end and said bottom end, a plurality of peripheral rods surrounding said central hollow tube and forming a rounded periphery of said rigid body, and a plurality of transversal reinforcing elements extending between said central hollow tube and said peripheral rods and connecting the latter with the former, and a filter web extending over the periphery of said rigid body and the bottom thereof, so that during the filtration the liquid being filtered flows in a radial direction from the exterior of said filter ele-



ments inwardly through said filter web, the filtered liquid then enters said central tube of each filter element through the bottom end, flows in an axial direction within said hollow tube, and then leaves the respective central tube through the top end thereof, whereas during the backwashing the liquid being backwashed enters the respective hollow central tube of each of said filter elements through the top end thereof, flows in the axial direction in said hollow central tube, leaves said hollow central tube through the bottom end thereof and distributes between said hollow central tube and said filter web, and then flows in the radial direction from the interior of each of said filter elements outwardly through said filter web.

4,604,202

FILTER APPARATUS

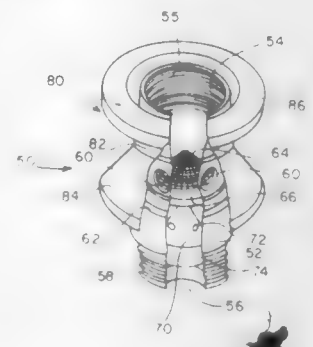
Avner Movshovitz, Tel Aviv, Israel, assignor to Amcor Ltd., Tel Aviv, Israel

Filed Dec. 26, 1984, Ser. No. 686,379

Claims priority, application Israel, Mar. 27, 1984, 71377

Int. Cl.[4] B01D *29/38, 35/22*

U.S. Cl. 210—409 **7 Claims**



1. Fluid filter apparatus which can be flushed in a controlled manner by a single longitudinal manual manipulation comprising:

a body member defining a fluid inlet and a fluid outlet which are separated along a longitudinal axis, the fluid outlet providing a fluid discharge along said longitudinal axis, and at least one flushing aperture disposed intermediate said fluid inlet and said fluid outlet;

filter means seated within said body member and disposed such that an upstream filter surface thereof lies adjacent and in communication with said at least one flushing aperture;

a manually adjustable flushing control cover member slidably mounted on said body member and arranged to have first and second operative orientations with respect thereto which are separated from each other along said longitudinal axis, and comprising a sleeve portion adapted for selectable sealing engagement with said at least one flushing aperture when said cover member is in a first operative orientation and a depending skirt portion arranged with respect to said sleeve portion such that when said cover member is in said second operative orientation and said sleeve portion lies above said at least one flushing aperture and out of sealing engagement therewith, fluid exiting from said at least one flushing aperture engages said skirt portion and is restricted to flow in a direction along said longitudinal axis;

said cover member being arranged to assume either said first orientation wherein said sleeve portion sealingly engages said at least one aperture, preventing fluid outflow therethrough, or said second orientation wherein said skirt portion lies in adjacent non-sealing relationship with said at least one aperture whereby substantially all fluid discharge from said aperture impinges on said skirt portion for being deflected thereby, such that at no position of said cover member relative to said body member, if fluid discharge from said fluid filter apparatus permitted other than along said longitudinal axis; and

manual engagement means for manual displacement of said cover member from said first orientation to said second orientation.

4,604,203

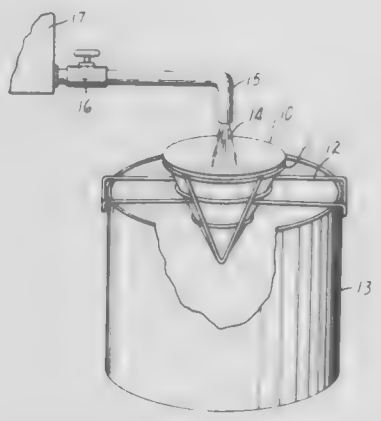
COOKING OIL FILTERING APPARATUS AND FILTER THEREFOR

Robert C. Kyle, Minneapolis, Minn., assignor to Minnesota Mining and Manufacturing Co., Saint Paul, Minn.

Filed Sep. 14, 1984, Ser. No. 650,414

Int. Cl.[4] B01D *23/28*

U.S. Cl. 210—489 **7 Claims**



1. A cooking oil filtering apparatus especially suited for gravity filtration, said apparatus comprising a frame and a filter in the shape of a cone or a bag supported in said frame comprising an assembly of juxtaposed layers, as follows:

(a) an inside filter layer formed of a uniformly porous web comprising uniformly distributed, randomly interentangled, synthetic polymeric, blown micro-fibers that are less than 10 microns in diameter, said web having a weight in the range of about 30 to 47 g/m^2, a flow time to pass 200 ml of cooking oil of less than about 40 seconds, and a pressure drop of less than about 42 Pa, and

(b) an outside support layer of a highly porous, relatively stiff, light weight sheet material, more porous than said filter layer

wherein said layers are formed of materials which are resistant to thermal degradation and appreciable softening at normal cooking temperatures of said cooking oil and are disposed within said frame with said filter layer positioned to initially receive cooking oil passing through said layers.

4,604,204

POROUS, SEMIPERMEABLE MEMBRANES OF CHEMICALLY MODIFIED CELLULOSE ACETATE

Charles Linder, Rehovot, and Mordechai Perry, Petach Tikvah, both of Israel, assignors to Aligena AG, Basel, Switzerland

Continuation of Ser. No. 190,524, Sep. 18, 1980, abandoned. This application Nov. 23, 1983, Ser. No. 554,881

Claims priority, application Switzerland, Sep. 19, 1979, 8460/79

Int. Cl.[4] B01D *13/04*

U.S. Cl. 210—490 **19 Claims**

1. A porous, modified cellulose acetate membrane having a structure suitable for ultrafiltration and reverse osmosis, said membrane being prepared by a sequence of chemical reactions consisting essentially of steps (1) to (3), wherein:

step (1) is reacting (a) a cellulose acetate containing membrane having a pore diameter in the range of from 10 to 1000 Å, with (b) an organic compound which contains at least one group (b_1) capable of reaction with hydroxyl groups of the membrane (a), and at least one group (b_2) capable of reaction with component (c), to bond the hydroxyl groups to a group (b_1), such that a membrane obtained from step (1) has at least one reactive group (b_2),

step (2) is reacting group (b_2) of said membrane with (c) a polyfunctional linear or branched polymer containing functional groups (c_1) and (c_2), to bond group (b_2) to group (c_1), and thereby introduce said polymer into said membrane, and

step (3) is reacting (d) a compound which contains at least one ionic group and at least one group (d_1) capable of reaction with group (c_2), provided that said polyfunctional linear or branched polymer (c) itself does not already possess sufficient ionic groups, to bond group (d_1) to group (c_2) to form a membrane containing said at least one ionic group.

4,604,205

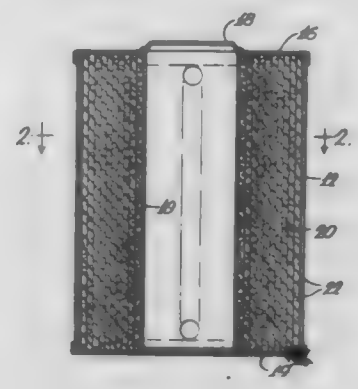
WATER REMOVING FILTER MEDIA

William R. Ayers, Bement, Ill., assignor to Central Illinois Manufacturing Company, Bement, Ill.

Continuation of Ser. No. 413,981, Sep. 2, 1982, abandoned. This application Nov. 13, 1984, Ser. No. 671,061

Int. Cl.[4] B01D *15/00*

U.S. Cl. 210—497.2 **1 Claim**



1. A water absorbing, mechanical filter comprising:

a filter housing;

an inlet port in said housing;

an outlet port in said housing;

said housing further including means defining a liquid flowpath from said inlet port to said outlet port;

a body of fibrous material within said housing and extending across said flowpath; and

a quantity of starch-polyacrylonitrile graft copolymer dispersed throughout and fixed to said body, the distribution

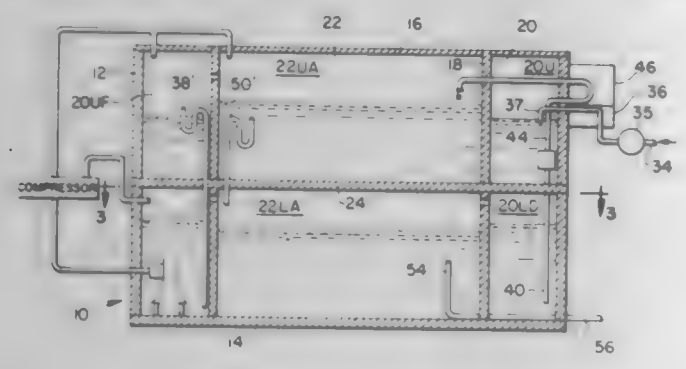
of the graft copolymer within said body being greater nearer said outlet port than said inlet port.

4,604,206

STAGED ANAEROBIC REACTOR

Richard A. Sullivan, Brookfield, Wis., assignor to Envirex Inc., Waukesha, Wis.

Division of Ser. No. 546,800, Oct. 31, 1983, Pat. No. 4,568,457.
This application Oct. 2, 1985, Ser. No. 782,823
Int. Cl.[4] C02F *3/28*
U.S. Cl. 210—603 **10 Claims**



1. A method of anaerobically digesting organic substances in wastewater, comprising:

establishing an acid forming microorganism colony on a first large surface area RBC in a first closed chamber;

establishing and maintaining the temperature, pH, and nutrient conditions for at least 80% of the growth rates of said acid forming microbes in said first closed member;

submerging and rotating said RBC in said wastewater at a rotational speed and a level between 10–90% submerged, selected for optimal gas/liquid and liquid/biota contact, to obtain the optimal CO_2 solution and liquid turbulence at the biota cell wall, and rotating said RBC about its axis;

isolating and compressing the off-gasses produced by said acid forming microbes, and utilizing at least a portion of said compressed off gasses to mix said wastewater and to adjust the pH of said wastewater by a controlled supply of said off-gasses to locations submerged in said wastewater;

establishing a methane forming microorganism on a second large surface RBC in a second closed chamber in liquid communication with said first closed chamber;

establishing and maintaining the optimum temperature, pH, and nutrient conditions for maximal growth rates of said methane forming microorganism in said second chamber;

submerging and rotating said second RBC in said wastewater at a rotational speed and a level between 10–90% submerged, selected to approach optimal gas/liquid and liquid/biota contact to obtain the optimal methane off-gassing and liquid turbulence at the biota cell wall;

isolating, collecting, and compressing the methane gas produced by said methane forming microbes for commercial or industrial utilization.

4,604,207

PACKING MATERIALS FOR CHROMATOGRAPHIC USE AND A METHOD FOR ANALYSIS OF AN ENANTIOMER MIXTURE USING THE SAME

Naobumi Oi, Kyoto; Tadashi Doi, Toyonaka, and Masayuki Nagase, Suita, all of Japan, assignors to Sumitomo Chemical Co., Ltd., Osaka, Japan

PCT No. PCT/JP83/00145, § 371 Date Jan. 18, 1984, § 102(e) Date Jan. 18, 1984, PCT Pub. No. WO83/04103, PCT Pub. Date Nov. 24, 1983
PCT Filed May 18, 1983, Ser. No. 585,825
Claims priority, application Japan, May 19, 1983, 57-85496
Int. Cl.[4] B01D *15/08*
U.S. Cl. 210—635 **10 Claims**

1. A packing material for chromatographic use which comprises an inorganic carrier having hydroxyl groups at the surface thereof having grafted thereon an α-arylalkylamine derivative which is formed by bonding an optically active α-arylalkylamine and an aminoalkylsilane through a dibasic carboxylic acid,

wherein the grafted α-arylalkylamine derivative is an organosilane represented by general formula (I):



$$R_2-Si(R_1)(R_3)-(CH_2)_n-X-Y-CONH-CH(Ar)-R_4 \quad (I)$$

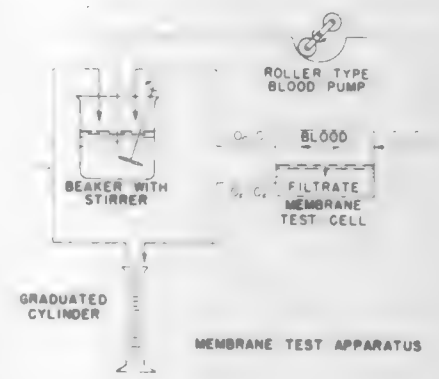
wherein R_1, R_2 and R_3 each, which may be the same or different, is an alkyl group, an alkoxyl group, a hydroxyl group or a halogen atom, with proviso that at least one thereof is an alkoxyl group or a halogen atom; R_4 is an alkyl group; Ar is a naphthyl group, which may be substituted; X is —NHCO— or $-N^{\oplus}H_3.O^{\ominus}CO-$; Y is a lower alkylene group or a phenylene group; n is an integer of from 2 to 4; and * indicates an asymmetric carbon atom.

4,604,208

LIQUID FILTRATION USING AN ANIONIC MICROPOROUS MEMBRANE

Chaokang Chu, 114 Manor Cir., E. Hartford, Conn. 06118; Joseph V. Fiore, 205 Steiner St., Fairfield, Conn. 06430; Rodney A. Knight, 147 Lane Oak Dr., New Milford, Conn. 06776; Paul J. Marinaccio, 107 Forest Rd., Monroe, Conn. 06468, and Asit Roy, 55 Carpenter Rd., Manchester, Conn. 06040

Filed Dec. 29, 1983, Ser. No. 566,764
Int. Cl.[4] B01D *13/00*
U.S. Cl. 210—636 **18 Claims**



1. A process for filtration of liquid having cationic particulate contaminants therein, comprising passing the liquid through a skinless hydrophilic anionic charge modified microporous filter membrane comprising:

a skinless hydrophilic organic polymeric microporous filter membrane having an internal microstructure throughout said membrane, and

a charge modifying amount of an anionic charge modifying agent bonded to substantially all of the membrane micro-

structure without substantial pore size reduction or pore blockage, wherein the charge modifying agent is a water soluble polymer having substituents thereon capable of bonding to the membrane and anionic functional groups, wherein the anionic functional groups are selected from the group consisting of carboxyl, phosphonous, phosphonic, sulfonic groups or mixtures thereof and modify the zeta potential of the membrane,

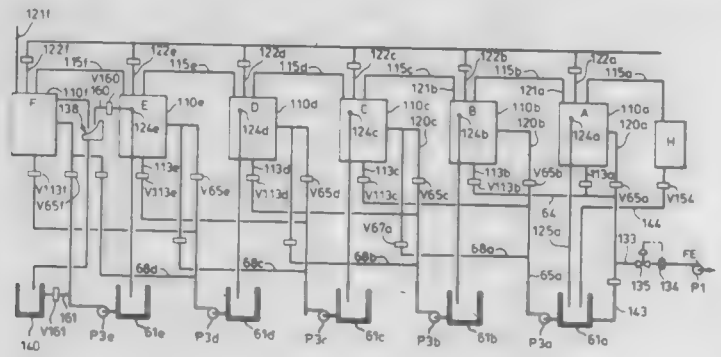
whereby the cationic particulate contaminants are captured by the anionic charge modified microporous membrane and substantially removed from the liquid.

4,604,209

PROCESS FOR LIQUID-SOLID CONTACTING

Alexander Himsley, 250 Merton Street, Toronto, Ontario, Canada M4S 1B1

Filed Oct. 24, 1984, Ser. No. 664,741
Int. Cl.[4] B01J *47/10*
U.S. Cl. 210—661 **13 Claims**



1. Process for the continuous contacting of pregnant liquid with absorbent particles contained in a series of horizontally adjacent vessels, wherein normally an incoming pregnant liquid is flowed in a continuous series stream passing upwardly through each vessel in series, whereby the particles are fluidized and receive a loading from the pregnant liquid, and, periodically, the loaded particles from a vessel at the end of said vessel series receiving the incoming pregnant liquid is removed from said end vessel, and a transfer of particles is effected between adjacent vessels in a direction counter-current to the pregnant liquid stream, the batch of loaded particles removed from said end vessel is stripped of its loading, and an initial vessel in the series is replenished with the stripped batch of particles, characterized in that each vessel has its side surfaces converging downwardly adjacent its lower end to a collection zone, and has a particle collection conduit having its inlet opening adjacent the collection zone and extending upwardly and transversely to its outlet in the vessel next adjacent in said counter-current direction, and said particles transfer is effected from each vessel to the next, which at such time is substantially empty of particles, by diverting said series stream to by-pass the vessel from which particles are to be transferred, and to flow to the vessel next adjacent in the co-current direction of the stream, and particles are transferred in a slurry by withdrawing liquid from the vessel next adjacent in the counter-current direction to the vessel which is to receive the particles, and flowing it into the collection zone of the vessel from which particles are to be transferred and up the particle collection conduit and into a lower region of the vessel which is to receive the particles, while withdrawing liquid from the upper region of the vessel which is to receive the particles, until substantially all the particles have been slurried from one vessel to the next.

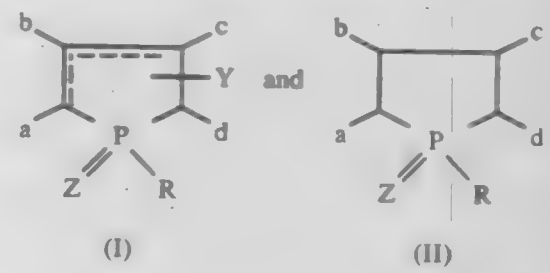
4,604,210

METHOD FOR REMOVING CYCLIC PHOSPHORUS CONTAMINANTS FROM ORGANIC SUBSTRATES

Chung-Yuan Lin, Northford, Conn., assignor to The Dow Chemical Company, Midland, Mich.

Filed Apr. 25, 1985, Ser. No. 727,178
Int. Cl.[4] B01D *15/04*
U.S. Cl. 210—690 **11 Claims**

1. A method for removing a cyclic phosphorus contaminant selected from those having the formulae:



(I) (II)

wherein

a, b, c, and d in each instance are independently selected from the group consisting of hydrogen, halogen, lower-alkoxy, phenoxy, lower-hydrocarbyl and halo-substituted lower-hydrocarbyl; the dotted lines represent a double bond between carbon atom 3 and one of the carbon atoms 2 and 4; Y is hydrogen attached to whichever of carbon atoms 2 and 4 is not part of said double bond; R is selected from the group consisting of lower-hydrocarbyl and halo-substituted lower-hydrocarbyl, and Z is selected from the class consisting of oxygen and sulfur

from a fluid or fluid mixture selected from the group consisting of an organic liquid, an organic solid dissolved in an organic liquid, an mixtures of any of the foregoing, said method comprising contacting the fluid or fluid mixture with a cation exchange resin insoluble therein at a temperature of from about 20° C. to about 100° C. and thereafter separating said exchange resin from said fluid or fluid mixture.

4,604,211

ACRYLIC ACID-SODIUM VINYLSULFONATE-VINYL ACETATE TERPOLYMER AND USE THEREOF AS A DISPERSANT

James F. Kneller, LaGrange Park, and John R. Hurlock, Hickory Hills, both of Ill., assignors to Nalco Chemical Company, Oak Brook, Ill.

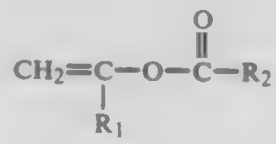
Filed Jan. 29, 1985, Ser. No. 696,227
Int. Cl.[4] C02F *5/10*
U.S. Cl. 210—701 **10 Claims**

1. A method for dispersing organic and inorganic constituents including iron oxide in industrial water systems which comprises adding to said water systems an effective dispersive amount of a water-soluble terpolymer comprising in percentages by weight:

A. 40–90 percent acrylic acid;

B. 5–40 percent sodium vinyl sulfonate, and,

C. 5–40 percent of a monomer having the formula:



wherein,

$R_1 = H, CH_3$

$R_2 = C_1$–C_7 alkyl;

said terpolymer having a molecular weight of from 1,500 to 100,000.

4,604,212

USE OF COPOLYMERS OF CARBOXYLIC MONOMER AND BETAINE-CONTAINING MONOMER AS CORROSION AND SCALE INHIBITORS

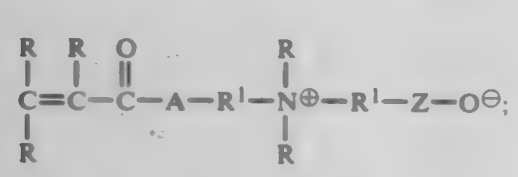
Gary F. Matz, Revere, Mass., assignor to Calgon Corporation, Pittsburgh, Pa.

Division of Ser. No. 601,892, Apr. 19, 1984, abandoned. This application May 16, 1985, Ser. No. 734,942
Int. Cl.[4] C02F *5/12*
U.S. Cl. 210—700 6 Claims

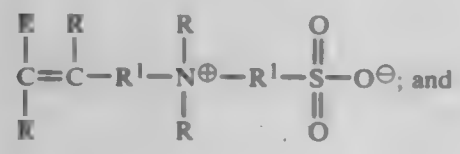
1. A process for inhibiting corrosion and the formation and deposition of scale in aqueous systems, comprising adding to the system at least 0.1 ppm of a water-soluble polymer having an intrinsic viscosity of 0.05 to 2.5 dl/g prepared from:

(A) 50 to 95%, by weight, of an unsaturated carboxylic acid selected from the group consisting of acrylic acid and methacrylic acid, or its salt, and

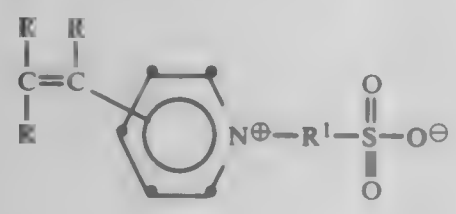
(B) 5 to 50% by weight, of a betaine-containing monomer selected from the group consisting of:



(i)



(ii)



(iii)

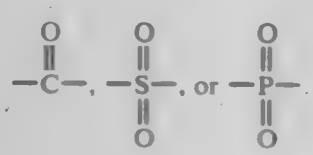
wherein

R, which may be the same or different, is hydrogen, a straight or branched, alkyl or an aryl or alkylaryl group of from 1 to 20 carbon atoms;

R^1, which may be the same or different, is a saturated, straight or branched alkyl group of from 1 to 5 carbon atoms;

A is NH or O; and

Z is



4,604,213

POLYMERS OF 1-ACRYLOYL-4-METHYL PIPERAZINE, METHYL CHLORIDE OR SULFATE QUATERNARY SALTS AS FLOCCULANTS

Dodd W. Fong, Naperville, and Ann M. Halverson, Wheaton, both of Ill., assignors to Nalco Chemical Company, Oak Brook, Ill.

Filed Apr. 8, 1985, Ser. No. 720,848
Int. Cl.[4] C02C *1/56*; B01D *21/01*
U.S. Cl. 210—735 6 Claims

1. A method of flocculating suspended solids from aqueous industrial wastes which comprises treating said wastes with a small, yet effective, amount of a water-soluble polymer which contains at least 50 mole percent of either the dimethyl sulfate or the methyl chloride quaternary ammonium salt of 1-acryloyl-4-methyl piperazine, which polymer has an intrinsic viscosity greater than 0.5.

4,604,214

REMOVAL OF NITROCRESOLS FROM DINITROTOLUENE WASTE STREAMS USING FENTONS REAGENT

Richard V. C. Carr, Allentown, Pa.; Carl J. Martin; Roland Gonzalez, both of Houston, Tex., and Thomas A. Albanese, Allentown, Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Aug. 16, 1985, Ser. No. 766,849
Int. Cl.[4] C02F *1/72*
U.S. Cl. 210—759 10 Claims

1. In a process for removing trinitrocresol material produced in the nitration of aromatic compounds by the mixed acid technique to produce a nitroaromatic compound, the improvement which resides in

(a) contacting the resultant crude nitroaromatic product with an alkaline material to convert trinitrocresol material therein to a water soluble salt, and thereby form a purified nitroaromatic organic product and an aqueous by-product phase containing the alkali metal salt of trinitrophenolic material,

(b) separating the aqueous phase from the organic phase,

(c) contacting the aqueous phase containing water soluble trinitrocresol material with an acid, said acid being added in sufficient proportion to reduce the pH to a range from about 2–4.5;

(d) contacting the aqueous phase at reduced pH with hydrogen peroxide and a ferrous ion under conditions to effect oxidation of the trinitrocresol material to carbon dioxide, nitric acid and carboxylic acid; and

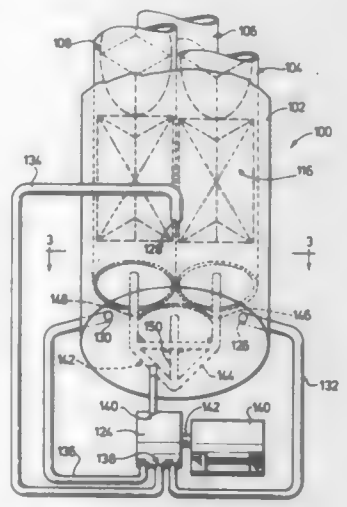
(e) disposing of said aqueous phase containing resultant oxidized trinitrocresolic material.

4,604,215

WET OXIDATION SYSTEM

Robert F. McCorquodale, West Hill, Canada, assignor to Kenox Corporation, Toronto, Canada

Filed Apr. 2, 1984, Ser. No. 595,821
Int. Cl.[4] C02F *11/08*
U.S. Cl. 210—762 16 Claims



1. A process for oxidizing an aqueous suspension of organic matter at elevated temperature and pressure by exposing the organic matter to an oxygen-containing gas in a reactor for a period sufficient to reduce chemical oxygen demand of the organic matter to a predetermined desired level, said reactor having a reactor core housing a static mixer vane arrangement and means for circulating said aqueous suspension of organic matter over said static mixer vane arrangement within said reactor core, said static mixer vane arrangement comprising an arrangement of vanes extending along a majority of and within said reactor core, said process comprising operating said reactor at said elevated temperature and pressure which promotes the oxidation in the aqueous medium of organic matter with minimal generation of steam, introducing an oxygen-contain-

ing gas into said aqueous suspension of organic matter; splitting, rearranging and combining the aqueous suspension of organic matter and bubbles of oxygen-containing gas by the aqueous suspension of organic matter and bubbles of oxygen containing gas over said arrangement of vanes within said reactor core to react said organic matter with said oxygen; withdrawing treated organic matter from said reactor.

4,604,216

DRILLING FLUIDS

Howard B. Irvin; G. Allan Stahl, and Earl Clark, all of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 435,175, Oct. 19, 1982. This application Jun. 11, 1984, Ser. No. 619,108

Int. Cl.[4] C09K *7/00*

U.S. Cl. 252—8.510 **37 Claims**

1. A method of preparing a composition suitable for use as a drilling fluid, comprising the steps of:

(a) copolymerizing a hydrophilic vinyl monomer selected from the group consisting of acrylic acid, methacrylic acid, other related monomers and mixtures of any two or more thereof with at least one hydrophobic vinyl monomer selected from the group consisting of acrylic acid esters, methacrylic acid esters, vinyl esters of saturated monocarboxylic acids having from 1 to 3 carbon atoms, and combinations of any two or more thereof under polymerization conditions in an inert low chain transfer organic liquid medium selected from the group consisting of n-hexane, cyclohexane and chlorofluorocarbons at a polymerization temperature and for a period of polymerization time sufficient to produce a copolymer having a weight average molecular weight in the range from about 100,000 to about 500,000;

(b) contacting said resulting copolymer in said inert, low chain transfer, organic liquid medium selected from the group consisting of n-hexane, cyclohexane and chlorofluorocarbons with an aqueous solution of sodium hydroxide which is present in a quantity sufficient to raise the pH of the subsequently dried copolymer salt in a polymer solution in water of at least about 1 weight percent concentration to a value in the range from about 5.3 to about 12 to produce the salt form of said resulting copolymer;

(c) drying the salt form of said resulting copolymer produced by step (b) to produce a dried copolymer salt;

(d) adding a quantity of the dried copolymer salt produced in accordance with step (c) to a quantity of a mixture comprising water and a clay substance suspended in said water; and

(e) mixing said dried copolymer salt, said water and said clay substance to produce a drilling fluid.

4,604,217

GELLED AQUEOUS COMPOSITIONS

Carl Lukach, and Shao-Tang Sun, both of New Castle County, Del., assignors to Hercules Incorporated, Wilmington, Del.

Filed Sep. 13, 1984, Ser. No. 650,386

Int. Cl.[4] E21B *43/26, 33/138*

U.S. Cl. 252—8.551 **16 Claims**

1. A gelled aqueous composition comprising fresh water or brine having a pH greater than 10 and

(a) a water thickening amount of (i) an anionic water soluble polymer selected from the group consisting of alkali metal salts of carboxymethyl cellulose, carboxymethyl hydroxyethylcellulose, carboxymethyl guar, carboxymethyl hydroxyethyl guar, carboxymethyl hydroxypropyl guar, xanthan gum and copolymers of sodium acrylate having a molecular weight of from about 50,000 to about 30,000,000 and from about 10% to about 90% acrylate content or (ii) a nonionic water soluble polymer selected from the group consisting of polyacrylamides having a molecular weight of from about 50,000 to about 30,000,000, polyacrylontrile having a molecular weight of from about 50,000 to about 30,000,000, polyvinylpyrrolidone having a molecular weight of from about 50,000 to about 30,000,000, copolymers of acrylamide having a molecular weight of from about 50,000 to about 30,000,000, hydroxyethyl cellulose, methyl cellulose, methylhydroxyethyl cellulose, ethylhydroxyethyl cellulose, hydroxypropyl hydroxyethyl cellulose, hydroxyethyl guar and hydroxypropyl guar, and

(b) a water soluble cationic poly(diallylamine)-epichlorohydrin resin having a molecular weight from about 100 to about 20,000,000 in an amount sufficient to cause a gel to form.

4,604,218

AQUEOUS ACID GELS AND USE THEREOF

Jeffrey C. Dawson, Katy, Tex., assignor to BJ-Titan Services Company, Houston, Tex.

Filed Mar. 28, 1985, Ser. No. 717,210

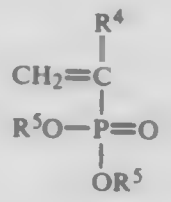
Int. Cl.[4] E21B *43/27*

U.S. Cl. 252—8.553 **4 Claims**

1. An aqueous acid gel useful in fracture acidizing of oil and gas wells, comprising:

an aqueous acid;

at least about 0.2 weight percent based upon the weight of aqueous acid of a copolymer of about 90 to 99 weight percent dialkyl diallyl ammonium halide, wherein the alkyl groups contain 1 to 4 carbon atoms, and about 1 to 10 weight percent of vinyl phosphonic acid of the formula



wherein R^4 is hydrogen or an alkyl radical containing 1 to 4 carbon atoms, R^5 is hydrogen or an alkyl radial containing 1 to 4 carbon atoms, and at least one of R^5 is hydrogen;

a cross-linking agent, present in a gelling amount, which is the reaction product of zirconium or titanium compounds with organic acids containing 1 to 12 carbon atoms, the cross-linking agent, calculated as ZrO_2 or TiO_2, being present in the range from 0.25 to 5.0 weight percent based on the weight of polymer; and

said gel further comprising a gel destabilizing amount of an acid soluble compound selected from the group consisting of compounds containing fluoride ions, alkali metal and alkaline earth metal phosphates and alkali metal and alkaline earth metal sulfates, said acid soluble compound being present in the range from about 1 to 10 weight percent, based on the weight of polymer.

4,604,219

METHOD OF PREPARING OVERBASED CALCIUM SULFONATES

Joanne R. Whittle, P.O. Box 1608, Port Arthur, Tex. 77641

Filed Apr. 25, 1985, Ser. No. 727,042

Int. Cl.[4] C10M *135/10*

U.S. Cl. 252—25 **5 Claims**

1. A process for preparing an overbased oil-soluble calcium sulfonate comprising in order:

(a) diluting a neutral calcium sulfonate with a light hydrocarbon solvent and a lower alkanol;

(b) mixing calcium oxide with the calcium sulfonate;

(c) heating the resulting mixture to about 100° F. to 170° F. at pressure of about 0 to 50 psig;

(d) introducing continuously over a time of about 60 to 240 minutes and at a uniform rate into the heated mixture gaseous carbon dioxide and liquid water in a molar ratio of water/calcium oxide of 0.1 to 1.2;

(e) adding a diluent oil;

(f) separating solids from the liquid; and
(g) stripping the solvent from the resulting liquid product.

4,604,220

ALPHA OLEFIN SULFONATES AS CONVEYOR LUBRICANTS

James H. Stanton, Grosse Ile, Mich., assignor to Diversey Wyandotte Corporation, Wyandotte, Mich.

Filed Nov. 15, 1984, Ser. No. 671,789
Int. Cl.[4] C10M *135/10*
U.S. Cl. 252—33.4 17 Claims

1. In a water-soluble lubricant concentrate of the type adapted to be admixed with water to form a lubricant for facilitating transportation of containers on a conveyor, the improvement comprising:
(a) C_{12} to C_{18} alpha olefin sulfonates and mixtures thereof in an amount ranging between about 5 to about 50 percent by weight of the concentrate; and
(b) a vehicle carrier for the sulfonate selected from the group consisting of water, a water-soluble solvent, or mixtures thereof present in an amount ranging between about 50 and about 95 percent by weight of the concentrate.

4,604,221

NITROGEN-CONTAINING ESTERS AND LUBRICANTS CONTAINING THEM

Charles P. Bryant, Euclid, and Harold M. Gerdes, Cleveland, both of Ohio, assignors to The Lubrizol Corporation, Wickliffe, Ohio

Continuation of Ser. No. 395,786, Jul. 6, 1982, abandoned. This application Apr. 3, 1985, Ser. No. 718,837
Int. Cl.[4] C16M *145/00*
U.S. Cl. 252—51.5 A 50 Claims

1. A nitrogen-containing ester consisting essentially of a carboxy-containing interpolymer, said interpolymer having a reduced specific viscosity of from about 0.05 to about 1 and being derived from at least two monomers, one of said monomers being a low molecular weight aliphatic olefin or styrene and the other of said monomers being an alpha, beta-unsaturated aliphatic acid, anhydride or ester thereof, said nitrogen-containing ester being substantially free of tritratable acidity and being characterized by the presence within its polymeric structure of each of the following groups which are derived from the carboxy groups of said interpolymer:
(A) a carboxylic ester group, said carboxylic ester group having at least eight aliphatic carbon atoms in the ester radical, and
(B) a carbonyl-polyamino group derived from a polyamino compound having one primary or secondary amino group and at least one monofunctional heterocyclic amino group,
wherein the molar ratio of carboxy groups of said interpolymer esterified to provide (A) to carboxy groups of said interpolymer neutralized to provide (B) is in the range of about 85:15 to about 99:1.

4,604,222

STABLE FERROFLUID COMPOSITION AND METHOD OF MAKING AND USING SAME

Lucian Borduz, Nashua, and Kuldip Raj, Merrimack, both of N.H., assignors to Ferrofluidics Corporation, Nashua, N.H.

Filed May 21, 1985, Ser. No. 736,388
Int. Cl.[4] H01F *1/25*
U.S. Cl. 252—62.52 30 Claims

1. A stable ferrofluid composition which comprises:
(a) an organic liquid carrier;
(b) magnetic particles in an amount sufficient to provide magnetic properties to the ferrofluid composition; and
(c) a dispersing agent in an amount sufficient to disperse and stabilize the magnetic particles in the organic liquid carrier, which dispersing agent comprises:
a cationic surfactant composed of a cationic positively charged head portion and a long-chain tail portion, the long-chain tail portion compatible with or soluble in the organic liquid carrier, to provide a stable ferrofluid composition having an electrical resistivity of about 10^6 ohms-cm or less.

4,604,223

HEAT STORAGE MATERIAL

Michio Yanadori, Hachiooji, and Seigo Miyamoto, Takahagi, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed May 18, 1984, Ser. No. 611,948
Claims priority, application Japan, May 20, 1983, 58-87411; Aug. 3, 1983, 58-141024
Int. Cl.[4] C09K *5/06*
U.S. Cl. 252—70 8 Claims

1. A heat storage material comprising magnesium chloride hexahydrate ($MgCl_2.6H_2O$), and a nucleator which is admixed with said magnesium chloride hexahydrate and which includes at least one substance selected from the group consisting of magnesium silicate (Mg_2SiO_4), sodium metasilicate (Na_2SiO_3), calcium silicate ($CaSiO_3.nH_2O$), silicon carbide (SiC), calcium carbonate ($CaCO_3$), and derivatives thereof, a total quantity of addition of said nucleator being in the range of 0.01 to 10 parts by weight, whereby said nucleator suppresses the degree of supercooling of the magnesium chloride hexahydrate while not causing decomposition of the magnesium chloride hexahydrate.

4,604,224

ZEOLITE CONTAINING HEAVY DUTY NON-PHOSPHATE DETERGENT COMPOSITION

Bao-Ding Cheng, Kendall Park, N.J., assignor to Colgate Palmolive Co., New York, N.Y.

Continuation of Ser. No. 702,863, Feb. 20, 1985, abandoned, which is a continuation of Ser. No. 659,863, Oct. 11, 1984, abandoned, which is a continuation of Ser. No. 530,428, Sep. 8, 1983, abandoned, which is a continuation of Ser. No. 32,749, Apr. 29, 1979, abandoned, which is a continuation of Ser. No. 785,473, Apr. 7, 1977, abandoned, which is a continuation of Ser. No. 640,794, Dec. 15, 1975, abandoned, which is a continuation-in-part of Ser. No. 467,688, May 7, 1974, abandoned. This application Jul. 8, 1985, Ser. No. 753,360
Int. Cl.[4] B01J *39/14;* C02F *1/42;* C11D *3/12, 11/00*
U.S. Cl. 252—91 1 Claim

1. The phosphate-free heavy duty synthetic organic detergent composition consisting of 9 percent sodium linear tridecylbenzene sulfonate, 1 percent fatty alcohol polyethoxy ethanol condensate having 14–15 carbon atoms in the fatty alcohol and 11 ethoxy groups in the polyethoxy ethanol moiety, 15 percent sodium silicate having an $Na_2O:SiO_2$ ratio of 1:2.35, 16 percent partially hydrated type 4A molecular sieve zeolite of about 6.4 to 8.3 microns in diameter, 16 percent sodium perborate tetrahydrate powder having a mesh size of from about 140 to 325 U.S. Standard Sieve Series, 1 percent sodium higher fatty acid soap prepared from a mixture of 4 parts by weight hydrogenated tallow oil and 1 part hydrogenated coconut oil, 0.5 percent sodium carboxymethyl cellulose, about 32 percent sodium sulfate, about 1 percent fluorescent brightener, about 1 percent of a mixture of washing dye, washing pigment, preservative and perfume, and about 6 percent moisture, said percents being weight percents relative to the total weight, wherein the sodium linear tridecylbenzene sulfonate, the sodium silicate, about 1 percent of the zeolite, the soap, the sodium carboxymethyl cellulose, the sodium sulfate, the brightener, the dye, the pigment and the preservative are in the form of spray-dried beads, the fatty alcohol polyethoxy ethanol condensate, and the perfume are absorbed into and coat the spray-dried beads, and about 15 percent of the zeolite and the sodium perborate tetrahydrate also are present as an overcoat on the spray-dried beads.

4,604,225

REFRACTORY OXIDE HOSTS FOR A HIGH POWER, BROADLY TUNABLE LASER WITH HIGH QUANTUM EFFICIENCY AND METHOD OF MAKING SAME

Yok Chen, Oak Ridge, Tenn., and Roberto Gonzalez, Madrid, Spain, assignors to The United States of America as represented by the Secretary of the Department of Energy, Washington, D.C.

Filed Jul. 3, 1985, Ser. No. 751,405
Int. Cl.[4] C09K *11/12*
U.S. Cl. 252—301.4 R 10 Claims

1. A high power laser host material formed of a refractory oxide crystal characterized by high quantum efficiency and high thermal stability with a substantially complete depletion of hydrogen and containing sufficient oxygen anion vacancies to produce only F^+ luminescence when optically excited

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4,604,226

AEROSOL CORROSION INHIBITORS

Philip L. Bartlett, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Mar. 22, 1985, Ser. No. 714,811
Int. Cl.[4] C09K *3/00;* A01N *25/06;* A61K *47/00*
U.S. Cl. 252—389 A 6 Claims

1. In an aerosol composition packaged in a tin-plated steel can containing an aqueous aerosol-dispersible medium and a propellant, the improvement which comprises the presence of the combination of:

15 wt % to 85 wt % of an amine neutralized phosphate ester selected from the group consisting of 2-ethylhexylamine salt of mixed mono- and di-isooctyl acid phosphate, tertiary C_{12-14} alkyl primary amine salt of mixed mono- and di-isooctyl acid phosphate, diethylamine salt of mixed mono- and di-butoxyethyl acid phosphate and 2-ethylhexylamine salt of mixed mono- and di-tridecyl acid phosphate, and

85 wt % to 15 wt % of a volatile amine selected from the group consisting of cyclohexylamine, morpholine, and isopropylamine

in an amount sufficient to prevent more than light corrosion to a tin-plated steel aerosol can containing said aerosol composition.

4,604,227

VAPOR PHASE AND SURFACE CONTACT RUST PREVENTIVE COMPOSITION

Joseph F. Anzenberger, Sr., New City, N.Y., assignor to Stauffer Chemical Company, Westport, Conn.

Filed Nov. 16, 1984, Ser. No. 672,043
Int. Cl.[4] C09K *3/00;* C23F *11/02, 11/16*
U.S. Cl. 252—389.2 2 Claims

1. A concentrate for imparting rust preventive properties to phosphate ester based functional fluids wherein the concentrate comprises an oil soluble calcium petroleum sulfonate ingredient, a liquid polyolester ingredient, and a vapor phase corrosion inhibiting amount of N-methylethanol amine.

4,604,228

CANDOLUMINESCENT MATERIAL AND ITS PREPARATION PROCESS

Anne-Marie Perroud, Meylan, and Alain Silvent, Grenoble, both of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Feb. 25, 1985, Ser. No. 705,006
Claims priority, application France, Mar. 2, 1984, 84 03304
Int. Cl.[4] F21H *3/00, 1/02;* H01M *2/10*
U.S. Cl. 252—492 10 Claims

1. A candoluminescent material comprising a mixture of finely divided oxides brought into the form of a net identical to a textile, wherein the molar composition of the oxide mixture is 75 to 90% zirconia, 5 to 20% yttrium oxide or calcium and yttrium oxides, 2 to 15% magnesia or magnesia and alumina, and 0.01 to 1% of one or more oxides selected from the group consisting of iron, manganese, praseodymium and cerium, and wherein when alumina is present, the amount of magnesia is at least 2%, and when calcium oxide is present, the amount of yttrium oxide is at least 4%.

2. The candoluminescent material of claim 1, wherein the molar composition of said oxide mixture is 75–90% zirconia, 5% yttrium oxide, 12% magnesia and 1% of a mixture of oxides of iron and cerium.

4. A process for the preparation of a candoluminescent material, comprising: impregnating a combustible textile material with a solution of zirconium, calcium or yttrium or a mixture thereof, aluminum or magnesium salts or a mixture thereof and one or more salts selected from the group consisting of iron, manganese, praseodymium, chromium and cerium, the concentration of the salts in the impregnation solution being such that it corresponds to obtaining a mixture of oxides having the following molar composition: 75 to 90% zirconia, 5 to 20% of yttrium oxide or calcium oxide and yttrium oxide, 2 to 15% of magnesia, or magnesia and alumina, and 0.01 to 1% of one or more oxides of iron, chromium, manganese, praseodymium and cerium, and subjecting the thus impregnated textile to combustion in order to eliminate the textile, thereby converting the salts into oxides distributed in the form of a net substantially corresponding to the original textile material.

4,604,229

ELECTRICALLY CONDUCTIVE FERROFLUID COMPOSITIONS AND METHOD OF PREPARING AND USING SAME

Kuldip Raj, Merrimack; Lucian Borduz, and Hanumaiah L. Gowda, both of Nashua, all of N.H., assignors to Ferrofluidics Corporation, Nashua, N.H.

Filed Mar. 20, 1985, Ser. No. 713,757
Int. Cl.[4] H01B *1/06*
U.S. Cl. 252—510 24 Claims

1. An electrically conductive ferrofluid composition, which composition consists essentially of:

(a) a nonvolatile liquid carrier;

(b) colloidal-size single domain magnetic particles in an amount sufficient to provide magnetic properties to the ferrofluid composition;

(c) colloidal-size electrically conductive carbon particles in an amount sufficient to provide electrical conductive properties to the ferrofluid composition; and

(d) a dispersing agent in an amount sufficient to disperse and stabilize the colloidal magnetic and electrically conductive carbon particles in the liquid carrier.

4,604,230

THERMALLY STABLE ADHESIVE

Jagadish C. Goswami, New City, N.Y.; Joseph A. Aurichio, Anderson, S.C., and Joseph R. Zingaro, Fairfield, Conn., assignors to Stauffer Chemical Company, Westport, Conn.

Filed Oct. 15, 1984, Ser. No. 660,593
Int. Cl.[4] H01B *1/02*
U.S. Cl. 252—514 97 Claims

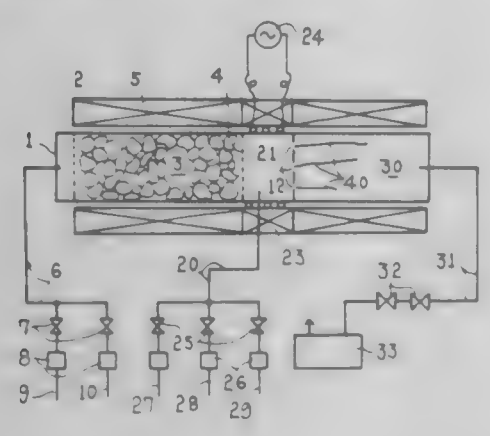
1. An adhesive composition comprising: (a) a soluble polyimide resin; (b) an appropriate solvent for said polyimide resin; (c) a tackifier; (d) an epoxy resin; (e) a hardener for said epoxy resin; (f) a catalyst which accelerates the curing of said epoxy resin; (g) a cross-linking agent reactive with the polyimide solvent of (b); (h) a catalyst which catalyzes the cross-linking reaction of (b) and (g); and (i) a filler material.

4,604,231

SILICON FIBER AND METHOD OF MAKING THE SAME

Shunpei Yamazaki, Tokyo, Japan, assignor to Semiconductor Energy Laboratory Co., Ltd., Setagaya, Japan

Filed Sep. 5, 1984, Ser. No. 647,544
Claims priority, application Japan, Sep. 5, 1983, 58-162795
Int. Cl.[4] H01B *1/06*
U.S. Cl. 252—518 **5 Claims**



1. A silicon fiber which has a structure expressed by $(SiF_2)_n$ where $n>1$.

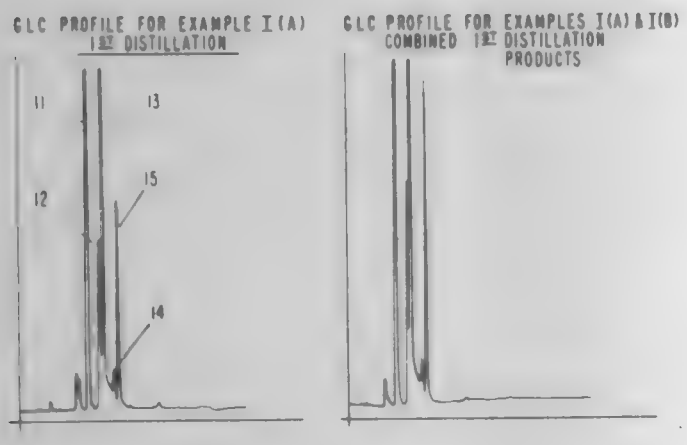
2. A silicon fiber according to claim 1, which has a region doped with a P- or N-type impurity.

4,604,232

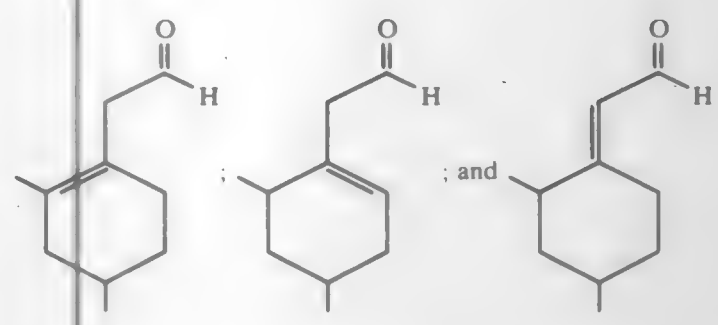
METHYL-SUBSTITUTED CYCLOHEXENYL ACETALDEHYDES, ORGANOLEPTIC USES THEREOF, PROCESSES FOR PRODUCING SAME AND INTERMEDIATES USEFUL THEREIN

Wilhelmus J. Wiegers, Red Bank, and Manfred H. Vock, Locust, both of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Filed Mar. 15, 1985, Ser. No. 712,170
Int. Cl.[4] C11B *9/00*
U.S. Cl. 252—522 R **3 Claims**

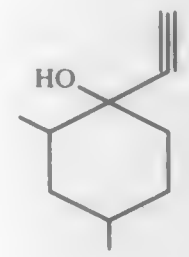


1. A process for augmenting or enhancing the aroma or taste of a consumable material selected from the group consisting of perfume compositions, colognes, perfumed articles, perfumed polymers, foodstuffs, chewing gums, medicinal products and toothpastes comprising the step of adding to said consumable material a product consisting essentially of a mixture of compounds having the structures:

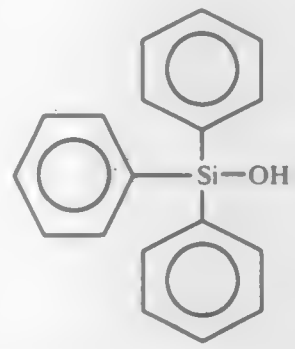


; ; and

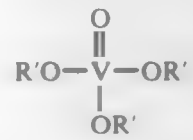
prepared according to the process of reacting the compound having the structure:



in the presence of a catalyst consisting essentially of triphenyl silanol having the structure:



and a vanadium trialkoxy oxide having the structure:



wherein R′ represents n-propyl or isopropyl.

4,604,233

THICKENED AQUEOUS HYDROCHLORIC ACID COMPOSITION FOR DESCALING, OR TREATMENT OF SUBTERRANEAN FORMATIONS

Walter J. M. Rootsaert, and Carolus H. van der Loo, both of Badhuisweg, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Continuation of Ser. No. 564,444, Dec. 22, 1983, abandoned. This application Feb. 11, 1985, Ser. No. 700,073
Claims priority, application United Kingdom, Dec. 22, 1982, 8236481
Int. Cl.[4] C02F *5/10*; C23F *11/00*; C23G *1/02*
U.S. Cl. 252—558 **9 Claims**

1. A thickened aqueous hydrochloric acid composition comprising

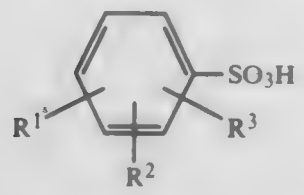
(a) 5 to 15%w hydrogen chloride,

(b) an alcohol ethoxylate of the formula

$$R\text{—}O\text{—}(CH_2\text{—}CH_2\text{—}O)_nH$$

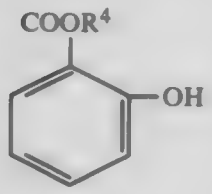
wherein R is a $C_{8\text{-}18}$ alkyl group and n has an average value in the range 3 to 15, provided that the $(CH_2\text{—}CH_2\text{—}O)_n$ moiety constitutes 50 to 67%w of the alcohol ethoxylate,

(c) an alkyl aryl sulfonic acid of the formula



wherein R^1 is a C_{8-13} linear alkyl chain and R^2 and R^3 are independently hydrogen atoms or methyl groups, the combined concentration of (b) and (c) being in the range 5 to 12%w, the relative weight proportions of (b) and (c) being in the range 45 to 65% of (b) to 55 to 35% of (c), and

(d) 0.25 to 1%w of a salicylate of the formula



where R^4 is a C_{1-4} alkyl or a benzyl group.

4,604,234

PROTEIN HAVING CELL GROWTH STIMULATING ACTION, COMPOSITION THEREOF AND METHOD FOR PRODUCING THE SAME

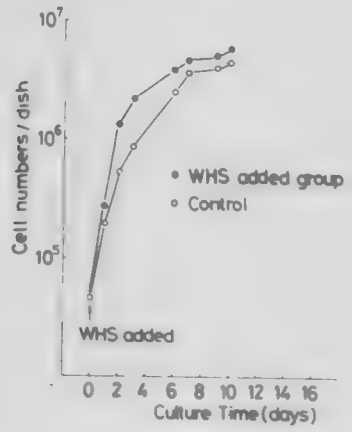
Setsuro Fujii, Toyonaka; Nobumoto Chikazawa, Nara; Teruo Arima, Amagasaki, and Masakazu Fukushima, Hirakata, all of Japan, assignors to Sanwa Kagaku Kenyusho Co., Ltd., Nagoya, Japan

Filed Feb. 28, 1984, Ser. No. 584,335

Claims priority, application Japan, Jun. 30, 1983, 58-119863

Int. Cl.⁴ C07K *15/04;* **C12P** *21/00;* **A61K** *37/00*

U.S. Cl. 514—2 **30 Claims**



1. A protein having cell growth stimulating activity, said protein selected from those obtained from a culture of a microorganism selected from the group consisting of *Staphylococcus epidermidis, Bacillus subtilis, Streptococcus faecalis, Serratia marcescens, Escherichia coli, Salmonella enteritidis,* and *Proteus vulgaris,* the protein being characterized as follows:

(a) Molecular weight in the range of 5,000–12,000, when said molecular weight is calculated on the basis of a calibration curve plotting the relationship between the molecular weight and an amount eluted by high performance liquid chromatography using as marker proteins, thioglobin (M.W. 670,000), bovine γ-globulin (M.W. 158,000), fowl ovalbumin (M.W. 44,000), equine myoglobulin (M.W. 17,000), and vitamin B-12 (M.W. 1,350);

(b) Ultraviolet absorption at 278 nm;

(c) Infrared absorption spectrum with dominant peaks at 1300, 1550, and 1630 cm^{-1};

(d) Isoelectric point in the range of 4.0–6.6;

(e) Soluble in water and insoluble in methanol, ethanol, acetone and ether;

(f) Appears as a grayish white powder in the lyophilized state;

(g) Positive for the following color reactions; Xanthoprotein, Pauli, Sakaguchi, Hunter, Sullivan, Hopkins-Cove, nitrosonaphthol, Millon, Neubauer-Road, and Libermann; and

(h)

Amino Acid	mol/M
Aspartic Acid	4.25–14.33
Glutamic Acid	4.76–21.35
Glycine	3.68–10.04
Valine	3.05–8.97
Alanine	3.51–18.09
Threonine	2.20–5.69
Serine	2.01–5.14
Cystine	0.00–0.40
Methionine	0.79–2.73
Isoleucine	2.34–7.97
Leucine	2.70–8.70
Tyrosine	0.39–3.17
Phenylalanine	0.79–3.20
Lysine	2.22–8.80
Histidine	0.54–1.35
Arginine	0.65–4.83
Proline	2.63–5.37
Tryptophan	0.25–0.70

said protein exhibiting cell growth stimulating activity in a pH range between 4–10; and being substantially free of nucleoside phosphotransferase.

4,604,235

PURIFICATION OF MONOCLONAL ANTIBODIES

Michael Flashner, Easton, Pa., assignor to J. T. Baker Chemical Company, Phillipsburg, N.J.

Filed May 23, 1984, Ser. No. 613,248

The portion of the term of this patent subsequent to Sep. 4, 2001, has been disclaimed.

Int. Cl.⁴ A61K *39/395;* **C07K** *3/20, 15/06*

U.S. Cl. 530—387 **5 Claims**

1. A method of obtaining essentially homongeneous monoclonal antibody type IgM from a sample of mouse ascites fluid containing said monoclonal antibody which comprises separating and recovering said monoclonal antibody from said sample by employing liquid chromatographic means wherein the chromatographic packing consists essentially of particulate silica gel having an average particle diameter of from about 3 to about 40 microns and an average pore size of from about 50 to about 1000 Angstrom units to which polyethylenimine functions are bound in covalently bound non-crosslinked form or in adsorbed crosslinked form.

4,604,236

CALCITONIN ANALOGS

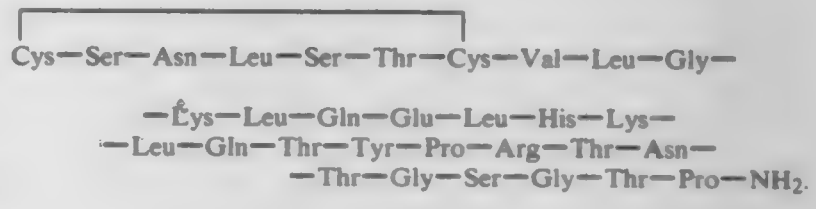
Ronald C. Orlowski, 140 Pueblo Ct., Frankfort, Ill. 60423, and Jay K. Seyler, 581 W. Drummond Dr., Bourbonnais, Ill. 60919

Filed Mar. 18, 1985, Ser. No. 713,156

Int. Cl.⁴ C07K *7/36*

U.S. Cl. 530—307 **6 Claims**

1. The peptide having the structure:



4,604,237

DES-21-THREONINE-CALCITONIN

Ronald C. Orlowski, Frankfort; Jay K. Seyler, Bourbonnais, and Glenn L. Stahl, Bradley, all of Ill., assignors to Armour Pharmaceutical Company, Tarrytown, N.Y.

Filed Nov. 20, 1984, Ser. No. 673,300
Int. Cl.[4] C07K *7/36*
U.S. Cl. 530—307 7 Claims

1. A peptide having the structure:

Cys—Ser—Asn—Leu—Ser—Thr—Cys—Val—Leu—Gly—
—Lys—Leu—Ser—Gln—Glu—Leu—His—Lys—Leu—Gln—
—Tyr—Pro—Arg—Thr—Asn—Thr—Gly—Ser—Gly—Thr—
—Pro—NH_2: Salmon,

Cys—Ser—Asn—Leu—Ser—Thr—Cys—Val—Leu—Gly—
—Lys—Leu—Ser—Gln—Glu—Leu—His—Lys—Leu—Gln—
—Tyr—Pro—Arg—Thr—Asp—Val—Gly—Ala—Gly—Thr—
—Pro—NH_2: Eel, or

Cys—Gly—Asn—Leu—Ser—Thr—Cys—Met—Leu—Gly—
—Thr—Tyr—Thr—Gln—Asp—Phe—Asn—Lys—Phe—His—
—Phe—Pro—Gln—Thr—Ala—Ile—Gly—Val—Gly—Ala—
—Pro—NH_2: Human.

4,604,238

ANALOGS OF CALCITONIN

Ronald C. Orlowski, Frankfort; Jay K. Seyler, Bourbonnais, and Glenn L. Stahl, Bradley, all of Ill., assignors to Armour Pharmaceutical Company, Tarrytown, N.Y.

Filed Dec. 10, 1984, Ser. No. 680,195
Int. Cl.[4] C07K *7/36*
U.S. Cl. 530—307 5 Claims

1. The peptide having the structure:

Cys—Gly—Ser—Leu—Ser—Thr—Cys—Gly—Leu—Gly—
—Lys—Leu—Ser—Gln—Glu—Leu—His—
—Lys—Leu—Gln—Thr—Pro—Arg—Thr—Asn—
—Thr—Gly—Ser—Gly—Thr—Pro—NH_2.

4,604,239

ANTIBIOTICS

Karl H. Michel, and Ralph E. Kastner, both of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 662,464, Oct. 18, 1984, Pat. No. 4,537,770, which is a continuation of Ser. No. 443,496, Nov. 22, 1982, abandoned, which is a continuation-in-part of Ser. No. 361,301, Mar. 24, 1982, abandoned. This application Jun. 11, 1985, Ser. No. 743,233
Int. Cl.[4] C07K *7/50*
U.S. Cl. 530—317 1 Claim

1. The A41030 complex of antibiotics which is produced by cultivating *Streptomyces virginiae* NRRL 12525, *Streptomyces virginiae* NRRL 15156 or an A41030-producing mutant or variant of *S. virginiae* NRRL 12525 or NRRL 15156 under submerged aerobic fermentation conditions until a substantial amount of antibiotic activity is produced.

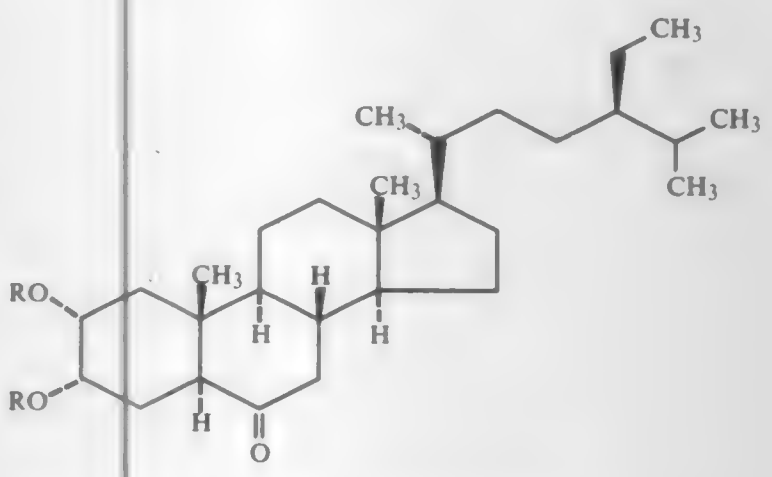
4,604,240

HOMOBRASSINOLIDE, AND ITS PRODUCTION AND USE

Kenji Mori, Tokyo; Tetsuo Takematsu, Tochigi; Masayuki Sakakibara, Chiba, and Hiromichi Oshio, Osaka, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Continuation of Ser. No. 443,018, Nov. 19, 1982, abandoned. This application Dec. 11, 1984, Ser. No. 680,471
Claims priority, application Japan, Nov. 24, 1981, 56-188818
Int. Cl.[4] C07J *71/00*
U.S. Cl. 540—114 3 Claims

2. A compound of the formula:



wherein R is a hydrogen atom or an acyl group.

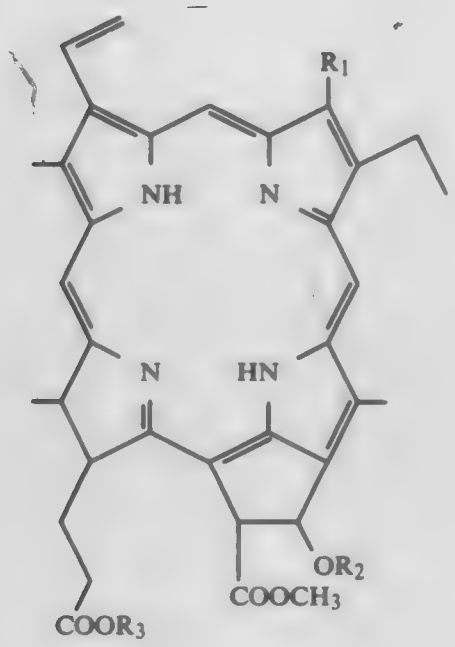
4,604,241

9-DESOXO-9-HYDROXY-PHEOPHORBIDE DERIVATIVES AND ALKALINE SALTS THEREOF

Isao Sakata, 1766-4, Obira, Kasaoka City, Okayama Pref.; Susumu Nakajima, 4-4-34, Gojo, Midorigaoka, Asahikawa City, Hokkaido; Koichi Koshimizu, 385-10 Horensan soinishi cho, Nara City, Nara Pref.; Natsuki Samejima, A-42, Idai Shukusha, 3-3 Nijo, Midorigaoka, Asahikawa Ci; Kazumi Inohara, 3-9-7 Mikado cho, Fukuyama City , Hiroshima Pref., and Hiroyuki Takata, 2098 Satomi, Satosho cho, Asakuchi gun, Okayam Pref., all of Japan

Filed Oct. 24, 1984, Ser. No. 664,375
Claims priority, application Japan, Oct. 24, 1983, 58-198934
Int. Cl.[4] C07D *487/22*
U.S. Cl. 540—145 1 Claim

1. 9-desoxo-9-hydroxy-pheophorbide derivatives and alkaline salts thereof represented by the general formula:



wherein
R_1 represents CH_3 or CH_2OH,
R_2 represents H or acetyl, and
R_3 represents H or an alkali metal atom.

4,604,242

PREPARATION OF DIALIPHATIC, DIALICYCLIC, OR DI(ARYL-SUBSTITUTED ALIPHATIC) CARBONATES

A. Dale Harley; Jerald L. Curnutt, and David T. Doughty, all of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Mar. 19, 1984, Ser. No. 590,596
Int. Cl.⁴ C07C *68/00*
U.S. Cl. 558—260 **8 Claims**

1. A process for the preparation of a symmetrical or unsymmetrical dihydrocarbyl carbonate which comprises contacting an aliphatic, cycloaliphatic or di(aryl-substituted aliphatic)alcohol or mixtures thereof with carbon monoxide and oxygen in the presence of between about 0.1 and 10 percent by weight based on the alcohol of bis((2,4-pentanedianato)copper (II) methoxide) and a cocatalytic amount of a basic nitrogen-containing coordination compound selected from the group consisting of a trialkylamine, pyridine, a substituted pyridine, imidazole, ammonia or acetonitrile, under conditions such that a symmetrical or unsymmetrical dihydrocarbyl carbonate is prepared.

4,604,243

ARYLATION OF OLEFINS

Robert I. Davidson, Baton Rouge, La., assignor to Ethyl Corporation, Richmond, Va.

Filed Jul. 25, 1985, Ser. No. 758,818
Int. Cl.⁴ C07C *121/66, 69/612*
U.S. Cl. 558—388 **18 Claims**

1. In a process for adding halogen and an aryl group to the double bond of an olefin by reacting an arylamine with the olefin in the presence of an alkyl nitrite, a copper catalyst, and an inert polar organic solvent, the improvement which comprises conducting the reaction in the presence of at least one equivalent of a hydrogen halide and employing as the catalyst a catalytic amount of a copper catalyst having the copper in an oxidation state below +2.

4,604,244

PROCESS FOR MAKING ADIPONITRILE PRECURSORS

James D. Burrington, Richmond Hts.; Robert K. Grasselli, Aurora, both of Ohio, and Craig T. Kartisek, Eugene, Oreg., assignors to The Standard Oil Company, Cleveland, Ohio

Continuation-in-part of Ser. No. 455,081, Jan. 3, 1983, abandoned. This application Apr. 23, 1984, Ser. No. 603,257
Int. Cl.⁴ C07C *120/00, 120/14, 121/30*
U.S. Cl. 558—320 **8 Claims**

1. A process which comprises contacting a reactant of the formula:

$$H-(CH_2)_a-(CH=CH)-(CH_2)_bX$$

with oxygen and ammonia to thereby form a product of the formula:

$$NC-CH=CH-CH=CH-X$$

wherein
X is —CN or —$CONH_2$ and each of a and b are zero or an integer from 1 to 3 such that a+b=3, and
wherein said contacting of said reactants is effected while said reactants (1) are in the gaseous phase and are in contact with a solid oxidation catalyst which is effective to catalyze the ammoxidation of propylene to acrylonitrile, and (2) are in the temperature range from 250° to 650° C.

7. A process which comprises:
(a) reacting propylene with an enophile of the formula:

$$CH_2=CH-X$$

wherein
X is —CN or —$CONH_2$ to form a cyano or amidoalkene intermediate of the formula:

$$CH_2=CH-(CH_2)_3-X, \text{ and}$$

(b) contacting and reacting said intermediate with molecular oxygen and ammonia to thereby form a product of the formula:

$$NC(CH=CH)_2-X$$

wherein
X is —CN or —$CONH_2$, and wherein said contact is effected while the reactants (1) are in the gaseous phase and are in contact with a solid oxidation catalyst which is effective to catalyze the ammoxidation of propylene to acrylonitrile, and (2) are in the temperature range from 250° to 650° C.

4,604,245

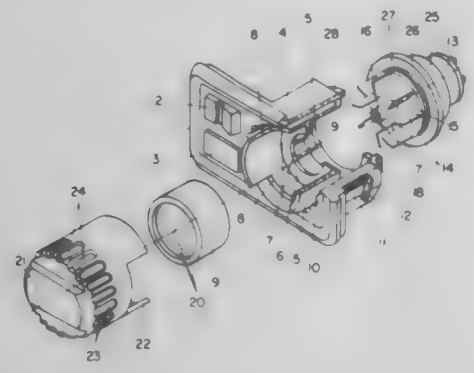
PERFUME DISPENSING DEVICE

D. Arturo M. Gutierrez, Paseo Pinter Rosales, 38, 28008-Madrid, Spain

Filed May 3, 1985, Ser. No. 730,323
Claims priority, application Spain, May 18, 1984, 279.366
Int. Cl.⁴ B01F *3/04*
U.S. Cl. 261—26 **8 Claims**

1. Panellable perfume dispenser for cars of timed and/or manual operation, insertable in a housing provided for such purpose in the front panel or dashboard of a car, characterized because it comprises a structure formed by a plate or front panel, with its perimetric border rounded and increased frontally in weight, on the surface of which have been cut, on one part, sundry orifices in which are housed respectively a switch and a pulsator, and on the opposite part, an orifice of greater diameter from the edge of which starts towards the interior an extension which forms a cylindrical housing provided with an internal wall, parallel to that of the cylindrical extension and separated therefrom, divided into two zones by an intermediate transversal wall provided with a broad central orifice, so that in the zone of the internal wall in the rear of the aforesaid

transversal wall have been cut two broad rectangular notches in diametrically opposite positions, whereas the zone of the



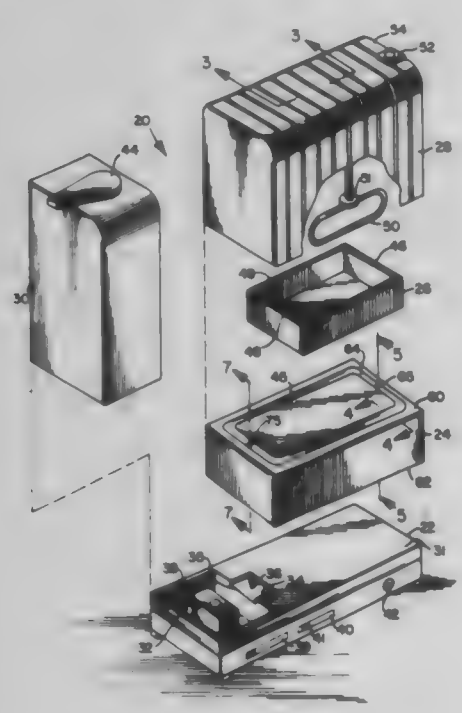
internal wall in front of said transversal wall likewise has two broad rectangular notches in diametrically opposite positions.

4,604,246

COMBINATION HUMIDIFIER/WATER DISTILLER

Pil Y. Choe, Dunellen, N.J., assignor to Prodel Corp., Dunellen, N.J.

Filed Dec. 21, 1984, Ser. No. 685,033
Int. Cl.[4] B01F *3/04*
U.S. Cl. 261—71 **16 Claims**



1. A combination humidifier/water distiller apparatus comprising:

a container for holding tap water;

a heater for heating tap water in the container to a vaporized state;

a condenser for the condensation of vaporized tap water into distilled water;

a receptacle for the collection of said distilled water and including means for removing said distilled water therefrom;

nebulizer means for converting liquid into a fine spray;

said container, heater, condenser, receptacle and nebulizer means assembled together in an integrated, utilized, compact module; and

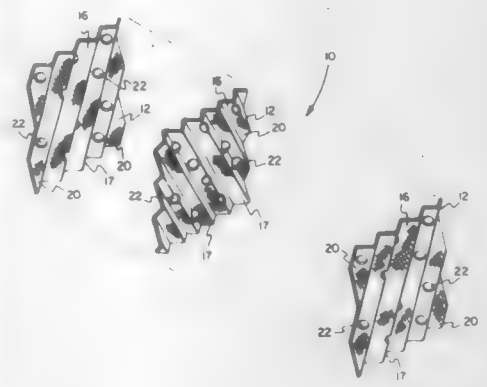
passage means associated with said nebulizer means and said receptacle for the supply of distilled water from said receptacle to said nebulizer means so that distilled water is nebulized to the fine spray, said nebulizer means including means for delivering said fine spray to the atmosphere to thereby humidify the surrounding air.

4,604,247

TOWER PACKING MATERIAL AND METHOD

Gilbert Chen, Farmers Branch; B. Layton Kitterman; Donald L. Glaspie, both of Dallas, and John R. Axe, Arlington, all of Tex., assignors to Glitsch, Inc., Dallas, Tex.

Continuation of Ser. No. 506,534, Jun. 21, 1983, abandoned.
This application Apr. 19, 1985, Ser. No. 725,143
Int. Cl.[4] B01F *3/04*
U.S. Cl. 261—94 **18 Claims**



9. An improved method of improving vapor liquid contact within a process tower of the type comprising the steps of providing a generally vertical tower having means for ingressing the flow of vapor at the lower region thereof and means for ingressing a stream of liquid at the upper region thereof and a series of layers of grid sections comprising generally vertically oriented corrugated sheets of unexpanded material with the corrugations of adjacent sheets being inclined one to the other between said liquid and vapor ingressing means for receiving the descending flow of liquid and the ascending flow of vapor concomitantly therethrough, said improvement comprising the steps of providing said corrugated sheets with a plurality of parallel, elongate, spaced apart slits formed through solid surfaces of each sheet with the total area of all of said slits being smaller than the total area of said solid surfaces, providing said slitted sheets with a plurality of relatively larger apertures spaced apart by said solid surfaces for effecting the flow of vapor and liquid therealong and within the corrugations of said adjacent sheets for enhancing the vapor liquid interaction, and the further step of orienting the longitudinal axes of said elongate slits in said sheets to extend generally transversely to said vapor liquid flow and said corrugations for imparting turbulence thereto along with a transverse spreading effect to the liquid flowing down and through said sheets.

15. A tower packing comprising a plurality of sheets of unexpanded material, a plurality of corrugations formed on each sheet, said sheets being disposed in face-to-face contact with the corrugations of each sheet extending at an angle to the corrugations of its adjacent sheets to define flow paths for a descending liquid and an ascending vapor, a plurality of relatively large orifices formed through and spaced apart by solid surfaces of each sheet for permitting passage of said liquid and vapor therethrough to distribute the liquid over said sheets and equalize the pressure of said vapor, and a plurality of relatively small elongated slits formed through the solid surfaces of each of said sheets, the slits in each sheet being spaced longitudinally from each other in parallel rows with the longitudinal axes of said slits extending transversely across said corrugations, the total area of all of said slits being smaller than the total area of said solid surfaces, a portion of each sheet adjacent each slit being displaced from the plane of said sheet, to enhance vapor-liquid contact along said sheets.

4,604,248

CHEMICAL CASE BOND SYSTEM WITH AZIDO COMPOUND BONDING

Henry C. Dehm, Salt Lake City, Utah, assignor to Hercules Incorporated, Wilmington, Del.

Filed Jan. 31, 1985, Ser. No. 697,094
Int. Cl.[4] C06B *21/00*
U.S. Cl. 264—3.1 32 Claims

1. A method of bonding a solid propellant to the inner surface of an elastomeric insulator carried by a rocket motor chamber, said solid propellant being solidified by crosslinking propellant ingredients of said solid propellant with a polyfunctional propellant crosslinker dispersed throughout said ingredients, said method comprising

(a) applying a thin film to said inner surface, said film comprising an azido composition selected from the group consisting of (i) a polyfunctional azido compound or polymer that additionally has crosslinker reactive functionality that is reactive with said polyfunctional propellant crosslinker, (ii) a polyazido compound or polymer and a polyfunctional graftable compound or polymer having (a) functionality that is reactive with azido functionality of said polyazido compound or polymer as well as (b) crosslinker reactive functionality that is reactive with said polyfunctional propellant crosslinker and (iii) a combination of (i) and (ii);

(b) exposing said film to sufficient energy in the form of heat or light or a combination thereof to cause azido functionality of said azido compositions to react with said insulator and graft said crosslinker reactive functionality to the surface of said elastomeric insulator;

(c) placing uncured propellant that contains said propellant crosslinker and solidifies into said solid propellant upon curing thereof in contact with said grafted surface applied in (b);

(d) curing said propellant such that said propellant crosslinker reacts with said functionability that is reactive therewith and bonded to said insulator surface thereby bonding said insulator to said solid propellant binder polymer.

4,604,249

METHOD OF PRODUCING COMPOSITE ARMOR PLATE BODIES

Hartmut Luhleich, Düren, and Francisco J. Dias, Jülich, both of Fed. Rep. of Germany, assignors to Kernforschungsanlage Jülich GmbH, Jülich, Fed. Rep. of Germany

Continuation of Ser. No. 233,474, Feb. 11, 1981, abandoned.
This application Nov. 16, 1984, Ser. No. 672,170
Claims priority, application Fed. Rep. of Germany, Feb. 15, 1980, 3005586
Int. Cl.[4] C04B *35/34*
U.S. Cl. 264—29.5 3 Claims

1. A method of making armor plate comprising the steps of:

making a porous body of silicon carbide in the shape of an armor plate element, having open and through-penetrating pores therein, by preparing a deformable mass of particles of silicon and carbon, all coated with an organic binder by suspending and mixing particles of silicon and particles of carbon in a binder solution from which the binder is thereafter precipitated by introducing the suspension into a liquid serving to precipitate the binder on the particles as an even coating, molding said mass into armor plate shape by extrusion or in a low pressure diepress, coking the binder of the molded body at a temperature in the range from 800° C. to 1000° C.; raising the temperature to a temperature in the range from 1400° C. to 1600° C. to form silicon carbide and cooling the body thus produced;

evacuating the pores of said body in a pressure vessel, then

soaking said body in a melt of a metallic material selected from the group consisting of steel and steel alloys under pressure of at least 1 bar to fill said pores with said metallic material, and then

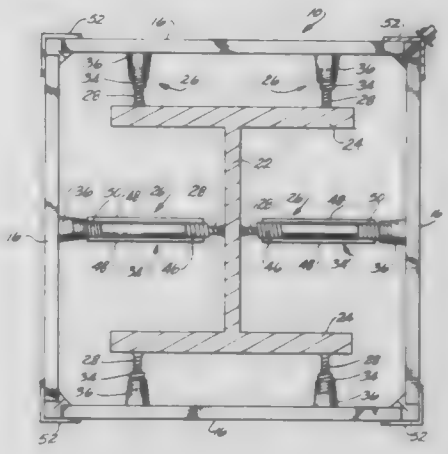
cooling said body and thereby solidifying the metallic material.

4,604,250

COLUMN FORM SUPPORT SYSTEM AND METHOD

Fred L. Ecker, Sierra Madre, Calif., assignor to Concrete Systems, Inc., Azusa, Calif.

Filed Oct. 24, 1984, Ser. No. 664,481
Int. Cl.[4] B28B *23/18*
U.S. Cl. 264—35 2 Claims



1. A form about an upstanding column for receiving concrete including:

interconnected form panels disposed about said column to define a form to receive concrete; and

means for supporting and adjustably spacing the panels about the column without attachment thereto, the supporting means including,

at least one stud affixed to and projecting from the column to support a corresponding form panel, and

a bearing member removably coupled to and adjustably positionable at the end of each stud, each bearing member having a base spaced from the column, the bearing member bases at each side of the column arranged to be coplanar,

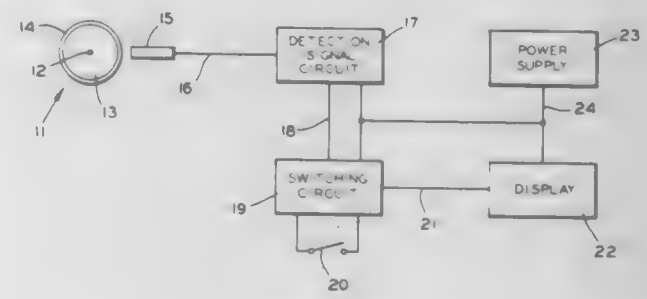
said form panels bearing against the bearing member bases to support the panels in the planes defined by said bases.

4,604,251

METHOD AND APPARATUS FOR INDICATING DIMENSIONAL RELATIONSHIPS IN PLASTIC MATERIAL FEEDING DEVICE DURING OPERATION

Jeffrey A. Kuhman, 8905 Hawthorne Blvd., Tecumseh, Mich. 49286

Filed Jun. 14, 1985, Ser. No. 745,297
Int. Cl.[4] G01R *33/12*
U.S. Cl. 264—40.2 12 Claims



1. An apparatus for indicating the dimensional relationship between an external surface of a flight on a screw and a predetermined reference point on an inner surface of a barrel in a plastic material feeder comprising:

an eddy current sensing probe positioned in an aperture formed in a side wall of a barrel of a plastic material feeder, said probe being located adjacent a predetermined reference point on an inner surface of the barrel and adja-

cent the path of travel of an outer edge of a flight on a screw in the barrel;

a detection signal circuit connected to said probe for exciting said probe and for generating an output signal with a magnitude proportional to the distance between said probe and the outer edge of the flight; and

means responsive to said output signal for generating an indication of the distance between the outer edge of the flight and said predetermined reference point.

4,604,252

PROCESS FOR THE PRODUCTION OF A PROFILE FROM DRY POWDER MATERIAL ALONG WITH A CONTRIVANCE FOR THIS PURPOSE

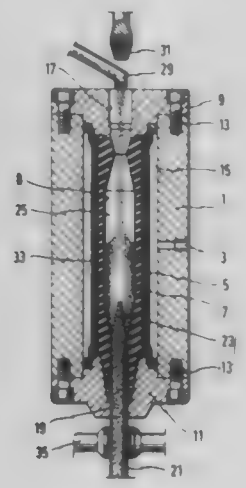
Anton Stigler, Am Rad 5½ , 8240 Berchtesgaden, Fed. Rep. of Germany

Filed May 14, 1984, Ser. No. 610,195

Claims priority, application Fed. Rep. of Germany, Jun. 13, 1983, 3321285

Int. Cl.⁴ B28B *3/00*

U.S. Cl. 264—120 **4 Claims**



1. In a process for the production of a profile structure from dry powder material selected from the group consisting of ceramic powder and powdered metals by means of a radially flexible elastic mold form surrounding, in sleeve fashion, a mold cavity with the radially flexible form being capable of being placed under external pressure radially inwardly over its entire length, and thereby radially compact the powder material disposed in the mold cavity between the inner surfaces of the flexible form; the process being characterized in that the production of a profile structure of unlimited length is accomplished by preparation of segments and, additionally, that the dry powder material is introduced into a mold form of constant diameter at the outlet end with the diameter being up to the profile diameter and with the first end being restricted by the presence of the previously compacted profile segment and with the opposed end of the flexible form having inner surfaces mutually converging toward a top feed supply opening and wherein the process includes the steps of:

(a) filling the said mold cavity with a uniform and measured amount of the dry powder material;

(b) closing the top supply opening with the converging surfaces providing a tapered trailing zone for said powder fill material;

(c) compacting the dry powder material therein while the trailing end of the previously compacted profile structural section is held firmly clamped adjacent the outlet end of the said mold form, the arrangement being such that because of the convergence of the elastic form toward the feed supply opening, the tapered end of the previously compacted profile is covered over by the radially compacted dry powder material and, thereby, is joined therewith; and

(d) the profile segment being unloaded from the flexible form and with the newly compacted profile section being advanced to the extent that that certain region of the flexible form surrounding the converging portion of the mold cavity surrounds the tapered end of the previously compacted profile section.

4,604,253

PROCESS FOR FORMING PLASTICIZED POLYVINYL BUTYRAL INTERLAYERS

I. Luis Gomez, Longmeadow, Mass., assignor to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 523,305, Aug. 15, 1983, Pat. No. 4,574,136. This application Feb. 27, 1985, Ser. No. 706,052

Int. Cl.⁴ B29B *11/10, 11/02*

U.S. Cl. 264—211 **5 Claims**

1. In a process for the preparation of polyvinyl butyral sheet by blending polyvinylbutyral with a plasticizer which is a multiester of an alcohol having 2 to 4 hydroxyl groups and a C_{16} to C_{20} unsaturated fatty acid having a hydroxyl group attached to the acid molecule and extruding the blend to form a sheet, the improvement which comprises adding to the blend a monoester of a glycol and said C_{16} to C_{20} unsaturated fatty acid, the ratio of said monoester to said multiester being between about 1:1 to about 5:1.

4,604,254

BUTTERFLY VALVE

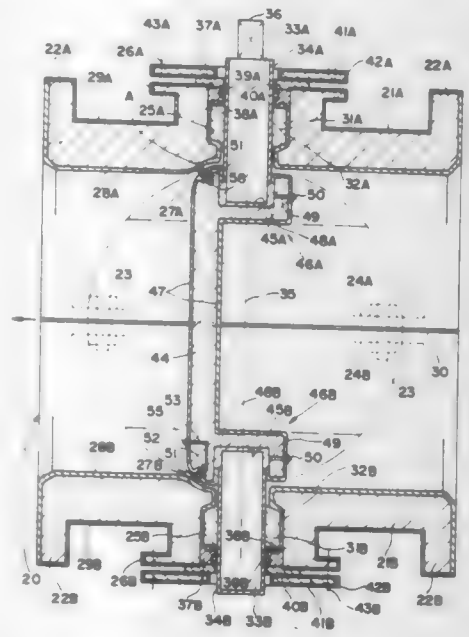
Masahiko Yamamoto, Nishinomiya; Yoshinori Nishino, Yamato-takada; Tadayoshi Uda, Izumi; Yoshiteru Sonoda, Habikino, and Toshio Suyama, Osaka, all of Japan, assignors to Hitachi Zosen Corporation and Jujikin International, Inc., Osaka, Japan

Filed May 20, 1985, Ser. No. 735,858

Claims priority, application Japan, May 23, 1984, 59-105156; May 23, 1984, 59-76228[U]; May 23, 1984, 59-76229[U]; May 23, 1984, 59-76230[U]; May 23, 1984, 59-76231[U]; May 23, 1984, 59-76232[U]; May 23, 1984, 59-76233[U]

Int. Cl.⁴ F16K *1/22;* B28B *7/22*

U.S. Cl. 264—254 **14 Claims**



1. A method of fabricating a butterfly valve comprising a substantially cylindrical casing (**20**) having an inner circumferential surface formed with an annular valve seat (A), a pair of stem bores (**25A, 25B**) formed through said casing (**20**) at diametrically opposite locations thereof, valve stem means (**33A, 33B**) rotatably extending through said pair of stem bores (**25A, 25B**), a valve disk (**44**), stem mount means (**46A, 46B**) on said valve disk (**44**) attaching said valve disk (**44**) to the valve stem means (**33A, 33B**), the valve disk (**44**) having an outer peripheral edge portion opposed in its entirety to the valve seat (A) when the valve disk (**44**) is in its closed position, an annular groove (**52**) in the outer peripheral portion of said valve disk (**44**), and an annular valve seal (**51**) partially fitted in said annual groove (**52**), a resin injection channel (**53**) with which

the annular groove (52) is in communication, said valve seal (51) being radially deformed and anchored in the annular groove (52) by first resin (58) injected into the groove (52) through the resin injection channel (53) at a predetermined pressure so that the valve seal (51) is pressed uniformly against the valve seat (A) when the valve disk (44) is in its closed position, wherein the method is characterized in that,

(a) prior to introducing the valve disk (44) into the casing (20) and inserting the valve stem means (33A, 33B) through the stem bores (25A, 25B) of the casing (20), a dummy stem (64) having a diameter equal to the diameter of the valve stem means (33A, 33B) is inserted through the stem bores (25A, 25B),

(b) a bearing ring (31A, 31B) is fitted on the dummy stem (64) and placed in each stem bore (25A, 25B),

(c) the dummy stem (64) is adjusted to a predetermined position relative to the casing (20) with a clearance formed between the bearing ring (31A, 31B) and the stem bore (25A, 25B),

(d) the clearance is filled with second resin (32A, 32B) injected under pressure so that the bearing ring (31A, 31B) is anchored in place upon curing of the second resin (32A, 32B),

(e) the dummy stem (64) is removed from the anchored bearing ring (31A, 31B),

(f) the valve disk (44) is introduced into the casing (20),

(g) the valve stem means (33A, 33B) is inserted through the anchored bearing ring (31A, 31B) so as to be received by the stem mount means (46A, 46B) of the valve disk (44),

(h) the valve disk (44) is adjusted to a predetermined position relative to the valve seat (A) with a second clearance formed between the valve stem means (31A, 31B) and the stem mount means, and

(i) the second clearance is filled with third resin (48A, 48B) injected under pressure so that the valve stem means (31A, 31B) is anchored onto the stem mount means (46A, 46B) upon curing of the third resin (48A, 48B).

4,604,255

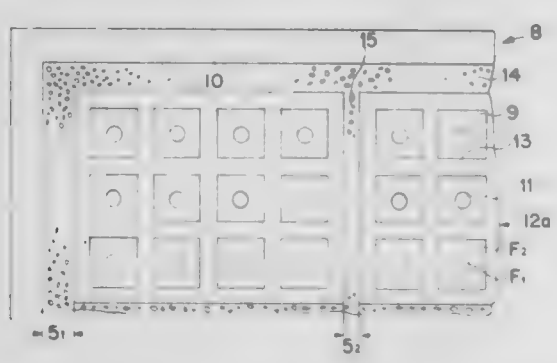
METHOD FOR FABRICATING MOLDED BODIES FORMED AT LEAST PARTIALLY OF SWELLED CLAY MATERIAL AND APPARATUS FOR THE PERFORMANCE OF THE METHOD

Hans Walt, Schlatt, and Dieter Sütterlin, Frick, both of Switzerland, assignors to Keller Holding AG, Pfungen, Switzerland

Continuation of Ser. No. 193,405, Jan. 14, 1980, abandoned. This application Jun. 16, 1983, Ser. No. 504,899

Int. Cl.⁴ B28B *3/00*

U.S. Cl. 264—273 **38 Claims**



1. A method of manufacturing substantially cubic molded bodies comprising the steps of:

arranging, in a mold box having a predetermined surface area in top plan view and containing sidewalls and a mold floor, on said mold floor and and between predetermined mold sidewalls made of a granular filler material at least one blank made of a blank material containing a heat-swellable clay component and having a predetermined surface area in top plan view which is smaller than said predetermined surface area in top plan view of said mold box, said at least one blank possessing an underside and a topside and a predetermined number of hollow spaces extending therebetween;

filling a preselected number of said predetermined number of said hollow spaces with said granular filler material;

heating said mold box containing said at least one blank at a predetermined swelling temperature in order to swell said heat-swellable clay component contained in said blank material;

cooling said mold box containing said at least one heat-swelled blank in order to obtain a swelled and solidified blank; and

removing said at least one swelled and solidified blank and said granular filler material which originally formed said predetermined mold sidewalls and which granular filler material is in a friable state at least during this step of removing the at least one swelled and solidified blank, in order to obtain at least one of said substantially cubic molded bodies.

4,604,256

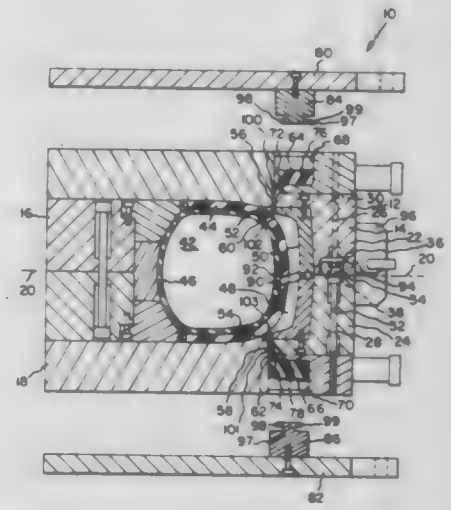
PROCESS AND APPARATUS FOR INJECTION MOLDING TIRE TREADS

Alan Greenwood, Kent, and Norbert Majerus, Akron, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Jul. 31, 1985, Ser. No. 760,937

Int. Cl.⁴ B29D *30/06;* **B29C** *45/02, 45/14*

U.S. Cl. 264—501 **23 Claims**



1. Apparatus for injection molding of the tread portion of a tire comprising a mold having a tread molding ring member, said mold containing an annular tread molding space, said tread molding space having a molding surface on said tread molding ring member, annular side members at each side of said tread molding ring member, each of said side members having a runner surface, said tread molding ring member having at least one runner surface movable into closely spaced relationship with said runner surface of each of said side members to form generally annular gates and annular runner passages between said tread molding ring member and said side members in a closed position of said mold, said side members having side member passages in communication with a source of fluid molding compound and with said annular runner passages, and said generally annular gates being positioned at the edges of said tread molding ring member for introducing said fluid molding compound into said tread molding space at the edges of said tread molding ring member.

18. A process for injection molding the tread portion of a tire comprising:

(a) locating a tire casing in a tire mold having a tread molding ring member providing a tread molding space between said casing and a molding surface of said tread molding ring member in the closed condition of said mold;

(b) closing said mold with said tire casing therein;

(c) inflating said tire casing;

(d) introducing fluid molding compound into said tread molding space substantially uniformly around the circumference of said molding space while maintaining a temperature and pressure above the curing temperature and pressure of said fluid molding compound until said tread molding space is filled, said fluid molding compound being introduced from the side edges of said tread molding space through annular gate means positioned at each side edge of said tread molding space whereby said fluid molding compound flows toward the midplane of the tire casing without any appreciable flow in a circumferential direction and with said incoming flow providing two leading surface portions meeting at said midplane;

(e) at least partially curing said fluid molding compound in said tread molding space to mold said tread portion on said tire casing; and

(f) opening said mold for removing said tire casing with the molded tread.

4,604,257

MULTI-LAYER POLYISOPHTHALATE AND POLYTEREPHTHALATE ARTICLES AND PROCESS THEREFOR

Richard R. Smith, Cuyahoga Falls, and Charles L. Kern, Jr., North Canton, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Division of Ser. No. 415,306, Sep. 7, 1982, Pat. No. 4,482,586. This application Sep. 17, 1984, Ser. No. 651,420

Int. Cl.[4] **B29C** *45/16, 49/06*

U.S. Cl. 264—513 **15 Claims**

1. A process for making a multi-layer packaging material, comprising the steps of:

(a) forming at least one layer made from a polyterephthalate compound, said polyterephthalate compound made by the reaction of terephthalic acid or esters thereof with ethylene glycol and up to 30 mole percent of one or more glycols selected from the group consisting of tetramethylene glycol and propylene glycol:

(b) forming at least one layer made from a polyisophthalate compound, said polyisophthalate compound consisting of the reaction product of isophthalic acid or esters thereof with ethylene glycol and from 0 to 60 mole percent of one or more glycols selected from the group consisting of tetramethylene glycol and propylene glycol; wherein said polyisophthalate compound has an oxygen permeability of 8cc-mil/100 in^2-day-atm or less; and

(c) contacting said polyisophthalate layer with said polyterephthalate layer and forming the packing material.

10. A process for making a multi-layer packaging material, according to claim 1, including forming a container, forming said container by injection molding said polyterephthalate layer at a temperature of from about 500° to about 550° F., injection molding said polyisophthalate layer at a temperature of from about 400° F. to about 500° F., and injection molding said polyisophthalate layer over said polyterephthalate layer.

11. A process for making a multi-layer packaging material according to claim 10, including orienting said injection molded article by blow-molding said article to form said container.

4,604,258

STACK-MOLD FOR INJECTION BLOW MOLDING

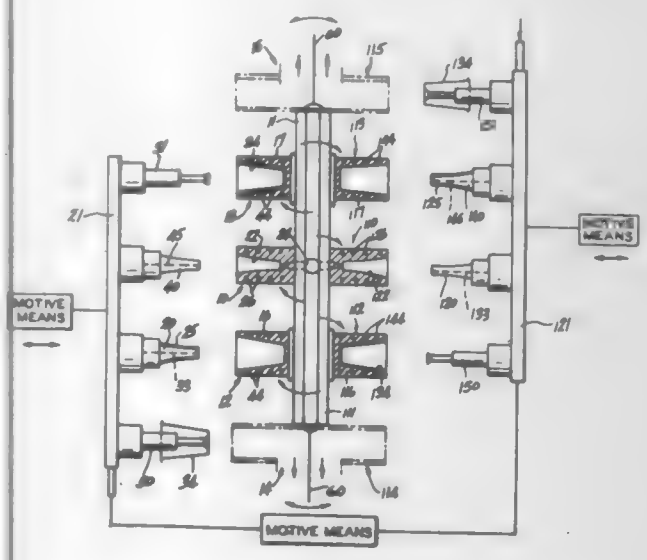
Emery I. Valyi, Stamford, Conn., assignor to Canada Cup, Inc., Toronto, Canada

Filed Nov. 15, 1984, Ser. No. 671,596

Int. Cl.[4] **B29C** *49/06, 49/32*

U.S. Cl. 264—537 **6 Claims**

1. Process for injection blow molding hollow plastic articles which comprises providing back-to-back first and second injection molds each including a respective first and second mold cavity formed by a respective first and second mold wall, each of said cavities cooperating with a respective first and second core, back-to-back first and second blow molds each adjacent respective first and second mold cavities in side-by-side relationship therewith, back-to-back first and second ejection stations in side-by-side relationship with said respective first and second blow molds, and first and second ejection mandrels adjacent respective first and second cores, and engageable with said first and second ejection stations, respectively, wherein said cores, mandrels, blow molds and ejection stations comprise a first set and a second set, respectively, and including the step of providing a third and fourth set of cores, mandrels, blow molds and ejection stations adjacent and in line with the first and second set, respectively, with said blow molds and ejection stations being in back-to-back relationship with each other and on opposite sides of said first and second injection molds, injecting molten plastic into said mold cavities to form first and second parisons on said cores, moving said parisons on said cores into said blow molds, expanding said parisons on said cores in said blow molds to form hollow articles, transferring said hollow articles to said ejection stations from said blow molds on said ejection mandrels and removing said hollow articles from said ejection stations, wherein said first and second cores and said first and second mandrels operate in overlapping cycles whereby said first core and first mandrel are located at said first injection mold and first blow mold, respectively, while said second core and second mandrel are located at a position spaced from said second injection mold and second blow mold, respectively and whereby said first core and first mandrel are located at said



first blow mold and first ejection station, respectively, while said second core and second mandrel are located at a position spaced from said second blow mold and second ejection station, respectively, and said third and fourth sets are simultaneously in corresponding positions, including the step of providing a common platen for said first and third cores and a common platen for said second and fourth cores, with a balanced motive means for both platens and moving said common platens via said balanced motive means.

4. An apparatus for injection blow molding hollow plastic articles which comprises back-to-back first and second injection molds each including a mold wall, opposing first and second cores each engageable with a respective injection mold to form a mold cavity with its respective mold wall, means to inject molten plastic into said mold cavities to form parisons therein, back-to-back first and second blow molds adjacent respective injection mold cavities in side-by-side relationship therewith, back-to-back first and second ejection stations adjacent respective blow molds in side-by-side relationship therewith, first and second ejection mandrels in side-by-side relationship with said first and second cores engageable with said first and second ejection stations, respectively, wherein said cores, mandrels, blow molds and ejection stations comprise a first and second set, respectively, and a third and fourth set of cores, mandrels, blow molds and ejection stations adjacent and in line with the first and second set, respectively, with said blow molds and ejection stations being in back-to-back relationship with each other and on opposite sides of said first and

second injection molds, means to move said parisons from said first and second injection molds to said first and second blow molds and means to expand said parisons in said blow molds to form hollow articles therein, means to move said hollow articles on said ejection cores from said blow molds to said ejection stations for removal therefrom, and means to locate said first and second cores in overlapping cycles wherein said first core and first mandrel are located at said first injection mold and first blow mold, respectively, while said second core and second mandrel are located at a position spaced from said second injection mold and second blow mold, respectively, and wherein said first core and first mandrel are located at said first blow mold and first ejection station, respectively, while said second core and second mandrel are located at a position spaced from said second blow mold and second ejection station, respectively, and wherein said third and fourth sets are simultaneously in corresponding positions, including a common platen for said first and third cores and a common platen for said second and fourth cores, with a balanced motive means for both platens.

4,604,259

PROCESS FOR MAKING COPPER-RICH METAL SHAPES BY POWDER METALLURGY

Charles I. Whitman, Bay Village, Ohio, assignor to SCM Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 540,973, Oct. 11, 1983, abandoned. This application Sep. 19, 1985, Ser. No. 777,768

Int. Cl.[4] B22F *7/00*

U.S. Cl. 75—247 **10 Claims**

1. A process for the production of a metal shape which comprises the steps of:

(a) forming a coherent forerunner shape consisting essentially of cupreous powder containing at least about 80% by weight of copper oxide and from 1% to 20% by weight of a fugitive binder,

(b) contacting said forerunner shape with a reducing atmosphere, and

(c) elevating the temperature of said shape in said atmosphere to from about 760° C. to a temperature below the melting point of copper, whereby said binder is removed, the copper oxide is reduced to copper metal and the copper metal is sintered to form a porous sintered mass of copper substantially free of copper oxide.

4,604,260

METHOD OF PRODUCING ELECTROLYTIC CAPACITOR WITH AL-TI ANODE BODY

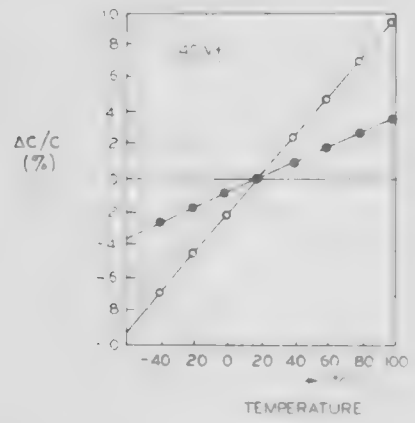
Shigeaki Shimizu, and Yoshio Arai, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed May 22, 1985, Ser. No. 736,944

Claims priority, application Japan, May 22, 1984, 59-102880

Int. Cl.[4] B22F *1/00*

U.S. Cl. 419—2 **12 Claims**



1. A method of producing an Al-Ti alloy solid electrolytic capacitor comprising steps of forming a porous Al-Ti alloy body, anodizing the Al-Ti alloy body to form an oxide layer onto said Al-Ti alloy body, and heating the anodized Al-Ti alloy body in an oxygen atmosphere at a temperature in the range of approximately 500° C. to 700° C.

4,604,261

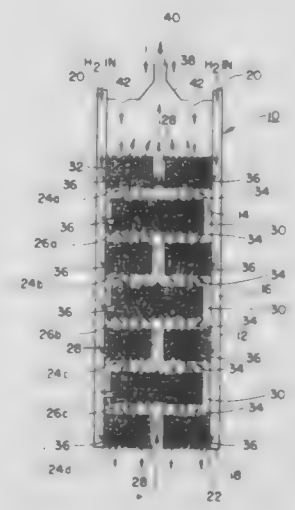
HYDROPROCESSING REACTOR FOR CATALYTICALLY DEWAXING LIQUID PETROLEUM FEEDSTOCKS

Nai Y. Chen, Titusville, N.J., and Thomas F. Degnan, Yardley, Pa., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Jun. 29, 1984, Ser. No. 626,519

Int. Cl.[4] B01J *8/04*

U.S. Cl. 422—191 **12 Claims**



1. A hydroprocessing reactor for catalytically dewaxing liquid petroleum feedstocks comprising:

(a) a substantially vertical, open-bottomed container having an inner and an outer wall defining an annular space therebetween, means for sealing the lower end of said annular space, and a central portion within said inner and outer walls;

(b) a plurality of vertically tiered trays mounted within the central portion of said container, and defining flow passageways intermediate said trays; a bed of crystalline aluminosilicate catalyst being supported on each of said trays;

(c) inlet means at the upper end of said container for the infeed of liquid petroleum feedstock into said central portion of said container to cause said liquid feedstock to trickle downwardly through said catalyst beds and trays towards the open bottom end of said container;

(d) inlet means at the upper end of said annular spaced for the infeed of hydrogen; apertures in said inner wall communicating said annular space with the lower portion of each of said catalyst beds to cause hydrogen to percolate upwardly through the catalyst bed on each tray and react with the liquid petroleum feedstock trickling downwardly therethrough and to strip low-boiling volatile conversion products from the liquid petroleum feedstock, said hydrogen gas and entrained conversion products flowing into the flow passageways intermediate said catalyst beds and trays; and

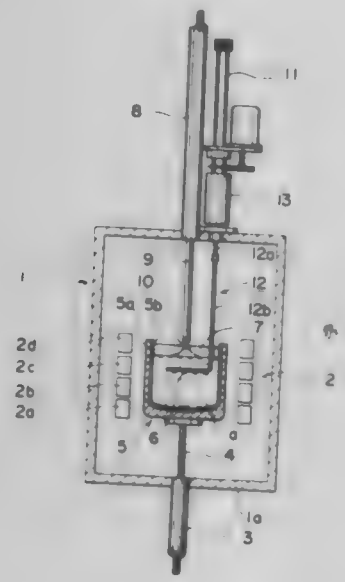
(e) an inlet to the flow passageways, said inlet being located at the bottom end of said container for introducing an upwardly directed flow of inert carrier gas into said flow passageways, further including flow passage means providing flow communication with said inlet and said passageways whereby said carrier gas and the hydrogen gas with the entrained conversion products are conducted upwardly through said flow passageways and scavenged from the upper end of said container.

4,604,262

APPARATUS FOR POSITIONING AND LOCATING A BAFFLE PLATE IN A CRUCIBLE

Minoru Nishizawa, Tokyo, Japan, assignor to Gakei Electric Works Co., Ltd., Tokyo, Japan

Filed Nov. 27, 1984, Ser. No. 675,410
Claims priority, application Japan, Aug. 31, 1984, 59-182438
Int. Cl.[4] B01D *9/00*
U.S. Cl. 422—310 11 Claims



1. A baffle plate positioning and locating apparatus for use in pulling a single crystal from a feed melt maintained in an inert gas atmosphere of a high pressure while maintaining a baffle plate in a predetermined position below the surface of the feed melt, comprising a plurality of cylinders each of a hermetically sealed structure adapted to be hermetically sealed to a furnace in which a crystal growing operation is taking place by pulling a crystal from a feed melt contained in a crucible, a control rod contained within each of said cylinders and adapted to project into said furnace to enter into the crucible to maintain the baffle plate in the predetermined position under the surface of the feed melt in the crucible, said control rods being disposed in a spatial relationship with a single crystal pulling rod disposed between them, and a drive means for vertically moving said control rods simultaneously to cause same to enter and withdraw from the crucible at the same rate and to assume controllable positions within the crucible, said drive means comprising outside magnets of magnetic drive mechanisms which have inside magnet counter parts disposed in said cylinders, for driving said control rods vertically, and means for rotating said outside magnets simultaneously to simultaneously drive said inside magnet counter parts and said control rods.

4,604,263

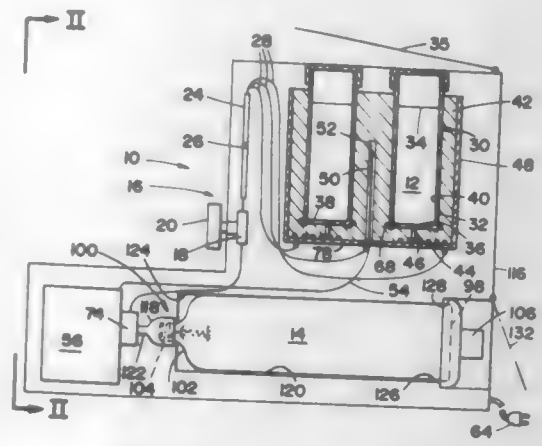
CELL FOR GAS SAMPLE EQUILIBRATOR

Ronald B. Smernoff, Belmont, Calif., assignor to Analytical Products, Inc., Belmont, Calif.

Filed Jun. 17, 1976, Ser. No. 697,268
Int. Cl.[4] G01N *33/50, 1/00;* B01L *11/00*
U.S. Cl. 422—50 16 Claims

1. In an apparatus for equilibrating a hydrophilic liquid such as an aqueous solution with a gas composition which comprises a gas vessel having therewithin a gas of a selectable composition at a pressure above ambient atmospheric pressure, flow control means for receiving flow from said vessel and controlling a flow rate therefrom and conduit means leading from said flow control means to a solution cell having therewithin a hydrophilic liquid such as an aqueous solution, improved solution cell means providing extremely fast attainment of gas-solution equilibrium, comprising:

a removable tube of a polymeric material having an open end and a closed end, said closed end comprising a porous polymeric member having a hydrophobic surface, said member being impervious to flow of a hydrophilic liquid therethrough when said tube is filled therewith and positioned vertically with the closed end thereof downwardly



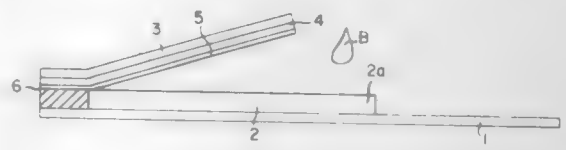
and being permeable to pressurized flow of said gas composition upwardly therethrough.

4,604,264

TEST STRIPS

Anselm Rothe, Birkenau; Wolfgang-Reinhold Knappe, Bürstadt, and Heinz-Friedrich Trasch, Ludwigshafen, all of Fed. Rep. of Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Fed. Rep. of Germany

Filed Dec. 13, 1983, Ser. No. 560,916
Claims priority, application Fed. Rep. of Germany, Dec. 23, 1982, 3247608
Int. Cl.[4] G01N *21/78, 33/52*
U.S. Cl. 422—56 12 Claims



1. A test strip, comprising:

a carrier layer made of one of a multifilar fabric and fleece;

a dry, reagent-containing film layer coatingly embedded at least preponderantly on and into only one side of the carrier layer; and

a synthetic resin film on the other side of the carrier layer from the preponderance of the reagent film layer.

4,604,265

RECOVERY OF TUNGSTEN AND RHENIUM

Alan D. Douglas; Kenneth T. Reilly, both of Towanda; John E. Landmesser, Monroeton; Richard E. Landry, and Martin B. MacInnis, both of Towanda, all of Pa., assignors to GTE Products Corporation, Stamford, Conn.

Filed Aug. 22, 1985, Ser. No. 768,388
Int. Cl.[4] C01G *41/02, 47/00*
U.S. Cl. 423—49 8 Claims

1. A process for recovering tungsten and rhenium from a tungsten and rhenium bearing source, said process comprising:

(a) firing said source in an oxidizing atmosphere at a temperature of at least about 650° C. for a sufficient time to convert the tungsten and rhenium to their respective oxides, to remove a portion of the rhenium as volatilized oxide, and to form a first fired material containing essentially all of the tungsten and the remaining portion of the rhenium;

(b) increasing the surface area of the resulting oxidized tungsten to appreciably above 0.5 m^2/g; and

(c) firing said first fired material having increased surface area oxidized tungsten in an oxidizing atmosphere at a temperature of at least about 700° C. for a sufficient time to remove essentially all of said remaining portion of the

rhenium as volatilized rhenium and to form an essentially rhenium-free oxidized tungsten.

4,604,266

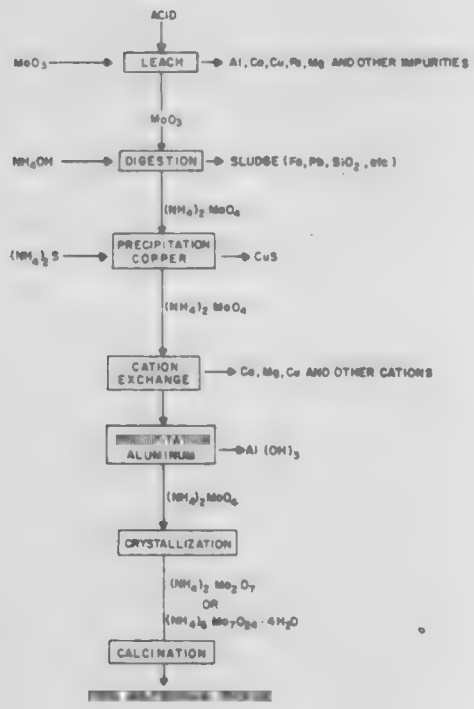
PROCESS FOR PURIFYING MOLYBDENUM TRIOXIDE

Michael J. Cheresnowsky; Timothy A. Brunelli, both of Towanda; Robin W. Munn, Sayre, and Tai K. Kim, Towanda, all of Pa., assignors to GTE Products Corporation, Stamford, Conn.

Continuation of Ser. No. 584,843, Feb. 24, 1984, Pat. No. 4,525,331. This application Mar. 27, 1985, Ser. No. 716,727

Int. Cl.[4] C01G *39/00*

U.S. Cl. 423—54 1 Claim



1. A method for preparing ammonium molybdate having low impurities, of iron from an impure concentrate of molybdenum trioxide consisting of contacting said concentrate with from about 0.85 to less than about one part by weight of an aqueous solution comprising about 4.2 moles per liter of nitric acid and 1.75 moles per liter ammonium nitrate at suitable concentrations to solubilize a major portion of said iron impurity and less than about 0.35 percent of of the molybdenum values from said concentrate, washing the resulting concentrate, for a period of about two hours digesting said resulting concentrate at a temperature of from about 50 to about 60 degrees centigrade with an aqueous solution of ammonium hydroxide at suitable concentrations to solubilize substantially all of the molybdenum values present in said resulting concentrate as ammonium molybdate and form an ammonium molybdate solution, adding an oxidizing agent to said ammonium molybdate solution to oxidize iron values from a plus two to a plus three oxidation state, adjusting pH of said solution to greater than about 9.5 by adding ammonium hydroxide, further digesting for about one to about three hours at around 50° C. to about 60° C. to form an iron precipitate, cooling to about room temperature before liquid-solid separation to decrease iron solubility, separating iron precipitate and sludge from ammonium molybdate solution while maintaining the pH of the molybdate solution above about 9.5, and contacting said resulting ammonium molybdate solution with a chelate iminodiacetate ion exchange resin in ammonium form and concentrating said resulting ammonium molybdate to form ammonium molybdate having low iron impurities.

4,604,267

PROCESS FOR PURIFYING MOLYBDENUM TRIOXIDE

Michael J. Cheresnowsky, Towanda, Pa., assignor to GTE Products Corporation, Stamford, Conn.

Continuation of Ser. No. 584,845, Feb. 29, 1984, Pat. No. 4,555,386. This application Mar. 27, 1985, Ser. No. 717,068

Int. Cl.[4] C01G *39/00*

U.S. Cl. 423—54 1 Claim



1. A method for preparing ammonium molybdate having low impurities of iron from an impure concentrate of molybdenum trioxide consisting of contacting said concentrate with from about 0.85 parts to about 3 parts by weight of an aqueous solution comprising about 2 to about 2.5 moles per liter nitric acid, 0.5 to 1 mole per liter of ammonium sulfate, and less than about 0.5 moles per liter of ammonium nitrate at suitable concentrations to solubilize a major portion of said iron impurity, and less than about 1.5 percent of the molybdenum values from said concentrate, washing the resulting concentrate, digesting said resulting concentrate at a temperature of from about 50 to about 60 degrees Centigrade for a period of about two hours with an aqueous solution of ammonium hydroxide at suitable concentrations to solubilize substantially all of the molybdenum values present in said resulting concentrate as ammonium molybdate and form an ammonium molybdate solution, adding an oxidizing agent to said ammonium molybdate solution to oxidize iron values from a plus two to a plus three oxidation state, adjusting pH of said solution to greater than about 9.5 by adding ammonium hydroxide, further digesting for about one to about three hours at around 50° C. to 60° C. to form an iron precipitate, cooling to about room temperature before liquid-solid separation to decrease iron solubility, separating iron precipitate and sludge from ammonium molybdate solution while maintaining the pH of the molybdate solution above about 9.5 and contacting said resulting ammonium molybdate solution with a chelate iminodiacetate ion exchange resin in ammonium form and concentrating said resulting ammonium molybdate to form ammonium molybdate having low iron impurities.

4,604,268

METHODS OF DESULFURIZING GASES

Alan R. Kay, Burlington, Canada, and William G. Wilson, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 521,751, Aug. 8, 1983, Pat. No. 4,507,149, which is a continuation-in-part of Ser. No. 471,773, Mar. 3, 1983, which is a continuation of Ser. No. 174,024, Jul. 31, 1980, Pat. No. 4,397,683. This application Apr. 2, 1985, Ser. No. 718,989

Int. Cl.[4] B01D *53/36*

U.S. Cl. 423—230 9 Claims

1. A method for desulfurizing gases containing hydrogen formed by the incomplete combustion of sulfur containing hydrocarbons at high temperature in which gases the sulfur is mainly in the form of one of hydrogen sulfide and sulfur carbonyl whereby the sulfur is removed to sufficiently low levels that when combustion of the gases is completed the gases emitted into the atmosphere have a sulfur content which is less than one pound of sulfur per million British thermal units produced by combustion of fuel or its equivalent comprising the steps of:

a. Controlling the incomplete combustion of the sulfur containing hydrocarbons so that the ratio of carbon monoxide to carbon dioxide (CO/CO_2) ratio at standard conditions (32 F. and one atmosphere pressure) is greater than one; and

b. Reacting the gases whose CO/CO_2 ratio is greater than one and whose sulfur content is in the form of one of H_2S and sulfur carbonyl (COS) with cerium oxide.

4,604,269

FLUE GAS DESULFURIZATION PROCESS

Heeyoung Yoon, McMurray, Pa., assignor to Conoco Inc., Wilmington, Del.

Filed Mar. 22, 1985, Ser. No. 714,750

The portion of the term of this patent subsequent to Jul. 15, 2003, has been disclaimed.

Int. Cl.[4] C01B *17/00;* B01J *8/00*

U.S. Cl. 423—242 2 Claims

1. The method of reducing sulfur dioxide content of a flue gas resulting from combustin of sulfur-containing fuel, which method comprises:

(a) mixing into said flue gas, at a point where its temperature is between about 120° and about 230° C., a finely divided dry sorbent comprising alkaline earth metal oxide slaked with an aqueous solution of solubilizing agent, said sorbent being added in amount sufficient to provide a metal salt: sulfur ratio of at least about 0.5, said alkaline earth metal being selected from calcium and magnesium and said solubilizing agent being selected from sodium hydroxide, sodium carbonate, calcium chloride, adipic acid and glycerol;

(b) spraying into the resulting suspensio of sorbent in flue gas a humidifying agent selected from water and steam;

(c) providing a contact time between said flue gas and droplets resulting from said spraying of at least about 1 second;

(d) subsequently separating from said flue gas solids resulting from addition of said sorbent and solids resulting from combustion of said fuel;

(e) discharging from said separating a flue gas of substantially diminished sulfur dioxide content; and

(f) regulating the rate of said spraying relative to the rate of said flue gas such that the temperature of said flue gas at the point of said separating is between about 10° C. and about 30° C. above its saturation temperature.

4,604,270

SCAVENGERS FOR THE REMOVAL OF IMPURITIES FROM INERT FLUIDS

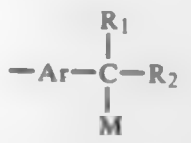
Glenn M. Tom, Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.

Division of Ser. No. 655,856, Sep. 28, 1984, which is a continuation-in-part of Ser. No. 493,875, May 12, 1983, abandoned. This application Jul. 31, 1985, Ser. No. 760,869

Int. Cl.[4] C01B *23/00*

U.S. Cl. 423—262 13 Claims

1. A process for the purification of fluids inert to macroreticulate polymer scavengers and containing Lewis acid and oxidant impurities which comprises contacting the fluid with a macroreticulate polymer scavenger to remove said impurities from said fluid, said scavenger comprising a macroreticulate polymer backbone having a plurality of pendant functional groups or a mixture of functional groups corresponding to the general formula:



where Ar is an aromatic hydrocarbon radical containing from one to three rings; R_1 and R_2 are the same or different and are selected from the group consisting of hydrogen, alkyl hydrocarbon radicals containing 1 to 12 carbon atoms, methylene-bridged benzophenone radicals, alkali or alkaline earth metal salts of methylene-bridged benzophenone; methylene-bridged fluorenone radicals, and alkali or alkaline earth metal salts of methylene-bridged fluorenone; and M is selected from the group consisting of lithium, potassium, sodium, alkyl magnesium, or alkyl zinc where the alkyl groups are hydrocarbon alkyl radicals containing from 1 to 12 carbon atoms and then separating the thus contacted fluid from the macroreticulate polymer.

4,604,271

MAGNESIUM BOROHYDRIDE DIAMMONIATE AND TRIAMMONIATE

Ross I. Wagner, Woodland Hills, and Louis R. Grant, Los Angeles, both of Calif., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Sep. 30, 1985, Ser. No. 781,819

Int. Cl.[4] C01B *35/00*

U.S. Cl. 423—286 3 Claims

1. A process for the conversion of magnesium borohydride dietherate or the deuterated analog dietherate thereof to the thermally stable compound magnesium borohydride di- or triammoniate or the deuterated analogs thereof comprising:

(i) providing a stoichiometric excess amount of a dietherate selected from the group consisting of

$Mg(BH_4)_2.X(C_2H_5)_2O$ and $Mg(BD_4)_2.X(C_2H_5)_2O$,

wherein D is deuterium and X is a numeral ranging from about 2 to about 2.5, in a reaction solvent selected from benzene and diethyl ether, said reaction solvent being benzene when said dietherate is to be converted to $Mg(BH_4)_2.2NH_3$, $Mg(BD_4)_2.2NH_3$ or $Mg(BD_4)_2.2ND_3$ said reaction solvent being diethyl ether when said dietherate is to be converted to $Mg(BH_4)_2.3NH_3$, $Mg(BD_4)_2.3NH_3$ or $Mg(BD_4)_2.3ND_3$;

(ii) contacting said dietherate in said reaction solvent with an amount from about 90 to about 95% of the stoichiometric amount of gaseous ammonia or its deuterated analog to form a precipitated solid compound which is magnesium borohydride di-or tri- ammoniate or the deuterated analogs thereof;

(iii) separating said precipitated solid compound and washing said precipitated solid compound with said reaction solvent which is diethyl ether when said precipitated solid

compound is magnesium borohydride triammoniate or the deuterated analogs thereof and washing said precipitated solid compound with said reaction solvent which is benzene when said precipitated solid compound is magnesium borohydride diammoniate or the deuterated analog thereof; and,

(iv) recovering said magnesium borohydride di- or triammoniate or the deuterated analogs thereof and drying under vacuum at ambient temperature.

4,604,272

PROCESS FOR THE PREPARATION OF SILICON TETRACHLORIDE

Günter Kratel, Durach-Bechen, and Stefan Loskot, Kempten, both of Fed. Rep. of Germany, assignors to Wacker-Chemie GmbH, Munich, Fed. Rep. of Germany

Filed Jul. 3, 1985, Ser. No. 752,147

Claims priority, application Fed. Rep. of Germany, Jul. 6, 1984, 3424978; Oct. 19, 1984, 3438444

Int. Cl.⁴ C01B *33/08*

U.S. Cl. 423—343 **18 Claims**

1. In a process for the preparation of silicon tetrachloride of the type including the step of reacting material containing SiO_2 with chlorine in the presence of carbon and catalytic concentrations of a catalyst, the improvement comprising:

(a) said material containing SiO_2 having a BET surface area of more than 0.1 m^2/g;

(b) said carbon having a BET surface area of at least 0.5 m^2/g;

(c) said catalyst comprising at least one halide selected from the group consisting of:

(1) a transition metal halide including iron chloride, iron fluoride, cobalt chloride, cobalt fluoride, nickel chloride, nickel fluoride, chromium chloride, manganese chloride, manganese fluoride, copper chloride, copper fluoride, silver chloride, and silver fluoride, and a combination thereof; and

(2) a chloride of the fifth main or subsidiary group of the Periodic Table; and a combination thereof; and

(d) the reaction temperature is in the range from 500° to 1200° C.

4,604,273

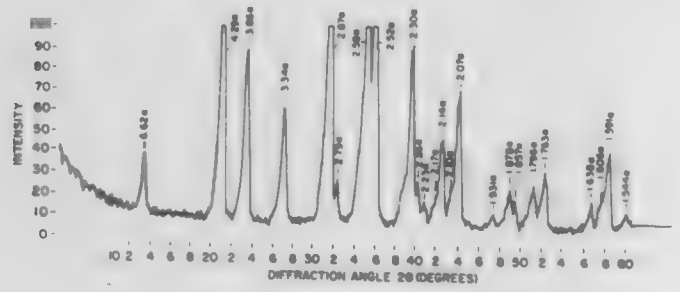
PROCESS FOR THE GROWTH OF ALPHA SILICON NITRIDE WHISKERS

Gary Czupryna; Samuel Natansohn, both of Sharon, Mass.; Robert A. Long, Towanda, and Robin W. Munn, Sayre, both of Pa., assignors to GTE Products Corporation, Stamford, Conn. and GTE Laboratories Incorporated, Waltham, Mass.

Filed Apr. 19, 1985, Ser. No. 725,043

Int. Cl.⁴ C01B *21/068*

U.S. Cl. 423—344 **5 Claims**



1. A method of making silicon nitride whiskers having a purity greater than 99.9% comprising the steps:

Step 1—mixing from about 0.5 to about 10 parts of carbon with one part silicon dioxide forming a mixture;

Step 2—adding from about 0.001 to about 0.5 weight percent of a whisker forming additive to the mixture from step 1, said whisker forming additive being selected from the group consisting of the metal, oxide, salt of chromium, nickel, magnesium, and combinations thereof, said salt being convertible to an oxide by heating;

Step 3—heating the produce from step 2 in a graphite container from about 1400° C. to about 1550° C. for about 2 to about 12 hours in a flowing nitrogen atmosphere at about 0.5 to about 5 cm/sec to form whiskers of alpha silicon nitride having an aspect ratio greater than 10 and a purity greater than 99.9%.

4,604,274

PHOTOCHEMICAL PROCESS FOR THE PREPARATION OF DISILANE

Joshua Zavelovich, Lincolnwood, and David S. Hacker, Evanston, both of Ill., assignors to Amoco Corporation, Chicago, Ill.

Filed Jul. 18, 1985, Ser. No. 756,188

Int. Cl.⁴ C01B *33/04;* B01J *1/10;* B01K *1/00*

U.S. Cl. 204—157.41 **20 Claims**

15. A method for the preparation of disilane which comprises:

(a) introducing silane into a reaction vessel and irradiating at least a portion of said silane with pulsed coherent light having a wavelength in the range from about 10.2 to about 11.2 μm and a fluence in the range from about 0.2 to about 2.0 J/cm² wherein said irradiation is carried out at a pressure in excess of about 75 torr and in the absence of a sensitizer; and

(b) separating disilane from the product of (a).

4,604,275

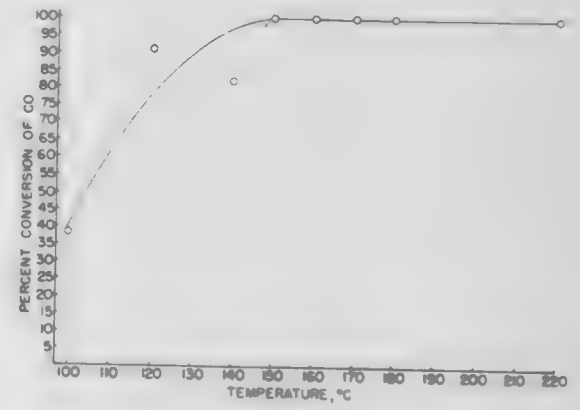
SELECTIVE CATALYTIC OXIDATION OF CARBON MONOXIDE IN HYDROCARBON STREAM TO CARBON DIOXIDE

Jawad H. Murib, Cincinnati, Ohio, assignor to National Distillers and Chemical Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 200,242, Oct. 24, 1980, abandoned, which is a continuation of Ser. No. 929,067, Jul. 28, 1978, abandoned, which is a continuation-in-part of Ser. No. 799,812, May 23, 1977, abandoned. This application Jul. 27, 1984, Ser. No. 635,339

Int. Cl.⁴ B01J *23/74;* C01B *31/20*

U.S. Cl. 423—437 **21 Claims**



1. A method for selectively oxidizing carbon monoxide in a gaseous reaction medium containing a hydrocarbon which comprises:

(a) introducing a gas containing carbon monoxide, hydrocarbon, and, based on the amount of carbon monoxide, a stoichiometric amount or greater of oxygen into an oxidation reaction zone containing a catalytically effective amount of a supported cobalt oxide catalyst prepared by:

(i) impregnating an alumina support with an aqueous solution of a first water soluble alkaline compound whose anion is capable of forming a water insoluble cobalt compound when said first water soluble alkaline compound is reacted with a water soluble cobalt compound, said water insoluble cobalt compound capable of providing a water insoluble cobalt oxide upon calcination,

(ii) drying the support,

(iii) impregnating the support with an aqueous solution of a water soluble cobalt compound whose anion is capable of forming a second water soluble alkaline compound upon reaction of said water soluble alkaline compound with said first water soluble cobalt compound, whereby an insoluble cobalt compound forms on the support,

(iv) calcining the impregnated support to form an insoluble cobalt oxide on said support,

(v) washing the calcined support with water to remove soluble compounds and activate the cobalt oxide catalyst, and

(b) reacting the carbon monoxide and oxygen in said reaction zone at an elevated temperature and for a period of time effective to provide substantially complete conversion of the carbon monoxide to carbon dioxide and no significant oxidation of the hydrocarbon.

4,604,276

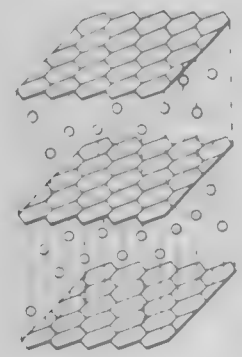
INTERCALATION OF SMALL GRAPHITE FLAKES WITH A METAL HALIDE

Daniel W. Oblas, Bedford, and Sophia R. Su, Weston, both of Mass., assignors to GTE Laboratories Incorporated, Waltham, Mass.

Filed Sep. 19, 1983, Ser. No. 533,512

Int. Cl.[4] C01B *31/02;* H01B *1/06*

U.S. Cl. 423—449 11 Claims



1. A method of intercalating small graphite flakes with an electron-acceptor metal halide, comprising:

placing said graphite flakes in a first zone of a two zone vapor transport reactor;

placing said metal halide in a second zone of said reactor;

charging said reactor with an intercalation-promoting halogen gas;

supplying heat to the second zone of said reacotr to provide a temperature therein sufficient to vaporize said metal halide and produce a partial pressure of the metal halide sufficent to promote intercalation;

supplying sufficient heat to the first zone of said reactor to provide a temeprature therein slightly elevated with regard to the temperature in said second zone and sufficient to prevent condensation of the metal halide on the graphite;

slowly rotating said reactor about its horizontal axis while supplying heat to the second zone of said reactor and to the first zone of said reactor; and

maintaining said reaction conditions until the graphite flakes have been intercalated with said metal halide.

4,604,277

PRODUCTION OF AMMONIUM TETRATHIOTUNGSTATE

Robin W. Munn, Sayre; Kenneth T. Reilly, Towanda, and Henry E. Hoffman, Towanda, all of Pa., assignors to GTE Products Corporation, Stamford, Conn.

Filed Aug. 16, 1985, Ser. No. 766,222

Int. Cl.[4] C01G *39/00*

U.S. Cl. 423—517 7 Claims

1. A process for producing ammonium tetrathiotungstate comprising:

(a) reacting an ammoniacal tungstate solution with hydrogen sulfide gas, said solution and said gas being in a closed system and the flow of said gas being at an elevated pressure to form a slurry consisting essentially of a solid, essentially all of which is ammonium tetrathiotungstate containing a portion of the starting tungsten, and a mother liquor containing the balance of the tungsten;

(b) cooling said slurry to ambient temperature;

(c) separating said solid from the major portion of said mother liquor;

(d) washing said solid with water and with alcohol followed by removing the resulting respective water and alcohol washes to remove the remaining portion of said mother liquor and soluble impurities from said solid; and

(e) drying the resulting washed solid at ambient temperature to form the final ammonium tetrathiotungstate.

4,604,278

PRODUCTION OF AMMONIUM TETRATHIOMOLYBDATE

Kenneth T. Reilly, Towanda; Robin W. Munn, Sayre; Henry E. Hoffman, and Alan D. Douglas, both of Towanda, all of Pa., assignors to GTE Products Corporation, Stamford, Conn.

Filed May 17, 1985, Ser. No. 734,985

Int. Cl.[4] C01G *39/00*

U.S. Cl. 423—517 7 Claims

1. A process for producing ammonium tetrathiomolybdate comprising:

(a) reacting an ammoniacal molybdate solution with hydrogen sulfide gas, said solution and said gas being in a closed system and the flow of said gas being regulated at an elevated pressure to form a slurry consisting essentially of a solid essentially all of which is ammonium tetrathiomolybdate containing a portion of the starting molybdenum and a mother liquor containing the balance of the molybdenum;

(b) cooling said slurry to ambient temperature;

(c) separating said solid from the major portion of said mother liquor;

(d) washing said solid with water and with alcohol followed by removing the resulting respective water and alcohol washes to remove the remaining portion of said mother liquor and soluble impurities from said solid; and

(e) drying the resulting washed solid at ambient temperature to form the final ammonium tetrathiomolybdate.

4,604,279

PROCESS FOR PRODUCING OZONE

Ortwin Leitzke, Kaarst, and Ewald Wolf, Karben, both of Fed. Rep. of Germany, assignors to Messer Griesheim GmbH, Frankfurt, Fed. Rep. of Germany

Filed Sep. 6, 1985, Ser. No. 773,030

Claims priority, application Fed. Rep. of Germany, Sep. 18, 1985, 3434169

Int. Cl.[4] C01B *13/10*

U.S. Cl. 423—581 6 Claims

1. In a process for producing ozone in which the ozone is produced from oxygen in an ozone generator, wherein said ozone is separated from the oxygen not converted into ozone in a pressure swing adsorber during an adsorption phase under reduced pressure and at ambient temperature, and the oxygen

not converted into ozone is returned to the ozone generator, after which the adsorbed ozone is drawn off from the pressure swing adsorber during a desorption phase under lower than atmospheric pressures which are created by a vacuum-generating machine which employs a flowing medium for generating the vacuum, and said ozone is mixed with the flowing medium, the improvement comprising passing the ozone from the pressure swing adsorber through an equalizing tank which reduces the pressure rise at the beginning of the desorption phase and equalizes the ozone concentration in the desorped gas with the equalizing tank being located between the pressure swing absorber and the vacuum generating machine, said equalizing tank being filled at least partially with silica gel, and mixing the ozone from the equalizing tank with the flowing medium.

4,604,280

STABILIZATION OF CARRAGEENAN-CONTAINING TOOTHPASTE

George V. Scott, Scotch Plains, N.J., assignor to Colgate-Palmolive Co., New York, N.Y.

Continuation of Ser. No. 406,610, Aug. 6, 1982, Pat. No. 4,473,988, which is a continuation of Ser. No. 87,561, Oct. 24, 1979, Pat. No. 4,353,890. This application Sep. 10, 1984, Ser. No. 648,557

The portion of the term of this patent subsequent to Oct. 12, 1999, has been disclaimed.

Int. Cl.[4] A61K *7/16, 41/00;* A61L *2/12;* B01J *1/10*

U.S. Cl. 424—49 4 Claims

1. A process for stabilizing a cosmetic composition containing carrageenan as a gelling agent, which comprises directing microwave radiation onto such composition in such quantity as to raise the temperature thereof to at least the gel-sol transition temperature of the carrageenan, and quiescently cooling the dentifrice from such gel-sol transition temperature to produce gelation thereof.

4,604,281

COSMETIC AND SKIN TREATMENT COMPOSITIONS CONTAINING ACETYLATED STEROLS

George E. Deckner, Westfield; Clara G. Mercado, Aberdeen, and Ann M. Krog, Eatontown, all of N.J., assignors to Charles of the Ritz Group Ltd., New York, N.Y.

Continuation-in-part of Ser. No. 477,562, Mar. 21, 1983, abandoned. This application Sep. 4, 1984, Ser. No. 646,409

Int. Cl.[4] A61K *7/42, 7/021, 47/00*

U.S. Cl. 424—59 9 Claims

1. A skin care preparation consisting essentially of at least one acetylated soya bean derived sterol which is acetylated sitosterol, acetylated campesterol or acetylated stigmasterol or a mixture thereof, and is exclusive of acetylated cholesterols, in an amount within the range of from about 0.1 to about 10% by weight which serves as an emollient to impart the above properties to the skin preparation, at least one emulsifier, at least one humectant, at least one diluent, and at least one preservative.

2. The skin care preparation as defined in claim 1 in the form of a cosmetic which is a foundation makeup.

3. The skin care preparation as defined in claim 2 including at least one coloring agent or pigment and at least one sun screen agent.

4,604,282

CAPILLARY COSMETIC COMPOSITION CONTAINING A SARSAPARILLA EXTRACT

Jean-Francois Grollier, Paris, and Josiane Allec, Pierrefitte, both of France, assignors to L'Oreal, Paris, France

Continuation of Ser. No. 146,371, May 2, 1980, abandoned. This application Aug. 27, 1982, Ser. No. 412,270

Claims priority, application Luxembourg, May 15, 1979, 81257

Int. Cl.[4] A61K *7/06;* C11D *9/22, 15/04*

U.S. Cl. 424—74 3 Claims

1. A method for washing the hair, comprising applying thereto an effective amount, so as to completely impregnate the hair, of a composition containing in an aqueous carrier from 0.1 to 20 weight percent of a sarsaparilla dry extract obtained from the ground roots of *Smilax medica,* said extract containing saponins, the sapogenin of said saponins having a steroidic structure, and said composition having a pH between 4 and 8.

4,604,283

HOOF CONDITIONER AND DRESSING AND METHODS OF USE

Anne L. Gresham, 5809 Warren Farm Rd., Rte. 2, Hiram, Ga. 30141

Continuation of Ser. No. 603,785, Apr. 24, 1984, abandoned. This application Jul. 17, 1985, Ser. No. 756,923

Int. Cl.[4] A61K *31/79, 33/18*

U.S. Cl. 424—80 1 Claim

1. A composition for treatment of horse hooves consisting of the following ingredients in percentages by volume:

Petrolatum	40%
Anhydrous Lanolin, U.S.P.	25%
Veterinary grade cod liver oil, fortified with 275μ vitamin A per ounce and 750μ vitamin D per ounce	12.5%
Veterinary grade wheat germ oil, fortified with 30,000μ vitamin A per ounce, 5000μ vitamin D per ounce and containing 100μ vitamin E per ounce	12.5%
Urea in a 20% by volume aqueous solution	5%
[Betadine ® 10% Povidone-Iodine solution] 10% Povidone-Iodine solution	5%

4,604,284

HOMOGENEOUS IMMUNE INTERFERON FRAGMENT

Hsiang-Fu Kung, Verona, N.J.; Hiromu Sugino, Hyogo, and Susumu Honda, Osaka, both of Japan, assignors to Hoffmann-La Roche Inc., Nutley, N.J. and Takeda Chemical Industries Ltd., Osaka, Japan

Filed Sep. 20, 1983, Ser. No. 534,038

Int. Cl.[4] A61K *37/02;* C07K *13/00;* C12P *21/00*

U.S. Cl. 424—85 4 Claims

1. A gamma interferon polypeptide fragment species with the amino acid sequence of the formula:

Cys	Tyr	Cys Gln	Asp Pro	Tyr Val	Lys Glu	Ala Glu
Asn	Leu	Lys Lys	Tyr Phe	Asn Ala	Gly His	Ser Asp
Val	Ala	Asp Asn	Gly Thr	Leu Phe	Leu Gly	Ile Leu
Lys	Asn	Trp Lys	Glu Glu	Ser Asp	Arg Lys	Ile Met
Gln	Ser	Gln Ile	Val Ser	Phe Tyr	Phe Lys	Leu Phe
Lys	Asn	Phe Lys	Asp Asp	Gln Ser	Ile Gln	Lys Ser
Val	Glu	Thr Ile	Lys Glu	Asp Met	Asn Val	Lys Phe
Phe	Asn	Ser Asn	Lys Lys	Lys Arg	Asp Asp	Phe Glu
Lys	Leu	Thr Asn	Tyr Ser	Val Thr	Asp Leu	Asn Val
Gln	Arg	Lys Ala	Ile His	Glu Leu	Ile Gln	Val Met
Ala	Glu	Leu Ser	Pro Ala	Ala Lys	Thr Gly	Lys

wherein the polypeptide has substantially the same activity as intact gamma interferon.

4. A composition useful in the prophylaxis or treatment of viral, neoplastic or immunosuppressive disorders comprising a therapeutically inert pharmaceuticlly acceptable carrier and a therapeutically effective amount of a polypeptide with the amino acid sequence of the formula:

Cys	Tyr	Cys Gln	Asp Pro	Tyr Val	Lys Glu	Ala Glu
Asn	Leu	Lys Lys	Tyr Phe	Asn Ala	Gly His	Ser Asp

-continued

Val	Ala	Asp Asn	Gly Thr	Leu Phe	Leu Gly	Ile Leu
Lys	Asn	Trp Lys	Glu Glu	Ser Asp	Arg Lys	Ile Met
Gln	Ser	Gln Ile	Val Ser	Phe Tyr	Phe Lys	Leu Phe
Lys	Asn	Phe Lys	Asp Asp	Gln Ser	Ile Gln	Lys Ser
Val	Glu	Thr Ile	Lys Glu	Asp Met	Asn Val	Lys Phe
Phe	Asn	Ser Asn	Lys Lys	Lys Arg	Asp Asp	Phe Glu
Lys	Leu	Thr Asn	Tyr Ser	Val Thr	Asp Leu	Asn Val
Gln	Arg	Lys Ala	Ile His	Glu Leu	Ile Gln	Val Met
Ala	Glu	Leu Ser	Pro Ala	Ala Lys	Thr Gly	Lys

4,604,285

PROTEIN C ENZYME DERIVATIVES

Richard A. Smith, and Robert Cassels, both of Reigate, England, assignors to Beecham Group p.l.c., England

PCT No. PCT/GB84/00239, § 371 Date Mar. 18, 1985, § 102(e) Date Mar. 18, 1985, PCT Pub. No. WO85/00521, PCT Pub. Date Feb. 14, 1985

PCT Filed Jul. 4, 1984, Ser. No. 717,269

Claims priority, application United Kingdom, Jul. 20, 1983, 8319538

Int. Cl.⁴ A61K *37/48; C07K 3/08; C12N 9/96, 9/99*

U.S. Cl. 424—94 **8 Claims**

1. An enzyme derivative comprising Protein Ca in which the active site essential for anti-coagulant activity is blocked by an acyl group which is removable in vivo by enzymatic hydrolysis to provide a sustained and controlled release of Protein Ca.

4,604,286

INFUSION SOLUTION FOR PARENTERAL NUTRITION

Seizo Kawajiri, Nagaokakyo, Japan, assignor to Daigo Nutritive Chemicals, Ltd., Osaka, Japan

Filed Sep. 17, 1984, Ser. No. 652,221

Int. Cl.⁴ A61K *31/70, 31/195, 33/06, 33/14, 33/20*

U.S. Cl. 424—149 **3 Claims**

1. An aqueous infusion solution for parenteral nutrition containing dextrose, amino acids and electrolytes in the form of salts of sodium, potassium, magnesium, calcium, phosphate and chlorine in the solution, wherein

the pH of the solution is 4.5–5.5,

said compounds being in the form of salts with hydrochloric acid, phosphoric acid, sulfuric acid and latic acid,

the pH adjustment is effected by the use of an acid selected from the group consisting of hydrochloric acid, phosphoric acid, sulfuric acid and lactic acid,

the content of dextrose is 3–10 W/V %,

the content of amino acids is as follows:

Amino acid	Concentration (g/l)
L-Methionine	1.09–3.27
L-Isoleucine	1.61–4.83
L-Leucine	2.02–6.06
L-Phenylalanine	1.12–3.36
L-Valine	1.45–4.35
L-Threonine	0.81–2.43
L-Lysine.HCl	1.46–4.38
L-Tryptophan	0.32–0.96
L-Alanine	0–4.59
L-Arginine	0–5.76
L-Histidine	0–1.74
L-Proline	0–6.78
L-Serine	0–3.60
Amino acetic acid	0–7.80
L-Cysteine HCl	0.0.09

and

the concentrations (as mEq/l) of the electrolytes including the acids used for the pH adjustment and f the hydrochlorides, if any, of the amino acid(s) are as follows:

Na^+	30–60
K^+	20–35
Mg^+	0–5
Ca^{++}	0–5
HPO_4^{--}	0–10
Cl^-	30–70
SO_4^{--}	0–5

and said solution further containing at least one of sodium lactate, calcium lactate or lactic acid in a concentration of 10–50 mEq/1 and said solution being free from any organic acid or its salt other than lactic acid or is salt.

4,604,287

MULTIPLE TEXTURED CHEWING GUM

Michael Glass, Fairlawn; Joseph Hoholick, Bridgewater; Alfred Oppenheimer, Randolph, and Amy Dombroski, Budd Lake, all of N.J., assignors to Warner-Lambert Company, Morris Plains, N.J.

Filed Jun. 7, 1985, Ser. No. 742,279

Int. Cl.⁴ A23G *3/30*

U.S. Cl. 426—5 **14 Claims**

1. A chewing gum composition having a short, soft non-elastic texture which comprises a substantially anhydrous mixture of a gum base, sweetening agent, from about 5 to about 18% by weight of a softener and a maltodextrin binder, the latter present in the amount of amount 0.75% to about 6% by weight having a DE value of about 7 to about 27 wherein the composition converts upon chewing to an elastic-cohesive chewing gum.

4,604,288

PROCESS FOR PREPARING A CHEWING GUM COMPOSITION WITH IMPROVED FLAVOR PERCEPTION

Michael Glass, Fairlawn; Vincent Corsello, Cedar Knolls, both of N.J.; Daniel A. Orlandi, Flushing, and Anthony Guzowski, Maspeth Queens, both of N.Y., assignors to Warner-Lambert Company, Morris Plains, N.J.

Filed May 23, 1985, Ser. No. 737,299

Int. Cl.⁴ A23G *3/30*

U.S. Cl. 426—5 **11 Claims**

1. The process of making an organoleptically pleasant chewing gum composition free of harsh or bitter flavor notes comprising:

(a) forming a premix comprising particulate lecithin present in the amount of about 8 to about 25%, a liquid or semi-liquid flavor present in amounts of about 75 to about 92%, all percents being based on the total weight of the premix;

(b) mixing the premix of (a) with an effective amount of sweetener;

(c) further mixing the resultant mixture of (b) with a gum base comprising elastomers and softeners to obtain a homogeneous mass.

4,604,289

PROCESS FOR PREPARING WHOLE WHEAT BREAD AND MIX FOR SAME

Henry C. Spanier, West Milford, N.J.; Albert Spiel, Yonkers, N.Y., and Gary M. J. Rinaldo, Landing, N.J., assignors to Nabisco Brands, Inc., Parsippany, N.J.

Filed Nov. 7, 1983, Ser. No. 549,419

Int. Cl.⁴ A21D *8/00*

U.S. Cl. 426—19 **34 Claims**

I. Whole wheat bread mix characterized by its ability to form a high quality whole wheat bread in less than two hours from addition of water to completion of baking, comprising:

(a) a stone-ground fine grain whole wheat flour, 40 to 75 percent by weight of the whole wheat flour passing through a +100 U.S. series mesh screen;

(b) about 2 to about 10 percent by weight, based on the weight of the mix, of added vital gluten;
(c) about 2 to about 3.5 percent by weight, based on the weight of the mix, of sucrose;
(d) about 2 to about 3.5 percent by weight, based on the weight of the mix, of dextrose, the ratio of dextrose to sucrose being between about 0.57 to about 1.75;
(e) about 1.5 to about 4 percent by weight, based on the weight of the mix, of a quick-leavening active dry yeast; and
(f) about 0.1 to about 0.75 percent by weight based on the weight of the mix, of a dough conditioner selected from the group consisting of calcium stearoyl-2-lactylate, sodium stearoyl-2-lactylate and a mixture of at least two of said lactylates.

4,604,290

MEAT FLAVORING AGENTS AND PROCESS FOR PREPARING SAME

Eldon C. Lee; Pierre J. van Pottelsberghe de la Potterie, both of New Milford, and John S. Tandy, Kent, all of Conn., assignors to Nestec S.A., Vevey, Switzerland

Filed Sep. 1, 1983, Ser. No. 528,561
Int. Cl.[4] A23L *1/226, 1/231*
U.S. Cl. 426—533 **10 Claims**

1. A process for preparing a flavorant for imparting cooked meat or fish flavor to foodstuffs which comprises:
(a) oxidizing a lipid material selected from the group consisting of triglycerides, unsaturated fatty acids and combinations thereof by contacting the lipid material with an oxidizing agent to form oxidation products, the extent of such oxidation corresponding to oxidation of the lipid material to a peroxide value between about 5 and about 150 milliequivalents per kilogram of lipid material;
(b) forming a reaction mixture before or after said oxidizing step by combining the lipid material with a source of amino acids capable of reacting with said oxidation products and with a sulfur-containing compound capable of reacting with said oxidation products, the amounts of said sulfur-containing compound and said amino acids together being sufficient to react with essentially all of the oxidation products produced in said oxidizing step, said amino acid source including an animal protein hydrolysate; and
(c) reacting said mixture until substantially all of said oxidation products have been consumed and the peroxide value of the reaction mixture is substantially zero thereby forming the flavorant, said oxidizing step being performed before or during said reacting step.

4,604,291

METHOD FOR MANUFACTURE OF ALUMINUM-COATED LEAD FRAME

Yen-Ching Huang, Ohiso, and Hideyasu Nikaido, Oume, both of Japan, assignors to Tokai University and Sumitomo Metal Mining Company Limited, both of Tokyo, Japan

Filed Aug. 26, 1985, Ser. No. 769,470
Claims priority, application Japan, Aug. 31, 1985, 59-182210
Int. Cl.[4] B05D *3/06*
U.S. Cl. 427—37 **4 Claims**

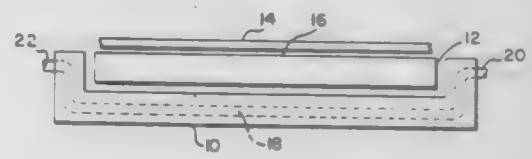
1. A method for the manufacture of an aluminum-coated lead frame for semiconductor integrated circuit devices, said method including the steps of covering said lead frame with a mask sheet possessing an opening for exposing an inner lead part of said lead frame, maintaining said lead frame at a temperature in a range of 100° to 240° C. and under a high degree of vacuum exceeding the level of 10^{-5} Torr, and deposing aluminum on said inner lead part by arc-discharge type ion plating.

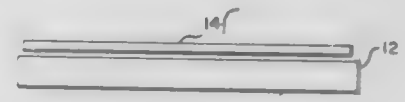
4,604,292

X-RAY MASK BLANK PROCESS

Robert D. Evans, Bedford, and Ward D. Halverson, Cambridge, both of Mass., assignors to Spire Corporation, Bedford, Mass.

Filed Apr. 26, 1985, Ser. No. 727,782
Int. Cl.[4] B05D *3/06*
U.S. Cl. 427—39 **10 Claims**





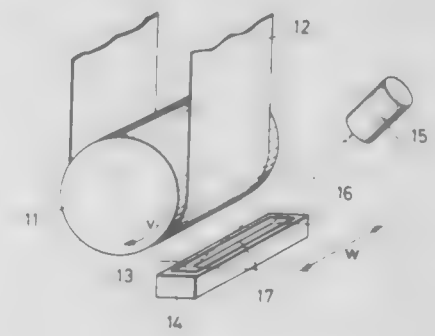
1. A process of growing a membrane for use as an X-ray mask blank comprising:
(a) providing a mounting fixture;
(b) providing a substrate on said mounting fixture;
(c) lowering the temperature of said substrate to about the boiling point of hydrogen by cooling said mounting fixture;
(d) depositing a membrane on said substrate while the same is being maintained at about said cooled temperature;
(e) removing said substrate and the thereon deposited membrane from said mounting fixture; and
(f) allowing said substrate to rise to ambient temperature.

4,604,293

PROCESS FOR PRODUCING MAGNETIC RECORDING MEDIUM

Ryuji Shirahata, and Akio Yanai, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Oct. 16, 1985, Ser. No. 788,177
Claims priority, application Japan, Oct. 16, 1984, 59-216922; Oct. 16, 1984, 59-216923
Int. Cl.[4] H01F *10/02*
U.S. Cl. 427—42 **9 Claims**



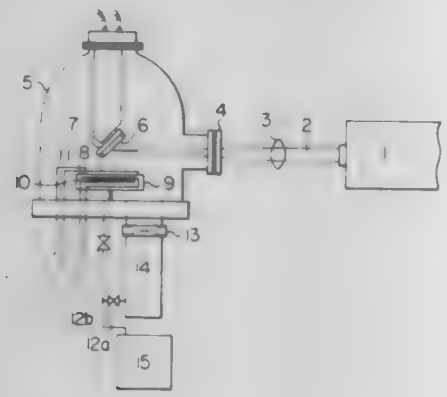
1. A process for producing a magnetic recording medium comprising the steps of heating a magnetic material evaporation source with at least one scanning electron beam and depositing a vapor of a magnetic material emitted from said magnetic material evaporation source onto a non-magnetic substrate continuously moving in a vacuum atmosphere, said magnetic material evaporation source being disposed substantially parallel to the width direction of said non-magnetic substrate to form a magnetic thin film on said substrate, wherein the scanning frequency of said electron beam(s) is at least about 2wv/n Hz, in which v m/min is the moving speed of the non-magnetic substrate; w m is the scanning width of the electrom beam(s) on said magnetic material evaporation source; and n is the number of said electron beam(s).

4,604,294

PROCESS FOR FORMING AN ORGANIC THIN FILM

Masahiro Tanaka, Yokohama; Kazufumi Azuma, Hiratsuka; Kazuo Nate, Machida, and Mitsuo Nakatani, Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 12, 1984, Ser. No. 660,230
Claims priority, application Japan, Oct. 14, 1983, 58-190898; Nov. 30, 1983, 58-224184; Apr. 16, 1984, 59-75067
Int. Cl.[4] B05D *3/06*
U.S. Cl. 427—53.1 23 Claims



1. A process for forming an organic thin film on a substrate by vacuum vapor deposition, which comprises exposing an organic compound as a vapor source to a laser beam having an energy level corresponding to that of the chemical bond of the organic compound in vacuum, to break the chemical bond and form vapors from said organic compound, and sputtering the organic compound vapors in vacuum onto a substrate surface and forming a film consisting essentially of the organic compound thereon.

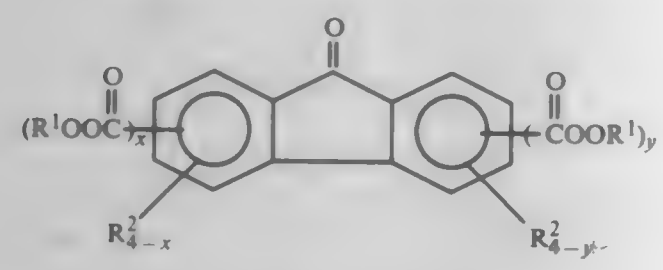
4,604,295

VISIBLE LIGHT ABSORBING PEROXY-ESTERS

Robert W. R. Humphreys, Bergenfield, N.J., assignor to Loctite Corporation, Newington, Conn.

Filed Dec. 22, 1983, Ser. No. 564,150
Int. Cl.[4] B05D *3/06*
U.S. Cl. 427—54.1 24 Claims

1. A peroxy compound having the general formula:



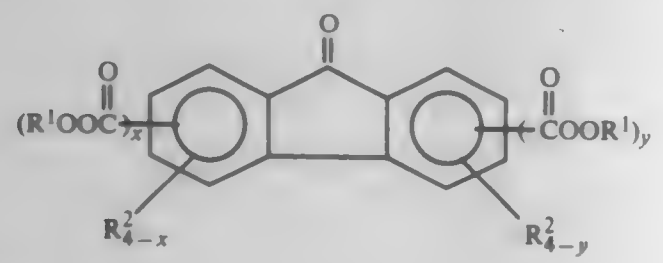
where

R^1 is alkyl, aralkyl, alkoxalkyl, alkenyl, alkynyl or carboxyalkyl;

R^2 is any group which does not cause spontaneous decomposition of the peroxy group;

x and y are integers between 0 and 4 and x+y is greater than or equal to 1.

19. A method of curing a free radically polymerizable formulation comprising an olefinically unsaturated compound and a compound of the formula:



wherein

R^1 is alkyl, aralkyl, alkoxyalkyl, alkenyl, alkynyl, carboxyalkyl, or carboxaryl;

R^2 is any group which does not cause spontaneous decomposition of the peroxy groups;

x and y are integers between 0 and 4 and x plus y is greater than or equal to 1,

the method comprising exposing the formulation to visible light for sufficient time to cure the formulation.

4,604,296

PROCESS FOR PRODUCTION OF MAGNETIC RECORDING ELEMENTS

Masashi Aonuma, and Yasuo Tamai, both of Odawara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation-in-part of Ser. No. 193,320, Oct. 2, 1980, abandoned. This application Nov. 20, 1984, Ser. No. 673,457
Claims priority, application Japan, Oct. 2, 1979, 54-126967
Int. Cl.[4] H01F *10/02*
U.S. Cl. 427—57 20 Claims

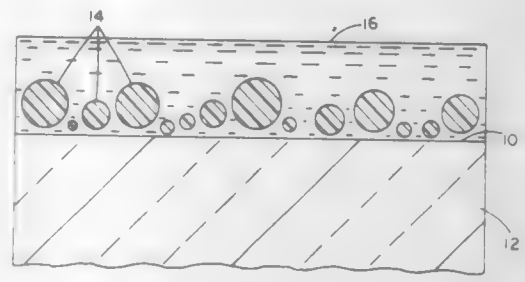
1. In a process for producing a magnetic recording element by preparing a coating composition including ferromagnetic metal fine powders that are mainly composed of iron and are produced by a dry reduction method, and coating said composition on a non-magnetic support to provide a magnetic recording layer, the improvement which comprises washing said ferromagnetic metal fine powders with water, methanol, water plus ethanol, water plus acetone, or a mixture thereof before preparing the coating composition, wherein said washing is carried out until the conductivity of an aqueous solution obtained after irradiation of a mixture of 1 part by weight of the ferromagnetic metal fine powder and 20 parts by weight of water with supersonic waves at 29 KHz for five minutes and removal of the fine powder from the mixture is 50 m /cm or less.

4,604,297

TRANSMISSION ENHANCING COATING

Peter D. Liu, 70 Marcellus Rd., Newton, Mass. 02159

Continuation-in-part of Ser. No. 636,369, Jul. 31, 1984, Pat. No. 4,582,761. This application Jan. 7, 1985, Ser. No. 689,388
Int. Cl.[4] B05D *5/06, 5/12;* B05B *5/00*
U.S. Cl. 427—64 9 Claims



1. A method of improvement of light transmission through a reflective/transmissive surface comprising external surface irregularities, said method comprising

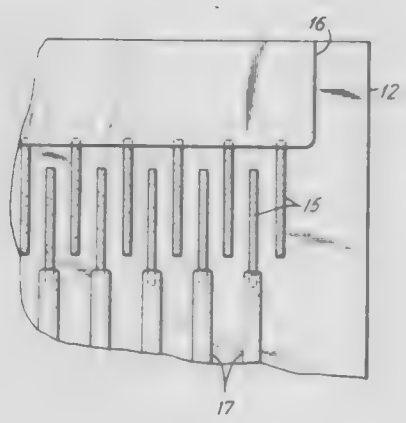
first creating said surface irregularities by providing an anti-glare dispersion of polyvinyl acetate particulates and water, applying said dispersion and allowing the dispersion to dry to form a coating that reduces reflected glare at said surface, while allowing transmission of light through the surface to permit viewing of objects behind the surface, and then

applying an inert liquid coating sufficiently thick to remove at least some, but not all, of the anti-glare effect of the surface irregularities.

4,604,298
FINGER LINE SCREEN PRINTING METHOD AND APPARATUS

Victor Shevtchuk, Trenton; Nhut Chau, Jackson, both of N.J., and Richard C. Schuessler, Levittown, Pa., assignors to Gulton Industries, Inc., East Greenwich, R.I.

Filed Feb. 12, 1985, Ser. No. 700,683
Int. Cl.[4] H05K *3/06*
U.S. Cl. 427—96 7 Claims



1. A method of screen printing a conductive ink onto a substrate to form a pattern of conductive lines adapted to be narrow and closely spaced, said method comprising the steps:

leaving said conductive ink exposed to air until said ink has a viscosity ranging from 700,000 to 900,000 centipoise at 70° Fahrenheit,

said air having temperature ranging from 65° to 75° Fahrenheit, and

after said exposure forcing said ink through a screen onto said substrate, said screen being a thin metallic sheet having a pattern of apertures.

4,604,299
METALLIZATION OF CERAMICS

Michael A. De Luca, Holbrook, and John F. McCormack, Roslyn Heights, both of N.Y., assignors to Kollmorgen Technologies Corporation, Dallas, Tex.

Continuation-in-part of Ser. No. 502,748, Jun. 9, 1983, abandoned. This application May 10, 1984, Ser. No. 607,874
Int. Cl.[4] B05D *5/12*
U.S. Cl. 427—98 32 Claims

22. Method of making a printed circuit on a surface of a ceramic substrate comprising:

treating the ceramic substrate with a molten alkali metal compound to adhesion promote or etch the surface;

exposing the surface to acidic halide solution containing one or more halides selected from the group consisting of chlorides, bromides, and iodides having an acidity and a halide concentration sufficient to eliminate bare spots in an adherent metal layer formed on the surface or selected parts thereof, wherein the acidic halide solution contains at least 1.5 moles of halide per liter;

treating the ceramic surface with a catalyst for electroless metal deposition;

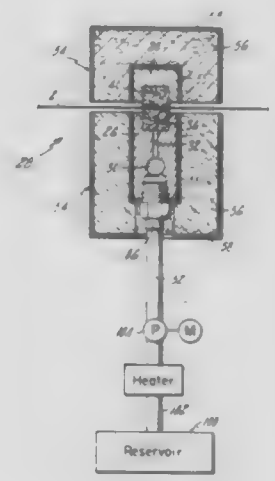
depositing metal onto the catalyzed surface; and

removing portions of the deposited metal to produce a metal printed circuit conductor pattern adhering to the surface of the ceramic substrate.

4,604,300
METHOD FOR APPLYING HIGH SOLIDS ENAMELS TO MAGNET WIRE

Steven F. Keys, Columbia City, and Dennis L. Peppler, Fort Wayne, both of Ind., assignors to Essex Group, Inc., Fort Wayne, Ind.

Filed Apr. 3, 1985, Ser. No. 719,395
Int. Cl.[4] B05D *5/12*
U.S. Cl. 427—120 5 Claims



1. A method for applying a polyvinyl butyral magnet wire enamel coating to magnet wire comprising:

heating a high solids polyvinyl butyral enamel coating material to reduce its viscosity to about 200 cps or less,

introducing the heated coating material into a heated applicator die wherein the heated coating material is wicked onto felt applicators,

passing a wire through the heated applicator and contacting said wire with the felt applicators, thereby coating the wire with a layer of enamel from about 0.03 to about 0.16 mil thick,

passing the coated wire through a means for curing the enamel coating forming the enamel coated magnet wire, wherein the enamel viscosity is maintained below 200 cps until applied to the wire, resulting in reduced defects in coils containing such wire.

4,604,301
PROCESS FOR PREPARING DIAPHRAGM-DEPOSITED ACTIVATED CATHODES

Karl Tari, Buffalo; Tilak V. Bommaraju, and Charles G. Rader, both of Grand Island, all of N.Y., assignors to Occidental Chemical Corporation, Niagara Falls, N.Y.

Filed Mar. 18, 1985, Ser. No. 712,933
Int. Cl.[4] B05D *5/12*; C25B *11/10*
U.S. Cl. 427—123 16 Claims

1. A process for preparing a diaphragm-deposited activated cathode comprising the steps of

(a) placing an activated cathode in a slurry of fibrous material,

(b) depositing a uniform mixture of said fibrous material onto the cathode by means of a vacuum,

(c) removing the cathode from the slurry and heating the cathode to a temperature of from about 50° C. to about 500° C. in an atmosphere consisting essentially of an inert gas or hydrogen to bake or sinter the fibrous material, and

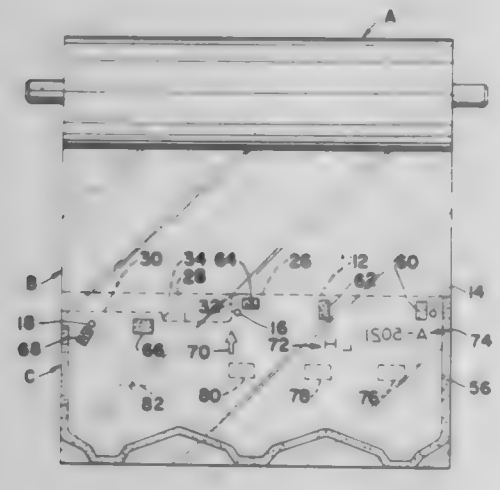
(d) cooling the cathode to about room temperature.

4,604,302

METHOD OF MANUFACTURING WATER DEFLECTOR FOR VEHICLE DOORS

Robert A. Isaksen, Chardon; David E. Frappier, Mayfield Hts., and Wallace R. Jones, Waite Hill Village, all of Ohio, assignors to The Excello Specialty Company, Cleveland, Ohio

Division of Ser. No. 415,228, Sep. 7, 1982, Pat. No. 4,469,732.
This application May 21, 1984, Ser. No. 612,414
Int. Cl.[4] B32B *31/18*
U.S. Cl. 427—208.6 4 Claims



1. A method of manufacturing water deflectors for application to the inner panels of vehicle doors comprising the steps of:

providing flat and flexible sheets of plastic material;

applying permanently plastic pressure sensitive adhesive to one face of each said sheet to cover a minor portion thereof in a pattern different from the peripheral shape of each said sheet and forming the outline of a desired configuration of a water deflector for application to the inner panel of a vehicle door;

curing said sheets for substantially permanently bonding said adhesive to said one face;

placing a plurality of said sheets on top of one another in a commonly oriented stacked relationship; and,

die cutting said stacked sheets generally along said desired configuration outwardly of said adhesive.

4,604,303

POLYMER COMPOSITION CONTAINING AN ORGANIC METAL COMPLEX AND METHOD FOR PRODUCING A METALLIZED POLYMER FROM THE POLYMER COMPOSITION

Makoto Takakura; Susumu Kondo, and Tatsuya Nogami, all of Funabashi, Japan, assignors to Nissan Chemical Industries, Ltd., Tokyo, Japan

Filed May 4, 1984, Ser. No. 607,214
Claims priority, application Japan, May 11, 1983, 58-82170; May 11, 1983, 58-82171; Mar. 23, 1984, 59-55565; Mar. 23, 1984, 59-55566; Apr. 2, 1984, 59-65627
Int. Cl.[4] B05D *3/02*
U.S. Cl. 427—229 17 Claims

1. A method for producing a metallized polymer, which comprises:

(a) contacting a polymer film comprising a polymer and an organic metal complex wherein the weight ratio of the polymer to the metal of said organic metal complex ranges from about 99.9:0.1 to 80:20, with a metallizing board, wherein said metallizing board has a heat-treated coating thereon comprising said organic metal complex;

(b) forming a metal layer on the surface of said film from the liberated metal from said organic metal complex by heating the polymer film and coated metallizing board of step (a); and

(c) recovering a polymer film with a metallized surface thereon.

4,604,304

PROCESS OF PRODUCING THICK LAYERS OF SILICON DIOXIDE

Lorenzo Faraone, Montgomery Township, Somerset County, and David L. Patterson, Wall Township, Monmouth County, both of N.J., assignors to RCA Corporation, Princeton, N.J.

Filed Jul. 3, 1985, Ser. No. 751,680
Int. Cl.[4] C23C *16/40*
U.S. Cl. 427—255 8 Claims

1. In a process of providing a thick layer of thermally grown silicon dioxide on a substrate having at least a sufficient thickness of silicon at the surface thereof to form the desired thickness of silicon dioxide, by oxidizing the silicon at an elevated temperature for a time sufficient to form the desired thickness of silicon dioxide, the improvement comprising oxidizing only so much of the silicon as required to form a thin layer of silicon dioxide, depositing a thin layer of silicon over the layer of silicon dioxide, completely oxidizing the silicon layer to increase the thickness of the silicon dioxide layer, and repeating the silicon deposition and oxidation steps if and as necessary to achieve a desired thickness of silicon dioxide.

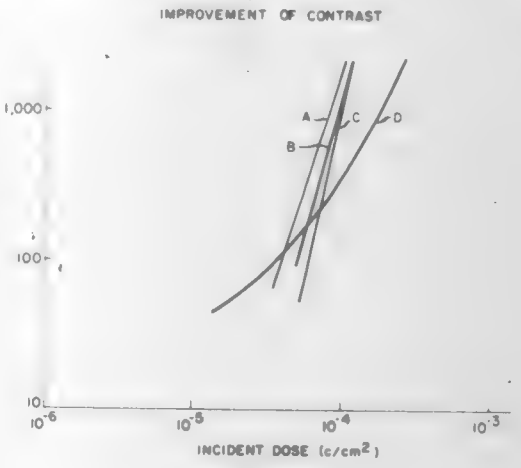
7. A process in accordance with claim 1, wherein the layers of silicon are deposited in the amorphous state by low pressure chemical vapor deposition at a temperature less than about 580° C.

4,604,305

IMPROVEMENTS IN CONTRAST OF A POSITIVE POLYMER RESIST HAVING A GLASS TRANSITION TEMPERATURE THROUGH CONTROL OF THE MOLECULAR WEIGHT DISTRIBUTION AND PREBAKED TEMPERATURE

Harry W. Deckman, Clinton, and John H. Dunsmuir, Annandale, both of N.J., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Continuation of Ser. No. 629,997, Jul. 12, 1984, abandoned, which is a continuation of Ser. No. 528,178, Aug. 31, 1983, abandoned, which is a continuation-in-part of Ser. No. 426,423, Sep. 28, 1982, abandoned. This application Jul. 31, 1985, Ser. No. 760,936
Int. Cl.[4] B05D *3/02*
U.S. Cl. 427—385.5 5 Claims



1. A method of increasing the contrast of a positive polymer resist having a glass transition temperature comprising:

A. obtaining a narrow molecular weight fraction positive polymer resist having $1 \leqslant M_w/M_n < 1.5$ and $M_w < 500{,}000$ wherein M_w = weight-average molecular weight and M_n = number-average molecular weight, said resist dissolved in a solvent;

B. coating a substrate with said narrow fraction resist such that a portion of said solvent remains trapped in said coating; and

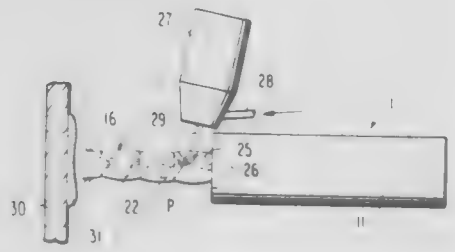
C. baking said narrow fraction resist coated substrate at a temperature above the glass transition temperature such that said solvent is removed from said coating.

4,604,306

ABRASIVE BLAST AND FLAME SPRAY SYSTEM WITH PARTICLE ENTRY INTO ACCELERATING STREAM AT QUIESCENT ZONE THEREOF

James A. Browning, P.O. Box 6, Hanover, N.H. 03755

Filed Aug. 15, 1985, Ser. No. 765,987
Int. Cl.[4] B05B *1/06, 1/24;* B05D *1/10*
U.S. Cl. 427—423 10 Claims



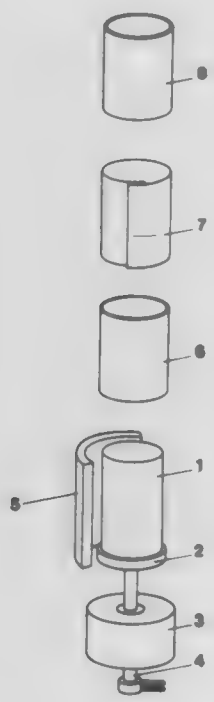
1. An improved flame spray method comprising the steps of: forming a primary jet stream of particulate material suspended in a carrier gas; forming a high velocity gaseous jet of non-circular geometry with a quiescent zone extending from the outer edge of the projected, to be formed circular jet, to well into the center of said jet, and introducing said stream of particulate material into said quiescent zone for subsequent acceleration of the particulate matter to high velocity and concentration thereof at the center of the accelerating stream wherein dynamic forces draw the non-circular flow of gases into a singular circular jet beyond said quiescent zone, capturing the particulate matter introduced within the quiescent zone.

4,604,307

TUBULAR OBJECT OF A LAYERED PLASTICS MATERIAL AND A METHOD FOR THE MANUFACTURE THEREOF

Harm R. Spreeuwers, Heelsum, Netherlands, assignor to Akzo N.V., Arnhem, Netherlands

Filed Jun. 25, 1984, Ser. No. 624,289
Claims priority, application Netherlands, Jul. 18, 1983, 8302560
Int. Cl.[4] B29C *17/07*
U.S. Cl. 428—35 13 Claims



1. A layered, rigid, dimensionally stable tubular object for packaging and transporting chemicals, beverages, foodstuffs and the like, comprising a first layer of 50 to 1000 μm thickness, a film-shaped interlayer and a second layer of 75 to 1000 μm thickness, said first and second layers being of axially and radially molecular oriented polyethylene terephthalate, said first layer forming the inner wall of the object and said second layer being shrunk onto and clamping the interlayer onto the first layer, said first layer and second layer being of substantially the same thickness and, further, thermally stabilized up to a degree of crystallization of at least 25%.

4,604,308

THERMOSETTING POWDER LACQUER FOR COVERING WELD SEAMS

Hans R. Widmer, Hombrechtikon, and Christian Schmid, Meilen, both of Switzerland, assignors to Vernicolor AG, Grüningen, Switzerland

Division of Ser. No. 586,330, Mar. 5, 1984, Pat. No. 4,549,000. This application Aug. 7, 1985, Ser. No. 763,239
Claims priority, application Switzerland, Mar. 9, 1983, 1264/83
Int. Cl.[4] B27N *5/02*
U.S. Cl. 428—35 10 Claims

1. A metal container comprising:
a weld seam;
an interior weld seam cover;
said weld seam cover comprising a flexible thermoset lacquer; and
said flexible thermoset lacquer essentially consisting of:
a polyaddition product formed by an aromatic epoxide resin mixture including at least two components a first of which contains a maximum of two epoxide groups per molecule on the average and a second of which which contains more than two epoxide groups per molecule on the average;
a hardener selected from the group: condensation product of the diglycidylether of bisphenol-A and bisphenol-A, acidic polyester on the basis of trimellitic acid anhydride and aliphatic polyol, phenolic resin, or a mixture thereof; and
a catalyst.

4,604,309

FOOD CASING WHICH WILL TRANSFER A SMOKE COLOR TO FOOD ENCASED THEREIN AND EXTRACTED NATURAL LIQUID SMOKE COLORANT FOR USE THEREWITH

Michael S. Goldberg, Danville, Ill., assignor to Teepak, Inc., Oak Brook, Ill.

Filed May 19, 1982, Ser. No. 379,795
Int. Cl.[4] A22C *13/00;* A23L *1/22*
U.S. Cl. 428—36 20 Claims

1. A casing for meat products comprising a tube, impregnated with a colorant, said colorant formed by neutralizing an aqueous natural liquid smoke coloring solution, with a solution consisting essentially of water soluble alkaline neutralizing agent, to a pH of from about 6 to about 8 to precipitate a substantial portion of tar materials contained therein and removing said precipitated tar materials.

4,604,310

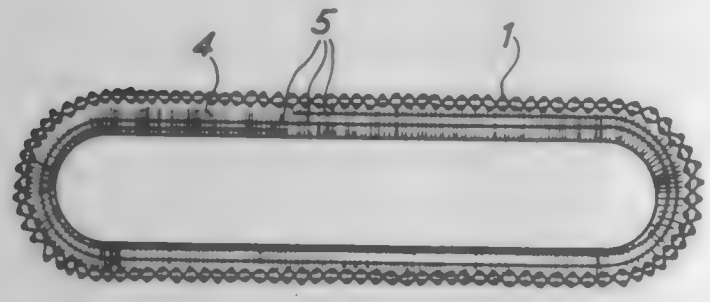
ENDLESS BELTS FOR BATTERY PASTING MACHINES AND METHOD FOR MANUFACTURING THE SAME

Serafino Bertotto, Como, Italy, assignor to Industrie Tessili Bresciane S.P.A., Merone, Italy

Filed Jul. 11, 1984, Ser. No. 629,720
Claims priority, application Italy, Aug. 3, 1983, 22412 A/83
Int. Cl.[4] B32B *5/02*
U.S. Cl. 428—36 14 Claims

1. A seamless endless conveyor belt for battery pasting machine which comprises two layers
(a) an outer layer formed by between 1 and 3 plies of an endless woven fabrics, and
(b) an inner backing layer formed by multi-strata of non-woven webs made of synthetic staple fibres and light woven meshes, said belt being prepared by inserting said

light woven meshes between said outer layer and said non-woven webs and bonding said two layers by needling



whereby the outer layer and the inner layer are bounded together and dewatering channels are formed therethrough to let liquid flow out.

4,604,311

PRECOAT RESIN DISPERSION FOR TUFTED CARPETS

Raymond W. Goss, New Castle County, Del., assignor to Hercules Incorporated, Wilmington, Del.

Division of Ser. No. 627,705, Jul. 3, 1984. This application Jun. 27, 1985, Ser. No. 749,593
Int. Cl.⁴ B32B *3/02, 33/00*
U.S. Cl. 428—96 **18 Claims**

1. A carpet comprising:

(a) a primary backing fabric stitched with loops of yarn on the frontside of the primary backing fabric to form a tufted structure;

(b) a precoat resin dispersion coated on the backside of the primary backing fabric having a solids content from about 63% to about 69% containing

(i) from about 93% to about 99% by weight of at least one resin material selected from the group consisting of hydrocarbon resins prepared from petroleum refined streams, polyterpene resins and esters of rosin having a Ring and Ball softening point of from about 60° C., to about 100° C. in an aqueous dispersion having a solids content from about 53% to about 58%;

(ii) from about 0.5% to about 5%, by weight of the total water content of (i), of at least one water-soluble polymer selected from the group consisting of polyacrylates and cellulose derivatives;

(iii) from about 0.1% to about 2.0% of at least one cationic polyamide-epichlorohydrin resin, by weight of the total solids of (i); and

(iv) optionally, sufficient water so that the solids content of the precoat resin dispersion is from about 63% to about 69%; and

(c) a carboxylated styrene-butadiene latex applied over the precoat resin dispersion.

4,604,312

STRESS-FREE, EMBOSSED, ORNAMENTED TILE SURFACE COVERING AND PROCESS FOR MAKING THE SAME

Thomas C. Creighton, Manheim; William C. Dorsey, Conestoga; Walter J. Lewicki, Jr., Lancaster; Harry F. Long, Lancaster, and Richard M. Ringer, Lancaster, all of Pa., assignors to Armstrong World Industries, Inc., Lancaster, Pa.

Continuation-in-part of Ser. No. 434,631, Oct. 15, 1982, abandoned. This application Jun. 11, 1984, Ser. No. 619,318
Int. Cl.⁴ B32B *31/00;* **B26D** *5/00;* **B31F** *1/20;* **D04H** *1/00*
U.S. Cl. 428—137 **6 Claims**

1. A process for making a stress-free, dimensionally stable, embossed surface covering comprising:

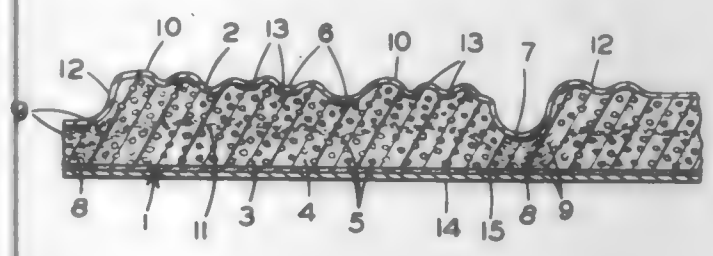
(a) providing a resinous thermoplastic transparent top layer having a plurality of openings extending through the thickness thereof and adapted to allow passage of air therethrough during a subsequent embossing and fusion step, said resinous thermoplastic top layer being a vinyl film having a design on one surface thereof;

(b) providing a low density porous thermoplastic base layer comprising a pre-consolidated resinous dryblend having preformed, hollow, non-thermoplastic particles homogeneously distributed therein;

(c) applying the resinous top layer onto the base layer;

(d) placing an embossing plate with deep recesses adjacent the resinous top layer, wherein the embossing plate is part of a flatbed press having a cooled embossing plate and a cooled backing plate;

(e) embossing the composite structure by pressure which presses the embossing plate into the surface of the com-



posite structure having the resinous top layer by applying high frequency energy to the structure after the press is closed;

(f) permitting air trapped in the deep recesses of the embossing plate to escape through the openings of the top layer into the porous base layer; and

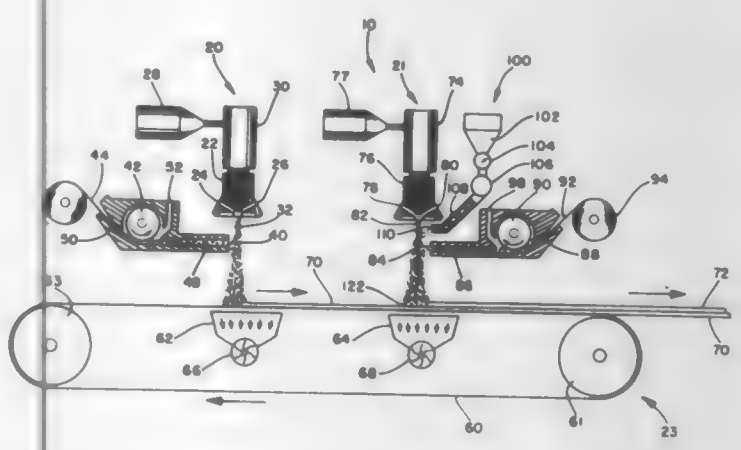
(g) then heating the composite structure under pressure to permit the film to seal shut its perforations and then to fuse the base layer without forcing base layer material into the openings of the top layer.

4,604,313

SELECTIVE LAYERING OF SUPERABSORBENTS IN MELTBLOWN SUBSTRATES

Timothy M. McFarland, and Theodore B. Lang, both of Winnebago County, Wis., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Filed Apr. 23, 1984, Ser. No. 602,993
Int. Cl.⁴ B32B *3/00*
U.S. Cl. 428—172 **14 Claims**



1. A layered nonwoven fabric-like material having a unique combination of strength, absorbency and hand, said material comprising

A. at least one normal absorbent layer of a gas-formed matrix of thermoplastic polymeric meltblown microfibers and a multiplicity of individualized and gas-formed staple fibers disposed throughout said matrix of microfibers and engaging at least some of said microfibers to space the microfibers apart from each other, said staple fibers being interconnected by and held captive within said matrix of microfibers by mechanical entanglement of said microfibers with said staple fibers, the mechanical entanglement and interconnection of said microfibers and staple fibers forming a coherent integrated fibrous structure, and

B. at least one highly-absorbent layer integrally connected to said normal absorbent layer, said highly-absorbent layer

comprising a gas-formed matrix of thermoplastic polymeric meltblown microfibers and a multiplicity of individualized and gas-formed staple fibers and superabsorbent particles disposed throughout said matrix of microfibers and engaging at least some of said microfibers to space the microfibers apart from each other, said staple fibers and said superabsorbent being interconnected by and held captive within said matrix of microfibers by mechanical entanglement of said microfibers with said staple fibers and said superabsorbent particles, the mechanical entanglement and interconnection of said microfibers and staple fibers and said superabsorbent particles forming a coherent integrated fibrous structure.

4,604,314

PRINTED CIRCUIT BOARDS OF LAMINATED THERMOSETTING SHEETS

Wolfgang von Gentzkow, Kleinsendelbach; Maximilian Hödl, Munich; Wolfgang Kleeberg, Erlangen, and Helmut Markert, Nuremberg, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Jan. 25, 1985, Ser. No. 694,776

Claims priority, application Fed. Rep. of Germany, Jan. 27, 1984, 3402883

Int. Cl.[4] C08K *5/25;* **C08L** *63/00*

U.S. Cl. 428—209 **9 Claims**

1. A laminated thermosetting sheets based printed circuit board wherein the bonding agent of said printed board comprises an epoxy resin containing an amount of N,N'-bis-salicyloyl hydrazine effective to inhibit the formation of conductive anodic filaments in said printed board.

4,604,315

HIGH BULK, BIAXIAL ELASTIC, HEAT SHRUNK FABRIC

Clyde A. McCall, Walhalla, S.C.; Michael J. Campbell, Roswell, and William B. Dean, Cornelia, both of Ga., assignors to Chicopee, New Brunswick, N.J.

Filed Dec. 20, 1983, Ser. No. 563,716

Int. Cl.[4] A61L *15/00;* **D03D** *15/04, 15/08;* **D04B** *11/12*

U.S. Cl. 428—230 **12 Claims**

1. A method of making a heat shrunk, bulk, elastic fabric comprising:

(a) forming an open pattern leno weave of highly heat shrinkable texturized theremoplastic warp direction yarns and "heat set", relatively less heat shrinkable texturized thermoplastic weft direction yarns, and

(b) applying heat to said yarns to bulk and shrink said yarns, to yield a fabric with good elastic recovery in both warp and weft directions, the bulking of the heat-shrunk warp yarns causing said yarns to twist and lie on their sides thereby further twisting the weft yarns and creating a fabric with enhanced elasticity in the weft direction.

7. The fabric produced by the method of claim 1.

4,604,316

FLUOROCHEMICAL COMPOSITION FOR COATING SOIL RESISTANT YARN

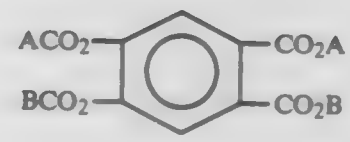
Robert H. Thomas, deceased, late of Lexington County; by Mary A. Thomas, executrix, Columbia, both of S.C.; Willis B. Hammond, Chatham, N.J.; Michael P. Friedberger, and William A. Archie, both of Petersburg, Va., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Continuation-in-part of Ser. No. 350,544, Feb. 19, 1982. This application Sep. 14, 1982, Ser. No. 417,970

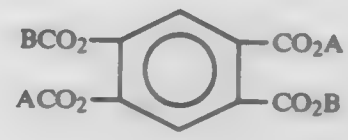
Int. Cl.[4] B32B *7/00;* **C07C** *69/76;* **D06M** *13/34*

U.S. Cl. 428—265 **33 Claims**

1. A composition of matter comprising 5 to below 70 percent by weight of fluorocarbon compounds of a mixture of meta and para pyromellitates having the structure



I.



II.

and above 30 to 95 percent by weight of fluorocarbon compounds of a dimer of the same pyromellitates selected from the group consisting of

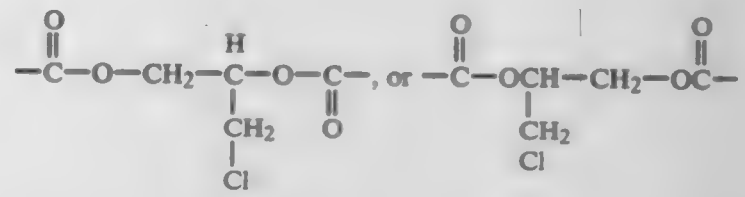


I.

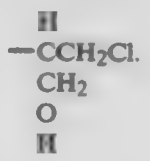


II.

and related oligomers,
and mixtures thereof,
wherein Q is



wherein A is $(CH_2)_2(CF_2)_nCF_3$ where n is 5 to 13 and B is $CH_2CHOHCH_2Cl$, and/or



4,604,317

CURABLE COMPOSITIONS CONTAINING A POLYEPOXIDE AND A HALOGENATED BISPHENOL

Jody R. Berman; Christine C. Berkefelt, and Dale J. Aldrich, all of Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 658,083, Oct. 5, 1984, abandoned. This application May 24, 1985, Ser. No. 737,591

Int. Cl.[4] C08G *59/08*

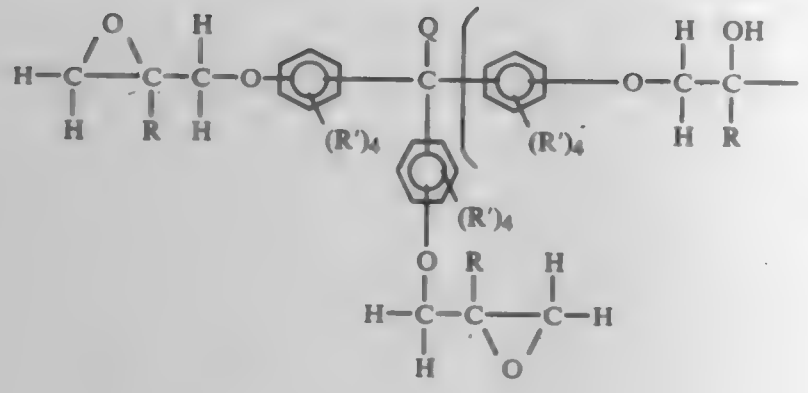
U.S. Cl. 428—285 **48 Claims**

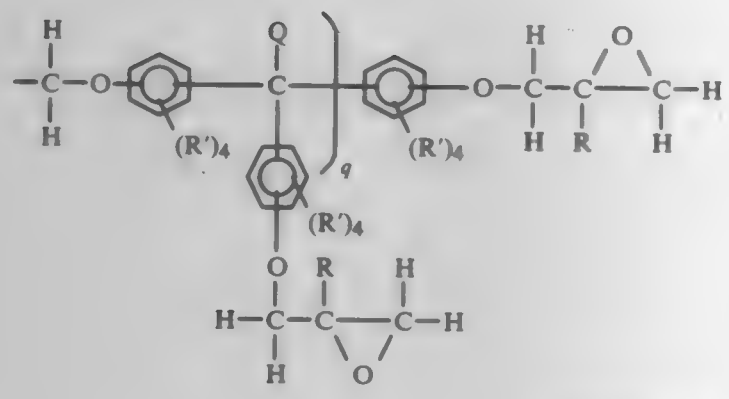
1. A composition comprising

(A) at least one of

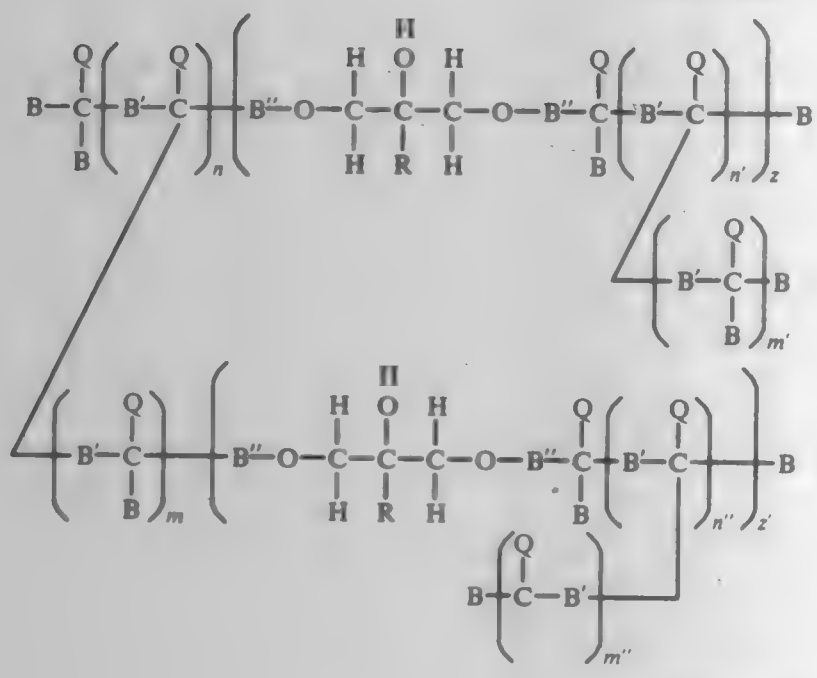
(1) at least one epoxy resin represented by the following formulas I, II, III, IV, V or VI

FORMULA I

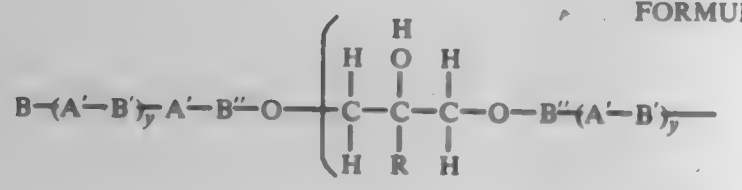


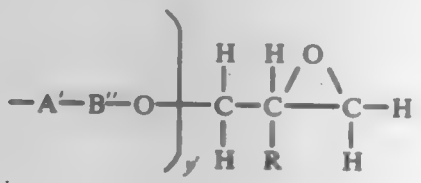


FORMULA II

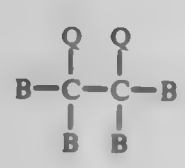


FORMULA III

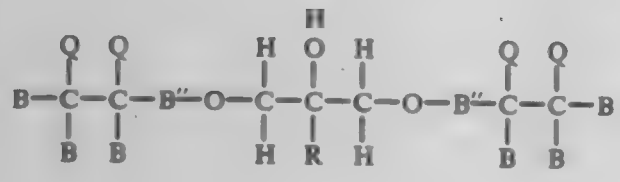




FORMULA IV

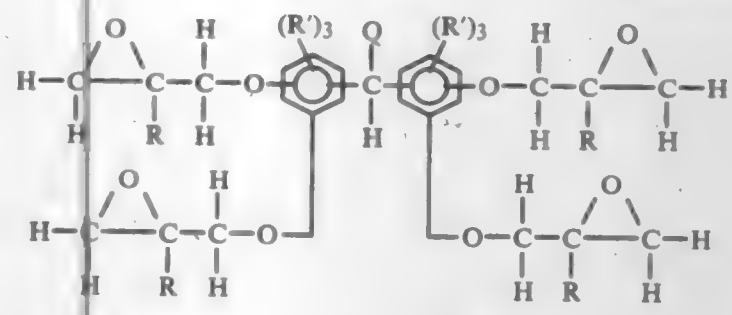


FORMULA V

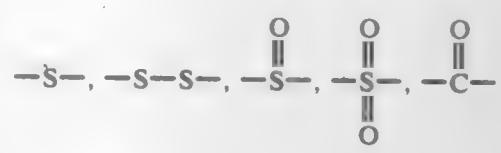


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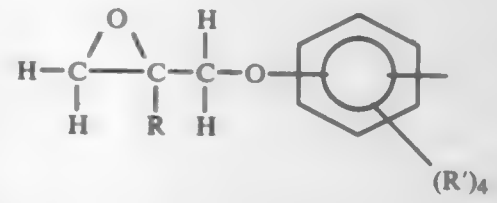
FORMULA VI



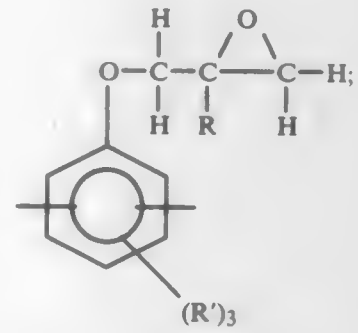
wherein each A and A′ is independently a divalent hydrocarbyl group having from 1 to about 12 carbon atoms,



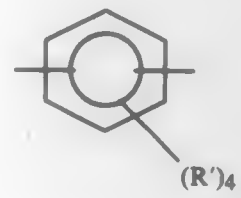
or —O—; each B is represented by the formula



each B′ is represented by the formula



each B″ is represented by the formula



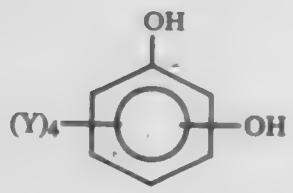
each R is independently hydrogen or an alkyl group having from 1 to about 4 carbon atoms; each Q is independently hydrogen or a hydrocarbyl group having from 1 to about 10 carbon atoms; each R′ is independently hydrogen, a hydrocarbyl or hydrocarbyloxy group having from 1 to about 10 carbon atoms or a halogen; m has a value of n − 1; m′ has a value of n′ − 1; m″ has a value of n″ − 1; each n, n′ and n″ independently has a value from zero to about 3; q has a value from zero to about 4; each y independently has an average value from 1 to about 5; y′ has an average value of from zero to about 3 and each z and z′ independently has a value from zero to about 3;

(2) the reaction product of

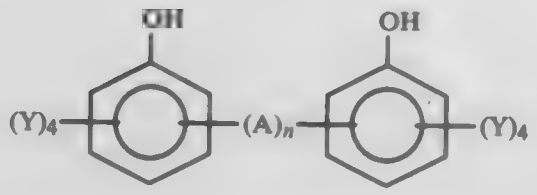
(a) at least one epoxy resin as defined in component (A-1) and

(b) at least one dihydric phenol represented by the following formulats VII or VIII

FORMULA VII



FORMULA VIII

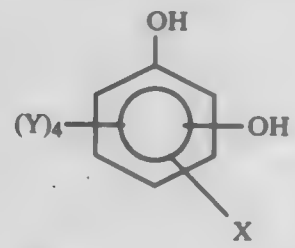


wherein A is as defined above; each y is independently hydrogen, a halogen or a hydrocarbyl or hydrocarbyloxy group having from 1 to about 10 carbon atoms; and n has a value of zero or 1; and wherein components (A-2-a) and (A-2-b) are present in quantities such that the ratio of phenolic hydroxyl groups to epoxide groups is from about 0.01:1 to about 0.5:1; or

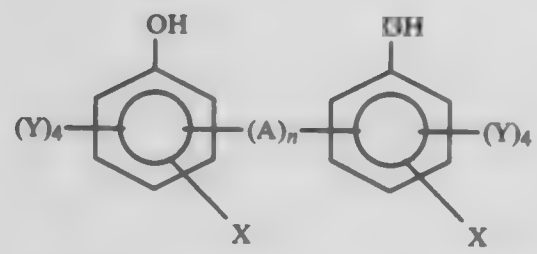
(3) mixtures thereof;

(b) at least one halogenated dihydric phenol represented by the following formulas IX or X

FORMULA IX



FORMULA X



wherein A, Y and n are as defined above; each X is a halogen; and

wherein components (A) and (b) are present in quantities such that the ratio of phenolic hydroxyl groups to epoxide groups is from about 0.7:1 to about 1.1:1.

4,604,318

COMPOSITION AND PROCESS FOR FORMING INORGANIC RESINS AND RESULTING PRODUCT

William L. Prior, Newark, and William C. Sargeant, Bolivar, both of Ohio, assignors to Masonite Corporation, Chicago, Ill.

Continuation-in-part of Ser. No. 415,314, Sep. 7, 1982, Pat. No. 4,504,555. This application Oct. 1, 1984, Ser. No. 656,686

The portion of the term of this patent subsequent to Mar. 12, 2002, has been disclaimed.

Int. Cl.[4] B28B *1/16*; C04B *9/04*

U.S. Cl. 428—289 **58 Claims**

18. A method of manufacturing a resin article comprising:

mixing two components A and B to form a mixture undergoing exothermic reaction;

directing the mixture toward a support surface capable of supporting said mixture until the reaction is completed; wherein component A comprises an aqueous solution of an aluminum phosphate, a magnesium phosphate or mixtures thereof having a viscosity ranging between about 700 and about 10,000 centipoises; and wherein component B comprises an aqueous vehicle; a phosphate-reactive constituent comprising wollastonite, or a source of magnesium oxide or mixtures thereof, and an essentially non-reactive phosphate dispersing agent; said component B having a viscosity permitting it to be rapidly and thoroughly mixed with component A, thereby to form a slurry which reacts exothermically to form an inorganic resin article on said support surface.

19. The method of claim 18 wherein said support surface comprises a fiberglass mat and said mixture impregnates at least an upper surface of said mat to form a fiber-reinforced article.

21. The product made by the process of claim 19.

4,604,319

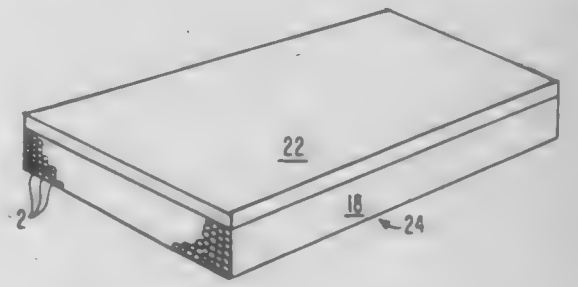
THERMOPLASTIC INTERLEAFED RESIN MATRIX COMPOSITES WITH IMPROVED IMPACT STRENGTH AND TOUGHNESS

Robert E. Evans, Trumbull, Conn., and Kevin R. Hirschbuehler, Bel Air, Md., assignors to American Cyanamid Company, Stamford, Conn.

Filed Jun. 1, 1984, Ser. No. 616,540

Int. Cl.[4] B32B *5/12*

U.S. Cl. 428—290 **20 Claims**



1. An interleafed fiber resin matrix composite which comprises:

(A) a fiber resin matrix layer comprising (i) high-strength reinforcing filaments and (ii) a thermosetting resin composition coating said filaments, and

(B) a discrete interleaf resin layer comprising (i) a thermoplastic resin, adhesively-bondable to said fiber resin matrix layer, wherein said thermosetting resin composition (A)(ii) exhibits shear modulus of at least 90,000 psi at high temperatures or at least 50,000 psi at high temperatures under wet conditions, and said interleaf resin (B) exhibits shear modulus of at least 50,000 psi and a yield strength of at least 3000 psi at high temperatures.

4,604,320

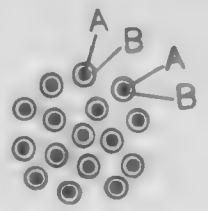
ULTRAFINE SHEATH-CORE COMPOSITE FIBERS AND COMPOSITE SHEETS MADE THEREOF

Miyoshi Okamoto, Takatsuki; Hiromichi Iijima, Otsu, and Akito Miyoshi, Kusatsu, all of Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Division of Ser. No. 678,386, Dec. 6, 1984, Pat. No. 4,557,972, which is a continuation of Ser. No. 347,623, Feb. 10, 1982, abandoned, which is a continuation-in-part of Ser. No. 338,978, Jan. 12, 1982, abandoned. This application Aug. 23, 1985, Ser. No. 768,730

Int. Cl.[4] B32B *27/00*

U.S. Cl. 428—290 **4 Claims**



1. A composite sheet comprising a fabric containing fiber components impregnated with polyurethane, in which all or parts of the fiber components comprise ultrafine composite fibers having a fineness of 0.5 denier or less, wherein said ultrafine composite fibers comprise a sheath component and a core component, the sheath component is mainly composed of a polyester copolymerized with a sulfoisophthalate selected

from the group consisting of 5-sodium sulfoisophthalate, 5-lithium sulfoisophthalate and 5-potassium sulfoisophthalate, and the core component is composed of a polyester selected from the group consisting of polyethylene terephthalate having an IV value of 0.75 to 1.2 and polybutylene terephthalate having an IV value, of 0.85 to 2.5, which core component is free of said sulfoisophthalate or contains sulfoisophthalate at a ratio smaller than in the sheath component.

4,604,321

MERCURY ADSORBING AGENT

Mitsuo Okahara, Kawanishi, and Isao Ikeda, Suita, both of Japan, assignors to Nippon Petrochemicals Co., Ltd., Chiyoda, Japan

Filed Sep. 27, 1984, Ser. No. 655,349

Claims priority, application Japan, Sep. 29, 1983, 58-181481

Int. Cl.[4] B05D *3/02;* C08K *3/04, 3/34, 3/36*

U.S. Cl. 428—319.9 8 Claims

1. A mercury adsorbing agent which consists of a porous solid carrier having a specific surface area greater than 10 m^2/g and a conjugated diolefin which contains between 4 and 8 carbon atoms polymer deposited on said solid carrier wherein said solid carrier is a member selected from the group consisting of silica gel, alumina, diatomaceous earth, active carbon, crystalline aluminosilicate and zeolite, said conjugated diolefin polymer has a number average molecular weight of 300–50,000 and said conjugated diolefin polymer is deposited in an amount of 5–50 weight percent upon said carrier.

4,604,322

METALLIZABLE POLYPROPYLENE FILM

Donald E. Reid, Landenberg, Pa., assignor to Hercules Incorporated, Wilmington, Del.

Filed Aug. 6, 1985, Ser. No. 762,905

Int. Cl.[4] B32B *27/08, 27/16, 27/18*

U.S. Cl. 428—332 5 Claims

1. A metallizable polypropylene film comprising a homopolypropylene core containing about 0.03 to 0.15% by weight based on the polymer of a fatty acid amide slip agent and having on one of its surfaces a 1 to 20 gauge layer comprised of a corona-treated propylene—ethylene copolymer containing about 1 to 10 wt. % ethylene and having no slip agent included therein.

4,604,323

MULTILAYER CATION EXCHANGE MEMBRANE

Bruce B. Johnson, Wallingford, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Feb. 22, 1985, Ser. No. 704,530

Int. Cl.[4] B32B *27/00;* C25B *1/46, 13/08*

U.S. Cl. 428—336 2 Claims

1. A fluorinated cation exchange membrane having at least one fluorine atom on the carbon adjacent to each functional group and having three adhered layers which are, in turn,

(a) a first layer consisting essentially of polymer with sulfonic ion exchange groups,

(b) a second layer adhered to the first layer consisting essentially of polymer with carboxylic ion exchange groups, and

(c) a third layer adhered to the second layer, having a thickness of less than 25 microns and consisting essentially of polymer with carboxylic ion exchange groups having an ion exchange capacity at least 0.1 milliequivalent/gram of dry resin greater than that of the second layer.

4,604,324

MULTI-LAYER POLYPROPYLENE FILM STRUCTURE AND METHOD OF FORMING THE SAME

A. Michael Nahmias, Victor, and Hee C. Park, Fairport, both of N.Y., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Sep. 28, 1984, Ser. No. 655,614

Int. Cl.[4] B32B *27/08*

U.S. Cl. 428—349 15 Claims

1. An oriented multi-layer polypropylene film structure comprising coextruded layers of:

(a) a base layer comprising polypropylene of comparatively high stereoregularity; and

(b) a skin layer comprising a polyolefin of comparatively low stereoregularity on at least one surface of (a), said skin layer containing a combination of finely divided silica, a silicon oil and a polymer incompatible with said skin layer polyolefin, said incompatible polymer having a melting point of greater than 150° F. above the melting point of the skin layer polyolefin.

4,604,325

NON-AQUEOUS COATING FOR GLASS FIBERS AND GLASS FIBERS COATED THEREWITH

Jean-Claude Pollet, Granville; Gordon P. Armstrong, Newark, and Martin C. Flautt, Granville, all of Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed May 10, 1985, Ser. No. 732,777

Int. Cl.[4] B32B *17/10;* C08K *5/01*

U.S. Cl. 428—391 10 Claims

8. A glass fiber including a coating thereon, which coating consists essentially of a cycloaliphatic epoxy resin, an ethylene-ethylacrylate copolymer, a microcrystalline wax, a phenolic-modified terpene resin, and an organosilane.

4,604,326

POROUS REGENERATED CELLULOSE HOLLOW FIBER AND PROCESS FOR PREPARATION THEREOF

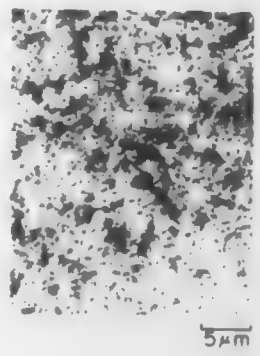
Seiichi Manabe, Ibaraki; Michitaka Iwata, Osaka, and Mamoru Inoue, Nobeoka, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Japan

Filed Apr. 27, 1984, Ser. No. 604,512

Claims priority, application Japan, May 2, 1983, 58-076305; May 2, 1983, 58-076306

Int. Cl.[4] D02G *3/00*

U.S. Cl. 428—398 7 Claims



1. A porous regenerated cellulose hollow fiber characterized by an inner wall surface, an outer wall surface, a hollow portion extending continuously over the entire fiber length, and a wall thickness portion having pores piercing therethrough between said inner wall surface and outer wall surface , said hollow fiber having about 10^5 to about 10^9 of fine particles and agglomerates thereof per cm^2 of said hollow fiber area wherein said fine particles have a diameter of 0.02 to 1 μm, the cellulose molecules of said fiber having a viscosity average molecular weight of at least 5×10^4, said pores having an average pore diameter D_1 and an in-plane porosity Pr on the inner wall surface of said hollow fiber, an average pore diameter D_2 and an in-plane porosity Pr on the outer wall surface of said hollow fiber and an average pore diameter D_3 and an in-plane porosity Pr of the intermediate part of said wall thickness portion, each

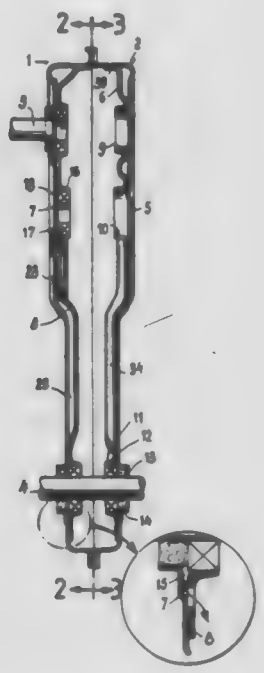
of the average pore diameters D_1 and D_2 being in the range of 0.02 to 10 μm and the in-plane porosity Pr on the outer wall surface of the hollow fiber being at least 10%.

4,604,327

MULTI-LAYER COMPOSITE-WALL PANEL OR CASE STRUCTURE

Gabriel de Smet, Courbevoie, France, assignor to Union Siderurgique du Nord et de l'Est de la France, Puteaux, France

Filed May 18, 1984, Ser. No. 611,814
Claims priority, application France, May 19, 1983, 83 08313
Int. Cl.[4] B32B *3/30*
U.S. Cl. 428—594 14 Claims



1. A composite-wall case structure, comprising two assembled composite wall panels, each comprising at least two shaped walls having regions in which confronting surfaces thereof are in adjoining relation to each other and interconnected by bonding and spot-welding and regions in which hollow bodies are formed between said confronting surfaces for imparting a required rigidity to the panel, one of said walls constituting an outer shell and the other wall a a rolling bearing-carrying wall located inside said case structure, said walls defining apertures for the passage of shafts.

4,604,328

DUCTILE BRAZING ALLOY CONTAINING REACTIVE METALS AND PRECIOUS METALS

Howard Mizuhara, Hillsborough, Calif., assignor to GTE Products Corporation, Stamford, Conn.

Continuation of Ser. No. 422,625, Sep. 24, 1982. This application Nov. 16, 1984, Ser. No. 672,057
Int. Cl.[4] C22C *5/02, 5/04, 9/00, 30/00*
U.S. Cl. 428—606 1 Claim

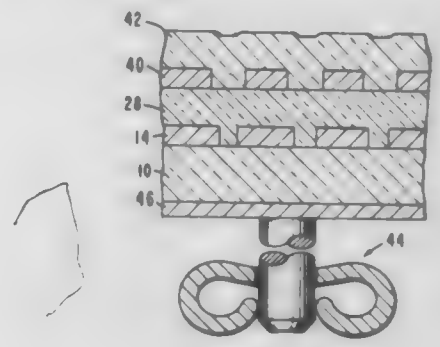
1. An article consisting essentially of a ductile brazing alloy foil having a liquidus temperature of from about 890° C. to about 1400° C., said alloy having a composition consisting essentially of from about 0.25% by weight to about 5% by weight titanium, from about 25% by weight to about 85% by weight of a gold palladium mixture wherein the gold is from about 28% by weight to about 81% by weight and palladium is from about 8% by weight to about 58% by weight of said alloy, from about 3% by weight to about 40% by weight of nickel, from about 20% by weight to about 61% by weight of copper, from 0 to about 40% by weight of molybdenum and from about 0 to about 30% by weight of chromium.

4,604,329

HIGH TECHNOLOGY DECORATIVE MATERIALS AND FABRICATION OF SAME

William L. Reber, 16321 Pacific Coast Hwy., #131, Pacific Palisades, Calif. 90272

Continuation-in-part of Ser. No. 523,683, Aug. 16, 1983, Pat. No. 4,490,440. This application Oct. 5, 1984, Ser. No. 658,409
The portion of the term of this patent subsequent to Dec. 25, 2001, has been disclaimed.
Int. Cl.[4] B44D *1/52*
U.S. Cl. 428—620 28 Claims



1. A decorative article of manufacture, comprising:
(a) at least one semiconductor substrate;
(b) a patterned coating formed on a major surface of said substrate, said patterned coating having formed therein a series of lines arranged in a variety of patterns such that incident light will be diffracted in a pleasing pattern, said lines evidencing a ratio of line width to line spacing of about 1:1 to 3:1; and
(c) a transparent layer formed over said at least one patterned coating.

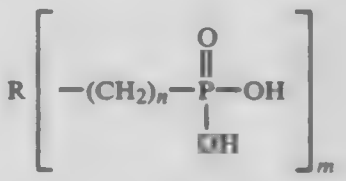
4,604,330

FUEL CELL ELECTROLYTE

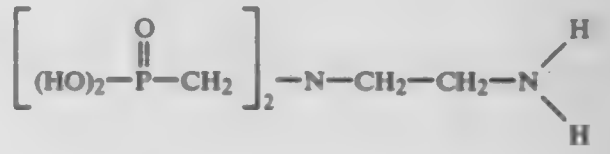
Edward N. Walsh, New City, N.Y., assignor to Stauffer Chemical Company, Westport, Conn.

Filed Dec. 16, 1983, Ser. No. 562,319
Int. Cl.[4] H01M *8/08*
U.S. Cl. 429—13 24 Claims

1. A process for making a fuel cell comprising using one or more phosphonic acids of the formula



wherein m represents an integer from 1 to 3, n represents 0 or the integer 1, and R is a moiety derived from hydroxyalkyl, alkyl, phenyl, alkylphenyl, vinyl, halophenyl, halomethylphenyl, amine, ammonia and



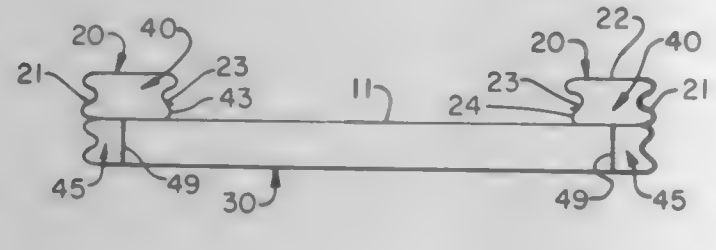
as an electrolyte composition.

4,604,331

FUEL CELL SEPARATOR PLATE WITH BELLOWS-TYPE SEALING FLANGES

George A. Louis, West Hartford, Conn., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed May 29, 1984, Ser. No. 614,505
The portion of the term of this patent subsequent to Apr. 30, 2002, has been disclaimed.
Int. Cl.[4] H01M *2/18*
U.S. Cl. 429—35 19 Claims



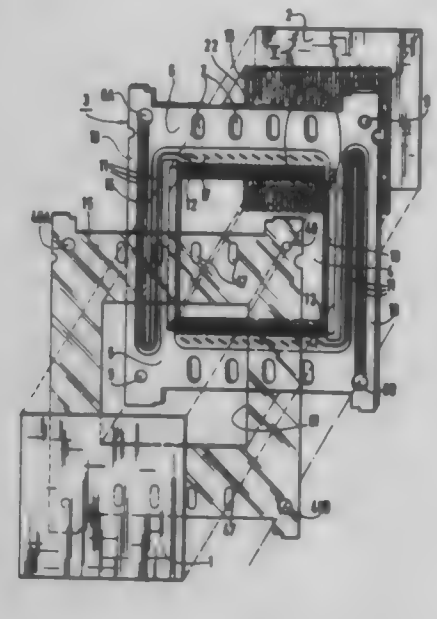
1. A fuel cell separator comprising a substantially flat, planar, gas-impermeable plate, and a sealing flange unitary with said plate and consisting of a peripheral margin of said plate folded back upon itself, said sealing flange including a first portion spaced from said plate and a second portion resiliently compressible in a direction generally normal to the plane of said plate for accommodating variation in the spacing between said first portion and said plate, said second portion of said sealing flange comprises an accordion pleated portion interconnecting said first portion and said plate.

4,604,332

FUEL CELL STRUCTURES

Bernard Warszawski, Paris; Pierre Fauvel, Limours, and Sylvain Dupré , Chilly Mazarin, all of France, assignors to Occidental Chemical Corporation, N.Y.

Filed May 13, 1985, Ser. No. 733,029
Claims priority, application France, May 11, 1984, 84 07313
Int. Cl.[4] H01M *8/24*
U.S. Cl. 429—38 6 Claims



1. In a fuel cell structure constituted by a plurality of cells disposed in electrical contact with one another, each cell comprising:

first and second porous electrodes which are plane in shape with parallel faces, one being a cathode and the other an anode, and each including a specific catalyst;

an electrolyte filling the gap situated between said electrodes; and

two impermeable bipolar current collectors, including at least a central conductive zone having channels on each face of said collectors, a first collector making electrical contact via the high points of its cathode face with the external surface of said cathode, and via its anode face with the external surface of the anode of an adjacent cell, and a second collector making electrical contact via the high points of its anode face with the external surface of said anode, and via its cathode face with the cathode of the other adjacent cell, said first and second electrodes being applied on either side of a frame of insulating plastic material and having a central orifice in the form of a quadrilateral, said electrodes and said frame together defining an electrolyte compartment, orifices within the top and bottom portions of said collectors situated on either side of the central conductive zone being for conveying fuel and electrolyte through the cell structure, one face of said top and bottom portions of said collectors being provided with hollows enabling both the anode face of the collector to be supplied with fuel from the fuel conveying orifices disposed in one of said portions, and the fuel to be evacuated via the fuelconveying orifices disposed in the other portion, the other face of said portions being provided with hollows communicating with the exterior enabling the cathode face of the collector to be supplied with oxidant, such that an oxidizing gas flows between said cathode and the cathode face of the first collector, and a fuel gas flows between said anode and the anode face of the second collector, and means for distributing gas flows disposed in said hollows provided in both faces of the top and bottom portions of the collector,

the improvement wherein said distribution means comprise elongate ribs forming distribution channels, the top face of the ribs lying in the same plane as the face of the portion on which said ribs are provided, said collectors including parallel splines in said central conductive zones defining channels having an average vertical orientation for conveying the gas flows and which are fed from said distributing channels.

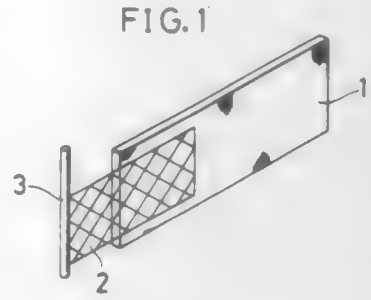
4,604,333

NON-AQUEOUS ELECTROLYTE BATTERY WITH SPIRAL WOUND ELECTRODES

Hironosuke Ikeda, Hirakata; Etsuro Yamashita, Akashi, and Hitoshi Nakashima, Kobe, all of Japan, assignors to Sanyo Electric Co., Ltd., Japan

Continuation of Ser. No. 596,507, Apr. 3, 1984, abandoned. This application Jul. 1, 1985, Ser. No. 750,855
Claims priority, application Japan, Apr. 6, 1983, 58-51900
Int. Cl.[4] H01M *4/00*
U.S. Cl. 429—94 7 Claims

FIG. 1



1. A non-aqueous electrolyte battery comprising:

a negative electrode of a light metal having an elongated shape elongated in a first direction, said negative electrode having first and second opposed surfaces;

an elongated separator having first and second opposed surfaces, said first separator surface being disposed on one of said electrode surfaces;

a positive electrode of elongated shape having first and second opposed surfaces, one of said positive electrode surfaces being disposed against said separator second surface;

a positive lead extending over at least one of said surfaces of said positive electrode, and being electrically coupled thereto;

a negative lead being disposed over at least one of said negative electrode surfaces and being electrically coupled thereto;

first heat resistant insulating member of a material different from said separator disposed over said negative electrode on said second surface opposite substantially only said negative lead and over substantially only said negative lead; and

second heat resistant insulating member of a material different from said separator disposed substantially only over said positive electrode on said second surface opposite substantially only said positive lead and over said positive lead;

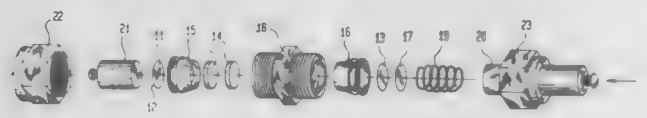
wherein said positive and negative electrodes, separator, leads, and first and second heat insulating members form an electrode body, said electrode body being spirally wound upon itself, such that said negative and positive leads are disposed opposite said positive and negative electrodes respectively.

4,604,334

MO_6SE_6 SOLID STATE ELECTRODE FOR SECONDARY LITHIUM BATTERIES

Jean-Marie Tarascon, Millington, N.J., assignor to Bell Communications Research, Inc., Livingston, N.J.

Filed Oct. 30, 1985, Ser. No. 792,962
Int. Cl.[4] H01M *6/16, 4/36*
U.S. Cl. 429—194 **6 Claims**



1. A non-aqueous battery including a lithium anode, an electrolyte and a cathode, characterized in that said cathode comprises a molybdenum selenide of the formula Mo_6Se_6.

4,604,335

HIGH RATE CATHODE FORMULATION

Dennis P. Johnson, Naperville, Ill., assignor to RAYOVAC Corporation

Filed Mar. 6, 1985, Ser. No. 708,891
Int. Cl.[4] H01M *4/40, 4/48, 4/04*
U.S. Cl. 429—197 **18 Claims**

1. An alkali metal anode, non-aqueous electrolyte cell having a solid cathode, said cathode comprising a major amount of a powdered high energy material, and a minor amount of a material intermixed with minor amounts of powdered zinc and powdered sulfur, the cathode material having been pelletized and heated in a protective atmosphere, which has an improved rate capability as compared to a similar cell having a cathode employing only the same high rate cathode material.

4,604,336

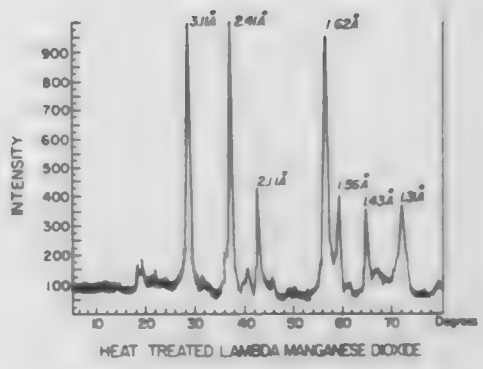
MANGANESE DIOXIDE AND PROCESS FOR THE PRODUCTION THEREOF

John C. Nardi, Brunswick, Ohio, assignor to Union Carbide Corporation, Danbury, Conn.

Filed Jun. 29, 1984, Ser. No. 626,104
Int. Cl.[4] H01M *4/50*
U.S. Cl. 429—224 **12 Claims**

1. A galvanic cell comprising an anode, a cathode, and an electrolyte, at least a portion of said cathode comprising manganese dioxide having an X-ray diffraction pattern indicating peaks and relative intensities of peaks as follows:

d(Å)	I/I_O × 100
3.11 ± 0.02	100



-continued

d(Å)	I/I_O × 100
2.41 ± 0.02	80–90
2.11 ± 0.02	28–38
1.62 ± 0.02	65–75
1.56 ± 0.02	18–28
1.43 ± 0.02	20–30
1.31 ± 0.02	25–35

wherein d is the plane spacing corresponding to the particular peak, I is the peak height of the particular peak, and I_O is the peak height of the highest peak.

4,604,337

ELECTROPHOTOGRAPHIC COLOR COPYING PAPER AND COPYING METHOD MAKING USE OF THE SAME

Yoshiyuki Mimura, and Akitoshi Toda, both of Hachioji, Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Nov. 28, 1984, Ser. No. 675,785
Claims priority, application Japan, Nov. 28, 1983, 58-222096; Nov. 28, 1983, 58-222097
Int. Cl.[4] G03G *5/12*
U.S. Cl. 430—46 **22 Claims**

1. An electrophotographic copying paper comprising an integrated structure having: a transparent substrate layer; a color filter layer provided on one side of said transparent substrate layer, and a photosensitive layer provided on the other side of said transparent substrate layer, said photosensitive layer including a transparent conductive layer so that said photosensitive layer can function as a photoconductive layer.

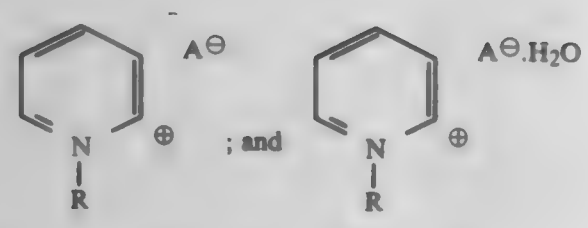
4,604,338

POSITIVELY CHARGED COLORED TONER COMPOSITIONS

Robert J. Gruber, Pittsford; Raymond A. Yourd, III, Rochester, and Ronald J. Koch, Webster, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

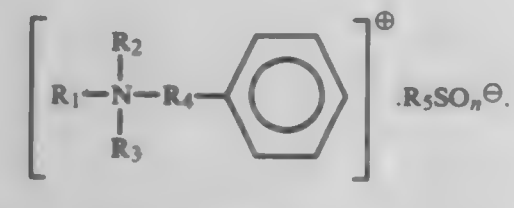
Filed Aug. 9, 1985, Ser. No. 764,024
Int. Cl.[4] G03G *9/08, 9/10*
U.S. Cl. 430—106 **27 Claims**

1. An improved positively charged dry electrostatic colored toner composition consisting essentially of first from about 70% by weight to about 90% by weight of resin particles; from about 10% by weight to about 30% by weight of crosslinked second resin particles; colored pigment particles excluding black; and selected from the group consisting of cyan, magenta, yellow, blue, red, and brown; a low molecular weight wax of a molecular weight of from 500 to about 20,000; and a charge enhancing additive selected from the group consisting of alkyl pyridinium halides, organic sulfonate compositions and organic sulfate compositions of the following formulas:



I.

wherein R is a hydrocarbon group containing from about 8 to about 22 carbon atoms, and A is an anion;



II.

wherein R_1 is an alkyl group of from about 12 carbon atoms to about 22 carbon atoms, R_2 and R_3 are independently selected from alkyl groups containing from about 1 carbon atom to about 5 carbon atoms, R_4 is an alkylene group of from about 1 carbon atom to about 5 carbon atoms, R_5 is a tolyl group or an alkyl group of from about 1 carbon atom to about 3 carbon atoms, and n is the number 3 or 4; and distearyl dimethyl ammonium methyl sulfate, behenyl trimethyl ammonium methyl sulfate, and distearyl methyl ethyl ammonium ethyl sulfate.

4,604,339

METHOD OF DEVELOPING SILVER HALIDE PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

Tadao Sugimoto; Hideo Ikeda; Hiroyuki Mifune, and Koki Nakamura, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Nov. 30, 1983, Ser. No. 556,667

Claims priority, application Japan, Nov. 30, 1982, 57-210498

Int. Cl.⁴ G03C *5/54, 5/24*

U.S. Cl. 430—244 **13 Claims**

1. A method of developing, after imagewise exposure, a silver halide photographic light-sensitive material which contains a light-sensitive silver halide emulsion and an internally-fogged silver halide emulsion, comprising: providing as said internally-fogged emulsion an emulsion having internal fogging nuclei inside the grains at a depth of 0.02μ or more below the surface of the grains, and developing said photographic light-sensitive material in the presence of a compound selected from the group consisting of tetraazaindenes containing at least one mercapto group, purines containing at least one mercapto group, triazaindenes containing at least one mercapto group and pentaazaindenes containing at least one mercapto group, thereby obtaining a negative image.

4,604,340

NEGATIVE-TONING IMAGING SYSTEM WITH RE-IMAGING CAPABILITY USING 4-(2'-NITROPHENYL)-1,4-DIHYDROPYRIDINE COMPOUNDS

Mario Grossa, Dreieich, Fed. Rep. of Germany, assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jul. 22, 1985, Ser. No. 757,841

Claims priority, application Fed. Rep. of Germany, Aug. 11, 1984, 3429615

Int. Cl.⁴ G03C *1/72*

U.S. Cl. 430—270 **8 Claims**

1. Process for the production of patterns on a substrate bearing a layer of a negative-working, light-sensitive composition comprising at least one 1,4-dihydropyridine compound substituted in the 4 position by a 2'-nitrophenyl ring which becomes tacky and tonable on exposure to actinic radiation, comprising the steps of:

(a) exposing said light-sensitive layer imagewise to actinic radiation whereby tacky areas are formed, and,

(b) toning said exposed tacky areas with finely divided powders.

4,604,341

PROCESS FOR THE ONE-STAGE ANODIC OXIDATION OF ALUMINUM BASES FOR OFFSET PRINTING PLATES AND PRODUCT THEREOF

Dieter Mohr, Schlangenbad, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Jul. 26, 1984, Ser. No. 634,588

Claims priority, application Fed. Rep. of Germany, Aug. 3, 1983, 3328049

Int. Cl.⁴ C25D *11/06;* B41N *1/04;* B41C *1/10*

U.S. Cl. 430—278 **13 Claims**

1. A process for producing a base for an offset printing plate comprising the steps of:

subjecting a base material selected from aluminum and aluminum alloys to an electrochemical roughening treatment in an acid to produce a roughened base material, and

anodically oxidizing said roughened base material in a single stage in an aqueous H_3PO_4-free electrolyte comprising dissolved inorganic phosphoroxo-anions of inorganic phosphoroxo compounds selected from the group consisting of metaphosphoric, pyrophosphoric or polyphosphoric acids or alkali metal or alpaline earth metal or ammonium salts of orthophosphoric, metaphosphoric, pyrophosphoric or polyphosphoric acids for a period from about 1 to about 90 seconds, at a voltage from 20 to about 100 volts and at a temperature from about 10° to about 80° C. to produce a metal oxide layer having a weight per unit of at least 0.5 g/m^2.

4,604,342

PHOTOPOLYMERIZABLE MIXTURE AND RECORDING MATERIAL PRODUCED FROM IT

Manfred A. J. Sondergeld, Muhlheim, and Mario Grossa, Dreieich, both of Fed. Rep. of Germany, assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Mar. 13, 1985, Ser. No. 711,251

Claims priority, application Fed. Rep. of Germany, Mar. 17, 1984, 3409821

Int. Cl.⁴ G03C *1/68, 1/70*

U.S. Cl. 430—281 **11 Claims**

1. A photopolymerizable mixture comprising a water-insoluble, binding agent which is soluble or at least capable of swelling in aqueous-alkaline solutions, a photoinitiator or a photoinitiator system, one or several photopolymerizable ethylenically unsaturated monomers, characterized in that at least one of the photopolymerizable ethylenically unsaturated monomers contains at least one aromatic hydroxyl-, aromatic mercapto-, aromatic sulfonamide-or aromatic mono-N-substituted sulfonamide group, or combinations thereof.

6. Light-sensitive recording material comprising a support, at least one photopolymerizable layer, characterized in that the photopolymerizable layer comprises the photopolymerizable mixture according to claim 1.

4,604,343

WATER DEVELOPABLE PHOTOSENSITIVE RESINOUS COMPOSITION

Kiyomi Sakurai, Neyagawa, and Katsuzi Konishi, Izumisano, both of Japan, assignors to Nippon Paint Co., Ltd., Osaka, Japan

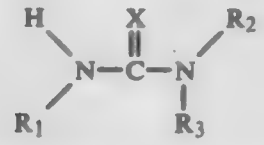
Continuation of Ser. No. 582,791, Feb. 23, 1984, abandoned. This application Jun. 13, 1985, Ser. No. 744,293

Int. Cl.⁴ G03C *1/68*

U.S. Cl. 430—281 **6 Claims**

1. In a water developable photosensitive composition consisting essentially of a water soluble polymer selected from the

group consisting of polyvinyl alcohol, partially saponified polyvinyl acetate, methyl cellulose, ethyl cellulose, hydroxypropyl propyl cellulose, hydroxy propylmethyl cellulose, polyethylene oxide, polyacrylamide, maleic acid copolymer and a nylon resin having water soluble groups, photopolymerizable unsaturated monomer(s), and a photopolymerization initiator, the improvement wherein at least 30% of said photopolymerizable unsaturated monomer(s) is a product made by reacting 1 mole of urea, thiourea or an alkyl derivative thereof of the formula:



wherein R_1, R_2 and R_3 are the same or different, and each represents hydrogen or a lower alkyl group and X represent oxygen or a sulfur atom, and 0.75 to 1.3 moles of an N-alkylol acrylamide or an N-alkylol methacrylamide, said photosensitive resin composition being present such that for 100 parts by weight of the water soluble polymer compound, 10 to 250 parts by weight of the photopolymerizable unsaturated monomer(s) and 0.01 to 30 parts by weight of the photopolymerization initiator are present in the composition.

4,604,344

PROCESS FOR THE PRODUCTION OF IMAGES USING SEQUENTIALLY LIQUID POLYMERIZING COMPOSITIONS AND PHOTOCURING

Edward Irving, Burwell, and Terence J. Smith, Royston, both of England, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Jan. 23, 1985, Ser. No. 694,178

Claims priority, application United Kingdom, Feb. 3, 1984, 8402937

Int. Cl.⁴ G03C *7/26, 5/16*

U.S. Cl. 430—325 **20 Claims**

1. A process for the production of an image which comprises

(a) applying to a substrate a polymerizing agent,

(b) applying to the polymerizing agent on the substrate a layer of a liquid composition containing a residue that is polymerizable on contact with the polymerizing agent, and a photocurable residue, such that the layer solidifies but remains photocurable,

(c) exposing the solidified layer to actinic radiation in a predetermined pattern such that exposed parts of the layer are photocured, and

(d) removing those parts of the layer which have not become substantially photocured by treatment with a solvent therefor.

4,604,345

EXPOSURE METHOD

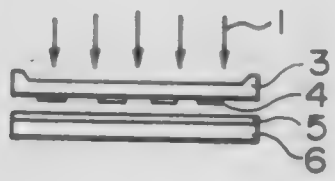
Mitsuaki Amemiya, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 30, 1985, Ser. No. 729,051

Claims priority, application Japan, May 11, 1984, 59-92893

Int. Cl.⁴ G03C *5/00*

U.S. Cl. 430—394 **11 Claims**



1. A method of transferring a pattern of a first object onto a radiation-sensitive layer of a second object by exposing the radiation-sensitive layer to radiation, said method comprising:

a primary exposure step for exposing, with a higher resolution, the radiation-sensitive layer to radiation through the pattern of the first object; and

a secondary exposure step for exposing the radiation-sensitive layer to radiation by an amount which does not have a substantial effect on the radiation-sensitive layer;

wherein the primary step and the secondary step, when combined, are effective to transfer the pattern of the first object onto the radiation-sensitive layer of the second object.

4,604,346

SKIN-EQUIVALENT PREPARED BY THE USE OF PUNCH BIOPSY

Eugene Bell, Dedham, Mass., and Louis Dubertret, Paris, France, assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Oct. 9, 1984, Ser. No. 658,499

Int. Cl.⁴ A01N *1/02*

U.S. Cl. 435—1 **10 Claims**

1. A method of forming a skin-equivalent, comprising:

a. forming an acidic solution of collagen;

b. combining contractile cells and nutrient medium with said acidic solution of collagen;

c. raising the pH of said solution of collagen to a level sufficient to precipitate collagen fibrils into a hydrated collagen lattice containing said contractile cells;

d. incorporating one or more punch biopsies of skin into said hydrated collagen lattice; and

e. maintaining said hydrated collagen lattice containing said punch biopsies under conditions sufficient for the contractile cells to contract the hydrated collagen lattice into a dermal-equivalent and sufficient to allow keratinocyte cells from said punch biopsies to overgrow the surface of said dermal equivalent thereby producing a skin-equivalent.

4,604,347

ANALYTICAL ELEMENT FOR DRY ANALYSIS

Fuminori Arai; Mitsutoshi Tanaka, and Harumi Katsuyama, all of Asaka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Feb. 6, 1984, Ser. No. 577,090

Claims priority, application Japan, Feb. 7, 1983, 58-17542

Int. Cl.⁴ C12Q *1/00*; G01N *33/52*

U.S. Cl. 435—4 **10 Claims**

1. An analytical element for dry analysis of analyte in a liquid sample which contains a liquid-impermeable, light-transmissive support, a non-diffusive acid-containing layer, and a non-diffusive base-containing layer, the latter two layers being arranged on the support such that both layers upon liquid contact adjust the surrounding pH of a predetermined reaction area and wherein at least one of the latter two layers contains a reagent which participates in the analytical reaction which takes place.

4,604,348

COMPOSITION FOR USE IN IMMUNOASSAYS

A. Robert Neurath, New York, N.Y., assignor to New York Blood Center, Inc., New York, N.Y.

Division of Ser. No. 323,003, Nov. 19, 1981, Pat. No. 4,459,359.

This application Jan. 20, 1984, Ser. No. 572,494

The portion of the term of this patent subsequent to Jul. 10, 2001, has been disclaimed.

Int. Cl.⁴ G01N *53/00, 33/564*

U.S. Cl. 435—7 **13 Claims**

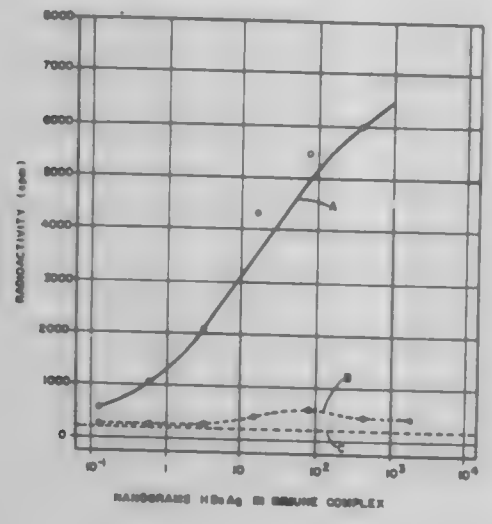
1. A kit for determining the presence of an antigen or antibody in a sample wherein said antigen or antibody exists in the form of an immune complex, said kit comprises

(a) a solid support which binds proteins,

(b) a container containing a dissociating buffer,

(c) a container containing a protein capable of filling-in unoccupied sites on the solid support, and

(d) a container containing a radiolabelled or enzyme labelled antibody or antigen,



said support, buffer, protein and radiolabelled or enzyme labelled antibody or antigen present in amounts sufficient to perform an assay for an antigen or antibody.

4,604,349

PROCESS FOR PREPARING URIDINE DIPHOSPHATE-N-ACETYLGALACTOSAMINE

Taiko Seno, Osaka; Yasuto Okubo, Nara; Masao Kawamura, Akashi; Seiichi Akutsu, Kakogawa, and Hirosuke Fukuda, Himeji, all of Japan, assignors to Seitetsu Kagaku Co., Ltd., Miyanishi, Japan

Division of Ser. No. 499,919, Jun. 1, 1983, Pat. No. 4,569,909. This application Feb. 25, 1985, Ser. No. 705,217

Claims priority, application Japan, Jun. 3, 1982, 57-95984; Jun. 3, 1982, 57-95986; Jun. 3, 1982, 57-95987; Jun. 3, 1982, 57-95988

Int. Cl.[4] C12Q *1/60*

U.S. Cl. 435—15 **2 Claims**

1. In the method of measuring the activity of α-N-acetylgalactosaminyl transferase wherein Type O red blood cells are converted to Type A red blood cells in the presence of a N-acetylgalactosamine donor and the activity of A-transferase is determined on the basis of their strength of agglutination with anti A serum, the improvement wherein the N-acetylgalactosamine donor which is the substrate for the conversion is a reaction mixture obtained by the conversion of uridine diphosphate-N-acetylglucosamine to uridine diphosphate-N-acetylgalactosamine in the presence of uridine diphosphate-N-acetylglucosamine-4-epimerase obtained by partially purifying cell free extracts of *Bacillus bacterium* by fractionation with ammonium sulfate, the reaction mixture being composed mainly of the uridine diphosphate-N-acetylgalactosamine and unreacted uridine diphosphate-N-acetylglucosamine.

4,604,350

SCREENING TEST FOR BETA-THALASSEMIA TRAIT AND A DIAGNOSTIC KIT FOR ITS INDIVIDUALIZATION

Maria C. De Matteis, Piazza Isotta Nogarola, 15 - 37131 Verona, Italy

Filed Apr. 15, 1983, Ser. No. 485,327

Claims priority, application Italy, Apr. 29, 1982, 41564 A/82

Int. Cl.[4] C12Q *1/06*; G01N *33/72*

U.S. Cl. 435—29 **3 Claims**

1. A method for detecting quantitatively beta-thalassemia in a patient which consists of:

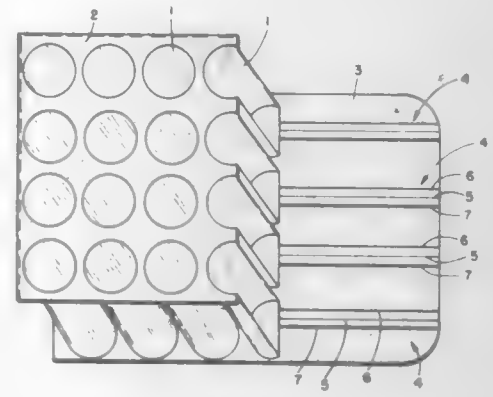
(a) preparing an aqueous solution A containing 148.5 mmoles of glycerol, 58 mmoles of sodium chloride, 7 mmoles of sodium dihydrogen phosphate, 3 mmoles of disodium monohydrogen phoshate, 1 mmole of sodium azide, 0.04 mmoles of Acid Green 5 ($C_{37}H_{34}N_2Na_2O_3S_9$) of pH 6.5 per liter of solution;

(b) placing 3 cc of said solution A from step (a) in a test tube;

(c) adding to said solution A 5 microliters of capillary freshly drawn blood or venous blood collected in the presence of an anticoagulant, stirring therewith to obtain a suspension and incubating said suspension for 30–45 minutes at room temperature to obtain the test suspension;

(d) preparing solution B from 150 mmoles of sodium chloride and 0.04 mmoles of Acid Green 5, said solution B being the 100% turbidity solution;

(e) placing 3 ml of said solution B from step (d) in a second test tube;



(f) preparing a blood suspension having 100% turbidity by shaking said solution B with 5 microliters of the blood from the same patient to obtain the comparison suspension;

(g) separately measuring at 495 nm wavelength the optical densities of said carefully stirred blood suspensions from steps (c) and (f) against said solution A from step (a) without blood added, and using said solution A as a blank;

(h) comparing the degree of turbidity based on values calculated as percent turbidity according to the equation

$$\frac{O.D.\text{ test suspension from step }(c)}{O.D.\text{ comparison suspension from step }(f)} \times 100. = \%\text{ turbidity}$$

and when the turbidity value is lower than 30%, said patient is normal, when the turbidity is between 30 and 50%, said patient is suspect and when the turbidity value is greater than 50%, said patient is a carrier of beta-thalassemia trait.

4,604,351

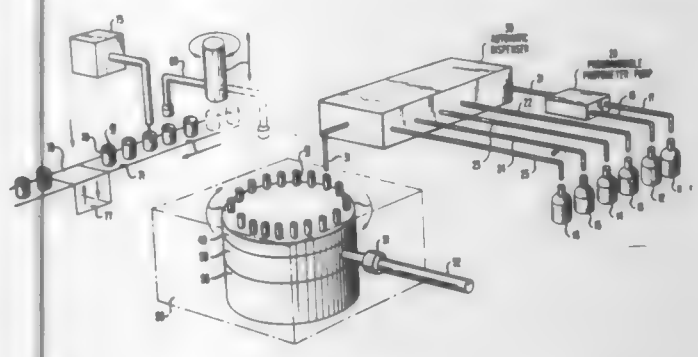
METHOD FOR DETERMINING BACTERIAL SENSITIVITY TO CHEMICAL AGENTS

Leonard Amaral, Pound Ridge, N.Y., assignor to Bronx Lebanon Hospital, Bronx, N.Y.

Division of Ser. No. 554,159, Nov. 22, 1983, abandoned, which is a division of Ser. No. 300,943, Sep. 10, 1981, Pat. No. 4,416,995. This application Jul. 13, 1984, Ser. No. 630,736

Int. Cl.[4] C12Q *1/16, 1/02, 1/18*

U.S. Cl. 435—35 **20 Claims**



1. A method for ascertaining the effect of a chemical on bacteria comprising the steps of:

(1) dividing a specimen of bacteria into a test sample and a control sample;

(2) culturing said test sample in the presence of a chemical for a first period of time;
(3) culturing said control sample in the absence of said chemical for the same first period of time;
(4) adding a radioactively-labelled nucleotide, wherein said nucleotide is selected from the group consisting of thymidine and thymidine analogs, to said test and control samples at a predetermined period of time after the beginning of, but before the expiration of said first period of time;
(5) determining the uptake of radioactively-labelled nucleotide by said test and control samples; and
(6) comparing the respective uptakes of radioactively-labelled nucleotide by said control and test samples.

4,604,352

CO-CULTURE PRODUCTION OF THERMOSTABLE ENZYMERS AND ETHANOL

Joseph G. Zeikus, Okemos, Mich., and Hyung-Hwan Hyun, Madison, Wis., assignors to Michigan Biotechnology Institute, East Lansing, Mich.

Filed Sep. 18, 1984, Ser. No. 652,588
Int. Cl.⁴ C12D *39/00, 7/14;* C12N *9/34, 9/44*
U.S. Cl. 435—42 **4 Claims**

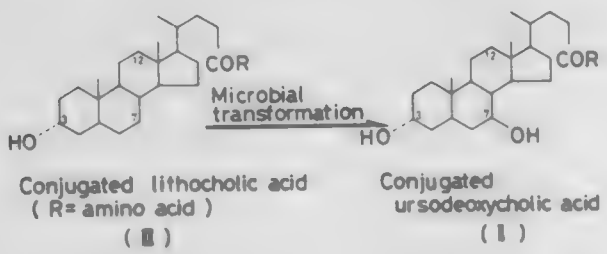
1. A method for the co-production of a thermostable β-amylase, a thermostable glucoamylase, a thermostable pullulanase and ethanol which comprises growing a biologically pure co-culture of *Clostridium thermosulfurogenes* and *Clostridium thermohydrosulfuricum* under anaerobic conditions on a carbohydrate substrate in a medium comprising essential vitamins, minerals and growth factors for a time sufficient to produce recoverable amounts of said themostable enzymes and ethanol.

4,604,353

METHOD FOR PRODUCING CONJUGATED URSODEOXYCHOLIC ACIDS BY MEANS OF MICROBIAL TRANSFORMATION

Haruji Sawada, and Masaaki Watanuki, both of Tokyo, Japan, assignors to Kabushiki Kaisha Yakult Honsha, Tokyo, Japan

Filed Feb. 24, 1984, Ser. No. 583,426
Claims priority, application Japan, Mar. 4, 1983, 58-035554
Int. Cl.⁴ C12P *33/06;* C12R *1/645*
U.S. Cl. 435—58 **5 Claims**



Conjugated lithocholic acid (R= amino acid) (II)

Conjugated ursodeoxycholic acid (I)

1. A method for producing a ursodeoxycholic acid conjugated with an amino acid from a lithocholic acid conjugated with said amino acid by means of microbial transformation, comprising the steps of:
cultivating a microorganism which belongs to *Mortierella ramanniana* and which has capability to produce said ursodeoxycholic acid conjugated with said amino acid from said lithocholic acid conjugated with said amino acid,
bringing said lithocholic acid conjugated with said amino acid into contact with said microorganism to convert said lithocholic acid conjugated with said amino acid to said ursodeoxycholic acid conjugated with said amino acid, and
recovering said ursodeoxycholic acid conjugated with said amino acid thus produced.

4,604,354

IMMOBILIZED GLUCOSE ISOMERASE CONTAINING MICROBIAL CELLS

Edward Katz, St. Louis; Jon J. Benedictus, Oakland; Edward L. Knarr, St. Louis, and Barrett L. Scallet, Clayton, all of Mo., assignors to Busch Industrial Products Corporation, St. Louis, Mo.

Continuation of Ser. No. 400,890, Jul. 22, 1982, abandoned. This application Apr. 17, 1985, Ser. No. 724,074
Int. Cl.⁴ C12P *19/24;* C12N *11/00, 11/14, 11/02*
U.S. Cl. 435—94 **10 Claims**

1. A method of immobilizing glucose isomerase cell material obtained from whole microbial cells of an organism of the genus Actinoplanes containing glucose isomerase comprising the steps of:
a. preparing whole microbial cells of an organism of the genus Actinoplanes containing glucose isomerase,
b. disrupting a substantial portion of said whole cells,
c. adding a flocculant to said disrupted glucose isomerase cell material,
d. recovering and dewatering the flocculated cell material,
e. adding to said dewatered flocculated glucose isomerase cell material from about 3% to about 15% of a water absorbing smectite filler and about 5% to about 55% granular activated carbon of about 50 to about 100 mesh, both by weight of total composite mixture on a dry solids basis, and
f. forming the mixture of glucose isomerase cell material and the water absorbing smectite filler and granular activated carbon into discrete particles.

4,604,355

MALTOGENIC AMYLASE ENZYME, PREPARATION AND USE THEREOF

Helle Outtrup, Syvendehusvej, Denmark, assignor to Novo Industri A/S, Denmark

Filed Mar. 20, 1984, Ser. No. 591,460
Claims priority, application Denmark, Mar. 25, 1983, 1359/83
Int. Cl.⁴ C12P *19/22, 19/16;* C12N *9/26;* C12R *1/07*
U.S. Cl. 435—95 **5 Claims**

1. A maltogenic amylase enzyme obtained by cultivation in a suitable nutrient medium of Bacillus strain NCIB 11837.

4,604,356

PURIFICATION OF FLAVIN ADENINE DINUCLEOTIDE SYNTHETASE

Robert C. Blake, II, Elkhart, Ind., assignor to Miles Laboratories, Inc., Elkhart, Ind.

Filed Dec. 21, 1983, Ser. No. 563,973
Int. Cl.⁴ C12N *9/12;* C12Q *1/48*
U.S. Cl. 435—194 **17 Claims**

1. A method for purifying flavin adenine dinucleotide synthetase comprising the steps of:
(a) disrupting cells containing flavin adenine dinucleotide synthetase activity,
(b) separating a liquid fraction,
(c) treating the separated liquid fraction with a protein precipitating agent,
(d) separating the precipitated protein,
(e) applying a solution of the precipitated protein to a chromatography column containing a moiety selective for flavin adenine dinucleotide synthetase,
(f) eluting the chromatography column with a first eluting solution containing one of (1) flavin mononucleotide or an effective analogue thereof or (2) adenosine triphosphate or an effective analogue thereof and a divalent cation, as a first eluent, and collecting a fraction containing flavin adenine dinucleotide synthetase activity,
(g) applying the collected fraction to a chromatography column containing a molecular sieve capable of excluding molecules greater than at least about 10^5 daltons, eluting

and collecting a fraction containing flavin adenine dinucleotide synthetase activity,

(h) applying the collected fraction to a second chromatography column containing a moiety selective for flavin adenine dinucleotide synthetase,

(i) eluting the second chromatography column with a second eluting solution containing the other of (1) flavin mononucleotide or an effective analogue thereof or (2) adenosine triphosphate or an effective analogue thereof and a divalent cation, not present in said first eluting solution, as a second eluent, and collecting a fraction containing flavin adenine dinucleotide cleotide synthetase activity, and

(j) removing said second eluent from the collected fraction.

4,604,357

ANTIMICROBIAL DISINFECTING URINAL BLOCK MEANS AND METHODS OF USE

Denis M. Callewaert, Oxford, and Earl J. Braxton, Utica, both of Mich., assignors to Enzymes of America, Utica, Mich.

Filed Apr. 13, 1984, Ser. No. 600,141
Int. Cl.[4] C12N *9/72*
U.S. Cl. 435—215 8 Claims

1. A method of minimizing urine protein degradation occurring during the collection of pooled urine employing as urinal block means

a hydrophilic water-leachable antimicrobial agent adapted in operation to be leached ratably by exposure to intermittent urine streams that is distributed in a matrix of water-insoluble hydrophobic component adapted in operation to sublime ratably to the air, the antimicrobial agent being partly leachable when exposed to urine streams and partly leachable only when and as the matrix sublimes away from the block, the respective rates of leaching and subliming during the service life being chosen such that the antimicrobial agent progressively exposed by said subliming and leaching of the thus exposed antimicrobial agent from the block means into the pooled urine is sufficient to provide an inhibitor concentration effectively inhibiting microbial growth and consequent degradation of wanted proteins contained in the pool,

the method comprising the steps of installing the block means in a urinal at a location such that the block means is exposed to air and intermittent urine streams but is not exposed to flushing water, allowing the matrix to sublime and progressively expose the water-leachable antimicrobial agent while further allowing said agent to be protected from exposure to flushing water and to be exposed to urine streams and released to the pool in a discontinuous slow release coinciding with the intermittent streams, and collecting urine to which the block means is exposed in a common pool together with an antimicrobial agent that is leached from the block means for a time not longer than the expiration of the useful life of the antimicrobial agent.

4,604,358

PREPARATION OF PASTEURIZED HUMAN PLASMINOGEN

Joseph D. Fisher, Chicago Heights, and Chin C. Huang, Bourbonnais, both of Ill., assignors to Armour Pharmaceutical Company, Tarrytown, N.Y.

Continuation-in-part of Ser. No. 484,837, Apr. 14, 1983, abandoned. This application Apr. 11, 1985, Ser. No. 722,099
Int. Cl.[4] C12N *9/68, 9/96*
U.S. Cl. 435—217 7 Claims

1. A method for pasteurizing plasminogen comprising the steps of:

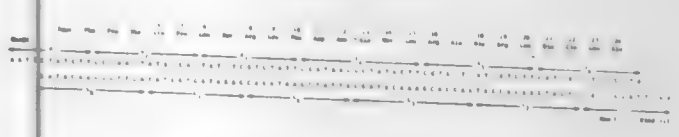
treating an aqueous solution of unpasteurized plasminogen by adding to said solution a protecting agent selected from the group consisting of methyl lysine ester, ethyl lysine ester or a hydrochloride salt thereof to thereby attach said agent to plasminogen and form modified plasminogen; and subjecting the resulting modified plasminogen to a heat treatment of at least 60° C. for at least 10 hours.

4,604,359

MICROBIAL EXPRESSION OF GENE FOR HUMAN GROWTH HORMONE

David V. Goeddel, and Herbert L. Heyneker, both of Burlingame, Calif., assignors to Genentech, Inc., South San Francisco, Calif.

Division of Ser. No. 55,126, Jul. 5, 1979, Pat. No. 4,342,832. This application Mar. 9, 1982, Ser. No. 361,160
Int. Cl.[3] C12N *1/20, 15/00*
U.S. Cl. 435—253 2 Claims



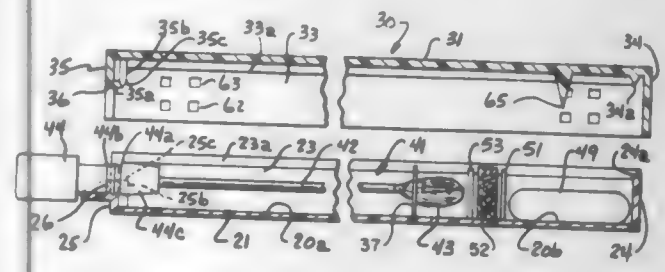
1. A viable culture of bacterial transformants comprising plasmids capable, in a transformant bacterium, of expressing a gene for human growth hormone unaccompanied by extraneous protein bound thereto.

4,604,360

CULTURE TRANSPORT APPARATUS

Melvin W. Hounsell, 1609 Sun Valley Dr., Beloit, Wis. 53511

Filed Jan. 19, 1983, Ser. No. 459,049
Int. Cl.[4] C12M *1/00, 1/28, 1/30;* B01J *7/00*
U.S. Cl. 435—287 27 Claims



1. A culture transport apparatus comprising, an open top receptacle having a bottom wall and upstanding side wall means, a cover having a top wall and depending cover flange means adapted to extend downwardly along the side wall means of the receptacle, a culture receiving device having a plug member at one end, the side wall means of the receptacle having a recess therein, the receptacle having a first open top culture device receiving area at one area of the bottom wall contiguous to said recess in the side wall means for receiving the culture receiving device when the plug member is positioned in said recess in the side wall means, the receptacle having a second open top container retaining area at a second area of the bottom wall and communicating with the first culture device receiving area, a rupturable container in said second container retaining area containing a material for use in maintaining viability of a microbial sample, interengaging detent means on the receptacle side wall means and cover flange means for releasably retaining the cover in a first position on the receptacle with the top wall of the cover spaced above the bottom wall of the receptacle to maintain the culture receiving device and rupturable container in the respective first culture device receiving area and second container retaining area without rupturing the rupturable container, the interengaging detent means being releasable in response to downward pressure on the cover to allow the cover to move down to a second position, means operative when the cover is moved from its first to its second position on the receptacle for rupturing the rupturable container to release the material therein, the

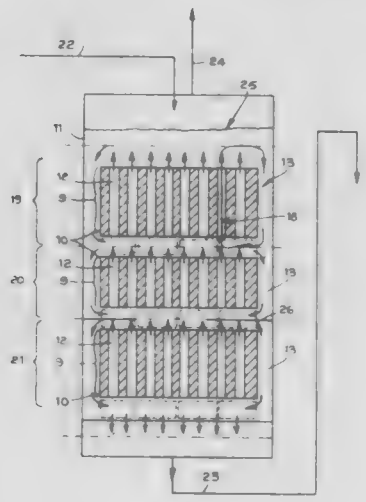
cover flange means having a recess therein at a location to form an opening with the recess in the side wall means of the receptacle when the cover is on the receptacle, and means on the cover and receptacle for sealing the first culture device receiving area and second container retaining area in the receptacle from outside atmosphere when the cover is in said second position.

4,604,361

REACTOR FOR PRODUCING GAS BY MEANS OF MICRO-ORGANISMS

Roeland H. Peters, Standbridge East, Canada, assignor to Agropur Cooperative Agro-Alimentaire, Granby, Canada

Filed Mar. 29, 1983, Ser. No. 480,104
Int. Cl.⁴ C12M *1/40, 1/02;* B01J *1/00*
U.S. Cl. 435—288 **16 Claims**



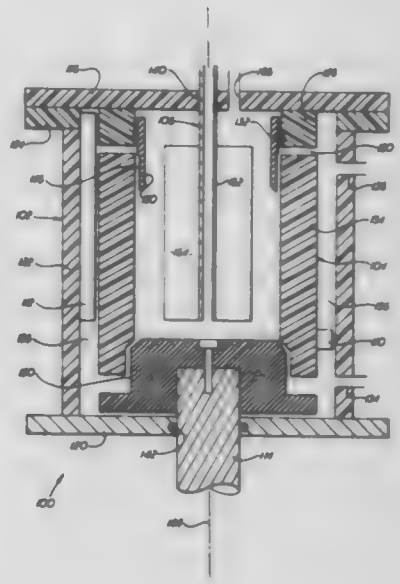
1. A column reactor for continuous production of a gaseous reaction product by contacting a downwardly flowing liquid reaction medium with a gas-forming agent fixed to a solid substrate, said reactor comprising an outer shell wall, inlet means for feeding liquid reaction medium into the reactor, outlet means for recovering gaseous reaction product, outlet means for recovering treated liquid reaction medium, and at least two reaction zones disposed within said outer shell wall following one after the other; wherein each reaction zone includes a first upstream free volume, a reaction plug consisting of a solid substrate provided with a plurality of gas-forming channels and having a periphery adjacent the outer shell wall, and a second downstream free volume spaced apart from said first free volume by said reaction plug; said gas-forming channels communicating between the first free volume and the second free volume and having a gas-forming agent fixed to the walls thereof; each reaction zone further being provided with a circulatory by-pass means communicating between said first and second free volumes for allowing liquid reaction medium to by-pass said channels; said channels and said by-pass means together facilitating an internal circulation of liquid reaction medium rising through the gas-forming channels into said first free volume under the influence of gaseous reaction product and passing from said first free volume through said by-pass means and the second free volume back to said gas-forming channels, and wherein the first free volume of each following reaction zone is in fluid communication with the second free volume of the preceding reaction zone.

4,604,362

GAS-LIQUID REACTOR AND A METHOD FOR REACTING LIQUIDS AND GASES

Jin Y. Park, Moscow; Barry H. O'Brien, Idaho Falls, and Woo G. Lee, Moscow, all of Id., assignors to Research Corporation, New York, N.Y.

Filed Jan. 14, 1985, Ser. No. 691,246
Int. Cl.⁴ G01N *33/50*
U.S. Cl. 436—34 **26 Claims**



1. A method comprising reacting liquids and gases over a substantially constant size surface area, by

directing a liquid into a rotatable reaction vessel;

rotating the reaction vessel to force liquid therein against an inside surface of the reaction vessel and into a thin liquid film having a stable shape and a smooth, substantially constant size surface area;

directing a gas into the reaction vessel to react with the liquid film over the substantially constant size surface area to facilitate analyzing the gas-liquid and reactions;

discharging gas and liquid from the reaction vessel; and

analyzing the chemical compositions of the gas and liquid discharged from the reaction vessel.

4. A gas-liquid reactor comprising: means for reacting gases and liquids over a substantially constant size surface area, including,

an outside containment vessel having a liquid inlet and a liquid outlet;

an inside reaction vessel supported within the containment vessel for rotation about an axis, and having a liquid inlet and a liquid outlet, the outside containment vessel and the inside reaction vessel forming a liquid passage for conducting liquid from the liquid inlet of the outside containment vessel to the liquid inlet of the inside reaction vessel;

drive means connected to the inside reaction vessel to rotate the inside reaction vessel, and to subject liquid therein to a centrifugal force field and force the liquid outward against an inside surface of the inside reaction vessel and into a thin liquid film having a substantially constant size surface area;

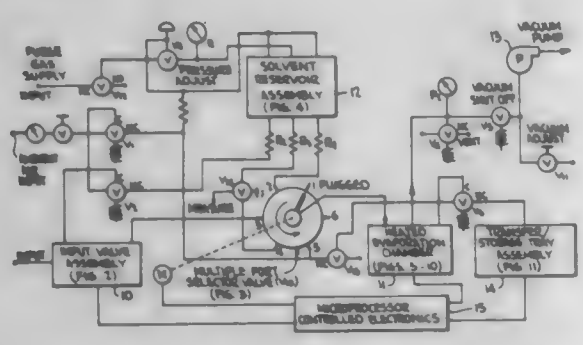
gas conduit means extending through the outside containment vessel and into the inside reaction vessel to conduct gas thereinto to react the gas with the liquid over the substantially constant size surface area to facilitate analyzing the gas-liquid reactions; and

means for receiving and analyzing the chemical compositions of the gas and liquid discharged from the inside reaction vessel.

4,604,363
AUTOMATIC EVAPORATOR SYSTEM

Daniel L. Newhouse, Harrisburg; Richard G. Wheeler, and Ralph H. Waltz, both of Columbia, all of Mo., assignors to Analytical Bio-Chemistry Laboratories Inc., Columbia, Mo.

Filed Oct. 18, 1984, Ser. No. 662,061
Int. Cl.[4] G01N *1/18, 21/00, 31/00, 33/00*
U.S. Cl. 436—177 42 Claims



1. A system comprising: means for automatically evaporating a predetermined volume of liquid from a sample solution having a known vapor pressure versus temperature characteristic curve, said system solutions, including,

an enclosure means;

supply means for delivering at least part of said predetermined volume of sample solution to said enclosure means; and

control means for evaporating said supply solution from said enclosure means at a predetermined rate by automatically controlling temperature in said enclosure means to maintain the pressure and temperature in said enclosure means substantially on said known vapor pressure versus temperature characteristic curve.

39. A method comprising: automatically evaporating a predetermined volume of liquid from a sample solution having a known vapor pressure versus temperature characteristic curve, by,

delivery at least part of a predetermined volume of said sample solution to an evaporation chamber; and

evaporating said sample solution from said evaporation chamber at a predetermined rate by controlling the temperature and pressure in said chamber to maintain the pressure and temperature of the liquid in said chamber substantially on said known vapor pressure versus temperature characteristic curve.

4,604,364
BIOLUMINESCENT TRACER COMPOSITION AND METHOD OF USE IN IMMUNOASSAYS

Kenneth M. Kosak, 3194 S. 4400 West, Salt Lake City, Utah 84120

Continuation-in-part of Ser. No. 106,354, Dec. 21, 1979, which is a continuation-in-part of Ser. No. 430,921, Jan. 4, 1974, Pat. No. 4,000,252. This application Apr. 21, 1983, Ser. No. 487,267
Int. Cl.[4] G01N *21/76, 33/532, 33/533, 33/536*
U.S. Cl. 436—501 25 Claims

1. A tracer composition comprising a material to be labelled selected from the group consisting of ligands and ligators, covalently coupled to luciferase through functional groups that are capable of coupling with glutaraldehyde, such functional groups being selected from amine, amide, phenolic hydroxyl, carbonyl and sulfhydryl groups.

13. A tracer composition comprising a material to be labelled selected from the group consisting of ligands and ligators, covalently coupled to a bioluminescent photon emitter selected from the group consisting of photoproteins, aequorin, mnemiopsin, berovin, scintillons and lumisomes.

17. In a nonradioactive immunoassay method for determining the presence of ligands and ligators in a competitive assay comprising

(1) bringing together under conditions conducive to binding;

(a) said ligand to be measured, with;

(b) a ligator which has selective affinity for (a) and where the concentration of (b) is not sufficient to bind all of (a), with;

(c) a labelled ligand which has selective affinity for (b) and competes with (a) for binding to (b);

(2) and selectively determining the amount of unbound (c) and of (c) bound to (b);

the improvement wherein said labelled ligand is a bioluminescent tracer composition comprising a material selected from the group consisting of ligands and ligators covalently coupled to luciferase and wherein step 2 includes the use of a bioluminescent reaction for detection.

20. In a nonradioactive assay method for determining the presence of ligands and ligators in a competitive binding assay comprising,

(1) bringing together under conditions conducive to binding;

(a) said ligand to be measured with;

(b) a ligator which has selective affinity for (a) and where the concentration of (b) is not sufficient to bind all of (a), with;

(c) a labelled ligand which has selective affinity for (b) and competes for binding to (b);

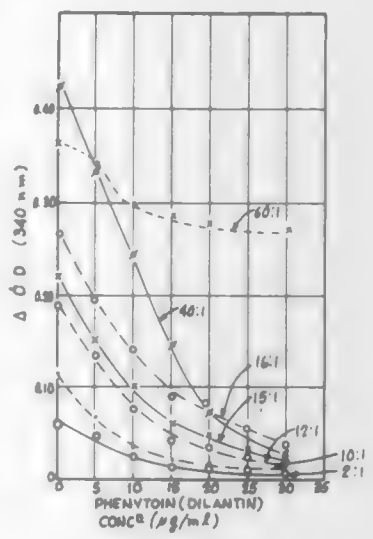
(2) and selectively determining the amount of unbound (c) and of (c) bound to (b);

the improvement wherein said labelled ligand is a bioluminescent tracer composition comprising a material selected from the group consisting of ligands and ligators covalently coupled to a bioluminescent photon emitter selected from the group consisting of photoproteins, aequorin, mnemiopsin, berovin, scintillons and lumisomes and wherein step 2 includes the use of a bioluminescent reaction for detection.

4,604,365
IMMUNOPRECIPITATION ASSAY

Sean P. O'Neill, Bethesda, and Joseph Wu, Gaithersburg, both of Md., assignors to Electro-Nucleonics, Inc., Fairfield, N.J.

PCT No. PCT/US82/00737, § 371 Date Jul. 1, 1982, § 102(e) Date Jul. 1, 1982, PCT Pub. No. WO82/04323, PCT Pub. Date Dec. 9, 1982
Continuation-in-part of Ser. No. 269,727, Jun. 2, 1981, abandoned. This PCT application May 28, 1982, Ser. No. 406,762
Int. Cl.[4] G01N *33/53*
U.S. Cl. 436—528 12 Claims



1. A method for determining the concentration of a physiologically active hapten in a concentration range of interest in a sample in which the hapten is soluble which comprises the steps of:

a. forming a mixture by mixing said sample with a soluble conjugate of said hapten covalently bound to an immunogenic carrier material and an antibody which will selectively bind said conjugate and measuring the optical density of resulting mixture at a wavelength of from 280 to 600 nm,

b. determining the amount of hapten present by comparing

the measured optical density with a standard curve obtained by separately mixing known amounts of said hapten with fixed amounts of said conjugate and said antibody at dilutions of maximum absorbance, determining the optical density of each resulting mixture at a wavelength of from 280 to 600 nm, and plotting decreasing optical density against increasing concentration of hapten,

the hapten to immunogenic carrier ratio in said conjugate being such that in the concentration range of interest the average slope of the standard curve is such as to give optimum sensitivity.

4,604,366

LEUCITE PORCELAIN

Joseph M. Kacicz, and Frank P. Fonvielle, both of York, Pa., assignors to Dentsply Research & Development Corp., Milford, Del.

Filed Mar. 20, 1984, Ser. No. 591,387

Int. Cl.[4] C03C *10/10, 8/22, 8/14, 8/02*

U.S. Cl. 501—6 **24 Claims**

1. A porcelain raw material comprising:

a. a first glass material having a first fusion range at a temperature on the order of from about 750° C. to about 845° C., said first glass material consisting essentially of silicon dioxide, aluminum oxide, sodium monoxide and potassium oxide;

b. a second glass material having a second fusion range at a temperature that is lower than said first fusion range, said second fusion range being on the order of from about 700° C. to about 825° C., said second glass material consisting essentially of silicon dioxide, aluminum oxide, sodium monoxide and potassium oxide;

c. a first glass-ceramic material consisting essentially of a first amount of leucite crystals dispersed in a glassy phase matrix, said first glass-ceramic material consisting essentially of silicon dioxide, aluminum oxide, sodium monoxide and potassium oxide;

d. a second glass-ceramic material consisting essentially of a second larger amount of leucite crystals dispersed in a glassy phase matrix, said second glass-ceramic material having a coefficient of thermal expansion that is higher than that of said first glass-ceramic material and consisting essentially of silicon dioxide, aluminum oxide, iron oxide, sodium monoxide and potassium oxide, the respective amounts silicon dioxide, aluminum oxide, and sodium oxide in said first glass-ceramic material being greater than the amounts thereof in said second glass-ceramic material, and the amount of potassium oxide in said first glass-ceramic material being less than the amount thereof in said second glass-ceramic material;

e. said first and second glass materials comprising from 20 to 80 percent by weight of the total raw material and being present in a ratio of 1:10 to 10:1 of said first glass to said second glass;

f. said first and second glass-ceramic materials being present in a ratio of from 1:10 to 10:1; and

g. said first and second glass materials and said first and second glass-ceramic materials and the relative amounts thereof being selected such that, upon fusion, the resulting porcelain exhibits a coefficient of thermal expansion on the order of from about 10×10^{-6} in/in/°C. to about 19×10^{6} in/in/°C.

4,604,367

METHOD FOR THE PREPARATION OF AN INORGANIC FIBER CONTAINING SILICON, CARBON, BORON AND NITROGEN

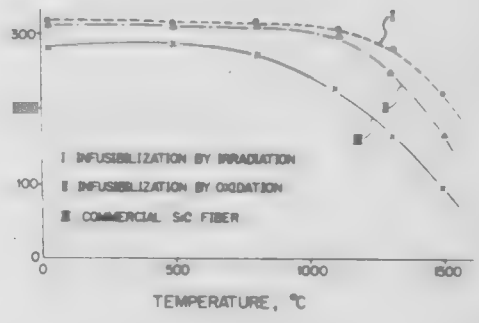
Minoru Takamizawa; Taishi Kobayashi; Akira Hayashida, and Yoshihumi Takeda, all of Niigata, Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Dec. 18, 1984, Ser. No. 682,796

Claims priority, application Japan, Dec. 27, 1983, 58-248030

Int. Cl.[4] C04B *35/02*

U.S. Cl. 501—95 **8 Claims**



1. A method for the preparation of an inorganic fiber comprising the elements of silicon, carbon, boron and nitrogen which comprises the steps of:

(a) heating a reaction mixture composed of an organosilicon compound having, in a molecule, at least one silicon-to-silicon linkage and at least one group denoted by R^1, R^1 being a hydrogen atom or a monovalent hydrocarbon group selected from the class consisting of methyl, ethyl, vinyl and phenyl groups, bonded to the silicon atom and an organoboron compound represented by the unit formula $—BR^2—NR^3—$, in which R^2 is a monovalent group selected from the class consisting of monovalent hydrocarbon groups, trihydrocarbylsilyl-substituted alkyl groups of the formula $—CH_2)_nSiR^4{}_3$, R^4 being a monovalent hydrocarbon group and n being a positive integer, and substituted or unsubstituted amino groups of the formula $—NR^5{}_2$, R^5 being a hydrogen atom or a monovalent hydrocarbon group, and R^3 is a monovalent hydrocarbon group, in the molar ratio of silicon to boron in the range from 2:1 to 200:1 at a temperature in the range from 250° to 500° C. in an inert atmosphere to effect the thermal decomposition and polycondensation reaction of the reactants forming an organoborosilicon polymer having a number-average molecular weight in the range from 1,000 to 50,000;

(b) spinning the organoborosilicon polymer into a fibrous form;

(c) infusibilizing the thus formed fiber of the organoborosilicon polymer; and

(d) calcining the infusibilized fiber of the organoborosilicon polymer at a temperature in the range from 900° to 1800° C. in an atmosphere of vacuum or an inert gas.

4,604,368

METHOD OF PRODUCING AN ALUMINIUM BORIDE

Martin R. Reeve, Beaconsfield, Canada, assignor to Alcan International Limited, Montreal, Canada

Filed Jun. 19, 1984, Ser. No. 622,104

Claims priority, application United Kingdom, Jun. 24, 1983, 8317243

Int. Cl.[4] C04B *35/58*

U.S. Cl. 501—98 **7 Claims**

1. A method of forming a solid mixture of particles of an aluminium boride with a refractory material selected from borides and nitrides of groups IIIb, IVb, Vb and VIb metals, which method comprises providing a body of molten aluminium containing suspended particles of an aluminium boride, physically separating said suspended particles from the bulk of the molten metal by passing the body containing the suspended particles through a filter which is pervious to the molten aluminium but which retains the suspended particles, said filter

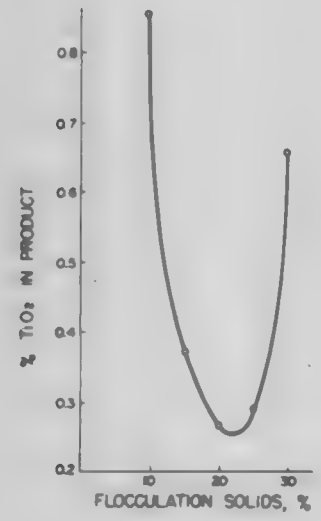
being constituted of a filter medium comprising a refractory material selected from borides and nitrides of groups IIIb, IV, Vb, and VIb metals, and thereafter recovering the filter medium containing retained aluminium boride particles separately from the bulk of the molten metal.

4,604,369

METHOD OF BENEFICIATING KAOLIN CLAY UTILIZING AMMONIUM SALTS

Joseph C. S. Shi, Bartow, Ga., assignor to Thiele Kaolin Company, Sandersville, Ga.

Filed Aug. 27, 1984, Ser. No. 644,614
Int. Cl.[4] C04B *33/04*
U.S. Cl. 501—148 18 Claims



1. A method of removing titanium impurities from kaolin clay comprising the following steps in sequence:

(A) blunging an aqueous kaolin clay suspension having 45 to 70 percent solids by weight, said suspension containing (i) an amount of dispersing agent sufficient to achieve minimum viscosity for said suspension and substantially free of excess dispersing agents, and (ii) 0.1 pounds to 10.0 pounds, per ton of dry clay, of a conditioning agent consisting essentially of a water-soluble ammonium salt;

(B) diluting the blunged clay suspension with an amount of water sufficient to form a clay slip having 10 to 40 percent solids by weight;

(C) adding 0.01 pounds to 5.0 pounds, per ton of dry clay, of a water-dispersible anionic polymer to said clay slip, whereby a separation of titanium-containing flocs is effected from said slip and

(D) separating a white claim product from said titanium-containing flocs;

wherein steps A, B and C are performed in a substantially continuous manner, without aging said blunged clay suspension or said clay slip.

4,604,370

PROCESS FOR REGENERATING A CATALYST

Kohei Sarumaru, Ami; Takeshi Shibano, Yokkaichi; Yoichi Ishii, and Etsuji Yamamoto, both of Ami, all of Japan, assignors to Mitsubishi Petrochemical Company, Limited, Tokyo, Japan

Filed Jul. 9, 1985, Ser. No. 753,136
Claims priority, application Japan, Jul. 23, 1984, 59-152651
Int. Cl.[4] R01J *23/92;* C07C *45/35*
U.S. Cl. 502—38 6 Claims

1. A process for regenerating a Mo.Bi-based multi-oxide catalyst which is used in the vapor-phase catalytic oxidation of propylene or isobutene into acrolein or methacrolein, respectively, the catalytic performance of which has deteriorated as a result of the use thereof in the vapor-phase oxidation at least partly because of sublimation of a portion of the molybdenum content of the catalyst, which process comprises:

heating the deteriorated Mo.Bi-based multi-oxide catalyst in an atmosphere consisting essentially of air at a temperature of 380° C. to 540° C., with the proviso that when the temperature ranges from 380° to 500° C., the heating is conducted for at least 12 hours and when the temperature ranges from 500° C. to 540° C., the heating is conducted for at least 2 hours, thereby restoring at least a portion of the performance capability of the catalyst.

2. The process of claim 1, wherein the vapor-phase catalytic oxidation is conducted over a fixed catalyst bed, and wherein the catalyst is regenerated by the prescribed treatment while in the state of a fixed bed.

3. The process of claim 1, wherein said catalyst has the formula: $Mo_aBi_bX_cO_d$, wherein X is a metal or metalloid other than Mo and Bi, a, b and c respectively represent the number of atoms of Mo, Bi and X in the catalyst and d is the number of oxygen atoms in the catalyst which is determined by the oxidation state of the Mo, Bi and X atoms.

4,604,371

OXIDATION CATALYST

Eric L. Moorehead, Diamond Bar, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Continuation-in-part of Ser. No. 461,942, Jan. 28, 1983, Pat. No. 4,481,363, which is a division of Ser. No. 289,806, Aug. 3, 1981, Pat. No. 4,388,221, and a continuation-in-part of Ser. No. 646,291, Aug. 29, 1984, which is a continuation-in-part of Ser. No. 461,942, Jan. 28, 1983, Pat. No. 4,481,363, which is a division of Ser. No. 289,806, , and a continuation-in-part of Ser. No. 492,163, May 6, 1983, Pat. No. 4,562,269, and a continuation-in-part of Ser. No. 492,226, May 6, 1983, each is a continuation-in-part of Ser. No. 275,370, Jun. 19, 1981, abandoned. This application Oct. 31, 1984, Ser. No. 666,997
The portion of the term of this patent subsequent to Jun. 14, 2000, has been disclaimed.
Int. Cl.[4] B01J *27/18, 29/04, 29/06*
U.S. Cl. 502—60 54 Claims

1. An oxidation catalyst comprising components of vanadium, phosphorus, and tin in combination with a microporous crystalline silica or a crystalline zeolite having a silica-to-alumina ratio of at least 6.0, said vanadium being present in an average oxidation state less than 5.0.

41. An oxidation catalyst consisting essentially of components of tin, vanadium, and phosphorus in combination with a microporous crystalline silica or a crystalline zeolite having a silica-to-alumina ratio of at least 6.0, said vanadium being present in an average oxidation state between 3.50 and 4.95.

4,604,372

AGGLOMERATED ARTICLE OF MODIFIED ZEOLITE

Satoru Morishita, Kodaira; Kenzi Shindo, Toyama; Isao Tozawa, Toyama, and Yukio Taga, Toyama, all of Japan, assignors to Toyo Soda Manufacturing Co., Ltd., Yamaguchi, Japan

Continuation of Ser. No. 710,952, Mar. 14, 1985, abandoned, which is a continuation of Ser. No. 381,873, May 25, 1982, abandoned. This application Nov. 25, 1985, Ser. No. 800,914
Claims priority, application Japan, May 28, 1981, 56-80183
Int. Cl.[4] B01J *20/18, 29/06*
U.S. Cl. 502—62 5 Claims

1. A zeolite agglomerated article which is formed from a zeolite composition comprising:

(a) a K-A zeolite which has been obtained by ion-exchanging a part of the sodium present in a Na-A zeolite with a potassium ion,

(b) at least one additive selected from the group consisting of alkaline earth metal oxides and hydroxides, and double salts containing an alkaline earth metal chloride, and

(c) a binder selected from the group consisting of sodium silicate, clays and organic binders, the amount of said binders being such that the ratio by weight of binder/zeolite is in the range of from 0.05 to 0.5.

4,604,373

HYDROCRACKING CATALYST OF IMPROVED ACTIVITY

Danford E. Clark, Fountain Valley, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Filed Aug. 24, 1984, Ser. No. 644,329
Int. Cl.[4] B01J *29/10*
U.S. Cl. 502—65 32 Claims

1. A catalyst composition which comprises:

(a) a crystalline aluminosilicate Y zeolite having a silica-to-alumina mole ratio of about 6.2 or above, said zeolite having been ion-exchanged with rare earth containing cations and Group VIII noble metal-containing cations;

(b) a porous, inorganic refractory oxide intimately mixed with said zeolite; and

(c) between about 4.5 weight percent and about 6.5 weight percent water based on the total weight of said catalyst composition.

4,604,374

CATALYST PREPARED FROM ORGANOMAGNESIUM COMPOUND, EPIHALOHYDRIN REDUCING HALIDE SOURCE AND TRANSITION METAL COMPOUND

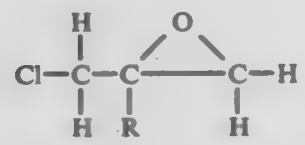
Gary K. Lund, Baton Rouge, La., assignor to The Dow Chemical Company, Midland, Mich.

Filed Sep. 20, 1982, Ser. No. 420,443
Int. Cl.[4] C08F *4/02, 10/00*
U.S. Cl. 502—115 4 Claims

1. A catalytic product resulting from admixing in an inert hydrocarbon diluent and in an atmosphere excludes moisture and oxygen

(A) at least one hydrocarbon soluble organomagnesium material represented by the formula $R_2Mg.xMeR'_{x'}$ wherein each R is independently a hydrocarbyl group having from 1 to about 20 carbon atoms; each R′ is independently a hydrogen, hydrocarbyl or hydrocarbyloxy group having from 1 to about 20 carbon atoms; Me is Al, Zn or B; x has a value from zero to 10 and is sufficient to render the organomagnesium component hydrocarbon soluble; and x′ has a value equal to the valence of Me;

(B) at least one epihalohydrin represented by the formula



wherein R is hydrogen or an alkyl group having from 1 to about 10 carbon atoms;

(C) at least one reducing halide source represented by the formulas $Al(R^3)_{3-m}X_m$ and $B(R^3)_{3-m}X_m$ including mixtures thereof wherein each R^3 is independently hydrogen or a hydrocarbyl group as above defined, and m_x has a value from 1 to 2; and

(D) at least one transition metal (Tm) compound represented by the formula TmY_nX_{z-n} wherein Tm is a transition metal in its highest stable valence state and being selected from groups IV-B, V-B and VI-B of the Periodic Table of the Elements; Y is oxygen, OR″ or NR_2″; R″ is hydrogen or a hydrocarbyl group having from 1 to about 20 carbon atoms; X is a halogen, preferably chlorine or bromine; z has a value corresponding to the valence of the transition metal, Tm; n has a value of from zero to 5 with the value of z−n being from zero up to a value equal to the valence state of the transition metal, Tm; and wherein

(1) the components are added in the order (A), (B), (C) and (D) or (A), (B), (D) and (C);

(2) the components are employed in quantities so as to provide the following atomic ratios

Mg:Tm of from about 0.1:1 to about 100:1; Cl (from Component C):Mg of from about 2:1 to about 20:1; and

the epoxide:total number of hydrocarbyl groups attached to a metal atom in component (A) is from about 0.5:1 to 2:1; and

(3) the proviso that when the halide (from Component C):Mg atomic ratio is less than about 3:1 then the resultant mixture is heated at a temperature of from about 35° C. up to the boiling point of the inert hydrocarbon diluent, for a time to permit substantial reaction of the resultant mixture as indicated by a change in color of the mixture.

4,604,375

MANGANESE-SPINEL CATALYSTS IN CO/H_2 OLEFIN SYNTHESIS

Stuart L. Soled, Madison, and Rocco A. Fiato, Scotch Plains, both of N.J., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Dec. 20, 1983, Ser. No. 564,465
Int. Cl.[4] B01J *23/34*
U.S. Cl. 502—241 15 Claims

1. A hydrocarbon synthesis catalyst composition comprising a bulk unsupported Group IA or IIA metal salt promoted iron-manganese single phase, said single phase comprising a spinel having the empirical formula:

$$Fe_xMn_yO_4$$

wherein x and y are integer or decimal values, other than zero, with the proviso that the sum of x+y is 3 and the ratio of x/y is 2:1 to 19:1 and said spinel exhibiting a powder X-ray diffraction pattern substantially isostructural with Fe_3O_4 and said metal salt being substantially deposited on the surface of said spinel.

4,604,376

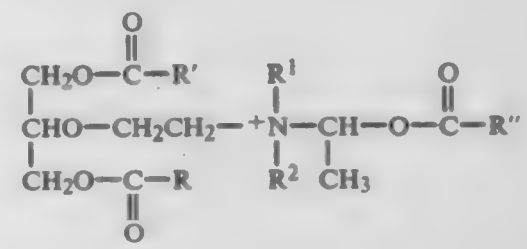
ENTERIC COMPOUNDS AND COMPLEXES

Lin-nar L. Teng, Bothell, Wash., assignor to Research Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 370,155, Apr. 21, 1982, Pat. No. 4,510,135, and a continuation-in-part of Ser. No. 452,493, Dec. 23, 1982. This application Apr. 8, 1985, Ser. No. 720,664
Int. Cl.[4] A61K *37/26*; C07K *7/40*
U.S. Cl. 514—3 28 Claims

1. An enterally effective, biologically active peptide or protein composition, comprising:

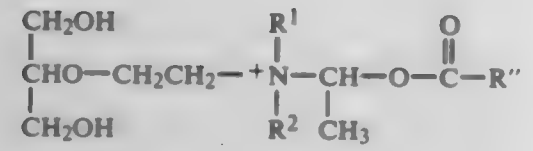
a sandwich complex comprising a hydrophobic core complex of a biologically active peptide or protein with an alkyl or alkenyl sulfate having 6–24 carbon atoms and 0–3 double bonds, said core complex forming an electrostatic complex with a quaternary ammonium ion selected from the group consisting of:



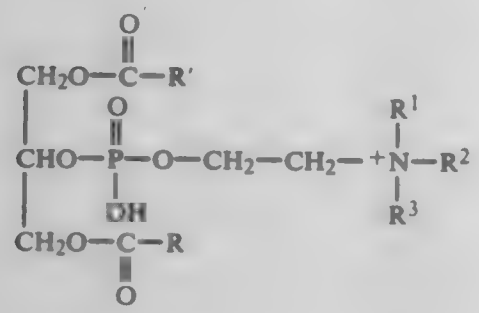
where

R^1 and R^2 are the same or different and are alkyl or hydroxy substituted alkyl containing 1 to 6 carbon atoms; and

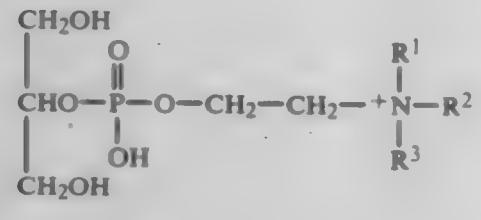
R, R′ and R″ are the same or different and are saturated or unsaturated aliphatics containing at least 10 carbon atoms;



where R^1, R^2 and R'' have the meanings given above;



where R^3 is independently alkyl or hydroxy substituted alkyl containing at least 10 carbon atoms; and R^1, R^2, R and R' have the meanings given above; and



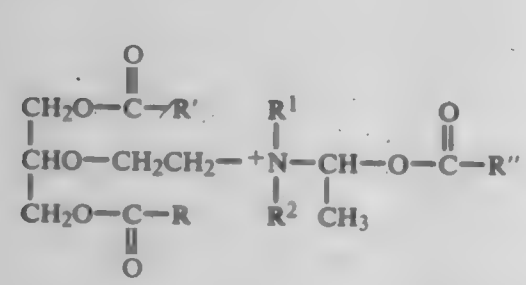
where R^1, R^2 and R^3 have the meanings given above.

16. A method of producing an enterally effective, biologically active peptide or protein composition, comprising the steps of:

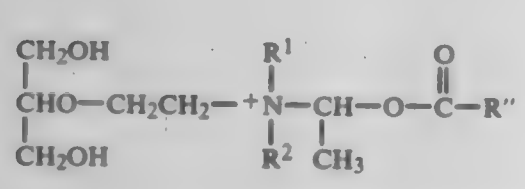
dissolving a biologically active peptide or protein in an aqueous solvent to form a solution;

adding an alkyl or alkenyl sulfate having 6–24 carbon atoms and 0–3 double bonds to said solution to form a hydrophobic core complex;

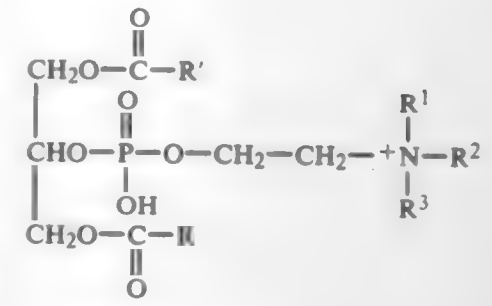
adding a quaternary ammonium ion to the solution of said core complex, wherein said ammonium ion is selected from the group consisting of



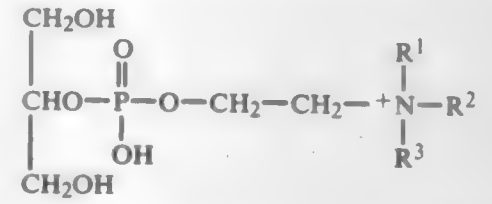
where R^1 and R^2 are the same or different and are alkyl or hydroxy substituted alkyl containing 1 to 6 carbon atoms; and R, R' and R'' are the same or different and are saturated or unsaturated aliphatics containing at least 10 carbon atoms;



where R^1, R^2 and R'' have the meanings given above;



where R^3 is independently alkyl or hydroxy substituted alkyl containing at least 10 carbon atoms; and R^1, R^2, R and R' have the meanings given above; and



where R^1, R^2 and R^3 have the meanings given above thereby forming a sandwich complex comprising said hydrophobic core complex in an electrostatic complex with said ammonium ion.

4,604,377

PHARMACEUTICAL COMPOSITIONS OF MICROBIALLY PRODUCED INTERLEUKIN-2

Pete M. Fernandes, Lafayette, and Terrance A. Taforo, Oakland, both of Calif., assignors to Cetus Corporation, Emeryville, Calif.

Continuation-in-part of Ser. No. 594,350, Mar. 28, 1984, abandoned. This application Mar. 21, 1985, Ser. No. 715,152

The portion of the term of this patent subsequent to Jul. 23, 2002, has been disclaimed.

Int. Cl.[4] A61K *45/02, 37/02, 39/39;* **C07K** *13/00*

U.S. Cl. 514—8 **15 Claims**

1. A recombinant IL-2 composition suitable for reconstituting in a pharmaceutically acceptable aqueous vehicle for parenteral administration to a patient to provide IL-2 therapy comprising a sterile lyophilized mixture of:

(a) a therapeutically effective amount of a selectively oxidized microbially produced recombinant IL-2 that is substantially free of non-IL-2 protein, and it is at least 95% pure recombinant IL-2, and contains less than about 5 ng endotoxin per 100,000 units of IL-2 activity;

(b) a physiologically acceptable water soluble carrier that does not affect the stability of the selectively oxidized microbially produced IL-2 adversely; and

(c) a sufficient amount of a surface active agent to ensure the water solubility of the selectively oxidized, microbially produced hydrophobic recombinant IL-2.

4,604,378

BASIC V_1-VASOPRESSIN ANTAGONISTS

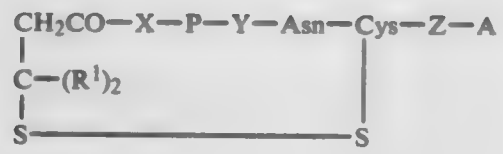
James F. Callahan, Philadelphia; William F. Huffman, Malvern; Michael L. Moore, Media, and Nelson C. Yim, Ambler, all of Pa., assignors to SmithKline Beckman Corporation, Philadelphia, Pa.

Filed Nov. 21, 1984, Ser. No. 673,829

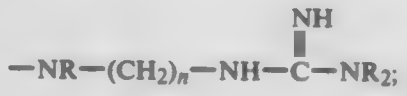
Int. Cl.[4] C07K *7/16;* **A61K** *37/34*

U.S. Cl. 514—11 **12 Claims**

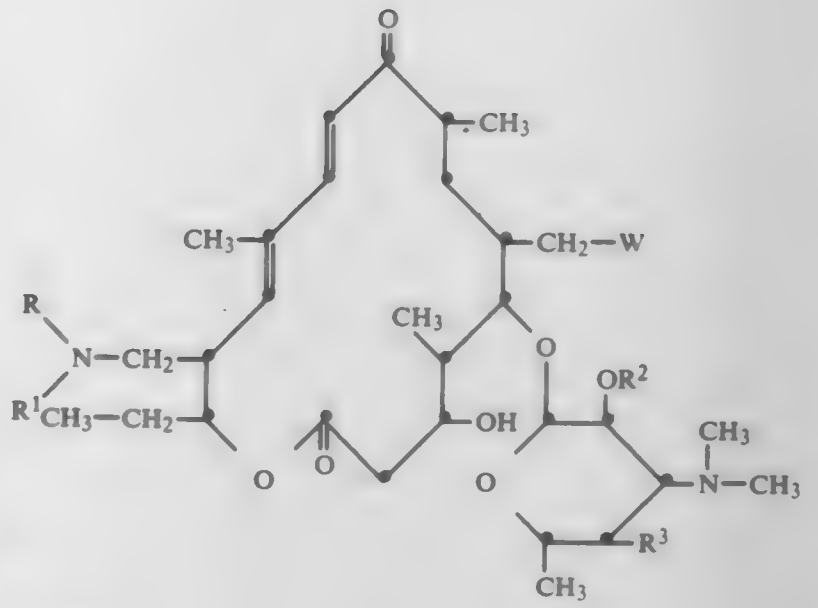
1. A polypeptide compound having the formula:



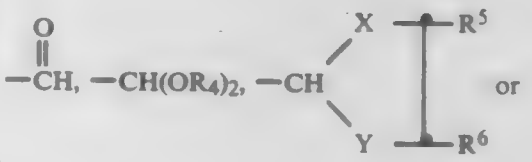
in which:
A is —NR—$(CH_2)_n$—NR_2 or



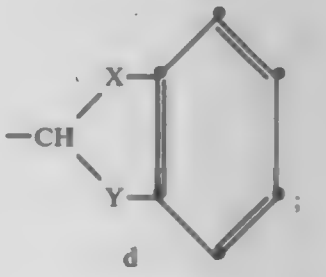
P is Phe, Ile, Phe(4'-Alk), Tyr or Tyr(Alk);
X is a D or L isomer of Val, Nva, Leu, Ile, Pba, Phe, Phe(4'-Alk), Trp, Nle, Cha, Abu, Met, Chg, Tyr or Tyr(Alk);
Y is Val, Ile, Abu, Ala, Chg, Gln, Lys, Cha, Thr, Nle, Phe, Leu or Gly;
z is Gly, Sar, a single bond or a D or L isomer of Pro, Δ^3-Pro, Ala or N-Me-Ala;
R^1 is, each, hydrogen or methyl;
n is an integer from 2–8;
R is, each, hydrogen or methyl; and Alk is an alkyl group 1–4 carbons; or a pharmaceutically acceptable salt thereof.



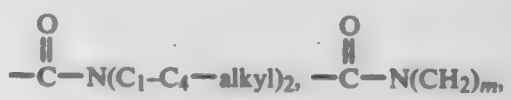
wherein
W represents



a b c



R is a bicyclic or tricyclic ring system containing from 6 to 18 carbon atoms; and
R^1 is hydrogen, C_1–C_4-alkyl or benzyl; or
R and R^1 together form a bicyclic or tricyclic ring system containing from 8 to 20 ring atoms wherein from 1 to 3 of the carbon atoms may be substituted by a group selected from C_1–C_4-alkyl, C_2–C_4-alkenyl, C_2–C_4-alkynyl, C_1–C_4-alkoxy, C_1–C_4-alkoxycarbonyl, hydroxyl, C_1–C_4-alkanoyloxy, C_1–C_4-alkanoylamino, halo, halo-C_1–C_4-alkyl, —$N(C_1$–C_4-alkyl$)_2$, —$N(CH_2)_m$,



cyano, ethylenedioxy, benzyl, phenyl, or phenyl substituted by from 1 to 3 substituents selected from nitro, halo, C_1–C_4-alkyl, C_1–C_4-alkoxy, hydroxy, amino, or mono- or di-(C_1–C_4-alkyl)amino; and
m is an integer from 4 through 7;
R^2 is hydrogen; C_1–C_5-alkanoyl; C_1–C_5-alkanoyl having 1 to 3 halo substituents; benzoyl, phenylacetyl or phenylpropionyl; or benzoyl, phenylacetyl or phenylpropionyl having 1 to 5 halo or methyl or 1 to 2 methoxyl, nitro or hydroxyl substituents on the phenyl ring;
R^3 is hydrogen or —OR^2;
R^4 is C_1–C_4-alkyl;
R^5 and R^6, independently, are hydrogen, methyl, ethyl, phenyl, methoxycarbonyl, ethoxycarbonyl or phenoxycarbonyl;
X and Y, independently, represent O, S or NR^7; and
R^7 is hydrogen, methyl, ethyl, phenyl or benzyl;
or its acid addition salt.

4,604,379

DIALYSIS SOLUTIONS CONTAINING CROSS-LINKED GELATIN

Zbylut J. Twardowski, and Karl D. Nolph, both of Columbia, Mo., assignors to Curators of the University of Missouri, Columbia, Mo.

Filed Jun. 18, 1984, Ser. No. 621,392
Int. Cl.[4] C08L *89/04, 89/06;* **C09H** *7/00*
U.S. Cl. 514—21 **6 Claims**

1. A peritoneal dialysis solution comprising
an osmotic agent operative, when said solution is present in the peritoneal cavity, to induce and sustain the ultrafiltration of water from the blood into said solution through the peritoneum, said osmotic agent comprising gelatin which is chemically cross-linked to suppress gelatin and which has an isoelectric point at a pH below about 5, said cross-linked gelatin being essentially free of synthetically added, pendant ionizable groups, and
a quantity of physiological cations present to maintain said solution at a pH above about 5 to create a normally anionic charge on said cross-linked gelatin and to cause said cross-linked gelatin to assume a salt form.

4,604,380

C-23-SUBSTITUTED MYCAMINOSYLTYLONOLIDE COMPOUNDS, PHARMACEUTICAL COMPOSITIONS AND METHODS OF USE

Manuel Debono, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed Jan. 18, 1985, Ser. No. 692,484
Int. Cl.[4] A61K *31/71;* **C07H** *17/08*
U.S. Cl. 514—30 **38 Claims**

1. A compound of the formula:

33. A composition useful for the treatment of bacterial or mycoplasmal infections comprising an effective amount of a compound of claim 1 or its pharmaceutically acceptable acid addition salt and a suitable pharmaceutical vehicle.

4,604,381

4-DEMETHOXY-13-DIHYDRODAUNORUBICIN AND USE THEREOF

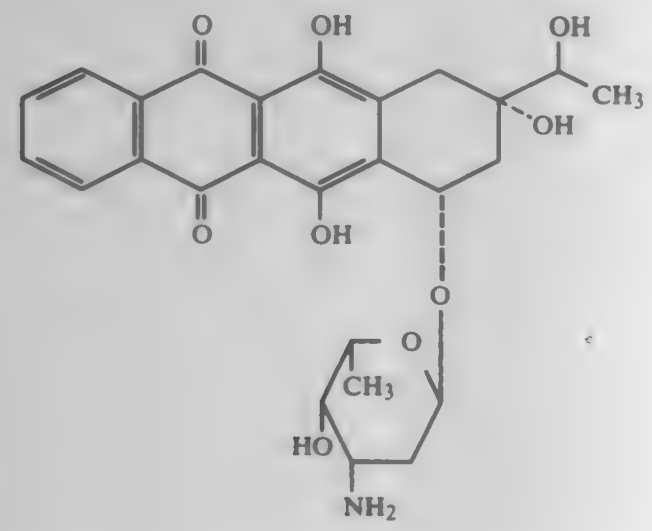
Sergio Penco, Milan; Federico Arcamone, Nerviano, and Anna Maria Casazza, Milan, all of Italy, assignors to Farmitalia Carlo Erba S.p.A., Milan, Italy

Continuation of Ser. No. 398,987, Jul. 16, 1982, abandoned. This application Nov. 5, 1984, Ser. No. 668,178

Int. Cl.[4] A61K *31/71;* C07H *15/24*

U.S. Cl. 514—34 3 Claims

1. An anthracycline glycoside having the formula:



and its pharmaceutically acceptable acid addition salts.

2. A method of inhibiting the growth of a tumor selected from the group consisting of P 388 leukemia and Gross leukemia, said method comprising administering to a host afflicted therewith, a therapeutically effective amount of the anthracycline glycoside as claimed in claim 1.

4,604,382

3'-AMINO-2',3'-DIDEOXYCYTIDINE AND THE PHARMACOLOGICALLY ACCEPTABLE SALTS THEREOF

Tai-Shun Lin, North Haven, and William H. Prusoff, Branford, both of Conn., assignors to Research Corporation, New York, N.Y.

Filed Jan. 17, 1983, Ser. No. 458,335

Int. Cl.[4] A61K *31/70;* C07H *17/00*

U.S. Cl. 514—49 5 Claims

1. A compound selected from the group consisting of 3'-amino-2',3'-dideoxycytidine and the pharmacologically acceptable acid addition salts thereof.

3. A pharmaceutical composition in dosage unit form comprising from about 50 milligrams to about 300 milligrams of a compound selected from the group consisting of 3'-amino-2',3'-dideoxycytidine and the pharmacologically acceptable acid-addition salts thereof in association with a pharmaceutical carrier.

4. The method of inducing regression of leukemia and/or inhibiting growth of tumors in a mammal comprising administering to said mammal an effective antineoplastic amount of a compound selected from the group consisting of 3'-amino-2,3'-dideoxycytidine and the pharmalogically acceptable acid-addition salts thereof.

4,604,383

PYRROLIDIN-2-ONES AND MEDICAMENTS CONTAINING THEM

Kathleen Biziere, Clapiers; Jean-Pierre Chambon, Montarnaud, and Jean-Charles Molimard, Saint-Gely-du-Fesc, all of France, assignors to Societe Anonyme Styled: SANOFI, Paris, France

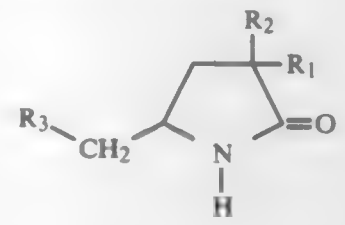
Filed Jul. 5, 1984, Ser. No. 628,211

Claims priority, application France, Jul. 12, 1983, 83 11636

Int. Cl.[4] C07D *207/26, 409/06;* A61K *31/40*

U.S. Cl. 514—63 8 Claims

1. Pyrrolidinones of the formula:



(I)

in which:

R_1 represents a hydrogen atom or a straight or branched alkyl group having 1 to 4 carbon atoms;

R_2 represents a straight or branched alkyl group having 1 to 4 carbon atoms, a phenyl group or a trimethylsilyl group;

R_3 represents a 2-thienyl group, an unsubstituted phenyl group, or a phenyl group substituted by one or two halogen atoms, methyl groups, methoxy groups, or trifluoromethyl groups.

7. A pharmaceutical composition for treatment of psychic, neurological or neuromuscular disorders, containing as active ingredient an effective amount for treating said disorders of at least one compound according to claim 1, in association with a pharmaceutically acceptable vehicle.

4,604,384

PHARMACEUTICAL GEL COMPOSITION

Robert A. Smith, 42 Bigge Street, Liverpool, New South Wales, 2170, and Maxine Goodman, 8/95 Chiswick Road, Greenacre, New South Wales 2190, both of Australia

PCT No. PCT/AU83/00081, § 371 Date Jan. 23, 1984, § 102(e) Date Jan. 23, 1984, PCT Pub. No. WO84/00111, PCT Pub. Date Jan. 19, 1984

PCT Filed Jun. 21, 1983, Ser. No. 584,941

Claims priority, application Australia, Jun. 24, 1982, PF4583

Int. Cl.[4] A61K *31/56*

U.S. Cl. 514—179 19 Claims

1. A composition for use in the treatment of burns, cuts, wounds, abrasions and the like consisting essentially of, per 100 parts by weight of composition,

from 20 to 30 parts by weight of propylene glycol,

from 1 to 4 parts by weight of hydroxy ethyl cellulose,

from 0 to 2 parts by weight of sodium chloride, and

the balance water, said composition being substantially sterile.

4,604,385

PERFLUORO-1-AZATRICYCLIC AMINE COMPOUNDS USEFUL AS OXYGEN CARRIERS IN ARTIFICIAL BLOOD AND INFUSION FLUIDS

Kazumasa Yokoyama, Toyonaka; Chikara Fukaya, Osaka; Yoshio Tsuda, Takarazuka; Taizo Ono, Osaka; Yoshio Arakawa, Suita; Yoshihisa Inoue, Kyoto; Youichiro Naito, Hirakata, and Tadakazu Suyama, Kyoto, all of Japan, assignors to The Green Cross Corporation, Osaka, Japan

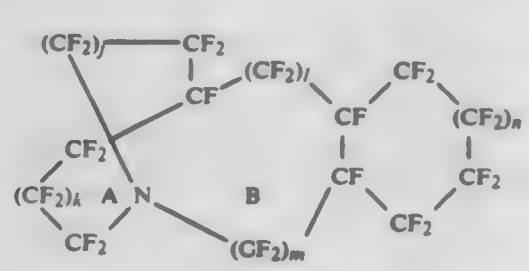
Division of Ser. No. 505,322, Jun. 17, 1983, Pat. No. 4,542,147. This application Jul. 5, 1985, Ser. No. 751,851

Claims priority, application Japan, Aug. 7, 1982, 57-137663; Aug. 7, 1982, 57-137664; Aug. 7, 1982, 57-137665

Int. Cl.[4] A61K *31/395, 31/55;* **C07D** *487/08*

U.S. Cl. 514—183 **9 Claims**

1. A perfluoro-1-azatricyclic amine compound represented by the formula:



wherein j, k, l and m are each an integer of from zero to 3 so as to make one of the rings A and B to be 7 or more members; n is zero or 1; any one fluorine of the formula optionally being replaced by a trifluoromethyl group.

7. A composition for use as a blood substitute or infusion fluid which composition is an aqueous emulsion of a compound according of claim 1.

4,604,386

3-(ALKYNYLALKYLOXY) CEPHALOSPORINS

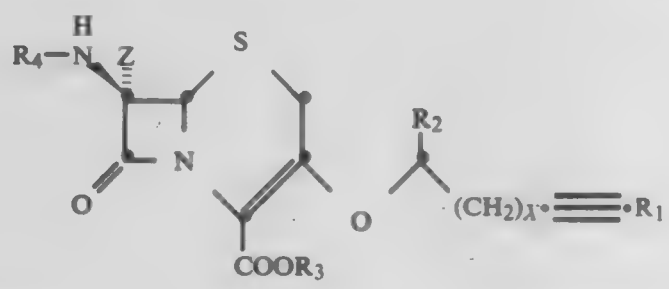
Douglas O. Spry, Mooresville, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed Jul. 9, 1984, Ser. No. 629,014

Int. Cl.[4] A61K *31/545;* **C07D** *501/18, 501/20*

U.S. Cl. 514—200 **59 Claims**

1. A compound of the formula:



wherein:

R_1 is hydrogen, C_1 to C_4 alkyl, C_1 to C_4 alkoxycarbonyl, C_1 to C_4 alkylthio, or phenylthio or halo;

R_2 is hydrogen, C_1 to C_4 alkyl, phenyl, benzyl or phenethyl;

R_3 is hydrogen, a carboxy protecting group, a pharmaceutically acceptable, non-toxic salt of the carboxy group, a hydrate of said salt, or a non-toxic, metabolically labile ester of the carboxy group; and

R_4 is

(a) hydrogen, or a salt of said compound;

(b) an amino-protected group;

(c) a group of the formula:



wherein

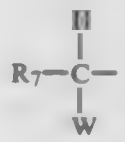
R_5 is

(i) 1,4-cyclohexadienyl, 1-cyclohexenyl, phenyl or substituted phenyl wherein the substituents are 1 or 2 halogens, hydroxy, protected hydroxy, nitro, cyano, trifluoromethyl, C_1 to C_4 alkyl, C_1 to C_4 alkoxy, carboxy, protected carboxy, carboxymethyl, protected carboxymethyl, hydroxymethyl, protected hydroxymethyl, aminomethyl, protected aminomethyl, or N-(methylsulfonylamino);

(ii) an arylalkyl group of the formula

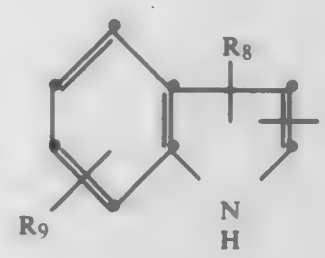
wherein y is O or S, m is 0 or 1, R_6 is R_5 as defined above, and when m is 0, R_6 is also 2-thienyl, 3-thienyl, 2-furyl, 3-furyl, 1-tetrazolyl, 5-tetrazolyl, 2-thiazolyl, 2-aminothiazol-4-yl, or 2-(protected amino)thiazol-4-yl; or

(iii) a substituted arylalkyl group of the formula



wherein

R_7 is R_6 as defined above, 2- or 3-indolyl, a substituted 2- or 3-indolyl group of the formula



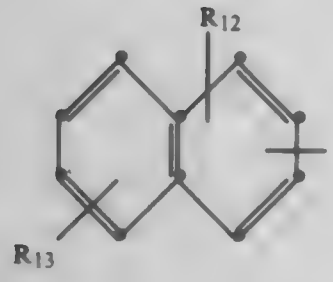
in which

R_8 and R_9 independently are hydrogen, halo, hydroxy, protected hydroxy, C_1 to C_4 alkyl, C_1 to C_4 alkoxy, nitro, amino, protected amino, C_1 to C_4 alkanoylamino, C_1 to C_4 alkylsulfonylamino, or when R_8 and R_9 are on adjacent carbons, they may be taken together to form methylenedioxy, 2- or 3-benzothienyl, 2- or 3-substituted benzothienyl of the formula



in which

R_{10} and R_{11} are independently hydrogen, halo, hydroxy, protected hydroxy, C_1 to C_4 alkyl, C_1 to C_4 alkoxy, nitro, amino, protected amino, C_1 to C_4 alkanoylamino, C_1 to C_4 alkylsulfonylamino, and when R_{10} and R_{11} are on adjacent carbon atoms, they can be taken together to form methylenedioxy; 1- or 2-naphthyl, substituted 1- or 2-naphthyl of the formula



wherein

R_{12} and R_{13} are independently hydrogen, halo, hydroxy, protected hydroxy, C_1 to C_4 alkyl, C_1 to C_4 alkoxy, nitro, amino, protected amino, C_1 to C_4 alkanoylamino, C_1 to C_4 alkylsulfonylamino, or when R_{12} and R_{13} are on adjacent carbon atoms, they can be taken together to form methylenedioxy;

W is hydroxy, protected hydroxy, carboxy, a carboxy salt, protected carboxy, amino, a salt of said amino compound, or protected amino; provided that,

when W is other than amino, a salt of said amino compound or protected amino, R_7 is other than 2 or 3-indolyl, substituted 2- or 3-indolyl, 2- or 3-benzothienyl, 2- or 3-substituted benzothienyl, 1- or 2-naphthyl, or substituted 1- or 2-naphthyl; and wherein X is 0 to 4 and Z is hydrogen or methoxy.

4,604,387

1,2,4-TRIAZINYLTHIOMETHYL-3-CEPHEM SULFOXIDES, AND A PROCEDURE FOR THEIR PREPARATION

Bernard Labeeuw, Montpellier, and Ali Sahli, St Gely du Fesc, both of France, assignors to Sanofi, Paris, France

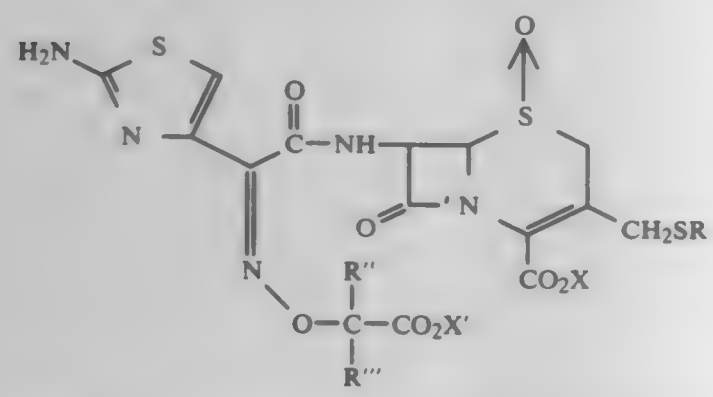
Continuation of Ser. No. 277,839, Jun. 26, 1981, abandoned. This application Aug. 23, 1983, Ser. No. 525,797

Claims priority, application France, Jun. 30, 1980, 80 14512; Mar. 3, 1981, 81 04242; Mar. 3, 1981, 81 04243

Int. Cl.[4] A61K *31/545;* C07D *501/60*

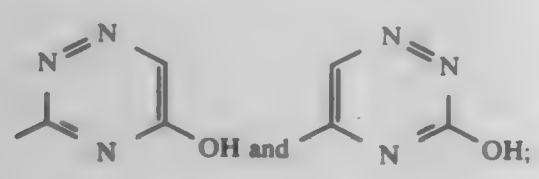
U.S. Cl. 514—206 4 Claims

1. A cephalosporin derivative having the formula



wherein the sulfoxide function is in the (S) stereoisomeric form;

R is selected from the group consisting of



R″ and R‴ each separately represents hydrogen or alkyl of from one to three carbons, or, R″ and R‴ taken together with the carbon to which they are attached constitute a cyclobutyl or cyclopentyl ring; and

X and X′ are separately selected from the group consisting of

hydrogen;

alkali metal cations;

alkaline earth cations;

cations resulting from protonation of a compound selected from the group consisting of ethylenediamine, triethanolamine, diethanolamine, ethanolamine, and tromethamine;

tertiary butyl;

organic radicals selected from the group consisting of phthalidyl, pivaloyl oxymethyl, acetoxymethyl, ethoxycarbonyl-oxymethyl, 1-(ethoxy carbonyloxy)ethyl, acetonyl, alpha-methoxy-alpha-carbomethoxy methyl, carbomethoxymethyl, and carbethoxymethyl;

or a pharmaceutically-acceptble acid addition salt of the compound in which X is H, tertiary butyl, or said organic radical.

4,604,388

FUSED AROMATIC OXAZEPINONES, THIAZEPINONES, DIAZEPINONES AND SULFUR ANALOGS THEREOF IN A METHOD OF COUNTERACTING HISTAMINE

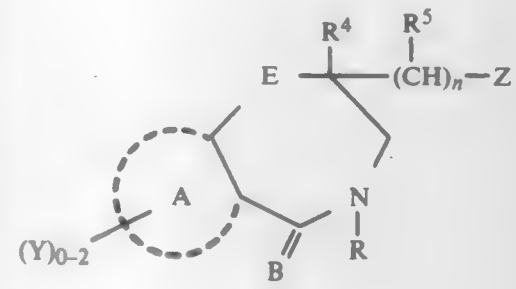
Charles A. Leonard; Bernard V. Franko, both of Richmond, and Albert D. Cale, Jr., Mechanicsville, all of Va., assignors to A. H. Robins Company, Incorporated, Richmond, Va.

Continuation-in-part of Ser. No. 652,007, Sep. 19, 1984, abandoned, which is a continuation-in-part of Ser. No. 527,558, Aug. 29, 1983, abandoned, which is a continuation-in-part of Ser. No. 431,998, Sep. 30, 1982, abandoned. This application Jul. 9, 1985, Ser. No. 753,325

Int. Cl.[4] A61U *31/55*

U.S. Cl. 514—211 258 Claims

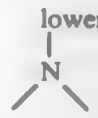
1. A method of counteracting histamine in a living animal body which comprises administering to said animal body an effective amount of a compound selected from the group having the formula:



wherein;

A represents an aromatic ring having two of its carbon atoms held mutually with the oxazepine, thiazepine, or diazepine moiety selected from the group consisting of benzene, naphthalene, a quinoline, or a pyridine in any of its four positions, any of the rings optionally substituted by one or two Y radicals selected from the group consisting of halo, loweralkyl, loweralkoxy, diloweralkylamino, nitro or trifluoromethyl;

E is selected from oxygen, sulfur or



loweralkyl;

B is selected from oxygen or sulfur;

R is selected from the group consisting of hydrogen, loweralkyl, cycloalkyl or phenyl-loweralkyl of which phenyl may be optionally substituted by one or two radicals selected from halo, loweralkyl, loweralkoxy, nitro, or trifluoromethyl;

n is 1, 2 or 3;

R^4 and R^5 are selected from hydrogen or loweralkyl (1–5 C);

Z is selected from the group consisting of —NR^1R^2, 1H-pyrazol-1-yl, 1H-imidazol-1-yl, 1H-imidazol-2-yl or 4,5-dihydro-1H-imidazol-2-yl;

R^1 and R^2 are selected from the group consisting of hydrogen, loweralkyl, cycloalkyl and phenyl-loweralkyl of which phenyl may be optionally substituted by 1 or 2 radicals selected from halo, loweralkyl, loweralkoxy, nitro, trifluoromethyl or cyano, or R^1 and R^2 taken together with the adjacent nitrogen atom may form a heterocyclic residue selected from the group consisting of 1-azetidinyl, 1-pyrrolidinyl, 2,5-dimethylpyrrolidin-1-yl, 2-methylpyrrolidin-1-yl, 1-piperidinyl, 4-substituted piperidin-1-yl, 4-[bis(4-fluorophenyl)methyl]piperidin-1-yl, 4-morpholinyl, 1-piperazinyl, 4-substituted piperazin-1-yl, 1,2,3,6-tetrahydropyridin-1-yl, 1H-pyrrol-1-yl or 2,5-dihydro-1H-pyrrol-1-yl; the optical isomers thereof and the pharmaceutically acceptable salts thereof with the proviso that when R=H, Z is never a primary or secondary amine and a further proviso that when n=4, Z is not pyrazolyl or imidazolyl.

4,604,389

BENZAZEPINE DERIVATIVES

Manfred Reiffen, Biberach; Klaus Noll; Joachim Heider, both of Warthausen; Volkhard Austel; Norbert Haüel, both of Biberach, all of Fed. Rep. of Germany; Walter Kobinger, and Christian Lillie, both of Vienna, Austria, assignors to Dr. Karl Thomae GmbH, Biberach an der Riss, Fed. Rep. of Germany

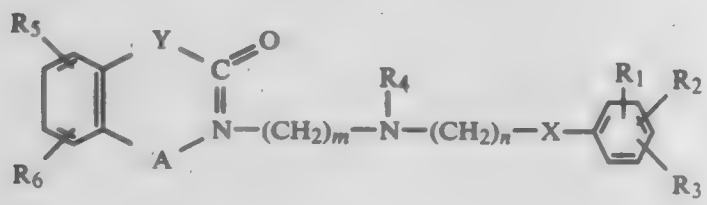
Filed May 8, 1985, Ser. No. 732,204

Claims priority, application Fed. Rep. of Germany, May 17, 1984, 3418271

Int. Cl.[4] **A61K** *31/55;* **C07D** *223/16, 491/55, 521/00*

U.S. Cl. 514—213 **10 Claims**

1. A compound of formula



wherein

A is $-CH_2CH_2-$ or $-CH=CH-$;

R_1 is hydrogen, chlorine, bromine, C_1–C_3 alkyl, amino, C_1–C_3 alkylamino, C_1–C_3 dialkylamino, acylamino, hydroxy, C_1–C_3 alkoxy or phenyl C_1–C_3 alkoxy;

R_2 is hydrogen, chlorine, bromine, hydroxy, C_1–C_3 alkyl, C_1–C_3 alkoxy or phenyl C_1–C_3 alkoxy or, together with R_1, can be C_1–C_2 alkylenedioxy;

R_3 is hydrogen, chlorine, bromine or C_1–C_3 alkoxy;

R_4 is hydrogen, benzyl, C_1–C_3 alkyl or C_3–C_5 alkenyl;

R_5 is hydrogen, halogen, C_1–C_3 alkyl or C_1–C_3 alkoxy;

R_6 is hydrogen, C_1–C_3 alkyl or C_1–C_3 alkoxy or together with R_5, can be a C_1–C_2 alkylenedioxy;

X is imino, optionally substituted by a benzyl or C_1–C_3 alkyl, or is oxygen, sulphur, sulfinyl or sulfonyl;

Y is imino, optionally substituted by a benzyl, or C_1–C_3 alkyl, or is methylene or carbonyl; and

m and n are each independently 2, 3 or 4;

or a nontoxic, pharmaceutically acceptable addition salts thereof.

10. A method of reducing the oxygen requirement of the heart in a human or animal in need thereof, which method comprises administering to said human or animal an effective amount of a compound of any of claims **1**, **2** or **3**.

4,604,390

ANTIBACTERIAL BENZO(CHALCOGENO)[4,3,2-CD]INDAZOLES

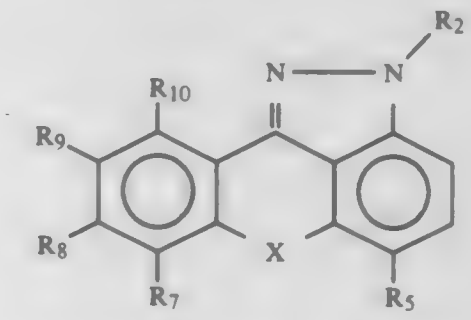
Edward F. Elslager; Leslie M. Werbel, both of Ann Arbor; Daniel F. Ortwine, Saline; Donald F. Worth, Ann Arbor; Howard D. H. Showalter, Ann Arbor; David B. Capps, Ann Arbor; Ellen M. Berman, Ann Arbor; Vlad E. Gregor, Ann Arbor, and Anthony D. Sercel, Ann Arbor, all of Mich., assignors to Warner-Lambert Company, Morris Plains, N.J.

Continuation-in-part of Ser. No. 626,090, Jun. 29, 1984, abandoned, and a continuation-in-part of Ser. No. 626,170, Jun. 29, 1984, abandoned, and a continuation-in-part of Ser. No. 559,402, Dec. 12, 1983, abandoned, which is a continuation-in-part of Ser. No. 456,162, Jan. 6, 1983, abandoned. This application May 24, 1985, Ser. No. 738,195

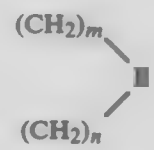
Int. Cl.[4] **A61K** *31/415, 31/54;* **C07D** *491/06, 517/06*

U.S. Cl. 514—222 **46 Claims**

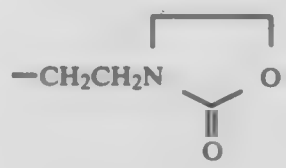
1. A benzo(chalcogeno)[4,3,2-cd]indazole compound having the structural formula



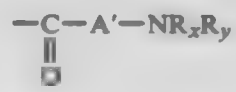
or a pharmaceutically acceptable salt thereof, wherein X is oxygen, sulfur, or selenium; the substituents R_7, R_8, R_9, and R_{10} are independently hydrogen, hydroxy, alkoxy of from 1 to 4 carbon atoms wherein R_2 is $—ANR'R''$ wherein A is a straight or branched alkylene chain of from 2 to 5 carbon atoms optionally substituted with hydroxyl; wherein R′ and R″ are hydrogen or are straight or branched alkyl of from 1 to 4 carbon atoms optionally substituted with hydroxyl, or where R′ and R″ taken together also represent



wherein m and n are each 2 and B is a direct bond, or oxygen, sulfur, or NR''' wherein R‴ is hydrogen or straight or branched alkyl of from 1 to 4 carbon atoms optionally substituted with hydroxyl; and wherein R_5 is nitro, NH_2, NHR_2, or NHR'''' where R⁗ is



or is



wherein A′ is a straight or branched alkylene chain of from 1 to 5 carbon atoms, and R_x and R_y are independently hydrogen or straight or branched alkyl of from 1 to 4 carbon atoms optionally substituted with hydroxyl.

46. A method of treating bacterial infections in a mammal comprising administering to a mammal in need of such treatment an antibacterially effective amount of a compound as

defined by claim 1 in combination with a pharmaceutically acceptable carrier.

4,604,391

TREATMENT OF OSTEITIS AND OSTEOMYELITIS EMPLOYING THIADIAZINE COMPOUNDS

Rolf W. Pfirrmann, Lucerne, Switzerland, assignor to Ed Geistlich Sohne AG fur Chemische Industrie, Switzerland

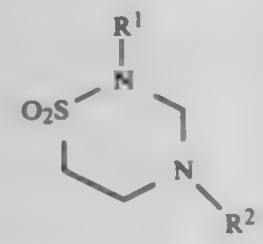
Filed Oct. 19, 1984, Ser. No. 662,885

Claims priority, application United Kingdom, Oct. 20, 1983, 8328073

Int. Cl.[4] A61K *31/54*

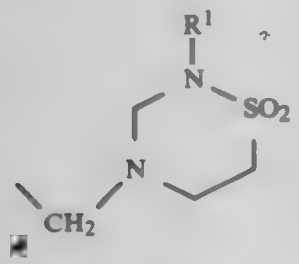
U.S. Cl. 514—222 4 Claims

1. A method of treating a human or warm-blooded animal patient suffering from bone injury to prevent the occurrence of osteitis or osteomyelitis, said method comprising administering systemically to said patient a therapeutically effective amount of a compound of formula (I)



(I)

wherein R_1 represents a hydrogen atom or an alkyl group having from 1 to 6 carbon atoms and R^2 represents a hydrogen atom, an alkyl group having from 1 to 6 carbon atoms or a group of formula (II)



(II)

in which R^1 is as defined above.

4,604,392

2-SUBSTITUTED BENZOFURAN DERIVATIVES USEFUL IN TREATING CARDIAC ARRHYTHMIC, HISTAMINIC AND TUSSIVE CONDITIONS

Vittorio Pestellini; Mario Ghelardoni; Carlo Alberto Maggi, Florence; Gabrio Roncucci, Siena, and Alberto Meli, Florence, all of Italy, assignors to A. Menarini S.A.S., Italy

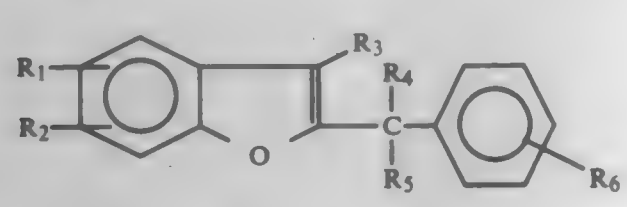
Division of Ser. No. 468,869, Feb. 22, 1983, Pat. No. 4,485,112, which is a continuation-in-part of Ser. No. 253,551, Apr. 13, 1981, abandoned. This application Aug. 17, 1984, Ser. No. 641,606

Claims priority, application Italy, Nov. 12, 1980, 9583 A/80

Int. Cl.[4] A61K *31/535;* C07D *295/08*

U.S. Cl. 514—227 24 Claims

1. A compound selected from the group consisting of compounds having the formula



and pharmaceutically acceptable salts thereof, in which:

R_1 and R_2 which can be the same or different are selected from the group consisting of a hydrogen atom, a halogen atom, an alkyl group containing 1 to 4 carbons atoms, a phenyl lower alkyl group, a naphthyl lower alkyl group, a phenyl group, a naphthyl group, a hydroxyl group, a lower alkoxy group, an NH_2 group, an NH-lower alkyl group, an N(lower alkyl)$_2$ group, an NH(CO-lower alkyl) group, an NH(CO-phenyl) group, an NH(CO-naphthyl) group, and an NO_2 group, and a ring of 5–8 carbon atoms including both R_1 and R_2;

R_3 is selected from the group consisting of a hydrogen atom, an alkyl group containing 1 to 4 carbon atoms, a phenyl group and a naphthyl group;

R_4 is selected from the group consisting of a hydrogen atom, a lower alkyl group, a phenyl group, a naphthyl group, a phenyl lower alkyl group, and a naphthyl lower alkyl group;

R_5 is selected from the group consisting of N-piperidyl, N-morpholino, N-piperazino, substituted N-piperidyl which is substituted with a substituent selected from the group consisting of lower alkyl, hydroxy lower alkyl, phenyl, naphthyl and pyridyl, substituted N-morpholino which is substituted with a substituent selected from the group consisting of lower alkyl, hydroxy lower alkyl, phenyl, naphthyl and pyridyl, and substituted N-piperazino which is substituted with a substituent selected from the group consisting of lower alkyl, hydroxy lower alkyl, phenyl, naphthyl and pyridyl; and

R_6 is selected from the group consisting of a hydrogen atom, a halogen atom, a lower alkyl group, a phenyl lower alkyl group, a naphthyl lower alkyl group, a phenyl group, a naphthyl group, a hydroxyl group, a lower alkoxy group, an NH_2 group, an NH-lower alkyl group, an N(lower alkyl)$_2$ group, an NHCO-lower alkyl group, an NHCO-phenyl group, an NHCO-naphthyl group, and an NO_2 group.

4,604,393

PHENYLOXOALKYL PIPERIDINES AND THE PHARMACEUTICAL COMPOSITIONS CONTAINING THEM

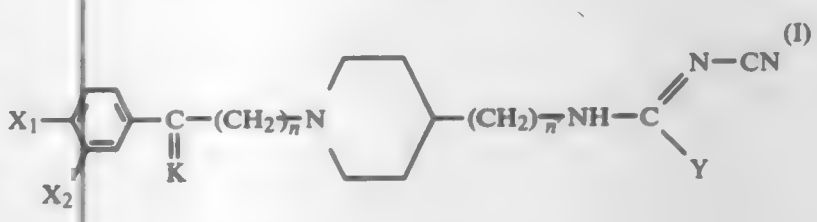
Pierre-Jean Cornu, 100, Avenue Kleber, F-75116, Paris; Claude Perrin, 5, rue de 1-Avenir, F-91400, Orsay; Bernard Dumaitre, 24, rue Chemin Vert., F-93000, Bobigny, and Gilles Streichenberger, 30, boulevard du Chateau, F-92200, Neuilly sur Seine, all of France

Filed Jan. 30, 1984, Ser. No. 575,022

Int. Cl.[4] C07D *211/26, 211/58, 405/06, 413/12, 413/14;* A61K *31/535, 31/445*

U.S. Cl. 514—229 6 Claims

1. The phenyloxoalkyl piperidines of the formula



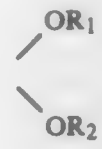
(I)

wherein

X_1 is hydrogen or fluoro, and

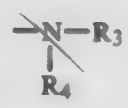
X_2 is hydrogen,

K is the oxygen of a ketonic group or the grouping



wherein R_1 and R_2 are a lower alkyl radical or together are a lower alkylene radical

Y is selected from the group consisting of a radical ZR_5 wherein Z is an oxygen or a sulphur atom and R_5 is a lower alkyl radical or an amino group of the formula



wherein R_3 is a lower alkyl radical, a lower alkenyl radical, a lower cycloalkyl radical or morpholino

R_4 is hydrogen

n is 1, 2 or 3

n′ is zero or 1

and the addition salts thereof with therapeutically acceptable acids.

4. A pharmaceutical composition containing as active ingredient at least one compound according to claim 1 in admixture or conjunction with a pharmaceutically acceptable carrier or vehicle.

4,604,394

ANTIARRHYTHMIC COMPOSITIONS AND METHOD

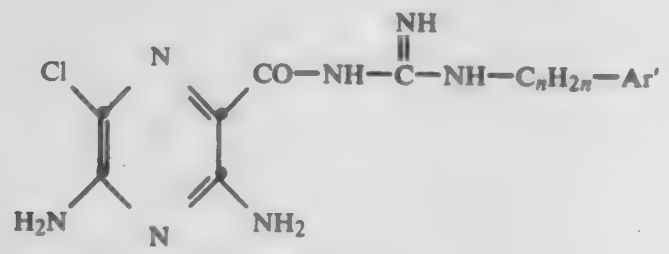
Gregory J. Kaczorowski, Edison, N.J., and Peter K S. Siegl, Blue Bell, Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Oct. 1, 1984, Ser. No. 655,777

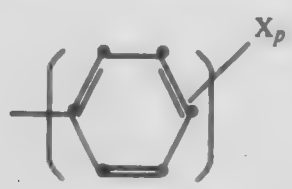
Int. Cl.[4] A61K *31/495*

U.S. Cl. 514—255 10 Claims

1. A method for treating cardiac arrhythmias which comprises administering to a subject in need of such treatment, a therapeutically effective amount of a pyrazinoylguanidine compound of the formula

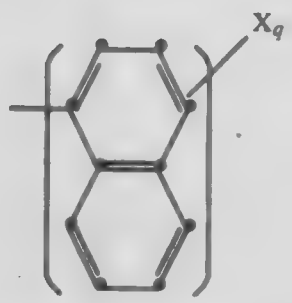


wherein Ar′ may be represented by:



(i)

or



(ii)

wherein each X independently may be halo, lower alkyl, lower alkoxy and nitro, p is from 1 to 3 and q is from 0 to 2; and wherein n is from 1 to 2; or

pharmaceutically acceptable salts thereof.

4,604,395

1-[3-(6-FLUORO-1,2-BENZISOXAZOL-3-YL)PROPYL]-4-(SUBSTITUTED)PIPERAZINES

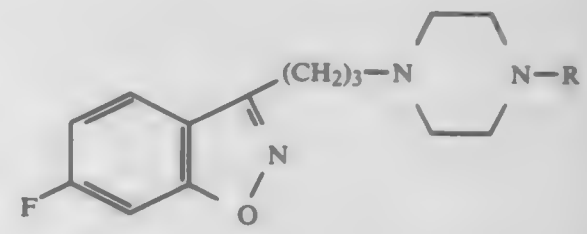
Larry Davis, Sergeantsville, and Joseph T. Klein, Somerville, both of N.J., assignors to Hoechst-Roussel Pharmaceuticals Inc., Somerville, N.J.

Division of Ser. No. 366,248, Apr. 9, 1982, Pat. No. 4,536,578. This application Jun. 7, 1985, Ser. No. 742,332

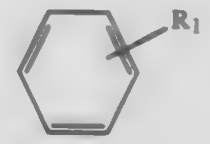
Int. Cl.[4] A61K *31/445, 31/495*

U.S. Cl. 514—255 12 Claims

1. A method of treating psychoses comprising administering to a mammal in need of psychoses treatment a psychoses treating effective amount of a compound of the formula



wherein R is loweralkyl, benzyl, 2-hydroxyethyl, pyridyl or a group of the formula



wherein R_1 is hydrogen, loweralkyl, loweralkoxy, halogen or trifluoromethyl; the optical antipode thereof; or a pharmaceutically acceptable acid addition salt thereof.

4,604,396

[(2,3,9,9A-TETRAHYDRO-3-OXO-9A-SUBSTITUTED-1H-FLUOREN-7-YL)OXY]ETHANIMIDAMIDES AND [(2,3,9,9A-TETRAHYDRO-3-OXO-9A-SUBSTITUTED-1H-FLUOREN-7-YL)OXY]ETHANIMIDIC ACID HYDRAZIDES, THEIR DERIVATIVES AND THEIR SALTS

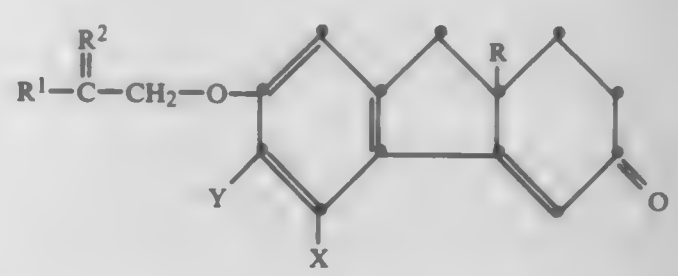
Edward J. Cragoe, Jr., Lansdale, and Otto W. Woltersdorf, Jr., Chalfont, both of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Sep. 26, 1985, Ser. No. 780,145

Int. Cl.[4] A61K *31/505, 31/155;* C07D *123/00*

U.S. Cl. 514—256 12 Claims

1. A compound of the formula:



wherein:

R is lower alkyl, branched or unbranched, containing from 1 to 5 carbon atoms, aryl, halo substituted aryl, aralkyl, cycloalkyl containing from 3 to 6 nuclear carbon atoms, or cycloalkyl-lower alkyl containing from 4 to 7 total carbon atoms;

R^1 is NH_2, NHR^3 or NR^3R^4;

R^2 is NH or NR^3;

R^3, R^4 are each independently lower alkyl, branched or unbranched, containing from 1 to 5 carbon atoms, or amino, provided that R^3 and R^4 are not both amino;

wherein R^1 and R^2 may be joined together via R^3 form a heterocyclic ring of 5 or 6 atoms containing 2 nitrogen atoms

and 3 or 4 carbon atoms; or wherein R^3 and R^4 may be joined together to form a 5- or 6-membered ring containing one nitrogen atom, and 4 or 5 carbon atoms; and X and Y are halo or lower alkyl, such as methyl; or the pharmaceutically acceptable salts thereof.

6. A pharmaceutical composition useful in the treatment of grey matter edema comprising a pharmaceutical carrier and an effective amount of a compound of claim 1.

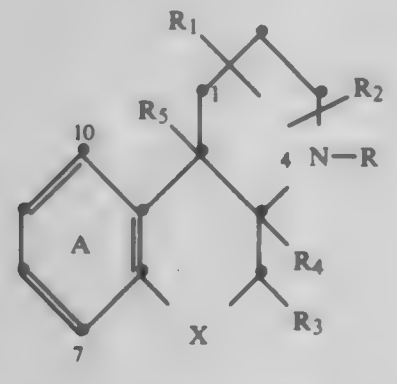
4,604,397

CERTAIN BENZO-(PYRANO AND THIOPYRANO)-PYRIDINES, USEFUL AS CNS AGENTS

Alan J. Hutchison, Verona, N.J., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation-in-part of Ser. No. 609,037, May 10, 1984, abandoned. This application Sep. 3, 1985, Ser. No. 771,934
Claims priority, application European Pat. Off., May 6, 1985, 85810208.0
Int. Cl.[4] A61K *31/38, 31/395;* C07D *491/02, 471/02*
U.S. Cl. 514—291 **28 Claims**

1. A compound of the formula



(I)

wherein X represents oxygen or sulfur; ring A is unsubstituted or substituted by one to three identical or different substituents selected from hydroxy, hydroxy-lower alkyl, etherified hydroxy, etherified hydroxy-lower alkyl, acyloxy, acyloxy-lower alkyl, halogen, lower alkyl, trifluoromethyl, amino, mono- and di-lower alkylamino and acylamino; or ring A is substituted by one lower alkylenedioxy; R represents hydrogen, lower alkyl or aryl-lower alkyl; R_1 represents hydrogen, lower alkyl, lower alkylthio-lower alkyl, amino, acylamino, (amino, mono- or di-lower alkylamino)-lower alkyl, carboxy, lower alkoxycarbonyl, carbamoyl or mono- or di-lower alkylcarbamoyl; R_2 to R_5 represent hydrogen or lower alkyl; and wherein within the definitions the term acyl represents lower alkanoyl, aroyl, lower alkoxycarbonyl, carbamoyl or mono- or di-lower alkylcarbamoyl; the term aryl represents phenyl or phenyl substituted by one to three of lower alkyl, lower alkoxy, halogen or trifluoromethyl; and aroyl represents benzoyl or benzenesulfonyl, benzoyl or benzenesulfonyl substituted by one to three of lower alkyl, lower alkoxy, halogen or trifluoromethyl, thienoyl, pyrroloyl, or 2-, 3- or 4-pyridylcarbonyl; a dehydro derivative thereof with a double bond at the 1,2-position, or at the 1,10b-position in which case R_5 is absent; or a pharmaceutically acceptable salt thereof.

23. A presynaptic dopamine receptor stimulating or serotonin receptor stimulating pharmaceutical composition suitable for administration to a mammal comprising an effective presynaptic dopamine receptor stimulating or serotonin receptor stimulating amount of a compound of claim 1 in combination with one or more pharmaceutically acceptable carriers.

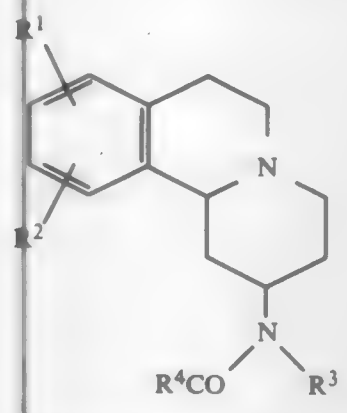
4,604,398

BENZOQUINOLIZINE DERIVATIVES, AND THEIR USE AS α_2ADRENOCEPTOR ANTAGONISTIC AGENTS

Terence J. Ward, Maidenhead, England, assignor to John Wyeth & Brother Limited, Maidenhead, England

Filed Jun. 13, 1985, Ser. No. 744,843
Claims priority, application United Kingdom, Jun. 28, 1984, 8416432
Int. Cl.[4] A61K *31/435;* C07D *455/06*
U.S. Cl. 514—294 **6 Claims**

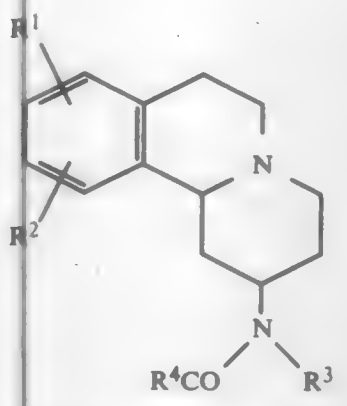
1. A compound selected from the group consisting of a benzoquinolizine of the formula



(I)

or a pharmaceutically acceptable acid addition salt thereof, wherein R^1 and R^2 which may be the same or different each represent hydrogen, lower alkyl, lower alkoxy or halogen, R^3 represents lower alkyl and R^4 is lower alkoxy or lower alkoxy carbonyl.

6. A method of antagonising α6hd 2-adrenoreceptors in warm blooded animals which comprises administering to the animal an amount sufficient to antagonise α_2-adrenoreceptors of a compound selected from the group consisting of a benzoquinolizine of the formula



(I)

or a pharmaceutically acceptable acid addition salt thereof, wherein R^1 and R^2 which may be the same or different each represent hydrogen, lower alkyl, lower alkoxy or halogen, R^3 represents lower alkyl and R^4 is lower alkoxy or lower alkoxy carbonyl.

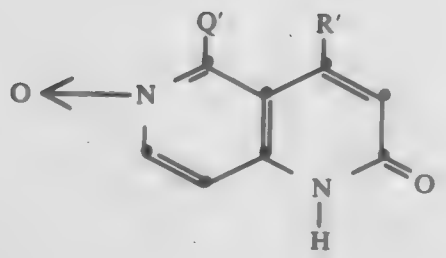
4,604,399

5-METHYL(OR ETHYL)-1,6-NAPHTHYRIDIN-2(1H)-ONE 6-OXIDES, THEIR PREPARATION AND THE CARDIOTONIC USE THEREOF

George Y. Lesher, Schodack, and Baldev Singh, East Greenbush, both of N.Y., assignors to Sterling Drug Inc., New York, N.Y.

Division of Ser. No. 521,293, Aug. 8, 1983, Pat. No. 4,532,247. This application Nov. 28, 1984, Ser. No. 675,789
Int. Cl.[4] A61K *31/44;* C07D *471/04*
U.S. Cl. 514—300 **7 Claims**

1. A 4-R′-5-Q′-1,6-naphthyridin-2(1H)-one-6-oxide having the formula



or acid-addition salt thereof, where R′ is hydrogen or methyl and Q′ is methyl or ethyl.

6. The method for increasing cardiac contractility in a patient requiring such treatment which comprises administering orally or parenterally in a solid or liquid dosage form to such patient a cardiotonically effective amount of 4-R′-5-Q′-1,6-naphthyridin-2(1H)-one-6-oxide according to claim 1 or pharmaceutically acceptable acid-addition salt thereof.

4,604,400

TREATING ARTHRITIS WITH 3-(N,N-DIMETHYL CARBAMOYL)PYRAZOLO[1,5-A]PYRIDINE

Raymond F. Collins, Harold Wood; Christopher A. Ramsden, Brentwood; Libert C. Saunders, Grays, and Peter J. Warne, London, all of England, assignors to May & Baker Limited, Essex, England

Continuation of Ser. No. 504,438, Jun. 15, 1983, abandoned. This application Sep. 13, 1984, Ser. No. 649,980
Claims priority, application United Kingdom, Jun. 16, 1982, 8217485
Int. Cl.[4] A61K *31/44*
U.S. Cl. 514—300 2 Claims

1. A method for the treatment of a patient with an arthritic disorder which comprises administering to the patient an amount of 3-(N,N-dimethylcarbamoyl)pyrazolo[1,5-a]pyridine sufficient to ameliorate the condition of the patient.

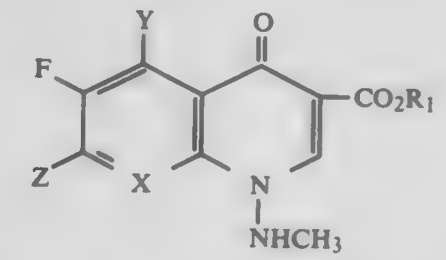
4,604,401

ANTIBACTERIAL AGENTS III

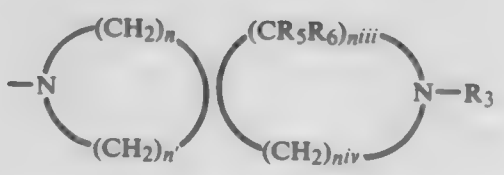
Thomas F. Mich; Townley P. Culbertson, both of Ann Arbor, and John M. Domagala, Canton, all of Mich., assignors to Warner-Lambert Company, Morris Plains, N.J.

Filed Jul. 20, 1984, Ser. No. 633,151
Int. Cl.[4] A61K *31/47;* C07D *215/22*
U.S. Cl. 514—312 7 Claims

1. A compound of the formula

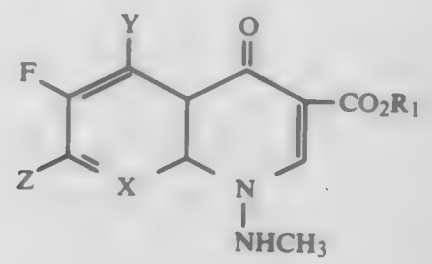


wherein Z is

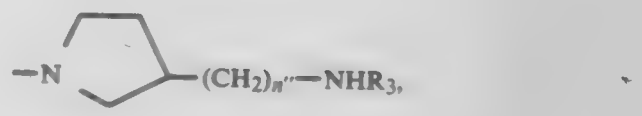


wherein R_1 is hydrogen or an alkyl having from one to six carbon atoms or a cation; X is CF or CH, Y is hydrogen or amino; R_3 is hydrogen, alkyl having from one to four carbon atoms or cycloalkyl having three to six carbon atoms; R_5 is hydrogen or alkyl having from one to three carbon atoms; R_6 is hydrogen or an alkyl having from one to three carbon atoms; n is one, two, three, or four, n′ is one, two, three, or four wherein n+n′ is a total of two, three, four, or five, n‴ is zero, one or two, n^{iv} is one, two, or threee and the pharmaceutically accpetable acid addition or base salts thereof.

2. A compound of the formula



wherein
Y is hydrogen:
Z is



in which n″ is one and R_3 is hydrogen, methyl, ethyl, 1- or 2-propyl; X is C—F and R_1 is hydrogen or a pharmaceutically acceptable base salt thereof.

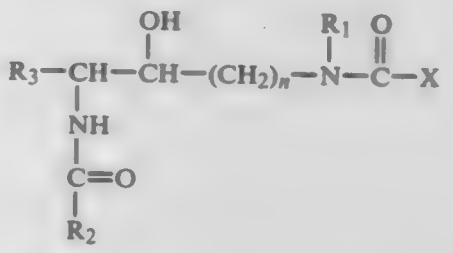
4,604,402

HYDROXY SUBSTITUTED UREIDO AMINO AND IMINO ACIDS

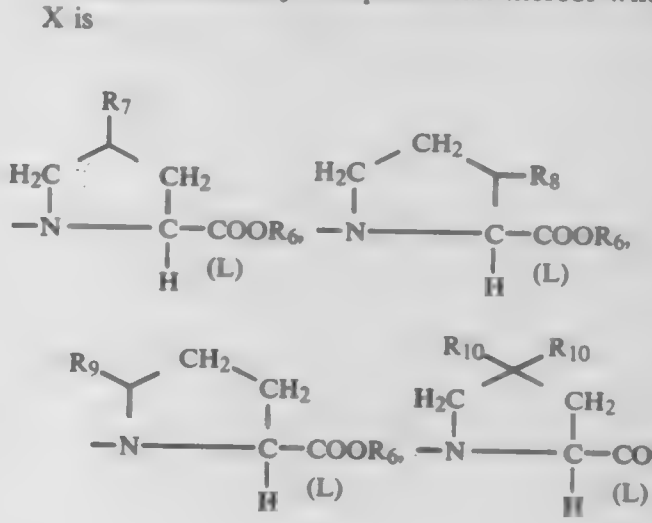
Jollie D. Godfrey, Jr., Lawrenceville; Eric M. Gordon, Pennington, and Sesha I. Natarajan, Neshanic Station, all of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Mar. 30, 1984, Ser. No. 595,218
Int. Cl.[4] C07D *207/04, 207/20;* A61K *31/40, 31/44*
U.S. Cl. 514—333 13 Claims

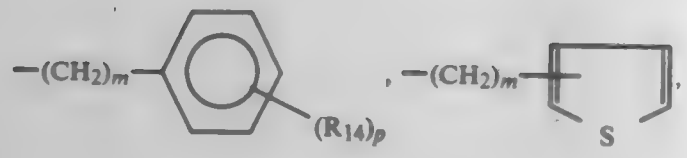
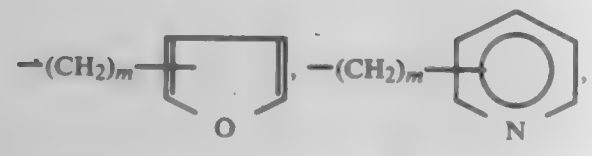
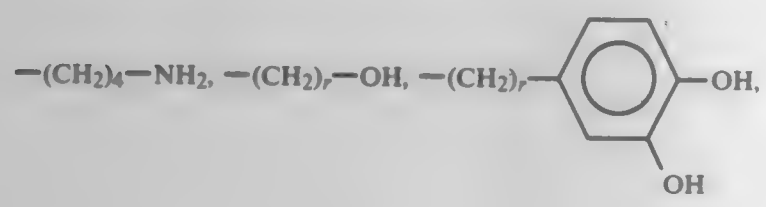
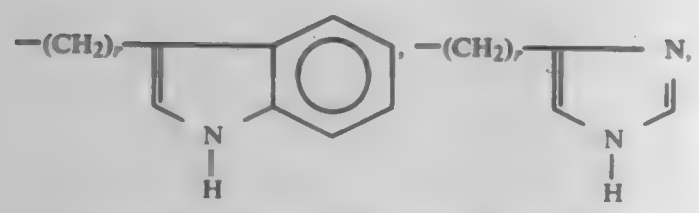
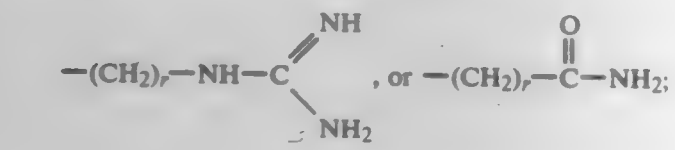
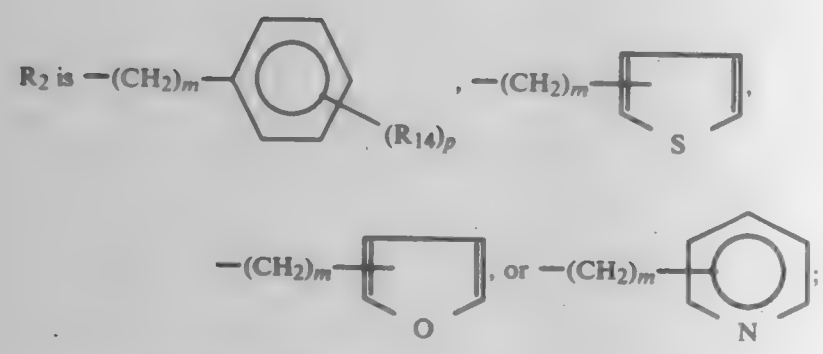
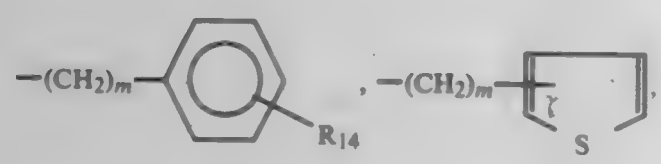
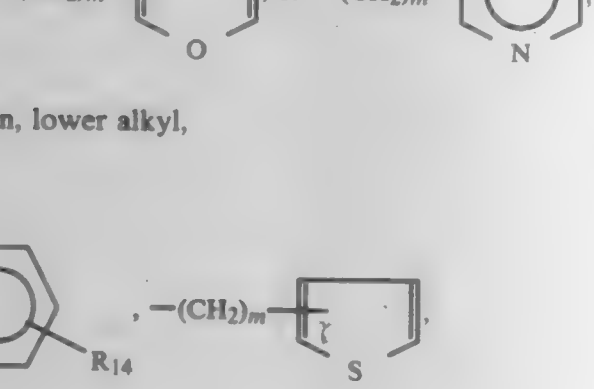
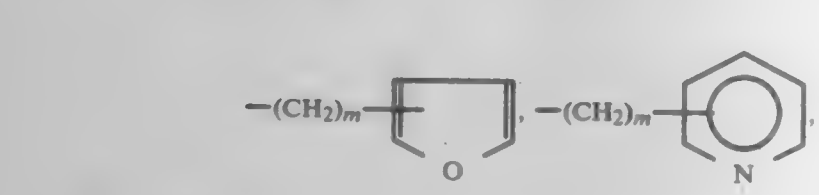
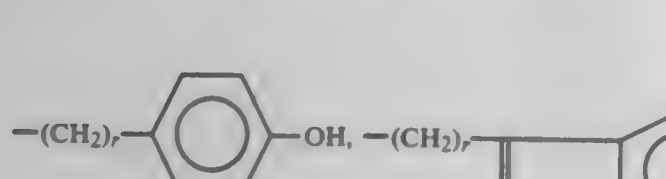
1. A compound of the formula



or a pharmaceutically acceptable salt thereof wherein
X is

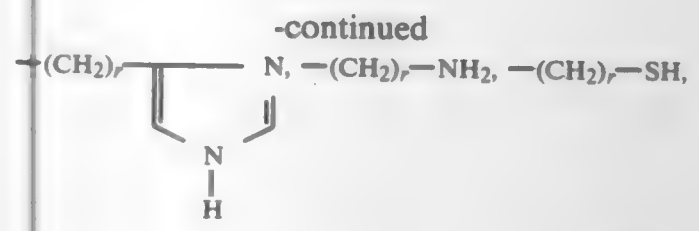
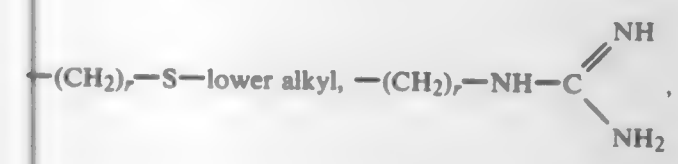
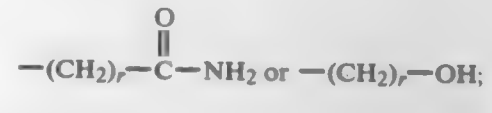


n is one or two;
R_1 is hydrogen, lower alkyl, halo substituted lower alkyl,

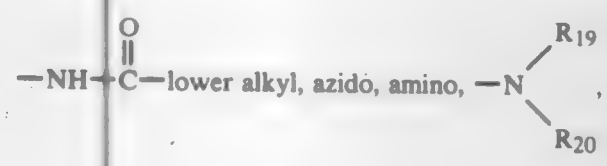
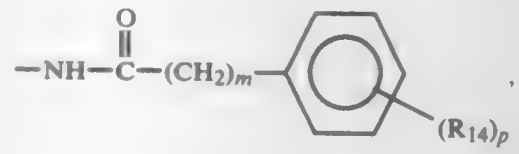
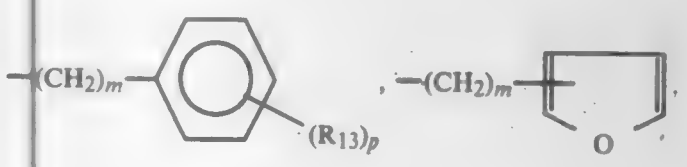
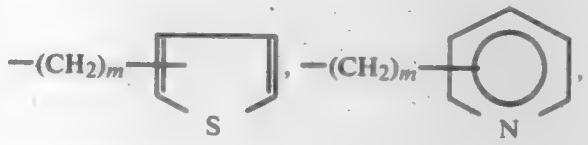













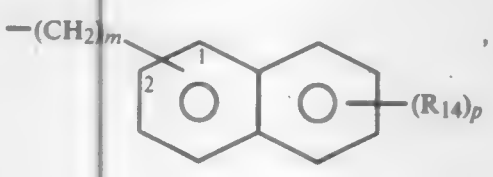
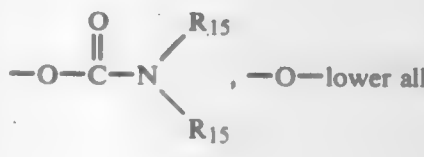
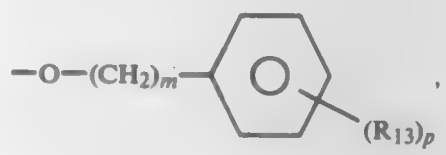
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r is an integer from 1 to 4;
R_7 is hydrogen, lower alkyl; halogen, keto, hydroxy,

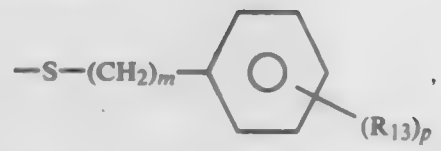
a 1- or 2-naphthyl of the formula

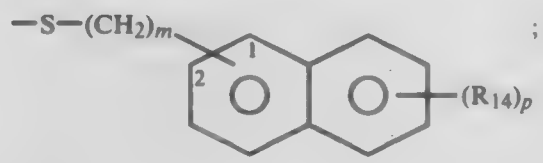
a 1- 2-naphthyloxy of the formula

, —S—lower alkyl,

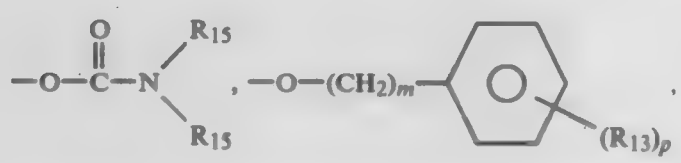
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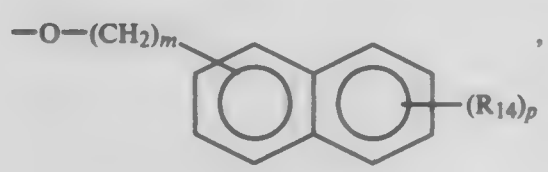
or a 1- 2-naphthylthio of the formula



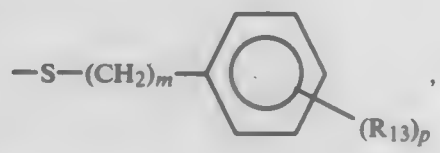
; R_8 is keto, halogen,



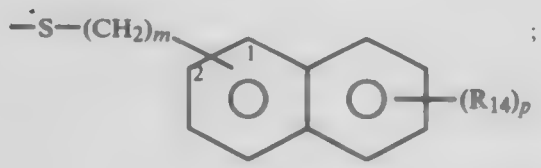
-O-lower alkyl, a 1- or 2-naphthyloxy of the formula



, —S—lower alkyl,

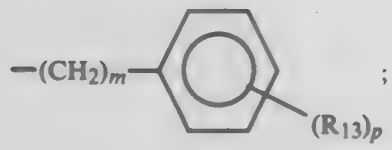


or a 1- or 2-naphthylthio of the formula



;

R_9 is keto or



;

R_{10} is halogen or —Y—R_{16};

R_{13} is hydrogen, lower alkyl of 1 to 4 carbons, lower alkoxy of 1 to 4 carbons, lower alkylthio of 1 to 4 carbons, chloro, bromo, fluoro, trifluoromethyl, hydroxy, phenyl, phenoxy, phenylthio, or phenylmethyl;

R_{14} is hydrogen, lower alkyl of 1 to 4 carbons, lower alkoxy of 1 to 4 carbons, lower alkylthio of 1 to 4 carbons, chloro, bromo, fluoro, trifluoromethyl, or hydroxy;

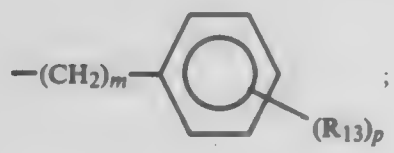
m is zero, one, two, three, or four;

p is one, two or three provided that p is more than one only if R_{13} or R_{14} is hydrogen, methyl, methoxy, chloro, or fluoro;

R_{15} is hydrogen or lower alkyl of 1 to 4 carbons;

Y ix oxygen or sulfur;

R_{16} is lower alkyl of 1 to 4 carbons, or

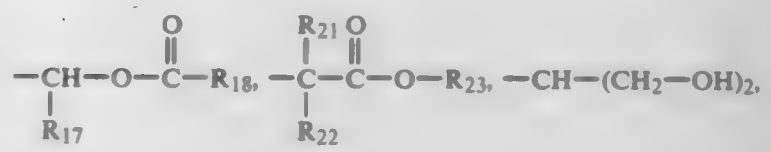


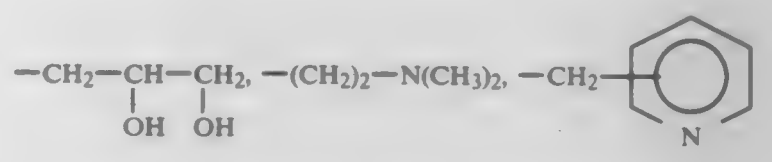
;

R_{19} is lower alkyl, benzyl, or phenethyl;

R_{20} is hydrogen, lower alkyl, benzyl or phenethyl;

R_6 is hydrogen, lower alkyl, benzyl, benzhydryl,





or a pharmaceutically acceptable salt forming ion;

R_{17} is hydrogen, lower alkyl, cycloalkyl, or phenyl;

R_{18} is hydrogen, lower alkyl, lower alkoxy, or phenyl or R_{17} and R_{18} taken together are —$(CH_2)_2$—, —$(CH_2)_3$—, —CH=CH—, or

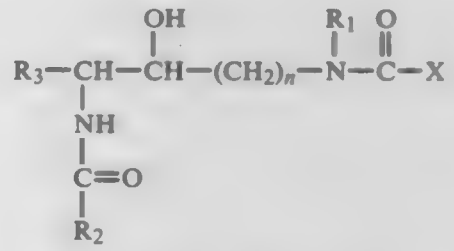


;

R_{21} and R_{22} are independently selected from hydrogen and lower alkyl; and

R_{23} is lower alkyl.

12. A pharmaceutical composition useful for treating hypertension comprising a pharmaceutically acceptable carrier and a hypotensively effective amount of a compound of the formula



wherein n, R_1, R_2, R_3 and X are as defined in claim **1**.

13. The method of treating hypertension in a mammalian host which comprises administering a hypotensively effective amount of the composition of claim **12**.

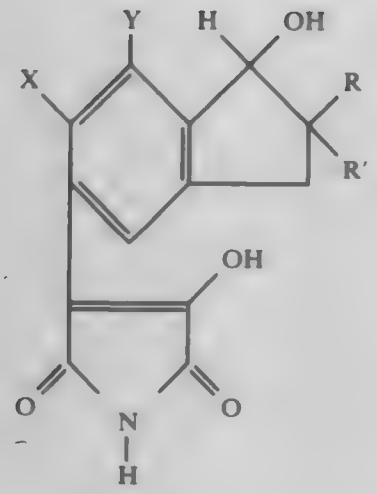
4,604,403

USE OF SUBSTITUTED-3(2,3-DIHYDRO-1H-INDEN-5-YL)-4-HYDROXY-1H-PYRROLE-2,5-DIONES FOR TREATING GREY MATTER EDEMA

Edward J. Cragoe, Jr., Lansdale, and Otto W. Woltersdorf, Jr., Chalfont, both of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Filed May 1, 1984, Ser. No. 605,734
Int. Cl.[4] A61K *31/40*
U.S. Cl. 514—425 **1 Claim**

1. A method of treating persons with grey matter edema which comprises administering to such a person an effective amount of a compound of the formula:



in which R and R′ are different entities and wherein:

R is C_3–C_6 cycloalkyl, C_3–C_6 cycloalkyl-lower alkyl, aryl selected from phenyl, halophenyl, methoxyphenyl, hydroxyphenyl, thienyl, aralkyl selected from benzyl and phenethyl, lower alkyl, lower alkenyl, lower alkynyl wherein the term lower indicates up to four carbon atoms;

R′ is lower alkyl, lower alkenyl, lower alkynyl; X and Y are each selected from methyl and chloro.

4,604,404

ANTIVIRAL SULFONATED NAPHTHALENE FORMALDEHYDE CONDENSATION POLYMERS

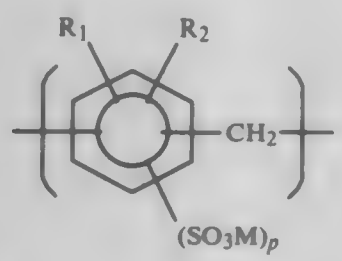
Harry R. Munson, Jr., and Robert W. Tankersley, Jr., both of Richmond, Va., assignors to A. H. Robins Company, Inc., Richmond, Va.

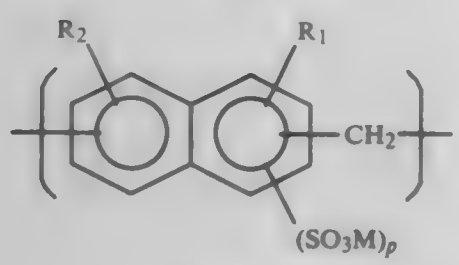
Filed Apr. 3, 1985, Ser. No. 719,296

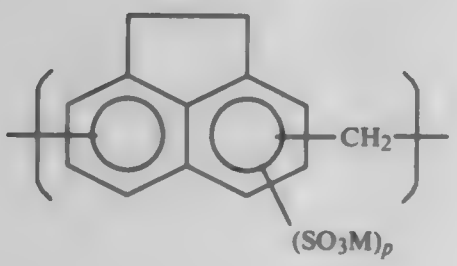
Int. Cl.[4] A61K *31/255, 31/315*

U.S. Cl. 514—494 **5 Claims**

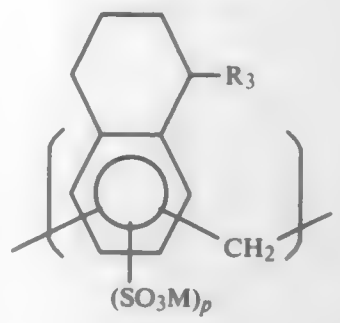
1. A method of treating viral infections caused by Type I or Type II *Herpes simplex* viruses comprising topically administering to infected tissue of a living animal under attack by said virus an effective amount of an arylsulfonic acid polymer having a repeating unit selected from the group consisting of the following structures:

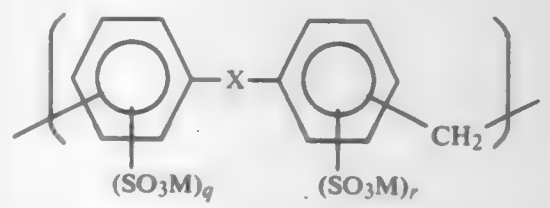






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wherein R_1 and R_2 are selected from the group consisting of hydrogen, alkyl having 1 to 20 carbon atoms, alkoxy having 1 to 20 carbon atoms, fluorine, chlorine and bromine; R_3 is hydrogen, alkoxy having 1 to 20 carbon atoms; X is selected from the group consisting of a direct covalent bond between the aromatic rings, a loweralkylene having 1 to 5 carbon atoms, a lower alkylene having 2 to 5 carbon atoms, oxygen, sulfur, and $—O(CH_2)_nO—$ wherein n is an integer from 2 to 20; p is from about 0.4 to about 1.2; the sum of q and r is from about 0.8 to about 2.4; and M is selected from the group consisting of lithium, sodium, potassium, calcium, magnesium, zinc, aluminum, hydrogen, ammonium and substituted ammonium ions derived from pharmaceutically acceptable organic amines.

4,604,405

ADMIXTURES OF 2-BROMO-2-BROMOMETHYLGLUTARONITRILE AND 2,2-DIBROMO-3-NITRILOPROPIONAMIDE

John A. Jakubowski, Piscataway, N.J., assignor to Calgon Corporation, Pittsburgh, Pa.

Filed Mar. 4, 1985, Ser. No. 708,193

Int. Cl.[4] A01N *37/34*

U.S. Cl. 514—526 **8 Claims**

1. A synergistic antimicrobial admixture consisting essentially of:

(a) 2-bromo-2-bromomethylglutaronitrile and

(b) 2,2-dibromo-3-nitrilopropionamide, wherein the weight ratio of (a):(b) ranges from about 1:6 to about 5:1.

4,604,406

N-[6-METHOXY-5-(PERFLUOROALKYL)-1-NAPHTHOLYL]-N-METHYLGLYCINES AND THEIR THIONAPHTHOYL ANALOGS

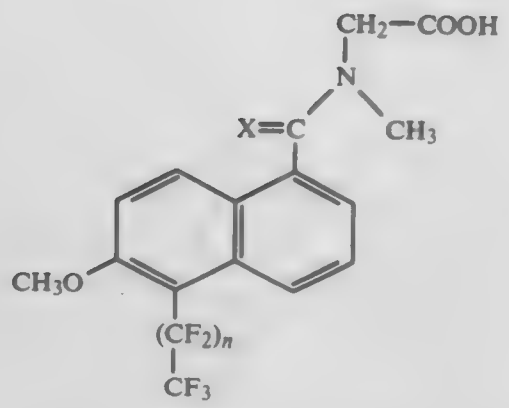
Francesco Bellini, Mt. Royal, Canada, and Kazimir Sestanj, Rocky Hill, N.J., assignors to Ayerst, McKenna & Harrison, Inc., Montreal, Canada

Filed Nov. 16, 1984, Ser. No. 672,015

Int. Cl.[4] A61K *31/19, 31/195;* **C07C** *103/84, 153/063*

U.S. Cl. 514—562 **8 Claims**

1. A compound of formula I



wherein n is an integer from 2 to 5 and X is oxygen or sulfur.

8. A method of preventing or relieving neuropathy, nephropathy, retinopathy or cataracts in a diabetic mammal by inhibiting aldose reductase, which comprises administering to said mammal an alleviating or prophylactic amount of a compound of claim 1.

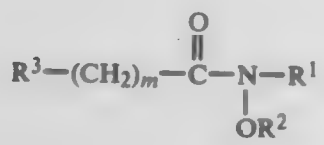
4,604,407

HYDROXAMATES

Martin F. Haslanger, Lambertville, and Donald S. Karanewsky, East Windsor, both of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Apr. 4, 1985, Ser. No. 720,102
Int. Cl.[4] A61K *31/165, 31/185;* C07C *83/10*
U.S. Cl. 514—575 13 Claims

1. A compound having the structure



wherein m is 1 to 5, R^1 is lower alkyl, phenylalkyl or phenyl, R^2 is H or lower alkyl; and R^3 is cycloalkyl, phenyl or biphenyl, all of the above hydrocarbon groups being unsubstituted.

13. A method for treating asthma in a mammalian species in need of such treatment, which comprises administering to a mammalian host an effective amount of a compound as defined in claim 1 or a pharmaceutically acceptable salt thereof.

4,604,408

COMPOSITION FOR MAKING CELLULAR THERMOSET POLYMERIZED DICYCLOPENTADIENE POLYMER

Norman R. Newburg, deceased, late of Wilmington, Del. (by Betty Newburg, executrix), assignor to Hercules Incorporated, Wilmington, Del.

Continuation of Ser. No. 526,835, Aug. 26, 1983, Pat. No. 4,535,097. This application Jun. 17, 1985, Ser. No. 745,767
Int. Cl.[4] C08J *9/14;* C08F *4/78*
U.S. Cl. 521—91 9 Claims

1. A cellular thermoset polymer product produced by the process comprising

(a) providing a polymerization mixture comprising:
dicyclopentadiene;
a catalyst; and
a blowing agent
wherein said catalyst comprises a tungsten compound selected from the group consisting of a tungsten halide and a tungsten oxyhalide;

(b) providing a heated mold;

(c) polymerizing said polymerization mixture in said mold, to form said cellular thermoset polymer product, said polymer product comprising polymerized units of dicyclopentadiene.

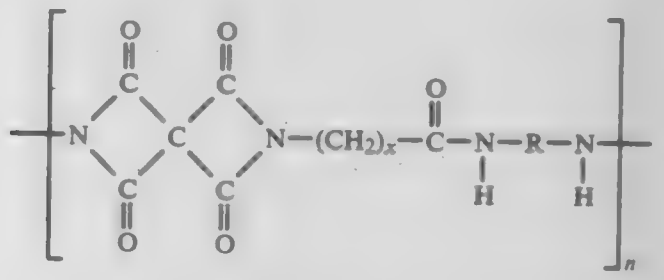
4,604,409

POLYAMIDE-IMIDE FOAMS AND METHODS OF MAKING SAME

John Gagliani, 6280 Larce Pl., San Diego, Calif. 92120, and John V. Long, 1756 E. Lexington Pl., El Cajon, Calif. 92021

Filed Jun. 13, 1985, Ser. No. 744,419
Int. Cl.[4] C08J *9/08*
U.S. Cl. 521—157 3 Claims

1. A polyamide-imide foam composition comprising a polymer having the recurring unit



wherein "n" is a positive integer, "R" is a radical selected from the group consisting of alkylene and phenylene radicals, which may have alkyl or aryl substituents and "x" is from 1 to 6.

4,604,410

MANUFACTURING OF RIGID FOAM USING ETHERIFIED MODIFIED AROMATIC POLYOLS

Milton J. Altenberg, Houston, Tex., assignor to Chardonol Corporation, Houston, Tex.

Continuation-in-part of Ser. No. 513,502, Jul. 13, 1983. This application Nov. 5, 1984, Ser. No. 668,254
Int. Cl.[4] C08G *18/42, 18/14*
U.S. Cl. 521—172 27 Claims

1. In a method of preparing a rigid polyurethane foam composition wherein an excess of an aromatic polyisocyanate is reacted with a polyol component in the presence of a catalyst, a blowing agent and a surfactant;

the improvement for obtaining a rigid polyurethane foam having improved properties which comprises:

utilizing a polyol component comprising an etherified modified aromatic polyol, said etherified modified aromatic polyol having been prepared by:

digesting a polyalkylene terephthalate with a low molecular weight polyol selected from a group consisting essentially of ethylene glycol, propylene glycol, butylene glycol, diethylene glycol, triethylene glycol, dipropylene glycol, glycerol, and trimethyol propane with the ratio of about 0.5 to about 1 mole equivalents of polyalkylene terephthalate to about 1 to about 0.5 moles of low molecular weight polyol at a temperature of about 180° to about 250° C. to provide a digested polyol;

reacting said digested polyol with about 0.01 to about 0.7 moles of an additional low molecular weight polyol containing from about 3 to about 8 hydroxyl groups and a molecular weight from about 90 to about 350 per mole equivalent of polyalkylene terephthalate at a temperature of about 120° to about 200° C. from about 1 to about 4 hours to form an intermediate reaction product; and

alkoxylating in the presence of a basic alkoxylation catalyst said intermediate product with an alkoxylation component comprising from about 1 to about 4 mole equivalents of alkylene oxide per mole equivalent of said polyalkylene terephthalate, said alkylene oxide consisting of from 0 to about 4 moles of ethylene oxide and, correspondingly, from 4 to about 0 moles of propylene oxide with the temperature not exceeding about 200° C.

4,604,411

PROCESS FOR PREPARING STICKY POLYMERS

Akira Yada, Kusatsu; Shusaku Matsumoto, Kyoto; Yoshihiro Kawamori, Joyo; Takao Saito, Nagaokakyo; Tadashi Nishiyama, and Yoshitugu Adachi, both of Kyoto, all of Japan, assignors to Dai-Ichi Kogyo Seiyaku Co., Ltd., Kyoto, Japan

Filed Jan. 4, 1985, Ser. No. 689,004

Claims priority, application Japan, Jan. 13, 1984, 59-5235; Jan. 19, 1984, 59-8085

Int. Cl.[4] C08F *2/46, 2/48, 2/10*

U.S. Cl. 522—14 15 Claims

1. In a process for preparing a sticky water-soluble polymer by polymerizing an aqueous solution containing at least one monomer having a polymerizable double bond to produce said sticky water-soluble polymer, the improvement which comprises carrying out the polymerization in a polymerization apparatus the portion of which contacts the monomer solution having a surface layer made of a tetrafluoroethylene-ethylene copolymer; said at least one monomer being selected from the group consisting of acrylamide, methacrylamide, an acrylic acid salt, a methacrylic acid salt, a nitrogen-containing acrylic acid ester, a diallylamine compound, a sulfoalkyl acrylate, a sulfoalkyl methacrylate, a water-insoluble acrylic acid ester, a water-insoluble methacrylic acid ester, an acrylamide alkylsulfonate, a dialkyl acrylamide, a dialkyl methacrylamide, acrylonitrile, a vinylsulfonic acid, and a vinylsulfonic acid salt and said tetrafluoroethylene-ethylene copolymer being a polymer forming a film having such an oxygen impermeability that hindrance to the polymerization of the at least one monomer on the surface layer is eliminated.

4,604,412

STABLE POLYMER EMULSION COMPOSITION CAPABLE OF GIVING A THROMBORESISTANT SURFACE, AND PROCESS FOR PRODUCTION THEREOF

Yasushi Joh, Yokohama; Toshio Nagase, Houjyoshin, and Noriaki Kaneko, Kawasaki, all of Japan, assignors to Nippon Zeon Co. Ltd., Tokyo, Japan

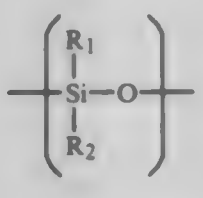
Filed Mar. 15, 1983, Ser. No. 475,499

Claims priority, application Japan, Mar. 17, 1982, 57-41865

Int. Cl.[4] C08L *83/06;* C09D *5/00;* C09K *3/00*

U.S. Cl. 523—112 33 Claims

1. A polymer emulsion composition which is stable against phase separation for extended periods and is capable of forming thromboresistant films, coatings, and surfaces, said composition comprising an emulsion of particles having an average particle diameter of from 0.1 to 50 microns of a polydiorganosiloxane having a weight average molecular weight in the range of from about 5000 to 200,000 and a hydroxyl, vinyl or acetate end group and repeating units of the formula



wherein R_1 and R_2 each independently represent an alkyl group, an aryl group, an alkenyl group or a halogenated hydrocarbon group, in a continuous phase of a solution of a polyether polyurethane or a polyester polyurethane in a cyclic either, wherein the surfaces of the polydiorganosiloxane particles are at last partially crosslinked in the presence of water, and wherein the total amount of the polyurethane and the polydiorganosiloxane is at least 4% by weight based on the weight of the composition and the amount of the polydiorganosiloxane is 0.1 to 50% by weight based on the combined weight of the polydiorganosiloxane and the polyether or polyester polyurethane.

4,604,413

RESIN COMPOSITION HAVING ELECTROMAGNETIC WAVE SHIELDING EFFECT

Takeshi Nabeta, and Isamu Hanahara, both of Machida, Japan, assignors to Denki Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 645,938, Aug. 30, 1984. This application Apr. 5, 1985, Ser. No. 720,194

Claims priority, application Japan, Sep. 7, 1983, 58-164353; Sep. 14, 1983, 58-169909; Dec. 2, 1983, 58-227019; Dec. 28, 1983, 58-247068; Mar. 10, 1984, 59-46277

Int. Cl.[4] G21F *1/10;* G21K *1/10;* C08K *5/17, 3/04*

U.S. Cl. 523—137 18 Claims

1. A resin composition having an electromagnetic wave shielding effect, comprising:

35 to 90 wt % of a copolymer of an ethylenic unsaturated nitrile, a diene rubber and an aromatic vinyl compound or a mixture of said copolymer with another copolymer of an ethylenic unsaturated nitrile and an aromatic vinyl compound;

1 to 25 wt % of a plasticizer;

5 to 40 wt % of carbon fibers, said carbon fibers being selected from the group consisting of carbonized polyacrylonitrile fibers, carbonized pitch fibers, carbonized phenolic compound fibers and mixtures thereof; and

2 to 30 wt % of carbon black.

4,604,414

ANTISTATIC ACRYLIC RESIN COMPOSITION AND METHOD FOR THE PRODUCTION THEREOF

Yasuyuki Kato; Masahiro Yuyama; Masahiko Moritani, and Mikio Futagami, all of Niihama, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

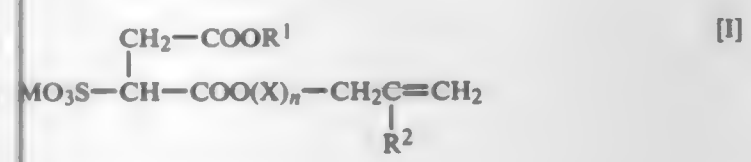
Filed Mar. 21, 1984, Ser. No. 591,853

Claims priority, application Japan, Mar. 31, 1983, 58-57636; Mar. 31, 1983, 58-57637; Mar. 31, 1983, 58-57638; Mar. 31, 1983, 58-57639; Mar. 31, 1983, 58-57640

Int. Cl.[4] C08J *5/51*

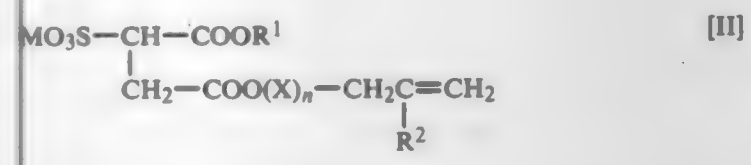
U.S. Cl. 524—139 12 Claims

1. An antistatic acrylic resin composition, which comprises a copolymer of 100 parts by weight of a methyl methacrylate monomer or a monomer mixture comprising 50% by weight or more of methyl methacrylate and a copolymerizable vinyl monomer with 0.5 to 15 parts by weight of a sulphone (A) selected from the group consisting of:



[I]

and



[II]

and mixtures thereof, wherein R^1 is a hydrocarbon group having 1 to 18 carbon atoms; a hydrocarbon group having 1 to 18 carbon atoms which is substituted with a member selected from the group consisting of hydroxy, halogen, carboxyl, tetrahydroxyfuryl, epoxy, nitrile, amide and amino, or an alkylene oxide-containing group wherein each alkylene oxide has 2 to 4 carbon atoms; R^2 is a hydrogen atom or methyl group; X is an alkylene oxide having 2 to 4 carbon atoms; n is an integer of 0 to 35 in number average; M is an alkali metal, ammonium, an organic amine base, or an organic quaternary ammonium base,

0 to 15 parts by weight of an alkylene oxide (B) of the formula:

$$R^3O—(Y)_l—R^4 \quad \text{(III)}$$

wherein R^3 is a hydrogen atom, a hydrocarbon group having 1 to 18 carbon atoms, acryloyl group, or methacryloyl group; R^4 is a hydrogen atom, an alkyl group having 1 to 18 carbon atoms, allyl group, an aryl group having 6 to 18 carbon atoms, or an aralkyl group having 7 to 18 carbon atoms; Y is an alkylene oxide having 2 to 4 carbon atoms; and l is 1 to 35 in number average, and

0 to 5 parts by weight of an acidic phosphate (C) of the formula:

$$(R^5O—)_{3-q}P(=O)(OH)_q \quad \text{(IV)}$$

where R^5 is an alkyl group having 1 to 18 carbon atoms, allyl group, an aryl group having 6 to 18 carbon atoms, an aralkyl group having 7 to 18 carbon atoms, an acryloxyalkyl group having 1 to 18 carbon atoms in the alkyl moiety, a methacryloxyalkyl group having 1 to 18 carbon atoms in the alkyl moiety, or a derivative thereof; q is 1 or 2.

4,604,415

THERMOPLASTIC MOLDING MATERIALS

Juergen Hambrecht, Heidelberg; Karl-Heinz Illers, Otterstadt; Adolf Echte, and Johann Swoboda, both of Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Dec. 20, 1984, Ser. No. 684,083

Claims priority, application Fed. Rep. of Germany, Dec. 22, 1983, 3346302

Int. Cl.⁴ C08K *5/51*; C08L *71/04*

U.S. Cl. 524—140 **7 Claims**

1. A thermoplastic molding material which contains a mixture of

(I) from 95 to 50% by weight of a polyphenylene ether and

(II) from 5 to 50% by weight of a copolymer consisting of

(A_1) from 74 to 99 parts by weight of a monovinylaromatic monomer,

(A_2) from 1 to 26 parts by weight of an alkyl acrylate where alkyl is of not more than 8 carbon atoms, and

(III) from 0 to 20 parts by weight of a diene elastomer component which has a glass transition temperature of ≦0° C., the sum of the number of parts by weight of said elastomer when totaled with those of A_1 and A_2 being 100.

6. A thermoplastic molding material according to claim 1, wherein said elastomer component III consists of from 10 to 50 parts by weight of a graft copolymer as a grafted shell on 50 to 90 parts by weight of an elastomeric grafting base.

4,604,416

METHACRYLIC RESIN COMPOSITION

Yoshio Nakai, Iwakuni; Katsusuke Yamauchi, Yamato; Masaaki Kishimura, Iwakuni, and Masamitsu Tateyama, Yamaguchi, all of Japan, assignors to Mitsubishi Rayon Company Ltd., Tokyo, Japan

Filed Dec. 13, 1984, Ser. No. 681,125

Claims priority, application Japan, Dec. 13, 1983, 58-233704; Jun. 2, 1984, 59-112222

Int. Cl.⁴ C08K *5/06, 5/52*; C08L *33/12*

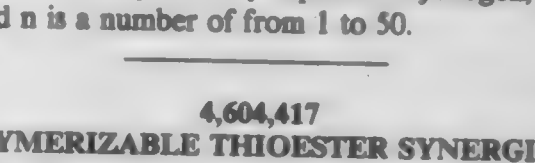
U.S. Cl. 524—145 **12 Claims**

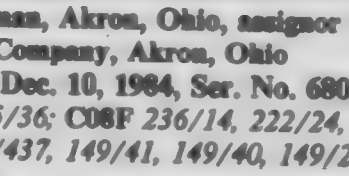
1. A methacrylic resin composition comprising:

(I) 50 to 99.8% by weight, based on the total weight of the methacrylic resin composition, of a methacrylic resin comprising 80% to 100% by weight of methyl methacrylate units and 20% to 0% by weight of units of another monomer copolymerizable with methyl methacrylate,

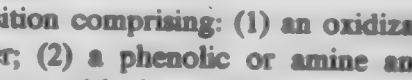
(II) 0.1 to 40% by weight, based on the total weight of the methacrylic resin composition, of a rubbery component which is a multi-stage, sequentially produced polymer containing an elastomeric portion comprising at least 50% by weight of units of a monomer selected from the group consisting of 1,3-butadiene and an acrylic acid ester, and

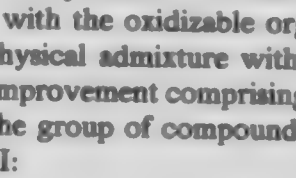
(III) 0.1 to 10% by weight, based on the total weight of the methacrylic resin composition of at least one compound selected from the group consisting of ester compounds of polyhydroxy alcohols and aliphatic acids represented by the following formulae:

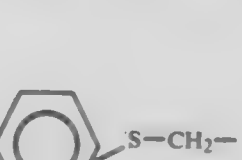




wherein R, R_1, R_2, R_3, R_4, R_5, R_6, R_7, R_8 and R_9 independently represent hydrogen or an acyl group of 8 to 20 carbon atoms, and phosphate compounds represented by the following formulae:







wherein R_{16}, R_{17}, R_{18}, and R_{19} independently represent an alkyl group having 8 to 20 carbon atoms; M, M_1, M_2, M_3, and M_4 independently represent hydrogen, Na, K or Li; and n is a number of from 1 to 50.

4,604,417

POLYMERIZABLE THIOESTER SYNERGISTS

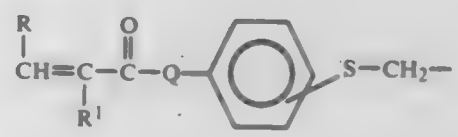
Kirkwood S. Cottman, Akron, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Dec. 10, 1984, Ser. No. 680,011

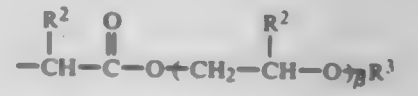
Int. Cl.⁴ C08K *5/36*; C08F *236/14, 222/24, 222/38*; C07C *149/437, 149/41, 149/40, 149/273*

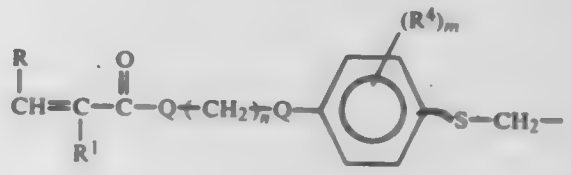
U.S. Cl. 524—199 **8 Claims**

1. A composition comprising: (1) an oxidizable diene containing polymer; (2) a phenolic or amine antidegradant in physical admixture with the oxidizable organic material; and (3) a synergist in physical admixture with the oxidizable organic material, the improvement comprising at least one synergist selected from the group of compounds having the structural formulae I–XII:

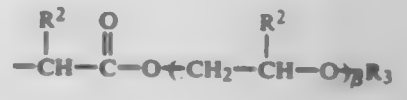


I



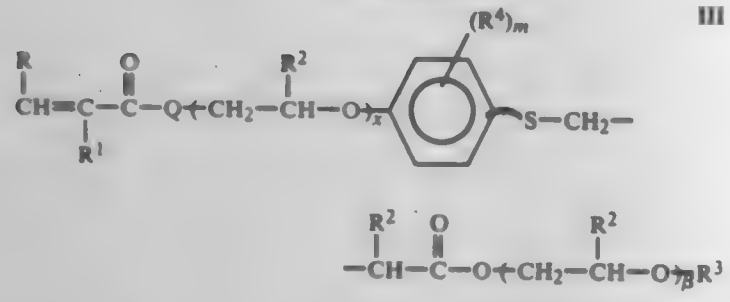


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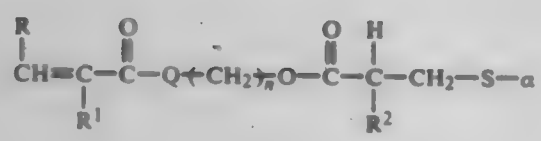


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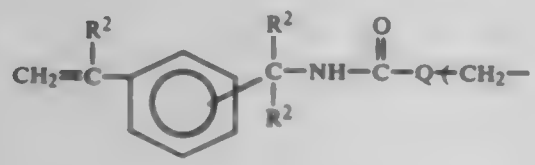
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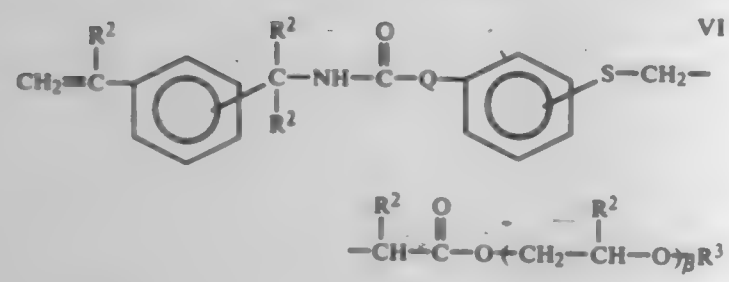
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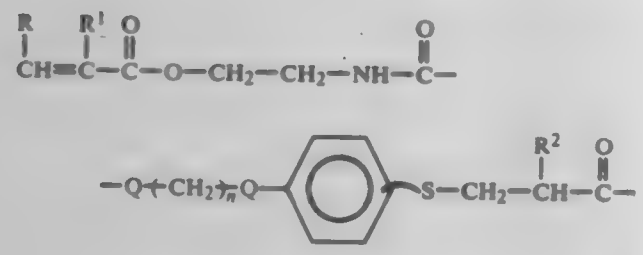
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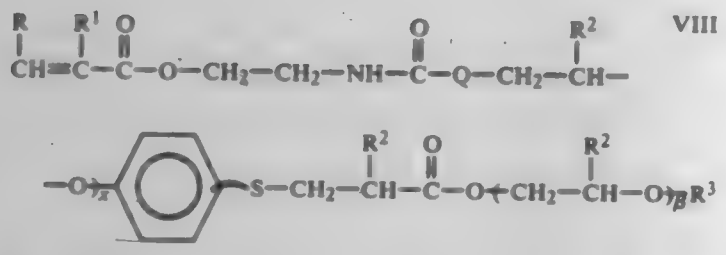
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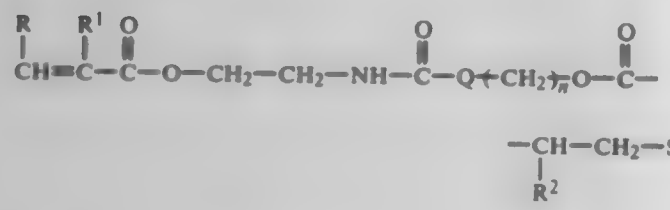
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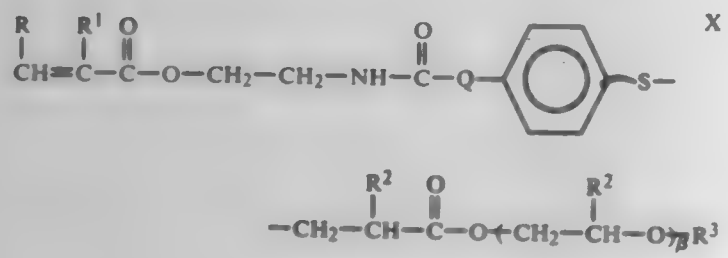
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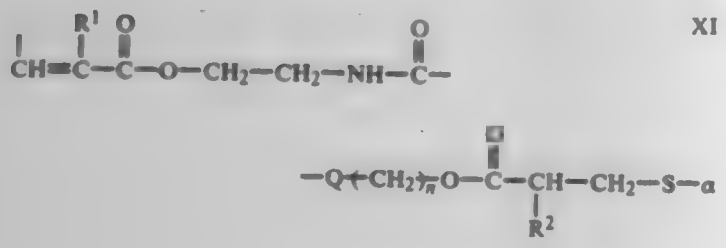
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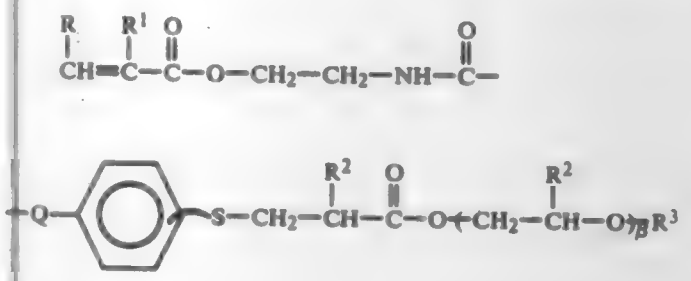
X



XI



XII



wherein

R is selected from hydrogen, methyl or phenyl radicals;

R^1 is selected from hydrogen, methyl or ethyl radicals;

R^2 is selected from hydrogen or methyl radicals;

R^3 is selected from hydrogen, alkyl radicals of 1 to 12 carbon atoms, phenyl and substituted phenyl radicals;

R^4 is an alkyl radical of 1 to 3 carbon atoms;

Q may be the same or different divalent radical selected from —O— or —NH—;

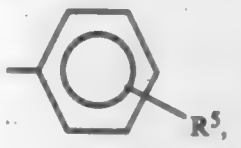
β is 0 or a whole number from 1 to 20;

n is a whole number from 2 to 20;

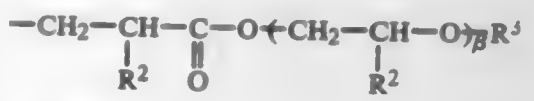
m is 0 or 1 or 2;

x is a whole number from 1 to 20;

α is a monovalent radical selected from alkyl radicals of 1 to 30 carbon atoms, the radical



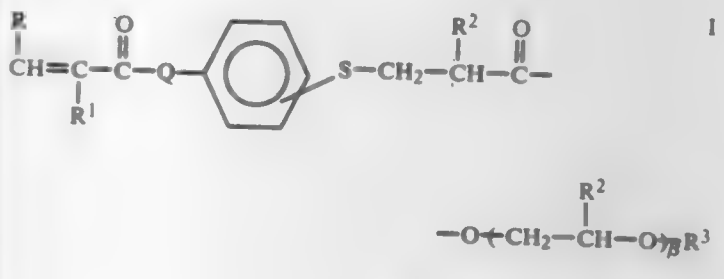
or the radical



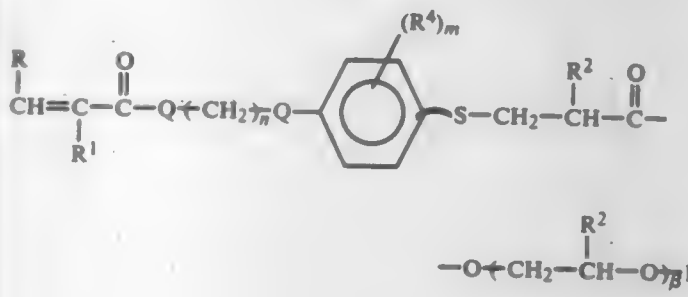
wherein R^2, R^3 and β are defined as above and R^5 is selected from hydrogen, hydroxyl and alkyl radicals of 1 to 10 carbon atoms.

8. A composition of matter represented by structural formulae I–X:

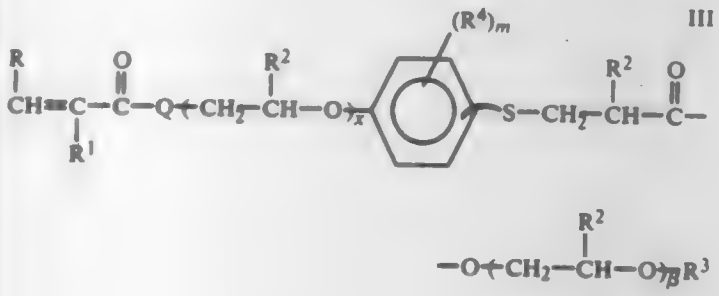
I



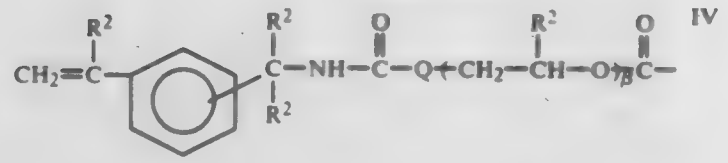
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III



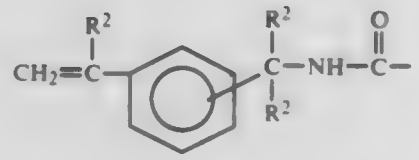
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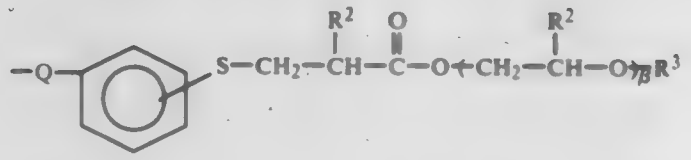


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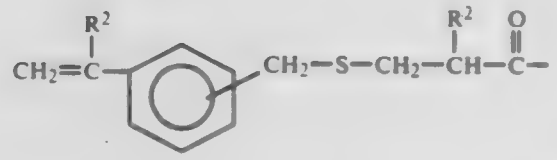


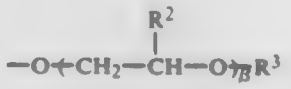
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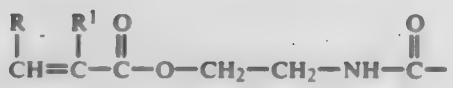




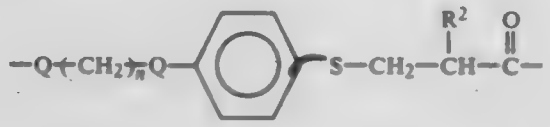
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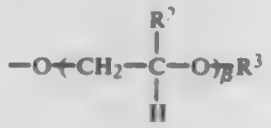


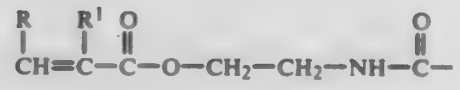




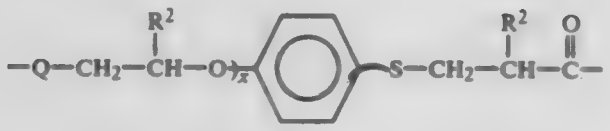
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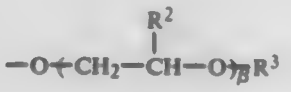


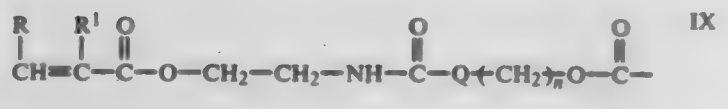




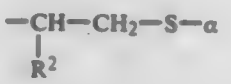
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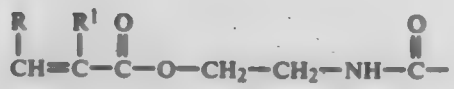




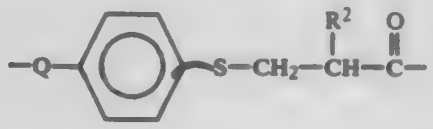


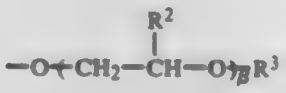
IX





X





wherein

R is selected from hydrogen, methyl or phenyl radicals;

R^1 is selected from hydrogen, methyl or ethyl radicals;

R^2 is selected from hydrogen or methyl radicals;

R^3 is selected from hydrogen, alkyl radicals of 1 to 12 carbon atoms, phenyl and substituted phenyl radicals;

R^4 is an alkyl radical of 1 to 3 carbon atoms;

Q may be the same or different divalent radical selected from —O— or —NH—;

β is 0 or a whole number from 1 to 20;

n is a whole number from 2 to 20;

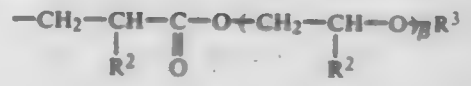
m is 0 or 1 or 2;

x is a whole number from 1 to 20;

α is a monovalent radical selected from alkyl radicals of 1 to 30 carbon atoms, the radical



or the radical



wherein R^2, R^3 and β are defined as above and R^5 is selected from hydrogen, hydroxyl and alkyl radicals of 1 to 10 carbon atoms.

4,604,418

PROCESS FOR ISOCYANURATING HEXAMETHYLENE-DIISOCYANATE USING A SODIUM OR POTASSIUM CARBOXYLATE CATALYST AND A PAINT COMPOSITION COMPRISING THE PRODUCT OF SAID PROCESS AND POLYOLS

Masanori Shindo, Fujisawa; Yusuke Aoki, Yokohama; Yoshimi Katsuka, Ota-ku; Susumu Enomoto, Yokohama, and Minoru Nakamura, both of Yokohama, all of Japan, assignors to Nippon Polyurethane Industry Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 380,885, May 21, 1982, abandoned. This application Aug. 13, 1984, Ser. No. 640,119

Claims priority, application Japan, Mar. 19, 1982, 57-43864

Int. Cl.[4] C08L *75/04*

U.S. Cl. 524—296 23 Claims

1. A process for preparing an isocyanurated compound of hexamethylene diisocyanate which comprises the following steps:

(a) partially polyoling hexamethylene diisocyanate using a polyol compound in an amount less than 15 mol %, and then recovering unreacted hexamethylene diisocyanate from the reaction mixture,

(b) trimerising said polyoled hexamethylene diisocyanate in the presence of a catalyst having the formula (1),

$$C_nH_{2n+1}COOM \quad (1)$$

wherein n stands for an integer of 2 to 10, C_nH_{2n+1} for a straight or branched alkyl radical and M for a potassium or sodium metal, and

(c) stopping the trimerization reaction at a reaction ratio of less than 80%.

4,604,419

TREATMENT OF AQUEOUS SUSPENSIONS OF VINYL CHLORIDE POLYMERS

Peter V. Smallwood, Cheshire, England, assignor to Imperial Chemical Industries PLC, London, England

Filed Mar. 26, 1985, Ser. No. 716,138

Claims priority, application United Kingdom, Apr. 17, 1984, 8409962; Sep. 26, 1984, 8424353

Int. Cl.[4] C08K *5/10*

U.S. Cl. 524—318 12 Claims

1. Method of treating an aqueous suspension of a vinyl chloride polymer, produced by aqueous suspension polymerisation

and containing residual vinyl chloride monomer, to inhibit wet-foaming therein, which method comprises adding to said aqueous suspension of a vinyl chloride polymer containing residual vinyl chloride monomer, a glyceride of a saturated or unsaturated carboxylic acid, containing 6 to 20 carbon atoms.

4,604,420

VULCANIZABLE POLYMER COMPOSITIONS WITH IMPROVED SCORCH

Kyosaku Sato, Sarnia, Canada, assignor to Polysar Limited, Sarnia, Canada

Filed Mar. 22, 1985, Ser. No. 714,919

The portion of the term of this patent subsequent to Jul. 2, 2002, has been disclaimed.

Int. Cl.[4] C08F *8/42*

U.S. Cl. 524—394 **16 Claims**

1. A vulcanizable polymer composition with improved scorch comprising (1) a carboxylated styrene-butadiene rubber, said rubber being a copolymer of butadiene, styrene, and one or more α-β unsaturated carboxylic acids selected from acrylic, methacrylic, fumaric, maleic and itaconic acids, (2) one or more polyvalent metal oxides, and (3) one or more alkali metal salts selected from the lithium sodium and potassium salts of C_{12-18}-alkanoic acids.

4,604,421

POLYPROPYLENE RESIN COMPOSITION COMPRISING TALC HAVING SPECIFIED AVERAGE DIAMETER AND PARTICLE SIZE

Tatsuyuki Mitsuno; Teruhisa Koyama, and Yuji Ikezawa, all of Chiba, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Mar. 26, 1985, Ser. No. 716,300

Claims priority, application Japan, Mar. 27, 1984, 59-60263

Int. Cl.[4] C08K *3/34*; C08L *23/00, 53/00*

U.S. Cl. 524—449 **4 Claims**

1. A polypropylene resin composition comprising 50 to 97% by weight of a crystalline propylene-ethylene copolymer resin having a melt index within the range of 0.1 to 100, 0 to 20% by weight of a rubber material, and 3 to 50% by weight of mica having an average particle diameter determined by photo extinction and sedimentation method of 0.5 to 4.5μ and a particle size distribution of 95% or more by weight for 10μ or less, 60% or more by weight for 5μ or less, and 10 to 80% by weight for 1μ or less.

4,604,422

FLAME-RETARDANT MOLDED COMPOSITION INCORPORATING A POLY[N-(BROMOPHENYL)MALEIMIDE-CO-STYRENE-CO-MALEIC ANHYDRIDE] COPOLYMER

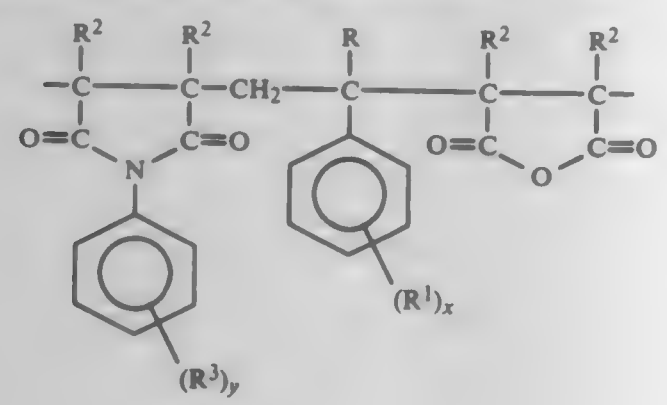
Usama E. Younes, Newtown Square, Pa., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Dec. 24, 1984, Ser. No. 685,361

Int. Cl.[4] C08L *39/04*

U.S. Cl. 524—502 **4 Claims**

1. A moldable composition comprising a random copolymer comprised of the following recurring units:



wherein R represents —H, —CH_3, or —CH_2CH_3; R^1 represents —CH_3, —CH_2CH_3, —$CH(CH_3)_2$, —$C(CH_3)_3$, —OH, —OCH_3, —CO_2H, —$CONH_2$, or —$CON(CH_3)_2$; each R^2 separately represents —H or —CH_3; R^3 represents a —Cl or —Br; x represents an integer of from 0 to 3 and, y represents an integer of from 1 to 3; a flame-retardant synergist; and, a thermoplastic resin with the proviso that the random copolymer and the thermoplastic resin cannot be the same.

4,604,423

COMPOSITION

Ping Y. Liu, Naperville, Ill., assignor to General Electric Company, Mt. Vernon, Ind.

Continuation-in-part of Ser. No. 563,183, Dec. 19, 1983, Pat. No. 4,536,538. This application Nov. 19, 1984, Ser. No. 672,718

The portion of the term of this patent subsequent to Aug. 20, 2002, has been disclaimed.

Int. Cl.[4] C08L *69/00*

U.S. Cl. 524—508 **18 Claims**

1. A composition comprising

a. a major amount of an aromatic polycarbonate;

b. a minor amount of an impact modifier comprising

(i) an amorphous polyester comprising units derived from 1,4-cyclohexane dimethanol and aromatic dicarboxylic acid or ester forming derivative; and

(ii) an olefin acrylate polymeric resin;

the components (i) and (ii) in such quantities that said composition has the following properties

(a) thick section notched Izod impact resistance or ductility at break higher than a_2

(b) double gate Izod impact or ductility at break of a weld line higher than a+b(i) or a+b(ii); and

(c) higher resistance against basic organic solution as measured by notched Izod impact resistance or ductility at break in thin section than a+b(i); and

(d) a flexural property and heat strength improving quantity of glass fiber which additionally maintains the ductility of (a) and (b) under notched Izod impact testing before and after aging in a basic organic solution.

4,604,424

THERMALLY CONDUCTIVE POLYORGANOSILOXANE ELASTOMER COMPOSITION

Richard L. Cole, Bay City, and Gloria Janik, Midland, both of Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Jan. 29, 1986, Ser. No. 823,851

Int. Cl.[4] C08L *83/04*

U.S. Cl. 524—862 **25 Claims**

1. A one-part polyorganosiloxane composition curable to a thermally conductive silicone elastomer, said composition comprising:

A. 100 parts by weight of a liquid polydiorganosiloxane containing an average of two ethylenically unsaturated hydrocarbon radicals per molecule;

B. a curing agent in an amount sufficient to cure said polydiorganosiloxane, where said curing agent is an organosilicon compound containing an average of at least three silicon-bonded hydrogen atoms per molecule and no more than one of said hydrogen atoms per silicon atom;

C. a platinum-containing hydrosilation catalyst in an amount sufficient to promote curing of said polydiorganosiloxane;

D. from 200 to 400 parts by weight of a finely divided thermally conductive filler comprising from 50 to 90 percent by weight of zinc oxide and from 10 to 50 percent by weight of magnesium oxide; and

E. an amount of filler treating agent sufficient to maintain the processability of said composition.

4,604,425

METHOD FOR MODIFYING THE SURFACE OF POLYMER MATERIALS

Hiroshi Ohmura; Yoshihiro Oshibe, both of Aichi; Masaharu Nakayama, Nagoya, and Takashi Yamamoto, Yokohama, all of Japan, assignors to Nippon Oil and Fats Co., Tokyo, Japan

Filed Apr. 18, 1984, Ser. No. 601,577
Claims priority, application Japan, Apr. 30, 1983, 58-74959
Int. Cl.[4] C08L *9/00, 31/00, 53/00*
U.S. Cl. 525—88 6 Claims

1. A method for modifying the surface of a polymer material, comprising adding a block copolymer consisting of a polymer portion compatible with the polymer material and a hydrophilic polymer portion to the polymer material,

said block copolymer having been produced through the following first and second steps,

in the first step, either a vinyl monomer which forms a hydrophilic polymer, or a vinyl monomer which forms a polymer compatible with the polymer material, is polymerized in the presence of a polymeric peroxide as a polymerization initiator to produce a peroxy bond- or azo bond-containing polymer, and

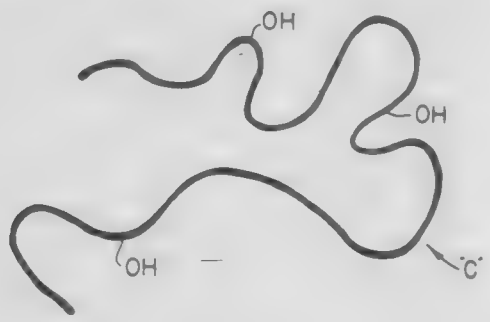
in the second step, either a vinyl monomer which forms a hydrophilic polymer, or a vinyl monomer which forms a polymer compatible with the polymer material, both the vinyl monomers being used in such a manner that, when a hydrophilic polymer is produced in the first step, a vinyl monomer which forms a polymer compatible with the polymer material is used in the second step, and when a polymer compatible with the polymer material is produced in the first step, a vinyl monomer which forms a hydrophilic polymer is used in the second step, is polymerized in the presence of a polymerization initiator of the peroxy bond- or azo bond-containing polymer obtained in the first step.

4,604,426

BETTER FOAMABLE STYRENE AND OTHER OLEFIN POLYMER COMPOSITIONS

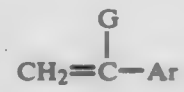
Louis C. Rubens, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 256,758, Apr. 23, 1981. This application Oct. 24, 1983, Ser. No. 545,316
Int. Cl.[4] C08G *18/62;* C08F *8/30;* C08L *75/00*
U.S. Cl. 525—123 13 Claims



1. A lightly cross-linked polymeric composition comprising, in intimate admixture:

(a) as a fundamental constituent, a hydroxylated, normally solid, linear polymer selected from the group consisting of linear olefin polymers and linear alkenyl aromatic polymers, which is a polymerizate containing at least about 60 percent by weight, based on total polymer weight (i.e., "weight percent") of at least one polymerizable monomer of the general Formula:



wherein: G is selected from the group consisting of hydrogen and methyl; and Ar is an aromatic radical, including alkyl and halo-ring-substituted aromatic units, that contains from 6 to about 10 carbon atoms; with the balance being copolymerized units of another addition polymerizable monomer or monomer mixture that is copolymerizable with styrene, the polymer having a hydroxyl functionality of from 2 to 6 average hydroxyl groups per unit weight average molecule; and

(b) a substantially minor proportion of an inter-reactive crosslinking polyisocyanate constituent, with the further limitation that the polymer have a crosslinking coefficient of from about 0.8 to about 3 which results in a visually detectable gel in a solvent which dissolves the corresponding noncrosslinked hydroxylated polymers, and that such composition on incorporation of a blowing agent therein is foamable to a thermal collapse resistant thermoplastic foam.

4,604,427

METHOD OF FORMING ELECTRICALLY CONDUCTIVE POLYMER BLENDS

William P. Roberts, Columbia, and Leslie A. Schulz, Olney, both of Md., assignors to W. R. Grace & Co., New York, N.Y.

Continuation-in-part of Ser. No. 685,887, Dec. 24, 1984, abandoned. This application Jul. 19, 1985, Ser. No. 756,534
Int. Cl.[4] C08L *79/04*
U.S. Cl. 525—185 7 Claims

1. A method of imparting electrical conductivity to the surface layer, up to 1 mm deep, of non-porous polymers by impregnation with a conductive polymer, said method comprising:

(a) either diffusing a cyclic monomer selected from the group consisting of pyrrole, aniline and substituted analogs thereof into said non-porous polymer or codissolving said cyclic monomer and said non-porous polymer in a solvent therefor followed by evaporation of said solvent, and

(b) then exposing the impregnated polymer to a solution containing at least one chemical oxidant selected from the group consisting of trivalent iron compounds, tetravalent cerium compounds, hexavalent molybdenum, tungsten or chromium compounds, divalent copper compounds, monovalent silver compounds, nitrites, quinones, peroxides and peracids, said oxidant(s) being capable of reacting with the cyclic monomer to convert it to an electrically conductive polymeric oxidation product within the surface layer of the impregnated polymer.

4,604,428

METHOD OF PRODUCING A FLAME-RETARDANT ACRYLIC POLYMER

Masaaki Fujimatsu, and Toshiyuki Kobashi, both of Okayama, Japan, assignors to Japan Exlan Company Limited, Osaka, Japan

Filed Jan. 6, 1984, Ser. No. 568,922
Claims priority, application Japan, Jan. 10, 1983, 58-2596
Int. Cl.[4] C08F *259/04, 259/06, 259/08*
U.S. Cl. 525—276 5 Claims

1. A method of producing a flame-retardant acrylic polymer, which comprises polymerizing, at a temperature of 30° to 60° C., a vinyl monomer containing more than 75 weight % of acrylonitrile, in an aqueous medium containing 0.01 to 2.0 weight %, based on the vinyl monomer, of an inorganic salt, and also containing a radical initiator and a halogen-containing polymer latex substantially free from an emulsifier, said polymer latex containing polymer particles of less than 0.5μ stably dispersed therein, wherein the quantity of the halogen-containing polymer latex is such that the quantity of the halogen-containing polymer in the latex is 1.5 to 150 weight % based on the weight of the vinyl monomer

4,604,429

AMMONIUM SALTS OF POLYMERIC ACIDS, THEIR PREPARATION AND USE AS FUNGICIDES

Eberhard Ammermann; Ernst Buschmann, both of Ludwigshafen; Gregor Ley, Wattenheim, and Ernst-Heinrich Pommer, Limburgerhof, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Nov. 19, 1984, Ser. No. 672,699

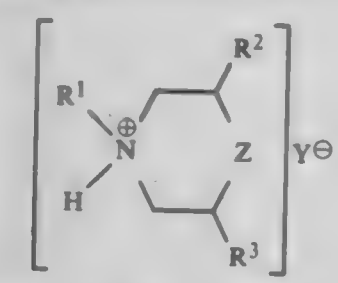
Claims priority, application Fed. Rep. of Germany, Nov. 19, 1983, 3341829

Int. Cl.[4] C08F *30/00, 130/08, 230/08*

U.S. Cl. 525—326.6 3 Claims

1. An ammonium salt of a polymeric acid of the formula

(I)



where R^1 is alkyl, cycloalkyl, cycloalkylalkyl or aralkyl, R^1 having 12–14 carbon atoms, R^2 and R^3 are each hydrogen, OH, CH_2OH or C_1–C_3-alkyl, Z is CH_2, O S, CO, or $(CH_2)_2$ and Y is an anion of a copolymeric acid based on acrylic acid, methacrylic acid, maleic acid, maleic anhydride, vinylsulfonic acid, styrenesulfonic acid, allysulfonic acid, methallylsulfonic acid, acrylamido-2-methylpropanesulfonic acid, vinylphosphonic acid and their salts, or mixtures thereof, and another monomeric compound selected from the group consisting of vinyl acetate, vinyl propionate, vinyl chloride, acrolein, methacrolein, acrylonitrile, methacrylonitrile, (meth)acrylamide and its derivatives, and malonates, fumarates and (meth)acrylates, said copolymeric acid having a K-value of from 10–50.

4,604,430

NOVEL BILE SEQUESTRANT RESIN

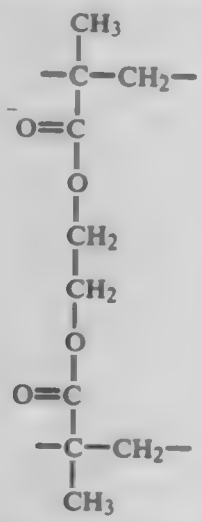
Porter C. Johnson, Pasadena, Calif., assignor to Bristol-Myers Company, New York, N.Y.

Filed May 11, 1984, Ser. No. 609,408

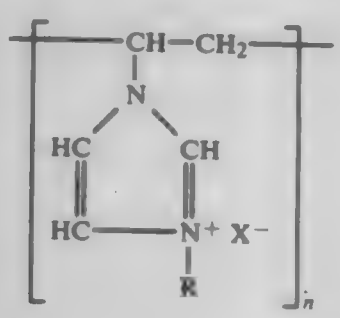
Int. Cl.[4] C08F *220/20, 226/06*

U.S. Cl. 525—326.7 11 Claims

1. A quaternized vinylimidazole-ethylene glycol dimethacrylate copolymer consisting of from about 1% to about 25%, based on the molecular weight of the copolymer, of ethylene glycol dimethacrylate moieties having the structural formula



and the balance to 100% based on the molecular weight of the copolymer of polyvinylimidazolium moieties having the structural formula



wherein n, on average, ranges from 3 to about 40 and wherein R is selected from the group consisting of alkyl and alkenyl groups having from 1 to 18 carbon atoms and $—CH_2R^1$ wherein R^1 is selected from the group consisting of phenyl, $—CH_2OH$, $—CH_2NHCOC_6H_5$, and $—CH_2NR^2R^3$ wherein R^2 and R^3 are each selected from the group consisting of methyl and ethyl and wherein X^- is a pharmaceutically acceptable anion selected from the group consisting of halides, acetate, propionate and phosphate.

4,604,431

CHEMICAL MODIFICATION OF (METH)ACRYLIC ACID HOMOPOLYMERS AND ALKYL (METH)ACRYLATE POLYMERS IN AQUEOUS SYSTEMS WITH AMINO SULFONIC ACIDS

Dodd W. Fong; Claudia C. Pierce, both of Naperville, and David A. Grattan, Lagrange Highlands, all of Ill., assignors to Nalco Chemical Company, Oak Brook, Ill.

Filed Nov. 22, 1985, Ser. No. 800,833

Int. Cl.[4] C08F *8/36*

U.S. Cl. 525—351 5 Claims

1. A method of preparing copolymers of acrylamido sulfonic acids which comprises converting to acrylamido sulfonic groups at least 5 mole % of the acrylic acid or methacrylic acid groups in a polymer which contains at least 5 mole % of these monomers in its structure which comprises reacting an aqueous solution of the acrylic acid or methacrylic acid polymer with an amino sulfonic acid from the group consisting of the lower alkyl, aryl and aryalkyl sulfonic acids, under pressure at a temperature of at least 70° C. for a period of time sufficient to convert at least 5 mole % of the acrylic acid or methacrylic acid groups in the polymer to amido lower alkyl, aryl or arylalkyl sulfonic acid groups.

4,604,432

FURAN REIMPREGNATION RESIN

P. Anthony Hinman, Torrance, Calif., assignor to Hitco, Newport Beach, Calif.

Division of Ser. No. 479,926, Mar. 29, 1983, Pat. No. 4,540,764. This application Jun. 24, 1985, Ser. No. 747,711

Int. Cl.[4] C08G *79/00*

U.S. Cl. 525—389 12 Claims

1. The copolymer obtained by copolymerizing furfuryl alcohol, a polyester prepolymer prepared by reacting an ethylenically unsaturated dicarbocyclic acid or anhydride with a glycol or a mixture of furfuryl alcohol and said polyester prepolymer with the thermoplastic/thermosetting product of (1) 2-furanacrylic acid or 2-furoic acid and (2) a metal complex which is a reaction product of tungsten carbonyl with pyrrolidine, said copolymer being a multi-cycle reimpregnation polymer.

4,604,433

THERMOSETTING FURAN BASED RESIN CONTAINING NIOBIUM AND/OR TANTALUM

Paul V. Mosher, Torrance, Calif., assignor to Hitco, Newport Beach, Calif.

Filed Jul. 6, 1984, Ser. No. 628,658

Int. Cl.[4] C08G *79/00*

U.S. Cl. 525—411 9 Claims

1. A thermosetting furan based resin containing niobium, tantalum, or a mixture of niobium and tantalum chemically bonded in the backbone of the polymer.

4,604,434

AROMATIC POLYCARBONATE CROSSLINKED WITH AROMATIC BIS CYCLIC CARBONATE

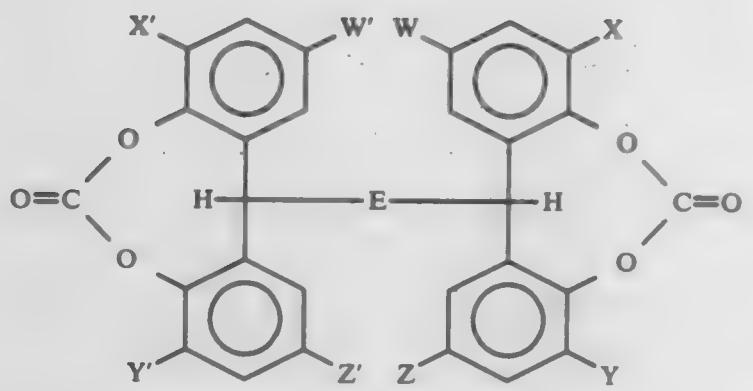
Niles R. Rosenquist, Evansville, Ind., assignor to General Electric Company, Mt. Vernon, Ind.

Filed Jan. 2, 1985, Ser. No. 688,244

Int. Cl.[4] C08G *63/76, 63/62*

U.S. Cl. 525—462 7 Claims

1. A composition comprising an aromatic polycarbonate crosslinked with a residue of a compound of the formula



wherein X, Y, X′ and Y′ are the same or different and are hydrogen or alkyl of one to about six carbon atoms, inclusive; W, W′, Z and Z′ are the same or different and are alkyl of one to about six carbon atoms, inclusive, and E is alkylene or alkylidene of two to about twelve carbon atoms, inclusive.

4,604,435

THERMOSETTING EPOXY RESIN COMPOSITIONS

Taro Koshii, Chiba; Yoshitsugu Morita, Ichihara; Hideo Shinmi, Ichihara, and Tsuneo Hanada, Ichihara, all of Japan, assignors to Toray Silicone Co., Ltd., Tokyo, Japan

Filed Nov. 16, 1984, Ser. No. 672,052

Claims priority, application Japan, Nov. 28, 1983, 58-223855

Int. Cl.⁴ C08L *63/00;* H01B *3/40;* C08G *59/40;* C09J *3/16*

U.S. Cl. 525—476 **6 Claims**

1. A thermosetting epoxy resin composition comprising a mixture of

(a) 100 parts by weight of epoxy resin;

(b) 1 to 100 parts by weight of a curing agent for the epoxy resin composition;

(c) 1 to 100 parts by weight of an organopolysiloxane composition which is a block copolymer containing at least one linear polysiloxane block and at least one resinous polysiloxane block wherein there is present in the block copolymer (i) 10 to 90 weight percent of linear organopolysiloxane blocks having the unit formula $—R_2SiO—_n$ and (ii) 90 to 10 weight percent of resinous organopolysiloxane blocks, the weight percents being based on the total weight of (i) and (ii) in the block copolymer, wherein R is independently selected from substituted and unsubstituted monovalent hydrocarbon groups having from 1 to 8 carbon atoms; n is an integer with a value of about 10 to 100; the solvent solution viscosity of the block copolymer being at least 30 centipoise at 25° C. for a 40 weight percent solution: the parts of (b) and (c) being based on 100 parts of (a).

4,604,436

PROCESS FOR METAL MODIFIED PHENOLIC NOVOLAC RESIN

Donald H. Thorpe, Williamsville, and Raymond P. Knipple, North Tonawanda, both of N.Y., assignors to Occidental Chemical Corporation, Niagara Falls, N.Y.

Continuation-in-part of Ser. No. 47,836, Jun. 12, 1979, abandoned. This application Mar. 24, 1980, Ser. No. 132,739

Int. Cl.⁴ C08G *8/32, 8/36;* C08L *61/14*

U.S. Cl. 525—504 **43 Claims**

1. In the process of preparing a metal-modified novolac phenolic resin wherein the metal is selected from the group consisting of copper, aluminum, zinc, chromium, indium, tin, cadmium, cobalt and nickel, by reaction of a compound of said metal, an ammonia base and a novolac phenolic resin at an elevated temperature sufficient to maintain the reaction mixture in molten condition, the improvement comprising charging as reactants an oxide of the metal or the functional equivalent of said oxide, a mono-carboxylic acid selected from the group consisting of C_{1-12} alkanoic acids and aromatic carboxylic acids of the benzene or naphthalene series, an ammonia base and the novolac phenolic resin.

4,604,437

POLYMER FROM SUBSTITUTED, UNSATURATED, BICYCLIC IMIDE

Alfred Renner, Muntelier, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

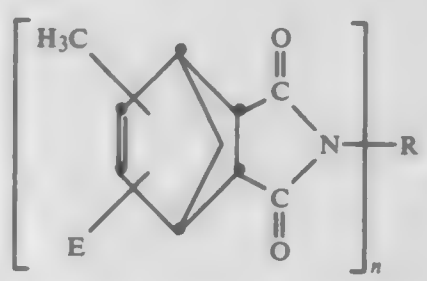
Filed Jan. 22, 1985, Ser. No. 693,640

Claims priority, application Switzerland, Jan. 31, 1984, 450/84; Oct. 5, 1984, 4796/84

Int. Cl.⁴ C08F *122/40*

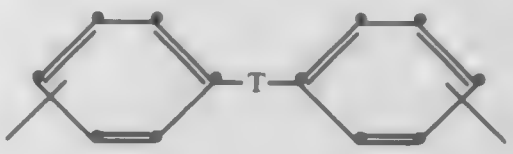
U.S. Cl. 526—262 **15 Claims**

1. A polymer obtained by heating an imide of formula I



(I)

in which E is allyl or methallyl and n is 1 or 2 and, when n is 1, R is hydrogen, alkyl having 1–12 C atoms, alkenyl having 3–6 C atoms, cycloalkyl having 5–8 C atoms, aryl having 6–10 C atoms or benzyl, or when n is 2, R is $—C_mH_{2m}—$ in which m is 2–20, arylene having 6–10 C atoms or a group of the formula II



(II)

in which T is methylene, isopropylidene, CO, O, S or SO_2, at a temperature between 180° and 300° C. for 6 to 60 hours.

4,604,438

HIGH TEMPERATURE THERMOSET TERPOLYMERS

Allyson J. Beuhler, Indian Head Park, and James A. Wrezel, Buffalo Grove, both of Ill., assignors to UOP Inc., Des Plaines, Ill.

Filed Aug. 12, 1985, Ser. No. 764,816

Int. Cl.⁴ C08F *20/32*

U.S. Cl. 526—262 **26 Claims**

1. A thermoset terpolymer comprising a cross-linked mixture of

(a) an alpha-substituted olefin selected from the group consisting of styrene, o-chlorostyrene, p-chlorostyrene, o-bromostyrene, p-bromostyrene, o-iodostyrene, m-iodostyrene, p-iodostyrene and vinylnaphthylene;

(b) an alpha, beta-disubstituted olefin selected from the group consisting of acenaphthylene, indene and N-phenylmaleimide; and

(c) a dual function monomer selected from the group consisting of glycidyl acrylate and glycidyl methacrylate.

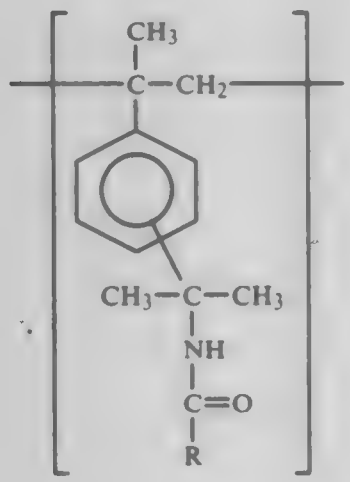
4,604,439

FUNCTIONALIZED MONOMERS FROM 1-(1-ISOCYANATO-1-METHYLETHYL)-3- OR 4-(1-METHYLETHENYL) BENZENE

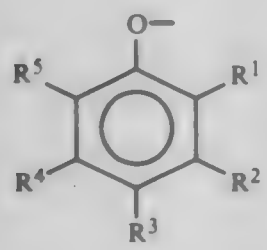
Howard A. Colvin; Kirkwood S. Cottman, both of Akron, and Dane K. Parker, Massillon, all of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed May 28, 1985, Ser. No. 737,742
Int. Cl.[4] C08F *26/02, 126/02, 226/02*
U.S. Cl. 526—288 4 Claims

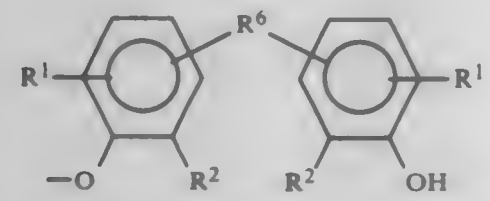
1. A polymer consisting essentially of segmeric units, a portion of said units consisting of at least one segmeric unit having the structural formula:



wherein R is a monovalent radical selected from the group of compounds of the structural formula:



wherein R^1 is hydrogen or an alkyl radical of 1 to 4 carbon atoms, a cycloalkyl radical of 5 to 12 carbon atoms, or an aralkyl radical having 7 to 12 carbon atoms, R^2 and R^5 are hydrogen, and R^3 and R^4 are alkyl radicals having 1 to 12 carbon atoms, cycloalkyl radicals having 5 to 12 carbon atoms, aralkyl radicals having 7 to 12 carbon atoms, or hydrogen; or a monovalent radical of the formula:



wherein R^6 is an alkylidine radical having 1 to 4 carbon atoms, the group —O—, or the group —S—, and wherein R^1 is hydrogen and R^2 is an alkyl radical having 1 to 4 carbon atoms, cycloalkyl radicals having 5 to 12 carbon atoms, or aralkyl radicals having 7 to 12 carbon atoms; with the proviso that the polymer also contains at least one segmeric unit selected from the group consisting of: segmers of styrene, butadiene, α-methylstyrene, acrylonitrile, butylacrylate, vinyl toluene and isoprene.

4,604,440

HYDROPHILIC THREE DIMENSIONAL POLYMER AND A METHOD FOR PRODUCTION THEREOF

Otto Wichterle; Jiri Trekoval; Jiri Vacik, and Jiri Michálek, all of Prague, Czechoslovakia, assignors to Ceskoslovenska Akademie VED, Prague, Czechoslovakia

Filed Apr. 2, 1985, Ser. No. 718,957
Claims priority, application Czechoslovakia, Apr. 6, 1984, 2633-84
Int. Cl.[4] C08F *220/40*
U.S. Cl. 526—327 16 Claims

1. A method for preparing a hydrophilic three dimensional polymer having a prevailing mass comprising structural units which correspond to monomers miscible with water at any ratio, comprising reacting, in the presence of a free-radical initiator,

(a) one part by weight of a monomer miscible with water, and

(b) 0.01 to 1 part by weight of a polyfunctional unsaturated oligomer having an average degree of polymerization x=3 to x=100, said oligomer prepared by the anionic polymerization of

(i) a member selected from the group consisting of methacrylonitrile, methacrylic ester of univalent saturated alcohols containing 1 to 4 carbon atoms, and methacrylic esters of monohydroxy compounds containing at least one etheric oxygen atom in the chain, and

(ii) allyl methacrylate.

4,604,441

POLYPROPYLENE SHEET

Ryuhei Ueeda, Kurashiki; Kiyonobu Fujii, Okayama, and Hiroshi Narukawa, Soja, all of Japan, assignors to Kuraray Company, Ltd., Kurashiki, Japan

Filed Mar. 20, 1985, Ser. No. 713,829
Claims priority, application Japan, Mar. 29, 1984, 59-62447
Int. Cl.[4] C08F *10/06*
U.S. Cl. 526—351 19 Claims

1. A polypropylene sheet having a thickness of at least 200 μm characterized in (a) that the base material is a propylene-based polymer having a melt flow rate of not more than 5 and a propylene unit content of not less than 70% by weight, (b) that the maximum value (Ftmax) among the values (Ft's) of integration of the force parallel to the sheet plane, as appearing upon heating said sheet at a temperature above the melting point thereof over the time period during which said force is observed, falls within the range of 0.5–45 kg.minute/cm^2, (c) that the ratio (RFt) between Ft's measured in directions at right angles to each other on the sheet plane is not more than 10, and (d) that the melting point (Tms) of said sheet is higher than the melting point (Tmr) of said sheet as measured after melting followed by recrystallization in the unstrained condition, the melting point difference (ΔTms=Tms−Tmr) being at least 3° C.

4,604,442

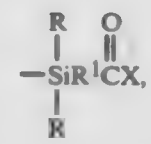
ORGANOPOLYSILOXANE-POLYAMIDE BLOCK POLYMERS AND METHOD FOR MAKING

Jonathan D. Rich, Ballston Lake, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Mar. 29, 1985, Ser. No. 718,038
Int. Cl.[4] C08G *77/04*
U.S. Cl. 528—28 8 Claims

1. A method for making organopolysiloxane-polyamide block polymers which comprises

(1) effecting reaction under interfacial polymerization conditions between an aqueous solution of an organo diamine or organo silicon diamine and an organic solvent solution of a poly(diorganosiloxane) having an average of about 7 to 2000 chemically combined diorganosiloxy units and terminal groups of the formula



or a mixture of such polydiorganosiloxane and organic polyacidhalide, where the reaction is conducted in the presence of a basic intercondensation catalyst and the polydiorganosiloxane is the reaction product of the corresponding silanol terminated polydiorganosiloxane and halosilylaroylhalide, and

(2) recovering organopolysiloxane block polymer from the resulting organic phase, where R is a member selected from the class consisting of halogen, $C_{(1-13)}$ monovalent hydrocarbon radicals, substituted $C_{(1-13)}$ monovalent hydrocarbon radicals and mixtures thereof, R^1 is selected from divalent $C_{(6-13)}$ aromatic organic radicals, and X is a halogen radical.

4,604,443

PARTIAL HYDROLYZATES CONTAINING HYDROLYZABLE MOIETIES FROM ORGANOSILANE COMPOUNDS

Wen-Hsuan Chang, Gibsonia, and Edward L. Dufford, Sarver, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Apr. 30, 1985, Ser. No. 728,968
Int. Cl.[4] C08G *77/04*
U.S. Cl. 528—28 **25 Claims**

1. An ungelled partial hydrolysis product of an organosilicon-containing material, said organosilicon-containing material comprising greater than or equal to 10 mole percent of at least one organosilane compound corresponding to the formula R—Si—Y_3 in which R represents hydrogen, or a C_1–C_{10} group joined to Si through an Si—C linkage, and each Y independently represents an easily hydrolyzable group, wherein said partial hydrolysis product is prepared by hydrolyzing said easily hydrolyzable groups of said organosilane compound with water wherein the amount of water is determined according to the following formula

$$(E_{1,2}\times 0.5)+(E_{3,4}\times Z)=W,$$

wherein

W represents the total moles H20 employed calculated on total equivalents of said easily hydrolyzable groups given that one equivalent of said easily hydrolyzable groups corresponds to 1 mole of said easily hydrolyzable groups employed,

$E_{1,2}$ represents the total number of equivalents of Y employed from organosilane compounds containing one or two Y groups,

$E_{3,4}$ represents the total number of equivalents of Y employed from organosilane compounds containing three or four Y groups,

Z is a number in the range of from 0.023 to 0.43;

provided that said organosilicon-containing material has an average functionality of equal to or greater than 2.4 based on easily hydrolyzable Y groups attached to silicon atoms of organosilane compounds containing easily hydrolyzable Y groups present in said organosilicon-containing material but excluding easily hydrolyzable Y groups attached to silicon atoms of organosilane compounds having only 1 easily hydrolyzable Y group which may be present in said organosilicon-containing material.

4,604,444

CURABLE ORGANOPOLYSILOXANE COMPOSITIONS COMPRISING MICROENCAPSULATED HARDENING ACCELERATORS

André Donnadieu, Lyons, and Michel Letoffé , Sainte Foy les Lyon, both of France, assignors to Rhone-Poulenc Specialites Chimiques, Courbevoie, France

Filed Oct. 19, 1984, Ser. No. 662,518
Claims priority, application France, Oct. 19, 1983, 83 16614
Int. Cl.[4] C08G *77/04*
U.S. Cl. 528—34 **13 Claims**

1. A composition of matter comprising (A) 100 parts by weight of an α,ω-di(hydroxy)diorganopolysiloxane polymer having a viscosity of from 700 to 1,000,000 mPa.s at 25° C., which comprises diorganosiloxy recurring units of the formula R_2SiO, in which the symbols R, which may be identical or different, represent hydrocarbon radicals having from 1 to 8 carbon atoms, or substituted such hydrocarbon radicals bearing at least one halogen atom or cyano substituent, (B) 2 to 20 parts by weight of a cross-linking agent of the general formula:

$$R_pSi(OCOR')_{4-p'}$$

in which the symbol R is as defined above, the symbol R' represents a hydrocarbon radical devoid of aliphatic unsaturation and having from 1 to 15 carbon atoms and the symbol p represents zero or one, (C) 0.01 to 7 parts by weight, per 100 parts by weight of (A)+(B)+(C), of hardening accelerator therefor, said accelerator containing and/or generating water by chemical reaction when said accelerator is placed in contact with the polyacyloxysilane (B), and said accelerator being protectively microencapsulated within impermeable outer skin membranes adopted to be disrupted by thermal, irradiation or mechanical treatment to permit the release of said accelerator (C) therefrom and consequent curing of said composition.

4,604,445

POLYURETHANE PREPOLYMER COMPRISING THE REACTION PRODUCT OF AT LEAST TWO ACTIVE HYDROGEN CONTAINING SUBSTANCES WITH POLYISOCYANATE

Edward L. Kay, Akron, and Kenneth B. Roukos, Clinton, both of Ohio, assignors to The Firestone Tire & Rubber Co., Akron, Ohio

Filed Apr. 18, 1985, Ser. No. 724,693
Int. Cl.[4] C08G *18/12*
U.S. Cl. 528—64 **18 Claims**

1. A urethane prepolymer comprising:

the reaction product of a polyisocyanate and an effective amount of at least two low molecular weight polymers each having two or more end groups selected from the group consisting of hydroxyl, amine, or combinations thereof, said polymers having a low molecular weight of from about 100 to about 10,000, said polyisocyanate having the formula $R(N{=}C{=}O)_n$ where R is an aliphatic having from 2 to 20 carbon atoms, a cycloaliphatic having from 4 to 20 carbon atoms, an aromatic or aliphatic substituted aromatic having from 6 to about 20 carbon atoms, or combinations thereof, the urethane prepolymer having an improved low strain modulus and an improved tensile strength upon cure.

4,604,446

BONDING COMPOSITIONS AND SHAPED ARTICLES UTILIZING THE BONDING COMPOSITIONS

I. Daniel Sand, Jonesborough; Freddie A. Shepherd, and David R. Fagerburg, both of Kingsport, all of Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 26, 1984, Ser. No. 686,508
Int. Cl.[4] C08G *63/18*
U.S. Cl. 528—173 **1 Claim**

1. A copolyesterether containing repeating units from

(a) about 90–100 mole % 1.4-cyclohexanedicarboxylic acid which is at least 80% trans configuration;
(b) about 1–10 mole % of at least one difunctional sulfomonomer containing at least one metal sulfonate group attached to an aromatic nucleus wherein the functional groups are carboxyl, hydroxy or amino;
(c) about 3–12 mole % of poly(tetramethylene oxide) glycol;
(d) about 15–20 mole % 1.4-butanediol or about 45–65 mole % 1.4cyclohexanedimethanol; and
(e) ethylene glycol in an amount sufficient to bring the total of the glycol components to 100 mole %.

4,604,447

HALOGEN-FREE, HIGH FLASH POINT REACTANT SOLUTION

Gerald D. Malpass, Jr., Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.

Filed Nov. 22, 1983, Ser. No. 554,468
Int. Cl.[4] C08F *4/52*
U.S. Cl. 526—189 **22 Claims**

1. A halogen-free polymerization reactant solution useful in metathesis-catalysis comprising dicyclopentadiene; trialkyl aluminum, where each alkyl contains from 5 to 10 carbon atoms and where the trialkyl aluminum is present in a dicyclopentadiene to trialkyl aluminum molar ratio of about 80:1 to about 1300:1; and bis(2-methoxyethyl)ether, where the bis(2-methoxyethyl)ether is present in a trialkyl aluminum to bis(2-methoxyethyl)ether ratio of at least 1:0.5, said reactant solution having a flash point greater than 100° F.

4,604,448

MOULDING COMPOSITIONS FROM MELAMINE-FORMALDEHYDE RESOLES

Robert Farkas, Bishops Stortford, and Lothar M. Hohmann, London, both of England, assignors to Polymer Tectonics, Limited, London, England

PCT No. PCT/GB84/00247, § 371 Date Mar. 11, 1985, § 102(e) Date Mar. 11, 1985, PCT Pub. No. WO85/00374, PCT Pub. Date Jan. 31, 1985
PCT Filed Jul. 10, 1984, Ser. No. 711,568
Claims priority, application United Kingdom, Jul. 14, 1983, 8319106
Int. Cl.[4] C08G *12/32*; C08L *61/24, 61/28*
U.S. Cl. 528—232 **23 Claims**

1. A moulding composition comprising (i) a melamine-formaldehyde resole in which the mole ratio melamine:formaldehyde is in the range 1:1.1 to 1:5.0, and (ii) a glycol in an amount between 20 and 80% by weight, based on the weight of solid melamine-formaldehyde resole.

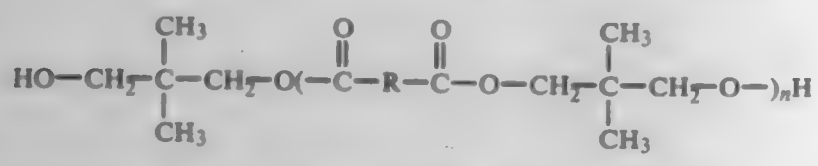
4,604,449

PROCESS FOR PREPARING POLY(ESTER-AMIDES)

Winston J. Jackson, Jr., and Herbert F. Kuhfuss, both of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 9, 1985, Ser. No. 785,647
Int. Cl.[4] C08G *63/44, 69/44*
U.S. Cl. 528—288 **4 Claims**

1. A process for preparing poly(ester-amides) which comprises reacting in molten form a compound of the formula



wherein n is 1–200 and R is divalent alicyclic radical having 4 to 20 carbon atoms, a divalent aliphatic radical having 4 to 20 carbon atoms or a divalent aromatic radical having 6 to 16 carbon atoms with the carbonyl linkages separated by at least 3 carbon atoms, with (a) about 5–50 mol % of a diamine of the formula

$$NH_2—CH_2—R^1—CH_2—NH_2$$

wherein R^1 is a divalent alicyclic radical having 4 to 20 carbon atoms, a divalent aliphatic radical having 0 to 20 carbon atoms or a divalent aromatic radical having 6 to 16 carbon atoms or (b) about 5–80 mol % of an aliphatic or cycloaliphatic amino alcohol having 4–20 carbon atoms to form a high melt viscosity polymer having an I.V. of at least 0.4.

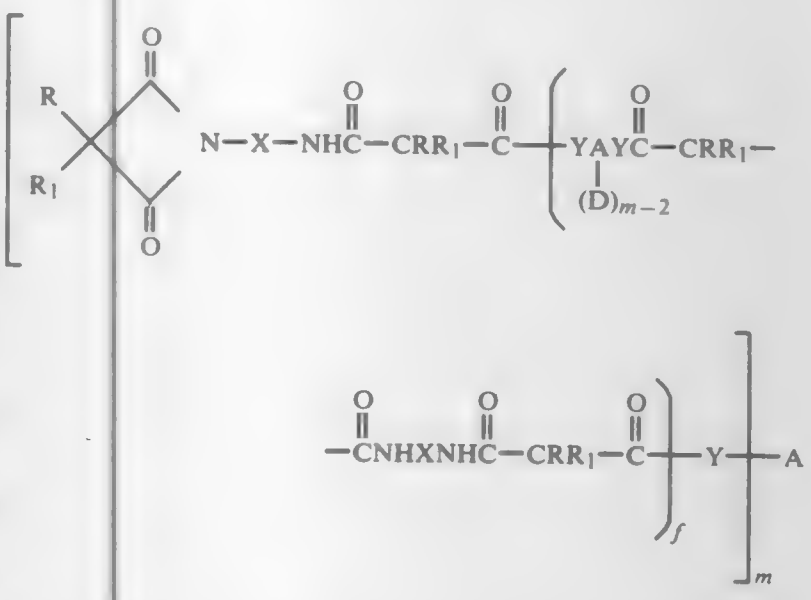
4,604,450

POLYMER FROM AZETIDINE-2,4-DIONE AND POLYOL OR POLYAMINE

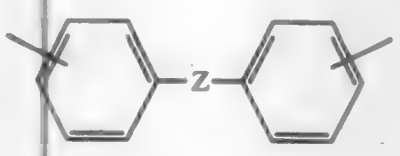
Shenghong A. Dai, Wallingford; Steven J. Grossman, Cheshire, and Kemal Onder, North Haven, all of Conn., assignors to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 608,004, May 7, 1984, Pat. No. 4,550,157. This application Aug. 16, 1985, Ser. No. 766,221
Int. Cl.[4] C08G *69/00*
U.S. Cl. 528—322 **16 Claims**

1. An azetidine-2,4-dione prepolymer having the formula



wherein A is the residue of a polymeric polyol or polyamine having a molecular weight of from about 400 to about 8000 and a functionality m of from about 2 to about 6, Y represents —O— when said A is the residue of a polymeric polyol and —NH— when said A is the residue of a polymeric polyamine, f has an average value between 0 and 1, D represents a branch unit when the functionality of said polymeric polyol or polyamine is greater than 2, R and R_1 when taken separately are independently selected from the group consisting of hydrogen and hydrocarbyl, and when R and R_1 are taken together with the carbon atom to which they are joined represent a cycloalkane having 4 to 8 ring carbon atoms, inclusive, and X is selected from the group consisting of lower alkylene, cycloalkylene, arylene, and divalent radicals having the formula



wherein Z is selected from the group consisting of —CO—, —O—, —SO_2—, and alkylene having 1 to 4 carbon atoms, inclusive.

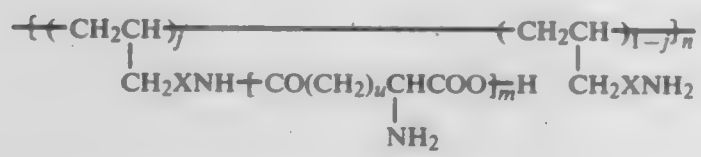
4,604,451

NOVEL FUNCTIONALIZED RESIN DERIVED FROM POLYALLYLAMINE

Susumu Harada; Kiyoshi Shimizu, and Masayuki Ujiie, all of Koriyama, Japan, assignors to Nitto Boseki Co., Ltd., Fukushima, Japan

Filed Nov. 13, 1984, Ser. No. 670,545
Claims priority, application Japan, Nov. 15, 1983, 58-214777
Int. Cl.[4] C08F *8/30*
U.S. Cl. 525—328.2 4 Claims

1. A functionalized resin represented by the general formula:



[I]

wherein, X represents the general formula

$$-NHCO(CH_2)_l\}_t \qquad [II]$$

t is 0 or 1, l is an integer of 1 to 20, $n \geqq 10$, $0<j<1$, u=1 or 2, and m=0 or 1, with the proviso that t and m are not simultaneously 0.

4,604,452

METAL CARBOXYLATE/ALKYLPHENOL CURING CATALYST FOR POLYCYANATE ESTERS OF POLYHYDRIC PHENOLS

David A. Shimp, Prospect, Ky., assignor to Celanese Corporation, New York, N.Y.

Filed Oct. 21, 1985, Ser. No. 789,678
Int. Cl.[4] C08G *73/00*
U.S. Cl. 528—422 27 Claims

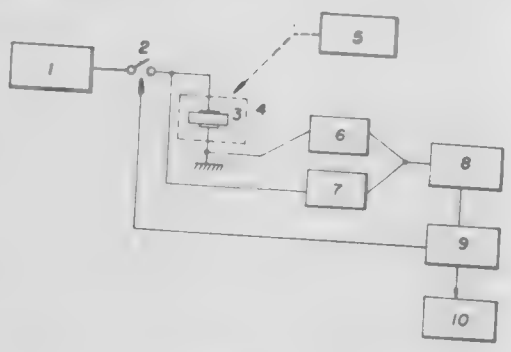
1. A curable composition comprising a polycyanate ester of a polyhydric phenol and a catalyst comprising a liquid solution of a metal carboxylate in an alkylphenol wherein the metal is a coordinating transition metal having 9 or more electrons in its next-to-outermost shell, wherein the carboxylate contains 4 to about 24 carbon atoms and wherein the alkylphenol has 1 or 2 alkyl substituents ortho or para to the phenol group and wherein the alkyl groups contain a total of 4 to about 24 carbon atoms.

4,604,453

POLYESTER COMPOSITION

Katsuaki Kuze; Yuziro Matsuyama; Yoshio Yamaoka; Ryuichi Murashige, all of Otsu, and Osamu Makimura, Ohgaki, all of Japan, assignors to Toyo Boseki Kabushiki Kaisha, Osaka, Japan

Filed Mar. 22, 1985, Ser. No. 714,996
Claims priority, application Japan, Mar. 22, 1984, 59-055836; Apr. 27, 1984, 59-087057; Jun. 13, 1984, 59-121525; Feb. 15, 1985, 60-028898
Int. Cl.[4] C08G *63/70*
U.S. Cl. 528—481 15 Claims



1. A polyester having an initial accumulation electric charge of not less than 2.9 $\mu c/mm^2$ when determined in a melt state according to the method comprising the following steps:

placing a polyester sample between two parallel electrodes separated by a distance of 1 cm, said two electrodes being maintained at 275° C. in a constant temperature chamber;

applying a voltage of 1200 V to said sample from a voltage source through a switch circuit which is opened or closed depending on a signal from a data treating device for a period of three minutes;

detecting resultant voltage and current values;

plotting the variation of the current value as a function of time on a graph;

calculating from the region (a) as shown in FIG. 2 the area bordered by the abscissa time value of 0.5 seconds and the abcissa time value corresponding to the initial current value to obtain an area value;

dividing said area value by the area of said electrodes to obtain the value of the initial accumulation electric charge.

2. The polyester according to claim 1, which has a heat resistance of not more than 0.210 when determined according to the method comprising the steps of:

admitting said polyester into a region having a nitrogen pressure of 100 mmHg;

sealing said region;

heating said polyester at 300° C. for two hours under a nitrogen pressure of 100 mmHg; and

measuring the change in intrinsic viscosity between the intrinsic viscosity at 30° C. and 300° C. to obtain the heat resistance value.

4,604,454

METHOD OF RECOVERING VINYL CHLORIDE RESIN

Masaaki Nishina, Takaoka; Shiro Imaizumi, Yokohama, and Osamu Ozaki, Himi, all of Japan, assignors to Nippon Zeon Co., Ltd., Tokyo, Japan

Filed Oct. 26, 1984, Ser. No. 665,118
Claims priority, application Japan, Oct. 28, 1983, 58-202025
Int. Cl.[4] C08F *6/24;* B07B *1/04*
U.S. Cl. 528—491 7 Claims

1. A method of recovering a vinyl chloride resin in the form of granules having good flow characteristics and suitable for use in paste processing, said method comprising the steps of

mixing an aqueous dispersion containing 10–70% by weight of a vinyl chloride resin at a temperature of 20° to 70° C. with from 0.5 to 30 parts by weight, per 100 parts by weight of the vinyl chloride resin in the aqueous dispersion, of an organic liquid which is difficultly soluble in water and does not dissolve nor swell the vinyl chloride resin to form a granular aggregate of the vinyl chloride resin,

classifying the granular aggregate by passing the granular aggregate through a sieve to thereby adjust the particle size of the granular aggregate to contain not more than 20% by weight of particles having a particle diameter of not more than 100 microns, and

dehydrating and drying the particle size-adjusted granular aggregate to thereby recover said vinyl chloride resin as an easily dispersible, non-agglomerating mass of granules having good flowability.

4,604,455

PROCESS OF PREPARING AZOALKANE MIXTURE CONTAINING AT LEAST ONE UNSYMMETRICAL AZOALKANE

Ronald E. MacLeay, Erie, N.Y., assignor to Pennwalt Corporation, Philadelphia, Pa.

Filed Dec. 14, 1984, Ser. No. 681,731
Int. Cl.[4] C07C *107/02*
U.S. Cl. 534—587 8 Claims

1. A process of preparing a mixture of azoalkanes comprising reacting 4 equivalents of a mixture of at least two amines

having the structures $R'—NH_2$ and $R—NH_2$ wherein R and R' are different and independently selected from the group consisting of a straight chain or branched alkyl of 1 to 22 carbons, a cycloalkyl of 3 to 12 carbons, and an aralkyl of 7 to 11 carbons, with the proviso that there can not be two aralkyl groups on the same azoalkane, with 1 equivalent of sulfuryl chloride in an anhydrous inert solvent until the reaction is completed, and then oxidizing the mixture of sulfamide products with basic bleach after removing the amine hydrochloride side products with an aqueous wash to form the mixture product of at least two azoalkanes, at least one of which is unsymmetrical of the structure R—N=N—R' and at least one other is symmetrical of the structure R'—N=N—R' or R—N=N—R', with the further proviso that in the oxidation of the more difficult to oxidize sulfamides, the solvent content is reduced to a minimal amount prior to the addition of the oxidizing solution or during the oxidation reaction.

4,604,456

CEPHEM AND CEPHAM COMPOUNDS

Takao Takaya, Kawanishi; Hisashi Takasugi, Kohamanishi; Kiyoshi Tsuji, Osaka, and Toshiyuki Chiba, Nara, all of Japan, assignors to Fujisawa Pharmaceutical Company, Limited, Osaka, Japan

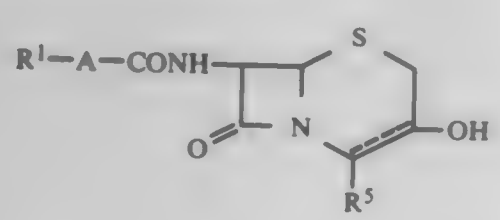
Division of Ser. No. 886,340, Mar. 14, 1978, Pat. No. 4,425,341. This application Oct. 19, 1983, Ser. No. 543,297

Claims priority, application United Kingdom, Mar. 14, 1977, 10699/77; Jul. 12, 1977, 29245/77; Oct. 11, 1977, 42315/77; Jan. 3, 1978, 75/78

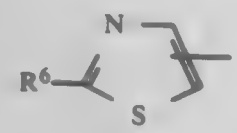
Int. Cl.⁴ C07D *501/22*; A61K *31/545*

U.S. Cl. 540—222 **16 Claims**

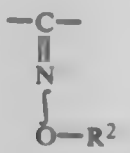
1. A compound of the formula



wherein R^1 is thiadiazolyl, thiazolyl of the formula:



in which R^6 is amino or protected amino, A is a group of the formula:



in which

R^2 is alkyl which may be substituted with halogen, carboxy or esterified carboxy,

R^5 is carboxy or functionally modified carboxy, and the dotted line represents 3-cephem and cepham nuclei, inclusively,

and pharmaceutically acceptable salt thereof.

4,604,457

2-SUBSTITUTED CEPHEM DERIVATIVES AND PROCESS FOR PREPARING THE SAME

Shigeru Torii; Hideo Tanaka; Junzo Nogami, all of Okayama; Michio Sasaoka, Tokushima; Norio Saito, Tokushima, and Takashi Shiroi, Tokushima, all of Japan, assignors to Otsuka Kagaku Kabushiki Kaisha, Osaka, Japan

PCT No. PCT/JP83/00299, § 371 Date May 8, 1984, § 102(e) Date May 8, 1984, PCT Pub. No. WO84/00965, PCT Pub. Date Mar. 15, 1984

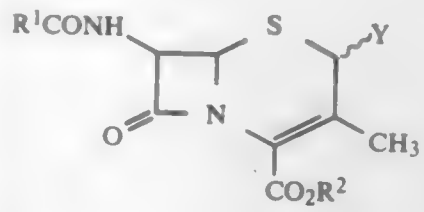
PCT Filed Sep. 6, 1983, Ser. No. 614,162

Claims priority, application Japan, Sep. 9, 1982, 57-157581

Int. Cl.⁴ C07D *501/22*

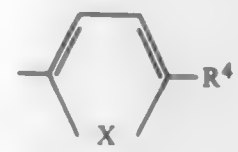
U.S. Cl. 540—223 **3 Claims**

1. A compound represented by the formula:



(II)

wherein R^1 represents phenyl; phenyl substituted with lower alkyl, lower alkoxy, halogen or nitro; phenylmethyl; phenylmethyl substituted with lower alkyl, lower alkoxy, halogen or nitro on the benzene nucleus; phenoxymethyl; or phenoxymethyl substituted with lower alkyl, lower alkoxy, halogen or nitro on the benzene nucleus: R^2 represents hydrogen atom or protective group for carboxylic acid: and Y represents carboxyalkylthio group or group of the formula:



wherein R^4 represents hydrogen atom or lower alkyl group and X represents —O—, —S— or $>N—CH_3$.

4,604,458

3-SUBSTITUTED CARBONYLOXY-7-DISUBSTITUTED AMINO-10-SUBSTITUTED CARBONYLPHENOTHIAZINES

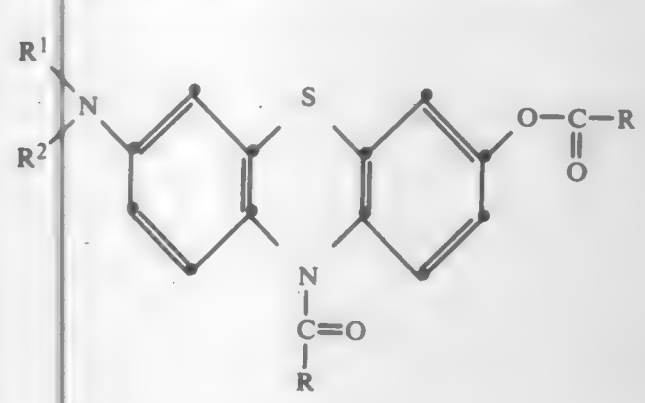
William M. Hung, Cincinnati, Ohio, assignor to The Hilton-Davis Chemical Co., Cincinnati, Ohio

Division of Ser. No. 636,464, Jul. 31, 1984, Pat. No. 4,551,740. This application Sep. 3, 1985, Ser. No. 771,875

Int. Cl.⁴ C07D *265/28*

U.S. Cl. 544—37 **6 Claims**

1. A compound having the structural formula



wherein:

R represents non-tertiary C_1 to C_{12} alkyl, C_4 to C_8 cycloalkyl, non-tertiary C_1 to C_{12} alkyl substituted with halogen, non-tertiary C_1 to C_4 alkoxy or non-tertiary C_1 to C_4 alkoxycarbonyl, phenyl or phenyl substituted by one to three of non-tertiary C_1 to C_4 alkyl, non-tertiary C_1 to C_4 alkoxy, nitro, halo, phenyl or cyano; and

R^1 and R^2 independently represent non-tertiary C_1 to C_4 alkyl, phenyl, phenyl substituted by one or two of halo, nitro, non-tertiary C_1 to C_4 alkyl or non-tertiary C_1 to C_4 alkoxy, benzyl or benzyl substituted in the benzene ring by one or two of halo, nitro, non-tertiary C_1 to C_4 alkyl or non-tertiary C_1 to C_4 alkoxy.

4,604,459

TRIPHENDIOXAZINE REACTIVE DYESTUFFS

Horst Jäger, Leverkusen, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

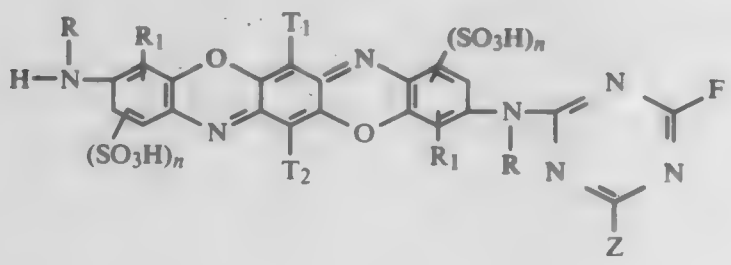
Filed Jun. 6, 1985, Ser. No. 741,769

Claims priority, application Fed. Rep. of Germany, Jun. 27, 1984, 3423581

Int. Cl.[4] C09B *19/00, 19/02*

U.S. Cl. 544—76 **3 Claims**

1. A dyestuff of the formula



wherein

R=H or C_1-C_4-alkyl,

R_1=H, CH_3, C_2H_5, Cl, OCH_3, OC_2H_5 or COOH,

T_1, T_2=H, Cl, Br, C_1-C_4-alkyl, C_1-C_4-alkoxy, phenyl or phenoxy,

Z=optionally substituted amino group,

n=0, 1 or 2.

4,604,460

1-OXADETHIACEPHAM COMPOUNDS

Mitsuru Yoshioka; Uyeo Shoichiro, both of Toyonaka; Yoshio Hamashima, Kyoto; Ikuo Kikkawa, Takarazuka; Teruji Tsuji, Takatsuki, and Wataru Nagata, Nishinomiya, all of Japan, assignors to Shionogi & Co., Ltd., Osaka, Japan

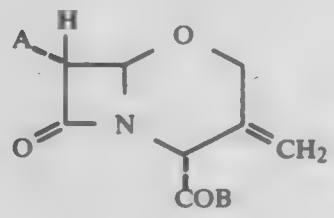
Division of Ser. No. 374,862, May 4, 1982, Pat. No. 4,443,598, which is a continuation-in-part of Ser. No. 322,662, Nov. 18, 1981, Pat. No. 4,366,316, which is a continuation of Ser. No. 72,600, Sep. 5, 1979, abandoned, which is a continuation of Ser. No. 877,811, Feb. 14, 1978, abandoned. This application Oct. 17, 1983, Ser. No. 542,520

Claims priority, application Japan, Feb. 15, 1977, 52-15813; Jun. 6, 1977, 52-67025; Oct. 1, 1980, 55-138092

Int. Cl.[4] C07D *498/04*

U.S. Cl. 544—90 **2 Claims**

1. A compound of the formula:



wherein

A is benzoylamino, methylbenzoylamino, chlorobenzoylamino, nitrobenzoylamino, or cyanobenzoylamino, and

B is hydroxy, benzyloxy, tolylmethoxy, chlorobenzyloxy, diphenylmethoxy, naphthylmethoxy, t-butoxy, or trimethylsilyloxy.

4,604,461

5-SUBSTITUTED-9-DISUBSTITUTED AMINO-12-SUBSTITUTED CARBONYLBENZO[A]PHENOXAZINES

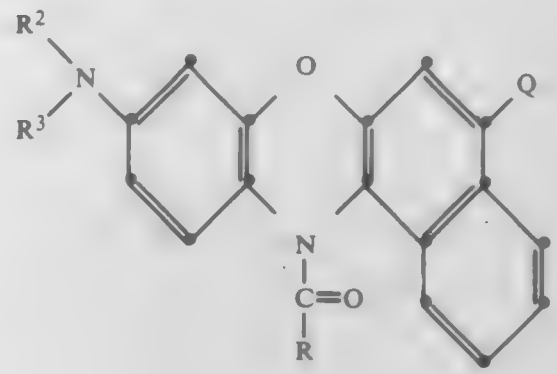
William M. Hung, Cincinnati, Ohio, assignor to The Hilton-Davis Chemical Co., Cincinnati, Ohio

Division of Ser. No. 636,461, Jul. 31, 1984, Pat. No. 4,570,171. This application Sep. 3, 1985, Ser. No. 772,096

Int. Cl.[4] C07D *265/28*

U.S. Cl. 544—99 **8 Claims**

1. A compound having the structural formula



wherein:

Q represents [N-R^1-N-(RCO)amino] or (RCOO);

R represents non-tertiary C_1 to C_{12} alkyl, C_4 to C_8 cycloalkyl, non-tertiary C_1 to C_{12} alkyl substituted with halogen, phenyl or phenyl substituted by one to three of non-tertiary C_1 to C_4 alkyl, non-tertiary C_1 to C_4 alkoxy, nitro, halo, phenyl, cyano, or trihalomethyl; and

R^1, R^2 and R^3 independently represent non-tertiary C_1 to C_4 alkyl, phenyl, phenyl substituted by one or two of halo, nitro, non-tertiary C_1 to C_4 alkyl or non-tertiary C_1 to C_4 alkoxy, benzyl or benzyl substituted in the benzene ring by one or two of halo, nitro, non-tertiary C_1 to C_4 alkyl or non-tertiary C_1 to C_4 alkoxy.

4,604,462

4-SUBSTITUTED AMIDO-8-DISUBSTITUTED AMINOIMIDAZOPHENOXAZINES

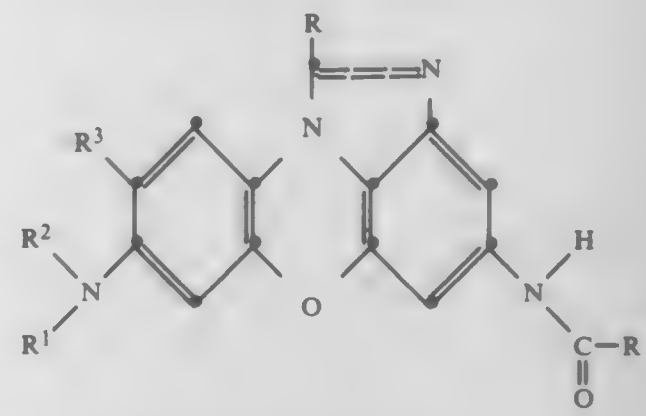
William M. Hung, Cincinnati, Ohio, assignor to The Hilton-Davis Chemical Co., Cincinnati, Ohio

Division of Ser. No. 636,471, Jul. 31, 1984, Pat. No. 4,549,192. This application Sep. 3, 1985, Ser. No. 771,866

Int. Cl.[4] C07D *279/30*

U.S. Cl. 544—99 **9 Claims**

1. A compound having the structural formula



wherein:

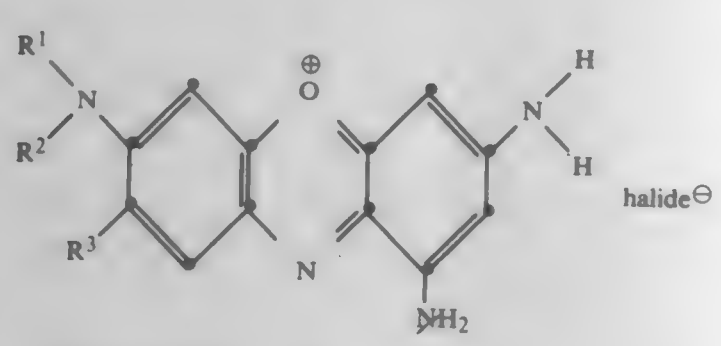
R represents non-tertiary C_1 to C_{12} alkyl, C_4 to C_8 cycloalkyl, non-tertiary C_1 to C_{12} alkyl substituted with halogen, non-tertiary C_1 to C_4 alkoxy or non-tertiary C_1 to C_4 alkoxycarbonyl, phenyl or phenyl substituted by one to three of non-tertiary C_1 to C_4 alkyl, non-tertiary C_1 to C_4 alkoxy, nitro, halo, phenyl, cyano, or trihalomethyl;

R^1 and R^2 independently represent non-tertiary C_1 to C_4 alkyl, phenyl, phenyl substituted by one or two of halo, nitro, non-tertiary C_1 to C_4 alkyl or non-tertiary C_1 to C_4

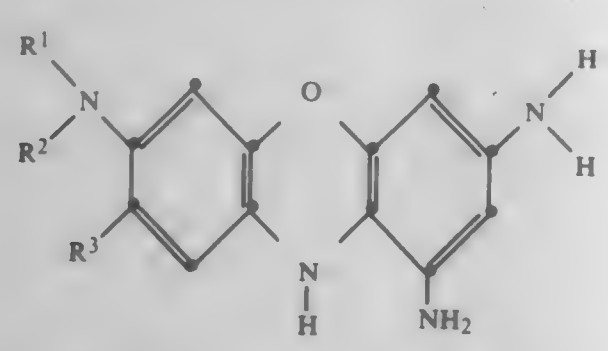
alkoxy, benzyl or benzyl substituted in the benzene ring by one or two of halo, nitro, non-tertiary C_1 to C_4 alkyl or non-tertiary C_1 to C_4 alkoxy; and

R^3 represents hydrogen or non-tertiary C_1 to C_4 alkyl.

7. A process for preparing a compound according to claim 1 which comprises in a first step, interacting a compound having the structural formula



with a reducing agent to obtain the corresponding leuco compound having the structural formula



and, in a second step, interacting the leuco compound with at least two molecular equivalents of an acylating agent having the structural formula R-CO-Z in which Z represents halo or RCOO, and R, R^1, R^2 and R^3 have the same respective meanings given in claim 1.

4,604,463

CAMPTOTHECIN DERIVATIVES AND PROCESS FOR PREPARING SAME

Tadashi Miyasaka, Kanagawa; Seigo Sawada, Tokyo; Kenichiro Nokata, Tokyo; Eiichi Sugino, Tokyo, and Masahiko Mutai, Tokyo, all of Japan, assignors to Kabushiki Kaisha Yakult Honsha, Tokyo, Japan

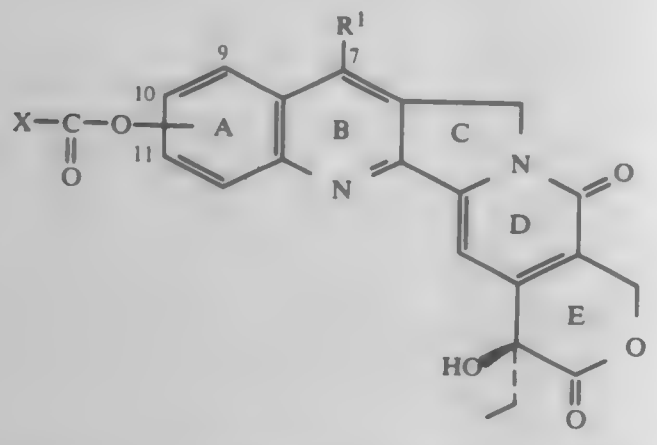
Filed Jul. 5, 1984, Ser. No. 627,980

Claims priority, application Japan, Jul. 14, 1983, 58-126946

Int. Cl.[4] C07D *491/22*

U.S. Cl. 544—125 25 Claims

1. Camptothecin derivatives of the formula:



wherein R^1 is a hydrogen atom, a halogen atom or an alkyl group with 1–4 carbon atoms and X is a chlorine atom or $-NR^2R^3$ where R^2 and R^3 are the same or different and each represents a hydrogen atom, a substituted or unsubstituted alkyl group with 1–4 carbon atoms or a substituted or unsubstituted group selected from the group consisting of cyclopentyl, cyclohexyl, N-methylpiperidyl-(4), 2-pyrrolidyl, phenyl, tolyl, xylyl, pyridyl-2 and 2-methylpyridyl-(4), with the proviso that when both R^2 and R^3 are the substituted or unsubstituted alkyl groups, they may be combined together with the nitrogen atom, to which they are bonded, to form a heterocyclic ring selected from the group consisting of pyrrolidine, piperidine, 2-oxapyrrolidine, morpholine, thiomorpholine and 4-R^4 piperizine rings in which R^4 is a hydrogen atom, a substituted or unsubstitued alkyl group with 1–4 carbon atoms or a substituted or unsubstituted phenyl group and wherein the grouping —O—CO—X is bonded to a carbon atom located in any of the 9-, 10- and 11-positions in the ring A, and ammonium salts or alkali metal salts thereof.

4,604,464

IMMUNOMODULATORY 3-(SUBSTITUTED AMINOBENZOYL)-3,4-DIHYDROPHTHALAZIN-1(2H)-ONES

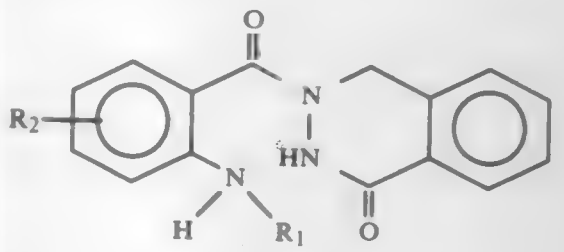
Robert J. Murray, Penfield, N.Y., assignor to Pennwalt Corporation, Philadelphia, Pa.

Filed Aug. 1, 1984, Ser. No. 636,633

Int. Cl.[4] C07D *237/30*

U.S. Cl. 544—237 14 Claims

1. A compound of the formula



wherein

R_1 is H, C_1–C_4 lower alkyl, C_3–C_7 cycloalkyl, C_6–C_{14} aryl, benzyl, or C_6–C_{14} aryl monosubstituted with or disubstituted with either methyl or trifluoromethyl, and

R_2 is H, C_1–C_4 lower alkyl, C_1–C_8 alkoxy, OH, NH_2 or NO_2.

4,604,465

HALOGUANIDINE INTERMEDIATES

Tobias O. Yellin, Wallingford, Pa.; Philip N. Edwards, Bramhall, and Michael S. Large, Congleton, both of England, assignors to ICI Americas, Inc., Wilmington, Del. and Imperial Chemical Industries, Limited, Welwyn Garden City, England

Division of Ser. No. 206,005, Nov. 12, 1980, Pat. No. 4,362,728.

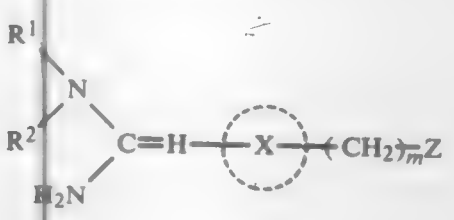
This application Sep. 21, 1982, Ser. No. 420,863

Claims priority, application United Kingdom, Nov. 13, 1979, 7939232; Apr. 18, 1980, 8012789; Aug. 13, 1980, 8026420

Int. Cl.[4] C07D *239/42;* A61K *31/505*

U.S. Cl. 544—326 5 Claims

1. A guanidine derivative of the formula:



in which

R^1 and R^2, which may be the same or different, are hydrogen atoms or branched or unbranched alkyl radicals of 1 to 10 carbon atoms, cycloalkyl radicals of 3 to 8 carbon atoms or cycloalkylalkyl radicals in which the alkyl part is of 1 to 6 carbon atoms and the cycloalkyl part is of 3 to 8 carbon atoms, each of the alkyl, cycloalkyl and cycloalkylalkyl radicals being optionally substituted by one or more halogen atoms selected from fluorine, chlorine and bromine atoms, provided that at least one of R^1 and R^2 is a halogen substituted alkyl, cycloalkyl or cycloalkylalkyl radical and provided that there is no halogen substituent on the carbon atom of the alkyl, cycloalkyl or cycloalky-

lalkyl radical which is directly attached to the nitrogen atom;

ring X is a pyrimidine, ring which may, where possible, carry a single optional substituent, the optional substituents on ring X being selected from fluorine, chlorine, bromine and iodine atoms and alkyl, alkoxy and alkylthio radicals of 1 to 6 carbon atoms, trifluoromethyl, hydroxy and amino radicals;

Z is a radical of the formula $—Y—(CH_2)_n—NH_2$, —Q—H or —Cl;

Y is an oxygen or sulphur atom, a direct bond, a methylene, cis or trans vinylene or sulphinyl radical or a radical of the formula NR^4 in which R^4 is a hydrogen atom or an alkyl radical of 1 to 6 carbon atoms;

m is 0 to 4 and n is 1 to 5, provided that when Y is an oxygen atom, a sulphinyl radical or a radical of the formula NR^4, n is 2 to 5; and

Q is an oxygen or sulfur atom or a radical of the formula NR^4.

4,604,466

PIPERIDINE-SUBSTITUTED PYRIMIDINES

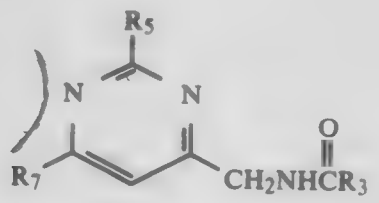
James J. Wade, Oakdale, Minn., assignor to Riker Laboratories, Inc., St. Paul, Minn.

Division of Ser. No. 519,707, Aug. 2, 1983, Pat. No. 4,478,835. This application Aug. 16, 1984, Ser. No. 641,515

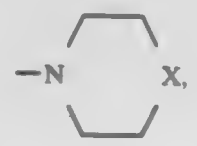
Int. Cl.[4] C07D *239/42, 239/47, 239/48, 239/46*

U.S. Cl. 544—330 4 Claims

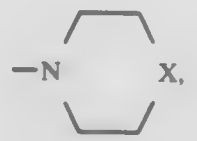
1. A compound of the formula



wherein R_3 is hydrogen, lower alkyl or phenyl; R_5 is amino, N-(lower)alkylamino, N,N-di(lower)alkylamino, mercapto, phenylthio, benzylthio, lower alkoxy, lower alkylthio or

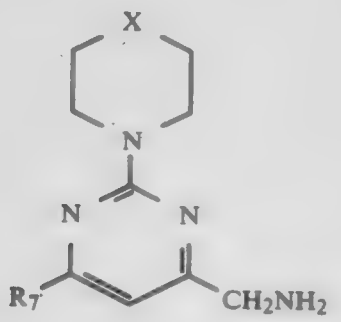


wherein X is methylene; and R_7 is hydrogen, methyl, lower alkoxy, lower alkylthio, or lower



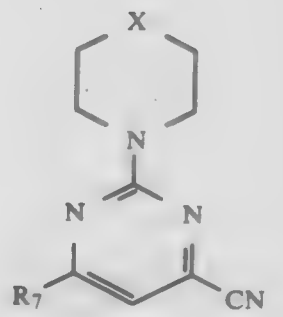
wherein X is methylene; with the proviso that at least one of R_5 and R_7 is said heterocyclic substituent.

3. The compound



wherein R_7 is hydrogen or methyl; and X is methylene.

4. The compound



wherein R_7 is hydrogen or methyl; and X is methylene.

4,604,467

CERTAIN 4-(3,4-DIBROMOCYCLOHEXYL)PYRIDINES

Venkataraman Ramachandran, and Paul F. Ranken, both of Baton Rouge, La., assignors to Ethyl Corporation, Richmond, Va.

Division of Ser. No. 511,831, Jul. 8, 1983, abandoned. This application Mar. 25, 1985, Ser. No. 715,672

Int. Cl.[4] C07D *213/26*

U.S. Cl. 546—346 3 Claims

1. 4-(3,4-Dibromocyclohexyl)pyridine.

4,604,468

INTERMEDIATE 1-ALKYLENYL-1H-BENZIMIDAZOL-2-ONE DERIVATIVES

Herbert Köppe, Ingelheim am Rhein; Anton Mentrup, Mainz-Kastel; Ernst-Otto Renth; Kurt Schromm, both of Ingelheim am Rhein; Wolfgang Hoefke, Budenheim, and Gojko Muaceic, Ingelheim am Rhein, all of Fed. Rep. of Germany, assignors to Boehringer Ingelheim International GmbH, Ingelheim am Rhein, Fed. Rep. of Germany

Continuation of Ser. No. 371,072, Apr. 23, 1984, abandoned, which is a division of Ser. No. 255,751, Apr. 20, 1981, Pat. No. 4,343,800, which is a division of Ser. No. 112,640, Jan. 16, 1980, Pat. No. 4,296,117, which is a division of Ser. No. 4,279, Jan. 17, 1979, Pat. No. 4,256,756, and a continuation-in-part of Ser. No. 838,450, Oct. 3, 1977, abandoned. This application Jul. 25, 1984, Ser. No. 634,446

Claims priority, application Fed. Rep. of Germany, Oct. 5, 1976, 2644833

The portion of the term of this patent subsequent to Jul. 29, 1997, has been disclaimed.

Int. Cl.[4] C07D *235/26*

U.S. Cl. 548—305 1 Claim

1. A compound of the formula

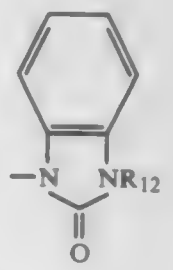
$$X_a—D—R_5'$$

wherein

X_a is halogen, mesyl, tosyl, or HNR_4—, where R_4 is hydrocarbyl aralkyl having from 7 to 14 carbon atoms;

D is alkylene having from 1 to 12 carbon atoms; and

R_5' is



where R_{12} is hydrogen or lower alkyl, with the proviso that when D is alkylene having from 2 to 6 carbon atoms and

R_{12} is a hydrogen or alkyl having from 1 to 4 carbon atoms, then R_4 cannot be benzyl.

4,604,469

PROCESS FOR THE RESOLUTION OF PYRANO[3,4-B]INDOLE-1-ACETIC ACIDS

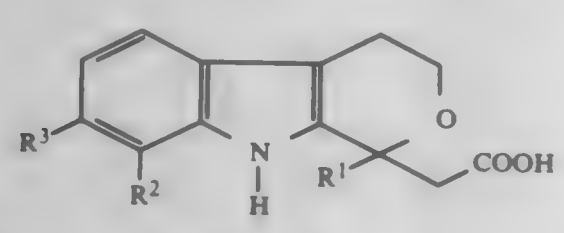
Christopher A. Demerson, Plainsboro, and Leslie G. Humber, North Brunswick, both of N.J., assignors to American Home Products Corporation, New York, N.Y.

Continuation of Ser. No. 580,901, Feb. 16, 1984, Pat. No. 4,544,757. This application May 14, 1985, Ser. No. 734,001

Int. Cl.[4] C07D *491/052*

U.S. Cl. 548—432 3 Claims

1. A (+) enantiomer of a compound of formula I



(I)

in which R^1 is lower alkyl, and R^2 and R^3 each is hydrogen, lower alkyl or halo.

4,604,470

PROCESS FOR THE ISOMERIZATION OF HALOGENATED THIOPHENES

Klaus Eichler, Eschborn, and Ernst I. Leupold, Neu-Anspach, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed May 23, 1985, Ser. No. 737,179

Claims priority, application Fed. Rep. of Germany, May 25, 1984, 3419555

Int. Cl.[4] C07D *333/28*

U.S. Cl. 549—81 13 Claims

1. A process for isomerizing a mono-, di- or trihalogenated thiophene containing a halogen at an alpha position by moving the halogen to an adjacent beta position, which comprises bringing the mono-, di- or trihalogenated thiophene, or a mixture thereof, into contact with a zeolite catalyst of the pentasil, mordenite or faujasite type at a temperature between 150° and 550° C.

4,604,471

FURAN-3-CARBOHYDROXAMATES AND THEIR USE

Peter Neumann, Wiesloch; Michael Thomas, Weisenheim; Stefan Weiss, Neckargemuend, and Hübert Traüth, Dudenhofen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

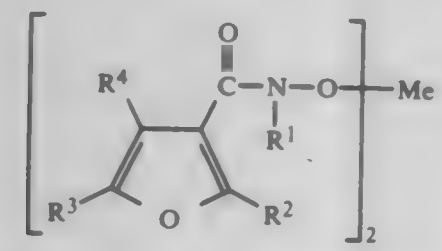
Filed Nov. 21, 1984, Ser. No. 673,784

Claims priority, application Fed. Rep. of Germany, Nov. 23, 1983, 3342219

Int. Cl.[4] C07F *15/04, 15/06*

U.S. Cl. 549—210 10 Claims

1. A furan-3-carbohydroxamate of the formula:



wherein R^1 is C_1–C_{18}-alkyl, C_3–C_8-cycloalkyl which is unsubstituted or monosubstituted or disubstituted by C_1–C_4-alkyl, or phenyl which is unsubstituted or monosubstituted or disubstituted or trisubstituted by identical or different substituents selected from the group consisting of C_1–C_{12} alkyl, chlorine, bromine or C_1–C_{12} alkoxy, R^2 is methyl or ethyl, R^3 and R^4 independently of one another are each hydrogen, bromine, chlorine, or C_1–C_{18}-alkyl which is unsubstituted or monosubstituted or disubstituted by chlorine, bromine or C_1–C_4-alkoxy, or are each $—CH_2—COOR^5$, where R^5 is C_1–C_{18}-alkyl which is unsubstituted or monosubstituted or disubstituted by chlorine, bromine or C_1–C_4-alkoxy, and Me is divalent nickel or cobalt.

4,604,472

OCTAHYDRONAPHTHALENE DERIVATIVES AND THEIR PREPARATION

Junya Ide; Shigeki Muramatsu; Yoshio Tsujita, and Masao Kuroda, all of Hiromachi, Japan, assignors to Sankyo Company Limited, Tokyo, Japan

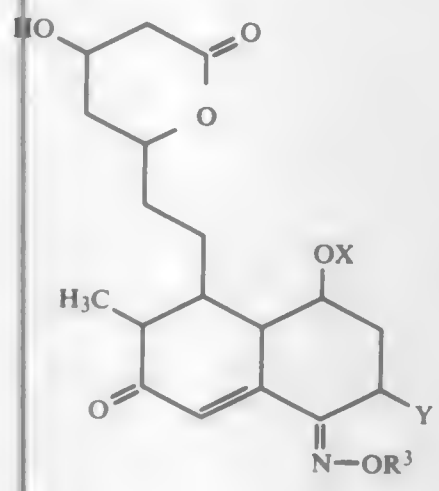
Continuation of Ser. No. 421,395, Sep. 22, 1982, abandoned. This application Jul. 9, 1985, Ser. No. 753,254

Claims priority, application Japan, Sep. 25, 1981, 56-151871

Int. Cl.[4] C07D *309/30*

U.S. Cl. 549—292 31 Claims

1. The compounds of the formula:



(I)

wherein:

X is a hydrogen atom or a 2-methylbutyryl group;

Y is a hydrogen atom or a methyl group; and

R^3 is a hydrogen atom or an alkyl group having 1-6 carbon atoms.

4,604,473

PREPARATION OF METAL ALKYLS

David J. Cole-Hamilton, Ormskirk; Anthony C. Jones, St Helens, and John B. Mullin, West Malvern, all of England, assignors to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

Filed Jun. 13, 1984, Ser. No. 620,256

Claims priority, application United Kingdom, Jun. 17, 1983, 8316605

Int. Cl.[4] C07F *5/00*

U.S. Cl. 556—1 10 Claims

1. A method of providing a trialkyl gallium compound having the formula $(R_A)_3Ga$ wherein said formula R_A is independently selected from methyl and ethyl, said method comprising the steps of:

(a) forming an ether adduct of said trialkyl gallium compound, said ether adduct having the formula $(R_A)_3Ga.R_1.R_2O$ by reacting, in a mixture, a gallium trihalide with a Grignard reagent in the presence of an ether, said Grignard reagent having the formula R_aMgQ wherein Q is a halogen and each R_A is independently selected from methyl and ethyl, said ether having a boiling point at least 50° C. above said trialkyl gallium compound, said ether having the formula R_1R_2O wherein R_1 and R_2 are independently selected from alkyl and phenyl radicals such that when R_1 and R_2 are both alkyl at least one of R_1 and R_2 has at least five carbon atoms; and

(b) heating said ether adduct to provide dissociation thereof

thereby releasing said trialkyl gallium compound of the formula $(R_A)_3Ga$ into the vapor phase.

4,604,474

RHODIUM-PHOSPHINE COMPLEX

Hidenori Kumobayashi, and Susumu Akutagawa, both of Kanagawa, Japan, assignors to Takasago Perfumery Co., Ltd., Tokyo, Japan

Filed Mar. 21, 1985, Ser. No. 714,281
Claims priority, application Japan, Mar. 22, 1984, 59-53600
Int. Cl.[4] C07F *15/00*
U.S. Cl. 556—7 1 Claim

1. A rhodium-phosphine complex represented by the formula (I):

$$[Rh(p\text{-Tolyl BINAP})_2]^+ Y^- \quad (I)$$

wherein p-Tolyl BINAP represents 2,2'-bis(di-p-tolylphosphino)-1,1'-binaphthyl which is a racemic substance or optically active substance; and Y represents ClO_4, PF_6, BF_4 or PCl_6.

4,604,475

METHOD FOR MAKING ORGANOTIN HALIDES

Max Buschhoff, Luenen, and Wilhelm P. Neumann, Dortmund-Kirchhoerde, both of Fed. Rep. of Germany, assignors to Schering AG, Berlin and Bergkamen, Fed. Rep. of Germany

Filed Mar. 19, 1985, Ser. No. 713,486
Claims priority, application Fed. Rep. of Germany, Mar. 30, 1984, 3411834
Int. Cl.[4] C07F *7/22*
U.S. Cl. 556—97 5 Claims

1. A method for making an organotin halide of the formula R_3SnX, R_2SnX_2, or $RSnX_3$, or a mixture of two or more of such halides, wherein R is saturated hydrocarbon and X is halide, which comprises redistributing an appropriate mixture of an organotin compound of the type R_4Sn, R_3SnX, or R_2SnX_2 with a tin halide of the type R_2SnX_2, $RSnX_3$, or SnX_4 in a homogeneous phase at a temperature above about 210° C. in the presence of stannous fluoride as a catalyst.

4,604,476

ODOR-STABILIZED MERCAPTOALKYL ALKOXYSILANES AND A METHOD FOR THEIR PREPARATION

Claus-Dietrich Seiler, Rheinfelden, and Hans-Joachim Vahlensieck, Wehr, both of Fed. Rep. of Germany, assignors to Dynamit Nobel AG, Troisdorf, Fed. Rep. of Germany

Filed Dec. 19, 1984, Ser. No. 683,385
Claims priority, application Fed. Rep. of Germany, Feb. 23, 1984, 3406534
Int. Cl.[4] C07F *7/08*
U.S. Cl. 556—401 8 Claims

1. An odor-stabilized mercaptoalkyl alkoxysilane, comprising 100 to 500 ppm of compounds containing oxirane groups.

4,604,477

METHOD FOR MAKING SILYLAROYLHALIDES AND REACTION PRODUCTS

Jonathan D. Rich, Ballston Lake, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Mar. 29, 1985, Ser. No. 718,039
Int. Cl.[4] C07F *7/08, 7/18*
U.S. Cl. 556—436 10 Claims

1. A method for making halosilylaroylhalide which comprises,

(A) effecting reaction between substantially equivalent amounts of an aromatic polyacyl halide and an organic halopolysilane having halogen radicals attached to silicon in the presence of an effective amount of a transition metal catalyst,

(B) thereafter recovering silylaroylhalide from the mixture of (1).

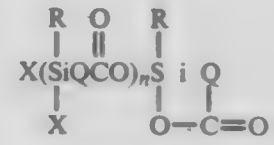
4,604,478

METHOD FOR SILALACTONE PREPARATION AND USE

Donnie R. Juen, Sanford, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Filed May 17, 1985, Ser. No. 734,999
Int. Cl.[4] C07F *7/08, 7/18*
U.S. Cl. 556—439 14 Claims

1. A method comprising heating, under substantially anhydrous conditions, a reaction mixture comprising a catalyst selected from the group consisting of tertiary amines and tertiary phosphines and an ester having the formula $X_2RSiQ\text{-}COOR'$ wherein X denotes a chlorine or bromine atom, R denotes a monovalent hydrocarbon radical, Q denotes a divalent hydrocarbon radical, there being at least two carbon atoms in Q separating a silicon atom and a carbonyl carbon atom, and R' denotes an alkyl radical, said heating being sufficient to produce a silalactone composition having the formula



wherein X, R and Q have the meanings recited above and n has an average value greater than zero.

4,604,479

SILICONE-CONTAINING CONTACT LENS MATERIAL AND CONTACT LENSES MADE THEREOF

Edward J. Ellis, Georgetown, Mass., assignor to Polymer Technology Corporation, Wilmington, Mass.

Division of Ser. No. 327,279, Dec. 4, 1981, Pat. No. 4,424,328.
This application Jun. 3, 1983, Ser. No. 501,293
Int. Cl.[4] C07F *7/08, 7/18*
U.S. Cl. 556—440 2 Claims

1. 1,7-Bis(γ-methacryloxypropyl)-1,1,3,3,5,5,7,7-octa(trimethylsiloxy) tetrasiloxane.

4,604,480

METHOD FOR THE PREPARATION OF SULFONES AND COMPOUNDS CONTAINING CARBON CHAINS HAVING CONJUGATED UNSATURATION AND THE COMPOUNDS RESULTING FROM SUCH METHOD

Eric Block, Delmar, and Mohammad Aslam, Menands, both of N.Y., assignors to The Research Foundation of State University of New York, Albany, N.Y.

Filed Aug. 15, 1983, Ser. No. 523,276
Int. Cl.[4] C07F *7/04;* C07C *2/76*
U.S. Cl. 556—445 10 Claims

1. A method for the preparation of conjugated aliphatically unsaturated compounds, which comprises the steps of reacting a starting compound containing carbon-carbon aliphatic unsaturation with a 1-haloalkyl 1-sulfonyl bromide at a temperature below 25° for less than 12 hours followed by treating the reaction product with sufficient base to eliminate two hydrogen ions, one halogen ion, one bromine ion and an SO_2 group from the reaction product to yield a compound having two conjugated carbon-carbon double bonds.

4,604,481

COMPOUNDS FOR TREATMENT OR PROPHYLAXIS OF CARDIAC DISORDERS

Sheung-tsam Kam, Vernon Hills; Paul W. Erhardt; Robert J. Borgman, both of Mundelein, all of Ill., and John P. O'Donnell, Morgantown, W. Va., assignors to American Hospital Supply Corporation, Evanston, Ill.

Division of Ser. No. 211,341, Nov. 28, 1980, Pat. No. 4,405,642. This application May 25, 1983, Ser. No. 490,476

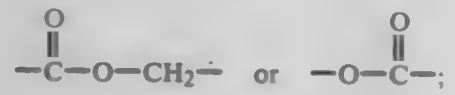
Int. Cl.[4] C07C *101/42, 101/30*

U.S. Cl. 560—39 16 Claims

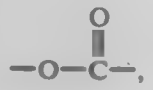
1. A compound of the formula



wherein Ar is unsubstituted phenyl, phenyl substituted with fluoro in the ortho position, or phenyl substituted with methyl in the meta or para position; X is



and R is isopropyl, t-butyl or 3,4-dimethoxyphenethyl; with the proviso that when Ar is unsubstituted phenyl, or 4-methylphenyl R is isopropyl or 3,4-dimethoxyphenethyl; and with the further proviso that when X is



Ar is unsubstituted phenyl and R is 3,4-dimethoxyphenethyl; or a pharmaceutically acceptable salt thereof.

4,604,482

PROCESSES FOR PRODUCING α-FLUOROACRYLIC ACID ESTERS AND α-FLUOROACRYLIC ACID FLUORIDE

Akira Ohmori, Ibaraki; Shoji Takaki, Toyonaka, and Takahiro Kitahara, Settsu, all of Japan, assignors to Daikin Kogyo Co., Ltd., Osaka, Japan

Filed Sep. 27, 1984, Ser. No. 655,078

Claims priority, application Japan, Oct. 4, 1983, 58-186326

Int. Cl.[4] C07C *67/317, 51/58*

U.S. Cl. 560—213 16 Claims

1. A process for producing an α-fluoroacrylic acid ester comprising providing a mixture comprising 2,2,3,3-tetrafluorooxetane, a metal halide, an alcohol and a dehalogenating agent to effect reaction thereof to produce an α-fluoroacrylic acid ester.

10. A process for preparing a compound represented by the formula

$$CH_2{=}CFCOF \qquad (I)$$

which comprises providing a mixture comprising 2,2,3,3-tetrafluorooxetane, a metal halide and a dehalogenating agent to effect reaction thereof to form a compound represented by said formula.

4,604,483

METHOD SEPARATING PHENYLALANINE AND CINNAMIC ACID

Tomohiko Kitsukawa; Hiroshi Kusano, both of Yokohama; Eiji Miyata, Komae, and Toyokazu Sugawara, Sagamihara, all of Japan, assignors to Mitsubishi Chemical Industries Limited, Tokyo, Japan

Filed Feb. 7, 1985, Ser. No. 699,015

Claims priority, application Japan, Feb. 28, 1984, 59-37050

Int. Cl.[4] C07C *99/12*

U.S. Cl. 562—443 23 Claims

1. A method of separating phenylalanine from an aqueous solution containing said phenylalamine and cinnamic acid as main components, which method comprises passing said solution through a packed layer of at least one synthetic adsorbant which is a cross-linked copolymer having a surface area of at least 100 m^2/g and a pore volume of at least 0.1 ml/g in the presence of a salt, a cation selected from an ammonium ion or an alkali metal ion and an anion selected from halogen, carbonate, or an aliphatic carboxylate at a concentration of 0.1N to 5N, and recovering a fraction of said phenylalanine substantially free from said cinnamic acid.

4,604,484

MONOALKYLATION OF 1-ALKYL-DIAMINOBENZENES

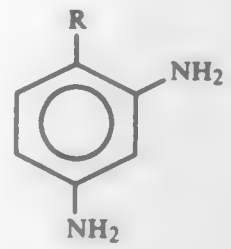
Kryn G. Ihrman, Farmington, Mich., assignor to Ethyl Corporation, Richmond, Va.

Continuation-in-part of Ser. No. 397,488, Jul. 12, 1982, abandoned. This application Jul. 30, 1982, Ser. No. 403,289

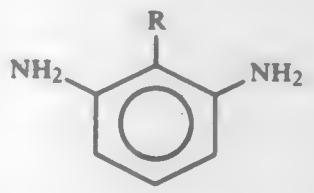
Int. Cl.[4] C07C *85/00, 87/50, 87/56*

U.S. Cl. 564—305 10 Claims

1. A process for the monoalkylation of 1-alkyl-2,4-diaminobenzene of structure:



or 1-alkyl-2,6-diaminobenzene of structure:



where R is a lower alkyl or cycloalkyl, said process comprising the steps of:

(a) reacting a 1-alkyl-2,4-diaminobenzene or a 1-alkyl-2,6-diaminobenzene at elevated temperature and pressure with an alkylene having at least three carbon atoms, in the presence of an aluminum anilide catalyst and a minor proportion of aniline; and

(b) recovering a monoalkylated product of 1-alkyl-2,4-diaminobenzene or 1-alkyl-2,6-diaminobenzene as the principal product.

4,604,485

CHEMICAL PROCESS

Howard M. Colquhoun, Knutsford, England, assignor to Imperial Chemical Industries PLC, London, England

Filed Jun. 4, 1984, Ser. No. 616,895

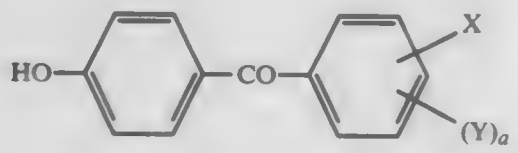
Claims priority, application United Kingdom, Jun. 7, 1983, 8315610

The portion of the term of this patent subsequent to Jul. 8, 2003, has been disclaimed.

Int. Cl.[4] C07C *45/46*

U.S. Cl. 568—319 18 Claims

1. A process for the preparation of a 4-hydroxybenzophenone having the formula



which comprises polymerising a precursor of poly(4-oxybenzoyl) and reacting in situ the poly(4-oxybenzoyl) so formed with an aromatic compound of the formula



in the presence of an effective amount of a Lewis acid wherein

X represents hydrogen or a substituent that is not strongly electron-attracting;

Y is a substituent which is not strongly electron attracting, and

a is zero or an integer of 1 to 4;

the remaining substituents being hydrogen atoms and the overall effect of X and the substituents Y is not sufficient to deactivate the aromatic compound to such an extent that substitution occurs only with difficulty.

4,604,486

METHOD OF PREPARING OPTICALLY ACTIVE KETONES

Genichi Tsuchihashi, Tama, and Keisuke Suzuki, Chigasaki, both of Japan, assignors to Toyo Stauffer Chemical Co., Ltd., Tokyo, Japan

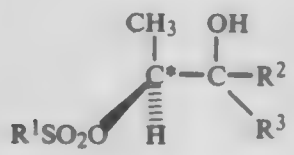
Filed Jan. 4, 1985, Ser. No. 689,007

Int. Cl.[4] C07C *45/51*

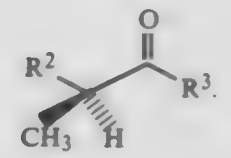
U.S. Cl. 568—322 7 Claims

1. In a Pinacol-type rearrangement, the improvement comprising:

contacting an optically active sulfonyloxy alcohol of the formula:



wherein R^1, R^2 and R^3 are each independently a C_1 to C_{20} hydrocarbon group which may contain N, O, P or S, and * indicates an asymmetric carbon atom, with an organoaluminum compound of the formula $R^4{}_{3-n}AlX_n$ wherein R^4 is a C_1 to C_{20} alkyl group, X is a halogen atom, an alkoxy group or a CN group, and n is 1, 1.5 or 2, to obtain an optically active ketone of the formula:



4,604,487

PROCESS FOR PREPARING PHENYL ALKANOL AND PERFUMERY USES OF RESULTING PRODUCT

Wilhelmus J. Wiegers, Red Bank, and Mark A. Sprecker, Sea Bright, both of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

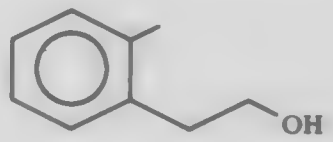
Division of Ser. No. 589,472, Mar. 14, 1984, Pat. No. 4,549,983, which is a continuation-in-part of Ser. No. 482,823, Apr. 7, 1983, Pat. No. 4,512,918. This application Jun. 21, 1985, Ser. No. 747,449

Int. Cl.[4] C07C *33/18*

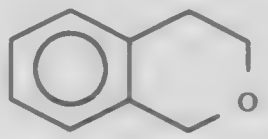
U.S. Cl. 568—715 3 Claims



1. A process for preparing a compound having the structure:



comprising the step of reacting the compound having the structure:



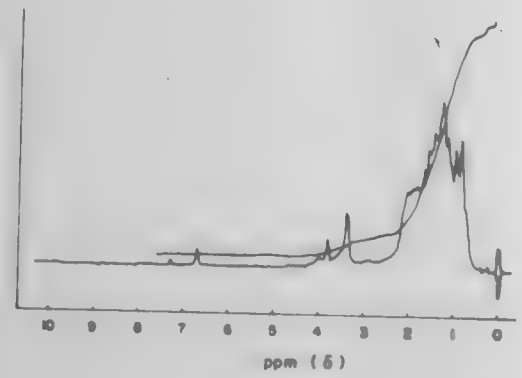
with hydrogen in the presence of a hydrogenation catalyst and an acid selection from the group consisting of mineral acids and and citric acid.

4,604,488

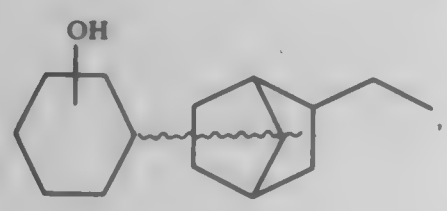
CYCLOHEXANOL DERIVATIVES AND FRAGRANCE COMPOSITIONS CONTAINING THE SAME

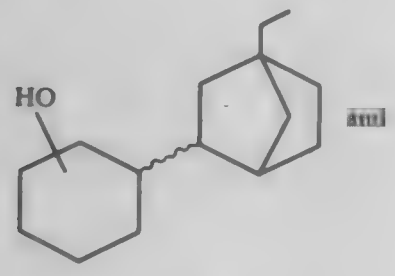
Yoshiaki Fujikura, Utsunomiya; Yasushi Kajihara, Ichikaimachi; Naotake Takaishi; Yoshiaki Inamoto, both of Utsunomiya; Akio Kimura, Wakayama; Motoki Nakajima, Miyashiromachi, and Norioki Miyamoto, Yotsukaido, all of Japan, assignors to Kao Corporation, Tokyo, Japan

Filed Dec. 21, 1983, Ser. No. 563,972
Claims priority, application Japan, Dec. 22, 1982, 57-225264
Int. Cl.[4] C07C *35/22*
U.S. Cl. 568—820 15 Claims

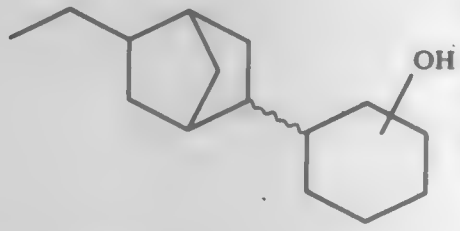


1. A fragrant mixture comprising at least one cyclohexanol derivative having the formula:





and



4,604,489

RECRYSTALLIZATION OF HEXANITROSTILBENE FROM DIMETHYLSULFOXIDE AND METHANOL

Eleonore G. Kayser, Baltimore, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 20, 1984, Ser. No. 602,577
Int. Cl.[4] C07C *79/10*
U.S. Cl. 568—931 3 Claims

1. A process for producing finely divided 2,2',4,4',6,6'-hexanitrostilbene-II (HNS-II) of uniform particle size comprising:

(1) dissolving conventional large particle 2,2',4,4',6,6'-hexanitrostilbene-II in hot dimethylsulfoxide (DMSO), wherein the large particle HNS-II had been produced by digestion of crude 2,2',4,4',6,6'-hexanitrostilbene-I in an organic solvent;

(2) injecting the hot dimethylsulfoxide solution through an opening of 0.70 mm or less in diameter into methanol which is kept at a temperature of from −50° C. to −80° C.; and

(3) isolating the finely divided particles of 2,2',4,4',6,6'-hexanitrostilbene-II which are produced in step (2).

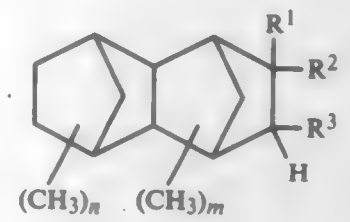
4,604,490

HIGH-DENSITY LIQUID FUEL

Hitoshi Yuasa, Yokohama; Mitsuo Matsuno, Kawasaki, and Hirosuke Imai, Yokohama, all of Japan, assignors to Nippon Oil Company Ltd., Japan

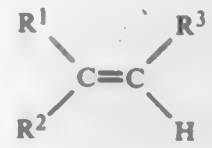
Filed Jun. 19, 1985, Ser. No. 746,279
Claims priority, application Japan, Jun. 21, 1984, 59-127768; Aug. 27, 1984, 59-177673
Int. Cl.[4] C07C *13/28, 2/50*
U.S. Cl. 585—21 10 Claims

1. A high-density liquid fuel consisting essentially of a compound of the formula



wherein each of m and n is 0 or 1, and each of R^1, R^2 and R^3 is a hydrogen atom or an alkyl group having 1 to 3 carbon atoms, the sum of carbon atoms in R^1, R^2 and R^3 being an integer of 1 to 3;

prepared by reacting an aliphatic unsaturated hydrocarbon having 3 to 5 carbon atoms of the formula



wherein R^1, R^2 and R^3 are as defined above,

with cyclopentadiene, methylcyclopentadiene and mixtures thereof in accordance with the Diels-Alder reaction to synthesize a 1:2 adduct of the unsaturated hydrocarbon and the pentadiene, and then hydrogenating the thus synthesized adduct, or by reacting 5-ethylidenenorbornene-2 with cyclopentadiene, methylcyclopentadiene or mixtures thereof in accordance with the Diels-Alder reaction to produce a 1:1 of adduct of 5-ethylidenenorbornene-2 and the pentadiene, and hydrogenating carbon-carbon double bonds in the adduct.

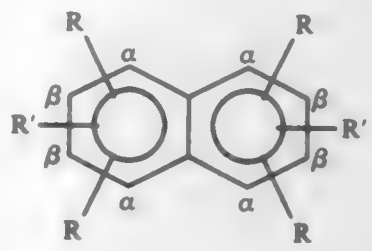
4,604,491

SYNTHETIC OILS

Hans Dressler, Monroeville, Pa., and Albert A. Meilus, Parma, Ohio, assignors to Koppers Company, Inc., Pittsburgh, Pa.

Filed Nov. 26, 1984, Ser. No. 674,881
Int. Cl.[4] C07C *13/47, 15/20*
U.S. Cl. 585—26 21 Claims

1. A synthetic base oil for functional fluids and greases comprising a mixture of monoalkylated naphthalenes and polyalkylated naphthalenes, said naphthalenes represented by the formula:



wherein the R' groups are independently selected from H and

methyl, the monoalkylated naphthalenes have three R groups which are H and one R group which is a 12–26 carbon alkyl, the polyalkylated naphthalenes have from two to four R groups which are 12–26 carbon alkyl and any remainder groups H, the weight ratio of monoalkylated naphthalenes to polyalkylated naphthalenes is from 5:95 to 70:30 when the average alkyl group is C_{12}–C_{16} and from 5:95 to 99:1 when the average alkyl group is C_{17}–C_{26} and the oil has a viscosity at 210° F. between 61 and 88 SUS, a viscosity index between 105 and 136, and a flash point (COC=Cleveland open cup) of between 508° F. and 560° F.

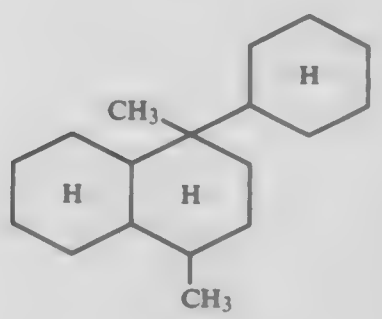
4,604,492

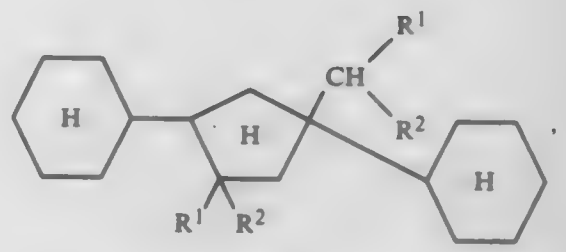
DICYCLOHEXYLCYCLOPENTANE COMPOUNDS

Nobuaki Shimizu; Toshiyuki Tsubouchi, both of Sodegaura, and Hitoshi Hata, Ichihara, all of Japan, assignors to Idemitsu Kosan Company Limited, Tokyo, Japan

Filed Oct. 8, 1985, Ser. No. 785,458
Claims priority, application Japan, Oct. 23, 1984, 59-221182
Int. Cl.⁴ C07C *13/28*
U.S. Cl. 585—360 **5 Claims**

1. A dicyclohexylcyclopentane compound represented by the general formula





in which R^1 and R^2 are each a hydrogen atom or an alkyl group having from 1 to 3 carbon atoms.

4,604,493

1-CYCLOHEXYL-1,4-DIMETHYL DECAHYDRONAPHTHALENE AND A WORKING FLUID FOR TRACTION DRIVE FORMULATED THEREWITH

Nobuaki Shimizu; Toshiyuki Tsubouchi, both of Sodegaura, and Hitoshi Hata, Ichihara, all of Japan, assignors to Idemitsu Kosan Company Limited, Tokyo, Japan

Filed Oct. 8, 1985, Ser. No. 785,457
Claims priority, application Japan, Oct. 18, 1984, 59-218892
Int. Cl.⁴ C07C *13/50*
U.S. Cl. 585—360 **3 Claims**

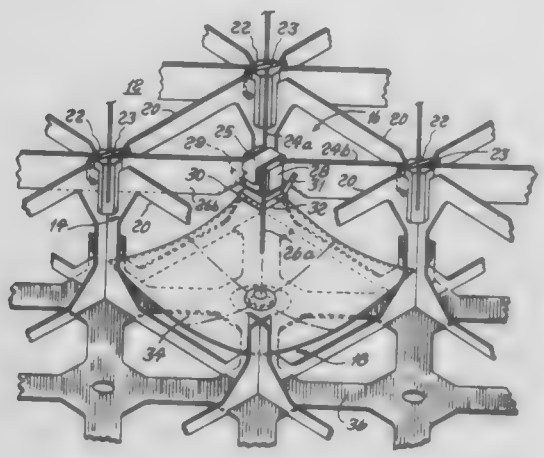
1. 1-Cyclohexyl-1,4-dimethyl decahydronaphthalene expressed by the structural formula

4,604,494

PHOTOVOLTAIC CELL ARRAY WITH LIGHT CONCENTRATING REFLECTORS

Neal F. Shepard, Jr., King of Prussia, Pa., assignor to General Electric Company, Philadelphia, Pa.

Filed Nov. 7, 1984, Ser. No. 669,082
Int. Cl.[4] H01L *25/02*; H02N *6/00*
U.S. Cl. 136—246 19 Claims



1. A solar battery array comprising:

a succession of first and second mutually spaced, elongate, electrical conductors, said first and second conductors alternating with each other and being generally parallel, each of said conductors being substantially rigid and having a configuration adapted to reject substantial amounts of heat by radiation to space;

a series of mutually spaced solar batteries positioned between successive conductors such that each of said series is bracketed by a first and a second conductor;

each of said solar batteries including a photovoltaic cell carried by an electrically insulating cell holder, and a reflector spaced from said cell, said reflector being shaped to concentrate incident light on a light receiving cell surface;

each of said cell holders bridging the bracketing pair of conductors and being fastened thereto to form a substantially rigid cell support structure therewith; and

the cells in each of said series of batteries having terminals of opposite polarity connected to respective conductors of the bracketing conductor pair such that all cells in a given series are connected in parallel with each other and the respective series of batteries are connected seriatim;

whereby the voltage potential of said array varies with the total number of said battery series in the array, and the current capacity of said array varies with the number of solar batteries per series.

4,604,495

SEMICONDUCTOR DEVICE AND PROCESS FOR PRODUCING SAME

Hisashi Watanabe, Yokohama, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

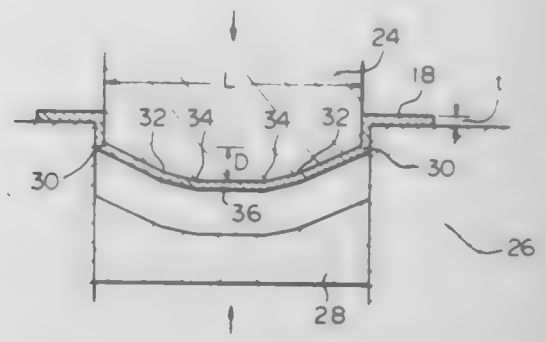
Filed Dec. 19, 1984, Ser. No. 683,735
Claims priority, application Japan, Dec. 21, 1983, 58-241307
Int. Cl.[4] H01L *23/04*
U.S. Cl. 174—52 FP 7 Claims

1. A ceramic-type semiconductor package comprising:

a semiconductor pellet;

a ceramic lead base having a cavity for accommodating said pellet; and

a metal cap for sealing said cavity, said cavity being upward opened and said metal cap having a central depressed portion to be inserted into said cavity, said central depressed portion having a bottom wall portion which has a plurality of facets.

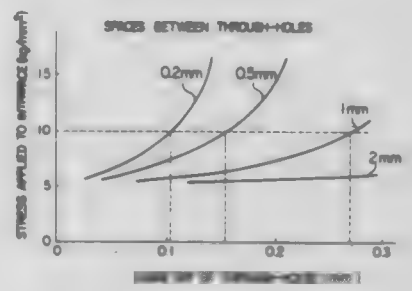


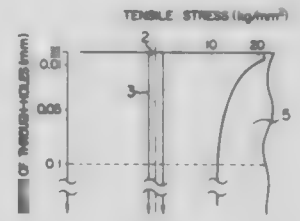
4,604,496

CERAMIC MULTILAYER WIRING BOARD

Shosaku Ishihara, Kamakura; Takashi Kuroki, Yokohama; Gyozo Toda, Hino; Akio Yasukawa, and Tatsuji Sakamoto, both of Ibaraki, all of Japan, assignors to Hitachi, Ltd, Tokyo, Japan

Filed Aug. 14, 1984, Ser. No. 640,582
Claims priority, application Japan, Aug. 25, 1983, 58-154052
Int. Cl.[4] H05K *1/02*
U.S. Cl. 174—68.5 6 Claims





1. In a ceramic multilayer wiring board having ceramic insulating layers and wiring patterns provided thereon, said wiring patterns being connected through said ceramic insulating layers by conductors filling a plurality of through-holes formed on said ceramic insulating layers, the improvement in which each of the through-holes range from 0.103 to 0.26 mm in diameter at the superficial portions thereof located at both sides of said ceramic multilayer wiring board, the space between adjacent superficial portions of the through-holes ranges from 0.2 to 1 mm, and the depth of the superficial portions of the through-holes is 0.1 mm or more; said superficial portions of the through-holes being smaller in diameter than inside portions of the through-holes arranged between said superficial portions.

4,604,497

ELECTRICAL CONDUCTOR FOR TELECOMMUNICATIONS CABLE

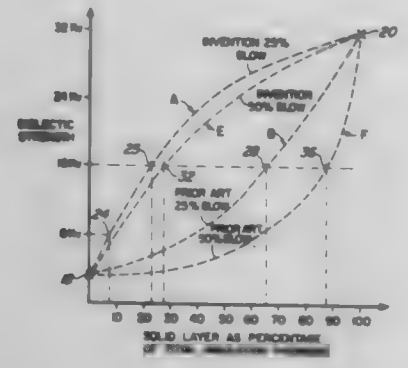
John M. Bell, Seeley's Bay, and Peter J. Schmidt, Gananoque, both of Canada, assignors to Northern Telecom Limited, Montreal, Canada

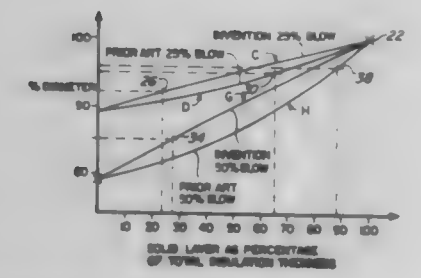
Continuation-in-part of Ser. No. 518,059, Jul. 28, 1983, abandoned, which is a continuation of Ser. No. 253,312, Apr. 13, 1981, abandoned. This application Mar. 4, 1985, Ser. No. 707,765

Int. Cl.[4] H01B *7/02*

U.S. Cl. 174—110 F

4 Claims





1. A telecommunications cable having an air-core in which a plurality of insulated electrical conductors are provided, each of which comprises a conductor of diameter between 0.0126 inch and 0.0360 inch having insulation comprising an unpigmented inner layer of solid non-cellular polyolefin based composition of at least 2 mils thick, and an outer layer of cellular polyolefin based composition wherein the cells provide an air space which is at least 15% of the total volume of the outer layer and wherein the nominal mutual capacitance between conductors is at 83 nanofarads/mile and a predetermined dielectric breakdown value between conductors is obtained, the maximum outside diameter across the insulation being less than that of an electrical conductor of equal conductor diameter which provides the same nominal mutual capacitance with a solid non-cellular insulation of the same material as said inner layer.

4,604,498

SEAL BETWEEN A METALLIC MOUNTING AND A GLASS FIBER ROD IN HIGH VOLTAGE COMPOUND INSULATORS AND METHOD OF FORMING SAME

Martin Kuhl, Selb/Bayern, Fed. Rep. of Germany, assignor to Hoechst CeramTec AG, Selb, Fed. Rep. of Germany

Filed Jan. 25, 1984, Ser. No. 573,622

Claims priority, application Fed. Rep. of Germany, Jan. 28, 1983, 3302788

Int. Cl.[4] H01B *17/02, 17/46*

U.S. Cl. 174—140 S

9 Claims

1. A high voltage insulator comprising:

(a) a synthetic plastic rod;

(b) an electrically insulating coating on at least a portion of said rod;

(c) a suspension mounting into which an end of said rod is inserted, said suspension mounting surrounding at least a portion of said coating at the location where said rod is inserted to form a gap between (i) said rod and coating and (ii) said suspension mounting, and

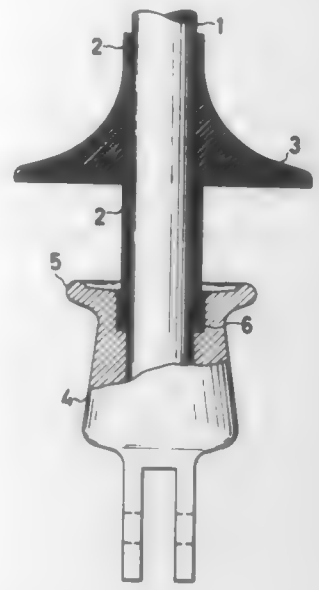
(d) a single, unitary seal in said gap completely filling the cavities between the rod and coating and the mounting, said seal comprising a cross-linked siloxane reaction product of two or more reactive components, said reaction product being incapable of flow and remaining sticky after cross-linking and having a penetration value after cross-linking of between about 1 and about 500 mm/10 with a 150 g hollow cone.

7. A method for sealing a high voltage insulator comprising:

(a) a synthetic plastic rod;

(b) an electrically insulating coating on said rod; and

(c) a suspension mounting into which at least one end of said rod is inserted, said suspension mounting surrounding said coating at the location where said rod is inserted,



said method comprising the steps of (1) providing a cross-linkable mixture of at least two reactive components which form a cross-linked siloxane upon reaction, (2) pouring said mixture into a gap between said coating and said suspension mounting filling the cavities of the gap between rod, coating and mounting, and (3) permitting the components of said mixture to react and form a single, unitary seal consisting of a siloxane reaction product which is incapable of flow and remains sticky after cross-linking.

4,604,499

COMPUTER TELEPHONE ACCESS SECURITY PROCESSOR

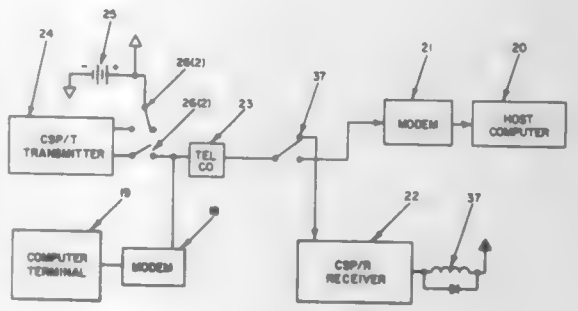
Lawrence R. Hughes, Lauderdale Lakes, Fla., assignor to Raymond F. Hughes, Tamarac, Fla.

Filed Feb. 24, 1984, Ser. No. 582,392

Int. Cl.[4] H04M *11/00;* H04L *9/00*

U.S. Cl. 179—2 DP

1 Claim



1. A computer security processor comprising a transmitter unit and a receiver unit in communication with each other via a telephone system; wherein

said transmitter unit comprises: means for manually setting a desired code, means responsive to the setting means for generating dual frequency tone signals corresponding to the desired code, means for connecting the generating means to a telephone line for transmitting the dual frequency tone signals over the telephone system, and means

for manually initiating operation of the generating and transmitting means;

said receiver unit comprises: means for manually setting the desired code in the receiver unit, means connected to a second telephone line for receiving dual frequency tones transmitted over said telephone system and deriving a received code therefrom, means connected to the manual setting means and the receiving means for comparing the received code to the desired code, means responsive to the comparing means for recognizing a fraudulent code and disconnecting the receiving means from the second telephone line, and means responsive to the comparing means for recognizing receipt of the desired code and connecting a computer to said second telephone line; and wherein

said dual frequency tone signals have frequencies different from dual frequency tone signals used by the telephone system for dialing purposes.

4,604,500

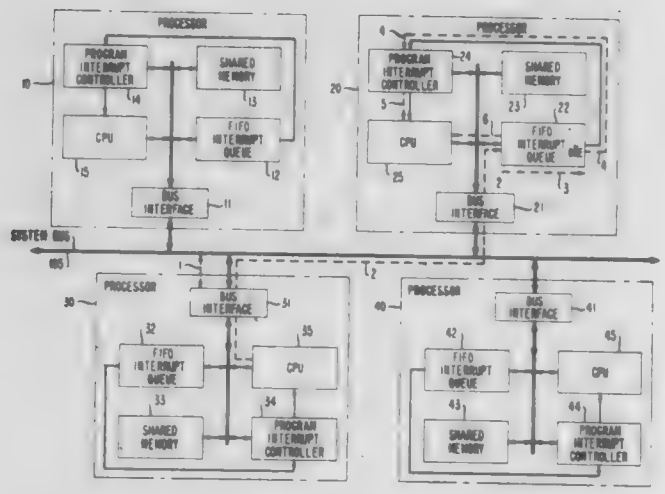
MULTIPROCESSING INTERRUPT ARRANGEMENT

Sanford S. Brown, River Plaza; Dennis J. Hunsberger, Lincroft, and Michael R. Lundberg, Bridgewater, all of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Dec. 2, 1981, Ser. No. 326,908

Int. Cl.[4] G06F *9/00*

U.S. Cl. 179—18 ES 13 Claims



1. An interrupt system for use with each processor of a multiprocessor communication or telephone network, where one processor may request actions of another responding processor independent of the state of the other processors, said system comprising

means including a FIFO memory for queuing interrupt vector messages directed from a requesting processor to a particular other responding processor and received via said network directly from said requesting processor without intervention by any other processor, and

means controlled only by said responding processor for sequentially providing to said directed processor an interrupt signal for each said queued vector message.

4,604,501

VOICE COMMUNICATION SYSTEM

Moscow K. Richmond, 2819 Butler Ave., Los Angeles, Calif. 90066; Thomas R. Richmond, Santa Ana, and Patrick S. Kochie, Simi Valley, both of Calif., assignors to Moscow K. Richmond, Los Angeles, Calif.

Filed Oct. 9, 1984, Ser. No. 658,765

Int. Cl.[4] H04M *1/60*

U.S. Cl. 179—81 B 27 Claims

1. A voice communication system comprising:

(a) a first speaker and a first microphone at a first location which is generally a relatively quiet location,

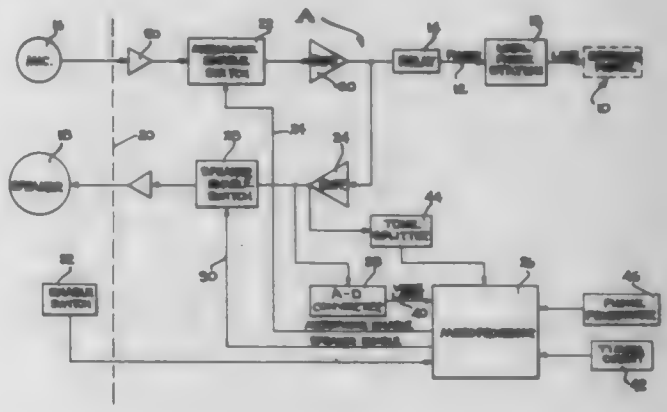
(b) a second speaker and a second microphone at a second location which may have relatively substantial background noise,

(c) a telephone line between the first speaker and first microphone and second speaker and second microphone,

(d) monitor means for monitoring the telephone line to determine if audible sounds are being generated at the first microphone or at the second microphone while temporarily disabling one of said microphones, and

(e) control means responsive to said monitor means for automatically transferring transmit control to the first microphone and disabling said second microphone such that transmission cannot occur through said second microphone when audible sounds are generated at said first microphone and for enabling said second microphone to transmit only when audible sounds are not generated at said first microphone.

13. A method of controlling voice communication in a voice communication system where a first speaker and a first microphone are located at a first location which is generally a relatively quiet location and a second speaker and a second microphone are located at a second location which may have rela-



tively substantial background noise, and which voice communication system comprises a telephone link between the first speaker and first microphone and second speaker and second microphone, said method comprising:

(a) periodically monitoring said telephone link to determine whether audible sound is present on and being carried over said link,

(b) automatically temporarily disabling the microphone at the second location so that no communication can originate from the second location and enabling the speaker at the second location to thereby dedicate transmit control to the microphone at the first location whenever sound to be transmitted is generated at the first location,

(c) enabling the microphone at the second location when no audible sound to be transmitted is generated at the first location, and

(d) automatically returning microphone control to the microphone at the first location when audible sound to be transmitted is again generated at the first location.

4,604,502

JOYSTICK CONTROL

David S. Thomas, 29998 MacIntyre, Livonia, Mich. 48150

Filed Jul. 5, 1985, Ser. No. 751,888

Int. Cl.[4] H01H *25/00*

U.S. Cl. 200—6 A 12 Claims

1. An improved joystick control device comprising:

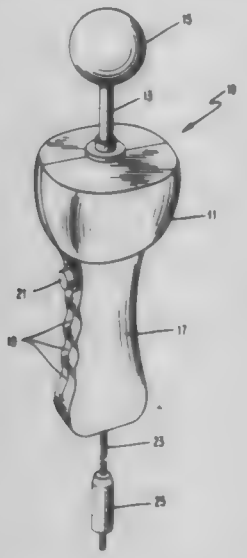
(a) an upper housing portion;

(b) a control rod extending upwardly from said upper housing portion;

(c) a hand grip held housing portion depending downwardly from said upper housing portion; and

(d) switch means in said upper housing portion, said switch means having actuating means facing downwardly in a direction substantially opposite to the direction of elonga-

tion of said control rod and operatively connected to said control rod by a movable plate means whereby controlled



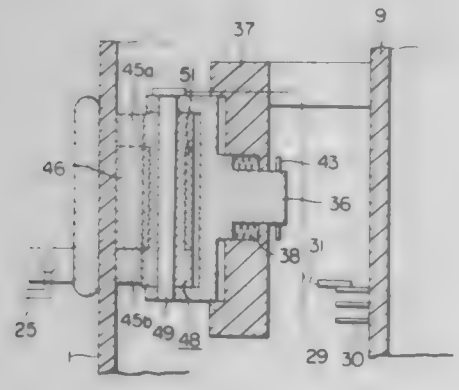
movement of said control rod selectively actuates said switch means.

4,604,503

CHANGE-OVER SWITCH FOR AN ON-LOAD TAP CHANGER

Yasushi Fuwa, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 13, 1984, Ser. No. 681,194
Claims priority, application Japan, Dec. 15, 1983, 58-234975
Int. Cl.[4] H01H *19/54, 1/16*
U.S. Cl. 200—11 TC 2 Claims



1. A change-over switch for an on-load tap changer, comprising:

a cylindrical housing having a first center axis, and having a plurality of stationary contacts fixed to the cylindrical periphery thereof, said plurality of stationary contacts including first and second stationary contacts subtending different overlapping angular arcs about said first center axis;

an electrically conductive bushing having a second center axis parallel said first center axis;

a principle roller contact and an arc interrupting roller contact electrically connected to said bushing, having peripheral surfaces movable circumferentially with respect to said center axis into and out of engagement with said stationary contacts and rotatably mounted in axial alignment on said bushing for rotation about said second center axis, said principle roller contact and said arc interrupting roller contact being integrally formed of an electrically conductive roller member having a first cylindrical surface exposed so as to be rollable on said first stationary contact and an unexposed second cylindrical surface, said arc interrupting roller contact including a cylindrical layer of arc resistive material formed on said unexposed second cylindrical surface so as to be rollable on said second stationary contact;

a roller contact holder supporting axially opposite ends of said bushing; and

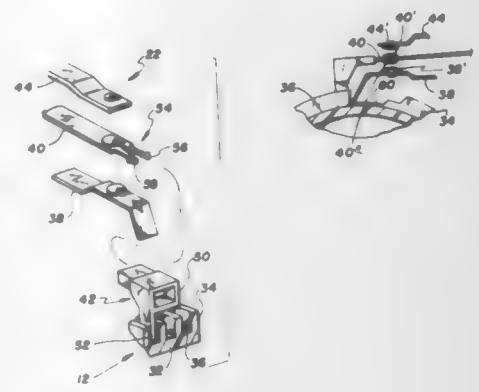
means, engaging said roller contact holder, for rotating said principle roller contact and said arc interrupting roller contact about said first center axis such that said principle roller and said arc interrupting roller respectively roll successively on and off said first and second stationary contacts.

4,604,504

TIMER BLADE ARRANGEMENT

Garry A. Stout, Bargersville, and Leroy A. Perry, Danville, both of Ind., assignors to Emhart Industries, Inc., Indianapolis, Ind.

Continuation of Ser. No. 487,976, Apr. 25, 1983, abandoned.
This application May 16, 1985, Ser. No. 734,826
Int. Cl.[4] H01H *43/00;* F16H *53/06*
U.S. Cl. 200—38 B 4 Claims



1. A timing mechanism comprising:

(a) a camstack including a hub portion and individual cams extending from said hub portion and providing channels therebetween, at least one of said individual cams having at least two cam lobes of different elevations,

(b) a first spring blade engaging said at least one individual of said cams and having a first electrical contact,

(c) a second spring blade mounted above said first spring blade and having a second electrical contact engaging said first electrical contact, and a second spring blade third electrical contact,

(d) a third spring blade mounted above said second spring blade having a fourth electrical contact engaging said third electrical contact,

(e) follower means mounted on said second spring blade engaging said hub portion in one of said channels and establishing a fixed air gap between said first and second electrical contacts when they are in a relaxed position.

4,604,505

SWITCH-PLUG INTERLOCK

William H. Henninger, Paramus, N.J., assignor to ERO, Inc., Glasser, N.J.

Filed May 17, 1985, Ser. No. 735,274
Int. Cl.[4] H01H *9/20*
U.S. Cl. 200—50 B 9 Claims

1. A receptacle for receiving a plug having a locking collar comprising:

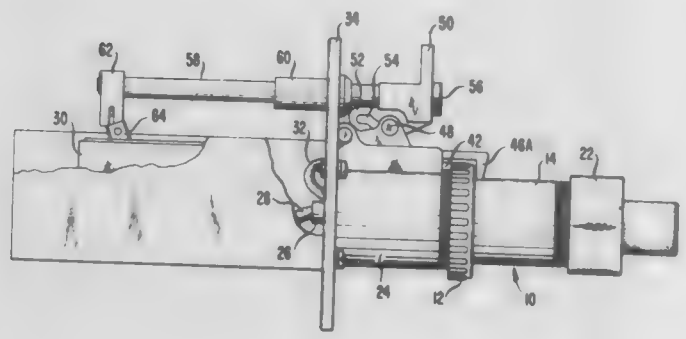
a frame;

an electrical connector mounted on said frame and having a locking means for engaging and holding said collar;

a switch means mounted on said frame, connected to said connector and operable to disconnect said connector; and

a manually operable interlock means having an on and off position, said interlock means being supported on said frame for manually operating said switch means to apply power to said connector after the securing of said plug into said connector, said interlock means being positioned adjacent said connector and being responsive to the securing thereon of said collar, said interlock means being

restrained from moving to said on position without said collar being secured to said locking means, said interlock means including:



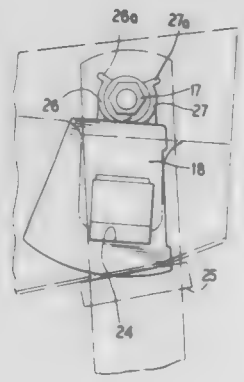
grasping means extending beyond said locking means for grasping said plug on a rearward external surface of said collar and preventing disengagement from said locking means in response to said interlock means being placed in said on position.

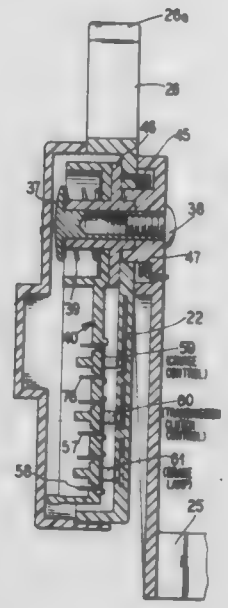
4,604,506

SELF-ADJUSTING SWITCH MECHANISM

Wallace E. Gebhardt, Logansport, Ind., assignor to Switches, Inc., Logansport, Ind.

Filed Jul. 10, 1985, Ser. No. 753,446
Int. Cl.[4] H01H *3/14, 21/36*
U.S. Cl. 200—61.89 10 Claims





1. A switch assembly for a vehicle braking system comprising:

a housing,

means on said housing arranged to frictionally engage a brake pedal arm pivot yoke in said vehicle,

restraining means restraining pivotal movement of said housing,

a switch actuator arm arranged to be coupled to the brake pedal arm on said vehicle,

a switch actuator disposed within said housing,

a friction clutch means interposed between said switch actuator arm and said switch actuator to permit first a driving and then a slippable connection therebetween whereby said switch actuator arm can pivot to a greater angular extent than said switch actuator,

a plurality of electrical contacts carried by said switch actuator, circuit means engageable by said electrical contacts to make or break electrical contact therebetween,

means within said housing limiting the pivotal movement of said electrical contacts to a predetermined arc, and

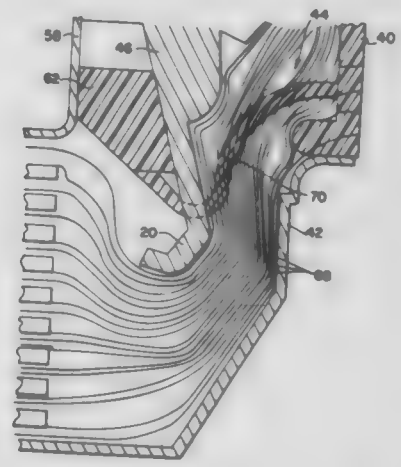
terminal means connected to said circuit means and extending outside said housing.

4,604,507

MINIATURE CIRCUIT BREAKER WITH IMPROVED INSULATION LEVEL

Jean-Pierre Roulet Dubonnet, Eybens; Louis Boillot, Grenoble, and Gilbert Mora, St. Nicolas de Macheran, all of France, assignors to Merlin Gerin, Grenoble, France

Filed Dec. 11, 1984, Ser. No. 680,465
Claims priority, application France, Dec. 26, 1983, 83 20899
Int. Cl.[4] H01H *33/04*
U.S. Cl. 200—144 R 4 Claims



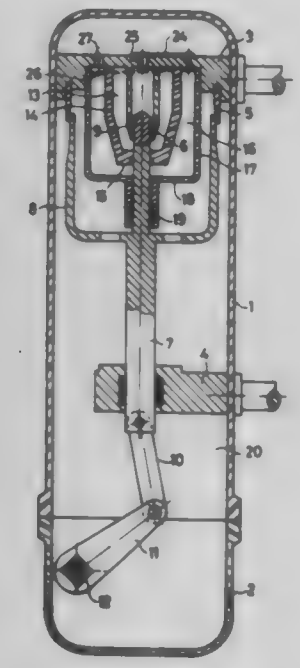
1. A miniature electric circuit breaker with an insulating moulded casing having an arc formation chamber, a pair of cooperating fixed and movable contacts disposed in said arc formation chamber and generating inside said arc formation chamber an electrical field defined by equipotential lines in a separation zone of said contacts in an open position, an arc extinction chamber communicating with the arc formation chamber, a mechanism for moving said contacts between an engaged condition and a disengaged condition, a chamber for the mechanism housing separated from the arc formation chamber by an intermediate insulating partition having a rectangular slot and two ribs for laterally delimitating said slot, a carrier supporting the movable contact and crossing said slot for cooperating with said mechanism, said carrier being longitudinally movable within said rectangular slot and laterally encompassed by said ribs, said ribs extending at least over a part of their length parallel to the equipotential lines of said electrical field, so that said ribs are submitted to a zero potential gradient and prevent any current creepage along said partition ribs.

4,604,508

ELECTRIC CIRCUIT BREAKER OF THE TYPE USING AN ARC QUENCHING FLUID WITH PRESSURE SELF-GENERATING DUE TO THE BREAKDOWN OF THE FLUID

Gianpietro Talpo, Bergamo, Italy, assignor to SACE S.p.A. Costruzioni Elettromeccaniche, Bergamo, Italy

Filed Jan. 14, 1985, Ser. No. 691,014
Claims priority, application Italy, Jan. 20, 1984, 20599/84[U]
Int. Cl.[4] H01H *33/74*
U.S. Cl. 200—148 R
8 Claims



1. Electric circuit breaker of the type using an arc extinguishing fluid with pressure self-generating by the breakdown of the fluid due to the same arc, comprising, inside a tightly sealed insulating casing filled with the extinguishing fluid, in particular with a gas such as sulphur hexafluoride, two plate-shaped current bearing connections, of which one supporting a stationary main contact and a tubular stationary arc contact, and the other being provided with a guide for a stem supporting a movable main contact and a rod-shaped movable arc contact, a drive mechanism for moving said stem from a closure position to an opening position of the contacts and vice-versa, a first extinguishing fluid collecting and compression chamber surrounding the tubular stationary arc contact and provided with an outlet opening adapted to be closed by said movable arc contact, at least a further collecting and compression chamber outboard of said first chamber provided with an outlet opening, characterized in that the stationary main contact and the movable main contact are outboard of said further chamber, the outlet openings of the first chamber and of the further chamber are coaxial and alined with the axis of the rod-shaped movable arc contact, and the movable arc contact defines means for closing the outlet opening of the further chamber, and the outlet opening of the first chamber is in fluid communication with the outlet opening of the further chamber.

4,604,509

ELASTOMERIC PUSH BUTTON RETURN ELEMENT FOR PROVIDING ENHANCED TACTILE FEEDBACK

Kevin F. Clancy, and Ralph J. Schneider, both of Freeport, Ill., assignors to Honeywell Inc., Minneapolis, Minn.

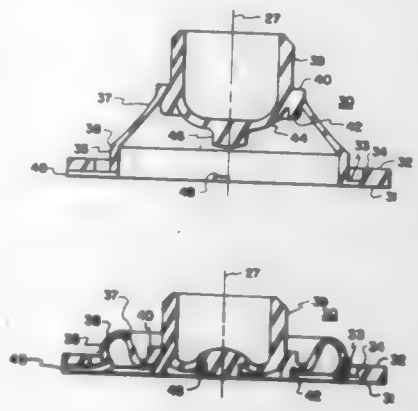
Filed Feb. 1, 1985, Ser. No. 697,294
Int. Cl.[4] H01H *3/12*
U.S. Cl. 200—159 B
23 Claims

17. A push button assembly with enhanced tactile characteristics comprising:

a base having a mounting surface thereon;

a push button adapted for movement along an axis relative to said mounting surface; and

an elastomeric return element extending along the axis between said mounting surface and said push button, said elastomeric return element being formed with an annular flange having lower surface in contact with said mounting surface, a hollow member including a first section having a predetermined diameter joined to said flange through a radially extending web characterized by greater flexibility than the first section, the web having a surface which is



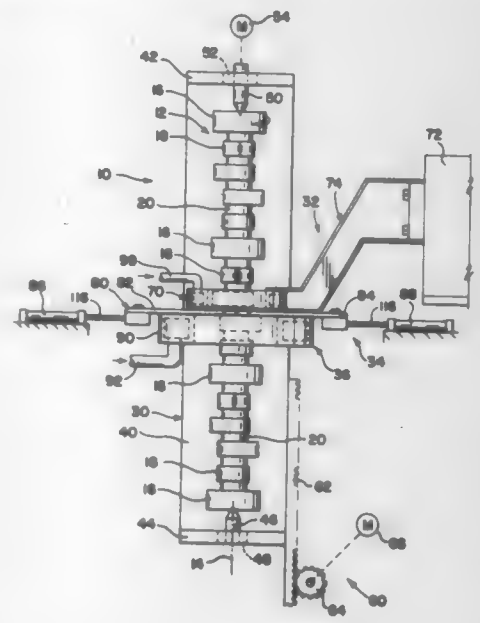
continuous with the lower surface of the flange, the hollow member further including a second section joined to the first section and having a diameter which decreases with distance along the axis away from said mounting surface, and a crown remote from said mounting surface connected to said push button.

4,604,510

METHOD AND APPARATUS FOR HEAT TREATING CAMSHAFTS

John R. Laughlin, Broadview Heights, and George M. Mucha, Parma Heights, both of Ohio, assignors to Tocco, Inc., Boaz, Ala.

Filed May 20, 1985, Ser. No. 736,214
Int. Cl.[4] H05B *6/40*
U.S. Cl. 219—10.43
26 Claims



1. An apparatus for heat treating a plurality of unhardened cam lobes on a camshaft, comprising:

support means for supporting the camshaft for rotation about a longitudinal axis;

means for selectively rotating said camshaft about said axis;

inductor means adapted to encircle the cam lobes in inductive heating relationship therewith;

drive means for locating said inductor means sequentially at the unhardened cam lobes;

shield means movable to an operative position closely encircling the camshaft between successive cam lobes including the cam lobes then located at said inductor means;

means for energizing said inductor means when said shield means is in said operative position to inductively heat the

unhardened cam lobe to a predetermined heat treating temperature;

first cooling means operative subsequent to said energizing for delivering liquid media on the cam lobe at said heat treating temperature and cool such cam lobe at a controlled rate to provide a predetermined surface hardness;

second cooling means for delivering liquid media on the hardened cam lobe adjacent said shield means after said shield means is in said operative position concurrent with said inductor means and said first cooling means, said second cooling means providing sufficient cooling of said hardened cam lobe to prevent tempering thereof.

4,604,511
METHOD FOR PRODUCING HEAVY STRUCTURAL ELEMENTS

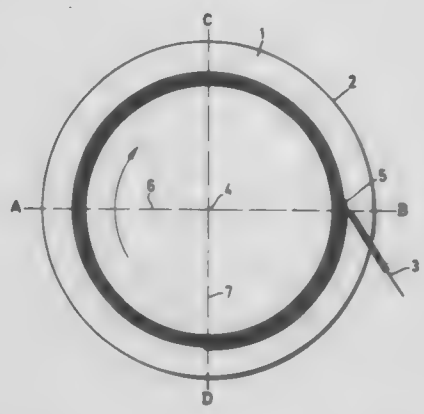
Josef Grosse-Wördemann, Osnabrück, and Herbert Luckow, Düsseldorf, both of Fed. Rep. of Germany, assignors to Thyssen Aktiengesellschaft vorm. August Thyssen-Hütte, Duisburg-Hamborn, Fed. Rep. of Germany

Continuation of Ser. No. 314,019, Oct. 22, 1981, abandoned. This application May 11, 1984, Ser. No. 609,477

Claims priority, application Fed. Rep. of Germany, Oct. 25, 1980, 3040296

Int. Cl.[4] B23K *9/04*

U.S. Cl. 219—76.14 10 Claims



1. A method for manufacturing large cylindrical structural elements comprising the steps of:

providing a pair of thick-walled cylindrical components each defining a longitudinal axis and each having a planar abutting surface at one end thereof, said cylindrical components being adapted to be joined together by welding at said planar abutting surfaces;

applying between said cylindrical components on at least one of said planar abutting surfaces at least one buffer layer of weld material, said buffer layer being applied by arc welding with a welding electrode having an axis;

holding said welding electrode with the axis thereof at an oblique angle relative to said planar abutting surface while said buffer layer is applied, said buffer layer being applied in the form of weld beads which overlap at their flanks by 50–70% of their width;

maintaining said axis of said electrode at an angle to two reference planes perpendicular to each other intersecting at said axis of said component, one of said reference planes passing through the weld point at which said at least one buffer layer is applied; and

holding said axis of said electrode at a first tracking angle in relation to the reference plane passing through the weld point, and at a second tracking angle with relation to the other of said reference planes of between 15° and 50°.

4,604,512
HEAT EXCHANGER TUBE REPAIR

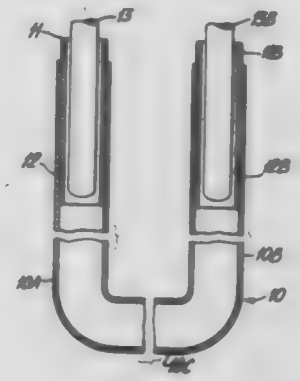
John Stacey, Breightmet, England, assignor to United Kingdom Atomic Energy Authority, London, England

Filed Apr. 4, 1984, Ser. No. 596,723

Claims priority, application United Kingdom, May 13, 1983, 8313266

Int. Cl.[4] B23K *1/04*

U.S. Cl. 219—85 M 5 Claims



1. In the method of repairing a heat exchanger tube which is leaking where it is welded to a tube plate comprising the insertion of a length of repair tube into the leaking tube through the tube plate with the inserted inner end of the repair tube brazed to the leaking tube and the other end of the repair tube explosively welded to the tube plate, the step of relieving heat-produced axial strain in the leaking tube while subjecting the leaking tube to the heat produced by the brazing.

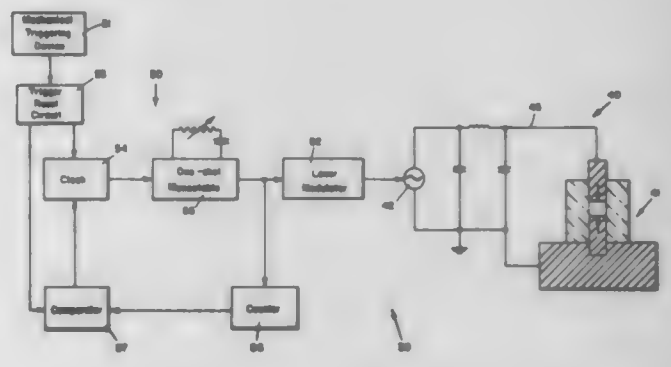
4,604,513
COMBINATION OF A LASER AND A CONTROLLER FOR TRIMMING A METALLIZED DIELECTRIC FILM CAPACITOR

Basilio Y. Lim, 12931 Sunnyside Pl., Santa Fe Springs, Calif. 90670

Filed May 7, 1985, Ser. No. 731,851

Int. Cl.[4] B23K *26/00*

U.S. Cl. 219—121 LA 1 Claim



1. A combination of a laser system and a controller for use in vaporizing the material of a capacitor, which is formed from a pair of metallized dielectric films, to form a hole in order to trim the capacitance of said capacitor, said combination comprising:

a. a laser system including a laser modulator which turns said laser system on and off at a freqency rate of two hundred cycles per second; and

b. a controller including a mechanical triggering device, a trigger/reset circuit which is electrically coupled to said mechanical triggering circuit and which provides a trigger signal in its triggered state and a reset signal in its untriggered state, a clock circuit which is electrically coupled to said trigger reset circuit and which provides clock signals in response to said trigger signal, a one-shot monostable, multivibrator circuit having an RC timing circuit which is electrically coupled to said clock circuit

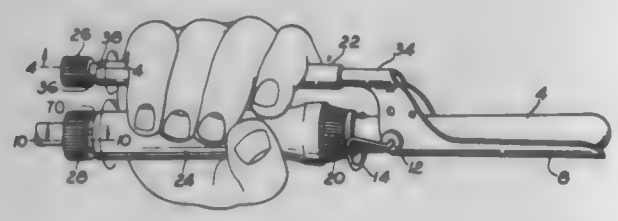
and to said laser modulator and which controls the pulse width of its output signal in a range of 0.005 seconds and 0.1 seconds in response to the clock signals, a counter which is electrically coupled to said one-shot monostable, multivibrator circuit and which counts each of said clock signals and a comparator which is electrically coupled to said counter in order to compare the number of said counted clock signals to a selected number and which is electrically coupled to said clock circuit, so that, when the number of said counted clock signal equals the selected number, said comparator provides a clock inhibit signal in order to inhibit said clock circuit from providing any more clock signals.

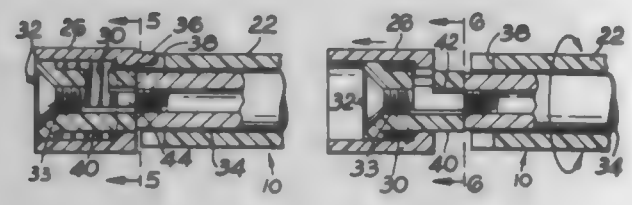
4,604,514

ELECTRIC CURLING IRON WITH SELECTIVELY LOCKABLE ROTATABLE HANDLES

Arnold Thaler, Plantation, Fla., and Lai Kin, Kowloon, Hong Kong, assignors to Windmere Corporation, Hialeah, Fla.

Filed May 15, 1984, Ser. No. 610,567
Int. Cl.[4] H05B *3/00;* **A45D** *1/04, 1/18*
U.S. Cl. 219—225 **25 Claims**





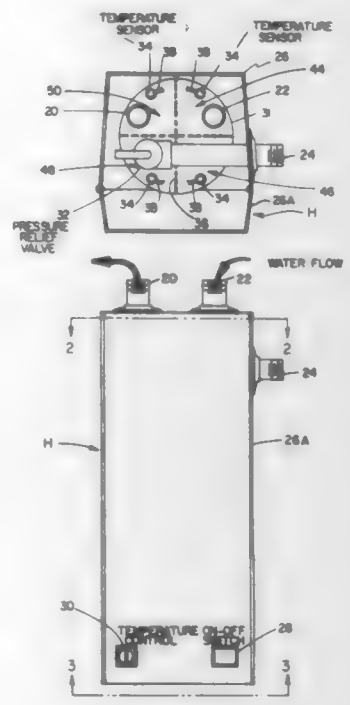
1. A rotatable curling iron comprising:
a heat conductive cylinder having an outer surface;
a main handle coupled to said cylinder, said main handle being rotatable relative to said cylinder;
first locking means on said main handle and cylinder and movable between a first position for coupling and locking said main handle to said cylinder, in which position said main handle is prevented from rotating, and a second position for uncoupling said main handle from said cylinder, in which position said main handle is free to rotate relative to said cylinder, said first locking means being biased toward said first position, said first locking means including first retaining means releasably retaining said first locking means in its second position when moved into such second position;
clamping means having a partial cylindrical clamp member having inner and outer surfaces, said inner surface of said clamp member being contoured to wrap around a portion of the outer surface of said cylinder for clamping hair between said cylinder and said clamp member and a clamping handle coupled to said clamp member; and
means for pivotably coupling said clamping means to said cylinder so that said clamp member can be pivoted with respect to said cylinder by manipulation of said clamping handle.

4,604,515

TANKLESS ELECTRIC WATER HEATER WITH STAGED HEATING ELEMENT ENERGIZATION

Mel Davidson, Houston, Tex., assignor to CMR Enterprises, Inc., Houston, Tex.

Filed Oct. 16, 1984, Ser. No. 661,372
Int. Cl.[4] H05B *1/02, 3/82;* **F24H** *1/10*
U.S. Cl. 219—298 **9 Claims**



1. A water heater comprising:
(a) a housing, including heater inlet and outlet ports adapted to receive and discharge, respectively, water to be heated and circulated along a flow path through the housing;
(b) the housing including a plurality of heating chambers, serially connected along the flow path;
(c) each chamber including an inlet and outlet;
(d) a separate heating means and a separate temperature sensing means for each chamber, the temperature sensing means producing a signal indicative of the water temperature in the chamber;
(e) an outlet temperature selecting means for producing a signal indicative of a desired temperature for water flowing through the outlet port; and
(f) control means connected to each heating means and responsive to the signals produced by each of the temperature sensing means and to the signal produced by the outlet temperature selectivng means for individually controlling the energization of each of said separate heating means to maintain the water flowing through the outlet port at a desired temperature by energizing the heating means in each chamber only if the temperature of the water in that chamber as sensed by the temperature sensing means in that chamber is below the desired outlet temperature as selected by said outlet temperature selecting means.

4,604,516

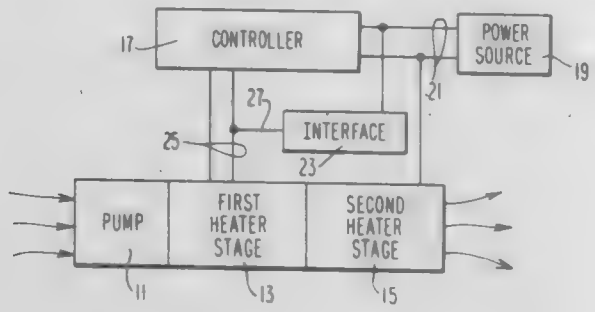
CASCADED ARRANGEMENT FOR ELECTRICALLY HEATING FLUIDS TO HIGH TEMPERATURE

Bruce E. Metz, Wilmington, Del., assignor to Athena Controls Inc., Plymouth Meeting, Pa.

Filed Jul. 19, 1983, Ser. No. 515,161
Int. Cl.[4] H05B *1/02;* **F24H** *1/10, 3/04*
U.S. Cl. 219—379 **7 Claims**

1. A cascaded fluid heating arrangement comprising in combination: pump means formed to discharge a relatively constant stream of fluid; electrical power source means; temperature controller means connected to said electrical power source means to receive electrical energy therefrom; first electrical heating means connected through first connecting

circuitry to said temperature controller means, said first electrical heating means disposed in a first heating chamber means which is coupled to said pump means to receive said relatively constant stream of fluid therefrom to enable said first electrical heating means to heat said stream of fluid to a first temperature, said first electrical heating means formed and disposed to act as a sensor whereby said temperature controller includes means responsive to changes in electrical resistance in said first electrical heating means; second electrical heating means disposed in a second heating chamber, which second heating chamber



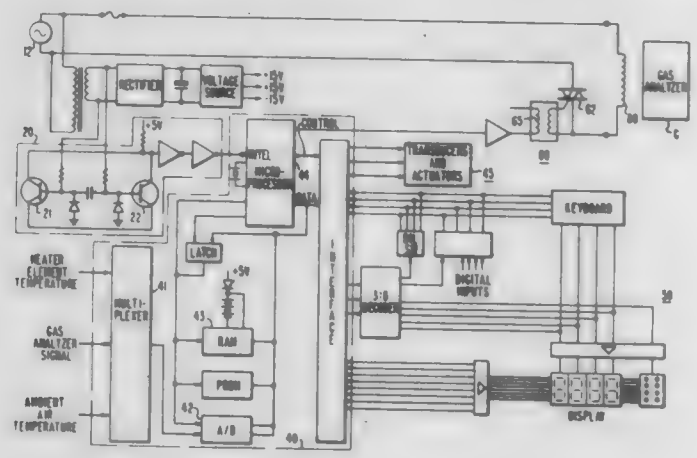
is coupled to said first heating chamber to receive said stream of fluid therefrom and whereby second electrical heating means heats said stream of fluid to a higher temperature than said first temperature; interface circuitry means connected to said first connecting circuitry and disposed to connect said power source to said second electrical heating means, said interface circuitry formed such that as the electrical current to said first electrical heating means varies, said interface circuitry will cause said power source to provide a related variation in current directly to said second heating means.

4,604,517

PULSE FREQUENCY MODULATION CONTROL FOR A HEATER

Michael N. Barry, Cork, Ireland, assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Continuation of Ser. No. 521,206, Aug. 8, 1983, abandoned. This application May 20, 1985, Ser. No. 736,406
Int. Cl.[4] H05B *1/02*
U.S. Cl. 219—494 **3 Claims**



1. A heater control system for maintaining a predetermined temperature of a solid electrolyte electrochemical cell of a gas analyzer essentially constant, comprising:

an AC power source;

a heater element operatively coupled to said solid electrolyte electrochemical cell of said gas analyzer,

a control circuit means coupling said AC power source to said heater element, said control circuit means including, a zero crossing detector circuit means for developing output logic levels indicative of the zero crossing of the AC cycles of said AC power source, a microcomputer means including a software program which implements a real time counter which is preset with the number of AC cycles to be controlled during a modulation period, the logic outputs of said zero crossing detector circuit means decrementing the counter, said microcomputer means including a multiplexer which generates signals indicative of at least said heater elements temperature, ambient temperature and gas analysis signal, said microcomputer means responding to the counter and the signals generated by said multiplexer in order to select the AC cycles within which AC power is applied to said heater element during the modulation period and generating a uniform output pulse pattern corresponding to an integral number of AC cycles to maintain the predetermined heater temperature essentially constant; and

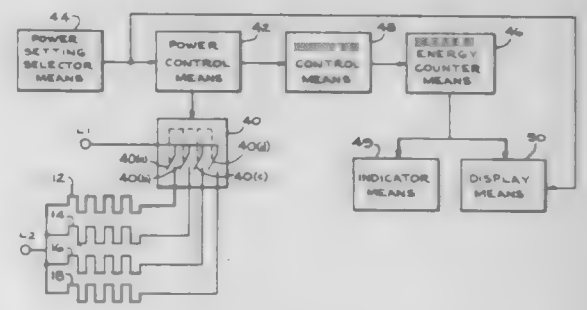
a trigger circuit means responsive to the output pulse pattern of said microcomputer means to dispatch uniformly the integral number of AC cycles of said AC power source to said heater element over the modulation period wherein the AC power applied to said heater element is characterized by a low ripple content and minimal radio frequency interference.

4,604,518

DISPLAY ARRANGEMENT FOR COOKING APPLIANCE WITH POWER CONTROL USING HEATER ENERGY COUNTER

Thomas R. Payne, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Filed Nov. 16, 1984, Ser. No. 672,300
Int. Cl.[4] H05B *1/02*
U.S. Cl. 219—506 **2 Claims**



1. An arrangement for monitoring and displaying the approximate temperature of a resistive heating element adapted for selective energization by a power signal from an external power supply at one of a plurality of power levels in response to selection by an operator of one of a plurality of power settings ranging from relatively low power settings, including an OFF setting, to relatively high power settings and displaying to the user that the element has reached the steady state power level associated with the selected power setting; the heating element having a temperature response characterized by a transient heat-up phase followed by a steady state phase when the power setting is changed from OFF to some power setting; and by a transient cool-down phase when the power setting is changed from a relatively higher power setting to a relatively lower power setting, the monitor and display arrangement comprising:

energy counter means for approximately tracking the heating element temperature;

counter control means operative to selectively increment said energy counter means at an increment rate which is approximately proportional to the rate of increase of the heating element temperature during the heat-up phase when operated at the selected power level, and to discontinue incrementing said energy counter means when said count at least equals a predetermined maximum count which is approximately proportional to the steady state heating element temperature for the selected power setting; said counter control means being further operative to decrement said energy counter means when the power setting selection is changed from a relatively higher power setting to a relatively lower power setting at a decrement rate which is approximately proportional to

the rate of decrease of the heating element temperature during its cool-down phase, and to discontinue decrementing said energy counter means when said count is less than a predetermined maximum count which is approximately proportional to the steady state operating temperature of the heating element at the selected relatively lower power setting; and

display means responsive to said counter control means operative to signify to the user that said count of said energy counter is closely approaching said predetermined maximum count for the selected power setting;

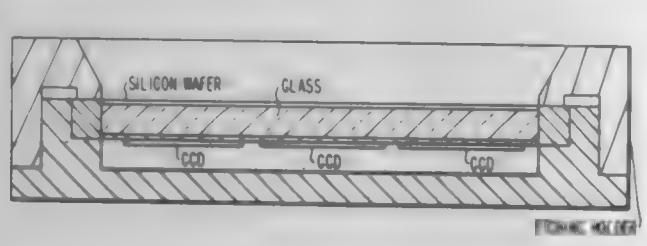
said display means comprising an array of display segmensts adapted to be selectively energized to form a plurality of patterns, each pattern representing a corresponding power setting, and circuit means for selectively energizing said display segments in that one of said plurality of patterns corresponding to the selected power setting, and means for intermittently interrupting energization of said display segments thereby creating a blinking effect during a period of predetermined duration, said period being initiated upon the occurrence of a predetermined count of said counter means, which count is a function of said predetermined maximum count for the selected power setting whereby blinking of said segments of said display means indicates to the user that the heating element has reached its steady state temperature for the selected power setting.

4,604,519

INTENSIFIED CHARGE COUPLED IMAGE SENSOR HAVING AN IMPROVED CCD SUPPORT

James A. Zollman; William M. Kramer, and James L. Rhoads, all of Lancaster, Pa., assignors to RCA Corporation, Princeton, N.J.

Filed May 13, 1983, Ser. No. 494,288
Int. Cl.⁴ H01J *40/14*
U.S. Cl. 250—213 VT **16 Claims**



1. In an intensified charge coupled image sensor of the type comprising:

an image intensifier tube including an evacuated envelope having therein a photoemissive cathode for emitting electrons in a pattern corresponding to the intensity of radiation incident thereon, a header assembly including a header member, a charge coupled device spaced from said cathode, said device having a first surface and a second surface, and support means for supporting said device within said header member, wherein the improvement comprises

said charge coupled device having a conductive boundary on said first surface, said support means comprising a discrete frame member having a coefficient of expansion identical to that of the charge coupled device, said frame member having a first and a second major surface with a conductive pattern on one of said major surfaces in register with the conductive boundry of said charge coupled device, said frame member being disposed between said cathode and said charge coupled device and having an aperture therein to permit the electrons from said cathode to impinge upon said charge coupled device, and

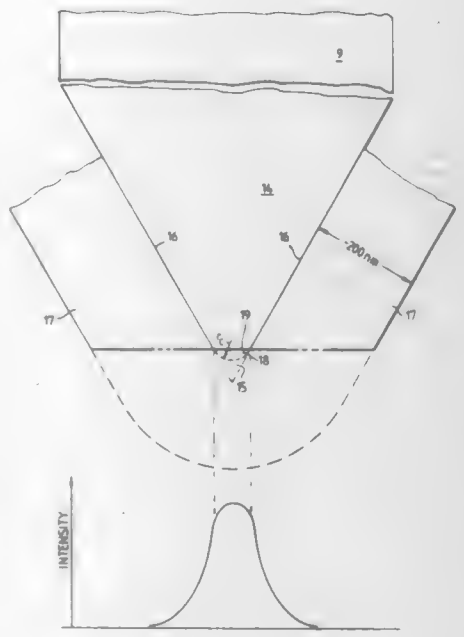
bonding means for securing said conductive pattern of said frame member to said conductive boundary of said charge coupled device, thereby attaching said frame member to said charge coupled device to strengthen and support said charge coupled device.

4,604,520

OPTICAL NEAR-FIELD SCANNING MICROSCOPE

Wolfgang D. Pohl, Adliswil, Switzerland, assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 20, 1983, Ser. No. 563,722
Claims priority, application European Pat. Off., Dec. 27, 1982, 82111974.0
Int. Cl.⁴ H01J *3/14*
U.S. Cl. 250—216 **9 Claims**



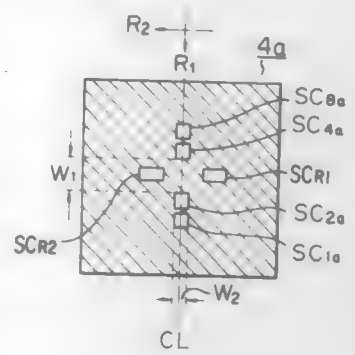
1. An optical near-field scanning microscope comprising an aperture with arrangements for mutual scanning displacement between said aperture and an object to be viewed to provide a controllable distance therebetween, a photodetector optically connected to said aperture, and a light source, characterized in that said aperture consists of a transparent body covered with an opaque layer through which an opening is formed, the diameter of said opening being less than the wavelength of the light used for illuminating the object to be viewed.

4,604,521

OPTICAL ABSOLUTE ENCODER

Yoshitaka Takekoshi, Hachioji, and Shigeyuki Ushiyama, Hino, both of Japan, assignors to Fanuc Limited, Hino, Japan

PCT No. PCT/JP83/00362, § 371 Date Jun. 18, 1984, § 102(e) Date Jun. 18, 1984, PCT Pub. No. WO84/01651, PCT Pub. Date Apr. 26, 1984
PCT Filed Oct. 18, 1983, Ser. No. 624,504
Claims priority, application Japan, Oct. 18, 1982, 57-181471
Int. Cl.⁴ G01D *5/34*
U.S. Cl. 250—231 SE **6 Claims**



1. An optical absolute encoder provided with:

a light emitting element;

a rotary code plate having a plurality of concentric code patterns with light passage portions, for passing light from said light emitting element, and light blocking portions alternately arranged on the same circle and having a reference pattern comprised of just a light passage portion arranged concentrically with said code patterns;

a fixed plate provided with light passage slits provided corresponding to said code patterns and reference pattern of said rotary code plate; and

light receiving elements for receiving light from said light emitting element passing through the light passage portions of said rotary code plate and the light passage portions of said fixed plate;

the optical absolute encoder being characterized in that:

said reference pattern included on said rotary code plate is arranged sandwiched between two adjoining code patterns and in that

said fixed plate is provided with:

first and second code pattern slit groups arranged at first predetermined intervals and in correspondence with said code patterns in the radial direction of said rotary code plate and

reference pattern light passage portions arranged at positions corresponding to said reference pattern at positions separated by exactly second predetermined intervals from the center line of said code pattern light groups.

4,604,522

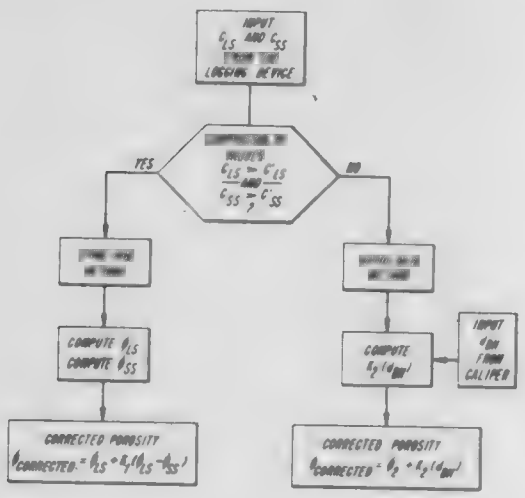
METHOD AND APPARATUS FOR LOGGING A BOREHOLE EMPLOYING DUAL RADIATION DETECTORS

Dan M. Arnold, Houston, Tex., assignor to Halliburton Company, Duncan, Okla.

Filed Nov. 5, 1984, Ser. No. 668,530

Int. Cl.⁴ G01V *5/08, 5/10*

U.S. Cl. 250—264 **20 Claims**



1. An apparatus for logging a characteristic of a borehole in an earth formation employing nuclear count rate data selectively compensated for non-standard borehole conditions, comprising:

a sonde, moveable in a borehole, having:

a radiation source for emitting radiation into earth formations adjacent the wellbore;

first detector, spaced longitudinally from the radiation source, for detecting radiation scattered back to the detector and generating a first signal representative of a first count rate value, C_{SS}; and

second detector spaced a different longitudinal distance from the radiation source, for detecting radiation scattered back to the detector and generating a second signal representative of a second count rate value, C_{LS};

memory means for storing a predetermined threshold value, first predetermined relationships between the borehole characteristic and count rate values C_{LS}, C_{SS}; and second predetermined relationships between the borehole characteristic and ratios of C_{LS} to C_{SS};

electronic means for producing a signal related in value to the borehole characteristic, which electronic means compares at least one of said first and second count rate value signals with the predetermined threshold value, determines when said one count rate value exceeds said threshold, and, in response thereto, produces a first signal representative in value of the borehole characteristic compensated for non-standard borehole conditions according to the first predetermined relationship; said electronic means also determining when said one count rate value is less than said threshold, and, in response thereto, producing a second signal representative in value of the borehole characteristic according to the second predetermined relationship; and

means for recording the signal generated by the electronic means.

4,604,523

SCANNABLE-BEAM MICROSCOPES AND IMAGE STORES THEREFOR

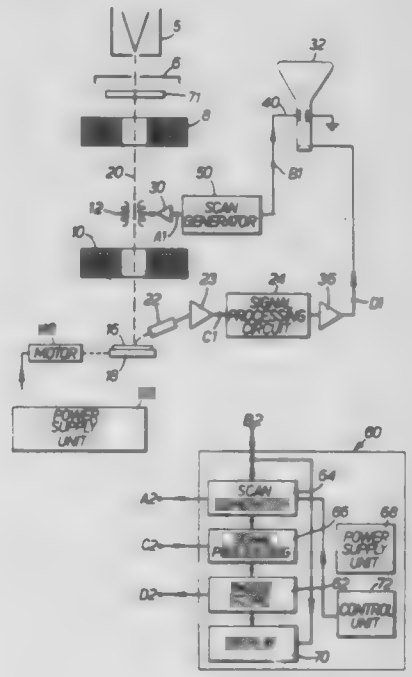
William R. Knowles, Newmarket, and Ian A. Cruttwell, Great Chishall, Nr. Royston, both of England, assignors to Cambridge Instruments Limited, Cambridge, England

Filed Jan. 12, 1984, Ser. No. 570,083

Claims priority, application United Kingdom, Jan. 15, 1983, 8301096

Int. Cl.⁴ G01N *23/00*

U.S. Cl. 250—310 **10 Claims**



1. A microscope arrangement having a movable energy probe and a scannable display means for displaying electrical signals derived from the interaction between a specimen and the probe as it moves over the specimen, in which

the scanning rate of the display means and the mode of movement of the probe over the specimen are fixed and asynchronous with, different from and independent of each other,

the mode of movement of the energy probe is a mode in which the probe is directed to each of a plurality of substantially randomly arranged positions on the specimen, and

including storage means which forms an integral part of the microscope arrangement and is for temporarily storing the signals derived from the specimen before they are displayed by the display means.

4,604,524

PASSIVE INFRA-RED SENSOR

Yaacov Kotlicki, 20 Yoav Street, Ramat Gan, and Moshe Kotlicki, 24 Weisburg Street, Tel Aviv, both of Israel

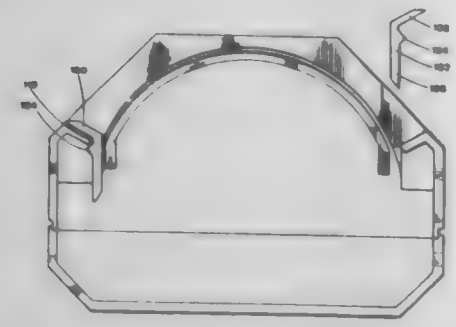
Filed Oct. 11, 1984, Ser. No. 659,945

Int. Cl.⁴ G01J *5/04*

U.S. Cl. 250—342 **17 Claims**

1. A passive infra-red sensor comprising:

a housing including a mounting base and a lens mounting cover element;
detector support means;
an infrared detector mounted on the detector support means; and



a lens arranged for optical coupling to the infrared detector; and
lens mounting and locking retaining means arranged for snap fit engagement with said cover element, and which once inserted, can be removed only from the inside of the cover element and not from the outside thereof.

4,604,525

RADIATION IMAGE STORAGE PANEL WITH DISPERSING AGENT

Akira Kitada; Kikuo Yamazaki, and Hisashi Yamazaki, all of Kaisei, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jul. 2, 1985, Ser. No. 751,122
Claims priority, application Japan, Jul. 4, 1984, 59-138831
Int. Cl.⁴ H05B *33/00;* **G01T** *1/20;* **C09K** *11/02, 11/08*
U.S. Cl. 250—363 R **9 Claims**

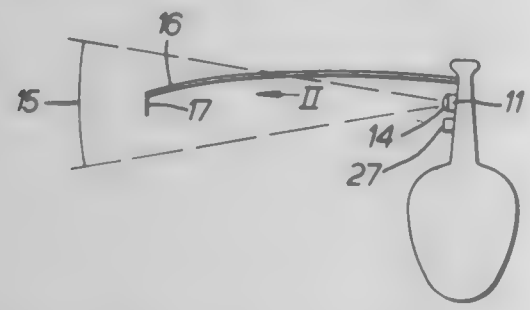
1. A radiation image storage panel comprising a support and a phosphor layer which comprises a binder and a stimulable phosphor dispersed therein and is colored with a colorant, characterized in that said colorant is a pigment capable of absorbing a portion of stimulating rays for the stimulable phosphor and said phosphor layer contains a dispersing agent of at least one fatty acid ester selected from the group consisting of sorbitan fatty acid esters, polyoxyethylene sorbitan fatty acid esters and polyoxyethylene fatty acid esters.

4,604,526

POSITION DETECTOR

Christopher I. Moir, Malvern Link, England, assignor to Micro Control Technology Limited, Great Britain

Filed Nov. 9, 1983, Ser. No. 550,479
Claims priority, application United Kingdom, Nov. 10, 1982, 8233096
Int. Cl.⁴ G01N *21/86*
U.S. Cl. 250—561 **10 Claims**



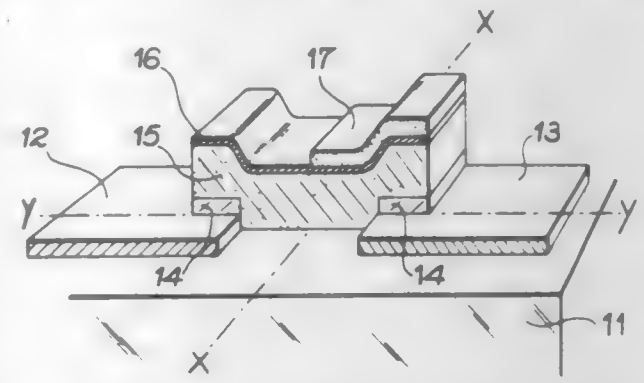
1. A position detector comprising means defining an elongate field of view, for viewing a target which is arranged to cross the field of view in any of a range of positions along the length of the field of view and having a reference part, a sensor in the form of a line of sensitive elements extending parallel with the field of view and positioned to receive an image of the field of view, and electronic means for repeatedly scanning the elements in scanning cycles and for detecting the particular sensitive element which receives the image of the reference part of the target as the target crosses the field of view.

4,604,527

APPARATUS FOR POINT-BY-POINT READING OF DOCUMENTS USING PHOTODETECTOR MATRIX

André Chenevas-Paule, Grenoble, and Robert Cuchet, Clelles, both of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Nov. 10, 1983, Ser. No. 550,769
Claims priority, application France, Nov. 17, 1982, 82 19229
Int. Cl.⁴ H01J *40/14*
U.S. Cl. 250—578 **5 Claims**



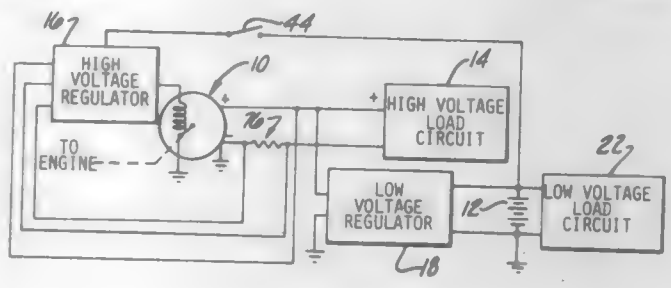
1. In an apparatus for the point-by-point reading of a document including:
(a) a matrix of photodetector elements, said matrix comprising p groups of q basic elements aligned along a first axis, each of said basic elements having an input terminal and an output terminal;
(b) a circuit having p connections, each of said connections being connected to the input terminal of each of the q basic elements in a corresponding one of said p groups; and
(c) an output circuit having q connections, each of said connections being connected to the output terminal of each of the basic elements occupying a corresponding position within said p groups,
each of said basic elements comprising a photodiode and an associated diode which is insensitive to light radiation, said photodiodes and associated diodes each having a first electrode of one polarity and a second electrode of opposite polarity, said first electrode of each photodiode being connected to said first electrode of said associated diode, said second electrode of each photodiode serving as the output terminal of a corresponding one of said basic elements, and said second electrode of each associated diode serving as the input terminal of said corresponding one of said basic elements, said circuit comprising a shift register for supplying a polarization voltage pulse to each of said p connections in sequence in order to render the basic elements connected thereto conductive, the improvement wherein in each basic element the arrangement of layers of material in the interelectrode space of said photodiode is the same as the arrangement of layers of material in the interelectrode space of said associated diode.

4,604,528

DUAL VOLTAGE POWER SUPPLY SYSTEM FOR VEHICLES

Peter Norton, 2730 Narragansett, Lansing, Mich. 48910

Filed Jan. 10, 1984, Ser. No. 569,723
Int. Cl.⁴ H02P *9/30*
U.S. Cl. 307—10 R **12 Claims**



1. In an electrical system for a vehicle, said system being of

the type including a DC generator having a DC output, a storage battery adapted to be charged from the generator, said generator having a field winding of controlled energization, a first load circuit including said storage battery and one or more load devices designed to be powered by electricity at a voltage in a first voltage range corresponding to the rated voltage of the battery, and a second load circuit including one or more load devices designed to be powered by electricity at a voltage in a second voltage range substantially higher than the rated voltage of said battery, the improvement comprising:

a first regulator having a power input coupled with the DC output of said DC generator and having an output coupled with said first load circuit, said first regulator including means for converting DC electrical power applied to said power input to an output voltage meeting the requirements of said first load circuit,

a second regulator responsive to DC voltage derived from said DC output and coupled with the field winding of said generator for controlling said generator to produce an output voltage meeting the requirements of said second load circuit,

the output of said generator being coupled with said second load circuit.

4,604,529

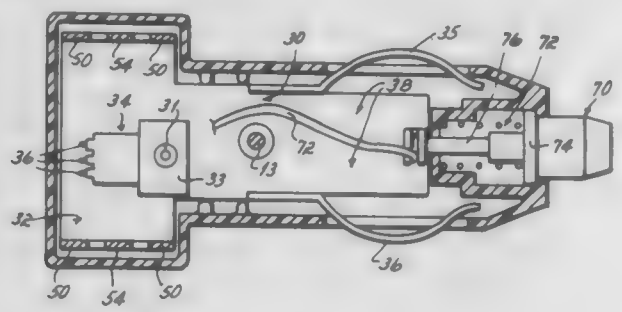
RADAR WARNING RECEIVER WITH POWER PLUG

Richrd L. Grimsley, Cincinnati, and Gregory R. Furnish, Mason, both of Ohio, assignors to Cincinnati Microwave, Inc., Cincinnnati, Ohio

Filed Sep. 28, 1984, Ser. No. 656,157

Int. Cl.[4] H02J *1/00*; H01R *3/00*

U.S. Cl. 307—10 R **12 Claims**



1. In combination:

a radar warning receiver;

a plug adapted to be received within a vehicle cigarette lighter socket;

a power cord interconnecting said radar warning receiver and said plug;

said plug comprising a plastic housing having a forward tubular end the circumference of which is sized to permit said tubular end to be slidably received in said vehicle cigarette lighter socket and further having a rearward handle grip end sized to conveniently be gripped between the thumb and fingers of a human hand;

an elongated metal plate having a forward end being contained substantially within said housing tubular end;

a pair of outwardly bowed resilient spring arms formed integral to the forward end of said plate, said arms projecting exteriorly of said forward tubular end of said housing;

power regulator means being a source of thermal energy and mounted in electrical and thermally conductive contact with said plate for providing regulated energy to said radar warning receiver via said power cord from the vehicle electrical system when said plug is received in said vehicle cigarette lighter socket;

said arms (1) being adapted to releasably retain said tubular end in said socket, (2) providing an electrical path between said vehicle electrical system and said power regulator means, and (3) providing a thermally conductive path between said vehicle and said power regulator means whereby said vehicle becomes a heat sink for said power regulator means.

4,604,530

POWER SUPPLY EQUIPMENT BACKUP SYSTEM FOR INTERRUPTION OF SERVICE

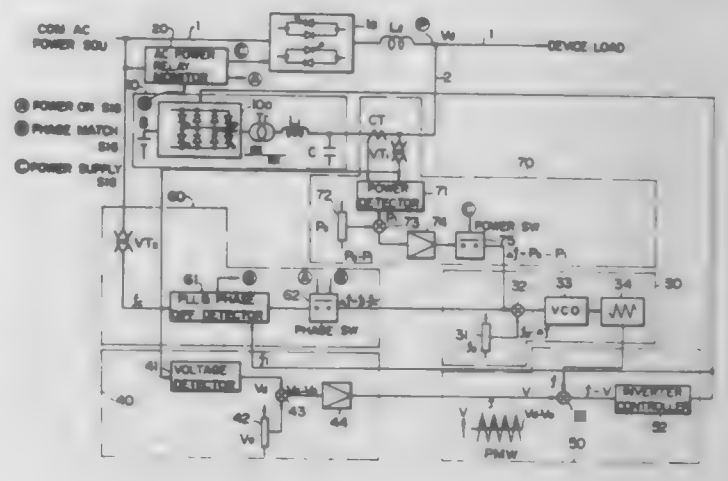
Tadao Shibuya, Numazu, Japan, assignor to Kabushiki Kaisha Meidensha, Tokyo, Japan

Filed Aug. 15, 1984, Ser. No. 641,000

Claims priority, application Japan, Aug. 16, 1983, 58-149482; Aug. 29, 1983, 58-157482

Int. Cl.[4] H02J *9/00*

U.S. Cl. 307—66 **15 Claims**



1. A power supply equipment backup system for interruption of service for supplying power from a commercial AC power source to a device load through a main power supply line (1) and from a battery DC source (B) to the device load through an auxiliary power supply line (2) connected in parallel with the main power supply line in relation to ground, which comprises:

(a) an AC switch (1*a*) connected to the commercial AC power source;

(b) a commercial AC power source mointoring means (20) connected to the commercial AC power source for outputting a power-on signal A to said AC switch (1*a*) for activating said AC switch (1*a*) to supply the commercial AC power source to the device load through the main power supply line when the commercial AC power source changes to a normal condition;

(c) power inverter means (10) having an inductor (L_i) and connected between the battery DC power source (B) and the device load for supplying an inverter power source to the device load through the auxiliary power supply line whenever the commercial AC power source is abnormal or normal;

(d) basic inverter frequency presetting means (30) for outputting a triangular wave signal to determine an inverter frequency substantially equal to said commercial AC power source frequency on the basis of a preset inverter frequency value (fo);

(e) basic inverter voltage presetting means (40) connected to an output terminal of said inverter means (10) for outputting a DC voltage signal to determine an inverter voltage substantially equal to said commercial AC power source voltage on the basis of a preset inverter voltage value (V_o);

(f) inverter controlling means (50) connected to said inverter frequency presetting means (30) and said inverter voltage presetting means (40) for comparing the triangular wave signal with the DC voltage signal in voltage level and for outputting inverter control signals to said inverter means (10), inverter frequency being determined by the triangular wave signal frequency, and further inverter voltage being determined by time intervals during which the triangular wave signal exceeds the DC voltage signal in voltage level,

(g) a main power supply line inductor (L_l) connected between said AC switch (1*a*) and the device load with an output terminal of said inverter means (10) connected to a

junction point between said inductor (L_i) and the device load;

(h) phase matching means (60) including phase difference detecting means connected between the commercial AC power source and said basic inverter frequency presetting means (30) and connected by a feedback loop from said inverter controlling means (50), said phase matching means detecting a phase difference between the commercial AC power source and the inverter power source, outputting a phase difference signal to said basic inverter frequency presetting means (30) to adjust the inverter power source frquency (fi) to the commercial AC power source frequency (fc), and outputting a phase match signal B to said commercial AC power source monitoring means (20) for allowing said monitoring means (20) to output a power-supply signal C to said AC switch (1a) to supply the commercial AC power source to the device load when the inverter power source has matched the commercial AC power source in phase, said phase matching means (60) being connected to said basic inverter frequency presetting means (30) in response to the power-on signal A and disconnected from said basic inverter frequency presetting means (30) in response to the phase match signal B; and

(i) a battery charging power presetting means (70) connected between the output terminal of said inverter means (10) and said basic inverter frequency presetting means (30), said battery charging power presetting means (70) reducing inverter frequency (fi) to supply a battery charging power from the main power supply line (1) to the auxiliary power supply line (2) by passing a charging current from the commercial AC power source to the battery through said inverter means (10) in dependence upon a small phase difference between the commercial AC power source and the inverter power source caused by a small frequency difference between the two, said battery charging power presetting means (70) being connected to said basic inverter frequency presetting means (30) in response to the power-supply signal C outputted from said commercial AC power source monitoring means (20) when the commercial AC power source changes to the normal condition.

4,604,531

IMBALANCE CIRCUITS FOR DC TESTING

John E. Gersbach, Burlington, and John J. Moser, Essex Junction, both of Vt., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 25, 1983, Ser. No. 517,140
Int. Cl.[4] H03K *19/20, 5/08*
U.S. Cl. 307—445 4 Claims

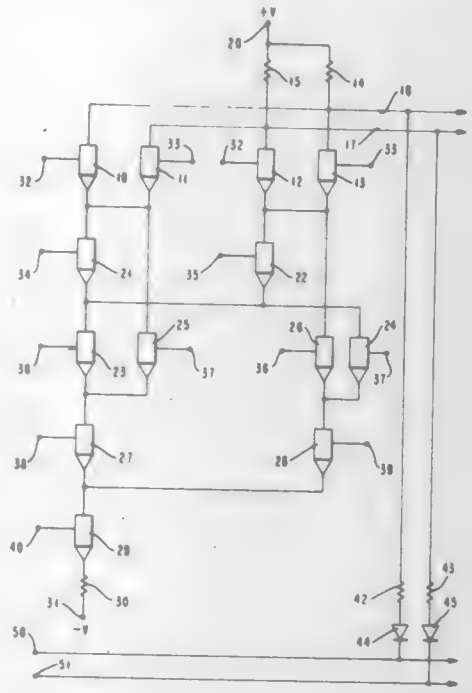
1. A logic circuit array comprising;

a plurality of logic circuits coupled to a pair of output lines and to a first voltage source,

each of said logic circuits comprising a plurality of emitter coupled transistors, arranged in a cascode configuration and coupled between said pair of output lines and a second voltage source,

a first impedance means coupled between said first voltage source and one of said pair of said output lines,

a second impedance means coupled between said first voltage source and the other of said pair of output lines, and



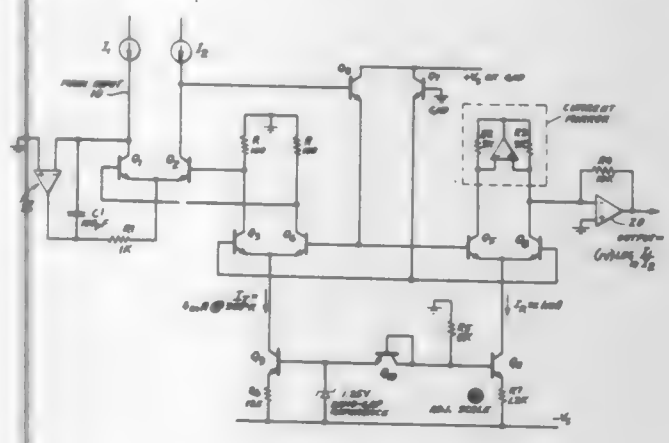
an imbalance voltage means connected to at least one of said output lines via a third impedance means for imbalancing at least one of said output lines.

4,604,532

TEMPERATURE COMPENSATED LOGARITHMIC CIRCUIT

Barrie Gilbert, Forest Grove, Oreg., assignor to Analog Devices, Incorporated, Norwood, Mass.

Continuation of Ser. No. 455,240, Jan. 3, 1983, abandoned. This application Jan. 24, 1985, Ser. No. 694,462
Int. Cl.[4] G06G *7/12, 7/24*
U.S. Cl. 307—490 18 Claims



1. A log circuit for producing an output signal proportional to the logarithm of an input signal and free from temperature induced variations, comprising:

input means responsive to said input signal and including means to develop a first signal proportional to the product of (1) the logarithm of said input signal and (2) absolute temperature;

circuit means including a PTAT (proportional-to-absolute-temperature) source producing a second signal and coupled to said input means;

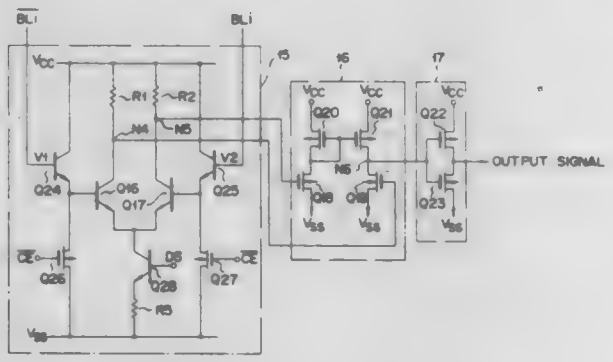
said circuit means further including means for modulating the magnitude of said second signal in accordance with said logarithm while effecting cancellation of the temperature-related factors of said two signals; and

output means for developing an output signal corresponding to said modulation of said second signal.

4,604,533
SENSE AMPLIFIER

Junichi Miyamoto, and Shinji Saito, Both of Yokohama, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Dec. 20, 1983, Ser. No. 563,501
Claims priority, application Japan, Dec. 28, 1982, 57-233564; Apr. 20, 1983, 58-76459
Int. Cl.[4] H03K *5/24;* G11C *7/06*
U.S. Cl. 307—530 10 Claims



5. A sense amplifier responsive to a chip enable signal and coupled to a plurality of MOS transistor type memory cells each providing a different differential signal and to first and second power supplies, said sense amplifier comprising:

first and second bipolar transistors having current paths connected at a first end to said first power supply and having bases coupled to receive a differential signal from one of said memory cells;

first and second MOS transistors each having a current path coupled at a first end to said second power supply and at a second end to a second end of a different one of said first and second bipolar transistor current paths, said first and second MOS transistors each having a gate coupled to said chip enable signal for controlling the conductivity state of said first and second MOS transistors;

third and fourth bipolar fransistors each being connected to a different one of said first and second bipolar transistors in a Darlington pair configuration, said third and fourth bipolar transistors having current paths connected together at first ends;

first and second load elements each connected between said first power supply and a second end of a different one of said third and fourth bipolar transistor current paths;

a constant current source connected between said first ends of said third and fourth bipolar transistor current paths and said second power supply;

third and fourth MOS transistors each having a gate coupled to said second end of a different one of said third and fourth bipolar transistor current paths, said third and fourth MOS transistors each having a current path with a first end connected to said second power supply; and

a current mirror circuit formed of MOS transistors and connected between a second end of said current paths of said third and fourth transistors and said second power supply, thereby supplying said third and fourth MOS transistors with a constant current, and said mirror circuit receiving a signal from said second end of said third MOS transistor current paths.

4,604,534
HIGHLY SENSITIVE HIGH PERFORMANCE SENSE AMPLIFIERS

Wilbur D. Pricer, Burlington, Vt., assignor to International Business Machines Corporation, Armonk, N.Y.

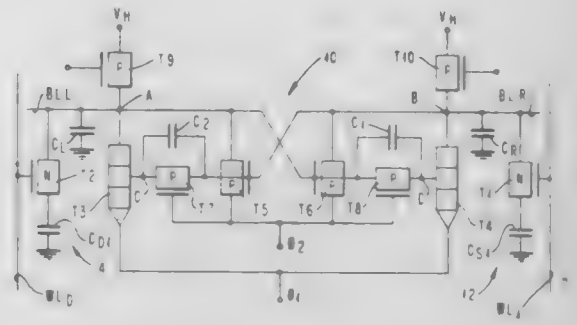
Filed Dec. 3, 1984, Ser. No. 677,613
Int. Cl.[4] H03K *5/24, 3/287, 3/356;* G11C *7/06*
U.S. Cl. 307—530 23 Claims

1. A sense amplifier comprising;

first and second nodes,

input/output means coupled to said nodes,

a pair of cross-coupled bipolar transistors arranged as a regenerative latch coupled at their control electrodes between said nodes,



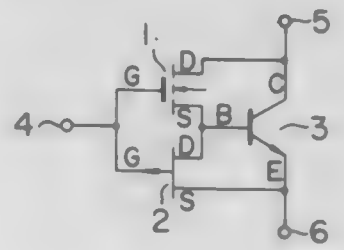
a pair of cross-coupled field effect transistors arranged as regenerative latch coupled at their control electrodes between said nodes, and

means for coupling a supply voltage to said transistors.

4,604,535
FET-BIPOLAR SWITCHING DEVICE AND CIRCUIT

Takao Sasayama, Hitachi; Kazuo Kato, Ibaraki, and Masayoshi Naito, Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed May 10, 1982, Ser. No. 376,575
Claims priority, application Japan, May 13, 1981, 56-70803
Int. Cl.[4] H03K *17/04, 17/60, 17/687*
U.S. Cl. 307—570 8 Claims



1. A switching device comprising a MOS FET, a depletion type FET and a bipolar transistor, a source of the MOS FET being connected to a drain of the depletion type FET with the connecting junction connected to a base of the bipolar transistor, a drain of the MOS FET being connected to a collector of the bipolar transistor and a source of the depletion type FET being connected to an emitter of the bipolar transistor, the collector-emitter conduction or non-conduction of said bipolar transistor being controlled by an input signal applied to gates of the MOS FET and depletion type FET connected in common.

4,604,536
TIMING CIRCUITS

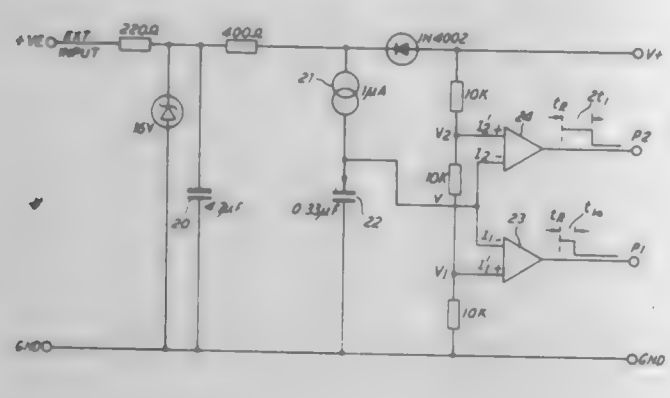
Richard C. D. Clutterbuck, Cobham, and Anthony R. Painton, Slough, both of England, assignors to EMI Limited, Hayes, England

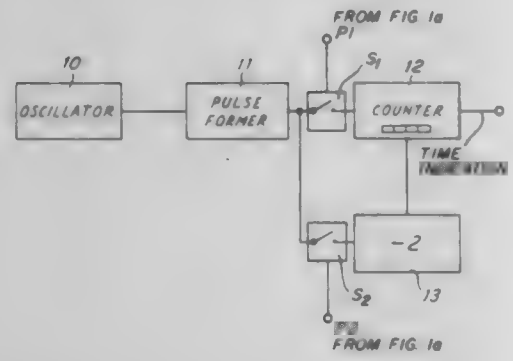
Filed Mar. 8, 1984, Ser. No. 587,537
Claims priority, application United Kingdom, Mar. 9, 1983, 8306483
Int. Cl.[4] H03K *17/28, 21/02*
U.S. Cl. 307—603 6 Claims

1. A timing circuit comprising,

a control circuit including a first pulse generating means for generating a first control pulse on expiry of a first delay, of preset duration, measured from reception of an external pulse, and a second pulse generating means for generating a second control pulse on expiry of a second delay, of preset duration, measured from the end of said first delay; and a clock circuit including means for generating clock pulses and counting means, responsive to said first and second control pulses, to count said clock pulses respec-

tively at a first rate and a second rate, $1/(r+1)$ times the first rate, where r is the ratio of said first delay to said





second delay, whereby after said second delay the count produced by said counting circuit represents the elapsed time as measured from reception of said external pulse.

4,604,537

AC TACHO-GENERATOR

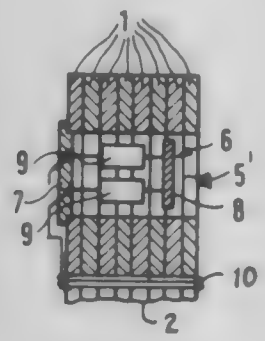
Hans-Dieter Layh, Zachersweg 17, D-7121 Gemmrigheim, Fed. Rep. of Germany

Filed Sep. 4, 1984, Ser. No. 647,135

Claims priority, application Fed. Rep. of Germany, Sep. 9, 1983, 3332533

Int. Cl.⁴ H02K *11/00*

U.S. Cl. 310—68 R **5 Claims**



1. An AC tacho-generator comprising a multiple pole stator with pole windings, said stator consisting of a magnetically interconnected pack of stacked, congruent steel laminae, each lamina defining an annular yoke portion; a plurality of poles projecting radially inwardly from the yoke portion, and an opening formed in each yoke portion, the openings of the yoke portions, in the pack forming a cut-out extending through the stator from endface to endface thereof; and electronic circuitry arranged in the cut-out, said circuitry including circuit elements coupled to said pole windings, a first supporting plate secured at one end of the cut-out and a second supporting plate movably arranged inside the cut-out, the second supporting plate being mounted on the first supporting plate by means of said circuit elements to neutralize thermal expansion of the latter.

4,604,538

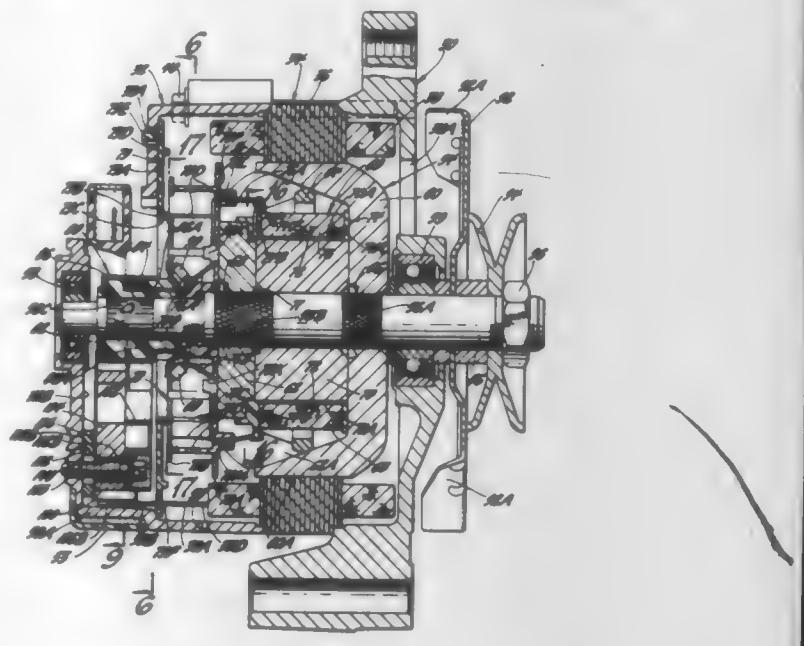
AIR COOLING FOR DIODE-RECTIFIED ALTERNATING CURRENT GENERATORS

Thomas A. Merrill, Anderson, and Donald A. Martin, Markleville, both of Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed Feb. 19, 1985, Ser. No. 703,123

Int. Cl.⁴ H02K *11/00*

U.S. Cl. 310—68 D **5 Claims**



1. An air cooled diode-rectified alternating current generator comprising, first and second metallic end frames, a stator core supported by said end frames disposed within said generator carrying a stator winding, a rotor for said generator having a rotor shaft supported for rotation by said end frames, a bridge rectifier comprised of a plurality of diodes mounted respectively on first and second metallic heat sinks, said diodes being electrically connected to said stator winding, said first heat sink mounted in direct metal-to-metal contact with an inner surface of said first end frame, a first cooling fan driven by said rotor shaft and located within said first end frame, a second cooling fan secured to said rotor shaft and located adjacent an outer surface of said second end frame, a first cooling path for causing cooling air impelled by said first fan to contact said second heat sink and one end of said stator winding located adjacent said first fan, said first cooling path comprising air inlet openings formed in said first end frame, said first fan and air outlet openings formed in an outer circumferentially extending wall of said first end frame that are located adjacent said one end of said stator winding, a second cooling path for causing cooling air impelled by said second fan to contact an opposite end of said stator winding, said second cooling path comprising air inlet openings formed in said second end frame that are disposed adjacent said opposite end of said stator winding and air outlet openings formed in an end wall of said second end frame and aligned with said second fan, said second fan causing some flow of air through said generator from the said air inlet openings formed in said first end frame to the air outlet openings formed in said second end frame.

4,604,539

DRIVE MECHANISM WITH A ROTARY DRIVE MOTOR

Leo Bertram, Stolberg, Fed. Rep. of Germany, and Romuald L. Bukoschek, Klagenfurt, Austria, assignors to U.S. Philips Corporation, New York, N.Y.

Filed May 15, 1985, Ser. No. 734,419

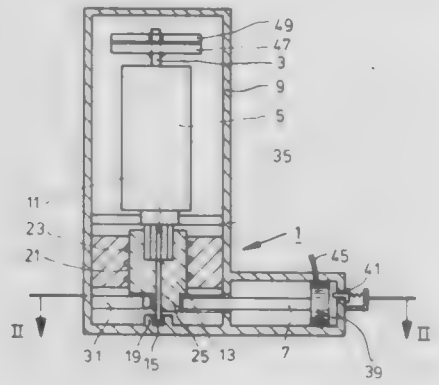
Claims priority, application Fed. Rep. of Germany, May 23, 1984, 3419177

Int. Cl.⁴ H02K *7/06*

U.S. Cl. 310—80 **6 Claims**

1. A drive mechanism comprising a mains-powered rotary drive motor, for converting the rotary movement of the drive

shaft into a pulsating axial movement by means of an eccentric cam, in particular for driving a pump-piston, characterized by a cylindrical body (13), which is force-coupled to the motor shaft (3) of a single-phase synchronous motor (5), which is coaxial with the motor shaft (3), and which co-operates with a piston rod (7) with its eccentric cam (25), and which drive-



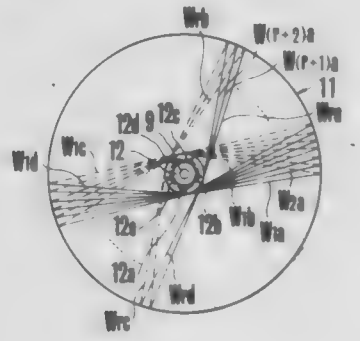
shaft system is supported in a multiple bearing arrangement, which comprises a broad-area bearing (23) for the circumferential surface (21) of the cylindrical body (13) and a shaft bearing (19) for a shaft end (15) which projects from the cylindrical body (13) at the end surface which is remote from the motor.

4,604,540

CORELESS MOTOR, AND A METHOD FOR MANUFACTURING THE CORELESS MOTOR

Tadashi Fukami, Sagamihara, Japan, assignor to Oken Seiko Co., Ltd., Tokyo, Japan

Filed Feb. 12, 1981, Ser. No. 233,817
Claims priority, application Japan, Feb. 18, 1980, 55-18818
Int. Cl.⁴ H02K *21/26*
U.S. Cl. 310—154 **8 Claims**



1. A coreless motor which comprises:

an air-core disc shaped rotor winding comprising a plurality of conductive loops formed from an insulation coated conductor, each said loop extending in the radial direction from a point on the circumference of said winding through the vicinity of the center of said winding to a substantially diametrically opposed point on said circumference, downward along the edge of said circumference to the lower face of said winding, along the radial direction on the lower face of said winding from a point on the circumference thereof, through the vicinity of said center to a substantially diametrically opposed point on said circumference, upward along the edge of said circumference to the upper face of said winding, each said loop being displaced from the preceding loop in the tangential direction of said winding;

a disc shaped yoke formed of magnetic material housed in said rotor winding with a gap therebetween; and

a permanent magnet disposed in a position opposing the plane portion of said rotor winding and having a magnetic pole means for providing magnetic flux which is alternately reversed in the direction of the axis of said winding in regions of said winding lying on opposite sides of the center of said plane portion,

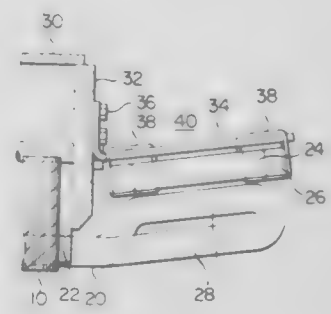
said yoke and said permanent magnet means being fixed relative to each other, and said rotor winding being freely rotatable with respect to said yoke and said permanent magnet means.

4,604,541

SPLIT STATOR ARMATURE WINDING

Shigeru Murasato; Yuji Nakanishi; Kenzou Fujiwara; Norio Takeuchi, and Tsuyoshi Horita, all of Kobe, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 15, 1985, Ser. No. 691,537
Claims priority, application Japan, Jan. 17, 1984, 59-6676
Int. Cl.⁴ H02K *1/00, 3/00, 19/26, 21/00*
U.S. Cl. 310—180 **4 Claims**



1. A split stator armature winding comprising

a circumferentially split stator core having slots formed therein;

a plurality of armature coils mounted in a single layer in said slots without bridging the splitting interface of said split stator; and

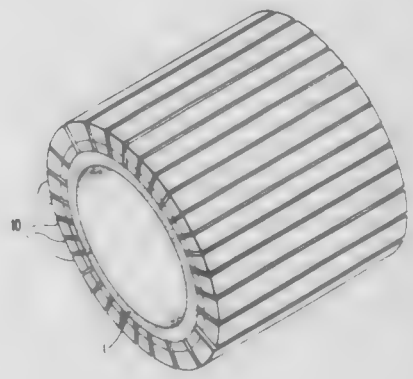
a closed-loop dummy coil disposed so as to bridge said splitting interface of said split stator and in the vicinity of the back portion of the coil ends of said armature coils close to said splitting interface of said split stator.

4,604,542

BROADBAND RADIAL VIBRATOR TRANSDUCER WITH MULTIPLE RESONANT FREQUENCIES

Stephen C. Thompson, Euclid, Ohio, assignor to Gould Inc., Rolling Meadows, Ill.

Filed Jul. 25, 1984, Ser. No. 634,073
Int. Cl.⁴ H01L *41/08*
U.S. Cl. 310—334 **15 Claims**



1. A transducer, comprising:

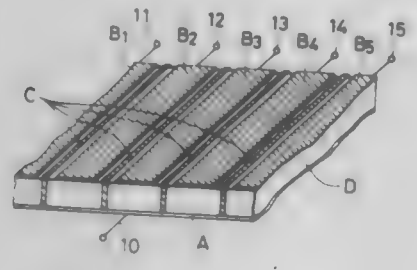
a radial electromechanical transducer element having a radiating surface on an outer circumference of said radial electromechanical transducer element; and

at least two mechanically resonant sections coupled to the radiating surface of said radial electromechanical transducer element and each mechanically resonant section having a laminar structure.

4,604,543
MULTI-ELEMENT ULTRASONIC TRANSDUCER

Shinichiro Umemura, Hachiouji; Hiroshi Takeuchi, Matsudo; Kageyoshi Katakura, Meguro, and Ryuichi Shinomura, Kokubunji, all of Japan, assignors to Hitachi, Ltd. and Hitachi Medical Corporation, both of Tokyo, Japan

Filed Nov. 29, 1984, Ser. No. 676,314
Int. Cl.[4] H01L *41/08*
U.S. Cl. 310—334 18 Claims

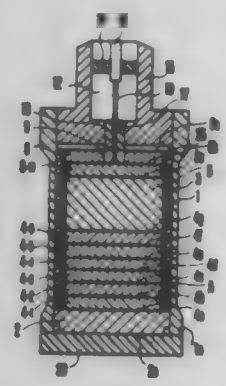


1. A multi-element ultrasonic transducer for at least one of transmission and reception of sound waves comprising:
a piezoelectric material having a plate or sheet shape;
a first electrode formed on a first face of said piezoelectric material;
a plurality of second electrodes formed on a second face of said piezoelectric material opposite to said first face such that they are separated from one another in a manner to correspond to the plural elements of said transducer; and
a plurality of third electrodes formed on the second face of said piezoelectric material and in the gaps between said second electrodes,
wherein said first electrode and said third electrodes are used as a common electrode whereas said second electrodes are used as the signal electrodes for said elements, respectively.

4,604,544
PIEZOELECTRIC PRESSURE INDICATOR

Toshiaki Konomi, Susono; Koji Ito, Gotenba; Yukihiro Nagahori, Kitaadachi, and Akio Ito, Kounosu, all of Japan, assignors to Jeco Co., Ltd., Kanagawa and Toyota Jidosha Kabushiki Kaisha, Aichi, both of, Japan

Filed Oct. 16, 1984, Ser. No. 661,542
Claims priority, application Japan, Oct. 17, 1983, 58-193904; Oct. 17, 1983, 58-160487[U]; Oct. 17, 1983, 58-160488[U]; Oct. 17, 1983, 58-160489[U]
Int. Cl.[4] H01L *41/08*
U.S. Cl. 310—338 3 Claims

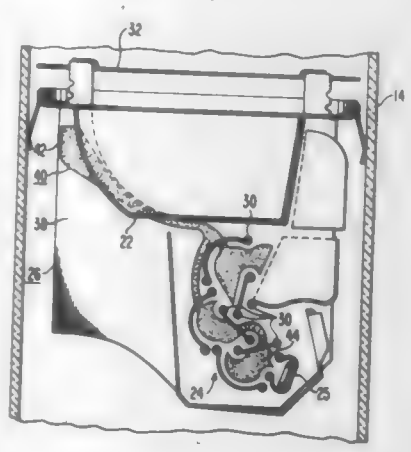


1. In a piezoelectric pressure indicator comprising a casing, a pressure receiving member at a bottom of said casing, piezoelectric element means mounted on said pressure receiving member for producing an electric voltage corresponding to a pressure applied to said pressure receiving member, an acceleration compensating weight and acceleration compensating piezoelectric element means, said first mentioned piezoelectric element means and said acceleration compensating piezoelectric element means being electrically connected such that voltages produced by said piezoelectric element means cancel with each other, thereby compensating for an effect of acceleration, the improvement wherein said acceleration compensating piezoelectric element means comprises an uppermost perforated element and an imperforate element thereunder, a lead wire for deriving the electric voltage connected to an electrode of said imperforate element to extend through a perforation of said perforated element, an output voltage deriving means having a bushing inserted into an upper end of said casing, and a terminal connected to said lead wire through a central opening of said bushing, said bushing having at its bottom surface a plurality of radial grooves in communication with the central opening.

4,604,545
PHOTOMULTIPLIER TUBE HAVING A HIGH RESISTANCE DYNODE SUPPORT SPACER ANTI-HYSTERESIS PATTERN

Arthur F. McDonie, and Richard D. Faulkner, both of Lancaster, Pa., assignors to RCA Corporation, Princeton, N.J.

Filed Jul. 28, 1980, Ser. No. 172,659
Int. Cl.[4] H01J *43/00*
U.S. Cl. 313—105 CM 10 Claims



1. A photomultipler tube comprising:
an evacuated envelope;
a photocathode within said envelope;
an anode spaced from said photocathode;
a plurality of spaced apart dynodes for propagating and concatenating electron emission from said photocathode to said anode;
a pair of substantially parallel support spacers of insulating material to support said dynodes and said anode;
a coating disposed on said support spacers and overlying an interelectrode region extending along a concatenating path of said electron emission from said dynodes to said anode, said coating having a resistance of greater than about 10^6 ohms per square but less than 10^{12} ohms per square.

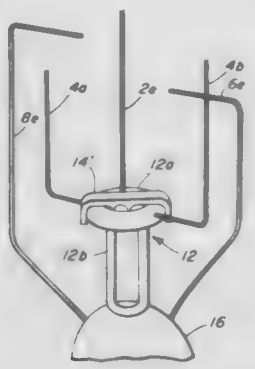
4,604,546
INCANDESCENT LAMP MOUNT STRUCTURE WITH SHIELD FOR EVAPORATION PRODUCTS

David H. Fox, Beverly, Mass., and Lonnie Robinson, Baskin Ridge, N.J., assignors to GTE Products Corporation, Danvers, Mass.

Filed Jul. 3, 1984, Ser. No. 627,397
Int. Cl.[4] H01J *1/88*
U.S. Cl. 313—272 18 Claims

1. An electric lamp for operation in either a "base down" or "base up" orientation, comprising:
(a) a light transparent glass envelope affixed to a lamp base,
(b) a stem means extending from said lamp base within said envelope,
(c) a pair of resistive filaments within said envelope,
(d) lead-in wires extending from the lamp base and said stem means and connected to said filaments,
(e) an arbor supported by said stem means within said envelope,

(f) filament support wires supported by said arbor and connected between said arbor and said filaments,
(g) shield means disposed intermediate said filaments and



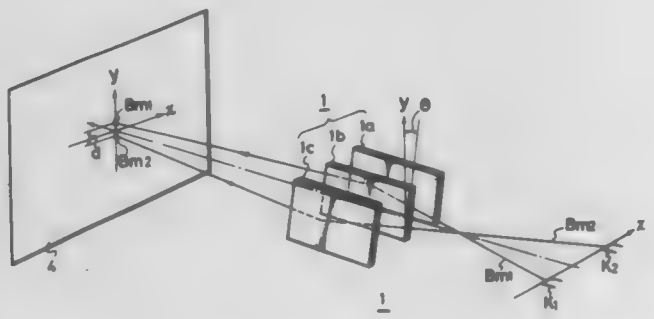
said arbor to shield said arbor from filament evaporation products produced when said lamp is operated and which would otherwise deposit on said arbor when said lamp is operated in the "base up" orientation.

4,604,547

DEFLECTION SYSTEM FOR A TWO ELECTRON BEAM CATHODE RAY TUBE

Tsunenari Saito; Akio Murata, and Koichi Sakai, all of Tokyo, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Feb. 8, 1984, Ser. No. 578,173
Claims priority, application Japan, Feb. 14, 1983, 58-22473
Int. Cl.⁴ H01J *29/50, 29/76*
U.S. Cl. 313—413 **8 Claims**



1. A cathode ray tube with a phosphor screen comprising: first and second cathodes mounted on a horizontal line parallel to each other, and deflecting means through which first and second electron beams emitted from said first and second cathodes pass mounted so as to apply to said first and second electron beams a rotational force about the center of the tube axis, whereby said first and second electron beams impinge on said phosphor screen at positions which are vertically spaced apart from each other by a distance of approximately half the distance between adjacent scan lines.

4,604,548

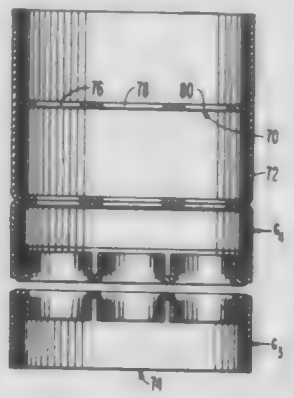
ELECTRON GUN WITH AFTERGLOW ELIMINATOR

Karl G. Hernqvist, Princeton, and Roger C. Alig, Princeton Junction, both of N.J., assignors to RCA Corporation, Princeton, N.J.

Filed May 29, 1980, Ser. No. 154,237
Int. Cl.⁴ H01J *29/50*
U.S. Cl. 313—414 **2 Claims**

1. In an electron gun for use in a cathode-ray tube, said gun including at least one cathode and a plurality of electrodes, each of said electrodes having a beam aperture aligned along an axis and spaced from the cathode, at least two of said electrodes forming a main focus lens, the electrode nearest said cathode which forms the main focus lens including an extrusion about the beam aperture therein and the other electrode of the main focus lens having a shield cup thereon, the improvement comprising

a plate having a plate aperture aligned with the beam apertures in said electrodes, said plate being located within and spaced from the bottom of said shield cup at the opposite end of said gun from said cathode, for blocking the exit



from said gun of electrons emitted from said extrusion and emerging at an off-axis direction from said beam aperture of the electrode of the main focus lens nearest the cathode to reduce afterglow caused by off-axis electrons.

4,604,549

ORANGE-YELLOW EMITTING PHOSPHOR AND CATHODE-RAY TUBE EMPLOYING THE SAME

Naotoshi Matsuda, Kawasaki, and Masaaki Tamatani, Fujisawa, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Continuation of Ser. No. 557,882, Dec. 5, 1983, abandoned. This application Aug. 19, 1985, Ser. No. 767,076
Claims priority, application Japan, Dec. 7, 1982, 57-213308
Int. Cl.⁴ C09K *11/477*
U.S. Cl. 313—468 **11 Claims**

1. An orange to yellow emitting phosphor, consisting essentially of an europium and terbium co-activated indium borate represented by the formula:

$$(In_{1-a-b}Eu_aTb_b)BO_3$$

wherein a and b are such that $0.0001 \leqq a \leqq 0.04$ and $0.0001 \leqq b \leqq 0.04$ and exhibiting a longer 10% afterglow time under electron excitation than a mixture of europium activated indium borate and terbium activated indium borate phosphors having the same quantity of europium and terbium.

4,604,550

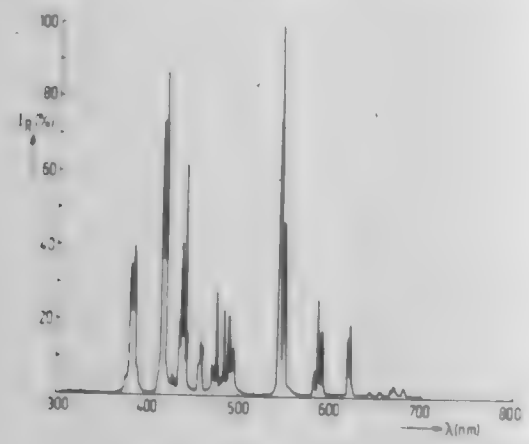
DISPLAY TUBE WITH TERBIUM-ACTIVATED BLUE-LUMINESCING PHOSPHOR SCREEN

Jan L. van Koesveld, and Roelof E. Schuil, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 1, 1984, Ser. No. 667,043
Claims priority, application Netherlands, Nov. 3, 1983, 8303782
Int. Cl.⁴ H01J *31/00, 29/10;* **C09K** *11/08*
U.S. Cl. 313—478 **8 Claims**

1. A display tube comprising in an evacuated envelope means to generate at least one electron beam which is focused on a display screen and describes a field thereon, which display screen comprises a terbium-activated phosphor on a carrier, and in which the light emitted by the phosphor falls through a filter, characterized in that the energy of the emissions of the phosphor which find their origin in the $^5D_3$-level of terbium, is at least 40% of the energy of the emissions of all terbium levels and the filter has a transmission of more than 75% at those wavelengths where the $^5D_3 \rightarrow {}^7F_5$ and the $^5D_3 \rightarrow {}^7F_4$ emissions of terbium are located and the filter has a transmission of less

than 10% at those wavelengths where the $^5D_4 \rightarrow {}^7F_5$ and the $^5D_4 \rightarrow {}^7F_4$ and the $^5D_4 \rightarrow {}^7F_3$ emissions of terbium are located so



that the color point of the filtered light is located in the range $x \leqq 0.200$ and $y \leqq 0.100$ in the CIE color triangle.

4,604,551

CYCLOTRON RESONANCE MASER SYSTEM WITH MICROWAVE OUTPUT WINDOW AND COUPLING APPARATUS

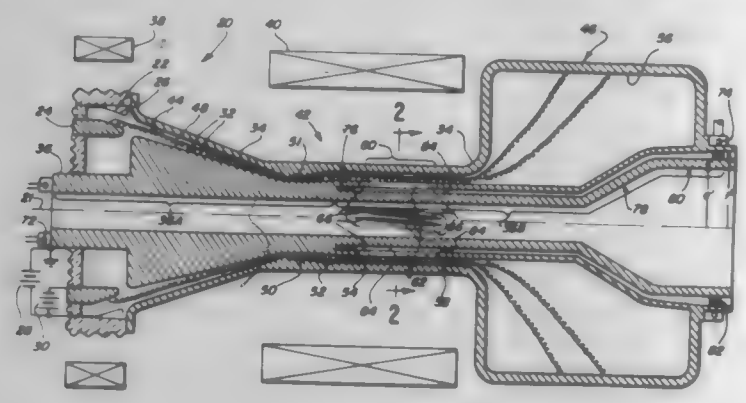
Charles P. Moeller, Del Mar, Calif., assignor to GA Technologies Inc., San Diego, Calif.

Continuation-in-part of Ser. No. 517,570, Jul. 26, 1983, Pat. No. 4,523,127, which is a continuation-in-part of Ser. No. 463,144, Feb. 2, 1983, abandoned. This application Jun. 20, 1984, Ser. No. 622,672

Int. Cl.⁴ H01J *25/00*

U.S. Cl. 315—4

44 Claims



1. A cyclotron resonance maser system comprising:

an assembly of components disposed successively along a common axis and including successively and coaxially an annular source of electrons, tunnel means for defining a beam tunnel symmetrically disposed about said axis, interaction means for defining an electron-microwave interaction region symmetrically disposed about said axis, a first coaxial waveguide coupled to said interaction means, and an annular collector of electrons,

means for forming electrons from said source into an annular beam of electrons having substantial energy transverse of said beam and directing said beam of electrons successively through said beam tunnel, said interaction region and said coaxial waveguide to said collector,

a second coaxial waveguide coaxial with and surrounded by said first coaxial waveguide and extending coaxially through said electron collector, and

symmetric coaxial coupling means for coupling microwave energy between said first and second coaxial waveguides.

4,604,552

RETROFIT FLUORESCENT LAMP ENERGY MANAGEMENT/DIMMING SYSTEM

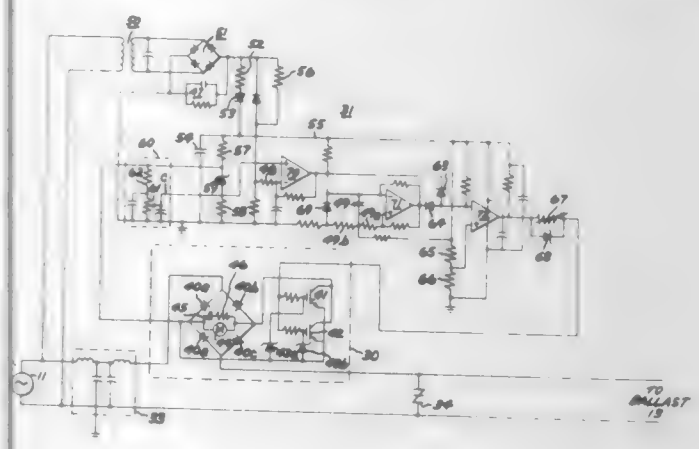
Robert P. Alley, Clifton Park, N.Y.; Paul G. Huber, Warwick, and Joseph M. Sullivan, Coventry, both of R.I., assignors to General Electric Company, Schenectady, N.Y.

Filed Aug. 30, 1984, Ser. No. 645,593

Int. Cl.⁴ H05B *37/00*

U.S. Cl. 315—176

23 Claims



1. A method for maintaining filament heating in a fluorescent lamp dimming system wherein a dimming circuit supplied by an AC line source supplied voltage to a ballast for a fluorescent lamp, the ballast voltage including a low frequency component having a variable duty cycle during each half wave thereof to dim said lamp said low frequency component being passed through said ballast to said lamp and to the filaments of said lamp, said method comprising the steps of:

adding a high frequency component to said ballast voltage, at least during times that said low frequency component is insufficient to maintain filament heating, said high frequency being greater than the resonant frequency of said ballast; and

restricting said high frequency component to cause current flow substantially only in the filaments of said lamp, whereby the filament voltage is maintained while the filament-to-filament current through said lamp is substantially unaffected by said high frequency component.

4,604,553

BASELESS INCANDESCENT LAMP

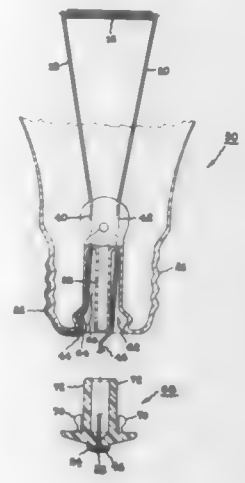
Jerry C. Kosmach, Euclid, Ohio, assignor to General Electric Company, Schenectady, N.Y.

Filed Jul. 30, 1984, Ser. No. 635,995

Int. Cl.⁴ H01J *5/48*

U.S. Cl. 313—315

12 Claims



1. An incandescent lamp devoid of an electrically conductive base and comprising a single unit which forms; (1) an outer envelope; (2) complementary threads for mating with an electrical socket; and (3) an insulative stem, said lamp further

comprising a filament rigidly disposed within said outer envelope by said insulative stem and connected between a pair of inleads, said inleads being connected to respective outer leads, one of said outer leads being electrically connected to at least a portion of said complementary threads by a layer of sprayed particles of electrically conductive material, wherein said single unit has a central hollow portion and means effective to electrically connect the other outer lead to a center contact comprising:

(a) a cylindrical stem member formed of thermoplastic material and having selected complementary dimensions of said hollow portion effective to be inserted into and rigidly lodged within said hollow portion; and

(b) a layer of said electrically conductive material covering said other outer lead and providing electrical contact of said other outer lead to a complementary portion of an electrical socket when the baseless incandescent lamp is so inserted.

4,604,554

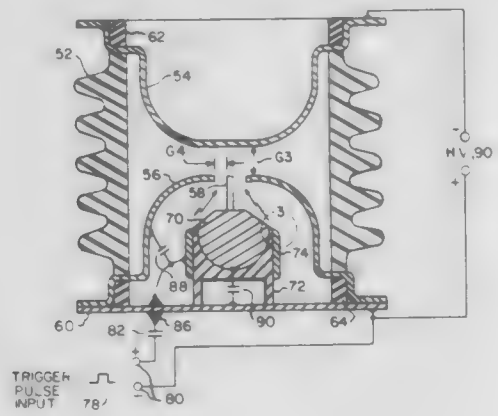
TRIGGERED SPARK GAP DISCHARGER

Roy E. Wootton, Murrysville, Pa., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jun. 5, 1984, Ser. No. 617,449

Int. Cl.[4] H01J *17/36;* H01T *2/02*

U.S. Cl. 315—330 **8 Claims**



1. A triggered spark gap discharger comprising:

means forming a chamber;

first and second primary electrodes having opposed electrode surfaces and defining a primary arc gap within said chamber;

an ionizable gaseous medium in said chamber;

a trigger electrode assembly having a trigger probe defining a trigger gap between itself and said first primary electrode, said trigger gap being smaller than said primary gap;

said trigger electrode assembly having a metallic member insulated from said trigger probe defining an auxiliary gap between itself and said trigger probe, said auxiliary gap being shorter than said trigger gap;

means for applying a high voltage between said primary electrodes; and

means for connecting a trigger pulse source between said metallic member and said first primary electrode.

4,604,555

INTENSITY MODULATION CIRCUIT FOR CATHODE-RAY TUBES

Nobuo Karaki, Suwa, Japan, assignor to Seiko Epson Corporation, Tokyo, Japan

Filed Aug. 13, 1984, Ser. No. 640,480

Claims priority, application Japan, Aug. 12, 1983, 58-147819

Int. Cl.[4] H01J *29/52;* G09G *1/14*

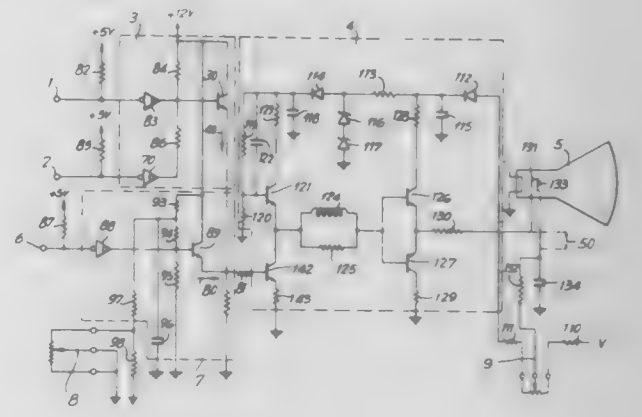
U.S. Cl. 315—383 **19 Claims**

1. An intensity modulation circuit for a cathode-ray display device comprising:

(a) designation means for producing digital signals representative of at least two areas of the display of said cathode-ray tube;

(b) analog signal producing means for producing from said digital signals analog video signals having at least two brightness grades one of said grades being associated with each of said areas of the display;

(c) intensity modulation means coupled to said analog signal producing means for varying the amplification of the



analog video signal in at least one but not all of said grades;

(d) output amplification means for receiving said analog video signals and for driving said cathode-ray tube in response thereto and switching means for switching said display device from an intensity modulation mode to an image superposition mode, said switching means coupled to said designation means.

4,604,556

TELEVISION RECEIVER LOAD COMPENSATION CIRCUIT

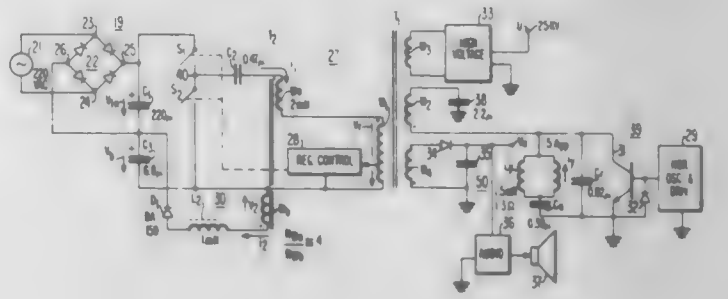
Peter E. Haferl, Adliswil, Switzerland, assignor to RCA Corporation, Princeton, N.J.

Filed Dec. 23, 1983, Ser. No. 564,912

Claims priority, application United Kingdom, Jul. 1, 1983, 8317970

Int. Cl.[4] H01J *29/70;* H04N *5/63*

U.S. Cl. 315—411 **11 Claims**



1. A regulated power supply and deflection circuit, comprising:

a deflection winding;

a deflection circuit coupled to said deflection winding for generating scanning current therein;

a flyback transformer coupled to said deflection circuit;

a retrace resonant circuit for producing transformer retrace pulse voltages across windings of said flyback transformer during a retrace interval;

a source of supply energy;

a load circuit coupled to a winding of said flyback transformer and energized by the voltage developed across that winding to draw a load current therefrom;

a first inductance coupled to said flyback transformer;

switching means for coupling said source of supply energy to said first inductance, said switching means varying in conduction for controlling the energy stored in said first inductance and transferred to said load circuit;

a second inductance coupled to said flyback transformer; and

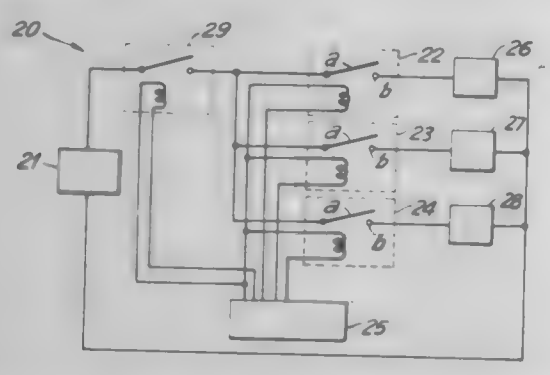
means for producing variation of current in said second inductance that is indicative of variation of the load current drawn by said load circuit, said flyback transformer coupling said second inductance to said retrace resonant circuit for controlling the retrace time in accordance with said variation of current in said second inductance.

4,604,557

VENDING MACHINE POWER SWITCHING APPARATUS

John C. Cowles, Bensalem, Pa., assignor to Mars Incorporated, McLean, Va.

Filed Oct. 10, 1984, Ser. No. 659,385
Int. Cl.[4] H02P 7/74
U.S. Cl. 318—98 **11 Claims**



1. An improved vending machine power switching apparatus comprising:

a plurality of relays for selecting which of a plurality of loads in a vending machine is to be energized, each of said relays having a coil and one set of switching contacts;

a power switching means connected in series with the switching contacts of each of the plurality of relays, said power switching means selectively controlling whether power is connected to the switching contacts of said relays;

each of said relays being associated on a one-to-one basis with a corresponding one of said loads so that when the power switching means connects power to the switching contacts of said relays, power flows through only one set of switching contacts, and the failure of the contacts of any one of said relays only prevents the selection of its associated load; and

an electronic switching control means having an output for producing electrical control signals connected to each of the coils of each of the plurality of relays for controlling the switching of the relays by producing the appropriate electrical control signals so that a relay is switched so as to select its associated load for energization only when the power switching means has disconnected power from the relay's switching contacts and a relay switch is switched to terminate the selection of its associated load only when the power switching means has previously disconnected power from the relay's switching contacts, whereby improved relay switching contact reliability is achieved.

4,604,558

MOTOR DRIVE ASSEMBLY HAVING A FLOATING SWITCH ACTUATOR

George Hirsch, Fort Lee, N.J., assignor to Vernitron Corporation, Lake Success, N.Y.

Filed Jul. 25, 1985, Ser. No. 758,731
Int. Cl.[4] H02P 7/00
U.S. Cl. 318—436 **12 Claims**

1. A motor drive assembly for a load, comprising:

a first support;

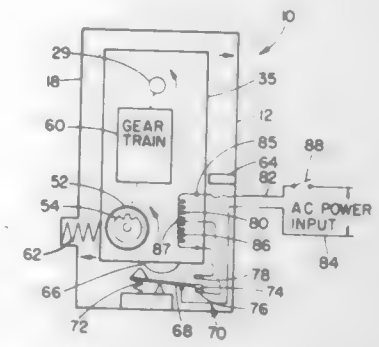
a shaft rotatably carried by said support for driving a load;

a movable second support;

an electric motor carried by said second support and having a rotor operatively coupled to said shaft to drive the same with predetermined torque;

a circuit means; and

a switch means carried by said first support, connected to



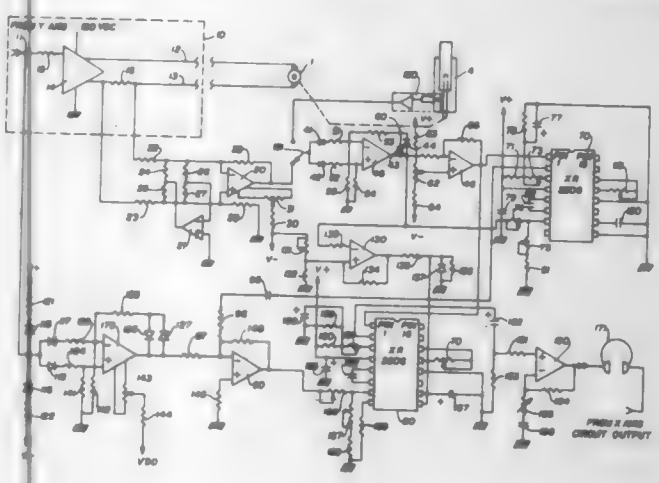
said circuit means, and arranged to actuate said circuit means, said switch means being disposed adjacent to said second support for operation by said second support when said second support moves in response to said rotor's exerting torque greater than said predetermined torque.

4,604,559

APPARATUS AND METHOD FOR PROVIDING USEFUL AUDIO FEEDBACK TO AID IN THE OPERATION OF REMOTELY CONTROLLED POWERED MANIPULATORS

Graham S. Hawkes, and Walter I. Glz, both of Oakland, Calif., assignors to Deep Ocean Engineering Incorporated, Oakland, Calif.

Filed Feb. 15, 1983, Ser. No. 466,433
Int. Cl.[4] G05B 9/02
U.S. Cl. 318—563 **23 Claims**



1. An audio feedback system for monitoring and aiding in user control of a remotely operated, powered manipulator comprising:

means providing an electrical signal proportional to manipulator force;

means providing an electrical signal proportional to manipulator speed;

a signal generator;

frequency modulation means connected to one of said electrical signals for varying the output frequency of said signal generator in proportion to said signal;

amplitude modulation means connected to the other of said electrical signals for varying the output amplitude of said signal generator in proportion to said other signal; and

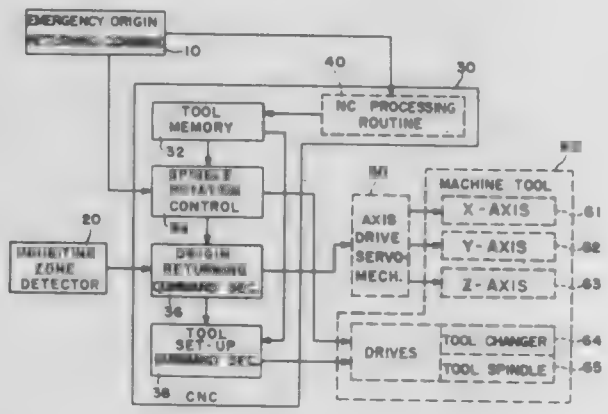
means for audibly reproducing the output of said signal generator.

4,604,560

NUMERICAL CONTROL MACHINE TOOL WITH AN EMERGENCY ORIGIN RETURNING FUNCTION

Syoji Inagaki, Kariya; Hideyuki Sanpe, Toyota, and Norimitsu Makihara, Gamagouri, all of Japan, assignors to Toyoda Koki Kabushiki Kaisha, Kariya, Japan

Filed Sep. 30, 1983, Ser. No. 537,446
Claims priority, application Japan, Oct. 13, 1982, 57-179218
Int. Cl.[4] G05B *19/10*
U.S. Cl. 318—567 3 Claims



1. A numerical control (NC) machine tool comprising:

a frame;

a spindle head rotatably carrying a tool spindle;

a spindle drive motor drivingly connected to said tool spindle;

a work table for mounting a workpiece thereon;

an NC drive axis for effecting relative movement between said spindle head and said work table in an axial direction of said tool spindle;

a tool magazine for storing a plurality of tools;

a tool changer for selectively attaching said tools to said tool spindle;

command means manually operable for generating a command signal instructing the returning of said NC drive axis to a machine origin;

an origin detector for generating an origin signal when said NC drive axis is returned to said machine origin;

a return inhibiting zone detector operable by the relative movement between said spindle head and said work table in the axial direction of said tool spindle for generating a return inhibiting signal when said NC drive axis is within a return inhibiting zone which is defined in the vicinity of said machine origin; and

a numerical controller connected to said spindle drive motor, said NC drive axis, said tool changer, said command means, said origin detector and said return inhibiting zone detector and operable for controlling said NC drive axis and said tool changer in accordance with a numerical control program so as to perform a series of machinings on said workpiece, said numerical controller including,

memory means for registering a tool being presently used on said tool spindle,

origin returning control means responsive to said command signal from said command means for controlling said NC drive axis to discontinue advance movement and then to effect origin returning movement until said origin signal is output from said origin detector, wherein said origin returning movement is performed in such a manner that when said NC drive axis is within said return inhibiting zone upon the manual operation of said command means, said NC drive axis is moved first out of said return inhibiting zone in an opposite direction away from the machine origin and then is reversed toward said machine origin,

direction decision means for determining the direction in which said tool spindle is to be rotated durig said origin returning movement of said NC drive axis under the control of said origin returning control means, by reference to said tool being registered in said memory means, and

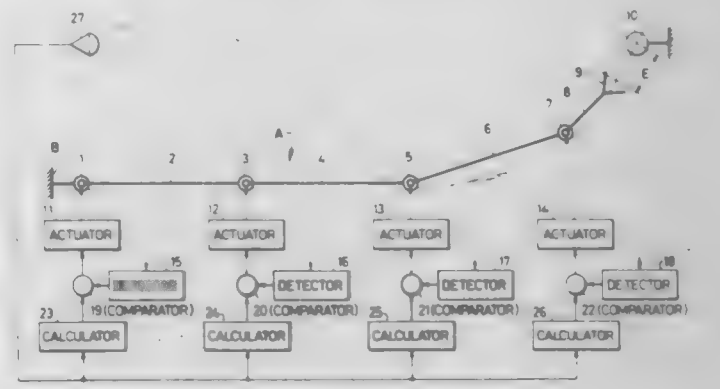
rotation control means for controlling said spindle drive motor to rotate said tool spindle in said direction determined by said direction means during said origin returning movement of said NC drive axis under the control of said origin returning control means.

4,604,561

CONTROL APPARATUS FOR MULTI-JOINTED ARM MECHANISM

Kohji Kamajima, Ibaraki; Yoshiyuki Nakano, Hitachi; Masakatsu Fujie; Yuji Hosoda, both of Ibaraki; Taro Iwamoto, Mito, and Kazuo Honma, Ibaraki, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 17, 1984, Ser. No. 661,958
Claims priority, application Japan, Oct. 17, 1983, 58-192352
Int. Cl.[4] G05B *19/10*
U.S. Cl. 318—567 19 Claims



1. A control apparatus for a multi-jointed arm mechanism having a plurality of arm elements which are respectively driven by actuator means, the control apparatus comprising input means for detecting information indicative of a displacement of the multi-jointed arm mechanism relative to a target position therefor and for providing a common output indicative of the displacement as a commmon control error signal, arithmetic means coupled to the actuator means of at least one of the arm elements for calculating a target movement magnitude of the arm element in response to the common control error signal from the input means and predictive information of the displacement calculated on the basis of movement information of the arm element and for providing an output target movement magnitude signal, means for detecting an actual movement magnitude of the arm element and providing an output signal indicative thereof, and comparison means for comparing the actual movement magnitude signal from the detecting means and the target movement magnitude signal from the arithmetic means and for providing an output signal indicative of the deviation therebetween to the associated actuator means for the arm element.

4,604,562

FEEDBACK-CONTROLLED WORKPIECE POSITIONING SYSTEM

Edward H. Phillips, Middletown, and Lawrence A. Wise, Sunnyvale, both of Calif., assignors to Eaton-Optimetrix Inc., San Jose, Calif.

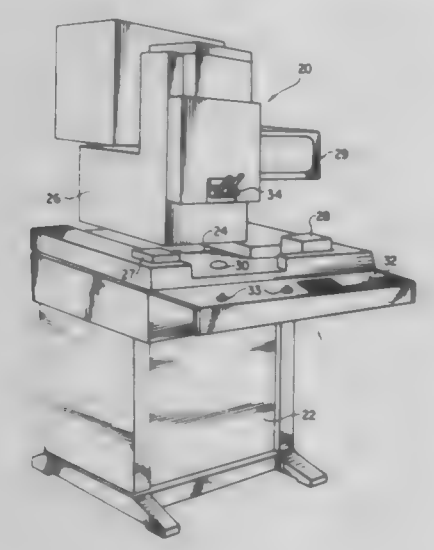
Filed Sep. 29, 1982, Ser. No. 427,716
Int. Cl.[4] G05B *1/06*
U.S. Cl. 318—640 30 Claims

1. Apparatus for positioning a workpiece at a predetermined coodinate location relative to a datum, said apparatus comprising:

a stage, movable along coordinate axes, for holding the workpiece, said stage being positioned at a desired coodinate stage position when the workpiece is positioned at a predetermined location;

measurment means for determining the coordinate position

of the stage relative to the datum, said measurement means including an array of uniformly spaced coordinate indicia affixed to the stage for movement therewith, a sensor means for generating at least three spatially periodic sensor signals for each axis of movement of the state with the signals generated for each axis of movement having periods corresponding to the spacing of the coordinate indicia and being spatially out of phase by a uniform offset, and signal processing means for processing the sensor signals



to produce a stage position signal determinative of the coordinate position of the stage relative to the datum; and positioning means for moving the stage to position the workpiece at the predetermined location, said positioning means including comparison means for comparing the stage position signal with input address information specifying the desired coordinate stage position to provide a positional error, and servo drive means for moving the stage in response to the positional error so as to minimize the positional error.

4,604,563

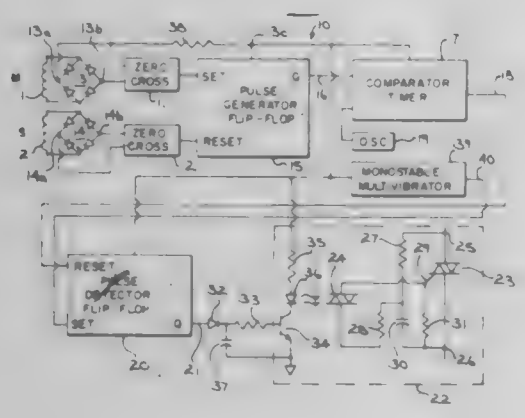
ELECTRONIC SWITCH FOR STARTING AC MOTOR

Young-Kee Min, Milwaukee, Wis., assignor to PT Components, Inc., Milwaukee, Wis.

Filed Dec. 11, 1984, Ser. No. 680,488

Int. Cl.[4] H02P *1/04*

U.S. Cl. 318—786 **12 Claims**



1. In an AC motor having a main winding and a start winding both connectable to an AC power source, and having a switch for disconnecting said start winding from said AC source, an improved control circuit for said switch comprising:

means for sensing main winding voltage;

means for sensing start winding voltage;

pulse generator means responsive to each of said voltage sensing means for generating a first set of variable width pulses having a width determined by the phase differential between said voltages;

comparator timer means responsive to said pulse generator means for outputting a second set of pulses for turning off said switch to disconnect said start winding from said AC source responsive to a given condition of said first set of pulses;

output pulse detector means responsive to said comparator timer means for detecting said second set of pulses and outputting a turn-off signal to said switch,

the pulse width of pulses in said first set of pulses increasing with increasing motor speed to a maximum value, and then decreasing while motor speed continues to increase, said decreasing pulse width passing through a given value corresponding to a threshold motor speed at which said start winding should be disconnected from said AC source,

said given condition of said first set of pulses to which said comparator timer means responds is said increasing pulse width passing through said given value prior to said maximum value,

and comprising delay means for delaying one of said first set of pulses, said second set of pulses and said turn-off signal such that said switch is turned off after said pulse width increasingly passes through said given value and before said pulse width decreasingly passes back through said given value subsequent to said maximum value.

4,604,564

TEMPERATURE CONTROLLED, AUTO TIMED, VARIABLE AMPERAGE CASCADING-WATER FORMATION METHOD FOR USE WITH HIGH ANTIMONY AND MAINTENANCE FREE LEAD-ACID BATTERIES

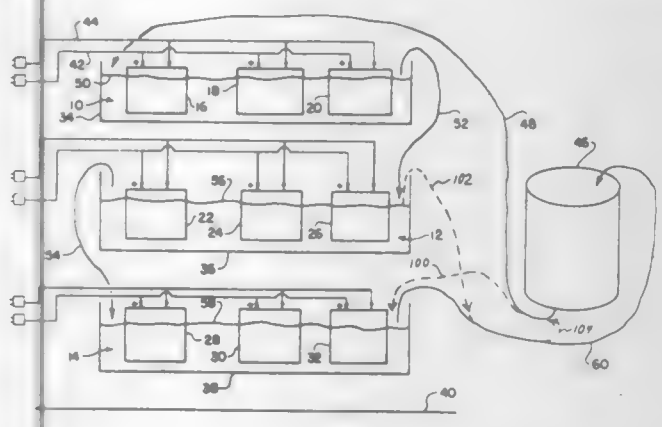
Lawrence Windisch, Selma, Ala.; John Nees, and Harry Channing, both of Wyomissing, Pa., assignors to General Battery Corporation, Reading, Pa.

Continuation of Ser. No. 910,942, May 30, 1978, Pat. No. 4,215,307, which is a continuation-in-part of Ser. No. 821,527, Aug. 3, 1977, Pat. No. 4,117,387. This application Dec. 10, 1979, Ser. No. 101,897

The portion of the term of this patent subsequent to Jul. 29, 1997, has been disclaimed.

Int. Cl.[4] H02J *7/00;* H01M *10/50*

U.S. Cl. 320—2 **9 Claims**



1. A method for producing batteries having plastic cases comprising the steps of:

(a) separating a plurality of batteries into a plurality of sets;

(b) providing a plurality of container means for holding a plurality of battery sets;

(c) placing said sets of batteries into said container means, one set for each container means and electrically interconnecting said batteries in each set for connection to a separate rectifying means for each set;

(d) stacking said plurality of container means at a plurality of positions at different heights above a forming room floor;

(e) connecting each set of said batteries to said separate rectifying means for charging said plurality of batteries in each set;

(f) continuously providing cooling fluid to maintain each of said plurality of container means at a predetermined level, and to circulate said cooling fluid therethrough by causing

said cooling fluid to overflow from said container means; and

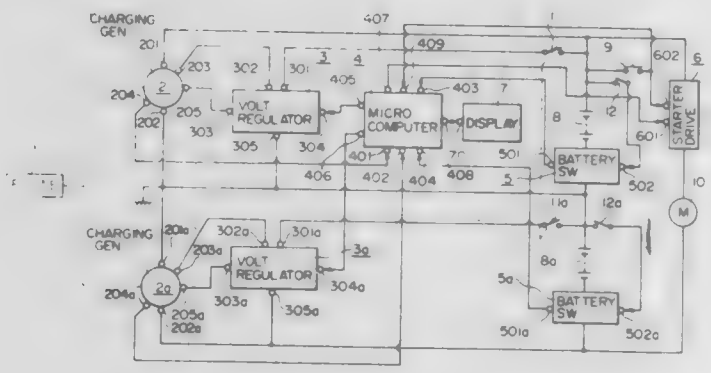
(g) forming said sets with said rectifying means while maintaining said cooling fluid within each of said container means at a temperature of between 100° to 125° F.

4,604,565

MICROCOMPUTER-CONTROLLED DC THREE-WIRE CIRCUIT FOR VEHICLE

Mitsuyoshi Yokota; Akio Matsumoto, and Mitsuharu Morishita, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Hyogo, Japan

Filed May 20, 1983, Ser. No. 496,711
Claims priority, application Japan, May 20, 1982, 57-87092
Int. Cl.⁴ H02J *7/14*
U.S. Cl. 320—15 **7 Claims**



1. A microcomputer-controlled DC three-wire circuit for a vehicle, comprising; first and second charging generators driven by an engine of said vehicle and magnetically separated from one another, and each having a rectifier; a first voltage regulator for detecting an output voltage of said first charging generator, and for controlling said output voltage to a first predetermined value; a second voltage regulator for detecting an output voltage of said second charging generator, and for controlling said output voltage to a second predetermined value; a first battery switch unit, a first battery connected through said first battery switch unit between a pair of terminals of said first charging generator; a starter switch electrically connected to at least said first battery; a second battery switch unit, a second battery connected through said second battery switch unit between a pair of terminals of said second charging generator; and an electric load connected between a positive terminal of one of said charging generators and a negative terminal of the other of said charging generators, and

means including a microcomputer which receives data on the on-off states of said first and second battery switch units, one of (a) first and second engine-speed related output signals of said first and second charging generators, respectively, or, (b) rotation signal data from said engine, and an output signal of said starter switch, for protecting said rectifiers in said first and second charging generators and said load and for preventing undue discharging of said first and second batteries.

4,604,566

VOLTAGE PULSE TO CURRENT REGULATING CONVERTOR

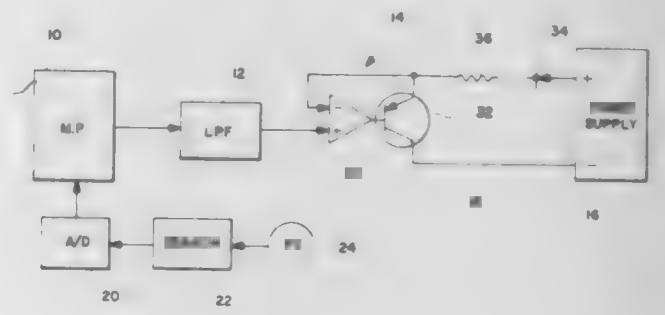
Edward L. Sterling, Jr., Cleveland, and Edward Bastijanic, Concord, both of Ohio, assignors to The Babcock & Wilcox Company, New Orleans, La.

Filed Aug. 7, 1985, Ser. No. 763,486
Int. Cl.⁴ G05F *1/58;* G08C *19/02*
U.S. Cl. 323—275 **14 Claims**

1. A voltage pulse to current regulating convertor comprising:

pulse generator means for generating a voltage pulse train having a selected frequency and a variable duty cycle;

a low pass filter connected to said pulse generator means for receiving said voltage pulse train and for generating a D/C voltage level which corresponds to the duty cycle of said voltage pulse train, said low pass filter having a cutoff frequency which is less than said selected frequency; and



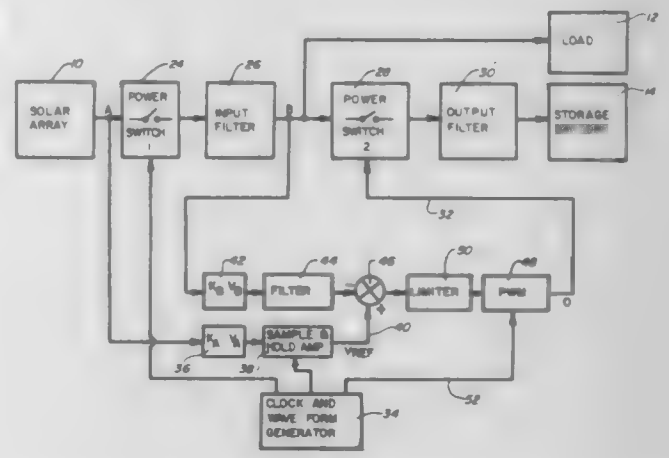
current drawing means connected to said low pass filter for drawing a current which is proportional to the D/C voltage level.

4,604,567

MAXIMUM POWER TRANSFER SYSTEM FOR A SOLAR CELL ARRAY

P. R. K. Chetty, Rockford, Ill., assignor to Sundstrand Corporation, Rockford, Ill.

Filed Oct. 11, 1983, Ser. No. 540,418
Int. Cl.⁴ G05F *5/00*
U.S. Cl. 323—299 **12 Claims**



1. In a system for transferring power from a solar array to a load, an improved means for operating said solar array at its maximum power point comprising:

means for sampling the open circuit voltage of the solar array;

means for sensing the operating voltage of said solar array;

means responsive to the open circuit voltage and the operating voltage of said solar array for providing an error signal;

means responsive to said error signal for altering a condition of said load to operate the solar array at its maximum power point.

4,604,568

CURRENT SOURCE WITH ADJUSTABLE TEMPERATURE COEFFICIENT

Yolanda Prieto, Miami, Fla., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Oct. 1, 1984, Ser. No. 655,837
Int. Cl.⁴ G05F *3/26*
U.S. Cl. 323—315 **19 Claims**

1. In a monolithic integrated circuit, a circuit arrangement for providing a current having a controlled variation with temperature comprising:

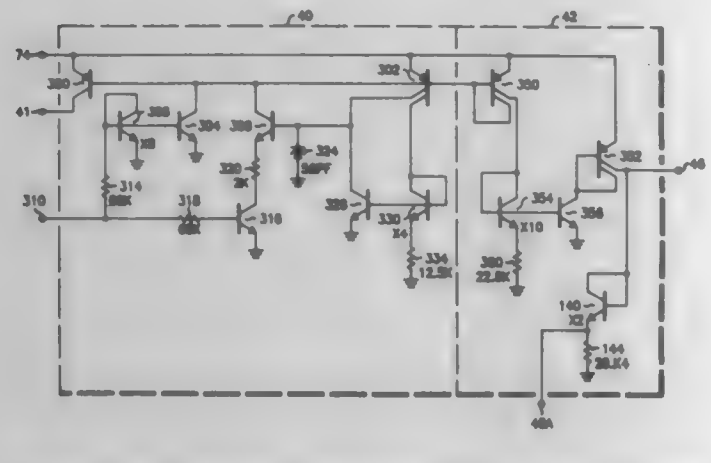
a first resistive pattern area having a first predetermined temperature coefficient of resistivity;

a current source coupled to said first resistive pattern area

for supplying a first current having a first temperature coefficient of current which is a function of said first predetermined temperature coefficient of resistivity;

a current mirror receiving said first current as its reference current and producing a mirror current; and

a second resistive pattern area having a second predetermined temperature coefficient of resistivity, which is



different from said first temperature coefficient of resistivity, said second resistive pattern area being coupled to said current mirror,

whereby said mirror current has a controlled variation with temperature characterized by a temperature coefficient which is a function of said first and second predetermined temperature coefficients of resistivity.

4,604,569

MULTIMETERS

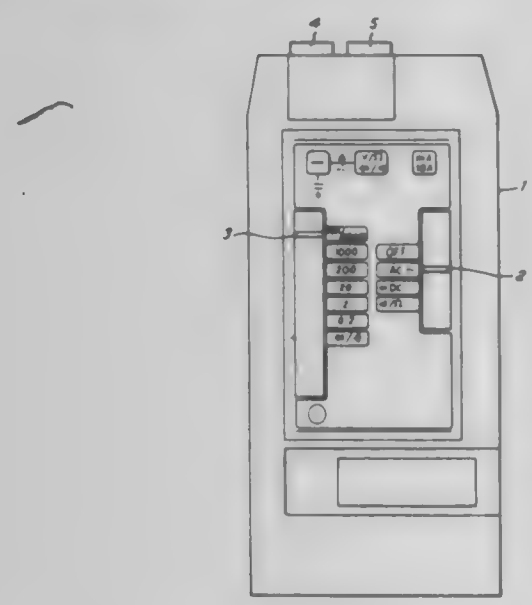
David C. Tedd, Folkestone, and David M. Kennedy, Hythe, both of England, assignors to Thorn EMI Instruments Limited, Dover, England

Filed Jul. 1, 1983, Ser. No. 510,353

Claims priority, application United Kingdom, Jul. 2, 1982, 8219252

Int. Cl.[4] G01R *15/12*

U.S. Cl. 324—73 R 12 Claims



1. A multimeter comprising a first user-operable switching means for selecting one of a first group of different measurement functions, a second user-operable switching means for selecting one of a second group of different measurement functions and further means, responsive to said first and second switching means to initiate an indication, perceptible by a user, whenever said respective measurement functions, selected from said first and second groups, are incompatible with one another.

4,604,570

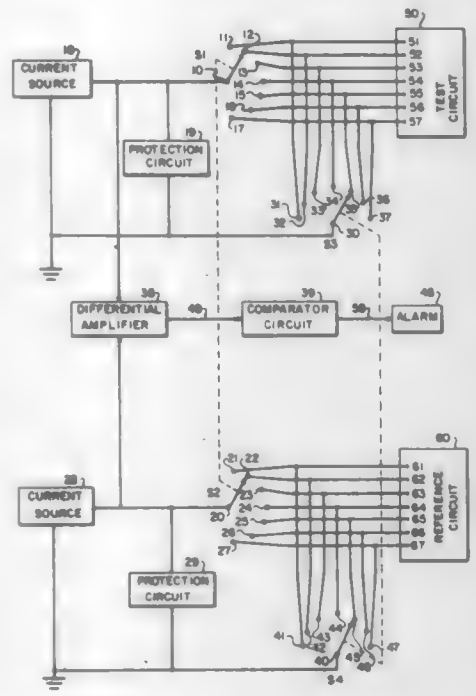
SYSTEM FOR COMPARING CONDITIONS BETWEEN SELECTED PAIRS OF TERMINALS IN TEST CIRCUIT WITH CONDITIONS BETWEEN LIKE TERMINAL PAIRS IN REFERENCE CIRCUIT

Richard W. Thorpe, Claremont, Calif., assignor to General Dynamics, Pomona Division, Pomona, Calif.

Continuation of Ser. No. 344,665, Feb. 1, 1982, abandoned. This application May 29, 1985, Ser. No. 738,824

Int. Cl.[4] G01R *15/12*

U.S. Cl. 324—73 R 8 Claims



1. A system for testing the impedance between different selected pairs of test terminals in a plurality of test terminals of linear and nonlinear test circuits in comparison to the impedance between corresponding pairs of reference terminals in a plurality of reference terminals of corresponding linear and non linear reference circuits during a transient response period, comprising:

first stepping switch means having a first output terminal and a first plurality of input terminals, each input terminal in said first plurality of input terminals adapted for connection to a respective one in a plurality of test terminals, for connecting said first output terminal to any selected input terminal in said first plurality of input terminals;

second stepping switch means having a second output terminal and a second plurality of input terminals, each input terminal in said second plurality of input terminals corresponding to an input terminal in said first plurality of input terminals and adapted for connection to a respective one in a plurality of reference terminals which corresponds to a respective one in a plurality of test terminals, for simultaneously connecting said second output terminal to an input terminal of said second plurality of input terminals that corresponds to the input terminal of said first plurality of the input terminals then selectively connected to said first output terminal by said first stepping switch means;

third stepping switch means having a third output terminal and a third plurality of input terminals, each input terminal in said third plurality of input terminals adapted for connection to a respective one in a plurality of test terminals, for connecting said third output terminal to any selected input terminal in said third plurality of input terminals notwithstanding the connection effected by said first stepping switch means;

fourth stepping switch means having a fourth output terminal and a fourth plurality of input terminals, each input terminal in said fourth plurality of input terminals corresponding to an input terminal in said third plurality of input terminals and adapted for connection to a respective one in a plurality of reference terminals which corresponds to a respective one in a plurality of test terminals,

for simultaneously connecting said fourth output terminal to an input terminal of said fourth plurality of input terminals that corresponds to the input terminal of said third plurality of input terminals then selectively connected to said third output terminal by said third stepping switch means;

first constant current source means connected across said first and third output terminals for providing a first predetermined current so as to flow through a test circuit connected between an input terminal of said first plurality of input terminals and an input terminal of said third plurality of input terminals respectively connected to said first and third output terminals by said first and third stepping switch means;

second constant current source means connected across said second and fourth output terminals for providing a second predetermined current so as to flow through a reference circuit connected between an input terminal of said second plurality of input terminals and an input terminal of said fourth plurality of input terminals respectively connected to said second and fourth output terminals by said second and fourth stepping switch means;

differential amplifier means connected to said first and second output terminals for comparing, in response to the application of said first and second predetermined currents, a first transient response voltage appearing at said first output terminal with respect to said third output terminal during a transient response period with, a second transient response voltage appearing at said second output terminal with respect to said fourth output terminal during said transient response period, and for providing a difference signal corresponding to the difference in amplitude between the compared first and second transient response voltages during said transient response period; and

comparator means connected to said differential amplifier means for comparing the amplitude of said difference signal to a predetermined voltage threshold signal and for providing an alarm signal in response to the comparison of said difference signal and said predetermined voltage threshold signal when the amplitude of said difference signal exceeds said predetermined voltage threshold signal.

4,604,571

CIRCUIT FOR THE DETERMINATION OF VOLTAGE EXTREMA

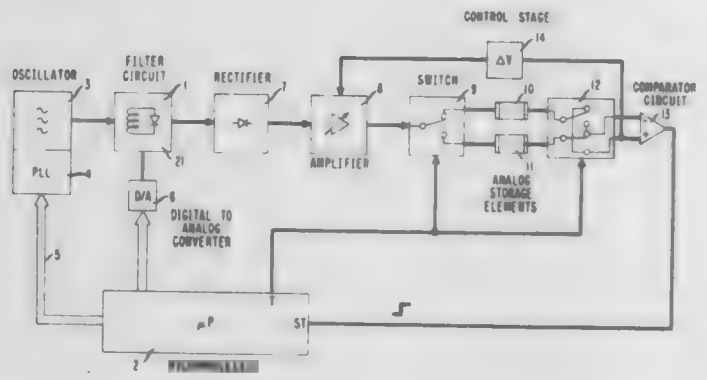
Gerhard Maier, Dauchingen, and Joachim Lange, Villingen-Schwenningen, both of Fed. Rep. of Germany, assignors to Deutsche Thomson-Brandt GmbH, Villingen-Schwenningen, Fed. Rep. of Germany

Filed Feb. 24, 1984, Ser. No. 583,173

Claims priority, application Fed. Rep. of Germany, Feb. 24, 1983, 3306401

Int. Cl.[4] G01R *23/16*

U.S. Cl. 324—77 A 15 Claims



1. A circuit for measuring and recognizing of a maximum output voltage at an electronic filter comprising

a generator for providing a fixed measurement frequency,

a control unit providing a stepwise adjustable control voltage;

an electronic filter circuit fed with the fixed measurement frequency from the generator where the electronic filter comprises a tuning diode, and receiving the stepwise adjustable control voltage; a direct current rectifier-amplifier connected to the output of the electronic filter circuit for rectifying and amplifying the output measurement voltage of the electronic filter circuit;

a clocked switch having its input connected to the output of the rectifier-amplifier and said clocked switch having two outputs;

an analog intermediate storage connected to one output of the clocked switch for storing the voltage value at the respective output of the clocked switch;

an intermediate switch clocked by the control unit and connected to the output of the analog intermediate storage; and

a stop pulse generator stage connected to the output of the intermediate switch for providing a pulse upon the reaching of a maximum value of the measurement voltage and connected to the control unit for transmitting the pulse to the control unit such that the control unit interrupts a further change of the tuning voltage for the electronic filter.

4,604,572

DEVICE FOR TESTING SEMICONDUCTOR DEVICES AT A HIGH TEMPERATURE

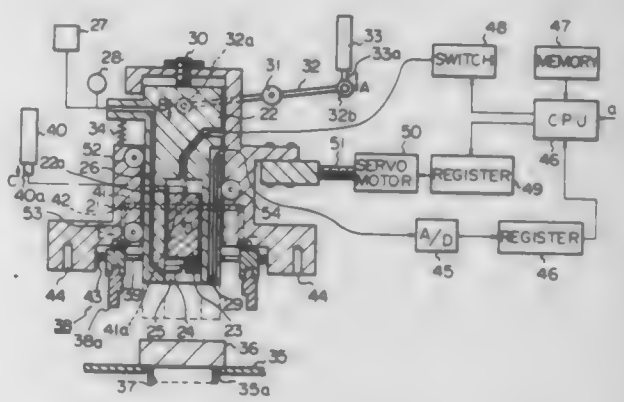
Akinori Horiuchi, Tokyo; Toshio Binnaka, Kawasaki, and Shigeyuki Maruyama, Yokohama, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 395,906, Jul. 7, 1982, abandoned. This application Nov. 19, 1984, Ser. No. 673,203

Claims priority, application Japan, Jul. 8, 1981, 56-102058[U]; Jul. 31, 1981, 56-113863[U]

Int. Cl.[4] G01R *31/26, 31/28*

U.S. Cl. 324—158 F 10 Claims



1. A system for testing semiconductor devices at a high temperature comprising: a heating portion where the semiconductor device to be tested is heated to a predetermined temperature; a testing portion where the semiconductor device is tested; means for chucking said semiconductor device, the chucking means having means for heating the semiconductor device and a thermosensor for the semiconductor device; means for conveying said semiconductor device chucked by the chucking means from the heating portion to the testing portion; and means for controlling the temperature of the heating means installed within said chucking means in response to the output of said thermosensor.

4,604,573

DRIFT RESISTANT MAGNET STRENGTH SIGNAL EVALUATION CIRCUIT

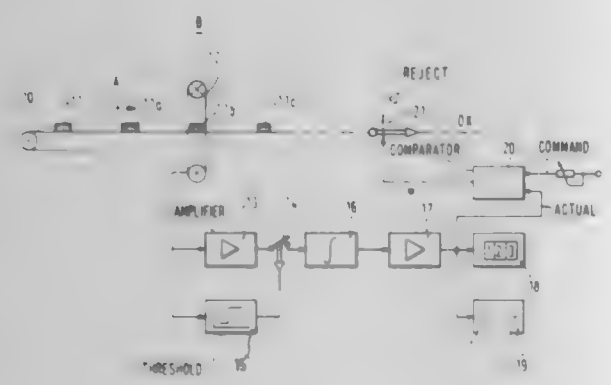
Manfred Eyermann, Vaihingerstrasse 109, D-7132 Illingen; Günter Kettenacker, Wolfsgasse 34, D-7141 Höpfigheim, and Kurt Zimmermann, Berliner Strasse 8, D-7120 Bietigheim, all of Fed. Rep. of Germany

Filed Oct. 20, 1982, Ser. No. 435,405

Claims priority, application Fed. Rep. of Germany, Mar. 2, 1982, 3207370

Int. Cl.[4] G01N *27/74;* G01R *33/12*

U.S. Cl. 324—205 **3 Claims**



1. Apparatus, including a drift-resistant evaluation circuit, for testing the strength of each of a sequence of magnetic components (**11**, **11*a***, **11*b***, **11*c***) of substantially identical physical orientation, having

an electromagnetic sensing means (**12**) providing an output signal representative of the magnetic strength of the component being tested,

an amplifier (**13**) for receiving and amplifying said output signal, and

an integrator (**16**) connected to receive the output signal, integrating the output signal over time, and providing an output control signal,

wherein, in order to prevent noise signals and signals of undesired polarity from reaching said integrator (**16**) and resulting in drift of said output control signal away from values representative solely of said magnetic strength,

there are provided:

a polarity-sensitive threshold circuit (**15**) connected in parallel with said amplifier, for receiving the output signal and testing said output signal to see if it exceeds a predetermined threshold with a given polarity and

controlled switching means (**14**), connected in said evaluation circuit in advance of the integrator (**16**), connected to and controlled by said threshold circuit (**15**), and applying the output signal from said sensing means to the integrator only if

(a) the polarity of the output signal is in accordance with predetermined polarity; and

(b) the level of the output signal is above a predetermined threshold level,

thereby preventing noise signals below said threshold level and output signals of polarity opposite to said predetermined polarity from reaching and being integrated by said integrator.

4,604,574

ROTATING PROBE INDICATING THE ANGLE OF INTERSECTION WITH A SURFACE

Thomas Posluszny, Juno Isles; Kevin D. Smith, Palm Beach Gardens, and Paul W. Schlie, Lake Worth, all of Fla., assignors to United Technologies Corporation, Hartford, Conn.

Filed Feb. 15, 1984, Ser. No. 580,505

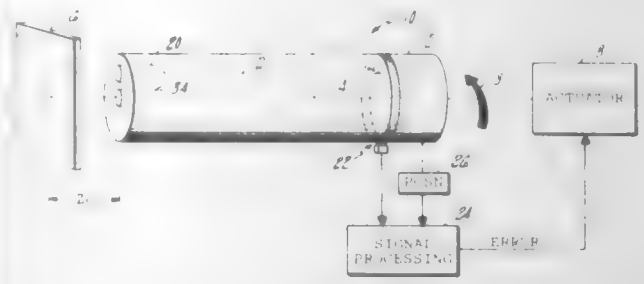
Int. Cl.[4] G01B *7/30, 7/14*

U.S. Cl. 324—207 **4 Claims**

1. Apparatus indicating the angle of intersection between the axis (**14**) of a rotating member (**12**) and a surface (**16**), comprising:

a rotating member (**12**) having an axis (**14**) of rotation;

a sensor (**20**), disposed off-axis on the rotating member, for providing a lift-off signal indicative of the instantaneous lift-off of the sensor from the surface;



means (**26**) for providing a theta signal indicative of the instantaneous rotational position of the sensor with respect to the axis;

means (**24**) for providing an orientation signal indicative of the intersection angle between the axis and the surface in response to the lift-off signal and the theta signal.

4,604,575

MULTIPLE OUTPUT ROTATIONAL POSITION DETECTION DEVICE

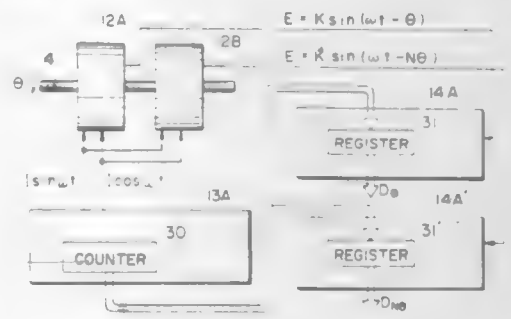
Wataru Shimizu, and Akira Yamashita, both of Tokyo, Japan, assignors to Kabushiki Kaisha SG, Tokyo, Japan

Division of Ser. No. 311,277, Oct. 14, 1981. This application Oct. 15, 1984, Ser. No. 661,199

Claims priority, application Japan, Oct. 21, 1980, 55-147425; Nov. 25, 1980, 55-164665

Int. Cl.[4] G01B *7/14;* G01P *3/56;* H01F *21/06;* G05B *1/06*

U.S. Cl. 324—208 **10 Claims**



1. A rotational position detection device comprising:

(a) a first detector, having a cyclic output signal, for detecting an absolute rotational position within one cycle, which cycle corresponds to 1/N circumference (N being a predetermined integer), and comprising a first rotor and a first stator,

said first rotor having teeth of N per one circumference,

said first stator having a plurality of poles arranged in a predetermined arrangement, a first primary winding means separately wound on said respective poles, and a first secondary winding means coupled magnetically to said first primary winding means, said poles having end portions opposing the teeth of said first rotor with gaps therebetween, and said end portions being provided with teeth corresponding to the teeth of said first rotor,

the teeth of said first rotor and the teeth of said first stator being so formed that correspondence between the rotor teeth and the stator teeth is different in pitch by 1/n pitch (n being a predetermind integer) with respect to the adjacent poles so that reluctance change, one cycle of which corresponds to one pitch of the rotor teeth, is produced in said respective poles and the cycle of said reluctance change is different by 1/n pitch with respect to the adjacent poles;

(b) a second detector for detecting an absolute rotational position within one circumference, and comprising a second stator and a second rotor,

said second stator having a plurality of poles arranged in a predetermined arrangement, second primary winding means separately wound on said respective poles, and second secondary winding means coupled magnetically to said second primary winding means, said poles having end portions,

said second rotor being coupled with said first rotor and being of such configuration as to oppose the end portions of the respective poles of the second stator with gaps therebetween, change reluctance of magnetic paths passing the respective poles in accordance with a rotational position at a rate of one cycle per one circumference, and the cycle of said reluctance change being different by 1/k (k being a predetermined integer);

(c) a clock pulse generator;

(d) reference AC signal generation means for generating a plurality of reference AC signals having a predetermined frequency and phases which are different from one another in response to a clock pulse signal generated by said generator;

(e) means for applying said reference AC signals to said first detector and exciting each of said first primary winding means on said poles with any one of said reference AC signals, each pole excitation signal being out of phase with the excitation signals of adjacent poles by a predetermined electrical angle and thereby producing in said first secondary winding means a first output signal resulting by phase shifting the reference AC signals in accordance with the rotational position of said first rotor;

(f) means for applying said reference AC signals to said second detector and exciting each of said second primary winding means on said poles with any one of said reference AC signals, each pole excitation signal being out of phase with the excitation signals of adjacent poles by a predetermined electrical angle and thereby producing in said second secondary winding means a second output signal resulting by phase shifting the reference AC signals in accordance with the rotational position of said second rotor;

(g) first phase difference detection means operatively connected to the clock pulse generator reference AC signal generation means, and means for applying said reference AC signals to said first detector for detecting, by digitally counting said clock pulse signal, the phase difference between a predetermined one of said reference AC signals and said first output signal to obtain detected digital phase difference data as a first absolute rotational position data within 1/N circumference of the first rotor and with an accuracy of rotational position 1/N as small as that obtained by the second detector;

(h) second phase difference detection means operatively connected to the clock pulse generator, reference AC signal generation means, and means for applying said reference AC signals to said second detector for detecting, by digitally counting said clock pulse signal, the phase difference between a predetermined one of said reference AC signals and said second output signal to obtain detected digital phase difference data as a second absolute rotational position data within one circumference of the second rotor; and

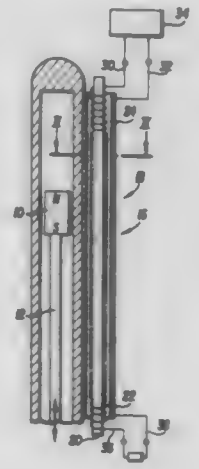
(i) means for obtaining an absolute rotational position by the combination of said first absolute rotational position data and said second absolute rotational position data.

4,604,576

ELECTROMAGNETIC DELAY LINE INCORPORATED IN A POSITION DETECTOR FOR A MOVABLE NUCLEAR REACTOR CONTROL ROD

Michel R. Barrault, Fontaine, France, assignor to Merlin Gerin, Grenoble, France

Filed Mar. 10, 1983, Ser. No. 474,193
Claims priority, application France, Mar. 17, 1982, 82 04665
Int. Cl.[4] G01B *7/14;* G21C *7/00*
U.S. Cl. 324—208 **14 Claims**



1. A detection device for detecting the position of a movable nuclear reactor control rod, comprising:

a permanent magnet attached to the movable control rod and slidable axially inside a non magnetic tube,

a sensor governed by the local action of the permanent magnet for delivering a signal indicative of the position of the movable control rod, the sensor comprising an electromagnetic delay line located adjacent to and along the path of the magnet and including

a rectilinear core of saturable magnetic material cooperating with a winding propagating high frequency pulses,

a generator connected to the input of the delay line to emit high frequency pulses,

measuring means for detecting local saturation of the core facing the permanent magnet, said saturation entailing a variation in the magnetic permeability of the core and a change in pulse propagation conditions in the winding, and

processing means co-operating with the measuring means for generating a signal representative of the position of the control rod.

4,604,577

TEMPERATURE-COMPENSATED MAGNETIC FIELD MEASURING INSTRUMENT

Hiroyoshi Matsumura, Saitama; Toshio Katsuyama, Hachioji; Norio Ohta, Sayama; Tsuneo Suganuma, Tokorozawa; Kazuyuki Nagatsuma, Hachioji; and Yutaka Sugita, Tokorozawa, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

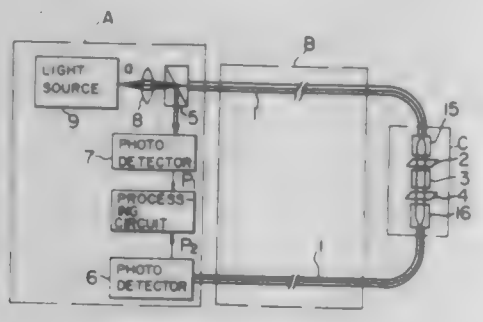
Filed Feb. 1, 1983, Ser. No. 462,765
Claims priority, application Japan, Feb. 15, 1982, 57-21121
Int. Cl.[4] G01R *33/02;* G02B *5/30;* G02F *1/09*
U.S. Cl. 324—244 **23 Claims**

1. A measuring instrument of magnetic field comprising:

a light source part;

a magnetic filed sensing part including a magnetic material, said magnetic material being provided with a medium capable of exhibiting Faraday rotation, said medium having at least one thin magnetic garnet film, means for providing linearly-polarized light from said light source to be vertically indicent upon said at least one thin magnetic garnet film, said thin magnetic garnet film having a composition expressed by a general formula $R_{3-x}Q_x(Fe_{5-y}M_y)O_{12}$ (where R is at least one element selected from a group consisting of Y, La, Lu, Ca, Sm and Bi, Q is at least one element selected from a group consisting of Gd, Eu,

Er, Tb, Yb, Ho and Dy, M is at least one element selected from a group consisting of Ga, Al, Ge, Si, Sc, Mn, In, V and Cr, the value of x lies in a range expressed by a formula $0.1 \leqq x \leqq 3.0$, and the value of y lies in range expressed by a formula $0 \leqq y \leqq 5.0$) so as to provide temperature-compensation for said magnetic field measuring instrument, said thin magnetic garnet film being magnetized in a propagation direction of the linearly-polarized light;



a measuring part for receiving and processing light from said magnetic field sensing part; and

an optical transmission line for optically connecting said light source part, said magnetic field sensing part and said measuring part;

whereby said temperature-compensated measuring instrument enables stable measurement of a magnetic field substantially independent of temperature variation.

4,604,578

NUCLEAR MAGNETIC RESONANCE METHODS AND APPARATUS

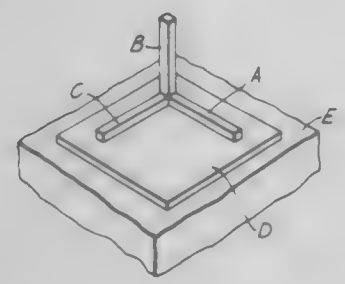
Ian R. Young, Sunbury-on-Thames, England, assignor to Picker International Limited, Wembley, England

Filed Jun. 2, 1983, Ser. No. 500,329

Claims priority, application United Kingdom, Jun. 9, 1982, 8216714

Int. Cl.⁴ G01R *33/20*

U.S. Cl. 324—307 **14 Claims**



8. A method for investigating the spatial distribution of a quantity of substance in a chose region of a body by NMR techniques, wherein an indication of movement of the body during investigation is obtained by monitoring signals produced by probe means attached to the body and responsive to a magnetic field applied to the body during investigation, said investigation comprising causing nuclear magnetic excitation of nuclei in a selected region of the body, applying a gradient magnetic field in a chosen direction in the selected region to disperse the resonance frequency of excited nuflei in the direction of the gradient, and causing the resonance signals during the application of said gradient field, wherein the signals produced by said probe means are monitored after excitation of the nuclei in said region, before application of said gradient field, and said signals are subsequently monitored during the application of said gradient field.

4,604,579

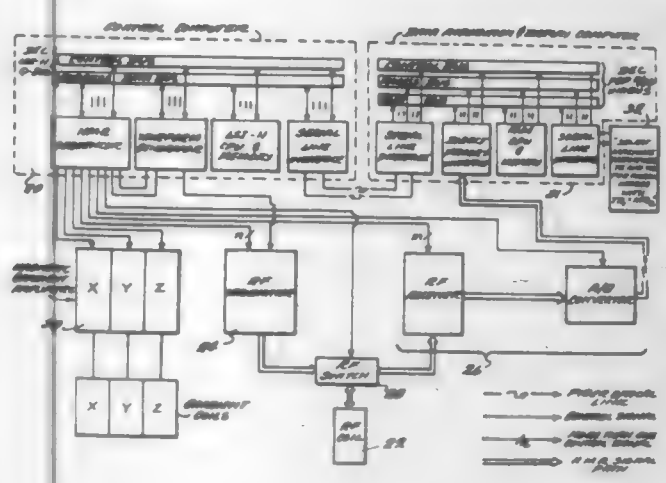
METHOD AND APPARATUS FOR ENHANCED T1 NMR MEASUREMENTS USING REPETITION INTERVALS TR RELATED TO ONE ANOTHER BY INTEGER MULTIPLES

Clifford R. Cannon, Pacifica, and Douglas A. Ortendahl, Berkeley, both of Calif., assignors to The Regents of the University of California, Berkeley, Calif.

Filed Jul. 21, 1983, Ser. No. 515,857

Int. Cl.⁴ G01N *24/08*; G01R *33/20*

U.S. Cl. 324—309 **23 Claims**



15. Apparatus for generating a spin-lattice relaxation time value T1 for NMR-excited nuclei, said apparatus comprising:

means for measuring an NMR signal intensity value I_1 for said nuclei using a first TR NMR time;

means for measuring an NMR signal intensity value I_2 for said nuclei using a second TR NMR time where said first and second TR times are related to one another by an integer multiplier greater than one; and

means for directly generating a spin-lattice relaxation time T1 for said nuclei from said measured I_1 and I_2 signal intensity values and said TR time.

4,604,580

NUCLEAR MAGNETIC RESONANCE DIAGNOSTIC APPARATUS

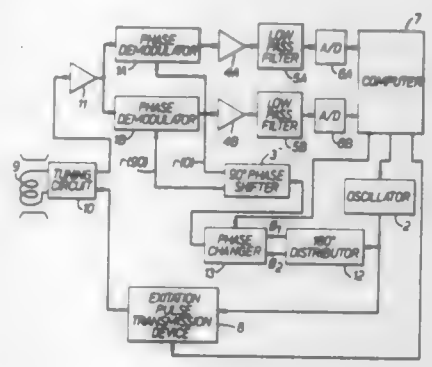
Satoshi Sugiura, Nishi-Nasuno; Mitchio Mitomi, Otawara, and Hirokazu Suzuki, Tokyo, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Mar. 9, 1984, Ser. No. 587,974

Claims priority, application Japan, Mar. 11, 1983, 58-40377

Int. Cl.⁴ G01R *33/20*

U.S. Cl. 324—311 **6 Claims**



1. In nuclear magnetic resonance diagnostic apparatus for image formation, which receives signals induced by nuclear magnetic resonance phenomena, the apparatus comprising:

means for generating high frequency pulses to be applied to the object for excitation of nuclear magnetic resonance synchronized with a cyclic noise component in the signal receiving system;

means for applying said high frequency pulses to the object

and detecting the nuclear magnetic resonance signals evoked from the object;

means for phase demodulating the nuclear magnetic resonance signals received by said transmission and reception means;

means for generating reference signals having the same frequency as said excitation signals and synchronized therewith to supply reference signals for phase demodulation to said phase demodulation means;

means for changing the phase of a first output reference signal from said reference signal generating means to a second signal 180° different in phase;

means for performing phase change control of said first and second output reference signals applied to said phase demodulation means;

means for phase inverting selectively the demodulated outputs obtained by said phase demodulation means by selectively applying to said phase modulating means said two reference signals which differ 180° in phase from each other; and

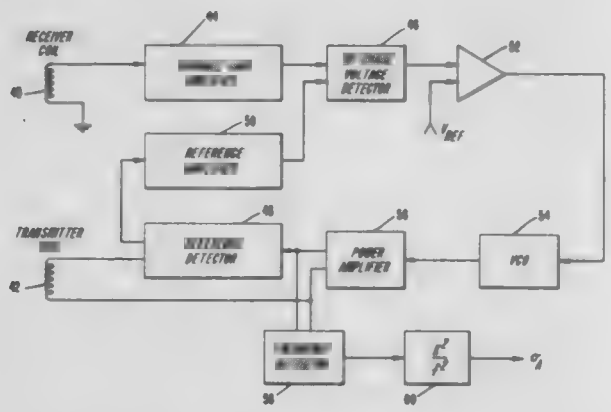
means for adding corresponding pairs of inverted and noninverted signals of the demodulated outputs for eliminating the cyclic noise component.

4,604,581

METHOD AND APPARATUS FOR DECONVOLVING APPARENT CONDUCTIVITY MEASUREMENTS IN INDUCTION WELL LOGGING

Suresh G. Thadani, and Gulamabbas A. Merchant, both of Houston, Tex., assignors to Halliburton Company, Duncan, Okla.

Filed Jan. 11, 1983, Ser. No. 457,150
Int. Cl.⁴ G01V *3/28, 3/18*
U.S. Cl. 324—339 **11 Claims**



1. An induction well logging apparatus for measuring the true conductivity of earth formations in the vicinity of a well borehole comprising:

(a) transmitter and receiver coil system for movement through a well borehole and operated so that variation of propagation effects in the formation are negligible, said coil system providing an output signal related in value to the apparent conductivity of the formation; and

means for operating on said output signal with an inverse vertical response function of said coil system to obtain a signal related in value to an approximation of the true conductivity of an incremental portion of the formation adjacent the well bore at the depth of investigation; and

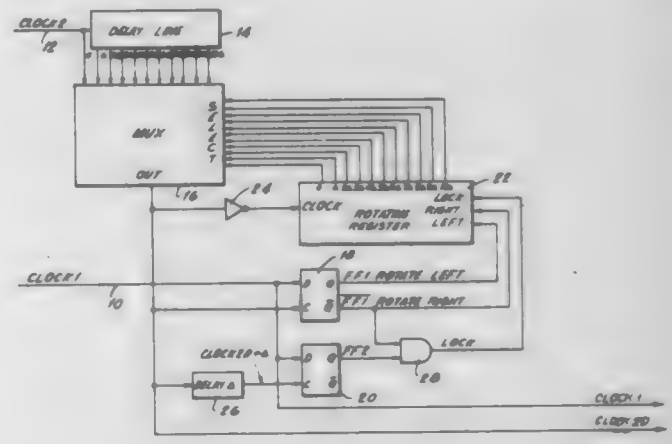
means for recording said signal related to an approximation of the true conductivity as a function of borehole depth of said coil system.

4,604,582

DIGITAL PHASE CORRELATOR

John G. Strenkowski, Whippany, and John P. Yang, BelleMead, both of N.J., assignors to Lockheed Electronics Company, Inc., Plainfield, N.J.

Filed Jan. 4, 1985, Ser. No. 689,072
Int. Cl.⁴ H04J *3/06*; G01R *25/04*; H03L *7/00*
U.S. Cl. 328—55 **6 Claims**



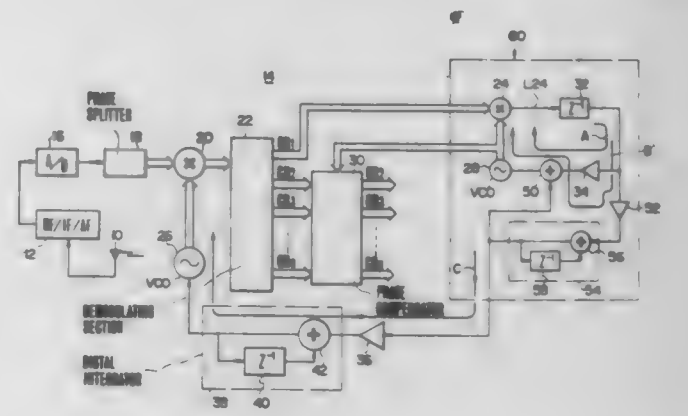
1. A phase correlator for detecting and correcting for phase differences between at least a first and a second signal, said phase correlator comprising a multistep delay line receiving one of said signals and effective to impart a series of different incremental delays to said one of said signals at a plurality of outputs, controllable switching means connected to said outputs of said delay line and effective in response to a first control signal applied thereto at a control input to output selectively one of said incrementally delayed signals, means for detecting the phase difference between said selected output signal of said switching means and the other of said signals and for producing a second control signal as a function of said detection, a multistage rotating register operatively connected to said phase detecting means and having a control input receiving said second control signal and a plurality of output lines operatively connected to said control input of said switching means, said rotating register being effective in response to said second control signal to provide said first control signal to said control input of said switching means, thereby to cause said switching means to output a corresponding one of said incrementally delayed signals to said phase detecting means.

4,604,583

FREQUENCY OFFSET CORRECTING CIRCUIT

Hidehito Aoyagi, and Botaro Hirosaki, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Aug. 24, 1984, Ser. No. 643,792
Claims priority, application Japan, Aug. 26, 1983, 58-156100
Int. Cl.⁴ H03D *3/00*
U.S. Cl. 329—122 **3 Claims**



1. A frequency offset correction circuit for use in a demodulator, said demodulator including a demodulating section which receives incoming parallel channel signals to recover

each baseband signal of the parallel channels, said frequency offset correction circuit comprising:

a second-order phase-locked loop which includes a first and second control loop and which is coupled to the output of said demodulating section, said second-order phase-locked loop being supplied with a baseband signal of a pilot channel of said parallel channels to compensate for a static phase shift and an abrupt frequency offset using said first and second control loops respectively;

a phase compensator which is coupled to said demodulating section so as to receive the baseband signals of data channels of said parallel channels, said phase compensator being controlled by said second-order phase-locked loop in order to correct the phase shifts and the frequency offsets of said data channels; and

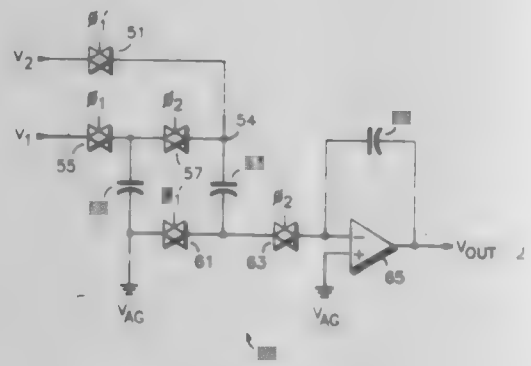
a third control loop which is coupled between said second-order phase-locked loop and the input of said demodulating section, said third control loop being arranged to correct a static or slow-changing frequency offset.

4,604,584

SWITCHED CAPACITOR PRECISION DIFFERENCE AMPLIFIER

Stephen H. Kelley, Austin, Tex., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Jun. 10, 1985, Ser. No. 743,228
Int. Cl.[4] H03F *3/45*
U.S. Cl. 330—9 **10 Claims**



1. A precision difference amplifier comprising:

first and second charge storage means, for selectively storing first and second input voltages, respectively, said first charge storage means being connected to a reference voltage terminal;

first switching means for coupling the to the first charge storage means during a first time period;

second switching means for coupling the second charge storage means between the second input voltage and the reference voltage terminal during a second time period successive to the first time period;

integrating operational amplifier means having a first input connected to the reference voltage terminal, a second input, an output for providing a difference signal proportional to a differential voltage between the first and second inputs, and feedback charge storage means coupled between the second input and the output thereof; and

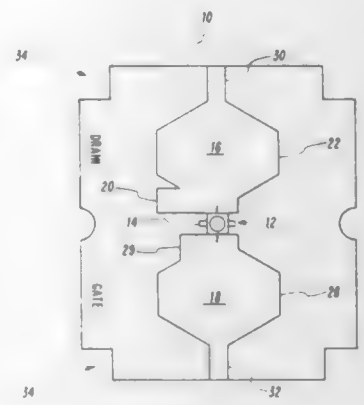
third switching means for connecting the first and second charge storage means in series between the reference voltage terminal and the second input of the operational amplifier means during a third time period successive to the second time period.

4,604,585

MICROWAVE PLUG-IN SIGNAL AMPLIFYING MODULE

Ben R. Hallford, Wylie, Tex., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Oct. 7, 1985, Ser. No. 784,961
Int. Cl.[4] H03F *3/60, 3/14*
U.S. Cl. 330—286 **4 Claims**



1. A low noise, high frequency amplifier module assembly comprising, in combination:

substrate means, including ground plane means on one side of said substrate means and source lead openings in said substrate means from said one side to the opposite side;

gate and drain transmission line means attached to said substrate means on a second side opposite said one side;

FET amplifying means mounted on said second side of said substrate means with drain and gate leads connected to said drain and gate transmission line means respectively and said source leads connected through said source lead openings in said substrate means to the ground plane means on said one side;

first transformer tuning means including first and second tuning screws mounted on said one side and juxtaposed said drain transmission line means for adjusting the gain of the amplifier module assembly; and

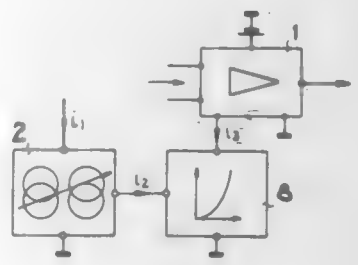
second transformer tuning means including first and second tuning screws mounted on said one side and juxtaposed said gate transmission line means for adjusting the noise figure of the amplifier module to a minimum value.

4,604,586

AMPLIFIER WITH CURRENT MIRROR CIRCUIT FOR CONTROLLING AMPLIFICATION TEMPERATURE DEPENDENCY

Heinz Rinderle, Heilbronn, Fed. Rep. of Germany, assignor to Telefunken Electronic GmbH, Heilbronn, Fed. Rep. of Germany

Filed Aug. 2, 1984, Ser. No. 637,033
Claims priority, application Fed. Rep. of Germany, Aug. 17, 1983, 3329665
Int. Cl.[4] H03G *3/10*
U.S. Cl. 330—288 **23 Claims**



1. In a circuit arrangement for controlling an amplifier which effects amplification of electric signals, the amplifier having a current controllable amplification, the circuit ar-

rangement comprising an electronic amplification control, wherein there is provided for the amplification control a current mirror circuit by means of which the temperature dependency of the amplification is adjustable, the improvement wherein said current mirror circuit comprises:

first and second transistors;

input means connected for supplying to said first transistor an input current for controlling the amplification of the amplifier;

output means connected to said second transistor for providing an output current derived from the input current;

current supply means connected to said output means for causing the amplification to be adjusted as a function of the value of the output current; and

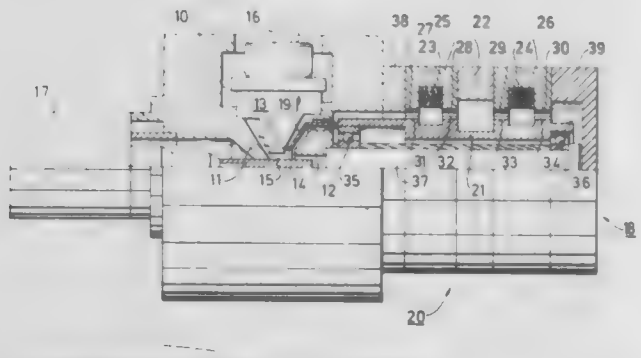
voltage supply means connected to at least one of said transistors for causing the base-emitter voltage of said first transistor to differ from the base-emitter voltage of said second transistor by a selected amount which is substantially independent of the input current value and which creates a selected temperature-dependent relation between the input current and the output current so that the amplification is controlled by the input current.

4,604,587

TUNABLE MAGNETRON WITH INTERNAL TUNING MOTOR

Tord S. Gunnarsson, Järfälla, Sweden, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Aug. 1, 1984, Ser. No. 636,536
Claims priority, application Sweden, Aug. 5, 1983, 8304289
Int. Cl.⁴ H03B *9/100*
U.S. Cl. 331—90 **4 Claims**



1. A tunable magnetron, comprising:

a magnetron having an interaction space, a tuning cavity communicating with said space, and an evacuated chamber communicating with said tuning cavity,

a rotatable tuning body having an active part projecting into said tuning cavity, arranged such that tuning frequency of the magnetron is a function of the instantaneous angular position of the tuning body, and

electric motor means for driving said tuning body,

characterized in that said electric motor means comprises a motor having a rotor and a stator, said rotor being situated entirely within said evacuated chamber and integrated with said tuning body,

said magnetron comprises a vacuum-tight envelope, said motor stator being fixed with respect to said envelope, and

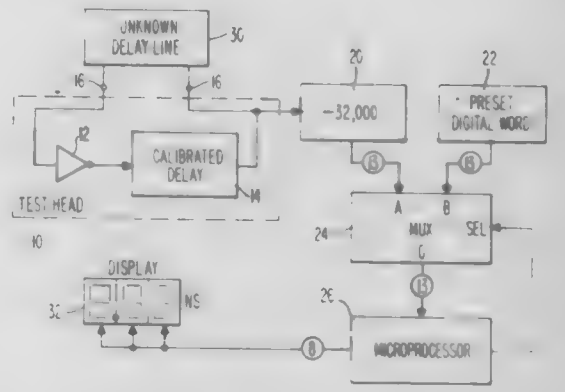
said stator comprises electrical excitation coils, and said rotor is electromagnetically coupled solely by magnetic flux coupling to said stator, said rotor and said stator being arranged such that the relative angular position of the rotor with respect to the stator is entirely determined by electrical excitation of the stator coils, whereby said motor is a position motor and the magnetron frequency is determined entirely by the instantaneous electrical excitation of the coils.

4,604,588

DIGITAL DELAY LINE TESTER

Thomas N. Webler, West Chester, and William A. Lacher, Lansdale, both of Pa., assignors to Burroughs Corporation, Detroit, Mich.

Filed Mar. 12, 1985, Ser. No. 711,058
Int. Cl.⁴ G01R *25/00*
U.S. Cl. 331—135 **11 Claims**



1. A tester for measuring the value of the delay present in an unknown delay line comprising:

a test head having a free-running square wave oscillator configured in a circuit loop, means for selectively coupling said unknown delay line into said circuit loop, said oscillator including inverter means and having oscillator fine-tuning means for effecting a predetermined calibration frequency in the absence of said unknown delay line in said circuit loop, means for determining the frequency of the square wave signals generated by said oscillator,

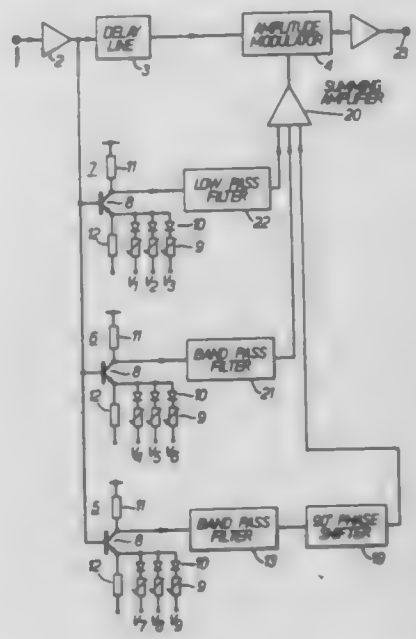
whereupon the coupling of said unknown delay line into said circuit loop causes the frequency of said oscillator to change from said calibration frequency to a measured frequency in direct proportion to the value of the delay introduced into said circuit loop by said unknown delay line, said last mentioned value being equal to one half of the difference in the periods of the respective square wave signals at said calibration and measured frequencies.

4,604,589

HIGH FREQUENCY CIRCUIT

Melvyn McGann, Chelmsford, United Kingdom, assignor to The Marconi Company Limited, Stanmore, Middlesex, England

Filed Dec. 10, 1984, Ser. No. 680,293
Claims priority, application United Kingdom, Jan. 19, 1984, 8401384
Int. Cl.⁴ H03C *1/06;* H03F *3/68*
U.S. Cl. 332—37 R **15 Claims**



1. A high frequency correction circuit including means for receiving a wideband high frequency signal, and for routing it

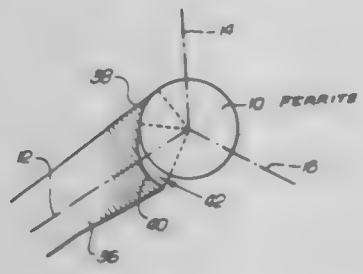
via a delay device to an amplitude modulator; a level dependent detector to which the received signal is applied, and which modifies the amplitude of the signal in a manner which is itself dependent upon the amplitude; a broadband 90° phase shifter arranged to receive the amplitude modified signal and the output of which is fed to the amplitude modulator so as to adjust the phase of said received signal which is routed to it via the delay device.

4,604,590

MICROSTRIP CIRCULATOR STRUCTURE

Mitchell J. Mlinar; Kenneth Louie, both of Torrance, and Wieslaw S. Piotrowski, Los Angeles, all of Calif., assignors to TRW Inc., Redondo Beach, Calif.

Filed Aug. 24, 1984, Ser. No. 643,924
Int. Cl.⁴ H01P *1/387*
U.S. Cl. 333—1.1 4 Claims



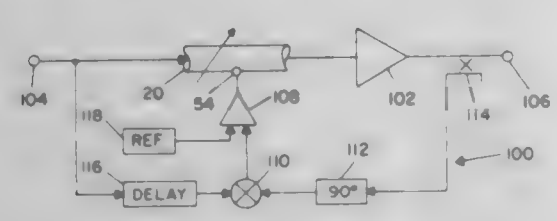
1. A microstrip circulator structure, comprising:
a metalized ferrite element of generally cylindrical shape; and
a plurality of microstrip transmission lines, radially oriented with respect to the ferrite, the ends of the microstrip lines adjacent to the ferrite being shaped to achieve magnetic and electrical matching over a wide range of frequencies, and wherein the end of each microstrip line includes a first arcuate portion extending from one edge of the microstrip line, to provide for tangential launching of energy into the ferrite, and in contact with the metalized ferrite, to provide a desirably low coupling angle with the ferrite, and a second arcuate portion contiguous with the first, and spaced from the ferrite, but sufficiently close to provide for magnetic coupling between the microstrip and the ferrite over a relatively wide angle, and thereby meeting its impedance matching requirements.

4,604,591

AUTOMATICALLY ADJUSTABLE DELAY CIRCUIT HAVING ADJUSTABLE DIODE MESA MICROSTRIP DELAY LINE

Carmine F. Vasile, Huntington, N.Y., assignor to Hazeltine Corporation, Commack, N.Y.

Filed Sep. 29, 1983, Ser. No. 537,181
Int. Cl.⁴ H03H *9/38, 11/20*
U.S. Cl. 333—18 8 Claims



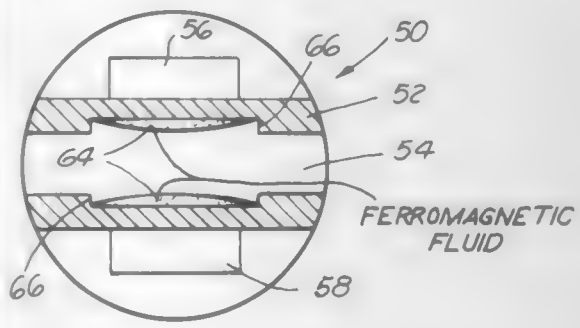
1. A microwave circuit including a microwave circuit input port and a microwave circuit output port and having a fixed delay, said microwave circuit comprising:
(a) a first amplifier having an input port and an output port, said output port of the first amplifier being the microwave circuit output port;
(b) a variable microwave delay circuit having an input port, a control port and an output port connected to the first amplifier input port, said variable delay circuit including a plurality of varactor diodes and means for applying a bias voltage to individual ones of said diodes, said input port of the delay circuit being the microwave circuit input port;
(c) a fixed delay circuit having an input port connected to the variable microwave delay input and an output port;
(d) a phase shifter having an input port connected via a coupler to the first amplifier output port and an output port;
(e) a mixer having a first input port connected to the fixed delay output port, a second input port connected to the phase shifter output port and an output port;
(f) a reference voltage source; and
(g) a second amplifier having a first input port connected to said reference voltage source, second input port connected to the mixer output port and an output port connected to the variable delay control port whereby varying the reference voltage the variable microwave delay circuit functions to increase or decrease delay to compensate for decreases or increases in transit time through the first amplifier thereby maintaining a constant delay between the variable delay input port and the first amplifier output port; said variable delay circuit comprising:
(1) a substrate;
(2) a plurality of gallium arsenide mesas developed upon said substrate;
(3) a metallized layer disposed on and supported by said substrate as to encircle each of said mesas, said layer including a set of apertures disposed about corresponding ones of said mesas for electrically insulating individual ones of said mesas from said layer;
(4) each of said mesas having an electrically conducting post extending therefrom to provide capacitance through the mesa between the conducting post and said metallized layer;
(5) a stripline conductor serially interconnecting the posts of respective ones of said mesas and being insulated from said metallized layer, the inductance of said conductor coacting with the capacitance of each of said mesa to provide a delay to signals propagating along said conductor;
(6) the variable delay circuit input port being one end of the stripline conductor;
(7) the variable delay circuit output port being the other end of the stripline conductor; and
(8) means for applying a bias voltage via said stripline conductor to each of the individual ones of mesas to adjust capacitance provided to said stripline circuit, the variable delay circuit control port being the means for applying.

4,604,592

ELECTRICALLY CONTROLLED RADIO FREQUENCY TUNER

George T. Pinson, Huntsville, Ala., assignor to The Boeing Company, Seattle, Wash.

Filed Apr. 19, 1984, Ser. No. 602,207
Int. Cl.⁴ H01P *1/20, 1/23*
U.S. Cl. 333—24.1 8 Claims



1. An electrically controlled radio frequency tuner for elimi-

nating a transmitted signal reflection and circulator feedthrough, the tuner comprising:

an elongated waveguide housing having a cavity along the length thereof;

a pair of first and second magnets attached to the exterior of the housing and disposed in a spaced relationship to each other and along the length of the housing;

ferromagnetic fluid disposed inside the cavity of the housing and held therein by the magnetic forces of the first and second magnets; and

a third and fourth magnet attached to the exterior of the housing and adjacent the first and second magnets, the third and fourth magnets, when energized, aligning the ferromagnetic fluid inside the cavity for partially blocking to fully blocking the cavity and thereby setting up a measured reflection for cancelling the undesired reflection and circulator feedthrough.

4,604,593

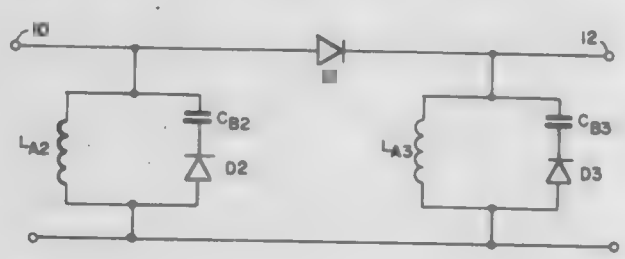
π-SECTION DIGITAL PHASE SHIFTER APPARATUS

Binboga S. Yarman, Istanbul, Turkey, assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Aug. 20, 1985, Ser. No. 767,455

Int. Cl.[4] H03H *7/20;* H01P *1/185*

U.S. Cl. 333—139 8 Claims



1. An extra high frequency π-section digital phase shifter apparatus comprising in combination:

a first diode means, the anode of said first diode means forming an input terminal for an RF signal, the cathode of said second diode means forming an output terminal, said first diode means having a first and second state,

a first shunt circuit comprising a first inductor means in parallel with first capacitor means which is in series with a second diode means, one end of said first inductor means connected to one end of said first capacitor means to form a first junction, said first junction connected to said input terminal, the other end of said first inductor means connected to one end of said second diode means to form a second junction, said second junction connected to ground, said second diode means having a first and second state, and,

a second shunt circuit comprising a second inductor means in parallel with second capacitor means which is in series with a third diode means, one end of said second inductor means connected to one end of said second capacitor means to form a third junction, said third junction connected to said output terminal, the other end of said second inductor means connected to one end of said third diode means to form a fourth junction, said fourth junction connected to ground, said third diode means having a first and second state.

4,604,594

SURFACE WAVE FILTER HAVING PHOTORESIST DAMPING MATERIAL THEREON AND METHOD FOR MANUFACTURING THE SAME

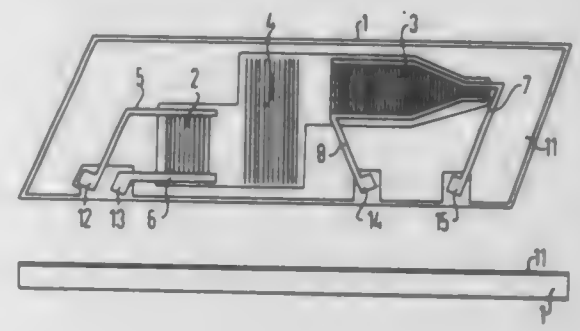
Heinrich Angerer, and Badri Sinha, both of Munich, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Sep. 15, 1983, Ser. No. 532,721

Claims priority, application Fed. Rep. of Germany, Sep. 21, 1982, 3234955

Int. Cl.[4] H03H *9/145, 9/25*

U.S. Cl. 333—194 11 Claims



1. In a surface wave filter with a wafer-shaped substrate formed of monocrystalline piezoelectric material having a surface, input and output transducers disposed on the surface of the substrate, a coupler for coupling the transducers, said coupler being spaced apart from the transducers on the surface of the substrate, and electric conductor leads being connected to the transducers on the surface of the substrate and having respective electrodes, the improvement comprising a damping layer formed of photoresist material having a plastic base covering substantially the entire surface of the perimeter of the substrate except for a region bounded by the perimeter of the transducers, the coupler, the respective electrodes of the electric conductor leads and the zones between the transducers and the coupler.

4,604,595

SURFACE ACOUSTIC WAVE DEVICE HAVING INTERDIGITATED COMB ELECTRODES WEIGHTED FOR ODD/EVEN RESPONSE

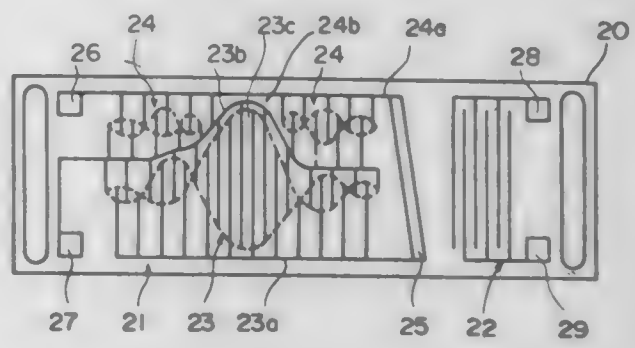
Michio Kadota, Nagaokakyo, Japan, assignor to Murata Manufacturing Co., Ltd., Japan

Filed Jun. 14, 1983, Ser. No. 504,271

Claims priority, application Japan, Jun. 16, 1982, 57-104391; Dec. 29, 1982, 57-227919; Dec. 29, 1982, 57-227920

Int. Cl.[4] H03H *9/25*

U.S. Cl. 333—196 18 Claims



1. A surface acoustic wave device, comprising:

(A) a piezoelectric substrate for propagating acoustic waves;

(B) input and output side electrodes disposed on a surface of said substrate and located laterally with respect to one another along a propagating direction of said acoustic waves;

(C) at least one of said input and output side electrodes comprising first and second interdigital electrodes:

(i) said first interdigital electrode including a pair of comb

electrodes, each of said comb electrodes of said first interdigital electrode including a respective common electrode extending generally along said propagating direction and a plurality of electrode fingers coupled thereto, each of said electrode fingers extending in a direction generally perpendicular to said propagating direction, each of said fingers overlapping adjacent fingers of the remaining comb electrode of the pair, the overlapping length of adjacent fingers being so weighted as to define one of odd and even components of a desired frequency characteristic, said first interdigital electrode lying within an imaginary rectangle whose length is defined by the distance between the most distant electrode fingers of said first interdigital electrode as measured in said propagating direction and whose width is defined by maximum distance between said common electrodes as measured along said direction perpendicular to said propagating direction;

(ii) said second interdigital electrode including a pair of comb electrodes, each of said comb electrodes including a respective common electrode extending generally along said propagating direction and a plurality of electrode fingers coupled thereto, said electrode fingers extending in a direction generally perpendicular to said propagating direction, each of said fingers of said second interdigital electrode overlapping adjacent fingers of the remaining comb electrode of said second interdigital electrode, the overlapping length of adjacent fingers being so weighted as to define the other of said odd and even components of said desired response frequency characteristic, said overlapping portions of said electrode fingers of said second interdigital electrode lying entirely within said imaginary rectangle but outside said overlapping region of said fingers of said first interdigital electrode.

4,604,596

REMOTELY CONTROLLABLE CIRCUIT BREAKER

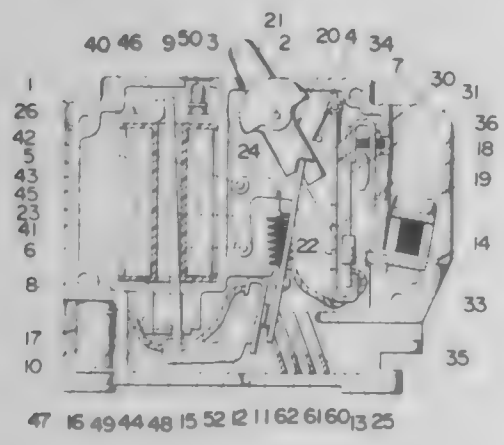
Yoichi Yokoyama, Itami, and Hideya Kondo, Yahata, both of Japan, assignors to Matsushita Electric Works, Ltd., Japan

Filed Sep. 5, 1985, Ser. No. 772,912

Claims priority, application Japan, Feb. 1, 1985, 60-18942; Jul. 12, 1985, 60-154455; Jul. 24, 1985, 60-163634

Int. Cl.[4] H01H *75/00*

U.S. Cl. 335—14 **12 Claims**



1. A remotely controllable circuit breaker comprising in combination:

a single set of first and second contacts;

a manually operable switching mechanism for opening and closing the contacts, said manual switching mechanism including a manual handle movable between an ON position and OFF position and including a movable arm carrying the first contact which arm is operatively connected to the manual handle to be actuated thereby between an ON condition and an OFF condition for bringing the first contact into and out of contacting engagement with the second contact;

a trip mechanism operatively connected to the manually operable switching mechanism so as to open the contacts upon the occurrence of predetermined fault current conditions flowing through the breaker;

a remotely controllable switching mechanism for forcibly opening and closing the contacts in response to a remote control signal;

said second contact being movable between an operative position where it is in electrical contacting engagement with the first contact of the movable arm in the ON condition and an inoperative position where it is away from the first contact independently of the conditions of the movable contact arm; and

said second contact being operatively connected to said remotely controllable switching mechanism in such a way as to be moved between the operative and the inoperative positions by the latter receiving the remote control signal.

4,604,597

SOLENOID SWITCH SUITABLE FOR MOTOR STARTERS

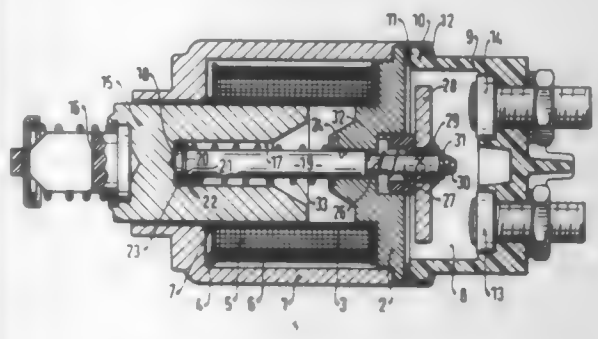
Karl-Heinz Bögner, Neuhausen, and Klaus Bolenz, Schwieberdingen, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Continuation of Ser. No. 515,611, Jul. 20, 1983, abandoned. This application Mar. 15, 1985, Ser. No. 712,912

Claims priority, application Fed. Rep. of Germany, Jul. 30, 1982, 8221714[U]

Int. Cl.[4] H01H *67/02*

U.S. Cl. 335—127 **10 Claims**



1. Solenoid switch suitable for starter circuits for internal combustion engines, having a casing of ferromagnetic material, a nonmagnetic guiding sleeve therein, an excitation winding mounted on said sleeve with a winding support, a magnet armature guided in said sleeve, a magnet core disposed at an open end of said casing against which said magnet armature is attractable magnetically against the force of a return spring bearing against said magnet core, a contact bridge carrier (28) guided movably in said magnet core by means of a longitudinally movable switch rod having a first end near which said carrier is mounted thereon, and having also a second end opposite the first, said switch rod extending through an aperture in said magnet core, said carrier being displaceable away from a stop therefor on said first end of said switch rod against the force of a contact pressure spring, said switch rod together with said contact bridge carrier seating a contact bridge in a switching space covered by a cap in which two main-current contacts are disposed which project into the switching space, said solenoid switch further embodying the improvement which comprises:

stop means (21; 35; 37), against which said return spring bears, located at said second end of said switch rod (19; 34; 36), said magnet armature (15) having a bore (17) in which said second siwtch-rod end is inserted, said stop means having a configuration for centering said switch rod second end in said bore, said contact bridge carrier (28) being thus subject to be pulled away form said two main contacts (13, 14) solely by the force of said return spring (33) immediately upon interruption of current flow in said winding and said return springs (33) thereby able to apply its full force simultaneously to both said switch rod (19)

and said armature (15) for returning them both while in mutual abutement in a concurrent movement in which they travel equal distance to their respective rest positions.

4,604,598

ELECTROMAGNETIC RELAY WITH UNDERSLUNG ARMATURE

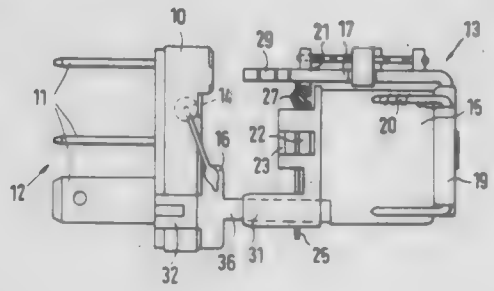
Joachim Naser, Nuremberg; Olaf Schmid, Schwabach; Gerhard Schmidt, Weihenzell; Theodor Sturm, Sachsen, and Berthold Walter, Oberasbach, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed May 13, 1985, Ser. No. 733,527

Claims priority, application Fed. Rep. of Germany, Jun. 23, 1984, 3423270

Int. Cl.[4] H01H *67/02*

U.S. Cl. 335—128 **10 Claims**



1. Electromagnetic relay comprising a base plate of insulating material in which are anchored connection prongs extending therebeneath, a preassembled magnetic system including an L-shaped magnet yoke, a winding core, a spool carried by said core, a winding on said spool, and a flap-type armature swingably mounted at a first end thereof on said magnet yoke; at least one switch contact mounted on said armature at a second end thereof opposite said first end, at least one contact fixed on said base plate for cooperation with said at least one switch contact, said preassembled magnetic system being fastened to said base plate by stamped out anchoring portions of said magnet yoke, and further comprising;

a seat (21) for said armature (22) formed on an end face of said magnet yoke (17) for seating said armature, in a manner suitable for testing said preassembled magnetic system, in a location which is defined on said magnetic yoke (17) without regard to whether said yoke is anchored on said base plate (10),

said anchoring portions (29) of said magnet yoke (17) being located adjacent said armature seat (21) and so set in corresponding cavities (30) in said base plate (10) that said core (18) carrying said spool (19) is disposed perpendicularly to, above, and spaced from said base plate, and so that said armature (22) is seated so as to be between said base plate (10) and a free end (18*a*) of said core directed towards said base plate (10).

4,604,599

ELECTROMAGNET COMPRISED OF YOKES AND AN ARMATURE SUPPORTING A PERMANENT MAGNET FITTED ON ITS POLE FACES WITH POLE PIECES THAT PROJECT FROM THE AXIS OF THE MAGNET, THIS AXIS BEING PERPENDICULAR TO THE DIRECTION OF MOVEMENT

Gérard Koehler, Ville d'Avray, France, assignor to La Telemecanique Electrique, Nanterre, France

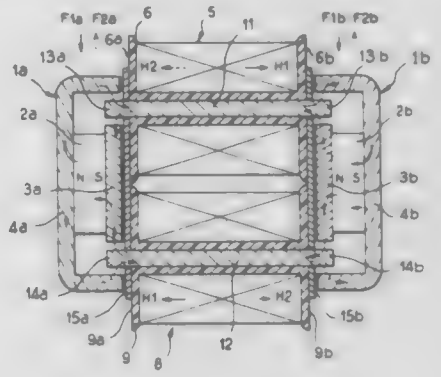
Filed Nov. 1, 1984, Ser. No. 668,164

Claims priority, application France, Nov. 16, 1983, 83 18184

Int. Cl.[4] H01F *7/08*

U.S. Cl. 335—230 **10 Claims**

1. An electromagnet comprising yokes (11, 12; 31, 32*a*; 51, 52; 71, 72; 91, 92), an armature (1*a*, 21*a*, 41*a*, 61*a*, 81*a*) moveable in relation to each other, and a winding (5, 25, 45, 65, 85) surrounding a portion of a magnetic circuit, said armature (1*a*, 21*a*, 41*a*, 61*a*, 81*a*) comprising a permanent magnet (2*a*, 22*a*, 42*a*, 62*a*, 82*a*) fitted on its two pole faces with two pole pieces (3*a*, 4*a*; 23*a*, 24*a*; 43*a*, 44*a*; 63*a*, 64*a*; 83*a*, 84*a*) projecting beyond both extremities of the axis of this permanent magnet, at least one (4*a*, 24*a*, 44*a*, 64*a*, 84*a*) of these said pole pieces having bent extremities to define with the other pole piece (3*a*, 23*a*, 43*a*, 63*a*, 83*a*) two air gap zones within which penetrate the extremities of the yokes (11, 12; 31, 32*a*; 51, 52; 71, 72; 91, 92) in such a way that each air gap zone is made up of two air



gaps inducing counter forces along a direction perpendicular to the principal axis of the permanent magnet (2*a*, 22*a*, 42*a*, 62*a*, 82*a*), characterized by the fact that at least one second armature (1*b*, 21*b*, 41*b*, 61*b*, 81*b*) of the same shape as the first (1*a*, 11*a*, 61*a*, 81*a*) is arranged in parallel with and facing the first, and that two yokes (11, 12; 31, 32*a*, 32*b*; 51, 52; 71, 72; 91, 92) join the air gap zones of the two armatures located facing one another in such a way that the magnetic circuit will be formed by a sequence of armature and yoke.

4,604,600

SOLENOID CONSTRUCTION AND METHOD FOR MAKING THE SAME

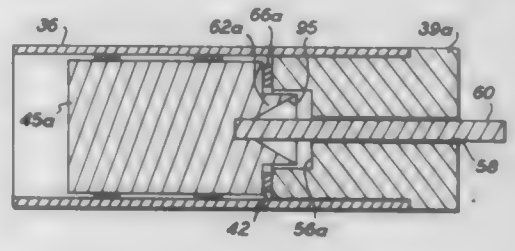
Bruce D. Clark, Clifton Springs, N.Y., assignor to G. W. Lisk Company, Inc., Clifton Springs, N.Y.

Continuation-in-part of Ser. No. 563,891, Dec. 23, 1983, Pat. No. 4,539,542. This application Jun. 3, 1985, Ser. No. 740,640

The portion of the term of this patent subsequent to Sep. 3, 2002, has been disclaimed.

Int. Cl.[4] H01F *7/08*

U.S. Cl. 335—261 **33 Claims**



1. An assembly for use in a solenoid comprising:

a. a hollow solenoid armature tube adapted to be received in a solenoid coil, said tube having an armature chamber therein;

b. a stationary pole piece member fixed in and defining one end of said armature chamber;

c. an armature member positioned in said armature chamber of said tube for axial sliding movement relative to and defining an armature stroke relative to said pole piece member;

d. one of said members having an axially extending recess therein and the other member having a reduced in cross section end portion adapted to be received in and complementary to said recess;

e. said other member having a radially internally facing frusto-conical surface formed on said reduced in cross section end portion and disposed within said recess;

f. said armature tube having a non-magnetic section defining

a reduced magnetic gap extending coaxially with at least a portion of said armature stroke sufficient to permit selected magnetic forces to be produced on said armature; and

g. said armature tube providing concentricity of said two members.

4,604,601

ELECTRIC PLUG FUSE WITH CORRUGATED ELEMENT

Terry R. O'Brien, Brampton, Canada, assignor to Gould Inc., Rolling Meadows, Ill.

Filed Jul. 30, 1985, Ser. No. 760,365
Int. Cl.[4] H01H *85/16*
U.S. Cl. 337—261 **3 Claims**



1. An electric plug type fuse including a substantially cylindrical hollow glass body defining a cavity and being screw threaded on the outer surface thereof, a contact button support of an electric insulating material of which one end projects into the cavity and the other end projects away from the cavity to the outside thereof, a contact button on the outer end of the contact button support, a metal shell overlapping the contact button support, the metal shell being screw threaded, and the screw threads thereof mating with the screw threads on the glass body, the glass body having a groove on the outer surface thereof extending perpendicular to and interrupting the screw threads on the glass body, the groove and the metal shell cooperating to define a channel therebetween, a strip-like fusible element having one end thereof conductively connected to the contat button and extending therefrom into the cavity defined by the glass body, the other end of the fusible element extending from the cavity, between the contact button support and the glass body into the channel defined by the groove and the metal shell, where the other end of the fusible element is soldered to the metal shell, wherein the improvement comprises:

forming said other end of said fusible element which extends into said channel into a geometric shape which defines a plurality of substantially separate longitudinal solder receiving cells in said channel between said fusible element and said metal shell.

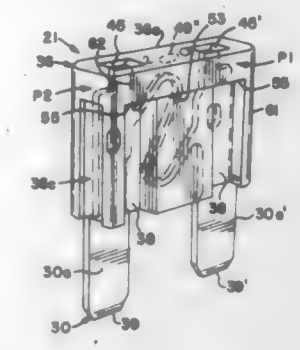
4,604,602

PLUG-IN FUSE ASSEMBLY WITH STACKABLE HOUSING

John Borzoni, Indian Rocks Beach, Fla., assignor to Littelfuse, Inc., Des Plaines, Ill.

Continuation-in-part of Ser. No. 640,841, Aug. 17, 1984. This application Apr. 16, 1985, Ser. No. 722,596
Int. Cl.[4] H01H *85/16*
U.S. Cl. 337—264 **14 Claims**

1. In a plug-in fuse assembly including a housing made of insulating material and including a pair of upwardly extending side walls; and a conductive plug-in fuse element secured in said housing and having laterally spaced, generally parallel confronting terminals at the bottom thereof projecting downwardly from the bottom of said housing, said terminals having upwardly extending current-carrying extensions, and a fuse link extending between said current-carrying extensions; portions of said current-carrying extensions and said fuse link being confronted by said side walls; the improvement wherein each side wall has outermost vertical coplanar wall surfaces parallel to the corresponding outermost vertical coplanar wall surfaces on the opposite side of the housing, said outermost vertical coplanar wall surfaces being adapted to engage the



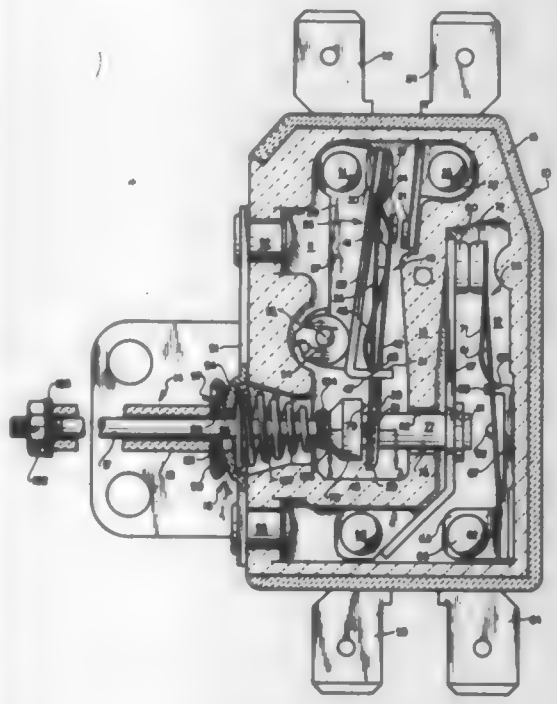
complementary outermost vertical wall surfaces of an identical plug-in fuse assembly placed with the identical orientation beside it, to provide for a stable side-by-side stacking of numbers of identical plug-in fuse assemblies in a stacking hopper or the like, said outermost vertical coplanar wall surfaces of each side wall occupying less than one half the total outer exposed surface area of the housing side wall involved, the remainder of which are recessed within the vertical plane thereof.

4,604,603

DUAL TEMPERATURE THERMOSTAT

Donald E. Place, Mansfield, Ohio, assignor to Therm-O-Disc, Incorporated, Mansfield, Ohio

Continuation of Ser. No. 590,377, Mar. 16, 1984, abandoned. This application May 20, 1985, Ser. No. 736,297
Int. Cl.[4] H01H *37/48*
U.S. Cl. 337—394 **18 Claims**



1. A thermally responsive switching device comprising a body, a temperature probe providing a tube and a rod extending through said tube wherein said tube and rod are formed of material having different coefficients of thermal expansion, swivel means mounting one end of said tube on said body and permitting swiveling movement of said tube and rod relative to said body, said swivel means including a first member providing a curved surface which is a portion of a sphere, and a second member providing a circular surface engageable and movable along said curved surface, one of said members being supported by said body and providing a first central opening through which said rod projects with substantial clearance, the

other of said members providing a second central opening through which said rod extends with relatively close clearance, said one end of said tube engaging a substantially flat portion of said second member around said second central opening, the other end of said tube being connected to said rod, spring means connected to said rod operating to tension said rod, bias said one end of said tube against said second member and in turn bias said second member against said first member, swiveling movement of said tubular member causing said rod to engage the sides of said second opening and in turn cause movement of said second member relative to said first member to maintain correct alignment of said second member with respect to said tube and rod, and switch means mounted on said body operated in response to differential thermal expansion and contraction of said rod and tube.

4,604,604

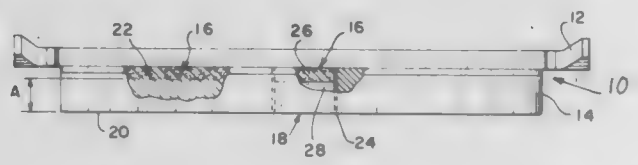
VAPOR EMITTING WEAR INDICATOR

Joseph M. Mann, Ft. Wayne, Ind., assignor to International Harvester Company, Chicago, Ill.

Filed Jun. 29, 1984, Ser. No. 625,988

Int. Cl.[4] B60Q *1/00*; G01D *21/00*

U.S. Cl. 340—52 A **12 Claims**



1. A material wear indicator for an erodible structure having a wearable surface comprising:

a vapor emitting means located in said erodible structure in a place beneath said wearable surface corresponding to a selected maximum erosion level of said wearable surface;

said vapor emitting means exuding a specific vapor upon said wearable surface of said structure being sufficiently eroded to expose said vapor emitting means.

4,604,605

SAFETY DEVICE FOR MANUALLY OPERABLE CODE GENERATION

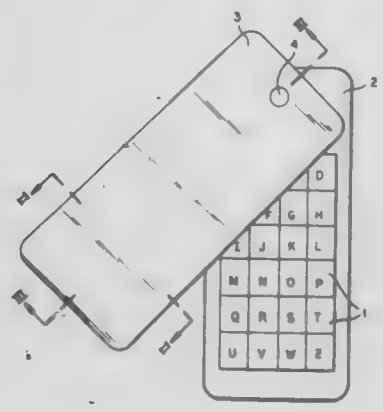
Pierre Meyers, Nimrodstr. 7A, Ottobrunn, and Klaus Meister, Am Fischerwinkel 3, Grünwald, both of Fed. Rep. of Germany

Filed Feb. 17, 1984, Ser. No. 581,052

Claims priority, application Fed. Rep. of Germany, May 10, 1983, 3317112

Int. Cl.[4] G06F *3/02*

U.S. Cl. 340—365 R **12 Claims**



1. In a code generator for the emission of combinations of digital data, comprising a base with a keyboard having manually operable keys with substantially coplanar pressure faces,

the combination therewith of a cover movably secured to said base for overlying said keyboard in a nonoperating position, said cover being provided with wiper means arranged to sweep over said pressure faces upon a displacement of said cover between said nonoperating position and an operating position giving access to said keys, said wiper means carrying a nonvolatile liquid forming a continuous film on said pressure faces upon a sweep thereof by said wiper means.

4,604,606

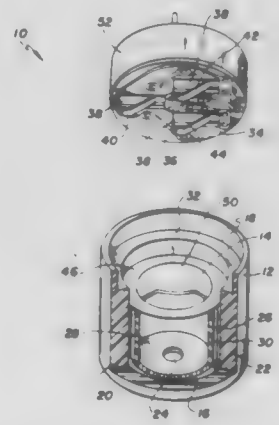
AUDIO SIGNALLING DEVICE

Louis P. Sweany, Carmel, Ind., assignor to Emhart Industries, Inc., Indianapolis, Ind.

Continuation of Ser. No. 430,869, Sep. 30, 1982, abandoned. This application Aug. 8, 1985, Ser. No. 763,775

Int. Cl.[4] G08B *3/00*; H01L *41/04*

U.S. Cl. 340—384 E **6 Claims**



1. An audio signalling device comprising:

a housing having an open and a closed end,

an aperture in said open end,

a piezoelectric transducer,

mounting means for nodally mounting said piezoelectric transducer in proximity to said closed end,

a printed circuit board carried in said housing and spaced from said piezoelectric transducer, said printed circuit board including first and second surfaces, said first surface having electrical circuits carried thereon and said second surface facing said piezoelectric transducer and having soldered electrical connections thereon, and openings extending through said printed circuit board, and

resilient contact means carried on said first surface and extending through said openings for engaging said piezoelectric transducer.

4,604,607

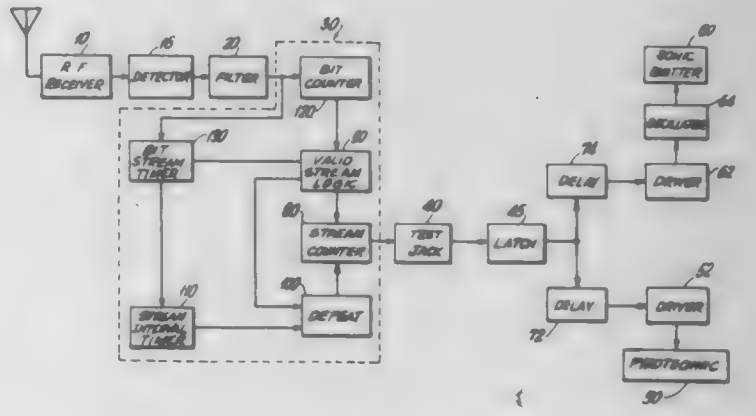
SECURITY DEVICE SIMULATING CURRENCY PACK OR THE LIKE

Hugh B. Sanderford, Jr., and John R. Souvestre, both of Metairie, La., assignors to Protection Products Corporation, New Orleans, La.

Filed Dec. 27, 1979, Ser. No. 107,527

Int. Cl.[4] G08B *1/08*

U.S. Cl. 340—539 **16 Claims**



1. A security device adapted to be secreted within a package simulating a currency pack or the like for foiling unauthorized

removal of said package passed a local electromagnetic carrier signal carrying information in a predetermined binary code, said binary code including a predetermined number of streams of serial data bits, said streams each being of a predetermined duration with a predetermined number of data bits and being separated from one another by predetermined time intervals, said device comprising:

means for receiving selectively signals in the frequency range of said carrier signal;

means connected to said receiving means for detecting information carried by the received signal and producing information signals in binary form in response thereto;

logic means for receiving said information signals and producing a validation signal upon receipt of information signals conforming to said predetermined binary code; and

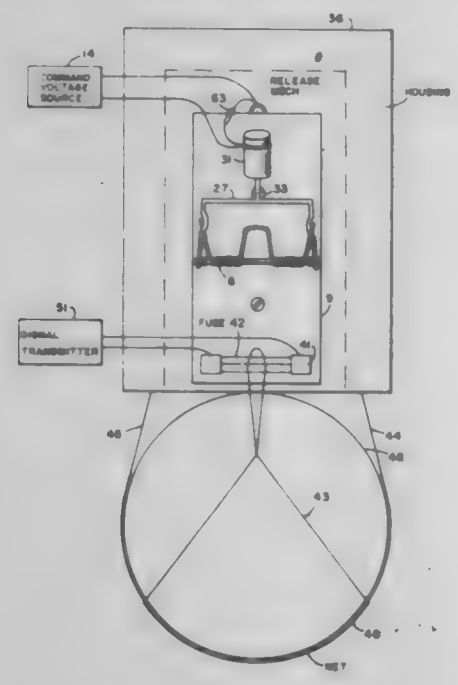
foiling means for receiving said validation signal and activating at least one means discouraging continued removal of said package.

4,604,608

POSITIVE ACTION RELEASE MECHANISM

Ernest J. Franchi, Kwajalein, Mich., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Mar. 14, 1985, Ser. No. 711,877
Int. Cl.[4] G08B *21/00*; G01W *1/08*
U.S. Cl. 340—540 **3 Claims**



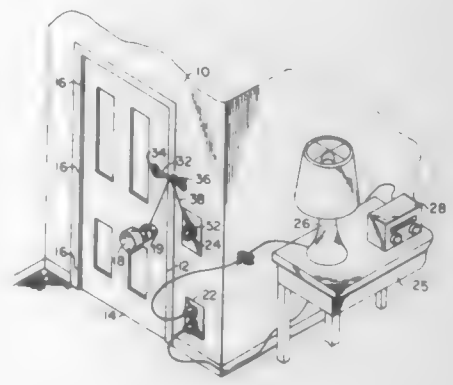
1. A system comprising a lever, biasing means connected to said lever so as to bias the lever to move in a predetermined direction, a platform positioned to hold said biasing means and said lever, an electrical element mechanically connected to said lever and to said platform so as to prevent said lever from moving in said predetermined direction, an electrical supply means connected across said electrical element such that when said electrical supply means is in an on condition, the electrical element will be caused to fracture and release said lever from movement in said predetermined direction, a breakable means connected to said platform, said breakable means being positioned such that when said lever is allowed to move in said predetermined direction said lever will make contact with said breakable means and cause breakable means to break, a load means which is desired to be released when said electrical supply means is in an on condition, said load means being tied down to said breakable means such that when said breakable means is broken said load means will be released, a signal generating means attached to said breakable means such that when said breakable means breaks said signal generating means will give an indication of that event, and said breakable means is a glass fuse mounted on said platform with electrical connections to said signal generating means.

4,604,609

SECURITY SYSTEM

George H. Wakefield, Jr., 85 W. First St., Lake Ronkonkoma, N.Y. 11779

Filed Mar. 21, 1985, Ser. No. 714,470
Int. Cl.[4] G08B *13/12*
U.S. Cl. 340—548 **7 Claims**



1. In combination with a door having a knob mounted in the doorway of a wall, a security arrangement comprising an elongated, rigid member having a fixed loop at one end and a latched loop at the other end, first loop means mounted on said door adjacent the side of said door which swings open adapted to engage one of the loops of said elongated member, second loop means mounted on said wall adjacent said first loop means for engaging the other loop of said elongated member, so that when said door is closed said elongated member may be engaged with the loops mounted on said door and said wall, string means tied at one end to said door knob and stretched taut over said elongated member, and means for engagement with the other end of said string means for producing an alarm when the tension in said string means is increased due to an attempted opening of said door causing said elongated member to move.

4,604,610

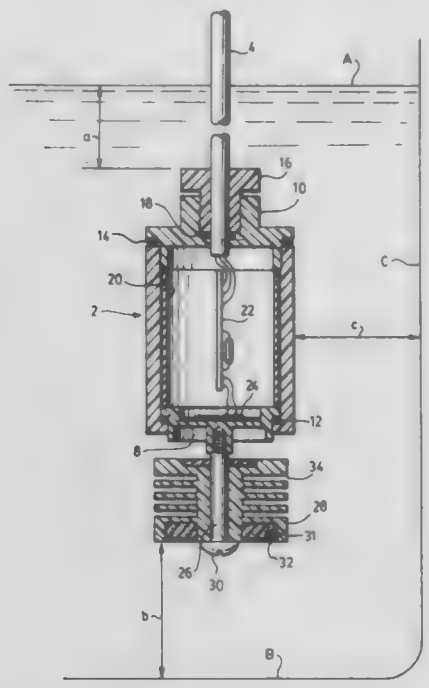
SWIMMING POOL ALARM

Robert W. Baker; Dean Donely, both of Scarborough, and Vlado Odorcic, Willowdale, all of Canada, assignors to Nathan I. Hennick, Toronto, Canada

Filed Feb. 11, 1985, Ser. No. 700,499
Int. Cl.[4] G08B *13/00*
U.S. Cl. 340—566 **7 Claims**

1. A swimming pool alarm apparatus comprising a triggerable alarm device, a transducer head incorporating an audio frequency transducer element, means to support said transducer head for submersion in and acoustically coupled to the water of a swimming pool, at a location clear of any wall of the latter and at a epth of at least 30 cm, and a sensor element hydraulically coupled to the water of the pool and mechanically couple for transmission of impulses to the transducer element through lost motion means permitting limited vertical movement of the sensor element relative to the transducer element, the sensor element having a mean density differing only slightly from that of the pool water, and amplifier means coupling said transducer head to said triggerable alarm device whereby to trigger the latter only in the event of the transducer head output reaching a predetermined level, whether in

response to sounds acoustically coupled to said transducer element, or to wave motions hydraulically coupled to said sensor element and causing transmission of impacts to said transducer element.

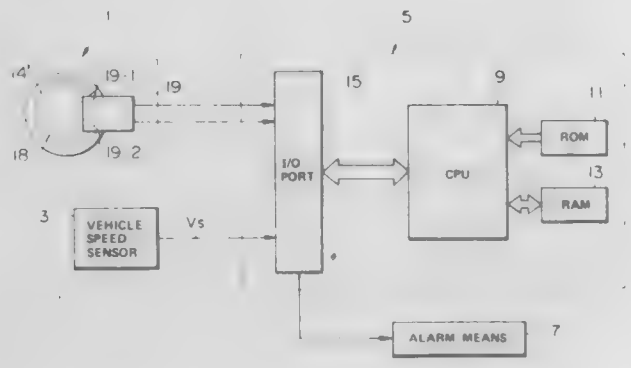


4,604,611

SYSTEM AND METHOD FOR DETECTING DRIVER DROWSINESS INCLUDING DETECTION OF STEERING ROTATION AND REVERSAL

Yasutoshi Seko, Yokohama; Haruhiko Iizuka, Yokosuka; Takayuki Yanagishima, Yokosuka, and Hideo Obara, Yokosuka, all of Japan, assignors to Nissan Motor Company, Limited, Japan

Filed Feb. 15, 1984, Ser. No. 580,175
Claims priority, application Japan, Feb. 18, 1983, 58-24605
Int. Cl.⁴ G08B *23/00*
U.S. Cl. 340—576 **14 Claims**



14. A method for detecting driver drowsiness in an automotive vehicle, comprising the steps of:

(a) determining whether a number of pulses within a first duration interval of time exceeds a first reference value, each of the pulses being produced whenever a steering wheel of the vehicle is rotated through a predetermined angle, each pulse indicating the direction of rotation of the steering wheel;

(b) determining whether the number of steering reversals within a first duration interval of time is below a second reference value, each steering reversal being detected when one of said pulses and the subsequent pulse thereto are derived from different rotational directions of the steering wheel; and

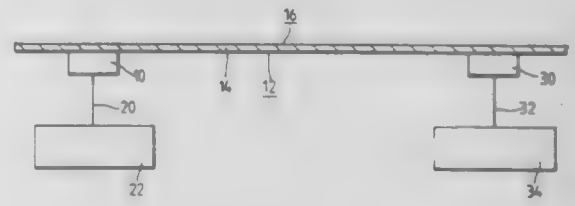
(c) producing an alarm when the number of pulses within a first duration interval of time exceeds said first reference value determined in said step (a) and the number of steering reversals within said first duration interval of time is below said second reference value determined in said step (b).

4,604,612

ICE DETECTOR

Roger D. Watkins, Wantage; Arthur B. Gillespie, Abingdon; Michael O. Deighton, Reading; Roger B. Pike, Newbury, and Colin B. Scott-Kestin, Reading, all of England, assignors to United Kingdom Atomic Energy Authority, London, England

Filed Jul. 22, 1983, Ser. No. 516,262
Claims priority, application United Kingdom, Aug. 3, 1982, 8222419; Dec. 16, 1982, 8235668
Int. Cl.⁴ G08B *19/02*; G01H *3/12*; H04R *15/00, 17/00*
U.S. Cl. 340—582 **14 Claims**



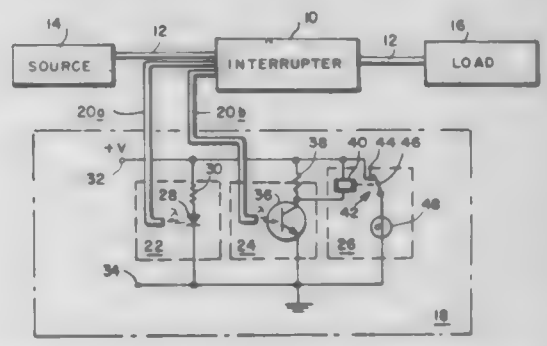
1. A method for detecting ice on a surface of a thin solid sheet comprising, energising a transducer to cause propagation through a portion of the sheet of ultrasonic waves having their predominant component parallel to the surface of the sheet, detecting the waves by means of a second transducer, measuring the amplitude of the waves received by the second transducer, and detecting by means of the amplitude of the waves received by the second transducer the presence of a layer of ice on the surface of the portion of the sheet.

4,604,613

STATUS-INDICATING CURRENT INTERRUPTER

Thomas F. Clark, Canton, Mass., assignor to Phoenix Electric Corporation, Boston, Mass.

Filed Jun. 18, 1984, Ser. No. 621,540
Int. Cl.⁴ G08B *21/00*
U.S. Cl. 340—638 **11 Claims**

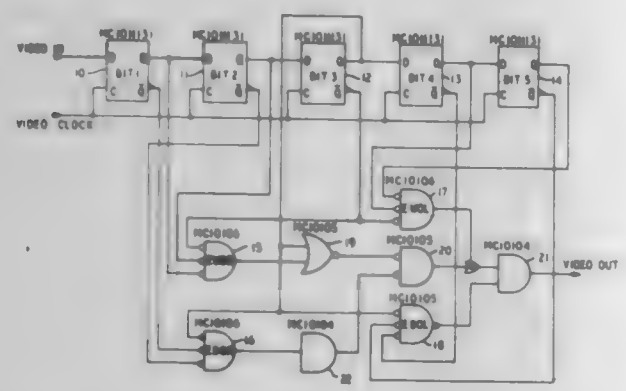


6. A high voltage current limiter providing an indication of current flow therethrough, comprising a housing enclosing an interruptable path extending therethrough and having an input port and an output port means, including fiber optic cable extending through said housing for defining a light path extending between the input port and the output port for carrying an optical signal indicative of the status of current flow through said current path, and an explosive charge for interrupting said light path on interruption of current flow through said current path to establish a failure-indication signal.

4,604,614
VIDEO DISPLAY SYSTEM EMPLOYING PULSE STRETCHING TO COMPENSATE FOR IMAGE DISTORTION

Robert W. E. Farr, Allbrook, and Ian D. Judd, Chandler's Ford, both of England, assignors to International Business Machines Corp., Armonk, N.Y.

Filed Sep. 26, 1983, Ser. No. 536,116
Claims priority, application European Pat. Off., Sep. 29, 1982, 82305176.8
Int. Cl.⁴ G09G *1/06*
U.S. Cl. 340—728
4 Claims

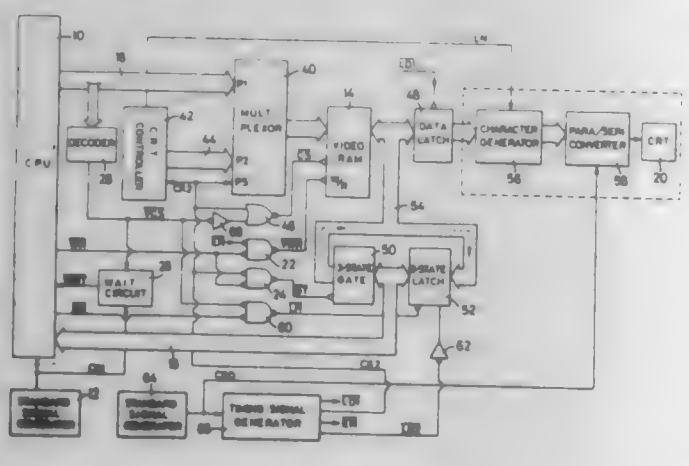


1. A video display system of the kind in which at least one visible characteristic of consecutive image points on the screen of a raster-scan CRT is defined by the values of consecutive pels of a digital video drive waveform, each such pel comprising one or a plurality of video bits in parallel, and in which a pulse stretching circuit is provided for extending the duration of selected pels in the video waveform in order to at least partially compensate for image distortion introduced by the finite video amplifier rise and fall times of the CRT, characterized in that the pulse stretching circuit comprises, decoding means for examining each pel at least in relation to its two immediate neighbors on either side in order to detect predetermined relationships between the values of the pels, and retiming means for selectively advancing or delaying the time of transitions between consecutive pels of different value in accordance with the relationships so detected.

4,604,615
IMAGE REPRODUCTION INTERFACE

Yasuhiro Funahashi, Nagoya, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Oct. 28, 1983, Ser. No. 546,424
Claims priority, application Japan, Nov. 6, 1982, 57-195055
Int. Cl.⁴ G09G *1/24*
U.S. Cl. 340—750
4 Claims



1. An image reproduction interface disposed between a central processing unit, and a display device having a control unit and a screen on which an image is reproduced, comprising:

a video random-access memory for temporarily storing code signals corresponding to respective ones of a multiplicity of image elements available for reproduction on said display device;

a multiplexor for alternately selecting, for a first time period, an address bus through which first address signals are transferred from said central processing unit to said video random-access memory to designate memory locations at which said code signals are stored, and for a second time period, a refresh address bus through which second address signals are transferred from said control unit of the display device to said video random-access memory to sequentially designate said memory locations from which said code signals are read out to reproduce the image on said display device, a sum of said first and second time periods being equal to a reproduction interval at which said image elements are sequentially reproduced;

latch means, operative during said second time period, for reading out from said video random-access memory one of said code signals which has been stored in the memory location designated by the second address signal transferred through said refresh address bus, and applying the read-out code signal to said display device for a period of said reproduction interval while latching said read-out code signal for the period of said reproduction interval;

gate means, operative during said first time period, for permitting the code signal from said central processing unit to be temporarily stored in the memory location of said video random-access memory designated by the first address signal transferred through said address bus;

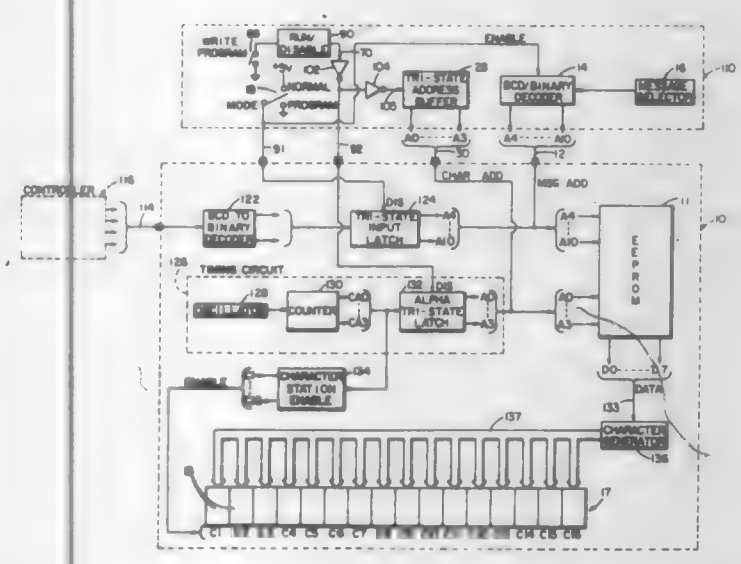
said central processing unit generating a first command signal to enable the code signal to be stored in said video random-access memory through said gate means during an access-ready time which is a portion of said first time period and during which said video random-access memory is accessible for storage of said code signal; and

wait-signal generating means for applying a wait-signal to said central processing unit, said wait-signal holding said first command signal active for a length of time sufficient to overlap with an entire length of said access-ready time.

4,604,616
APPARATUS FOR PROGRAMMING AN ELECTRICALLY ERASABLE PROGRAMMABLE READ-ONLY MEMORY

Gerald L. Buchas, Bristol, Conn., assignor to The Arthur G. Russell Company, Incorporated, Bristol, Conn.

Filed Dec. 1, 1983, Ser. No. 557,192
Int. Cl.⁴ G09G *3/04*
U.S. Cl. 340—756
7 Claims



1. Apparatus for programming an electrically erasable programmable read-only-memory (EEPROM) semi-conductor memory device wherein said EEPROM is part of an alphanumeric display system having a multi-character station visual display device for displaying message units each made up of a plurality of characters wherein each character of the message

unit is stored at an adressable character location as a byte of data in cells of said EEPROM, said EEPROM having a plurality of address terminals divided into two groups where one group is energized by a binary coded message unit address signal to address any one of a plurality of message units into which the stored characters are divided and the other group is energized by a binary coded character address signal to address any one of the character locations of the addressed message unit, said display system also including a first message unit addressing means for generating a message unit address signal to address one of the message units of said EEPROM, and said display system further including a first character addressing means for generating a character address signal to address one of the characters of the addressed message unit of said EEPROM, said apparatus comprising:

second message unit addressing means for generating a message unit address signal to address one of the message units of said EEPROM;

means for selectively connecting or disconnecting said EEPROM to or from said first message unit addressing means and for simultaneously disconnecting or connecting said EEPROM from or to said second message unit addressing means so that stored message units are addressed by one or the other of said first and second message unit addressing means;

second character addressing means for generating a character address to address one of the character storage locations of the addressed message unit;

means for selectively connecting or disconnecting said EEPROM to or from said first character addressing means and for simultaneously disconnecting or connecting said EEPROM from or to said second character addressing means so that character storage locations are addressed by one or the other of said first and second character addressing means;

means for comparing a character address generated by said first character addressing means to a character address generated by said second character addressing means to produce an ADD MATCH signal, said ADD MATCH signal being representative of a character address generated by the first generating means being the same as a character address generated by the second generating means;

means for generating an indicator character signal representative of a cursor in response to the presence of said ADD MATCH signal, said cursor being displayed in the character display station position corresponding to the character address generated by said second character addressing means;

means for conditioning an addressed EEPROM character storage location to receive a data byte;

alphanumeric character generating means associated with the EEPROM programming apparatus for generating a signal representative of an alphanumeric character to be written into an addressed and conditioned EEPROM character storage location, and

storage location altering means responsive to said conditioning means and said programming apparatus alphanumeric character generating means for electrically altering said addressed and conditioned EEPROM character storage location to cause it to retain said signal representative of an alphanumeric character generated by said programming apparatus alphanumeric character generating means.

4,604,617

DRIVING SYSTEM FOR A MATRIX DISPLAY PANEL

Shinji Morozumi, Suwa, Japan, assignor to Seiko Epson Corporation, Tokyo, Japan

Filed Aug. 19, 1983, Ser. No. 524,621

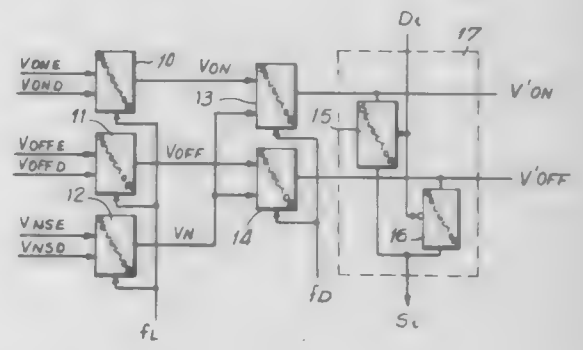
Claims priority, application Japan, Aug. 23, 1982, 57-145942; Oct. 28, 1982, 57-189618

Int. Cl.⁴ G09G *3/00*

U.S. Cl. 340—805 **8 Claims**

1. A driving circuit for applying a video input signal comprising a plurality of sequential video scanning lines to a matrix display panel having a plurality of data electrodes and a plurality of scanning electrodes arranged in a matrix, a portion of the scanning lines containing significant data signals and another portion containing data signals of little or no significance, the driving circuit comprising:

circuit means for driving said scanning electrodes in sequence and in synchronism with at least a portion of the scanning lines which contain significant data signals while omitting said portion containing data signals of little or no significance;



circuit means for driving said data electrodes with video data from said input signal for display in synchronism with said scanning electrodes; and

circuit means responsive to said input signal for applying substantially equal potentials to said scanning electrodes and to said data electrodes when said scanning lines are omitted, whereby the contrast of the display produced by the display panel is enhanced.

4,604,618

TIME-DIVISION MULTIPLEX TRANSMISSION SYSTEM

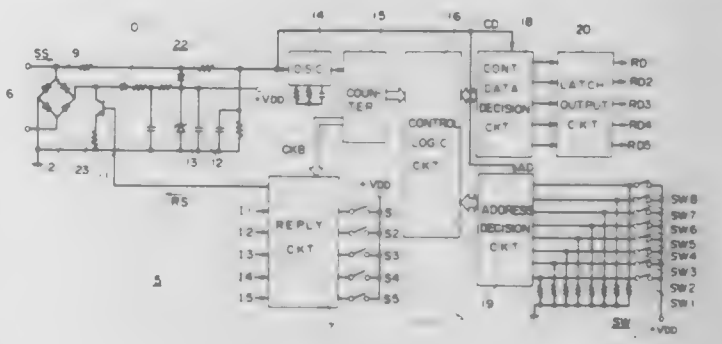
Osamu Akiba, Neyagawa; Yoshiharu Suzuki, Kadoma; Motoharu Terada, Higashiosaka, and Takashi Saeki, Shijonawate, all of Japan, assignors to Matsushita Electric Works, Ltd., Kadoma, Japan

Filed Apr. 28, 1983, Ser. No. 489,324

Claims priority, application Japan, May 15, 1982, 57-81842

Int. Cl.⁴ G05B *23/02*; H04Q *9/00*

U.S. Cl. 340—825.06 **8 Claims**



1. A time-division multiplex transmission system comprising:

a host machine;

a signal line connected to said host machine; and

a plurality of addressable terminals connected to objects to be controlled and objects to be monitored, and connected to said host machine by way of said signal line to place the objects to be controlled under centralized control of said host machine and to place the object to be monitored under centralized monitoring of said host machine, said host machine including:

transmission means for transmitting, in a cyclic fashion, a transmission signal including address data for addressing said terminals, control data for controlling the objects to be controlled and reply standby signals for defining a reply standby period during which reply signals, including monitor data, may be received from any of said terminals, the reply standby period being divided into a number of reply blocks; and

first reception means for receiving the reply signals from any of said terminals during the reply standby period and for picking up the monitor data included therein,

each of said plurality of terminals including:

second reception means for receiving the transmission signal transmitted fron said transmission means of said host machine;

address setting means for setting, as a preset address, an address assigned to the terminal, the same address being set for a number of said terminals which is less than the number of the reply blocks;

address decision means, connected to said second reception means and said address setting means, for determining if the address defined by the address data in the received transmission signal corresponds to the present address;

control signal output means, connected to said second reception means and said address decision means, for providing a control signal corresponding to the control data when said address decision means determines that correspondence exists between the addresses;

reply means for receiving from the objects to be monitored a number of monitor data signals, including monitor data, which is less than the number of reply blocks, and for supplying, for at least one preselected reply block, the reply signal including the monitor data; and

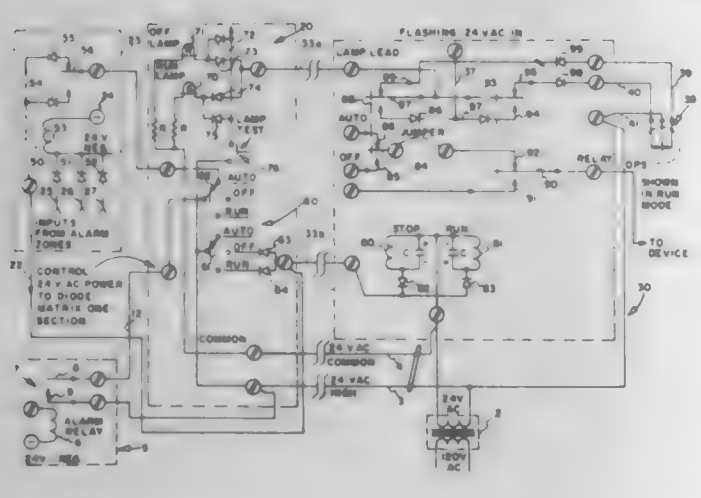
selection means, connected to said reply means, for selecting the at least one preselected reply block for which the reply signal is to be supplied by said reply means, a different one of the reply blocks being preselected for each of said plurality of terminals having the same preset address, by means of said selection means in each of said terminals, a particular object to be monitored being connected to a particular terminal out of said plurality of terminals having the same address, so that the monitor data in the monitor data signal from the particular object can be determined.

4,604,619

APPARATUS AND METHOD FOR MULTIPLE MODE REMOTE CONTROL SWITCHING

Harry C. Goodwater, 450 Ramsell St., San Francisco, Calif. 94132

Filed Sep. 16, 1983, Ser. No. 533,097
Int. Cl.[4] G05B *23/02*
U.S. Cl. 340—825.18 11 Claims



1. A remote controlled switching apparatus for controlling the operation of a device having a plurality of modes of operation comprising:

a first switch means having a wiper which is movable between a first and a second position, a first contact adapted to be contacted by said wiper of said first switch means when said wiper of said first switch means is moved from its first to its second position and means for moving said wiper of said first switch means;

a second switch means having a wiper which is movable between a first and a second position, a first contact adapted to be contacted by said wiper of said second switch means when said wiper of said second switch means is in its first position, a second contact adapted to be contacted by said wiper of said second switch means when said wiper of said second switch means is in its second position, a first diode having an anode coupled to said first contact of said second switch means, a second diode having a cathode coupled to said second contact, and means for moving said wiper of said second switch means between said first and said second positions;

a third switch means having a first and a second wiper which are ganged together and movable between a first, a second and a third position, a first contact adapted to be contacted by said first wiper when said first and second wipers are in their first position, a second contact adapted to be contacted by said second wiper when said first and second wipers are in their second position, a third contact adapted to be contacted by said second wiper when said first and second wipers are in their third position, a first diode having a cathode coupled to said second contact, a second diode having an anode coupled to said third contact, and a means for moving said first and second wipers in unison;

a fourth switch means having a wiper which is movable between a first and a second position, a first contact adapted to be contacted by said wiper of said fourth switch means when said wiper of said fourth switch means is in its first position and a second contact adapted to be contacted by said wiper of said fourth switch means when said wiper of said fourth switch means is in its second position, means for coupling said wiper of said fourth switch means to said device, means for coupling said second contact to a source of power, and means, including a diode having a cathode coupled to a relay, for moving said wiper of said fourth switch means;

a fifth switch means having a wiper which is movable between a first and a second position, a first contact adapted to be contacted by said wiper of said fifth switch means when said wiper of said fifth switch means is in its first position and a second contact adapted to be contacted by said wiper of said fifth switch means when said wiper of said fifth switch means is in its second position, means for coupling said first contact to a source of power, means for coupling said wiper of said fifth switch means to said first contact of said fourth switch means, and means, including a diode having an anode coupled to a relay, for moving said wiper of said fifth switch means;

means for coupling said wiper of said first switch means and said first wiper of said third switch means;

means for coupling said first contact of said first switch means to a source of AC power;

means for coupling said first and said second diodes of said second switch means to said diodes in said means for moving said wipers of said fourth and said fifth switch means;

means for coupling said second wiper of said third switch means to said source of AC power; and

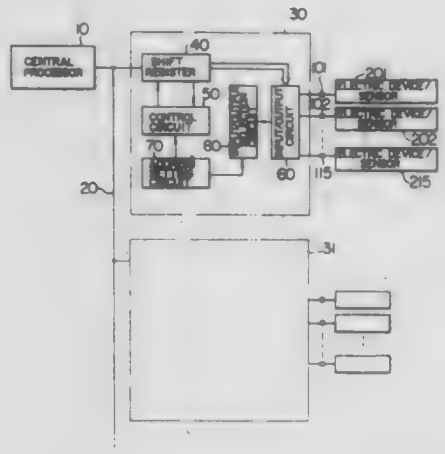
means for coupling said first and said second diodes of said third switch means to said diodes in said means for moving said wipers in said fourth and said fifth switch means, such that when a positive potential from said diodes in said second or said third switch means is applied to said diodes in said fourth and said fifth switch means, said wiper in said fourth switch means is moved from its first position to its second position and, when a negative potential from said diodes in said second or said third switch means is applied to said diodes in said fourth and said fifth switch means, said wiper in said fourth switch means is moved from its first position to its second position.

4,604,620

INFORMATION TRANSMISSION SYSTEM

Shigeru Oho, Hitachi, and Takeshi Hirayama, Mito, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 7, 1983, Ser. No. 464,212
Claims priority, application Japan, Feb. 8, 1982, 57-17535
Int. Cl.[4] H04Q *1/00*
U.S. Cl. 340—825.52 19 Claims



1. An information transmission system comprising:
an addressable terminal device including a plurality of input-/output terminals for inputting and outputting signals;
a central processor for receiving data from said terminal device and for supplying data including address information to said terminal device; and
a transmission line connected between said central processor and said terminal device;
said terminal device including address setting means which is selectively settable for generating signals representing an address for said terminal device, holding means for holding data including address information received from said central processor or data received from said input-/output terminals, comparator means for comparing received address information in said holding means with said generated address signals to determine if said data received from said central processor is to be applied from said holding means to said input/output terminals, and connection means responsive to said comparator means for applying said received data from said holding means to selected ones of said input/output terminals designated on the basis of said generated address signals.

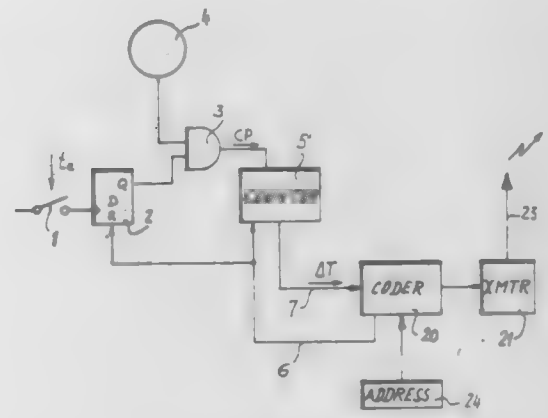
4,604,621

DEVICE FOR THE ELECTROMAGNETIC TRANSMISSION OF AN EVENT TAKING PLACE IN AN INTERFERENCE-LADEN ENVIRONMENT

Max Suter, Dotzigen, Switzerland, assignor to Omega Electronics S.A., Switzerland

Filed May 9, 1984, Ser. No. 608,338
Claims priority, application France, May 13, 1983, 83 08653
Int. Cl.[4] G08C *19/00;* G08B *23/00;* G04F *8/00*
U.S. Cl. 340—825.69 7 Claims

1. A device for electromagnetically transmitting, in an environment marked by interference, a sporting event entailing in particular the start of a race in which several racers are involved, said event being defined by a time t_e at which it occurred, characterized by the fact that the device consists of a transmitting mechanism able to transmit a sequence of pulses consecutive to the said event, each of the pulses in the said sequence being marked by a distinctive sign making it possible to situate it in time (ΔT_i) in relation to the said event and by a code making it possible to identify each racer, and of a receiving device which is suitable for detecting the first interference-free pulse of the sequence and which, by considering a current time t_h at the time of detection of the said code, makes it possible in turn to restore the value of the time t_e at which the said



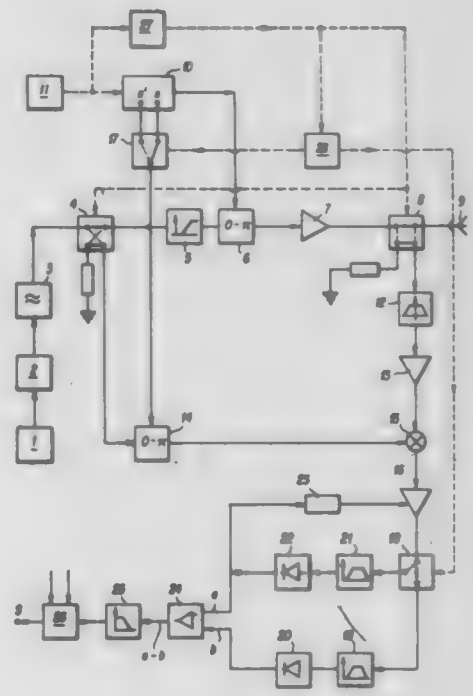
event occurred and the identification of the racer to which the same time t_e belongs.

4,604,622

PROXIMITY RADAR

Patrice C. G. Delon, Neuilly; Gerard D. Fourreaux, Chatou; Michel J. R. Nicolas, Paris, and Bruno R. Sebilet, Suresnes, all of France, assignors to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation S.N.E.C.M.A., Paris, France

Filed May 25, 1983, Ser. No. 498,162
Claims priority, application France, Jun. 28, 1982, 82 11268
Int. Cl.[4] G01S *13/32*
U.S. Cl. 343—5 PD 7 Claims



1. A proximity radar for detecting when the radar is at a predetermined distance from a target, said radar including
means for transmitting towards the target a signal phase modulated in accordance with a pseudorandom sequence of logic bits produced at a control frequency, means for receiving the transmitted signal after reflection from said target,
time delay means for producing an output of a signal corresponding to the transmitted signal which is delayed by a selected time interval,
means for correlating the received signal with the output signal of the time delay means,
an amplifier for amplifying the output of said correlating means,
means for alternately setting said selected time interval to times corresponding to the duration of n and n′ bits of said pseudorandom sequence, where n′ is less than n and the

duration of n bits corresponds to the time taken for the signal to travel twice said predetermined distance, and

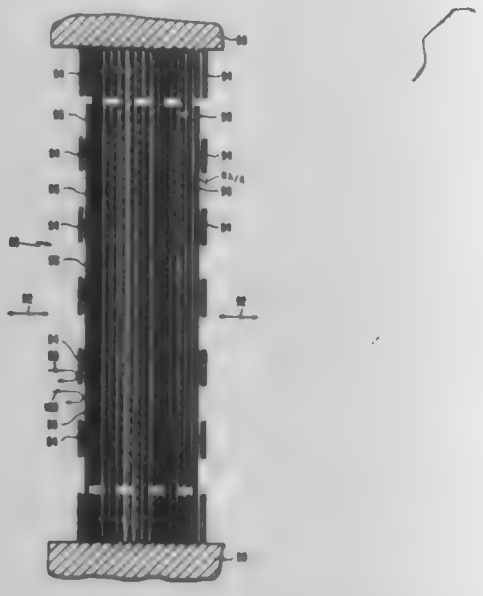
an automatic gain control circuit for controlling said amplifier when said time interval corresponds to n′ bits, said automatic gain control device being inoperative when said time interval corresponds to n bits.

4,604,623

SURFACE ACOUSTIC WAVE PASSIVE TRANSPONDER HAVING NON-REFLECTIVE TRANSDUCERS AND PADS

Halvor Skeie, San Jose, Calif., assignor to X-Cyte Inc., Mountain View, Calif.

Filed Jun. 30, 1983, Ser. No. 509,524
Int. Cl.⁴ G01S *13/74*
U.S. Cl. 343—6.8 R **8 Claims**



1. In a passive transponder adapted for use in an interrogation system for transmitting a reply signal containing coded information in response to the receipt of an interrogating signal, said transponder comprising:

(a) a substrate having a substrate surface defining a plurality of paths of travel for surface acoustic waves, each path of travel having a different length from its beginning to its end; and

(b) electric circuit means for propagating surface acoustic waves along said paths of travel, from said beginning of each path to said end thereof, said electric circuit means comprising a plurality of metallized layer elements, disposed on said substrate and arranged in said paths of travel;

the improvement wherein at least one of said layer elements has a substantially linear serrated edge on a side thereof facing a path of travel to reduce acoustic wave reflections from said edge, the width of the serration in said serrated edge in the direction of said path of travel being substantially equal to $n\lambda/4$, where n is an odd integer and λ is the center wavelength of said surface acoustic waves.

4,604,624

PHASED ARRAY ANTENNA EMPLOYING LINEAR SCAN FOR WIDE-ANGLE ARC COVERAGE WITH POLARIZATION MATCHING

Noach Amitay, Tinton Falls, and Michael J. Gans, Monmouth Beach, both of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Nov. 16, 1982, Ser. No. 442,237
Int. Cl.⁴ H01Q *21/06, 21/24*; H04B *7/10*
U.S. Cl. 343—361 **4 Claims**

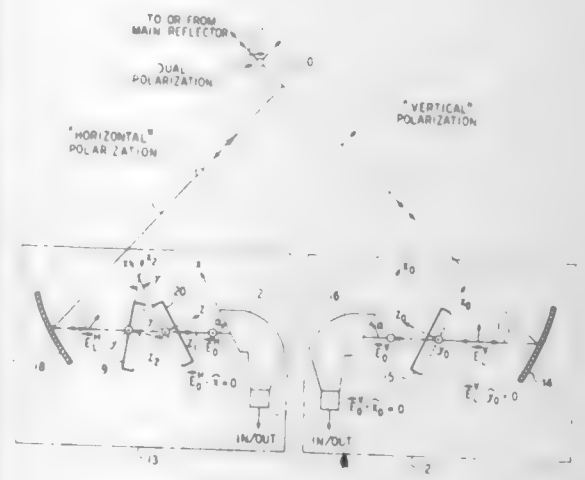
1. An antenna feed arrangement comprising:

a plurality of feed elements arranged in an array and capable of launching or receiving a beam of electromagnetic energy polarized in a first direction, the array including a fixed linear phase taper along a first axis across the aperture of the array to cause the beam to be squinted at an angle 90 degrees-α;

phase shifting means connected to the plurality of feed elements and capable of selectively producing a predetermined linear phase taper along a second axis across the aperture of the array for causing the squinted beam to traverse a predetermined arc in the far field of the antenna arrangement when scanned along the second axis of the array orthogonal to the first axis;

polarization diplexing means capable of bidirectionally directing orthogonally polarized signals along one path in the far field of the antenna arrangement and along first and second separate paths in the near field of the antenna arrangement for interception along the first one of the paths by the array of feed elements;

first polarization rotating means disposed between the diplexing means and the array with the surface normal



vector of the polarization rotating means at an angle to a ray directed from the center of the aperture of the array to the center of the far field of view of the antenna arrangement which substantially corresponds to the angle of squint of the beam generated by the array, the polarization rotating means being capable of rotating a signal polarized in a first direction at the aperture of the array into a signal polarized in a second direction; and

second polarization rotating means disposed between the diplexing means and the first polarization rotating means at a predetermined acute angle γ to the first polarization rotating means, the second polarization rotating means being capable of rotating a signal polarized in the second direction from the first polarization rotating means into a signal polarized in the first direction which is matched to the polarization of the beam received from the diplexing means along the first separate path.

4,604,625

PHASE-LOCKED DIGITAL VERY HIGH FREQUENCY OMNI-RANGE (VOR) RECEIVER

Eldon F. Davidson, 240 Flower Dr., Folsom, Calif. 95630

Filed Jul. 14, 1983, Ser. No. 513,654
Int. Cl.⁴ G01S *1/44*
U.S. Cl. 343—401 **18 Claims**

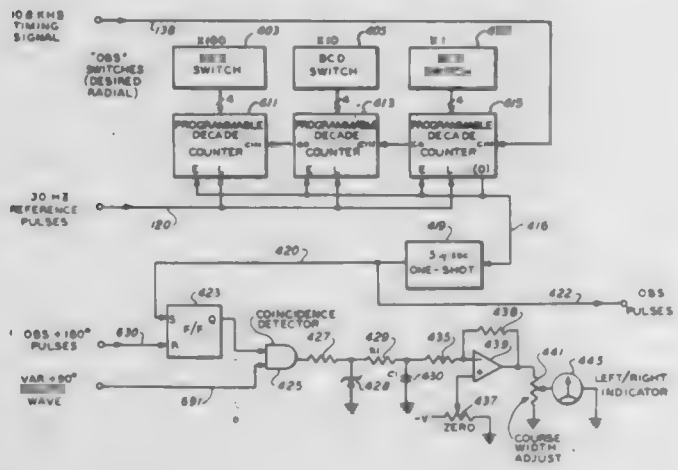
1. In a very high frequency omni-range (VOR) receiver of the type wherein an incoming VOR signal is comprised of both a reference signal and a variable signal, circuitry for producing navigation information in response to said reference and variable signals comprising:

means for generating a stream of timing pulses which are in a substantially phase-locked relationship to a stream of pulses corresponding to said reference signal;

means for producing, in response to said timing pulse stream and to said reference signal pulse stream, a stream of OBS pulses which are phase-shifted by an amount representative of a preselected radial emitted by a predetermined VOR station; and

means, operative in response to said timing pulse stream, said OBS pulse stream, and a stream of pulses corresponding to

said variable signal, for determining any phase difference existing between said OBS pulse stream and said variable



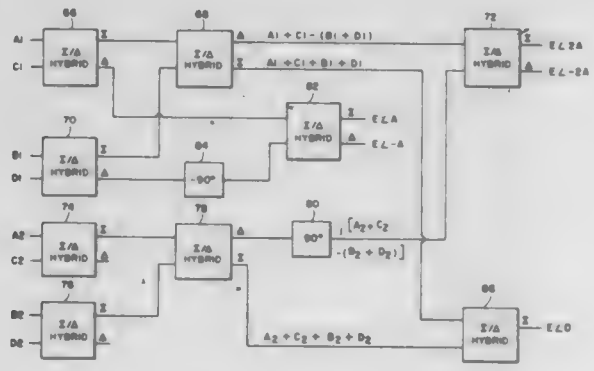
signal pulse stream and, in response thereto, producing a voltage indicative of course deviation between an actual course and said pre-selected radial.

4,604,626

ACQUISITION SYSTEM EMPLOYING CIRCULAR ARRAY

Chester E. Stromswold, Nashua, N.H., assignor to Sanders Associates, Inc., Nashua, N.H.

Filed Nov. 21, 1983, Ser. No. 553,608
Int. Cl.[4] G01S *5/02*
U.S. Cl. 343—417 8 Claims



1. A direction-finding antenna system for determining the signal direction from which signals from a signal source are received, the system comprising:

A. first and second concentric circular arrays, each array having N equally spaced antenna elements, where N is an even number greater than two, the first and second arrays being angularly offset by 180°/N;

B. a processing circuit, connected to receive the signals from each of the antenna elements of the first and second arrays, for generating an ensemble of composite n-pole signals, n=2, . . . N2, N, by:

(i) generating a first N-pole signal by adding the signals from alternate elements of the first array and subtracting the signals from the remainder of the elements of the first array;

(ii) generating a second N-pole signal by adding signals from alternate elements of the second array and subtracting the signals from the remainder of the elements of the second array;

(iii) shifting the second N-pole signal in phase by 90° and adding it to the first N-pole signal to generate a composite N-pole signal, in response to a single plane-wave signal with a wavelength substantially greater than twice the spacing between the elements, whose phase angle with respect to the phase center of the array is N/2 times the bearing angle of the plane-wave signal; and

(iv) combining signals from the antenna elements to generate, in response to a single plane-wave signal with a wavelength substantially greater than twice the spacing between the elements, composite n-pole signals, n=2, . . . , N−2, N the phase angles of the composite n-pole signals being n/2 times the bearing angle of the plane-wave signal,

whereby the ensemble of composite n-pole signals, in response to a single plane-wave signal with a wavelength substantially greater than twice the spacing between the elements, has a spatial frequency proportional to the bearing angle of the plane wave; and

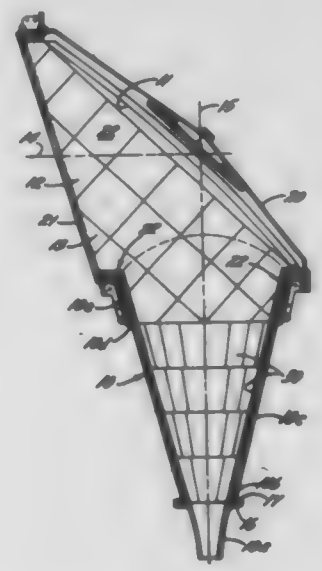
C. a spatial-Fourier-transform device, connected to receive the ensemble of composite n-pole signals and having a plurality of output terminals, for providing at its output ports a spatial Fourier transform of the ensemble of composite N-pole signals, thereby indicating the bearing angles of incoming plane waves by the positions of maxima in the spatial Fourier transform.

4,604,627

FLARED MICROWAVE FEED HORNS AND WAVEGUIDE TRANSITIONS

Saad S. Saad, Willowbrook, and Charles M. Knop, Lockport, both of Ill., assignors to Andrew Corporation, Orland Park, Ill.

Filed Jan. 11, 1984, Ser. No. 569,789
Int. Cl.[4] H01Q *13/02*
U.S. Cl. 343—786 12 Claims



1. A horn-reflector antenna comprising

a paraboloidal reflector for transmitting and receiving microwave energy, and

a flared feed horn for guiding microwave energy to and from said reflector, the longitudinal shape of at least a section of said horn at the end where the horn begins to flare outwardly being defined by the equation

$$R^p = R_1^p + \left(\frac{R_2^p - R_1^p}{L^p} \right) l^p$$

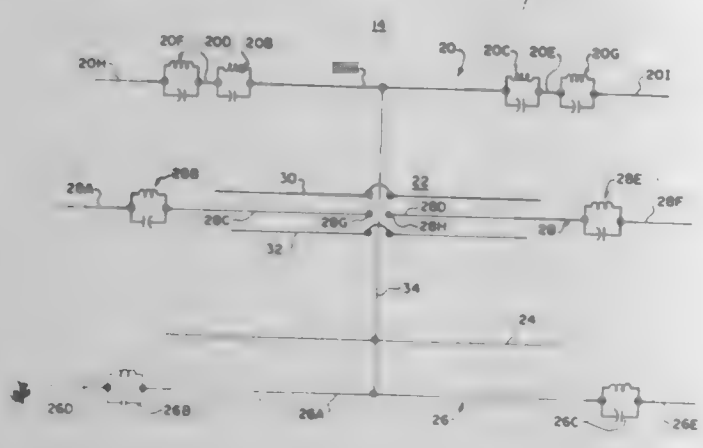
where R is the transverse dimension from the longitudinal axis of the horn to the side wall of the horn, l is the axial distance along the horn measured from said end where the horn begins to flare outwardly, R_1 and R_2 are the radii of the horn at opposite ends of the horn section defined by said equation, L is the axial length of the horn section defined by said equation, and the exponent p has a value greater than two and less than about 7, to effect a substantial reduction in the TM_{11} mode level.

4,604,628

PARASITIC ARRAY WITH DRIVEN SLEEVE ELEMENT

Roger A. Cox, Lincoln, Nebr., assignor to Telex Communications, Inc., Lincoln, Nebr.

Filed Mar. 11, 1983, Ser. No. 474,557
Int. Cl.[4] H01Q *21/12*
U.S. Cl. 343—818 12 Claims



2. An antenna system comprising:

a driven element adapted to be driven in a predetermined frequency band;

at least a first parasitic element;

said at least a first parasitic element having a portion self-resonant in said predetermined frequency band, positioned at betwen 0.1 and 0.3 wavelength from said driven element and tuned to form an additive field to the field of said driven element at said predetermined frequency band in a predetermined direction;

said at least a first parasitic element being parallel to said driven element;

said driven element including at least one directly fed portion and first and second sleeve portions;

said first sleeve portion having a predetermined diameter; and

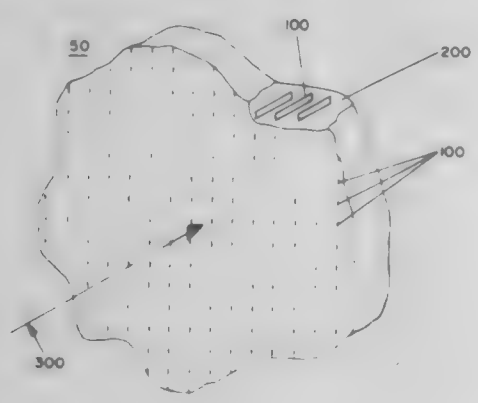
said first and second sleeve portions being spaced from each other a distance of between four and twelve times the predetermined diameter.

4,604,629

AXIAL CONDUCTANCE ANGULAR FILTER

Peter W. Hannan, Smithtown, N.Y., assignor to Hazeltine Corporation, Commack, N.Y.

Filed Apr. 23, 1984, Ser. No. 602,885
Int. Cl.[4] H01Q *15/02*
U.S. Cl. 343—909 10 Claims



1. An angular filter which passes a wave of electromagnetic energy at one angle of incidence to the apparatus and which attenuates waves of electro-magnetic energy at other angles of incidence, said apparatus comprising:

a. an array of a plurality of parallel, resistive elements, each of said elements having an elongated dimension, and having an axis along the elongated dimension; and

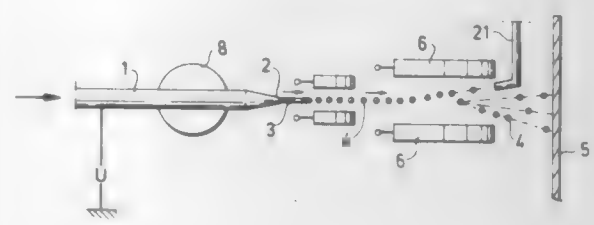
b. means for supporting said elements whereby waves of electromagnetic energy impinging on said filter in a direction substantially parallel to the axis along the elongated dimension of said resistive elements passes through said filter and a wave of electromagnetic energy impinging on said filter at an angle with respect to the axis is substantially attenuated.

4,604,630

METHOD OF APPLYING AN ELECTRICAL CHARGE IN INK JET PRINTERS, AND AN ARRANGEMENT FOR CARRYING THE METHOD

Bengt Thell, Eslöv, Sweden, assignor to Esselte Sanden AB, Eslöv, Sweden

Filed Oct. 19, 1984, Ser. No. 662,823
Claims priority, application Sweden, Oct. 24, 1983, 8305841
Int. Cl.[4] G01D *15/18*
U.S. Cl. 346—1.1 15 Claims



1. A method for applying an electric charge in ink jet printers of the so-called continuous kind, in which electrically conductive ink or like medium is forced in the form of a jet from a container through a nozzle or like device and caused to form droplets to which an electric voltage is applied and which, by passing said droplets through deflecting electrodes, to which a voltage is applied, are caused to travel along a path determined by, inter alia, said charge, in order to produce a pre-determined transcript or the like on a printing sheet or like medium, and in which disturbances of a given kind are generated with the aid of a piezo-electric crystal (**8**), by means of which, said jet (**3**) is disturbed in a manner to disintegrate said jet (**3**) into droplets (**4**) in a pre-determined fashion; characterized by electrically charging the ink in said nozzle (**1**) by varying the level of voltage applied with regard to the pre-determined frequency at which droplets are separated from the jet, thereby to give practically each droplet (**4**) an individual, pre-determined charge which is in relation to the level of voltage applied in conjunction with the separation of said droplets (**4**).

4,604,631

CONTROL SYSTEM AND METHOD FOR CHARGE CONTROL INK JET PRINTER

Koichiro Jinnai, Kawasaki; Takao Fukazawa, Tokyo; Tadashi Ito, Yokohama; Takahisa Koike, Tokyo; Toshiharu Murai, Yokohama, and Kazumi Ishima, Kashiwa, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Dec. 6, 1984, Ser. No. 679,116
Claims priority, application Japan, Dec. 7, 1983, 58-231187
Int. Cl.[4] G01D *15/18*
U.S. Cl. 346—1.1 11 Claims

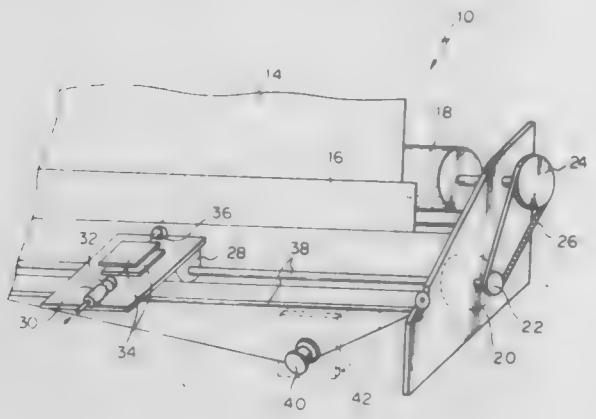
7. In a charge control type ink jet printer for printing out one character line of data on a paper by a plurality of strokes which includes an ink jet head, a carriage loaded with charging means and deflecting means, carriage driving means for driving the carriage in a horizontal scan direction, and paper driving means for feeding the paper in a vertical scan direction, a control method comprising the steps of:

storing one character line of print data which is made of a plurality of odd and even scanning lines in a buffer memory means;

reading from said buffer memory means one of the odd scanning lines and even scanning lines, each of which contains a predetermined number of lines;

printing the line read from said buffer memory means;

feeding the paper in the vertical scan direction by an amount equal to a predetermined number of dot pitches;
reading from said buffer memory means the other of the odd scanning lines and even scanning lines;
printing said other scanning lines so as to alternate said one scanning lines and said other scanning lines;



feeding the paper in the vertical scan direction by a number of dot pitches equal to twice said predetermined number of lines minus said predetermined number of dot pitches;
whereby the head, the carriage and the carriage driving means are controlled to fully print out one character line of print data.

4,604,632

RECORDER TRANSPORT FOR PERFORATING AND CUTTING OPERATIONS

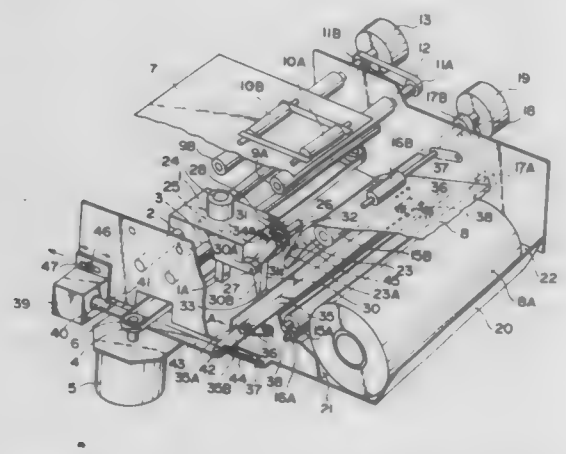
Hiroaki Matsumoto, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 5, 1983, Ser. No. 520,577

Claims priority, application Japan, Aug. 16, 1982, 57-141016; Aug. 16, 1982, 57-141017; Aug. 16, 1982, 57-141018; Aug. 16, 1982, 57-141019

Int. Cl.⁴ G01D *15/28;* **H04N** *1/31;* **B41J** *3/04;* **B41F** *1/08*

U.S. Cl. 346—24 **5 Claims**



1. A recording apparatus for recording an image on a recording sheet comprising:
means for transporting the recording sheet along a path;
means located along a path for recording the image on the recording sheet in response to an image signal;
perforation means located along the path and having tooth edges for forming perforations in the recording sheet;
cutting means located downstream of said perforation means with respect to a direction in which said sheet is transported, for cutting said sheet; and
control means for controlling said perforation means such that perforations are formed at a desired margin between recorded images and such that in response to a decision to end processing, perforations are again formed after the last formed perforations are transported to said cutting means.

4,604,633

INK-JET RECORDING APPARATUS

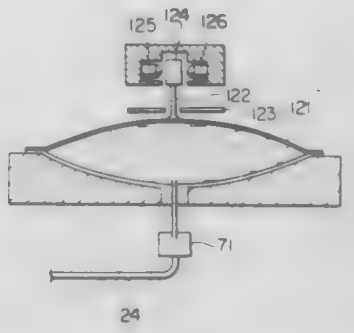
Yoshiaki Kimura, Hachioju, and Yasuhiko Tanaka, Tokyo, both of Japan, assignors to Konishiroku Photo Industry Co., Ltd, Tokyo, Japan

Filed Dec. 8, 1983, Ser. No. 559,496

Claims priority, application Japan, Dec. 8, 1982, 57-216031; Dec. 8, 1982, 57-216032; Dec. 23, 1982, 57-230841; Dec. 23, 1982, 57-230842; Dec. 23, 1982, 57-230843; Dec. 23, 1982, 57-230844; Dec. 23, 1982, 57-230845

Int. Cl.⁴ G01D *18/00*

U.S. Cl. 346—140 R **9 Claims**



1. An ink jet recording apparatus comprising:
at least one ink-droplet jetting nozzle having an orifice of defined aperture;
a pressure chamber communicating with said at least one nozzle and having a flexible wall;
an ink supply system for supplying ink from an ink reservoir to said pressure chamber of said at least one nozzle;
said ink supply system comprising an ink chamber having a flexible diaphragm forming a wall thereof and which is deformable responsive to at least one of the ink pressure in said ink chamber and the amount of ink remaining in said ink chamber;
said flexible diaphragm being deformable such that a displacement thereof responsive to an ink-pressure variation of -5 to -10 cm H_2O is from 5 μm/cm H_2O to 20 mm/cm H_2O;
a light shielding means coupled to said flexible diaphragm so as to be movable responsive to deformation of said flexible diaphragm; and
light detecting means including a light emitting element and a light receiving element for receiving light emitted by said light emitting element, a light path being provided between said light emitting element and said light receiving element, said light detecting means being arranged adjacent said light shielding means;
said light shielding means being selectively movable into and out of said light path to selectively block light emitted from said light emitting element from being received by said light receiving element as a function of the deformation of said flexible diaphragm.

4,604,634

APPARATUS FOR RECORDING AND REPRODUCING AN ELECTROGRAPHIC IMAGE

Ingmar Feigt, Langensendelbach; Ernst Feldtkeller, Munich, and Gottfried Lange, Erlangen, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Continuation of Ser. No. 592,313, Mar. 22, 1984, abandoned. This application Feb. 26, 1986, Ser. No. 833,671

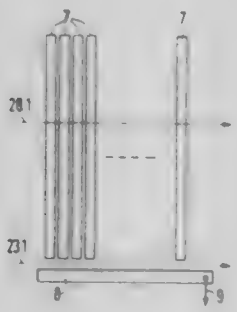
Claims priority, application Fed. Rep. of Germany, Apr. 15, 1983, 3313764

Int. Cl.⁴ G01D *15/14*

U.S. Cl. 346—160 **1 Claim**

1. Apparatus for recording and reproducing an electroradiographic image comprising, in combination:
(a) a photoconductive layer for storing an electrostatic radiation image;

(b) a plurality of adjacent strip electrodes disposed substantially in parallel on the surface of said layer;
(c) at least one discharge electrode disposed on said surface and spaced apart from said strip electrodes by a gap, said gap being bridged by photoconductive material;
(d) first means for scanning said surface with a first radiation beam, thereby to convert an electrostatic stored image into electrical signals in said discharge electrodes, said scanning means moving said radiation beam across said



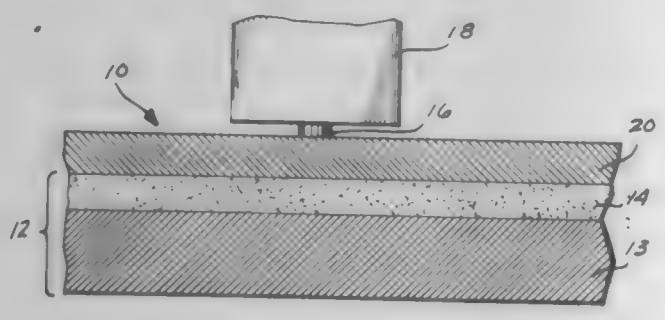
surface in a linear path whose orientation is substantially transverse with respect to the longitudinal orientation of said strip electrodes; and
(e) means for irradiating said photoconductive material in said gap between said discharge electrode and successive ones of said strip electrodes along a path substantially parallel to the orientation of the linear path, thereby to electrically connect said discharge electrode to respective ones of said strip electrodes in synchronism with the scanning of said first means.

4,604,635

THERMAL PAPER AND METHOD FOR MAKING THERMAL PAPER WITH SILICONE RESIN PROTECTIVE LAYER

Christopher A. Wiklof, Mukilteo; Gerald R. Apperson, Seattle; Robert J. Brooks, Woodinville, and Robert A. Samuel, Snohomish, all of Wash., assignors to Intermec Corporation, Lynnwood, Wash.

Filed Nov. 8, 1984, Ser. No. 669,594
Int. Cl.[4] D03D *3/00*
U.S. Cl. 346—226 5 Claims



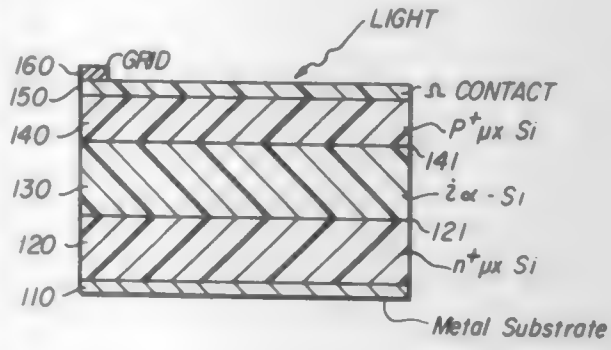
1. A thermal recording paper comprising a substrate that includes a support layer and a thermal layer comprising a heat-sensitive, image forming material, and a protective layer comprising a cured silicone resin overlying one side of the substrate, the protective layer being positioned on the same side of the support layer as the thermal layer.

4,604,636

MICROCRYSTALLINE SEMICONDUCTOR METHOD AND DEVICES

Vikram L. Dalal, Lawrenceville, N.J., assignor to Chronar Corp., Princeton, N.J.

Filed May 11, 1983, Ser. No. 493,701
Int. Cl.[4] H01L *45/00*
U.S. Cl. 357—2 7 Claims



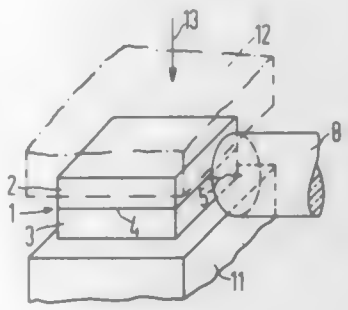
1. A semiconductor device comprising a body of amorphous semiconductor sandwiched between two doped microcrystalline semiconductor layers of opposite types of conductivity.

4,604,637

LIGHT-EMITTING DIODE SUITABLE AS A PRESSURE SENSOR

Wolfgang Rühle, Erlangen, and Claus Weyrich, Gauting, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Mar. 1, 1983, Ser. No. 470,953
Claims priority, application Fed. Rep. of Germany, Mar. 19, 1982, 3210086
Int. Cl.[4] H01L *33/00, 29/84*
U.S. Cl. 357—17 11 Claims



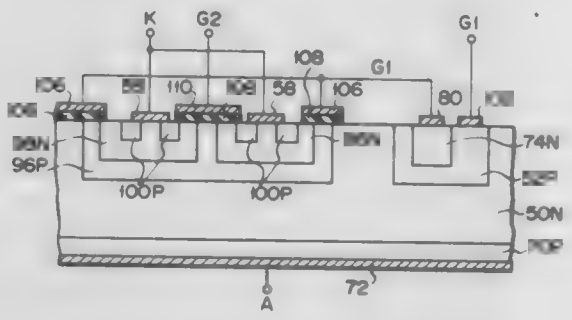
1. A luminescent diode including electrodes for supporting a constant current flow and responsive to pressure with pressure-dependent brightness of emitted luminescent radiation, said diode comprising:
a semiconductor body of III-V mixed semiconductor material consisting of $GA_{1-x}Al_xAs$ and dopants, wherein $0<x<0.4$, and including
a first component of said body comprising p-conductive material, and
a second component of said body comprising n-conductive material and forming a pn junction with said first component to define an active zone for emitting luminescent radiation,
the value of mixture of said semiconductor material being selected as an energy gap material close to the transition from a direct energy gap to an indirect energy gap and at which a change of the value x of the composition would result in a significant change in the brightness of emission so that exertion of pressure on said diode results in a pressure induced transition.

4,604,638

FIVE LAYER SEMICONDUCTOR DEVICE WITH SEPARATE INSULATED TURN-ON AND TURN-OFF GATES

Hideo Matsuda, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed May 16, 1984, Ser. No. 610,780
Claims priority, application Japan, May 17, 1983, 58-86062; Sep. 2, 1983, 58-161452
Int. Cl.[4] H01L *29/78*
U.S. Cl. 357—23.4 10 Claims



1. A semiconductor device comprising:
a first layer of p-type conductivity;
a second layer of n-type conductivity contacting said first layer;
a third layer of p-type conductivity contacting said second layer;
a fourth layer of n-type conductivity contacting said third layer;
a fifth layer of p-type conductivity contacting said fourth layer;
an anode electrode formed on said first layer;
a cathode electrode formed on said fourth and fifth layers;
a first gate electrode insulatively formed over said third layer, forming a first field-effect transistor in cooperation with said second, third and fourth layers and forming a first current channel in the surface of said third layer interposed between said second and fourth layers upon receipt of a turn-on signal, flow of current in said first current channel removing the electrical barrier between said second and third layers and permitting current flow between said anode and cathode electrodes, and
a second gate electrode insulatively formed over said fourth layer, forming a second field-effect transistor in cooperation with said third, fourth and fifth layers, whereupon application of a turn-off signal to said second electrode forms a second current channel in the surface of said fourth layer interposed between said third and fifth layers, reestablishing the electrical barrier betwen said second and third layers and blocking said current flow between said anode and cathode electrodes.

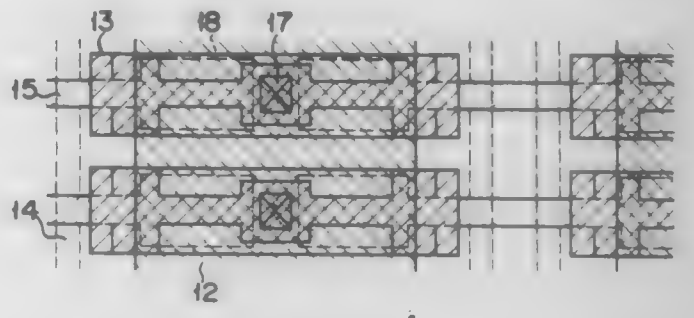
4,604,639

SEMICONDUCTOR MEMORY DEVICE

Hiroyuki Kinoshita, Tokyo, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Continuation of Ser. No. 224,013, Jan. 12, 1981, abandoned. This application Dec. 23, 1983, Ser. No. 564,370
Claims priority, application Japan, Jan. 14, 1980, 55-2871
Int. Cl.[4] H01L *29/93*
U.S. Cl. 357—23.6 8 Claims

1. In a semiconductor device having a plurality of memory cells each coupled to a data line and having a word line, each memory cell being formed on a semiconductor substrate of a first conductivity type, said data line being formed of a semiconductor impurity region of a second conductivity type opposite to said first conductivity type formed in said semiconductor substrate, and each memory cell including a charge storage portion formed in said semiconductor substrate and a gate portion for forming a channel in said semiconductor substrate between said semiconductor impurity region and said charge storage portion, said word line being a metal conductive layer formed on said semiconductor substrate to overlie said charge storage portion and connected to said gate portion at a junction, said word line and said data line crossing each other with an insulating layer therebetween, the improvement



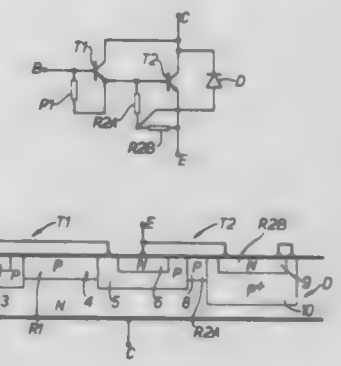
wherein said word line has a first portion overlying said charge storage portion and a second portion overlying said data line, said first portion of said word line being of a width such that it completely overlies said charge storage portion, in width of said first portion being greater than the width of said second portion.

4,604,640

DARLINGTON TRANSISTORS

Derek Colman, Bromham, and David R. Cotton, Putnoe, both of England, assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Oct. 1, 1984, Ser. No. 656,216
Claims priority, application United Kingdom, Oct. 3, 1983, 8326451
Int. Cl.[4] H01L *27/02, 27/04;* H03K *3/26*
U.S. Cl. 357—46 6 Claims



1. A darlington transistor having an output transistor element and at least one driver transistor element in which the output transistor element has an integrated resistor connected from base to emitter, wherein at least part of the integrated resistor is formed by a resistive region of the same conductivity type as the emitter of the output transistor element.

4,604,641

SEMICONDUCTOR DEVICE AND METHOD FOR MANUFACTURING THE SAME

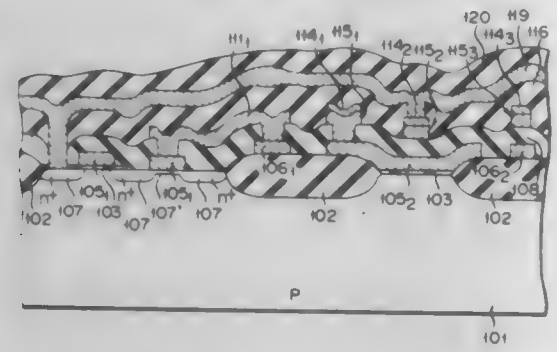
Satoshi Konishi, Tokyo, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Nov. 29, 1982, Ser. No. 445,247
Claims priority, application Japan, Nov. 30, 1981, 56-192228
Int. Cl.[4] H01L *23/48, 23/54*
U.S. Cl. 357—59 10 Claims

1. A semiconductor device comprising:
a semiconductor substrate having an active region including a buried contact and a field region with a field insulation layer;
a first polysilicon layer formed on said semiconductor sub-

strate and electrically connected to said active region through said buried contact;

an isolation film formed on a portion of said first polysilicon region in contact with said buired contact; and



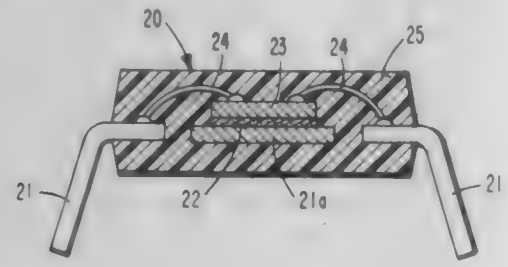
a second polysilicon layer formed on said first polysilicon layer and said isolation film, a portion of said second polysilicon layer being located above said field insulation layer, being doped with a metal and in electrical contact with said first polysilicon layer.

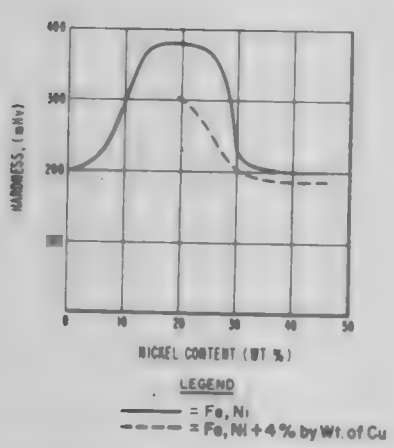
4,604,642

FE-NI-CU LEADFRAME

Toshiharu Sakurai, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kanagawa, Japan

Filed Mar. 26, 1984, Ser. No. 593,515
Claims priority, application Japan, Mar. 28, 1983, 58-51984
Int. Cl.⁴ H01L *29/54, 23/28, 23/50*
U.S. Cl. 357—70
4 Claims





1. In a semiconductor device, comprising a semiconductor element:

a pair of in-line lead electrodes having a mounting island supporting the semiconductor element;

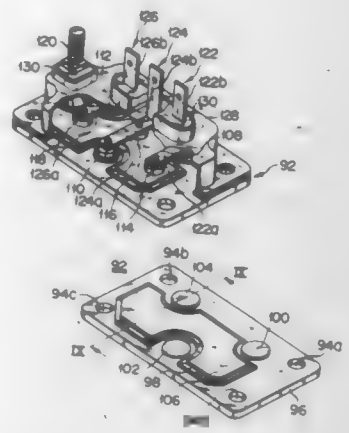
a molding resin body substantially enclosing said semiconductor element and said electrodes, wherein said electrodes and island are made from an alloy essentially consisting of 3 wt percent to 8 wt percent of copper (Cu), 25 wt percent to 30 wt percent of nickel (Ni) and the remaining amount of iron (Fe), said electrodes having a thermal expansion coefficient in the range of about 7×10^{-6} 1/°C. to about 14×10^{-6} 1/°C.

4,604,643

SEMICONDUCTOR RECTIFIER DEVICE

Yoshiharu Yotsumoto, Tokyo; Katsuhiko Kubota, Yokohama, and Toshinobu Sekiba, Kawasaki, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Continuation of Ser. No. 298,741, Sep. 2, 1981. This application Oct. 30, 1984, Ser. No. 665,509
Claims priority, application Japan, Sep. 4, 1980, 55-122660
Int. Cl.⁴ H01L *23/48, 25/02, 27/02*
U.S. Cl. 357—75
12 Claims



1. A semiconductor rectifier device comprising:

a substrate designed to radiate heat;

a flame-sprayed ceramic layer formed directly on a surface of said substrate, and having a low heat resistance;

two first flame-sprayed metal layers formed directly on said surface of said substrate, one of the two metal layers being located at one side of said ceramic layer and the other of the two metal layers being located at the other side of said ceramic layer;

a second flame-sprayed metal layer formed on said flame-sprayed ceramic layer;

a rectifier circuit comprising first through fourth rectifying elements grouped into two pairs, each of said pairs being electrically coupled, respectively, between a separate one of said two first flame-sprayed metal layers and said second flame-sprayed metal layer, each of said rectifying elements having two terminals to permit coupling of the rectifying elements in circuit, wherein the terminals of the rectifying elements in each pair which are coupled to said first and second flame-sprayed metal layers are of opposite polarity; and

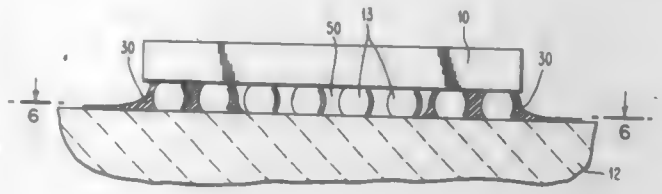
an electrode member connected to each pair of rectifying elements at the terminals which are not coupled to said first and second flame-sprayed layers.

4,604,644

SOLDER INTERCONNECTION STRUCTURE FOR JOINING SEMICONDUCTOR DEVICES TO SUBSTRATES THAT HAVE IMPROVED FATIGUE LIFE, AND PROCESS FOR MAKING

Keith F. Beckham, Newburgh; Anne E. Kolman, Wappingers Falls; Kathleen M. McGuire, Fishkill; Karl J. Puttlitz, Wappingers Falls, and Horatio Quinones, Peekskill, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 28, 1985, Ser. No. 695,597
Int. Cl.⁴ H01L *23/50, 21/58;* **H05K** *7/06, 3/34*
U.S. Cl. 357—80
15 Claims



1. An improved solder interconnection for forming I/O

connections between an integrated semiconductor device and a support substrate comprising

a plurality of solder connections arranged in an area array joining a set of I/O's on a flat surface of said semiconductor device to a corresponding set of solder wettable pads on a substrate,

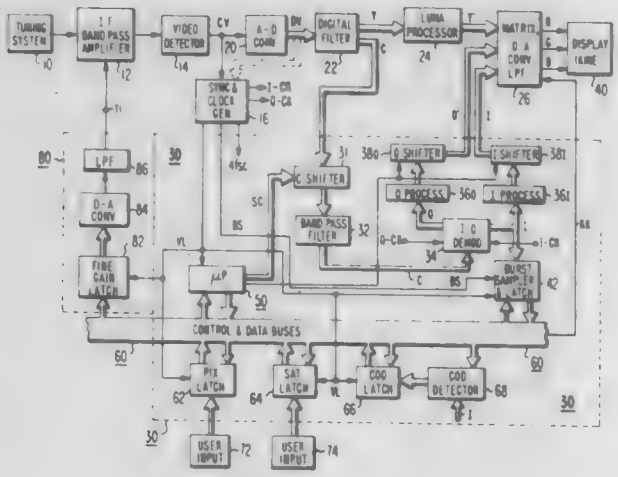
a band of dielectric organic material disposed between and bonded to said device and substrate embedding at least an outer row of solder connections, and leaving the central inner solder connections and the central underside device surface and opposing substrate surface and also the top surface of the device being free of said dielectric organic material.

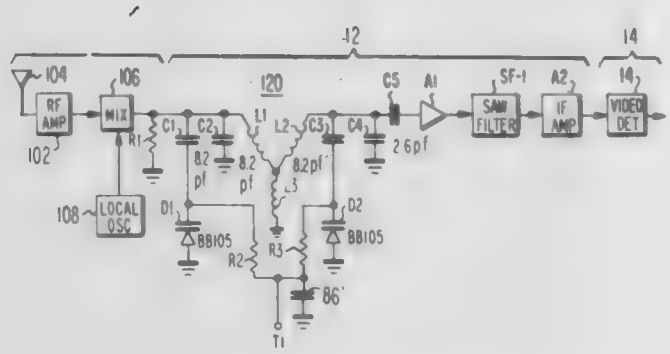
4,604,645

COARSE/FINE AUTOMATIC CHROMINANCE GAIN CONTROL USING A GAIN ADJUSTABLE IF AMPLIFIER IN A DIGITAL TELEVISION RECEIVER

Henry G. Lewis, Jr., Trenton, N.J., assignor to RCA Corporation, Princeton, N.J.

Filed Sep. 30, 1983, Ser. No. 537,814
Int. Cl.⁴ H04N *9/64, 9/77, 5/52*
U.S. Cl. 358—27 **20 Claims**





1. A chrominance signal processing apparatus for providing a given chrominance gain in a television receiver comprising:

analog filtering means for providing a frequency response characteristic including the frequency of a chrominance component of an analog composite video signal therein, wherein said frequency response characteristic is controllable in response to a first gain control signal for adjusting the amplitude of said chrominance component in first predetermined increments relative to other components of said analog composite video signal;

analog-to-digital converting means coupled to said analog filtering means for developing digital video samples corresponding to said analog composite video signals;

digital shifting means, coupled to said analog-to-digital converting means and responsive to a second gain control signal, for modifying the magnitude of the chrominance component of said digital video samples in second predetermined increments being greater than said first predetermined increments;

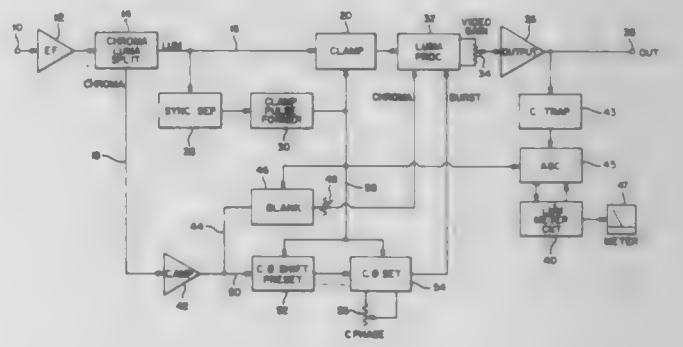
control means, coupled to said digital shifting means and to said analog filtering means and responsive to the chrominance component of said digital video samples, for developing said first and second gain control signals to apportion said given chrominance gain between said analog filtering means and said digital shifting means.

4,604,646

VIDEO PROCESSING CIRCUIT

James A. Karlock, 3311 NE. 35th Ave., Portland, Oreg. 97212

Continuation of Ser. No. 575,489, Feb. 1, 1984, abandoned, which is a continuation of Ser. No. 325,755, Nov. 30, 1981, abandoned. This application Nov. 19, 1984, Ser. No. 672,860
The portion of the term of this patent subsequent to Nov. 5, 2002, has been disclaimed.
Int. Cl.⁴ H04N *9/64*
U.S. Cl. 358—28 **27 Claims**



1. A processing circuit for processing a color video signal comprising:

an input circuit path for receiving a video input signal,

means for removing the chrominance signal portion from said video signal,

means for clamping the video signal with the chrominance signal portion removed to a predetermined back porch clamping level of said video signal,

means for separating the luminance signal portion of the clamped video signal comprising a unilaterally conducting sync separator circuit for conducting at levels below the back porch clamping level whereby synchronizing signals are coupled through said sync separator circuit and substantially eliminated from the luminance signal portion at the input of the sync separator circuit,

means for amplifying the separated luminance signal portion from the input of the sync separator circuit,

and means for selectively recombining the amplified luminance signal portion with said synchronizing signals coupled through said sync separator circuit to provide an output signal.

4,604,647

CATHODE RAY TUBE DRIVER CIRCUIT

James C. Peele, Portsmouth, Va., assignor to General Electric Company, Portsmouth, Va.

Filed Oct. 22, 1984, Ser. No. 663,628
Int. Cl.⁴ H04N *9/20, 9/64, 9/16, 5/68*
U.S. Cl. 358—65 **18 Claims**

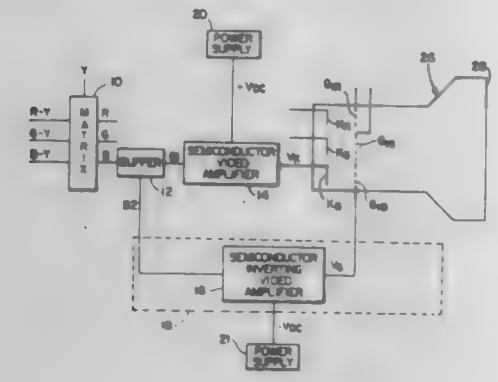
1. A circuit for driving a cathode ray tube in response to a video signal, said driving circuit comprising:

a first circuit portion responsive to said video signal for providing a first control signal to a first electrode of an electron gun, of said tube, said first control signal having a first polarity and being adapted to vary in amplitude between predetermined first limits; and

a second circuit portion responsive to said video signal for providing a second control signal to a second electrode of said electron gun, said second control signal being inverted and of opposite polarity with respect to said first control signal and being adapted to vary in amplitude between predetermined second limits;

whereby the potential difference between said first and

second electrodes varies within a predetermined range of magnitude as a function of said video signal to control the



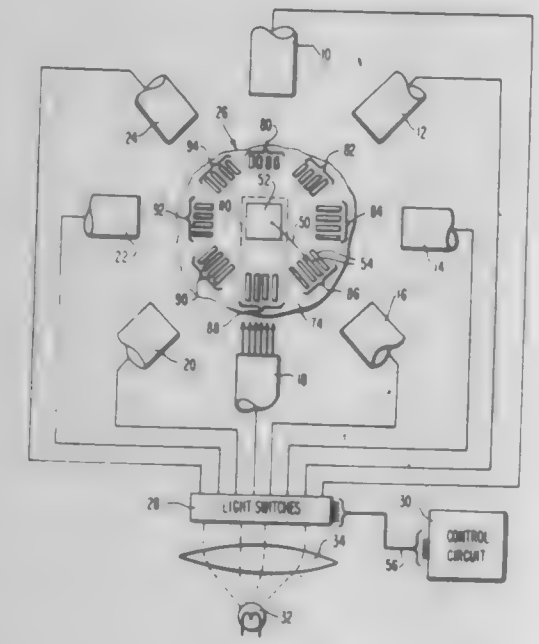
gun current and consequently the light image formed on the screen of said tube.

4,604,648

ELECTRONIC VIEWING SYSTEM FOR INTEGRATED CIRCUIT PACKAGES

Victor B. Kley, 1119 Park Hill Rd., Berkeley, Calif. 94708

Filed Oct. 12, 1984, Ser. No. 660,275
Int. Cl.[4] H04N *7/18*
U.S. Cl. 358—101 **7 Claims**



1. A system for viewing spaced metal fingers mounted in a plane on an amorphic substrate to generate electrical signals indicative of the finger pattern, comprising

utilizing means for receiving light indicative of the finger pattern,

an objective for being positioned over the finger pattern and for receiving and directing light from a field of view of the finger pattern to the utilization means,

light source means for illuminating the finger pattern with generally unidirectional light,

said light source means projecting the unidirectional light in a direction forming an acute angle relative to the plane of the metal fingers, and

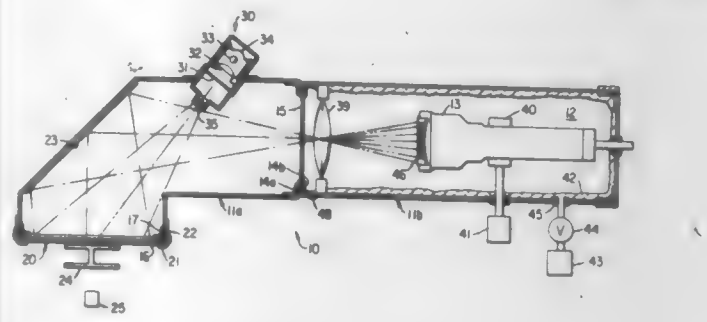
said acute angle and direction being selected so that directly reflected light from the fingers and amorphic substrate within the field of view avoids impingement upon the objective whereby scattered reflective light from the metal fingers impinges upon the objective to form an image of the metal fingers in the utilization means.

4,604,649

RADIOGRAPHIC INSPECTION MEANS AND METHOD

Sammy F. Carollo, Irving, and William E. Dance, Dallas, both of Tex., assignors to Vought Corporation, Dallas, Tex.

Filed Nov. 24, 1981, Ser. No. 324,519
Int. Cl.[4] H04N *5/32*
U.S. Cl. 358—111 **36 Claims**



1. A radiographic inspection system for producing a shadowgraoh or transmission image of an object to be inspected, comprising:

radiation means for directing radiation through the object;

a radioluminescent screen structure positioned to receive the radiation directioned through the object, the screen structure including a lithium based phosphorescent means for producing a scintillation shadowgraph pattern in response to impingement on the screen structure of the radiation directioned through the object;

a television camera for successively generating frames of video data during respective frame cycles, the camera having its optical input section directioned toward the radioluminescent screen, and having a semi-conductor target means for forming charge patterns corresponding to the scintillation patterns produced on the phosphorescent screen for producing shadowgraph images of the object, the television camera further including raster scanning means for scanning the semi-conductor target during respective frame cycles to generate an output signal corresponding to the charge pattern formed on the semi-conductor target;

means for controlling the raster scanning means for preventing scanning of the target during a blanking period extending continuously during a plurality of successive frame cycles to thereby accumulate an enhanced level of charge on the target derived from the scintillations on the phosphorescent screen, the accumulated charge representing a pattern corresponding to a shadowgraph image of the object, the control means being further operative for permitting scanning of the target, susequent to the blanking period for reading the charge accumulated during the blanking period; and

means for processing information read from sequential raster scans of the target, subsequent to respective blanking periods, and for producing a television display corresponding to the shadowgraph scintillation pattern.

4,604,650

THREE LINE VIDEO SCRAMBLING METHOD

Robert J. DelCoco, Severn, Md.; Gerald M. Borsuk, Washington, D.C., and Donald R. Lampe, Ellicott City, Md., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed May 17, 1983, Ser. No. 495,549
Int. Cl.[4] H04N *7/167*; H04L *9/00*
U.S. Cl. 358—119 **3 Claims**

1. Apparatus for scrambling the video portion of a TV signal, comprising:

(1) a first serial first in first out memory for storing data corresponding to a full line of the video portion of said TV signal;

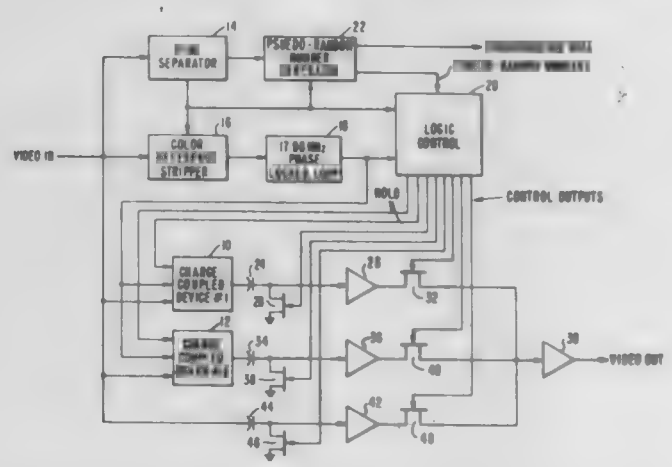
(2) a second first in first out serial memory for storing data corresponding to a full line of the video portion of said TV signal;

(3) control means for sequentially

(a) reading data representing first and second selected segments of said video portion of said TV signal stored in said first memory to form a line of scrambled video and storing data representing the video portion of a selected line of said TV signal in said first memory;

(b) reading data representing third and fourth selected segment of said video portion of said TV signal stored in said second memory to form a line of scrambled video and storing data in said second memory representing the video portion of a second selected line of said TV signal;

(c) reading data representing a fifth selected segment of



said video portion of said TV signal stored in said first memory and storing data in said first memory representing a seventh segment of the video of a third selected line of said TV signal;

(d) reading data representing a sixth segment of said video portion of said TV signal stored in said second memory and storing in said second memory data representing an eighth segment of the video signal of the third selected line of said TV signal;

(e) forming a scrambled video signal comprising said data read from said first and second memories during steps (a) through (d), and

(4) cyclically repeating steps (a) through (e) for a time interval equal to the duration of the TV signal to be scrambled.

4,604,651

TELEVISION CIRCUIT ARRANGEMENT FOR FIELD AND LINE FREQUENCY DOUBLING AND PICTURE PART MAGNIFICATION

Peter H. Frencken; Johannes G. Raven, and Marcellinus J. J. C. Annegarn, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

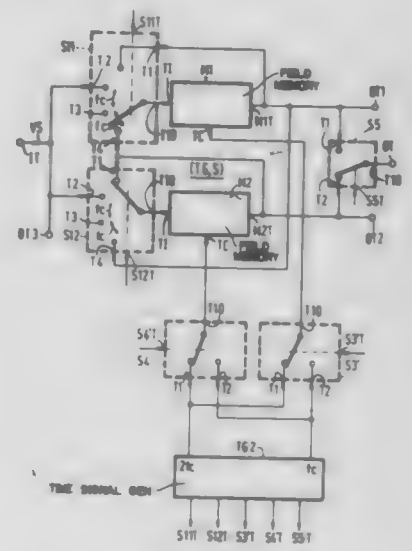
Filed Nov. 17, 1983, Ser. No. 552,656

Claims priority, application Netherlands, Dec. 7, 1982, 8204728

Int. Cl.⁴ H04N *3/22, 7/01*

U.S. Cl. 358—140 **11 Claims**

1. A television circuit arrangement for field and line frequency doubling and picture part magnification, said television circuit arrangement comprising a signal input for receiving information and a signal output for supplying information; first and second field memories arranged in parallel between said signal input and said signal output, each field memory having a signal input, a signal output and a clock signal input; a write/-read circuit having first means for coupling the signal input of said television circuit arrangement to the signal inputs of said first and second field memories, respectively, second means for coupling the signal outputs of said first and second field memories, respectively, to the signal output of said television circuit arrangement, and a clock signal source circuit coupled to said first and second coupling means and said clock signal inputs of said first and second field memories, respectively, said write/-read circuit controlling writing of said information into said first and second field memories, respectively, during alternate field periods, each field period including line periods, for a writing time equivalent to a field period at a given writing speed, and reading of said information twice from said first and second field memories, respectively, during a field period following the field period in which said first and second field memories, respectively, are written, for a reading time equivalent to a field period at a reading speed which is substantially twice the writing speed; and a magnification control circuit, coupled to said first and second field memories and said write/-



read circuit, for providing said picture part magnification, characterized in that said magnification control circuit comprises a clock signal change-over circuit coupled to said clock signal source for selectively modifying the clock signals therefrom, whereby, during the writing of said information into said first and second field memories, the writing speed is selectively made higher than said given writing speed during a part of the field periods and of the line period in said writing time, which part is substantially inversely proportional to the ratio between said higher writing speed and said given writing speed.

4,604,652

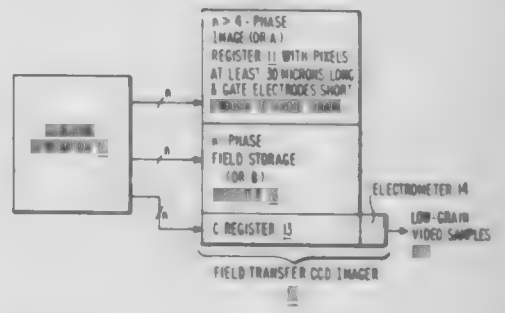
CCD IMAGERS WITH PIXELS AT LEAST THIRTY MICRONS LONG IN THE DIRECTION OF CHARGE TRANSFER

Hammam Elabd, Mercer County; Walter F. Kosonocky, Somerset County, both of N.J., and Donald F. Battson, Lancaster, Pa., assignors to RCA Corporation, Princeton, N.J.

Filed Dec. 24, 1984, Ser. No. 685,725

Int. Cl.⁴ H04N *3/14*

U.S. Cl. 358—213 **10 Claims**



1. A method for operating a CCD imager with pixels of a dimension L at least thirty microns long in the direction of charge transfer without incurring unacceptable grain in video output signal samples therefrom, said method comprising the steps of:

using gate electrodes in said image register having equal lengths, each shorter than the length at which grain is no longer kept satisfactorily low;

during pixel transfer times, applying dynamic clocking signal to the gate electrodes crossing each CCD charge transfer channel in said image register in a number n of successive-in-time phases, n being greater than four and of

such value as to equal L when multiplied by a positive integer times the length of gate electrodes in said image register;

during image integration times between said pixel transfer times in each CCD charge transfer channel, applying static clocking signal to the gate electrodes crossing each CCD charge transfer channel in said image register in said n phases, with no two phases of said static clocking signal applied to adjacent ones of the gate electrodes in said image register simultaneously having voltages such as to induce potential energy barriers in the charge transfer channels therebeneath, and with at least two phases of said static clocking signal having voltages such as to induce potential energy wells in charge transfer channels beneath the gate electrodes in said image register to which those phases of static clocking signal are applied;

arranging to illuminate said image register with a radiant energy image during said image integration times; and

accumulating photoresponse to elements of said radiant energy image in said potential energy wells induced in the charge transfer channels.

4,604,653

DOCUMENT FILING SYSTEM

Makoto Shimizu, Tokyo, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

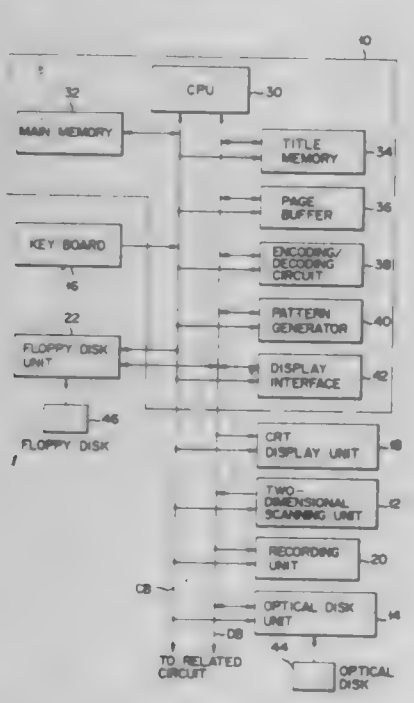
Filed Oct. 20, 1983, Ser. No. 543,964

Claims priority, application Japan, Oct. 21, 1982, 57-185126; Oct. 27, 1982, 57-188623

Int. Cl.⁴ H04N *1/00, 1/32, 1/40*

U.S. Cl. 358—256

21 Claims



1. A document filing system comprising:

input means for selectively inputting a plurality of items of image information, retrieval data and title data, and for selectively inputting a code corresponding to the title data corresponding to desired image information;

first storing means for storing a plurality of items of image information input by the input means at a corresponding plurality of addresses;

processing means including: first read/write means for selectively writing the items of image information in, and for selectively reading the items of image information from, the first storing means; and addressing means for applying to said first read/write means an address of said first storing means corresponding to a code input by said inputting means in order to read out desired image information from said first storing means;

second storing means including a retrieval data area for storing retrieval data of each item of image information inputted by the input means and a title data area for storing title data corresponding to each of plural item groups of image information into which image items are classified and which represent respective titles;

second read/write means for selectively writing retrieval data in, and selectively reading the retrieval data from, the retrieval data area of the second storing means and for writing title data in and reading the title data from the title data area of the second storing means;

means for retrieving the image information in accordance with the retrieval data input by said input means; and

output means for outputting the title data of each item group in the form of a soft copy or a hard copy, said output means obtaining said title data from the title data area of said second storing means to select the title data corresponding to desired image information from displayed or printed title data.

4,604,654

IMAGE FORMING METHOD AND APPARATUS

Nobuaki Sakurada, Yokohama; Yoshitaka Watanabe; Hideaki Kawamura, both of Tokyo, and Yuichi Sato, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

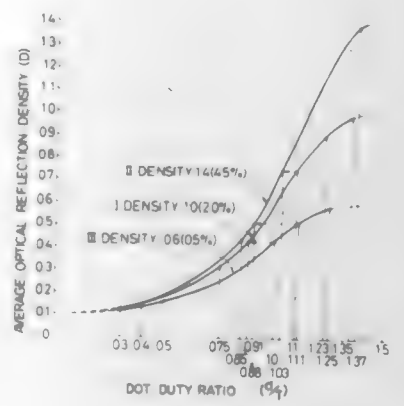
Continuation of Ser. No. 514,592, Jul. 18, 1983, abandoned. This application Jul. 26, 1985, Ser. No. 758,851

Claims priority, application Japan, Jul. 23, 1982, 57-128541; Jul. 23, 1982, 57-128542; Jul. 23, 1982, 57-128543; Jul. 23, 1982, 57-128553

Int. Cl.⁴ H04N *1/40*

U.S. Cl. 358—298

7 Claims



1. An image forming method for forming on a medium an image pattern comprising a plurality of picture elements with different light-reflecting properties providing different optical reflection densities by using pattern elementary marks on the medium at a substantially constant pitch to form the picture elements, the method comprising the steps of:

determining within which of a first optical reflection density range and a second optical reflection density range the optical reflection density of an area of the image pattern falls, the first range having an upper limit higher than the lower limit of the second range;

providing a pattern elementary mark with a first density when the optical reflection density of an area of the image pattern to be depicted thereby is in the first optical reflection density range, the pattern elementary mark having a size that provides the image area depicted thereby an optical reflection density substantially the same as the determined optical reflection density;

providing a pattern elementary mark with a second density higher than the first density when the optical reflection density of an area of the image pattern to be depicted thereby is in the second optical reflection density range, the pattern elementary mark having a size that provides the image area depicted thereby with an optical reflection density substantially the same as the determined optical reflection density; and

setting the optical reflection density ranges so that efficient representation of the optical reflection densitites of the image pattern throughout the image can be performed by

the pattern elementary marks having the first and second densities.

4,604,655

METHOD OF RECORDING AND REPRODUCING VIDEO FORMAT SIGNAL

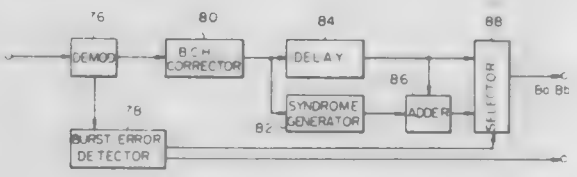
Yoshiaki Moriyama, Tokorozawa, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed Oct. 21, 1983, Ser. No. 544,245

Claims priority, application Japan, Oct. 23, 1982, 57-186568; Oct. 23, 1982, 57-186569

Int. Cl.[4] H04N *5/91*

U.S. Cl. 358—343 **29 Claims**



1. A method of recording and reproducing a video format signal containing picture information, sound information and control information comprising:

forming said control information as data indicative of identification numbers of sections of a two-dimensional picture format into which said sound information is to be inserted,

recording said sound information and said control information on said recording medium in the form of binary signals each comprising a predetermined number of bits of data,

modulating each of said binary signals before recordation on said recording medium such that the signal level is inverted between every adjacent two bits,

reproducing the video format signal on said recording medium in a two-dimensional picture format which is divided into a plurality of sections having predetermined identification numbers respectively allocated thereto, said sections comprising at least one section for inserting said sound information in accordance with said control information, at least one section for inserting said control information and remaining sections for inserting said picture information,

monitoring the inversions of signal level during reproduction of said picture and sound information; and

signaling an occurrence of a burst error in response to a break in the regularity of inversions of signal level during reproduction of said picture and sound information.

4,604,656

TAPE STOP POSITION DETECTING APPARATUS AND MAGNETIC VIDEO REPRODUCING APPARATUS USING THE SAME

Toshifumi Fujii, Nagaokakyo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 9, 1984, Ser. No. 587,958

Claims priority, application Japan, Mar. 11, 1983, 58-41250; Apr. 29, 1983, 58-76709; Oct. 20, 1983, 58-197780; Oct. 21, 1983, 58-197798

Int. Cl.[4] G11B *5/00*; H04N *5/782*

U.S. Cl. 360—10.1 **21 Claims**

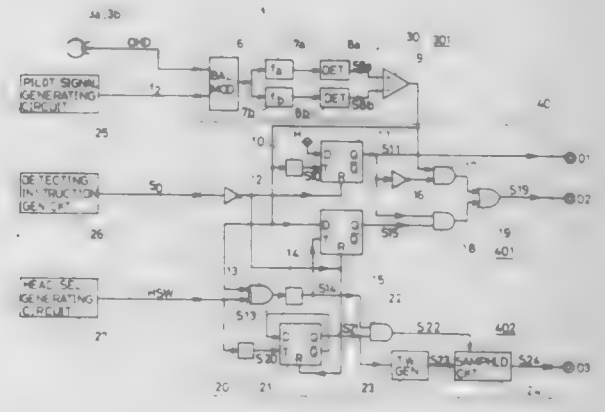
1. A tape stop position detecting apparatus for a magnetic video reproducing apparatus in which first to fourth pilot signals of different frequencies recorded in first to fourth video tracks, respectively, in a magnetic tape cyclically together with a video signal are reproduced from said magnetic tape, comprising:

a plurality of rotational magnetic heads for reproducing said signals from said magnetic tape to provide a reproduced signal,

comparing means connected to said rotational magnetic heads for comparing the amounts of predetermined two pilot signals out of said first to fourth pilot signals contained in said reproduced signal to provide a comparison output,

head selecting signal generating means for generating a head selecting signal for selection of said rotational magnetic heads,

region signal generating means connected to said comparing means for generating, in response to said comparison output, a region signal indicating in which region among the first to fourth regions associated with said first to



fourth video tracks the stop position of said magnetic tape is located, said stop position of said magnetic tape being the reproducing position on said magnetic tape when said magnetic tape is at a stop, and

position signal generating means connected to said comparing means and said head selecting signal generating means for generating position signal indicating the stop position of said magnetic tape in response to said comparison output and said head selecting signal in case where the stop position of said magnetic tape is located in predetermined two regions out of said first to fourth regions.

4,604,657

APPARATUS FOR PROCESSING PCM SIGNAL

Tadashi Fukami, Yokohama, and Kentaro Odaka, Kawasaki, both of Japan, assignors to Sony Corporation, Tokyo, Japan

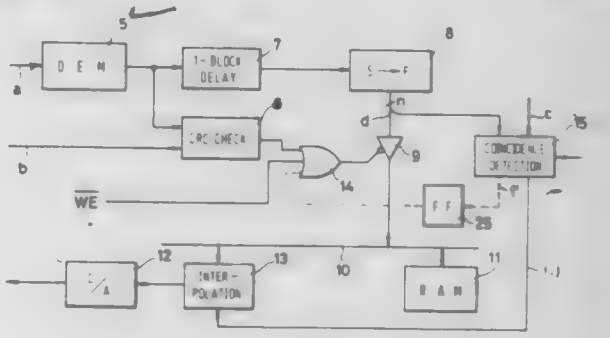
PCT No. PCT/JP84/00025, § 371 Date Oct. 1, 1984, § 102(e) Date Jan. 1, 1984, PCT Pub. No. WO84/02999, PCT Pub. Date Aug. 2, 1984

PCT Filed Jan. 31, 1984, Ser. No. 662,410

Claims priority, application Japan, Jan. 31, 1983, 58-14335

Int. Cl.[4] G11B *5/00, 5/09, 27/02*; H04J *3/06*

U.S. Cl. 360—32 **9 Claims**

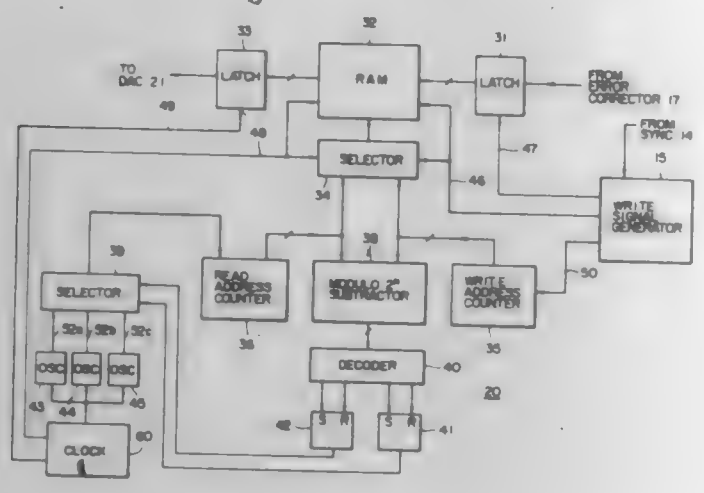


1. An apparatus for processing a PCM data signal, wherein one-segment of data consists of a plurality of blocks, and each block consists of a plurality of PCM data and a segment address that is the same for each block in a given segment, characterized in that said apparatus comprises a coincidence detection circuit receiving said PCM data signal for detecting a coincidence/non-coincidence of the segment address between every two adjacent blocks of a given segment and producing a non-coincidence signal when said segment addreases do not coincide, and compensating means for performing data compensation in response to said non-coincidence signal from said detection circuit.

4,604,658
MEMORY CONTROL CIRCUIT FOR REMOVING JITTER

Chitoshi Hibino, and Harukuni Kobari, both of Yokohama, Japan, assignors to Victor Company of Japan, Limited, Japan

Continuation of Ser. No. 311,026, Oct. 13, 1981, abandoned.
This application Oct. 19, 1984, Ser. No. 662,535
Int. Cl.[4] H04N *5/78*
U.S. Cl. 360—36.2
6 Claims



1. An apparatus for controlling write-in and readout operations of a memory responsive to digital data input signals subject to jitter; the apparatus controlling the memory so that digital output signals read out of the memory and including the data do not include the jitter, comprising:

write-in address means connected to be responsive to said digital data input signals for generating a write address count that changes at a rate substantially equal to the occurrence rate of said digital input signals and for writing each digital input signal into said memory at an address indicated by said write address count;

read-out rate control means for deriving an output signal

read-out address means connected to be responsive to the output signal of the read-out rate control means, the read-out address means being operable at a controlled rate in response to said output signal for generating a read address count that changes at a rate whereby the read address count is time interleaved with the times at which said write address count is generated and for reading each digital signal from said memory in response to said read address count;

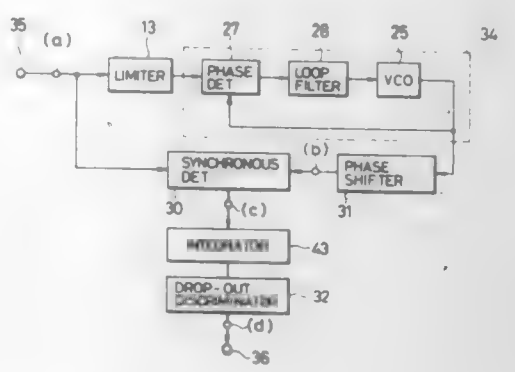
address monitor means responsive to said changing write and read address counts for detecting the number of digital signals stored in said memory, the address monitor means having first, second and third values respectively corresponding to the memory being at: an upper allowable limit for the number of digital signals stored in said memory, a lower allowable limit for the number of digital signals stored in said memory, and for the number of digital signals of said memory being between the upper and lower allowable limits; and

rate control means including: a first source for generating a standard frequency signal, a second source for generating a signal having a higher frequency than the standard frequency and a third source for generating a signal having a lower frequency than the standard frequency, and means responsive to the first, second and third sources and said address monitor means for coupling: (a) said first source to said read-out address means when said detected number is between said first and second values to cause the read-out address means to operate at a standard rate, (b) said second source to said read-out address means in response to said first value being reached to increase the operating rate of said read-out address means, and (c) said third source to said read-out address means in response to said second value being reached to decrease the operating rate of said read-out address means.

4,604,659
APPARATUS FOR DETECTING A DROP-OUT IN A MAGNETIC RECORDING/REPRODUCING APPARATUS

Shigeyuki Itoh, Ibaraki; Yoshizumi Watatani, and Katsuo Mohri, both of Kanagawa, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 12, 1984, Ser. No. 660,520
Claims priority, application Japan, Oct. 19, 1983, 58-194297
Int. Cl.[4] G11B *20/06*; H04N *5/78*
U.S. Cl. 360—38.1
25 Claims



1. An apparatus for detecting a drop-out condition in a magnetic recording/reproducing apparatus wherein an FM audio signal is recorded on a magnetic tape and is reproduced therefrom utilizing a rotary magnetic head, the apparatus comprising:

frequency demodulator means including a phase locked loop frequency demodulator for demodulating a reproduced FM signal and for providing an output signal indicative thereof;

synchronous detector means for synchronously detecting the reproduced FM audio signal with the output signal of the phase locked loop frequency demodulator and for providing an output signal indicative thereof;

integrator means for integrating an output signal of the synchronous detector means and providing an integrated output signal therefrom; and

drop-out discriminator means responsive to the integrated output signal for detecting a drop-out and for providing an output signal indicative thereof.

4,604,660
METHOD AND CIRCUIT FOR CORRECTING A RECORD TIMING

Tuneo Horie, Odawara; Shiyozi Ozaki, Kanagawa, and Takikazu Takeuti, Odawara, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

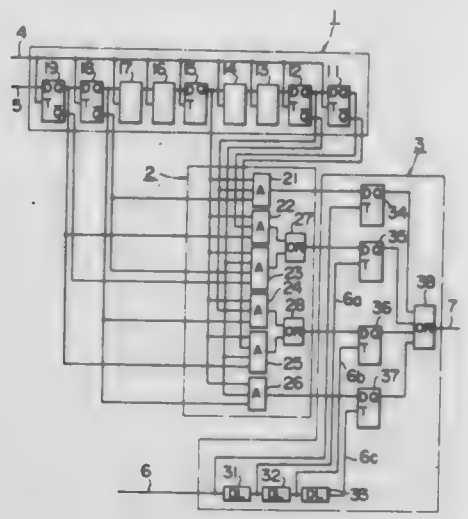
Filed Oct. 14, 1983, Ser. No. 542,180
Claims priority, application Japan, Oct. 27, 1982, 57-187417
Int. Cl.[4] G11B *5/09*; H04B *1/10, 14/04*
U.S. Cl. 360—45
13 Claims

1. A record timing correction method in a magnetic recording apparatus for writing on a record medium digital data consisting of a plurality of bits translated to include i to i+k "0" bits between adjacent "1" bits, comprising the steps of:

detecting the state of a bit at a specified position in the digital data serially recorded on said record medium and the state of the i-th bit from said specified position;

designating a normal timing in the data recording when the state of the bit at said specified position is "1" and the number "if" of "0" bits between the "1" bit at said specified position and a preceding "1" bit is equal to i+k and the number "ir" of "0" bits between the "1" bit at said specified position and a next "1" bit is equal to i+k, designating an early timing in the data recording when the number "if"=i and the number "ir">i, and designating a late timing in the data recording when the number "if"≧i and the number "ir"=i or when the number "if"≧i+1 and the number "ir"=i+1; and

correcting the record timing to provide said normal timing, said early timing or said late timing, whereby the output



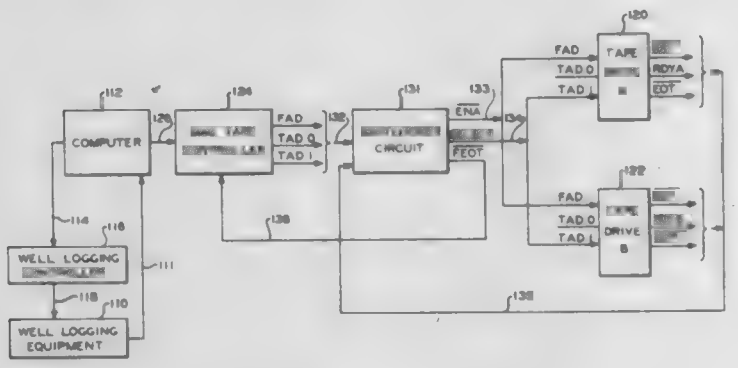
data is produced at said normal timing, said early timing or said late timing depending on the bit pattern designation.

4,604,661

AUTOMATIC SWITCHING APPARATUS AND METHOD

Wallace E. DeShon, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Nov. 5, 1984, Ser. No. 668,066
Int. Cl.[4] G11B *15/00*
U.S. Cl. 360—69 23 Claims



1. An apparatus comprising:

a mode setting means for selectively generating an automatic mode signal representative of an automatic mode, or a non-automatic mode signal representative of a non-automatic mode;

a switching means for receiving either mode signal so as to be set in a respective mode, said switching means having the capability of generating a number of different possible selection signals, only one selection signal being generated at any one time, wherein in the automatic mode, said switching means automatically switches from generating one selection signal to another selection signal in response to receival of a predetermined input which includes a control pulse, and wherein in the non-automatic mode, one selection signal does not switch to another selection signal in response to said predetermined input; and

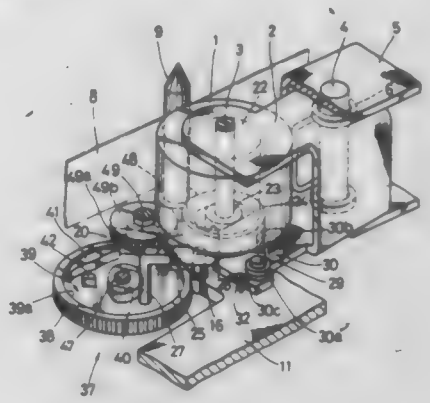
a signal capturing means for receiving said first control pulse and for generating, in the non-automatic mode, a pseudo-control signal which changes in a predetermined manner in response to said control pulse so as to simulate said control pulse, said signal capturing means being unresponsive to said control pulse when said switching means is set in the automatic mode.

4,604,662

AUTOMATIC MODE-CHANGE MECHANISM FOR TAPE RECORDER

Mitsuru Ida, Saitama, and Minoru Shimada, Chiba, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Jul. 19, 1984, Ser. No. 632,623
Claims priority, application Japan, Jul. 30, 1983, 58-140266
Int. Cl.[4] G11B *15/18, 15/28*
U.S. Cl. 360—74.1 9 Claims



1. In a cassette tape recording and/or reproducing apparatus having a motor-driven capstan which, in a selected operating mode of the apparatus, is rotated for driving the tape in the cassette in the direction for winding the tape onto a take-up reel; a device for automatically changing the operating mode of the apparatus when the tape is fully wound on the take-up reel, comprising:

a pinch roller movable between operative and inoperative positions in respect to said capstan and which is rotated when the tape is running and which stops rotating when the tape is fully wound on said take-up reel, said pinch roller having a cylindrical actuating portion rotatable coaxially therewith;

a mode-change lever having an elongated hole with converging sides in which said cylindrical actuating portion is received so that said mode-change lever is angularly displaceable about the axis of rotation of said pinch roller and also longitudinally displaceable in the direction along said elongated hole;

spring means urging said mode-change lever in one direction along said elongated hole for frictionally engaging said converging sides with said actuating portion and thereby frictionally urging said mode-change lever to turn with said pinch roller so long as the latter is rotated;

means for establishing another operating mode of the apparatus in response to displacement of said mode-change lever in the opposite direction along said elongated hole against the force of said spring means; and

mode-change drive means effecting a repeated motion in response to rotation of said capstan and being operative to displace said mode-change lever in said opposite direction only when said pinch roller stops rotating and no longer frictionally urges said mode-change lever to turn therewith angularly about said axis, whereby said mode-change lever is moved to an inoperative position in response to movement of said pinch roller to said inoperative position of the latter.

4,604,663

FLOPPY DISK DRIVER

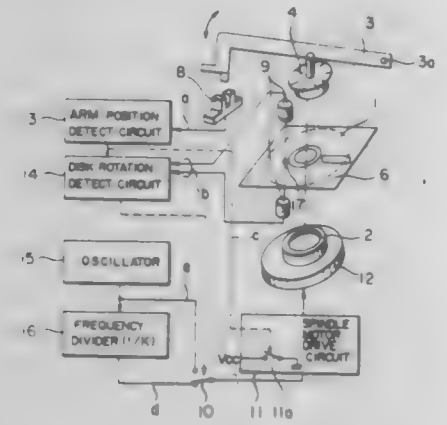
Yoshihiro Moribe, Chigasaki; Nobukuni Ohkubo, Kanagawa; Mikio Takahashi, and Kazuo Nakagoshi, both of Odawara, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 1, 1985, Ser. No. 707,033
Claims priority, application Japan, Mar. 5, 1984, 59-40328
Int. Cl.[4] G11B *19/26*
U.S. Cl. 360—73 11 Claims

1. A floppy disk driver for recording and reproducing data on a recording disk by holding said disk at a center hole thereof between a spindle driven with a motor and a rotatable collet so

that said disk is rotated for data recording or reproduction, said floppy disk driver comprising:

speed detection means for detecting that said recording disk held between said collet and spindle has reached a first rotational speed; and



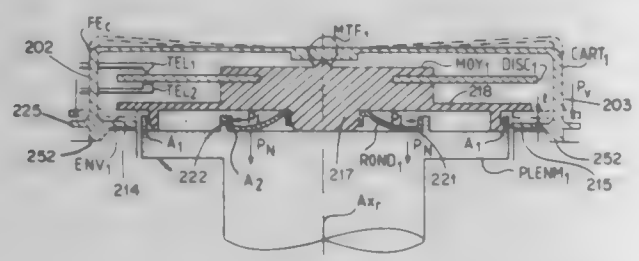
a control circuit operating on said motor to speed up from said first rotational speed to a second rotational speed in response to the detection of said first rotational speed of said floppy disk by said speed detection means, said floppy disk driver performing data recording or reproduction while said recording disk rotates at said second rotational speed.

4,604,664

MAGNETIC DISC CARTRIDGE WITH CENTERING STRUCTURE

Guy Barski, Paris, France, assignor to CII Honeywell Bull, France

Filed Feb. 1, 1983, Ser. No. 462,911
Claims priority, application France, Feb. 11, 1982, 82 02206
Int. Cl.[4] G11B *23/02*
U.S. Cl. 360—97 **22 Claims**



1. A cartridge for a removable magnetic disc designed to be inserted into a suitable receptacle of a magnetic disc memory unit, the cartridge comprising a shell inside which the disc is positioned, the shell having an aperture through which a transducing head for accessing data contained on the disc is introduced, the head being a part of the memory unit, a hub for carrying the disc, means for coupling the hub to a rotary drive mechanism of the memory unit, the rotary drive mechanism including a reference planar surface and reference cylinder concentric with a rotation axis of the rotary drive mechanism, the hub including:

a cylindrical mechanism contacting the reference planar surface for precentering the hub on the axis of rotation of the drive mechanism when the cartridge is in the receptacle, and

an elastically deformable mechanism contacting the reference planar surface and an internal wall of the reference cylinder for precisely centering the hub relative to the axis of rotation when the cartridge is in the receptacle;

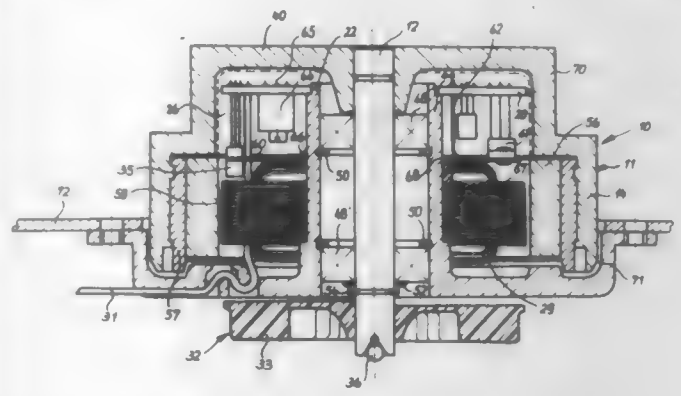
the shell including means for applying a compressive force to the hub and to the elastic mechanism, the compressive force being applied perpendicular to the plane of the disc to deform the elastic mechanism in such a way that the elastic mechanism simultaneously exerts pressures perpendicular to and against the reference planar surface and perpendicular to and against the wall of the reference cylinder.

4,604,665

DRIVING MECHANISM FOR MAGNETIC HARD DISC

Rolf Müller; Dieter Elsässer, both of St. Georgen; Johann von der Heide, Mönchweiler, and Georg Papst, St. Georgen, all of Fed. Rep. of Germany, assignors to Papst-Motoren GmbH & Co. KG, Black Forest, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 326,559, Dec. 2, 1981, Pat. No. 4,519,010. This application Nov. 10, 1982, Ser. No. 440,537
Claims priority, application Fed. Rep. of Germany, Dec. 5, 1980, 3045972; Nov. 10, 1981, 3144629; United Kingdom, Dec. 3, 1981, 8136443
Int. Cl.[4] G11B *17/00, 25/04*
U.S. Cl. 360—97 **14 Claims**



1. A driving mechanism for magnetic hard discs, comprising:

means in said mechanism isolating a space for maximum cleanness;

a driving motor mounted within said apparatus and having a stator and a rotor, said motor when energized having parts producing magnetic flux;

a rotor shaft mounting said rotor, said shaft being mounted in a bearing system;

a hub extending into the space of maximum cleanness for receiving therein at least one magnetic hard memory disc;

means between said motor and said hub for driving said hub;

means forming a magnetic flux shield and located between the parts producing the magnetic flux and the space of maximum cleanness for receiving the hard memory disc; and

means detachably connecting the rotor and at least parts of the stator to the rotor shaft independently of any connection between said shaft and said hub.

4,604,666

DATA TRANSFER APPARATUS FOR USE WITH A MAGNETIC DISK CARTRIDGE

Toshihiro Kitahara, and Yasushi Noda, both of Tokyo, Japan, assignors to Teac Corporation, Tokyo, Japan

Filed Nov. 30, 1984, Ser. No. 676,005
Claims priority, application Japan, Nov. 30, 1983, 58-225569
Int. Cl.[4] G11B *17/04*
U.S. Cl. 360—99 **8 Claims**

1. A data transfer apparatus for use with a disk cartridge having a magnetic disk rotatably housed in a protective envelope therefor, comprising:

(a) a base structure;

(b) a disk drive mechanism on the base structure for imparting rotation to the magnetic disk of the disk cartridge, the disk drive mechanism including a drive hub rotatable about a predetermined axis in driving engagement with the magnetic disk;

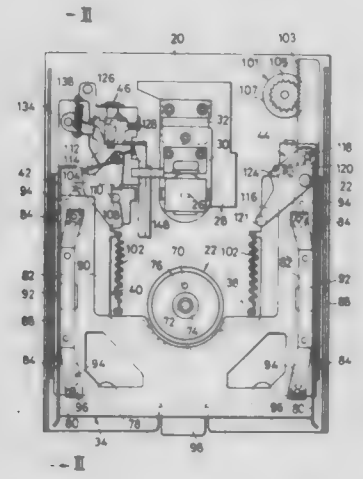
(c) a pair of magnetic transducer heads arranged substantially opposite each other, normally with a spacing therebetween, for data transfer contact with the opposite faces of the magnetic disk of the disk cartridge, at least one of the transducer heads being movable toward and away

from the other transducer head into and out of data transfer contact with the magnetic disk;

(d) a cartridge cradle mounted on the base structure for movement between a first position, where the disk cartridge is to be loaded on and unloaded from the cartridge cradle in a direction at right angles with the axis of rotation of the drive hub of the disk drive mechanism, and a second position where the drive hub of the disk drive mechanism makes driving engagement with the magnetic disk of the loaded disk cartridge;

(e) a cradle transport mechanism for moving the cartridge cradle between the first and second positions, the cradle transport mechanism including resilient means biasing the cartridge cradle from the first toward the second position;

(f) a first locking mechanism acting on the cradle transport mechanism for normally holding the cartridge cradle in the first position against the bias of the resilient means, the first locking mechanism being adapted to be tripped in



response to the loading of the disk cartridge on the cartridge cradle;

(g) a second locking mechanism acting directly on the cartridge cradle for normally holding the same in the first position, the second locking mechanism being also adapted to be tripped in response to the loading of the disk cartridge on the cartridge cradle; and

(h) a head transport mechanism for causing at least one of the transducer heads to move toward the other transducer head, and hence for establishing data transfer contact of the transducer heads with the opposite faces of the magnetic disk of the loaded disk cartridge, when the cartridge cradle travels with the disk cartridge from the first to the second position upon tripping of both the first and the second locking mechanisms;

(i) whereby the head transport mechanism holds the pair of transducer heads away from each other unless both the first and the second locking mechanisms are tripped.

4,604,667

RECORDING MEDIUM FOR RECORDING AND/OR REPRODUCING APPARATUS

Hisao Kinjo, Yokohama, Japan, assignor to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Oct. 25, 1982, Ser. No. 436,418

Claims priority, application Japan, Oct. 27, 1981, 56-171868; Aug. 2, 1982, 57-134930

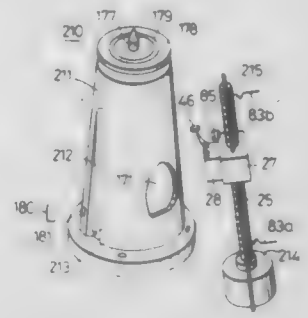
Int. Cl.⁴ G11B *5/004*

U.S. Cl. 360—100 **8 Claims**

1. A recording medium which is user-replaceable for a recording and/or reproducing apparatus which comprises a rotational motor and recording and/or reproducing means, said motor including a rotary shaft, said recording medium being accommodated within an accommodating case which constitutes a cartridge together with said recording medium, said recording medium comprising:

a main body having opposite ends and including a hollow tapered part having a central axis, said tapered part being open at one of said ends of said main body, said main body having a diameter at said one open end which is greater than the diameter of said main body at the other end, said tapered part having a peripheral surface with a recording surface thereon;

magnetic coupling means on said other end of said main body for user-replaceably magnetically coupling said recording medium to the rotary shaft of said motor, said



magnetic coupling means including means for supporting said main body along an axial direction of said tapered part when said recording medium is magnetically coupled to the rotary shaft of said motor; and

preventing means for preventing the recording surface of said recording medium from making contact with an inner peripheral surface of said accommodating case, said preventing means being provided on at least one of said recording medium and said accommodating case.

4,604,668

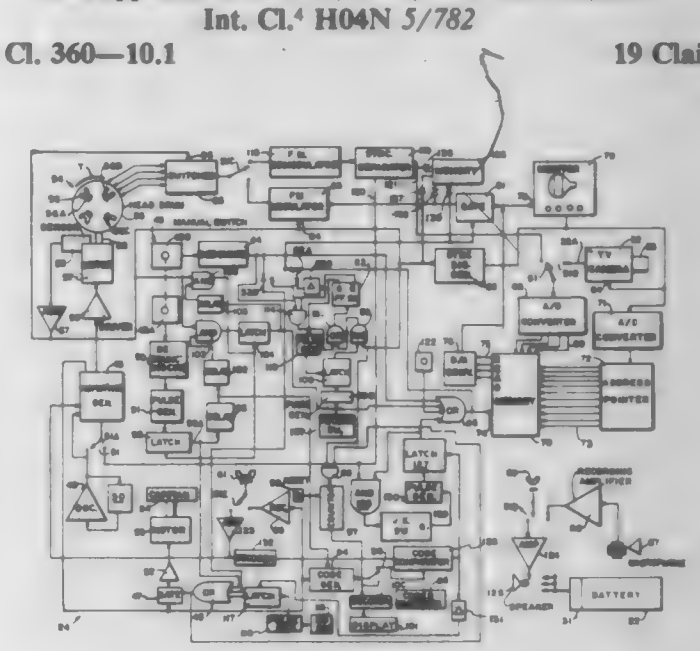
PORTABLE TELEVISION CAMERA AND RECORDING UNIT

Jerome H. Lemelson, 48 Parkside Dr., Princeton, N.J. 08540

Continuation of Ser. No. 209,057, Nov. 21, 1980, abandoned. This application Jul. 25, 1983, Ser. No. 516,532

Int. Cl.⁴ H04N *5/782*

U.S. Cl. 360—10.1 **19 Claims**



1. A camera recording apparatus comprising:

a housing,

a television camera supported within said housing and having an input for optical image phenomena occurring exterior of said housing,

means for controlling the operation of said camera to cause said camera to scan the image field thereof and to generate a single full-frame video picture signal on its output,

receiving means for said full-frame video picture signal including:

a video recorder operable to record full-frame video picture signals on a recording means thereof, and

a video monitor supported within said housing and having a viewing screen viewable from the exterior of said housing,

buffer means supported within said housing for recording

full-frame video picture signals and having means for reproducing picture signals recorded therein and applying same to said video monitor,

means for operating said buffer means for sustaining a still image on said viewing screen of said video monitor defined by a full-frame video picture signal recorded in said buffer means,

selectively operable control means for passing selected full-frame video picture signals of still image phenomena recorded in said buffer means to said video monitor and applying same to control said monitor and to generate a still image of said scanned phenomena on the screen of said monitor, and

further control means for disconnecting said buffer means from said video monitor to permit video picture signals sequentially generated by said video camera to be applied to said video monitor to cause motion picture image phenomena to be generated on the viewing screen of said video monitor.

4,604,669

MAGNETOSTRICTIVE RECORD HEAD

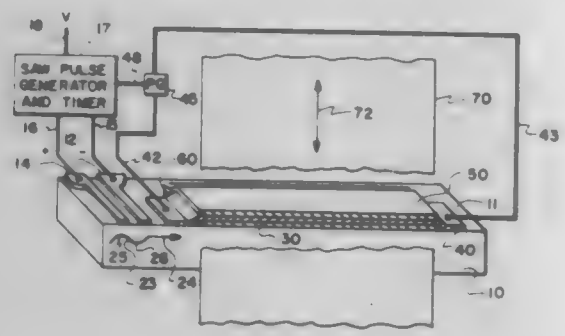
Dale O. Ballinger, Lakewood; William R. Chynoweth, and Gerald J. Wade, both of Littleton, all of Colo., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Sep. 4, 1984, Ser. No. 647,192

Int. Cl.[4] G11B *5/30*

U.S. Cl. 360—113

11 Claims



1. Apparatus for use in recording information on a magnetic medium movable along a path comprising:

piezoelectric means having a first substantially planar surface;

first and second electrodes on the first surface a predetermined distance apart;

a first magnetostrictive layer on the first surface;

a second magnetostrictive layer magnetically coupled to the first magnetostrictive layer; and

a conductive layer between the first and second magnetostrictive layers, the piezoelectric means, the first and second magnetostrictive layers and the conductive layer each having an edge lying in a plane which is adjacent the path.

4,604,670

MAGNETIC HEAD

Eelco G. Visser, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 31, 1983, Ser. No. 462,273

Claims priority, application Netherlands, Feb. 9, 1982, 8200481

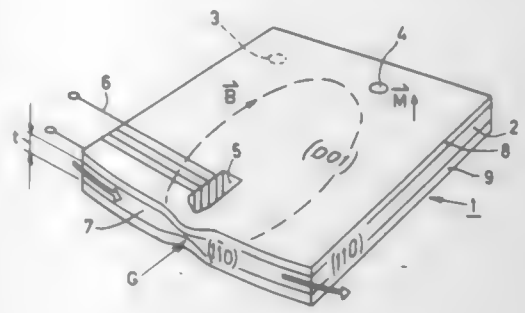
Int. Cl.[4] G11B *5/133, 5/127, 5/187*

U.S. Cl. 360—127

9 Claims

1. In a magnetic head comprising

a magnetizable ferrite core for providing a substantially closed planar flux path for magnetic flux during writing or reading operations of the magnetic head, said core having a gap in said flux path and a pair of opposite faces parallel to the plane of said flux path; the improvement wherein the head is of a material having magneto-strictive properties and comprises means for producing a uniaxial magnetic anisotropy in said core having an easy axis of magnetization which is oriented in a direction transverse to said planar path for the magnetic flux, the anistropy producing means including means for applying a mechanical



stress to said faces, the mechanical stress being such that the uniaxial magnetic anisotropy is caused by the mechanical stress.

4,604,671

MAGNETIC RECORDING TAPE CASSETTE

Kengo Oishi, Odawara, Japan, assignor to Fuji Photo Film Co., Ltd., Odawara, Japan

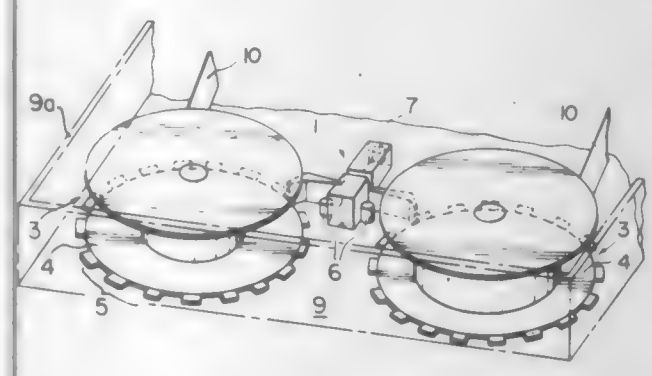
Filed Jul. 26, 1983, Ser. No. 517,281

Claims priority, application Japan, Jul. 28, 1982, 57-131503

Int. Cl.[4] G11B *15/32;* G03B *1/04*

U.S. Cl. 360—132

3 Claims



1. In a magnetic recording tape cassette comprising a casing, a pair of reels which are mounted for rotation in the casing and around which a magnetic recording tape is wound, said tape including an unwound portion, said reels being rotatable in a winding direction and an unwinding direction, and a braking device for preventing rotation of said reels in said unwinding direction, said reels having a flange provided with gear teeth on a periphery thereof, the improvement wherein said braking device comprises:

a braking member having a body portion movable in a direction perpendicular to a line passing through the centers of said reels back and forth with respect to said line between an operative position remote from said line and an inoperative position near said line, said braking member being disposed on the same side as said unwound portion of said tape with respect to said line;

a pair of wing-like swinging portions integrally extending from said body portion on opposite sides thereof toward the flanges of the respective reels;

an engaging hook formed on a free end of each swinging portion to be engaged with said gear teeth of the corresponding reel, said swinging portions being resiliently urged to an engaging position in which said engaging hooks are brought into engagement with said gear teeth; and

engaging means for engaging with said swinging portions in response to movement of said body portion toward said line to the inoperative position to swing said swinging portions to a disengaging position in which said engaging hooks are released from said gear teeth overcoming the resilient force urging said swinging portions, said body

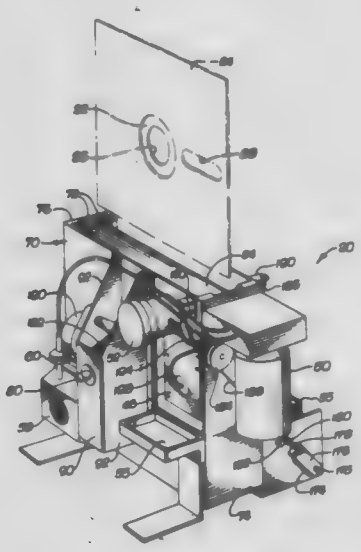
portion normally being held in the operative position by a counter force exerted thereon against the resilient force through the engagement between said engaging hooks and said gear teeth by which engagement, said reels are prevented from rotating in said unwinding direction.

4,604,672

APPARATUS AND METHOD FOR ENHANCING FLEXIBLE MAGNET DISK PERFORMANCE

C. Paul Davis, Woodland Hills, and Eli Neuman, Chatsworth, both of Calif., assignors to PerfectData Corporation, Chatsworth, Calif.

Continuation-in-part of Ser. No. 257,769, Apr. 27, 1981, abandoned. This application May 31, 1983, Ser. No. 499,189
Int. Cl.[4] G11B *23/00*
U.S. Cl. 360—137 52 Claims



1. A system for treating a floppy disk disposed in an envelope with conditioning fluid to clean, lubricate, and de-staticize said floppy disk comprising:

a first fluid absorbing pad;

means for moving said first fluid absorbing pad into and out of contact with a first magnetic information storing surface of said disk through a read-write opening in the envelope;

fluid dispensing means for providing conditioning fluid to said first fluid absorbing pad; and

means for rotating said floppy disk about its center, said envelope remaining stationary while said floppy disk is rotating, so that said first magnetic information storing surface is treated with conditioning fluid by means of contact of said surface with said first pad to which fluid is dispensed.

4,604,673

DISTRIBUTION TRANSFORMER WITH SURGE PROTECTION DEVICE

Charles W. Schoendube, Hickory, N.C., assignor to General Electric Company, King of Prussia, Pa.

Continuation of Ser. No. 609,661, May 14, 1984, abandoned. This application Nov. 20, 1984, Ser. No. 673,214
Int. Cl.[4] H02H *7/04*
U.S. Cl. 361—38 9 Claims

1. A distribution-type single-phase transformer having a surge protection arrangement comprising;

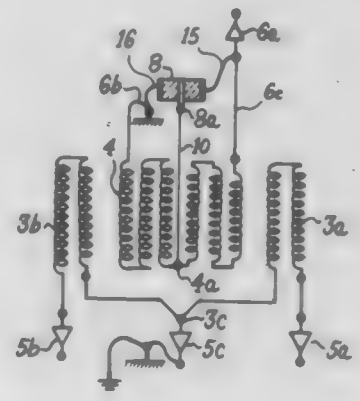
(a) a layer-type high voltage winding having two terminals, one being a high voltage terminal for connection to a high voltage line,

(b) a divided low voltage winding comprising two winding sections and a grounded interconnection between said winding sections,

(c) varistor means having opposite ends and comprising a plurality of stacked metal oxide varistor elements between said ends, said varistor means being connected from said high voltage terminal of said high voltage winding to ground,

(d) means for connecting said varistor means at not more than two points intermediate its ends to a corresponding number of points on said high voltage winding intermediate the terminals of said high voltage winding,

(e) the portions of said varistor means located between each of its opposite ends and an adjacent intermediate connection and any portion located between adjacent intermediate connections, if more than one intermediate connection



is present, being substantially equal in impulse protective level rating,

(f) the corresponding portions of said high voltage winding being substantially equal in numbers of turns, whereby protection is provided for said high voltage winding against both voltage surges entering said transformer via the terminals of said high voltage winding and current surges entering said transformer via the terminals of said low voltage winding,

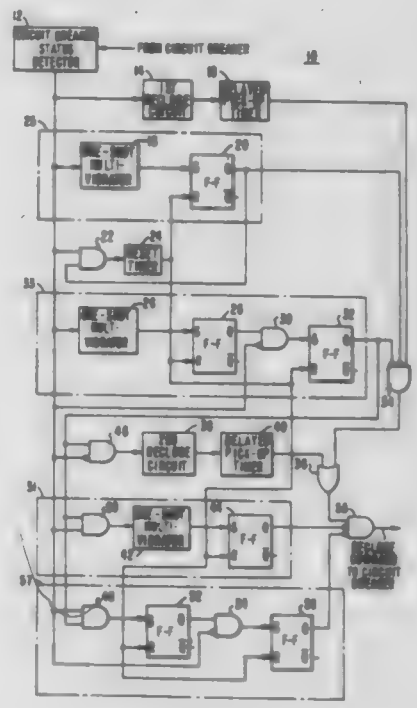
(g) said transformer further comprising an oil-filled tank in which said windings and said varistor means are located.

4,604,674

RECLOSING RELAY APPARATUS

Richard G. Hamel, Margate, Fla., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Continuation of Ser. No. 527,887, Aug. 30, 1983, abandoned. This application Mar. 13, 1985, Ser. No. 712,315
Int. Cl.[4] H02H *3/06, 3/07*
U.S. Cl. 361—73 4 Claims



1. Reclosing relay apparatus for reclosing a circuit breaker in an electrical power system when the circuit breaker trips in response to a fault in the electrical power system, said apparatus including a reclosing stage with two lockout circuits for

reliably preventing circuit breaker pumping, and detector means for determining the trip status and reclosure status of the circuit breaker and for generating a status signal representative thereof, said reclosing stage comprising:

reclosing means governed by said status signal for reclosing the circuit breaker after a first predetermined time interval measured from the initiation of a trip status of the circuit breaker as indicated by said status signal;

first lockout circuit governed by said status signal for setting a first lockout signal upon reclosure of the circuit breaker as indicated by said status signal to disable said reclosing means from reclosing the circuit breaker;

second lockout circuit governed by said status signal for setting a first lockout signal, independent of said first lockout circuit, to redundantly disable said reclosing means from reclosing the circuit breaker, said second lockout circuit comprising:

first circuit stage governed by the status signal for generating an intermediate signal upon reclosure of the circuit breaker as indicated by said status signal; and

second circuit stage governed by said intermediate signal and the status signal for setting the second lockout signal upon retrip of the circuit breaker as indicated by the combination of the status and intermediate signals; and

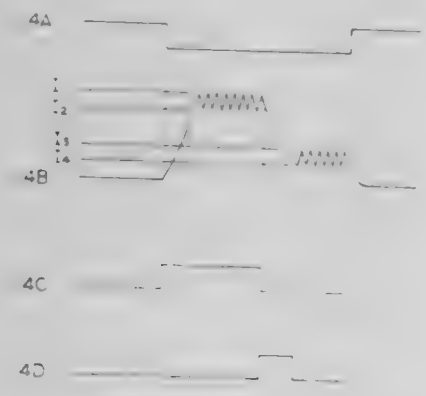
reset means for resetting said first and second lockout signals after a second predetermined time interval measured from the initiation of said reclosure status of the circuit breaker to enable said reclosing means for reclosing the circuit breaker, said second predetermined time interval being longer than said first predetermined time interval.

4,604,675

FUEL INJECTION SOLENOID DRIVER CIRCUIT

Mark R. Pflederer, Tremont, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Jul. 16, 1985, Ser. No. 755,385
Int. Cl.[4] H01H *47/32*; F02D *1/00*
U.S. Cl. 361—155
6 Claims



1. A fuel injection solenoid driver circuit, comprising:

a solenoid coil;

a storage capacitor;

first switching means for controllably connecting and disconnecting a solenoid coil to and from a storage capacitor in response to receiving a control signal;

second switching means for controllably connecting and disconnecting said solenoid coil to and from system ground in response to receiving a control signal;

means for delivering a first control signal to said first and second switching means and enabling said first and second switching means for a first preselected duration of time to initiate current flow in said solenoid coil;

third means for sensing the magnitude of the current in said solenoid coil and delivering a second control signal to said first switching means to alternately connect and disconnect said solenoid coil to and from the storage capacitor in response to the magnitude of said current respectively falling below and rising above a first and second preselected level;

fourth means for sensing the magnitude of the current in said solenoid coil and delivering a third control signal to said first switching means to alternately connect and disconnect said solenoid coil to and from the storage capacitor in response to the magnitude of said current respectively falling below and rising above a third and fourth preselected level, said third and fourth preselected levels being less than both of said first and second preselected levels;

fifth means for preventing delivery of said third control signal for a second preselected duration of time in response to receiving said first control signal;

sixth means for preventing delivery of said first control signal for a third preselected duration of time after termination of said second preselected duration of time; and

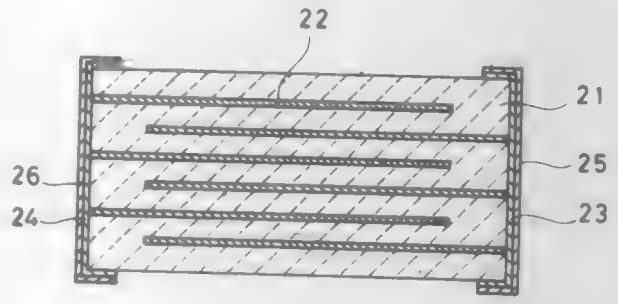
means for discharging said solenoid coil to said storage capacitor in response to disconnecting said solenoid coil from both said storage capacitor and system ground.

4,604,676

CERAMIC CAPACITOR

Atsuo Senda; Toshi Numata; Takuji Nakagawa, and Yoshifumi Ogiso, all of Nagaokakyo, Japan, assignors to Murata Manufacturing Co., Ltd., Japan

Filed Sep. 30, 1985, Ser. No. 782,217
Claims priority, application Japan, Oct. 2, 1984, 59-207363; Oct. 2, 1984, 59-207364; Oct. 2, 1984, 59-207365; Oct. 2, 1984, 59-207366; Oct. 2, 1984, 59-207369; Dec. 28, 1984, 59-281814; Dec. 28, 1984, 59-281815; Apr. 30, 1985, 60-94079
Int. Cl.[4] H01G *1/14, 4/10*
U.S. Cl. 361—309
12 Claims



1. A ceramic capacitor formed by a laminated dielectric ceramic element assembly comprising:

a dielectric ceramic member consisting of a plurality of layers of metal oxide, respective said layers being not more than 50 μm in thickness; and

a plurality of layers of inner metal electrodes laminated with each other through said dielectric ceramic member to form electrostatic capacity,

metal electrodes for external connection being formed on said dielectric ceramic element assembly to be connected with prescribed ones of said inner metal electrodes for obtaining electrostatic capacity,

conductive metal oxide layers being formed between said dielectric ceramic element assembly and said metal electrodes for external connection for preventing reduction of said metal oxide forming said dielectric ceramic member.

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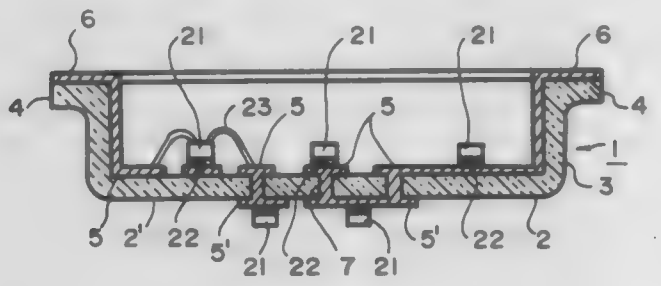
CERAMIC STRUCTURAL BODY AND A METHOD OF MANUFACTURING THE SAME

Go Suzuki, Nagoya, and Kazuo Michisita, Fujiyoshida, both of Japan, assignors to NGK Insulators, Ltd., Japan

Continuation of Ser. No. 268,234, May 29, 1981, abandoned, which is a continuation of Ser. No. 970,444, Dec. 18, 1978, abandoned. This application Aug. 16, 1983, Ser. No. 525,250
Claims priority, application Japan, Dec. 23, 1977, 52-174414
Int. Cl.[4] H05K *1/18*
U.S. Cl. 361—393
9 Claims

1. A ceramic package comprising a single monolithic ceramic sheet formed into a primary ceramic body having a

recess portion therein with a flange portion disposed at the edge of said recess portion, at least one metallized chip member on an inner bottom surface of the recess portion for mounting an electronic device thereon, and a plurality of metallized layers extending from the inner bottom surface to the flange portion thereof and comprising a conductive path to connect



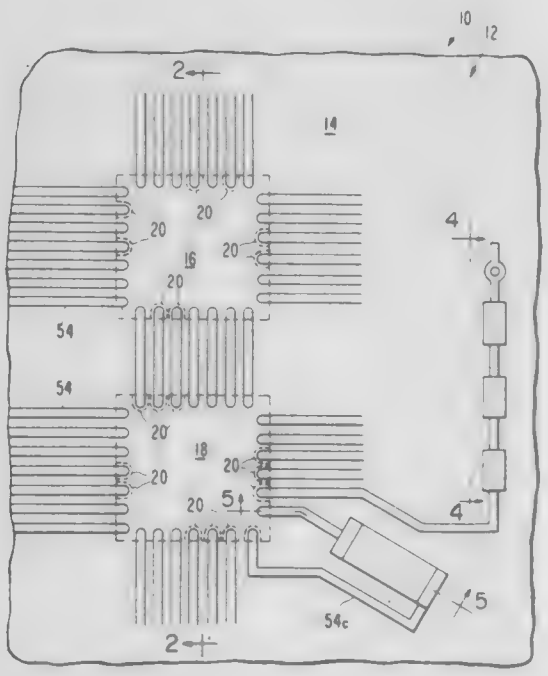
the electronic device to external circuits, further comprising a plurality of metallized conductive layers provided on an outer bottom surface of the ceramic body and a plurality of through-holes extended through the bottom surface, the metallized conductive layers being electrically connected to the metallized layers on the inner bottom surface through the through-holes.

4,604,678

CIRCUIT BOARD WITH HIGH DENSITY ELECTRICAL TRACERS

George R. Hagner, San Jose, Calif., assignor to Frederick Parker, San Jose, Calif.

Filed Jul. 18, 1983, Ser. No. 515,008
Int. Cl.[4] H05K *1/18*
U.S. Cl. 361—401 4 Claims



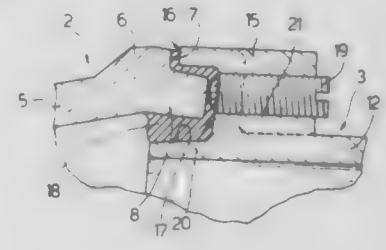
1. An electrical circuit board comprising: a substrate having a surface provided with a plurality of grooves; a number if discrete electrical components adapted to be carried by the substrate near the surface thereof and to be coupled together to form an electrical current carrying path, each component having a pair of terminals; and a plurality of electrically conductive traces in respective grooves and interconnecting the terminals of the components in a manner to form said electrical current carrying path, each trace having a depth, the depth of at least certain of the traces being a number of times greater than the width of the traces, each groove having a bottom and a pair of sides, each trace being a mass of electrically conductive material substantially filling the respective

4,604,679

METHOD OF ASSEMBLING A MOTOR VEHICLE HEADLIGHT, AND HEADLIGHT PRODUCED USING SUCH A METHOD

Giovanni Rolando, and Giorgio Manunta, both of Turin, Italy, assignors to Carello Industriale, S.p.A., Turin, Italy

Filed Mar. 6, 1985, Ser. No. 708,819
Claims priority, application Italy, Mar. 13, 1984, 67237 A/84
Int. Cl.[4] F21V *21/29*
U.S. Cl. 362—277 6 Claims



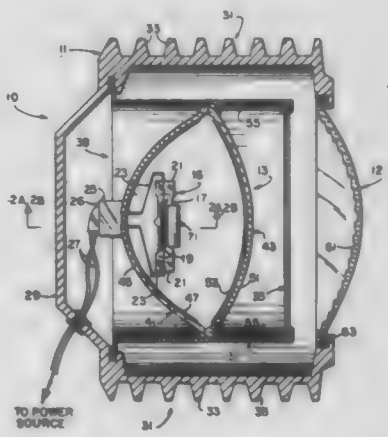
1. A method for assembling a motor vehicle headlight having a transparent front member provided with a rear, peripheral annular edge, and a rear parabola reflector provided with an axial front annular groove and at least three adjustable pins extending through the bottom of said groove along axes essentially parallel with the optical axis of said reflector, comprising inserting the rear, peripheral annular edge of said transparent front member into the axial front annular groove of said reflector, adjusting said adjustable pins along their axes, bringing them into contact with the rear edge of said transparent member and providing a supporting surface therefor, and feeding bonding and sealing material into said groove and into contact with the ends of said pins and locking said rear edge in said groove.

4,604,680

INFRARED FLOODLIGHT

Robert E. Levin, S. Hamilton, and George J. English, Reading, both of Mass., assignors to GTE Products Corporation, Stamford, Conn.

Filed Apr. 25, 1985, Ser. No. 727,961
Int. Cl.[4] F21V *9/00*
U.S. Cl. 362—293 29 Claims



1. An infrared floodlight comprising:

a light source for providing infrared radiation;

means located substantially on one side of said light source for reflecting infrared radiation from said light source and for transmitting visible radiation from said light source therethrough; and

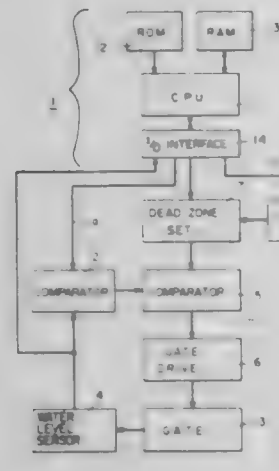
means secured to or forming part of said infrared reflecting means to provide a closure therefor, said closure means transmitting infrared radiation from said light source and from said infrared reflecting means therethrough and reflecting visible radiation toward said infrared reflecting means

4,604,681

FEEDBACK CONTROL METHOD AND SYSTEM HAVING VARIABLE DEADBAND

Ryuji Sakashita, Kobe, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 454,569, Dec. 29, 1982, abandoned.
This application Aug. 13, 1985, Ser. No. 765,189
Claims priority, application Japan, Mar. 5, 1982, 57-35381
Int. Cl.[4] G06F *15/20;* G05B *11/01;* E02B *7/20*
U.S. Cl. 364—183 **20 Claims**



18. Apparatus for controlling a parameter with an actuator in response to an indication of a value of the parameter comprising:

(a) means for establishing a target value for the parameter,

(b) means for setting an initial dead band zone including the set point value for the actuator at the time the target value is established,

(c) means for gradually reducing in only a monotonic manner the width of the dead band zone for the established target value from the initial dead band zone as control time for the parameter increases, whereby the dead band zone has a time dependent gradually decreasing monotonic variable value,

(d) means for comparing the monitored and target values for the parameters to derive an indication of an error between them,

(e) means for comparing the indicated error between the monitored and target values with the time dependent gradually decreasing monotonic variable value for the dead band zone, and

(f) means responsive to comparing means (e) for controlling said actuator so the parameter is varied toward the target value only when the error indication derived by comparing means (d) is greater than the time dependent gradually decreasing monotonic variable for the dead band.

4,604,682

BUFFER SYSTEM FOR INTERFACING AN INTERMITTENTLY ACCESSING DATA PROCESSOR TO AN INDEPENDENTLY CLOCKED COMMUNICATIONS SYSTEM

Herbert A. Schwan, and Eduard A. Schwan, both of Encinitas, Calif., assignors to Teleplex Corporation, San Diego, Calif.

Filed Sep. 30, 1982, Ser. No. 430,404
Int. Cl.[4] G06F *13/18, 13/00*
U.S. Cl. 364—200 **18 Claims**

1. A buffer system for interfacing an intermittently accessing data processor to a communications system in which the transfer of data bits is clocked at a predetermined rate in response to clock pulses provided by a communications system clock signal comprising

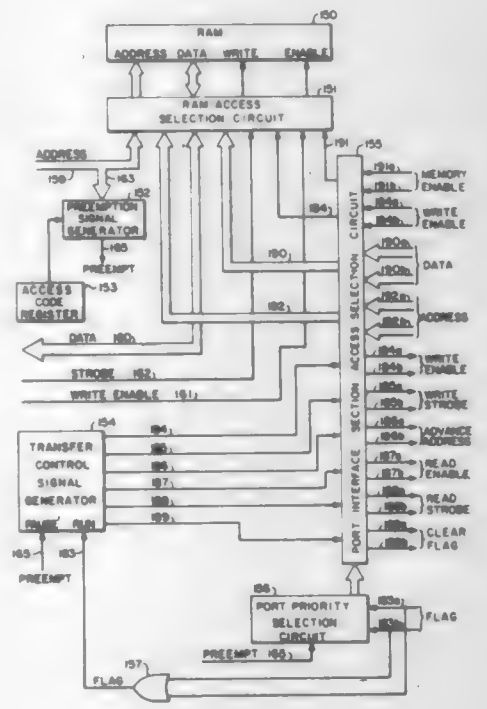
a random access memory (RAM) for storing all input signal data bytes received from an input communications channel of the communications system and for storing all output signal data bytes for transmission to an output communications channel of the communications system;

means connected to the RAM for connection to said data processor for enabling the data processor to access the RAM at any time to retrieve input signal data bytes from the RAM and to store output signal data bytes in the RAM, said connecting means including a preemption signal generator for providing a preemption signal during the interval that the RAM is accessed by the data processor;

a port interface section responsive to the system clock signal for receiving and storing an input signal data byte from the input channel, for transmitting an output signal data byte to the output channel and for providing a flag signal to demarcate the data bytes;

means responsive to each preemption signal for preventing connection of the port interface section to the RAM during the interval that the RAM is accessed by the data processor; and

a transfer control signal generator for responding to the flag signal by generating the following sequence of transfer control signals:



a write enable signal provided to the port interface section for enabling the input signal data byte stored therein to be written into the RAM;

a write strobe signal provided to the RAM for causing the RAM to store the input signal data byte from the port interface section;

a read enable signal provided to the RAM for enabling an output signal data byte stored therein to be read therefrom;

a read strobe signal provided to the port interface section to cause the port interface section to read the stored output signal data byte from the RAM; and

a clear flag signal provided to the port interface section for terminating the flag signal;

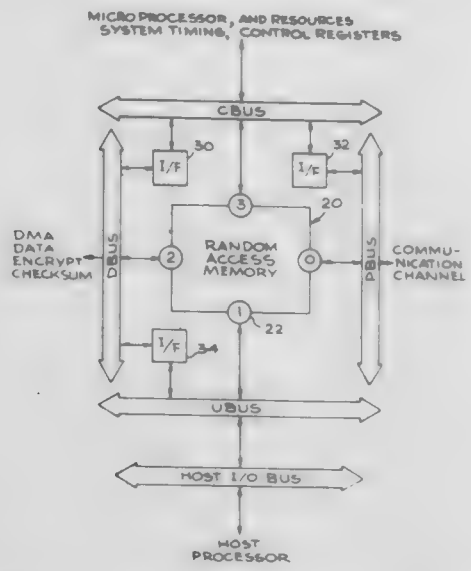
wherein the transfer control signal generator is connected to respond to each preemption signal by interrupting its sequential generation of transfer control signals during the interval of the preemption signal and to respond to the termination of the preemption signal by resuming said sequential generation of transfer control signals at the point of interruption.

4,604,683

COMMUNICATION CONTROLLER USING MULTIPORTED RANDOM ACCESS MEMORY

Roger R. Russ, Santa Barbara, and Arthur C. Berggreen, Goleta, both of Calif., assignors to Advanced Computer Communications, Santa Barbara, Calif.

Filed Dec. 10, 1984, Ser. No. 679,809
Int. Cl.[4] G06F *13/12*
U.S. Cl. 364—200 16 Claims



1. A communications controller useful for processing digital data supplied by a host processor and a communications network in accordance with defined protocal rules and for transferring the processed data to said network and processor, respectively, said controller comprising:

random access memory means including a memory array, memory bus means, and arbitration logic means;

microprocessor means operable to supply memory access instructions;

first bus segment means connecting said microprocessor means to said arbitration logic means;

second bus segment means for connecting said communications network to said arbitration logic means;

third bus segment means for connecting said host processor to said arbitration logic means;

each of said second and third bus segment means having a component means connected thereto for supplying memory access instructions;

said arbitration logic means including means responsive to memory access instructions supplied by said first, second, and third bus segment means for coupling a selected one of said bus segment means to said memory bus means for reading data from or writing data into said memory array; and

program memory means storing said protocol rules coupled to said microprocessor means for causing said microprocessor means to selectively modify data written into said memory array by said second and third bus segment means.

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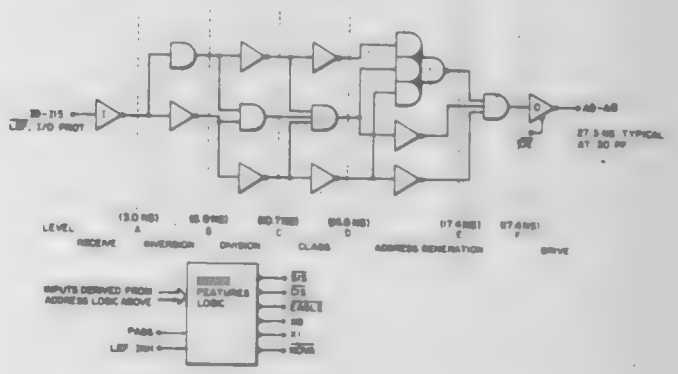
DIGITAL COMPUTER HAVING UNIQUE INSTRUCTION DECODING LOGIC

David I. Epstein, Framingham, Mass., assignor to Data General Corp., Westborough, Mass.

Filed Nov. 15, 1983, Ser. No. 552,207
Int. Cl.[4] G06F *9/28*
U.S. Cl. 364—200 7 Claims

1. A method of increasing speed of instruction decoding in a microcode-controlled digital computer, comprising the steps of:

employing a gate array comprising on a single chip and in a single encapsulation the gating necessary to decode the operation code of an instruction; and,



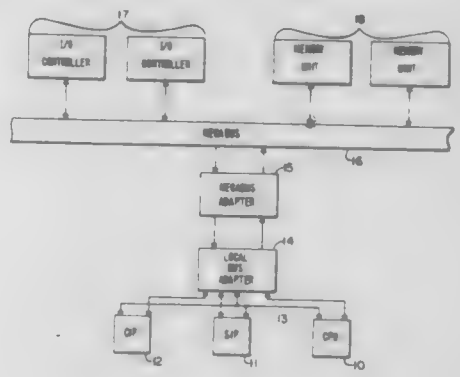
producing from said gate array the control store address of a sequence of microinstructions that will effect the operation specified by said instruction.

4,604,685

TWO STAGE SELECTION BASED ON TIME OF ARRIVAL AND PREDETERMINED PRIORITY IN A BUS PRIORITY RESOLVER

Richard P. Brown, Acton; Richard A. Lemay, Carlisle; G. Lewis Steiner, Milford, and William E. Woods, Natick, all of Mass., assignors to Honeywell Information Systems Inc., Waltham, Mass.

Continuation of Ser. No. 350,537, Feb. 19, 1982, abandoned.
This application Oct. 9, 1984, Ser. No. 659,012
Int. Cl.[4] G06F *9/46*
U.S. Cl. 364—200 12 Claims



1. In combination with a computer system having a common shared unit and further having a plurality of devices coupled to the common shared unit, each device having an assigned priority for accessing the common shared unit, each device competing with each other for access to said shared unit, a priority resolver for providing unambiguous resolution of requests by the devices for access to the shared unit during a first service cycle, said priority resolver comprising:

(a) first means including a plurality of storage elements, each having first and second states for storing a request received from one of said devices for access to said shared unit, all storage elements being connected to receive in parallel all requests from said plurality of devices in a predetermined common time period;

(b) second means coupled to said first means for determining priority access to the common shared unit based upon time of arrival of the request wherein state changes of higher priority storage elements are disabled with prior receipt of a request by any lower priority storage element;

(c) third means coupled to said first means for determining priority access to the common shared unit based on the assigned priority of the device making a request for access to the common shared unit by comparing priority of the stored requests and providing an output indicative of the highest priority request stored in one of the storage elements;

(d) fourth means coupled to said third means for selecting

the highest priority device indicated by the output of the third means for communication with the shared unit; and

(e) fifth means for resetting the first means to terminate a conflict resolver interval with each selection of a device, whereby one device is serviced per priority interval and a highest priority device will never have to wait more than one service cycle to gain access to the shared unit.

4,604,686

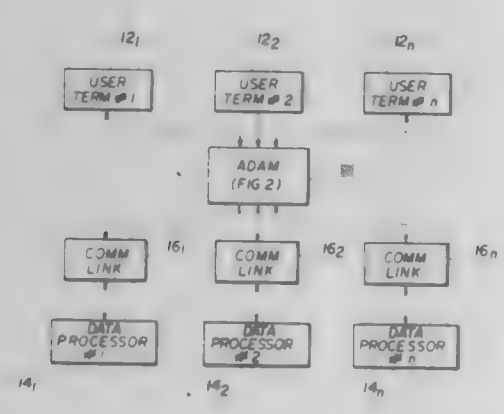
ASSOCIATIVE DATA ACCESS METHOD (ADAM) AND ITS MEANS OF IMPLEMENTATION

Bernadette G. Reiter, Longmont; John W. Castor, Pine; R. J. Carter Blume, Aurora; Roy A. Schewe, Boulder, and Leonard D. Shepley, Littleton, all of Colo., assignors to Martin Marietta Corporation, Bethesda, Md.

Filed Jan. 27, 1984, Ser. No. 574,438

Int. Cl.[4] G06F *15/16*

U.S. Cl. 364—200 **27 Claims**



1. A method of integrating data in a distributed processing environment, comprising the steps of:

(a) coupling at least one user terminal to a plurality of mutually diverse type data processors through an intelligent interface;

(b) loading said interface with information for coupling to and retrieving data from each of said data processors;

(c) operating said interface as an asynchronous terminal, thereby emulating a dumb terminal, in accordance with said information loaded therein and selectively coupling to and accessing said data processors for predetermined data via a communications link;

(d) retrieving and returning said predetermined data to said interface via said communications link;

(e) integrating said data retrieved from said plurality of mutually diverse type data processors at said interface comprising the steps of consolidating the data received from said diverse type processors and reformatting the data into a common format following said consolidating step; and

(f) reporting said data thus integrated to said user terminal in a user friendly form.

4,604,687

METHOD AND SYSTEM FOR STORING AND RETRIEVING MULTIPLE CHANNEL SAMPLED DATA

Curtis W. Abbott, San Rafael, Calif., assignor to Lucasfilm Ltd., San Rafael, Calif.

Filed Aug. 11, 1983, Ser. No. 522,024

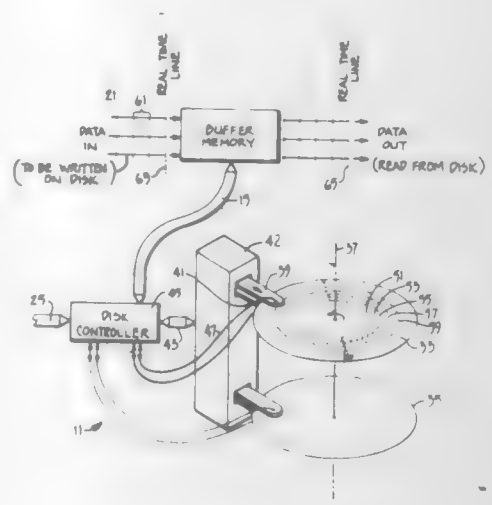
Int. Cl.[4] G06F *13/00*; G11B *3/74*

U.S. Cl. 364—200 **20 Claims**

1. In a random access rotating disk digital data storage system wherein successive blocks of data of at least two data files are recorded in a pattern of a plurality of concentric circular tracks on said disk, each of said plurality of tracks having a plurality of sectors therearound for receiving said data and with one of said sectors at a particular rotational position of each such track designated to receive the beginning of a block of data, an improved method of positioning the recorded blocks of data on said circular tracks in order to reduce rotational latency, comprising the steps of:

recording the successive blocks of data for said at least two data files in physically non-sequential scattered positions in said circular tracks, and

beginning the recording of blocks of data in each of said plurality of tracks at its said beginning sector, the beginning sector of each of said plurality of tracks on said disk



being fixed at one of at least two different rotational positions with respect to said disk, wherein the different rotational positions of the beginning sectors are N in number and the beginning sector for substantially any given track is given by (S/N) (cyl. modulo N), where S is the total number of sectors in the given track and "cyl. modulo N" is the remainder resulting from dividing the track number by N.

4,604,688

ADDRESS TRANSLATION BUFFER CONTROL SYSTEM

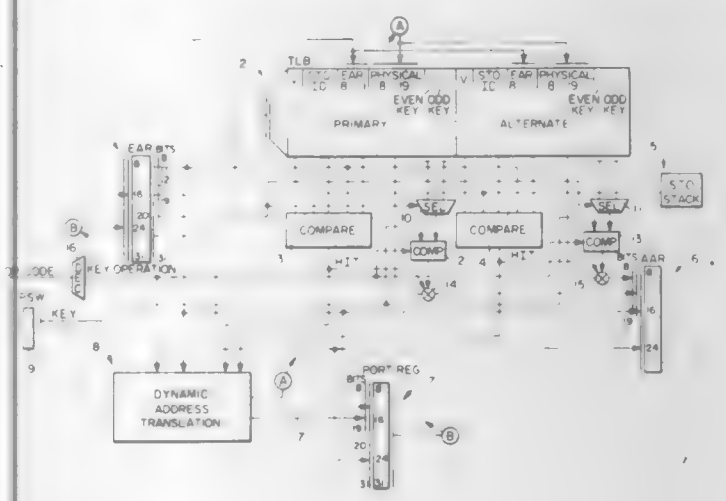
Hirosada Tone, Fuchu, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Jun. 30, 1983, Ser. No. 509,868

Claims priority, application Japan, Jun. 30, 1982, 57-113310

Int. Cl.[4] G06F *12/10, 12/14*

U.S. Cl. 364—200 **3 Claims**



1. An address translation control system for storage access instructions including a first instruction requiring a storage protection check prior to storage accessing and a second instruction not requiring a storage protection check prior to storage accessing, said system comprising:

an effective address register for storing an effective address;

a decoder for decoding the storage access instructions;

a result register, connected to said effective address register, for storing a physical address;

translation buffer means, connected to said effective address register, said decoder and said result register, for storing physical addresses corresponding to effective addresses and for providing a hit signal when the physical address

corresponding to the effective address stored in the effective address register is stored therein and the storage protection check is successful, and for providing the physical address to said result register as a result of the hit signal;

dynamic address translation means, connected to said effective address register, said decoder and said translation buffer means, providing a physical address in dependence on the first or second instruction being decoded and providing the physical address to said translation buffer means in dependence upon the first instruction being decoded; and

a port register, connected to said effective address register and said dynamic address translation means, for passing the physical address directly to said effective address register from said dynamic address translation means in dependence upon the second instruction being decoded.

4,604,689

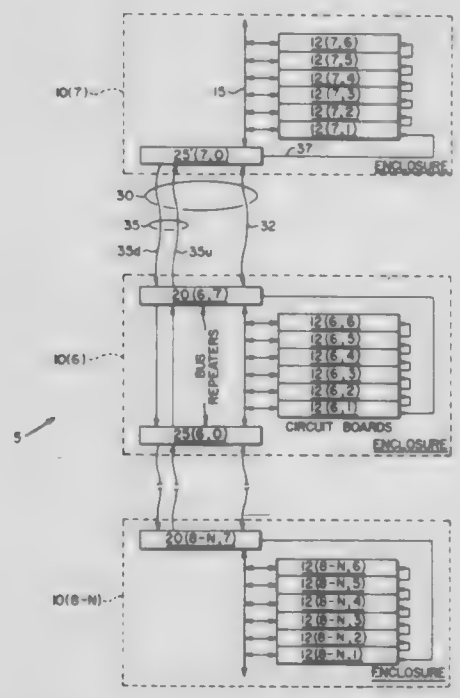
BUS REPEATER

John P. Burger, Sunnyvale, Calif., assignor to Convergent Technologies, Inc., San Jose, Calif.

Filed Apr. 15, 1983, Ser. No. 485,557

Int. Cl.[4] G06F *13/36, 13/40*

U.S. Cl. 364—200 10 Claims



1. A computer system comprising:

a plurality of N enclosures, each having a motherboard carrying bused address and data lines for communication to at least one circuit board within the enclosure, and having means for generating local busy and request signals;

N-1 downstream bus repeaters, each being located at the downstream end of the motherboard of a corresponding one of enclosures 1 . . . , N-1;

N-1 upstream bus repeaters, each being located at the upstream end of the motherboard of a corresponding one of enclosures 2 . . . , N; and

N-1 connector cables for serially coupling said enclosures, each connector cable coupling the downstream bus repeater in a corresponding enclosure to the upstream bus repeater in the serially adjacent enclosure, the cable that is coupled to the upstream or downstream bus repeater of a particular enclosure being designated the upstream or downstream cable, as the case may be, for that particular enclosure;

each connector cable having a first set of lines corresponding to said address and data lines and a second set of private lines having a first subset of private lines for passing downstream-bound private signals and a second subset of private lines for passing upstream-bound private signals;

said first subset of private lines including lines for passing downstream-bound busy and request signals, the downstream-bound busy and request signals arriving at a particular enclosure being representative of the status of bus use and bus requests for all enclosures, if any, upstream of that particular enclosure;

said second subset of private lines including lines for passing upstream-bound busy and request signals the upstream-bound busy and request signals arriving at a particular enclosure being representative of the status of bus use and bus requests for all enclosures, if any, downstream of that particular enclosure;

wherein the upstream and downstream bus repeaters in a given enclosure include between them the following

buffering means for coupling the data and address lines of said given enclosure to the connector cable or cables coupled to said given enclosure, thereby defining a system bus in which inter-enclosure communication can occur,

means for receiving said downstream-bound busy and request signals on the first subset of private lines of the upstream cable, if any, for said particular enclosure,

means for sensing the local busy and request signals within said given enclosure;

means for combining the local busy and request signals in said given enclosure with said downstream-bound busy and request signals arriving at said given enclosure to generate updated downstream-bound busy and request signals representative of the status of bus use and bus requests for all enclosures upstream of and including said given enclosure,

means for placing said updated downstream-bound busy and request signals on the first subset of private lines of the downstream cable, if any, for said given enclosure,

means for receiving said upstream-bound busy and request signals on the second subset of private signal lines of the downstream cable, if any, for said particular enclosure,

means for combining the local busy and request signals in said given enclosure with said upstream-bound busy and request signals arriving at said given enclosure to generate updated upstream-bound busy and request signals representative of the status of bus use and bus requests for all enclosures downstream of and including said given enclosure,

means for placing said updated upstream-bound busy and request signals on the second subset of private lines of the upstream cable, if any, for said given enclosure, and

request monitoring circuitry, responsive to said upstream-bound and downstream-bound private signals arriving at said given enclosure and to the local request signal, for determining according to a defined protocol whether another enclosure has higher priority than the given enclosure for bus use.

4,604,690

DYNAMIC CONFIGURATION FOR ADDED DEVICES

Robert P. Crabtree, Colleyville, and Keith F. Kelly, Jr., Dallas, both of Tex., assignors to International Business Machines Corp., Armonk, N.Y.

Continuation of Ser. No. 468,514, Feb. 22, 1983, abandoned. This application Sep. 3, 1985, Ser. No. 771,801

Int. Cl.[4] G06F *9/00*

U.S. Cl. 364—200 7 Claims

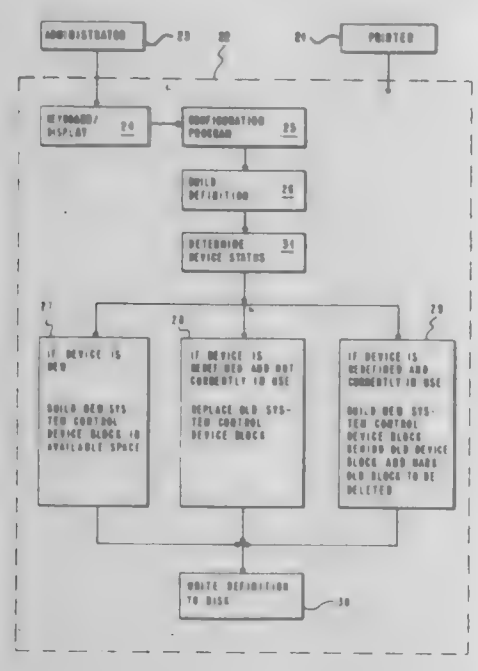
1. A method of on-line reconfiguring a data processing system for an added or redefined device, said method comprising:

(a) building a definition for said device based on input to a configuration program;

(b) determining a status of said devices as being new, redefined and not currently in use, or redefined and currently in use; and

(c) building and storing a control block in main storage for said data processing system if said defined device is new, building a redefined control block and replacing a control

block for the device in main storage if said device is redefined and not currently in use, or building a redefined control block and storing it in main storage to be substituted at a later time if said device is redefined and currently in use, all said building, storing or replacing steps being performed during the operation of said data processing system.

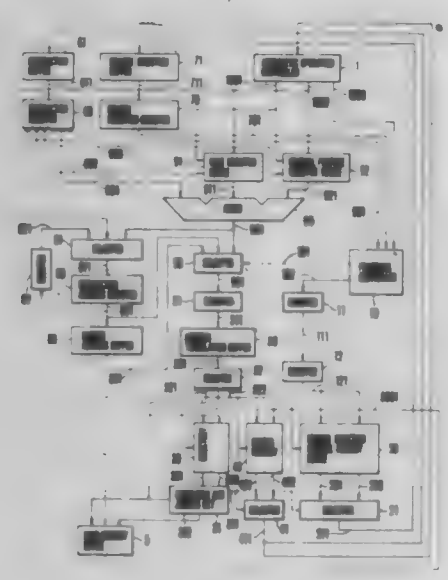


4,604,691

DATA PROCESSING SYSTEM HAVING BRANCH INSTRUCTION PREFETCHING PERFORMANCE

Masanobu Akagi, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Sep. 7, 1982, Ser. No. 415,709
Int. Cl.[4] G06F *9/42*
U.S. Cl. 364—200 7 Claims



1. A data processing systems having a branch instruction prefetching performance, said system comprising:

main memory means (**5**) for storing information;

buffer memory means (**30**, **40**; **130**, **140**) coupled to said main memory means having a plurality of blocks for holding a copy of a portion of the information stored in said memory means (**5**) in said plurality of blocks;

arithmetic operation control means (**1**) for executing instructions including a branch instruction;

branch direction control memory means (**2**) coupled to said main memory means including at least one block corresponding to at least one of said blocks of said buffer memory means for storing a branch direction information obtained by execution of said branch instruction in a block in said branch direction control memory means corresponding to the block containing said branch instruction of said buffer memory means; and

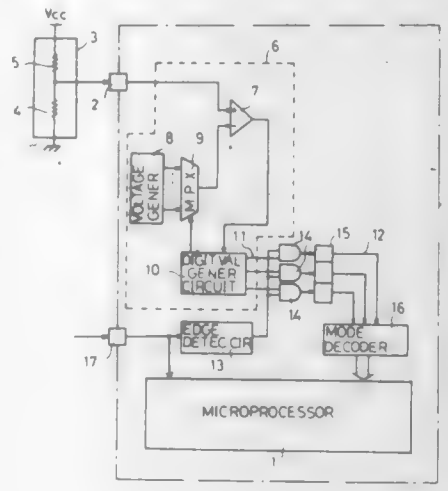
preceding control means (**10**) coupled to said branch direction control memory means and said buffer memory means including means for reading out from said branch direction control memory means said branch direction information and for reading out from said buffer memory means an instruction to be prefetched wherein a common directory means (**30**) is used for said branch direction control memory means and for said buffer memory means, means for predicting whether a branching will be successful or not based on the branch direction information stored in said branch direction control memory means when said instruction to be prefetched is a branch instruction, and means responsive to a result of said prediction for prefetching an instruction in a direction having a highest probability of being executed after said branch instruction has been executed.

4,604,692

OPERATION MODE SETTING SYSTEM FOR A MICROPROCESSOR

Joji Murakami, Kawasaki, Japan, assignor to Fujitsu Limited, Kanagawa, Japan

Filed Dec. 29, 1982, Ser. No. 454,258
Claims priority, application Japan, Dec. 29, 1981, 56-213710
Int. Cl.[4] G06F *3/00*
U.S. Cl. 364—200 6 Claims



1. An operation mode setting system for a microprocessor operable in a plurality of operation modes, said operation mode setting system comprising in a single integrated circuit:

a microprocessor having a plurality of operation modes;

a reset input terminal connected to said microprocessor for receiving a reset signal;

a mode input terminal for receiving an analog voltage the amplitude of which determines exclusively a corresponding one of said plurality of operation modes;

an analog-to-digital converter means connected to said mode input terminal for converting said analog voltage to a digital signal representative of the amplitude thereof;

a decoder means connected to said analog-to-digital converter means for decoding said digital signal and connected to said microprocessor for generating a signal for setting said microprocessor at said one of said plurality of operation modes corresponding solely to the amplitude of said analog voltage; and

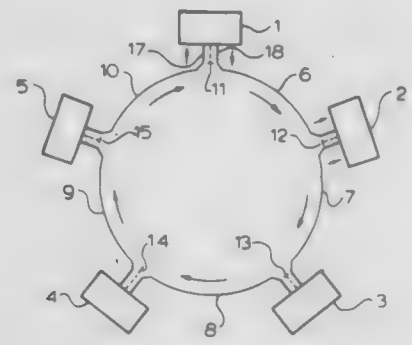
means responsive to a reset signal applied to said reset input terminal for applying said decoded signal to said microprocessor to set the operation mode thereof when a reset signal is applied.

4,604,693

SYSTEM AND METHOD FOR COMMUNICATION BETWEEN NODES OF A CLOSED LOOP LOCAL COMMUNICATION PATH

George E. Chadima, Jr., and Joseph J. Kubler, both of Cedar Rapids, Iowa, assignors to Norand Corporation, Cedar Rapids, Iowa

Division of Ser. No. 289,098, Jul. 31, 1981, Pat. No. 4,430,700.
This application Oct. 24, 1983, Ser. No. 544,969
Int. Cl.[4] G06F *13/38*
U.S. Cl. 364—200 11 Claims



1. In a closed loop data processing network,

(a) a series of nodes having data processing units associated therewith each having a data input and a data output, and requiring at least one processing step in transmitting data between its data input and its data output, said nodes being selectively operable for sending a bid message seeking control of communication,

(b) a series of communication links coupling the nodes in a loop communications path for enabling data communication therebetween, and including an incoming link path and an outgoing link path at each node,

(c) transmission link switches at the respective nodes each having a first transmission mode and a second cutoff mode,

(d) each transmission link switch in said first transmission mode providing a switch path directly coupling the incoming and outgoing link paths at the respective associated node so as to provide for undelayed date transmission independent of the data processing unit associated with the node,

(e) each transmission link switch in said cutoff mode serving to interrupt said switch path such that the incoming and outgoing link paths at the respective associated node are not coupled via said switch path but are only coupled via the data input and the data output of the associated data processing unit, and

(f) control means associated with each data processing unit for placing the associated transmission link switch is cutoff mode during the transmission of a data message from the data processing unit, while assuring against a communications gap of a predetermined time duration during reception of a response to the transmitted data message,

(g) said control means associated with each data processing means being free of a common timing control common to said series of nodes and whenever ready to initiate communication with any other node being operable in response to a communications gap of the predetermined time duration occurring at any time to immediately place the associated transmission link switch in the cutoff mode in preparation for sending a bid message over the same communication path as data messages are transmitted.

4,604,694

SHARED AND EXCLUSIVE ACCESS CONTROL

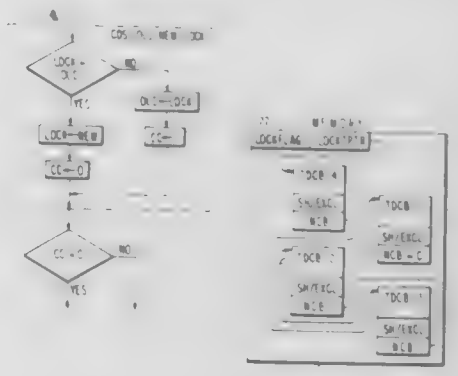
Roger E. Hough, Highland, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 14, 1983, Ser. No. 561,613
Int. Cl.[4] G06F *9/46*
U.S. Cl. 364—200 27 Claims

1. A method for aquisition and release of access to each of plural resources in a multi-programming system, the method comprising:

providing a first-in/first-out (FIFO) queue of elements in which each element is respectively associated with a request waiting for access to a resource,

associating each resource with a respective lockfield in a location known by and accessible to all programs wanting to use the resource, said lockfield containing a lockflag and a lockpointer, the lockflag indicating a type of access granted to said resource, and the lockpointer locating a most recently enqueued element in the queue, the lockpointer indicating whether or not a queue exists, and if the queue exists identifying the most recently enqueued element, each element in the queue (except a least recently enqueued element) having a pointer to a next less recently enqueued element in the queue, and the pointer for the



least recently enqueued element having an indicator identifying the element as the least recently enqueued element,

granting one or more share requests for non-exclusive use of the resource to concurrently access the resource, but allowing only a single exclusive request for exclusive use of the resource to access the resource at a time,

controlling the lockflag to indicate the type of access currently granted to the resource, in which the lockflag is set to one of the following states: (1) a shareable usage state, (2) an exclusive usage state, or (3) a no existing access state representing no assignment of the resource to any request,

providing a shareable or exclusive usage indicator field in each element in the queue for indicating whether a request associated with the element is waiting for shareable or exclusive usage of the resource when the usage would conflict with access to the resource by previous requests not yet released.

4,604,695

NIBBLE AND WORD ADDRESSABLE MEMORY ARRANGEMENT

Melinda A. Widen, Arlington; John J. Bradley, Framingham, and George M. O'Har, Chelmsford, all of Mass., assignors to Honeywell Information Systems Inc., Waltham, Mass.

Filed Sep. 30, 1983, Ser. No. 537,928
Int. Cl.[4] G06F *12/04*
U.S. Cl. 364—200 7 Claims

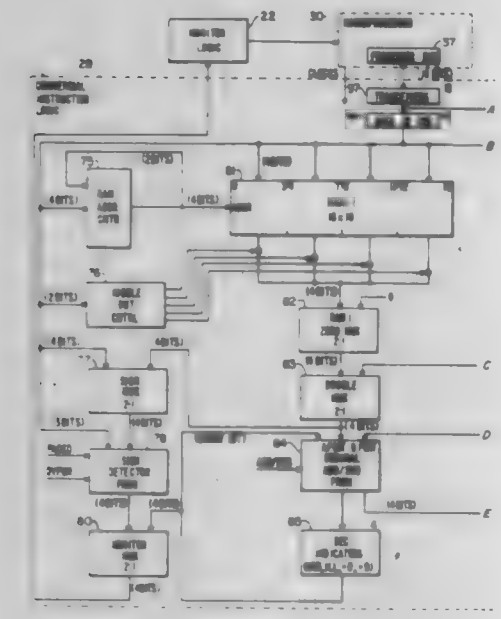
1. An auxiliary memory arrangement for use with a central processing unit (CPU), said CPU capable of performing operations in response to software instructions, said software instructions specifying the type of operation to be performed and one or more operands, each said operand being stored in a large memory, said auxiliary memory arrangement comprising:

A. a memory means having storage bits which are organized in groups called words with each word being made up of a plurality of nibbles and each nibble being made up of a predetermined plurality of said storage bits, and each of said words is used to store an operand from said large memory, a data input to said memory means for accepting operands and nibble size parts thereof to be stored in word and nibble locations therein, a data output from said memory means for providing the operand bits stored in ones of said words read from said memory means, an address

input to said memory means to which are applied addresses indicating which words and nibbles in said memory means are to have operands or nibbles thereof written therein or read therefrom;

B. an address counter having an input and an output which is coupled to said address input of said memory means, said address counter input receiving an initial word address which is stored in said address counter, said initial word address stored in said address counter being incremented in response to an increment address signal and being decremented in response to a decrement address signal to thereby increment or decrement the word address stored in said address counter and identify words in which one or more of the nibbles are to be written into or read out;

C. a nibble control having an input and an output, said nibble control input for receiving an initial nibble address which indicates one of the plurality of nibbles within a word being addressed by a word address on the output of said address counter, the output of said nibble control for providing the nibble address stored therein to the address input of said memory means along with the word address to indicate nibbles to be written into or read out of said



memory means, said nibble control being incremented in response to an increment nibble signal and decremented in response to a decrement nibble signal to thereby sequentially address nibbles within an addressed word; and

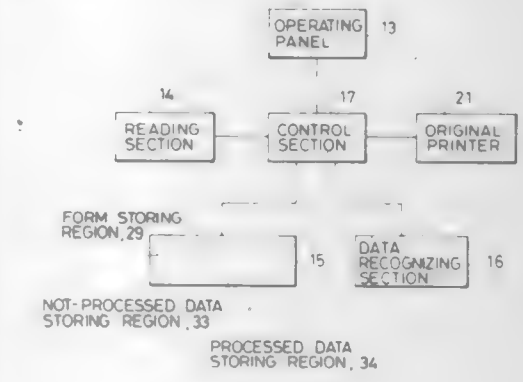
D. a step address means having an input for receiving said increment nibble signal and said decrement nibble signal, and having an output coupled to said address counter for incrementing and decrementing said address counter, said step address means output providing said increment address signal to said address counter if said step address means increments through a count corresponding to the last nibble of the plurality of nibbles within a word being addressed by said address counter, and said step address means output providing said decrement address signal to said address counter if said step address means decrements through a count corresponding to the first nibble of said plurality of nibbles within the word being addressed by said address counter; whereby operands and nibble size parts thereof are written in or read from consecutive words and nibbles in said memory means by incrementing or decrementing both word addresses stored in said address counter and nibble addresses stored in said nibble control.

4,604,696

DOCUMENT ISSUING APPARATUS FOR PRINTING A SET OF TRANSACTION CONTROL SLIPS FOR EACH OF MANY TRANSACTIONS

Saburo Suganuma, and Hiroyuki Kataoka, both of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Feb. 9, 1984, Ser. No. 578,568
Claims priority, application Japan, Feb. 10, 1983, 58-19792
Int. Cl.[4] G06F *15/22*
U.S. Cl. 364—401 **4 Claims**



1. A document issuing apparatus for printing item sale and delivery control information for each of a plurality of transactions, involving the sale and delivery of an item, which information is presented on an order form for each of a plurality of transactions, onto an individual set of transaction control slips for each transaction, said apparatus comprising:

(a) optical means for reading from a plurality of said order forms, item sale and delivery control data representing transaction control information for a plurality of transactions, said control data including item classification data;

(b) storage means for storing said sale and delivery control data;

(c) processing means for ordering said sale and delivery control data for said plurality of transactions in response to said classification data contained in said transaction control information for each transaction, and for organizing said sale and delivery control data for each transaction into a format compatible with the format of said transaction control slips; and

(d) printing means for simultaneously printing both said transaction control information for each transaction and format data representing the format of said control slips to form a set of said transaction control slips for each transaction, said set of transaction control slips being printed in an order determined by said classification data for each transaction.

4,604,697

BODY IMAGING USING VECTORIAL ADDITION OF ACOUSTIC REFLECTION TO ACHIEVE EFFECT OF SCANNING BEAM CONTINUOUSLY FOCUSED IN RANGE

Ajay K. Luthra; Saleem Kassam, both of Bala Cynwyd, and Richard B. Bernardi, Strafford, all of Pa., assignors to Interspec, Inc., Conshohocken, Pa.

Filed Aug. 5, 1983, Ser. No. 520,573
Int. Cl.[4] G01N *29/00*
U.S. Cl. 364—414 **16 Claims**

1. An ultrasonic imaging system comprising:

an array of electro-acoustic transducers for transmitting acoustic energy upon a body to be displayed and for receiving reflections from said body to develop output signals representative of said reflections and which contain complex information corresponding to the amplitudes and phases of said reflections;

an image display for presenting an image, composed of a plurality of varying intensity pixels, of said body;

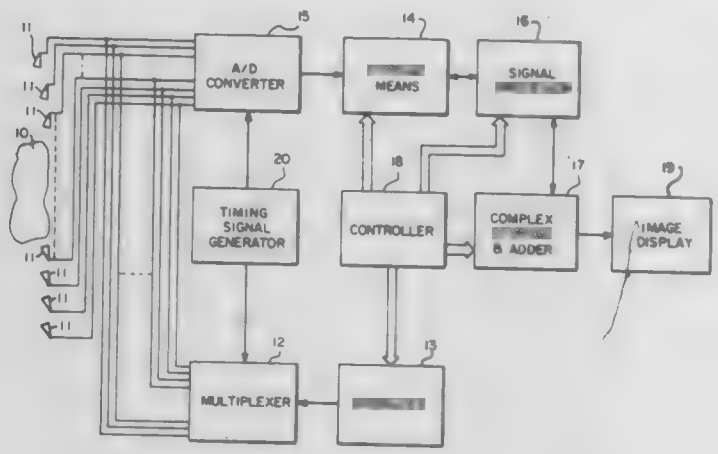
means for selectively energizing said transducers to develop a series of acoustic energy transmissions from said array

and to develop output signals from said transducers from reflections of said transmissions;

means for processing said output signals, after selected acoustic energy transmissions, to develop from the preceding acoustic energy transmissions a plurality of complex image signals individually representative of the sum of the amplitude and phase information associated with individual pixels and collectively representative of a complex image for the preceding acoustic energy transmissions,

means for combining complex image signals associated with the same pixel of each complex image to develop a plurality of image display signals representative of the combined amplitude and phase information of each pixel for all preceding acoustic energy transmissions; and

means for supplying said image display signals to said image display, thereby presenting an image of said body.

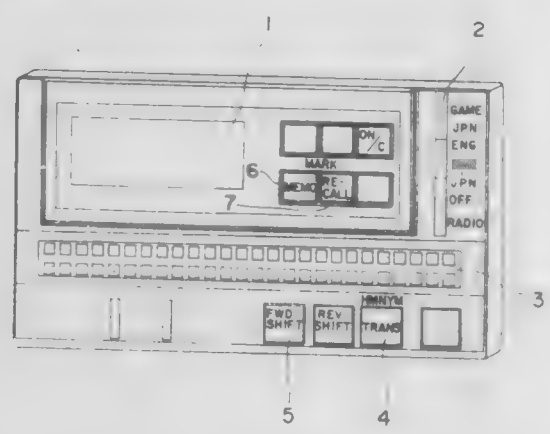


4,604,698

ELECTRONIC TRANSLATOR

Yutaka Ikemoto, Nara, and Ken Sawada, Ikoma, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Dec. 22, 1983, Ser. No. 564,204
Claims priority, application Japan, Dec. 28, 1982, 57-228792
Int. Cl.[4] G06F *15/38*
U.S. Cl. 364—419 **9 Claims**



5. An electronic translator comprising:

first memory means for storing words of a first language and words of a second language wherein each word of the first language is stored in an interlinked manner with at least one word of the second language, at least one of the words in said first language having more than one meaning and being interlinked with more than one word of said second language, each said word of said second language interlinked with said word in said first language, indicating a different meaning of said word in said first language having more than one meaning;

input means for introducing a word of the first language;

search means for searching for said introduced work in said first memory means;

first producing means for recalling a word of the second language from said first memory means having a said interlinked relationship with said introduced word of said first language;

second producing means for recalling said word of the first language from said first memory means having the said interlinked relationship with said word recalled by said first producing means;

means for providing a comment representative of the meaning of said word of the second language recalled by said first producing means; and

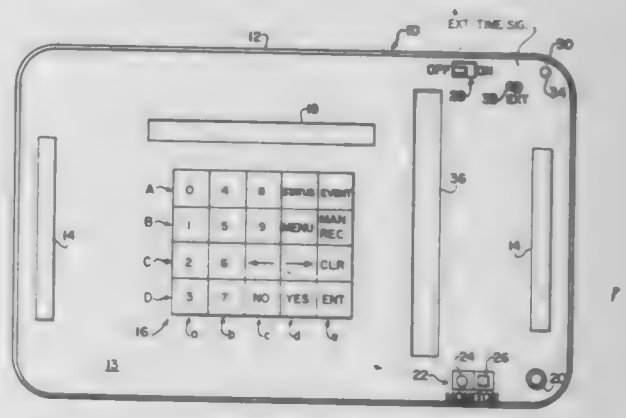
means for indicating said introduced word, said second language word recalled by said first producing means, said word in said first language recalled by said second means, and said comment.

4,604,699

GENERAL EARTHQUAKE OBSERVATION SYSTEM

Roger D. Borcherdt, Mountain View; Jon P. Fletcher; Richard E. Warrick, both of Palo Alto; Gary L. Maxwell, Menlo Park; Edward G. Jensen, Newark, and John V. Schaack, Cupertino, all of Calif., assignors to The United States of America as represented by the Secretary of the Interior, Washington, D.C.

Filed Jan. 25, 1984, Ser. No. 573,775
Int. Cl.[4] G01V *1/00*; G01W *1/10*
U.S. Cl. 364—420 **15 Claims**



1. A computer system for monitoring analog signals produced by a plurality of transducers, the system comprising:

a computer bus;

a microcomputer comprised of a microprocessor and program memory connected to said computer bus, said program memory for storing software that controls operation of said microprocessor, which programmed microprocessor in turn controls the operation of said system;

a plurality of software selectable input channels connectable to the transducers, each channel comprising amplifiers and software selectable filters;

an analog to digital converter coupled to a selected input channel for converting analog data from said selected input channel to digital data;

a Direct Memory Access data bus;

Direct Memory Access data memory connected to said data bus;

a controller for initiating a Direct Memory Access data transfer of said digital data from said converter to said data memory through said data bus;

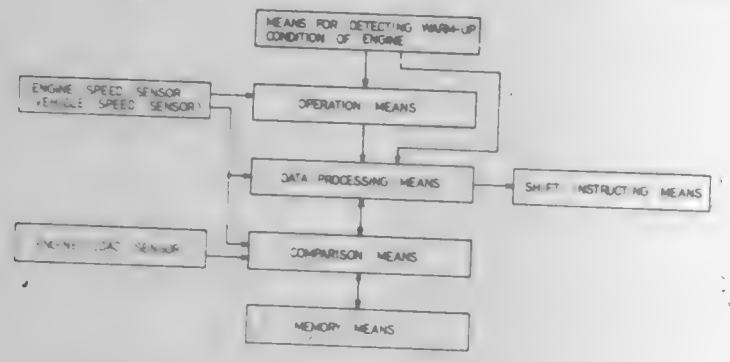
a data recorder connected to said data bus; and

means for automatically storing said digital data on said data recorder.

4,604,700
APPARATUS FOR INDICATING AN OPTIMUM TIME TO SHIFT A MANUAL TRANSMISSION INSTALLED IN A VEHICLE

Kohei Igarashi, Susono, and Kazuo Tomita, Gotenba, both of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Japan

Filed Sep. 19, 1983, Ser. No. 533,560
Claims priority, application Japan, Feb. 25, 1983, 58-031132
Int. Cl.[4] B60K *41/18*; G07C *5/08*; G09B *19/16*
U.S. Cl. 364—424
21 Claims



1. An apparatus for indicating an optimum time to shift a manual transmission installed in a vehicle comprising:

a first detecting means for detecting an actual engine speed;

a second detecting means for detecting an actual engine load;

a third detecting means for detecting an actual engine temperature;

memory means for storing a plurality of optimum relationships between engine speed, engine load and engine temperature each of said plurality of optimum relationships including a shift-up zone;

comparison means for comparing an actual relationship between said actual engine speed, said actual engine load, and said actual engine temperature plurality of optimum relationships between engine speed, engine load and engine temperature and outputting a shift-up signal when the actual relationship is in the shift-up zone of one of said plurality of optimum relationships; and

instruction means for indicating a shift-up condition when the comparison means outputs a shift-up signal;

whereby an operator is notified by said instruction means, when said actual relationship is in said shift-up zone of one of said plurality of relationships.

4,604,701
FAIL-SOFT TURBOCHARGER CONTROL SYSTEM

Charles S. Fujawa, and Sara B. Masteller, both of South Bend, Ind., assignors to Allied Corporation, Morristown, N.J.

Filed Feb. 16, 1983, Ser. No. 467,070
Int. Cl.[4] F02B *37/12*; F02D *23/00*; G01M *15/00*
U.S. Cl. 364—431.01
17 Claims

10. A fail-soft turbocharger control system for an engine with a first bank and second bank of cylinders and a first turbocharger and second turbocharger associated therewith, each turbocharger having a variable output compressor boosting the pressure of an input manifold to said associated bank of cylinders and a variable input turbine driving said compressor powered by the exhaust gases of said bank of cylinders for said control system comprising:

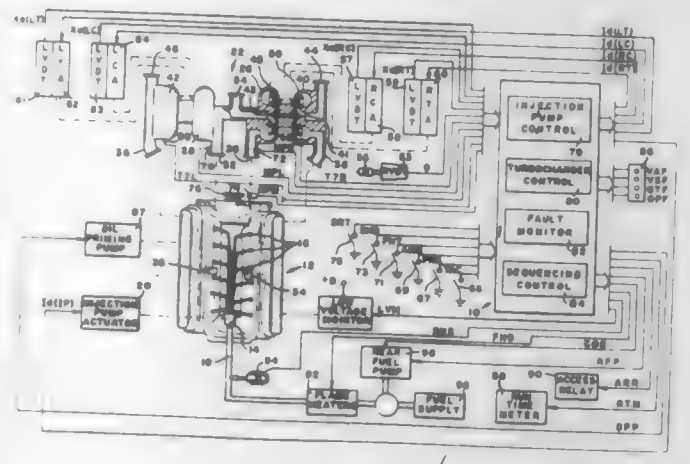
a computing circuit including input circuit means for receiving sensor input signals representative of operational parameters of said engine, programmable memory means for storing predetermined tabular data and sequential and computational instructions, means responsive to said memory means for receiving said input signals and generating a plurality of said output signals as a function of said input signals, tabular data, and instructions, and output circuit means for outputting said plurality of output signals,

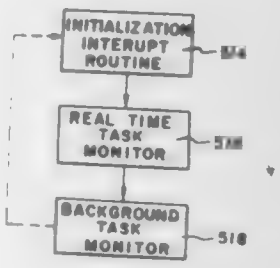
sensor means connected to said engine and said computing circuit for sensing and generating said sensor input signals representative of the manifold pressure, exhaust gas temperature, engine speed, and the position of the throttle, compressor and turbine actuators of said engine,

and actuator means connected to said output circuit means for controlling the position of said actuators in response to predetermined ones of said output signals, respectively,

said computing circuit, sensor means, and actuator means defining a first turbine control loop for regulating the input of exhaust gases to the first turbine as a function of the error difference between the optimum manifold pressure of said first bank of cylinders and the actual manifold pressure of said first bank of cylinders; wherein said optimum manifold pressure is calculated from said stored tabular data and at least one operating parameter of the engine including the speed of the engine;

a first compressor control loop for regulating the output of the airflow from the first compressor as a function of at least one operating parameter of the engine including the speed of the engine;





a second turbine control loop for regulating the input of exhaust gases to the second turbine as a function of the error difference between the optimum manifold pressure of said second bank of cylinders and the actual manifold pressure of said second bank of cylinders; wherein said optimum manifold pressure is calculated from said stored tabular data and at least one operating parameter of the engine including the speed of the engine;

a second compressor loop for regulating the output of the airflow from the second compressor as a function of said stored tabular data and at least one operating parameter of the engine including the speed of the engine;

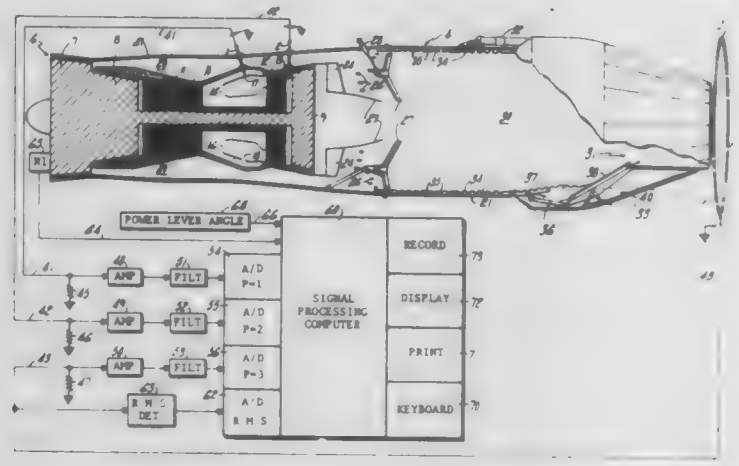
fault testing means for testing the validity of said sensor input signals, said fault testing means including means for determining whether the value of said speed signal is valid before regulating either the first and second turbine inputs or the first and second compressor outputs with that value.

4,604,702

VARIABLE DISCRIMINATORS IN ELECTROSTATIC ENGINE DIAGNOSTICS

Philip E. Zwicke, South Glastonbury, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Dec. 28, 1982, Ser. No. 454,119
Int. Cl.[4] G01M *15/00*
U.S. Cl. 364—431.02 4 Claims



1. Electrostatic diagnostic apparatus for distinctly correlating different events occurring in an operating gas turbine engine, comprising:

electrostatic signal means, including a probe to be disposed in the gas stream of an engine, for providing, when said probe is disposed in the gas stream of an operating engine, a probe signal having a waveshape defined by amplitude variations thereof across a time interval of a given duration in response to electrostatic charge flowing in the gas stream in the vicinity of said probe;

analog to digital converter means connected for response to said electrostatic signal means; and

digital signal processing means connected to said analog to digital converter means

(a) for causing said analog to digital converter means to sample the probe signal provided by said electrostatic signal means in a manner to provide a record of digital signals indicative of the amplitude variations in said probe signal defining the waveshape thereof,

(b) for storing, in response to the amplitude of one of said digital signals being in excess of a threshold magnitude, a record comprising a contiguous sequence of said digital signals sufficient to define the waveshape of said probe signal,

(c) for providing a plurality of groups of predetermined discriminator signals, each of said groups identifying characteristics of the waveshape of a corresponding predetermined paradigm signal representative of a corresponding category which is correlated to a particular corresponding one of a plurality of engine events,

(d) for providing, in response to each record of digital signals, a plurality of groups of acutal signals, each group of actual signals being indicative of the characteristics of the waveshape of said probe signal corresponding to characteristics of said paradigm signal,

(e) for providing, in accordance with a first subroutine first degradation signals indicative of the deviation of said actual signals from a group of said discriminator signals corresponding to a first one of said categories,

(f) for providing, in accordance with said first subroutine, second degradation signals indicative of the deviation of said actual signals from a group of said discriminator signals correspnnding to a second one of said categories, and

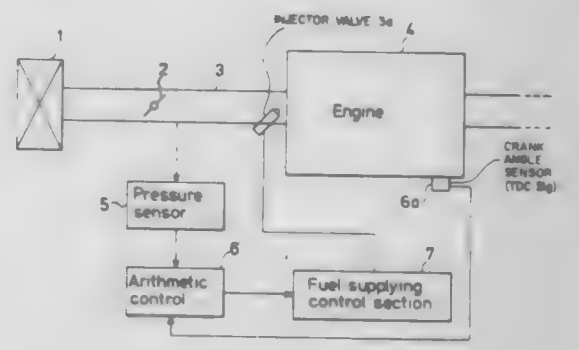
(g) for providing in response to said first and second degradation signals a selected category signal indicative of the one of said categories to which said record of digital signals most nearly correlates.

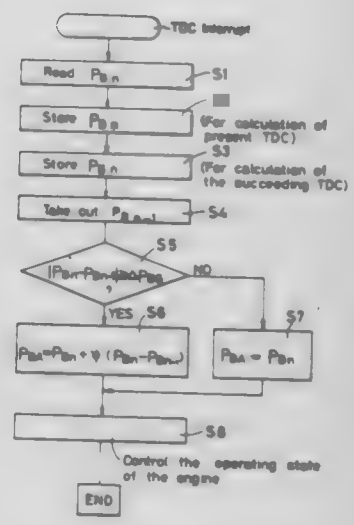
4,604,703

APPARATUS FOR CONTROLLING THE OPERATING STATE OF AN INTERNAL COMBUSTION ENGINE

Shumpei Hasegawa, Niiza, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 28, 1983, Ser. No. 479,396
Claims priority, application Japan, Apr. 2, 1982, 57-55890
Int. Cl.[4] F02B *3/04;* F02D *41/08, 41/26;* F02M *51/00*
U.S. Cl. 364—431.07 10 Claims





9. A method for controlling an internal combustion engine which operates in accordance with an operating command, and which comprises the steps of:

producing a parameter signal representative of an engine parameter of said internal combustion engine;

sampling said parameter signal at a sampling frequency so as to produce successively appearing sample signals;

storing said sample signals;

producing a first subtraction signal representative of a difference in magnitude between a latest sample signal and a two-times preceding sample signal having appeared two-times before said latest sample signal;

comparing said first subtraction signal with a predetermined value so as to produce a correction command signal when said first subtraction signal exceeds said predetermined level;

producing a second subtraction signal representative of a difference in magnitude between a latest sample signal and a one-time preceding sample signal appearing one time before said latest sample signal;

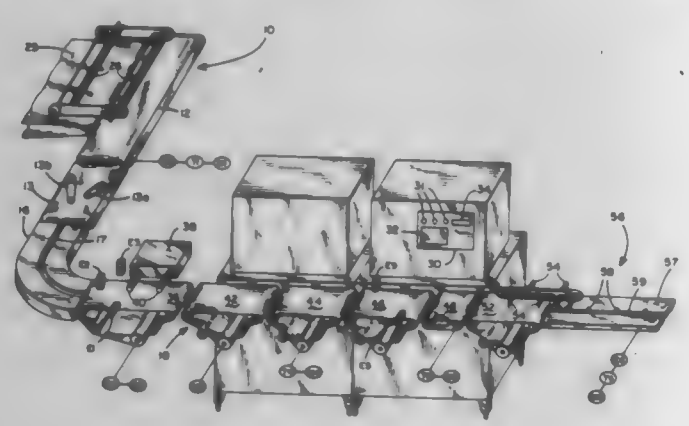
correcting said latest sample signal by adding an additive signal related to said second subtraction signal under the existence of said correction command signal; and

establishing said operating command for the engine in response to the corrected latest sample signal.

4,604,704
HIGH-SPEED MICROPROCESSOR-CONTROLLED BRANCH CONVEYOR

Fred W. Eaves, Clayton, and Wayne D. Sommer, Amery, both of Wis., assignors to Doboy Packaging Machinery, Inc., New Richmond, Wis.

Filed Sep. 10, 1984, Ser. No. 649,173
Int. Cl.[4] G06F *15/20*; B65G *43/10*
U.S. Cl. 364—478 15 Claims



1. In a conveyor system, apparatus for randomly receiving product from a longitudinally extending supply conveyor in rows and conveying the product to a selected one of a plurality of work stations by way of a plurality of transversely extending branch conveyor means, each branch conveyor means, comprising:

first conveyor means extending transverse to said longitudinally extending supply conveyor for simultaneously receiving a plurality of products from said supply conveyor, a row at a time, and conveying them in a predetermined orientation with respect to one another and with random spacing therebetween;

second conveyor means disposed downstream from said first conveyor means and electronically feedback coupled to sense the speed of operation of said selected one of said plurality of work stations for accumulating and partially backlogging said products as they are conveyed along said second conveyor means; and

third conveyor means disposed downstream from said second conveyor means and coupled to said selected one of said plurality of work stations for separating each of said products from one another by a predetermined spacing and correctively adjusting said spacing so as to synchronize the position of products spaced on said third conveyor means with a fourth conveyor means of the type having a plurality of spaced-apart pusher members mounted on an endless chain and with adjacent ones of said pusher members defining flights for synchronously receiving said products within said flights and conveying said product to said selected one of said plurality of said work stations.

4,604,705
NUMERICAL CONTROL MACHINING METHOD AND SYSTEM THEREFOR

Kazuo Imanishi, Aichi, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

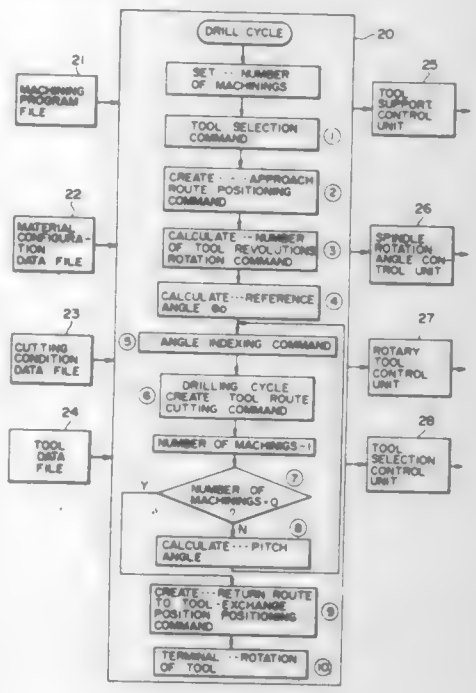
Filed Dec. 29, 1983, Ser. No. 566,937
Claims priority, application Japan, Dec. 29, 1982, 57-232287
Int. Cl.[4] G06F *15/46*
U.S. Cl. 364—474 17 Claims

1. A numerical control machining method of a type in which a workpiece can be machined at plural positions by one or more rotary tools mounted on a movable tool support, comprising the steps of:

(a) entering data describing a configuration of a workpiece to be machined, a machining mode for the machining workpiece, and machining data for machining program execution in correspondence with said machining mode;

(b) computing a safety route of a selected rotary tool from a rest position to a machining start point on said workpiece based upon said data describing said configuration of said workpiece and in accordance with said machining program;

(c) computing a rotation/positioning command for said workpiece with said machining program in response to said machining data;



(d) computing a machining command in response to said machining mode and rotation/positioning command;

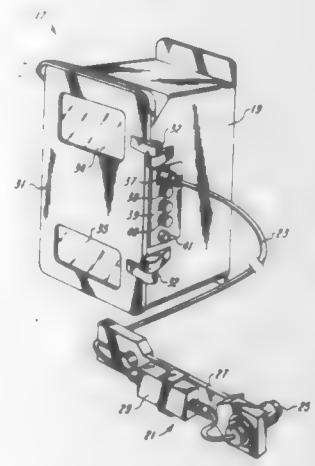
(e) repeating said steps (c) and (d) a number of times corresponding to a number of portions of said workpiece to be machined; and

(f) controlling said tool support, said workpiece, and said rotary tool in accordance with said steps (b) to (e).

4,604,706
APPARATUS FOR FAILURE PREDICTION OF EARTH STRUCTURES

Carl Fisher, Jr., Louisville; Charles R. Carrington, and George A. Grant, both of Longmont, all of Colo., assignors to Integrated Sciences, Inc., Longmont, Colo.

Filed Jun. 27, 1983, Ser. No. 508,344
Int. Cl.[4] G01L *1/26*
U.S. Cl. 364—507 34 Claims



1. A device for failure prediction of earth structures, said device comprising:

sensing means for sensing predetermined microseismic emissions of a selected earth structure and responsive thereto providing electrical output signals indicative of predicted failure of said earth structure;

processing means including computer means for receiving said electrical output signals from said sensing means;

control means connected with said computer means for caus-

ing said computer means, responsive to receipt of said electrical output signals from said sensing means to provide an output signal from said processing means indicative of said predicted earth structure failure; and

indicating means connected with said processing means to receive said output signal from said processing means and responsive thereto automatically providing an indication of said predicted structure failure.

4,604,707

DEVICE AND METHOD FOR COMPARING OPTICAL SIGNALS

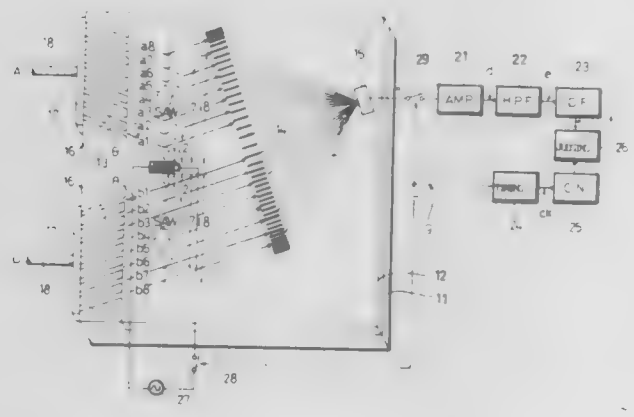
Tsukasa Yamashita, Nara; Nobuhisa Inoue, Kyoto; Kazuhiko Mori, Osaka, and Masaharu Matano, Kyoto, all of Japan, assignors to Omron Tateisi Electronics Co., Kyoto, Japan

Filed Mar. 3, 1983, Ser. No. 471,728

Claims priority, application Japan, Mar. 12, 1982, 57-39683; Mar. 19, 1982, 57-45449; Mar. 19, 1982, 57-45450

Int. Cl.⁴ G06G *9/00*

U.S. Cl. 364—822 **31 Claims**



1. An optical comparator for comparing two optical digital signals comprising:

optical waveguide means, including an acousto-optical material, for propagating light therethrough;

means for coupling first and second optical digital signals to said waveguide means, said first and second signals each comprising plural optical bits, a one-to-one correspondence existing between the plural bits of said first signal and the plural bits of said second signal;

surface acoustic wave generator means for generating surface acoustic waves and for propagating said waves through the optical waveguide means to impinge upon said first and second signals propagating through said waveguide means at the Bragg angle; and

means for detecting the bits of said first signal which have been diffracted or the undiffracted bits of said first signal and for detecting the bits of said second signal which have been diffracted or the bits of said second signal which have not been diffracted,

wherein the initiation or cessation of interaction between a surface wave produced by said surface acoustic wave generator means and any given one of the plural optical bits of said first signal is simultaneous with initiation or cessation of the interaction of the surface acoustic wave with a corresponding bit of the second optical signal.

4,604,708

ELECTRONIC SECURITY SYSTEM FOR EXTERNALLY POWERED DEVICES

Gainer R. Lewis, 7018 Pacific View Dr., Hollywood, Calif. 90068

Continuation of Ser. No. 328,080, Dec. 7, 1981, abandoned. This application Nov. 8, 1984, Ser. No. 669,727

Int. Cl.⁴ G08B *13/06*; G06F *1/00*; B60R *25/00*

U.S. Cl. 364—900 **16 Claims**

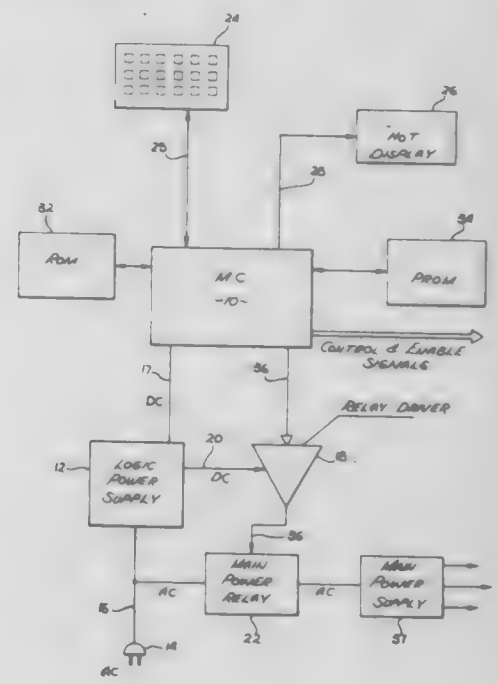
1. A security system including a microcomputer for protecting an externally powered device such that once said device has been enabled it will remain capable of being operated unless the security system is disconnected from the external power source, comprising:

a microcomputer connected to said external power source;

storage means for storing a predetermined code;

input means for receiving a code;

comparator means coupled to said storage means and said input means for comparing said first predetermined code with said received code and for producing a first output signal upon determining that said first predetermined and received codes are identical; and



relay means coupled between said external power source and the protected device and connected to be actuated by said first output signal such that external power is provided to enable the protected device by selectively coupling said external power source to said device upon receipt of said first output signal;

whereby said received code need only be reentered if the coupling of said microcomputer to said external power source is interrupted.

4,604,709

CHANNEL COMMUNICATOR

Frederick T. Blount, Hopewell Junction; Robert S. Capowski, Verbank; Daniel F. Casper, Poughkeepsie; Lawrence R. Del-Sonno, Beacon; Robert F. Geller, Wappingers Falls, all of N.Y.; Joseph M. Kusmiss, El Paso, Tex., and Terrence K. Zimmerman, Red Hook, N.Y., assignors to International Business Machines Corp., Armonk, N.Y.

Filed Feb. 14, 1983, Ser. No. 465,952

Int. Cl.⁴ G06F *13/14, 13/38*

U.S. Cl. 364—900 **10 Claims**

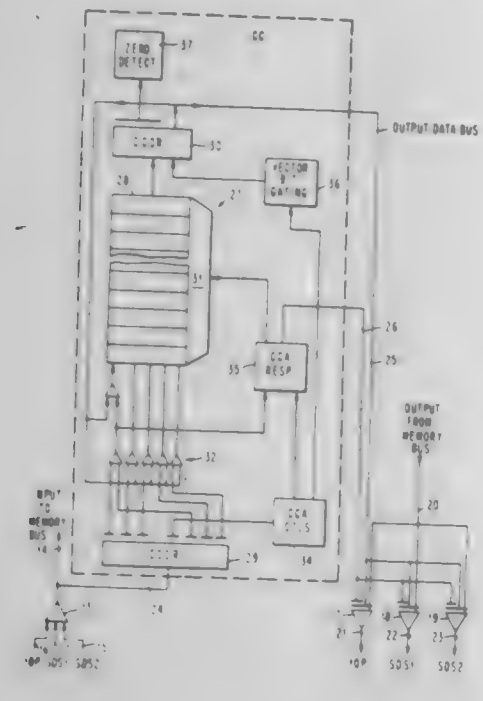
1. In a data processing system having a channel subsystem including (1) a plurality of channels for transmitting data between I/O devices and a central processor store, (2) a processor IOP for controlling certain operations of the channels, (3) and an input bus and an output bus interconnecting the channels and the IOP and the central processor store for these operations, a channel communicator for communications between the IOP and the channels, comprising,

a storage array having a multi-byte word location for each channel in the subsystem, an input register and an output register for the array, address means for accessing a word location in the array, and means for performing store and fetch operations,

means connecting said input register to receive a message from said input bus and connecting said output register to place a message on said output bus,

means in said channels and in said IOP for sending to said input register via said input bus a message containing a

channel ID identifying the channel that the message is addressed to or is from, a command to be executed by the channel communicator, and byte positions for data to be stored in said array on the execution of certain commands, means in said channel communicator for supplying address bits from the channel ID of a message to said address



means for accessing a word location holding an entry for the channel identified in the channel ID,

and means for executing commands for fetching data from a channel entry of the array, commands for storing data in a channel entry of the array and commands for both fetching and storing data in a channel entry of the array.

4,604,710

SYSTEM FOR CONVERTING DATA PROCESSING INFORMATION TO TEXT PROCESSING FORMAT AND VICE VERSA

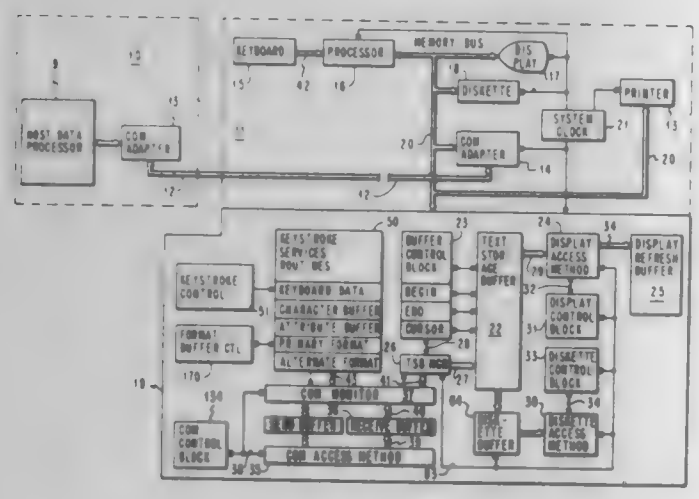
Robert Amezcua, Austin; Silous F. Clements, Georgetown; John S. Coenen, Austin; Ralph H. DaFoe, Austin; Michael N. Day, Austin; Dennis M. Ross, Austin, and Richard O. Simpson, Austin, all of Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 310,182, Oct. 9, 1981, abandoned. This application Mar. 12, 1984, Ser. No. 588,404

Int. Cl.[4] G09G *1/10;* G06F *3/023*

U.S. Cl. 364—900

7 Claims



1. In an information processing system capable of conducting data processing operations wherein data information including one or more alphanumeric character codes and an attribute code is stored in a data processing field format and the data processing affects the substance of the data information and capable of conducting text processing operations wherein text information is stored in a text processing string format having strings of text codes intermixed with format codes and the text processing affects the arrangement of the text information, the improvement for converting data information in said data processing field format to text information in said text processing string format comprising:

means for storing data information in said data processing field format;

means connected to said means for storing for converting the stored data information in said data processing field format to text information in said text processing string format;

said means for converting the stored data information including means, connected to said means for storing, for scanning said data information after said data information has been stored;

means, connected to said means for scanning, for testing each of said codes of said stored data information to detect said attribute code; and

means, connected to said means for storing and said means for testing, for replacing said attribute code with a space code.

4,604,711

AIRCRAFT FLIGHT DATA DISPLAY SYSTEM

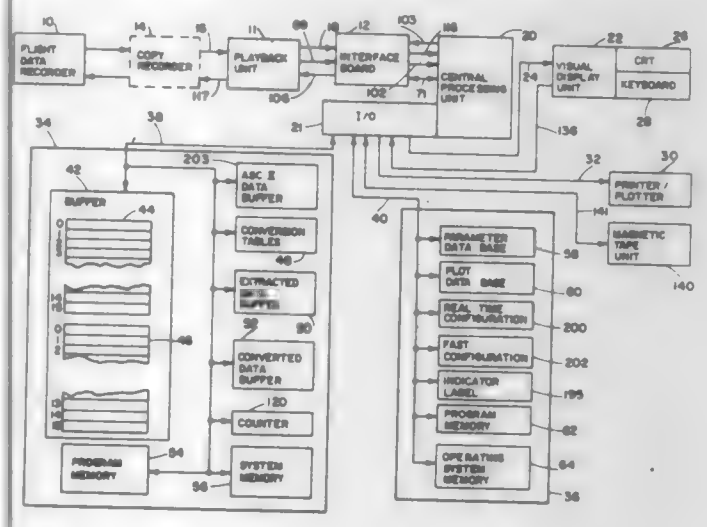
George Benn, Bellevue; Wendell Frost, Renton; Chris Knudsen, Federal Way, and David Nieuwsma, Renton, all of Wash., assignors to Sundstrand Data Control, Inc., Redmond, Wash.

Continuation-in-part of Ser. No. 401,206, Jul. 23, 1982, abandoned. This application Sep. 23, 1982, Ser. No. 421,743

Int. Cl.[4] G06F *15/20*

U.S. Cl. 364—900

50 Claims



1. A system for displaying flight data from an aircraft flight data recorder, comprising:

a data storage unit;

input means, operatively connected to a source of the flight data from the flight data recorder and to said data storage unit, for reformatting and storing the flight data in said data storage unit, said input means including a sync word detector circuit for detecting sync words in the flight data;

processor means, operatively connected to said input means and said data storage unit, for converting selected portions of said reformatted flight data into engineering units and storing said converted flight data in said storage unit; and

a video display unit including a keyboard operatively connected to said processor effective to cause said processor means to select said portion of said reformatted flight data for conversion into engineering units and to display said converted flight data in the form of cockpit instruments.

4,604,712

APPARATUS FOR CONTROLLING REPRODUCTION OF TEXT CHARACTERS WHOSE FORM DEPENDS ON ADJACENCY OF OTHER CHARACTERS

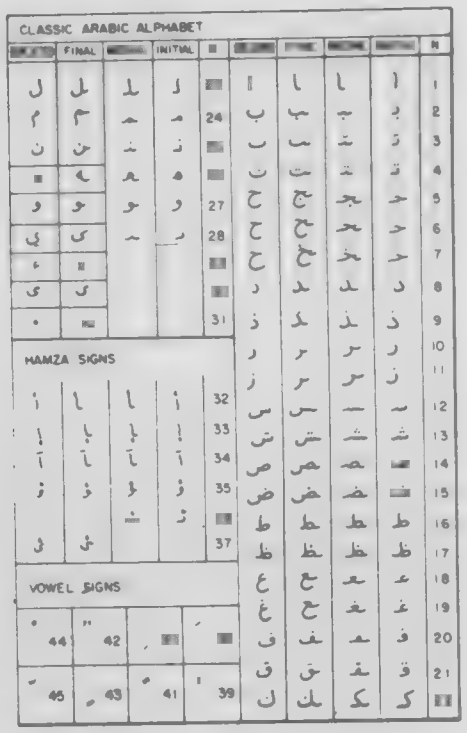
Hans Orrhammar, Grottaferrata, Italy, assignor to Agence Spatiale Europeenne, Paris, France

Filed Jan. 26, 1983, Ser. No. 461,032

Claims priority, application Belgium, Jan. 27, 1982, 01207149

Int. Cl.[4] G06F *3/14;* G06K *15/00;* B41J *5/00;* G09G *9/30*

U.S. Cl. 364—900 2 Claims



1. Digital apparatus for controlling the reproduction by a graphic device of characters forming the words of a text in a typescript including characters which have several possible graphic forms depending on the adjacency of other characters, the characters being received from an external source as sequences of character identification codes, said apparatus comprising:

a character generator including a character store having a base page section for storing codes identifying the base bodies of characters and at least one additional page section for storing codes identifying forms of the characters; and

a digital control device including:

first means for accepting and buffering the character identification codes from the external source,

second means for accepting the character identification codes from the external source to produce category signals for each character to be reproduced,

third means connected to receive the category signals from said second means for buffering the category signals of at least four successive characters,

fourth means responsive to the category signals buffered in said third means for producing a first control signal having a first state when the identification code of the character to be reproduced is stored in the base page section of the character store and a second state when the identification code of the character to be reproduced is stored in an additional page section of said character store, and also for producing at least one second control signal for the graphic device to enable the addition of supplementary signs to a character form read out from the character store, and

fifth means coupled to receive the character identification codes from the first means and said first control signal from the fourth means for producing a final character address code for the character store, thereby to select the character form to be reproduced.

4,604,713

TONE DETECTOR AND MULTIFREQUENCY RECEIVER USING SAID DETECTOR

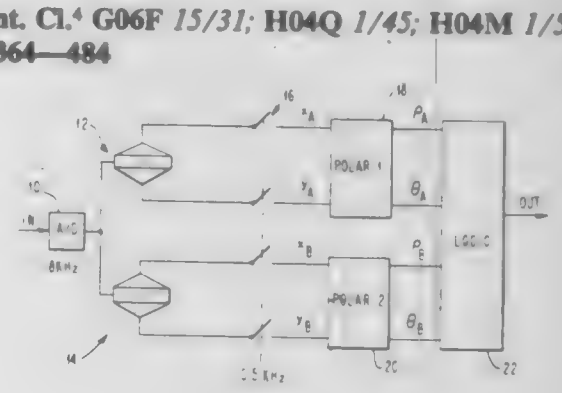
Dominique Godard, Le Rouret, and Emile Morlec, Saint-Paul, both of France, assignors to International Business Machines Corp., Armonk, N.Y.

Filed Jun. 13, 1983, Ser. No. 503,965

Claims priority, application European Pat. Off., Jun. 25, 1982, 82430017.2

Int. Cl.[4] G06F *15/31;* H04Q *1/45;* H04M *1/50*

U.S. Cl. 364—484 4 Claims



1. A method for detecting the reception of at least one pure tone frequency in a predetermined set of frequencies within a given frequency bandwidth, and for identifying said received tone frequency, said method including the steps of:

sampling and converting the received signal to a digital form;

bandpass filtering the converted digital signal within said predetermined bandwidth, and providing in-phase and quadrature components x,y of the filtered signal;

converting said x,y components into polar (phase, amplitude) components;

comparing successive values of the amplitude components over a given number of sampling periods for deriving an amplitude variation information therefrom;

computing successive phase variation values over equally spaced time intervals to derive a phase variation information therefrom;

detecting the reception of a pure tone by detecting that said amplitude and phase variations remain within predetermined respective limits; and,

identifying said detected pure tone by comparing said computed phase variation value with a set of predetermined frequency versus phase variation values for said predetermined set of frequency(ies).

4,604,714

STEAM OPTIMIZATION AND COGENERATION SYSTEM AND METHOD

Richard E. Putman, Penn Hills; Katherine A. Gundersen, Edgewood, and James C. Christenson, Glenshaw, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Nov. 8, 1983, Ser. No. 550,164

Int. Cl.[4] H02J *3/00*

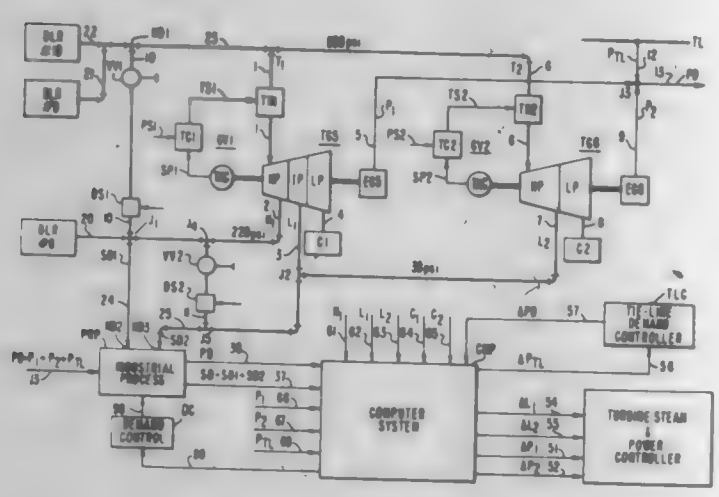
U.S. Cl. 364—494 3 Claims

1. In a cogeneration system including at least a first and a second turbogenerator unit, each supplied through throttle valve means with steam at a higher throttle pressure, for generating steam through extraction valve means at a lower extraction pressure and for exhausting steam to an associated condenser at a still lower exhaust pressure and under condenser constraints, while generating electrical power at an operating speed of the associated turbogenerator unit, said generated steam and electrical power being supplied to a plant together with electrical power derived from a tie-line, each of said turbogenerator units having a throttle flow input and a condenser flow output, at least one of said turbogenerator units having an extraction flow output, while generating output electrical power; the combination of:

first means responsive to a present steam demand of the plant for determining under said condenser constraints an opti-

mal steam flow output distribution between said exhaustion flow and condenser flow outputs from said turbogenerator units;

second means responsive to said optimal steam output distribution and to said plant power demand for providing a throttle flow input distribution for said turbogenerator units; and



control means responsive to said first and second means and operative on said extraction valve means and said throttle valve means for establishing said optimal steam flow output and throttle steam flow input distributions;

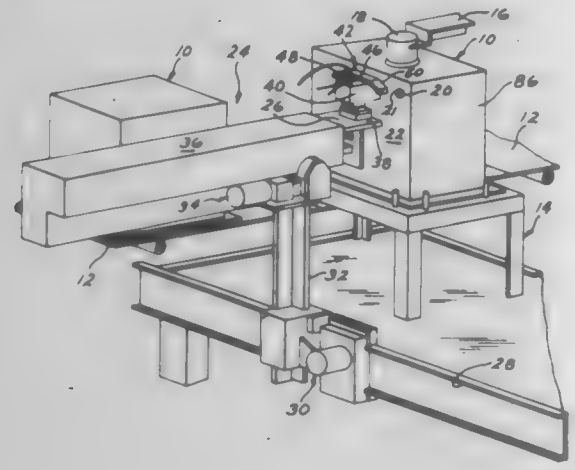
whereby said steam and power demands of the plant are optimally satisfied.

4,604,715

ROBOTIC INSPECTION SYSTEM

Roy T. Toutant, and Gerald J. Lozinski, both of Louisville, Ky., assignors to General Electric Company, Louisville, Ky.

Filed Oct. 19, 1984, Ser. No. 662,842
Int. Cl.[4] G06F *15/46*
U.S. Cl. 364—513 **8 Claims**



1. A method of inspecting and determining the status of a hole in the surface of a part comprising:

placing a robot at a stationary position, said robot being programmed by a controller and having a movable arm with a fiber optic scanner device capable of sensing a reflective surface,

placing the part to be inspected in a stationary fixture spaced from the robot,

moving the robot arm with the fiber optic scanner device to a point spaced from the part surface,

incrementally moving the robot arm with fiber optic scanner device closer to the part surface until light reflection from the part surface is detected by the fiber optic scanner device,

sending a signal to the robot controller upon detecting light reflection from the part surface to stop further incremental moving of the robot arm with optic scanner device closer to the part,

moving the robot arm with fiber optic scanner device in response to a signal from the robot controller parallel to the part surface to a predetermined position representing where the approximate hole location should be, and

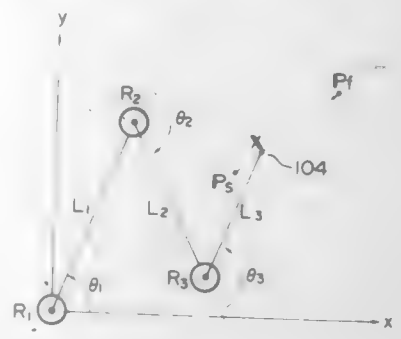
determining by reflectivity value the presence or absence of the hole and sending a corresponding signal to the robot controller.

4,604,716

METHOD AND APPARATUS FOR CONTROLLING A ROBOT

Kanji Kato, Tokorozawa; Junichi Higashino, Kokubunji, and Akisuke Naruse, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 7, 1983, Ser. No. 559,090
Claims priority, application Japan, Dec. 10, 1982, 57-215425
Int. Cl.[4] G09C *00/00*; G05B *11/32, 19/10*
U.S. Cl. 364—513 **14 Claims**



1. A method for controlling a multi-joint robot having redundant operable joints comprising the steps of:

(a) calculating joint velocities for non-redundant joints based upon no movement of the redundant joints, for each of at least a portion of combinations formed by selecting different combinations of the non-redundant joints from all operable joints, the joint velocities for the combinations of non-redundant joints being capable of moving an end of the robot at a command velocity specified to the robot in a predetermined spatial coordinate, by an inverse-coordinate-transformation from said spatial coordinate to a joint coordinate inherent to the robot in response to current joint angles detected by encoders mounted on each joint of the robot, an averaging or nearly averaging the joint velocities to obtain an average joint velocity or nearly average joint velocity as a desired joint velocity for the joints; and

(b) supplying the desired joint velocity to a velocity control unit of the robot as a controlled variable.

4,604,717

METHOD AND APPARATUS FOR MEASURING THE TIME DELAY BETWEEN SIGNALS

Albert Kaplan, Cherry Hill, N.J., assignor to RCA Corporation, Princeton, N.J.

Filed Feb. 18, 1983, Ser. No. 467,645
Int. Cl.[4] G06F *15/20*
U.S. Cl. 364—569 **21 Claims**

1. A signal processing system for measuring the time delay between first and second signals, said system comprising:

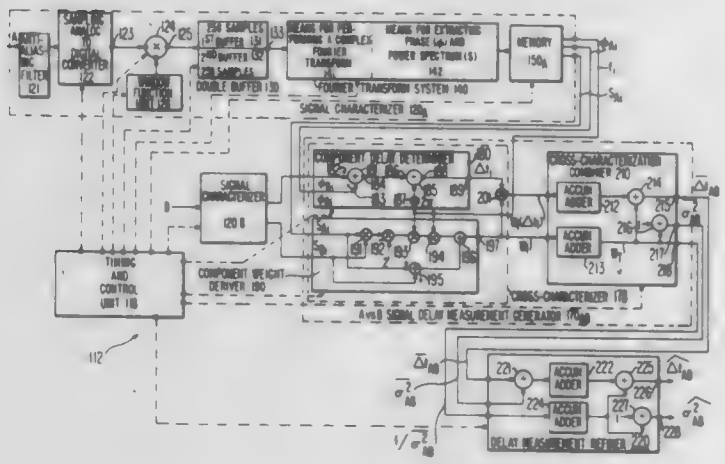
means for receiving said first and second signals; and

means for comparing said first signal to said second signal to determine the time delay of said second signal relative to said first signal comprising:

means responsive to said first and second signals for dissecting them individually into respective first and second sets of components, each component having a power level, and a primary frequency range, each component in said first set having a different primary frequency range and having a corresponding component in said second set having the same primary frequency range;

means responsive to said corresponding components of said first and second sets for generating a weighted time

delay of each component in said second set relative to its corresponding component in said first set; and



means for combining said weighted time delays to provide a measure of the time delay of said second signal relative to said first signal.

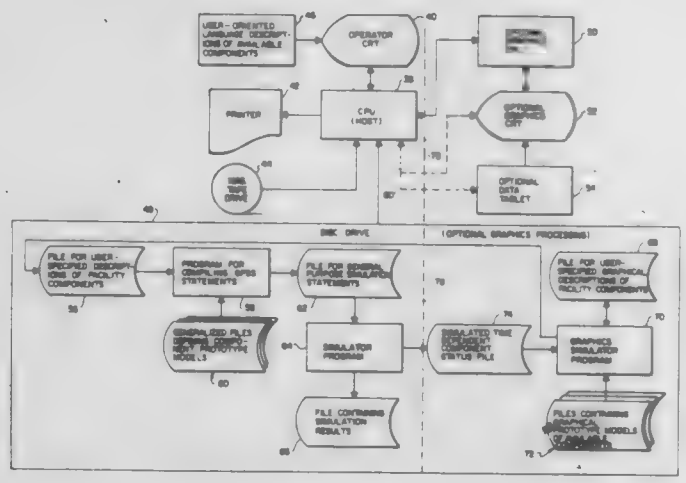
4,604,718

COMPUTER SIMULATION SYSTEM

Theodore A. Norman, Lindon, and Van B. Norman, Centerville, both of Utah, assignors to Simulated Designs, Ltd., Salt Lake City, Utah

Filed Apr. 25, 1983, Ser. No. 488,095
Int. Cl.[4] G06F *15/16, 15/62*
U.S. Cl. 364—578 14 Claims

MICROFICHE APPENDIX INCLUDED
(5 Microfiche, 281 Pages)



1. A computer system for simulating a user-specified automated manufacturing and/or materials handling (AM/MH) facility which includes as part of the facility a plurality of different types of computer-controlled components, said computer-controlled components being listed in a catalog means containing user-oriented language descriptions adapted for input by a system user to a CPU, and said system comprising:

a central processing unit (CPU);

first means, electronically connected to said CPU, for inputting to said CPU said descriptions for said computer-controlled components which are to be simulated by said system;

second means, electronically connected to said CPU, for outputting information from said CPU; and

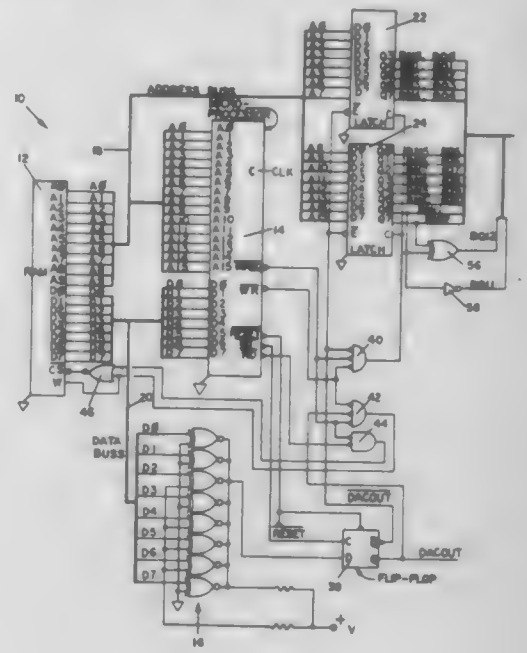
third means, electronically connected to said CPU, for controlling said CPU so as to generate at said second means a simulation which represents a working model of said user-specified AM/MH facility based on said component descriptions input to said CPU.

4,604,719

OSCILLATOR HAVING A SIXTEEN BIT SIGNAL GENERATION UTILIZING AN EIGHT BIT PROCESSOR

Gerald R. Stanley, Mishawaka, Ind., assignor to Crown International, Inc., Elkhart, Ind.

Filed Oct. 21, 1983, Ser. No. 544,280
Int. Cl.[4] G06F *1/02, 15/31;* G03B *19/00*
U.S. Cl. 364—721 5 Claims



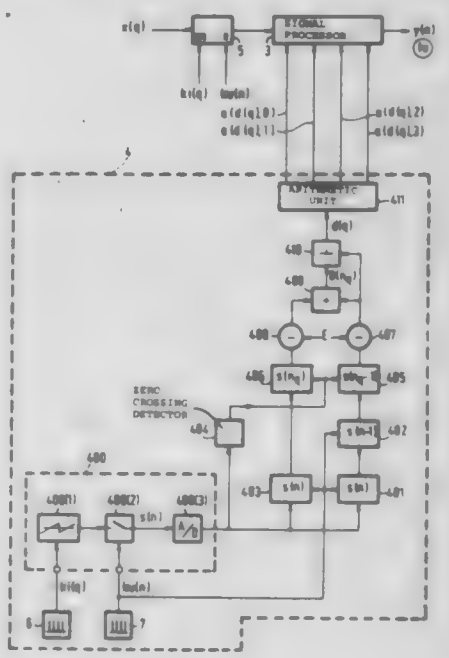
1. A signal generator comprising a processor having an eight bit data register and a sixteen bit address register, a memory device communicating with said processor through common address lines, digital to analog converter means, means for diverting signal data at said address register from said memory device to said converter means, said converter means for converting said signal data into an analog signal, means for converting said analog signal into a signal waveform.

4,604,720

INTERPOLATING FILTER ARRANGEMENT WITH NON-RATIONAL RATIO BETWEEN THE INPUT AND THE OUTPUT SAMPLING FREQUENCIES

Eduard F. Stikvoort, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 16, 1984, Ser. No. 590,096
Claims priority, application Netherlands, Jan. 10, 1984, 8400073
Int. Cl.[4] G06F *15/31*
U.S. Cl. 364—724 5 Claims



1. An interpolating time-discrete filter arrangement having a

non-rational interpolation factor R for converting a time-discrete input signal formed by a sequence of input samples x(q), $q=\ldots -2, -1, 0, 1, 2, 3, \ldots$ with which an input sampling frequency f_i is associated into a time-discrete output signal formed by a sequence of output samples y(n), $n=\ldots -2, -1, 0, 1, 2, 3, \ldots$ and with which an output sampling frequency f_u is associated which is R-times higher than the input sampling frequency f_i, comprising:

(a) first means for producing input clock pulses ki(q) occurring at the said input sampling frequency f_i;

(b) second means for producing output clock pulses ku(q) occurring at the output sampling frequency f_u;

(c) a filter coefficients generator for producing a group of W filter coefficients, the generator comprising:

(c1) means to which the input clock pulses and the output clock pulses are applied and which in response to each input clock pulse ki(q) supplies a deviation component d(q) whose magnitude is proportional to the relationship between the time interval $T_{d(q)}$ located between that input clock pulse ki(q) and the immediately subsequent or the immediately preceding output clock pulse and the time interval $T_u=1/f_u$ between two consecutive output clock pulses;

(c2) means for generating the group of W filter coefficients in response to the deviation component d(q) supplied, the filter coefficient having number w being equal to d(d(q),w) and being defined by the expression

$$d(d(q),w)=h(d(q)T_u+wT_u)$$

$$w=0, 1, 2, \ldots W-1$$

wherein h(v) represents the impulse response of a FIR filter, v is a continuous variable in the interval $-\infty<v<\infty$

(d) a signal processing arrangement for generating the output samples y(n) by multiplying input samples by selected filter coefficients and adding together the products thus obtained.

4,604,721

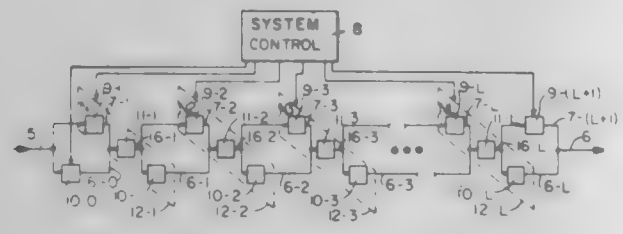
COMPUTER AND METHOD FOR HIGH SPEED PRIME FACTOR TRANSFORM

Joseph H. Gray, Berkeley, Calif., assignor to TRW Inc., Redondo Beach, Calif.

Continuation-in-part of Ser. No. 310,469, Oct. 13, 1981, abandoned. This application Feb. 27, 1985, Ser. No. 706,222

Int. Cl.[4] G06F *15/332*

U.S. Cl. 364—726 **15 Claims**



1. A computer for performing an N-length discrete Fourier transform of N initial data values, where the number N equals the product of a number L of mutually prime factors $N_1, N_2, \ldots N_i, N_i+1, \ldots N_L$, comprising:

(a) a set of one or more kernels;

(b) each kernel being adapted to perform a discrete Fourier transform characterized by a transform length equal to one or more of said prime factors N_i;

(c) wherein for each value of i in the range from 1 to L, said set of kernels includes a kernel adapted to perform a N_i-length transform;

(d) wherein each kernel includes:

first reorder means for receiving N input data values and reordering them into (N/N_i) groups, with each group consisting of N_i input data values x(n), $n=0, 1, 2, \ldots N_i-1$,

computational means for performing a sum and difference conjugate N_i-length discrete Fourier transform upon each of the (N/N_i) groups of N_i reordered input data values x(n), thereby producing (N/N_i) groups of N_i transformed data values X(k), for $k=0, 1, 2, \ldots N_i-1$, and

second reorder means for reordering the (N/N_i) groups of N_i transformed data values X(k) into N output data values, wherein N_i equals any of said transform lengths for which that kernel is adapted to perform a discrete Fourier transform;

(e) means for connecting said N initial data values to the kernel performing the N_1-length transform so that said initial data values are received as the N input data values of the N_1-length transform; and

(f) for each value of i in the range from 1 to L-1, means for connecting the N output data values produced by the kernel performing the N_i-length transform to the kernel performing the N_{i+1}-length transform so that said output data values are received as the N input data values of the N_{i+1}-length transform;

(g) whereby the N output data values produced by the kernel performing the N_L-length transform are the N-length discrete Fourier transform of the N initial data values.

4,604,722

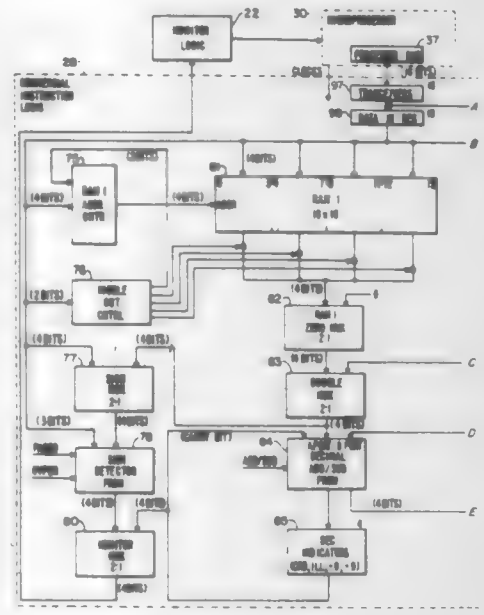
DECIMAL ARITHMETIC LOGIC UNIT FOR DOUBLING OR COMPLEMENTING DECIMAL OPERAND

Theodore R. Staplin, Jr., Chelmsford; John J. Bradley, Framingham, and Brian L. Stoffers, No. Billerica, all of Mass., assignors to Honeywell Information Systems Inc., Waltham, Mass.

Filed Sep. 30, 1983, Ser. No. 537,899

Int. Cl.[4] G06F *7/48*

U.S. Cl. 364—736 **3 Claims**



1. A decimal arithmetic logic unit comprising: an arithmetic processor having,

a first input port for receiving decimal operands,

a second input port for receiving decimal operands,

a carry-in port for receiving a carry out from a previous decimal arithmetic operation, and

an output port for providing a result decimal operand equal to the result of an arithmetic operation performed on decimal operands received at said first and said second input ports;

a first multiplexer having an output connected to said first input port, having a first input for receiving a first decimal operand, having a second input for receiving a second decimal operand, and having a select input for receiving a first select signal which determines if said first decimal operand or said second decimal operand is to be connected to the output of said first multiplexer, and

a second multiplexer having an output connected to said

second input port, having a first input for receiving said second decimal operand, having a second input for receiving a decimal zero operand, and having a select input for receiving a second select signal which determines if said second decimal operand or said decimal zero operand is to be connected to the output of said second multiplexer,

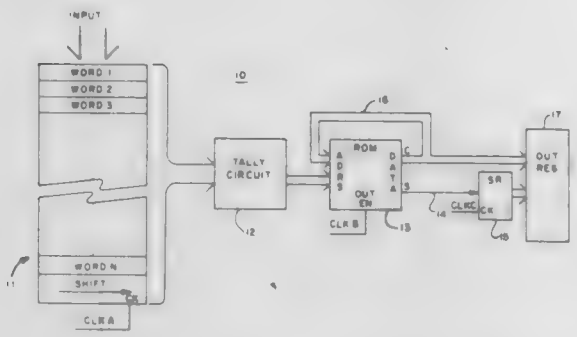
whereby said second operand may be applied via said first and said second multiplexers respectively to said first input port and to said second input port of said arithmetic processor so that said second operand may be added to itself when it is desired to convert said second operand in decimal format to binary format, and whereby either said first or said second decimal operands can be applied via said first multiplexer to said first input port of said arithmetic processor while said zero operand is connected via said second multiplexer to said second input port of said arithmetic processor so that they may be subtracted from said zero operand when it is desired to complement either said first or said second operand in decimal format.

4,604,723

BIT-SLICE ADDER CIRCUIT

James L. Burrows, Merrimack, N.H., assignor to Sanders Associates, Inc., Nashua, N.H.

Filed Oct. 17, 1983, Ser. No. 542,325
Int. Cl.[4] G05F *7/50*
U.S. Cl. 364—786 **3 Claims**



1. A bit slice adder for forming a sum of a plurality of words each comprising a plurality of binary digits comprising:

(A) input means for iteratively receiving one binary digit slice from all of the words in parallel,

(B) tally means for iteratively receiving the binary digit slice from the input means and for transmitting an output signal having a value corresponding to the number of binary ones in the binary digit slices from the input means; and

(C) memory means connected to receive the output signal from the tally means for generating an output signal and a carry signal, in response to each output signal from the tally means for the particular binary digit slice, the memory means including a plurality of address inputs, the address inputs comprising high-order address inputs and low-order address inputs, the output signal from the tally means being coupled to the low-order address inputs and the carry signal from the memory means being coupled to the high-order address inputs, the output signal from the tally means and the carry signal from the memory means being coupled to the memory means address inputs as address signals, and the memory means output signal being representative of the sum of the number identified by the tally means and the carry signal generated in response to a previous iteration,

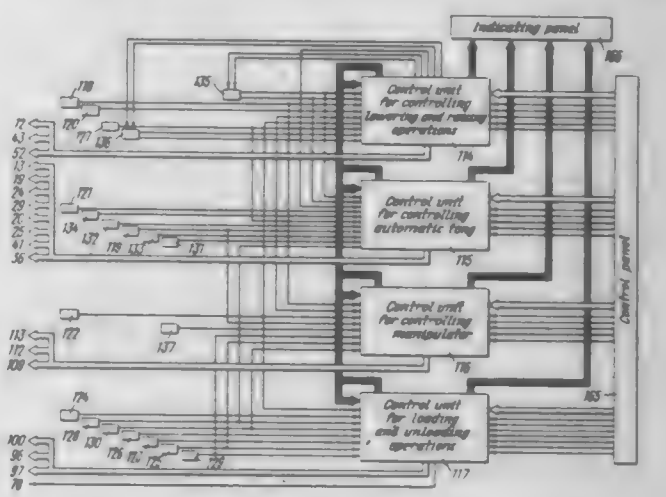
the memory means further comprising a plurality of storage locations each uniquely identified by the signals coupled to said address inputs, each storage location storing a value equal to the sum of the value corresponding to the low-order address inputs and the high-order address inputs which identify the location.

4,604,724

AUTOMATED APPARATUS FOR HANDLING ELONGATED WELL ELEMENTS SUCH AS PIPES

Albert S. Shaginian; Alexei G. Asan-Dzhalalov; Anatoly A. Pevnev; Alexandr P. Androsenko; Alexandr V. Suvorov; Boris V. Khalitov; Leonid N. Palkin, all of Gomel; Viktor V. Gnatchenko; Nikolai P. Makarov, both of Moscow; Valery A. Panteleev, Gomel; Nikolai I. Davidenko, Gomel; Stanislav K. Shpilevsky, Gomel; Alexandr S. Tikhonenko, Gomel, and Anatoly G. Romanovsky, Gomel, all of U.S.S.R., assignors to Gomelskoe Spetsialnoe Konstruktorsko-Tekhnologicheskoe Bjuro Seismicheskoi Tekhniki S Opytnym Proizvodstvom, Gomel, U.S.S.R.

Continuation of Ser. No. 468,844, Feb. 22, 1983, abandoned.
This application Oct. 4, 1985, Ser. No. 783,277
Int. Cl.[4] G06F *15/20*
U.S. Cl. 364—478 **2 Claims**



1. An automated apparatus for handling elongated well elements such as pipes, made up into a pipe string by means of screw joints, which comprises:

a first base;

a derrick mounted on said first base;

elevator means for suspending a pipe string mounted on said derrick and for vertical movement, said elevator means including gripping means and drive means for closing and opening said gripping means;

driving means to move said elevator means vertically for suspending a pipe string and mounted on said first base;

suspending means for suspending a pipe string immovably mounted above a well head and below said elevator means, said suspending means including gripping means and drive means for closing and opening said gripping means;

an automated tong for screwing and unscrewing a pipe string, said tong being mounted upon said first base between said elevator means and suspending means and for transverse movement relative to a pipe string and including drive means for rotating a pipe element;

a second base mounted adjacent but spaced from said first base;

manipulator means mounted on said second base for movement so that a pipe element clamped thereby can be aligned with a pipe string, said manipulator means including gripping means mounted for longitudinal movement relative to said manipulator means, drive means for closing and opening said gripping means, and drive means for longitudinal movement of said gripping means relative to said manipulator means;

a rack for storing string elements in a horizontal position and mounted on said second base, said rack including:

substantially vertical columns mounted on said second base;

shelves mounted on said columns and vertically spaced above one another;

drive means for moving said shelves;

transfer means for transferring a string element from said

rack into said manipulator means and back, said transfer means mounted on said second base and comprising:

at least one boom mounted on said second base for pivoting movement in a vertical plane;

gripping means mounted on said boom for holding a string element;

drive means for closing said gripping means;

drive means to pivotally move said boom;

control means including:

a plurality of electronically controlled actuator means for actuating said transfer means, said drive means to pivotally move said boom, and said drive means for closing and opening said gripping means of said manipulator means, of said automatic tong, of said elevator means and suspending means for suspending a pipe string, and of said transfer means for transferring well elements;

position sensing means mounted on said transfer means for sensing the position of said boom and for providing one of two signals: "approached" corresponding to the position of said boom as it approaches the manipulator means or "withdrawn" corresponding to stopping said boom in a preset position for transferring a string element to said manipulator means and gripping a string element by said manipulator means;

position sensing means mounted on said shelves for sensing positions of said shelves of said rack and for providing one of two signals: "approached" corresponding to the position of the shelves for loading string elements, or "withdrawn" corresponding to moving said shelves away from said loading position and to stopping said shelves in a preset position;

control means comprising at least one programmed logical control means connected with said actuating means of said plurality of electrically controlled actuating means and wherein said programmed logical control means further comprises:

an instruction coding means for specifying a sequence of instructions to be sent to respective control means in accordance with a preset sequence of operation;

a timer for generating a signal at the end of a time preset by a code of instructions produced by said instruction coding means;

a recycle counter electrically connected with said timer of said programmed logical control means to generate a signal upon receiving an output signal from said programmed logical control means indicative of the termination of a preset time from the moment of the generation of an instruction for switching on of said drive means for rotating said automatic tong;

a control signal conditioner electrically connected with said timer, with said instruction coding means of said programmed logical control means, and with said recycle counter to generate and send to said programmed logical control means, in an amount preset by said recycle counter, instructions for reversing and for restarting said instruction coding means in the original counting direction;

a string element counter electrically connected with said instruction coding means of said programmed logical control means for generating a signal at the moment when the number of string elements taken from a desired shelf of said rack or stored on said shelf reaches a preset amount defined by the capacity of said shelf; and

counting means for counting said shelves of said rack and electrically connected with said counter for string elements and for supplying to a respective corresponding drive means an instruction to move a required one of said shelves into the position for loading and to withdraw it from said position for loading, and for switching off said programmed logical control means at the moment when all said shelves of said rack are fully loaded and at the moment when all said shelves of said rack are empty.

4,604,725

ROTARY APPARATUS HAVING CODE TRACK WITH PSEUDO-RANDOM BINARY DIGIT SEQUENCE FOR INDICATING ROTATIONAL POSITION

George G. Davies; Stuart M. McGlade, and Peter L. Dunn, all of Chelmsford, England, assignors to The Marconi Company Limited, Stanmore, England

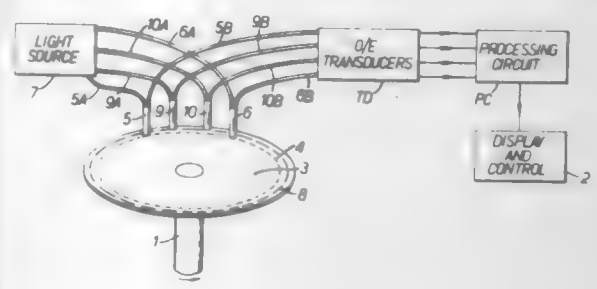
Filed May 17, 1983, Ser. No. 495,389

Claims priority, application United Kingdom, May 18, 1982, 8214452

Int. Cl.[4] G06F *15/20, 7/58*

U.S. Cl. 364—900

5 Claims



1. Apparatus for indicating the position of a rotatable member, comprising:

a rotatable member;

a code track disposed on said rotatable member and defining a pseudo-random sequence of binary digits consisting of ones and noughts and extending continuously around said rotatable member, the pseudo-random sequence including a given number of n consecutive noughts, and the digits of the sequence being arranged so that each group of n adjacent digits is different from each other group of n adjacent digits in the pseudo-random sequence; and

reading means operatively positioned relative to said code track for reading n consecutive digits of the pseudo-random sequence, each n consecutive digits of the pseudo-random sequence defining a position of said member.

4,604,726

SORTING APPARATUS

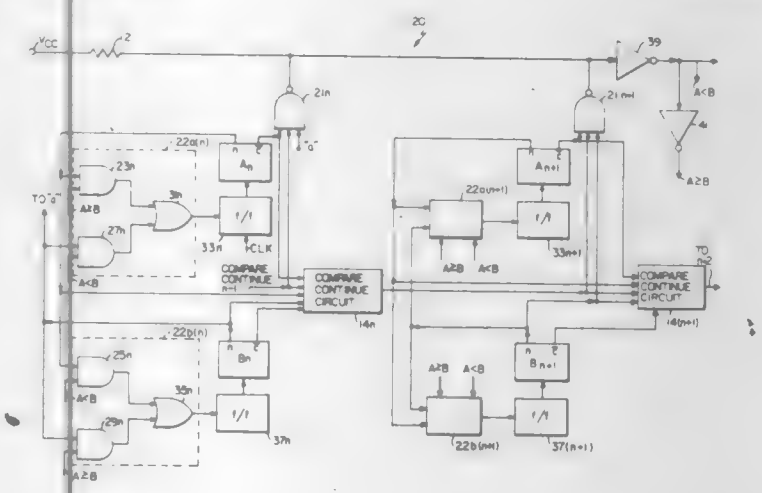
John Terzian, Winchester, Mass., assignor to Raytheon Company, Lexington, Mass.

Filed Apr. 18, 1983, Ser. No. 485,809

Int. Cl.[4] G06F *7/24*

U.S. Cl. 364—900

3 Claims



1. In a digital computer wherein a randomly arranged set of n digital numbers is to be converted to a set of n digital numbers, where n is greater than two, in and ordered sequence after (2n − 1) clock pulses, the improvement comprising:

(a) n registers for storing n digital numbers, the digital numbers initially stored in such registers being randomly arranged;

(b) comparator means, switchably disposed between adjacent first pairs of registers upon the occurrence of odd

numbered ones of the (2n−1) clock pulses, for testing the digital numbers initially stored in each such first pair of registers to determine whether or not the digital numbers stored in each first pair are in the ordered sequence and to produce first control signals indicative of the result of comparison of the digital numbers;

(c) transfer means, responsive to first control signals indicating that the digital numbers stored in any first pair of registers are not in the ordered sequence, for then interchanging the digital numbers in any such first pair; and

(d) means, responsive upon occurrence of even numbered ones of the (2n−1) clock pulses, for switching each comparator means to a second pair of adjacent registers, each one of such second pair including one of the registers in a corresponding first pair and not the first or the last ones of the registers, to produce second control signals for the transfer means whereby, after the occurrence of, at the most, (2n−1) clock pulses, the digital numbers stored in the registers are in the ordered sequence.

4,604,727

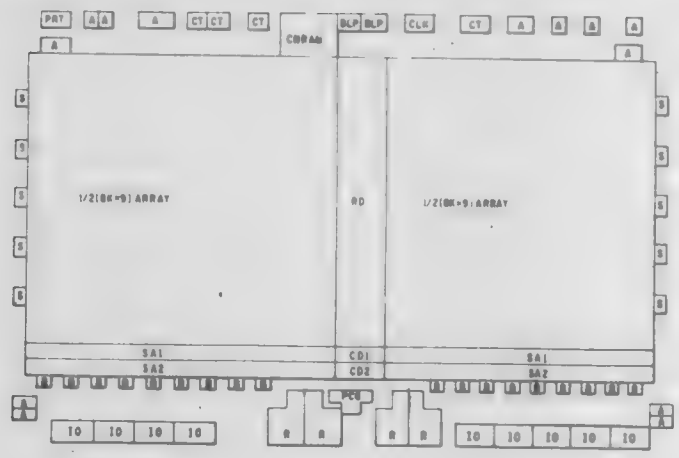
MEMORY WITH CONFIGURATION RAM

Ashwin H. Shah, Dallas; Pallab K. Chatterjee, Richardson; James D. Gallia, and Shivaling S. Mahant-Shetti, both of Dallas, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Aug. 31, 1983, Ser. No. 528,303

Int. Cl.[4] G11C *7/00*

U.S. Cl. 365—189 **7 Claims**



1. An integrated circuit memory comprising:

(a) an array of memory cells;

(b) output means for reading out one or more selected cells from said array of memory cells;

(c) programmable peripheral circuits, said programmable peripheral circuits comprising means for controlling the operation of said output means to effect a predetermined memory control logic function; and

(d) a configuration RAM connected to at least one of said programmable peripheral circuits for controlling the operations thereof;

(e) said configuration RAM comprising both constant-value output means connected to selected ones of said programmable peripheral circuits and differential analog output means.

4,604,728

SEMICONDUCTOR MEMORY DEVICE

Yoshinori Okajima, Yokohama, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Jul. 1, 1983, Ser. No. 510,349

Claims priority, application Japan, Jul. 2, 1982, 57-116055; Dec. 29, 1982, 57-233779

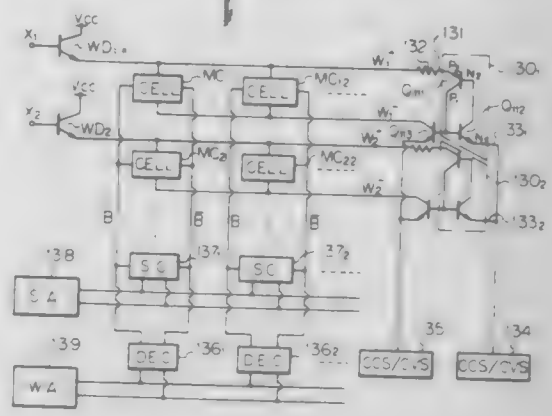
Int. Cl.[4] G11C *7/00*

U.S. Cl. 365—189 **15 Claims**

1. A semiconductor memory device including pairs of word lines, and a first constant current source or a first constant voltage source, comprising:

a plurality of static-type memory cells, respectively connected to the pairs of word lines, each of the pairs of word lines including a word line having a high potential and a word line having a low potential; and

a plurality of word-line discharging circuits, each of said



word line discharging circuits being connected to a respective one of the pairs of word lines, and comprising:

a voltage level shifter operatively connected to the word lines having the high potential; and

a thyristor having an anode operatively connected to said voltage level shifter and having a cathode operatively connected to the first constant-current source or the first constant-voltage source.

4,604,729

STATIC-TYPE SEMICONDUCTOR MEMORY DEVICE

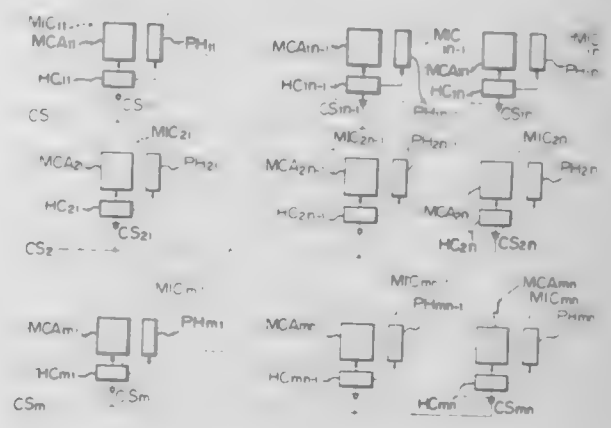
Masayoshi Kimoto, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Apr. 5, 1983, Ser. No. 482,301

Claims priority, application Japan, Apr. 12, 1982, 57-59763

Int. Cl.[4] G11C *11/40*

U.S. Cl. 365—190 **17 Claims**



1. A static-type semiconductor memory device comprising:

a plurality of memory blocks, arranged in rows and columns to form a matrix, having selected and unselected states, any one row of the memory blocks being selected to carry out a reading or writing operation in the selected memory blocks, each of said memory blocks comprising:

a memory cell array including memory cells;

a peripheral circuit operatively connected to said memory cell array, said peripheral circuit comprising:

a holding current supplying circuit, operatively connected to said memory cell array, for supplying a holding current for holding data stored in said memory cells;

bit lines operatively connected to said memory cells;

a first current-source circuit, operatively connected to said bit lines, for supplying currents to said bit lines;

a sense amplifier circuit, operatively connected to said bit lines, for detecting potential differences between said bit lines; and

a second current-source circuit, operatively connected to said sense amplifier circuit, for supplying currents, other than those supplied by said first current-source circuit, to said sense amplifier circuit; and

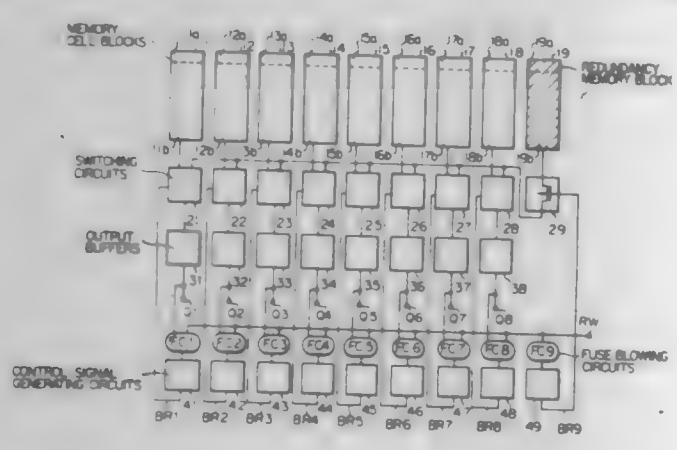
a holding-current controlling circuit, operatively connected to said peripheral circuit and said holding-current supplying circuit, for controlling said holding-current supplying circuit such that the holding-current supplied to an unselected-state memory block is greater than the holding-current supplied to a selected-state memory block, and such that the currents supplied from said first current-source circuit to said bit lines and the currents supplied from said second current-source circuit to said sense amplifier, assoicated with an unselected-state memory block, are smaller than the currents supplied from said first current-source circuit to said bit lines and the currents supplied from said second current-source circuit to said sense amplifier, associated with the selected-state memory block.

4,604,730

SEMICONDUCTOR MEMORY DEVICE

Masanobu Yoshida, Kawaguchi, and Kiyoshi Itano, Kawasaki, both of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Feb. 8, 1984, Ser. No. 578,000
Claims priority, application Japan, Feb. 8, 1983, 58-18027
Int. Cl.[4] G11C *7/00*
U.S. Cl. 365—200
11 Claims



1. A semiconductor memory device comprising:

a plurality of output terminals for respectively outputting a plurality of output bit data;

a plurality of memory cell blocks, respectively, operatively connected to said output terminals and each having a first specific area for storing first predetermined data and each having a first memory data area for storing first data;

a redundancy memory cell block, operatively connected to said plurality of memory cells, for replacing a faulty memory cell block among said plurality of memory cell blocks, having a second specific area for storing second predetermined data comprising a plurality of bits, and having a second memory data area for storing second data, said first predetermined data being equal to a divided one of said second predetermined data in a one to one correspondence, said second specific area in said redundancy memory cell block being divided into a plurality of sub-blocks, each of said sub-blocks storing a divided one of said second predetermined data, and each of said second sub-blocks corresponding to one of said plurality of memory cell blocks; and

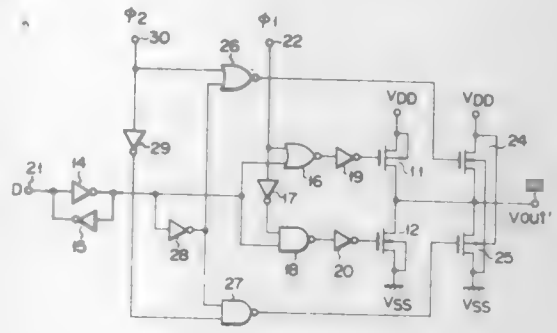
means, operatively connected to said plurality of memory cell blocks, for selectively reading, when said first memory data area in one of said memory cell blocks is replaced by said second memory data areas in said redundancy memory cell block, a divided one of said second predetermined data corresponding to said first predetermined data stored in said one of said memory cell blocks to be replaced by said redundancy memory cell block.

4,604,731

OUTPUT CIRCUIT FOR A SEMICONDUCTOR MEMORY DEVICE

Satoshi Konishi, Tokyo, Japan, assignor to Shibaura Denki Kabushiki Kaisha, Japan

Filed Sep. 2, 1983, Ser. No. 528,790
Claims priority, application Japan, Sep. 3, 1982, 57-153412
Int. Cl.[4] G11C *7/00*; H03K *19/092*
U.S. Cl. 365—203
17 Claims



1. An output circuit for a semiconductor memory device, comprising:

first and second potential supply terminals;

a data signal input terminal for receiving a data signal read out of a memory cell;

a control signal input terminal for receiving a control signal;

a signal output terminal;

a first transistor connected between the first potential supply terminal and the signal output terminal;

a second transistor connected between the second potential supply terminal and the signal output terminal;

a preset circuit including of a third transistor connected between the signal output terminal and the first potential supply terminal and a fourth transistor connected between the signal output terminal and the second potential supply terminal;

a control circuit for controlling the first and second transistors according to the data signal input to the data signal input terminal and the control signal input to the control signal input terminal; and

preset circuit control means for presetting the third and fourth transistors during a preparative period for read preceding the data readout from the memory cell, to set a potential on the signal output terminal to a potential between a potential of the first potential supply source and that of the second potential supply source.

4,604,732

POWER SUPPLY DEPENDENT VOLTAGE REFERENCE CIRCUIT

Hiep van Tran, Carrollton, Tex., assignor to Thomson Components-Mostek Corporation, Carrollton, Tex.

Filed May 29, 1984, Ser. No. 614,619
Int. Cl.[4] G11C *13/00*
U.S. Cl. 365—207
8 Claims

1. A circuit for sensing a voltage state comprising:

a conditioning circuit responsive to an applied input data voltage for generating a conditioned data voltage on a conditioned input node;

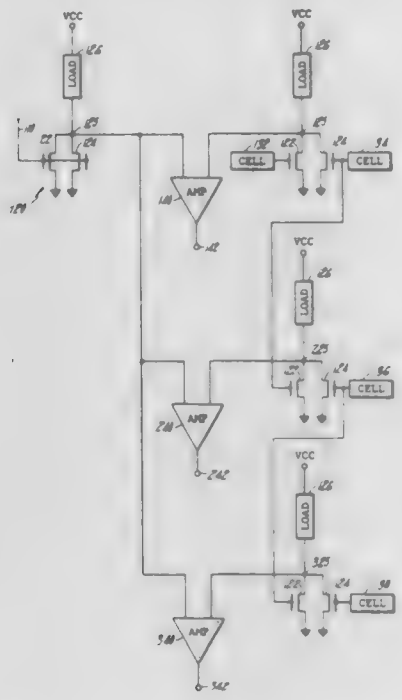
a voltage reference circuit for generating a reference voltage on a reference node; and

sensing means for comparing said conditioned data voltage and said reference voltage;

in which said voltage reference circuit comprises means for supplying current to a reference node and first and second reference transistors connected in parallel between said reference node and a second node, each of which first and second reference transistors has a gate controlled by first and second dummy memory cells having predetermined stored data, whereby the voltage of said reference node and the impedance of said first and second reference tran-

sistors between said reference node and said second node is dependent on said stored data;

in which said conditioning circuit comprises means for supplying current to a conditioned input node and a pair of corresponding first and second transistors, each of which is matched to one of said first and second reference transis-

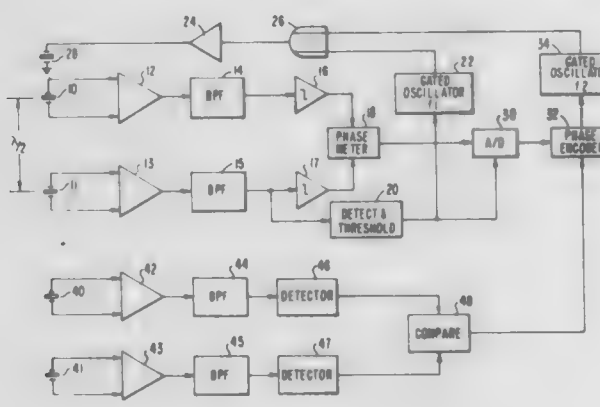


tors, which pair of corresponding transistors are connected in parallel between said conditioned input node and ground and both of which corresponding transistors have their gates connected to an input node, whereby an applied input data voltage produces a corresponding conditioned data voltage on said conditoned input node.

4,604,733
APPARATUS FOR DETERMINING RANGE AND BEARING

Billy F. Brown, Arnold, and Kenneth J. Petrosky, Glen Burnie, both of Md., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jan. 3, 1984, Ser. No. 567,592
Int. Cl.[4] G01S *15/42, 15/74*
U.S. Cl. 367—2 **13 Claims**



1. Apparatus for determination of range and bearing, comprising:

(a) first means, for operation at a first location, for transmitting an acoustic interrogating signal;

(b) second means, for operation at a second location, responsive to said interrogating signal to, in turn,

(i) transmit a first response signal upon receipt of said interrogating signal, and

(ii) transmit a second response signal at a time after transmission of said first response signal, where said time is a function of the bearing between said first and second locations;

(c)

(i) said first means including means for generating range and bearing information in response to receipt of said first and second response signals;

(d) said second means including

(i) first and second hydrophones spaced apart by a distance of approximately $\lambda/2$, where λ is the wavelength of said interrogating signal, and each operable to provide an output signal in response to impingement of said interrogating signal;

(ii) a phase meter responsive to said hydrophone output signals and operable to provide an output signal indicative of the phase difference between them, said phase difference being related to the direction of impingement of said interrogating signal;

(iii) means for translating said phase meter output signal to a corresponding time delay;

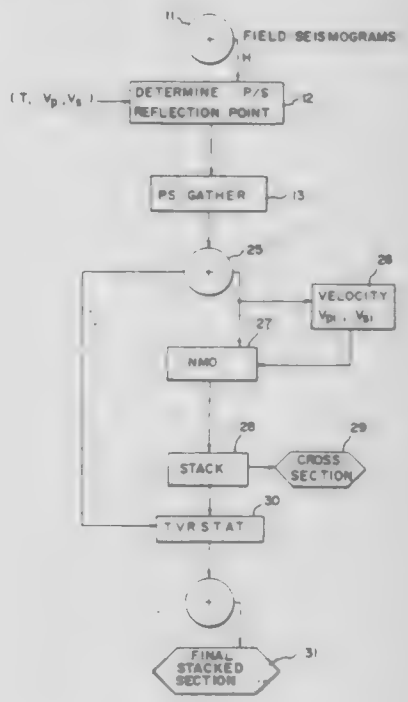
(iv) means for generating said first response signal in response to said impingement of said interrogating signal; and

(v) means for generating said second response signal after said time delay.

4,604,734
SEISMIC EXPLORATION IN AREAS WHERE P WAVES ARE CONVERTED TO S WAVES

William H. Ruehle, Duncanville, Tex., assignor to Mobil Oil Corporation, New York, N.Y.

Continuation of Ser. No. 220,889, Dec. 29, 1980, abandoned.
This application Jun. 6, 1983, Ser. No. 501,338
Int. Cl.[4] G01V *1/34, 1/28*
U.S. Cl. 367—63 **4 Claims**



1. A method of enhancing seismic sections of areas containing subsurface formations which generate shear wave reflections from longitudinal wave excitation, comprising:

generating seismic energy and detecting reflections of said energy with a plurality of offsets between the source and detector to produce a plurality of field seismograms, which include reflections from asymmetrical, common reflection points where there is a conversion between longitudinal and shear waves;

determining the velocity of said energy in the earth formations to said asymmetrical common reflection points;

determining the asymetrical reflection point for the field seismograms from the velocity determined in the preceding step and from the course to detector offset for the seismogram;

gathering said field seisomograms into sets having reflections from said asymmetrical common reflection points;

determining the velocity of said energy in said earth formations from said gathered sets of field seismograms;

normal moveout correcting said gathered sets of field seismograms using the velocity determinations from said preceeding steps.

enhancing said gathered sets of seismograms to correct for non-surface consistent static time shifts; and

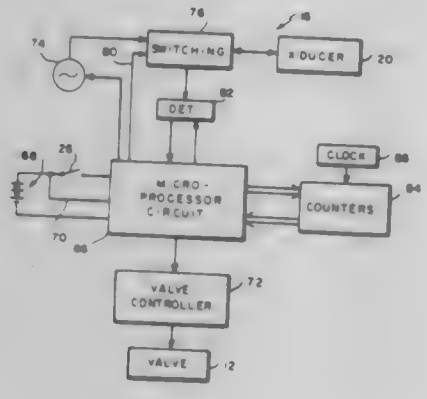
stacking said sets to produce a seismic section which emphasizes the reflections from said asymmetrical reflection points at which there is a conversion between longitudinal waves and shear waves.

4,604,735

ULTRASONIC MOTION DETECTION SYSTEM

Natan E. Parsons, Cambridge, Mass., assignor to Recurrent Solutions, Inc., Cambridge, Mass.

Division of Ser. No. 535,213, Sep. 23, 1983, Pat. No. 4,520,516.
This application Jan. 24, 1985, Ser. No. 694,611
The portion of the term of this patent subsequent to Jun. 4, 2002, has been disclaimed.
Int. Cl.⁴ G08B *21/00*
U.S. Cl. 367—93
3 Claims



1. An ultrasonic motion-detection system comprising:

A. ultrasonic means for transmitting ultrasound into a target region and detecting ultrasound reflected from objects in the target region;

B. a control circuit, electrically connected for application of drive signals to and reception of echo signals from the ultrasound means, for operating the ultrasound means to transmit ultrasound into the target region, measuring the time between ultrasound transmission and the reception of echo signals, comparing the measurement for each transmission with the measurement of the previous transmission, and providing an indication of object motion if successive measurements of time between ultrasound transmission and the reception of ultrasound echo signals differ.

4,604,736

DIGITAL DEVICE FOR THE FORMATION OF SONAR CHANNELS

Alain Demeure, Meudon, France, assignor to Thomson CSF, Paris, France

Filed Oct. 21, 1983, Ser. No. 544,412
Claims priority, application France, Oct. 22, 1982, 82 17742
Int. Cl.⁴ G01S *3/82*
U.S. Cl. 367—123
15 Claims

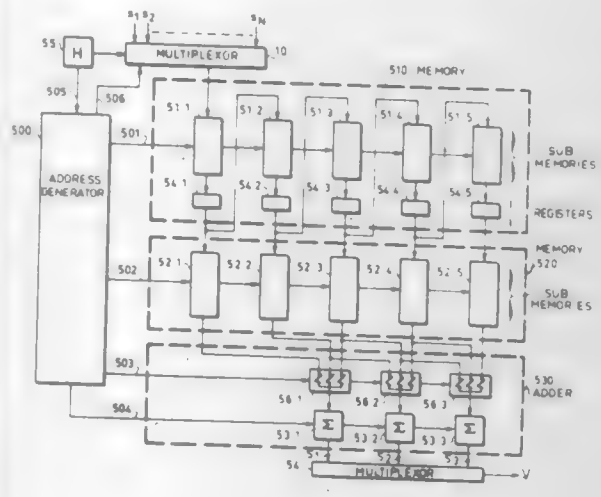
1. A digital device for forming of spatial channels for a sonar having an acoustic transducer array comprising N sensor which deliver N sensor signals, said device comprising:

means for sampling and time multiplexing in series the N sensor signals;

storage means, having a plurality of memory blocks, for sequentially storing the samples of the N sensor signals;

addressing means for supplying a series of reading addresses to the memory blocks, all the memory blocks receiving the same address at the same time;

summing means, coupled to said memory blocks, for calculating in parallel, Q values for each spatial channel, each value being calculated as a function of a series of samples of the N sensor signals, each series of samples being read respectively in the memory blocks at the series of addresses supplied by the addressing means; and



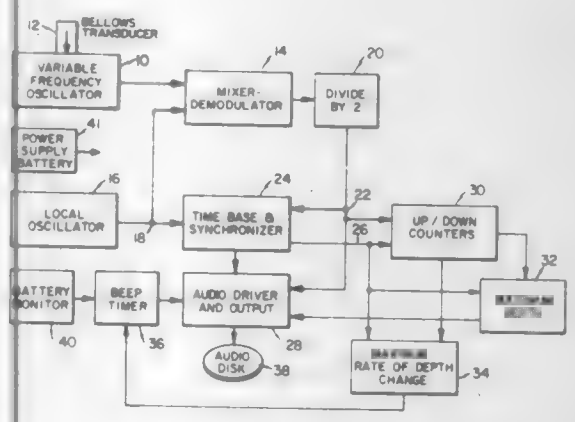
means for storing the Q values calculated in parallel for each channel and restoring them in a series constituting signal values of a spatial channel of the sonar.

4,604,737

ELECTRONIC DIVING APPARATUS

Gordon B. Hoffman, Colorado Springs, Colo., assignor to Hoffman & Goode, Richardson, Tex.

Filed Jul. 15, 1983, Ser. No. 514,317
Int. Cl.⁴ G06F *15/42*; H04B *11/00*
U.S. Cl. 367—134
14 Claims



1. An electronic diving apparatus for producing indication sounds to assist a diver carrying the apparatus, comprising:

means for sensing ambient pressure in a body of water;

means responsive to said means for sensing for generating a depth signal having a frequency related to said ambient pressure;

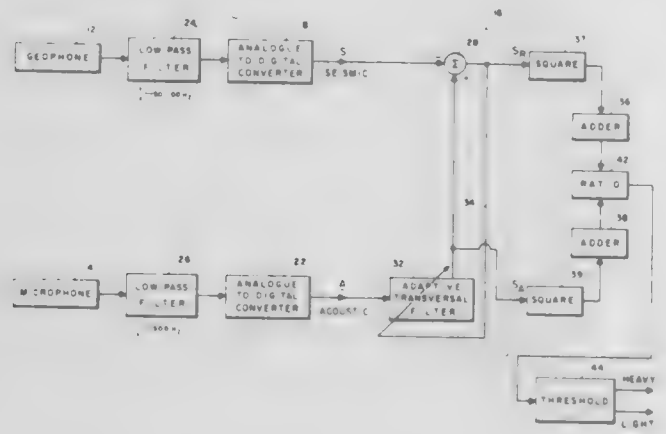
timing means for gating said depth signal to produce periodic audio signal pulses separated by intervals of silence having a greater time duration than said pulses; and

transducer means for receiving said gated depth signal and producing a corresponding sound in said body of water for indicating the depth of said apparatus within said body of water.

4,604,738
METHOD AND APPARATUS FOR CLASSIFICATION OF A MOVING TERRESTRIAL VEHICLE AS LIGHT OR HEAVY

Raj Aggarwal, Wayzata, and Bindinganavle R. Suresh, New Brighton, both of Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Feb. 22, 1982, Ser. No. 350,926
Int. Cl.[4] G01V *1/28*
U.S. Cl. 367—135 **2 Claims**



2. A system for classifying a terrestrial moving object as either heavy or light, comprising in combination:

means for detecting a seismic signal generated by said object;

means for detecting an acoustic signal generated by said object;

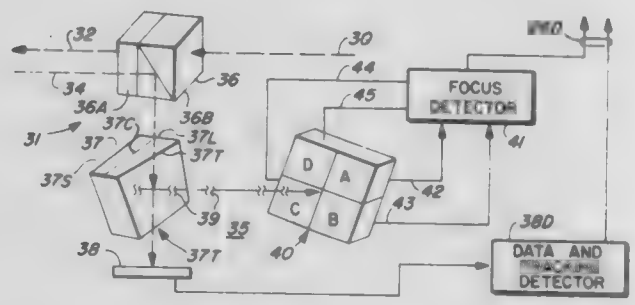
means responsive to said seismic signal and said acoustic signal for separating said seismic signal into a signal component which is a function of the Rayleigh component of the seismic signal and a signal component which is a function of the acoustically coupled component of the seismic signal; and

means responsive to the relative magnitudes of said Rayleigh and acoustically coupled seismic component signals for classifying said terrestrial moving object as either heavy or relatively light.

4,604,739
OPTICAL FOCUS DETECTION EMPLOYING ROTATED INTERFERENCE PATTERNS

Donald K. Cohen, Tucson, Ariz., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 16, 1984, Ser. No. 600,863
Int. Cl.[4] G11B *7/09*
U.S. Cl. 369—45 **10 Claims**



8. An optical device having a collimated light source for emitting a beam of light; a member capable of reflecting the emitted beam of light but with predetermined focus indicating changes; a lense system for transmitting said emitted beam of light to said member and for transmitting said reflected beam of light;

the improvement including an improved focus detector comprising:

a beam splitter disposed in said lense system for passing said emitted light and blocking said reflected beam of light from passing but deflecting said reflected beam of light in a direction away from said lense system;

a pattern generating optical member disposed adjacent to said beam splitter for intercepting said deflected light beam to rotatably generate a light interference pattern having a rotational orientation in accordance with and indicating said predetermined focus indicating changes;

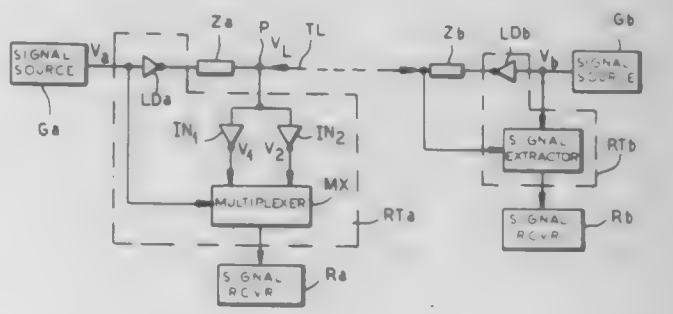
a quadrant detector disposed adjacent to pattern generating optical member for intercepting said light interference patterns, quadrant detector having four quadrant light detectors disposed in a rectangular array so as to intercept said quadrant detectors being arranged into two pairs of diagonal detectors; and

circuit means connected to said four quadrant detectors for effectively additively combining signals from the quadrant detectors in said pairs of diagonal detectors and subtractively combining the sums for indicating focus when the sums are equal and nonfocus when the sums are not equal.

4,604,740
DIGITAL TRANSCEIVER FOR FULL-DUPLEX TRANSMISSION OF BINARY SIGNALS OVER A COMMON LINE

Marco Gandini, and Mario Sartori, both of Turin, Italy, assignors to Cselt - Centro Studi e Laboratori Telecomunicazioni S.p.A., Turin, Italy

Filed Mar. 2, 1984, Ser. No. 585,567
Claims priority, application Italy, Mar. 4, 1983, 67245 A/83
Int. Cl.[4] H04L *5/14*
U.S. Cl. 370—27 **8 Claims**



1. A full-digital circuit arrangement connected with a local source of outgoing binary signals for the detection of incoming binary signals from a remote source communicating with said local source by way of a single tapped transmission line, said binary signals alternating between a low voltage level and a high voltage level, said circuit arrangement comprising:

a line driver and a terminating impedance connected in series between the local source and the tap of the transmission line, the impedance reducing the voltage of the signal of the line driver, whereby the voltage at the tap is proportional to the sum of the voltages of concurrent incoming and outgoing signals;

first and second logic-element voltage sensors with respective inputs connected in parallel to the tap of said transmission line, said first voltage sensor having a threshold lying at a lower intermediate level between said low voltage level and a median level of said high and low voltage levels, said second voltage sensor having a respective second threshold lying at a higher intermediate level between said median and high voltage levels;

a local signal receiver having an input; and

switch means controlled by said local source for selectively connecting the input of the local signal receiver only to the first voltage sensor when the signal of the local source is at the low voltage level and for connecting the input of the local signal receiver only to the second voltage sensor when the signal of the local source is at the high voltage level and for thereby supplying said signal receiver at all instants with an output signal from the respective voltage

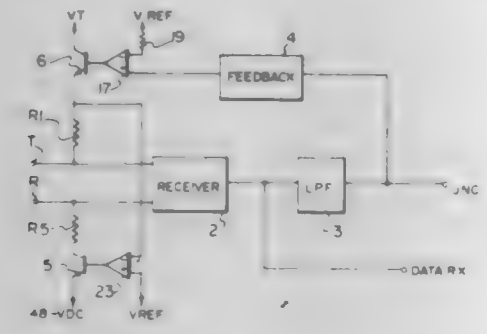
sensor varying in conformity with the voltage level of an incoming binary signal.

4,604,741

VOICE AND DATA INTERFACE CIRCUIT

John A. Barsellotti, Kanata, Canada, assignor to Mitel Corporation, Ontario, Canada

Filed May 17, 1984, Ser. No. 611,515
Claims priority, application Canada, Sep. 30, 1983, 438,169
Int. Cl.[4] H04J *1/12;* H03H *7/38*
U.S. Cl. 370—69.1
16 Claims



1. An interface circuit comprising:

(a) means for receiving a first and a second signal having two different frequencies from a line, the line having a first nominal line impedance to the first signal and a second nominal line impedance to the second signal which is less than the first nominal line impedance, said receiving means having an input impedance intermediate said first and second line impedances, and

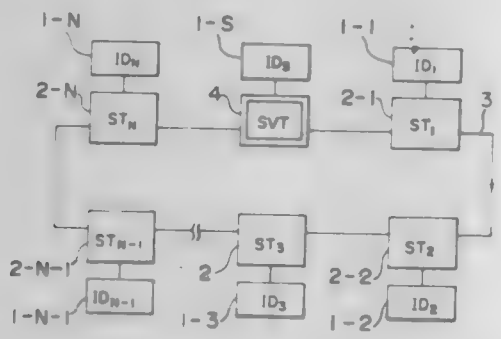
(b) means for applying a representation of the first signal in aiding phase with the first signal and a representation of the second signal in opposing phase to the second signal, to the line whereby the input impedance is raised to at least approximately match the first nominal line impedance with respect to the first signal and lowered to at least approximately match the second nominal line impedance with respect to the second signal.

4,604,742

LOOP TYPE DATA TRANSMISSION SYSTEM

Takuji Hamada; Masahiro Takahashi, both of Hitachi, and Sadao Mizokawa, Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 11, 1984, Ser. No. 599,165
Claims priority, application Japan, Apr. 11, 1983, 58-62295
Int. Cl.[4] H04J *3/16*
U.S. Cl. 370—89
4 Claims



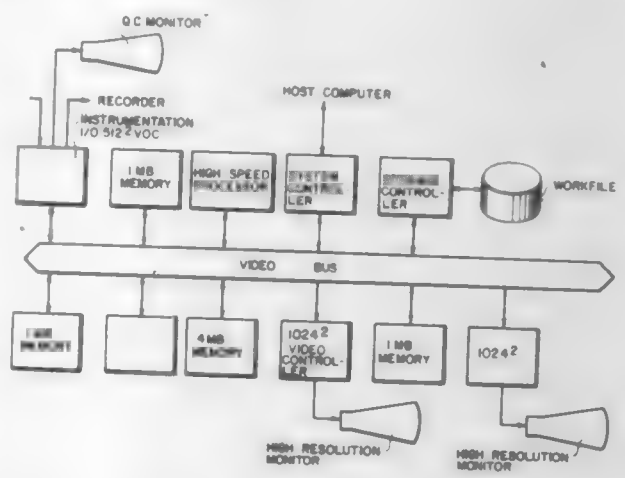
1. A loop type transmission system comprising a plurality of data transmission stations connected in cascade along a loop transmission line in which any station that has completed a transmission of data sends out token information to be used for determining the next station to perform transmission of its data, said token information being either a free token which represents that the loop transmission line is in a condition for any station to assume control of the loop transmission line to transmit data thereon or a busy token which represents that the loop transmission line is in a condition in which a station is currently transmitting data thereon, any station having a transmission request to transmit data on the loop transmission line sequentially detecting a free token on the loop transmission line, transmitting a busy token onto the transmission line, transmitting its data onto the loop transmission line, and transmitting a free token onto the loop transmission line, said station which transmits the data onto the loop transmission line subsequent to transmission of the data changing from a data transmitting state into a state of repeating data and tokens received from other stations upon detection of a busy token.

4,604,743

BUS STRUCTURE FOR AN IMAGE PROCESSOR

Radu Alexandru, Cheshire, Conn., assignor to North American Philips Corporation, New York, N.Y.

Filed Nov. 21, 1984, Ser. No. 673,960
Int. Cl.[4] H04J *3/02, 3/16, 3/24*
U.S. Cl. 370—85
8 Claims



1. An image processing system, capable of sustaining N simultaneous processes, comprising:

a plurality of data acquisition, data processing, storage, and/or display devices;

a synchronous video bus interconnecting all of said devices for communicating digital image information therebetween at video data rates;

a low speed bus interconnecting said devices for communicating control information therebetween;

said video bus comprising a time-multiplexed address selection bus, a timing and synchronization bus, and a plurality of N dynamically allocatable data sub-buses;

said address selection bus and each of said data sub-buses comprising a plurality of parallel data lines;

system clock means for producing a periodic signal on the clock bus which defines sequential time slots;

packet clock means for producing a periodic signal on the clock bus which defines sequential packet slots, each of said packet slots comprising at least N time slots and being synchronized therewith;

each of said devices comprising means for transmitting and/or receiving a packet of N serial words of data on each of one or more allocated sub-buses during each packet slot and in synchronization with said time slots;

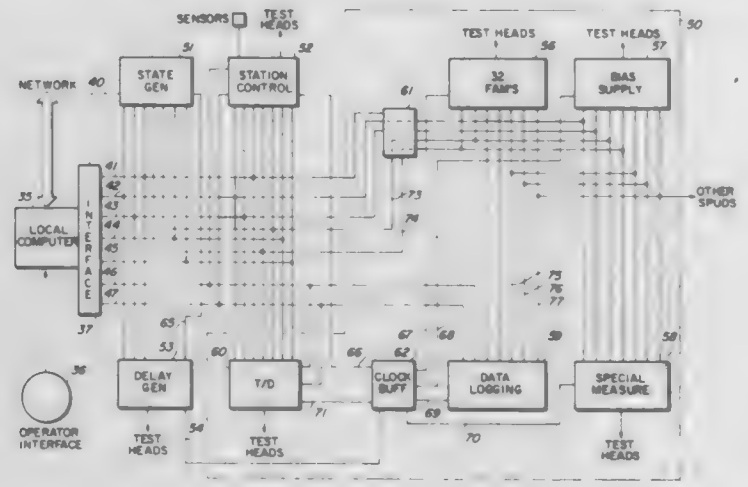
each of said devices further comprising means for transmitting and/or receiving a single word of address information during a single allocated time slot in each packet which time slot is uniquely allocated with the data sub-bus allocated to the device;

whereby said sub-buses are spatially multiplexed among said processes and said address bus is time multiplexed among said processes.

4,604,744
AUTOMATED CIRCUIT TESTER

Hugh Littlebury, Tempe, and Mavin Swapp, Mesa, both of Ariz., assignors to Motorola Inc., Schaumburg, Ill.

Filed Oct. 1, 1984, Ser. No. 656,812
Int. Cl.[4] G01R *31/28*
U.S. Cl. 371—20 **23 Claims**



1. An apparatus for testing at least one electronic device having a predetermined number of pins comprising:

a state memory having a plurality of memory locations, each of said locations containing a frame comprising a number of elements greater than said predetermined number of pins;

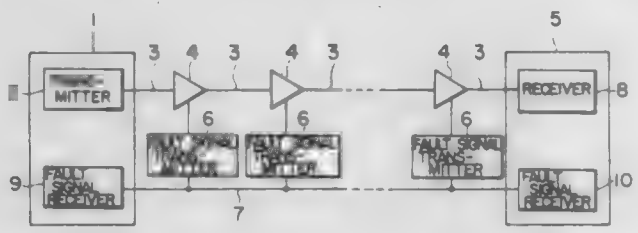
a number of force and measure units coupled to said state memory and to said pins, said number of force and measure units being greater than or equal to said predetermined number of pins, each of said force and measure units being responsive to a predetermined element of each frame in said state memory; and

state generator means for providing addresses to said state memory, said state generator means being responsive to a test program stored in at least one element of each frame of said state memory.

4,604,745
METHOD OF SEARCHING FAULT LOCATIONS IN DIGITAL TRANSMISSION LINE

Yoshitaka Takasaki, Tokorozawa; Kiichi Yamashita, Kanagawa, and Yasushi Takahashi, Hachioji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 10, 1984, Ser. No. 578,791
Claims priority, application Japan, Mar. 11, 1983, 58-40455; Dec. 28, 1983, 58-246931
Int. Cl.[4] H04B *3/46*
U.S. Cl. 371—22 **29 Claims**



1. A method of searching fault locations in a transmission system comprising a transmitting terminal having a transmitter for transmitting a digital signal; a receiving terminal having a receiver for receiving the digital signal; a plurality of repeaters which are placed between the transmitting and receiving terminals, and each of which receives and amplifies the digital signal from a preceding repeater section and delivers it to a subsequent repeater section; and a plurality of transmission lines for connection of the first repeater to the transmitter, for connection of the repeaters with each other, and for connection of the final repeater with the receiver, respectively; said method comprising the steps of:

coding an original signal to be transmitted in terms of an error detecting code at the transmitting terminal to send it out from the transmitter;

detecting an error or a received signal using said error detecting code at each repeater thereby to measure the error rate of one repeater section corresponding to each repeater;

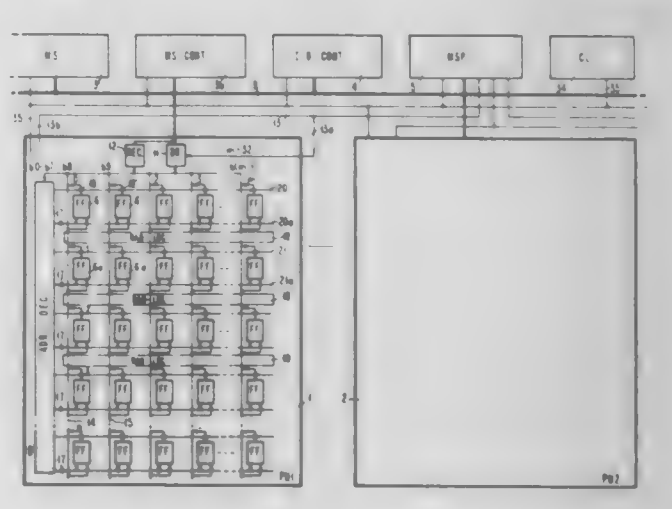
recoding a decoded received signal using said error detecting code employed to detect the error, and delivering it to a subsequent repeater section; and

transmitting signals each of which represents said error rate at each repeater section measured at each repeater, to the transmitting terminal or receiving terminal.

4,604,746
TESTING AND DIAGNOSTIC DEVICE FOR DIGITAL COMPUTERS

Arnold Blum, Gechingen, Fed. Rep. of Germany, assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 19, 1984, Ser. No. 602,108
Claims priority, application European Pat. Off., May 25, 1983, 83105172.7
Int. Cl.[4] G06F *11/22*
U.S. Cl. 371—25 **8 Claims**



1. A data-processing system comprising:

a central processor having random logic networks interconnected by storage elements, said logic networks and said storage elements together performing data-processing operations in a normal mode;

a main storage;

an input/output control;

a service processor for generating test patterns and test addresses and for receiving and analyzing test results in a test mode;

a high-speed system bus coupled to said central processor, to said main storage, to said input/output control, and to said service processor, said but being adapted to carry system data and addresses among said central processor, said main storage, and said input/output control in said normal mode, and to carry said test patterns, addresses, and results between said central processor and said service in said test mode;

an address decoder located in said central processor and operative in said test mode for addressing particular ones of said storage elements in accordance with said test addresses from said system bus;

receiver means located in said central processor and operative in said test mode for writing said test patterns from said system bus into said particular storage elements addressed by said address decoder;

driver means located in said central processor and operative in said test mode for reading the contents of said particular

storage elements addressed by said address decoder to said system bus as said test results.

4,604,747

ERROR CORRECTING AND CONTROLLING SYSTEM

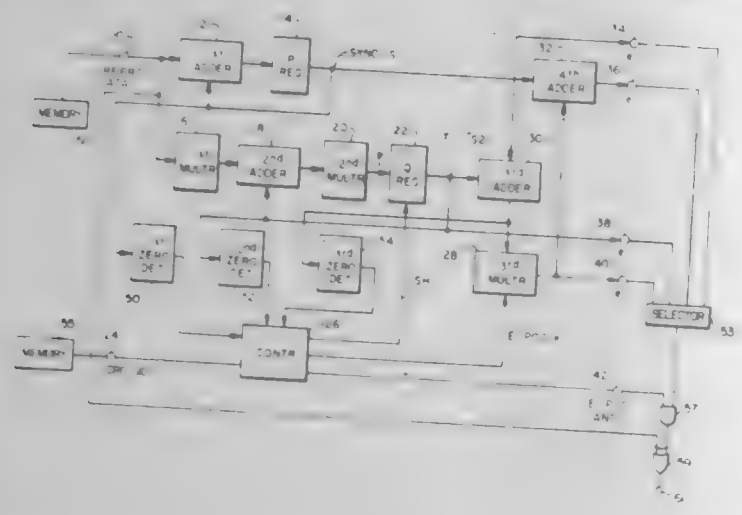
Ken Onishi, Kyoto; Masayuki Ishida, Nagaokakyo; Masakazu Shiroza, Osaka; Toshikatsu Takedomi, Urawa; Makoto Namekawa, and Yukihiko Haikawa, both of Iwaki, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha; Akai Electric Company Limited and Alpine Electronics, Inc., all of Tokyo, Japan

Continuation-in-part of Ser. No. 360,570, Mar. 22, 1982, abandoned. This application May 14, 1984, Ser. No. 609,854

Claims priority, application Japan, Mar. 25, 1981, 56-43475; Mar. 25, 1981, 56-43476

Int. Cl.[4] G06F *11/10*

U.S. Cl. 371—37 19 Claims



1. An error correcting and controlling system used with a PCM decoder and comprising:

(a) first syndrome generator means for generating a syndrome S_1 given by the subsequently mentioned expression (1) on the basis of an error correcting word P and sampled words A_n to A_{n+2}, and B_n to B_{n+2} which comprise data to be reproduced;

(b) a second syndrome generator means for generating the product of a T^{i-7} and a syndrome S_2 given by the subsequently mentioned expression (2) on the basis of an error correcting word Q and said sampled words A_n to A_{n+2}, and B_n to B_{n+2};

(c) a third syndrome generator means operatively connected to said first and second syndrome generator means and consisting of an adder used to generate a syndrome S_i given by the subsequently mentioned expression (3) on the basis of outputs from said first and second syndrome generator means;

(d) a first detector means operatively connected to said second syndrome generator means for detecting $S_1=0$ and $T^{i-7}S_2=0$ with respect to the S_i and T^{i-7} respectively forming said outputs from said first and second syndrome generator means;

(e) a CRC checking means for detecting whether error correcting words P and Q and said sampled words A_n to A_{n+2} and B_n to B_{n+2} are correct or erroneous and for delivering CRC pointer signals in accordance with said error correcting words and said sampled words on the basis of the result of said detection;

(f) a decoder means operatively connected to said CRC checking means for decoding the number of CRC pointers on the basis of said CRC pointer signals from said CRC checking means in accordance with said error correcting words and said sampled words;

(g) a second detector means for detecting a value of i rendering S_i equal to zero, S_i corresponding to the product of an output from said second syndrome generator means multiplied by T_i times through a feedback loop connected thereto, wherein $1 \leqq i \leqq 6$; and

(h) a correcting means for effecting error correction by adding said syndrome S_1 to an i-th sampled word with a modulo 2 addition upon the detection of a value of i from said second detector means when the number of CRC pointers is equal to zero, and $S_1 \neq 0$ and $T^{i-7}S_2 \neq 0$, wherein the expressions (1), (2) and (3) are given by:

$$S_1 = A_n \oplus B_n \oplus A_{n+1} \oplus B_{n+1} \oplus A_{n+2} B_{n+2} \oplus P_n$$

$$S_2 = T^6 A_n \oplus T^5 B_n \beta T^4 A_{n+1} \oplus T^3 B_{n+1} \oplus T^2 A_{n+2} \oplus T B_{n+2} \oplus Q_n$$

and

$$S_i = S_1 \neq T^{i-7} S_2$$

respectively, A_n, A_{n+1} and A_{n+2} designate sampled signal words which are sampled on one of two channels at sampling times and alternating sampled signal words B_n, B_{n+2} sampled on the other channel at the common sampling times staggered from the corresponding sampling times for A_n, A_{n+1} and A_{n+2} by one half the sampling time, n is an integer and designates a sampling time point, i is an integer and $1 \leqq i \leqq 6$, T designates a Q generating matrix given by:

$$T = \begin{bmatrix} 0000000000001 \\ & & & & & & & & & & & & 0 \\ & & & & & & & & & & & & 0 \\ & & & & & & & & & & & & 0 \\ & & & & & & & & & & & & 0 \\ & & & & & & & & & & & & 1 \\ & & & & & & I & & & & & & 0 \\ & & & & & & & & & & & & 0 \\ & & & & & & & & & & & & 1 \\ & & & & & & & & & & & & 0 \\ & & & & & & & & & & & & 0 \\ & & & & & & & & & & & & 0 \\ & & & & & & & & & & & & 0 \end{bmatrix}$$

where I designates a thirteenth order unit matrix, and the number of CRC pointers is defined to be equal to the number of error correcting words detected by said checking means CRC from among eight words.

4,604,748

DATA PROCESSING SYSTEM WITH ERROR CORRECTION

Fumitaka Sato, Tokyo, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Jan. 3, 1984, Ser. No. 567,912

Claims priority, application Japan, Jan. 24, 1983, 58-8772

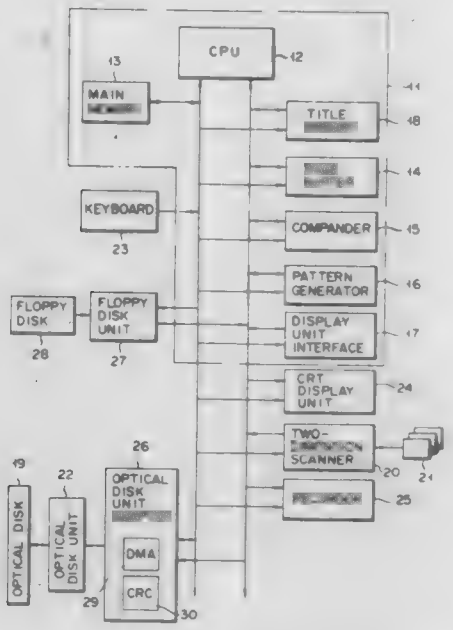
Int. Cl.[4] G06F *11/10*; G11C *29/00*

U.S. Cl. 371—38 12 Claims

1. A data processing system designed to handle a large amount of high-redundant data which allows for a low frequency of occurrence of errors, and a small amount of low-redundant data which allows for a very low frequency of occurrence of errors, which data processing system has a memory device with a large capacity for storing high-redundant and low-redundant data at an insufficiently low frequency of error, said data processing system comprising:

first error correction means for correcting the errors of said high- and low-redundant data, so that said high- and low-redundant data may be set within a tolerable error range when said high- and low-redundant data are read out from or written into said memory device; and

second error correction means for double recording the low redundant data onto said memory device and for execut-



ing error correction on each item of the double-recorded low redundant data.

4,604,749

SEMICONDUCTOR MEMORY

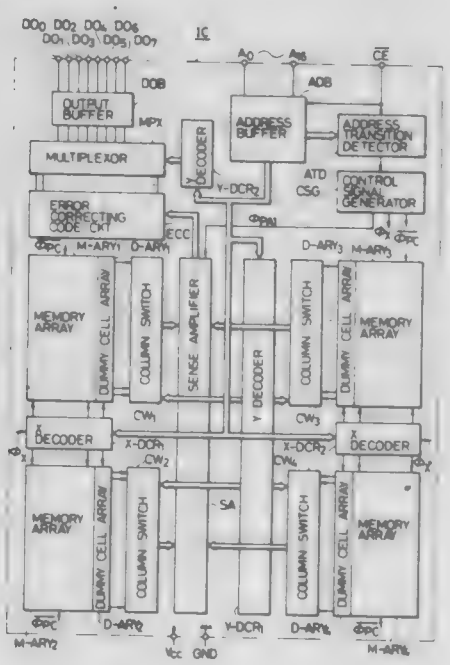
Takashi Shinoda, Kodaira; Kikuo Sakai, Hachiohji; Masahiro Ogata; Hiroshi Kawamoto, both of Kodaira; Yoshiaki Onishi, deceased, late of Kokubunji, and Junko Onishi, administratrix, Nagoya, all of Japan, assignors to Hitachi, Ltd. and Hitachi Microcomputer Engineering Ltd., both of Tokyo, Japan

Filed Jun. 9, 1983, Ser. No. 502,636

Claims priority, application Japan, Jun. 9, 1982, 57-97826; Jun. 9, 1982, 57-97825

Int. Cl.⁴ G06F *11/10*

U.S. Cl. 371—38 **3 Claims**



1. A semiconductor memory comprising:

a plurality of external output terminals;

a plurality or memory cells formed in one semiconductor chip for storing a plurality of sets of data each having check bits;

a selecting circuit which is formed in said semiconductor chip and which selects some of said memory cells to be formed into one set in response to first address signals;

an error correcting code circuit formed in said semiconductor chip and supplied with one set of data read out from the selected memory cells;

a tristate circuit formed in said semiconductor chip, having a plurality of output terminals and supplied with data delivered from said error correcting code circuit; and

a control circuit formed in said semiconductor chip for forming a control signal for controlling said tristate circuit;

wherein the output terminals of said tristate circuit are coupled with said external output terminals, and wherein said tristate circuit is controlled by the control signal of said control circuit so as to bring said external output terminals into high impedance at least during the time when said error correcting code circuit is delivering indefinite data.

4,604,750

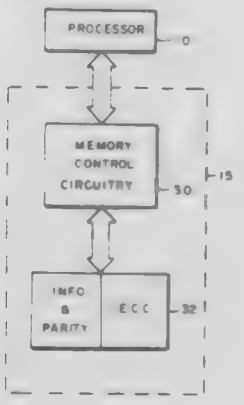
PIPELINE ERROR CORRECTION

John C. Manton, Marlboro; William F. Bruckert, Hudson, and Alfred J. Dellicicchi, Acton, all of Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

Filed Nov. 7, 1983, Ser. No. 549,610

Int. Cl.⁴ G06F *11/10*; G11C *29/00*

U.S. Cl. 371—38 **6 Claims**



1. In a data processing system, the combination comprising:

A. a memory circuit including a plurality of data locations for storing data, such as instructions and operands, and separate error-detection and error-correction codes associated with the data;

B. processor means including:

(i) means for generating memory-request signals that represent requests for the memory to send instructions and operands designated thereby;

(ii) means for receiving the requested instructions and operands and the error-detection codes associated therewith and examining each received instruction and operand and the error-detection codes associated therewith to determine whether an error is present in that instruction or operand; and

(iii) means for executing an instruction without applying it to error-correction circuitry if no error is detected in that instruction and any operand designated thereby and repeating the memory-request signal for that instruction if an error has been detected in that instruction or in an operand designated thereby; and

C. memory control means connected to receive the memory-request signals from the processor means, the memory control means including:

(i) means for operating the memory circuit to retrieve instructions and operands in response to the memory-request signals, and for operating the memory circuit to retrieve the error-correction code associated with an instruction or operand if an error is detected therein;

(ii) means for examining the retrieved instructions and operands and their associated error-detection codes to determine whether errors exist therein;

(iii) means for forwarding the instructions and operands and associated error-detection codes to the processor means without waiting for the determination of whether errors exist; and

(iv) means for correcting any correctable detected error in accordance with that error-correction code,

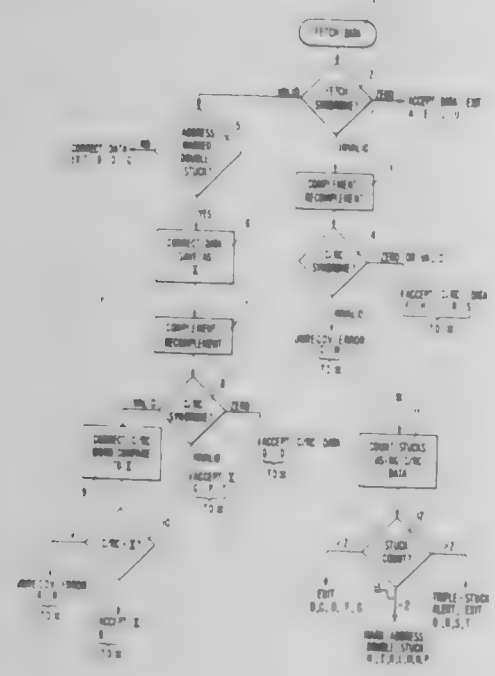
the data-processing system thereby providing for retrieval of correct instructions and operands without the delay required for error detection but still providing the capability for correction of errors in incorrect instructions and operands without correction by the processor means.

4,604,751

ERROR LOGGING MEMORY SYSTEM FOR AVOIDING MISCORRECTION OF TRIPLE ERRORS

Frederick J. Aichelmann, Jr., and Philip M. Ryan, both of Hopewell Junction, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 29, 1984, Ser. No. 626,275
Int. Cl.[4] G06F *11/10*
U.S. Cl. 371—38 **8 Claims**



1. Means for producing a suspected triple bit error alerting signal, said signal producing means extending the error detection capability of a single bit error detection and correction/-double bit error detection code means used in a memory system wherein multiple bit word signals are fetched from memory from respective memory addresses and applied to said code means, said signal producing means including

means for storing first signals representing the addresses of blocks of fetched word signals wherein a double bit error is detected by said code means,

address comparison means receiving said stored first signals,

means for applying to said address comparison means second signals representing the address of each fetched word wherein a single bit error is detected by said code means,

said address comparison means producing said suspected triple bit error alerting signal upon coincidence of the addresses of said double bit error words and said single bit error word represented by said first and second signals respectively.

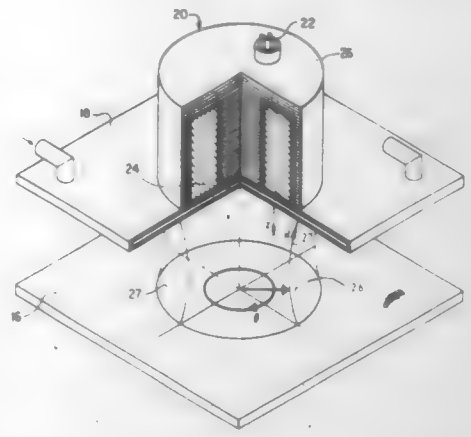
4,604,752

MAGNETIC STABILIZATION OF HIGH POWER GLOW DISCHARGES

Herb J. J. Sequin, 7840 - 44th Avenue, Edmonton, Alberta, Canada P6K 0Z1; Kyong H. Nam, 11130 - 24A Avenue, Edmonton, Alberta, Canada T6J 4Y9, and Clarence E. Capjack, 5403 143rd Street, Edmonton, Alberta, Canada T6H 4E4

Filed Jul. 14, 1981, Ser. No. 283,181
Int. Cl.[4] H01S *3/13*
U.S. Cl. 372—29 **35 Claims**

1. For use in a glow discharge device including a discharge volume containing charged and neutral particles and a discharge electric field across the discharge volume said field having a discharge current, a method of stabilizing the said device against electrothermal instabilities and electrode induced instabilities comprising imposing a profiled magnetic



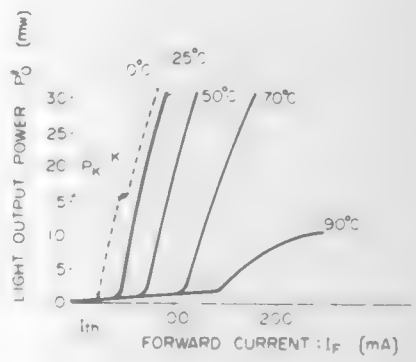
field on the discharge current so as to create a sheared flow system comprising the charged and neutral particles within the discharge volume.

4,604,753

SEMICONDUCTOR LASER MODULE HAVING AN IMPROVED TEMPERATURE CONTROL ARRANGEMENT

Masaaki Sawai, Takasaki, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 25, 1983, Ser. No. 554,959
Claims priority, application Japan, Nov. 24, 1982, 57-204645
Int. Cl.[4] H01S *3/045*
U.S. Cl. 372—36 **16 Claims**



1. A semiconductor laser module comprising:

a semiconductor laser element;

a semiconductor submount of a first conductivity type which supports said semiconductor laser element;

a semiconductor region of a second conductivity type opposite to said frist conductivity type formed in said submount and located adjacent to said laser element so as to form a PN-junction element for detecting heat developing from said laser element and an ambient temperature in the area of said laser element; and

a thermoelectric heat pump which is electrically connected to said PN-junction element and which is coupled to said laser element to control the temperature of said laser element in accordance with an output signal from said PN-junction element.

4,604,754
SUSPENSION DEVICE FOR RESISTOR ELEMENTS IN FURNACES

John H. Haglund, Hallstahammar, Sweden, assignor to Bulten-Kanthal AB, Hallstahammar, Sweden

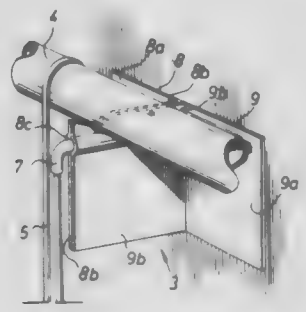
PCT No. PCT/SE83/00127, § 371 Date Nov. 28, 1983, § 102(e) Date Nov. 28, 1983, PCT Pub. No. WO83/03517, PCT Pub. Date Oct. 13, 1983

PCT Filed Apr. 5, 1983, Ser. No. 557,288

Claims priority, application Sweden, Apr. 2, 1982, 8202145

Int. Cl.[4] H05B *3/06*

U.S. Cl. 373—130 11 Claims



1. Suspension device for loop-shaped electrical resistor elements (5, 5', 5'') having loops in a furnace having a wall, comprising a rod element (4;4', 4'') resting substantially horizontally on consoles (2, 3; 11; 26) which support said loops in closely located winding coils substantially in a flattened helical configuration, wherein the terminal portion (7) of the resistor element are located adjacent to the rod element (4,4', 4'') and the consoles (2, 3; 11; 26) also serve as spacer elements for suspension of the resistor element coils, so that the latter hang freely from the rod element (4,4',4'') at a distance from the furnace wall (1) and cover a relatively large surface area thereof, the rod element (4,4',4'') and the suspended resistor element (5,5',5'') being removable as a unit from the furnace.

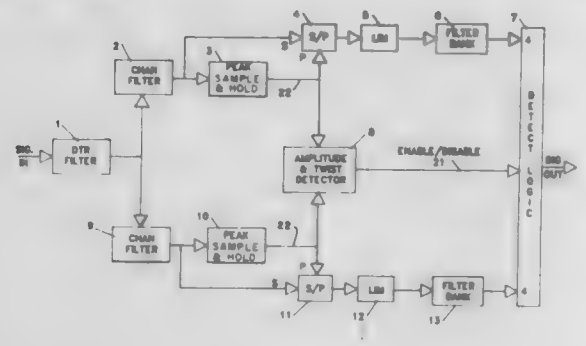
4,604,755
FEED FORWARD DUAL CHANNEL AUTOMATIC LEVEL CONTROL FOR DUAL TONE MULTI-FREQUENCY RECEIVERS

Jack T. Murray, Raleigh, N.C., assignor to International Business Machines Corp., Armonk, N.Y.

Filed Jun. 1, 1984, Ser. No. 616,087

Int. Cl.[4] H04B *1/16;* H04M *1/50*

U.S. Cl. 375—98 6 Claims



2. The method of controlling signal level gain for a dual tone multifrequency receiver comprising steps of:

separating incoming dual tone multifrequency signals into at least two separate tone group channels by passing said incoming signal through separate channel filter banks;

sampling the output of each of said filter banks independently and isolating the absolute magnitude value of the signal level in each said sample;

comparing each said sample against previously stored sample magnitude that represents a peak value;

storing each new sample as a new peak value when its value is greater than or equal to said stored peak value; and

dividing each said sample by said stored peak value to form a signal level normalized ratio for application to an envelope limiter thereby providing separate channel automatic signal level control for each of the two channels in a dual tone multifrequency receiver

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4,604,756
DEVICE FOR RECOVERING A SYNCHRONIZED CLOCK SIGNAL FROM A SIGNAL SEQUENCE

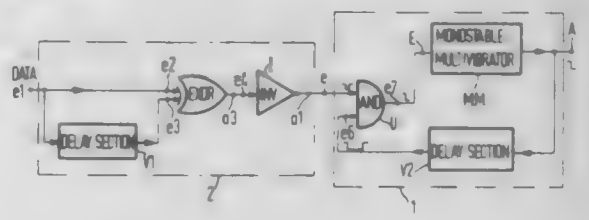
Steven Moustakas, and Hans-Hermann Witte, both of Munich, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Mar. 15, 1984, Ser. No. 589,964

Claims priority, application Fed. Rep. of Germany, Mar. 30, 1983, 3311677

Int. Cl.[4] H04L *7/02, 7/06*

U.S. Cl. 375—113 4 Claims



1. A device for the recovery of an output clock signal from a random signal sequence, characterized by a clock generator (1) comprising a monostable multivibrator (M.M.) with an input (E) and an output (A), in which an appearance of a specific signal change (Z) at the input (E) triggers the output clock signal which is delivered at the output (A) and which likewise shows the specific signal change (Z);

the output (A) of the multivibrator being connected to a delay element (V2), which provides a delayed output, the delay being approximately equal to the clock pulse length of the output clock signal, to one input (e6) of a gate (U) which comprises two inputs (e and e6) and one output (e7), the one output of the gate being connected to the input (E) of the multivibrator, and to whose second input (e) certain signals (a1) from the random signal sequence are applied, and the gate transmitting to the input (E) of the multivibrator the specific signal change (Z) for each output clock signal of the multivibrator and also the specific signal change (Z) of the certain signals from the ramdom sequence,

and a signal forming means (2) which comprises an additional delay element (V1) and an exclusive OR element with two inputs (e2, e3) and one output (a3), the random signal sequence being applied at one input (e2) of the exclusive OR element, this one input (e2) being connected by the additional delay element (V1) to the other input (e3) of the exclusive OR element, and the output (a3) of the signal forming means being connected with the input (e) of the gate (U) whose output is connected to the monostable multivibrator.

4,604,757
PAPER SACK WITH A VALVE FOR PACKAGING PULVERIZED OR GRANULAR MATERIALS

Masayoshi Yokomatsu, 25-11-25, Fukawa, Tone-machi, Kita-Soma-Gun, Ibaragi Prefecture, Japan

Continuation of Ser. No. 415,183, Sep. 7, 1982, abandoned. This application Jul. 5, 1984, Ser. No. 626,596

Claims priority, application Japan, Sep. 7, 1981, 56-140721; Nov. 20, 1981, 56-187506; Dec. 3, 1981, 56-194741

Int. Cl.[4] B65D *30/24*

U.S. Cl. 383—46 5 Claims

1. A paper valve sack, comprising:

a flattened paper tube having a longitudinal axis;

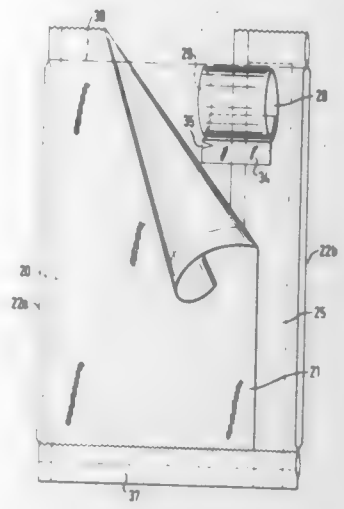
a first end of said flattened tube being folded closed along a first line, said first line being substantially transverse to said longitudinal axis;

a second end of said flattened tube being folded closed along

a second line, said second line being substantially transverse to said longitudinal axis;

said flattened tube defining first and second sides, said first side comprising a first strip and a second strip, said first strip being folded over said second strip to form a longitudinal seam which extends at least from said first line to said second line;

a collapsible filling valve in said longitudinal seam between said first and second strips, said collapsible filling valve comprising an outer filling orifice and a projecting strip, said outer filling orifice and said projecting strip being oriented transverse to said longitudinal axis, and means including said projecting strip being secured at its respective sides to the first and second strips and between said first and second lines, whereby said projecting strip distributes forces arising in the vicinity of said filling valve during filling of said paper valve sack, thereby reducing

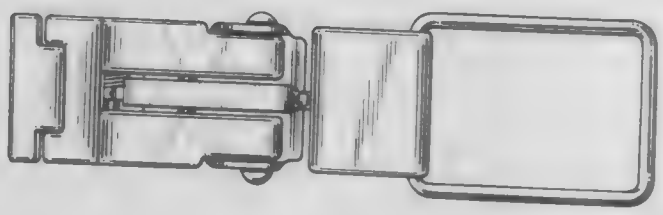


tensile stresses and the tendency to rupture resultant therefrom.

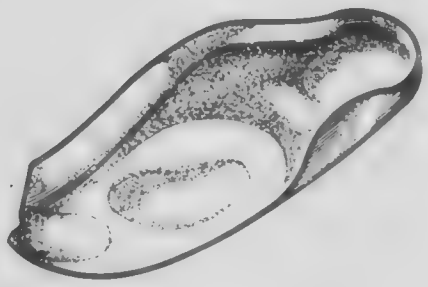
DESIGNS

AUGUST 5, 1986

284,900
SKI BOOT BUCKLE
Edward L. Chalmers, II, and David C. Everest, III, both of Boulder, Colo., assignors to Lange International S.A., Fribourg, Switzerland
Filed Jul. 28, 1983, Ser. No. 518,441
Term of patent 14 years
U.S. Cl. D2—314

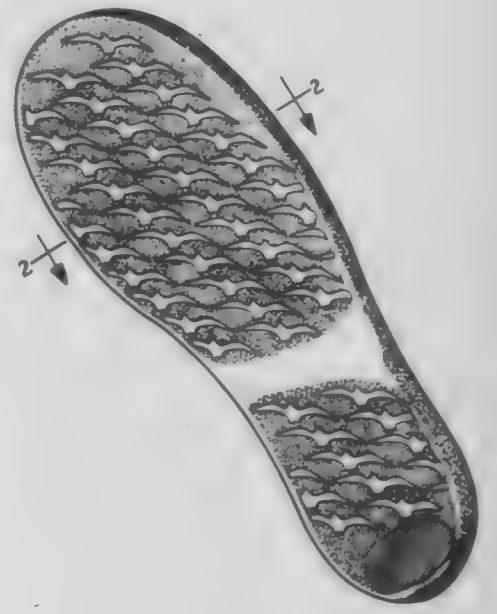


284,901
INSOLE FOR SHOES USED IN LATERAL SPORTS
Harvey G. Tilles, P.O. Box 5466, 614 N. Hamilton St., High Point, N.C. 27262
Continuation-in-part of Ser. No. 387,255, Jun. 10, 1982, abandoned. This application May 17, 1984, Ser. No. 611,085
Term of patent 14 years
U.S. Cl. D2—318

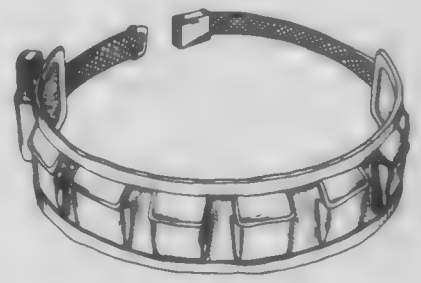




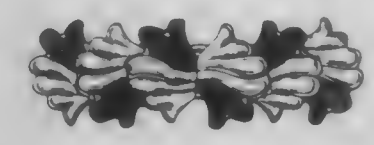
284,902
FOOTWEAR SOLE
Paul A. Lindh, 9 Pell St., Newport, R.I. 02840
Filed Feb. 9, 1984, Ser. No. 578,482
Term of patent 14 years
U.S. Cl. D2—321

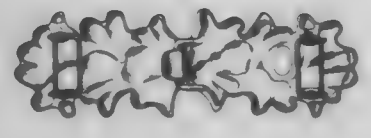


284,903
CARRIER FOR CASSETTE PLAYER AND CASSETTES
Barbara A. Rose, 330-44 Windward Cir., Aurora, Ohio 44202
Filed Oct. 18, 1983, Ser. No. 543,020
Term of patent 14 years
U.S. Cl. D2—383

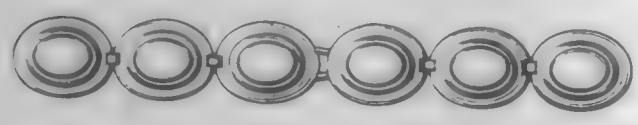


284,904
BELT BUCKLE
Alexis V. Kirk, New York, N.Y., assignor to Somersett Moon Ltd., New York, N.Y.
Filed Mar. 30, 1984, Ser. No. 595,058
Term of patent 14 years
U.S. Cl. D2—405

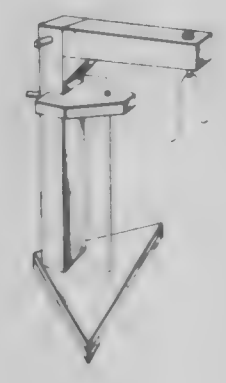




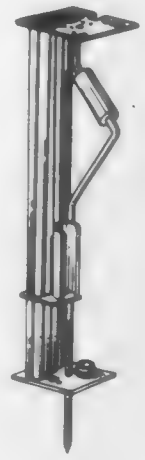
284,905
BELT BUCKLE
Alexis Kirk, New York, N.Y., assignor to Somersett Moon Ltd., New York, N.Y.
Filed Nov. 27, 1984, Ser. No. 675,293
Term of patent 14 years
U.S. Cl. D2—422



284,906
YARN HOLDER
Ethel V. Richter, 4608 Morris, Victoria, Tex. 77901
Filed Mar. 5, 1984, Ser. No. 586,382
Term of patent 14 years
U.S. Cl. D3—26



284,907
GOLF CARRIER
James W. Wiedeman, Box 133B, Mill Run, Pa. 15464
Filed Nov. 1, 1982, Ser. No. 438,337
Term of patent 14 years
U.S. Cl. D3—37



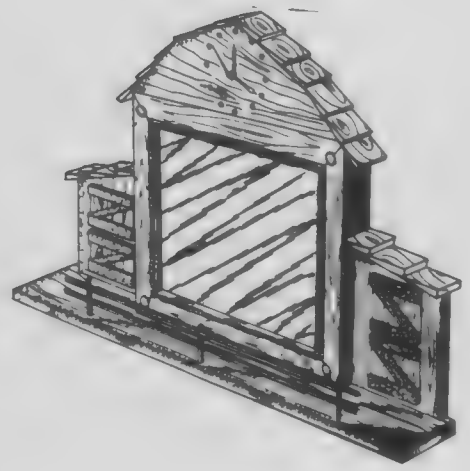
284,908
BROOM CAP
Robert J. Libman, Champaign, Ill., assignor to Libman Broom Company, Arcola, Ill.
Filed May 3, 1984, Ser. No. 606,868
Term of patent 14 years
U.S. Cl. D4—199



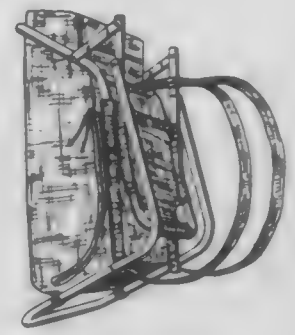
284,909
PICTURE FRAME
Robert E. Johnson, Box 112, Castlewood, S. Dak. 57223
Continuation-in-part of Ser. No. 461,591, Jan. 27, 1983. This application Jun. 1, 1984, Ser. No. 616,541
Term of patent 14 years
U.S. Cl. D6—303



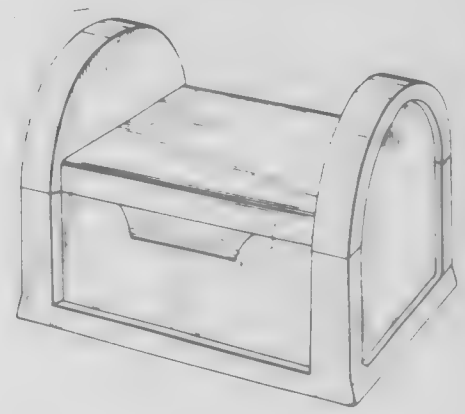




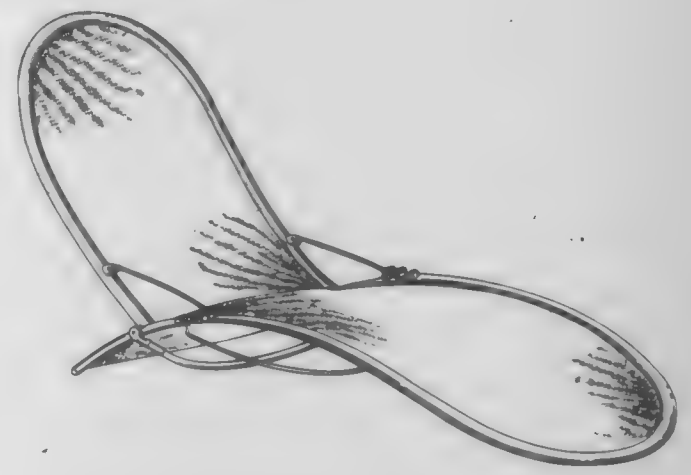
284,910
COMBINED BACK PACK AND CHAIR
Mark R. Handy, 2934 La Vante, Carlsbad, Calif. 92008
Filed Jan. 9, 1984, Ser. No. 569,338
Term of patent 14 years
U.S. Cl. D6—336



284,911
STEP STOOL
Gary R. Lemmeyer, East Aurora, N.Y., assignor to The Quaker Oats Company, Chicago, Ill.
Filed Feb. 2, 1984, Ser. No. 576,262
Term of patent 14 years
U.S. Cl. D6—349



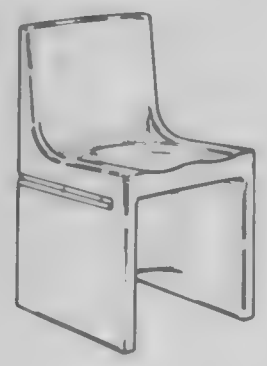
284,912
LOUNGE CHAIR
Gys Bakker, Amersfoort, and Frans van den Toorn, Amdyle, both of Netherlands, assignors to Industrial Designers Bussum B.V., Naarden, Netherlands
Filed Jan. 16, 1984, Ser. No. 570,982
Term of patent 14 years
U.S. Cl. D6—361



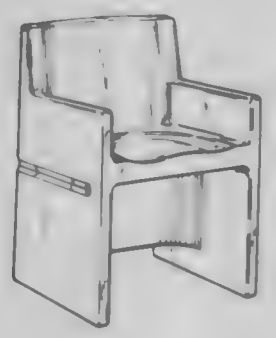
284,913
ARM CHAIR
Didier Deconinck, Seyssins, France, assignor to Allibert SA, Grenoble Cedex, France
Filed Feb. 9, 1984, Ser. No. 578,745
Claims priority, application Hague, Aug. 12, 1983, DM-002786
Term of patent 14 years
U.S. Cl. D6—368



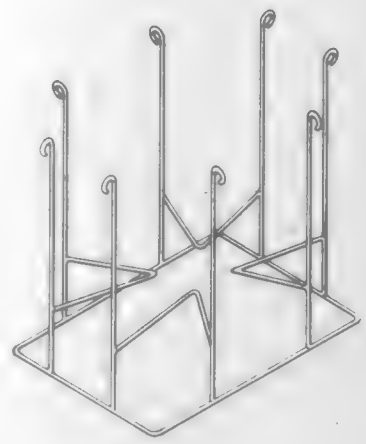
284,914
CHAIR
Leonard M. Nemschoff, and Mark S. Nemschoff, both of Sheboygan, Wis., assignors to Nemschoff Chairs, Inc., Sheboygan, Wis.
Filed Nov. 21, 1983, Ser. No. 553,548
The portion of the term of this patent subsequent to Aug. 5, 2000, has been disclaimed.
Term of patent 14 years
U.S. Cl. D6—375



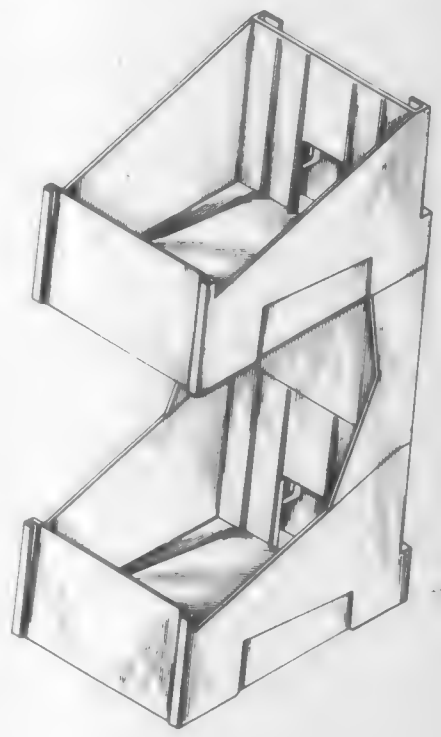
284,915
ARMCHAIR
Leonard M. Nemschoff, and Mark S. Nemschoff, both of Sheboygan, Wis., assignors to Nemschoff Chairs, Inc., Sheboygan, Wis.
Filed Nov. 21, 1983, Ser. No. 553,549
Term of patent 14 years
U.S. Cl. D6—375



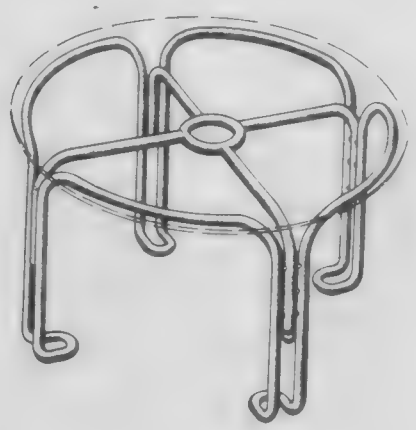
284,916
NEWSPAPER RACK
Dwight W. Marks, P.O. Box 26732, San Jose, Calif. 95159
Filed Apr. 30, 1984, Ser. No. 605,115
Term of patent 14 years
U.S. Cl. D6—462



284,917
POINT OF SALE DISPLAY MODULE
Stanton J. Canter, Carversville, Pa., assignor to Diversified Group, Inc., Doylestown, Pa.
Filed Feb. 14, 1984, Ser. No. 580,144
Term of patent 14 years
U.S. Cl. D6—476



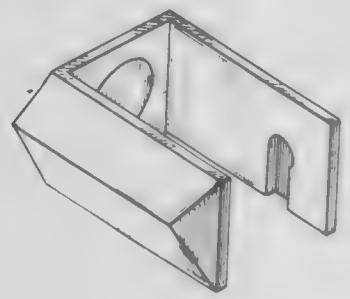
284,918
TABLE FRAME
William McBride, 1110 W. Barry St., Chicago, Ill. 60657
Filed Jan. 25, 1984, Ser. No. 573,978
Term of patent 14 years
U.S. Cl. D6—488



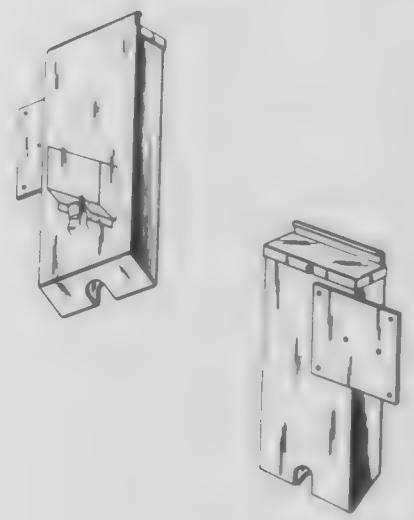
284,919
OCCASIONAL TABLE
George L. Garcia, Naperville, and Robert G. Kopp, Carol Stream, both of Ill., assignors to Suncast Corporation, Batavia, Ill.
Filed Apr. 2, 1984, Ser. No. 595,699
Term of patent 14 years
U.S. Cl. D6—488



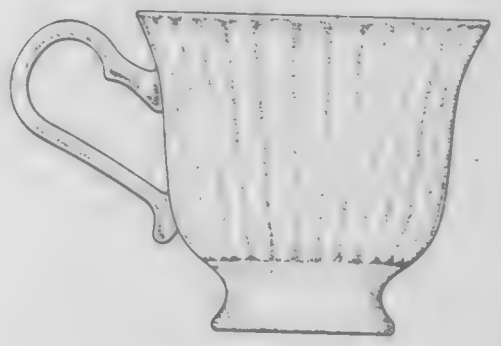
284,920
CONNECTING BRACKET FOR FURNITURE
James Van Horn, Rte. 2, Box 166, Mundelein, Ill. 60060
Filed Oct. 21, 1983, Ser. No. 544,275
Term of patent 14 years
U.S. Cl. D6—191



284,921
DISPENSER FOR CARDS
Ernest E. Hansen, P.O. Box 272, San Juan Capistrano, Calif. 92693
Filed Jan. 24, 1984, Ser. No. 573,428
Term of patent 14 years
U.S. Cl. D6—515

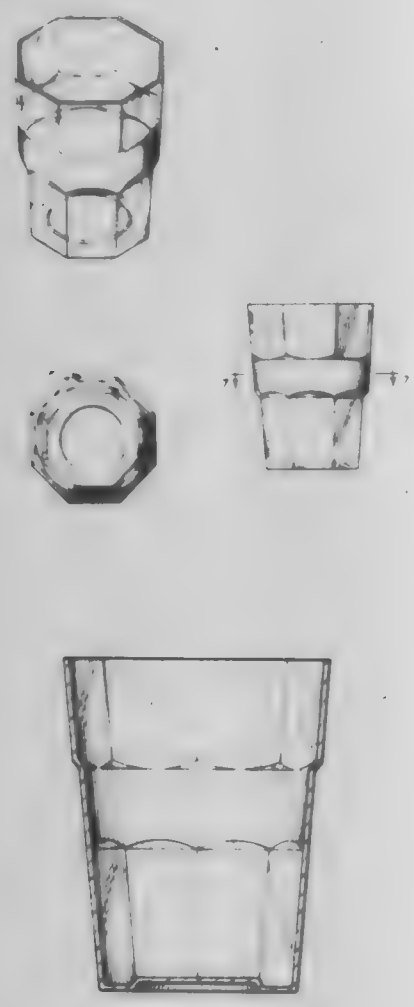


284,922
CUP
Katsuhiro Otake, Mie, Japan, assignor to American Commercial, Incorporated, Secaucus, N.J.
Filed Jul. 27, 1983, Ser. No. 517,785
Term of patent 14 years
U.S. Cl. D7—9

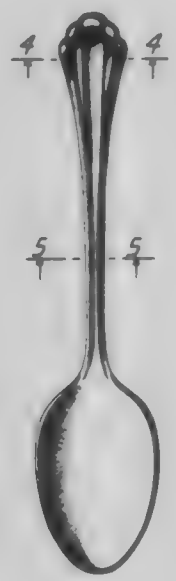




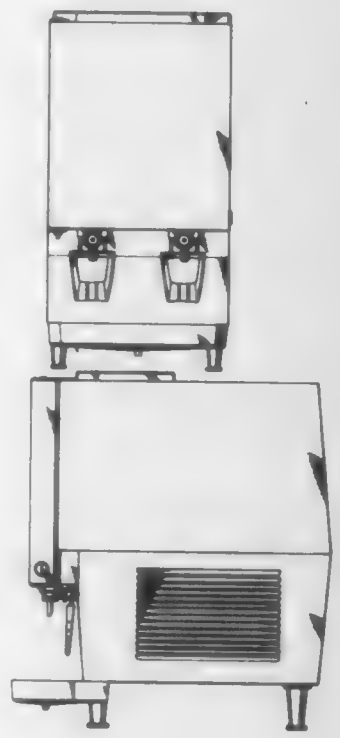
284,923
TUMBLER OR SIMILAR ARTICLE
Joost R. Ritman, Bloemgracht 15-19, 1016 KB Amsterdam, Netherlands
Filed Oct. 5, 1983, Ser. No. 539,373
Claims priority, application Fed. Rep. of Germany, Apr. 6, 1983, URA 391/83
Term of patent 14 years
U.S. Cl. D7—14

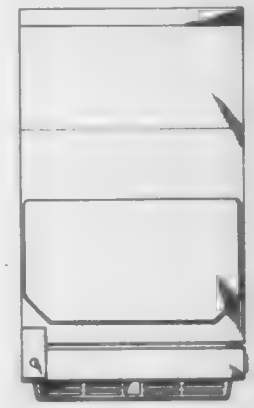


284,924
SPOON OR SIMILAR ARTICLE
Ellen B. Manderfield, Sherrill, N.Y., assignor to Oneida Ltd., Oneida, N.Y.
Filed Jul. 12, 1984, Ser. No. 630,299
Term of patent 14 years
U.S. Cl. D7—137

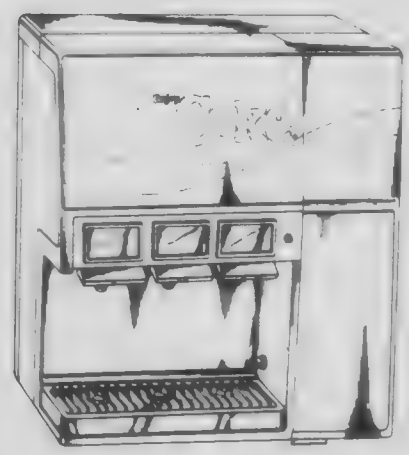


284,925
BEVERAGE DISPENSER
Leonard J. Jacobs, Chestnut Hill, and Michael J. Riley, Pembroke, both of Mass., assignors to Jet Spray Corporation, Norwood, Mass.
Filed Sep. 21, 1984, Ser. No. 653,439
Term of patent 14 years
U.S. Cl. D7—308





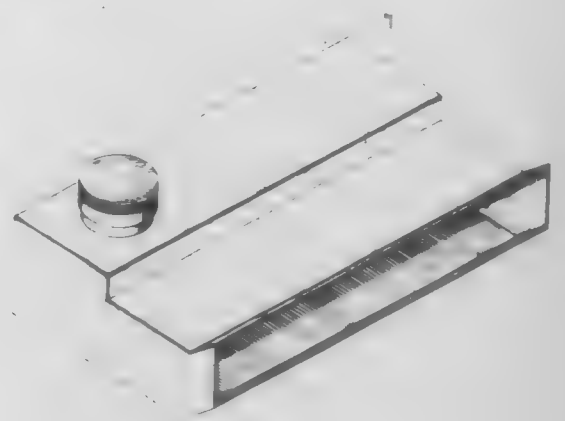
284,926
BEVERAGE DISPENSER
Jason K. Sedam, Dunwoody; Richard J. Mueller, Atlanta; Andrew J. Holoubek, and Samuel C. Crosby, both of Stone Mountain, all of Ga., assignors to The Coca-Cola Company, Atlanta, Ga.
Continuation of Ser. No. 531,254, Sep. 12, 1983, abandoned, which is a continuation of Ser. No. 320,477, Nov. 12, 1981, Pat. No. Des. 273,654. This application Oct. 16, 1985, Ser. No. 788,164
Term of patent 14 years
U.S. Cl. D7—308



284,927
INSULATED JUG
Anso Zimmermann, Bad Hersfeld, Fed. Rep. of Germany, assignor to Rotpunkt Dr. Anso Zimmerman, Niederaula, Fed. Rep. of Germany
Filed Feb. 7, 1983, Ser. No. 464,694
Claims priority, application Fed. Rep. of Germany, Aug. 19, 1982, MR182
Term of patent 14 years
U.S. Cl. D7—317



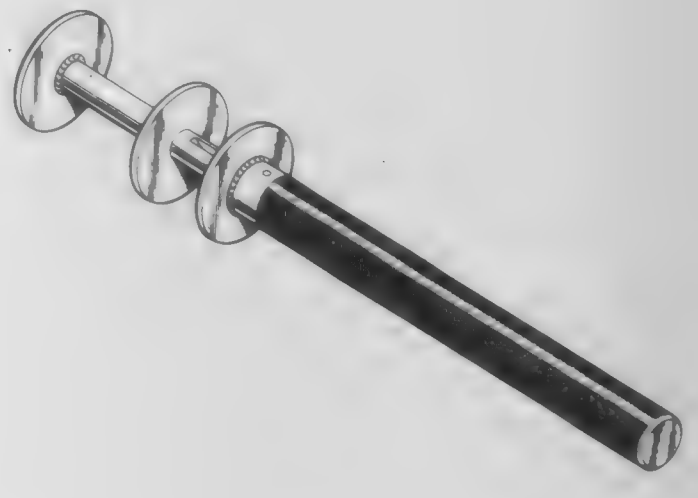
284,928
STOVE
Stanley N. Clark, Box 71, Milo, Me. 04463
Filed Dec. 17, 1984, Ser. No. 682,605
Term of patent 14 years
U.S. Cl. D7—323



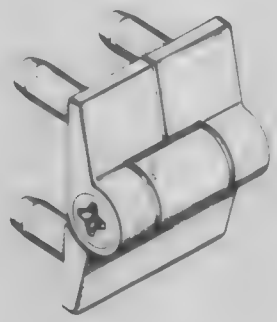
284,929
OUTDOOR BARBECUE COOKER
Erich J. Schlosser, Lindenhurst, and James C. Stephen, Arlington Heights, both of Ill., assignors to Weber-Stephen Products Co., Palatine, Ill.
Filed Aug. 10, 1984, Ser. No. 639,918
Term of patent 14 years
U.S. Cl. D7—332



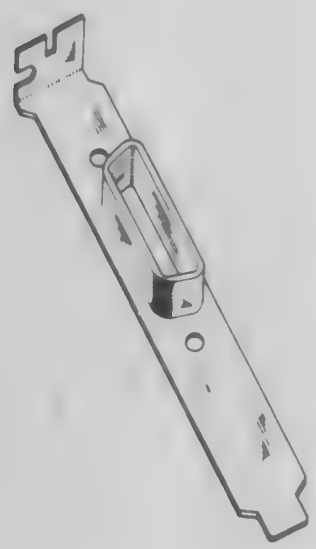
284,930
GROUND ROD DRIVING HAMMER
David B. Richards, 33465 Caliban Dr., Fremont, Calif. 94536
Filed Dec. 20, 1983, Ser. No. 563,406
Term of patent 14 years
U.S. Cl. D8—70

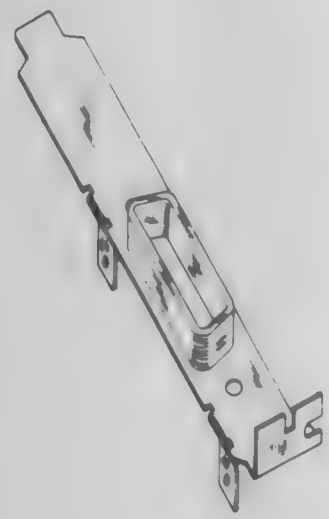


284,931
ADJUSTABLE FRICTION HINGE
Robert H. Bisbing, Springfield, Pa., assignor to Southco, Inc., Concordville, Pa.
Filed Nov. 8, 1984, Ser. No. 669,667
Term of patent 14 years
U.S. Cl. D8—327

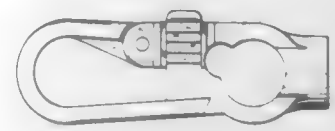


284,932
BRACKET FOR ELECTRONIC EQUIPMENT
R. Alan Beverly, San Luis Obispo, Calif., assignor to Ziatech Corporation, San Luis Obispo, Calif.
Filed Dec. 15, 1983, Ser. No. 561,877
Term of patent 14 years
U.S. Cl. D8—373



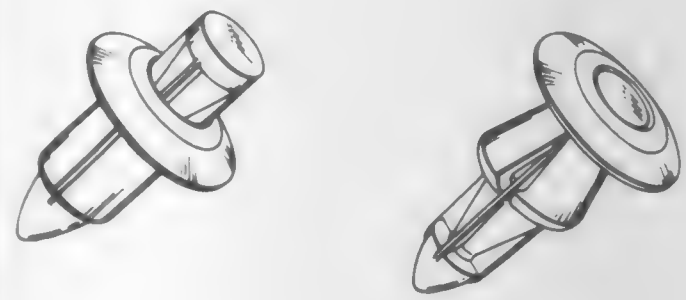


284,933
SHACKLE
Jack J. Murphy, Chapel Elms, Chapel La., West Wittering, West Sussex, England
Filed Aug. 2, 1983, Ser. No. 519,749
Claims priority, application United Kingdom, Feb. 3, 1983, 1011234; Feb. 3, 1983, 1011235
Term of patent 14 years
U.S. Cl. D8—382

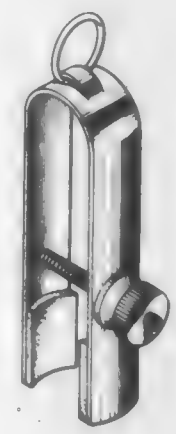




284,934
PANEL FASTENER OR THE LIKE
Toshiya Okawa, Nagoya, Japan, assignor to Nifco, Inc., Yokohama, Japan
Filed Oct. 19, 1983, Ser. No. 543,595
Claims priority, application Japan, Apr. 18, 1983, 58-16101
Term of patent 14 years
U.S. Cl. D8—386



284,935
PLANTING POT CLAMP FOR SUSPENDED SUPPORTS
Velma M. Shaw, 3711 Summer Shore La., Westlake Village, Calif. 91361
Filed May 10, 1984, Ser. No. 609,282
Term of patent 14 years
U.S. Cl. D8—394



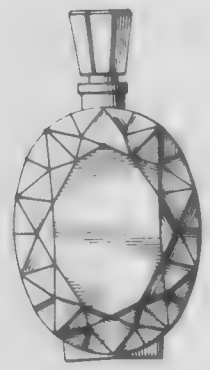
284,936
ANTENNA ELEMENT-BOOM CLAMP
Donald R. Newcomb, San Marcos, Tex., assignor to Butternut Electronics Co., Lockhart, Tex.
Filed Mar. 17, 1983, Ser. No. 476,069
Term of patent 14 years
U.S. Cl. D8—396



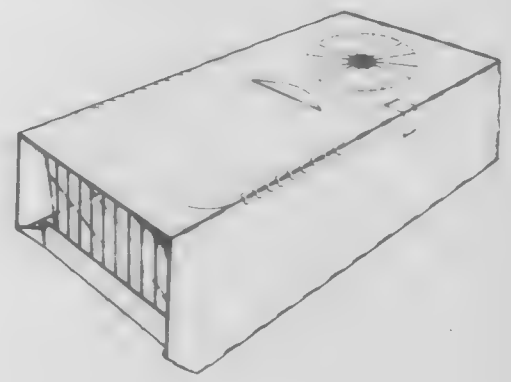
284,937
DOOR KNOCKER
Clint Shaw, 552 Sherwood Dr., Auburn, Ala. 36830
Filed May 7, 1984, Ser. No. 607,412
Term of patent 14 years
U.S. Cl. D8—401



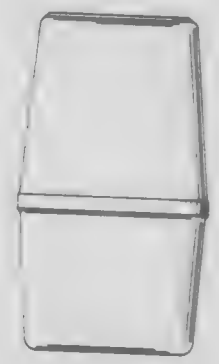
284,938
BOTTLE
Maurice Jedwab, 22 Rue de la Tourelle, 92100 Boulogne, France, and Henri Jedwab, 163 Avenue Victor Hugo, 75016 Paris, France
Filed Aug. 12, 1983, Ser. No. 522,712
Claims priority, application France, Feb. 25, 1983, 830728
Term of patent 14 years
U.S. Cl. D9—307



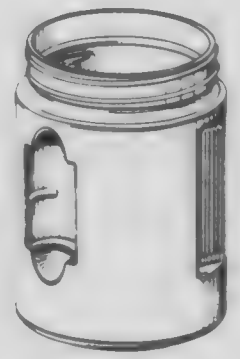
284,939
PACKAGING CONTAINER FOR FOOD AND BEVERAGES
George R. Sandish, Annapolis, Md.; Henry Wischusen, III, Lilburn, Ga., and George Nemeskeri, Nova Scotia, Canada, assignors to The Coca-Cola Company, Atlanta and Rock Tenn, Norcross, both of, Ga.
Filed Aug. 25, 1983, Ser. No. 526,575
Term of patent 14 years
U.S. Cl. D9—346



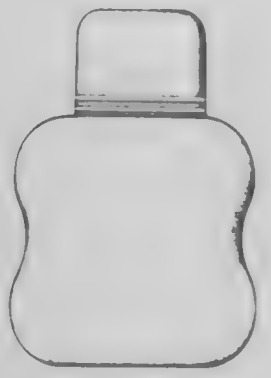
284,940
PACKAGING CONTAINER
Vincent E. Fortuna, Huntington Beach, Calif., and Donald N. MacLaughlin, Midland, Mich., assignors to Vercon, Inc., Dallas, Tex.
Filed Apr. 30, 1984, Ser. No. 605,446
Term of patent 14 years
U.S. Cl. D9—349



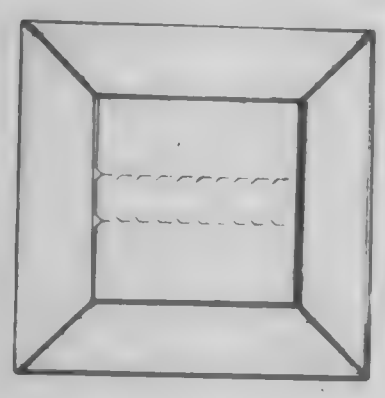
284,941
JAR OR THE LIKE
Don D. Porteous, 2794 Moraga Dr., Los Angeles, Calif. 90024
Filed Mar. 19, 1984, Ser. No. 590,633
Term of patent 14 years
U.S. Cl. D9—378



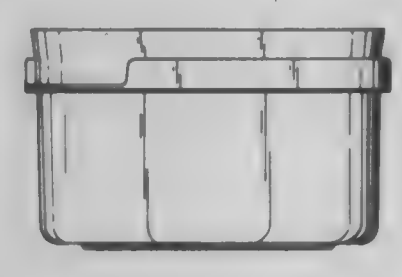
284,942
BOTTLE OF PERFUME OR TOILET WATER
Pierre Dinand, Levallois-Perret, France, assignor to Co. Pr. A., Spa-Via Giacomo Watt 13, Milan, Italy
Filed Apr. 26, 1983, Ser. No. 488,725
Claims priority, application France, Nov. 10, 1982, 823908
Term of patent 14 years
U.S. Cl. D9—403



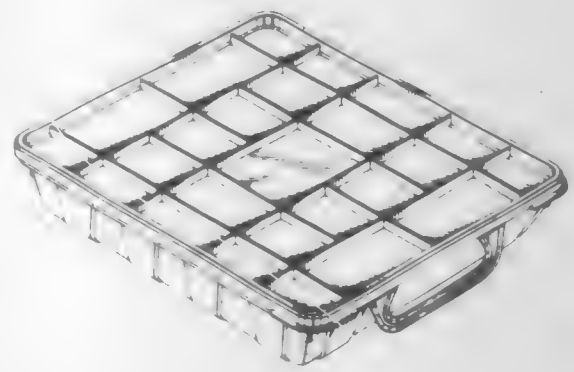
284,943
MICROWAVE COOKING CARTON
George P. Webinger, Robbinsdale, Minn., assignor to Waldorf Corporation, St. Paul, Minn.
Filed Feb. 13, 1984, Ser. No. 579,371
Term of patent 14 years
U.S. Cl. D9—416



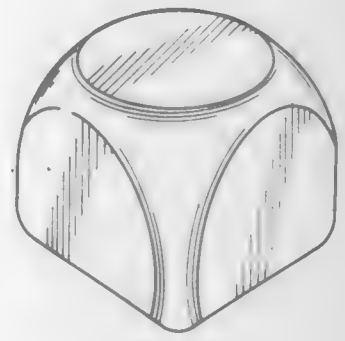
284,944
CONTAINER FOR FOOD
Arthur R. Carlson, East Malvern, Australia, assignor to The Decor Corporation PTY, LTD, Scoresby, Australia
Filed Jul. 14, 1983, Ser. No. 513,720
Term of patent 14 years
U.S. Cl. D9—425



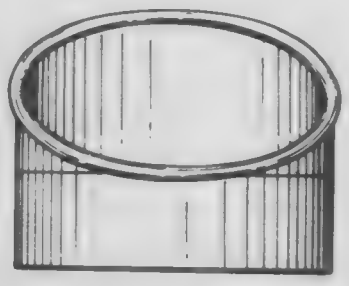
284,945
COMBINED TRAY AND COVER
Wilfred L. Jones, Crafta Webb, and Nigel A. Dent, Headington, both of England, assignors to Imperial Chemical Industries PLC, London, England
Filed Apr. 12, 1984, Ser. No. 599,556
Claims priority, application United Kingdom, Oct. 12, 1983, 1015629
Term of patent 14 years
U.S. Cl. D9—425



284,946
BOTTLE CAP
Jacques Augros, Villiers le Bel, France, assignor to J. Augros et Cie Société Anonyme Francaise, France
Filed Jul. 11, 1983, Ser. No. 512,340
Claims priority, application France, Apr. 13, 1983, 831365
Term of patent 14 years
U.S. Cl. D9—435

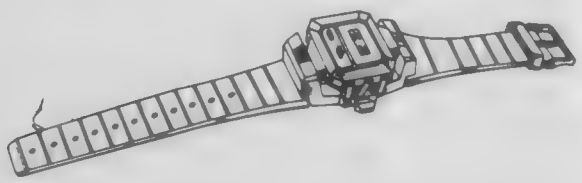


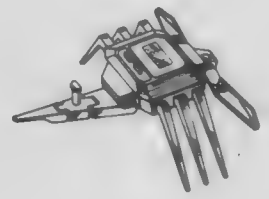
284,947
AEROSOL CAN OVERCAP
Michael A. Cousins, New York, N.Y., assignor to Bristol-Myers Company, New York, N.Y.
Filed Oct. 5, 1983, Ser. No. 539,247
Term of patent 14 years
U.S. Cl. D9—445



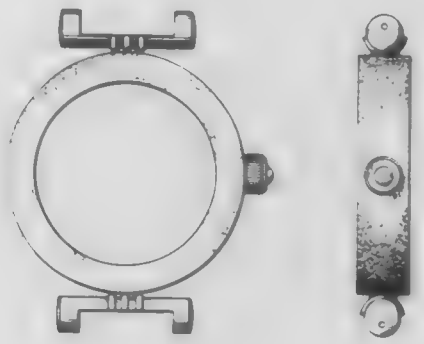


284,948
COMBINED WRISTWATCH AND TOY ANIMAL FIGURE
Iwakichi Ogawa, Kashiwa, Japan, assignor to Takara Co., Ltd., Tokyo, Japan
Filed May 30, 1984, Ser. No. 616,426
Term of patent 14 years
U.S. Cl. D10—34

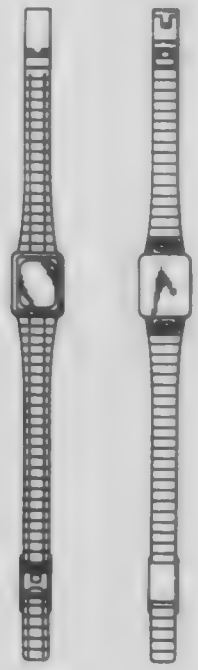




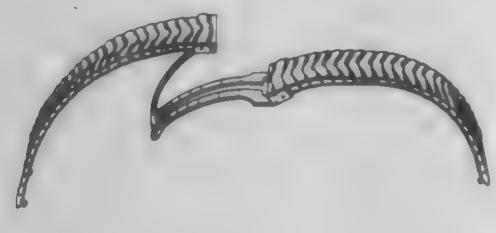
284,949
WATCH FRAME
Hung W. Kong, No. 5, Wanchai Rd., Fifth Floor, Hong Kong, Hong Kong
Filed Apr. 16, 1984, Ser. No. 600,822
Term of patent 14 years
U.S. Cl. D10—128



284,950
WATCH STRAP
Fu Hong Lai, Kowloon, Hong Kong, assignor to Hong Nin Metal Works Factory Co. Ltd., Kwai Chung, Hong Kong
Filed May 10, 1984, Ser. No. 609,106
Claims priority, application United Kingdom, Nov. 22, 1983, 1016412
Term of patent 14 years
U.S. Cl. D11—3



284,951
WATCH BAND
Jean-Pierre Chodat, Auvernier, Switzerland, assignor to Fabrique Ebel, Societe Anonyme, Switzerland
Filed Jun. 12, 1984, Ser. No. 619,810
Claims priority, application Int'l Pat. Institute, Dec. 13, 1983, DM/003 202
Term of patent 14 years
U.S. Cl. D11—4





284,952
EARRING
William M. Ricks, 1104 Moccasin Tr., Kokomo, Ind. 46902
Filed Jul. 23, 1984, Ser. No. 633,709
Term of patent 14 years
U.S. Cl. D11—75

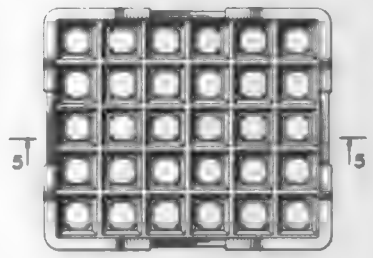






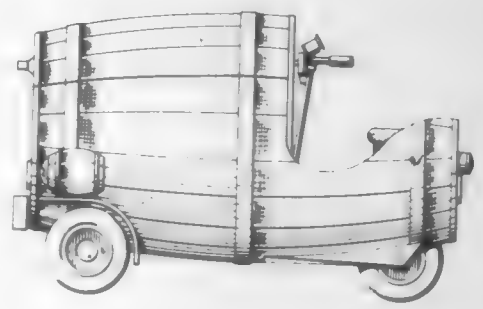


284,953
BOX FOR CULTIVATING VEGETABLES OR THE LIKE
Toshiro Kaneko, 20-3, Nakashinden, Yaizu-shi, Shizuoka-ken, Japan
Filed Oct. 18, 1983, Ser. No. 543,100
Term of patent 14 years
U.S. Cl. D11—155

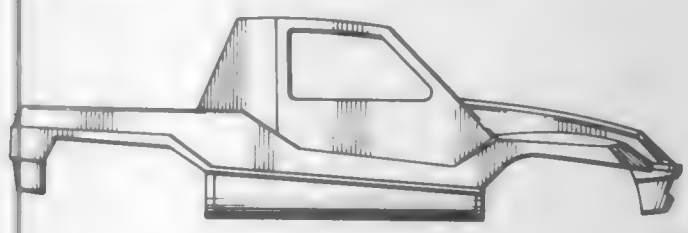




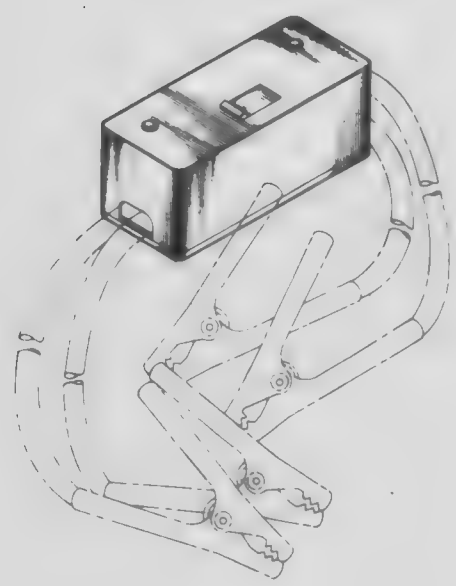
284,954
CARBONATED BEVERAGE VEHICLE
Bernard D. Lamb, 4316 S. A St., Tacoma, Wash. 98408
Filed Sep. 21, 1984, Ser. No. 652,970
Term of patent 14 years
U.S. Cl. D12—83



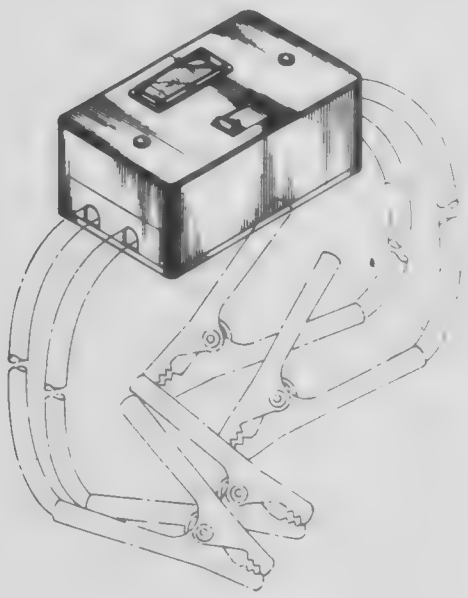
284,955
VEHICLE BODY
Nicolaas D. Loubser, Kempton Park, South Africa, assignor to Hennic (Proprietary) Limited, South Africa
Filed May 4, 1984, Ser. No. 607,138
Claims priority, application South Africa, Dec. 15, 1983, 83/1112
Term of patent 14 years
U.S. Cl. D12—98



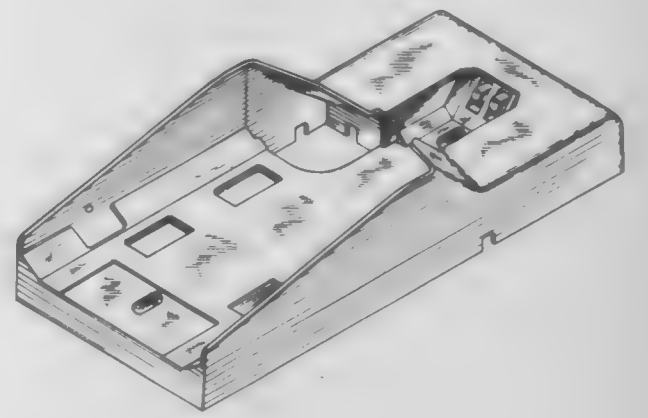
284,956
JUMPER CABLE CONTROL BOX
Bobby L. Bates, San Dimas, Calif., assignor to Bates R&D, Inc., San Dimas, Calif.
Filed Jan. 19, 1984, Ser. No. 571,835
Term of patent 14 years
U.S. Cl. D13—5



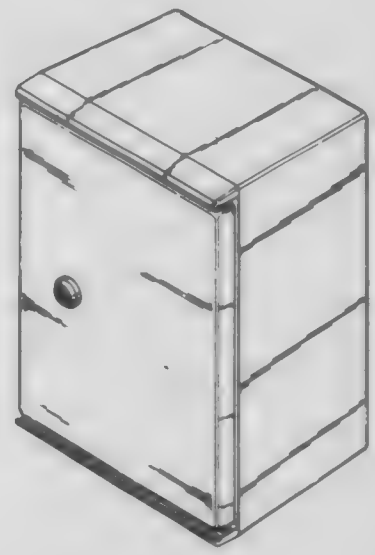
284,957
COMBINED JUMPER CABLE CONTROL BOX AND METER
Bobby L. Bates, San Dimas, Calif., assignor to Bates R&D, Inc., San Dimas, Calif.
Filed Jan. 19, 1984, Ser. No. 571,836
Term of patent 14 years
U.S. Cl. D13—5



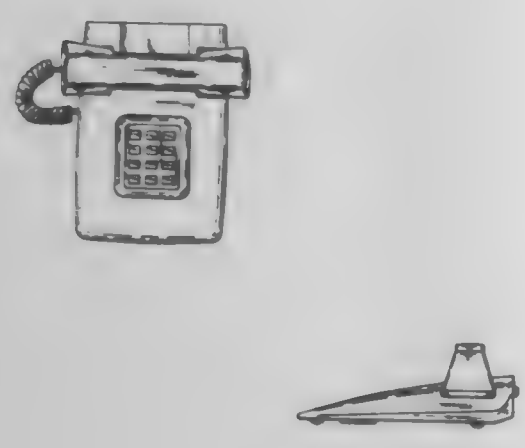
284,958
CHARGER BASE FOR A BATTERY-OPERATED APPLIANCE OR THE LIKE
Masao Tsuji, Old Lyme, Conn., assignor to North American Philips Corporation, New York, N.Y.
Filed Jul. 6, 1983, Ser. No. 522,880
Term of patent 14 years
U.S. Cl. D13—6



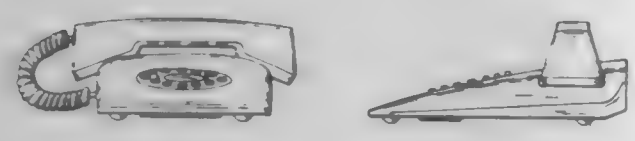
284,959
ELECTRICAL CABINET OR SIMILAR ARTICLE
Franco Berg, Isernhagen, Fed. Rep. of Germany, assignor to Rittal-Werk Rudolf Loh GmbH & Co. KG, Fed. Rep. of Germany
Filed Oct. 7, 1985, Ser. No. 785,284
Claims priority, application Fed. Rep. of Germany, Apr. 17, 1985, MR 357
Term of patent 14 years
U.S. Cl. D13—40



284,960
TELEPHONE
Morty Hova, 29 Seaside Dr., Port Jefferson, N.Y. 11777
Filed May 25, 1984, Ser. No. 613,916
Term of patent 14 years
U.S. Cl. D14—53

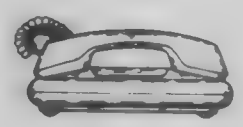


284,961
TELEPHONE
Morty Hova, 29 Seaside Dr., Port Jefferson, N.Y. 11777
Filed May 25, 1984, Ser. No. 614,327
Term of patent 14 years
U.S. Cl. D14—53

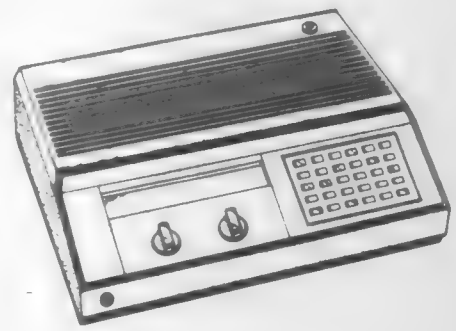


284,962
TELEPHONE
Morty Hova, 29 Seaside Dr., Port Jefferson, N.Y. 11777
Filed May 25, 1984, Ser. No. 614,326
Term of patent 14 years
U.S. Cl. D14—53

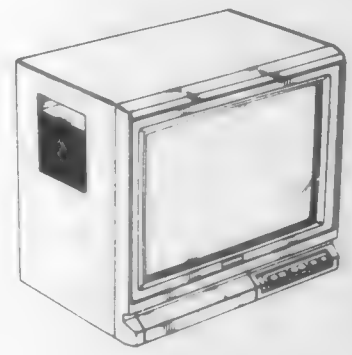




284,963
PROGRAMMABLE AM/FM SCANNING RADIO RECEIVER
Kazuyoshi Imazeki, Tokyo, Japan, assignor to General Research of Electronics, Inc., Tokyo, Japan
Filed Jan. 27, 1984, Ser. No. 574,389
Term of patent 14 years
U.S. Cl. D14—71



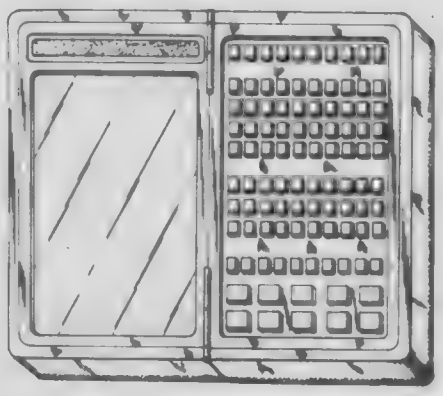
284,964
TELEVISION RECEIVER
Toru Higashihara, Tokyo; Akira Takahashi, Sayama; Toru Kiyota, Tachikawa, and Takashi Fujii, Hino, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Jan. 31, 1984, Ser. No. 575,692
Claims priority, application Japan, Sep. 9, 1983, 58-39116
Term of patent 14 years
U.S. Cl. D14—60



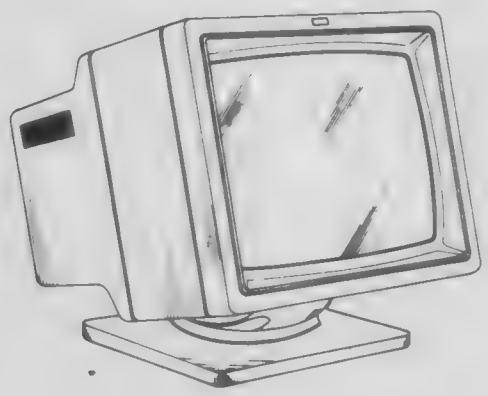
284,965
UHF ANTENNA
Norio Nakamura, Yokohama, Japan, assignor to Suntron Industrial Co., Ltd., Kanagawa, Japan
Filed Mar. 31, 1983, Ser. No. 480,689
Term of patent 14 years
U.S. Cl. D14—86



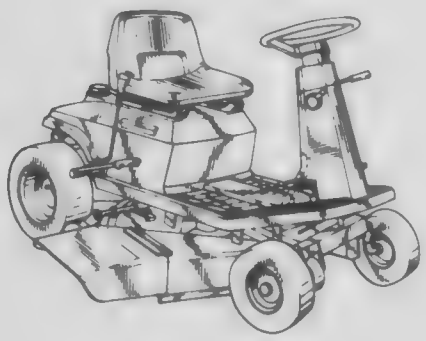
284,966
HAND HELD PORTABLE COMPUTER IN THE FORM OF A BOOK
Frank D. Larkins, Greenville, S.C., assignor to Computer Bibles International, Inc., Greenville, S.C.
Filed Sep. 19, 1983, Ser. No. 533,806
Term of patent 14 years
U.S. Cl. D14—100



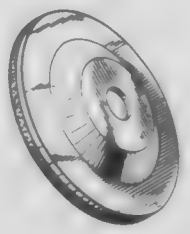
284,967
DISPLAY MONITOR
John A. Wiseman, Winchester, United Kingdom, assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Dec. 16, 1983, Ser. No. 562,503
Claims priority, application United Kingdom, Jun. 21, 1983, 1013702
Term of patent 14 years
U.S. Cl. D14—113



284,968
LAWN TRACTOR
Masahiro Watanabe, and Shungo Yorozu, both of Tokyo, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Nov. 9, 1984, Ser. No. 669,938
Claims priority, application Japan, May 9, 1984, 59-18682
Term of patent 14 years
U.S. Cl. D15—15

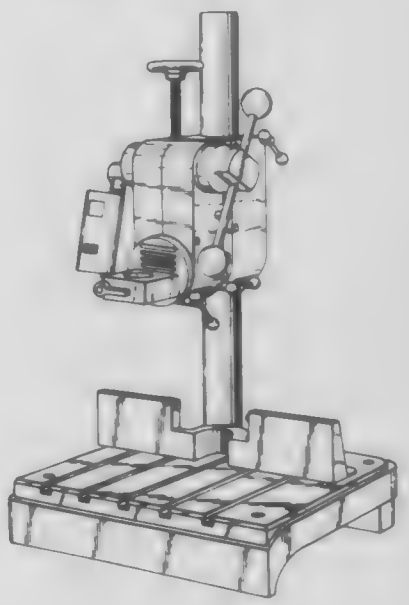


284,969
HONING DISC
Gunnar Olovsson, P.O. Box 3031, S-981 03 Kiruna, Sweden
Filed Oct. 28, 1983, Ser. No. 546,254
Term of patent 14 years
U.S. Cl. D15—126

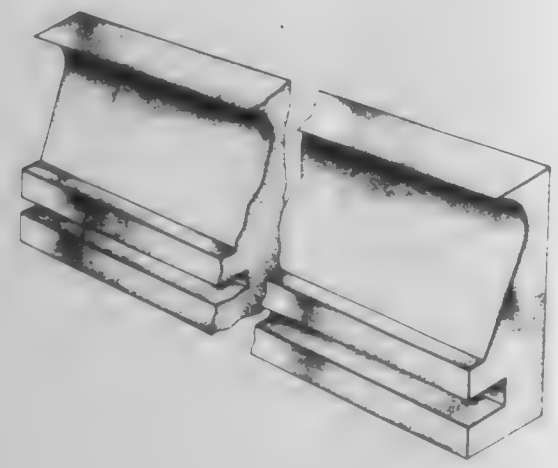




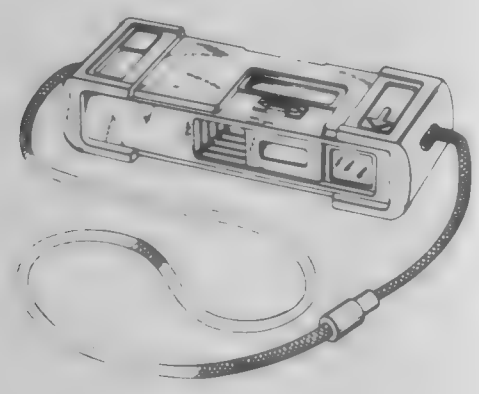
284,970
HAND-DRILL PRESS STAND
Friedrich Wolff, Remscheid, Fed. Rep. of Germany, assignor to Werkzeug GmbH, Fed. Rep. of Germany
Filed Jul. 9, 1984, Ser. No. 629,047
Claims priority, application Fed. Rep. of Germany, Feb. 8, 1984, 5 MR 254
Term of patent 14 years
U.S. Cl. D15—132



284,971
MOLD FOR FORMING SWIMMING POOL COPING
Max W. Deason, 1818 W. Price St., Tucson, Ariz. 85705
Filed Apr. 4, 1983, Ser. No. 481,669
Term of patent 14 years
U.S. Cl. D15—136



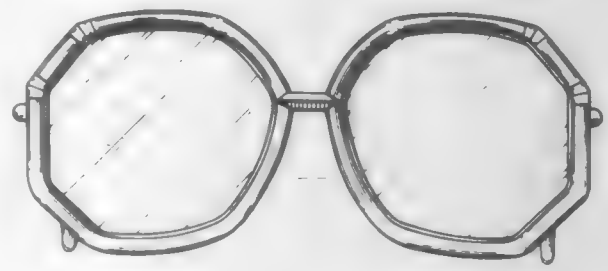
284,972
CAMERA
Robert A. Kolich, East Aurora, N.Y., assignor to The Quaker Oats Company, Chicago, Ill.
Filed Feb. 9, 1984, Ser. No. 578,492
Term of patent 14 years
U.S. Cl. D16—6



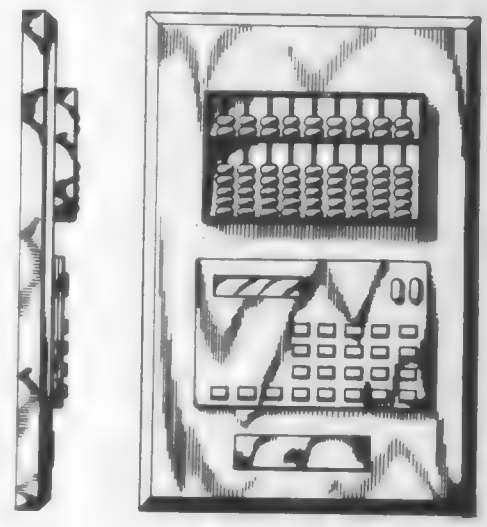
284,973
CAMERA WITH INTEGRAL FLASH UNIT
David E. Hansen, Fairport, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Sep. 10, 1984, Ser. No. 649,102
Term of patent 14 years
U.S. Cl. D16—6



284,974
SUNGLASSES
Jean-Pierre Lamy, Geneva, Switzerland, assignor to Lamy Optic Industries, Inc., Miami, Fla.
Filed Feb. 29, 1984, Ser. No. 584,796
Term of patent 14 years
U.S. Cl. D16—102



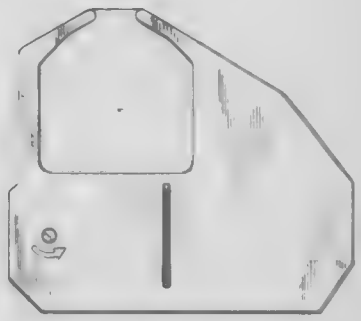
284,975
COMBINED DESKTOP ABACUS AND ELECTRONIC CALCULATOR
Herbert Kwok, 4118 Bristol Ct., Northbrook, Ill. 60062
Filed Aug. 7, 1984, Ser. No. 638,575
Term of patent 14 years
U.S. Cl. D18—2



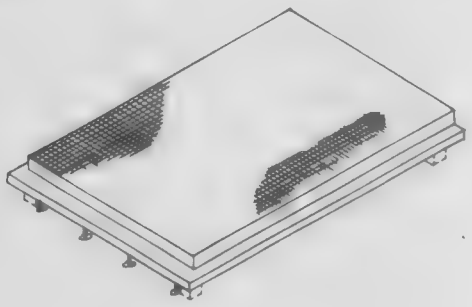
284,976
COMBINED CALCULATOR AND CLIPBOARD
Danny Chan Chi Hung, Hong Kong, Hong Kong, assignor to Dah Sun Electronics Company, Limited, Hong Kong, Hong Kong
Filed Aug. 13, 1984, Ser. No. 640,197
Claims priority, application United Kingdom, May 17, 1984, 1019723
Term of patent 14 years
U.S. Cl. D18—2

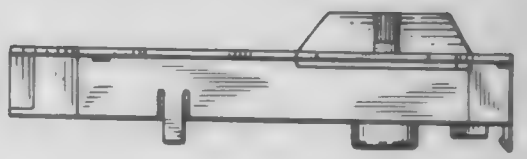


284,978
INK RIBBON CARTRIDGE
Yoshito Kusabuka, Shiojiri, Japan, assignor to Seiko Epson Corporation, Tokyo, Japan
Filed Mar. 5, 1984, Ser. No. 586,453
Claims priority, application Japan, Sep. 7, 1983, 39049
Term of patent 14 years
U.S. Cl. D18—22

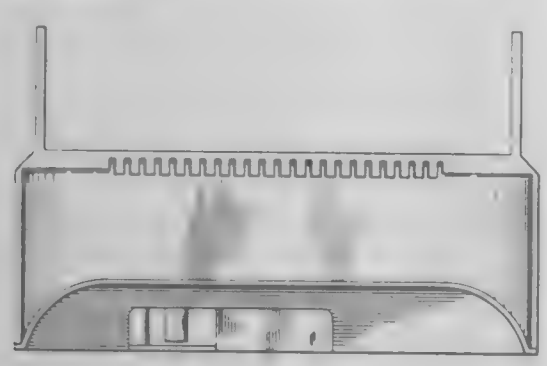


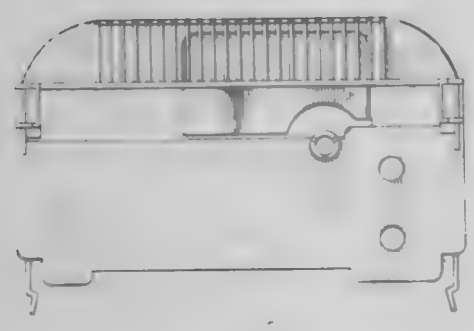
284,977
MIMEOGRAPHER
Raymond B. Simmons, 1570 Hudson Ave., San Francisco, Calif. 94124
Filed Feb. 15, 1979, Ser. No. 12,442
Term of patent 14 years
U.S. Cl. D18—18

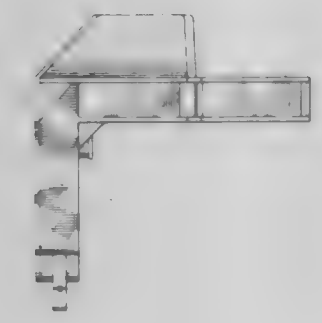




284,979
RIBBON CASSETTE OR SIMILAR ARTICLE
Thomas J. Bossack, Candor, and Louis E. Shipos, Ithaca, both of N.Y., assignors to NCR Corporation, Dayton, Ohio
Filed Aug. 27, 1984, Ser. No. 644,884
Term of patent 14 years
U.S. Cl. D18—22

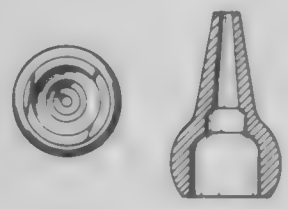






284,980
CRAYON
Kenkichi Yoshida, Tokyo, Japan, assignor to Kabushiki Kaisha Buncho, Tokyo, Japan
Filed Jul. 7, 1983, Ser. No. 512,194
Term of patent 14 years
U.S. Cl. D19—41

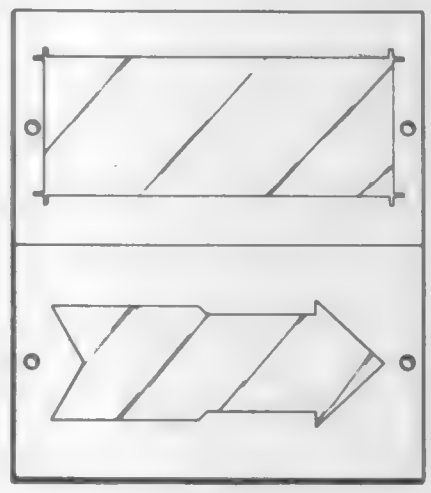




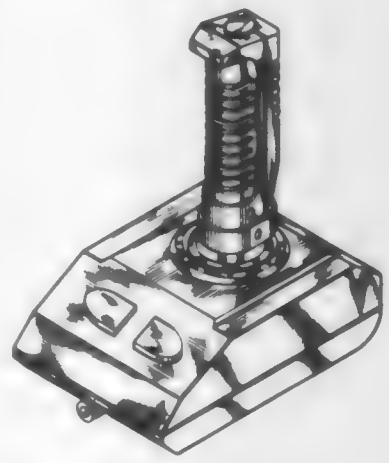
284,981
COMBINED TAG AND CORD FOR BAG CONTAINING MOISTURIZING BEADS OR THE LIKE
Vincent N. Figliola, 301 E. 62nd St., New York, N.Y. 10021
Filed Apr. 20, 1983, Ser. No. 486,723
Term of patent 14 years
U.S. Cl. D20—26



284,982
MARKER
Knut H. Collinder, Åkarp, Sweden, assignor to Ingenjörsfirma Knut Collinder AB, Åkarp, Sweden
Filed Dec. 20, 1983, Ser. No. 563,521
Claims priority, application Sweden, Jun. 23, 1983, 83-1723
Term of patent 14 years
U.S. Cl. D20—40



284,983
CONTROL FOR A VIDEO GAME
Lai-Jin Liu, 2F. #328 Mu Cha Rd. Sec. 1, Mu Cha Ward, Taipei, Taiwan
Filed Nov. 30, 1983, Ser. No. 556,695
Term of patent 14 years
U.S. Cl. D21—48

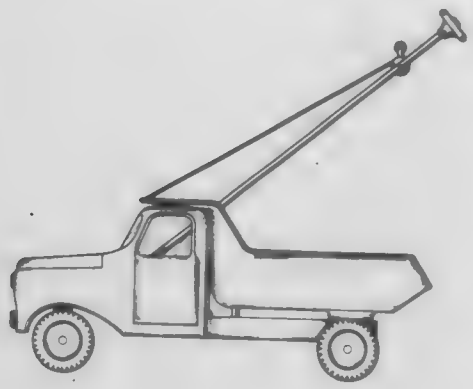


284,984

TOY DUMP TRUCK

Christos Tzanetakos, 405 NE. 114 St., Miami, Fla. 33161

Filed Jun. 4, 1984, Ser. No. 617,178
Term of patent 14 years
U.S. Cl. D21—134

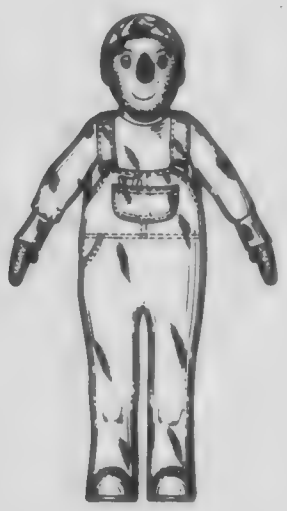


284,985

DOLL

Arlene Bobker, 165 E. 66th St., New York, N.Y. 10021, and
Arline Politzer, 315 E. 88th St., New York, N.Y. 10128

Filed Apr. 16, 1984, Ser. No. 601,048
Term of patent 14 years
U.S. Cl. D21—175

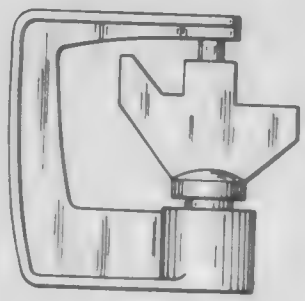


284,986

GARDEN SPRINKLER HEAD

Jack L. Lemkin, Cincinnati, and Eugene A. Zilber, Columbus, both of Ohio, assignors to The O. M. Scott & Sons Company, Marysville, Ohio

Filed Mar. 5, 1984, Ser. No. 586,284
Term of patent 14 years
U.S. Cl. D23—7

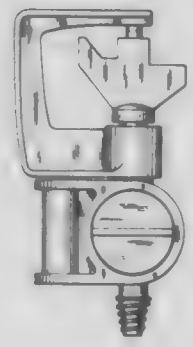


284,987

COMBINED GARDEN SPRINKLER AND VALVE

Jack L. Lemkin, Cincinnati, and Eugene A. Zilber, Columbus, both of Ohio, assignors to The O. M. Scott & Sons Company, Marysville, Ohio

Filed Mar. 5, 1984, Ser. No. 586,286
Term of patent 14 years
U.S. Cl. D23—7

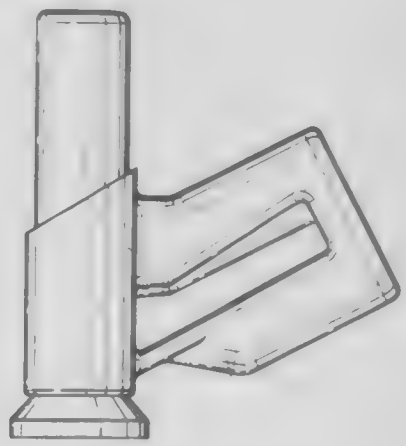


284,988

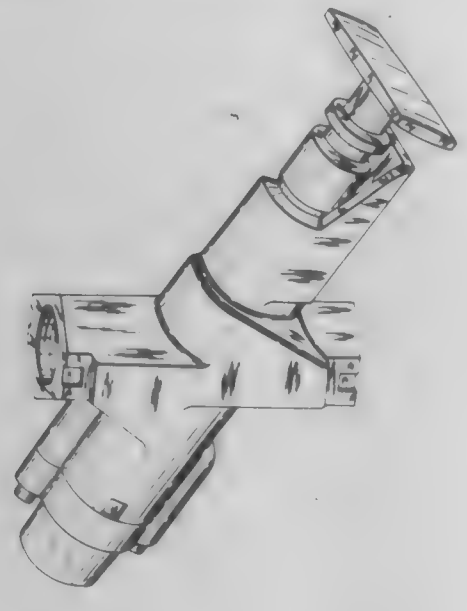
SPRAY GUN

David Powell, London, England, assignor to Imperial Chemical Industries PLC, London, England

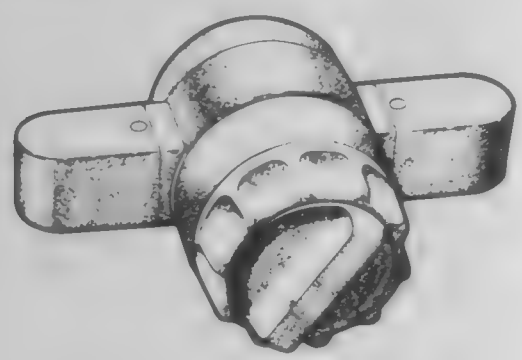
Filed Jul. 25, 1984, Ser. No. 634,359
Claims priority, application United Kingdom, Jan. 25, 1984, 1017508
Term of patent 14 years
U.S. Cl. D23—17



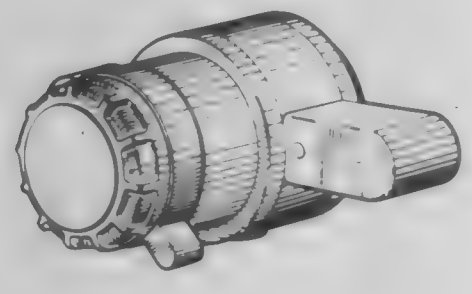
284,989
VALVE
Harold D. Fetty, Birmingham, Mich., assignor to Ross Operating Valve Company, Troy, Mich.
Filed Jun. 13, 1983, Ser. No. 503,779
Term of patent 14 years
U.S. Cl. D23—19



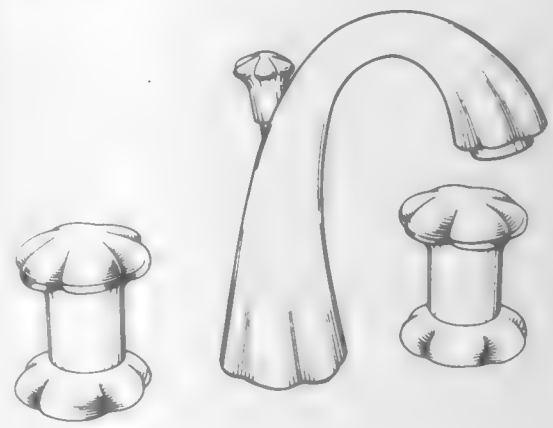
284,990
FLUID MIXING VALVE FOR SHOWERS OR THE LIKE
Kenneth A. Ogilvie, Naunton, England, assignor to Walker Crosweller & Company Limited, England
Filed Oct. 17, 1983, Ser. No. 542,541
Claims priority, application United Kingdom, Jul. 2, 1983, 1013894
Term of patent 14 years
U.S. Cl. D23—19



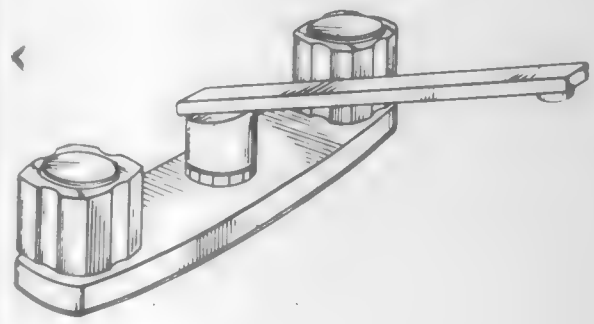
284,991
MIXING VALVE FOR SHOWERS OR THE LIKE
Kenneth A. Ogilvie, Naunton, England, assignor to Walker Crosweller & Company Limited, England
Filed Apr. 11, 1985, Ser. No. 721,923
Claims priority, application United Kingdom, Dec. 4, 1984, 1023714
Term of patent 14 years
U.S. Cl. D23—19



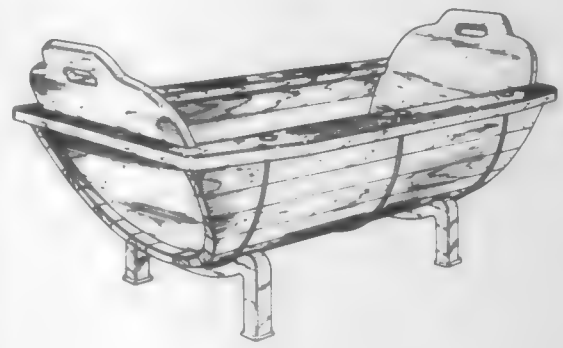
284,992
LAVATORY FAUCET SET
Gerhard E. Joerger, Hans-Thoma-Strasse 89-99, 6800 Mannheim 25, Fed. Rep. of Germany
Filed May 9, 1983, Ser. No. 493,096
Claims priority, application Fed. Rep. of Germany, Nov. 8, 1982, MR V/1247
Term of patent 14 years
U.S. Cl. D23—25



284,993
SINK FAUCET
Holly K. Yost, Van Nuys, Calif., assignor to Price Pfister, Inc., Pacoima, Calif.
Division of Ser. No. 507,524, Jun. 24, 1983. This application Jul. 22, 1985, Ser. No. 757,731
Term of patent 14 years
U.S. Cl. D23—25



284,994
BATHTUB
Waldemar Rothe, Lutherstr. 9, D-6900 Heidelberg, Fed. Rep. of Germany
Filed Dec. 9, 1983, Ser. No. 559,803
Claims priority, application Fed. Rep. of Germany, Jun. 11, 1983, MR BD IVNR.370; Jun. 13, 1983, 8317248[U]
Term of patent 14 years
U.S. Cl. D23—56

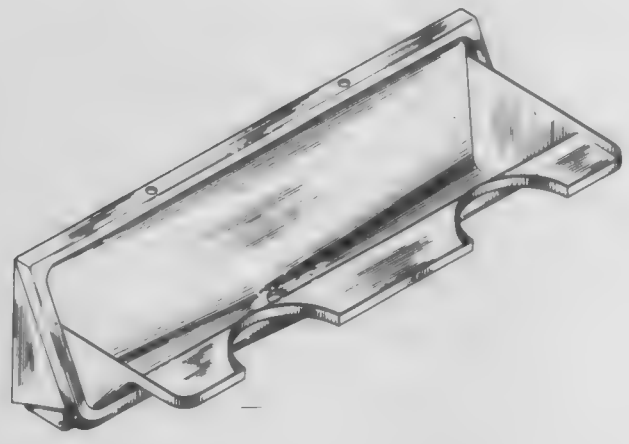


284,995

SURGEON'S SCRUB SINK

Fred V. G. Ekbladh, Postlåda 178, S-430 40 Särö, and Hans Tillander, Humlegårdsgatan 3, S-412 74 Göteborg, both of Sweden

Filed May 3, 1983, Ser. No. 491,055
Claims priority, application Sweden, Nov. 12, 1982, 82-2720
Term of patent 14 years
U.S. Cl. D23—60

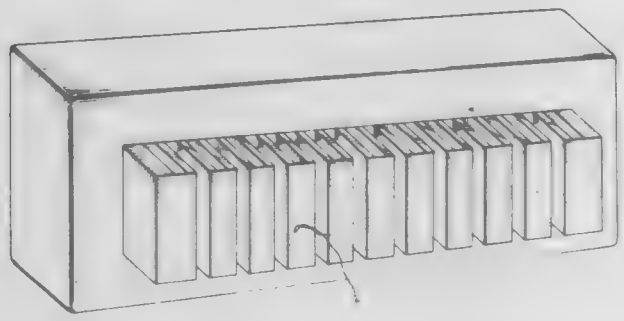


284,996

AIR SUPPLY REGISTER

Knut E. Bergdahl, Kvartsgränd 4, S-852 52 Sundsvall, Sweden

Filed Feb. 6, 1984, Ser. No. 577,259
Term of patent 14 years
U.S. Cl. D23—141

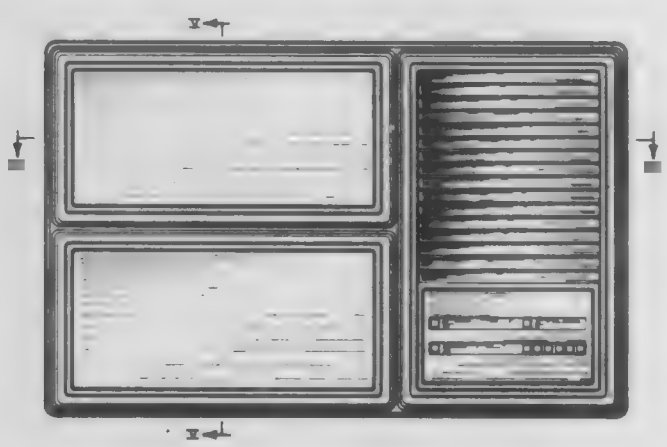


284,997

FRONT PANEL FOR A ROOM AIR CONDITIONER

Walter W. Hoyle, Fayetteville, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.

Filed Mar. 28, 1984, Ser. No. 594,649
The portion of the term of this patent subsequent to Aug. 5, 2000, has been disclaimed.
Term of patent 14 years
U.S. Cl. D23—141

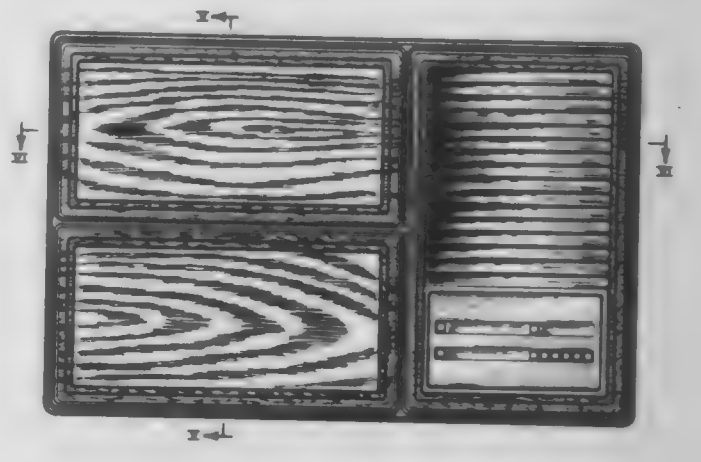


284,998

FRONT PANEL FOR A ROOM AIR CONDITIONER

Walter W. Hoyle, Fayetteville, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.

Filed Mar. 28, 1984, Ser. No. 594,648
The portion of the term of this patent subsequent to Aug. 5, 2000, has been disclaimed.
Term of patent 14 years
U.S. Cl. D23—141

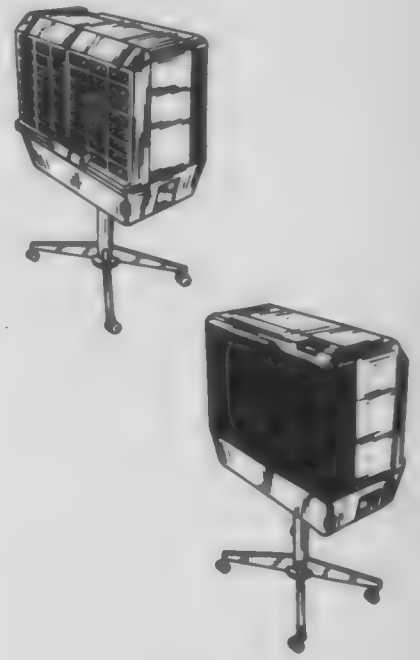


284,999

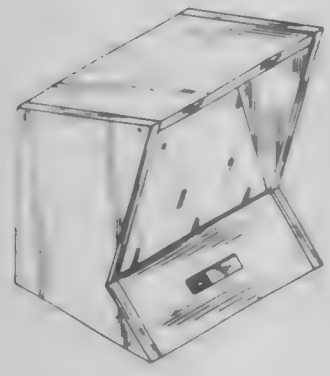
EVAPORATIVE AIR CONDITIONER

William Worthington, Glenalta, and John R. Ridings, Hope Valley, both of Australia, assignors to Dalgety Australia Operations Limited, Sydney, Australia

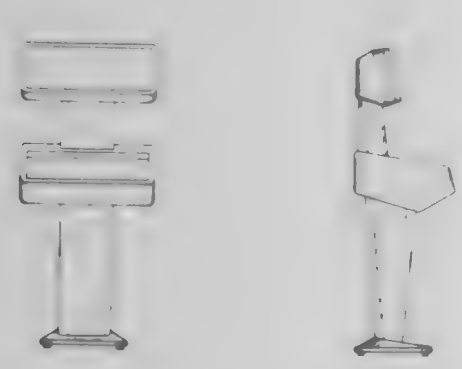
Filed Sep. 6, 1983, Ser. No. 529,348
Claims priority, application Australia, Jun. 17, 1983, 4115/83
Term of patent 14 years
U.S. Cl. D23—143



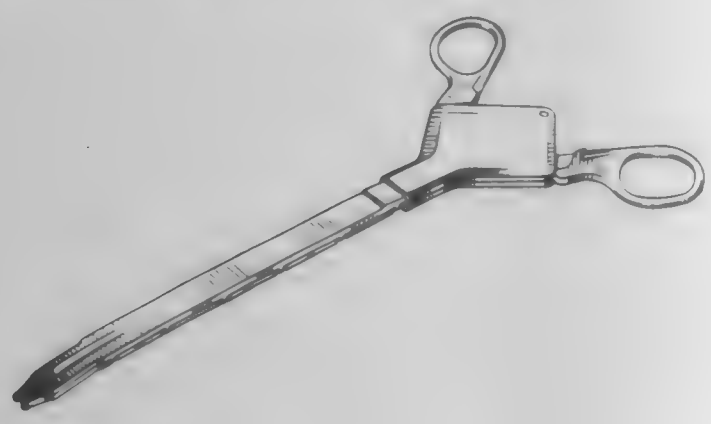
285,000
X-RAY VIEWER
Kent E. Stratton, 2649 Ethel Ave., Fort Wayne, Ind. 46808
Filed Nov. 15, 1983, Ser. No. 552,293
Term of patent 14 years
U.S. Cl. D24—2



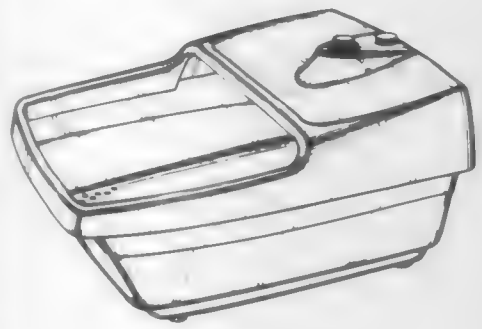
285,001
MEASURING AND CHECKING CONSOLE PARTICULARLY ADAPTED FOR HEART TESTS
Hervé Denis, 16 rue de Condé 75006 Paris, and Jacqueline Becquet, 55 Septième Ave., 60260 Lamorlay, both of France
Filed Sep. 28, 1982, Ser. No. 425,911
Claims priority, application Hague, Aug. 16, 1982, DM 001730
Term of patent 14 years
U.S. Cl. D24—21



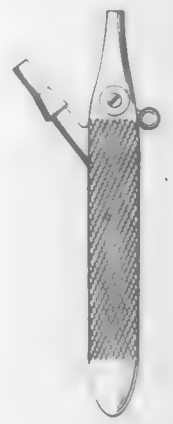
285,002
SURGICAL CLIP APPLICATOR
David T. Green; Richard A. McGarry, both of Norwalk, and Graham Smith, Ridgefield, all of Conn., assignors to United States Surgical Corporation, Norwalk, Conn.
Filed Jul. 27, 1984, Ser. No. 635,284
Term of patent 14 years
U.S. Cl. D24—26



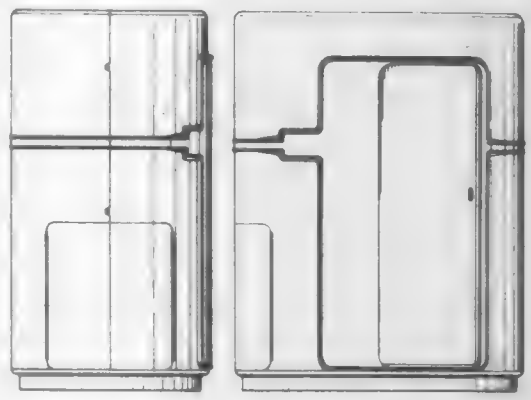
285,003
WHIRLPOOL FOOT MASSAGER
Alfred W. Madl, Glendale, Wis., assignor to Sunbeam Corporation, Oak Brook, Ill.
Filed Jan. 13, 1983, Ser. No. 457,799
Term of patent 14 years
U.S. Cl. D24—38



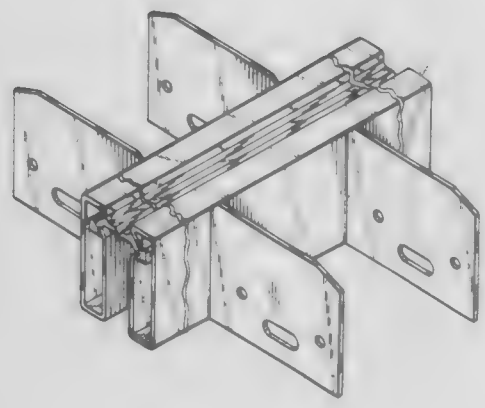
285,004
SURGICAL SUCTION INSTRUMENT
Ronald D. Shippert, 4975 S. Albion, Littleton, Colo. 80121
Filed Aug. 1, 1983, Ser. No. 519,406
Term of patent 14 years
U.S. Cl. D24—51



285,005
ENVIRONMENTAL-RETREAT BOOTH
Frank Italiane, 22996 El Toro Rd., El Toro, Calif. 92630
Filed Jul. 20, 1983, Ser. No. 515,204
Term of patent 14 years
U.S. Cl. D25—16



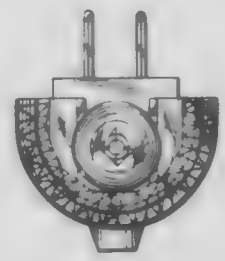
285,006
EXPANSION JOINT
Raoul M. Moulinie, Lachenaie, and Guy Gagne, St. Sauveur des Montes, both of Canada, assignors to Z-Tech Enterprises Inc., Boisbriand, Canada
Filed May 23, 1983, Ser. No. 497,033
Claims priority, application Canada, Dec. 10, 1982, 10-12-82-15
Term of patent 14 years
U.S. Cl. D25—73



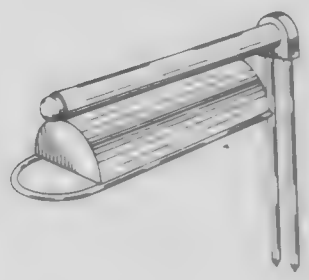
285,007
COMBINED FLUORESCENT LAMP AND ELECTRICAL ADAPTER THEREFOR
Herman J. Engel, 9832 Dungan Rd., Philadelphia, Pa. 19115
Filed Jul. 7, 1983, Ser. No. 511,771
The portion of the term of this patent subsequent to Jul. 22, 2000, has been disclaimed.
Term of patent 14 years
U.S. Cl. D26—3



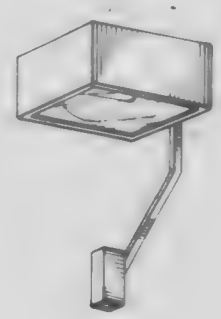
285,008
NIGHTLIGHT
Frederic W. Schwartz, Providence, R.I., assignor to Cable Electric Products, Inc., Providence, R.I.
Filed Jan. 6, 1984, Ser. No. 568,981
Term of patent 14 years
U.S. Cl. D26—26



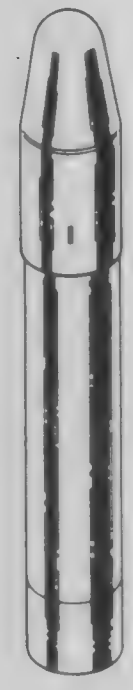
285,009
TASK LIGHT
Niels Diffrient, Ridgefield, Conn., assignor to Hauserman, Inc., Cleveland, Ohio
Filed Dec. 5, 1983, Ser. No. 558,200
Term of patent 14 years
U.S. Cl. D26—66



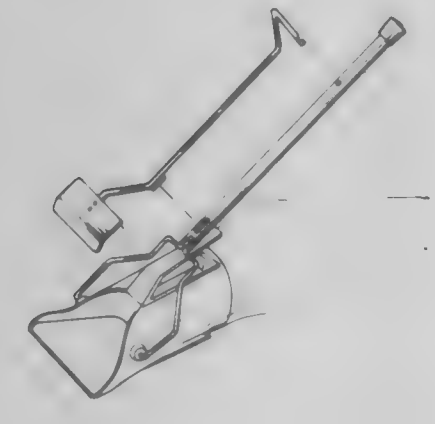
285,010
LIGHTING FIXTURE
Jack R. Mullins, Missouri City, Tex., assignor to JW Lighting, Inc., Houston, Tex.
Filed Jul. 11, 1983, Ser. No. 512,486
Term of patent 14 years
U.S. Cl. D26—67



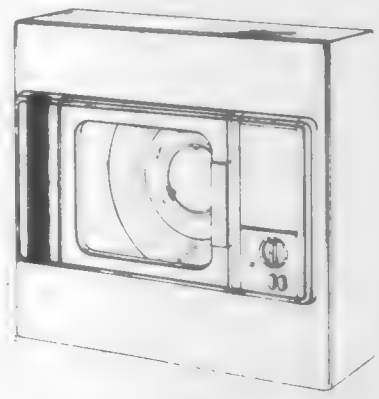
285,011
NAIL POLISH APPLICATOR
Axel Jankewitz, Furth, Fed. Rep. of Germany, assignor to A.W. Faber-Castell GmbH & Co., Nuernberg, Fed. Rep. of Germany
Filed Apr. 30, 1984, Ser. No. 605,567
Term of patent 14 years
U.S. Cl. D28—7



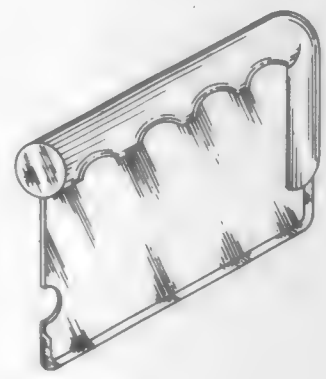
285,012
REFUSE COLLECTING DEVICE
J. Don Willis, 301 E. Lawrence Rd., Phoenix, Ariz. 85012
Filed Aug. 29, 1983, Ser. No. 527,031
Term of patent 14 years
U.S. Cl. D30—99,



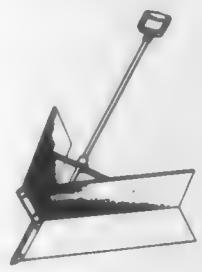
285,013
CLOTHES DRYING MACHINE
Yuji Nakamura, Inagi, and Jun Matsumoto, Tokyo, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan
Filed Apr. 12, 1983, Ser. No. 484,241
Claims priority, application Japan, Oct. 21, 1982, 57-47582
Term of patent 14 years
U.S. Cl. D32—8

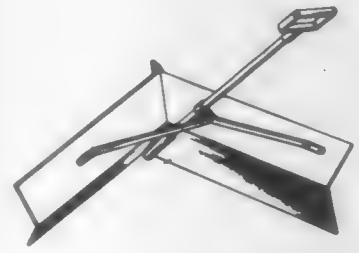


285,014
POT AND PAN SCRAPER
Ronald Maciel, 4238 Presidio Way, Napa, Calif. 94558
Filed Mar. 25, 1983, Ser. No. 478,645
Term of patent 14 years
U.S. Cl. D32—46

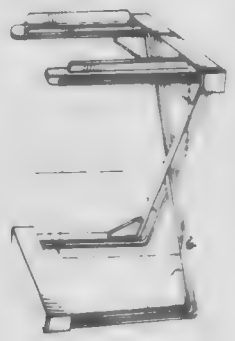


285,015
SNOW REMOVER
John L. DiAmico, 3109 Dalton Ct., Bensalem, Pa. 19020
Filed Jul. 25, 1984, Ser. No. 634,377
Term of patent 14 years
U.S. Cl. D32—49

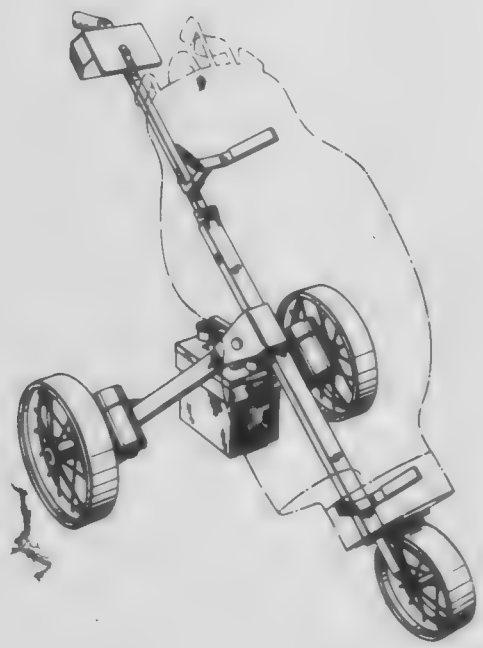




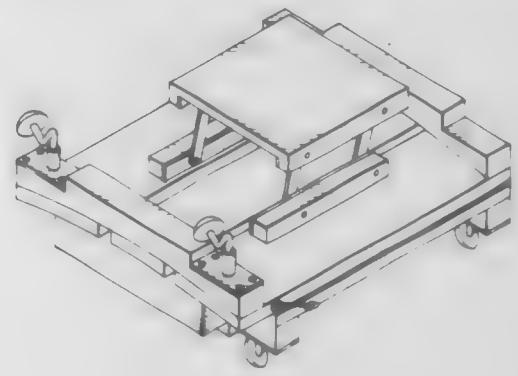
285,016
SUPPORT FOR FLEXIBLE CONTAINERS
Howard F. Claydon, 517 15th St., Boulder, Colo. 80302
Filed Nov. 26, 1984, Ser. No. 674,778
Term of patent 14 years
U.S. Cl. D34—6



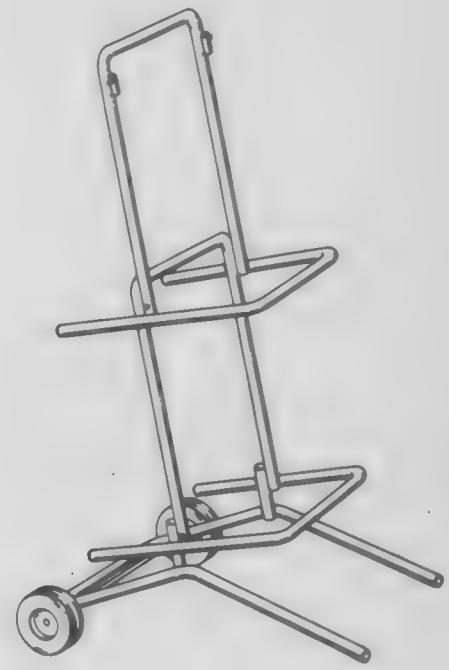
285,017
MOTOR PROPELLED GOLF CLUB CART
Ramon J. Zentis, 5533 Amoroso, Fort Myers, Fla. 33907, and Alfred A. Zentis, 8991 Main St., McKean, Pa. 16426
Filed Jun. 29, 1984, Ser. No. 626,150
Term of patent 14 years
U.S. Cl. D34—15



285,018
FOLDABLE AND CONVERTIBLE CREEPER
Silvio C. Quinonez, 355 N. Dougherty Ave., Fort Bragg, N.C. 28307
Filed Nov. 28, 1983, Ser. No. 555,521
Term of patent 14 years
U.S. Cl. D34—23



285,019
HAND TRUCK FOR DISPLAYING A PRODUCT
John J. Jackmore, St. James, N.Y., assignor to Crown Zellerbach Corporation, San Francisco, Calif.
Filed Jul. 23, 1984, Ser. No. 633,780
Term of patent 14 years
U.S. Cl. D34—26



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 5TH DAY OF AUGUST, 1986

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A. H. Robins Company, Incorporated: *See*—
Leonard, Charles A.; Franko, Bernard V.; and Cale, Albert D., Jr., 4,604,388, Cl. 514-211.000.
Munson, Harry R., Jr.; and Tankersley, Robert W., Jr., 4,604,404, Cl. 514-494.000.

A. Menarini S.A.S.: *See*—
Pestellini, Vittorio; Ghelardoni, Mario; Maggi, Carlo Alberto; Roncucci, Gabrio; and Meli, Alberto, 4,604,392, Cl. 514-227.000.

A. O. Smith Harvestore Products, Inc.: *See*—
Roberts, James R., 4,604,035, Cl. 417-319.000.

A/S Kaj Neckelmann, Syntetisk Fiber Industri: *See*—
Meyer, Hans; and Hartmann, Viggo E., 4,603,562, Cl. 68-198.000.

AB Scaniainventor: *See*—
Siwersson, Olle L.; and Wall, Arne E., 4,603,774, Cl. 198-518.000.

AB Svensk Alunskifferutveckling: *See*—
Bergkvist, Bruno; Kolhi, Martti; Strandell, Erik; and Svemar, Christer, 4,604,136, Cl. 75-24.000.

AB Volvo Penta: *See*—
Brandt, Lennart H.; and Pichl, Heinz, 4,604,032, Cl. 416-128.000.

Abbes, Claude; De Villepoix, Raymond; and Rouaud, Christian, to Commissariat a l'Energie Atomique. Tight connection device. 4,603,892, Cl. 285-336.000.

Abbott, Curtis W., to Lucasfilm Ltd. Method and system for storing and retrieving multiple channel sampled data. 4,604,687, Cl. 364-200.000.

Abdulla, Riaz F.; and Samaritoni, Jack G., to Eli Lilly and Company. Herbicidal pyridazinylimidazolidinone compounds. 4,604,127, Cl. 71-66.000.

Abe, Ryoji: *See*—
Hiraoka, Shin; Asanomi, Koji; and Abe, Ryoji, 4,603,673, Cl. 123-573.000.

Abo, Keiju: *See*—
Tanaka, Yoshikazu; Kumura, Haruyoshi; Abo, Keiju; Hirano, Hiroyuki; and Yamamuro, Sigeaki, 4,603,602, Cl. 74-866.000.

Ackerman, Walter T.; and Klimeck, Edward F., to Risdon Corporation. Cosmetic container construction. 4,603,989, Cl. 401-78.000.

Adachi, Yoshitugu: *See*—
Yada, Akira; Matsumoto, Shusaku; Kawamori, Yoshihiro; Saito, Takao; Nishiyama, Tadashi; and Adachi, Yoshitugu, 4,604,411, Cl. 522-14.000.

Adams, Graham L., to International Standard Electric Corporation. Distance measurement. 4,603,972, Cl. 356-4.000.

Adaptive Micro Systems, Inc.: *See*—
Latz, William J.; Mandler, Thomas J.; and Lai, Jason C. S., 4,603,496, Cl. 40-547.000.

Adis, Erich; Bader, Manfred; and Buschulte, Winfried, to Deutsche Forschungs- und Versuchsanstalt fur Luft- und Raumfahrt e.V. Oil gasifying burner with an oil atomizer. 4,604,104, Cl. 48-107.000.

Advanced Computer Communications: *See*—
Russ, Roger R.; and Berggreen, Arthur C., 4,604,683, Cl. 364-200.000.

Advanced Technology Laboratories, Inc.: *See*—
Hwang, Juin-Jet; McKeighan, Ronald E.; and Jaeger, Paul M., 4,603,702, Cl. 128-660.000.

AECI Limited: *See*—
Norton, John H. R.; and Rebello, Peter R., 4,603,662, Cl. 123-1.00A.

Afrashteh, Alireza: *See*—
Nesbit, Gerald H.; and Afrashteh, Alireza, 4,603,926, Cl. 339-17.00C.

Agence Spatiale Europeenne: *See*—
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Agency of Industrial Science and Technology: *See*—
Fujii, Yoshimasa; Mitsuhashi, Yoshinobu; and Koike, Osamu, 4,603,941, Cl. 350-96.150.

Aggarwal, Raj; and Suresh, Bindinganavle R., to Honeywell Inc. Method and apparatus for classification of a moving terrestrial vehicle as light or heavy. 4,604,738, Cl. 367-135.000.

Agnelli, Medardo: *See*—
Bretti, Carlo; Sermidi, Franco; and Agnelli, Medardo, 4,603,465, Cl. 29-564.600.

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Peters, Roeland H., 4,604,361, Cl. 435-288.000.

Aichelmann, Frederick J., Jr.; and Ryan, Philip M., to International Business Machines Corporation. Error logging memory system for avoiding miscorrection of triple errors. 4,604,751, Cl. 371-38.000.

Aida, Akira; Ohno, Tetsu; Fukuda, Takashi; Aihara, Kenji; Mizoguchi, Takuo; Nishimura, Syozi; and Kajiyama, Katsuyoshi, to Sumitomo Metal Industries, Ltd. Process for manufacturing high tensile steel wire. 4,604,146, Cl. 148-12.00B.

Aida Engineering Limited: *See*—
Komatsu, Isamu; and Serizawa, Kenkichi, 4,603,511, Cl. 51-165.710.
Kunieda, Masanori; Hiramatsu, Hiromichi; Higuchi, Toshiro; and Nakagawa, Takeo, 4,603,509, Cl. 51-31.000.

Aihara, Kenji: *See*—
Aida, Akira; Ohno, Tetsu; Fukuda, Takashi; Aihara, Kenji; Mizoguchi, Takuo; Nishimura, Syozi; and Kajiyama, Katsuyoshi, 4,604,146, Cl. 148-12.00B.
Kanabara, Susumu; and Aihara, Kenji, 4,604,145, Cl. 148-12.00B.

Air Products and Chemicals, Inc.: *See*—
Carr, Richard V. C.; Martin, Carl J.; Gonzalez, Roland; and Albanese, Thomas A., 4,604,214, Cl. 210-759.000.

Aisin Seiki Kabushiki Kaisha: *See*—
Yamazaki, Takeo, 4,603,600, Cl. 74-503.000.

Akagi, Masanobu, to Nippon Electric Co., Ltd. Data processing system having branch instruction prefetching performance. 4,604,691, Cl. 364-200.000.

Akahoshi, Haruo: *See*—
Murakami, Kanji; Akahoshi, Haruo; Kawamoto, Mineo; Wajima, Motoyo; Matsuda, Yoichi; Kawakubo, Kyoji; Kanechiku, Minoru; Yoshimura, Toyofusa; and Matsunaga, Makoto, 4,604,160, Cl. 156-630.000.

Akai Electric Company Limited: *See*—
Onishi, Ken; Ishida, Masayuki; Shirozu, Masakazu; Takedomi, Toshikatsu; Namekawa, Makoto; and Haikawa, Yukihiko, 4,604,747, Cl. 371-37.000.

Akashi, Teruo; Ito, Hiroshi; and Yamada, Shigemichi, to Toyota Jidosha Kabushiki Kaisha. Actuation system for transmission synchronizer providing regulated engagement pressure. 4,603,596, Cl. 74-336.00R.

Akiba, Osamu; Suzuki, Yoshiharu; Terada, Motoharu; and Saeki, Takashi, to Matsushita Electric Works, Ltd. Time-division multiplex transmission system. 4,604,618, Cl. 340-825.060.

Akita, Shigeyuki: *See*—
Yamanoue, Kouichi; Kitagawa, Junji; Akita, Shigeyuki; and Kuno, Akira, 4,603,581, Cl. 73-304.00C.

Aktien-Gesellschaft der Dillinger Huttenwereke: *See*—
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Aktiengesellschaft Adolph Saurer: *See*—
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Akutagawa, Susumu: *See*—
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Akutsu, Seiichi: *See*—
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Albanese, Thomas A.: *See*—
Carr, Richard V. C.; Martin, Carl J.; Gonzalez, Roland; and Albanese, Thomas A., 4,604,214, Cl. 210-759.000.

Albrecht, Hans G. Explosion type rotary turbine engine. 4,603,549, Cl. 60-39.161.

Albrecht, Raymond E.; and Haskins, Paul L., to H. H. Robertson Company. Underfloor access housing. 4,603,523, Cl. 52-221.000.

Alcan International Limited: *See*—
Reeve, Martin R., 4,604,368, Cl. 501-98.000.
Sivilotti, Olivo G., 4,604,177, Cl. 204-244.000.

Aldrich, Dale J.: *See*—
Berman, Jody R.; Berkefelt, Christine C.; and Aldrich, Dale J., 4,604,317, Cl. 428-285.000.

Aldridge, Clyde L.: *See*—
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Alexandru, Radu, to North American Philips Corporation. Bus structure for an image processor. 4,604,743, Cl. 370-85.000.

Alig, Roger C.: *See*—
Hernqvist, Karl G.; and Alig, Roger C., 4,604,548, Cl. 313-414.000.

Aligena AG: *See*—
Linder, Charles; and Perry, Mordechai, 4,604,204, Cl. 210-490.000.

Allardyce, Gerald M., to RCA Corporation. Method for engaging support studs into shadow mask spring apparatus. 4,604,072, Cl. 445-30.000.

Allec, Josiane: *See*—
Grollier, Jean-Francois; and Allec, Josiane, 4,604,282, Cl. 424-74.000.

Allegretti & Company: *See*—
Anderson, Kenneth K., 4,603,478, Cl. 30-276.000.

Alley, Robert P.; Huber, Paul G.; and Sullivan, Joseph M., to General Electric Company. Retrofit fluorescent lamp energy management-/dimming system. 4,604,552, Cl. 315-176.000.

Allied Corporation: *See—*
Fujawa, Charles S.; and Masteller, Sara B., 4,604,701, Cl. 364-431.010.
Schutzle, Gunter, 4,603,475, Cl. 29-857.000.
Thomas, Robert H., deceased; Mary A. Thomas, executrix; Hammond, Willis B.; Friedberger, Michael P.; and Archie, William A., 4,604,316, Cl. 428-265.000.

Allied Tube & Conduit Corporation: *See—*
Krengel, Theodore H., 4,603,807, Cl. 228-152.000.

Alpine Electronics, Inc.: *See—*
Onishi, Ken; Ishida, Masayuki; Shirozu, Masakazu; Takedomi, Toshikatsu; Namekawa, Makoto; and Haikawa, Yukihiko, 4,604,747, Cl. 371-37.000.

Altenberg, Milton J., to Chardonol Corporation. Manufacturing of rigid foam using etherified modified aromatic polyols. 4,604,410, Cl. 521-172.000.

Altmann, Hans-Peter. Shut-off valve. 4,603,708, Cl. 137-116.000.

Amaral, Leonard, to Bronx Lebanon Hospital. Method for determining bacterial sensitivity to chemical agents. 4,604,351, Cl. 435-35.000.

Amazonen Werke AG H. Dreyer GmbH & Co. KG: *See—*
Wiemeyer, Benno, 4,603,645, Cl. 111-1.000.

Amcor Ltd.: *See—*
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Amdev, Inc.: *See—*
Weinberg, Melvin S.; Cormier, Alan D.; and Jones, Ronald L., 4,604,166, Cl. 204-1.00T.

Amemiya, Mitsuaki, to Canon Kabushiki Kaisha. Exposure method. 4,604,345, Cl. 430-394.000.

American Cyanamid Company: *See—*
Evans, Robert E.; and Hirschbuehler, Kevin R., 4,604,319, Cl. 428-290.000.

American Home Products Corporation: *See—*
Demerson, Christopher A.; and Humber, Leslie G., 4,604,469, Cl. 548-432.000.

American Hospital Supply Corporation: *See—*
Kam, Sheung-tsam; Erhardt, Paul W.; Borgman, Robert J.; and O'Donnell, John P., 4,604,481, Cl. 560-39.000.
Norman, Jacob J., 4,603,574, Cl. 73-4.00R.

American Orthodontics Corporation: *See—*
Viglietti, John E., 4,604,057, Cl. 433-9.000.

Amezcua, Robert; Clements, Silous F.; Coenen, John S.; DaFoe, Ralph H.; Day, Michael N.; Ross, Dennis M.; and Simpson, Richard O., to International Business Machines Corporation. System for converting data processing information to text processing format and vice versa. 4,604,710, Cl. 364-900.000.

AMF Inc.: *See—*
Dailey, Nils; Rai, Vishva; Southall, Kenneth; and Webster, Timothy J., 4,604,198, Cl. 210-198.200.

Amitay, Noach; and Gans, Michael J., to AT&T Bell Laboratories. Phased array antenna employing linear scan for wide-angle arc coverage with polarization matching. 4,604,624, Cl. 343-361.000.

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Zavelovich, Joshua; and Hacker, David S., 4,604,274, Cl. 204-157.410.

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Newhouse, Daniel L.; Wheeler, Richard G.; and Waltz, Ralph H., 4,604,363, Cl. 436-177.000.

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Smernoff, Ronald B., 4,604,263, Cl. 422-50.000.

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Hilmersson, Anders E.; and Andersson, Helge, 4,603,490, Cl. 34-155.000.

Andrew Corporation: *See—*
Saad, Saad S.; and Knop, Charles M., 4,604,627, Cl. 343-786.000.

Androsenko, Alexandr P.: *See—*
Shaginian, Albert S.; Asan-Dzhalalov, Alexei G.; Pevnev, Anatoly A.; Androsenko, Alexandr P.; Suvorov, Alexandr V.; Khalitov, Boris V.; Palkin, Leonid N.; Gnatchenko, Viktor V.; Makarov, Nikolai P.; Panteleev, Valery A.; Davidenko, Nikolai I.; Shpilevsky, Stanislav K.; Tikhonenko, Alexandr S.; and Romanovsky, Anatoly G., 4,604,724, Cl. 364-478.000.

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Hirukawa, Yohichi; Nozaki, Toshiyuki; and Hosokawa, Naokichi, 4,604,180, Cl. 204-298.000.

Angelini, Leonello: *See—*
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Angerer, Heinrich; and Sinha, Badri, to Siemens Aktiengesellschaft. Surface wave filter having photoresist damping material thereon and method for manufacturing the same. 4,604,594, Cl. 333-194.000.

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Frencken, Peter H.; Raven, Johannes G.; and Annegarn, Marcellinus J. J. C., 4,604,651, Cl. 358-140.000.

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Dorflinger, Benno; and Steinebrunner, Walter, 4,603,913, Cl. 300-7.000.

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Aota, Koichi; Ishikawa, Katsuhiko; and Yokoi, Naoki, to Fuji Xerox Co., Ltd. Apparatus for inhibiting copying of confidential documents. 4,603,970, Cl. 355-133.000.

Aoyagi, Hidehito; and Hirosaki, Botaro, to NEC Corporation. Frequency offset correcting circuit. 4,604,583, Cl. 329-122.000.

Apperson, Gerald R.: *See—*
Wiklof, Christopher A.; Apperson, Gerald R.; Brooks, Robert J.; and Samuel, Robert A., 4,604,635, Cl. 346-226.000.

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Shimizu, Shigeaki; and Arai, Yoshio, 4,604,260, Cl. 419-2.000.

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Suefuji, Kazutaka; Yasuda, Hiromu; Hayashi, Masakatsu; Arata, Tetsuya; Oguni, Kensaku; Kuroda, Shigeaki; Atsumi, Akira; Ishibane, Kyuhei; Terada, Hirokiyo; Senshu, Takao; and Kogure, Hiroshi, 4,603,556, Cl. 62-180.000.

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Schleimer, Francois; Burton, Clement; Bock, Andre ; and Peckels, Jean, 4,603,810, Cl. 239-1.000.

Arcamone, Federico: *See—*
Penco, Sergio; Arcamone, Federico; and Casazza, Anna Maria, 4,604,381, Cl. 514-34.000.

Archer, Lee A., to Akzona Incorporated. Apparatus and structure for joining pipe. 4,603,885, Cl. 285-18.000.

Archie, William A.: *See—*
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Arco Industries: *See—*
Richards, Lawrence D.; and Yuen, Johnny S. C., 4,604,075, Cl. 446-232.000.

Arima, Teruo: *See—*
Fujii, Setsuro; Chikazawa, Nobumoto; Arima, Teruo; and Fukushima, Masakazu, 4,604,234, Cl. 514-2.000.

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Fisher, Joseph D.; and Huang, Chin C., 4,604,358, Cl. 435-217.000.
Orlowski, Ronald C.; Seyler, Jay K.; and Stahl, Glenn L., 4,604,237, Cl. 530-307.000.
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Pollet, Jean-Claude; Armstrong, Gordon P.; and Flautt, Martin C., 4,604,325, Cl. 428-391.000.

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Creighton, Thomas C.; Dorsey, William C.; Lewicki, Walter J., Jr.; Long, Harry F.; and Ringer, Richard M., 4,604,312, Cl. 428-137.000.

Arnold, Dan M., to Halliburton Company. Method and apparatus for logging a borehole employing dual radiation detectors. 4,604,522, Cl. 250-264.000.

Arnott, Walter. Bowling ball. 4,603,861, Cl. 273-63.00R.

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Siebert, Georg, 4,603,545, Cl. 57-68.000.

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Buchas, Gerald L., 4,604,616, Cl. 340-756.000.

Asahi Glass Company Ltd.: *See—*
Miyake, Haruhisa; Suhara, Manabu; Sugaya, Yoshio; and Horie, Hirofumi, 4,604,170, Cl. 204-98.000.

Asahi Kasei Kogyo Kabushiki Kaisha: *See—*
Manabe, Seiichi; Iwata, Michitaka; and Inoue, Mamoru, 4,604,326, Cl. 428-398.000.
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Haneishi, Yasuyuki, 4,603,955, Cl. 354-286.000.
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Asanomi, Koji: *See—*
Hiraoka, Shin; Asanomi, Koji; and Abe, Ryoji, 4,603,673, Cl. 123-573.000.
Ashley, Eugene, to General Electric Company. Liquid propellant weapon system. 4,603,615, Cl. 89-7.000.
Aslam, Mohammad: *See—*
Block, Eric; and Aslam, Mohammad, 4,604,480, Cl. 556-445.000.
ASM Assembly Automation, Ltd.: *See—*
Chan, Lo Kwan; and Li, Wai Sau, 4,603,803, Cl. 228-4.500.
AT&T Bell Laboratories: *See—*
Amitay, Noach; and Gans, Michael J., 4,604,624, Cl. 343-361.000.
Brown, Sanford S.; Hunsberger, Dennis J.; and Lundberg, Michael R., 4,604,500, Cl. 179-18.0ES.
Kuhl, Jane F.; and Vicory, William A., 4,604,119, Cl. 65-4.210.
Lin, Albert M., 4,604,150, Cl. 148-188.000.
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Wong, Ching-Ping, 4,604,144, Cl. 134-28.000.
Atalar, Abdullah, to Ernst Leitz Wetzlar GmbH. Method for representing elastic parameters of object surfaces. 4,603,585, Cl. 73-606.000.
Athena Controls Inc.: *See—*
Metz, Bruce E., 4,604,516, Cl. 219-379.000.
Atkins, Richard R. Safety attachment for a table saw. 4,603,612, Cl. 83-425.000.
Atlantic Richfield Company: *See—*
Younes, Usama E., 4,604,422, Cl. 524-502.000.
Atsumi, Akira: *See—*
Suefuji, Kazutaka; Yasuda, Hiromu; Hayashi, Masakatsu; Arata, Tetsuya; Oguni, Kensaku; Kuroda, Shigeaki; Atsumi, Akira; Ishibane, Kyuhei; Terada, Hirokiyo; Senshu, Takao; and Kogure, Hiroshi, 4,603,556, Cl. 62-180.000.
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Goswami, Jagadish C.; Aurichio, Joseph A.; and Zingaro, Joseph R., 4,604,230, Cl. 252-514.000.
Auscilla Plastics, Inc.: *See—*
Dittrich, Patrick E., 4,603,982, Cl. 384-129.000.
Austel, Volkhard: *See—*
Reiffen, Manfred; Noll, Klaus; Heider, Joachim; Austel, Volkhard; Hauel, Norbert; Kobinger, Walter; and Lillie, Christian, 4,604,389, Cl. 514-213.000.
Avco Corporation: *See—*
Boudreau, Jon P., 4,603,635, Cl. 102-206.000.
Avon Inflatables Limited: *See—*
Harding, Richard J. A., 4,603,651, Cl. 114-345.000.
Axe, John R.: *See—*
Chen, Gilbert; Kitterman, B. Layton; Glaspie, Donald L.; and Axe, John R., 4,604,247, Cl. 261-94.000.
Ayers, William R., to Central Illinois Manufacturing Company. Water removing filter media. 4,604,205, Cl. 210-497.200.
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Bellini, Francesco; and Sestanj, Kazimir, 4,604,406, Cl. 514-562.000.
Ayoub, Peter, to United States of America, Navy. Airspeed sensing pressure valve system. 4,603,823, Cl. 244-122.0AE.
Azuma, Kazufumi: *See—*
Tanaka, Masahiro; Azuma, Kazufumi; Nate, Kazuo; and Nakatani, Mitsuo, 4,604,294, Cl. 427-53.100.
Babb, Richard R.; and Kirschler, Howard A., to Motorola, Inc. Spinner chuck. 4,603,867, Cl. 279-3.000.
Babcock & Wilcox Company, The: *See—*
Sterling, Edward L., Jr.; and Bastijanic, Edward, 4,604,566, Cl. 323-275.000.
Bach, Bert; and Bach, David. Grain chute system. 4,603,769, Cl. 193-12.000.
Bach, David: *See—*
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Bach, Stanley M., Jr.: *See—*
Speicher, Vernon L.; and Bach, Stanley M., Jr., 4,603,705, Cl. 128-786.000.
Bader, Manfred: *See—*
Adis, Erich; Bader, Manfred; and Buschulte, Winfried, 4,604,104, Cl. 48-107.000.
Baeger, Holm; and Preiss, Bernd, to VDO Adolf Schindling AG. Indicating device having spacer element distribution to compensate for expansion. 4,603,947, Cl. 350-344.000.
Bak, Michael J.: *See—*
Pfefferle, William C.; and Bak, Michael J., 4,603,547, Cl. 60-39.020.
Baker, Richard W., to Pako Corporation. Film-width and transmittance scanner system. 4,603,956, Cl. 354-298.000.
Baker, Robert W.; Donely, Dean; and Odorcic, Vlado, to Hennick, Nathan I. Swimming pool alarm. 4,604,610, Cl. 340-566.000.
Balibali System Co., Ltd.: *See—*
Kazuo, Ozawa; and Saburo, Yoinara, 4,603,684, Cl. 126-299.00R.
Ballinger, Dale O.; Chynoweth, William R.; and Wade, Gerald J., to Honeywell Inc. Magnetostrictive record head. 4,604,669, Cl. 360-113.000.
Banks, Bruce A.: *See—*
Mirtich, Michael J.; Sovey, James S.; and Banks, Bruce A., 4,604,181, Cl. 204-298.000.
Barabino, William A.: *See—*
Dean, Raymond S.; and Barabino, William A., 4,604,096, Cl. 604-385.00A.
Barbieri, Raul; and Marianelli, Giorgio. Paper sheet carrying board provided with clip and closable seat for containing writing articles. 4,603,883, Cl. 281-45.000.
Barfield, Kenneth E. Single lens goggle. 4,603,442, Cl. 2-447.000.
Barmag Barmer Maschinenfabrik Aktiengesellschaft: *See—*
Hertell, Siegfried; and Lange, Robert, 4,604,041, Cl. 418-82.000.
Barny, Jean J.; and Roch, Roger, to Bobst SA. Machine for manufacturing folded boxes. 4,604,083, Cl. 493-34.000.
Barrault, Michel R., to Merlin Gerin. Electromagnetic delay line incorporated in a position detector for a movable nuclear reactor control rod. 4,604,576, Cl. 324-208.000.
Barrett, Keith, to Dart Industries Inc. Telescoping parts manipulator. 4,604,026, Cl. 414-728.000.
Barry, Michael N., to Westinghouse Electric Corp. Pulse frequency modulation control for a heater. 4,604,517, Cl. 219-494.000.
Barsellotti, John A., to Mitel Corporation. Voice and data interface circuit. 4,604,741, Cl. 370-69.100.
Barski, Guy, to CII Honeywell Bull. Magnetic disc cartridge with centering structure. 4,604,664, Cl. 360-97.000.
Barth, Alois; and Wiemann, Lothar, to Mahle GmbH. Multi-part plunger piston for internal combustion engines. 4,603,617, Cl. 92-216.000.
Bartholomew, James C.: *See—*
Moroney, William F.; Bartholomew, James C.; Cagle, Clifford M.; and Hughes, Robert E., 4,603,486, Cl. 33-512.000.
Bartle, Peter M.; and Needham, James C., to Welding Institute, The. Acoustic detection of defects in structures. 4,603,584, Cl. 73-599.000.
Bartlett, Philip L., to Du Pont de Nemours, E. I., and Company. Aerosol corrosion inhibitors. 4,604,226, Cl. 252-389.00A.
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Ammermann, Eberhard; Buschmann, Ernst; Ley, Gregor; and Pommer, Ernst-Heinrich, 4,604,429, Cl. 525-326.600.
Hambrecht, Juergen; Illers, Karl-Heinz; Echte, Adolf; and Swoboda, Johann, 4,604,415, Cl. 524-140.000.
Neumann, Peter; Thomas, Michael; Weiss, Stefan; and Trauth, Hubert, 4,604,471, Cl. 549-210.000.
Schott, Eberhard P.; Fischer, Volker; Jung, Johann; and Rosebrock, Henning, 4,604,129, Cl. 71-76.000.
Bastijanic, Edward: *See—*
Sterling, Edward L., Jr.; and Bastijanic, Edward, 4,604,566, Cl. 323-275.000.
Battelle Development Corporation: *See—*
DeFord, Henry S.; and Moss, Owen R., 4,603,794, Cl. 222-207.000.
Battson, Donald F.: *See—*
Elabd, Hammam; Kosonocky, Walter F.; and Battson, Donald F., 4,604,652, Cl. 358-213.000.
Bauer Kaba AG: *See—*
Kleinhany, Arno; and Gutmann, Walter, 4,603,564, Cl. 70-277.000.
Baumgartner, Hans; Brandstadter, Manfred; and Sudbeck, Rainer, to Pierburg GmbH & Co., KG. Displacement machine having a housing and piston with spiral walls. 4,604,040, Cl. 418-55.000.
Baxter Travenol Laboratories, Inc.: *See—*
de la Poype, Roland, 4,603,536, Cl. 53-410.000.
Duffy, Joseph K.; Thoene, Mark L.; and Combs, Cathy M., 4,603,780, Cl. 206-591.000.
Bayer Aktiengesellschaft: *See—*
Jager, Horst, 4,604,459, Cl. 544-76.000.
Oberkirch, Wolfgang; de Montigny, Armand; and Botsch, Hansjurgen, 4,603,738, Cl. 166-275.000.
BBC Brown, Boveri & Company Limited: *See—*
Gobrecht, Jens; and Schuler, Claus, 4,603,474, Cl. 29-597.000.
Bearden, Roby, Jr.; and Aldridge, Clyde L., to Exxon Research and Engineering Co. Hydrocracking with chromic acid and an aliphatic polyhydroxy compound. 4,604,190, Cl. 208-112.000.
Beaver, Richard N.: *See—*
Morris, Gregory J. E.; Pimlott, John R.; Beaver, Richard N.; Dang, Hiep D.; and Grosshandler, Sandor, 4,604,171, Cl. 204-98.000.
Bechu, Jean-Pierre, to Caoutchouc Manufacture et Plastiques. Rubber mount with elastic control. 4,603,843, Cl. 267-35.000.
Beck, Rainer; and Schulte, Alfons, to Eugen Beck, KG. Spectacle frame with securing band. 4,603,951, Cl. 351-156.000.
Beck, Reinhold. Fat frier. 4,603,622, Cl. 99-331.000.
Becker, Alan R.; McCorkle, Richard A.; Miller, Robert A.; and Plessl, Gary J., to AT&T Technologies, Inc. Manipulator of articles and methods of moving articles over an extended distance. 4,604,027, Cl. 414-749.000.
Beckham, Keith F.; Kolman, Anne E.; McGuire, Kathleen M.; Puttlitz, Karl J.; and Quinones, Horatio, to International Business Machines Corporation. Solder interconnection structure for joining semiconductor devices to substrates that have improved fatigue life, and process for making. 4,604,644, Cl. 357-80.000.
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Smith, Richard A.; and Cassels, Robert, 4,604,285, Cl. 424-94.000.
Beer, Carl C., to Sherman Industries, Inc. Disk type brush. 4,603,447, Cl. 15-97.00B.

Belew, Robert R., to United States of America, National Aeronautics and Space Administration. Remotely operable peristaltic pump. 4,604,038, Cl. 417-475.000.

Bell Communications Research, Inc.: *See*—
Tarascon, Jean-Marie, 4,604,334, Cl. 429-194.000.

Bell, Eugene; and Dubertret, Louis, to Massachusetts Institute of Technology. Skin-equivalent prepared by the use of punch biopsy. 4,604,346, Cl. 435-1.000.

Bell, John M.; and Schmidt, Peter J., to Northern Telecom Limited. Electrical conductor for telecommunications cable. 4,604,497, Cl. 174-110.00F.

Bellini, Francesco; and Sestanj, Kazimir, to Ayerst, McKenna & Harrison, Inc. N-[6-methoxy-5-(perfluoroalkyl)-1-naphtholyl]-N-methylglycines and their thionaphthoyl analogs. 4,604,406, Cl. 514-562.000.

Benedicktus, Jon J.: *See*—
Katz, Edward; Benedicktus, Jon J.; Knarr, Edward L.; and Scallet, Barrett L., 4,604,354, Cl. 435-94.000.

Benko, Eva; Csabanko, Istvan; Porkolab, Aniko ; Szabo, Zsolt; and Takacs, Gabor, to "Labor" Muszeripari Muvek. Multifunction centrifuge. 4,604,086, Cl. 494-16.000.

Benn, George; Frost, Wendell; Knudsen, Chris; and Nieuwsma, David, to Sundstrand Data Control, Inc. Aircraft flight data display system. 4,604,711, Cl. 364-900.000.

Bennett, James L.; and Pax, Ralph A., to Research Corporation. Micromotility meter. 4,603,977, Cl. 356-436.000.

Berendt, Hans-Ulrich; and Schafer, Paul, to Ciba-Geigy Corporation. Process for printing cellulose-containing textile material with foam-containing reactive dyes and addition of (meth) acrylamide polymers. 4,604,099, Cl. 8-477.000.

Berg, James I., to Owens-Corning Fiberglas Corporation. Methods of measuring temperature and electrical resistivity in a molten glass stream. 4,603,980, Cl. 374-179.000.

Berge, Jacques. Watercraft with at least two twin hulls. 4,603,648, Cl. 114-39.000.

Berger, Johann: *See*—
Berger, Josef; and Berger, Johann, 4,603,561, Cl. 66-203.000.

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Bergevin, Benoit: *See*—
Jean, Benoit; Bergevin, Benoit; and Rheault, Fernand, 4,603,685, Cl. 126-433.000.

Berggreen, Arthur C.: *See*—
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Bergh, Ralph A.: *See*—
Shaw, Herbert J.; Digonnet, Michel J. F.; Bergh, Ralph A.; Sorin, Wayne V.; and Kolner, Brian H., 4,603,940, Cl. 350-96.150.

Bergkvist, Bruno; Kolhi, Martti; Strandell, Erik; and Svemar, Christer, to AB Svensk Alunskifferutveckling. Method and an apparatus for subdivision of and heat recovery from a liquid slag. 4,604,136, Cl. 75-24.000.

Bergler, Otto, to Black & Decker Overseas AG. Guide means for manual planing tools. 4,603,479, Cl. 30-475.000.

Berkefelt, Christine C.: *See*—
Berman, Jody R.; Berkefelt, Christine C.; and Aldrich, Dale J., 4,604,317, Cl. 428-285.000.

Berman, Ellen M.: *See*—
Elslager, Edward F.; Werbel, Leslie M.; Ortwine, Daniel F.; Worth, Donald F.; Showalter, Howard D. H.; Capps, David B.; Berman, Ellen M.; Gregor, Vlad E.; and Sercel, Anthony D., 4,604,390, Cl. 514-222.000.

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Luthra, Ajay K.; Kassam, Saleem; and Bernardi, Richard B., 4,604,697, Cl. 364-414.000.

Bernd-Holger, Rohling, to Lucas Industries public limited company. Floating caliper type disc brake. 4,603,761, Cl. 188-73.450.

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Leiber, Heinz; and Bertling, Hannes, 4,603,918, Cl. 303-6.00R.

Bertotto, Serafino, to Industrie Tessili Bresciane S.P.A. Endless belts for battery pasting machines and method for manufacturing the same. 4,604,310, Cl. 428-36.000.

Bertram, Leo; and Bukoschek, Romuald L., to U.S. Philips Corporation. Drive mechanism with a rotary drive motor. 4,604,539, Cl. 310-80.000.

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BETAX Gesellschaft fur Beratung und Entwicklung technischer Anlagen mbH: *See*—
Tax, Hans; and Kurz, Herbert, 4,603,783, Cl. 212-132.000.

Beuhler, Allyson J.; and Wrezel, James A., to UOP Inc. High temperature thermoset terpolymers. 4,604,438, Cl. 526-262.000.

Bews, Andrew M., to United Wire Group. Marine antifouling materials and markers. 4,603,653, Cl. 116-209.000.

Bien, Paul R., to General Motors Corporation. Drive motor gear lubricant seal for locomotives and the like. 4,603,865, Cl. 277-12.000.

Bilco Company, The: *See*—
Lyons, George W., Jr., 4,603,517, Cl. 52-60.000.

Binnaka, Toshio: *See*—
Horiuchi, Akinori; Binnaka, Toshio; and Maruyama, Shigeyuki, 4,604,572, Cl. 324-158.00F.

Bird, Graham J.: *See*—
Watson, Keith G.; Wishart, John D.; Farquharson, Graeme J.; Bird, Graham J.; and Cross, Lindsay E., 4,604,128, Cl. 71-88.000.

Birkadze, Dzhemal I.: *See*—
Ganago, Oleg A.; Safonov, Anatoly V.; Stepanov, Boris A.; Subich, Vadim N.; Frolov, Alexandr D.; Lobanov, Nikolai A.; Lumer, Yakov L.; Xenofontov, Alexei M.; Rudman, Leonid I.; Lebed, Alexandr D.; Mamatsashvili, Vasha I.; Kljuchnikov, Valery F.; Birkadze, Dzhemal I.; Shklyarman, Sergei S.; Gordeev, Nikolai A.; Golovin, Vasily Y.; Kruk, Alexandr T.; Yakovenko, Ivan F.; Novikov, Vladimir V.; Grishkov, Andrei M.; Gorozhankin, Valery N.; Svistunov, Vladmir E.; Bocharov, Jury A.; and Sergeev, Jury N., 4,603,573, Cl. 72-454.000.

Biziere, Kathleen; Chambon, Jean-Pierre; and Molimard, Jean-Charles, to Societe Anonyme Styled: SANOFI. Pyrrolidin-2-ones and medicaments containing them. 4,604,383, Cl. 514-63.000.

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Dawson, Jeffrey C., 4,604,218, Cl. 252-8.55C.

Bjorn, Tord. Boat, the bottom of which is provided with a plurality of downwardly opening channels. 4,603,650, Cl. 114-288.000.

Black & Decker Overseas AG: *See*—
Bergler, Otto, 4,603,479, Cl. 30-475.000.

Black, John B., to New Pro Technology, Inc. Down the hole reverse up flow jet pump. 4,603,735, Cl. 166-68.000.

Black, John W., to Standex International Corporation. Mold mounting and releasable clamp therefor. 4,604,045, Cl. 425-575.000.

Blake, Robert C., II, to Miles Laboratories, Inc. Purification of flavin adenine dinucleotide synthetase. 4,604,356, Cl. 435-194.000.

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Smith, Ronald A.; Jackson, James M.; Lehfeldt, Carl L.; Cygnarowicz, Leonard P.; Moshfegh, Khosro; Blanchard, Kenneth L.; and Nelson, Kenneth J., 4,603,567, Cl. 72-8.000.

Block, Eric; and Aslam, Mohammad, to Research Foundation of State University of New York, The. Method for the preparation of sulfones and compounds containing carbon chains having conjugated unsaturation and the compounds resulting from such method. 4,604,480, Cl. 556-445.000.

Blond, Marcel, to Valeo. Clutch plate having two stage torsion damping means. 4,603,767, Cl. 192-106.200.

Bloomfield Industries, Inc.: *See*—
Roberts, Melvin F., 4,603,621, Cl. 99-307.000.

Blount, Frederick T.; Capowski, Robert S.; Casper, Daniel F.; DelSonno, Lawrence R.; Geller, Robert F.; Kusmiss, Joseph M.; and Zimmerman, Terrence K., to International Business Machines Corp. Channel communicator. 4,604,709, Cl. 364-900.000.

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Panning, Martin H., 4,603,816, Cl. 241-266.000.

Blum, Arnold, to International Business Machines Corporation. Testing and diagnostic device for digital computers. 4,604,746, Cl. 371-25.000.

Blume, R. J. Carter: *See*—
Reiter, Bernadette G.; Castor, John W.; Blume, R. J. Carter; Schewe, Roy A.; and Shepley, Leonard D., 4,604,686, Cl. 364-200.000.

Board of Governors for Higher Education, State of Rhode Island and Providence Plantations: *See*—
Rahn, Kenneth A.; and Lowenthal, Douglas H., 4,603,575, Cl. 73-28.000.

Bober, Helmut; Buthe, Theo; Coenen, Karl; Fartmann, Norbert; Herbertz, Klaus; Koch, Franz-Heinz; Kretschmer, Horst; Nienhaus, Clemens; Schardt, Peter; Schibrowski, Jurgen; and Schmandt, Willi, to Jean Walterscheid GmbH. Shaft connection mechanism. 4,603,998, Cl. 403-322.000.

Bobrick Washroom Equipment, Inc.: *See*—
Greenberg, Robert, 4,603,827, Cl. 248-542.000.

Bobst SA: *See*—
Barny, Jean J.; and Roch, Roger, 4,604,083, Cl. 493-34.000.

BOC Group, Inc., The: *See*—
Nichols, Robert A.; and Tobler, David R., 4,603,700, Cl. 128-633.000.

Bocharov, Jury A.: *See*—
Ganago, Oleg A.; Safonov, Anatoly V.; Stepanov, Boris A.; Subich, Vadim N.; Frolov, Alexandr D.; Lobanov, Nikolai A.; Lumer, Yakov L.; Xenofontov, Alexei M.; Rudman, Leonid I.; Lebed, Alexandr D.; Mamatsashvili, Vasha I.; Kljuchnikov, Valery F.; Birkadze, Dzhemal I.; Shklyarman, Sergei S.; Gordeev, Nikolai A.; Golovin, Vasily Y.; Kruk, Alexandr T.; Yakovenko, Ivan F.; Novikov, Vladimir V.; Grishkov, Andrei M.; Gorozhankin, Valery N.; Svistunov, Vladmir E.; Bocharov, Jury A.; and Sergeev, Jury N., 4,603,573, Cl. 72-454.000.

Bock, Andre : *See*—
Schleimer, Francois; Burton, Clement; Bock, Andre ; and Peckels, Jean, 4,603,810, Cl. 239-1.000.

Bocko, Peter L.; Wein, William J.; and Young, Charles E., to Corning Glass Works. Method for synthesizing $MgO—Al_2O_3—SiO_2$ glasses and ceramics. 4,604,118, Cl. 65-3.120.

Boehm, Douglas A.; and Ylinen, David M., to Motorola, Inc. Portable demonstrator for electronic equipment. 4,604,064, Cl. 434-224.000.

Boehm, Terrence E. Tree transporter. 4,604,017, Cl. 414-23.000.

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Koppe, Herbert; Mentrup, Anton; Renth, Ernst-Otto; Schromm, Kurt; Hoefke, Wolfgang; and Muaceic, Gojko, 4,604,468, Cl. 548-305.000.

Boehringer Mannheim GmbH: *See*—
Rothe, Anselm; Knappe, Wolfgang-Reinhold; and Trasch, Heinz-Friedrich, 4,604,264, Cl. 422-56.000.

Boeing Company, The: *See—*
Chee, Wan T., 4,603,822, Cl. 244-54.000.
McArdel, Richard C., 4,603,824, Cl. 244-134.00B.
Pinson, George T., 4,604,592, Cl. 333-24.100.
White, John L., 4,603,821, Cl. 244-54.000.

Bogner, Karl-Heinz; and Bolenz, Klaus, to Robert Bosch GmbH. Solenoid switch suitable for motor starters. 4,604,597, Cl. 335-127.000.

Boillot, Louis: *See—*
Roulet Dubonnet, Jean-Pierre; Boillot, Louis; and Mora, Gilbert, 4,604,507, Cl. 200-144.00R.

Bolenz, Klaus: *See—*
Bogner, Karl-Heinz; and Bolenz, Klaus, 4,604,597, Cl. 335-127.000.

Bollinger, James M.; and Klinkowski, Peter R., to Dorr-Oliver Incorporated. High flow electrofiltration. 4,604,174, Cl. 204-151.000.

Bollmann, Jean-Jacques. Ground securing device. 4,603,526, Cl. 52-296.000.

Bommaraju, Tilak V.: *See—*
Tari, Karl; Bommaraju, Tilak V.; and Rader, Charles G., 4,604,301, Cl. 427-123.000.

Bone, Kendall F., to Cincinnati Milacron Inc. Metal working machine having polygon tool support bar. 4,604,008, Cl. 409-231.000.

Bonerb, Vincent C.; and Bonerb, Vincent C. Center unloading bin for storing free-flowing granular material with side conveyor discharge. 4,603,795, Cl. 222-262.000.

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Bonerb, Vincent C.; and Bonerb, Vincent C., 4,603,795, Cl. 222-262.000.

Bonneton, Michel; and Marchal, Bernard, to L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude. Method and installation for treating a storage site. 4,604,115, Cl. 62-11.000.

BoPeep Nursery Products Limited: *See—*
Moscovitch, Jerry N., 4,603,903, Cl. 297-250.000.

Borcherdt, Roger D.; Fletcher, Jon P.; Warrick, Richard E.; Maxwell, Gary L.; Jensen, Edward G.; and Schaack, John V., to United States of America, Interior. General earthquake observation system. 4,604,699, Cl. 364-420.000.

Borduz, Lucian; and Raj, Kuldip, to Ferrofluidics Corporation. Stable ferrofluid composition and method of making and using same. 4,604,222, Cl. 252-62.520.

Borduz, Lucian: *See—*
Raj, Kuldip; Borduz, Lucian; and Gowda, Hanumaiah L., 4,604,229, Cl. 252-510.000.

Borgman, Robert J.: *See—*
Kam, Sheung-tsam; Erhardt, Paul W.; Borgman, Robert J.; and O'Donnell, John P., 4,604,481, Cl. 560-39.000.

Borsuk, Gerald M.: *See—*
DelCoco, Robert J.; Borsuk, Gerald M.; and Lampe, Donald R., 4,604,650, Cl. 358-119.000.

Borwick Innovations, Inc.: *See—*
Borwick, Michael J., 4,603,724, Cl. 160-180.000.

Borwick, Michael J., to Borwick Innovations, Inc. Pet door for a screen. 4,603,724, Cl. 160-180.000.

Borzoni, John, to Littelfuse, Inc. Plug-in fuse assembly with stackable housing. 4,604,602, Cl. 337-264.000.

Botsch, Hansjurgen: *See—*
Oberkirch, Wolfgang; de Montigny, Armand; and Botsch, Hansjurgen, 4,603,738, Cl. 166-275.000.

Boucherie, Leonel P., to G.B. Boucherie, Firma. Brush manufacturing machine. 4,603,912, Cl. 300-2.000.

Boudreau, Jon P., to Avco Corporation. Dual safing for base element fuze. 4,603,635, Cl. 102-206.000.

Boughton, Matthew S.; and La Plante, Mark T., to Canondale Corporation. Bicycle front wheel holder. 4,603,875, Cl. 280-272.000.

Bourgoine, Edward C.: *See—*
Gile, Richard H.; and Bourgoine, Edward C., 4,603,677, Cl. 125-11.00R.

Bourgraf, Elroy E., to Ferno Washington, Inc. Trunk loading device for business machines and the like. 4,604,022, Cl. 414-340.000.

Boyd, Winnett. Brake actuator for bicycles and the like. 4,603,764, Cl. 192-5.000.

Bradley, John J.: *See—*
Staplin, Theodore R., Jr.; Bradley, John J.; and Stoffers, Brian L., 4,604,722, Cl. 364-736.000.
Widen, Melinda A.; Bradley, John J.; and O'Har, George M., 4,604,695, Cl. 364-200.000.

Brandis, Helmut; and Spyra, Wolfgang, to Thyssen Edelstahlwerke AG. Method of manufacturing permanent magnets. 4,604,147, Cl. 148-102.000.

Brandstadter, Manfred: *See—*
Baumgartner, Hans; Brandstadter, Manfred; and Sudbeck, Rainer, 4,604,040, Cl. 418-55.000.

Brandt, Lennart H.; and Pichl, Heinz, to AB Volvo Penta. Rotor device. 4,604,032, Cl. 416-128.000.

Braxton, Earl J.: *See—*
Callewaert, Denis M.; and Braxton, Earl J., 4,604,357, Cl. 435-215.000.

Breitscheidel, Hans-Ulrich; and Kautz, Rudolf, to Dynamit Nobel Aktiengesellschaft. Mat for sports and athletics. 4,603,852, Cl. 272-109.000.

Brenk, Fritz, to Timex Corporation. Laminated base element for a wristwatch using hot melt adhesive foil. 4,603,978, Cl. 368-317.000.

Bretti, Carlo; Sermidi, Franco; and Agnelli, Medardo, to Eurosab S.R.L. Machine for marking electric wires. 4,603,465, Cl. 29-564.600.

Brickman, Harold. Foldable table having storage capabilities. 4,603,642, Cl. 108-25.000.

Bridgestone Tire Company: *See—*
Oshima, Noboru; Shimizu, Isamu; Yoshimura, Yoshito; Fujimaki, Tatsuo; and Tomita, Seisuke, 4,603,722, Cl. 152-209.00R.

Bristol-Myers Company: *See—*
Johnson, Porter C., 4,604,430, Cl. 525-326.700.

British Petroleum Company p.l.c., The: *See—*
Mayer, Rayner M., 4,603,555, Cl. 60-721.000.

Bronx Lebanon Hospital: *See—*
Amaral, Leonard, 4,604,351, Cl. 435-35.000.

Brookes, David R. Incinerator and cremator. 4,603,644, Cl. 110-194.000.

Brooks, Robert J.: *See—*
Wiklof, Christopher A.; Apperson, Gerald R.; Brooks, Robert J.; and Samuel, Robert A., 4,604,635, Cl. 346-226.000.

Brosson, Jacques: *See—*
Damiron, Pierre M.; Legoupil, Jean-Luc; and Brosson, Jacques, 4,604,157, Cl. 156-345.000.

Brother Kogyo Kabushiki Kaisha: *See—*
Funahashi, Yasuhiro, 4,604,615, Cl. 340-750.000.

Broussard, Felix J.: *See—*
Fiegener, Dale R.; and Broussard, Felix J., 4,604,178, Cl. 204-286.000.

Brown, Bernard T.: *See—*
Mueller, Carl J.; Brown, Bernard T.; Rippelmeyer, Dennis M.; and Haefner, John S., 4,604,046, Cl. 431-2.000.

Brown, Billy F.; and Petrosky, Kenneth J., to Westinghouse Electric Corp. Apparatus for determining range and bearing. 4,604,733, Cl. 367-2.000.

Brown, Eric W.; and Tai, Henry T., to I-Flow Corporation. Apparatus and method for administering multiple fluid infusions. 4,604,093, Cl. 604-248.000.

Brown, Glenn W.: *See—*
Wan, Chung-Chu; and Brown, Glenn W., 4,603,801, Cl. 228-194.000.

Brown, Richard P.; Lemay, Richard A.; Steiner, G. Lewis; and Woods, William E., to Honeywell Information Systems Inc. Two stage selection based on time of arrival and predetermined priority in a bus priority resolver. 4,604,685, Cl. 364-200.000.

Brown, Ronald L.: *See—*
Fenner, Gordon H.; and Brown, Ronald L., 4,603,625, Cl. 100-53.000.

Brown, Roy, to Graphoidal Developments Limited. Method and apparatus for lubricating and moulding glass parisons. 4,604,120, Cl. 65-26.000.

Brown, Sanford S.; Hunsberger, Dennis J.; and Lundberg, Michael R., to AT&T Bell Laboratories. Multiprocessing interrupt arrangement. 4,604,500, Cl. 179-18.0ES.

Brown, Thomas D.; Reehl, Douglas P.; and Walbert, Gary F., to United States of America, Energy. Dual-water mixture fuel burner. 4,604,052, Cl. 431-168.000.

Brown, Trevor J.; and Dipzinski, Eugene S., to General Motors Corporation. Axially adjustable vehicle wheel cover. 4,603,914, Cl. 301-37.00P.

Browning, James A. Abrasive blast and flame spray system with particle entry into accelerating stream at quiescent zone thereof. 4,604,306, Cl. 427-423.000.

Brownstein, Scott A., to Eastman Kodak Company. Film video player/printer with cropping control. 4,603,966, Cl. 355-45.000.

Broyles, Henry D., to Goodyear Tire & Rubber Company, The. Apparatus and method for storing and positioning bead cores for tire building. 4,604,158, Cl. 156-403.000.

Bruckert, William F.: *See—*
Manton, John C.; Bruckert, William F.; and Dellicicchi, Alfred J., 4,604,750, Cl. 371-38.000.

Brunelli, Timothy A.: *See—*
Cheresnowsky, Michael J.; Brunelli, Timothy A.; Munn, Robin W.; and Kim, Tai K., 4,604,266, Cl. 423-54.000.

Brunssen, Johann: *See—*
Koch, Klaus D.; Brunssen, Johann; and Sieling, Helmut, 4,603,492, Cl. 34-237.000.

Brunswick Corp.: *See—*
Hesterberg, William G.; Donahue, Raymond J.; and Sheaffer, Benjamin L., 4,603,665, Cl. 123-195.00R.

Bryant, Charles P.; and Gerdes, Harold M., to Lubrizol Corporation, The. Nitrogen-containing esters and lubricants containing them. 4,604,221, Cl. 252-51.50A.

Buchanan, James C. Rocker bushings for pivotal movement. 4,603,459, Cl. 29-130.000.

Buchas, Gerald L., to Arthur G. Russell Company, Incorporated, The. Apparatus for programming an electrically erasable programmable read-only memory. 4,604,616, Cl. 340-756.000.

Bukoschek, Romuald L.: *See—*
Bertram, Leo; and Bukoschek, Romuald L., 4,604,539, Cl. 310-80.000.

Bulten-Kanthal AB: *See—*
Haglund, John H., 4,604,754, Cl. 373-130.000.

Bunn-O-Matic Corporation: *See—*
Daugherty, Donald L., 4,603,620, Cl. 99-300.000.

Burger, John P., to Convergent Technologies, Inc. Bus repeater. 4,604,689, Cl. 364-200.000.

Burke Industries, Inc.: *See—*
Gerber, Dennis H., 4,603,790, Cl. 220-219.000.

Burns, Edgar, to G & H Technology, Inc. Face seal pressure apparatus for electrical connectors. 4,603,934, Cl. 339-90.00R.

Burr, Edward A.: *See—*
Shaum, Richard L.; and Burr, Edward A., 4,603,579, Cl. 73-186.000.

Burr, Peter S., to Linde Aktiengesellschaft. Low temperature separation of fluids by formation of phases having different densities. 4,604,107, Cl. 55-17.000.

Burrington, James D.; Grasselli, Robert K.; and Kartisek, Craig T., to Standard Oil Company, The. Process for making adiponitrile precursors. 4,604,244, Cl. 558-320.000.

Burroughs Corporation: *See—*
Webler, Thomas N.; and Lacher, William A., 4,604,588, Cl. 331-135.000.

Burrows, James L., to Sanders Associates, Inc. Bit-slice adder circuit. 4,604,723, Cl. 364-786.000.

Burton, Clement: *See—*
Schleimer, Francois; Burton, Clement; Bock, Andre ; and Peckels, Jean, 4,603,810, Cl. 239-1.000.

Burton, David. Lotto ticket marking guide. 4,603,884, Cl. 283-1.00A.

Busch Industrial Products Corporation: *See—*
Katz, Edward; Benedicktus, Jon J.; Knarr, Edward L.; and Scallet, Barrett L., 4,604,354, Cl. 435-94.000.

Buschhoff, Max; and Neumann, Wilhelm P., to Schering AG. Method for making organotin halides. 4,604,475, Cl. 556-97.000.

Buschmann, Ernst: *See—*
Ammermann, Eberhard; Buschmann, Ernst; Ley, Gregor; and Pommer, Ernst-Heinrich, 4,604,429, Cl. 525-326.600.

Buschulte, Winfried: *See—*
Adis, Erich; Bader, Manfred; and Buschulte, Winfried, 4,604,104, Cl. 48-107.000.

Buthe, Theo: *See—*
Bober, Helmut; Buthe, Theo; Coenen, Karl; Fartmann, Norbert; Herbertz, Klaus; Koch, Franz-Heinz; Kretschmer, Horst; Nienhaus, Clemens; Schardt, Peter; Schibrowski, Jurgen; and Schmandt, Willi, 4,603,998, Cl. 403-322.000.

Byers, Stuart D.; and Clark, John F., to Crophandling Systems Limited. Storage vessel. 4,603,525, Cl. 52-245.000.

Cagle, Clifford M.: *See—*
Moroney, William F.; Bartholomew, James C.; Cagle, Clifford M.; and Hughes, Robert E., 4,603,486, Cl. 33-512.000.

Calderon, Albert. Apparatus for processing bulk materials by induction. 4,604,165, Cl. 202-113.000.

Cale, Albert D., Jr.: *See—*
Leonard, Charles A.; Franko, Bernard V.; and Cale, Albert D., Jr., 4,604,388, Cl. 514-211.000.

Calgon Corporation: *See—*
Jakubowski, John A., 4,604,405, Cl. 514-526.000.
Matz, Gary F., 4,604,212, Cl. 210-700.000.

Callahan, James F.; Huffman, William F.; Moore, Michael L.; and Yim, Nelson C., to SmithKline Beckman Corporation. Basic V_1-vasopressin antagonists. 4,604,378, Cl. 514-11.000.

Callewaert, Denis M.; and Braxton, Earl J., to Enzymes of America. Antimicrobial disinfecting urinal block means and methods of use. 4,604,357, Cl. 435-215.000.

Cambridge Instruments Limited: *See—*
Knowles, William R.; and Cruttwell, Ian A., 4,604,523, Cl. 250-310.000.

Campbell, Curtis B., to Chevron Research Company. Deposit control additives—polyether polyamine ethanes. 4,604,103, Cl. 44-72.000.

Campbell, Michael J.: *See—*
McCall, Clyde A.; Campbell, Michael J.; and Dean, William B., 4,604,315, Cl. 428-230.000.

Can-Eng Holdings, Ltd.: *See—*
Mackenzie, Peter B., 4,604,055, Cl. 432-58.000.

Canada Cup, Inc.: *See—*
Valyi, Emery I., 4,604,258, Cl. 264-537.000.

Cannon, Clifford R.; and Ortendahl, Douglas A., to University of California, The Regents of the. Method and apparatus for enhanced T1 NMR measurements using repetition intervals TR related to one another by integer multiples. 4,604,579, Cl. 324-309.000.

Canon Kabushiki Kaisha: *See—*
Amemiya, Mitsuaki, 4,604,345, Cl. 430-394.000.
Egawa, Akira; and Kodaira, Takanori, 4,603,954, Cl. 354-137.000.
Matsumoto, Hiroaki, 4,604,632, Cl. 346-24.000.
Sakurada, Nobuaki; Watanabe, Yoshitaka; Kawamura, Hideaki; and Sato, Yuichi, 4,604,654, Cl. 358-298.000.
Suzuki, Nobuyuki, 4,603,957, Cl. 354-410.000.
Watanabe, Isao, 4,603,953, Cl. 354-126.000.

Canondale Corporation: *See—*
Boughton, Matthew S.; and La Plante, Mark T., 4,603,875, Cl. 280-272.000.

Caoutchouc Manufacture et Plastiques: *See—*
Bechu, Jean-Pierre, 4,603,843, Cl. 267-35.000.

Capjack, Clarence E.: *See—*
Sequin, Herb J. J.; Nam, Kyong H.; and Capjack, Clarence E., 4,604,752, Cl. 372-29.000.

Capowski, Robert S.: *See—*
Blount, Frederick T.; Capowski, Robert S.; Casper, Daniel F.; DelSonno, Lawrence R.; Geller, Robert F.; Kusmiss, Joseph M.; and Zimmerman, Terrence K., 4,604,709, Cl. 364-900.000.

Capps, David B.: *See—*
Elslager, Edward F.; Werbel, Leslie M.; Ortwine, Daniel F.; Worth, Donald F.; Showalter, Howard D. H.; Capps, David B.; Berman, Ellen M.; Gregor, Vlad E.; and Sercel, Anthony D., 4,604,390, Cl. 514-222.000.

Carello Industriale, S.p.A.: *See—*
Rolando, Giovanni; and Manunta, Giorgio, 4,604,679, Cl. 362-277.000.

Carle & Montanari S.p.A.: *See—*
Ripani, Sergio; and Serafini, Giulio, 4,603,815, Cl. 241-36.000.

Carollo, Sammy F.; and Dance, William E., to Vought Corporation. Radiographic inspection means and method. 4,604,649, Cl. 358-111.000.

Carr, Richard V. C.; Martin, Carl J.; Gonzalez, Roland; and Albanese, Thomas A., to Air Products and Chemicals, Inc. Removal of nitrocresols from dinitrotoluene waste streams using fentons reagent. 4,604,214, Cl. 210-759.000.

Carrier Corporation: *See—*
Dempsey, Daniel J.; and Parker, Kent L., 4,603,680, Cl. 126-99.00A.

Carrington, Charles R.: *See—*
Fisher, Carl, Jr.; Carrington, Charles R.; and Grant, George A., 4,604,706, Cl. 364-507.000.

Carter, Mark L.: *See—*
Edwards, Jon L.; and Carter, Mark L., 4,603,740, Cl. 166-319.000.

Caruso, Richard. Hair curler. 4,603,706, Cl. 132-41.000.

Casazza, Anna Maria: *See—*
Penco, Sergio; Arcamone, Federico; and Casazza, Anna Maria, 4,604,381, Cl. 514-34.000.

Casper, Daniel F.: *See—*
Blount, Frederick T.; Capowski, Robert S.; Casper, Daniel F.; DelSonno, Lawrence R.; Geller, Robert F.; Kusmiss, Joseph M.; and Zimmerman, Terrence K., 4,604,709, Cl. 364-900.000.

Cassels, Robert: *See—*
Smith, Richard A.; and Cassels, Robert, 4,604,285, Cl. 424-94.000.

Castor, John W.: *See—*
Reiter, Bernadette G.; Castor, John W.; Blume, R. J. Carter; Schewe, Roy A.; and Shepley, Leonard D., 4,604,686, Cl. 364-200.000.

Caterpillar Tractor Co.: *See—*
Pflederer, Mark R., 4,604,675, Cl. 361-155.000.

Cave, Eric F.; and Cowden, James J., to RCA Corporation. Apparatus for lapping a facet on a tip of a workpiece. 4,603,512, Cl. 51-229.000.

Celanese Corporation: *See—*
Shimp, David A., 4,604,452, Cl. 528-422.000.

Central Illinois Manufacturing Company: *See—*
Ayers, William R., 4,604,205, Cl. 210-497.200.

Ceskoslovenska Akademie VED: *See—*
Wichterle, Otto; Trekoval, Jiri; Vacik, Jiri; and Michalek, Jiri, 4,604,440, Cl. 526-327.000.

Cetus Corporation: *See—*
Fernandes, Pete M.; and Taforo, Terrance A., 4,604,377, Cl. 514-8.000.

Chadima, George E., Jr.; and Kubler, Joseph J., to Norand Corporation. System and method for communication between nodes of a closed loop local communication path. 4,604,693, Cl. 364-200.000.

Chambers, Gary C.; and Hychalk, Leonard V., to Figgie International Inc. Speed and direction control apparatus for a vehicle. 4,603,752, Cl. 180-6.400.

Chambon, Jean-Pierre: *See—*
Beziere, Kathleen; Chambon, Jean-Pierre; and Molimard, Jean-Charles, 4,604,383, Cl. 514-63.000.

Chan, Lo Kwan; and Li, Wai Sau, to ASM Assembly Automation, Ltd. Wire bonding apparatus. 4,603,803, Cl. 228-4.500.

Chang, Wei C. Nursing bottle system. 4,603,784, Cl. 215-11.00R.

Chang, Wen-Hsuan; and Dufford, Edward L., to PPG Industries, Inc. Partial hydrolyzates containing hydrolyzable moieties from organosilane compounds. 4,604,443, Cl. 528-28.000.

Chang, Yu-Wen; Kan, Phillip T.; and Ross, Oakley G., to General Dynamics, Pomona Division. Flexible, dielectric millimeter waveguide. 4,603,942, Cl. 350-96.240.

Channellock, Inc.: *See—*
Schaffner, Bernard P., Jr., 4,603,607, Cl. 81-414.000.

Channing, Harry: *See—*
Windisch, Lawrence; Nees, John; and Channing, Harry, 4,604,564, Cl. 320-2.000.

Chardonol Corporation: *See—*
Altenberg, Milton J., 4,604,410, Cl. 521-172.000.

Charles of the Ritz Group Ltd.: *See—*
Deckner, George E.; Mercado, Clara G.; and Krog, Ann M., 4,604,281, Cl. 424-59.000.

Charles S. Dozer Enterprises, Inc.: *See—*
Dozer, Charles S., 4,603,638, Cl. 104-95.000.

Charonnat, Marcel. Electromagnetic jigsaw. 4,603,614, Cl. 83-752.000.

Chatterjee, Pallab K.: *See—*
Shah, Ashwin H.; Chatterjee, Pallab K.; Gallia, James D.; and Mahant-Shetti, Shivaling S., 4,604,727, Cl. 365-189.000.

Chau, Nhut: *See—*
Shevtchuk, Victor; Chau, Nhut; and Schuessler, Richard C., 4,604,298, Cl. 427-96.000.

Chee, Wan T., to Boeing Company, The. Aft engine mount. 4,603,822, Cl. 244-54.000.

Chen, Gilbert; Kitterman, B. Layton; Glaspie, Donald L.; and Axe, John R., to Glitsch, Inc. Tower packing material and method. 4,604,247, Cl. 261-94.000.

Chen, James N., to Hewlett-Packard Company. Stand-off device with special fluid. 4,603,701, Cl. 128-660.000.

Chen, Kuang P. Structure for tee joint. 4,603,996, Cl. 403-7.000.

Chen, Nai Y.; and Degnan, Thomas F., to Mobil Oil Corporation. Hydroprocessing reactor for catalytically dewaxing liquid petroleum feedstocks. 4,604,261, Cl. 422-191.000.

Chen, Richard M. Golf ball with alignment marker. 4,603,862, Cl. 273-183.00C.
Chen, Thomas. Cushion isolator. 4,603,844, Cl. 267-118.000.
Chen, Yok; and Gonzalez, Roberto, to United States of America, Energy. Refractory oxide hosts for a high power, broadly-tunable laser with high quantum efficiency and method of making same. 4,604,225, Cl. 252-301.40R.
Chenevas-Paule, Andre ; and Cuchet, Robert, to Commissariat a l'Energie Atomique. Apparatus for point-by-point reading of documents using photodetector matrix. 4,604,527, Cl. 250-578.000.
Cheng, Bao-Ding, to Colgate Palmolive Co. Zeolite containing heavy duty non-phosphate detergent composition. 4,604,224, Cl. 252-91.000.
Cheresnowsky, Michael J.; Brunelli, Timothy A.; Munn, Robin W.; and Kim, Tai K., to GTE Products Corporation. Process for purifying molybdenum trioxide. 4,604,266, Cl. 423-54.000.
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Chetty, P. R. K., to Sundstrand Corporation. Maximum power transfer system for a solar cell array. 4,604,567, Cl. 323-299.000.
Cheung, Harry, to Union Carbide Corporation. Hybrid nitrogen generator with auxiliary column drive. 4,604,117, Cl. 62-25.000.
Chevalier-Bultel, Jean P.: *See—*
Lalancette, Jean M.; Chevalier-Bultel, Jean P.; and Desrosiers, Luc, 4,604,140, Cl. 106-38.900.
Chevron Research Company: *See—*
Campbell, Curtis B., 4,604,103, Cl. 44-72.000.
Chew, William F.: *See—*
Davis, Esker K.; and Chew, William F., 4,603,730, Cl. 165-30.000.
Chianelli, Russell R.: *See—*
Edelson, Edward H.; Stiefel, Edward I.; Chianelli, Russell R.; and Coyle, Catherine L., 4,604,183, Cl. 208-420.000.
Chiba, Toshiyuki: *See—*
Takaya, Takao; Takasugi, Hisashi; Tsuji, Kiyoshi; and Chiba, Toshiyuki, 4,604,456, Cl. 540-222.000.
Chicopee: *See—*
McCall, Clyde A.; Campbell, Michael J.; and Dean, William B., 4,604,315, Cl. 428-230.000.
Chikazawa, Nobumoto: *See—*
Fujii, Setsuro; Chikazawa, Nobumoto; Arima, Teruo; and Fukushima, Masakazu, 4,604,234, Cl. 514-2.000.
Chipman, Max C.; and Horton, George R. Spring exercise device. 4,603,857, Cl. 272-136.000.
Cho, Tsuneo: *See—*
Ikada, Yoshito; Gen, Shokyu; Shimizu, Yasuhiko; Tamura, Koichi; Nakamura, Tatsuo; Kimura, Sosuke; Cho, Tsuneo; Tadokoro, Hideki; and Hori, Kazuaki, 4,603,695, Cl. 128-334.00R.
Choe, Pil Y., to Prodel Corp. Combination humidifier/water distiller. 4,604,246, Cl. 261-71.000.
Christenson, James C.: *See—*
Putman, Richard E.; Gundersen, Katherine A.; and Christenson, James C., 4,604,714, Cl. 364-494.000.
Christianson, Tony. Inlet valve for breathing apparatus second stage regulators. 4,603,833, Cl. 251-94.000.
Chronar Corp.: *See—*
Dalal, Vikram L., 4,604,636, Cl. 357-2.000.
Chrysler Corporation: *See—*
Cuevas-Cumming, Pablo, 4,603,925, Cl. 312-196.000.
Chu, Chaokang; Fiore, Joseph V.; Knight, Rodney A.; Marinaccio, Paul J.; and Roy, Asit. Liquid filtration using an anionic microporous membrane. 4,604,208, Cl. 210-636.000.
Chynoweth, William R.: *See—*
Ballinger, Dale O.; Chynoweth, William R.; and Wade, Gerald J., 4,604,669, Cl. 360-113.000.
Ciba-Geigy Corporation: *See—*
Berendt, Hans-Ulrich; and Schafer, Paul, 4,604,099, Cl. 8-477.000.
Hutchison, Alan J., 4,604,397, Cl. 514-291.000.
Irving, Edward; and Smith, Terence J., 4,604,344, Cl. 430-325.000.
Renner, Alfred, 4,604,437, Cl. 526-262.000.
Schneider, Dieter; Knies, Heinz; and Kaudela, Gerhard, 4,604,100, Cl. 8-526.000.
CII Honeywell Bull: *See—*
Barski, Guy, 4,604,664, Cl. 360-97.000.
Ciliberti, David F.; and Lippert, Thomas E., to Westinghouse Electric Corp. Electrostatic precipitator with readily cleanable collecting electrode. 4,604,112, Cl. 55-117.000.
Cincinnati Microwave, Inc.: *See—*
Grimsley, Richrd L.; and Furnish, Gregory R., 4,604,529, Cl. 307-10.00R.
Cincinnati Milacron Inc.: *See—*
Bone, Kendall F., 4,604,008, Cl. 409-231.000.
Cinzori, Robert J., to Hughes Aircraft Company. Apparatus and method for nighttime and low visibility alignment of communicators. 4,603,975, Cl. 356-152.000.
Clancy, Kevin F.; and Schneider, Ralph J., to Honeywell Inc. Elastomeric push button return element for providing enhanced tactile feedback. 4,604,509, Cl. 200-159.00B.
Clark, Bruce D., to G. W. Lisk Company, Inc. Solenoid construction and method for making the same. 4,604,600, Cl. 335-261.000.
Clark, Danford E., to Union Oil Company of California. Hydrocracking catalyst of improved activity. 4,604,373, Cl. 502-65.000.
Clark, Earl: *See—*
Irvin, Howard B.; Stahl, G. Allan; and Clark, Earl, 4,604,216, Cl. 252-8.510.
Clark, John F.: *See—*
Byers, Stuart D.; and Clark, John F., 4,603,525, Cl. 52-245.000.
Clark, Thomas F., to Phoenix Electric Corporation. Status-indicating current interrupter. 4,604,613, Cl. 340-638.000.
Clawson, Lawrence G., to Raytheon Company. Condensing furnace with corrosion suppression. 4,603,681, Cl. 126-110.00R.
Clecim: *See—*
Damiron, Pierre M.; Legoupil, Jean-Luc; and Brosson, Jacques, 4,604,157, Cl. 156-345.000.
Clegg, John E. Synchronized scotch yoke. 4,603,593, Cl. 74-50.000.
Clegg, John E. Wall-mounted conical beam concentrator. 4,603,686, Cl. 126-440.000.
Clegg, John E. Revolving magnifying prisms. 4,603,939, Cl. 350-6.400.
Clegg, John E. Conical beam concentrator. 4,603,949, Cl. 350-432.000.
Clements, Silous F.: *See—*
Amezcua, Robert; Clements, Silous F.; Coenen, John S.; DaFoe, Ralph H.; Day, Michael N.; Ross, Dennis M.; and Simpson, Richard O., 4,604,710, Cl. 364-900.000.
Clutterbuck, Richard C. D.; and Painton, Anthony R., to EMI Limited. Timing circuits. 4,604,536, Cl. 307-603.000.
CMR Enterprises, Inc.: *See—*
Davidson, Mel, 4,604,515, Cl. 219-298.000.
Codman & Shurtleff, Inc.: *See—*
Santangelo, John A.; and Worrick, Charles B., III, 4,604,089, Cl. 604-30.000.
Coenen, John S.: *See—*
Amezcua, Robert; Clements, Silous F.; Coenen, John S.; DaFoe, Ralph H.; Day, Michael N.; Ross, Dennis M.; and Simpson, Richard O., 4,604,710, Cl. 364-900.000.
Coenen, Karl: *See—*
Bober, Helmut; Buthe, Theo; Coenen, Karl; Fartmann, Norbert; Herbertz, Klaus; Koch, Franz-Heinz; Kretschmer, Horst; Nienhaus, Clemens; Schardt, Peter; Schibrowski, Jurgen; and Schmandt, Willi, 4,603,998, Cl. 403-322.000.
Cohen, Donald K., to International Business Machines Corporation. Optical focus detection employing rotated interference patterns. 4,604,739, Cl. 369-45.000.
Cohen, Howard; and Dauer, Alois, to Irwin Measuring Tool Co. Bumper indicator. 4,603,481, Cl. 33-138.000.
Cole-Hamilton, David J.; Jones, Anthony C.; and Mullin, John B., to United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the. Preparation of metal alkyls. 4,604,473, Cl. 556-1.000.
Cole, Richard L.; and Janik, Gloria, to Dow Corning Corporation. Thermally conductive polyorganosiloxane elastomer composition. 4,604,424, Cl. 524-862.000.
Colgate Palmolive Co.: *See—*
Cheng, Bao-Ding, 4,604,224, Cl. 252-91.000.
Scott, George V., 4,604,280, Cl. 424-49.000.
Collins, Brian J., to Rolls-Royce Limited. Control systems for gas turbine aeroengines. 4,603,546, Cl. 60-39.020.
Collins, Raymond F.; Ramsden, Christopher A.; Saunders, Libert C.; and Warne, Peter J., to May & Baker Limited. Treating arthritis with 3-(N,N-dimethyl carbamoyl)pyrazolo[1,5-a]pyridine. 4,604,400, Cl. 514-300.000.
Colman, Derek; and Cotton, David R., to Texas Instruments Incorporated. Darlington transistors. 4,604,640, Cl. 357-46.000.
Coloplast A/S: *See—*
Samuelsen, Peter, 4,604,095, Cl. 604-323.000.
Colquhoun, Howard M., to Imperial Chemical Industries PLC. Chemical process. 4,604,485, Cl. 568-319.000.
Colvin, Howard A.; Cottman, Kirkwood S.; and Parker, Dane K., to Goodyear Tire & Rubber Company, The. Functionalized monomers from 1-(1-isocyanato-1-methylethyl)-3- or 4-(1-methylethenyl) benzene. 4,604,439, Cl. 526-288.000.
Combs, Cathy M.: *See—*
Duffy, Joseph K.; Thoene, Mark L.; and Combs, Cathy M., 4,603,780, Cl. 206-591.000.
Combustion Engineering, Inc.: *See—*
Lowrie, Neely E.; and Rooker, Mitchel L., 4,604,196, Cl. 210-136.000.
Commissariat a l'Energie Atomique: *See—*
Abbes, Claude; De Villepoix, Raymond; and Rouaud, Christian, 4,603,892, Cl. 285-336.000.
Chenevas-Paule, Andre ; and Cuchet, Robert, 4,604,527, Cl. 250-578.000.
Perroud, Anne-Marie; and Silvent, Alain, 4,604,228, Cl. 252-492.000.
Concrete Systems, Inc.: *See—*
Ecker, Fred L., 4,604,250, Cl. 264-35.000.
Coney, Michael H.: *See—*
Moss, Roger W.; Coney, Michael H.; and Richardson, David A., 4,604,031, Cl. 416-97.00R.
Conley, Ralph F., Jr.; and Frye, Ricky F., to MIM Industries, Inc. Sewing machine with edge trimmer. 4,603,647, Cl. 112-129.000.
Conoco Inc.: *See—*
McConaghy, James R., Jr.; and Anderson, Ardis L., 4,604,185, Cl. 208-56.000.
Yoon, Heeyoung, 4,604,269, Cl. 423-242.000.
Consolidated Controls Corporation: *See—*
Reinicke, Robert H., 4,604,090, Cl. 604-118.000.
Construction Robotics, Inc.: *See—*
Deike, Robert F., 4,603,520, Cl. 52-98.000.
Conta, Robert L.; and Wallach, Harvey N., to United States Surgical Corporation. Instrument for circular surgical stapling of hollow body organs and disposable cartridge therefor. 4,603,693, Cl. 128-305.000.
Container Development Company: *See—*
Schultheis, Stephen K., 4,603,535, Cl. 53-373.000.

Continental Group, Inc., The: *See—*
Krishnakumar, Suppayan M.; Friendship, Kenneth F. M.; Mahajan, Gautam K.; and Pocock, John F. E., 4,603,831, Cl. 249-144.000.

Continental White Cap, Inc.: *See—*
Lecinski, Frank H., Jr.; and Thomas, William J., 4,603,786, Cl. 215-318.000.

Convergent Technologies, Inc.: *See—*
Burger, John P., 4,604,689, Cl. 364-200.000.

Conway, Richard J.; Watson, Keith G.; and Farquharson, Graeme J., to ICI Australia Limited. Herbicidal 5-(hetero-substituted) cyclohexane-1,3-dione derivatives. 4,604,132, Cl. 71-90.000.

Cook, Kenneth O. Apparatus and method for making color photographic prints. 4,603,965, Cl. 355-38.000.

Copp, James R. Holography. 4,603,937, Cl. 350-368.000.

Cormier, Alan D.: *See—*
Weinberg, Melvin S.; Cormier, Alan D.; and Jones, Ronald L., 4,604,166, Cl. 204-1.00T.

Cornell, Charles R., to J. I. Case Company. Cotton harvester harvesting rotor speed monitor. 4,603,543, Cl. 56-10.200.

Corning Glass Works: *See—*
Bocko, Peter L.; Wein, William J.; and Young, Charles E., 4,604,118, Cl. 65-3.120.

Cornu, Pierre-Jean; Perrin, Claude; Dumaitre, Bernard; and Streichenberger, Gilles. Phenyloxoalkyl piperidines and the pharmaceutical compositions containing them. 4,604,393, Cl. 514-229.000.

Corsello, Vincent: *See—*
Glass, Michael; Corsello, Vincent; Orlandi, Daniel A.; and Guzowski, Anthony, 4,604,288, Cl. 426-5.000.

Cosco, Inc.: *See—*
Maloney, Kevin, 4,603,902, Cl. 297-35.000.

Cottman, Kirkwood S., to Goodyear Tire & Rubber Company, The. Polymerizable thioester synergists. 4,604,417, Cl. 524-199.000.

Cottman, Kirkwood S.: *See—*
Colvin, Howard A.; Cottman, Kirkwood S.; and Parker, Dane K., 4,604,439, Cl. 526-288.000.

Cotton, David R.: *See—*
Colman, Derek; and Cotton, David R., 4,604,640, Cl. 357-46.000.

Cotton, Worth B., Jr., to Industrial Air, Inc. Air washer and method. 4,604,108, Cl. 55-20.000.

Coulthard, Leslie M. F., to GKN Birwelco Limited. Flare for and method of flaring high velocity gas. 4,604,047, Cl. 431-5.000.

Cousens, Donald E.: *See—*
Kurtz, John A.; Cousens, Donald E.; and Dufour, Mark D., 4,603,802, Cl. 228-1.100.

Couvrette, Edward F. Expandable structure for automatic teller machines. 4,603,643, Cl. 109-24.100.

Cowden, James J.: *See—*
Cave, Eric F.; and Cowden, James J., 4,603,512, Cl. 51-229.000.

Cowles, John C., to Mars Incorporated. Vending machine power switching apparatus. 4,604,557, Cl. 318-98.000.

Cox, Roger A., to Telex Communications, Inc. Parasitic array with driven sleeve element. 4,604,628, Cl. 343-818.000.

Coyle, Catherine L.: *See—*
Edelson, Edward H.; Stiefel, Edward I.; Chianelli, Russell R.; and Coyle, Catherine L., 4,604,183, Cl. 208-420.000.

Crabtree, Robert P.; and Kelly, Keith F., Jr., to International Business Machines Corp. Dynamic configuration for added devices. 4,604,690, Cl. 364-200.000.

Cragoe, Edward J., Jr.; and Woltersdorf, Otto W., Jr., to Merck & Co., Inc. [(2,3,9,9a-tetrahydro-3-oxo-9a-substituted-1H-fluoren-7-yl)oxy]ethanimidamides and [(2,3,9,9a-tetrahydro-3-oxo-9a-substituted-1H-fluoren-7-yl)oxy]ethanimidic acid hydrazides, their derivatives and their salts. 4,604,396, Cl. 514-256.000.

Cragoe, Edward J., Jr.; and Woltersdorf, Otto W., Jr., to Merck & Co., Inc. Use of substituted-3(2,3-dihydro-1H-inden-5-yl)-4-hydroxy-1H-pyrrole-2,5-diones for treating grey matter edema. 4,604,403, Cl. 514-425.000.

Craig Medical Products, Limited: *See—*
Steer, Peter L., 4,603,837, Cl. 251-352.000.

Craver, Richard D., to Orrville Products, Inc. Fireplace insert. 4,603,683, Cl. 126-138.000.

Creighton, Thomas C.; Dorsey, William C.; Lewicki, Walter J., Jr.; Long, Harry F.; and Ringer, Richard M., to Armstrong World Industries, Inc. Stress-free, embossed, ornamented tile surface covering and process for making the same. 4,604,312, Cl. 428-137.000.

Crimmins, Arthur G., Jr., to Crimmins, Joan M. Means for securing and aligning the barrels of two pistols substantially parallel. 4,603,497, Cl. 42-106.000.

Crimmins, Joan M.: *See—*
Crimmins, Arthur G., Jr., 4,603,497, Cl. 42-106.000.

Cronenwett, Duane; and Gottfried, Robert W. Roofing system. 4,603,529, Cl. 52-536.000.

Crophandling Systems Limited: *See—*
Byers, Stuart D.; and Clark, John F., 4,603,525, Cl. 52-245.000.

Cross, Lindsay E.: *See—*
Watson, Keith G.; Wishart, John D.; Farquharson, Graeme J.; Bird, Graham J.; and Cross, Lindsay E., 4,604,128, Cl. 71-88.000.

Cross, Thomas E., Jr.; and Hults, Gerald J., to Medtronic, Inc. Lead connector. 4,603,696, Cl. 128-419.00P.

Crow, Robert P. Visibility enhancement system. 4,603,973, Cl. 356-5.000.

Crown International, Inc.: *See—*
Stanley, Gerald R., 4,604,719, Cl. 364-721.000.

Cruijsen, Hermanus G. M., to Volvo Car B.V. Means for maintaining clutch disengagement where transmission is neutral. 4,603,765, Cl. 192-85.00V.

Cruttwell, Ian A.: *See—*
Knowles, William R.; and Cruttwell, Ian A., 4,604,523, Cl. 250-310.000.

Csabanko, Istvan: *See—*
Benko, Eva; Csabanko, Istvan; Porkolab, Aniko ; Szabo, Zsolt; and Tatacs, Gabor, 4,604,086, Cl. 494-16.000.

Cselt - Centro Studi e Laboratori Telecomunicazioni S.p.A.: *See—*
Gandini, Marco; and Sartori, Mario, 4,604,740, Cl. 370-27.000.

Cuchet, Robert: *See—*
Chenevas-Paule, Andre ; and Cuchet, Robert, 4,604,527, Cl. 250-578.000.

Cuevas-Cumming, Pablo, to Chrysler Corporation. Personal computer storage cabinet. 4,603,925, Cl. 312-196.000.

Cukier, Samuel; and Kremer, Henry A. F. L., to Domtar Inc. Modified coal-tar pitch. 4,604,184, Cl. 208-22.000.

Culbertson, Townley P.: *See—*
Michl, Thomas F.; Culbertson, Townley P.; and Domagala, John M., 4,604,401, Cl. 514-312.000.

Curnutt, Jerald L.: *See—*
Harley, A. Dale; Curnutt, Jerald L.; and Doughty, David T., 4,604,242, Cl. 558-260.000.

Cusack, Robert F., to Valeron Corporation. Probe shield. 4,603,482, Cl. 33-169.00R.

Cuzic, John E.: *See—*
Stoesser, Paul R.; Cuzic, John E.; and McLaren, John W., 4,603,812, Cl. 239-329.000.

Cygnarowicz, Leonard P.: *See—*
Smith, Ronald A.; Jackson, James M.; Lehfeldt, Carl L.; Cygnarowicz, Leonard P.; Moshfegh, Khosro; Blanchard, Kenneth L.; and Nelson, Kenneth J., 4,603,567, Cl. 72-8.000.

Czupryna, Gary; Natansohn, Samuel; Long, Robert A.; and Munn, Robin W., to GTE Products Corporation; and GTE Laboratories Incorporated. Process for the growth of alpha silicon nitride whiskers. 4,604,273, Cl. 423-344.000.

DaFoe, Ralph H.: *See—*
Amezcua, Robert; Clements, Silous F.; Coenen, John S.; DaFoe, Ralph H.; Day, Michael N.; Ross, Dennis M.; and Simpson, Richard O., 4,604,710, Cl. 364-900.000.

Dai-Ichi Kogyo Seiyaku Co., Ltd.: *See—*
Yada, Akira; Matsumoto, Shusaku; Kawamori, Yoshihiro; Saito, Takao; Nishiyama, Tadashi; and Adachi, Yoshitugu, 4,604,411, Cl. 522-14.000.

Dai, Shenghong A.; Grossman, Steven J.; and Onder, Kemal, to Dow Chemical Company, The. Polymer from azetidine-2,4-dione and polyol or polyamine. 4,604,450, Cl. 528-322.000.

Daigo Nutritive Chemicals, Ltd.: *See—*
Kawajiri, Seizo, 4,604,286, Cl. 424-149.000.

Daikin Kogyo Co., Ltd.: *See—*
Ohmori, Akira; Takaki, Shoji; and Kitahara, Takahiro, 4,604,482, Cl. 560-213.000.

Dailey, Nils; Rai, Vishva; Southall, Kenneth; and Webster, Timothy J., to AMF Inc. Multicartridge chromatography cartridge housing. 4,604,198, Cl. 210-198.200.

Daimler-Benz Aktiengesellschaft: *See—*
Heintz, Harald M., 4,603,915, Cl. 301-37.00P.

Dalal, Vikram L., to Chronar Corp. Microcrystalline semiconductor method and devices. 4,604,636, Cl. 357-2.000.

Damiron, Pierre M.; Legoupil, Jean-Luc; and Brosson, Jacques, to Clecim. Acid pickling tank for metal strips. 4,604,157, Cl. 156-345.000.

Dance, William E.: *See—*
Carollo, Sammy F.; and Dance, William E., 4,604,649, Cl. 358-111.000.

Dang, Hiep D.: *See—*
Morris, Gregory J. E.; Pimlott, John R.; Beaver, Richard N.; Dang, Hiep D.; and Grosshandler, Sandor, 4,604,171, Cl. 204-98.000.

DaPrato, Philip L.: *See—*
Aquino, Dolores C.; DaPrato, Philip L.; Gouker, Toby R.; and Knoer, Peter, 4,604,105, Cl. 48-197.00R.

Dart Industries Inc.: *See—*
Barrett, Keith, 4,604,026, Cl. 414-728.000.

Data General Corp.: *See—*
Epstein, David I., 4,604,684, Cl. 364-200.000.

Dauer, Alois: *See—*
Cohen, Howard; and Dauer, Alois, 4,603,481, Cl. 33-138.000.

Daugherty, Donald L., to Bunn-O-Matic Corporation. VPS with hot water dispenser. 4,603,620, Cl. 99-300.000.

Davatz, Christian R. Hand control for foot control trolling motor. 4,604,066, Cl. 440-7.000.

Davidenko, Nikolai I.: *See—*
Shaginian, Albert S.; Asan-Dzhalalov, Alexei G.; Pevnev, Anatoly A.; Androsenko, Alexandr P.; Suvorov, Alexandr V.; Khalitov, Boris V.; Palkin, Leonid N.; Gnatchenko, Viktor V.; Makarov, Nikolai P.; Panteleev, Valery A.; Davidenko, Nikolai I.; Shpilevsky, Stanislav K.; Tikhonenko, Alexandr S.; and Romanovsky, Anatoly G., 4,604,724, Cl. 364-478.000.

Davidson, Eldon F. Phase-locked digital very high frequency omnirange (VOR) receiver. 4,604,625, Cl. 343-401.000.

Davidson, Mel, to CMR Enterprises, Inc. Tankless electric water heater with staged heating element energization. 4,604,515, Cl. 219-298.000.

Davidson, Robert I., to Ethyl Corporation. Arylation of olefins. 4,604,243, Cl. 558-388.000.

Davies, George G.; McGlade, Stuart M.; and Dunn, Peter L., to Marconi Company Limited, The. Rotary apparatus having code track with pseudo-random binary digit sequence for indicating rotational position. 4,604,725, Cl. 364-900.000.

Davies, Theodore E.; Quinn, Dennis E.; and Watson, James E., to Gas Research Institute. Regenerative burner. 4,604,051, Cl. 431-166.000.

Davis, C. Paul; and Neuman, Eli, to PerfectData Corporation. Apparatus and method for enhancing flexible magnet disk performance. 4,604,672, Cl. 360-137.000.

Davis, Esker K.; and Chew, William F., to GTI Corporation. Multiple module furnace system. 4,603,730, Cl. 165-30.000.

Davis, J. Stanley; and Radford, Steven R., to Norton Christensen, Inc. Apparatus for downward displacement of an inner tube within a coring barrel. 4,603,749, Cl. 175-250.000.

Davis, Larry; and Klein, Joseph T., to Hoechst-Roussel Pharmaceuticals Inc. 1-[3-(6-fluoro-1,2-benzisoxazol-3-yl)propyl]-4-(substituted)-piperazines. 4,604,395, Cl. 514-255.000.

Dawson, Jeffrey C., to BJ-Titan Services Company. Aqueous acid gels and use thereof. 4,604,218, Cl. 252-8.55C.

Day, Michael N.: *See—*
Amezcua, Robert; Clements, Silous F.; Coenen, John S.; DaFoe, Ralph H.; Day, Michael N.; Ross, Dennis M.; and Simpson, Richard O., 4,604,710, Cl. 364-900.000.

de la Poype, Roland, to Societe D'Etude et D'Application Industrielle de Brevets; and Baxter Travenol Laboratories, Inc. Apparatus for forming a web of film into a tubular shape in a form, fill and seal packaging machine. 4,603,536, Cl. 53-410.000.

de la Rosa, Rudolpho. Food warming cartridge. 4,604,053, Cl. 431-320.000.

Dean, Raymond S.; and Barabino, William A., to Physiological Research Associates. Disposable diaper with integral disposal system. 4,604,096, Cl. 604-385.00A.

Dean, William B.: *See—*
McCall, Clyde A.; Campbell, Michael J.; and Dean, William B., 4,604,315, Cl. 428-230.000.

Debono, Manuel, to Eli Lilly and Company. C-23-substituted mycaminosyltylonolide compounds, pharmaceutical compositions and methods of use. 4,604,380, Cl. 514-30.000.

Deckman, Harry W.; and Dunsmuir, John H., to Exxon Research and Engineering Co. Improvements in contrast of a positive polymer resist having a glass transition temperature through control of the molecular weight distribution and prebaked temperature. 4,604,305, Cl. 427-385.500.

Deckner, George E.; Mercado, Clara G.; and Krog, Ann M., to Charles of the Ritz Group Ltd. Cosmetic and skin treatment compositions containing acetylated sterols. 4,604,281, Cl. 424-59.000.

Dee Zee Manufacturing: *See—*
Elwell, Dennis L.; and Sills, Robert L., 4,604,013, Cl. 410-106.000.

Deep Ocean Engineering Incorporated: *See—*
Hawkes, Graham S.; and Glz, Walter I., 4,604,559, Cl. 318-563.000.

Deering, Roland F., to Union Oil Company of California. System for removing solids from a solids upflow vessel. 4,604,019, Cl. 414-187.000.

DeFord, Henry S.; and Moss, Owen R., to Battelle Development Corporation. Pressure multiplying dispenser. 4,603,794, Cl. 222-207.000.

Degnan, Thomas F.: *See—*
Chen, Nai Y.; and Degnan, Thomas F., 4,604,261, Cl. 422-191.000.

Degremont: *See—*
Louboutin, Robert; and Gibaud, Jean, 4,604,197, Cl. 210-150.000.

Dehm, Henry C., to Hercules Incorporated. Chemical case bond system with azido compound bonding. 4,604,248, Cl. 264-3.100.

Dehn, Freddie H. Universal dedicated fixture for frame straightening rack. 4,603,570, Cl. 72-305.000.

Deighton, Michael O.: *See—*
Watkins, Roger D.; Gillespie, Arthur B.; Deighton, Michael O.; Pike, Roger B.; and Scott-Kestin, Colin B., 4,604,612, Cl. 340-582.000.

Deike, Robert F., to Construction Robotics, Inc. Post mounting anchor base. 4,603,520, Cl. 52-98.000.

Dekura, Hitoshi, to Kabushiki Kaisha Toshiba. Image forming apparatus with a display device for matching the image size with the copying sheet size. 4,603,962, Cl. 355-3.00R.

DelCoco, Robert J.; Borsuk, Gerald M.; and Lampe, Donald R., to Westinghouse Electric Corp. Three line video scrambling method. 4,604,650, Cl. 358-119.000.

Dellicicchi, Alfred J.: *See—*
Manton, John C.; Bruckert, William F.; and Dellicicchi, Alfred J., 4,604,750, Cl. 371-38.000.

Delon, Patrice C. G.; Fourreaux, Gerard D.; Nicolas, Michel J. R.; and Sebilet, Bruno R., to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation S.N.E.C.M.A. Proximity radar. 4,604,622, Cl. 343-5.0PD.

DelSonno, Lawrence R.: *See—*
Blount, Frederick T.; Capowski, Robert S.; Casper, Daniel F.; DelSonno, Lawrence R.; Geller, Robert F.; Kusmiss, Joseph M.; and Zimmerman, Terrence K., 4,604,709, Cl. 364-900.000.

De Luca, Michael A.; and McCormack, John F., to Kollmorgen Technologies Corporation. Metallization of ceramics. 4,604,299, Cl. 427-98.000.

Demarest, Henry M., Jr.; Matesa, Joseph M.; and Kunkle, Gerald E., to PPG Industries, Inc. Method of pretreating glass batch. 4,604,121, Cl. 65-27.000.

De Matteis, Maria C. Screening test for beta-thalassemia trait and a diagnostic kit for its individualization. 4,604,350, Cl. 435-29.000.

Demerson, Christopher A.; and Humber, Leslie G., to American Home Products Corporation. Process for the resolution of pyrano[3,4-b]indole-1-acetic acids. 4,604,469, Cl. 548-432.000.

Demeure, Alain, to Thomson CSF. Digital device for the formation of sonar channels. 4,604,736, Cl. 367-123.000.

deMey, Charles F., II, to Perkin-Elmer Corporation, The. Shutter mechanism. 4,603,835, Cl. 251-215.000.

de Montigny, Armand: *See—*
Oberkirch, Wolfgang; de Montigny, Armand; and Botsch, Hansjurgen, 4,603,738, Cl. 166-275.000.

Dempsey, Daniel J.; and Parker, Kent L., to Carrier Corporation. Furnace inducer outlet box assembly. 4,603,680, Cl. 126-99.00A.

Denki Kagaku Kogyo Kabushiki Kaisha: *See—*
Nabeta, Takeshi; and Hanahara, Isamu, 4,604,413, Cl. 523-137.000.

de Nora, Oronzio: *See—*
Nidola, Antonio; and de Nora, Oronzio, 4,604,173, Cl. 204-105.00R.

Dentsply Research & Development Corp.: *See—*
Kacicz, Joseph M.; and Fonvielle, Frank P., 4,604,366, Cl. 501-6.000.

Derbyshire, Francis J.; and Varghese, Philip, to Mobil Oil Corporation. Hydrocracking of heavy feeds with dispersed dual function catalyst. 4,604,189, Cl. 208-111.000.

Derevyanko, Yan N.: *See—*
Naumov, Jury I.; Juzefovich, Dmitry K.; Epifanova, Valentina S.; Kucherenko, Vladimir I.; Flerov, Valery N.; Praporov, Anatoly M.; Shustov, Vladimir P.; Sychev, Alexel E.; Korolev, Georgy V.; Kotov, Evgeny P.; and Derevyanko, Yan N., 4,604,175, Cl. 204-151.000.

DeShon, Wallace E., to Phillips Petroleum Company. Automatic switching apparatus and method. 4,604,661, Cl. 360-69.000.

de Smet, Gabriel, to Union Siderurgigue du Nord et de l'Est de la France. Multi-layer composite-wall panel or case structure. 4,604,327, Cl. 428-594.000.

Desprez, Marc; and Laurenceau, Serge, to L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude. Process and installation for heating a channel containing glass by means of oxyfuel flames. 4,604,123, Cl. 65-134.000.

Desrosiers, Luc: *See—*
Lalancette, Jean M.; Chevalier-Bultel, Jean P.; and Desrosiers, Luc, 4,604,140, Cl. 106-38.900.

Deutsche Forschungs- und Versuchsanstalt fur Luft- und Raumfahrt e.V.: *See—*
Adis, Erich; Bader, Manfred; and Buschulte, Winfried, 4,604,104, Cl. 48-107.000.

Deutsche Gesellschaft fur Wiederaufarbeitung von Kernbrennstoffen mbH: *See—*
Dudek, Gunther, 4,603,608, Cl. 81-463.000.

Deutsche Thomson-Brandt GmbH: *See—*
Maier, Gerhard; and Lange, Joachim, 4,604,571, Cl. 324-77.00A.

Deutschle, Robert, to E. C. H. Will (GmbH & Co.). Apparatus for transporting paper stacks. 4,603,768, Cl. 198-369.000.

De Villepoix, Raymond: *See—*
Abbes, Claude; De Villepoix, Raymond; and Rouaud, Christian, 4,603,892, Cl. 285-336.000.

Dias, Francisco J.: *See—*
Luhleich, Hartmut; and Dias, Francisco J., 4,604,249, Cl. 264-29.500.

Diebold, Rick: *See—*
Miles, Kevin; M., 4,603,846, Cl. 271-2.000.

Diesel Kiki Co., Ltd.: *See—*
Ueno, Masahito, 4,603,668, Cl. 123-352.000.

Digital Equipment Corporation: *See—*
Manton, John C.; Bruckert, William F.; and Dellicicchi, Alfred J., 4,604,750, Cl. 371-38.000.

Digonnet, Michel J. F.: *See—*
Shaw, Herbert J.; Digonnet, Michel J. F.; Bergh, Ralph A.; Sorin, Wayne V.; and Kolner, Brian H., 4,603,940, Cl. 350-96.150.

Dipzinski, Eugene S.: *See—*
Brown, Trevor J.; and Dipzinski, Eugene S., 4,603,914, Cl. 301-37.00P.

Disco Abrasive Systems, Ltd.: *See—*
Takatoshi, Ono, 4,603,609, Cl. 82-51.000.

Dittrich, Patrick E., to Auscilla Plastics, Inc. Molded bearing. 4,603,982, Cl. 384-129.000.

Diversey Wyandotte Corporation: *See—*
Stanton, James H., 4,604,220, Cl. 252-33.400.

Dixon Valve & Coupling Company: *See—*
Goodall, Richard L.; and Singh, Paramjit, 4,603,888, Cl. 285-55.000.

DM International Inc.: *See—*
Lutz, Irvin H.; and Wilson, Thomas M., 4,604,186, Cl. 208-50.000.

Doboy Packaging Machinery, Inc.: *See—*
Eaves, Fred W.; and Sommer, Wayne D., 4,604,704, Cl. 364-478.000.

Dr. Karl Thomae GmbH: *See—*
Reiffen, Manfred; Noll, Klaus; Heider, Joachim; Austel, Volkhard; Hauel, Norbert; Kobinger, Walter; and Lillie, Christian, 4,604,389, Cl. 514-213.000.

Dr. Muller AG: *See—*
Muller, Hans, 4,604,201, Cl. 210-323.200.

Dr. Techn. Ernst Linsinger & Co. GmbH: *See—*
Rungger, Helmut; Fuchs, Erwin; and Knoll, Johann, 4,604,011, Cl. 409-138.000.

Dodgen Industries, Inc.: *See—*
Dodgen, John N., 4,603,900, Cl. 296-156.000.

Dodgen, John N., to Dodgen Industries, Inc. Upper bed structure for a recreational vehicle. 4,603,900, Cl. 296-156.000.

Doi, Shin: *See—*
Yamada, Yukiyoshi; Doi, Shin; and Yasuguchi, Masayuki, 4,604,192, Cl. 209-144.000.

Doi, Tadashi: *See—*
Oi, Naobumi; Doi, Tadashi; and Nagase, Masayuki, 4,604,207, Cl. 210-635.000.
Domagala, John M.: *See—*
Mich, Thomas F.; Culbertson, Townley P.; and Domagala, John M., 4,604,401, Cl. 514-312.000.
Dombroski, Amy: *See—*
Glass, Michael; Hoholick, Joseph; Oppenheimer, Alfred; and Dombroski, Amy, 4,604,287, Cl. 426-5.000.
Domtar Inc.: *See—*
Cukier, Samuel; and Kremer, Henry A. F. L., 4,604,184, Cl. 208-22.000.
Donahue, Raymond J.: *See—*
Hesterberg, William G.; Donahue, Raymond J.; and Sheaffer, Benjamin L., 4,603,665, Cl. 123-195.00R.
Donely, Dean: *See—*
Baker, Robert W.; Donely, Dean; and Odorcic, Vlado, 4,604,610, Cl. 340-566.000.
Donnadieu, Andre ; and Letoffe , Michel, to Rhone-Poulenc Specialites Chimiques. Curable organopolysiloxane compositions comprising microencapsulated hardening accelerators. 4,604,444, Cl. 528-34.000.
Doppling, Horst; Hertrich, Steffen; Poschl, Walter; Ritter, Joachim; and Sill, Karl, to INA Walzlager Schaeffler KG. Inner race for a swashplate mechanism. 4,603,923, Cl. 384-7.000.
Dorflinger, Benno; and Steinebrunner, Walter, to Anton Zahoransky. Apparatus for storing and manipulating bundles of bristles in brush making machines. 4,603,913, Cl. 300-7.000.
Dorfman, Leslie J.: *See—*
McGill, Kevin C.; and Dorfman, Leslie J., 4,603,703, Cl. 128-731.000.
Dorr-Oliver Incorporated: *See—*
Bollinger, James M.; and Klinkowski, Peter R., 4,604,174, Cl. 204-151.000.
Dorsey, William C.: *See—*
Creighton, Thomas C.; Dorsey, William C.; Lewicki, Walter J., Jr.; Long, Harry F.; and Ringer, Richard M., 4,604,312, Cl. 428-137.000.
Doughty, David T.: *See—*
Harley, A. Dale; Curnutt, Jerald L.; and Doughty, David T., 4,604,242, Cl. 558-260.000.
Douglas, Alan D.; Reilly, Kenneth T.; Landmesser, John E.; Landry, Richard E.; and MacInnis, Martin B., to GTE Products Corporation. Recovery of tungsten and rhenium. 4,604,265, Cl. 423-49.000.
Douglas, Alan D.: *See—*
Reilly, Kenneth T.; Munn, Robin W.; Hoffman, Henry E.; and Douglas, Alan D., 4,604,278, Cl. 423-517.000.
Dow Chemical Company, The: *See—*
Berman, Jody R.; Berkefelt, Christine C.; and Aldrich, Dale J., 4,604,317, Cl. 428-285.000.
Dai, Shenghong A.; Grossman, Steven J.; and Onder, Kemal, 4,604,450, Cl. 528-322.000.
Fiegener, Dale R.; and Broussard, Felix J., 4,604,178, Cl. 204-286.000.
Harley, A. Dale; Curnutt, Jerald L.; and Doughty, David T., 4,604,242, Cl. 558-260.000.
Lin, Chung-Yuan, 4,604,210, Cl. 210-690.000.
Lund, Gary K., 4,604,374, Cl. 502-115.000.
Morris, Gregory J. E.; Pimlott, John R.; Beaver, Richard N.; Dang, Hiep D.; and Grosshandler, Sandor, 4,604,171, Cl. 204-98.000.
Rubens, Louis C., 4,604,426, Cl. 525-123.000.
Stoesser, Paul R.; Cuzic, John E.; and McLaren, John W., 4,603,812, Cl. 239-329.000.
Dow Corning Corporation: *See—*
Cole, Richard L.; and Janik, Gloria, 4,604,424, Cl. 524-862.000.
Juen, Donnie R., 4,604,478, Cl. 556-439.000.
Dozer, Charles S., to Charles S. Dozer Enterprises, Inc. Train system with variably tilting rail. 4,603,638, Cl. 104-95.000.
Dresser Industries, Inc.: *See—*
Hammoud, Ezzat A., 4,604,025, Cl. 414-698.000.
Dressler, Hans; and Meilus, Albert A., to Koppers Company, Inc. Synthetic oils. 4,604,491, Cl. 585-26.000.
Dubertret, Louis: *See—*
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Dubler, Alfred: *See—*
Miles, Kevin; M., 4,603,846, Cl. 271-2.000.
Dubler, David: *See—*
Miles, Kevin; M., 4,603,846, Cl. 271-2.000.
Ducate, John S., Sr. Apparatus for assembling blower wheel blades. 4,603,773, Cl. 198-468.200.
Dudek, Gunther, to Deutsche Gesellschaft fur Wiederaufarbeitung von Kernbrennstoffen mbH. Remotely-manipulated apparatus for performing maintenance work in shielded cells. 4,603,608, Cl. 81-463.000.
Dufford, Edward L.: *See—*
Chang, Wen-Hsuan; and Dufford, Edward L., 4,604,443, Cl. 528-28.000.
Duffy, Joseph K.; Thoene, Mark L.; and Combs, Cathy M., to Baxter Travenol Laboratories, Inc. Carton for housing fragile containers. 4,603,780, Cl. 206-591.000.
Dufour, Mark D.: *See—*
Kurtz, John A.; Cousens, Donald E.; and Dufour, Mark D., 4,603,802, Cl. 228-1.100.
Dumaitre, Bernard: *See—*
Cornu, Pierre-Jean; Perrin, Claude; Dumaitre, Bernard; and Streichenberger, Gilles, 4,604,393, Cl. 514-229.000.
Dunn, Peter L.: *See—*
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Dunsmuir, John H.: *See—*
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Du Pont de Nemours, E. I., and Company: *See—*
Bartlett, Philip L., 4,604,226, Cl. 252-389.00A.
Grossa, Mario, 4,604,340, Cl. 430-270.000.
Hanagan, Mary A., 4,604,131, Cl. 71-90.000.
Jagen, Paul R., 4,603,936, Cl. 339-143.00R.
Johnson, Bruce B., 4,604,323, Cl. 428-336.000.
Seago, James L., 4,604,182, Cl. 204-403.000.
Shapiro, Rafael, 4,604,130, Cl. 71-90.000.
Sondergeld, Manfred A. J.; and Grossa, Mario, 4,604,342, Cl. 430-281.000.
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Dupral B.V.: *See—*
Van Breukelen, Jacobus A. T.; and Westerveld, Theodorus, 4,603,572, Cl. 72-385.000.
Dupre , Sylvain: *See—*
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Durney, Max W. Drilling and counterboring apparatus and method for toe fastening. 4,603,719, Cl. 144-365.000.
Dynamit Nobel AG: *See—*
Seiler, Claus-Dietrich; and Vahlensieck, Hans-Joachim, 4,604,476, Cl. 556-401.000.
Dynamit Nobel Aktiengesellschaft: *See—*
Breitscheidel, Hans-Ulrich; and Kautz, Rudolf, 4,603,852, Cl. 272-109.000.
E. C. H. Will (GmbH & Co.): *See—*
Deutschle, Robert, 4,603,768, Cl. 198-369.000.
E et M Lamort S.A.: *See—*
Lamort, Jean-Pierre J., 4,604,193, Cl. 209-273.000.
E. R. Squibb & Sons, Inc.: *See—*
Godfrey, Jollie D., Jr.; Gordon, Eric M.; and Natarajan, Sesha I., 4,604,402, Cl. 514-333.000.
Haslanger, Martin F.; and Karanewsky, Donald S., 4,604,407, Cl. 514-575.000.
Eastman Kodak Company: *See—*
Brownstein, Scott A., 4,603,966, Cl. 355-45.000.
Jackson, Winston J., Jr.; and Kuhfuss, Herbert F., 4,604,449, Cl. 528-288.000.
Sand, I. Daniel; Shepherd, Freddie A.; and Fagerburg, David R., 4,604,446, Cl. 528-173.000.
Eaton-Optimetrix Inc.: *See—*
Phillips, Edward H.; and Wise, Lawrence A., 4,604,562, Cl. 318-640.000.
Eaves, Fred W.; and Sommer, Wayne D., to Doboy Packaging Machinery, Inc. High-speed microprocessor-controlled branch conveyor. 4,604,704, Cl. 364-478.000.
Echte, Adolf: *See—*
Hambrecht, Juergen; Illers, Karl-Heinz; Echte, Adolf; and Swoboda, Johann, 4,604,415, Cl. 524-140.000.
Ecker, Fred L., to Concrete Systems, Inc. Column form support system and method. 4,604,250, Cl. 264-35.000.
Ed Geistlich Sohne AG fur Chemische Industrie: *See—*
Pfirrmann, Rolf W., 4,604,391, Cl. 514-222.000.
Edelson, Edward H.; Stiefel, Edward I.; Chianelli, Russell R.; and Coyle, Catherine L., to Exxon Research and Engineering Co. Catalytic process for hydroconversion of solid carbonaceous materials. 4,604,183, Cl. 208-420.000.
Edgmon, John W., to Hughes Tool Company. Weight actuated tubing valve. 4,603,741, Cl. 166-369.000.
Edwards, David K.; and Kramer, John H., to General Motors Corporation. Washer pick up and placement tool. 4,604,024, Cl. 414-592.000.
Edwards, Jon L.; and Carter, Mark L., to Hydril Company. Subsurface safety valve. 4,603,740, Cl. 166-319.000.
Edwards, Philip N.: *See—*
Yellin, Tobias O.; Edwards, Philip N.; and Large, Michael S., 4,604,465, Cl. 544-326.000.
Egawa, Akira; and Kodaira, Takanori, to Canon Kabushiki Kaisha. Synchronizing device for flash photography. 4,603,954, Cl. 354-137.000.
Eichler, Klaus; and Leupold, Ernst I., to Hoechst Aktiengesellschaft. Process for the isomerization of halogenated thiophenes. 4,604,470, Cl. 549-81.000.
Ekman, Uno; and Hjert, Leif, to Igelfors Bruks AB. Device for transport or displacement of elongated objects in particular, as well as a pulling or traction wheel comprised in said device. 4,603,839, Cl. 254-329.000.
Ekstrand, John A. I. Means for adjusting a sighting instrument in relation to a support. 4,603,826, Cl. 248-205.100.
Elabd, Hammam; Kosonocky, Walter F.; and Battson, Donald F., to RCA Corporation. CCD imagers with pixels at least thirty microns long in the direction of charge transfer. 4,604,652, Cl. 358-213.000.
Electro-Nucleonics, Inc.: *See—*
O'Neill, Sean P.; and Wu, Joseph, 4,604,365, Cl. 436-528.000.
Electrovac Fabrikation elektronischer Spezialartikel Gesellschaft m.b.H.: *See—*
Lieberth, Karl, 4,603,981, Cl. 374-210.000.
Eli Lilly and Company: *See—*
Abdulla, Riaz F.; and Samaritoni, Jack G., 4,604,127, Cl. 71-66.000.
Debono, Manuel, 4,604,380, Cl. 514-30.000.
Michel, Karl H.; and Kastner, Ralph E., 4,604,239, Cl. 530-317.000.

Spry, Douglas O., 4,604,386, Cl. 514-200.000.
Ellis, Edward J., to Polymer Technology Corporation. Silicone-containing contact lens material and contact lenses made thereof. 4,604,479, Cl. 556-440.000.
Elsasser, Dieter: *See—*
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Elslager, Edward F.; Werbel, Leslie M.; Ortwine, Daniel F.; Worth, Donald F.; Showalter, Howard D. H.; Capps, David B.; Berman, Ellen M.; Gregor, Vlad E.; and Sercel, Anthony D., to Warner-Lambert Company. Antibacterial benzo(chalcogeno)[4,3,2-cd]indazoles. 4,604,390, Cl. 514-222.000.
Eltoukhy, Atef; and Price, Rick C., to Trimedia Corporation. Sputtering-system baffle. 4,604,179, Cl. 204-298.000.
Elwell, Dennis L.; and Sills, Robert L., to Dee Zee Manufacturing. Vehicle side rail assembly. 4,604,013, Cl. 410-106.000.
Emhart Industries, Inc.: *See—*
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Stout, Garry A.; and Perry, Leroy A., 4,604,504, Cl. 200-38.00B.
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EMI Limited: *See—*
Clutterbuck, Richard C. D.; and Painton, Anthony R., 4,604,536, Cl. 307-603.000.
Endress u. Hauser GmbH u. Co.: *See—*
Woest, Wolfgang; Silbermann, Rainer; and Hegner, Frank, 4,603,455, Cl. 29-25.420.
Engelhart, Jack, to Quality Pool Mfg. Co. Swimming pool coping and clip. 4,603,521, Cl. 52-102.000.
Engle, T. Scott; and Poznick, Jeffrey B., to Mattell, Inc. Push toy. 4,604,074, Cl. 446-171.000.
English, George J.: *See—*
Levin, Robert E.; and English, George J., 4,604,680, Cl. 362-293.000.
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Enso-Gutzeit Oy: *See—*
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Enterprise Vercelletto: *See—*
Vercelletto, Antoine, 4,603,527, Cl. 52-410.000.
Entingh, Melvin E. Water conditioner valve and system. 4,604,194, Cl. 210-98.000.
Envirex Inc.: *See—*
Sullivan, Richard A., 4,604,206, Cl. 210-603.000.
Enzymes of America: *See—*
Callewaert, Denis M.; and Braxton, Earl J., 4,604,357, Cl. 435-215.000.
Epifanova, Valentina S.: *See—*
Naumov, Jury I.; Juzefovich, Dmitry K.; Epifanova, Valentina S.; Kucherenko, Vladimir I.; Flerov, Valery N.; Praporov, Anatoly M.; Shustov, Vladimir P.; Sychev, Alexel E.; Korolev, Georgy V.; Kotov, Evgeny P.; and Derevyanko, Yan N., 4,604,175, Cl. 204-151.000.
Epstein, David I., to Data General Corp. Digital computer having unique instruction decoding logic. 4,604,684, Cl. 364-200.000.
Erdmann, Jurgen: *See—*
Fetzer, Gunter; and Erdmann, Jurgen, 4,603,976, Cl. 356-402.000.
Erhardt, Paul W.: *See—*
Kam, Sheung-tsam; Erhardt, Paul W.; Borgman, Robert J.; and O'Donnell, John P., 4,604,481, Cl. 560-39.000.
Erickson, Donald C. High pressure oxygen pumped LOX rectifier. 4,604,116, Cl. 62-13.000.
Erickson, Robert A., to Kennametal Inc. Mechanically fastened center vacuum roof drill bit. 4,603,751, Cl. 175-410.000.
Ernst Leitz Wetzlar GmbH: *See—*
Atalar, Abdullah, 4,603,585, Cl. 73-606.000.
ERO, Inc.: *See—*
Henninger, William H., 4,604,505, Cl. 200-50.00B.
Erwin Sick GmbH Optik-Elektronik: *See—*
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ESPE Fabrik pharmazeutischer Praparate GmbH: *See—*
Pfannenstiel, Hubert; and Hubner, Heinz-Joachim, 4,603,726, Cl. 164-35.000.
Espinoza, John A.; Konchan, Jeffrey L.; and Rimbey, Ronald P., to General Motors Corporation. Control means for occupant restraint belt system. 4,603,877, Cl. 280-807.000.
Essary, Larry, to Essary, Larry. Multi-use job box. 4,603,787, Cl. 220-1.500.
Esselte Sanden AB: *See—*
Thell, Bengt, 4,604,630, Cl. 346-1.100.
Essex Group, Inc.: *See—*
Keys, Steven F.; and Peppler, Dennis L., 4,604,300, Cl. 427-120.000.
Eston, Gary A. Insole with moldable material. 4,603,493, Cl. 36-44.000.
Ethyl Corporation: *See—*
Davidson, Robert I., 4,604,243, Cl. 558-388.000.
Ihrman, Kryn G., 4,604,484, Cl. 564-305.000.
Raley, Garland E.; and Spear, Dean M., 4,604,156, Cl. 156-294.000.
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Eumuco Aktiengesellschaft fur Maschinenbau: *See—*
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Evans, Robert E.; and Hirschbuehler, Kevin R., to American Cyanamid Company. Thermoplastic interleafed resin matrix composites with improved impact strength and toughness. 4,604,319, Cl. 428-290.000.
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Eyermann, Manfred; Kettenacker, Gunter; and Zimmermann, Kurt. Drift resistant magnet strength signal evaluation circuit. 4,604,573, Cl. 324-205.000.
Fadner, Thomas A., to Rockwell International Corporation. Copper and nickel layered ink metering roller. 4,603,634, Cl. 101-426.000.
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Farley, Owen E., Jr.; and Hopkins, Gerard T. Kinder bar and kinder grow. 4,603,828, Cl. 248-542.000.
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Donnadieu, Andre ; and Letoffe , Michel, to Rhone-Poulenc Specialites Chimiques. Curable organopolysiloxane compositions comprising microencapsulated hardening accelerators. 4,604,444, Cl. 528-34.000.
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Soled, Stuart L.; and Fiato, Rocco A., 4,604,375, Cl. 502-241.000.
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Fadner, Thomas A., to Rockwell International Corporation. Copper and nickel layered ink metering roller. 4,603,634, Cl. 101-426.000.
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Farr, Robert W. E.; and Judd, Ian D., to International Business Machines Corp. Video display system employing pulse stretching to compensate for image distortion. 4,604,614, Cl. 340-728.000.
Fartmann, Norbert: *See—*
Bober, Helmut; Buthe, Theo; Coenen, Karl; Fartmann, Norbert; Herbertz, Klaus; Koch, Franz-Heinz; Kretschmer, Horst; Nienhaus, Clemens; Schardt, Peter; Schibrowski, Jurgen; and Schmandt, Willi, 4,603,998, Cl. 403-322.000.
Faulkner, Richard D.: *See—*
McDonie, Arthur F.; and Faulkner, Richard D., 4,604,545, Cl. 313-105.0CM.
Fauvel, Pierre: *See—*
Warszawski, Bernard; Fauvel, Pierre; and Dupre , Sylvain, 4,604,332, Cl. 429-38.000.
Fecker, Rainer: *See—*
Markgraf, Wilhelm; Lehmann, Werner; and Fecker, Rainer, 4,603,848, Cl. 271-125.000.
FECO Engineered Systems, Inc.: *See—*
Hengle, Robert E.; and Granfors, William F., 4,603,491, Cl. 34-191.000.
Feigt, Ingmar; Feldtkeller, Ernst; and Lange, Gottfried, to Siemens Aktiengesellschaft. Apparatus for recording and reproducing an electrographic image. 4,604,634, Cl. 346-160.000.
Felder, Christian, to Gebhardt Fordertechnik GmbH. Sorting installation for piece goods. 4,603,771, Cl. 198-367.000.

Feldtkeller, Ernst: *See—*
Feigt, Ingmar; Feldtkeller, Ernst; and Lange, Gottfried, 4,604,634, Cl. 346-160.000.

Fenner, Gordon H.; and Brown, Ronald L., to Marathon Corporation. Apparatus for monitoring the fullness of a compactor. 4,603,625, Cl. 100-53.000.

Fennes, Walter. Collapsible mobile building. 4,603,518, Cl. 52-66.000.

Fenwick, Jay G., to R. J. Reynolds Tobacco Company. Adjustable shelf assembly. 4,603,782, Cl. 211-153.000.

Fergason, James L., to Manchester R & D Partnership. Liquid crystal graphics imager and method. 4,603,945, Cl. 350-331.00R.

Ferguson, Dennis R. Feed system for punch press. 4,603,611, Cl. 83-50.000.

Fernandes, Pete M.; and Taforo, Terrance A., to Cetus Corporation. Pharmaceutical compositions of microbially produced interleukin-2. 4,604,377, Cl. 514-8.000.

Ferno Washington, Inc.: *See—*
Bourgraf, Elroy E., 4,604,022, Cl. 414-340.000.

Ferrofluidics Corporation: *See—*
Borduz, Lucian; and Raj, Kuldip, 4,604,222, Cl. 252-62.520.
Raj, Kuldip; Borduz, Lucian; and Gowda, Hanumaiah L., 4,604,229, Cl. 252-510.000.

Fetzer, Gunter; and Erdmann, Jurgen, to Erwin Sick GmbH Optik-Elektronik. Optical mark recognition apparatus. 4,603,976, Cl. 356-402.000.

Fiato, Rocco A.: *See—*
Soled, Stuart L.; and Fiato, Rocco A., 4,604,375, Cl. 502-241.000.

Fiegener, Dale R.; and Broussard, Felix J., to Dow Chemical Company, The. Anode. 4,604,178, Cl. 204-286.000.

Figgie International Inc.: *See—*
Chambers, Gary C.; and Hychalk, Leonard V., 4,603,752, Cl. 180-6.400.

Findeva AG: *See—*
Fink, Willy, 4,604,029, Cl. 415-92.000.

Fink, Willy, to Findeva AG. Compressed-air vibrator with turbine drive. 4,604,029, Cl. 415-92.000.

Fiore, Joseph V.: *See—*
Chu, Chaokang; Fiore, Joseph V.; Knight, Rodney A.; Marinaccio, Paul J.; and Roy, Asit, 4,604,208, Cl. 210-636.000.

Fiore, Russell D. Exercising device. 4,603,856, Cl. 272-131.000.

Firestone Tire & Rubber Co., The: *See—*
Kay, Edward L.; and Roskos, Kenneth B., 4,604,445, Cl. 528-64.000.

Fischer, Volker: *See—*
Schott, Eberhard P.; Fischer, Volker; Jung, Johann; and Rosebrock, Henning, 4,604,129, Cl. 71-76.000.

Fish, Donald D., to W. F. Meyers Company, Inc. Belt-configured saw for cutting slots into stone. 4,603,678, Cl. 125-21.000.

Fish, Richard H., to United States of America, Energy. Removal of arsenic, vanadium, and/or nickel compounds from petroliferous liquids. 4,604,191, Cl. 208-251.00R.

Fisher, Carl, Jr.; Carrington, Charles R.; and Grant, George A., to Integrated Sciences, Inc. Apparatus for failure prediction of earth structures. 4,604,706, Cl. 364-507.000.

Fisher, Joseph D.; and Huang, Chin C., to Armour Pharmaceutical Company. Preparation of pasteurized human plasminogen. 4,604,358, Cl. 435-217.000.

Fisher, Leo; and Weiser, Atilla, to Teledyne Industries, Inc. Dental appliance. 4,604,058, Cl. 433-127.000.

Fitzpatrick, Michael H., to Northern Telecom Limited. Connector shroud. 4,603,929, Cl. 339-17.00C.

Flashner, Michael, to J. T. Baker Chemical Company. Purification of monoclonal antibodies. 4,604,235, Cl. 530-387.000.

Flautt, Martin C.: *See—*
Pollet, Jean-Claude; Armstrong, Gordon P.; and Flautt, Martin C., 4,604,325, Cl. 428-391.000.

Flerov, Valery N.: *See—*
Naumov, Jury I.; Juzefovich, Dmitry K.; Epifanova, Valentina S.; Kucherenko, Vladimir I.; Flerov, Valery N.; Praporov, Anatoly M.; Shustov, Vladimir P.; Sychev, Alexel E.; Korolev, Georgy V.; Kotov, Evgeny P.; and Derevyanko, Yan N., 4,604,175, Cl. 204-151.000.

Fletcher, Jon P.: *See—*
Borcherdt, Roger D.; Fletcher, Jon P.; Warrick, Richard E.; Maxwell, Gary L.; Jensen, Edward G.; and Schaack, John V., 4,604,699, Cl. 364-420.000.

Flo-Con Systems, Inc.: *See—*
King, Patrick D., 4,603,842, Cl. 266-44.000.

Florin, Wolfram: *See—*
Hoffken, Erich; Florin, Wolfram; and Hammer, Rudolf, 4,604,138, Cl. 75-51.600.

Focke & Co., (GmbH & Co.): *See—*
Focke, Heinz, 4,603,534, Cl. 53-231.000.
Focke, Heinz; and Liedtke, Kurt, 4,603,800, Cl. 226-119.000.

Focke, Heinz, to Focke & Co., (GmbH & Co.). Apparatus for wrapping articles, especially cigarette groups. 4,603,534, Cl. 53-231.000.

Focke, Heinz; and Liedtke, Kurt, to Focke & Co., (GmbH & Co.). Apparatus for transporting sheets of packaging material. 4,603,800, Cl. 226-119.000.

Folkins, Jeffrey J., to Xerox Corporation. Development system. 4,603,961, Cl. 355-3.0DD.

Fong, Dodd W.; and Halverson, Ann M., to Nalco Chemical Company. Polymers of 1-acryloyl-4-methyl piperazine, methyl chloride or sulfate quaternary salts as flocculants. 4,604,213, Cl. 210-735.000.

Fong, Dodd W.; Pierce, Claudia C.; and Grattan, David A., to Nalco Chemical Company. Chemical modification of (meth)acrylic acid homopolymers and alkyl (meth)acrylate polymers in aqueous systems with amino sulfonic acids. 4,604,431, Cl. 525-351.000.

Fonvielle, Frank P.: *See—*
Kacicz, Joseph M.; and Fonvielle, Frank P., 4,604,366, Cl. 501-6.000.

Formost Packaging Machines, Inc.: *See—*
Pace, Vincent C., 4,603,537, Cl. 53-415.000.

Fosnaught, Harold R., to Owens-Illinois, Inc. Apparatus and method for guiding plastic labels to a label-wrapping station. 4,604,154, Cl. 156-264.000.

Fosse, John S.: *See—*
Vitona, James J., 4,603,995, Cl. 402-73.000.

Foti, William T.: *See—*
Hinton, John H.; Foti, William T.; and Giguere, Philip J., 4,603,963, Cl. 355-8.000.

Foulke, Richard F.; and Winchell, Kenneth A., to Poconics International, Inc. Vacuum pickup apparatus. 4,603,897, Cl. 294-64.100.

Fourreaux, Gerard D.: *See—*
Delon, Patrice C. G.; Fourreaux, Gerard D.; Nicolas, Michel J. R.; and Sebilet, Bruno R., 4,604,622, Cl. 343-5.0PD.

Fox, David H.; and Robinson, Lonnie, to GTE Products Corporation. Incandescent lamp mount structure with shield for evaporation products. 4,604,546, Cl. 313-272.000.

Franchi, Ernest J., to United States of America, Army. Positive action release mechanism. 4,604,608, Cl. 340-540.000.

Francis, John F., to Gillette Company, The. Safety razors. 4,603,477, Cl. 30-50.000.

Franck, Klaus, to Wilkhahn Wilkening and Hahne GmbH & Co. Spring mounting apparatus. 4,603,830, Cl. 248-575.000.

Francoeur, Ronald A.; and Schellhorn, Verne L. Method and apparatus for retensioning prestressed concrete members. 4,604,003, Cl. 405-256.000.

Franko, Bernard V.: *See—*
Leonard, Charles A.; Franko, Bernard V.; and Cale, Albert D., Jr., 4,604,388, Cl. 514-211.000.

Frano, Francis G., to Illinois Tool Works Inc. Pallet fastener. 4,604,014, Cl. 411-338.000.

Frappier, David E.: *See—*
Isaksen, Robert A.; Frappier, David E.; and Jones, Wallace R., 4,604,302, Cl. 427-208.600.

Frazer, Stephen O.; and Riddiford, Martin P., to Price/Stern/Sloan Publishers, Inc. Teaching or amusement apparatus. 4,604,065, Cl. 434-331.000.

Frazier, Stephen E., to General Time Corporation. Filter element, filter, and method for removing odors from indoor air. 4,604,110, Cl. 55-74.000.

Freller, Helmut: *See—*
Mund, Konrad; Freller, Helmut; and Hoerauf, Friedrich, 4,603,704, Cl. 128-784.000.

Frencken, Peter H.; Raven, Johannes G.; and Annegarn, Marcellinus J. J. C., to U.S. Philips Corporation. Television circuit arrangement for field and line frequency doubling and picture part magnification. 4,604,651, Cl. 358-140.000.

Freudenschuss, Otto: *See—*
Rollenitz, Leopold; Schmidt, Harald; Freudenschuss, Otto; and Morell, Josef, 4,603,811, Cl. 239-90.000.

Friedberger, Michael P.: *See—*
Thomas, Robert H., deceased; Mary A. Thomas, executrix; Hammond, Willis B.; Friedberger, Michael P.; and Archie, William A., 4,604,316, Cl. 428-265.000.

Friendship, Kenneth F. M.: *See—*
Krishnakumar, Suppayan M.; Friendship, Kenneth F. M.; Mahajan, Gautam K.; and Pocock, John F. E., 4,603,831, Cl. 249-144.000.

Frigoscandia Contracting AB: *See—*
Olsson, Lennart, 4,603,776, Cl. 198-778.000.

Frolov, Alexandr D.: *See—*
Ganago, Oleg A.; Safonov, Anatoly V.; Stepanov, Boris A.; Subich, Vadim N.; Frolov, Alexandr D.; Lobanov, Nikolai A.; Lomer, Yakov L.; Xenofontov, Alexei M.; Rudman, Leonid I.; Lobed, Alexandr D.; Mamatsashvili, Vasha I.; Kljuchnikov, Valery F.; Birkadze, Dzhemal I.; Shklyarman, Sergei S.; Gordeev, Nikolai A.; Golovin, Vasily Y.; Kruk, Alexandr T.; Yakovenko, Ivan F.; Novikov, Vladimir V.; Grishkov, Andrei M.; Gorozhankin, Valery N.; Svistunov, Vladmir E.; Bocharov, Jury A.; and Sergeev, Jury N., 4,603,573, Cl. 72-454.000.

Frost, Charles W.: *See—*
Kimball, David V.; and Frost, Charles W., 4,603,587, Cl. 73-663.000.

Frost, Wendell: *See—*
Benn, George; Frost, Wendell; Knudsen, Chris; and Nieuwsma, David, 4,604,711, Cl. 364-900.000.

Frye, Ricky F.: *See—*
Conley, Ralph F., Jr.; and Frye, Ricky F., 4,603,647, Cl. 112-129.000.

Fuchs, Dieter; and Schmitt, Wolfgang, to Weissenfeld-Richters, H. Shaft and radially-sealing ring with cold flexed seal disk. 4,603,866, Cl. 277-152.000.

Fuchs, Erwin: *See—*
Rungger, Helmut; Fuchs, Erwin; and Knoll, Johann, 4,604,011, Cl. 409-138.000.

Fujawa, Charles S.; and Masteller, Sara B., to Allied Corporation. Fail-soft turbocharger control system. 4,604,701, Cl. 364-431.010.

Fuji Koko Co., Ltd.: *See—*
Tsuji, Shinsaku; Kimura, Toshimitsu; Asano, Yasushi; and Suzuki, Yasuhito, 4,603,598, Cl. 74-473.00P.

Fuji Photo Film Co., Ltd.: *See—*
Aonuma, Masashi; and Tamai, Yasuo, 4,604,296, Cl. 427-57.000.
Arai, Fuminori; Tanaka, Mitsutoshi; and Katsuyama, Harumi, 4,604,347, Cl. 435-4.000.
Kitada, Akira; Yamazaki, Kikuo; and Yamazaki, Hisashi, 4,604,525, Cl. 250-363.00R.
Oishi, Kengo, 4,604,671, Cl. 360-132.000.
Shirahata, Ryuji; and Yanai, Akio, 4,604,293, Cl. 427-42.000.
Sugimoto, Tadao; Ikeda, Hideo; Mifune, Hiroyuki; and Nakamura, Koki, 4,604,339, Cl. 430-244.000.
Terashita, Takaaki, 4,603,969, Cl. 355-77.000.

Fuji Xerox Co., Ltd.: *See—*
Aota, Koichi; Ishikawa, Katsuhiko; and Yokoi, Naoki, 4,603,970, Cl. 355-133.000.
Suganuma, Saburo; and Kataoka, Hiroyuki, 4,604,696, Cl. 364-401.000.

Fujie, Masakatsu: *See—*
Kamajima, Kohji; Nakano, Yoshiyuki; Fujie, Masakatsu; Hosoda, Yuji; Iwamoto, Taro; and Honma, Kazuo, 4,604,561, Cl. 318-567.000.

Fujii, Kiyonobu: *See—*
Ueeda, Ryuhei; Fujii, Kiyonobu; and Narukawa, Hiroshi, 4,604,441, Cl. 526-351.000.

Fujii, Setsuro; Chikazawa, Nobumoto; Arima, Teruo; and Fukushima, Masakazu, to Sanwa Kagaku Kenyusho Co., Ltd. Protein having cell growth stimulating action, composition thereof and method for producing the same. 4,604,234, Cl. 514-2.000.

Fujii, Toshifumi, to Mitsubishi Denki Kabushiki Kaisha. Tape stop position detecting apparatus and magnetic video reproducing apparatus using the same. 4,604,656, Cl. 360-10.100.

Fujii, Yoshimasa; Mitsuhashi, Yoshinobu; and Koike, Osamu, to Agency of Industrial Science and Technology; and Hoya Corporation. Polarization-maintaining fiber system and method of manufacturing the same. 4,603,941, Cl. 350-96.150.

Fujikura, Yoshiaki; Kajihara, Yasushi; Takaishi, Naotake; Inamoto, Yoshiaki; Kimura, Akio; Nakajima, Motoki; and Miyamoto, Norioki, to Kao Corporation. Cyclohexanol derivatives and fragrance compositions containing the same. 4,604,488, Cl. 568-820.000.

Fujimaki, Tatsuo: *See—*
Oshima, Noboru; Shimizu, Isamu; Yoshimura, Yoshito; Fujimaki, Tatsuo; and Tomita, Seisuke, 4,603,722, Cl. 152-209.00R.

Fujimatsu, Masaaki; and Kobashi, Toshiyuki, to Japan Exlan Company Limited. Method of producing a flame-retardant acrylic polymer. 4,604,428, Cl. 525-276.000.

Fujinami, Hiroshi: *See—*
Otsuki, Hiromi; Matsuura, Ryoichi; Fujinami, Hiroshi; Hori, Shinichi; Nomura, Yoshihisa; and Oka, Hiroyuki, 4,603,920, Cl. 303-10.000.

Fujisawa Pharmaceutical Company, Limited: *See—*
Takaya, Takao; Takasugi, Hisashi; Tsuji, Kiyoshi; and Chiba, Toshiyuki, 4,604,456, Cl. 540-222.000.

Fujitsu Limited: *See—*
Horiuchi, Akinori; Binnaka, Toshio; and Maruyama, Shigeyuki, 4,604,572, Cl. 324-158.00F.
Kimoto, Masayoshi, 4,604,729, Cl. 365-190.000.
Matsui, Shougo, 4,603,974, Cl. 356-394.000.
Murakami, Joji, 4,604,692, Cl. 364-200.000.
Okajima, Yoshinori, 4,604,728, Cl. 365-189.000.
Tone, Hirosada, 4,604,688, Cl. 364-200.000.
Watanabe, Hisashi, 4,604,495, Cl. 174-52.0FP.
Yoshida, Masanobu; and Itano, Kiyoshi, 4,604,730, Cl. 365-200.000.

Fujiwara, Haruyoshi; and Makino, Tetsuo, to Mitsubishi Jukogyo Kabushiki Kaisha. Flow restraining elements in the headbox of a paper machine. 4,604,164, Cl. 162-343.000.

Fujiwara, Kenzou: *See—*
Murasato, Shigeru; Nakanishi, Yuji; Fujiwara, Kenzou; Takeuchi, Norio; and Horita, Tsuyoshi, 4,604,541, Cl. 310-180.000.

Fukami, Akira: *See—*
Kobayashi, Yutaka; Fukami, Akira; and Suzuki, Takaya, 4,604,159, Cl. 156-617.00R.

Fukami, Tadashi, to Oken Seiko Co., Ltd. Coreless motor, and a method for manufacturing the coreless motor. 4,604,540, Cl. 310-154.000.

Fukami, Tadashi; and Odaka, Kentaro, to Sony Corporation. Apparatus for processing PCM signal. 4,604,657, Cl. 360-32.000.

Fukaya, Chikara: *See—*
Yokoyama, Kazumasa; Fukaya, Chikara; Tsuda, Yoshio; Ono, Taizo; Arakawa, Yoshio; Inoue, Yoshihisa; Naito, Youichiro; and Suyama, Tadakazu, 4,604,385, Cl. 514-183.000.

Fukazawa, Takao: *See—*
Jinnai, Koichiro; Fukazawa, Takao; Ito, Tadashi; Koike, Takahisa; Murai, Toshiharu; and Ishima, Kazumi, 4,604,631, Cl. 346-1.100.

Fukuda, Hirosuke: *See—*
Seno, Taiko; Okubo, Yasuto; Kawamura, Masao; Akutsu, Seiichi; and Fukuda, Hirosuke, 4,604,349, Cl. 435-15.000.

Fukuda, Takashi: *See—*
Aida, Akira; Ohno, Tetsu; Fukuda, Takashi; Aihara, Kenji; Mizoguchi, Takuo; Nishimura, Syozi; and Kajiyama, Katsuyoshi, 4,604,146, Cl. 148-12.00B.

Fukuda, Yukihiro: *See—*
Nishikawa, Masao; Sakai, Shinzo; Sato, Yoichi; and Fukuda, Yukihiro, 4,603,601, Cl. 74-731.000.
Nishikawa, Masao; Sato, Yoichi; and Fukuda, Yukihiro, 4,603,604, Cl. 74-869.000.

Fukushima, Masakazu: *See—*
Fujii, Setsuro; Chikazawa, Nobumoto; Arima, Teruo; and Fukushima, Masakazu, 4,604,234, Cl. 514-2.000.

Funahashi, Yasuhiro, to Brother Kogyo Kabushiki Kaisha. Image reproduction interface. 4,604,615, Cl. 340-750.000.

Furnish, Gregory R.: *See—*
Grimsley, Richrd L.; and Furnish, Gregory R., 4,604,529, Cl. 307-10.00R.

Furukawa Electrical Company, Ltd.: *See—*
Shiga, Shoji; Hayakawa, Takayuki; and Kamiyama, Yasuo, 4,604,169, Cl. 204-34.000.

Furukawa, Koichi: *See—*
Kuranishi, Masaaki; Nonaka, Susumu; Furukawa, Koichi; and Siozaki, Fumio, 4,603,987, Cl. 400-639.100.

Futagami, Mikio: *See—*
Kato, Yasuyuki; Yuyama, Masahiro; Moritani, Masahiko; and Futagami, Mikio, 4,604,414, Cl. 524-139.000.

Fuwa, Yasushi, to Mitsubishi Denki Kabushiki Kaisha. Change-over switch for an on-load tap changer. 4,604,503, Cl. 200-11.0TC.

G.B. Boucherie, Firma: *See—*
Boucherie, Leonel P., 4,603,912, Cl. 300-2.000.

G-C Dental Industrial Corp.: *See—*
Kamohara, Hiroshi; Hayashi, Shohei; and Ohi, Nobukazu, 4,604,142, Cl. 106-38.510.

G & H Technology, Inc.: *See—*
Burns, Edgar, 4,603,934, Cl. 339-90.00R.

G. W. Lisk Company, Inc.: *See—*
Clark, Bruce D., 4,604,600, Cl. 335-261.000.

GA Technologies Inc.: *See—*
Moeller, Charles P., 4,604,551, Cl. 315-4.000.
Olsen, Randall B., 4,603,731, Cl. 165-41.000.

Gach, Peter P., to Sunbeam Plastics Corp. Tamper indicating closure. 4,603,785, Cl. 215-230.000.

Gagliani, John; and Long, John V. Polyamide-imide foams and methods of making same. 4,604,409, Cl. 521-157.000.

Gakei Electric Works Co., Ltd.: *See—*
Nishizawa, Minoru, 4,604,262, Cl. 422-310.000.

Gallia, James D.: *See—*
Shah, Ashwin H.; Chatterjee, Pallab K.; Gallia, James D.; and Mahant-Shetti, Shivaling S., 4,604,727, Cl. 365-189.000.

Gallo, Joseph S., Sr. Bow winder. 4,603,797, Cl. 223-46.000.

Ganago, Oleg A.; Safonov, Anatoly V.; Stepanov, Boris A.; Subich, Vadim N.; Frolov, Alexandr D.; Lobanov, Nikolai A.; Lumer, Yakov L.; Xenofontov, Alexei M.; Rudman, Leonid I.; Lebed, Alexandr D.; Mamatsashvili, Vasha I.; Kljuchnikov, Valery F.; Birkadze, Dzhemal I.; Shklyarman, Sergei S.; Gordeev, Nikolai A.; Golovin, Vasily Y.; Kruk, Alexandr T.; Yakovenko, Ivan F.; Novikov, Vladimir V.; Grishkov, Andrei M.; Gorozhankin, Valery N.; Svistunov, Vladmir E.; Bocharov, Jury A.; and Sergeev, Jury N., to Moskovskoe Vysshee Tekhnicheskoe Uchilische Imeni N.E. Baumana; and Zavod-Vtuz Pri Moskovskom Avtomobilnom Zavode Imeni I.A. Likhacheva. Press. 4,603,573, Cl. 72-454.000.

Gandini, Marco; and Sartori, Mario, to Cselt - Centro Studi e Laboratori Telecomunicazioni S.p.A. Digital transceiver for full-duplex transmission of binary signals over a common line. 4,604,740, Cl. 370-27.000.

Gans, Michael J.: *See—*
Amitay, Noach; and Gans, Michael J., 4,604,624, Cl. 343-361.000.

Garber Company, The: *See—*
Meyers, George; and Mueller, David C., 4,603,779, Cl. 206-426.000.

Gardner, John R., to Rogers Corporation. Surface mounted bussing device. 4,603,927, Cl. 339-17.00C.

Garnsey, Roger L. Collapsible structure. 4,603,658, Cl. 119-19.000.

Garrett Corporation, The: *See—*
Wan, Chung-Chu; and Brown, Glenn W., 4,603,801, Cl. 228-194.000.

Gartner, Gunter: *See—*
Luz, Rudolf; and Gartner, Gunter, 4,603,818, Cl. 242-35.50A.

Gas Research Institute: *See—*
Davies, Theodore E.; Quinn, Dennis E.; and Watson, James E., 4,604,051, Cl. 431-166.000.

Gates Rubber Company, The: *See—*
Krause, Keith M., 4,603,712, Cl. 138-137.000.

Gauronski, John F.: *See—*
Kukucka, William P.; Sklut, Robert L.; and Gauronski, John F., 4,603,971, Cl. 355-133.000.

GCA Corporation: *See—*
Morley, Morgan J., 4,603,466, Cl. 29-569.00R.

Gearhart Industries, Inc.: *See—*
Stoltz, John W., 4,603,578, Cl. 73-151.000.

Gebhardt Fordertechnik GmbH: *See—*
Felder, Christian, 4,603,771, Cl. 198-367.000.

Gebhardt, Wallace E., to Switches, Inc. Self-adjusting switch mechanism. 4,604,506, Cl. 200-61.890.

Geimuplast Peter Mundt GmbH & Co. KG.: *See—*
Mussig, Herbert; and Pohl, Claus, 4,603,539, Cl. 53-435.000.

Geller, Robert F.: *See—*
Blount, Frederick T.; Capowski, Robert S.; Casper, Daniel F.; DelSonno, Lawrence R.; Geller, Robert F.; Kusmiss, Joseph M.; and Zimmerman, Terrence K., 4,604,709, Cl. 364-900.000.

Gen, Shokyu: *See—*
Ikada, Yoshito; Gen, Shokyu; Shimizu, Yasuhiko; Tamura, Koichi; Nakamura, Tatsuo; Kimura, Sosuke; Cho, Tsuneo; Tadokoro, Hideki; and Hori, Kazuaki, 4,603,695, Cl. 128-334.00R.

Genentech, Inc.: *See—*
Goeddel, David V.; and Heyneker, Herbert L., 4,604,359, Cl. 435-253.000.
General Aero Products Corp.: *See—*
Reiter, Eli; and Robson, Joseph R., 4,603,542, Cl. 53-585.000.
General Battery Corporation: *See—*
Windisch, Lawrence; Nees, John; and Channing, Harry, 4,604,564, Cl. 320-2.000.
General Dynamics Corporation: *See—*
Paciorek, Peter M., 4,603,452, Cl. 16-262.000.
General Dynamics, Pomona Division: *See—*
Chang, Yu-Wen; Kan, Phillip T.; and Ross, Oakley G., 4,603,942, Cl. 350-96.240.
Thorpe, Richard W., 4,604,570, Cl. 324-73.00R.
General Electric Company: *See—*
Alley, Robert P.; Huber, Paul G.; and Sullivan, Joseph M., 4,604,552, Cl. 315-176.000.
Ashley, Eugene, 4,603,615, Cl. 89-7.000.
Kosmach, Jerry C., 4,604,553, Cl. 313-315.000.
Liu, Ping Y., 4,604,423, Cl. 524-508.000.
Payne, Thomas R., 4,604,518, Cl. 219-506.000.
Peele, James C., 4,604,647, Cl. 358-65.000.
Rich, Jonathan D., 4,604,442, Cl. 528-28.000.
Rich, Jonathan D., 4,604,477, Cl. 556-436.000.
Rosenquist, Niles R., 4,604,434, Cl. 525-462.000.
Schoendube, Charles W., 4,604,673, Cl. 361-38.000.
Shepard, Neal F., Jr., 4,604,494, Cl. 136-246.000.
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Yeaple, Thomas L.; Wagner, James B.; and Hall, Donald H., 4,604,028, Cl. 415-38.000.
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Edwards, David K.; and Kramer, John H., 4,604,024, Cl. 414-592.000.
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Loose, Richard D.; and Struck, Joseph W., 4,603,819, Cl. 242-107.40A.
Merrill, Thomas A.; and Martin, Donald A., 4,604,538, Cl. 310-68.00D.
Myers, William K., 4,603,760, Cl. 188-73.370.
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Salmon, Michael E., 4,603,603, Cl. 74-868.000.
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Rossfelder, Andre M.; and Jung, Peter A., 4,603,748, Cl. 175-19.000.
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Gerber Garment Technology, Inc.: *See—*
Pearl, David R.; and Wolfson, Lawrence S., 4,603,777, Cl. 198-803.800.
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Bryant, Charles P.; and Gerdes, Harold M., 4,604,221, Cl. 252-51.50A.
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Roulet Dubonnet, Jean-Pierre; Boillot, Louis; and Mora, Gilbert, 4,604,507, Cl. 200-144.00R.
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Gilbert, Barrie, to Analog Devices, Incorporated. Temperature compensated logarithmic circuit. 4,604,532, Cl. 307-490.000.
Gile, Richard H.; and Bourgoine, Edward C. Orthogonal dressing of grinding wheels. 4,603,677, Cl. 125-11.00R.
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Gilmore, Robert L.; and Lander, George E., to United States of America, Air Force. Vacuum blast adapter for bombs. 4,603,515, Cl. 51-424.000.
Giocastro, Joseph. Rockerarm system for controlling valves in an internal combustion engine. 4,603,663, Cl. 123-90.170.
Girsberger Aktiengesellschaft: *See—*
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Glass, Michael; Hoholick, Joseph; Oppenheimer, Alfred; and Dombroski, Amy, to Warner-Lambert Company. Multiple textured chewing gum. 4,604,287, Cl. 426-5.000.
Glass, Michael; Corsello, Vincent; Orlandi, Daniel A.; and Guzowski, Anthony, to Warner-Lambert Company. Process for preparing a chewing gum composition with improved flavor perception. 4,604,288, Cl. 426-5.000.
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Godard, Dominique; and Morlec, Emile, to International Business Machines Corp. Tone detector and multifrequency receiver using said detector. 4,604,713, Cl. 364-484.000.
Godfrey, Jollie D., Jr.; Gordon, Eric M.; and Natarajan, Sesha I., to E. R. Squibb & Sons, Inc. Hydroxy substituted ureido amino and imino acids. 4,604,402, Cl. 514-333.000.
Godfrey, Richard. Ball valve with preloaded seals and method of manufacture. 4,603,836, Cl. 251-315.000.
Goeddel, David V.; and Heyneker, Herbert L., to Genentech, Inc. Microbial expression of quasi-synthetic genes. 4,604,359, Cl. 435-253.000.
Goldberg, Michael. Heat pump closed loop drying. 4,603,489, Cl. 34-77.000.
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Golden, James M. Apparatus for removing internal tiles from chimneys. 4,603,747, Cl. 173-94.000.
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Gomez, I. Luis, to Monsanto Company. Process for forming plasticized polyvinyl butyral interlayers. 4,604,253, Cl. 264-211.000.
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Goodall, Richard L.; and Singh, Paramjit, to Dixon Valve & Coupling Company. End fitting. 4,603,888, Cl. 285-55.000.
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Goss, Raymond W., to Hercules Incorporated. Precoat resin dispersion for tufted carpets. 4,604,311, Cl. 428-96.000.
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Granryd, Thorvald G. Lightweight retractable track-wheel for agricultural tractors and the like. 4,603,916, Cl. 301-45.000.
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Grauel, Ingolf; Kulke, Gunter; Muller, Egbert; and Stumpe, Werner, to Robert Bosch GmbH. Dual control pressure medium brake system. 4,603,919, Cl. 303-6.00R.
Graves, George A., Jr.; and Kumar, Binod, to University of Dayton. Bioabsorbable glass fibers for use in the reinforcement of bioabsorbable polymers for bone fixation devices and artificial ligaments. 4,604,097, Cl. 623-11.000.
Gray, Joseph H., to TRW Inc. Computer and method for high speed prime factor transform. 4,604,721, Cl. 364-726.000.
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Greenberg, Robert, to Bobrick Washroom Equipment, Inc. Sheet metal mounting device. 4,603,827, Cl. 248-542.000.
Greenblatt, Abraham J. Motorized nutcracker. 4,603,624, Cl. 99-572.000.
Greenlaw, John W.; Schlueter, Gary R.; and Kettlitz, Karsten, to Kettlitz, Karsten; and Schlueter, Gary. Optical device for an individual. 4,603,944, Cl. 350-252.000.
Greenwood, Alan; and Majerus, Norbert, to Goodyear Tire & Rubber Company, The. Process and apparatus for injection molding tire treads. 4,604,256, Cl. 264-501.000.
Greenwood, Eugene C. Continuous passive motion orthopedic device. 4,603,687, Cl. 128-25.00R.
Gregoire, Roger J.; and Huling, Bruce, to Motorola, Inc. Purge block for gas systems. 4,603,707, Cl. 137-557.000.
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Grimm, Duane H., to Sundstrand Corporation. Fail safe actuator. 4,603,594, Cl. 74-89.150.
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Grossa, Mario, to Du Pont de Nemours, E. I., and Company. Negative-toning imaging system with re-imaging capability using 4-(2'-nitrophenyl)-1,4-dihydropyridine compounds. 4,604,340, Cl. 430-270.000.
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Gurmarnik, Simon. System for and a method of translation. 4,604,063, Cl. 434-157.000
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Hagner, George R., to Parker, Frederick. Circuit board with high density electrical tracers. 4,604,678, Cl. 361-401.000.
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Halbmann, Manfred, to Linde Aktiengesellschaft. Refrigerated-goods display case. 4,603,557, Cl. 62-255.000.
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Hall, Luke; and Multop, Jerry M., to Progressive Technology, Inc. Cutting tool. 4,604,007, Cl. 409-89.000.
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Hambrecht, Juergen; Illers, Karl-Heinz; Echte, Adolf; and Swoboda, Johann, to BASF Aktiengesellschaft. Thermoplastic molding materials. 4,604,415, Cl. 524-140.000.
Hamel, Richard G., to Westinghouse Electric Corp. Reclosing relay apparatus. 4,604,674, Cl. 361-73.000.
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Hanagan, Mary A., to Du Pont de Nemours, E. I., and Company. Herbicidal sulfonamides. 4,604,131, Cl. 71-90.000.
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Haney, James P. Portable bait container. 4,603,503, Cl. 43-56.000.
Hannan, Peter W., to Hazeltine Corporation. Axial conductance angular filter. 4,604,629, Cl. 343-909.000.
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Harding, Richard J. A., to Avon Inflatables Limited. Inflatable boat. 4,603,631, Cl. 114-345.000.
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Hazeltine Corporation: *See*—
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Smith, Roger, Jr.; and Hebard, Harry D., 4,603,464, Cl. 29-428.000.
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Hegner, Frank: *See*—
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Helinski, Edward F.; and Lee, Ho C., to International Business Machines Corporation. Backstop and damping apparatus for actuator. 4,603,985, Cl. 400-167.000.
Helphrey, Marvin G. Adjustable muzzle. 4,603,659, Cl. 119-130.000.
Hendrick, Fred W., to Smith International, Inc. Mounting of disk in a disk valve. 4,603,834, Cl. 251-121.000.
Hengel, Rolf, to Hoechst Aktiengesellschaft. Process for the electrolysis of sodium chloride. 4,604,172, Cl. 204-98.000.
Hengle, Robert E.; and Granfors, William F., to FECO Engineered Systems, Inc. Reversible cross flow drying or curing oven. 4,603,491, Cl. 34-191.000.
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Henriksson, Erik A., to Stal-Laval Turbin AB. Method of cleaning nozzles in a fluidized bed. 4,604,050, Cl. 431-121.000.
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Hernqvist, Karl G.; and Alig, Roger C., to RCA Corporation. Electron gun with afterglow eliminator. 4,604,548, Cl. 313-414.000.
Hertell, Siegfried; and Lange, Robert, to Barmag Barmer Maschinenfabrik Aktiengesellschaft. Rotary vane pump. 4,604,041, Cl. 418-82.000.
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Hesterberg, William G.; Donahue, Raymond J.; and Sheaffer, Benjamin L., to Brunswick Corp. Hypereutectic aluminum-silicon casting alloy. 4,603,665, Cl. 123-195.00R.
Heumuller, Roland, to Kraftwerk Union Aktiengesellschaft. Method for the ultrasonic testing of ferritic parts having a cladding. 4,603,583, Cl. 73-596.000.
Heverly, Karen H. Electrical outlet cover. 4,603,932, Cl. 339-39.000.
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Hibino, Chitoshi; and Kobari, Harukuni, to Victor Company of Japan, Limited. Memory control circuit for removing jitter. 4,604,658, Cl. 360-36.200.
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Hilmersson, Anders E.; and Andersson, Helge, to Tetra Pak International AB. Arrangement for the treatment of a moving material web. 4,603,490, Cl. 34-155.000.
Hilton-Davis Chemical Co., The: *See*—
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Hung, William M., 4,604,462, Cl. 544-99.000.
Himpens, Jacques M. Apparatus and method for measuring osmotic pressure in situ. 4,603,699, Cl. 128-632.000.
Himsley, Alexander. Process for liquid-solid contacting. 4,604,209, Cl. 210-661.000.
Hindmarsh, Leslie W.; Knight, Robert G.; and Sanders, Gerald J., to Santrade Ltd. Pick holding arrangements. 4,603,911, Cl. 299-91.000.
Hinman, P. Anthony, to Hitco. Furan reimpregnation resin. 4,604,432, Cl. 525-389.000.
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Hiraoka, Shin; Asanomi, Koji; and Abe, Ryoji, to Mazda Motor Corporation. Breather device in internal combustion engine. 4,603,673, Cl. 123-573.000.
Hirayama, Takeshi: *See*—
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Hiroyasu, Minoru; Hashimoto, Hitoshi; Yamada, Susumu; Miyanaka, Masaki; and Koizumi, Hideharu, to Honda Giken Kogyo Kabushiki Kaisha. Machining equipment for production lines. 4,603,456, Cl. 29-33.00P.
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Hirschbuehler, Kevin R.: *See*—
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Hirukawa, Yohichi; Nozaki, Toshiyuki; and Hosokawa, Naokichi, to Anelva Corporation. Target assembly capable of attaining a high step coverage ratio in a magnetron-type sputtering device. 4,604,180, Cl. 204-298.000.
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Hoefke, Wolfgang: *See*—
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Hoffken, Erich; Florin, Wolfram; and Hammer, Rudolf, to Thyssen Stahl AG. Process for refining hot metal. 4,604,138, Cl. 75-51.600.

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Hoffman, Joseph H., to Resource Engineering and Manufacturing Corp. Self propelled pipe blast cleaner capable of travel along a pipeline supported over the ditch. 4,603,516, Cl. 51-425.000.

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Kung, Hsiang-Fu; Sugino, Hiromu; and Honda, Susumu, 4,604,284, Cl. 424-85.000.

Hofmann, Heinrich; and Markfelder, Gunter, to FAG Kugelfischer Georg Schafer (KgaA). Axial shift arrangement for two-row angular-contact bearing. 4,603,983, Cl. 384-512.000.

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Hoholick, Joseph: *See*—
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Hori, Kazuaki: *See*—
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Hori, Shinichi: *See*—
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Horita, Tsuyoshi: *See*—
Murasato, Shigeru; Nakanishi, Yuji; Fujiwara, Kenzou; Takeuchi, Norio; and Horita, Tsuyoshi, 4,604,541, Cl. 310-180.000.

Horiuchi, Akinori; Binnaka, Toshio; and Maruyama, Shigeyuki, to Fujitsu Limited. Device for testing semiconductor devices at a high temperature. 4,604,572, Cl. 324-158.00F.

Horiuchi, Tatumi, to Konishiroku Photo Industry Co., Ltd. Controlling method for a sorter. 4,603,850, Cl. 271-288.000.

Horner, John A. Patient operated device and method for applying traction to the lower back vertebra of a patient in a seated position. 4,603,689, Cl. 128-75.000.

Horton, George R.: *See*—
Chipman, Max C.; and Horton, George R., 4,603,857, Cl. 272-136.000.

Hosoda, Yuji: *See*—
Kamajima, Kohji; Nakano, Yoshiyuki; Fujie, Masakatsu; Hosoda, Yuji; Iwamoto, Taro; and Honma, Kazuo, 4,604,561, Cl. 318-567.000.

Hosokawa, Naokichi: *See*—
Hirukawa, Yohichi; Nozaki, Toshiyuki; and Hosokawa, Naokichi, 4,604,180, Cl. 204-298.000.

Hough, Roger E., to International Business Machines Corporation. Shared and exclusive access control. 4,604,694, Cl. 364-200.000.

Hounsell, Melvin W. Culture transport apparatus. 4,604,360, Cl. 435-287.000.

Howard, Clyde: *See*—
McIntosh, Kenneth B.; and Howard, Clyde, 4,603,901, Cl. 296-165.000.

Hoya Corporation: *See*—
Fujii, Yoshimasa; Mitsuhashi, Yoshinobu; and Koike, Osamu, 4,603,941, Cl. 350-96.150.

Hoya, Takesi. Slurry pumping apparatus for solid-liquid separation. 4,604,037, Cl. 417-394.000.

Hsu, Shih C., to GTE Laboratories Incorporated. Flexible permeable valve for melt spinning process. 4,603,727, Cl. 164-133.000.

Huang, Chin C.: *See*—
Fisher, Joseph D.; and Huang, Chin C., 4,604,358, Cl. 435-217.000.

Huang, Yen-Ching; and Nikaido, Hideyasu, to Tokai University; and Sumitomo Metal Mining Company Limited. Method for manufacture of aluminum-coated lead frame. 4,604,291, Cl. 427-37.000.

Huber, Paul G.: *See*—
Alley, Robert P.; Huber, Paul G.; and Sullivan, Joseph M., 4,604,552, Cl. 315-176.000.

Hubner, Heinz-Joachim: *See*—
Pfannenstiel, Hubert; and Hubner, Heinz-Joachim, 4,603,726, Cl. 164-35.000.

Huffman, William F.: *See*—
Callahan, James F.; Huffman, William F.; Moore, Michael L.; and Yim, Nelson C., 4,604,378, Cl. 514-11.000.

Hughes Aircraft Company: *See*—
Cinzori, Robert J., 4,603,975, Cl. 356-152.000.

Hughes, Lawrence R., to Hughes, Raymond F. Computer telephone access security processor. 4,604,499, Cl. 179-2.0DP.

Hughes, Raymond F.: *See*—
Hughes, Lawrence R., 4,604,499, Cl. 179-2.0DP.

Hughes, Robert E.: *See*—
Moroney, William F.; Bartholomew, James C.; Cagle, Clifford M.; and Hughes, Robert E., 4,603,486, Cl. 33-512.000.

Hughes Tool Company: *See*—
Edgmon, John W., 4,603,741, Cl. 166-369.000.
Smith, Roger, Jr.; and Hebard, Harry D., 4,603,464, Cl. 29-428.000.

Hughes Tool Company - USA: *See*—
Sorenson, Robert B., 4,603,750, Cl. 175-340.000.

Huisma, Camiel, to Oy Wartsila AB. Device in a vacuum transportation system for liquids, preferably a vacuum sewage system. 4,603,709, Cl. 137-205.000.

Huling, Bruce: *See*—
Gregoire, Roger J.; and Huling, Bruce, 4,603,707, Cl. 137-557.000.

Hults, Gerald J.: *See*—
Cross, Thomas E., Jr.; and Hults, Gerald J., 4,603,696, Cl. 128-419.00P.

Humber, Leslie G.: *See—*
Demerson, Christopher A.; and Humber, Leslie G., 4,604,469, Cl. 548-432.000.

Humphreys, Robert W. R., to Loctite Corporation. Visible light absorbing peroxy-esters. 4,604,295, Cl. 427-54.100.

Hundt, Werner; and Wagner, Bernd, to Metzeler Kautschuk GmbH. Support ring for a torsional vibration balancer which can be fastened to a shaft. 4,603,997, Cl. 403-228.000.

Hung, William M., to Hilton-Davis Chemical Co., The. 3-substituted carbonyloxy-7-disubstituted amino-10-substituted carbonylphenothiazines. 4,604,458, Cl. 544-37.000.

Hung, William M., to Hilton-Davis Chemical Co., The. 5-substituted-9-disubstituted amino-12-substituted carbonylbenzo[a]phenoxazines. 4,604,461, Cl. 544-99.000.

Hung, William M., to Hilton-Davis Chemical Co., The. 4-substituted amido-8-disubstituted aminoimidazophenoxazines. 4,604,462, Cl. 544-99.000.

Hunsberger, Dennis J.: *See—*
Brown, Sanford S.; Hunsberger, Dennis J.; and Lundberg, Michael R., 4,604,500, Cl. 179-18.0ES.

Huppee, Robert. Barbed tubing connector. 4,603,890, Cl. 285-239.000.

Hurlock, John R.: *See—*
Kneller, James F.; and Hurlock, John R., 4,604,211, Cl. 210-701.000.

Hutchison, Alan J., to Ciba-Geigy Corporation. Certain benzo-(pyrano and thiopyrano)-pyridines, useful as CNS agents. 4,604,397, Cl. 514-291.000.

Hutson, James H. Feed roll construction for log debarkers. 4,603,718, Cl. 144-208.00E.

Hwang, Juin-Jet; McKeighan, Ronald E.; and Jaeger, Paul M., to Advanced Technology Laboratories, Inc. Circuit for monitoring contact of ultrasound transducer with patient. 4,603,702, Cl. 128-660.000.

Hychalk, Leonard V.: *See—*
Chambers, Gary C.; and Hychalk, Leonard V., 4,603,752, Cl. 180-6.400.

Hydril Company: *See—*
Edwards, Jon L.; and Carter, Mark L., 4,603,740, Cl. 166-319.000.
Wong, Fred S.; and Grohman, Larry F., 4,603,742, Cl. 166-374.000.

Hydro Rene Leduc: *See—*
Porel, Louis C., 4,603,711, Cl. 138-30.000.

Hystad, Per H. Closeable restraint for maintaining a tow line between guide pins on a boat. 4,603,649, Cl. 114-199.000.

Hyun, Hyung-Hwan: *See—*
Zeikus, Joseph G.; and Hyun, Hyung-Hwan, 4,604,352, Cl. 435-42.000.

I-Flow Corporation: *See—*
Brown, Eric W.; and Tai, Henry T., 4,604,093, Cl. 604-248.000.

ICI Americas, Inc.: *See—*
Yellin, Tobias O.; Edwards, Philip N.; and Large, Michael S., 4,604,465, Cl. 544-326.000.

ICI Australia Limited: *See—*
Conway, Richard J.; Watson, Keith G.; and Farquharson, Graeme J., 4,604,132, Cl. 71-90.000.
Watson, Keith G.; Wishart, John D.; Farquharson, Graeme J.; Bird, Graham J.; and Cross, Lindsay E., 4,604,128, Cl. 71-88.000.

Ida, Mitsuru; and Shimada, Minoru, to Sony Corporation. Automatic mode-change mechanism for tape recorder. 4,604,662, Cl. 360-74.100.

Ide, Junya; Muramatsu, Shigeki; Tsujita, Yoshio; and Kuroda, Masao, to Sankyo Company Limited. Octahydronaphthalene derivatives and their preparation. 4,604,472, Cl. 549-292.000.

Idemitsu Kosan Company Limited: *See—*
Shimizu, Nobuaki; Tsubouchi, Toshiyuki; and Hata, Hitoshi, 4,604,492, Cl. 585-360.000.
Shimizu, Nobuaki; Tsubouchi, Toshiyuki; and Hata, Hitoshi, 4,604,493, Cl. 585-360.000.

Ieki, Mitsuru: *See—*
Yano, Nobuyuki; Inami, Takashi; Ieki, Mitsuru; and Wakai, Masao, 4,603,460, Cl. 29-157.30V.

Igarashi, Kohei; and Tomita, Kazuo, to Toyota Jidosha Kabushiki Kaisha. Apparatus for indicating an optimum time to shift a manual transmission installed in a vehicle. 4,604,700, Cl. 364-424.000.

Igashira, Toshihiko: *See—*
Yoshinaga, Toru; Igashira, Toshihiko; Sakakibara, Yasuyuki; and Natsuyama, Yukihiro, 4,603,671, Cl. 123-467.000.

IGC, Inc.: *See—*
Machart, Ronald C., Jr., 4,604,200, Cl. 210-314.000.

Igelfors Bruks AB: *See—*
Ekman, Uno; and Hjert, Leif, 4,603,839, Cl. 254-329.000.

Ihrman, Kryn G., to Ethyl Corporation. Monoalkylation of 1-alkyldiaminobenzenes. 4,604,484, Cl. 564-305.000.

IIda, Taketoshi, to Kabushiki Kaisha Toshiba. Delay line circuit arrangement and ultrasonic imaging apparatus utilizing the same. 4,603,586, Cl. 73-626.000.

Iijima, Hiromichi: *See—*
Okamoto, Miyoshi; Iijima, Hiromichi; and Miyoshi, Akito, 4,604,320, Cl. 428-290.000.

Iizuka, Haruhiko: *See—*
Seko, Yasutoshi; Iizuka, Haruhiko; Yanagishima, Takayuki; and Obara, Hideo, 4,604,611, Cl. 340-576.000.

Ikada, Yoshito; Gen, Shokyu; Shimizu, Yasuhiko; Tamura, Koichi; Nakamura, Tatsuo; Kimura, Sosuke; Cho, Tsuneo; Tadokoro, Hideki; and Hori, Kazuaki, to Japan Medical Supply Co., Ltd. Use of molded polymeric material for preventing adhesion of vital tissues. 4,603,695, Cl. 128-334.00R.

Ikeda, Hideo: *See—*
Sugimoto, Tadao; Ikeda, Hideo; Mifune, Hiroyuki; and Nakamura, Koki, 4,604,339, Cl. 430-244.000.

Ikeda, Hironosuke; Yamashita, Etsuro; and Nakashima, Hitoshi, to Sanyo Electric Co., Ltd. Non-aqueous electrolyte battery with spiral wound electrodes. 4,604,333, Cl. 429-94.000.

Ikeda, Isao: *See—*
Okahara, Mitsuo; and Ikeda, Isao, 4,604,321, Cl. 428-319.900.

Ikemoto, Yutaka; and Sawada, Ken, to Sharp Kabushiki Kaisha. Electronic translator. 4,604,698, Cl. 364-419.000.

Ikezawa, Yuji: *See—*
Mitsuno, Tatsuyuki; Koyama, Teruhisa; and Ikezawa, Yuji, 4,604,421, Cl. 524-449.000.

Illers, Karl-Heinz: *See—*
Hambrecht, Juergen; Illers, Karl-Heinz; Echte, Adolf; and Swoboda, Johann, 4,604,415, Cl. 524-140.000.

Illinois Tool Works Inc.: *See—*
Frano, Francis G., 4,604,014, Cl. 411-338.000.
Tennerstedt, M. Richard, 4,604,009, Cl. 409-233.000.

Imai, Hirosuke: *See—*
Yuasa, Hitoshi; Matsuno, Mitsuo; and Imai, Hirosuke, 4,604,490, Cl. 585-21.000.

Imai, Toshihiro, to Olympus Optical Co., Ltd. Large-aperture wide-angle zoom lens system. 4,603,948, Cl. 350-426.000.

Imaizumi, Shiro: *See—*
Nishina, Masaaki; Imaizumi, Shiro; and Ozaki, Osamu, 4,604,454, Cl. 528-491.000.

Imanishi, Kazuo, to Mitsubishi Denki Kabushiki Kaisha. Numerical control machining method and system therefor. 4,604,705, Cl. 364-474.000.

Imhof, Ernst: *See—*
Grunwald, Werner; Imhof, Ernst; Komaroff, Iwan; Schmid, Gunther; and Schmid, Kurt, 4,603,667, Cl. 123-297.000.

Imperial Chemical Industries, Limited: *See—*
Yellin, Tobias O.; Edwards, Philip N.; and Large, Michael S., 4,604,465, Cl. 544-326.000.

Imperial Chemical Industries PLC: *See—*
Colquhoun, Howard M., 4,604,485, Cl. 568-319.000.
Smallwood, Peter V., 4,604,419, Cl. 524-318.000.

INA Walzlager Schaeffler KG: *See—*
Doppling, Horst; Hertrich, Steffen; Poschl, Walter; Ritter, Joachim; and Sill, Karl, 4,603,923, Cl. 384-7.000.

Inagaki, Syoji; Sanpe, Hideyuki; and Makihara, Norimitsu, to Toyoda Koki Kabushiki Kaisha. Numerical control machine tool with an emergency origin returning function. 4,604,560, Cl. 318-567.000.

Inami, Tai: *See—*
Mitsuda, Yoshinobu; Inami, Tai; and Mori, Koji, 4,603,994, Cl. 401-209.000.

Inami, Takashi: *See—*
Yano, Nobuyuki; Inami, Takashi; Ieki, Mitsuru; and Wakai, Masao, 4,603,460, Cl. 29-157.30V.

Inamoto, Yoshiaki: *See—*
Fujikura, Yoshiaki; Kajihara, Yasushi; Takaishi, Naotake; Inamoto, Yoshiaki; Kimura, Akio; Nakajima, Motoki; and Miyamoto, Norioki, 4,604,488, Cl. 568-820.000.

Inco Alloys International, Inc.: *See—*
Mehltretter, James C.; Woodard, Winfred L., III; Orlando, John J.; and Goodrich, Charles B., 4,603,814, Cl. 241-30.000.

Industrial Air, Inc.: *See—*
Cotton, Worth B., Jr., 4,604,108, Cl. 55-20.000.

Industrie Tessili Bresciane S.P.A.: *See—*
Bertotto, Serafino, 4,604,310, Cl. 428-36.000.

Inohara, Kazumi: *See—*
Sakata, Isao; Nakajima, Susumu; Koshimizu, Koichi; Samejima, Natsuki; Inohara, Kazumi; and Takata, Hiroyuki, 4,604,241, Cl. 540-145.000.

Inoue, Mamoru: *See—*
Manabe, Seiichi; Iwata, Michitaka; and Inoue, Mamoru, 4,604,326, Cl. 428-398.000.

Inoue, Nobuhisa: *See—*
Yamashita, Tsukasa; Inoue, Nobuhisa; Mori, Kazuhiko; and Matano, Masaharu, 4,604,707, Cl. 364-822.000.

Inoue, Yoshihisa: *See—*
Yokoyama, Kazumasa; Fukaya, Chikara; Tsuda, Yoshio; Ono, Taizo; Arakawa, Yoshio; Inoue, Yoshihisa; Naito, Youichiro; and Suyama, Tadakazu, 4,604,385, Cl. 514-183.000.

Insta-Foam Products, Inc.: *See—*
Luegering, Gregory J., 4,603,813, Cl. 239-399.000.

Institut National de la Recherche Scientifique: *See—*
Jean, Benoit; Bergevin, Benoit; and Rheault, Fernand, 4,603,685, Cl. 128-433.000.

Integrated Sciences, Inc.: *See—*
Fisher, Carl, Jr.; Carrington, Charles R.; and Grant, George A., 4,604,706, Cl. 364-507.000.

Intermec Corporation: *See—*
Wiklof, Christopher A.; Apperson, Gerald R.; Brooks, Robert J.; and Samuel, Robert A., 4,604,635, Cl. 346-226.000.

International Business Machines Corporation: *See—*
Aichelmann, Frederick J., Jr.; and Ryan, Philip M., 4,604,751, Cl. 371-38.000.
Amezcua, Robert; Clements, Silous F.; Coenen, John S.; DaFoe, Ralph H.; Day, Michael N.; Ross, Dennis M.; and Simpson, Richard O., 4,604,710, Cl. 364-900.000.
Beckham, Keith F.; Kolman, Anne E.; McGuire, Kathleen M.; Puttlitz, Karl J.; and Quinones, Horatio, 4,604,644, Cl. 357-80.000.

Blount, Frederick T.; Capowski, Robert S.; Casper, Daniel F.; DelSonno, Lawrence R.; Geller, Robert F.; Kusmiss, Joseph M.; and Zimmerman, Terrence K., 4,604,709, Cl. 364-900.000.

Blum, Arnold, 4,604,746, Cl. 371-25.000.

Cohen, Donald K., 4,604,739, Cl. 369-45.000.

Crabtree, Robert P.; and Kelly, Keith F., Jr., 4,604,690, Cl. 364-200.000.

Farr, Robert W. E.; and Judd, Ian D., 4,604,614, Cl. 340-728.000.

Gersbach, John E.; and Moser, John J., 4,604,531, Cl. 307-445.000.

Godard, Dominique; and Morlec, Emile, 4,604,713, Cl. 364-484.000.

Helinski, Edward F.; and Lee, Ho C., 4,603,985, Cl. 400-167.000.

Hough, Roger E., 4,604,694, Cl. 364-200.000.

Murray, Jack T., 4,604,755, Cl. 375-98.000.

Pohl, Wolfgang D., 4,604,520, Cl. 250-216.000.

Pricer, Wilbur D., 4,604,534, Cl. 307-530.000.

International Flavors & Fragrances Inc.: *See—*

Wiegers, Wilhelmus J.; and Vock, Manfred H., 4,604,232, Cl. 252-522.00R.

Wiegers, Wilhelmus J.; and Sprecker, Mark A., 4,604,487, Cl. 568-715.000.

International Harvester Company: *See—*

Mann, Joseph M., 4,604,604, Cl. 340-52.00A.

International Standard Electric Corporation: *See—*

Adams, Graham L., 4,603,972, Cl. 356-4.000.

Interspec, Inc.: *See—*

Luthra, Ajay K.; Kassam, Saleem; and Bernardi, Richard B., 4,604,697, Cl. 364-414.000.

Investronica, S.A.: *See—*

Martinez Llaneza, Manuel, 4,603,630, Cl. 101-227.000.

Ipco Corporation: *See—*

Weissman, Bernard, 4,604,060, Cl. 433-221.000.

Irvin, Howard B.; Stahl, G. Allan; and Clark, Earl, to Phillips Petroleum Company. Drilling fluids. 4,604,216, Cl. 252-8.510.

Irving, Edward; and Smith, Terence J., to Ciba-Geigy Corporation. Process for the production of images using sequentially liquid polymerizing compositions and photocuring. 4,604,344, Cl. 430-325.000.

Irwin Measuring Tool Co.: *See—*

Cohen, Howard; and Dauer, Alois, 4,603,481, Cl. 33-138.000.

Isaksen, Robert A.; Frappier, David E.; and Jones, Wallace R., to Excello Specialty Company, The. Method of manufacturing water deflector for vehicle doors. 4,604,302, Cl. 427-208.600.

Ishibane, Kyuhei: *See—*

Suefuji, Kazutaka; Yasuda, Hiromu; Hayashi, Masakatsu; Arata, Tetsuya; Oguni, Kensaku; Kuroda, Shigeaki; Atsumi, Akira; Ishibane, Kyuhei; Terada, Hirokiyo; Senshu, Takao; and Kogure, Hiroshi, 4,603,556, Cl. 62-180.000.

Ishibashi, Yoji; Sato, Isao; Kato, Fumio; Ohmori, Takashi; and Hayashi, Noriyuki, to Hitachi, Ltd. Method of supplying fuel into gas turbine combustor. 4,603,548, Cl. 60-39.060.

Ishida, Masayuki: *See—*

Onishi, Ken; Ishida, Masayuki; Shirozu, Masakazu; Takedomi, Toshikatsu; Namekawa, Makoto; and Haikawa, Yukihiko, 4,604,747, Cl. 371-37.000.

Ishihara, Shosaku; Kuroki, Takashi; Toda, Gyozo; Yasukawa, Akio; and Sakamoto, Tatsuji, to Hitachi, Ltd. Ceramic multilayer wiring board. 4,604,496, Cl. 174-68.500.

Ishihara, Takeo: *See—*

Matsutoh, Takushi; Wakatsuki, Goroei; Kitamura, Yoshitaka; and Ishihara, Takeo, 4,603,754, Cl. 180-221.000.

Ishii, Yoichi: *See—*

Sarumaru, Kohei; Shibano, Takeshi; Ishii, Yoichi; and Yamamoto, Etsuji, 4,604,370, Cl. 502-38.000.

Ishikawa, Katsuhiko: *See—*

Aota, Koichi; Ishikawa, Katsuhiko; and Yokoi, Naoki, 4,603,970, Cl. 355-133.000.

Ishima, Kazumi: *See—*

Jinnai, Koichiro; Fukazawa, Takao; Ito, Tadashi; Koike, Takahisa; Murai, Toshiharu; and Ishima, Kazumi, 4,604,631, Cl. 346-1.100.

Isowa, Eiichi: *See—*

Mori, Kazuo; and Isowa, Eiichi, 4,603,654, Cl. 118-202.000.

Isowa Industry Company, Ltd.: *See—*

Mori, Kazuo; and Isowa, Eiichi, 4,603,654, Cl. 118-202.000.

Itano, Kiyoshi: *See—*

Yoshida, Masanobu; and Itano, Kiyoshi, 4,604,730, Cl. 365-200.000.

Ito, Akio: *See—*

Konomi, Toshiaki; Ito, Koji; Nagahori, Yukihiro; and Ito, Akio, 4,604,544, Cl. 310-338.000.

Ito, Hiroshi: *See—*

Akashi, Teruo; Ito, Hiroshi; and Yamada, Shigemichi, 4,603,596, Cl. 74-336.00R.

Ito, Katsumi: *See—*

Yoshimura, Shingo; Ito, Katsumi; and Tanaka, Shigeru, 4,603,753, Cl. 180-131.000.

Ito, Koji: *See—*

Konomi, Toshiaki; Ito, Koji; Nagahori, Yukihiro; and Ito, Akio, 4,604,544, Cl. 310-338.000.

Ito, Mitsuru, to Tokai Electric Wire Company Limited; and Sumitomo Electric Industries Ltd. Interconnection apparatus for wiring harnesses. 4,603,930, Cl. 339-17.00R.

Ito, Tadashi: *See—*

Jinnai, Koichiro; Fukazawa, Takao; Ito, Tadashi; Koike, Takahisa; Murai, Toshiharu; and Ishima, Kazumi, 4,604,631, Cl. 346-1.100.

Itoh, Shigeyuki; Watatani, Yoshizumi; and Mohri, Katsuo, to Hitachi, Ltd. Apparatus for detecting a drop-out in a magnetic recording/reproducing apparatus. 4,604,659, Cl. 360-38.100.

Iwamoto, Taro: *See—*

Kamajima, Kohji; Nakano, Yoshiyuki; Fujie, Masakatsu; Hosoda, Yuji; Iwamoto, Taro; and Honma, Kazuo, 4,604,561, Cl. 318-567.000.

Iwasa, Tadanobu, to Toyoda Gosei Co., Ltd. Weather strip. 4,603,899, Cl. 296-154.000.

Iwata, Michitaka: *See—*

Manabe, Seiichi; Iwata, Michitaka; and Inoue, Mamoru, 4,604,326, Cl. 428-398.000.

J. I. Case Company: *See—*

Cornell, Charles R., 4,603,543, Cl. 56-10.200.

J. T. Baker Chemical Company: *See—*

Blashner, Michael, 4,604,235, Cl. 530-387.000.

Jackson, James M.: *See—*

Smith, Ronald A.; Jackson, James M.; Lehfeldt, Carl L.; Cygnarowicz, Leonard P.; Moshfegh, Khosro; Blanchard, Kenneth L.; and Nelson, Kenneth J., 4,603,567, Cl. 72-8.000.

Jackson, Melvin R.: *See—*

Siemers, Paul A.; Jackson, Melvin R.; and Rutkowski, Stephen F., 4,603,568, Cl. 72-47.000.

Jackson, Robert V., to McCulloch Corporation. Magnetic structure for use in a chain saw or edge trimmer ignition system or the like. 4,603,664, Cl. 123-149.00D.

Jackson, Winston J., Jr.; and Kuhfuss, Herbert F., to Eastman Kodak Company. Process for preparing poly(ester-amides). 4,604,449, Cl. 528-288.000.

Jacobs, Erwin P.: *See—*

Schwabe, Ulrich; Jacobs, Erwin P.; and Neppl, Franz, 4,603,472, Cl. 29-576.00B.

Jacoby, Charles E., to SI Handling Systems Inc. Drive wheel for driverless vehicle. 4,603,720, Cl. 152-209.00R.

Jacquart, Alain: *See—*

Vilotte, Alain; and Jacquart, Alain, 4,603,809, Cl. 229-2.5EC.

Jaeger, Paul M.: *See—*

Hwang, Juin-Jet; McKeighan, Ronald E.; and Jaeger, Paul M., 4,603,702, Cl. 128-660.000.

Jagen, Paul R., to Du Pont de Nemours, E. I., and Company. Electrical connector for a shielded cable. 4,603,936, Cl. 339-143.00R.

Jager, Horst, to Bayer Aktiengesellschaft. Triphendioxazine reactive dyestuffs. 4,604,459, Cl. 544-76.000.

Jakubowski, John A., to Calgon Corporation. Admixtures of 2-bromo-2-bromomethylglutaronitrile and 2,2-dibromo-3-nitrilopropionamide. 4,604,405, Cl. 514-526.000.

Jandrasits, Walter G.: *See—*

Wolbert, Ronald R.; and Jandrasits, Walter G., 4,603,463, Cl. 29-402.070.

Janik, Gloria: *See—*

Cole, Richard L.; and Janik, Gloria, 4,604,424, Cl. 524-862.000.

Janome Sewing Machine Co., Ltd.: *See—*

Takenoya, Hideaki; and Mishima, Fumiyuki, 4,603,988, Cl. 400-649.000.

Janssen, Alex P., Jr.; and Janssen, Alexander P. Hinge forming and attaching apparatus. 4,603,454, Cl. 29-11.000.

Janssen, Alexander P.: *See—*

Janssen, Alex P., Jr.; and Janssen, Alexander P., 4,603,454, Cl. 29-11.000.

Japan Exlan Company Limited: *See—*

Fujimatsu, Masaaki; and Kobashi, Toshiyuki, 4,604,428, Cl. 525-276.000.

Japan Medical Supply Co., Ltd.: *See—*

Ikada, Yoshito; Gen, Shokyu; Shimizu, Yasuhiko; Tamura, Koichi; Nakamura, Tatsuo; Kimura, Sosuke; Cho, Tsuneo; Tadokoro, Hideki; and Hori, Kazuaki, 4,603,695, Cl. 128-334.00R.

Japan Synthetic Rubber Co., Ltd.: *See—*

Oshima, Noboru; Shimizu, Isamu; Yoshimura, Yoshito; Fujimaki, Tatsuo; and Tomita, Seisuke, 4,603,722, Cl. 152-209.00R.

Jaye, Frederick O., Jr. Galvanizing apparatus. 4,603,656, Cl. 118-429.000.

JCC Construction Company AB: *See—*

Laneus, Per, 4,603,910, Cl. 299-13.000.

Jean, Benoit; Bergevin, Benoit; and Rheault, Fernand, to Institut National de la Recherche Scientifique. Solar heating system. 4,603,685, Cl. 126-433.000.

Jean Walterscheid GmbH: *See—*

Bober, Helmut; Buthe, Theo; Coenen, Karl; Fartmann, Norbert; Herbertz, Klaus; Koch, Franz-Heinz; Kretschmer, Horst; Nienhaus, Clemens; Schardt, Peter; Schibrowski, Jurgen; and Schmandt, Willi, 4,603,998, Cl. 403-322.000.

Jeco Co., Ltd.: *See—*

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Jensen, Earl M.: *See—*

Toro Lira, Guillermo L.; and Jensen, Earl M., 4,604,020, Cl. 418-217.000.

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plate of a plate cylinder of rotary printing machine. 4,603,641, Cl. 101-415.100.

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Ward, Terence J., 4,604,398, Cl. 514-294.000.

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Schwartz, Robert E.; and Noble, Roger K., 4,604,048, Cl. 431-8.000.

Johns Hopkins University, The: *See—*
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Weinberg, Melvin S.; Cormier, Alan D.; and Jones, Ronald L., 4,604,166, Cl. 204-1.00T.

Jones, Wallace R.: *See—*
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Niermann, Hans; Kohnen, Klaus; and Jorde, Joachim, 4,603,588, Cl. 73-794.000.

Joseph, Neil H. Aqueous humor drainage device. 4,604,087, Cl. 604-9.000.

Joyce, Stephen A. Multi-dimensional force-torque hand controller having force feedback. 4,604,016, Cl. 414-7.000.

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Farr, Robert W. E.; and Judd, Ian D., 4,604,614, Cl. 340-728.000.

Juen, Donnie R., to Dow Corning Corporation. Method for silalactone preparation and use. 4,604,478, Cl. 556-439.000.

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Schott, Eberhard P.; Fischer, Volker; Jung, Johann; and Rosebrock, Henning, 4,604,129, Cl. 71-76.000.

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Rossfelder, Andre M.; and Jung, Peter A., 4,603,748, Cl. 175-19.000.

Junginger, Erich; Schnaibel, Eberhard; and Schneider, Erich, to Robert Bosch GmbH. Supervisory and monitoring system for an electronically controlled automotive fuel controller, and method. 4,603,675, Cl. 123-478.000.

Just, Walter. Self-inking stamp with adjustable printing members. 4,603,628, Cl. 101-105.000.

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Naumov, Jury I.; Juzefovich, Dmitry K.; Epifanova, Valentina S.; Kucherenko, Vladimir I.; Flerov, Valery N.; Praporov, Anatoly M.; Shustov, Vladimir P.; Sychev, Alexel E.; Korolev, Georgy V.; Kotov, Evgeny P.; and Derevyanko, Yan N., 4,604,175, Cl. 204-151.000.

Kabe, Kazuyuki: *See—*
Kogure, Tomohiko; Hanada, Ryoji; and Kabe, Kazuyuki, 4,603,721, Cl. 152-209.00R.

Kabushiki Kaisha Kobe Seiko Sho: *See—*
Kawaguchi, Hiroshi; Sasaki, Hirofumi; Nishida, Mamoru; and Harada, Shinichi, 4,603,729, Cl. 164-442.000.

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Shibuya, Tadao, 4,604,530, Cl. 307-66.000.

Kabushiki Kaisha Sanai Estate: *See—*
Takano, Saburo, 4,604,113, Cl. 55-201.000.

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Shimizu, Wataru; and Yamashita, Akira, 4,604,575, Cl. 324-208.000.

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Takeda, Kota; and Masuda, Tsugunori, 4,603,804, Cl. 228-40.000.

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Kato, Shigeru; Nakaho, Junichi; and Shibahara, Makoto, 4,603,946, Cl. 350-331.00R.

Kabushiki Kaisha Toshiba: *See—*
Dekura, Hitoshi, 4,603,962, Cl. 355-3.00R.
Ilda, Taketoshi, 4,603,586, Cl. 73-626.000.
Koike, Noboru; Kitamura, Hidenari; and Tomita, Tsuneo, 4,603,829, Cl. 248-553.000.
Machida, Kaoru, 4,603,589, Cl. 73-861.280.
Matsuda, Hideo, 4,604,638, Cl. 357-23.400.
Sakurai, Toshiharu, 4,604,642, Cl. 357-70.000.

Kabushiki Kaisha Yakult Honsha: *See—*
Miyasaka, Tadashi; Sawada, Seigo; Nokata, Kenichiro; Sugino, Eiichi; and Mutai, Masahiko, 4,604,463, Cl. 544-125.000.
Sawada, Haruji; and Watanuki, Masaaki, 4,604,353, Cl. 435-58.000.

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Yokoyama, Ryuzo, 4,603,453, Cl. 24-155.00R.

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Kadota, Michio, to Murata Manufacturing Co., Ltd. Surface acoustic wave device having interdigitated comb electrodes weighted for odd/even response. 4,604,595, Cl. 333-196.000.

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Fujikura, Yoshiaki; Kajihara, Yasushi; Takaishi, Naotake; Inamoto, Yoshiaki; Kimura, Akio; Nakajima, Motoki; and Miyamoto, Norioki, 4,604,488, Cl. 568-820.000.

Kajiyama, Katsuyoshi: *See—*
Aida, Akira; Ohno, Tetsu; Fukuda, Takashi; Aihara, Kenji; Mizoguchi, Takuo; Nishimura, Syozi; and Kajiyama, Katsuyoshi, 4,604,146, Cl. 148-12.00B.

Kam, Sheung-tsam; Erhardt, Paul W.; Borgman, Robert J.; and O'Donnell, John P., to American Hospital Supply Corporation. Compounds for treatment or prophylaxis of cardiac disorders. 4,604,481, Cl. 560-39.000.

Kamajima, Kohji; Nakano, Yoshiyuki; Fujie, Masakatsu; Hosoda, Yuji; Iwamoto, Taro; and Honma, Kazuo, to Hitachi, Ltd. Control apparatus for multi-jointed arm mechanism. 4,604,561, Cl. 318-567.000.

Kamerling, William. System for preventing or treating open angle glaucoma and presbyopia. 4,603,697, Cl. 128-421.000.

Kamiyama, Yasuo: *See—*
Shiga, Shoji; Hayakawa, Takayuki; and Kamiyama, Yasuo, 4,604,169, Cl. 204-34.000.

Kamohara, Hiroshi; Hayashi, Shohei; and Ohi, Nobukazu, to G-C Dental Industrial Corp. Investments for dental casting. 4,604,142, Cl. 106-38.510.

Kan, Phillip T.: *See—*
Chang, Yu-Wen; Kan, Phillip T.; and Ross, Oakley G., 4,603,942, Cl. 350-96.240.

Kanabara, Susumu; and Aihara, Kenji, to Sumitomo Metal Industries, Ltd. Process for production of steel bar or steel wire having an improved spheroidal structure of cementite. 4,604,145, Cl. 148-12.00B.

Kanechiku, Minoru: *See—*
Murakami, Kanji; Akahoshi, Haruo; Kawamoto, Mineo; Wajima, Motoyo; Matsuda, Yoichi; Kawakubo, Kyoji; Kanechiku, Minoru; Yoshimura, Toyofusa; and Matsunaga, Makoto, 4,604,160, Cl. 156-630.000.

Kaneko, Noriaki: *See—*
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Kaneko, Shinichi, to Marcon Electronics Co., Ltd. Method of manufacturing chip-type aluminum electrolytic capacitor. 4,603,467, Cl. 29-570.000.

Kao Corporation: *See—*
Fujikura, Yoshiaki; Kajihara, Yasushi; Takaishi, Naotake; Inamoto, Yoshiaki; Kimura, Akio; Nakajima, Motoki; and Miyamoto, Norioki, 4,604,488, Cl. 568-820.000.

Kaplan, Albert, to RCA Corporation. Method and apparatus for measuring the time delay between signals. 4,604,717, Cl. 364-569.000.

Karaki, Nobuo, to Seiko Epson Corporation. Intensity modulation circuit for cathode-ray tubes. 4,604,555, Cl. 315-383.000.

Karanewsky, Donald S.: *See—*
Haslanger, Martin F.; and Karanewsky, Donald S., 4,604,407, Cl. 514-575.000.

Karlock, James A. Video processing circuit. 4,604,646, Cl. 358-28.000.

Kartisek, Craig T.: *See—*
Burrington, James D.; Grasselli, Robert K.; and Kartisek, Craig T., 4,604,244, Cl. 558-320.000.

Kassam, Saleem: *See—*
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Kastner, Ralph E.: *See—*
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Katakura, Kageyoshi: *See—*
Umemura, Shinichiro; Takeuchi, Hiroshi; Katakura, Kageyoshi; and Shinomura, Ryuichi, 4,604,543, Cl. 310-334.000.

Kataoka, Hiroyuki: *See—*
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Kataoka, Yosizumi: *See—*
Shindo, Masanori; Aoki, Yusuke; Kataoka, Yosizumi; Enomoto, Susumu; and Nakamura, Minoru, 4,604,418, Cl. 524-296.000.

Katchka, Jay R.; and Schultz, Gilbert, to Robertshaw Controls Company. Dual rate burner construction and method of making the sar 4,604,049, Cl. 431-80.000.

Kato, Fumio: *See—*
Ishibashi, Yoji; Sato, Isao; Kato, Fumio; Ohmori, Takashi; and Hayashi, Noriyuki, 4,603,548, Cl. 60-39.060.
Kato, Kanji; Higashino, Junichi; and Naruse, Akisuke, to Hitachi, Ltd. Method and apparatus for controlling a robot. 4,604,716, Cl. 364-513.000.
Kato, Kazuo: *See—*
Sasayama, Takao; Kato, Kazuo; and Naito, Masayoshi, 4,604,535, Cl. 307-570.000.
Kato, Shigeru; Nakaho, Junichi; and Shibahara, Makoto, to Kabushiki Kaisha Tokai Rika Denki Seisakusho. Reflection controllable view mirror device for motor vehicle or the like. 4,603,946, Cl. 350-331.00R.
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Kato, Yukio: *See—*
Kawasaki, Hisamitsu; and Kato, Yukio, 4,604,012, Cl. 409-233.000.
Katsuyama, Harumi: *See—*
Arai, Fuminori; Tanaka, Mitsutoshi; and Katsuyama, Harumi, 4,604,347, Cl. 435-4.000.
Katsuyama, Toshio: *See—*
Matsumura, Hiroyoshi; Katsuyama, Toshio; Ohta, Norio; Suganuma, Tsuneo; Nagatsuma, Kazuyuki; and Sugita, Yutaka, 4,604,577, Cl. 324-244.000.
Katz, Edward; Benedicktus, Jon J.; Knarr, Edward L.; and Scallet, Barrett L., to Busch Industrial Products Corporation. Immobilized glucose isomerase containing microbial cells. 4,604,354, Cl. 435-94.000.
Kaudela, Gerhard: *See—*
Schneider, Dieter; Knies, Heinz; and Kaudela, Gerhard, 4,604,100, Cl. 8-526.000.
Kautz, Rudolf: *See—*
Breitscheidel, Hans-Ulrich; and Kautz, Rudolf, 4,603,852, Cl. 272-109.000.
Kavoussi, James P. Aerosol shaving brush. 4,603,992, Cl. 401-190.000.
Kawaguchi, Hiroshi; Sasaki, Hirofumi; Nishida, Mamoru; and Harada, Shinichi, to Kabushiki Kaisha Kobe Seiko Sho. Piping assembly for use in roll section of continuous casting line. 4,603,729, Cl. 164-442.000.
Kawajiri, Seizo, to Daigo Nutritive Chemicals, Ltd. Infusion solution for parenteral nutrition. 4,604,286, Cl. 424-149.000.
Kawakubo, Kyoji: *See—*
Murakami, Kanji; Akahoshi, Haruo; Kawamoto, Mineo; Wajima, Motoyo; Matsuda, Yoichi; Kawakubo, Kyoji; Kanechiku, Minoru; Yoshimura, Toyofusa; and Matsunaga, Makoto, 4,604,160, Cl. 156-630.000.
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Kawamoto, Hiroshi: *See—*
Shinoda, Takashi; Sakai, Kikuo; Ogata, Masahiro; Kawamoto, Hiroshi; Onishi, Yoshiaki, deceased; and Onishi, Junko, administratrix, 4,604,749, Cl. 371-38.000.
Kawamoto, Mineo: *See—*
Murakami, Kanji; Akahoshi, Haruo; Kawamoto, Mineo; Wajima, Motoyo; Matsuda, Yoichi; Kawakubo, Kyoji; Kanechiku, Minoru; Yoshimura, Toyofusa; and Matsunaga, Makoto, 4,604,160, Cl. 156-630.000.
Kawamura, Hideaki: *See—*
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Kawamura, Masao: *See—*
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Kawasaki, Hisamitsu; and Kato, Yukio, to Toyoda Koki Kabushiki Kaisha. Tool clamping device for a spindle head. 4,604,012, Cl. 409-233.000
Kay, Alan R.; and Wilson, William G. Methods of desulfurizing gases. 4,604,268, Cl. 423-230.000.
Kay, Edward L.; and Roskos, Kenneth B., to Firestone Tire & Rubber Co., The. Polyurethane prepolymer comprising the reaction product of at least two active hydrogen containing substances with polyisocyanate. 4,604,445, Cl. 528-64.000.
Kayser, Eleonore G., to United States of America, Navy. Recrystallization of hexanitrostilbene from dimethylsulfoxide and methanol. 4,604,489, Cl. 568-931.000.
Kazuo, Ozawa; and Saburo, Yoinara, to Balibali System Co., Ltd. Gas cooking device. 4,603,684, Cl. 126-299.00R.
Kearney & Trecker Corporation: *See—*
Ostby, Lyle D., 4,603,485, Cl. 33-367.000.
Keller Holding AG: *See—*
Walt, Hans; and Sutterlin, Dieter, 4,604,255, Cl. 264-273.000.
Keller, R. W. Fuel vaporizer for internal combustion engine. 4,603,672, Cl. 123-545.000.
Keller, Rene , to Emhart Industries, Inc. Method of sensing gobs of molten glass. 4,604,122, Cl. 65-29.000.
Keller, William F.: *See—*
Sibley, Richard D.; and Keller, William F., 4,603,591, Cl. 74-2.000.
Kelley, Stephen H., to Motorola, Inc. Switched capacitor precision difference amplifier. 4,604,584, Cl. 330-9.000.
Kelly, Keith F., Jr.: *See—*
Crabtree, Robert P.; and Kelly, Keith F., Jr., 4,604,690, Cl. 364-200.000.
Kendall Company, The: *See—*
Silver, Brian H., 4,604,092, Cl. 604-246.000.
Kendrick, William D.: *See—*
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Kennametal Inc.: *See—*
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Erickson, Robert A., 4,603,751, Cl. 175-410.000.
Kennedy, David M.: *See—*
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Kenox Corporation: *See—*
McCorquodale, Robert P., 4,604,215, Cl. 210-762.000.
Kent, John: *See—*
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Kettlitz, Karsten: *See—*
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Keys, Steven F.; and Peppler, Dennis L., to Essex Group, Inc. Method for applying high solids enamels to magnet wire. 4,604,300, Cl. 427-120.000.
Khalitov, Boris V.: *See—*
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Kido, Yoshinobu, to Toyo Kogyo Co., Ltd. Safety device for turbocharged engine. 4,603,552, Cl. 60-605.000.
Kijima, Takao; and Maebayashi, Jiro, to Mazda Motor Corporation. Vehicle rear suspension mechanism. 4,603,882, Cl. 280-701.000.
Kikkawa, Ikuo: *See—*
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Kimball, David V.; and Frost, Charles W., to Kimball Industries, Inc. High productivity vibration test fixture suited for testing printed circuit boards. 4,603,587, Cl. 73-663.000.
Kimball Industries, Inc.: *See—*
Kimball, David V.; and Frost, Charles W., 4,603,587, Cl. 73-663.000.
Kimberly-Clark Corporation: *See—*
McFarland, Timothy M.; and Lang, Theodore B., 4,604,313, Cl. 428-172.000.
Kimoto, Masayoshi, to Fujitsu Limited. Static-type semiconductor memory device. 4,604,729, Cl. 365-190.000.
Kimura, Akio: *See—*
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Ikada, Yoshito; Gen, Shokyu; Shimizu, Yasuhiko; Tamura, Koichi; Nakamura, Tatsuo; Kimura, Sosuke; Cho, Tsuneo; Tadokoro, Hideki; and Hori, Kazuaki, 4,603,695, Cl. 128-334.00R.
Kimura, Toshimitsu: *See—*
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Kimura, Yoshiaki; and Tanaka, Yasuhiko, to Konishiroku Photo Industry Co., Ltd. Ink-jet recording apparatus. 4,604,633, Cl. 346-140.00R.
Kin, Lai: *See—*
Thaler, Arnold; and Kin, Lai, 4,604,514, Cl. 219-225.000.
King, Patrick D., to Flo-Con Systems, Inc. Method of sliding gate valve operation. 4,603,842, Cl. 266-44.000.
Kinjo, Hisao, to Victor Company of Japan, Ltd. Recording medium for recording and/or reproducing apparatus. 4,604,667, Cl. 360-100.000.
Kinoshita, Hiroyuki, to Tokyo Shibaura Denki Kabushiki Kaisha. Semiconductor memory device. 4,604,639, Cl. 357-23.600.
Kinoshita, Takashi: *See—*
Mashimo, Satoshi; Tanaka, Masayuki; Yamaguchi, Yoshio; and Kinoshita, Takashi, 4,604,081, Cl. 474-205.000.
Kirschler, Howard A.: *See—*
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Kishimura, Masaaki: *See—*
Nakai, Yoshio; Yamauchi, Katsusuke; Kishimura, Masaaki; and Tateyama, Masamitsu, 4,604,416, Cl. 524-145.000.
Kissling, Bruno; and Robinson, Tibor, to Sandoz Ltd. After treatment of anionic dyeings, printings and optical brightenings on textil fibers. 4,604,101, Cl. 8-551.000.
Kitada, Akira; Yamazaki, Kikuo; and Yamazaki, Hisashi, to Fuji Photo Film Co., Ltd. Radiation image storage panel with dispersing agent. 4,604,525, Cl. 250-363.00R.

Kitagawa, Junji: *See—*
Yamanoue, Kouichi; Kitagawa, Junji; Akita, Shigeyuki; and Kuno, Akira, 4,603,581, Cl. 73-304.00C.

Kitahara, Takahiro: *See—*
Ohmori, Akira; Takaki, Shoji; and Kitahara, Takahiro, 4,604,482, Cl. 560-213.000.

Kitahara, Toshihiro; and Noda, Yasushi, to Teac Corporation. Data transfer apparatus for use with a magnetic disk cartridge. 4,604,666, Cl. 360-99.000.

Kitamura, Hidenari: *See—*
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Kitamura, Yoshitaka: *See—*
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Kitsukawa, Tomohiko; Kusano, Hiroshi; Miyata, Eiji; and Sugawara, Toyokazu, to Mitsubishi Chemical Industries Limited. Method separating phenylalanine and cinnamic acid. 4,604,483, Cl. 562-443.000.

Kitterman, B. Layton: *See—*
Chen, Gilbert; Kitterman, B. Layton; Glaspie, Donald L.; and Axe, John R., 4,604,247, Cl. 261-94.000.

Klaus, Irving; Herbstman, Warren; and Lopez, Jairo, to Excelco International, Inc. Dental compositions, fired dental porcelains and processes for making and using same. 4,604,059, Cl. 433-217.100.

Kleeberg, Wolfgang: *See—*
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Klein, Joseph T.: *See—*
Davis, Larry; and Klein, Joseph T., 4,604,395, Cl. 514-255.000.

Kleinhany, Arno; and Gutmann, Walter, to Bauer Kaba AG. Lock cylinder with integrated electromagnetic locking system. 4,603,564, Cl. 70-277.000.

Kley, Victor B. Electronic viewing system for integrated circuit packages. 4,604,648, Cl. 358-101.000.

Klimeck, Edward F.: *See—*
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Klinkowski, Peter R.: *See—*
Bollinger, James M.; and Klinkowski, Peter R., 4,604,174, Cl. 204-151.000.

Kljuchnikov, Valery F.: *See—*
Ganago, Oleg A.; Safonov, Anatoly V.; Stepanov, Boris A.; Subich, Vadim N.; Frolov, Alexandr D.; Lobanov, Nikolai A.; Lumer, Yakov L.; Xenofontov, Alexei M.; Rudman, Leonid I.; Lebed, Alexandr D.; Mamatsashvili, Vasha I.; Kljuchnikov, Valery F.; Birkadze, Dzhemal I.; Shklyarman, Sergei S.; Gordeev, Nikolai A.; Golovin, Vasily Y.; Kruk, Alexandr T.; Yakovenko, Ivan F.; Novikov, Vladimir V.; Grishkov, Andrei M.; Gorozhankin, Valery N.; Svistunov, Vladmir E.; Bocharov, Jury A.; and Sergeev, Jury N., 4,603,573, Cl. 72-454.000.

Klose, Heinrich: *See—*
Zeth, Ulrich; Klose, Heinrich; Voss, Gunther; and Winkler, Peter, 4,603,960, Cl. 354-432.000.

Knapp, Kenneth M. Unitized pig body for parafin removal. 4,603,449, Cl. 15-104.06R.

Knappe, Wolfgang-Reinhold: *See—*
Rothe, Anselm; Knappe, Wolfgang-Reinhold; and Trasch, Heinz-Friedrich, 4,604,264, Cl. 422-56.000.

Knarr, Edward L.: *See—*
Katz, Edward; Benedicktus, Jon J.; Knarr, Edward L.; and Scallet, Barrett L., 4,604,354, Cl. 435-94.000.

Kneller, James F.; and Hurlock, John R., to Nalco Chemical Company. Acrylic acid-sodium vinylsulfonate-vinyl acetate terpolymer and use thereof as a dispersant. 4,604,211, Cl. 210-701.000.

Knickerbocker, Robert H., to Siemon Company, The. Multiple electrical connector block with improved wire wrap pins. 4,603,935, Cl. 339-97.00P.

Knies, Heinz: *See—*
Schneider, Dieter; Knies, Heinz; and Kaudela, Gerhard, 4,604,100, Cl. 8-526.000.

Knight, Douglas W. Headrail for a window blind. 4,603,725, Cl. 160-243.000.

Knight, Robert G.: *See—*
Hindmarsh, Leslie W.; Knight, Robert G.; and Sanders, Gerald J., 4,603,911, Cl. 299-91.000.

Knight, Rodney A.: *See—*
Chu, Chaokang; Fiore, Joseph V.; Knight, Rodney A.; Marinaccio, Paul J.; and Roy, Asit, 4,604,208, Cl. 210-636.000.

Knipple, Raymond P.: *See—*
Thorpe, Donald H.; and Knipple, Raymond P., 4,604,436, Cl. 525-504.000.

Knoer, Peter: *See—*
Aquino, Dolores C.; DaPrato, Philip L.; Gouker, Toby R.; and Knoer, Peter, 4,604,105, Cl. 48-197.00R.

Knoll, Helmut: *See—*
Miller, Luitpold; Knoll, Helmut; and Meins, Juergen, 4,603,640, Cl. 104-282.000.

Knoll, Johann: *See—*
Rungger, Helmut; Fuchs, Erwin; and Knoll, Johann, 4,604,011, Cl. 409-138.000.

Knop, Charles M.: *See—*
Saad, Saad S.; and Knop, Charles M., 4,604,627, Cl. 343-786.000.

Knowles, William R.; and Cruttwell, Ian A., to Cambridge Instruments Limited. Scannable-beam microscopes and image stores therefor. 4,604,523, Cl. 250-310.000.

Knowlton, Gregory D.; and Pietz, John F., to Talley Defense Systems, Inc. Method and compositions for generating nitrogen gas. 4,604,151, Cl. 149-35.000.

Knudsen, Chris: *See—*
Benn, George; Frost, Wendell; Knudsen, Chris; and Nieuwsma, David, 4,604,711, Cl. 364-900.000.

Kobari, Harukuni: *See—*
Hibino, Chitoshi; and Kobari, Harukuni, 4,604,658, Cl. 360-36.200.

Kobashi, Toshiyuki: *See—*
Fujimatsu, Masaaki; and Kobashi, Toshiyuki, 4,604,428, Cl. 525-276.000.

Kobayashi, Taishi: *See—*
Takamizawa, Minoru; Kobayashi, Taishi; Hayashida, Akira; and Takeda, Yoshihumi, 4,604,367, Cl. 501-95.000.

Kobayashi, Waichi: *See—*
Suzukawa, Yuichi; Kobayashi, Waichi; and Ohtaka, Satoshi, 4,604,143, Cl. 106-89.000.

Kobayashi, Yutaka; Fukami, Akira; and Suzuki, Takaya, to Hitachi, Ltd. Method of forming a large number of monocrystalline semiconductor regions on the surface of an insulator. 4,604,159, Cl. 156-617.00R.

Kobinger, Walter: *See—*
Reiffen, Manfred; Noll, Klaus; Heider, Joachim; Austel, Volkhard; Hauel, Norbert; Kobinger, Walter; and Lillie, Christian, 4,604,389, Cl. 514-213.000.

Koch, Franz-Heinz: *See—*
Bober, Helmut; Buthe, Theo; Coenen, Karl; Fartmann, Norbert; Herbertz, Klaus; Koch, Franz-Heinz; Kretschmer, Horst; Nienhaus, Clemens; Schardt, Peter; Schibrowski, Jurgen; and Schmandt, Willi, 4,603,998, Cl. 403-322.000.

Koch, Klaus D.; Brunssen, Johann; and Sieling, Helmut, to HAG GF Aktiengesellschaft. Insert container for freeze-drying plants. 4,603,492, Cl. 34-237.000.

Koch, Ronald J.: *See—*
Gruber, Robert J.; Yourd, Raymond A., III; and Koch, Ronald J., 4,604,338, Cl. 430-106.000.

Kochie, Patrick S.: *See—*
Richmond, Moscow K.; Richmond, Thomas R.; and Kochie, Patrick S., 4,604,501, Cl. 179-81.00B.

Kodaira, Takanori: *See—*
Egawa, Akira; and Kodaira, Takanori, 4,603,954, Cl. 354-137.000.

Koehler, Gerard, to La Telemecanique Electrique. Electromagnet comprised of yokes and an armature supporting a permanent magnet fitted on its pole faces with pole pieces that project from the axis of the magnet, this axis being perpendicular to the direction of movement. 4,604,599, Cl. 335-230.000.

Koenig & Bauer Aktiengesellschaft: *See—*
Schneider, Georg, 4,603,632, Cl. 101-364.000.

Kogure, Hiroshi: *See—*
Suefuji, Kazutaka; Yasuda, Hiromu; Hayashi, Masakatsu; Arata, Tetsuya; Oguni, Kensaku; Kuroda, Shigeaki; Atsumi, Akira; Ishibane, Kyuhei; Terada, Hirokiyo; Senshu, Takao; and Kogure, Hiroshi, 4,603,556, Cl. 62-180.000.

Kogure, Tomohiko; Hanada, Ryoji; and Kabe, Kazuyuki, to Yokohama Rubber Co., Ltd., The. Base-cap tire tread. 4,603,721, Cl. 152-209.00R.

Kohnen, Klaus: *See—*
Niermann, Hans; Kohnen, Klaus; and Jorde, Joachim, 4,603,588, Cl. 73-794.000.

Kohno, Teruhisa, to Sumitomo Electric Industries, Ltd. Hydraulic pressure control valve for dual brake circuit. 4,603,917, Cl. 303-6.00C.

Koike, Noboru; Kitamura, Hidenari; and Tomita, Tsuneo, to Kabushiki Kaisha Toshiba. System for fixedly mounting a case or the like box-shaped article. 4,603,829, Cl. 248-553.000.

Koike, Osamu: *See—*
Fujii, Yoshimasa; Mitsuhashi, Yoshinobu; and Koike, Osamu, 4,603,941, Cl. 350-96.150.

Koike, Takahisa: *See—*
Jinnai, Koichiro; Fukazawa, Takao; Ito, Tadashi; Koike, Takahisa; Murai, Toshiharu; and Ishima, Kazumi, 4,604,631, Cl. 346-1.100.

Koizumi, Hideharu: *See—*
Hiroyasu, Minoru; Hashimoto, Hitoshi; Yamada, Susumu; Miyanaka, Masaki; and Koizumi, Hideharu, 4,603,456, Cl. 29-33.00P.

Kojima, Chiaki; Hasegawa, Kayoko; and Miyahara, Kousuke, to Sony Corporation. Method of producing inline hologram lens. 4,603,938, Cl. 350-3.720.

Kokusan Kinzoku Kogyo Kabushiki Kaisha: *See—*
Mochida, Haruo; Shimizu, Keiichi; and Okuya, Shigetami, 4,603,563, Cl. 70-276.000.

Kolhi, Martti: *See—*
Bergkvist, Bruno; Kolhi, Martti; Strandell, Erik; and Svemar, Christer, 4,604,136, Cl. 75-24.000.

Kollmorgen Technologies Corporation: *See—*
De Luca, Michael A.; and McCormack, John F., 4,604,299, Cl. 427-98.000.

Kolman, Anne E.: *See—*
Beckham, Keith F.; Kolman, Anne E.; McGuire, Kathleen M.; Puttlitz, Karl J.; and Quinones, Horatio, 4,604,644, Cl. 357-80.000.

Kolner, Brian H.: *See—*
Shaw, Herbert J.; Digonnet, Michel J. F.; Bergh, Ralph A.; Sorin, Wayne V.; and Kolner, Brian H., 4,603,940, Cl. 350-96.150.

Komaroff, Iwan: *See—*
Grunwald, Werner; Imhof, Ernst; Komaroff, Iwan; Schmid, Gunther; and Schmid, Kurt, 4,603,667, Cl. 123-297.000.

Komatsu, Isamu; and Serizawa, Kenkichi, to Aida Engineering Limited. Grinding robot. 4,603,511, Cl. 51-165.710.

Konchan, Jeffrey L.: *See—*
Espinoza, John A.; Konchan, Jeffrey L.; and Rimbey, Ronald P., 4,603,877, Cl. 280-807.000.

Kondo, Hideya: *See—*
Yokoyama, Yoichi; and Kondo, Hideya, 4,604,596, Cl. 335-14.000.

Kondo, Susumu: *See—*
Takakura, Makoto; Kondo, Susumu; and Nogami, Tatsuya, 4,604,303, Cl. 427-229.000.

Kondo, Takumi, to Nissan Motor Co., Ltd. Joining jig for vehicle body panels. 4,603,462, Cl. 29-281.100.

Konishi, Katsuzi: *See—*
Sakurai, Kiyomi; and Konishi, Katsuzi, 4,604,343, Cl. 430-281.000.

Konishi, Satoshi, to Tokyo Shibaura Denki Kabushiki Kaisha. Semiconductor device and method for manufacturing the same. 4,604,641, Cl. 357-59.000.

Konishi, Satoshi, to Shibaura Denki Kabushiki Kaisha. Output circuit for a semiconductor memory device. 4,604,731, Cl. 365-203.000.

Konishi, Yoshimune: *See—*
Takemoto, Eiji; Miyaki, Masahiko; Norimatsu, Hideaki; Hobo, Nobuhito; Tsuzuki, Yoshihiko; and Konishi, Yoshimune, 4,603,669, Cl. 123-357.000.

Konishiroku Photo Industry Co., Ltd.: *See—*
Horiuchi, Tatumi, 4,603,850, Cl. 271-288.000.

Konishiroku Photo Industry Co., Ltd: *See—*
Kimura, Yoshiaki; and Tanaka, Yasuhiko, 4,604,633, Cl. 346-140.00R.

Konomi, Toshiaki; Ito, Koji; Nagahori, Yukihiro; and Ito, Akio, to Jeco Co., Ltd.; and Toyota Jidosha Kabushiki Kaisha. Piezoelectric pressure indicator. 4,604,544, Cl. 310-338.000.

Kopp, Georg, to SIG Schweizerische Industrie-Gesellschaft. Apparatus for making packaging bags. 4,603,540, Cl. 53-546.000.

Koppe, Herbert; Mentrup, Anton; Renth, Ernst-Otto; Schromm, Kurt; Hoefke, Wolfgang; and Muaceic, Gojko, to Boehringer Ingelheim International GmbH. Intermediate 1-alkylenyl-1H-benzimidazol-2-one derivatives. 4,604,468, Cl. 548-305.000.

Koppers Company, Inc.: *See—*
Dressler, Hans; and Meilus, Albert A., 4,604,491, Cl. 585-26.000.

Korolev, Georgy V.: *See—*
Naumov, Jury I.; Juzefovich, Dmitry K.; Epifanova, Valentina S.; Kucherenko, Vladimir I.; Flerov, Valery N.; Praporov, Anatoly M.; Shustov, Vladimir P.; Sychev, Alexel E.; Korolev, Georgy V.; Kotov, Evgeny P.; and Derevyanko, Yan N., 4,604,175, Cl. 204-151.000.

Kosak, Kenneth M. Bioluminescent tracer composition and method of use in immunoassays. 4,604,364, Cl. 436-501.000.

Koshii, Taro; Morita, Yoshitsugu; Shinmi, Hideo; and Hanada, Tsuneo, to Toray Silicone Co., Ltd. Thermosetting epoxy resin compositions. 4,604,435, Cl. 525-476.000.

Koshimizu, Koichi: *See—*
Sakata, Isao; Nakajima, Susumu; Koshimizu, Koichi; Samejima, Natsuki; Inohara, Kazumi; and Takata, Hiroyuki, 4,604,241, Cl. 540-145.000.

Koshiyouji, Takashi: *See—*
Nakamura, Kunihiko; and Koshiyouji, Takashi, 4,603,849, Cl. 271-186.000.

Koslow, Evan E., to Pall Corporation. Fluid purifier. 4,604,109, Cl. 55-52.000.

Kosmach, Jerry C., to General Electric Company. Baseless incandescent lamp. 4,604,553, Cl. 313-315.000.

Koso International, Inc.: *See—*
Sibley, Richard D.; and Keller, William F., 4,603,591, Cl. 74-2.000.

Kosonocky, Walter F.: *See—*
Elabd, Hammam; Kosonocky, Walter F.; and Battson, Donald F., 4,604,652, Cl. 358-213.000.

Kotliar, Howard J. Taco holder. 4,603,825, Cl. 248-174.000.

Kotlicki, Moshe: *See—*
Kotlicki, Yaacov; and Kotlicki, Moshe, 4,604,524, Cl. 250-342.000.

Kotlicki, Yaacov; and Kotlicki, Moshe. Passive infra-red sensor. 4,604,524, Cl. 250-342.000.

Kotobuki & Co., Ltd.: *See—*
Yamamoto, Ken, 4,603,990, Cl. 401-85.000.
Yamamoto, Ken, 4,603,991, Cl. 401-86.000.

Kotov, Evgeny P.: *See—*
Naumov, Jury I.; Juzefovich, Dmitry K.; Epifanova, Valentina S.; Kucherenko, Vladimir I.; Flerov, Valery N.; Praporov, Anatoly M.; Shustov, Vladimir P.; Sychev, Alexel E.; Korolev, Georgy V.; Kotov, Evgeny P.; and Derevyanko, Yan N., 4,604,175, Cl. 204-151.000.

Koyama, Teruhisa: *See—*
Mitsuno, Tatsuyuki; Koyama, Teruhisa; and Ikezawa, Yuji, 4,604,421, Cl. 524-449.000.

Kraftwerk Union Aktiengesellschaft: *See—*
Heumuller, Roland, 4,603,583, Cl. 73-596.000.

Kramer, John H.: *See—*
Edwards, David K.; and Kramer, John H., 4,604,024, Cl. 414-592.000.

Kramer, William M.: *See—*
Zollman, James A.; Kramer, William M.; and Rhoads, James L., 4,604,519, Cl. 250-213.0VT.

Kratel, Gunter; and Loskot, Stefan, to Wacker-Chemie GmbH. Process for the preparation of silicon tetrachloride. 4,604,272, Cl. 423-343.000.

Krause, Keith M., to Gates Rubber Company, The. Compounded polychloroprene formulation used as an adhesive layer in the manufacture of elastomeric articles. 4,603,712, Cl. 138-137.000.

Krausz, Frank. Trunk-twist exercise device. 4,603,854, Cl. 272-116.000.

Kremer, Henry A. F. L.: *See—*
Cukier, Samuel; and Kremer, Henry A. F. L., 4,604,184, Cl. 208-22.000.

Krengel, Theodore H., to Allied Tube & Conduit Corporation. Mill for roll forming a fluted tube. 4,603,807, Cl. 228-152.000.

Kresse, Franz: *See—*
Osberghaus, Rainer; Scheller, Bernfrid; Schunter, Roland; Kresse, Franz; and Schell, Helmut, 4,603,450, Cl. 15-147.00A.

Kretschmer, Horst: *See—*
Bober, Helmut; Buthe, Theo; Coenen, Karl; Fartmann, Norbert; Herbertz, Klaus; Koch, Franz-Heinz; Kretschmer, Horst; Nienhaus, Clemens; Schardt, Peter; Schibrowski, Jurgen; and Schmandt, Willi, 4,603,998, Cl. 403-322.000.

Krishnakumar, Suppayan M.; Friendship, Kenneth F. M.; Mahajan, Gautam K.; and Pocock, John F. E., to Continental Group, Inc., The. Mold core member for use in a mold unit for injection molding a plastic material preform for a blow molded container. 4,603,831, Cl. 249-144.000.

Krog, Ann M.: *See—*
Deckner, George E.; Mercado, Clara G.; and Krog, Ann M., 4,604,281, Cl. 424-59.000.

Kroy Inc.: *See—*
Melbye, Kenneth M., 4,604,153, Cl. 156-235.000.

Kruehn, Juergen; and Prunbauer, Kurt, to Zeiss Ikon AG. Safety lock. 4,603,566, Cl. 70-380.000.

Krugh, Michael E., to Marathon Oil Company. Process for cleaning an oil field well bore hole using an interval casing wiper. 4,603,739, Cl. 166-311.000.

Kruk, Alexandr T.: *See—*
Ganago, Oleg A.; Safonov, Anatoly V.; Stepanov, Boris A.; Subich, Vadim N.; Frolov, Alexandr D.; Lobanov, Nikolai A.; Lumer, Yakov L.; Xenofontov, Alexei M.; Rudman, Leonid I.; Lebed, Alexandr D.; Mamatsashvili, Vasha I.; Kljuchnikov, Valery F.; Birkadze, Dzhemal I.; Shklyarman, Sergei S.; Gordeev, Nikolai A.; Golovin, Vasily Y.; Kruk, Alexandr T.; Yakovenko, Ivan F.; Novikov, Vladimir V.; Grishkov, Andrei M.; Gorozhankin, Valery N.; Svistunov, Vladmir E.; Bocharov, Jury A.; and Sergeev, Jury N., 4,603,573, Cl. 72-454.000.

Krupp Koppers GmbH: *See—*
Niermann, Hans; Kohnen, Klaus; and Jorde, Joachim, 4,603,588, Cl. 73-794.000.

Krupp Stahl AG: *See—*
Heinen, Karl-Heinz; Glitscher, Wolfgang; and Zorcher, Heinz, 4,604,135, Cl. 373-60.000.

Kruse, Marvin F. Hay bale loader. 4,604,018, Cl. 414-44.000.

Kubler, Joseph J.: *See—*
Chadima, George E., Jr.; and Kubler, Joseph J., 4,604,693, Cl. 364-200.000.

Kubota, Katsuhiko: *See—*
Yotsumoto, Yoshiharu; Kubota, Katsuhiko; and Sekiba, Toshinobu, 4,604,643, Cl. 357-75.000.

Kubota, Ltd.: *See—*
Yoshimura, Shingo; Ito, Katsumi; and Tanaka, Shigeru, 4,603,753, Cl. 180-131.000.

Kucherenko, Vladimir I.: *See—*
Naumov, Jury I.; Juzefovich, Dmitry K.; Epifanova, Valentina S.; Kucherenko, Vladimir I.; Flerov, Valery N.; Praporov, Anatoly M.; Shustov, Vladimir P.; Sychev, Alexel E.; Korolev, Georgy V.; Kotov, Evgeny P.; and Derevyanko, Yan N., 4,604,175, Cl. 204-151.000.

Kuhfuss, Herbert F.: *See—*
Jackson, Winston J., Jr.; and Kuhfuss, Herbert F., 4,604,449, Cl. 528-288.000.

Kuhl, Jane F.; and Vicory, William A., to AT&T Bell Laboratories. Method for fusion splicing optical fiber. 4,604,119, Cl. 65-4.210.

Kuhl, Martin, to Hoechst CeramTec AG. Seal between a metallic mounting and a glass fiber rod in high voltage compound insulators and method of forming same. 4,604,498, Cl. 174-140.00S.

Kuhman, Jeffrey A. Method and apparatus for indicating dimensional relationships in plastic material feeding device during operation. 4,604,251, Cl. 264-40.200.

Kukucka, William P.; Sklut, Robert L.; and Gauronski, John F., to Xerox Corporation. Finisher mode switching. 4,603,971, Cl. 355-133.000.

Kulke, Gunter: *See—*
Grauel, Ingolf; Kulke, Gunter; Muller, Egbert; and Stumpe, Werner, 4,603,919, Cl. 303-6.00R.

Kumar, Binod: *See—*
Graves, George A., Jr.; and Kumar, Binod, 4,604,097, Cl. 623-11.000.

Kumobayashi, Hidenori; and Akutagawa, Susumu, to Takasago Perfumery Co., Ltd. Rhodium-phosphine complex. 4,604,474, Cl. 556-7.000.

Kumura, Haruyoshi: *See—*
Tanaka, Yoshikazu; Kumura, Haruyoshi; Abo, Keiju; Hirano, Hiroyuki; and Yamamuro, Sigeaki, 4,603,602, Cl. 74-866.000.

Kung, Hsiang-Fu; Sugino, Hiromu; and Honda, Susumu, to Hoffmann-La Roche Inc.; and Takeda Chemical Industries Ltd. Homogeneous immune interferon fragment. 4,604,284, Cl. 424-85.000.

Kunieda, Masanori; Hiramatsu, Hiromichi; Higuchi, Toshiro; and Nakagawa, Takeo, to Aida Engineering, Ltd.; and Nakagawa, Takeo.

Magnetic attraction system grinding method. 4,603,509, Cl. 51-31.000.

Kunkle, Gerald E.: *See—*
Demarest, Henry M., Jr.; Matesa, Joseph M.; and Kunkle, Gerald E., 4,604,121, Cl. 65-27.000.

Kuno, Akira: *See—*
Yamanoue, Kouichi; Kitagawa, Junji; Akita, Shigeyuki; and Kuno, Akira, 4,603,581, Cl. 73-304.00C.

Kuranishi, Masaaki; Nonaka, Susumu; Furukawa, Koichi; and Siozaki, Fumio, to Sharp Kabushiki Kaisha. Recording member pressing device in a printer. 4,603,987, Cl. 400-639.100,

Kuraray Company, Ltd.: *See—*
Ueeda, Ryuhei; Fujii, Kiyonobu; and Narukawa, Hiroshi, 4,604,441, Cl. 526-351.000.

Kuroda, Masao: *See—*
Ide, Junya; Muramatsu, Shigeki; Tsujita, Yoshio; and Kuroda, Masao, 4,604,472, Cl. 549-292.000.

Kuroda, Shigeaki: *See—*
Suefuji, Kazutaka; Yasuda, Hiromu; Hayashi, Masakatsu; Arata, Tetsuya; Oguni, Kensaku; Kuroda, Shigeaki; Atsumi, Akira; Ishibane, Kyuhei; Terada, Hirokiyo; Senshu, Takao; and Kogure, Hiroshi, 4,603,556, Cl. 62-180.000.

Kuroki, Takashi: *See—*
Ishihara, Shosaku; Kuroki, Takashi; Toda, Gyozo; Yasukawa, Akio; and Sakamoto, Tatsuji, 4,604,496, Cl. 174-68.500.

Kurtz, John A.; Cousens, Donald E.; and Dufour, Mark D., to Fairchild Camera & Instrument Corporation. Variation and control of bond force. 4,603,802, Cl. 228-1.100.

Kurz, Herbert: *See—*
Tax, Hans; and Kurz, Herbert, 4,603,783, Cl. 212-132.000.

Kusano, Hiroshi: *See—*
Kitsukawa, Tomohiko; Kusano, Hiroshi; Miyata, Eiji; and Sugawara, Toyokazu, 4,604,483, Cl. 562-443.000.

Kusmiss, Joseph M.: *See—*
Blount, Frederick T.; Capowski, Robert S.; Casper, Daniel F.; DelSonno, Lawrence R.; Geller, Robert F.; Kusmiss, Joseph M.; and Zimmerman, Terrence K., 4,604,709, Cl. 364-900.000.

Kuze, Katsuaki; Matsuyama, Yuziro; Yamaoka, Yoshio; Murashige, Ryuichi; and Makimura, Osamu, to Toyo Boseki Kabushiki Kaisha. Polyester composition. 4,604,453, Cl. 528-481.000.

Kverneland A/S: *See—*
Watvedt, Jorn, 4,603,745, Cl. 172-212.000.

Kyle, Robert C., to Minnesota Mining and Manufacturing Co. Cooking oil filtering apparatus and filter therefor. 4,604,203, Cl. 210-489.000.

Kyoritsu Kikai Co., Ltd.: *See—*
Sugihara, Toshihiko, 4,603,723, Cl. 160-35.000.

La Telemecanique Electrique: *See—*
Koehler, Gerard, 4,604,599, Cl. 338-230.000.

Labeeuw, Bernard; and Sahli, Ali, to Sanofi. 1,2,4-triazinylthiomethyl-3-cephem sulfoxides, and a procedure for their preparation. 4,604,387, Cl. 514-206.000.

"Labor" Muszeripari Muvek: *See—*
Benko, Eva; Csabanko, Istvan; Porkolab, Aniko ; Szabo, Zsolt; and Takacs, Gabor, 4,604,086, Cl. 494-16.000.

Labovitz, Jeffrey N.; and Fang, Lawrence, to Lafarge Coppee. Pollen suppressant comprising a fused pyridazine. 4,604,134, Cl. 71-92.000.

Labuhn, Walter: *See—*
Siebold, Quentin R.; and Labuhn, Walter, 4,603,592, Cl. 74-41.000.

Lacher, William A.: *See—*
Webler, Thomas N.; and Lacher, William A., 4,604,588, Cl. 331-135.000.

Laditka, Alexander. Apparatus for mixing and spreading coatings on surfaces. 4,603,999, Cl. 404-112.000.

Lafarge Coppee: *See—*
Labovitz, Jeffrey N.; and Fang, Lawrence, 4,604,134, Cl. 71-92.000.

Lagow, Ralph J., to Thermal Engine Technology. Method and apparatus for extracting useful energy from a superheated vapor actuated power generating device. 4,603,554, Cl. 60-670.000.

Lai, Jason C. S.: *See—*
Latz, William J.; Mandler, Thomas J.; and Lai, Jason C. S., 4,603,496, Cl. 40-547.000.

L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude: *See—*
Bonneton, Michel; and Marchal, Bernard, 4,604,115, Cl. 62-11.000.
Desprez, Marc; and Laurenceau, Serge, 4,604,123, Cl. 65-134.000.

Lalancette, Jean M.; Chevalier-Bultel, Jean P.; and Desrosiers, Luc, to Societe Nationale de l'Amiante. Foundry sands derived from serpentine and foundry molds derived therefrom. 4,604,140, Cl. 106-38.900.

Lallemant, Bernard: *See—*
Joly, Jean-Louis; and Lallemant, Bernard, 4,603,796, Cl. 222-400.700.

Lam, Hon W., to Texas Instruments Incorporated. Method for source/-drain self-alignment in stacked CMOS. 4,603,468, Cl. 29-571.000.

Lamort, Jean-Pierre J., to E et M Lamort S.A. Method and apparatus for sorting out a mixture of paper pulp and contaminants. 4,604,193, Cl. 209-273.000.

Lampe, Donald R.: *See—*
DelCoco, Robert J.; Borsuk, Gerald M.; and Lampe, Donald R., 4,604,650, Cl. 358-119.000.

Landa, Benzion. Lever operated friction clutch. 4,603,766, Cl. 192-99.00S.

Lander, George E.: *See—*
Gilmore, Robert L.; and Lander, George E., 4,603,515, Cl. 51-424.000.

Landmesser, John E.: *See—*
Douglas, Alan D.; Reilly, Kenneth T.; Landmesser, John E.; Landry, Richard E.; and MacInnis, Martin B., 4,604,265, Cl. 423-49.000.

Landry, Richard E.: *See—*
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Laneus, Per, to JCC Construction Company AB. Method of blasting rock caverns with large cross-sectional area. 4,603,910, Cl. 299-13.000.

Lang, Theodore B.: *See—*
McFarland, Timothy M.; and Lang, Theodore B., 4,604,313, Cl. 428-172.000.

Lange, Gottfried: *See—*
Feigt, Ingmar; Feldtkeller, Ernst; and Lange, Gottfried, 4,604,634, Cl. 346-160.000.

Lange, Joachim: *See—*
Maier, Gerhard; and Lange, Joachim, 4,604,571, Cl. 324-77.00A.

Lange, Robert: *See—*
Hertell, Siegfried; and Lange, Robert, 4,604,041, Cl. 418-82.000.

Langenbahn, Albert. Combination padded security lock and carrier therefor. 4,603,895, Cl. 292-295.000.

La Plante, Mark T.: *See—*
Boughton, Matthew S.; and La Plante, Mark T., 4,603,875, Cl. 280-272.000.

Large, Michael S.: *See—*
Yellin, Tobias O.; Edwards, Philip N.; and Large, Michael S., 4,604,465, Cl. 544-326.000.

Latz, William J.; Mandler, Thomas J.; and Lai, Jason C. S., to Adaptive Micro Systems, Inc. Electronic display with lens matrix. 4,603,496, Cl. 40-547.000.

Laughlin, John R.; and Mucha, George M., to Tocco, Inc. Method and apparatus for heat treating camshafts. 4,604,510, Cl. 219-10.430.

Laurenceau, Serge: *See—*
Desprez, Marc; and Laurenceau, Serge, 4,604,123, Cl. 65-134.000.

Layh, Hans-Dieter. AC tacho-generator. 4,604,537, Cl. 310-68.00R.

Layher, Ulrich. Metal pipe scaffolding. 4,603,756, Cl. 182-178.000.

Lebed, Alexandr D.: *See—*
Ganago, Oleg A.; Safonov, Anatoly V.; Stepanov, Boris A.; Subich, Vadim N.; Frolov, Alexandr D.; Lobanov, Nikolai A.; Lumer, Yakov L.; Xenofontov, Alexei M.; Rudman, Leonid I.; Lebed, Alexandr D.; Mamatsashvili, Vasha I.; Kljuchnikov, Valery F.; Birkadze, Dzhemal I.; Shklyarman, Sergei S.; Gordeev, Nikolai A.; Golovin, Vasily Y.; Kruk, Alexandr T.; Yakovenko, Ivan F.; Novikov, Vladimir V.; Grishkov, Andrei M.; Gorozhankin, Valery N.; Svistunov, Vladmir E.; Bocharov, Jury A.; and Sergeev, Jury N., 4,603,573, Cl. 72-454.000.

LeBoeuf, Eugene A.: *See—*
Weaver, Leslie A., 4,603,908, Cl. 298-17.00R.

Lechner, Ernst F.; and Vache, Peter, to Siemens Aktiengesellschaft. Method and device for making a wrapped joint. 4,603,457, Cl. 29-33.00F.

Lecinski, Frank H., Jr.; and Thomas, William J., to Continental White Cap, Inc. Press-on closure for resealable glass finish. 4,603,786, Cl. 215-318.000.

Lee, Eldon C.; van Pottelsberghe de la Potterie, Pierre J.; and Tandy, John S., to Nestec S.A. Meat flavoring agents and process for preparing same. 4,604,290, Cl. 426-533.000.

Lee, Ho C.: *See—*
Helinski, Edward F.; and Lee, Ho C., 4,603,985, Cl. 400-167.000.

Lee, Woo G.: *See—*
Park, Jin Y.; O'Brien, Barry H.; and Lee, Woo G., 4,604,362, Cl. 436-34.000.

Legoupil, Jean-Luc: *See—*
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Legrand Industries Ltd.: *See—*
Siebold, Quentin R.; and Labuhn, Walter, 4,603,592, Cl. 74-41.000.

Le Guen, Annick; and Moutarde, Joseph. Installation for the production of cheeses. 4,603,623, Cl. 99-454.000.

Lehfeldt, Carl L.: *See—*
Smith, Ronald A.; Jackson, James M.; Lehfeldt, Carl L.; Cygnarowicz, Leonard P.; Moshfegh, Khosro; Blanchard, Kenneth L.; and Nelson, Kenneth J., 4,603,567, Cl. 72-8.000.

Lehman, Cris R.: *See—*
Nelson, Charles R.; and Lehman, Cris R., 4,603,661, Cl. 122-392.000.

Lehmann, Werner: *See—*
Markgraf, Wilhelm; Lehmann, Werner; and Fecker, Rainer, 4,603,848, Cl. 271-125.000.

Lehrman, David. Non-skid ironing board cover. 4,603,494, Cl. 38-140.000.

Leiber, Heinz; and Bertling, Hannes, to Robert Bosch GmbH. Hydraulic dual-circuit tandem master brake cylinder. 4,603,918, Cl. 303-6.00R.

Leitzke, Ortwin; and Wolf, Ewald, to Messer Griesheim GmbH. Process for producing ozone. 4,604,279, Cl. 423-581.000.

Le Jeune, Gwenole . Device for separating phases for rigid multiphase materials. 4,603,909, Cl. 299-7.000.

Leland Stanford Junior University, The Board of Trustees of the: *See—*
McGill, Kevin C.; and Dorfman, Leslie J., 4,603,703, Cl. 128-731.000.
Shaw, Herbert J.; Digonnet, Michel J. F.; Bergh, Ralph A.; Sorin, Wayne V.; and Kolner, Brian H., 4,603,940, Cl. 350-96.150.

Lemay, Richard A.: *See*—
Brown, Richard P.; Lemay, Richard A.; Steiner, G. Lewis; and Woods, William E., 4,604,685, Cl. 364-200.000.
Lemelson, Jerome H. Portable television camera and recording unit. 4,604,668, Cl. 360-10.100.
Leonard, Charles A.; Franko, Bernard V.; and Cale, Albert D., Jr., to A. H. Robins Company, Incorporated. Fused aromatic oxazepinones, thiazepinones, diazepinones and sulfur analogs thereof in a method of counteracting histamine. 4,604,388, Cl. 514-211.000.
Lesher, George Y.; and Singh, Baldev, to Sterling Drug Inc. 5-methyl(or ethyl)-1,6-naphthyridin-2(1H)-one 6-oxides, their preparation and the cardiotonic use thereof. 4,604,399, Cl. 514-300.000.
Lesniak, Thomas A., to McCord Heat Transfer Corporation. Means for retaining a radiator rigid. 4,604,015, Cl. 411-537.000.
Letoffe , Michel: *See*—
Donnadieu, Andre ; and Letoffe , Michel, 4,604,444, Cl. 528-34.000.
Leupold, Ernst I.: *See*—
Eichler, Klaus; and Leupold, Ernst I., 4,604,470, Cl. 549-81.000.
Levin, Robert E.; and English, George J., to GTE Products Corporation. Infrared floodlight. 4,604,680, Cl. 362-293.000.
Lew, Hyok S.; and Stranahan, Michael. Geodesically reinforced honeycomb structures. 4,603,519, Cl. 52-81.000.
Lew, Hyok S.; and Stranahan, Michael. Common apex double cone variable speed mechanical transmission. 4,603,595, Cl. 74-191.000.
Lewicki, Walter J., Jr.: *See*—
Creighton, Thomas C.; Dorsey, William C.; Lewicki, Walter J., Jr.; Long, Harry F.; and Ringer, Richard M., 4,604,312, Cl. 428-137.000.
Lewis, Gainer R. Electronic security system for externally powered devices. 4,604,708, Cl. 364-900.000.
Lewis, Henry G., Jr., to RCA Corporation. Coarse/fine automatic chrominance gain control using a gain adjustable IF amplifier in a digital television receiver. 4,604,645, Cl. 358-27.000.
Ley, Gregor: *See*—
Ammermann, Eberhard; Buschmann, Ernst; Ley, Gregor; and Pommer, Ernst-Heinrich, 4,604,429, Cl. 525-326.600.
Li, Wai Sau: *See*—
Chan, Lo Kwan; and Li, Wai Sau, 4,603,803, Cl. 228-4.500.
Lieberth, Karl, to Electrovac, Fabrikation elektronischer Spezialartikel Gesellschaft m.b.H. Device for regulating or limiting at least one temperature value or a temperature range of radiation or contact heaters of electric cooking apparatus. 4,603,981, Cl. 374-210.000.
Liedtke, Kurt: *See*—
Focke, Heinz; and Liedtke, Kurt, 4,603,800, Cl. 226-119.000.
Liggett, John V., to Rockwell International Corporation. Brake proportioning system. 4,603,921, Cl. 303-6.00C.
Lillie, Christian: *See*—
Reiffen, Manfred; Noll, Klaus; Heider, Joachim; Austel, Volkhard; Hauel, Norbert; Kobinger, Walter; and Lillie, Christian, 4,604,389, Cl. 514-213.000.
Lim, Basilio Y. Combination of a laser and a controller for trimming a metallized dielectric film capacitor. 4,604,513, Cl. 219-121.0LA.
Lin, Albert M., to AT&T Bell Laboratories. Controlled boron doping of silicon. 4,604,150, Cl. 148-188.000.
Lin, Chung-Yuan, to Dow Chemical Company, The. Method for removing cyclic phosphorus contaminants from organic substrates. 4,604,210, Cl. 210-690.000.
Lin, Tai-Shun; and Prusoff, William H., to Research Corporation. 3'-amino-2',3'-dideoxycytidine and the pharmacologically acceptable salts thereof. 4,604,382, Cl. 514-49.000.
Linde Aktiengesellschaft: *See*—
Burr, Peter S., 4,604,107, Cl. 55-17.000.
Halbmann, Manfred, 4,603,557, Cl. 62-255.000.
Linder, Charles; and Perry, Mordechai, to Aligena AG. Porous, semipermeable membranes of chemically modified cellulose acetate. 4,604,204, Cl. 210-490.000.
Lindsay, James H.: *See*—
Liu, Sonya W.; and Lindsay, James H., 4,604,168, Cl. 204-30.000.
Lindsey, Hiram E., Jr., to MWL Tool & Supply Company. Hydraulic/-mechanical setting tool and liner hanger. 4,603,743, Cl. 166-382.000.
Lintunen, Tuomo, to Enso-Gutzeit Oy. Filter press for thickening cellulose pulp or sludge. 4,604,195, Cl. 210-131.000.
Lippert, Thomas E.: *See*—
Ciliberti, David F.; and Lippert, Thomas E., 4,604,112, Cl. 55-117.000.
Littelfuse, Inc.: *See*—
Borzoni, John, 4,604,602, Cl. 337-264.000.
Littlebury, Hugh; and Swapp, Mavin, to Motorola Inc. Automated circuit tester. 4,604,744, Cl. 371-20.000.
Littleton, Floyd B., Jr.: *See*—
Nall, Kenneth L.; and Littleton, Floyd B., Jr., 4,603,626, Cl. 100-215.000.
Liu, Peter D. Transmission enhancing coating. 4,604,297, Cl. 427-64.000.
Liu, Ping Y., to General Electric Company. Composition. 4,604,423, Cl. 524-508.000.
Liu, Sonya W.; and Lindsay, James H., to General Motors Corporation. Pretreatment for electroplating mineral-filled nylon. 4,604,168, Cl. 204-30.000.
Liukko, Lasse. Method of making a stitched and bonded seam. 4,604,152, Cl. 156-93.000.
Livesey, James R.; Hart, William; and Hartleben, Harold A., to Mattel, Inc. Take-apart rocking stack toy. 4,604,073, Cl. 446-117.000.
Llanos, Orestes L. Mousetrap. 4,603,504, Cl. 43-76.000.
Lobanov, Nikolai A.: *See*—
Ganago, Oleg A.; Safonov, Anatoly V.; Stepanov, Boris A.; Subich, Vadim N.; Frolov, Alexandr D.; Lobanov, Nikolai A.; Lumer, Yakov L.; Xenofontov, Alexei M.; Rudman, Leonid I.; Lebed, Alexandr D.; Mamatsashvili, Vasha I.; Kljuchnikov, Valery F.; Birkadze, Dzhemal I.; Shklyarman, Sergei S.; Gordeev, Nikolai A.; Golovin, Vasily Y.; Kruk, Alexandr T.; Yakovenko, Ivan F.; Novikov, Vladimir V.; Grishkov, Andrei M.; Gorozhankin, Valery N.; Svistunov, Vladmir E.; Bocharov, Jury A.; and Sergeev, Jury N., 4,603,573, Cl. 72-454.000.
Lockheed Electronics Company, Inc.: *See*—
Strenkowski, John G.; and Yang, John P., 4,604,582, Cl. 328-55.000.
Loctite Corporation: *See*—
Humphreys, Robert W. R., 4,604,295, Cl. 427-54.100.
Loevinger, Richard. Heated railroad tank car. 4,603,733, Cl. 165-41.000.
Long, Harry F.: *See*—
Creighton, Thomas C.; Dorsey, William C.; Lewicki, Walter J., Jr.; Long, Harry F.; and Ringer, Richard M., 4,604,312, Cl. 428-137.000.
Long, John V.: *See*—
Gagliani, John; and Long, John V., 4,604,409, Cl. 521-157.000.
Long, Robert A.: *See*—
Czupryna, Gary; Natansohn, Samuel; Long, Robert A.; and Munn, Robin W., 4,604,273, Cl. 423-344.000.
Loose, Richard D.; and Struck, Joseph W., to General Motors Corporation. Seat belt retractor. 4,603,819, Cl. 242-107.40A.
Lopez, Jairo: *See*—
Klaus, Irving; Herbstman, Warren; and Lopez, Jairo, 4,604,059, Cl. 433-217.100.
L'Oreal: *See*—
Grollier, Jean-Francois; and Allec, Josiane, 4,604,282, Cl. 424-74.000.
Lorient Polyproducts Ltd.: *See*—
Mann, Robert, 4,603,524, Cl. 52-232.000.
Loskot, Stefan: *See*—
Kratel, Gunter; and Loskot, Stefan, 4,604,272, Cl. 423-343.000.
Louboutin, Robert; and Gibaud, Jean, to Degremont. Submerged filter filled with granular material. 4,604,197, Cl. 210-150.000.
Louie, Kenneth: *See*—
Mlinar, Mitchell J.; Louie, Kenneth; and Piotrowski, Wieslaw S., 4,604,590, Cl. 333-1.100.
Louis, George A., to United States of America, Energy. Fuel cell separator plate with bellows-type sealing flanges. 4,604,331, Cl. 429-35.000.
Loveless, John H.: *See*—
Seamone, Woodrow; and Loveless, John H., 4,604,098, Cl. 623-60.000.
Lowenthal, Douglas H.: *See*—
Rahn, Kenneth A.; and Lowenthal, Douglas H., 4,603,575, Cl. 73-28.000.
Lowery, Archie J. Pendant line connecting link. 4,604,002, Cl. 405-224.000.
Lowrie, Neely E.; and Rooker, Mitchel L., to Combustion Engineering, Inc. Marine separator for fluids of different densities. 4,604,196, Cl. 210-136.000.
Lozinski, Gerald J.: *See*—
Toutant, Roy T.; and Lozinski, Gerald J., 4,604,715, Cl. 364-513.000.
Lubrizol Corporation, The: *See*—
Bryant, Charles P.; and Gerdes, Harold M., 4,604,221, Cl. 252-51.50A.
Lucas Industries public limited company: *See*—
Bernd-Holger, Rohling, 4,603,761, Cl. 188-73.450.
Lucasfilm Ltd.: *See*—
Abbott, Curtis W., 4,604,687, Cl. 364-200.000.
Luckow, Herbert: *See*—
Grosse-Wordemann, Josef; and Luckow, Herbert, 4,604,511, Cl. 219-76.140.
Luegering, Gregory J., to Insta-Foam Products, Inc. Double back spray nozzle. 4,603,813, Cl. 239-399.000.
Luhleich, Hartmut; and Dias, Francisco J., to Kernforschungsanlage Julich GmbH. Method of producing composite armor plate bodies. 4,604,249, Cl. 264-29.500.
Lukach, Carl; and Sun, Shao-Tang, to Hercules Incorporated. Gelled aqueous compositions. 4,604,217, Cl. 252-8.55R.
Lumer, Yakov L.: *See*—
Ganago, Oleg A.; Safonov, Anatoly V.; Stepanov, Boris A.; Subich, Vadim N.; Frolov, Alexandr D.; Lobanov, Nikolai A.; Lumer, Yakov L.; Xenofontov, Alexei M.; Rudman, Leonid I.; Lebed, Alexandr D.; Mamatsashvili, Vasha I.; Kljuchnikov, Valery F.; Birkadze, Dzhemal I.; Shklyarman, Sergei S.; Gordeev, Nikolai A.; Golovin, Vasily Y.; Kruk, Alexandr T.; Yakovenko, Ivan F.; Novikov, Vladimir V.; Grishkov, Andrei M.; Gorozhankin, Valery N.; Svistunov, Vladmir E.; Bocharov, Jury A.; and Sergeev, Jury N., 4,603,573, Cl. 72-454.000.
Lund, Gary K., to Dow Chemical Company, The. Catalyst prepared from organomagnesium compound, epihalohydrin reducing halide source and transition metal compound. 4,604,374, Cl. 502-115.000.
Lundberg, Michael R.: *See*—
Brown, Sanford S.; Hunsberger, Dennis J.; and Lundberg, Michael R., 4,604,500, Cl. 179-18.0ES.
Luoma, Eugene H. Bow drawback mechanism. 4,603,676, Cl. 124-25.000.
Luthra, Ajay K.; Kassam, Saleem; and Bernardi, Richard B., to Interspec, Inc. Body imaging using vectorial addition of acoustic reflection to achieve effect of scanning beam continuously focused in range. 4,604,697, Cl. 364-414.000.

Lutz, Irvin H.; and Wilson, Thomas M., to DM International Inc. Process for upgrading residuums by combined donor visbreaking and coking. 4,604,186, Cl. 208-50.000.

Luukkala, Mauri: *See—*
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Luz, Rudolf; and Gartner, Gunter, to Rieter Machine Works, Ltd. Bobbin inserting device. 4,603,818, Cl. 242-35.50A.

Lyons, George W., Jr., to Bilco Company, The. Corner patch support. 4,603,517, Cl. 52-60.000.

M.A.N. Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft: *See—*
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M.A.N.-Roland Druckmaschinen Aktiengesellschaft: *See—*
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Simeth, Claus, 4,603,631, Cl. 101-229.000.

MacDonald, Margaret H.: *See—*
MacDonald, Richard, 4,603,502, Cl. 43-41.000.

MacDonald, Richard, to MacDonald, Margaret H. Fishing lure assembly. 4,603,502, Cl. 43-41.000.

Machart, Ronald C., Jr., to IGC, Inc. Fluid filter with uniform spacing. 4,604,200, Cl. 210-314.000.

Machida, Kaoru, to Kabushiki Kaisha Toshiba. Ultrasonic flowmeter. 4,603,589, Cl. 73-861.280.

MacInnis, Martin B.: *See—*
Douglas, Alan D.; Reilly, Kenneth T.; Landmesser, John E.; Landry, Richard E.; and MacInnis, Martin B., 4,604,265, Cl. 423-49.000.

Mackenzie, Peter B., to Can-Eng Holdings, Ltd. Lip-hung retort furnace. 4,604,055, Cl. 432-58.000.

MacLeay, Ronald E., to Pennwalt Corporation. Process of preparing azoalkane mixture containing at least one unsymmetrical azoalkane. 4,604,455, Cl. 534-587.000.

Maebayashi, Jiro: *See—*
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Maggi, Carlo Alberto: *See—*
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Mahajan, Gautam K.: *See—*
Krishnakumar, Suppayan M.; Friendship, Kenneth F. M.; Mahajan, Gautam K.; and Pocock, John F. E., 4,603,831, Cl. 249-144.000.

Mahant-Shetti, Shivaling S.: *See—*
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Mahle GmbH: *See—*
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Maier, Gerhard; and Lange, Joachim, to Deutsche Thomson-Brandt GmbH. Circuit for the determination of voltage extrema. 4,604,571, Cl. 324-77.00A.

Majerus, Norbert: *See—*
Greenwood, Alan; and Majerus, Norbert, 4,604,256, Cl. 264-501.000.

Makarov, Nikolai P.: *See—*
Shaginian, Albert S.; Asan-Dzhalalov, Alexei G.; Pevnev, Anatoly A.; Androsenko, Alexandr P.; Suvorov, Alexandr V.; Khalitov, Boris V.; Palkin, Leonid N.; Gnatchenko, Viktor V.; Makarov, Nikolai P.; Panteleev, Valery A.; Davidenko, Nikolai I.; Shpilevsky, Stanislav K.; Tikhonenko, Alexandr S.; and Romanovsky, Anatoly G., 4,604,724, Cl. 364-478.000.

Makihara, Norimitsu: *See—*
Inagaki, Syoji; Sanpe, Hideyuki; and Makihara, Norimitsu, 4,604,560, Cl. 318-567.000.

Makimura, Osamu: *See—*
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Makino, Tetsuo: *See—*
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Maloney, Kevin, to Cosco, Inc. Foldable high chair. 4,603,902, Cl. 297-35.000.

Malpass, Gerald D., Jr., to Hercules Incorporated. Halogen-free, high flash point reactant solution. 4,604,447, Cl. 526-189.000.

Mamatsashvili, Vasha I.: *See—*
Ganago, Oleg A.; Safonov, Anatoly V.; Stepanov, Boris A.; Subich, Vadim N.; Frolov, Alexandr D.; Lobanov, Nikolai A.; Lumer, Yakov L.; Xenofontov, Alexei M.; Rudman, Leonid I.; Lebed, Alexandr D.; Mamatsashvili, Vasha I.; Kljuchnikov, Valery F.; Birkadze, Dzhemal I.; Shklyarman, Sergei S.; Gordeev, Nikolai A.; Golovin, Vasily Y.; Kruk, Alexandr T.; Yakovenko, Ivan F.; Novikov, Vladimir V.; Grishkov, Andrei M.; Gorozhankin, Valery N.; Svistunov, Vladmir E.; Bocharov, Jury A.; and Sergeev, Jury N., 4,603,573, Cl. 72-454.000.

Manabe, Seiichi; Iwata, Michitaka; and Inoue, Mamoru, to Asahi Kasei Kogyo Kabushiki Kaisha. Porous regenerated cellulose hollow fiber and process for preparation thereof. 4,604,326, Cl. 428-398.000.

Manchester R & D Partnership: *See—*
Fergason, James L., 4,603,945, Cl. 350-331.00R.

Mandler, Thomas J.: *See—*
Latz, William J.; Mandler, Thomas J.; and Lai, Jason C. S., 4,603,496, Cl. 40-547.000.

Mann, Joseph M., to International Harvester Company. Vapor emitting wear indicator. 4,604,604, Cl. 340-52.00A.

Mann, Robert, to Lorient Polyproducts Ltd. Fire resistant glazing system. 4,603,524, Cl. 52-232.000.

Manton, John C.; Bruckert, William F.; and Dellicicchi, Alfred J., to Digital Equipment Corporation. Pipeline error correction. 4,604,750, Cl. 371-38.000.

Manunta, Giorgio: *See—*
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Mar-Mex International, Ltd.: *See—*
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Marathon Corporation: *See—*
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Marathon Oil Company: *See—*
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Marchal, Bernard: *See—*
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Marcon Electronics Co., Ltd.: *See—*
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Marconi Company Limited, The: *See—*
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McGann, Melvyn, 4,604,589, Cl. 332-37.00R.

Marianelli, Giorgio: *See—*
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Marinaccio, Paul J.: *See—*
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Markert, Helmut: *See—*
von Gentzkow, Wolfgang; Hodl, Maximilian; Kleeberg, Wolfgang; and Markert, Helmut, 4,604,314, Cl. 428-209.000.

Markfelder, Gunter: *See—*
Hofmann, Heinrich; and Markfelder, Gunter, 4,603,983, Cl. 384-512.000.

Markgraf, Wilhelm; Lehmann, Werner; and Fecker, Rainer, to Mathias Bauerle GmbH. Sheet separator including passage gap adjusting mechanism for separating sheets of various thicknesses from a stack of sheets. 4,603,848, Cl. 271-125.000.

Marotta, Joseph J., to Xerox Corporation. Toner bottle for copier/-printing machines. 4,603,714, Cl. 141-383.000.

Marr, Robert: *See—*
Wynnyckyj, John R.; Rhodes, Edward; and Marr, Robert, 4,603,660, Cl. 122-379.000.

Mars Incorporated: *See—*
Cowles, John C., 4,604,557, Cl. 318-98.000.

Martin, Carl J.: *See—*
Carr, Richard V. C.; Martin, Carl J.; Gonzalez, Roland; and Albanese, Thomas A., 4,604,214, Cl. 210-759.000.

Martin, Donald A.: *See—*
Merrill, Thomas A.; and Martin, Donald A., 4,604,538, Cl. 310-68.00D.

Martin Marietta Corporation: *See—*
Reiter, Bernadette G.; Castor, John W.; Blume, R. J. Carter; Schewe, Roy A.; and Shepley, Leonard D., 4,604,686, Cl. 364-200.000.

Martinek, Thomas W., to Teepak, Inc. Sausage casing automatic closing method. 4,604,085, Cl. 493-259.000.

Martinelli, Giuseppe. Device for maintaining a constant oil level. 4,603,666, Cl. 123-196.00S.

Martinez Llaneza, Manuel, to Investronica, S.A. Machine for continuously perforating wide paper. 4,603,630, Cl. 101-227.000.

Maruyama, Shigeyuki: *See—*
Horiuchi, Akinori; Binnaka, Toshio; and Maruyama, Shigeyuki, 4,604,572, Cl. 324-158.00F.

Maruyama, Yuji; and Horinishi, Katsumi, to West Electric Company, Ltd. Automatic electronic flash. 4,603,958, Cl. 354-414.000.

Mary A. Thomas, executrix: *See—*
Thomas, Robert H., deceased; Mary A. Thomas, executrix; Hammond, Willis B.; Friedberger, Michael P.; and Archie, William A., 4,604,316, Cl. 428-265.000.

Mashimo, Satoshi; Tanaka, Masayuki; Yamaguchi, Yoshio; and Kinoshita, Takashi, to Mitsuboshi Belting Ltd. Toothed belt. 4,604,081, Cl. 474-205.000.

Masonite Corporation: *See—*
Prior, William L.; and Sargeant, William C., 4,604,318, Cl. 428-289.000.

Massachusetts Institute of Technology: *See—*
Bell, Eugene; and Dubertret, Louis, 4,604,346, Cl. 435-1.000.

Masteller, Sara B.: *See—*
Fujawa, Charles S.; and Masteller, Sara B., 4,604,701, Cl. 364-431.010.

Masuda, Tsugunori: *See—*
Takeda, Kota; and Masuda, Tsugunori, 4,603,804, Cl. 228-40.000.

Matano, Masaharu: *See—*
Yamashita, Tsukasa; Inoue, Nobuhisa; Mori, Kazuhiko; and Matano, Masaharu, 4,604,707, Cl. 364-822.000.

Matesa, Joseph M.: *See—*
Demarest, Henry M., Jr.; Matesa, Joseph M.; and Kunkle, Gerald E., 4,604,121, Cl. 65-27.000.

Mathias Bauerle GmbH: *See—*
Markgraf, Wilhelm; Lehmann, Werner; and Fecker, Rainer, 4,603,848, Cl. 271-125.000.

Mathiesen, Lars. Separable piece of furniture. 4,603,906, Cl. 297-440.000.

Matilainen, Aarre; and Luukkala, Mauri. Procedure and means for measuring the internal friction of liquid substances. 4,603,979, Cl. 374-54.000.

Matsuda, Hideo, to Kabushiki Kaisha Toshiba. Five layer semiconductor device with separate insulated turn-on and turn-off gates. 4,604,638, Cl. 357-23.400.

Matsuda, Naotoshi; and Tamatani, Masaaki; to Tokyo Shibaura Denki Kabushiki Kaisha. Orange-yellow emitting phosphor and cathode-ray tube employing the same. 4,604,549, Cl. 313-468.000.

Matsuda, Yoichi: *See*—
Murakami, Kanji; Akahoshi, Haruo; Kawamoto, Mineo; Wajima, Motoyo; Matsuda, Yoichi; Kawakubo, Kyoji; Kanechiku, Minoru; Yoshimura, Toyofusa; and Matsunaga, Makoto, 4,604,160, Cl. 156-630.000.

Matsui, Shougo, to Fujitsu Limited. Reticle used in semiconductor device fabrication and a method for inspecting a reticle pattern thereon. 4,603,974, Cl. 356-394.000.

Matsumoto, Akio: *See*—
Yokota, Mitsuyoshi; Matsumoto, Akio; and Morishita, Mitsuharu, 4,604,565, Cl. 320-15.000.

Matsumoto, Hiroaki, to Canon Kabushiki Kaisha. Recorder transport for perforating and cutting operations. 4,604,632, Cl. 346-24.000.

Matsumoto, Shusaku: *See*—
Yada, Akira; Matsumoto, Shusaku; Kawamori, Yoshihiro; Saito, Takao; Nishiyama, Tadashi; and Adachi, Yoshitugu, 4,604,411, Cl. 522-14.000.

Matsumura, Hiroyoshi; Katsuyama, Toshio; Ohta, Norio; Suganuma, Tsuneo; Nagatsuma, Kazuyuki; and Sugita, Yutaka, to Hitachi, Ltd. Temperature-compensated magnetic field measuring instrument. 4,604,577, Cl. 324-244.000.

Matsunaga, Makoto: *See*—
Murakami, Kanji; Akahoshi, Haruo; Kawamoto, Mineo; Wajima, Motoyo; Matsuda, Yoichi; Kawakubo, Kyoji; Kanechiku, Minoru; Yoshimura, Toyofusa; and Matsunaga, Makoto, 4,604,160, Cl. 156-630.000.

Matsunata, Yuso, to Mitsubishi Jukogyo Kabushiki Kaisha. Method of compensating a profiling direction of a profiling machine. 4,603,487, Cl. 33-551.000.

Matsuno, Mitsuo: *See*—
Yuasa, Hitoshi; Matsuno, Mitsuo; and Imai, Hirosuke, 4,604,490, Cl. 585-21.000.

Matsuoka, Hideoki, to Nissan Motor Co., Ltd. Steering system equipped with steering wheel center pad anti-rotation mechanism. 4,603,599, Cl. 74-492.000.

Matsushita Electric Industrial Co., Ltd.: *See*—
Yano, Nobuyuki; Inami, Takashi; Ieki, Mitsuru; and Wakai, Masao, 4,603,460, Cl. 29-157.30V.

Matsushita-Electric Works, Ltd.: *See*—
Akiba, Osamu; Suzuki, Yoshiharu; Terada, Motoharu; and Saeki, Takashi, 4,604,618, Cl. 340-825.060.
Yokoyama, Yoichi; and Kondo, Hideya, 4,604,596, Cl. 335-14.000.

Matsushita Seiko Co., Ltd.: *See*—
Yano, Nobuyuki; Inami, Takashi; Ieki, Mitsuru; and Wakai, Masao, 4,603,460, Cl. 29-157.30V.

Matsutoh, Takushi; Wakatsuki, Goroei; Kitamura, Yoshitaka; and Ishihara, Takeo, to Honda Giken Kogyo Kabushiki Kaisha. Drive system for engine-driven light vehicles. 4,603,754, Cl. 180-221.000.

Matsuura, Ryoichi: *See*—
Otsuki, Hiromi; Matsuura, Ryoichi; Fujinami, Hiroshi; Hori, Shinichi; Nomura, Yoshihisa; and Oka, Hiroyuki, 4,603,920, Cl. 303-10.000.

Matsuyama, Yuziro: *See*—
Kuze, Katsuaki; Matsuyama, Yuziro; Yamaoka, Yoshio; Murashige, Ryuichi; and Makimura, Osamu, 4,604,453, Cl. 528-481.000.

Mattel, Inc.: *See*—
Livesey, James R.; Hart, William; and Hartleben, Harold A., 4,604,073, Cl. 446-117.000.
St. Pierre, Raymond M., 4,604,076, Cl. 446-418.000.

Mattell, Inc.: *See*—
Engle, T. Scott; and Poznick, Jeffrey B., 4,604,074, Cl. 446-171.000.

Matz, Gary F., to Calgon Corporation. Use of copolymers of carboxylic monomer and betaine-containing monomer as corrosion and scale inhibitors. 4,604,212, Cl. 210-700.000.

Maxwell, Eugene O. Helicopter ground handling wheel assembly. 4,603,869, Cl. 280-11.000.

Maxwell, Gary L.: *See*—
Borcherdt, Roger D.; Fletcher, Jon P.; Warrick, Richard E.; Maxwell, Gary L.; Jensen, Edward G.; and Schaack, John V., 4,604,699, Cl. 364-420.000.

May & Baker Limited: *See*—
Collins, Raymond F.; Ramsden, Christopher A.; Saunders, Libert C.; and Warne, Peter J., 4,604,400, Cl. 514-300.000.

Mayer, Rayner M., to British Petroleum Company p.l.c., The. Apparatus for containing an energy storage flywheel. 4,603,555, Cl. 60-721.000.

Mayfield, Terry D.; and Kendrick, William D., to Halliburton Company. Rigid adjustable length assembly. 4,603,887, Cl. 285-32.000.

Mazda Motor Corporation: *See*—
Hiraoka, Shin; Asanomi, Koji; and Abe, Ryoji, 4,603,673, Cl. 123-573.000.
Kijima, Takao; and Maebayashi, Jiro, 4,603,882, Cl. 280-701.000.

Maziasz, Daniel E. Three-dimensional fireplace insert. 4,603,682, Cl. 126-120.000.

McAdams, Michael J. Receptacle for mounting in a freezer for assisting in the defrosting thereof. 4,603,558, Cl. 62-272.000.

McArdel, Richard C., to Boeing Company, The. Wing slat anti-ice air duct system with improved slide bearings and air seal. 4,603,824, Cl. 244-134.00B.

McCall, Clyde A.; Campbell, Michael J.; and Dean, William B., to Chicopee. High bulk, biaxial elastic, heat shrunk fabric. 4,604,315, Cl. 428-230.000.

McConaghy, James R., Jr.; and Anderson, Ardis L., to Conoco Inc. Co-processing of straight run vacuum resid and cracked residua. 4,604,185, Cl. 208-56.000.

McCord Heat Transfer Corporation: *See*—
Lesniak, Thomas A., 4,604,015, Cl. 411-537.000.

McCorkle, Richard A.: *See*—
Becker, Alan R.; McCorkle, Richard A.; Miller, Robert A.; and Plessl, Gary J., 4,604,027, Cl. 414-749.000.

McCormack, John F.: *See*—
De Luca, Michael A.; and McCormack, John F., 4,604,299, Cl. 427-98.000.

McCorquodale, Robert P., to Kenox Corporation. Wet oxidation system. 4,604,215, Cl. 210-762.000.

McCulloch Corporation: *See*—
Jackson, Robert V., 4,603,664, Cl. 123-149.00D.

McDonie, Arthur F.; and Faulkner, Richard D., to RCA Corporation. Photomultiplier tube having a high resistance dynode support spacer anti-hysteresis pattern. 4,604,545, Cl. 313-105.0CM.

McFarland, Timothy M.; and Lang, Theodore B., to Kimberly-Clark Corporation. Selective layering of superabsorbents in meltblown substrates. 4,604,313, Cl. 428-172.000.

McGann, Melvyn, to Marconi Company Limited, The. High frequency circuit. 4,604,589, Cl. 332-37.00R.

McGill, Kevin C.; and Dorfman, Leslie J., to Leland Stanford Junior University, The Board of Trustees of the. Method for real-time detection and identification of neuroelectric signals. 4,603,703, Cl. 128-731.000.

McGlade, Stuart M.: *See*—
Davies, George G.; McGlade, Stuart M.; and Dunn, Peter L., 4,604,725, Cl. 364-900.000.

McGuire, Kathleen M.: *See*—
Beckham, Keith F.; Kolman, Anne E.; McGuire, Kathleen M.; Puttlitz, Karl J.; and Quinones, Horatio, 4,604,644, Cl. 357-80.000.

McIntosh, Kenneth B.; and Howard, Clyde. Liftable top for pickup trucks. 4,603,901, Cl. 296-165.000.

McKee, Bruce C.; and Ross, Mitchell S. Ski board having angularly adjustable binding. 4,604,070, Cl. 441-70.000.

McKeighan, Ronald E.: *See*—
Hwang, Juin-Jet; McKeighan, Ronald E.; and Jaeger, Paul M., 4,603,702, Cl. 128-660.000.

McKiernan, Patrick N., to Goodyear Tire & Rubber Company, The. Method of making a multi-layered pressure hose utilizing internal fluid pressure. 4,604,155, Cl. 156-287.000.

McLaren, John W.: *See*—
Stoesser, Paul R.; Cuzic, John E.; and McLaren, John W., 4,603,812, Cl. 239-329.000.

McNeill, Samuel J., to Schwend, Fred N., a part interest. Wheel for shopping cart or the like. 4,603,871, Cl. 280-33.99C.

Medlin, Lewis B., Sr. Extension bracket for mounting electrical outlet box. 4,603,789, Cl. 220-3.900.

Medtronic, Inc.: *See*—
Cross, Thomas E., Jr.; and Hults, Gerald J., 4,603,696, Cl. 128-419.00P.

Medwed, Emmerich, to Multivac Sepp Haggenmuller KG. Packaging machine. 4,603,541, Cl. 53-561.000.

Mehltretter, James C.; Woodard, Winfred L., III; Orlando, John J.; and Goodrich, Charles B., to Inco Alloys International, Inc. System for discharging rotary mills. 4,603,814, Cl. 241-30.000.

Meilus, Albert A.: *See*—
Dressler, Hans; and Meilus, Albert A., 4,604,491, Cl. 585-26.000.

Meins, Juergen: *See*—
Miller, Luitpold; Knoll, Helmut; and Meins, Juergen, 4,603,640, Cl. 104-282.000.

Meister, Klaus: *See*—
Meyers, Pierre; and Meister, Klaus, 4,604,605, Cl. 340-365.00R.

Melbye, Kenneth M., to Kroy Inc. Method of manufacturing figures from a laminated tape and applying the same to a desired medium. 4,604,153, Cl. 156-235.000.

Meli, Alberto: *See*—
Pestellini, Vittorio; Ghelardoni, Mario; Maggi, Carlo Alberto; Roncucci, Gabrio; and Meli, Alberto, 4,604,392, Cl. 514-227.000.

Mentrup, Anton: *See*—
Koppe, Herbert; Mentrup, Anton; Renth, Ernst-Otto; Schromm, Kurt; Hoefke, Wolfgang; and Muaceic, Gojko, 4,604,468, Cl. 548-305.000.

Mercado, Clara G.: *See*—
Deckner, George E.; Mercado, Clara G.; and Krog, Ann M., 4,604,281, Cl. 424-59.000.

Merchant, Gulamabbas A.: *See*—
Thadani, Suresh G.; and Merchant, Gulamabbas A., 4,604,581, Cl. 324-339.000.

Merck & Co., Inc.: *See*—
Cragoe, Edward J., Jr.; and Woltersdorf, Otto W., Jr., 4,604,396, Cl. 514-256.000.
Cragoe, Edward J., Jr.; and Woltersdorf, Otto W., Jr., 4,604,403, Cl. 514-425.000.
Kaczorowski, Gregory J.; and Siegl, Peter K. S., 4,604,394, Cl. 514-255.000.

Merlin Gerin: *See*—
Barrault, Michel R., 4,604,576, Cl. 324-208.000.

Merrill, Darrell L. Hitch-borne vehicle transport. 4,603,874, Cl. 280-402.000.

Merrill, Thomas A.; and Martin, Donald A., to General Motors Corporation. Air cooling for diode-rectified alternating current generators. 4,604,538, Cl. 310-68.00D.
Meschke, Juergen, to Mar-Mex International, Ltd. Rappel line clamp and harness. 4,603,755, Cl. 182-5.000.
Messer Griesheim GmbH: *See—*
Leitzke, Ortwin; and Wolf, Ewald, 4,604,279, Cl. 423-581.000.
Metz, Bruce E., to Athena Controls Inc. Cascaded arrangement for electrically heating fluids to high temperature. 4,604,516, Cl. 219-379.000.
Metzeler Kautschuk GmbH: *See—*
Hundt, Werner; and Wagner, Bernd, 4,603,997, Cl. 403-228.000.
Meyer, Hans; and Hartmann, Viggo E., to A/S Kaj Neckelmann, Syntetisk Fiber Industri. Bobbin supporting textile strands to be subjected to a heat and/or wet treatment. 4,603,562, Cl. 68-198.000.
Meyer, William D. Tiltable game pieces for use with board games. 4,603,863, Cl. 273-282.000.
Meyers, George; and Mueller, David C., to Garber Company, The. Glassware package. 4,603,779, Cl. 206-426.000.
Meyers, Pierre; and Meister, Klaus. Safety device for manually operable code generation. 4,604,605, Cl. 340-365.00R.
Mich, Thomas F.; Culbertson, Townley P.; and Domagala, John M., to Warner-Lambert Company. Antibacterial agents III. 4,604,401, Cl. 514-312.000.
Michalek, Jiri: *See—*
Wichterle, Otto; Trekoval, Jiri; Vacik, Jiri; and Michalek, Jiri, 4,604,440, Cl. 526-327.000.
Michel, Karl H.; and Kastner, Ralph E., to Eli Lilly and Company. Antibiotics. 4,604,239, Cl. 530-317.000.
Michigan Biotechnology Institute: *See—*
Zeikus, Joseph G.; and Hyun, Hyung-Hwan, 4,604,352, Cl. 435-42.000.
Michisita, Kazuo: *See—*
Suzuki, Go; and Michisita, Kazuo, 4,604,677, Cl. 361-393.000.
Micro Control Technology Limited: *See—*
Moir, Christopher I., 4,604,526, Cl. 250-561.000.
Middleton, Frederic H.; Mollenhoff, David V.; Taylor, Theodore L.; and Vaughn, Thomas N., to MTV Associates. Rotary electric toothbrush. 4,603,448, Cl. 15-22.00R.
Middleton, Harold G. Inertial dynamometer system and method for measuring and indicating gross horsepower. 4,603,582, Cl. 73-511.000.
Mifune, Hiroyuki: *See—*
Sugimoto, Tadao; Ikeda, Hideo; Mifune, Hiroyuki; and Nakamura, Koki, 4,604,339, Cl. 430-244.000.
Mikina, Stanley J. Drum brake with negative feedback for brake shoe friction compensation. 4,603,763, Cl. 188-334.000.
Mikina, Stanley J. Vehicle suspension. 4,603,881, Cl. 280-675.000.
Mikiya, Toshio: *See—*
Shoji, Mitihiro; and Mikiya, Toshio, 4,604,006, Cl. 408-76.000.
Miles, Kevin; M., to Miles, Micheal; Dubler, Alfred; Diebold, Rick; and Dubler, David. Dual-stream envelope feeder. 4,603,846, Cl. 271-2.000.
Miles Laboratories, Inc.: *See—*
Blake, Robert C., II, 4,604,356, Cl. 435-194.000.
Miles, Micheal: *See—*
Miles, Kevin; M., 4,603,846, Cl. 271-2.000.
Millard, Lance. Portable electronic insect controller. 4,603,505, Cl. 43-112.000.
Miller, Luitpold; Knoll, Helmut; and Meins, Juergen, to Thyssen Industrie AG. Device for incrementally identifying the vehicle position of a magnet levitation vehicle. 4,603,640, Cl. 104-282.000.
Miller, Richard E. Thread vise. 4,603,605, Cl. 81-53.200.
Miller, Robert A.: *See—*
Becker, Alan R.; McCorkle, Richard A.; Miller, Robert A.; and Plessl, Gary J., 4,604,027, Cl. 414-749.000.
MIM Industries, Inc.: *See—*
Conley, Ralph F., Jr.; and Frye, Ricky F., 4,603,647, Cl. 112-129.000.
Mimura, Yoshiyuki; and Toda, Akitoshi, to Olympus Optical Co., Ltd. Electrophotographic color copying paper and copying method making use of the same. 4,604,337, Cl. 430-46.000.
Min, Young-Kee, to PT Components, Inc. Electronic switch for starting AC motor. 4,604,563, Cl. 318-786.000.
Minnesota Mining and Manufacturing Co.: *See—*
Kyle, Robert C., 4,604,203, Cl. 210-489.000.
Mirowski, Mieczyslaw: *See—*
Speicher, Vernon L.; and Bach, Stanley M., Jr., 4,603,705, Cl. 128-786.000.
Mirtich, Michael J.; Sovey, James S.; and Banks, Bruce A., to United States of America, National Aeronautics and Space Administration. Apparatus for producing oxidation protection coatings for polymers. 4,604,181, Cl. 204-298.000.
Mishima, Fumiyuki: *See—*
Takenoya, Hideaki; and Mishima, Fumiyuki, 4,603,988, Cl. 400-649.000.
Mitel Corporation: *See—*
Barsellotti, John A., 4,604,741, Cl. 370-69.100.
Mitomi, Mitchio: *See—*
Sugiura, Satoshi; Mitomi, Mitchio; and Suzuki, Hirokazu, 4,604,580, Cl. 324-311.000.
Mitsubishi Chemical Industries Limited: *See—*
Kitsukawa, Tomohiko; Kusano, Hiroshi; Miyata, Eiji; and Sugawara, Toyokazu, 4,604,483, Cl. 562-443.000.
Mitsubishi Denki Kabushiki Kaisha: *See—*
Fujii, Toshifumi, 4,604,656, Cl. 360-10.100.
Fuwa, Yasushi, 4,604,503, Cl. 200-11.0TC.
Imanishi, Kazuo, 4,604,705, Cl. 364-474.000.
Murasato, Shigeru; Nakanishi, Yuji; Fujiwara, Kenzou; Takeuchi, Norio; and Horita, Tsuyoshi, 4,604,541, Cl. 310-180.000.
Onishi, Ken; Ishida, Masayuki; Shirozu, Masakazu; Takedomi, Toshikatsu; Namekawa, Makoto; and Haikawa, Yukihiko, 4,604,747, Cl. 371-37.000.
Sakashita, Ryuji, 4,604,681, Cl. 364-183.000.
Yokota, Mitsuyoshi; Matsumoto, Akio; and Morishita, Mitsuharu, 4,604,565, Cl. 320-15.000.
Mitsubishi Jukogyo Kabushiki Kaisha: *See—*
Fujiwara, Haruyoshi; and Makino, Tetsuo, 4,604,164, Cl. 162-343.000.
Matsunata, Yuso, 4,603,487, Cl. 33-551.000.
Takahashi, Saburo, 4,603,893, Cl. 285-342.000.
Mitsubishi Petrochemical Company, Limited: *See—*
Sarumaru, Kohei; Shibano, Takeshi; Ishii, Yoichi; and Yamamoto, Etsuji, 4,604,370, Cl. 502-38.000.
Mitsubishi Rayon Company Ltd.: *See—*
Nakai, Yoshio; Yamauchi, Katsusuke; Kishimura, Masaaki; and Tateyama, Masamitsu, 4,604,416, Cl. 524-145.000.
Mitsuboshi Belting Ltd.: *See—*
Mashimo, Satoshi; Tanaka, Masayuki; Yamaguchi, Yoshio; and Kinoshita, Takashi, 4,604,081, Cl. 474-205.000.
Mizuno, Takahide, 4,604,080, Cl. 474-153.000.
Mitsuda, Yoshinobu; Inami, Tai; and Mori, Koji, to Pentel Kabushiki Kaisha. Ball-holder of a ball-point pen. 4,603,994, Cl. 401-209.000.
Mitsuhashi, Yoshinobu: *See—*
Fujii, Yoshimasa; Mitsuhashi, Yoshinobu; and Koike, Osamu, 4,603,941, Cl. 350-96.150.
Mitsuno, Tatsuyuki; Koyama, Teruhisa; and Ikezawa, Yuji, to Sumitomo Chemical Company, Limited. Polypropylene resin composition comprising talc having specified average diameter and particle size. 4,604,421, Cl. 524-449.000.
Mitutoyo Mfg. Co., Ltd.: *See—*
Sakagami, Seiji, 4,603,480, Cl. 33-125.00R.
Miyahara, Kousuke: *See—*
Kojima, Chiaki; Hasegawa, Kayoko; and Miyahara, Kousuke, 4,603,938, Cl. 350-3.720.
Miyake, Haruhisa; Suhara, Manabu; Sugaya, Yoshio; and Horie, Hirofumi, to Asahi Glass Company Ltd. Multi-layered diaphragm for electrolysis. 4,604,170, Cl. 204-98.000.
Miyaki, Masahiko: *See—*
Takemoto, Eiji; Miyaki, Masahiko; Norimatsu, Hideaki; Hobo, Nobuhito; Tsuzuki, Yoshihiko; and Konishi, Yoshimune, 4,603,669, Cl. 123-357.000.
Miyamoto, Junichi; and Saito, Shinji, to Tokyo Shibaura Denki Kabushiki Kaisha. Sense amplifier. 4,604,533, Cl. 307-530.000.
Miyamoto, Norioki: *See—*
Fujikura, Yoshiaki; Kajihara, Yasushi; Takaishi, Naotake; Inamoto, Yoshiaki; Kimura, Akio; Nakajima, Motoki; and Miyamoto, Norioki, 4,604,488, Cl. 568-820.000.
Miyamoto, Seigo: *See—*
Yanadori, Michio; and Miyamoto, Seigo, 4,604,223, Cl. 252-70.000.
Miyanaka, Masaki: *See—*
Hiroyasu, Minoru; Hashimoto, Hitoshi; Yamada, Susumu; Miyanaka, Masaki; and Koizumi, Hideharu, 4,603,456, Cl. 29-33.00P.
Miyasaka, Tadashi; Sawada, Seigo; Nokata, Kenichiro; Sugino, Eiichi; and Mutai, Masahiko, to Kabushiki Kaisha Yakult Honsha. Camptothecin derivatives and process for preparing same. 4,604,463, Cl. 544-125.000.
Miyata, Eiji: *See—*
Kitsukawa, Tomohiko; Kusano, Hiroshi; Miyata, Eiji; and Sugawara, Toyokazu, 4,604,483, Cl. 562-443.000.
Miyazaki, Takeshi; and Sugiyama, Kenji, to Toyoda Gosei Co., Ltd. Hose midway holder. 4,603,891, Cl. 285-205.000.
Miyoshi, Akito: *See—*
Okamoto, Miyoshi; Iijima, Hiromichi; and Miyoshi, Akito, 4,604,320, Cl. 428-290.000.
Mizoguchi, Takuo: *See—*
Aida, Akira; Ohno, Tetsu; Fukuda, Takashi; Aihara, Kenji; Mizoguchi, Takuo; Nishimura, Syozi; and Kajiyama, Katsuyoshi, 4,604,146, Cl. 148-12.00B.
Mizokawa, Sadao: *See—*
Hamada, Takuji; Takahashi, Masahiro; and Mizokawa, Sadao, 4,604,742, Cl. 370-89.000.
Mizoro, Tsuguo: *See—*
Oota, Koichi; and Mizoro, Tsuguo, 4,603,847, Cl. 271-10.000.
Mizuhara, Howard, to GTE Products Corporation. Ductile brazing alloy containing reactive metals and precious metals. 4,604,328, Cl. 428-606.000.
Mizuno, Takahide, to Mitsuboshi Belting Ltd. Toothed drive belt. 4,604,080, Cl. 474-153.000.
Mlinar, Mitchell J.; Louie, Kenneth; and Piotrowski, Wieslaw S., to TRW Inc. Microstrip circulator structure. 4,604,590, Cl. 333-1.100.
Mobil Oil Corporation: *See—*
Chen, Nai Y.; and Degnan, Thomas F., 4,604,261, Cl. 422-191.000.
Derbyshire, Francis J.; and Varghese, Philip, 4,604,189, Cl. 208-111.000.
Nahmias, A. Michael; and Park, Hee C., 4,604,324, Cl. 428-349.000.
Pistner, Timothy W., 4,604,084, Cl. 493-226.000.
Ruehle, William H., 4,604,734, Cl. 367-63.000.
Yan, Tsoung Y.; and Shu, Paul, 4,604,188, Cl. 208-106.000.

Mochida, Haruo; Shimizu, Keiichi; and Okuya, Shigetami, to Nissan Motor Co., Ltd.; and Kokusan Kinzoku Kogyo Kabushiki Kaisha. Magnetic door locking system. 4,603,563, Cl. 70-276.000.

Moeller, Charles P., to GA Technologies Inc. Cyclotron resonance maser system with microwave output window and coupling apparatus. 4,604,551, Cl. 315-4.000.

Mogami, Satoshi: *See*—
Uehara, Makoto; and Mogami, Satoshi, 4,603,950, Cl. 350-432.000.

Mohr, Dieter, to Hoechst Aktiengesellschaft. Process for the one-stage anodic oxidation of aluminum bases for offset printing plates and product thereof. 4,604,341, Cl. 430-278.000.

Mohri, Katsuo: *See*—
Itoh, Shigeyuki; Watatani, Yoshizumi; and Mohri, Katsuo, 4,604,659, Cl. 360-38.100.

Moir, Christopher I., to Micro Control Technology Limited. Position detector. 4,604,526, Cl. 250-561.000.

Molimard, Jean-Charles: *See*—
Biziere, Kathleen; Chambon, Jean-Pierre; and Molimard, Jean-Charles, 4,604,383, Cl. 514-63.000.

Molineux, Royston D. Ticket issuing machine with product dispenser. 4,603,792, Cl. 221-96.000.

Mollenhoff, David V.: *See*—
Middleton, Frederic H.; Mollenhoff, David V.; Taylor, Theodore L.; and Vaughn, Thomas N., 4,603,448, Cl. 15-22.00R.

Monarch Marking Systems, Inc.: *See*—
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Moroney, William F.; Bartholomew, James C.; Cagle, Clifford M.; and Hughes, Robert E., to United States of America, Navy. Automated anthropometric data measurement system. 4,603,486, Cl. 33-512.000.

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Murray, Robert J., to Pennwalt Corporation. Immunomodulatory 3-(substituted aminobenzoyl)-3,4-dihydrophthalazin-1(2H)-ones. 4,604,464, Cl. 544-237.000.

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Musschoot, Albert, to General Kinematics Corporation. Shakeout apparatus. 4,604,023, Cl. 414-375.000.

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Nabeta, Takeshi; and Hanahara, Isamu, to Denki Kagaku Kogyo Kabushiki Kaisha. Resin composition having electromagnetic wave shielding effect. 4,604,413, Cl. 523-137.000.

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Naser, Joachim; Schmid, Olaf; Schmidt, Gerhard; Sturm, Theodor; and Walter, Berthold, to Robert Bosch GmbH. Electromagnetic relay with underslung armature. 4,604,598, Cl. 335-128.000.

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Natale, Anthony. Particulate contamination control method and filtration device. 4,604,111, Cl. 55-97.000.

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Nelson, Paul W. Multi-tier multi-unit pot hanger assembly. 4,603,507, Cl. 47-67.000.

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Nicolas, Michel J. R.: *See—*
Delon, Patrice C. G.; Fourreaux, Gerard D.; Nicolas, Michel J. R.; and Sebilet, Bruno R., 4,604,622, Cl. 343-5.0PD.

Nidola, Antonio; and de Nora, Oronzio, to Oronzio de Nora Impianti Elecltrochimici, S.p.A. Low oxygen overvoltage lead anodes. 4,604,173, Cl. 204-105.00R.

Niebylski, Leonard M.: *See—*
Zaweski, Edward F.; and Niebylski, Leonard M., 4,604,102, Cl. 44-57.000.

Nienhaus, Clemens: *See—*
Bober, Helmut; Buthe, Theo; Coenen, Karl; Fartmann, Norbert; Herbertz, Klaus; Koch, Franz-Heinz; Kretschmer, Horst; Nienhaus, Clemens; Schardt, Peter; Schibrowski, Jurgen; and Schmandt, Willi, 4,603,998, Cl. 403-322.000.

Niermann, Hans; Kohnen, Klaus; and Jorde, Joachim, to Krupp Koppers GmbH. Device for gripping specimens. 4,603,588, Cl. 73-794.000.

Nieuwsma, David: *See—*
Benn, George; Frost, Wendell; Knudsen, Chris; and Nieuwsma, David, 4,604,711, Cl. 364-900.000.

Niggemann, Richard E., to Sundstrand Corporation. Heat management system for spacecraft. 4,603,732, Cl. 165-41.000.

Nikaido, Hideyasu: *See—*
Huang, Yen-Ching; and Nikaido, Hideyasu, 4,604,291, Cl. 427-37.000.

Nippon Electric Co., Ltd.: *See—*
Akagi, Masanobu, 4,604,691, Cl. 364-200.000.

Nippon Kogaku K. K.: *See—*
Takahata, Hisatoshi, 4,603,959, Cl. 354-420.000.
Uehara, Makoto; and Mogami, Satoshi, 4,603,950, Cl. 350-432.000.

Nippon Oil Company Ltd.: *See—*
Yuasa, Hitoshi; Matsuno, Mitsuo; and Imai, Hirosuke, 4,604,490, Cl. 585-21.000.

Nippon Oil and Fats Co.: *See—*
Ohmura, Hiroshi; Oshibe, Yoshihiro; Nakayama, Masaharu; and Yamamoto, Takashi, 4,604,425, Cl. 525-88.000.

Nippon Paint Co., Ltd.: *See—*
Sakurai, Kiyomi; and Konishi, Katsuzi, 4,604,343, Cl. 430-281.000.

Nippon Petrochemicals Co., Ltd.: *See—*
Okahara, Mitsuo; and Ikeda, Isao, 4,604,321, Cl. 428-319.900.

Nippon Polyurethane Industry Co., Ltd.: *See—*
Shindo, Masanori; Aoki, Yusuke; Kataoka, Yosizumi; Enomoto, Susumu; and Nakamura, Minoru, 4,604,418, Cl. 524-296.000.

Nippon Soken, Inc.: *See—*
Yamanoue, Kouichi; Kitagawa, Junji; Akita, Shigeyuki; and Kuno, Akira, 4,603,581, Cl. 73-304.00C.
Yoshinaga, Toru; Igashira, Toshihiko; Sakakibara, Yasuyuki; and Natsuyama, Yukihiro, 4,603,671, Cl. 123-467.000.

Nippon Steel Corporation: *See—*
Watanabe, Kazuo; Seki, Hiromi; Yamada, Kenji; and Tsuyama, Yoshito, 4,603,806, Cl. 228-152.000.

Nippon Zeon Co., Ltd.: *See—*
Nishina, Masaaki; Imaizumi, Shiro; and Ozaki, Osamu, 4,604,454, Cl. 528-491.000.

Nippon Zeon Co., Ltd: *See—*
Joh, Yasushi; Nagase, Toshio; and Kaneko, Noriaki, 4,604,412, Cl. 523-112.000.

Nippondenso Co., Ltd.: *See—*
Otsuki, Hiromi; Matsuura, Ryoichi; Fujinami, Hiroshi; Hori, Shinichi; Nomura, Yoshihisa; and Oka, Hiroyuki, 4,603,920, Cl. 303-10.000.
Takemoto, Eiji; Miyaki, Masahiko; Norimatsu, Hideaki; Hobo, Nobuhito; Tsuzuki, Yoshihiko; and Konishi, Yoshimune, 4,603,669, Cl. 123-357.000.
Yamanoue, Kouichi; Kitagawa, Junji; Akita, Shigeyuki; and Kuno, Akira, 4,603,581, Cl. 73-304.00C.

Niriki, Takashi: *See—*
Suemitsu, Takashi; and Niriki, Takashi, 4,603,473, Cl. 29-578.000.

Nishida, Mamoru: *See—*
Kawaguchi, Hiroshi; Sasaki, Hirofumi; Nishida, Mamoru; and Harada, Shinichi, 4,603,729, Cl. 164-442.000.

Nishikawa, Masao; Sakai, Shinzo; Sato, Yoichi; and Fukuda, Yukihiro, to Honda Giken Kogyo Kabushiki Kaisha. Direct-coupling controller for a transmission having delay means for temporarily releasing the clutch during speed change. 4,603,601, Cl. 74-731.000.

Nishikawa, Masao; Sato, Yoichi; and Fukuda, Yukihiro, to Honda Giken Kogyo K.K. Creep-inhibiting device for an automotive vehicle equipped with an automatic transmission. 4,603,604, Cl. 74-869.000.

Nishimura, Syozi: *See—*
Aida, Akira; Ohno, Tetsu; Fukuda, Takashi; Aihara, Kenji; Mizoguchi, Takuo; Nishimura, Syozi; and Kajiyama, Katsuyoshi, 4,604,146, Cl. 148-12.00B.

Nishina, Masaaki; Imaizumi, Shiro; and Ozaki, Osamu, to Nippon Zeon Co., Ltd. Method of recovering vinyl chloride resin. 4,604,454, Cl. 528-491.000.

Nishino, Yoshinori: *See—*
Yamamoto, Masahiko; Nishino, Yoshinori; Uda, Tadayoshi; Sonoda, Yoshiteru; and Suyama, Toshio, 4,604,254, Cl. 264-254.000.

Nishiyama, Tadashi: *See—*
Yada, Akira; Matsumoto, Shusaku; Kawamori, Yoshihiro; Saito, Takao; Nishiyama, Tadashi; and Adachi, Yoshitugu, 4,604,411, Cl. 522-14.000.

Nishizawa, Minoru, to Gakei Electric Works Co., Ltd. Apparatus for positioning and locating a baffle plate in a crucible. 4,604,262, Cl. 422-310.000.

Nissan Chemical Industries, Ltd.: *See—*
Takakura, Makoto; Kondo, Susumu; and Nogami, Tatsuya, 4,604,303, Cl. 427-229.000.

Nissan Motor Co., Ltd.: *See—*
Kondo, Takumi, 4,603,462, Cl. 29-281.100.
Matsuoka, Hideoki, 4,603,599, Cl. 74-492.000.
Mochida, Haruo; Shimizu, Keiichi; and Okuya, Shigetami, 4,603,563, Cl. 70-276.000.
Seko, Yasutoshi; Iizuka, Haruhiko; Yanagishima, Takayuki; and Obara, Hideo, 4,604,611, Cl. 340-576.000.
Shimizawa, Motohiro, 4,603,550, Cl. 60-274.000.
Tanaka, Yoshikazu; Kumura, Haruyoshi; Abo, Keiju; Hirano, Hiroyuki; and Yamamuro, Sigeaki, 4,603,602, Cl. 74-866.000.
Tsuji, Shinsaku; Kimura, Toshimitsu; Asano, Yasushi; and Suzuki, Yasuhito, 4,603,598, Cl. 74-473.00P.

Nisshin Engineering Co., Ltd.: *See—*
Yamada, Yukiyoshi; Doi, Shin; and Yasuguchi, Masayuki, 4,604,192, Cl. 209-144.000.

Nisshin Flour Milling Co., Ltd.: *See—*
Yamada, Yukiyoshi; Doi, Shin; and Yasuguchi, Masayuki, 4,604,192, Cl. 209-144.000.

Nitto Boseki Co., Ltd.: *See—*
Harada, Susumu; Shimizu, Kiyoshi; and Ujiie, Masayuki, 4,604,451, Cl. 525-328.200.

Nitto Kohki Co., Ltd.: *See—*
Shoji, Mitihiro; and Mikiya, Toshio, 4,604,006, Cl. 408-76.000.

Noble, Roger K.: *See—*
Schwartz, Robert E.; and Noble, Roger K., 4,604,048, Cl. 431-8.000.

Noda, Masahiro: *See—*
Udagawa, Masakazu; Saito, Masaaki; Segawa, Shingo; and Noda, Masahiro, 4,603,898, Cl. 296-91.000.

Noda, Yasushi: *See—*
Kitahara, Toshihiro; and Noda, Yasushi, 4,604,666, Cl. 360-99.000.
Nogami, Junzo: *See—*
Torii, Shigeru; Tanaka, Hideo; Nogami, Junzo; Sasaoka, Michio; Saito, Norio; and Shiroi, Takashi, 4,604,457, Cl. 540-223.000.
Nogami, Tatsuya: *See—*
Takakura, Makoto; Kondo, Susumu; and Nogami, Tatsuya, 4,604,303, Cl. 427-229.000.
Nokata, Kenichiro: *See—*
Miyasaka, Tadashi; Sawada, Seigo; Nokata, Kenichiro; Sugino, Eiichi; and Mutai, Masahiko, 4,604,463, Cl. 544-125.000.
Noll, Klaus: *See—*
Reiffen, Manfred; Noll, Klaus; Heider, Joachim; Austel, Volkhard; Hauel, Norbert; Kobinger, Walter; and Lillie, Christian, 4,604,389, Cl. 514-213.000.
Nolph, Karl D.: *See—*
Twardowski, Zbylut J.; and Nolph, Karl D., 4,604,379, Cl. 514-21.000.
Nomura, Yoshihisa: *See—*
Otsuki, Hiromi; Matsuura, Ryoichi; Fujinami, Hiroshi; Hori, Shinichi; Nomura, Yoshihisa; and Oka, Hiroyuki, 4,603,920, Cl. 303-10.000.
Nonaka, Susumu: *See—*
Kuranishi, Masaaki; Nonaka, Susumu; Furukawa, Koichi; and Siozaki, Fumio, 4,603,987, Cl. 400-639.100.
Norand Corporation: *See—*
Chadima, George E., Jr.; and Kubler, Joseph J., 4,604,693, Cl. 364-200.000.
Norimatsu, Hideaki: *See—*
Takemoto, Eiji; Miyaki, Masahiko; Norimatsu, Hideaki; Hobo, Nobuhito; Tsuzuki, Yoshihiko; and Konishi, Yoshimune, 4,603,669, Cl. 123-357.000.
Norman, Jacob J., to American Hospital Supply Corporation. Blood pressure transducer tester. 4,603,574, Cl. 73-4.00R.
Norman, Theodore A.; and Norman, Van B., to Simulated Designs, Ltd. Computer simulation system. 4,604,718, Cl. 364-578.000.
Norman, Van B.: *See—*
Norman, Theodore A.; and Norman, Van B., 4,604,718, Cl. 364-578.000.
Norris, Peter E.: *See—*
Armiento, Craig A.; and Norris, Peter E., 4,603,469, Cl. 29-571.000.
North American Philips Corporation: *See—*
Alexandru, Radu, 4,604,743, Cl. 370-85.000.
Northern Telecom Limited: *See—*
Bell, John M.; and Schmidt, Peter J., 4,604,497, Cl. 174-110.00F.
Fitzpatrick, Michael H., 4,603,929, Cl. 339-17.00C.
Norton Christensen, Inc.: *See—*
Davis, J. Stanley; and Radford, Steven R., 4,603,749, Cl. 175-250.000.
Norton, John H. R.; and Rebello, Peter R., to AECI Limited. Fuels. 4,603,662, Cl. 123-1.00A.
Norton, Peter. Dual voltage power supply system for vehicles. 4,604,528, Cl. 307-10.00R.
Nottbohm, Friedrich. Instrument for indirect treatment with a hot air flow and moxa smoke. 4,604,088, Cl. 604-24.000.
Novikov, Vladimir V.: *See—*
Ganago, Oleg A.; Safonov, Anatoly V.; Stepanov, Boris A.; Subich, Vadim N.; Frolov, Alexandr D.; Lobanov, Nikolai A.; Lumer, Yakov L.; Xenofontov, Alexei M.; Rudman, Leonid I.; Lebed, Alexandr D.; Mamatsashvili, Vasha I.; Kljuchnikov, Valery F.; Birkadze, Dzhemal I.; Shklyarman, Sergei S.; Gordeev, Nikolai A.; Golovin, Vasily Y.; Kruk, Alexandr T.; Yakovenko, Ivan F.; Novikov, Vladimir V.; Grishkov, Andrei M.; Gorozhankin, Valery N.; Svistunov, Vladmir E.; Bocharov, Jury A.; and Sergeev, Jury N., 4,603,573, Cl. 72-454.000.
Novo Industri A/S: *See—*
Outtrup, Helle, 4,604,355, Cl. 435-95.000.
Nozaki, Toshiyuki: *See—*
Hirukawa, Yohichi; Nozaki, Toshiyuki; and Hosokawa, Naokichi, 4,604,180, Cl. 204-298.000.
Numata, Toshi: *See—*
Senda, Atsuo; Numata, Toshi; Nakagawa, Takuji; and Ogiso, Yoshifumi, 4,604,676, Cl. 361-309.000.
Obara, Hideo: *See—*
Seko, Yasutoshi; Iizuka, Haruhiko; Yanagishima, Takayuki; and Obara, Hideo, 4,604,611, Cl. 340-576.000.
Oberkirch, Wolfgang; de Montigny, Armand; and Botsch, Hansjurgen, to Bayer Aktiengesellschaft. Process and means for preventing blockages of crude oil deposits by the formation of emulsion due to deposits of asphalt. 4,603,738, Cl. 166-275.000.
Oblas, Daniel W.; and Su, Sophia R., to GTE Laboratories Incorporated. Intercalation of small graphite flakes with a metal halide. 4,604,276, Cl. 423-449.000.
O'Brien, Barry H.: *See—*
Park, Jin Y.; O'Brien, Barry H.; and Lee, Woo G., 4,604,362, Cl. 436-34.000.
O'Brien, Terry R., to Gould Inc. Electric plug fuse with corrugated element. 4,604,601, Cl. 337-261.000.
Occidental Chemical Corporation: *See—*
Tari, Karl; Bommaraju, Tilak V.; and Rader, Charles G., 4,604,301, Cl. 427-123.000.
Thorpe, Donald H.; and Knipple, Raymond P., 4,604,436, Cl. 525-504.000.
Warszawski, Bernard; Fauvel, Pierre; and Dupre , Sylvain, 4,604,332, Cl. 429-38.000.
O'Connor, Lawrence J. Package of tape. 4,603,817, Cl. 242-1.000.
Oda, Yukio: *See—*
Suzuki, Ikuo; and Oda, Yukio, 4,603,514, Cl. 51-281.00C.
Odaka, Kentaro: *See—*
Fukami, Tadashi; and Odaka, Kentaro, 4,604,657, Cl. 360-32.000.
O'Donnell, John P.: *See—*
Kam, Sheung-tsam; Erhardt, Paul W.; Borgman, Robert J.; and O'Donnell, John P., 4,604,481, Cl. 560-39.000.
Odorcic, Vlado: *See—*
Baker, Robert W.; Donely, Dean; and Odorcic, Vlado, 4,604,610, Cl. 340-566.000.
Ogata, Masahiro: *See—*
Shinoda, Takashi; Sakai, Kikuo; Ogata, Masahiro; Kawamoto, Hiroshi; Onishi, Yoshiaki, deceased; and Onishi, Junko, administratrix, 4,604,749, Cl. 371-38.000.
Ogden, Ralph. Barbeque grill with paper start facility. 4,603,679, Cl. 126-25.00B.
Ogiso, Yoshifumi: *See—*
Senda, Atsuo; Numata, Toshi; Nakagawa, Takuji; and Ogiso, Yoshifumi, 4,604,676, Cl. 361-309.000.
Oguni, Kensaku: *See—*
Suefuji, Kazutaka; Yasuda, Hiromu; Hayashi, Masakatsu; Arata, Tetsuya; Oguni, Kensaku; Kuroda, Shigeaki; Atsumi, Akira; Ishibane, Kyuhei; Terada, Hirokiyo; Senshu, Takao; and Kogure, Hiroshi, 4,603,556, Cl. 62-180.000.
O'Har, George M.: *See—*
Widen, Melinda A.; Bradley, John J.; and O'Har, George M., 4,604,695, Cl. 364-200.000.
Ohi, Nobukazu: *See—*
Kamohara, Hiroshi; Hayashi, Shohei; and Ohi, Nobukazu, 4,604,142, Cl. 106-38.510.
Ohkubo, Nobukuni: *See—*
Moribe, Yoshihiro; Ohkubo, Nobukuni; Takahashi, Mikio; and Nakagoshi, Kazuo, 4,604,663, Cl. 360-73.000.
Ohmori, Akira; Takaki, Shoji; and Kitahara, Takahiro, to Daikin Kogyo Co., Ltd. Processes for producing α-fluoroacrylic acid esters and α-fluoroacrylic acid fluoride. 4,604,482, Cl. 560-213.000.
Ohmori, Takashi: *See—*
Ishibashi, Yoji; Sato, Isao; Kato, Fumio; Ohmori, Takashi; and Hayashi, Noriyuki, 4,603,548, Cl. 60-39.060.
Ohmura, Hiroshi; Oshibe, Yoshihiro; Nakayama, Masaharu; and Yamamoto, Takashi, to Nippon Oil and Fats Co. Method for modifying the surface of polymer materials. 4,604,425, Cl. 525-88.000.
Ohno, Tetsu: *See—*
Aida, Akira; Ohno, Tetsu; Fukuda, Takashi; Aihara, Kenji; Mizoguchi, Takuo; Nishimura, Syozi; and Kajiyama, Katsuyoshi, 4,604,146, Cl. 148-12.00B.
Oho, Shigeru; and Hirayama, Takeshi, to Hitachi, Ltd. Information transmission system. 4,604,620, Cl. 340-825.520.
Ohta, Norio: *See—*
Matsumura, Hiroyoshi; Katsuyama, Toshio; Ohta, Norio; Suganuma, Tsuneo; Nagatsuma, Kazuyuki; and Sugita, Yutaka, 4,604,577, Cl. 324-244.000.
Ohtaka, Satoshi: *See—*
Suzukawa, Yuichi; Kobayashi, Waichi; and Ohtaka, Satoshi, 4,604,143, Cl. 106-89.000.
Oi, Naobumi; Doi, Tadashi; and Nagase, Masayuki, to Sumitomo Chemical Co., Ltd. Packing materials for chromatographic use and a method for analysis of an enantiomer mixture using the same. 4,604,207, Cl. 210-635.000.
Oishi, Kengo, to Fuji Photo Film Co., Ltd. Magnetic recording tape cassette. 4,604,671, Cl. 360-132.000.
Oka, Hiroyuki: *See—*
Otsuki, Hiromi; Matsuura, Ryoichi; Fujinami, Hiroshi; Hori, Shinichi; Nomura, Yoshihisa; and Oka, Hiroyuki, 4,603,920, Cl. 303-10.000.
Okahara, Mitsuo; and Ikeda, Isao, to Nippon Petrochemicals Co., Ltd. Mercury adsorbing agent. 4,604,321, Cl. 428-319.900.
Okajima, Yoshinori, to Fujitsu Limited. Semiconductor memory device. 4,604,728, Cl. 365-189.000.
Okamoto, Miyoshi; Iijima, Hiromichi; and Miyoshi, Akito, to Toray Industries, Inc. Ultrafine sheath-core composite fibers and composite sheets made thereof. 4,604,320, Cl. 428-290.000.
Oken Seiko Co., Ltd.: *See—*
Fukami, Tadashi, 4,604,540, Cl. 310-154.000.
Okoshi, Takanori, to Sumitomo Electric Industries, Ltd. Structure of an optical fiber. 4,603,943, Cl. 350-96.300.
Okubo, Yasuto: *See—*
Seno, Taiko; Okubo, Yasuto; Kawamura, Masao; Akutsu, Seiichi; and Fukuda, Hirosuke, 4,604,349, Cl. 435-15.000.
Okuya, Shigetami: *See—*
Mochida, Haruo; Shimizu, Keiichi; and Okuya, Shigetami, 4,603,563, Cl. 70-276.000.
Olivotto S.p.A.: *See—*
Olivotto, Vanfrido, 4,604,149, Cl. 148-153.000.
Olivotto, Vanfrido, to Olivotto S.p.A. Process for hardening elongate metal elements. 4,604,149, Cl. 148-153.000.
Olofsson, Stig E. E. Thread reel. 4,603,820, Cl. 242-118.400.
Olsen, Randall B., to GA Technologies Inc. Graphite fiber thermal radiator. 4,603,731, Cl. 165-41.000.
Olsson, Lennart, to Frigoscandia Contracting AB. Conveyor belt. 4,603,776, Cl. 198-778.000.
Olympus Optical Co., Ltd.: *See—*
Imai, Toshihiro, 4,603,948, Cl. 350-426.000.
Mimura, Yoshiyuki; and Toda, Akitoshi, 4,604,337, Cl. 430-46.000.
Omega Electronics S.A.: *See—*
Suter, Max, 4,604,621, Cl. 340-825.690.

Omron Tateisi Electronics Co.: *See—*
Yamashita, Tsukasa; Inoue, Nobuhisa; Mori, Kazuhiko; and Matano, Masaharu, 4,604,707, Cl. 364-822.000.

Onder, Kemal: *See—*
Dai, Shenghong A.; Grossman, Steven J.; and Onder, Kemal, 4,604,450, Cl. 528-322.000.

O'Neill, Sean P.; and Wu, Joseph, to Electro-Nucleonics, Inc. Immunoprecipitation assay. 4,604,365, Cl. 436-528.000.

Onishi, Junko, administratrix: *See—*
Shinoda, Takashi; Sakai, Kikuo; Ogata, Masahiro; Kawamoto, Hiroshi; Onishi, Yoshiaki, deceased; and Onishi, Junko, administratrix, 4,604,749, Cl. 371-38.000.

Onishi, Ken; Ishida, Masayuki; Shirozu, Masakazu; Takedomi, Toshikatsu; Namekawa, Makoto; and Haikawa, Yukihiko, to Mitsubishi Denki Kabushiki Kaisha; Akai Electric Company Limited; and Alpine Electronics, Inc. Error correcting and controlling system. 4,604,747, Cl. 371-37.000.

Onishi, Yoshiaki, deceased: *See—*
Shinoda, Takashi; Sakai, Kikuo; Ogata, Masahiro; Kawamoto, Hiroshi; Onishi, Yoshiaki, deceased; and Onishi, Junko, administratrix, 4,604,749, Cl. 371-38.000.

Ono, Taizo: *See—*
Yokoyama, Kazumasa; Fukaya, Chikara; Tsuda, Yoshio; Ono, Taizo; Arakawa, Yoshio; Inoue, Yoshihisa; Naito, Youichiro; and Suyama, Tadakazu, 4,604,385, Cl. 514-183.000.

Onorati, Frank V., to Xerox Corporation. Drive system. 4,603,597, Cl. 74-434.000.

Oota, Koichi; and Mizoro, Tsuguo, to Glory Kogyo Kabushiki Kaisha. Bank note processing machine equipped with a cassette for accommodating bank notes. 4,603,847, Cl. 271-10.000.

Oppenheimer, Alfred: *See—*
Glass, Michael; Hoholick, Joseph; Oppenheimer, Alfred; and Dombroski, Amy, 4,604,287, Cl. 426-5.000.

Orain, Michel A., to Glaenzer Spicer. Constant-speed tripod joint having an axial retention. 4,604,077, Cl. 464-111.000.

Orlandi, Daniel A.: *See—*
Glass, Michael; Corsello, Vincent; Orlandi, Daniel A.; and Guzowski, Anthony, 4,604,288, Cl. 426-5.000.

Orlando, John J.: *See—*
Mehltretter, James C.; Woodard, Winfred L., III; Orlando, John J.; and Goodrich, Charles B., 4,603,814, Cl. 241-30.000.

Orlowski, Ronald C.; and Seyler, Jay K. Calcitonin analogs. 4,604,236, Cl. 530-307.000.

Orlowski, Ronald C.; Seyler, Jay K.; and Stahl, Glenn L., to Armour Pharmaceutical Company. Des-21-threonine-calcitonin. 4,604,237, Cl. 530-307.000.

Orlowski, Ronald C.; Seyler, Jay K.; and Stahl, Glenn L., to Armour Pharmaceutical Company. Analogs of calcitonin. 4,604,238, Cl. 530-307.000.

Oronzio de Nora Impianti Elecltrochimici, S.p.A.: *See—*
Nidola, Antonio; and de Nora, Oronzio, 4,604,173, Cl. 204-105.00R.

Orrhammar, Hans, to Agence Spatiale Europeenne. Apparatus for controlling reproduction of text characters whose form depends on adjacency of other characters. 4,604,712, Cl. 364-900.000.

Orrville Products, Inc.: *See—*
Craver, Richard D., 4,603,683, Cl. 126-138.000.

Ortendahl, Douglas A.: *See—*
Cannon, Clifford R.; and Ortendahl, Douglas A., 4,604,579, Cl. 324-309.000.

Ortwine, Daniel F.: *See—*
Elslager, Edward F.; Werbel, Leslie M.; Ortwine, Daniel F.; Worth, Donald F.; Showalter, Howard D. H.; Capps, David B.; Berman, Ellen M.; Gregor, Vlad E.; and Sercel, Anthony D., 4,604,390, Cl. 514-222.000.

Osberghaus, Rainer; Scheller, Bernfrid; Schunter, Roland; Kresse, Franz; and Schell, Helmut, to Henkel Kommanditgesellschaft auf Aktien. Frame for a floor wiper. 4,603,450, Cl. 15-147.00A.

Osenkowski, Joseph M., to General Motors Corporation. Lock and handle module for vehicle door. 4,603,894, Cl. 292-216.000.

Oshibe, Yoshihiro: *See—*
Ohmura, Hiroshi; Oshibe, Yoshihiro; Nakayama, Masaharu; and Yamamoto, Takashi, 4,604,425, Cl. 525-88.000.

Oshima, Noboru; Shimizu, Isamu; Yoshimura, Yoshito; Fujimaki, Tatsuo; and Tomita, Seisuke, to Bridgestone Tire Company; and Japan Synthetic. Rubber Co., Ltd. Tire tread comprised of branched styrene-butadiene copolymers. 4,603,722, Cl. 152-209.00R.

Oshio, Hiromichi: *See—*
Mori, Kenji; Takematsu, Tetsuo; Sakakibara, Masayuki; and Oshio, Hiromichi, 4,604,240, Cl. 540-114.000.

Ostby, Lyle D., to Kearney & Trecker Corporation. Leveling apparatus. 4,603,485, Cl. 33-367.000.

Otsuka Kagaku Kabushiki Kaisha: *See—*
Torii, Shigeru; Tanaka, Hideo; Nogami, Junzo; Sasaoka, Michio; Saito, Norio; and Shiroi, Takashi, 4,604,457, Cl. 540-223.000.

Otsuki, Hiromi; Matsuura, Ryoichi; Fujinami, Hiroshi; Hori, Shinichi; Nomura, Yoshihisa; and Oka, Hiroyuki, to Nippondenso Co., Ltd. Hydraulic pressure control device for use in vehicle anti-skid braking system. 4,603,920, Cl. 303-10.000.

Outboard Marine Corporation: *See—*
Guinn, Douglas B., 4,604,068, Cl. 440-76.000.

Outtrup, Helle, to Novo Industri A/S. Maltogenic amylase enzyme, preparation and use thereof. 4,604,355, Cl. 435-95.000.

Owens-Corning Fiberglas Corporation: *See—*
Berg, James I., 4,603,980, Cl. 374-179.000.
Pollet, Jean-Claude; Armstrong, Gordon P.; and Flautt, Martin C., 4,604,325, Cl. 428-391.000.

Owens-Illinois, Inc.: *See—*
Bosnaught, Harold R., 4,604,154, Cl. 156-264.000.

Oy Wartsila AB: *See—*
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Colvin, Howard A.; Cottman, Kirkwood S.; and Parker, Dane K., 4,604,439, Cl. 526-288.000.

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Schleimer, Francois; Burton, Clement; Bock, Andre ; and Peckels, Jean, 4,603,810, Cl. 239-1.000.

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MacLeay, Ronald E., 4,604,455, Cl. 534-587.000.
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PerfectData Corporation: *See—*
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Peritronic Medical Industries plc: *See—*
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Perlini, Roberto. Device for straight traveling stabilization and change of attitude on predetermined paths for vehicle axles. 4,603,873, Cl. 280-94.000.
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Pettit, Frederick M. Ladder construction. 4,603,758, Cl. 182-194.000.
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Pflederer, Mark R., to Caterpillar Tractor Co. Fuel injection solenoid driver circuit. 4,604,675, Cl. 361-155.000.
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Irvin, Howard B.; Stahl, G. Allah; and Clark, Earl, 4,604,216, Cl. 252-8.510.
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Moriyama, Yoshiaki, 4,604,655, Cl. 358-343.000.
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Pitney Bowes Inc.: *See—*
Pollak, Philip, Jr.; and Schubert, Keith E., 4,603,627, Cl. 101-91.000.
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Place, Donald E., to Therm-O-Disc, Incorporated. Dual temperature thermostat. 4,604,603, Cl. 337-394.000.
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Pohl, Wolfgang D., to International Business Machines Corporation. Optical near-field scanning microscope. 4,604,520, Cl. 250-216.000.
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Pollet, Jean-Claude; Armstrong, Gordon P.; and Flautt, Martin C., to Owens-Corning Fiberglas Corporation. Non-aqueous coating for glass fibers and glass fibers coated therewith. 4,604,325, Cl. 428-391.000.
Polymer Technology Corporation: *See—*
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Porel, Louis C., to Hydro Rene Leduc. Prestressed hydraulic accumulator. 4,603,711, Cl. 138-30.000.
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Posluszny, Thomas; Smith, Kevin D.; and Schlie, Paul W., to United Technologies Corporation. Rotating probe indicating the angle of intersection with a surface. 4,604,574, Cl. 324-207.000.
Pou, Frederick M., to Monarch Marking Systems, Inc. Printer with automatically adjustable stacker. 4,603,629, Cl. 101-226.000.
Powell, George P., Jr. Hydroponic plant growing device. 4,603,506, Cl. 47-62.000.
Poznick, Jeffrey B.: *See—*
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PPG Industries, Inc.: *See—*
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Frazer, Stephen O.; and Riddiford, Martin P., 4,604,065, Cl. 434-331.000.
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Prieto, Yolanda, to Motorola, Inc. Current source with adjustable temperature coefficient. 4,604,568, Cl. 323-315.000.
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Prodel Corp.: *See—*
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Proficient Systems, Inc.: *See—*
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PT Components, Inc.: *See—*
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Putman, Richard E.; Gundersen, Katherine A.; and Christenson, James C., to Westinghouse Electric Corp. Steam optimization and cogeneration system and method. 4,604,714, Cl. 364-494.000.
Puttlitz, Karl J.: *See—*
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Rahn, Kenneth A.; and Lowenthal, Douglas H., to Board of Governors for Higher Education, State of Rhode Island and Providence Plantations. Elemental tracer system for determining the source areas of pollution aerosol. 4,603,575, Cl. 73-28.000.
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Raley, Garland E.; and Spear, Dean M., to Ethyl Corporation. Method of fabricating a cylindrical multilayer screen. 4,604,156, Cl. 156-294.000.
Ramachandran, Venkataraman; and Ranken, Paul F., to Ethyl Corporation. Certain 4-(3,4-dibromocyclohexyl)pyridines. 4,604,467, Cl. 546-346.000.
Ramirez, Frank L. Weed extractor device. 4,603,744, Cl. 172-25.000.
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Rasmussen, Aaron P. Multiple position belt grinder. 4,603,510, Cl. 51-148.000.
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RAYOVAC Corporation: *See—*
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Red Valve Company, Inc.: *See—*
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Reeve, Martin R., to Alcan International Limited. Method of producing an aluminium boride. 4,604,368, Cl. 501-98.000.
Reeves, Derek G., to VSI Corporation. Draw bar type flange mounted tool holder. 4,604,010, Cl. 409-233.000.
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Reinicke, Robert H., to Consolidated Controls Corporation. Compact implantable medication infusion device. 4,604,090, Cl. 604-118.000.
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Renth, Ernst-Otto: *See—*
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Wynnyckyj, John R.; Rhodes, Edward; and Marr, Robert, 4,603,660, Cl. 122-379.000.
Rhodes, William J. Machine for contouring a workpiece. 4,603,716, Cl. 144-134.00A.
Rhone-Poulenc Specialites Chimiques: *See—*
Donnadieu, Andre ; and Letoffe , Michel, 4,604,444, Cl. 528-34.000.
Rich, Jonathan D., to General Electric Company. Organopolysiloxane-polyamide block polymers and method for making. 4,604,442, Cl. 528-28.000.
Rich, Jonathan D., to General Electric Company. Method for making silylaroylhalides and reaction products. 4,604,477, Cl. 556-436.000.
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Wheeler, C. Ray, 4,603,694, Cl. 128-312.000.
Richardson, David A.: *See—*
Moss, Roger W.; Coney, Michael H.; and Richardson, David A., 4,604,031, Cl. 416-97.00R.
Richmond, Moscow K.; Richmond, Thomas R.; and Kochie, Patrick S., to Richmond, Moscow K. Voice communication system. 4,604,501, Cl. 179-81.00B.
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Richter, Lois M. Sport garment for women. 4,603,441, Cl. 2-211.000.
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Ridgway, Stuart L., to R & D Associates. Ballistic cold water pipe. 4,603,553, Cl. 60-641.700.
Rieter Machine Works, Ltd.: *See—*
Luz, Rudolf; and Gartner, Gunter, 4,603,818, Cl. 242-35.50A.
Riker Laboratories, Inc.: *See—*
Wade, James J., 4,604,466, Cl. 544-330.000.
Rimbey, Ronald P.: *See—*
Espinoza, John A.; Konchan, Jeffrey L.; and Rimbey, Ronald P., 4,603,877, Cl. 280-807.000.
Rinaldo, Gary M. J.: *See—*
Spanier, Henry C.; Spiel, Albert; and Rinaldo, Gary M. J., 4,604,289, Cl. 426-19.000.
Rinderle, Heinz, to Telefunken Electronic GmbH. Amplifier with current mirror circuit for controlling amplification temperature dependency. 4,604,586, Cl. 330-288.000.
Ringer, Richard M.: *See—*
Creighton, Thomas C.; Dorsey, William C.; Lewicki, Walter J., Jr.; Long, Harry F.; and Ringer, Richard M., 4,604,312, Cl. 428-137.000.
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Mueller, Carl J.; Brown, Bernard T.; Rippelmeyer, Dennis M.; and Haefner, John S., 4,604,046, Cl. 431-2.000.
Risdon Corporation: *See—*
Ackerman, Walter T.; and Klimeck, Edward F., 4,603,989, Cl. 401-78.000.
Ritter, Joachim: *See—*
Doppling, Horst; Hertrich, Steffen; Poschl, Walter; Ritter, Joachim; and Sill, Karl, 4,603,923, Cl. 384-7.000.
Robert Bosch GmbH: *See—*
Bertsch, Richard; Gunther, Dieter; Schnurle, Hans; and Steinbrenner, Ulrich, 4,603,670, Cl. 123-440.000.
Bogner, Karl-Heinz; and Bolenz, Klaus, 4,604,597, Cl. 335-127.000.
Grauel, Ingolf; Kulke, Gunter; Muller, Egbert; and Stumpe, Werner, 4,603,919, Cl. 303-6.00R.
Grunwald, Werner; Imhof, Ernst; Komaroff, Iwan; Schmid, Gunther; and Schmid, Kurt, 4,603,667, Cl. 123-297.000.
Junginger, Erich; Schnaibel, Eberhard; and Schneider, Erich, 4,603,675, Cl. 123-478.000.
Leiber, Heinz; and Bertling, Hannes, 4,603,918, Cl. 303-6.00R.
Naser, Joachim; Schmid, Olaf; Schmidt, Gerhard; Sturm, Theodor; and Walter, Berthold, 4,604,598, Cl. 335-128.000.
Robertiello, Andrea; and Angelini, Leonello, to Eni-Ente Nazionale Idrocarburi. Solid composition of organic fertilizer and of organo-mineral fertilizer. 4,604,125, Cl. 71-26.000.
Roberts, James R., to A. O. Smith Harvestore Products, Inc. Submersible pump having frangible drive connection. 4,604,035, Cl. 417-319.000.
Roberts, Jimmy C. Method and apparatus for converting line trimmer into a trolling motor. 4,604,067, Cl. 440-49.000.
Roberts, Melvin F., to Bloomfield Industries, Inc. Beverage-making device. 4,603,621, Cl. 99-307.000.
Roberts, William P.; and Schulz, Leslie A., to W. R. Grace & Co. Method of forming electrically conductive polymer blends. 4,604,427, Cl. 525-185.000.
Robertshaw Controls Company: *See—*
Katchka, Jay R.; and Schultz, Gilbert, 4,604,049, Cl. 431-80.000.
Robinson, Lonnie: *See—*
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Robinson, Tibor: *See—*
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Robson, Joseph R.: *See—*
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Rockwell International Corporation: *See—*
Fadner, Thomas A., 4,603,634, Cl. 101-426.000.
Hallford, Ben R., 4,604,585, Cl. 330-286.000.
Liggett, John V., 4,603,921, Cl. 303-6.00C.
Stacher, George W., 4,603,808, Cl. 228-265.000.
Rogers Corporation: *See—*
Gardner, John R., 4,603,927, Cl. 339-17.00C.
Rogers, William O., to Motorola, Inc. Method for enhancing the solderability of nickel layers. 4,603,805, Cl. 228-123.000.
Rohweller, David J.: *See—*
Pallini, Joseph W., Jr.; and Rohweller, David J., 4,603,886, Cl. 285-24.000.
Rolando, Giovanni; and Manunta, Giorgio, to Carello Industriale, S.p.A. Method of assembling a motor vehicle headlight, and headlight produced using such a method. 4,604,679, Cl. 362-277.000.
Rollenitz, Leopold; Schmidt, Harald; Freudenschuss, Otto; and Morell, Josef, to Steyr-Daimler-Puch AG. Injection unit associated with each cylinder of a multicylinder diesel engine. 4,603,811, Cl. 239-90.000.
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Collins, Brian J., 4,603,546, Cl. 60-39.020.
Moss, Roger W.; Coney, Michael H.; and Richardson, David A., 4,604,031, Cl. 416-97.00R.
Romanovsky, Anatoly G.: *See—*
Shaginian, Albert S.; Asan-Dzhalalov, Alexei G.; Pevnev, Anatoly A.; Androsenko, Alexandr P.; Suvorov, Alexandr V.; Khalitov, Boris V.; Palkin, Leonid N.; Gnatchenko, Viktor V.; Makarov, Nikolai P.; Panteleev, Valery A.; Davidenko, Nikolai I.; Shpilevsky, Stanislav K.; Tikhonenko, Alexandr S.; and Romanovsky, Anatoly G., 4,604,724, Cl. 364-478.000.
Roming, Helmut. Massage apparatus. 4,603,688, Cl. 128-37.000.
Ronald A. Smith & Associates: *See—*
Smith, Ronald A.; Jackson, James M.; Lehfeldt, Carl L.; Cygnarowicz, Leonard P.; Moshfegh, Khosro; Blanchard, Kenneth L.; and Nelson, Kenneth J., 4,603,567, Cl. 72-8.000.
Roncucci, Gabrio: *See—*
Pestellini, Vittorio; Ghelardoni, Mario; Maggi, Carlo Alberto; Roncucci, Gabrio; and Meli, Alberto, 4,604,392, Cl. 514-227.000.
Rooker, Mitchel L.: *See—*
Lowrie, Neely E.; and Rooker, Mitchel L., 4,604,196, Cl. 210-136.000.
Rootsaert, Walter J. M.; and van der Loo, Carolus H., to Shell Oil Company. Thickened aqueous hydrochloric acid composition for descaling, or treatment of subterranean formations. 4,604,233, Cl. 252-558.000.
Rosebrock, Henning: *See—*
Schott, Eberhard P.; Fischer, Volker; Jung, Johann; and Rosebrock, Henning, 4,604,129, Cl. 71-76.000.
Rosenquist, Niles R., to General Electric Company. Aromatic polycarbonate crosslinked with aromatic bis cyclic carbonate. 4,604,434, Cl. 525-462.000.
Roskos, Kenneth B.: *See—*
Kay, Edward L.; and Roskos, Kenneth B., 4,604,445, Cl. 528-64.000.
Ross, Dennis M.: *See—*
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Chang, Yu-Wen; Kan, Phillip T.; and Ross, Oakley G., 4,603,942, Cl. 350-96.240.
Rossfelder, Andre M.; and Jung, Peter A., to Geomarex. High frequency vibratory systems for earth boring. 4,603,748, Cl. 175-19.000.
Rothe, Anselm; Knappe, Wolfgang-Reinhold; and Trasch, Heinz-Friedrich, to Boehringer Mannheim GmbH. Test strips. 4,604,264, Cl. 422-56.000.
Rouaud, Christian: *See—*
Abbes, Claude; De Villepoix, Raymond; and Rouaud, Christian, 4,603,892, Cl. 285-336.000.
Roulet Dubonnet, Jean-Pierre; Boillot, Louis; and Mora, Gilbert, to Gerin, Merlin. Miniature circuit breaker with improved insulation level. 4,604,507, Cl. 200-144.00R.
Rousseau, Carl H. Apparatus for obtaining improved dental castings. 4,603,728, Cl. 164-237.000.
Roy, Asit: *See—*
Chu, Chaokang; Fiore, Joseph V.; Knight, Rodney A.; Marinaccio, Paul J.; and Roy, Asit, 4,604,208, Cl. 210-636.000.
Rubens, Louis C., to Dow Chemical Company, The. Better foamable styrene and other olefin polymer compositions. 4,604,426, Cl. 525-123.000.
Rudman, Leonid I.: *See—*
Ganago, Oleg A.; Safonov, Anatoly V.; Stepanov, Boris A.; Subich, Vadim N.; Frolov, Alexandr D.; Lobanov, Nikolai A.; Lumer, Yakov L.; Xenofontov, Alexei M.; Rudman, Leonid I.; Lebed, Alexandr D.; Mamatsashvili, Vasha I.; Kljuchnikov, Valery F.; Birkadze, Dzhemal I.; Shklyarman, Sergei S.; Gordeev, Nikolai A.; Golovin, Vasily Y.; Kruk, Alexandr T.; Yakovenko, Ivan F.; Novikov, Vladimir V.; Grishkov, Andrei M.; Gorozhankin, Valery N.; Svistunov, Vladmir E.; Bocharov, Jury A.; and Sergeev, Jury N., 4,603,573, Cl. 72-454.000.
Ruehle, William H., to Mobil Oil Corporation. Seismic exploration in areas where p waves are converted to s waves. 4,604,734, Cl. 367-63.000.
Ruffman, Samuel H. Anti-theft device for appliances with electrical AC power cords. 4,603,931, Cl. 339-37.000.
Ruhle, Wolfgang; and Weyrich, Claus, to Siemens Aktiengesellschaft. Light-emitting diode suitable as a pressure sensor. 4,604,637, Cl. 357-17.000.
Rungger, Helmut; Fuchs, Erwin; and Knoll, Johann, to Dr. Techn. Ernst Linsinger & Co. GmbH. Method and apparatus for edge-planing sheet metal. 4,604,011, Cl. 409-138.000.
Russ, Norman. Portable selector drill. 4,604,005, Cl. 408-35.000.
Russ, Roger R.; and Berggreen, Arthur C., to Advanced Computer Communications. Communication controller using multiported random access memory. 4,604,683, Cl. 364-200.000.
Russell, Brian. Portable exercising device. 4,603,851, Cl. 272-96.000.
Russell, Monte E.: *See—*
Hall, David R.; Russell, Monte E.; and Hall, H. Tracy, Jr., 4,604,106, Cl. 51-293.000.
Rusz, Tibor. Pulmonary ventilator-bellows-assembly kit. 4,603,691, Cl. 128-205.150.
Rutkowski, Stephen F.: *See—*
Siemers, Paul A.; Jackson, Melvin R.; and Rutkowski, Stephen F., 4,603,568, Cl. 72-47.000.
Ryan, Delvin R., Jr., to SEVKO, Inc. Shelf assembly. 4,603,781, Cl. 211-90.000.
Ryan, Philip M.: *See—*
Aichelmann, Frederick J., Jr.; and Ryan, Philip M., 4,604,751, Cl. 371-38.000.
Ryco Graphic Manufacturing, Inc.: *See—*
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S.N.E.C.M.A.: *See—*
Surdi, Jean M., 4,604,033, Cl. 416-220.00R.
Saad, Saad S.; and Knop, Charles M., to Andrew Corporation. Flared microwave feed horns and waveguide transitions. 4,604,627, Cl. 343-786.000.
Saburo, Yoinara: *See—*
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SACE S.p.A. Costruzioni Elettromeccaniche: *See—*
Talpo, Gianpietro, 4,604,508, Cl. 200-148.00R.
Saeki, Takashi: *See—*
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Safonov, Anatoly V.: *See—*
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Sahli, Ali: *See—*
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St. Pierre, Raymond M., to Mattel, Inc. Toy stove with simulated timer. 4,604,076, Cl. 446-418.000.
Saito, Masaaki: *See—*
Udagawa, Masakazu; Saito, Masaaki; Segawa, Shingo; and Noda, Masahiro, 4,603,898, Cl. 296-91.000.
Saito, Norio: *See—*
Torii, Shigeru; Tanaka, Hideo; Nogami, Junzo; Sasaoka, Michio; Saito, Norio; and Shiroi, Takashi, 4,604,457, Cl. 540-223.000.
Saito, Shinji: *See—*
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Saito, Takao: *See—*
Yada, Akira; Matsumoto, Shusaku; Kawamori, Yoshihiro; Saito, Takao; Nishiyama, Tadashi; and Adachi, Yoshitugu, 4,604,411, Cl. 522-14.000.
Saito, Tsunenari; Murata, Akio; and Sakai, Koichi, to Sony Corporation. Deflection system for a two electron beam cathode ray tube. 4,604,547, Cl. 313-413.000.
Sakagami, Seiji, to Mitutoyo Mfg. Co., Ltd. Linear scale type displacement measuring instrument. 4,603,480, Cl. 33-125.00R.
Sakai, Kikuo: *See—*
Shinoda, Takashi; Sakai, Kikuo; Ogata, Masahiro; Kawamoto, Hiroshi; Onishi, Yoshiaki, deceased; and Onishi, Junko, administratrix, 4,604,749, Cl. 371-38.000.
Sakai, Koichi: *See—*
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Sakakibara, Masayuki: *See—*
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Sakakibara, Yasuyuki: *See—*
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Sakamoto, Tatsuji: *See—*
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Sakashita, Ryuji, to Mitsubishi Denki Kabushiki Kaisha. Feedback control method and system having variable deadband. 4,604,681, Cl. 364-183.000.
Sakata, Isao; Nakajima, Susumu; Koshimizu, Koichi; Samejima, Natsuki; Inohara, Kazumi; and Takata, Hiroyuki. 9-desoxo-9-hydroxypheophorbide derivatives and alkaline salts thereof. 4,604,241, Cl. 540-145.000.
Sakura Color Products Corp.: *See—*
Shioi, Keiko; and Shoji, Yukito, 4,604,139, Cl. 106-23.000.
Sakurada, Nobuaki; Watanabe, Yoshitaka; Kawamura, Hideaki; and Sato, Yuichi, to Canon Kabushiki Kaisha. Image forming method and apparatus. 4,604,654, Cl. 358-298.000.
Sakurai, Kiyomi; and Konishi, Katsuzi, to Nippon Paint Co., Ltd. Water developable photosensitive resinous composition. 4,604,343, Cl. 430-281.000.
Sakurai, Toshiharu, to Kabushiki Kaisha Toshiba. Fe-Ni-Cu leadframe. 4,604,642, Cl. 357-70.000.
Salmon, Michael E., to General Motors Corporation. Electronic transmission shift controller having a controlled alignment valve mechanism. 4,603,603, Cl. 74-868.000.
Salomon, Georges P. J., to Salomon S.A. Ski binding. 4,603,880, Cl. 280-628.000.
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Salomon, Georges P. J., 4,603,880, Cl. 280-628.000.
Salvadori, Bruno: *See—*
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Samaritoni, Jack G.: *See—*
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Samuel, Robert A.: *See—*
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Samuelsen, Peter, to Coloplast A/S. Return valve for a bag for collecting liquid excretions from the human body. 4,604,095, Cl. 604-323.000.
Sand, I. Daniel; Shepherd, Freddie A.; and Fagerburg, David R., to Eastman Kodak Company. Bonding compositions and shaped articles utilizing the bonding compositions. 4,604,446, Cl. 528-173.000.
Sanden Corporation: *See—*
Terauchi, Kiyoshi, 4,604,039, Cl. 418-55.000.
Sanderford, Hugh B., Jr.; and Souvestre, John R., to Protection Products Corporation. Security device simulating currency pack or the like. 4,604,607, Cl. 340-539.000.
Sanders Associates, Inc.: *See—*
Burrows, James L., 4,604,723, Cl. 364-786.000.
Stromswold, Chester E., 4,604,626, Cl. 343-417.000.
Sanders, Gerald J.: *See—*
Hindmarsh, Leslie W.; Knight, Robert G.; and Sanders, Gerald J., 4,603,911, Cl. 299-91.000.
Sandoz Ltd.: *See—*
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Sanitation Equipment Limited: *See—*
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Sanko Kikai Co., Ltd.: *See—*
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Sankyo Company Limited: *See—*
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Sanpe, Hideyuki: *See—*
Inagaki, Syoji; Sanpe, Hideyuki; and Makihara, Norimitsu, 4,604,560, Cl. 318-567.000.
Sanshin Kogyo Kabushiki Kaisha: *See—*
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Santangelo, John A.; and Worrick, Charles B., III, to Codman & Shurtleff, Inc. Pressure regulated irrigation system for arthroscopy. 4,604,089, Cl. 604-30.000.
Santrade Ltd.: *See—*
Hindmarsh, Leslie W.; Knight, Robert G.; and Sanders, Gerald J., 4,603,911, Cl. 299-91.000.
Sanwa Kagaku Kenyusho Co., Ltd.: *See—*
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Sanyo Electric Co., Ltd.: *See—*
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Sargeant, William C.: *See—*
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Sarumaru, Kohei; Shibano, Takeshi; Ishii, Yoichi; and Yamamoto, Etsuji, to Mitsubishi Petrochemical Company, Limited. Process for regenerating a catalyst. 4,604,370, Cl. 502-38.000.
Sasaki, Hirofumi: *See—*
Kawaguchi, Hiroshi; Sasaki, Hirofumi; Nishida, Mamoru; and Harada, Shinichi, 4,603,729, Cl. 164-442.000.
Sasaoka, Michio: *See—*
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Sasayama, Takao; Kato, Kazuo; and Naito, Masayoshi, to Hitachi, Ltd. FET-bipolar switching device and circuit. 4,604,535, Cl. 307-570.000.
Sato, Fumitaka, to Tokyo Shibaura Denki Kabushiki Kaisha. Data processing system with error correction. 4,604,748, Cl. 371-38.000.
Sato, Isao: *See—*
Ishibashi, Yoji; Sato, Isao; Kato, Fumio; Ohmori, Takashi; and Hayashi, Noriyuki, 4,603,548, Cl. 60-39.060.
Sato, Kyosaku, to Polysar Limited. Vulcanizable polymer compositions with improved scorch. 4,604,420, Cl. 524-394.000.
Sato, Yoichi: *See—*
Nishikawa, Masao; Sakai, Shinzo; Sato, Yoichi; and Fukuda, Yukihiro, 4,603,601, Cl. 74-731.000.
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Sato, Yuichi: *See—*
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Satterthwaite, Edward W. Modular frame structure and building system. 4,603,853, Cl. 272-113.000.
Saunders, Libert C.: *See—*
Collins, Raymond F.; Ramsden, Christopher A.; Saunders, Libert C.; and Warne, Peter J., 4,604,400, Cl. 514-300.000.
Sawada, Haruji; and Watanuki, Masaaki, to Kabushiki Kaisha Yakult Honsha. Method for producing conjugated ursodeoxycholic acids by means of microbial transformation. 4,604,353, Cl. 435-58.000.
Sawada, Ken: *See—*
Ikemoto, Yutaka; and Sawada, Ken, 4,604,698, Cl. 364-419.000.
Sawada, Seigo: *See—*
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Sawai, Masaaki, to Hitachi, Ltd. Semiconductor laser module having an improved temperature control arrangement. 4,604,753, Cl. 372-36.000.

Scallet, Barrett L.: *See—*
Katz, Edward; Benedicktus, Jon J.; Knarr, Edward L.; and Scallet, Barrett L., 4,604,354, Cl. 435-94.000.
Scandpower, Inc.: *See—*
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Schaack, John V.: *See—*
Borcherdt, Roger D.; Fletcher, Jon P.; Warrick, Richard E.; Maxwell, Gary L.; Jensen, Edward G.; and Schaack, John V., 4,604,699, Cl. 364-420.000.
Schaerer, Jean E. Forward feed assembly for continuous forward feed of open tubular fabric under controlled tension. 4,603,799, Cl. 226-171.000.
Schafer, Paul: *See—*
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Schaffner, Bernard P., Jr., to Channellock, Inc. Pivot connection for slip joint pliers. 4,603,607, Cl. 81-414.000.
Schardt, Peter: *See—*
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Yan, Tsoung Y.; and Shu, Paul, 4,604,188, Cl. 208-106.000.

Shustov, Vladimir P.: *See*—
Naumov, Jury I.; Juzefovich, Dmitry K.; Epifanova, Valentina S.; Kucherenko, Vladimir I.; Flerov, Valery N.; Praporov, Anatoly M.; Shustov, Vladimir P.; Sychev, Alexel E.; Korolev, Georgy V.; Kotov, Evgeny P.; and Derevyanko, Yan N., 4,604,175, Cl. 204-151.000.

SI Handling Systems Inc.: *See*—
Jacoby, Charles E., 4,603,720, Cl. 152-209.00R.
Sleep, Craig F., 4,603,639, Cl. 104-252.000.

Sibley, Richard D.; and Keller, William F., to Koso International, Inc. Device responsive to shock forces. 4,603,591, Cl. 74-2.000.

Siebe North, Inc.: *See*—
Montesi, Edward N., 4,603,692, Cl. 128-207.110.

Siebert, Georg, to Artec Design GmbH. Yarn twisting and winding apparatus. 4,603,545, Cl. 57-68.000.

Siebold, Quentin R.; and Labuhn, Walter, to Legrand Industries Ltd. Off-vertical pumping unit. 4,603,592, Cl. 74-41.000.

Siegl, Peter K. S.: *See*—
Kaczorowski, Gregory J.; and Siegl, Peter K. S., 4,604,394, Cl. 514-255.000.

Sieling, Helmut: *See*—
Koch, Klaus D.; Brunssen, Johann; and Sieling, Helmut, 4,603,492, Cl. 34-237.000.

Siemens Aktiengesellschaft: *See*—
Angerer, Heinrich; and Sinha, Badri, 4,604,594, Cl. 333-194.000.
Feigt, Ingmar; Feldtkeller, Ernst; and Lange, Gottfried, 4,604,634, Cl. 346-160.000.
Hoer, Leopold, 4,603,933, Cl. 339-75.00P.
Lechner, Ernst F.; and Vache, Peter, 4,603,457, Cl. 29-33.00F.
Moustakas, Steven; and Witte, Hans-Hermann, 4,604,756, Cl. 375-113.000.
Mund, Konrad; Freller, Helmut; and Hoerauf, Friedrich, 4,603,704, Cl. 128-784.000.
Ruhle, Wolfgang; and Weyrich, Claus, 4,604,637, Cl. 357-17.000.
Schwabe, Ulrich; Jacobs, Erwin P.; and Neppl, Franz, 4,603,472, Cl. 29-576.00B.
Ullenboom, Hermann, 4,603,984, Cl. 400-121.000.
von Gentzkow, Wolfgang; Hodl, Maximilian; Kleeberg, Wolfgang; and Markert, Helmut, 4,604,314, Cl. 428-209.000.

Siemers, Paul A.; Jackson, Melvin R.; and Rutkowski, Stephen F., to General Electric Company. Method of fabricating bimetal variable exhaust nozzle flaps and seals. 4,603,568, Cl. 72-47.000.

Siemon Company, The: *See*—
Knickerbocker, Robert H., 4,603,935, Cl. 339-97.00P.

SIG Schweizerische Industrie-Gesellschaft: *See*—
Kopp, Georg, 4,603,540, Cl. 53-546.000.

Sigerist, Helmut, to Venturetech Enterprises, Inc. Panel installation. 4,603,528, Cl. 52-464.000.

Silbermann, Rainer: *See*—
Woest, Wolfgang; Silbermann, Rainer; and Hegner, Frank, 4,603,455, Cl. 29-25.420.

Sill, Karl: *See*—
Doppling, Horst; Hertrich, Steffen; Poschl, Walter; Ritter, Joachim; and Sill, Karl, 4,603,923, Cl. 384-7.000.

Sills, Robert L.: *See*—
Elwell, Dennis L.; and Sills, Robert L., 4,604,013, Cl. 410-106.000.

Silvent, Alain: *See*—
Perroud, Anne-Marie; and Silvent, Alain, 4,604,228, Cl. 252-492.000.

Silver, Brian H., to Kendall Company, The. Liquid drainage system with vertical movable light emitter and detector. 4,604,092, Cl. 604-246.000.

Simborski, Anthony. Horizontal fishing rod motion control. 4,603,499, Cl. 43-19.200.

Simeth, Claus, to M.A.N.-Roland Druckmaschinen Aktiengesellschaft. Perfecting printing process and apparatus for a sheet-fed offset press. 4,603,631, Cl. 101-229.000.

Simkin, Frank. Fence support member. 4,603,840, Cl. 256-11.000.

Simpson, George R. Ink projecting typewriter ribbon. 4,603,986, Cl. 400-241.200.

Simpson, Richard O.: *See*—
Amezcua, Robert; Clements, Silous F.; Coenen, John S.; DaFoe, Ralph H.; Day, Michael N.; Ross, Dennis M.; and Simpson, Richard O., 4,604,710, Cl. 364-900.000.

Simulated Designs, Ltd.: *See*—
Norman, Theodore A.; and Norman, Van B., 4,604,718, Cl. 364-578.000.

Singh, Baldev: *See*—
Lesher, George Y.; and Singh, Baldev, 4,604,399, Cl. 514-300.000.

Singh, Paramjit: *See*—
Goodall, Richard L.; and Singh, Paramjit, 4,603,888, Cl. 285-55.000.

Sinha, Badri: *See*—
Angerer, Heinrich; and Sinha, Badri, 4,604,594, Cl. 333-194.000.

Siozaki, Fumio: *See*—
Kuranishi, Masaaki; Nonaka, Susumu; Furukawa, Koichi; and Siozaki, Fumio, 4,603,987, Cl. 400-639.100.

Sivilotti, Olivo G., to Alcan International Limited. Electrolysis cell for a molten electrolyte. 4,604,177, Cl. 204-244.000.

Siwersson, Olle L.; and Wall, Arne E., to AB Scaniainventor. Vertical conveyor for bulk goods. 4,603,774, Cl. 198-518.000.

Sjoquist, Dennis R., to Evolutionary Concepts, Inc. Solenoid actuator with bleed screw. 4,603,832, Cl. 251-30.020.

Skeen, Solomon L. Sliding pivot knee joint. 4,603,690, Cl. 128-80.00C.

Skeie, Halvor, to X-Cyte Inc. Surface acoustic wave passive transponder having non-reflective transducers and pads. 4,604,623, Cl. 343-6.80R.

Sklut, Robert L.: *See*—
Kukucka, William P.; Sklut, Robert L.; and Gauronski, John F., 4,603,971, Cl. 355-133.000.

Sleep, Craig F., to SI Handling Systems Inc. Traffic control device for driverless vehicles. 4,603,639, Cl. 104-252.000.

Smallwood, Peter V., to Imperial Chemical Industries PLC. Treatment of aqueous suspensions of vinyl chloride polymers. 4,604,419, Cl. 524-318.000.

Smernoff, Ronald B., to Analytical Products, Inc. Cell for gas sample equilibrator. 4,604,263, Cl. 422-50.000.

Smith, Hoke, Jr. Automatic locking and centering wide range tow hitch. 4,603,878, Cl. 280-478.00A.

Smith International Inc.: *See*—
Hall, David R.; Russell, Monte E.; and Hall, H. Tracy, Jr., 4,604,106, Cl. 51-293.000.
Hendrick, Fred W., 4,603,834, Cl. 251-121.000.

Smith, Kevin D.: *See*—
Posluszny, Thomas; Smith, Kevin D.; and Schlie, Paul W., 4,604,574, Cl. 324-207.000.

Smith, Richard A.; and Cassels, Robert, to Beecham Group p.l.c. Protein C enzyme derivatives. 4,604,285, Cl. 424-94.000.

Smith, Richard R.; and Kern, Charles L., Jr., to Goodyear Tire & Rubber Company, The. Multi-layer polyisophthalate and polyterephthalate articles and process therefor. 4,604,257, Cl. 264-513.000.

Smith, Robert A.; and Goodman, Maxine. Pharmaceutical gel composition. 4,604,384, Cl. 514-179.000.

Smith, Roger, Jr.; and Hebard, Harry D., to Hughes Tool Company. Stand jumping and stabbing guide device and method. 4,603,464, Cl. 29-428.000.

Smith, Ronald A.; Jackson, James M.; Lehfeldt, Carl L.; Cygnarowicz, Leonard P.; Moshfegh, Khosro; Blanchard, Kenneth L.; and Nelson, Kenneth J., to Ronald A. Smith & Associates. Programmable manufacturing system for load/support arms for magnetic disk drive data storage systems. 4,603,567, Cl. 72-8.000.

Smith, Terence J.: *See*—
Irving, Edward; and Smith, Terence J., 4,604,344, Cl. 430-325.000.

Smith, Thomas M. Radiant heating. 4,604,054, Cl. 431-328.000.

SmithKline Beckman Corporation: *See*—
Callahan, James F.; Huffman, William F.; Moore, Michael L.; and Yim, Nelson C., 4,604,378, Cl. 514-11.000.

Snide, James A.; and Morrisey, Edward J., to United States of America, Air Force. Variable density frangible projectile. 4,603,637, Cl. 102-529.000.

Sobczak, Zbigniew P., to NCR Corporation. Formation and planarization of silicon-on-insulator structures. 4,604,162, Cl. 156-657.000.

S.A. Atecmi: *See*—
Vasseur, Jackie; and Vasseur, Roger, 4,603,896, Cl. 294-2.000.

Societe Anonyme Styled: SANOFI: *See*—
Biziere, Kathleen; Chambon, Jean-Pierre; and Molimard, Jean-Charles, 4,604,383, Cl. 514-63.000.

Societe D'Etude et D'Application Industrielle de Brevets: *See*—
de la Poype, Roland, 4,603,536, Cl. 53-410.000.

Societe Nationale de l'Amiante: *See*—
Lalancette, Jean M.; Chevalier-Bultel, Jean P.; and Desrosiers, Luc, 4,604,140, Cl. 106-38.900.

Societe Nationale d'Etude et de Construction de Moteurs d'Aviation S.N.E.C.M.A.: *See*—
Delon, Patrice C. G.; Fourreaux, Gerard D.; Nicolas, Michel J. R.; and Sebilet, Bruno R., 4,604,622, Cl. 343-5.0PD.
Naudet, Jacky, 4,604,030, Cl. 415-126.000.

Societe Nationale Industrielle et Aerospatiale: *See*—
Joly, Jean-Louis; and Lallemant, Bernard, 4,603,796, Cl. 222-400.700.

Soled, Stuart L.; and Fiato, Rocco A., to Exxon Research and Engineering Co. Manganese-spinel catalysts in CO/H_2 olefin synthesis. 4,604,375, Cl. 502-241.000.

Soltis Charles W. Air filtering and distribution for laminar flow clean room. 4,603,618, Cl. 98-31.500.

Sommer, Wayne D.: *See*—
Eaves, Fred W.; and Sommer, Wayne D., 4,604,704, Cl. 364-478.000.

Sondergeld, Manfred A. J.; and Grossa, Mario, to Du Pont de Nemours, E. I., and Company. Photopolymerizable mixture and recording material produced from it. 4,604,342, Cl. 430-281.000.

Sonoda, Yoshiteru: *See*—
Yamamoto, Masahiko; Nishino, Yoshinori; Uda, Tadayoshi; Sonoda, Yoshiteru; and Suyama, Toshio, 4,604,254, Cl. 264-254.000.

Sony Corporation: *See*—
Fukami, Tadashi; and Odaka, Kentaro, 4,604,657, Cl. 360-32.000.
Ida, Mitsuru; and Shimada, Minoru, 4,604,662, Cl. 360-74.100.
Kojima, Chiaki; Hasegawa, Kayoko; and Miyahara, Kousuke, 4,603,938, Cl. 350-3.720.
Saito, Tsunenari; Murata, Akio; and Sakai, Koichi, 4,604,547, Cl. 313-413.000.

Sorenson, Robert B., to Hughes Tool Company - USA. Replaceable bit nozzle. 4,603,750, Cl. 175-340.000.

Sorin, Wayne V.: *See*—
Shaw, Herbert J.; Digonnet, Michel J. F.; Bergh, Ralph A.; Sorin, Wayne V.; and Kolner, Brian H., 4,603,940, Cl. 350-96.150.

Southall, Kenneth: *See*—
Dailey, Nils; Rai, Vishva; Southall, Kenneth; and Webster, Timothy J., 4,604,198, Cl. 210-198.200.

Souvestre, John R.: *See*—
Sanderford, Hugh B., Jr.; and Souvestre, John R., 4,604,607, Cl. 340-539.000.

Sovey, James S.: *See*—
Mirtich, Michael J.; Sovey, James S.; and Banks, Bruce A., 4,604,181, Cl. 204-298.000.

Span-America Medical Systems, Inc.: *See*—
Spann, Donald C., 4,603,445, Cl. 5-481.000.

Spanier, Henry C.; Spiel, Albert; and Rinaldo, Gary M. J., to Nabisco Brands, Inc. Process for preparing whole wheat bread and mix for same. 4,604,289, Cl. 426-19.000.

Spann, Donald C., to Span-America Medical Systems, Inc. Support pad and method of manufacture. 4,603,445, Cl. 5-481.000.

Spear, Dean M.: *See*—
Raley, Garland E.; and Spear, Dean M., 4,604,156, Cl. 156-294.000.

Spector, George: *See*—
Spierer, Stuart; and Spector, George, 4,603,791, Cl. 220-404.000.

Speicher, Vernon L.; and Bach, Stanley M., Jr., to Mirowski, Mieczyslaw. Intravascular multiple electrode unitary catheter. 4,603,705, Cl. 128-786.000.

Spencer, Herbert J. C., to Telspec Limited. Apparatus for providing fluid pressure for testing a seal. 4,603,576, Cl. 73-40.000.

Sperry Corporation: *See*—
Paul, Maynard C., 4,604,176, Cl. 204-192.00M.
Wing, Willis G., 4,603,483, Cl. 33-324.000.

Spiegel, Nikolaus: *See*—
Jeschke, Willi; and Spiegel, Nikolaus, 4,603,641, Cl. 101-415.100.

Spiel, Albert: *See*—
Spanier, Henry C.; Spiel, Albert; and Rinaldo, Gary M. J., 4,604,289, Cl. 426-19.000.

Spierer, Stuart; and Spector, George. Refund bottle and can bag. 4,603,791, Cl. 220-404.000.

Spikes, Hugh D. Line protector. 4,603,737, Cl. 166-241.000.

Spire Corporation: *See*—
Evans, Robert D.; and Halverson, Ward D., 4,604,292, Cl. 427-39.000.

Sprecher, Mark A.: *See*—
Wiegers, Wilhelmus J.; and Sprecker, Mark A., 4,604,487, Cl. 568-715.000.

Spreetwers, Harm R., to Akzo N.V. Tubular object of a layered plastics material and a method for the manufacture thereof. 4,604,307, Cl. 428-35.000.

Spry, Douglas O., to Eli Lilly and Company. 3-(alkynylalkyloxy) cephalosporins. 4,604,386, Cl. 514-200.000.

Spyra, Wolfgang: *See*—
Brandis, Helmut; and Spyra, Wolfgang, 4,604,147, Cl. 148-102.000.

Staats, Gotthard; and Thome, Horst, to Aktien-Gesellschaft der Dillinger Huttenwereke. Method of and vessel for removing samples from a bath of molten metal. 4,603,590, Cl. 73-864.580.

Stacey, John, to United Kingdom Atomic Energy Authority. Heat exchanger tube repair. 4,604,512, Cl. 219-85.00M.

Stacher, George W., to Rockwell International Corporation. Super plastic forming method with heat treated seals. 4,603,808, Cl. 228-265.000.

Stahl, G. Allan: *See*—
Irvin, Howard B.; Stahl, G. Allan; and Clark, Earl, 4,604,216, Cl. 252-8.510.

Stahl, Glenn L.: *See*—
Orlowski, Ronald C.; Seyler, Jay K.; and Stahl, Glenn L., 4,604,237, Cl. 530-307.000.
Orlowski, Ronald C.; Seyler, Jay K.; and Stahl, Glenn L., 4,604,238, Cl. 530-307.000.

Stal-Laval Turbin AB: *See*—
Henriksson, Erik A., 4,604,050, Cl. 431-121.000.

Standard Oil Company, The: *See*—
Barrington, James D.; Grasselli, Robert K.; and Kartisek, Craig T., 4,604,244, Cl. 558-320.000.

Standex International Corporation: *See*—
Black, John W., 4,604,045, Cl. 425-575.000.

Stanley, Gerald R., to Crown International, Inc. Oscillator having a sixteen bit signal generation utilizing an eight bit processor. 4,604,719, Cl. 364-721.000.

Stanton, James H., to Diversey Wyandotte Corporation. Alpha olefin sulfonates as conveyor lubricants. 4,604,220, Cl. 252-33.400.

Staplin, Theodore R., Jr.; Bradley, John J.; and Stoffers, Brian L., to Honeywell Information Systems Inc. Decimal arithmetic logic unit for doubling or complementing decimal operand. 4,604,722, Cl. 364-736.000.

Stauffer Chemical Company: *See*—
Anzenberger, Joseph F., Sr., 4,604,227, Cl. 252-389.200.
Goswami, Jagadish C.; Aurichio, Joseph A.; and Zingaro, Joseph R., 4,604,230, Cl. 252-514.000.
Walsh, Edward N., 4,604,330, Cl. 429-13.000.

Steer, Peter L., to Craig Medical Products, Limited. Tap or valve. 4,603,837, Cl. 251-352.000.

Steinbrenner, Ulrich: *See*—
Bertsch, Richard; Gunther, Dieter; Schnurle, Hans; and Steinbrenner, Ulrich, 4,603,670, Cl. 123-440.000.

Steinebrunner, Walter: *See*—
Dorflinger, Benno; and Steinebrunner, Walter, 4,603,913, Cl. 300-7.000.

Steiner, G. Lewis: *See*—
Brown, Richard P.; Lemay, Richard A.; Steiner, G. Lewis; and Woods, William E., 4,604,685, Cl. 364-200.000.

Stepanov, Boris A.: *See*—
Ganago, Oleg A.; Safonov, Anatoly V.; Stepanov, Boris A.; Subich, Vadim N.; Frolov, Alexandr D.; Lobanov, Nikolai A.; Lumer, Yakov L.; Xenofontov, Alexei M.; Rudman, Leonid I.; Lebed, Alexandr D.; Mamatsashvili, Vasha I.; Kljuchnikov, Valery F.; Birkadze, Dzhemal I.; Shklyarman, Sergei S.; Gordeev, Nikolai A.; Golovin, Vasily Y.; Kruk, Alexandr T.; Yakovenko, Ivan F.; Novikov, Vladimir V.; Grishkov, Andrei M.; Gorozhankin, Valery N.; Svistunov, Vladmir E.; Bocharov, Jury A.; and Sergeev, Jury N., 4,603,573, Cl. 72-454.000.

Sterling Drug Inc.: *See*—
Lesher, George Y.; and Singh, Baldev, 4,604,399, Cl. 514-300.000.

Sterling, Edward L., Jr.; and Bastijanic, Edward, to Babcock & Wilcox Company, The. Voltage pulse to current regulating convertor. 4,604,566, Cl. 323-275.000.

Stern, Leif E. Coupling device for connecting a material outlet to a packing. 4,603,793, Cl. 222-105.000.

Stevens, John K. Alphanumeric display modules. 4,603,495, Cl. 40-451.000.

Stewart, John M., to Sanitation Equipment Limited. Toilet with sight gauge. 4,603,443, Cl. 4-314.000.

Steyr-Daimler-Puch AG: *See*—
Rollenitz, Leopold; Schmidt, Harald; Freudenschuss, Otto; and Morell, Josef, 4,603,811, Cl. 239-90.000.

Stiefel, Edward I.: *See*—
Edelson, Edward H.; Stiefel, Edward I.; Chianelli, Russell R.; and Coyle, Catherine L., 4,604,183, Cl. 208-420.000.

Stigler, Anton. Process for the production of a profile from dry powder material along with a contrivance for this purpose. 4,604,252, Cl. 264-120.000.

Stikvoort, Eduard F., to U.S. Philips Corporation. Interpolating filter arrangement with non-rational ratio between the input and the output sampling frequencies. 4,604,720, Cl. 364-724.000.

Stoesser, Paul R.; Cuzic, John E.; and McLaren, John W., to Dow Chemical Company, The. Foam-generating pump sprayer. 4,603,812, Cl. 239-329.000.

Stoffers, Brian L.: *See—*
Staplin, Theodore R., Jr.; Bradley, John J.; and Stoffers, Brian L., 4,604,722, Cl. 364-736.000.

Stoltz, John W., to Gearhart Industries, Inc. Side entry sub with tension release wireline cable clamp. 4,603,578, Cl. 73-151.000.

Stout, Garry A.; and Perry, Leroy A., to Emhart Industries, Inc. Timer blade arrangement. 4,604,504, Cl. 200-38.00B.

Strain, Robert J., to Fairchild Semiconductor Corporation. Method for making a CMOS circuit having a reduced tendency to latch by controlling the band-gap of source and drain regions. 4,603,471, Cl. 29-576.00B.

Stranahan, Michael: *See—*
Lew, Hyok S.; and Stranahan, Michael, 4,603,519, Cl. 52-81.000.
Lew, Hyok S.; and Stranahan, Michael, 4,603,595, Cl. 74-191.000.

Strandell, Erik: *See—*
Bergkvist, Bruno; Kolhi, Martti; Strandell, Erik; and Svemar, Christer, 4,604,136, Cl. 75-24.000.

Strassmeir, Maximilian E. F. Cylinder lock embodying at least two rows of tumbler pin bores and opposed rows of locking pins which interact to preclude picking. 4,603,565, Cl. 70-358.000.

Strauss, Gottfried, to Glasstemp of Toledo, Inc. Apparatus for manufacturing of tempered, bent glass sheets. 4,604,124, Cl. 65-273.000.

Streichenberger, Gilles: *See—*
Cornu, Pierre-Jean; Perrin, Claude; Dumaitre, Bernard; and Streichenberger, Gilles, 4,604,393, Cl. 514-229.000.

Strenkowski, John G.; and Yang, John P., to Lockheed Electronics Company, Inc. Digital phase correlator. 4,604,582, Cl. 328-55.000.

Stromswold, Chester E., to Sanders Associates, Inc. Acquisition system employing circular array. 4,604,626, Cl. 343-417.000.

Strothmann, Thomas. Level sensing apparatus providing output signals compatible with digital apparatus. 4,603,484, Cl. 33-366.000.

Struck, Joseph W.: *See—*
Loose, Richard D.; and Struck, Joseph W., 4,603,819, Cl. 242-107.40A.

Structural Design Services: *See—*
Watson, John, 4,603,532, Cl. 52-830.000.

Stucki, Felix, to Girsberger Aktiengesellschaft. Control mechanism for an adjustable chair or the like. 4,603,905, Cl. 297-300.000.

Stumpe, Werner: *See—*
Grauel, Ingolf; Kulke, Gunter; Muller, Egbert; and Stumpe, Werner, 4,603,919, Cl. 303-6.00R.

Sturm, Theodor: *See—*
Naser, Joachim; Schmid, Olaf; Schmidt, Gerhard; Sturm, Theodor; and Walter, Berthold, 4,604,598, Cl. 335-128.000.

Su, Sophia R.: *See—*
Oblas, Daniel W.; and Su, Sophia R., 4,604,276, Cl. 423-449.000.

Subich, Vadim N.: *See—*
Ganago, Oleg A.; Safonov, Anatoly V.; Stepanov, Boris A.; Subich, Vadim N.; Frolov, Alexandr D.; Lobanov, Nikolai A.; Lumer, Yakov L.; Xenofontov, Alexei M.; Rudman, Leonid I.; Lebed, Alexandr D.; Mamatsashvili, Vasha I.; Kljuchnikov, Valery F.; Birkadze, Dzhemal I.; Shklyarman, Sergei S.; Gordeev, Nikolai A.; Golovin, Vasily Y.; Kruk, Alexandr T.; Yakovenko, Ivan F.; Novikov, Vladimir V.; Grishkov, Andrei M.; Gorozhankin, Valery N.; Svistunov, Vladmir E.; Bocharov, Jury A.; and Sergeev, Jury N., 4,603,573, Cl. 72-454.000.

Sudbeck, Rainer: *See—*
Baumgartner, Hans; Brandstadter, Manfred; and Sudbeck, Rainer, 4,604,040, Cl. 418-55.000.

Suefuji, Kazutaka; Yasuda, Hiromu; Hayashi, Masakatsu; Arata, Tetsuya; Oguni, Kensaku; Kuroda, Shigeaki; Atsumi, Akira; Ishibane, Kyuhei; Terada, Hirokiyo; Senshu, Takao; and Kogure, Hiroshi, to Hitachi, Ltd. Control method and apparatus for an air conditioner using a heat pump. 4,603,556, Cl. 62-180.000.

Suemitsu, Takashi; and Niriki, Takashi, to Pioneer Electronic Corporation. Method of fabricating integrated semiconductor circuit. 4,603,473, Cl. 29-578.000.

Suganuma, Saburo; and Kataoka, Hiroyuki, to Fuji Xerox Co., Ltd. Document issuing apparatus for printing a set of transaction control slips for each of many transactions. 4,604,696, Cl. 364-401.000.

Suganuma, Tsuneo: *See—*
Matsumura, Hiroyoshi; Katsuyama, Toshio; Ohta, Norio; Suganuma, Tsuneo; Nagatsuma, Kazuyuki; and Sugita, Yutaka, 4,604,577, Cl. 324-244.000.

Sugawara, Toyokazu: *See—*
Kitsukawa, Tomohiko; Kusano, Hiroshi; Miyata, Eiji; and Sugawara, Toyokazu, 4,604,483, Cl. 562-443.000.

Sugaya, Yoshio: *See—*
Miyake, Haruhisa; Suhara, Manabu; Sugaya, Yoshio; and Horie, Hirofumi, 4,604,170, Cl. 204-98.000.

Sugihara, Toshihiko, to Kyoritsu Kikai Co., Ltd. Shutter. 4,603,723, Cl. 160-35.000.

Sugimoto, Tadao; Ikeda, Hideo; Mifune, Hiroyuki; and Nakamura, Koki, to Fuji Photo Film Co., Ltd. Method of developing silver halide photographic light-sensitive material. 4,604,339, Cl. 430-244.000.

Sugino, Eiichi: *See—*
Miyasaka, Tadashi; Sawada, Seigo; Nokata, Kenichiro; Sugino, Eiichi; and Mutai, Masahiko, 4,604,463, Cl. 544-125.000.

Sugino, Hiromu: *See—*
Kung, Hsiang-Fu; Sugino, Hiromu; and Honda, Susumu, 4,604,284, Cl. 424-85.000.

Sugita, Yutaka: *See—*
Matsumura, Hiroyoshi; Katsuyama, Toshio; Ohta, Norio; Suganuma, Tsuneo; Nagatsuma, Kazuyuki; and Sugita, Yutaka, 4,604,577, Cl. 324-244.000.

Sugiura, Satoshi; Mitomi, Mitchio; and Suzuki, Hirokazu, to Tokyo Shibaura Denki Kabushiki Kaisha. Nuclear magnetic resonance diagnostic apparatus. 4,604,580, Cl. 324-311.000.

Sugiyama, Kenji: *See—*
Miyazaki, Takeshi; and Sugiyama, Kenji, 4,603,891, Cl. 285-205.000.

Suhara, Manabu: *See—*
Miyake, Haruhisa; Suhara, Manabu; Sugaya, Yoshio; and Horie, Hirofumi, 4,604,170, Cl. 204-98.000.

Suits, Bevan D. Convertible furniture apparatus. 4,603,444, Cl. 5-431.000.

Sullivan, Joseph M.: *See—*
Alley, Robert P.; Huber, Paul G.; and Sullivan, Joseph M., 4,604,552, Cl. 315-176.000.

Sullivan, Richard A., to Envirex Inc. Staged anaerobic reactor. 4,604,206, Cl. 210-603.000.

Sulzer Brothers Limited: *See—*
Tiefenthaler, Edelbert, 4,603,710, Cl. 137-514.700.

Sumitomo Chemical Company, Limited: *See—*
Kato, Yasuyuki; Yuyama, Masahiro; Moritani, Masahiko; and Futagami, Mikio, 4,604,414, Cl. 524-139.000.
Mitsuno, Tatsuyuki; Koyama, Teruhisa; and Ikezawa, Yuji, 4,604,421, Cl. 524-449.000.
Mori, Kenji; Takematsu, Tetsuo; Sakakibara, Masayuki; and Oshio, Hiromichi, 4,604,240, Cl. 540-114.000.
Oi, Naobumi; Doi, Tadashi; and Nagase, Masayuki, 4,604,207, Cl. 210-635.000.

Sumitomo Electric Industries Ltd.: *See—*
Ito, Mitsuru, 4,603,930, Cl. 339-17.00R.
Kohno, Teruhisa, 4,603,917, Cl. 303-6.00C.
Okoshi, Takanori, 4,603,943, Cl. 350-96.300.
Yamada, Katsuhiko, 4,604,137, Cl. 75-49.000.

Sumitomo Metal Industries, Ltd.: *See—*
Aida, Akira; Ohno, Tetsu; Fukuda, Takashi; Aihara, Kenji; Mizoguchi, Takuo; Nishimura, Syozi; and Kajiyama, Katsuyoshi, 4,604,146, Cl. 148-12.00B.
Kanabara, Susumu; and Aihara, Kenji, 4,604,145, Cl. 148-12.00B.

Sumitomo Metal Mining Company Limited: *See—*
Huang, Yen-Ching; and Nikaido, Hideyasu, 4,604,291, Cl. 427-37.000.

Sun, Shao-Tang: *See—*
Lukach, Carl; and Sun, Shao-Tang, 4,604,217, Cl. 252-8.55R.

Sunbeam Plastics Corp.: *See—*
Gach, Peter P., 4,603,785, Cl. 215-230.000.

Sundstrand Corporation: *See—*
Chetty, P. R. K., 4,604,567, Cl. 323-299.000.
Grimm, Duane H., 4,603,594, Cl. 74-89.150.
Niggemann, Richard E., 4,603,732, Cl. 165-41.000.

Sundstrand Data Control, Inc.: *See—*
Benn, George; Frost, Wendell; Knudsen, Chris; and Nieuwsma, David, 4,604,711, Cl. 364-900.000.

Suomen Sokeri Oy: *See—*
Yoritomi, Kenzaburo, 4,604,199, Cl. 210-293.000.

Surdi, Jean M., to S.N.E.C.M.A. Device for locking a turbine blade to a rotor disk. 4,604,033, Cl. 416-220.00R.

Suresh, Bindinganavle R.: *See—*
Aggarwal, Raj; and Suresh, Bindinganavle R., 4,604,738, Cl. 367-135.000.

Suter, Max, to Omega Electronics S.A. Device for the electromagnetic transmission of an event taking place in an interference-laden environment. 4,604,621, Cl. 340-825.690.

Sutou, Masatsune; and Uneyama, Yoshihisa, to Hitachi, Ltd. Torque control apparatus for enclosed compressors. 4,604,036, Cl. 417-18.000.

Sutterlin, Dieter: *See—*
Walt, Hans; and Sutterlin, Dieter, 4,604,255, Cl. 264-273.000.

Suvorov, Alexandr V.: *See—*
Shaginian, Albert S.; Asan-Dzhalalov, Alexei G.; Pevnev, Anatoly A.; Androsenko, Alexandr P.; Suvorov, Alexandr V.; Khalitov, Boris V.; Palkin, Leonid N.; Gnatchenko, Viktor V.; Makarov, Nikolai P.; Panteleev, Valery A.; Davidenko, Nikolai I.; Shpilevsky, Stanislav K.; Tikhonenko, Alexandr S.; and Romanovsky, Anatoly G., 4,604,724, Cl. 364-478.000.

Suyama, Tadakazu: *See—*
Yokoyama, Kazumasa; Fukaya, Chikara; Tsuda, Yoshio; Ono, Taizo; Arakawa, Yoshio; Inoue, Yoshihisa; Naito, Youichiro; and Suyama, Tadakazu, 4,604,385, Cl. 514-183.000.

Suyama, Toshio: *See—*
Yamamoto, Masahiko; Nishino, Yoshinori; Uda, Tadayoshi; Sonoda, Yoshiteru; and Suyama, Toshio, 4,604,254, Cl. 264-254.000.

Suzukawa, Yuichi; Kobayashi, Waichi; and Ohtaka, Satoshi, to Ube Industries, Ltd. Demolition facilitating agent. 4,604,143, Cl. 106-89.000.

Suzuki, Go; and Michisita, Kazuo, to NGK Insulators, Ltd. Ceramic structural body and a method of manufacturing the same. 4,604,677, Cl. 361-393.000.

Suzuki, Hirokazu: *See*—
Sugiura, Satoshi; Mitomi, Mitchio; and Suzuki, Hirokazu, 4,604,580, Cl. 324-311.000.

Suzuki, Ikuo; and Oda, Yukio, to Toyoda Koki Kabushiki Kaisha. Method of grinding a workpiece having a cylindrical portion and shoulder portions. 4,603,514, Cl. 51-281.00C.

Suzuki, Keisuke: *See*—
Tsuchihashi, Genichi; and Suzuki, Keisuke, 4,604,486, Cl. 568-322.000.

Suzuki, Nobuyuki, to Canon Kabushiki Kaisha. Switch state detecting apparatus for a camera. 4,603,957, Cl. 354-410.000.

Suzuki, Takaya: *See*—
Kobayashi, Yutaka; Fukami, Akira; and Suzuki, Takaya, 4,604,159, Cl. 156-617.00R.

Suzuki, Yasuhito: *See*—
Tsuji, Shinsaku; Kimura, Toshimitsu; Asano, Yasushi; and Suzuki, Yasuhito, 4,603,598, Cl. 74-473.00P.

Suzuki, Yoshiharu: *See*—
Akiba, Osamu; Suzuki, Yoshiharu; Terada, Motoharu; and Saeki, Takashi, 4,604,618, Cl. 340-825.060.

Svemar, Christer: *See*—
Bergkvist, Bruno; Kolhi, Martti; Strandell, Erik; and Svemar, Christer, 4,604,136, Cl. 75-24.000.

Svistunov, Vladmir E.: *See*—
Ganago, Oleg A.; Safonov, Anatoly V.; Stepanov, Boris A.; Subich, Vadim N.; Frolov, Alexandr D.; Lobanov, Nikolai A.; Lumer, Yakov L.; Xenofontov, Alexei M.; Rudman, Leonid I.; Lebed, Alexandr D.; Mamatsashvili, Vasha I.; Kljuchnikov, Valery F.; Birkadze, Dzhemal I.; Shklyarman, Sergei S.; Gordeev, Nikolai A.; Golovin, Vasily Y.; Kruk, Alexandr T.; Yakovenko, Ivan F.; Novikov, Vladimir V.; Grishkov, Andrei M.; Gorozhankin, Valery N.; Svistunov, Vladmir E.; Bocharov, Jury A.; and Sergeev, Jury N., 4,603,573, Cl. 72-454.000.

Swales, Barton L. Disk blade scraper. 4,603,746, Cl. 172-559.000.

Swapp, Mavin: *See*—
Littlebury, Hugh; and Swapp, Mavin, 4,604,744, Cl. 371-20.000.

Sweany, Louis P., to Emhart Industries, Inc. Audio signalling device. 4,604,606, Cl. 340-384.00E.

Swistak, Gregory B., to Xerox Corporation. Photoreceptor charging scorotron. 4,603,964, Cl. 355-14.0CH.

Switall, Thomas G., to Ryco Graphic Manufacturing, Inc. Liquid applicator for a printing press. 4,603,655, Cl. 118-302.000.

Switches, Inc.: *See*—
Gebhardt, Wallace E., 4,604,506, Cl. 200-61.890.

Swoboda, Johann: *See*—
Hambrecht, Juergen; Illers, Karl-Heinz; Echte, Adolf; and Swoboda, Johann, 4,604,415, Cl. 524-140.000.

Sybenga, John R. Professional stereoscopic projection. 4,603,952, Cl. 352-65.000.

Sychev, Alexel E.: *See*—
Naumov, Jury I.; Juzefovich, Dmitry K.; Epifanova, Valentina S.; Kucherenko, Vladimir I.; Flerov, Valery N.; Praporov, Anatoly M.; Shustov, Vladimir P.; Sychev, Alexel E.; Korolev, Georgy V.; Kotov, Evgeny P.; and Derevyanko, Yan N., 4,604,175, Cl. 204-151.000.

Szabo, Zsolt: *See*—
Benko, Eva; Csabanko, Istvan; Porkolab, Aniko ; Szabo, Zsolt; and Takacs, Gabor, 4,604,086, Cl. 494-16.000.

Tadokoro, Hideki: *See*—
Ikada, Yoshito; Gen, Shokyu; Shimizu, Yasuhiko; Tamura, Koichi; Nakamura, Tatsuo; Kimura, Sosuke; Cho, Tsuneo; Tadokoro, Hideki; and Hori, Kazuaki, 4,603,695, Cl. 128-334.00R.

Taforo, Terrance A.: *See*—
Fernandes, Pete M.; and Taforo, Terrance A., 4,604,377, Cl. 514-8.000.

Taga, Yukio: *See*—
Morishita, Satoru; Shindo, Kenzi; Tozawa, Isao; and Taga, Yukio, 4,604,372, Cl. 502-62.000.

Taguchi, Michihiro, to Sanshin Kogyo Kabushiki Kaisha. Exhaust silencer structure for outboard engines. 4,604,069, Cl. 440-88.000.

Tai, Henry T.: *See*—
Brown, Eric W.; and Tai, Henry T., 4,604,093, Cl. 604-248.000.

Takacs, Gabor: *See*—
Benko, Eva; Csabanko, Istvan; Porkolab, Aniko ; Szabo, Zsolt; and Takacs, Gabor, 4,604,086, Cl. 494-16.000.

Takada, Hiroshi, to Murata Kikai Kabushiki Kaisha. Lifting device for a heddle frame. 4,603,713, Cl. 139-82.000.

Takahashi, Masahiro: *See*—
Hamada, Takuji; Takahashi, Masahiro; and Mizokawa, Sadao, 4,604,742, Cl. 370-89.000.

Takahashi, Mikio: *See*—
Moribe, Yoshihiro; Ohkubo, Nobukuni; Takahashi, Mikio; and Nakagoshi, Kazuo, 4,604,663, Cl. 360-73.000.

Takahashi, Saburo, to Mitsubishi Jukogyo Kabushiki Kaisha. Pipe coupling joint. 4,603,893, Cl. 285-342.000.

Takahashi, Yasushi: *See*—
Takasaki, Yoshitaka; Yamashita, Kiichi; and Takahashi, Yasushi, 4,604,745, Cl. 371-22.000.

Takahata, Hisatoshi, to Nippon Kogaku K. K. Photographic information generating apparatus for camera. 4,603,959, Cl. 354-420.000.

Takaishi, Naotake: *See*—
Fujikura, Yoshiaki; Kajihara, Yasushi; Takaishi, Naotake; Inamoto, Yoshiaki; Kimura, Akio; Nakajima, Motoki; and Miyamoto, Norioki, 4,604,488, Cl. 568-820.000.

Takaki, Shoji: *See*—
Ohmori, Akira; Takaki, Shoji; and Kitahara, Takahiro, 4,604,482, Cl. 560-213.000.

Takakura, Makoto; Kondo, Susumu; and Nogami, Tatsuya, to Nissan Chemical Industries, Ltd. Polymer composition containing an organic metal complex and method for producing a metallized polymer from the polymer composition. 4,604,303, Cl. 427-229.000.

Takamizawa, Minoru; Kobayashi, Taishi; Hayashida, Akira; and Takeda, Yoshihumi, to Shin-Etsu Chemical Co., Ltd. Method for the preparation of an inorganic fiber containing silicon, carbon, boron and nitrogen. 4,604,367, Cl. 501-95.000.

Takano, Saburo, to Kabushiki Kaisha Sanai Estate. Deodorizing apparatus. 4,604,113, Cl. 55-201.000.

Takasago Perfumery Co., Ltd.: *See*—
Kumobayashi, Hidenori; and Akutagawa, Susumu, 4,604,474, Cl. 556-7.000.

Takasaki, Yoshitaka; Yamashita, Kiichi; and Takahashi, Yasushi, to Hitachi, Ltd. Method of searching fault locations in digital transmission line. 4,604,745, Cl. 371-22.000.

Takasugi, Hisashi: *See*—
Takaya, Takao; Takasugi, Hisashi; Tsuji, Kiyoshi; and Chiba, Toshiyuki, 4,604,456, Cl. 540-222.000.

Takata, Hiroyuki: *See*—
Sakata, Isao; Nakajima, Susumu; Koshimizu, Koichi; Samejima, Natsuki; Inohara, Kazumi; and Takata, Hiroyuki, 4,604,241, Cl. 540-145.000.

Takatoshi, Ono, to Disco Abrasive Systems, Ltd. Apparatus for cutting a sheet-like member applied to a surface of a semiconductor wafer. 4,603,609, Cl. 82-51.000.

Takaya, Takao; Takasugi, Hisashi; Tsuji, Kiyoshi; and Chiba, Toshiyuki, to Fujisawa Pharmaceutical Company, Limited. Cephem and cephem compounds. 4,604,456, Cl. 540-222.000.

Takeda Chemical Industries Ltd.: *See*—
Kung, Hsiang-Fu; Sugino, Hiromu; and Honda, Susumu, 4,604,284, Cl. 424-85.000.

Takeda, Kota; and Masuda, Tsugunori, to Kabushiki Kaisha Tamura Seisakusho. Automatic soldering apparatus. 4,603,804, Cl. 228-40.000.

Takeda, Yoshihumi: *See*—
Takamizawa, Minoru; Kobayashi, Taishi; Hayashida, Akira; and Takeda, Yoshihumi, 4,604,367, Cl. 501-95.000.

Takedomi, Toshikatsu: *See*—
Onishi, Ken; Ishida, Masayuki; Shirozu, Masakazu; Takedomi, Toshikatsu; Namekawa, Makoto; and Haikawa, Yukihiko, 4,604,747, Cl. 371-37.000.

Takekoshi, Yoshitaka; and Ushiyama, Shigeyuki, to Fanuc Limited. Optical absolute encoder. 4,604,521, Cl. 250-231.0SE.

Takematsu, Tetsuo: *See*—
Mori, Kenji; Takematsu, Tetsuo; Sakakibara, Masayuki; and Oshio, Hiromichi, 4,604,240, Cl. 540-114.000.

Takemoto, Eiji; Miyaki, Masahiko; Norimatsu, Hideaki; Hobo, Nobuhito; Tsuzuki, Yoshihiko; and Konishi, Yoshimune, to Nippondenso Co., Ltd.; and Toyota Jidosha Kabushiki Kaisha. Fuel injection pump having voltage variation compensation. 4,603,669, Cl. 123-357.000.

Takenoya, Hideaki; and Mishima, Fumiyuki, to Janome Sewing Machine Co., Ltd. Attaching device for a platen body in a printer. 4,603,988, Cl. 400-649.000.

Takeuchi, Hiroshi: *See*—
Umemura, Shinichiro; Takeuchi, Hiroshi; Katakura, Kageyoshi; and Shinomura, Ryuichi, 4,604,543, Cl. 310-334.000.

Takeuchi, Norio: *See*—
Murasato, Shigeru; Nakanishi, Yuji; Fujiwara, Kenzou; Takeuchi, Norio; and Horita, Tsuyoshi, 4,604,541, Cl. 310-180.000.

Takeuti, Takikazu: *See*—
Horie, Tuneo; Ozaki, Shiyozi; and Takeuti, Takikazu, 4,604,660, Cl. 360-45.000.

Takoh, Masako: *See*—
Wakabayashi, Shinichi; and Takoh, Masako, 4,604,167, Cl. 204-29.000.

Talley Defense Systems, Inc.: *See*—
Knowlton, Gregory D.; and Pietz, John F., 4,604,151, Cl. 149-35.000.

Talpo, Gianpietro, to SACE S.p.A. Costruzioni Elettromeccaniche. Electric circuit breaker of the type using an arc quenching fluid with pressure self-generating due to the breakdown of the fluid. 4,604,508, Cl. 200-148.00R.

Tamai, Yasuo: *See*—
Aonuma, Masashi; and Tamai, Yasuo, 4,604,296, Cl. 427-57.000.

Tamatani, Masaaki: *See*—
Matsuda, Naotoshi; and Tamatani, Masaaki, 4,604,549, Cl. 313-468.000.

Tamura, Koichi: *See*—
Ikada, Yoshito; Gen, Shokyu; Shimizu, Yasuhiko; Tamura, Koichi; Nakamura, Tatsuo; Kimura, Sosuke; Cho, Tsuneo; Tadokoro, Hideki; and Hori, Kazuaki, 4,603,695, Cl. 128-334.00R.

Tanaka, Hideo: *See*—
Torii, Shigeru; Tanaka, Hideo; Nogami, Junzo; Sasaoka, Michio; Saito, Norio; and Shiroi, Takashi, 4,604,457, Cl. 540-223.000.

Tanaka, Masahiro; Azuma, Kazufumi; Nate, Kazuo; and Nakatani, Mitsuo, to Hitachi, Ltd. Process for forming an organic thin film. 4,604,294, Cl. 427-53.100.

Tanaka, Masayuki: *See—*
Mashimo, Satoshi; Tanaka, Masayuki; Yamaguchi, Yoshio; and Kinoshita, Takashi, 4,604,081, Cl. 474-205.000.
Tanaka, Mitsuo, to Yanmar Diesel Engine Co., Ltd. Gas-diesel dual fuel engine. 4,603,674, Cl. 123-575.000.
Tanaka, Mitsutoshi: *See—*
Arai, Fuminori; Tanaka, Mitsutoshi; and Katsuyama, Harumi, 4,604,347, Cl. 435-4.000.
Tanaka, Shigeru: *See—*
Yoshimura, Shingo; Ito, Katsumi; and Tanaka, Shigeru, 4,603,753, Cl. 180-131.000.
Tanaka, Yasuhiko: *See—*
Kimura, Yoshiaki; and Tanaka, Yasuhiko, 4,604,633, Cl. 346-140.00R.
Tanaka, Yoshikazu; Kumura, Haruyoshi; Abo, Keiju; Hirano, Hiroyuki; and Yamamuro, Sigeaki, to Nissan Motor Company, Limited. Method of controlling continuously variable transmission. 4,603,602, Cl. 74-866.000.
Tandy, John S.: *See—*
Lee, Eldon C.; van Pottelsberghe de la Potterie, Pierre J.; and Tandy, John S., 4,604,290, Cl. 426-533.000.
Tanigawa, Shigeho; Shiina, Shuichi; and Uchida, Kimio, to Hitachi Metals, Inc. Apparatus for producing anisotropic magnets. 4,604,042, Cl. 425-3.000.
Tankersley, Robert W., Jr.: *See—*
Munson, Harry R., Jr.; and Tankersley, Robert W., Jr., 4,604,404, Cl. 514-494.000.
Tarascon, Jean-Marie, to Bell Communications Research, Inc. Mo_6Se_6 solid state electrode for secondary lithium batteries. 4,604,334, Cl. 429-194.000.
Tarbox, John W. Method for handling harness wire. 4,603,476, Cl. 29-863.000.
Tari, Karl; Bommaraju, Tilak V.; and Rader, Charles G., to Occidental Chemical Corporation. Process for preparing diaphragm-deposited activated cathodes. 4,604,301, Cl. 427-123.000.
Tateyama, Masamitsu: *See—*
Nakai, Yoshio; Yamauchi, Katsusuke; Kishimura, Masaaki; and Tateyama, Masamitsu, 4,604,416, Cl. 524-145.000.
Tax, Hans; and Kurz, Herbert, to BETAX Gesellschaft fur Beratung und Entwicklung technischer Anlagen mbH. Device on hoisting machinery for automatic control of the movement of the load carrier. 4,603,783, Cl. 212-132.000.
Taylor, Theodore L.: *See—*
Middleton, Frederic H.; Mollenhoff, David V.; Taylor, Theodore L.; and Vaughn, Thomas N., 4,603,448, Cl. 15-22.00R.
Teac Corporation: *See—*
Kitahara, Toshihiro; and Noda, Yasushi, 4,604,666, Cl. 360-99.000.
Tedd, David C.; and Kennedy, David M., to Thorn EMI Instruments Limited. Multimeters. 4,604,569, Cl. 324-73.00R.
Teepak, Inc.: *See—*
Goldberg, Michael S., 4,604,309, Cl. 428-36.000.
Martinek, Thomas W., 4,604,085, Cl. 493-259.000.
Teledyne Industries, Inc.: *See—*
Fisher, Leo; and Weiser, Atilla, 4,604,058, Cl. 433-127.000.
Telefunken Electronic GmbH: *See—*
Rinderle, Heinz, 4,604,586, Cl. 330-288.000.
Teleplex Corporation: *See—*
Schwan, Herbert A.; and Schwan, Eduard A., 4,604,682, Cl. 364-200.000.
Telex Communications, Inc.: *See—*
Cox, Roger A., 4,604,628, Cl. 343-818.000.
Telspec Limited: *See—*
Spencer, Herbert J. C., 4,603,576, Cl. 73-40.000.
Teng, Lin-nar L., to Research Corporation. Enteric compounds and complexes. 4,604,376, Cl. 514-3.000.
Tennerstedt, M. Richard, to Illinois Tool Works Inc. Tool retention mechanism. 4,604,009, Cl. 409-233.000.
Terada, Hirokiyo: *See—*
Suefuji, Kazutaka; Yasuda, Hiromu; Hayashi, Masakatsu; Arata, Tetsuya; Oguni, Kensaku; Kuroda, Shigeaki; Atsumi, Akira; Ishibane, Kyuhei; Terada, Hirokiyo; Senshu, Takao; and Kogure, Hiroshi, 4,603,556, Cl. 62-180.000.
Terada, Motoharu: *See—*
Akiba, Osamu; Suzuki, Yoshiharu; Terada, Motoharu; and Saeki, Takashi, 4,604,618, Cl. 340-825.060.
Teramachi, Hiroshi. Roller bearing for linear sliding movement. 4,603,922, Cl. 384-44.000.
Terashita, Takaaki, to Fuji Photo Film Co., Ltd. Method for setting conditions in photographic printing. 4,603,969, Cl. 355-77.000.
Terauchi, Kiyoshi, to Sanden Corporation. Scroll type fluid compressor with axial clearance adjusting construction. 4,604,039, Cl. 418-55.000.
Terzian, John, to Raytheon Company. Sorting apparatus. 4,604,726, Cl. 364-900.000.
Tetra Pak International AB: *See—*
Hilmersson, Anders E.; and Andersson, Helge, 4,603,490, Cl. 34-155.000.
Texas Instruments Incorporated: *See—*
Colman, Derek; and Cotton, David R., 4,604,640, Cl. 357-46.000.
Lam, Hon W., 4,603,468, Cl. 29-571.000.
Shah, Ashwin H.; Chatterjee, Pallab K.; Gallia, James D.; and Mahant-Shetti, Shivaling S., 4,604,727, Cl. 365-189.000.
Thadani, Suresh G.; and Merchant, Gulamabbas A., to Halliburton Company. Method and apparatus for deconvolving apparent conductivity measurements in induction well logging. 4,604,581, Cl. 324-339.000.
Thaler, Arnold; and Kin, Lai, to Windmere Corporation. Electric curling iron with selectively lockable rotatable handles. 4,604,514, Cl. 219-225.000.
Thell, Bengt, to Esselte Sanden AB. Method of applying an electrical charge in ink jet printers, and an arrangement for carrying the method. 4,604,630, Cl. 346-1.100.
Therm-O-Disc, Incorporated: *See—*
Place, Donald E., 4,604,603, Cl. 337-394.000.
Thermal Engine Technology: *See—*
Lagow, Ralph J., 4,603,554, Cl. 60-670.000.
Thibault, Blandine; and Thibault, Delphine. Device for fastening flags or the like to their staff or the like avoiding winding thereof. 4,603,652, Cl. 116-174.000.
Thibault, Delphine: *See—*
Thibault, Blandine; and Thibault, Delphine, 4,603,652, Cl. 116-174.000.
Thiele Kaolin Company: *See—*
Shi, Joseph C. S., 4,604,369, Cl. 501-148.000.
Thoene, Mark L.: *See—*
Duffy, Joseph K.; Thoene, Mark L.; and Combs, Cathy M., 4,603,780, Cl. 206-591.000.
Thomas, David S. Joystick control. 4,604,502, Cl. 200-6.00A.
Thomas, Donald E. Sliding dovetail template. 4,603,717, Cl. 144-144.5GT.
Thomas, Michael: *See—*
Neumann, Peter; Thomas, Michael; Weiss, Stefan; and Trauth, Hubert, 4,604,471, Cl. 549-210.000.
Thomas, Robert H., deceased; by Mary A. Thomas, executrix; Hammond, Willis B.; Friedberger, Michael P.; and Archie, William A., to Allied Corporation. Fluorochemical composition for coating soil resistant yarn. 4,604,316, Cl. 428-265.000.
Thomas, William J.: *See—*
Lecinski, Frank H., Jr.; and Thomas, William J., 4,603,786, Cl. 215-318.000.
Thome, Horst: *See—*
Staats, Gotthard; and Thome, Horst, 4,603,590, Cl. 73-864.580.
Thompson, Dennis W., to Thompson, Dennis W. Detection of defects in conveyor belts. 4,603,778, Cl. 198-810.000.
Thompson, Stephen C., to Gould Inc. Broadband radial vibrator transducer with multiple resonant frequencies. 4,604,542, Cl. 310-334.000.
Thomson Components-Mostek Corporation: *See—*
van Tran, Hiep, 4,604,732, Cl. 365-207.000.
Thomson CSF: *See—*
Demeure, Alain, 4,604,736, Cl. 367-123.000.
Thorn EMI Instruments Limited: *See—*
Tedd, David C.; and Kennedy, David M., 4,604,569, Cl. 324-73.00R.
Thorpe, Donald H.; and Knipple, Raymond P., to Occidental Chemical Corporation. Process for metal modified phenolic novolac resin. 4,604,436, Cl. 525-504.000.
Thorpe, Richard W., to General Dynamics, Pomona Division. System for comparing conditions between selected pairs of terminals in test circuit with conditions between like terminal pairs in reference circuit. 4,604,570, Cl. 324-73.00R.
Thyssen Aktiengesellschaft vorm. August Thyssen-Hutte: *See—*
Grosse-Wordemann, Josef; and Luckow, Herbert, 4,604,511, Cl. 219-76.140.
Thyssen Edelstahlwerke AG: *See—*
Brandis, Helmut; and Spyra, Wolfgang, 4,604,147, Cl. 148-102.000.
Thyssen Industrie AG: *See—*
Miller, Luitpold; Knoll, Helmut; and Meins, Juergen, 4,603,640, Cl. 104-282.000.
Thyssen Stahl AG: *See—*
Hoffken, Erich; Florin, Wolfram; and Hammer, Rudolf, 4,604,138, Cl. 75-51.600.
Tiefenthaler, Edelbert, to Sulzer Brothers Limited. Non-return valve. 4,603,710, Cl. 137-514.700.
Tikhonenko, Alexandr S.: *See—*
Shaginian, Albert S.; Asan-Dzhalalov, Alexei G.; Pevnev, Anatoly A.; Androsenko, Alexandr P.; Suvorov, Alexandr V.; Khalitov, Boris V.; Palkin, Leonid N.; Gnatchenko, Viktor V.; Makarov, Nikolai P.; Panteleev, Valery A.; Davidenko, Nikolai I.; Shpilevsky, Stanislav K.; Tikhonenko, Alexandr S.; and Romanovsky, Anatoly G., 4,604,724, Cl. 364-478.000.
Timex Corporation: *See—*
Brenk, Fritz, 4,603,978, Cl. 368-317.000.
Tobler, David R.: *See—*
Nichols, Robert A.; and Tobler, David R., 4,603,700, Cl. 128-633.000.
Tocco, Inc.: *See—*
Laughlin, John R.; and Mucha, George M., 4,604,510, Cl. 219-10.430.
Toda, Akitoshi: *See—*
Mimura, Yoshiyuki; and Toda, Akitoshi, 4,604,337, Cl. 430-46.000.
Toda, Gyozo: *See—*
Ishihara, Shosaku; Kuroki, Takashi; Toda, Gyozo; Yasukawa, Akio; and Sakamoto, Tatsuji, 4,604,496, Cl. 174-68.500.
Tokai Electric Wire Company Limited: *See—*
Ito, Mitsuru, 4,603,930, Cl. 339-17.00R.
Tokai University: *See—*
Huang, Yen-Ching; and Nikaido, Hideyasu, 4,604,291, Cl. 427-37.000.
Tokyo-Buhin Kogiyo Co., Ltd.: *See—*
Kajihara, Shoji, 4,603,762, Cl. 188-79.50R.
Tokyo Shibaura Denki Kabushiki Kaisha: *See—*
Kinoshita, Hiroyuki, 4,604,639, Cl. 357-23.600.

Konishi, Satoshi, 4,604,641, Cl. 357-59.000.
Matsuda, Naotoshi; and Tamatani, Masaaki, 4,604,549, Cl. 313-468.000.
Miyamoto, Junichi; and Saito, Shinji, 4,604,533, Cl. 307-530.000.
Nakamura, Kunihiko; and Koshiyouji, Takashi, 4,603,849, Cl. 271-186.000.
Sato, Fumitaka, 4,604,748, Cl. 371-38.000.
Shimizu, Makoto, 4,604,653, Cl. 358-256.000.
Sugiura, Satoshi; Mitomi, Mitchio; and Suzuki, Hirokazu, 4,604,580, Cl. 324-311.000.
Yotsumoto, Yoshiharu; Kubota, Katsuhiko; and Sekiba, Toshinobu, 4,604,643, Cl. 357-75.000.

Tolleson, Thomas H.; and Hartzog, Steve B., to Shelby Williams Industries, Inc. Chair with articulated, flexible spring backrest. 4,603,904, Cl. 297-296.000.

Tom, Glenn M., to Hercules Incorporated. Scavengers for the removal of impurities from inert fluids. 4,604,270, Cl. 423-262.000.

Tomita, Kazuo: *See*—
Igarashi, Kohei; and Tomita, Kazuo, 4,604,700, Cl. 364-424.000.

Tomita, Seisuke: *See*—
Oshima, Noboru; Shimizu, Isamu; Yoshimura, Yoshito; Fujimaki, Tatsuo; and Tomita, Seisuke, 4,603,722, Cl. 152-209.00R.

Tomita, Tsuneo: *See*—
Koike, Noboru; Kitamura, Hidenari; and Tomita, Tsuneo, 4,603,829, Cl. 248-553.000.

Tomosue, Hiroshi. Shifting device for objects, such as eggs, to be handled. 4,603,772, Cl. 198-424.000.

Tone, Hirosada, to Fujitsu Limited. Address translation buffer control system. 4,604,688, Cl. 364-200.000.

Toray Industries, Inc.: *See*—
Okamoto, Miyoshi; Iijima, Hiromichi; and Miyoshi, Akito, 4,604,320, Cl. 428-290.000.

Toray Silicone Co., Ltd.: *See*—
Koshii, Taro; Morita, Yoshitsugu; Shinmi, Hideo; and Hanada, Tsuneo, 4,604,435, Cl. 525-476.000.

Torii, Shigeru; Tanaka, Hideo; Nogami, Junzo; Sasaoka, Michio; Saito, Norio; and Shiroi, Takashi, to Otsuka Kagaku Kabushiki Kaisha. 2-substituted cephem derivatives and process for preparing the same. 4,604,457, Cl. 540-223.000.

Toro Lira, Guillermo L.; and Jensen, Earl M., to Nanometrics Incorporated. Integrated circuit wafer handling system. 4,604,020, Cl. 414-217.000.

Toutant, Roy T.; and Lozinski, Gerald J., to General Electric Company. Robotic inspection system. 4,604,715, Cl. 364-513.000.

Toyo Boseki Kabushiki Kaisha: *See*—
Kuze, Katsuaki; Matsuyama, Yuziro; Yamaoka, Yoshio; Murashige, Ryuichi; and Makimura, Osamu, 4,604,453, Cl. 528-481.000.

Toyo Kogyo Co., Ltd.: *See*—
Kido, Yoshinobu, 4,603,552, Cl. 60-605.000.

Toyo Soda Manufacturing Co., Ltd.: *See*—
Morishita, Satoru; Shindo, Kenzi; Tozawa, Isao; and Taga, Yukio, 4,604,372, Cl. 502-62.000.

Toyo Stauffer Chemical Co., Ltd.: *See*—
Tsuchihashi, Genichi; and Suzuki, Keisuke, 4,604,486, Cl. 568-322.000.

Toyoda Gosei Co., Ltd.: *See*—
Iwasa, Tadanobu, 4,603,899, Cl. 296-154.000.
Miyazaki, Takeshi; and Sugiyama, Kenji, 4,603,891, Cl. 285-205.000.

Toyoda Koki Kabushiki Kaisha: *See*—
Inagaki, Syoji; Sanpe, Hideyuki; and Makihara, Norimitsu, 4,604,560, Cl. 318-567.000.
Kawasaki, Hisamitsu; and Kato, Yukio, 4,604,012, Cl. 409-233.000.
Suzuki, Ikuo; and Oda, Yukio, 4,603,514, Cl. 51-281.00C.

Toyota Jidosha Kabushiki Kaisha: *See*—
Akashi, Teruo; Ito, Hiroshi; and Yamada, Shigemichi, 4,603,596, Cl. 74-336.00R.
Igarashi, Kohei; and Tomita, Kazuo, 4,604,700, Cl. 364-424.000.
Konomi, Toshiaki; Ito, Koji; Nagahori, Yukihiro; and Ito, Akio, 4,604,544, Cl. 310-338.000.
Takemoto, Eiji; Miyaki, Masahiko; Norimatsu, Hideaki; Hobo, Nobuhito; Tsuzuki, Yoshihiko; and Konishi, Yoshimune, 4,603,669, Cl. 123-357.000.

Tozawa, Isao: *See*—
Morishita, Satoru; Shindo, Kenzi; Tozawa, Isao; and Taga, Yukio, 4,604,372, Cl. 502-62.000.

Trasch, Heinz-Friedrich: *See*—
Rothe, Anselm; Knappe, Wolfgang-Reinhold; and Trasch, Heinz-Friedrich, 4,604,264, Cl. 422-56.000.

Trauth, Hubert: *See*—
Neumann, Peter; Thomas, Michael; Weiss, Stefan; and Trauth, Hubert, 4,604,471, Cl. 549-210.000.

Trekoval, Jiri: *See*—
Wichterle, Otto; Trekoval, Jiri; Vacik, Jiri; and Michalek, Jiri, 4,604,440, Cl. 526-327.000.

Trimedia Corporation: *See*—
Eltoukhy, Atef; and Price, Rick C., 4,604,179, Cl. 204-298.000.

TRW Inc.: *See*—
Gray, Joseph H., 4,604,721, Cl. 364-726.000.
Mlinar, Mitchell J.; Louie, Kenneth; and Piotrowski, Wieslaw S., 4,604,590, Cl. 333-1.100.

Tseng, Chi-Ping, to Du Pont de Nemours, E. I., and Company. Herbicidal sulfonamide inner salts. 4,604,133, Cl. 71-90.000.

Tsubouchi, Toshiyuki: *See*—
Shimizu, Nobuaki; Tsubouchi, Toshiyuki; and Hata, Hitoshi, 4,604,492, Cl. 585-360.000.
Shimizu, Nobuaki; Tsubouchi, Toshiyuki; and Hata, Hitoshi, 4,604,493, Cl. 585-360.000.

Tsuchihashi, Genichi; and Suzuki, Keisuke, to Toyo Stauffer Chemical Co., Ltd. Method of preparing optically active ketones. 4,604,486, Cl. 568-322.000.

Tsuda, Yoshio: *See*—
Yokoyama, Kazumasa; Fukaya, Chikara; Tsuda, Yoshio; Ono, Taizo; Arakawa, Yoshio; Inoue, Yoshihisa; Naito, Youichiro; and Suyama, Tadakazu, 4,604,385, Cl. 514-183.000.

Tsuji, Kiyoshi: *See*—
Takaya, Takao; Takasugi, Hisashi; Tsuji, Kiyoshi; and Chiba, Toshiyuki, 4,604,456, Cl. 540-222.000.

Tsuji, Shinsaku; Kimura, Toshimitsu; Asano, Yasushi; and Suzuki, Yasuhito, to Nissan Motor Co., Ltd.; and Fuji Koko Co., Ltd. Shift lever. 4,603,598, Cl. 74-473.00P.

Tsuji, Teruji: *See*—
Yoshioka, Mitsuru; Shoichiro, Uyeo; Hamashima, Yoshio; Kikkawa, Ikuo; Tsuji, Teruji; and Nagata, Wataru, 4,604,460, Cl. 544-90.000.

Tsujita, Yoshio: *See*—
Ide, Junya; Muramatsu, Shigeki; Tsujita, Yoshio; and Kuroda, Masao, 4,604,472, Cl. 549-292.000.

Tsuyama, Yoshito: *See*—
Watanabe, Kazuo; Seki, Hiromi; Yamada, Kenji; and Tsuyama, Yoshito, 4,603,806, Cl. 228-152.000.

Tsuzuki, Yoshihiko: *See*—
Takemoto, Eiji; Miyaki, Masahiko; Norimatsu, Hideaki; Hobo, Nobuhito; Tsuzuki, Yoshihiko; and Konishi, Yoshimune, 4,603,669, Cl. 123-357.000.

Twardowski, Zbylut J.; and Nolph, Karl D., to University of Missouri, Curators of the. Dialysis solutions containing cross-linked gelatin. 4,604,379, Cl. 514-21.000.

Ube Industries, Ltd.: *See*—
Suzukawa, Yuichi; Kobayashi, Waichi; and Ohtaka, Satoshi, 4,604,143, Cl. 106-89.000.

Uchida, Kimio: *See*—
Tanigawa, Shigeho; Shiina, Shuichi; and Uchida, Kimio, 4,604,042, Cl. 425-3.000.

Uda, Tadayoshi: *See*—
Yamamoto, Masahiko; Nishino, Yoshinori; Uda, Tadayoshi; Sonoda, Yoshiteru; and Suyama, Toshio, 4,604,254, Cl. 264-254.000.

Udagawa, Masakazu; Saito, Masaaki; Segawa, Shingo; and Noda, Masahiro, to Honda Giken Kogyo Kabushiki Kaisha. Apparatus for inhibiting foreign material from being deposited on rear window of a motorcar. 4,603,898, Cl. 296-91.000.

Ueeda, Ryuhei; Fujii, Kiyonobu; and Narukawa, Hiroshi, to Kuraray Company, Ltd. Polypropylene sheet. 4,604,441, Cl. 526-351.000.

Uehara, Makoto; and Mogami, Satoshi, to Nippon Kogaku K. K. Projection lens. 4,603,950, Cl. 350-432.000.

Ueno, Masahito, to Diesel Kiki Co., Ltd. Apparatus for controlling the rotational speed of an internal combustion engine. 4,603,668, Cl. 123-352.000.

Ujiie, Masayuki: *See*—
Harada, Susumu; Shimizu, Kiyoshi; and Ujiie, Masayuki, 4,604,451, Cl. 525-328.200.

Ullenboom, Hermann, to Siemens Aktiengesellschaft. Apparatus and method for the reduction of printing offset in bidirectional printing devices. 4,603,984, Cl. 400-121.000.

Umemura, Shinichiro; Takeuchi, Hiroshi; Katakura, Kageyoshi; and Shinomura, Ryuichi, to Hitachi, Ltd.; and Hitachi Medical Corporation. Multi-element ultrasonic transducer. 4,604,543, Cl. 310-334.000.

Uneyama, Yoshihisa: *See*—
Sutou, Masatsune; and Uneyama, Yoshihisa, 4,604,036, Cl. 417-18.000.

Union Carbide Corporation: *See*—
Cheung, Harry, 4,604,117, Cl. 62-25.000.
Nardi, John C., 4,604,336, Cl. 429-224.000.

Union Oil Company of California: *See*—
Clark, Danford E., 4,604,373, Cl. 502-65.000.
Deering, Roland F., 4,604,019, Cl. 414-187.000.
Moorehead, Eric L., 4,604,371, Cl. 502-60.000.
Ward, John W., 4,604,187, Cl. 208-59.000.

Union Siderurgigue du Nord et de l'Est de la France: *See*—
de Smet, Gabriel, 4,604,327, Cl. 428-594.000.

United Kingdom Atomic Energy Authority: *See*—
Stacey, John, 4,604,512, Cl. 219-85.00M.
Watkins, Roger D.; Gillespie, Arthur B.; Deighton, Michael O.; Pike, Roger B.; and Scott-Kestin, Colin B., 4,604,612, Cl. 340-582.000.

United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the: *See*—
Cole-Hamilton, David J.; Jones, Anthony C.; and Mullin, John B., 4,604,473, Cl. 556-1.000.

United States of America
Air Force: *See*—
Gilmore, Robert L.; and Lander, George E., 4,603,515, Cl. 51-424.000.
Snide, James A.; and Morrisey, Edward J., 4,603,637, Cl. 102-529.000.
Wootton, Roy E., 4,604,554, Cl. 315-330.000.
Yarman, Binboga S., 4,604,593, Cl. 333-139.000.
Army: *See*—
Franchi, Ernest J., 4,604,608, Cl. 340-540.000.
Wagner, Ross I.; and Grant, Louis R., 4,604,271, Cl. 423-286.000.

Energy: *See—*
Anderson, Robert C., 4,604,148, Cl. 148-132.000.
Aquino, Dolores C.; DaPrato, Philip L.; Gouker, Toby R.; and Knoer, Peter, 4,604,105, Cl. 48-197.00R.
Brown, Thomas D.; Reehl, Douglas P.; and Walbert, Gary F., 4,604,052, Cl. 431-168.000.
Chen, Yok; and Gonzalez, Roberto, 4,604,225, Cl. 252-301.40R.
Fish, Richard H., 4,604,191, Cl. 208-251.00R.
Louis, George A., 4,604,331, Cl. 429-35.000.
Wolbert, Ronald R.; and Jandrasits, Walter G., 4,603,463, Cl. 29-402.070.

Health and Human Services: *See—*
Shook, Daniel R., 4,604,094, Cl. 604-271.000.

Interior: *See—*
Borcherdt, Roger D.; Fletcher, Jon P.; Warrick, Richard E.; Maxwell, Gary L.; Jensen, Edward G.; and Schaack, John V., 4,604,699, Cl. 364-420.000.

National Aeronautics and Space Administration: *See—*
Belew, Robert R., 4,604,038, Cl. 417-475.000.
Mirtich, Michael J.; Sovey, James S.; and Banks, Bruce A., 4,604,181, Cl. 204-298.000.

Navy: *See—*
Ayoub, Peter, 4,603,823, Cl. 244-122.0AE.
Kayser, Eleonore G., 4,604,489, Cl. 568-931.000.
Moroney, William F.; Bartholomew, James C.; Cagle, Clifford M.; and Hughes, Robert E., 4,603,486, Cl. 33-512.000.

U.S. Philips Corporation: *See—*
Bertram, Leo; and Bukoschek, Romuald L., 4,604,539, Cl. 310-80.000.
Frencken, Peter H.; Raven, Johannes G.; and Annegarn, Marcellinus J. J. C., 4,604,651, Cl. 358-140.000.
Gunnarsson, Tord S., 4,604,587, Cl. 331-90.000.
Munnig Schmidt, Robert H., 4,603,968, Cl. 355-75.000.
Schmedemann, Walter, 4,603,845, Cl. 269-323.000.
Stikvoort, Eduard F., 4,604,720, Cl. 364-724.000.
van Koesveld, Jan L.; and Schuil, Roelof E., 4,604,550, Cl. 313-478.000.
Visser, Eelco G., 4,604,670, Cl. 360-127.000.

United States Surgical Corporation: *See—*
Conta, Robert L.; and Wallach, Harvey N., 4,603,693, Cl. 128-305.000.

United Technologies Corporation: *See—*
Posluszny, Thomas; Smith, Kevin D.; and Schlie, Paul W., 4,604,574, Cl. 324-207.000.
Zwicke, Philip E., 4,604,702, Cl. 364-431.020.

United Wire Group: *See—*
Bews, Andrew M., 4,603,653, Cl. 116-209.000.

University of California, The Regents of the: *See—*
Cannon, Clifford R.; and Ortendahl, Douglas A., 4,604,579, Cl. 324-309.000.

University of Dayton: *See—*
Graves, George A., Jr.; and Kumar, Binod, 4,604,097, Cl. 623-11.000.

University of Missouri, Curators of the: *See—*
Twardowski, Zbylut J.; and Nolph, Karl D., 4,604,379, Cl. 514-21.000.

University of Waterloo: *See—*
Wynnyckyj, John R.; Rhodes, Edward; and Marr, Robert, 4,603,660, Cl. 122-379.000.

UOP Inc.: *See—*
Beuhler, Allyson J.; and Wrezel, James A., 4,604,438, Cl. 526-262.000.

Ushiyama, Shigeyuki: *See—*
Takekoshi, Yoshitaka; and Ushiyama, Shigeyuki, 4,604,521, Cl. 250-231.0SE.

USI Agri-Business Company Inc.: *See—*
Peckskamp, Hubert, 4,603,657, Cl. 119-18.000.

Vache, Peter: *See—*
Lechner, Ernst F.; and Vache, Peter, 4,603,457, Cl. 29-33.00F.

Vacik, Jiri: *See—*
Wichterle, Otto; Trekoval, Jiri; Vacik, Jiri; and Michalek, Jiri, 4,604,440, Cl. 526-327.000.

Vahlensieck, Hans-Joachim: *See—*
Seiler, Claus-Dietrich; and Vahlensieck, Hans-Joachim, 4,604,476, Cl. 556-401.000.

Valeo: *See—*
Blond, Marcel, 4,603,767, Cl. 192-106.200.

Valeron Corporation: *See—*
Cusack, Robert F., 4,603,482, Cl. 33-169.00R.

Valyi, Emery I., to Canada Cup, Inc. Stack-mold for injection blow molding. 4,604,258, Cl. 264-537.000.

Van Breukelen, Jacobus A. T.; and Westerveld, Theodorus, to Dupral B.V. Device and method for bending corrugated plates. 4,603,572, Cl. 72-385.000.

van der Loo, Carolus H.: *See—*
Rootsaert, Walter J. M.; and van der Loo, Carolus H., 4,604,233, Cl. 252-558.000.

Van Eenam, Donald N., to Monsanto Company. Viscosity modifiers for grafted starch polymer solutions. 4,604,163, Cl. 162-175.000.

van Koesveld, Jan L.; and Schuil, Roelof E., to U.S. Philips Corporation. Display tube with terbium-activated blue-luminescing phosphor screen. 4,604,550, Cl. 313-478.000.

van Pottelsberghe de la Potterie, Pierre J.: *See—*
Lee, Eldon C.; van Pottelsberghe de la Potterie, Pierre J.; and Tandy, John S., 4,604,290, Cl. 426-533.000.

VanSickle, Robert O. Heated windshield wiper assembly. 4,603,451, Cl. 15-250.070.

van Tran, Hiep, to Thomson Components-Mostek Corporation. Power supply dependent voltage reference circuit. 4,604,732, Cl. 365-207.000.

van Weezenbeek, Reijer N. Method for removing sludge or mud from the bottom of a water area. 4,604,000, Cl. 405-52.000.

Varghese, Philip: *See—*
Derbyshire, Francis J.; and Varghese, Philip, 4,604,189, Cl. 208-111.000.

Vasile, Carmine F., to Hazeltine Corporation. Automatically adjustable delay circuit having adjustable diode mesa microstrip delay line. 4,604,591, Cl. 333-18.000.

Vasseur, Jackie; and Vasseur, Roger, to S.A. Atecmi. Method and gripping head for gripping a layer of containers arranged on a plane. 4,603,896, Cl. 294-2.000.

Vasseur, Roger: *See—*
Vasseur, Jackie; and Vasseur, Roger, 4,603,896, Cl. 294-2.000.

Vaughn, Thomas N.: *See—*
Middleton, Frederic H.; Mollenhoff, David V.; Taylor, Theodore L.; and Vaughn, Thomas N., 4,603,448, Cl. 15-22.00R.

VDO Adolf Schindling AG: *See—*
Baeger, Holm; and Preiss, Bernd, 4,603,947, Cl. 350-344.000.

Venturetech Enterprises, Inc.: *See—*
Sigerist, Helmut, 4,603,528, Cl. 52-464.000.

Vercelletto, Antoine, to Enterprise Vercelletto. Prefabricated wall for the construction of houses and buildings. 4,603,527, Cl. 52-410.000.

Vernicolor AG: *See—*
Widmer, Hans R.; and Schmid, Christian, 4,604,308, Cl. 428-35.000.

Vernitron Corporation: *See—*
Hirsch, George, 4,604,558, Cl. 318-436.000.

Vetco Offshore, Inc.: *See—*
Pallini, Joseph W., Jr.; and Rohweller, David J., 4,603,886, Cl. 285-24.000.

Vicory, William A.: *See—*
Kuhl, Jane F.; and Vicory, William A., 4,604,119, Cl. 65-4.210.

Victor Company of Japan, Limited: *See—*
Hibino, Chitoshi; and Kobari, Harukuni, 4,604,658, Cl. 360-36.200.
Kinjo, Hisao, 4,604,667, Cl. 360-100.000.

Videocolor: *See—*
Pons, Claude, 4,604,071, Cl. 445-4.000.

Viglietti, John E., to American Orthodontics Corporation. Cast orthodontic appliance. 4,604,057, Cl. 433-9.000.

Vilona, James J., to Fosse, John S. Easel binder. 4,603,995, Cl. 402-73.000.

Vilotte, Alain; and Jacquart, Alain, to Seprosy Societe Europeenne pour la Transformation des Produits de Synthese. Package with a base and a cover, especially for foodstuffs such as eggs. 4,603,809, Cl. 229-2.5EC.

Virtanen, John T. Rotary-disc test printing easel. 4,603,967, Cl. 355-72.000.

Visser, Eelco G., to U.S. Philips Corporation. Magnetic head. 4,604,670, Cl. 360-127.000.

Vock, Manfred H.: *See—*
Wiegers, Wilhelmus J.; and Vock, Manfred H., 4,604,232, Cl. 252-522.00R.

Voest-Alpine International Corporation: *See—*
Scheurecker, Werner; and Scheinecker, Alois, 4,603,841, Cl. 266-44.000.

Volvo Car B.V.: *See—*
Cruijsen, Hermanus G. M., 4,603,765, Cl. 192-85.00V.

von der Heide, Johann: *See—*
Muller, Rolf; Elsasser, Dieter; von der Heide, Johann; and Papst, Georg, 4,604,665, Cl. 360-97.000.

von Gentzkow, Wolfgang; Hodl, Maximilian; Kleeberg, Wolfgang; and Markert, Helmut, to Siemens Aktiengesellschaft. Printed circuit boards of laminated thermosetting sheets. 4,604,314, Cl. 428-209.000.

Voss, Gunther: *See—*
Zeth, Ulrich; Klose, Heinrich; Voss, Gunther; and Winkler, Peter, 4,603,960, Cl. 354-432.000.

Vought Corporation: *See—*
Carollo, Sammy F.; and Dance, William E., 4,604,649, Cl. 358-111.000.

VSI Corporation: *See—*
Reeves, Derek G., 4,604,010, Cl. 409-233.000.

W. F. Meyers Company, Inc.: *See—*
Fish, Donald D., 4,603,678, Cl. 125-21.000.

W. R. Grace & Co.: *See—*
Roberts, William P.; and Schulz, Leslie A., 4,604,427, Cl. 525-185.000.

Wacker-Chemie GmbH: *See—*
Kratel, Gunter; and Loskot, Stefan, 4,604,272, Cl. 423-343.000.

Wade, Gerald J.: *See—*
Ballinger, Dale O.; Chynoweth, William R.; and Wade, Gerald J., 4,604,669, Cl. 360-113.000.

Wade, James J., to Riker Laboratories, Inc. Piperidine-substituted pyrimidines. 4,604,466, Cl. 544-330.000.

Wagner, Bernd: *See—*
Hundt, Werner; and Wagner, Bernd, 4,603,997, Cl. 403-228.000.

Wagner, James B.: *See—*
Yeaple, Thomas L.; Wagner, James B.; and Hall, Donald H., 4,604,028, Cl. 415-38.000.

Wagner, Ross I.; and Grant, Louis R., to United States of America, Army. Magnesium borohydride diammoniate and triammoniate. 4,604,271, Cl. 423-286.000.

Wajima, Motoyo: *See—*
Murakami, Kanji; Akahoshi, Haruo; Kawamoto, Mineo; Wajima, Motoyo; Matsuda, Yoichi; Kawakubo, Kyoji; Kanechiku, Minoru; Yoshimura, Toyofusa; and Matsunaga, Makoto, 4,604,160, Cl. 156-630.000.

Wakabayashi, Shinichi; and Takoh, Masako, to Shinko Electric Industries Co., Ltd. Silver plating solution and silver plating process and pretreatment solution therefor. 4,604,167, Cl. 204-29.000.

Wakai, Masao: *See—*
Yano, Nobuyuki; Inami, Takashi; Ieki, Mitsuru; and Wakai, Masao, 4,603,460, Cl. 29-157.30V.

Wakatsuki, Goroei: *See—*
Matsutoh, Takushi; Wakatsuki, Goroei; Kitamura, Yoshitaka; and Ishihara, Takeo, 4,603,754, Cl. 180-221.000.

Wakefield, George H., Jr. Security system. 4,604,609, Cl. 340-548.000.

Walbert, Gary F.: *See—*
Brown, Thomas D.; Reehl, Douglas P.; and Walbert, Gary F., 4,604,052, Cl. 431-168.000.

Wall, Arne E.: *See—*
Siwersson, Olle L.; and Wall, Arne E., 4,603,774, Cl. 198-518.000.

Wallach, Harvey N.: *See—*
Conta, Robert L.; and Wallach, Harvey N., 4,603,693, Cl. 128-305.000.

Wallow, Peter, to Rheinmetall GmbH. Form-locking arrangement for projectiles. 4,603,636, Cl. 102-521.000.

Walsh, Edward N., to Stauffer Chemical Company. Fuel cell electrolyte. 4,604,330, Cl. 429-13.000.

Walt, Hans; and Sutterlin, Dieter, to Keller Holding AG. Method for fabricating molded bodies formed at least partially of swelled clay material and apparatus for the performance of the method. 4,604,255, Cl. 264-273.000.

Walter, Berthold: *See—*
Naser, Joachim; Schmid, Olaf; Schmidt, Gerhard; Sturm, Theodor; and Walter, Berthold, 4,604,598, Cl. 335-128.000.

Waltz, Ralph H.: *See—*
Newhouse, Daniel L.; Wheeler, Richard G.; and Waltz, Ralph H., 4,604,363, Cl. 436-177.000.

Wan, Chung-Chu; and Brown, Glenn W., to Garrett Corporation, The. Diffusion bonding of mechanically held components by hot isostatic pressure. 4,603,801, Cl. 228-194.000.

Ward, John W., to Union Oil Company of California. Hydrocracking with rare earth-containing Y zeolite compositions. 4,604,187, Cl. 208-59.000.

Ward, Robert. Fragrant scented air filter. 4,604,114, Cl. 55-279.000.

Ward, Terence J., to John Wyeth & Brother Limited. Benzoquinolizine derivatives, and their use as $\alpha_2$adrenoceptor antagonistic agents. 4,604,398, Cl. 514-294.000.

Waring, James P., to Scandpower, Inc. Unicable liquid level sensing system. 4,603,580, Cl. 73-295.000.

Warne, Peter J.: *See—*
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Yoshimura, Shingo; Ito, Katsumi; and Tanaka, Shigeru, to Kubota, Ltd. Automatic running work vehicle. 4,603,753, Cl. 180-131.000.
Yoshimura, Toyofusa: *See—*
Murakami, Kanji; Akahoshi, Haruo; Kawamoto, Mineo; Wajima, Motoyo; Matsuda, Yoichi; Kawakubo, Kyoji; Kanechiku, Minoru; Yoshimura, Toyofusa; and Matsunaga, Makoto, 4,604,160, Cl. 156-630.000.
Yoshimura, Yoshito: *See—*
Oshima, Noboru; Shimizu, Isamu; Yoshimura, Yoshito; Fujimaki, Tatsuo; and Tomita, Seisuke, 4,603,722, Cl. 152-209.00R.
Yoshinaga, Toru; Igashira, Toshihiko; Sakakibara, Yasuyuki; and Natsuyama, Yukihiro, to Nippon Soken, Inc. Fuel injector for an internal combustion engine. 4,603,671, Cl. 123-467.000.
Yoshioka, Mitsuru; Shoichiro, Uyeo; Hamashima, Yoshio; Kikkawa, Ikuo; Tsuji, Teruji; and Nagata, Wataru, to Shionogi & Co., Ltd. 1-oxadethiacepham compounds. 4,604,460, Cl. 544-90.000.
Yotsumoto, Yoshiharu; Kubota, Katsuhiko; and Sekiba, Toshinobu, to Tokyo Shibaura Denki Kabushiki Kaisha. Semiconductor rectifier device. 4,604,643, Cl. 357-75.000.
Younes, Usama E., to Atlantic Richfield Company. Flame-retardant molded composition incorporating a poly[N-(bromophenyl)maleimide-co-styrene-co-maleic anhydride] copolymer. 4,604,422, Cl. 524-502.000.
Young, Charles E.: *See—*
Bocko, Peter L.; Wein, William J.; and Young, Charles E., 4,604,118, Cl. 65-3.120.
Young, Ian R., to Picker International Limited. Nuclear magnetic resonance methods and apparatus. 4,604,578, Cl. 324-307.000.
Yourd, Raymond A., III: *See—*
Gruber, Robert J.; Yourd, Raymond A., III; and Koch, Ronald J., 4,604,338, Cl. 430-106.000.
Yuasa, Hitoshi; Matsuno, Mitsuo; and Imai, Hirosuke, to Nippon Oil Company Ltd. High-density liquid fuel. 4,604,490, Cl. 585-21.000.
Yuen, Johnny S. C.: *See—*
Richards, Lawrence D.; and Yuen, Johnny S. C., 4,604,075, Cl. 446-232.000.
Yuyama, Masahiro: *See—*
Kato, Yasuyuki; Yuyama, Masahiro; Moritani, Masahiko; and Futagami, Mikio, 4,604,414, Cl. 524-139.000.
Zajac, Theodore S., to Zaytran Inc. Rotary actuator. 4,603,616, Cl. 92-33.000.
Zaro, Marvin: *See—*
Willcocks, Reginald; and Zaro, Marvin, 4,604,061, Cl. 434-74.000.
Zavelovich, Joshua; and Hacker, David S., to Amoco Corporation. Photochemical process for the preparation of disilane. 4,604,274, Cl. 204-157.410.
Zavod Vtuz Pri Moskovskom Avtomobilnom Zavode Imeni I.A. Likhacheva: *See—*
Ganago, Oleg A.; Safonov, Anatoly V.; Stepanov, Boris A.; Subich, Vadim N.; Frolov, Alexandr D.; Lobanov, Nikolai A.; Lumer, Yakov L.; Xenofontov, Alexei M.; Rudman, Leonid I.; Lebed, Alexandr D.; Mamatsashvili, Vasha I.; Kljuchnikov, Valery F.; Birkadze, Dzhemal I.; Shklyarman, Sergei S.; Gordeev, Nikolai A.; Golovin, Vasily Y.; Kruk, Alexandr T.; Yakovenko, Ivan F.; Novikov, Vladimir V.; Grishkov, Andrei M.; Gorozhankin, Valery N.; Svistunov, Vladmir E.; Bocharov, Jury A.; and Sergeev, Jury N., 4,603,573, Cl. 72-454.000.
Zaweski, Edward F.; and Niebylski, Leonard M., to Ethyl Corporation. Fuel compositions. 4,604,102, Cl. 44-57.000.
Zaytran Inc.: *See—*
Zajac, Theodore S., 4,603,616, Cl. 92-33.000.
Zeikus, Joseph G.; and Hyun, Hyung-Hwan, to Michigan Biotechnology Institute. Co-culture production of thermostable enzymers and ethanol. 4,604,352, Cl. 435-42.000.
Zeiss Ikon AG: *See—*
Kruehn, Juergen; and Prunbauer, Kurt, 4,603,566, Cl. 70-380.000.
Zeth, Ulrich; Klose, Heinrich; Voss, Gunther; and Winkler, Peter, to Jenoptik Jena G.m.b.H. Method for and apparatus for determining an optimum gradation parameter for developing aerial photographs. 4,603,960, Cl. 354-432.000.
Zimmerman, Terrence K.: *See—*
Blount, Frederick T.; Capowski, Robert S.; Casper, Daniel F.; DelSonno, Lawrence R.; Geller, Robert F.; Kusmiss, Joseph M.; and Zimmerman, Terrence K., 4,604,709, Cl. 364-900.000.
Zimmermann, Kurt: *See—*
Eyermann, Manfred; Kettenacker, Gunter; and Zimmermann, Kurt, 4,604,573, Cl. 324-205.000.
Zingaro, Joseph R.: *See—*
Goswami, Jagadish C.; Aurichio, Joseph A.; and Zingaro, Joseph R., 4,604,230, Cl. 252-514.000.
Zollman, James A.; Kramer, William M.; and Rhoads, James L., to RCA Corporation. Intensified charge coupled image sensor having an improved CCD support. 4,604,519, Cl. 250-213.0VT.
Zorcher, Heinz: *See—*
Heinen, Karl-Heinz; Glitscher, Wolfgang; and Zorcher, Heinz, 4,604,135, Cl. 373-60.000.
Zwicke, Philip E., to United Technologies Corporation. Variable discriminators in electrostatic engine diagnostics. 4,604,702, Cl. 364-431.020.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 5TH DAY OF AUGUST, 1986

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Garth, Geoffrey C. Portable cervical collar. Re. 32,219, Cl. 128-76.00R.

Meinert, Leo L.; and Rymarchyk, Nicholas M., to Pullman Berry Co. Lance mounted spray apparatus. Re. 32,220, Cl. 266-158.000.

Pullman Berry Co.: *See*—
Meinert, Leo L.; and Rymarchyk, Nicholas M., Re. 32,220, Cl. 266-158.000.

Rymarchyk, Nicholas M.: *See*—
Meinert, Leo L.; and Rymarchyk, Nicholas M., Re. 32,220, Cl. 266-158.000.

LIST OF REEXAMINATION PATENTEES

TO WHOM

CERTIFICATES WERE ISSUED

Application Art Laboratories Co., Ltd.: *See*—
Morita, Tamao, B1 4,021,891, Cl. 24-303.000.

Barnes Engineering Company: *See*—
Schwarz, Frank, B1 3,631,434, Cl. 340-567.000.

Belanger, Raymond J.: *See*—
John, Phillip M.; Belanger, Raymond J.; and Paikoff, Myron, B1 4,302,440, Cl. 424-35.000.

Finamore, Paul V., to World of Wigs Mfg. Co. Inc. Hairpiece. B1 3,716,065, 8-5-86, Cl. 132-53.000.

John, Phillip M.; Belanger, Raymond J.; and Paikoff, Myron, to Sterling Drug Inc. Easily-swallowed, powder-free and gastric-disintegrable aspirin tablet thinly-coated with hydroxypropyl methylcellulose and aqueous spray-coating preparation thereof. B1 4,302,440, 8-5-86, Cl. 424-35.000.

Lever Brothers Company: *See*—
Stahli, Ernst, B1 4,308,306, Cl. 428-141.000.

Martikainen, Kaarlo, to Oy Wartisila AB. Cylinder lock mechanism. B1 4,351,172, 8-5-86, Cl. 70-366.000.

Morita, Tamao, to Application Art Laboratories Co., Ltd. Magnetic lock closure. B1 4,021,891, 8-5-86, Cl. 24-303.000.

Oy Wartisila AB: *See*—
Martikainen, Kaarlo, B1 4,351,172, Cl. 70-366.000.

Paikoff, Myron: *See*—
John, Phillip M.; Belanger, Raymond J.; and Paikoff, Myron, B1 4,302,440, Cl. 424-35.000.

Schwarz, Frank, to Barnes Engineering Company. Passive intrusion detector. B1 3,631,434, 8-5-86, Cl. 340-567.000.

Stahli, Ernst, to Lever Brothers Company. Fabric conditioning products. B1 4,308,306, 8-5-86, Cl. 428-141.000.

Sterling Drug Inc.: *See*—
John, Phillip M.; Belanger, Raymond J.; and Paikoff, Myron, B1 4,302,440, Cl. 424-35.000.

World of Wigs Mfg. Co. Inc.: *See*—
Finamore, Paul V., B1 3,716,065, Cl. 132-53.000.

LIST OF DESIGN PATENTEES

A.W.Faber-Castell GmbH & Co.: *See*—
Jankewitz, Axel, 285,011, Cl. D28-7.000.

Allibert SA: *See*—
Deconinck, Didier, 284,913, Cl. D6-368.000.

American Commercial, Incorporated: *See*—
Otake, Katsuhiro, 284,922, Cl. D7-9.000.

Augros, Jacques, to J. Augros et Cie Societe Anonyme Francaise. Bottle cap. 284,946, 8-5-86, Cl. D9-435.000.

Bakker, Gys; and van den Toorn, Frans, to Industrial Designers Bussum B.V. Lounge chair. 284,912, 8-5-86, Cl. D6-361.000.

Bates, Bobby L., to Bates R&D, Inc. Jumper cable control box. 284,956, 8-5-86, Cl. D13-5.000.

Bates, Bobby L., to Bates R&D, Inc. Combined jumper cable control box and meter. 284,957, 8-5-86, Cl. D13-5.000.

Bates R&D, Inc.: *See*—
Bates, Bobby L., 284,956, Cl. D13-5.000.
Bates, Bobby L., 284,957, Cl. D13-5.000.

Becquet, Jacqueline: *See*—
Herve, Denis; and Becquet, Jacqueline, 285,001, Cl. D24-21.000.

Berg, Franco, to Rittal-Werk Rudolf Loh GmbH & Co. KG. Electrical cabinet or similar article. 284,959, 8-5-86, Cl. D13-40.000.

Bergdahl, Knut E. Air supply register. 284,996, 8-5-86, Cl. D23-141.000.

Beverly, R. Alan, to Ziatech Corporation. Bracket for electronic equipment. 284,932, 8-5-86, Cl. D8-373.000.

Bisbing, Robert H., to Southco, Inc. Adjustable friction hinge. 284,931, 8-5-86, Cl. D8-327.000.

Bobker, Arlene; and Politzer, Arline. Doll. 284,985, 8-5-86, Cl. D21-175.000.

Bossack, Thomas J.; and Shipos, Louis E., to NCR Corporation. Ribbon cassette or similar article. 284,979, 8-5-86, Cl. D18-22.000.

Bristol-Myers Company: *See*—
Cousins, Michael A., 284,947, Cl. D9-445.000.

Butternut Electronics Co.: *See*—
Newcomb, Donald R., 284,936, Cl. D8-396.000.

Cable Electric Products, Inc.: *See*—
Schwartz, Frederic W., 285,008, Cl. D26-26.000.

Canter, Stanton J., to Diversified Group, Inc. Point of sale display module. 284,917, 8-5-86, Cl. D6-476.000.

Carlson, Arthur R., to Decor Corporation PTY, LTD, The. Container for food. 284,944, 8-5-86, Cl. D9-425.000.

Carrier Corporation: *See*—
Hoyle, Walter W., 284,997, Cl. D23-141.000.
Hoyle, Walter W., 284,998, Cl. D23-141.000.

Chalmers, Edward L., II; and Everest, David C., III, to Lange International S.A. Ski boot buckle. 284,900, 8-5-86, Cl. D2-314.000.

Chodat, Jean-Pierre, to Fabrique Ebel, Societe Anonyme. Watch band. 284,951, 8-5-86, Cl. D11-4.000.

Clark, Stanley N. Stove. 284,928, 8-5-86, Cl. D7-323.000.

Claydon, Howard F. Support for flexible containers. 285,016, 8-5-86, Cl. D34-6.000.

Coca-Cola Company, The: *See*—
Sandish, George R.; Wischusen, Henry, III; and Nemeskeri, George, 284,939, Cl. D9-346.000.
Sedam, Jason K.; Mueller, Richard J.; Holoubek, Andrew J.; and Crosby, Samuel C., 284,926, Cl. D7-308.000.

Collinder, Knut H., to Ingenjorsfirma Knut Collinder AB. Marker. 284,982, 8-5-86, Cl. D20-40.000.

Co. Pr. A., Spa-Via Giacomo Watt 13: *See*—
Dinand, Pierre, 284,942, Cl. D9-403.000.

Computer Bibles International, Inc.: *See*—
Larkins, Frank D., 284,966, Cl. D14-100.000.

Cousins, Michael A., to Bristol-Myers Company. Aerosol can overcap. 284,947, 8-5-86, Cl. D9-445.000.

Crosby, Samuel C.: *See*—
Sedam, Jason K.; Mueller, Richard J.; Holoubek, Andrew J.; and Crosby, Samuel C., 284,926, Cl. D7-308.000.
Crown Zellerbach Corporation: *See*—
Jackmore, John J., 285,019, Cl. D34-26.000.
Dah Sun Electronics Company, Limited: *See*—
Hung, Danny C. C., 284,976, Cl. D18-2.000.
Dalgety Australia Operations Limited: *See*—
Worthington, William; and Ridings, John R., 284,999, Cl. D23-143.000.
Deason, Max W. Mold for forming swimming pool coping. 284,971, 8-5-86, Cl. D15-136.000.
Deconinck, Didier, to Allibert SA. Arm chair. 284,913, 8-5-86, Cl. D6-368.000.
Decor Corporation PTY, LTD, The: *See*—
Carlson, Arthur R., 284,944, Cl. D9-425.000.
Dent, Nigel A.: *See*—
Jones, Wilfred L.; and Dent, Nigel A., 284,945, Cl. D9-425.000.
DiAmico, John L. Snow remover. 285,015, 8-5-86, Cl. D32-49.000.
Diffrient, Niels, to Hauserman, Inc. Task light. 285,009, 8-5-86, Cl. D26-66.000.
Dinand, Pierre, to Co. Pr. A., Spa-Via Giacomo Watt 13. Bottle of perfume or toilet water. 284,942, 8-5-86, Cl. D9-403.000.
Diversified Group, Inc.: *See*—
Canter, Stanton J., 284,917, Cl. D6-476.000.
Eastman Kodak Company: *See*—
Hansen, David E., 284,973, Cl. D16-6.000.
Ekbladh, Fred V. G.; and Tillander, Hans. Surgeon's scrub sink. 284,995, 8-5-86, Cl. D23-60.000.
Engel, Herman J. Combined fluorescent lamp and electrical adapter therefor. 285,007, 8-5-86, Cl. D26-3.000.
Everest, David C., III: *See*—
Chalmers, Edward L., II; and Everest, David C., III, 284,900, Cl. D2-314.000.
Fabrique Ebel, Societe Anonyme: *See*—
Chodat, Jean-Pierre, 284,951, Cl. D11-4.000.
Fetty, Harold D., to Ross Operating Valve Company. Valve. 284,989, 8-5-86, Cl. D23-19.000.
Figliola, Vincent N. Combined tag and cord for bag containing moisturizing beads or the like. 284,981, 8-5-86, Cl. D20-26.000.
Fortuna, Vincent E.; and MacLaughlin, Donald N., to Vercon, Inc. Packaging container. 284,940, 8-5-86, Cl. D9-349.000.
Fujii, Takashi: *See*—
Higashihara, Toru; Takahashi, Akira; Kiyota, Toru; and Fujii, Takashi, 284,964, Cl. D14-60.000.
Gagne, Guy: *See*—
Moulinie, Raoul M.; and Gagne, Guy, 285,006, Cl. D25-73.000.
Garcia, George L.; and Kopp, Robert G., to Suncast Corporation. Occasional table. 284,919, 8-5-86, Cl. D6-488.000.
General Research of Electronics, Inc.: *See*—
Imazeki, Kazuyoshi, 284,963, Cl. D14-71.000.
Green, David T.; McGarry, Richard A.; and Smith, Graham, to United States Surgical Corporation. Surgical clip applicator. 285,002, 8-5-86, Cl. D24-26.000.
Handy, Mark R. Combined back pack and chair. 284,910, 8-5-86, Cl. D6-336.000.
Hansen, David E., to Eastman Kodak Company. Camera with integral flash unit. 284,973, 8-5-86, Cl. D16-6.000.
Hansen, Ernest E. Dispenser for cards. 284,921, 8-5-86, Cl. D6-515.000.
Hauserman, Inc.: *See*—
Diffrient, Niels, 285,009, Cl. D26-66.000.
Hennic (Proprietary) Limited: *See*—
Loubser, Nicolaas D., 284,955, Cl. D12-98.000.
Herve, Denis; and Becquet, Jacqueline. Measuring and checking console particularly adapted for heart tests. 285,001, 8-5-86, Cl. D24-21.000.
Higashihara, Toru; Takahashi, Akira; Kiyota, Toru; and Fujii, Takashi, to Hitachi, Ltd. Television receiver. 284,964, 8-5-86, Cl. D14-60.000.
Hitachi, Ltd.: *See*—
Higashihara, Toru; Takahashi, Akira; Kiyota, Toru; and Fujii, Takashi, 284,964, Cl. D14-60.000.
Holoubek, Andrew J.: *See*—
Sedam, Jason K.; Mueller, Richard J.; Holoubek, Andrew J.; and Crosby, Samuel C., 284,926, Cl. D7-308.000.
Honda Giken Kogyo Kabushiki Kaisha: *See*—
Watanabe, Masahiro; and Yorozu, Shungo, 284,968, Cl. D15-15.000.
Hong Nin Metal Works Factory Co. Ltd.: *See*—
Lai, Fu Hong, 284,950, Cl. D11-3.000.
Hova, Morty. Telephone. 284,960, 8-5-86, Cl. D14-53.000.
Hova, Morty. Telephone. 284,961, 8-5-86, Cl. D14-53.000.
Hova, Morty. Telephone. 284,962, 8-5-86, Cl. D14-53.000.
Hoyle, Walter W., to Carrier Corporation. Front panel for a room air conditioner. 284,997, 8-5-86, Cl. D23-141.000.
Hoyle, Walter W., to Carrier Corporation. Front panel for a room air conditioner. 284,998, 8-5-86, Cl. D23-141.000.
Hung, Danny C. C., to Dah Sun Electronics Company, Limited. Combined calculator and clipboard. 284,976, 8-5-86, Cl. D18-2.000.
Imazeki, Kazuyoshi, to General Research of Electronics, Inc. Programmable AM/FM scanning radio receiver. 284,963, 8-5-86, Cl. D14-71.000.
Imperial Chemical Industries PLC: *See*—
Jones, Wilfred L.; and Dent, Nigel A., 284,945, Cl. D9-425.000.
Powell, David, 284,988, Cl. D23-17.000.
Industrial Designers Bussum B.V.: *See*—
Bakker, Gys; and van den Toorn, Frans, 284,912, Cl. D6-361.000.
Ingenjorsfirma Knut Collinder AB: *See*—
Collinder, Knut H., 284,982, Cl. D20-40.000.
International Business Machines Corporation: *See*—
Wiseman, John A., 284,967, Cl. D14-113.000.
Italiane, Frank. Environmental-retreat booth. 285,005, 8-5-86, Cl. D25-16.000.
J. Augros et Cie Societe Anonyme Francaise: *See*—
Augros, Jacques, 284,946, Cl. D9-435.000.
Jackmore, John J., to Crown Zellerbach Corporation. Hand truck for displaying a product. 285,019, 8-5-86, Cl. D34-26.000.
Jacobs, Leonard J.; and Riley, Michael J., to Jet Spray Corporation. Beverage dispenser. 284,925, 8-5-86, Cl. D7-308.000.
Jankewitz, Axel, to A.W.Faber-Castell GmbH & Co. Nail polish applicator. 285,011, 8-5-86, Cl. D28-7.000.
Jedwab, Henri: *See*—
Jedwab, Maurice; and Jedwab, Henri, 284,938, Cl. D9-307.000.
Jedwab, Maurice; and Jedwab, Henri. Bottle. 284,938, 8-5-86, Cl. D9-307.000.
Jet Spray Corporation: *See*—
Jacobs, Leonard J.; and Riley, Michael J., 284,925, Cl. D7-308.000.
Joerger, Gerhard E. Lavatory, faucet set. 284,992, 8-5-86, Cl. D23-25.000.
Johnson, Robert E. Picture frame. 284,909, 8-5-86, Cl. D6-303.000.
Jones, Wilfred L.; and Dent, Nigel A., to Imperial Chemical Industries PLC. Combined tray and cover. 284,945, 8-5-86, Cl. D9-425.000.
JW Lighting, Inc.: *See*—
Mullins, Jack R., 285,010, Cl. D26-67.000.
Kabushiki Kaisha Buncho: *See*—
Yoshida, Kenkichi, 284,980, Cl. D19-41.000.
Kaneko, Toshiro. Box for cultivating vegetables or the like. 284,953, 8-5-86, Cl. D11-155.000.
Kirk, Alexis, to Somersett Moon Ltd. Belt buckle. 284,905, 8-5-86, Cl. D2-422.000.
Kirk, Alexis V., to Somersett Moon Ltd. Belt buckle. 284,904, 8-5-86, Cl. D2-405.000.
Kiyota, Toru: *See*—
Higashihara, Toru; Takahashi, Akira; Kiyota, Toru; and Fujii, Takashi, 284,964, Cl. D14-60.000.
Kolich, Robert A., to Quaker Oats Company, The. Camera. 284,972, 8-5-86, Cl. D16-6.000.
Kong, Hung W. Watch frame. 284,949, 8-5-86, Cl. D10-128.000.
Kopp, Robert G.: *See*—
Garcia, George L.; and Kopp, Robert G., 284,919, Cl. D6-488.000.
Kusabuka, Yoshito, to Seiko Epson Corporation. Ink ribbon cartridge. 284,978, 8-5-86, Cl. D18-22.000.
Kwok, Herbert. Combined desktop abacus and electronic calculator. 284,975, 8-5-86, Cl. D18-2.000.
Lai, Fu Hong, to Hong Nin Metal Works Factory Co. Ltd. Watch strap. 284,950, 8-5-86, Cl. D11-3.000.
Lamb, Bernard D. Carbonated beverage vehicle. 284,954, 8-5-86, Cl. D12-83.000.
Lamy, Jean-Pierre, to Lamy Optic Industries, Inc. Sunglasses. 284,974, 8-5-86, Cl. D16-102.000.
Lamy Optic Industries, Inc.: *See*—
Lamy, Jean-Pierre, 284,974, Cl. D16-102.000.
Lange International S.A.: *See*—
Chalmers, Edward L., II; and Everest, David C., III, 284,900, Cl. D2-314.000.
Larkins, Frank D., to Computer Bibles International, Inc. Hand held portable computer in the form of a book. 284,966, 8-5-86, Cl. D14-100.000.
Lemkin, Jack L.; and Zilber, Eugene A., to O. M. Scott & Sons Company, The. Garden sprinkler head. 284,986, 8-5-86, Cl. D23-7.000.
Lemkin, Jack L.; and Zilber, Eugene A., to O. M. Scott & Sons Company, The. Combined garden sprinkler and valve. 284,987, 8-5-86, Cl. D23-7.000.
Lemmeyer, Gary R., to Quaker Oats Company, The. Step stool. 284,911, 8-5-86, Cl. D6-349.000.
Libman Broom Company: *See*—
Libman, Robert J., 284,908, Cl. D4-199.000.
Libman, Robert J., to Libman Broom Company. Broom cap. 284,908, 8-5-86, Cl. D4-199.000.
Lindh, Paul A. Footwear sole. 284,902, 8-5-86, Cl. D2-321.000.
Liu, Lai-Jin. Control for a video game. 284,983, 8-5-86, Cl. D21-48.000.
Loubser, Nicolaas D., to Hennic (Proprietary) Limited. Vehicle body. 284,955, 8-5-86, Cl. D12-98.000.
Maciel, Ronald. Pot and pan scraper. 285,014, 8-5-86, Cl. D32-46.000.
MacLaughlin, Donald N.: *See*—
Fortuna, Vincent E.; and MacLaughlin, Donald N., 284,940, Cl. D9-349.000.
Madl, Alfred W., to Sunbeam Corporation. Whirlpool foot massager. 285,003, 8-5-86, Cl. D24-38.000.
Manderfield, Ellen B., to Oneida Ltd. Spoon or similar article. 284,924, 8-5-86, Cl. D7-137.000.
Marks, Dwight W. Newspaper rack. 284,916, 8-5-86, Cl. D6-462.000.
Matsumoto, Jun: *See*—
Nakamura, Yuji; and Matsumoto, Jun, 285,013, Cl. D32-8.000.
McBride, William. Table frame. 284,918, 8-5-86, Cl. D6-488.000.
McGarry, Richard A.: *See*—
Green, David T.; McGarry, Richard A.; and Smith, Graham, 285,002, Cl. D24-26.000.
Moulinie, Raoul M.; and Gagne, Guy, to Z-Tech Enterprises Inc. Expansion joint. 285,006, 8-5-86, Cl. D25-73.000.
Mueller, Richard J.: *See*—
Sedam, Jason K.; Mueller, Richard J.; Holoubek, Andrew J.; and Crosby, Samuel C., 284,926, Cl. D7-308.000.

Mullins, Jack R., to JW Lighting, Inc. Lighting fixture. 285,010, 8-5-86, Cl. D26-67.000.
Murphy, Jack J. Shackle. 284,933, 8-5-86, Cl. D8-382.000.
Nakamura, Norio, to Suntron Industrial Co., Ltd. UHF antenna. 284,965, 8-5-86, Cl. D14-86.000.
Nakamura, Yuji; and Matsumoto, Jun, to Tokyo Shibaura Denki Kabushiki Kaisha. Clothes drying machine. 285,013, 8-5-86, Cl. D32-8.000.
NCR Corporation: *See—*
Bossack, Thomas J.; and Shipos, Louis E., 284,979, Cl. D18-22.000.
Nemeskeri, George: *See—*
Sandish, George R.; Wischusen, Henry, III; and Nemeskeri, George, 284,939, Cl. D9-346.000.
Nemschoff Chairs, Inc.: *See—*
Nemschoff, Leonard M.; and Nemschoff, Mark S., 284,914, Cl. D6-375.000.
Nemschoff, Leonard M.; and Nemschoff, Mark S., 284,915, Cl. D6-375.000.
Nemschoff, Leonard M.; and Nemschoff, Mark S., to Nemschoff Chairs, Inc. Chair. 284,914, 8-5-86, Cl. D6-375.000.
Nemschoff, Leonard M.; and Nemschoff, Mark S., to Nemschoff Chairs, Inc. Armchair. 284,915, 8-5-86, Cl. D6-375.000.
Nemschoff, Mark S.: *See—*
Nemschoff, Leonard M.; and Nemschoff, Mark S., 284,914, Cl. D6-375.000.
Nemschoff, Leonard M.; and Nemschoff, Mark S., 284,915, Cl. D6-375.000.
Newcomb, Donald R., to Butternut Electronics Co. Antenna element-boom clamp. 284,936, 8-5-86, Cl. D8-396.000.
Nifco, Inc.: *See—*
Okawa, Toshiya, 284,934, Cl. D8-386.000.
North American Philips Corporation: *See—*
Tsuji, Masao, 284,958, Cl. D13-6.000.
O. M. Scott & Sons Company, The: *See—*
Lemkin, Jack L.; and Zilber, Eugene A., 284,986, Cl. D23-7.000.
Lemkin, Jack L.; and Zilber, Eugene A., 284,987, Cl. D23-7.000.
Ogawa, Iwakichi, to Takara Co., Ltd. Combined wristwatch and toy animal figure. 284,948, 8-5-86, Cl. D10-34.000.
Ogilvie, Kenneth A., to Walker Crosweller & Company Limited. Fluid mixing valve for showers or the like. 284,990, 8-5-86, Cl. D23-19.000.
Ogilvie, Kenneth A., to Walker Crosweller & Company Limited. Mixing valve for showers or the like. 284,991, 8-5-86, Cl. D23-19.000.
Okawa, Toshiya, to Nifco, Inc. Panel fastener or the like. 284,934, 8-5-86, Cl. D8-386.000.
Olovsson, Gunnar. Honing disc. 284,969, 8-5-86, Cl. D15-126.000.
Oneida Ltd.: *See—*
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Otake, Katsuhiro, to American Commercial, Incorporated. Cup. 284,922, 8-5-86, Cl. D7-9.000.
Politzer, Arline: *See—*
Bobker, Arlene; and Politzer, Arline, 284,985, Cl. D21-175.000.
Porteous, Don D. Jar or the like. 284,941, 8-5-86, Cl. D9-378.000.
Powell, David, to Imperial Chemical Industries PLC. Spray gun. 284,988, 8-5-86, Cl. D23-17.000.
Price Pfister, Inc.: *See—*
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Quaker Oats Company, The: *See—*
Kolich, Robert A., 284,972, Cl. D16-6.000.
Lemmeyer, Gary R., 284,911, Cl. D6-349.000.
Quinonez, Silvio C. Foldable and convertible creeper. 285,018, 8-5-86, Cl. D34-23.000.
Richards, David B. Ground rod driving hammer. 284,930, 8-5-86, Cl. D8-70.000.
Richter, Ethel V. Yarn holder. 284,906, 8-5-86, Cl. D3-26.000.
Ricks, William M. Earring. 284,952, 8-5-86, Cl. D11-75.000.
Ridings, John R.: *See—*
Worthington, William; and Ridings, John R., 284,999, Cl. D23-143.000.
Riley, Michael J.: *See—*
Jacobs, Leonard J.; and Riley, Michael J., 284,925, Cl. D7-308.000.
Ritman, Joost R. Tumbler or similar article. 284,923, 8-5-86, Cl. D7-14.000.
Rittal-Werk Rudolf Loh GmbH & Co. KG: *See—*
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Sandish, George R.; Wischusen, Henry, III; and Nemeskeri, George, 284,939, Cl. D9-346.000.
Rose, Barbara A. Carrier for cassette player and cassettes. 284,903, 8-5-86, Cl. D2-383.000.
Ross Operating Valve Company: *See—*
Fetty, Harold D., 284,989, Cl. D23-19.000.
Rothe, Waldemar. Bathtub. 284,994, 8-5-86, Cl. D23-56.000.
Rotpunkt Dr. Anso Zimmerman: *See—*
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Sandish, George R.; Wischusen, Henry, III; and Nemeskeri, George, to Coca-Cola Company, The; and Rock Tenn. Packaging container for food and beverages. 284,939, 8-5-86, Cl. D9-346.000.
Schlosser, Erich J.; and Stephen, James C., to Weber-Stephen Products Co. Outdoor barbecue cooker. 284,929, 8-5-86, Cl. D7-332.000.
Schwartz, Frederic W., to Cable Electric Products, Inc. Nightlight. 285,008, 8-5-86, Cl. D26-26.000.
Sedam, Jason K.; Mueller, Richard J.; Holoubek, Andrew J.; and Crosby, Samuel C., to Coca-Cola Company, The. Beverage dispenser. 284,926, 8-5-86, Cl. D7-308.000.
Seiko Epson Corporation: *See—*
Kusabuka, Yoshito, 284,978, Cl. D18-22.000.
Shaw, Clint. Door knocker. 284,937, 8-5-86, Cl. D8-401.000.
Shaw, Velma M. Planting pot clamp for suspended supports. 284,935, 8-5-86, Cl. D8-394.000.
Shipos, Louis E.: *See—*
Bossack, Thomas J.; and Shipos, Louis E., 284,979, Cl. D18-22.000.
Shippert, Ronald D. Surgical suction instrument. 285,004, 8-5-86, Cl. D24-51.000.
Simmons, Raymond B. Mimeographer. 284,977, 8-5-86, Cl. D18-18.000.
Smith, Graham: *See—*
Green, David T.; McGarry, Richard A.; and Smith, Graham, 285,002, Cl. D24-26.000.
Somersett Moon Ltd.: *See—*
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Southco, Inc.: *See—*
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Stratton, Kent E. X-ray viewer. 285,000, 8-5-86, Cl. D24-2.000.
Sunbeam Corporation: *See—*
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Tillander, Hans: *See—*
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Tilles, Harvey G. Insole for shoes used in lateral sports. 284,901, 8-5-86, Cl. D2-318.000.
Tokyo Shibaura Denki Kabushiki Kaisha: *See—*
Nakamura, Yuji; and Matsumoto, Jun, 285,013, Cl. D32-8.000.
Tsuji, Masao, to North American Philips Corporation. Charger base for a battery-operated appliance or the like. 284,958, 8-5-86, Cl. D13-6.000.
Tzanetakos, Christos. Toy dump truck. 284,984, 8-5-86, Cl. D21-134.000.
United States Surgical Corporation: *See—*
Green, David T.; McGarry, Richard A.; and Smith, Graham, 285,002, Cl. D24-26.000.
van den Toorn, Frans: *See—*
Bakker, Gys; and van den Toorn, Frans, 284,912, Cl. D6-361.000.
Van Horn, James. Connecting bracket for furniture. 284,920, 8-5-86, Cl. D6-191.000.
Vercon, Inc.: *See—*
Fortuna, Vincent E.; and MacLaughlin, Donald N., 284,940, Cl. D9-349.000.
Waldorf Corporation: *See—*
Webinger, George P., 284,943, Cl. D9-416.000.
Walker Crosweller & Company Limited: *See—*
Ogilvie, Kenneth A., 284,990, Cl. D23-19.000.
Ogilvie, Kenneth A., 284,991, Cl. D23-19.000.
Watanabe, Masahiro; and Yorozu, Shungo, to Honda Giken Kogyo Kabushiki Kaisha. Lawn tractor. 284,968, 8-5-86, Cl. D15-15.000.
Weber-Stephen Products Co.: *See—*
Schlosser, Erich J.; and Stephen, James C., 284,929, Cl. D7-332.000.
Webinger, George P., to Waldorf Corporation. Microwave cooking carton. 284,943, 8-5-86, Cl. D9-416.000.
Werkzeug GmbH: *See—*
Wolff, Friedrich, 284,970, Cl. D15-132.000.
Wiedeman, James W. Golf carrier. 284,907, 8-5-86, Cl. D3-37.000.
Willis, J. Don. Refuse collecting device. 285,012, 8-5-86, Cl. D30-99.000.
Wischusen, Henry, III: *See—*
Sandish, George R.; Wischusen, Henry, III; and Nemeskeri, George, 284,939, Cl. D9-346.000.
Wiseman, John A., to International Business Machines Corporation. Display monitor. 284,967, 8-5-86, Cl. D14-113.000.
Wolff, Friedrich, to Werkzeug GmbH. Hand-drill press stand. 284,970, 8-5-86, Cl. D15-132.000.
Worthington, William; and Ridings, John R., to Dalgety Australia Operations Limited. Evaporative air conditioner. 284,999, 8-5-86, Cl. D23-143.000.
Yorozu, Shungo: *See—*
Watanabe, Masahiro; and Yorozu, Shungo, 284,968, Cl. D15-15.000.
Yoshida, Kenkichi, to Kabushiki Kaisha Buncho. Crayon. 284,980, 8-5-86, Cl. D19-41.000.
Yost, Holly K., to Price Pfister, Inc. Sink faucet. 284,993, 8-5-86, Cl. D23-25.000.
Z-Tech Enterprises Inc.: *See—*
Moulinie, Raoul M.; and Gagne, Guy, 285,006, Cl. D25-73.000.
Zentis, Alfred A.: *See—*
Zentis, Ramon J.; and Zentis, Alfred A., 285,017, Cl. D34-15.000.
Zentis, Ramon J.; and Zentis, Alfred A. Motor propelled golf club cart. 285,017, 8-5-86, Cl. D34-15.000.
Ziatech Corporation: *See—*
Beverly, R. Alan, 284,932, Cl. D8-373.000.
Zilber, Eugene A.: *See—*
Lemkin, Jack L.; and Zilber, Eugene A., 284,986, Cl. D23-7.000.
Lemkin, Jack L.; and Zilber, Eugene A., 284,987, Cl. D23-7.000.
Zimmermann, Anso, to Rotpunkt Dr. Anso Zimmerman. Insulated jug. 284,927, 8-5-86, Cl. D7-317.000.

LIST OF PLANT PATENTEES

Duffett, William E.; and Jessel, Walter H., Jr., to Yoder Brothers, Inc. Carnation plant named Winsome. 5,776, 8-5-86, Cl. 71.000.

Duffett, William E., to Yoder Brothers, Inc. Chrysanthemum plant named Deep Luv. 5,777, 8-5-86, Cl. 76.000.

Jessel, Walter H., Jr.: *See*—
Duffett, William E.; and Jessel, Walter H., Jr., 5,776, Cl. 71.000.

Yoder Brothers, Inc.: *See*—
Duffett, William E.; and Jessel, Walter H., Jr., 5,776, Cl. 71.000.
Duffett, William E., 5,777, Cl. 76.000.

LIST OF STATUTORY INVENTION REGISTRATIONS

APPLICANTS TO WHOM

STATUTORY INVENTION REGISTRATIONS WERE ISSUED ON THE 5TH DAY OF AUGUST, 1986

AT&T Bell Laboratories: *See*—
O'Connor, Kevin J., H97, Cl. 365-230.000.
Rubinstein, Michael; and Starov, Vladimir, H102, Cl. 430-311.000.

Barditch, Irving F.; and Bowersox, Orville C., to United States of America, Army. Tracking of air mass movement. H110, 8-5-86, Cl. 435-29.000.

Bauer, Kevin T., to United States of America, Army. Trigger mechanism. H107, 8-5-86, Cl. 89-149.000.

Boschert, Eric J.: *See*—
Gardner, Christian S.; and Boschert, Eric J., H109, Cl. 239-129.000.

Bowersox, Orville C.: *See*—
Barditch, Irving F.; and Bowersox, Orville C., H110, Cl. 435-29.000.

Cason, Charles M., III: *See*—
Jones, Robert W.; Cason, Charles M., III; and Perkins, James F., H99, Cl. 372-108.000.

Denton, Medona B., to United States of America, Navy. Apparatus for nebulizing particulate laden samples of lubricating oils. H100, 8-5-86, Cl. 239-133.000.

Donovan, William F.; and Nusca, Michael, to United States of America, Army. Projectile stabilizer. H112, 8-5-86, Cl. 102-501.000.

Everritt, William A.: *See*—
Gould, Paul F.; and Everritt, William A., H105, Cl. 89-1.140.

Flesner, Larry D., to United States of America, Navy. Gallium arsenide material and process evaluation by means of pulsed photoconductance in test devices. H111, 8-5-86, Cl. 324-158.00D.

Fuji Photo Film Co., Ltd.: *See*—
Yabuki, Yoshiharu; Sato, Kozo; Fujita, Shinsaku; Koyama, Koichi; Hara, Hiroshi; and Naito, Hideki, H98, Cl. 430-203.000.

Fujita, Shinsaku: *See*—
Yabuki, Yoshiharu; Sato, Kozo; Fujita, Shinsaku; Koyama, Koichi; Hara, Hiroshi; and Naito, Hideki, H98, Cl. 430-203.000.

Gardner, Christian S.; and Boschert, Eric J., to United States of America, Army. Smoke generator. H109, 8-5-86, Cl. 239-129.000.

Gerlach, Karl, to United States of America, United States. Radar doppler processor using a fast orthogonalization network. H108, 8-5-86, Cl. 343-5.0FT.

Gilbert, Everett E., to United States of America, Army. Novel poly(-vinylazide). H103, 8-5-86, Cl. 525-331.500.

Gilbert, Everett E., to United States of America, Army. Novel energetic sulfate salts and a process for their preparation. H106, 8-5-86, Cl. 149-56.000.

Gould, Paul F.; and Everritt, William A., to United States of America, Navy. Lightweight hydraulically fired minesweeping cutter. H105, 8-5-86, Cl. 89-1.140.

Hara, Hiroshi: *See*—
Yabuki, Yoshiharu; Sato, Kozo; Fujita, Shinsaku; Koyama, Koichi; Hara, Hiroshi; and Naito, Hideki, H98, Cl. 430-203.000.

Hung, James C.; and Hung, Stephen T., to United States of America, Army. Digital resolver compensation technique. H104, 8-5-86, Cl. 340-347.0SY.

Hung, Stephen T.: *See*—
Hung, James C.; and Hung, Stephen T., H104, Cl. 340-347.0SY.

Jones, Robert W.; Cason, Charles M., III; and Perkins, James F., to United States of America, Army. Modular unstable ring resonator with multiple output couplers. H99, 8-5-86, Cl. 372-108.000.

Koyama, Koichi: *See*—
Yabuki, Yoshiharu; Sato, Kozo; Fujita, Shinsaku; Koyama, Koichi; Hara, Hiroshi; and Naito, Hideki, H98, Cl. 430-203.000.

Lorch, Daniel L., to United States of America, Navy. Arm restraint system for harness mounting. H115, 8-5-86, Cl. 244-122.00A.

McNeel, William. Waterblock and strain relief for electrical connectors. H113, 8-5-86, Cl. 339-105.000.

Naito, Hideki: *See*—
Yabuki, Yoshiharu; Sato, Kozo; Fujita, Shinsaku; Koyama, Koichi; Hara, Hiroshi; and Naito, Hideki, H98, Cl. 430-203.000.

Nusca, Michael: *See*—
Donovan, William F.; and Nusca, Michael, H112, Cl. 102-501.000.

O'Connor, Kevin J., to AT&T Bell Laboratories. Row-address-decoder-driver circuit. H97, 8-5-86, Cl. 365-230.000.

Perkins, James F.: *See*—
Jones, Robert W.; Cason, Charles M., III; and Perkins, James F., H99, Cl. 372-108.000.

Quintavalle, Richard M., to United States of America, Army. Practice projectile assembly. H114, 8-5-86, Cl. 102-513.000.

Rubinstein, Michael; and Starov, Vladimir, to AT&T Bell Laboratories. Controlling resolution of exposed resist in device lithography. H102, 8-5-86, Cl. 430-311.000.

Sato, Kozo: *See*—
Yabuki, Yoshiharu; Sato, Kozo; Fujita, Shinsaku; Koyama, Koichi; Hara, Hiroshi; and Naito, Hideki, H98, Cl. 430-203.000.

Starov, Vladimir: *See*—
Rubinstein, Michael; and Starov, Vladimir, H102, Cl. 430-311.000.

Taylor, Henry F., to United States of America, America. Intensity modulated light source. H96, 8-5-86, Cl. 332-7.510.

United States of America
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Taylor, Henry F., H96, Cl. 332-7.510.
Army: *See*—
Barditch, Irving F.; and Bowersox, Orville C., H110, Cl. 435-29.000.
Bauer, Kevin T., H107, Cl. 89-149.000.
Donovan, William F.; and Nusca, Michael, H112, Cl. 102-501.000.
Gardner, Christian S.; and Boschert, Eric J., H109, Cl. 239-129.000.
Gilbert, Everett E., H103, Cl. 525-331.500.
Gilbert, Everett E., H106, Cl. 149-56.000.
Hung, James C.; and Hung, Stephen T., H104, Cl. 340-347.0SY.
Jones, Robert W.; Cason, Charles M., III; and Perkins, James F., H99, Cl. 372-108.000.
Quintavalle, Richard M., H114, Cl. 102-513.000.
Walker, Clifford G., H101, Cl. 357-30.000.
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Denton, Medona B., H100, Cl. 239-133.000.
Flesner, Larry D., H111, Cl. 324-158.00D.
Gould, Paul F.; and Everritt, William A., H105, Cl. 89-1.140.
Lorch, Daniel L., H115, Cl. 244-122.00A.
United States: *See*—
Gerlach, Karl, H108, Cl. 343-5.0FT.

Walker, Clifford G., to United States of America, Army. Ultraviolet and infrared focal place array. H101, 8-5-86, Cl. 357-30.000.

Yabuki, Yoshiharu; Sato, Kozo; Fujita, Shinsaku; Koyama, Koichi; Hara, Hiroshi; and Naito, Hideki, to Fuji Photo Film Co., Ltd. Heat-developable color photographic material. H98, 8-5-86, Cl. 430-203.000.

CLASSIFICATION OF PATENTS

ISSUED AUGUST 5, 1986

NOTE.—First number, class; second number, subclass; third number, patent number

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[illegible]	4,603,604

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CLASS 92

33	4,603,616
216	4,603,617

CLASS 98

31.5	4,603,618
59	4,603,619

CLASS 99

300	4,603,620
307	4,603,621
331	4,603,622
454	4,603,623
572	4,603,624

CLASS 100

53	4,603,625
215	4,603,626

CLASS 101

91	4,603,627
105	4,603,628
226	4,603,629
227	4,603,630
229	4,603,631
364	4,603,632
366	4,603,633
415.1	4,603,641
426	4,603,634

CLASS 102

206	4,603,635
521	4,603,636
529	4,603,637

CLASS 104

95	4,603,638
252	4,603,639
282	4,603,640

CLASS 108

23	4,604,139
38.35	4,604,141
38.51	4,604,142
38.9	4,604,140
[illegible]	4,604,143

CLASS 109

25	4,603,642

CLASS 110

24.1	4,603,643

CLASS 111

194	4,603,644

CLASS 112

1	4,603,645

CLASS 114

[illegible]	4,603,646
129	4,603,647

CLASS 116

39	4,603,648
199	4,603,649
[illegible]	4,603,650
345	4,603,651

CLASS 118

174	4,603,652
209	4,603,653

CLASS 118

202	4,603,654
302	4,603,655
429	4,603,656

CLASS 119

18	4,603,657
19	4,603,658
130	4,603,659

CLASS 122

379	4,603,660
392	4,603,661

CLASS 123

1 A	4,603,662
90.17	4,603,663
149 D	4,603,664
195 R	4,603,665
196 S	4,603,666
297	4,603,667
352	4,603,668
357	4,603,669
440	4,603,670
467	4,603,671
478	4,603,675
545	4,603,672
573	4,603,673
575	4,603,674

CLASS 124

25	4,603,676

CLASS 125

11 R	4,603,677
21	4,603,678

CLASS 126

25 B	4,603,679
99 A	4,603,680
110 R	4,603,681
120	4,603,682
138	4,603,683
299 R	4,603,684
433	4,603,685
440	4,603,686

CLASS 128

25 R	4,603,687
37	4,603,688
75	4,603,689
76 R	Re.32,219
80 C	4,603,690
205.15	4,603,691
207.11	4,603,692
305	4,603,693
312	4,603,694
334 [illegible]	4,603,695
419 P	4,603,696
421	4,603,697
603	4,603,698
632	4,603,699
633	4,603,700
[illegible]	4,603,701
	4,603,702
731	4,603,703
784	4,603,704
786	4,603,705

CLASS 132

41	4,603,706
53	D1 3,716,065

CLASS 134

28	4,604,144

CLASS 136

246	4,604,494

CLASS 137

116	4,603,708
205	4,603,709
514.7	4,603,710
557	4,603,707

CLASS 138

30	4,603,711
137	4,603,712

CLASS 139

[illegible]	4,603,713

CLASS 141

383	4,603,714

CLASS 144

1 E	4,603,715
134 A	4,603,716
144.5 GT	4,603,717
208 E	4,603,718
365	4,603,719

CLASS 148

12 B	4,604,145
	4,604,146
102	4,604,147
132	4,604,148
153	4,604,149
188	4,604,150

CLASS 149

35	4,604,151

CLASS 152

209 R	4,603,720
	4,603,721
	4,603,722

CLASS 156

93	4,604,152
235	4,604,153
264	4,604,154
287	4,604,155
294	4,604,156
345	4,604,157
403	4,604,158
617 R	4,604,159
630	4,604,160
645	4,604,161
657	4,604,162

CLASS 160

35	4,603,723
180	4,603,724
243	4,603,725

CLASS 162

175	4,604,163
343	4,604,164

CLASS 164

35	4,603,726
133	4,603,727
237	4,603,728
442	4,603,729

CLASS 165

30	4,603,730
41	4,603,731
	4,603,732
	4,603,733
67	4,603,734

CLASS 166

[illegible]	4,603,735
117.5	4,603,736
241	4,603,737
275	4,603,738
311	4,603,739
319	4,603,740
369	4,603,741
374	4,603,742
382	4,603,743

CLASS 172

25	4,603,744
212	4,603,745
559	4,603,746

CLASS 173

[illegible]	4,603,747

CLASS 174

52 FP	4,604,495
68.5	4,604,496
110 F	4,604,497
140 S	4,604,498

CLASS 175

19	4,603,748
250	4,603,749
340	4,603,750
410	4,603,751

CLASS 179

2 DP	4,604,499
18 ES	4,604,500
81 B	4,604,501

CLASS 180

6.4	4,603,752
131	4,603,753

221 4,603,754

CLASS 182

5 4,603,755
178 4,603,756
187 4,603,757
194 4,603,758
234 4,603,759

CLASS 188

73.37 4,603,760
73.45 4,603,761
79.5 R 4,603,762
334 4,603,763

CLASS 192

5 4,603,764
85 V 4,603,765
99 S 4,603,766
106.2 4,603,767

CLASS 193

12 4,603,769

CLASS 198

345 4,603,770
367 4,603,771
369 4,603,768
424 4,603,772
468.2 4,603,773
518 4,603,774
589 4,603,775
778 4,603,776
803.8 4,603,777
810 4,603,778

CLASS 200

6 A 4,604,502
11 TC 4,604,503
38 B 4,604,504
50 E 4,604,505
61.89 4,604,506
144 R 4,604,507
148 R 4,604,508
159 B 4,604,509

CLASS 202

113 4,604,165

CLASS 204

1 T 4,604,166
29 4,604,167
30 4,604,168
34 4,604,169
90 4,604,170
4,604,171
4,604,172
105 R 4,604,173
151 4,604,174
4,604,175
157.41 4,604,274
192 M 4,604,176
244 4,604,177
286 4,604,178
298 4,604,179
4,604,180
4,604,181
403 4,604,182

CLASS 206

426 4,603,779
591 4,603,780

CLASS 208

22 4,604,184
50 4,604,186
56 4,604,185
59 4,604,187
106 4,604,188
111 4,604,189
112 4,604,190
251 R 4,604,191
420 4,604,183

CLASS 209

144 4,604,192
273 4,604,193

CLASS 210

[illegible] 4,604,194
131 4,604,195
136 4,604,196
150 4,604,197
198.2 4,604,198
293 4,604,199
314 4,604,200
323.2 4,604,201
409 4,604,202
489 4,604,203
490 4,604,204
497.2 4,604,205
503 4,604,206
635 4,604,207
636 4,604,208
661 4,604,209
681 4,604,210
700 4,604,212
701 4,604,211
735 4,604,213
759 4,604,214
762 4,604,215

CLASS 211

[illegible] 4,603,781
153 4,603,782

CLASS 212

132 4,603,783

CLASS 215

11 R 4,603,784
230 4,603,785
318 4,603,786

CLASS 219

10.43 4,604,510
76.14 4,604,511
85 M 4,604,512
121 LA 4,604,513
225 4,604,514
298 4,604,515
379 4,604,516
494 4,604,517
506 4,604,518

CLASS 220

1.5 4,603,787
4,603,788
3.9 4,603,789
219 4,603,790
[illegible] 4,603,791

CLASS 221

96 4,603,792

CLASS 222

105 4,603,793
207 4,603,794
262 4,603,795
400.7 4,603,796

CLASS 223

46 4,603,797

CLASS 224

310 4,603,798

CLASS 226

119 4,603,800
171 4,603,799

CLASS 228

1.1 4,603,802
4.5 4,603,803
40 4,603,804
123 4,603,805
152 4,603,806
4,603,807
194 4,603,801
265 4,603,808

CLASS 229

2.5 EC 4,603,809

CLASS 239

1 4,603,810
90 4,603,811
329 4,603,812
399 4,603,813

CLASS 241

30 4,603,814
36 4,603,815
266 4,603,816

CLASS 242

1 4,603,817
35.5 A 4,603,818
107.4 A 4,603,819
118.4 4,603,820

CLASS 244

54 4,603,821
4,603,822
122 AE 4,603,823
134 B 4,603,824

CLASS 248

174 4,603,825
205.1 4,603,826
542 4,603,827
4,603,828
553 4,603,829
575 4,603,830

CLASS 249

144 4,603,831

CLASS 250

213 VT 4,604,519
216 4,604,520
231 SE 4,604,521
264 4,604,522
310 4,604,523
342 4,604,524
363 R 4,604,525
561 4,604,526
578 4,604,527

CLASS 251

30.02 4,603,832
94 4,603,833
121 4,603,834
215 4,603,835
315 4,603,836
352 4,603,837
361 4,603,838

CLASS 252

8.510 4,604,216
8.55 C 4,604,218
8.55 R 4,604,217
25 4,604,219
33.4 4,604,220
51.5 A 4,604,221
62.52 4,604,222
70 4,604,223
91 4,604,224
301.4 R 4,604,225
389 A 4,604,226
389.2 4,604,227
492 4,604,228
510 4,604,229
514 4,604,230
518 4,604,231
522 R 4,604,232
558 4,604,233

CLASS 254

329 4,603,839

CLASS 256

11 4,603,840

CLASS 261

26 4,604,245
71 4,604,246
94 4,604,247

CLASS 264

3.1 4,604,248
29.5 4,604,249
35 4,604,250
40.2 4,604,251
120 4,604,252
211 4,604,253
254 4,604,254
273 4,604,255
501 4,604,256
513 4,604,257
537 4,604,258

CLASS 266

44 4,603,841
4,603,842
158 Re.32,220

CLASS 267

35 4,603,843
118 4,603,844

CLASS 269

323 4,603,845

CLASS 271

2 4,603,846
10 4,603,847
125 4,603,848
186 4,603,849
288 4,603,850

CLASS 272

96 4,603,851
109 4,603,852
113 4,603,853
116 4,603,854
117 4,603,855
131 4,603,856
136 4,603,857
137 4,603,858
142 4,603,859

CLASS 273

1 GD 4,603,860
63 R 4,603,861
183 C 4,603,862
282 4,603,863

CLASS 277

12 4,603,864
4,603,865
152 4,603,866

CLASS 279

3 4,603,867

CLASS 280

7.13 4,603,868
11 4,603,869
[illegible] 4,603,870
33.99 C 4,603,871
47.13 B 4,603,872
94 4,603,873
272 4,603,875
402 4,603,874
474 4,603,876
478 A 4,603,878
628 4,603,880
652 4,603,879
675 4,603,881
701 4,603,882
807 4,603,877

CLASS 281

45 4,603,883

CLASS 283

1 A 4,603,884

CLASS 285

18 4,603,885
24 4,603,886
32 4,603,887
55 4,603,888
175 4,603,889
205 4,603,891
239 4,603,890
336 4,603,892
342 4,603,893

CLASS 292

216 4,603,894
295 4,603,895

CLASS 294

2 4,603,896
64 4,603,897

CLASS 296

91 4,603,898
154 4,603,899
156 4,603,900
165 4,603,901

CLASS 297

35 4,603,902
250 4,603,903
296 4,603,904
300 4,603,905
440 4,603,906
452 4,603,907

CLASS 298

17 R 4,603,908

CLASS 299

7 4,603,909
13 4,603,910
91 4,603,911

CLASS 300

2 4,603,912
7 4,603,913

CLASS 301

37 P 4,603,914
4,603,915
45 4,603,916

CLASS 303

[illegible] C 4,603,917
4,603,921
6 R 4,603,918
4,603,919
10 4,603,920

CLASS 307

10 R 4,604,528
4,604,529
66 4,604,530
445 4,604,531
490 4,604,532
530 4,604,533
4,604,534
570 4,604,535
603 4,604,536

CLASS 310

68 D 4,604,538
68 R 4,604,537
[illegible] 4,604,539
154 4,604,540
[illegible] 4,604,541
334 4,604,542
4,604,543
338 4,604,544

CLASS 312

183 4,603,924
196 4,603,925

CLASS 313

105 CM 4,604,545
272 4,604,546
315 4,604,553
413 4,604,547
414 4,604,548
[illegible] 4,604,549
478 4,604,550

CLASS 315

[illegible] 4,604,551
176 4,604,552
330 4,604,554
383 4,604,555
411 4,604,556

CLASS 318

98 4,604,557
436 4,604,558
563 4,604,559
567 4,604,560
4,604,561
640 4,604,562
786 4,604,563

CLASS 320

2 4,604,564
15 4,604,565

CLASS 323

275 4,604,566
299 4,604,567
315 4,604,568

CLASS 324

73 R 4,604,569
4,604,570
77 A 4,604,571
158 F 4,604,572
205 4,604,573
207 4,604,574
208 4,604,575
4,604,576
244 4,604,577
307 4,604,578
309 4,604,579
311 4,604,580
339 4,604,581

CLASS 328

55 4,604,582

CLASS 329

122 4,604,583

CLASS 330

9 4,604,584
286 4,604,585
288 4,604,586

CLASS 331

90 4,604,587
135 4,604,588

CLASS 332

37 R 4,604,589

CLASS 333

1.1 4,604,590
18 4,604,591
24.1 4,604,592
139 4,604,593
194 4,604,594
196 4,604,595

CLASS 335

14 4,604,596
127 4,604,597
128 4,604,598
230 4,604,599
261 4,604,600

CLASS 337

4,604,601
264 4,604,602
394 4,604,603

CLASS 339

17 C 4,603,926
4,603,927
4,603,929
17 LM 4,603,928
17 R 4,603,930
37 4,603,931
39 4,603,932
75 P 4,603,933
90 R 4,603,934
97 P 4,603,935
143 R 4,603,936

CLASS 340

52 A 4,604,604
365 R 4,604,605
384 E 4,604,606
539 4,604,607
540 4,604,608
548 4,604,609
566 4,604,610
567 RE 3,631,434
576 4,604,611
582 4,604,612
638 4,604,613
728 4,604,614
750 4,604,615
756 4,604,616
[illegible] 4,604,617
825.06 4,604,618
825.18 4,604,619
825.52 4,604,620
825.69 4,604,621

CLASS 343

5 PD 4,604,622
6.8 R 4,604,623
361 4,604,624
401 4,604,625
417 4,604,626
786 4,604,627
818 4,604,628
909 4,604,629

CLASS 346

1.1 4,604,630
4,604,631
24 4,604,632
140 R 4,604,633
160 4,604,634
226 4,604,635

CLASS 350

3.72 4,603,938
6.4 4,603,939
96.15 4,603,940
4,603,941
96.24 4,603,942
96.30 4,603,943
252 4,603,944
331 R 4,603,945
4,603,946
344 4,603,947
368 4,603,937
426 4,603,948
432 4,603,949
4,603,950

CLASS 351

156 4,603,951

CLASS 352

65 4,603,952

CLASS 354

126 4,603,953
137 4,603,954
286 4,603,955
298 4,603,956
410 4,603,957
414 4,603,958
420 4,603,959
432 4,603,960

CLASS 355

3 DD 4,603,961
3 R 4,603,962
[illegible] 4,603,963
14 CH 4,603,964
38 4,603,965
45 4,603,966
72 4,603,967
75 4,603,968
77 4,603,969
133 4,603,970
4,603,971

CLASS 356

4 4,603,972
5 4,603,973
152 4,603,975
394 4,603,974
402 4,603,976
436 4,603,977

CLASS 357

2 4,604,636
17 4,604,637
23.4 4,604,638
23.6 4,604,639
46 4,604,640
59 4,604,641
70 4,604,642
75 4,604,643
80 4,604,644

CLASS 358

27 4,604,645
28 4,604,646
65 4,604,647
101 4,604,648
111 4,604,649
119 4,604,650
140 4,604,651
213 4,604,652
256 4,604,653
298 4,604,654
343 4,604,655

CLASS 360

10.1 4,604,656
4,604,668
32 4,604,657
36.2 4,604,658
38.1 4,604,659
45 4,604,660
69 4,604,661
73 4,604,663
74.1 4,604,662
97 4,604,664
4,604,665
99 4,604,666

100 4,604,667
113 4,604,669
127 4,604,670
132 4,604,671
137 4,604,672

CLASS 361

38 4,604,673
73 4,604,674
155 4,604,675
309 4,604,676
393 4,604,677
401 4,604,678

CLASS 362

277 4,604,679
293 4,604,680

CLASS 364

183 4,604,681
200 4,604,682
4,604,683
4,604,684
4,604,685
4,604,686
4,604,687
4,604,688
4,604,689
4,604,690
4,604,691
4,604,692
4,604,693
4,604,694
4,604,695
401 4,604,696
414 4,604,697
419 4,604,698
420 4,604,699
424 4,604,700
431.01 4,604,701
431.02 4,604,702
431.07 4,604,703
474 4,604,705
478 4,604,704
4,604,724
484 4,604,713
494 4,604,714
507 4,604,706
513 4,604,715
4,604,716
569 4,604,717
578 4,604,718
721 4,604,719
724 4,604,720
726 4,604,721
736 4,604,722
786 4,604,723
822 4,604,707
[illegible] 4,604,708
4,604,709
4,604,710
— 4,604,711
4,604,712
4,604,725
4,604,726

CLASS 365

189 4,604,727
4,604,728
190 4,604,729
200 4,604,730
203 4,604,731
207 4,604,732

CLASS 367

2 4,604,733
63 4,604,734
93 4,604,735
123 4,604,736
134 4,604,737
135 4,604,738

CLASS 368

317 4,603,978

CLASS 369

45 4,604,739

CLASS 370

27 4,604,740
69.1 4,604,741
[illegible]5 4,604,743
89 4,604,742

CLASS 371

20 4,604,744
22 4,604,745
25 4,604,746
37 4,604,747
38 4,604,748
4,604,749
4,604,750
4,604,751

CLASS 372

29 4,604,752
36 4,604,753

CLASS 373

60 4,604,135
130 4,604,754

CLASS 374

54 4,603,979
179 4,603,980
210 4,603,981

CLASS 375

98 4,604,755
113 4,604,756

CLASS 383

46 4,604,757

CLASS 384

7 4,603,923
44 4,603,922
129 4,603,982
512 4,603,983

CLASS 400

121 4,603,984
167 4,603,985
241.2 4,603,986
639.1 4,603,987
649 4,603,988

CLASS 401

78 4,603,989
85 4,603,990
86 4,603,991
190 4,603,992
195 4,603,993
209 4,603,994

CLASS 402

73 4,603,995

CLASS 403

7 4,603,996
228 4,603,997
322 4,603,998

CLASS 404

112 4,603,999

CLASS 405

52 4,604,000
224 4,604,001
4,604,002
256 4,604,003

CLASS 407

110 4,604,004

CLASS 408

35 4,604,005
76 4,604,006

CLASS 409

89 4,604,007
138 4,604,011
231 4,604,008
233 4,604,009
4,604,010
4,604,012

CLASS 410

106 4,604,013

CLASS 411

338 4,604,014
537 4,604,015

CLASS 414

7 4,604,016
23 4,604,017
44 4,604,018
187 4,604,019
217 4,604,020
226 4,604,021
340 4,604,022
375 4,604,023
592 4,604,024
[illegible]98 4,604,025
728 4,604,026
749 4,604,027

CLASS 415

[illegible] 4,604,028
92 4,604,029
126 4,604,030

CLASS 416

97 R 4,604,031
128 4,604,032
220 R 4,604,033

CLASS 417

18 4,604,034
4,604,036
319 4,604,035
394 4,604,037
475 4,604,038

CLASS 418

55 4,604,039
4,604,040
82 4,604,041

CLASS 419

2 4,604,260

CLASS 422

50 4,604,263
56 4,604,264
191 4,604,261
310 4,604,262

CLASS 423

49 4,604,265
54 4,604,266
4,604,267
230 4,604,268
242 4,604,269
262 4,604,270
286 4,604,271
343 4,604,272
344 4,604,273
437 4,604,275
449 4,604,276
517 4,604,277
4,604,278
581 4,604,279

CLASS 424

35 B1 4,302,440
49 4,604,280
59 4,604,281
74 4,604,282
80 4,604,283
85 4,604,284
94 4,604,285
149 4,604,286

CLASS 425

3 4,604,042
182 4,604,043
525 4,604,044
575 4,604,045

CLASS 426

5 4,604,287
4,604,288
19 4,604,289
533 4,604,290

CLASS 427

37 4,604,291
39 4,604,292
42 4,604,293
53.1 4,604,294
54.1 4,604,295
57 4,604,296
[illegible] 4,604,297
96 4,604,298
[illegible] 4,604,299
120 4,604,300
123 4,604,301
208.6 4,604,302
229 4,604,303
255 4,604,304
385.5 4,604,305
423 4,604,306

CLASS 428

35 4,604,307
4,604,308
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96 4,604,311
137 4,604,312
141 B1 4,308,306
172 4,604,313
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398 4,604,326
[illegible]94 4,604,327
[illegible]00 4,604,328
620 4,604,329

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394 4,604,345

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5 4,604,047
8 4,604,048
80 4,604,049
121 4,604,050
166 4,604,051
168 4,604,052
320 4,604,053
328 4,604,054

CLASS 432

58 4,604,055
249 4,604,056

CLASS 433

9 4,604,057
127 4,604,058
217.1 4,604,059
221 4,604,060

CLASS 434

74 4,604,061
[illegible] 4,604,062
157 4,604,063
224 4,604,064
331 4,604,065

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[illegible] 4,604,347
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287 4,604,360
288 4,604,361

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177 4,604,363
501 4,604,364
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CLASS 440

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49 4,604,067
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88 4,604,069

CLASS 441

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CLASS 445

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30 4,604,072

CLASS 446

117 4,604,073
171 4,604,074
232 4,604,075
418 4,604,076

CLASS 464

111 4,604,077

CLASS 474

[illegible] 4,604,078
114 4,604,079
153 4,604,080
205 4,604,081
242 4,604,082

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34 4,604,083
226 4,604,084
259 4,604,085

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172 4,604,410

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139 4,604,414
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862 4,604,424

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185 4,604,427
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326.6 4,604,429
326.7 4,604,430
328.2 4,604,451
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389 4,604,432
411 4,604,433
462 4,604,434
476 4,604,435
[illegible]04 4,604,436

CLASS 526

189 4,604,447
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[illegible] 4,604,439
327 4,604,440
351 4,604,441

CLASS 528

[illegible] 4,604,442
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34 4,604,444
[illegible] 4,604,445
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232 4,604,448
[illegible] 4,604,449
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CLASS 540

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248 4,604,093
271 4,604,094
323 4,604,095
385 A 4,604,096

CLASS 623

11 4,604,097
60 4,604,098

CLASSIFICATION OF DESIGNS

D2—	314	284,900			284,919		349	284,940	D14—	53	284,960	D19—	41	284,980	D24—	2	285,000
	318	284,901		515	284,921		378	284,941			284,961	D20—	26	284,981		21	285,001
	321	284,902	D7—	[illegible]	284,922		403	284,942			284,962		[illegible]	284,982		26	285,002
	383	284,903		14	284,923		416	284,943		60	284,964	D21—	48	284,983		38	285,003
	405	284,904		137	284,924		425	284,944		71	284,963		134	284,984		51	285,004
	422	284,905		308	284,925			284,945		86	284,965		175	284,985	D25—	16	285,005
D3—	26	284,906			284,926		435	284,946		100	284,966	D23—	7	284,986		73	285,006
	37	284,907		317	284,927		445	284,947		113	284,967			284,987	D26—	3	285,007
D4—	199	284,908		323	284,928	D10—	34	284,948	D15—	15	284,968		17	284,988		26	285,008
D6—	191	284,920		332	284,929		128	284,949		126	284,969		19	284,989		66	285,009
	303	284,909	D8—	70	284,930	D11—	3	284,950		132	284,970			284,990		67	285,010
	336	284,910		327	284,931		4	284,951		136	284,971			284,991	D28—	7	285,011
	349	284,911		373	284,932		75	284,952	D16—	6	284,972		25	284,992	D30—	99	285,012
	361	284,912		382	284,933		155	284,953			284,973			284,993	D32—	[illegible]	285,013
	368	284,913		386	284,934	D12—	83	284,954		102	284,974		56	284,994		46	285,014
	375	284,914		394	284,935		98	284,955	D18—	2	284,975		[illegible]	284,995		49	285,015
		284,915		396	284,936	D13—	[illegible]	284,956			284,976		141	284,996	D34—	6	285,016
	462	284,916		401	284,937			284,957		18	284,977			284,997		15	285,017
	476	284,917	D9—	307	284,938		[illegible]	284,958		22	284,978			284,998		23	285,018
	488	284,918		346	284,939		[illegible]	284,959			284,979		143	284,999		26	285,019

CLASSIFICATION OF PLANTS

P—	71	5,776		76	5,777												

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STATUTORY INVENTION REGISTRATIONS

01 : H99
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August 12, 1986 Volume 1069 Number 2

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The following are mailed under direction of the Superintendent of Documents, Government Printing Office, Washington, D.C., 20402, to whom all subscriptions should be made payable and all communications addressed:

THE OFFICIAL GAZETTE (PATENT SECTION), issued weekly.
THE OFFICIAL GAZETTE (TRADEMARK SECTION), issued weekly.
GENERAL INFORMATION concerning PATENTS.
GENERAL INFORMATION concerning TRADEMARKS.

COPIES OF PATENTS are furnished by the Patent and Trademark Office at $1.50 each; PLANT PATENTS in color, $6.00 each; copies of TRADEMARKS at $1.00 each. Address orders to the Commissioner of Patents and Trademarks, Washington, D.C., 20231.

Printing authorized by Section 11(a)3 of Title 35, U.S. Code P.T.O.

PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty (PCT) Information

For information concerning the PCT member countries see the notice appearing in the *Official Gazette* at 1052 O.G. 52 on Mar. 26, 1985.

For use of the European Patent Office as Searching Authority for PCT applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52 on Sept. 28, 1982.

Certain domestic PCT fees for international applications have been changed effective Oct. 5, 1985 in the rule change notice titled "Revision of Patent Fees" published at 1057 O.G. 24 on Aug. 20, 1985.

The Search fee of the European Patent Office has been changed as of Feb. 9, 1986 and is announced in the *Official Gazette* at 1061 O.G. 30 on Dec. 31, 1985.

International PCT fees have been changed effective Jan. 1, 1986 and were announced in the *Official Gazette* at 1061 O.G. 30 on Dec. 31, 1985.

Note that the amount of the international search fee for the European Patent Office and the amounts of the International PCT fees will change effective June 1, 1986. For information on these fee changes see the notice appearing in the *Official Gazette* at 1065 O.G. 41 on Apr. 29, 1986.

The current schedule of PCT fees is as follows:

Transmittal fee:	170.00
Search Fee	
U.S. Patent and Trademark Office as Searching Authority	
—No corresponding prior U.S. national application filed	420.00
—Corresponding prior U.S. national application filed	250.00
European Patent Office as Searching Authority	
if paid before June 1, 1986	830.00
if paid on or after June 1, 1986	930.00
International fees	
Basic fee (first 30 pages):	
if paid before June 1, 1986	325.00
if paid on or after June 1, 1986	375.00
Basic Supplemental fee (for each page over 30):	
if paid before June 1, 1986	6.00
if paid on or after June 1, 1986	7.00
Designation fee for the first 10 national or regional offices:	
if paid before June 1, 1986	80.00
if paid on or after June 1, 1986	90.00
Designation fee for 11th and subsequent designations	No charge

DONALD J. QUIGG,
Assistant Secretary and Commissioner of Patents and Trademarks.

Mar. 31, 1986.

Notice of Maintenance Fees Payable

Title 37, Code of Federal Regulations, Section 1.362(d), effective Nov. 1, 1984, provides that maintenance fees may be paid without surcharge for a six-month period beginning 3, 7, and 11 years after the date of issue of patents based on applications filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(k) or (l), as amended effective Oct. 5, 1985. If the maintenance fee is not paid in a patent requiring such payment the patent will expire on the 4th, 8th or 12th anniversary of the grant.

Attention is drawn to the patents which were issued on Aug. 9, 1983, for which maintenance fees due at 3 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,397,043 through 4,398,304
Reissue Patents based on the above identified patents.

No maintenance fees are required for design or plant patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

The current amounts of the maintenance fees due at 3 years and six months are set forth in 37 CFR 1.20(e) and (h), as amended effective Oct. 5, 1985, which are reproduced below:

37 CFR §1.20 Post-issuance fees

"(e) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant . . . $ 225.00"

"(h) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Aug. 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant:
By a small entity (§1.9(f)) . . . . . $ 225.00
By other than a small entity . . . . . $ 450.00"

The amounts of the surcharges as amended effective Oct. 5, 1985, are set forth in 37 CFR 1.20 (k) and (l) which are reproduced below:

"(k) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982 . . . . . $ 110.00"

"(l) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Aug. 27, 1982:
By a small entity (§1.9(f)) . . . . . $ 55.00
By other than a small entity . . . . . $ 110.00"

Section 1.20 paragraph (m) as amended as a result of enactment of Public Law 98–622 effective Nov. 8, 1984, is reproduced below:

"(m) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee where the delay in payment is shown to the satisfaction of the Commissioner to have been unavoidable . . . . . $ 500.00"

Notice of Expiration of Patents Due to Failure to Pay Maintenance Fees

35 U.S.C. 41 and 37 CFR 1.362(g) provide that if the required maintenance fee and any applicable surcharge are not paid in a patent requiring such payment, the patent will expire at the end of the 4th, 8th, or 12th anniversary of the grant of the patent depending on the first maintenance fee which was not paid.

According to the records of the Office, the patents listed below have expired due to failure to pay the required maintenance fee and any applicable surcharge.

PATENTS WHICH EXPIRED MAY 25, 1986, DUE TO FAILURE TO PAY MAINTENANCE FEES

Patent Number	Serial Number	Issue Date
4,330,902	06/218,471	5/25/82
4,330,903	06/216,518	5/25/82
4,330,952	06/249,999	5/25/82
4,330,955	06/217,951	5/25/82
4,331,103	06/234,947	5/25/82
4,331,138	06/266,659	5/25/82
4,331,139	06/273,732	5/25/82
4,331,171	06/228,100	5/25/82
4,331,256	06/248,273	5/25/82
4,331,272	06/229,739	5/25/82
4,331,311	06/271,534	5/25/82
4,331,332	06/223,321	5/25/82
4,331,448	06/237,101	5/25/82
4,331,472	06/266,048	5/25/82
4,331,473	06/266,066	5/25/82
4,331,554	06/271,901	5/25/82
4,331,571	06/287,934	5/25/82
4,331,589	06/254,726	5/25/82
4,331,637	06/255,355	5/25/82
4,331,667	06/231,001	5/25/82
4,331,718	06/262,996	5/25/82
4,331,742	06/220,214	5/25/82
4,331,755	06/221,451	5/25/82
4,331,781	06/223,811	5/25/82
4,331,911	06/234,884	5/25/82
4,332,025	06/218,304	5/25/82

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.19(a)).

4,044,805, Re. S.N. 868,324, Filed May 29, 1986, Cl. 141/134D, ROUTER GUIDE UNIT, Donald D. Gronholz, Owner of Record: *Inventor,* Attorney or Agent: Richard O. Bartz, Ex. Gp.: 243

4,411,963, Re. S.N. 854,657, Filed Apr. 16, 1986, Cl. 427, THIN FILM RECORDING AND METHOD OF MAKING, Harry E. Aine, Owner of Record: *Inventor,* Attorney or Agent: Harry E. Aine, Ex. Gp.: 152

4,414,890, Re. S.N. 830,215, Filed Feb. 18, 1986, Cl. 100/162B, PRESS ROLL WITH ADJUSTABLE FLEXION, Christian Schiel, et al., Owner of Record: *J. M. Voith GmbH, West Heidenheim, Germany,* Attorney or Agent: Bernard Gerb, et al., Ex. Gp.: 242

4,437,742, Re. S.N. 841,796, Filed Mar. 20, 1986, Cl. 354/21, CAMERA CAPABLE OF AUTOMATICALLY RESPONDING TO DATA CODED ON FILM, Nobuyuki Taniguchi, Owner of Record: *Minolta Camera Kabushiki Kaisha, Osaka, Japan,* Attorney or Agent: Walter D. Ames, et al., Ex. Gp.: 211

4,444,321, Re. S.N. 837,086, Filed Mar. 6, 1986, Cl. 211/186, BRACKET STRUCTURE FOR SUPPORTING A SHELF OR PARTITION OF A DISPLAY CASE OR THE LIKE, William Carlstrom, Owner of Record: *Lyle-Carlstrom Associates, Inc., Sommerville, N.J.,* Attorney or Agent: Edward H. Loveman, Ex. Gp.: 355

4,445,157, Re. S.N. 855,316, Filed Apr. 24, 1986, Cl. 360/133, FLEXIBLE MAGNETIC DISK CASSETTE, Kiyoshi Takahashi, Owner of Record: *Sony Corp., Tokyo, Japan,* Attorney or Agent: Lewis H. Eslinger, et al., Ex. Gp.: 233

4,447,445, Re. S.N. 861,249, Filed May 8, 1986, Cl. 514/460, MANOALIDE AN ANTI-INFLAMMATORY ANALGESIC MARINE NATURAL PRODUCT, Robert S. Jacobs, et al., Owner of Record: *Regents of the University of California, Berkeley, Calif.,* Attorney or Agent: Thomas E. Ciotti, et al., Ex. Gp.: 125

4,450,512, Re. S.N. 866,053, Filed May 21, 1986, Cl. 362/276, ARRANGEMENT FOR MOUNTING A THERMAL PROTECTIVE DEVICE IN A RECESS MOUNTED LIGHTING FIXTURE, Paul J. Kristofek, Owner of Record: *Cooper Industries, Inc., Houston, Tex.,* Attorney or Agent: Gomer W. Walters, et al, Ex. Gp.: 342

4,450,828, Re. S.N. 849,080, Filed Apr. 2, 1986, Cl. 126/343.50A, TRUCK HAVING EQUIPMENT FOR ON-SITE HEATING AND COLLECTING USED GREASE FROM CONTAINERS, Donald R. Onken, et al., Owner of Record: *Inventors,* Attorney or Agent: Edwin E. Greigg, et al., Ex. Gp.: 344

4,451,137, Re. S.N. 870,276, Filed May 27, 1986, Cl. 355/14C, ADJUSTING COPIER COPY CONTRAST AND DENSITY DURING PRODUCTION RUNS, Ronald W. Farley, Owner of Record: *Eastman Kodak Co., Rochester, N.Y.,* Attorney or Agent: Norman Rushefsky, Ex. Gp.: 215

4,476,953, Re. S.N. 850,151, Filed Apr. 10, 1986, Cl. 180/249, FOUR-WHEEL VEHICLE DRIVE SYSTEM, Kazuyoshi Hiraiwa, Owner of Record: *Nissan Motor Co., Ltd., Yokohama, Japan,* Attorney or Agent: Richard L. Aitken, et al., Ex. Gp.: 316

4,488,817, Re. S.N. 853,196, Filed Apr. 17, 1986, Cl. 366/149, DEVICE FOR MAKING FROZEN CONFECTIONS, Susumu Uesaka, et al., Owner of Record: *Nippon Light Metal Co., Ltd., Tokyo, Japan,* Attorney or Agent: Eric P. Schellin, Ex. Gp.: 242

4,515,223, Re. S.N. 837,174, Filed Mar. 7, 1986, Cl. 172/372, HAND OPERATED WEEDING DEVICE WITH OPERATING DEPTH STABILIZER PLATE AND WEED DISPLACER STRIP, Wade A. Erickson, Owner of Record: *Inventor,* Attorney or Agent: Harvey B. Jacobson, Ex. Gp.: 331

4,530,989, Re. S.N. 868,990, Filed May 30, 1986, Cl. 528/15, ROOM TEMPERATURE STABLE ORGANOPOLYSILAXANE COMPOSITIONS, Ulrich Michel, et al., Owner of Record: *Wacker-Chemie GmbH, Monich Germany,* Attorney or Agent: Marion D. Ford, Ex. Gp.: 151

4,551,331, Re. S.N. 870,245, Filed June 3, 1986, Cl. 424/195.1, EASILY DISPERSIBLE DIETARY FIBER PRODUCT AND METHOD FOR PRODUCING THE SAME, Richard E. Rudin, Owner of Record: *S. C. Johnson & Son, Inc., Racine, Wis.,* Attorney or Agent: Joseph M. Fitzpatrick, et al., Ex. Gp.: 125

REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the gen-

eral public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19(a)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

No Publications This Issue.

Printing of Use in Another Form Claims

Effective immediately, all claims of prior use of the subject mark in another form contained in applications for Trademark registration will be printed in the *Official Gazette* and on the registration certificates according to the following formats:

First used in another form on _____.
First used in commerce in another form on _____.

July 15, 1986.

MARGARET M. LAURENCE,
Assistant Commissioner
for Trademarks.

Change in Legal Holidays

The Commissioner's Notice of Sept. 25, 1979, "Change in Legal Holidays," is hereby rescinded, in view of Public Law 98–144, enacted Nov. 2, 1983, which amended the listing of legal public holidays in 5 USC §6103. That amendment took effect in 1986 and added a new legal holiday relating to the birthday of Martin Luther King, Jr. This new holiday is designated for the third Mon. in Jan.

Section 6103, as amended, reads as follows:

New Year's Day, Jan. 1
Birthday of Martin Luther King, Jr., the third Mon. in Jan.
Washington's Birthday, the third Mon. in Feb.
Memorial Day, the last Mon. in May.
Independence Day, July 4.
Labor Day, the first Mon. in Sept.
Columbus Day, the second Mon. in Oct.
Veterans Day, Nov. 11.
Thanksgiving Day, the fourth Thurs. in Nov.
Christmas Day, Dec. 25.

Each of the holidays enumerated will constitute a "Federal holiday within the District of Columbia," as referred to in Section 21, Title 35, United States Code. In accordance with 37 CFR 1.6(a) and 1.10(a), the Patent and Trademark Office will not receive papers on these holidays. Actions required to be taken on such days may be taken on the next succeeding day that the Office is open for business in accordance with 37 CFR 1.7.

July 15, 1986.

DONALD J. QUIGG,
Assistant Secretary and
Commissioner of Patents
and Trademarks.

Service by Publication

A petition to cancel each of the registrations identified below having been filed, and the notice of such proceedings sent by registered mail to each registrant at the last known address having been returned by the Postal Service as undeliverable, notice is hereby given that unless the registrants listed herein, their assigns or legal representatives, shall enter an appearance within thirty days of this publication, the cancellation will be proceeded with as in the case of default.

Merri Dee Cosmetics, Inc., Chicago, Ill., Reg. 1,183,408, for the mark "COSMETICS FOR WOMEN OF EXOTIC COLORS", Canc. No. 14,990.

Time Savers, Inc., Montclair, N.J., Reg. No. 430,726, for the mark "TIME SAVERS AND DESIGN", Canc. No. 15,218.

ERMA S. BROWN,
Administrator
of the Trademark Trial
and Appeal Board.
For MARGARET M. LAURENCE,
Assistant Commissioner
for Trademarks.

Patents Available for License or Sale

4,231,061. INSTANT COLOR SLIDE RECORDER OF CRT IMAGE. *Samuel Freeman,* 13 Birchwood Court East, Syosset, N.Y. 11791.

4,443,971. HERBICIDE-TOLERANT PLANTS. *Edwin Tocker,* Legal Dept., E. I. du Pont de Nemours and Co., Wilmington, Del. 19898.

4,588,863. SYSTEM FOR FACILITATING PROFESSIONAL TELEPHONE COMMUNICATION. *James M. Ress,* 5300–27th St., North Arlington, Va. 22207.

4,598,241. RECTIFIER COMMUTATION IN ELECTRICAL MACHINES. *M. Sereda,* C. P. 358, Succ. K Montreal, Quebec, Canada H1N 3L3. (514) 861–7670.

Adverse Decisions in Interference

In the designted interferences involving the following patents, final decisions have been rendered that the respective patentees were not the first inventors with respect to the claims listed.

Patent No. 3,905,790, Edward T. Strickland, METHOD AND APPARTUS FOR MANUFACTURING GLASS FIBERS, Interference No. 100,382, decided Sept. 22, 1983, claim 1.

Patent No. 4,168,314, Burton G. Christensen and Frank P. DiNinno, 6-1'-HYDROXYETHYL)-2-AMINOETHYLTHIO-PEN-2-EM-3-CARBOXYLIC ACID, Interference No. 100,992, decided Mar. 4, 1986, claims 1 & 2.

Patent No. 4,260,618, Burton G. Christensen and Frank P. DiNinno, 6-1'-HYDROXYETHYL)-2-SUBSTITUTED-PEN-EM-2-CARBOXYLIC ACID, Interference No. 100,991, decided Mar. 4, 1986, claims 1, 2 & 3.

Patent No. 4,264,307, Siegmund A. Neuwirth, DENTAL REDUCING TOOL, Interference No. 101,005, decided May 13, 1986, claims 1–8, 14 & 15.

Patent No. 4,299,720, Maged A. Osman, Terry J. Scheffer, Laszlo Revesz and Jurgen Markert, LIQUID CRYSTAL MIXTURE, Interference No. 101,309, decided May 8, 1986, claims 7, 11 & 12.

Patent No. 4,365,033, Yuval Halpern and Donna M. Mott, FLAME-RETARDANT POLYMER COMPOSITIONS CONTAINING METAL OR AMINE SALTS, Interference No. 101,181, decided May 15, 1986, claims 4, 6 & 7.

Patent No. 4,380,514, Guenther Seybold, PREPARATION OF OPTICAL BRIGHTENERS, Interference No. 101,499, decided June 3, 1986, claims 1–7.

Patent No. 4,425,090, Gerhard Hansen, APPARATUS FOR PRODUCING A HEAT-SEALABLE CONTAINER, Interference No. 101,327, decided May 16, 1986, claims 3, 11 & 12.

Patent No. 4,462,078, Ron Ross, COMPUTER PROGRAM PROTECTION METHOD, Interference No. 101,445, decided Apr. 24, 1986, claims 1–3.

Patent No. 4,474,793, Barry C. Ross, Graham Johnson and Michael E. Yeomans, 7-OXO-4-THIA-1-AZA-(3,2,0)HEPTANE AND 7-OXO-4-THIA-1-AZA-(3,2,0)-

HEPT-2-ENE DERIVATIVES, Interference No. 101,521, decided June 9, 1986, claims 1–3 and 5–6.

Patent No. 4,512,416, David R. Smith, FLAT FOLD IMPLEMENT FRAME, Interference No. 101,464, decided June 3, 1986, claim 1.

NANNIE B. HENRY,
Deputy Clerk,
Board of Patent Appeals and Interferences.

Removal from Register

Pursuant to the provisions of 37 CFR §10.11(b), a letter was directed on Nov. 18, 1985, to the last post office address furnished to the Office of Enrollment and Discipline by each of the persons whose name and address appear on the following list. With respect to some of the letters, no reply was received within the period of forty-five (45) days therein set. Other letters were returned by the Post Office with notations to the effect that the addressee was deceased, unknown, or had moved and left no forwarding address.

Accordingly, the names of the following persons have been removed from the Register of Patent Attorneys and Patent Agents.

May 21, 1986.

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PATENT NOTICES

Certificates of Correction for the Week of Aug. 12, 1986

B1. 4,445,789	4,536,754	4,564,757	4,582,575
PP. 5,569	4,537,751	4,565,181	4,583,007
PP. 5,570	4,537,829	4,565,221	4,583,089
Re. 31,999	4,538,260	4,565,948	4,583,100
Re. 32,044	4,538,885	4,567,751	4,583,113
Re. 32,098	4,541,633	4,567,869	4,583,298
De. 283,067	4,541,705	4,568,434	4,583,351
4,079,144	4,541,706	4,569,047	4,584,204
4,253,164	4,541,936	4,569,331	4,584,284
4,401,199	4,542,059	4,569,938	4,584,407
4,404,247	4,542,854	4,570,390	4,584,425
4,438,255	4,544,152	4,570,695	4,584,738
4,443,789	4,544,256	4,570,793	4,584,811
4,445,761	4,544,654	4,571,612	4,584,875
4,449,793	4,544,734	4,571,937	4,585,113
4,451,137	4,545,019	4,572,068	4,585,261
4,454,087	4,545,848	4,572,212	4,585,301
4,456,382	4,546,499	4,572,653	4,585,600
4,459,313	4,548,577	4,572,849	4,585,943
4,471,379	4,548,939	4,572,961	4,586,107
4,473,498	4,549,071	4,574,141	4,586,130
4,479,354	4,549,145	4,574,394	4,586,151
4,482,886	4,550,098	4,574,756	4,586,209
4,487,340	4,551,003	4,574,843	4,586,305
4,489,890	4,551,586	4,575,030	4,587,186
4,493,019	4,552,679	4,575,407	4,587,278
4,496,640	4,553,854	4,575,429	4,587,374
4,496,768	4,553,979	4,576,209	4,587,564
4,497,813	4,554,191	4,576,327	4,587,616
4,498,109	4,554,392	4,576,555	4,587,623
4,502,976	4,555,064	4,576,701	4,587,685
4,506,714	4,555,264	4,577,022	4,587,921
4,512,340	4,555,538	4,577,143	4,588,028
4,512,981	4,555,580	4,577,159	4,588,394
4,516,560	4,555,796	4,577,619	4,588,506
4,517,295	4,556,073	4,578,637	4,588,512
4,519,771	4,556,583	4,578,811	4,588,630
4,520,151	4,559,471	4,578,815	4,588,651
4,522,728	4,560,304	4,578,879	4,588,794
4,523,039	4,561,057	4,578,890	4,589,550
4,523,484	4,561,467	4,579,930	4,589,758
4,523,548	4,561,559	4,580,680	4,590,635
4,524,061	4,561,767	4,580,853	4,590,640
4,524,392	4,561,913	4,581,364	4,590,802
4,527,895	4,562,470	4,581,367	4,590,866
4,530,374	4,563,480	4,581,580	4,590,896
4,530,963	4,563,569	4,581,831	4,592,245
4,533,232	4,563,991	4,582,065	4,592,357
4,535,317	4,564,593	4,582,206	
4,536,061	4,564,638	4,582,429	

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The following libraries, designated as Patent Depository Libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent years to all or most of the patents issued since 1790.

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Arkansas	Little Rock: Arkansas State Library	(501) 371-2090
California	Los Angeles Public Library	(213) 612-3273
	Sacramento: California State Library	(916) 322-4572
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	Sunnyvale: Patent Information Clearinghouse*	(408) 730-7290
Colorado	Denver Public Library	(303) 571-2122
Delaware	Newark: University of Delaware Library	(302) 451-2432
Florida	Fort Lauderdale: Broward County Main Library	(305) 357-7444
	Miami–Dade Public Library	(305) 375-2665
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4508
Idaho	Moscow: University of Idaho Library	(208) 885-6235
Illinois	Chicago Public Library	(312) 269-2865
	Springfield: Illinois State Library	(217) 782-5430
Indiana	Indianapolis–Marion County Public Library	(317) 269-1706
Louisiana	Baton Rouge: Troy H. Middleton Library, Louisiana State University	(504) 388-2570
Maryland	College Park: Engineering and Physical Sciences Library, University of Maryland	(301) 454-3037
Massachusetts	Amherst: Physical Sciences Library, University of Massachusetts	(413) 545-1370
	Boston Public Library	(617) 536-5400 Ext. 265
Michigan	Ann Arbor: Engineering Transportation Library, University of Michigan	(313) 764-7494
	Detroit Public Library	(313) 833-1450
Minnesota	Minneapolis Public Library & Information Center	(612) 372-6570
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 390
Montana	Butte: Montana College of Mineral Science and Technology Library	(406) 496-4283
Nebraska	Lincoln: University of Nebraska-Lincoln, Engineering Library	(402) 472-3411
Nevada	Reno: University of Nevada Library	(702) 784-6579
New Hampshire	Durham: University of New Hampshire Library	(603) 862-1777
New Jersey	Newark Public Library	(201) 733-7815
New Mexico	Albuquerque: University of New Mexico Library	(505) 277-5441
New York	Albany: New York State Library	(518) 474-5125
	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 714-8529
North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
Ohio	Cincinnati & Hamilton County, Public Library of	(513) 369-6936
	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 255-7055 Ext. 212
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Oregon	Salem: Oregon State Library	(503) 378-4239
Pennsylvania	Cambridge Springs: Alliance College Library	(814) 398-2098
	Philadelphia: Franklin Institute Library	(215) 448-1227
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	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
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	Dallas Public Library	(214) 749-4176
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
Utah	Salt Lake City: Marriott Library, University of Utah	(801) 581-8394
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Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3247

All of the above-listed libraries offer CASSIS (Classification And Search Support Information System), which provides direct, on-line access to Patent and Trademark Office data.

*Collection organized by subject matter.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

JAMES E. DENNY, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF July 5, 1986

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, AND ENGINEERING, GROUP 110—D. E. TALBERT, Director	4-01-85
ORGANIC CHEMISTRY AND BIOTECHNOLOGY, GROUP 120—C. E. VAN HORN, Director	2-22-84
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 130—R. F. WHITE, Director	4-01-85
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY, STOCK MATERIALS AND COMPOSITIONS, GROUP 150—J. O. THOMAS, Director	10-12-84
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—G. GOLDBERG, Director	4-18-84
SPECIAL LAWS ADMINISTRATION, GROUP 220—K. L. CAGE, Director	4-11-84
INFORMATION PROCESSING, STORAGE, AND RETRIEVAL, GROUP 230—E. LEVY, Director	11-21-83
PACKAGES, CLEANING, TEXTILES, AND GEOMETRICAL INSTRUMENTS, GROUP 240—E. E. KUBASIEWICZ, Director	2-13-85
ELECTRONIC AND OPTICAL SYSTEMS AND DEVICES, GROUP 250—S. S. MATTHEWS, Director	3-30-83
COMMUNICATIONS, MEASURING, TESTING AND LAMP/DISCHARGE GROUP, GROUP 260—S. G. KUNIN, Director	9-26-83
DESIGN, GROUP 290—K. L. CAGE, Director	2-06-84
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director	7-12-83
MATERIAL SHAPING, ARTICLE MANUFACTURING AND TOOLS, GROUP 320—S. N. ZAHARNA, Director	12-24-84
MECHANICAL TECHNOLOGIES AND HUSBANDRY PERSONAL TREATMENT INFORMATION, GROUP 330—R. E. AEGERTER, Director	8-18-83
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 340—D. J. STOCKING, Director	7-31-84
GENERAL CONSTRUCTIONS, PETROLEUM AND MINING ENGINEERING, GROUP 350—A. L. SMITH, Director	7-01-85

Expiration of patents: The patents within the range of numbers indicated below expire during June 1986, except those which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents . . . . . Numbers 3,452,362 to 3,458,862, inclusive

Plant Patents . . . . . Numbers 2,897 to 2,913 inclusive

REEXAMINATIONS

AUGUST 12, 1986

Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination.

B1 3,563,399 (550th)

METHOD FOR CIRCULATING GRAIN STORED IN A CIRCULAR BIN

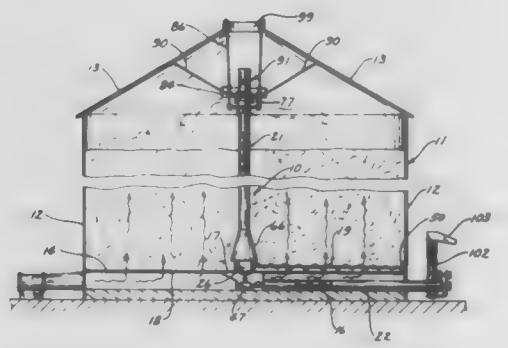
Charles C. Shivers, Corydon, Iowa 50060

Reexamination Request No. 90/000,363, Apr. 27, 1983.

Reexamination Certificate for Patent No. 3,563,399, issued Feb. 16, 1971, Ser. No. 638,257, May 15, 1967.

Int. Cl.[4] B65G *65/46*

U.S. Cl. 414—786



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1** and **2** is confirmed.

Claim **3** was previously disclaimed.

1. The method for circulating free-flowing grain stored in a circular bin having a ventilated floor which comprises:

a. continuously radially moving predetermined relative volumes of grain at a progressively increasing volume flow from given portions of grain extended annularly within the bin for delivery centrally of the bin to successively remove horizontal layers of grain of uniform thickness from the floor of the bin;

b. elevating the centrally delivered grain above the surface of the stored grain; and

c. distributing the elevated over the top surface of the stored grain so that the stored grain is continuously and uniformly circulated from the bin floor to the top surface of the stored grain.

B1 3,764,305 (551st)

METHOD OF STORAGE AND HEAT-RETAINING FOR TREATED NODULAR CAST IRON

Georg Andersson, Västerås, Sweden, assignor to Allmanna Svenska Elektriska Aktiebolaget, Västerås, Sweden

Reexamination Request No. 90/000,706, Jan. 10, 1985.

Reexamination Certificate for Patent No. 3,764,305, issued Oct. 9, 1973, Ser. No. 118,957, Feb. 25, 1971.

Continuation of Ser. No. 703,175, Feb. 5, 1968, abandoned.

Claims priority, application Sweden, Feb. 10, 1967, 1860/67

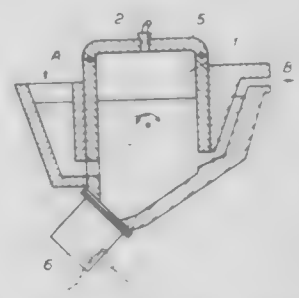
Int. Cl.[4] C22C *33/08*

U.S. Cl. 75—130 R

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **1** and **2** are determined to be patentable as amended.

1. Method of *continuously or semi-continuously* manufacturing, storing and [heat-]retaining *the heat content of* nodular cast iron including *continuously or semi-continuously* pouring melt consisting essentially of iron into the inlet of a double-sided closed induction furnace of submerged resistor type with a central hearth and inlet and outlet channels separated from the hearth and with at least one inductor unit communicating with said hearth separately from said inlet and outlet channels, filling said furnace with melt to such a height that a closed space is formed above the melt in the central hearth of the



furnace *thereby closing off said inlet and outlet channels*, which space thus is sealed from the atmosphere, evacuating air from said space and introducing protective gas into the space at a pressure above atmospheric together with a component comprising magnesium, thus forming nodular cast iron, storing said nodular cast iron and keeping it hot in said furnace for a considerable time, and *continuously or semi-continuously* tapping off the hot iron through the outlet.

B1 3,815,213 (552nd)

METHOD OF MAKING AN IMPROVED SLOT DRAINAGE CULVERT

Ralph E. Evans, Middletown, Ohio, and Howard E. Blower, Oakland, Calif., assignors to Armco Steel Corporation, Middletown, Ohio

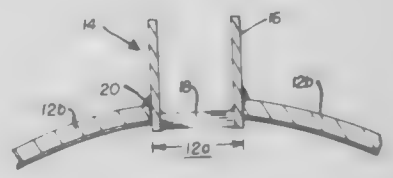
Reexamination Request No. 90/000,881, Oct. 10, 1985.

Reexamination Certificate for Patent No. 3,815,213, issued Jun. 11, 1974, Ser. No. 307,137, Nov. 16, 1972.

Division of Ser. No. 60,516, Aug. 3, 1970, Pat. No. 3,714,786.

Int. Cl.[4] B23P *11/02*

U.S. Cl. 29—446



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–7** is confirmed.

1. A method of making an open slot culvert, for positioning in drainage area with the open slot at the top so that any surface drainage water will flow through the slot and directly into the culvert, the culvert being satisfactorily backfilled by utilizing any suitable material with the upper surface of the drainage area being substantially on a level with the upper surface of the open slot of the culvert, of the type which includes a metallic pipe section, split longitudinally along its upper side to form a narrow slot, and grate means secured in said slot, said grate means comprising two spaced, vertical bearing members substantially normal to the axis of said pipe section and extending

longitudinally over the major portion of the length of said slot and being joined by spacer means substantially normal to said vertical bearing members and being located substantially at the neutral axis of the pipe section wall, which comprises the steps:

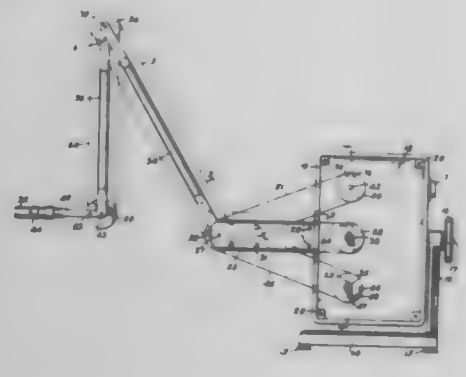
a. providing a grate means comprising two elongated parallel vertical bearing members in spaced relation and joined by spacer means substantially normal to said bearing members;
b. longitudinally splitting a metallic pipe section along its upper end to form a narrow slot;
c. inserting said grate means within said slot;
d. setting the position of said bearing members so that they are substantially normal to the axis of said pipe section and so that said spacer means are located substantially at the neutral axis of the pipe section wall; and
e. welding both sides of said grate means to said pipe section wall.

B1 4,014,207 (553rd)

SECTOR SCANNING ULTRASONIC INSPECTION APPARATUS

Edward P. Meyer, Boulder, and William L. Wright, Longmont, both of Colo., assignors to Picker Electronics, Inc., Northford, Conn.

Reexamination Request No. 90/000,793, Jun. 5, 1985.
Reexamination Certificate for Patent No. 4,014,207, issued Mar. 29, 1977, Ser. No. 572,058, Apr. 28, 1975.
Division of Ser. No. 62,143, Aug. 7, 1970, Pat. No. 3,924,452, which is a continuation of Ser. No. 801,882, Oct. 1, 1968, abandoned, which is a continuation-in-part of Ser. No. 373,312, Jun. 8, 1964, abandoned.
The portion of the term of this patent subsequent to Dec. 9, 1992, has been disclaimed.
Int. Cl.[4] G01N *29/00, 29/04*
U.S. Cl. 73—621



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–10** is confirmed.

New claims **11** and **12** are added and determined to be patentable.

1. In an ultrasonic apparatus for investigating the internal structure of an object and having electroacoustic transducer for transmitting ultrasonic signals through an object to be investigated and for receiving reflected ultrasonic signals, an ultrasonic generator connected to said transducer, a readout device for translating reflected ultrasonic signals received by said transducer into a visible reproduction of reflections from and within said object being investigated, the combination comprising:

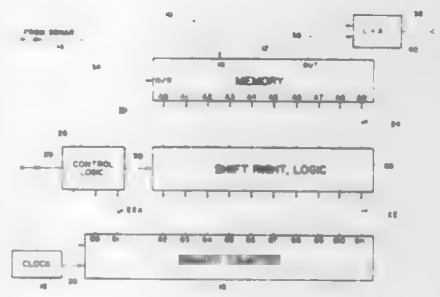
a. supporting means supporting the electroacoustic transducer for restraining movement of the transducer to emit signals having axes in a single predetermined plane while the transducer is substantially in contact with the surface of said object, said supporting means comprising:
i. a base;
ii. a first arm pivotally connected to said base for movement about a first axis transverse to said predetermined plane;
iii. a second arm pivotally connected to said first arm for movement about a second axis transverse to said predetermined plane; and,
iv. a third arm pivotally connected to said second arm for movement about a third axis transverse to said predetermined plane, the transducer being connected to said third arm for transmitting and receiving ultrasonic signals having signal axes substantially in said predetermined plane;
b. first signal generator means responsive to movement of said third arm for providing first electrical signals corresponding to direction of emission of said ultrasonic signals;
c. second signal generator means responsive to movement of said second and first arms for providing second and third electrical signals respectively related to angular positions of said third and second axes about said second and first axes, respectively;
d. conversion means responsive to said second and third electrical signals for providing a fourth electrical signal representative of x and y coordinate positions of said transducer; and,
e. means for transmitting said first and fourth electrical signals to said readout device for producing a visual representation of the location of said transducer and of the direction of emission of said ultrasonic signals from said transducer in said predetermined plane.

B1 4,322,827 (554th)

RANGE EXPANDER FOR SONAR SYSTEM

Ronald G. Weber, Tulsa, Okla., assignor to Lowrance Electronics, Inc., Tulsa, Okla.

Reexamination Request No. 90/000,693, Dec. 20, 1984.
Reexamination Certificate for Patent No. 4,322,827, issued Mar. 30, 1982, Ser. No. 189,047, Sep. 22, 1980.
Int. Cl.[4] G01S *15/08*
U.S. Cl. 367—99



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **1, 2** and **6** are cancelled.

Claims **3, 4, 5, 7** and **8** are determined to be patentable as amended.

[1. Apparatus for extending the distance range of a sonar apparatus, comprising:

(a) a clock of selected period;
(b) digital binary counter means responsive to said clock; said counter means having a plurality of output terminals Q0, Q1, Q2, Q3, . . . QN;
(c) a random access memory having a plurality of input address control terminals A0, A1, A2, A3, . . . AN; a signal input and signal output means, and a read/write control input terminal;
(d) a multi-channel switching means, whereby a selected

single memory address control terminal can be connected alternately to one or another of two selected Q terminals of said counter; and

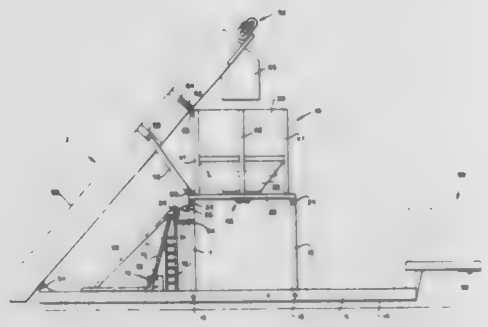
(e) means to synchronously control both said read/write operations of said memory, and said switching of said switching means.]

B1 4,348,146 (555th)

SELF-ERECTING SURGE BIN

J. Donald Brock, Chattanooga, Tenn., assignor to Astec Industries, Inc., Chattanooga, Tenn.

Reexamination Request No. 90/000,848, Aug. 29, 1985.
Reexamination Certificate for Patent No. 4,348,146, issued Sep. 7, 1982, Ser. No. 148,509, May 9, 1980.
Division of Ser. No. 912,501, Jun. 5, 1978, Pat. No. 4,249,351.
Int. Cl.[4] B65G *67/08*
U.S. Cl. 414—332



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claim **5** is confirmed.

Claims **1** and **4** are determined to be patentable as amended.

Claims **2** and **3** dependent on an amended claim, are determined to be patentable.

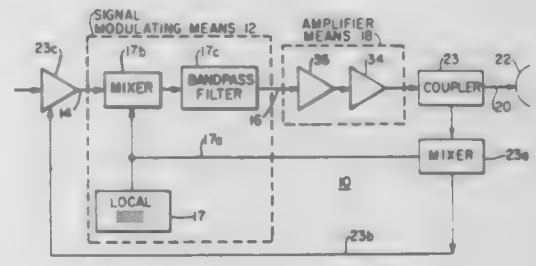
New claim **6** is added and determined to be patentable.

B1 4,475,242 (556th)

MICROWAVE COMMUNICATIONS SYSTEM

Marc Rafal; William T. Joines, and Larry W. Burton, all of Durham, N.C., assignors to Avnet Inc., Ellenville, N.Y.

Reexamination Request No. 90/000,833, Aug. 9, 1985.
Reexamination Certificate for Patent No. 4,475,242, issued Oct. 2, 1984, Ser. No. 440,628, Nov. 10, 1982.
Int. Cl.[4] H04B *1/02*; H04H *1/00*
U.S. Cl. 455—3



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–12** is confirmed.

1. A microwave transmitter having a gain and a noise figure for relaying information channels to any of a number of signal distribution systems, comprising:

signal modulating means for receiving an input signal that includes a plurality of information channels and producing an amplitude modulated signal in the microwave frequency range, and

amplifier means responsive to said microwave frequency signal for producing an amplified output signal suitable for microwave transmission to a remote location,

said signal modulating means and said amplifier means having upper power limits which are sufficiently below their respective two-tone third order intermodulation intercept points that each has a carrier-to-triple-beat power ratio at least equal to first predetermined values dependent on the number of said information channels,

said amplifier means having a gain high enough that, notwithstanding power limitations of said signal modulating means, the power of said amplifier output signal is at least equal to a second predetermined value, whereby

the sum of the gain and the noise figure of said transmitter measured in decibels has an upper limit determined by a desired carrier-to-noise ratio and by thermal noise.

REISSUES

AUGUST 12, 1986

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 32,221

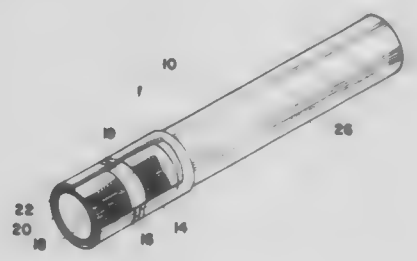
VARIABLE DILUTION FILTER

John M. Adams, 2512 Cedar La., Mechanicsville, Va. 23111

Original No. 4,433,696, dated Feb. 28, 1984, Ser. No. 307,973, Oct. 2, 1981. Application for reissue Oct. 2, 1984, Ser. No. 656,993

Int. Cl.[4] A24D *1/04, 3/00*

U.S. Cl. 131—336 19 Claims



1. In a smoking article the improvements which comprise:

a filter mouthpiece attached to one end of said smoking article by air impervious tipping paper [;] *having*

a second stage filter means mounted in said mouthpiece behind the tobacco portion of said smoking article and free to move in an axial direction in said mouthpiece in response to tapping said mouthpiece on a hard surface;

a first stage filter means rigidly mounted in said mouthpiece behind said second stage filter means such that there is space for axial movement of said second stage filter; and

ventilation holes in said air impervious tipping paper forward of said first stage filter and behind the tobacco portion of said smoking article.

Re. 32,222

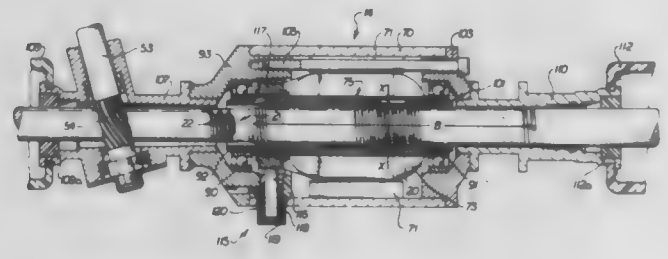
STEERING GEAR

Gilbert H. Drutchas, Birmingham, Mich., assignor to TRW Inc., Cleveland, Ohio

Original No. 4,415,054, dated Nov. 15, 1983, Ser. No. 405,705, Aug. 5, 1982. Application for reissue Nov. 6, 1984, Ser. No. 668,658

Int. Cl.[4] B62D *5/04*

U.S. Cl. 180—79.1 9 Claims



1. An assembly for pivoting the steerable wheels of a vehicle upon manual rotation of a steering wheel, said assembly comprising:

a member which is axially movable to effect turning movement of the steerable vehicle wheels;

ball screw and nut means for applying force to said member to move said member axially, said ball screw and nut means including;

thread means connected with said member, rotatable nut means circumscribing at least a portion of said thread means and ball means for transmitting forces between said nut means and said thread means;

an electric motor for rotating said nut means about the central axis of said member, said electric motor including a stator for providing a magnetic field, and a rotor *means* disposed in a coaxial relationship with said member and rotatable under the influence of the magnetic field from said stator to rotate said nut means relative to said thread means;

control means for energizing the [stator] *rotor means* of said electric motor to rotate said motor and nut means in response to rotation of the steering wheel; and

a rack and pinion gear set for applying force transmitted from the steering wheel to said member and for moving said member axially and imparting rotary motion to said nut means to turn the steerable vehicle wheels upon failure of said electric motor, said rack and pinion gear set including

a pinion gear rotatable with the steering wheel and

a rack gear disposed in meshing engagement with said pinion gear and connected with said member.

Re. 32,223

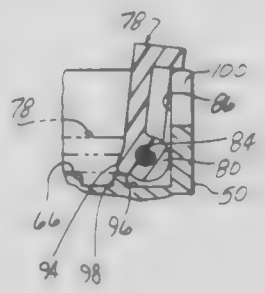
MULTILEVEL STACKING CONTAINER

Elsmer W. Kreeger, Howell, Mich., and Edward L. Stahl, Osage Beach, Mo., assignors to Pinckney Molded Plastics, Inc., Howell, Mich.

Original No. 4,423,813, dated Jan. 3, 1984, Ser. No. 381,072, May 24, 1982. Application for reissue Feb. 8, 1985, Ser. No. 699,655

Int. Cl.[4] B65D *21/04*

U.S. Cl. 206—506 6 Claims



1. In a multilevel stacking container adapted to be stacked on a like container at any one of a plurality of different levels relative thereto, said container including a rectangular bottom, and first and second end walls fixedly secured to and projecting upwardly from respective opposite [ends] *end edges* of said bottom; the improvement wherein each of said end walls comprises [a web-like lower rail fixedly secured to said bottom,] a web-like upper rail vertically spaced above said [lower rail] *bottom* , a plurality of support webs each fixedly secured at *the inner side of* its lower end to the outer side of said [lower rail] *bottom* and fixedly secured at its upper end to the inner side of said upper rail whereby said upper rail is offset outwardly from said [lower rail] *end edge of said bottom* by the thickness of said support webs, a support foot at the lower end of each support web, a support platform at the upper end of each support web spaced downwardly from the upper edge of said upper rail and horizontally offset from the support foot at the lower end of its support web, a support seat on each support web vertically below *the support platform* and horizontally offset from [both] the support platform [and support foot] on the web, means defining a recess on the inner side of said upper rail extending horizontally the entire length of said upper rail and extending downwardly from the upper edge of said upper rail substantially to said support platforms, a stacking shelf, hinge means hingedly connecting said shelf to said upper rail along the lower edge of said recess for hinging movement of said shelf relative to said upper rail between a [generally vertical] stored position wherein said shelf is received within said recess *and located outwardly of the support*

webs and a [generally horizontal] support position wherein said shelf lies upon said support platforms in vertical alignment with said [stacking] *support* feet whereby the [stacking] *support* feet of a like container may be supported on said shelf when said shelf is in said support position to establish a high stacked relationship and may be supported on said support seats when said shelf is in said stored position and said like container is in a first orientation to the one container, [said upper rail being engageable with said shelf] *said like container being supportable upon the one container in a fully nested position* when said shelf is in said stored position and said like container is in a second orientation reversed from said first orientation.

Re. 32,224

POLYURETHANE COATED SAFETY GLASS

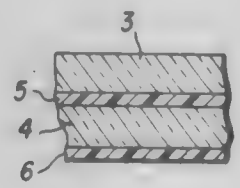
Wolfgang Schäfer, and Helmer Raedisch, both of Aachen, Fed. Rep. of Germany, assignors to Saint-Gobain Industries, Neuilly-sur-Seine, France

Original No. 3,979,548, dated Sep. 7, 1976, Ser. No. 523,016, Nov. 12, 1974. Continuation of Ser. No. 456,251, Jan. 6, 1983, abandoned, which is a continuation of Ser. No. 417,847, Sep. 14, 1982, abandoned, which is a continuation of Ser. No. 847,321, Oct. 31, 1977, abandoned. Application for reissue Jan. 30, 1985, Ser. No. 696,865

Claims priority, application France, Nov. 16, 1973, 73 40821

Int. Cl.[4] B32B *27/40*

U.S. Cl. 428—423.1 **6 Claims**



1. A safety window comprising at least one glass sheet having bonded thereto an adherent solid transparent layer of a scratch-resistant polyurethane formed by curing a liquid mixture containing (1) a polyglycol ether resulting from the condensation of propylene oxide with trimethylolpropane and containing about 10.5–12% by weight free hydroxyls together with (2) a biuret of 1,6-hexamethylene diisocyanate having about 21–22% by weight isocyanate groups, the weight of said biuret being between about 0.9 and 1.1 times the weight of said polyglycol ether.

Re. 32,225

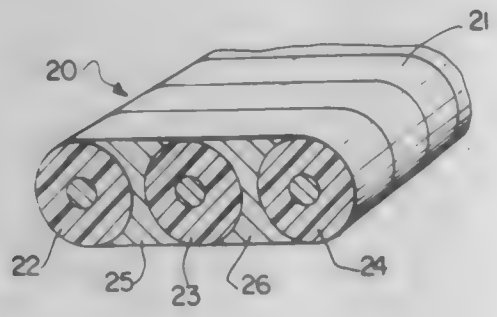
OIL WELL CABLE

David H. Neuroth, Bethany, Conn., assignor to Harvey Hubbell Incorporated, Orange, Conn.

Original No. 4,409,431, dated Oct. 11, 1983, Ser. No. 291,125, Aug. 7, 1981. Application for reissue May 22, 1984, Ser. No. 613,085

Int. Cl.[4] H01B *7/18*

U.S. Cl. 174—103 **40 Claims**



39. In an electrical cable of elongated cross section having opposite, flattened sides, wherein there is at least one electrical conductor having electrical insulation thereon within the cable, the improvement comprising:

an elongated, force-resisting member within the cable adjacent the insulation on the conductor, said member comprising two opposite edges each of which is adjacent a different one of the cable sides, said member having a cross section joining said edges, said cross section being rigid for resisting transverse compressive forces and extending across the interior of the cable, said member being flexible to allow long radius bending transverse to the longitudinal axis thereof,

said force-resisting member comprising first and second elongated, parallel bodies which abut one another along an interface including a pair of planar surfaces.

Re. 32,226

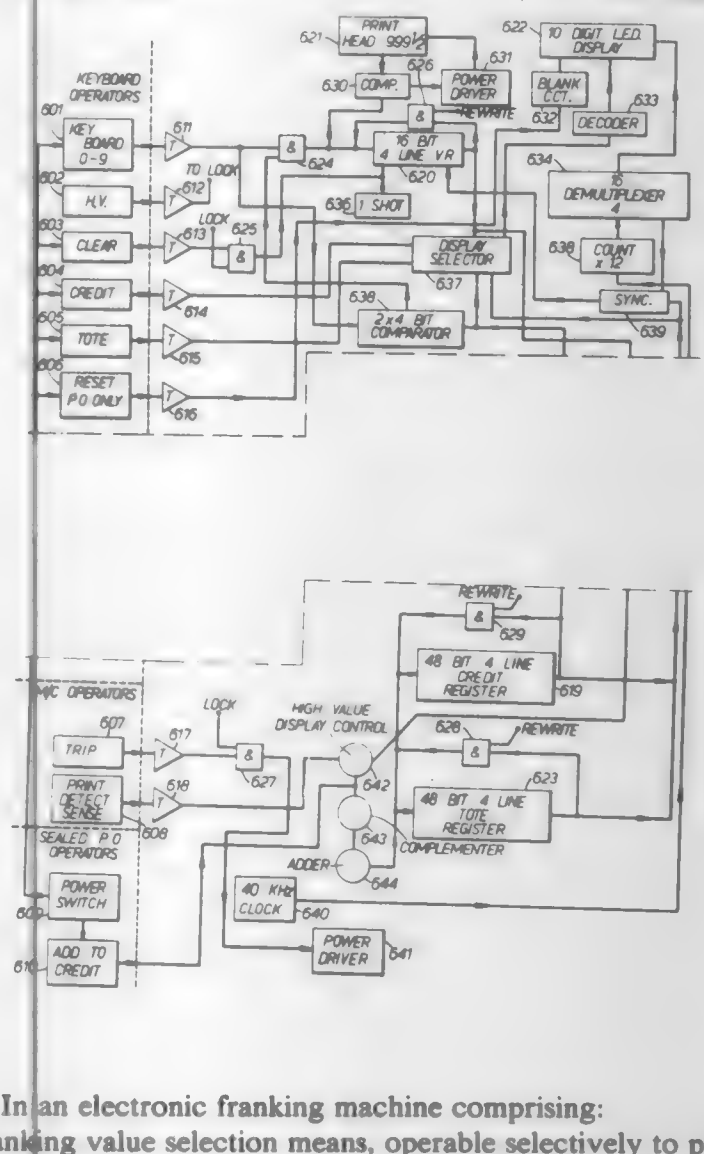
ELECTRONIC FRANKING MACHINES

Paul Fuller, Romford; John B. Gillender, Canvey Island; Michael Shacklady, Benfleet, and Samir Basu, Romford, all of England, assignors to Roneo Alcatel Limited, Esses, England

Original No. 4,093,999, dated Jun. 6, 1978, Ser. No. 746,490, Dec. 1, 1976. Application for reissue Sep. 13, 1984, Ser. No. 650,242

Int. Cl.[4] G06F *3/12, 3/02, 15/21*; H03K *21/00*

U.S. Cl. 364—900 **28 Claims**



1. In an electronic franking machine comprising:

franking value selection means, operable selectively to provide an electrical input representative of a franking value selected for a desired next franking operation of the machine, for setting the selected franking value into the machine;

a digital electronic input register, having an input connected to said franking value selection means, for receiving and holding said selected franking value;

an electrically adjustable printing device, settable electrically to any selected one of a plurality of different conditions enabling the device to be actuated respectively to print a plurality of different franking values;

setting control circuitry, connected with said input register and said printing device, operable in dependence upon said electrical input to bring about setting of said printing

device to the condition in which it is actuable to print said selected franking value;

a digital electronic total register, for holding an accumulated value representative of the sum of the respective franking values used in preceding franking operations of the machine; and

totalling circuitry, connected between said input register and said total register, for effecting addition of said selected franking value held in the input register to said accumulated value; whereby a new accumulated value is provided, to be held in said total register, after printing of said selected franking value, in place of said accumulated value previously held there,

the improvement wherein said machine comprises an electronics unit which houses franking value selection means, said input register, said total register and said totalling circuitry and a separate printing unit which houses the said electrically adjustable printing device and with which said electronics unit is engaged during the operation of the machine, [said electronics and printing units being readily separable one from the other and having complementary coupling means for setting up operative electrical connections therebetween when the electronics unit is engaged with the printing unit.] *said electronics and printing units nesting together with the electronics unit being carried by the printing unit and with the electronics unit fitting into a spatial envelope defined by the exterior dimensions of the printing unit, the electronics unit being readily separable from the printing unit and the electronics and printing units being connected together by means of a plug projecting from one said unit which directly engages a socket in the other said unit to set up operative electrical connections therebetween when the electronics unit is engaged with the printing unit, said plug and socket connectors being concealed when said electronics and printing units are nested together.*

PLANT PATENTS

GRANTED AUGUST 12, 1986

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

5,778

CHRYSANTHEMUM PLANT NAMED BRIGHTLIGHT

Leonard H. Shoesmith, deceased, late of Woking Surrey, England (by May Victoria Shoesmith, executrix), assignor to Ball PanAm Plant Company, Parrish, Fla.

Filed Apr. 25, 1984, Ser. No. 603,840
Int. Cl.[3] A01H *5/00*
U.S. Cl. Plt.—74 **1 Claim**

1. A new and distinct cultivar of chrysanthemum plant named Brightlight, as illustrated and described, and particularly characterized by its flat capitulum form and single capitulum type, bright yellow ray floret color, excellent flower substance, diameter of 55–65 cm. across face of capitulum, medium pot height, and semi-upright branching pattern.

5,779

CHRYSANTHEMUM PLANT NAMED REJOICE

William E. Duffett, Salinas, Calif., assignor to Yoder Brothers, Inc., Barberton, Ohio

Filed Nov. 28, 1984, Ser. No. 675,566
Int. Cl.[4] A01H *5/00*
U.S. Cl. Plt.—74 **1 Claim**

1. A new and distinct cultivar of *Chrysanthemum morifolium,* Ramat., plant named Rejoice, as described and illustrated, and particularly characterized as to uniqueness by the combined characteristics of flat capitulum form; anemone capitulum type; yellow ray floret color; diameter across face of capitulum ranging from 6 to 8 cm. at maturity; uniform eight week flowering response; medium plant height; semi-spreading branching pattern; and tolerance of high summer 21° C. night to 37° C. day temperatures for bud initiation and flower development.

5,780

IMPATIENS PLANT NAMED QUASAR

James C. Mikkelsen, Ashtabula, Ohio, assignor to Mikkelsens, Inc., Ashtabula, Ohio

Filed Oct. 19, 1984, Ser. No. 663,479
Int. Cl.[4] A01H *5/00*
U.S. Cl. Plt.—68 **1 Claim**

1. A new and distinct cultivar of New Guinea Impatiens plant named Quasar, as described and illustrated, and particularly characterized by its multiple flowering from leaf axil, vigorous, self-branching growth habit, salmon flower color with excellent keeping quality of flowers, flowering from two (2) leaf whorls at one time making it useful for pot plant use, and by its adaptability to various environments of use.

5,781

CHRYSANTHEMUM REEF

Martinus van der Jagt, Ter Aar, Netherlands, assignor to Chrysanthemum Breeders Association N.V., Netherlands Antilles

Filed Apr. 12, 1984, Ser. No. 599,701
Int. Cl.[4] A01H *5/00*
U.S. Cl. Plt.—76 **1 Claim**

1. A new and distinctive variety of chrysanthemum as described and illustrated in the foregoing specification and accompanying drawings.

PATENTS

GRANTED AUG. 12, 1986

ERRATA

For CLASS	See PATENT NO.
623–001	4,604,762
384–020	4,605,265
406–049	4,605,329
530–324	4,605,512
530–303	4,605,513
530–307	4,605,514
530–307	4,605,515
540–034	4,605,516
540–052	4,605,517
558–244	4,605,518
558–234	4,605,519
558–414	4,605,520
558–313	4,605,521
428–622	4,605,533
524–504	4,605,720
351–213	4,605,969
373–108	4,606,055
381–099	4,606,071

PATENTS

GRANTED AUGUST 12, 1986

GENERAL AND MECHANICAL

4,604,758
SAFETY BIB FOR ENGAGING A PACIFIER
Christine L. Grasberger, 5 Care Free La., and Eileen M. Martin, 6 Care Free La., both of Gansevoort, N.Y. 12831
Filed Dec. 18, 1985, Ser. No. 810,516
Int. Cl.[4] A41B *13/10*
U.S. Cl. 2—49 R **15 Claims**



1. An article for enaging the ring of a pacifier and for holding the pacifier about the neck of an infant, said article comprising:

a first flat panel having a substantially rectangular shape and having a notch for engaging the infant's neck;

the notch being defined by an arcuate portion in the first panel, said arcuate portion conforming to the infant's neckline and forming right and left tabs for location around the infant's neck;

interlocking means attached to at least one of the tabs for engaging the other tab thereby closing the notch about the infant's neck;

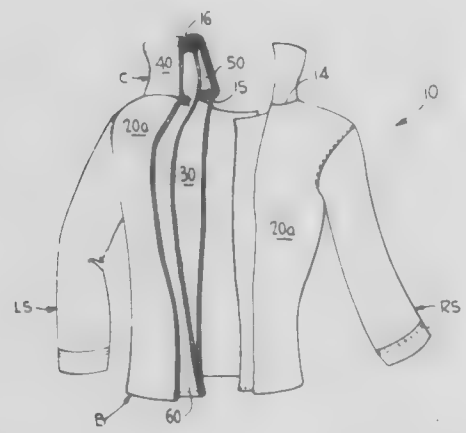
a second flat panel having upper and lower ends;

the upper end of the second panel having an arcuate edge engaging the arcuate portion of the first panel;

the lower end of the flat panel having means for engaging the pacifier ring; and

the engagement between the arcuate edge and the arcuate portion causing the underside of the flat panel to be positioned adjacent to the overside of the first flat panel.

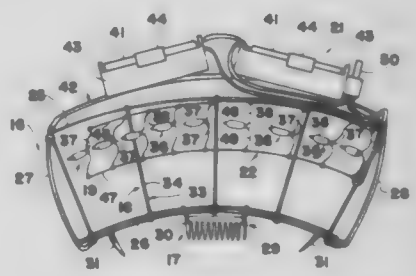
4,604,759
FIREFIGHTER'S SUIT WITH WATERPROOF COLLAR
J. Robert Bowman, Manchester, and Eleanor T. Pinkham, Northwood, both of N.H., assignors to Globe Manufacturing Company, Pittsfield, N.H.
Continuation-in-part of Ser. No. 761,812, Aug. 2, 1985, abandoned. This application Sep. 26, 1985, Ser. No. 780,339
Int. Cl.[4] A41D *10/00*
U.S. Cl. 2—81 **6 Claims**



1. A firefighter's coat which includes a body portion, left and right sleeve portions and a collar portion; said body portion including a flame-resistant shell having an upper edge and a heat-resistant liner having an upper edge; said collar portion including a flame-resistant outer collar part having a lower edge and an upper edge, and a fire-resistant inner collar part having a lower edge and an upper edge; at least a portion of the upper edge of said shell being stitched to the lower edge of said outer collar part to provide an outer neckline for said coat, the upper edge of said liner being stitched to the lower edge of said inner collar part to provide at least a portion of an inner neckline for said coat, the upper edges of said outer and inner collar parts being stitched together to close said collar portion along the periphery thereof; and wherein said firefighter's coat includes a waterproof interliner which extends essentially freely from between said shell and said liner upwardly between said inner and outer necklines without connection thereto except possibly at their opposite ends, and then between said outer and inner collar parts, such that any moisture which seeps through the stitching along said outer neckline will be prevented from penetrating to said inner collar part or said liner and, due to gravity, will be caused to flow downwardly between said interliner and said shell.

4,604,760
BRIDAL HEADDRESS APPARATUS
Sheri K. Coin, 519 Ave. E, Apt. B, Billings, Mont. 59102
Filed Feb. 20, 1985, Ser. No. 703,393
Int. Cl.[4] A42B *1/16*
U.S. Cl. 2—209.2 **20 Claims**





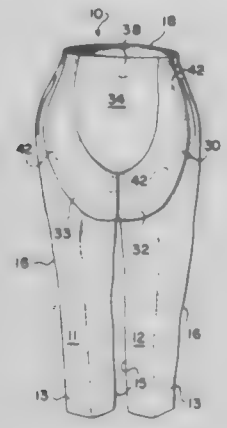
1. Bridal headdress apparatus including a frame portion, a fastening portion, a supporting portion, an illuminating portion, a power supplying portion and a circuitry portion; said frame portion including a face section formed with spaced generally parallel horizontal elongated upper and lower peripheral sections, end sections extending between said horizontal sections; said fastening portion including at least one securing member extending from said lower horizontal section; said supporting portion including an intermediate section extending between said horizontal upper and lower peripheral sections; said illuminating portion including a plurality of spaced miniature incandescent lamps disposed along the length of said supporting portion; said power supplying portion including a plurality of thin elongated batteries, said batteries being mounted remote from said lamps; said circuitry portion including conductive means connecting said spaced lamps in parallel electrically with said batteries and switch means controlling the flow of electrical current from said batteries to said lamps.

4,604,761

WOMAN'S OUTER GARMENT

Joyce Wright, 2155 Harshman Blvd., Springfield, Ohio 45504

Filed Nov. 18, 1985, Ser. No. 798,790
Int. Cl.[4] A41D *1/06*
U.S. Cl. 2—227 5 Claims



1. An outdoor sportswear trouser-like garment for women comprising:

left and right leg sections closed about the hips and buttocks having a waistband encircling the waist and being partially closed at the abdomen defining and forming a front opening which extends generally from the crotch region toward the waistband,

a yoke having a rear portion fastened at the back of the garment adjacent the waistband and extending through the crotch upwardly and having a front panel formed in fully closed relation to said opening and normally covering said opening,

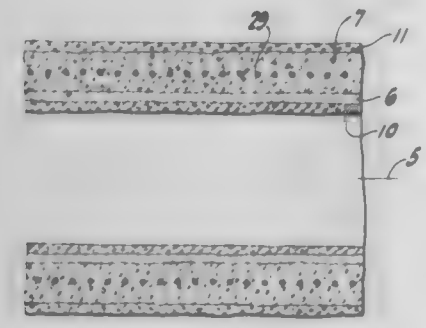
means attaching said front panel to said leg sections adjacent said waistband.

4,604,762

ARTERIAL GRAFT PROSTHESIS

Thomas C. Robinson, Berkeley, Calif., assignor to Thoratec Laboratories Corporation, Berkeley, Calif.

Filed Feb. 13, 1981, Ser. No. 234,116
Int. Cl.[4] A61F *1/00, 1/24*
U.S. Cl. 623—1 5 Claims



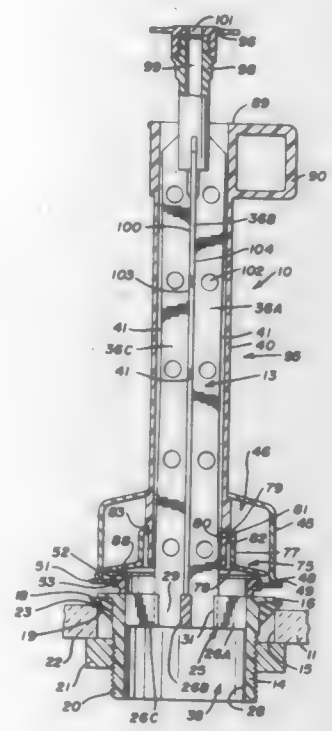
1. An arterial graft prosthesis formed of a core zone of porous elastomer disposed about the longitudinal axis of the prosthesis, an inner zone of solid elastomer concentric with and homogeneously joined to the inside of said core zone, an outer zone of porous elastomer, said outer zone of porous elastomer being concentric with and homogeneously joined to the outside of said core zone.

4,604,763

SEAL MEANS FOR A FLUSH VALVE ASSEMBLY

Richard W. Sprang, Lakeville, Ohio, assignor to Clevepak Corporation, Purchase, N.Y.

Filed Feb. 19, 1985, Ser. No. 703,050
Int. Cl.[4] E03D *1/34*
U.S. Cl. 4—391 4 Claims



1. A flush valve assembly for a water closet having a tank with a discharge opening comprising:

a spud having a tubular body portion with an outer generally cylindrical surface and an axially upper end;

a radial groove recessed in the outer surface of said tubular body portion in close proximity to its axially upper end, said body portion being adapted to be received in the discharge opening of a water closet tank with said radial groove positioned interiorly of the tank;

resilient gasket means carried by said radial groove and extending radially outwardly therefrom;

guide means extending axially upwardly from the tubular body portion of said spud and positioned interiorly of the tank;

tube means having a lower end portion and being slidably associated with said guide means;

skirt means carried by the lower end portion of said tube means, said skirt means extending outwardly from said tube means and defining a circular valve seat; and

anti-cavitation plate positioned interiorly of said skirt means, and being affixed to the lower end portion of said tube means;

said anti-cavitation plate defining a radially oriented wall between said skirt means and said tube means;

said anti-cavitation plate, said tube means and said skirt defining a bell like float cavity;

said anti-cavitation plate having means for draining said float cavity.

4,604,764

TAP FOR THE DELIVERY OF LIQUIDS FOR THE CONVERSION FROM AUTOMATIC TO MANUAL

Fava Enzo, 5, Via Simboli, 62019 Recanati, Italy

Filed Oct. 18, 1984, Ser. No. 661,858
Claims priority, application Italy, Oct. 3, 1984, 48941 A/84
Int. Cl.[4] E03C *1/05*
U.S. Cl. 4—623 10 Claims

1. A fluid delivery system, which can be alternately manually or automatically controlled, wherein the delivery system comprises:

a body for directing fluid to a desired location;

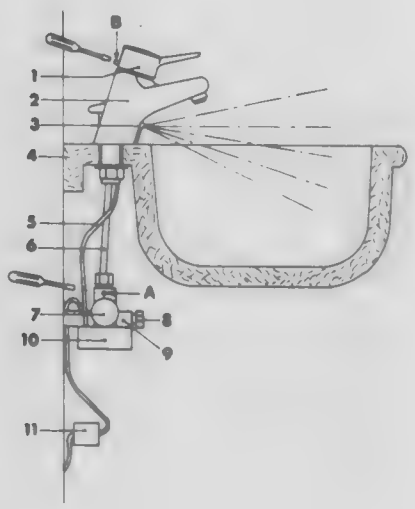
means for supplying fluid to the body;

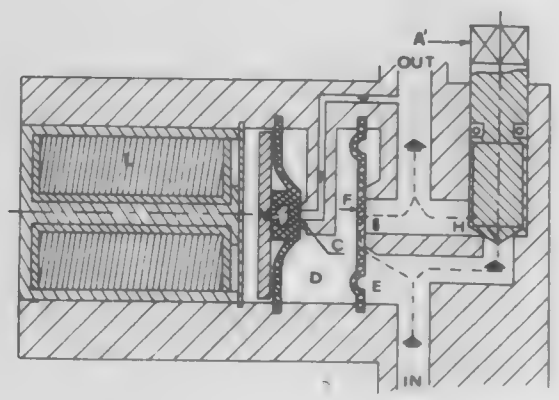
regulator means for manually controlling flow of fluid through the body;

locking means for releasably locking the regulator means in an open position so that fluid can flow through the body;

electrically operated valve means in the fluid supply means, wherein the valve means is comprised of an automatically controlled fluid flow circuit and a manually controlled fluid flow circuit;

sensing means for detecting presence of an object proximate





the body and for providing an electrical signal in response thereto;

controller means for opening and closing the valve;

means for transmitting the electrical signal to the controller for opening the automatically controlled fluid flow circuit in the valve;

wherein the locking means for the regulator is engaged when the manually controlled fluid flow circuit in the valve is closed, and the locking means is released when the manually controlled fluid flow circuit in the valve is open.

4,604,765

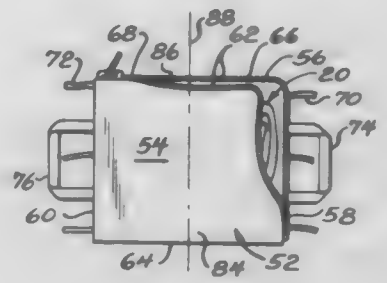
ARTICLE RETAINING DEVICE

Dennis B. Schultz, 418 N. Van Buren, East Dundee, Ill. 60118

Filed May 3, 1984, Ser. No. 606,469

Int. Cl.[4] A47G *9/08;* **A45F** *3/04;* **B65D** *30/04*

U.S. Cl. 5—413 **39 Claims**



1. An article retaining device, comprising:

a sleeping bag comprising, a pair of padded panels with one of the panels overlying the other panel, said panels having a first end portion, a second opposed end portion, and a central portion therebetween, said panels being folded to a configuration of reduced length to define a pocket between the panels and such that the central portion defines an opening communicating with the pocket to receive articles for storage in the pocket;

a cover for the sleeping bag comprising, a pair of flexible sheets with one of the sheets overlying the other sheet, said sheets having a pair of opposed end edges and a pair of opposed side edges connecting the end edges, said sheets having an opening along at least one of the edges to receive the folded bag, and said sheets defining a cavity sufficiently large to receive and cover the folded bag;

means for closing the cover opening, the bag and cover being folded along a central fold line such that opposed edges of the cover are generally aligned with each other; and means for securing said aligned edges together.

4,604,766

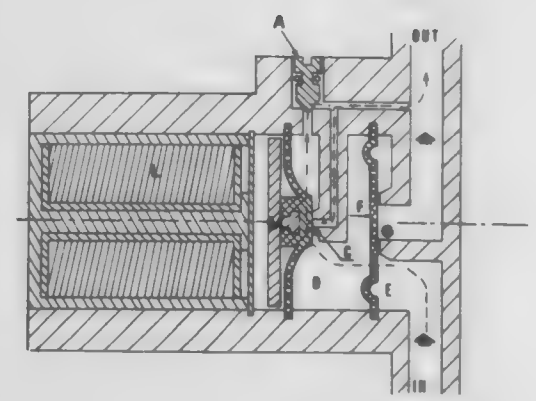
TILE CLEANING DEVICE FOR REMOVING CALCIUM BUILD-UP IN POOLS

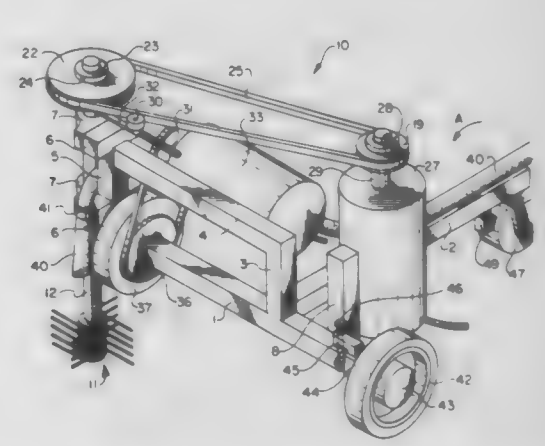
Dennis Avery, 3328 Del Paso Blvd., Sacramento, Calif. 95815

Filed Jun. 7, 1985, Ser. No. 742,562

Int. Cl.[4] E04H *3/20;* **A46B** *13/04*

U.S. Cl. 15—50 C **16 Claims**





1. A tile cleaning device for removing calcium buildup from tile which occurs substantially at and above a liquid level in a pool or the like comprising, in combination:

a wheeled frame means, placed adjacent a ledge surrounding the pool,

brush means extending from said frame means oriented to address the tile,

and pressure means on said frame means for urging said brush means in striking relationship against the tile including a single driven wheel proximate the pool ledge whereby said driven wheel tends to drive away from the

pool ledge providing at least a portion of said pressure means on said brush means

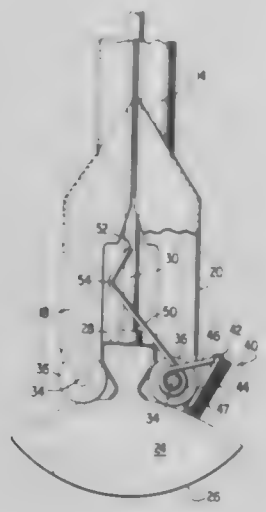
whereby calcium deposits and the like are fractured off the tile.

4,604,767

WRINGER MOP

Richard P. Burkhart, and Edward C. Gemperle, both of Cincinnati, Ohio, assignors to The Drackett Company, Cincinnati, Ohio

Filed Jan. 29, 1985, Ser. No. 695,982
Int. Cl.[4] A47L *13/12, 13/144*
U.S. Cl. 15—119 A 13 Claims



1. A scrubbing attachment and wringer mop, the mop including a U-shaped yoke having a pair of spaced, parallel and elongated abutment members each mounted on a respective end of the U-shaped yoke, the bight of the yoke being secured to one end of an elongated handle, a mop head including a sponge having a rear portion fixedly secured to a rigid, elongated spine, the major portion of the sponge normally extending beyond the ends of the yoke, the front portion of the sponge being its working surface, the sponge having a normal thickness greater than the distance between the two elongated and parallel abutment members, means for retracting the sponge between said two abutment members towards said handle to thereby squeeze the sponge and wring out liquid therein, said scrubber attachment defined by a rigid frame carrying a scrubber pad, the rigid frame having at least one apertured ear carried thereby, said rigid scrubber frame being mounted for limited rotary oscillatory movement on one of said parallel and elongated abutment members, with said one abutment passing through said at least one apertured ear, said rigid frame carrying an arm, said spine abutting said arm when said sponge is retracted to thereby rotate said scrubber pad to a position beyond the working surface of the retracted sponge, whereby a scrubber pad mounted on said scrubber attachment may be applied to and rubbed against a surface such as a floor or a wall, which is to be cleaned and whereby the scrubber pad attachment may be rotated back to its original, non-use position above the working surface of the sponge by a reverse operation of the sponge retracting means.

4,604,768

TRANSPARENT SELF-ADHESIVE BUMPERS FOR PROTECTING HOUSEHOLD OR OFFICE SURFACES OR ARTICLES INCONSPICUOUSLY

Adolph E. Goldfarb, 1432 S. East Wind Cir., Westlake Village, Calif. 91361

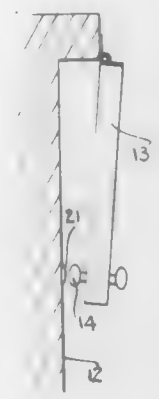
Continuation-in-part of Ser. No. 541,541, Oct. 13, 1983, abandoned. This application Jul. 19, 1985, Ser. No. 756,956
Int. Cl.[4] E05F *5/06*
U.S. Cl. 16—86 A 8 Claims

1. A bumper for use by consumers at home, in protecting patterned household surfaces and household articles from damage due to impact with one another, and comprising:

a resilient, generally transparent body that is substantially free of any opaque attachment, and that is shaped to fit directly against such a household surface; and

means for use by such consumer at home in attaching the body to the household surface of the consumer's choice, without any opaque intermediary, and without interfering with the transparency of the body, so that the bumper permits generally unobstructed view of the household surface;

the portion of the body that does not fit against the surface being curved and substantially free from discontinuities, except at its extreme periphery immediately adjacent to the surface; and



the body being sufficiently thin, and the material of the body having a sufficiently low index of refraction, and the portion of the body that does not fit against the surface having sufficiently shallow curvature, that the body produces only inconspicuous magnification, and at usual viewing angles only inconspicuous apparent displacement, of the pattern detail of the household surface of the consumer's choice said magnification, and at usual viewing angles said apparent displacement, are substantially negligible, wherein: the magnification does not exceed 1.15, and at viewing angles of sixty degrees to the normal or less the apparent displacement does not exceed three millimeters;

whereby the bumper protects the household surface and household articles from damage due to impact with one another while being inconspicuous, even if the household surface has an elaborate pattern with many colors.

4,604,769

HINGE

Erich Röck, Höchst; Klaüs Brüstle, and Helmut Rupprechter, both of Lauterach, all of Austria, assignors to Julius Blum Gesellschaft m.b.H., Höchst, Austria

Filed Nov. 17, 1983, Ser. No. 552,909
Claims priority, application Austria, Dec. 6, 1982, 4423/82
Int. Cl.[4] E05D *7/04*
U.S. Cl. 16—238 6 Claims

1. An adjustable hinge for mounting a door of an article of furniture to a frame thereof such that the door is movable between an open position away from the frame and a closed position adjacent the frame and extending in a closing plane, said hinge comprising:

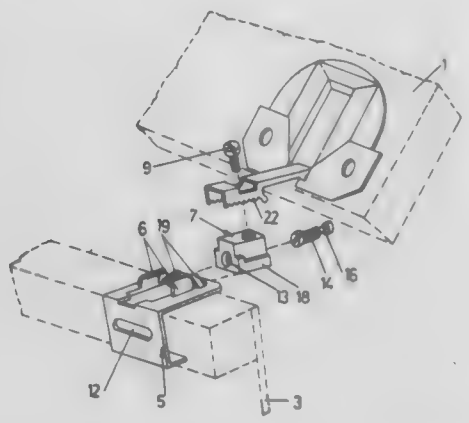
a hinge casing adapted to be mounted in a recess in the door;

a mounting body adapted to be mounted on the frame and including a portion extending in a plane parallel to the closing plane, said portion having extending therefrom a pair of guide flanges extending in directions parallel to the closing plane;

a hinge arm pivotally connected to said hinge casing by means of at least one hinge axle, said hinge arm extending longitudinally in a direction parallel to the closing plane, said hinge arm having side flanges extending in directions parallel to said closing plane;

an intermediate member separate from said hinge arm and mounted on said portion of said mounting body for longitudinal sliding movement with respect thereto in opposite directions parallel to the closing plane, said intermediate member having marginal flanges extending in directions parallel to said closing plane;

clamping means, in the form of a single screw, for clamping side guide flanges between said marginal flanges and said side flanges and thereby clamping said hinge arm to said intermediate member and simultaneously for clamping said intermediate member to said portion of said mounting body, said intermediate member, upon loosening of said single screw, being capable of slidable movement in said opposite directions with respect to said portion of said mounting body; and



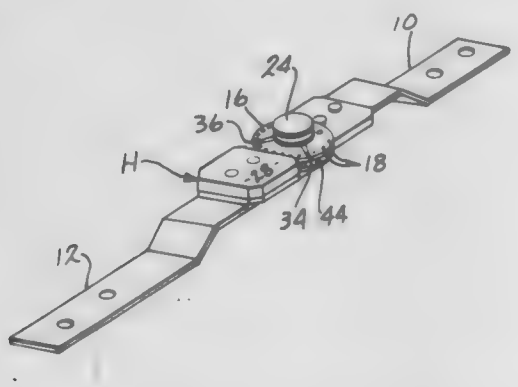
adjusting means for, upon loosening of said single screw, selectively slidably moving said intermediate member and thereby said hinge arm in said opposite directions, said adjusting means comprising an adjusting screw threaded into said intermediate member, said adjusting screw extending orthogonally to said hinge axle and parallel to the closing plane, said adjusting screw having a reduced portion defining an annular groove, and at least one projection extending from said portion of said mounting body into said groove, whereby upon rotation of said adjusting screw said projection prevents axial movement thereof and thus compels said intermediate member to slide in one of said opposite directions with respect to said portion of said mounting body.

4,604,770

SELECTIVELY ADJUSTABLE HINGE

Thomas J. Lang, 326 Chardon Ave. Extension, Chardon, Ohio 44024

Filed Oct. 15, 1984, Ser. No. 660,960
Int. Cl.[4] E05D *15/00*
U.S. Cl. 16—363 **10 Claims**



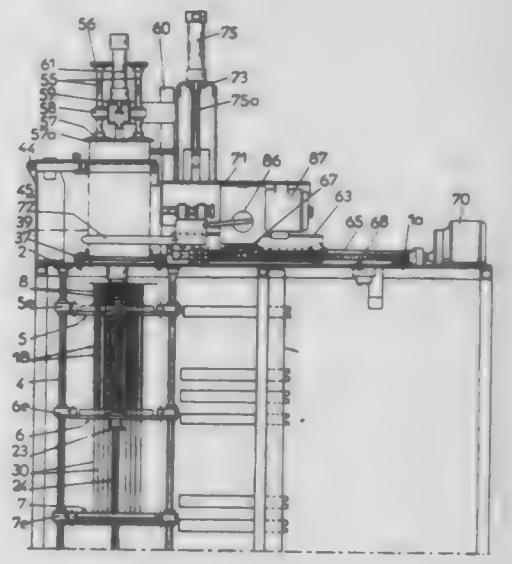
1. A selectively pivotal hinge comprising a hinge having two hinge elements pivotally connected together about a pivot point for free pivotal movement relative to one another with one of said hinge elements having a projecting an abutment thereon, said abutment projecting generally longitudinally of said one hinge element in overlapping relation to said other hinge element, and hinge adjustment means disposed on the other hinge element coacting with the hinge pivot point for selectively changing the limit of pivotal movement of the hinge in coaction with said abutment, and wherein said hinge adjustment means comprises an arm disposed in a plane generally parallel to the planes of pivotal movement of said hinge elements and pivoted to the other hinge element at the hinge pivot point for pivotal movement of said arm relative to said hinge elements in the first mentioned plane, said arm including a transverse pin fixed to said arm and projecting into a selected one of a series of spaced complementally sized openings in said other hinge element and into the path of said abutment to limit the range of relative pivotal movement between said hinge elements, said arm and pin being non-pivotal relative to said other hinge element when said pin projects into the selected of said openings, and means coacting with said arm at said pivot point enabling said arm and pin to be moved as a unit generally parallel to and transverse to said planes and generally parallel to and transverse relative to said hinge elements away from the latter, to remove said pin from said abutment path, thus permitting a greater range of said relative pivotal movement between said hinge elements.

4,604,771

APPARATUS FOR THE PREPARATION OF SKEWERS OF MEAT, VEGETABLES, OR THE LIKE PRODUCTS

Jacques Dollé , 1060 Avenue de la Trillade, 84003 Avignon, France

Filed Oct. 28, 1982, Ser. No. 437,455
Claims priority, application France, Oct. 28, 1981, 81 20367
Int. Cl.[4] A22C *17/02*
U.S. Cl. 17—45 **38 Claims**



1. An apparatus for automatically preparing skewers of meats, vegetables, and other foods, said apparatus comprising a plurality of axially moveable skewering tubes, each of said skewering tubes having an upper end and a lower end, the upper end of each of said skewering tubes comprising means for receiving a spike adapted to be inserted along the longitudinal axis of each said skewering tube, said skewering tubes being slideably mounted within a reception platform having a plurality of holes permitting passage of said tubes, said apparatus further comprising a pressing element comprising means for pressing at least one layer of food positioned on said reception platform.

33. A method for automatically preparing a plurality of skewers of food products in an apparatus which comprises a reception element, at least one pressure element, at least one skewer, and a piercing tube associated with each skewer, said method comprising:

(a) placing at least one layer of food product between said reception element and said pressure element;

(b) positioning each skewer within an associated piercing tube;

(c) simultaneously inserting each said skewer and said associated piercing tube into said at least one layer of food product, each skewer being inserted into said food

through an aperture located in at least one of said reception and pressure elements;

(d) removing each piercing tube from said at least one food product layer and leaving each skewer within said at least one food product layer; and

(e) separating said reception and said pressure elements from said at least one food product layer.

4,604,772

DEVICE FOR TENSIONING BELTS OR THE LIKE

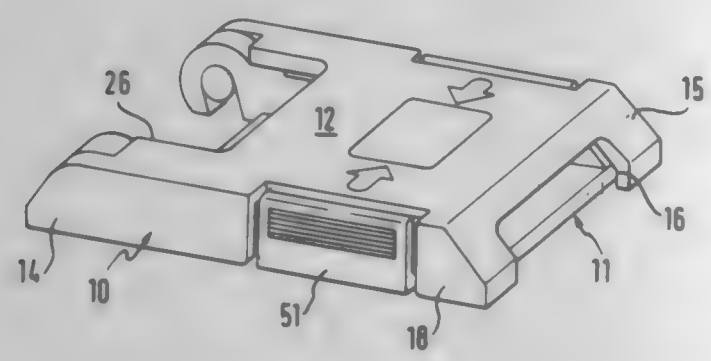
Heino Arff, Hamburg, Fed. Rep. of Germany, assignor to ITW-Ateco GmbH, Norderstedt, Fed. Rep. of Germany

Filed Oct. 9, 1984, Ser. No. 658,948

Claims priority, application Fed. Rep. of Germany, Oct. 11, 1983, 8329307[U]

Int. Cl.[4] A44B *11/25*

U.S. Cl. 24—68 R 2 Claims



1. A two-piece plastic belt tensioning device having and open and latched position comprising:

a base member having top and bottom sides, a beveled aperture and a rivet means for permanently affixing a first end of a belt thereto;

a cover member having top and bottom sides with a peg means integrally formed to said bottom of said cover for engaging an aperture formed in said belt, for affixing said belt to said cover at a point intermediate the ends of said belt and for engagement with said beveled aperture;

prong and hook means integrally formed on opposite sides of said bottom of said cover and said top of said base respectively for hingedly connecting said base to said cover at one of their respective ends; and

means for latching said base to said cover upon rotation about said hinge means at their respective ends opposite said hinge means said means for latching said base to said cover having a pair of resilient catch members integrally formed on opposite sides of said top of said base and a pair of loop members integrally formed on opposite sides of said bottom of said cover which engage said catch members when said cover is rotated to said final latched position, each of said catch members having an integrally formed tab means which is engageable from the outside of said device for disengaging said catch from said loop when said tab means is properly displaced toward the interior of said device whereby upon latching, said point intermediate the ends of said belt is further tensioned with respect to said first end of said belt.

4,604,773

AUTOMOBILE SEAT BELT TIGHTENER FOR USE WITH CHILD SAFETY SEATS

Kathleen Weber, Ann Arbor, and Joseph B. Benson, South Lyon, both of Mich., assignors to The Regents of the University of Michigan, Ann Arbor, Mich.

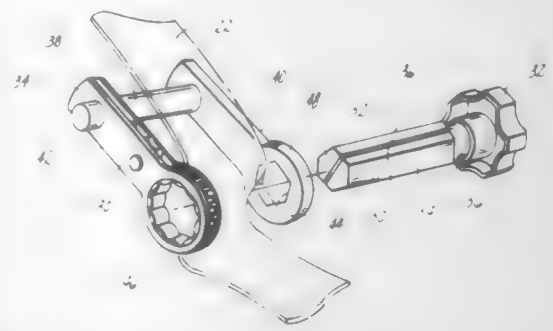
Filed Jul. 22, 1985, Ser. No. 757,795

Int. Cl.[4] A44B *21/00;* F16L *33/14*

U.S. Cl. 24—71.2 6 Claims

1. A belt tightening mechanism comprising a generally U-shaped frame, said frame comprising a cross pin and two parallel side portions rigidly affixed thereto, a non-circular aperture extending through one side portion and spaced from the cross pin, a selectably reversible ratchet mechanism on the other side portion, said ratchet mechanism having a socket therein of non-circular configuration substantially identical to the aperture and similarly spaced from the cross pin,

a bifurcated reel having a non-circular exterior complementary to the aperture and extending for substantially the



length of the reel, said bifurcation extending through one end of the reel and a handle at the other end of the reel, said handle spaced from the non-circular exterior of the reel by a circular exterior portion of the reel,

whereby said reel must be inserted through the aperture and sufficiently into the socket to engage the circular portion of the reel with the aperture.

4,604,774

SLIDING CLASP FASTENER

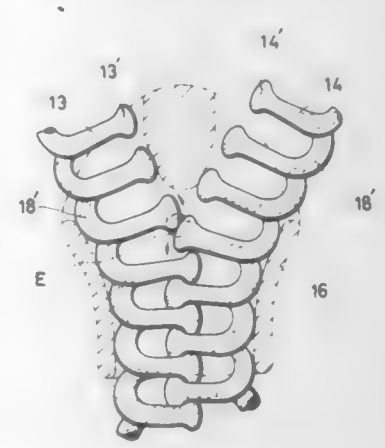
Yoshiharu Yamaguchi, Namerikawa, and Masashi Doi, Kurobe, both of Japan, assignors to Yoshida Kogyo K. K., Tokyo, Japan

Filed Feb. 22, 1985, Ser. No. 704,175

Claims priority, application Japan, Feb. 24, 1984, 59-33764

Int. Cl.[4] A44B *19/40*

U.S. Cl. 24—389 5 Claims



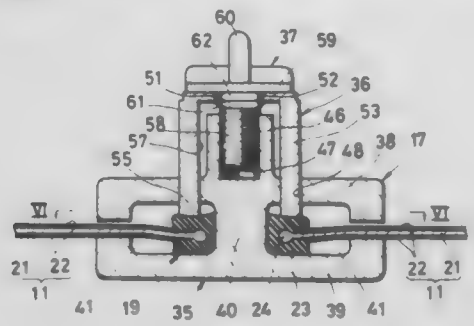
1. A sliding clasp fastener, comprising: a pair of opposed support tapes, rows of coupling elements having a continuous spiral or meander formation provided with coupling heads and made from a plastic monofilament, and a slider member adapted to take said rows of elements into and out of sliding engagement with each other, said monofilament having a multiplicity of indents extending longitudinally thereof, said indents at the coupling heads of the elements being oriented to extend perpendicularly with respect to the plane of the fastener, and a lubricative agent filled in at least some of said indents.

4,604,775

SEALING SLIDE FASTENER

Masahiro Kusayama, Kurobe, Japan, assignor to Yoshida Kogyo, K. K., Tokyo, Japan

Filed Dec. 21, 1983, Ser. No. 564,030
Claims priority, application Japan, Dec. 27, 1982, 57-234600
Int. Cl.[4] A44B *19/32*
U.S. Cl. 24—389 9 Claims



1. A sealing slide fastener comprising:

(a) a stringer tape having a pair of inner opposite edges defining a longitudinal opening therebetween, said stringer tape having a terminal opening communicating with said longitudinal opening;

(b) a pair or rows of coupling elements mounted on said inner opposite edges, respectively;

(c) an elastomeric top stop mounted on said stringer tape around said terminal opening at an end of said pair of rows of coupling elements; and

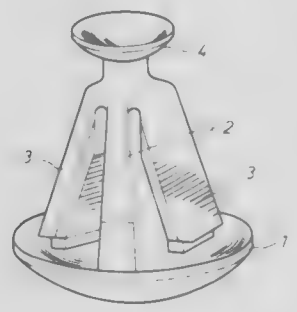
(d) a slider slidably mounted on said rows of coupling elements for taking the latter into and out of mutual intermeshing engagement, said slider including a slider body having a pair of upper and lower plates and a diamond interconnecting said upper and lower plates and defining a guide channel therebetween for passage therethrough of said rows of coupling elements, and means on said upper plate for pressing said top stop resiliently against said lower plate and said diamond when said slider is located on said top stop, said means comprising a presser having a plurality of pins extending through said upper plate and means for pushing said pins against said top stop.

4,604,776

SPACER FOR MOUNTING BOARDS

Katsumasa Takahashi, Nagoya, Japan, assignor to Kitagawa Industries Co., Ltd., Nagoya, Japan

Filed Mar. 29, 1984, Ser. No. 594,732
Claims priority, application Japan, Apr. 20, 1983, 58-58941[U]
Int. Cl.[4] F16B *19/00;* H05K *7/12*
U.S. Cl. 24—453 22 Claims



12. A spacer for mounting a first board having a hole therethrough and a second board spaced from the first board, each of the boards having a first surface and a second surface, said spacer comprising:

(a) a first resilient detent member having a first side and a second side, the second side, in use, resiliently engaging the first surface of the first board around the hole in the first board;

(b) a support pillar member having a first end and a second end, the first end of said support pillar member extending from a central portion of the second side of said first resilient detent member and, in use, extending through the hole in the first board;

(c) at least two resilient reverse detent leg members each of which has a first end and a second end, the second ends of said at least two resilient reverse detent leg members extending symmetrically from the second end of said support pillar member, said at least two resilient reverse detent leg members being sized, shaped, and positioned so that, in use, the first ends of said at least two resilient reverse detent leg members are cammed inwardly by passage through the hole in the first board, after which the first ends of said at least two resilient reverse detent leg members are held resiliently against the second surface of the first board by the resiliency of said first resilient detent member; and

(d) a second resilient detent member having a first side and a second side, the first side of said second resilient detent member being joined to the second end of said support pillar member and the second side, in use, resiliently engaging the first surface of the second board, said second resilient detent member being sized and shaped so that, in use, said second resilient detent member will pass through the hole in the first board,

(e) said first resilient detent member, said support pillar member, said at least two resilient reverse detent leg members, and said second resilient detent member all being formed integrally as one piece, and

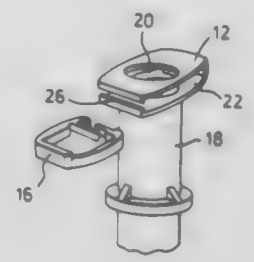
(f) the portion of said support pillar member adjacent said second resilient detent member having a generally elliptical cross-section parallel to said second resilient detent member.

4,604,777

SPRING RETAINERS

Alan M. G. Meeks, Chineham, England, assignor to ITW Limited, Windsor, England

Filed Sep. 22, 1983, Ser. No. 534,880
Int. Cl.[4] A47C *1/02*
U.S. Cl. 24—665 5 Claims



1. A spring retainer comprising: a hollow elongated housing with a flange integral with said housing at one end thereof having a centrally disposed aperture coaxial with the aperture of said hollow housing, said flange having a transverse slot which intersects said aperture and extends through said flange, said slot being defined by top, bottom and at least one side wall, an actuator contained within said slot having first and second arm members hingedly connected at one of their respective ends to a bridge member, said first arm member having a means for affixing to said housing on its opposite end, said second arm member having a resilient retaining means on its opposite end for affixing said actuator to said housing, said retaining means of said second arm member having first and second positions, a spring having a flexed and an unflexed position being supported between said first and second arm members and having a portion which extends across said centrally disposed aperture when said spring is in its unflexed position and said second arm member is in its first position said portion of said spring being retracted outside of said centrally disposed aperture when said

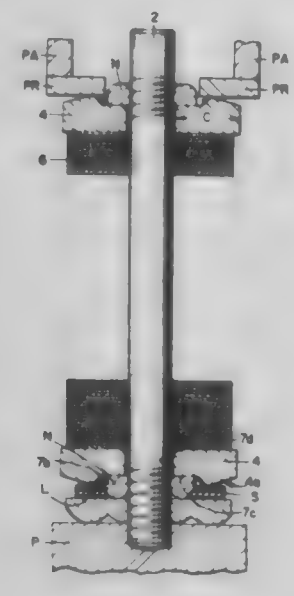
spring is in its flexed position and said second arm is in its second position.

4,604,778

FILLED CALENDER ROLL AND METHOD OF BUILDING SAME

William H. Edwards, Main St., Warner, N.H. 03278

Filed Sep. 20, 1985, Ser. No. 778,021
Int. Cl.[4] B21B *31/08;* B30B *3/00*
U.S. Cl. 29—123 5 Claims



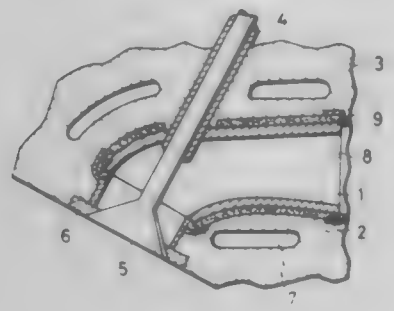
1. In a filled roll, the combination of a load-carrying shaft, a stack of fillings sleeved upon the shaft,
an end head sleeved on each end of the shaft outboard of and in compressing relationship with the stack,
with a compressive-force-locating locus located on the outer end face of each end head radially outwardly of and circumadjacent the shaft periphery as defined by angular radially-disposed surfaces on opposite sides of the locus,
and with the inner end face of each end head having a negative taper at the interface of the end head and the respective end of the stack.

4,604,779

METHOD OF PRODUCING A CYLINDER HEAD WITH A PORT LINER

Yoshinori Narita, and Hirohisa Makino, both of Aichi, Japan, assignors to NGK Spark Plug Co., Ltd., Nagoya, Japan

Filed Feb. 26, 1985, Ser. No. 705,789
Claims priority, application Japan, Feb. 27, 1984, 59-34435; Dec. 26, 1984, 59-281326
Int. Cl.[4] B23P *15/00, 17/00;* B22D *19/00*
U.S. Cl. 29—156.4 WL 8 Claims



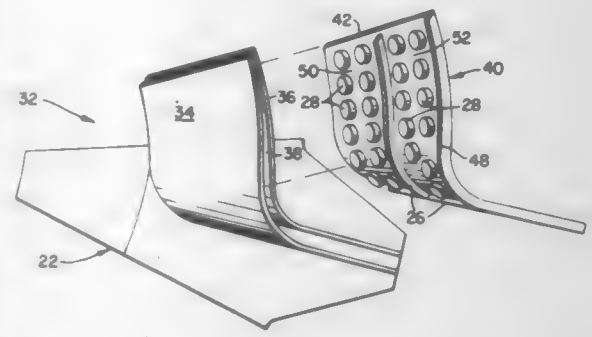
1. A method of producing a cylinder head having a tubular exhaust port liner made of a ceramic material, comprising the steps of:
providing a covering layer of refractory fibers around the outer circumference of said tubular exhaust port liner;
applying a metal cap over each end of said covered tubular exhaust port liner;
setting said covered exhaust port liner into a mold;
casting a cylinder head around said exhaust port liner and fusing to said cylinder head the portions of said metal caps contacting said cylinder head;
performing predetermined treatments on said cylinder head; and
boring said metal caps after performing said predetermined treatments.

4,604,780

METHOD OF FABRICATING A COMPONENT HAVING INTERNAL COOLING PASSAGES

Arthur G. Metcalfe, National City, Calif., assignor to Solar Turbines Incorporated, San Diego, Calif.

Filed Feb. 3, 1983, Ser. No. 463,597
Int. Cl.[4] B21K *3/04;* B23P *15/04*
U.S. Cl. 29—156.8 R 3 Claims



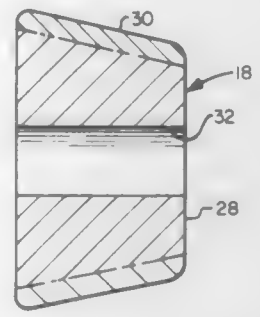
1. A method of fabricating a component having internal passages through which a heat transfer fluid can be circulated to alter the temperature of the component, said method comprising the steps of: installing a unitized insert composed of a carrier fabricated from a first metal and at least one internal passage defining member fabricated from a second metal totally in or between external configuration defining portions of the component that were theretofore fabricated from a metal other than said first metal; bonding said insert member to the aforesaid portions of the component essentially without altering the external configuration of the component; and thereafter leaching from said component only the metal making up the carrier portion of said insert.

4,604,781

HIGHLY ABRASIVE RESISTANT MATERIAL AND GRINDING ROLL SURFACED THEREWITH

Arthur L. Rankin, III, Signal Mtn., Tenn., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Feb. 19, 1985, Ser. No. 703,160
Int. Cl.[4] B23P *7/00, 15/18*
U.S. Cl. 29—402.07 11 Claims



1. A method of surfacing a new grinding roll comprising the steps of providing in powdered form a highly abrasive resistant alloy; adding a binder to the highly abrasive resistant alloy; mixing the binder with the highly abrasive resistant alloy to form pellets with each pellet having a homogeneous consistency; drying the pellets to set the binder; and providing the new grinding roll with a hardfacing having a composition, by

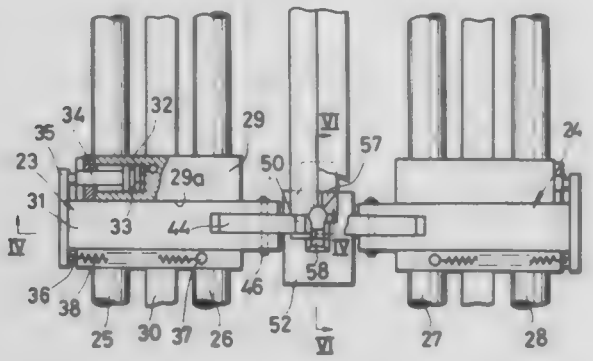
weight percentages, of 4.0–6.0% Carbon; 3.0–14.0% Manganese; 1.0–2.5% Silicon; 15.0–30.0% Chromium; and 4.0–6.0% Molybdenum; and 0.5–2.0% Boron, the balance being essentially iron by applying the pelletized highly abrasive resistant alloy to the new grinding roll through the technique of bulk welding.

4,604,782

METHOD AND APPARATUS FOR AUTOMATICALLY THREADING SEPARABLE SLIDE FASTENER STRINGERS THROUGH SLIDERS

Koichi Kawakami, Toyama, and Mitsuo Sawada, Kurobe, both of Japan, assignors to Yoshida Kogyo K.K., Tokyo, Japan

Filed Jun. 10, 1983, Ser. No. 503,051
Claims priority, application Japan, Jun. 19, 1982, 57-105686
Int. Cl.[4] B21D *53/50;* A41H *37/06*
U.S. Cl. 29—409 6 Claims



1. A method of automatically threading a pair of separable slide fastener stringers including rows of coupling elements and pins on ends of the rows of coupling elements through a slider having a guide channel including a pair of throats and a rear end, said method comprising the steps of:

(a) moving the separable slide fastener stringers in one plane along parallel spaced paths, respectively, toward the throats in the slider fixed in position;

(b) inserting the pins into the guide channel through said throats, respectively, in said fixedly positioned slider;

(c) stopping said pins as they emerge from the rear end of the slider when the rows of coupling elements start intermeshing with each other within said guide channel; and

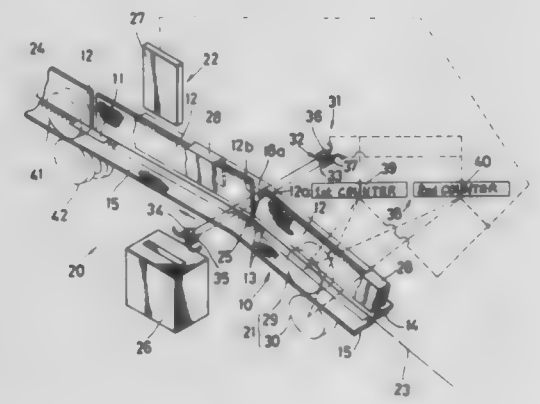
(d) moving said separable slide fastener stringers again at the same speed to bring said rows of coupling elements into intermeshing engagement.

4,604,783

METHOD OF AND APPARATUS FOR FORMING ELEMENT-FREE SPACES IN CONTINUOUS SLIDE FASTENER CHAIN WITH FLY STRIPS

Shinichi Kojima, Kurobe, Japan, and Kiichiro Ishikawa, Marietta, Ga., assignors to Yoshida Kogyo K. K., Tokyo, Japan

Filed Dec. 6, 1984, Ser. No. 679,033
Claims priority, application Japan, Dec. 9, 1983, 58-233225
Int. Cl.[4] B21D *53/52;* A41H *37/06*
U.S. Cl. 29—410 5 Claims



1. A method of forming element-free spaces in a continuous slide fastener chain at ends of successive fly strips sewn by at least one line of stitching to the slide fastener chain, the chain having a pair of interengaged rows of coupling elements, said method comprising the steps of:

(a) feeding a continuous ungapped slide fastener chain longitudinally through a gap-forming station, with the fly strips folded about the stitching, to such an extent that the interengaged rows of coupling elements are fully exposed;

(b) detecting portions of the interengaged rows of coupling elements to be removed at said gap-forming station by

(1) temporarily providing a relatively large space between confronting ends of adjacent pair of the folded fly strips when the confronting ends arrive at a fixed turning point spaced a first distance upstream from said gap-forming station,

(2) sensing the departure of the trailing end of a preceding one of the adjacent pair of fly strips from said turning point, and

(3) then sensing the arrival of the leading end of the succeeding fly strip at a second point spaced a second distance upstream of said fixed turning point so that the last-mentioned sensing takes place only when the longitudinal extent of said temporary space is larger than said second distance;

(c) temporarily stopping the feeding of the chain when the chain has advanced through said first distance after said sensing of the trailing and leading ends; and

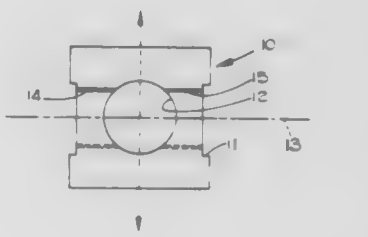
(d) removing the thus detected portions of the interengaged rows of coupling elements at said gap-forming station while the chain is at rest.

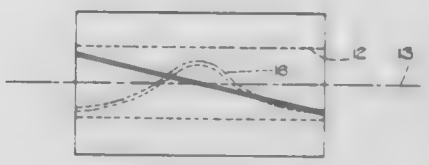
4,604,784

CAM FOLLOWER SHOE

John Downs, Bradford-on-Avon, England, assignor to Lucas Industries public limited company, Birmingham, England

Filed Apr. 19, 1985, Ser. No. 725,232
Claims priority, application United Kingdom, Apr. 26, 1984, 8410700
Int. Cl.[4] B23P *17/00*
U.S. Cl. 29—415 8 Claims





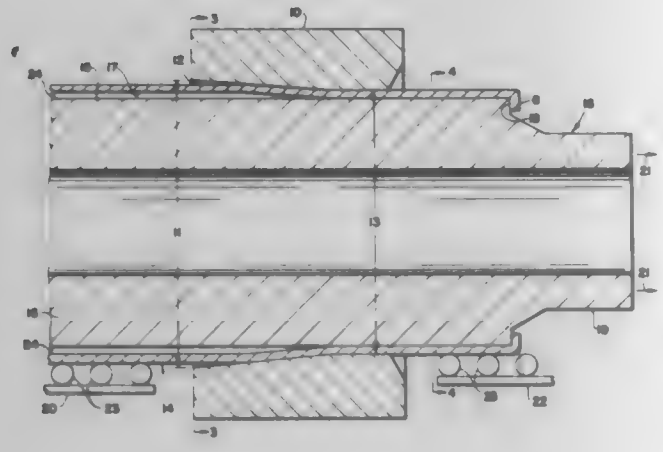
1. A method of making a shoe for use in a cam follower of a fuel injection pump comprises forming and finishing a bore in a block of material and dividing the block into two pieces by means of two axially extending cuts extending outwardly from the bore, the cuts during their formation crossing at least once from one side to the other of a diametral plane of the bore, said plane being disposed at right angles to the plane of movement of the shoes in use, the two pieces forming shoes respectively, each recess in each shoe subtending a total angle of more than 180° whereby rollers located in the recesses will be held captive therein.

4,604,785

METHOD OF MAKING FUEL CHANNEL

Fletcher C. Eddens, Wilmington, N.C., assignor to General Electric Company, San Jose, Calif.

Filed Dec. 21, 1984, Ser. No. 685,265
Int. Cl.[4] B21D *39/02*
U.S. Cl. 29—463 9 Claims



1. A method for making a precisely sized hollow channel from an elongate metal channel preform, said method comprising the steps of:

(a) inserting an elongate metal mandrel into said preform, said mandrel having a cross-sectional configuration conforming at least in part to said preform substantially along the full length of the latter and being dimensioned to provide a loose sliding fit upon assembly with said preform, the coefficient of thermal expansion of said mandrel being greater than that of said preform;

(b) drawing the assembly of said preform and mandrel through a die, said die including a cross section effective to die sink the walls of said preform into surface-to-surface contact with said mandrel during said drawing step substantially throughout the length of said preform;

(c) heating said drawn assembly to a predetermined temperature to expand said mandrel and said preform by amounts dictated by their respective coefficients of expansion, said heating step being effective to deform the cross section of said preform to conform to the lateral expansion of said mandrel;

(d) cooling said assembly to room temperature, said cooling step being effective to reduce said preform to a channel having precisely determined cross-sectional dimensions at said room temperature and being clear of said mandrel;

(e) removing said mandrel from said channel; and

(f) trimming said channel to the desired length.

2. The method as set forth in claim 1 wherein said channel preform is fabricated by the steps of:

a. forming a pair of elongate channel preform components from flat strip metallic stock, each of said preform components having a substantially U-shaped cross-sectional configuration including a base wall intermediate a pair of mutually facing side walls, said side walls terminating in a pair of parallel, longitudinal edge surfaces;

b. positioning said channel components with said longitudinal edge surfaces in mutual contact throughout their length; and

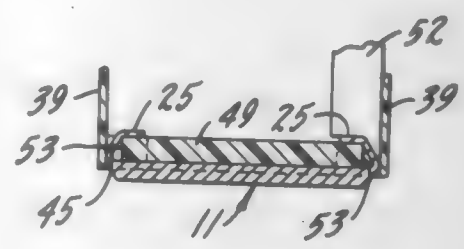
c. welding said contacting edge surfaces together throughout their length, said welding step being effective to provide a preform having a substantially uniform rectangular cross section.

4,604,786

METHOD OF MAKING A COMPOSITE ARTICLE INCLUDING A BODY HAVING A DECORATIVE METAL PLATE ATTACHED THERETO

Robert K. Howie, Jr., Decatur, Ill., assignor to The Grigoleit Company, Decatur, Ill.

Continuation of Ser. No. 439,347, Nov. 5, 1982, abandoned. This application Dec. 19, 1984, Ser. No. 683,329
Int. Cl.[4] B21D *39/00*; B23P *11/00*
U.S. Cl. 29—513 5 Claims



1. A method of manufacturing a composite article including a body having a decorative metal plate attached thereto, the method including the steps of:

selecting a metal sheet having at least one decorative surface,

machining the decorative surface of the metal sheet to remove a uniform thickness of metal and leave a central island of metal with a decorative surface surrounded on all sides by the machined surface which defines an apron around the island,

removing some of the machined surface apron leaving tabs of apron attached to the island,

bending the tabs away from the machined surface to extend at generally right angles to the decorative surface of the island,

inserting the tabs in openings extending through a surface of the body while positioning the decorative plate against the surface of the body, and

bending the tabs to lock the decorative plate to the body by means of a tool located on the opposite side of the surface of the body to which the plate is attached.

3. A method of manufacturing a metal plate having integral tabs to be attached to a body by inserting the tabs into slots extending through a surface of the body and bending the tags into locking engagement with the body, the method including the steps of:

selecting a metal sheet having a decorative surface,

machining the decorative surface of the sheet to remove a uniform thickness of metal from the sheet, thereby leaving a central island with a decorative surface having the thickness of the original sheet with the island surrounded on all sides by an apron of the thinner machined surface, and

removing the annular apron around some of the island leaving oppositely located tabs extending from the island.

4,604,787

TOOL CHANGER FOR MANIPULATOR ARM

Ralph H. Silvers, Jr., Arlington, Va., assignor to Transamerica Delaval Inc., Los Angeles, Calif.

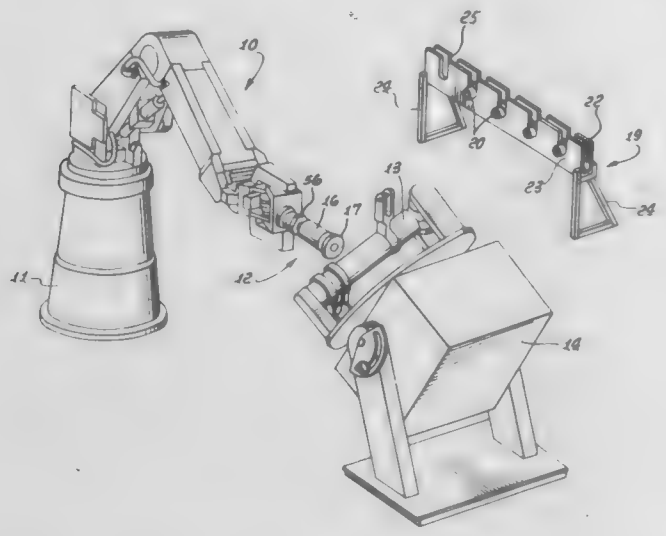
Filed Aug. 15, 1984, Ser. No. 641,060
Int. Cl.[4] B23Q *3/12*
U.S. Cl. 29—568 9 Claims

1. In a tool changer for use with a manipulator arm which provides a first movement along an axis and a second movement laterally to said axis, the combination of:

a coupling comprising a nipple member and a socket member with one of said members including means for connecting the member to the manipulator arm and with the other of said members including means for connecting the member to an end effector and flange means for engaging an end effector rack, and with said members being coupled together solely by an axial compression force and

separated solely by an axial tension force without any external manipulation; and

an end effector rack for receiving and supporting an end effector, said rack having means interengaging with said coupling member flange means for limiting movement of the end effector along the axis of said coupling while



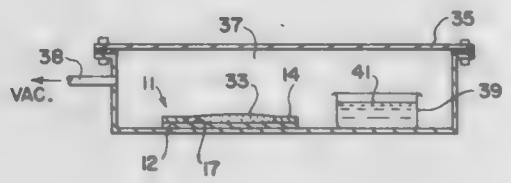
permitting movement laterally, whereby the manipulator arm can position an end effector in said rack solely by a lateral movement, disengage the arm from the end effector solely by an axial movement, engage the arm with an end effector solely by an axial movement in the opposite direction, and remove the end effector from the rack solely by a lateral movement.

4,604,788

METHOD FOR MAKING ELECTRODES FOR DOUBLE LAYER CAPACITORS

Donald L. Boos, Garfield Hts., Ohio, assignor to The Standard Oil Company, Cleveland, Ohio

Filed Jun. 17, 1985, Ser. No. 745,172
Int. Cl.[4] H01G *9/00*
U.S. Cl. 29—570 **23 Claims**



1. A process for forming an electrode within an electrode cavity, said electrode to be formed from a damp powder mix of solid, conductive, particulate material and an electrolyte, comprising the steps of:

a. adding a predetermined excess of liquid to the damp powder mix to render it possible,

b. pouring the mix into said electrode cavity to slightly overfill said cavity,

c. removing the excess liquid from the poured mix to return the mix to damp powder consistency thereby assuring contact between the solid particles of the electrode.

4,604,789

PROCESS FOR FABRICATING POLYSILICON RESISTOR IN POLYCIDE LINE

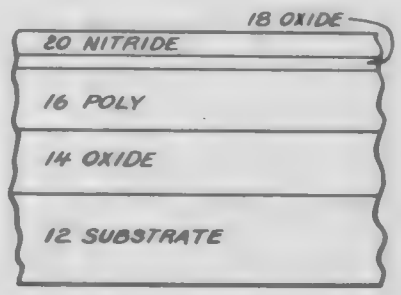
Ronald R. Bourassa, Colorado Springs, Colo., assignor to Inmos Corporation, Colorado Springs, Colo.

Filed Jan. 31, 1985, Ser. No. 696,918
Int. Cl.[4] H01L *21/425, 21/44*
U.S. Cl. 29—576 C **14 Claims**

1. A method for fabricating a polysilicon resistor in a polycide line, including the steps of:

establishing a protective material on top of a polysilicon region designated for location of the polysilicon resistor before silicide contacts said region; then

adding silicide over the polysilicon; and



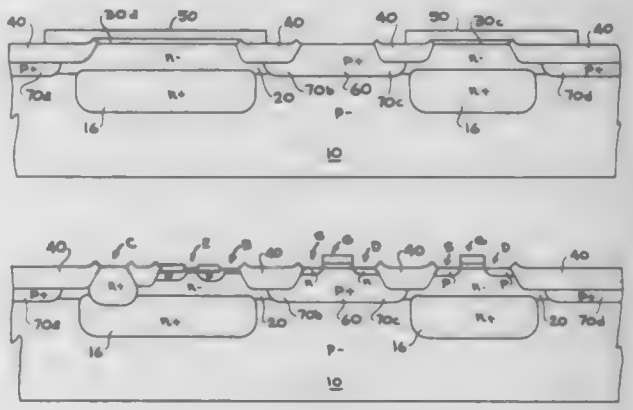
defining the silicide and polysilicon to result in a polysilicon resistor in contact with a polycide line, the resistor being protected from the silicide.

4,604,790

METHOD OF FABRICATING INTEGRATED CIRCUIT STRUCTURE HAVING CMOS AND BIPOLAR DEVICES

Matthew A. Bonn, Saratoga, Calif., assignor to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Apr. 1, 1985, Ser. No. 718,393
Int. Cl.[4] H01L *21/22, 21/265*
U.S. Cl. 29—576 B **9 Claims**



1. An improved method for isolating active devices in an integrated circuit structure containing both CMOS and bipolar devices to simultaneously form channel stops to separate CMOS channels from adjacent CMOS channels and isolation regions to separate bipolar devices from adjoining CMOS devices as well as to separate adjacent bipolar devices from one another comprises: implanting, into a substrate having field oxide portions previously grown thereon, impurities capable of forming one or more channel stops and isolation regions at an energy level sufficiently high to permit penetration of the impurities through unmasked portions of said field oxide.

4,604,791

METHOD FOR PRODUCING MULTI-LAYER, THIN-FILM, FLEXIBLE SILICON ALLOY PHOTOVOLTAIC CELLS

William J. Todorof, 590 Cress St., Laguna Beach, Calif. 92651

Division of Ser. No. 422,944, Sep. 24, 1982, Pat. No. 4,479,027.
This application Jun. 15, 1984, Ser. No. 621,249
Int. Cl.[4] H01L *31/18, 21/302*
U.S. Cl. 29—581 **12 Claims**

1. The method for producing a semiconductor silicon alloy substrate for a photovoltaic cell, comprising the steps of:

providing a ribbon of the silicon alloy in a molten state,

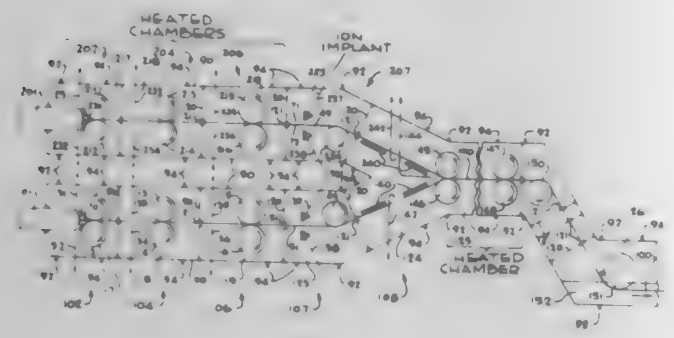
passing the molten silicon alloy ribbon between a first pair of opposed rollers in a first rolling station,

cooling said first pair of rollers for rapidly cooling said molten ribbon to its semi-solidus condition,

then passing said ribbon between other pairs of opposed rollers in other rolling stations,

keeping the ribbon temperature in the range from 740° C. to 1130° C. in said other rolling stations for promoting crystal growth in the ribbon while being rolled,

suddenly quenching the hot rolled ribbon for stopping further crystal growth, and wherein:



said silicon alloy is a ceramic metallic glass semiconductor alloy of silicon characterized by the indicated weight percent of the following elements:

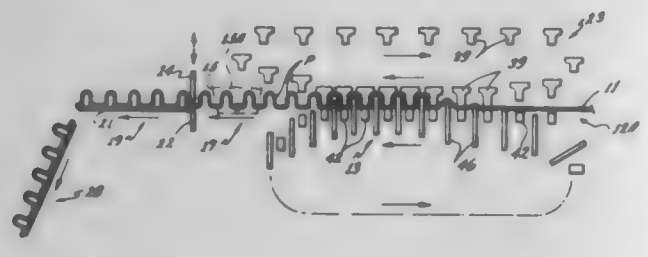
Ingredient	Range in Weight Percent of Total Composition
Silicon	51-88%
Lithium	3-30%
Aluminum	0.5-29%
Fluorine	0.5-8%
Hydrogen	1-12%
Vanadium	0-5%

4,604,792

METHOD FOR MAKING ELECTRO-ACOUSTIC TRANSDUCER APPARATUS

David A. Larson, Downers Grove, Ill., assignor to LFF & Associates, San Diego, Calif.

Filed Dec. 20, 1984, Ser. No. 684,379
Int. Cl.[4] H04R *31/00*
U.S. Cl. 29—594 7 Claims



1. A method of making a transducer diaphragm comprising:

using a generally flat stock having a conductive means arranged on at least one face thereof with a series of parallel spaced-apart portions;

pressing on said film on the front face thereof at spaced-apart areas to deform it progressively into a series of substantially U-shaped projections disposed between said areas, each projection having at least one of said portions of said conductive means on the tip portion thereof; and

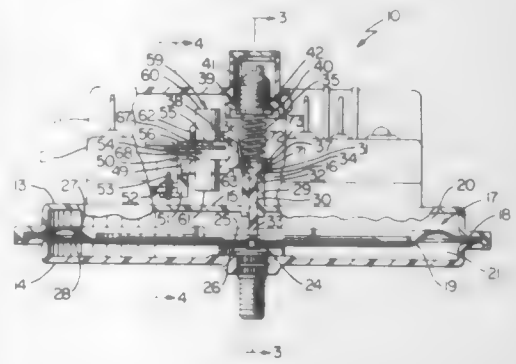
causing said projections to move into close proximity to one another in a parallel manner as said projections are being formed.

4,604,793

METHOD OF MAKING A CONTROL DEVICE

Charles J. Everett, Clinton, Conn., assignor to Robertshaw Controls Company, Richmond, Va.

Division of Ser. No. 527,037, Sep. 29, 1983, Pat. No. 4,484,173.
This application Sep. 10, 1984, Ser. No. 648,585
The portion of the term of this patent subsequent to Nov. 20, 2001, has been disclaimed.
Int. Cl.[4] H01H *11/04*
U.S. Cl. 29—622 7 Claims



1. In a method of making a control device having a housing means provided with an actuator chamber separated from a pressure differential chamber by wall means having opening means therethrough receiving an axially movable actuator pin that transmits axial movement of a movable part in said pressure differential chamber to said actuator chamber and provided with an adjustable range spring disposed in said actuator chamber and being operatively interconnected to said actuator pin to tend to move said actuator pin in one direction relative to said housing means, the improvement comprising the steps of disposing a Hall effect transducer means in said actuator chamber, forming said actuator pin to have magnet means for operating said transducer means as said movable part axially moves said actuator pin relative to said housing means, disposing said magnet means to be in offset relation to the axis of said actuator pin and so as to move in unison therewith relative to said transducer means, forming said magnet means to comprise an arm having opposed ends and a magnet carried by one of said opposed ends, operatively interconnecting the other of said opposed ends of said arm to said actuator pin, forming said actuator pin to have opposed ends, operatively interconnecting said other end of said arm to one of said opposed ends of said actuator pin by forming said other end of said arm to have an opening therethrough and forming said one end of said actuator pin to have a projection extending through said opening in said other end of said arm, forming said spring to comprise a coiled compression spring and have opposed ends, and bearing one of said opposed ends of said spring against said other end of said arm to hold said other end of said arm against said one end of said actuator pin whereby said magnet moves in unison with said actuator pin, said step of bearing said one end of said spring against said other end of said arm also causing said projection of said actuator pin to be received in said one end of said spring whereby said projection acts as a spring retainer for said one end of said spring.

4,604,794

METHOD OF MANUFACTURING BATTERY PLATE GROUPS

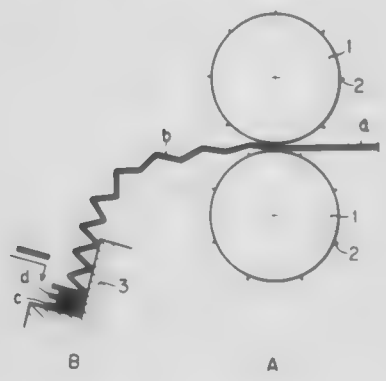
Takao Marui, and Tetsuo Uwani, both of Takatsuki, Japan, assignors to Yuasa Battery Company Limited, Takatsuki, Japan

Filed Jul. 21, 1982, Ser. No. 400,268
Int. Cl.[4] H01M *6/00*
U.S. Cl. 29—623.1 2 Claims

1. A method of manufacturing battery plate groups which comprises

(a) providing a pliable, smooth, continuous glass fiber mat which has a predetermined thickness,

(b) providing a pair of plastic rotors which are aligned in parallel, said rotors including circumferential surfaces and equal numbers of projections extending outwardly from their circumferential surfaces a distance of between 0.7 mm and 2 mm,
(c) spacing said rotors apart such that a clearance is provided between the projections on one rotor and the circumferential surface of the other rotor which is between ½ and ¼ said predetermined thickness of said glass fiber mat,
(d) rotating both said rotors such that the projections from one rotor are displaced by half a pitch from the projections from the other rotor,



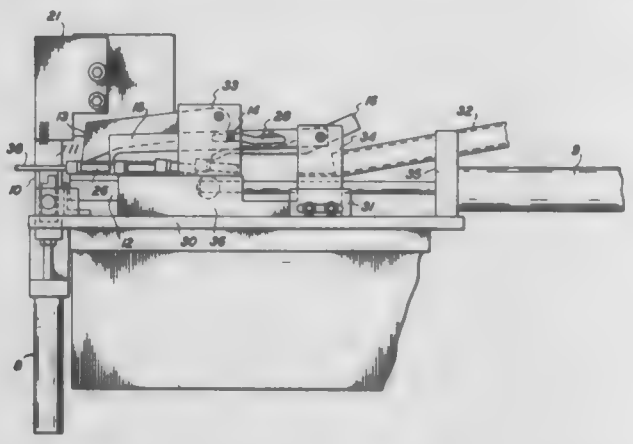
(e) passing said glass fiber mat between said rotors such that the projections thereon form alternately-directed folding habits therein at regular intervals along its length and to provide interconnected separator portions which are aligned in an accordion-like fashion,
(f) providing an alternating series of positive and negative battery plates on only one side of said interconnected separator portions, and
(g) sequentially inserting said positive and negative battery plates between adjacent separator portions.

4,604,795

APPARATUS FOR INSTALLING TERMINALS ON WIRES AND INSULATION PODS ON TERMINALS

John C. Collier, York, and David L. Lehman, Lewisberry, both of Pa., assignors to Burndy Corporation, Norwalk, Conn.

Division of Ser. No. 235,619, Feb. 19, 1981, Pat. No. 4,426,772. This application Nov. 2, 1983, Ser. No. 547,830
Int. Cl.⁴ B23P *19/00*
U.S. Cl. 29—748 **5 Claims**



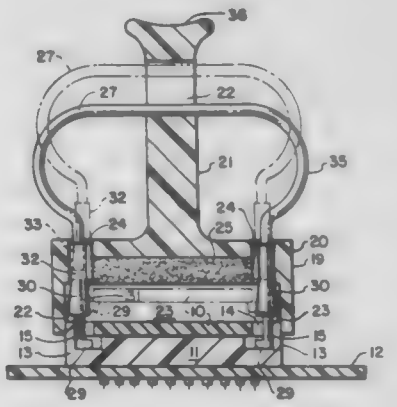
1. Apparatus for installing a pod onto a terminated wire upon placing the terminated wire into the apparatus comprising:
(a) means for securely holding the terminated wire in response to the terminated wire being placed in the apparatus and for substantially preventing the terminated wire from becoming misaligned in relation to the approaching pods,
(b) means for preventing pods from being fed to the terminated wire until the terminated wire is in correct position for installation of a pod,
(c) means for feeding a strip of interconnected pods to the vicinity of the terminal on the terminated wire,
(d) means for pushing the first pod in the strip onto the terminated wire; and
(e) means for restraining the movement of the remaining pods in the strip, except for the first pod in the strip being pushed, from movement toward the terminated wire while the first pod in the strip is being pushed onto the terminated wire to thereby separate the first pod in the strip from the remaining pods in the strip.

4,604,796

IC EXTRACTOR TOOL

Pyotr Tsipenyuk, Bronx, and Marvin Kober, Spring Valley, both of N.Y., assignors to O.K. Industries Inc., New York, N.Y.

Filed May 31, 1985, Ser. No. 739,708
Int. Cl.⁴ H05K *3/32*
U.S. Cl. 29—764 **9 Claims**



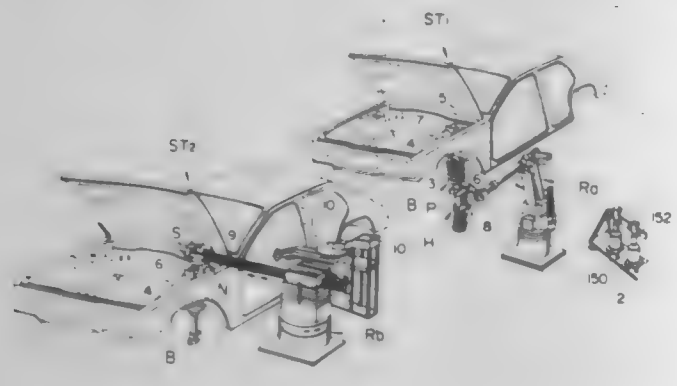
1. An extraction tool for PCC components mounted in a socket, comprising a base member having upper and lower surfaces and openings extending between the upper and lower surfaces, said base member having a square or rectangular configuration defining by side walls at its lower surface a cavity configured to receive the socket when the base member is placed over the socket and to engage and align the base member with the socket, said base member's openings being constituted by holes located at diagonally opposed corners of the rectangular base member and extending between its upper and lower surfaces and terminating within the cavity, a handle member connected to the base member's upper surface, hook means movably mounted in the base member's openings and extending below the base member's lower surface in such manner as to be positioned adjacent the component in the socket when the base member is engaged and aligned with the socket, and actuable means connected to the hook means and mounted to the handle for moving, in a first position of the actuable means, the hook means to a position alongside but laterally spaced from the component, and including means for camming the hook ends laterally inwardly when the actuable means is moved from its first to a second position, said camming means comprising a tapered member connected to the hook means and located within the holes and engaging the hole wall surface such that upward movement of the hook means cams the hook ends laterally inwardly so as to cause the hook ends to engage the component, said actuable means comprising a generally U-shaped member whose ends are each connected to one of the hook means, said U-shaped member being resiliently biased laterally outwardly tending to move the hook means away from the component, said hook means being positioned to enter diagonally located slots at the socket corners for accessing the bottom of the component, whereby upon lifting of the base member by the handle when the actuable member is in its second position the component can be extracted from the socket.

4,604,797

METHOD FOR AUTOMATICALLY ATTACHING SUB-ASSEMBLY TO MAIN ASSEMBLY AND SYSTEM THEREOF USING INDUSTRIAL ROBOTS

Kengo Kitamura, Koshigaya, and Hitoshi Murata, Zama, both of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Dec. 30, 1983, Ser. No. 567,178
Claims priority, application Japan, Feb. 5, 1983, 58-16903
Int. Cl.[4] B23P *19/00*
U.S. Cl. 29—783 4 Claims



1. A method for automatically attaching a sub-assembly to a main assembly by means of at least one fastener, comprising the step of:

(a) carrying the sub-assembly from a first position to a second position relative to a predetermined location of the main assembly at which the subassembly is attached with a first robot placed at a first work station;

(b) removably attaching the sub-assembly with the first robot at the first work station;

(c) moving the main assembly to a second work station which is at a predetermined distance remote from the first work station upon completion of the removable attachment of the sub-assembly to the predetermined location of the main assembly in step (b), the predetermined distance being at least a limit of distance within which the first robot moves;

(d) carrying an automatic fastening tool toward the predetermined location of the main assembly so as to position the automatic fastening tool on the sub-assembly with a second robot placed at the second work station; and

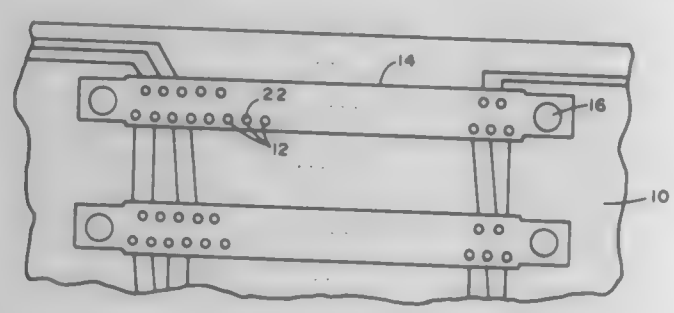
(e) tightening a fastener onto the sub-assembly with the automatic fastening tool attached to the second robot so as to permanently attach the subassembly to the predetermined location on the main assembly.

4,604,798

EXTRACTOR FOR SPRING-LOCK PIN CONNECTORS

James R. Long, Madison, and James A. Kerr, Huntsville, both of Ala., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jun. 29, 1984, Ser. No. 626,520
Int. Cl.[4] B23P *19/04*
U.S. Cl. 29—764 1 Claim



1. Apparatus for removal of connectors having spring-lock type conductor pins therein from printed circuit boards comprising:

a. means for release of said spring-lock pins from said connectors including collars for engaging springs on said spring-lock pins for compression thereof for disengagement of each spring from said connector;

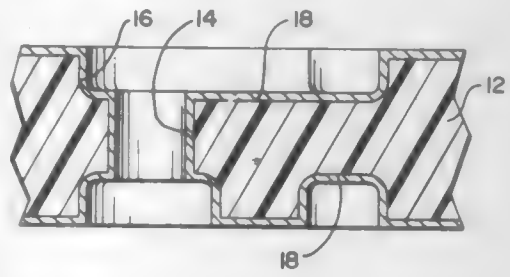
b. extractor means for engagement with said connectors along the sides thereof for disengagement of said connectors from said printed circuit boards; said extractor means including a pair of spaced, downwardly extending members each having a projection along the length thereof for engagement with said connectors along the length thereof and means for moving said members upwardly for disengagement of said connectors from said printed circuit board; said extractor means further including an upper body portion having said pair of spaced members secured thereto and a housing, said means for moving said members upwardly including a threaded shaft secured to said upper body member and extending upwardly through said housing, a nut carried on said threaded shaft in seating engagement with said housing, whereby responsive to rotation of said nut, said pair of members are moved upwardly.

4,604,799

METHOD OF MAKING MOLDED CIRCUIT BOARD

Ismail M. Gurol, Seattle, Wash., assignor to John Fluke Mfg. Co., Inc., Everett, Wash.

Filed Sep. 3, 1982, Ser. No. 414,954
Int. Cl.[4] H05K *3/02*
U.S. Cl. 29—897 68 Claims



1. A method of manufacturing a circuit carrier comprising:

(a) forming a nonconductive polymer base having a channel and an intersecting through-hole provided therein;

(b) coating said nonconductive base with a conductive material by vacuum deposition to establish a circuit line within said channel including said through hole; and

(c) removing said conductive material except in said channel and said through-hole,

wherein said coating is also applied to a nonchannel area of said base, and comprising the further steps of covering a predetermined area of said nonconductive base and said conductive material in said channels with a mask material after removing said conductive material from the nonchannel area and coating said nonconductive base with a further conductive material, said mask material acting as a mask to prevent deposition of said further conductive material onto said predetermined area, including the further step of planarizing and stress relieving said base after forming.

4,604,800

SEALING CONSTRUCTION FOR A CASING

Tadashi Yamamoto, Shiga; Mitsuo Ichiya, Kadoma, and Keizo Yamaguchi, Ikeda, all of Japan, assignors to Matsushita Electric Works, Ltd., Japan

Filed Jun. 28, 1984, Ser. No. 625,818
Claims priority, application Japan, Jun. 28, 1983, 58-117715
Int. Cl.[4] B26B *19/38*
U.S. Cl. 30—41 6 Claims

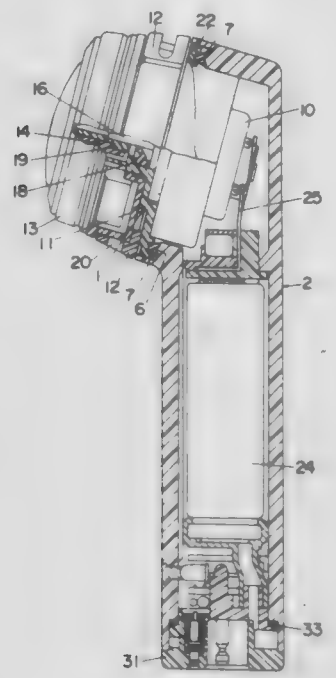
1. A seal construction between first and second casing members of a case for an electric shaver comprising:

a first sealing surface having an annular groove therein;

an annular elastic sealing member having a bottom portion

conforming with and seated in said groove and a top portion which is rounded in cross section and projects above said first sealing surface;

a second sealing surface facing toward said first sealing surface and having an annular protuberance aligned with the rounded top portion of the sealing member, said annular protuberance being more rigid than said sealing member, said annular protuberance having a radius of curva-



ture in cross section, said radius being less than a radius of curvature of said top portion of said sealing member in cross section;

means for pressing said annular protuberance against said annular sealing member to cause deformation thereof around its circumference so that the top portion of the sealing member is deformed around the annular protuberance both radially inwardly and outwardly thereof.

4,604,801

SHAVER WITH INSERTABLE AUXILIARY FRAME

Roland Ullmann, Offenbach, and Hans E. Heintke, Wächtersbach, both of Fed. Rep. of Germany, assignors to Braun Aktiengesellschaft, Kronberg, Fed. Rep. of Germany

Filed Apr. 17, 1985, Ser. No. 724,127

Claims priority, application Fed. Rep. of Germany, Apr. 21, 1984, 3415122

Int. Cl.⁴ B26B *19/38*

U.S. Cl. 30—43.92 **7 Claims**

a shaver housing including first and second end cheeks;

an elongated interchangeable frame member being displaceably insertable between said first and second end cheeks of said shaver housing, and having ends spaced from one another in the direction of elongation, said interchangeable frame member having first and second substantially parallel longitudinal sides connecting said ends, thereby defining an opening, said ends including means for releasably mounting said interchangeable frame member to said first and second end cheeks of said shaver housing;

means for tensioning and attaching a shaving foil to said interchangeable frame member opposite said opening of said interchangeable frame member;

a reciprocating elongated inner cutting head cooperating with the shaving foil, said inner cutting head being positioned between said first and said second end cheeks of said shaver housing and between said ends of said interchangeable frame member through said opening of said interchangeable frame member; and

said means for releasably mounting said interchangeable frame member includes, on each end of said interchangeable frame member, spring-tensioned locking means having an up ramp, each of said up ramps terminating in a free end, said first and second end cheeks each including an aperture and a spring-tensioned button member disposed in said aperture, each of said button members being displaceable toward one of said ends of said interchangeable frame member, each of said end cheeks also including a recess and a stop member for cooperating with said spring-tensioned locking means, whereby movement of said opening of said interchangeable frame member in the direction of said inner cutting head and between said first and second end cheeks causes inner displacement of said up ramps until said free ends of said up ramps cooperate with said recesses and stop members on said end cheeks of said shaver housing to lock said interchangeable frame member to said shaver housing, and whereby the displacement of said buttons causes the displacement of said up ramps thereby removing said free ends of each of said up ramps from said end cheeks of said shaver housing and unlocking said interchangeable frame member from said shaver housing.

4,604,802

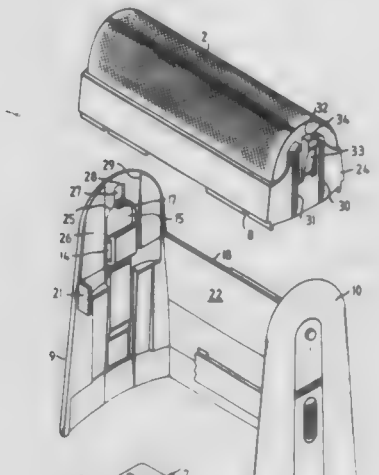
SQUEEGEE BLADE TRIMMER

Soren Samuelsson, 74-259 Candlewood St., Palm Desert, Calif. 92260

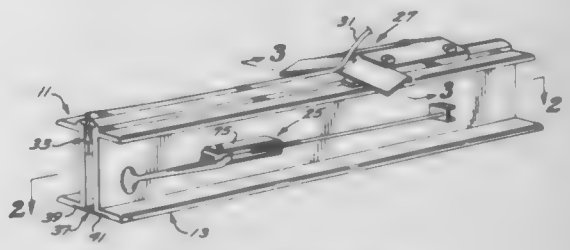
Filed Oct. 22, 1984, Ser. No. 663,395

Int. Cl.⁴ B25F *3/00*

U.S. Cl. 30—124 **8 Claims**



1. A dry shaver comprising:



1. A squeegee blade trimmer comprising:

a squeegee blade holder having top and bottom sides and including a pair of elongated, parallel beam members spaced apar: for receipt therebetween of a squeegee blade to be trimmed;

a pair of parallel shear bars, one mounted on each of said beam members for pressing against the opposite sides of said blade;

a pair of parallel tracks, one mounted on the top side of each beam member;

releasable press means coupled between said beam members for selectively drawing said beam members together; and

a cutting blade holder formed with a pair of runners for

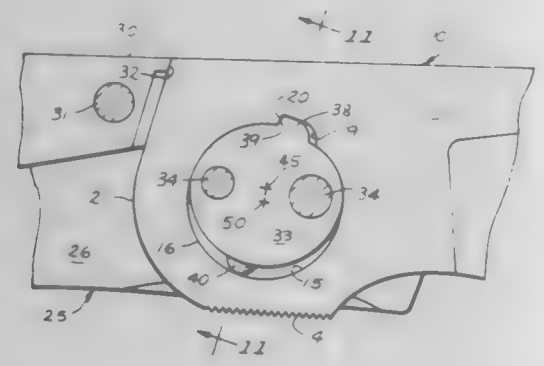
riding on said tracks and including clamp means, said trimmer including a cutting blade for receipt in said clamp means and adapted to be clamped therein with its cutting edge extending laterally of the longitudinal direction or said shear bars wnen said runners of said cutting blade holder are sitting in position on said tracks whereby said press means may be released to enable a worn squeegee blade to be positioned between said shear bars with the worn edge projecting therefrom, said press means activated to draw said beam members together to press said squeegee blade between said shear bars, said cutting blade holder positioned on said squeegee blade holder with said runners riding on said tracks and drawn along said tracks to draw said cutting edge through the body of said squeegee blade to sever said worn edge therefrom.

4,604,803

FOLDING KNIFE

Scott Sawby, 500 W. Center Valley Rd., Sandpoint, Id. 83864

Filed Aug. 8, 1985, Ser. No. 763,666
Int. Cl.[4] B26B *1/04*
U.S. Cl. 30—161
14 Claims



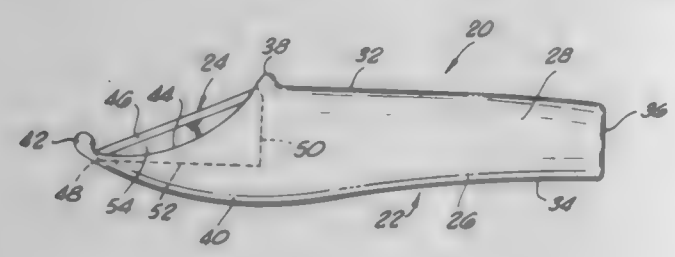
1. A folding knife, comprising:
a knife blade having a tang formed at its inner end;
a handle transversely flanking the tang;
a pivot hole formed through the tang of the knife blade;
bushing means fixed to the handle and extending through the pivot hole in the tang for movably supporting the knife blade about a transverse axis across the handle; and
latching means on said bushing and pivot hole for selectively locking the knife blade at a preselected angular position relative to said transverse axis, said latching means being manually releasable in response to movement of the tang relative to the handle in a preselected direction perpendicular to said transverse axis.

4,604,804

CUTTING DEVICE FOR LIMB WRAPPINGS

Jimmy L. Sparks, Aiken, S.C., assignor to Horse Health Products, Inc., S.C.

Filed Mar. 4, 1985, Ser. No. 707,905
Int. Cl.[4] B26B *29/00*
U.S. Cl. 30—294
2 Claims



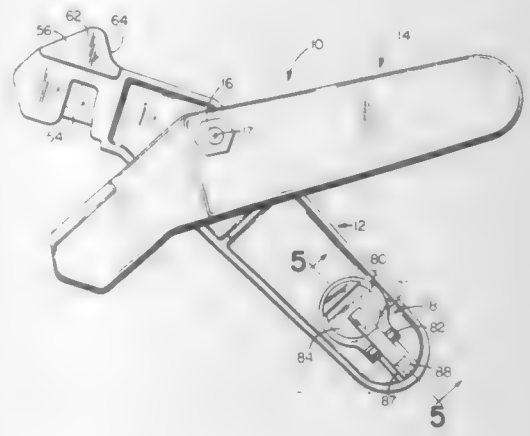
1. A cutting device for removing limb wrappings wherein said device comprises:
a handle including an elongated portion having a elongated axis and an outer end, said elongated portion including top and bottom surfaces projecting from said end and said top surface terminating in a front upper end, and said bottom surface curving upwardly and extending forwardly of said front upper end terminating in a protective lip below and forwardly of said front upper end;
a generally concave biasing surface extending from said protective lip to said front upper end;
a cutting blade having generally parallel sides mounted in said handle within said biasing surface and extending at an angle to said elongated axis from a point inwardly of said protective lip adjacent said front upper end, whereby said protective lip is slightly outward of and elevated above said point of intersection of said blade with said biasing surface to afford protection from said blade; and
said lip portion adapted to enter between said limb and said wrappings at any reasonable angle without cutting injury to said limb and said cutting blade engages said wrappings and upon movement cuts said wrappings with said wrappings on each side of said blade being biased on said biasing surface away from each other to prevent interference with said cutting.

4,604,805

HOLDER FOR DETACHABLE BLADES

George H. Krieger, Creve Coeur, Mo., assignor to John F. Cuscovitch, East Hartford, Conn.

Filed Dec. 14, 1983, Ser. No. 561,165
Int. Cl.[4] B26B *5/00*
U.S. Cl. 30—330
20 Claims

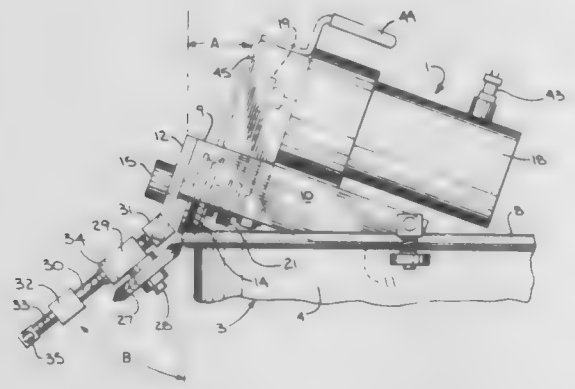


1. In a holder for a detachable blade and having a body including a pair of mating body sections having marginal portions for engagement within a common plane, each of the body sections having a handle portion and a blade retaining portion, pivot means connecting the body sections for pivotal movement about an axis generally normal to the common plane between an open position wherein a blade may be inserted into and removed from the holder and a closed position wherein the blade retaining portions cooperate to define blade retaining means for securing a blade in a cutting position in the holder, and latching means for releasably securing said body sections in closed position, the improvement comprising said blade retaining means including a laterally outwardly facing first clamping surface defined by a marginal portion of the outer peripheral surface of each of said blade retaining portions and a lip carried by each of said blade retaining portions and extending laterally therefrom beyond said common plane and in the direction of the other of said blade retaining portions and defining a laterally inwardly second facing clamping surface, said second clamping surface on each of said blade retaining portions engaging said first clamping surface on the other of said blade retaining portions when said body sections are in said closed position.

4,604,806
POWERED DRUM OPENER WITH CUTTER WHEEL

John F. Pelczynski, Greenfield, Wis., assignor to Hydro-Thermal Corp., Milwaukee, Wis.

Filed Jul. 20, 1984, Ser. No. 633,011
Int. Cl.[4] B23D *21/04*
U.S. Cl. 30—417 8 Claims

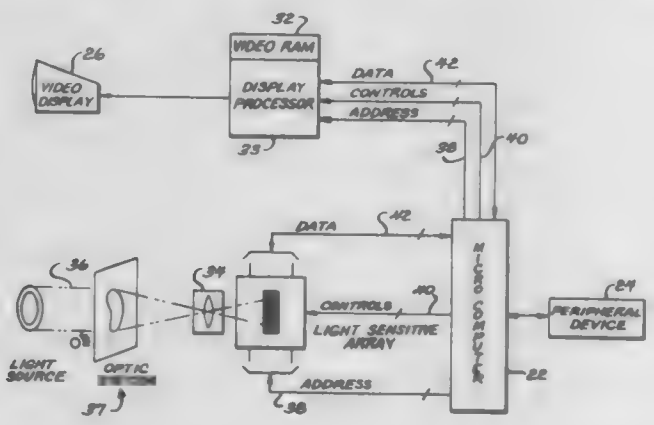


1. A drum opener for removing a cover from a platic lined drum, said drum including a cylindrical metal wall having a plastic liner on the inner surface of said wall, the upper edge of said wall and said liner being rolled outwardly with the peripheral edge of the cover to form a chime, and said drum including a metal clamping band clamped around the chime and extending completely around the circumference of the drum, said opener comprising a supporting structure, power means mounted on the supporting structure, rotatable drive means journaled on the supporting structure and disposed to engage the upper portion of said clamping band, means operably connecting said power means to said drive means to thereby rotate said drive means and move said opener in a path around the periphery of the drum, a rotatable cutter disposed in engagement with the lower portion of said band and disposed on the opposite side of a vertical plane extending through said drive means from said power means, said cutter being disposed out of direct alignment with said drive means, a pair of arms extending outwardly in opposite direction from the supporting structure, and guide means on the end portion of each arm and spaced circumferentially from said drive means, said guide means disposed to ride on said chime as the opener is moved in its path of travel.

4,604,807
ELECTRONIC FOOT MEASURING APPARATUS AND METHOD

Harry S. Bock, Inverness; Stanley O. Gregory, Elgin; F. Philip Gardner, McHenry, and Russell H. Reid, Bolingbrook, all of Ill., assignors to Interco, Incorporated, St. Louis, Mo.

Continuation-in-part of Ser. No. 685,137, Dec. 21, 1984, Pat. No. 4,538,353. This application Aug. 30, 1985, Ser. No. 770,966
Int. Cl.[4] A43D *1/00*
U.S. Cl. 33—3 C 15 Claims



1. Apparatus for measurement of foot size comprising light sensitive array means comprising plural individual light sensitive elements,

means for imaging the foot to be measured upon said light sensitive array means to thereby effect the storage of electrical energy in individual ones of said plural light sensitive elements,

microprocessor means connected at an output thereof through address select logic means to an input of said light sensitive array means to direct the sequential reading of the output of said individual light sensitive elements thereof,

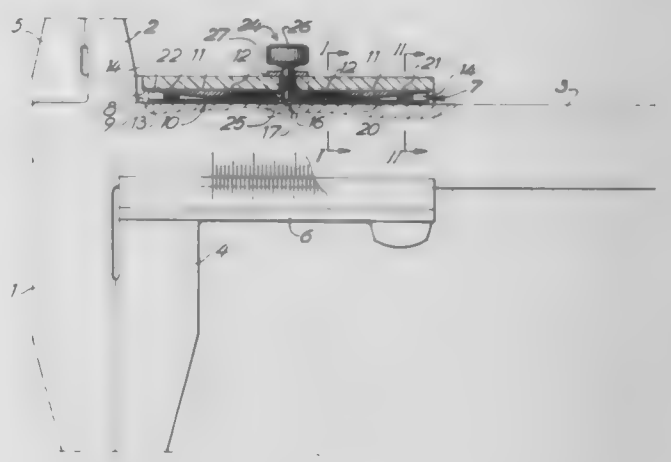
video display means for displaying the image of said foot in response to the output of said light sensitive array means, and

data bus means for transmitting said output of said light sensitive array means to said microprocessor means and said video display means.

4,604,808
INSTRUMENT FOR MEASURING LINEAR MAGNITUDES

Jean-Pierre Jeannet, Lausanne; Eric Zumbrunnen, Lutry, and Roberto Cartisano, Renens, all of Switzerland, assignors to Tesa S.A., Renens, Switzerland

Filed Apr. 22, 1985, Ser. No. 726,333
Claims priority, application Switzerland, Apr. 26, 1984, 2047/84
Int. Cl.[4] G01B *5/02*
U.S. Cl. 33—143 M 5 Claims



1. An instrument for measuring linear magnitudes comprising at least a first feeler which is rigidly connected to a linear slideblock, at least one second feeler of a slider mounted for sliding on the slideblock and at least one play take-up device connected to the slider and inserted between an inner resting face (8) of the latter and a corresponding outer resting face (9) of the slideblock in a space of rectangular cross section, characterized by the fact that the play take-up device comprises a base plate (10) having a flat sliding face (13) over which there are two symmetrical end inclined resting planes (14) of the same slope, two shoes (11) with inclined resting planes (20) of the same slope as those of the base plate and arranged resting respectively against the latter and with flat sliding faces (21) parallel to the flat face of the base plate, and at least one elastic compression member (12) arranged resting tangentiallyagainst each of the two shoes so as to cause the latter to ascend along the two symmetric inclined planes of the base plate.

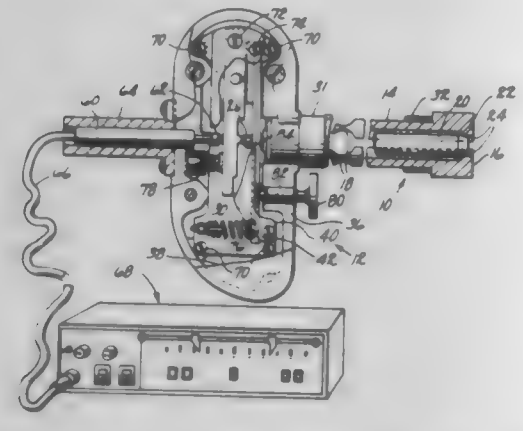
4,604,809
GAGE HEAD ACTUATING COUPLER

Franklin Meyer, Jr., P.O. Box 1, Forestdale, R.I. 02024

Filed Apr. 5, 1985, Ser. No. 720,088
Int. Cl.[4] G01B *5/12, 7/12*
U.S. Cl. 33—178 E 5 Claims

1. An actuator for an expanding and contracting gage head operated by an axially movable plunger having a tapered operating end and a cross head at the other end, comprising a case,

a retracting lever, a transducer coupling lever, a supporting structure fixedly secured within the case providing pivots for the levers, the side of the retracting lever remote from the gage head being in engagement with the cross head, means for mounting said gage head and defining an axis for the case, a



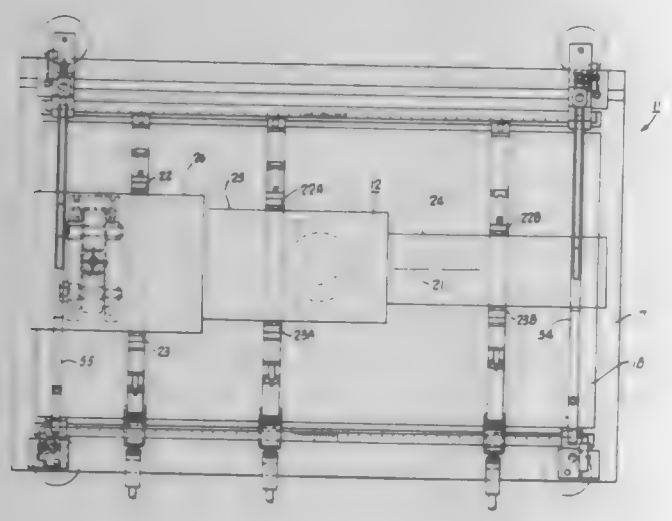
contact surface on the coupling lever for the other end of the plunger, a transducer defining on axis fixed to the case in alignment with said axis of the case and being in engagement with said coupling lever, and means for actuating the retracting lever for withdrawing the plunger in a direction away from the gage head.

4,604,810

POST PROCESS DIAMETER GAGE

Nagle V. Gusching, Sidney, and Richard R. Daulton, Cincinnati, both of Ohio, assignors to The Monarch Machine Tool Company, Sidney, Ohio

Filed Aug. 29, 1985, Ser. No. 770,709
Int. Cl.[4] G01B *7/12*
U.S. Cl. 33—178 E **14 Claims**



1. A post process diameter gate for a workpiece with multiple portions of different diameters comprising in combination:

a gage platform;

drive means to relatively move said gage platform and a multiple diameter workpiece relative to each other in a plane through the workpiece centerline;

at least two sets of first and second gage blocks;

first means mounting said first gage block of each set on said gage platform for limited lateral movement relative to said centerline plane;

second means mounting said second gage block of each set on said gage platform for limited lateral movement relative to said centerline plane with the two gage blocks of each set on opposite sides of a diameter of the workpiece;

said at least two sets of first and second gage blocks being mounted on said gage platform at different longitudinal positions to gage portions of different diameters on the workpiece;

spring means connected to relatively urge said first and second gage blocks of each set toward the workpiece centerline;

an electrical output gage connected to be moved in accordance with relative movement between said first and second gage blocks of each set;

means adapted to connect said electrical output gages to a numerical control of the machine tool machining successive workpieces; and

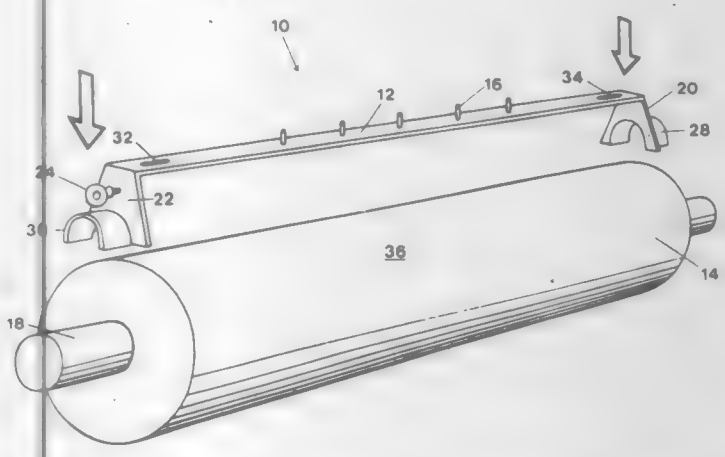
said drive means being controllable to relatively advance said gage platform and a workpiece to a position whereat said sets of gage blocks are urged by said spring means to contact opposite sides of plural diameters of a workpiece machined by the numerically controlled machine tool to gage at least two different diameter portions of the workpiece to correct the cutting diameters of the machine tool in accordance with variation from desired dimensions of the workpiece.

4,604,811

HOLDING UNIT FOR MOUNTING AND ALIGNING PRINTING PLATES

Reiner Roosen, Von-Eiff-Strasse 23, D-6450 Hanau/Main 7, Fed. Rep. of Germany

PCT No. PCT/EP84/00089, § 371 Date Feb. 11, 1985, § 102(e) Date Feb. 11, 1985, PCT Pub. No. WO84/04900, PCT Pub. Date Dec. 20, 1984
PCT Filed Mar. 29, 1984, Ser. No. 700,770
Claims priority, application Fed. Rep. of Germany, Jun. 11, 1983, 8317151[U]
Int. Cl.[4] B41B *1/00*
U.S. Cl. 33—184.5 **6 Claims**



1. A holding unit for mounting and aligning printing plates on the printing cylinder of a printing machine, said cylinder having a longitudinal axis, opposed end faces and a coaxial shaft with opposed coaxial shaft end portions projecting beyond the end faces; said holding unit comprising a straight rail adapted to parallel said cylinder in overlying relation thereto, said rail having opposed end portions, a pair of end sections engaged with said opposed end portions of said rail and extending generally laterally therefrom for overlying said end faces, said end sections each including a shaft-engaging structure configured to receive the corresponding shaft end portion, to self-center on the corresponding shaft end portion upon the shaft end portion being fully received therein, thereby positioning the rail of the holding unit parallel to the longitudinal axis of the cylinder, said rail including releasable plate securing means therealong for selective retention of printing plates on said rail for alignment on a cylinder, said releasable plate securing means being adapted to cooperate with complementary means on the plates to be mounted, said plate securing means and said complementary means comprising interengaging projections and recesses, said shaft-engaging structure of each end section comprising a pair of opposed members positionable to opposite sides of the corresponding shaft end portion, at least one of said members being mounted for movement, relative to the other member, toward and away from the corresponding

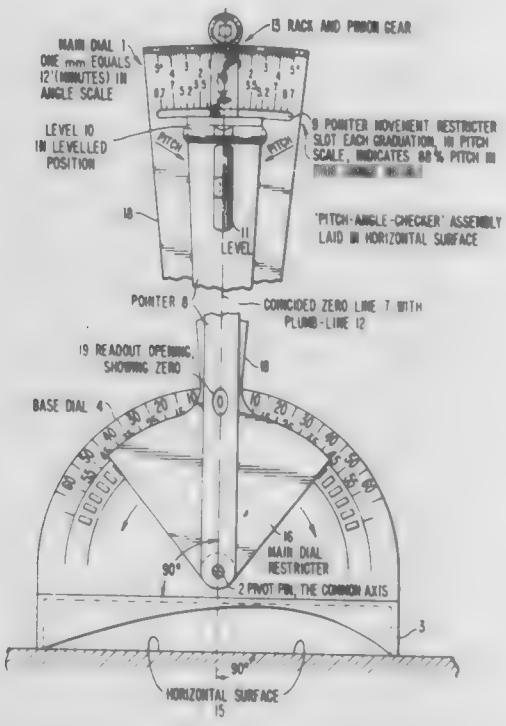
shaft end portion for engagement and enclosure of the corresponding shaft end portion therebetween.

4,604,812

PITCH-ANGLE-CHECKER (P-A-C)

Jahanbakhsh Arjomand, P.O. Box 4372, San Juan, P.R. 00905

Filed Mar. 1, 1985, Ser. No. 707,409
Int. Cl.[4] G01B *5/24;* G01C *9/28*
U.S. Cl. 33—387 **15 Claims**



1. A pitch and angle measuring instrument comprising:

a base including means for resting said base on an item and an upper portion extending upward from said means, said upper portion having a first calibrated scale thereon;

a main dial member rotatably affixed to said base and extending upward therefrom, said main dial member having a second calibrated scale thereon; and

an elongated pointer rotatably connected to said base about the same pivot point as said main dial member, said pointer including a level indicator;

wherein said first and said second calibrated scales are arcuate having the same center point, the radius of the arc of the second scale being greater than the radius of the arc of the first scale, said second calibrated scale being of less arcuate length then said first calibrated scale, said second scale being graduated in smaller units than said first scale;

said pointer including means for indicating a number on both of said scales when the level indicator is at a level position.

4,604,813

APPARATUS FOR DIMENSIONAL INSPECTION OF A PIPE SPOOL, OR FOR MAKING OR CUTTING AND FINISHING AT ITS BOTH ENDS

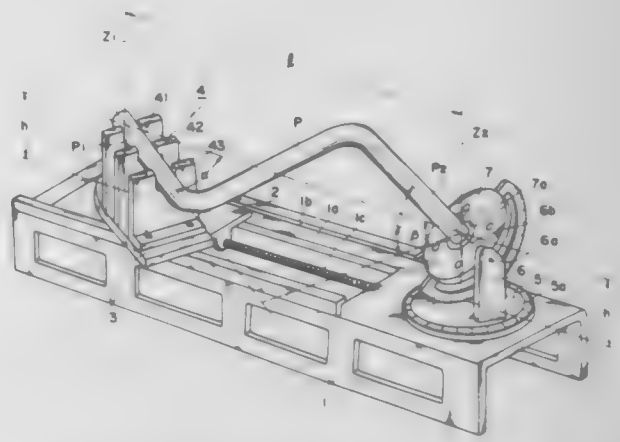
Shumpei Kawanami, Hiratsuka, and Hiroshi Nakama, Yokohama, both of Japan, assignors to Dai-Ichi High Frequency Co., Ltd., Tokyo, Japan

Filed Feb. 20, 1985, Ser. No. 703,545
Int. Cl.[4] A61B *5/08*
U.S. Cl. 33—529 **12 Claims**

1. Apparatus for dimensional inspection of a pipe spool or for marking, or cutting and finishing at its both ends comprising a

base frame, which is long enough to cover the diagonal length of a pipe spool to be inspected, on which a substantially horizontal base plane as the reference for a coordinate system exists, said base frame having first and second rotary tables, said first table being rotatable around an axis vertical to said horizontal base plane, said second table being mounted on a slide table slidable relative to said first rotary table,

a first horizontal pipe end support mounted on the rotary tables so that its horizontal axis intersects the vertical axis of said rotary table at a determined proper effective height, and



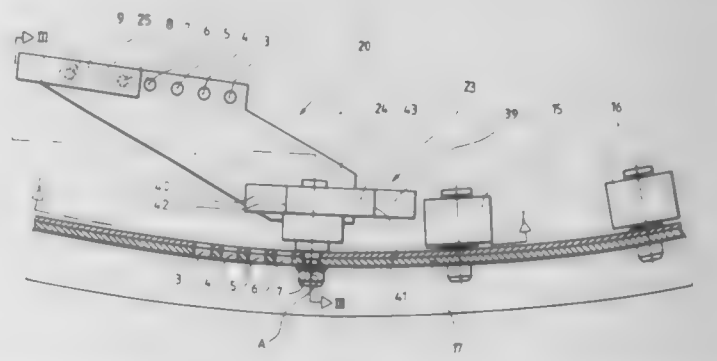
a second pipe end support mounted on a swing table swingable around an axis which is supported and fixed on another rotary table so as to let three axes, that is axis of the pipe end support, axis of the swing table and axis of the rotary table, intersect each other at a point at the same height with that of said horizontal pipe end support.

4,604,814

APPARATUS FOR COOLING OR DRYING COARSE-GRAINED BULK MATERIAL

Alfred Klöckner, Hirtscheider Str. 11, D-5239 Nistertal, Fed. Rep. of Germany

Filed Mar. 27, 1984, Ser. No. 593,969
Claims priority, application Fed. Rep. of Germany, Mar. 30, 1983, 3311693; European Pat. Off., Mar. 20, 1984, 84103053.9
Int. Cl.[4] F26B *17/00, 17/12*
U.S. Cl. 34—172 **16 Claims**

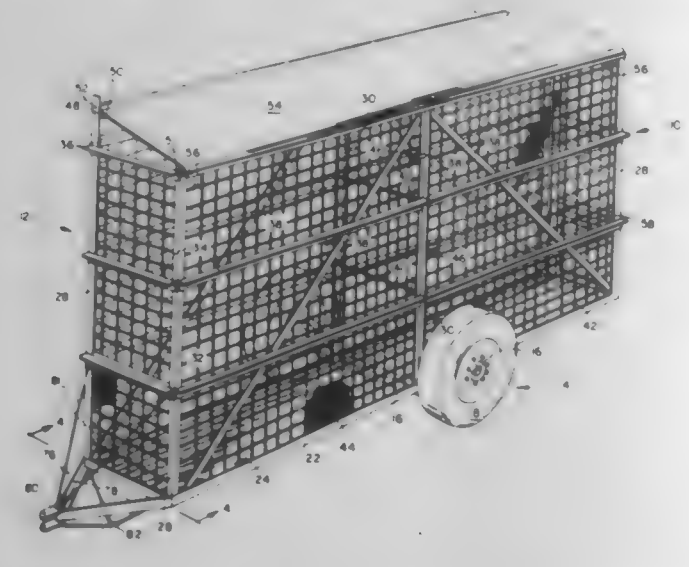


1. Apparatus for cooling or drying of coarse-grained bulk material, comprising a plurality of substantially planar trays mounted one above another for rotation in one direction about a common axis, each tray being divided into a plurality of segments adapted to be tilted about a tilt axis extending in a radial direction of said common axis, means supporting said segments along a path in the plane of the respective tray and permitting said segments to be tilted only within an angular range of said rotation, said means including in association with each tray a tilt lever mounted for pivoting movement about a stationary tilt axis for tilting any one segment within said angular range, said tilt lever having a first lever arm projecting into the path of said segment support means, and a second lever arm adapted on pivoting said first lever arm to engage a respective segment for forcibly tilting it about its tilt axis, characterized in that said first lever arm (25, 24) of said tilt lever (20) is adjustable in the direction of rotation of said trays (10) relative to said second lever arm (23, 39).

4,604,815
TRAILER FOR STORING AND DRYING HARVESTED CROPS

Steve H. Ridgway, Rte. 1, Box 44R, Pleasanton, Tex. 78064

Filed Sep. 6, 1984, Ser. No. 647,747
Int. Cl.[4] F26B *9/02*
U.S. Cl. 34—201 10 Claims

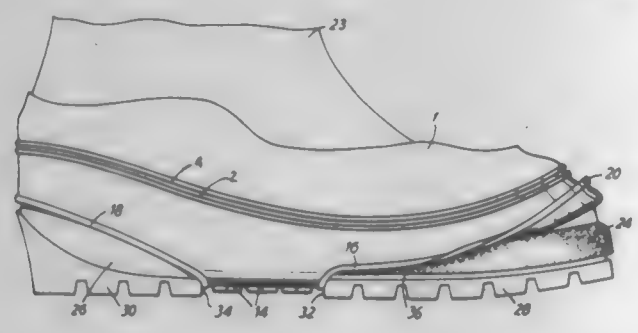


1. A trailer for storing and/or drying harvested crops, such as peanuts, comprising:
at least one front truck axle having tires on each end thereof;
a frame attached to a lower portion of said front truck axle, said frame being formed to give a long narrow deep rectangular box with smooth inner walls;
cattle panel wire having a first mesh size attached to said smooth inner walls;
hardware cloth overlapping said cattle panel wire and attached thereto, said hardware cloth having sufficient strength to hold said crops inside said trailer and a second mesh size, said second mesh size being smaller than said first mesh and being small enough to prevent said crops from spilling therethrough from said trailer, said cattle panel wire being of sufficient strength to support said hardware cloth;
at least two corner posts on one side of said frame extending above said trailer for supporting a cover thereon, said cover being extendable over said trailer;
hitch means attached at a lower front of said trailer;
gate means releasably secured at a lower rear of said trailer, said gate means also being covered with said cattle panel wire and said hardware cloth; and
floor means with holes therein for allowing moisture and sand out and air in;
width of said trailer being between 30" and 48".

4,604,816
GAITER RANDS

George G. Davison, 24 Low Gosforth Court, Melton Park, Newcastle upon Tyne 3, England

Filed Jun. 4, 1984, Ser. No. 616,726
Claims priority, application Italy, Jun. 9, 1983, 85578 A/83
Int. Cl.[4] A43B *3/16*
U.S. Cl. 36—1.5 10 Claims

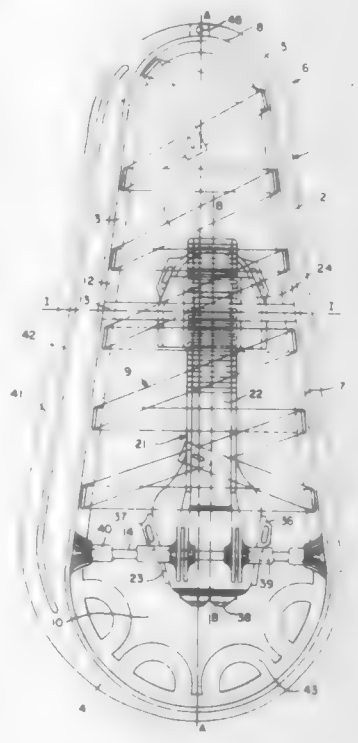


1. A rand for a gaiter to be applied to a boot, the boot having a sole and a heel, the sole including an upstanding sidewall and the gaiter including a flexible upper portion, the rand being of elastic material and having a periphery adapted for connection to the flexible upper portion of the gaiter, the rand defining therein an aperture across which extends an instep strap defining front and rear openings the shapes of which conform substantially with those of the sole and heel respectively of the boot but the dimensions of which are less than the corresponding external dimensions of said sole and heel, at least the toe portion of the upstanding sidewall of the sole of the boot having a groove formed therearound and a rib being formed on the inside surface of the rand around at least the front extent of the boundary of the front opening, the arrangement being such that, on positioning of the rand on the boot, the boundaries of the front and rear openings are stretched such that the rib around the front opening is located in the groove formed in the sidewall of the sole of the boot to make sealing contact therewith and the rear opening extends around the heel of the boot to make sealing contact therewith, the instep strap extending across the base of the boot between the sole and the heel thereof.

4,604,817
SNOWSHOE

Gérard Ramboz, Rue Allamand, 74490 Saint Jeoire en Faucigny, France

Filed Feb. 27, 1985, Ser. No. 706,092
Claims priority, application France, Feb. 29, 1984, 84 03247
Int. Cl.[4] A63C *13/00;* A43B *5/04*
U.S. Cl. 36—125 13 Claims



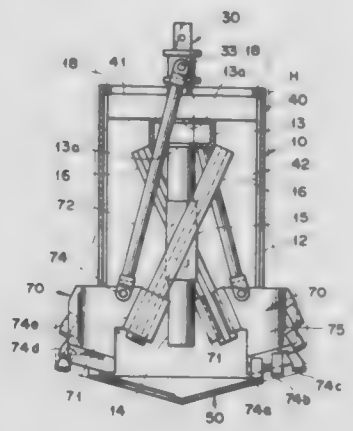
1. A snowshoe or racket, comprising a rigid generally flat frame formed from an inner side member and an outer side member joined together by a front end cross piece and a rear end cross piece, the frame having fixed thereto a central lattice forming a perforated bearing surface having a toe passage, said frame receiving a transverse pivot pin, disposed at the end of the toe passage, the two ends of said pin being housed in the side members and its intermediate part supporting a pivoting structure provided with fastening means for receivng and fastening the shoe of the user, wherein:
said side members each have identical cross setions, a fin portion extending outwardly from said identical cross sections only along a portion of said outer side member, said fin portion providing a sliding bearing surface; and
the pivoting structure comprises a base plate having a front stirrup-piece and a rear heelpiece for holding respectively the front and the rear of the shoe, fastening means allowing the shoe to be fastened to said structure.

4,604,818

UNDER REAMING PILE BORE EXCAVATING BUCKET AND METHOD OF ITS EXCAVATION

Hachiro Inoue, Ichikawa, Japan, assignor to Kabushiki Kaisha Tokyo Seisakusho, Urayasu, Japan

Filed Jul. 24, 1985, Ser. No. 758,329
Claims priority, application Japan, Aug. 6, 1984, 59-164393; May 31, 1985, 60-118191; Jun. 1, 1985, 60-83076[U]
Int. Cl.[4] E02E *1/00;* E01H *13/04*
U.S. Cl. 37—195 16 Claims



1. A method of excavating an under reamed part of a pile bore with an excavating bucket having a bucket body with side apertures, an openable bucket bottom plate with openable bottom apertures, a drive shaft, a bucket cover, and wing bits slidably movable by the drive shaft along guide rails downwardly and outwardly when the drive shaft is rotated in a forward direction, which comprises the following steps of:

(a) excavating a straight pile bore;

(b) lowering the excavating bucket to a bottom of the straight pile bore;

(c) closing the bucket bottom plate when the bucket reaches the bottom of the straight pile bore;

(d) rotating the drive shaft in the forward direction to first open the side apertures and then to drive the wing drill bits together with the bucket body in such a way that the rotated wing drill bits move downward and extend outward along the guide rails passing through the opened side apertures to excavate the under reamed part of the pile bore, while taking excavated soil into the bucket body through the side apertures of the bucket body and the openable bottom apertures of the bucket bottom plate;

(e) if the wing drill bits reach their lowermost position, rotating the drive shaft in the reverse direction to move the wing drill bits upward and contract inward along the guide rails passing through the opened side apertures to house again the drill bits within the bucket body while moving excavated soil to under the bucket body and taking the moved soil into the bucket body through the openable bottom apertures;

(f) closing the side apertures by the bucket cover;

(g) raising the excavating bucket onto the round; and

(h) opening the openable bucket bottom plate to discharge the excavated soil within the bucket body to the outside.

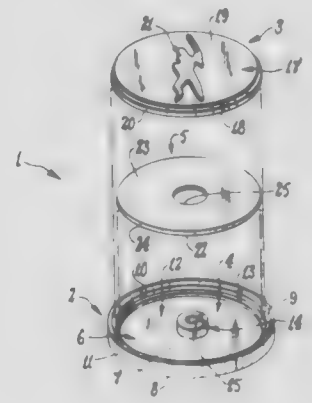
4,604,819

IMITATION MEDAL

George E. Grey, Mount Dandenong, Australia, assignor to Craigave Pty. Ltd., Mt. Dandenong, Australia

Filed Aug. 10, 1984, Ser. No. 639,447
Claims priority, application Australia, Aug. 23, 1983, PG0984
Int. Cl.[4] A44C *3/00*
U.S. Cl. 40—1.5 11 Claims

1. A medal, including: a pair of casing parts composed of plastic material and assembled together to give an appearance of a unitary medal having a pair of spaced apart outer faces at least one of which is decorated, the casing parts frictionally interengaging each other so as to be assembled together by friction fit, the assembled casing parts defining an internal cavity therebetween; one of the casing parts having a location post projecting into the internal cavity; and, a weighted member located within the cavity to give the medal an appreciable weight, the weighted member having an aperture therein through which the location post closely extends so as to assist



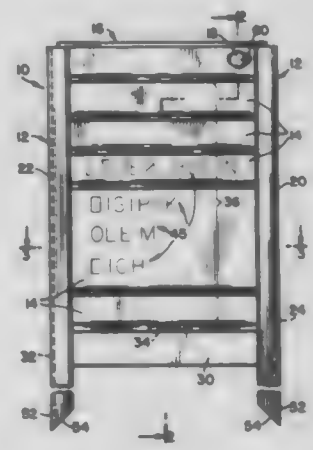
positive location of the weighted member within the cavity, and the weighted member being shaped and sized so as to be sandwiched between the friction fitted casing parts and thereby be securely held against rattling within the cavity solely by the casing parts.

4,604,820

MODULAR SIGN

David C. Edman, Camp Hill, Pa., assignor to Build-A-Sign, Inc., Mechanicsburg, Pa.

Filed Jan. 23, 1985, Ser. No. 693,976
Int. Cl.[4] G09F *7/00*
U.S. Cl. 40—605 11 Claims



1. A modular sign including a rectangular frame having opposed vertical channel members with upper and lower ends defining a pair of inwardly facing channels, a top rail extending between the upper ends of the channel members and a bottom rail extending between the lower ends of the channel members, and panel member retention means on the bottom rail; an essentially flat assembly of panel members including a top panel member and a bottom panel member, each panel member including an elongate flat central panel having a pair of opposed display surfaces, a top locking element on the top of the central panel and a bottom locking element on the bottom of the central panel, said panel members extending from side to side across the width of the assembly with the top and bottom locking elements of adjacent panel members removably interlocked to secure the panel members together in the assembly; and an elongate top member including a roof, a body extending downwardly from the roof and a locking element on the bottom of the body; said assembly being confined within the interior of the frame with the ends of the panel members extending into the channels in the channel members, the bottom locking element of the bottom panel member extending past the bottom rail panel member retention means to retain the rail and bottom panel member together; the top member body

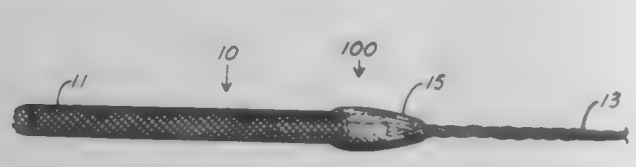
extending along said top rail with the roof overlying the top rail and the top member body extending downwardly from the roof to one side of the rail, the ends of the body extending into the channels in the channel members adjacent the rail and the top member locking element removably interlocked with the top locking element of the top panel member of said assembly whereby the assembly and top member are removably confined within the frame.

4,604,821

FLY FISHING JUNCTION LEADER

Roman Moser, Kuferzeile 19, 4810 Gmunden, Austria

Filed Sep. 12, 1983, Ser. No. 531,072
Int. Cl.[4] A01K *91/00*
U.S. Cl. 43—44.98 **4 Claims**



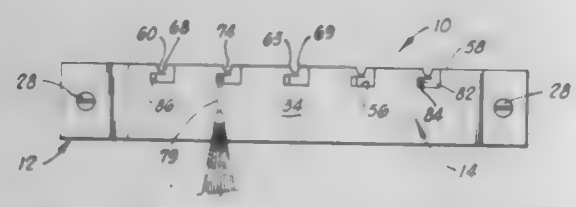
1. A junction leader for a fly line comprising:
a hollow braided tube formed by a plurality of braided filaments, said tube having open opposite ends one of which is large enough to receive the fly line therein and said tube constricting upon elongation to permit constriction of the tube on the fly line inserted into said one end thereof; and
a leader line tapering from a butt end thereof to a distal end adapted for attachment to a fly, said butt end being received in the end of the tube opposite said one end and being glued in place therein, said leader line comprising:
a first monofilament tapering from said butt end toward said distal end;
a second monofilament shorter than said first monofilament and substantially uniform in cross section; and
a third monofilament shorter than said first monofilament and tapering from said butt end toward said distal end said monofilaments all being braided together to form the leader line.

4,604,822

FISHING LURE HOLDER

S. Kent Christenberry, 200 NE. 46th St., Oklahoma City, Okla. 73105

Filed Jun. 24, 1985, Ser. No. 748,210
Int. Cl.[4] A01K *97/06*
U.S. Cl. 43—57.1 **16 Claims**



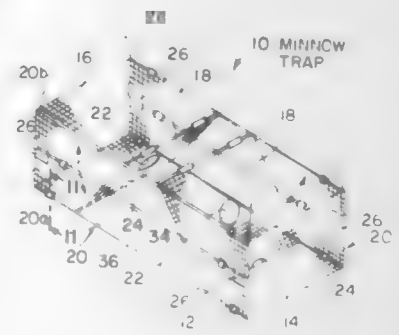
15. In a fishing lure holder of a type having a pair of longitudinally extending portions, one of said portions defining a transversely extending L-shaped slot therein and the other of said portions defining a transversely extending U-shaped slot therein, one of said portions being movable so that said slots are positionable for locking a hook of a fishing lure therebetween, the improvement comprising:
a first surface interconnecting an apex of said L-shaped slot and a longitudinal edge of the corresponding longitudinally extending portion;
a second surface interconnecting an intermediate portion of said U-shaped slot with a longitudinal edge of the other longitudinally extending portion, such that said first and second surfaces define a hook-receiving groove extending normally with respect to said longitudinally extending portions adjacent said longitudinal edges; and
biasing means for biasing said movable portion toward a hook locking position, such that as a hook is moved transversely in said groove, said movable portion is moved toward an open position in which said hook may be moved past an apex of said L-shaped slot, whereupon said biasing means will return said movable portion to said locking position.

4,604,823

MINNOW TRAP

Charles Ponzo, 37 Abby La., Shirley, N.Y. 11967

Filed Jul. 16, 1984, Ser. No. 631,333
Int. Cl.[4] A01K *69/10*
U.S. Cl. 43—105 **13 Claims**



1. A minnow trap, comprising in combination:
(a) a frame, shaped like a rectangular parallelepiped covered on the top and bottom and two sides with mesh but having open ends whereby small fish may swim into either of said ends but are prevented from exiting said top or said bottom or said sides due to the separation of the strands of said mesh;
(b) two rectangular frames, covered with mesh wherein each of said rectangular mesh covered frames are suspended from said top to said bottom of said rectangular parallelepiped mesh covered frame slanting toward each other and located at a distance inward from said open ends of said rectangular parallelepiped mesh covered frame to provide a cove for said small fish; further comprising an aperture in the center of each of said rectangular mesh covered frames whereby small fish may enter through either of said apertures but are trapped in the open space between said rectangular mesh covered frames and the interior of said rectangular parallelepiped shaped mesh covered frame; and,
(c) means for collapsing said minnow trap.

4,604,824

LILY PRODUCTS

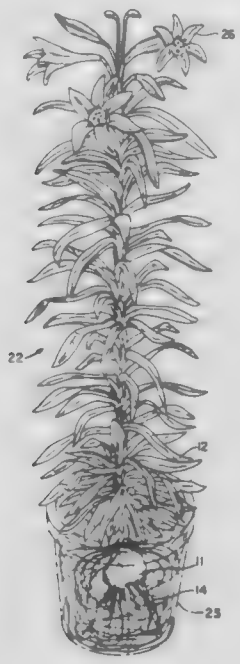
J. Robert Oglevee; James F. Tammen, both of Connellsville, and Wendy O. O'Donovan, Scottdale, all of Pa., assignors to Oglevee Associates, Inc., Connellsville, Pa.

Division of Ser. No. 559,035, Dec. 7, 1983, Pat. No. 4,570,379.
This application Sep. 18, 1985, Ser. No. 777,635
Int. Cl.[4] A01H *3/00*
U.S. Cl. 47—1 A **1 Claim**

1. A *Lilium longiflorum* bulb having a size on the order of two to two and one-half inches and adapted to produce a *Lilium longiflorum* plant when subjected to a method of growing *Lilium longiflorum* comprising:
A. propagating from a substantially pathogen-free lily plant by removing a portion of the plant;
B. growing the portion in a growing media for about ten weeks to form bulblets on the order of 0.6 to 1.2 inches in circumference;
C. digging, grading and cleaning the bulblets;
D. immediately planting the bulblet in a small pot in a greenhouse under aseptic conditions;
E. growing the bulblet under short-day conditions to pre-

vent flowering and establish foliage and roots for about ten weeks to form a young plant;

F. transplanting the young plant to a larger pot and further growing the young plant under short-day conditions for about fourteen weeks to form a plant having on the order of forty to fifty leaves rosette in form and an extensive root system;



G. growing the plant under long-day conditions for about two weeks to initiate flowers; and

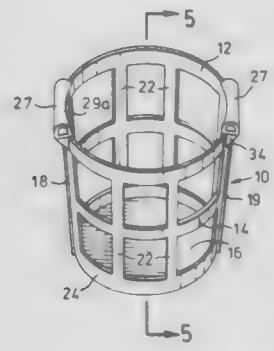
H. growing the plant under natural lighting for up to about three months to a plant of about eighteen to twenty-four inches including the pot with about four to six flowers and about eighty to ninety leaves.

4,604,825

TREE CRADLE

Walter H. Mainprice, R.R. #1, Sunderland, Ontario, Canada (L0C 1H0)

Filed Jan. 22, 1985, Ser. No. 692,991
Int. Cl.[4] A01G *23/04*
U.S. Cl. 47—76 **6 Claims**



1. A cradle for use in transplanting and transporting trees, comprising:

a body having an upper rim member in the shape of a closed loop, two main strap members integral with said rim member at opposed locations thereon and extending downwardly therefrom to terminate at bottom edges,

a bottom wall disposed between said bottom edges and integral therewith,

auxiliary strap members extending between the bottom wall and the upper rim member,

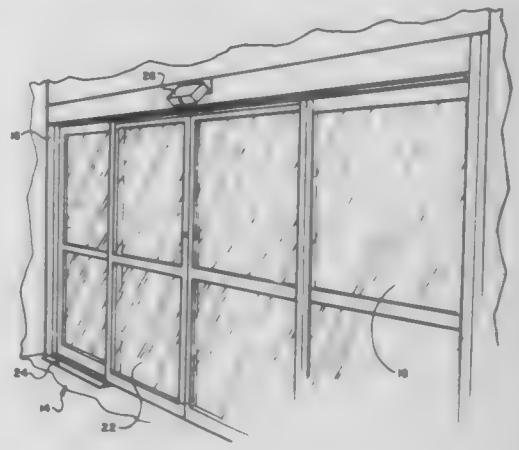
a handle at the top of each main strap member and integral therewith, each handle defining an open ended sleeve parallel with the bottom wall, whereby carrying poles can be inserted through the handles to facilitate manipulation of the cradle, each handle being disposed to the outside of its respective main strap member, the cradle further including reinforcement web means between each handle and its respective main strap member.

4,604,826

AUTOMATIC SLIDING DOOR OPERATOR

Robert Sorber, Charlotte, N.C., assignor to Keane Monroe Corporation, Monroe, N.C.

Filed Oct. 30, 1984, Ser. No. 666,507
Int. Cl.[4] E05F *15/20*
U.S. Cl. 49—31 **5 Claims**



1. In an automatic door control system of the type comprising a frame in which a door is slidably supported for opening and closing movement, driving means for driving said opening and closing movements of said doors, and control means for controlling actuation and de-actuation of said driving means and operative upon each said actuation to cause said door to be moved to provide an opening of a predetermined width, the improvement comprising means operatively associated with said control means for regulating the width of said door opening in relation to the frequency of actuation of said driving means, said regulating means including timing means for determining at any given time whether or not the elapsed time since the last previous cycle of door opening and closing actuation of said driving means is greater or less than a predetermined time value, said timing means being operative on said control means upon each door opening actuation of said driving means for stopping movement of said door beyond a reduced opening of less than said predetermined width when said elapsed time is greater than said predetermined time value and for permitting movement of said door fully to said opening of said predetermined width when said elapsed time is less than said predetermined time value, said regulating means comprising logic circuit means electrically connected with said control means to receive an electrical input signal therefrom upon each said door opening actuation of said driving means, said logic circuit means being arranged to provide different return signals to said control means respectively when said elapsed time is less than and greater than said predetermined time value, said logic circuit means being operatively associated with said control means to cause it to terminate prematurely door opening actuation of said driving means in response to a disenabling one of the return signals representing that said elapsed time exceeds said predetermined time value and to have no altering effect upon door opening actuation of said driving means in response to an enabling one of said return signals representing that said elapsed time is less than said predetermined time value.

4,604,827

HINGED WINDOW-GUARD ASSEMBLY

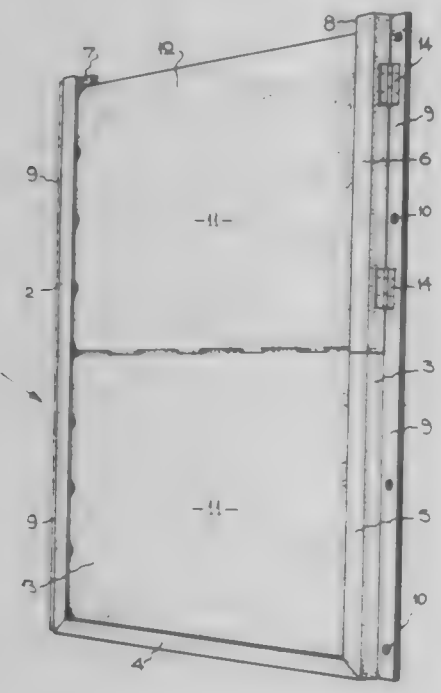
William G. Hitchins, "Fiddawn", New Cascade Road, Australia, Norfolk Island (2899)

Filed Jul. 23, 1985, Ser. No. 758,083
Claims priority, application Australia, Jun. 11, 1985, PH0983
Int. Cl.[4] E06B *3/68*
U.S. Cl. 49—57 **5 Claims**

1. A window guard assembly comprising a frame element

adapted to be affixed to, and to extend about, three sides of a surround of a window opening, and a shutter element receivable in said frame element;

said frame element consisting of three sub-elements each of channel-shaped cross section and having their appropriate respective ends joinable so as to constitute three sides of a rectangle, two of which are adapted to extend vertically adjacent the sides of said window opening and the other of which is adapted to extend horizontally adjacent the lower sill of said window opening, the mouths of the said three channel-shaped sub-elements facing inwardly to thereby define a continuous inwardly-opening channel about the three sides of said window opening; one of said vertically-extending sub-elements being formed in two



vertically-juxtaposed portions, the upper one of which is side-hinged so as to be able to be swung outwardly; said shutter element being composed of at least two portions of horizontally-corrugated cross-section, an upper horizontal edge of each portion except tthe topmost one being formed so as to be able to receive therein a plane edge of an adjacent portion; said shutter element being dimensioned so as to be able to be held sungly, by its lower and side marginal portions, within the said continuous channel when the said hinged upper portion is in the closed position; the arrangement being such that, by virtue of the said hinged upper portion, said shutter element is slidable sideways into said frame element when the lintel of the window closely approaches an eave-line or soffit.

4,604,828

SAFETY DEVICE, IN PARTICULAR FOR AN OVERHEAD DOOR

Dick Baarse, Aalsmeer, Netherlands, assignor to Saturn Limited, Colchester, Great Britain

Filed Mar. 4, 1985, Ser. No. 707,909

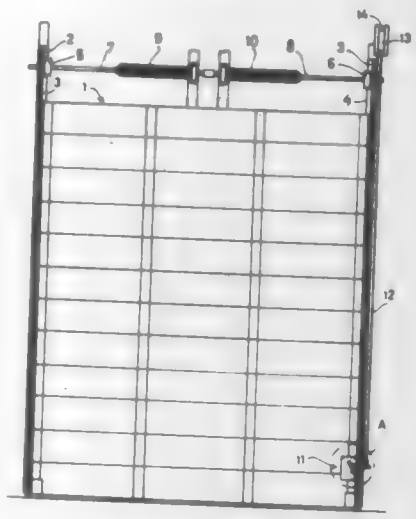
Claims priority, application Netherlands, Mar. 2, 1984, 8400692

Int. Cl.[4] E05D *13/00*

U.S. Cl. 49—322

4 Claims

1. Safety device, in particular for an overhead door, comprising fastening means for blocking the door, which means is operated by an auxiliary cable under tension, which is connected on the one hand to the door and on the other hand to a reel provided with a speed-limiting means, the latter blocking the reel and hence the auxiliary cable when the door exceeds a predetermined rate of descent and the fastening means becomes operative, the auxiliary cable being provided with a breaking element which breaks when the reel is blocked, while the fastening means is under pressure and becomes operative when the tension in the auxiliary cable is removed, a lever-shaped locking lever is fastened rotatably to the door, the lever being connected on the one hand to the auxiliary cable and on the other hand acting upon the fastening means, and the locking lever being capable of holding the fastening means under spring pressure in a non-operative position as a result of the tension in the auxiliary cable, the fastening means is defined by



a bar, which is movably connected to the door so as to engage with one of its outer ends into one of openings in a post attached beside the door, the bar being under pressure from a spring which seeks to press the bar into engagement with the post and being provided with a projecting cam which cooperates with the locking lever.

4,604,829

DOOR WINDOW REGULATOR

Daiichi Shiraishi; Eiji Iwasaki, and Ryoichi Fukumoto, all of Aichi, Japan, assignors to Toyota Jidosha Kabushiki Kaisha and Aisin Seiki Co., Ltd., both of, Japan

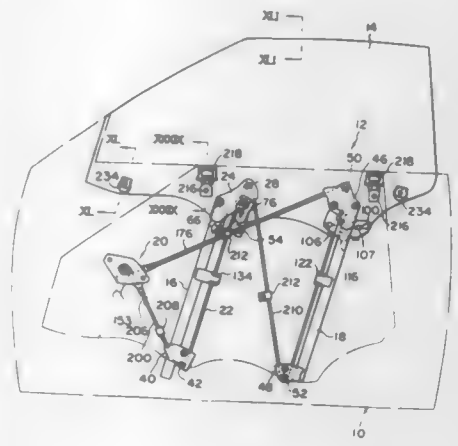
Filed Jun. 5, 1985, Ser. No. 741,442

Claims priority, application Japan, Jun. 6, 1984, 59-83801[U]; Jun. 6, 1984, 59-83802[U]; Jun. 6, 1984, 59-83803[U]

Int. Cl.[4] E05F *11/48*

U.S. Cl. 49—352

32 Claims



1. A door window regulator which vertically moves and guides a door window glass of a vehicle, said regulator comprising:

(a) a pair of parallel guide members secured to a door;

(b) sliders secured to the lower portion of said door window glass and respectively guided by said guide members;

(c) upper and lower pulleys rotatably supported at the upper and lower portions, respectively, of each of said guide members;

(d) a wire stretched between said upper and lower pulleys on each of said guide members and connected to the lower portion of said door window glass at a portion of said wire between said upper and lower pulleys on each of said guide members, said wire being further stretched between said upper pulley on one of said guide members and said

lower pulley on the other guide member and between said lower pulley on said one guide member and said upper pulley on said other guide member so that said wire forms a closed loop;

(e) a driving unit adapted to actuate a portion of said closed loop wire; and

(f) wire tubes respectively interconnecting said driving unit and each of said guide members and interconnecting said guide members, thereby guiding said wire.

4,604,830

FLUSH-SURFACED AUTOMOBILE DOOR ASSEMBLY

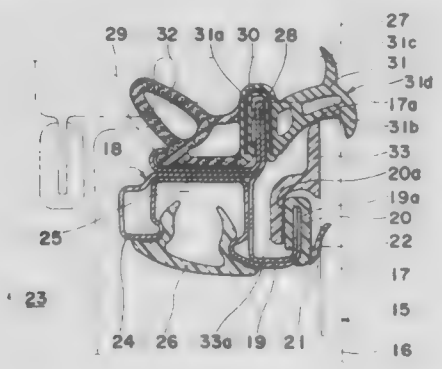
Tatsuo Maeda, and Takeshi Konishi, both of Hiroshima, Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Filed Jan. 25, 1985, Ser. No. 694,817

Claims priority, application Japan, Jan. 31, 1984, 59-12929[U]; Jan. 31, 1984, 59-12930[U]

Int. Cl.[4] E05F *11/38*

U.S. Cl. 49—374 **9 Claims**



1. A door assembly for an automobile having a door body, which comprises:

a window pane adapted to be raised from and lowered into the door body;

a window sash mounted on the top of the door body and positioned generally inwardly of the window pane with respect to the interior of the automobile, said window sash including an inner peripheral flange of generally U-shaped cross section opening in a direct towards and outwardly of a pheripheral edge of the window pane and an outer peripheral fange positioned exteriorly with respect to said inner peripheral flange, said outer peripheral flange carrying a sealing member for sealing a gap between a peripheral edge of the window pane and the window sash; and

a plurality of guide blocks secured to the window pane, each of said plurality of guide blocks having a finger portion slidingly protruding into the U-sectioned space in the inner peripheral flange for guiding the window pane during the raising and lowering thereof from and into the door body.

4,604,831

REDUCTION OF DRAUGHTS THROUGH SLIDING SASH WINDOWS

Robert W. Tunnicliffe, Harrogate, and John M. H. Leighton, Thirsk, both of England, assignors to Ventrolla Limited, North Yorkshire, England

Filed Apr. 13, 1984, Ser. No. 600,329

Claims priority, application United Kingdom, Apr. 15, 1983, 8310299

Int. Cl.[4] E05D *15/16*

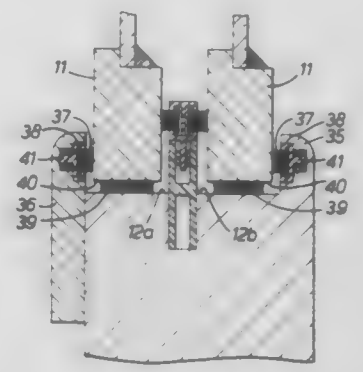
U.S. Cl. 49—434 **6 Claims**

1. A method of reducing draughts through sliding sash windows in which wooden leaves slides in respective side-by-side portions of a wooden frame opening, the portions being separated by a parting bead carried in a slot extending around the frame and lying in a plane parallel to the plan of the leaves, the method comprising:

removing the parting bead to leave said slot,

securing in said slot, an H-shaped base edge strip including means defining a groove,

inserting a seal carrying strip into said means defining a groove, said seal carrying strip defining two oppositely facing channels,



and introducing respective pile weatherstrips into said oppositely facing channels, so that each pile weatherstrip seals against a respective leaf to reduce draughts past the leaves.

4,604,832

EDGE GUARD

Robert Adell, Sunnyvale, Tex., assignor to U.S. Product Development Company, Sunnyvale, Tex.

Continuation of Ser. No. 617,766, Jun. 6, 1984, Pat. No. 4,565,032. This application Oct. 4, 1985, Ser. No. 784,920

Int. Cl.[4] B60J *5/00*

U.S. Cl. 49—462 **12 Claims**

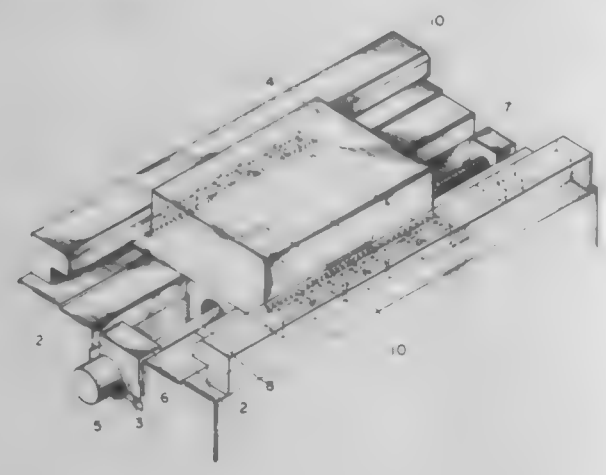


9. In an ornamental and protective edge guard of generally channel-shaped cross section comprising inner and outer legs via which the edge guard is self-retaining on the edge of a sheet metal panel of a vehicle body when the edge guard is installed thereon, the edge guard comprising a metal strip formed to a generally channel-shaped cross section with the sides of the channel constituting the legs of the edge guard, and an insulating layer secured to the metal strip, the improvement comprising a bead at the distal end of one leg comprising a double thickness fold of the metal strip folded back onto the one leg so that there are three thicknesses of metal at the distal end of the one leg and said bead also comprising at least two thicknesses of said insulating layer wherein the two thicknesses of insulating layer are not in surface-to-surface confrontation with each other but wherein one of the two thicknesses of insulating layer is disposed on the distal end of the leg so as to insulate the metal of the strip from that of the sheet metal panel, and in which said insulating material is selectively disposed on both sides of the metal strip which become the major portions of the exterior and interior of the channel-shaped cross section and covers the entirety of each of said sides.

4,604,833
TABLE MECHANISM

Sosaku Kimura, Nerima; Takeshi Okabe, Hino, and Toshikazu Hatsuse, Tanashi, all of Japan, assignors to Citizen Watch Co., Ltd., Tokyo, Japan

Filed Dec. 10, 1985, Ser. No. 807,311
Claims priority, application Japan, Jul. 2, 1985, 60-145113
Int. Cl.[4] B24B *41/06*
U.S. Cl. 51—165.8 3 Claims

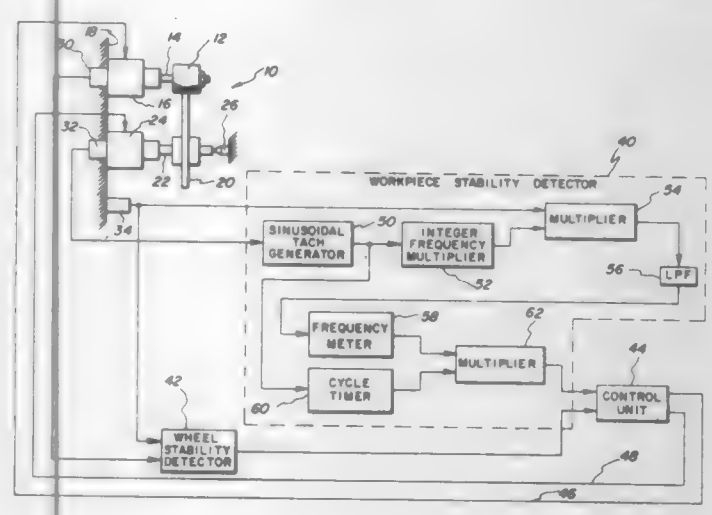


1. A table mechanism comprising:
(1) a bed;
(2) a horizontal guide and a vertical guide of said bed or formed on said bed;
(3) a pair of supports fixed to said bed;
(4) a motor fixed to one of said pair of supports;
(5) a feed screw supported rotatably by said supports, connected to said motor and adapted to be turned by said motor;
(6) a first table including nuts for screwing onto said feed screw and having a lower extension engagedly guided by said vertical guide and horizontal extensions engagedly guided by said horizontal guide, said first table moving straight through said nuts screwed onto said feed screw connected to said motor and adapted to be turned by said motor;
(7) a second table having lower extensions engagedly guided by said vertical guide and horizontal extensions engagedly guided by said horizontal guide;
(8) wherein, of the opposite surfaces between the lower extension of the first table and each of the lower extensions of the second table, on a pair of opposite surfaces opposed at right angles to a direction of movement of said tables, hydrostatically coupling portions comprising hydrostatic pads are formed; and between the upper surfaces of the horizontal extensions of both the tables and said horizontal guide, and between the lower surfaces of the horizontal extensions of both the tables and said horizontal guide, hydrostatically supporting horizontal portions comprising hydrostatic pads are formed;
(9) gap detecting means on said hydrostatically coupling portions for detecting gaps in said hydrostatically coupling portions;
(10) second table position detecting means provided on said second table for detecting an amount of movement of said second table;
(11) a control unit for giving a movement command to said first table, computing a difference between said movement command value and the value of movement from the second table position detecting means for detecting the amount of movement of said second table, and giving a position correcting command to the second table;
(12) a first error detecting means for detecting a difference between the second table position correcting signal from the control unit and the gap detecting signal from said gap detecting means, and producing an error signal;
(13) a servo amplifier for amplifying said error signal; and
(14) a servo valve for supplying differential pressures to said hydrostatically coupling portions in synchronism with the error signal of said servo amplifier;
(15) wherein said second table is first moved by the movement of the first table which has been moved under the movement command from the control unit and by hydrostatically coupling forces produced between the first table and the second table, and then positioned precisely by supplying differential pressures to the hydrostatically coupling portions of the first and second tables under the position correcting command from the control unit.

4,604,834
METHOD AND APPARATUS FOR OPTIMIZING GRINDING

Robert A. Thompson, Quaker Street, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Oct. 3, 1985, Ser. No. 783,599
Int. Cl.[4] B24B *49/02*
U.S. Cl. 51—165.71 20 Claims

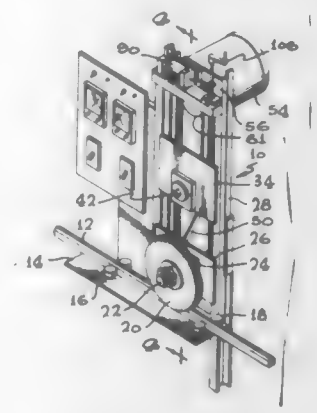


1. Apparatus for optimizing a grinding process which includes a rotating grinding wheel and a rotating workpiece, the apparatus comprising first means for measuring a wheel lobe precession parameter representative of the precession of lobes about the grinding wheel; second means for measuring a workpiece lobe precession parameter representative of the precession of lobes about the workpiece; and third means responsive to the measured lobe precession parameters for determining a chatter growth index representative of the rate of chatter growth in the grinding process.

4,604,835
APPARATUS FOR AUTOMATIC MAINTENANCE OF SURFACE SPEED AND WORK-BEARING FORCE FOR ROTARY TOOL APPARATUS

Charles Borin, 19328 Halstead St., Northridge, Calif. 91324

Filed Sep. 12, 1984, Ser. No. 649,759
Int. Cl.[4] B24B *49/16*
U.S. Cl. 51—165.87 18 Claims



1. An apparatus for automatic maintenance of surface speed

of a rotary tool which acts on a work piece advancing therepast comprising:

guide means defining a path for the advance of the work piece;

support means for mounting a rotary tool shaft for supporting the rotary tool with respect to said path;

a drive motor connected to drive the rotary tool;

means for sensing the size of the rotary tool; and

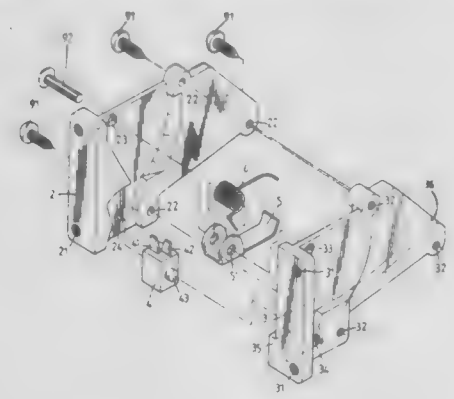
variable speed means connected between said motor and said rotary tool shaft for driving said rotary tool shaft, said variable speed means being a driving shaft connected to be driven by said drive motor and a driven shaft connected to drive said rotary tool shaft, a V-belt pulley fixed to one of said drive and driven shafts and a variable V-belt pulley connected to the other of said drive and driven shafts, said variable pulley having spaced V-belt flanges urged toward each other, a V-belt engaged on both of said pulleys so that said drive shaft drives said driven shaft at a speed ratio governed by the effective pitch diameter of said V-belt on said variable V-belt pulley, V-belt tension of said V-belt urging said drive and said driven shafts toward each other, one of said drive and driven shafts being movably mounted so that it can move toward the other of said drive and driven shafts, a stop post and a plurality of stacked stop fingers connected between said drive and driven shafts to maintain the spacing therebetween, said means for sensing the size of the rotary tool being connected to control said stop fingers so that said stop fingers are moved away from said stop post in order to permit said drive and driven shafts to move closer to each other to change the effective pitch diameter of said V-belt on said variable V-belt pulley to change the speed ratio between said driving and driven shafts so that said variable speed means for driving said rotary tool shaft automatically drives said rotary tool shaft at a greater rotative speed as the rotary tool wears in order to maintain automatically substantially constant surface speed of the rotary tool.

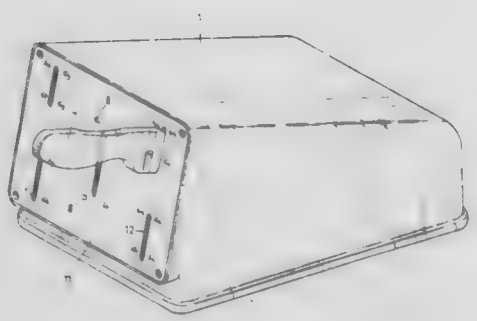
4,604,836

SAFETY CUTLERY CASE WITH SHARPENING DEVICE

Francke L. D. Huang, 300, Nan Ta Wan, Yung Kang Village, Tainan, Taiwan

Filed Dec. 17, 1984, Ser. No. 682,275
Int. Cl.[4] B24B *3/54;* B24D *15/08*
U.S. Cl. 51—214 **2 Claims**





1. A device for storing and sharpening cutlery comprising:

(a) a case defining an interior storage space;

(b) a front panel defining a plurality of slots to facilitate the passage of a cutlery blade therethrough;

(c) attachment means removably and reversibly attaching the front panel to the casing;

(d) a pair of side members attached to the front panel on either side of each slot so as to define a cutlery blade passage therebetween;

(e) sharpening means pivotally attached between the pair of side members; and

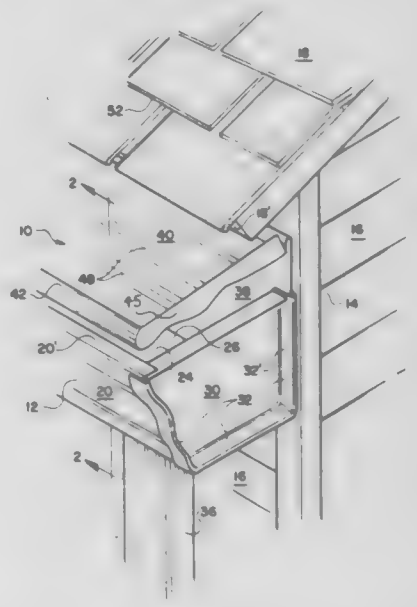
(f) spring biased means pivotally mounted between the pair of side members bearing against a cutlery blade so as to urge a cutting edge of the cutlery against said sharpening means as the cutlery is inserted into or withdrawn from the case.

4,604,837

COVER MEMBER FOR RAIN GUTTERS

Tony D. Beam, P.O. Box 777, Stanley, N.C. 28164

Filed Sep. 13, 1985, Ser. No. 775,604
Int. Cl.[4] E04D *13/00*
U.S. Cl. 52—12 **24 Claims**



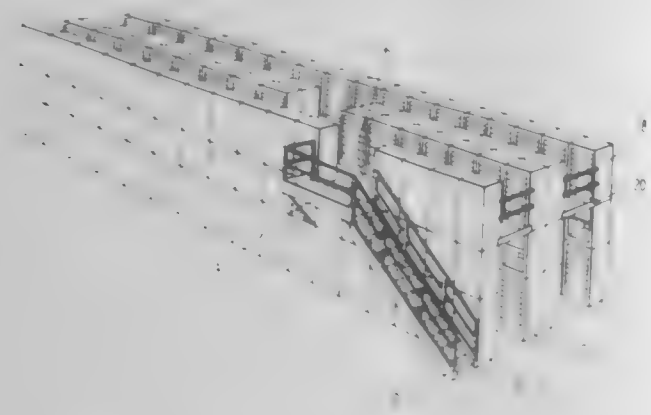
13. In combination with a building structure including a roof having a terminal edge and including further a gutter of the type having spaced upright front and rear walls and a bottom wall extending therebetween forming a collecting trough having an open top, said gutter being mounted to said building structure below said terminal edge of said roof with said rear wall most closely adjacent said building structure for collecting water runoff from said roof, a cover member affixed over said open top of said gutter for directing water runoff to flow thereinto while preventing leaves and debris from entering said gutter, said cover member comprising a cover plate portion being disposed in covering relation over said open top of said gutter with said rearward region extending along said rear wall and beneath said terminal edge of said roof and with said forward region extending along said front wall and outwardly of said terminal edge of said roof, and lip means extending along said forward region and extending upwardly with respect to said forward region, said lip means having a rearwardly facing dam surface to form a dam to water runoff from said roof flowing across said cover plate portion to slow the speed of water runoff from said roof and having a curved forwardly-facing outward surface to cause water runoff flowing over said lip means to flow along said curved outward surface and into said gutter while causing leaves and debris flowing with said water runoff to fall gravitationally over said lip means outwardly of said front wall of said gutter.

4,604,838

MODULAR MEZZANINE STRUCTURE FOR A STORAGE FACILITY AND METHOD OF ASSEMBLY

John L. Remington, Coplay, and Jon A. Boyer, Allentown, both of Pa., assignors to The Stanley Works, New Britain, Conn.

Filed Nov. 3, 1983, Ser. No. 548,504
Int. Cl.[4] A47B *45/00*
U.S. Cl. 52—73 11 Claims



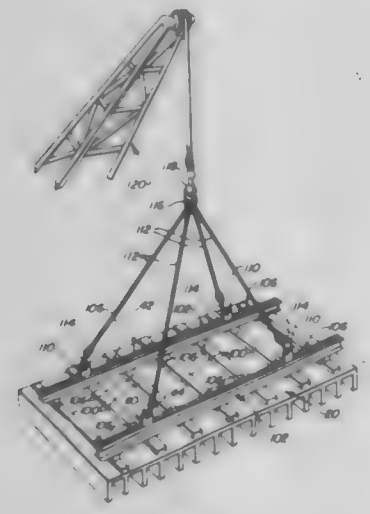
1. A modular mezzanine structure for ready attachment to preexisting storage cabinet structure, the storage cabinet structure comprising a plurality of storage cabinets stacked one on top of the other to a predetermined height, the stacks being arranged side by side in rows and the rows being parallel to each other in face to face relation and spaced apart a predetermined distance, each of the storage cabinets in the rows being formed with preexisting spaced apertures therein, said modular mezzanine structure comprising modular support means for supporting said mezzanine structure, said support means comprising brackets of predetermined length and having feet attached thereto at spaced locations thereon, the length of said brackets being predetermined in relation to the width of the storage cabinets, said feet having dimensions and relative spacing therebetween corresponding to the dimensions and relative spacing of the preexisting apertures in the storage cabinets and adapted for insertion into the apertures to support said brackets, said brackets being paired for application to the facing rows of storage cabinet structures so that said brackets extend along the length of each of the facing rows, and modular platform means adapted for support by said brackets between the facing rows of storage cabinet structure.

4,604,839

TOMB MODULE

John M. Esposito, 130 High Holborn, Lake Forest, Ill. 60045

Filed May 3, 1984, Ser. No. 606,877
Int. Cl.[4] E04H *13/00*; E04F *17/00*
U.S. Cl. 52—124.2 5 Claims



1. A transportable mausoleum assembly including a unitarily cast concrete tomb module having at least five compartments, comprising:

a roof panel;

at least six divider panels unitarily formed with the roof panel, said divider panels projecting downwardly from the roof panel at even spacings to define the compartments therebetween;

a brace having a pair of transverse members rigidly fixing a plurality of longitudinal members substantially in alignment in a plane parallel to the roof panel, said longitudinal members being spaced at multiples of three or less of the divider panel spacings; and

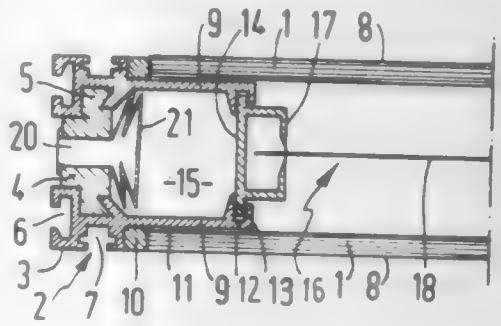
means for securing the longitudinal members to the roof panel and selected divider panels.

4,604,840

DOUBLE GLAZING AND A PROCESS FOR OBTAINING IT

Charles Mondon, 7 bis avenue du Général Leclerc, 91330 Yerres, France

Filed Mar. 26, 1984, Ser. No. 593,387
Claims priority, application France, Mar. 28, 1983, 83 05053
Int. Cl.[4] E06B *7/12*
U.S. Cl. 52—172 11 Claims



1. A glazing comprising two panes located opposite one another and retained by a rigid frame provided with leakproofing means, said frame having sections which are contained completely in the gap defined by the planes of the outer faces of the panes, which sections bear on inner faces of the panes and which sections are fastened to the panes by an anchor preventing the panes from moving apart, said sections having wings and a shape toward the outside of the glazing which allows direct attachment of accessories so as to enable the glazing to interact with a fixed surround, said frame being provided with at least one deformable and leakproof member for equalizing pressure between the outside and inside of the glazing, said member being independent of said leakproofing means and being located on the inside of the glazing in relation to said sections, said frame being also provided with at least one auxiliary member being supported by said wings with projections of one of said auxiliary member and said sections penetrating into grooves of the other of said auxiliary member and said sections with clearance, said auxiliary member dividing the inner space of the glazing into two communicating chambers which are subjected to the same pressure, one of said chambers being peripheral and containing said pressure-equalizing member, said auxiliary member being so made and shaped as to enable said pressure-equalizing member to be wholly protected against the radiation penetrating through the panes, said pressure equalizing member being a pocket in the form of a bellows.

6. A process for producing a glazing comprising the steps of: providing frame sections with a pressure-equalizing member in the form of a bellows; bonding the sections to one another and to two opposing panes to form a leakproof assembly; partitioning space enclosed by said panes and said frame into a first, peripheral chamber and a second chamber in communication with said first chamber by placing an auxiliary member between said sections with projections of one of said auxiliary member and said sections fitting grooves of the other of said auxiliary member and said sections with clearance; locating said pressure-equalizing member within said peripheral cham-

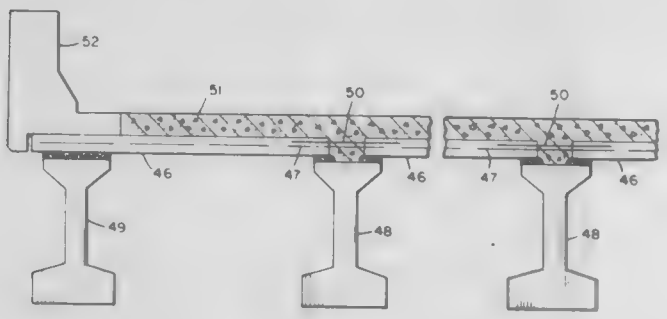
ber so as to wholly protect the pressure-equalizing member against radiation penetrating said panes; after bonding, producing a pressure difference between the two faces of the equalizing member through a sealable orifice in one section and communicating with an interior of the glazing, this pressure difference being such that the average shape of said equalizing member during use will be intermediate between its extreme shapes and subsequently sealing off communications between the interior of the glazing and the outside at least up to the moment when the glazing is used.

4,604,841

CONTINUOUS, PRECAST, PRESTRESSED CONCRETE BRIDGE DECK PANEL FORMS, PRECAST PARAPETS, AND METHOD OF CONSTRUCTION

Robert M. Barnoff, 606 Nimitz Ave., State College, Pa. 16801, and Gordon A. Nagle, P.O. Box 74, R.D. #1, Orwigsburg, Pa. 17961

Filed Apr. 1, 1983, Ser. No. 481,311
Int. Cl.[4] E01D *19/02*
U.S. Cl. 52—174 **5 Claims**



1. In a bridge structure adapted for a long span bridge, comprising in part of supporting beams extending longitudinally the length of the bridge span, said supporting beams themselves being supported by the bridge foundations, the combination comprising:

premanufactured, prefabricated and prestressed partial depth cement concrete panels positioned continuously in a general transverse direction, with a space in between each panel, over supporting beams and supported thereby, said panels comprising:

a plurality of prestressing cables extending within and through said panels in a general perpendicular direction to said supporting bridge beams;

said prestressing cables extending continuously through each panel, through the space in between and through the adjacent panel;

said prestressing cables extending continuously through said panels in an approximate perpendicular direction to the direction of the said supporting beams;

a roughened top surface of said concrete panel to permit bonding;

a cast-in-place cement concrete topping placed on the top surface of said concrete panel to form a smooth continuous top surface thereon, said concrete topping bonded to said concrete roughened top surface panel which when hardened forms a portion of the structural system in conjunction with said panel and bears loads impinging upon said cement concrete topping;

reinforcing members placed within said cement concrete topping, said topping adapted to bond with said panel and in combination therewith act as a structural member;

a shear connecting dowel connecting each of said adjacent panels and extending across the space in between;

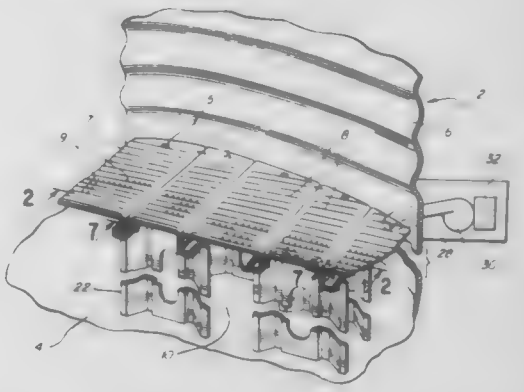
haunches positioned between said panel and said beam, said haunches being of appropriate height to position the top surface of said panel.

4,604,842

DRYING BIN FLOOR

Eugene G. Sukup, Beeds Lake, Hampton, Iowa 50441

Filed Feb. 28, 1985, Ser. No. 706,489
Int. Cl.[4] E04B *1/70*
U.S. Cl. 52—263 **19 Claims**



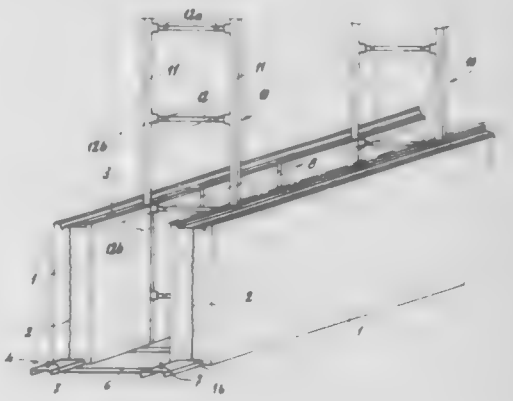
1. A perforate grain bin floor assembly for a supported floor having a space therebeneath comprising a series of elongated panels of formed sheet material, each of said panels having a generally planar top portion and depending flanges along each longitudinal edge of said top portion, said top portions of successive panels in said series being perforate to permit the passage of air therethrough and being contiguous to one another along said longitudinal edges of said top portions, each of said flanges of alternate panels in said series extending downward and outward from the respective edge of the top portion thereof, each of said flanges of each of said panels which intervenes between said alternate panels extending downward and inward from the respective edge of the top portion of such intervening panel and engaging in nesting relation with the respective adjacent flange of the adjacent alternate panel, whereby said top portions form a generally continuous planar floor surface while permitting the passage of air therethrough, and each of said intervening panels may be selectively lifted from said assembly for access to the space subjacent said panels.

4,604,843

LOST-FORM CONCRETE FALSEWORK

Renaud P. L. Ott, Saint Laurent Du Pont, and Georges E. P. Jalabert, Saint Ismier, both of France, assignors to Societe Anonyme Dite "Etablissements Paturle" , Saint Laurent Du Pont, France

Filed Feb. 8, 1984, Ser. No. 577,959
Claims priority, application France, Feb. 8, 1983, 83 02166; Sep. 28, 1983, 83 15742
Int. Cl.[4] E04B *1/00*
U.S. Cl. 52—426 **20 Claims**



1. A lost concrete form comprising:

a multiplicity of slabs adapted to remain in place subsequent to the casting of concrete in the form and including at least two slabs in horizontally spaced upright orientation in at least one tier; and

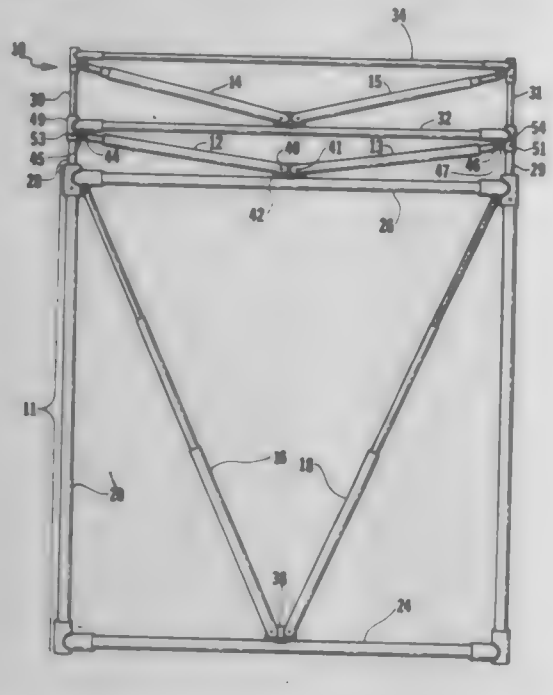
a plurality of rigid ladder-like connecting elements each having a pair of longitudinal members each resting upon an upper edge of a respective one of said slabs, said longitudinal members and said upper edges of said slabs having mutually engaging formations anchoring said longitudinal members to slabs, each ladder-like connecting element further having a plurality of mutually parallel transverse members bridging said longitudinal members and rigidly connected thereto, spanning between said slabs and anchored in the concrete upon the casting thereof between said slabs whereby said connecting elements retain said slabs on the concrete structure resulting from the hardening of concrete cast between said slabs.

4,604,844

DEPLOYABLE M-BRACED TRUSS STRUCTURE

Martin M. Mikulas, Jr., Williamsburg, and Marvin D. Rhodes, Yorktown, both of Va., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Jul. 30, 1985, Ser. No. 760,378
Int. Cl.[4] E04H *12/18*; E04G *25/04*
U.S. Cl. 52—632 **5 Claims**



4. An M-braced truss structure comprising:
a plurality of interconnected truss sections,
each said truss section having at least one elongated structural cross-member or batten,
at least one axial structural member or longeron attached to each end of said batten,
a pair of diagonal structural members hingedly connected at one end thereof substantially intermediate said batten and hingedly connected at the other end thereof to an end of one said longeron, and
each said longeron and each said diagonal being formed of telescoping segments and adapted to be moved from a stowed compressed position to an expanded operative truss structure.

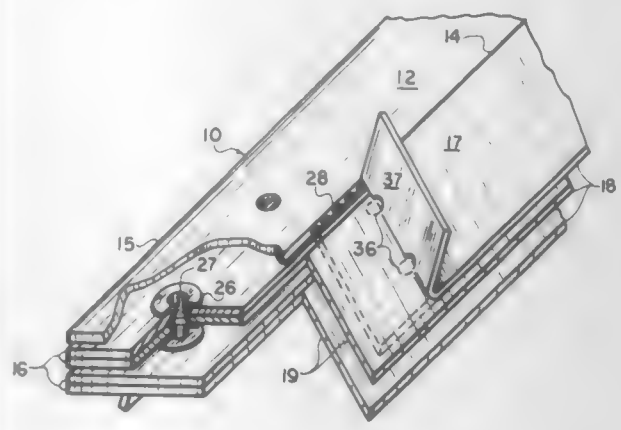
4,604,845

CONTINUOUS PIVOTED SPACING TIE

Sheridan F. Brinker, 1621 Sweem St., Oroville, Calif. 95965

Continuation-in-part of Ser. No. 623,509, Jun. 22, 1984. This application Feb. 13, 1985, Ser. No. 701,186
Int. Cl.[4] E04C *3/02*
U.S. Cl. 52—696 **8 Claims**

1. A spacing brace apparatus for temporarily interconnecting a number of wooden structural members in a parallel array comprising a series of rigid spacer segments of equal length pivotably interengaged in a manner permitting nested stacking in a storage state and rapid deployment to a linearly sequenced working state, each spacer segment being of substantially integral construction and comprised of: (a) a top panel of flat rectangular configuration elongated about a center longitudinal axis and having parallel first and second long side edges extending between short edge extremities which define the length of said panel, (b) a side panel of elongated flat rectangular configuration emergent from alternating first and second long side edges of successive spacer segments, said side panel



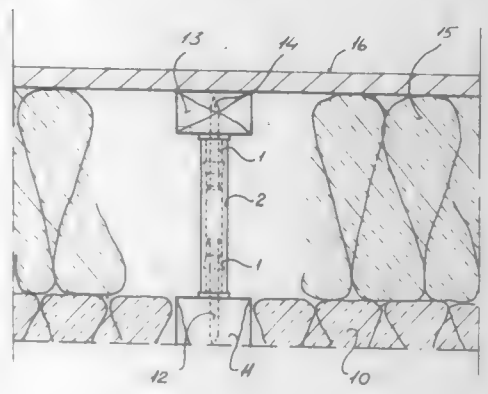
being of shorter length than said top panel and angled thereto, (c) tangs disposed at each extremity of said top panels as portions thereof extending beyond the length of the associated side panel, (d) fasteners located within said tangs and adapted to pivotably interengage adjacent spacer segments, and (e) a nail receiving aperture located within said fasteners, the first and last spacer segments of said series having free distal extremities whose tangs are without said fasteners.

4,604,846

ANCHORAGE DEVICE

Leif E. J. Ekström, Matterödsgaten 16, 282 00 Tyringe, Sweden

Filed Jan. 29, 1985, Ser. No. 699,511
Claims priority, application Sweden, Feb. 10, 1984, 8400713
Int. Cl.[4] E04B *1/38*
U.S. Cl. 52—704 **7 Claims**



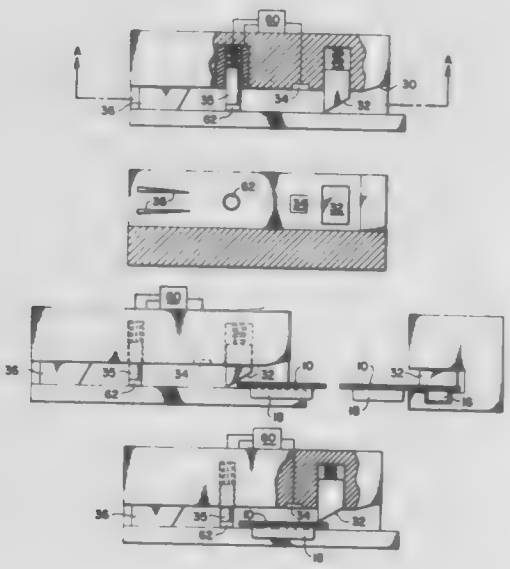
1. A device for anchoring a first element to a second element, said elements being spaced apart with respect to one another, comprising; a cylindrical plug-like member having a longitudinal bore for receiving a fastener which anchors said plug-like member to said first element, a spacer adapted to be fixed to the second said element; said plug-like member and said spacer having ends which are provided with mutually cooperable snap-like locks which are operable to connect the plug-like member and the spacer and their associated elements to one another, said plug-like member having a foot for abutting against said first element, said spacer having at at least one end a hole dimensioned so as to receive said plug-like member.

4,604,847

MEDICINE PACKAGE, METHOD OF OPENING THE PACKAGE, AND MACHINE FOR PERFORMING THE METHOD

Thomas S. Moulding, Jr., 1954 Glencoe St., Denver, Colo. 80220, and Donald G. Ellis, Geneva Park, Boulder, Colo. 80302

Filed Sep. 14, 1983, Ser. No. 532,038
Int. Cl.[4] B65B *43/26*
U.S. Cl. 53—75 126 Claims



1. A machine for opening a package, the package having a reservoir and bearing a code indicating information concerning the characteristics of the contents thereof, comprising:

means for guiding the code bearing portion of the package along a selected path;

means for deciphering the code as the code bearing package portion travels forward along the path; and

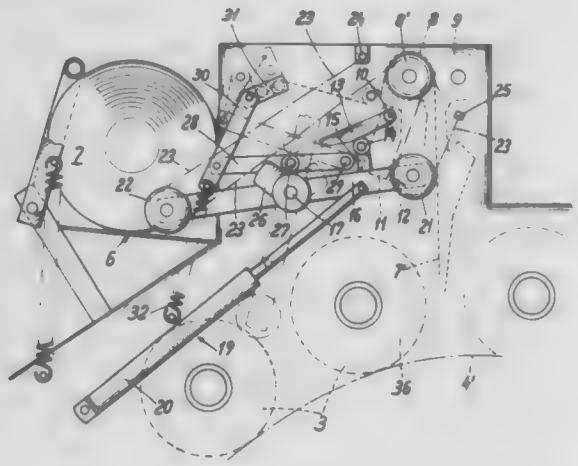
means for cutting the package when the code bearing package portion travels forward along the path.

4,604,848

LARGE BALING PRESS

Gerhard Clostermeyer, Gutersloh, Fed. Rep. of Germany, assignor to Claas Ohg, Harsewinkel, Fed. Rep. of Germany

Filed Jun. 28, 1985, Ser. No. 750,752
Claims priority, application Fed. Rep. of Germany, Jul. 4, 1984, 3424567
Int. Cl.[4] B65B *11/04*
U.S. Cl. 53—118 9 Claims



1. A large baling press for forming bales of agricultural products, comprising means forming a pressing chamber for pressing a bale and including side walls which limit said pressing chamber laterally and a plurality of driven winding elements which limit said pressing chamber peripherally; means for supplying a web material to wrap a finished bale so that a portion of the web material with a predetermined length is pulled from said supplying means by the bale and said winding elements; means for cutting the pulled portion of the web material and including a cutter; and braking means acting upon the pulled portion of the web material and including two rods which are wrapped around by the web material and provided with means for rotatably mounting one of said rods around its own axis and means for turning the other of said rods around and parallel to said one rod

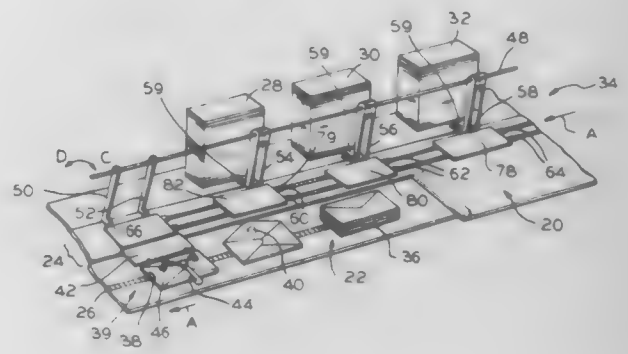
wherein said means for turning said other rod includes a turning arm having two ends of which one end is fixedly connected with said one rotatable rod to rotate said arm, a shackle articulately connected with the other end of said turning arm, spring means connected to said shackle for biasing said other rod into the path of the web material for braking the web, and a lifting arm engaging said shackle against said spring means for moving said other rod out of the path of the web material.

4,604,849

INSERTION MACHINE DRIVE

Edward H. Zemke, deceased, late of Chicago, Ill. (by Anne Zemke, legal representative); Kenneth L. Guenther, Park Ridge, Ill., and Gerald D. Warden, Easton, Pa., assignors to Bell & Howell, Chicago, Ill.

Filed Sep. 7, 1984, Ser. No. 648,640
Int. Cl.[4] B65B *43/30;* B65H *29/12*
U.S. Cl. 53—266 A 22 Claims



1. A common power drive for a stationary device and for a moveable device adapted to move back and forth over a fixed excursion relative to the stationary device, said common power drive comprising a stationary means having at least one rotary power output means, a parallelogram drive means operated responsive to power delivered by said power output means, said moveable device comprising one side of said parallelogram, a pair of spaced parallel drive linkages of fixed length connected to opposite ends of said moveable device, each of said spaced parallel linkages having a free end, means for restraining said free ends of said linkages in the directions of said movement of said moveable device while enabling a free floating in a direction which extends angularly relative to said movement, and means for delivering power from said power output means to the free ends of said spaced parallel linkages; wherein said power drive is part of an insertion machine, said stationary device includes at least one means for delivering inserts to a stuffing position and said moveable device comprising means for delivering envelopes opposite said inserts at said stuffing position, said excursion of said moveable device providing means for aligning the inserts and envelopes at said stuffing position; wherein each of said drive linkages comprises an elongated mechanical link of fixed length having a rotating wheel on each of the opposite ends of said link, a running belt trained over each of the wheels on said link, and a pair of running belts extending from said output means to a wheel on said free ends of an individually associated one of said links, whereby the excursions of said moveable device are distrib-

uted over four running belts associated with said pair of spaced parallel drive linkages and said output power means.

4,604,850

PACK FOR FLUID FILLING MATERIALS WITH RECLOSABLE OPENING DEVICE

Wilhelm Reil, Beusheim, Fed. Rep. of Germany, assignor to Tetra Pak Developpement S.A., Pully, Switzerland

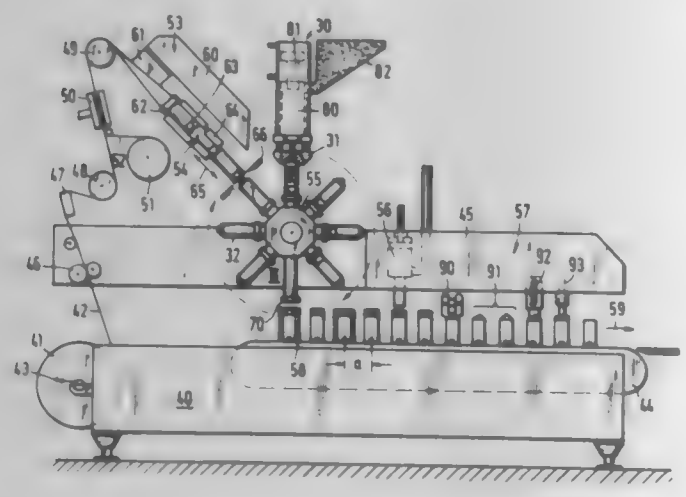
Division of Ser. No. 319,907, Nov. 10, 1981, abandoned. This application Jul. 17, 1984, Ser. No. 631,152

Claims priority, application Fed. Rep. of Germany, Nov. 15, 1980, 3043134

Int. Cl.[4] B65B *3/04*

U.S. Cl. 53—423

22 Claims



1. An apparatus for making a container comprising tube forming, cover molding, container filling and base sealing stations, the tube forming station comprising means for forming fold impressions on a continuous web of container supporting material, means for shaping the continuous web of material into a strand of connected tubular container bodies with fold impressions, means for sealing the longitudinal edges of said strand, means for advancing the tubular strand and severing the strand into separate bodies of partially assembled containers with said fold impressions; the cover molding station comprising means for receiving and positioning severed tubular bodies from the tube forming station, said cover molding station including means for molding thermoplastic covers onto the tubular bodies and means for removing containers from the receiving and positioning means, said apparatus having means for receiving the covered containers from the cover molding station for filling at the filling station and means for sealing the container base at the base sealing station.

4,604,851

METHOD AND APPARATUS FOR THE INTERMEDIATE STORAGE OF PRINTED PRODUCTS ARRIVING IN AN IMBRICATED PRODUCT FORMATION SUCH AS NEWSPAPERS, PERIODICALS AND THE LIKE

Walter Reist, Hinwil, Switzerland, assignor to Ferag AG, Hinwil, Switzerland

Filed Jun. 4, 1984, Ser. No. 616,677

Claims priority, application Switzerland, Jun. 9, 1983, 3159/83

Int. Cl.[4] B65B *63/04;* B65H *29/70*

U.S. Cl. 53—430

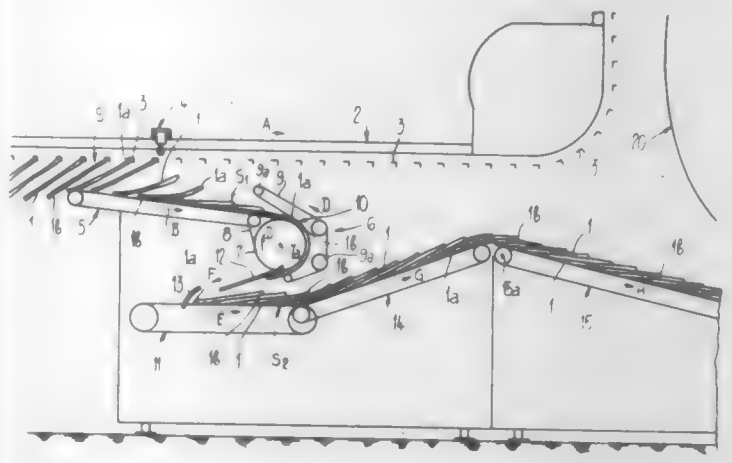
22 Claims

1. A method for the intermediate storage of printed products arriving in an imbricated product formation, comprising the steps of:

delivering said printed products in an imbricated product formation with predetermined edges of the printed products trailing;

altering the position of the printed products within said imbricated product formation such that said predetermined edges now lead and upper sides of the printed products become lower sides; and

winding up the printed products in imbricated product formation upon a winding mandril and conjointly with a winding band maintained under tension to form a wound



product package with the predetermined, now leading, edges in contact with a next inner layer of the wound product package being formed.

4,604,852

PROCESS AND APPARATUS FOR PRODUCING CONSECUTIVE PACKAGES FOR DRINKING STRAWS OR THE LIKE

Gert Becker, Bremen, Fed. Rep. of Germany, assignor to Overbeck GmbH & Co., Bremen, Fed. Rep. of Germany

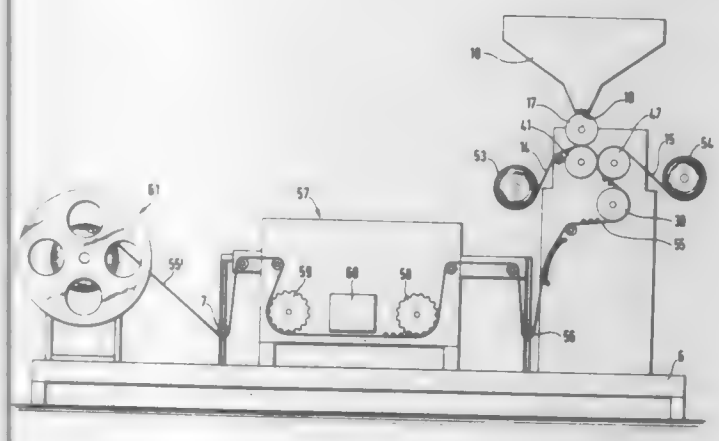
Filed Feb. 24, 1984, Ser. No. 583,263

Claims priority, application Fed. Rep. of Germany, Mar. 5, 1983, 3307941

Int. Cl.[4] B65B *19/34*

U.S. Cl. 53—444

19 Claims



1. A process for producing consecutive packages for drinking straws, or the like, that are received spaced from one another between two foil sheets secured to one another, said method comprising:

(a) providing a supply funnel for a plurality of drinking straws arranged in parallel relationship, said supply funnel including a discharge opening having a width greater than the diameters of two straws;

(b) providing a first carrier for receiving and carrying drinking straws in parallel, spaced relationship, said carrier having a plurality of spaced, parallel grooves, each groove adapted to receive a single straw;

(c) moving said first carrier past said funnel discharge opening to deposit individual straws in individual grooves in said first carrier;

(d) retaining the straws in the grooves by means of suction;

(e) providing a second carrier for receiving and carrying straws in parallel, spaced relationship, said second carrier having a plurality of spaced, parallel grooves, each groove adapted to receive a signle straw;

(f) passing a first packaging foil over the surface of said second carrier;

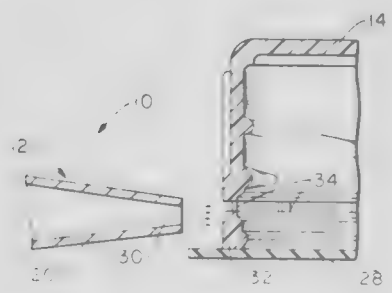
(g) carrying the straws by means of said first carrier to said second carrier;
(h) positively transferring individual straws from the grooves in said first carrier to the grooves in said second carrier with movable transfer means;
(i) simultaneously pressing the transferred straws and the packaging foil into the grooves in said second carrier;
(j) passing a second packaging foil over said first packaging foil to enclose the straws therebetween;
(k) joining together the first and second foils outwardly of the straws to form a band of spaced, parallel straws positioned between the first and second foils; and
(l) forming spaced cuts in said band between consecutive straws.

4,604,853

METHOD AND APPARATUS FOR SEALING A CONTAINER WITH A TAMPER-EVIDENT CLOSURE

Leman P. Albrecht, and Darwin L. Ellis, both of Richmond, Ind., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed Dec. 3, 1984, Ser. No. 677,283
Int. Cl.[4] B65B *7/28*
U.S. Cl. 53—487 **4 Claims**



1. The method of sealing a container with a mechanical lock type tamper-evident closure comprising the steps of:
providing such a closure with
a preformed thermoplastic tamper-indicating portion which is configured to cooperate with a container to provide visible indication of tampering upon first removal of the closure from the container;
applying heat to said tamper indicating portion to induce an increase in the flexibility thereof sufficient to permit application of the closure to a container without damage to said tamper-indicating portion;
maintaining said increased flexibility for a limited period;
applying said closure to a container during said limited period; and
permitting said closure to return to said normal flexibility whereby, upon subsequent removal of said closure from said container, said tamper-indicating portion will provide said visible indication of tampering.

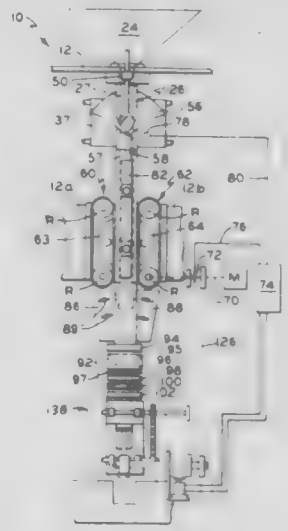
4,604,854

MACHINE FOR FORMING, FILLING AND SEALING BAGS

David W. Andreas, Minneapolis, Minn., assignor to Golden Valley Foods Inc, Eden Prairie, Minn.

Filed Dec. 5, 1983, Ser. No. 557,752
Int. Cl.[4] B65B *9/06*
U.S. Cl. 53—552 **12 Claims**

12. In a vertical form, fill and seal packaging machine for forming bags from flexible packaging material including a tube former for forming packaging material into a tube with overlapping edges to provide a series of flexible packages, a dispenser for a product and a product transfer tube having an inlet at its upper end and, extending downwardly through the tube former and a drive means for advancing the flexible packaging material over the tube former and downwardly around the transfer tube, the improvement comprising first and second vertically disposed longitudinally extending spaced apart tube forming plates disposed on opposite sides of the product transfer tube to form the front and rear surfaces of the bag with gusset forming blades between the plates for forcing portions of the flexible tube into a region between the plates, said plates having substantially parallel upper portions and lower portions having lower ends which converge toward one another proceeding toward their lower ends in the region of the gusset forming blades, said transfer tube having a side opening at its lower end adapted to expel product passing downwardly therethrough laterally toward one side of the bag, one of said plates adjacent to the opening in the dispensing tube having a vertically disposed slot therein extending upwardly from its lower end, whereby the end of the second plate is bifurcated and includes spaced apart vertically disposed tube forming elements at its lower end and the side opening of the product transfer tube is located at a point where the product is emptied into each successive bag so that the product in the tube is



transferred toward the side through the slot in the forming plate, the product transfer tube having an inlet adjacent the dispenser and a liquid fill tube is provided having an upper end portion adjacent the inlet of the dispensing tube and extending downwardly parallel to the transfer tube through the tube former such that the flexible packaging material is formed into a tube around both the liquid fill tube and the product transfer tube and the liquid fill tube extends a substantial distance toward the bottom of the product transfer tube to prevent significant mixing of the liquid and product in the product transfer tube whereby mixing thereof occurs in situ within bags formed from the flexible packaging material and valve means operatively connected to the liquid fill tube to control the flow of liquid therethrough into the bags as they are formed and sealing members for bonding the tube of packaging material to itself at spaced apart intervals thereby forming a succession of bags.

4,604,855

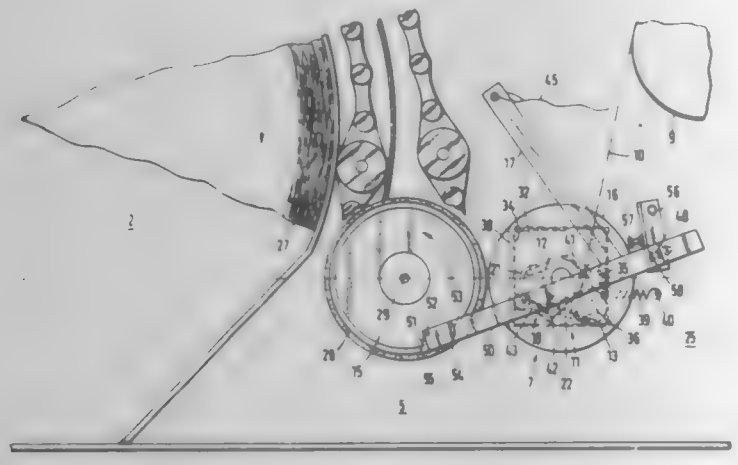
WRAPPING APPARATUS FOR ROUND BALES IN BALING PRESSES

Bernard Krone, Spelle, and Wilhelm Ahler, Stadtlohn, both of Fed. Rep. of Germany, assignors to Maschinenfabriken Bernard Krone GmbH, Spelle, Fed. Rep. of Germany

Filed May 7, 1984, Ser. No. 607,367
Claims priority, application Fed. Rep. of Germany, Jun. 18, 1983, 3322024
Int. Cl.[4] B65B *11/04, 61/06*
U.S. Cl. 53—64 **21 Claims**

1. Wrapping apparatus for use with a baling machine of the type having a forming chamber in which a round bale is formed and into which a wrapping material is fed to wrap said bale, comprising a housing means, feeding means mounted on said housing means for feeding a wrapping material from a source of wrapping material to said forming chamber, drive means mounted on said housing for movement between a non-drive position and a drive position for driving said feeding means, biasing means between said drive means and said hous-

ing means for biasing said drive means into said non-drive position wherein said drive means is disengaged from driving said feeding means, cutter means pivotably mounted on said drive means for cutting said wrapping material after the wrapping material exits said feeding means, said cutter means being pivotable between a cutting position and a non-cutting position in which said cutter means is clear of the wrapping material exiting from said feeding means, a pivotal lever means connected to said drive means and movable between an initial position and at least one operable position, said pivotal lever means being movable from said initial position to said operable position to move said drive means from its non-drive to its drive position to thereby cause said drive means to drive said feeding means to feed said wrapping material, cutter actuating means mounted on said drive means and connected to said pivotal lever means such that said pivotal lever means in moving from said initial position to said at least one operable position pivots said cutter means from said cutting position to the



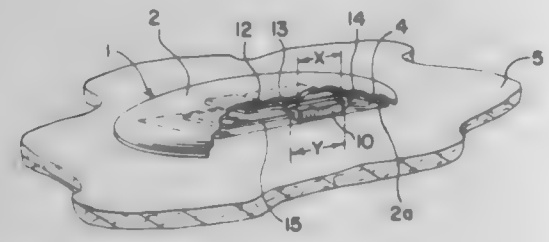
non-cutting position, means for moving said cutting means to said cutting position, meter means operably connected to said cutter actuating means for retaining said cutter means in said non-cutting position while metering an adjustable predetermined amount of wrapping material fed to wrap said bale, said pivotable lever means being movable by an operator from said initial position to said at least one operable position to pivot said cutter means to said non-cutting position and to actuate said meter means to retain said cutter means in the non-cutting position while metering a metered amount of wrapping material fed to wrap said bale, said metering means having means to actuate said means for moving the cutter means to said cutting position after said metered amount has been metered and when said material has been fed into the pressing chamber and into contact with the bale to thereby release said retention of said cutter means so that the cutter means moves to the cutting position and in so doing cuts off said metered amount of wrapping material.

4,604,856

RELEASABLE AFFIXATION OF ARTICLE OF MANUFACTURE TO AN ENVIRONMENT

Donald Schneider, 7515 Cedar Rd., Chesterland, Cuyahoga County, Ohio 44026, and Stanley Schneider, 1820 Chartley Rd., Gates Mills, Cuyahoga County, Ohio 44122

Filed Oct. 18, 1984, Ser. No. 662,164
Int. Cl.[4] B68B *1/00*
U.S. Cl. 54—76 **18 Claims**



1. An article of manufacture comprising at least two surfaces,

one of said surfaces further comprising first means whereby said article may be releasably attached to extant means in the environment of intended attachment of said article,

said first means comprising generally U-shaped resilient clip means having a first leg, a second leg, and a joint joining said legs, said first leg being secured to said surface of said article, said second leg extending rearwardly and downwardly from said surface and joint,

said extant means comprising outwardly extending bridging means,

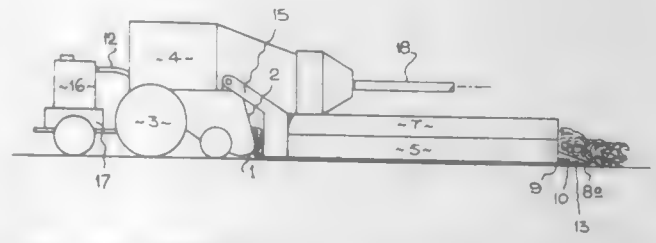
at least one of said legs of said first means comprising detent means disposed so as to extend towards the other of said legs and in spaced relationship from said joint, whereby the interior space formed between said first and second legs is divided into at least two longitudinal portions extending substantially parallel to said surfaces, such that the portion between said joint and said detent means is of a longitudinal dimension so as to substantially mate with said extant means while effecting releasable attachment therewith.

4,604,857

HAY PRE-CONDITIONER

Jack Maher, 12 Williams Street, Forbes, N.S.W. 2871, Australia

Filed Feb. 24, 1984, Ser. No. 583,385
Claims priority, application Australia, Feb. 25, 1983, 1243483
Int. Cl.[4] A01D *14/02, 39/00*
U.S. Cl. 56—16.4 **16 Claims**



1. A hay pre-conditioner in association with a hay-baler having a pick-up, said hay pre-conditioner comprising an elongated box-like structure having opposed sidewalls and a top wall and being adapted to be supported so as to progressively substantially enclose a portion of a windrow over which it is caused to travel; means mounting the box-like structure to the hay-baler so as to be raisable relative thereto; and a steam generator disposed adjacent to said hay-baler, and in communication with a plurality of steam outlet nozzles within said box-like structure, located towards the forward end thereof; whereby, as said hay pre-conditioner is caused to progress so as to traverse a windrow, the windrowed material is treated with steam emerging from said steam outlet nozzles, and is subsequently garnered by the pick-up of said hay-baler for feeding into a feed opening thereof.

4,604,858

PLUNGER CLEANOUT APPARATUS FOR UNDERFED CROP BALER

Edward W. Esau, and Howard J. Ratzlaff, both of Hesston, Kans., assignors to Hesston Corporation, Hesston, Kans.

Filed Jun. 15, 1984, Ser. No. 620,963
Int. Cl.[4] A01D *39/00*
U.S. Cl. 56—341 **9 Claims**

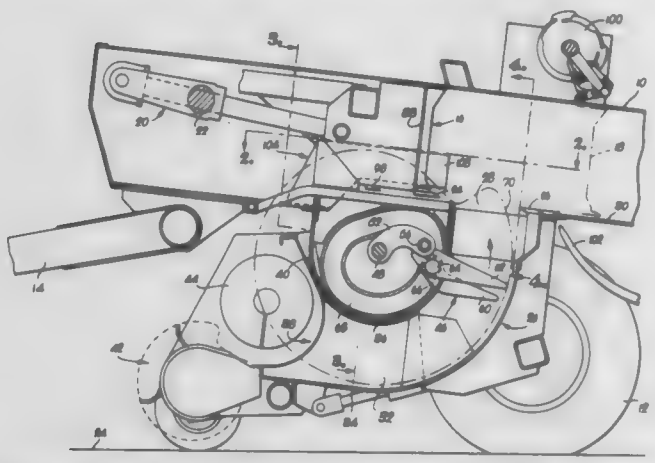
1. In a crop baler having a baling chamber and a plunger reciprocable in said chamber through compaction and retraction strokes, the improvement comprising:

means defining at least one clearance slot in the cropengaging face of said plunger;

structure movable through said slot during at least a portion of the operating cycle of the plunger;

apparatus separate from said structure and insertable into the clearance slot during retraction of the plunger to remove

obstructing crop materials therefrom in order to avoid interference of the crop materials with said structure when the latter is moved through the slot; and



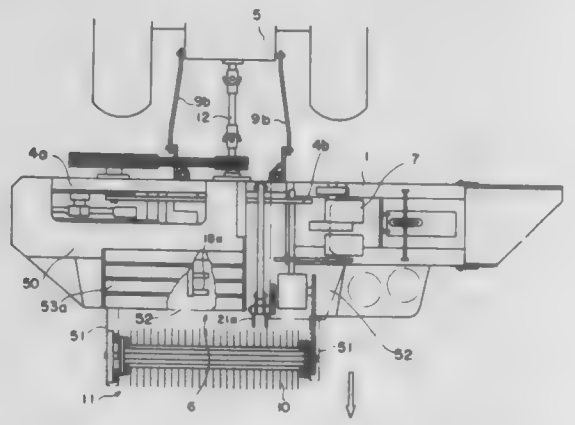
means mounting said apparatus for removal of said obstructing crop material from said slot and into said baling chamber in a direction opposite to the direction of movement of said plunger during retraction thereof.

4,604,859

AGRICULTURAL BALER

Chuichi Sasaki; Haruo Sasaki; Katumi Miyajima, all of Towada, and Kaoru Ebisawa, Nohejimachi, all of Japan, assignors to Sasaki Nouki Kabushiki Kaisha, Towada, Japan

Filed May 16, 1985, Ser. No. 734,918
Int. Cl.⁴ A01D *59/00*
U.S. Cl. 56—341 **9 Claims**



1. In an agricultural baler comprising pick-up means, compressing means, and bundling means, said baler being driven by power of a tractor,

the improvement comprising:

a bale chamber transversely provided with respect to a direction of running of said tractor;

said compressing means and said bundling means being contained in said bale chamber, said compressing means comprising a plunger reciprocating in said bale chamber to perform advance and return strokes;

a counter weight reciprocating in a direction opposite to the direction of movement of said plunger; and

link means for directly mounting said baler on said tractor.

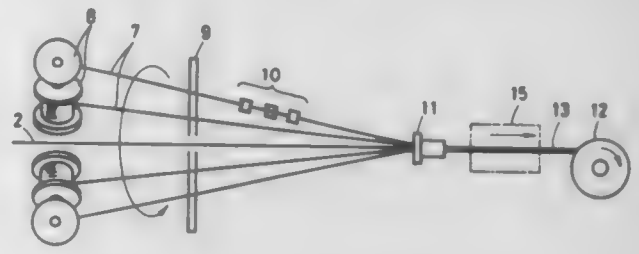
4,604,860

METHOD FOR STRANDING PROFILE STRANDS

Takayuki Matsuura, and Kenji Miyazaki, both of Osaka, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Dec. 20, 1984, Ser. No. 683,925
Claims priority, application Japan, Jan. 23, 1984, 59-10595
Int. Cl.⁴ D07B *5/10, 3/00, 7/00*
U.S. Cl. 57—9 **15 Claims**

1. A method of stranding profiled strands for forming a cable, comprising the steps of first spirally stranding a plurality of profiled strands (7) together around a central core means while imparting twist to each profiled strand to form said cable and then heat-treating said plurality of profiled strands (7) in said cable together with said core means, said heat-treating



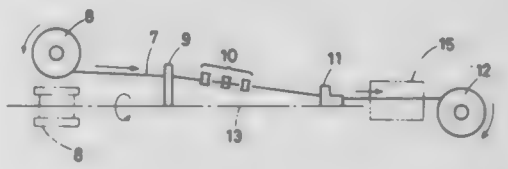
step taking place in a temperature range and for a time duration sufficient for removing stress from said profiled strands.

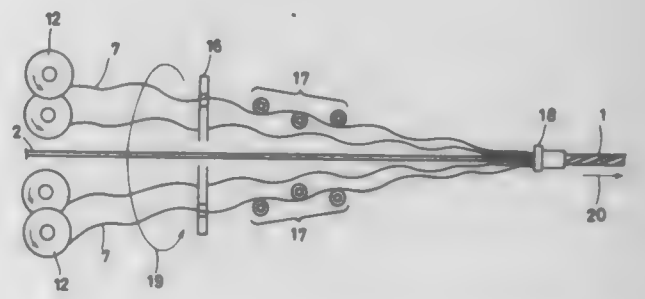
4,604,861

METHOD AND APPARATUS FOR STRANDING PROFILE STRANDS

Takayuki Matsuura, and Kenji Miyazaki, both of Osaka, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Dec. 17, 1984, Ser. No. 682,652
Claims priority, application Japan, Dec. 26, 1983, 58-248942
Int. Cl.⁴ D07B *5/10, 3/00, 7/00*
U.S. Cl. 57—9 **29 Claims**





1. A method for stranding a plurality of profile strands (7) together around a central wire means having a central axis (2), comprising the steps of: first imparting a spiral twist having a given twist pitch to each of said plurality of profile strands (7) whereby a certain stress is introduced into each profile strand, then subjecting said strands to a heat treatment within a temperature range and for a time duration sufficient for again removing said stress from said twisted profile strands for providing twisted but unstressed strands, and then subjecting said twisted and unstressed strands to a planetary motion with respect to said central axis for stranding said plurality of twisted and unstressed profile strands around said central wire means thereby using a stranding twist pitch which is substantially the same as said given twist pitch.

4,604,862

MANUFACTURE OF TELECOMMUNICATIONS CABLE CORES

Philip A. McGettigan, Montreal, and Jean M. Roberge, Pointe Claire, both of Canada, assignors to Northern Telecom Limited, Montreal, Canada

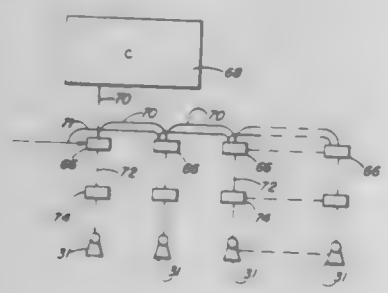
Filed Dec. 27, 1983, Ser. No. 565,633
Int. Cl.⁴ D01H *7/46, 1/10, 7/86*
U.S. Cl. 57—264 **8 Claims**

1. Apparatus for making a core unit for a telecommunications cable from twisted unit of individually insulated conductors comprising:

a plurality of twisting machines disposed in an in-parallel relationship to one another relative to a general passline through the apparatus, each machine for carrying a plurality of reels of insulated conductor and each machine comprising a flyer which is rotatable to introduce twist into conductors to cause them to twist to form a twisted unit;

rotating means for rotating each of the flyers at speeds which are variable independently of other flyers and for changing the ratio of the rotational speed of the flyers, each rotating means comprising a variable speed drive motor;

control means to control the speed of each variable speed drive motor for rotating the flyer of the associated twisting machine at a speed appropriate to the line speed of the apparatus to produce the desired angle of twist lay, the control means including a computer, a microprocessor for each drive motor, the computer connected to each micro-



processor to send a first signal thereto which corresponds to the desired angle of twist lay of a twisted unit to be formed by the associated twisting machine at a given line speed of the apparatus, each microprocessor having a memory for storage of the first signal, a measuring device for measuring the actual line speed and for sending a second signal corresponding to actual line speed to each microprocessor, each microprocessor capable of emitting a basic control signal corresponding to the stored first signal as modified by the second signal to control the speed of its associated drive motor to provide the desired angle of twist lay at the actual line speed; and

a core unit forming and take-up means in tandem with and downstream from the twisting machines to draw the twisted units together and form a core unit, the forming and take-up means comprising drawing means to draw twisted units into the forming and take-up means.

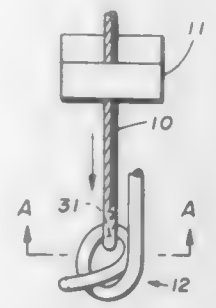
4,604,863

PIGTAIL GUIDE FOR STAPLE SPINNING

Don E. Fisher, Pensacola; John W. Fuqua, Milton, and Arnold E. Wilkie, Pensacola Beach, all of Fla., assignors to Monsanto Company, St. Louis, Mo.

Filed Jan. 28, 1985, Ser. No. 695,513
Int. Cl.[4] D01H *13/04, 7/10*
U.S. Cl. 57—352 **16 Claims**

1. In a ring spinning frame position for continuously converting sliver to yarn, said position comprising means for drafting sliver to a desired count including a pair of rotatable nip rolls for forwardly drafted sliver away from said drafting means, an upright rotatable spindle disposed below said nip rolls and being adapted to receive a bobbin, a ring-and-traveler take-up mechanism associated with said spindle for inserting twist in sliver and then winding the sliver onto a bobbin mounted on said spindle, and a pigtail balloon guide having an elongated body, one end of which is attached to said spinning frame position and the other end of which is in the shape of a single-looped coil terminating in a straight piece extending outwardly from the coil for threading of sliver through the loop, and being disposed between said nip rolls and said take-up mechanism for facilitating winding of sliver onto said bobbin, said guide being vertically in line with said spindle and having a yarn contact surface over which sliver makes rubbing contact enroute from said nip rolls to said take-up mechanism,



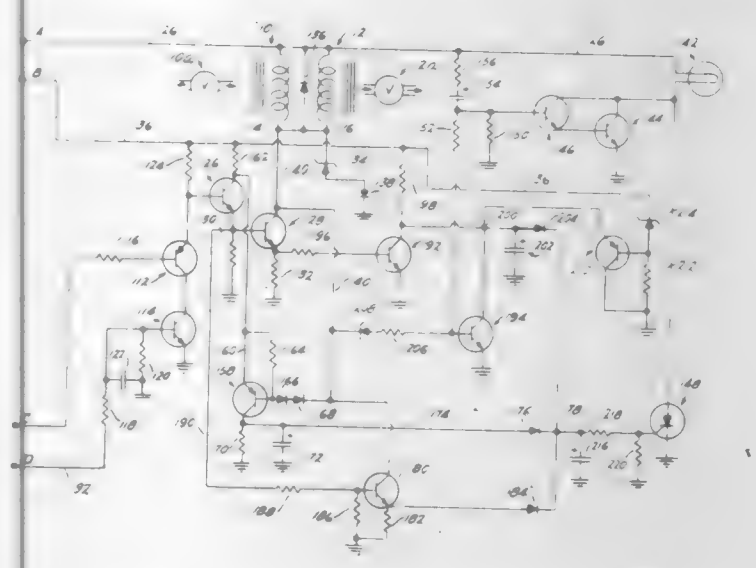
wherein said nip rolls are disposed from said guide at an angle (θ) of at least 10° from vertical, the improvement wherein said guide is characterized in that when viewed from a point where said spindle is in line with the vertical center line of said nip rolls said yarn contact surface is tiled downwardly from left-to-right for spindles rotating in a clockwise direction and upwardly from left-to-right for spindles rotating in a counter-clockwise direction.

4,604,864

CONTROL CIRCUIT FOR USE WITH AIR-DIVERTER VALVE OF INTERNAL COMBUSTION ENGINE

Peter J. Lupoli, Hamden, Conn., assignor to Casco Products Inc., Bridgeport, Conn.

Filed May 10, 1984, Ser. No. 608,711
Int. Cl.[4] F01N *3/22*
U.S. Cl. 60—290 **11 Claims**



1. An electronic control circuit for actuating an air-diverter valve connected with the exhaust system of an internal combustion engine to supply air thereto, comprising in combination:

(a) means responsive to engine speed, for operating said air diverter valve toward its closing position if a predetermined time interval has elapsed with the engine running above a given speed, and

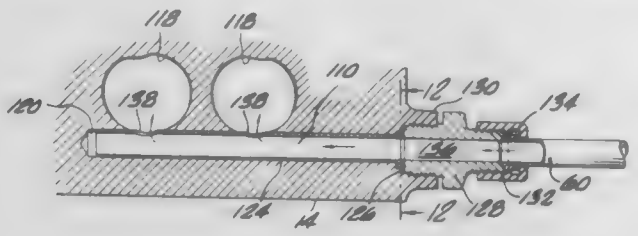
(b) means responsive to engine speed, for rendering inoperative the first mentioned means if there has elapsed a second time interval, shorter than said first predetermined time interval, during which the engine has run continuously at a speed lower than said given speed, all to the end that exhaust pollutants are reduced without incurring excessive heating of the exhaust system.

4,604,865

EXHAUST SYSTEM AIR INTRODUCTION DEVICE

Junji Otani, Saitama; Akira Okubo, Tokyo, and Kanau Iwashita, Saitama, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 15, 1983, Ser. No. 485,202
Claims priority, application Japan, Apr. 24, 1982, 57-69185; Apr. 24, 1982, 57-69186
Int. Cl.[4] F01N *3/30*
U.S. Cl. 60—293 24 Claims



1. An air introduction device for the exhaust system of an engine having exhaust ports and exhaust passages leading therefrom, comprising

a bore in the engine extending in a partially overlapping tangential intersection with one of said exhaust passage near the exhaust port, thereby defining a hole between said bore and the exhaust passage; and

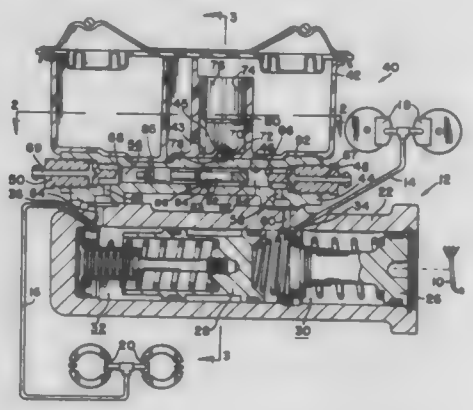
a pipe rigidly positioned in said bore to line said bore at least adjacent said hole, said pipe including a nozzle through the sidewall thereof aligned with said hole.

4,604,866

MASTER CYLINDER

Robert F. Gaiser, Stevensville, Mich., assignor to Allied Corporation, Morristown, N.J.

Filed Sep. 6, 1984, Ser. No. 647,774
Int. Cl.[4] F15B *7/00*
U.S. Cl. 60—535 13 Claims



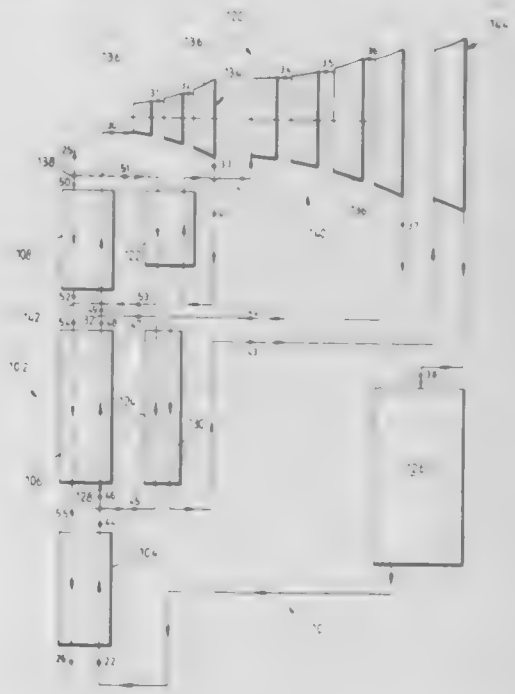
1. A master cylinder comprising a housing movably receiving a pair of pistons in order to develop fluid pressure in a pair of pressure chambers during braking, a reservoir assembly carrying fluid for communication to the pair of pressure chambers in a rest position, a differential area piston exposed to the pair of pressure chambers and operable during braking to actuate a signal circuit in response to a failure mode in either pressure chamber, a float disposed in the reservoir assembly in order to also actuate the signal circuit in response to the fluid level in the reservoir assembly falling below a predetermined amount and a reed switch or the like controlling the signal circuit, characterized in that said reservoir assembly defines a first bore extending from a front end to a rear end for receiving said differential area piston, said reservoir assembly defines a second bore extending transversely to said first bore for receiving said reed switch or the like, said float carrying a first magnet for disposition adjacent said second bore when the fluid level is below the predetermined amount, and said differential piston carrying a second magnet and a third magnet which are normally equally spaced from said reed switch in the absence of a failure mode.

4,604,867

METHOD AND APPARATUS FOR IMPLEMENTING A THERMODYNAMIC CYCLE WITH INTERCOOLING

Alexander I. Kalina, 12214 Clear Fork, Houston, Tex. 77077

Filed Feb. 26, 1985, Ser. No. 705,906
Int. Cl.[4] F01K *7/38, 25/00*
U.S. Cl. 60—653 30 Claims



1. A method for implementing a thermodynamic cycle comprising the steps of:

expanding a gaseous working fluid to transform its energy into usable form;

cooling said expanded gaseous working fluid;

expanding said cooled working fluid to a spent low pressure level to transform its energy into usable form;

condensing said spen working fluid; and

evaporating said condensed working fluid using heat transferred during cooling from said expanded gaseous working fluid.

4,604,868

CLEANER CONTROL FOR DIESEL ENGINE EXHAUST GASES

Yoshitaka Nomoto, and Tsutomu Matsuoka, both of Higashihiroshima, Japan, assignors to Mazda Motor Corporation, Hiroshiuma, Japan

Filed Nov. 30, 1983, Ser. No. 556,616
Claims priority, application Japan, Dec. 4, 1982, 57-184193
Int. Cl.[4] F01N *3/02*
U.S. Cl. 60—286 3 Claims

1. An exhaust cleaner system for a diesel engine having an exhaust system for the discharge of exhaust gases emitted from the discharge of exhaust gases emitted from the engine, said cleaner system comprising, in combination:

an exhaust duct for conducting engine exhaust gas;

a cleaner having a filter disposed therein and an upstream compartment located upstream of the filter, said upstream compartment communicating with the exhaust duct for directing exhaust gases to the filter which traps carbon particulates carried by the exhaust gases;

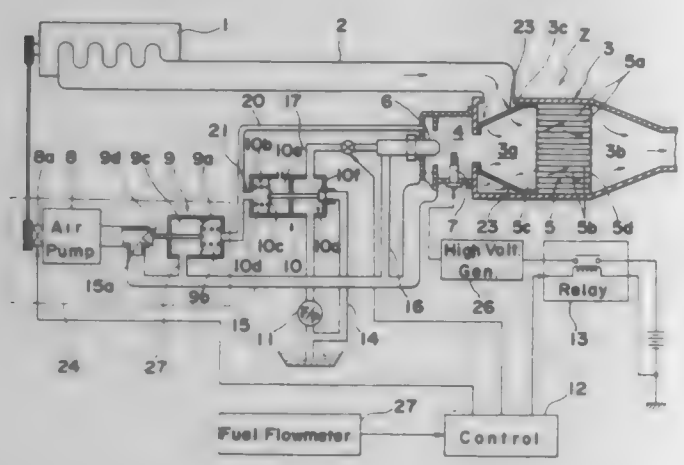
a burner unit including a combustion chamber having an outlet communicating with said upstream compartment and including a fuel nozzle and an igniter for combusting a mixture of fuel and air to produce a flame for providing to said outlet a high temperature combustion gas necessary to elevate the temperature of the exhaust gases enter-

ing said upstream chamber to a temperature suitable for incinerating carbon particulates trapped by the filter;

an air supply means for supplying air to the combustion chamber upstream of the outlet thereof;

a fuel supply means for supplying fuel to the combustion chamber upstream of the outlet thereof;

sensing means for sensing pressure inside the combustion chamber upstream of the outlet thereof and for generating a signal indicative thereof;



an air pressure regulating means actuated by said signal for increasing the pressure of the air supplied to the combustion chamber in correspondence with an increase in pressure within the combustion chamber; and

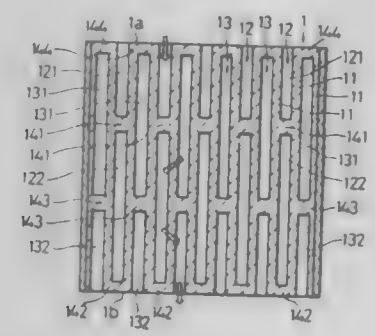
a fuel pressure regulating means actuated by said signal for increasing the pressure of fuel supplied to the combustion chamber in correspondence with an increase in pressure within the combustion chamber, said burner operative during the discharge of the exhaust gases through the filter.

4,604,869

POROUS CERAMIC STRUCTURE

Hitoshi Yoshida, Okazaki; Yukihisa Takeuchi, Chita, and Yasunao Miura, Kasugai, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed May 30, 1985, Ser. No. 739,100
Claims priority, application Japan, May 31, 1984, 59-112302
Int. Cl.[4] F01N *3/02*; B01D *39/20*
U.S. Cl. 60—311 15 Claims



1. A porous ceramic structure comprising porous partition walls forming a multiplicity of passage regions positioned adjacent to one another and extending from the upstream side to the downstream side of said porous ceramic structure and partition portions sectioning said passage regions, said passage regions are respectively provided with at least one of said partition portions and some of said passage regions are provided with at least two of said partition portions to form at least one intermediate passage having said partition portions on both the upstream and downstream sides thereof and one end passage having at least one open end and one closed end, said end passages comprise inlet passages which are open at the upstream side thereof and closed by said partition portions at the downstream side thereof and outlet passages which are closed by said partition portions at the upstream side thereof and open at the downstream side thereof,

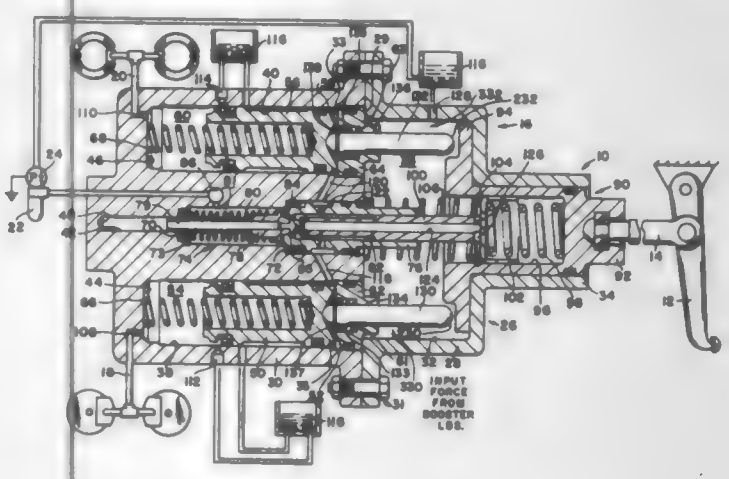
and said partition portions positioned at intermediate portions of said passage regions are located respectively at positions corresponding to intermediate portions of at least one of said intermediate passages positioned adjacent thereto with said porous partition walls therebetween.

4,604,870

BRAKE BOOSTER

Lloyd G. Bach; Lawrence R. Myers, both of South Bend, Ind., and Robert F. Gaiser, Stevensville, Mich., assignors to Allied Corporation, Morristown, N.J.

Filed Dec. 3, 1984, Ser. No. 677,271
Int. Cl.[4] B60T *13/20*
U.S. Cl. 60—551 4 Claims



1. A brake booster including a housing with a first bore (38) receiving first piston (50), a second bore (40) parallel to the first bore (38) and receiving a second piston (56), a third bore (42) receiving a valve assembly (74), an input assembly (90) extending into the housing and responsive to an input force for moving valve assembly (74) during a brake application to control fluid pressure communication to the first and second bores, and connecting means (330, 332) disposed between the input assembly (90) and the first and second pistons (50, 56) to provide a mechanical connection therebetween, the improvement wherein said connecting means (330, 332) comprises pins (130, 132) which are urged toward the first and second pistons (50, 56), respectively, by resilient means (133, 135) to establish a gap between said input assembly and connecting pins (130, 132), said gap allowing said input assembly (90) to move said valve assembly (74) and communicate fluid pressure to said first and second bore (38, 40) whereby said pistons (50, 56) are moved to actuate brake assemblies associated with said first and second bores (38, 42), said fluid pressure in said bores (38, 40) acting on said pins (130, 132) and at a predetermined fluid pressure level overcoming said resilient means (133, 135) to move said pins, to close said gap and to thereafter provide said input assembly (90) with a delayed reaction force that opposes the input force during a brake application.

4,604,871

OVER-TEMPERATURE WARNING SYSTEM FOR REFRIGERATOR APPLIANCE

Norman H. Chiu, and David A. Schneider, both of Louisville, Ky., assignors to General Electric Company, Louisville, Ky.

Filed Jan. 17, 1985, Ser. No. 692,081
Int. Cl.[4] G08B *17/00*
U.S. Cl. 62—130 11 Claims

1. An over-temperature alarm system for an appliance having a freezer compartment for storing perishable items, said alarm system comprising:

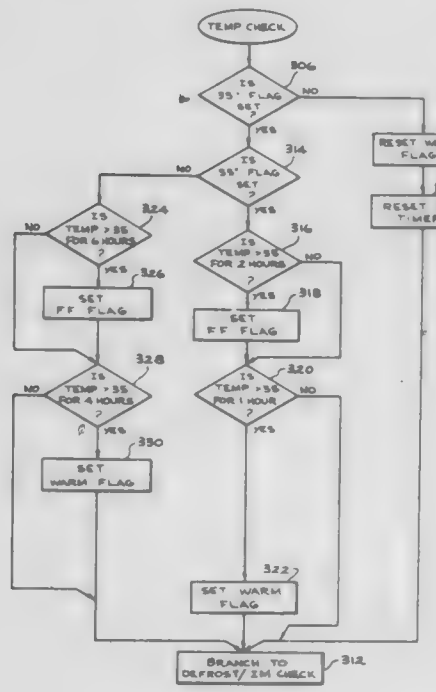
temperature sensing means for sensing the temperature in the freezer compartment;

means responsive to said temperature sensing means operative to detect a first temperature condition when the

sensed temperature is greater than a first reference temperature, and to detect a second temperature condition when the sensed temperature is greater than a second reference temperature greater than said first reference temperature;

timer means for measuring the duration of said first and second temperature conditions;

signal generating means responsive to said timer means operative to generate a first user discernible warning



signal whenever the duration of a first temperature condition exceeds a first relatively long delay time or the duration of a second temperature condition exceeds a second relatively short delay time less than said first delay time; said delay times being selected to be of sufficient duration to avoid warning signals in response to temporary over-temperature conditions likely to occur during normal operation;

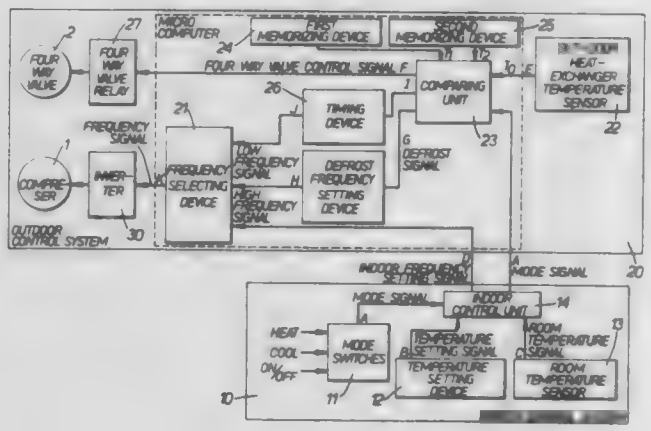
whereby the user is alerted to the existence of an undesirable time/temperature condition in the freezer compartment.

4,604,872

HEAT PUMP TYPE AIR CONDITIONING APPARATUS HAVING A CONTROLLED VARIABLE CAPACITY COMPRESSOR

Koichi Miyazaki, Shizuoka, and Masaya Yamazaki, Fuji, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jan. 25, 1985, Ser. No. 695,254
Claims priority, application Japan, Feb. 3, 1984, 59-17088
Int. Cl.⁴ F25D *21/06*
U.S. Cl. 62—156 **5 Claims**



1. A heat pump type air conditioning apparatus comprising;

a variable capacity compressor;

a reversing valve;

an indoor heat exchanger;

an expansion device;

an outdoor heat exchanger;

said compressor, said valve, said indoor heat exchanger, said expansion device and said outdoor heat exchanger connected respectively in series, and forming a closed refrigerant circuit operable in a defrost mode of operation wherein heat energy is transferred from said refrigerant to said outdoor heat exchanger;

detecting means for generating an electrical signal when the defrosting mode of operation is completed and the heating mode of operation begins; and

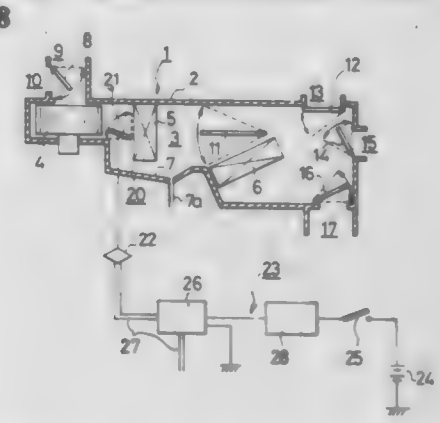
protecting means for controlling said compressor so that said compressor is operated at a predetermined low capacity for a predetermined time interval upon receiving said electrical signal.

4,604,873

AIR CONDITIONING UNIT FOR AUTOMOBILES

Toshio Ohashi, Atsugi, and Yasushi Yamamoto, Zama, both of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Nov. 30, 1984, Ser. No. 676,930
Claims priority, application Japan, Dec. 1, 1983, 58-227524
Int. Cl.⁴ G05D *23/32;* F25D *17/00*
U.S. Cl. 62—158 **7 Claims**



1. An air conditioning unit for automobiles, comprising a casing defining a ventilation duct, an evaporator disposed within said ventilation duct, a water collecting portion formed on the bottom wall of said casing, said water collecting portion collecting the dripping water from said evaporator, a bypass passage, between said evaporator and the bottom wall of said casing, for bypassing said evaporator, a door for opening and closing said bypass passage, and an actuator comprising an operation circuit to operate said door, said operation circuit including a delay circuit interposed therein so as to provide the actuator with a time delay function to open said door to said bypass passage after a predetermined time delay when the air conditioning is stopped after operation, whereby the water collected in the water collecting portion is substantially exhausted from the air conditioning unit before the ambient air passes through said bypass passage.

4,604,874

EVAPORATIVE COOLERS

Frederic F. Seeley, St. Marys, Australia, assignor to F. F. Seeley Nominees Pty Ltd., St. Marys, Australia

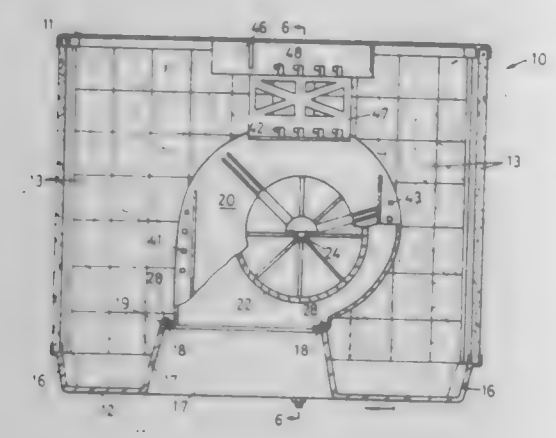
Filed Oct. 23, 1984, Ser. No. 663,772
Claims priority, application Australia, Oct. 25, 1983, PG2041
Int. Cl.⁴ F25D *19/00*
U.S. Cl. 62—298 **12 Claims**

1. Improvements in an evaporative cooler of the type wherein a cabinet is provided with a top panel, a bottom panel, four side panels, at least some of said panels being pervious, one of said panels being a discharge panel having surfaces defining an exhaust opening therein, a blower comprising an impeller and a volute housing within the cabinet, means for discharging water over the pervious panels, and a motor coupled for drive to the impeller, comprising:

a flange on the volute, interengaging surfaces on the volute

flange and discharge panel retaining the volute flange in face-to-face contiguity with a surface of the discharge panel,

at least two pairs of volute support means extending outwardly from the volute and circumferentially spaced from each other and from the volute flange,



and spacer means extending into the cabinet from a said panel, and interengaging surfaces on at least one pair of support means and each volute support means retaining one of said volute support means to said spacer means.

4,604,875

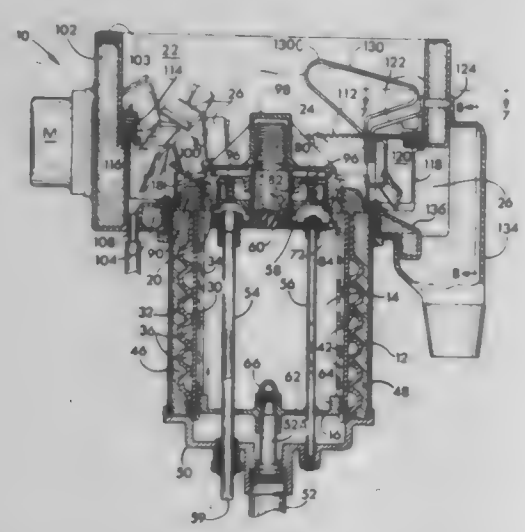
ICE MACHINE

Paul Keller, Coon Rapids, Minn., assignor to Kellex Industries Ltd., Minneapolis, Minn.

Filed Dec. 3, 1984, Ser. No. 677,284

Int. Cl.[4] F25C *1/14*

U.S. Cl. 62—354 **6 Claims**



1. A machine for making ice comprising a tubular ice forming chamber, refrigeration means associated with the chamber to chill the chamber to freezing temperature, a stripper mounted within the chamber for reciprocation along the axis of said chamber to strip the ice formed on the inner surface thereof and move it toward one end of said chamber, a breaker at the end of the chamber toward which the ice is moved by the stripper, said breaker being adapted to engage the ice and break it into pieces as the ice is moved by the stripper, a hopper having a side wall at the end of the chamber adjacent to the breaker to receive pieces of broken ice as they are forced past the breaker by the stripper and a hollow annular conveyor having an open center located in the middle of the hopper and being mounted within the hopper where said pieces of ice accumulate, said conveyor including at least one vertically disposed paddle connected thereto and adapted to move in a circle through the hopper as the annular conveyor is rotated about a central axis within the hopper to convey the ice pieces in a circle within the hopper, said hopper having an outlet port therein in lateral alignment with the paddle for the removal of the ice from the hopper and a drive means connected to the conveyor in proximity to the side wall of the hopper for imparting rotation to the annular conveyor to transport the cracked ice pieces within the hopper toward said outlet port and thereby dispense the ice from the hopper.

4,604,876

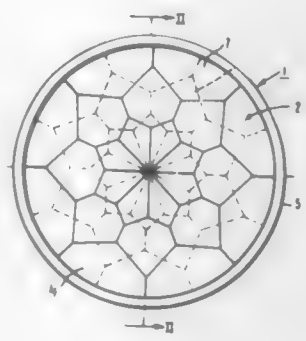
IMITATION GEM

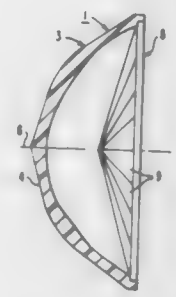
Reinhold Hoffmann, Neue-Bruch-Strasse 2a, 7505 Ettlingen, Fed. Rep. of Germany

Filed Aug. 6, 1984, Ser. No. 637,975

Int. Cl.[4] A44C *17/00*

U.S. Cl. 63—32 **4 Claims**





1. An imitation gem having light reflecting and light refracting facets formed thereon, said gem comprising two semi-shells mounted together and formed of transparent material, each with an essentially concave inner surface and an essentially convex outer surface both provided with a multitude of facets, said semi-shells having their concave inner surfaces spaced from one another and provided with a semitransparent light reflecting coating, said semi-shells being identical in shape and arrangement of facets and being angularly displaced with respect to each other by a distance of from one fourth to one half of a facet width.

4. An imitation gem comprising a semi shell formed of transparent material with an essentially concave inner surface and an essentially convex outer surface, both of said inner and outer surfaces being provided with a multitude of facets, a semitransparent, light reflecting coating disposed on said concave faceted inner surface of said semi shell and a cover mounted on said semi shell, said cover having an essentially conical roof-like, inwardly converging inner surface spaced from the concave faceted inner surface of said semi shell, said conical inner surface having facets formed thereon and being coated with a light-reflecting material.

4,604,877

NEEDLE SELECTION DEVICE FOR KNITTING MACHINES

Masatoshi Sawazaki, and Shozo Yorisue, both of Hyogo, Japan, assignors to Precision Fukuhara Works, Ltd., Hyogo, Japan

Filed Feb. 25, 1985, Ser. No. 705,190

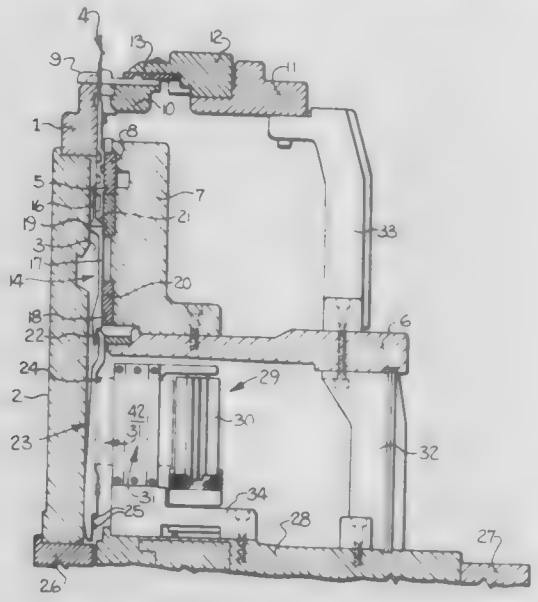
Claims priority, application Japan, Mar. 2, 1984, 59-030745[U]

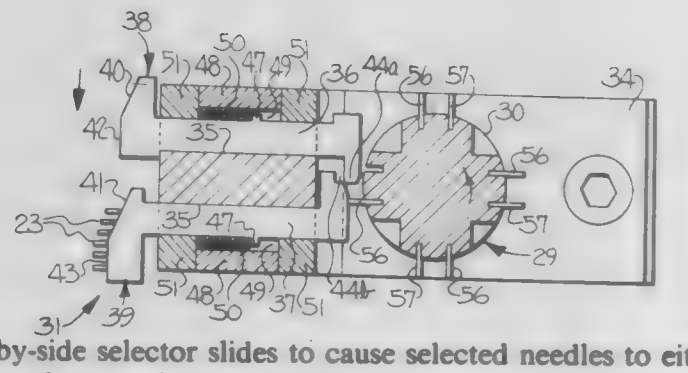
Int. Cl.[4] D04B *9/38, 15/74*

U.S. Cl. 66—224 **10 Claims**

1. A needle selection device for a circular knitting machine including needles supported for vertical movement in slots in a needle cylinder, a pattern jack positioned in each slot in the needle cylinder and beneath each needle, said pattern jacks including spaced selector butts thereon and being operable to

cause said needles to selectively knit, welt and tuck, a pair of side-by-side stacks of selector slides supported for individual horizontal sliding movement between innermost and outermost radial positions relative to said needle cylinder and including inner ends vertically aligned with said selector butts of said pattern jacks, and a single pattern device supported for engagement with the outer ends of said selector slides, said single pattern device being operable to radially position said





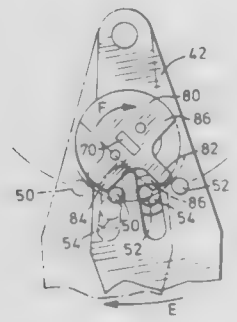
side-by-side selector slides to cause selected needles to either knit, welt or tuck, said side-by-side selector slides including engagement portions on their outer ends including a projection at the rear end of one of said selector slides and a cutout at the rear end of the other of said selector slides and adapted to be engaged by said projection so that adjacent pairs of side-by-side selector slides are simultaneously moved inwardly by said pattern butt means engaging and moving inwardly said selector slide including said projection provided thereon.

4,604,878

LATCH ACTUATOR CAM OF DOOR LOCKS

Terry J. M. Todd, Willowdale, and Josip Vulakovic, Weston, both of Canada, assignors to Papaiz of Canada Limited, St. Catharines, Canada

Filed Jan. 28, 1985, Ser. No. 695,569
Int. Cl.[4] E05B *65/06*
U.S. Cl. 70—139 **3 Claims**



1. In a door lock of the type having a rotatably mounted cam which has a detent which serves to displace a latching member and to engage a downstream abutment member of a pair of abutment members which are arranged upstream and downstream of a locking member with respect to the direction of rotation of an actuator cam, the abutment members being mounted on a lever arm which is connected to a locking bolt such that rotation of the actuator cam in one direction or the other will cause the detent to displace the locking member and thereafter engage the downstream abutment member to effect movement of the lever arm which in turn effects movement of the locking bolt between an open position and a closed position and to move the downstream abutment member clear of the path of the detent so as to permit the detent to gain access to the locking member when the direction of rotation of the actuator cam is reversed, the improvement of;

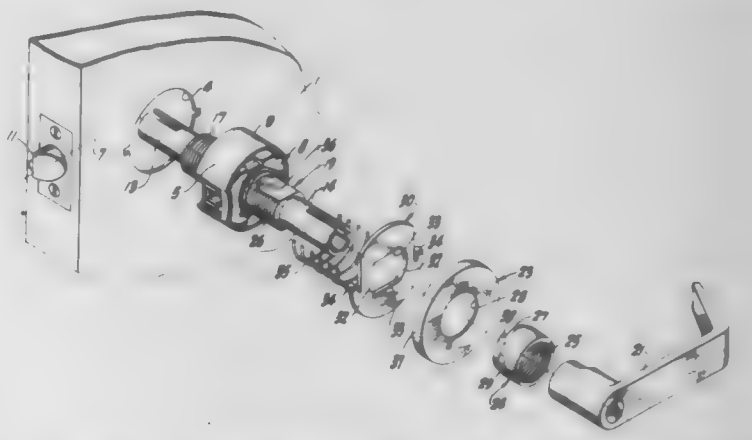
first and second abutments formed on the actuator cam and arranged one on either side of the detent so as to engage the upstream abutment member to arrest the movement of the actuator cam after displacement of the downstream abutment member to the position in which it is clear of the path of travel of the detent such that the rotation of the actuator member is restricted to about 90°.

4,604,879

CYLINDRICAL LOCK

Ralph E. Neary, San Francisco, and Scott A. Hull, Burlingame, both of Calif., assignors to Schlage Lock Company, San Francisco, Calif.

Filed Mar. 16, 1984, Ser. No. 590,326
Int. Cl.[4] E05B *13/10, 3/00*
U.S. Cl. 70—224 **8 Claims**



8. For use in a cylindrical lock, a hub having threads and having a chordal flat surface, a torque plate having a transversely elongated central opening of greater diameter than the diameter of said hub and adapted to surround said hub, said central opening in part bein defined by a chordal flat surface adapted substantially to abut said chordal flat surface of said hub and said central opening in part being defined by an arcuate surface separated from said threads by a space, and a nut having threads engageable with said threads on said hub and having portions adapted to lie in parts only of said space to leave transverse clearance, said portions having a pair of chordal flat surfaces adapted substantially to abut and shift transversely relative to said chordal flat surface of said opening.

4,604,880

CONTINUOUS EXTRUSION OF METALS

John East, Highworth, and Ian Maxwell, Reading, both of England, assignors to Metal Box Public Limited Company, United Kingdom

Filed Jan. 27, 1984, Ser. No. 574,513
Claims priority, application United Kingdom, Feb. 3, 1983, 8302951; Apr. 12, 1983, 8309836
Int. Cl.[4] B21C *35/02*
U.S. Cl. 72—9 **9 Claims**

1. A continuous extrusion system comprising:

(a) a continuous extrusion apparatus for producing a continuous metal extrusion product;

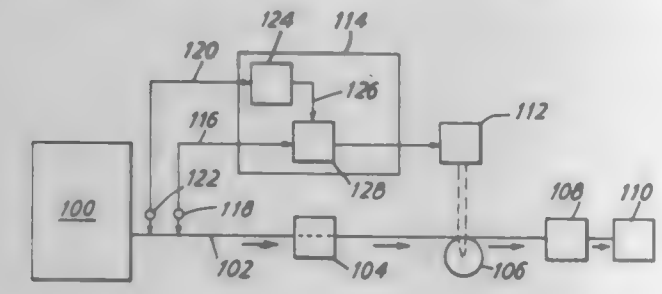
(b) an extrusion product treatment means through which said extrusion product is to be threaded and drawn under tension from said extrusion apparatus, thus effecting a

desired change in one or more predetermined characteristics of said extrusion product;

(c) tensioning means arranged to apply, when the system is in operation, a tension to said extrusion product leaving said treatment means, thus continuously drawing said extrusion product through said treatment means;

(d) a temperature sensing means arranged to sense the temperature of the extrusion product as it leaves the continuous extrusion apparatus and to provide a temperature reference signal dependent upon the sensed temperature of the extrusion product;

(e) a tension sensing means arranged to sense the tension in the length of the extrusion product extending between the



extrusion apparatus and the treatment means, and to provide a tension feedback signal dependent upon the sensed tension in that length of the extrusion product; and

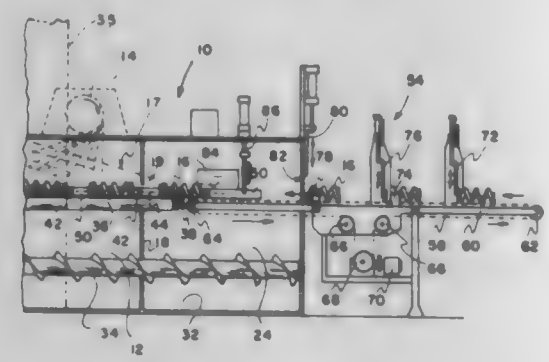
(f) control apparatus arranged for controlling the tensioning means, which control apparatus is responsive to said temperature reference signal and said tension feedback signal and is arranged to control said tensioning means automatically in response thereto in a manner such that the sensed tension in said length of said extrusion product is limited so as not to exceed a predetermined safe value which is less than the yield stress tension of said extrusion product at the sensed temperature at which the extrusion product leaves the extrusion apparatus.

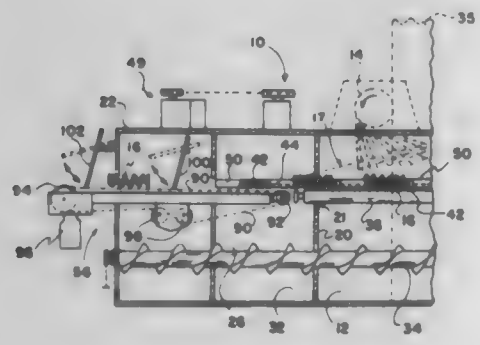
4,604,881

SHOT PEENING MACHINE

Gerold Lienert, Georgetown, Canada, assignor to Rockwell International Corporation, Pittsburgh, Pa.

Continuation of Ser. No. 445,394, Nov. 30, 1982, abandoned.
This application Mar. 11, 1985, Ser. No. 710,723
Int. Cl.⁴ B24C *1/10*
U.S. Cl. 72—53 **2 Claims**





1. An improved shot peening machine of the type which includes blast wheel means or the like which is capable of propelling a plurality of shot generally downwardly into a critical blast region of said machine for shot peening a plurality of springs passing therethrough, wherein said improvement comprises:

a housing for said machine including an entrance chamber, an exit chamber, and a blast cabinet therebetween;

said critical blast region being defined by a first edge thereof within said entrance chamber and a second edge thereof within said exit chamber and including the interior of said blast cabinet therebetween;

horizontally extending support means for said springs including a pair of spaced spinner rolls for supporting said springs therebetween, said spinner rolls extending through said blast cabinet and terminating at a first end at a first edge of said critical blast region within said entrance chamber and a second end at a second edge of said critical blast region within said exit chamber;

means for conveying said springs along a peening path on said spinner rolls which said peening path extends from said first end to said second end of said spinner rolls, said means for conveying said springs including a plurality of horizontally extending finger elements which extend transversely of said peening path above said spaced spinner rolls, each of said finger elements being capable of advancing one of said springs along said peening path through said critical blast region, said spinner rolls including a space therebetween free of any means for conveying so that said spaces can be varied without restriction between said spinner rolls to accommodate said springs within a range of different sizes and shapes, and said space can be preselected and fixed to accommodate said plurality of said springs having a particular size and shape,

means for feeding said springs from an exterior of said housing into said entrance chamber to supply said springs to said first end of said spinner rolls; and

means for discharging said springs from said exit chamber to said exterior of said housing as said springs are conveyed by said means for conveying from said second end of said spinner rolls,

whereby said spinner rolls would be subject to wear from said plurality of shot in said critical blast region and require periodic replacement, said spinner rolls would have a minimum overall length needed to support said springs in said critical blast region, and said means for feeding and said means for discharging would be located out of said critical blast region and free of wear by said shot.

4,604,882

FORMING APPARATUS FOR PRODUCTION OF STRANDED CONDUCTOR

Tamotsu Nishijima, and Toshihiro Fujino, both of Numazu, Japan, assignors to Yazaki Corporation, Tokyo, Japan

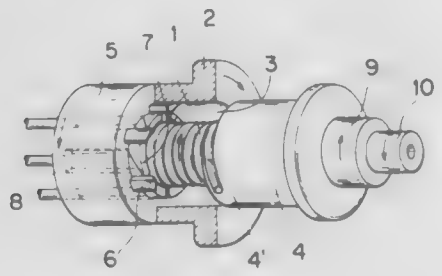
Filed Apr. 25, 1984, Ser. No. 603,700
Claims priority, application Japan, Aug. 12, 1983, 58-146634
Int. Cl.⁴ B21C *37/04, 23/00;* B21F *7/00*
U.S. Cl. 72—71 **4 Claims**

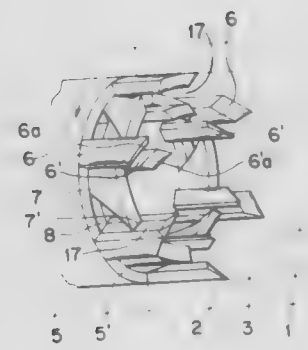
1. An apparatus for producing a stranded conductor, said apparatus including a rotary head, an inner rotating body rotating about a predetermined axis, an outer rotating body rotating coaxially with and surrounding said inner rotating body, an annular spaced defined between said two bodies, said bodies having first and second end portions, and a guide member provided at said first end portion for guiding wire stock into said annular space;

said rotary head being coaxially provided at said second end portion for rotation in a predetermined direction, said rotary head having an axial end face at said second end portion and facing said guide member,

said rotary head comprising:

plural pairs of projections extending axially from said end face, each pair being radially oriented on said end face and including an inner member extending in said annular space adjacent the inner rotating body and an outer member





extending in said annular space adjacent the outer rotating body, said inner and outer members opposing each other with a predetermined gap therebetween; and

cut-forming means provided in the vicinity of said gap.

4,604,883

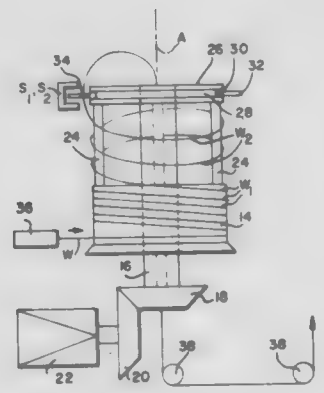
MASS FLOW CONTROL SYSTEM FOR WIRE DRAWING MACHINE

William R. Schaetzke, Shrewsbury, and Ronald W. DuFries, Westboro, both of Mass., assignors to Morgan Construction Company, Worcester, Mass.

Filed Oct. 17, 1985, Ser. No. 788,745

Int. Cl.[4] B21C *1/10, 1/12*

U.S. Cl. 72—280 **6 Claims**



1. A wire drawing machine having a die and rotating block wherein wire is drawn through said die by said rotating block, said block being driven by a variable speed motor, the thus drawn wire being accumulated as a plurality of windings on the block before being removed therefrom via a guide, the guide being arranged on a carrier which rotates independently of the block about the axis of block rotation when a difference exists between the rates at which wire is wound onto and removed from the block, the improvement comprising: a control system including motion detection means arranged to coact with the carrier in generating electrical signals representative of the direction and speed of rotation of said carrier, and control means associated with said motor and said motion detection means and responsive to said signals for adjusting the rotational speed of said block in order to reach a steady state condition where wire is being wound onto and removed from said block at the same rate, and said carrier remains motionless.

4,604,884

TWISTING APPARATUS OF ROOT CANAL REAMER OR FILE MATERIAL AND METHOD FOR MANUFACTURING ROOT CANAL REAMER OR FILE

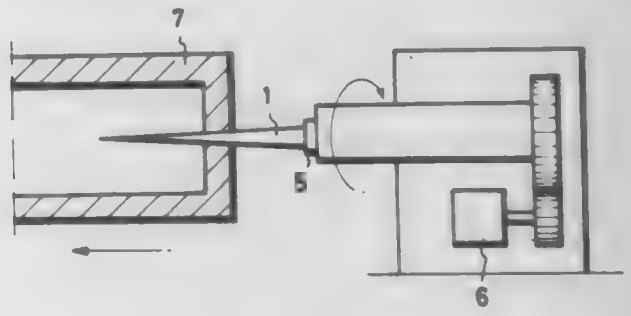
Kanji Matsutani, Takanezawa, Japan, assignor to Matsutani Seisakusho, Japan

Filed Jul. 3, 1984, Ser. No. 627,538

Claims priority, application Japan, Jul. 4, 1983, 58-120268; Dec. 15, 1983, 58-237042

Int. Cl.[4] B21D *11/04*

U.S. Cl. 72—299 **9 Claims**





1. An apparatus for twisting root canal reamer material, the material having a plurality of angular edges and a root portion comprising:

a chuck portion holding a root portion of a reamer material;

a vice having a plurality of vice-claws each of which being pivotally connected to a cylinder and piston means, each having front and side portions, the front portion being planar and capable of pressing the respective angular edges of the reamer material, said vice and chuck being positioned a distance from one another and being oriented to hold said reamer material at spaced positions along its longitudinal axis;

means for rotationally varying the distance between the vice-claws and the chuck portion;

the vice-claws being movable in a plane perpendicular to the longitudinal axis of the reamer in relation to each other and to the reamer material complying with variations in the thickness of the material; and

the vice-claws being positioned so that each vice-claw presses a portion of the front of the adjacent vice-claw.

4,604,885

MACHINE FOR THE BENDING OF STRANDED MATERIAL

Thomas P. Lang, Erbacher Strasse 45, D-6120 Michelstadt, Fed. Rep. of Germany

Filed Mar. 27, 1984, Ser. No. 594,485

Claims priority, application Fed. Rep. of Germany, Mar. 31, 1983, 3311766

Int. Cl.[4] B21D *7/022*

U.S. Cl. 72—306

8 Claims



1. A machine for bending elongate material, more particularly a tubular member such as a brake line, a fuel line or the like, said machine comprising:

fixed central clamping means for clamping a central section of an unbent elongate member and to define a fixed elongate member axis;

first and second bending heads mounted at respective sides of said clamping means, each said bending head including a bending die having a longitudinal axis, a counterpressure die spaced from said bending die such that a respective end section of the elongate member fits therebetween, and means for rotating said counterpressure die in a bending plane about said longitudinal axis of said bending die, thereby bending the respective end section; and

means for swivelling each said bending head about said elongate member axis independently of said swivelling of the other said bending head, and thereby for independently rotating said bending planes with respect to said elongate member axis.

4,604,886

METHOD AND APPARATUS FOR SINGLE STEP FORMATION OF SPHERICAL RETAINER

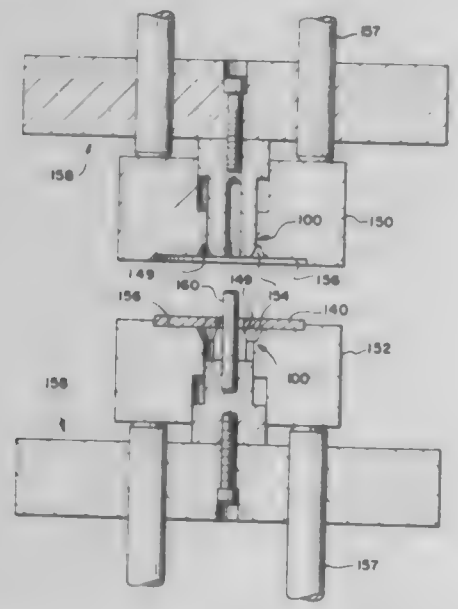
John C. McGregor, Jr., c/o Pentaflex, Inc., P.O. Box 1566, Springfield, Ohio 45501

Filed Feb. 28, 1985, Ser. No. 706,997

Int. Cl.[4] B21D *22/00*

U.S. Cl. 72—354

6 Claims



1. A method of forming a retainer for a truncated spherical member in a single stroke stamping operation comprising the following steps:

inserting a blank having a cylindrical opening therein between upper and lower tools each comprising a die, a sectored punch and impinging segments, each punch including at least one pair of diametrically opposed sectors of a cylinder, said sectors being separated from one another such that the sectors of each punch can be intermated to form a cylinder, the distal ends of said sectors being spherically contoured; and

compressing said blank between said upper and lower tools to form alternating cylindrical and spherical surfaces into the upper and lower portions of said blank with a cylindrical surface on the upper portion of said blank being opposite to a spherical surface on the lower portion of said blank and a spherical surface on the upper portion of said blank being opposite to a cylindrical surface on the lower portion of said blank, each axially opposed cylindrical and spherical surface being formed on opposite sides of said blank by a sector of the punch of one of the upper or lower tools.

4,604,887

DUPLEX STAINLESS STEEL SEAMLESS PIPE AND A METHOD FOR PRODUCING THE SAME

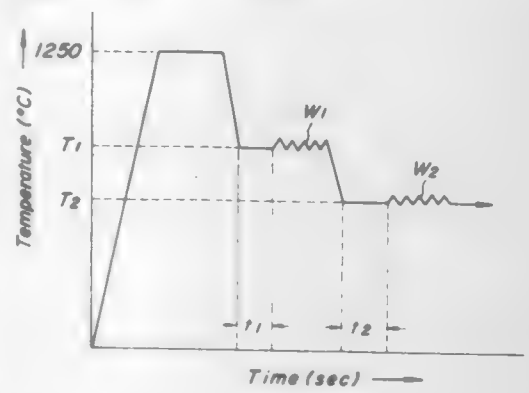
Hiroshi Ohtsubo, Aichi; Isao Takada, Chita, and Tatsuo Kawasaki, Yotsukaido, all of Japan, assignors to Kawasaki Steel Corporation, Kobe, Japan

Filed Nov. 30, 1984, Ser. No. 676,639

Int. Cl.[4] B21B *3/02*

U.S. Cl. 72—368

2 Claims



1. A method of producing a duplex stainless steel seamless pipe having a composition consisting of, in % by weight, C: not more than 0.03%, Si: not more than 2.00%, Mn: not more than 2.00%, Cr: 20.0–30.0%, Ni: 1.0–9.0%, Cu: not more than 3.0%, Mo: 0.5–5.0%, N: 0.05–0.30%, Al: 0.01–0.10%, S: not more than 0.004%, P: not more than 0.030%, at least one of Ca: (1–10)×[%S] and B: 0.0005–0.010%; and the remainder being Fe and incidental impurities by a plug mill process comprising a piercing step by means of a piercing mill, a cross rolling step by means of a cross rolling mill, a rolling step by means of a plug mill, a reeling step by means of a reeler and an outer diameter reducing step by means of a sizer, wherein a billet is pierced in the piercing step under a condition that the billet is kept at a temperature of 1,200°–1,350° C. in its center portion and at a temperature of 1,100°–1,350° C. in its outer surface portion; the cross rolling of the resulting hollow piece is finished at a temperature not lower than 1,100° C. in the cross rolling step; and the cross rolled hollow piece is worked in the plug mill rolling step, in the reeling step and in the outer diameter reducing step under conditions that the equivalent strains which will be caused in the hollow piece in the plug milling rolling step, in the reeling step and in the outer diameter reducing step are kept to not higher than 0.5, not higher than 0.4 and not higher than 0.2 respectively, said equivalent strains being calculated by the following formula (1), and that the total amount of the equivalent strain which will be caused in the hollow piece in the plug mill rolling step and in the reeling step is kept to not higher than 0.6, said total amount of the equivalent strain being calculated by the following formula (2):

$$\bar{\epsilon} = \frac{2}{\sqrt{3}} \sqrt{(\epsilon_t^2 + \epsilon_t \cdot \epsilon_B + \epsilon_B^2)} \quad (1)$$

wherein

$\epsilon_t = \ln (t/t_o)$

$\epsilon_B = \ln (D/D_o)$

t_o, D_o: average wall thickness and average outer diameter of the hollow piece before rolling in each step, respectively

t, D: average wall thickness and average outer diameter of the hollow piece after rolling in each step, respectively; and

$$\bar{\epsilon'} = \frac{2}{\sqrt{3}} \sqrt{(\epsilon_t'^2 + \epsilon_t' \cdot \epsilon_B' + \epsilon_B'^2)} \quad (2)$$

wherein

$\epsilon'_t = \ln (t_p/t_{po}) + \ln (t_R/t_{Ro})$

$\epsilon'_B = \ln (D_p/D_{po}) + \ln (D_R/D_{Ro})$

t_p, t_{po}: average wall thicknesses of the hollow piece after and before rolling by the plug mill, respectively

t_R, t_{Ro}: average wall thicknesses of the hollow piece after and before rolling by the reeler, respectively

D_p, D_{po}: average outer diameters of the hollow piece after and before rolling by the plug mill, respectively

D_R, D_{Ro}: average outer diameters of the hollow piece after and before rolling by the reeler, respectively.

4,604,888

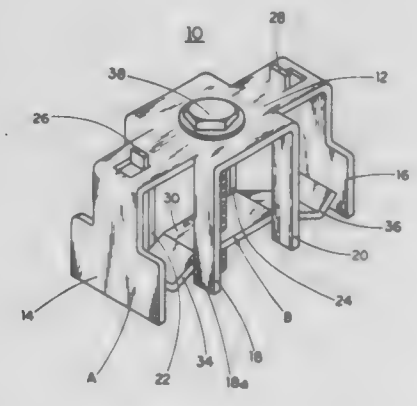
CABLE CLAMP, BODY PORTION THEREFOR AND METHOD OF MANUFACTURING SAME

Michael T. Mayszak, Villa Park, Ill., assignor to Reliance Electric Company, Cleveland, Ohio

Division of Ser. No. 638,296, Aug. 6, 1984. This application Jul. 3, 1985, Ser. No. 751,442

Int. Cl.[4] B21D *53/36*

U.S. Cl. 72—379 **3 Claims**



1. The method of manufacturing from a strip of resilient sheet metal a body portion of an electrical cable clamp of the type which includes a jaw movable with respect to said body portion, comprising the steps of:

(a) bending the ends of the strip through an angle of essentially ninety degrees to thereby produce a substantially U-shaped configuration having a flat base and planar end walls extending at generally right angles to opposed margins of said base;

(b) shearing each of said end walls and portions of said base along lines just below and parallel to one edge of said generally U-shaped configuration said shearing continuing inwardly to a distance defining a central uncut area of said base so as to produce parallel pairs of elements extending in directions opposite from said central uncut area; and

(c) bending those of said elements which are above said lines such that a first pair of arms are formed spaced intermediate along said one base edge, said arms being substantially parallel to each other and said end walls and extending generally at right angles to said base, each of said arms forming with the associated one of said end walls a first U-shaped channel,

whereby said jaw interfits below said arms and said jaw having a pair of symmetrically disposed concave wings having an apex portion and locationally mounted adjacent said end walls and slidably contiguous with respect to said end walls for preventing pinching of said cables between said wings and end walls, and said clamp of the type also including means to draw said jaw into compressive engagement with cables nested within said first channel.

4,604,889

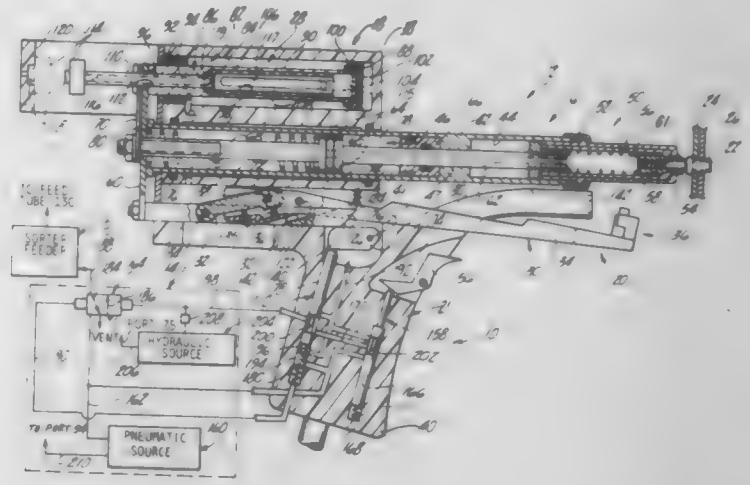
AUTOMATED INSTALLATION TOOL FOR BLIND FASTENERS

Boris P. Sukharevsky, Fullerton, Calif., assignor to Huck Manufacturing Company, Irvine, Calif.

Filed Dec. 27, 1984, Ser. No. 686,891

Int. Cl.[4] B21D *9/05*

U.S. Cl. 72—391 **32 Claims**



1. In a portable tool for setting blind fasteners including a pin and a sleeve by applying a relative axial force between the pin and sleeve, said tool comprising: fastener installation means actuable for applying the relative axial force between the pin and sleeve, said installation means including a nose assembly having an open, forward end and adapted to receive the fastener at said forward end and to apply the relative axial force to the fastener, fastener loading means operable for automatically loading fasteners into said nose assembly and comprising a pivotal arm pivotably actuable to a load position locating the fastener at said forward end of said nose assembly, said pivotal arm being generally elongated and extending in a direction generally parallel to the line of travel of said reciprocable movement, and actuating means operatively connected with said fastener loading means and said installation means for actuating said pivotal arm to pivot about an axis transverse to said line of travel to said load position and for causing relative reciprocable movement between said loading means and said installation means whereby the fastener held by said loading means will be inserted into said open end of said nose assembly as said nose assembly and said loading means are moved towards each other.

4,604,890

COMPRESSION TOOL

William C. Martin, Fairview, Pa., assignor to Teledyne Penn-Union, Edinboro, Pa.

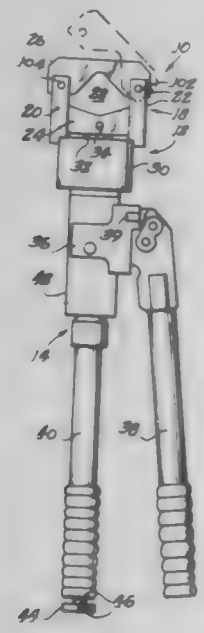
Continuation-in-part of Ser. No. 578,999, Feb. 14, 1984, abandoned, which is a continuation of Ser. No. 347,014, Feb. 8, 1982, abandoned. This application Mar. 25, 1985, Ser. No. 715,599

Int. Cl.[4] B21J *9/18*

U.S. Cl. 72—453.16 **16 Claims**

4. A compression tool for compressing a generally tubular workpiece comprising: a tool head, a die set including fixed

and movable die means mounted in said tool head, said movable die means intermeshing with said fixed die means for surroundingly engaging and compressing said tubular workpiece, said movable die means being continuously variably positionable relative to said fixed die means for defining an opening of variable size between a predetermined minimum opening and a predetermined maximum opening for selectively compressing relatively large and relatively small workpieces over a corresponding range of sizes by the same said die set, fluid operated drive means for driving said movable die means towards said predetermined minimum opening to compress a preselected size of workpiece; and fluid pressure control means including a manually adjustable member readily accessible and in view to an operator in on-the-job field use for preselecting and presetting the maximum pressure of the fluid supply to said fluid operated drive means for the preselected size of work-



piece to be compressed and thereby controlling the force applied by the drive means to the die means and the compressive force applied by the die means to the selected size of workpiece within the range of sizes which may be accommodated by the same said die set; wherein said manually adjustable member protrudes from the tool to be accessible to an operator, and wherein said fluid operated drive means includes a fixed handle and a movable handle movably mounted to said fixed handle to define a lever, and further including mounting means coupled with said fixed handle for mounting said manually adjustable member to protrude therefrom substantially without interferring with the pivotal motion of said movable handle relative to said fixed handle; and wherein said mounting means comprises a rotatable shaft protruding from a free outer end portion of said fixed handle and said adjustable member comprises a knob coupled with said shaft.

4,604,891

REFERENCE PRESSURE DEVICES FOR CALIBRATING PRESSURE-MEASURING INSTRUMENTS

George E. Sgourakes, Mills; John P. Angelosanto, North Attleboro, and Barry T. Malloy, Norton, all of Mass., assignors to The Foxboro Company, Foxboro, Mass.

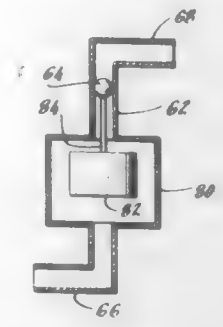
Filed Oct. 17, 1984, Ser. No. 661,806
Int. Cl.[4] G01L *27/00*
U.S. Cl. 73—4 R
29 Claims

1. In a pressure measuring instrument of the type including a sealed interior pressure chamber containing a fill-liquid and having diaphragm means to apply thereto an input pressure signal to be measured, said instrument further including sensing means responsive to the input pressure signal applied to said fill-liquid to produce a corresponding output signal;

that improvement for calibrating the span of the instrument comprising:

a reference pressure device forming an integral part of said instrument and including a cavity formed as part of said interior chamber;

an object in said cavity sized to provide a close fit with the cavity walls so that the object when moved by the force of



gravity through the cavity will produce a reference pressure signal for said instrument; and

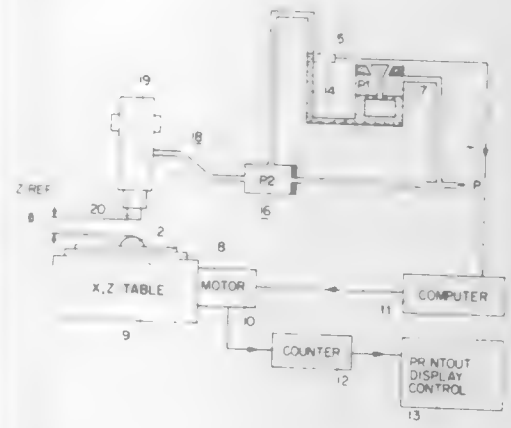
a weight in said chamber coupled to said object to augment the gravity force on said object and thereby increase the magnitude of said reference pressure signal.

4,604,892

DEVICE FOR THE AUTOMATIC CONTACTLESS MEASUREMENT OF THE VOLUME OF A LAYER DEPOSITED ON A SUBSTRATE

Michelle Carreras, 81 rue de Paris, St. Rémy les chorreuse 78470, France

PCT No. PCT/FR83/00246, § 371 Date Jul. 27, 1984, § 102(e) Date Jul. 27, 1984, PCT Pub. No. WO84/02394, PCT Pub. Date Jun. 21, 1984
PCT Filed Dec. 8, 1983, Ser. No. 641,965
Claims priority, application France, Dec. 10, 1982, 82 20723
Int. Cl.[4] G01B *13/02*
U.S. Cl. 73—37.5
10 Claims



1. In a process utilizing measurement of gas pressure at the outlet end of a gas jet for measuring the average topological thickness of a strip of wet electrically resistive material carried on a flat, rigid, substrate, wherein the gas pressure is alternately applied onto the top surface of the strip of wet electrically resistive material and the surrounding flat surface of the substrate; the improved process comprising the steps of:

providing a single shaped gas jet discharge outlet that is homothetic and smaller to the width and length of the strip of wet electrically resistive material to be measured;

providing a jet of gas issuing from said outlet at a measureable first discharge pressure and directed at the surface of the deposit on the substrate;

positioning said homothetic shaped gas jet outlet opposite said deposit on said substrate to direct said jet against the entire homothetically-included surface of said deposit, so that said measureable first discharge pressure represents a measured distance between the gas jet outlet and the opposed surface deposit of wet resistive material integrated over all of the thickness variations occurring in the portion of the layer of deposit against which the jet is directed, while spacing said gas jet outlet to maintain the

issuing gas pressure at a substantially constant reference pressure value;

establishing a reference spacing between said outlet and the facing surface of the deposit as a first reference distance associated with said measurable first pressure;

positioning said gas jet outlet to direct said jet at a region of said flat, rigid substrate surface free of a deposit thereon, so that a second gas pressure is substantially related to the distance from said outlet to the substrate surface free of deposit;

adjusting the distance between the substrate surface and the jet so that said outlet gas pressure is equal to said first reference pressure value, said adjusted distance being proportional to the distance from the gas jet discharge outlet to the average topological thickness of said deposit.

4,604,893

LEAK DETECTOR

Frank J. Senese, Hickory Hills, and Lloyd A. Baillie, Homewood, both of Ill., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Division of Ser. No. 340,439, Jan. 18, 1982, Pat. No. 4,453,400.
This application Jun. 1, 1984, Ser. No. 616,042
The portion of the term of this patent subsequent to Jan. 18, 1999, has been disclaimed.
Int. Cl.[4] G01M *3/38;* G01F *23/10*
U.S. Cl. 73—49.2 **7 Claims**

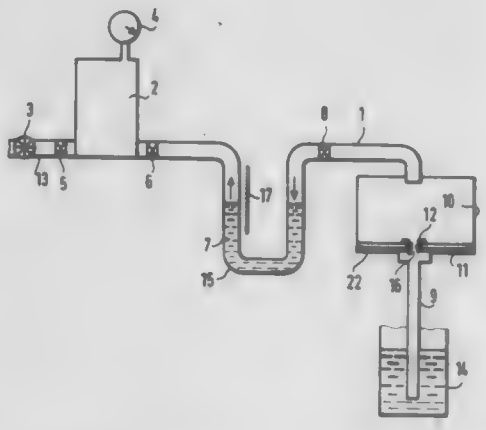
1. A method for detecting small leaks in a tank storing a liquid, said tank having a float means positioned in contact with said stored liquid, a detector means and a signal means in fixed relationship to each other, said float means moving in relationship to the level of said stored liquid and having a reservoir means for holding a measuring medium, said measuring medium being capable of modulating a signal characteristic representative of the position of said detecting means, comprising sealing said float means to prevent the condensation of vapors within said float means, emitting a signal having a characteristic from said signal means into said measuring medium, modulating said signal characteristic by an amount which varies with the changes in the location of said float means, detecting said modulated signal characteristic, and producing a response signal directly related to said detected characteristic, wherein changes in said response signal are indicative of small leaks in said tank.

4,604,894

SYSTEM FOR MEASURING BLEEDING TIME IN VITRO

Michael Kratzer, Leopoldstr. 56, D-8000 München 40, Fed. Rep. of Germany, and Gustav V. R. Born, 10 Woodland Gardens, Muswell Hill, London N10 3UA, England

Filed Dec. 20, 1983, Ser. No. 563,454
Claims priority, application Fed. Rep. of Germany, Dec. 23, 1982, 3247815
Int. Cl.[4] G01N *11/04, 33/48*
U.S. Cl. 73—64.1 **18 Claims**



1. A system for measuring bleeding time in vitro, in which the blood can be passed under pressure through a porous element, the system being provided with a system for measurement of the resulting volumetric flow, comprising:

an aperture in said porous element; and

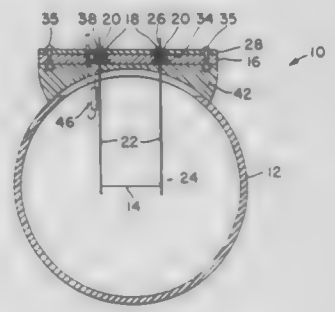
a chamber in which said porous element is arranged such that said blood moves substantially through said aperture and substantially no blood moves laterally through said porous element.

4,604,895

HOT WIRE ANEMOMETER

Dennis W. Watkins, King County, Wash., assignor to Air Sensor Inc., Seattle, Wash.

Continuation of Ser. No. 490,560, May 2, 1983, Pat. No. 4,523,461. This application Mar. 12, 1985, Ser. No. 711,090
The portion of the term of this patent subsequent to Jun. 18, 2002, has been disclaimed.
Int. Cl.[4] G01F *1/68*
U.S. Cl. 73—204 **10 Claims**



8. An electronic anemometer for measuring air mass flow in a conduit, comprising:

a length of temperature-dependent resistive wire;

a circuit board for holding at least a portion of the anemometer electronic circuitry;

a rigid support member, said circuit board being attached to said member; and

a pair of electrically conductive, resilient posts capable of withstanding the elevated operating temperatures encountered when the anemometer is operating, each of said posts having a wire-supporting end portion fixedly connected to said wire, said end portions being spaced apart and positionable in the conduit, and biased away from each other to hold said wire under tension, each of said posts further having a remote end portion fixedly held by said support member, said remote end portions being electrically connected to the electronic circuitry.

4,604,896

ROTOR BLADE TEST APPARATUS

Edwin C. Taschner, Scottsdale, Ariz., and Edward M. Myzska, San Antonio, Tex., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed May 24, 1985, Ser. No. 737,377
Int. Cl.[4] G01H *3/08, 13/00*
U.S. Cl. 73—583 **7 Claims**

1. A rotor blade test apparatus for the J-69 engine comprising in combination:

a test fixture for cradling a plurality of rotor blades including the rotor blade to be tested,

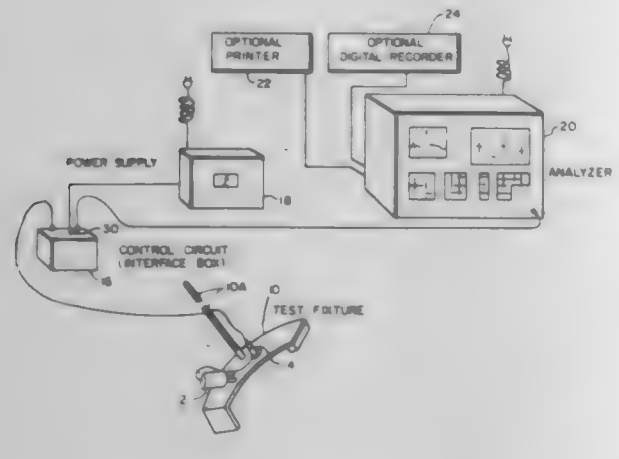
a solenoid means for striking said rotor blade, said striking solenoid means mounted on said test fixture at a predetermined distance from said rotor blade, said solenoid striking being actuated to strike said rotor blade to produce an audio signal,

means for receiving audio signals, said audio receiving means mounted on said test fixture to receive said audio signal,

an interface control means for providing operating voltages to said striking solenoid and said audio receiving means,

said interface control means including a means for activating said striking solenoid, and a means for signal coupling, and,

a means for frequency analyzing an audio signal, said frequency analysing means operatively connected to said



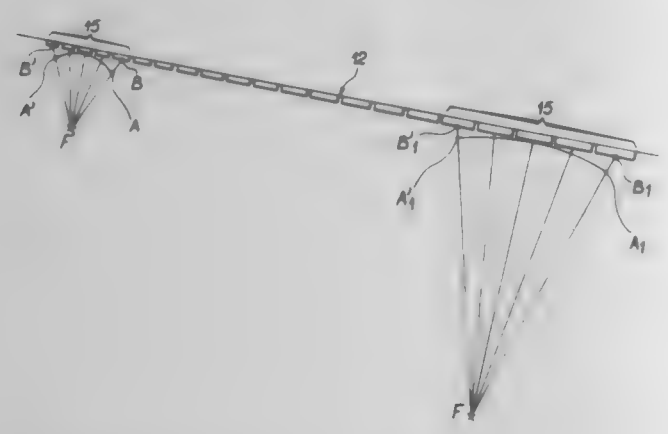
interface control means, said frequency analyzer means receiving said audio signal from said audio receiving means from said signal coupling means in said interface control means, said frequency analyzing means analyzing said audio signal and providing a frequency waveform which is representative of said audio signal.

4,604,897

MULTITRANSDUCER ULTRASONIC PROBE WITH TRANSDUCERS OF DIFFERENT SIZES

Robert Saglio, Antony, France, assignor to Commissariat a l'Energie Atomique, Paris, France

Filed Jul. 30, 1984, Ser. No. 636,003
Claims priority, application France, Aug. 1, 1983, 83 12641
Int. Cl.[4] G01N *29/04*
U.S. Cl. 73—626 **14 Claims**



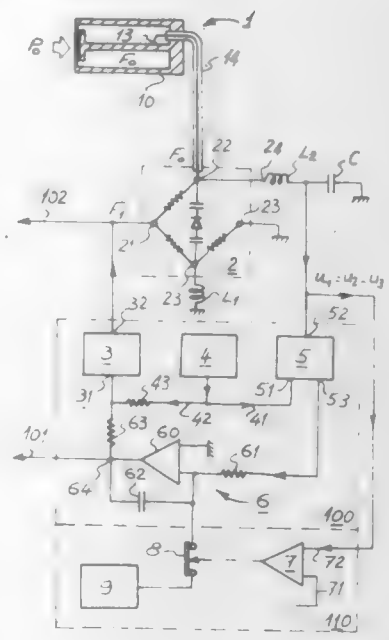
1. An ultrasonic probe for transmitting ultrasonic waves in the direction of an object having points of variable depth to be inspected and for receiving the ultrasonic waves reflected from said points in response to impingement of said transmitted ultrasonic waves thereon, comprising a first plurality of M juxtaposed ultrasonic transducers arranged along a first line and directed toward said object, M being an integer, and control means for selectively activating successive groups of m juxtaposed transducers from among said first plurality to form successive zones of activation, where $m < M$ and m is an integer, and for progressively displacing said zone of activation along said first line in a predetermined direction during successive activations for accomplishing scanning of said object, said displacement having a magnitude corresponding to the total dimension along said first line of an integral number of juxtaposed transducers, wherein each of said first plurality of transducers has a different dimension along said first line and said transducers of said first plurality are arranged in order of increasing dimension, said dimension along said first line being selected such that a predetermined redundancy rate is attained during scanning of said object, which redundancy rate is substantially independent of the depth of said point to be inspected, said redundancy rate being defined as the number of successive activations during which said point is impinged upon by said transmitted ultrasonic waves.

4,604,898

PRESSURE MEASURING DEVICE

Christian Gohin, Magny, and Henri Leblond, Versailles, both of France, assignors to Badin Crouzet, Chateaufort, France

Filed Oct. 16, 1984, Ser. No. 661,320
Claims priority, application France, Oct. 21, 1983, 83 16767
Int. Cl.[4] G01L *9/12*
U.S. Cl. 73—701 **6 Claims**



1. A pressure measuring device, comprising:

at least one sensor having a resonating cavity, said cavity comprising a deformable wall means, whereby deformation of said wall means, responsive to a pressure to be measured, results in a variation of a capacity of said resonating cavity and a resonance frequency thereof,

an electronic user circuit comprising an impedance bridge,

a coaxial cable for connecting said sensor to said user circuit, said coaxial cable connecting said sensor in a leg of said bridge,

an oscillator connected to said bridge and having a frequency different from said resonance frequency of said sensor to result in a standing wave rate in said coaxial cable in accordance with a frequency difference between said frequency of said oscillator and said resonance frequency, and

a servo control for controlling said oscillator to cause a mean frequency of the oscillator to be equal to said resonance frequency of said sensor.

4,604,899

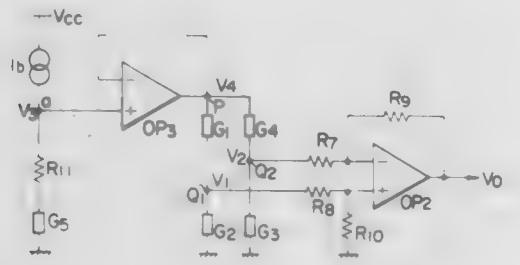
SEMICONDUCTOR-TYPE PRESSURE TRANSDUCER

Kazuji Yamada; Hideo Sato, both of Hitachi; Kanji Kawakami, Mito; Kazuo Kato, Ibaraki, and Takao Sasayama, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 6, 1984, Ser. No. 597,753
Claims priority, application Japan, Apr. 6, 1983, 58-59307
Int. Cl.[4] G01L *9/04, 19/04*
U.S. Cl. 73—708 **6 Claims**

1. A semiconductor-type pressure transducer comprising a bridge circuit including a plurality of gauge resistors at least one of which has a resistance which varies with an external force, an amplification circuit connected to an output of said bridge circuit for amplifying the output of said bridge circuit, and a drive power circuit connected to a power source terminal of said bridge circuit and connected between first and second potential voltage levels for supplying a drive voltage to said bridge circuit, wherein said drive power circuit includes a

resistor coupled in series between said first and second potential voltage levels and having the same temperature characteristic as that of the gauge resistors for correcting said drive



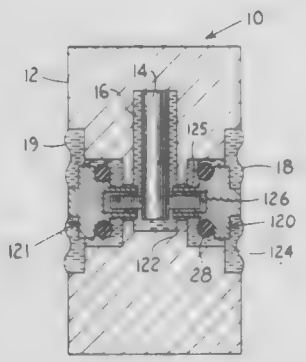
voltage correspondingly to temperature variation of the gauge resistors so as to cancel the effect of the temperature change of the gauge resistors of the bridge circuit on the amplification factor of the amplification circuit.

4,604,900

ADHESIVE JOINT FOR DIAPHRAGM TO SENSOR CONNECTION IN PRESSURE TRANSDUCERS

James K. Knudsen, South Euclid; Allen C. Koller, Hamilton; Eugene Skuratovsky, Mayfield Hts., and Gary S. Thomas, Eastlake, all of Ohio, assignors to The Babcock & Wilcox Company, New Orleans, La.

Filed Nov. 5, 1984, Ser. No. 668,460
Int. Cl.[4] G01L *7/08*
U.S. Cl. 73—716 **1 Claim**



1. In a pressure transducer having a body, a sensor beam fixed to the body within a first cavity formed therein, a diaphragm attached to a side of said body over a second cavity in communication with said first cavity, and a shaft assembly connecting said diaphragm and the sensor beam, the improvement wherein said shaft assembly comprises:

a sensor post attached to said sensor beam and having a free end;

an overpressure stop member having an extended hollow cylindrical portion spaced away from and in surrounding relation to said sensor post and attached to said diaphragm; and

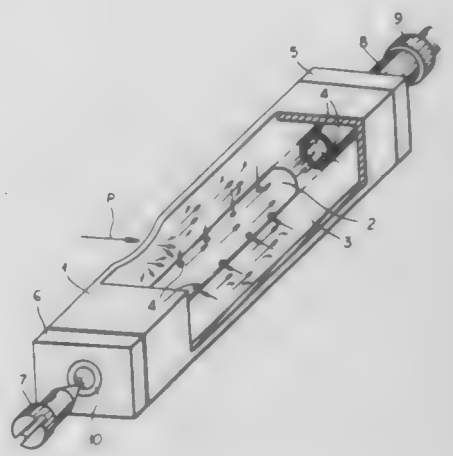
epoxy rigidifying material that is received in the space between said sensor post and said extended hollow cylindrical portion of said overpressure stop member for connecting said sensor post and said overpressure stop member.

4,604,901

HYDRAULIC PRESSURE RECEIVER

Bruno Kägi, Meilan, Switzerland, assignor to St Sensortechnik AG, Chur, Switzerland

PCT No. PCT/CH84/00013, § 371 Date Sep. 20, 1984, § 102(e) Date Sep. 20, 1984, PCT Pub. No. WO84/02977, PCT Pub. Date Aug. 2, 1984
PCT Filed Jan. 30, 1984, Ser. No. 662,296
Claims priority, application Switzerland, Jan. 31, 1983, 527/83
Int. Cl.[4] G01L *7/08*
U.S. Cl. 73—731 **11 Claims**



1. A hydraulic pressure receiver comprising:

an elongated elastically deformable housing responsive to external force applied thereto and connectable to a pressure evaluation device;

a rigid tube longitudinally traversing said housing and defining therewith a closed annular space around said tube;

a plurality of radial bores formed in said tube in an array extending the length of said housing and connecting the interior of said tube with said space;

a hydraulic fluid contained in said annular space and said tube; and

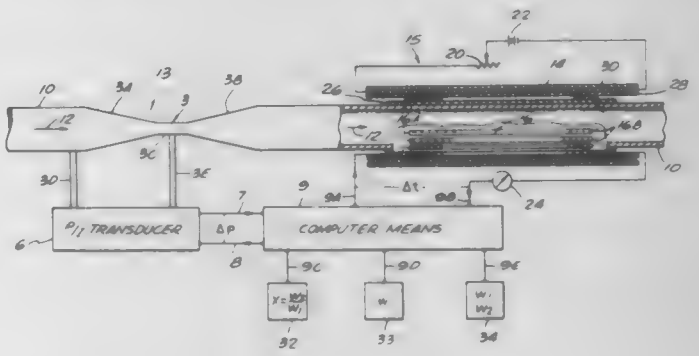
means at one end of said tube for the connection thereof to said pressure evaluation device whereby the application of said force to said housing generates an increase in pressure within said space, which is transmitted to the interior of said tube by said bores and is detected by said device.

4,604,902

MEANS AND TECHNIQUES USEFUL IN MASS FLOWMETERS FOR MULTIPHASE FLOWS

Cullen M. Sabin, Solana Beach, and Heinz F. Poppendiek, La Jolla, both of Calif., assignors to Geoscience Ltd, Solana Beach, Calif.

Filed Oct. 24, 1984, Ser. No. 664,231
Int. Cl.[4] G01F *1/44, 1/68*
U.S. Cl. 73—861.04 **6 Claims**



1. In a two-component flow meter, the combination including:

means defining a flow path for a two-component mixture;

means in said path restricting flow of said mixture and pro-

ducing an accompanying differential pressure between spaced regions of said path;

means for heating said mixture as it flows from an upstream region to a downstream region to produce a differential temperature between said upstream and downstream regions; and

means jointly responsive to said differential pressure and to said differential temperature for evaluating a characteristic of each component of said two-component mixture.

4,604,903

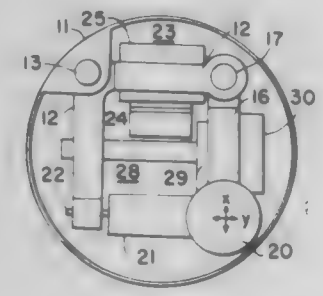
TWO-AXIS, SELF-NULLING SKIN FRICTION BALANCE

Ping Tcheng, Norfolk, and Frank H. Supplee, Jr., Hampton, both of Va., assignors to The United States of America as represented by the Administrator, National Aeronautics & Space Administration, Washington, D.C.

Filed Feb. 28, 1985, Ser. No. 706,681

Int. Cl.[4] G01L *5/16*

U.S. Cl. 73—862.04 9 Claims



9. A method for measuring the skin friction forces along two axes on a sensing surface comprising the steps of:

independently pivoting a sensing plane surface back or forth about a first pivot point along a first axis in the sensing plane surface in response to a skin friction force along said first axis;

independently pivoting said sensing plane surface back or forth about a second pivot point pivotally connected to the first pivot point along a second axis in the sensing plane surface in response to a skin friction force along said second axis;

forcing said sensing plane surface back to its zero position along said first axis in response to any movement along said first axis;

forcing said sensing plane surface back to its zero position along said second axis in response to any movement along said second axis; and

processing the forces applied to the sensing plane surface to move it back to its zero positions to obtain the skin friction forces along said first and second axes.

4,604,904

SENSOR FOR THE DETECTION OF RANDOM SIGNALS WHICH ARE SUITABLE FOR CORRELATIVE SIGNAL PROCESSING

Robert Massen, Radolfzell, Fed. Rep. of Germany, assignor to Endress u. Hauser GmbH u. Co., Maulburg, Fed. Rep. of Germany

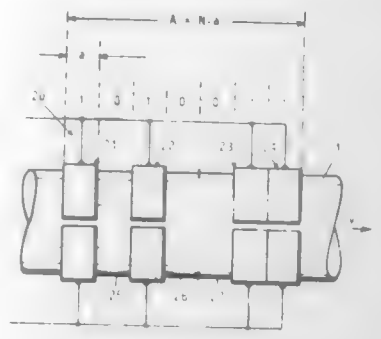
Filed Sep. 20, 1983, Ser. No. 533,989

Claims priority, application Fed. Rep. of Germany, Sep. 27, 1982, 3235750

Int. Cl.[4] G01F *1/712, 1/74*

U.S. Cl. 73—861.06 6 Claims

1. Sensor for the detection of random signals from a process in motion relative to the sensor, said signals being suitable for correlative signal processing, in particular for the purposes of correlative measurement of velocity or running time, said sensor having a total aperture sensitive to a parameter characteristic for the process in motion, said total aperture being subdivided into aperture segments separated by gaps which are not sensitive to said parameter of the process in motion, said aperture segments and gaps being arranged along the direction



of motion according to a binary coding which results in a time-compressed signal upon correlative reception.

4,604,905

MEASURED-VALUE SENSORS FOR MAGNETIC-INDUCTIVE FLOWMETERS

Kristian Rademacher-Dubbick, Duisburg, Fed. Rep. of Germany, assignor to Rheometron A.G., Basel, Switzerland

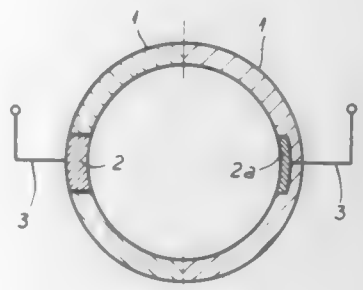
PCT No. PCT/EP83/00351, § 371 Date Sep. 17, 1984, § 102(e) Date Sep. 17, 1984, PCT Pub. No. WO84/02976, PCT Pub. Date Aug. 2, 1984

PCT Filed Dec. 30, 1983, Ser. No. 653,217

Claims priority, application European Pat. Off., Jan. 18, 1983, 83200069.6

Int. Cl.[4] G01F *1/58*

U.S. Cl. 73—861.12 5 Claims



1. In a magnetic-inductive flowmeter wherein the flow of a conductive material is measured, and having a measured-value sensor traversed by the conductive material, the improvement wherein said measured-value sensor is an electrically insulating ceramic tube having a pair of electrodes formed by electrically conductive ceramic material fused in said tube and having surfaces lying along an inner surface of said tube for contact with said material, and means connected to said electrodes enabling said electrodes to measure said flow, said tube being composed of silicon nitride and said electrodes being composed of silicon carbide.

4,604,906

FLOWMETER

Thomas J. Scarpa, 6481 Rte. 6N West, Edinboro, Pa. 16412

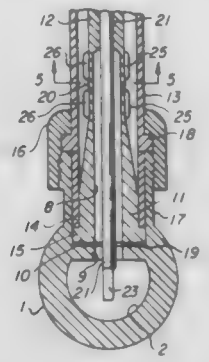
Filed Sep. 24, 1984, Ser. No. 653,301

Int. Cl.[4] G01F *1/28*

U.S. Cl. 73—861.74 8 Claims

1. A flowmeter comprising a body having a passageway for fluid to be measured, a tubular body having its inner end open to said passageway and sealed to said first body and having its outer end closed, a rod fixed to the outer end of the tubular body and having its inner end extending to said passageway, an airfoil vane in said passageway and fixed to the inner end of

said rod and oriented to produce a force on said rod transverse to the direction of fluid flow, said tubular body having a section constructed to be flexed by said force, and strain gage means for sensing the flexing of said section.



4,604,907

REDUCTION GEAR DEVICE FOR A COAXIAL TYPE STARTER

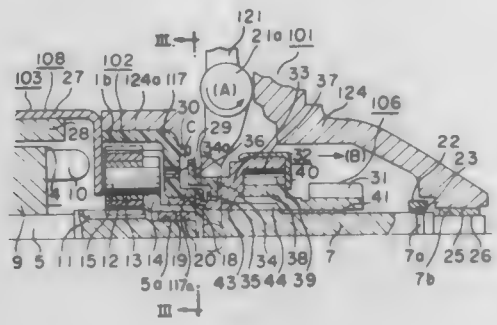
Akira Morishita, and Kyoichi Okamoto, both of Himeji, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 7, 1984, Ser. No. 669,080

Claims priority, application Japan, Nov. 7, 1983, 58-172139[U]

Int. Cl.⁴ F02N *15/06*

U.S. Cl. 74—7 E **7 Claims**



1. In a coaxial type starter having a starter motor including a motor shaft and a starter pinion mounted on an output shaft coaxial with said motor shaft, a reduction gear device comprising:

reduction gear means associated with said motor shaft and said output shaft for tarnsferring rotation of said motor shaft to said output shaft with a speed reduction ratio;

annular stationary frame means at least partially enclosing said reduction gear means;

at least one through hole formed in a portion of said machine frame to permit air flow through said machine frame; and

labyrinth sealing means for preventing the entry of dust into said machine frame via said through hole, said sealing means comprising projections formed on said machine frame on two sides of said through hole, and a ring element positionable between said projections and adjacent said through hole.

4,604,908

TRANSFER CASE PLANETARY WITH POWER TAKE-OFF

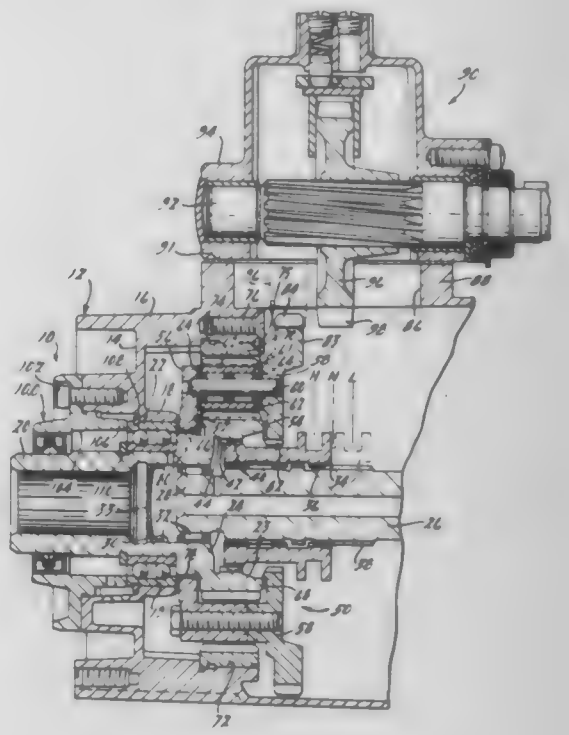
Courtney F. Dolan, Syracuse, N.Y., assignor to Chrysler Corporation, Highland Park, Mich.

Filed Oct. 18, 1984, Ser. No. 662,104

Int. Cl.⁴ F16H *37/8, 3/44, 57/10*

U.S. Cl. 74—15.88 **1 Claim**

1. In a transfer case apparatus including a housing having an end wall defining an axial opening; said housing having outer wall means extending in a first axial direction from said end wall, axial bearing means journally supporting an input shaft in said end wall opening, said input shaft having one end terminating within said housing in an annular end flange portion joined by an intermediate stepped radially extending flange portion, said input shaft annular end flange portion defining an integral sun gear having oppositely facing transverse extending shoulders, an output shaft journally supported in said housing, said output shaft having a clutch collar axially slidable thereon by means of collar internal splines engaged with external splines on said output shaft, said input shaft having an axial counter-bore formed on said input shaft annular end flange, internal clutch tooth formed in said input shaft counter-bore, external clutch teeth formed on said clutch collar slidably engageable with said input shaft counterbore internal teeth when said clutch collar is moved axially outboard into a high-range drive mode, a helical planetary gear assembly comprising a carrier having outward and inboard axially spaced rings defining inner opposed faces and supporting a plurality of planet gears therebetween, said outboard ring formed with an axial bore encircling said intermediate flange portion for journalled rotation thereon, external bearing means interposed between the inner opposed faces of said rings and their associated sun gear transverse shoulders whereby said planet carrier is axially aligned in a radially floating manner on said input



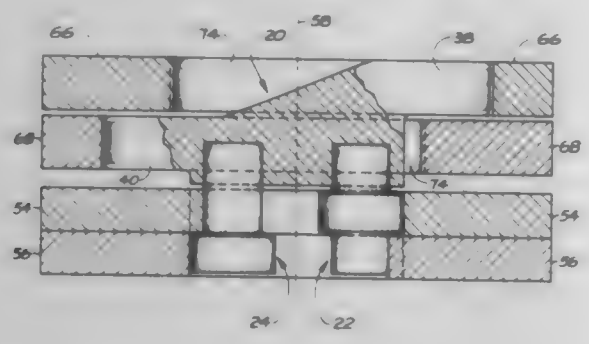
shaft, said wall means having a counter-bore formed therein concentrically supporting an annulus gear, said annulus gear having internal helical gear teeth in meshing relation with said planetary gears, said carrier inboard ring formed with power take-off gear teeth extending radially a predetermined distance beyond said annulus gear, said outer wall means having an aperture therein radially aligned with said inboard ring power take-off gear teeth, mounting means on said outer wall means for supporting a power take-off gear box thereon including an input gear with spur teeth rotatably supported on an axially extending take-off shaft disposed parallel to said transfer case input shaft, a portion of said input gear adapted to extend through said aperture for axial travel on said take-off shaft input gear spur teeth into selective meshing engagement with said inboard ring output spur gear teeth, said inboard ring including an axial bore encircling said clutch collar, said inboard ring axial bore having internal spur gear teeth formed thereon such that when said clutch collar is moved axially inboard its external clutch teeth slidably engage said inboard ring internal spur teeth providing a low-range drive mode, whereby said carrier inboard ring operative for transmitting either a high-range or a low-range drive mode to said take-off shaft upon selective shifting of said clutch collar.

4,604,909

CAM-FOLLOWER TRANSFER MECHANISM FOR CONTROLLING RELATIVE ROTATIONAL MOVEMENT

James E. Marson, 9301 Interlake Ave. N., Seattle, Wash. 98103

Filed Apr. 8, 1985, Ser. No. 721,058
Int. Cl.[4] F02B *53/00*; F04C *2/00*; F16H *35/02*
U.S. Cl. 74—63
13 Claims



1. Transfer mechanism for controlling the rotational movement of one rotary means relative to the rotational movement of a second rotary means, comprising in combination:

first rotary means having a first axis;

second rotary means rotatable about said first axis;

motion transmitting means including a motion transmitting member;

first joint means having a second axis and located at one end of said motion transmitting member for pivotally connecting said motion transmitting member to said first rotary means;

second joint means having a third axis and located at the other end of said motion transmitting member for pivotally connecting said motion transmitting member to said second rotary means;

said second axis and said third axis both being perpendicular to the longitudinal center line of said motion transmitting member, equidistant from the mid-point of said longitudinal center line, parallel to said first axis, and spaced apart from said first axis and from each other;

first follower means having a fourth axis, said fourth axis being spaced apart from said first, second, and third axis;

second follower means having a fifth axis, said fifth axis being spaced apart from said first, second and third axis;

said first and said second follower means both being substantially cylindrical about their respective axes and being of equal diameter;

said first and said second follower means being mounted upon said motion transmitting member with their respective axes being parallel to said first axis and perpendicular to the longitudinal center line of said motion transmitting member, said axes of said first and second follower means being spaced apart from each other, equidistant from said mid-point of said longitudinal center line of said motion transmitting member, and intermediate between said mid-point and said second or said third axis, respectively;

guide means for receiving and cooperating with said first and second follower means, said guide means having a contour being defined by a plurality of segments of a circle, said circle having a radius equal to the sum of the radius of said follower means plus the distance between said fourth axis and said fifth axis, said circle segments together forming a closed path surrounding said first, fourth, and fifth axes and also containing the centerpoints of said circle segments;

said center points of said circle segments all being radially spaced an equal distance from said first axis, and uniformly spaced apart about said first axis, such that a straight line bisecting opposite circle segments will pass through the center points of said segments and through said first axis;

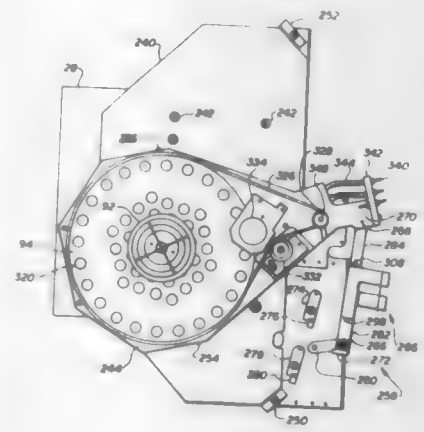
said guide means and said follower means causing said motion transmitting member to firstly angularly rotate about said fourth axis, and then to secondly angularly rotate about said fifth axis, with the pivot point of said angular rotation continuing to alternate between said fourth and fifth axes whereby said motion transmitting member, and through said joint means, alternately rotates said second rotary means at speeds which are relatively faster than, and then relatively slower than, said first rotary means during each revolution of said first rotary means.

4,604,910

APPARATUS FOR ACCURATELY POSITIONING AN OBJECT AT EACH OF TWO LOCATIONS

Curt H. Chadwick, Los Altos, and Anil A. Desai, San Jose, both of Calif., assignors to KLA Instruments Corporation, Santa Clara, Calif.

Filed Feb. 22, 1984, Ser. No. 582,585
Int. Cl.[4] F16H *21/44, 21/54, 25/18*
U.S. Cl. 74—96
7 Claims



1. Apparatus for accurately positioning an object at either one of two fixed locations and rapidly moving the object therebetween, comprising;

means forming a base;

horizontal guide means mounted to said base and defining a predetermined slide path;

slide means supported by said horizontal guide means and adapted to move along said slide path and to carry said object between two fixed positions, said slide means including a horizontally extending portion disposed above said guide means and adapted to support an object mount;

drive means for rapidly moving said slide means in opposite directions along said path with sinusoidally varying velocity so that the velocity of said slide means is maximum midway between said fixed positions and is close to zero when the carried object reaches each said fixed position; and

means for accurately limiting the travel of said slide means so that the carried object is accurately located at each of said two fixed positions.

4,604,911

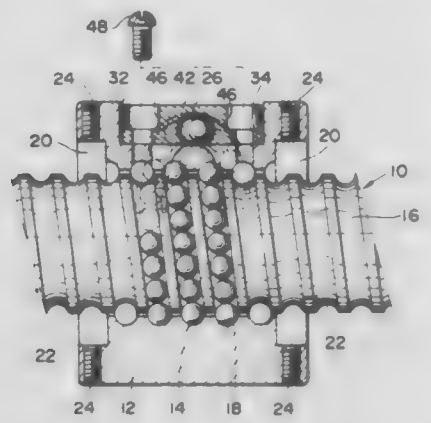
RECIRCULATING-BALL ROTARY-TO-LINEAR CONVERTER WITH AN IMPROVED BALL RETURN GUIDE

Hiroshi Teramachi, 2-34-8, Higashi-Tamagawa, Setagaya-ku, Tokyo, Japan

Continuation of Ser. No. 465,645, Feb. 10, 1983. This application Nov. 25, 1985, Ser. No. 801,394
Claims priority, application Japan, Feb. 26, 1982, 57-28751
Int. Cl.[4] F16H *27/02, 1/18, 1/20*
U.S. Cl. 74—424.8 R
1 Claim

1. In a rotary-to-linear converter for translating rotary motion into rectilinear motion, comprising a ball nut mounted on a worm via a plurality of antifriction balls rollably engaged between an internal helical groove in the ball nut and an external helical groove in the worm, a tubular ball return guide providing a return path for the balls from one end of the ball nut to the other and having an arcuate shape with a constant radius, the opposite end portions of the ball return guide being received in a pair of openings formed through the ball nut in axially and circumferentially spaced positions thereof, each opening in the ball nut composed essentially of a first portion

of semicircular cross section extending straightly in a tangential direction from a cylinder bounded within the ball nut; a second portion of semicircular cross section curving away from the first portion as it extends outwardly from the ball nut the improvement wherein the ball nut has rectangular recess formed in the outside of the ball nut so as to provide a flat



surface; a clamp is attached to the flat surface of the ball nut for fimly retaining the ball return guide in place thereon; and the ball guide clamp has a channel-shaped groove cut diagonally in its bottom surface, into which groove is closely fitted that part of the ball return guide which projects outwardly of the ball nut.

4,604,912

STEERING WHEEL

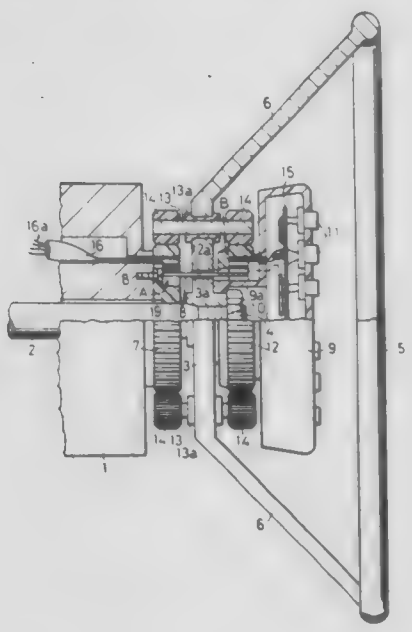
Hiroshi Sugita, Ichinomiya, and Tetsushi Hiramitsu, Kasugai, both of Japan, assignors to Toyoda Gosei Co., Ltd., Nishikasugaigun, Japan

Filed Feb. 24, 1984, Ser. No. 583,266

Claims priority, application Japan, Feb. 25, 1983, 58-27527[U]

Int. Cl.⁴ B62D *1/04*

U.S. Cl. 74—484 R **5 Claims**



1. A steering wheel assembly for a vehicle having electrically-controlled accessories,

said steering wheel assembly comprising:

a tubular stationary steering column having an end constructed and arranged to be presented towards a vehicle driver;

a steering shaft supported for rotation about its own longitudinal axis, said steering shaft extending longitudinally within said steering column and having a portion protruding out of said end of said steering column;

steering wheel boss plate means provided in said protruding portion of said steering shaft;

a steering ring secured by spoke means to said boss plate means, said steering ring being constructed and arranged to be grasped and rotated by the vehicle driver for correspondingly turning the steering shaft;

a pad disposed at least generally centrally of said steering ring, said pad mounting at least one switch means for operating an electrically-controlled accessory of the vehicle;

means journalling the pad with respect to the steering wheel boss plate means so that the steering wheel boss plate means is free to rotate angularly relative to the pad as the steering wheel is turned, but restraining axial movement of said pad longitudinally of said steering shaft, said journalling means disposing said pad so that said switch means mounted thereon is arranged to confront the vehicle driver;

first sun gear means stationarily provided on said steering column in the vicinity of said end thereof, surrounding said steering shaft;

second sun gear means fixed to said pad;

said first and second sun gear means being coaxially arranged and confronting one another with said boss plate means being sandwiched between them;

at least one planet gear shaft means, each being arranged parallel to said steering shaft but disposed eccentrically thereof on said boss plate means and journalled on said boss plate means for rotation about its own longitudinal axis;

first and second planet gear means fixed to the respective said at least one planet gear shaft means and respectively meshingly engaged with said first and second sun gear means, so that as said steering ring is rotated, said pad does not rotate but remains with its same side up confronting the vehicle driver;

means defining a first at least generally coaxially arranged annular slot in said first sun gear means;

means defining a second at least generally coaxially arranged annular slot in said second sun gear means;

means defining a slot formed axially through said boss plate means and arranged to communicate towards both said first and second annular slots;

an electrical control cable operatively connected to said at least one switch means, having a loose spiral portion in one angular sense at least generally coaxially received in said second annular slot in said second sun gear means, another loose spiral portion in an opposite angular sense at least generally coaxially received in said first annular slot in said first annular slot means, an intermediate axially extending portion extending through said slot in said base plate means and operatively interconnecting said loose spiral portions, and having a further portion extending from said opposite sense loose spiral portion for electrical connection with at least one electrically-controlled accessory, so that said steering shaft may be turned clockwise sufficiently to maximally steer the vehicle to the left and to the right without disrupting electrical control of said at least one electrically-controlled accessory.

4,604,913

PARKING BRAKE RELEASING MECHANISM

Masaru Kyonomine, Toyota, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Aichi, Japan

Continuation of Ser. No. 851,702, Nov. 15, 1977, abandoned. This application Nov. 4, 1983, Ser. No. 549,012

Claims priority, application Japan, Nov. 16, 1976, 51-153742[U]

Int. Cl.⁴ G05G *5/06*

U.S. Cl. 74—540 **18 Claims**

1. A parking brake release mechanism for use in association with a parking brake actuator member having a toothed quadrant disposed on a part thereof and movable between a brake applied and brake release position, said release mechanism comprising:

a pawl which is engaged with said toothed quadrant for

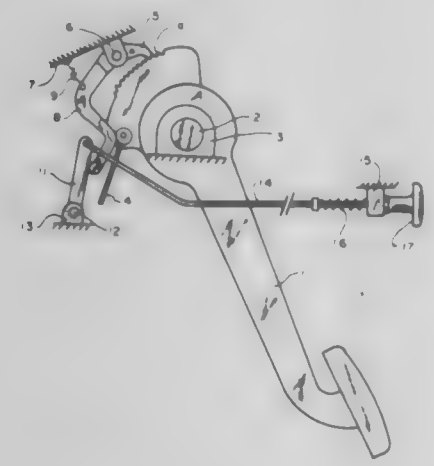
restraining the movement of said actuator member to its brake release position;

a first stationary member rotatably supporting said pawl about a first axis;

a first lever secured to said pawl and integrally rotatable with said pawl, said first lever having an intermediate portion terminating in a free end remote from said first axis;

a second stationary member;

a second lever pivotally coupled to said second stationary member for rotation about a second axis and having an intermediate portion terminating in a free end remote from said second axis, said free end of the first lever abutting the intermediate portion of said second lever at a first substantially single point of contact to maintain a lever ratio of the mechanism at one level while said pawl is engaged with said quadrant;



means for imparting rotative force to said second lever to cause the intermediate portion of said second lever to move against the free end of said first lever solely at said first point of contact and rotate while maintaining said first point of contact to cause rotational movement of said first lever to disengage said pawl from said quadrant, said first lever being spaced from said second lever such that said first lever only contacts said second lever by engagement of said free end of said first lever abutting the intermediate portion of said second lever at said first point of contact during rotation of said first and second levers until disengagement of said pawl from said quadrant whereupon said free end of said second lever contacts said first lever solely at the intermediate portion of said first lever at a second substantially single point of contact to thereby effect a sudden decrease in lever ratio to a level lower than said one level upon further rotation of said second lever.

4,604,914

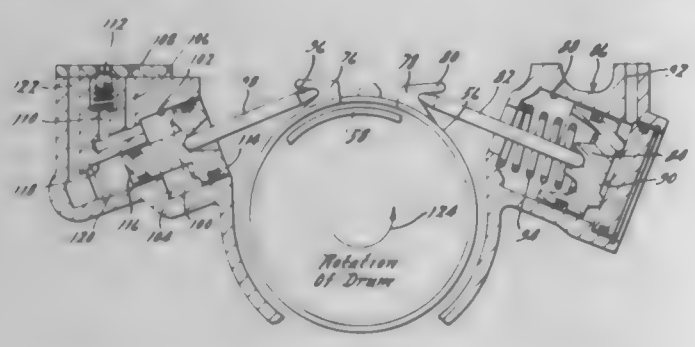
AUTOMATIC POWER TRANSMISSION MECHANISM WITH A PRESSURIZED BRAKE BAND ANCHOR

Alan R. Fisher, Dearborn, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Jul. 5, 1984, Ser. No. 628,051

Int. Cl.[4] F16H *47/08, 3/44;* **F16D** *51/00*

U.S. Cl. 74—688 **2 Claims**



1. In an automatic transmission mechanism having a hydrokinetic torque converter and multiple ratio gearing, said converter having an impeller adapted to be connected to an engine and a turbine connected to an input element of said gearing, an output element of the gearing being adapted to be connected to a torque output member of said mechanism, at least one clutch and at least one brake forming a part of said gearing for controlling the relative motion of elements of the gearing to effect ratio changes;

said brake upon application providing a reaction point for said gearing so that torque multiplication can be achieved, said brake comprising a brake drum, a brake band surrounding said brake drum having an operating end and an anchor end, a fluid pressure operated servo having a servo piston connected operatively to said operating end of said brake band;

an anchor piston connected operatively to said anchor end of said brake band, a cylinder receiving said anchor piston, said cylinder and said anchor piston defining a pressure cavity;

means for pressurizing said anchor piston with a threshold pressure to eliminate slack in said brake band when said servo piston is retracted;

orifice means for controlling the displacement of fluid from said cylinder by said anchor piston as said servo piston is stroked upon brake application;

said anchor piston having two pressure areas, one of said pressure areas being subjected to said threshold pressure to effect a drag force on said brake band and the other of said pressure areas being subjected to a reaction pressure as said anchor piston is stroked upon movement of said servo piston to a brake applying position.

4,604,915

DRIVE SYSTEM FOR A ROTARY-, PIVOT-, AND PROPELLING-DRIVE OF A VEHICLE ESPECIALLY OF AN EXCAVATING MACHINE

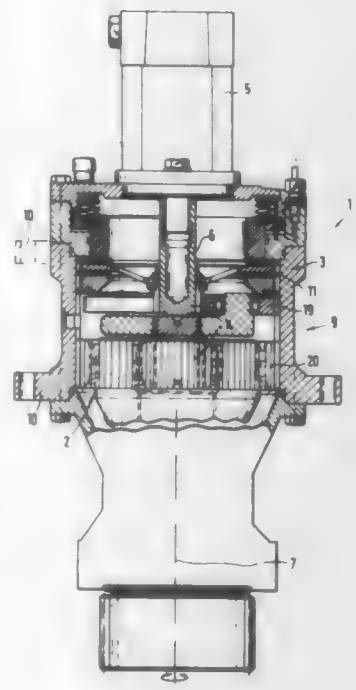
Friedhelm Söffge, and Hans-Peter Knauss, both of Leonberg, Fed. Rep. of Germany, assignors to Ing. h.c.F. Porsche AG, Fed. Rep. of Germany

Filed Dec. 6, 1983, Ser. No. 558,430

Claims priority, application Fed. Rep. of Germany, Dec. 10, 1982, 3245720

Int. Cl.[4] F16H *3/44, 57/10*

U.S. Cl. 74—790 **4 Claims**



1. A drive system for a travelling drive of a vehicle, a driving motor, via an engine output shaft, being connected with a planetary gear having a gear input shaft, and the shafts interacting with a pressure-medium-actuated braking device provided approximately in a vertical longitudinal central plane of a driving gear, and interacting with a spring loading arrangement disposed in a housing of the planetary gear and includes

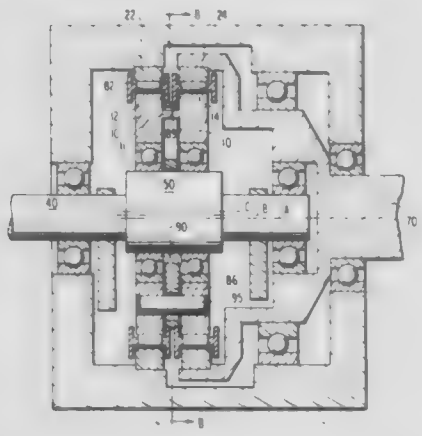
a brake disk which is supported on a toothing of the input shaft and is arranged between two brake plates, wherein the brake plates are held in a toothed wheel that is connected with a stationary pinion cage, and wherein the cage extends into the vertical longitudinal central plane, and wherein the braking device is connected between said cage and the driving motor, and a single bearing arranged in the vertical longitudinal central plane for support of the braking device in said bearing.

4,604,916

EPICYCLIC TRANSMISSION HAVING CAM DRIVEN ROLLER RETAINER

Robert G. Distin, Jr., Louisville, Colo., assignor to Advanced Energy Concepts '81 Ltd., Boulder, Colo.

Filed Feb. 10, 1984, Ser. No. 578,929
Int. Cl.[4] F16H *1/34*
U.S. Cl. 74—805 **17 Claims**



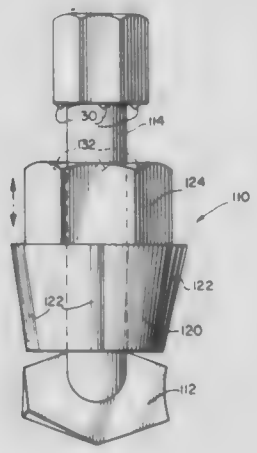
1. In an epicyclic speed reducing transmission of the type employing gear members having opposed gear surfaces with a plurality of rollers in rolling engagement with and transmitting torque between the same, the improvement comprising retainer means directly guiding said rollers, and cam means for orbitally driving said retainer means while said retainer means maintains said rollers in a circular array, said cam means being centered at the center of the circle defined by said rollers.

4,604,917

EASY-OUT THREADED FASTENER EXTRACTOR

Eli Polonsky, 1608 S. Kenton, Aurora, Colo. 80012

Filed Mar. 12, 1985, Ser. No. 710,675
Int. Cl.[4] B25B *13/50*
U.S. Cl. 81—53.2 **1 Claim**



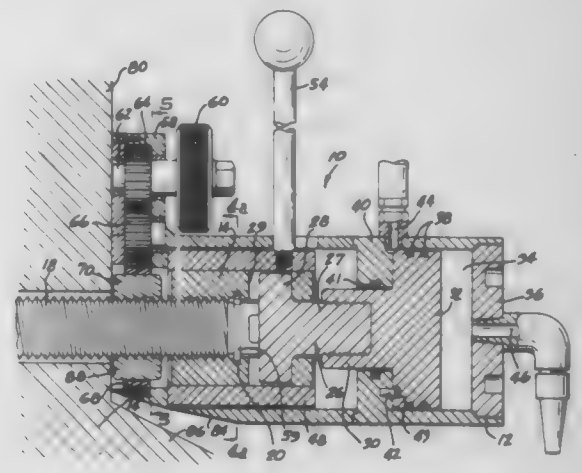
1. A combination tool for extracting broken threaded fasteners from a threaded bore comprising; drill means for forming a bore in said broken fastener, shaft means attached to said drill means, drive means attached to said shaft means opposite said drill means, extractor means rotatably and reciprocally moveable on said shaft means and coupling means for coupling said extractor means to said drive means, said coupling means formed of a plurality of projections on said drive means and a plurality of projections receiving openings on said extractor means; whereby, in use, a bore is drilled in said broken fastener by said drill means while permitting movement between said drill means and said extractor means allowing said drill means to penetrate said broken fastener to a predetermined depth before said coupling means engages said drive means and said extractor means causing said extractor means to be driven by said drive means to engage the interior of said bore to extract said broken fastener.

4,604,918

APPARATUS FOR APPLYING TENSION TO STUDS

Derek L. Aldred, Dipton, England, assignor to Haskel, Inc., Burbank, Calif.

Filed Sep. 20, 1985, Ser. No. 778,220
Int. Cl.[4] B25B *29/02*
U.S. Cl. 81—57.38 **16 Claims**



1. A stud tensioning apparatus comprising:

an array of jaw segments, each having an inwardly facing engagement surface with grooves thereon adapted to engage threads on said stud, each of said segments having an attachment portion extending away from said surface and defining an aperture therein;

a pull member disposed along an axis about which said segments are arranged and having a plurality of hangers projecting radially from said axis into said apertures;

radial confinement means for urging said segments inwardly against said stud; and

actuator means for applying an axial tensioning force to said pull member and thus to said segments and said stud.

4,604,919

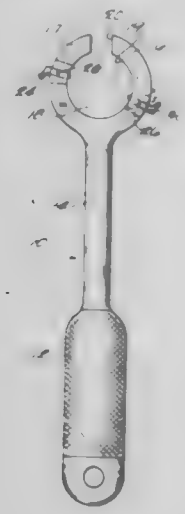
OPEN END RATCHET SOCKET WRENCH

Richard P. Rollo, 712 S. Spruce, Pana, Ill. 62557

Filed Dec. 6, 1984, Ser. No. 679,130
Int. Cl.[4] B25B *13/00*
U.S. Cl. 81—58.2 **2 Claims**

1. The combination of an open end socket wrench for turning nuts and a cooperating socket comprising a wrench handle portion, a wrench head portion, said head portion having wall means defining a socket receptacle in the form of an annular ring with concentric inside and outside surfaces and parallel upper and lower surfaces, wall means in said annular ring defining opposed recesses extending from said inside ring surface to said outside surface and between said upper and lower surfaces, said head portion adapted to rotatably support said socket, with said inner surface rotatably engaging said socket, wall means defining a slot in said socket wrench head and drive means on said socket head engagable with said socket to drive said socket in a selected direction and release said socket in the other direction as said handle is returned to a driving position, said drive means including pawls, pivot pins for each of said pawls, said pins extending between said upper and lower surfaces, said pins being located on a concentric circle with respect to said inside ring surface to pivotally

support said pawls in said recesses for pivotal movement in a plane transverse to said socket rotation with said pawls extending outwardly of said rings for manual engagement and release with said pawl tips movable into and from said socket receptacle and springs in said recesses in said wrench heads engaged with said pawls at a point remote from said pivot pins, and



biasing said pawls about said pivot pins, said socket adapted to rotatable interfit in said wrench head and wall means on said socket which cooperate with said wrench drive means to afford driving of said socket and wall means on said socket defining a slot which registers with said wrench head slot to enable access to inline nuts.

4,604,920

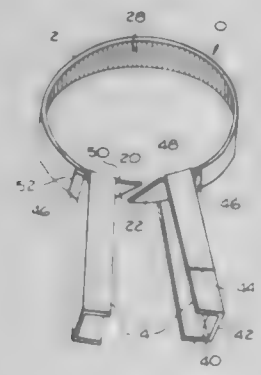
FILTER WRENCH

Conrad E. Dupke, 870 Tanglewood Dr., Wheeling, Ill. 60090

Filed Jun. 11, 1985, Ser. No. 743,390

Int. Cl.[4] B25B *13/46*

U.S. Cl. 81—64 **8 Claims**



1. A filter wrench comprising,

a curved band in a near-circle shape, and having an axis, and radial and circumferential directions according to a circle,

the band including end portions having end surfaces directed toward each other, and otherwise being continuous from one end to the other,

the band being of uniform cross sectional shape between points closely adjacent the end surfaces, and being of uniform thickness throughout,

the band being self spring biased to an outer position of large size and capable of being flexed to an inner position of small size,

the band being of great thickness whereby in moving between its said positions, the band does not bend in localized areas, but all bending takes place as a continuous and progressive action distributed throughout the length of the band, whereby in said positions, and positions therebetween, the band maintains its near-circle shape, and

handles secured to the band at the end portions thereof, and extending generally radially therefrom, the handles being rigid, and capable, when gripped in the hand and moved toward each other in circumferential direction, of contracting the band to its inner position,

the handles being rigidly secured to the band each at points spaced apart a substantial distance circumferentially of the band, whereby in response to the handles being moved toward each other, the band is capable of withstanding deformation at the junctures of the handles and the band.

4,604,921

ADJUSTABLE CONTROL ASSEMBLIES

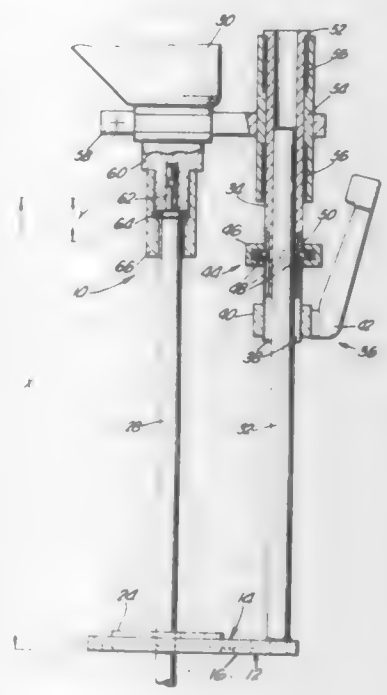
George D. Hewison, Hampshire, England, assignor to ITW Limited, Camberley, England

Filed May 20, 1985, Ser. No. 736,206

Claims priority, application United Kingdom, May 24, 1984, 8413275

Int. Cl.[4] B25B *23/00*

U.S. Cl. 81—429 **8 Claims**



1. An adjustable control assembly comprising first abutment means for placement against a workpiece, the first abutment means being provided on first spacing means which is movable with respect to second abutment means, the second abutment means being provided on second spacing means which is movable with respect to third abutment means for attachment to a worktool, the first and second spacing means being releasably secured together by connector means entirely separate from the second abutment means, the connector means providing longitudinally extending slots in a free end of a hollow tube forming the second spacing means, and further providing a pinch bracket for squeezing said slotted end of the hollow tube onto a rod forming the first spacing means, the preset distance between the first and third abutment means being adjustable to correspond to the desired initial position of the worktool with respect to the workpiece, and the preset distance between the second and third abutment means being adjustable to correspond to the maximum permitted advance of the worktool with respect to the workpiece.

4,604,922

DRILL PIPE TURNING DEVICE

Michael D. Soutsos, 5475 Colorado St., Long Beach, Calif. 90814

Filed Sep. 17, 1984, Ser. No. 651,162

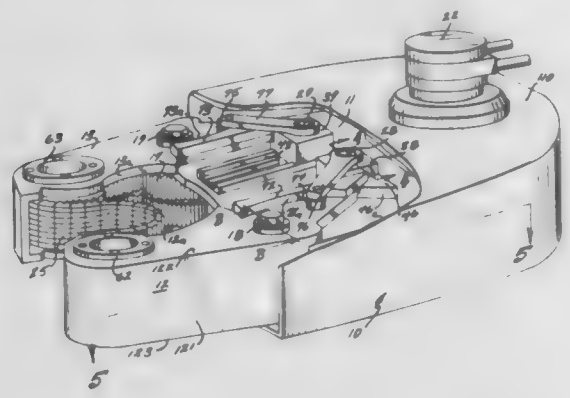
Int. Cl.[4] B25B *17/00*

U.S. Cl. 81—57.17 **3 Claims**

1. In a tool conformed to clamp onto segments of pipe and to advance in rotation said segments, including a frame, two opposed jaw-like arms each of said arms at a first end thereof attached to said frame by a pivotal mount and each arm including rolling means at a free second end thereof, a chain loop, a

motor attached to said frame for advancing said chain loop, said motor including a drive sprocket thereon, said chain loop extending around and in engagement with the drive sprocket, the pivotal mounts, and the rolling means;

said arms each including levers radially extending from said pivoted mounts and projecting over said frame;



a pair of shuttles slidably mounted on said frame and having camming means to abut against said levers to pivotally articulate said arms around said pivotal mounts in the course of the translation of said shuttles;

a pair of shuttle idles supported for rotation on said shuttles and aligned to engage the exterior of said chain loop; and

actuating means operatively connected for translating said shuttles.

4,604,923

METHOD OF MACHINING A WORKPIECE BETWEEN CENTERS AND A CLAMPING DEVICE FOR PERFORMING THIS METHOD

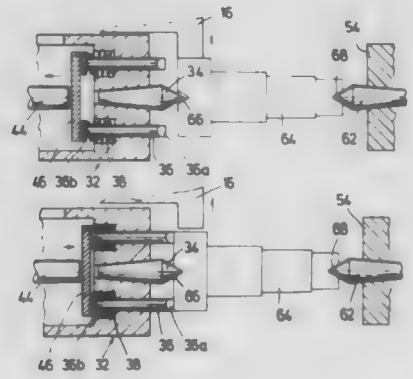
Helmut F. Link, Aichwald, and Erich E. Schäfer, Nabern, both of Fed. Rep. of Germany, assignors to Index-Werke Komm. Ges. Hahn & Tessky, Esslingen, Fed. Rep. of Germany

Filed Jan. 13, 1984, Ser. No. 570,462

Claims priority, application Fed. Rep. of Germany, Jan. 18, 1983, 3301438

Int. Cl.⁴ B23B *1/00, 33/00*

U.S. Cl. 82—1 C **11 Claims**



1. A method for machining a workpiece mounted in a lathe between a rotatable work spindle rotatable about an axis of rotation and having a chuck, front drivers and first center at one workpiece end and an axially movable second center mounted on a tailstock and urged in the direction of said first center at a second workpiece end, the second center being disposed substantially in alignment with the work spindle axis of rotation, comprising the steps of inserting a workpiece between the first and second centers; centering and supporting the workpiece between said centers; applying force to the workpiece end engaging the first center and removing the centered workpiece from engagement with said first center in the direction of said second center; supporting said workpiece between the point of force application and said second center; urging said second center to move substantially along said work spindle axis of rotation away from said first center; clampingly supporting the workpiece about peripheral portions thereof by means of said chuck; rotating the workpiece while so clamped to said chuck by rotatably driving said chuck; rough-machining the rotating workpiece; releasing the workpiece from the chuck while supporting the workpiece between said first and second centers; urging said front drivers against the end of the workpiece engaging the first center; rotating said workpiece by means of said front drivers while said workpiece is supported between said centers, and finish-machining the rotating workpiece.

7. A workpiece clamping apparatus for use in a lathe, comprising a work spindle rotatably driven about an axis of rotation; bearing means rotatably mounting said work spindle; a first workpiece center supportably mounted on an end portion of said work spindle; retractable front driver means supportably mounted on the spindle end portion; a tailstock spaced axially from said work spindle end portion; means for urging said front driver means into a retracted position wherein the distal ends of said front driver means are inwardly disposed of the distal end of the first workpiece center; an axially movable second workpiece center rotatably mounted on said tailstock; means for urging said second center toward said first center whereby a workpiece may be centered and supported between said first and second workpiece centers; a chuck mounted on said work spindle and having clamping jaws for clampingly engaging a workpiece after said workpiece is centered, and cooperative action with said second center in maintaining a clampingly engaged workpiece in substantial alignment with said axis of rotation; means for moving said clamping jaws in synchronism and concentrically to said axis of rotation into workpiece-engaging and workpiece-release conditions; said chuck clamping jaws moving at an angle to the work spindle axis of rotation when moving into engagement with a workpiece and being so located relative to said first workpiece center as to impart axial movement to a workpiece centered between said first and second workpiece centers whereby a workpiece is simultaneously driven from engagement with said first workpiece center, axially moved in opposition to the second center substantially along the workpiece axis of rotation and clamped into a position substantially coaxial with the workpiece axis of rotation; and means for extending said front driver means from the retracted position into engagement with the end of a workpiece when said workpiece is engaged by said first and second centers.

4,604,924

CONTROL DEVICE FOR THE OPENING AND CLOSING OF THE METAL BAR SLIDING GUIDES IN AN EQUIPMENT FOR THE FEEDING OF METAL BARS TO A MULTIPLE-SPINDLE LATHE

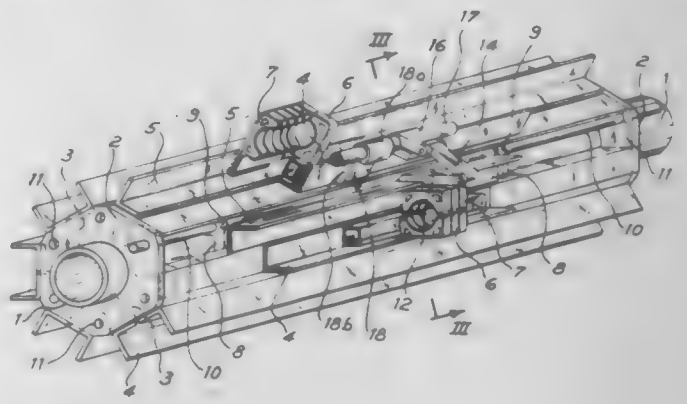
Giovanni Cucchi, and Pietro Cucchi, both of Bussero, Italy, assignors to F. lli Cucchi S.r.l., Bussero, Italy

Filed Jun. 26, 1984, Ser. No. 624,859

Claims priority, application Italy, Jul. 8, 1983, 21988 A/83

Int. Cl.⁴ B23B *13/04*

U.S. Cl. 82—27 **11 Claims**



1. A control device for feeding metal bars to a multi-spindle lathe comprising:

a frame;

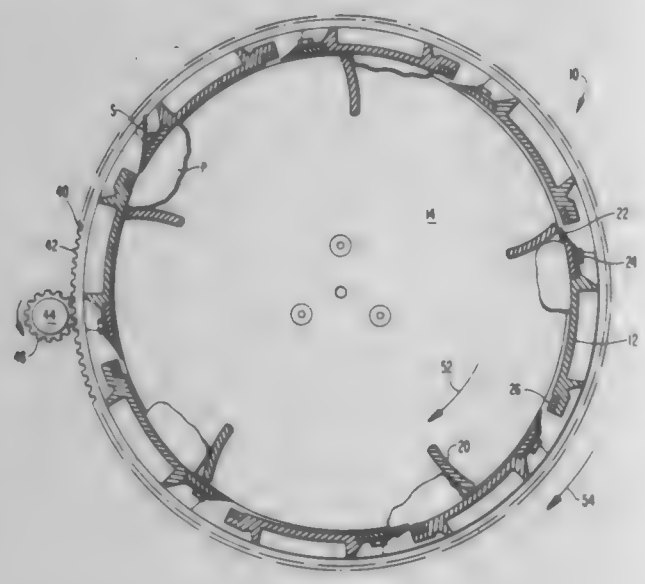
rotatable support means carried by said frame;
a drum mounted on said support means for rotation about its longitudinal axis;
bar guides fixedly secured to said drum for rotation therewith having a fixed half and a movable half, said movable half being pivotally mounted on said drum and adapted to be moved between opened and closed positions with respect to said fixed half;
a first shaft having an axis parallel to said drum, said first shaft being rotatably mounted on said drum about said first shaft axis;
a hinge transmission kinematic mechanism connecting said first shaft to said movable half and adapted to move said movable half between the opened and closed position;
a latch mechanism connected to said first shaft, said latch mechanism including a fixed part secured on said drum and said first shaft being journaled therein, and a mobile part facing said fixed part and being secured on said first shaft for rotation therewith;
a locking pin located within said fixed part and being parallel to said first shaft, said locking pin being positively locked within said mobile part when said movable half is closed;
means operatively connected to said first shaft for disengaging said locking pin from said mobile part and for actuating the rotational movement of said first shaft whereby said movable half is opened.

4,604,925

METHOD AND APPARATUS FOR SLICING PRODUCE

Lawrence W. Wisdom, Dallas, Tex., assignor to Frito-Lay, Inc., Dallas, Tex.

Filed May 24, 1985, Ser. No. 737,546
Int. Cl.[4] B26D *3/28*
U.S. Cl. 83—13 **16 Claims**



1. A centrifugal slicer comprising
(a) an impeller for receiving an article to be sliced, the impeller including means for carrying an article to be sliced;
(b) means for rotating the impeller so that an article to be sliced being carried by the impeller is centrifugally forced in an outward direction;
(c) a cylindrical slicing head adapted for cooperation with the impeller so that an article to be sliced is rotated by the impeller within the slicing head, the slicing head including at least one knife for slicing an article when said article is centrifugally forced against the knife during rotation of the impeller; and
(d) means for rotating the cylindrical slicing head in the same direction as the impeller but at a rotational speed less than that of the impeller.

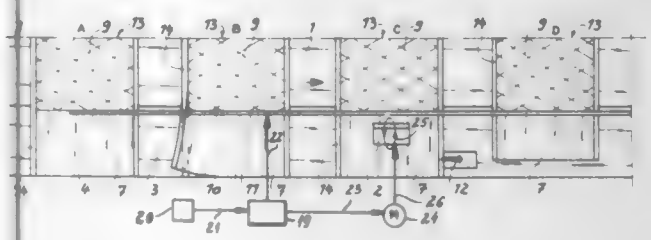
9. A method for slicing produce in a centrifugal slicer of the type having an impeller for receiving and carrying an article to be sliced, which impeller cooperates with a cylindrical slicing head having at least one slicing knife, the method comprising:
(a) feeding an article to be sliced to the impeller,
(b) rotating the impeller to centrifugally force the article against the slicing head knife, and
(c) rotating the slicing head in the same direction as the impeller, but at a rotational speed less than that of the impeller, to slice the article while simultaneously reducing waste and scrap.

4,604,926

METHOD OF AND APPARATUS FOR AUTOMATICALLY ORIENTING A FABRIC WITH ALIGNED NAP ZONE AND NAPLESS ZONE

Johannes Freermann, Ochtrup, Fed. Rep. of Germany, assignor to Carl Schmale GmbH & Co. KG, Ochtrup, Fed. Rep. of Germany

Filed Sep. 21, 1984, Ser. No. 653,505
Claims priority, application Fed. Rep. of Germany, Sep. 24, 1983, 3334645
Int. Cl.[4] B26D *7/14*; D06H *3/12*
U.S. Cl. 83—18 **20 Claims**



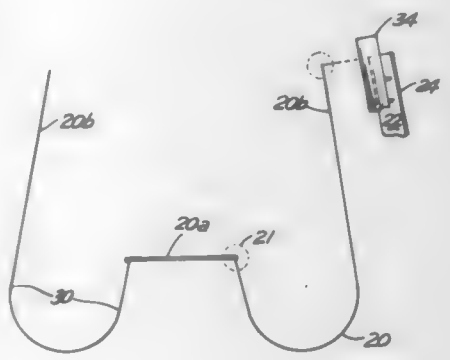
1. A method of automatically producing a fabric with a nap zone and napless zone joining along a line comprising the steps of:
(a) continuously transporting the fabric along a conveyor in a direction parallel to said line;
(b) sliding said fabric under a guide elongated in and extending in said direction and pressing on said fabric;
(c) incrementally and iteratively drawing said napless zone laterally transverse to said direction to bring an edge of the nap zone against the guide;
(d) continuing to transport the fabric so that said edge of the nap zone continues to lie along the guide; and
(e) severing a portion of the napless zone in such a manner that the napless zone has an outer edge parallel to the edge of the nap zone.

4,604,927

RAZOR BLADE CUTTER ASSEMBLY

George J. Reimann, Pittsford, N.Y., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Oct. 9, 1984, Ser. No. 658,727
Int. Cl.[4] B26F *1/44*
U.S. Cl. 83—55 **17 Claims**



14. A method for die cutting a stack of layered material comprising;
providing said stack with a supporting surface having a relief slot formed in said surface in the shape of the desired cut; and

applying cutting pressure to said stack with a razor blade cutter in the configuration of the desired cutting shape opposite said slot, said razor blade cutter having a maximum thickness of not less than about 0.01 inches and not more than about 0.040 inches, said blade having a continuous blade with a continuous body portion having two sides and two edges, one of said edges being a substantially straight razor sharp continuous cutting edge, said razor blade comprised of at least two separate blades mounted to form the desired cutting shape, with straight configured blades having a maximum thickness of not less than about 0.030 inches, and irregularly configured blades having a maximum thickness of not more than about 0.015 inches, whereby said stack of layered stock material is cut in the desired shape.

4,604,928

SECTION CONVEYING AND COOLING APPARATUS

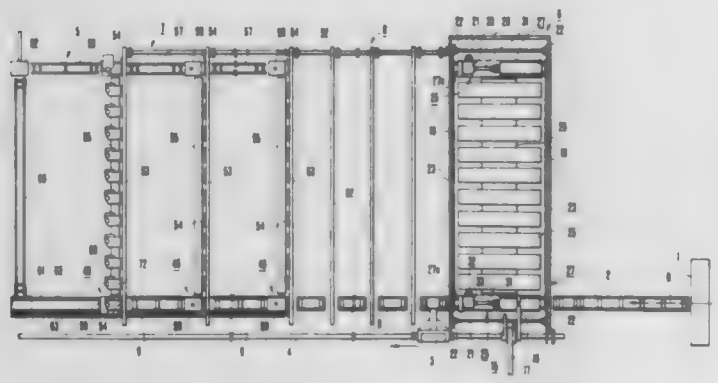
Masahiro Honda, Ube, Japan, assignor to Ube Industries, Ltd., Yamaguchi, Japan

Filed Aug. 23, 1985, Ser. No. 768,976

Claims priority, application Japan, Aug. 28, 1984, 59-177567[U]

Int. Cl.⁴ B26D *7/06*; B23D *45/02*

U.S. Cl. 83—151 **7 Claims**



1. A section conveying and cooling apparatus comprising:

an elongated table for supporting a member continuously supplied thereto at a start point of conveyance and cooling;

a cutter provided for the table for cutting the member into sections of predetermined length;

a plurality of head chucks for gasping head ends of said sections;

plurality of tail chucks for grasping tail ends of said sections, each ones of said head chucks and said tail chucks including means for gasping said sections and means for adjusting pulling forces applied to said sections and said head chuck and said tail chuck in pair sequentially conveying said sections in a direction perpendicular to said sections while maintaining said sections in parallel and at equal distances;

head chuck moving means provided at a head side of said sections, which runs along an endless path including forward, downward, rearward and upward paths which are contained in a plane perpendicular to an axis of said section, between a conveyance and cooling starting position and a conveyance and cooling ending position, and which has a chuck engaging means for engaging with said head chuck while it is moved horizontally but releasing said head chuck while the same is moved in the vertical direction;

head chuck elevating means respectively provided at forward and rearward limit positions of said head chuck moving means for raising and lowering said head chuck;

tail chuck moving means which is disposed on a tail side of said section to intersect the same, and forwardly moved at an equal speed as said head chuck moving means, and which includes a holding means for holding said tail chucks at the same spacing as said head chucks between said conveyance and cooling starting and end positions; and

tail chuck returning means for transferring said tail chuck from said conveyance and cooling end position of said tail chuck moving means to said conveyance and cooling start position.

4,604,929

SELF-ALIGNING GUILLOTINE

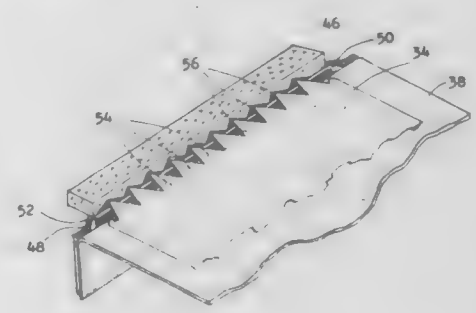
Leslie Vallance, Livingston, Scotland, assignor to Burroughs Corporation, Detroit, Mich.

Filed Jan. 31, 1985, Ser. No. 696,756

Claims priority, application United Kingdom, Mar. 22, 1984, 8407453

Int. Cl.⁴ B26D *5/16*

U.S. Cl. 83—524 **30 Claims**



1. An apparatus for severing a movable web, said apparatus comprising: a blade, movable towards said web on a first face of said web for a cutting portion of said blade to be passed through said web to sever said web; and an anvil in opposition to said blade for engaging and supporting said web on a second face of said web when said web is urged thereagainst by said blade, said anvil comprising an opening for accommodating said cutting portion of said blade and said anvil being co-operative with said blade to support said web against the cutting action of said blade; where a first boundary of said opening is defined by an edge of a resilient elastic member, where a second boundary of said opening, opposing said first boundary, is defined by an edge of a rigid plate, where a face of said resilient elastic member is operative to assist in the support of said second face of said web, and where said cutting portion of said blade is operative to displace said edge of said resilient member to allow ingress of said cutting portion of said blade into said opening despite any misalignment between said blade and said opening.

4,604,930

PUNCH PRESS

Robert M. Avila, 8362 Seaport Dr., San Clemente, 92764, and Glenn A. Hoffman, Jr., Huntington Beach, both of Calif.

Filed Apr. 30, 1984, Ser. No. 605,636

Int. Cl.⁴ B26D *5/12*

U.S. Cl. 83—527 **8 Claims**

1. A punch press, comprising:

(a) a platen and a bed disposed in parallel relationship to each other,

(b) first and second guide pins projecting upwardly from said bed,

said guide pins being perpendicular to said bed,

said guide pins being spaced sufficiently far from each other to permit mounting of dies therebetween,

each of said guide pins having a longitudinal bore therethrough,

(c) bushings mounted slidably on the upper end portions of said guide pins,

said bushings having upper portions extending above the upper ends of said guide pins and at least to said platen,

(d) pull rods extending through said bores in said guide pins,

(e) connector means to connect the upper ends of said pull rods to said platen,

said connector means comprising threaded elements threadably associated with the upper ends of said pull rods,

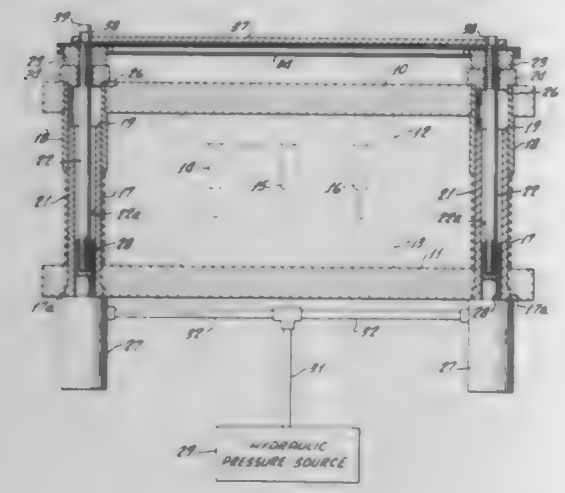
said threaded elements being seated on said platen,

said threaded elements being adapted to be rotated relative to said pull rods to thereby adjust the position of said platen relative to said bed prior to injection of fluid into said cylinder,

(f) helical compression springs mounted around said guide pins and seated between said bed and said bushings,

(g) cylinders mounted at said bed,

the pistons of said cylinders being connected to the lower ends of said pull rods,



(h) means to inject fluid into said cylinders to cause them to shift their pistons downwardly, thus pulling downwardly on said pull rods and causing downward movement of said platen,

(i) means to effect simultaneous and equal rotation of said threaded elements relative to their associated pull rods to thus effect uniform adjustment at each of said pull rods, whereby to prevent unbalance of forces in the press, and

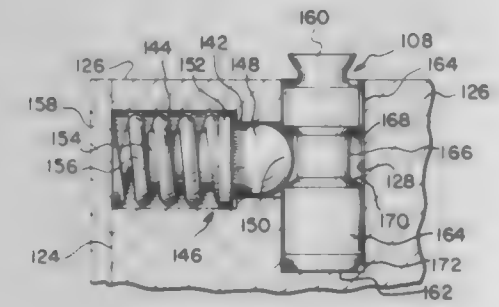
(j) means to prevent rotation of said pull rods during rotation of said threaded elements including a bar extended between said pull rods and having a noncircular opening at each of said pull rods, said noncircular openings mating with noncircular portions of the ends of said pull rods to prevent rotation.

4,604,931

QUICK CHANGE ROTARY PUNCH

Donald G. Bastian, Dayton, and Gregory L. Slepicka, Miamisburg, both of Ohio, assignors to Harris Graphics Corporation, Melbourne, Fla.

Filed Aug. 16, 1985, Ser. No. 766,601
Int. Cl.[4] B26F *1/10*
U.S. Cl. 83—665 **12 Claims**



5. An improved punch reel for use in a rotary punch to provide regularly spaced holes along a web of material, said punch reel being adapted to receive and accurately retain punch tools, each having a punch head at one end, a base at the other end, and an outer cylindrical sidewall, the outer cylindrical sidewall having a circumferential undercut which includes a tapered wall extending toward the base of said punch, said reel comprising:

an annular main body member having a central shaft-receiving opening therethrough, a planar side face, and an outer cylindrical surface having a plurality of regularly spaced radially extending cylindrical socket openings therein for receiving the individual punches, said punch-receiving socket openings being adjacent to said planar side face of said main body member;

a corresponding plurality of cylindrical bores extending through said planar side face and intersecting said punch-receiving socket openings, each of said bores having a counterbore at said planar side face;

a plurality of punch-retaining plungers, one for each of said punch-receiving socket openings, each of said plungers having a first cylindrical portion terminating in a spherical punch-retaining head at its distal end and a spring-retaining flange at its base, and a second cylindrical portion extending from the base of said first cylindrical portion beyond said flange, said first cylindrical portion being sized to be received within one of said cylindrical bores to extend into a respective one of said punch-receiving socket openings, said flange being sized to be received within said counterbore;

a plurality of spring members, one for each of said plungers, each of said spring members being sized to receive said second cylindrical portion of one of said plungers and to be received within one of said counterbores; and

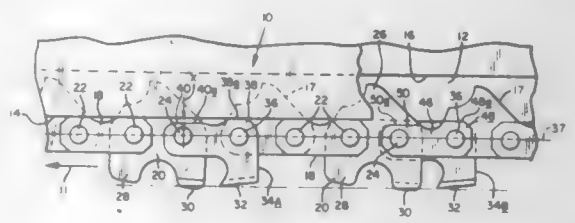
a cap plate secured to the planar side face of said main body member to retain all of said plungers and said springs in said respective bores and counterbores, said springs being sized such that they are placed into compression between said cap plate and said spring-retaining flange whereby each punch may be quickly changed yet, once inserted, is retained within one of said punch-receiving socket openings by the spring-induced pressure of the spherical punch-retaining head of said plunger within the circumferential undercut of the punch.

4,604,932

SAFETY CHAIN FOR CHAIN SAWS

Gerald J. Doiron, Harwich, Mass., assignor to Omark Industries, Inc., Portland, Oreg.

Continuation of Ser. No. 544,783, Oct. 24, 1983, abandoned.
This application Apr. 5, 1985, Ser. No. 720,292
Int. Cl.[4] B27B *33/14*
U.S. Cl. 83—830 **15 Claims**



1. A chain for a chain saw including a cutter bar having a periphery about which the chain circulates with a substantially straight portion along which the chain travels, said chain comprising articulated cutting tooth elements and additional non-cutting elements, safety members on the non-cutting elements projecting in the same direction as the cutting teeth and shiftable between two positions while on the substantially straight portion of the bar, one position in which the safety members extend beyond the cutting teeth inhibiting cutting, and a second position in retracted position in which the teeth are allowed to cut, the safety members being normally held in said one position solely by longitudinal tension in the chain to inhibit cutting in the absence of pressure on the chain toward the cutter bar, and pins articulating the elements wherein tension applied to the chain about the cutter bar normally maintains the pins in a single line, but at the same time allows

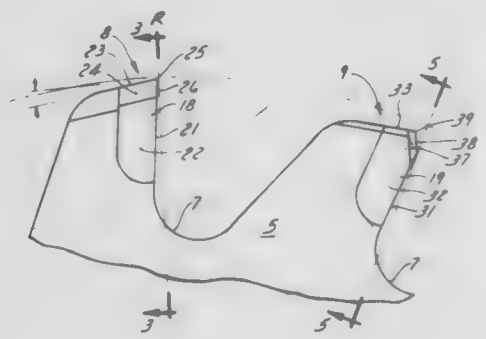
retraction of certain pins upon contact of the chain with a relatively hard substance.

4,604,933

CARBIDE-TIPPED CIRCULAR SAW FOR METAL CUTTING AT LOW SURFACE SPEEDS

Ernest G. Lesher, Cleona, Pa., and Cornelius E. Mieras, Jasper, Ind., assignors to North American Products Corp., Atlanta, Ga.

Filed Oct. 28, 1983, Ser. No. 546,468
Int. Cl.[4] B23D *57/00*; B27B *33/08*
U.S. Cl. 83—851 **6 Claims**



1. A metal cutting circular saw that comprises a blade body having an axis and a plane of symmetry normal to said axis and having gullets that separate circumferentially spaced teeth, and wherein each tooth comprises a carbide insert which defines a front portion of the tooth and which has opposite side surfaces that face substantially axially outwardly and a top surface that faces away from said axis, said saw being characterized by:

A. the teeth being arranged in pairs to cooperate for triple chip cutting, with the two teeth of each pair circumferentially adjacent to one another; and

B. each pair comprising

(1) a lead tooth

(a) having a cutting edge which

(i) is parallel to said axis and

(ii) extends across at least half the distance between the side surfaces of the lead tooth but

(iii) has its ends spaced inwardly from those side surfaces,

(b) said cutting edge being defined by the junction of the top surface on the lead tooth with a front surface thereon, and

(c) said front surface being at a positive rake angle, and

(2) a follower tooth

(a) having a pair of oppositely oblique cutting edges, one at each side of said plane of symmetry,

(i) each of which is inclined rearwardly away from said plane and

(ii) each of which is at a smaller distance from said axis than said cutting edge on the lead tooth,

(b) each of said oblique cutting edges being defined by the junction of the top surface on the follower tooth with an obliquely forwardly and sidewardly facing surface thereon, and

(c) each said obliquely forwardly and sidewardly facing surface being at a negative rake angle.

4,604,934

CARRIAGE TRAIN PRECISION LINEAR POSITIONING SYSTEM

Martin R. Elliott, Austin, Tex.; Dwight A. Bollinger, Mt. Zion, Ill.; Kris B. Curry, and Daniel C. Plocik, both of Decatur, Ill., assignors to PPG Industries, Inc., Pittsburgh, Pa.

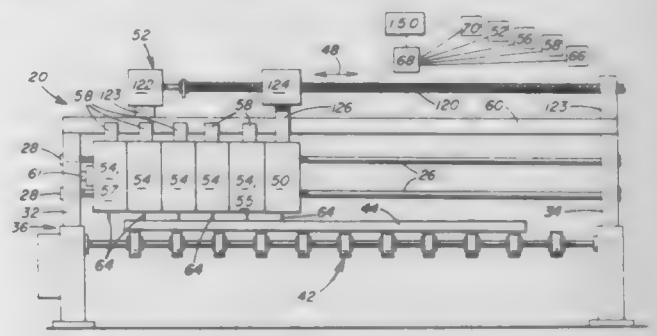
Filed May 8, 1985, Ser. No. 732,040
Int. Cl.[4] C03B *33/02*
U.S. Cl. 83—880 **20 Claims**

1. An apparatus for positioning a plurality of carriages across a work surface, comprising:

means for supporting said carriages for movement across the work surface;

an elongated member extending across the work surface;

means for detachably interconnecting said carriages together to form a carriage train;



means for driving an endmost carriage along said supporting means to move said train across the work surface; and

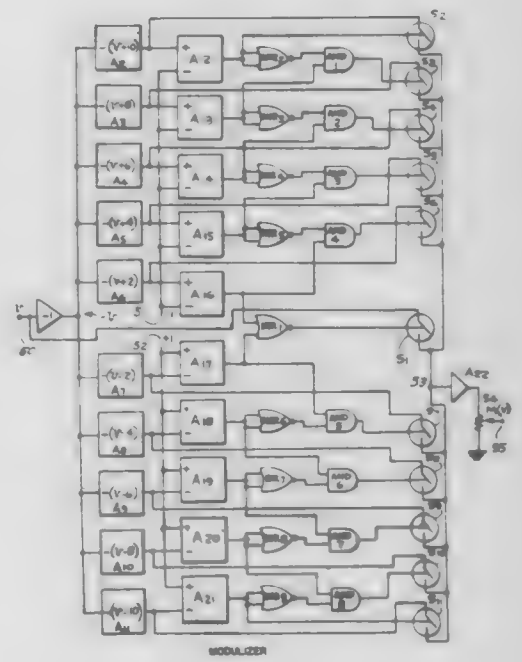
means operatively associated with each of said carriages, except said endmost carriage, selectively actuatable for holding its associated carriage to said elongated member at a preselected position across the work surface.

4,604,935

APPARATUS AND METHOD FOR PROCESSING AUDIO SIGNALS

Ellis D. Cooper, New York, N.Y., assignor to Joseph A. Barbosa, New York, N.Y.

Filed Mar. 27, 1980, Ser. No. 134,547
The portion of the term of this patent subsequent to Apr. 12, 2000, has been disclaimed.
Int. Cl.[4] G10H *1/00*
U.S. Cl. 84—1.01 **13 Claims**

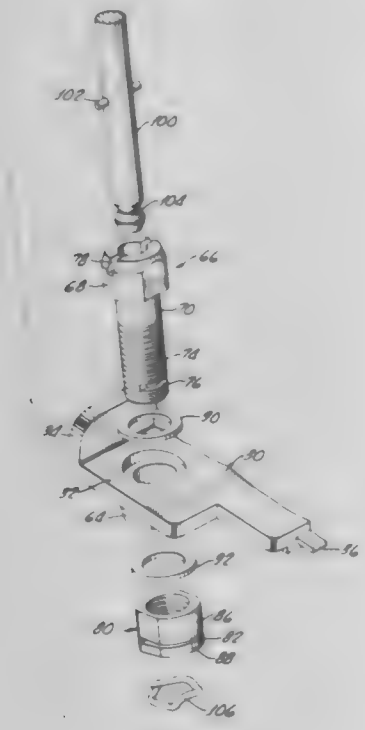


1. In a method for producing musical signals with variable bandwidth responsive to input signal amplitude, the step comprising smoothing the discontinuities in a variable amplitude audio input in the time domain with a continuous and bilaterally tapered transfer function.

4,604,936
SNAP-IN VIBRATO ARM

John F. Page, La Mirada, Calif., and Helmut Schaller, Feucht, Fed. Rep. of Germany, assignors to Fender Musical Instruments Corporation, Brea, Calif.

Filed Jan. 4, 1985, Ser. No. 689,715
Int. Cl.[4] G10D *3/12*
U.S. Cl. 84—313 15 Claims



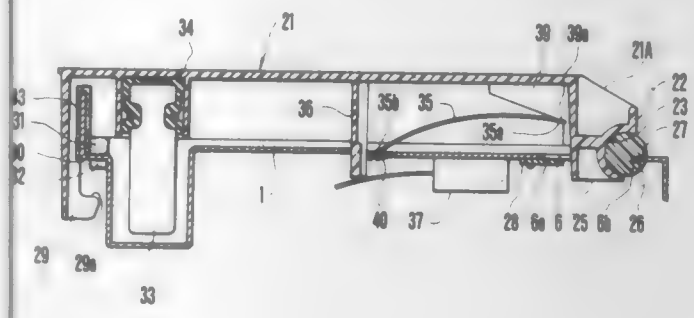
1. A guitar-type musical instrument comprising:
a body,
a plurality of strings mounted to and extending over said body in tensioned relationship,
a string mounting element movably mounted to the body, said strings being connected to the string mounting element so that motion of the string mounting element produces a vibrato sound, said string mounting element comprising a bridge plate pivoted to said body,
a vibrato actuator handle for effecting motion of the string mounting element, said handle having an operator arm extending in a direction generally parallel to said body, and
means for detachably and rotatably connecting the handle to said string mounting element, said means for connecting the handle comprising a shaft rotatably mounted to the plate and means for detachably connecting the handle to said shaft, whereby the handle may be rotated to move the arm to different positions over said body and may be completely detached without the use of tools.

4,604,937
KEYBOARD DEVICE OF ELECTRONIC MUSICAL INSTRUMENT

Shinji Kumano, and Motoshi Murasaki, both of Shizuoka, Japan, assignors to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatdsu, Japan

Filed Jan. 17, 1984, Ser. No. 571,913
Claims priority, application Japan, Jan. 20, 1983, 58-7955; Jan. 20, 1983, 58-7956
Int. Cl.[4] G10C *3/12*
U.S. Cl. 84—435 21 Claims

1. A keyboard device of an electronic musical instrument, comprising:
a keyboard frame;
a plurality of keys, which are aligned on said keyboard frame, and which are vertically pivotable, wherein each key of said plurality of keys, has a longitudinal axis and a semi-circular surface at a back end portion thereof having a radius of curvature lying in a vertical plane passing through said longitudinal axis of said key,
a plurality of return springs each of which corresponds to one of said keys and has one end stopped by said key and the other end stopped by said keyboard frame so as to bias said key toward a nonstruck position; and
a plurality of pivot members each of which is disposed on said keyboard frame at an end of a corresponding one of said plurality of keys on said longitudinal axis of each of said

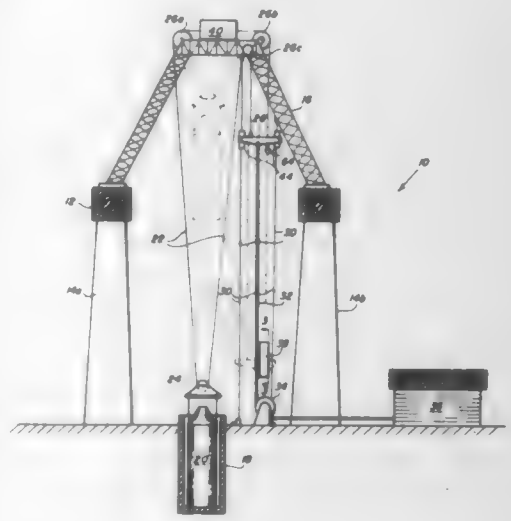


keys, each of said plurality of pivot members having a semi-circular surface which is in slidable contact with said back end portion of said corresponding one of said keys, so as to allow each of said keys to perform pivotal movement,
said back end portion of each of said keys being spring-biased against said semi-circular surface of said pivot member by means of said return spring.

4,604,938
ARRESTING AND RECOVERY SYSTEM FOR TEST MISSILES

Robert E. Kennedy, Santa Cruz, and James D. Neef, Sunnyvale, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 2, 1984, Ser. No. 637,238
Int. Cl.[4] F41F *3/042, 3/052;* F16F *7/00*
U.S. Cl. 89—1.8 9 Claims



1. A system for arresting and recovering a test ballistic missile launched from a surface launcher to a predetermined height, said system comprising:
a support structure disposed over the launcher and formed to stand higher than the launch height;
a loop of cable formed to be operatively suspended from said support structure and adapted to be coupled to the test missile;
a singletree formed for spreading and terminating the ends of said cable loop such that one end is swivelably connected to said singletree and the other end is slidably engaged therewith;
means for capping the slidable end of said cable loop such that the cable end may not be withdrawn from said singletree;
arresting means operatively connected to said singletree for taking up slack developed in said cable loop as the test

missile is launched and for arresting the test missile after it has reached its apogee;

means for releasably capturing said capping means at the limit of travel of said singletree; and

means for lowering the test missile after it has been arrested, whereby the missile may be recovered.

4,604,939

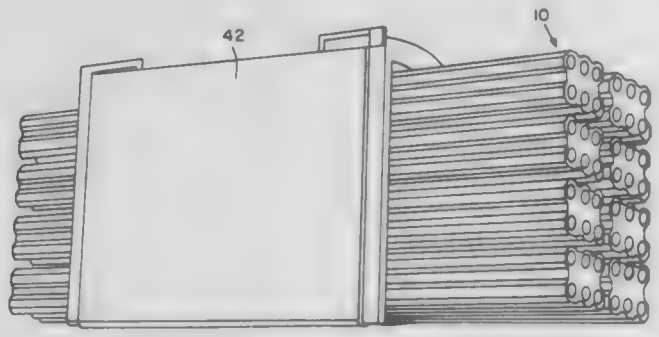
LIGHTWEIGHT COMPOSITE LAUNCHER POD

Lawrence D. Hoffmeister, New Market, and Richard J. Thompson, Huntsville, both of Ala., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Aug. 20, 1984, Ser. No. 642,850

Int. Cl.[4] F41F *3/04*

U.S. Cl. 89—1.816 **10 Claims**



1. A lightweight composite launcher pod comprising a multiplicity of elongated composite launch tubes that are mounted in a cluster in a composite material that completely surrounds each of said elongated launch tubes about the circumference thereof and for the length thereof with the axis of each of the elongated launch tubes being substantially parallel to each of the other axes and said composite material having outer surfaces that bearing and locking structure on one side of said composite launcher pod, an alignment surface on said composite material and on an opposite side of said launcher pod from said bearing and locking structure, and alignment surfaces on said composite material that are parallel and on opposite sides of said launcher pod such that said parallel alignment surfaces on opposite sides are perpendicular to said alignment surface on said side opposite said bearing and locking structure, said alignment surfaces each being spaced inwardly from outer most side surfaces and being spaced so as to produce a more uniform thickness of said composite material surrounding said elongated launch tubes.

4,604,940

HIGHLY RESILIENT POLYURETHANE ELASTOMER

Morris A. Mendelsohn, Wilkins Twp., Allegheny County, and Francis W. Navish, Jr., East Pittsburgh, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Feb. 28, 1985, Ser. No. 707,111

The portion of the term of this patent subsequent to Dec. 4, 2001, has been disclaimed.

Int. Cl.[4] F41F *3/04*; C08G *18/32*

U.S. Cl. 89—1.816 **9 Claims**

3. A highly resilient polyurethane elastomer structural member in circumferential contact with a launchable missile, comprising the cured admixture of:

(A) about 6.6 to about 7.2 parts by weight of a polyurethane prepolymer prepared from a composition consisting essentially of:

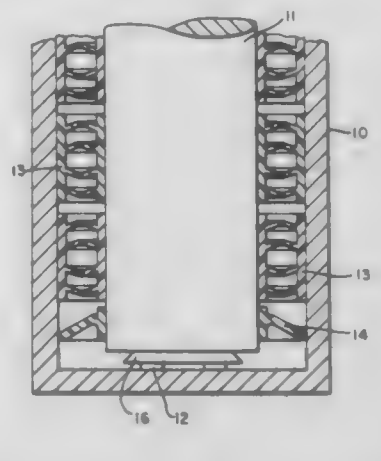
(1) 2.60 moles to 2.80 moles of 4,4'-diphenylmethane diisocyanate,

(2) about 0.23 mole to about 0.31 mole of a low molecular weight triol selected from the group consisting of trimethylol ethane, trimethylol propane, trimethylol butane, trimethylol pentane and mixtures thereof, and

(3) 1.0 mole of polyoxytetramethylene glycol, with

(B) 1.0 part by weight of hydroquinone di-(β-hydroxyethyl)ether acting as a chain extender.

8. The structural member of claim 3 attached to a launchable missile having a bottom firing end and disposed inside a launch



tube, said structural member being a shock isolator pad liner, said liner circumferentially contacting the inside of the launch tube and being effective to support the missile in an aligned position and provide shock mitigation generated during firing of the missile.

4,604,941

EMERGENCY CHAMBERING DEVICE

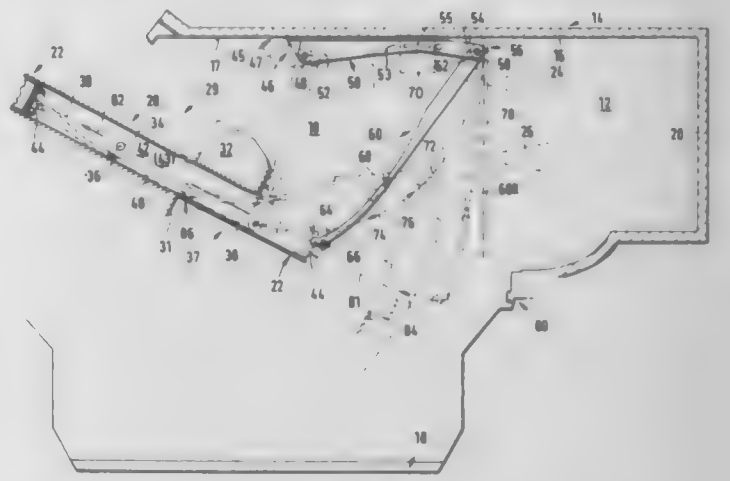
Erich Zielinski, Haan, and Harry Meschke, Düsseldorf, both of Fed. Rep. of Germany, assignors to Rheinmetall GmbH, Düsseldorf, Fed. Rep. of Germany

Continuation of Ser. No. 421,095, Sep. 22, 1982, abandoned. This application Nov. 13, 1984, Ser. No. 671,047

Claims priority, application Fed. Rep. of Germany, Sep. 23, 1981, 3137850

Int. Cl.[4] F41F *17/16*

U.S. Cl. 89—47 **16 Claims**



1. Manually actuable emergency chambering device for a system including a gun disposed in a closed operator housing and having a large caliber barrel provided with a loading end defining a loading chamber near the far end of which a shell is to be rammed, a loading tray disposed adjacent the loading end of the barrel, and means for pivotably mounting the barrel about a horizontal trunnion axis but permitting the barrel to move linearly with respect thereto when the gun is fired, said device comprising:

a selectively manually deflectable rod assembly having a first end mounted for deflection movement relative to a first articulation region fixed relative to the trunnion axis and a second end spaced from said first end, said first articulation region presenting an articulation axis parallel to the trunnion axis and said rod assembly being deflectable at said first articulation region, between a rest position and an operating position, along a path lying in a plane that is parallel to the barrel bore axis;

selectively manually deflectable elongated element means,

having a front end and a rear end connected to said second end of said rod assembly to permit articulation movement between said elongated element means and said rod assembly at a second articulation region which is associated with said second end of said rod assembly and which presents an articulation axis parallel to the trunnion axis,

for bringing said front end into a first position, in which said front end rests against the rear surface of a shell supported on the loading tray while said rod assembly is in said rest position, when said elongated element means is deflected at said second articulation region, and, while said front end of said elongated element means remains in contact with the rear surface of the shell,

for pushing the shell off of the loading tray and then through the loading chamber into a rammed position corresponding to the operating position of said rod assembly when said rod assembly is deflected at said first articulation region from said rest position toward said operating position so that the second end of the rod assembly moves toward the trunnion axis; and

a roller rotatably mounted at said front end of said elongated element means for reducing friction between said front end and the surface of the loading tray and with the interior of the barrel.

4,604,942

BOLT ASSEMBLY WITH A ROTATING LOCKING BOLT HEAD AND A FLOATING BOLT ELEMENT FOR AUTOMATIC FIREARMS

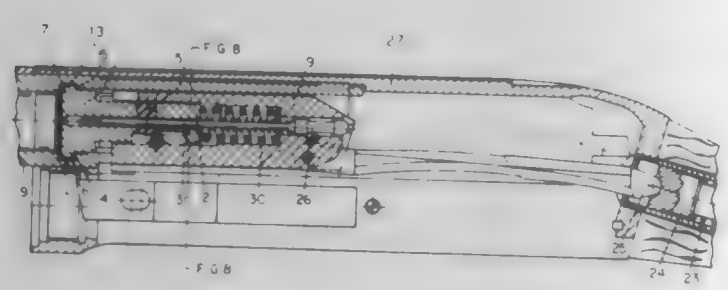
Paolo Benelli, Pesaro, Italy, assignor to Benelli Armi S.p.A., Urbino, Italy

Filed Apr. 19, 1984, Ser. No. 602,219

Claims priority, application Italy, May 9, 1983, 44019 A/83

Int. Cl.⁴ F41D *3/06*

U.S. Cl. 89—185 **2 Claims**



1. A bolt assembly for an automatic firearm which operates in an inertial mode using kinetic recoil energy comprising a barrel, a floating bolt element formed with a helical slot, a rotatable locking bolt head, a return spring interposed between the rotatable locking bolt head and the floating bolt element; the spring, rotatable locking bolt head and the floating bolt element in communication with the barrel, the rotatable locking bolt head formed with a cylindrical portion having two crescent shaped projections located at diametrically opposite points along the circumference of the cylindrical portion, the barrel formed with two diametrically opposite recesses associated with and shaped to correspond to the crescent shaped projections, a pair of grooves formed in the barrel, each groove associated with a recess such that the crescent shaped projections may enter and exit the grooves through the recesses, the grooves being staggered with respect to the recesses and having an angular extension such that the crescent shaped projections may enter and be retained within the grooves, the barrel formed with projecting edge guide grooves, the floating bolt element formed with projecting edges that are located in and guided by the projecting edge guide grooves, the locking bolt head including a shank having a lesser diameter than that of the cylindrical portion of the locking bolt head, a cavity formed in the floating bolt element for receiving the shank, the shank carrying a pin adapted to impart a rotary movement to the locking bolt head by engaging the helical slot formed in the floating bolt element, whereby the firearm is in a locked position when the crescent shaped projections of the cylindrical portion of the locking bolt head are retained within the associated grooves formed in the barrel by means of the return spring, whereby upon firing the firearm recoils, the floating bolt element maintains its position by means of the projecting edge guide grooves sliding over the projecting edges of the floating bolt element thereby compressing the return spring, the rotatable locking bolt head remaining in a locked position during compression of the return spring to provide a delay which permits the dissipation of pressures in the barrel after firing, the return spring upon being compressed to a predetermined level expands and exerts a force upon the floating bolt element causing the helical slot of the floating bolt element to impart a rotary movement to the rotatable locking bolt head through the pin carried by the shank, which causes the rotatable locking bolt head to disengage its projections from the associated grooves formed in the barrel causing the crescent shaped projections of the cylindrical portion of the rotatable locking bolt head to pass through the recesses formed in the barrel to put the firearm in an unlocked position to permit reloading.

4,604,943

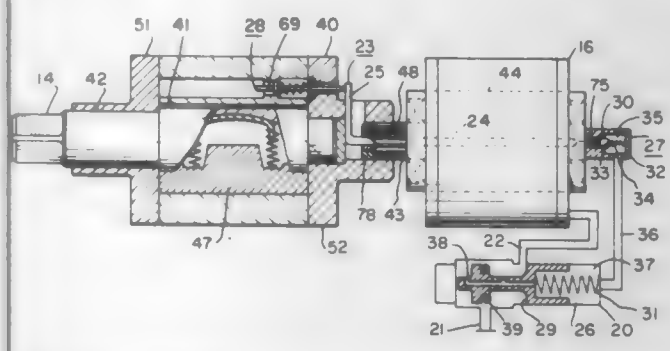
IMPULSE TOOL HAVING SHUT OFF SYSTEM

Reginald W. Pauley, Belle Mead, N.J., assignor to Ingersoll-Rand Company, Woodcliff Lake, N.J.

Filed Feb. 4, 1985, Ser. No. 697,953

Int. Cl.⁴ F15B *15/00*

U.S. Cl. 91—59 **7 Claims**



1. A torque controlled air tool having an air motor connectable to an air pressure source, a rotatable spindle connected to the air motor, a means for rotating the spindle, and a shut-off means for controlling the rotating of the spindle to stop rotating of the spindle at a pre-selected torque level, said shut-off means comprising:

an activating means connected to the spindle for providing mechanical movement in response to the pre-selected torque level;

an arm having a first section extending along an axis and a second section extending away from said axis, said second section having a portion located adjacent the activating means and positioned so that movement by the activating means moves the arm; and

a means connecting to the arm at its first section for disconnecting the air pressure source from the air motor upon movement of the arm.

4,604,944

HOUSING OF PNEUMATIC BOOSTER DEVICE

Kaoru Tsubouchi, Toyota, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Jun. 14, 1985, Ser. No. 744,566

Claims priority, application Japan, Jun. 22, 1984, 59-093931[U]

Int. Cl.⁴ F16J *3/00*

U.S. Cl. 92—98 D **3 Claims**

1. A housing of a booster device of the type in that the inside space of the housing made elliptical in outer peripheral shape is divided by a diaphragm and a power piston into a constant-pressure chamber and a variable-pressure chamber,

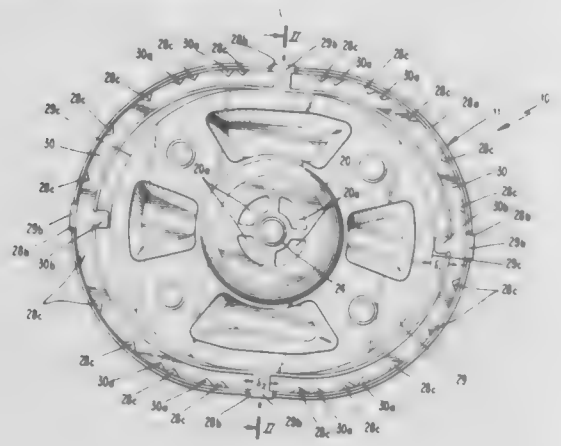
comprising a first shell made by subjecting a metallic plate to

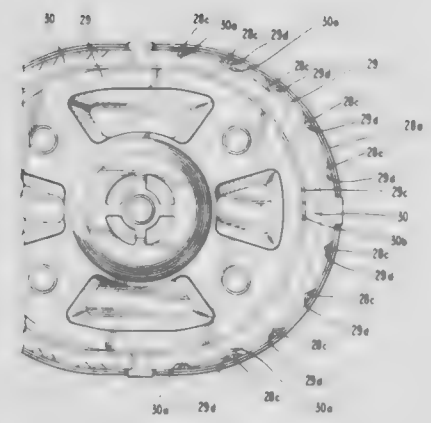
plastic working, and a second shell made by subjecting a metallic plate to plastic working and provided with a flange portion which is inserted in an opening portion of said first shell and clamped in place, and

characterized in that

on said flange portion of said second shell and on said opening portion of said first shell, mating abutting portions are formed respectively for limiting a depth of insertion of said second shell into said first shell,

in said flange portion of said second shell a plurality of notches extending from the outer periphery toward the center are formed which are distributed circumferentially and spaced from one another,





on said opening portion of said first shell a plurality of pawls are provided projectingly for clamping said flange portion of said second shell via a pair of U-shaped lock members disposed adjacent to the outside of said flange portion,

said pawls being aligned with said notches in the axial direction of said housing and made smaller than said notches,

between the inner periphery of said pair of lock members and said second shell and between opposite ends of both said lock members, gaps are left for permitting said lock members to slide a given extent,

in each of said lock members notches are formed to cancel a locked relation of said lock member with said pawls as said lock member slides a given extent, and

a stopper is incorporated for preventing sliding of said lock members in a normal state.

4,604,945

THERMALLY INSULATED PISTON

Howard Mizuhara, Hillsborough, Calif., assignor to GTE Products Corporation, Stamford, Conn.

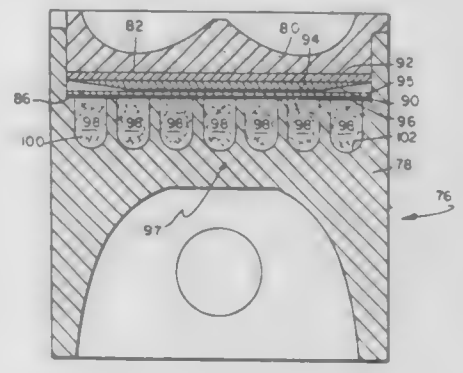
Division of Ser. No. 567,193, Dec. 30, 1983, Pat. No. 4,552,057.
This application Mar. 7, 1985, Ser. No. 709,144
Int. Cl.[4] F04B *31/08*
U.S. Cl. 92—176 **7 Claims**

1. A piston comprising:

(a) a cap portion having an inner planar surface and

(b) a body portion having a recess for receiving said cap portion, said recess having a first surface opposing said inner planar surface of said cap portion and,

(c) an interlayer between said inner planar surface of said cap and said first surface of said body portion, said interlayer having an outer knife edge, said cap portion and said interlayer being bonded together by a first brazing alloy, said interlayer and said body portion being bonded together by a combination of a second brazing alloy bonding



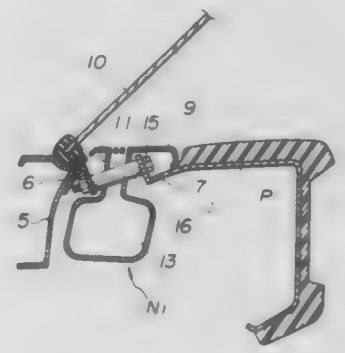
said interlayer to a steel disc and a third brazing alloy bonding said steel disc to said body portion wherein said body portion has a cellular portion adjacent to said interlayer comprised of cells filled with a thermal insulating material.

4,604,946

STRUCTURE OF DEFROSTER NOZZLE FOR AUTOMOTIVE VEHICLE

Takeaki Watanabe, Ebina, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed May 16, 1985, Ser. No. 734,688
Claims priority, application Japan, May 25, 1984, 59-104793
Int. Cl.[4] B60H *1/00*
U.S. Cl. 98—2.09 **6 Claims**



1. A structure of a defroster nozzle for an automotive vehicle, comprising:

(a) means for directing heated air derived from air heating means of the vehicle along the entire lower edge of a rear surface of a windshield, said heated air directing means comprising a nozzle port and duct for directing air flow from said air heating means to said nozzle port, wherein said nozzle port and said duct extend along substantially the lower edge of the rear surface of the windshield and comprise a single, continuous elongated shape; and

(b) means passing through a part of said air-directing means for attaching an instrument panel to a portion of a vehicle body.

4,604,947

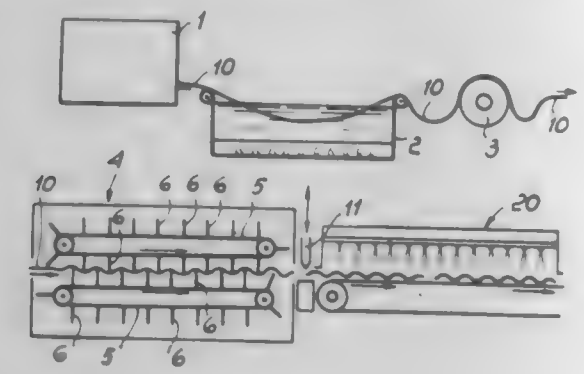
APPARATUS FOR PRODUCING SHAPED DOUGH PRODUCTS

Mario Pavan, Via Montegrappa, 10, Galliera Veneta, Italy

Division of Ser. No. 262,725, May 11, 1981, Pat. No. 4,515,817.
This application Feb. 26, 1985, Ser. No. 705,830
Claims priority, application Italy, May 15, 1980, 22096 A/80
Int. Cl.[4] A47J *37/00*
U.S. Cl. 99—353 **3 Claims**

1. A system for producing a shaped dough product compris-

ing in succession a dough sheet producing station, a tank for pre-cooking said dough sheet for instantaneization and for containing water at substantially 100° C., a dough sheet shaping station, a station whereat said dough sheet is cut to a desired size, and a final dough sheet drying station, wherein said dough sheet shaping station includes a pair of conveyor belts



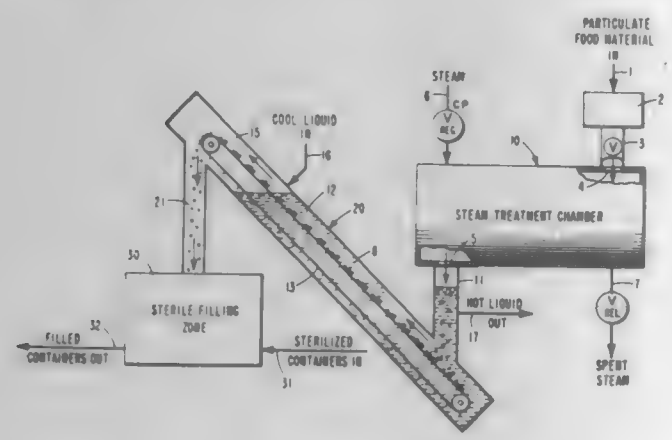
arranged in side-by-side relationship and defining passage for said dough sheet therebetween, each said conveyor belts having vanes extending substantially perpendicular to the plane defined by the respective conveyor belt and being arranged offset to each other to exert alternative transverse pressing actions on and thereby shaping a dough sheet being caused to pass through a gap between said conveyor belts.

4,604,948

CONTINUOUS FOOD STERILIZATION SYSTEM WITH HYDROSTATIC SEALED TREATMENT CHAMBER

Stephen L. Goldhahn, Stratford, N.J., assignor to Campbell Soup Company, Camden, N.J.

Division of Ser. No. 501,821, Jun. 7, 1983, Pat. No. 4,547,383. This application Jul. 22, 1985, Ser. No. 757,304
Int. Cl.⁴ A23L *3/16*
U.S. Cl. 99—470 **3 Claims**



1. An apparatus for continuously heat treating particulate food material by direct contact with super-atmospheric steam comprising:

(a) a pressurized steam treatment chamber having (i) a pressure-tight inlet opening through which particulate food material is fed into the treatment chamber, (ii) means for feeding pressurized steam into the treatment chamber, (iii) means for discharging spent steam from the treatment chamber, (iv) an outlet opening for discharging hot particulate food material from the treatment chamber and (v) means for transporting food material through the treatment chamber from the inlet opening to the outlet opening;

(b) hydrostatic sealing means sealing said outlet opening, said hydrostatic sealing means comprising a hydrostatic pressure column filled with a liquid, said liquid filled hydrostatic column in communication with the outlet opening and with a region of lower pressure, said liquid filled column having a height in the range of about 20 to about 130 feet, said liquid filled column balancing a steam pressure in said pressurized steam treatment chamber within the range of about 10 to about 55 psig, said liquid constituting a broth for the particulate food material;

(c) means for cooling said liquid in said hydrostatic sealing means; and

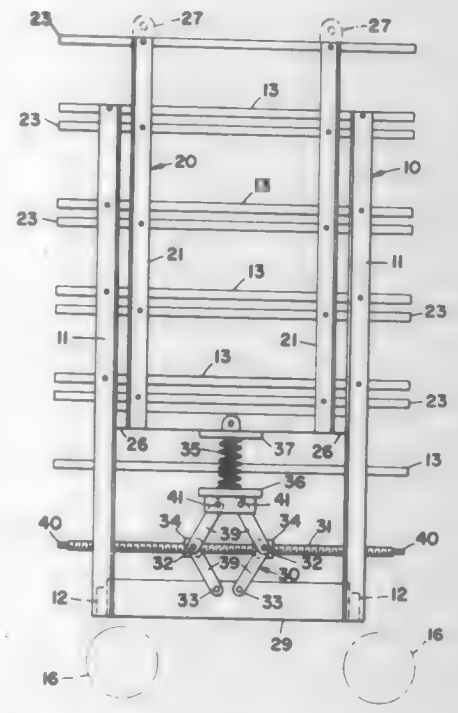
(d) means for conveying food material discharged from said treatment chamber through said hydrostatic sealing means to said region of lower pressure for gradually cooling and depressurizing said hot particulate food material discharged from the treatment chamber so as to avoid flashing and loss of structural integrity while simultaneously avoiding the extraction of valuable components from the food material.

4,604,949

MEAT PRESS

John D. Giese, Berkeley, Calif., assignor to Mepaco, Inc., Oakland, Calif.

Filed Nov. 20, 1984, Ser. No. 673,899
Int. Cl.⁴ A22C *7/00*; B30B *7/02*
U.S. Cl. 100—194 **4 Claims**



1. A meat press comprising:

a first frame having a horizontal meat support tray held between vertical columns,

a second frame having a horizontal meat pressing tray held between vertical columns, the vertical columns of said second frame being formed to be vertically moveable with respect to the columns of said first frame when said pressing tray is vertically aligned above said support tray,

a spring assembly connected at one end to said first frame and at the other end to said second frame, said spring assembly including a spring and means to vary the force exerted by said spring when said first frame and said second frame are in contact with meat to be pressed.

4,604,950

WORM GEAR RACK MOVEMENT SYSTEM

Paul R. Sette, Hamden, Conn., assignor to Pitney Bowes Inc., Stamford, Conn.

Filed Oct. 4, 1984, Ser. No. 657,703
Int. Cl.⁴ B41J *1/34*; B41K *3/08*
U.S. Cl. 101—110 **4 Claims**

1. A postage meter for printing selected value amounts on a print receiving surface, comprising:

a support,

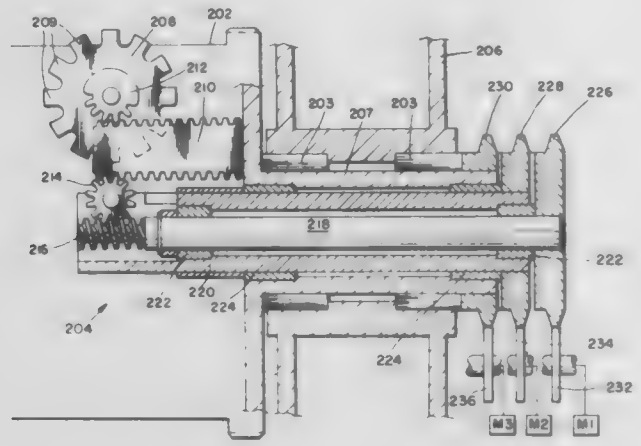
a plurality of value print devices mounted on said support, said devices each having a plurality of value print elements and being selectively movable to align selected value print elements,

means for driving said support to move selected value print

elements through a printing position to form an imprint on a said print receiving surface,

a plurality of axially displaceable racks, arranged in a group and connected to respective value print devices for adjusting same,

rack displacement means engageable with said racks one at a time for moving said racks to adjust the associated value



print devices, said racks being disposed in an annular array around said rack displacement means,

means for shifting said rack displacement means from rack to rack to selectively engage said rack displacement means with respective said racks, and

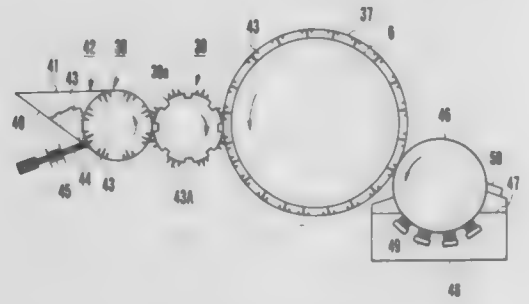
means for driving said rack displacement means and said rack-to-rack shifting means.

4,604,951

INTAGLIO PRINTING MACHINE

Ieyasu Ichikawa, Machida, and Shigeji Arai, Matsudo, both of Japan, assignors to Komori Printing Machinery Co., Ltd., Tokyo, Japan

Filed Aug. 6, 1985, Ser. No. 763,383
Claims priority, application Japan, Sep. 3, 1984, 59-182573
Int. Cl.[4] B41F *9/00, 31/26*
U.S. Cl. 101—153 **5 Claims**



1. An intaglio printing machine including a plate cylinder having plate means thereon, said plate means having ink holding recesses of different depths, a pattern roller having projections which are in rolling contact with an outer surface of said plate means, and an inking unit with a duct roller which is in rolling contact with said pattern roller, wherein said duct roller has substantially the same diameter as a diameter of said pattern roller which includes said projections, and ink holding recesses having different depths corresponding to those of said plate means are formed in an outer surface of said duct roller along circumferential and axial directions thereof.

4,604,952

QUICK DRYING FOUNTAIN SOLUTIONS

John W. Daugherty, Fairlawn, N.J., assignor to Inmont Corporation, Clifton, N.J.

Division of Ser. No. 610,722, May 16, 1984. This application Jun. 14, 1985, Ser. No. 728,641
Int. Cl.[4] B41M *1/06*
U.S. Cl. 101—451 **6 Claims**

1. In a method of lithographic printing, comprising:

(a) transferring a water based fountain solution to a lithographic plate,

(b) then transferring at least one lithographic ink to said plate,

(c) transferring said ink from said plate to a blanket roll, and

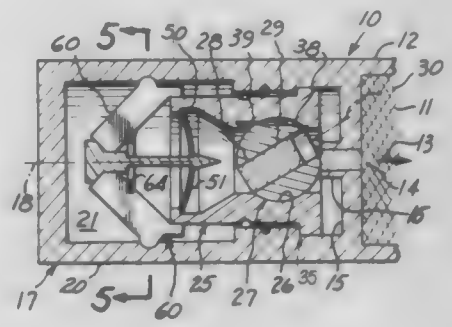
(d) then transferring said ink from said roll to a substrate thereby producing a printed image, wherein the improvement comprises the inclusion of about 0.005 wt. % to about 5.0 wt. % of hydrogen peroxide in the fountain solution for the purpose of quick drying, thereby producing a decrease in the drying time of the ink.

4,604,953

VOID-SENSING FUZE

Donald E. Olander, Westminster, and Harold J. Woods, Lomita, both of Calif., assignors to Hi-Shear Corporation, Torrance, Calif.

Filed Apr. 26, 1984, Ser. No. 604,066
Int. Cl.[4] F42C *1/08, 15/04, 15/22*
U.S. Cl. 102—272 **14 Claims**



1. A fuze adapted to fire after termination of mechanical impact forces, said fuze having an axis of forward motion, and comprising:

a fuze case having an axial internal cavity;

a second case in said cavity adapted for motion relative to said fuze case along said axis,

safety means carried by said second case preventing initiation until released;

detonator means carried by said second case;

limit stop means on said cases which cooperate to limit the movement of the second case relative to the fuze case in an axial direction opposite from said forward motion;

a commit latch between said cases adapted to permit said second case to move relative to the fuze case in the direction of forward motion, from a first position defined by the limit stop means to a second position spaced therefrom, and to latch said cases together in said second position when said second position is attained;

a firing pin axially movable along said cavity axis, said firing pin having a shaft, and a first end;

a firing pin spring interposed between said firing pin and said second case adapted to be deflected so as upon release to drive said firing pin toward said second case;

a sear carried by said fuze case in said cavity, said sear being engageable with said firing pin tending, when engaged to hold said firing pin away from said second case, and releaseable therefrom when said second case moves to its said second position whereby to release said firing pin;

whereby during forward flight, said safety means is disengaged;

whereby upon impact, said rotor case moves to its second position, said firing pin pulls said firing pin spring to a

spring-loaded position, and said commit latch locks said rotor case in its second position, said sear continuing to engage said firing pin, and

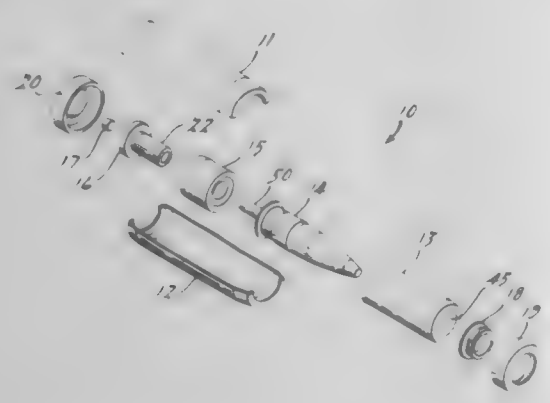
whereby upon cessation of impact forces said sear is disengaged from said firing pin, and said firing pin spring propels said firing pin toward said detonator to strike and initiate it.

4,604,954

TELESCOPED AMMUNITION WITH DUAL SPLIT CARTRIDGE CASE

Stephen E. Clarke, Orange; James D. Hendry, Huntington Beach, and Ernest R. Mijares, Sunset Beach, all of Calif., assignors to Ford Aerospace & Communications Corp., Dearborn, Mich.

Filed Oct. 22, 1984, Ser. No. 663,645
Int. Cl.[4] F42B *5/02*
U.S. Cl. 102—434 10 Claims



1. A telescoped ammunition round comprising:

a propellant charge means having an axial cavity and supplying firing power for said ammunition round;

a projectile means housed within said cavity for being fired from said ammunition round;

a generally tubular casing means surrounding said propellant charge means and having two longitudinal splits dividing said casing means into two substantially identical halves so as to separate during firing and sustain pressure created by said propellant charge means without deforming; and

first and second end cap means for providing a gas seal during firing of said ammunition round in a chamber and for coupling adjacent ends of said halves of said tubular cavity to each other, and first end cap means coupling the two adjacent ends of said halves at the forward end of said projectile means and having a central opening for passing said projectile means when said projectile means is fired, and said second end cap means coupling the two adjacent ends of said halves at the rearward end of said projectile means and cooperates to close off the rear of said telescoped ammunition round with respect to said projectile means.

4,604,955

HEIGHT-ADJUSTABLE TABLE FOR WORK PLACES WITH VIDEO SCREEN

Joachim Fleischer, and Willy Fleischer, both of Essen, Fed. Rep. of Germany, assignors to Willy Fleischer Metallwarenfabrik GmbH & Co., Bochum, Fed. Rep. of Germany

PCT No. PCT/EP82/00220, § 371 Date Jun. 2, 1983, § 102(e) Date Jun. 2, 1983, PCT Pub. No. WO83/01183, PCT Pub. Date Apr. 14, 1983
PCT Filed Oct. 2, 1982, Ser. No. 509,434
Claims priority, application Fed. Rep. of Germany, Oct. 3, 1981, 8128983[U]
Int. Cl.[4] A47B *9/00*
U.S. Cl. 108—147 5 Claims

1. A height-adjustable stand for a work place with a video monitor and a keyboard, the stand having a pair of horizontally spaced opposite sides and comprising:

respective back telescoping columns at the sides and provided with lower portions and upper portions vertically telescoping with said lower portions;

a video-monitor table supported on the upper portions of the back columns and extending between the sides;

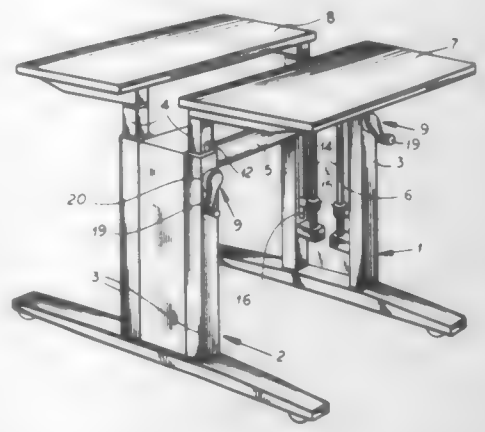
respective front columns adjacent the back columns at the respective sides and having lower portions and upper portions telescoping within the latter lower portions;

a keyboard plate supported on the upper portions of the front columns adjacent the video-monitor table;

a horizontal crossbar connecting the lower portions of said columns on one of the sides with the lower portions of the columns of the other side of said stand, the upper portions of the columns supporting said video-monitor table being adjustable independently as to height with respect to the upper portions of the columns supporting the keyboard plate; and

actuating means on said sides at least partly concealed by said columns for adjusting said upper portions, the actuating means including:

respective upright front and back spindles at each of the sides,



respective means coupling the front spindles to the upper portions of the respective front columns and the rear spindles to the upper portions of the respective rear columns for vertically displacing same on rotation of the respective spindles,

front link means operatively connecting the front spindles together for joint rotation,

rear link means operatively connecting the rear spindles together for joint rotation,

respective driving shafts at the stand sides horizontally traversing both the upper and lower portions of the front columns, the upper portions of each front column being formed with a vertically elongated oblong hole through which the respective shaft passes and of a length at least equal to the travel of the respective upper portion, and

means including an input gear on each of the shafts and an output gear at each of the sides on one of the respective spindles and meshing with the respective input gear for raising and lowering said upper portions of said columns, each of said lower portions fully enclosing the respective upper portion except where each upper portion stands out of the top of the respective lower portion.

4,604,956

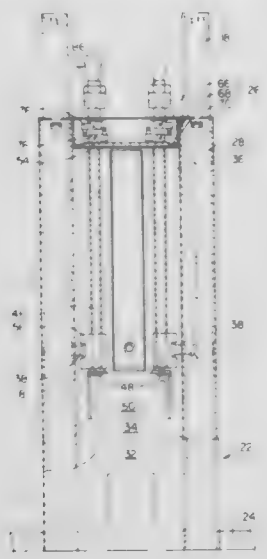
ADJUSTMENT MECHANISM FOR WORK STATION

Robert E. Grebel, Northboro; Robert K. Neunherz, Westminster, and David W. McGrath, Rochdale, all of Mass., assignors to Wright Line Inc., Worcester, Mass.

Filed May 18, 1984, Ser. No. 612,002
Int. Cl.[4] F16H *25/20;* A47B *9/12*
U.S. Cl. 108—147 10 Claims

1. In an adjustable height table comprising a pair of telescop-

ing table support and elevating assemblies each including a first stationary post and a second movable post, means securing said stationary posts in fixed spatial relation to each other, a table top secured to said movable posts so as to move therewith relative to said stationary posts, and a pair of synchronized post drive means for causing said movable posts to telescope up or down relative to said stationary posts, said post drive means each comprising a screw, means mounting said screw for rotation about its own axis, an elevating nut mounted on said screw so as to permit relative rotation between it and the screw, means holding said elevating nut against rotation as said screw is rotated, and a support pin connecting said elevating nut to the movable post of an adjacent one of said table support and elevating assemblies so as to cause said movable post to be telescoped relative to the stationary post of said adjacent table support and elevating the assembly as said screw is rotated,



the improvement wherein each of said nuts has a kerf located to one side and extending transversely of its center axis, said kerf being defined by a pair of parallel flat side surfaces and a flat bottom surface extending between said flat side surfaces, and further wherein each of said support pins has one end connected to one of said movable posts and an opposite end that extends into the kerf of one of said nuts and is movable in said kerf parallel to side surfaces, whereby said elevating nuts and said support pins are coupled so as to (a) cause said movable posts to move with said elevating nuts as said screws are turned and (b) allow said pins to shift in said kerfs relative to said elevating nuts as said screws are turned so as to accommodate and compensate for misalignment of said screws.

4,604,957

METHOD FOR WET COMBUSTION OF ORGANIC MATERIAL

Karl N. Cederquist, Stockholm, Sweden, assignor to Sunds Defibrator AB, Stockholm, Sweden

Continuation of Ser. No. 551,977, Nov. 5, 1983, abandoned. This application Feb. 20, 1985, Ser. No. 703,257

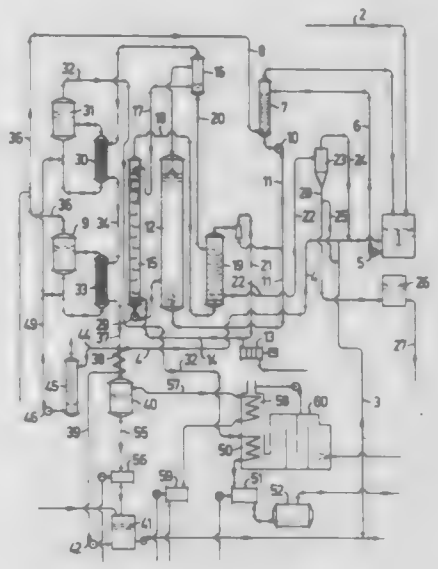
Int. Cl.⁴ F23G *7/04*

U.S. Cl. 110—238 **2 Claims**

1. In the wet combustion method of combusting organic material including oxidation-resistant substances of lignocellulosic origin comprising low-molecular-weight acids which comprising the group including acetic acid proprionic acid or salts thereof, dissolved or suspended in a liquid comprising waste liquor obtained from wood pulping processes in which the organic material is oxidized by contact with air or oxygen at a temperature ranging between 180° C. and 340° C. and at a correspondingly superatmospheric pressure, the improvement comprising:

(a) a first oxidizing step, in which the organic material is partially oxidized by introducing into said liquid a molecular oxygen at a temperature and superatmospheric pressure and in an amount corresponding substantially to the theoretical value required to release a portion on the order of 75%–95% of the total heat value of said organic material;

(b) a second oxidizing step, in which high temperature superatmospheric molecular oxygen is introduced into said liquid in an amount in excess of the theoretical value



sufficient to oxidize the residual oxidation-resistant substances and to impart to the effluents generated in said second step a molecular oxygen content sufficient to achieve the partial oxidation in said first step; and

(c) feeding the thus oxygenated effluents to said first step.

4,604,958

FEED DRIVE FOR THE WORK HOLDER OF A ZIG-ZAG SEWING MACHINE

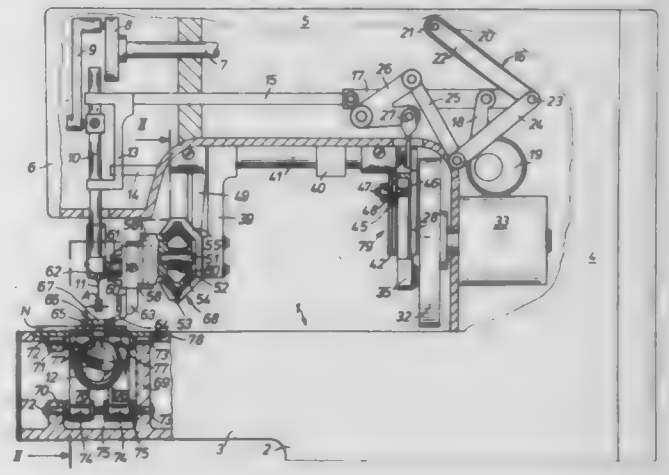
Edgar Busch, Trippstadt, and Ernst Albrecht, Hochspeyer, both of Fed. Rep. of Germany, assignors to Pfaff Industriemaschinen GmbH, Fed. Rep. of Germany

Filed Aug. 7, 1985, Ser. No. 763,535

Claims priority, application Fed. Rep. of Germany, Aug. 16, 1984, 8424175[U]

Int. Cl.⁴ D05B *3/00, 27/00*

U.S. Cl. 112—443 **5 Claims**



1. In a zig-zag stitch group sewing machine having a housing with a base portion, a standard portion extending upwardly from the base portion, an arm portion extending in a longitudinal direction outwardly from an upper portion of the standard portion, a head portion at the end of said arm portion, a needle bar mounted in said head portion for upward and downward reciprocating motion, the improvement comprising a driver movably mounted to said housing and engaged with said needle bar for moving said needle bar in a direction parallel to said longitudinal direction of said arm portion for swinging said needle bar in said longitudinal direction, a work holder mounted to said housing near said needle bar for holding and moving a workpiece on said base portion, a cam plate mounted

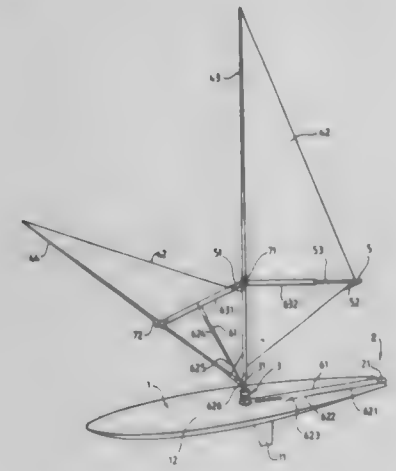
for rotation to said housing, cam plate drive means connected to said cam plate for rotating said cam plate, needle bar drive means operatively connected between said cam plate and said driver for moving said needle bar parallel to said longitudinal direction, work holder drive means operatively connected between said cam plate and said work holder for driving said work holder transversely to said longitudinal direction, a rectilinear guide arranged on said housing adjacent said head portion at a closely spaced location from said needle bar and engaged with said work holder for guiding said work holder for rectilinear motion transversely to said longitudinal direction, said work holder including a driver plate extending below said head portion and gripping the workpiece on said base portion from above.

4,604,959

WIND-PROPELLED CRAFT

Michael J. Menear, 14 Lodge Way, Shepperton, Middlesex TW17 0RZ, England

Continuation of Ser. No. 397,947, Jul. 13, 1982, Pat. No. 4,478,164. This application Oct. 18, 1984, Ser. No. 662,086
The portion of the term of this patent subsequent to Oct. 23, 2001, has been disclaimed.
Int. Cl.[4] B63H *9/04*; B63B *39/00*
U.S. Cl. 114—39 **11 Claims**



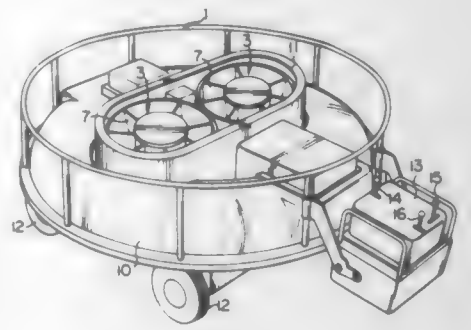
1. A sailboard comprising:
(a) a hull having an unstayed rig structure mounted thereon via a joint assembly which permits the rig structure to be pivoted about three mutually perpendicular axes,
(b) said rig structure including a pair of masts, each of which in use supports a sail, and
(c) means on said rig structure adapted to be grasped by a crew member so that a single crew member standing on the sailboard can rotate the rig as a unitary structure:
(i) about an approximately vertical axis to trim a first sail to the wind to provide forward propulsion,
(ii) about a first approximately horizontal axis to trim a second sail to the wind to provide upward lift at the leeward side of the sailboard to counter the rolling or heeling moment appled to the sailboard by the wind impinging on the first sail, and
(iii) about a second approximately horizontal axis from a first position in which a first mast extends substantially vertically and a second mast extends generally at right angles thereto away from the hull to a second position in which the second mast extends substantially vertically and the first mast extends generally at right angles thereto away from the hull.

4,604,960

APPARATUS FOR CLEANING UNDERWATER SURFACES

Kiyoshi Wachi, Machida, Japan, assignor to Macsea Marine Services Company, Inc., Tokyo, Japan

Filed Dec. 28, 1984, Ser. No. 687,423
Claims priority, application Japan, Apr. 4, 1984, 59-49564[U]
Int. Cl.[4] B63B *59/00*
U.S. Cl. 114—222 **6 Claims**



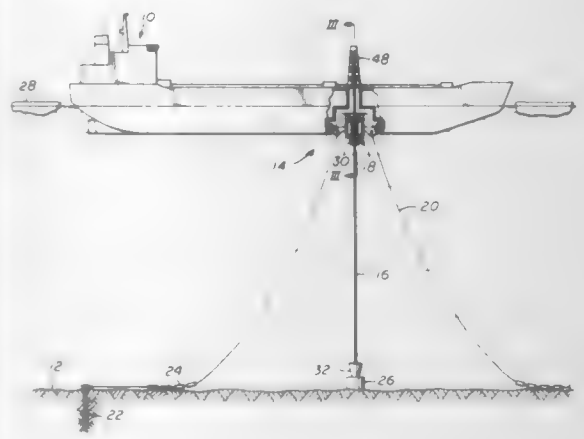
1. An underwater cleaning apparatus, comprising:
at least one rotatable brush having a front side for contact with an underwater object to be cleaned and a rear side opposite said front side;
pump means for generating a water stream flowing from said front side to said rear side;
an annular tube surrounding said at least one brush and pump means; and
two immiscible liquids of respectively different specific gravities filling, freely flowably movable with respect to each other in, and hermetically sealed in said annular tube, so that the liquid having greater specific gravity moves downward in said annular tube relative to the other of said two liquids in synchronism with changes in the attitude of said apparatus, thereby to assist in attitude control and facilitate maintenance of a change in attitude of said apparatus.

4,604,961

VESSEL MOORING SYSTEM

John E. Ortloff; Allen P. Ziarnik; John J. Filson, and John F. Gadbois, all of Houston, Tex., assignors to Exxon Production Research Co., Houston, Tex.

Filed Jun. 11, 1984, Ser. No. 619,747
Int. Cl.[4] B63B *21/52*
U.S. Cl. 114—230 **36 Claims**



1. A vessel having a detachable vessel mooring system, said vessel comprising:
a hull, said hull defining a mooring recess, said recess being situated intermediate the bow and stern of the vessel and being in a wholly submerged portion of said hull;
a buoyant mooring element sized to be situated within said submerged mooring recess;
plurality of mooring lines extending between and connected to said mooring element and the ocean floor, said mooring lines being arranged so that as said mooring

element moves downward from said mooring recess, an increasing amount of each mooring line comes to rest on the ocean floor;

means for securing said mooring element within said mooring recess;

means for permitting the vessel to pivot about the mooring element along a substantially vertical axis;

means for releasing said mooring element from said vessel; and,

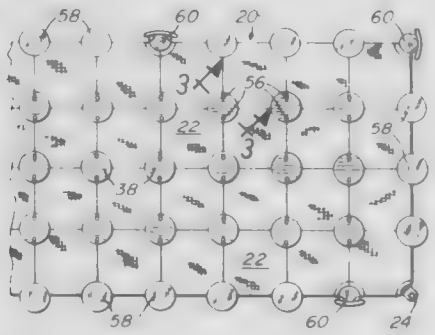
said mooring element being adapted to sink upon being released from said vessel to an equilibrium position above the ocean floor at which the buoyancy of the mooring element is balanced by the loading imposed on the mooring element, the loading on said mooring element decreasing with increasing depth due to increasing amounts of said mooring lines resting on the ocean floor.

4,604,962

MODULAR FLOATING DOCK

Denis Guibault, 5285 des Tilleuls St., Montreal, Canada (H1T 2H7)

Filed Jan. 28, 1985, Ser. No. 695,378
Int. Cl.[4] B63B *3/08*
U.S. Cl. 114—266 **4 Claims**



1. A floating dock comprising a plurality of similar floating units detachably interconnected, each floating unit comprising a floatable substantially polygonal body provided with bevelled corners, eye lugs horizontally projecting from each corner at different levels for overlapping with eye lugs of adjoining floating units linked therewith, the lowermost lug of each floating unit having lateral and parallel longitudinally-extending grooves at the top longitudinal corners thereof, a bolt having an externally-threaded spindle portion insertable through the registering eyes of at least two superposed lugs of adjacent floating units, a nut screwable on said bolt spindle from underneath the lowermost lug of superposed lugs, said nut having upstanding parallel flanges, of L-shape cross-section, slidably engageable within said grooves of said lowermost lug, said flanges holding said nut onto said lowermost lug and preventing said nut from rotating with respect to said lowermost lug, each corner of said floating unit forming a top concave and downwardly-converging surface portion, and said bolt having an enlarged head, of generally frusto-conical shape, matching and frictionally engaging said top concave corner surface portions, each lug having at least one notch extending across the periphery of the eye thereof, some of said lugs being exposed along the sides of said dock, and further including bumpers attached to at least some of said exposed lugs, said bumpers including a threaded spindle and an enlarged head, said spindle adapted to extend through the eye of said exposed lugs and attached thereto by a nut screwed on the threaded spindle of the bumper; a portion of said bumper spindle having at least one longitudinal ridge slidably fitting within the notch of the eye lug to prevent its rotation during screwing of said last-named nut, the bumpers forming an enlarged head for said spindle, said enlarged bumper head defining a half-portion with a frusto-conical part adapted to fit against the matching top concave corner surface portions of two adjacent floating units, the other half-part of the humper head being of generally half-cylindrical shape and protruding from the side of the dock.

4,604,963

DIGITAL GRAPHIC IMAGE ANALYZER

James A. Kirkham, 2817 Xerxes Ave. S., Minneapolis, Minn. 55416

Filed Nov. 30, 1984, Ser. No. 676,832
Int. Cl.[4] G01J *3/52*
U.S. Cl. 116—300 **25 Claims**



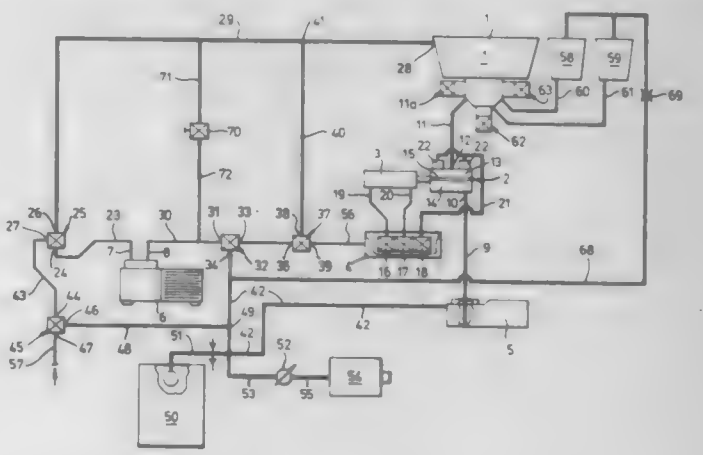
1. An apparatus for use in analysis of an image having a plurality of varying shades of grey and providing information for selected portions of the plurality of varying shades of grey comprising: first means having an edge, a scale of readable indicia on the first means extended along said edge, second means located adjacent said first means, a reference greyscale of varying shades of grey from black to white on the second means, at least a portion of the greyscale being visible adjacent said edge whereby the greyscale can be compared with the scale of readable indicia, said reference greyscale having a reference line and said greyscale diverging from an apex point located on said reference line away from opposite sides of the reference line, said first and second means being movable relative to each other whereby the portion of the greyscale visible adjacent said edge is repositioned relative to the scale of readable indicia whereby said readable indicia provides information for analysis of said image having a plurality of shades of grey.

4,604,964

TISSUE PROCESSING APPARATUS

Alan J. Gordon, Liverpool; David W. Sterritt, Warrington, and Robert Evans, Liverpool, all of England, assignors to Shandon Southern Products Limited, Runcorn, England

Continuation of Ser. No. 426,913, Sep. 29, 1982, abandoned. This application Feb. 19, 1985, Ser. No. 701,818
Claims priority, application United Kingdom, Oct. 20, 1981, 8131663
Int. Cl.[4] B05C *3/02*
U.S. Cl. 118—50 **18 Claims**



1. A tissue processing apparatus, comprising:

a processing chamber for processing a tissue specimen;
a plurality of reagent containers;
a selector valve interconnected with said reagent containers and with said processing chamber for creating a fluid conduit between a selected reagent container and said processing chamber;
a pump having a suction port and a pressure port and adaptable to provide both a vacuum and a compressed gas; and
changeover valve means interconnected with said pump, with said processing chamber and with said reagent containers, said changeover valve means having first and second selectable operative conditions, said first selectable operative condition connecting said suction port of said pump with said processing chamber and said pressure port of said pump with said reagent containers, and said second selectable operative condition connecting said suction port of said pump with said reagent containers and said pressure port of said pump with said processing chamber, thereby in each said operative condition to establish a closed circuit comprising said pump, said processing chamber, said fluid conduit and said selected reagent container;
whereby operation of said pump with said changeover valve means in said first operative condition enables transfer of reagent from said selected reagent container through said fluid conduit to said processing chamber, whereas operation of said pump with said changeover valve means in said second operative condition enables transfer of reagent from said processing chamber through said fluid conduit to said selected reagent container, and in each said operative condition without providing communication between the atmosphere external to said closed circuit and any one of said pump, said processing chamber or said reagent containers.

4,604,965

APPARATUS FOR DEPOSITING A RING OF MATERIAL ON THE TIPS OF AMPOULES OR THE LIKE

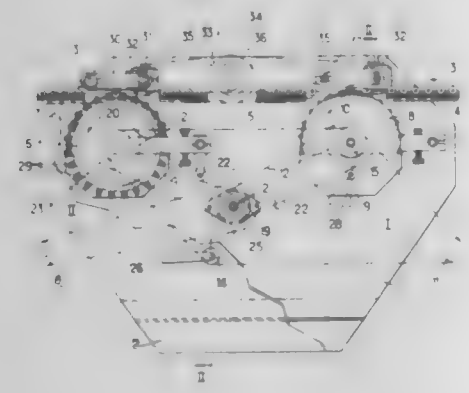
Claude Dehais, 35, rue Godot de Mauroy, 75009 Paris, France

Filed Mar. 9, 1984, Ser. No. 587,960

Claims priority, application France, Mar. 10, 1983, 83 03947; Dec. 13, 1983, 83 19939

Int. Cl.⁴ B05C *1/02*

U.S. Cl. 118—219 **10 Claims**



1. A machine for depositing a ring of plastic material on the tips of pharmaceutical ampoules or the like, which material is pasty or liquid at the moment when it is deposited on said tips and which subsequently hardens, comprising: advancing means for advancing said ampoules in a line, said ampoules being disposed perpendicularly to the direction of their advance; at least one reservior containing said plastic material; transfer means for transferring said plastic material between said reservoir and at least one of the tips of said ampoules, said transfer means comprising a rotary disk with an essentially horizontal axis, the lower part of which disk bathes in said reservoir, said advancing means including means for bringing each advancing ampoule tip into contact with the emerging part of the edge of the disk; and drive means for rotating the ampoules about their axes, at least at the moment when their tips are being coated with said material, said advancing means comprising transporting chains or the like having members for individually driving the ampoules, and at least one wheel having peripheral cups, each of which cups supports an ampoule, at least at the time of coating that ampoule, the peripheral speed of said cups being the same as the advancing speed of said chains.

4,604,966

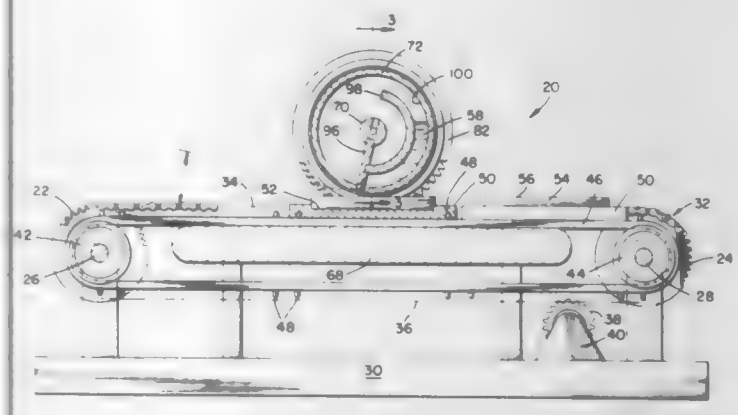
CONTINUOUS SOLDER PASTE DISPENSER

Harold Kohn, Endwell, N.Y., assignor to International Business Machine Corp., Armonk, N.Y.

Filed Oct. 10, 1985, Ser. No. 786,225

Int. Cl.⁴ B05C *5/02*

U.S. Cl. 118—406 **12 Claims**



1. Apparatus for applying solder paste to printed circuit boards in a continuous operation comprising:
a receptacle for containing solder paste, said receptacle being positioned above a work station and having an inlet for receiving the solder paste therethrough, an outlet for discharging the solder paste at the work station, and a passageway connecting the inlet to the outlet;
support means mounting said receptacle above the work station;
drive means for advancing a printed circuit board through the work station so that it can receive thereon the solder paste from said receptacle;
stencil means defining a desired pattern of the solder to be applied to the printed circuit board, said stencil means being mounted on said reeeptacle overlying the outlet and movable relative thereto in a timed relationship with movement of the printed circuit board; and
a rigid squeegee blade defining a boundary of said passageway integral with said support means and lying generally in a vertical plane and having a forward face and a lower edge extending into the outlet and having a resilient pad fixed on the lower regions of said forward face and extending beyond said lower edge;
whereby the solder paste in said receptacle is caused to flow by gravity and by vibration occurring with operation of said apparatus through said passageway against said squeegee blade including said pad, said pad being operable, by reason of its resiliency, to drive the solder paste through said stencil and onto the printed circuit board, thereby creating a pattern of the solder paste on the printed circuit board as defined by said stencil means.

4,604,967

SYSTEM FOR UNIFORMLY DISPENSING A PASTE MATERIAL TO A SEAL EDGE

Leonard P. Wilbur, Jr., and Wallace B. Anthony, both of Lancaster, Pa., assignors to RCA Corporation, Princeton, N.J.

Filed Sep. 26, 1984, Ser. No. 654,485

Int. Cl.⁴ B05C *5/02*

U.S. Cl. 118—668 **5 Claims**

1. A system for uniformly dispensing a paste material to the seal edge of a rotating, rounded corner, substantially rectangu-

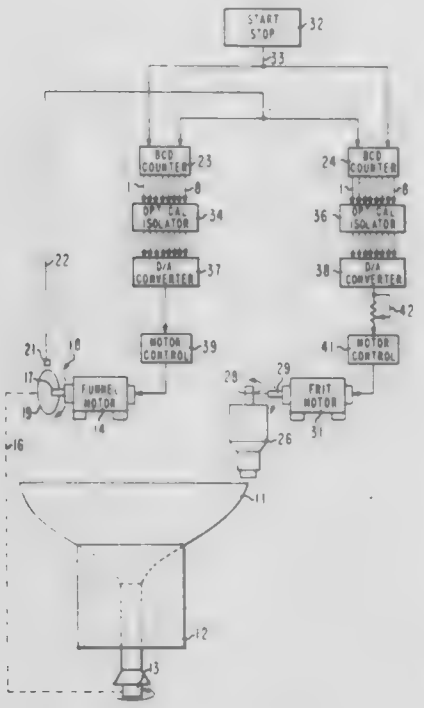
lar object, from a dispensing apparatus having a feed screw, said system comprising:

first means for rotating said object;

pulse generator means responsive to said first means for rotating, said pulse generator means providing a preselected number of input pulses for each increment of rotation of said object;

second means for rotating said feed screw;

first pulse counter means for receiving said input pulses and



providing a plurality of first output pulses, said first means for rotating being responsive to said first output pulses whereby the speed of rotation of said first means for rotating is proportional to said first output pulses;

second pulse counter means for receiving said input pulses and providing a plurality of second output pulses, said second means for rotating being responsive to said second output pulses whereby the speed of rotation of said second means for rotating is proportional to said second output pulses.

4,604,968

INCREASING THE EFFICIENCY OF POULTRY PRODUCTION

Vern L. Christensen, Raleigh, N.C., assignor to North Carolina State University, Raleigh, N.C.

Continuation-in-part of Ser. No. 627,751, Jul. 5, 1984, abandoned. This application Jun. 26, 1985, Ser. No. 748,165

Int. Cl.⁴ A01K *45/00*

U.S. Cl. 119—1 **18 Claims**

1. A method of increasing the efficiency of poultry production comprising injecting poultry eggs during late embryonic development with a substance that operates to augment the endogenous thyroid output of the embryos, said substance being injected at a time and in an amount effective to increase the efficiency of poultry production as measured by a favorable impact on at least one of the following: (i) hatchability rate, (ii) feed conversion rate, (iii) mature bird weight and (iv) mortality rate.

4,604,969

MILKING INFLATION INCLUDING AIR VENT

Leigh R. Larson, 100 Lincoln St., Johnson Creek, Wis. 53038

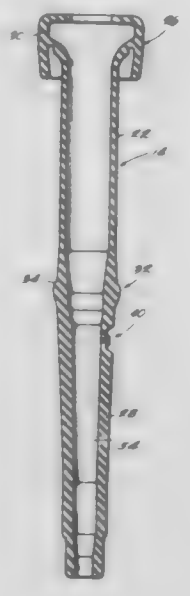
Filed Jun. 17, 1985, Ser. No. 745,201

Int. Cl.⁴ A01J *5/04*

U.S. Cl. 119—14.36 **11 Claims**

1. A milking inflation for a teat cup assembly including a rigid shell, said inflation being made from an elastomeric material, having an upper portion located inside the shell for receiving a cow's teat, and having an elongated milking tube portion extending below the shell, said mailing tube portion including

an annular recess in the wall of said milking tube portion at a location near the lower end of the shell defining an isolated area and including a bottom portion having an



annular web section of reduced thickness surrounding said isolated area; and

an opening extending through said isolated area for admitting a metered amount of air into the interior said milking portion.

4,604,970

ANIMAL FEEDING METHOD AND APPARATUS

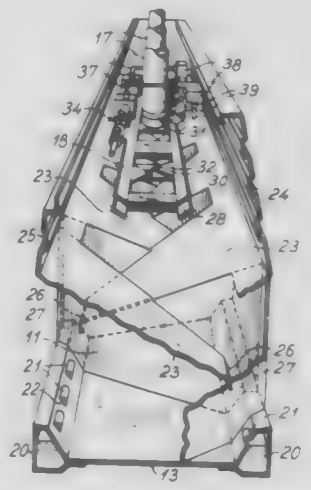
Steen Blicher, Dalkildegaard, DK-5600 Faaborg, Denmark

Filed Apr. 13, 1984, Ser. No. 599,759

Claims priority, application Denmark, Apr. 14, 1983, 1644/83

Int. Cl.⁴ A01K *5/02*

U.S. Cl. 119—51 R **24 Claims**



1. A method of operating an animal feeding apparatus having dry feed or fodder supply means driven by a driving device for supplying amounts of dry feed or fodder to at least one animal feeding place, and liquid supply means for supplying aqueous liquid to each said feeding place, said method comprising:

(a) supplying the aqueous liquid to the driving device under superatmospheric pressure;

(b) using said aqueous liquid as a driving medium for operating the driving device to supply the dry feed or fodder to the feeding place in an amount substantially proportional to the amount of the aqueous liquid supplied to the driving device;

(c) discharging the aqueous liquid from the driving device after step (b); and

(d) dispensing all or a predetermined proportion of said liquid into the feeding place to produce a feed mixture

therein containing a predetermined proportion of said liquid and said dry feed or fodder.

4,604,971

INSECTICIDAL GROOMING ARTICLE

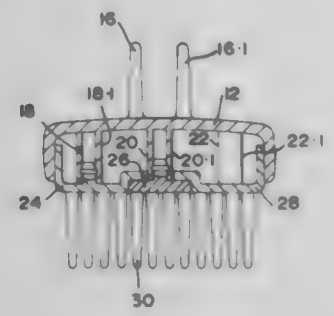
Rodney C. Baker, Kempton Park, and Philippus J. van Rensburg, Randburg, both of South Africa, assignors to AECI Limited, Johannesburg, South Africa

Filed Mar. 29, 1984, Ser. No. 594,531

Claims priority, application South Africa, Apr. 13, 1983, 83/2597

Int. Cl.[4] A01K *13/00*

U.S. Cl. 119—86 **6 Claims**



1. An article for grooming an animal which includes a hand-grippable portion and a plurality of teeth or bristles of plastics material attached to the hand-grippable portion, at least some of the teeth or bristles being moulded and flexible and containing, along at least a portion of the teeth or bristles, at least one insecticide, said insecticide being included in said plastics material when said teeth or bristles are moulded therefrom so that the insecticide is moulded therein with the plastics material yet is capable of blooming sufficiently, from the teeth or bristles onto the animal when the animal is groomed with the article, so as to have an insecticidal effect, said plastics material comprising a mouldable polymer and a plasticizer present in sufficient amount to permit effective blooming of the insecticide.

4,604,972

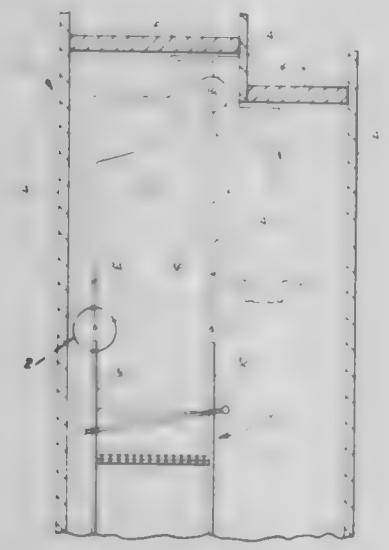
SEAL ASSEMBLY FOR A VAPOR GENERATOR

Alexander J. Difonzo, North Plainfield, and Venkatraman Seshamani, Gillette, both of N.J., assignors to Foster Wheeler Energy Corporation, Livingston, N.J.

Filed Mar. 11, 1985, Ser. No. 710,653

Int. Cl.[4] F22B *37/24*

U.S. Cl. 122—510 **4 Claims**



1. A seal assembly for a boiler, each wall of which has a lower portion and an upper portion spaced from said lower portion to accommodate relative movement between said portions, said seal assembly comprising a trough containing water connected to said upper portion of each wall; partition means having a first portion extending outwardly from said lower portion of each wall, a second portion extending from said first portion in a general parallel relation to said wall portions and across the space between said wall portions, and a third portion extending horizontally from said second portion towards said upper wall portion; and a dip skirt extending downwardly from said third partition portion and into said trough for accommodating said relative movement between said upper wall portion and said lower wall portion, and for dividing same into a first chamber containing water exposed to the boiler pressure and a second chamber containing water exposed to atmosphere.

4,604,973

EVAPORATIVE COOLED ENGINE HAVING MANUAL CONTROL FOR SERVICE FACILITATION

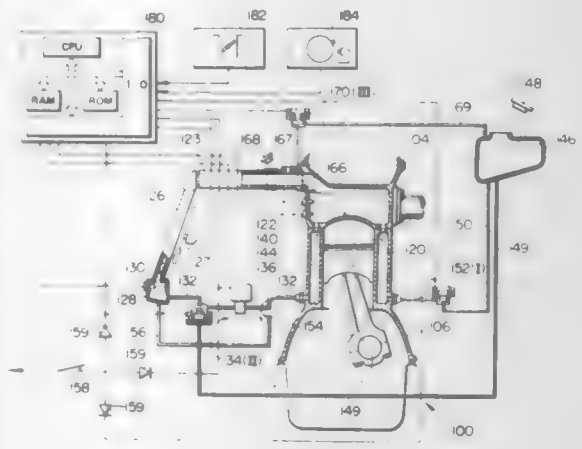
Yoshimasa Hayashi, Kamakura, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed May 30, 1985, Ser. No. 739,288

Claims priority, application Japan, Jun. 18, 1984, 50-124777

Int. Cl.[4] F01P *9/02*

U.S. Cl. 123—41.21 **5 Claims**



1. In an internal combustion engine:

a structure subject to high heat flux; and

a cooling system comprising:

(a) a cooling circuit which includes:

a coolant jacket formed about said structure subject to high heat flux and into which coolant is introduced in liquid form, permitted to boil and discharged in gaseous form,

a radiator exposed to a cooling medium which can remove heat from said radiator,

a vapor transfer conduit leading from said coolant jacket to said radiator for transferring gaseous coolant from said coolant jacket to said radiator for condensation therein, and

means for returning coolant condensed to its liquid form in said radiator to said coolant jacket in a manner to maintain said structure immersed in a predetermined depth of liquid coolant, said coolant returning means taking the form of:

a coolant return conduit which leads from a lower portion of said radiator to said coolant jacket;

a pump disposed in said coolant return conduit,

a first level sensor disposed in said coolant jacket, said first level sensor being arranged to control said pump in a manner to maintain said structure immersed in said predetermined depth of liquid coolant, and

means defining a port in an upper portion of said cooling circuit, said port being closed by a manually removable member;

(b) a reservoir containing liquid coolant;

(c) valve and conduit means for controlling fluid communication between said reservoir and said cooling circuit, said valve and conduit means including:

a first valve disposed in said coolant return conduit between said radiator and said pump, and

a first conduit which leads from said reservoir to said first valve,

said first valve having a first state wherein communication

between said pump and said radiator is established and a second state wherein communication between said pump and said reservoir is established;

(d) a two position valve disposed in said coolant return conduit at a position between said pump and said coolant jacket; and

(e) a by-pass conduit leading from said coolant return conduit to said lower portion of said radiator, said two position valve having a first position wherein said pump is communicated with said coolant jacket and a second position wherein said pump is communicated with said lower portion of said radiator.

4,604,974

AIR GUIDE ARRANGEMENT IN ENGINE ROOM

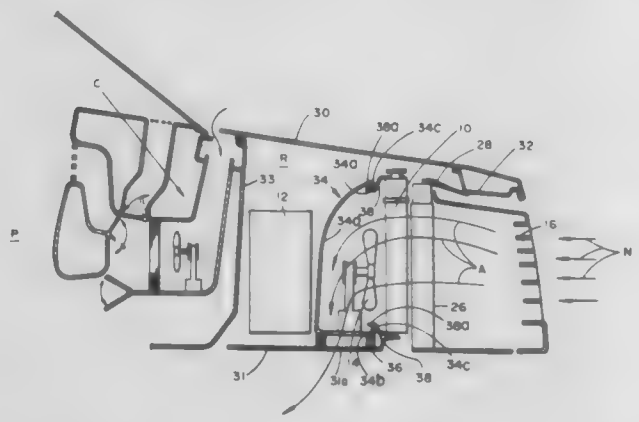
Takeaki Watanabe, Ebina, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Aug. 3, 1984, Ser. No. 637,567

Claims priority, application Japan, Aug. 8, 1983, 58-144723

Int. Cl.⁴ F01P *9/04*

U.S. Cl. 123—41.57 **4 Claims**



1. In an engine cooling arrangement in an engine room of a vehicle, said arrangement including an air intake grill through which air is introduced into the engine room, a radiator located between said air intake grill and said engine permitting the air from said intake grill to pass through said radiator before reaching the engine and a motor-driven fan located in the vicinity of the radiator to positively produce air flow passing through said radiator,

an air guide arrangement comprising:

an air flow enclosure member removably disposed on an undercover of the engine room between said radiator and said engine to divert and guide the air flow which has passed through the radiator from contacting the engine, said enclosure member including a box-shaped body of generally wedge-like profile, said body having an inlet opening in a vertical side which faces the inboard side of said radiator, an outlet opening in a horizontal side which faces said undercover and a smoothly curved portion for smoothly guiding the air flow from said inlet opening toward said outlet opening;

means for detachably connecting said enclosure member adjacent the inboard side of said radiator so that air flowing through said radiator is guided into said inlet opening, the detachable connecting means permitting the removal of said enclosure member from the engine room whereby when the enclosure is removed air flowing through said radiator contacts the engine; and

means defining a discharging opening in said undercover of the engine room facing said outlet opening of the air flow enclosure member, so that the air from said outlet opening is discharged from said discharging opening into the open air under said engine room.

4,604,975

APPARATUS FOR INJECTING FUEL INTO A SECONDARY FLOW OF COMBUSTION AIR FROM A COMBUSTION CHAMBER

Thomas Frey, Friolzheim; Werner Grünwald, Gerlingen; Ernst Imhof, Munchingen; Iwan Komaroff, Regensburg; Helmut Reüm; Günther Schmid, both of Stuttgart, and Kurt Schmid, Ditzingen-Schockingen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

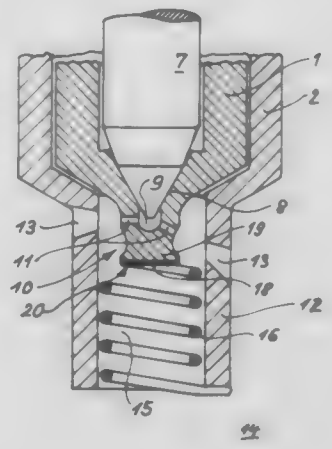
PCT No. PCT/DE83/00212, § 371 Date Dec. 18, 1984, § 102(e) Date Dec. 18, 1984, PCT Pub. No. WO84/04359, PCT Pub. Date Nov. 8, 1984

PCT Filed Dec. 20, 1983, Ser. No. 692,450

Claims priority, application Fed. Rep. of Germany, Apr. 27, 1983, 3315241

Int. Cl.⁴ F02B *9/08*; F02P *19/00*

U.S. Cl. 123—145 A **14 Claims**



1. An apparatus for injecting fuel into a combustion chamber of an internal combustion engine, in particular a self-igniting internal combustion engine, having an injection nozzle which has injection openings disposed at an angle from the nozzle axis, through which openings laterally-oriented fuel streams emerge from outlets, characterized in that between said injection openings and said combustion chamber a partition is arranged to surround at least the lateral axis of said injection nozzle, said partition being spaced from said injection nozzle and provided with through openings aligned with said fuel streams, said partition containing at least one further opening to admit bypass combustion chamber air such that said partition acts as a guide device for bypassing combustion chamber air from said combustion chamber via said further opening and said through openings back to said combustion chamber whereby said fuel streams which are emitted at and through said through openings bring about an injector effect that accelerates combustion chamber air through said partition, and a heating device between said further opening and said through openings, said heating device being adapted to heat aspirated combustion air before said air passes into said through openings.

4,604,976

ROAD AND ENGINE SPEED GOVERNOR WITH LINEAR ACTUATOR

Harry D. Sturdy, Wilmington, N.C., assignor to Sturdy Truck Equipment, Inc., Wilmington, N.C.

Division of Ser. No. 459,345, Jan. 20, 1983, Pat. No. 4,523,564. This application Jan. 8, 1985, Ser. No. 689,729

Int. Cl.⁴ F02D *11/10*

U.S. Cl. 123—361 **2 Claims**

1. For use in an engine speed governor for an engine having a throttle movable between an open throttle position and a close throttle position for regulating the flow of fuel to the engine, said governor being of the type comprising an overriding throttle closing means, a control means responsive to engine speed for controlling the throttle closing means,

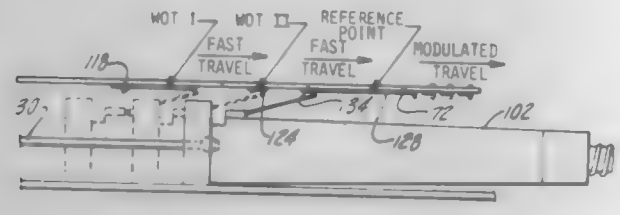
a linear actuator including a linearly movable actuator member,

a reversible electric motor,

a control circuit having plural inputs and including means for controlling the energization and speed of said motor in accordance with selected position of said actuator member,

drive means coupled between the motor and the actuator member for imparting reversible linear motion to the actuator member,

said actuator member being connected with the overriding throttle limiting means for positioning it to limit the throttle opening,



a switch plate disposed adjacent the actuator member and including plural fixed electrical contacts each of which is connected with one of said inputs of said control circuit,

a movable electrical contact carried by the actuator member and being selectively engageable with said fixed contacts, and

adjusting means for adjustably positioning said switch plate relative to said actuator member,

whereby the movable contact engages a selected fixed contat in accordance with the position of the actuator member to control said motor.

4,604,977

CENTRIFUGAL GOVERNOR FOR INTERNAL COMBUSTION ENGINES

Masanori Ohnishi, Higashimatsuyama, Japan, assignor to Diesel Kiki Co., Ltd., Tokyo, Japan

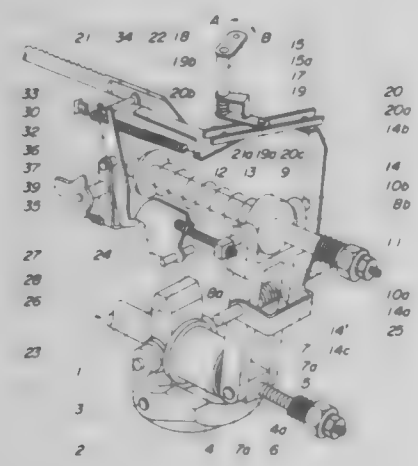
Filed Apr. 24, 1985, Ser. No. 726,413

Claims priority, application Japan, May 2, 1984, 59-64873[U]

Int. Cl.[4] F02M *39/00*

U.S. Cl. 123—365

2 Claims



1. A centrifugal governor for use with an internal combustion engine, comprising:

a control rack for regulating the quantity of fuel to be supplied to said engine;

flyweights radially displaceable in response to the rotational speed of said engine;

a tension lever pivotable about a stationary fulcrum in response to the radial displacement of said flyweights;

a torque cam having a cam surface determining a fuel increment to be applied at the start of said engine;

a sensor lever having one end engaged by said control rack and another end disposed for engagement with said cam surface of said torque cam, said sensor lever being adapted to engage with said cam surface of said torque cam when said engine is in a starting condition, to cause displacement of said control rack into a fuel increasing position for the start of said engine; and

spring means interposed between said torque cam and said tension lever and urging said torque cam with a force dependent upon the angularity of said tension lever in a direction of disengaging said sensor lever from said cam surface of said torque cam;

said spring means comprising first and second springs, one of said first and second springs being formed of a thermosensitive material having a smaller spring constant at a low temperature below a predetermined value, and a larger spring constant at a temperature above said predetermined value; and

said first and second springs of said spring means comprising coiled springs disposed concentrically with each other.

4,604,978

SPEED GOVERNOR FOR FUEL INJECTION PUMPS

Sytze Brouwers, Woodridge, Ill.; Werner Brühmann, Stuttgart, and Heinz Kuschmierz, Gerlingen, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

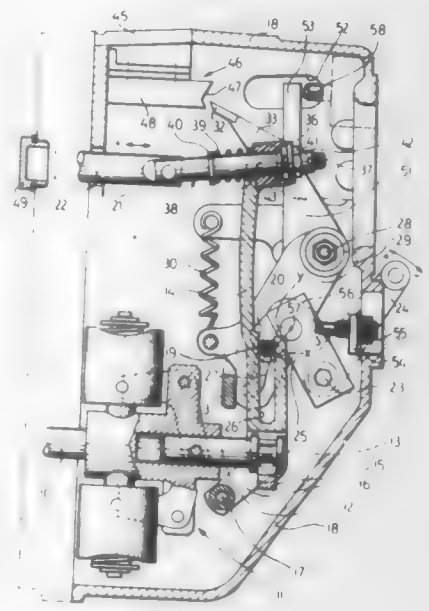
Filed Mar. 19, 1985, Ser. No. 713,719

Claims priority, application Fed. Rep. of Germany, Oct. 26, 1984, 3439277

Int. Cl.[4] F02D *1/04*

U.S. Cl. 123—374

12 Claims



1. A speed governor for fuel injection pumps for internal combustion engines including a housing, comprising a rpm-dependent adjusting member which is joined to a supply quantity control member via a governor lever pivotable about a guide shaft, said guide shaft being displaceable by an arbitrarily actuatable adjusting lever along said governor lever to vary the speed droop of said governor and to preselect the rpm to be governed, said guide shaft being displaceable along a curve of a cam plate that is retainable in a basic position by a spring, said cam plate being pivotable about a pin integral with said housing, said guide shaft further being displaceable into a position assuring a minimum idling rpm by means of a movement-coupling member upon adjustment of said cam plate to produce a lower maximum rpm, said movement-coupling member further including a stop plate, said stop plate being disposed on a shaft of said adjusting lever parallel to said cam plate, and means for reducing the full-load and maximum rpm by swiveling said cam plate counter to the force of the said spring in accordance with an operating parameter acting independently of the rpm governor.

4,604,979

ELECTRONICALLY CONTROLLED DISTRIBUTOR TYPE FUEL INJECTION PUMP FOR INTERNAL COMBUSTION ENGINES

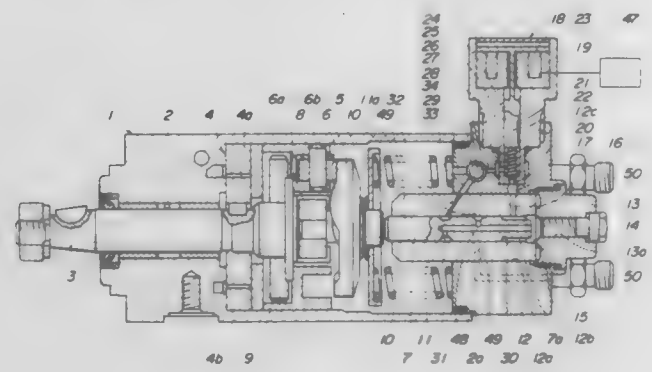
Tadashi Kobayashi; Shinya Nozaki, and Keiichi Yamada, all of Higashi-matsuyama, Japan, assignors to Diesel Kiki Co., Ltd., Tokyo, Japan

Filed Apr. 2, 1985, Ser. No. 718,806

Claims priority, application Japan, Apr. 5, 1984, 59-49875[U]

Int. Cl.⁴ F02M *59/20*

U.S. Cl. 123—449 **5 Claims**



1. A distributor type fuel injection pump for an internal combustion engine, comprising: a suction space filled with fuel under pressure variable as a function of the rotational speed of said engine; a plunger driven by said engine for concurrent reciprocating and rotative motion to effect suction of fuel from said suction space into a pump working chamber defined by said plunger at one end thereof, pressure delivery of fuel from said pump working chamber and distribution of the fuel into cylinders of said engine; a plurality of suction ports formed in said plunger and identical in number with the cylinders of said engine, said suction ports communicating with said pump working chamber; a first communication passageway communicating said suction space with said pump working chamber; a second communication passageway having a restriction therein, said second communication passageway being disposed to sequentially register with said suction ports as said plunger rotates for communicating said suction space with each of said suction ports that registers with said second communication passageway; a solenoid valve disposed to selectively open and close said first communication passageway; a selector valve operable to assume, independently of the opening and closing action of said solenoid valve, a first valve position wherein said first communication passageway is closed and simultaneously said second communication passageway is opened, at the start of said engine, and a second valve position wherein said second communication passageway is closed and simultaneously said first communication passageway is opened, during operation of said engine other than at the start of said engine; and control means operable in response to operating conditions of said engine to control said solenoid valve to alternately open and close so as to achieve required fuel injection quantity and required injection timing.

4,604,980

FUEL INJECTION PUMP

Jean Leblanc, Lyons, France, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

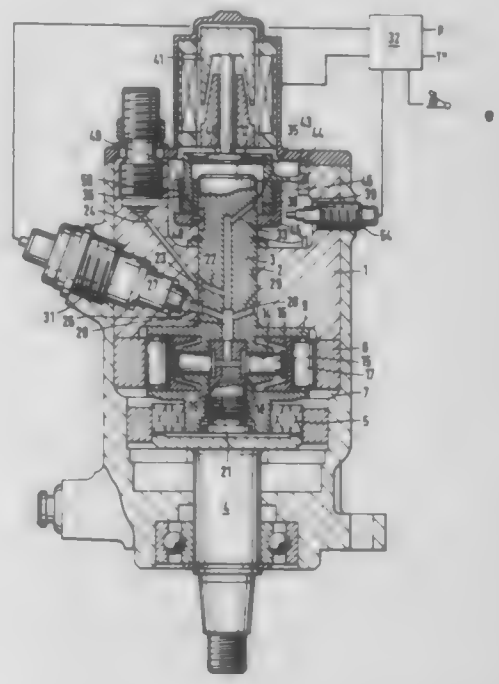
Filed Mar. 8, 1985, Ser. No. 709,957

Claims priority, application Fed. Rep. of Germany, Apr. 5, 1984, 3412834

Int. Cl.⁴ F02M *41/00*

U.S. Cl. 123—450 **12 Claims**

1. A fuel injection pump having a housing, a bore in said housing at least one pump work chamber defined by a pump piston driven via a cam track, a distributor in said bore a pump work chamber in continuous communication with an opening provided in a jacket face of said distributor which rotates in said bore and is coupled with a drive shaft, said pump work chamber thereby being arranged to communicate during any given supply stroke of the pump piston successively with one of a plurality of injection lines distributed about the circumference of said bore via a longitudinal conduit in said distributor, said pump work chamber further being in continuous communication with a first control opening in said jacket face of said distributor, wherein the said first control opening is arranged to communicate with means having a second control opening and positioned adjacent to said jacket face of said distributor, said means adapted to communicate with a low fuel pressure chamber, an electrically controlled switching valve connected with a fuel supply line extending from a fuel supply, said electrically controlled switching valve controlling flow of fuel from said fuel supply line through said switching valve to said



longitudinal conduit in said distributor during each cycle of operation and also communicate with said pump work chamber during the intake stroke of at least one pump piston, a control unit means for controlling said electrically controlled switching valve whereby said switching valve is opened no later than the beginning of the intake stroke of said pump piston and is closed at the end of a metering stroke to thereby determine the filling quantity of the work chamber prior to the onset of the supply stroke and said distributor further including an end means arranged to protrude out of said bore, said end means including said first control opening, an annular slide encompassing said first control opening and including said second control opening, and means for adjusting said annular slide and said first control opening.

4,604,981

INJECTION TIMING DEVICE

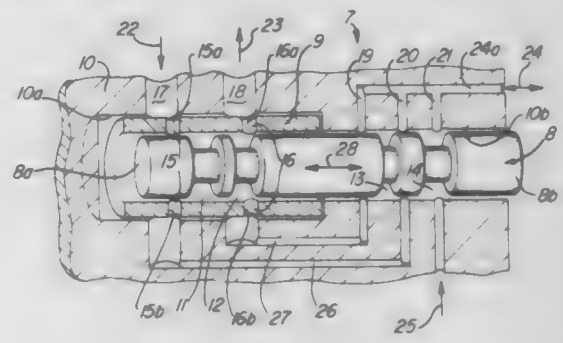
Jean-Louis Dazzi, 52 Rue des Collonges, Saint Genis Laval - Rhone, France

Filed Jul. 20, 1983, Ser. No. 516,114

Claims priority, application France, Jul. 22, 1982, 82 13138

Int. Cl.⁴ F02M *39/00*

U.S. Cl. 123—451 **8 Claims**



1. A fuel injection timing device for insertion in the high

pressure fuel circuit of an internal combustion engine, and for controlling the operation of a fuel injection needle, said fuel injection timing device comprising:

a manifold comprising:

a longitudinally extending bore having an enlarged portion;

a pair of transversely extending passages communicating with said longitudinally extending bore;

three additional spaced apart transverse passages communicating with said longitudinally extending bore; and

at least one internal passage connecting said three additional spaced apart transverse passages to the rear of said fuel injection needle, the third of said three additional passages being connected to said high pressure fuel circuit for the flow of fuel from said high pressure fuel circuit to said fuel injection needle through said manifold;

a sleeve slidably mounted in said enlarged portion of said longitudinally extending bore of said manifold, said sleeve having a pair of spaced apart holes extending transversely therethrough, one of said pair of spaced apart holes communicating with said high pressure fuel circuit, the other of said pair of spaced apart holes communicating with a line for delivery of fuel to said engine; and means for slidably moving said sleeve in said enlarged portion of said longitudinally extending bore within said manifold such that said sliding movement of said sleeve selectively moves said pair of spaced apart holes in said sleeve into and out of alignment with said pair of transversely extending passages in said manifold to control the termination of the flow of fuel through said manifold; and

a sliding valve having one end slidably mounted within said sleeve; an opposite end slidably mounted within said longitudinally extending bore of said manifold; and means for slidably moving said sliding valve in said manifold, said one end comprising a pair of spaced apart grooves whereby said means for slidably moving selectively moves said pair of spaced apart grooves of said sliding valve into and out of alignment with said pair of spaced apart holes in said sleeve; said opposite end of said sleeve comprising a pair of spaced apart grooves such that as said means for slidably moving said sliding valve selectively moves said sliding valve, one of said pair of spaced apart grooves communicates with one of said three additional spaced apart transverse passages while the other of said pair of spaced apart grooves communicates with said second or said third of said three additional spaced apart transverse passages, the position of said pair of spaced apart grooves in said opposite end of said sliding valve with respect to said three additional spaced apart transverse passages in said manifold controlling the operation of said fuel injection needle to initiate the flow of fuel therethrough.

4,604,982

CONTROLLING AND SWITCHING MECHANISM

Isadore Turetsky, 23940 Welby Way, Canoga Park, Calif. 91307

Filed Mar. 19, 1985, Ser. No. 713,878
Int. Cl.[4] F02M *51/00*
U.S. Cl. 123—477 6 Claims

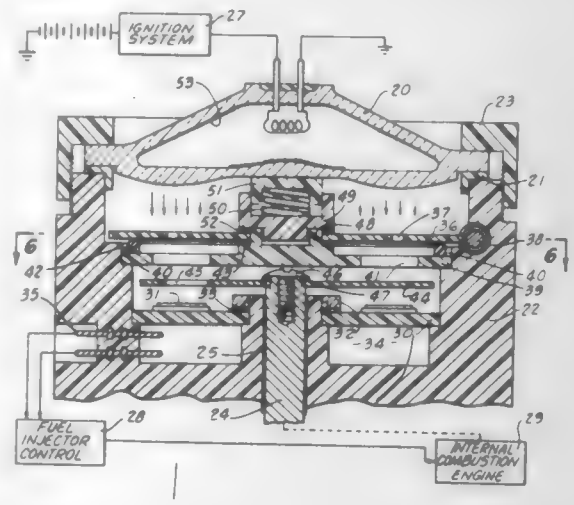
1. In a fuel injection system for an internal combustion engine, a controlling and switching mechanism using radiant energy for controlling the sequential operation of the fuel injectors, said mechanism comprising:

A source of radiant energy

A first element having a plurality of switching members which are activated by said radiant energy and fixed to said element, said members electrically connected in the circuit controlling their associated fuel injectors

A second element disposed between the source of radiant energy and said switching members, said second element having a plurality of apertures therein through which beams of radiant energy are directed, there being an aperture for each switching member; said second element adapted for optional rotation so that each beam of radiant energy emanating from each aperture and directed toward said first element can be shifted with respect to its associated switching member

A third element disposed intermediate said first and second element, said third element having an aperture therein and



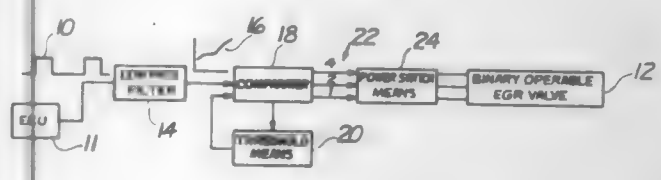
rotating in timed relationship with the engine shaft, so that each switching member is activated by its associated beam by means of the rotating aperture in said third element; the duration of an energizing pulse when said switching member is activated, in degrees of engine shaft rotation, being a function of that part of the switching member illuminated by its associated beam of radiant energy.

4,604,983

ANALOG DUTY CYCLE TO BCD CONVERTER

Ralph W. Carp, 90 Huxley Pl., Newport News, Va. 23606; Robert E. Weber, 978 Lacon Dr., Newport News, Va. 23602, and Danny O. Wright, 411 Dare Rd., Grafton, Va. 23692

Filed Apr. 9, 1985, Ser. No. 721,358
Int. Cl.[4] F02M *25/06*
U.S. Cl. 123—571 6 Claims



1. An analog duty cycle to BCD converter circuit for controlling a binary encoded EGR valve, the circuit comprising:

low pass active filter means for receiving a digitally encoded voltage signal and generating an analog voltage signal proportional thereto;

threshold means for generating a plurality of threshold voltages each representing a binary value;

comparator means for receiving said analog voltage signal and said threshold voltages and generating binary encoded analog signals proportional to the digitally encoded voltage signal; and

power switch means actuable in response to said binary encoded analog signals

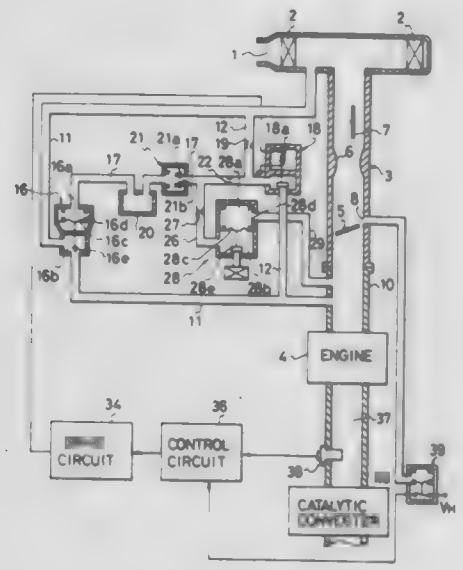
wherein said low pass filter means is a two pole active filter.

4,604,984

AIR INTAKE SIDE SECONDARY AIR SUPPLY SYSTEM FOR AN INTERNAL COMBUSTION ENGINE

Yoshinobu Isobe, Tokyo, and Hiroaki Iwasaki, Niiza, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed May 8, 1985, Ser. No. 731,786
Claims priority, application Japan, May 16, 1984, 59-98269
Int. Cl.[4] F02M *23/04*
U.S. Cl. 123—589 3 Claims



1. An air intake side secondary air supply system for an internal combustion engine having a carburetor and intake air passage with a throttle valve, comprising:

an air-fuel ratio detection means for detecting an air-fuel ratio from an oxygen concentration of an exhaust gas of the engine and producing an air-fuel ratio signal;

a first air intake side secondary air supply passage leading to the intake air passage on downstream side of the carburetor and the throttle valve;

an air control valve disposed in said first air intake side secondary air supply passage and adapted to vary a sectional area of the first air intake side secondary air supply passage in accordance with a magnitude of a pressure supplied to a pressure chamber thereof;

a second air intake side secondary air supply passage leading to the intake air passage on downstream side of the carburetor and the throttle valve;

a first open/close valve disposed in said second air intake side secondary air supply passage and opening and closing same in accordance with a content of said air-fuel ratio signal;

a first air supply delay means disposed in said second air intake side secondary air supply passage, on upstream side of said first open/close valve;

a pressure supply passage for communicating said pressure chamber of said air control valve with a part of said second air intake side secondary air supply passage between said first open/close valve and said first air supply delay means;

a second air supply delay means disposed in said pressure supply passage; and

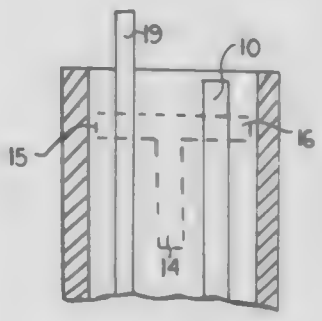
a pressure control means for supplying an air pressure for reducing an opening degree of said air control valve into said pressure supply passage between said second pressure supply delay means and said pressure chamber of the air control valve, during a predetermined operating condition of the engine.

4,604,985

FIRE ARM

Alexander Kulgevich, Brooklyn, N.Y., assignor to Naum Frayberg, Brooklyn, N.Y.

Filed Dec. 3, 1984, Ser. No. 677,576
Int. Cl.[4] F41B *7/00, 11/00*
U.S. Cl. 124—56 4 Claims



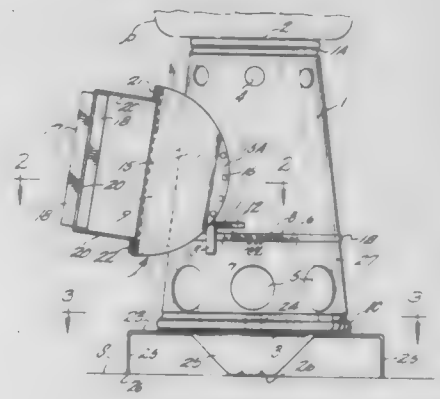
1. A fire arm, comprising a firing element having a muzzle and striking means; at least one element to be fired and formed as a boomerang, wherein said striking means is formed so as to deliver a stronger strike against one of said legs and a weaker against the other of said side legs of said boomerang.

4,604,986

BRIQUET STARTER AND OUTDOOR STOVE

Bruce L. Barnes, 2335 N. 31st, Springfield, Oreg. 97478

Filed Nov. 13, 1984, Ser. No. 670,570
Int. Cl.[4] F24B *3/00*
U.S. Cl. 126—25 B 5 Claims



1. A briquet starter and outdoor stove comprising in combination,

a container of frustum shape and including grate means and defining an upper and a lower series of air vent openings,

a heat shield of curved section having upper and lower end portions and having a pair of flanges along its sides in place against the container exterior, means securing said flanges to said container, said heat shield of a length so as to extend along a major portion of the containers length, said curved heat shield defining an open area with the container and open at its upper and lower ends, to define an air passageway through which a convective air flow passes and

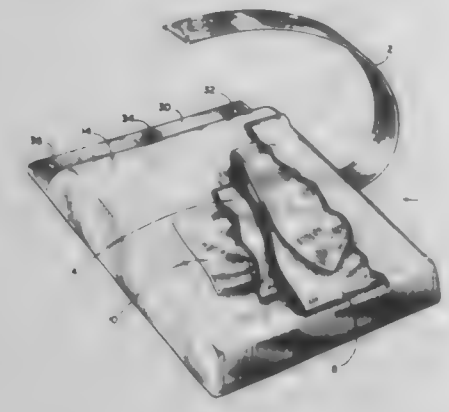
a handle oppositely disposed on said heat shield from said container and including a bracket terminating at its ends in securement to said upper and lower end portions of the heat shield remote from the side flange so as to isolate the handle from heat radiated from the container, said handle substantially equal in length to heat shield length.

4,604,987

HEATED STADIUM CUSHION

Heidi Keltner, 1905 Calle de Vega, Las Vegas, Nev. 89102

Filed Oct. 4, 1985, Ser. No. 784,553
Int. Cl.[4] A61F *7/00*
U.S. Cl. 126—204 8 Claims



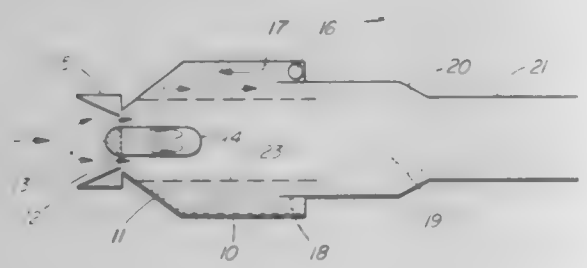
1. In combination, a heated cushion device comprising a foam pad enclosed in a unitary flexible casing, a first pocket attached to an exterior portion of the casing adapted to enclose a heating element, a second pocket attached to the casing adapted to enclose at least one article of weather-resistant clothing, handle means attached to the casing for carrying the device, said first pocket is located interior of said second pocket and an air-activated chemical heating element enclosed within said first pocket.

4,604,988

LIQUID VORTEX GAS CONTACTOR

Dandina N. Rao, Calgary, Canada, assignor to Budra Research Ltd., Calgary, Canada

Filed Mar. 19, 1984, Ser. No. 591,041
Int. Cl.[4] F24H *1/20*
U.S. Cl. 126—360 A 29 Claims



1. A method for contacting a liquid with a gas comprising the steps of:

(a) continuously injecting said liquid through an inlet pipe into a hollow container and forming along the interior surface of said container a continuous, inertially rotating liquid vortex flow having a substantially liquid free core within said container; and

(b) passing a gas through said vortex core, whereby said gas contacts the inner surface of said liquid along said vortex core;

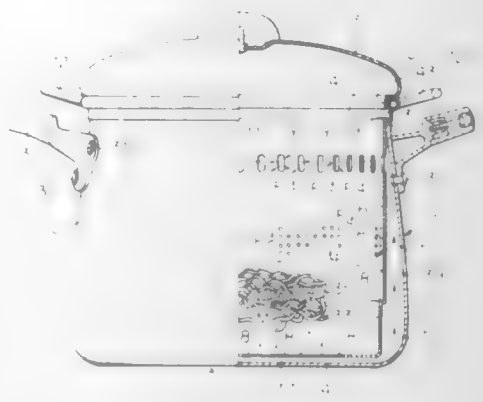
wherein said gas originates from a combustible mexture which is introduced into and is ignited to produce a flame within said vortex core said flame being substantially surrounded by, and in direct contact with, said rotating liquid.

4,604,989

COOKING VESSEL

Toshiyuki Kita, Osaka, Japan, assignor to Hokusei Nikkei Household Utensils Co., Ltd., Takaoka, Japan

Filed Feb. 20, 1985, Ser. No. 703,432
Claims priority, application Japan, Feb. 21, 1984, 59-22464[U]
Int. Cl.[4] F24D *1/00*
U.S. Cl. 126—369 10 Claims



1. A cooking vessel comprising an inner container for holding a cooking material and an outer container for receiving the inner container, said inner and outer containers being sized to provide a circumferential space therebetween in the lower part of the vessel but that fit snugly together in the upper part of the vessel, said inner container being provided on its bottom and lower side circumference with a large number of holes for connecting the inside areas of the inner and outer containers and also being provided with a plurality of vertically elongated openings, relatively larger than said holes, spaced circumferentially around the upper part of the inner container above the normal level of water used in the vessel that connect the upper part of the circumferential space between the containers with the inside area of the inner container whereby foam produced in the circumferential space by the cooking material when it is boiled passes upwardly in the space and through said elongated openings at a relatively high rate of speed into the inner container to prevent boiling over of the vessel.

4,604,990

COLLECTOR MEANS FOR SOLAR ENERGY COLLECTING SYSTEM

Ronnie D. Nikkel, and Paul M. L'Esperance, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 507,397, Jun. 24, 1983, Pat. No. 4,465,057.
This application Jun. 11, 1984, Ser. No. 619,659
Int. Cl.[4] F24J *2/46*
U.S. Cl. 126—418 6 Claims

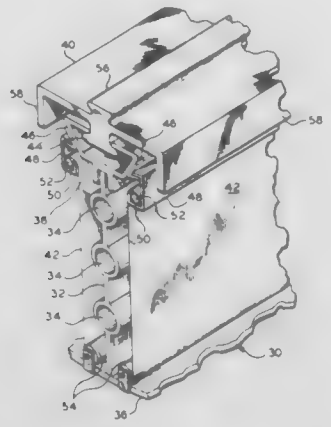
1. Absorber means for a solar energy collector system, which includes an absorber plate means having at least one side thereof exposed to solar rays, comprising:

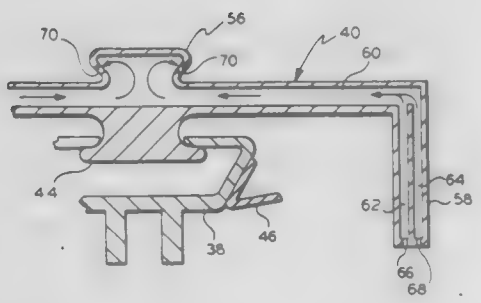
(a) transparent glazing panel means, generally parallel to and in spaced relation to the exposed side of said absorber plate means; and

(b) absorber plate cap means coupled to and extending along one edge of said absorber plate, and having a downwardly depending leg extending over the complimentary edge of said glazing panel means and spaced therefrom;

(c) said cap means having formed therein at least one air channel means generally conforming to the cross-sectional contour of said cap means and having air inlet means adjacent the bottom of said leg of said cap means and in communication with said channel and air outlet

means adjacent the top of said cap means in communication with said channel and said channel being adapted to





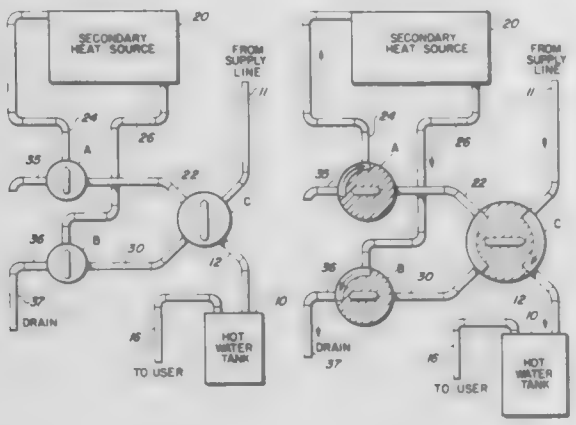
permit currents of cooling air to pass therethrough from said inlet means to said outlet means.

4,604,991

HOT WATER PREHEATER SYSTEM

Kenneth F. Miller, P.O. Box 342, Americus, Ga. 31709

Filed Sep. 6, 1985, Ser. No. 773,251
Int. Cl.[4] F24J *2/04*
U.S. Cl. 126—437 **10 Claims**



1. In a system for supplying hot water to a point of use from a primary heated water storage tank having an inlet and an outlet, an improvement including in combination:

a water supply line;

a secondary water heating source having an inlet and an outlet;

a main valve means having first and second operating positions, and first, second, third, and fourth ports;

second and third valve means each having first and second operating positions and each having first, second and third ports;

means for connecting said water supply line to the first port of said main valve means;

first pipe means connecting the second port of said main valve means to the first port of said second valve means;

second pipe means connecting the second port of said second valve means to the inlet of said secondary water heating source;

drain means;

pipe means connecting the third port of said second valve means and the third port of said third valve means, respectively, to said drain means;

fourth pipe means connecting the outlet of said secondary water heating source to the second port of said third valve means;

fifth pipe means connecting the first port of said third valve means to the third port of said first valve means; and

means coupling the fourth port of said first valve means to the inlet of said primary heated water storage tank; and

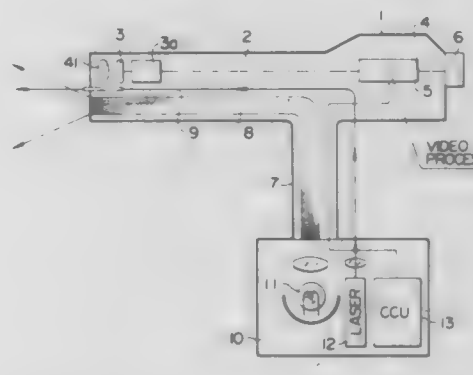
wherein the first position of said first valve means interconnects the first and fourth ports thereof for fluid flow therebetween, and the second position of said first valve means interconnects the first and second ports thereof for fluid flow therebetween and connects the third and fourth ports thereof for fluid flow therebetween; the first operating position of said second valve means interconnects the second and third ports thereof for fluid flow therebetween and the second operating position of said second valve means interconnects the first and second ports thereof for fluid flow therebetween; said first position of said third valve means interconnects the second and third ports thereof for fluid flow therebetween and the second position of said third valve means interconnects the first and second ports thereof for fluid flow therebetween.

4,604,992

ENDOSCOPE SYSTEM

Ken Sato, Akigawa, Japan, assignor to Olympus Optical Company, Ltd., Japan

Filed Dec. 24, 1984, Ser. No. 685,322
Claims priority, application Japan, Dec. 27, 1983, 58-248948
Int. Cl.[4] A61B *1/04*
U.S. Cl. 128—6 **9 Claims**



1. An endoscope system including a line transfer type CCD solid-state camera located within the distal end of an endoscope, said camera providing a video output to a television monitor so that an affected area can be treated with laser radiation while being observed, said system comprising:

a light source for providing illumination;

a laser oscillator for producing said laser radiation;

blocking means for blocking said illumination from said light source and said laser radiation from said laser oscillator from impinging upon said CCD camera at least during a period of operation when said CCD camera is in a transfer mode; and

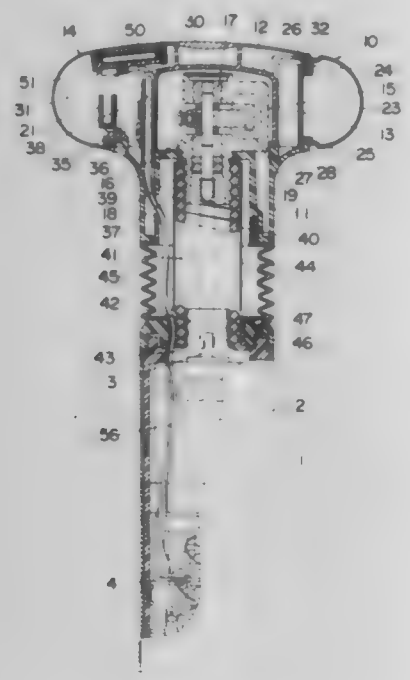
locating means for locating and displaying at least a portion of a path followed by said laser radiation on said television monitor.

4,604,993

VIBRATORY MASSAGE DEVICE

Hiroshi Moriwaki; Yukio Yamamura, both of Hikone, and Kazuhiko Fujikawa, Mie, all of Japan, assignors to Matsushita Electric Works, Ltd., Japan

Filed Dec. 13, 1983, Ser. No. 560,849
Claims priority, application Japan, Jan. 31, 1983, 58-14149
Int. Cl.[4] A61H *21/00*
U.S. Cl. 128—24.2 **1 Claim**



1. A vibratory massage device comprising:

an elongated housing adapted to fit the user's hand and enclosing an electric motor, the housing being outwardly flared at one end to form an applicator head of fungiform shape;

the applicator head having a generally flat to face, a portion thereof being rigid and of good thermal conductivity and a side face which is generally C shaped in cross section;

the C shaped side face having a first portion which is rigid and of good thermal conductivity extending part way circumferentially around the applicator head and a second portion which is resilient and etends around the remainder of the circumference of the applicator head;

a positive temperature coefficient electric heating element within the applicator head and disposed closely adjacent the underside of the rigid portion thereof, and in good thermal conductive contact therewith;

an eccentric weight mounted for rotation within said applicator head about an axis perpendicular to the generally flat top face and means connecting the weight to the motor for rotation thereby;

the rotation of the eccentric weight being such as to cause a rubbing massage when the generally flat end face is contacted by the user and a tapping massage action when either the rigid or resilient side faces are contacted by the user.

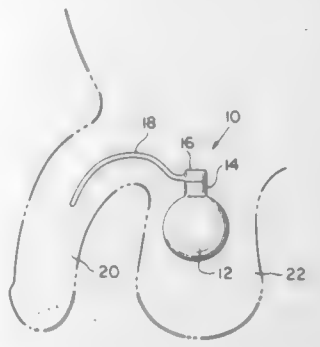
4,604,994

IMPLANTABLE MEDICAL PROSTHESIS FOR OBVIATING MALE IMPOTENCY

Andrew I. Sealfon, Port Washington, N.Y., assignor to Repro-Med Systems, Inc., Middletown, N.Y.

Filed Jun. 24, 1985, Ser. No. 747,938
Int. Cl.[4] A61F *5/00*
U.S. Cl. 128—79 **8 Claims**

1. An implantable medical prosthesis for the demand delivery of medication comprising a manually compressible reservoir for maintaining a quanity of fluid medication within the body and having an outlet from said reservoir for directing said fluid medication to a selected part of the body, including means for normally storing a predetermined dose of said fluid medication in advance of said outlet in readiness for discharge to the body, said means being responsive to compression of said reservoir to discharge said stored predetermine dose and responsive to the subsequent release of compression to be automatically supplied with an amount of fluid from said reservoir equal to the amount of discharged dose to restore a predetermined dose of fluid medication for succeeding discharge.

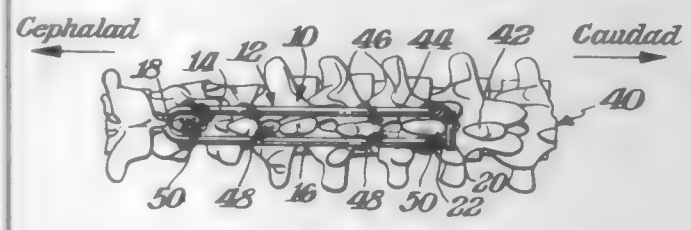


4,604,995

SPINAL STABILIZER

David C. Stephens, 129 School Rd., Wilmington, Del. 19803, and Craig D. Morgan, 902 Stuart Rd., Wilmington, Del. 19807

Filed Mar. 30, 1984, Ser. No. 595,259
Int. Cl.[4] A61F *5/04*
U.S. Cl. 128—69 **9 Claims**



1. A surgical implant for imparting stability to the thoracolumbar spine by fixation of the implant to the spine with segmental spinal instrumentation, the implant comprising a unitary rod having a generally rectangular configuration formed by a pair of spaced apart branches substantially mirror image duplicates of one another and substantially equally spaced apart along their entire length, a bight end piece interconnecting the branch pair at one end portion thereof, and a gate forming end piece connected to close the other end portion of the branch pair except for a small gate opening to provide access to the space between the branch pair.

4,604,996

EXTERNAL SKELETAL FIXATOR

David M. Nunamaker, 396 Valley Rd., West Grove, Pa. 19390, and Dean W. Richardson, 1291 New London Rd., Landenberg, Pa. 19350

Filed Mar. 11, 1985, Ser. No. 710,376
Int. Cl.[4] A61F *5/04*
U.S. Cl. 128—87 R **20 Claims**

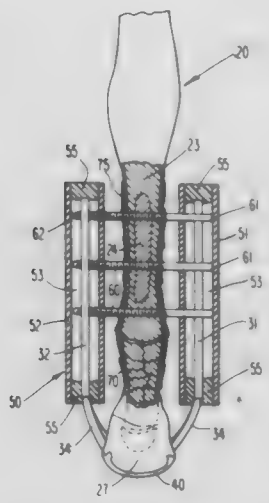
1. An external skeletal fixator for treating an injured mammalian limb which comprises

a plurality of transfixation pins which transfix bone at separated sites along the limb proximal the injury and terminate beyond the limb;

means for rigidly connecting pins terminii to a weight bear-

ing member carried beneath the foot of the limb; together with

means for immobilizing the limb distal the injury;



whereby the weight of the mammal is transferred from the limb proximal the injury to said weight bearing member, permitting the mammal to ambulate while the injury heals.

4,604,997

ARTICULATED MINI EXTERNAL FIXATION DEVICE

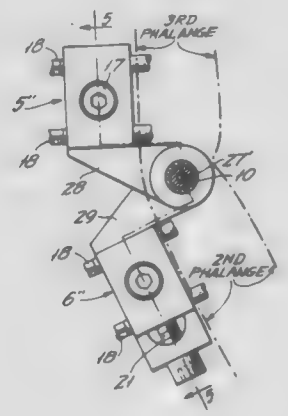
Giovanni De Bastiani, Verona; Lodovico R. Brivio, Castenedola; Roberto Aldegheri, Lupatoto, and Giovanni Faccioli, Monzambano, all of Italy, assignors to Orthofix S.r.l., Verona, Italy

Filed Jan. 23, 1985, Ser. No. 694,062

Claims priority, application Italy, Feb. 13, 1984, 84909 A/84

Int. Cl.[4] A61F *5/04*

U.S. Cl. 128—92 A **17 Claims**



1. An articulated external minifixator device, comprising two elongate arms with a single-axis articulating connection of adjacent ends of said arms, said connection being characterized by an alignment guide bore on the axis of articulation, first clamping means including spaced guideways adpated for clamping at least two orthopedic pins which are longitudinally spaced and oriented transverse to the direction of elongation of one of said arms, said first clamping means being at offset from the articulation axis, second clamping means including spaced guideways adapted for clamping at least two orthopedic pins which are longitudinally spaced and oriented transverse to the direction of elongation of the other of said arms, said second clamping means being at offset from the articulation axis, and means including a longitudinal lead screw in one of said arms and egaging the clamping means of said one arm for selective longitudinal positioning adjustment of the clamping means of said one arm.

4,604,998

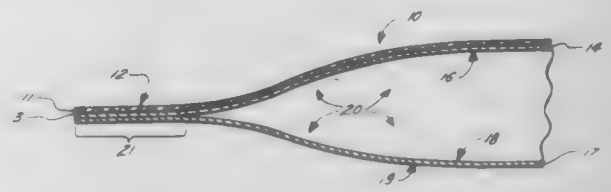
LASER SURGERY DRAPE

Joseph H. Bellina, 3439 Kabel Dr., New Orleans, La. 70114

Filed Apr. 11, 1984, Ser. No. 598,994

Int. Cl.[4] A61F *13/00*

U.S. Cl. 128—132 D **18 Claims**



1. A laser surgery drape for use in protecting a patient from the radiation of a medical operating laser during surgery comprising:

a. a multi-layered drape that can be draped upon the patient, having at least one metallic layer adhered to at least one non-metallic fabric-like layer; and

b. reflective surface means positioned to reflect laser radiation toward the metallic and non-metallic layers for diffusing any laser radiation ray which is emitted from the medical operating laser and penetrates the metallic and non-metallic layers.

4,604,999

INHALATOR

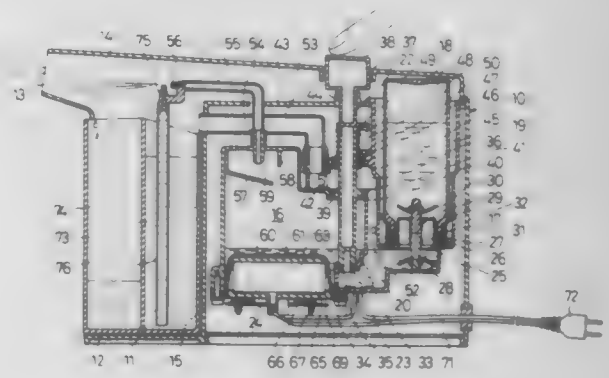
Masatoshi Maeda, Hikoni, Japan, assignor to Matsushita Electric Works, Ltd., Osaka, Japan

Filed Apr. 24, 1984, Ser. No. 603,427

Claims priority, application Japan, May 14, 1983, 58-84372

Int. Cl.[4] A61M *15/00*

U.S. Cl. 128—200.21 **5 Claims**



1. An inhalator comprising:

a casing including

a housing, and

a cover mounted atop said housing and forming a vapor discharge port adjacent a front end of said casing,

a suction tank disposed in said casing at a front end thereof below said discharge port for containing an inhalant,

a suction tube extending into said suction tank and including a suction nozzle at its upper end,

a water supply chamber disposed in said casing for containing a supply of water,

a vaporizing chamber disposed in said casing forwardly of said supply chamber and including a portion disposed below said supply chamber,

said vaporizing chamber including a vapor release vent communicating said vaporizing chamber with a space disposed above said vaporizing chamber, said space communicating with the exterior of said casing,

a water level adjusting chamber disposed in said casing at about the same height as said vaporizing chamber and arranged to fluidly communicate said supply chamber with said vaporizing chamber,

said adjusting chamber communicating with said vaporiz-

ing chamber by means of a communicating path disposed below said vapor release vent,

said adjusting chamber including an air vent path communicating with said space,

valve means for closing said vent and said communicating path simultaneously,

a heater for heating and vaporizing water in said vaporizing chamber in response to the closing of said vent and communicating path by said valve means, and for terminating the heating of the water in response to the opening of said vent and communicating path, and

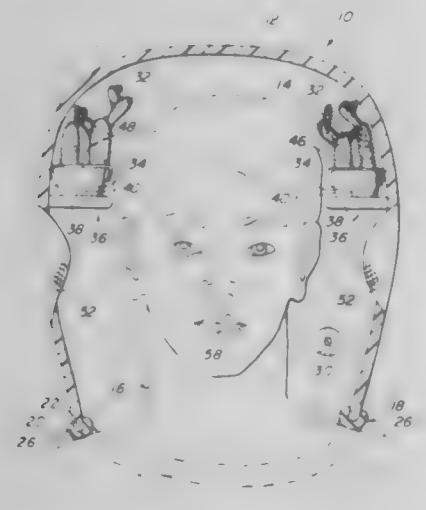
ejector means communicating with said vaporizing chamber for conducting vapor therefrom and ejecting the vapor toward said vapor discharge port and across said suction nozzle to create a Venturi effect for sucking inhalant from said suction tank and into the stream of vapor.

4,605,000

GREENHOUSE HELMET

Waldemar Anguita, 83 N. Henry St., Apt. 1-L, Brooklyn, N.Y. 11222

Filed Jan. 4, 1985, Ser. No. 688,821
Int. Cl.[4] A62B *7/00*
U.S. Cl. 128—201.25 **6 Claims**



1. A greenhouse helmet which comprises:

(a) a transparent dome worn completely over the head of a person;

(b) means for securing said dome to said person;

(c) means for adequately filtering ambient air having carbon dioxide in and out of said dome to meet the needs of the person;

(d) means for resting at least one plant within a pot placed in said dome so that carbon dioxide of said ambient air will mix with carbon dioxide breathed out by said person to be used by said plant to produce oxygen to be breathed in by said person in addition to the ambient air; and

(e) means for securing said plant and pot upon said resting means within said dome.

4,605,001

SURGICAL STAPLING INSTRUMENT WITH DUAL STAPLE HEIGHT MECHANISM

Robert G. Rothfuss, Bellevue, Ky.; David K. Kuhl, Cincinnati, Ohio, and Michael A. Murray, Bellevue, Ky., assignors to Senmed, Inc., Cincinnati, Ohio

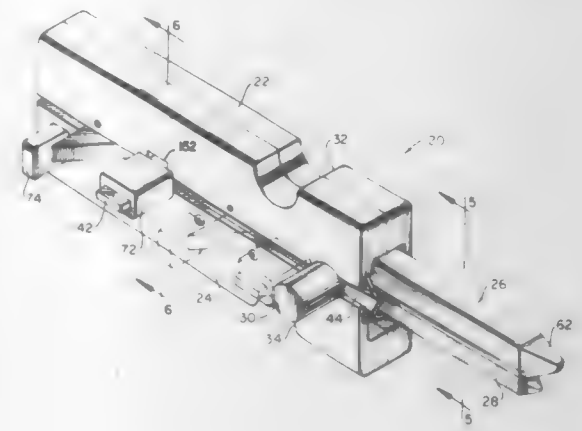
Filed Oct. 19, 1984, Ser. No. 662,621
Int. Cl.[4] A61B *17/11*
U.S. Cl. 128—305 **38 Claims**

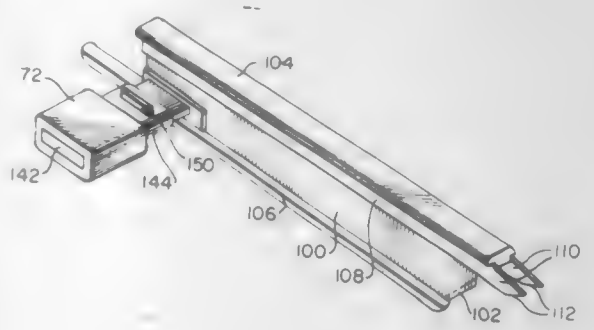
15. A surgical stapling instrument comprising:

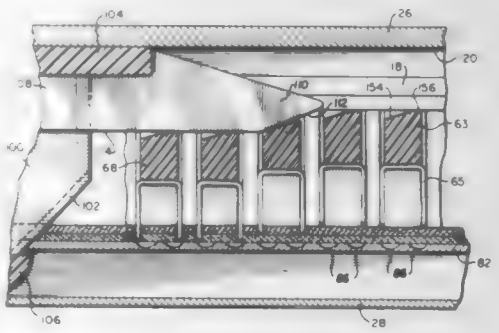
first and second cooperating elongate jaw members, one of said jaw members including a staple cartridge adapted to receive at least two laterally spaced longitudinal rows of staples, and said other jaw member including an anvil adapted to form said staples,

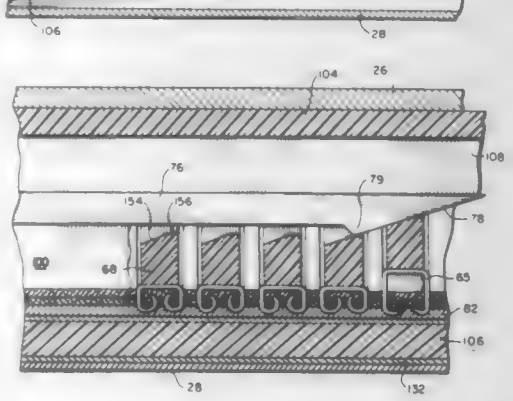
an elongate actuator assembly mounted on one of said jaw members and slidable longitudinally relative to said jaw members, said actuator assembly including cam means for sequentially driving the staples partially from said staple cartridge to force the staples in said longitudinal rows into tissue gripped between said jaw members without forming the staples against said anvil, and knife means for cutting the tissue along a line between said longitudinal staple rows after the unformed staples are forced into the tissue, and

an elongate staple driver mounted on one of said frames and slidable longitudinally relative to said jaw members for completely ejecting the staples from said staple cartridge









and forming the staples against said anvil to provide laterally spaced longitudinal rows of closed staples along opposite sides of the line cut in the tissue.

28. A surgical stapling instrument comprising:

first and second cooperating elongate jaw members, one of said jaw members including a staple cartridge adapted to receive at least two laterally spaced longitudinal rows of staples, and said other jaw member including an anvil adapted to form said staples,

means for sequentially driving the staples from said staple cartridge into tissue gripped between said jaw members

and forming the staples against said anvil means to produce a pair of laterally spaced longitudinal rows of closed staples in the tissue,

knife means for cutting the tissue gripped between said jaw members along a line between said longitudinal staple rows, and

support means including elongated support members movable into engagement with each of said elongate jaw members and adapted to provide support along substantially the entire length of said staple cartridge and said anvil during the forming of the staples.

37. A method of performing an anastomosis using a surgical stapling instrument including first and second cooperating jaw members, one of said jaw members including a staple cartridge adapted to receive a plurality of staples arranged in at least one row, and said other jaw member including an anvil adapted to form said staples, said method comprising:

clamping the tissue to be anastomosed between the staple cartridge and the anvil on the jaw members,

partially ejecting the staples from said staple cartridge into the tissue gripped between the jaw members to force the staples into the tissue before the tissue is cut without forming the staples to produce at least one row of unformed staples in the tissue,

cutting the tissue gripped between the jaw members along a line adjacent to said row of unformed staples, and

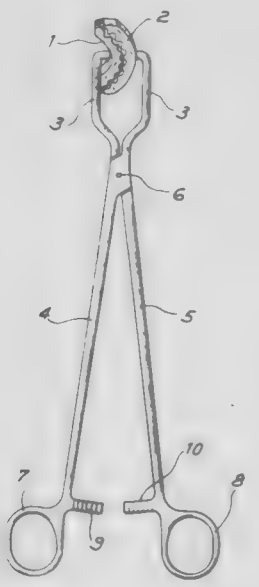
completely ejecting the staples from the staple cartridge and forming the staples against the anvil after the tissue is cut to provide at least one row of closed staples adjacent to the line cut in the tissue.

4,605,002

PURSE-STRING INSTRUMENT

Carlo Rebuffat, Via Galilei 7, Trento, Italy

Filed Mar. 5, 1984, Ser. No. 585,929
Claims priority, application Italy, Mar. 11, 1983, 20033 A/83
Int. Cl.[4] A61B *17/04*
U.S. Cl. 128—321 **1 Claim**



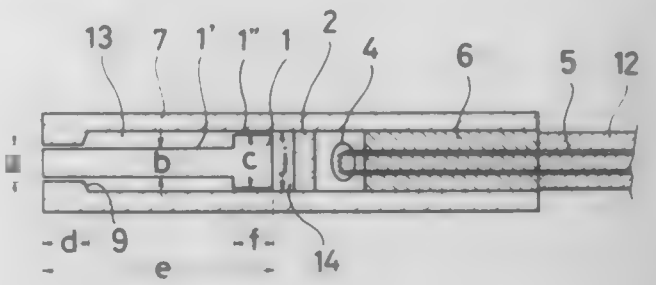
1. A purse-string instrument for the mechanical placement of a distal purse-string comprising two coaxial arc shaped jaws each having a different curvature and each provided with a working surface and an arc shaped channel for the insertion of a proper needle, two hinged arc shaped handles, and two intermediate segments which connect the jaws to the arc shaped handles and each having a longitudinal axis, wherein the angle formed by the projection of the working surface of the jaws and the longitudinal axis of the intermediate segments connecting the jaws and the handles is the complement of the angle formed by the longitudinal axis of the intermediate segments connecting the jaws and the handles and the tangent to the arc handles at the location of attachment between the arc handles and the segments.

4,605,003

LITHOTRIPTOR

Senzo Oinuma; Kazumi Tanaka; Kazuo Shiino, all of Ibaraki, and Hiroki Watanabe, Otsu, all of Japan, assignors to Agency of Industrial Science & Technology; Kyoto Prefectural Government and Hosoya Fireworks Co., Ltd., of JPX

Filed Nov. 29, 1984, Ser. No. 676,360
Claims priority, application Japan, Jul. 3, 1984, 59-138150
Int. Cl.[4] A61B *17/00*
U.S. Cl. 128—328 **14 Claims**



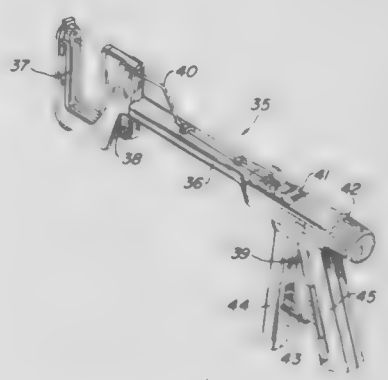
1. A lithotriptor comprising an outer slender tube small in outside diamter enough for insertion into an organ growing a stone therein and open in the leading end thereof, an inner member internally disposed in the front portion of said outer slender tube, means for preventing gases from leaving said outer slender tube, said outer slender tube accommodating therein behind said inner member an explosive layer or a gas-generating layer, ignition means for igniting said explosive layer or said gas-generating layer, and a closing member for preventing rearward advance of the gas generated on explosion of said explosive layer or said gas-generated layer, and said closing member admitting insertion of a power feed line for passing electric current to said ignition means and thereby causing explosion of said explosive layer of gas-generating layer.

4,605,004

SURGICAL INSTRUMENT FOR APPLYING FASTENERS SAID INSTRUMENT INCLUDING FORCE SUPPORTING MEANS (CASE IV)

John Di Giovanni, Woodbridge, and John Kula, Budd Lake, both of N.J., assignors to Ethicon, Inc., Somerville, N.J.

Filed Jul. 16, 1984, Ser. No. 631,119
Int. Cl.[4] A61B *17/00, 17/12*
U.S. Cl. 128—334 R **5 Claims**



1. A surgical instrument for stitching tissue by means of staples, said instrument comprising a support body, a pair of jaws mounted at one end of said support body, a staple housing mounted in one of said jaws, said jaw containing said staple housing being movable with respect to the other of said jaw means mounted on said support body for moving said jaw containing said staple housing towards the other jaw to close the gap therebetween and clamp tissue therebetween, drive means mounted on said support body for driving the staples from the jaw containing the staple housing towards the opposite jaw, actuating means mounted at the end of said support body opposite said end on which the jaws are mounted for actuating said staple drive means, the improvement comprising

engaging means connecting the support body and movable jaws containing the staple housing when the appropriate gap is set between the jaws to reinforce the central portion of said jaw and transmit forces from the jaw to the support body while the staples are being driven.

4,605,005

WOUND CLOSURE DEVICE AND METHOD FOR USING SAME

Joseph C. M. Sheehan, Burr Ridge, Ill., assignor to Kells Medical, Inc., Burr Ridge, Ill.

Continuation-in-part of Ser. No. 472,053, Feb. 10, 1983, Pat. No. 4,526,173, which is a continuation-in-part of Ser. No. 367,671, Apr. 12, 1982, abandoned. This application Oct. 16, 1984, Ser. No. 661,375
Int. Cl.[4] A61B *17/08*
U.S. Cl. 128—335 22 Claims

1. A wound closure device for a wound in a region of skin which defines an epidermal layer and a germinal layer, said device comprising:

a strip defining first and second end sections and a center section;

an adhesive layer covering the first and second end sections and the center section and adapted to adhesively secure each of the sections to the epidermal layer;

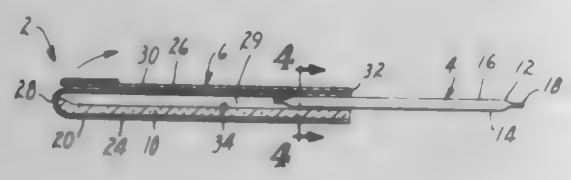
said center section defining a selected convex shape and comprising a resilient material which operates to allow the center section to be flattened during application of the strip to the epidermal layer and then to return to a convex shape after the adhesive layer has secured the sections to the epidermal layer, thereby everting the skin under the center section in order to enhance alignment of the germinal layer across the wound.

4,605,006

HYPOTHERMIC PROTECTION PAD

Roberta C. Jacques, West Lakeland Township, Washington County, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Feb. 28, 1984, Ser. No. 584,316
Int. Cl.[4] A61F *7/12*
U.S. Cl. 128—401 7 Claims



1. A hypothermic protection pad for topically cooling an internal organ comprising:

A. a flexible, outer pouch, comprised of a polymeric film and having two major, opposite sidewalls;

B. a flexible liquid-tight bladder having two major, opposite sidewalls, said bladder being disposed within said pouch between said sidewalls of said pouch;

C. a sterile solution of sodium chloride in water, containing 0.85–0.95 weight percent of sodium chloride, capable of absorbing and dissipating heat and contained within said bladder; and

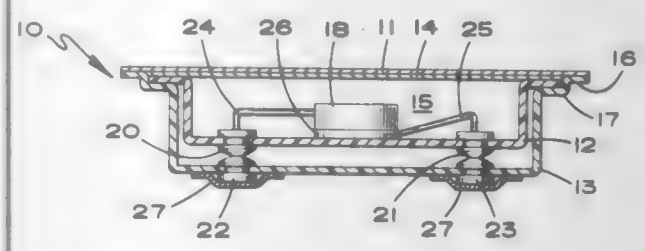
D. a thermal insulating layer comprising a web of microfibers, said layer being disposed within said pouch between one sidewall of said pouch and one sidewall of said bladder so that said hypothermic protection pad can be positioned between said internal organ and a surface with said insulation layer between said bladder and said surface to restrict heat transfer from said surface into said liquid while permitting heat transfer from said organ into said liquid.

4,605,007

TEMPORARY PACKAGE FOR AN ELECTRICAL COMPONENT

Neil H. Heraly, New Brighton, Minn., assignor to Medtronic, Inc., Minneapolis, Minn.

Filed Jun. 2, 1980, Ser. No. 155,432
Int. Cl.[4] A61N *1/00*
U.S. Cl. 128—419 PT 11 Claims



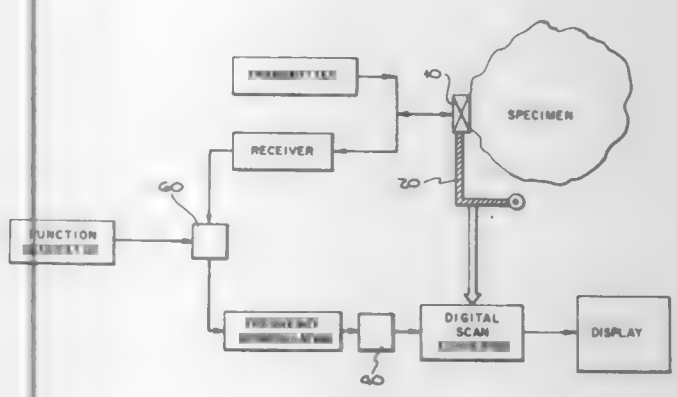
1. In a temporary package for a body implantable signal generator of the type having a container housing a signal generator, the container including tray means and gas permeable closure means maintaining a sterile internal condition while closed, the improvement which comprises means for monitoring the operating parameters of said container housed signal generator at the tray means exterior without compromising internal container sterility including electrically conductive path means extending through said tray means to at least two electrical contact means at said tray means exterior and insulating means removably secured to said tray means exterior over said contact means.

4,605,008

ACOUSTICAL IMAGING SYSTEM

Leonard A. Ferrari, San Clemente, Calif., assignor to The Regents of the University of California, Berkeley, Calif.

Filed Nov. 1, 1984, Ser. No. 667,380
Int. Cl.[4] A61B *10/00*
U.S. Cl. 128—660 11 Claims



1. In a method for generating frequency demodulated acoustic images of a body organ, said method including the steps of generating an electrical signal at a defined frequency, projecting said signal against said organ, receiving the acoustic pressure signals reflected from said organ, frequency demodulating said reflected signals to produce the scattering properties of said organ, and displaying images of said demodulated signal, the improvement comprising:

generating a fixed frequency signal; and

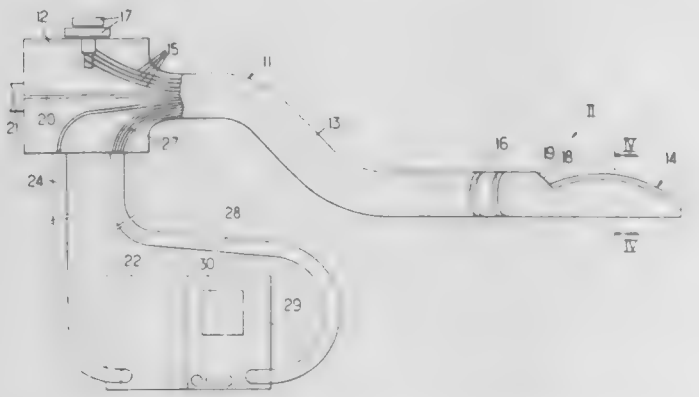
adding said fixed frequency signal to said reflected acoustic pressure signals prior to said frequency demodulation such that low-level signals or noise in said reflected acoustic pressure signals is suppressed, whereby said images are enhanced.

4,605,009

ULTRASONIC SWEEP ECHOGRAPHY AND DISPLAY ENDOSCOPIC PROBE

Léandre Pourcelot, Saint Avertin; Gérard Fleury, Fondettes Par Luynes, and Marceau Berson, Joue les Tours, all of France, assignors to Universite Francois Rabelais, Tours, France

Filed Apr. 5, 1984, Ser. No. 597,054
Claims priority, application France, Apr. 6, 1983, 83 05610
Int. Cl.[4] A61B *10/00*
U.S. Cl. 128—660 8 Claims



1. An endoscopic probe system for simultaneous visual and ultrasonic imaging of internal body parts, comprising

an endoscope insertable into a body organ and including an elongated flexible tubular member having an axis, a rigid end section having a lateral wall and connected to a distal end of said tubular member, and mechanical control means to said tubular member for adjusting the angular position of said end section with respect to said axis,

an optical system for use in visually viewing said body organ in a predetermined field of view including lens means secured to said lateral wall of said end section, optical light carrying and image return means located within and along said flexible tubular member from said distal end to a proximal end thereof, and viewing means located outside of said flexible tubular member and connected to said optical means at said proximal end,

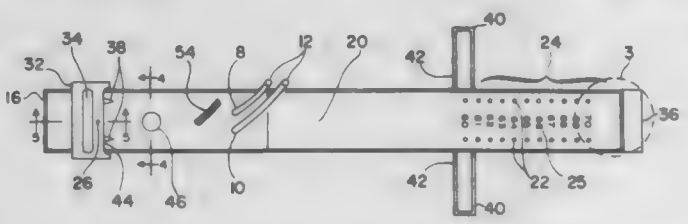
and a ultrasonic imaging system for use in providing a display of said body organ in an angular field having an overlap with said predetermined field of view, said ultrasonic imaging system having a curved linear array of piezoelectric transducer elements fixed to said lateral wall of said end section, the convexity of said array being directed outwardly of said end section, electronic circuit means operatively associated with said transducer elements and arranged for operating said piezoelectric elements according to a predetermined sector scanning sequence for sweeping said angular field with a focussed ultrasonic beam and display means connected to said electronic means and providing a visual image of said body organ.

4,605,010

PRESSURIZING CUFF

James A. McEwen, Richmond, Canada, assignor to Western Clinical Engineering Ltd., Richmond, Canada

Filed May 17, 1984, Ser. No. 611,083
Int. Cl.[4] A61B *17/12*
U.S. Cl. 128—686 18 Claims



1. A cuff for encircling a human limb, comprising in combination:

(a) an inflatable bladder capable of completely encircling the limb;

(b) a stiffener which causes the bladder when encircling the limb to inflate inwardly;

(c) bladder-securing means for securing the bladder around the limb; and

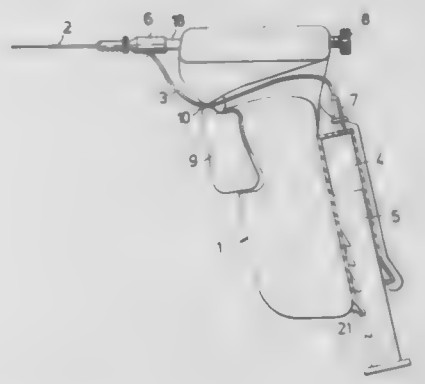
(d) stiffener-securing means for securing the stiffener around the limb independently of the bladder-securing means such that the bladder remains encircling the limb if either the bladder-securing means of the stiffener-securing means becomes ineffective.

4,605,011

CELL SAMPLING APPARATUS

Jan I. Näslund, Vassvägen 21, S-141 39 Huddinge, Sweden

Filed Mar. 13, 1984, Ser. No. 588,954
Claims priority, application Sweden, Mar. 23, 1983, 8301598
Int. Cl.[4] A61B *10/00*
U.S. Cl. 128—752 11 Claims



1. Apparatus for taking samples of cells from small tumours by means of fine-needle puncture techniques, said apparatus comprising a hand-grip having a trigger for operating the apparatus by activating the trigger, said hand-grip having detachably connected thereto a syringe provided with a cannula connected via a coupling to a motor energized on activation of said trigger to drive the cannula in an oscillating reciprocatory movement, said cannula being connected to a container forming part of the apparatus, said container having means operative to create in the cannula a vacuum for drawing a cell sample into said cannula on activating the trigger, and means operatively associated with the trigger to prevent the vacuum from reaching the cannula when the trigger is released, said last-named means being also effective to deenergize the motor on termination of vacuum.

4,605,012

APPLICATOR FOR SUPPLYING RADIO-FREQUENCY ENERGY TO AND FROM AN OBJECT

Victor Ringeisen, Wissembourg; Maurice Chivé, and Serge Toutain, both of Lille, all of France, assignors to Odam, Societé Anonyme, Wissembourg, France

Filed Jan. 9, 1984, Ser. No. 569,400
Claims priority, application Fed. Rep. of Germany, Jan. 11, 1983, 3300677
Int. Cl.[4] A61N *5/02*
U.S. Cl. 128—804 9 Claims

1. An applicator for coupling electromagnetic energy into a high-loss material, such as tissue, comprising in combination

a transmission line having first and second conductors (3,4) disposed in different respective planes,

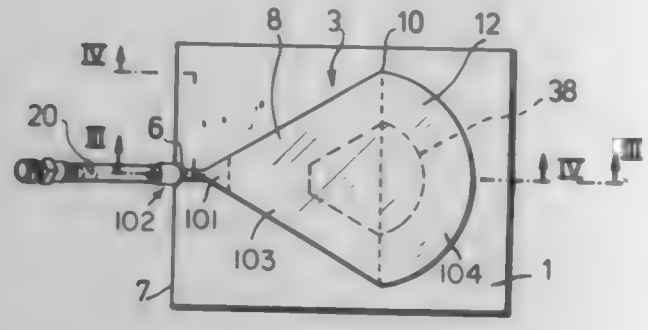
a substrate (1) of insulating material interposed between said conductors (3,4), said substrate (1) being in firm mechanical relationship with said conductors (3,4),

said conductors (3,4,) having an at least approximately complementary configuration,

so that said first conductor (3), which is disposed in one plane, increases in width from a substantially pointed end region (101) near a connection zone (102) adapted to be

connected to a radio frequency supply line carrying frequencies at least within the range of about 434 MHZ to about 2.45 GHz, to a truncated wedge-like broader region (103) widening as its extends away from said connection zone (102), said truncated wedge-like broader region (103) merging smoothly with said pointed end region (101),

while said second conductor (4), which is disposed substantially in the other plane, defines on a portion thereof a delimiting face (25) facing outwardly, which is adapted to be in substantially flat relationship with said high-loss



material, said second conductor being further formed with a recess (14) extending substantially only opposite said broader region (103) of said first conductor (3), and having opposite said broader region (103) substantially the shape of said first conductor (3),

at least one of the remaining portion of said second conductor (4) and said first conductor (3) extending substantially in parallel with said delimiting face (25) and in proximity thereto,

whereby said transmission line may radiate electromagnetic energy within a bandwidth of at least 2 GHz.

4,605,013

METHOD AND APPARATUS FOR FORMING DISCRETE BATCHES OF TOBACCO PARTICLES

Manfred Goldbach, Hamburg, Fed. Rep. of Germany, assignor to Hauni-Werke Körber & Co. KG, Hamburg, Fed. Rep. of Germany

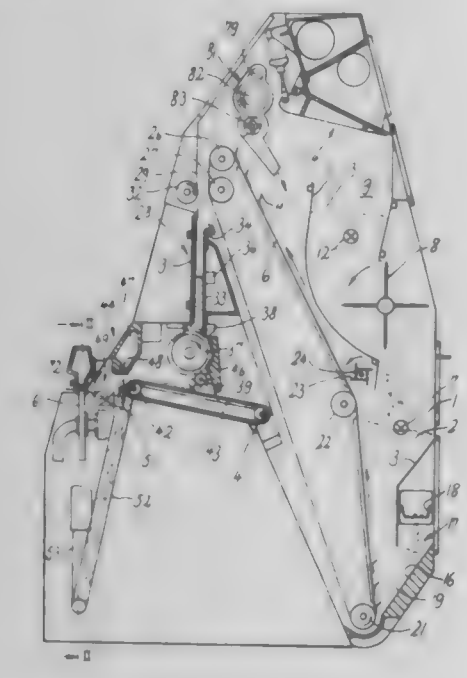
Filed Jan. 30, 1984, Ser. No. 575,169

Claims priority, application Fed. Rep. of Germany, Feb. 2, 1983, 3303381

Int. Cl.⁴ A24C *5/14*

U.S. Cl. 131—80

20 Claims



1. A method of forming discrete batches of tobacco particles at the periphery of a rotating conveyor, comprising the steps of converting the particles into a first stream and forcibly advancing the stream along a first portion of a predetermined path; converting the first stream into a narrower second stream and forcibly advancing the second stream along a second portion of said path; and conveying successive increments of the second stream toward the periphery and substantially radially of the conveyor.

4,605,014

MACHINE FOR THE PRODUCTION OF SMOKERS' PRODUCTS WITH CAVITIES BETWEEN THEIR ROD-SHAPED COMPONENTS

Günter Wahle, Reinbek, Fed. Rep. of Germany, assignor to Hauni-Werke Körber & Co. KG, Hamburg, Fed. Rep. of Germany

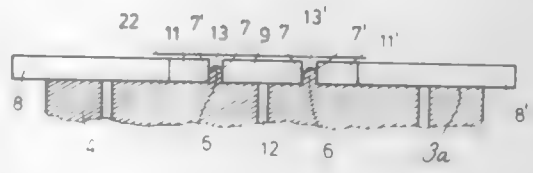
Filed Sep. 30, 1983, Ser. No. 537,584

Claims priority, application Fed. Rep. of Germany, Oct. 27, 1982, 3239763

Int. Cl.⁴ A24C *5/52*

U.S. Cl. 131—94

11 Claims



1. In a machine for manipulating rod-shaped articles of the tobacco processing industry, particularly for making filter cigarettes with cavities between the rod-shaped components thereof, the combination of a conveyor having elongated article-receiving flutes and at least one distancing element in each of said flutes, each of said distancing elements having a predetermined thickness, as considered in the longitudinal direction of the respective flute; and means for feeding discrete rod-shaped articles into said flutes at the opposite sides of the respective distancing elements so that the discrete articles at the opposite sides of the distancing elements are separated from one another by gaps having a width at least matching the thickness of the respective distancing elements.

4,605,015

METHOD OF TIP TURNING FILTER CIGARETTES OR THE LIKE

Karl-Heinz Grieben, Schwarzenbek, Fed. Rep. of Germany, assignor to Hauni-Werke Körber & Co. KG, Hamburg, Fed. Rep. of Germany

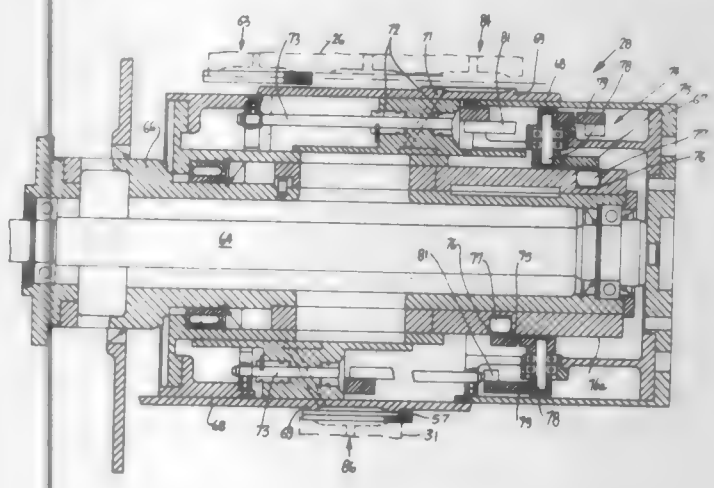
Division of Ser. No. 362,409, Mar. 26, 1982. This application Apr. 25, 1985, Ser. No. 727,365

Claims priority, application Fed. Rep. of Germany, Apr. 9, 1981, 3114331

Int. Cl.⁴ A24C *5/52*

U.S. Cl. 131—94

11 Claims



1. A method of inverting filter cigarettes or analogous rod-shaped articles each of which has a filter at one end thereof, comprising the steps of transporting two parallel rows of arti-

cles sideways so that the filters of articles in one of said rows are adjacent to the filters of articles in the other of said rows; turning the articles of said one row through at least substantially 180 degrees about axes which are at least substantially normal to the longitudinal directions of such articles and remote from the respective filters so that the filters of the thus inverted articles face away from the articles of said other row, said turning step including conveying the articles of said one row along an endless path, turning successive articles through a first angle during transport along a first portion of said path, providing a first mobile support for successive articles of said one row during turning through said first angle, turning successive articles through a second angle during transport along a second portion of said path, and providing a second mobile support for successive articles during turning through said second angle, the sum of said first and second angles being or approximating 180 degrees; and shuffling said rows to form a single third row of articles wherein the orientation of all filters is the same.

4,605,016

PROCESS FOR PREPARING TOBACCO FLAVORING FORMULATIONS

Kiyomi Soga, Ayase; Nobuyoshi Tenjin; Hiroyuki Tohira, both of Odawara; Naoyoshi Ninomiya, Hiratsuka, and Yasuhiro Nishikata, Fujisawa, all of Japan, assignors to Japan Tobacco, Inc., Japan

Filed Jul. 20, 1984, Ser. No. 632,874
Claims priority, application Japan, Jul. 21, 1983, 58-131973
Int. Cl.⁴ A24B *3/18, 15/18*
U.S. Cl. 131—297 **4 Claims**

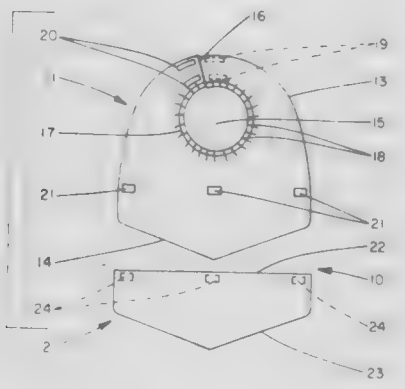
1. A process for preparing a tobacco flavoring formulation extract which comprises extracting tobacco leaves having a moisture content of 7.9 to 12.7% by weight with cold water at a temperature of 0°–10° C. in a quantity of one to five times by weight of water to obtain a liquid extract by solid-liquid separation and concentrating the extract at a concentration temperature of 30°–50° C. to produce a solute concentration of 25–35% by weight and recover a concentrated extract.

4,605,017

PERMANENT WAVE CAPE

Patricia A. Thompson, Mabry Rd., and Dot M. Wood, Barkersville Rd., both of Angier, N.C. 27501

Filed Mar. 26, 1984, Ser. No. 593,544
Int. Cl.⁴ A45D *44/00*
U.S. Cl. 132—1 R **8 Claims**



1. A permanent wave cape comprising: a border portion having an opening therein for encircling the head of a user thereof; non metallic means for releasably securing said border portion in encircled position around said head; a combination liquid channeling and heat retaining tail portion outwardly extending from said border portion; and a pouch means releasably attachable to said tail portion by non metallic securing means whereby a combination permanent wave cape is provided which confines liquids being used to the scalp area of the head of the user, allows liquids to be channeled in desired predetermined directions, acts as a heat bag and as a receptacle for liquids being recycled and for used curlers.

4,605,018

METHOD OF TREATING HAIR AND ANHYDROUS COMPOSITION RELATED THERETO

Mario de la Guardia, and Charles R. Hendrix, Jr., both of Savannah, Ga., assignors to Carson Products Company, Savannah, Ga.

Continuation-in-part of Ser. No. 236,118, Feb. 19, 1981, abandoned. This application Jul. 27, 1983, Ser. No. 517,709
Int. Cl.⁴ A45D *7/00*
U.S. Cl. 132—7 **4 Claims**

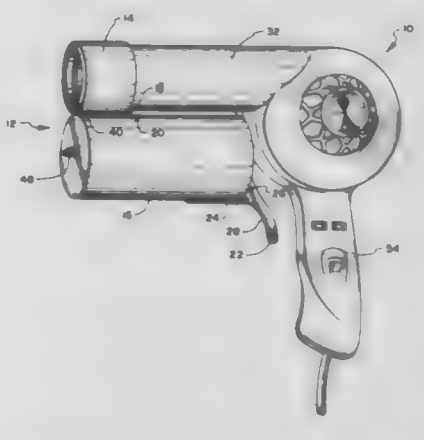
1. An improvement in a composition for treating hair of the type comprising a water-soluble inorganic hydroxide ingredient and a water-soluble guanidine salt ingredient, said ingredients being selected such that reaction products thereof are guanidine hydroxide and a substantially water-insoluble inorganic salt formed by the cation of said inorganic hydroxide ingredient and the anion of said guanidine salt ingredient whereby the reaction producing said guanidine hydroxide will be driven toward completion, the improvement comprising: said hydroxide ingredient and said guanidine salt being incorporated within an effective amount of an anhydrous component which, upon the addition of an effective amount of water to said component, allows said ingredients, upon mixing, to react within said component so as to form guanidine hydroxide which has a pH of at least 11.8 and which is then applied to the hair, said component being an emulsifier.

4,605,019

SPRAYER ATTACHMENT FOR A HAIR DRYER

Gordon S. Reynolds, Bountiful, and Sherman L. Kendall, Salt Lake City, both of Utah, assignors to Sorenco, Inc., Salt Lake City, Utah

Filed Sep. 5, 1984, Ser. No. 647,717
Int. Cl.⁴ A45D *1/00*
U.S. Cl. 132—9 **27 Claims**



1. An apparatus which is capable of being attached to a hair dryer, the hair dryer having a nozzle which conveys a stream of air which leaves the hair dryer through the nozzle, which apparatus is also capable of spraying a hair conditioner, comprising:

means for holding a container of hair treatment, said container having means for spraying hair treatment;

means for causing the container to spray hair treatment at desired intervals;

means for directing the spray of hair treatment in a predetermined direction such that the spray is mixed with the stream of air leaving the nozzle of the hair dryer at a point downstream from the end of the nozzle of the hair dryer and such that the air stream and the spray of hair treatment combine to form a single stream;

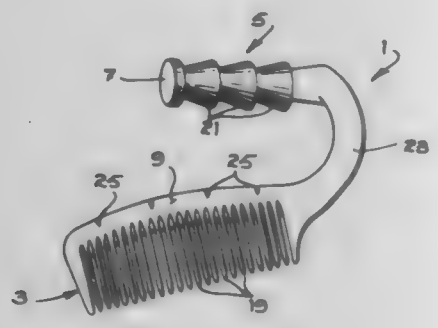
means for removably attaching the apparatus to a hair dryer.

4,605,020

COMB

Michel Lavoie, 1875 Boulevard des Laureatides, Vimont, Laval, Canada (H7M 2P8)

Filed Mar. 27, 1985, Ser. No. 716,630
Claims priority, application Canada, Feb. 19, 1985, 474663
Int. Cl.[4] A45D *24/00*
U.S. Cl. 132—11 R 5 Claims



1. A comb for use by a hairdresser during hair cutting, said comb comprising:

(a) a combing portion comprising a base and a plurality of combing teeth projecting therefrom; and

(b) a handle portion solid with said combing portion, said handle portion comprising:

an arcuate connection part projecting from one end of the base of the combing portion tangentially therefrom and bending back toward said combing portion at a predetermined distance therefrom; and

a gripping part integrally extending from the arcuate connection part in a direction generally parallel to the base of the combing portion, said gripping part standing above said base with respect to the combing teeth and having a predetermined length suitable to be finger-gripped against the palm of a hand of the hairdresser with the said combing portion located generally above the back of the hand, said gripping part being formed with knuckles that are spaced therealong and define finger-lodging grooves to prevent longitudinal displacement of the comb in use;

(c) wherein said predetermined distance at which the arcuate connection part is bent back toward the combing portion, is sufficient to allow easy insertion of the fingers between the gripping part of the handle portion and the base of the combing portion; and

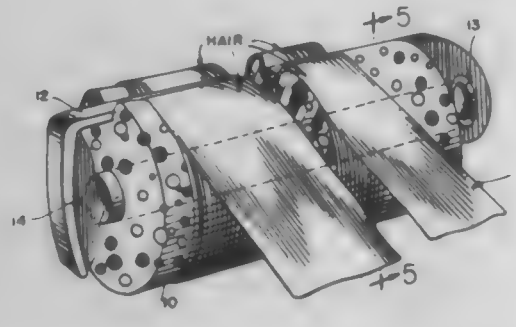
(d) wherein the combing portion is flat along the major portion of its length but twists slightly out of its plane close to the one end of its base from which projects the arcuate connecting part to give additional room to the fingers of the hairdresser.

4,605,021

SELF-TENSIONING HAIR WAVING ROD

Homer J. Hodson, Homewood; Glenn A. Shurney, Chicago, and Eric E. Hartman, Lisle, all of Ill., assignors to Alberto-Culver Company, Melrose Park, Ill.

Filed Aug. 13, 1984, Ser. No. 640,463
Int. Cl.[4] A45D *2/12*
U.S. Cl. 132—33 R 6 Claims



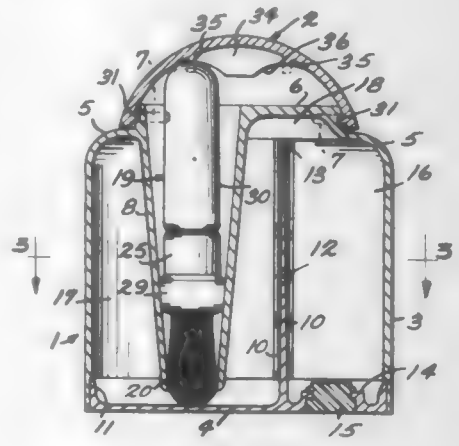
1. A self-tensioning hair waving rod adapted for home permanent use, comprising an elongated generally cylindrical water-absorbing sponge body in substantially dry condition for receiving a strand of hair wrapped therearound, support means extending axially through said sponge body, and retainer means associated with the outer end portions of said support means for holding the wrapped hair strand around the sponge body, said sponge body being formed of a hydrophilic polymer which expands from dry condition on application of water to increase its volume by 50 to 250%, whereby the wrapped strand is tightened and drawn into close proximity to the outer surface of said sponge body.

4,605,022

MAKE-UP POWDER COMPACT AND ITS APPLICATOR BRUSH

Jean-Louis H. Gueret, Paris, France, assignor to L'Oreal, Paris, France

Filed Apr. 5, 1984, Ser. No. 597,111
Claims priority, application France, Apr. 26, 1983, 83 06842
Int. Cl.[4] A45D *33/00*
U.S. Cl. 132—82 R 14 Claims



1. A make-up powder compact to contain powder in a substantially fluid state, comprising: a take-up compartment for a dose of powder, an internal duct in said take-up compartment and having a cross-section which decreases progressively towards the bottom of the said take-up compartment and has its smaller cross-section end slightly spaced from the bottom of the take-up compartment; a powder applicator brush which comprises a handle and a tuft of hairs having, in the absence of any constraint, a substantially frustoconical shape with its maximum cross-section greater than the cross-section of the smaller cross-section end of the duct, the tuft being fixed at its smaller cross section end to the end of the brush handle, said brush being detachably fixable in the duct so that when it is accommodated in the duct, the larger cross section free end of the tuft is substantially in contact with the bottom of the take-up compartment and the end of the brush handle remote from the tuft projects from the greater cross-section end of the duct, wherein the brush comprises a collar mounted around the said end of the brush handle and is movable between a first position in which the collar exerts substantially no constraint on the tuft and a second position in which the collar produces a transverse constriction of the tuft.

4,605,023

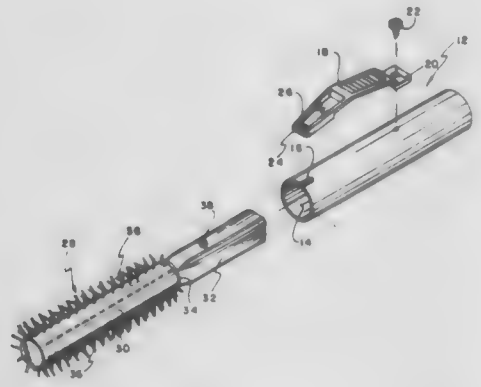
HAIRSTYLING BRUSH AND A METHOD FOR HANDLING HAIRSTYLING BRUSHES

Jimmie D. Modin, 728 S. 10th, Salina, Kans. 67401

Filed Sep. 10, 1984, Ser. No. 648,474
Int. Cl.[4] A45D *44/18*
U.S. Cl. 132—85 6 Claims

1. A hairstyling brush comprising a generally cylindrical hollow handle means having a structure defining a generally cylindrical reservoir and a slot with an open end, a biasing latch means including a first end secured to the handle means and a second end having a structure defining an aperture

which generally registers with the slot, said slot allows the inside of said hollow handle means to communicate with the atmosphere while being situated on the same general side of said handle means where said first end of said latch means connects to said handle means; a brush means having a structure defining a closed shank and an open shank; a plurality of



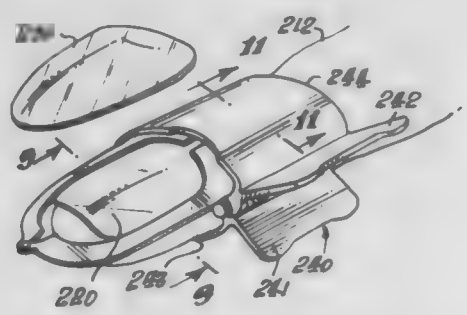
groups of bristles attached to said closed shank; a boss means stationarily integrally bound to said open shank; and said open shank slidably, removably lodged within said generally cylindrical reservoir such that said boss means extends and operates through said slot while simultaneously being received within said aperture of said biasing latch means.

4,605,024

METHOD AND APPARATUS FOR APPLICATION OF ARTIFICIAL FINGERNAILS

Gregory D. Tremblay, 437 1/2 Ninth St. #C, Sparks, Nev. 89431

Filed Sep. 20, 1983, Ser. No. 534,098
Int. Cl.⁴ A45D *40/30*
U.S. Cl. 132—88.5 **3 Claims**



1. Apparatus for improved application of artificial fingernails comprising, in cooperative combination: protective shield means comprising a multiplicity of protective elements movably connected together in such manner as to be able to adjust to the configuration of the cutisle area of a fingernail suitable to be removably fastened to a finger in such manner as to encompass the cuticle area around a fingernail so as to prevent damage to the cuticle and flesh adjacent to the fingernail when an artificial fingernail is placed thereon and shaped by abrasion or the like and wherein at least one of the movable elements is suitable to support the end of an artificial fingernail at a distance from the end of the finger.

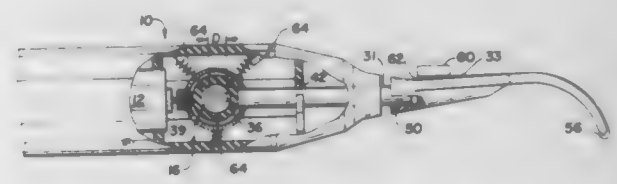
4,605,025

POWERED DENTAL FLOSSING DEVICE

John T. McSpadden, 2112 N. Roan St., Johnson City, Tenn. 37601

Filed May 14, 1984, Ser. No. 610,041
Int. Cl.⁴ A61C *15/00*
U.S. Cl. 132—92 R **10 Claims**

1. A powered dental flossing device comprising a power element having an electrical motor with an output shaft having drive means thereon, an oscillation unit having driven means engaging said drive means for actuation thereby, a floss stringer connected to said oscillation unit, said oscillation unit further having cam means connected to said driven means, cam follower means on said stringer and engageable with said cam means for actuation thereby, and said follower means being



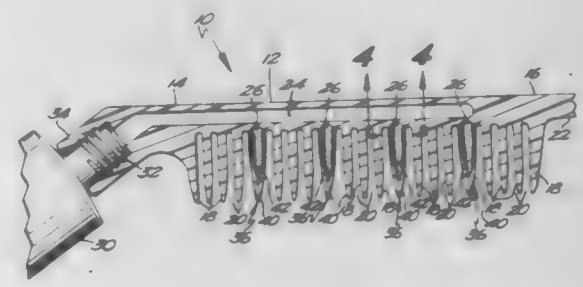
formed to provide a clutch mechanism for imparting oscillatory motion to said stringer essentially only when substantial force is exerted against the floss held thereby.

4,605,026

COMB FOR DISPENSING TREATMENT SOLUTION TO HAIR

Rosemary D. Nolin, 9935 Marigold La., Duluth, Minn. 55810

Filed Apr. 6, 1983, Ser. No. 482,668
Int. Cl.⁴ A45D *24/22*
U.S. Cl. 132—112 **17 Claims**



3. Comb for dispensing treatment solution to hair comprising, in combination: an elongated frame member having a first end and a second end; groups of a plurality of teeth extending generally perpendicular to the longitudinal axis of the frame member, with the teeth having a length, a width, and a height, with the groups of teeth being spaced from each creating gaps therebetween; a handle portion extending from the first end of the frame member; means formed in the gaps between the groups of teeth for separating and capturing strands of hair desired to be treated, for receiving and forming pools of hair treatment solution, and for allowing hair to be pulled through the pools of hair treatment solution comprising troughs formed in the frame member; and means for introducing treatment solution into the troughs for application to the hair separated and captured in the gaps between the groups of teeth while leaving the hair located in the groups of teeth and not within the gaps free of the application of treatment solution.

4,605,027

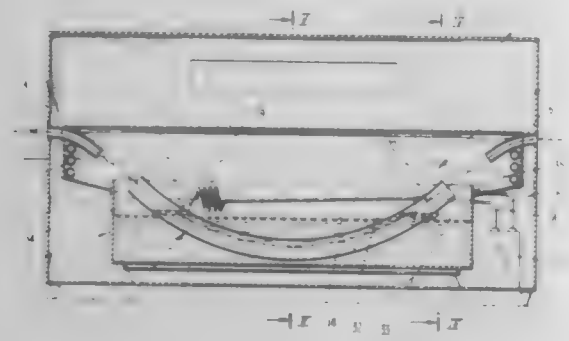
APPARATUS FOR CLEANING A LINEAR OBJECT IN A SOLVENT MEDIUM

Mario Dallot, Annemasse, France, assignor to Ultrasons Annemasse, Annemasse, France

Filed Apr. 2, 1984, Ser. No. 595,824
Claims priority, application France, Apr. 1, 1983, 83 05649
Int. Cl.⁴ B08B *3/12*
U.S. Cl. 134—108 **7 Claims**

1. An apparatus for cleaning a continuous, long, linear object in a solvent medium, comprising a tubular guide open at its ends for guiding the long, linear object, means for drawing the object inside said tubular guide along an imposed trajectory in the form of a continuous curve, said tubular guide being provided, adjacent one end thereof, with inlet means for clean solvent medium and, adjacent its other end, with outlet means for dirty solvent medium, so that the solvent medium circulates through the tubular guide in contact with the long, linear object and in the opposite direction to the direction of movement of the object through the tubular guide, and means for subjecting the solvent medium to ultrasound, further compris-

ing a vat including a cleaning compartment and a distillation compartment, each containing solvent medium and laterally separated from each other by a dividing partition having an overflow sill and an opening for providing vapors of the solvent medium with access to said cleaning compartment, with said distillation compartment including heating means and said cleaning compartment projecting upward above the upper



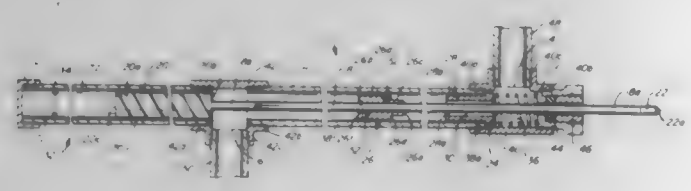
portion of said distillation compartment and having at each end thereof condenser coils for condensing vapors of the solvent medium, with inlet and outlet ramps for said object placed upon said condenser coils, wherein said tubular guide is partly immersed in the solvent medium in said cleaning compartment such that its ends are located above the surface of said solvent medium and under said condenser coils.

4,605,028

TUBE CLEANING APPARATUS

Richard R. Paseman, 5517 Newport, Houston, Tex. 77023

Filed Aug. 20, 1984, Ser. No. 642,262
Int. Cl.[4] B08B *3/02*
U.S. Cl. 134—167 C **8 Claims**



1. An apparatus for cleaning tubes, pipes or like elongate tubular objects with pressurized fluid from a controlled pressurized fluid reservoir, comprising:

(a) an essentially tubular lance housing having a front end and a rear end, said housing further comprising:

(1) a fluid inlet adjacent said front end;

(2) a fluid outlet adjacent said rear end;

(3) an essentially cylindrical central bore extending between said front end and said rear end;

(b) elongate lance means mounted for reciprocating motion within said central bore in said lance housing and adapted for dispensing pressurized cleaning fluid, said lance means comprising:

(1) an essentially tubular lance body having a first end, a second end, and a central longitudinal bore extending therebetween;

(2) nozzle means for controlling the volume and direction of fluid discharge from said lance means, said nozzle means being mounted adjacent said first end of said lance body in fluid communication with said lance bore;

(3) generally cylindrical piston means of outer dimension slightly less than the inner dimension of said housing bore, said piston means having a front surface, a rear surface, an essentially cylindrical outer surface and a central longitudinal bore extending the length thereof to enable fluid communication through said piston means to said lance bore, said piston means being mounted adjacent said second end of said lance body and adapted to cause reciprocating motion of said lance means in response to fluid pressure differentials acting alternatively upon said front surface and said rear surface; and

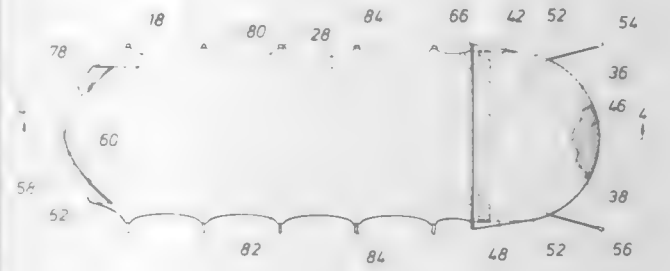
(c) said rear surface of said piston means having a plurality of radial grooves formed thereon for providing fluid communication between said housing central bore and said rear surface of said piston.

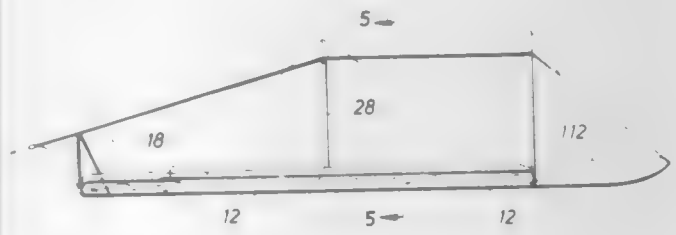
4,605,029

SELF SUPPORTING OUTDOOR SLEEPING SYSTEM

Chesley G. Russell, 11003 Meadow Rue, The Woodlands, Tex. 77380

Filed Mar. 6, 1984, Ser. No. 586,746
Int. Cl.[4] E04H *15/40, 15/44;* **E47C** *29/00;* **A41B** *00/00*
U.S. Cl. 135—104 **24 Claims**





1. A self supporting portable sleeping system, comprising:

(a) ground cover sheet means forming a moisture impervious floor;

(b) a tent cover attached to the peripheral edges of said ground cover sheet means, at least one side of said tent cover being releasable from said ground cover sheet means to facilitate ingress and egress of the user, said tent cover defining rib receptacle means at side portions thereof; and

(c) a plurality of spaced flexible ribs having end portions thereof releasably received within said rib receptacle means, said spaced flexible ribs supporting said tent cover in spaced relation with said floor and tensioning said tent cover, at least one end of at least an intermediate one of said ribs being received in releasable connection with said tent cover at said releasable side thereof, upon release of said one side of said tent cover from said ground cover sheet said at least one of said ribs unflexing and acting with the tension of said tent cover supporting the intermediate portion of said tent cover in elevated position above said ground cover sheet means forming an opening with said ground cover sheet means, said ground cover sheet means being protected from rain by said elevated intermediate portion of said ten cover for said ingress and egress of the user.

4,605,030

PORTABLE ERECTILE VEHICLE SHELTER STRUCTURE

Jefrey K. Johnson, 250 Hampton Ct., Covina, Calif. 91723

Filed Jan. 24, 1985, Ser. No. 694,525
Int. Cl.[4] E04H *15/58, 15/08, 15/48;* **A47B** *39/00*
U.S. Cl. 135—117 **16 Claims**

1. A collapsible structure for sheltering a vehicle having at least four wheels including:

a first pad member having:

a first pad adapted for placement on the ground with a

first wheel of the vehicle to be sheltered parked thereon; and

first hinge means housing connected to said pad; a second pad member having:

a second pad adapted for placement on the ground with a second wheel of the vehicle to be sheltered parked thereon; and

second hinge means housing connected to said pad;

a third pad member having:

a third pad adapted for placement on the ground with a third wheel of the vehicle to be sheltered parked thereon; and

third hinge means housing connected to said pad; a fourth pad member having:

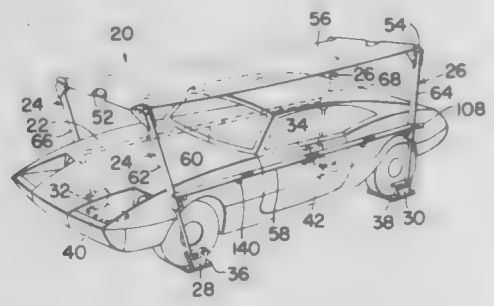
a fourth pad adapted for placement on the ground with a fourth wheel of the vehicle to be sheltered parked thereon; and

fourth hinge means housing connected to said pad; a first collapsible hoop having:

a first side with a first end pivoting in said first hinge means housing;

a second side with a second end pivoting in said second hinge means housing; and

a center portion connecting said first and second sides thereof;



a second collapsible hoop having:

a first side with a third end pivoting in said third hinge means housing;

a second side with a fourth end pivoting in said fourth hinge means housing; and

a center portion connecting said first and second sides thereof;

first collapsible linkage connected to said first side portions of said first and second collapsible hoops;

second collapsible linkage connected to said second side portions of said first and second collapsible hoops; and

a canopy connected between said center portions of said first and second collapsible hoops, said first end including:

a sidewardly facing pin extending therefrom, and said first hinge means housing includes:

first and second side plates spaced for insertion of said first hoop end therebetween, said first side plate including:

a generally horizontal cutout therein;

an upper surface; and

a generally vertical slot through said upper surface to said generally horizontal cutout whereby said sidewardly facing pin can be slid through said generally vertical slot and positioned in said generally horizontal cutout for pivoting therein.

4,605,031

METHOD OF AND DEVICE FOR REPAIRING SLIDE-VALVE SPINDLES

Klaus J. Gründ, Winkelweg 5, 8071 Unterhaunstadt, Fed. Rep. of Germany

Filed Jun. 7, 1984, Ser. No. 618,196

Claims priority, application Fed. Rep. of Germany, Jun. 7, 1983, 3320505

Int. Cl.⁴ F16K *43/00*

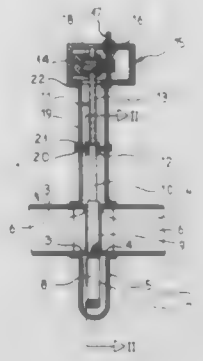
U.S. Cl. 137—15 **14 Claims**

1. A method of repairing a spindle rising within a tubular attachment of a valve housing from a slider which is vertically reciprocable between two limiting positions within said housing for selectively blo king and unblocking a flow of fluid between two pipe sections adjoining said housing, said spindle having a damaged upper part,

comprising the steps of:

(a) removing said attachment to expose a portion of said spindle including said damaged upper part;

(b) severing said upper part from said spindle with a spindle stump remaining fixed to said slider;



(c) providing a replacement spindle part of greater length than said upper part and attaching said replacement part to said spindle stump;

(d) reconnecting said attachment and said housing; and

(e) supplementing said attachment with an extension equaling at least the length difference between said upper part and said replacement part.

4,605,032

AIR VENT DEVICE FOR FUEL TANK ON VEHICLE

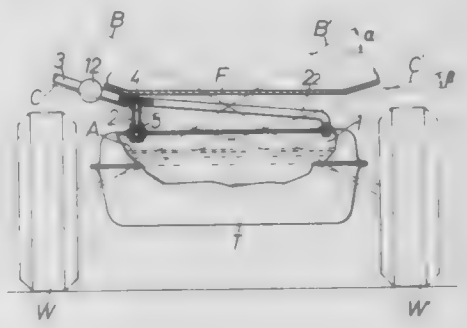
Mitsutoshi Hayashi, Wako; Kazunobu Nagaoka, Asaka, and Michihiro Ohkawa, Shiki, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 20, 1984, Ser. No. 622,599

Claims priority, application Japan, Jun. 22, 1983, 58-112468

Int. Cl.⁴ F16K *24/00*

U.S. Cl. 137—44 **6 Claims**



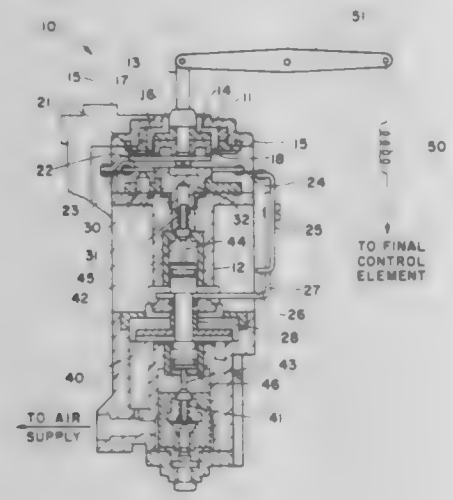
1. An air vent device for a fuel tank on a vehicle, having paired first and second air vent pipes joined to the portions of an upper section of a fuel tank which are spaced from each other in the lateral direction of said vehicle, and a main air vent pipe connected to said paired air vent pipes to communicate those paired pipes with the atmospheric air, wherein a connecting point of said three air vent pipes is positioned below at least one of left and right maximum-angled inclined surfaces of fuel contained in the fuel tank, which surfaces are inclined with respect to the lateral axis of said fuel tank, and wherein said maximum-angled inclined surfaces are obtainable when said vehicle turns to the left and right, and a normally-opened float valve adapted to be closed when the fuel reaches said float valve, said float valve being provided in said first or second air vent pipe, and wherein a portion of said valve opening into the tank is positioned to be submerged in the fuel when the fuel surface is inclined to be said one maximum-angled inclined surface.

4,605,033

PNEUMATIC CONVERTER HAVING VARIABLE GAIN RELAY STACK

Lee A. Weber, Mentor, Ohio, assignor to The Babcock & Wilcox Company, New Orleans, La.

Filed Sep. 27, 1984, Ser. No. 655,172
Int. Cl.[4] G05D *16/00*
U.S. Cl. 137—84 **3 Claims**



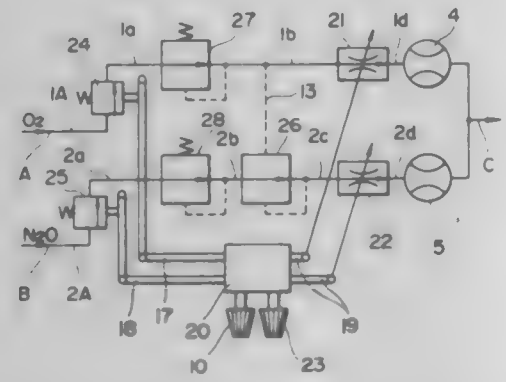
1. In a pneumatic positioner of the type having a nozzle connected to a source of air under pressure, a flat vane juxtaposed adjacent to the outlet of the nozzle, and input means operatively connected to a first end of the vane for pivotally moving the vane relative to the outlet to variably restrict the outflow of air from the outlet and vary the back-pressure of the nozzle, and means operatively connected to a second end of the vane for generating an output signal, said nozzle being juxtaposed to a portion of the vane intermediate said first and second ends, the improvement wherein the vane comprises an O-shaped strip having an O-shaped recess, an elongated stem extending into the O-shaped recess between the first and second ends of the strip, a disc mounted on the stem for rotation, the nozzle being mounted in the disc for movement therewith with the outlet of the nozzle continuously aligned with the vane along a path between the first and second ends for the entire range of disc and nozzle movement, and a first flexible membrane connected to the first end of the vane at one end and to a link member at the other end, the link member being a strip vertically spaced from and substantially parallel to the O-shaped strip and being connected to the input means.

4,605,034

GAS FLOW CONTROL SYSTEM FOR AN ANESTHESIA APPARATUS

Yoshihisa Urushida, Tokorozawa, Japan, assignor to Citizen Watch Co., Ltd., Tokyo, Japan

Filed Oct. 23, 1984, Ser. No. 664,050
Claims priority, application Japan, Oct. 25, 1983, 58-199442
Int. Cl.[4] A61M *16/01*
U.S. Cl. 137—88 **3 Claims**



1. A gas flow control system for an anesthesia apparatus, comprising:

an oxygen circuit between an oxygen gas inlet and a manifold;

a gaseous anesthetic circuit between an anesthetic gas inlet and said manifold;

an oxygen valve connected to said oxygen gas inlet for controlling the supply of oxygen gas;

an anesthetic valve connected to said anesthetic gas inlet for controlling the supply of anesthetic gas;

an oxygen gas pressure reducing valve provided in said oxygen circuit for reducing primary pressure of said oxygen gas supplied from said oxygen valve to secondary pressure;

an oxygen gas flow regulating valve connected between a secondary side of said oxygen gas pressure reducing valve and said manifold for regulating the flow rate of said oxygen gas;

an anesthetic gas pressure reducing valve provided in said gaseous anesthetic circuit for reducing primary pressure of the anesthetic gas to secondary pressure;

a pressure control valve connected to the secondary side of said anesthetic gas pressure reducing valve and responsive to said secondary pressure of the oxygen gas for controlling said secondary pressure of said anesthetic gas;

an anesthetic flow regulating valve connected between a secondary side of said pressure control valve and said manifold for regulating the flow rate of said anesthetic gas; and

means for operating said oxygen gas flow regulating valve and said anesthetic gas flow regulating valve and for controlling flow rates of both gases;

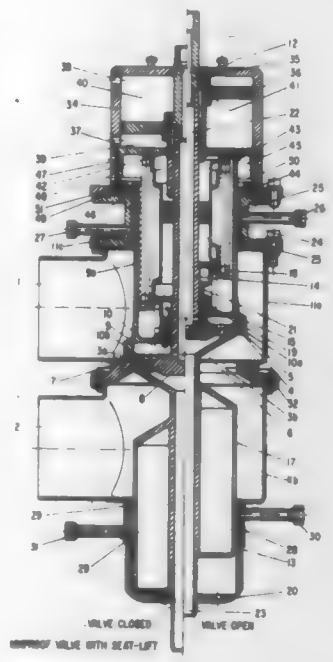
said means having a knob for operating said oxygen valve, said knob having a cut off position, and said means being so arranged that when said knob is at the cut off position, both the oxygen valve and anesthetic valve are closed, when said knob is operated a predetermined small degree, said oxygen valve is opened, and when said knob is operated more than said predetermined degree, said anesthetic valve is also opened.

4,605,035

DOUBLE SEAT VALVE

Erik Rasmussen, Kolding, Denmark; Gunnar Lundquist, Hoerby, Sweden, and Stig Lading, Kolding, Denmark, assignors to Lavrids Knudsen Maskinefabrik A/S, Kolding, Denmark

Filed Sep. 14, 1984, Ser. No. 651,700
Int. Cl.[4] F16K *11/065, 31/122, 11/10;* **B08B** *3/04*
U.S. Cl. 137—240 **11 Claims**



1. A double seat valve comprising: a valve housing having at least two conduit openings for fluid inlet and outlet, two coaxial valve seats disposed between said openings, two valve closure members each guided in said valve housing for coaxial movement relative to each other and to their respective valve seats between an open position and a closed position, realizing

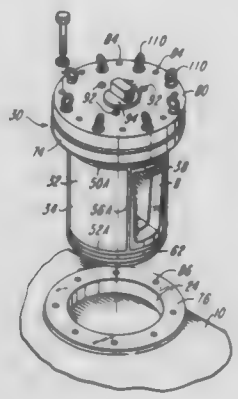
together in their closed position a double seal between said openings, a first closure member being adapted to abut during its opening movement against a second closure member and to move the latter the open position, a leakage space defined between said closure members in both the closed and the open position thereof, a drain outlet permanently connecting said leakage space to the outside of the valve, and drive means for moving said first and second closure members between said closed and said open positions, respectively, at least one closure member being a slide piston having radial sealing means and being operative to slide between an open position and a closed position sealingly received in a cylindrical valve seat and the other closure member being provided at its end facing said slide piston with a recess having a substantially cylindrical seat wall coaxial to said cylindrical valve seat and dimentsioned to sealingly receive during opening movement an end portion of said slide piston before said second closure member opens, at least one of said cylindrical valve seat and the cylindrical seat wall of said recess being provided with a circumferential annular groove at a position passed by the radial sealing means of said slide piston during its movement between the closed position and the position in which both closure members abut for common movement, said annular groove being dimensioned to permit in a predetermined intermediate position of said radial sealing means opposite said annular groove, in which said first closure is partially received within said second closure member, a seat-cleaning flow of liquid flows along said cylindrical valve seat and between the opposed circumferential surfaces of said radial sealing means and said annular groove into said leakage space, and wherein separate auxiliary drive means are provided for moving said first closure member between its closed position and said intermediate position.

4,605,036

VALVE HOUSING WITH REMOVABLE SELF-CONTAINED VALVING UNIT

Russell G. Smith, Cincinnati, Ohio, and Michael J. Sandling, Flackwell Heath, England, assignors to Xomox Corporation, Cincinnati, Ohio

Continuation of Ser. No. 808,722, Jun. 22, 1977, abandoned.
This application Jan. 22, 1979, Ser. No. 5,004
Int. Cl.[4] F16K *43/00*
U.S. Cl. 137—327 **14 Claims**



1. A valve assemblage comprising a valve-receptive outer housing and a removable self-contained valve unit which is received in said housing for controlling the flow of fluid through said housing wherein:

said housing includes a centrally disposed upwardly opening bore the lower end of which is closed so that access to said bore occurs only via the open top thereof, axially aligned outer inlet and outlet ports spaced outwardly from and on opposite sides of said bore, said ports defining means for connecting said housing in a pipe line, and axially aligned inner inlet and outlet ports in open communication with said bore and in laterally spaced relationship with said corresponding outer inlet and outlet ports and in communication therewith;

said valve unit is removably mounted in said bore of said housing, said valve unit includes a valve body and a rotatable valving member unconnected to each other, said valve body has an upwardly opening bore therein for the reception of said rotatable valving member, said valve body provides subjacent support for said rotatable valving member to prevent downward movement of said rotatable valving member with respect to said valve body, said valve body includes axially aligned inlet and outlet ports communicating with said bore in said valve body, said valving member has a passage extending therethrough for movement into and out of alignment with said inlet and outlet ports in said valve body, said valving member blocking said inlet and outlet ports in said valve body when said passage in said valving member is out of alignment with said inlet and outlet ports in said valve body, and sealing means is disposed between said valve body and said valving member to prevent contact between said valve body and said valving member while preventing fluid leakage therebetween;

means to releasably connect said valve body to said housing;

means attached to said valve body and accessible from a location above and remote from said housing for withdrawing or lowering said valve unit from or into said bore in said housing, said attached means extending upwardly from said valve body and being accessible irrespective of whether said valve body is releasably connected to said housing by said releasable connecting means;

rotation means, separate from and independent of said attached means, accessible from a location above and remote from said housing to enable rotation of said valving member within said valve body;

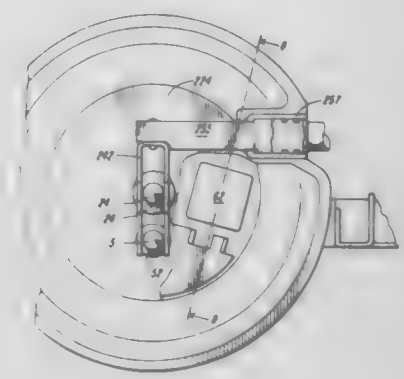
and each of said attached means and said rotation means being accessible from a location above and remote from said housing without the other of said attached means and said rotation means being moved.

4,605,037

LIQUID OVERFILL PROTECTION SYSTEM

Joshua E. Rabinovich, Newton, Mass., assignor to RCR Industries, Inc., Boston, Mass.

Filed Dec. 21, 1984, Ser. No. 684,480
Int. Cl.[4] F16K *21/18*
U.S. Cl. 137—390 **4 Claims**



1. A system for preventing a liquid storage tank that is filled through an inlet, via a liquid flow path into the tank, from becoming filled beyond a desired level, the system comprising:

pressure means for delivering to first and second outlets fluid with a pressure difference therebetween that is indicative of the extent to which the tank has been filled with liquid;

valve means, in communication with the inlet, for permitting or blocking, according as the valve means is moved into an open or closed position respectively, the liquid flow path through the inlet into the tank, such valve means including a valve member movable along a central axis and having a reclosable aperature therein for insertion of a dip stick therethrough; and

control means, having ports in communication with the first and second outlets, for moving the valve means into a closed position when the fluid pressure difference be-

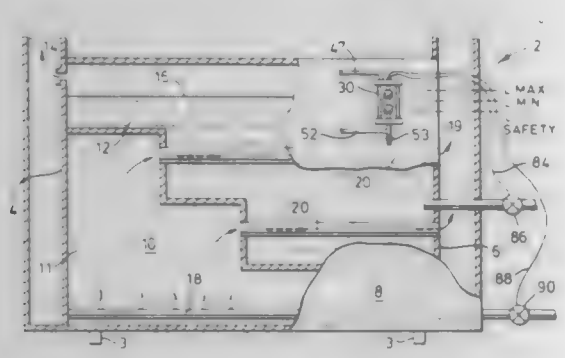
tween the first and second outlets exceeds a predetermined level, so that the liquid flow into the tank is blocked when the tank has been filled to the desired level, such control means further including (i) an enclosure having first and second regions in communication with the first and second outlets respectively, (ii) a diaphragm, displaceable by a relative difference in fluid pressure existing on each side thereof, so located in the enclosure as to form a fluid-tight separation of the first and second regions into first and second chambers, and (iii) actuation means, for moving the valve means into a closed position when displacement of the diaphragm by the fluid pressure difference thereon exceeds a predetermined limit, wherein (a) the diaphragm and first and second chambers are included in the valve member, and (b) the first and second chambers are so located that there is no communication from either of them to the reclosable aperature.

4,605,038

FLOAT VALVE CONTROL

John K. Tchitdjian, Downsview, Canada, assignor to Garland Commercial Ranges Limited, Mississauga, Canada

Filed Apr. 29, 1985, Ser. No. 728,332
Int. Cl.[4] F16K *33/00, 31/08, 31/18*
U.S. Cl. 137—399 **8 Claims**



1. In a liquid level control device for monitoring the level of water in a steam generating tank between predetermined upper, intermediate and lower levels, said tank equipped with a valve for introducing water into said tank and valve means for introducing heat energy to the water to generate steam, comprising:

(a) a glass gauge tube adapted to be vertically mounted exteriorally of said tank;

(b) a top and bottom cover covering the ends of said glass gauge tube, said bottom cover including an opening for communicating with said liquid in said tank and said top cover including an opening for communicating with the steam generated in said tank;

(c) upper and lower magnetic float means mounted co-axially within said glass gauge tube;

(d) said upper magnetic float means including means to activate said water valve when said water is in the region of said predetermined intermediate level so as to introduce water into the tank until said water is in the region of said predetermined upper level, and to deactivate said water valve and stop the introduction of water into the tank when said water is in the region of said predetermined upper level;

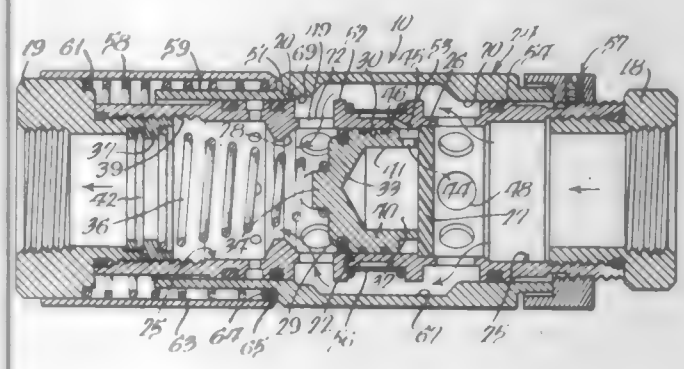
(e) said lower magnetic float means is adapted to continuously maintain the application of heat energy during said introduction of water at said intermediate level, and said lower magnetic float means is adapted to activate said heat energy valve means to stop the application of heat energy in said steam generating tank when said water is in the region of said predetermined lower level.

4,605,039

RUNAWAY PROTECTIVE FUSE VALVE

Myron J. Johnson, Arlington Heights, and Mark C. C. Kao, Elmhurst, both of Ill., assignors to Stewart-Warner Corporation, Chicago, Ill.

Filed Oct. 4, 1984, Ser. No. 657,801
Int. Cl.[4] F16K *17/30*
U.S. Cl. 137—460 **11 Claims**



1. A runaway shut-off valve for a pneumatic implement supplied compressed air through a conduit, comprising; a valve body having an inlet and an outlet interconnected by a main passage, a poppet valve member in the passage movable from an open position permitting flow through the passage to a closed position blocking flow through the passage, spring means biasing said poppet valve member toward its open position, said poppet valve member being responsive to a predetermined pressure drop between the inlet and the outlet to move to its closed position, means for delaying the closing movement of the poppet valve member after said predetermined pressure drop is reached so that transient pressure variations do not cause unwanted poppet valve member closing, a variable orifice in the passage upstream of the poppet valve member, an axially slideable sleeve surrounding the body and controlling the effective area of the orifice, and means for interconnecting the upstream and downstream sides of the poppet valve member to reset the poppet valve member to its open position including passage means in the sleeve responsive to predetermined axial movement of the sleeve.

4,605,040

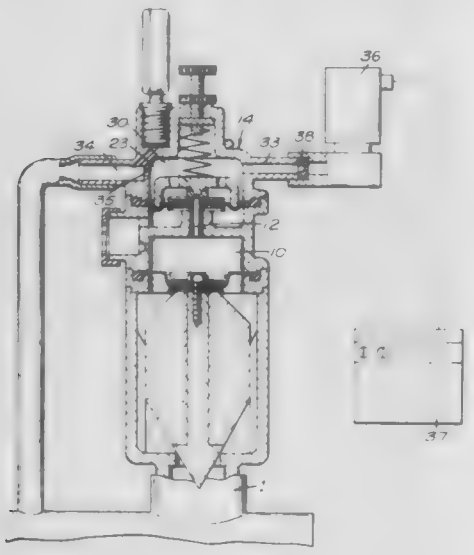
VALVE THAT AUTOMATICALLY REGULATES AN OPERATING PARTIAL VACUUM IN MILKING SYSTEMS

Theodor Meermöller, Oelde, Fed. Rep. of Germany, assignor to Westfalia Separator AG, Oelde, Fed. Rep. of Germany

Filed Apr. 12, 1984, Ser. No. 599,400
Claims priority, application Fed. Rep. of Germany, Apr. 15, 1983, 3313645
Int. Cl.[4] F16K *17/00*
U.S. Cl. 137—489 **4 Claims**

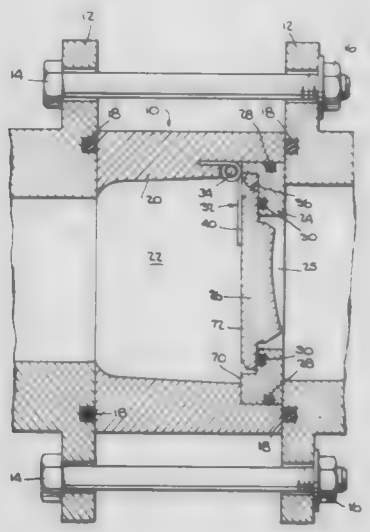
1. In a valve for automatically regulating the operating partial vacuum in a milkin system with automatic flushing means, having a main valve for admitting atmospheric air into the partially vacuumized system and including a control chamber receptive of a calibrated admission of air from the atmosphere valve including a control chamber in communication with the control chamber of the main valve through choke point blockable by the auxiliary valve, and wherein the auxiliary-valve control chamber is communicatable with means for supplying the operating partial vacuum, the improvement comprising: means forming an additional calibrated air inlet for the main-valve control chamber and which communicates with the atmosphere and means for selectively unblocking and blocking off the additional air inlet comprising a remotely

controlled automatic valve and wherein the automatic valve is automatically shifted by the automatic flushing means when



rinsing is initiated, whereby a different partial vacuum pressure can be obtained without altering the opening partial vacuum.

4,605,041
CHECK VALVE
Henry E. Teumer, 5308 Woodline Dr. South, Mobile, Ala. 36609
Filed Apr. 5, 1985, Ser. No. 720,137
Int. Cl.[4] F16K *15/03*
U.S. Cl. 137—527 **10 Claims**



1. A check valve comprising:

(a) a valve body having a bore therethrough for the flow of fluid and in the bore a counterbore whose diameter is larger than that of the bore, the counterbore having a counterbore periphery and a counterbore face inside the valve body, the counterbore face being at an angle to the axis of the bore, the counterbore face having a biasing means recess;

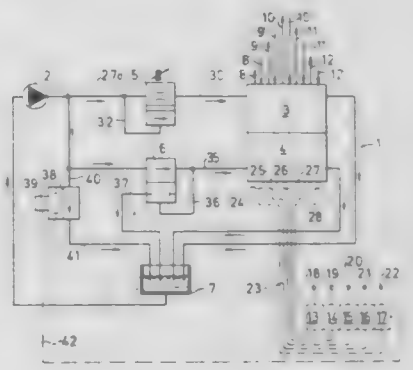
(b) an insert contained at least partially in the counterbore, the insert having (i) a bore therethrough for the flow of fluid, (ii) an outer periphery that corresponds to and mates with the counterbore periphery, and (iii) an inner face that corresponds to the counterbore face, the inner face having a flapper pin recess;

(c) a flapper having a flapper pin, the flapper pin being rotatably mounted in the flapper pin recess of the insert so that the flapper can rotate between open and closed positions, the closed position blocking the bore of the insert to prevent substantially the flow of fluid through the bore;

(d) biasing means mounted in the biasing means recess of the valve body to bias the flapper towards the closed position; and

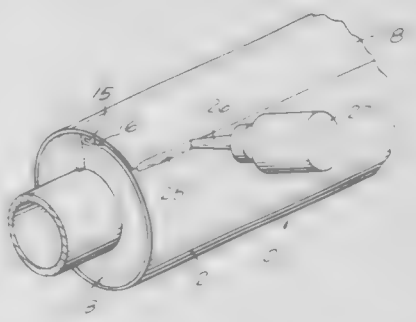
(e) blocking means inside the valve for blocking the flapper pin recess to prevent the flapper pin from leaving the flapper pin recess and for blocking the biasing means recess to prevent the biasing means from leaving the biasing means recess.

4,605,042
PILOT OIL SUPPLY ARRANGEMENT
Ted Zettergren, Nyland, Sweden, assignor to Hydrino AB, Nyland, Sweden
PCT No. PCT/SE84/00379, § 371 Date Jun. 18, 1985, § 102(e) Date Jun. 18, 1985, PCT Pub. No. WO85/02233, PCT Pub. Date May 23, 1985
PCT Filed Nov. 7, 1984, Ser. No. 749,628
Claims priority, application Sweden, Nov. 9, 1983, 8306179
Int. Cl.[4] F15B *13/02*
U.S. Cl. 137—596.12 **6 Claims**



1. An arrangement for supplying pilot oil to a servo-valve arranged to activate a main valve in a hydraulic system, said hydraulic system also including a hydraulic pump, and a pressure reducing valve located between the pump and the servo-valve, and at least one auxiliary assembly arranged to deliver an electric signal to electromagnetic means arranged to activate the servo-valve, characterized in that said valve (5) located between the pump (2) and the main valve (3) is arranged to be substantially closed when standing at a given, pre-determined pressure corresponding to the servo pressure required by the servo-valve (4) to fulfil its intended function, and said valve (5) is arranged to be open when said pressure slightly exceeds said predetermined pressure.

4,605,043
SNAP-ON HEAT INSULATING JACKET AND METHOD FOR ENCLOSING DUCTING
Claude A. Grenier, Mesa, Ariz., assignor to Walter Allen Plummer, Sherman Oaks, Calif.
Filed Aug. 8, 1984, Ser. No. 638,852
Int. Cl.[4] F16L *58/00;* B32B *1/08*
U.S. Cl. 138—149 **2 Claims**



1. An improved method of providing installed ducting with a heat insulating jacket of the type having an impervious flexible main body of high impact strength plastic laminated to resilient heat insulation between a pair of interlockable seam members so positioned relative to the opposite edge portions of main body as to provide the same with an external guard flap sufficiently wide to bridge and extend very substantially beyond the exterior of said seam members when closed, said improved method comprising:

providing the inwardly facing side of said external guard

flap with a layer of pressure sensitive adhesive covered prior to use with a readily separable protective mask strip;

assembling said jacket about ducting and interlocking said seam members beneath said guard flap; removing said protective mask strip from said adhesive;

pressing said guard flap and said adhesive layer against the underlying surface of said main body thereby to conceal said seam members and provide the same with a vapor-tight sealed cover and

applying a bevelled layer of a permanently settable bonding agent between the free lateral edge of said guard flap and the contiguous surface of said main body lying outwardly of said free lateral edge thereby to augment the sealing of said guard flap to said main body and cooperating therewith to provide an assembled jacket with a continuous smooth outer surface free of foreign matter collecting crevices.

2. In a heat insulated seamed jacket assembly for enclosing installed ducting with a sanp-on enclosure of the type having a main outer body formed of high impact strength flexible impervious sheet plastic laminated to a resilient layer of heat insulating material affixed to the inwardly facing side thereof and provided with a pair of interlocking seam members secured to the opposite lateral portions of said main body so as to provide an external guard flap sufficiently wide to bridge and extend very substantially beyond the exterior of said seam members when snapped closed, that improvement comprising:

a layer of non-permanently masked pressure sensitive adhesive adherent to the inwardly facing surface of said external guard flap adapted, upon removal of said mask after assembly of said jacket to ducting, to hold said guard flap pressed across the exterior of said closed seam members and firmly sealed against the underlying juxtaposed exterior surface of said main body thereby to conceal said seam members; and

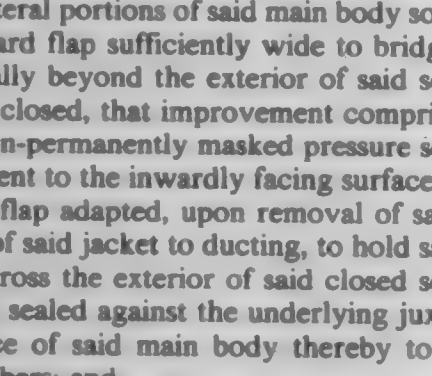
a permanently settable initially fluent bonding agent distributed in a bevelled layer along the free lateral edge of said guard flap and the adjacent outer surface of said main body permanently bonding said guard flap to said main body and providing said installed jacket assembly with a continuous outer surface free of foreign matter collecting crevices.

4,605,044

TAKEUP MOTION CONTROL DEVICE FOR LOOMS

Toshiyuki Sakano, Kanazawa, Japan, assignor to Tsudakoma Corp., Kanazawa, Japan

Filed Feb. 22, 1985, Ser. No. 704,682
Claims priority, application Japan, Feb. 24, 1984, 59-032572
Int. Cl.⁴ D03D *49/20*
U.S. Cl. 139—304 **12 Claims**



1. A takeup motion control device for a loom which has a servomotor to drive a winding roll for winding a woven fabric, comprising:

(a) input setting unit means for introducing into said device functions of a repetitive period and a takeup speed;

(b) function unit means for storing each of said functions as a function of rotation of the loom;

(c) arithmetic control unit means for successively reading out selected functions from said function unit means in synchronism with rotation of the loom and for generating therefrom a digital takeup command signal;

(d) driver circuit means for generating a drive signal in response to said takeup command signal and for applying said drive signal to the servomotor driving the winding roll; and

(e) digital feedback circuit means for feeding the amount of rotation of said servomotor back to said arithmetic control unit means as a digital feedback signal;

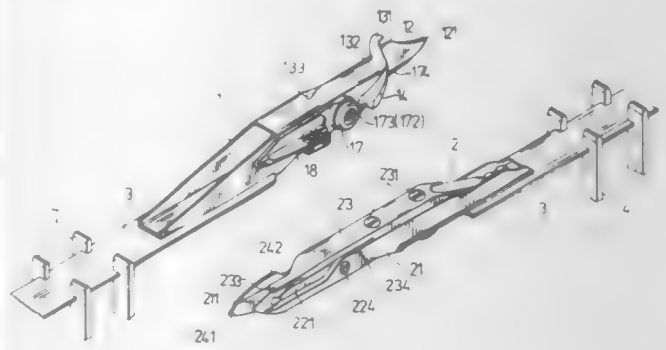
wherein said arithmetic control unit means is responsive to an operation command signal for reading out a fell position control signal from said function unit means and for rotating said servomotor so as to move a fell of the fabric in a direction specified by said fell position control signal.

4,605,045

GRIPPING APPARATUS FOR SHUTTLELESS LOOMS

Lien-Shin Wu, No. 151, Section 1, Chang-Mei Road, Chang-hua City, Taiwan

Filed Sep. 9, 1985, Ser. No. 774,088
Int. Cl.⁴ D03D *47/20*
U.S. Cl. 139—448 **6 Claims**



1. A gripping apparatus for shuttleless looms having a set of steel belts arranged in a opposite position to be driven to slide in a post-like track by a driving power thereof, and a protuberance provided between the track, comprising in combination:

a weft supplying fork means having a hollow body structure with its bottom portion fixed on one of the steel belts for carrying a weft, which is laid in a traverse position in the hollow body structure, from one side of a warp arrangement in a shuttleless loom, and moving along with the steel belt to a predetermined position; and

a weft transfer hook means having a body with its rear bottom portion fixed on another steel belt of the shuttleless loom and its front portion formed in a tapered edge for weft gripping operation, a through longitudinal slot formed in the body with a through hole and a screw hole respectively provided in opposite sides defining the through slot, a support stand with a plurality of screw holes formed therein provided on top of the through slot so as to form a weft guide and gripping arrangement in the body, suitable for being entirely inserted in the hollow body structure of said weft supplying fork means;

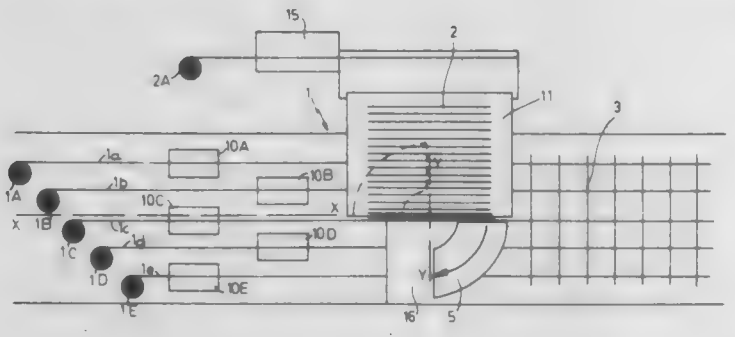
whereby, when both said weft supplying fork means and said weft transfer hook means move toward each other in an opening of the warp from opposite sides thereof along with the steel belts for weft exchanging operation, said weft transfer hook means will be completely inserted into the hollow body of said weft supplying fork means at a predetermined position in the opening of the warp, and will grip the weft traversely laid in said weft supplying fork means and transfer the weft back to the side of the warp without incurring any breaking of either the warp or the weft.

4,605,046

PROCESS AND DEVICE FOR FEEDING MACHINES FOR WELDING WIRE MESH WITH WEFT WIRES

Pierre Decoux, 6, Grand'Place, B - 5950 Orp-Jauche, Belgium

Filed Apr. 26, 1984, Ser. No. 604,288
Claims priority, application Luxembourg, May 3, 1983, 84785
Int. Cl.[4] B21F *15/08*
U.S. Cl. 140—112 **17 Claims**



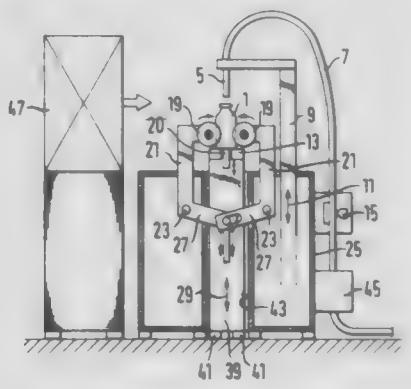
1. A process for feeding weft wires to a machine for welding mesh, in which a series of parallel warp wires is moved towards a welding station, as is a series of weft wires which have been cut to length, said process comprising the steps of moving forward the warp and the weft wires in substantially a same first direction, so that the cut weft wires reach a position wherein they are at a higher level than the series of parallel warp wires and then dropping and simultaneously twisting said weft wires under the effect of gravity toward a second direction displaced from said first direction by an angle, such that the weft wires are longitudinally disposed in said second direction which is substantially perpendicular to the warp wires when the weft wires reach them.

4,605,047

FILLING DEVICE FOR BULK MATERIAL, ESPECIALLY LIQUIDS

Wilhelm L. Bausch; Rolf Ströbel; Siegfried Bullinger; Harald Harlass, all of Ilshofen, and Walter Busch, Grundelhardt, all of Fed. Rep. of Germany, assignors to Bausch & Strobel Maschinenfabrik GmbH & Co., Fed. Rep. of Germany

PCT No. PCT/DE83/00049, § 371 Date Nov. 15, 1983, § 102(e) Date Nov. 15, 1983, PCT Pub. No. WO83/03235, PCT Pub. Date Sep. 29, 1983
PCT Filed Mar. 17, 1983, Ser. No. 557,146
Claims priority, application Fed. Rep. of Germany, Mar. 17, 1982, 3209790
Int. Cl.[4] B65B *1/32, 57/10*
U.S. Cl. 141—83 **18 Claims**



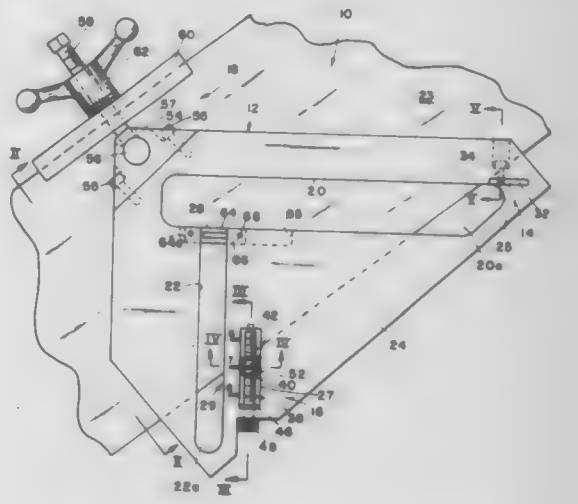
1. A device for the metered filling of bulk materials and particularly liquids in receptacles comprising:
first and second weight metering units each having:
(a) filling means for successively feeding the receptacles with bulk material; and
(b) means for sensing the weight of the receptacles and for blocking the filling means when a predetermined combined weight of the receptacle and material in the receptacle has been exceeded; said means for sensing and blocking having:
(i) first and second electric weight sensors spaced from each other by a first distance and capable of generating a signal corresponding to the weight of a receptacle and its contents being weighed thereby;
(ii) a signal sample and hold circuit coupled to each weight sensor; and
(iii) an adding circuit; and
(c) flow control means to selectively allow flow of materials from the filling means and block flow of materials from the filling means;
a first frame;
means mounting the filling means to the first frame;
conveyor means for supplying the first and second receptacles groupwise to the weight metering units for simultaneous feeding with bulk material, said conveying means having:
(a) conveyor means on a first side of the weight sensors and extending in a direction of conveyance of the receptacles; and
(b) means mounting the conveyor means to the first frame;
a second frame separate from and independent of the first frame and the filling means;
means for mounting the weight sensors to the second frame;
a plurality of pushing surfaces associated with the transport means for engaging the receptacles, said plurality of pushing surfaces spaced one from the other by the first distance;
means for operating the conveyor means intermittently to advance the pushing surfaces and thereby the receptacles in the conveying direction;
means for moving the pushing surfaces with the first and second receptacles situated over the first and second sensors away from the receptacles;
said signal sample and hold circuit triggerable by the conveyor means when the pushing surfaces are moved away from the receptacles to store a tare signal value corresponding to the empty weight of a receptacle associated therewith to be filled and after storage of the tare signal value releasing the filling means to fill the recepatcle;
a settable nominal value generator for storing a net weight signal value,
said adding circuit adding the tare signal value and the net weight signal value; and
a comparator circuit coupled to the weight sensor and the adding circuit and causing the flow control means to block flow of material from the filling means when a signal of the weight sensor represents a higher weight than the signal of the adding circuit.

4,605,048

STAIR STEP ROUTING TEMPLATE

James J. Swartout, 5663 County Rd. 616, East Cedar, Mich. 49621, and William D. Scott, 10795 Dalzell Rd., Traverse City, Mich. 49684

Filed Oct. 17, 1984, Ser. No. 661,606
Int. Cl.[4] B27C *5/00*
U.S. Cl. 144—136 B **20 Claims**



1. A stair stringer routing template comprising:

a template body including opposite first and second planar faces to be laid against a stair stringer, said body defining tread and riser slots;

tread registration means for registering said tread slot with respect to a stair stringer edge;

riser registration means for adjustably registering said riser slot with respect to the stair stringer edge enabling the riser height to be varied, said tread and riser registration means being flush with or below one face when the other face is laid on the stair stringer; and

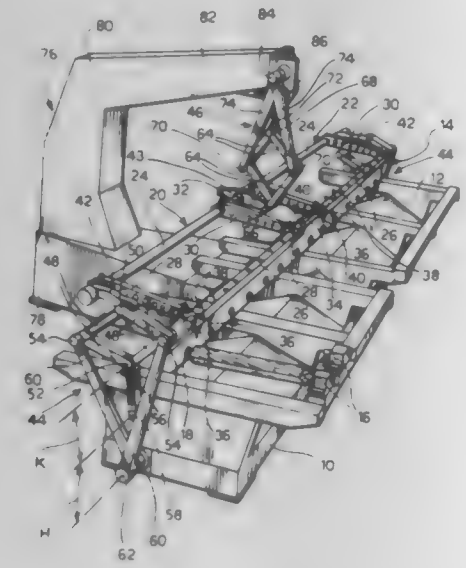
clamping means for securing said body to a stair stringer with said tread and riser registration means engaging a common edge of the stair stringer.

4,605,049

MULTIPLE CARVING MACHINE

Giovanni Giordanengo, and Giorgio Cavallera, both of Boves, Italy, assignors to La Nuova Scolpitrice S.p.A., Italy

Filed Dec. 20, 1984, Ser. No. 684,398
Claims priority, application Italy, Dec. 20, 1983, 54060 B/83
Int. Cl.[4] B27C *5/00*
U.S. Cl. 144—144 R **4 Claims**



1. Multiple working machine for the simultaneous working of a plurality of workpieces, including:

a base,

a work bench supported by the base and having a plurality of retaining members for pieces to be worked and for a pattern piece,

a work frame in the form of a generally horizontal articulated parallelogram having a front side and a rear side, the work frame being movable above the work bench and carrying on its front side a plurality of working tools for the pieces to be worked and a feeler member for engagement with the pattern piece, and

an articulated arm system interconnecting the rear side of the work frame and the base and including two symmetrical lateral linkages located vertically in correspondence with the sides of the work frame, each said linkage including an upper pin connected to the work frame, a lower pin and two side pins, four connecting rods articulated together in a rhombus by said pins, a shorter arm articulated at its upper end to the lower pin of the rhombus and at its lower end to the base about a first common horizontal axis, and two longer arms articulated at their upper ends to said pins of the rhombus and at their lower ends to the base about a second common axis located below said first axis, the distance between said first and second axes being equal to the distance between the first axis and the axis of said lower pin,

wherein the improvements comprise

(a) the said work frame comprises two adjacent half-frames, and respective front and rear connections interconnecting said half-frames along their front and rear sides, and a support structure extending above said connections between the two half-frames, and

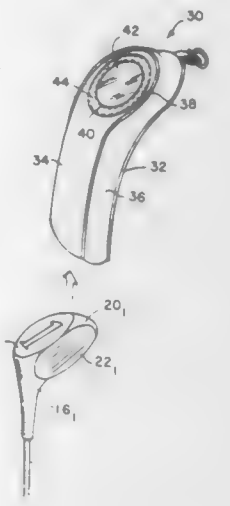
(b) the articulated arm system further includes a supplementary vertical central linkage, similar to said lateral linkages but inverted relative thereto, connecting the rear connection between said half-frames to the said support structure.

4,605,050

GOLF CLUB HEAD COVERS

Young J. Suk, 59 Sandy Hollow Rd., Port Washington, N.Y. 11050

Filed Aug. 9, 1984, Ser. No. 639,263
Int. Cl.[4] A63B *57/00*
U.S. Cl. 150—52 G **8 Claims**



1. a universal type of head cover for a golf club, comprising:

a head cover body for receiving a golf club therein; and

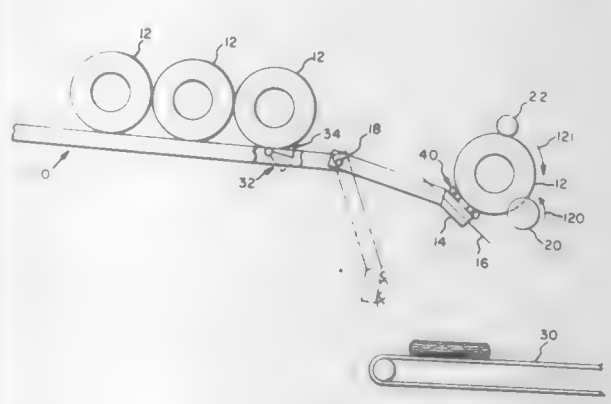
window means including an opening formed in the material of said head cover body for revealing the identifying portion of the golf club inserted therein and a transparent window member covering said opening and secured to said head cover body for protecting the golf club while revealing the identifying portion of the golf club.

4,605,051

APPARATUS FOR TRIMMING TIRES

Gary W. Sloan, and Walter H. Nelson, both of Lawton, Okla., assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Aug. 22, 1984, Ser. No. 643,114
Int. Cl.[4] B29H *21/08*
U.S. Cl. 157—13 **12 Claims**



1. Apparatus for trimming vents from the tread area of a tire comprising, means for rotatively supporting a tire including at least one vent trimmer, each said trimmer being operative to trim vents from and support a tire; each vent trimmer comprising a frame, a pair of tire engageable tire supportable rollers rotatably mounted on said frame in spaced parallel relation, a vent trimming knife, means mounting said knife on said frame generally between said rollers, said knife having a cutting edge portion extending parallel to the rotational axes of said rollers

and lying between the common plane containing said rotational axes and a second plane extending parallel to said common plane and tangent to the tire engageable surfaces of said rollers; said vent trimmer, or trimmers, being disposed such that if the tire engageable surfaces of said rollers are all moved away from the remainder of said means for rotatably supporting a tire a distance greater than the diameter of a tire to be processed on said apparatus the remainder of said means for support cannot support said tire.

4,605,052

CURING BINDERS FOR FOUNDRY MOULDS AND CORES

John G. Morley, Alcester, England, assignor to BCIRA, Birmingham, England

Filed Aug. 13, 1985, Ser. No. 765,101

Claims priority, application United Kingdom, Aug. 16, 1984, 8420877

Int. Cl.[4] B22C *9/12*

U.S. Cl. 164—16 **8 Claims**

1. A method of curing the binder in a foundry mould or core made of a granular refractory material together with a water-soluble alkali metal polyacrylate binder including an additive which at least partially comprises lime, said method comprising passing through said mould or core a carrier gas containing a significant proportion of the vapour of an alkyl ester containing not more than three carbon atoms.

4,605,053

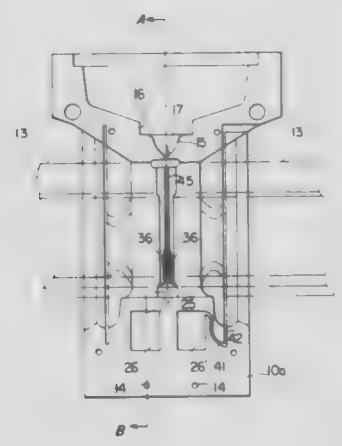
ART OF MOLD WELDING

Hans D. Fricke, Brielle, N.J., assignor to Orgo-Thermit Inc., Lakehurst, N.J.

Continuation of Ser. No. 189,521, Sep. 22, 1980, abandoned, which is a continuation of Ser. No. 43,542, May 29, 1979, abandoned. This application Sep. 5, 1984, Ser. No. 647,626

Int. Cl.[4] B23K *23/00*; B22D *19/04*

U.S. Cl. 164—54 **4 Claims**



1. In the process of mold welding two metal parts together having respective base sections, which includes enclosing the end sections of said metal parts in aligned end-to-end relation in a mold having an entrance gate, flowing molten metal through said entrance gate into said mold, and out of said mold at rates so related as to cause some of the metal admitted into the mold to be discharged from said mold while the rest of the molten metal accumulates as a metal bath to cause the molten metal during the early stage of its admission into the mold to preheat the metal parts, and conducting some of the said molten metal during said early stage from the entrance gate through a recess and directly onto said base sections in direct impingement with said base sections to promote better heat transfer between said molten metal and said metal parts,

the improvement comprising discharging molten metal through at least two separate exit gates in opposite sides of said mold into separate non-communicating discharge chambers of substantially identical geometry located underneath said base sections to fill said separate chambers with said molten metal, said gate on one side of said mold discharging into one chamber only and said gate on the opposite side of said mold discharging into the other chamber only, whereby exactly the same amount of molten metal washes alongside both base sections even if the centerline of the mold deviates from the vertical and thus provides the same amount of preheat to said sections.

3. In a mold for welding two metal parts together having respective bases, said mold having side walls defining a mold cavity for enclosing therein the confronting end sections of said metal parts in aligned end-to-end relationship, said mold having entrance gate means for the molten metal leading into the upper part of said mold cavity, exit gate means near the lower part of the mold cavity and discharge chamber means on the discharge side of said exit gate means, said entrance gate means and exit gate means being relatively dimensioned to cause flow through said entrance gate means at a greater rate than discharge through said exit gate means, said side walls also defining a recess constituting an extension of said mold cavity and extending from a region near the upper part of said mold cavity, along said mold cavity and to a region near the lower part of the mold cavity where said recess discharges, said recess extending at its lower discharge end to a region which is located beyond the region where the end sections of the metal parts confront and which is opposite a region of a base of one of said metal parts in a direct impinging path of the molten metal discharged from said recess, whereby heat transfer between said molten metal and the impinged base region of said metal part is promoted,

the improvement comprising at least two separate exit gate means near the lower part of said mold cavity, in opposite sides of said mold,

separate non-communicating discharge chamber means of substantially identical geometry located underneath said mold cavity,

means connecting said exit gate means in one side of said mold with one of said discharge chamber means only,

and means connecting said exit gate means in the other side of said mold with the other of said discharge chamber means only, whereby molten metal fills both said discharge chamber means and exactly the same amount of molten metal washes alongside both bases even if the centerline of the mold deviates from the vertical and thus provides the same amount of preheat to said bases.

4,605,054

CASTING APPARATUS INCLUDING A CONDUCTOR FOR ELECTROMAGNETIC INDUCTION HEATING

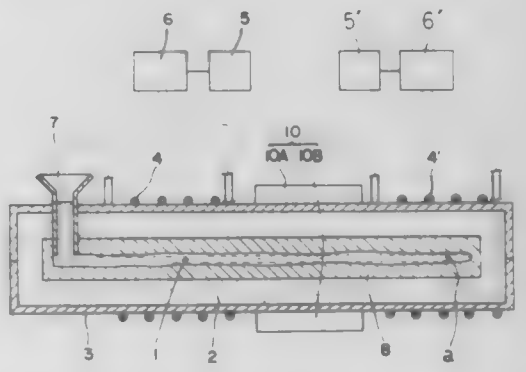
Akio Sumida, Yao, Japan, assignor to Kawachi Aluminium Casting Co., Ltd., Osaka, Japan

Filed Sep. 26, 1984, Ser. No. 654,589

Claims priority, application Japan, Sep. 26, 1983, 58-177577; Oct. 26, 1983, 58-200494; Jan. 27, 1984, 59-13575

Int. Cl.[4] B22D *27/02*

U.S. Cl. 164—147.1 **4 Claims**



1. A casting apparatus comprising a mold frame formed of a non-magnetic material, molding material disposed in the mold frame, a mold disposed in the molding material defining a molding space into which a molten metal is injected, an electri-

cal conductor for electromagnetic induction heating disposed peripherally of the mold frame, and

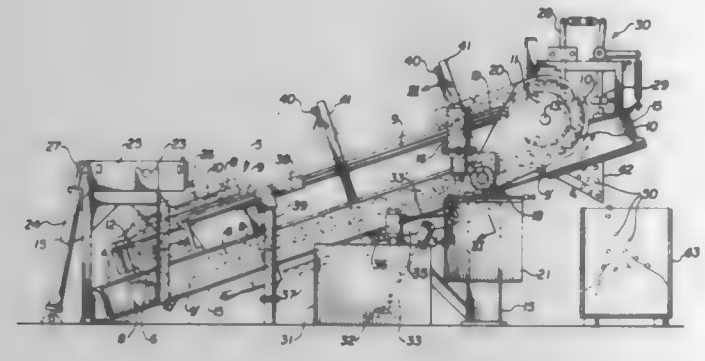
a magnet device including oppositely disposed magnets mounted along said mold frame to generate lines of magnetic force in a magnetic field therebetween across said mold, said conductor comprising two electromagnetic coils positioned along said mold frame on opposite ends of said magnet device.

4,605,055

METHOD AND APPARATUS FOR CASTING FERROALLOYS AND SLAGS IN MOULDS HAVING A LARGE RATIO OF MOULD MASS TO CAVITY SIZE

Thomas R. Allen, Jr., Sewickley, Pa., assignor to Economy Industrial Corporation, Ambridge, Pa.

Filed Oct. 19, 1984, Ser. No. 662,968
Int. Cl.[4] B22D *11/06*
U.S. Cl. 164—479 9 Claims



1. A method of continuously casting molten materials such as ferroalloys, deoxidizers, slags and the like, comprising the steps of:

(a) providing a train of moulds constructed of a ferrous material, each of said moulds containing at least one cavity formed therein, the ratio of the mould mass to the total mass of the cast product to be formed therein being greater than 6 to 1;

(b) pouring the molten material into the mould cavities;

(c) cooling the cast molten material in air to form a partially solidified cast product within the mould cavities;

(d) quenching the cast product and the moulds with a water spray means to further cool the cast product and the moulds; and

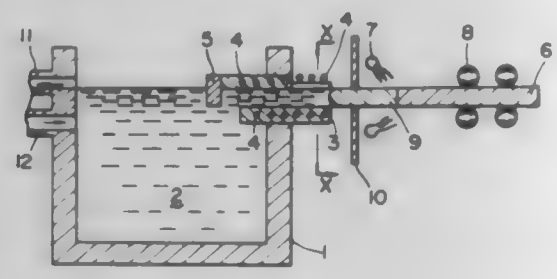
(e) discharging the solidified cast product from the moulds.

4,605,056

PROCESS AND APPARATUS FOR THE HORIZONTAL CONTINUOUS CASTING OF A METAL MOLDING

Atsumi Ohno, Chofu, Japan, assignor to Nippon Light Metal Company Limited and O.C.C. Company Limited, both of Tokyo, Japan

Filed Jun. 13, 1984, Ser. No. 620,019
Claims priority, application Japan, Jun. 13, 1983, 58-104248
Int. Cl.[4] B22D *11/00*
U.S. Cl. 164—490 8 Claims



1. A continuous casting process comprising: supplying molten metal into a generally open top horizontal mold having an inner wall maintained at a temperature above the solidification temperature of said metal, while maintaining said molten metal under a substantially zero pressure at the outlet opening of said mold; applying heat to the exposed surface of the molten metal in said mold through the open top of said mold by heater means spaced out of contact with said molten metal surface to maintain said surface above the solidification temperature of said metal; and drawing a dummy bar horizontally away from said outlet opening to cause said molten metal to solidify continuously after exiting the mold to form the leading end of a molded product.

4,605,057

PROCESS FOR PRODUCING CORE FOR CASTING

Junji Sakai, Ibaraki; Syogo Morimoto, Katsuta; Minoru Morikawa, Katsuta, and Yoshitsugu Maehashi, Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 4, 1983, Ser. No. 520,518
Claims priority, application Japan, Aug. 6, 1982, 57-136264
Int. Cl.[4] B22C *1/02, 9/00*
U.S. Cl. 164—519 21 Claims

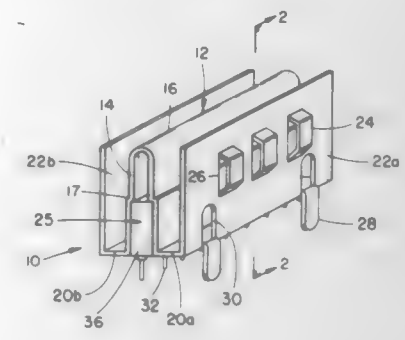
1. A process for producing a core for casting which comprises mixing refractory particles with colloidal alumina to give a slurry, filling said slurry in a cavity of a pattern made of a synthetic resin that has a property of absorbing water, whereby the slurry is formed into a solid due to removal of water from said slurry containing colloidal alumina by said pattern made of said synthetic resin, followed by drying and firing.

4,605,058

HEAT DISSIPATING RETAINER FOR ELECTRONIC PACKAGE

Seymour Wilens, Wantagh, N.Y., assignor to The Staver Company, Inc., Bay Shore, N.Y.

Filed Apr. 1, 1985, Ser. No. 718,743
Int. Cl.[4] F28F *7/00*
U.S. Cl. 165—80.2 4 Claims



1. A retainer for a flat, rectangular package of electronic components, comprising:

a generally W-shaped structure having an inner, inverted, U-shaped channel section open at opposite front, back, and bottom ends to receive said flat package of electronic components in frictional engagement under spring tension with sides of said package;

said structure further having a pair of outer side walls laterally spaced from said channel section by integral inner bottom walls to dissipate by conduction, convection and radiation heat generated in said package; and

wherein said channel section comprises:

an upper springy ridge integral with a pair of laterally spaced first inner walls;

a pair of outwardly flaring narrow bent wall portions respectively integral with said first inner walls to serve as abutments for limiting insertion of said package into said channel section; and

a pair of second inner walls respectively integral with said bent wall portions and with said inner bottom walls, said second inner walls normally being inclined toward each other, and assuming parallel position only when said pack-

age is inserted into said channel section while said springy ridge flexes to retain said package in said channel section under said spring tension.

4,605,059

HEAT EXCHANGER

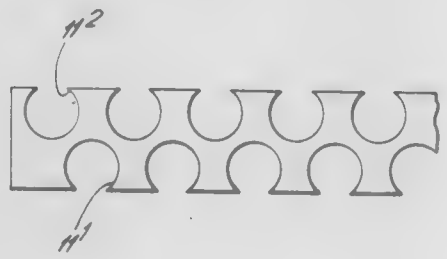
Michael J. Page, Maltby, Nr. Rotherham, England, assignor to Laporte Industries Limited, London, England

Filed Dec. 5, 1984, Ser. No. 678,228

Claims priority, application United Kingdom, Dec. 21, 1983, 8334078

Int. Cl.⁴ F28D *1/00*

U.S. Cl. 165—163 **7 Claims**



1. A heat exchanger element comprising a plurality of coils of tubing so arranged that a plurality of parallel flows of heat exchange fluid may be passed therethrough wherein the coils are of cylindrical conformation and of differing diameters each coil being mounted co-axially about the coil of next smaller diameter and the plurality of coils being supported on a central longitudinal frame member co-axially positioned with respect to the coil characterized in that the tubing is flexible tubing of plastics material and in that each coil is spaced outwardly with respect to the frame member from the coil of next smaller diameter by means of a plurality of slat members lying therebetween and longitudinally arranged with respect to the frame member, the slat members lying in spaced radial planes passing through and intersecting at the axis of the frame member, the innermost plurality of the slat members being attached to the frame member and the free longitudinal edges of the slats having a plurality of recesses, the recesses have mouths of a lesser dimension than the tubing comprising the turns of the coil to be capable of releasably holding turns of coil therewithin, and the coils being supported in position by successive turns thereof being inserted within said recesses.

4,605,060

HEAT EXCHANGER PLATE

Jarl A. Andersson, and Leif Hallgren, both of Lund, Sweden, assignors to Alfa-Laval AB, Tumba, Sweden

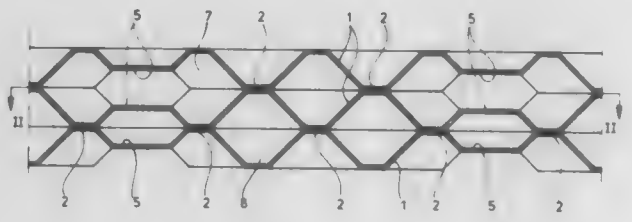
PCT No. PCT/SE82/00393, § 371 Date Jul. 19, 1983, § 102(e) Date Jul. 19, 1983, PCT Pub. No. WO83/01998, PCT Pub. Date Jun. 9, 1983

PCT Filed Nov. 23, 1982, Ser. No. 517,529

Claims priority, application Sweden, Nov. 26, 1981, 8107040

Int. Cl.⁴ F28F *3/00*

U.S. Cl. 165—166 **6 Claims**



1. In a plate heat exchanger, the combination comprising two adjacent plates defining a passage for flow of a heat exchanging medium, each of said two plates having a central plane and a corrugation pattern forming ridges projecting in opposite directions from said central plane, the ridges on each face of the plate being parallel to the ridges on the opposite face of the plate and forming parallel grooves in said opposite face of the plate, the ridges and grooves of each plate crossing ridges and grooves of the other plate, each plate having first regions where a plurality of ridges of the plate engage a plurality of crossing ridges of the adjacent plate to form a substantial number of supporting points in said passage, ridges of at least one plate having recesses at selected second regions where a plurality of ridges of said one plate would engage a plurality of crossing ridges of the adjacent plate except for said recesses, whereby said number of supporting points in said passage is less than it would have been without said recesses.

4,605,061

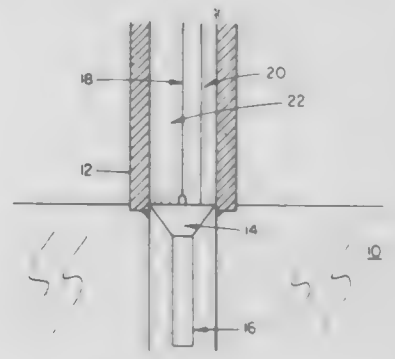
APPARATUS FOR PLUGGING A WELLBORE IN HIGH IMPULSE FRACTURING

Alfred R. Jennings, Jr., Plano, Tex., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Jun. 28, 1984, Ser. No. 625,429

Int. Cl.⁴ E21B *33/134, 43/263*

U.S. Cl. 166—63 **16 Claims**



1. An apparatus for sealing a wellbore after placing a canister containing a propellant into a wellbore where said seal forms a solidified gel capable of withstanding energy released from ignition of said propellant comprising:

(a) a means for placing and containing a pumpable gel mixture at a predetermined level in said wellbore where said means for containing said pumpable mixture forms an integral part of said canister which is suspended into said wellbore from a position at or above the ground level; and

(b) a means for pumping said gel mixture into the wellbore above the means for containing the pumpable mixture which mixture becomes a solid sufficient to withstand the energy released from an ignited propellant, including heat and pressure.

4,605,062

SUBSURFACE INJECTION TOOL

Joseph N. Klumpyan, and Richard J. Ross, both of Houston, Tex., assignors to Baker Oil Tools, Inc., Orange, Calif.

Filed Jun. 10, 1985, Ser. No. 742,994

Int. Cl.⁴ E21B *33/124, 34/14, 43/14, 23/06*

U.S. Cl. 166—127 **20 Claims**

1. A tool for use in a well bore for producing hydrocarbons through a tubing string from subterranean hydrocarbon-bearing formations having a plurality of vertically spaced perforations therein, the tool comprising:

a tubular body assembly;

a plurality of radially expandable and retractable packing elements mounted in axially spaced relation on the tubular body assembly, each of said elements comprising means for sealing the annular area between the tubing string and the well bore upon radial expansion thereof;

a rigid mandrel assembly attachable to the tubing string, insertable in said tubular body assembly, and having a mandrel bore communicable with the tubing string;

at least one horizontal locking groove extending partially around the exterior of said mandrel;

means on the interior of said tubular body assembly defining a toothed segment engagable with said locking groove

during run-in to secure said mandrel against movement relative to said tubular body assembly;

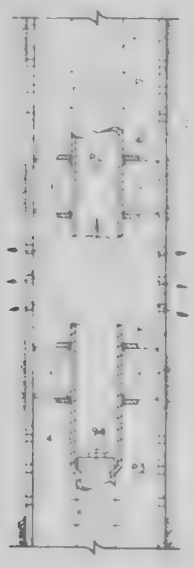
said mandrel being releasable from said tubular body assembly by limited angular movement relative to said tubular body assembly;

means for expanding and retracting said packing elements upon axial manipulation of the mandrel relative to said tubular body assembly;

a radial injection path communicable between the mandrel bore and the exterior of the tool, at least one upper packing element being above the injection path, and at least one lower packing element being below the radial injection path;

means for sealing the mandrel bore below the injection path;

upper and lower pressure unloading means respectively



above and below the radial injection path for separately equalizing the pressure differential across said packing elements above and below the injection path in response to axial manipulation of said mandrel, whereby successive perforations can be separately treated by injecting fluids through the tubing string and injection path; said upper and lower pressure-unloading means comprising an axially extending bypass communicable with the injection path, with an upper portion communicable to the exterior of the tool above the upper packing elements and with a lower portion communicable to the exterior of the tool below the packing elements, upper seal means shiftable between positions opening and closing the axially extending bypass upper portion and lower seal means being shiftable between positions opening and closing the axially extending bypass lower portion.

4,605,063

CHEMICAL INJECTION TUBING ANCHOR-CATCHER

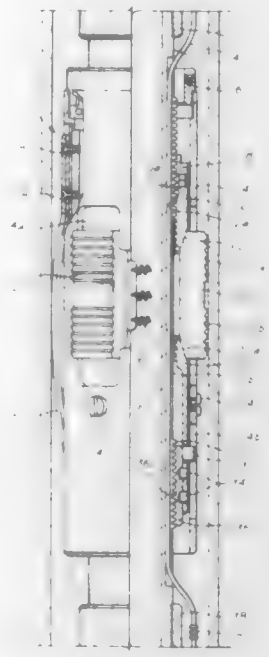
Richard J. Ross, Houston, Tex., assignor to Baker Oil Tools, Inc., Orange, Calif.

Filed May 11, 1984, Ser. No. 609,327

Int. Cl.[4] E21B *23/00*

U.S. Cl. 166—216 **3 Claims**

1. Apparatus engagable with the wall of a well bore and attached to a tubing string in the well bore to anchor the tubing string against axial movement, in which at least one separate fluid pipe is attached to the exterior of the tubing string, the apparatus comprising: a tubular body connected to the tubing string and having an axial passage of area equal to the tubing string bore communicating with the bore of the tubular body; anchoring slip means concentrically encircling the tubular body; expander means concentrically encircling the tubular body and adjacent to the anchoring slip means and relatively axially shiftable for expanding the anchoring slip means; means responsive to rotation of the tubular body for shifting the expander means axially relative to the tubular body to expand the slip means; said tubular body having an axially extending groove in its exterior surface extending axially through the encircling expander means and slip means, a second pipe disposed in the full length of said groove; and means for attaching the second pipe to the separate fluid pipe to conduct fluids to



a well bore location below said tubular body without reduction in fluid passage area of the tubing string.

4,605,064

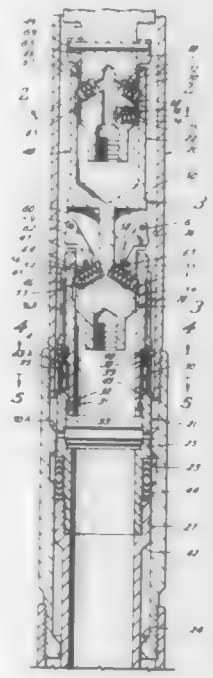
WELL APPARATUS

Neil H. Akkerman, Houston, Tex., assignor to AVA International Corp., Houston, Tex.

Continuation of Ser. No. 536,278, Sep. 27, 1983, abandoned, which is a continuation-in-part of Ser. No. 489,827, Apr. 29, 1983, Pat. No. 4,522,259. This application Mar. 5, 1985, Ser. No. 708,536

Int. Cl.[4] E21B *23/02*

U.S. Cl. 166—237 **42 Claims**



1. For use in a well conduit having a seat therein and an internal groove thereabout, apparatus comprising a running tool adapted to be raised and lowered within the well conduit, a well tool, means for connecting the well tool to the running tool to permit the well tool to be raised and lowered with the running tool, locking means carried by the well tool for radial expansion and contraction with respect thereto, said well tool having a shoulder thereon engageable with the seat to dispose the locking means opposite the groove in the well conduit, means shiftable in one vertical direction, following engagement of the shoulder with the seat, for causing the locking means to be expanded into locking position within the groove,

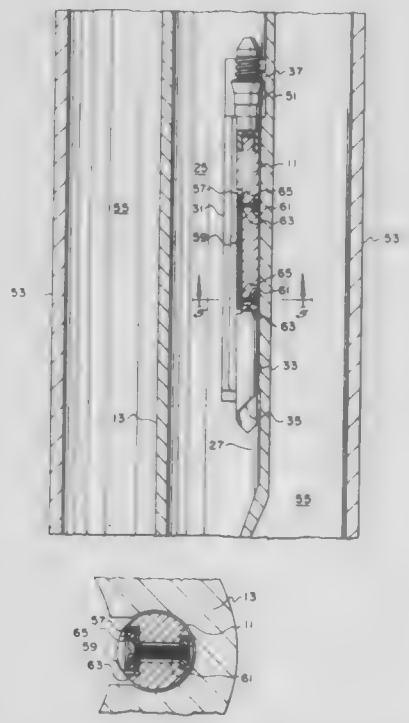
and means operable upon further shifting of said shiftable means in said one vertical direction, following expansion of said locking means into locking position, for locking said shiftable means against movement in the opposite direction in response to an axial force in said opposite vertical direction, and means automatically responsive to locking of said shiftable means for disconnecting the running tool from the well tool in order to permit retrieval of the running tool from the well conduit.

4,605,065

METHOD AND APPARATUS FOR MONITORING WELL TUBING FLUID

Bolling A. Abercrombie, Montgomery County, Tex., assignor to Hughes Tool Company, Houston, Tex.

Filed Jun. 26, 1985, Ser. No. 748,785
Int. Cl.[4] E21B *41/02, 47/00*
U.S. Cl. 166—250 **10 Claims**



1. An apparatus for monitoring corrosive effects of fluid in a well, for use with a well tubing mandrel having a main bore and a side pocket offset from the main bore, the apparatus comprising:

a carrier, mounted in the side pocket; and

a coupon secured to the carrier, and positioned within a slot between the main bore and the side pocket.

8. A method of monitoring fluid within well tubing, comprising the steps of:

installing a well tubing mandrel downhole in well tubing, said mandrel having a main bore, a side pocket offset from the main bore, and a slot along the length of the side pocket adjacent the main bore;

mounting a coupon on a carrier, said coupon being a strip of selected material;

placing the carrier into the side pocket, positioning the coupon within the slot for a specified time period;

removing the carrier from the well tubing; and

inspecting the coupon.

4,605,066

OIL RECOVERY METHOD EMPLOYING CARBON DIOXIDE FLOODING WITH IMPROVED SWEEP EFFICIENCY

Nizar F. Djabbarah, Richardson, Tex., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Mar. 26, 1984, Ser. No. 593,465
Int. Cl.[4] E21B *43/22*
U.S. Cl. 166—273 **7 Claims**

1. A method of recovering oil from a subterranean, oil-containing, permeable formation penetrated by at least one injection well and by at least one production well, both wells being in fluid communication with the formation, comprising steps (a) through (d) in the recited sequence:

(a) injecting carbon dioxide into the formation through the injection well and recovering fluid including oil from the formation through the production well until carbon dioxide breakthrough occurs at the production well, thereby forming a CO_2-swept zone in the formation;

(b) subsequently injecting a mixture of carbon dioxide and an intermediate hydrocarbon into the CO_2-swept zone through the injection well, thereby decreasing the permeability of the CO_2-swept zone and increasing the pressure required to inject the mixture into the CO_2-swept zone, and recovering fluid including oil from the formation through the production well until the injection pressure increases to a value about 10% above the injection pressure at the initiation of the injection of said mixture;

(c) thereafter injecting CO_2 into the formation through the injection well and recovering fluid including oil from the formation through the production well until carbon dioxide breakthrough occurs at the production well; and

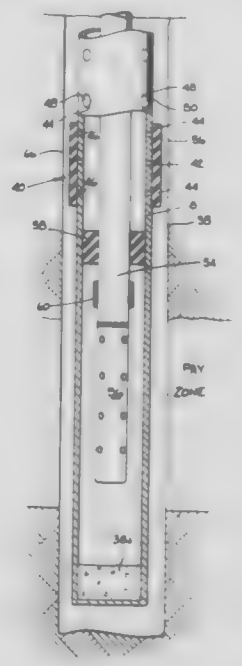
(d) thereafter repeating steps (b) and (c) for a plurality of cycles.

4,605,067

METHOD AND APPARATUS FOR COMPLETING WELL

Guy C. Burton, Jr., Casper, Wyo., assignor to ReJane M. Burton, Casper, Wyo., a part interest

Filed Mar. 26, 1984, Ser. No. 593,394
Int. Cl.[4] E21B *33/126, 33/14, 43/11*
U.S. Cl. 166—285 **18 Claims**



1. A method for the completion of a well comprising:

drilling a first well hole and providing said first well hole with at least a first casing to a predetermined depth;

drilling a second well hole having a smaller diameter than said first well hole to a pay zone at which quantities of gas are encountered;

providing a second casing positioned within said first casing, forming a first annular space between said first and second casings and extending said second casing into said second well hole;

said second casing having an outer diameter less than the diameter of said second well hole and forming a second annular space between said second casing and said second well hole;

sealing the interior of said second casing by providing a seal spaced from the wall of said second well hole and positioned within the well in the interior of said second casing so as to seal the interior of said second casing above said seal from fluid communication with any fluid in said sec-

ond well bore exterior to said second casing so that said gas from said second well hole is prevented by said seal from entering the portion of the interior of said second casing which is above said seal such that said gas will flow through said second and said first annular spaces;

positioning tubing within said second casing in a position entirely above said seal while said gas is flowing through said second and said first annular spaces, forming a third annular space between said second casing and said tubing;

forming an opening in said casing within the well above said seal in the interior of said second casing;

allowing said gas from said pay zone to enter into said tubing using said opening in said second casing;

providing a flowable sealing material in said second annular space; and

preventing said flowable sealing material from being located laterally adjacent to said pay zone from which said gas is to be received.

4,605,068

WELL TREATING COMPOSITION AND METHOD

Peter J. Young, and Julian M. E. Romocki, both of Calgary, Canada, assignors to Amerigo Technology Limited, Calgary, Canada

Division of Ser. No. 97,151, Nov. 26, 1979, abandoned. This application Dec. 17, 1981, Ser. No. 331,761

Claims priority, application Canada, Apr. 20, 1979, 325951

Int. Cl.[4] E21B *43/26, 43/27*

U.S. Cl. 166—307 15 Claims

1. A method of treating a subterranean limestone or dolomitic formation or a sandstone formation having a substantial carbonate content associated with a well completed in said limestone or dolomitic formation or said sandstone formation having a substantial carbonate content comprising displacing into said formation through said well an effective amount of an acidic aqueous solution comprising from about 5 to about 36% by weight phosphoric acid, from about 0.6 to about 5 weight % of a highly polar surface active agent which is a citric acid-monoethanolamine elimination reaction product characterized by a visible absorption spectrum which displays an increasing extinction coefficient from the red to the near U.V. with some structure, an absorption maximum at 475 nm, a plateau from 460 nm to 465 nm, an absorption maximum at 450 nm, and extinction coefficients as follows:

$\epsilon_{475}=0.325$ l/gm.cm

$\epsilon_{462}=0.379$ l/gm.cm

$\epsilon_{450}=0.509$ l/gm.cm,

an effective amount of a ferrous metal corrosion inhibitor, and an amount of a phosphate crystal modifying agent sufficient to control crystal growth, minimize crystal agglomeration and minimize crystal adhesion to the formation, said phosphate crystal modifying agent being selected from the group consisting of polyacrylate polymers and blends of such polymers with a phosphonic acid or a phosphonate.

4,605,069

METHOD FOR PRODUCING HEAVY, VISCOUS CRUDE OIL

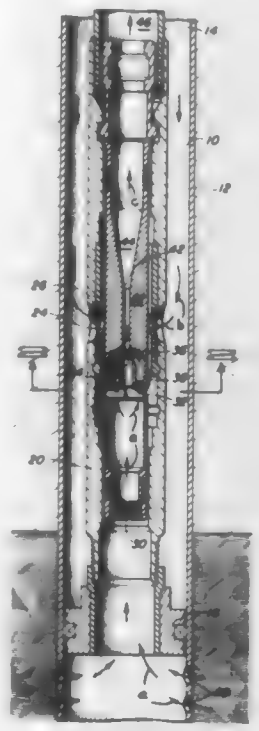
Gifford G. McClaflin; Henry A. Bourne, and Donald L. Whitfill, all of Ponca City, Okla., assignors to Conoco Inc., Ponca City, Okla.

Filed Oct. 9, 1984, Ser. No. 658,720

Int. Cl.[4] E21B *43/00;* F04F *5/02*

U.S. Cl. 166—310 11 Claims

1. In a method of producing hydrocarbon liquid having an A.P.I. gravity of less than about 15 degrees from a hydrocarbon-bearing formation in which the hydrocarbon liquid is propelled to the surface by a jet pump utilizing a jetted power fluid which entrains the hydrocarbon liquid in a jet stream, the improvement which comprises providing a power fluid comprising a water and surfactant solution and emulsifying the hydrocarbon liquid in the solution within the jet stream



whereby heavy, viscous hydrocarbon liquid can be economically produced.

4,605,070

REDUNDANT SAFETY VALVE SYSTEM AND METHOD

Arthur J. Morris, Magnolia, Tex., assignor to Camco, Incorporated, Houston, Tex.

Filed Apr. 1, 1985, Ser. No. 718,628

Int. Cl.[4] E21B *19/16, 34/10, 34/14*

U.S. Cl. 166—380 4 Claims

1. The method of installing a redundant safety valve system in a well comprising,

threadably connecting a tubing retrievable safety valve in a first well production tubing in a well casing in which the safety valve has a bore of substantially the same size as the bore of the first well tubing,

installing the first well tubing and safety valve in the well,

threadably connecting a landing nipple to a second well tubing in which the landing nipple has a bore of substantially the same size as the bore of the second well tubing, said second well tubing having a bore greater than the bore of the first well tubing, and said landing nipple having means in the bore of the landing nipple for receiving a wireline retrievable safety valve and including hydraulic control means extending between the landing nipple and the casing for controlling a wireline retrievable safety valve,

connecting the second well tubing and landing nipple to and above the first well tubing, and

installing the second well tubing in the well casing extending to the well surface.

3. A redundant safety valve system for a well comprising,

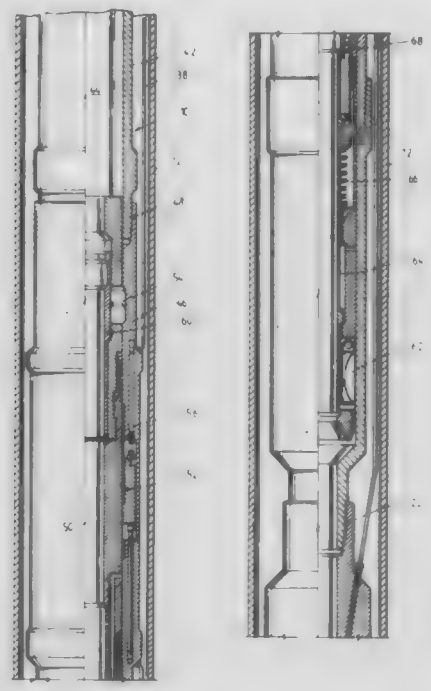
a first well production tubing have a bore therethrough positioned in a well casing below the well surface,

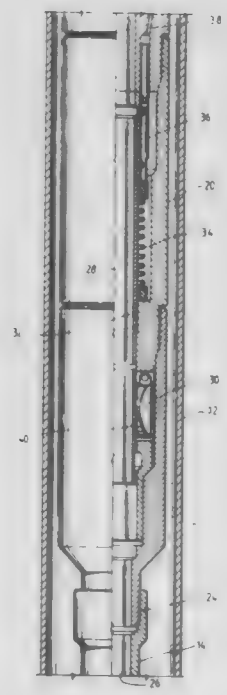
a tubing retrievable safety valve threadably connected in the first well tubing and having a bore of substantially the same size as the bore of the first well tubing, said tubing retrievable safety valve including hydraulic control means extending from said valve to the well surface between the valve and said casing for controlling said valve and including means for locking the valve in the open position,

a second well production tubing having a bore larger than the bore of the first well tubing, said second well tubing connected to the first well tubing above the first well tubing and extending to the well surface through the casing,

a landing nipple threadably positioned in the second well

tubing, said nipple having substantially the same size bore as the bore of the second well tubing, said landing nipple including means in its bore for receiving a wireline re-





trievable safety valve and including hydraulic control means extending between the landing nipple and the casing for controlling a wireline retrievable safety valve.

4,605,071

THERAPEUTIC HORSESHOE

David P. McKibben, Gilroy, Calif., assignor to Sir Pegasus, Inc., San Jose, Calif.

Continuation-in-part of Ser. No. 619,616, Jun. 11, 1984, abandoned. This application Dec. 6, 1984, Ser. No. 679,202

Int. Cl.[4] A01L *5/00*

U.S. Cl. 168—12 **6 Claims**

1. A plastic horseshoe comprising:

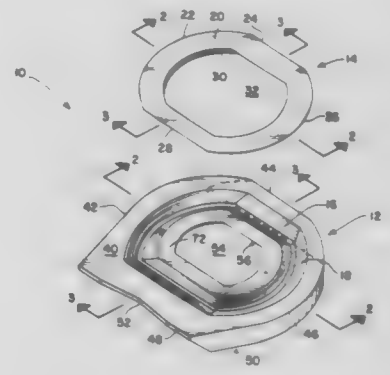
(1) a plastic frame having an upper surface for engaging a horse's hoof, a lower ground engaging surface, a front toe portion, left and right side portions and a rear heel portion, such portions being interconnected and surrounding a central opening extending through the frame from its upper surface to its lower surface,

(2) said frame having an outer rim portion adapted to be nailed to the wall of a horse's hoof and having an inner portion surrounding said central opening, said inner portion having a bottom surface which is elevated above the bottom surface of the rim portion, said inner portion being formed with a recess open at the top, closed at the bottom and surrounding said central opening, and

(3) a plastic insert within and filling said recess and surrounding substantially completely the central opening

(4) said frame being of hard but flexible plastic material

(5) said insert being of more resilient, deformable plastic



providing a cushion upon impact of a horse's hoof with the ground and which will return to its original shape upon release of pressure,

(6) whereby upon impact with the ground the inner portion of the frame will initially clear the ground, will then flex toward the ground and will return to its initial position when the hoof is raised from the ground, and the insert will cushion shock to the hoof and will provide a pumping action.

4,605,072

SOIL CULTIVATING APPARATUS

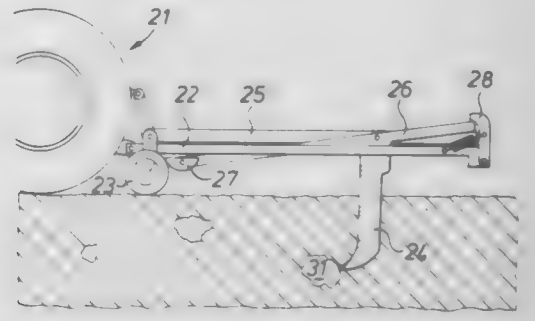
Fred A. Jones, Redhouse Farm, Spalford Lane, North Scarle, Lincoln, England, assignor to Fred A. Jones and Jean Jones, both of North Scarle, England

Filed Apr. 18, 1983, Ser. No. 486,194

Claims priority, application United Kingdom, Apr. 20, 1982, 8211396

Int. Cl.[4] A01B *61/00*

U.S. Cl. 172—236 **4 Claims**



1. Soil cultivating apparatus comprising:

(a) a main support member securable to a towing vehicle and extending rearwardly therefrom;

(b) an elongated secondary member pivoted to said main support member at the front ends of the main support member and the secondary member relative to the direction of travel of the apparatus in use so as to pivot in a vertical plane;

(c) a soil cultivating tool pivotally suspended from a rearward part of said secondary member;

(d) a rigid control arm extending from said tool and having a forward end carrying a ground-engaging member whereby upon pivotal movement of said tool upon encountering an obstacle the ground-engaging member will move downwardly to engage the ground and accelerate the pivoting of the tool rearwardly and upwardly out of the soil and pivot said secondary member upwardly; and

(e) a force sensitive release means carried at least in part by

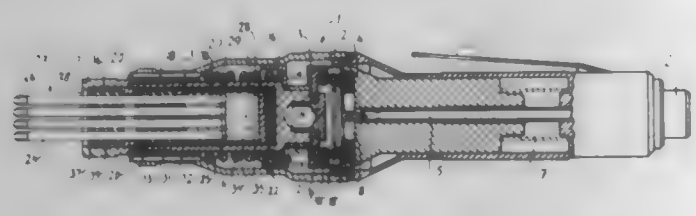
said main support member and holding said control arm against movement relative to said secondary member and to said main support member until the force on said tool tending to pivot said control arm relative to said secondary member exceeds a predetermined value, and for releasing said control arm in response to said force exceeding a predetermined value.

4,605,073

DEVICE IN NEEDLE HAMMERS

Göran A. Nilsson, Box 61, Sandarne, Sweden (S-820 22); Kjell E. E. Edström, Åsbäcksgatan 43, Söderhamn, Sweden (S-826 00), and Henry W. Wiklund, Bäckvägen 1, Arbrå, Sweden (S-820 10)

Filed Jun. 27, 1984, Ser. No. 624,928
Claims priority, application Sweden, Jul. 1, 1983, 8303760
Int. Cl.[4] B21C *43/00*
U.S. Cl. 173—51 **4 Claims**



1. A needle hammer device including a working member (**3**), at least one holder (**31,39**) formed from a flexible material and mounted to said working member, said holder defining a plurality of openings therein for receiving a neelde in each of said openings and retaining said needles in said openings by frictional engagement with said holder, one end of each of said needles extending from said holder in a forward direction, said working member being reciprocatingly movable together with said holder and said needles in the axial direction of said needles, said needles being retained in said holder to permit individual axial movement of each of said needles relative to said holder, within predetermined limits, by overcoming the resistance of the frictional engagement by said holder, the other end of each of said needles extending from said holder in a rearward direction, a sealed chamber for holding a fluid medium defined in said working member behind said holder such that said other ends of said needles extend into said chamber, wherein axial movement of any of said needles into said chamber causes fluid medium in said chamber to exert a force on said other ends of each of said needles.

4,605,074

METHOD AND APPARATUS FOR CONTROLLING BOREHOLE PRESSURE IN PERFORATING WELLS

Virgil H. Barfield, 3410 Mount Vernon, Houston, Tex. 77006

Continuation-in-part of Ser. No. 459,771, Jan. 21, 1983, abandoned. This application Oct. 15, 1984, Ser. No. 661,207
Int. Cl.[4] E21B *43/11, 47/66*
U.S. Cl. 175—4.52 **57 Claims**

1. A wireline operated well perforating apparatus adapted to be positioned below a packer mounted in a wellbore comprising:

(a) a running tool adapted to be supported on a wireline;

(b) a pressurized surge tank operably connected to said running tool;

(c) means for supporting a perforating gun on said surge tank and means for selectively opening communication between said surge tank and said wellbore to reduce pressure in said wellbore adjacent said surge tank; and

(d) frangible valve means in the upper end of said surge tank to close communication between pressure from well fluid above said surge tank and pressure in said wellbore below said surge tank.

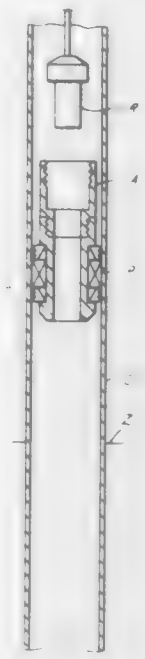
31. The method of completing a well comprising:

setting a packer in the well bore at a desired distance above the zone to be perforated,

running a retrievable running tool having a pressurized surge tank and a perforating gun connected thereto and adapted to extend below said packer until the running tool reaches said packer and said perforating gun is below said packer,

actuating said perforating gun to perforate the well bore below said packer,

disconnecting the running tool from the surge tank and perforating gun,



retrieving said retrievable running tool,

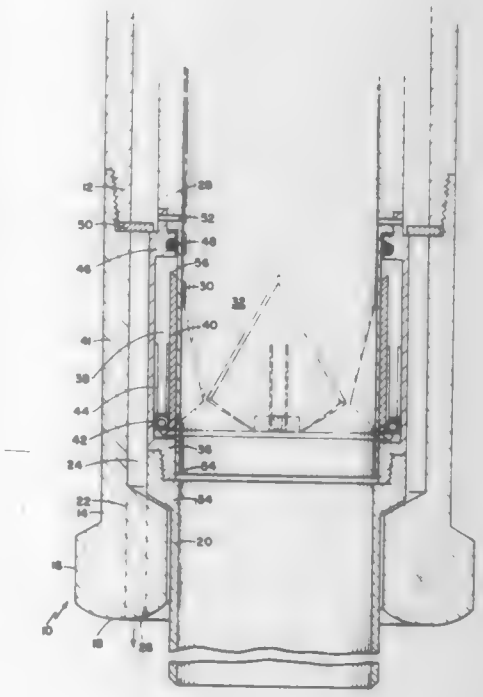
running a string of tubing and landing the lower end of same in the upper end of said surge tank and rupturing a frangible disk in the upper end of said surge tank to open communication therethrough to receive fluid from below said packer.

4,605,075

SHROUDED CORE CATCHER

Steven R. Radford, West Jordan, and J. Stanley Davis, Sandy, both of Utah, assignors to Norton Christensen, Inc., Salt Lake City, Utah

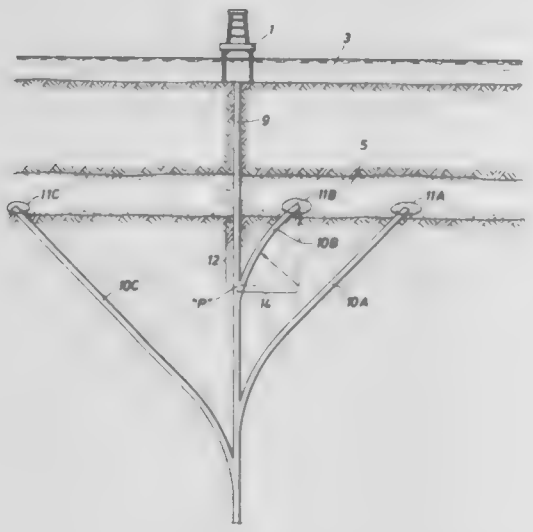
Filed Aug. 31, 1984, Ser. No. 646,576
Int. Cl.[4] E21B *25/00, 49/02*
U.S. Cl. 175—58 **7 Claims**



1. An improvement in the coring tool for cutting a core and including an inner tube longitudinally displaceable within said coring tool comprising:

a smooth inner cylindrical sleeve for receiving said core;
a core catcher concentrically disposed outside said sleeve and concealed from said core; and
means coupled to said sleeve and core catcher for temporarily longitudinally connecting said core catcher and said sleeve in a first configuration, and for selectively disconnecting said core catcher and said sleeve in a second configuration to allow relative longitudinal displacement of said sleeve with respect to said core catcher to unconceal said core catcher with respect to said core;
wherein said means for connecting and selectively disconnecting said core catcher and sleeve is concentrically disposed outside of said core catcher;
wherein said means for connecting and selectively disconnecting said core catcher and sleeve longitudinally restrains said core catcher within said coring tool, and then selectively disconnects said sleeve from said core catcher, thereby permitting said core catcher to become unconcealed,
whereby interfering contact between said core catcher and said core is substantially eliminated.

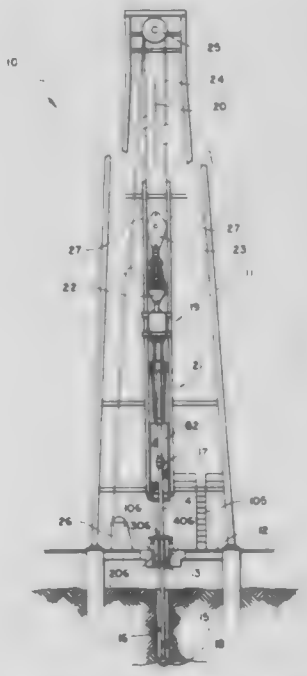
4,605,076
METHOD FOR FORMING BOREHOLES
Milton E. Goodhart, Houston, Tex., assignor to Hydril Company, Los Angeles, Calif.
Filed Aug. 3, 1984, Ser. No. 637,396
Int. Cl.[4] E21B *7/04*
U.S. Cl. 175—61 **7 Claims**



1. A method of boring a well hole into a target zone in a formation comprising the steps of
boring an essentially vertical hole to at least a predetermined depth below the target zone in the formation, said vertical hole being laterally displaced from said target zone,
lowering via said vertical hole drilling apparatus including a mud pressure driven motor and drilling bit to said predetermined depth,
applying pressurized drilling mud from said vertical hole to said mud motor, and
mechanically boring with said mud motor and said drilling bit initially in an upward direction from the verticle hole a deviated hole into the target zone.

4,605,077
TOP DRIVE DRILLING SYSTEMS
George I. Boyadjieff, Anaheim, Calif., assignor to Varco International, Inc., Orange, Calif.
Filed Dec. 4, 1984, Ser. No. 677,988
Int. Cl.[4] E21B *19/16*
U.S. Cl. 175—85 **12 Claims**

1. Well apparatus comprising:
a back-up tool for holding the upper end of a string of pipe against rotation as an additional section of pipe is connected thereto; and
powered means for moving said tool to engage said upper end of the string;
said powered means being operable through a predetermined range of movement, and acting to move said back-up tool vertically during an inital portion of said range of movement and then move the tool between an active position at the axis of the well and a retracted position offset to a side of said axis at the end of said range of movement.
6. Well drilling apparatus, comprising;
a rig having a rig floor;
a top drive unit including a rotary drive element detachably connectible to an upper threaded end of a drill string and a motor for driving said element to turn the string and drill a well, said unit being movable downwardly with the string to a position in which said upper end of the string is in a bottom position thereof near the rig floor;
means for supporting said string independently of the top drive unit so that said element of the top drive unit can be detached from the string and an additional section of pipe



can be connected between the top drive unit and said upper threaded end of the string and be rotated into threaded engagement with the upper threaded end of the string;
a back-up tool for engaging said upper end of the drill string and preventing rotation thereof as said pipe section is connected thereto;
means mounting said back-up tool for movement between an inactive position offset to a side of the drill string and an active position of gripping engagement with said upper threaded end of the string, with said upper threaded end raised above said bottom position near the rig floor and to a higher level at which said upper threaded end of the string is essentially inaccessible from the rig floor; and
said mounting means being constructed to mount said back-up tool for swinging movement to said inactive position and for vertical shifting movement; and
a common power actuated unit for effecting both said swinging movement and said vertical shifting movement of the tool.

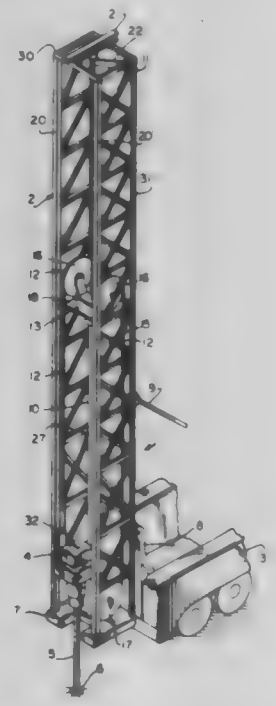
4,605,078
CARRIAGE FEED SYSTEM
Ronald F. Bukovitz, Richardson, Tex., and Walter C. Vliet, Landing, N.J., assignors to Ingersoll-Rand Company, Woodcliff Lake, N.J.
Filed Jun. 6, 1984, Ser. No. 617,922
Int. Cl.[4] E21B *19/08*
U.S. Cl. 175—162 **7 Claims**

1. In an earth and rock drilling machine having a tower, a drilling head, a first guide means for guiding said drilling head

for translation along a preferred path with respect to said tower and drill means attached to said drilling head for drilling holes, feed means for effecting said translation of said drilling head comprising:

(a) a double rodded hydraulic cylinder having two cylinder rods, said cylinder extending substantially the length of the tower and having a cylinder barrel which traverses said cylinder rods from a position near the bottom of the tower to a position near the top of the tower;

(b) an upper wheel and a lower wheel for rotation being attached to said cylinder barrel, each wheel having a second guide means formed in the periphery thereof for



engaging and guiding a flexible segment, said upper and lower wheels arranged so that their respective second guide means are coplanar;

(c) at least one flexible segment joined to form the continuous unitary loop disposed about a portion of the periphery of said upper and lower wheels and in guiding engagement with said second guide means thereof;

(d) an anchor means located approximately midway on said tower for rendering a first portion of said at least one flexible segment stationary and immovable with respect to said tower; and

(e) coupling means for attaching a second portion of said at least one flexible segment to said drilling head.

4,605,079

DRILL BIT

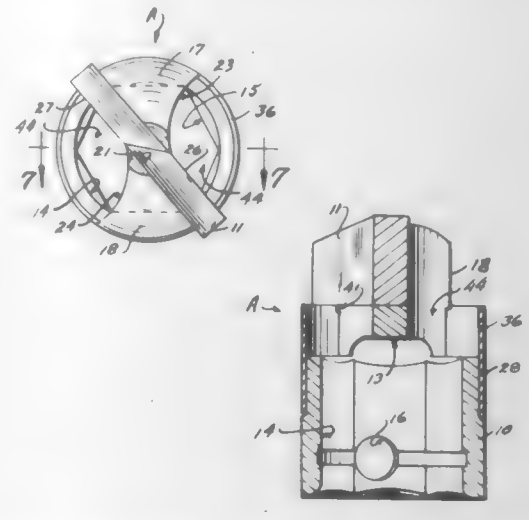
Donald L. Leibee, and Owen K. Crist, both of Bedford, Pa., assignors to The Marmon Group, Chicago, Ill.

Filed Jun. 20, 1985, Ser. No. 746,804

Int. Cl.[4] E21B *10/36*

U.S. Cl. 175—410 **21 Claims**

1. A drill bit for use in combination with a through-the-steel drill stem, said drill bit including a drill tip; an elongated body portion having a lower portion for interconnection of the drill bit to said drill stem, a head portion for receiving said drill tip, and a bore through which cuttings may be removed to said drill stem; and sleeve means attached about said body portion intermediate the lower portion and the head portion thereof, said head portion including a web extending transversely across said bore and having opposed axially extending faces contoured from the periphery of said body portion toward the axis thereof and leading from said drill tip to said bore, the upper reaches of said axially extending faces opening to the cutting edges of said drill tip and the lower reaches thereof opening to said bore, said sleeve means extending from said body portion and in opposed spaced apart axial relation to and above the lower reaches of said axially extending faces of said web whereby said axially extending faces of said web and the inner surface of said sleeve means define drill cut receiving



ports opening upwardly to said drill tip and opening downwardly to said bore.

4,605,080

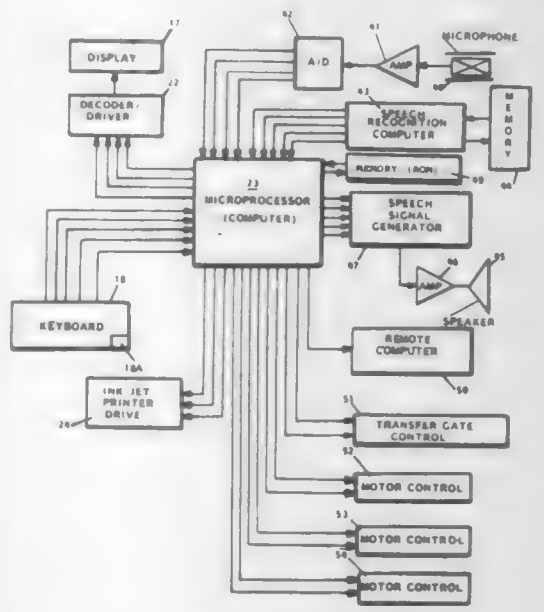
SPEECH RECOGNITION CONTROL SYSTEM AND METHOD

Jerome H. Lemelson, 48 Parkside Dr., Princeton, N.J. 08540

Continuation-in-part of Ser. No. 401,116, Jul. 23, 1982, Pat. No. 4,544,929, which is a continuation of Ser. No. 167,673, Jul. 11, 1980, Pat. No. 4,342,038. This application Mar. 25, 1985, Ser. No. 715,624

Int. Cl.[4] G01G *23/38, 23/22, 19/00;* G01D *9/00*

U.S. Cl. 177—4 **10 Claims**



1. Weighing apparatus comprising:

first means for sensing the weight of an article and generating an analog signal indicative of the weight sensed,

second means for receiving, processing and analyzing said analog signal and generating first digital signals indicative of the weight sensed by said first means,

third means including electrically operated indicating means for indicating a variable associated with the article sensed by said first means,

a microphone,

first electronic computing means connected to receive speech signals output by said microphone, process and analyze same and generate first control signals,

second electronic computing means operable to receive said first digital signals and said first control signals and to perfrom a computing function with respect to the information defined by said signals and to generate second control signals defining information relating to computations involving said first digital weight defining signals

and said first control signals generated by said first electronic computing means, and

means for applying said second control signals to selectively control the operation of said electrically operated indicating means to cause said indicating means to indicate the information defined by said second control signals.

4,605,081

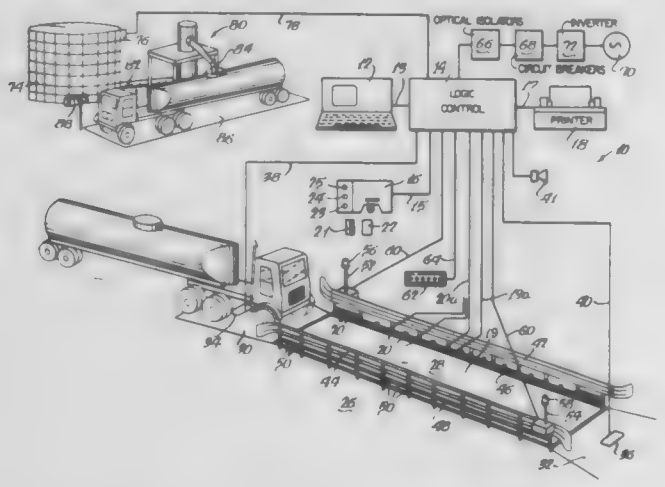
AUTOMATIC TRUCK MEASURING SYSTEM AND PROCESS

Paul K. Helmly, Jr., Richmond Hill; Fred D. Forster, Jr., Savannah, both of Ga.; Patrick E. Gower; Steven D. Holdaway, both of Houston, Tex.; Stanley W. Tutman, Naperville, Ill.; Timothy J. Beissel, Whiting, Ind.; Robert J. Needham, Chicago, Ill., and Arthur J. Lasky, Tulsa, Okla., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed Sep. 28, 1984, Ser. No. 656,034

Int. Cl.[4] G01G *19/00, 19/22, 19/02*

U.S. Cl. 177—25 **12 Claims**



1. An automatic truck measuring system, comprising:

a truck-supporting platform having elongated sides, at least one inclined entrance ramp for access of a truck and a scale for determining the actual gross weight of said truck, said ramp containing a vehicle detector loop;

an identification badge input reader and scanner for reading a driver identification card of the truck driver and a product identification card selected by said truck driver to indicate the product the driver wants loaded in his truck;

optical sensing and detection means comprising photoelectric cells mounted to said sides of said platform at a sufficient height to sense and detect the position and number of axles or outside tires of said truck and the wheelbase length of said truck between its front and rear axles;

a central processing unit comprising a computer operatively connected to said scale, said identification badge input reader and scanner, and said optical sensing and detection means for determining the maximum allowable loaded weight of said truck under state law and regulations based upon said number of axles or outside tires of said truck and its wheelbase length and for comparing said maximum allowable loaded weight with said actual gross weight of said truck; and

printing means operatively connected to said central processing unit for printing and dispensing a bill of lading if said actual gross weight is less than said maximum allowable loaded weight, said bill of lading containing and indicating said actual gross weight, the name of said truck driver, the type of product loaded into said truck, the specific gravity of said product, and said maximum allowable loaded weight.

4,605,082

COMBINED WEIGHING APPARATUS

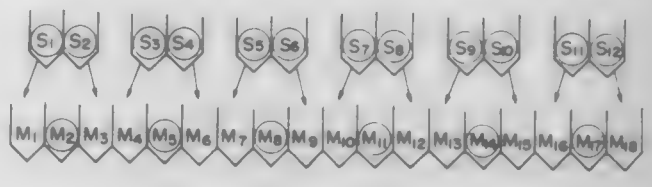
Yoshikazu Matsuura, Tokyo, Japan, assignor to Teraoka Seiko Co., Ltd., Tokyo, Japan

Filed Aug. 23, 1984, Ser. No. 643,898

Claims priority, application Japan, Aug. 31, 1983, 58-159478; Aug. 31, 1983, 58-159479

Int. Cl.[4] G01G *19/22, 19/52*

U.S. Cl. 177—25 **10 Claims**



1. A combined weighing apparatus comprising 6 sets of two weighing hoppers (S1, S2) . . . (S11, S12) for alternately weighing products fed thereto, and sets of three memory hoppers (M1, M2, M3) . . . (M16, M17, M18), each set of weighing hoppers corresponding to a respective set of three memory hoppers, one memory hopper of each set being supplied with weighed products from either of said weighing hoppers of a respective set, for pooling the products, and wherein combinations of weights are formed from a group of memory hoppers consisting of one hopper per each set, a combination which is within a permissible limit and is equal or nearest to a predetermined weight value is selected from said combinations of weights and selected memory hoppers used in the selected combination are fed immediately after being emptied from corresponding odd- or even-numbered weighing hoppers.

4,605,083

METHOD AND APPARATUS FOR WEIGHING MATERIAL

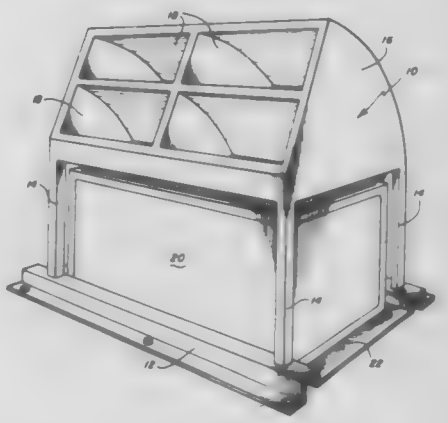
R. Langdon Wales, Lincoln, and H. W. Crowley, Newton, both of Mass., assignors to Automation, Inc., Needham, Mass.

Filed Dec. 13, 1982, Ser. No. 449,390

The portion of the term of this patent subsequent to Oct. 30, 2001, has been disclaimed.

Int. Cl.[4] G01G *13/02, 19/00*

U.S. Cl. 177—122 **16 Claims**



1. Apparatus for weighing material from multiple streams with a common scale, comprising;

a plurality of separate means for the temporary storage of a quantity of said material that is to be weighed,

common weighing means,

means for sequentially releasing said material from said respective separate means for storing to said common weighing means,

means responsive to said weighing means for sensing increments in weight for each respective release of material,

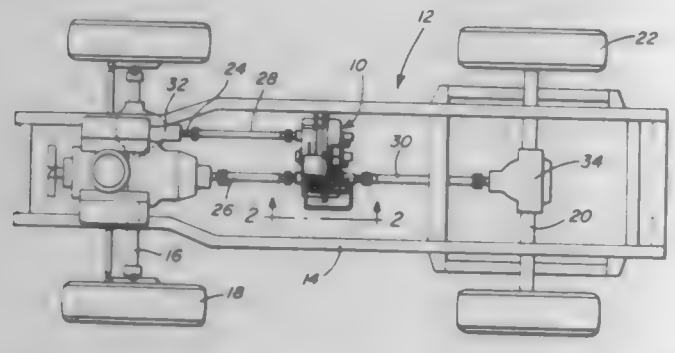
and means for totaling the respectively sensed weight increments to provide a plurality of separate counts corresponding to weight and associated with each respective means for storage.

4,605,084

CONSTANT MESH GEAR TRANSMISSION

Hendrick W. Haynes, Seattle, Wash., and Harry W. Mayer, 7414 218th St., SW., Edmonds, Wash. 98020, assignors to Harry W. Mayer, Edmonds, Wash.

Filed Oct. 20, 1983, Ser. No. 545,051
Int. Cl.[4] F16H *37/06*
U.S. Cl. 180—70.1 18 Claims



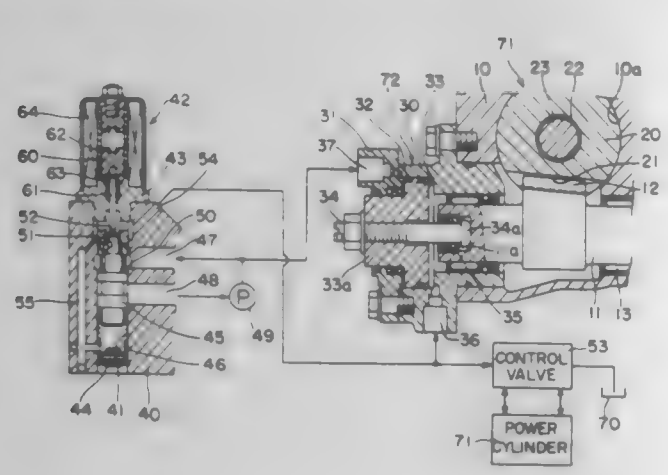
1. In combination with a vehicle having at least two drive axles, and a transfer gear assembly through which the vehicle is propelled, including a transfer gear case, a pair of driven shafts rotatably mounted in non-aligned spaced relation in the gear case, means drivingly connecting the driven shafts to the drive axles, respectively, an input shaft and means rotatably mounting said input shaft in the gear case, the improvement comprising a counter shaft rotatably mounted in the gear case in spaced relation to said driven shafts and the input shaft, countershaft gear means drivingly connecting the input shaft to the counter shaft, constant mesh gear means drivingly connected to one of the driven shafts, controllable clutch means for respectively coupling the constant mesh gear means to the input shaft, the counter shaft and the other of the driven shafts, and selective control means operatively connected to said clutch means for transmitting torque to one or both of the drive axles at two different drive ratios without interrupting propulsion of the vehicle.

4,605,085

POWER STEERING

Susumu Honaga, Aichi, and Mikio Suzuki, Hekinan, both of Japan, assignors to Toyoda Koki Kabushiki Kaisha, Kariya, Japan

Filed Apr. 19, 1985, Ser. No. 724,920
Claims priority, application Japan, Apr. 23, 1984, 59-82732
Int. Cl.[4] B62D *5/06*
U.S. Cl. 180—143 4 Claims



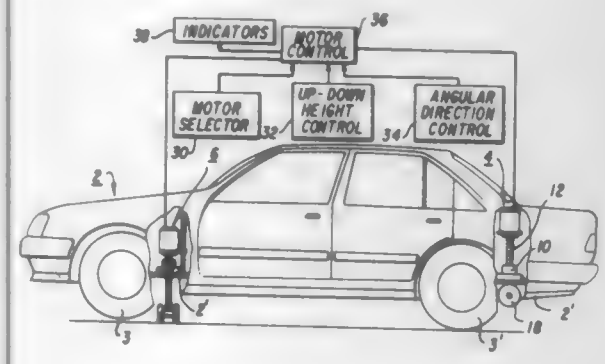
1. A power steering, comprising:
a pump driven from an engine;
a flow control valve for regularizing the discharge rate of said pump varying in response to the rotational speed of an engine;
a power cylinder;
a distribution control valve for distributing a regularized fluid pressure from said flow control valve to opposite fluid chambers of said power cylinder;
a sector gear meshed with a rack formed on the piston of said power cylinder and rotatable by operation of said power cylinder;
a sector shaft having the sector gear formed integrally therewith and displaceable in the axial direction for adjusting the preload on the meshed rack and sector gear;
a preload control cylinder for axially displacing said sector shaft, said preload control cylinder including a piston connected to said sector shaft and having different pressure receiving areas on the axially opposite ends thereof;
a first fluid passage for conducting part of the pressurized fluid, which is sent from said pump to said flow control valve, to one of fluid chambers defined in said preload control cylinder by said piston; and
a second fluid passage for conducting part of the pressurized fluid, which is fed from said flow control valve to said distribution control valve, to the other fluid chamber in said preload control cylinder.

4,605,086

LIFTING AND MANEUVERING DEVICE FOR MOTOR VEHICLES

Itshak Marom, 21 Horev Street, Haifa, Israel

Filed Oct. 26, 1984, Ser. No. 664,900
Claims priority, application Israel, Nov. 3, 1983, 70130
Int. Cl.[4] B60S *9/215*
U.S. Cl. 180—202 20 Claims



1. A lifting and maneuvering device for a motor vehicle having a motor vehicle frame, a vehicle motor for propelling the motor vehicle, a differential transmission, and two sets of vehicle wheels each mounted on an axle for supporting the motor vehicle on a vehicle supporting surface, comprising: a secondary wheel assembly mounted to the motor vehcile frame in proximity to one of the axles of the motor vehicle, the secondary wheel assembly including a maneuvering wheel and vertical drive means for moving the second wheel assembly back and forth between an upper retracted position and a lower operative position, in the operative position the maneuvering wheel comes in contact with the vehicle supporting surface and lifts one set of vehicle sheels off the vehicle support surface, the secondary wheel assembly further including a threaded nut fixed to the motor vehicle frame, a vertical shaft threadedly recieved on the nut and capable of support of the motor vehicle, the vertical drive means comprising a secondary motor having a stator and a rotor, the rotor coupled to the upper end of the shaft for rotating the shaft while the secondary motor is supported by the shaft for vertical movement thereon, the shaft being moved in a vertical direction by the secondary motor simultaneously with the vertical movement of the secondary motor, the secondary wheel assembly further including wheel means which include the maneuvering wheel and secondary axle means, the maneuvering wheel rotatably attached to the secondary axle means as part of the wheel means and having an axis of rotation generally prependicular to the shaft, the wheel means being fixedly mounted on the lower end of the shaft whereby rotational motion of the shaft causes the wheel means to rotate simultaneously with the shaft

thereby rotating the axis of the maneuvering wheel with the rotational motion of the shaft, the secondary wheel assembly capable of reciporcal movement between the upper retracted position and the lower operative position upon the energization of the secondary motor, wherein when the secondary wheel assembly is in the operative position operation of the vehicle motor causes the motor vehicle to rotate.

4,605,087

ALL-WHEEL DRIVE SYSTEM FOR VEHICLES

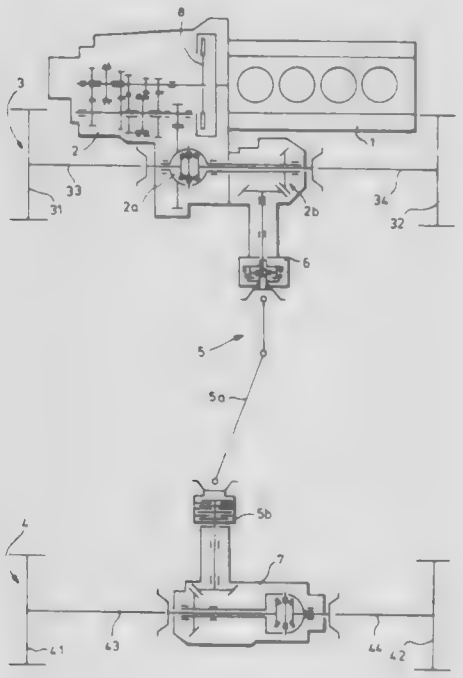
Karl Ashauer, Wolfsburg; Bernd Richter, Bokensdorf; Manfred Kalversberg, and Rudiger Schmidt, both of Wolfsburg, all of Fed. Rep. of Germany, assignors to Volkswagenwerk Aktiengesellschaft, Wolfsburg, Fed. Rep. of Germany

Filed May 9, 1984, Ser. No. 608,471

Claims priority, application Fed. Rep. of Germany, May 11, 1983, 3317247

Int. Cl.[4] B60K *17/344*

U.S. Cl. 180—248 **8 Claims**



1. In an all-wheel drive system for a vehicle comprising a front axle with front wheels and a rear axle with rear wheels, the front wheels being continuously driven by a conventional live axle drive comprising a positive differential gear and the rear wheels being automatically driven with said front wheels by a drive train having viscous fluid coupling means therein, the improvement comprising at least one coupling means in said drive train responsive to the direction of a torque applied thereto to automatically interrupt said drive train so as to prevent braking effects on the front wheels from being transmitted to the rear wheels by way of the drive train.

4,605,088

MULTIDIRECTIONAL SOUND ABSORBER

Anthony R. Sickels, Dayton, Ohio, assignor to Soundfold, Inc., Dayton, Ohio

Filed Nov. 13, 1984, Ser. No. 670,242

Int. Cl.[4] E04B *1/99*

U.S. Cl. 181—30 **2 Claims**

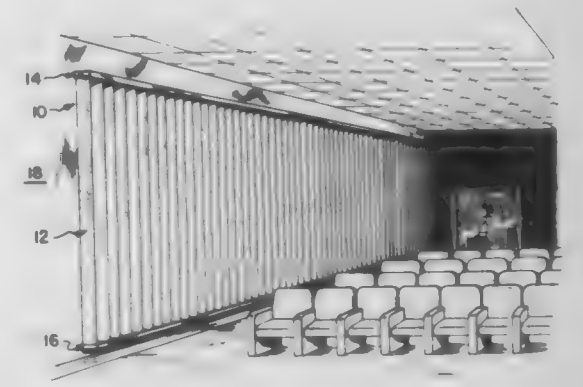
1. For use on an exterior surface of a wall, a multi-directional sound absorber comprising:

a substantially flat base including a continuous, imperforate sheet of fiber glass compressed to a relatively low density and having inner and outer surfaces;

an outer layer including a continuous, imperforate sheet of fiber glass compressed to a relatively high density and forming a plurality of channels having inner and outer faces and attached to said base such that said channels form a plurality of hollow chambers therewith;

a sheet of acoustically transparent, relatively abrasion-resistant material attached to said outer faces of said channels;

track means for enclosing upper and lower ends of said base and channels and including means for mounting said track means on an exterior of a wall, said track means having upper and lower track members, each of said track members including a one-piece blank having a floor with an end surface beveled to conform to a slope of said outer face of an end one of said channels, an elongate rear wall



attached to said floor at a first fold line, an elongate front wall attached to said floor opposite said front wall at a second fold line, a side wall attached to said front wall at a third fold line, a first, substantially triangularly-shaped tab attached to said side wall at a fourth fold line, a tap attached to an end of said side wall opposite said front wall at a fifth fold line, and first and second elongate flaps attached to said front and side walls opposite said floor and said triangularly-shaped tab at sixth and seventh fold lines, respectively.

4,605,089

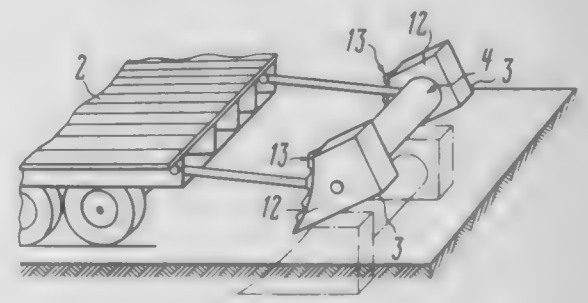
METHOD OF AND APPARATUS FOR GENERATING SHEAR SEISMIC WAVES

Jury B. Kravchenko, Kiev; Jury A. Baru; Saul G. Osyatinsky, both of Kharkov; Jury V. Timoshin, Kiev; Anatoly I. Makogon, Kharkov; Igor P. Lobas, Kiev; Kim S. Gasilovsky, Lvov; Inna Z. Livshits, and Alexei N. Besedin, both of Kharkov, all of U.S.S.R., assignors to Spetsialnoe Proektno-Konstruktorskoe I Tekhnologicheskoe Bjuro Po Pogruzhnomu Elektrooborudovaniju Dlya Burenia Skvazhin I Dobychi Nefti VNPO "Potentsial" , Kharkov, U.S.S.R.

Filed Jun. 3, 1983, Ser. No. 500,920

Int. Cl.[4] G01V *1/09*

U.S. Cl. 181—114 **12 Claims**



1. A method of generating shear seismic waves in the ground by a mobile seismic energy source, comprising a target member penetrating the ground, including the steps of:

utilizing as the target member a structure defined by a concave frontal surface and a flat lower surface both forming parts of a wedge with a cutting edge and symmetrically divergent from the cutting edge in the form of essentially flat side surfaces inclined to each other at an acute angle;

bringing said target member in contact with the ground;

moving said target member along the ground profile by a tractive force of a land vehicle;

forcing said target member into the ground to a preset depth by using a component of said tractive force of the land vehicle and dependent on the specified shape of said target member, simultaneously with said movement of said target member along the ground profile during which the net force acting on said target member is directed at an angle less than 90° to the direction of movement of the land vehicle; and

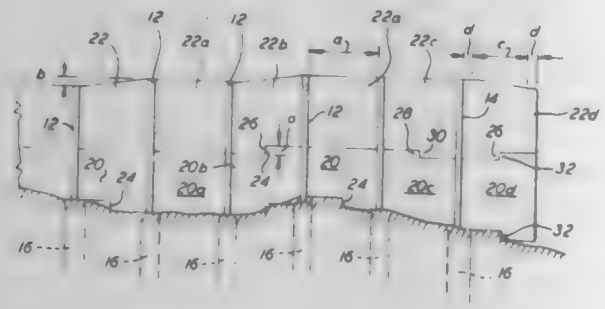
generating a force in said target member by transmitting thereto mechanical impulses in a plane generally parallel to the ground surface and essentially perpendicular to the direction of movement of said target member.

4,605,090

CONCRETE NOISE BARRIER

Nicholas W. Melfi, Manlius, N.Y., assignor to Concrete Pipe and Products Corp., East Syracuse, N.Y.

Filed Oct. 24, 1985, Ser. No. 791,054
Int. Cl.[4] E04H *17/00*
U.S. Cl. 181—210 **10 Claims**



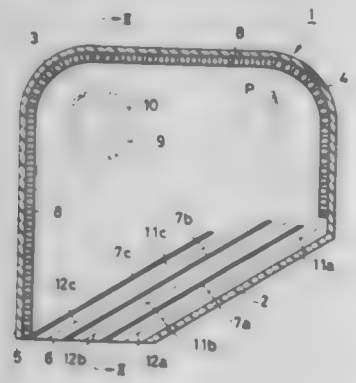
1. A concrete post-and-panel noise barrier comprising a plurality of flat reinforced concrete panels each having a pair of parallel vertical side edges defining a width of the panel, a top edge, a bottom edge, and a predetermined thickness; and a plurality of reinforced concrete columns each having a pair of generally oppositely disposed longitudinal recesses each slightly wider than the thickness of said panels, with each said panel being mounted in cooperating longitudinal recesses in successive ones of said columns; and wherein at least certain ones of said panels have a step formed in one of said top and bottom edges with said one edge being generally horizontal and said step defining an offset such that one portion of said one edge adjacent said step is lower than the abutting portion of said one edge.

4,605,091

SOUND INSULATING APPARATUS

Kazuyoshi Iida; Keiichiro Mizuno, both of Yokohama; Michiyuki Yamaguchi, Fuchu, and Kazuo Kondo, Yokohama, all of Japan, assignors to Bridgestone Corporation, Tokyo, Japan

Filed Jun. 7, 1985, Ser. No. 742,508
Claims priority, application Japan, Jun. 21, 1984, 59-126506
Int. Cl.[4] E04F *17/04*
U.S. Cl. 181—224 **7 Claims**



1. A sound insulating apparatus for installation in a communicating means interconnecting a first space and a second space otherwise separated from one another by partition means, for reducing sound propagation through said communicating means between said first and second spaces while allowing air and gas exchange therebetween, comprising:

a closed hollow container means having an outer wall for enclosing an interior thereof, said outer having an interior surface defining said interior therewithin;

a first opening in said container means for communicating said interior thereof with said first space;

sound converging means provided at said first opening in said container means for converging sound waves entering said first opening from said first space towards a predetermined convergence point within said interior of said container means;

a sound absorbing member attached to said interior surface at least at said predetermined convergence point for absorbing said converged sound waves; and

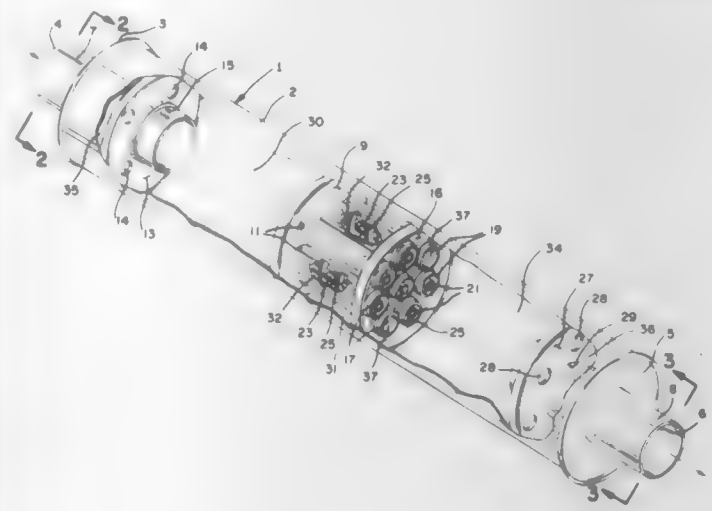
a second opening in said container means for communicating said interior thereof with said second space, said second opening being positioned away from said predetermined convergence point.

4,605,092

LARGE, HIGH R.P.M. DIESEL ENGINE EXHAUST MUFFLER

Theodore R. Harris, 14 El Patio, Orinda, Calif. 94563, and Richard T. Harris, 3127 Stanley Blvd., Lafayette, Calif. 94549

Filed Jan. 18, 1985, Ser. No. 693,005
The portion of the term of this patent subsequent to Dec. 4, 2001, has been disclaimed.
Int. Cl.[4] F01N *1/12*
U.S. Cl. 181—280 **10 Claims**



1. An internal combustion engine muffler comprising:

a. an elongated housing having a curvilinear side wall, an inlet end wall formed with a first inlet opening, and an outlet end wall formed with a first outlet opening;

b. an inlet tube connected to said inlet end wall and communicating with said first inlet opening in said inlet end wall;

c. an outlet tube communicating with said first outlet opening in said outlet end wall;

d. a first internal reflection wall axially spaced downstream from said inlet end wall forming a close fit with said curvilinear side wall and formed with a pluralty of large tube openings;

e. a second internal reflection wall spaced between said inlet end wall and said first internal reflection wall forming a close fit with said curvilinear side wall and formed with a first edge echo orifice opening therethrough and a second inlet tube opening;

f. said inlet tube communicates with said second inlet tube opening in said second internal reflection wall;

g. a bulkhead wall axially spaced downstream from said first internal reflection wall forming a close fit with said curvilinear side wall and formed with a plurality of large tube openings axially aligned with said large tube openings in said first internal reflection wall;

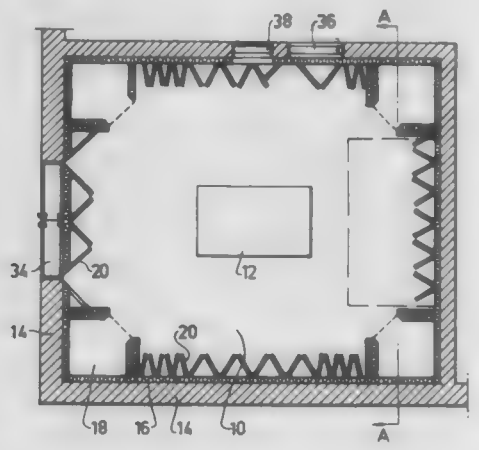
h. a plurality of elongated internal large tube members extending from said first internal reflection wall to said bulkhead wall and communicating with said large tube openings in said first internal reflection wall and said bulkhead;
i. inner small tube members coaxially mounted within less than all of said large tubes forming small open ended pulse chambers;
j. helical members in each of said large tubes having an inner small tube joining each of said inner small tubes and said large tube members;
k. a third internal reflection wall axially spaced downstream from said bulkhead wall forming a close fit with said curvilinear side wall and formed with a second edge echo orifice opening therethrough and a second outlet tube opening formed in alignment with said first outlet opening is said outlet end wall;
l. said outlet tube is in communication with said second outlet tube opening in said third internal reflection wall;
m. a primary expansion chamber formed by said curvilinear side wall, said second internal reflection wall and said first internal reflection wall;
n. elongated swirl and pulse smoothing chambers formed between said small tubes and said internal large tubes and divided by said helical members;
o. a primary interference chamber formed by said curvilinear side wall, said bulkhead wall and said third internal reflection wall;
p. a first acceleration gas expansion chamber formed by said curvilinear side wall, said inlet end wall, and said second internal reflection wall;
q. a second acceleration gas expansion chamber formed by said curvilinear side wall, said third internal reflection wall and said outlet end wall;
r. said plurality of internal large tube members mounted between said first reflection member and said bulkhead member are positioned at substantially the mid-point of said housing; and
s. at least one large open ended pulse chamber formed within one of said large tubes which does not include an inner small tube and helical member.

4,605,093

DEVICE FOR ABSORPTION OF SOUND WAVES

Lennart Karlén, Stockholm, Sweden, assignor to Gullfiber Akustik AB, Billesholm, Sweden

PCT No. PCT/SE84/00365, § 371 Date Jun. 27, 1985, § 102(e) Date Jun. 27, 1985, PCT Pub. No. WO85/01975, PCT Pub. Date May 9, 1985
PCT Filed Oct. 30, 1984, Ser. No. 755,378
Claims priority, application Sweden, Oct. 31, 1983, 8305972
Int. Cl.⁴ E04B *1/82*
U.S. Cl. 181—295 **5 Claims**



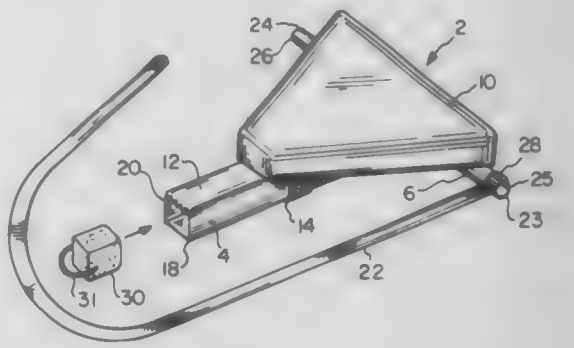
1. A device intended for absorption of sound waves and for use as internal facing, primarily in so-called echo-free rooms, said device comprising a substrate support which consists of mineral wool plates, to which plate-shaped sound absorbents, preferably of mineral wool, are inclined relative to each other in such a way that they have a wave-like cross-section, wherein the angle between two sound absorbents placed with their edges close to each other on the substrate support is so chosen that the sound waves deriving from a measuring object are always reflected at least twice before they leave the device, and wherein the substrate support as well as two adjacent sound absorbents, which are placed on the substrate support with their edges in spaced relationship from each other, define a cavity with a gap between the sound absorbents and/or between sound absorbents and substrate support, which gap is so adapted that cavity resonance is obtained at a predetermined lower range of frequencies.

4,605,094

COMBINATION TREE SEAT AND ANIMAL DRAG

Richard A. Minerd, R.D. #1, Box 223, LeMont Furnace, Pa. 15456

Filed Oct. 30, 1985, Ser. No. 792,849
Int. Cl.⁴ A01M *31/02*; A45F *32/26*
U.S. Cl. 182—20 **11 Claims**



1. A combination tree seat and animal drag device comprising an elongated central support having a first end and a second end and an elongated cross support attached to said first end of said central support and extending approximately transverse thereto to form a substantially T-shaped frame member, a seat member removably attached to a planar surface of said frame member, tree grip means on said second end of said central support, attachment means on said cross support and an elongated strap removably attached at each end thereof to said attachment means on said cross support, whereby said frame member may be attached to a tree by engaging said tree grip means on said central support with the outer surface of the tree and passing said strap around said tree and attaching said strap to said attachment means on said cross support.

4,605,095

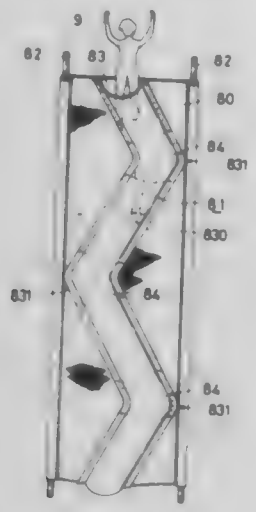
VERTICAL ELONGATED CHUTE

Kenichi Koizumi, Omiya, Japan, assignor to Fujikura Rubber Ltd., Tokyo, Japan

Filed Oct. 30, 1985, Ser. No. 792,819
Claims priority, application Japan, Oct. 31, 1984, 59-229689; Oct. 31, 1984, 59-229690
Int. Cl.⁴ A62B *1/20*
U.S. Cl. 182—48 **16 Claims**

1. In a vertical elongated chute of the type including a vertically extending main body having a high intensity of strength, said main body comprising a base cloth of which both longitudinally extending side edges are jointed to one another to build a tubular zigzag slip down passage to which a zigzag slip down passage cloth is fixedly secured, an inclined slip way jointed to the lower end of the main body and a platform engaged to the foremost end of said inclined slip away so that a person who has to leave a ship lands thereon safely, the improvement consisting in that the zigzag slip down passage cloth is provided with an expansible cloth at least at each of a plurality of bent parts along the zigzag slip down passage so that the latter is enlarged when dead weight of the descending person is

exerted to the area where said expansible cloth is attached to the zigzag slip down passage cloth, wherein expansibility of



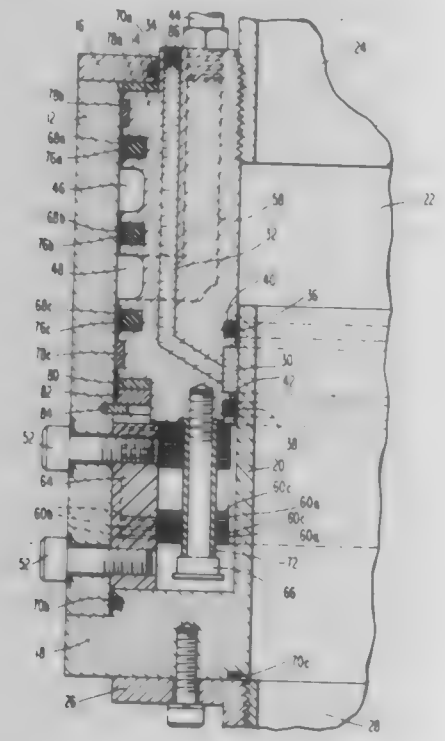
the expansible cloth is determined in the range of 200 to 250% as seen in the longitudinal direction as well as in the peripheral direction of the zigzag slip down passage.

4,605,096

LADDER BASE SWIVEL WITH A THROUGH WATER CHANNEL

Joseph I. Bishop, 45 S. Forge Mannor Dr., Phoenixville, Pa. 19460

Filed May 31, 1984, Ser. No. 615,992
Int. Cl.[4] F16L *27/08*
U.S. Cl. 182—51 4 Claims



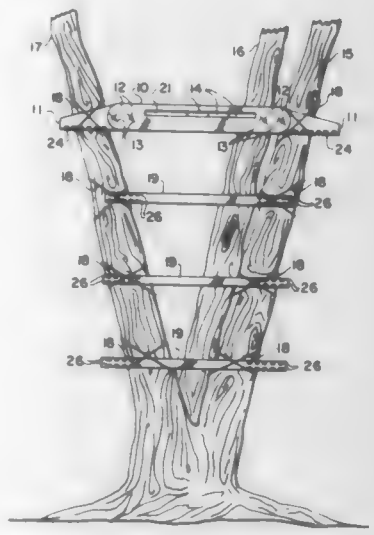
1. In a ladder base swivel, the combination comprising:
(a) a bottom cover having an annular planar element and an upwardly extending water passage tube,
(b) a cylindrical body having a cylindrical water passage bore forming a continuous vertical water passage through said swivel, said body water passage bore adapted to rotatably receive said tube and having on its inner surface a first annular channel surrounding a portion of the received tube wherein said first channel contains a first annular lip seal for preventing the passage of water from said bore to the exterior of said tube,
(c) a housing having an upper portion adapted to rotatably receive said body and a lower portion adapted to secure the planar element of said cover,
(d) a second annular channel on the inner surface of said body water passage bore, said second channel containing a water displaceable oil lubricant and surrounding said tube below said first channel wherein said second channel communicates with said first lip seal,
(e) a third annular channel in said bore, said third annular channel surrounding said tube below said second channel and communicating with said second annular channel and containing a second annular lip seal adapted to prevent the passage of the oil lubricant,
(f) a continuous electric circuit through said swivel from the exterior of said housing to the exterior of said body, said electric circuit including electric contacts surrounding said tube below said third annular channel whereby said second lip seal prevents the passage of said oil lubricant from said second annular channel to said electric contacts and passage of water from said bore to said electric contacts upon failure of said first lip seal, and
(g) an escape waterway completely surrounded by said body, said escape waterway communicating with said second channel and communicating with an opening on the exterior of said swivel independently of the relative positions of said body and said housing, said escape waterway and said second channel adapted to provide both a water escape path away from said electric contacts upon failure of said first lip seal and a reservoir for said oil lubricant.

4,605,097

PORTABLE TREE STAND

Thurman L. Maxwell, 108 Jackson St., Cookeville, Tenn. 38501

Filed May 13, 1985, Ser. No. 733,262
Int. Cl.[4] A01M *31/02*
U.S. Cl. 182—92 4 Claims



1

1. A portable treestand to be supported by three individual trees, four individual trees, a tree with three or four diverging limbs comprising an elongated main runner (10) having holes (20) located at both ends to fasten to each end an extension arm (11) with bolts (12) and secured by wing nuts (13), said main runner also having a slot (21) to receive platform boards (14).

4,605,098

TRUCK BUMPER STEP

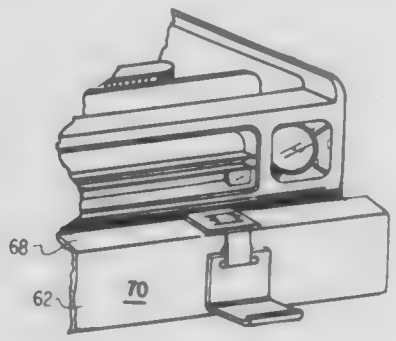
David S. Leuty, 1025 S. Gay Dr., Longmont, Colo. 80501

Filed Jan. 28, 1985, Ser. No. 695,381
Int. Cl.[4] B60R *3/00*
U.S. Cl. 182—92 2 Claims

1. A bumper step adapted for removable connection to the front bumper of a motor vehicle for providing a stable platform on which the user may stand to gain access to the engine compartment of such vehicle, the bumper step comprising:
a generally flat clip member including a forwardly turned under lip portion adapted to be hooked over and behind a top surface of said bumper, said clip member further including a plurality of horizontal slots for adjustably receiving a flexible strap;
a step member, including a vertical portion and a platform

portion that is formed at a right angle to said vertical portion, said vertical portion including a horizontal slot for receiving a flexible strap; and

a length of flexible strap, one end of which is fixedly attached to said step member through the horizontal slot therein and the other end of which is adjustably placed through said plurality of horizontal slots in said clip member, whereby the height above ground of said step member may be adjusted as desired by the user.

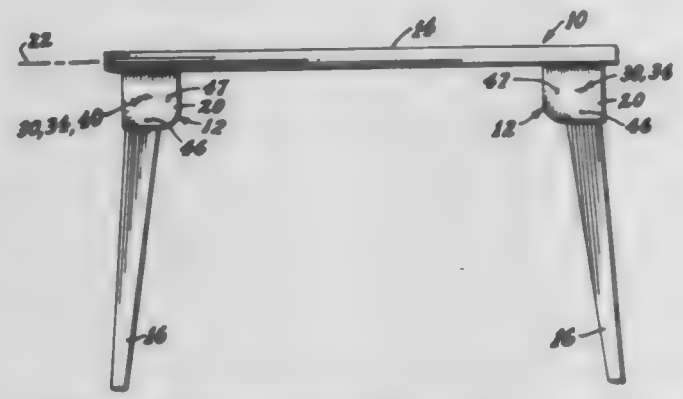


4,605,099

BRACKET MEANS PROVIDING FULL COLLAPSIBILITY TO SAWHORSES

Wesley W. Crum, 17239 Sycamore Rd., and Gary L. Fraley, P.O. Box 946, both of Mount Vernon, Ohio 43050

Filed May 17, 1985, Ser. No. 735,129
Int. Cl.[4] B27B *21/00*; F16M *11/00*
U.S. Cl. 182—155 24 Claims



1. A support means for a sawhorse having a horizontal spine rail which is supported at each end by a pair of outwardly-spread legs which are connected to the respective end of the spine rail by a support bracket, the support means comprising;

a three-panelled bracket body member, having an intermediate panel and side panels, and which when viewed from above and from a point axially outwardly of the end of the spine rail when assembled thereto is of a generally U-shape,

with the intermediate panel disposed generally vertically, and transversely of the axis of the spine rail,

and with the side panels extending from the intermediate panel, generally parallel to the axis of the spine rail, and generally perpendicular to the intermediate panel, but sloping outwardly and downwardly.

and the bracket body member also has panel means which extend under the respective end of the spine rail, for supportive connection thereto;

and there are pivot means provided for pivotally interconnecting a sawhorse leg to each of the side panels,

and each leg and side panel are provided with co-operative latch means by which the sawhorse legs are latchingly held in optionally an extended position generally parallel to the respective side panel, for support of the spine rail by the sawhorse legs, and in a retracted position also generally parallel to the respective side panel but generally juxtaposed along the spine rail,

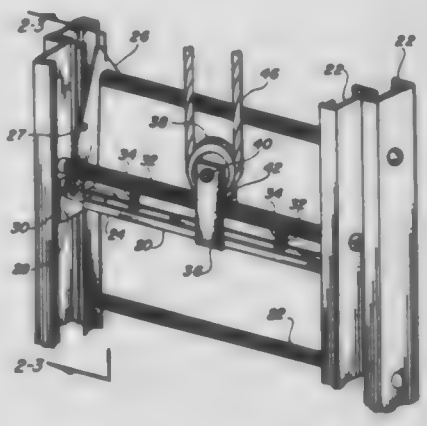
and each leg is pivotally movable about the axis of the respective pivot means between and into each position of latched engagement with the respective side panel.

4,605,100

LADDER EXTENSION LOCK

Giulio S. Inglese, Granada Hills, Calif., assignor to Uniprode, Granada Hills, Calif.

Filed Aug. 30, 1985, Ser. No. 770,971
Int. Cl.[4] E06C *7/06*
U.S. Cl. 182—213 6 Claims



1. A ladder extension lock for a sectionalized extendable ladder having channel side legs, and a plurality of rungs therebetween attached to interconnecting rung plates comprising:

(a) a channel shaped control bar movably positioned under one of the ladder rungs;

(b) a pair of pivot pins rigidly fastened on each end of said control bar distending outwardly therefrom for connection to said ladder;

(c) a pair of rung engaging hooks having swivel means, each rotatably contacting said pivot pin on one end and said ladder rung on the other, axially rotating when said control bar is urged upward toward said ladder rung;

(d) a pair of mounting blocks each nestingly joined within the inside of each ladder channel side leg defining a structural member receiving said hook swivel means rotatably attaching said hook to the ladder providing the hook with a pivot point in conjunction with said control bar pivot pin for converting linear movement of the bar to axial rotation of the hook when the bar is urged upward toward said ladder rung;

(e) a plurality of guide mounted compression springs abutted to said control bar and contiguous with one of the ladder rungs, drivingly urging the bar away from the rung;

(f) a channel shaped pulley yoke having a web and upstanding legs nestingly attached to said control bar abutting the web of the channel in the middle, defining an attachment member immediately above the rung of the ladder under which said bar is located;

(g) a pulley having an axle rotatably positioned between the legs of said yoke providing a sheave with a groove rim to change directions of a pulley force;

(h) a plurality of existing hoisting pulleys attached to the uppermost section of said ladder above said control bar for changing direction of a pulley force; and,

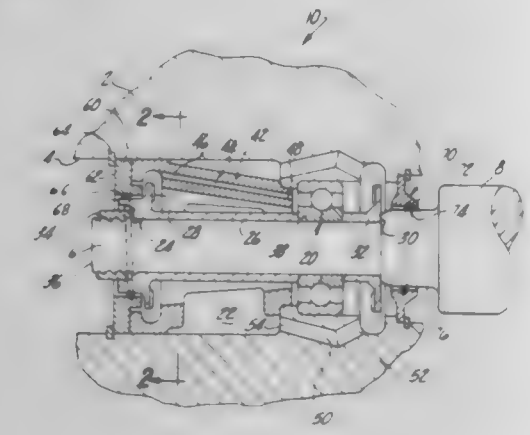
(i) a halyard loopingly positioned around said pulley and hoisting pulleys with one end attached to the ladder and the other loose, allowing an operator to hoist sections of said extendable ladder, while doing so said control bar is urged upward toward said rung against spring pressure, pivoting said hooks outwardly away from the rungs allowing the hooks to pass by while being hoisted with said hooks being returned to their locking position, as urged by said springs, when the tension on said halyard is quickly released, thus creating a fail-safe condition in the event of an accidental loosening grip on said halyard.

4,605,101

SELF-CONTAINED TURBINE ENGINE LUBRICATION SYSTEM

Dennis E. Barbeau, Lambertville, Mich., assignor to Teledyne Industries, Inc., Los Angeles, Calif.

Filed Dec. 10, 1984, Ser. No. 679,931
Int. Cl.[4] F01M *9/10*
U.S. Cl. 184—6.11 **9 Claims**



1. A self contained lubrication system for a turbine engine, said turbine engine having a support housing and a drive shaft rotatably mounted to the support housing by a bearing assembly, said lubrication system comprising:

a first seal assembly extending between said shaft and said housing at a position axially spaced from one side of the bearing assembly;

a second seal assembly extending between said shaft and said housing at a position axially spaced from the other side of said bearing assembly;

a sump chamber adapted to contain a lubricant formed in said housing between said seal assemblies; and

means contained in said sump chamber for pumping lubricant contained in said sump chamber through said bearing assembly during rotation of said shaft, said pumping means having a radial outer periphery;

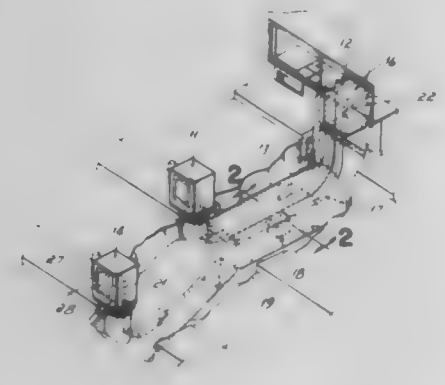
wherein each seal assembly comprises a resilient O-ring sandwiched between a stationary portion of said housing and a rotating portion of said shaft and wherein said O-rings are spaced radially inwardly from said outer periphery of said lubricant pumping means such that said pumping means pumps fluid away from said O-rings.

4,605,102

TRANSPORTATION SYSTEM HAVING MULTIPLE DIRECTION CARGO CARRIER DOOR OPENER

Robert E. Morano, Ringwood; Victor J. Vogel, Oak Ridge, and Peter Pawchak, Randolph, all of N.J., assignors to American Standard Inc., New York, N.Y.

Filed Jun. 20, 1984, Ser. No. 622,704
Int. Cl.[4] B61D *19/02;* **B61B** *1/00*
U.S. Cl. 186—37 **20 Claims**



1. A transportation system for transporting cargo comprising:

a track;

a car on the track which includes a portion defining a cargo container;

means for driving the car along the track;

a door on the car movable between a container-closed position in which access to the cargo container is restricted and any of a plurality of alternative container-open positions in which access to the cargo container is permitted;

means for sensing the orientation of the car; and

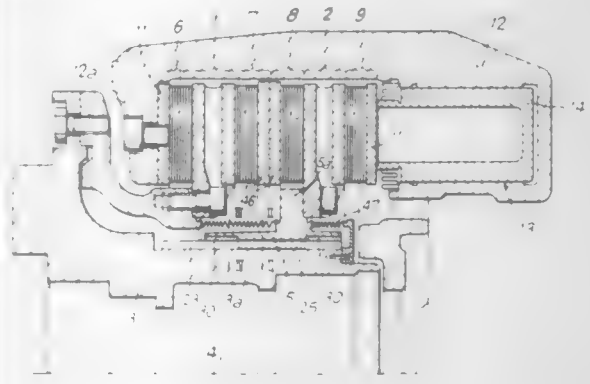
means on the car, coupled to the means for sensing the orientation of the car, for selectively moving the door from the container-closed position to one of the container-open positions, said one of the container-open positions being selected in dependence upon the orientation of the car.

4,605,103

MULTI-DISC BRAKE

Jean-Jacques Carré, Le Raincy, and Ghislain Escarabajal, Meaux, both of France, assignors to Societe Anonyme D.B.A., Paris, France

Filed Jun. 21, 1984, Ser. No. 623,041
Claims priority, application France, Jun. 30, 1983, 83 10917
Int. Cl.[4] F16D *55/36*
U.S. Cl. 188—71.5 **5 Claims**

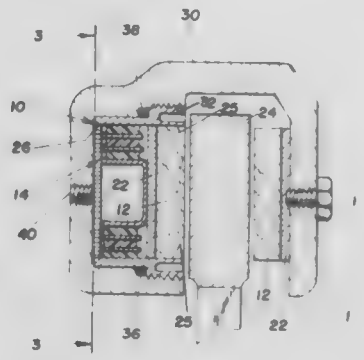


1. A multi-disc brake comprising a first rotary disc solid with a hub and a second rotary disc mounted on the hub for sliding movement parallel to an axis of the hub, the axis of the hub and axes of the discs coinciding with one another, and an assembly of friction blocks incorporating friction linings capable of engaging faces of the discs by means of an actuating device such as a hydraulic caliper jack, the linings extending only over a limited angular sector of the periphery of the discs, the second rotary disc carried by an internally splined sleeve which slides on an externally splined part of the hub, splines of the sleeve and hub engaged with one another to drive rotationally the second rotary disc with the hub, the splines having flanks shaped as gear teeth so that the flanks of two adjacent splines of the sleeve and hub are in contact only along a line substantially parallel to the axis of the hub, characterized in that the second rotary disc is mounted directly on the hub and located substantially in the middle of the sleeve, the brake including a radial-guidance arrangement for guiding the sleeve radially relative to the hub and provided at each axial end of the sleeve, the radial-guidance arrangement consisting of two continuous annular surfaces engaged with one of the sleeve and hub and in axial sliding contact with the other of the sleeve and hub, the splines of one of the sleeve and hub being interrupted by the continuous annular surfaces, each continuous annular surface consisting of a ring disposed within one of the sleeve and hub and axially slidably engaging the other of the sleeve and hub in order to maintain radial alignment of the sleeve relative to the hub, and the rings engaged slidably by a discontinuous annular surface comprised of tips of splines of the other of the sleeve and hub.

4,605,104
ACTUATOR DEVICE

Arnold R. Thompson, Brigham City, Utah, assignor to Morton Thiokol, Inc., Chicago, Ill.

Continuation of Ser. No. 387,898, Jun. 14, 1982, abandoned.
This application Jun. 17, 1985, Ser. No. 745,821
Int. Cl.[4] F16D *55/224, 55/228, 65/20*
U.S. Cl. 188—72.4 6 Claims

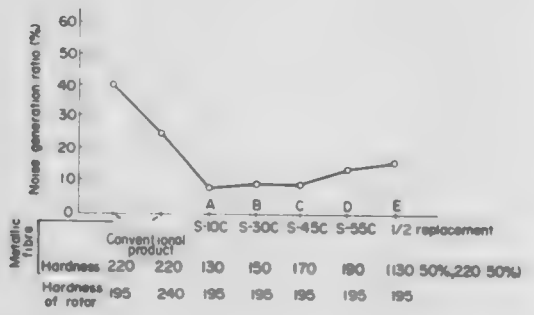


3. A disc brake including a brake caliper housing that is substantially C-shape in section and adapted to fit over a part of the periphery and sides of a brake rotor, said brake housing having a recess therein, a brake pad secured to said brake housing for engaging one face of a brake rotor, a brake pad movably carried by said brake housing in opposed relation to said first mentioned brake pad for engaging the opposed face of the brake rotor, said movably carried brake pad being carried in said recess, said recess having a closed end and an open end and having a port formed in its closed end to receive fluid from a pressure source, means for moving said movably carried brake pad to urge it towards said first mentioned brake pad comprising actuator means operatively connected to said movably carried brake pad, said actuator means having elastic properties and being operative under axial stress produced thereon by a fluid pressure applied thereto through said port to effect a displacement of said movably carried brake pad, said actuator means being comprised of rigid and resilient members bonded together in substantially parallel relation about an axis corresponding to the direction of stress and adapted to yield by flexing under said stress producing said displacement of said movably carried brake pad and to resist said flexing under compressive stress, and further including means for containing said bonded together members fixedly secured in said recess in static sealing relation with said movably carried brake pad.

4,605,105
BRAKE SYSTEM

Osao Ogiwara, Hanyu, Japan, assignor to Akebono Brake Industry Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 524,215, Aug. 18, 1983, abandoned. This application Jun. 4, 1984, Ser. No. 616,648
Claims priority, application Japan, Sep. 3, 1982, 57-153750
Int. Cl.[4] F16D *69/02*
U.S. Cl. 188—251 M 5 Claims

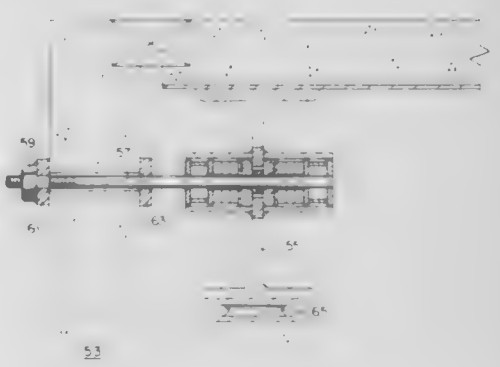


1. In a brake system comprising a semi-metallic friction material component and a braking component which frictionally contacts said friction material component during braking action, the semi-metallic friction material containing 10–70 vol % of a metallic fiber and/or a metallic powder, conventional additives and a thermosetting resin binder, the improvement wherein at least 50% of the metallic fiber and/or the metallic powder in said friction material has a Vickers hardness of Hv 100 to Hv 170 and is selected from the group consisting of steel wool and sponge iron powder, said braking component is cast iron having a Vickers hardness greater than Hv 170, and the Vickers hardness of said steel wool and sponge iron powder is at least Hv 5 lower than the Vickers hardness of said braking component.

4,605,106
DISPLACEMENT CONTROL DEVICE

Edward R. Fyfe, Burlington, and William M. Slater, Toronto, both of Canada, assignors to Elastometal Limited, Ontario, Canada

Filed Jan. 16, 1984, Ser. No. 571,268
Claims priority, application Canada, Jan. 17, 1983, 419576
Int. Cl.[4] E02D *27/34*
U.S. Cl. 188—374 3 Claims



1. A displacement control device for limiting the magnitude of movement between two relatively movable bodies comprising:

a first member for securement to one body and a second member for securement to the other body, the first member including a cylinder having located therein a plurality of viscoelastic discs arranged on a common axis, constituting a set of discs having first and second ends;

first and second solid discs located at first and second ends of said set of viscoelastic discs respectively,

a perforated plate located below said second solid disc and fixed to said cylinder and a viscous material disposed between said perforated plate and said second disc; wherein upon pressure being exerted upon said first disc, the viscoelastic discs compress and limit relative movement between said first member and said second member, and upon excess movement of said first disc toward said second disc due to an increase of pressure exerted upon said first disc, said second disc is moved toward said perforted plate and extrudes the viscous material through the perforation in said perforated plate thereby absorbing some of the energy causing the relative movement.

4,605,107
SLIP CLUTCH WITH SLIP DETECTOR AND ELECTRICAL DISCONNECT

William M. Hallidy, Glendora, and Donald P. Shutt, Long Beach, both of Calif., assignors to Western Gear Corporation, Lynwood, Calif.

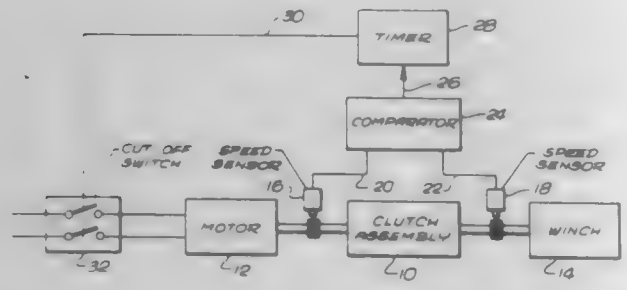
Filed Dec. 12, 1983, Ser. No. 560,216
Int. Cl.[4] F16D *7/00*
U.S. Cl. 192—0.02 R 8 Claims

1. An apparatus for protecting against excessive mechanical loads in rotating machinery, said device comprising:

a fast-acting slip clutch means having an input shaft for

connection to a drive motor and an output shaft for connection to a mechanical load, said slip clutch means being operative for mechanically limiting the torque that can be transmitted to the load by permitting slippage between said shafts without disengaging said output shaft from said input shaft;

slip-sensing means for electronically detecting differences in speed between said input and output shafts and for gener-



ating a control signal in response to a predetermined relationship between said input and output shaft speeds; and

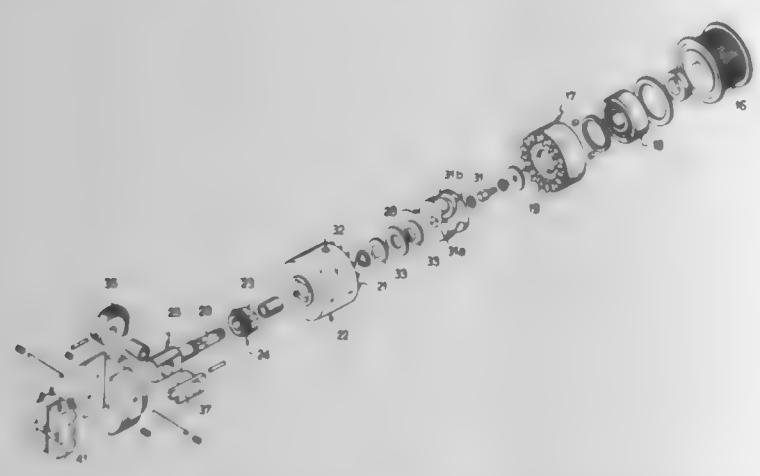
automatic protective means, responsive to said control signal, for disconnecting power to said drive motor after a predetermined degree of slippage bewteen said input and output shafts has continued for a predetermined time period.

4,605,108

DEVICE FOR RELEASING A ROTATIONAL-LOCKING ACTUATING MEMBER

Bernard Monot, Aubervilliers, France, assignor to Faiveley Entreprises, Saint Ouen, France

Filed Apr. 12, 1983, Ser. No. 484,418
Claims priority, application France, Apr. 21, 1982, 82 06817
Int. Cl.[4] E05C *15/02*
U.S. Cl. 192—0.02 R **7 Claims**



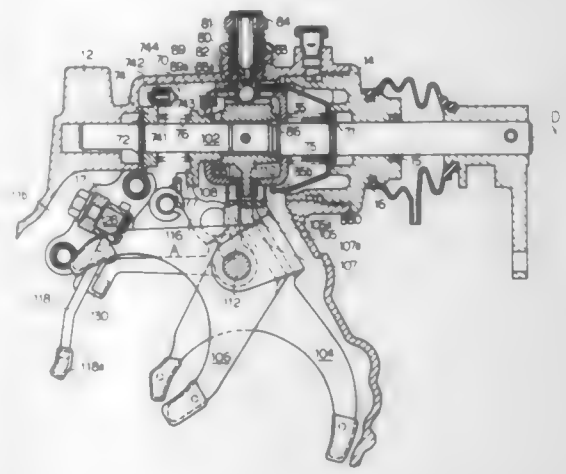
1. An unlocking device for releasing a rotationally-locking actuating member, comprising a nut (5) mounted on an endless screw (4) connected to a motor (11), said unlocking device comprising a freewheel (18) connected to said endless screw (4) and positioned relatively thereto for driving said endless screw (4) when said freewheel (18) is itself driven according to a driving movement in an unlocking direction with respect to said endless screw (4), said freewheel (18) being connected to a first clutch disk (17) of a clutch device comprising two clutch disks, a second clutch disk (22) of said clutch device being connected to a manual control member (36) through a cam system (28, 32) in order to subject said second clutch disk (22) to a movement having a translational motion component and a rotational motion component upon actuation of said manual control member.

4,605,109

TOTALLY SYNCHRONIZED MANUAL TRANSMISSION UNIT FOR USE IN A VEHICLE

Hisashi Fukuchi; Masayuki Shibuya, and Yasuie Takahashi, all of Toyota, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Aichi, Japan

Filed Jun. 27, 1984, Ser. No. 625,129
Claims priority, application Japan, Jul. 2, 1983, 58-120749
Int. Cl.[1] B60K *41/26;* G05G *5/10, 9/12*
U.S. Cl. 192—4 C **15 Claims**



1. A gear-shift mechanism for a manual transmission unit for use in a motor vehicle, comprising:

a housing assembly;

an input shaft for connection to an engine;

an output shaft supported in a parallel relationship to the input shaft within the housing assembly;

a forward input gear integrally attached to the input shaft;

a forward output gear mounted on the output shaft and constantly meshing with the forward input gear;

synchronizing means which are slidably mounted on one of the input and output shafts and rotatable therewith;

first actuating means for shifting the synchronizing means toward or away from one of the forward input or output gears;

a reverse input gear integral with the input shaft;

an idler shaft supported in a parallel relationship with the input and output shafts within the housing assembly;

a reverse sliding gear mounted on the idler shaft;

a reverse output gear mounted on the output shaft;

second actuating means for shifting the reverse sliding gear into meshing engagement with the reverse input and output gears;

a manual shift lever for changing gearing ratios between the input shaft and the output shaft;

a shift-and-select shaft supported in a parallel relationship with the input and output shafts within the housing assembly and operatively connected to the manual shift lever;

a fork shaft slidably supported in a parallel relationship with the idler shaft within the housing assembly and operatively connected to the manual shift lever for being selectively shifted by the operation between its neutral, forward and reverse positions;

a detent mechanism mounted in the housing assembly to retain selectively the fork shaft in its neutral or shifted positions when subjected to a resilient load acting thereon, the detent mechanism comprising a first holder member and a second holder member, the first holder member being slidable on the shift-and-select shaft and rotatable relative to the housing assembly, rotation of the first holder member resulting in the movement of said synchronizing means, the first holder member having a first projection, a slot for permitting the rotation of the first holder member when shifting into reverse speed and a pawl which prevents a double shift in association with the first actuating means, the pawl including a means for retaining one of the synchronizing means associated with the reverse gear in its neutral position when the manual shift

lever is shifted to a reverse speed, the second holder member having an engagement member which selectively engages with the first holder member, corresponding to the retained neutral position of one of the synchronizing means; and

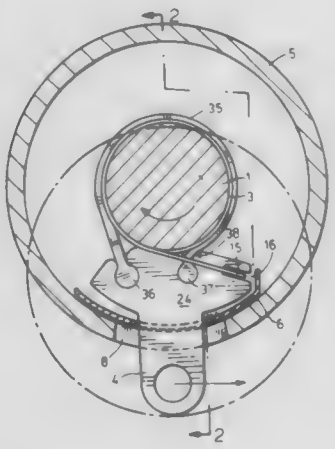
rotating means rotated by the manual shift lever, having a second projection engaged with the first projection of the first holder member when the first holder member slides upon shifting into reverse speed, rotation of the manual shift lever resulting in the rotation of the rotating means because of the engagement between the first projection and the second projection, this resulting in the effect of the synchronizing means for a forward speed, whereby when the manual shift lever is shifted to a reverse speed, the synchronizing means for a forward speed are effected to stop the rotation of the input shaft by inertia and the synchronizing means associated with the reverse gear is maintained to its neutral position by the engagement member of the second holder member.

4,605,110

BRAKE ACTUATOR FOR BICYCLES AND THE LIKE

Winnett Boyd, 107 Victoria Place, Bobcaygeon, Ontario, Canada (K0M 1A0)

Filed May 6, 1985, Ser. No. 730,993
Int. Cl.[4] B60K *41/26;* F16D *41/34*
U.S. Cl. 192—5 **4 Claims**



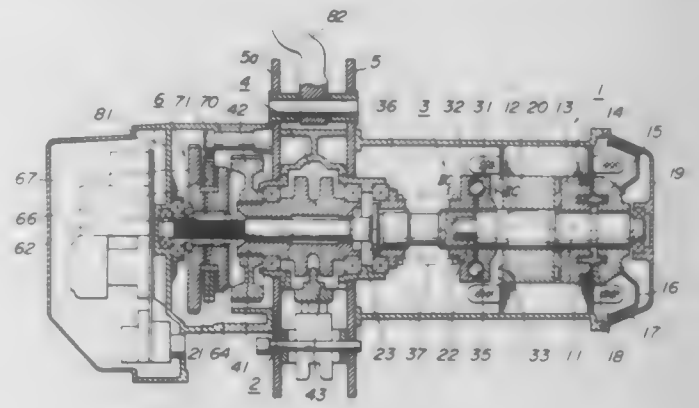
1. A device for operating a brake of a pedal operated vehicle, comprising a brake operating lever projecting through an opening in a pedal crankshaft housing of the vehicle, and two oppositely wound spring coils connected at a bight engaging the lever, and concentrically surrounding and frictionally engaging a pedal crankshaft within the housing, with an inner end of the lever engaging the circumference of the crankshaft, wherein a flexible strap is provided extending in a loop from the lever, around the crankshaft and back to the lever, a wrapping surface is formed on the inner end of the lever whereby tilting of the lever in one direction relative to the periphery of the crankshaft causes the strap to wrap onto the wrapping surface and reduce the length of the loop so that the strap grips the crankshaft and locks the lever to the latter, the bight engaging the lever adjacent its inner end so that the spring coils extend from the bight in the direction of crankshaft motion associated with back pedalling, and said bight provides a fulcrum for tilting of the lever relative to the crankshaft in said one direction such that the strap grips the crankshaft and locks the lever to the latter.

4,605,111

HOIST

Masayuki Ohno, Tokyo, and Kazuo Maeda, Yokohama, both of Japan, assignors to Kabushiki Kaisha Kito, Kawasaki, Japan

Filed Aug. 19, 1983, Ser. No. 524,715
Claims priority, application Japan, Aug. 25, 1982, 57-146213
Int. Cl.[4] F16D *15/00, 67/02*
U.S. Cl. 192—16 **8 Claims**



1. A hoist including a shaft driven by external force, a driving shaft connected to said shaft, a reduction gear train for transmitting rotation of said driving shaft to a load sheave, a mechanical brake assembly in said reduction gear train, and an overload safety device having a clutch mechanism capable of transmitting torque larger in driving said load sheave in a winding-off direction than that in a winding-up direction, said clutch mechanism comprising a disc-like driving member, a disc-like driven member, surfaces of these members facing to each other being formed with a plurality of recesses which are arranged in circles on the surfaces of these members and in opposition to each other, slide elements each accommodated in each set of said opposite recesses respectively formed in the these members, and resilient urging means for urging said slide elements between said driving and driven members, any one of each set of the recesses having a gentle slope surface facilitating each said slide element to ride thereon and slip when driving said load sheave in the winding-up direction, and said clutch mechanism axially arranged directly between said shaft driven by external force and said driving shaft connected to said shaft.

4,605,112

CONTROL SYSTEM FOR AN INFINITELY VARIABLE TRANSMISSION WITH AN ELECTROMAGNETIC POWDER CLUTCH

Toshio Takano, Hamuramachi, Japan, assignor to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan and Van Doorne's Transmissie B.V., Tilburg, Netherlands

Filed Oct. 4, 1983, Ser. No. 538,880
Claims priority, application Japan, Oct. 9, 1982, 57-178022
Int. Cl.[4] B60K *41/02, 41/28*
U.S. Cl. 192—0.033 **6 Claims**

1. A system for controlling an infinitely variable transmission for a vehicle which comprises a driving pulley, a driven pulley and a belt engaged with both pulleys, the transmission ratio thereof being automatically varied by changing effective diameters of both pulleys with said belt, comprising

an electromagnetic clutch for coupling a crankshaft of an engine with an input shaft of the transmission;

said electromagnetic clutch having a coil for engaging the clutch by current flowing through said coil partially and completely, respectively;

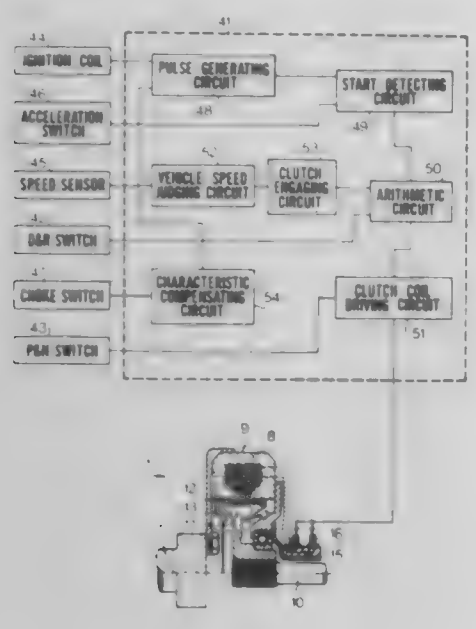
first circuit means for producing an engine speed signal;

second circuit means for producing a vehicle speed signal dependent on vehicle speed;

arithmetic circuit means for controlling the clutch current flowing through said coil in dependency on said engine speed signal and said vehicle speed signal;

said arithmetic circuit means is for cutting off the clutch

current so as to disengage the clutch at a low vehicle speed when the engine speed has decreased to a predeter-



mined value which is slightly higher than an engine speed at which the engine stalls at the low vehicle speed.

4,605,113

CLUTCH RELEASE, IN PARTICULAR FOR AUTOMOBILE CLUTCHES

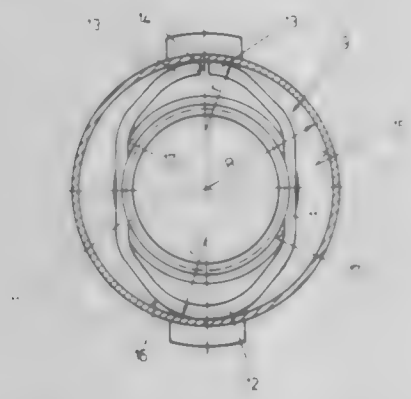
Manfred Brandenstein, Eussenheim, and Roland Haas, Hofheim, both of Fed. Rep. of Germany, assignors to SKF Kugellagerfabriken GmbH, Schweinfurt, Fed. Rep. of Germany

Filed Apr. 25, 1984, Ser. No. 603,647

Claims priority, application Fed. Rep. of Germany, Apr. 30, 1983, 8312805

Int. Cl.[4] F16D *23/14*

U.S. Cl. 192—98 **9 Claims**



1. A clutch release comprising a sliding sleeve having a radially outwardly directed flange, a clutch release bearing having a stationary bearing ring with a radially inwardly directed flange which slidably abuts said flange of said sliding sleeve, and a generally oval-shaped spring ring having a pair of mutually parallel guiding surfaces and arranged between said stationary bearing ring and said sliding sleeve, said stationary bearing ring being rotatable with respect to said sliding sleeve in the circumferential direction within fixed limits and to move in a radial direction along said guiding surfaces by overcoming a radially acting frictional force between said flanges, said spring ring abutting the bore surface of said stationary ring at two diametrically opposed positions and engaging two diametrically opposed positions in an annular groove of said sliding sleeve that are displaced 90° from said two positions of said bore surface, the contact points for said spring ring on said bore surface of said stationary bearing ring and the contact points in said annular groove of said sliding sleeve being mutually displaced in the axial direction, said spring ring having a substantially bow-shaped profile.

4,605,114

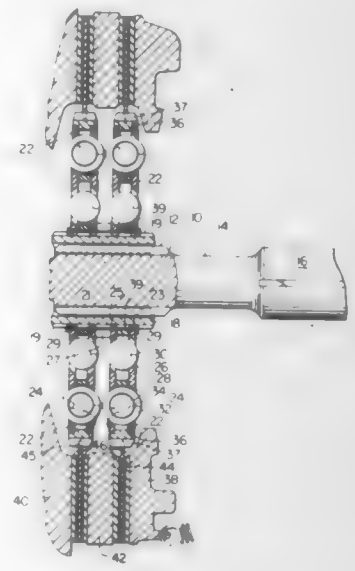
VIBRATION DAMPING CLUTCH AND PINION ASSEMBLY

Oliver R. Goetz, Greencastle, Pa.; Richard D. Schnurr, Williamsport, and Victor Kronstadt, Hagerstown, both of Md., assignors to Mack Trucks, Inc., Allentown, Pa.

Filed Jan. 18, 1985, Ser. No. 692,496

Int. Cl.[4] F16D *3/14, 3/66*

U.S. Cl. 192—106.2 **8 Claims**



1. A clutch and pinion vibration-damping assembly for use with a drive train of a heavy-duty, high torque rise, slow speed engine and producing a very low spring rate, the assembly comprising; a clutch having a driving member including a disk and a driven member including a hub, a very low spring rate vibration damper connecting the clutch driving member to the clutch-driven member, the vibration damper including multiple circumferential rows of springs constituting the sole normal drive connection between the disk and the hub, in combination with a pinion output shaft drivingly connected to the clutch-driven member through spline connecting means, the output shaft having a necked-down portion so that the spring rate of the multiple spring row vibration damper and the necked-down output shaft take the resonant speed of the drive train lower than the operating speed of the engine.

4,605,115

DEVICE DESIGNED TO MOVE A SECTION BEING MACHINED PAST MACHINING MEANS AND IN THE LONG DIRECTION OF THE SECTION

Michel Genans, Grenoble, France, assignor to Dufieux and Societe Nationale des Chemins de fer Francais, both of Paris, France

Filed Jan. 30, 1984, Ser. No. 575,129

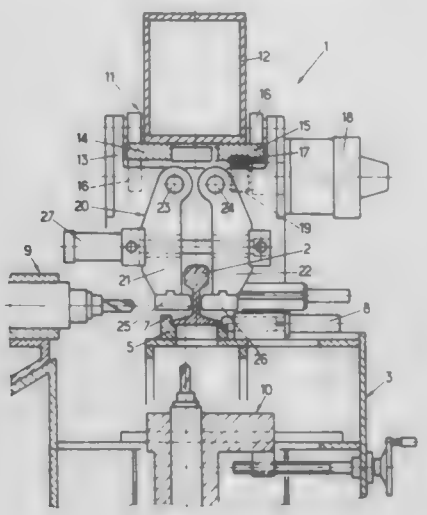
Claims priority, application France, Feb. 1, 1983, 83 01567

Int. Cl.[4] B65G *43/00, 47/90;* B26D *5/20;* B23Q *5/50*

U.S. Cl. 198—341 **6 Claims**

1. A device designed to move a section being machined past machining means along a path in a longitudinal direction with respect to the section so that the section can be positioned with respect to the machining means, said section having a front end, said device comprising translation means including a carriage and means for moving said carriage in said longitudinal direction; a clamp mounted on said carriage, said clamp having arms for gripping the section transversely; clamp actuating means connected to said clamp for causing said clamp to grip or release the section; a stop also mounted on said carriage; stop actuating means connected to the stop for moving the stop on the carriage between a first position where the stop is located in the path of the section and a second position where the stop is retracted from the path of the section, said clamp and said stop moving simultaneously with said carriage so that, when said stop is in its first position and located forwardly of the section, the front end of the section is moveable

in a forward direction into contact with the stop while the section lies between the arms of said clamp at a position where it is grippable by the clamp, said device being operable when said stop is in its second position so that said clamp can grip the



section at any position along the length of the section away from the front end of the section, said carriage moving the section to machining positions located at preset distances from the front end of the section regardless of the length of the section.

4,605,116

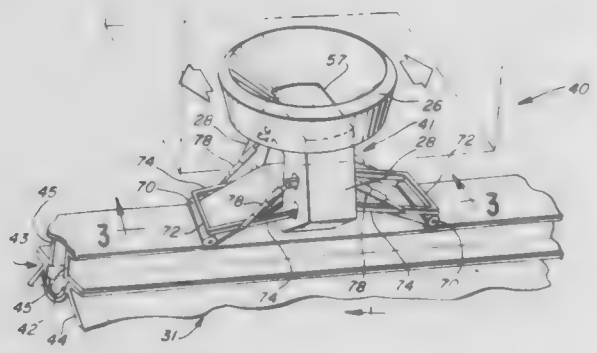
CONVEYOR SYSTEM USED WITH APPARATUS FOR UNLOADING COMMINUTED MATERIALS

Charles P. Miller, McHenry, Ill., assignor to Miller Formless Co., Inc., McHenry, Ill.

Continuation-in-part of Ser. No. 414,383, Sep. 2, 1982, abandoned. This application Feb. 17, 1984, Ser. No. 581,284

Int. Cl.⁴ B65G *47/44*

U.S. Cl. 198—364 **13 Claims**



1. Enclosed conveyor apparatus for receiving comminuted material therealong and confining such materials therein while conveying the material, said apparatus comprising: an elongate housing having sidewall portions defining an elongated opening for receiving such materials therethrough; conveyor means disposed within said housing and moving said material longitudinally through said housing; discharge guide means disposed over said opening and movable therealong for discharging such material into said housing at any position along said opening; flexible cover means normally closing said opening and being selectively displaceable by said discharge guide means as said guide means moves along said opening permitting discharge of such material into said housing through said guide means and opening at any such position while maintaining a substantially dust-tight cover over said opening; said discharge guide means having shroud means overlying said opening and separating said cover means from said housing while maintaining an effective seal of said housing, said shroud means including sidewalls extending in overlapping spaced relation with the sidewalls of said elongate housing, and yieldable sealing means providing sliding seals between said overlapping sidewalls and said sidewall portions of said housing for providing a dust-tight seal between said discharge guide means and said housing as said discharge guide means is moved therealong.

4,605,117

CONVEYING ROD-LIKE ARTICLES

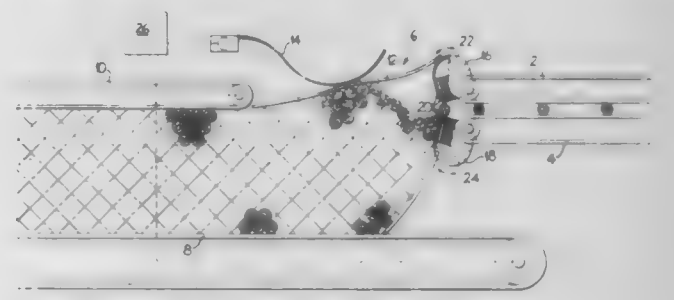
Frank Heybourn, Milton Keynes, England, assignor to Molins, Limited, Great Britain

Filed Aug. 4, 1981, Ser. No. 289,838

Claims priority, application United Kingdom, Aug. 8, 1980, 8025874

Int. Cl.⁴ B65G *47/22*

U.S. Cl. 198—493 **13 Claims**



1. Apparatus for conveying rod-like articles, comprising means including a first conveyor for conveying a stream of articles in a direction transverse to the lengths of the articles at a first speed, means including a second conveyor for conveying a stream of articles in a direction transverse to the lengths of the articles at a second speed which is less than the first speed, the height of the stream on said second conveyor being greater than that on said first conveyor, a transfer region disposed between said first and second conveyors in which articles are transferred from the first conveyor towards the second conveyor, and means for directing an air flow to retard articles from said first conveyor in said transfer region as they move towards the second conveyor.

4,605,118

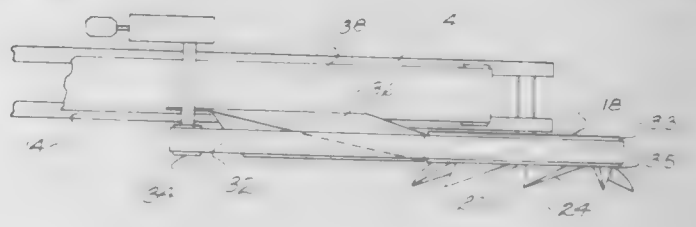
RECLAIMING DEVICE

Richard G. Kotler, 10 Be. agton Rd., Pittsburgh, Pa. 15221

Filed Feb. 7, 1985, Ser. No. 699,209

Int. Cl.⁴ B65G *17/36*

U.S. Cl. 198—509 **5 Claims**



1. A reclaiming device comprising;

a. a reclaiming wheel comprising an axle, a first annular member mounted on the axle, a second annular member mounted on the axle spaced apart from the first annular member and having a plurality of openings therein, and scoop means attached to the second annular member adjacent to at least one of said openings, said scoop means being configured to direct material to be reclaimed through the adjacent opening into the space between the first annular member and the second annular member;

b. a flexible belt having one edge which engages the first annular member and a second edge which engages the second annular member around a part of the periphery of the wheel; and

c. means for rotating the wheel about the axle at a speed sufficient for centrifugal force to hold the material that is to be reclaimed by the device against the segment of the

flexible belt whose edges are engaged by the annular members.

4,605,119

DRIVE ARRANGEMENT FOR THE LOADING ARMS OF A LOADING RAMP FOR HEADING MACHINES OR LONGWALL SHEARING MACHINES

Josef Keuschnigg, Ehrenhausen, and Arnulf Kissich, Zeltweg, both of Austria, assignors to Voest-Alpine Aktiengesellschaft, Vienna, Austria

Filed Dec. 21, 1983, Ser. No. 563,984
Claims priority, application Austria, Dec. 23, 1982, 4672/82
The portion of the term of this patent subsequent to Nov. 12, 2002, has been disclaimed.
Int. Cl.[4] B65G *65/02*
U.S. Cl. 198—514 **8 Claims**



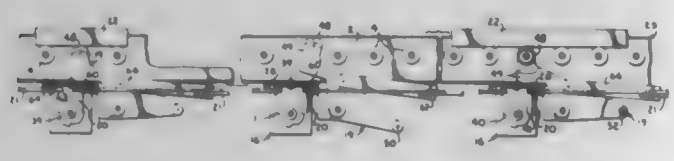
1. Drive arrangement for the loading arms of a loading ramp for heading machines or longwall shearing machines including a loading ramp, a pivotally mounted laterally extendible member for increasing the surface area of said loading ramp, the drive arrangement comprising a rotary disc pivotally supporting said loading arm in an off-center position, a guide arm fixed to the loading arm and extending from the vicinity of the pivotal support on the rotary disc, a steering lever having one end pivotally connected to the guide arm, said steering arm further connected at its opposite end to said laterally extendible member, the drive arrangement being such that rotational movement of the rotary disc about a fixed axis produces an orbital path in the loading arm and pivotal movement of said laterally extendible member varies the location of said orbital path of the loading arms.

4,605,120

SHAFT DRIVEN ACCUMULATION CONVEYOR ARRANGEMENT

Leendert A. Vanderlinde, Kansas City, Mo., and Byron T. Collier, Overland Park, Kans., assignors to Mid-West Conveyor Company, Inc., Kansas City, Kans.

Filed Nov. 29, 1983, Ser. No. 555,948
Int. Cl.[4] B65G *13/06*
U.S. Cl. 198—781 **10 Claims**



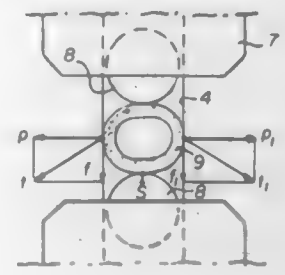
1. An accumulation conveyor arrangement comprising:
(a) an elongated roller conveyor including a conveyor frame with a plurality of rollers supported thereon;
(b) a downstream accumulation zone having a downstream roller;
(c) an upstream accumulation zone having an upstream roller;
(d) drive means;
(e) upstream and downstream clutch means each operably connecting said drive means and a respective roller, each said clutch means having a clutch control member adapted for disengaging said clutch means when immobilized, each said clutch control member having engagement means;
(f) upstream and downstream stop pawl means each slidable between a stop position engaging a respective clutch control member engagement means for immobilizing said clutch control member and a drive position disengaged from said engagement means;
(g) upstream and downstream article sensors each positioned in a respective accumulation zone and adapted for engagement by an article on said roller;
(h) upstream and downstream pawl control rods each interconnecting a respective pawl means and article sensor;
(i) said upstream pawl control rod having downstream abutment means engaging said downstream pawl means whereby said downstream pawl means is adapted to move said downstream pawl control rod upon movement of said downstream pawl means to its stop position;
(j) said downstream pawl control rod having an upstream end with upstream abutment means, said upstream abutment means being selectively disengaged from said upstream pawl means with said downstream pawl means in a stop position whereby said upstream pawl means is adapted to move to its stop position upon engagement of said upstream sensor by an article on said rollers; and
(k) said downstream pawl means being held in the drive position thereof by said downstream abutment until said downstream sensor is engaged by an article on said rollers; and
(l) biasing means engaging said upstream pawl means, said biasing means adapted to urge said upstream pawl means to its stop position.

4,605,121

ARRESTING BUFFER FOR OBJECTS ON CONVEYORS

Mats E. Wahren, Vadstena, Sweden, assignor to EWAB Ejvin Wahren AB, Vadstena, Sweden

Filed Jan. 16, 1985, Ser. No. 692,353
Claims priority, application Sweden, Nov. 9, 1984, 8402948
Int. Cl.[4] B65G *37/00*
U.S. Cl. 198—803.01 **11 Claims**



1. A braking system for a conveyor for objects conveyed by the conveyor to and stopped at assembly or processing stations for a work performing operation on the objects, said conveyor including a continuously moving conveying means, the movement of which is guided in a trough defined by parallel side walls, said braking system comprising support block means supporting the objects for movement on the conveying means, and elastic ring means freely disposed between adjacent support block means for gliding movement of the ring means on the conveying means, said ring means being compressed in the conveying direction of said objects by the support block associated with the trailing object when the trailing object reaches the station whereat the object to be worked on is stopped, said elastic ring means being laterally expanded from a circular into

an oval form for functionally engaging said side walls and thereby braking the movement of the trailing object to minimize its impact on the object being worked on.

4,605,122

SCRAPER CHAIN CONVEYOR

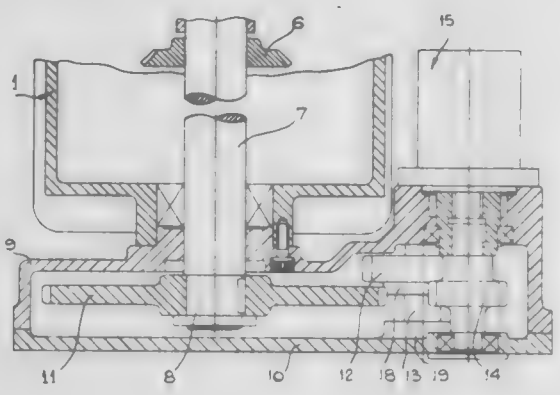
Ronald A. Biddle, St. John's, England, assignor to Dowty Meco Limited, Worcester, England

Filed Nov. 6, 1984, Ser. No. 668,756

Claims priority, application United Kingdom, Nov. 22, 1983, 8331129; Mar. 16, 1984, 8406979

Int. Cl.[4] B65G *23/06*

U.S. Cl. 198—834 **8 Claims**



1. A conveyor-chain-drive gear box and an auxiliary drive unit therefor, the gear-box comprising:

an input shaft;

an output shaft;

a side wall having an aperture therein;

a further shaft extending through said aperture and having an end portion outside the gear-box;

a bevel wheel carried by the further shaft within the gear-box;

an auxiliary drive unit having a housing detachably secured to said side wall; the auxiliary drive unit further including:

a drive pinion removably secured to the end portion of the further shaft;

an auxiliary hydraulic motor supported by the housing;

a driving pinion connected to the auxiliary motor;

an idler gear rotatably supported by the housing by means of a splined shaft and continuously in mesh with the driving pinion;

the arrangement being such that the idler gear is movable from a position in which it is out of meshing engagement with the driven pinion to an operative position in which it is in meshing engagement with the driven pinion and that the idler gear is further movable into a position in which it is locked against rotation by engagement with part of the housing while remaining in meshing engagement with both the driving pinion and the driven pinion.

4,605,123

INFUSION PACKAGE

Richard W. Goodrum, Richmond; Thomas E. Bechtold, and Albert A. Klimek, both of Midlothian, all of Va., assignors to Ethyl Corporation, Richmond, Va.

Continuation of Ser. No. 561,824, Dec. 15, 1983, abandoned. This application May 24, 1985, Ser. No. 737,460

Int. Cl.[4] B65B *29/04*

U.S. Cl. 206—0.5 **18 Claims**

1. An infusion package for particulated or finely ground products consisting essentially of a tube of perforated thermoplastic film having a central product containing portion, a product in said central product containing portion, an elongated flattened end portion on each end, said ends being oppositely located ends, each of said flattened end portions of said central product containing portion being sealedly separated from said central product containing portion, said flattened end portions being sufficiently elongated that they may be interwoven or knotted together, whereby when so interwoven or knotted together a flow through type of package with an integrated handle thereon is formed, allowing a majority of said central product containing portion to be suspended below the handle formed by said flattened end portions, said product containing package having sufficient wet strength or stability that it may be compressed after liquid infusion without destruction of the package, and said product containing package being free of any extraneous materials such as staples, strings, tabs, tags, or the like.

4. An infusion package for particulated or finely ground products consisting essentially of a tube or perforated thermoplastic film having a central product containing portion and an elongated flattened end portion on each end thereof, said ends being oppositely located ends, each of said flattened end portions being sealedly separated from said central product containing portion, said flattened end portions being sufficiently elongated that they may be interwoven or knotted together, whereby when so interwoven or knotted together a flow through type of package with an integrated handle thereon is formed, allowing a majority of said central product containing portion to be suspended below, at least one of said flattened end portions having an elongated slot or opening therein which enables one flattened end portion to be inserted through the other flattened end portion and thereby form the flow through type of bag with an integrated handle thereon, and said thermoplastic film having a multiplicity of minute uniform holes or openings therein each of which is sufficiently small to inhibit migration therethrough of a particulated product contained in the central product containing portion and is sufficiently large to permit the flow of liquids therethrough.



4,605,124

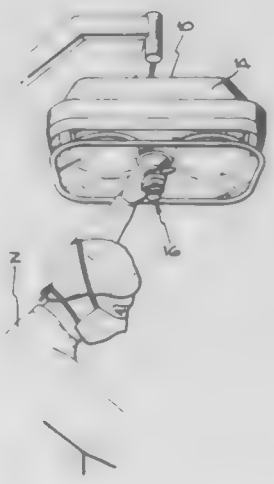
DISPOSABLE COVER FOR SURGICAL LIGHT HANDLE

Dan Sandel, and Michael Hoftman, both of Northridge, Calif., assignors to Devon Industries, Inc., Los Angeles, Calif.

Filed Aug. 9, 1983, Ser. No. 521,626

Int. Cl.[4] B65D *69/00*

U.S. Cl. 206—223 **16 Claims**



3. A disposable cover for the handle of a surgical room light

fixture which is normally positioned above the operating table and handled by the surgeon during operations, said handle including a handle grip depending from a handle flange adjacent said fixture, said cover comprising:

a sterile, disposable thin walled imperivous plastics or rubber like material body including a generally hollow grip portion and a flange integral with said grip portion at an open end thereof, whereby said cover body may be fitted over said light fixture handle, and

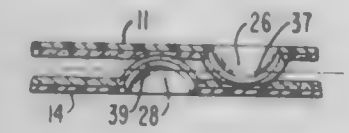
wherein reinforcing means including a plurality of spaced ribs are provided integrally of said grip portion and flange for giving said flange and grip portion a reinforced and predetermined configuration for facilitating the fit thereof to said handle.

4,605,125

MINIATURE FLEXIBLE MAGNETIC DISK ASSEMBLY WITH MOTION LIMIT STOP

Richard N. James, 4911 Kenson Dr., San Jose, Calif. 95124, assignor to Dysan Corporation, Santa Clara, Calif.

Filed Dec. 5, 1983, Ser. No. 558,396
Int. Cl.[4] G11B *23/02;* B31B *1/14*
U.S. Cl. 206—312 **16 Claims**



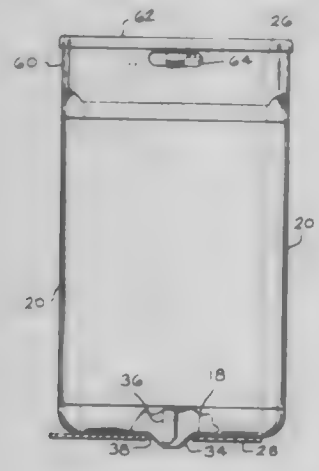
1. An enclosure for a flexible disk, said enclosure including facing major wall portions and sidewall portions defining an essentially bounded enclosure space for the disk, and motion limiting means formed in said facing major wall portions for limiting lateral migration of the disk within said enclosure space, said motion limiting means comprising a first spaced pair of inwardly extending projections formed in a first one of said facing major wall portions and a second spaced pair of inwardly extending projections formed in the other one of said facing major wall portions, said first and second pairs of projections being mutually spaced, said projections each having an outer concave surface and an inner convex surface, each said projection terminating in a curved abutment edge within said enclosure space.

4,605,126

PALLET AND TANK ASSEMBLY

James H. Goedken, and David L. Waltke, both of Beatrice, Nebr., assignors to Hoover Universal, Inc., Ann Arbor, Mich.

Filed Oct. 1, 1984, Ser. No. 656,575
Int. Cl.[4] B65D *19/00*
U.S. Cl. 206—386 **1 Claim**



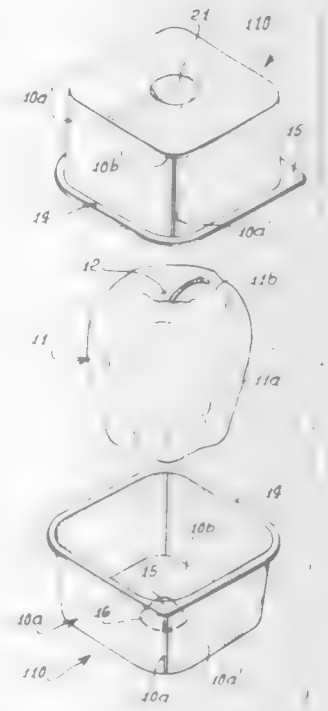
1. A multiple tank and pallet assembly comprising a rectangular pallet having short upstanding side and end walls and a bottom wall, a rectangular cluster of rectangular tanks supported on said pallet bottom wall within the boundaries defined by said side and end walls, each of said tanks having upright rigid side walls extending upwardly a substantial distance above said pallet side and end walls and two of which are engaged by a pair of said pallet side and end walls, said assembly being adaptable for handling as a unit and said tanks being individually removable from said assembly for individual handling, at least one of said tanks in said cluster including a top wall, a bottom wall that includes a downwardly extending formed sump, and a discharge conduit extending downwardly from the top wall into said sump, said pallet bottom wall including an opening through which said formed sump extends to enable said tank bottom wall to rest on said pallet bottom wall, said tank bottom wall around said formed sump being flat and said pallet bottom wall being flat.

4,605,127

FRESH FRUIT PACKAGING

Robert O. Magnussen, Jr., 20442 Lake Canyon Dr., Walnut, Calif. 91789

Continuation-in-part of Ser. No. 698,119, Feb. 4, 1985, Pat. No. 4,556,147. This application Apr. 25, 1985, Ser. No. 727,232
Int. Cl.[4] B65D *77/00*
U.S. Cl. 206—525 **10 Claims**



1. In a package for fresh fruit characterized as having a lower surface forming an upward, reentrant recess, the combination comprising

(a) upper and lower container sections to receive said fruit,

(b) first locating means on the container lower section to project upwardly into said recess, thereby to position the lower extent of the fruit, limiting its sideward movement relative to the container,

(c) and second locating means on the container upper section to engage the upper extent of the fruit, thereby to position same limiting its sideward movement relative to the container,

(d) each container section being cup-shaped and having a thin side wall and thin end wall and consisting of synthetic resin, the side wall comprising four substantially flat side wall portions joined by four outwardly convex corner wall portions, all such wall portions of each section tapering to join the end wall at outwardly convex corners, the side wall portions and corner wall portions also turning outwardly to form a continuous peripheral flange, extending about a container section mouth, said flanges being joined,

(e) each flange having a projecting corner tab adapted to be grasped and pulled to tear apart the sections,

(f) said container section wall portions being sized to closely surround said fruit, in spaced relation thereto, said second

locating means having a centrally located conical projection to downwardly enter a re-entrant recess defined by the upper extent of said fruit, said projection having a downwardly domed convex terminus, and said first locating means having a centrally located, generally conical projection to upwardly enter said upwardly re-entrant recess, said projection having an upwardly domed convex terminus.

4,605,128

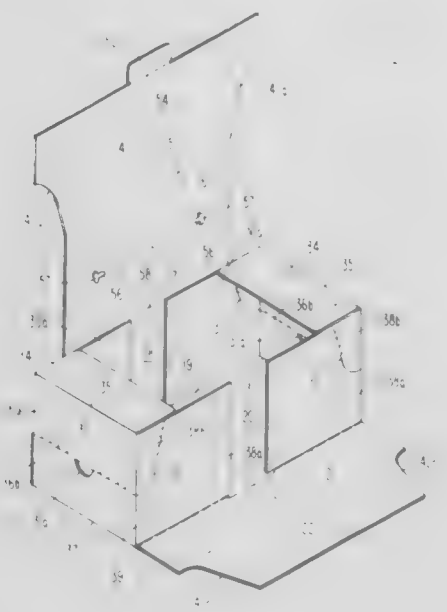
DISPENSING CARRIER BOX AND BLANK

Herbert W. Rieke, Indianapolis, Ind., assignor to Scott Paper Company, Philadelphia, Pa.

Filed Jul. 22, 1985, Ser. No. 757,592

Int. Cl.[4] B65D *5/54*

U.S. Cl. 206—611 **9 Claims**



1. A carrier dispenser comprising:
(a) a top wall spanning a central portion of the dispenser;
(b) a bottom wall;
(c) a pair of opposed side walls each having a lower section extending the length of the dispenser and an upper section extending along a central portion of the length of the dispenser;
(d) opposed end walls each comprising a lower section adjacent to the bottom wall, and an upper section connected to the lower section by a partially cut score line;
(e) a top flap connected to each upper end wall section by a fold line and tucked under the top wall; and
(f) each end wall having connected thereto a pair of side flaps each side flap having an upper section and a lower section connected to the upper section by a partially cut score line and connected to one of the lower end wall sections by a fold line, the side flaps being tucked inside the side walls to close the container and whereby the upper end walls, top flaps and upper side flap sections can be detached to provide an access opening into the dispenser.

4,605,129

CYLINDRICAL CONTAINER

Josef Detzel, Kempten; Franz Reitmeier, Sontheim, and Remigius Heubuch, Dietmannsried, all of Fed. Rep. of Germany, assignors to Internationale Octrooi Maatschapij "Octropa" B.V., Rotterdam, Netherlands

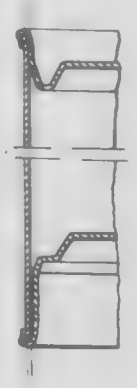
Filed Nov. 28, 1984, Ser. No. 675,697

Claims priority, application Fed. Rep. of Germany, Dec. 17, 1983, 3345802

Int. Cl.[4] B65D *3/26*

U.S. Cl. 206—623 **3 Claims**

1. A cylindrical container with a lid incorporating an opening for dispensing purposes and a piston-like base as well as a body wound from a flat, rectangular blank made from board or similar material that is closed along a longitudinal seam, said body having a body width wherein the two ends of the body are widened conically so as to be wider than said body width, and in these two ends the base and lid are inserted, the sides of which rest against the inside of the end of the body and each of which have a U-shaped edge which the two ends of the body engage and wherein the outer sections of the U-shaped edges are glued or sealed to the outside of the body, the portion of



the U-shaped edge of the base which extends over the end of the body having a line of weakening which extends all the way around the edge at the end of the body so that the part of the U-shaped edge which is glued or sealed to the outside of the body may be separated around the line of weakening from the rest of the base when the base is moved inwardly towards the lid, the sides of the base being cylindrical and having ribbing on the outside which extends in rings around the sides of the base.

4,605,130

ARTICLE DISPLAY STAND WITH SELF-FEEDING HOPPER

Ronald H. Taub, Highland Park, Ill., assignor to Taub Family Trust, Highland Park, Ill.

Filed Dec. 4, 1984, Ser. No. 677,978

Int. Cl.[4] A47F *5/11*

U.S. Cl. 211—59.2 **18 Claims**



1. A display stand for displaying articles for sale, comprising:
an upstanding support base portion of substantially hollow construction having a plurality of walls thereof defining a hollow interior, said support base portion being formed from one piece of material, such as corrugated board, paperboard, and the like, and having an integrally-formed article-supporting section for supporting thereon articles to be displayed; said article-supporting section being pivotally connected along a fold line to a rim portion of one of said walls, whereby said article-supporting section may

alternatively be swung into the hollow interior of said upstanding support base portion for use as a display stand upon which are supported articles to be displayed, and swung out of the interior of said upstanding support base portion to position said article-supporting section substantially parallel to said one wall to which it is connected;

said upstanding support base portion firmly and releasably holding said article-supporting section in the hollow interior of said upstanding support base portion when said section is positioned therein; whereby said article-supporting section may be fixed in the interior of said upstanding support base portion for displaying articles, and pivoted out of the interior for subsequent folding and storage;

a storage bin having a hollow interior in which are stored articles to be displayed on said article-supporting section, said storage bin being mounted substantially vertically to the upper portion of at least one of said plurality of walls for projection above the top of said upstanding support base portion; said storage bin having a lower exit mouth through which the stored articles exit and drop onto said article-supporting section;

said storage bin, said article-supporting surface, and said support base portion all being made from one piece of material.

4,605,131

UTILITY TABLE FOR ATTACHMENT TO A VERTICAL WALL, PARTICULARLY OF A SWITCH CABINET

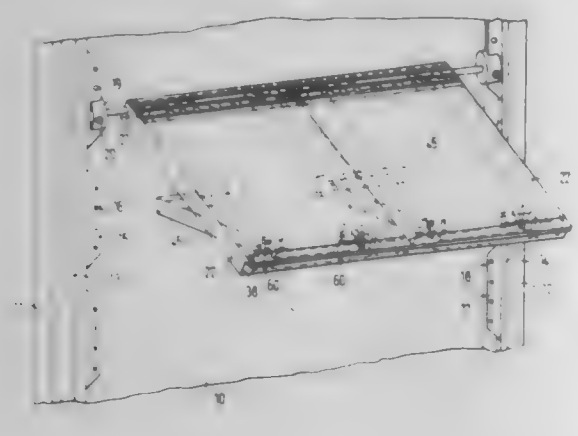
Jurgen Debus, Dietzholztal, and Claus-Dieter Ehrhardt, Springe, both of Fed. Rep. of Germany, assignors to Rittal-Werk Rudolf Loh GmbH & Co. KG, Fed. Rep. of Germany

Filed Mar. 26, 1984, Ser. No. 593,714

Claims priority, application Fed. Rep. of Germany, Apr. 12, 1983, 3313194

Int. Cl.⁴ A47F *5/08*

U.S. Cl. 211—90 **21 Claims**



1. Utility table for attachment to a vertical wall comprising a tabletop platform (**22**) having a tabletop surface with two longitudinal (**40**, **41**) and two transverse (**39**, **44**) side walls directed substantially perpendicular to said tabletop surface to form a box-shaped platform (**22**), said side walls reinforced by longitudinal supporting walls (**42**) and transverse supporting walls (**31**, **43**); and a support member (**45**) having a support member surface with two longitudinal (**46**, **47**) and two transverse (**51**, **52**) side walls forming a box-shaped support member, said support member side walls reinforced by longitudinal (**48**) and transverse (**49**) supporting walls; said tabletop platform provided on its underside with aligned bearing bushings (**34**, **36**) adjacent one said transverse side wall (**44**) supporting at least one bearing pin (**21**, **60**) engageable in bearing elements (**19**) to tiltably attach said tabletop platform to said vertical wall, with the open side of said box-shaped platform facing said vertical wall, and aligned bearing bushings (**23**, **24**) in said longitudinal supporting walls (**42**) supporting at least one bearing pin (**21**, **60**) pivotably attaching said supporting member to said tabletop platform in the area of the other said transverse side wall (**39**), with the open side of said box-shaped support member facing said vertical wall, whereby said utility table is adjustable from an initial position wherein said tabletop platform is substantially parallel to said vertical wall and said supporting member is retained between said tabletop platform and said vertical wall to an inclined work position wherein said tabletop platform is inclined and said support member is perpendicular to said vertical wall, one said support member transverse side wall (**52**) projecting from said support member surface forming a support panel abutting said vertical wall, and the other said support member transverse side wall (**51**) projecting from said support member surface forming a support abutting said tabletop surface when said utility table is in said inclined work position.

4,605,132

LIFTING TOOL

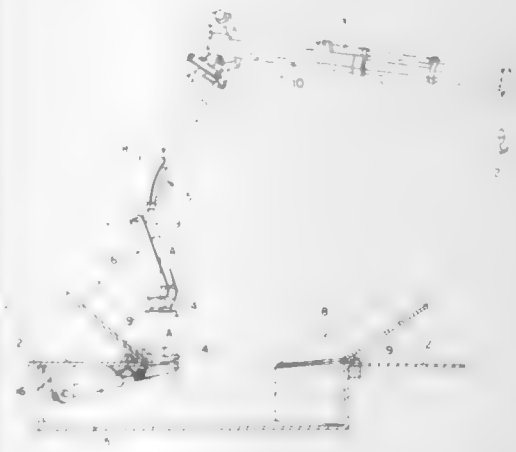
Adelbert M. D. G. van Seumeren, Mr. van Coothstraat 4, 5141 AS Waalwijk, Netherlands

Filed May 2, 1984, Ser. No. 607,227

Claims priority, application Netherlands, May 4, 1983, 8301580

Int. Cl.⁴ B66C *23/42*

U.S. Cl. 212—185 **8 Claims**



1. In a marine vessel having a deck and a shallow storage space immediately below said deck, said storage space extending laterally to define a width and longitudinally to define a length, a lifting tool adapted to be moved between a folded, stowed position within said storage space below said deck and a working position upstanding from said storage space, said lifting tool having a foot part and an upper part connected thereto about a first axis adapted to be disposed generally horizontally and longitudinally of said storage space when the lifting tool is in said stowed position, said upper part including a first section directly connected to said foot part about said first axis and extending generally in the direction of said first axis to terminate in a free end, first pivot means for pivotally connecting said foot part about a generally horizontal second axis extending laterally of said storage space and first hydraulic means for swinging said foot part about said second axis, said upper part including a second section having a length greater than the cumulative length of said foot part and said first section, second pivot means for pivotally connecting one end of said second section to said free end of said first section about a third axis allowing said second section to jackknife relative to said first section and said foot part with that end of the second section remote from said third axis being disposed laterally of said foot part within said storage space when said lifting tool is in said stowed position, and second hydraulic means for swinging said second section about said third axis.

4,605,133

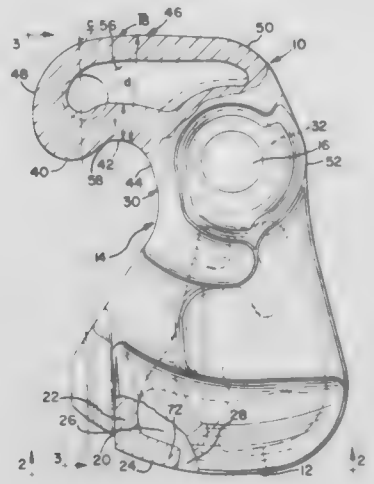
COUPLER KNUCKLE

Russell G. Altherr, Munster, Ind., assignor to Amsted Industries Incorporated, Chicago, Ill.

Filed Sep. 22, 1983, Ser. No. 534,814

Int. Cl.⁴ B61G *3/04*

U.S. Cl. 213—155 **1 Claim**



1. A railway vehicle coupler knuckle comprising a steel casting formed to provide an open-cored rear tail portion having a locking face wall and partial rear wall reinforcing web normal to said locking face, an intermediate section including a throat wall and a pin hole, and a forward portion including a nose surface and a curved pulling face devoid of draft angles merging with said throat, and a forward surface substantially uniformly spaced from said pulling face along the full length of the knuckle,

said rear tail portion being formed with a cavity defining the inner surface of said locking face wall and said reinforcing web and a lightening hole which defines the extent of the edge of said reinforcing web from said locking wall face of at least two multiples of thickness of the locking face wall,

said pin hole having end portions proximate the size of the knuckle pin and an enlarged intermediate portion spaced from said throat such that the minimum throat wall thickness is at least ⅔ the diameter of the pin.

4,605,134

REINFORCED RECESSED POURER IN INSULATING JUG

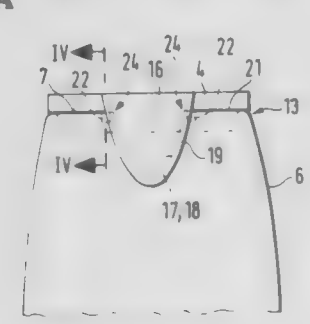
Anso Zimmermann, Bad Hersfeld, Fed. Rep. of Germany, assignor to Rotpunkt Dr. Anso Zimmermann, Niederaula, Fed. Rep. of Germany

Filed Mar. 26, 1985, Ser. No. 716,034

Claims priority, application Fed. Rep. of Germany, Apr. 2, 1984, 3412209

Int. Cl.⁴ A47J *41/00*

U.S. Cl. 215—13 A **3 Claims**



1. An insulating jug including a reinforced recessed pourer, comprising a protective housing having a housing casing, a top housing part supported on said casing, and a bottom housing part; an insulating insert being arranged within said housing casing between said housing top part and said housing bottom part, said housing top part having a handle, an opening in said housing top part sealable by a lid, said pourer being formed on said top part and extending radially outwardly through a cut-out in the housing casing of said protective housing; and cooperating extensions and recesses being arranged on both sides of said cut-out on facing surfaces of, respectively, the housing top part and the housing casing, said extensions and recesses having interlocking surfaces extending transversely of a peripheral direction of said jug.

4,605,135

SCREW-TOPPED CONTAINERS HAVING SAFETY MEANS

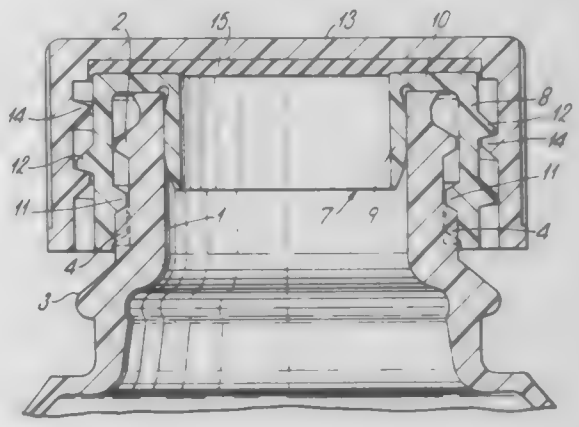
Geoffrey A. Ryder, 18 Meadow Green, Welwyn Garden City, Hertfordshire, England, assignor to Trevor G. Evans; Geoffrey A. Ryder and Lyn T. Evans, all of Hertfordshire, England

Filed Oct. 24, 1985, Ser. No. 791,069

Claims priority, application United Kingdom, Nov. 5, 1984, 8427911

Int. Cl.⁴ B65D *55/02*

U.S. Cl. 215—220 **9 Claims**



1. A container in combination with child-resistant closure means, said container comprising means defining a top opening thereof and a projecting retaining ring formed integrally with said container and extending around the outside of said top opening, and said closure means comprising a collar, an external screw-thread on said collar, means rotatably mounting said collar around said opening, said collar being retained in position around said opening by said retaining ring, and a closure cap screwable onto said collar to close said top opening, said collar and said container including inter-engaging parts which cooperate with each other whereby as said cap is turned on said collar in one direction, said collar is prevented from rotating on said container to allow said cap to be screwed onto said collar and as said cap is turned in a reverse direction, said collar turns on said container to prevent said cap from being unscrewed from said collar, but said inter-engaging parts being arranged to prevent said rotation of said collar in said reverse direction to allow unscrewing of said cap from said collar by the application to said cap of an additional force, wherein said collar is U-shaped in radial section and comprises a first portion which fits around said top opening of said container and over said retaining ring, a second portion which extends over an edge portion of said container around said top opening, and a third tubular plug portion which fits within said top opening and seals against an inside surface of said container surrounding said top opening, means forming a seal between said cap and said collar when said cap is fully screwed onto said collar; wherein said inter-engaging parts comprise a series of ratchet teeth formed integrally with said container, said ratchet teeth being spaced apart from each other around said top opening and being spaced from said retaining ring on the side thereof remote from said top opening; wherein means is provided on said collar cooperating with said retaining ring whereby said retaining ring retains said collar in position and pawls are provided on said collar, said pawls cooperating with said ratchet teeth to allow said cap to be screwed onto said collar but to prevent said collar from turning on said container to allow said cap to be unscrewed from said collar only when a

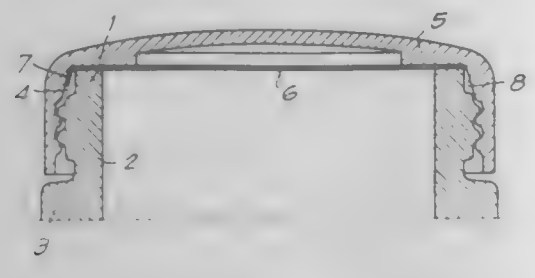
sufficient axial force, which forms said additional force, is applied to said cap to push said cap towards said top opening and hold said pawls in engagement with said teeth.

4,605,136

SEAL WITH TEAR LIP FOR CONTAINERS

Jean Debetencourt, Maulde, Belgium, assignor to Calwag S.A., Luxemburg, Luxembourg

Filed Jan. 7, 1985, Ser. No. 689,247
Claims priority, application Belgium, Jan. 9, 1984, 2/60312
Int. Cl.[4] B65D *41/62*
U.S. Cl. 215—232 **3 Claims**



1. A closure assembly for a container, said assembly comprising:

(a) a container having an annular portion that terminates in an annular end to define an opening;

(b) a seal including an aluminum foil sheet having a layer of thermally weldable material applied thereto for adherently sealing said seal to said annular end by the application of heat and pressure, said seal overlying said annular end to close said opening and including an outwardly extending tab having a length sufficient to permit the tab to be manually gripped for removal of said seal from said annular end, said tab extending outwardly away from said annular portion; and

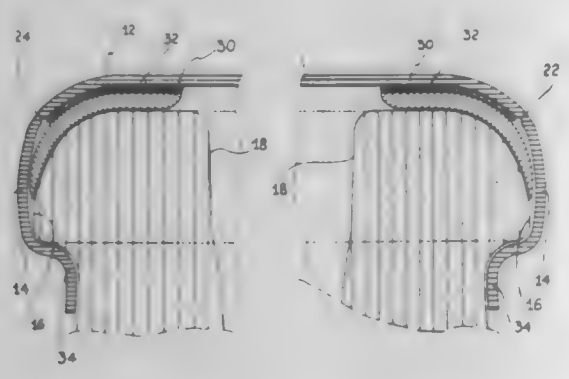
(c) a closure including a top wall in overlying relationship with said opening and a depending side wall extending from said top wall and along and over a part of the outer surface of said annular portion, said closure and annular portion including a space therebetween for completely receiving said tab in outwardly spaced relationship to said annular portion of said container.

4,605,137

BOTTLE CAP

Luigi Taragna, Rome, and Antonio Giovannelli, Anzio, both of Italy, assignors to Italcaps S.p.A., Aprilia, Italy

Filed Apr. 3, 1985, Ser. No. 719,471
Claims priority, application Italy, Apr. 12, 1984, 48025 A/84
Int. Cl.[4] B65D *41/42*
U.S. Cl. 215—254 **5 Claims**



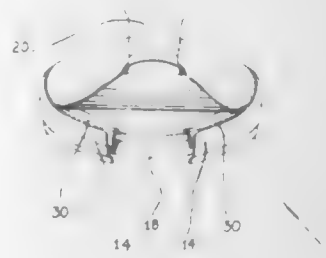
1. A bottle cap, of the tear-off type in which a central top wall which covers the top portion of the mouth of the bottle is connected to a lateral band which surrounds the opening of the neck of the bottle and is bent under the edge of the neck to grip the cap, and a tear-off tab, bounded by score lines extending from the top wall through the lateral band, and an angular sealing gasket interposed between the mouth of the bottle and the top wall and between the lateral band and the bottle mouth, said cap characterized in that said angular sealing gasket is bonded to the undersurface of the central top wall at a bond area inside the score lines, whereby, when the cap is broken by lifting the central top wall by means of the tear tab, the angular sealing gasket is lifted with the central top wall in one piece and slips off from underneath the lateral band thereby freeing or loosening the lateral band from the mouth of the bottle.

4,605,138

BOTTLE CAP

Luigi Taragna, Rome, and Antonio Giovannelli, Anzio, both of Italy, assignors to Italcaps S.p.A., Aprilia, Italy

Filed Apr. 3, 1985, Ser. No. 719,472
Claims priority, application Italy, May 16, 1984, 48205 A/84
Int. Cl.[4] B65D *41/42*
U.S. Cl. 215—254 **5 Claims**



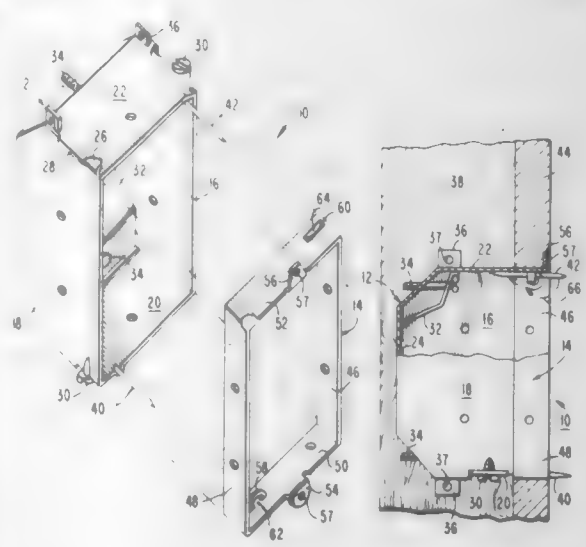
1. A bottle cap, of the tear-off type in which a central top wall which covers the top portion of the mouth of the bottle is connected to a lateral band which surrounds the opening of the neck of the bottle and is bent under the edge of the neck to grip the cap, and a tear-off tab, bounded by score lines, extends from the top wall through the lateral band and an angular sealing gasket interposed between the mouth of the bottle and the top wall and between the lateral band and the bottle mouth, said cap being characterized in that the score lines are located approximately at the boundary line between the top wall and the lateral band and said angular sealing gasket is bonded to the innermost surface of the lateral band at a bond area outside the score lines, whereby, when the cap is broken by lifting the central top wall by means of the tear-off tab, the residual lateral band appears L shaped and the angular sealing gasket is broken only at the tear tab.

4,605,139

SELF-TARGETING ELECTRICAL OUTLET BOX

Arlen M. Dacar, 41211 Mount Hope Rd., Flushing, Ohio 43977

Filed Oct. 28, 1983, Ser. No. 546,395
Int. Cl.[4] H02G *3/12*
U.S. Cl. 220—3.4 **15 Claims**



1. An electrical outlet box comprising, in combination

first and second box sections adapted to assembled together said first box section including a backwall, sidewalls extending from said backwall, and an open front, said sidewalls terminating in free edges disposed in a common plane defining said open front,

a plurality of elongated spike members rigidly mounted on said sidewalls and projecting outwardly from said open front in parallel spaced relation to one another and perpendicular to the plane of said open front,

said second box section having sidewalls and an open front and open back, said open front and back corresponding in size and shape to the open front of said first box section,

guide members on said second box section adapted to engage said spike members and align said sidewalls of said first and second box sections, said guide members and said spike members cooperating to guide said second box section into engagement with said first box section in aligned abutting relation when said first and second box sections are assembled together, whereby the sidewalls of said said second box section form extensions of the sidewalls of said first box section,

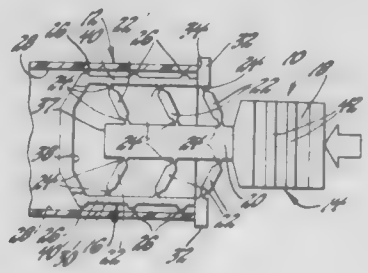
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4,605,140

TUBE CLOSURE MEMBER HAVING TOGGLE ACTION

Mark A. Koors, Kokomo, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Sep. 9, 1985, Ser. No. 773,992
Int. Cl.[4] B65D *53/00*
U.S. Cl. 220—233 2 Claims



1. A closure member used to close the aperture of an integrated circuit package carrier tube having side walls, said closure member having a central body manually operable surrounded on three sides by a rib member, a plurality of toggle means operatively interconnecting said central body and said rib member, said rib member having a surface on the outer periphery for frictionally engaging the side walls of said aperture, said toggle means being operable permitting said central body to move linearly relative to said rib member simultaneously forcing said protuberances to frictionally engage the side wall surface, said rib member having stop means limiting the axial movement of said rib member, whereby said central body causes said toggle means to laterally expand said rib member achieving the desired closure function.

4,605,141

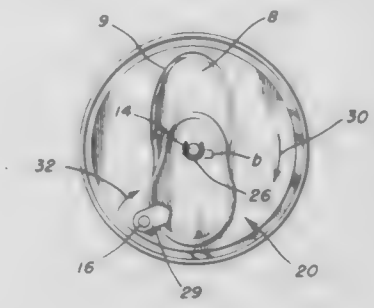
OPENING MEANS HAVING HOLD DOWN MEANS

Duksoo Won, West Haverstraw, N.Y.

Filed Mar. 1, 1985, Ser. No. 707,203
Int. Cl.[4] B65D *41/32*
U.S. Cl. 220—269 12 Claims

1. A metallic container, comprising:

a top wall having a rupturable score line defining a permanent top wall portion and an opening closure portion; pivot means spaced from said drinking opening; a pull tab pivotally connected with said pivot means, said pull tab comprising a solid pull tab portion having a size at least as large as said opening and a piercing portion, said pull tab being pivotal from an opening position wherein when said pull tab portion is lifted, said piercing portion presses on said opening closure portion to rupture said score line and form a drinking opening to a closing position wherein said pull tab portion completely covers said drinking opening; and a pivotal hold down tab located adjacent to said opening, said hold down tab being pivotal from a first normal position wherein said hold down tab is located



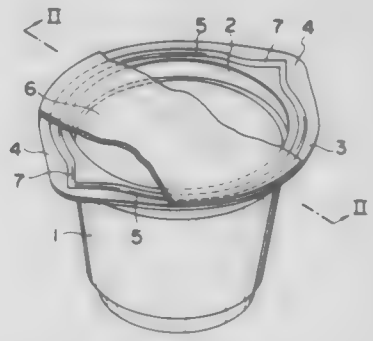
entirely over said permanent top wall portion to a second hold down position wherein a portion of said hold down tab is located over said opening whereby said hold down tab presses said pull tab portion onto said opening.

4,605,142

SYNTHETIC RESIN VESSEL AND HEAT SEALED LID

Shoji Itoh, Yokohama; Yukio Yanagawa, and Kouzō Wakabayashi, both of Saitama, all of, Japan, assignors to Toyo Seikan Kaisha, Ltd. and Tokan Kogyo Co., Ltd., both of Tokyo-To, Japan

Filed Jul. 17, 1984, Ser. No. 631,637
Int. Cl.[4] B65D *41/00*
U.S. Cl. 220—359 19 Claims



1. A vessel composed of a synthetic resin and having a top opening, a flange formed integrally with and along the peripheral edge portion of the opening, a continuous ridge protuberance formed on and along the top face of the flange, and a lid configured to overlie and rest upon the protuberance without contacting the interior of the vessel so that the lid can be heat-sealed through the protuberance to close the opening and can be removed by unsealing, said vessel having a projection of beak-like shape of the continuous ridge protuberance extending on the top face of the flange, the top face being substantially flat, toward the outer periphery at one or both portions of the protuberance where an operation for the unsealing is started or/and terminated.

4,605,143

METHOD AND APPARATUS FOR RETAINING ARTICLES ON PACKFRAMES

Steven E. Parker, 514 S. 119th St., Tacoma, Wash. 98444

Filed Feb. 4, 1985, Ser. No. 697,788
Int. Cl.[4] A45F *3/04*
U.S. Cl. 224—214 17 Claims

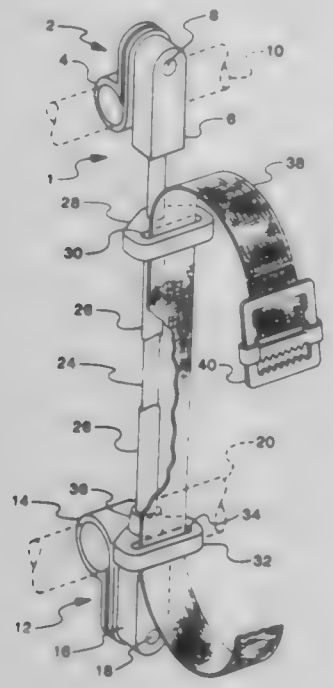
1. A device for attaching an ancillary article to a packframe which comprises:

a. first and second clamp means adapted for attachment to rigid, spaced apart, generally parallel packframe members;

b. rod means held between the clamp means;

c. at least one slotted strap retaining means swivelably mounted on the rod means and having at least limited freedom of movement along the rod means; and

d. strap means passing through the slots of the strap retaining means, said strap means being adapted to firmly but releasably hold an ancillary article to be attached to the packframe.

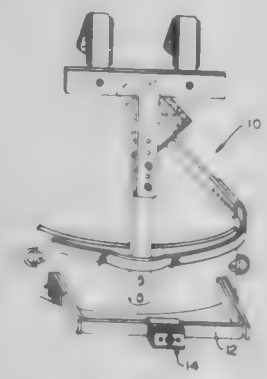


4,605,144

SUPPORT FOR A PERCUSSION INSTRUMENT

Thomas R. LaFlame, 107 Noble Ave., Pittsburgh, Pa. 15205

Filed Apr. 15, 1985, Ser. No. 723,335
Int. Cl.[4] A45F *3/10*
U.S. Cl. 224—265 15 Claims



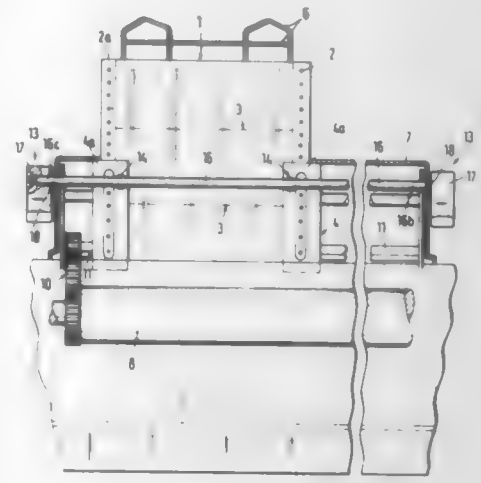
1. A mounting structure for supporting a drum or like instrument with respect to an instrument carrier frame comprising:
a clamp means adapted to be secured to such a drum;
said clamp means including inner and outer clamp elements and respective inner and outer confronting clamp surface means having cooperable surface profiles which are adapted to engage respective inner and outer surfaces of a side wall portion of such an instrument to secure the instrument between said inner and outer clamp elements;
said outer clamp element being engageable with such a carrier frame for non-rotary support thereby;
selectively releasable securing means cooperable with said clamp means for selectively securing and releasing said clamp means with respect to such a carrier frame;
laterally-spaced rotary constraint means associated with said clamp surface means for engaging such an instrument side wall portion in a manner to constrain the instrument against rotation with respect to said clamp means, and
at least one of said securing means and said rotary constraint means being effective to maintain said inner and outer clamp elements in clamping engagement with such an instrument side wall portion therebetween.

4,605,145

SHEET SEPARATING STRUCTURE

Günther Engelhardt, Niederstotzingen, and Gerhard Lohrmann, Elchingen, both of Fed. Rep. of Germany, assignors to Mannesmann AG, Duesseldorf, Fed. Rep. of Germany

Filed Jan. 9, 1985, Ser. No. 689,866
Claims priority, application Fed. Rep. of Germany, Jan. 10, 1984, 3400894
Int. Cl.[4] G03B *1/30*
U.S. Cl. 226—74 6 Claims



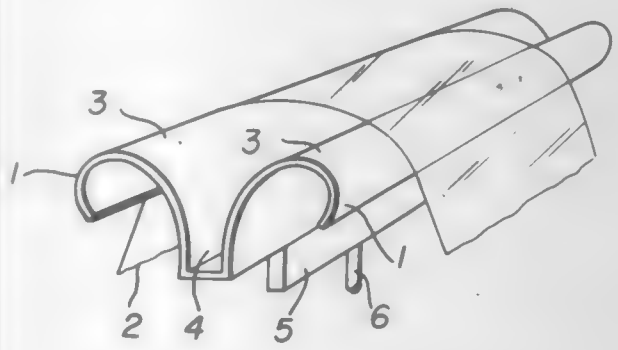
1. A structure for separating individual sheets or sheet bundles from a sheet stock supply there being transverse tear perforations provided, the structure provided for cooperating with a printer, typewriter, or the like having a housing and including means for transporting and passing such endless sheet stock through the machine; comprising:
a rotatable sheet clamping shaft for providing clamping action;
means for mounting said clamping shaft to said housing, the shaft as so mounted having first, nonclamping and second, clamping positions in relation to said sheet stock as passed through by said means for transporting;
means associated with and operated by said clamping shaft for obtaining clamping of sheet stock in the first position and unclamping in the second position; and
means disposed external to said housing and connected to said clamping shaft for turning said clamping shaft to change its disposition, permitting manual tear off of the portion of the clamped sheet stock outside the clamping zone.

4,605,146

HYDROSTATIC FILM SUPPORT

Gilles Petitjean, Arlon, Belgium, assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Feb. 15, 1985, Ser. No. 702,332
Int. Cl.[4] F26B *13/20, 13/10*
U.S. Cl. 226—97 10 Claims



1. A web handling device for providing hydrostatic support to a moving web of material comprising
(a) adjacent bearing bars, across which the supported web moves, in operation, having (i) arcuate, smooth, surfaces

and being (ii) holefree at lines of web proximity, in operation,

(b) a pressure chamber between the bearing bars and open toward the arcuate surfaces,

(c) fluid supply means to the pressure chamber.

4,605,147

ROLL FEED APPARATUS

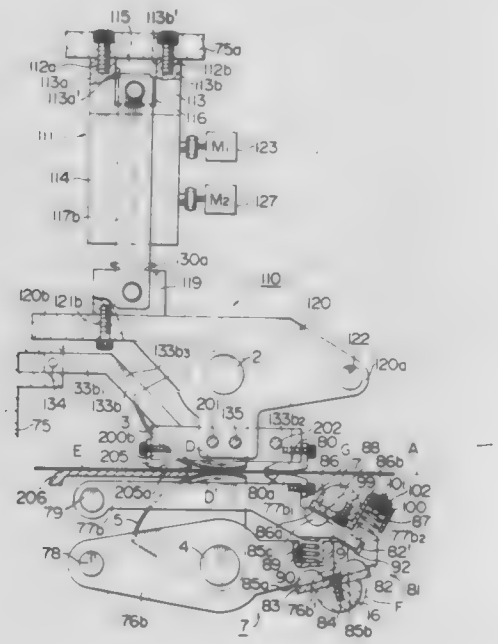
Heizaburo Kato, Shizuoka, Japan, assignor to Sankyo Manufacturing Company, Ltd., Tokyo, Japan

Filed Sep. 3, 1985, Ser. No. 771,923

Claims priority, application Japan, Sep. 18, 1984, 59-141374[U]

Int. Cl.⁴ B65H *20/02, 20/04*

U.S. Cl. 226—156 **1 Claim**



1. A roll feed apparatus having a first roll integrally carried by a first roll shaft for oscillatory rotation therewith, a second roll integrally carried by a second roll shaft for oscillatory rotation in the direction counter to that of rotation of said first roll, said second roll being adapted for cooperation with said first roll in clamping therebetween a sheet and feeding said sheet, a releasing/braking means for moving, when said rolls are rotated in the directions counter to the feeding directions, said second roll away from said first roll such as to release the clamping force which has been exerted by said rolls on said sheet, said releasing/braking means having first and second braking members, the first braking member being adapted to be moved towards said second braking member such as to temporarily fix said sheet when said sheet is unclamped from said rolls, and an adjusting device for adjusting the gap between said first and second rolls, wherein said adjusting device includes a pivot member having one end fitting on a first pivot shaft extending from the housing of the apparatus substantially in parallel with said first roll shaft and the other end which is free, said pivot member being mounted at its position between said one and said free ends on said first roll shaft, said pivot member being adapted to cause, when it pivots, said first roll shaft and said first roll to move towards and away from said second roll, and wherein said releasing/braking means includes a braking position adjusting arm disposed between said pivot member and the path of feed of the sheet such as to extend in parallel with the path and pivotally carried by said pivot member for pivotal movement about a second pivot shaft parallel to said first roll shaft, and an adjusting plate pivotally secured to said pivot member through a third pivot shaft adjacent and parallel to said second pivot shaft, said adjusting plate being disposed adjacent said path of feed of said sheet such as to extend in parallel with said path, said braking position adjusting arm having one end pivotable on a fourth pivot shaft which is adjacent said free end of said pivot member and parallel to said first roll shaft, said one end of said braking position adjusting member being mounted on said housing for a slight sliding movement together with said fourth pivot shaft in the direction of feed of said sheet and in the counter direction, the other end of said braking position adjusting arm between said first pivot shaft and said first roll shaft being provided with said second braking member, said adjusting plate being pivotally connected to said braking position adjusting by means of a fifth pivot shaft adjacent said second braking member and extending in parallel with said first roll shaft, said adjusting plate having one end disposed between said first roll shaft and said fourth pivot shaft and provided with a first guide member which is adapted to guide the feeding of said sheet in cooperation with a second guide member facing said first guide member across said path of feed of said sheet, the positions of said first to fifth pivot shaft, position of said first roll shaft, position of said second braking member, position of said first guide member and the radius of said first roll being determined in relation to one another such that an imaginary plane connecting the portions of said first roll, second braking member and said first guide member is moved substantially in parallel with the path of feed of said sheet.

4,605,148

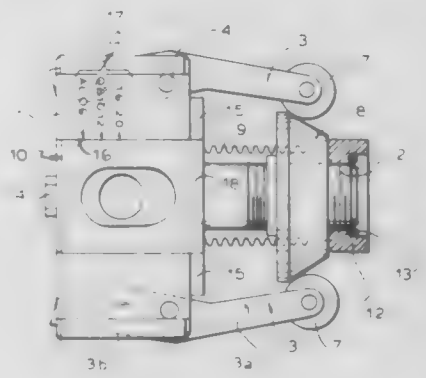
PLANETARY WIRE-FEEDING DEVICE

David A. Samokovlitski; Georgi I. Georgiev; Rumen P. Peychev; Sami S. Levi, and Lazar O. Petrov, all of Sofia, Bulgaria, assignors to Insitute po Technicheska Kibernetika iRobotika, Sofia, Bulgaria

Filed Nov. 15, 1984, Ser. No. 671,560

Int. Cl.⁴ B65H *20/00*

U.S. Cl. 226—174 **6 Claims**



1. A planetary wire-feeding device, comprising a body, two oppositely disposed similar first-class levers pivotally mounted on the body, the levers each having a first and a second arm, the first arms of the levers being in contact with the faces of pistons which carry skewed wire-feeding rolls arranged on the body opposite one another and radially with respect to the axis of an electrode wire traveling axially through the body of the device, a guiding cone on the body, the second arms of the levers being in thrusting relationship with the guiding cone, the cone being mounted axially movably within the body, a coil compression spring disposed on the body coaxially therewith, the larger diameter end of the guiding cone being in contact with one end of the coil compression spring, the other end of the spring being in contact with an adjustable abutment means on the body of the device for calibrating the force which the spring exerts upon the cone, whereby to adjusting the force which the feeding rolls exert upon the wire being fed thereby.

4,605,149

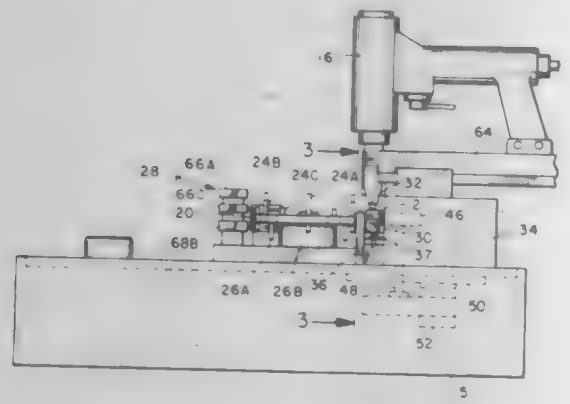
STAPLING MACHINE

Eldon F. Farrens, Imperial Beach, Calif., and Arthur M. Tillery, 4602 Katy Ct., La Mesa, Calif. 92041, assignors to Arthur M. Tillery and Elinor E. Tillery, both of National City, Calif.

Filed Apr. 19, 1985, Ser. No. 725,218

Int. Cl.[4] B27F *7/09, 7/34, 17/28*

U.S. Cl. 227—7 **9 Claims**



1. A machine for driving objects into a rod at spaced intervals, comprising:

object applying means for driving objects into the rod;

drive means for moving the rod in a drive path past the object applying means;

an indexing wheel mounted for rotation about an axis transverse to the drive path and positioned with its periphery adjacent the drive path to be contacted and driven to rotate by a rod moving along the drive path;

a series of switch actuating pins of at least two different heights projecting outwardly at spaced intervals from an annular ring around one axial face of the wheel;

switch means adjacent the periphery of the wheel for controlling operation of said object applying means, including a first switch positioned for contact with pins of both heights and a second switch positioned for contact with the tallest pins only, on rotation of said indexing wheel; and

switch selector means for selecting either of the switches for controlling operation of the object applying means.

4,605,150

BUTTON SETTING APPARATUS WITH OPTICAL POSITION INDICATOR

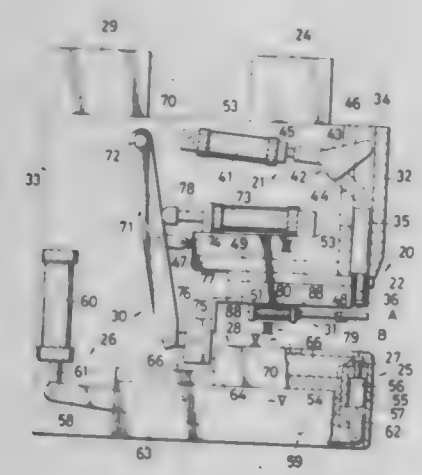
Ichiro Ikehara, Toyama, Japan, assignor to Nippon Notion Kogyo Co., Ltd., Tokyo, Japan

Filed Dec. 26, 1984, Ser. No. 686,541

Claims priority, application Japan, Dec. 29, 1983, 58-200487[U]; Dec. 29, 1983, 58-200493[U]

Int. Cl.[4] A41H *37/10*

U.S. Cl. 227—18 **5 Claims**



1. An apparatus for attaching a pair of fastener elements of a garment fastener to a garment fabric, comprising:

(a) a frame;

(b) a pair of vertically aligned upper and lower units supported by said frame for receiving the respective fastener elements, said lower unit having a die, said upper unit having a punch reciprocably movable toward and away from said die to join the two fastener elements together with the garment fabric sandwiched therebetween;

(c) a pusher mechanism for supplying one fastener element at a time to said upper unit;

(d) a first actuator mounted on said frame for driving said pusher mechanism; and

(e) means for indicating a position on the garment fabric where the two fastener elements are to be attached, said indicating means including

(1) a tubular housing having therein a light source for projecting a beam of light, and a reflector for reflecting the light beam dowardly, and an aperture in a circumferential wall of said tubular housing below said reflector for the passage therethrough of the reflected light beam, and

(2) a second actuator operatively connected to said tubular housing for reciprocating it toward and away from said position where said aperture is in registry with a common vertical axis of said punch and said die.

3. An apparatus for attaching a pair of fastener elements of a garment fastener to a garment fabric, comprising:

(a) a frame;

(b) a pair of vertically aligned upper and lower units supported by said frame for receiving the respective fastener elements, said lower unit having a die, said upper unit having a punch reciprocably movable toward and away from said die to join the two fastener elements together with the garment fabric sandwiched therebetween;

(c) a pusher mechanism for supplying one fastener element at a time to said upper unit;

(d) a first actuator mounted on said frame for driving said pusher mechanism; and

(e) means for indicating a position on the garment fabric where the two fastener elements are to be attached, said indicating means including

(1) a light projector having a light source for projecting a beam of light, a reflector for reflecting the light beam downwardly, and means defining an aperture for the passage therethrough of the reflected light beam,

(2) a second actuator operatively connected to said light projector for reciprocating at least said reflector and said aperture-defining means toward and away from said position where said aperture is in registry with a common vertical axis of said punch and said die, and

(3) means for selectively changing the color of the light beam projected from said light source.

4,605,151

CHUCK ASSEMBLY

Kenneth W. Brown, Cambridge, United Kingdom, assignor to The Welding Institute, Cambridge, England

Filed Jul. 12, 1985, Ser. No. 754,614

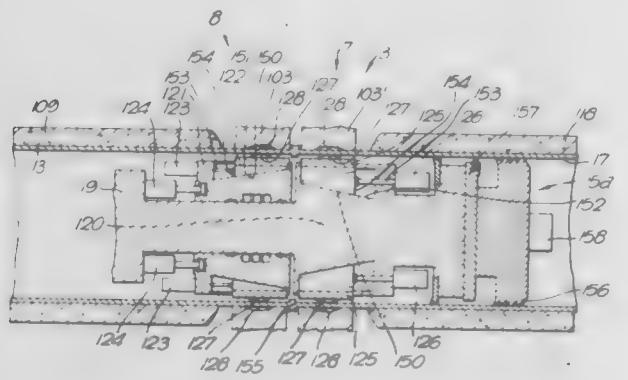
Claims priority, application United Kingdom, Jul. 20, 1984, 8418553; Jul. 20, 1984, 8418554

Int. Cl.[4] B23K *20/12, 37/04*

U.S. Cl. 228—2 **18 Claims**

1. A chuck assembly comprising a plurality of external jaws arranged in an annular configuration; and a corresponding plurality of internal jaws positioned within a pipe in use with the internal and external jaws in alignment, said jaws being adapted to move in a radial direction relatively to one another to grip a pipe wall therebetween, wherein at least one of said

internal and external jaws defines a griping portion comprising one of a projection and a recess adapted to cooperate with a



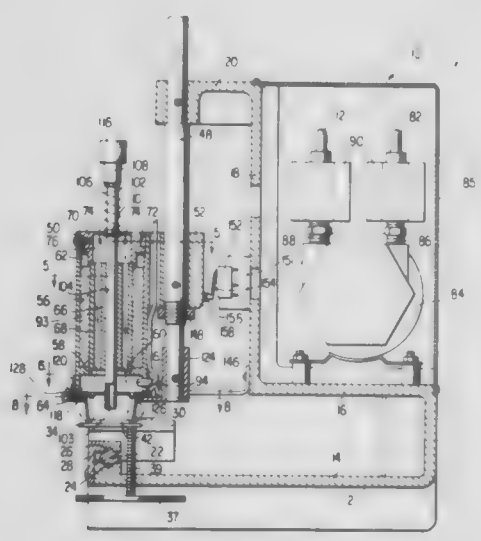
corresponding recess or projection respectively in the wall of a pipe.

4,605,152

DEVICE FOR ATTACHING MODULAR ELECTRONIC COMPONENTS TO OR REMOVING THEM FROM AN INSULATIVE SUBSTRATE

Robert Fridman, Randallstown, Md., assignor to Pace, Incorporated, Laurel, Md.

Filed Feb. 24, 1984, Ser. No. 583,218
Int. Cl.[4] B23K *1/12, 31/02*
U.S. Cl. 228—6.2 10 Claims



1. A device for attaching modular electronic components to or removing them from a substrate, said device comprising:

(a) a frame having a support shaft secured at one end to said frame,

(b) heater means slidably mounted on said support shaft intermediate the ends thereof for heating a flow of air from a source, said heater means having a first nozzle means secured to one end thereof for directing said heated air flow,

(c) means for adjustably positioning said substrate containing said modular electronic component beneath said heater means, and

(d) holder means slidably mounted on the other end of said shaft, said holder means having a second nozzle means removably mounted thereon which is adapted to substantially enclose said modular electronic component and direct said heated air flow from said first nozzle means adjacent the sides of said component to melt solder associated therewith.

9. A device for attaching modular electronic components to or removing them from a substrate where each said component has a plurality of terminals extending from the periphery thereof, said device comprising:

heater means having at least one passage extending therethrough for heating a fluid flowing through said passage;

first nozzle means disposed at one end of the heater means, said first nozzle means including a plate having a plurality of nozzle openings where the configuration of the plurality of openings generally corresponds to that of the plurality of terminals of the component and where the heated fluid from the heater means flows through the nozzle openings; and

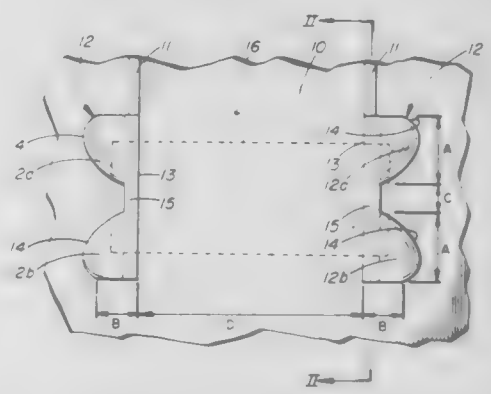
second nozzle means disposed adjacent said first nozzle means for directing the heated fluid flowing through the nozzle openings to the terminals of the component, said second nozzle means having side walls defining a lower opening positionable adjacent said electronic component, said lower opening being larger than the periphery of said electronic component, said second nozzle means being separated from said substrate by a gap whereby heated fluid flows out of said gap after it has melted said solder.

4,605,153

SHAPED SOLDER PAD FOR REFLOW SOLDERING OF SURFACE MOUNTING CYLINDRICAL DEVICES ON A CIRCUIT BOARD

Jacques Van Den Brekel, Nepean, and Thomas K. Y. Ho, Ottawa, both of Canada, assignors to Northern Telecom Limited, Montreal, Canada

Filed Jun. 17, 1985, Ser. No. 745,108
Int. Cl.[4] B23K *3/06*
U.S. Cl. 228—56.3 3 Claims



1. A mounting position for mounting a cylindrical surface mounting device on a surface of a circuit board by reflow soldering, comprising two shaped solder pads spaced apart on said surface along an axis, each solder pad having two spaced humps of solder, the humps spaced apart in a direction normal to said axis and defining a channel in which an end of the device can rest prior to reflow soldering, said channel also being of solder; each pad having a straight inner edge extending normal to said axis, the humps each having a convex arcuate outer edge extending along said surface away from said inner edge in a direction parallel to said axis and each hump having a convex arcuate shape viewed in cross-section in a plane normal to said surface and to said axis; the channels being aligned on said axis, the solder pads being spaced along said axis a distance whereby the ends of the device overlie said channels, the end surfaces of the device positioned outside of an outer surface of each channel and inside said arcuate outer edges.

4,605,154

RADIATOR HEATER SOLDER POURING PROCESS

Wayne A. Rhodes, Larray, Tenn., assignor to Johnstone Railway Supply Mfg., Co. Inc., Kenton, Tenn.

Filed Jan. 28, 1985, Ser. No. 695,391
Int. Cl.[4] B23K *31/02;* B21D *53/02;* B23P *15/26*
U.S. Cl. 228—102 10 Claims

1. A method of soldering tubular members of a cooling radiator which are inserted through holes in a top and bottom header comprising:

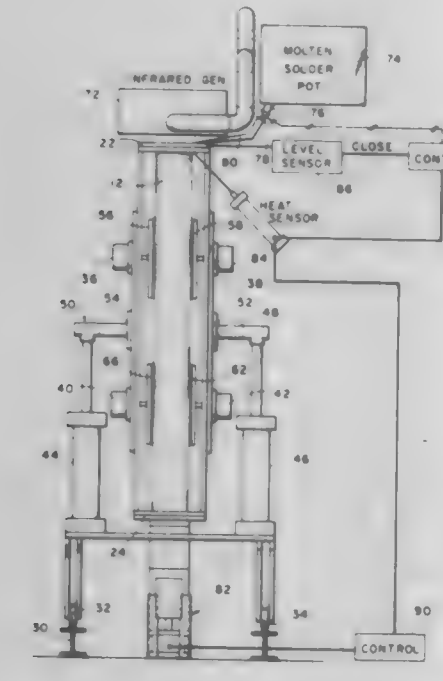
(a) sealing the space between said tubes and the wall of said holes with a high temperature solder melting at the temperature T_1;

(b) using infrared heat to heat one of said headers to a temperature T_2 which is less than T_1 but above a lower melting point temperature T_3 of a second solder;

(c) upon said one header reaching the temperature T_2 pouring a selected amount of said second solder in a molten stage in said header and blowing a cooling medium through said tubular members.

8. An apparatus for soldering tubular members of a cooling radiator which are inserted through holes in a top and bottom header, said header having a pan and which comprises:

frame means for holding said radiator in an upright position with said header in a horizontal position;



heating means to heat said header to a selected temperature;

a solder pot for holding molten solder which has a melting temperature less than said selected temperature and supported by said frame means at a position at a higher level than said header and including valve means for permitting the flowing of liquid solder onto the pan of said header;

means to sense the temperature of said header and to open said valve means when said header reaches said selected temperature;

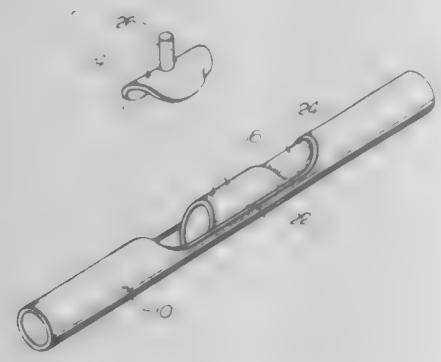
means to blow a cooling medium through said tubular members.

4,605,155

METHOD OF REPAIRING HIDDEN LEAKS IN TUBES

Joseph D. Duesberg, Canoga Park, and Raymond C. Mills, Sr., Oxnard, both of Calif., assignors to The United States of America as represented by the Administrator, National Aeronautics and Space Administration, Washington, D.C.

Filed Aug. 30, 1985, Ser. No. 770,920
Int. Cl.[4] F16L *55/18*
U.S. Cl. 228—119 **16 Claims**



1. A method of repairing a leak in a tube in which access to the tube in the area of the leak is restricted, comprising the steps of:

removing a portion of the tube wall from an accessible area of the tube near the leak to form an opening having a length along the tube;

inserting a tubular insert whose outer circumference is approximately equal to the inner circumference of the tube and whose length is shorter than the length of said opening made in the tube wall into said opening, and positioning the insert so the insert wall covers the leak and each end of the insert is accessible through a space between that end of the insert and the adjacent circumference of said opening;

securing the insert within the tube so as to seal the leak;

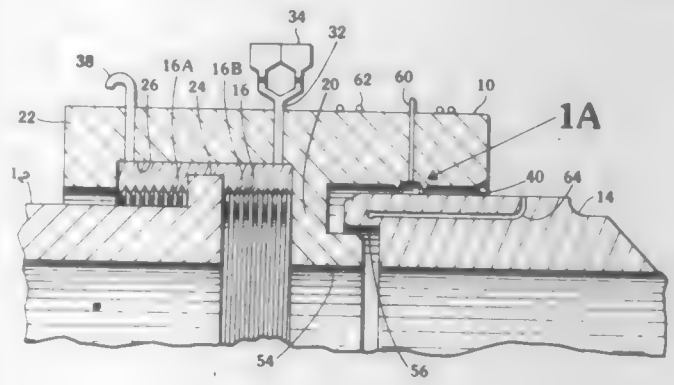
sealing each space between the end of the insert and the circumference of said opening with a patch to close the wall of the tube whereby a leak-free tube repair is obtained.

4,605,156

COLD WELDED JOINT

Donald D. Stenger, San Diego, Calif., and John F. Coulahan, Bridgewater, N.J., assignors to General Dynamics Corporation/Convair Div., San Diego, Calif.

Filed Feb. 25, 1985, Ser. No. 705,248
Int. Cl.[4] B21D *39/04;* **F16L** *53/00, 55/00*
U.S. Cl. 228—127 **10 Claims**



1. A cold weld joint formed by forces of shrink fit comprising:

a cylindrical hollow coupling member for receiving two conductors, and inner surface of said coupling member being provided with weld pads,

a first conductor having a mating surface area which is brought into telescoping relationship with said pads,

restricting means in said coupling member and said first conductor to limit the flow of the material of said weld pads,

means on said coupling to heat said coupling to increase its diameter to allow said first conductor to be telescoped within said coupling member, said coupling upon cooling causes the material of the weld pads to flow and engage said first conductor by the force of shrink fit to form a cold weld between the coupling and the first conductor,

a bellows, and

a second conductor in telescoping relationship with the coupling member and connected thereto by said bellows which provides compensation for misalignment of the coupling member and conductors when initially brought together.

7. A cold weld joint formed by forces of shrink fit comprising:

a cylindrical bored coupling member for receiving two conductors, the bore in said coupling member being provided with cold weld pads and spaced apart raised serrations,

a first conductor having flush serrations on its outer diameter spaced apart distance coextensive with the serrations on said coupling to form a mating surface are therebetween which is brought into telescoping relationship with said cold weld pads,

heating coils on the outer surface of said coupling to cause said weld pads to increase in diameter to enable telescop-

ing of first conductor as a step in joint assembly and disassembly process; and

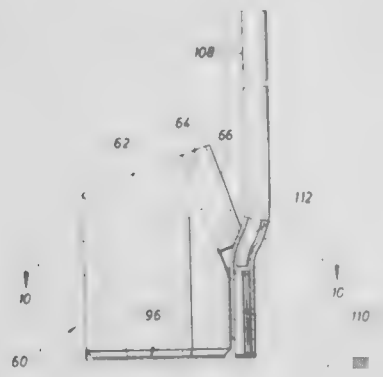
a second conductor in telescoping relationship with the coupling and connected thereto by bellows alignment means which provide compensation for misalignment of the parts when initially brought together.

4,605,157

DRILL BIT MANUFACTURING METHOD

John D. Barr, Cheltenham, and Haydn R. Lamb, Gloucester, both of United Kingdom, assignors to NL Industries, Inc., New York, N.Y.

Filed Jan. 31, 1984, Ser. No. 575,555
Int. Cl.[4] E21B *10/58*
U.S. Cl. 228—132 **23 Claims**



1. A method of mounting a cutter device, having a stud portion defining one end thereof and a cutting formation generally adjacent the other end, in a pocket in a drill bit body member, said method comprising the steps of:

forming channel means extending into said pocket by inserting a channel member into said pocket adjacent a side wall thereof;

inserting brazing material into said channel means;

inserting said stud portion of said cutter device into said pocket;

then heating said bit body member to cause said brazing material to flow through said channel means into said pocket;

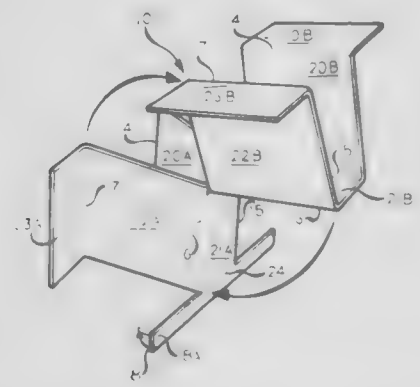
then re-cooling said bit body member.

4,605,158

CARTON DIVIDER WITH POSITIONING MEANS

Harold A. Barton, South Pasadena, Calif., assignor to Owens-Illinois, Inc., Toledo, Ohio

Continuation of Ser. No. 498,384, May 26, 1983, abandoned.
This application Jun. 24, 1985, Ser. No. 748,107
Int. Cl.[4] B65D *1/36*
U.S. Cl. 229—15 **3 Claims**



1. In a rectangular corrugated paperboard carton having opposed pairs of vertical side walls defining a rectangular perimeter thereof, each said wall having flaps at either vertical end, respectively, foldable to form opposite end closure walls of said carton, the combination therewith of

a divider formed from a rectangular blank of corrugated paperboard having a longitudinal center line, opposite end panels on either side of said center line, an intermediate panel hingedly connected to each of said end panels and a rectangular center panel on opposite sides of said center line hingedly connected at both side edges to the intermediate panels adjacent thereto, center panels being hingedly connected at a top edge to each other along the said center line, and a center line slot on either side of said center panels separating the end and intermediate panels on one side of the center line from the end and intermediate panels on the other side thereof;

said central panels having a width substantially less than the width of the carton within which the divider is adapted to be positioned, a positioning flap hingedly connected to the free edge of one of said central panels, said positioning flap having a length greater than the width of the central panel and extending beyond both side edges of the central panel;

said divider being folded at said center line to form a generally H-shaped divider for insertion in the carton with the positioning flap in surface engagement with the bottom end closure wall of the carton;

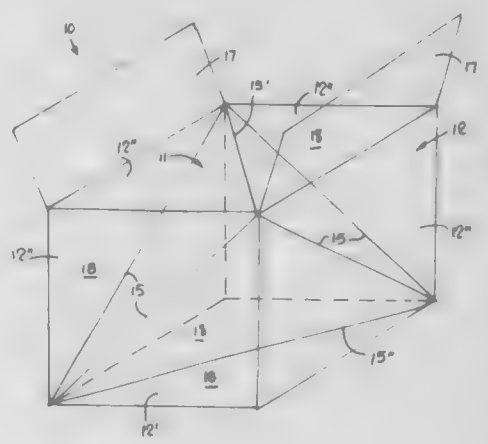
and interengaging means between said positioning flap and said carton for holding the divider in assembled position in said carton.

4,605,159

REINFORCED BOX STRUCTURE

Gad J. Harrel, 119 Wilson Rd., Dollard des Ormeaux, Quebec, Canada

Filed Mar. 20, 1985, Ser. No. 713,804
Claims priority, application Canada, Mar. 29, 1984, 450811
Int. Cl.[4] B65D *5/00, 81/02*
U.S. Cl. 229—116 **6 Claims**



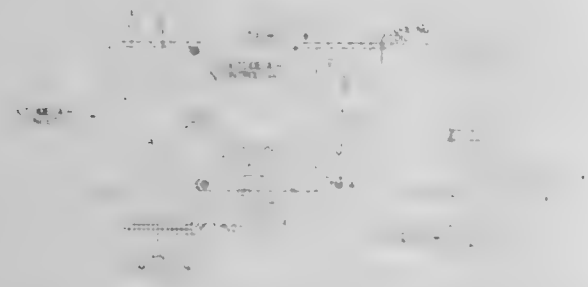
1. A reinforcing triangular container for a box enclosure, said container comprising a four sided hollow triangular enclosure formed of cardboard material and defining six straight edges and four side walls, securable opening means for access to the interior of said triangular enclosure for positioning articles therein, said triangular enclosure being dimensioned for positioning in said box enclosure with at least some of said straight edges in diagonal contact with a respective wall of said cardboard box to reinforce same while said side walls of said triangular enclosure are spaced inwardly of the walls of said box, there being two of said triangular enclosures in said cardboard box, four of said straight edges of each said triangular enclosure being in contact with a side wall of said cardboard box, each said triangular enclosure having a top and bottom transverse edge disposed in transverse relationship to like edges of the other of said triangular enclosures with one of said sides of each said triangular enclosure in partial abutment, said two triangular enclosure being arrested between said side walls of said box.

4,605,160

AIR BLENDING APPARATUS FOR HEATING, VENTILATING AND AIR CONDITIONING (HVAC)

James L. Day, 7480 Dryer Rd., Victor, N.Y. 14564

Filed Jun. 8, 1984, Ser. No. 618,801
Int. Cl.[4] G05D *23/13*
U.S. Cl. 236—13 26 Claims



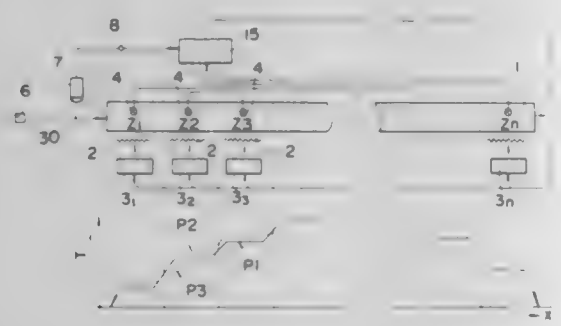
1. Air-blending apparatus comprising a chamber having a first inlet for outside air and a second inlet for return air and an outlet, a partition dividing a portion of said chamber adjacent to said inlet into first and second compartments, said partition extending from inlet ends of said compartments near said first and second inlets in the direction of said outlet to outlet ends of said compartments, first and second dampers pivotally mounted in said chamber on opposite sides of said partition, said dampers being rotatable into and out of closing engagement with said oulet ends of said compartments, said dampers defining a region of said chamber on opposite sides of said partition and between said outlet ends thereof and the outlet of said chamber of volume variable in accordance with the position of said dampers, means responsive to conditions representing stratification of the air in the vicinity of said outlet of said chamber, and means responsive to said last-named means for controlling the position of said dampers whereby to prevent stratification of the air in the vicinity of said outlet of said chamber.

4,605,161

PATTERN-SWITCHING TEMPERATURE CONTROL APPARATUS

Takehiko Motomiya, and Shigeu Ogawa, both of Tokyo, Japan, assignors to Ohkura Electric Co., Ltd., Tokyo, Japan

Filed Apr. 22, 1985, Ser. No. 725,413
Claims priority, application Japan, Nov. 24, 1984, 59-247015
Int. Cl.[4] G05D *23/19*
U.S. Cl. 236—15 BC 9 Claims



1. A pattern-switching temperature control apparatus for a furnace with a number of zones, each zone having a temperature detecting element and a heating element mounted thereon, comprising

a memory storing a series of inside temperature distribution patterns for the furnace and a series of numbers, each of which numbers represents a predetermined quantity of works of one kind to be heat-treated in the furnace at corresponding one of said temperature distribution patterns;

a temperature setting element on which one of said inside temperature distribution patterns is placed zone by zone;

a counting means for counting the number of those works of one kind which have been heat-treated at one of said temperature distribution patterns;

a setting means adapted to reset said counting means to zero and to place a next succeeding one of said inside temperature distribution patterns from said memory when count of said counting means coincides with said predetermined quantity of said one kind of works; and

a regulating means adapted to control said heating element depending on difference between said inside temperature distribution pattern stored in the temperature setting element and actual temperature detected by said temperature detecting element zone by zone.

4,605,162

EMERGENCY VENTILATOR OPENER FOR LIVESTOCK HOUSES

Granlin W. Crider, Rte. 1, Box 17, Bremen, Ala. 35033

Filed Jan. 2, 1985, Ser. No. 688,299
Int. Cl.[4] F24F *13/10;* G05D *23/30*
U.S. Cl. 236—49 4 Claims



1. In a livestock and poultry house having at least one ventilation opening along a wall thereof, a closure for opening and closing said ventilation opening, an electrically operated ventilation means for providing ventilation to the house and an electrical power supply, the improvement comprising:

(a) electrically operated thermal generator means operatively connected to said power supply and having a thermal output substantially confined to the region immediately surrounding said generator means; and

(b) latch means operatively connected to said closures and mounted for movement selectively to a first position proximal said thermal generator and to a second position distal said thermal generator and responsive to said thermal output to open said closures upon movement of said latch means to said second position, wherein said thermal generator means comprises a cylindrical resistance heater having an axial bore for receiving at least a portion of said latch means therewithin.

4,605,163

PASSENGER ROOM HEATING SYSTEM FOR USE WITH BOILING LIQUID ENGINE COOLING SYSTEM

Yoshimasa Hayashi, Kamakura, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Aug. 9, 1985, Ser. No. 764,113
Claims priority, application Japan, Sep. 29, 1984, 59-202943
Int. Cl.[4] B60H *1/02*
U.S. Cl. 237—2 A 9 Claims

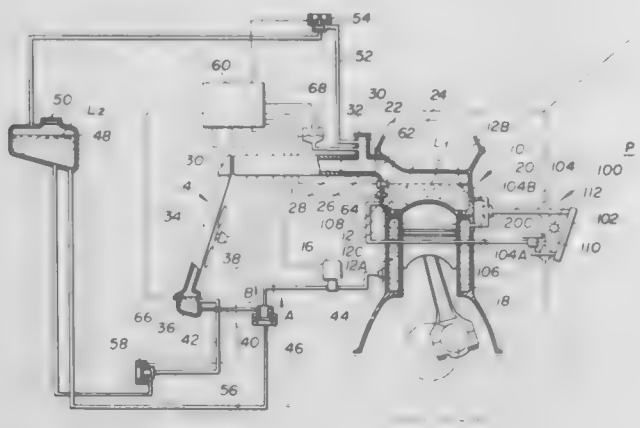
1. In a motor vehicle powered by a combustion engine cooled by a boiling liquid cooling system which includes a coolant jacket defined in the engine proper and containing

therein a liquid coolant to a certain level to cover highly heated portions of the engine, a condenser for condensing the gaseous coolant introduced thereinto from the coolant jacket and recirculating means for recirculating the coolant thus liquefied by the condenser back into the coolant jacket,

a passenger room heating system comprising:

a heat exchanger through which a liquid flows for achieving heat exchange between the liquid and air in the passenger room;

verticallty spaced first and second outlet ports formed in the engine proper to connect the coolant jacket separately, the second outlet port being positioned higher than the first outlet port when the engine proper is properly mounted in the vehicle;



a first conduit extending from a junction portion of the first and second outlet ports of said coolant jacket to a coolant inlet port of said heat exchanger;

a second conduit extending from a coolant outlet of said heat exchanger to said coolant jacket;

pumping means for enforcedly recirculating the coolant through the first conduit, the heat exchanger, the second conduit and the coolant jacket in this order; and

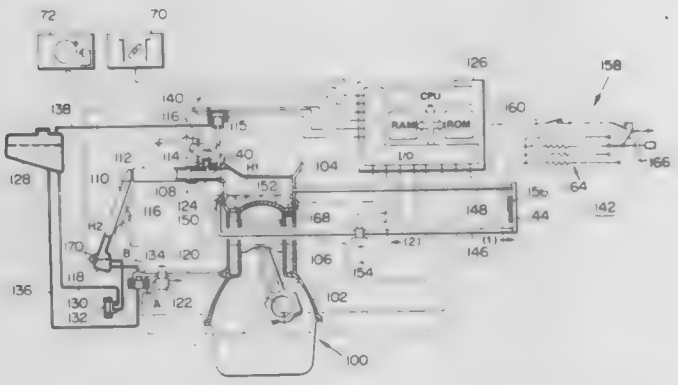
switch means associated with the first and second outlet ports, the switch means functioning to open the second outlet port and close the first outlet port when the temperature of the coolant is lower than a predetermined degree and to close the second outlet port and open the first outlet port when the temperature of the coolant is higher than the predetermined degree.

4,605,164

CABIN HEATING ARRANGEMENT FOR VEHICLE HAVING EVAPORATIVE COOLED ENGINE

Yoshimasa Hayashi, Kamakura, and Naoki Ogawa, Yokohama, both of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Sep. 17, 1985, Ser. No. 777,019
Claims priority, application Japan, Sep. 29, 1984, 59-204584
Int. Cl.[4] B60H *1/02*
U.S. Cl. 237—2 A **15 Claims**



1. In an automotive vehicle having a passenger compartment and an engine compartment:

an engine, said engine being disposed in said engine compartment and having structure which is subject to high heat flux;

a cooling system for removing heat from said engine; and

a passenger compartment heating arrangement incorporated with said cooling system, said cooling system and said passenger heating arrangement comprising:

a coolant jacket disposed about said engine into which coolant is introduced in liquid form and allowed to boil;

a radiator fluidly communicated with said coolant jacket, said radiator being arranged to receive gaseous coolant produced by the boiling of the liquid coolant in said coolant jacket and condense same to its liquid form;

means for returning liquid coolant from said radiator to said coolant jacket in a manner which maintains the level of coolant in said coolant jacket at a first predetermined level, said first predetermined level being selected to immerse said strcture in a predetermined depth of liquid coolant;

a cabin heater disposed in said passenger compartment, said cabin heater including a core through which coolant may pass;

a first port formed in said coolant jacket at a level higher than said first predetermined level;

a second port formed in said coolant jacket at a level lower than said first predetermined level and proximate said structure;

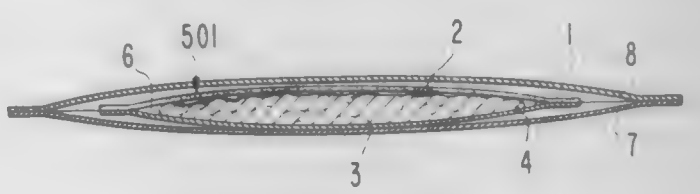
a circulation pump in fluid communication with said core and said first and second ports, said pump being selectively energizable to pump coolant from said first port to said second port via said core during a first mode of operation and pump coolant from said second port to said first port via said core during a second mode of operation.

4,605,165

CONSTANT RATE VOLATILE COMPOSITION DISPENSING ARTICLE AND PROCESS FOR USING SAME

Augustinus G. Van Loveren, Rye; Marina A. Munteanu, New York, both of N.Y., and Geoffrey B. Seaber, Ijsselstein, Netherlands, assignors to International Flavors & Fragrances Inc., New York, N.Y.

Filed Jun. 13, 1984, Ser. No. 620,167
The portion of the term of this patent subsequent to Jun. 14, 2000, has been disclaimed.
Int. Cl.[4] A61L *9/04, 9/01, 9/12*
U.S. Cl. 239—6 **12 Claims**



1. A hollow totally enclosed structure capable of the release into the space surrounding said structure at a substantially constant rate of at least one volatile consumable material consisting of volatile consumable material molecules, said volatile consumable material being selected from the group consisting of: perfume compositions, herbicide compositions, insecticide compositions, animal repellent compositions, air freshener compositions, pheromone compositions, odor maskant compositions, deodorant compositions, insect repellent compositions and compositions for the evaluation of olfactory funtioning in humans; said structure comprising (i) a thin shell totally enclosing an inner void with at least a first finite section of said thin shell being a microporous polymer shell section consisting of a porous membrane having (1) the property of transporting water vapor at a rate of from about 50 $g/m^2/day$ up to about 1000 $g/m^2/day$ at about 25° C. and at about 50% relative humidity at about atmospheric pressure and having an air transport rate of 100–20,000 Gurley seconds (Gs) and (2) a

thickness in the range of from about 0.01 mils up to about 20 mils; the remaining second section of said thin shell having a porosity equal to or less than the porosity of said first finite section, said microporous polymer shell section consisting essentially of a polyolefin intimately admixed with a powder having an average particle diameter of from about 0.3 up to about 500 microns, said powder being a filler material incompatible with said polymer, said powder being in a proportion of from about 5 to 100 parts by weight per 100 parts by weight of polymer, the said volatile composition having a volatility at ambient conditions which is higher than the transmissibility of said microporous polymer shell section, and (ii) located within said inner void on a portion of said second section, said volatile consumable material, releasably entrapped in a gel.

4,605,166

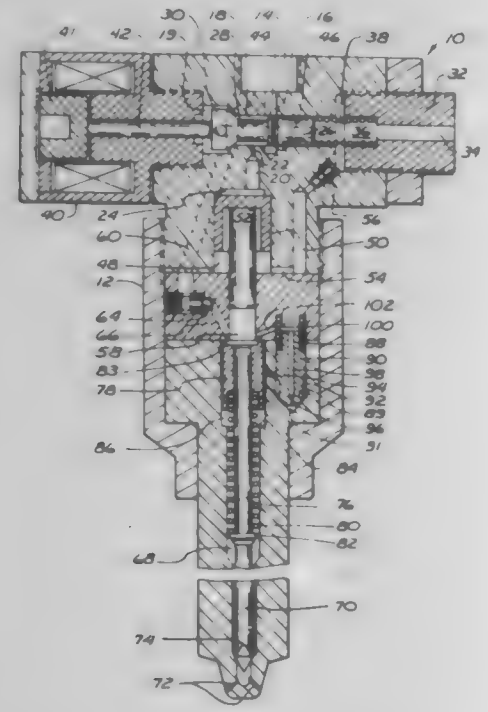
ACCUMULATOR INJECTOR

William W. Kelly, Granby, Conn., assignor to Stanadyne, Inc., Windsor, Conn.

Filed Feb. 21, 1985, Ser. No. 704,033

Int. Cl.[4] F02M *41/16, 47/02;* B05B *1/30;* F02D *39/10*

U.S. Cl. 239—96 **12 Claims**



10. An accumulator injector for injecting a pressurized charge of fuel into a cylinder of an internal combustion engine comprising:

an injector body having a fuel inlet for receiving pressurized fuel at a supply pressure, an accumulator pressure chamber communicating with said fuel inlet for accumulating pressurized fuel, and a valve opening for discharging accumulated pressurized fuel;

a control chamber communicating with said fuel inlet and adapted for rapid charging with pressurized fuel;

pressure release means controllably actuable to effect a rapid decrease in pressure in said control chamber;

a valve member axially displaceable in response to opposing pressures in said accumulator and control pressure chambers to open and close said valve opening;

a shuttle bore forming opposing bleed chambers communicating with said control and accumulator pressure chambers;

a shuttle piston means received in said shuttle bore and displaceable in response to the pressure differential between said control chamber and said accumulator chamber to inversely variably change the volume of said opposing bleed chambers so that actuation of said pressure release means results in a two-phase displacement of said valve member.

4,605,167

ULTRASONIC LIQUID EJECTING APPARATUS

Naoyoshi Maehara, Nara, Japan, assignor to Matsushita Electric Industrial Company, Limited, Japan

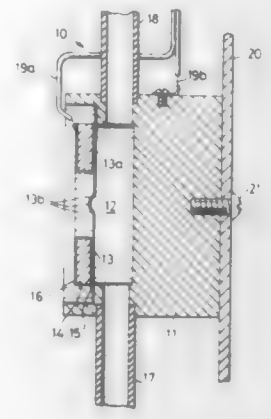
Filed Jan. 17, 1983, Ser. No. 458,881

Claims priority, application Japan, Jan. 18, 1982, 57-6284; Feb. 10, 1982, 57-20030; Jun. 23, 1982, 57-107901

The portion of the term of this patent subsequent to Aug. 6, 2002, has been disclaimed.

Int. Cl.[4] B05B *3/14*

U.S. Cl. 239—102 **13 Claims**



1. An ultrasonic liquid ejecting apparatus comprising:

a housing including a chamber for holding liquid therein having an intake port connected to a liquid supply container;

a vibrator system including a vibrating member secured to said housing in pressure transmitting relation with the liquid in said chamber so that the vibrating member defines a front wall of said chamber and having at least one nozzle opening therein and a piezoelectric transducer secured to said vibrating member for inducing therein a displacement at each vibration to discharge a small amount of liquid through said nozzle opening;

means in communication with said chamber for maintaining static pressure therein at a value equal to or lower than pressure in front of the vibrating member; and

means for exciting said transducer at a frequency substantially equal to the resonant frequency of said vibrator system.

4,605,168

ROTATING SPRAYING TYPE COATING APPARATUS WITH WASH SHROUD

Kazuyuki Tachi; Chikaaki Okuda, and Shoichi Suzuki, all of Aichi, Japan, assignors to Kabushiki Kaisha Toyota Chuo Kenkyusho, Aichi, Japan

Filed Dec. 5, 1985, Ser. No. 805,570

Claims priority, application Japan, Dec. 13, 1984, 59-190365

Int. Cl.[4] B05B *3/10, 15/02*

U.S. Cl. 239—112 **4 Claims**

1. A rotating spraying type coating apparatus with wash shroud, comprising:

a rotary drive device;

a spraying head connected to the rotary drive device;

a paint feed passage connected to base end of the spraying head;

a paint radiating part formed at top end of the spraying head;

an air jet device of annular shape for jetting an air flow to direct paint particles forward which are radiated from the paint radiating part;

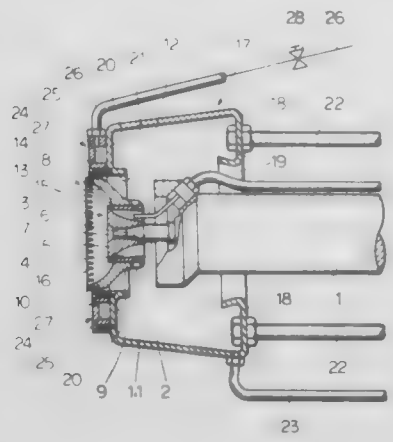
a coating pattern adjusting means for varying the flow rate of the air jetting from the air jet device;

a wash shroud covering outside of the spraying head and being movable forward and rearward; and

an opening formed at front end of the wash shroud,

whereby said wash shroud is disposed during coating to the rearward position where the paint radiating part of the spraying head projects from the opening at the front end

of the wash shroud and during washing to the forward position where the paint radiating part of the spraying head is arranged within the wash shroud,



wherein said air jet device is installed around the opening at the front end of the wash shroud.

4,605,169

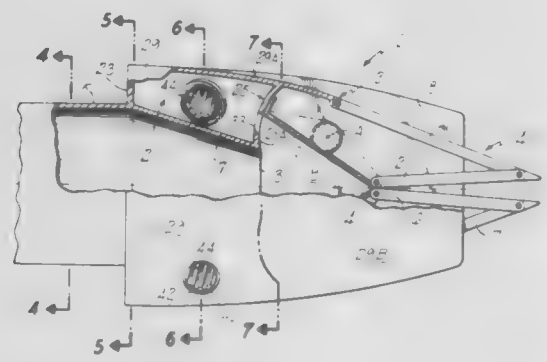
EXHAUST NOZZLE CONSTRUCTION

John L. Mayers, Lake Park, Fla., assignor to United Technologies Corporation, Hartford, Conn.

Filed Dec. 27, 1983, Ser. No. 565,488

Int. Cl.⁴ F02K *1/42*

U.S. Cl. 239—265.29 **12 Claims**



1. In combination with an aircraft engine exhaust duct, a peripheral housing positioned around said exhaust duct forming a peripheral chamber, nozzle means being movable to control exhaust flow through said exhaust duct to provide a primary flow path, inlet openings located through said peripheral housing into said peripheral chamber for receiving exhaust flow from said exhaust duct, said nozzle means being movable to direct exhaust flow from said exhaust duct into said peripheral chamber through said inlet openings, outlet openings positioned in said peripheral housing to direct exhaust flow therefrom to provide a secondary flow path.

4,605,170

APPARATUS FOR WETTING MOLD SURFACES WITH A LIQUID

Hans Thurner, Baldham, Fed. Rep. of Germany, assignor to Bayrisches Druckgusswerk Thurner GmbH & Co. KG, Bavaria, Fed. Rep. of Germany

Filed Aug. 23, 1985, Ser. No. 768,811

Int. Cl.⁴ B29C *39/22, 45/17, 45/83*

U.S. Cl. 239—444 **17 Claims**

1. Apparatus for wetting mold surfaces with a pressurized fluid for cooling, cleansing and lubricating purposes in pressure casting machines including a pair of mold elements comprising:

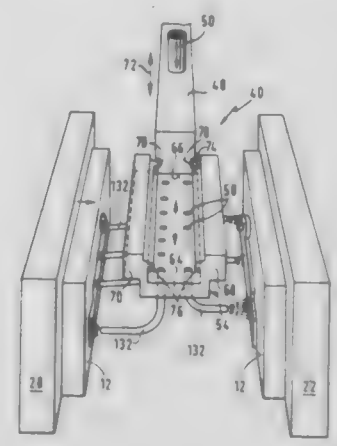
a spraying head having at least one directionally adjustable spraying nozzle;

said spraying head having pressure fluid inlet and pressure fluid feed line means;

channel means interconnecting said inlet with each spraying nozzle;

means defining at least one adjustable throttle valve to directly control the pressurized fluid directed to each spraying nozzle;

vertically and horizontally movable means for positioning said spraying head relative to said mold to spray said pressure fluid on said mold;



said spraying head further including an elongated manifold member and a replaceable spraying nozzle carrier sealingly secured to said elongated manifold, said manifold being fixed relative to said means for positioning, said elongated manifold member being provided with the inlets, channels and throttle valves for receiving, distributing and controlling the flow of said pressurized fluid therethrough; and

said spraying nozzle carrier slidably mounted on said manifold member and including passage bores aligned with and interconnecting said channels in said manifold member with said spraying nozzles for delivery of said pressure fluid to said mold surfaces.

4,605,171

FUEL INJECTOR HAVING FUEL-FILLED DAMPING CHAMBER

Dietrich Trachte, Leonberg, and Helmut Giess, Aspach, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Apr. 13, 1984, Ser. No. 600,043

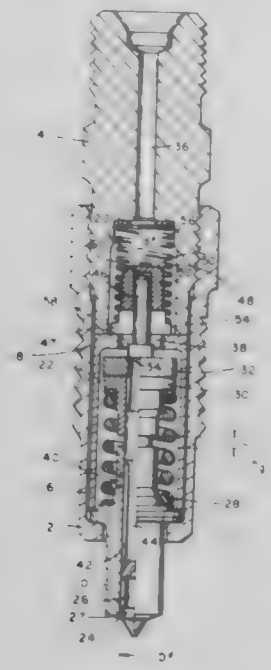
Claims priority, application Fed. Rep. of Germany, Aug. 13, 1983, 3329380

Int. Cl.⁴ F02M *61/08, 61/16*

U.S. Cl. 239—453 **6 Claims**

1. A fuel injection nozzle for internal combustion engines comprising a nozzle body, a valve seat integral with said nozzle body, and a valve needle displaceably supported in said nozzle body at an injection opening, said valve seat being monitored by said valve needle injection opening in the fuel flow direction, a closing spring in a first chamber for loading said valve needle, a fuel inflow line arranged to discharge into said first chamber, a second chamber upstream from said first chamber, a dividing wall means separating said second chamber from said first chamber and including a blocking shoulder in said second chamber, said valve needle including an end extension piston that extends with radial clearance through said dividing wall means into said second chamber, a cap including a blind bore bottom positioned on said end extension piston and arranged in said second chamber, a damping chamber formed by said cap, said blind bore bottom of said cap and an end face of said end extension piston, a throttle conduit in said cap adapted to lead away from and to said second chamber into said damping chamber, a restoring spring in said second chamber, acting on the cap for shifting the cap against said blocking shoulder on said dividing wall means, said cap arranged to rest on said blocking shoulder no later than after a

first pre-stroke of the valve needle, and said end extension piston of the valve needle includes a cross section which is



smaller than a cross section of said piston enclosed by said valve seat.

4,605,172

SENSORY APPARATUS

Dieter Ahlert, Ostercappeln, Fed. Rep. of Germany, assignor to Dierks & Söhne GmbH & Co. KG, Osnabrueck, Fed. Rep. of Germany

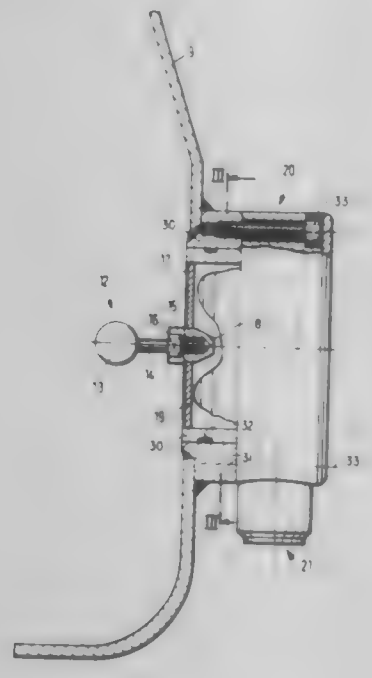
Filed Oct. 1, 1984, Ser. No. 656,629

Claims priority, application Fed. Rep. of Germany, Oct. 5, 1983, 3336218

Int. Cl.[4] B02C *25/00*

U.S. Cl. 241—33

15 Claims



1. Sensory apparatus for substances being mixed in a container comprising a container having a wall with an opening, a deflectable plate member disposed over said opening in said wall and which forms a continuation of said wall, a sensor element connected to said plate member and protruding from the inside of said plate member into the container and into the path of movement of the substances being mixed in the container such that said plate deflects depending on the mixing conditions in said container, and sensor detectors externally of said container on the outside of said plate member sensing the deflection of said plate member and providing signals indicative of said deflection and thereby indicative of the mixing conditions in said container.

4,605,173

SIZE REDUCTION MACHINE

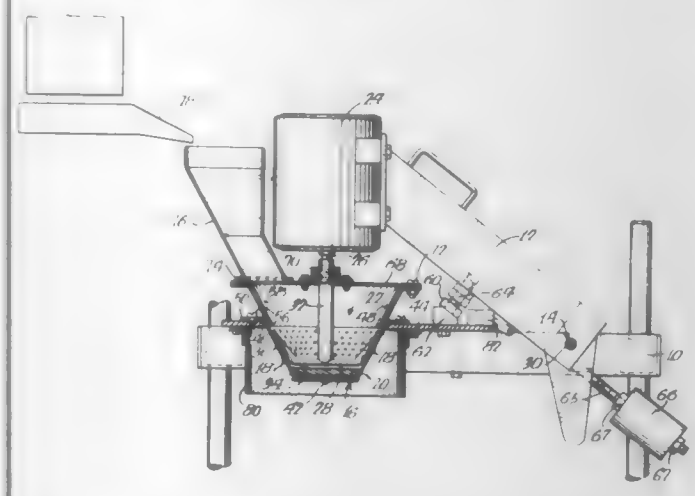
Harvey A. Edmonds, 108 Paradise Harbor Blvd., North Palm Beach, Fla. 33408

Filed Apr. 4, 1984, Ser. No. 596,651

Int. Cl.[4] B02C *19/08*

U.S. Cl. 241—36

7 Claims



1. Apparatus for reducing the particle size of materials comprising:

a frame;

an arm pivotally connected intermediate its ends to said frame;

a counter weight movably mounted on one end of said arm;

a motor having a drive shaft mounted on the other end of said arm;

an impeller connected to the free end of said motor shaft;

an enclosure carried by said frame below said motor, said enclosure having fenestrated side walls and an open top for receiving the motor shaft and said impeller, said enclosure being spaced apart from said impeller, said impeller being movable into and out of said enclosure upon pivotal movement of said arm; and

an adjustable stop positioned between said frame and said arm for limiting the maximum downward travel of said impeller into said enclosure, but not restricting upward travel of said impeller within said enclosure.

4,605,174

VANE WHEEL ARRANGEMENT WITH NIHARD WEAR PLATES

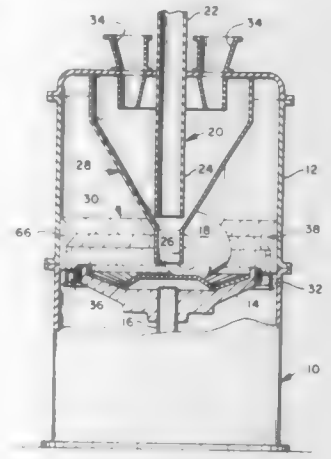
Theodore V. Maliszewski, North Canton, and David E. Kohler, Windsor, both of Conn., assignors to Combustion Engineering, Inc., Windsor, Conn.

Division of Ser. No. 447,916, Dec. 8, 1982. This application Jul. 2, 1984, Ser. No. 627,157

Int. Cl.[4] B02C *15/00*

U.S. Cl. 241—52

5 Claims



1. In a bowl mill having a substantially closed separator body, a rotatable grinding surface having a circumference and mounted within the separator body so as to be rotatable within

the separator body, at least one grinding roll mounted within the separator body so as to coact with the rotatable grinding surface, and an annular passage formed between the circumference of the rotatable grinding surface and the separator body so as to enable air to flow upwardly through the annular passage, the improvement comprising a vane wheel assembly for use within the bowl mill so as to be operative to affect the flow of air traveling within the bowl mill, said vane wheel assembly comprising:

(a) a plurality of vane wheel segments mounted to the rotatable grinding surface so as to be mounted in spaced relation one to another around the circumference of the rotatable grinding surface, each of said plurality of vane wheel segments including a vane wheel portion extending outwardly of the circumference of the rotatable grinding surface and into the annular passage at an angle of substantially 45 degrees relative to a vertical plane and in a direction counter to the direction of rotation of the rotatable grinding surface, so that air flowing through the annular passage is engaged by said vane wheel portion of each of said plurality of vane wheel segments and is caused thereby to change direction and to flow, upon exiting from the annular passage, in a direction opposite to the direction of rotation of the rotatable grinding surface;

(b) a plurality of vane wheel supports equal in number to the plurality of vane wheel segments, each of said plurality of vane wheel supports being fastened to a corresponding one of said plurality of vane wheel segments;

(c) a plurality of vane wheel deflector plates equal in number to the plurality of vane wheel segments, each of said plurality of vane wheel deflector plates being fastened to an adjoining pair of said plurality of vane wheel segments so as to be equally spaced across said adjoining pair of said plurality of vane wheel segments; and

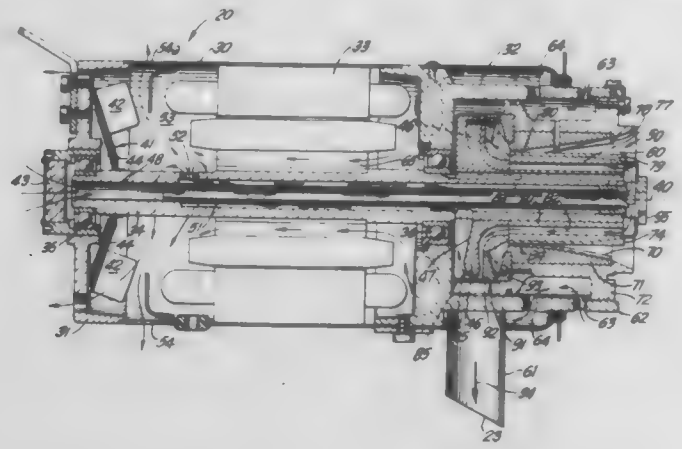
(d) an air restriction block means mounted around the circumference of the rotatable grinding surface, said air restriction block means comprising a multiplicity of air restriction blocks exceeding in number the number of said plurality of vane wheel segments, each of said air restriction blocks being mounted to the rotatable grinding surface so as to be located between said vane wheel segments.

4,605,175

PRECISION COFFEE GRINDER

Robert L. Weber, New Canaan, Conn., assignor to Webston, Inc., New Canaan, Conn.

Filed Sep. 10, 1984, Ser. No. 648,876
Int. Cl.[4] B02C *19/12*
U.S. Cl. 241—56 **13 Claims**



1. A grinder for grinding roasted coffee beans without heating the beans, including:

hopper means for holding a quantity of beans;

a grinder assembly having an entry port to receive the beans, an exit port to expel the ground beans, a motor having an output shaft, grinder head means to grind the beans, and air flow means to flow air through the grinder head means;

wherein the grinder head means grinds the beans in two stages, said first stage including a cracking cutter means positioned at said entry port to cut the beans into shavings and having a fixed member and a rotatable member rotatably driven by said shaft, one of said members being a cone having blades thereon and the other being a right cylindrical reel having blades thereon;

said second stage including a micro grinder means to finely grind the shavings received from the first stage and having at least one rotatable ring with blades on its flat face which is rotatably driven by said shaft, said micro grinder means receiving cut bean shavings from said first stage and delivering ground coffee selected to be in the size range 100–1500 microns to said exit port, wherein the predominant over 80% particle size is within 50 microns of the size selected;

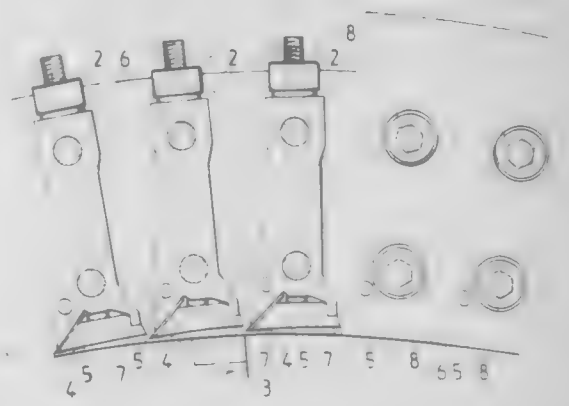
and wherein said micro grinder comprises two rings each being ring-shaped with a flat face thereon and having blades on said flat face, the blades facing each other and being spaced apart, and one ring being rotatable and the other ring being fixed.

4,605,176

BLADE RING FOR SHAVER

Matti Jaakonmäki, and Pentti Raura, both of Valko, Finland, assignors to Rauma-Repola Oy Loviisan Tehtaat, Finland

Continuation of Ser. No. 456,740, Jan. 10, 1983, abandoned. This application Jun. 26, 1985, Ser. No. 748,713
Claims priority, application Finland, Jan. 12, 1982, 820099
Int. Cl.[4] B02C *13/14*
U.S. Cl. 241—240 **2 Claims**



1. A blade ring for a shaver of chips comprising a plurality of blade units arranged in close succession in fixed ring configuration and constituting an envelope, a rotor rotatable within said envelope for only urging the chips against said blade units, each blade unit comprising a cutting blade having a cutting edge and a trailing counterblade, and means for adjustment of the thickness of the shavings of the chips comprising a pivot for each blade unit close to its respective cutting blade and paralleling its cutting edge for selectively turning said blade unit about said pivot, whereby the position of the counterblade of said blade unit is radially adjusted with reference to a cutting edge of a next blade unit to change the thickness of chip shavings.

4,605,177

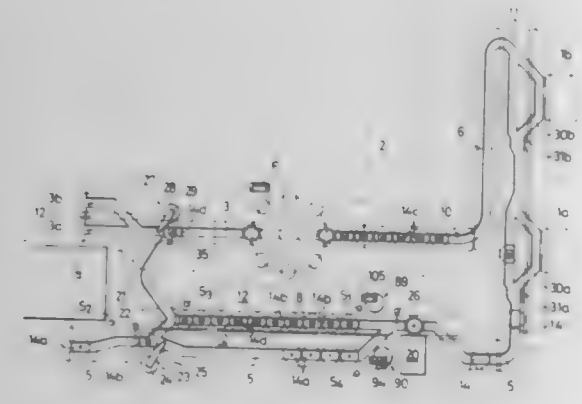
BOBBIN TRANSPORTING AND TREATING SYSTEM

Hiroshi Uchida, Oumihachiman; Kazuo Nakanishi, Uji, and Yoshihiko Kawasaki, Kyoto, all of Japan, assignors to Murata Kikai Kabushiki Kaisha, Japan

Filed Sep. 19, 1984, Ser. No. 652,338
Claims priority, application Japan, Sep. 20, 1983, 58-173689; Sep. 21, 1983, 58-174843; Sep. 21, 1983, 58-174845
Int. Cl.[4] B65H *54/20, 67/06*
U.S. Cl. 242—35.5 A **10 Claims**

1. A bobbin and carrier transporting system, comprising: a winder, a bobbin yarn end readying device, a bobbin remover, a spinning bobbin supply station, a bobbin supplying path for

transporting bobbins and carriers from said bobbin yarn end readying device to said winder, a returning path for feeding back to said bobbin yarn end readying device bobbins and carriers discharged from said winder, a bobbin carrier discharging path branched from said bobbin supplying path for transporting bobbin carriers carrying bobbins from which yarn ends have not been readied successfully by said yarn end



readying device, a bypass path branched from said bobbin supplying path for transporting bobbins and carriers from said bobbin carrier discharging path to said returning path, and a branch path connecting a beginning end of said bypass path to said returning path, said bobbin remover, said spinning bobbin supplying station and said yarn end readying device being located adjacent said returning path.

4,605,178

DEVICE FOR THE COMPENSATING STORAGE OF PACKING BAND IN PACKAGING MACHINES

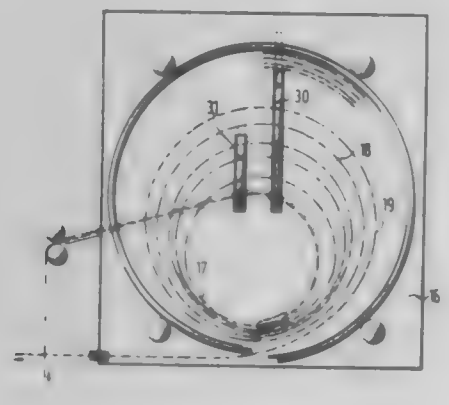
Günter Bartzick, Ennepetal; Gerd Bühne, Schwelm, and Reinhard Naydowski, Ennepetal, all of Fed. Rep. of Germany, assignors to Hoesch Aktiengesellschaft, Dortmund, Fed. Rep. of Germany

Filed Oct. 4, 1984, Ser. No. 657,679

Claims priority, application Fed. Rep. of Germany, Oct. 4, 1983, 3335964

Int. Cl.[4] B65B *13/02;* **B65H** *20/24, 20/26*

U.S. Cl. 242—55 **4 Claims**



1. A device for compensating for different speeds of a moving packaging band during unwinding and supplying of the packaging band to a packaging machine, the packaging band is unwound relatively slowly from a supply roll for long intervals and is supplied to a packaging machine after it has passed through a compensating storage unit interposed between the supply roll and the packaging machine, the device is characterized in that the compensating storage unit comprises:

a storage area adapted and constructed to accept and temporarily store a portion of a packaging band in a loosely coiled coil roll, the storage area being slightly wider that the width of a coil roll of a packaging band;

a circular ring positioned within the storage area defining a circle having a radius, a coil roll of a packaging band is positioned inside the circular ring, a coil roll of a packaging band having an outermost coil the radius of which is limited by the radius of the circular ring;

a guide supply track adapted and constructed for directing a packaging band from a supply roll to form a coil roll of a packaging band in the circular ring, a coil roll of a packaging band having an innermost coil to which a packaging band of the supply roll is directed;

a sensor for sensing the diameter of a innermost coil of a coil roll of a packaging band in the circular ring, the sensor comprises a lever which is pressed against a coil roll, the lever is provided with outwardly extending substantially parallel arms connected at inner ends with a generally centrally located sloping section that contacts the coils and as the radius of the smallest coil becomes smaller it presses the lever away from the coils; and

a switch for stopping a moving packaging band through the compensating storage unit when a preselected diameter of an innermost coil of a coil roll of a packaging band in the circular ring is reached, as determined by the movement of the lever away from the coils.

4,605,179

APPARATUS FOR WINDING UP FLAT MATERIAL WEBS

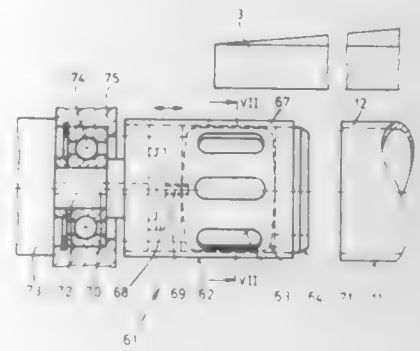
Conrad Arbter, Saal an der Saale, Fed. Rep. of Germany, assignor to Kolb & Schule AG, Fed. Rep. of Germany

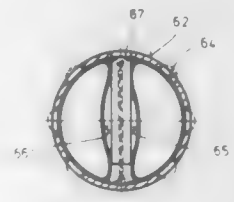
Filed Sep. 21, 1984, Ser. No. 653,876

Claims priority, application Fed. Rep. of Germany, Sep. 23, 1983, 3334370

Int. Cl.[4] B65H *75/24, 75/28*

U.S. Cl. 242—72 B **7 Claims**





1. An apparatus for winding flat material webs, comprising a rotatable winding cylinder having a longitudinally extending slot in the surface thereof and an open end, a clamping device arranged within said cylinder behind the slot, the web being guided over the winding cylinder and being deflectable into the slot, said clamping device including means for engaging a deflected loop of the web and holding it within the winding cylinder, said clamping device permitting release of the web after the winding is effected, a blade movable over the winding cylinder and engageable in the slot to deflect a loop of the web material into engagement with the clamping device, said clamping device including resilient means engaging the loop of web material deflected through the slot on each side thereof, a back-up roller on each side of said winding cylinder supporting said winding cylinder for rotation, contact pressure roller means on each side of said back-up rollers, and a take-off device associated with said winding cylinder mounted alongside said winding cylinder at one end thereof, said take-off device comprises an axially displaceable clamping head which is introducible into the open end of said winding cylinder and which is braced against the interior of said winding cylinder in

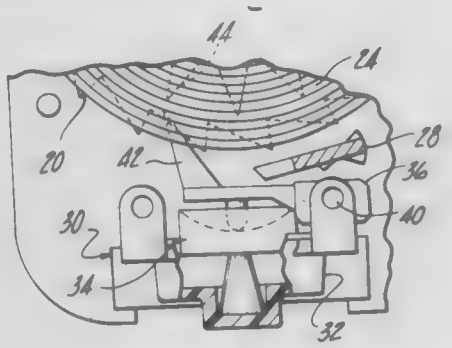
the manner of an internal chuck, said clamping head having a slot for receiving said blade, said blade having a blade portion enterable through the slot of said clamping head, said clamping head having an insert which comprises two inflatable parts arranged at respective sides of the slot of said clamping head, and a fluid pressure supply line connected to said inflatable parts for inflating them.

4,605,180

SEAT BELT RETRACTOR ASSEMBLY

Alfred J. Fisher, III, Grosse Pointe Farms, and Timothy J. Schmidt, Troy, both of Mich., assignors to General Safety Corporation, St. Clair Shores, Mich.

Filed Aug. 13, 1984, Ser. No. 640,468
Int. Cl.[4] B60R *22/40*
U.S. Cl. 242—107.4 A **4 Claims**



1. In an emergency locking seat belt retractor which prevents seat belt webbing from being withdrawn when said retractor is subjected to deceleration above a predetermined level, said retractor of the type having an inertia sensitive actuator with an actuator pawl engageable with a spur gear which rotates with a toothed sprocket, said actuator pawl further engageable with a locking bar which cooperates with said toothed sprocket to selectively inhibit withdrawal of said seat belt webbing, the improvement comprising;

a spur gear and toothed sprocket assembly wherein said toothed sprocket defines a plurality of apertures and wherein a portion of each tooth of said spur gear is disposed in one of said apertures whereby said spur gear is in interlocking engagement with said toothed sprocket.

4,605,181

STRAND TENSION CONTROLLING APPARATUS

James L. Alexander, Charlotte, N.C., assignor to McCoy-Ellison, Inc., Monroe, N.C.

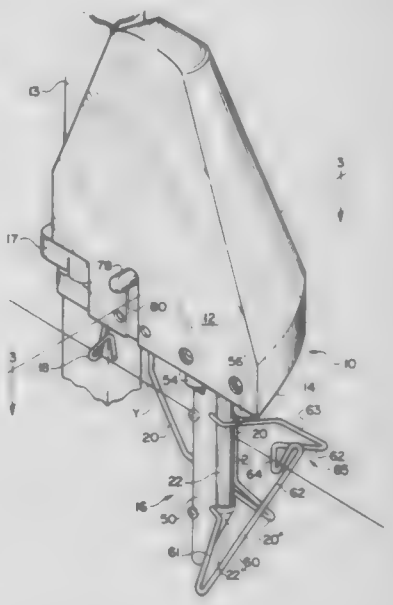
Filed Mar. 22, 1985, Ser. No. 714,724
Int. Cl.[4] B65H *59/24*
U.S. Cl. 242—149 **21 Claims**

1. Apparatus for controlling the tension in advancing strand material comprising:

a base;

strand tensioning means movably mounted on said base for variable engagement with said advancing strand for applying a variable frictional drag on said strand, said tensioning means including movable control means arranged for engagement with said strand for movement in response to tension fluctuations in said strand for decreasing and increasing the frictional drag applied thereto in relation to increases and decreases in the amount of tension in said strand to compensate for and offset tension fluctuations from a desired constant tension value, said strand tensioning means including two adjacent strand engaging surfaces aranged for strand travel therebetween, said surfaces being independently movable toward and away from surface engagement with one another for engaging said traveling strand therebetween to apply said frictional drag thereto;

means for independently biasing each said surface toward surface engagement with one another, said biasing means including means for urging one said surface into following relation with the other said surface for exerting a decreasing biasing force during movement of said other surface in the direction away from said one surface, for increasing and decreasing the frictional drag on said strand in direct relation to the movement of said other surface in the directions toward and away from said one surface, and said biasing means including means for applying a biasing force to said other surface at a predetermined varying rate



of change in direct relation to the degree of movement of said other surface toward and away from said one surface; and

guide means for directing said advancing strand in a path of travel in engagement with said strand tensioning means and in tensioned engagement with said control means;

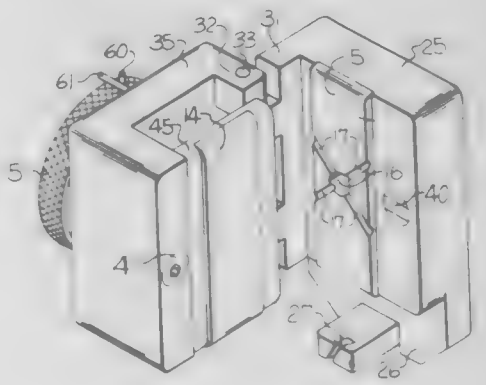
whereby fluctuations in the tension in said strand are controlled and the strand tension is maintained within a substantially uniform range.

4,605,182

YARN TENSION CONTROL DEVICE

Otto Zollinger, Spartanburg, S.C., assignor to Otto Zollinger, Inc., Spartanburg, S.C.

Filed Sep. 20, 1985, Ser. No. 778,303
Int. Cl.[4] B65H *59/22*
U.S. Cl. 242—149 **8 Claims**



1. A yarn tension control device for regulating and adjustably varying the tension placed on a running yarn being fed along a predetermined path of travel, said device including first and second plate members having adjacent inner faces positioned on opposite sides of the predetermined path of travel of the running yarn, means supporting said first and second plate members for relative movement toward and away from each other for selective movement of the inner faces of said plate members into and out of engagement with the running yarn, means for resiliently urging said plates toward each other to thereby apply tension to the running yarn passing therebetween, the inner face of said first plate member being

substantially flat and smooth and including parallel opposite side edges, and said second plate member including parallel opposite side edges aligned with said opposite side edges of said first plate member, and having an opening extending through the central portion thereof, said inner face of said second plate member having shallow grooves therein, said shallow grooves including inner and outer ends and extending radially outwardly from said opening, said inner ends of said shallow grooves being communicatively connected with said opening, and said outer ends of said shallow grooves being communicatively connected with said opposite side edges of said second plate member, said opening and said grooves cooperating to provide passageways for the passage of air and for the escape of lint from between said first and second plate members.

4,605,183

SWING WING GLIDER

Albert L. Gabriel, 135 W. Mission Ave., Suite 211, Escondido, Calif. 92025

Filed Mar. 22, 1984, Ser. No. 592,348
Int. Cl.[4] B64C *3/40*
U.S. Cl. 244—46 **34 Claims**



1. A glider which comprises:

a pair of elongated, generally flat wings having forward, inner root portions that are freely pivotally interconnected,

each of said wings extending rearwardly and outwardly from its said root portion to an outer tip portion, and

tailfin means on each of said wings rearwardly and outwardly spaced from overlapped portions,

each of said tailfin means having a component that is vertical to the general horizontal plane of its respective wing and is angularly offset from a trailing edge to a leading edge forwardly and outwardly from the general longitudinal axis of its respective wing,

said angular offset causing said vertical components to each have an airfoil liftout angle of attack to the relative wind during flight which causes said wings to swing out to an extended best glide configuration,

said wings being freely automatically pivotally adjustable during flight in a range of movement between said extended best glide configuration and a substantially more retracted configuration under the opposing influences of aerodynamic liftout forces on said tailfin means urging said wings toward a more extended configuration and drag forces on said wings and tailfin means urging said wings toward a more retracted configuration,

the ratio of said liftout forces to said drag forces being greatest and said wings being automatically extended to said best glide configuration at substantially the best glide speed of said glider, and said ratio being reduced and said wings being automatically retracted from said best glide configuration at speeds both higher and lower than said best glide speed,

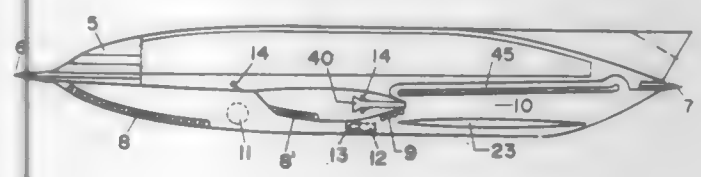
said wing retraction at said higher speeds providing reduced lift and corresponding greater flight efficiency for such higher speeds, and said wing retraction at said lower speeds providing reduced lift causing said forward wing portions to drop and the speed of said glider to increase toward its said best glide speed.

4,605,184

AERODYNAMIC HEATED STEAM GENERATING APPARATUS

Kyusik Kim, 5026 Rhoads Ave., Santa Barbara, Calif. 93111

Filed Jul. 13, 1983, Ser. No. 513,179
Int. Cl.[4] B64D *41/00*
U.S. Cl. 244—58 **6 Claims**



1. An aerodynamic heated steam generating apparatus comprising

an aerodynamic heat immersion coil steam generator adapted to be located on the leading edge of an airframe of a hypersonic aircraft and being responsive to aerodynamic heating of water by a compression shock airstream to produce steam pressure;

an expansion shock air-cooled condensor adapted to be located in the airframe rearward of and operatively coupled to the aerodynamic heat immersion coil steam generator to receive and condense the steam pressure; and

an aerodynamic heated steam injector manifold adapted to distribute heated steam into the airstream flowing through an exterior generating channel of an air-breathing, ducted power plant.

4,605,185

AIRPLANE POWERED BY VEHICULAR MOTOR

Daniel Reyes, 233 Broadway, Rm 3615, New York, N.Y. 10007

Filed Oct. 17, 1983, Ser. No. 542,461
Int. Cl.[4] B64D *35/00*
U.S. Cl. 244—60 **1 Claim**



1. A motor generator powered airplane which comprises:

(a) an internal combustion engine having a drive shaft, said engine mounted in the tail of the fuselage of the airplane;

(b) an electric generator mounted within the fuselage of the airplane;

(c) means for driving said generator from said engine;

(d) two transformers mounted symmetrically within the fuselage of the airplane in alignment with the wings, each said transformer electrically connected to said generator;

(e) two electric motors, each said motor having a drive shaft, mounted symmetrically within a wing of the airplane and electrically connected to one said transformer;

(f) two propellers, each said propeller rotatably mounted

symmetrically to a wing of the airplane, parallel to each motor;

(g) a starter mounted to said engine;

(h) a pilot's instrument panel in a cockpit of the airplane electrically connected to said starter and said transformer so that the pilot can start and stop said engine and control speed of said propellers when needed, wherein said means for driving said generator from said engine comprises:

(i) a pulley having a pulley shaft and a large spur gear, said pulley attached to the drive shaft to said engine;

(j) a small spur gear driven by the large spur gear;

(k) a multi gear box having an inlet gear shaft and an outlet gear shaft, the inlet gear shaft attached to said small spur gear and the outlet gear shaft driving said generator, wherein said means for driving each said propeller from said motor comprises:

(l) a large spur gear attached to the drive shaft of said motor;

(m) a small spur gear driven by said large spur gear; and

(n) a multi gear box having an inlet gear shaft and an outlet gear shaft, the inlet gear shaft attached to said small spur gear and the outlet gear shaft driving said propeller, wherein said multi gear box comprises:

(o) a first spur gear mounted to the inlet gear shaft;

(p) a first pinion and second spur gear rotatably mounted within said gear box, said first pinion driven by said first spur gear; and

(q) a second pinion mounted to the outlet gear shaft, and second pinion driven by said second spur gear.

4,605,186

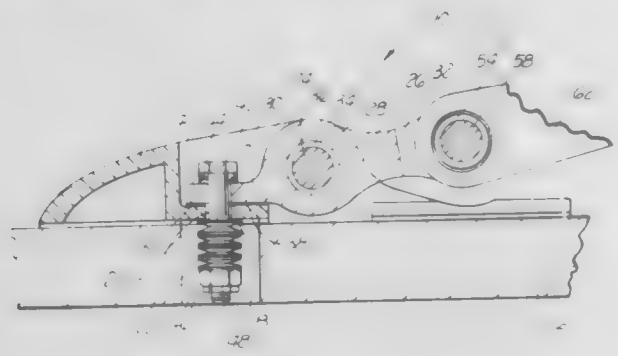
VIBRATION ISOLATION DEVICE USED WITH A JET ENGINE THRUST REVERSER UNIT

James A. Fernz, Wichita, Kans., assignor to The Boeing Company, Seattle, Wash.

Filed Feb. 16, 1984, Ser. No. 580,796

Int. Cl.[4] B64D *33/00*

U.S. Cl. 244—110 B **4 Claims**



1. A vibration isolation device for connection to a mounting structure and a drag arm of a blocker door assembly used in a jet engine thrust reverser unit, the device comprising:

a fitting adapted for attachment to the mounting structure, the fitting having an aperture with a guide bushing therein and a mounting bracket adjacent the aperture;

a pivot link, pivotally mounted on the mounting bracket, one end of the link having a tongue connected to a spring-biased bolt, the bolt including a plurality of belleville washers and a threaded nut for adjusting the spring pressure to a pre-determined load when engaging the tongue of the pivot link, the bolt received in the aperture of the fitting, the other end of the pivot link pivotally attached to the drag arm; and

a wear plate mounted on top of the fitting and adjacent the tongue of the pivot link for engaging the bottom of the tongue when the link is rotated in counterclockwise direction thereon, the drag arm, when moved from a normal operating position to an over-extended position rotates the pivot link in the counterclockwise position raising the tongue above the wear plate and compressing the belleville washers.

4,605,187

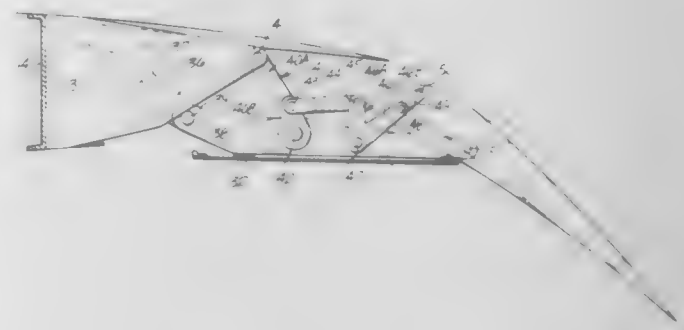
WING FLAP MECHANISM

Martin F. Stephenson, Issaquah, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Mar. 9, 1984, Ser. No. 588,161

Int. Cl.[4] B64C *9/18*

U.S. Cl. 244—216 **7 Claims**



1. A carrier unit for chordwise extending and rotatably positioning an auxiliary airfoil mounted adjacent to the trailing edge of a relatively fixed main airfoil of an airplane, comprising: a pair of structural rib members spaced apart spanwise and extending chordwise within said main airfoil; said carrier unit being supportably mounted between said pair of rib members and comprising: three sets of four-bar linkages arranged in a chordwise integrated series relative to said main airfoil; said first set of four-bar linkages being arranged symmetrically about a fore-and-aft support centerline within said carrier unit for producing a chordwise translational movement of said auxiliary airfoil relative to said main airfoil, such that said auxiliary airfoil is extended to provide a substantial aerodynamic slot, for the through flow of air, between the trailing edge of said main airfoil and the leading edge of said auxiliary airfoil; said second set of four-bar linkages being arranged in a fore-and-aft series alignment with said first set of four-bar linkages for producing a rotational movement of said auxiliary airfoil, about a spanwise axis, to change the angle-of-incidence of said auxiliary airfoil relative to said main airfoil; and said third set of four-bar linkages forming a direct interconnection between said first and second sets of four-bar linkages for synchronization of extension actuation in combination with programming control of angle-of-incidence of said auxiliary airfoil relative to said main airfoil, from an undeflected retracted position to an extended position to form an aerodynamic slot and a deflected position whereat said auxiliary airfoil has its chord plane deflection angle increased relative to a chord reference plane of said main airfoil, for takeoff and landing operation of the airplane.

4,605,188

APPARATUS FOR SEATING A TERMINAL OR SIMILAR OFFICE EQUIPMENT

Werner Goetz, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

PCT No. PCT/DE84/00029, § 371 Date Aug. 15, 1984, § 102(e) Date Aug. 15, 1984, PCT Pub. No. WO84/03134, PCT Pub. Date Aug. 16, 1984

PCT Filed Feb. 3, 1984, Ser. No. 642,678

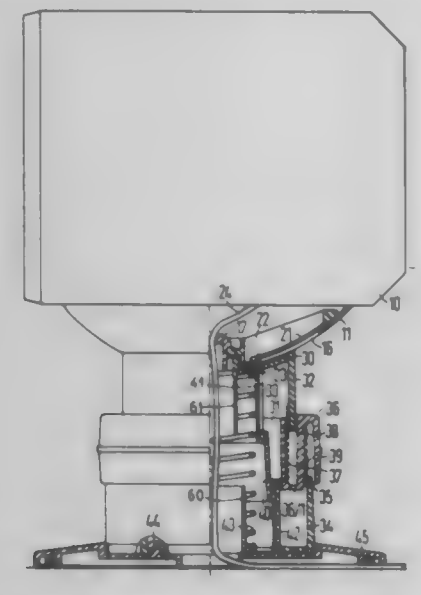
Claims priority, application Fed. Rep. of Germany, Feb. 8, 1983, 3304217

Int. Cl.[4] F16M *11/00*

U.S. Cl. 248—157 **15 Claims**

1. Apparatus for mounting a computer terminal (10) or similar office equipment, comprising an upper cap member (32) to which the terminal is connected and having a first threaded stud (33) extending downwardly therefrom, a lower base member (34) which has a second threaded stud (35) extending upwardly therefrom, a central adjustment member (36) which has a threaded portion (36/1) which has first threads (37)

which mate with the first threaded stud (33) and second threads (38) which mate with the second threaded stud (35), and the threads (37, 38) are formed in the opposite direction relative to each other, said central adjustment member having an externally disposed gripping portion (39) which is connected to the threaded member (36), so that a telescope-like displacement of the cap member (32) relative to the base member (34) occurs when the threaded member (36) is turned with the gripping portion (39), and an anti-twist element (40) slidably connects the cap member (32) to the base member (34) to prevent them from twisting relative to each other, and wherein a spring element (43) for partially supporting the weight of the terminal is mounted between said cap member (32) and said base member (34).

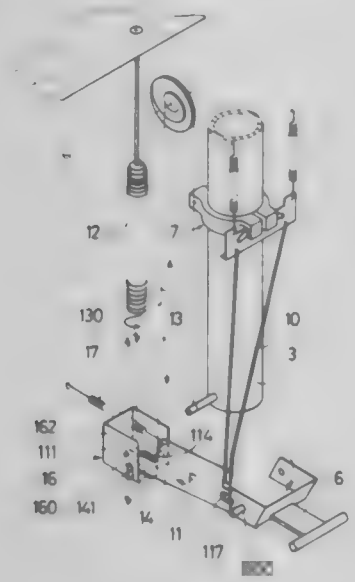


4,605,189

ANTI-FAIL DEVICE FOR LOCKING A DRAWING-BOARD PILLAR AGAINST MOTION

Alain Bruneau, Montferrand le Chateau, France, assignor to Alpia S.A., Besancon, France

Filed Aug. 16, 1984, Ser. No. 641,499
Claims priority, application France, Sep. 7, 1983, 83 14564
Int. Cl.[4] F16M *11/00*
U.S. Cl. 248—162.1 **5 Claims**



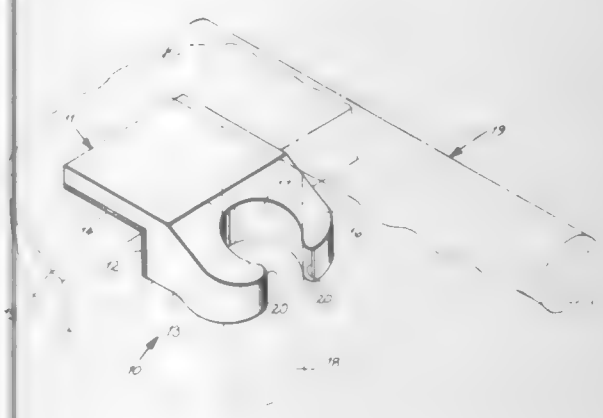
1. A drawing board construction comprising a frame structure including a base, a vertical pillar guided by said frame structure for movement vertically relative to said frame structure, a drawing board proper pivotally mounted on said pillar, means for counterbalancing the weight of said pillar and drawing board proper, said counterbalancing means comprising a pulley rotatably supported by said frame structure, a cable passing over said pulley and attached to said pillar and spring means for tensioning said cable, spring actuated locking means for frictionally gripping said pillar to hold it in selected position, user actuated means for releasing said locking means to permit movement of said pillar relative to said frame structure, said releasing means comprising a foot pedal pivotally mounted on said base and tension members connecting said foot pedal with said locking means, and safety means responsive to slackening or breaking of said cable for disconnecting said foot pedal from said tension members in the event of slackening or breaking of said cable, whereby said locking means cannot be released by operation of said foot pedal.

4,605,190

CANE KEEPER

Harry W. Kamp, 1552 Cornell Rd., Muskegon, Mich. 49441

Filed Dec. 10, 1984, Ser. No. 680,316
Int. Cl.[4] E04G *3/00*
U.S. Cl. 248—316.7 **1 Claim**



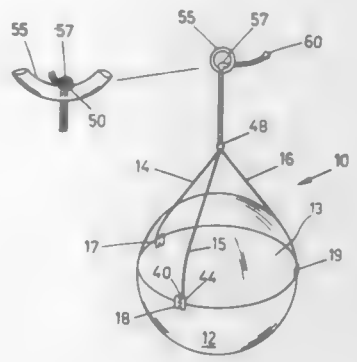
1. A cane keeper, comprising, in combination, a main body made of a resilient plastic material, a right angle shaped cut-out along a rear lower portion of said main body for fitting around a right angle corner of a supporting object, a top wall of said main body being horizontally flat at its rearward portion and being angularly, donwardly forwardly inclined at its front portion, an upper side of said cut-out being parallel with said rearward portion of said main body top wall and a forward side of said cut-out being downwardly perpendicular, a pair of adhesive pads at right angle to each other, one said pad lining each said side of said cut-out for adhering to a top surface and a side surface of said supporting object, and a generally circular notch on a front wall of said main body having a narrowed front entry for a vertical cane being slidably received therethrough and into said notch.

4,605,191

SUSPENDABLE DISPLAY RECEPTACLE

Michael Kagan, 116 Viceroy Rd., Bldg. B, Unit #9, Concord, Ontario, Canada

Continuation-in-part of Ser. No. 126,663, Mar. 3, 1980, abandoned. This application Jun. 12, 1984, Ser. No. 620,084
Int. Cl.[4] A47H *1/10*
U.S. Cl. 248—318 **15 Claims**



1. A display receptacle carrying a plurality of tabulate bodies or relatively thin projections on a surface of the display

receptacle proximate the rim thereof for securing strands having enlarged ends, each tabulate body or relatively thin protrusion presenting a face on the side of the body remote the surface of the receptacle and presenting a slot, intermediate the body's or protrusion's width, opening through the face along its length from the top of the protrusion and extending downwardly, the slot carrying a wider slot portion or socket at the upper end thereof also opening through the face, each tabulate body or protrusion carrying another channel, slot or groove into which the first mentioned slot opens and which channel, slot or groove extends in a curved path to the top of the body or protrusion at a position spaced from the wider slot Portion or socket, the channel, slot, or groove comprising means for restricting a portion of the opening of the channel, slot or groove, to require flexture of a filament strand when it is pushed into the channel, slot or groove to thereby allow the strand to seat and be held in the channel, slot or groove during use in the suspension of the receptacle.

4,605,192

SEAT RAIL

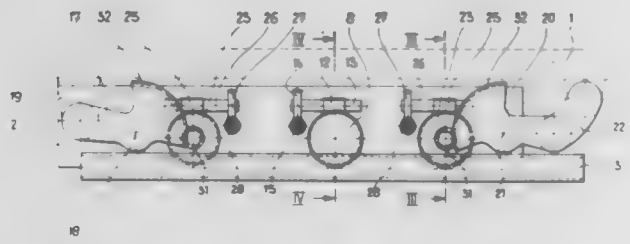
Bernd Klüting, Radevormwald; Peter Ebeling, Remscheid, and Willibald Strowik, Remscheid-lennep, all of Fed. Rep. of Germany, assignors to Keiper Recaro GmbH & Co., Fed. Rep. of Germany

Division of Ser. No. 503,552, Jun. 13, 1983, Pat. No. 4,530,481. This application Jun. 4, 1985, Ser. No. 728,024

Claims priority, application Fed. Rep. of Germany, Jun. 11, 1982, 3221959

Int. Cl.[4] A45D *19/04*

U.S. Cl. 248—394 **7 Claims**



1. A seat rail for vehicle seats, particularly for motor vehicle seats, comprising:

an adjustment device for adjusting the position of said seat rail;

said seat rail being formed as a housing;

said housing enclosing at least one drive element of said seat adjustment device and having a slide rail formed on said seat rail, said slide rail being longitudinally movable in said guide rail

said seat rail comprising two half shells, said half shells being joined to form a hollow casing, and the lower edge of each half shell forms half of the slide rail;

said half shells being one-piece sheet metal elements;

said half shells being connected to each other along their upper edges;

said seat rail further comprising a large diameter spur gear mounted between two smaller diameter spur gears, said smaller diameter spur gears being adapted for engagement with two spur racks mounted on said guide rail, said larger diameter spur gear being mounted within and extending below the two half shells, and being in engagement with a driving element, said driving element being arranged inside the seat rail and formed as a worm;

wherein at least one spur gear is arranged in the vicinity of the laterally projecting surface areas of the seat rail, said one spur gear having a rotational axis forming an acute angle with the longitudinal axis of the seat rail, said seat rail having an opening in one of its side walls, said opening being aligned with one end of the shaft supporting said one spur gear;

a locking element and a pivot lever, said pivot lever lying partially inside said seat rail and being pivotably mounted therein, and said locking element being movably mounted inside the seat rail, whereby when said locking element is in its locking position, it is in form-fitting engagement with the pivot lever.

4,605,193

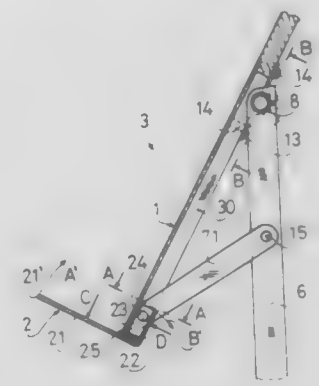
FOLDABLE MUSIC STAND

Pertti K. Kuparinen, Haavikonkuja 3, SF-78210 Varkaus, Finland

Filed Nov. 9, 1984, Ser. No. 670,348

Int. Cl.[4] A47B *97/04*

U.S. Cl. 248—460 **7 Claims**



1. A foldable stand comprising:

a vertical shaft;

a back member pivotally mounted to one end of said vertical shaft and having an operating position inclined with respect to an axis of said shaft and a transport position parallel to the axis of said shaft;

a shelf pivotally mounted to a lower end of said back member, said shelf having a first leg and a second leg extending at an angle to said first leg;

a fixed support part connected to said shaft at an opposite end thereof opposite from said back member and extending in a plane containing said back member with said back member in its transport position, a movable support part movably connected to said shaft at its opposite end and having a support position extending substantially perpendicularly to said fixed support part, and a transport position extending parallel to said fixed support part; and

a lever having one end pivotally mounted to said second leg of said shelf and an opposite end pivotally mounted to said shaft, said lever being pivotally mounted to said second leg of said shelf at a location so that movement of said back member into its open position causes said lever to rotate said shelf into a use position with said first leg extending at an angle to said back member, and with said back member moved into its transport position, said lever pivoting said shelf into a transport position with said first leg extending parallel to said back member.

4,605,194

HIGH-PERFORMANCE VIBRATION FILTER

Gerd Binnig, Richterswil; Christoph Gerber, Adliswil; Heinrich Rohrer, Richterswil, and Edmund Weibel, Adliswil, all of Switzerland, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 17, 1983, Ser. No. 505,533

Claims priority, application European Pat. Off., Aug. 13, 1982, 82107380.6

Int. Cl.[4] F16M *13/00*

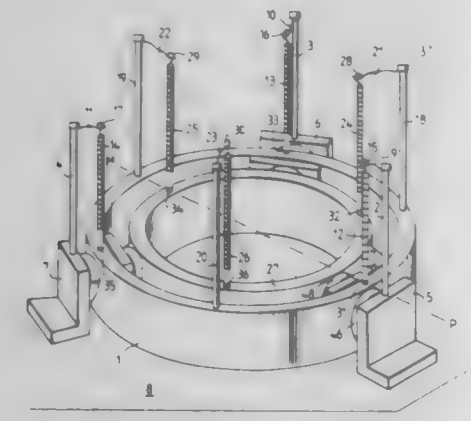
U.S. Cl. 248—559 **10 Claims**

1. In a vibration-free mechanical support system including a mechanical vibration filter for providing vibration-free mechanical support,

said system employing elastic elements to connect a suspended mass to a base element,

the improvement comprising employing a plurality of said elastic elements to support said mass, with a series of said elastic elements connected in a series,

with each of said elastic elements connected in a series having a different resonant frequency from each other in order to minimize coupling of vibration from one of said



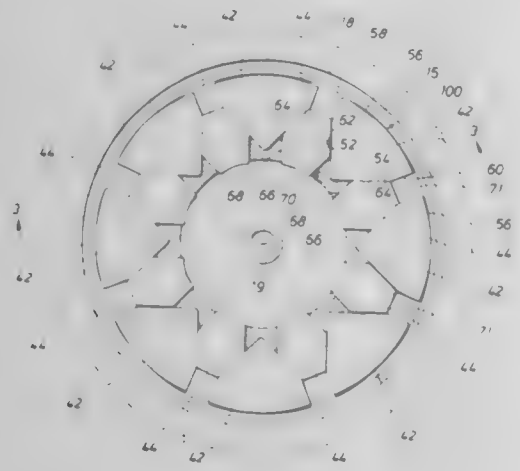
elastic elements connected in a series and supporting said suspended element through another of said elastic elements connected in said series,
whereby vibration of said mass is minimized.

4,605,195

ANNULAR BLOWOUT PREVENTER PACKING UNIT

James A. Burton, Houston; Kenneth W. Colvin, Humble, and Julian D. Keithahn, Houston, all of Tex., assignors to Hydril Company, Los Angeles, Calif.

Filed May 1, 1985, Ser. No. 729,179
Int. Cl.[4] E21B *33/06*
U.S. Cl. 251—1.2 **15 Claims**



1. An annular blowout preventer packer unit having a longitudinal axis and adapted to be compressed radially inwardly from a relaxed state to a closing state comprising,
an annulus of elastomeric material,
metallic drive inserts embedded in said elastomeric material generally circularly about said axis, each of said drive inserts having a web which extends generally longitudinally and having a top plate with two longitudinal forward surfaces and a longitudinal back surface, said two longitudinal forward surfaces being equally inclined with respect to a longitudinal plane along a radius through the center of the drive insert,
lead inserts embedded in said elastomeric material generally circularly about said axis, each of said inserts having a web which extends generally longitudinally and having a top plate with two longitudinal rearward surfaces and a longitudinal forward surface, said two longitudinal rearward surfaces being equally inclined with respect to a longitudinal plane through a radius through the center of the lead insert, and
said drive inserts and said lead inserts being arranged with respect to each other so that at least partial engagement exists between each forward surface of the top plate of a drive insert and a corresponding rearward surface of the top plate of an adjacent lead insert in the relaxed state of the packer unit.

15. An annular blowout preventer packer unit having a longitudinal axis and adapted to be compressed radially inwardly from a relaxed state to a closing state comprising,
an annulus of elastomeric material,
metallic drive inserts embedded in said elastomeric material generally circularly about said axis, each of said drive inserts having a web which extend generally longitudinally and having a top plate with two longitudinal forward surfaces and a longitudinal back surface, said two longitudinal forward surfaces being equally inclined with respect to a longitudinal plane along a radius through the center of the drive insert,
said drive inserts having a bottom plate with two longitudinal forward surfaces, said two longitudinal forward surfaces being equally inclined with respect to the longitudinal plane along the radius through the center of the drive insert,
lead inserts embedded in said elastomeric material generally circularly about said axis, each of said inserts having a web which extends generally longitudinally and having a top plate with two longitudinal rearward surfaces and a longitudinal forward surface, said two longitudinal rearward surfaces being equally inclined with respect to a longitudinal plane through a radius through the center of the lead insert,
said lead inserts having a bottom plate with two longitudinal rearward surfaces and a longitudinal forward surface, said two longitudinal rearward surfaces being equally inclined with respect to the longitudinal plane through the radius through the center of the lead insert, and
said drive inserts and said lead inserts being arranged with respect to one another so that at least partial engagement exists between each forward surface of the top plate of a drive insert and a corresponding rearward surface of the top plate of an adjacent lead insert in the relaxed state of the packer unit and partial engagement exists between each forward surface of the bottom plate of the drive insert and a corresponding rearward surface of the bottom plate of an adjacent lead insert in the relaxed state of the packer unit.

4,605,196

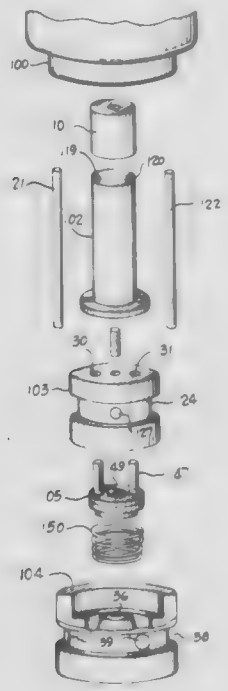
SOLENOID OPERATED VALVE

Allen J. Moffat, Wilmington, and Tom Ours, Xenia, both of Ohio, assignors to Airmatic-Allied, Inc., Wilmington, Ohio

Filed Jun. 21, 1984, Ser. No. 623,099
Int. Cl.[4] F16K *25/00*
U.S. Cl. 251—84 **6 Claims**

1. An improvement for a solenoid operated valve having two pins operatively connecting a valve operating mechanism with a valve seal, the two pins having an axis and being in containment cavities, connected to the valve seal, the improvement comprising the two pins being split in a direction generally perpendicular to their respective axis into actuation pins and guide legs, the effective diameter of the containment cavities being reduced surrounding said guide legs, said guide legs

guiding the valve seal, and said actuating pins transferring the valve operating forces between the valve operating mechanism



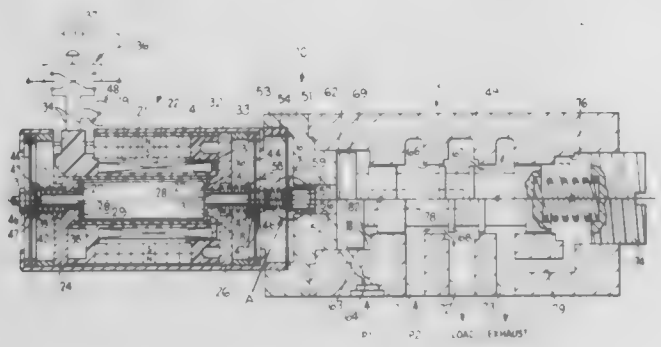
and said guide legs, said split separating the actuating function of the pins from the guiding function of the pins.

4,605,197

PROPORTIONAL AND LATCHING PRESSURE CONTROL DEVICE

Gerald F. Casey, and Richard A. Schultz, both of Portage, Mich., assignors to Fema Corporation, Kalamazoo, Mich.

Filed Jan. 18, 1985, Ser. No. 692,586
Int. Cl.[4] F16K *31/42*
U.S. Cl. 251—30.01 **6 Claims**



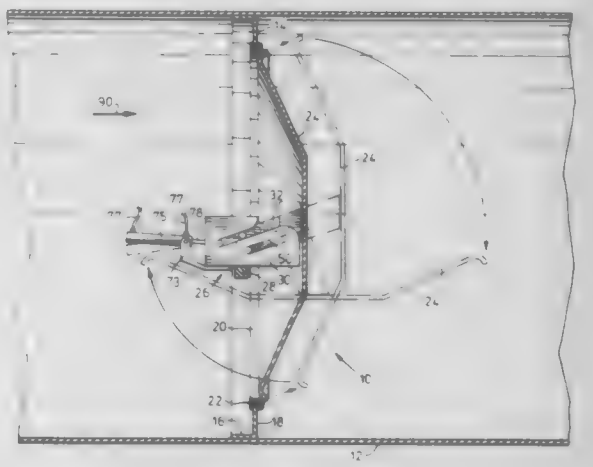
1. A proportional pressure control device, comprising:
a motor having a housing and a reciprocally movable armature therein movable between first and second limits;
a valve body secured to said housing;
a plate-like poppet valve member on at least one end of said armature, said plate-like poppet valve member having a flat surface thereon oriented in a plane that extends perpendicular to the direction of movement of said armature and on a side thereof remote from said one end of said armature;
means defining a fluid pressure port in said valve body adapted to be connected to a fluid pressure source, said pressure port extending into the interior of said valve body to further means defining a chamber;
wherein a flow restrictor means is provided in said pressure port to restrict fluid flow from a pressure source into said pressure port and said chamber;
nozzle outlet means in said chamber having an annular flat valve seat thereon directly opposing said plate-like poppet valve member, the spacing between said valve seat and said valve member controlling the magnitude of the fluid pressure in said chamber;
means for preventing a magnetic holding of said armature at said first limit position;
means for effecting a movement of said armature in a manner that is substantially proportionally related to a variable current signal between a position of said armature at said first limit position and a position of said one side of said plate-like poppet valve member whereat it engages said flat valve seat;
magnetic latching means for releasably magnetically holding said armature in at least said second limit position, said plate-like poppet valve member engaging said valve seat and restricting fluid flow out of said nozzle outlet means when said armature is magnetically held in said second limit position as well as oriented a finite distance away from said second limit position whereat said armature is free of said magnetic latching means and said poppet valve member engages said valve seat; and
compensating means coupled between said plate-like poppet valve member and said armature for compensating for a continued movement of said armature from said finite distance away from said second limit position toward said second limit position following an engagement of said plate-like poppet valve member with said valve seat.

4,605,198

DAMPER CONSTRUCTION

Waldemar H. Greiner, Hamilton, Canada, assignor to Seal-Air Control Systems Inc., Downsview, Canada

Filed Feb. 14, 1985, Ser. No. 701,990
Claims priority, application Canada, Jan. 28, 1985, 473012
Int. Cl.[4] F16K *31/12*
U.S. Cl. 251—58 **7 Claims**



1. A damper for controlling fluid flow, comprising:
a frame having an opening through which fluid is intended to flow when the damper is open,
a closure member movable between a first position in which it blocks said opening, and a second position in which the opening is unblocked and the closure member is rotated with respect to its first position, so as to minimize its interference with fluid flow through said opening, and;
mechanism for controlling movement of said closure member, the mechanism including:
(a) a first and a second bracket fixed with respect to the frame and the closure member, respectively,
(b) an elongate guideway defined by one bracket and registry means defined by the other bracket, the registry means being movably captive within said elongate guideway,
(c) stabilizing track means on the brackets spaced from said guideway and registry means, the stabilizing track means requiring the second bracket (1) to substantially retain a given angular orientation with respect to the first bracket while the registry means slides from a first end to a second end of said elongate guideway thus moving said closure member in translation with respect to said frame, and (2) to rotate with respect to said first bracket about said second end of said elongate guideway thus moving said closure member in rotation with respect to said frame when said second bracket is disposed exteriorly of said first bracket; and

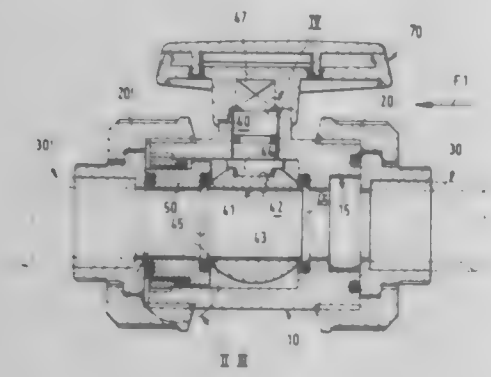
(d) power means to positively move the brackets with respect to each other.

4,605,199

BALL VALVE PROVIDED WITH A LOCK RING

Giancarlo Bonissone, and Piero Mulas, both of Genoa, Italy, assignors to F.I.P. Formatura Iniezione Polimeri, S.p.A., Sori, Italy

Filed Sep. 12, 1984, Ser. No. 649,891
Claims priority, application Italy, Oct. 4, 1983, 15261/83[U]
Int. Cl.[4] F16K *25/00*
U.S. Cl. 251—171 2 Claims



1. A ball valve comprising a valve body having an axial through bore open at opposite ends thereof and a radial passage radially of the bore and in communication with the bore, a valve stem extending axially in said radial passage and outwardly of the valve body, a rotatable ball in the bore connected to said valve stem for selective operation thereof, the ball having a diametrical passageway positionable selectively in communication with said valve body bore by selective manipulation of said valve stem for opening and closing the ball valve, said valve body having opposite ends externally threaded, two internally threaded external lock rings each removably threaded on a respective one of said externally threaded ends, two end bushings each disposed internally of a corresponding lock ring for each receiving an end of a respective pipe for connection in use to the valve body, the valve body having an annular internal flange extending inwardly and disposed coaxial with said bore inwardly of one of said end bushings, a ring seal disposed between said flange and said ball, an internal bushing internally of the valve body held inwardly by the end bushing at an end remote from said internal flange, a second ring seal disposed between the internal bushing and the ball, an internal lock ring in said axial bore circumferentially of an axial part of the internal bushing threaded onto an internal thread of the valve body at said end remote from the internal flange, and an elastic O-ring in said axial bore circumferentially of the internal bushing disposed for effecting a seal between the internal lock ring, said internal bushing, and surfaces of the valve body defining said axial bore of the valve body.

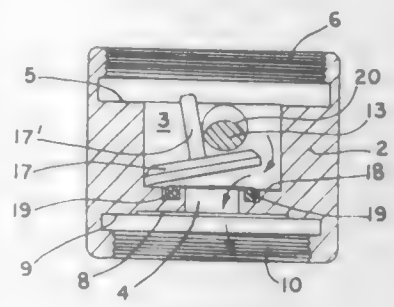
4,605,200

FAUCET VALVE

Robert Huppee, 1910 Thierry Street, Brossard, Canada (J4W 2M8)

Filed Apr. 2, 1984, Ser. No. 595,656
Claims priority, application Canada, Mar. 28, 1984, 450672
Int. Cl.[4] F16K *31/524*
U.S. Cl. 251—258 5 Claims

1. A shut-off valve comprising a tubular valve body, having a larger diameter upstream bore defining an inlet and a smaller diameter downstream bore centrally communicating with said upstream bore and defining an outlet and an upstream facing annular valve seat, a valve member including a disc-shape valve plug of a diameter intermediate the diameters of said upstream and downstream bores, and formed with an upstream projecting axial pin, said valve member entirely located within said upstream bore and freely supported on said valve seat and movable between valve-opening and valve-closing positions, said valve plug having a downstream face facing said valve seat, one of said valve seat and said downstream face having a circular groove, an O-ring seal positioned and mechanically retained in said groove and making sealing contact with one of said downstream face and valve seat, respectively, in the valve-closing position of said valve member; an operant cylindrical shaft removably extending transversely of said valve body across and exposed within said upstream bore, said shaft lying in a plance parallel to the plane of said valve seat and laterelly offset from the longitudinal axis of said bores, said shaft having an end projecting from said tubular valve body and movable



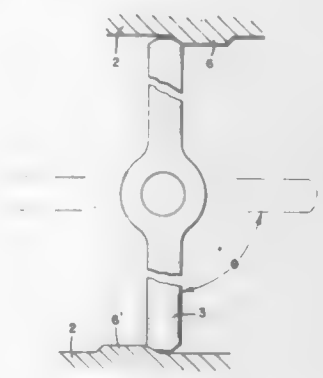
relative to said body and valve member by a force applied to said projecting end, means to releasably retain said shaft in said valve body, sealing means between said shaft and said valve body at both sides of said upstream bore, said shaft having a central portion of reduced diameter, defining a cam surface merging with the full diameter surface of said shaft, said cam surface and said full diameter shaft surface selectively (engageable with) slidably contacting said (valve member) axial pin upon movement of said shaft in said valve body to permit said valve member to take its valve-closing position under liquid pressure and to tilt said valve plug on its valve seat to valve-opening position respectively.

4,605,201

BUTTERFLY VALVE

Tadao Miyazaki, Shiga, Japan, assignor to Okumura Engineering Works Co., Ltd., Shiga, Japan

Continuation of Ser. No. 35,898, May 3, 1979, abandoned. This application Sep. 16, 1980, Ser. No. 187,804
Int. Cl.[4] F16K *1/22*
U.S. Cl. 251—305 2 Claims



1. A butterfly valve comprising a valve casing; a seat ring provided in the valve casing and having a pair of semi-circular sealing projections; and a disc rotatably provided in the valve casing forming a seal with the ring, wherein said disc is provided with a taper in circumference thereof, said semi-circular sealing projections are provided with sloping side surfaces which engage respectively with one side and another side of said taper of said disc and a tilt angle of said taper is smaller than a sloping angle of said sloping side surfaces of said sealing projections taken with respect to a plane parallel to a direct of flow through said valve.

4,605,202

BALL VALVE

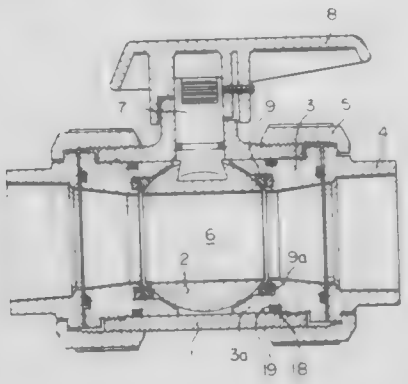
Kazuhiko Tsuno, and Nitiro Sano, both of Nobeoka, Japan, assignors to Asahi Yukizai Kogyo Co., Ltd., Miyazaki, Japan

Filed Oct. 2, 1984, Ser. No. 656,882

Claims priority, application Japan, Oct. 28, 1983, 58-166050[U]; Dec. 8, 1983, 58-188583[U]; Jul. 23, 1984, 59-110209[U]

Int. Cl.⁴ F16K *5/06*

U.S. Cl. 251—315 **6 Claims**



1. A ball valve for controlling liquid flow, comprising a tubular valve body, a ball rotatably mounted inside of said valve body and provided with a central through channel, a union positioned in each end of said valve body so as to be in slidable contact with said ball via a seat, and a body cap connected to each outer end of said union with a packing ring intervening therebetween for providing a water-tight seal, said union and said body cap having opposed end surfaces, said packing ring being accommodated in an annular groove recessed on at least one of said opposed end surface, said body cap being secured to said union by a cap nut engaged with a circumference of said valve body, whereby liquid flow passing through the valve is controlled by rotating said ball so that the direction of the channel of said ball is varied from a direction aligned with a longitudinal axis of said valve body to a direction perpendicular to said axis of said valve body, said union having, at the inner end thereof, an annular projection substantially filling an annular cavity between an inner wall of said valve body and an outer surface of said ball, said packing ring having the same inner diameter as that of said union and is provided with an annular rib to be accommodated into the entire length of said annular groove, said ball valve including a valve stem connected to said ball, said valve stem extending outwardly through said valve body, a portion of each annular projection located adjacent said stem when said channel is aligned with said axis.

4,605,203

PNEUMATIC JACK

Jack L. Hooper, and Harold E. Radiel, both of 108 Cummings Ct., Antioch, Tenn. 37013

Filed Mar. 4, 1985, Ser. No. 707,962

Int. Cl.⁴ B66F *3/24*

U.S. Cl. 254—93 HP **11 Claims**

1. A pneumatic jack comprising:

(a) a base member having a vertical central axis and adapted to rest upon a supporting surface,

(b) an annular, closed, flexible wall member having a longitudinal axis, a bottom portion and a top portion, and enclosing an expansible air chamber,

(c) means connecting the bottom portion of said annular wall member to said base member,

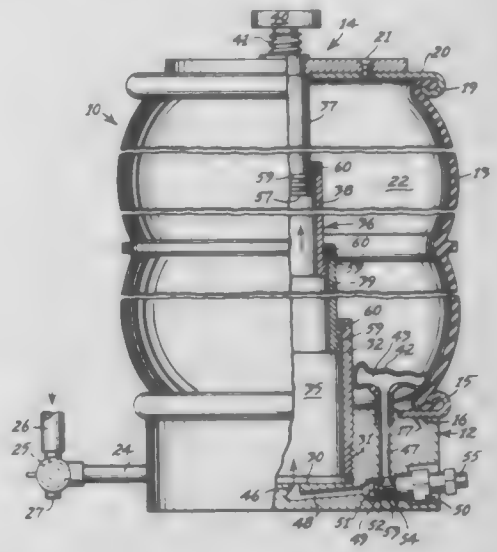
(d) a jack head member secured to the upper portion of said annular wall member,

(e) inlet means communicating with said air chamber for introducing compressed air into said air chamber for elevating said jack head,

(f) an extensible plunger member fixed to said jack head and adapted to support a vertically expanding and contracting column of hydraulic fluid,

(g) an expansible and contractible fluid reservoir adapted to receive hydraulic fluid and having a hydraulic fluid outlet opening,

(h) check valve means in fluid communication between said fluid outlet opening and said plunger member to normally



permit the flow of hydraulic fluid only from said reservoir to said plunger member when the hydraulic pressure in said reservoir exceeds the hydraulic pressure in said plunger member by a predetermined value,

(i) relief means for permitting flow of hydraulic fluid from said plunger member into said reservoir, and

(j) means for releasing the air pressure within said air chamber.

4,605,204

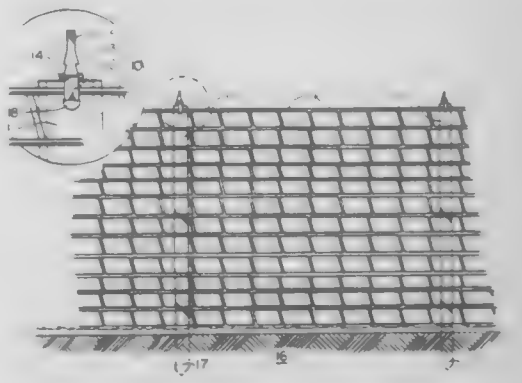
COLLAPSIBLE RECREATIONAL FENCE

Donald W. Schmanski, and Scott Landis, both of Carson City, Nev., assignors to Carsonite International Corporation, Carson City, Nev.

Filed Aug. 13, 1984, Ser. No. 639,629

Int. Cl.⁴ E04H *17/14*

U.S. Cl. 256—19 **7 Claims**



1. A collapsible fence structure specifically adapted for use in recreational applications such as baseball outfield fencing, crowd control in recreational areas and playground fencing, said fence structure comprising:

a substantial length of flexible, resilient, plastic fence mesh capable of supporting a person when such person falls against the mesh in its vertical orientation;

at least two fiber-reinforced plastic support posts characterized in that each post has concurrent driveability and flexibility characteristics wherein the product of EI (E=elastic modulus; I=moment of inertia) for the post is chosen such that it withstands buckling loads applied at the top of the post by a post driver during installation and that it establishes elastic character in an exposed section of the post to permit non-destructive deflection of the post upon impact by a moving object and subsequent immediate restoration to an original, upright condition;

means for attaching the mesh to the plastic posts to form a unified fence structure which is maintained in vertical orientation by the support post except under conditions of impact, whereupon the mesh and support post deflect and allow the impacting body to pass over the fence, said fence structure thereafter being restored to its vertical orientation by the support post.

4,605,205

ARRANGEMENT COMPRISING A GASIFIER AND A DIRECT REDUCTION FURNACE

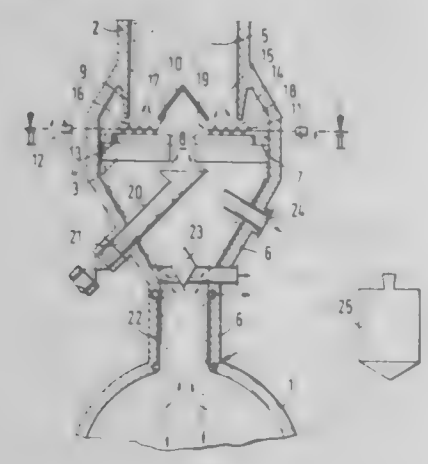
Klaus Langner, Meerbusch-Osterath; Gero Papst, Kaarst; Rolf Hauk, Achern, all of Fed. Rep. of Germany, and Michael Nagl, Linz, Austria, assignors to Korf Engineering GmbH, Dusseldorf, Fed. Rep. of Germany and Voest-Alpine Aktiengesellschaft, Linz, Austria

Filed Jun. 11, 1985, Ser. No. 743,640

Claims priority, application Fed. Rep. of Germany, Jun. 12, 1984, 3422185

Int. Cl.[4] F27B *9/38*

U.S. Cl. 266—160 **17 Claims**



1. A combined melting gasifier and a direct reduction shaft furnace structure for reducing lumpy iron ore or iron oxide pellets, comprising a base adapted to support a charging column of ore in the shaft furnace, at least one discharge port being formed in the base for discharging sponge iron particles produced by reduction of said ore and at least one annular intake being formed in said shaft furnace to convey the reduction gas supplied by the gasifier to the charge in the lower part of the charging column, and mechanical means disposed at the base of said shaft furnace for causing the continuous reciprocal movement of the reduced charge particles in an area adjacent said annular intake for the reduction gas.

4,605,206

SUSPENDED SEAL RING FOR LADLE PREHEATER

Mack A. Hounsel, Houston, Tex., assignor to J T Thorpe Company, Houston, Tex.

Continuation-in-part of Ser. No. 564,745, Dec. 21, 1983, Pat. No. 4,492,382. This application Oct. 29, 1984, Ser. No. 665,938

The portion of the term of this patent subsequent to Jan. 2, 2002, has been disclaimed.

Int. Cl.[4] F27D *1/18*

U.S. Cl. 266—283 **17 Claims**

1. An apparatus for sealing the rim of a ladle as it is positioned adjacent a primary insulative lining for a ladle preheater, comprising:

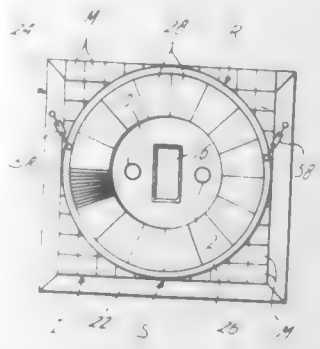
(a) a plurality of seal ring modules, each of said modules comprising:

(1) a plurality of adjacent layers of refractory ceramic fiber insulating material;

(2) said layers further having a side surface portion adapted to be contacted by the rim of the ladle during preheating of the ladle;

(3) said layers further being mounted in planes extending radially outwardly from a central portion of the ladle;

(b) support ring means for mounting said plurality of refractory fiber ring insulation units adjacent the primary insulative lining of the preheater; and



(c) means for mounting said support ring means with the ladle preheater, said means for mounting further permitting relative movement between the primary insulative lining and said support ring and modules.

4,605,207

FLUID-FILLED RESILIENT BUSHING

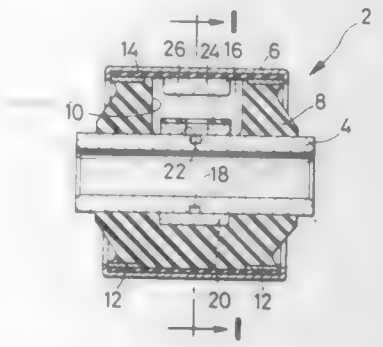
Keizo Konishi, Nagoya, Japan, assignor to Tokai Rubber Industries, Ltd., Komaki, Japan

Filed Aug. 9, 1984, Ser. No. 639,674

Claims priority, application Japan, Aug. 27, 1983, 58-156772

Int. Cl.[4] F16M *1/00*; B60G *11/18*

U.S. Cl. 267—57.1 R **11 Claims**



1. A fluid-filled resilient bushing structure wherein a resilient member is interposed between an inner sleeve and an outer sleeve disposed radially outwardly of the inner sleeve with a predetermined radial distance therebetween, said resilient member having portions at least partially defining plural fluid chambers which are filled with an incompressible fluid and held in communication with each other through an orifice, said resilient bushing structure comprising:

a movable radial stop member of a rigid material accommodated in at least one of said plural fluid chambers and movable relative to a pair of circumferential surfaces which partially define said at least one fluid chamber and which are opposed to each other in a radial direction of said inner and outer sleeves, said radial stop member being abuttable on said circumferential surfaces, and thereby preventing an excessive displacement of said inner and outer sleeves relative to each other in the radial direction thereof perpendicular to axes of the inner and outer sleeves.

4,605,208

COMBINATION AUTOMATIC AND MANUAL VISE APPARATUS

Randy E. Durham, 307 N. Magnolia, Woodville, Tex. 75979

Filed Apr. 4, 1985, Ser. No. 719,981

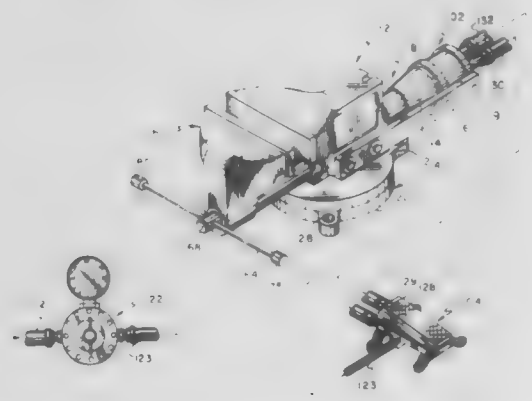
Int. Cl.[4] B23Q *3/08*

U.S. Cl. 269—32 **16 Claims**

1. A combination automatic and manual vise apparatus, comprising:

(a) a main support base assembly connectable to a support surface to hold same against movement;

(b) a manual vise assembly connected to said main support base assembly;
(c) said manual vise assembly includes (1) a stationary jaw assembly; (2) a movable jaw assembly mounted on said stationary jaw assembly for relative movement thereto; and (3) a vise actuator assembly engagable with said movable jaw assembly and operable to move said movable jaw assembly relative to said stationary jaw assembly;
(d) said vise actuator assembly having an actuator shaft assembly mounted within an actuator housing assembly;
(e) said actuator shaft assembly includes a shaft member which is selectively locked to the said actuator housing assembly for non-rotational movement or releasable therefrom for relative rotation thereto;



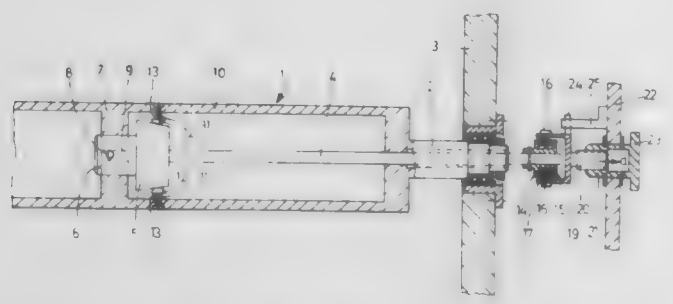
(f) an automatic vise assembly operably connected to the manual vise assembly having an automatic actuator assembly selectively operable through a power drive assembly; and
(g) said automatic actuator assembly included an actuator sleeve assembly engagable with said shaft member and selectively operable to be locked against rotation or unlocked for rotational movement;
whereby said actuator sleeve member when in a locked condition permits said shaft member when in the unlocked condition to rotate and move the movable jaw assembly in a manual mode operation relative to said stationary jaw assembly.

4,605,209

LONGITUDINAL FOLDING APPARATUS FOR TRAVELING WEBS, PARTICULARLY PAPER WEBS RECEIVED FROM A ROTARY PRINTING MACHINE

Hermann Fischer, Augsburg, Fed. Rep. of Germany, assignor to M.A.N.-Roland Druckmaschinen Aktiengesellschaft, Offenbach am Main, Fed. Rep. of Germany

Filed Feb. 4, 1985, Ser. No. 697,734
Claims priority, application Fed. Rep. of Germany, Feb. 9, 1984, 3404551
Int. Cl.[4] B41L *1/30*
U.S. Cl. 270—40 **19 Claims**



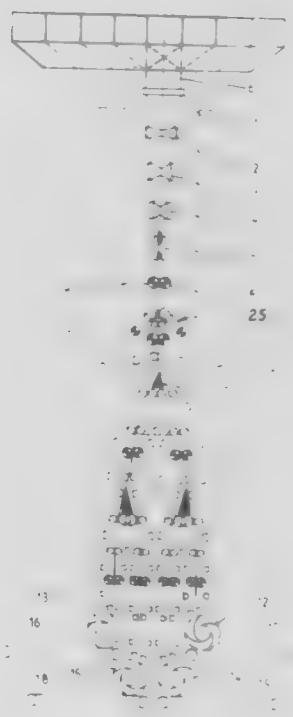
1. Longitudinal folding apparatus for folding a plurality of unperforated superposed webs (**29**) over a folding or former funnel or triangle (**26**), particularly printed paper webs, having
at least one paper engaging roller (**1, 27, 30, 31**) positioned for contact with the webs upon passage of the webs thereover;
engagement penetrating pins (**11, 34**) positionable on the periphery of the at least one paper engagement roller, the pins having a length just sufficient to perforate said webs; and comprising
means for selectively providing a smooth clear path about the circumference of said roller for threading of the webs thereover, or a path in which said projections or pins engage said webs for positive transport thereby, including
means (**4, 5, 13, 33**) for selectively positioning the engagement pins (**11, 34**) either below, or projecting above a generated cylindrical outline defined by the largest radial dimension of the at least one engagement roller in the region of contact of the webs over said at least one engagement roller.

4,605,210

APPARATUS FOR FOLDING TRAVELING WEBS USING A SERIES OF ROLLER PAIRS

Hatto Hechler, Augsburg, Fed. Rep. of Germany, assignor to M.A.N.-Roland Druckmaschinen Aktiengesellschaft, Augsburg, Fed. Rep. of Germany

Filed Aug. 8, 1985, Ser. No. 763,805
Claims priority, application Fed. Rep. of Germany, Aug. 8, 1984, 3429172
Int. Cl.[4] B41L *1/30*
U.S. Cl. 270—41 **9 Claims**



1. Folding apparatus to fold a traveling web, or a plurality of superposed traveling webs (**6**), especially printed material or products received from a printing machine, about a theoretical ridge line (M, M') to thereby fold together said web and define two folded edge lines (R, R' . . .),
comprising, in accordance with the invention,
a plurality of folding stages (S1 . . . S5), located at different height levels with respect to the direction of a theoretical ridge line of the material entering a first stage, and to define height offsets of the respective stages with respect to said first stage (S1),
each folding stage including
a folding roller pair (**1, 1'** . . . **5, 5'**), the rollers (**1, 2 . . . 5; 1', 2' . . . 5'**) of the pair being located at opposite sides of the web or superposed webs (**6**) and the web or superposed webs being guided between the rollers of the pairs, to be folded thereby, in steps;
and wherein
the spacing of adjacent folding stages (e.g. S1–S2), and
the folding angle of the respective adjacent adjacent stages are related to
the height offset of the downstream subsequent stage (S2)—in the direction of travel of the web—

and the angular direction of a line (Z) connecting the centers of the rollers of the pair (2, 2') of the downstream stage, such that the length dimension of the theoretical ridge line between adjacent stages (S1–S2) corresponds at least approximately to the length dimension of the theoretical longitudinal edge lines (R) of the web between the corresponding adjacent stages (S1–S2).

4,605,211

AUTOMATIC SHEET PROCESSING DEVICE HAVING TILTABLE COLLECTING TRAY ADJACENT CORNER BINDER STATION

Hiraku Sonobe, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

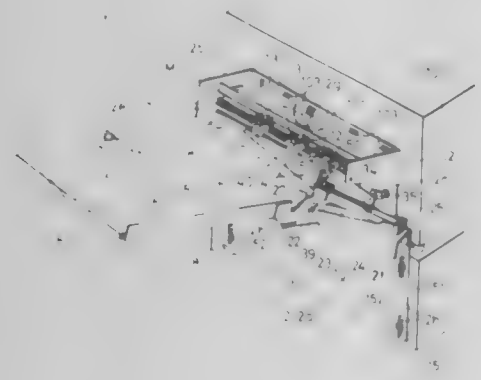
Continuation-in-part of Ser. No. 628,297, Jul. 6, 1984, abandoned, and Ser. No. 633,271, Jul. 23, 1984, abandoned. This application Aug. 7, 1985, Ser. No. 763,396

Claims priority, application Japan, Jul. 12, 1983, 58-126612; Jul. 12, 1983, 58-126613; Jul. 12, 1983, 58-126614; Jul. 12, 1983, 58-126615; Jul. 12, 1983, 58-126616; Jul. 25, 1983, 58-135644; Jul. 25, 1983, 58-135645; Jul. 25, 1983, 58-135646; Jul. 25, 1983, 58-135647; Jul. 25, 1983, 58-135648

Int. Cl.[4] B42B *1/02*

U.S. Cl. 270—53

17 Claims



1. A sheet collecting tray device comprising:

a sheet collecting tray disposed in a posture inclined forwardly upwardly or forwardly downwardly and rightwardly downwardly or leftwardly downwardly with respect to a sheet discharge port portion for receiving sheets put out from a sheet outputting apparatus, said tray being rockably supported;

tray rocking means for selectively changing said tray to a first posture in which it is capable of receiving the output sheets from the sheet outputting apparatus and a second posture more steeply inclined than said first posture;

sheet aligning means for stopping the two side edges on the sliding-down side of the sheets successively discharged into said tray in said first posture and piled therein and aligning the sheets with one another; and

binding means operating at a predetermined point of time after a predetermined number of sheets have been put out from the sheet outputting apparatus into said tray and binding a bundle of aligned sheets in said tray;

said tray being changed over to said second posture by said tray rocking means so that the bound bundle of sheets in said tray is slidingly discharged out of said tray.

4,605,212

DEVICE ON A FOLDING GRIPPER CYLINDER TO ACCEPT FOLDED PRODUCTS

Ingo Kobler, Anhausen, Fed. Rep. of Germany, assignor to M.A.N. Roland Druckmaschinen Aktiengesellschaft, Offenbach am Main, Fed. Rep. of Germany

Filed Jul. 19, 1985, Ser. No. 757,005

Claims priority, application Fed. Rep. of Germany, Jul. 26, 1984, 3427559

Int. Cl.[4] B65H *39/02*

U.S. Cl. 270—54

15 Claims



1. Device on a folding gripper cylinder to accept and further transport the folded products provided between a folding gripper cylinder and a folding blade cylinder with a crosswise fold, by means of a revolving transport device, characterized in that the revolving transport device (7), provided with drivers (8), is arranged in the approximately wedge-shaped region (A) behind the transfer point of the folded product (5) from the folding blade cylinder (1) to the folding gripper cylinder (2), that the drivers (8) are positioned on the transport device (7) in such a manner that one driver at a time, after the insertion of the folded product (5) into the folding gripper (4) of the folding gripper cylinder (2) is inserted engagingly into the region (A) between the two halves (5*a*, 5*b*), which are still resting on the folding blade cylinder (1), and that after the release of the folded product (5) by the folding grippers (4), the drivers (8) transport the folded products (5) further after they have been removed from the folding gripper cylinder (2).

4,605,213

APPARATUS FOR CONTINUOUS HANDLING OF FOLDED PAPER PRODUCTS

Hatto Hechler, Augsburg, Fed. Rep. of Germany, assignor to M.A.N. Roland Druckmaschinen Aktiengesellschaft, Offenbach am Main, Fed. Rep. of Germany

Filed Jul. 18, 1985, Ser. No. 756,779

Claims priority, application Fed. Rep. of Germany, Jul. 26, 1984, 3427558

Int. Cl.[4] B65H *5/30*

U.S. Cl. 270—55

9 Claims



1. Apparatus for further handling of the folded products produced in the folding apparatus of a rotary printing machine, having a device for opening these products,

characterized in that the folded items (9) transferred from the folding apparatus (1) by means of conveyor belts (5, 6) can be grasped by the leading folded spine (10) by forward grippers (12) disposed on a rotating opening cylinder (8),

that rearward grippers (13) disposed on the opening cylinder (8) grasp the overhang (11) of the folded items (9), that after the folded items (9) have been grasped by the forward and rearward grippers (12, 13), the half of the folded items (9) remote from the opening cylinder (8) moves away, because of centrifugal force, from the half held on the opening cylinder (8) by the forward and rearward grippers (12, 13), so that at least one of the rods (14 disposed at intervals on a revolving conveyor belt or chain system (15) and traveling approximately parallel past the opening cylinder (8) can, upon its approximately tangential upward movement, be introduced into the respective folded item (9) then being opened, after which the forward and rearward grippers (12, 13) respectively release the folded item (9) and the folded items (9) that are held by the rods (14) can be transferred onto rods (18) of further conveyor belt or chain systems (17).

4,605,214

LABEL HANDLING APPARATUS

Bernard W. Hanning, 49, St. Jude's Road, Englefield Green, Egham, Surrey, and John N. Dent, 2, Ellerman Avenue, Twickenham, Middlesex, both of United Kingdom

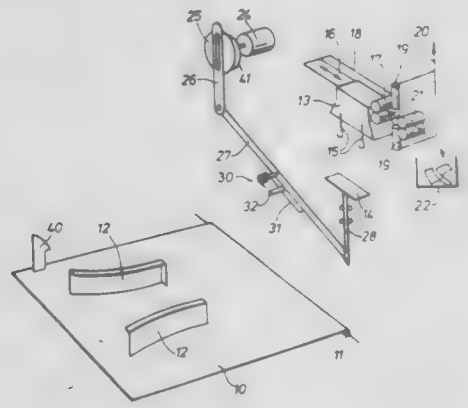
PCT No. PCT/GB83/00219, § 371 Date May 7, 1984, § 102(e) Date May 7, 1984, PCT Pub. No. WO84/01045, PCT Pub. Date Mar. 15, 1984

PCT Filed Sep. 6, 1983, Ser. No. 610,279

Claims priority, application United Kingdom, Sep. 6, 1982, 8225326

Int. Cl.[4] B65H *1/08*

U.S. Cl. 271—3.1 **10 Claims**



1. A label handling system comprising: a plurality of label-receiving boxes, apparatus including a box-receiving station, means for ejecting upwardly a stack of labels from a label containing box placed in the box-receiving station into a hopper having a downwardly opening aperture for receiving a stack of labels, and means for removing labels sequentially from the top of the stack in the hopper and passing labels so removed through a data reading station at which price and weight data are read from the labels and subsequently further processed.

4,605,215

PROCESSING STATION FOR AN ELECTROPHOTOGRAPHIC INFORMATION PRINTER

Hans C. Hyltoft, Vaerlose, Denmark, assignor to Mercante International A/S, Glostrup, Denmark

Filed Oct. 19, 1984, Ser. No. 662,553

Claims priority, application Denmark, Nov. 3, 1983, 5047/83; Sep. 14, 1984, 4388/84

Int. Cl.[4] B65H *3/44*

U.S. Cl. 271—9 **2 Claims**

1. An electrophotographic information printer utilizing a zerographic system comprising

a sheet supply with associated sheet feeding means for feeding individual sheets to a sheet advancing path;

a movable photoconductor with an associated image transfer device arranged at said sheet advancing path for transferring a toner image developed on said photoconductor to a sheet advanced along said sheet advancing path;

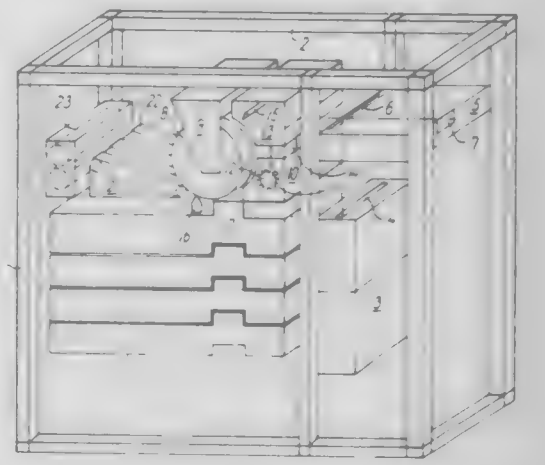
a further sheet advancing device for conveying sheets from said image transfer device to a fixation device;

said sheet supply device with associated sheet feeding means, said photoconductor and said further sheet advancing device forming individual replaceable first, second and third sheet processing modules, respectively;

at least two of said first, second and third modules each including a rotatable member and an individual drive means in the form of an electronic stepping motor which is mechanically coupled to the respective rotatable member within said module;

a program-controlled control unit; and

a device operated by the program-controlled control unit for selectively supplying predetermined numbers of pulses at controlled pulse frequencies to the respective stepping motors within said at least two modules for operating said stepping motors in an operational sequence for said information printer.



4,605,216

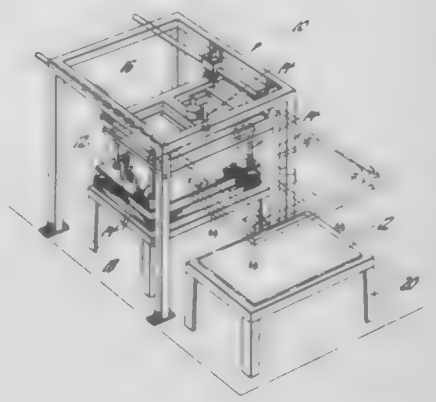
MATERIAL PICK-UP MECHANISM

Albert C. DeWitt, Warren; Donald W. Herriges, Mt. Clemens, and Donald Stanner, Milford, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Jul. 24, 1984, Ser. No. 633,930

Int. Cl.[4] B65H *3/22*

U.S. Cl. 271—18.3 **3 Claims**



1. An improved material pick-up mechanism of the type which is moved between a pick-up position against a sheet of fibrous material and a remote position for releasing it, said improved mechanism being adapted to pick up materials of varying texture and resiliency by pinching said materials without piercing and substantially without puckering the material, comprising,

at least two support members each having at least two projections having a gripping surface thereon, the spacing between adjacent gripping surfaces on one support member being substantially identical to the other support mem-

ber with all gripping surfaces being disposable substantially in a plane,

means guiding the support members to be reciprocated relative to each other along substantially side by side paths such that each gripping surface of one support member moves together and apart within the plane relative to a respective gripping surface on the other support member as the support members are reciprocated, the substantially identical spacing between adjacent gripping surfaces on each support member serving to maintain a substantially identical spacing between the pairs of respective gripping surfaces, as they move together and apart,

power means to reciprocate the support members so as to move the respective gripper surfaces together as the mechanism is moved to pick-up position against the material and apart when the mechanism is moved to the remote position,

and adjusting means cooperable between the power means and the guiding means to control the reciprocation of the support members in accordance with the varying material texture and resiliency so that the respective gripping surfaces move a sufficient distance together, as they move against the material, without moving past one another, to a gripping position where said gripping surfaces are separated by a distance sufficiently small to pinch just sufficient fibers of the top surface of the material so that the material may be picked up without piercing the material and substantially without puckering the material, said gripping surfaces moving apart sufficiently to release the material when the mechanism is moved to the remote position,

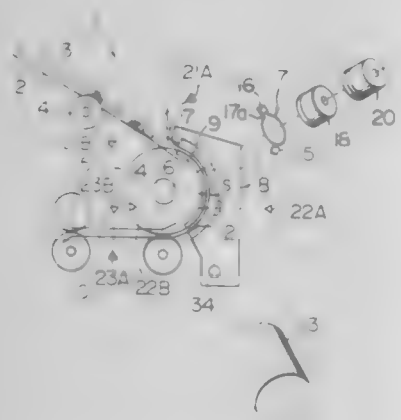
whereby materials of varying texture and resiliency may be picked up and released without damage.

4,605,217

BILL FEEDING APPARATUS

Kowichi Goi, Kawasaki, Japan, assignor to Laurel Bank Machine Co., Ltd., Tokyo, Japan

Filed Apr. 4, 1985, Ser. No. 720,286
Claims priority, application Japan, Apr. 6, 1984, 59-68552
Int. Cl.[4] B65H *3/52*
U.S. Cl. 271—124 **5 Claims**



1. A bill feeding apparatus which separates and feeds bills, one at a time, from a stack of bills positioned in a bill handling machine, and which comprises:

(a) a feed-out roller for feeding out the bills by engaging with one surface of the bills,

(b) a friction member having a gap for the passage of bills between the friction member and the feed-out roller and separating the bills, one at a time, by applying friction force to the other surface of the bills from the friction member,

(c) a pressure sensor for detecting pressure acting on the friction member to generate a pressure signal,

(d) a gap adjusting mechanism for adjusting the gap between the friction member and the feed-out roller by moving the friction member, and

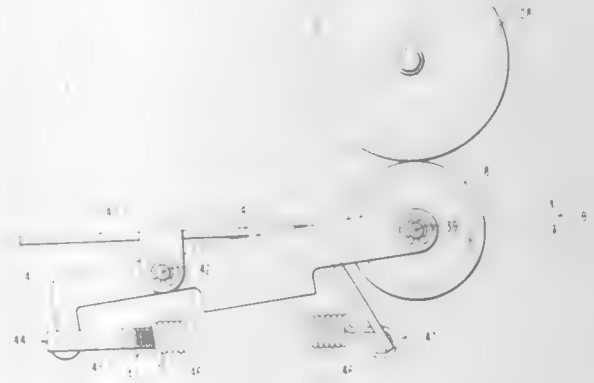
(e) a control circuit means for controlling the gap adjusting mechanism to adjust the gap on the basis of the pressure signal from the pressure sensor so that the size of the gap is first set to be zero by sensing when the pressure sensor first provides a pressure signal output as the gap is narrowed and the gap then is increased up to a predetermined value by moving the friction member relative to the feed-out roller in an initialization mode prior to feeding of the bills.

4,605,218

CONSTANT FORCE ROLL ASSEMBLY

James A. Knepper, Longmont, and Leroy Rose, Boulder, both of Colo., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 26, 1983, Ser. No. 545,728
Int. Cl.[4] B65H *9/16*
U.S. Cl. 271—238 **2 Claims**



1. A convenience copier machine wherein said machine includes:

a document platen;

a cover for said document platen;

an entry tray means across which a document to be copied is fed to said document platen;

aligner roll means to position said document to be copied, said aligner roll means comprised of a first aligner roll mounted near said entry tray and a second aligner roll mounted in said document cover, the two rolls capable of mating with one another to establish an aligner roll nip for feeding said document to said document platen;

mounting means for mounting one of the aligner rolls such that it assumes a stationary position, said nip established within an angular displacement tolerance of six degrees;

mounting means for the other roll for establishing a nominal normal force at said nip at a selected force level in the range of 20 to 30 grams, said mounting means maintaining said selected force level over said angular displacement tolerance to within ten percent of said selected level;

a first reference edge along one side of said document platen and wherein said aligner roll means is positioned near said first reference edge to move one side of said document to be copied into sliding engagement therewith;

a second reference edge parallel to said first reference edge and positioned along an opposite side of said document platen;

a second aligner roll means positioned near said second reference edge to move one side of a document to be copied into sliding engagement with said second reference edge;

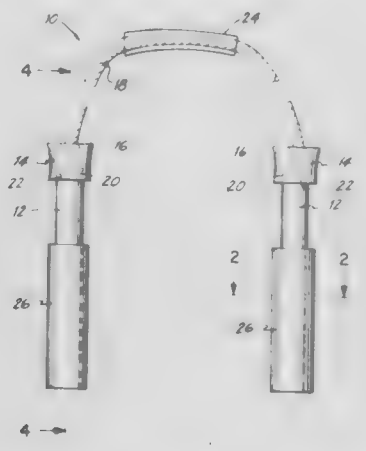
said second aligner roll means including a third roll mounted near said entry tray and being positioned at a stationary location within an angular displacement tolerance range of six degrees;

a fourth roll bearing against said third roll when it is at said stationary location for providing a nip therebetween;

mounting means for said fourth roll for establishing a nominal normal force at said nip at a selected force level in the range of 20 to 30 grams, said mounting means maintaining

said selected force level over said angular displacement tolerance to within ten percent of said selected level; and said selected force level for said second aligner roll means being established within said range at least twenty percent below the force level established for said first aligner roll means.

4,605,219
JUMPERCISER
Elliott Mahana, and George Spector, both of 233 Broadway, Rm 3615, New York, N.Y. 10007
Filed May 14, 1984, Ser. No. 609,823
Int. Cl.[4] A63B *5/20*
U.S. Cl. 272—75 **2 Claims**



1. A jumerciser rope to be used by a person exercising which comprises:

(a) a pair of hollow pipe handles to be gripped by the hands of said person exercising, each said handle having external threads at the top end;

(b) a pair of caps, each said cap having internal threads at the bottom end to engage said external threads of one said handle;

(c) a pair of ball bearings, each said ball bearing mounted within the top end of said cap; and

(d) an elongated rope having each end engaging one said ball bearing to reduce friction when said rope is turned with arms extending parallel to the ground when said person is exercising, further comprising:

(a) each said cap having an inner flared top end so that each said end of said rope can slide within one said flared top end of one said cap;

(b) each said ball bearing having a race mounted on each said flared top end;

(c) a pair of compression springs, each said compression spring mounted on each said one end of said rope within said cap; and

(d) a pair of stop members each said stop member affixed to said one end of said rope to hold one said compression spring against said cap so that when said rope is turned said compression spring wil compress due to centrifugal force acting on the rotating rope resisted by said stop members acting against the spring which reacts against said spring.

4,605,220
ANKLE EXERCISER
Tim L. Troxel, Kearney, Nebr., assignor to Wikco Industries, Inc., Broken Bow, Nebr.
Filed Apr. 12, 1985, Ser. No. 722,648
Int. Cl.[4] A63B *23/04*
U.S. Cl. 272—96 **11 Claims**

1. An ankle exerciser, comprising:

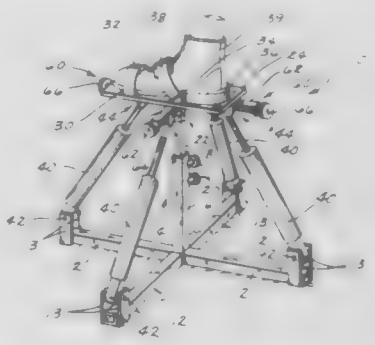
a base;

a support post having one end attached to said base and having the other end attached to a universal swivel joint;

a foot plate attached to said universal swivel joint, said foot plate being pivotable about only a longitudinal axis and a transverse axis;

means connected to said foot plate for independently resisting pivotal movement of said foot plate only said longitudinal axis;

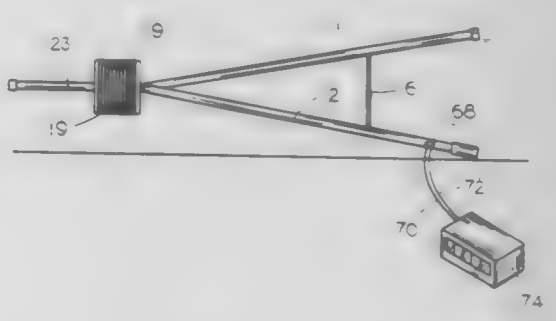
means connected to said foot plate for independently resist-



ing pivotal movement of said foot plate only said transverse axis; and

means connected to said foot plate for releasably securing a human foot to said foot plate.

4,605,221
EXERCISE METHOD AND APPARATUS
Nino D'Agosta, 3502 S. 66th St., Omaha, Nebr. 68106
Continuation-in-part of Ser. No. 360,442, Mar. 22, 1982. This application Sep. 10, 1984, Ser. No. 648,767
Int. Cl.[4] A63B *21/06, 5/00*
U.S. Cl. 272—117 **11 Claims**



9. An exercise device for strengthening one's grip, wrist, arms and back, comprising,

a frame means including first, second and third elongate members, each having upper and lower ends, said three elongate members being connected together adjacent the upper ends thereof, said lower ends extending downwardly from said connected upper ends, and terminating in three support points arranged to provide a stable standing frame means upon engagement of said three support points on a flat surface,

a weight attachment means comprising an elongated extension projecting upwardly from said connected upper ends of said elongate members in the stable standing position of said frame means,

a plurality of light incremental disc weights having center openings therein, said disc weights being supported in stacked relation on said extension with said extension extended through said center openings,

means for limiting downward axial movement of said disc weights on said extension,

said disc weights being removably positioned on said extension to thereby accommodate incremental weight variations for a generally 90° pivotal movement of the device about an axis extended between the support points of two elongate members by various users using only a single handed grip on one of said two elongate members adjacent the support point thereof, and

an inclination sensitive electrical switch mounted on said device,

said device being pivotal between said standing stable position and a lying stable position wherein the support points of two elongate members and an upper portion of the device all engage said flat surface, said switch being oper-

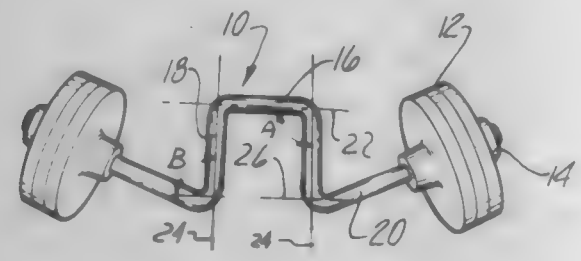
ative to close upon downward pivotal movement of said device to a position adjacent to but spaced above said lying stable position.

4,605,222

WEIGHTLIFTING EXERCISE BAR

Gary L. Shannon, 637 Brooks, Pontiac, Mich. 48055

Filed Oct. 15, 1984, Ser. No. 661,107
Int. Cl.[4] A63B *11/02, 13/00*
U.S. Cl. 272—122 **17 Claims**



1. A weightlifting bar adapted to receive weight plates and collars, comprising:

a straight center section,

a pair of handle sections extending from said center section, said handle sections being generally parallel to each other and each forming an angle of approximately 90 degrees with respect to said center section, and

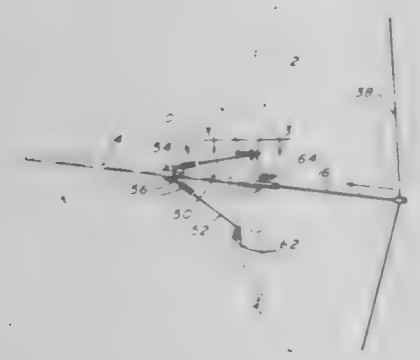
a pair of straight weight receiving end portions extending from said handle sections and forming an angle therefrom of less than 90 degrees such that said end portions have nonparallel longitudinal axes.

4,605,223

ARCHERY EXERCISING DEVICE

Gérard Rainville, 8387 Bretagne St., Saint-Léonard, Canada (H1R 2W9)

Filed Jan. 31, 1985, Ser. No. 697,024
Int. Cl.[4] A63B *21/00*
U.S. Cl. 272—130 **5 Claims**



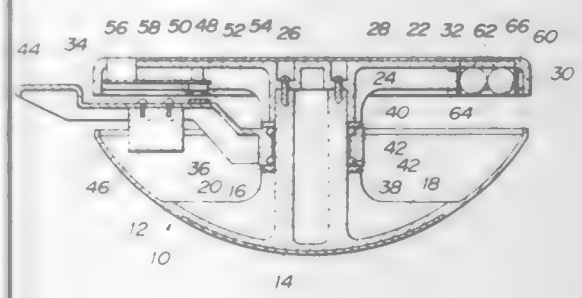
1. A practice device adapted for use with a bow, the latter being constituted of an arcuate, elastic bow frame, having a front and a rear face, and a cord extending opposite said rear face; said device comprising a liquid-filled cylinder, having a front-closed end, cylinder-securing means carried by said cylinder adapted to secure said cylinder to said bow frame with the rear portion of said cylinder intersecting and transversing the center portion of said bow frame, said cylinder-securing means include a pair of rigid braces fixed to said cylinder adjacent its front end, rearwardly diverging from said cylinder and adapted to be fixed to said bow frame, each brace including a length-adjusting means to vary its effective length, said cylinder-securing means further including a lateral stop member fixed to said cylinder adjacent its rear end and adapted to engage the rear face of said bow frame and with the front end of said cylinder spaced forwardly of the front face of said bow frame, a reciprocal piston within said cylinder, a piston rod fixed to said piston and protruding from the rear end of said cylinder, means at the outer end of said piston rod adapted to receive said cord, so that the latter may propel said piston inside said cylinder and a restricted passage at said piston allowing transfer of said liquid between the ends of said piston.

4,605,224

EXERCISE APPARATUS

Masakatsu Torii, Hatogaya, Japan, assignor to Saitama Kako Co., Ltd., Hatogaya, Japan

Filed May 14, 1984, Ser. No. 609,698
Int. Cl.[4] A63B *23/04*
U.S. Cl. 272—146 **5 Claims**



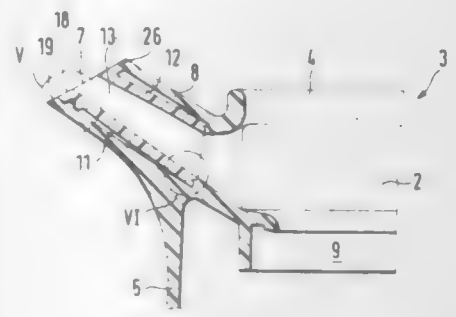
1. Exercise equipment for improving the bodily balance function through active bodily movements comprising: a spherical sector-shaped member having an inner surface and an outer surface, said outer surface being adapted to contact the floor surface, a column extending radially from the center of the inner surface of said spherical sector shaped member towards the center of the sphere, a rotatable arm having a base end and a free end, a boss formed at said base end which is rotatably mounted on said column, said rotatable arm extending radially outwardly from said column and projecting beyond the outer periphery of said spherical sector-shaped member, a base plate having a periphery corresponding generally to the periphery of said spherical sector-shaped member and having upper and lower surfaces, said base plate being provided with connecting means at the center of its lower surface adapted to be fitted and secured to said column, and an electric circuit means for detecting and indicating rotation of said arm relative to said base plate.

4,605,225

POURING SPOUT HAVING AN INSERT

Anso Zimmermann, Bad Hersfeld, Fed. Rep. of Germany, assignor to Rotpunkt Dr. Anso Zimmermann, Niederaula, Fed. Rep. of Germany

Filed May 2, 1984, Ser. No. 606,152
Claims priority, application Fed. Rep. of Germany, May 10, 1983, 3317106
Int. Cl.[4] B65D *25/42*
U.S. Cl. 222—566 **12 Claims**



1. A pouring section for use with a container for liquids, said container having an open neck portion of injection-molded material on its upper end, said pouring section cooperating with said container and forming a tube-like spout through which liquid contents of said container can be poured, said tube-like spout comprising:

a moldable member laterally projecting out of said neck portion of said container and having an open conduit communicating with said neck portion of said container, said molded member having

a first portion communicating with said neck portion of said container and having a cylindrically shaped bore diverging toward the interior of said container, and

a second portion communicating with said first portion and having a bore of substantially uniform cross sectional area and facing outward from said container; and

a molded insert having an outside diameter and shape corresponding to said bore in said second portion of said molded member for insertion thereinto and having a channel therein for passage of liquid, said channel being conically shaped and diverging toward an outer wall of said container, such that wide end of said conically shaped channel fits flush up against said cylindrically shaped bore in said first portion of said molded member.

4,605,226

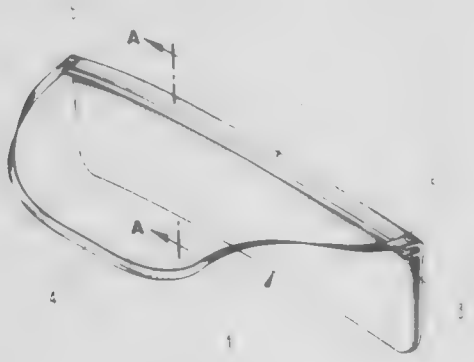
HEAD GUIDE AND BATTING HELMET

James Morrissey, 58 Mary St., Ashley, Pa. 18706

Filed Aug. 23, 1984, Ser. No. 643,784

Int. Cl.[4] A63B *61/00*

U.S. Cl. 273—26 C **4 Claims**



1. A baseball training device in combination with a protective baseball batting helmet having a beak comprising

a. a shield comprised of a elongated top flange and a main opaque body, said shield having adjustment means and a length whereby said shield may be adjusted on said helmet beak to cover only the left half of the face of a left handed batter and only the right half of the face of a right handed batter,

b. said adjustment means being a groove defined along the length of said flange, of a width accommodatingly larger than the thickness of the beak, and slidingly mounted thereon;

c. means for releasably attaching said shield to said protective batting helmet.

4,605,227

ATHLETE'S ARM RESTRAINER

Bruce Hurd, Ridgefield, Conn., and Robert Oda, Englewood Cliffs, N.J., assignors to Accuswing, Incorporated, Easton, Conn.

Continuation-in-part of Ser. No. 606,205, May 2, 1984, abandoned. This application Jan. 30, 1985, Ser. No. 697,412

Int. Cl.[4] A63B *71/02*

U.S. Cl. 273—54 B **8 Claims**

1. An arm restrainer comprising:

an upper mounting member to be worn on a person's upper arm above the elbow;

a lower mounting member to be worn on the person's forearm below the elbow;

and a hinge acting between said upper and lower mounting members and permitting the person's arm to bend at the elbow, and means in said hinge operable upon movement of the person's forearm to straighten the arm for locking said hinge to prevent the arm from bending at the elbow;

said hinge comprising:

a rigid upper hinge structure attached to said upper mounting member;

a rigid lower hinge structure attached to said lower mounting member and pivotally coupled to said upper hinge structure;

and a detent mechanism acting between said upper and lower hinge structures for automatically locking them together against further pivotal movement of one with respect to the other when they are brought into a predetermined angular relationship between one another;

one of said hinge structures having a portion with a peripheral surface which extends circularly about the pivotal axis between said upper and lower hinge structures, said one hinge structure having a detent recess at one location along said peripheral surface;

and the other of said hinge structures having a locking element slidably engageable with said peripheral surface and spring means biasing said locking element against said peripheral surface to snap into said detent recess when said locking element registers with the detent recess;

said one hinge structure comprising:



a hinge member rigidly attached to the corresponding mounting member;

a bushing member formed separate from said hinge member and having a circular periphery with said detent recess therein;

means supporting said bushing member on said hinge member for rotative adjustment about the axis of said circular periphery;

and means for selectively locking said bushing member in different rotative positions on said hinge member to thereby adjust the position of said detent recess angularly about said axis;

said hinge member having a plurality of openings evenly spaced radially from said axis at 90 degrees apart;

said bushing member having a plurality of angularly spaced openings at the same radial distance from said axis as said openings in the hinge member and each selectively registrable with a corresponding opening in the hinge member, depending upon the rotative position of said bushing member about said axis;

and said means for locking comprising a locking member snugly but slidably insertable in respective openings in said bushing member and said hinge member which register with each other.

4,605,228

METHOD OF PUTTING A GOLF BALL

Fred W. Guendling, Jr., 199-4 Center St., Box 443, Mokena, Ill. 60448

Division of Ser. No. 490,285, May 2, 1983, Pat. No. 4,523,758.
This application Apr. 29, 1985, Ser. No. 728,016
Int. Cl.[4] A63B *53/00*
U.S. Cl. 273—77 R 2 Claims



1. A method of putting a golf ball, comprising the steps of selecting a putting club having a shaft which can be held vertically in the same vertical plane as the vertical midline of a golf ball in position for putting toward the cup and a selected aiming point which is between the ball and the cup in a selected path of travel which is intended to enable the ball to roll into the cup, holding such club shaft at one side in such vertical position with only the hand on that side gripping said club shaft, facing forward in the direction of the said selected path of travel with the hand on the opposite side free, swinging said club with said one hand in a way whereby said shaft thereof remains substantially in said vertical plane throughout said swing, and striking said golf ball with that portion of the striking surface of its club head which is in line with the axis of said club shaft impacting against the golf ball at its said vertical midline which lies in said vertical plane to cause said ball to roll along said selected path of travel substantially in said vertical plane until it passes over said selected aiming point.

4,605,229

TOY DRAGSTRIP AND STARTING TOWER

Robert S. McKay, 7420 Beckwith Rd., Morton Grove, Ill. 60053

Filed Feb. 8, 1985, Ser. No. 699,592
Int. Cl.[4] A63F *9/14*
U.S. Cl. 273—86 R 12 Claims

1. A toy dragstrip for toy vehicles comprising;

a base defining at least two starting gates to receive toy vehicles therein,

means to release said vehicles upon indication of a starting signal,

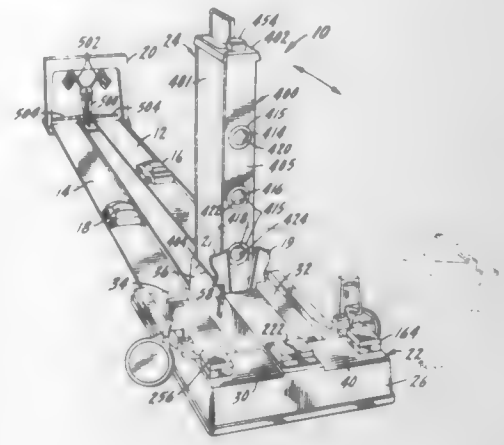
a starting tower defined by an elongated housing having top and bottom ends, said bottom end being releasably pivoted to said base, for movement between a generally vertical position and an inclined position with the top end thereof disposed below the bottom end thereof,

said housing including a wall defining a plurality of apertures, which, when said housing is in said vertical position, are spaced vertically one below the other,

at least three marbles contained within said housing, each associated with one of said apertures,

said housing including landings adjacent each of said apertures to receive one of said marbles at said aperture to expose at least a portion of said marble to the exterior of said housing through said aperture,

said housing further including webs which, when said housing is in said vertical position, define inclined paths including a path for a first marble commencing adjacent the top end of said housing and termininating adjacent the vertically uppermost of said apertures, a path for a second marble commencing adjacent the landing for said first marble and terminating adjacent the next lowermost aperture, and a path for a third marble commencing adjacent the landing for said second marble and terminating adjacent the next lowermost aperture,



marble holding means formed at the commencement of each said path for releasably holding said associated marble at the commencement of said path,

marble release means accessible exteriorly of said housing and actuable to move said first marble from its marble holding means to cause it to travel along its inclined path to its landing, said movement causing said second marble to move from its marble holding means and to travel along its inclined path to its landing, said movement causing said third marble to move from its marble holding means and to travel along its inclined path to its landing.

4,605,230

TOY VEHICLE GAME WITH LAUNCHER AND RETURN MEANS

Wayne R. Halford, and Walter S. Nakano, both of Manhattan Beach, Calif., assignors to Mattel, Inc., Hawthorne, Calif.

Division of Ser. No. 566,591, Dec. 29, 1983, Pat. No. 4,513,967.
This application Jan. 24, 1985, Ser. No. 694,531
Int. Cl.[4] A63B *67/14*
U.S. Cl. 273—129 AP 2 Claims

1. A launcher for a toy car adapted to be connected to a track section, comprising:

a supporting base;

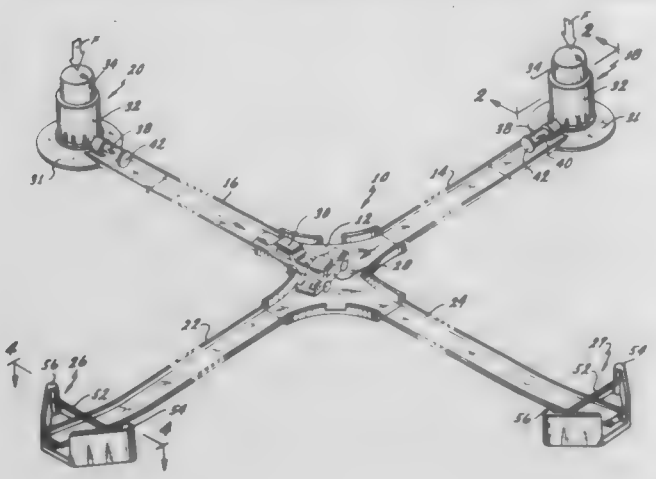
an exterior hollow cylinder extending in a generally vertical direction upwardly from said supporting base and having a small exterior hollow cylinder extending in a generally horizontal direction outwardly from said exterior hollow cylinder near the bottom of said exterior hollow cylinder, said exterior hollow cylinder and small exterior hollow cylinder having generally perpendicular longitudinal axes;

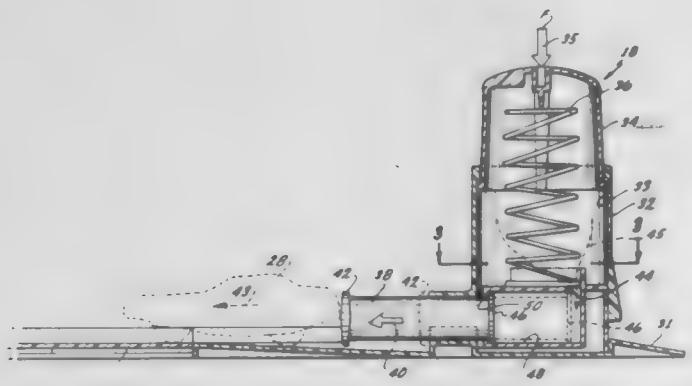
a generally horizontal internal hollow cylinder operably supported by said base, said internal hollow cylinder being disposed within a first hollow interior of said exterior hollow cylinder and immediately below a second hollow interior of said exterior hollow cylinder, said first hollow interior being separated from said second hollow interior by a plate member, said internal hollow cylinder being directly connected to said second hollow interior of said exterior hollow cylinder by a constricted opening in said plate member;

a small piston slidable engaging said internal hollow cylinder and said small exterior hollow cylinder, said small piston being capable of exiting said launcher in a generally horizontal direction through an opening at one end of said

small exterior hollow cylinder, one end of said small piston being enlarged in order to prevent movement of said small piston upon contact with an end of said internal hollow cylinder;

a large piston slidably engaging said external hollow cylinder inside said second hollow interior, said large and small pistons having a compression ratio so that actuation of said large piston causes compressed fluid in said second hollow interior of said external hollow cylinder to flow





through said constricted opening directly into said internal hollow cylinder and to act against said one end of said small piston resulting in said small piston exiting said launcher through said opening of said small exterior hollow cylinder in a generally horizontal direction for the purpose of launching a toy car resting against the other end of said small piston; and

a compressed spring located within said launcher resisting downward movement of said large piston, one end of said spring being supported by said plate member.

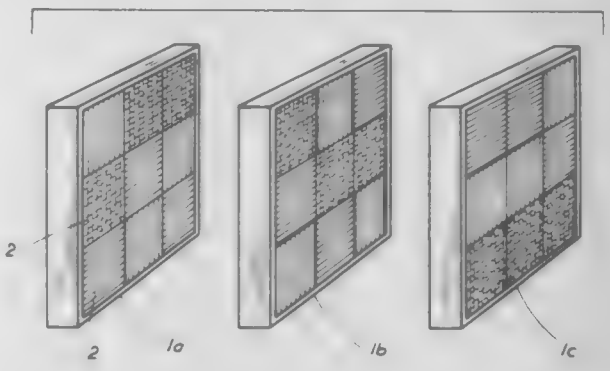
4,605,231

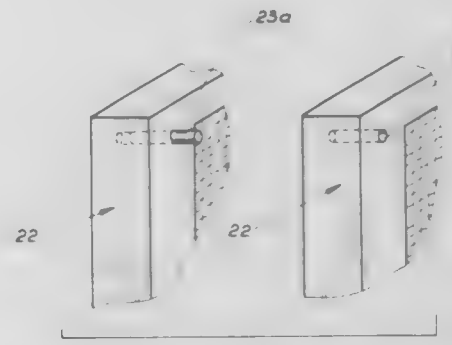
LIGHT TRANSMISSION PUZZLE GAME

Lawrence D. Richman, 7167 Lake Worth Rd., Lake Worth, Fla. 33463

Filed Sep. 19, 1984, Ser. No. 652,089
Int. Cl.[4] A63F *9/08*
U.S. Cl. 273—157 A **12 Claims**

1. A puzzle game having at least one solution comprising at least 2 multicolored superposable light permeable portions, said portions selected from the group consisting of colored and uncolored transparent elements and colored and uncolored translucent elements disposed in such a way that at least one superposition of light permeable portions, each in individually light continuous disposition will define one solution in which the surface appearance of the puzzle is of the same color and wherein each said light permeable portion further comprises an





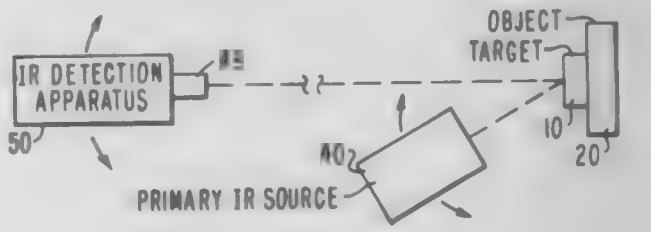
engaging means suitable for registrably engaging at least one other superposable light permeable portion.

4,605,232

INFRARED RADIATION RESPONSIVE TARGET

Richard L. Hundstad, 221 Woodside Rd., Pittsburgh, Pa. 15221

Filed Apr. 24, 1984, Ser. No. 603,350
Int. Cl.[4] F41J *1/00*
U.S. Cl. 273—348.1 **12 Claims**





1. An infrared radiation responsive target system, comprising,

a non-thermal target structure for scattering impinging infrared radiation to produce retro-reflected infrared radiation in a diffuse distribution simulating the radiation distribution of a thermal target,

a source of infrared radiation energy for directing infrared radiation energy onto said non-thermal target structure, and

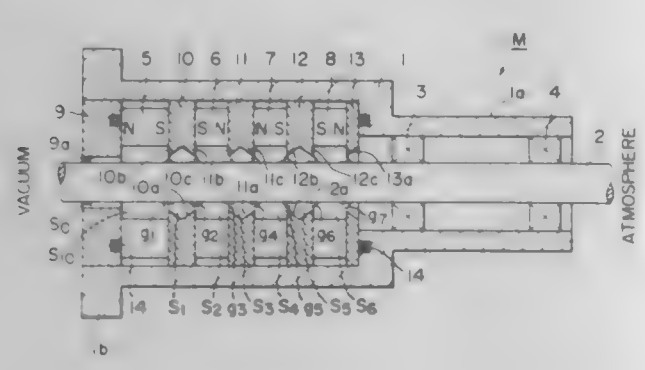
infrared radiation detection means responsive to the retro-reflected infrared radiation from said non-thermal target structure.

4,605,233

MAGNETIC FLUID SEALING DEVICE

Kimio Sato, Tokyo, Japan, assignor to Rigaku Keisoku Kabushiki Kaisha, Musashi-Murayama, Japan

Filed Sep. 13, 1983, Ser. No. 531,704
Claims priority, application Japan, Sep. 16, 1982, 57-159662
Int. Cl.[4] F16J *15/40*
U.S. Cl. 277—80 7 Claims



1. A magnetic fluid sealing device comprising

a housing disposed between a low pressure environment and a high pressure environment:

a shaft of magnetic material rotatably mounted in said housing;

a plurality of annular permanent magnets mounted in said housing coaxially of each other with the polarity of the opposite surfaces of two adjoining magnets being the same;

a plurality of annular pole pieces mounted in said housing in alternating manner with said magnets, each pole piece having at least one annular knife edge on an inner periphery facing said shaft, each said knife edge being disposed to pass magnetic flux from an adjacent magnet to capture a ring of magnetic fluid between said shaft and said respective knife edge and form a barrier to maintain a pressure difference between the low pressure environment and the high pressure environment; and

wherein said magnet closest to the low pressure environment generates a greater magnetic flux density in said one knife edge of an adjacent pole piece than the other of said magnets in respective said pole pieces, thus providing a stronger sealing effect adjacent said low pressure environment.

4,605,234

MECHANICAL SEAL ASSEMBLY WITH ORIENTATION MAINTAINING MEANS

Maurice E. Metcalf, 1028 Avenue E, Nederland, Tex. 77627

Filed Dec. 16, 1985, Ser. No. 808,943
Int. Cl.[4] F16J *15/34*
U.S. Cl. 277—81 R 13 Claims

1. A mechanical seal assembly for use with a rotatable shaft passing through a housing, said seal assembly comprising:

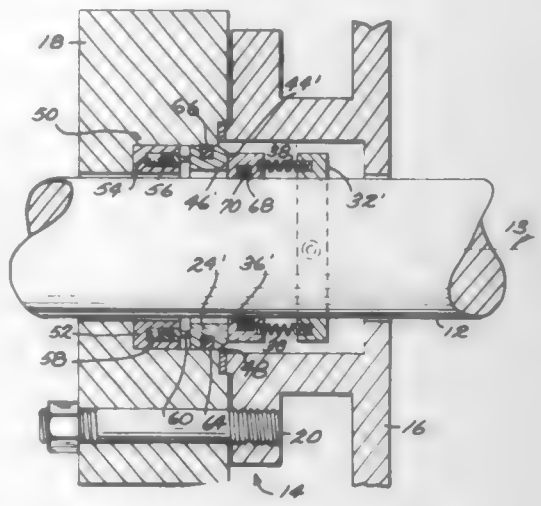
a first ring member attached to and rotatable with said shaft:

a first annular seal member positioned in fluid-tight contact around and rotatable with said shaft:

at least one spring member yieldingly connected between said ring member and said seal member;

a second annular seal member positioned within said housing in spaced relationship from and around said shaft and in fluid-tight relationship with said housing and with said first seal member; and

flowable material filled means in operative relationship with said housing and with said second seal member for cooperating with said first seal member to enable said second seal member to be maintained in a predetermined orientation with respect to said shaft.

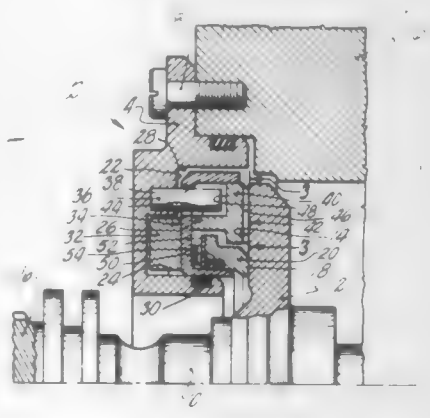


4,605,235

HIGH THRUST CAPACITY SHAFT SEAL ASSEMBLY FOR FUEL PUMPS

Jack G. Sundberg, Meriden, and Paul L. Haynes, Jr., Pleasant Valley, both of Conn., assignors to Chandler Evans Inc., West Hartford, Conn.

Filed Sep. 12, 1984, Ser. No. 649,676
Int. Cl.[4] F16J *15/34*
U.S. Cl. 277—87 7 Claims



1. In an improved shaft seal assembly for a pump having a pump housing and a drive shaft with a sealing face extending therein of the type comprising: a seal housing mounted upon the front of the pump housing in surrounding relationship to the drive shaft, a face seal, having its seal face in wiping engagement with the sealing face, mounted in the seal housing such that it is and capable of universal motion and wherein the improvement comprises:

a thrust member having a thrust face mounted in the seal housing for universal motion with respect thereto and such that its thrust face engages the sealing face during normal pump operation;

means to prevent rotation of the thrust member with respect to the seal housing; and

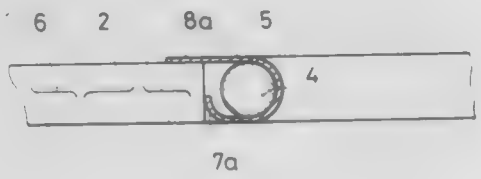
means to transmit movements of the thrust member to the face seal such that misalignments between the seal housing and the axis of the drive shaft produce corresponding displacements in the axis of the face seal.

4,605,236

CYLINDER HEAD GASKET CONSTRUCTION

Keiichi Tsuchihashi; Shinji Yamada; Makoto Arakawa; Osamu Aizawa, and Nobuyuki Otomo, all of Tokyo, Japan, assignors to Hino Jidosha Kogyo Kabushiki Kaisha and Marusan Packing Manufacturing Co., both of Tokyo, Japan

Filed Aug. 27, 1984, Ser. No. 644,924
Claims priority, application Japan, Aug. 29, 1983, 58-157447
Int. Cl.[4] F16J *15/12*
U.S. Cl. 277—235 B 6 Claims



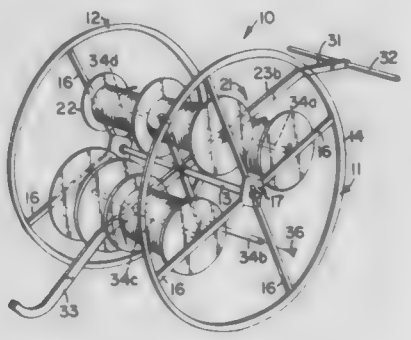
1. In a cylinder head gasket for engines comprising a gasket main body formed with bores and bore walls to match with the cylinder bore and a metal grommet provided in said bore of the gasket about the periphery of the gasket bore, said metal grommet having an arcuate cross-section with spaced apart ends and retaining a metal compression ring in an enveloping fashion, with at least one said end of said metal grommet being bent so as to exert a spring abutting force on the bore wall of the gasket to assist in holding and centering the grommet relative to said bore wall.

4,605,237

WIRE REEL CARRIAGE

Donald L. Torgrimson, Minot, N. Dak., assignor to Main Electric Construction, Inc., Minot, N. Dak.

Filed Feb. 9, 1984, Ser. No. 578,675
Int. Cl.[4] B65H *75/40*
U.S. Cl. 280—47.24 13 Claims



1. A carriage for transporting reels of electric wire, said carriage comprising:

a pair of large light weight wheels, said wheels being axially aligned and spaced from each other;

axle means extending between said pair of wheels;

means for supporting a plurality of reels of electric wire, said support means being mounted on said axle means intermediate said wheels, said support means comprising a plurality of elongated arms extending radially from said axle means at spaced locations around said axle means, said support means further including reel support shafts carried by said arms, said reel support shafts being disposed near the radially outer ends of said arms, said shafts each being adapted to rotatably support at least one wire carrying reel;

said wheels each including a plurality of spokes, said spokes being spaced sufficiently to permit insertion and removal of wire reels therebetween for mounting and dismounting on said reel support shafts; and

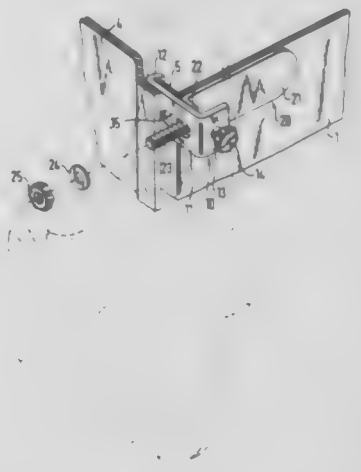
drawbar means for drawing said carriage from one location on a construction site to another.

4,605,238

DEVICE FOR FIXING A MUD FLAP TO THE FENDER FOLD OF A MOTOR VEHICLE

Knut Arenhold, Westend 7, 2000 Hamburg 52, Fed. Rep. of Germany

Filed Apr. 20, 1984, Ser. No. 602,503
Claims priority, application Fed. Rep. of Germany, Apr. 28, 1983, 3315341
Int. Cl.[4] B62B *9/14*
U.S. Cl. 280—154.5 R 15 Claims



1. A device for fixing a mud flap to a motor vehicle body having a fender fold with a free end, which device comprises:

a bracket member with a central part, whose length exceeds the width of the fender fold, a hooked-shape section on one end of said central part for engaging around the free end of said fender fold, and a support section at the other end of said central part for supporting at least one threaded screw member in a respective threaded taphole; said central part of said bracket member having at least one elongated slot whose longitudinal extension runs substantially in the direction of an an imaginary line connecting said hook-shaped section and said support section; and

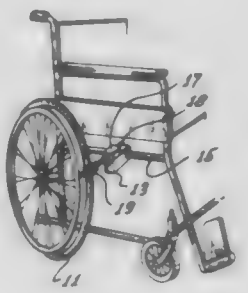
a pressure member which can be pressed by said at least one threaded screw member against the vehicle body area proximate said bracket member, said pressure member comprising an elongated base plate having a side contactable with said vehicle body area proximate said bracket member, a bent portion on one end of said base plate, at least one threaded bolt mounted on said bent portion, said at least one threaded bolt receivable within a respective slot formed in said central part of said bracket member whereby said mud flap is supported adjacent said bracket member by said at least one threaded bolt.

4,605,239

WHEELCHAIR TIRE AND WHEEL CLEANER

Jeff Warfel, 23 Lantern Cir., Spearfish, S. Dak. 57783

Filed Jun. 20, 1984, Ser. No. 622,748
Int. Cl.[4] B60S *1/68*
U.S. Cl. 280—158 R 6 Claims



1. Apparatus for cleaning rotating wheels, comprising:

a U-shaped mounting bracket having a receptacle and also having tightening means for tightening the open ends of the "U" securely onto a support to which the mounting bracket is to be clamped;

a support arm having a supporting extremity that fits within said receptacle;

a brush tightly attached to said support arm; and

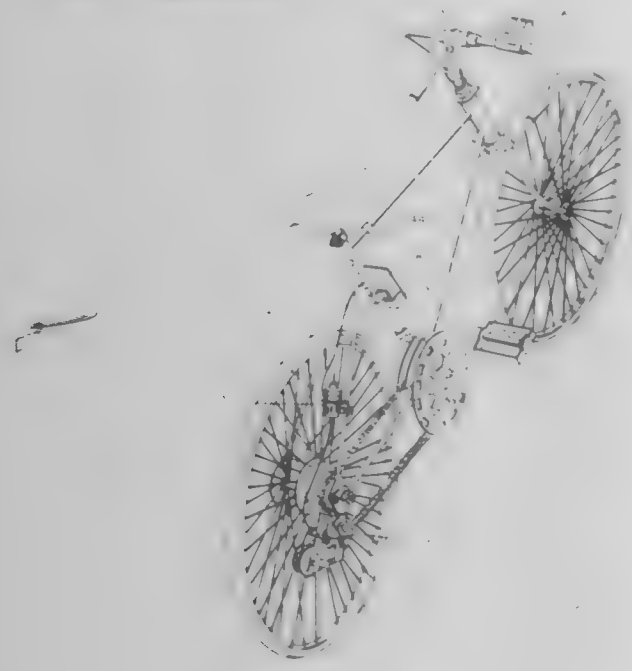
indexing means to retain said support arm in one of a plurality of user-selectable rotational positions, wherein said indexing means comprises a plurality of flattened surfaces within said receptacle and on said supporting extremity of said supporting arm.

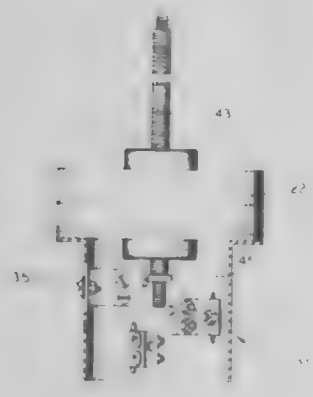
4,605,240

ELECTRONICALLY CONTROLLED BICYCLE TRANSMISSION

William E. Clem, and William C. Trethewey, both of Lancaster, Ohio, assignors to Telewe', Inc., Lancaster, Ohio

Filed Aug. 18, 1983, Ser. No. 524,445
Int. Cl.[4] F16H *7/22, 9/00*
U.S. Cl. 280—236 **1 Claim**





1. An improved automatic shifter for shifting the transmission of a human powered vehicle which includes pedals drivingly connected through a variable speed transmission to a wheel, said transmission including a movable shift member for changing the transmission ratio, wherein the improvement comprises:

(a) a velocity detector means mounted to said vehicle for generating an electrical signal representing the velocity of a wheel of said vehicle;

(b) a plurality of manual control switches;

(c) a microcomputer having inputs connected to the output of said velocity detector means and to said control switches;

(d) a digitally controlled motor/actuator means having its control input connected to an output port of said microcomputer and its output shaft linked to the shift member of said vehicle, said motor actuator means comprising a linear stepping actuator having a position detector means for providing electrical signals representing the current transmission ratio position, the output of said detector means being connected to an input port of said microcomputer, the position detector means comprising a cam mounted to the screw shaft of said linear actuator and a plurality of microswitches mounted about and axially spaced along said screw shaft and having their cam follower portions extending inwardly for engagement with said cam; and

(e) a source of electrical energy connected for operating the above elements of said improvement.

4,605,241

RACING BICYCLE FRAMESET

David R. Graham, West Redding, Conn., assignor to Cannondale Corporation, Georgetown, Conn.

Filed Dec. 27, 1984, Ser. No. 686,652
Int. Cl.[4] B62D *19/06*
U.S. Cl. 280—281 R **3 Claims**



2. In a racing bicycle frameset that includes a single straight seat tube, a down tube and a tubular bottom bracket, all of aluminum alloy joined directly to each other by weldments at junctures with each other, the down tube having an outside diameter substantially greater than the outside diameter of the seat tube, the improvement wherein the centerline of the seat tube intersects the horizontal plane of the frameset that includes the centerline of the bottom bracket tube a substantial distance forwardly of the bottom bracket tube centerline.

4,605,242

SUPPORT FOR A BICYCLE AND RIDER

James F. Kimball, 83617 Rattlesnake Rd., Dexter, Oreg. 97431

Division of Ser. No. 571,942, Jan. 19, 1984, Pat. No. 4,563,017.
This application Oct. 18, 1985, Ser. No. 788,960
Int. Cl.[4] B62H *1/08*
U.S. Cl. 280—294 **6 Claims**

1. A pedal and stand combination for a two-wheeled vehicle to support same and a rider during momentary stops, said combination comprising,

a pedal assembly including treads and adapted at one end for attachment to the vehicle,

a stand assembly including,

a base in place on the remaining end of said pedal,

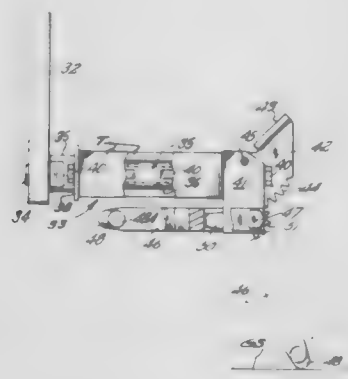
means extending through said treads and securing said base to said pedal assembly,

an arm pivotally mounted at one end to said base and having a ground engageable end,

foot actuated trigger means rotatably mounted on said base for downward rotation about a horizontal axis, said foot actuated trigger means normally projecting up-

wardly from the base when the stand assembly is inoperative,

motion translation means interposed between said trigger means and said arm and urging said arm downwardly to



an extended position during movement of said trigger means, and

means acting on said arm to bias same toward a raised stowed position, said arm urging said foot actuated trigger means toward a raised position.

4,605,243

FOLDING PUSHCHAIR

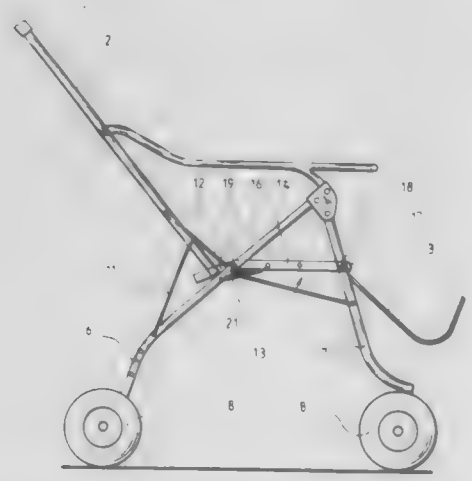
Dieter Gläser, Dachau, Fed. Rep. of Germany, assignor to PEG Perego Pines Deutschland GmbH, Fed. Rep. of Germany

Filed Oct. 9, 1984, Ser. No. 658,665

Claims priority, application Fed. Rep. of Germany, Oct. 14, 1983, 3337493

Int. Cl.⁴ B62B *7/06*

U.S. Cl. 280—642 **38 Claims**



1. A folding pushchair comprising: a chassis, which is provided on each side with first and second chassis struts carrying wheels at their bottom ends and pivotally connected so that they can swing apart out of a folded position, in which they lie side by side, into a position of use, and are securable in the position of use by means of a fastening device; and, joined to the chassis, a push handle, a back part and a seat part; the push handle being joined on each side of the pushchair to the first chassis strut by means of a first intermediate link and to the second chassis strut by means of a second intermediate link; the pivot point in which the second intermediate link is joined to the push handle lying at a distance above the pivot point at which the first intermediate link is joined at the push handle; the fastening device being pivotable upwards, about a bearing on the first chassis strut; out of a fastening position, in which the fastening device extends rigidly between the first and second chassis struts, into a released position to allow relative movement of the two chassis struts; and the seat part being supported on the fastening device in such a manner that it rests on the device when the latter is in its fastening position.

4,605,244

VEHICLE SUSPENSION APPARATUS

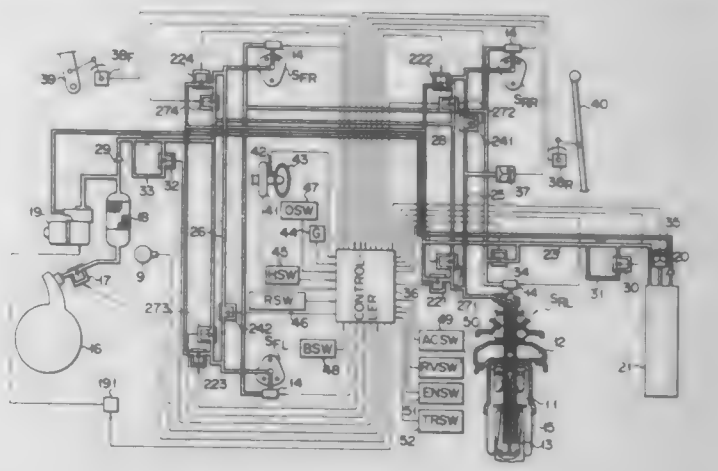
Tadao Tanaka, Okazaki; Sunao Chikamori, Nagoya; Mitsuhiko Harara, Okazaki; Yasutaka Taniguchi; Masanaga Suzumura, both of Nagoya; Minoru Tatemoto, Okazaki; Naotake Kumagai, Aichi; Hiroki Abe, and Shozo Takizawa, both of Okazaki, all of Japan, assignors to Mitsubishi Jidosha Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 25, 1985, Ser. No. 727,370

Claims priority, application Japan, Apr. 28, 1984, 59-63111

Int. Cl.⁴ B60G *11/26*

U.S. Cl. 280—707 **6 Claims**



1. A vehicle suspension apparatus comprising suspension units each provided for each wheel and having a fluid spring chamber, fluid supply means for supplying fluid to said fluid spring chambers of said suspension units through a fluid supply control on-off valve, fluid exhausting means for exhausting fluid from said fluid spring chambers of said suspension units through an exhaust control on-off valve, and communicating means for communicating the fluid spring chambers of the front left and right suspension units with one another and communicating the fluid spring chambers of the rear left and right suspension units with one another through respective communication control valves, said communication control valves of said communicating means being normally held open to communicate the fluid spring chambers of the front left and right suspension units with one another and communicate the fluid spring chambers of the rear left and right suspension units with one another, a rolling displacement of the vehicle body being suppressed with said communication control valves of said communicating means closed and with fluid supplied to contraction side fluid spring chambers and exhausted from elongation side fluid spring chambers with respect to the direction of rolling of the vehicle body,

said vehicle suspension apparatus further comprising:

steering state detecting means for detecting the steering state of the vehicle;

vehicle velocity sensing means for sensing the vehicle velocity;

rolling suppression starting means functioning, when it is decided from the steering angular velocity detected by said steering state detecting means and the vehicle velocity detected by said vehicle velocity sensing means that it is necessary to start a rolling control, to close said communication control valves of said communicating means and also effect on-off control of said communication control valves, fluid supply control on-off valve and exhaust control on-off valves such as to supply fluid to the contraction side fluid spring chambers and exhaust fluid from the elongation side fluid spring chambers with respect to the direction of rolling of the vehicle body; and

rolling control restoring means for opening said communication control valves when it is decided by said steering state detecting means that the steering is being-executed in a returning direction toward a center position after the start of the rolling control caused by said rolling suppression starting means and also it is decided from the steering

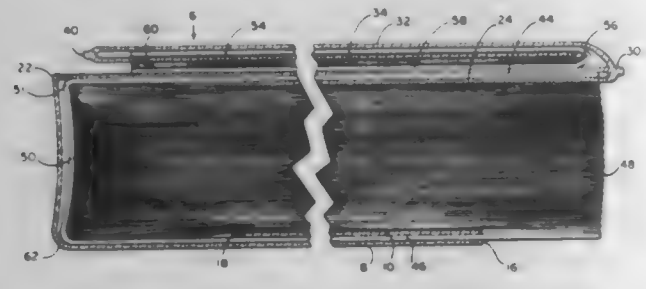
angular velocity detected by said steering state detecting means and the vehicle velocity detected by said vehicle velocity sensing means that said vehicle body begins returning to a neutral state.

4,605,245

SELF-ADJUSTING BOOK COVER

Leonard B. Weaver, 4325 S. Bruce St., Apartment #78, Las Vegas, Nev. 89109

Filed May 22, 1984, Ser. No. 613,075
Int. Cl.[4] B42D *3/00, 3/02, 3/04, 3/18*
U.S. Cl. 281—34 **4 Claims**



1. In combination, a telephone book cover adapted to extend around the exterior of a telephone book comprising a first section having an open-ended sleeve formed from inside and outside panels and adapted to slidingly receive the back cover of a telephone book, a second section having a pocket adapted to slidingly receive the front cover of a telephone book, and a third section extending rearwardly from the second section having at least one pocket formed by flat rectangular panels having three sealed edges, and

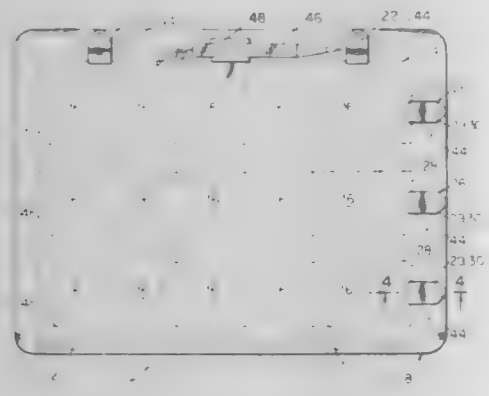
a plurality of pages bound into a book having front and rear covers, wherein a cover of the book is slidably mounted into the pocket in the third section.

4,605,246

WRITING BOARD

David J. Haas, Suffern, N.Y., and Alexander J. Autote, Stamford, Conn., assignors to Temtec Inc., Suffern, N.Y.

Continuation-in-part of Ser. No. 564,172, Dec. 22, 1983. This application Dec. 18, 1984, Ser. No. 683,032
Int. Cl.[4] B42F *9/00;* **B42D** *1/00*
U.S. Cl. 282—29 A **13 Claims**



1. A writing board for mounting an overlying sheet for writing information thereon and an underlying sheet for storing a copy of the information, the board comprising a board;

a mounting means attached to the board for removably mounting to the board the overlying sheet along an edge of the sheet;

an other mounting means attached to the board for removably mounting the underlying sheet to the board along an edge of the sheet;

wherein the mounting means for the underlying sheet and overlying sheet comprise a plurality of clips, each clip comprising a substantially flat spring secured to the board for engaging and holding the sheet lying on the board and a means for lifting the spring to remove the sheet, the means for lifting comprising a button passing through a bore in the board, its lower end projecting from the lower surface of the board and its upper end in contact with the spring, the button slideable within the bore, whereby when the bore is force downward the button slides upward to raise the spring and release the sheet and when the force is removed from the board the spring engages and holds the sheet.

4. A writing board for mounting an overlying sheet for writing information thereon, the board comprising:

a board having a writing surface thereon; a mounting means attached to the board for removing mounting to the board the overlying sheet along an edge of the sheet;

wherein the mounting means for the overlying sheet comprises at least one clip, the clip comprising a substantially flat spring secured to the board for engaging and holding the sheet lying on the board and means for lifting the spring to remove the sheet;

wherein the means for lifting the spring comprises a button passing through a bore in the board, its lower end projecting from the lower surface of the board and its upper end in contact with the spring, the button slidable within the bore;

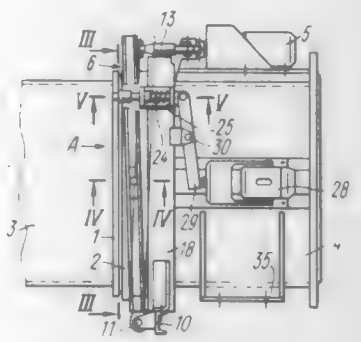
whereby when the board is forced downward, the button slides upward to raise the spring and release the sheet and when the force is removed from the board the spring engages and holds the sheet.

4,605,247

DEVICE FOR SEALING THE DETACHABLE JOINTS OF TUBING ELEMENTS IN PNEUMATIC TRANSPORT FACILITIES

Adolf M. Alexandrov, Moscow; Evgeny F. Bulginov, Moskovskaya; Jury A. Yashin, Moscow; Vladimir Y. Tsernes, Moscow, and Igor I. Volyansky, Moscow, all of U.S.S.R., assignors to Spetsialnoe Konstruktorskoe Bjuro "Transprogress" , Moskovskaya, U.S.S.R.

PCT No. PCT/SU82/00014, § 371 Date Dec. 8, 1983, § 102(e) Date Dec. 8, 1983, PCT Pub. No. WO83/03812, PCT Pub. Date Nov. 10, 1983
PCT Filed Apr. 21, 1982, Ser. No. 567,865
Int. Cl.[4] F16L *55/00*
U.S. Cl. 285—9.2 **2 Claims**



1. A device for sealing detachable joints of two tubing elements in a pneumatic transport facility, said device comprising:

two flanges,

one of the flanges being rigidly affixed on one of the tubing elements,

the other flange being mounted with a clearance on the other tubing element and connected with a mechanical actuator by a kinematic coupling so as to be traversed lengthwise the other tubing element,

said other flange including means for hermetically sealing a joint between said other flange and said other tubing element,

characterized in that:

the kinematic coupling which connects the other flange with the mechanical actuator includes a frame which is pivotally mounted through an angle corresponding to the

amount of the aforementioned clearance about at least one pivot point situated outside the other flange, and

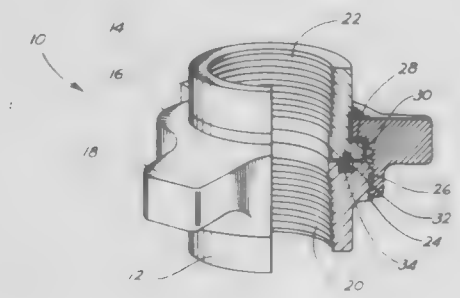
the other flange is mounted on the frame through two hinge joints including pivot pins which are located on opposite sides of the other flange in a plane passing through the geometric axis of the other tubing element.

4,605,248

INSULATING UNION AND METHOD

John W. Goldsmith, Humble, and Paul B. Rullman, Borger, both of Tex,, assignors to J. M. Huber Corporation, Locust, N.J.

Filed Jan. 7, 1985, Ser. No. 689,412
Int. Cl.[4] F16L *19/02*
U.S. Cl. 285—52 **10 Claims**



1. An insulating pipe union for preventing electrolytic corrosion in a pipeline, including a metallic tail sub for interconnection with a first length of pipeline, a metallic threaded sub for interconnection with a second length of pipeline, a nut for threaded engagement with said threaded sub and for joining together said tail sub and said threaded sub, an electrically insulating layer covering the end of said tail sub, a first annular groove in an end of said threaded sub, and a first O-ring in said threaded sub groove for sealing engagement with said insulating layer, the improvement comprising:

said electrically insulating layer being bonded to said tail sub for forming a first seal with said tail sub;

a second annular groove in said end of said tail sub; and

a second O-ring in said tail sub groove for sealing engagement between said tail sub and said electrically insulating layer for forming a second seal with said tail sub.

4,605,249

ROTARY COUPLING FOR FLUIDS

Harold R. Klievoneit, Mesa, and Augustine G. Esposito, Phoenix, both of Ariz., assignors to St. Florian Company, Phoenix, Ariz.

Filed Jan. 3, 1983, Ser. No. 454,998
Int. Cl.[4] F16L *17/00*
U.S. Cl. 285—98 **4 Claims**

1. A rotary coupling for conveying a fluid into a rotating hollow shaft from a stationary source of fluid under pressure, said coupling comprising in combination:

(a) rotating means axially and radially fixedly attached to the shaft for directing the fluid into the hollow shaft, said rotating means including a first generally radial annular surface means and at least one passageway having an inlet radially circumscribed by first annular surface means;

(b) annular stationary means connectable to the source of fluid for receiving fluid from the source, said annular stationary means being rotatably mounted upon the shaft to permit rotation of the shaft without corresponding rotation of said annular stationary means;

(c) an annular plenum disposed within said stationary means for receiving the fluid from the source;

(d) a first ring disposed within said annular plenum, said first ring including a first plurality of axially aligned holes extending therethrough;

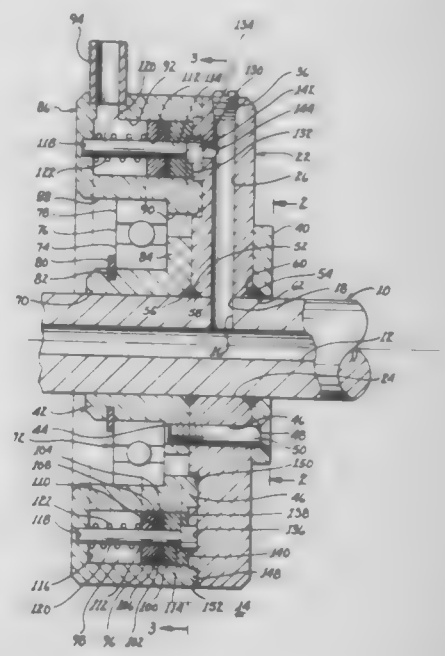
(e) a second ring disposed within said annular plenum, said second ring including a second plurality of axially aligned holes extending therethrough;

(f) dowel means located with said annular plenum for maintaining said first and second plurality of hole in aligned relationship;

(g) means for developing a seal with said plenum intermediate the inner perimeters of said first and second rings and further means for developing a further seal with said plenum intermediate the outer perimeters of said first and second rings to prevent fluid flow intermediate the plenum and the respective inner and outer perimeters;

(h) means for urging said first ring against said second ring;

(i) a second generally radial annular surface means disposed



in said second ring and radially circumscribing said second plurality of holes, said second generally radial annular surface means being in mating relationship with said first generally radially annular surface means to form a seal therebetween in response to the force exerted by said urging means; and

(j) channel means interconnecting said second plurality of holes with one another and with the inlets of each of said passageways in said rotating means for conveying the fluid from said second plurality of holes to at least one of said passageways.

4,605,250

INTERNAL BRAKE FOR DOORS

Angel Simo-Company, Urb. Santa Paula, Calle Géminis, Qta. "Aleromay" , El Cafetal, Caracas 1062, Venezuela

Continuation-in-part of Ser. No. 447,890, Dec. 8, 1982, abandoned. This application Aug. 2, 1985, Ser. No. 762,792
Int. Cl.[4] E05C *1/12*
U.S. Cl. 292—171 **3 Claims**

1. An internal door brake comprising:

a door having at least a portion thereof formed with a hollow interior;

a rotatable doorknob provided on said door and having a shaft extending into the hollow portion thereof;

a vertically displaceable plunger provided at the bottom edge of said door directly below said doorknob, said plunger being formed with an inwardly directed step having a projection extending upwardly therefrom, the bottom end of said plunger being provided with a butt of elastomeric material adapted to engage the floor beneath said door;

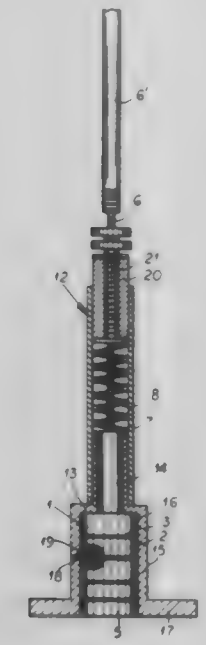
a housing around said plunger forming a guide therefor and having a shoulder engageable with said step for limiting the upward movement of said plunger, said housing being formed with oppositely extending flanges at the lower end thereof engageable with the bottom edge of said door for fixing said housing thereto;

a sleeve provided at the upper end of said housing and extending upwardly from said shoulder around said projection;

a seat in said sleeve spaced from said projection;

a spring disposed between said seat and said projection for biasing said plunger into egagement with said floor;

a cable connected to said plunger and extending axially upwardly through said spring and said seat and connected to said shaft whereby upon rotation of said doorknob said plunger is vertically displaced out of engagement with said floor; and



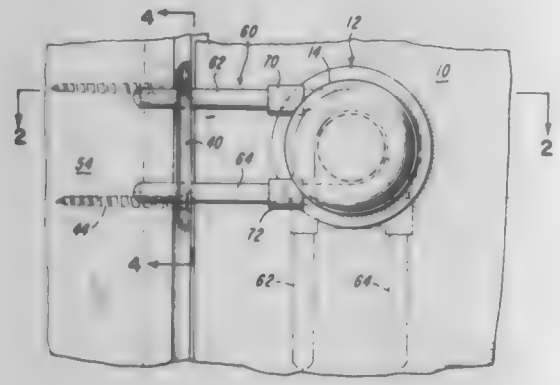
a pin extending through a wall of said door and said housing and being radially displaceable for engagement in a recess formed in said plunger when said plunger is retracted against said shoulder for maintaining said plunger in a retracted position out of engagement with said floor, said plunger being formed by a plurality of intercalated metal and elastomeric washers, said elastomeric washers contacting the internal walls of said housing for preventing the introduction therein of foreign particles and lateral movement of the plunger.

4,605,251

DOOR LOCK

John R. Finlay, 900 Garrison Ave., Kettering, Ohio 45429

Filed Jul. 23, 1984, Ser. No. 633,341
Int. Cl.[4] E05C *1/04*
U.S. Cl. 292—288 **18 Claims**



1. A door lock arrangement comprising a door having a door knob assembly extending therethrough and operably associated with an adjacent door jamb, said door knob assembly having a door knob and a shank portion on one side of the door, said door lock arrangement comprising a

U-shaped member positioned to partially encircle the shank portion of the door knob assembly between the door knob and the door and having the two leg portions of the U-shaped member extending in a generally horizontal direction,

means associated with the door jamb for receiving the leg portions of the U-shaped member for locking the door in one position of the member, and

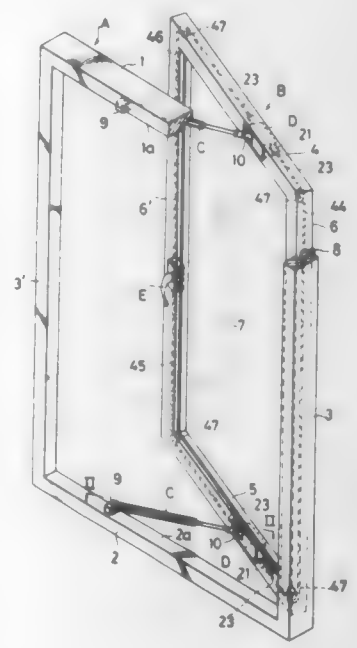
means positioned on at least one of the leg portions for keeping the U-shaped member in said one position thereof and enabling said member to be moved to another position in an unlocked condition.

4,605,252

APPARATUS FOR RETAINING A SASH IN OPEN POSITION IN A PROJECTED WINDOW

Yukio Yamamoto, Tokyo, Japan, assignor to Yoshida Kogyo K. K., Tokyo, Japan

Filed Mar. 27, 1985, Ser. No. 716,551
Int. Cl.[4] E05C *17/30*
U.S. Cl. 292—338 **9 Claims**



1. An apparatus for retaining a pivotally adjustable inner window frame in open position on an outer frame, said apparatus comprising:

(a) a handle having means enabling it to be mounted on the inner frame for angular movement through a predetermined angle between a "retained" position and a "released" position;

(b) at least one retaining unit having means enabling it to be mounted on the outer frame, said retaining unit including an elongated first member having means at one and enabling it to be pivotally connected to the outer frame, and an elongated second member telescopicaly connected to said first member, said second member, in response to the angular movement of said handle between the "retained" and "released" position, having means enabling it to be turnable between a first position in which said second member is longitudinally locked relative to said first member and a second position in which said second member is longitudinally movable relative to said first member; and

(c) at least one transforming unit having means enabling it to be mounted within the inner frame, said transforming unit being operatively connected to said handle and said second member for, in response to the angular movement of said handle, turning said second member between said first and second positions.

4,605,253

CARPET SEAM ROLLER

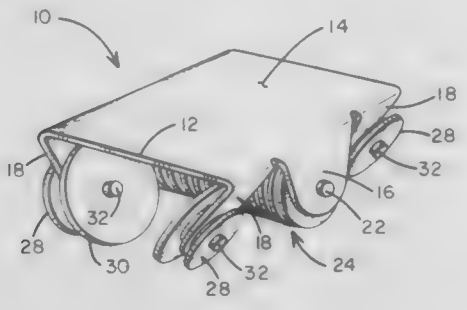
Martin L. Anderson, 4417 Third Street NE., Minneapolis, Minn. 55428

Filed Oct. 3, 1985, Ser. No. 783,560
Int. Cl.[4] A47G *27/04*
U.S. Cl. 294—8.6 **5 Claims**

1. A carpet seam rolling tool comprising, in combination:

(a) a roller support blade having a generally planar top

surface and at least two pairs of leg members joined thereto, one of said pair of leg members extending out of the plane of said support plate at right angles with the individual legs of said one pair being disposed along opposite side edges of said support plate in a parallel, spaced apart relationship extending out of the plane of said support plate, the individual legs of said other pair being disposed along said opposite side edges of said support plate at an acute angle with respect to one another;



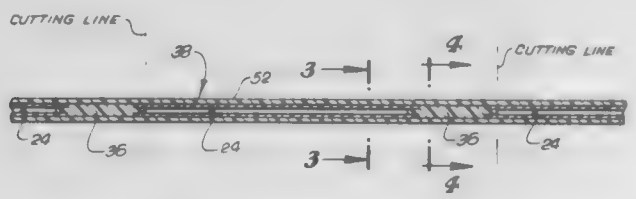
(b) an axle member extending between said first pair of legs;
(c) roller means journaled for rotation on said axle;
(d) separate stub axles affixed to said individual legs of said other pair; and
(e) at least two disc members journaled for rotation on each of said separate stub axles at spaced apart locations, said two disc members being of different diameters such that the lower peripheral edge thereof lie on a straight line generally parallel to said support plate.

4,605,254

REINFORCED HANDLE AND METHOD OF MAKING SAME

Joseph A. Carmien, 525 N. Maple Dr., Beverly Hills, Calif. 20210

Continuation-in-part of Ser. No. 407,818, Aug. 13, 1982, abandoned. This application May 21, 1984, Ser. No. 612,431
Int. Cl.⁴ B25G *1/10*
U.S. Cl. 294—57 **17 Claims**



1. A handle for tools such as shovels, hoes, rakes, forks and the like, said handle comprising:
a core having alternately non-reinforcing and reinforcing sections; and
a fiber-resin jacket including a reinforcing bead, formed around said core to securely position and hold said core within said jacket, wherein said reinforcing bead is formed by the position or configuration of said core within the confines of said jacket.

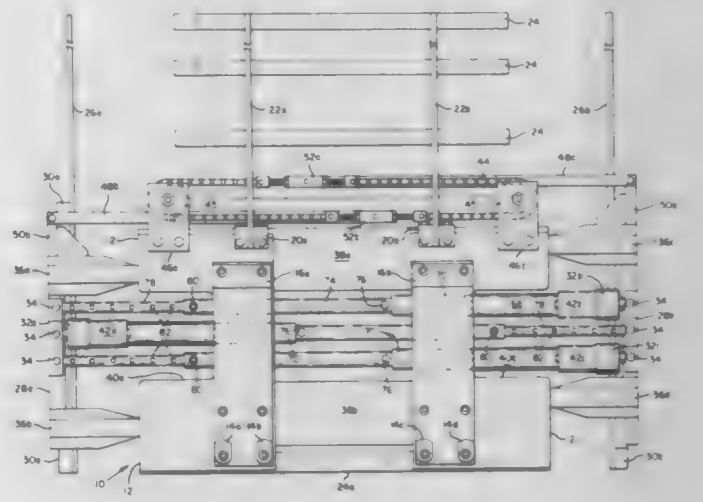
4,605,255

LOAD CLAMP HAVING MOTOR-POWERED SCREW-TYPE CLAMPING ACTUATOR CAPABLE OF ACCURATE POSITIONING AND HIGH CLAMPING FORCE

John E. Olson, Portland, Oreg., assignor to Cascade Corporation, Portland, Oreg.

Filed Dec. 4, 1984, Ser. No. 677,929
Int. Cl.⁴ B66C *1/66*
U.S. Cl. 294—67.33 **12 Claims**

1. A motor-actuated load-engaging clamp adapted to be fitted to a materials handling machine comprising:
(a) a frame adapted to extend vertically and transversely relative to said machine;
(b) a pair of selectively openable and closeable clamp arms extending forwardly from said frame movably mounted thereon for transverse movement relative to said frame and to each other;
(c) elongate screw actuator means, having mutually-cooperating turnable and nonturnable elements, interconnecting said pair of clamp arms for selectively closing them by turning the turnable element in one rotational direction and, alternatively, selectively opening them by turning the turnable element in the opposite rotational



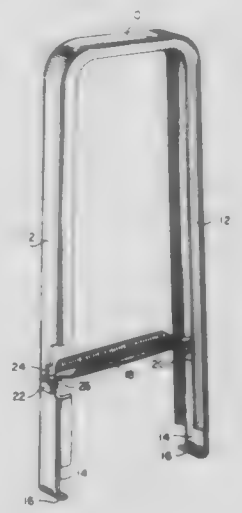
direction so as to move said clamp arms transversely relative to said frame selectively either toward or away from each other;
(d) said turnable element having an axis of rotation extending transversely relative to said frame, and both said turnable element and said nonturnable element of said screw actuator means being mounted for movement transversely relative to said frame in a direction along said axis of rotation; and
(e) motor means for turning said turnable element while permitting said turnable element to move transversely relative to said frame in said direction along said axis of rotation.

4,605,256

LOCKING TOOL FOR MANIPULATION OF ELECTRONIC COMPONENTS

Philip T. Stokoe, North Attleboro, Mass., assignor to Augat Inc., Mansfield, Mass.

Filed Oct. 25, 1984, Ser. No. 664,568
Int. Cl.⁴ B25J *1/02*; H05K *13/04*
U.S. Cl. 294—99.2 **9 Claims**



1. A locking tool having defined open and closed positions, for manipulation of electronic components, comprising:
a U-shaped frame having first and second legs constituting

the sides of the U, each leg having an end, each leg end having at least one hook attachable to an electronic component, said frame being biased so said legs tend to spring apart;

said first leg having a T-shaped hole therethrough, said hole having a wider first part contiguous with a relatively narrower second part;

a cross-bar connecting said legs, said cross-bar having a body, a fixed end, and a moveable end, said moveable end being T-shaped and having a wider first section contiguous with a relatively narrower second section connected in turn to said cross-bar body;

said fixed end of said cross-bar being attached to said second leg, opposite the hole in said first leg;

said moveable end of said cross-bar projecting through the hole in said first leg;

the wider first section of said cross-bar moveable end having a bend operative to hold said wider first section of said cross-bar moveable end within the wider first part of said T-shaped hole and to establish the limit to which the tool can open;

the wider part of said hole accommodating the wider first section of said cross-bar moveable end, and the narrower part of said hole accommodating the relatively narrower section of said cross-bar moveable end;

said cross-bar being biased and said T-shaped hole being oriented such that upon squeezing together of the legs of said frame, the narrower second section of said cross-bar moveable end springs into the narrower second part of said T-shaped hole, holding the legs in a closed position to grasp and retain an electronic component until bias-opposing force is applied to said cross-bar, bringing the wider first part of said T-shaped hole and the wider first section of said cross-bar moveable end into alignment and permitting the frame legs to spring apart, releasing the component.

4,605,257

EXPANDABLE OPERATOR'S CAB

David M. Lang, South Milwaukee, and Richard W. Lewitzke, Franklin, both of Wis., assignors to Becor Western Inc., South Milwaukee, Wis.

Filed Jun. 7, 1985, Ser. No. 742,285
Int. Cl.[4] B62D *33/06*
U.S. Cl. 296—26 **9 Claims**



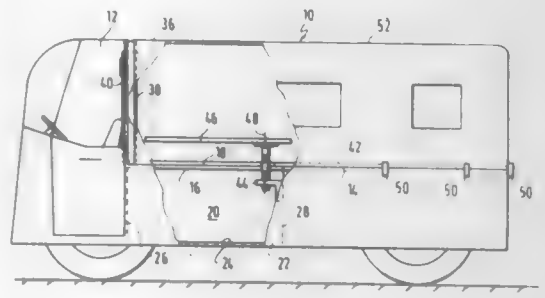
1. A generally rectangular operator's cab or the like, comprising: a cab split diagonally from corner to corner to define two sections that can be moved away from one another in a direction substantially perpendicular to either the side walls, the end walls, or the split line; and a mating insert constructed and arranged to be connected between the separated sections to reestablish an enlarged generally rectangular cab configuration in width or length or a combination thereof.

4,605,258

VEHICLE, ESPECIALLY CAMPING VEHICLE

Roland Höhn, Lipfersbergerstr. 20, D-7118 Ingelfingen, Fed. Rep. of Germany

Continuation of Ser. No. 249,712, Mar. 31, 1981, Pat. No. 4,458,939. This application May 29, 1984, Ser. No. 615,698
Int. Cl.[4] B60P *3/32*
U.S. Cl. 296—164 **2 Claims**



1. In combination, a motor vehicle having a cab with a back wall and a cab floor in a substantially horizontal plane and at leat one seat secured to said floor and a load platform located behind said cab and substantially above the level of said cab floor, said load platform having an opening immediately adjacent the cab and extending rearwardly from said cab, a camping addition means adapted to be releasably fastened on said load platform of the motor vehicle, said camping addition means having a bottom opening which in the mounted condition is aligned with said opening in the load platform of the vehicle immediately adjacent the cab, said camping addition means having a tub-like depression means having an addition floor secured to said bottom opening by sidewall means in the camping addition means and said sidewall means extending beneath said platform to said addition floor, said addition floor being substantially in the same horizontal plane with said cab floor of said cab and forming an increased height for standing in the interior of the addition means and defining a living space in the area of said openings as a rearward extension of said cab, said cab having an opening in said back wall aligned with said tub-like depression means to form a substantially continuous living space between said cab and said addition.

4,605,259

OPERATOR'S CAB FOR CROP HARVESTING MACHINE

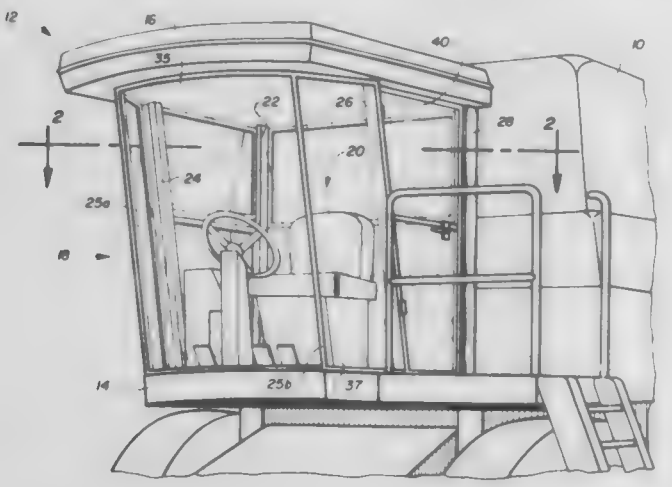
Joseph C. Hurlburt, Lancaster, Pa., assignor to New Holland Inc., New Holland, Pa.

Filed Apr. 15, 1985, Ser. No. 723,425
Int. Cl.[4] B60J *1/02*
U.S. Cl. 296—190 **11 Claims**

1. In an operator's cab for a crop harvesting machine, said cab being mounted on said crop harvesting machine to provide a field of view of a portion of the harvesting operation involving the gathering of crop material from the field, said cab having a floor member; a roof member vertically spaced above said floor member; an operator's station supported on said floor member to position an operator during operation of said crop harvesting machine; a plurality of generally vertically extending support posts supporting said roof member above said floor member, a portion of said support posts being positioned forwardly of said operator's station within said field of view, each said forward support post having an obstructing dimension extending generally perpendicular to the line of sight from said operator's station; an enclosure at least partially

supported by said support posts, extending between said floor member and said roof member and surrounding said operator's station, said enclosure including transparent panels extending between said forward support posts; and glazing elements supported by said forward support posts to engage and support said transparent panels, the improvement comprising:

each said glazing element having a dimension no greater than said obstructing dimension and being positioned on the opposing side of the corresponding said forward support post from said operator's station such that said glazing elements do not obstruct said field of view, at least one of said glazing elements being an elongated extrusion having an attachment portion engageable with the corresponding forward support post to effect attachment therewith and a panel retention portion engageable with the said corresponding transparent panels for support and retention thereof, said extrusion being constructed such that said corresponding transparent panels are positionally fixed without any portion of said corresponding forward support post being positioned therebetween.

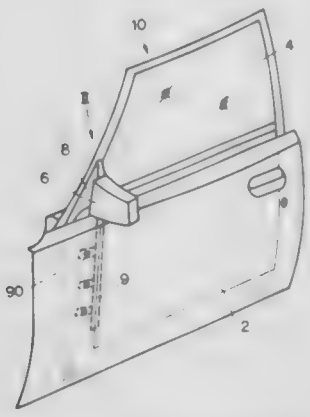


4,605,260

VEHICLE DOOR STRUCTURE

Yozo Sakakibara, Aichi, and Yuji Okamoto, Toyota, both of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Japan

Filed Jan. 17, 1985, Ser. No. 692,182
Claims priority, application Japan, Feb. 7, 1984, 59-16232[U]
Int. Cl.[4] B60J *5/04*
U.S. Cl. 296—201 **8 Claims**



1. A vehicle door structure, comprising:

a door frame having a door window opening therein, said door frame defining upper, front and rear borders of said door window opening, said door frame including an exterior portion and an interior portion, said door frame being mounted on a door plate, said door plate defining a lower border of the door window opening, said door frame incluidng a front portion and a rear portion;

a bracket provided between said front portion of said door frame and said door plate, the bracket being secured onto the door frame, the bracket having a first insert portion where the bracket is fixed by a fixing means onto the door frame and a second insert portion, the first insert portion having a length in the lateral direction of the vehicle which is greater than the length of the second insert portion, said bracket having an exterior surface and an interior surface, said exterior surface cooperating with the exterior portion of the door frame to create a substantially flush exterior surface, said interior surface including said first and second insert portions, said second insert portion being spaced from said door frame by a predetermined distance;

a door frame molding attached to the exterior surface of the door frame, said door frame molding including a notch portion and a hook portion, said notch portion being located at the first insert portion of the bracket, said hook portion being located at the second insert portion of said bracket and being inserted into said predetermined distance defined between said second insert portion and said door frame; and

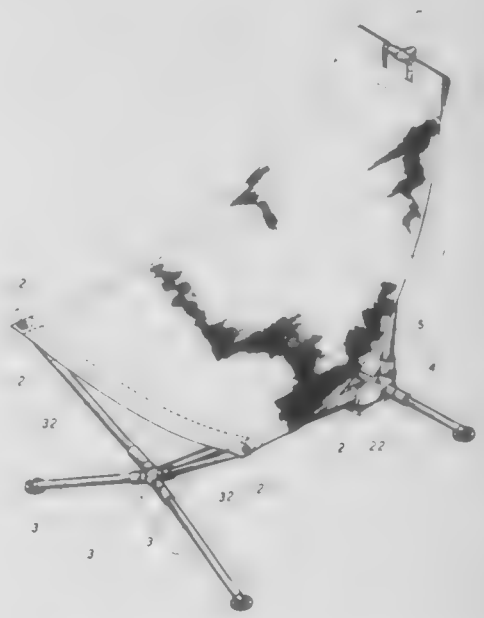
a rear view mirror secured to said door frame, whereby the door frame molding is securely mounted on the door frame by the hook portion of the door frame molding.

4,605,261

FOLDABLE PORTABLE RECLINING CHAIR

Ching C. Lee, No. 281, Cheng Te Rd., Taipei, Taiwan

Filed Dec. 28, 1984, Ser. No. 687,240
Int. Cl.[4] A47C *4/00*
U.S. Cl. 297—16 **1 Claim**



1. A foldable portable reclining chair having a chair face and a foldable frame, said chair face being of fabric and having an upper selvege with a through hole pocket and a lower sewn rim with a button hole near each of the ends of said sewn rim; said chair frame comprising a main frame rod; front fork link rods fixedly attached to the front end of said main frame rod and rear leg rods and a back support rod pivotally attached to a support seat on the rear end of said main frame rod, said support seat having a seat surface vertical link rod extending upwardly from said support seat and horizontal link rods extending outwardly from said support seat from the opposite sides of said support seat and from the opposite sides of said main frame rod, means pivotally attaching one end of said back support rod to said vertical link rod, sleeve means slidable on said back support rod and over said vertical link rod for locking said back support rod in fixed vertical position when said sleeve means is over said pivotally attaching means on said back support rod to said vertical link rod and for allowing said back support rod to be pivoted when said sleeve means is raised above said pivotally attaching means, means on each of said horizontal link rods for pivotally attaching each of said rear leg rods to said horizontal link rods, respectively, and for locking said respective rear legs in horizontal fixed position

when said chair is unfolded, a pair of front leg rods and a pair of front bracing rods, means for pivotally attaching each of said front leg rods and each of said front bracing rods, respectively, at one of their ends to one of said front link rods, for pivoting said front leg rods and said front bracing rods on said front fork link rods and for preventing said leg rods and said bracing rods from being pivoted and means on said back support rod and said front bracing rods for attachment to said hole pocket and said button holes in said chair face,

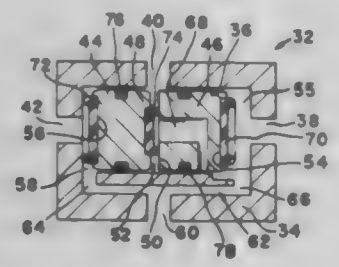
Said means for pivotally attaching said rear legs to said horizontal link rods and said front leg rods and front bracing rods to said front fork link rods including a U-shaped catch ring, a spring hooked and provided on said ring, a stop pin extending through said U-shaped ring and means for elongating said spring when said rods are extended for pivotal movement and for contracting said spring when said rods are released for preventing pivotal movement.

4,605,262

THREE WAY CHECK VALVE

Roy E. Bartholomew, Elyria, Ohio, assignor to Allied Corporation, Morristown, N.J.

Filed Sep. 7, 1984, Ser. No. 648,200
Int. Cl.[4] G05D *11/00*; B60T *15/46*
U.S. Cl. 303—84 A **3 Claims**



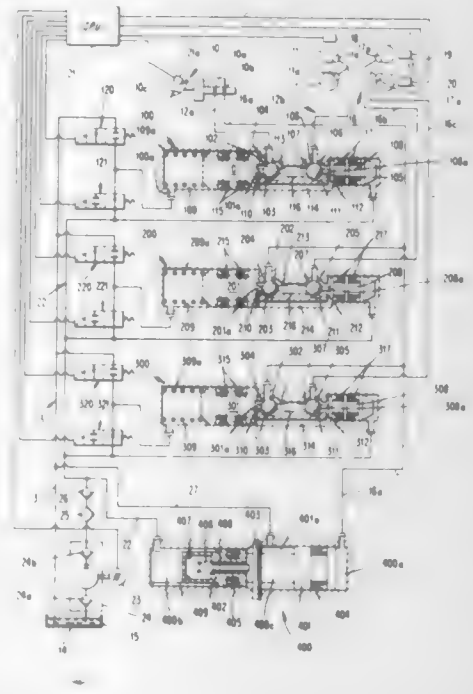
1. Three way check valve comprising a housing having first, second and third inlet ports and an outlet port, said housing defining a bore therewithin, a pair of pressure differential responsive shuttle members slidably mounted in said bore, each of said shuttle members cooperating with a corresponding portion of the bore and with each other to define first, second and third chambers, each of said first, second and third chambers being communicated with a corresponding one of said first, second, and third inlet ports, said shuttle members cooperating wih one another to define said third chamber between the shuttle members, and passage means having branches communicating each of said chambers with the outlet port, said shuttle members being movable in said bore in response to pressure changes at said inlet ports to communicate to said outlet port the chamber communicated with the one of said inlet ports having the highest pressure level, said shuttle members closing communication between the outlet port and the chambers communicated with the other inlet ports, circumferentially extending sealing means carried by each of said shuttle members, each of said sealing means being adapted to control communication between a corresponding one of the inlet ports and said outlet port, each of said sealing means cooperating with its corresponding shuttle member to define circumscribed and non-circumscribed areas on the corresponding shuttle member, one of said circumscribed and non-circumscribed areas defined by each of said sealing means communicating with a corresponding inlet port when the corresponding sealing means blocks communication between its corresponding inlet port and the outlet port, the other of said last-mentioned areas being communicated to the outlet port through a corresponding branch of said passage means when the corresponding sealing means blocks communication between its corresponding inlet port and the outlet port whereby said other area is exposed to the pressure level at said outlet port when the corresponding sealing means prevents communication through the inlet port controlled by the corresponding sealing means.

4,605,263

ANTISKID CONTROL APPARATUS FOR AUTOMOBILES

Masamoto Ando; Hiroaki Takeuchi, both of Toyota; Toyohisa Yamada, Anjo, and Toshihiko Yamanaka, Toyota, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Jul. 1, 1985, Ser. No. 750,135
Claims priority, application Japan, Jul. 2, 1984, 59-137579; Jul. 17, 1984, 59-149225; Jul. 25, 1984, 59-155944; Jul. 25, 1984, 59-155945; Jul. 27, 1984, 59-158430; Aug. 7, 1984, 59-166214
Int. Cl.[4] B60T *8/10*
U.S. Cl. 303—116 **6 Claims**



1. An antiskid control apparatus for use in an automobile having a brake master cylinder and at least one wheel cylinder, comprising:

(a) a fluid pressure circuit for connecting the brake master cylinder and the wheel cylinder;

(b) a cutoff valve disposed in said fluid pressure circuit and adapted to be interposed between the brake master cylinder and the wheel cylinder for hydraulically separating the wheel cylinder from the master cylinder;

(c) a pump for generating a working fluid pressure;

(d) a brake fluid-pressure adjusting piston movable in one direction by a fluid pressure from the wheel cylinder for closing said cutoff valve and for increasing the volume of said fluid pressure circuit between said cutoff valve and said wheel cylinder and also movable in an opposite direction by the working fluid pressure for reducing the volume of said fluid pressure circuit between said cutoff valve to increase the fluid pressure applied to said wheel cylinder and opening said cutoff valve;

(e) a pressure regulating valve for regulating the working fluid pressure generated by said pump by applying a resistance responsive to the fluid pressure imposed by said brake master cylinder to a working fluid flowing from a discharge port of said pump to a reservoir;

(f) a solenoid-operated valve for supplying and discharging said working fluid pressure to and from said brake fluid-pressure adjusting piston;

(g) a wheel speed sensor for detecting the speed of rotation of a wheel associated with said wheel cylinder;

(h) an electronic control circuit for detecting whether said wheel is subject to a skid or not based on a signal from said wheel speed sensor, for controlling said solenoid-operated valve to supply said working fluid pressure to said brake fluid-pressure adjusting piston when said wheel is not subject to a skid, and for controlling said solenoid-operated valve to discharge said working fluid pressure from said brake fluid-pressure adjusting piston when said wheel is subject to a skid;

(i) a motor for actuating said pump, said motor being con-

trolled by said electronic control circuit for being de-energized at least when said wheel is not braked; and

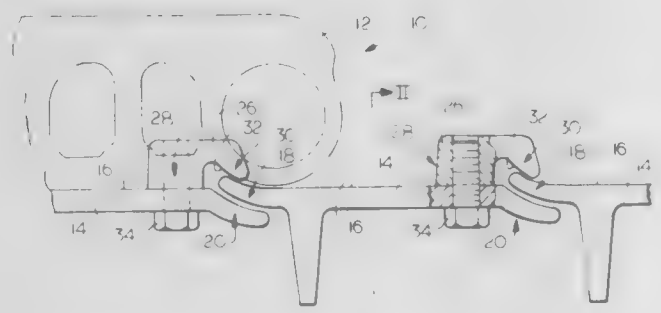
(j) a pressure compensating piston having a pair of pressure bearing areas to which the fluid pressure from said master cylinder and said working fluid pressure are applied, respectively, for generating said working fluid pressure simultaneously with the generation of said fluid pressure from said master cylinder.

4,605,264

TRACK SHOE DEFLECTION STOP FOR ENDLESS TRACK ASSEMBLIES

Andrew J. Tonsor, East Peoria, Ill., assignor to Caterpillar Inc., Peoria, Ill.

Filed Nov. 8, 1984, Ser. No. 669,395
Int. Cl.[4] B62D *55/22, 55/28*
U.S. Cl. 305—47 **3 Claims**



1. An endless track assembly, comprising:

a plurality of pivotally interconnected track links;

a plurality of individual track shoes, each having a mounting surface, a leading end portion and a trailing end portion, first and second outer end portions, and each being pivotally connected to an adjacent track shoe by said track links with each leading end portion overlaying an associated trailing end portion of an adjacent shoe;

a replaceable stop member releaseably connected to each of said outer end portions and having a mounting portion in direct contact with and rigidly connected to said shoe mounting surface adjacent said trailing end portion, a deflection stop portion spaced from said mounting portion and overlaying said leading end portion of an adjacent shoe and defining a groove formed between said mounting portion and said deflection stop portion; and

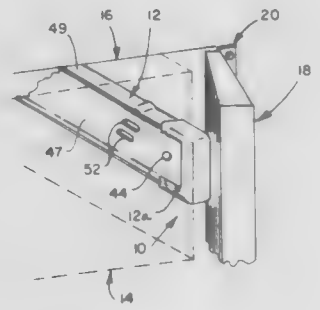
means for releaseably connecting said stop members to said mounting surfaces.

4,605,265

DRAWER SLIDE BUMPER

Walter L. Bessinger, Grand Haven, and Jerry D. Rutledge, Grand Rapids, both of Mich., assignors to Knape & Vogt Manufacturing Company, Grand Rapids, Mich.

Filed Aug. 20, 1984, Ser. No. 642,111
Int. Cl.[4] A47B *88/00, 95/00;* **F16C** *29/00*
U.S. Cl. 384—20 **20 Claims**



1. A drawer rail assembly comprising:

a generally C-shaped rail including inner and outer surfaces, a web portion to be secured to a drawer, upper and lower flanges extending transversely from said web portion, and upper and lower V-shaped connector portions extending between said web portion and said upper and lower flanges, respectively, whereby said rail has reverse bends at the two corners of its C-shape; and

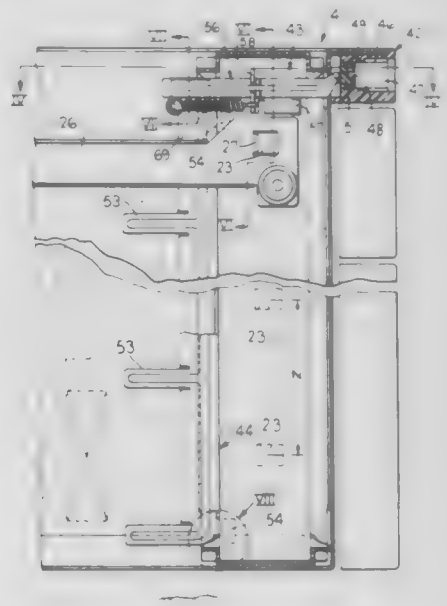
a one-piece bumper mounted on the end of said rail, said bumper including a body portion abutting the end of the rail, upper and lower legs overlying said outer rail surface and interfitting within said upper and lower V-shaped connector portions, respectively, and connector means for preventing relative longitudinal movement of said bumper and said rail.

4,605,266

PIVOTED DRAWER LOCK MECHANISM

Thomas J. McKernan, and Gordon C. Berry, both of Grand Rapids, Mich., assignors to Haworth, Inc., Holland, Mich.

Filed Oct. 19, 1984, Ser. No. 662,670
Int. Cl.[4] E05B *65/46*
U.S. Cl. 312—219 **8 Claims**



1. In a drawer unit having a housing, a plurality of drawers disposed vertically above one another and movably supported on said cabinet for substantially linear movement between open and closed positions, each said drawer having a lock stop thereon, and a locking mechanism for lockingly retaining said drawers in said closed position, the improvement wherein said locking mechanism comprises:

a vertically elongated lock bar disposed within and supported on said housing for swinging movement about a substantially vertical axis between locking and unlocking positions, said lock bar having a plurality of locking tabs fixedly and permanently attached thereto and projecting outwardly therefrom for individual cooperation with the lock stops on the drawers when the latter are in said closed position, said locking tabs being uniformly vertically spaced apart;

spring means normally urging said lock bar to swing inwardly toward said locking position for causing said locking tabs to be positioned in front of the lock stops on the drawers when the latter are in said closed position;

a key-operated rotary lock unit mounted on said housing and being accessible from the exterior thereof, said lock unit including a rotary actuator provided with an eccentric crank thereon; and

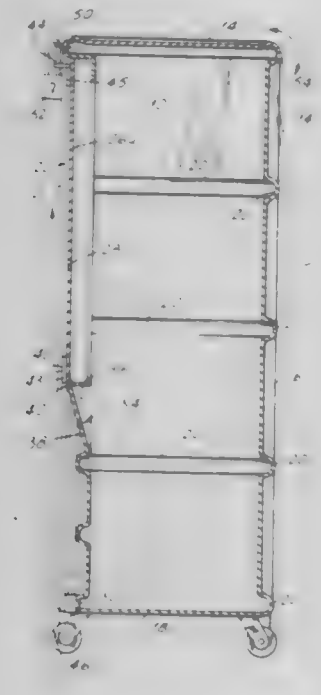
activating means coacting between said rotary crank and said lock bar for positively effecting displacement of the latter into said unlocking position in opposition to the urging of said spring.

4,605,267

SECURITY CART

Isaac Rinkewich, New York, N.Y., assignor to M.I.T. Polycart Corp., New York, N.Y.

Filed Mar. 18, 1985, Ser. No. 713,171
Int. Cl.[4] A47B *96/00*
U.S. Cl. 312—297 10 Claims



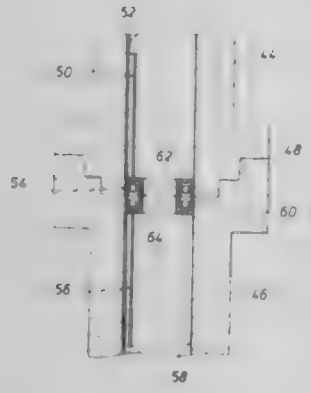
1. A security cart comprising an enclosure having a front with an opening to permit access to the interior of the cart, a fixed panel situated adjacent said opening, a substantially planar flexible panel mounted for movement between a first position aligned with said fixed panel and a second position aligned with said opening, track means along which said movable panel is moved, said track means being situated in a plane spaced from said fixed panel, and means protruding from said fixed panel and intersecting said plane so as to align the central portion of said movable panel and maintain said movable panel in said second position, said movable panel being capable of being flexed such that said central portion is out of alignment with said protruding means to permit said movable panel to be moved from said second position to said first position.

4,605,268

TRANSFORMER CABLE CONNECTOR

Richard A. Meador, Spring, Tex., assignor to NL Industries, Inc., New York, N.Y.

Filed Nov. 8, 1982, Ser. No. 439,797
Int. Cl.[4] H01R *15/30*
U.S. Cl. 339—16 C 24 Claims



1. An electrical connector means, comprising:
a first connector portion including a first electrically conducting coil element partially enclosed by a first, electrical conducting means and defining a first axially open passageway;
a second connector portion including a second electrically conducting coil element partially enclosed by a second, electrical conducting means and defining a second axially open passageway; and
conductive coupling means for current coupling said first and second coil elements defined by connection of said first and second electrical conducting means for enclosing said first and second coil elements in an electrical conducting path and aligning said first and second passageways, wherein said first and second coil elements are mutually electrically isolated one from the other within said conductive coupling means.

4,605,269

PRINTED CIRCUIT BOARD HEADER HAVING COAXIAL SOCKETS THEREIN AND MATABLE COAXIAL PLUG HOUSING

Thomas S. Cohen, Camp Hill, and Douglas F. Finan, Harrisburg, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Jun. 20, 1984, Ser. No. 622,615
Int. Cl.[4] H01R *9/05, 9/09*
U.S. Cl. 339—17 LC 4 Claims

1. A printed circuit board header of coaxial sockets, comprising: a dielectric housing having a series of passageways extending therethrough; coaxial sockets disposed in respective passageways, each of said coaxial sockets including an outer contact member, a dielectric member and a center contact member, said outer contact member being a tubular member, said dielectric member being disposed in said tubular member and said center contact member having a first section and a second section, said first section disposed in said dielectric member and including a first contact section extending outward from a front surface of said dielectric member coaxial with said tubular member, said second section extending outwardly from said tubular member for electrical connection with a signal path on a printed circuit board, said tubular member including a rear contact element extending outwardly from a rear end of said tubular member and extending substantially parallel to said second section for electrical connection with a ground plane on the printed circuit board; securing means provided by the tubular members and the passageways for releasably securing the coaxial sockets in the passageways; and mounting means on said housing for mounting the housing on the printed circuit board, said dielectric member has a slot in which said second section of said center contact member is disposed so that said second section is at right angles to said first section.

4,605,270

COVER FOR ELECTRICAL OUTLET

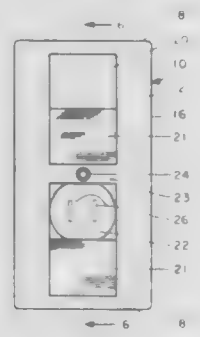
Nejdeh Aslizadeh, 1050 Mont Royal Blvd., North Vancouver, B.C., Canada

Filed Jan. 22, 1985, Ser. No. 693,291
Int. Cl.[4] H01R *13/447*
U.S. Cl. 339—40 12 Claims

1. In a cover for an electrical outlet having a pair of receptacles adapted to receive prongs of an electrical plug, the improvement comprising in combination:
a pair of spaced apart rectangular openings in front wall of said cover;

a protective closure plate mounted within each of said openings for slidable upward and downward movement;

a spring-actuated blocking plate movable rearwardly or frontwardly within each of said openings, said blocking plate being provided with a plurality of coil springs affixed to rear wall thereof and positioned in contact with inner surface of rear wall of said cover;



said closure plate being positioned in the same plane as said front wall and said blocking plate whereby said receptacles are covered when said cover is in closed position and said closure plate is overlying said blocking plate when slidably moved to open position to expose said receptacles to insertion of said prongs therein.

4,605,271

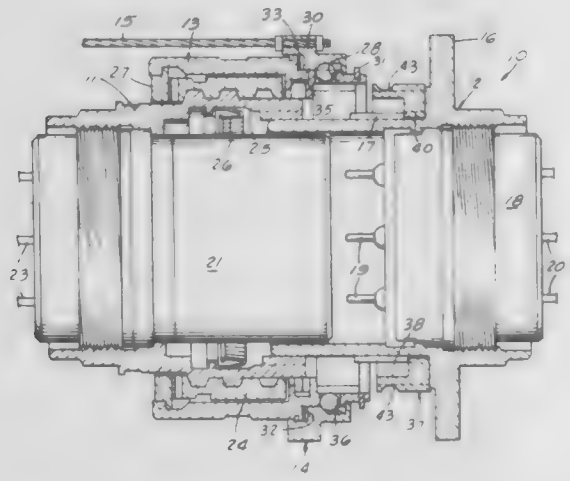
REMOTE QUICK DISCONNECT FOR BREECH-LOK

Edgar Burns, Los Angeles, Calif., assignor to Automation Industries, Inc., Greenwich, Conn.

Filed Mar. 11, 1985, Ser. No. 710,285

Int. Cl.[4] H01R *13/62*

U.S. Cl. 339—45 M **6 Claims**



1. A rapidly releasable connector having a receptacle receivable within a plug shell, and a hollow coupling ring rotatably received on the plug shell for moving the plug shell and receptacle toward and away from each other depending upon the direction of rotation, comprising:

said coupling ring having at least one opening extending radially therethrough at a point spaced inwardly from the outer end;

ringlike means slidingly received onto the outer end portion of the coupling ring and movable from a first position presenting a surface covering the coupling ring opening to a second position locating a recess or the ringlike means directly opposite said openings;

separable end piece means fitted within the open end of the coupling ring and having a recess on an outer surface located directly opposite the opening in the coupling ring, said separable end piece means including a radially inwardly directed flange for engaging the receptacle during mating of the plug shell and receptacle; and

a ball located within the coupling ring opening and having parts thereof lockingly extending into the separable end piece means when the ringlike means inner surface is located directly opposite the coupling ring opening, which ball is free to move entirely into the coupling ring opening when the ringlike means recess is directly opposite the coupling ring opening releasing the separable end piece means from the coupling ring.

4,605,272

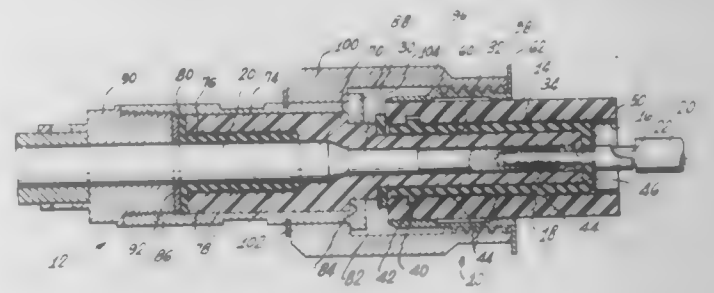
HIGH VOLTAGE ELECTRICAL CONNECTOR

Melvin K. Myers, and Frank Pospisil, both of Los Angeles, Calif., assignors to Reynolds Industries, Inc., Los Angeles, Calif.

Continuation of Ser. No. 142,976, Apr. 21, 1980, abandoned, which is a continuation of Ser. No. 936,642, Aug. 24, 1978, abandoned. This application Feb. 1, 1985, Ser. No. 696,899

Int. Cl.[4] H01R *13/52*

U.S. Cl. 339—60 M **20 Claims**



1. In a high-voltage electrical connector having a receptacle assembly and a plug assembly, each assembly having at least one electrical contact pin, the improvement comprising:

a receptacle body of relatively non-resilient dielectric material having a cylindrical inner surface;

a first cylindrical dielectric sleeve, of smooth, relatively non-resilient material, included in the plug assembly and encasing a first contact pin in the plug assembly; and

a sedond cylindrical dielectric sleeve, of resilient and relatively thin-walled material, installed in said receptacle body surrounding a second contact pin therein, said second dielectric sleeve's wall thickness being substantially less than its inner radius;

wherein said second cylindrical dielectric sleeve includes a plurality of inner raised annular portions on its inner surface and an equal plurality of outer raised annular portions on its outer surface, each of said inner raised annular portions being located immediately opposite a corresponding outer raised annular portion, along a line normal to the sleeve axis; and

wherein said first dielectric sleeve is dimensioned to slide tightly but easily inside said second dielectric sleeve, such that oney the inner and outer raised annular portions of said second dielectric sleeve contact the respective first dielectric sleeve and receptacle body, and such that the inner and outer raised annular portions are compressed directly towards each other and substantially uniformly in all radial directions, against said receptacle body, to form a first seal between said first and second dielectric sleeves and a second seal between said second dielectric sleeve and the inner surface of said receptacle body, thereby completing a continuous dielectric seal between the contact pins and said receptacle body, without the necessity of an axial force to maintain the seal.

4,605,273

PARALLEL-BLADE/TWIST-LOCK ADAPTER PLUG

Paul D. Horton, 730 W. Washington Ave., Orange, Calif. 92668

Filed Dec. 17, 1984, Ser. No. 682,161

Int. Cl.[4] H01R *13/639*

U.S. Cl. 339—75 P **4 Claims**

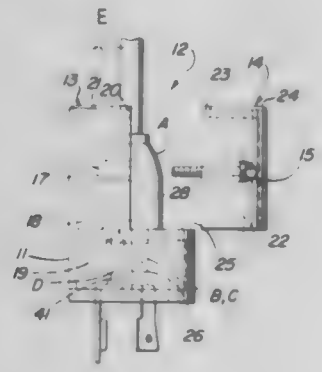
1. An adapter plug adapted to provide electrical connections between corresponding terminals of a parallel blade male connector plug and a female twist-lock connector having arcuate, circularly arranged connector slots, said adapter plug comprising:

a. an elongated cylindrical base having parallel, transversely disposed upper and lower faces,

b. a plurality of female connectors adapted to insertably receive male connector terminals from said parallel blade male connector plug, said female connectors being disposed axially downward from said upper face of said base,

c. a plurality of arcuate, circularly arranged twist-lock connector blades extending axially downward from said lower face of said base,

d. a plurality of electrical conductors separately connecting each said female connector to a separate twist-lock connector blade, and



e. means for loosenably clamping said parallel blade male connector plug to said adapter plug base, said clamping means comprising:

(i) a fixed, hollow semi-cylindrical extension continuous with a semi-cylindrical face of said base and extending longitudinally upward from the plane of said upper transverse face of said base,

(ii) a removable hollow semi-cylindrical section continuous with the opposite semi-cylindrical face of said base and extending longitudinally upward from the plane of said upper transverse face of said base, and

(iii) means for removably fastening said fixed hollow semi-cylindrical extension and said removable hollow semi-cylindrical section together.

4,605,274

CABLE CONNECTING DEVICE

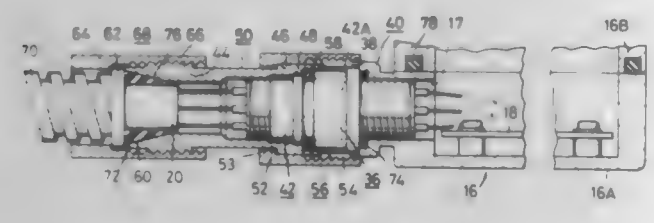
Souji Ichikawa, Sagamihara, Japan, assignor to Mitutoyo Mfg. Co., Ltd., Tokyo, Japan

Filed Sep. 7, 1984, Ser. No. 648,247

Claims priority, application Japan, Sep. 9, 1983, 58-166321; Sep. 9, 1983, 58-166322

Int. Cl.[4] H01R *13/62*

U.S. Cl. 339—89 R **32 Claims**



1. A cable connecting device for detachably, electrically connecting a flexible cable protected by a flexible electric wire tube to a wiring in a component movable in a moving direction within a predetermined scope relative to a main body, the component having a first portion opposite the main body and a second portion disposed between the first portion and the main body, the first portion defining an outer periphery at a travelling distance from the main body in a normal direction perpendicular to the moving direction, wherein at least the vicinity of a connecting portion of the flexible cable of said component is formed into a hermetically sealed construction except for an opening for an electric wiring, said cable connecting device comprising:

a first connector connected to an electric circuit in said component via the opening for the electric wiring and having a first end portion on a first connecting side opposite said component, the first connector having at least one electric contact point;

a first cylindrical member formed integrally with said component, enclosingly supporting the first connector with its first end portion on the first connecting side being exposed, an outer periphery of the first cylindrical member being formed with a first threaded portion;

a second connector capable of being coupled to the first connector and having at least one opposite electric contact point connected to the cable;

a second cylindrical member enclosingly supporting an end portion of the cable and having a second end portion on a second connecting side opposite the cable, the second connector being connected to the second cylindrical member except for the second end portion on the second connecting side of the second connector, an end face of the second cylindrical member being adapted to abut against an end face of the first cylindrical member when the second connector is coupled to the first connector, the second cylindrical member including

a second threaded portion formed on an outer periphery of a third end portion on the second cylindrical member opposite the second end portion and adjacent the cable, the second threaded portion being smaller in diameter than the first threaded portion,

an outer stepped portion formed on an outer periphery of the second end portion, the outer stepped portion being larger in diameter than the second threaded portion and smaller in diameter than the first threaded portion, and

a first inner stepped portion formed on an inner periphery of the second cylindrical member, the first inner stepped portion being smaller in diameter than a maximum outer diameter of the second connector enclosed therein for regulating the movement of the second connector toward the cable;

a first tightening tubular member coupled onto the outer periphery of the second cylindrical member, the first tightening tubular member having an end portion adjacent the cable and an opposite end portion adjacent the second connector, the first tightening tubular member including

a second inner stepped portion having an inner periphery of the end portion adjacent the cable being passable through the second threaded portion, smaller in diameter than the outer stepped portion, and adapted to abut against the outer stepped portion for form a lock against dislodging in the direction of the end portion adjacent of the second connector, and

a third threaded portion capable of being threadably coupled to the first threaded portion of the first cylindrical member when the first cylindrical member and the second cylindrical member are in abutting contact with each other;

a first seal member interposed between opposing outer peripheral end faces of the first connector and the second connector;

a second seal member interposed between the inner periphery of the second cylindrical member and an outer periphery of the cable enclosed by the second cylindrical member to seal a space formed therebetween at a position of the third end portion of the second cylindrical member; and

a second tightening tubular member including a third inner stepped portion engageable with a stop member on an outer periphery of the cable to form a lock against dislodging the cable and a fourth threaded portion threadably coupled to the second threaded portion of the second cylindrical member, the third inner stepped portion engaging the stop member when the fourth threaded portion is threadably coupled to the second threaded portion to push the second seal member between the inner periphery of the second cylindrical member and the outer periphery of the cable, the outer periphery of both the first and

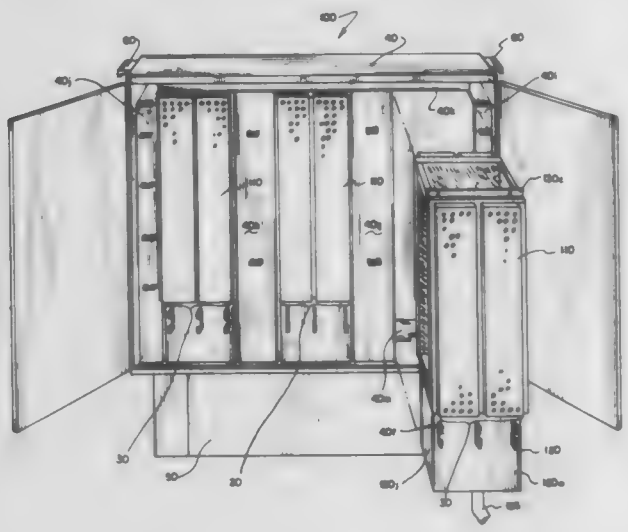
second tightening tubular members defining first and second distances, respectively, from the main body in the normal direction, the first and second distances being less than the travelling distance of the component from the main body, the first portion of the component being detachable from the second portion and including a seal and the first cylindrical member.

4,605,275

MODULAR ENCAPSULATED CROSS-CONNECT TERMINAL UNIT

Laszlo Pavel, Palatine, Ill., assignor to Reliance Electric Company, Cleveland, Ohio

Filed Mar. 5, 1985, Ser. No. 708,217
Int. Cl.[4] H05K *5/00*
U.S. Cl. 339—119 R **12 Claims**



2. A modular encapsulated cross-connect terminal unit for mounting in a cross-connect terminal, said terminal forming a housing for receiving said modular unit, said unit comprising:

I. first means comprising:

(a) an open top enclosure of predetermined shape, said enclosure having a bottom having an opening therein, said enclosure also having a top peripheral edge;

(b) first and second panels, at least said first panel being connected by hinge means to an associated portion of said top peripheral edge, said first panel having at least one hollow section therein and being mounted for pivotal motion about said hinge means between vertical and horizontal positions, said second panel being connected by connection means to an associated portion of said top peripheral edge, said connection means allowing said second panel to be in at least said vertical position;

(c) at least one connector block having a multiplicity of connection means on its front and rear faces, said block being mounted in said at least one hollow section such that said rear face is projecting upwardly when said first panel is in said horizontal position;

(d) a cable stub having a multiplicity of cable pairs therein, said stub being mounted to said bottom such that said cable pairs project through said opening, at least some of said cable pairs being connected to said rear face connection means in a predetermined arrangement; and

(e) means connected to both said first and said second hinged panels for holding said first and said second hinged panels in said vertical position, said rear face connection means being encapsulated and said enclosure filled with encapsulating material to encapsulate said stub after said cable pairs are connected to said rear face; and

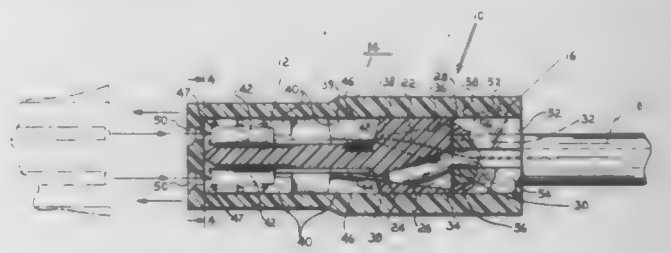
II. second means attached to said first means for mounting said terminal unit in said terminal with the cable stub extending through an opening in said terminal.

4,605,276

TWO ROW COAXIAL CABLE CONNECTOR

Alexander W. Hasircoglu, Lancaster, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 480,594, Mar. 30, 1983, abandoned. This application Mar. 26, 1985, Ser. No. 716,515
Int. Cl.[4] H01R *13/50*
U.S. Cl. 339—176 MF **6 Claims**



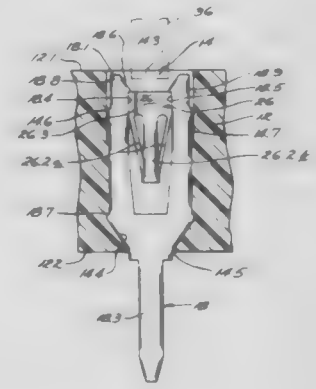
1. An electrical connector for coax cable having repeating units of a poly(tetrafluoroethylene) jacket surrounding a central signal conductor and at least one drain wire exterior to the jacket, the connector comprising an interior dielectric housing and an exterior dielectric housing, the interior housing containing entrance and exit ends, the ends separated by channels for guiding and receiving signal and drain wires and slots for retaining electrical terminals, the entrance end having two rows of openings, one above the other, leading into conical shaped channels, said channels engaging and pushing back the jacket surrounding the signal conductor as the cable is inserted, one row receiving a signal wire surrounded by the poly(tetrafluoroethylene) jacket in each opening and the other row receiving at least one drain wire in each opening, the exit end having two rows of open slots, one above the other, each slot containing an electrical terminal having a first and second contact end, one row of terminals terminating the drain wires and the other row terminating the signal wires free of the jacket at the first end, the second end being available for another electrical termination, the exterior housing having two upright side walls joined to two horizontal top and bottom members enclosing a cavity of sufficient dimension to slidably engage and retain the interior housing.

4,605,277

CONNECTOR AND METHOD OF MAKING

Pietro DeFilippis, Aversa; Amedeo Salvatore, and Mario Biscione, both of Naples, all of Italy, assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Mar. 11, 1985, Ser. No. 710,347
Claims priority, application Italy, Jun. 13, 1984, 48391 A/84
Int. Cl.[4] H01R *11/22*
U.S. Cl. 339—262 R **9 Claims**



1. A connector comprising an insulating body having an opening extending through the body, an electrically conductive retainer formed of sheet metal having a pair of spaced wings lying in a common plane extending from the retainer in one direction so that surface portions on the respective sheet metal wings are disposed in spaced facing relation to each other and having a post unitary therewith extending from the retainer in an opposite direction, the retainer being attached to

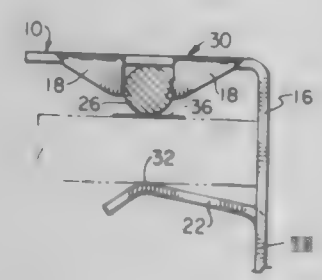
the body in the body opening with the retainer post extending from the opening at one side of the body to be connected in an electrical circuit and with the retainer wings disposed in fixed position in the opening adjacent an opposite side of the body with said plane of the retainer wings extending along a longitudinal axis of the opening, and a spring clip having an interrupted ring loop of resilient, electrically conductive sheet metal spring material disposed between said retainer surface portions having portions of the loop biased into resilient electrical engagement with the respective sapced facing surface portions of the retainer wings to position the interrupted ring loop to extend in a plane normal to the longitudinal axis of the opening and to said plane of the retainer wings, the spring clip having portions of the spring clip in juxtaposed relation to each other to make detachable, resilient electrical engagement to a terminal inserted within the interrupted ring loop to connect the terminal in said electrical circuit.

4,605,278

SOLDER-BEARING LEADS

Jack Seidler, Flushing, N.Y., assignor to North American Specialties Corporation, College Point, N.Y.

Filed May 24, 1985, Ser. No. 737,830
Int. Cl.[4] H01R *4/02*
U.S. Cl. 339—275 B **9 Claims**



1. A solder-bearing lead adapted to be soldered to a conductive surface, comprising

an elongated strip-like body portion,

said body portion having on each edge thereof a pair of spaced laterally extending tabs defining an opening therebetween,

said openings being laterally aligned transversely of said strip,

said pairs of tabs being bent substantially perpendicular from the body portion strip to align said openings to form a channel transversely of said strip, with said body portion forming a floor for said channel,

a solder mass in said channel and bordered by said pairs of tabs,

said tabs being bent inwardly of said channel to retain said solder mass therein,

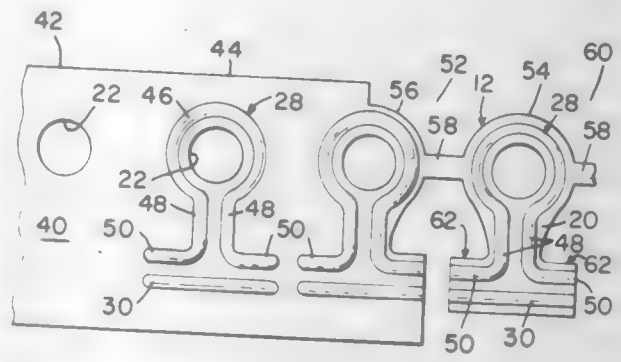
said solder mass having a dimension extending away from said body portion greater than the extent of said tabs, whereby said solder mass extends outwardly from said channel and may be placed in direct contact with the conductive surface to which said lead is to be soldered, while spacing said tabs from said surface and upon melting said solder mass, said tabs are permitted to move into contact with said conductive surface to make electrical contact therewith and to be retained in such contact upon re-solidification of said solder mass.

4,605,279

ELECTRICAL TERMINAL

James L. Mixon, Jr., Harrisburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Oct. 23, 1985, Ser. No. 790,545
Int. Cl.[4] H01R *4/26*
U.S. Cl. 339—276 R **20 Claims**



1. An electrical terminal, comprising

contact section means at one end for being attached to an electrical device;

wire receiving means at another end for receiving an electrical wire therein and being crimped down around said wire to establish electrical contact therewith; and

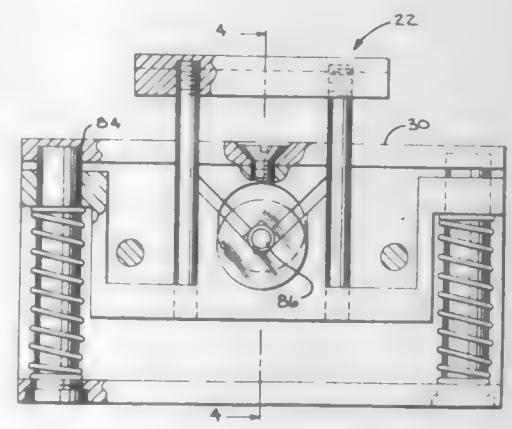
continuous rib means coined on said contact section means and said wire receiving means, said rib means providing rigidity to said contact section means and providing concentrated pressure points against the wire crimped in said wire receiving means.

4,605,280

UNIVERSAL LIGHT CABLE ADAPTER FOR LIGHT SOURCE

Stanley Welber, Palatine, and Nick Lakatos, Des Plaines, both of Ill., assignors to Eder Instrument Company, Inc., Chicago, Ill.

Continuation of Ser. No. 400,343, Jul. 21, 1982, abandoned. This application May 20, 1985, Ser. No. 736,517
Int. Cl.[4] G02B *6/36, 7/26*
U.S. Cl. 350—96.20 **7 Claims**



1. An adapter for coupling optical fiber cables having connectors of differing types and sizes to a light source, said adapter comprising:

a frame mountable on said light source in front of the light of the source,

a cable holder mounted on said frame and having a first stationary surface element capable of receiving an optical fiber cable connector;

a cable support operatively associated with said cable holder and including a second surface element disposed in opposition to said first surface element and capable of receiving the optical fiber cable connector, said cable support relatively movable with respect to said cable holder between a first unclamped position and a second clamped position so that said second surface element coacts with said first

surface element to clamp therebetween connectors of differing types and sizes inserted in said adapter;

spring means biasing said second surface element toward said second clamped position for retaining the optical fiber cable connector in said adapter;

actuator means for moving said cable support against the force of said spring means; and

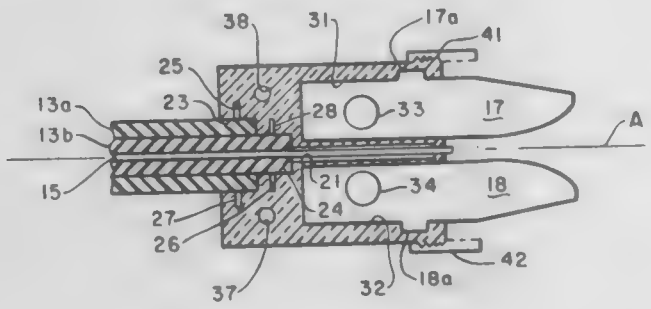
stop means for preventing a connector from engaging and possibly damaging the light source when inserted between said cable holder and cable support, said stop means includes a light transmitting disc member mounted on said cable support for movement therewith and positionable in axial alignment with said connector between said connector and said light source when said connector is retained in said adapter.

4,605,281

SELF-ALIGNING FIBER OPTIC CONNECTOR

Byron A. Hellewell, 1074 W. 1290 South, Syracuse, Utah 84041

Filed Jan. 17, 1984, Ser. No. 571,627
Int. Cl.[4] G02B *6/38*
U.S. Cl. 350—96.21 **2 Claims**



1. A connector for a fiber optic cable having a light-conducting core and a sheath surrounding said core, comprising:

(a) a substantially cylindrical body member having first and second endfaces and a coaxial central bore therethrough sized for receiving a corresponding lengthwise portion of said core from which said sheath has been removed;

(b) means for attaching said sheath to said body member near said first endface;

(c) a pair of substantially identical alignment projections disposed on said second endface in diametrically opposed relationship to said central bore;

(d) a pair of substantially identical fully enclosed alignment slots defined in said second endface, and disposed in diametrically opposed relationship to said central bore and in quadrature to said alignment projections, said fully enclosed slots defined in size and shape to receive projections substantially identical to that defining said alignment projections;

(e) wherein the combination of said body member, alignment projections and slots define a geometric shape having 180° rotational symmetry about the cylindrical axis of symmetry of said body member;

(f) wherein said body member is formed of two substantially identical half-cylindrical sections joinable along a plane including said axis, each section having corresponding first and second endfaces, said second endface of each section including one alignment slot defined therein, and further comprising means for joining said half-cylindrical sections along said plane; and,

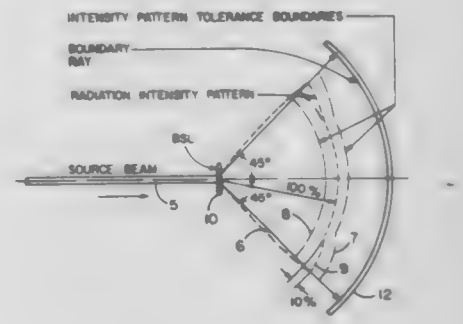
(g) wherein each alignment projection extends backwards within each half-cylindrical body member section and includes mating holes and mating posts for secure and accurate positioning in relation to each half-cylindrical section.

4,605,282

LINE LENS AND METHOD OF DESIGN THEREFOR

Paul L. Fox, Whittier, Calif., assignor to Pyramid Optical, Inc., Irvine, Calif.

Filed Dec. 22, 1983, Ser. No. 564,562
Int. Cl.[4] G02B *3/02*
U.S. Cl. 350—167 **8 Claims**



1. A lens apparatus of the type receiving a collimated beam of input radiation for transmitting a narrow sheet of output radiation of substantially uniform intensity over an angular range of approximately + and −45 degrees relative to the input radiation beam; the apparatus comprising:

an optically transparent material having an index of refraction no greater than 1.6 and having;

a lenticulated receiving surface; and

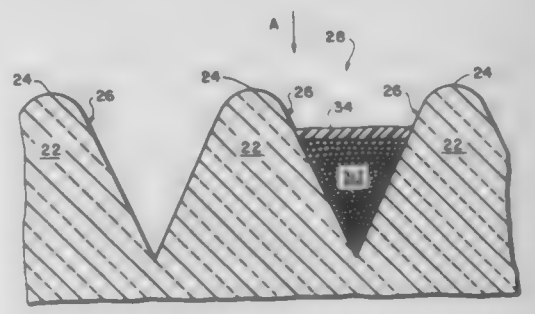
a lenticulated transmitting surface; wherein the lenticulated contours of said lenticulated receiving surface are alternately convex and concave, the convex contours being wider than the concave contours.

4,605,283

BLACKENED OPTICAL TRANSMISSION SYSTEM

Douglas A. Stanton, Ossining, N.Y., assignor to North American Philips Corporation, New York, N.Y.

Continuation of Ser. No. 567,022, Dec. 30, 1983, abandoned. This application Sep. 26, 1985, Ser. No. 780,706
Int. Cl.[4] G03B *21/60*
U.S. Cl. 350—127 **39 Claims**



1. An optical transmission system, comprising:

a transparent substrate having a front surface;

a pair of elongated mutually parallel transparent ribs provided on the front surface, the ribs being laterally spaced to form a groove therebetween, and

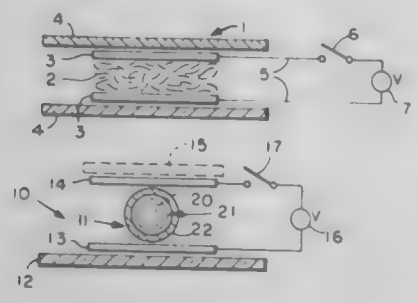
means for absorbing visible light, the means comprising an amount of light-absorbent discrete particles disposed in the groove, the amount being disposed such that the discrete particles disposed immediately adjacent to the transparent ribs are loose, whereby reflection of visible ambient light impinging on the system is reduced.

4,605,284

ENCAPSULATED LIQUID CRYSTAL AND METHOD

James L. Fergason, Atherton, Calif., assignor to Manchester R & D Partnership, Cleveland, Ohio

Division of Ser. No. 477,242, Mar. 21, 1983, which is a continuation-in-part of Ser. No. 302,780, Sep. 15, 1981, Pat. No. 4,435,047. This application Jun. 29, 1984, Ser. No. 626,425
The portion of the term of this patent subsequent to Mar. 6, 2001, has been disclaimed.
Int. Cl.[4] G02F *1/13*
U.S. Cl. 350—334 28 Claims



1. Liquid crystal apparatus, comprising liquid crystal material, and containment means for inducing a generally non-parallel alignment of said liquid crystal material which in response to such alignment at least one of scatters and absorbs light and which in response to a prescribed input reduces the amount of such scattering or absorption, said liquid crystal material and containment means comprising a dispersion thereof.

18. Liquid crystal material and a medium for containing discrete quantities of such liquid crystal material, said material having positive dielectric anisotropy, and wherein the difference between the ordinary index of refraction of said liquid crystal material and the index of refraction of said medium being no greater than 0.03.

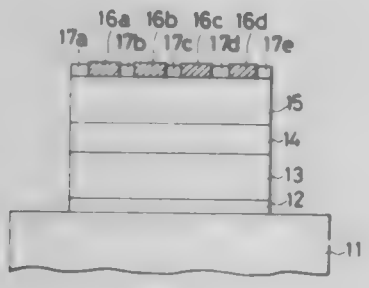
25. A method of making encapsulated nematic liquid crystals, comprising mixing at least an encapsulating medium and a nematic liquid crystal material, and further comprising selecting such liquid crystal material and such encapsulating medium such that the liquid crystal material has a positive dielectric anisotropy and the dielectric constant of such encapsulating medium is at least as great as the lower dielectric constant of such liquid crystal material and such lower dielectric constant is from about 3.5 to about 8.

4,605,285

ELECTROCHROMIC DEVICE

Ryoji Fujiwara, Sagamihara, and Isamu Shimizu, Yokohama, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 26, 1984, Ser. No. 593,490
Claims priority, application Japan, Apr. 1, 1983, 58-57211; Apr. 1, 1983, 58-57212; Apr. 1, 1983, 58-57213
Int. Cl.[4] G02F *1/17*
U.S. Cl. 350—357 20 Claims



1. An electrochromic device comprising an oxidative-coloration layer between a pair of electrodes, said oxidative-coloration layer being composed of a film of a metal oxyhydroxide represented by the formula:

$$MOx(OH)y$$

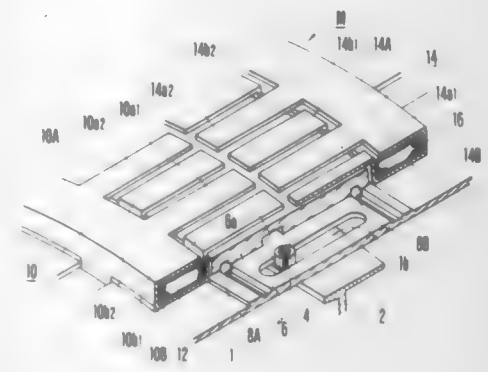
wherein M is a metal of group VIII of the periodic table, x is a number satisfying $0<x<1$, and y is a number satisfying $1<y<2$.

4,605,286

MOTOR BUILT-IN LENS MOUNTING

Akiyasu Sumi, Kanagawa, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed May 17, 1984, Ser. No. 611,413
Claims priority, application Japan, May 20, 1983, 58-89781; May 20, 1983, 58-89782; May 20, 1983, 58-89783
Int. Cl.[4] G02B *7/04*
U.S. Cl. 350—429 9 Claims



1. A lens assembly comprising:
(a) a body tube;
(b) lens holder means containing focusing lens means defining an optical axis;
(c) motor means for moving said lens holder means, said motor means including:
a hollow cylindrical field magnet rotatable about said optical axis and having a camming groove for determining the amount of axial movement of said lens holder means, and
a field coil and a field yoke for producing an electromagnetic force by which said field magnet is driven to rotate stepwise; and
(d) a drive connection member on said lens holder menas and extending into a cross point of a longitudinally elongated slot provided in said body tube and said camming groove of said field magnet;
(e) said field yoke including a first yoke member holding a first field coil and having pole teeth axially extending over the outer periphery of said field magnet, and a second yoke member positioned on the opposite side of said field magnet to said first yoke member, holding a second field coil and having pole teeth axially extending over the outer periphery of said field magnet in displaced relation to the pole teeth of said first yoke member by a predetermined pitch in a circle with its center at said optical axis.

4,605,287

SURGICAL MICROSCOPE FOR TWO SURGEONS

Walter H. Lang, Königsbronn; Klaus Biber, Aalen; Ulrich Lemcke, and Ulrich Sander, both of Heidenheim, all of Fed. Rep. of Germany, assignors to Carl-Zeiss-Stiftung, Heidenheim, Fed. Rep. of Germany

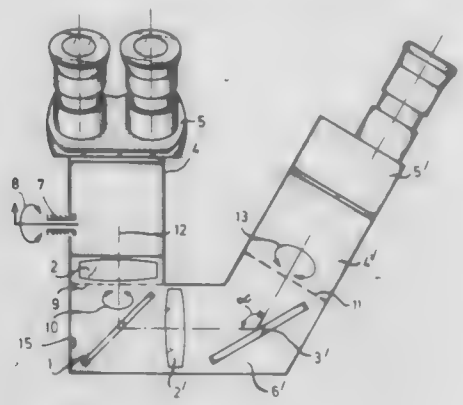
Filed Sep. 5, 1984, Ser. No. 647,623
Claims priority, application Fed. Rep. of Germany, Sep. 16, 1983, 3333471
Int. Cl.[4] G02B *21/18*
U.S. Cl. 350—513 7 Claims

1. A surgical microscope device for viewing an operating region of the body by two surgeons for performing surgery thereon, the device comprising:
a first microscope for an operating surgeon having a first objective defining a first optical axis;

a second microscope for an assistant surgeon having a second objective defining a second optical axis;

optical splitter means common to both said microscopes for splitting the light from the operating region and directing the light beams split therefrom to said objectives, respectively, thereby defining respective viewing beam paths for said microscopes;

an opto-mechanical component for accommodating said splitter means therein and for mounting said second microscope to said first microscope so as to permit said



splitter means and said second microscope to be conjointly rotatable about said first optical axis relative to said first microscope whereby the assistant surgeon can change the viewing direction through said second microscope relative to the viewing direction of the operating surgeon through said first microscope; and,

said second microscope having occular means mounted thereon so as to be rotatable about said second optical axis thereby permitting the assistant surgeon to adapt the position of said ocular means to the new viewing direction.

4,605,288

ZOOM INTERLOCKING MECHANISM FOR BINOCULAR

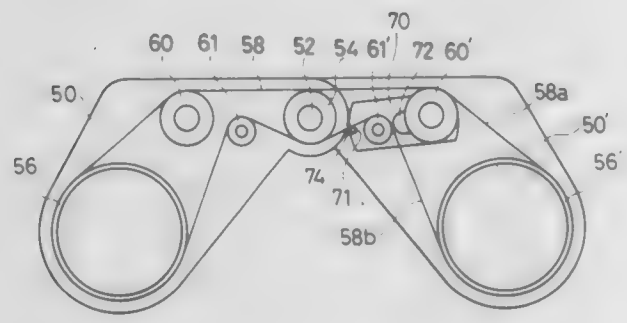
Akihiro Shimofuruta, Saitamaken, Japan, assignor to Kamakura Koki Kabushiki Kaisha, Japan

Filed Apr. 19, 1985, Ser. No. 725,119

Claims priority, application Japan, Apr. 20, 1984, 59-57396[U]

Int. Cl.⁴ G02B *7/06, 23/00*

U.S. Cl. 350—552 **3 Claims**



1. A zoom interlocking mechanism for a binocular having a pair of support arms, each provided with a telescopic optical system having an associated zoom mechanism, annular pulleys associated with respective zoom mechanisms, a central shaft affixed to one of said support arms, the other of said support arms being mounted on said central shaft for rotation within a predetermined angular range about said shaft, a central pulley coaxially mounted on said central shaft, tightening pulleys interposed between said central pulley and said annular pulleys, and a length of belt extending along a path defined by said central pulley, said annular pulleys and said tightening pulleys, said zoom interlocking mechanism comprising

an adjustment plate pivotally mounted on said other of said support arms, two of said tightening pulleys being rotatably mounted on said adjustment plate at eccentric positions and biased so as to deflect portions of said belt extending between said central pulley and said annular pulley away from the outer tangential lines connecting said central pulley to said annular pulley, said adjustment plate being operatively associated with said one of said support arms in a manner whereby said adjustment plate is rotated as said support arms are rotated around said central shaft, that one of said tightening pulleys mounted on said adjustment plate and acting on the belt portion of a tension side of said belt being moved together with said adjustment plate so as to urge said belt portion toward said outer tangential lines, while the other of said tightening pulleys mounted on said adjustment plate acting on the belt portion of a slack side of said belt is moved together with said adjustment plate so as to urge said belt portion of said slack side away from said outer tangential lines, thereby maintaining the two belt portions at the same tension before, during and after adjustable rotation of said support arms around said central shaft for varying the interoptical axis distance of said telescopic optical systems.

4,605,289

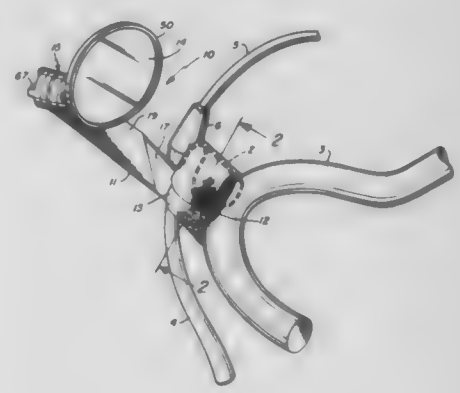
BICYCLE MIRROR ASSEMBLY

Edward H. Levine, and F. E. Dixon Newbold, both of Providence, R.I., assignors to Rhode Gear USA, Providence, R.I.

Filed Oct. 5, 1984, Ser. No. 658,181

Int. Cl.⁴ G02B *7/18*

U.S. Cl. 350—606 **16 Claims**



1. A mirror assembly for attachment to a bicycle brake lever stem on drop handlebars or a handgrip on upright handlebars, said assembly comprising:

a rigid arm having first and second sides and distal and proximal ends;

a rigid hook extending from one edge of said arm between said proximal and distal ends, said hook being disposed adjacent said proximal end and positionable around the stem of a bicycle brake lever;

a means for attaching said hook to the stem;

a mirror mounted on said arm adjacent said distal end; and

a mirror mounting means for mounting said mirror on said arm, said mirror mounting means being attachable to each of the first and second sides of said arm for mounting said mirror on either of said first and second sides.

4,605,290

COHERENT LIGHT VERGENCE VARYING APPARATUS

Richard H. Burns, North Hollywood, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Jul. 22, 1985, Ser. No. 757,391

Int. Cl.⁴ H01S *3/081;* **G02B** *5/04, 5/08, 17/00*

U.S. Cl. 350—619 **6 Claims**

1. An apparatus for varying the vergence of a beam of light from a laser comprising:

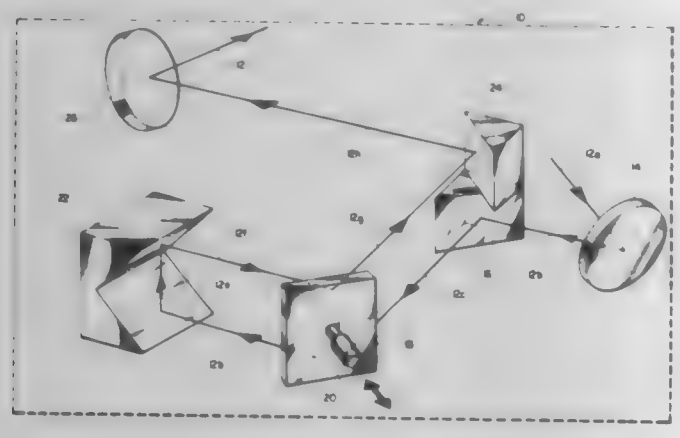
first focusing reflector means for receiving said beam of light and reflecting it angularly back on a different path;

first flat reflector means for receiving said beam of light

from said first focusing reflector means and reflecting it angularly back;

moveable reflector means linearly moveable along an axis between two positions for receiving said beam of light from said second reflector means throughout the linear movement between said two positions and reflecting said beam of light angularly back;

return reflector means for receiving said beam of light from said moveable reflector means and reflecting it back to said moveable reflector means in an offset path parallel to that of said beam of light received and for reflection off said moveable reflector means;



second flat reflector means for receiving said beam of light reflected off said moveable reflector means and reflecting it angularly back; and

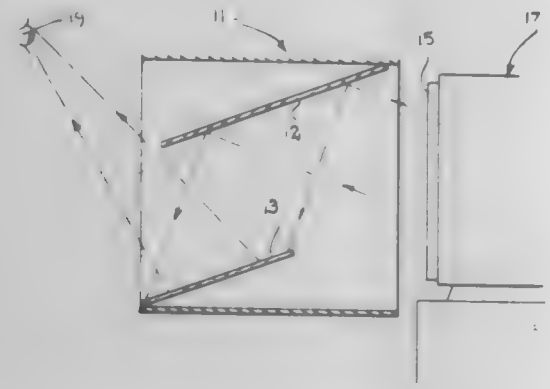
second focusing reflector means for receiving said beam of light from said second flat reflector means and reflecting it in a predetermined direction whereby during operation of said apparatus axial movement of said moveable reflector means changes the length of the focal path through said apparatus with a corresponding change in the vergence of said beam of light reflected from said second focusing reflector means.

4,605,291

CATHODE RAY TUBE SCREEN VIEWING AID

Thomas A. Jolly, 352 Loma Vista, El Segundo, Calif. 90245

Filed Oct. 24, 1984, Ser. No. 664,165
Int. Cl.⁴ G02B *7/18, 17/06*
U.S. Cl. 350—623 **14 Claims**



1. A viewing device for facilitating the viewing of images on a screen comprising

first and second reflecting mirrors,

support means, and

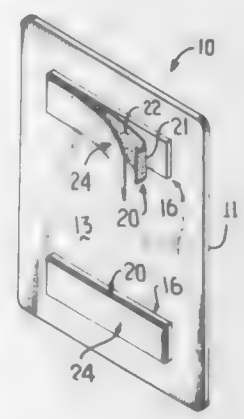
means for adjustably mounting said mirrors on the support means for vertical, lateral and pivotal positioning relative to each other and said screen so as to double reflect the screen images to a desired convenient viewing point comprising a support assembly for supporting each of said mirrors, a pair of oppositely positioned side plates having elongated opposing slots formed therethrough, and means for supporting said support assemblies for selective positioning along said slots and pivotally relative to said plates.

4,605,292

MIRROR WITH ADHESIVE/MAGNETIC MIRROR SUPPORTING STRIPS

Edwin J. McIntosh, Summersville, W. Va., assignor to Bright Of America, Inc., Greenbrier, W. Va.

Filed Jun. 28, 1985, Ser. No. 749,722
Int. Cl.⁴ G02B *7/18*
U.S. Cl. 350—641 **7 Claims**



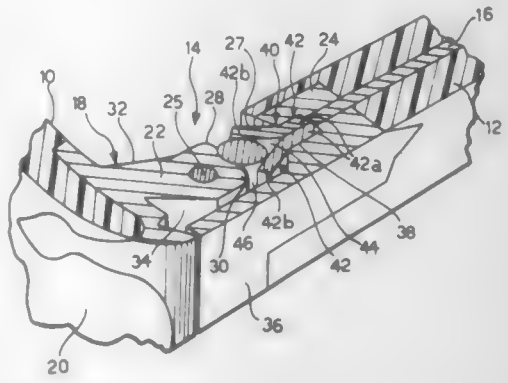
1. A mirror comprising a generally sheet-like unbreakable body having opposite surfaces, one of said surfaces being a reflective surface, a first removable transparent protective sheet covering and protecting said reflective surface, means for securing a magnet to a second of said surfaces whereby said mirror can be removably attached to magnetically-attractive support surfaces, a strip of tape having pressure-sensitive adhesive coatings upon opposite sides thereof, a first of said adhesive coatings bonding said strip of tape to said magnet, a second removable protective sheet covering a second of said adhesive coatings whereby said mirror can not be adhesively secured to a nonmagnetically-attractive support surface until said second removable protective sheet has been removed, and the bond strength and adhesive affinity of said first adhesive coating is such as to generally cleanly separate along an interface between said magnet and said first adhesive coating when said strip of tape is separated from said magnet.

4,605,293

SPECTACLE FRAME WITH RESILIENT HINGES

Oreste Blumenthal, Corso Montevecchio 36, Torino, Italy

Filed Feb. 23, 1984, Ser. No. 582,787
Claims priority, application Italy, Mar. 3, 1983, 67243 A/83
Int. Cl.⁴ G02C *5/14, 5/22*
U.S. Cl. 351—153 **26 Claims**



1. Spectacle frame having two parts interconnected so as to be pivotable relative to each other between a mutually closed folded position and a mutually open position, a resilient hinge mechanism pivotally interconnecting the parts and including resilient biassing means associated with one of the frame parts, a cam member associated with the other of the frame parts, and

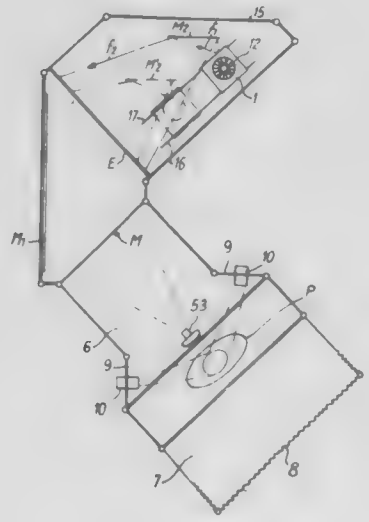
a rolling member cooperating with the cam member under the action of the resilient biassing means, the hinge mechanism defining a stable open position relative to which the two parts are able to effect limited and definable relative angular displacements against the action of the said resilient biassing means, wherein the resilient biassing means include a Y-configuration flexion spring device comprised of leaf spring means, said flexion device anchored to the respective part of the frame and defining a resiliently deformable seat for the lateral containment and centering of the rolling member.

4,605,294

COMPOSITE OPTICAL DISPLAY METHOD AND RELATED APPARATUS

Jean-Claude Bourdier; Frederic G. Bourdier; Brigitte E. Bourdier, and Claude H. Bourdier, all of 17, Place des Vosges, 75004 Paris, France

Filed Aug. 31, 1984, Ser. No. 646,352
Claims priority, application France, Jan. 30, 1984, 84 01417
Int. Cl.[4] G03B *21/26, 21/22*
U.S. Cl. 353—28 **15 Claims**



1. A method for projecting onto a screen of a projection installation images of a series of adornments of the body each superimposed on the screen with the personal image of a person, to form on the screen, for viewing by the person, a series of composite images of the person dressed with each of said adornments, the method being performed with the aid of a series of slides of said adornments and a preliminary slide illustrating a sight image but not an adornment, the slide of each said adornment having defined therein a dimension mark which is treated as a reference value corresponding to a body measurement which is easily identified on the personal image of any person, one of the elements of the dimension mark of the slide of each said adornment being treated as a reference base constituted by one end of the dimension mark, such that the dimension mark has a constant value for the slides of all said adornments and the images of the reference base of the slides of all said adornments will be projected at the same physical place on the screen, said method comprising the steps of:

placing the person in the installation at a location such that the image of the part of his or her body which corresponds to said reference base will be projected onto the screen at said physical place;

projecting the image of the person onto the screen with the person so placed and projecting the image of said preliminary slide onto the screen to form a composite image representing the person and said sight image;

adjusting the position of said sight image on the screen until said sight image tallies on the screen with the particular size of the person, thus to set the size of the images of said adornments to be projected onto the screen; and thereafter

projecting the images of the series of slides of said adornments onto the screen, one after the other, while the person remains in said location;

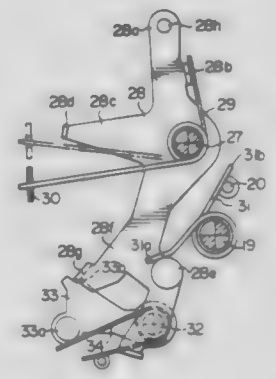
the method being repeatable with a following person.

4,605,295

SINGLE LENS REFLEX CAMERA

Yoshimi Ohno, Kawasaki; Ikuya Tsurukawa, and Tokio Ishino, both of Yokohama, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Division of Ser. No. 457,382, Jan. 12, 1983, Pat. No. 4,498,754.
This application Aug. 9, 1984, Ser. No. 621,727
Claims priority, application Japan, Jan. 25, 1982, 57-9675; Jan. 25, 1982, 57-9676; Feb. 12, 1982, 57-20940; Feb. 15, 1982, 57-22232; Feb. 15, 1982, 57-22233; Feb. 16, 1982, 57-27085[U]
Int. Cl.[4] G03B *17/02, 19/12*
U.S. Cl. 354—154 **5 Claims**



1. A single lens reflex camera having a shutter, a mirror, and a finder operatively associated with said mirror and comprising:

a quick return mechanism including a quick return setting member which is brought to a set position in response to a charging operation of the camera;

a combination spring means operatively associated with said quick return mechanism and which further comprises a mirror-biasing spring and a return spring offset from one another and which are stressed as the quick return setting member is brought to said set position;

a setting pawl operable for locking the quick return setting member in said set position and for unlocking the quick return setting member immediately before termination of operation of said shutter; and

a mirror-shutting member for causing upward movement of said mirror associated with said finder under a resilient force of the mirror-biasing spring in response to shutter release operation wherein the return spring and the quick return setting member are configured such that as the return spring is stressed, the resilient force of the return spring is directed closer to the direction of movement of said setting pawl.

4,605,296

MOUNTING ARRANGEMENT FOR A CAMERA VIEWFINDER

Derek Munnion, Andover, England, assignor to Link Electronics Limited, Great Britain

Filed Sep. 9, 1983, Ser. No. 530,988
Claims priority, application United Kingdom, Sep. 9, 1982, 8225699
Int. Cl.[4] G03B *13/02*
U.S. Cl. 354—223 **17 Claims**

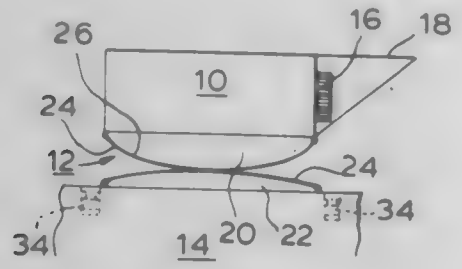
1. A mounting arrangement for adjustably attaching a viewfinder to a camera, comprising:

at least one rocker, said at least one rocker having a first end, a second end and a curved surface extending therebetween, said curved surface interposed said viewfinder and said camera for a rocking motion therebetween;

a second surface, positioned for rocking of said curved surface of said at least one rocker along said second surface, said second surface having a first end adjacent said

first end of said at least one rocker, and a second end adjacent said second end of said at least one rocker; and

means for attaching said at least one rocker to said second surface, said means for attaching comprising a first flexible



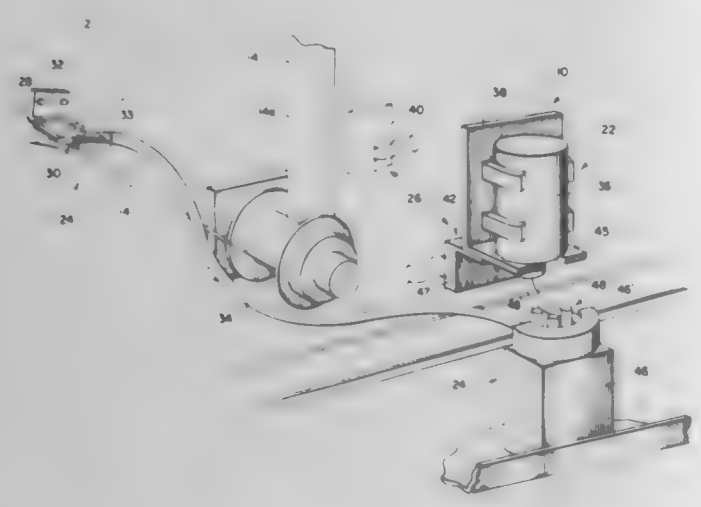
elongated member having a pair of ends, one of said pair of ends secured to said second end of said second surface and an other of said pair of ends secured to said first end of said at least one rocker.

4,605,297

METHOD OF AND APPARATUS FOR CONTROLLING THE APPLICATION OF PROCESSING FLUID

James J. Livingston, Waltham, and Duncan C. Sorli, Chelmsford, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Dec. 24, 1984, Ser. No. 685,403
Int. Cl.[4] G03D *9/00*
U.S. Cl. 354—303 **9 Claims**



1. Apparatus for applying a coating of fluid initially retained in a container to an elongated section of a web of material,

a fluid dispensing nozzle;

means for progressively advancing the web of material along a predetermined path into operative relationship with said nozzle,

weight sensing means for receiving the container;

means for pumping the fluid from the container to said nozzle, said pumping means including a pump and a fluid line operatively associated with both said pump and said nozzle; and

means for enabling said pump to be rendered operable only when the weight sensing means senses a weight indicative that an amount of fluid retained in the container is sufficient to cover the entire elongated section of the web.

4,605,298

ELECTROGRAPHIC TRANSFER ROLLER DRIVE MECHANISM

Matthew J. Russel, and Rose M. Borruso, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 29, 1985, Ser. No. 728,017
Int. Cl.[4] G03G *15/14*
U.S. Cl. 355—3 TR **13 Claims**

1. In an electrographic reproduction apparatus wherein a transferable image is carried by a moving dielectric member and transferred from such dielectric member to a receiver member supported by a transfer roller when such transfer roller brings such receiver member into contact with such image in a transfer zone, mechanism for driving said transfer roller in relation with the moving dielectric member, said mechanism comprising:

means, located relative to the transfer roller, for supporting a dielectric member and moving said dielectric member through the transfer zone in transfer relation with a receiver member supported by said transfer roller;

means for selectively driving said transfer roller; and



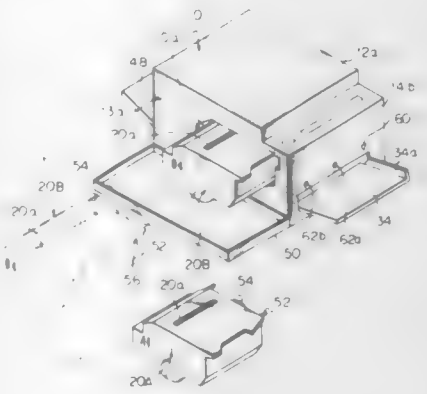
means for coupling said selective drive means to said transfer roller when a receiver member supported by said transfer roller is out of the transfer zone, and for decoupling said selective drive means from said transfer roller when such receiver member is in contact with said dielectric member in the transfer zone, whereby drive for said transfer roller is imparted thereto only through contact of such receiver member with said moving dielectric member and such receiver member and dielectric member move at the same peripheral surface speed.

4,605,299

IMAGE FORMING APPARATUS WITH SIZED PROCESSING KITS

Hideaki Mochimaru, Yokohama, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Aug. 20, 1985, Ser. No. 767,426
Claims priority, application Japan, Aug. 28, 1984, 59-179095
Int. Cl.[4] G03G *15/00*
U.S. Cl. 355—3 R **18 Claims**



1. An image forming apparatus for providing an image on a photoconductive element, comprising:

a body which constitutes a housing; and

a plurality of image forming kits selectively and removably loaded in said housing for each forming an image of a predetermined maximum size which differs from a predetermined maximum size or sizes assigned to the other kit or kits, each of said kits being provided in a cartridge configuration and including at least a photoconductive element therein.

4,605,300

DEVICE FOR EXPOSING AND SEPARATING PHOTOGRAPHIC STRIP-MATERIAL FOR THE PRODUCTION OF MARGINLESS COPIES

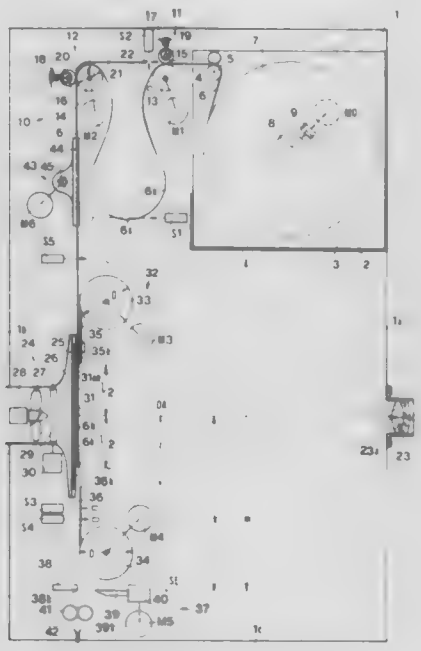
Kurt Thaddey, Buchs, Switzerland, assignor to Prontophot Holding AG, Dübendorf, Switzerland

Filed Oct. 11, 1984, Ser. No. 659,776

Claims priority, application Switzerland, Oct. 12, 1983, 5551/83

Int. Cl.[4] G03B *29/00*

U.S. Cl. 355—29 **18 Claims**



1. A device for exposing photographic strip material in consecutive sections of predetermined format and for separating the exposed sections into marginless copies for further processing, said device having an exposure platform perpendicular to an optical copying axis of an optical copying device; a roller-blind shutter located immediately in front of said exposure platform with two curtains, each adapted to be moved along a path by means of a curtain roller and each comprising a closing edge running at right angles to said path and adapted to move across the exposure platform; a separating device which includes a cutting location at a fixed, predetermined distance from said optical axis; and a feed device for the strip material, said feed device containing a positioning roll operated by a drive motor, whereby said strip material is adapted to be fed along a track running along the path of the shutter curtains, across the exposure platform, and to said separating device, wherein the roller-blind shutter also serves as a picture-defining mask, to which end the rollers of the two shutter curtains are adapted to be operated by two drive motors through a curtain-positioning device which is arranged to move the shutter curtain more remote from the separating device into an exposure position in which its closing edge is half a frame length away from the optical copying axis, in the direction of said separating device, in order to mask the section of strip material at the edge of the picture more remote from said separating device, and in that the positioning roll of the feed device for the strip material is adapted to be operated by its drive motor through a strip material positioning device which is arranged to position the strip material, when the roller-blind shutter is closed and before a section of strip is exposed, in an exposure position in which the transverse edge of the strip material, leading in the direction of feeding, is spaced from the optical copying axis by half a frame length in the direction of the separating device and, after a section of strip material has been exposed, to advance said strip material, in order to position the exposed section in said separating device, by one feed length which is equal to the sum of the half frame length and said fixed distance between the cutting location of said separating device and the optical copying axis, and thereafter to actuate said separating device, and wherein the strip material positioning device is also arranged to move said strip material, for the purpose of exposing a first section of the strip, from a neutral position where said leading transverse edge of the strip material lies at said cutting location of the separating device, and for exposing each additional section after the separating operation, back out of the same neutral position, by a distance equal to the difference between the distance between the cutting location and the optical copying axis, and the half frame length, into the exposure position on the exposure platform.

4,605,301

EXPOSURE METHOD OF SEMICONDUCTOR WAFER BY MERCURY-VAPOR LAMP

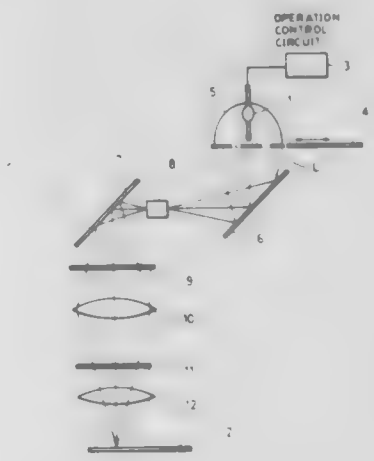
Takehiro Kira, Kobe, Japan, assignor to Ushio Denki Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 26, 1985, Ser. No. 705,646

Claims priority, application Japan, Jul. 7, 1984, 59-139774; Jul. 7, 1984, 59-139775

Int. Cl.[4] G03B *27/72*; G05F *1/00*

U.S. Cl. 355—69 **6 Claims**



1. In a method for exposing, through a pattern mask, small sections of a semiconductor wafer successively to light radiated from a mercury-vapor lamp in highlevel steps, during each of which the power consumption and discharge current of the mercury-vapor lamp are at a high level, by continuously lighting the mercury-vapor lamp and repeatedly alternating each of the high-level steps and a low-level step during which the power consumption and discharge current of the mercury-vapor lamp are at a low level, wherein the discharge current of the mercury-vapor lamp overshoots the discharge current of the high-level step when the mercury-vapor lamp is switched from the low-level step to the high-level step and undershoots the discharge current of the low-level step when the mercury-vapor lamp is switched from the high-level step to the low-level step, the improvement comprising effecting the alternation of the high-level step and low-level step while limiting the magnitude of each of the overshoot and undershoot to below 10% of the difference between the discharge current in the high-level step and the discharge current in the low-level step.

4,605,302

CLOUD HEIGHT MEASURING DEVICE WITH COMPENSATION FOR WINDOW FOULING

Folke Löfgren, and Sven-Erik Söderström, both of Västerås, Sweden, assignors to Asea Aktiebolag, Västerås, Sweden

Filed Apr. 16, 1984, Ser. No. 600,768

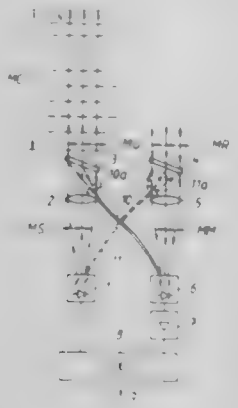
Claims priority, application Sweden, Apr. 18, 1983, 8302152

Int. Cl.[4] G01C *3/08*

U.S. Cl. 356—5 **12 Claims**

1. A method for controlling the energy of measurement pulses emitted from a cloud height measuring device during cloud height measurement, in which the measurement pulses from a transmitter of the cloud height measuring device are passed through an output window of the device and after reflection at a given height above the said output window are

reflected back to a receiver in the device via a receiver window, characterized in that at least one of said windows is regularly monitored as regards surface fouling by means of measuring the level of energy reflected from the said window using the transmitter and receiver of the cloud height measur-



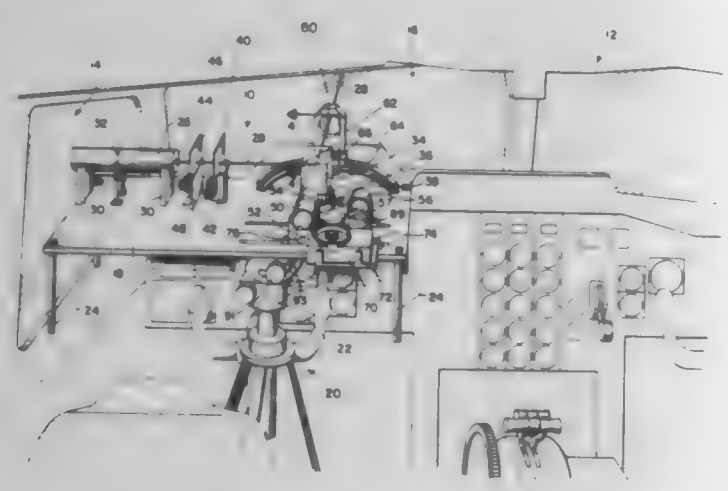
ing device and in that the emitted energy of the measurement pulses used for cloud height measurement is controlled with the aid of this measurement whereby the attenuation of the measurement pulses transmitted throught the output window is compensated for by a corresponding increase of the measurement energy output from the transmitter.

4,605,303

SIMULATOR SCENE DISPLAY EVALUATION DEVICE

Richard F. Haines, Los Altos, Calif., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Dec. 22, 1983, Ser. No. 565,481
Int. Cl.[4] G01N *21/00*
U.S. Cl. 356—73 **7 Claims**



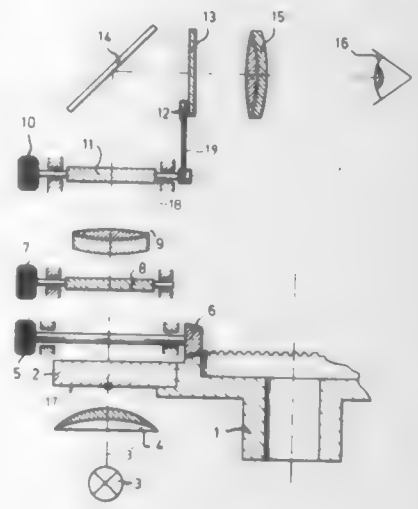
1. Apparatus for evaluating simulator scene display alignment and calibration, which comprises, a base, a source of collimated light mounted on said base, means mounted on said base for directing the collimated light at selected angles encompassed within a field of vision at a point proximate to said light source, a plurality of scene evaluation instruments mounted on said base and means mounted on said base for selectively positioning said plurality of scene evaluation instruments at the point by moving each of said plurality of scene evaluation instruments to and away from the point.

4,605,304

ANGLE-MEASURING INSTRUMENT WITH A COARSE-FINE DRIVE ARRANGEMENT

Helmut Leitz, Königsbronn, and Günter Rometsch, Oberkochen, both of Fed. Rep. of Germany, assignors to Carl-Zeiss-Stiftung, Heidenheim, Fed. Rep. of Germany

Filed Sep. 9, 1983, Ser. No. 531,180
Claims priority, application Fed. Rep. of Germany, Nov. 13, 1982, 3242084
Int. Cl.[4] G01B *11/26;* G01C *1/06, 1/00;* F16H *35/18*
U.S. Cl. 356—138 **10 Claims**



1. An angle-measuring instrument such as a theodolite, tacheometer or the like, comprising: a housing; a graduated circle supported on a carrier mounted so as to be rotatable with respect to the housing; an index mounted in the housing; an optical transmission path for transmitting an optical image of a circle part of the graduated circle to the index whereat the same may be viewed by an observer; and, a coarse-fine drive arrangement for presetting a circle part of the graduated circle to a predetermined read-out value that includes a predetermined fine read-out value, the coarse-fine drive arrangement including:

light-shifting means movably mounted in the optical transmission path for shifting the light rays passing therealong;

movement transmission means for transmitting an actuating movement to said light-shifting means;

a gear mounted on said carrier of the graduated circle; and,

an adjustable drive including: gear means mounted thereon and adapted to be engageable with said carrier gear; and, actuator means forming part of said adjustable drive for actuating said movement transmission means;

said adjustable drive being mounted in said housing so as to be movable to a first position whereat said gear means engages said carrier gear thereby permitting adjustment of the graduated circle to bring the circle part corresponding to the predetermined read-out value into the optical transmission path so as to cause the predetermined read-out value to appear as a coarse scale value at the index; and

said adjustable drive means also being mounted in said housing so as to be movable from said first position to a second position whereat said gear means is completely disengaged from said carrier gear and whereat said adjustable drive can be adjusted to cause said actuator means to transmit movement via said movement transmission means to said light-shifting means for finely shifting the light rays in the optical transmission path so as to cause said scale value to be aligned with said index whereby said predetermined read-out value can be read from said circle part and the angular position of said graduated circle remains unchanged.

4,605,305

LASER NEPHELOMETER FOR SENSING ANTIGENS AND ANTIBODIES CHARACTERIZED IN HAVING MEASURING CELL COMPRISED OF CAPILIARY TUBE WITH THE DIAMETER OF LASER BEAM

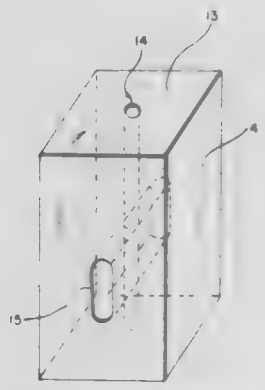
Jeannine Lenoir, Chaponost; André G. Bertoye, and Renée Bertoye, both of Lyons, all of France, assignors to Centre National de la Recherche Scientifique, Paris and Institut Pasteur De Lyon Et Du Sud-Est, Lyons, both of, France

Filed Jun. 30, 1983, Ser. No. 509,814

Claims priority, application France, Jul. 6, 1982, 82 12045

Int. Cl.[4] G01N *21/00, 21/03, 1/10, 15/00*

U.S. Cl. 356—246 **2 Claims**



1. A laser nephelometer for detecting antigens and antibodies, comprising:

a laser source for emitting a laser beam;

a cell consisting of a capiliary tube containing a solution of said antigens and a solution of said antibodies to be detected, said laser beam being directed toward said cell and being scattered by said cell;

a photoelectric sensor to collect the scattered light of said laser beam;

processing means to process the information received by the sensor;

wherein the inner diameter of the capiliary tube is approximately equal to the diameter of the laser beam, and wherein the laser beam is directed perpendicular to the capiliary tube and falls in the vicinity of an interface separation zone between the antigen solution and antibody solution to be detected.

4,605,306

GRATING MONOCHROMATOR

Károly Kaffka; Béla Nádai; András Czabaffy, and Loránd Horváth, all of Budapest, Hungary, assignors to Kozponti Elelmiszeripari Kutato Intezet, Budapest, Hungary

Filed Jun. 7, 1983, Ser. No. 501,902

Claims priority, application Hungary, Jun. 9, 1982, 1868/82

Int. Cl.[4] G01J *3/20*

U.S. Cl. 356—334 **12 Claims**

1. A grating monochromator comprising

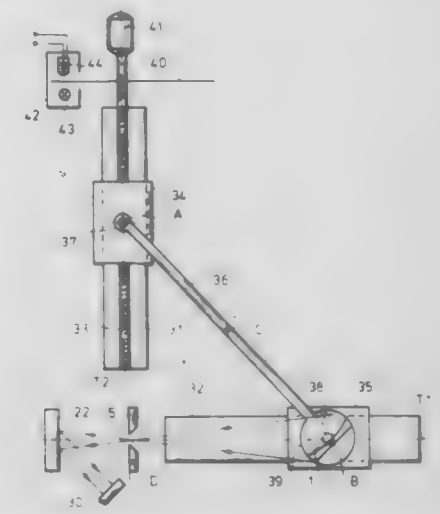
a concave reflection grating defining a Rowland-circle;

an entance slit transmitting a radiation beam onto said grating;

an exit slit transmitting the radiation beam reflected by said grating;

a mechanism for moving said grating and at least one of said slits with respet to each other for setting different wavelengths of said reflected beam of radiation so that in the course of said moving both said entrance slit and said eit slit are always positioned along the Rowland-circle of said grating; and

means for driving said moving mechanism by altering the distance between said at least one slit and a point on the Rowland-circle lying diametrically opposite to said grating; said driving means having a member moving proportionally to aid distance thereby providing a linear correspondence between said moving and said wavelength setting.



4,605,307

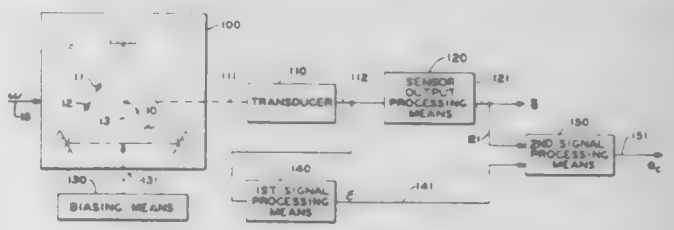
APPARATUS FOR LASER GYRO

Wah L. Lim, Anaheim, Calif., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Jun. 21, 1982, Ser. No. 390,417

Int. Cl.[4] G01C *19/64*

U.S. Cl. 356—350 **24 Claims**



1. An apparatus for determining incremental lock-in error in a sensor output of an angular rate sensor of the class wherein two waves propagate in opposite directions along a closed-loop path, wherein the frequency of each of said waves is a function of the rate of rotation of said closed-loop path, said waves establishing a phase difference therebetween, wherein said sensor provides an output signal, related to the frequency difference between said waves, indicative of the rotation of said closed-loop path, but which includes lock-in error, the apparatus comprising:

signal means responsive to said waves for providing at least one output signal related to said phase difference between said waves;

first signal processing means responsive to said at least one output signal for providing an output signal related to incremental lock-in error due to the lock-in phenomenon of said sensor, said first signal processing means having,

first approximating means for determining a first characteristic function descriptive of said phase difference for a first selected time interval in which first derivative values of said phase difference are continuously of a first polarity, said first approximating means further being capable of extrapolating from said first characteristic function a first value of said phase difference corresponding to a selected occurrence of a zero value of said first derivative having a corresponding second derivative value of said phase difference of a first polarity, and

second approximating means for determining a second characteristic function descriptive of said phase difference for a second selected time interval in which first derivative values of said phase difference are continuously of a second polarity, said second approximating means further being capable of extrapolating from said second character-

istic function a second value of said phase difference corresponding to said selected occurrence; and

difference means for determining a difference value between said first and second values, said incremental lock-in error being directly related to said difference value.

4,605,308

CONTACTLESS RELATIVE MOVEMENT SENSOR

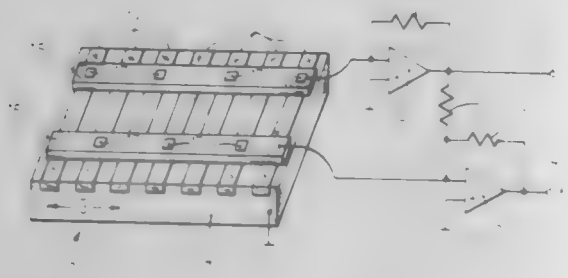
Rainer Hankel; Minh-Chanh Pham, and Sieghart Peuser, all of Berlin, Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Aug. 4, 1983, Ser. No. 520,136

Claims priority, application Fed. Rep. of Germany, Aug. 6, 1982, 3229343

Int. Cl.⁴ G01B *11/14*

U.S. Cl. 356—373 **19 Claims**



1. Contactless relative movement sensor system to determine relative movement between a sensor (**11**, **12**, **13**) and a reference surface (**10**), in which the sensor includes a grid structure (**12**, **30**, **40**) located in a grid plane, and optical means (**11**) imaging the surface (**10**) on the grid plane,

wherein, in accordance with the invention,

said grid structure comprises an electro-optical transducer means (**13**, **41**, **50**) arranged in a grid structure pattern, connected in the form of four inter-digited comb-like grid structures, and positioned in said grid plane; and

electrical means (**18**,**24**; **35**–**37**) coupled to said transducer means and providing electrical output signals directly from said optical transducer means in said grid structure pattern, said electrical means comprising

a first subtraction circuit (**35**) subtracting the outputs of a first and a third grid from each other;

a second subtraction circuit (**36**) subtracting the outputs of a second and a fourth grid from each other; and

a phase comparator (**37**) comparing the phases of the outputs of the first and second subtraction circuits to obtain an output signal representative of the direction of motion of the sensor with respect to the reference surface.

4,605,309

MIXING AND SHEARING ROLLER-MILL

August Albers, Heitersheim, Fed. Rep. of Germany, assignor to Hermann Berstorff Maschinenbau GmbH, Hanover, Fed. Rep. of Germany

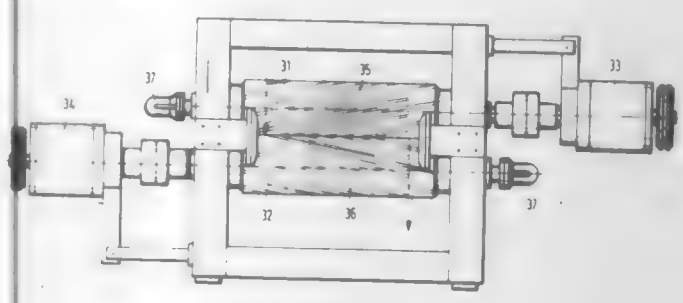
Filed Jan. 9, 1985, Ser. No. 690,052

Claims priority, application European Pat. Off., Jan. 16, 1984, 84100370.0

Int. Cl.⁴ B29B *1/06*

U.S. Cl. 366—76 **10 Claims**

1. A mixing and shearing roller-mill for plasticisable material comprising first and second rotatable, tempered rolls, each said roll defining a longitudinal axis, said rotation being effected about said longitudinal axis, drive means for each said roll for rotating said rolls at different speeds relative to one another, each said roll having an axial length and a diameter, said axial length being at least four times greater than said diameter, each said roll including an external surface, said external surface defining grooved portions, the transition regions between said surface and each said groove being sharp-edged, each said groove being inclinedly disposed at an acute angle relative to said roll axis, said grooves on said first roll having an opposite hand to said grooves on said second roll, each said roll defining first and second axial end regions and a central region intermediate said end regions, said material feed means disposed in said first end region and material discharge means disposed in said



second end region, the number and depth of said grooves increasing from said first end region to said central region and decreasing from said central region to said second end region, said rolls jointly defining a roll nip therebetween and adjustable feed and discharge means for feeding and discharging different types of material and additives axially disposed along said roll nip.

4,605,310

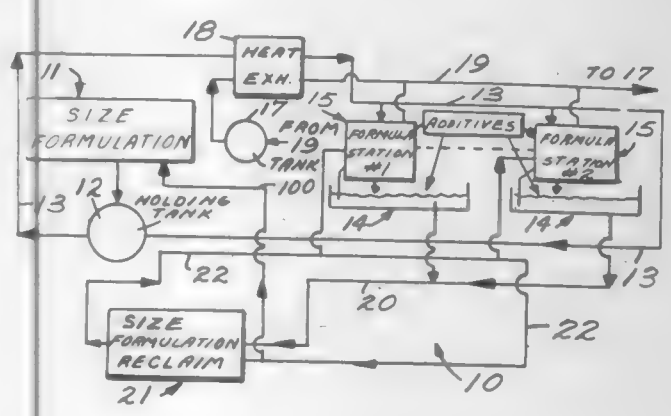
AUTOMATED SIZING SYSTEM CONTROLLING USING A RADIO TRANSMITTER LEVEL CONTROL

Frederick D. Pritchard, Clarksville, and John E. Pittard, Halifax, both of Va., assignors to Burlington Industries, Inc., Greensboro, N.C.

Division of Ser. No. 491,274, May 4, 1983, Pat. No. 4,514,092. This application Feb. 8, 1985, Ser. No. 699,473

Int. Cl.⁴ B01F *15/02*

U.S. Cl. 366—142 **4 Claims**



1. A method of providing size formulation to one or more of a plurality of size boxes associated with a plurality of slashers, comprising the steps of:

(a) mixing and heating a number of size formulation components to produce a size formulation having a predetermined composition and temperature;

(b) circulating the size formulation in a closed loop past each of the size boxes;

(c) sensing the size level in each size box utilizing a radio transmitter level control in each size box, which utilizes radio waves to sense the level; and

(d) responsive to said sensing in step (c), withdrawing size formulation from said closed loop and supplying it to each size box having size therein below a predetermined level.

4,605,311

ELECTRONIC WATCH HAVING A STEPPING MOTOR

Jürgen Loitz, Rheinfelden, Switzerland, assignor to Aline Loitz-Triebold, Rheinfelden, Switzerland

Filed Apr. 24, 1985, Ser. No. 727,252
Claims priority, application Switzerland, Oct. 2, 1984, 4725/84
Int. Cl.[4] G04B *19/20, 19/06*
U.S. Cl. 368—77 10 Claims

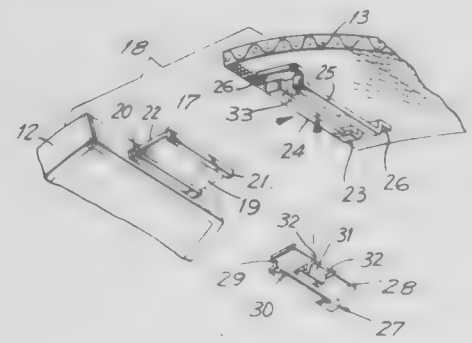
1. An electronic watch, comprising:
a watch face having at least one window therein;
a stepping motor with a rotor which rotates suddenly by about 180° after the elapse of every second, said rotor having a shaft that is oriented toward said face; and
an ornamental disc mounted on said shaft and disposed directly below said face, said ornamental disk having a plurality of visually distinguishable regions that are disposed so that regions exposed by said at least one window change suddenly every second.

4,605,312

WATCHBAND/WATCHCASE CONNECTION

Quentin Sellier, North Bergen, N.J., assignor to Duchess Industries, Inc., Hoboken, N.J.

Filed Feb. 8, 1985, Ser. No. 699,998
Int. Cl.[4] G04B *37/00;* A44C *5/18*
U.S. Cl. 368—282 7 Claims



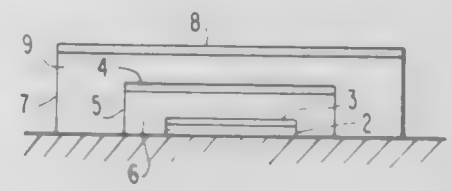
1. A watchband/watchcase connection comprising:
a bridge component permanently connected to the watchband at one end portion of the latter and having two bridge portions extending transversely of the watchband at a first spacing from the latter to bound therewith a receiving space and at a second spacing longitudinally of the watchband from one another;
a lug component rigid with the watchcase and at least partially received with minimum clearance in said receiving space in an assembled condition upon introduction from the free end of the one end portion of the watchband, said lug component having a channel extending transversely of the watchband and facing toward said second spacing in said assembled condition; and
a connecting component having at least a limited resiliency to brace itself with a predetermined force against said bridge portions, and including a first substantially flat portion substantially snugly received in said channel of said lug component, and two second portions having respective abutment surfaces facing in opposite longitudinal directions of the watchband away from one another and each engaging one of said bridge portions of said bridge components with interference fit in said assembled condition, one of said second portions of said connecting component extending along a course substantially normal to said first portion, and the other of said second portions being a protuberance rising out of said first portion, said one of said second portions of said connecting component deviating from said substantially normal course to form a nose which, in said assembled condition, extends within said channel of said lug component to underneath the associated one of said bridge portions to engage the same from below.

4,605,313

INFRARED DETECTOR FOR NDIR GAS ANALYSIS

Paul L. Kebabian, Acton, Mass., assignor to Environmental Research & Technology, Inc., Concord, Mass.

Filed Apr. 10, 1985, Ser. No. 721,601
Int. Cl.[4] G01J *5/00*
U.S. Cl. 374—121 15 Claims



1. A detector for receiving radiation and providing a first signal in accordance with the amount of said radiation absorbed by a reference gas and a second signal in accordance with the amount of said radiation not substantially absorbed by said reference gas, said detector comprising:
a first enclosure containing said reference gas, and being at least partially transparent to said radiation;
absorption means for absorbing radiation which passes through said reference gas without absorption by said reference gas; and
a thermal detector, in thermal contact with said absorption means and said reference gas, for providing an output signal responsive to the temperature of said thermal detector, said output signal being alternatively indicative of said first or said second signal.

4,605,314

SPECTRAL DISCRIMINATION PYROMETER

Lars Stenmark, Klevbergsvägen 53, S-17900 Stenhamra, Sweden

Filed Jan. 11, 1984, Ser. No. 569,883
Claims priority, application Sweden, Jan. 13, 1983, 8300139
Int. Cl.[4] G01J *5/24, 5/26*
U.S. Cl. 374—127 5 Claims



1. A device for determining the temperature of a body by detecting the electromagnetic radiation emitted by said body, said device comprising:
a transmission means for transmitting the radiation from said body,

a wavelength separating means for receiving said radiation from said transmission means and spectrally separating said radiation according to wave length in a distribution of intensities having a center of gravity at a particular wave length,

a detector unit including a detector said detector receiving said spectrally separated radiation,

a signal processing unit for receiving an output signal from said detector and converting said signal into a temperature information,

an output means connected to the output of said signal processing unit for receiving and displaying said temperature information,

wherein said detector comprises a single linear position sensing detector cell having outputs with sensitivity suitable for receiving and processing said spectrally separated radiation transmitted by said transmission means as a function of distribution about said center gravity, and responsive within the intended range of temperature measurement, and wherein said transmission means, said detector and said separating means are fixed in position with respect to each other.

4,605,315

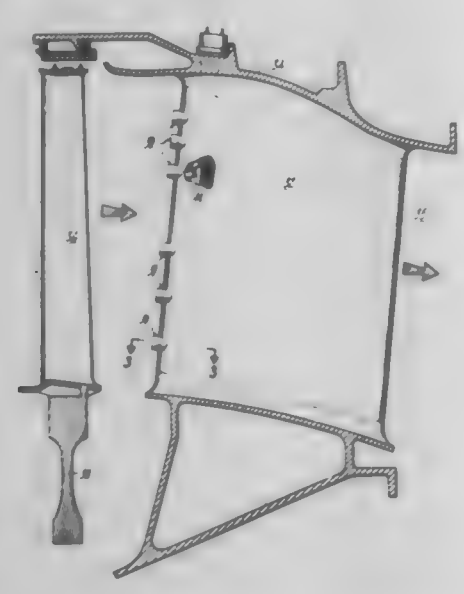
TEMPERATURE PROBE FOR ROTATING MACHINERY

Joseph M. Kokoszka, Enfield, and Rocco M. Tommasini, West Hartford, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Dec. 13, 1984, Ser. No. 681,395

Int. Cl.⁴ G01K *1/14, 13/02*

U.S. Cl. 374—144 **3 Claims**



1. A temperature probe for measuring the temperature of a gaseous stream in rotating machinery whose direction varies, a strut having a leading edge disposed in said gaseous stream, a temperature measuring element mounted in a cavity in said strut and first and second passageways in said strut leading a portion of said gaseous stream from said leading edge to said temperature measuring element and to a discharge port located at the side of said strut where the static pressure is at a value lower than the value of the pressure adjacent said leading edge, means for obtaining a free stream velocity of said gaseous stream in said passageways, said means including a tube projecting from said leading edge communicating with said first passageway, the end of said tube being scarfed and angled relative to the strut in the direction of said gaseous stream.

4,605,316

FLEXIBLY DAMPED SHAFT BEARING ARRANGEMENT, PARTICULARLY FOR USE IN ELECTRICAL MACHINERY

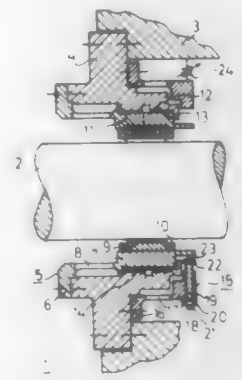
Manfred Utecht, Berlin, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich and Berlin, Fed. Rep. of Germany

Filed Jul. 26, 1984, Ser. No. 634,913

Claims priority, application Fed. Rep. of Germany, Aug. 4, 1983, 3328362

Int. Cl.⁴ F16C *27/02, 27/06*

U.S. Cl. 384—99 **15 Claims**



1. In a flexibly damped shaft-bearing arrangement, in electrical machines, with a bearing housing that surrounds the shaft in a ring and a movable bearing support, which contains the shaft bearing and is suspended radially by first stage springs in the bearing housing, with a recess in the bearing housing, provided with lateral seals, being left between the bearing housing and the bearing support in order to accommodate a fluid pressure cushion, the improvement comprising a second stage elastic suspension provided between the bearing housing and the bearing support, which, when the machine provided with such bearings is not operating, has a clearance with respect to the bearing support which is smaller than the potential spring excursion of the bearing support said second stage elastic suspension having means for providing support between the bearing housing and the bearing support when the clearance between the first stage springs and second stage springs is taken up for changing the elasticity of the bearing assembly.

4,605,317

HYDROSTATIC ROLLER BEARING

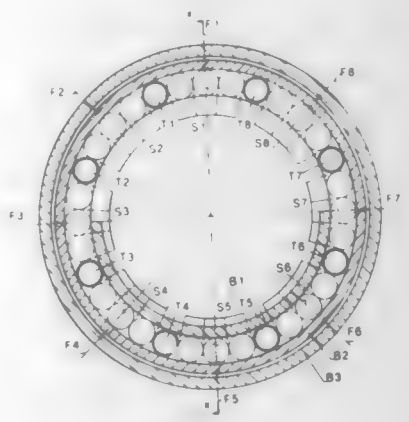
Francesco Bonaccorso, Via G. La Farina, 163, 98100 Messina, Italy

Filed Nov. 16, 1983, Ser. No. 552,269

Claims priority, application European Pat. Off., Nov. 24, 1982, 82830287.7

Int. Cl.⁴ F16C *21/00, 33/66*

U.S. Cl. 384—101 **8 Claims**



1. A bearing for supporting a load on a shaft by means of a pressurized fluid and/or by means of a plurality of rollers in the absence of said pressurized fluid;

said bearing comprising:

an inner bearing race;
an outer bearing race;
a plurality of pressure reduction ducts formed in said outer bearing race for feeding said pressurized fluid therethrough; and wherein said plurality of rollers disposed between said inner bearing race and said outer bearing race are divided into a plurality of groups of at least one roller, each group of said plurality of groups defining a chamber including a plurality of cavities formed between said plurality of rollers and said inner and outer bearing races, each said chamber communicating with and fed by one of said plurality of pressure reduction ducts, such that a loading of said shaft resulting in an eccentric disposition of said shaft within said bearing generates a fluid pressure differential between each said chamber corresponding to a different reaction force opposed to said loading generated within each said chamber.

4,605,318

ELASTIC SEAL FOR USE IN ANTIFRICTION BEARINGS

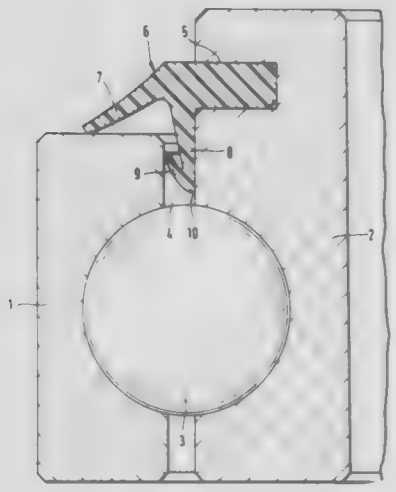
Theodor Kaiser, Höchstadt, Fed. Rep. of Germany, assignor to INA Walzlager Schaeffler KG, Fed. Rep. of Germany

Filed Sep. 11, 1985, Ser. No. 774,911

Claims priority, application Fed. Rep. of Germany, Sep. 27, 1984, 3435437

Int. Cl.[4] F16C *33/78*

U.S. Cl. 384—482 **5 Claims**



1. An antifriction bearing comprising two coaxial races, said races defining an annular gap and one of said races having a portion extending axially beyond the other of said races, said other race having an end face at the other side of said gap; and an elastic annular seal including a supporting portion affixed to said portion of said one race, a sleeve integral with said supporting portion, extending into the interior of said gap and contacting said one race, a first lip which is integral with said supporting portion, which is located outside of said gap, and which sealingly and slidably engages the end face of said other race, and at least one additional lip integral with said sleeve, located in said gap and sealingly and slidably engaging said other race.

4,605,319

SEALING RING FOR A ROLLING BEARING

Abraham Korenhof, Damhertlaan, Netherlands, assignor to SKF Industrial Trading and Development Company B.V., Nieuwegein, Netherlands

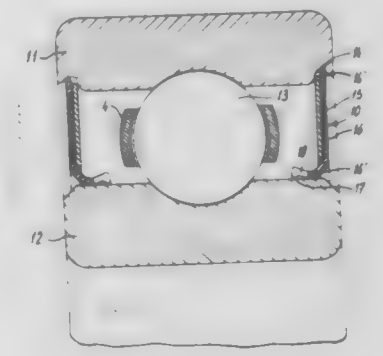
Filed May 29, 1984, Ser. No. 614,803

Claims priority, application Netherlands, Jun. 9, 1983, 8302055

Int. Cl.[4] F16C *33/78*

U.S. Cl. 384—484 **14 Claims**

1. In a rolling bearing comprising inner and outer races and at least one row of rolling members between said races, said inner race having an outer cylindrical surface, said surface being grooved for contacting said rolling members, and sealing rings closing off the space between the races externally, each sealing ring including an annular element of a rigid material, the outer edge of which is accommodated in an annular groove in the outer race of the rolling bearing and a sealing element, attached thereto, of an elastic material comprising a lip-shaped part which, with respect to the annular element, projects inward and rests against the inner race of the rolling bearing, the improvement wherein the annular element is a flat ring which closes off the space between the races, except for a relatively



narrow slot between its inner peripheral edge and the inner race, and the sealing element of an elastic material likewise has essentially the shape of a flat ring, the outer peripheral part of which and the element of a rigid material are joined, the inner peripheral part projecting beyond the inner periphery of said rigid element, which projecting part is directed inward, and the outer surface of which abuts against said outer cylindrical surface of said inner race, and including a plurality of spaced apart notches, the length and/or the thickness of said abutting part being greater than the breadth of the said slot.

4,605,320

DEVICE FOR SUPPORTING SPINDLES

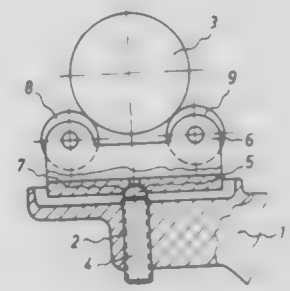
Matthias Gössner, Malente, Fed. Rep. of Germany, assignor to Dr. Ing. Rudolf Hell GmbH, Fed. Rep. of Germany

Filed Oct. 28, 1985, Ser. No. 792,036

Claims priority, application Fed. Rep. of Germany, Nov. 2, 1984, 3440039

Int. Cl.[4] F16C *13/06*

U.S. Cl. 384—494 **7 Claims**



1. A device for supporting long threaded spindles to prevent sag of the spindles due to their dead weight at a free-bearing portion thereof, comprising:
at least one carrier member connected to a base of a machine with which the spindle is associated, the carrier member having a height-adjustable spherical head positioned below a rotational axis of the spindle;
a substantially U-shaped roller bearing block and means for situating the roller bearing block on the spherical head so as to permit rotation of the roller bearing block about three mutually perpendicular axes;
first and second supporting rollers seated in the roller bearing block such that their respective rotational axes lie parallel to said spindle rotational axis;
the first roller having means for seating it in play-free fashion, and the second roller having means for seating it so as

to permit a limited tilting motion about a center thereof; and

means for limiting the tilting motion of the second roller.

4,605,321

ROLLER BEARING FOR SEATING A PEDAL BEARING SHAFT

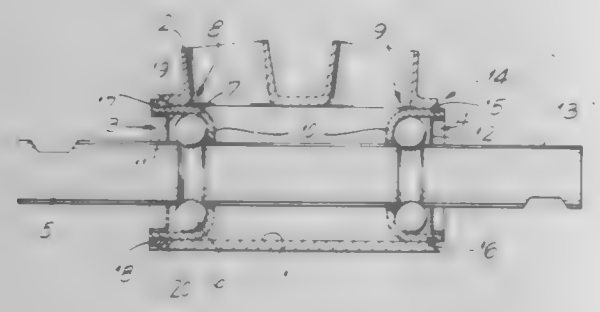
Manfred Brandenstein, Eussenheim; Roland Haas, Hofheim, and Rüdiger Hans, Niederwerrn, all of Fed. Rep. of Germany, assignors to SKF Kugellagerfbriken GmbH, Schweinfurt, Fed. Rep. of Germany

Filed Feb. 27, 1984, Ser. No. 584,090

Claims priority, application Fed. Rep. of Germany, Mar. 23, 1983, 8308615[U]

Int. Cl.⁴ F16C *23/06*

U.S. Cl. 384—512 **10 Claims**



1. In a rolling bearing unit including a housing element with a bore therethrough, a pedal bearing shaft extending through said bore, and a pair of axially spaced bearings formed by a pair of axially spaced annular grooves in the outer surface of said shaft, a plurality of bearing elements positioned in said grooves and first and second outer race elements mounted in said housing bore, the improvement wherein each of said outer race elements is made of sheet metal, is generally cup-shaped to define generally cylindrical walls, and has a flange at one end extending radially inward, and said rolling bearing unit further comprises first means mounted to inhibit axial movement of said first outer race element in said bore in one axial direction at an axial position along said bore, whereby said first and second outer race elements may pass freely through said bore in said one axial direction until said first outer race element is at said axial position, and second means for adjusting the axial position of said second outer race element with respect to said bore to enable adjustment of the axial play of said bearing with respect to said shaft, wherein said second means comprises a ring with external threads, rotation of said ring driving said ring and said second outer race element axially relative to said housing.

4,605,322

DOUBLE ROW ROLLER BEARING RETAINER

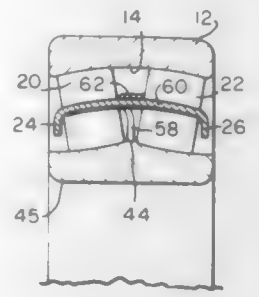
Richard L. Alling; Richard W. Shepard, both of Torrington, Conn.; Clyde L. Landrum, Granger, Ind.; Robert H. Tofield, Torrington, and Stephen T. Podhajecki, Norfolk, both of Conn., assignors to The Torrington Company, Torrington, Conn.

Continuation of Ser. No. 556,559, Nov. 30, 1983, abandoned. This application Jul. 12, 1985, Ser. No. 754,680

Int. Cl.⁴ F16C *33/46*

U.S. Cl. 384—575 **2 Claims**

2. A double row spherical roller bearing comprising: inner and outer races with opposed curved raceways, the inner race having two curved raceways separated by an annular protrusion and extending angularly from the annular protrusion toward the bearing axis, a rigid unitary retainer made from flat metal stock and having a pair of axially separated end rings at least a portion of the radially inner surface of each end ring being radially spaced from the inner race and circumferentially separated axially extending generally U-shaped crossbars interconnecting the end rings with the legs of each generally U-shaped crossbar extending radially outwardly from the end rings and an axially centered metal band bonded to the crossbars, said metal band having a plurality of circumferentially separated radially inwardly extending projections extending



from the metal band, each projection being adapted to extend between the rollers in axially aligned pockets and contact said annular protrusion on the inner race.

4,605,323

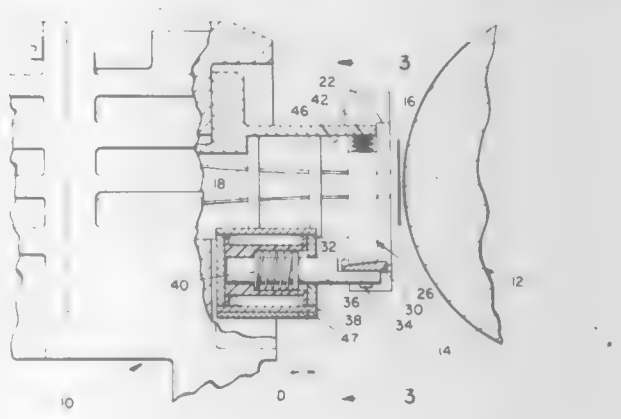
DUAL QUALITY WIRE MATRIX PRINT HEAD

Robert C. Blanchard, Glendale, Ariz., and David G. Geis, Niles, Ill., assignors to AT&T Teletype Corporation, Skokie, Ill.

Filed Jul. 2, 1985, Ser. No. 751,358

Int. Cl.⁴ B41J *3/02*

U.S. Cl. 400—124 **8 Claims**



1. A print head for a wire matrix printer, said print head being laterally movable in the direction of printing, comprising:

a pair of wire guides positioned in adjacent, parallel, vertical relationship;

each of said guides having a plurality of print wires extending therefrom in vertical alignment with each other within the respective guide;

means for effecting the simultaneous selected vertical movement of said guides, including:

a horizontally moveable platform positioned beneath corresponding ends of said guides in contacting relationship therewith;

said platform presenting a pair of inclined surfaces on the top thereof sloping in opposite directions; and

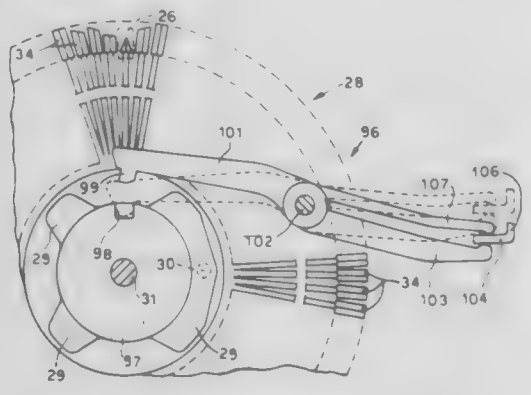
means operatively connected to said platform for moving said platform in a horizontal direction to thereby effect simultaneous selected vertical movement of said guides.

4,605,324

ELECTRONIC TYPEWRITER WITH A DEVICE FOR ZERO POSITIONING OF A ROTARY CHARACTER-CARRYING DEVICE

Pietro Musso, Ivrea, Italy, assignor to Ing. C. Olivetti & C., S.p.A., Ivrea, Italy

Continuation of Ser. No. 582,611, Feb. 22, 1984, abandoned.
This application Nov. 8, 1985, Ser. No. 795,759
Claims priority, application Italy, Feb. 22, 1983, 67196 A/83
Int. Cl.[4] B41J *1/30*
U.S. Cl. 400—144.2 **22 Claims**



1. An electronic typewriter comprising a platen which defines a typing point, a carriage which is movable parallel to the platen and supporting a character-bearing disc having a series of flexible laminae each carrying a character, a driving means consisting of a selector motor with windings for selectively rotating the character-bearing disc, a correcting ribbon, means comprising a control member and a ribbon supporting frame for lifting the correcting ribbon up to a position in front of said typing point, memory means for storing the angular position of the character-bearing disc with respect to the typing point, means for performing a correction cycle including, in the following order, the selection of a desired character of the character-bearing disc in front of the typing point, the actuation of said control member and the striking of the desired character against the platen through said correction ribbon, and zeroing means for positioning the character-bearing disc in a zero position at any point of the carriage movement along the platen,

said zeroing means comprising;

means for performing an initialization cycle for said selecting motor and said control member;

a stop member including a single stop surface rotatable together with the given path, wherein said single stop surface is univocally associated with said zero position of the character-bearing disc;

means for arresting the character-bearing disc in its zero position consisting of.

a toothed member operatively connected with the ribbon lifting frame and having a tooth cooperative with the single stop surface of said stop member

first means controlled by said means for performing an initialization cycle for actuating said control member to lift the ribbon lifting frame in the correcting position and for causing the toothed member with its tooth to be moved toward the path of the single stop surface of the stop member during the initialization cycle;

second means also controlled by said means performing an initialization cycle for driving the selecting motor with a reduced current and a reduced speed to rotate the character-bearing disc jointly with actuation of said control member until the tooth engages the single stop surface and causes the character-bearing disc to be stopped at its zero position; and wherein the reduced current on said windings and the reduced speed of said motor are selected to avoid damage to the moving parts, arrested by the action of said tooth on said stop surface;

loading means for loading the memory means with the zero position, said loading means including timing means for revealing a given time sufficient to the arrest of the character-bearing disc by the action said tooth on said stop surface; and

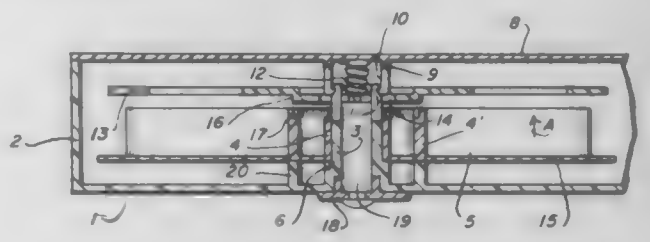
execution register means for loading the memory means with said zero position after the elapsing of said given time, and wherein said means for performing a correction cycle comprises means for selecting the desired character in front of the typing point when said tooth is disengaged from said stop surface and actuate said control member only when the selection of the desired character has been completed before the lifting of said ribbon lifting frame during each correction cycle wherein any engagement of said single stop surface with said tooth is avoided during said correction cycle.

4,605,325

RIBBON CASSETTE WITH RELEASABLE LOCKING MECHANISM

Norbert Hofmann, Nuremberg, Fed. Rep. of Germany, assignor to Triumph Adler AG, Nuremberg, Fed. Rep. of Germany

Filed May 28, 1985, Ser. No. 738,175
Claims priority, application Fed. Rep. of Germany, Jun. 8, 1984, 3421407
Int. Cl.[4] B41J *35/28*
U.S. Cl. 400—207 **4 Claims**



1. A ribbon cassette for use in typewriters or like machines, said cassette having a bottom wall and a cover and containing a single flange ribbon supply spool supporting a ribbon coil,

a hollow axle extending from the bottom wall toward said cover for rotatably supporting said ribbon supply spool and for accomodating a pin extending upwardly from a cassette supporting machine part,

a locking plate having a dimension at least equal to the diameter of a full ribbon coil non-rotatably mounted on said moveable relative to said axle in planes parallel to the plane of said ribbon coil,

means on said axle and said cover for locking said cover to said axle,

and a coiled spring positioned between said cover and said locking plate with its coil axis aligned with the axis of said axle for normally biasing said locking plate against the plane of said ribbon coil to prevent treeing of said ribbon coil, said plate being movable away from said ribbon coil against the bias of said spring by said pin when said cassette is mounted on said machine part, said nonrotatable mounting of said locking plate and said axle comprising a central cross-shaped portion on said locking plate, and an axially slitted upper end on said axle to accommodate its extension through said openings on said cross-shaped portion whereby relative rotational movement is precluded while axial movement of said locking plate relative to said axle is permitted.

4,605,326

DOT MATRIX COLOR PRINTER

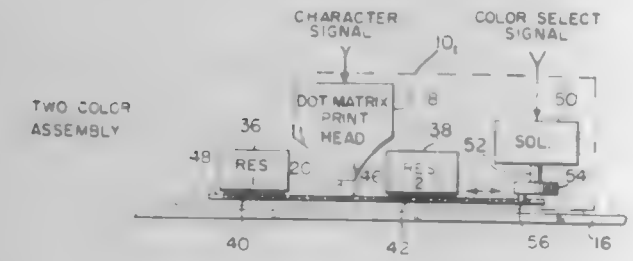
Seth L. Everett, Jr., Lincroft, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Mar. 22, 1985, Ser. No. 714,784
Int. Cl.[4] B41J *27/12, 27/14*
U.S. Cl. 400—201 **22 Claims**

1. An impact printer which operates to print in a plurality of colors, on a medium, comprising:

impact print means; means for providing relative movement between said print means and said medium,

at least one flat elongated ink trnasfer material holding member located intermediate said print means and said medium; at least two elongated mutually separated sections of ink transfer material of selective colors collinearly arranged along the lengthwise dimension of said holding member and being operable to transfer ink in the form of printed indicia, to said medium upon actuation of said print means;



means in contact with each said section of ink transfer material for continuously replenishing a supply of ink of a selected color to the respective section of ink transfer material; and

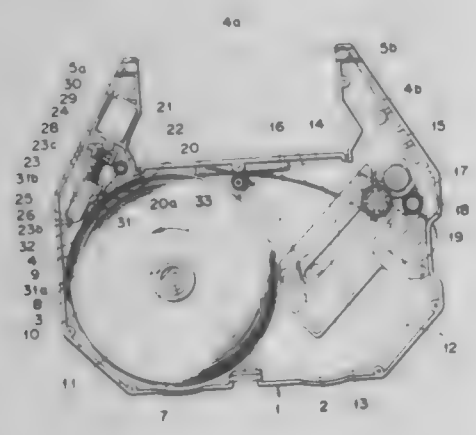
translating means for translating said ink transfer material holding member linearly back and forth across the front of said print means; said translating means including a cam; and means for rotating said cam to at least two positions, said cam engaging said transfer material holding member causing linear translation of said member.

4,605,327

PRINT RIBBON CASSETTE INCLUDING RIBBON TENSIONING MEANS

Junzo Ueki, and Yoshiaki Nakajima, both of Kodaira, Japan, assignors to Silver Seiko Ltd., Japan

Filed Jul. 23, 1985, Ser. No. 758,055
Claims priority, application Japan, Jul. 31, 1984, 59-158584
Int. Cl.[4] B41J *32/00*
U.S. Cl. 400—208
8 Claims



1. A print ribbon cassette removably mountable on a printing office machine, comprising:

a cassette body including a bottom member;

a feed spool mounted for rotation in said cassette body and having a ribbon wound thereon;

a take-up spool mounted for rotation in said cassette body for winding the ribbon thereon;

ribbon guide means provided on said cassette body for guiding the ribbon to be fed from said feed spool to said take-up spool; and

ribbon locking means for permitting rotation of said feed spool to feed the ribbon therefrom during use of the ribbon and for preventing inadvertent rotation of said feed spool during disuse of the ribbon;

said ribbon locking means including a flange mounted for coaxial and integrally rotatable relationship with said feed spool and having peripheral serrations formed thereon; a lock member mounted for pivotal motion on said cassette body and having a tip end for engagement with said peripheral serrations of said flange, a ribbon lock control member movable in response to a tensile force of the ribbon fed out from said feed spool between an operative position in which said ribbon lock control member engages with a portion adjacent said tip end of said lock member to press said lock member into engagement with said flange and an inoperative position in which said ribbon lock control member disengages from said lock member to allow said lock member to be disengaged from said flange, and a spring member for urging said ribbon lock control member to said operative position;

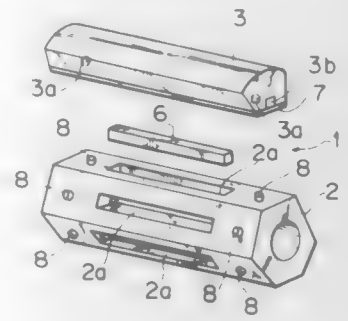
said bottom member having a support rib provided thereon and said ribbon lock control member having a groove formed on a bottom face thereof and fitted with said support rib to allow said ribbon lock control member to move back and forth along said support rib, said ribbon lock control member having a ribbon guide face formed at a forward end thereof, said ribbon lock control member having at the opposite rearward end thereof a receiving portion for receiving said spring member thereon.

4,605,328

POLYCHROME PRINTING PLATEN OF A PRINTER

Eiichi Shomura, and Taiji Goto, both of Tokyo, Japan, assignors to Janome Sewing Machine Co., Ltd., Tokyo, Japan

Filed May 21, 1984, Ser. No. 612,442
Claims priority, application Japan, Jun. 1, 1983, 58-81849[U]
Int. Cl.[4] B41J *11/04, 11/057*
U.S. Cl. 400—662
4 Claims



1. A polychrome printing platen of a printer having a platen shaft, comprising an axially elongated platen core of polygonal cross-section to form a plurality of planar support faces extending in the direction of elongation of said core, said core being rotatably mounted on said platen shaft and having a plurality of grooves each formed in a respective support face and extended in the direction of elongation of said core, said grooves being spaced from each other in a circumferential direction of said core; a plurality of permanent magnets each mounted in one of said grooves and each having an upper face coplanar with a respective support face; a plurality of axially elongated elements having inks of different colors impregnated therein, each of said ink impregnated elements having an upper face and a lower face and having a magnetisable plate secured to the lower face thereof, said ink impregnated elements being detachably attached to and retained on said platen core by said permanent magnets which attract said magnetisable plates, and by means preventing each of said ink impregnated elements from being displaced along said support face, whereby said elements are individually and optionally interchangeable on said core.

4,605,329

HYDRAULIC TRANSPORTATION OF OBJECTS

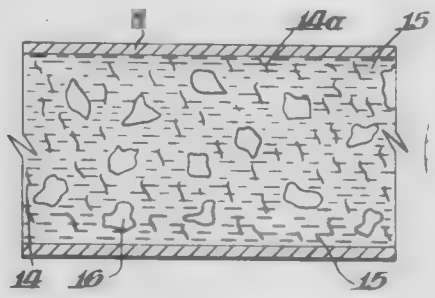
Geoffrey G. Duffy, Takapuna, New Zealand, assignor to Fibre Dynamics Limited, Takapuna, New Zealand

Filed Oct. 25, 1983, Ser. No. 545,347

Claims priority, application New Zealand, Oct. 29, 1982, 202329

Int. Cl.[4] B65G *53/30*

U.S. Cl. 406—49 4 Claims



1. The method of transporting coal, characerized by supplying the coal in pieces about 60 millimeters in size, introducing those pieces into a pipeline along with a stream of water in which is distributed a sufficient concentration of suspended flocculated flexible fibers to support each of the pieces of the coal, and passing the stream of water carrying the thus-supported pieces of coal, through the pipeline.

4,605,330

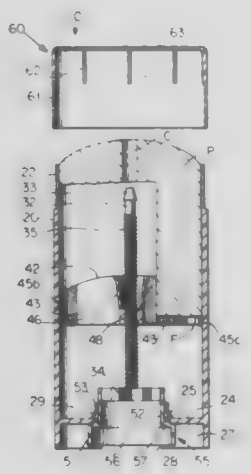
DISPENSING CONTAINER FOR STICK-SOLIDS

Michael J. Crowley, Maineville; Arthur H. Dornbusch, and Paul J. Green, both of Cincinnati, all of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Aug. 27, 1984, Ser. No. 644,429

Int. Cl.[4] B43K *21/08, 5/06*

U.S. Cl. 401—68 15 Claims



10. A dispensing container for solid stick-type products comprising:

(a) a tubular container body of substantially oval cross-section having an open upper end and a base member substantially closing the lower end of said container body, said base member having a central aperture formed therethrough;

(b) a cup-shaped closure cap telescoped over said upper end;

(c) an internally threaded follower slidably and non-rotatably disposed within said container body for axial movement therewithin, said follower being substantially fully retractable within said container body and including a central core having a plurality of radially disposed fin-like elements extending outwardly therefrom providing a partially open skeletal structure about the periphery of said central core adapted to permit axial flow of molten solid stick product therethrough during filling operations and later imbedment in and adherence to the solidified stick product; and

(d) means for manually varying the axial position of said follower within said container body; said varying means further comprising an externally threaded screw stem having cooperative engagement with said internal threads of said follower, and a rotating means disposed on the lower exterior of said base member and extending into said container body through said central aperture; said rotating means having a bore formed therein providing fluid communication from the exterior to the interior of said container body therethrough; and said screw stem being attached to said rotating means adjacent said bore by skeletal-structured mounting means further comprising at least one radially disposed spoke-like support arm which does not substantially block said bore and thereby permits axial flow of said molten solid stick product through said central bore and said mounting means during filling operations.

4,605,331

PRESSURIZED WRITING DEVICE WITH NEEDLE WEIGHT HAVING VALVE MEANS

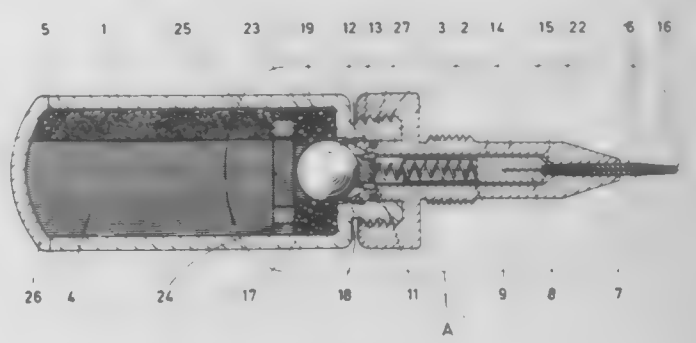
Kurt Held, Alte Strasse 1, 7218 Trossingen 2, Fed. Rep. of Germany

Filed Dec. 26, 1984, Ser. No. 686,322

Claims priority, application Fed. Rep. of Germany, Dec. 31, 1983, 3347708

Int. Cl.[4] B43K *8/00, 5/18*

U.S. Cl. 401—258 10 Claims



1. A writing device comprising:

a storage tank for Indian ink or another writing medium;

a propellant in the storage tank in the form of a liquid gas that is subject to its own vapor pressure and that acts directly on the writing medium contained in said tank;

a housing connected to the storage tank and open in the direction of said tank;

a tubular pen arranged on the housing, where the end of said pen situated in the interior of said housing is designed as a valve seat;

a drop weight member, displaceable in the interior of the housing, having at one end a valve body situated opposite the valve seat formed at the end of the tubular pen, so that said valve body can be sealingly positioned onto said valve seat; and

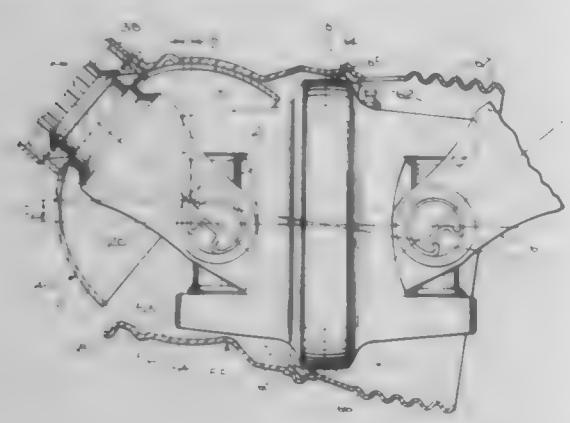
a needle, attached to the drop weight member, that is axially displaceable in the tubular pen and arranged so that it may act on said drop weight member to move the valve body from its closed, sealed position of the valve seat to an open position allowing the writing medium to flow through said pen.

4,605,332

UNIVERSAL JOINT GUARD

Roger D. Mayhew, Fredonia, and B. Bennett Reak, West Bend, both of Wis., assignors to Weasler Engineering, Inc., West Bend, Wis.

Filed Apr. 12, 1985, Ser. No. 722,340
Int. Cl.[4] F16B *11/00;* F16C *1/26*
U.S. Cl. 403—23 2 Claims



1. In a double universal joint having first and second yokes pivotally connected by corresponding cross-links to a double inner housing, a guard comprising:

a single bell element having a hemispherically shaped outer surface;

bearing means for mounting the bell element on the first yoke with the bell element opening toward the housing and being axially fixed and rotatable on the first yoke;

a boot for surrounding the housing, the boot having (a) a first end portion with a hemispherically shaped inner surface to mate in sliding contact with the hemispherically shaped outer surface of the bell element so that the bell element is captured inside the boot, (b) a central portion having a bearing surface therein, and (c) a second end portion from said central portion opposite from said first end portion, said second end portion being open; and

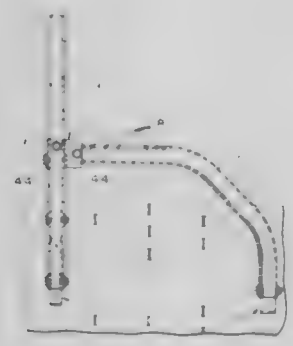
wherein the housing has a spherical outer surface in sliding contact with the bearing surface to allow the bearing surface and the boot to tilt on the housing as the first yoke is articulated relative to the housing.

4,605,333

DISH ANTENNAE MOUNTING STRUCTURE

Lyle W. Hovland, Murrysville, and James D. Klingensmith, Apollo, both of Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Division of Ser. No. 473,018, Mar. 7, 1983, Pat. No. 4,510,502.
This application Dec. 17, 1984, Ser. No. 682,426
Int. Cl.[4] B25G *3/00*
U.S. Cl. 403—27 1 Claim



1. A bolted joint connection for joining at least two members comprising:

a deformable portion of the first member having a bore extending therethrough;

a portion of the second member having an aperture extending therethrough;

a threaded bolt having a shank portion for extending through said bore and aperture; and

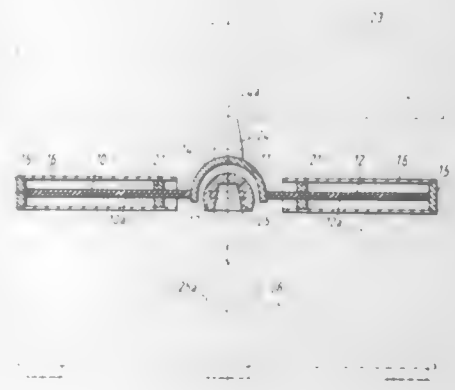
a nut for threading on said bolt to draw said first and second members tightly together, said nut, bolt, deformable portion and second member portion cooperating upon tightening to indicate to one tightening the nut and bolt when said nut and bolt are tightened to a predetermined extent, said predetermined extent of tightness being characterized by said deformable portion having undergone a predetermined amount of deformation.

4,605,334

LINKAGE MECHANISM FOR COUPLING TWO MOVABLE MEMBERS

Ivar Kalvatn, Volda, Norway, assignor to Ari Associates, Inc., San Rafael, Calif.

Filed Nov. 17, 1983, Ser. No. 552,666
Claims priority, application Norway, Nov. 17, 1982, 823841
Int. Cl.[4] F16M *13/00;* F16D *1/00*
U.S. Cl. 403—291 10 Claims



1. A linkage mechanism for connection between a pair of mutually movable members to provide torsionally restrained conical motion therebetween comprising:

a generally hemispherical yoke connected to one of the movable members;

a center support member connected to the remaining movable member, said center support member being nested within and spaced apart from said yoke;

a first pair of torsion bars projecting radially outwardly from and connected to the sides of said yoke;

a second pair of torsion bars projecting radially outwardly from and connected to said center support, said first and second pairs of torsion bars being substantially coplanar and defining a cross-shaped configuration in plan; and

brace means interconnecting adjacent torsion bars for transmitting torsional forces therebetween with said torsion bars functioning to restrain the relative motion between the movable members.

4,605,335

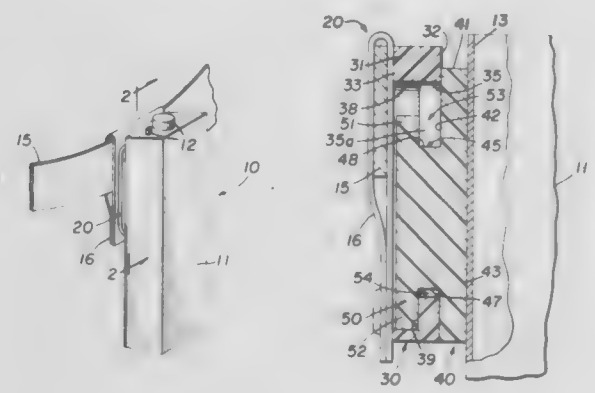
QUICK-RELEASE CONNECTOR WITH TEARDROP-SHAPED CONFIGURATION

Edward C. Otrusina, 19 W. 240 Oldfield Rd., Downers Grove, Ill. 60515

Filed Feb. 28, 1985, Ser. No. 706,673
Int. Cl.[4] F16D *1/06;* A45F *5/00*
U.S. Cl. 403—348 17 Claims

1. Quick-release connecting apparatus for detachably interconnecting two objects, such as a belt and a device to be carried on the belt, including in combination: a female member adapted to be secured to one of the objects and having a front surface, said female member having a generally teardrop-shaped opening in the front surface thereof and a recess formed behind said opening, said opening having a part-circular portion and a lobe portion projecting from said part-circular portion and having an axis which bisects the arc of said part-circu-

lar portion, said recess being larger than said opening and communicating with the entire area of said opening and defining a bearing surface along the periphery of said opening, a male member adapted to be secured to the other object and having a stud extending therefrom and a button at the distal end of said stud, said button having the same configuration as said opening and being sized to pass therethrough but having a cross-sectional area substantially greater than that of said stud so that said button forms a flange extending laterally from said



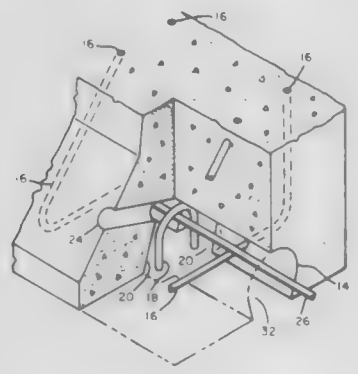
stud, said male member being rotatable about the axis of said stud between first and second positions when said stud is disposed in said opening with said button disposed in said recess, said button being aligned with said opening when said male member is in the first position thereof for permitting insertion of said button into and withdrawal of said button from said opening, said button being out of alignment with said opening and engageable with said bearing surface when said male member is in the second position thereof for preventing detachment of said male body from said female body.

4,605,336

JOINT CONSTRUCTION OF CONCRETE MEMBERS

Robert A. Slaw, Sr., Hemlock Trail, R.D. 4, Lehighton, Pa. 18235

Filed Jul. 12, 1984, Ser. No. 630,281
Int. Cl.[4] E01F *13/00*
U.S. Cl. 404—6 **6 Claims**



1. A union for concrete units intended to be used to couple a precast concrete parapet to a substantially flat concrete roadway surface, comprising in combination:

a precast concrete parapet having a substantially longitudinal horizontal groove therethrough;

a substantially flat concrete roadway contiguous to said precast concrete parapet, said longitudinal groove being adjacent to said concrete roadway;

a first coupling member extending from said precast concrete parapet to within said longitudinal groove;

a second coupling member extending from said concrete roadway to within said longitudinal groove;

a locking rod positioned in coupling relationship with said first coupling member and said second coupling member;

pressure pumped concrete grout compound within said longitudinal groove enclosing said first coupling member, said second coupling member and said locking rod;

a portion of said longitudinal horizontal groove adjacent to said second coupling member having an outwardly flaring wedged shaped cross chamber section;

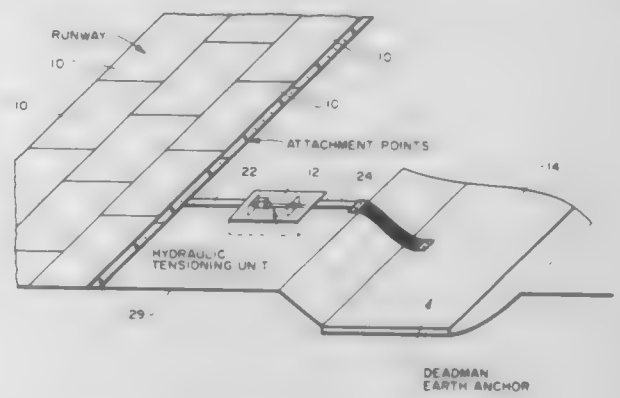
a portion of said longitudinal groove adjacent to said first coupling member having an inwardly flaring wedged shaped cross member section.

4,605,337

EXPEDIENT RUNWAY SURFACING WITH POST TENSIONING SYSTEM FOR EXPEDITIONARY AIRFIELDS

Preston S. Springston, Oxnard, Calif., and Richard L. Claxton, Evanston, Ill., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 11, 1985, Ser. No. 702,091
Int. Cl.[4] E01C *9/08*
U.S. Cl. 404—35 **6 Claims**



1. An expedient airfield runway surfacing system having an anchoring and tensioning system for maintaining constant tension on the runway while allowing for both expansion/contraction due to temperature and dynamic aircraft braking loads, comprising:

a. A plurality of prefabricated portable panels interconnected together to form airfield surfacing matting over a prepared ground subsurface and operating to distrubute aircraft wheel loads to the underlying subsurface;

b. a plurality of hydraulic automatic tensioning means and earth anchoring means positioned at at least one end of the airfield along the perimeter of the airfield surfacing matting formed from said the plurality of prefabricated portable panels;

c. said tensioning means each having one side thereof connected to an edge of said airfield surfacing matting and the opposite side thereof connected to an earth anchoring means and being adjustable to airfield runway expansion/-contraction conditions as determined by the ambient temperatures of said airfield surfacing matting;

d. each said tensioning means being operable to maintain prescribed reaction forces to provide automatic constant and and uniform tension on said airfield surfacing matting during dynamic shock loading due to aircraft landing and braking while simultaneously compensating for expansion/contraction of said airfield surfacing matting due to ambient temperature changes; wherein development of a matting bow wave ahead of the landing gear of braking aircraft is avoided and warping of the runway surfacing as a result of expansion/contraction is prevented.

4,605,338

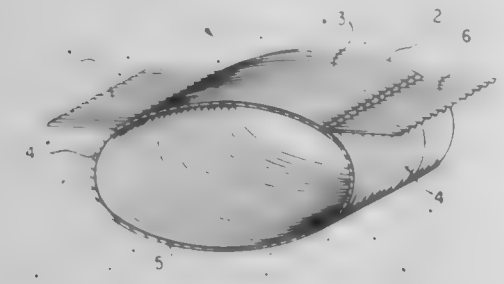
CULVERT

Carl W. Peterson, 200, 7603-104 Street, Edmonton, Alberta, Canada

Filed May 22, 1984, Ser. No. 612,819
Claims priority, application Canada, May 31, 1983, 429322
Int. Cl.[4] E01F *5/00*
U.S. Cl. 405—124 **10 Claims**

1. A culvert structure comprising an elongated conduit having top, bottom and side surfaces, said culvert structure comprising a pair of wing members being attached to opposite

side surfaces of said conduit along a marginal edge of each of said wing members and extending laterally outwardly therefrom a substantial distance for distributing downward forces acting on the culvert outwardly from said conduit when in use,



the attachment of each of said wing members to said conduit being so constructed that reactive forces developed by said wing members are transferred to the top of said conduit without causing significant bending moment effects in the top surface of said conduit.

4,605,339

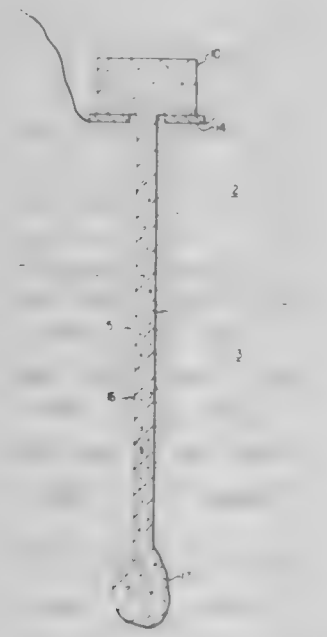
SITU PILE CONSTRUCTION IN GROUND LIABLE TO UPLIFT

Roger A. Bullivant, Burton-on-Trent, England, assignor to Roger Bullivant of Texas, Inc., Grand Prairie, Tex.

Continuation-in-part of Ser. No. 288,133, Jul. 29, 1981, abandoned. This application Jan. 27, 1984, Ser. No. 574,564

Int. Cl.[4] **E02D** *5/34, 5/44*

U.S. Cl. 405—237 **13 Claims**



1. A method of constructing a pile in situ through a region of unstable soil to rest on a region of stable soil, said method comprising the steps of:

(a) forming a hole through the unstable soil to a region of stable soil by allowing an elongate self-propelled soil displacing mole to descend to the stable soil, said mole drawing down with itself a first tubular member of internal diameter larger than the external diameter of the mole to line the hole;

(b) withdrawing the mole up through the bore of the first tubular member;

(c) inserting a second tubular member within the first tubular member, the second tubular member having an external diameter smaller than the internal diameter of the first tubular member and an internal diameter larger than the diameter of said mole;

(d) filling the hole within the second tubular member with concrete;

(e) inserting said mole into the filled hole before the concrete sets to produce a pile footing in said stable soil at the base of the second tubular member;

(f) withdrawing said mole;

(g) refilling the hole in said second tubular member with concrete and allowing the concrete to set to form an in situ double cased pile with an integral footing; and

(h) completing steps (d) through (g) whereby the first tubular member may receive heave loads from the surrounding soil and move longitudinally along the axis of the pile without transfer of such loads to the second tubular member thereby isolating the pile from frictional engagement with the unstable soil.

4,605,340

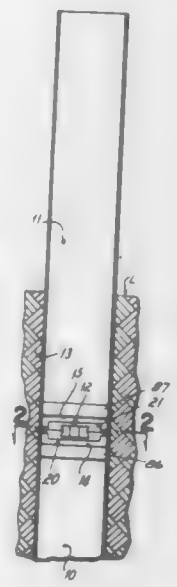
PILE SPLICE

Karl Stephan, 550 Inlet Dr., Marco Island, Fla. 33937

Filed Mar. 28, 1984, Ser. No. 594,258

Int. Cl.[4] **E02D** *5/10, 5/30;* **F16B** *7/00*

U.S. Cl. 405—252 **30 Claims**



1. Splicing apparatus for joining pilings together and comprising:

a splice plate adapted to be mounted on each of the adjoining ends of two piles to be joined together, each said plate including a groove extending from one side of said plate to another therein;

at least two movable, separate and independent cam means for disposition on opposite sides of said grooves within adjoining plates for drawing said plates together, and

drive wedge means, independent of said cam means, for engaging and expanding said cam means within said grooves to draw and hold adjacent splice plates together.

4,605,341

MINE ROOF SUPPORT AND ATTACHMENT MEANS THEREFOR

Archelaius D. Allen, Preston, England, assignor to Dobson Park Industries Plc., Nottingham, England

Filed Oct. 22, 1984, Ser. No. 663,496

Claims priority, application United Kingdom, Oct. 22, 1983, 8328281

Int. Cl.[4] **E21D** *15/44, 23/08*

U.S. Cl. 405—297 **16 Claims**

1. A mine roof support suitable for use in thin seam mines, said support comprising:

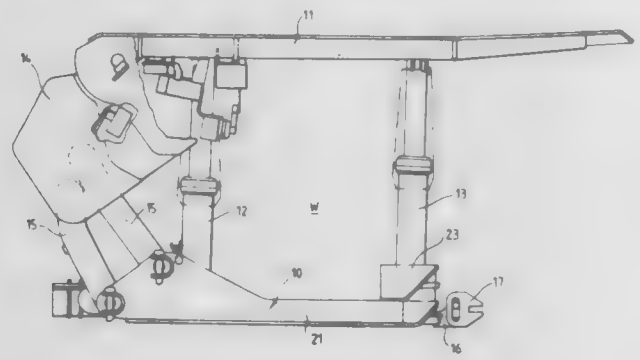
a base unit having a height;

a mine roof engaging canopy;

support means for separating said base unit and said canopy to provide a miner's walkway having a vertical space between said base unit and said canopy;

attachment means connected to said base unit for attaching the mine roof support to a flexible conveyor, said attachment means including at least two telescopic rams each

having a piston and a cylinder, a first common connection means for connecting said cylinders together, and a second common connection means for connecting said pistons together, at least one of said first and second common connection means including fluid flow passages through which hydraulic fluid can be fed simultaneously to each said cylinder, said rams being extended or retracted in unison when fluid is fed to or removed from said cylinders; and



a protective structure connected to said base unit, said rams being positioned in side-by-side relationship under said protective structure, said protective structure providing a platform in said walkway which miners can walk or crawl over, or sit on, said attachment means and said protective structure not extending substantially above said height of said base unit, thereby leaving said vertical space available in said walkway substantially unaltered.

4,605,342

DEVICE FOR INTRODUCING DOSED QUANTITIES OF PULVERIZED SOLID MATERIALS INTO A CARRIER GAS STREAM

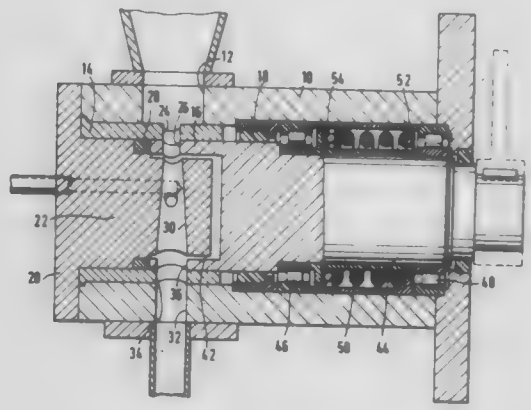
Edouard Legille, Luxembourg; Léon Ulveling, and Pierre Mailliet, both of Howald, all of Luxembourg, assignors to Paul Wurth S.A., Luxembourg, Luxembourg

Filed Apr. 10, 1985, Ser. No. 721,565

Claims priority, application Luxembourg, Apr. 11, 1984, 85298

Int. Cl.⁴ B65G *53/46*

U.S. Cl. 406—129 **16 Claims**



1. A device for introducing pulverized materials in a carrier gas stream comprising:

housing means;

inlet aperture means in said housing means for delivery of pulverized material;

outlet aperture means in said housing means, said outlet aperture means being positioned in opposing relation to said inlet aperture means;

inner sleeve means in said housing and extending across said inlet and outlet aperture means, said inner sleeve means having an axial bore;

outer sleeve means, said outer sleeve means being coaxial with said inner sleeve means and extending across said inlet and outlet aperture means, at least one of said outer and inner sleeve means being rotatable about its longitudinal axis;

means for rotating at least one of said outer and inner sleeve means;

at least a first pair of opposing slots on said inner sleeve means and at least a second pair of opposing slots on said outer sleeve means, said first and second pairs of opposing slots being capable of mutual overlapping alignment with each other and with said inlet and outlet aperture means to define a pair of variable sized opposing passages;

cheek means positioned on one end of said housing means, said cheek means including an extension portion which extends axially into said inner sleeve means axial bore and extending across said inlet and outlet aperture means, said cheek means extension portion including a channel therethrough, said channel being fixed in axial alignment with said inlet and outlet aperture means and being connectable to a pressurized fluid source.

4,605,343

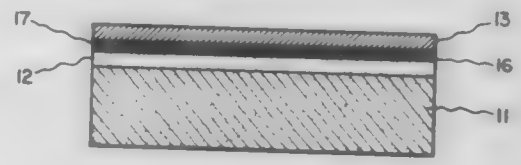
SINTERED POLYCRYSTALLINE DIAMOND COMPACT CONSTRUCTION WITH INTEGRAL HEAT SINK

Louis E. Hibbs, Jr., Schenectady, and George C. Sogoian, Scotia, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Sep. 20, 1984, Ser. No. 652,242

Int. Cl.⁴ B24B *1/00*

U.S. Cl. 407—119 **6 Claims**



1. In a composite tool insert construction in which a layer of sintered polycrystalline diamond is supported on and bonded to a cemented carbide substrate, the improvement comprising a metallic heat sink layer having a thickness between about 0.01 and 0.1 inches and covering at least the outer diamond surface of said diamond layer, said heat sink layer being selected from the group consisting of copper, tungsten alloyed with cobalt, and nickel or iron and nickel phosphorus alloys, and said heat sink layer being bonded to said diamond surface via a bonding medium comprising at least one intermediate layer of metal selected from the group consisting of molybdenum, tungsten, titanium, zirconium and chromium.

4,605,344

DEVICE FOR DRILLING HOLES IN A STACK OF PLATES

Gunter Hartmann, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Aug. 2, 1984, Ser. No. 636,923

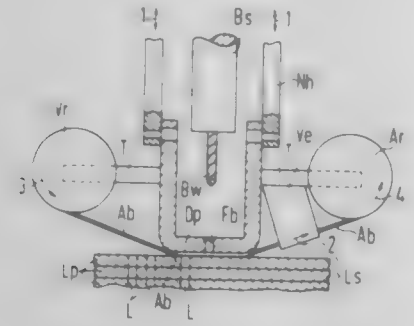
Claims priority, application Fed. Rep. of Germany, Sep. 20, 1983, 3333978

Int. Cl.⁴ B23B *39/00*

U.S. Cl. 408—95 **17 Claims**

1. In a device for drilling holes into a workpiece, said device having a drill spindle accepting a drill bit and clamping means for engaging the workpiece adjacent the location of the hole being drilled and for holding the workpiece during the drilling operation, the improvements comprising means for positioning a cover tape on the surface of the workpiece beneath clamping means and directly beneath the drill bit, said means for positioning enabling the tape to be displaced in a longitudinal

direction, and said clamping means pressing the cover tape onto a surface of the workpiece during a drilling operation so



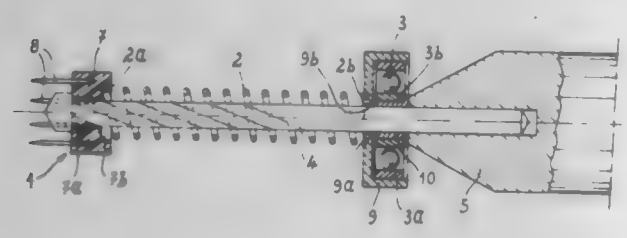
that as the drill bit drills through the cover tape and into the workpiece, the tape prevents ejecta from the workpiece.

4,605,345

DRILLING APPARATUS WITH WALL-COVERING PROTECTION

Michel Giughèse, 51, rue de la Balme, Lyon, France

Filed May 25, 1984, Ser. No. 614,437
Claims priority, application France, May 25, 1983, 83 08952
Int. Cl.[4] B23B *51/00*
U.S. Cl. 408—95 **10 Claims**



1. A tool for use in interior decoration for the drilling of a hole in a support covered by a yieldable and tearable covering, the tool comprising:

a chuck member rotatable about an axis;

a solid drill bit received coaxially in said chuck member and adapted to bore axially forward into said support and having a front end remote from said chuck member for penetrating axially forward through said covering into said support when pressed axially forward thereagainst while rotating about the axis;

a covering-protective sleeve member closely surrounding said bit and having a front face turned away from said chuck member a multiplicity of pins projecting axially forward from said face and forming respective axially forwardly directed points distributed uniformly in at least one circle around said bit for piercing said covering, lodging in said support, and holding said sleeve member out of contact with said covering;

a coil spring surrounding said bit and braced axially between said sleeve member and said chuck member and enabling travel of said bit through said sleeve member with compression of said spring; and

at least one bearing operatively connected between one of said members and said spring to enable rotation of said chuck member and said bit while permitting said sleeve member to be immobilized by said points upon engagement of said covering therewith.

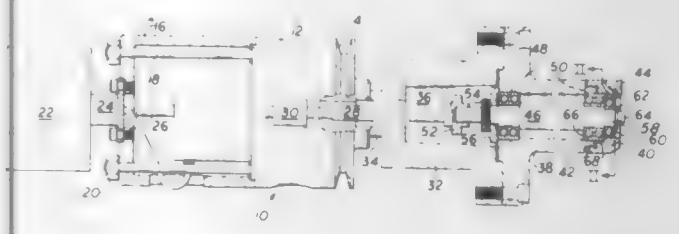
4,605,346

TOOL WEAR COMPENSATOR

David J. Trevarrow, Horton, Mich., assignor to Schrader Machine & Tool, Inc., Hanover, Mich.

Filed Jun. 4, 1984, Ser. No. 616,714
Int. Cl.[4] B23B *51/00*
U.S. Cl. 408—147 **4 Claims**

1. A fine adjustment for cutting tools mounted upon a machine tool wherein a cutting tool is mounted upon a laterally displaceable tool carrier affixed to a support, the improvement, comprising, the tool carrier comprising an elongated lever having an axis, an outer end, an inner end and a spherical pivot surface intermediate said ends defining a lever pivot point, a pivot support defined upon the support pivotally supporting said lever at said spherical pivot surface, said pivot support including a key preventing rotation of said lever about its axis, a cutting tool mounted on said lever outer end, a shaft rotat-



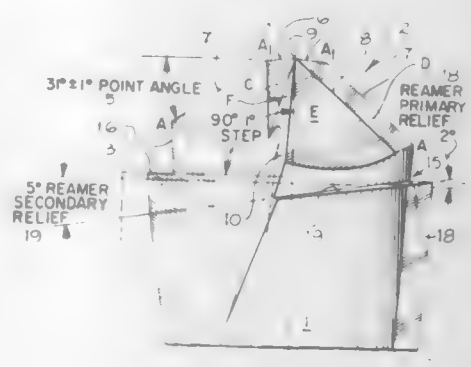
ably mounted upon the support having an axis of rotation, a rotatable eccentric connection interconnecting said shaft and said lever inner end having an eccentric offset with respect to said shaft axis of rotation whereby rotation of said shaft laterally displaces said lever inner end pivoting said lever outer end and cutting tool about said lever pivot point laterally with respect to the shaft axis, and an electric stepping motor drivingly connected to said shaft for rotatably indexing said shaft.

4,605,347

HIGH SPEED DRILL REAMER

Marvin S. Jodock, San Jose, Calif., and Fred Maternus, Chicago, Ill., assignors to Lockheed Missiles & Space Company, Inc., Sunnyvale, Calif. and National Carbide Tool, Inc., Skokie, Ill.

Filed Dec. 27, 1982, Ser. No. 453,278
Int. Cl.[4] B23B *51/00*
U.S. Cl. 408—224 **17 Claims**



1. A drill bit having a pair of spiral flutes separated by a pair of webs, each of said webs terminating at the cutting end of said bit in first, second, third, and fourth facets, a trailing edge and primary and secondary cutting edges contained in the plane of said first facet, each of said webs having a step floor extending from the periphery of said webs to a smooth wall, said wall extending parallelly to the drill axis from said step floor to said facets, and a relief in said step floor intersecting with said flute surface thus to constitute a reamer cutting edge.

4,605,348

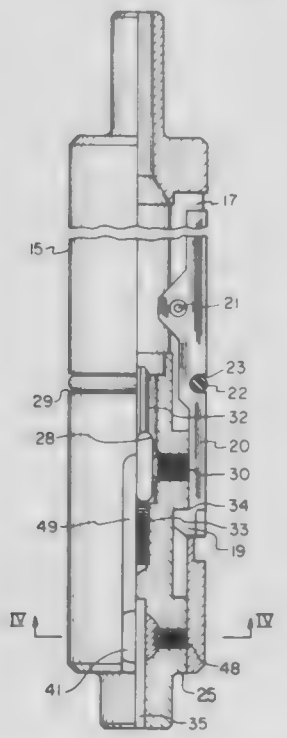
QUICK RELEASE ADAPTER

Charles J. DeCaro, Pittsburgh, Pa., assignor to Textron Inc., Providence, R.I.

Filed Oct. 29, 1982, Ser. No. 437,542
The portion of the term of this patent subsequent to Jan. 1, 2002, has been disclaimed.
Int. Cl.[4] B23B *31/10*
U.S. Cl. 408—239 A **1 Claim**

1. In a reversible adapter for a power driven torquing tool, including an elongated cylindrical body having a bore extending inward from each of a first and second end and adapted to accommodate a fastener driver and a drill bit respectively, said

adapter being connectable at both its first and second ends to the torquing tool so as to be reversible in relation thereto, the improvement comprising quick release means cooperating with at least one of said bores to detachably retain the driver or bit within the bore, said driver or bit having a flattened shank section said body including an opening radially therethrough and in communication with said at least one bore, and a shuttle, said shuttle including an axially extending threaded bore accommodating a first set screw for engaging the flattened shank



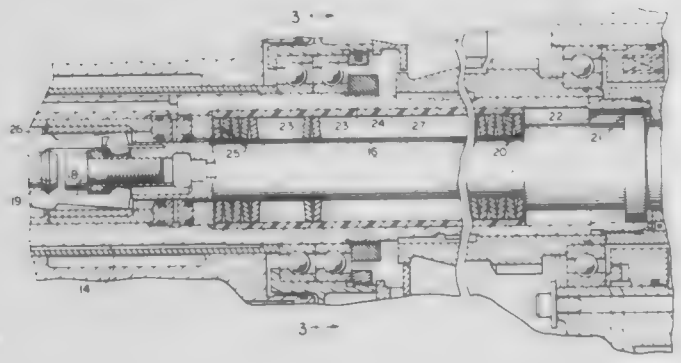
section, a clear through slot extending transverse of the shuttle longitudinal axis and in communication with the threaded bore and a J-shaped peripheral slot accommodating a second set screw extending radially through said adapter, said shuttle being rotatable on an axis perpendicular to the longitudinal axis of the adapter between a first position wherein the second set screw is accommodated by a short leg of the J-shaped slot and a second position wherein the second set screw is accommodated by a long leg of the J-shaped slot, said shuttle being depressable to release the driver or bit in said second position.

4,605,349

SPRING CENTERING DEVICE FOR TOOL SPINDLES

Kendall F. Bone, Cincinnati, Ohio, assignor to Cincinnati Milacron Inc., Cincinnati, Ohio

Filed Jan. 7, 1985, Ser. No. 689,260
Int. Cl.[4] B23C *5/26*
U.S. Cl. 409—141 **4 Claims**



1. In a machine having a rotatable tool spindle and a central spring-assisted mechanism utilizing a linear-operating spring, a spring centering device, comprising:

(a) radially yieldable means coaxially mounted with said spindle for contacting at least a peripheral portion of said linear-operating spring; and

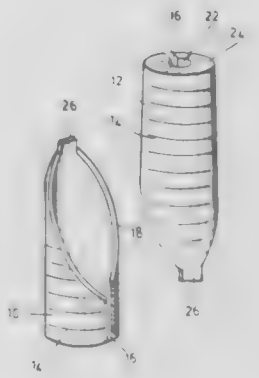
(b) means for supporting and centering said yieldable means while said yieldable means is in contact with said spring.

4,605,350

EXPANSION SHELL

Izak Chater, 25 Robin Street, and Allan H. G. Brown, 35 Marilyn Street, both of Flamwood, Klerksdorp, South Africa

Filed Oct. 25, 1983, Ser. No. 545,273
Int. Cl.[4] F16B *13/04*
U.S. Cl. 411—75 **6 Claims**



1. An expansion assembly which is adapted during use to be expanded into contact with the wall of a hole in which it is placed, comprising:

a first shell member of generally tubular shape, the member having a first end which is inclined to its longitudinal axis from a first position at which the wall of the member has substantially its greatest axial length to a second position, diametrically opposing the first position, at which the wall of the member has substantially its shortest axial length, the first end being disposed substantially in a plane, the member being formed with at least a first line of weakness in its wall which extends in the axial direction of the member and with a formation positioned at the first end where the wall of the member has substantially its greatest axial length, the formation projecting out of the plane of the first end;

a second shell member that is substantially identical to the first shell member; and

an elongate member passing through the first and second shell members, the shell members being arranged so that their first ends respectively are opposed to and in contact with each other and so that the formation of each shell member engages the first line of weakness of the other shell member.

4,605,351

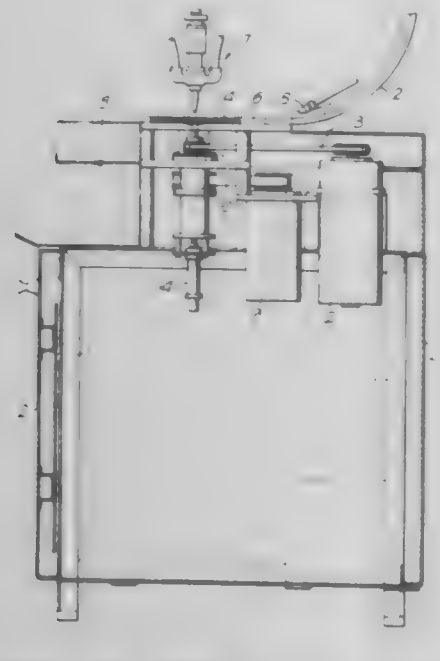
CLOSURE LINING MACHINE

Clive D. Hatcher, Marlow Bottom; Alan Hill, Stanmore, and Geoffrey W. King, Northolt, all of England, assignors to W. R. Grace & Co., Lexington, Mass.

Filed Nov. 15, 1984, Ser. No. 671,550
Int. Cl.[4] B21D *51/46*
U.S. Cl. 413—58 **11 Claims**

1. A closure lining machine comprising a star wheel having one or more pockets in its outer peripherial edge to receive a closure to be lined and move it to a lining applicator and thence to an outlet, the lining applicator being located above the star wheel and in alignment with the closure in a pocket of the star wheel to apply a lining compound to the closure, the star wheel being driven by a stepping motor and a control circuit including a variable means, variable in dependence upon the number of pockets in the star wheel, the control circuit controlling the stepping motor and hence movement of the star wheel and also controlling operation of the lining applicator so

that upon changing the star wheel to accommodate a different size of closure the control circuit is varied to synchronize the



movement of the star wheel and the operation of the lining applicator to the different sizes of closure.

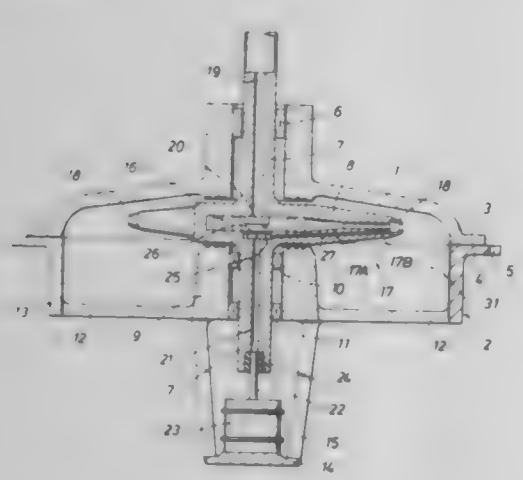
4,605,352

CENTRIFUGAL PUMP FOR PULVERIZED MATERIAL

Andrew M. Scott; Bernardus B. Quist, and Teunis Terlouw, all of Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Division of Ser. No. 699,494, Feb. 8, 1985, abandoned, which is a continuation of Ser. No. 435,011, Oct. 18, 1982, abandoned.
This application Jun. 18, 1985, Ser. No. 746,441
Claims priority, application United Kingdom, Nov. 20, 1981, 8135066

Int. Cl.[4] B65G *53/40*
U.S. Cl. 414—217
1 Claim



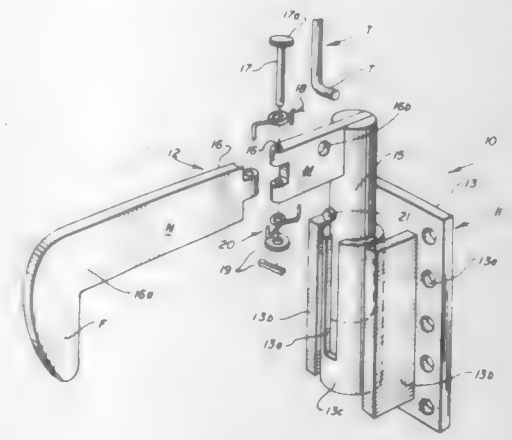
1. A centrifugal pump for continuously feeding pulverized material from a low pressure zone into a high pressure zone, the pump comprising a hollow rotor with a central chamber communicating with a plurality of channels extending toward the outer rim of the rotor, each channel communicating at the outlet thereof with a nozzle and the interior of each nozzle communicating with a conduit for the supply of gas, the interior of each nozzle being frusto-conically shaped, and each nozzle being connected to the rotor by a flexible bellows allowing vibration of the nozzle with respect to the rotor.

4,605,353

VEHICLE RESTRAINT

Norbert Hahn, South Milwaukee, Wis., and Arthur A. Olson, Jr., Glenview, Ill., assignors to Rite-Hite Corporation, Milwaukee, Wis.

Filed Aug. 24, 1983, Ser. No. 526,090
Int. Cl.[4] B60D *1/00;* B65G *67/02*
U.S. Cl. 414—401
5 Claims



1. A restraint for releasably securing a parked vehicle against an adjacent structure and preventing accidental transverse movement of the vehicle away from the structure, said restraint comprising a first means fixedly mountable on the structure, and a second means mounted on a segment of said first means for selective relative movement in a vertical plane and for selective relative pivotal movement about a vertical axis defined by said first means segment between operative and inoperative modes only when said second means assumes a predetermined elevated position with respect to the first means segment and a surface supporting and subtending the parked vehicle, said second means having an elongated downwardly extending first section in vertical sliding engagement with said first means segment and being adapted to turn about a longitudinal axis of said first section which is coaxial with said vertical axis, and an elongated second section projecting angularly from an upper end portion of said first section, said second section having a distal end portion provided with a depending projection, said distal end portion being adapted, when said second means is in an operative mode, to overlie and have the depending projecting thereof interlock with a transverse member depending from a portion of the parked vehicle adjacent the structure; said second section including releasable safety means effecting separation of said first section and at least a portion of said second section upon an external pulling force exceeding a predetermined amount being exerted on the depending projection of the distal end portion of said second section when said second means is in an operative mode; said second section also including inner and outer segments connected to one another for pivotal movement about a secondary axis parallel to and spaced from said vertical axis, said inner segment having one end thereof fixedly connected to the upper end portion of said first section, said outer segment including the depending projection of the distal end portion; the safety means including a shearable pintle effecting the pivotal connection between the inner and outer segments.

4,605,354

SLIP SENSITIVE ROBOT GRIPPER SYSTEM

Timothy P. Daly, Fishkill, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

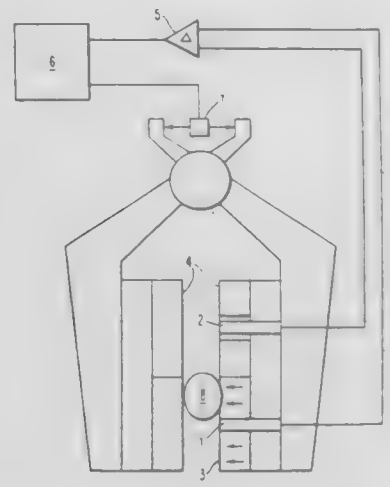
Filed Jul. 30, 1984, Ser. No. 635,988
Int. Cl.[4] B66C *1/00*
U.S. Cl. 414—730
6 Claims

1. A gripping robot having a gripper characterized by

(a) slip sensing means (1,2,3,4,5) at least partially mounted in the gripper and providing an output related to rapid acceleration of a linearly deformed resilient pad as it springs back to rest position;

(b) slip determining control means (6), responsive to said slip

sensing means and other inputs, to provide control of gripping action as a function of inputs including output from said slip sensing means, to provide a gripper control output; and



(c) servo means (7) responsive to said control means 6 to provide controlled gripping action to the gripper;

whereby an object held by the gripper may be imparted controlled slipping motion.

4,605,355

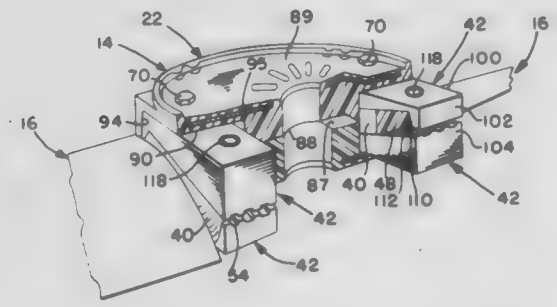
PROPELLER

Robert J. Davis, Newburry; Charles R. Anspach, Painesville, and John T. Venaleck, Madison, all of Ohio, assignors to Competition Aircraft, Inc., Painesville, Ohio

Filed Mar. 31, 1983, Ser. No. 480,711

Int. Cl.[4] B64C *11/06*

U.S. Cl. 416—208 **33 Claims**



1. An aircraft propeller comprising a rotatable hub having a plurality of sockets, a plurality of propeller blades each with an air foil portion and a root portion of noncircular transverse cross-section, and a plurality of pairs of opposed pitch blocks received within respective sockets to hold therebetween the root portions of respective blades, each pair of pitch blocks having a noncircular surface engaging a noncircular outer side of the root portion of the respective blade to fix the blade at a thusly determined pitch angle to the axis of the hub.

4,605,356

APPARATUS FOR CONTINUOUSLY PRESSURE-FEEDING SLURRY

Kenji Uchida, Kashiwa; Masakatsu Sakamoto, Matsudo; Makoto Saito, Ibaraki, and Yukishige Kamino, Tsuchiura, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

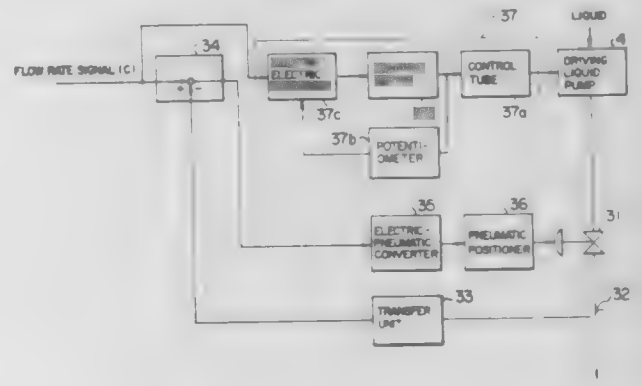
Filed Feb. 10, 1984, Ser. No. 578,789

Claims priority, application Japan, Mar. 16, 1983, 58-42148

Int. Cl.[4] F04F *11/00*

U.S. Cl. 417—102 **1 Claim**

1. A continuous pressure slurry feeding apparatus comprising a plurality of supply chambers respectively accommodating a float, a driving liquid pump and a slurry pump, said supply chambers being arranged in parallel to each other and being respectively connected to driving liquid supply and discharge pipes by means of change-over valves for pressure feeding of driving fluid in and out of the upper portion of each of the chambers, slurry supply and discharge pipes respectively connected to the lower portion of each of the chambers by means of lift type change-over valves for pressure feeding of slurry in and out of the lower portion of each of the chambers, sensor means for detecting a position of the float floating on an interface between slurry and driving liquid within each of said supply chambers, means for opening/closing said valves provided for the upper and lower portions of each of said supply chambers in accordance with a detecting signal of said sensor means whereby the slurry may be transferred under pressure through the lower portions of the supply chambers, and wherein means are provided for maintaining a differential pressure between a pressure at a normal flow rate and a pressure in a shut-off condition of the valve of the driving liquid pump which is higher than a pressure required for opening the lift type change-over valves positioned on the lower side of the chambers, wherein said means for maintaining includes a rotational speed control of said driving liquid pump which is carried out by a rotational speed control mechanism for keeping the rotational speed of the driving liquid pump under a condition in which an output pressure is provided exceeding the differential pressure of said driving liquid pump, and wherein said rotational speed control mechanism comprises a fluid joint having a control tube, a potentiometer, and electric-electric positioner and a control motor, whereby the rotational speed of said driving liquid pump corresponding to a flow rate which is required for feeding the slurry under pressure is controlled by adjusting the position of said control tube of said fluid joint.



4,605,357

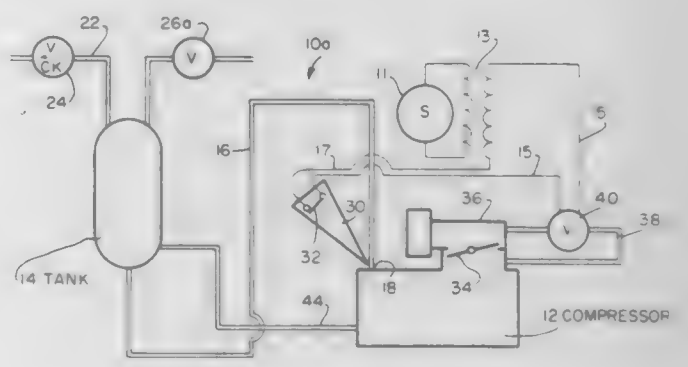
LUBRICATION SYSTEM FOR A COMPRESSOR

Jeffrey S. Keith, Charlotte, N.C., assignor to Ingersoll-Rand Company, Woodcliff Lake, N.J.

Division of Ser. No. 621,750, Jun. 18, 1984. This application Nov. 25, 1985, Ser. No. 801,245

Int. Cl.[4] F04B *39/02, 49/00*

U.S. Cl. 417—228 **5 Claims**



1. In combination with a gas compressor, a lubrication system therefor, comprising:

first means for conducting gas to said gas compressor;

second means for conducting gas and lubricant from said gas compressor;

reservoir means for storing lubricant; and

conduit means for supplying lubricant from said reservoir means to said gas compressor;

means, coupled to said first means, operative for controllingly modulating the gas conduct of said first means;

means, coupled to said conduit means, for directly communicating with lubricant therewithin and for sensing a given condition of lubricant therein; and

means, coupled to said sensing means and said modulating means, responsive to a given setpoint of said given condition, as sensed by said sensing means, for operating said modulating means.

4,605,358

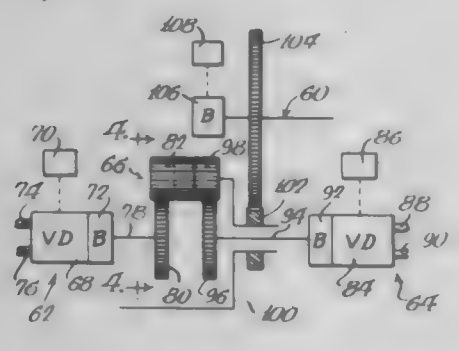
INTEGRATED POWER DRIVE AND POWER TRANSFER SYSTEM

Wesley A. Burandt, Rockford, Ill., assignor to Sundstrand Corporation, Rockford, Ill.

Filed Dec. 24, 1984, Ser. No. 685,909

Int. Cl.[4] F04B *35/00;* **F16H** *39/14, 39/00*

U.S. Cl. 417—236 **16 Claims**



1. A power drive and power transfer system comprising, a pair of power conversion devices connected one in each of a pair of separate power circuits and each having a rotatable drive shaft associated therewith, gear means interconnecting said rotatable drive shafts, an output shaft connected to said gear means to be driven thereby and transmit power from said power conversion devices to provide a power drive, and means for holding said output shaft against rotation whereby power may be transferred from one power circuit to the other through said gear means and said power conversion devices.

4,605,359

RADIAL PLUNGER PUMP

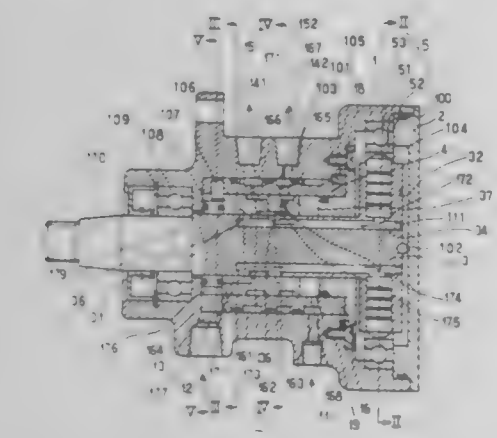
Masahiko Suzuki; Masatoshi Koroyanagi; Kouichi Moriguchi, and Kazuma Matsui, all of Aichi, Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Feb. 28, 1985, Ser. No. 706,930

Claims priority, application Japan, Feb. 28, 1984, 59-38364

Int. Cl.[4] F04B *27/04, 49/06*

U.S. Cl. 417—270 **8 Claims**



1. A radial plunger pump, comprising:

a housing;

a rotor including a shaft having a substantially coaxially circumferential enlargement providing a body thereon arranged for rotation therewith;

means defining a plurality of angularly spaced, radially aligned, radially outwardly opening cylinder cavities in said rotor body;

a respective piston-like plunger sealingly, slidingly received in each said cylinder cavity and being constructed and arranged for reciprocating movement radially of said rotor body upon rotation of said rotor thereby to increase and decrease the volume of a respective chamber defined in the respective said cavity, radially inwardly of an axially inner end of such plunger;

means defining a cavity in said housing including a first portion which is constructed and arranged to enclose said rotor body and an adjoining second portion which is constructed and arranged to enclose a portion of said shaft;

said rotor body and shaft portion being received in said first and second portions of said housing cavity, means journalling said rotor with respect to said housing for rotation about the longitudinal axis of said rotor; with a portion of said shaft being accessible for application of rotary power thereto for rotating said rotor about said axis;

said first portion of said housing cavity having inner peripheral wall means including, cam surface means which are curved about to form an endless path that is eccentric with respect to said rotor body;

said plungers being constructed and arranged to ride in centrifugally-urged contact with said cam surface means as said rotor is rotated, thereby oscillating each plunger in the respective said cylinder/cavity and correspondingly cyclically increasing and decreasing the volume of the respective said chamber formed in such cylinder cavity;

means defining a respective fluid passageway communicated with each said cylinder cavity chamber and extending within said rotor body and said shaft to at least one site located intermediate the longitudinal extent of such shaft, at which at least one site each such fluid passageway emerges from said shaft;

means defining at least one fluid suction port through said housing to said housing cavity;

means defining at least two fluid discharge ports through said housing from said housing cavity;

a switching valve received within and movably mounted on said housing as a tubular member coaxially received radially between said shaft and said housing;

said switching valve including suction passageway means constructed for periodically connecting a continually changing at least one but less than all of said fluid passageways of said rotor to said at least one fluid suction port of said housing and these only during a predetermined portion of each cycle of rotation of said rotor while each corresponding cylinder cavity chamber is increasing in volume;

said switching valve further including discharge passageway means constructed and arranged for periodically connecting a continually changing at least one but less than all of said fluid passageways of said rotor to a selectable at least one of said at least two fluid discharge ports of said housing and these only during a predetermined portion of each cycle of rotation of said rotor while each corresponding cylinder cavity chamber is decreasing in volume;

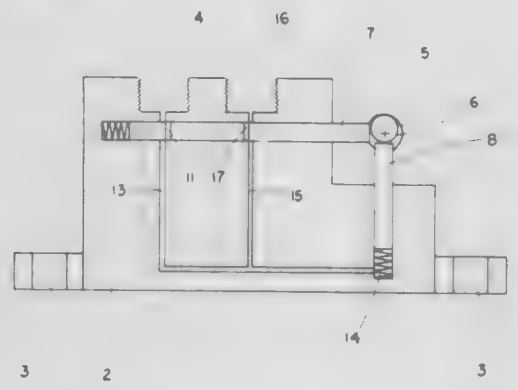
said switching valve being constructed and arranged for movement between at least two positions in at least one of which said discharge passageway means connect the respective said at least one fluid passsageway of said rotor with at least one different one of said at least two fluid discharge ports of said housing than it does when positioned in at least another of said at least two positions.

4,605,360

REVERSIBLE EXPANSIBLE CHAMBER HYDRAULIC PUMP

James M. Swartwood, 7927 Lazy S. La. NE., Bremerton, Wash. 98310

Filed Jan. 29, 1985, Ser. No. 696,166
Int. Cl.[4] F04B *19/22, 21/02*
U.S. Cl. 417—518 **1 Claim**



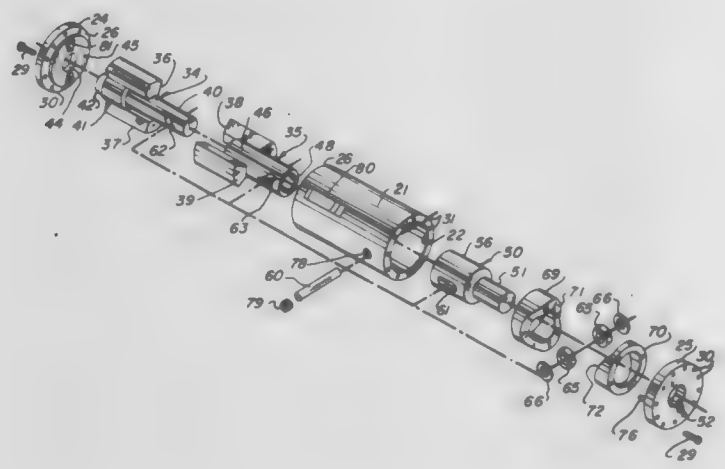
1. A reversible, expansible chamber hydraulic pump comprising, a pump block, first and second fluid ports disposed in said block, a rotating input shaft having an axis of rotation, said input shaft having an eccentric cam, a pump piston reciprocating in a pump chamber, a reciprocating slide valve, said pump piston and said slide valve both being disposed perpendicular to said input shaft, said pump piston and said slide valve being actuated by said eccentric cam, said pump piston and said slide valve being disposed perpendicular to each other, fluid passages being provided such that said reciprocating slide valve alternately communicates one of said ports to the pump chamber, and at the same time blocks communication between the other port and the pump chamber.

4,605,361

OSCILLATING VANE ROTARY PUMP OR MOTOR

Robert K. Cordray, 1441 W. 46th Ave., #17, Denver, Colo. 80211

Filed Jan. 22, 1985, Ser. No. 693,136
Int. Cl.[4] F02B *53/00*
U.S. Cl. 418—38 **9 Claims**



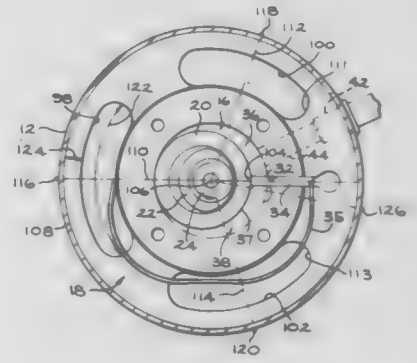
1. In an oscillating vane rotary pump or motor including a cylinder housing a pair of co-axial rotors each having a plurality of vanes theron, each of said rotors having an axially extending shaft, a power shaft journaled in said cylinder and having a portion extending outwardly of said cylinder and an internal quill portion housed within said cylinder, said rotor shafts and said quill being co-axially telescoped together, and a cam mechanism operatively coupling said power shaft quill and said rotor shafts for rotation with respect to said cylinder and for oscillating said rotor shafts relative to each other in response to relative rotation between said cylinder and said rotors, said cam mechanism comprising means defining an axially elongated slot in said quill, means defining a helical slot in each of said rotor shafts, said helical slots in said rotor shafts each being of opposite hand with respect to the other, a drive pin extending through said quill and helical slots, and a cam including a cam roller on said pin and a cam track on said cylinder for reciprocating said pin axially in said slots in response to rotation of said rotors in said cylinder, thereby effecting relative rotational oscillational movement between said rotors and thereby the vanes supported thereon for providing alternating expanding and contracting chambers between said vanes.

4,605,362

ROTARY COMPRESSOR AND METHOD OF ASSEMBLY

Gerald E. Sturgeon, and Robert I. Derman, both of Louisville, Ky., assignors to General Electric Company, Louisville, Ky.

Filed Jun. 17, 1985, Ser. No. 745,561
Int. Cl.[4] F04C *29/00;* **B23P** *15/00;* **B23K** *9/18, 31/02*
U.S. Cl. 418—63 **18 Claims**



1. In a rotary compressor of the type having an outer metal cylindrical casing, a cylinder as viewed in top plan view with a circular chamber the center of which is in alignment with the central axis of the cylinder and having a circular outer wall slightly smaller than the inside diameter of the casing, a vane slot in the cylinder open at one end into the chamber, a vane in the vane slot to divide the chamber into a high pressure side and a low pressure side, wherein the improvement comprises:

three curved elongated ports spaced from each other in the cylinder between the chamber and outer wall, the length of each port and thickness of the metal between the port and outer wall of the cylinder cooperating to provide adequate strength for welding and sufficiently flexible to absorb any distortion forces caused by welding without transmitting any significant distortion forces to the vane slot, and

welds joining the cylinder outer wall to the casing, said welds being adjacent the three ports.

4,605,363

GEAR PUMP WITH PIVOTED BUSHINGS THAT CAN DEFLECT

Richard E. Walsh, Rockford, Ill., assignor to Sundstrand Corporation, Rockford, Ill.

Filed Mar. 25, 1985, Ser. No. 715,675
Int. Cl.[4] F04C *2/18, 15/00;* **F16C** *23/04*
U.S. Cl. 418—131 **6 Claims**

1. In a gear pump including:

a housing having an interior wall;

a pumping chamber within said housing and defined by said interior wall;

opposed inlet and outlet ports in said housing extending to said chamber;

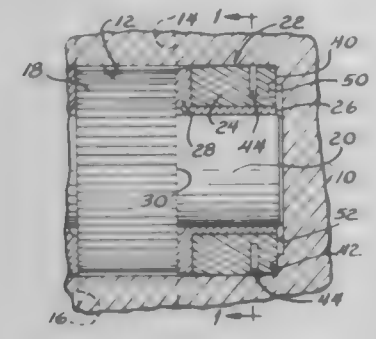
a pair of meshed gears within said chamber;

a pair of shafts within said housing and said chamber, each shaft mounting a respective one of the gears of said pair; and

bushings within said chamber journalling said shafts, the radially outer surface of at least some of said bushings and

the adjacent portion of said interior wall defining an annular space that is narrow medially of said some bushings and of increasing width axially toward the ends of said some bushings to allow said some bushings to pivot in said housing;

the improvement wherein said some bushings, near their ends remote from said gears, at least on their sides remote



from said outlet include radially outwardly opening slots extending generally transverse to said shafts, said slots being sufficiently near said ends and extending sufficiently into said bushings as to allow said ends to deflect relative to the remainder of the associated bushing and sealingly engage the adjacent portion of said interior wall when said some bushings pivot in said housing.

4,605,364

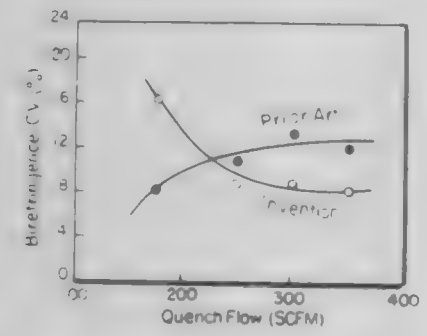
MELT-SPINNING APPARATUS FOR POLYESTER FILAMENTS

Douglas D. Roth, Matthews, and Fredrick A. Ethridge, Waxhaw, both of N.C., assignors to Celanese Corporation, New York, N.Y.

Division of Ser. No. 422,116, Sep. 23, 1982, Pat. No. 4,514,350. This application Jan. 25, 1985, Ser. No. 680,452

Int. Cl.[4] B29D *7/20*

U.S. Cl. 425—72 S **3 Claims**



1. An improved melt-spinning apparatus for forming polymeric filaments by extruding polymer through orifices in a spinnerette and thereafter quenching the melt-spun filaments which apparatus comprises a spinnerette means for extruding molten polymer through a plurality of orifices and a centrally located quench means for passing a vapor or gas radially outward across the polymeric filaments extruded from said spinnerette means, said orifices being arranged in a plurality of concentric rows that are essentially perpendicular to the, flow direction of the quenching vapor or gas wherein the improvement comprises:

the diameter, d_1, of the orifices in the row closest to the quench means is greater than the diameter, d_2, of the orifices in the row furtherest from the quench means, by an amount such that d_1/d_2 is in the range from 1.03 to 1.20.

4,605,365

BLOWING HEAD FOR MAKING TUBULAR PLASTIC FILMS

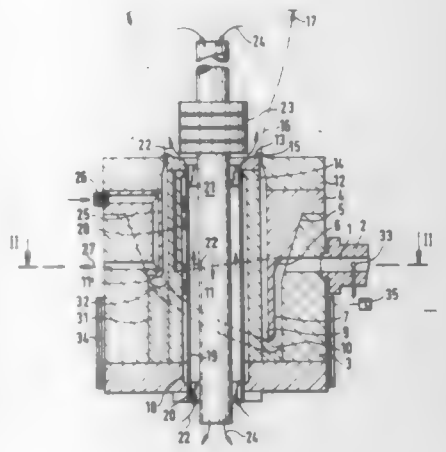
Hartmüt Upmeier, Lengerich, Fed. Rep. of Germany, assignor to Windmoller & Holscher, Lengerich, Fed. Rep. of Germany

Filed Jul. 2, 1985, Ser. No. 751,145

Claims priority, application Fed. Rep. of Germany, Jul. 10, 1984, 3425371

Int. Cl.[4] B29C *47/12, 47/88*

U.S. Cl. 425—72 R **3 Claims**



1. A blowing head for making tubular films from thermoplastic materials, wherein a lateral inlet for supplying molten material opens into a first annular passage having an upper boundary wall, which extends in a plane which is substantially radial with respect to the blowing head, and wherein a second annular passage is provided, which is concentric to the first annular passage and leads to a die orifice, from which the tubular film is extruded, said second annular passage is separated from the first annular passage by a tubular partition, which has a flow guiding surface which adjoins both annular passages, and the axial length of said tubular partition, measured from the upper boundary wall to the flow guiding surface, decreases from the inner end of the inlet to the diametrically opposite line of confluence of streams of molten material diverging from the inlet in such a manner that all flow paths for the molten material flowing from the inlet to the die orifice are substantially equal in length, characterized in that the film blowing head is formed with concentric axial passages for supplying and withdrawing inflating and cooling air and one or each of the inner and outer walls defining the second annular passage is formed between the line of confluence of the streams of molten material and the die orifice with coolant conducting bores, which are connected to coolant supply and withdrawing lines.

4,605,366

CALENDER FOR PRESSURE AND THERMAL TREATMENT OF MATERIAL WEBS

Rolf Lehmann, Rudolfstetten, and Alfred Christ, Zürich, both of Switzerland, assignors to Sulzer-Escher Wyss AG, Zürich, Switzerland

Filed Jan. 30, 1984, Ser. No. 575,010

Claims priority, application Switzerland, Feb. 10, 1983, 750/83

Int. Cl.[4] B29C *43/24*

U.S. Cl. 425—143 **11 Claims**

1. A calender for the pressure and thermal treatment of sheet material of plastic or textile or both, comprising:

at least one heated roll having two end faces and a circumferential region;

at least one counter roll cooperating with said at least one heated roll at a contact pressure region;

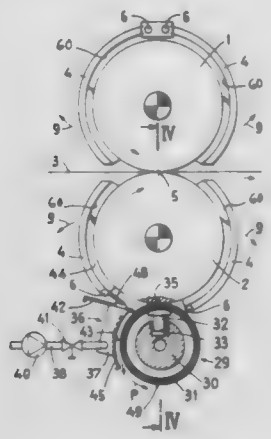
thermal insulating protective shields pivotally mounted at said circumferential region of said at least one heated roll to pivot away therefrom;

thermal insulating end seals disposed in proximity to said end faces of said at least one heated roll;

said at least one counter roll being a controlled deflection roll;

said controlled deflection roll comprising:

means for locally regulating a contact pressure force between the controlled deflection roll and said at least one heated roll; and



a substantially cylindrical roll shell of highly elastic material and of low thermal conductivity;

locally regulatable cooling means for cooling the surface of the controlled deflection roll; and

said cooling means being disposed on an outbound side of said controlled deflection roll in the vicinity of said contact pressure region.

4,605,367

MOLD CLOSING UNIT OF AN INJECTION MOLDING MACHINE

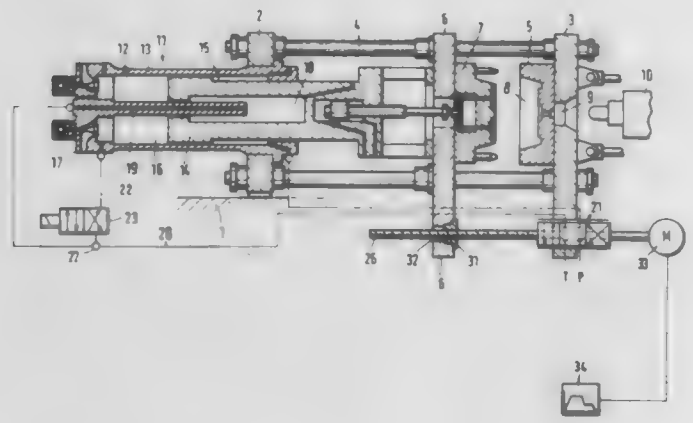
Lothar Gutjahr, Denzlingen, Fed. Rep. of Germany, assignor to Klöckner-Werke Aktiengesellschaft, Duisburg, Fed. Rep. of Germany

Filed Aug. 1, 1984, Ser. No. 636,722

Claims priority, application Fed. Rep. of Germany, Aug. 3, 1983, 3327936

Int. Cl.[4] B29C *45/68*

U.S. Cl. 425—150 **1 Claim**



1. A mold closing unit of an injection molding machine which includes a stationary mold clamping plate and a movable mold clamping plate slidable along parallel guide rods relative to said stationary plate, a movable mold die affixed to said movable plate a mating fixed mold die affixed to said stationary plate and confronting said movable die so as to therewith define a mold cavity having a volume which is greater at the commencement of mold charging than at the termination of the mold charging, the unit comprising a fixed, hydraulic mold closure retention cylinder, and a hydraulic traveling cylinder including a piston operable within said retention cylinder and defining therewith on opposite sides of said piston first and second pressure chambers for respectively retracting and extending said piston, said piston being connected to said movable die, and said piston being hollow so as to define a third pressure chamber, means for operating said unit comprising a hydraulic supply passage leading to said first and third chambers for operating said piston; a linear amplifier having rigid hydraulically fixed feedback and comprising a 4/2-way valve arranged in said supply passage for axial movement to control the flow of hydraulic fluid through said passage for closing and opening said movable die, and elongated threaded rotatable spindle extending between said mold clamping plates, a spindle nut on said movable plate through which said spindle extends for threadedly engaging said spindle with said movable plate, a stepping motor connected with said spindle for rotation thereof, said valve having a valve body on said spindle for axial movement upon spindle rotation, said stepping motor being controllable depending on one of a specified speed and pressure pattern as a function of the distance between said movable fixed dies or between said mold clamping plates, whereby rotation of said spindle effects the movement of said 4/2-way valve to control the flow of hydraulic fluid, the movement of said movable die effecting an oppositely directed movement of said valve via said spindle which is counteracted by said motor, said hydraulic supply passage having a branch hydraulic supply line leading to said second pressure chamber, a multi-way valve in said branch line for opening the flow of hydraulic fluid through said branch line into said second chamber at a predetermined distance of said movable plate from said stationary plate until said movable die plate closes, whereby said multi-way valve permits a high holding force to be attained at said distance.

4,605,368

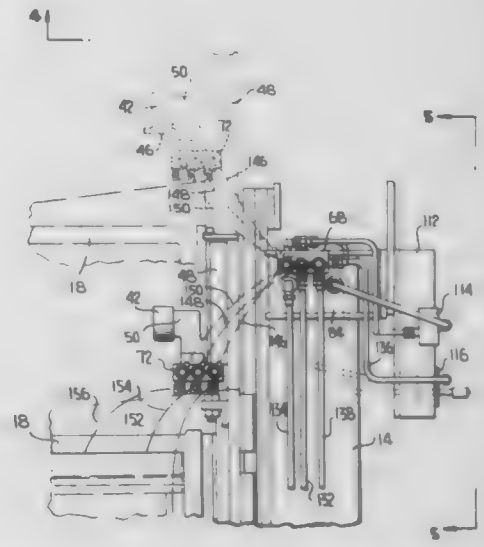
SWIVEL HOSE CONNECTION AND ADJUSTABLE MOUNTING OF SUPPORT MEMBER FOR CAM FOLLOWER AND SWIVELS

Ernest W. Hellmer, and Frank W. Pfohl, both of Chicago, Ill., assignors to Continental Plastic Containers, Stamford, Conn.

Filed Jun. 27, 1985, Ser. No. 749,214

Int. Cl.[4] B29C *49/56*

U.S. Cl. 425—195 **14 Claims**

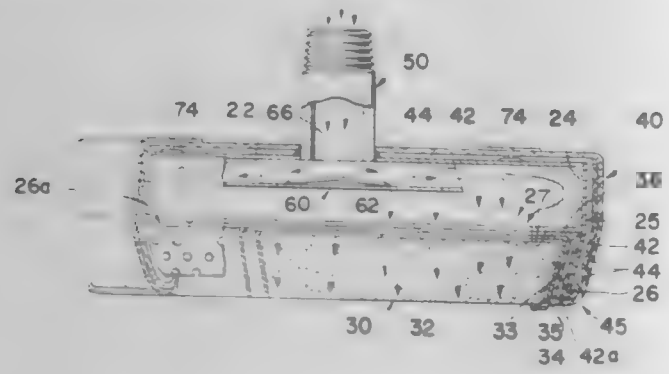


1. A fluid supply system for a blow molding apparatus of the rotary wheel type, said blow molding apparatus having a radially opening split mold assembly wherein a radially inner mold half carrier is radially fixed, and a radially outer mold half carrier is radially movable, a frame, means mounting said mold half carriers on said frame, a fluild line having a terminal mounted in a fixed position on said frame, said outer mold half carrier having a like fluid line terminal mounted thereon for radial movement therewith relative to said radially fixed terminal, a flexible fluid line connecting said fixed and radially movable terminals, said flexible fluid line including a swivel fitting at each of said terminals and a hose extending between said swivel fittings, said hose being of a length to be bowed in both radial extreme positions of said radially movable terminal with the bow being different at said radial extreme positions with said swivels permitting the change in said bow.

4,605,369
RADIANT BURNER

Arnold L. Buehl, Solon, Ohio, assignor to Slyman Manufacturing Corporation, Cleveland, Ohio

Division of Ser. No. 490,343, May 2, 1983. This application Oct. 12, 1984, Ser. No. 660,320
Int. Cl.[4] F23D *13/12*
U.S. Cl. 431—328 4 Claims

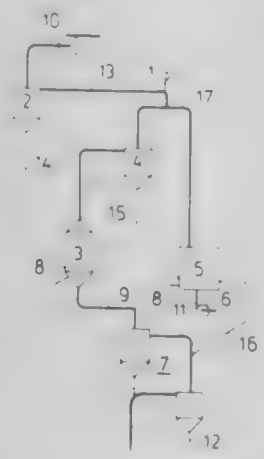


1. In a gas-fired radiant burner including a gas-permeable matrix of refractory fiber material having a generally equal degree of porosity throughout, the matrix having an inner face, an outer face, and a gas nonpermeable peripheral edge separating the faces, the burner further including a plenum means sealed against the periphery of the inner face of the matrix to supply a pressurized combustible gas thereto for burning at the outer face of the matrix, the burner further including a flexible blanket of thermal insulation material wrapped around the outside of the plenum means to thermally insulate the plenum means from high temperature gas byproducts generated by said burning, an edge portion of the blanket being biased against the edge of the matrix, the improvement wherein the blanket is comprised of an inner layer of nonwoven high-temperature-resistant fibers and an outer layer of woven material of high-temperature resistance, said woven outer layer being abrasion-resistant to protect said nonwoven inner layer.

4,605,370
METHOD AND APPARATUS FOR BURNING AWAY ORGANIC COMPONENTS IN RAW PHOSPHATE

Soren Hundebol, Copenhagen, Denmark, assignor to F. L. Smidth & Co. A/S, Denmark

Filed Sep. 19, 1984, Ser. No. 652,329
Claims priority, application Denmark, Sep. 28, 1983, 4433/83
Int. Cl.[4] F27B *15/00*
U.S. Cl. 432—14 9 Claims

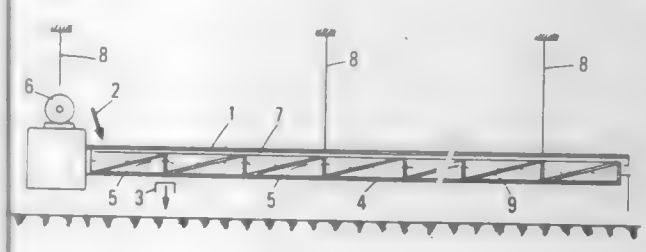


5. Apparatus for burning away organic components in phosphate raw material, said apparatus comprising first and second series-coupled reactors, said first reactor being a suspension transport reactor having top and bottom portions and including means for injecting phosphate raw material, from a source other than material treated in said second reactor, and a stream of combustion air into the bottom thereof and for suspending said material in said air and conveying said suspension upwardly through said reactor, said first reactor further including exit means for removing gas-entrained material from the top thereof, separator means for separating said gas-entrained material removed from said first reactor from said gas, means for passing substantially all of said material from said separator means to said second reactor, said second reactor being a suspension reactor and including means for injecting into said reactor combustion air and said material from said separator, and means for removing material treated in said second reactor.

4,605,371
APPARATUS FOR THE TRANSPORTATION AND HEATING OF GRANULATED MATERIALS

Georges Berrebi, Valence, France, assignor to Europeenne de Retraitement de Catalyseurs, La Voulte sur Rhone, France

Division of Ser. No. 567,722, Jan. 3, 1984, Pat. No. 4,551,437. This application Sep. 11, 1985, Ser. No. 774,837
Claims priority, application France, Mar. 15, 1983, 83004350
Int. Cl.[4] F27B *9/14*
U.S. Cl. 432—134 3 Claims



1. Apparatus for reactivating or regenerating solid catalyst particles used for the treatment or conversion of hydrocarbons, the apparatus comprising:

at least one elongate chamber having a longitudinal axis inclined with respect to a horizontal line at an angle of about 0°–5°; the chamber including an inlet zone, an outlet zone and a plurality of stepped floor plates having perforations therein wherein the floor plates are inclined with respect to the elongate chamber;

means for vibrating the elongate chamber in a direction substantially parallel to the longitudinal axis of the chamber at an amplitude to impart translational movement to the catalyst over the length of the chamber;

means for varying the speed of vibration to produce continuous mixing of the catalyst particles with the particles remaining in substantial contact with the floor plates whereby the particles slide along the floor plates and fall from upstream plates to adjacent downstream plates;

infrared heating means disposed in the elongate chamber for emitting infrared radiation in the range of about 0.75 μm to 1.5 mm wherein the particles are irradiated over the entire surfaces thereof as they drop from upstream plates to downstream plates, and

means for flowing gas through the bed of catalyst particles by passing gas through the perforations in the floor plates.

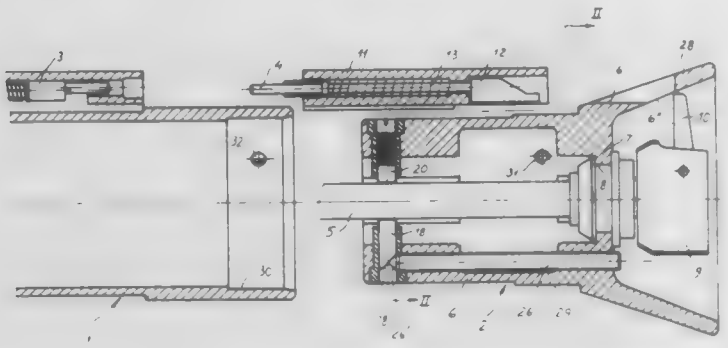
4,605,372
TRAINING MEANS FOR A WEAPON

Jan-Erik Nyzell, Eskilstuna, Sweden, assignor to Affarsverket FFV, Eskilstuna, Sweden

Filed Apr. 4, 1985, Ser. No. 720,287
Claims priority, application Sweden, Apr. 9, 1984, 8401963
Int. Cl.[4] F41F *27/00;* F41G *3/26*
U.S. Cl. 434—16 3 Claims

1. Training means for shooting with a weapon intended to be used with live ammunition, said training means comprising a sub-calibre barrel, which is attached inside a holder, which is capable of being placed inside the barrel of said weapon, said holder exhibiting a number of adjusting elements in contact with the sub-calibre barrel and capable of displacement in its transverse direction in order to provide zeroing of the sub-

calibre barrel, two of the adjusting elements are each operatively connected to an individual adjuster means, which extends essentially parallel with the sub-calibre barrel and at a



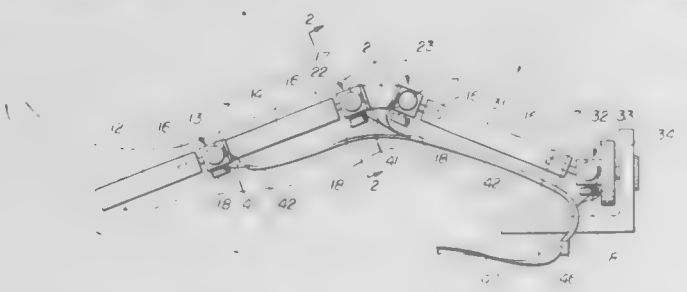
certain distance from it which shall be less than one half of the calibre of the barrel, and for a sufficient distance rearwards for its free end to be accessible inside a rear part of the holder, as seen in the shooting direction.

4,605,373

TRAINING DEVICE FOR SETTING BROKEN LIMBS

Bernard A. Rosen, 4246 Atlantic Ct., Santa Clara, Calif. 95054

Filed Jan. 10, 1985, Ser. No. 690,466
Int. Cl.[4] G09B *23/32*
U.S. Cl. 434—274 **6 Claims**



1. A training device for first aid handling of broken limbs comprising a flexible simulation of a limb having at least first and second substantially rigid, bone-simulating members embedded within said simulation in proximity to each other, a sensor fixed to the end of said first member nearest said second member, said sensor having a projection embedded in an end of said second member and a first and a second potentiometer at 90° angles with respect to each other capable of emitting an electric signal responsive to relative movement of said projection relative to said sensor in either of two directions, and an electric circuit including said first and second potentiometers and having means indicating to an observer that said potentiometers have been actuated by said projection.

4,605,374

DEMONSTRATOR FOR TEACHING PRESSURE BLOW FORMING OF PLASTICS

Karl J. Vinup, 1535 N. 26th St., Allentown, Pa. 18104

Filed Jul. 22, 1985, Ser. No. 757,510
Int. Cl.[4] G09B *25/02*
U.S. Cl. 434—365 **16 Claims**

1. A generally portable student teaching device to demonstrate pressure blow forming comprising:

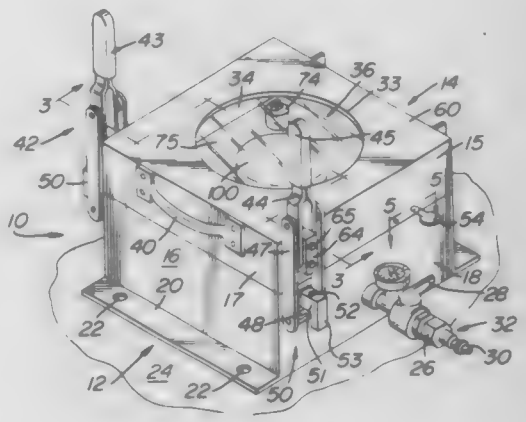
a. a generally parallelpipedal and sealable housing, said housing including a bottom, a lid including means to receive a mold, and four sides;

b. means to sealably lock said lid to said housing;

c. shelf supports located proximate said housing sides' interior upper edges;

d. a generally horizontal planar shelf sized to span transversely the area defined by said four sides and rest on said supports, said shelf adapted to receive thereon plastic starting material, said shelf including an orifice to direct a jet of pressurized gas upward vertically through said shelf into said starting material; and,

e. means located on one of said sides to receive gas under pressure,



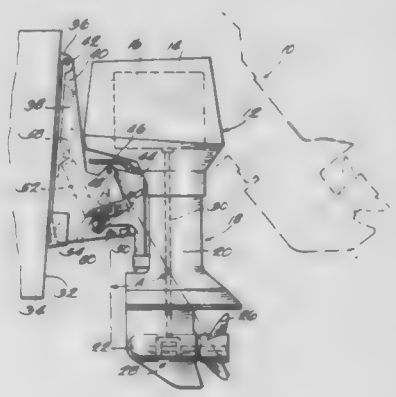
so that softened plastic starting material, when placed over said orifice on said shelf in said sealed housing, may be blown upward by pressurized gas to form thereby a workpiece.

4,605,375

TRIM AND TILT CONTROL FOR MARINE PROPULSION DEVICES

Arthur R. Ferguson, Northbrook, Ill., assignor to Outboard Marine Corporation, Waukegan, Ill.

Filed Jan. 27, 1984, Ser. No. 574,582
Int. Cl.[4] B63H *21/26*
U.S. Cl. 440—1 **33 Claims**



16. A marine propulsion device comprising a transom bracket adapted to be connected to a boat transom, a propulsion assembly including a lower unit which carries a rotatably mounted propeller and which is submerged in water when said propulsion assembly is in an operating position, means connecting said propulsion assembly and said transom bracket to afford relative pivotal movement of said propulsion assembly in a generally vertical plane, hydraulic cylinder means for pivoting said propulsion assembly in said vertical plane through a range of trim positions from a fully down, operating position wherein said propeller is fully submerged in the water and also through a range of tilt positions angularly upwardly from the range of trim positions and including a fully raised, non-operating position, a hydraulic fluid system for actuating said hydraulic cylinder means including an electrically operated, reversible hydraulic pump which effects movement of said hydraulic cylinder means in a first direction to downwardly pivot said propulsion assembly in said vertical plane when pumping hydraulic fluid in one direction and which effects movement of said hydraulic cylinder means in a second direction to upwardly pivot said propulsion assembly in said vertical plane when pumping hydraulic fluid in the opposite direction, and electrical control means for selectively operating said pump so as cause downward pivotal movement of said propulsion assembly in said vertical plane from a tilt position to

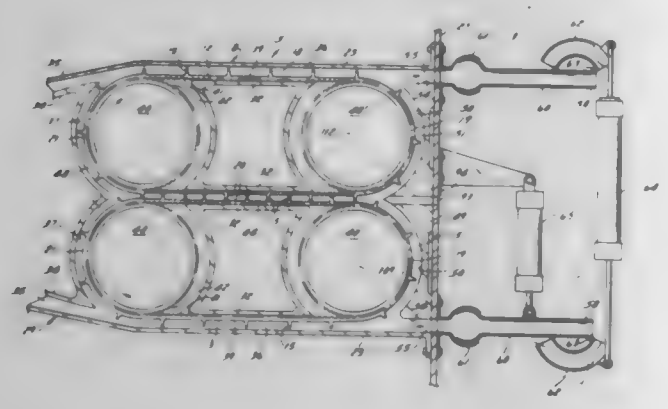
a trim position when the thrust applied on said propulsion assembly exceeds a predetermined level.

4,605,376

MARINE JET PROPULSION UNIT

George R. Aschauer, 720 Florence Ave., Racine, Wis. 53402

Filed Jan. 18, 1985, Ser. No. 692,510
Int. Cl.[4] B63H *11/10*
U.S. Cl. 440—38 16 Claims



1. A reaction propulsion unit for installation in the interior of a marine craft hull, said unit comprising a housing having forward water intake means into which water can enter through the bottom of the hull, rearwardly discharging outlet means through which water can be discharged to the exterior of the hull, and driven impeller means in said housing whereby water entering said intake means is accelerated rearward and expelled through said outlet means to generate a propulsive reaction force, said propulsion unit being characterized by:

A said impeller means comprising a blade carrier which moves in an orbit in one orbital direction,

(1) said blade carrier having thereon a plurality of blades

(a) which are spaced apart in said orbital direction and

(b) each of which has a front surface that faces in said orbital direction, and

(2) the orbit of said blade carrier having

(a) a driving portion in which the blades move rearward,

(b) an opposite return portion which is spaced from the driving portion and in which the blades move forward,

(c) a rear transition portion in which the blades move from said driving portion to said return portion, and

(d) a front transition portion in which the blades move from said return portion to said driving portion; and

B. said housing defining

(1) an acceleration channel in which the blade carrier has its driving portion and wherein water is accelerated rearward, said acceleration channel having wall portions extending therealong that lie closely adjacent to the edges of the blades,

(2) a return passage in which the blade carrier has its return portion,

(3) a front transition passage in which the blade carrier has its front transition portion and which has wall portions extending therealong that lie closely adjacent to the edge of the blades, said front transition passage having opposite ends that communicate, respectively, with a front end of said return passage and with a front end of said acceleration channel,

(4) a rear transition passage in which the blade carrier has its rear transition portion and which has wall portions extending therealong that lie closely adjacent to the edges of the blades, said front transition passage having opposite ends that communicate, respectively, with the rear ends of the acceleration channel and of the return passage,

(5) substantially rearwardly extending passages communicating

(a) said intake means with the front end of said acceleration channel and

(b) the rear end of said acceleration channel with said outlet means and cooperating with said acceleration channel to provide an unobstructed path in which water is confined and along which it flows without abrupt acceleration substantially consistently and undivertedly rearwardly from said intake means to said outlet means, and

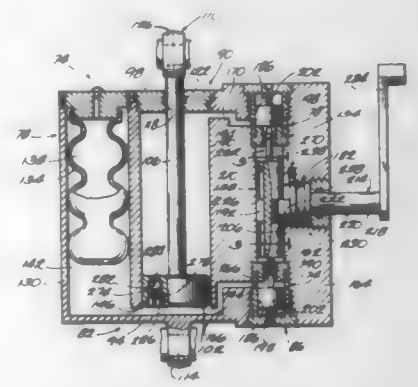
(6) an air inlet passage having an opening to the atmosphere and which is communicated with a rear portion of said return passage to mix air with water in the return passage and thus maintain water in said acceleration channel substantially at a static pressure near that of the atmosphere and prevent cavitation therein.

4,605,377

MANUAL LIFT MEANS FOR MARINE PROPULSION DEVICE

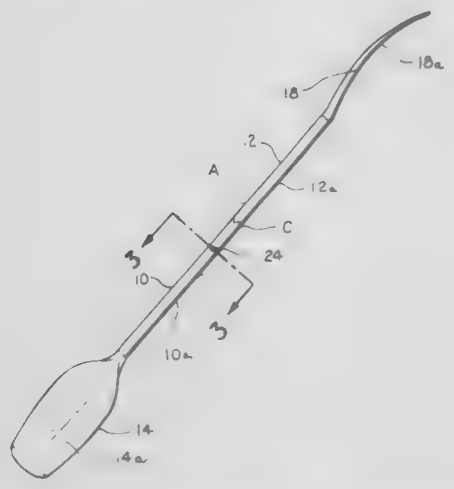
Thomas D. Wenstadt, Winthrop Harbor, Ill., assignor to Outboard Marine Corporation, Waukegan, Ill.

Filed Jun. 21, 1984, Ser. No. 622,885
Int. Cl.[4] B63H *5/12*
U.S. Cl. 440—61 14 Claims



1. A marine propulsion device comprising a support bracket adapted to be attached to a boat hull, a propulsion unit, means connecting said propulsion unit and said support bracket for tilting movement of said propulsion unit in a vertical plane about a horizontal transverse axis between an operating position and a raised nonoperating position, extendable and retractable cylinder-piston means for facilitating manual tilting movement of said propulsion unit upwardly about said axis when said support bracket is attached to a boat hull, said cylinder-piston means comprising a cylinder including a first end and a second end, a piston located in said cylinder for reciprocative movement therein, a piston rod connected to said piston and extending from said second end of said cylinder, means connecting said cylinder-piston means to said support bracket and said propulsion unit for extending said cylinder-piston means in response to upward tilting movement of said propulsion unit, and for retracting said cylinder-piston means in response to downward tilting movement of said propulsion unit, said connecting means comprising means pivotally connecting said first end of said cylinder to one of said support bracket and said propulsion unit, and means pivotally connecting said piston rod to the other of said support bracket and said propulsion unit, a predetermined quantity of incompressible fluid partially filling said cylinder, a gas with a pressure higher than atmospheric pressure filling the remainder of said cylinder, a single conduit communicating solely with said first end and said second end of said cylinder, and manually operable valve means in said conduit for selectively preventing fluid flow between said first end and said second end of said cylinder.

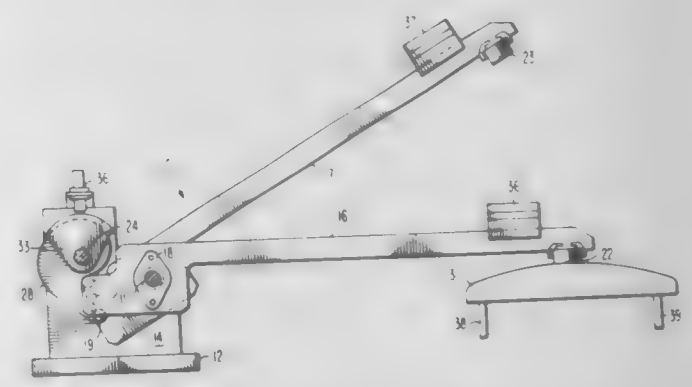
4,605,378
BREAKDOWN BOAT PADDLE WITH VARIABLE CONFIGURATION
Don A. Hamilton, P.O. Box 1727, Easley, S.C. 29641
Filed Dec. 20, 1984, Ser. No. 684,374
Int. Cl.[4] B63H *16/04*
U.S. Cl. 440—102 20 Claims



1. A breakdown boat paddle for a kayak and the like comprising:
a first section having a paddle blade carried on one end and a jointed end formed on the opposing end with a handle portion in between;
a second elongated section having a paddle blade carried on one end and a jointed end formed on the other end with a handle portion in between;
a joint formed between the jointed ends of said first and second sections when fitted together to make a double-bladed boat paddle;
a sleeve carried by the jointed end of said second section receivable in the jointed end of said first section;
a lock means carried by said sleeve of said second section;
locking means carried by said first section for engaging with said lock means in a number of predetermined operational positions of operational paddle blade orientations in a manner that said paddle may be configured for righthand or lefthand control operation;
said lock means and locking means interlocking in such a manner that said first and second sections are fixed against axial and rotational movement in relation to one another;
torque resisting means formed on the jointed ends of said first and second sections which positively prevents rotation between said first and second sections and removes torque stresses from said lock means and locking means when interlocked with each other to prevent failure thereof.

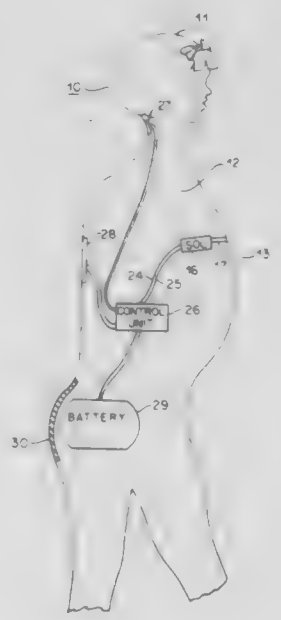
4,605,379
KINESCOPE PANEL/MASK FRAME ASSEMBLY THUMPER AND FLUSH DEVICE AND METHOD
Donald J. Shahan, Lancaster, Pa., assignor to RCA Corporation, Princeton, N.J.
Filed Aug. 27, 1985, Ser. No. 769,977
Int. Cl.[4] H01J *9/20*
U.S. Cl. 445—59 11 Claims

1. A device for dislodging potentially aperture blocking particles from a kinescope panel/mask frame assembly comprising:
a fixed shaft;
at least one thumper arm pivotably supported by said fixed shaft, one end of said arm having a cam follower, and the other end of said arm having a faceplate thumper;
a rotatable shaft arranged substantially parallel to said fixed shaft;
at least one cam fixed to said rotatable shaft for rotation with said shaft, said cam having a curved surface for engaging said cam follower and raising said faceplate thumper above a faceplate panel located in the proximity of said thumper, and said cam having an inset portion for disengaging said cam follower whereby said arm pivots downwardly and said thumper impacts said faceplate panel;
means for rotating said rotatable shaft;



means for supporting a faceplate panel in the proximity of said thumpers; and
means for blowing charged fluid across said panel/mask frame assembly while said thumper impacts said panel.

4,605,380
HEARTBEAT DOLL
Samuel A. Camm, 966 Ponus Ridge Rd., New Canaan, Conn. 06840, and Malcolm E. Bryant, Easton, Conn., assignors to Samuel A. Camm, New Cannan, Conn.
Filed Mar. 13, 1985, Ser. No. 711,371
Int. Cl.[4] A63H *33/00, 3/00*
U.S. Cl. 446—14 6 Claims



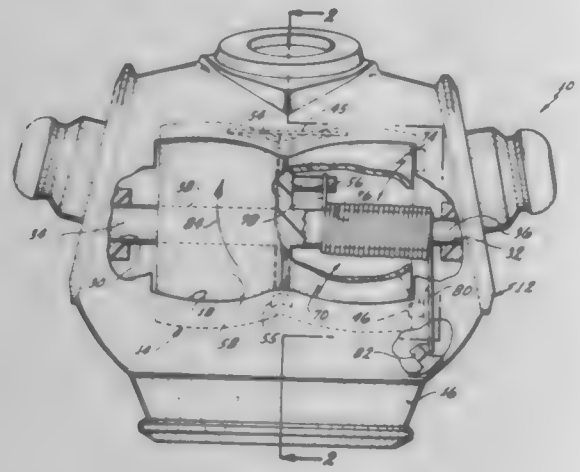
1. A heartbeat doll having an internal cavity adjacent an inner chest wall of the doll, said doll comprising:
solenoid means disposed within said cavity, said solenoid means comprising a solenoid having a plunger for repetitively impacting said inner chest wall when the solenoid is repetitively actuated;
spring means for biasing said plunger in a given position with respect to said inner chest wall when said solenoid is not actuated;
pulse generator means disposed within said doll for repetitively actuating said solenoid; and
means comprising a temperature sensor mounted on a surface portion of said doll for varying the pulse repetition rate of said pulse generator means.

4,605,381

ANIMATED FIGURE TOY HAVING A UNITARY, MULTIPLE-FUNCTION SPRING

Ronald H. MacBain, Los Angeles, and Tony Rhodes, Torrance, both of Calif., assignors to Mattel, Inc., Hawthorne, Calif.

Filed Dec. 29, 1983, Ser. No. 566,742
Int. Cl.[4] A63H *3/12*
U.S. Cl. 446—321 1 Claim



1. In combination with an animated toy having a body including an upper torso with a predetermined opening formed therein, a rotatable chest drum positioned adjacent to said opening within said body, said drum having at least first and second sections, said first section representing one appearance and said second section representing another appearance, said rotatable chest drum including an axle rotatably mounting said drum in slots in said body, spring means including a coiled spring encompassing said axle and having a short leg portion bearing against a stop adjacent said axle and a long leg portion bearing against said body for biasing said rotatable chest drum into engagement with latch means, said latch means for positioning said first and second sections in first and second positions, said latch means including at least two stop members positioned at predetermined locations on said chest drum and a stop member on said body, said first section being exposed through said opening and said second section being concealed inside said body while in said first position, said first and second sections capable of moving from said first position to said second position due to and after impact of a force upon said chest drum which causes said axle to be displaced releasing said latch means and causing said chest drum to rotate about a longitudinal axis due to action of said coiled spring until said first and second sections are positioned in said second position by said latch means, said first section being concealed inside said body and said second section being exposed through said opening while in said second position.

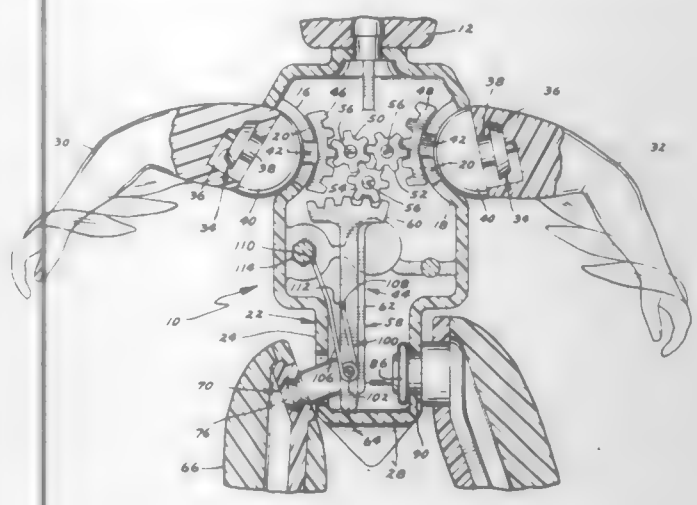
4,605,382

FIGURE WHEREIN LEG MOVEMENT PRODUCES WING-LIKE MOVEMENT OF ARMS

Stuart A. Cook, New Richmond; Phillip G. Reed, Loveland, and Michael C. Scarpa, Cincinnati, all of Ohio, assignors to CPG Products Corp., Minneapolis, Minn.

Filed Feb. 8, 1985, Ser. No. 699,618
Int. Cl.[4] A63H *3/20*
U.S. Cl. 446—330 15 Claims

8. A toy action figure comprising a hollow torso, a pair of limbs constituting a pair of arms, means pivotably mounting said arms to said torso for wing-like movement relative to said torso, a third limb constituting a leg, means mounting said leg to said torso for rocking movement relative to said torso and means within said torso for moving said arms simultaneously upward as a result of rocking said third limb in one direction and simultaneously downward as a result of rocking said third limb in the other direction to produce said wing-like movement, said means within said torso comprising a plurality of gear members interconnecting said leg with said arms, said gear members including a respective arcuate gear rack fixed to



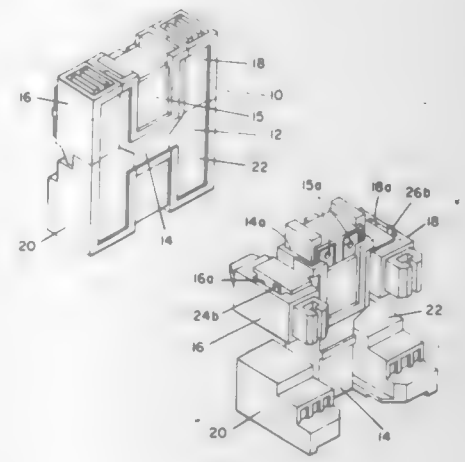
the torso end of each of said limbs and at least one additional gear element rotatably mounted within said torso.

4,605,383

TOY BLOCK TRANSFORMED INTO A ROBOT

Shigeyuki Horiuchi, Tokyo, Japan, assignor to Mattel, Inc., Hawthorne, Calif.

Filed Jul. 22, 1985, Ser. No. 757,415
Claims priority, application Japan, Dec. 29, 1984, 59-279135
Int. Cl.[4] A63H *3/46*
U.S. Cl. 446—376 5 Claims



1. In a toy block capable of being transformed into another form, the combination comprising:

a main body member having a hollow portion therein;

a pair of shoulder members pivotally coupled to said main body member;

a pair of leg members pivotally coupled to said main body member; and

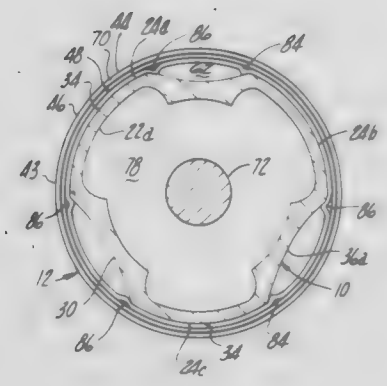
a head member slidably coupled to said main body member for being received within said hollow portion thereof, said shoulder members and said leg members when pivoted to a first position with respect to said main body member provide a contiguous surface having embossed thereon an alphanumeric symbol viewable only with said shoulder members and said leg members in said first position.

4,605,384

SELF-ALIGNING TRIPOD JOINT TULIP COVER AND CONSTANT VELOCITY JOINT INCORPORATING SAME

Patrick L. Kurzeja, Comber, Canada; Noel W. Sutton, Northville, Mich., and Steven C. Hahn, Mt. Clemens, both of Mich., assignors to GKN Automotive Components Incorporated, Southfield, Mich.

Filed Mar. 14, 1984, Ser. No. 589,994
Int. Cl.[4] F16D *3/30*
U.S. Cl. 464—111 24 Claims



1. A self-aligning tulip cover for interconnecting and aligning a spider assembly, an irregularly shaped, noncircular tulip body, and a boot; said irregularly shaped, non-circular tulip body having an open cavity formed therein, an irregularly shaped, non-circular outer circumferential surface disposed about said open cavity, and a flat annular surface extending between said irregularly shaped, non-circular outer circumferential surface and said open cavity; said spider assembly having a portion selectively insertable in said open cavity; said boot further having an inner surface with a cylindrical end portion; said self-aligning tulip cover further comprising:

first flange means selectively engageable with said irregularly shaped, non-circular outer circumferential surface of said irregularly shaped, non-circular tulip body;

interconnection means selectively interconnecting said first flange means with said irregularly shaped, non-circular outer circumferential surface of said irregularly shaped, non-circular tulip body;

second flange means extending in a direction away from said first flange means, said second flange means in sealing engagement with said cylindrical end portion of said inner surface of said boot; and

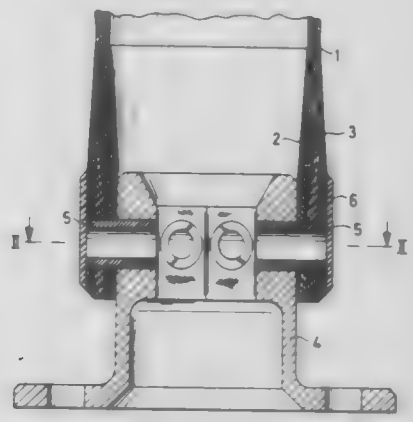
radially extending flange means interposed said first and second flange means, said radially extending flange means extending radially and being engageable with said flat annular surface of said irregularly shaped, non-circular tulip body, such as to form a seal therebetween when said first flange means is interconnected with said irregularly shaped, non-circular outer circumferential surface of said irregularly shaped, non-circular tulip body by said interconnection means, said radially extending flange means further being selectively engageable with said spider assembly, such as to retain said spider assembly in a preselected aligned orientation in said open cavity when said first flange means is interconnected with said irregularly shaped, non-circular outer circumferential surface of said irregularly shaped, non-circular tulip body by said interconnection means.

4,605,385

FIBRE REINFORCED PLASTICS POWER TRANSMISSION SHAFT

Alfred Pück, Basel, and Peter Voirol, Binningen, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 70,188, Aug. 26, 1979, abandoned. This application Dec. 24, 1984, Ser. No. 685,202
Claims priority, application Switzerland, Sep. 7, 1978, 9409/78; Sep. 12, 1978, 9542/78; Sep. 12, 1978, 9546/78; May 10, 1979, 4373/79
The portion of the term of this patent subsequent to Dec. 7, 1999, has been disclaimed.
Int. Cl.[4] F16D *3/26*
U.S. Cl. 464—181 20 Claims



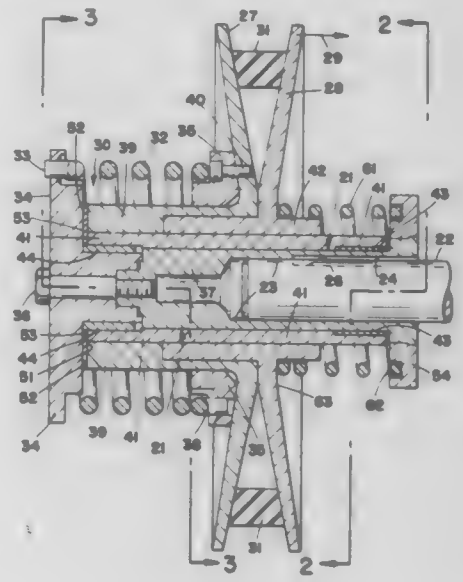
1. A power transmission shaft, comprising a tube of carbon fibre reinforced plastics, fittings secured to its two ends and at each end of the tube a wall reinforcement of carbon fibre reinforced plastics tapering substantially gradually towards the middle of the tube, the wall reinforcement fibre structure being similar to that of the tube so that the tube and the wall reinforcements have at least approximately the same anisotropic behaviour, and radial bolts located in the region of the wall reinforcements securing said fittings to said tube.

4,605,386

COMPACT VARIABLE SPEED PULLEY ASSEMBLY

Gerald R. Harris, P.O. Box 1148, Pryor, Okla. 74361

Filed Aug. 19, 1985, Ser. No. 766,646
Int. Cl.[4] F16H *55/56*
U.S. Cl. 474—8 14 Claims



1. A compact variable speed pulley assembly including pulley shaft means, a pair of pulley faces mounted for angular displacement relative to said shaft means, at least one of said pulley faces being axially displaceable along said shaft means toward a remainder of said pulley faces, and spring biasing means mounted to bias said pulley faces toward each other and coupled to transmit torque between one of said pulley faces

and said shaft means, wherein the improvement in said pulley assembly comprises:

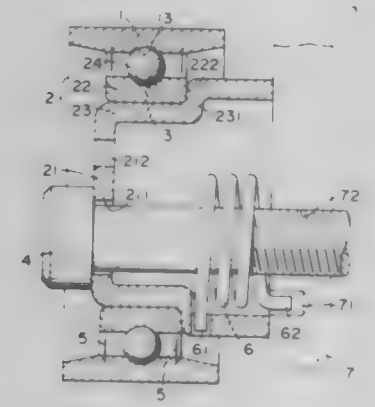
motion damping means mounted to said pulley assembly and formed and coupled to apply a damping force resisting relative angular displacement between said shaft means and at least one of said pulley faces.

4,605,387

TENSIONER

Kenji Okubo, Tokyo; Yasuaki Kuroki, Chigasaki, and Takashi Horikawa, Hiroshima, all of Japan, assignors to Nippon Seiko Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 207,968, Nov. 18, 1980, abandoned.
This application Apr. 18, 1985, Ser. No. 724,484
Claims priority, application Japan, Nov. 21, 1979, 54-160426[U]
Int. Cl.⁴ F16H *7/12, 7/10*
U.S. Cl. 474—112 **8 Claims**



1. A tensioner for imparting a desired tension to a belt, comprising a cylindrical inner member fixed to a support, said inner member having a race member with an outer track, a rotatable outer member engaged with said belt, and rolling members disposed between said outer track and said outer member, the improvement comprising:

said inner member having a wall portion spaced from said support and having therein an aperture located eccentrically with respect to the axis of said inner member;

biasing means including a resilient member disposed within said inner member and having at least one end restrained by said inner member and the other end restrained by the support, said resilient member including a portion extending outwardly from said inner member and holding said race member against axial movement; and

means including a single bolt threaded within said support to extend through said aperture for supporting said inner member so that it may rotate eccentrically about said bolt until the moment applied by said belt corresponds to the opposite moment applied by said resilient member, whereupon said bolt can be tightened to said support to fix the inner member in place.

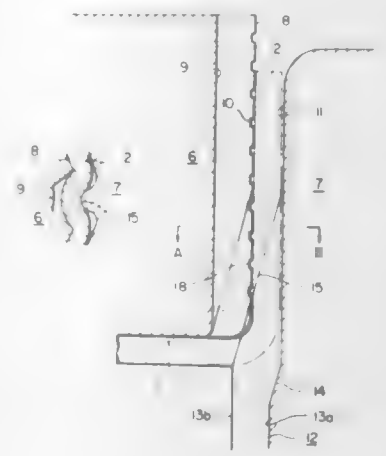
4,605,388

SHEET METAL PULLEY FOR TOOTHED BELTS AND MANUFACTURING PROCESS THEREOF

Satoshi Nagano, and Masanori Sakai, both of Osaka, Japan, assignors to Tsubakimoto Chain Company, Osaka, Japan

Filed Jun. 6, 1985, Ser. No. 742,184
Claims priority, application Japan, Jun. 12, 1984, 59-119088
Int. Cl.⁴ F16H *55/17*
U.S. Cl. 474—152 **8 Claims**

5. The method of manufacturing a pulley made of sheet metal for use with toothed belts comprising the steps of providing a sheet-metal cup-shaped body which has a generally circular base with a circumferential flange section to form belt engaging teeth, said body having a solid lubrication film thereon, cold-forging the pulley in a single operation by means of a punch which has radially-outward facing convex sections and concave sections of a configuration matching the desired inner face shape of said teeth, said punch having a plurality of circumferential grooves cut into at least one of said sections and a die with an upper cylindrical section having an inside diameter to receive said circumferential flange of the cup-shaped body and a lower die section in which concave sections and convex sections are formed with a first clearance gap relative to said convex and concave sections of the punch, said first clearance gap being smaller than the wall thickness of the sheet metal circumferential flange of the body, the clearance gap between said die section and the base of said circumferential grooves being greater than the first clearance gap, and a tapered inclined face between the upper cylindrical wall section and said die section; said method including the step of inserting said punch into said body in the cylindrical section of the die and displacing it into said die section to forge the circumferential flange to form pulley teeth with a plurality of reinforcing crosspiece ribs disposed circumferentially and projecting inwardly from the inner surface of said circumferential flange by the pressure exerted radially upon said circumferential flange when said circumferential flange passes said tapered inclined face.

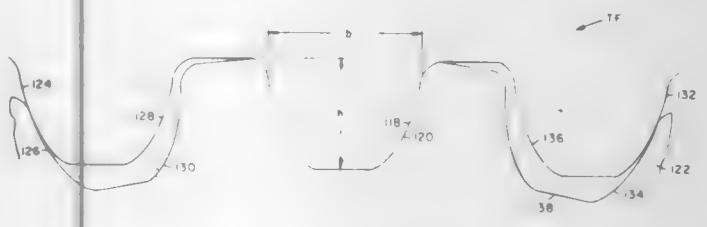


4,605,389

TOOTHED BELT AND SPROCKET

William L. Westhoff, Denver, Colo., assignor to The Gates Rubber Company, Denver, Colo.

Filed Apr. 22, 1985, Ser. No. 726,254
Int. Cl.⁴ F16H *7/02*
U.S. Cl. 474—153 **8 Claims**



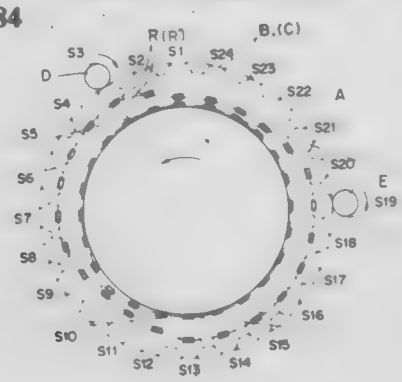
1. In a toothed power transmission belt of the type formed with an elastomer, reinforced with a tensile member that defines a pitch line, and teeth that when viewed in longitudinal section each have a base width b, a height h, a pitch spacing P and oppositely facing flank surfaces that change at roots into land surfaces and also change into a tooth tip, wherein the improvement comprises:

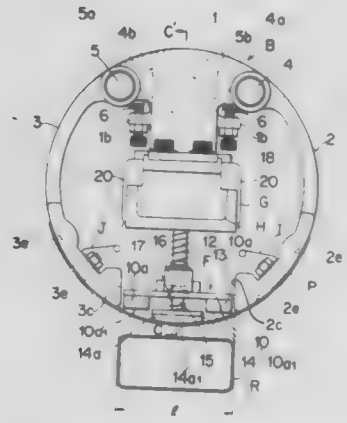
each belt tooth having a major portion of each flank surface shaped in longitudinal section as substantially a tractrix curve.

4,605,390
PACKING CONTAINER FORMING APPARATUS

Tomizou Nagata; Yoshiyuki Mutoh; Kouzou Sakakibara, and Norikuni Miyaoka, all of Tokyo, Japan, assignors to Japan Tobacco Inc., Tokyo, Japan

Filed Sep. 10, 1984, Ser. No. 648,839
Claims priority, application Japan, Sep. 13, 1983, 58-167586
Int. Cl.[4] F16H *7/00*
U.S. Cl. 493—84 9 Claims





1. In a packing container forming apparatus in a packing machine including a rotary packing drum, means cooperating with said drum for feeding a first sheet material to said drum, means cooperating with said drum for feeding a second sheet material to said drum, a plurality of arbors comprising hollow rectangular sleeves mounted on said drum, a plurality of packing container forming means cooperating with said arbors for forming double bags of first and second sheet materials by winding said sheet materials around each of said arbors and closing one end thereof, the improvement comprising:

a plurality of arbors arranged in first and second rotary rows on one rotary packing drum with said arbors being oriented with their longitudinal axes parallel to the rotary axis of said drum and with said arbors of the respective rows being arranged in tandem in the axial direction of said drum;

means cooperating with said arbors in said first rotary row for forming a bag of first sheet material with one of its ends closed by winding a sheet of said first sheet material around each said arbor;

means cooperating with said arbors in said second rotary row for forming a bag of second sheet material with one of its ends closed upon said bag of first sheet material by winding a sheet of said second sheet material around each said arbor; and,

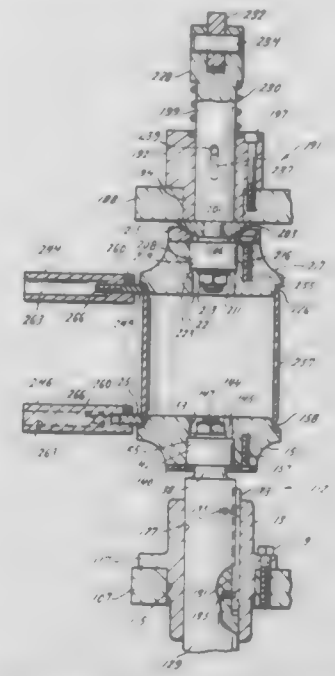
means on said drum for consecutively shifting said arbors between said rotary rows by movement of said arbors along their longitudinal axes in paths parallel to the rotary axis of said drum.

4,605,391
APPARATUS FOR FLANGING CAN ENDS

Ronald Cook, Marquand, Mo., assignor to Tools & Machinery Builders, Inc., Arcadia, Mo.

Filed Mar. 28, 1985, Ser. No. 716,839
Int. Cl.[4] B31B *1/13*
U.S. Cl. 493—159 21 Claims

1. In a flanging machine for flanging the ends of cans such as fiberboard cans, the combination of: a base, a can support on the base, means on the base for making a preliminary flange on at least one end of the can and mechanism for compressing a material of said preliminary flange, said last named mechanism comprising means for rotatably mounting the can support on the base, means for translating the can on the can support in a fixed path, a fixed compression rail adjacent said path and



opposite the preliminary flange, the compression rail having means thereon to engage the said preliminary flange portion of the can as the can is translated along its path, said means compressing the material of the can, the can being adapted to roll against the rail and thereby compress the entire circumference of the can.

4,605,392
APPARATUS FOR MAKING PLASTIC CARRIER BAGS

Fritz Achelpohl; Friedhelm Mundus, both of Lengerich, and Wilfried Ebmeyer, Enger, all of Fed. Rep. of Germany, assignors to Windmoller & Holscher, Lengerich, Fed. Rep. of Germany

Filed Oct. 2, 1984, Ser. No. 656,999
Claims priority, application Fed. Rep. of Germany, Oct. 5, 1983, 3336231
Int. Cl.[4] B31B *23/86;* B26D *1/06*
U.S. Cl. 493—196 12 Claims

1. Apparatus for making plastic carrier bags of a preselected width from a tubular web of plastic film material, comprising:

feeding means for intermittently feeding the tubular web along a path in successive steps each corresponding to the width of the bags to be made;

cutting means along said path for cutting the tubular web at a central region thereof into half tubular webs along an undulating sinusoidal curve to form undulations having peaks and troughs in adjacent edges of the half tubular webs, said cutting means including a cutting member;

a carriage mounted for movement transversely to the feeding direction of the tubular web, said cutting member of said cutting means being pivotably mounted on said carriage for pivoting movement about an axis perpendicular to a plane of the tubular web;

first lever means for reciprocating said carriage transversely of the direction of advancement of the tubular web in synchronism with the intermittent feeding of the tubular web by said feeding means, such that said cutting member cuts the tubular web along the undulating sinusoidal curve, said first lever means being pivotably mounted adjacent one end and being pivotably connected adjacent an opposite end to said carriage;

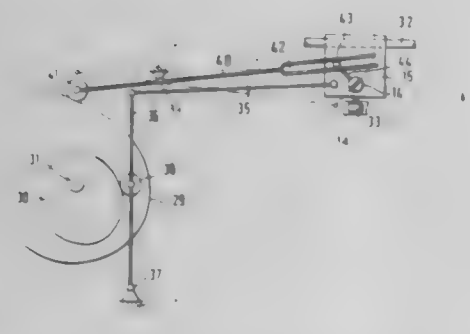
means comprising a first continuously driven control cam engaged with said first lever means for oscillating said first lever means to cause reciprocation of said carriage in said synchronism;

second lever means for pivoting said cutting member in synchronism with the reciprocation of said carriage by said first lever means and the intermittent feeding of the tubular web by said feeding means, so as to maintain said

cutting member substantially tangential to the undulating curve at the cutting point of the undulating curve, said second lever means being pivotably mounted and having one end connected to said pivotably mounted cutting member;

means comprising a second continuously driven control cam engaged with said second lever means for pivoting said second lever means and thereby pivoting said cutting member in said synchronism;

diverting means along said path for displacing the half tubular webs longitudinally relative to each other by half the



width of the bags such that respective ones of the peaks and troughs of the half tubular webs are in an aligned opposed mirror image relationship to each other; and

transverse welding and cutting means along said path for simultaneously welding and cutting the half tubular webs centrally through respective ones of the troughs of the half tubular webs which are in aligned opposed mirror image relationship to each other, to form the plastic tubular carrier bags.

4,605,393

CARTON BLANK REMOVAL, ERECTION AND TRANSFER APPARATUS

Eberhard Krieger, Weinstadt, and Theo Moser, Steinenberg, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jan. 25, 1985, Ser. No. 695,111

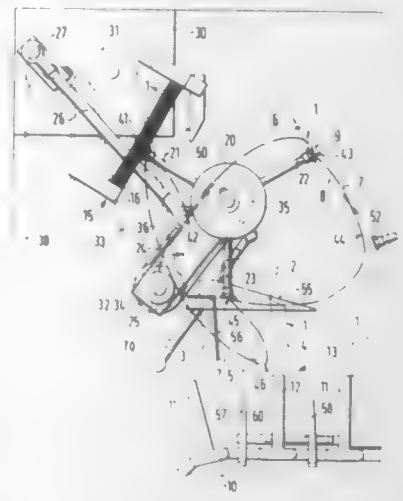
Claims priority, application Fed. Rep. of Germany, Apr. 7, 1984, 3413232

Int. Cl.[4] B31B *3/80*

U.S. Cl. 493—317 **7 Claims**

1. An apparatus for removing carton blanks, erecting and transferring cartons which comprises:

means comprising a conveyor apparatus, for moving said cartons in a conveying direction, a magazine disposed forward of and above one end of said conveyor, a rotor which is disposed between said magazine and a transfer station of said conveyor apparatus, means operatively connected to said rotor for rotating said rotor in increments of a predetermined angle, said rotor having means comprising three equally spaced suction units disposed on said rotor in a radially offstanding fashion for grasping a second wall of said carton blank, means comprising a valve device for connecting each of said three suction units intermittently to a source of negative pressure, said rotor being supported on an arm, said arm being pivotable about a shaft disposed in an area between a carton blank removal end of the magazine and the transfer station of said conveyor apparatus, means operatively connected to said arm for pivoting said arm and said rotor away from said magazine substantially during an interval between rotations of said rotor, means comprising a counterpart suction device disposed in a vicinity of the transfer station for temporarily grasping a first wall of a partially open carton located opposite said second wall grasped by a suction unit of said rotor, said rotating means and said pivoting means being synchronized so that in the vicinity of the transfer station the rotor has a rotational movement contrary to the conveying direction of the conveyor appa-



ratus, which moves in a direction away from the magazine.

4,605,394

METHODS FOR THE TREATMENT OF PATHOLOGICAL CONDITIONS BY REMOVING INTERFERON FROM THE ORGANISM

Simon V. Skurkovich, 261 Congressional La., #709, Rockville, Md. 20852, assignor to Simon V. Skurkovich, Rockville, Md.

Filed Dec. 3, 1982, Ser. No. 446,680

The portion of the term of this patent subsequent to Dec. 7, 1999, has been disclaimed.

Int. Cl.[4] A61M *37/00*

U.S. Cl. 604—4 **2 Claims**



1. In a method of treating diseases comprising the step of selectively clearing the blood of a patient from interferon using an apparatus having, in continuous fluid communication, an inlet tube, absorbing means for absorbing and thereby removing interferon from the whole blood, and an outlet tube, said method comprising:

connecting the inlet tube of said apparatus to a blood vessel of a patient and connecting the outlet tube of said apparatus to a vein of the patient;

removing blood from the blood vessel of the patient;

passing the removed blood through the absorbing means for absorbing interferon to thereby reduce the amount of interferon in the blood; and

returning the blood to the vein of the patient,

the improvement comprising:

administering normal interferon after completion of the clearance of interferon process and returning the blood containing normal interferon to the patient.

4,605,395

HYDROCEPHALY TREATMENT DEVICE INCLUDING A VARIABLE IMPEDANCE FILTER

Christian Sainte Rose, and Jacques Lacombe, both of Paris, France, assignors to Universite Rene Descartes (Paris V), Paris, France

Filed Jan. 13, 1984, Ser. No. 570,686

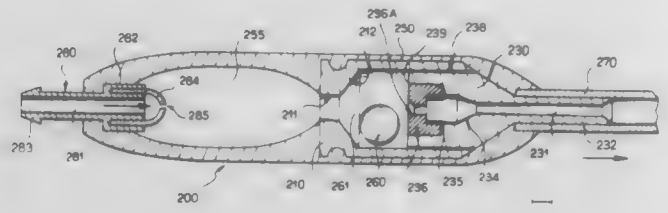
Claims priority, application France, Jan. 14, 1983, 83 00546

Int. Cl.[4] A61M *5/00*

U.S. Cl. 604—9 **12 Claims**

1. A hydrocephaly treatment device comprising an intracra-

nial catheter connected to a tube fitted with a first valve for diverting the flow of cephalo-rachidian liquid to one or more cavities in the organism capable of absorbing said liquid, the improvement wherein a hydraulic filter of non-linear variable impedance is connected in said tube in series with said valve, said filter comprising at least one bead and one outlet orifice for the cephalo-rachidian liquid, said outlet orifice substantially cooperating with said at least one bead to form a seat of



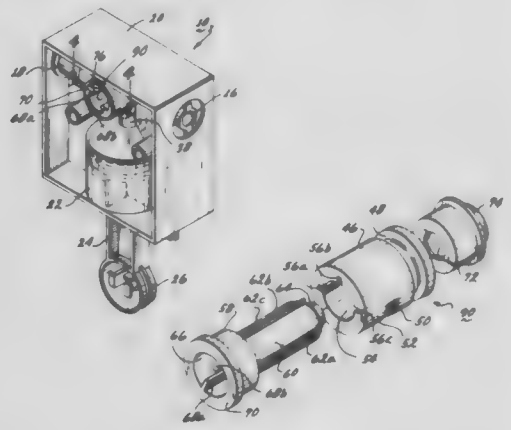
a leakage rate valve the leakage rate of which varies as a function of pressure, said filter maintaining an average flow rate of the cephalo-rachidian liquid defined by said leakage rate close to the physiological flow rate, thereby permitting the intracranial pressure to vary in the short term over a characteristic period of about one second, while preventing said pressure from varying in the long term over a characteristic period of about one minute.

4,605,396

GRAVITY FLOW CASSETTE WITH ROTARY VALVE

Gus G. Tseo, San Diego, and Dennis L. Fitzwater, Murrieta, both of Calif., assignors to Warner-Lambert Company, Morris Plains, N.J.

Filed Feb. 25, 1985, Ser. No. 704,803
Int. Cl.[4] A61M *1/00*
U.S. Cl. 604—32 **17 Claims**



1. A disposable cassette used with an I.V. infusion pump which comprises:

a pump chamber having a fluid inlet and a fluid outlet; and

a valve body formed with a first fluid pathway and a separate second fluid pathway, said valve body normally disposed in said cassette for operative association with the pump chamber to alternatingly establish fluid communication through said first pathway from said inlet to said pump chamber and from said pump chamber to said outlet,

said valve body means being movable longitudinally and axially in said cassette when said cassette is removed from the pump to establish fluid communication through said second fluid pathway simultaneously between said inlet, said outlet and said pump chamber.

4,605,397

APPARATUS FOR SUPPORTING AND MANAGING A MEDICAL PIG TAIL TYPE FLUID INFUSION DEVICE

Kathy D. Ligon, and Marcia J. Hoovler, both of 6741 A-1 Six Forks Rd., Raleigh, N.C. 27609

Filed Jan. 23, 1985, Ser. No. 694,019
Int. Cl.[4] A61M *5/00*
U.S. Cl. 604—179 **6 Claims**

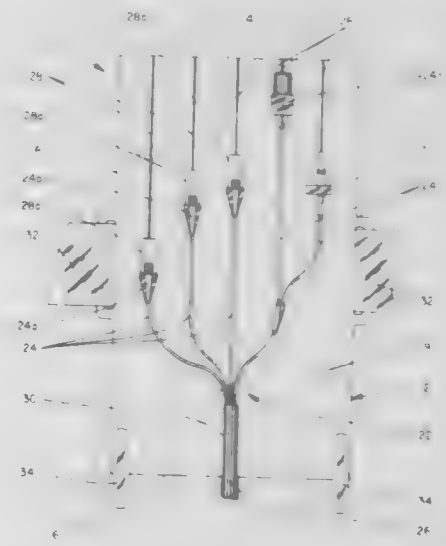
1. A medical infusion management board for receiving and holding a fluid infusion line assembly having a main feed line and a plurality of pig tails that branch and extend therefrom and which are operative to connect to a series of different fluid sources for channeling the respective fluids into said main feed line and on into said patient, said medical infusion management board comprising:

A. a board type support structure having an upper surface and opposed first and second ends;

B. main channel means formed in the upper surface of said board type support structure for receiving and holding said main feed line of said pig tail type fluid infusion line assembly;

C. said main channel means comprising a channel formed in the upper surface of said board type support structure and extending from a first end of said board type support structure to an intermediate area thereof;

D. pig tail channel means formed in the upper surface of said board type support structure for receiving and holding said pig tails of said fluid infusion line assembly for main-



taining the pig tails in spaced apart relationship about said board type support structure;

E. said pig tail channel means including a plurality of separate, distinct and laterally spaced pig tail receiving channels formed across said board type support structure about the upper surface thereof with the respective pig tail channels extending in spaced apart relationship from said second end towards the intermediate area of said board type support structure and wherein said pig tail channels come together and merge with said main channel at the intermediate area of said board type support structure; and

F. means for engaging and retaining said main feed line and said pig tails within the respective channels formed in said board type support structure such that said pig tails are maintained in spaced apart relationship in order that they may be freely and conveniently spaced and discussed to various inputs.

4,605,398

DISPENSING DEVICE FOR CONTAINER HAVING FLUID TO BE CONTROLLABLY DISPENSED INTO AN EYE

Robert S. Herrick, 4134 N. Rosemead Blvd., Rosemead, Calif. 91770

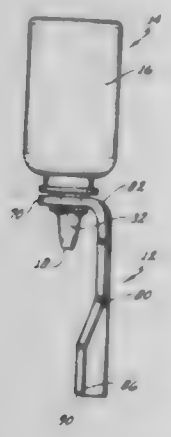
Filed Apr. 20, 1984, Ser. No. 602,358
Int. Cl.[4] A61N *1/00*
U.S. Cl. 604—300 **22 Claims**

1. A dispensing device adapted to be attached to a container having a fluid-dispensing opening through which fluid is to be controllably dispensed into an eye of a user comprising

attaching means adapted to be operatively coupled to the exterior of a said container and positioned with said fluid-dispensing opening extending in a predetermined direction therefrom; and

support guide means including means defining a first end which is operatively coupled to said attaching means and a second opposed eyelid everting end which is located in said predetermined direction and which extends beyond the fluid-dispensing opening, said second opposed eyelid everting end terminating in a curvilinear, blade-like evert-

ing member having an outer ribbed edge eye socket bone engaging member having two ribs, one of which is higher than the other, and which is adapted to be positioned against the outer skin and below the lower eyelid and over a portion of the bone structure defining the eye socket of a user wherein the outer ribbed edge is capable of being urged against the bone structure with the skin therebetween to produce movement of the skin relative to the eye



socket bone engaging member to evert the lower eyelid when said engaging member is positioned with the higher rib away from the eye and against the eye socket bone, said eyelid everting member urging the skin in a downward direction from the eye which everts the lower eyelid from the eye of a user, enabling drops of fluid to be directed into the eye in the absence of interference from the lower eyelid.

4,605,399

TRANSDERMAL INFUSION DEVICE

Robert E. Weston, Exeter, N.H., and Robert R. Hunter, III, Westboro, Mass., assignors to Complex, Inc., Hampton, N.H.

Filed Dec. 4, 1984, Ser. No. 677,799

Int. Cl.[4] A61M *7/00*

U.S. Cl. 604—305 **3 Claims**

1. Transdermal infusion device, comprising:

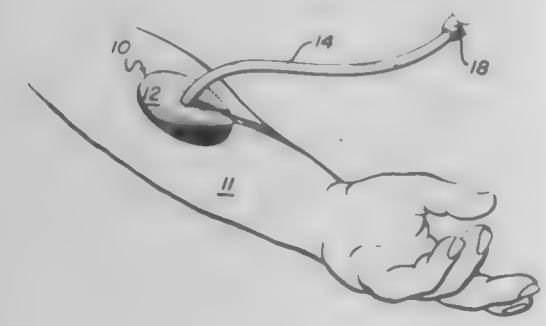
(a) an impervious main sheet formed of a foamed polymer plastic,

(b) a manifold sheet attached to one side of the main sheet and providing a passage complex in the form of a screen made up of strands of a polymer plastic,

(c) a flexible fluid delivery tube extending through the main sheet and into the passage complex of the manifold sheet,

(d) a porous sheet formed of gauze attached to and coextensive with the manifold sheet and adapted to lie against a human skin to release fluid thereto,

(e) an annular adhesive layer in a peripheral area provided on the said one side of the main sheet and completely



surrounding both the manifold sheet and the porous sheet, and

(f) a release sheet overlying the adhesive peripheral area of the main sheet, as well as the porous sheet and the manifold sheet.

4,605,400

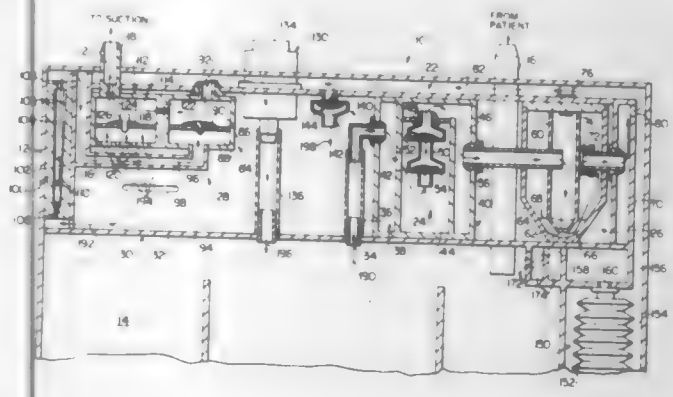
SURGICAL DRAINAGE APPARATUS

Leonard D. Kurtz, Woodmere, and Joseph M. LiCausi, Port Jefferson Station, both of N.Y., assignors to BioResearch Inc., Farmingdale, N.Y.

Filed May 4, 1984, Ser. No. 606,968

Int. Cl.[4] A61M *1/00*

U.S. Cl. 604—319 **42 Claims**



29. A surgical pleural drainage device for draining fluids from the body of a patient comprising:

a container,

a collection chamber for fluids formed in said container,

a fluid inlet extending from outside said container into the upper end of said collection chamber to provide an unobstructed passageway for the free flow of both liquids and gases from the body of a patient into the collection chamber,

connection means for connecting said collection chamber to a source of negative pressure to create a negative pressure within said collection chamber and thereby draw fluids into said collection chamber through said fluid inlet, said connection means including a suction outlet mounted on said container to which the source of negative pressure is applied and a passageway disposed adjacent the upper end of the container connecting said suction outlet and said collection chamber,

one way resiliently operated valve means provided in said fluid passageway for allowing gases to flow from said collection chamber to said suction outlet and preventing reverse flow of gases from said suction outlet to said collection chamber,

trap means for preventing liquid from said collection chamber from passing through said one way valve means,

control means provided in said passageway for controlling the amount of negative pressure applied to said collection chamber relative to the negative pressure applied at said suction outlet,

an air leak indicating means provided in said passageway for indicating the flow of gases through said passageway including a visible liquid trap through which the gases flow and therein form bubbles, which bubbles serve as visible indicators of flow, and

an excess negative pressure relief means for relieving excess negative pressure in said collection chamber which cannot relieve the negative pressure down to atmospheric pressure.

4,605,401

MATERIAL FOR THE ABSORPTION OF WATER, AQUEOUS SOLUTIONS AND AQUEOUS BODY FLUIDS

Miroslav Chmelir, and Alois Künschner, both of Krefeld, Fed. Rep. of Germany, assignors to Chemische Fabrik Stockhausen GmbH, Krefeld, Fed. Rep. of Germany

Continuation of Ser. No. 434,218, Oct. 14, 1982, abandoned. This application May 25, 1984, Ser. No. 614,353

Claims priority, application Fed. Rep. of Germany, Oct. 16, 1981, 3141098

Int. Cl.[4] A61F *13/16*

U.S. Cl. 604—368 **12 Claims**

1. A process for producing an absorption material compris-

ing applying directly to a cellulosic fibrous support a suspension in a liquid of a water-insoluble cross-linked absorbent polymer or copolymer of acrylic, methacryclic or acrylamidomethylpropanesulfonic acid or of a salt thereof, or of acrylic amide or methacrylic amide with one another or with at least one of vinylpyrrolidone and vinyl acetate, and drying to remove the liquid so as to leave the absorbent directly on the support.

4,605,402

SOFTENING OF A COMPOSITE ABSORBENT PRODUCT

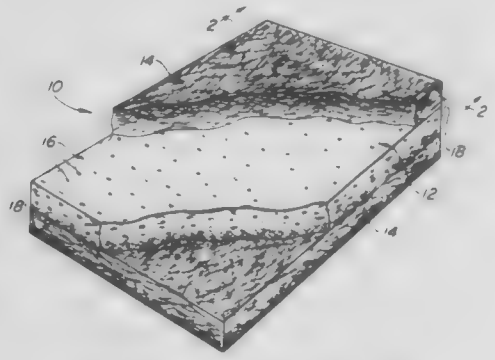
Michael J. Iskra, Flemington, N.J., assignor to Personal Products Company, Milltown, N.J.

Filed Aug. 17, 1984, Ser. No. 641,549

The portion of the term of this patent subsequent to Dec. 17, 2002, has been disclaimed.

Int. Cl.[4] A61F *13/16*

U.S. Cl. 604—368 **10 Claims**



1. A microcorrugated, perf-embossed, absorbent composite structure comprising an absorbing layer comprised of a fibrous web having an initial dry bulk of at least about 20 cc/gm., a dry bulk recovery of at least about 30 percent, a wet bulk of at least about 30 cc/gm., and a weight less than about 4 oz/sq. yd., and containing at least about 200 percent superabsorbent and a wicking layer, said structure having a Taber stiffness value less than about 25.

4,605,403

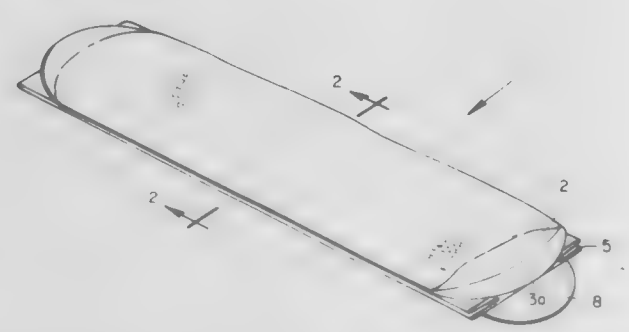
SANITARY NAPKIN DISPOSAL SYSTEM

J. Camille Tucker, San Antonio, Tex., assignor to Dalal Hibril, San Antonio, Tex.

Filed Apr. 8, 1985, Ser. No. 720,698

Int. Cl.[4] A61F *13/16*

U.S. Cl. 604—385 R



1. A sanitary napkin comprising an absorbent pad; a liquid impermeable sheet secured to one face of said pad; a perforated wrapper surrounding all portions of said pad and said impermeable sheet; said perforated wrapper having a slit-like opening extending transversely across one end of said napkin for a distance less than the full width of said napkin and disposed adjacent to said impermeable sheet; a flexible impermeable disposal bag dimensioned to receive said napkin within its interior without folding said napkin, said bag folded to an area substantially less than said impermeable sheet and insertable through said slit-like opening to lie between the outer face of said impermeable sheet and said perforated wrapper; and adhesive means on the outer face of that portion of said perforated wrapping adjacent said impermeable sheet for securing said assemblage to an undergarment.

4,605,404

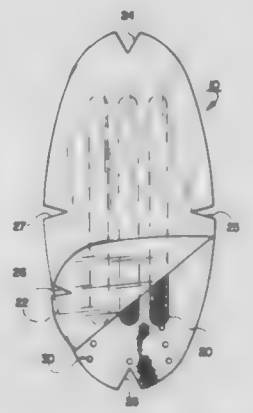
DISPOSABLE PAD FOR PANTY HOSE

Vincent R. Sneider, 3422 Hallcrest Dr., Hampton Hall, Atlanta, Ga. 30319

Filed Jan. 16, 1985, Ser. No. 691,845

Int. Cl.[4] A61F *13/16*

U.S. Cl. 604—385 R



11. A method of forming and constructing a disposable pad for attachment to panty hose and like undergarments which is secured by a self-stick adhesive applied to an outer surface member of said pad, the method including the steps of:

(a) proving an impervious backing-sheet member and contouring said backing-sheet member so as to conform to the desired shape of the pad;

(b) applying self-stick adhesive in defined patterns on the outer or backside of the backing-sheet member, with said applied adhesive so disposed as to leave a portion or portions of said backing-sheet member absent self-stick adhesive;

(c) arranging a plurality of absorbent fill portions and carrying said absorbent portions in close proximity to said backing sheet, said portions being of substantially the same thickness and positioned so as to abut each other, thereby providing a substantially equal division of the absorbent fill portions of said pad;

(d) locally securing the absorbent fill portions to the impervious sheet so that each securing means is disposed interior of the outer edges of the pad;

(e) providing a release sheet and covering all of the self-stick adhesive portions by and with said release sheet, the release sheet so disposed as to leave a portion of said backing sheet absent contact with said self-stick adhesive;

(f) trimming the exterior periphery of the pad including the backing-sheet member, the absorbent fill portions and the release sheet so that the edges of the pad are exposed and these exposed portions of the absorbent fill are disposed to contact the skin of the user, and

(g) at least two notches formed in the outer-edge portions of the pad, said notches disposed so as to straddle any formed seam or seams in the panty hose or like undergarment to which said pad is to be attached in use.

4,605,405

DYNAMICALLY MOVEABLE NAPKIN

Frederich O. Lassen, Winnebago County, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.

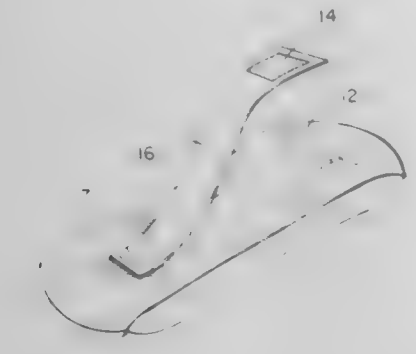
Filed Sep. 26, 1983, Ser. No. 536,034

Int. Cl.[4] A61F *13/16*

U.S. Cl. 604—389 **8 Claims**

1. A catamenial appliance comprising (i) means for positioning a sanitary napkin in a position to absorb body fluid discharge, said means adapted to be releasably securely adhered

to the crotch area of a wearer's undergarment, (ii) a sanitary napkin which comprises (1) a body fluid-impermeable baffle sheet, (2) a body fluid-permeable, body facing cover and (3) a layer of body fluid absorbent material disposed therebetween, and (iii) means for securely attaching said sanitary napkin to



said positioning means and for permitting constrained slideable movement of said sanitary napkin in response to wearer motion wherein said means (i) and (iii) comprise a strap adhered to said sanitary napkin (ii) and adapted to be releasably, adhesively securely adhered to the crotch area of a wearer's undergarment.

4,605,406

METHOD FOR FABRICATING PROSTHESIS MATERIAL

Patrick T. Cahalan, Champlin; Carolann M. Holmblad, Cambridge; Robert W. Pike, Jr., Minneapolis, and Eileen L. Schultz, Fridley, all of Minn., assignors to Medtronic, Inc., Minneapolis, Minn.

Filed Aug. 3, 1984, Ser. No. 637,476

Int. Cl.[4] A61F *1/24*

U.S. Cl. 623—1 **21 Claims**

1. A method of fabricating a prosthesis material for use with a living body, the prosthesis material having a surface of improved smoothness, the method comprising the steps of:

(a) coating the interior surface of a tube with a solution comprised of a synthetic polymer, having suitable compatibility characteristics, dissolved in a solvent, and

(b) precipitating the polymer as a coating on the interior surface of the tube by contacting the polymer solution with a precipating solution comprised of a fluid which is miscible with the solvent but operable as a precipitating nonsolvent with respect to the polymer.

4,605,407

HEART VALVE REPLACEMENTS

Martin M. Black; Philip J. Drury, and Wendy B. Tindale, all of Sheffield, United Kingdom, assignors to The University of Sheffield, Sheffield, England

Filed Jan. 9, 1984, Ser. No. 569,383

Claims priority, application United Kingdom, Jan. 11, 1983, 8300636

Int. Cl.[4] A61F *2/24*

U.S. Cl. 623—2 **4 Claims**

1. A heart valve replacement, comprising

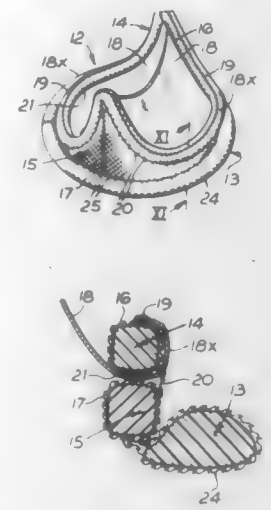
a two-part frame with parts defining a nip therebetween, one part being generally cylindrical, and the other part being generally ring-shaped and wire-like;

cloth coverings over both frame parts;

at least two leaflets each having a margin passing between the two frame parts and continuing around the wire-like frame part to a line of stitching spaced from the nip and connecting said leaflet to the cloth covering of that wire-like frame part; and

stitching spaced from said nip and between the cloth coverings of the two frames securing said frame parts together;

said nip between the two frame parts defining flexure lines, one along each of said leaflets spaced from the line of stitching between said leaflet and the wire-like frame part and from the stitching securing said two frame parts together, whereby during leaflet flexing tearing of either of



said leaflets between stitch holes of the stitching is eliminated.

4,605,408

ARTIFICIAL CARDIAC VALVE WITH ACTIVE OPENING

Alain Carpentier, Paris, France, assignor to Universite Pierre et Marie Curie Paris VI, France

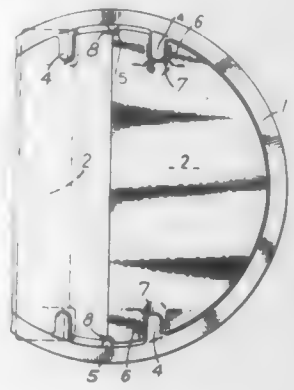
Filed Mar. 29, 1984, Ser. No. 594,736

Claims priority, application France, Mar. 30, 1983, 83 05274

The portion of the term of this patent subsequent to Jul. 3, 1996, has been disclaimed.

Int. Cl.[4] A61F *2/24*

U.S. Cl. 623—2 **4 Claims**



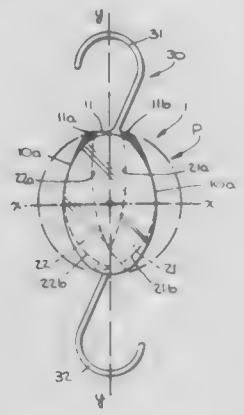
1. A cardiac valve comprising a fixed seat having a passage for blood flow therethrough including a circular ring comprising suture means and a swell, a mobile check unit for opening and closing the passage including two substantially semi-circular check valves, each check valve including two swells and whose edges rest on the swell on said ring when the valve is closed, said check valves effecting in their displacements a movement of translation and a movement of rotation, wherein the axes of rotation of each valve are constituted by two protuberances each fixed on the ring and together forming a common axis, said protuberances cooperating with grooves made in the two swells of each check valve, and means for maintaining the check unit in a controlled opened position when blood pressure is balanced on both sides thereof.

4,605,409

INTRAOCULAR LENS WITH MINIATURE OPTIC HAVING EXPANDABLE AND CONTRACTIBLE GLARE-REDUCING MEANS

Charles D. Kelman, North Shore Towers - 269 Grand Central Pkwy., Bldg. 3, Floral Park, N.Y. 11005

Filed May 21, 1984, Ser. No. 612,584
Int. Cl.[4] A61F *2/16*
U.S. Cl. 623—6 **22 Claims**



1. An intraocular lens comprising:

a lens body for focusing light rays on the retina of an eye, said lens body having an anterior and a posterior face and having a pair of imaginary coordinate axes at right angles to one another and to the optical axis and said lens body having a maximum dimension of substantially less than 5 mm along any line drawn through said lens body parallel to a given one of its pair of coordinate axes, said maximum dimension being defined by a pair of opposite peripheral edge portions of said lens body transverse to said one coordinate axis, and

masking means including a pair of wing portions operatively connected with said lens body for sliding movement along a face of said lens body between an expanded condition in which free inner edge portions of said wing portions are respectively located adjacent said peripheral edge portions of said lens body and said wing portions extend radially outwardly of said peripheral edge portions of said lens body for inhibiting light rays which are directed toward said peripheral edge portions from being scattered thereby toward the retina after the lens has been implanted in an eye, and a contracted condition in which said pair of wing portions are located substantially entirely within said maximum dimension of said pair of opposite peripheral edge portions of said lens body for permitting insertion of said lens through an incision in an eye which is substantially less than 5 mm in length.

4,605,410

INTRAOCULAR LENS

Dennis T. Grendahl, Medicine Lake, Minn., assignor to Surgidev Corporation, Goleta, Calif.

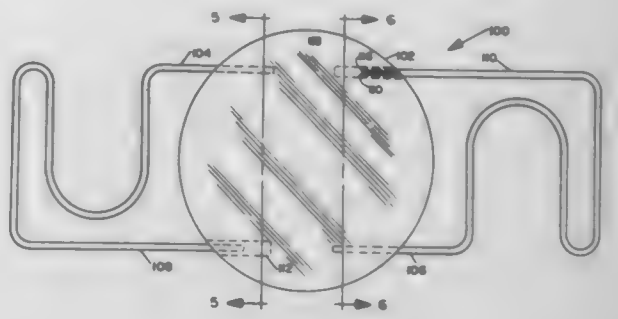
Division of Ser. No. 398,322, Jul. 15, 1982, Pat. No. 4,503,570.
This application Mar. 11, 1985, Ser. No. 710,313
Int. Cl.[4] A61F *2/16*
U.S. Cl. 623—6 **1 Claim**

1. Intraocular lens for implant in an eye, said lens comprising:

a. plano-convex lens including a plano surface, a convex surface, and a finite edge surface about a junction between said plano surface and said convex surface;

b. plurality of closed loops for supporting said lens in said eye, said loops including two ends, at least one of said ends of each loop secured to said edge surface of said lens;

c. slidable means including an elongated hole in said edge of said lens of slightly larger geometrical cross section than the geometrical cross section of an other end of said loops; and,



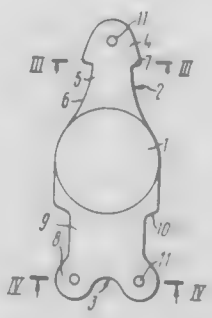
d. a geometrically configured channel running the length of said hole for relieving pressure between said hole and said slidable end of said loop.

4,605,411

ANTERIOR-CHAMBER INTRAOCULAR PROSTHETIC LENS

Svyatoslav N. Fedorov; Sergei I. Anisimov; Alexandr A. Karavaev; Vladimir G. Kiselev, all of Moscow; July A. Juzhelevsky, Leningrad, and Evgeny I. Degtev, Moscow, all of U.S.S.R., assignors to Moskovsky Nauchno-Issledovatelsky Institut Mikrokhirurgii Glaza, Moscow, U.S.S.R.

Filed Sep. 17, 1985, Ser. No. 777,022
Claims priority, application U.S.S.R., Sep. 27, 1984, 3795791
Int. Cl.[4] A61F *2/16*
U.S. Cl. 623—6 **2 Claims**



1. An intraocular prósthetic lens, comprising an optical element, two diametrically opposite supporting setting elements shaped as platforms,

one of said platforms formed by a circumferential sector situated on the platform side distant from the optical element, and by a portion of said sector conjugated with the optical element, said conjugate portion having concave lateral sides forming shoulders at the place of joining with the sector,

the other of said platforms is formed by two rounded-off portions arranged symmetrically with respect to a plane passing through the centre of the optical element and substantially radially, said roundedoff portions being conjugated with each other and with the optical element through a transitional portion, projections being thus formed that face a direction opposite to the optical element,

both of said platforms have a biconcave crosssectional shape and are arranged in a common plane which is coplanar with the central plane of the optical element, and one of said platforms is thicker than the other.

4,605,412

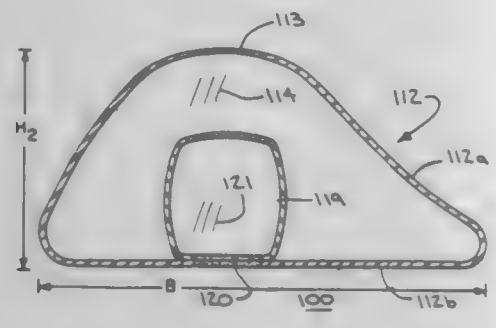
MAMMARY PROSTHESIS HAVING ADJUSTABLE PROJECTION

Lance J. LaForest, Scottsdale, Ariz., and Rita L. Taylor, Racine, Wis., assignors to Medical Engineering Corp., Racine, Wis.

Continuation-in-part of Ser. No. 459,383, Jan. 20, 1983, abandoned. This application Nov. 19, 1984, Ser. No. 672,785

Int. Cl.⁴ A61F *2/12*

U.S. Cl. 623—8 **4 Claims**



1. An improved prosthesis having a vertical axis defining a projection (H_1) which is adjustable without increasing the prosthesis base (B) dimension comprises:

a first distensible outer container having a substantially fixed base dimension;

a second column shaped contained having a flat top disposed within the interior of said first container and wherein a longitudinal axis of said column shaped contained is aligned substantially parallel to said vertical axis, the interior of said second container being partially filled with silicone gel and the remainder of the interior of said first container being completely filled with silicone gel; and

means for adding liquid to the silicone gel in the second container to further fill said prosthesis thereby extending said column shaped container vertically along said longitudinal axis thus vertically increasing said projection of said prosthesis without increasing said base dimension of said first container.

4,605,413

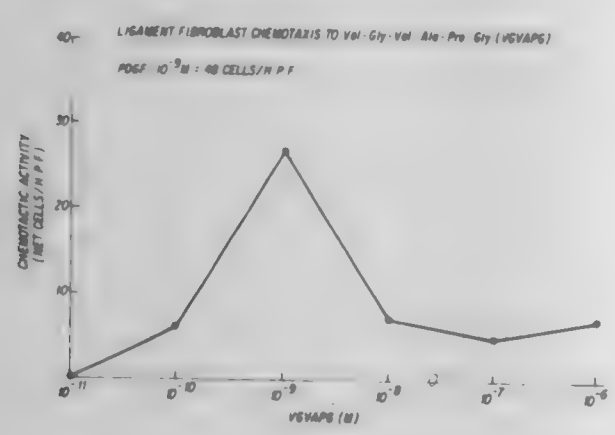
STIMULATION OF CHEMOTAXIS BY CHEMOTACTIC PEPTIDES

Dan W. Urry, Birmingham, Ala., and Robert M. Senior, Clayton, Mo., assignors to The University of Alabama at Birmingham, Birmingham, Ala.

Filed Sep. 19, 1983, Ser. No. 533,670

Int. Cl.⁴ A61F *2/02;* **A01N** *1/02, 25/00;* **A61K** *9/38*

U.S. Cl. 623—11 **11 Claims**



1. A prosthetic device wherein a surface of said device has a chemotactic peptide of the formula

$$B^1—X—(APGVGV)_n—Y—B^2$$

wherein

A is a peptide-forming residue of L-alanine;

P is a peptide-forming residue of L-proline;

G is a peptide-forming residue of glycine;

V is a peptide-forming residue of L-valine;

B^1 is H or a biocompatible N-terminal group;

B^2 is OH, OB^3 where B^3 is a non-toxic metal ion, or a biocompatible C-terminal group;

X is PGVGV, GVGV, VGV, GV, V, or a covalent bond;

Y is APGVG, APGV, APG, AP, A, or a covalent bond; and

n is an integer from 1 to 100; incorporated into said surface.

4,605,414

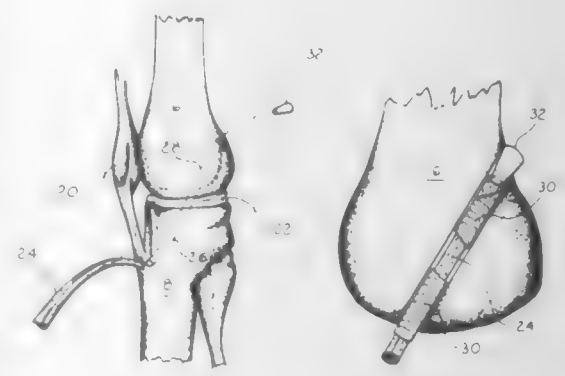
RECONSTRUCTION OF A CRUCIATE LIGAMENT

John Czajka, One Executive Park Dr., Albany, N.Y. 12203

Filed Jun. 6, 1984, Ser. No. 617,742

Int. Cl.⁴ A61F *2/08*

U.S. Cl. 623—13 **5 Claims**



1. Process for surgically reconstructing the anterior cruciate ligament of the knee joint comprising the steps of forming aligned holes through both the tibia and the femur towards the points of origin of the damaged ligament, removing the damaged ligament and substituting a composite graft therefor by severing a strip of the patellar tendon, then fitting the same into an open-ended sleeve of synthetic biocompatible material, fitting the two-ply composite structure within the aligned holes formed in the tibia and femur and using a fastening means to secure the free end of the composite structure in place within the femur.

4,605,415

BIOREACTIVE MATERIALS

Raymond M. Richez, Mons, Belgium, assignor to Region Wallonne, representee par l'Executif Regional Wallon, Brussels, Belgium

Filed Dec. 2, 1983, Ser. No. 557,495

Claims priority, application Belgium, Dec. 2, 1982, 895229

Int. Cl.⁴ A61F *2/28;* **C03C** *3/097*

U.S. Cl. 623—16 **7 Claims**

1. A vitreous anti corrosive bioreactive material consisting essentially of a mixture of 20 to 50% by weight of SiO_2, 15 to 25% by weight of CaO, 5 to 10% by weight of P_2O_5, 15 to 25% by weight of Na_2O and 3 to 15% by weight of Al_2O_3, formed from a mixture of oxides or their metallic precursors yielding equivalent quantities of oxides by fusion, said material forming a silico-aluminous layer of high corrosion resistance in the presence of living tissues.

4,605,416

APPARATUS FOR HIP ARTHROPLASTY

Charl J. Grobbelaar, Transvaal, South Africa, assignor to Arthroplasty Research & Development (Pty) Ltd., Pretoria, South Africa

Filed Aug. 1, 1984, Ser. No. 636,684

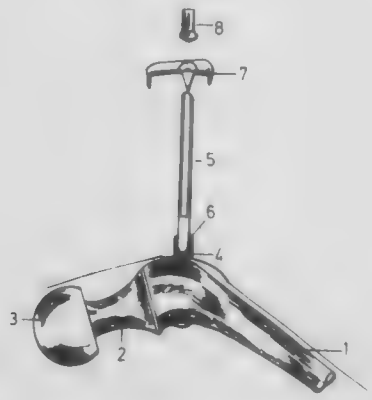
Claims priority, application South Africa, Aug. 18, 1983, 83-3562

Int. Cl.⁴ A61F *2/36, 5/04*

U.S. Cl. 623—23 **4 Claims**

1. The combination of a femoral prosthetic device for use in hip arthroplasty and a greater trochanter fixation device, said

femoral prosthetic device comprising a stem, a neck and a ball for use in combination with an acetabular prosthesis, the stem, neck and ball of the femoral prosthetic device being unperforated, said greater trochanter fixation device comprising a loop part and a u-bolt, said loop part having a ring-like portion



constructed and arranged to be passed over and thereby attached to the stem without perforating the same, the loop part having a hole formed therein through which the u-bolt passes unhindered, said u-bolt being swingable in said hole, the loop part and the stem being mutually contoured such that the loop part is adopted to snugly embrace the stem.

4,605,417

PROSTHETIC JOINT

K. E. Fleischauer, 2031 SE. 33rd St., Okeechobee, Fla. 33472

Filed Oct. 3, 1984, Ser. No. 657,370
Int. Cl.[4] A61F *2/66*
U.S. Cl. 623—49 **20 Claims**

1. A prosthetic ankle device for use with a rigid prosthetic lower leg portion and a rigid prosthetic foot portion, comprising:

upper and lower plates adapted for attachment to flat faces on said lower leg and foot portions respectively, and disposed therebetween;

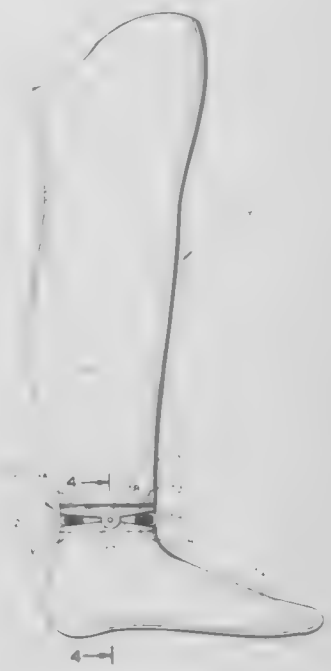
said upper and lower plates having dual interfittable hinge means disposed along facing portions of said plates, said hinge means having complementary ridge and trough shapes which, when interfitted, bear against one another over a substantial area and define an axis of rotation for the foot portion relative to the lower leg portion, the axis being perpendicular to a plane of the leg portion and foot portion, said device further including:

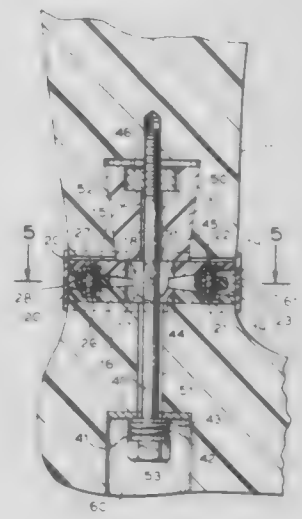
(a) longitudinally extending means from the leg portion to the foot portion which urges the ridge and trough shapes together, and

(b) laterally extending means preventing separation of the ridge and trough shapes,

said longitudinally extending means and said laterally extending means providing a safety measure in the event of failure of either of said means; and

opposed biasing means located between said plates and spaced on both sides of said axis of rotation for progressively resisting said rotation about the axis, whereby natural foot rotation about an ankle is simulated with respect to cushioning of foot strikes without risking loss of balance.





4,605,418

AFTERTREATMENT OF DYED CELLULOSIC MATERIALS

Nick J. Christie, Mendham, N.J.; Randall A. Cox, Greenville, S.C.; Robert E. James, Rock Hill, S.C., and James C. Stevenson, Ft. Mill, S.C., assignors to Diamond Shamrock Chemicals Company, Dallas, Tex.

Continuation of Ser. No. 473,550, Mar. 9, 1983, Pat. No. 4,531,946. This application Jan. 28, 1985, Ser. No. 695,578

Int. Cl.[4] D06M *15/52*

U.S. Cl. 8—192 5 Claims

1. In a process for aftertreating dyed cellulosic materials and their blends, the improvement comprising aftertreating dyed cellulosic materials and their blends with a finish in an amount sufficient to improve wet and dry crockfastness, the finish comprising effective amounts of a reactive component and a blocked urethane prepolymer component wherein the active component is an epoxidized polyamine by applying, drying and curing the reactive and prepolymer components in the finish in situ on the materials and blends.

4,605,419

5,8-DIHYDROXY NAPHTHALENE-1,4-DIONE DERIVATIVE AND A HAIR DYE COMPOSITION CONTAINING THE SAME

Masashi Kikuchi, and Masahiro Matsuoka, both of Yokohama, Japan, assignors to Shiseido Company Ltd., Tokyo, Japan

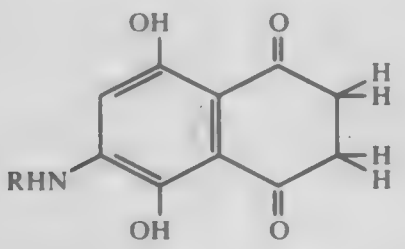
Filed Apr. 19, 1985, Ser. No. 725,069

Claims priority, application Japan, Apr. 20, 1984, 59-79965; Jul. 25, 1984, 59-154946; Sep. 18, 1984, 59-195471; Sep. 18, 1984, 59-195472; Oct. 16, 1984, 59-216560; Jan. 17, 1985, 60-6519; Mar. 5, 1985, 60-42930; Mar. 5, 1985, 60-42931

Int. Cl.[4] A61K *7/13;* C07C *87/64*

U.S. Cl. 8—426 9 Claims

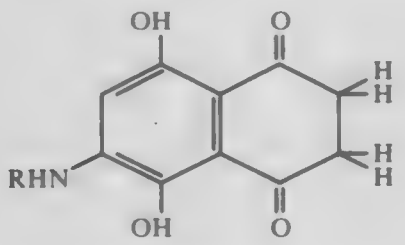
1. A naphthalene derivative having the general formula:



(I)

wherein R represents hydrogen, an alkyl group having 1 to 8 carbon atoms, an $R^1O(CH_2)_n$ group, or a benzyl group, R^1 represents hydrogen or a lower alkyl group, and n represents an integer of 2 or 3.

6. A hair dye composition comprising a naphthalene derivative having the general formula:



(I)

wherein R represents hydrogen, an alkyl group having 1 to 8 carbon atoms, an $R^1O(CH_2)_n$ group, or a benzyl group, R^1 represents hydrogen or a lower alkyl group, and n represents an integer of 2 or 3.

4,605,420

METHOD FOR THE BENEFICIATION OF OXIDIZED COAL

Phillip E. McGarry, Palmerton; David E. Herman, Jim Thorpe; Robert A. Treskot, Walnutport, and David C. Fistner, Sr., Bethlehem, all of Pa., assignors to Sohio Alternate Energy Development Company, Cleveland, Ohio

Filed Jul. 2, 1984, Ser. No. 627,163

Int. Cl.[4] C10L *9/02, 1/32*

U.S. Cl. 44—1 R 3 Claims

1. A process for modifying the surfaces of oxidized coal and beneficiating said coal, said process comprising the steps of:

(i) subjecting coal having oxidized surfaces to high shear agitation in water;

(ii) desliming the coal mixture resulting from step (i); and

(iii) introducing the deslimed coal mixture resulting from step (ii) to froth flotation beneficiation, said froth flotation beneficiation comprising admixing said deslimed coal mixture with a surface treating mixture comprised of a polymerizable monomer, a catalyst and a liquid organic carrier.

4,605,421

PROCESS FOR THE PREPARATION OF A CARBONACEOUS-DERIVED SOLID FUEL PRODUCT

Jim W. Kauffman; William C. Laughlin, both of Edmond, and Roger A. Baldwin, Oklahoma City, all of Okla., assignors to Kerr-McGee Chemical Corporation, Oklahoma City, Okla.

Filed Sep. 10, 1984, Ser. No. 648,471

Int. Cl.[4] C10L *9/00, 9/08*

U.S. Cl. 44—1 F 14 Claims

1. A process for preparing a solid, particulated carbonaceous fuel composite having an improved heating value and substantially reduced tendencies to ignite spontaneously and undergo particle size degradation, consisting essentially of:

drying a solid, particulated carbonaceous material ranging in size from about two inches to about +8 mesh by heating said material at a temperature ranging from about 100° C. to about 150° C. to remove and recover a substantial portion of inherent water in said particulated carbonaceous material and provide a dried, particulated carbonaceous material having a reduced water content;

pyrolyzing at least a portion of said dried, particulated carbonaceous material by heating said material at a temperature sufficient to pyrolyze said portion to a particulated carbonaceous-based char material and to simultaneously recover from said portion carbonaceous-based tar by-products, said portion of dried, particulated carbonaceous material being an amount which upon pyrolysis will provide at least about 0.5% by weight of said carbonaceous-based tar by-products based upon the weight of a material to be contacted with a water-in-tar emulsion, said material and said water-in-tar emulsion being defined hereinbelow;

providing a water-in-tar emulsion prepared from said recovered carbonaceous-based tar by-products;

contacting said water-in-tar emulsion with at least one material selected from the group consisting of said dried, particulated carbonaceous material and a mixture of said dried, particulated carbonaceous material and said particulated carbonaceous-based char material at a temperature ranging from about 50° C. to about 600° C. to provide said solid, particulated carbonaceous fuel composite; and

recovering said solid, particulated carbonaceous fuel composite.

4,605,422

OIL-IN-ALCOHOL MICROEMULSION

Errol D. Goddard, Haworth, N.J., and Pak S. Leung, Highland Mills, N.Y., assignors to Union Carbide Corporation, Danbury, Conn.

Continuation of Ser. No. 595,421, Mar. 30, 1984, abandoned.
This application Dec. 26, 1985, Ser. No. 815,192
Int. Cl.[4] C10L *1/32*
U.S. Cl. 44—51 **7 Claims**

1. An oil-in-alcohol microemulsion composition having a discontinuous phase and a continuous phase comprising;

(a) alcohol, in an amount sufficient to form a continuous phase in the composition, and

(b) alcohol-insoluble oil particles having a vapor pressure of less than 80 mm of Hg at 25° C. and forming a discontinuous phase in said composition, said particles having a particle size of less than about 0.1 micron; and,

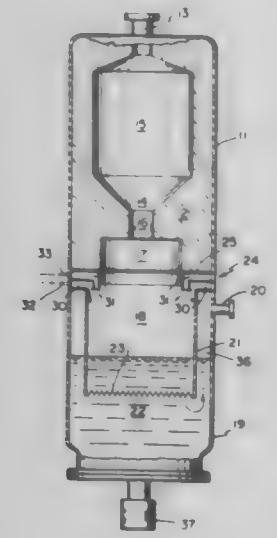
(c) at least one emulsifier selected from the group consisting of nonionic surfactants, said emulsifier being present in an amount sufficient to stabilize the composition, wherein said alcohol-insoluble oil particles are present in an amount of between about 0.001 and about 20 wt. percent based on the weight of the composition, and wherein said emulsifier is present in an amount of between about 0.1 times and about 100 times the weight of said alcohol-insoluble oil particles in the composition, and wherein said alcohol is present in an amount of at least about 26 wt. percent based on the weight of the composition, with the proviso that the total weight of the composition not exceed 100 wt. percent, said composition being devoid of anionic surface-active agent.

4,605,423

APPARATUS FOR GENERATING AND COOLING SYNTHESIS GAS

Wolfgang Koog, Pleasantville, N.Y., assignor to Texaco Development Corporation, White Plains, N.Y.

Division of Ser. No. 367,821, Apr. 12, 1982, Pat. No. 4,466,808.
This application Jul. 9, 1984, Ser. No. 629,149
Int. Cl.[4] C10J *3/48, 3/84*
U.S. Cl. 48—69 **3 Claims**



1. A synthesis gas generation apparatus including

a vertically extending synthesis gas generator having a lower outlet through which hot synthesis gas is withdrawn;

means defining a vertically extending quench chamber, below said vertically extending synthesis gas generator, having a hot synthesis gas inlet therein joining said lower outlet of said synthesis gas generator whereby hot synthesis gas exits said synthesis gas generator and is admitted to said quench chamber, and an exit conduit at the upper portion of said quench chamber, said quench chamber containing a body of cooling liquid in the lower portion thereof;

an attenuated vertically extending dip tube in said quench chamber having a vertically extending axis, inner and outer perimetric surfaces, and an upper inlet through which hot synthesis gas entering said quench chamber is admitted to said dip tube, through which said gas moves toward a lower outlet end of said dip tube located within said body of liquid;

a quench ring adjacent to the inner perimetric surface at the inlet end of said dip tube, said quench ring having a liquid-inlet;

a liquid outlet on said quench ring for directing a curtain of liquid along the inner perimetric surface of said attenuated dip tube and toward the outlet end of said dip tube;

spray means in said quench ring for directing a stream of liquid away from the inner perimetric surface of said attenuated vertically extending dip tube and toward the axis of said dip tube;

and said quench chamber surrounding said attenuated vertically extending dip tube forming a closed chamber thereabound providing an annular passageway therebetween, and said exit conduit comprising a quenched gas outlet adjacent to the inlet end of said attentuated dip tube, and a quench bottoms liquid outlet in said quench chamber adjacent to the outlet end of said dip tube;

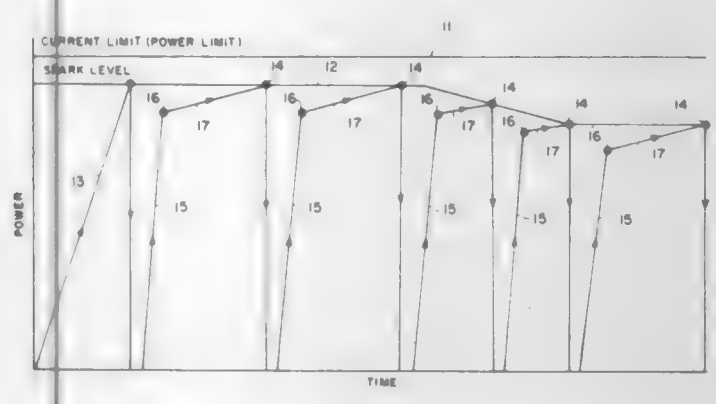
whereby charge gas admitted to the inlet end of said attenuated vertically extending dip tube is contacted with liquid from said liquid outlet on said quench ring and said spray means, as the charge gas passes downwardly along the axis of said attenuated dip tube, and thereafter into a body of liquid maintained in said quench chamber, said charge gas leaving said dip tube, passing through the annular passageway between the outside of the outer perimetric surface of the dip tube and the inside of the inner perimetric surface of the quench chamber, and thence to the quench gas outlet of said quench chamber.

4,605,424

METHOD AND APPARATUS FOR CONTROLLING POWER TO AN ELECTRONIC PRECIPITATOR

David F. Johnston, 103 Fairmont Dr., Hampton, Va. 23666

Filed Jun. 28, 1984, Ser. No. 625,436
Int. Cl.[4] B03C *3/68*
U.S. Cl. 55—2 **9 Claims**



1. A method for controlling the power to a precipitator with a power varying means for the purpose of closely approximating the actual spark line in order to maximize the efficiency of the precipitator, where the power received by said precipitator is determined by the firing angle of said power varying means and a selected setback and where the power is varied to follow a fast ramp and a slow ramp, comprising the steps of:

storing in a look-up table in memory fast ramp values and slow ramp values in pairs corresponding to all possible firing angles and setbacks according to a predetermined formula;

selecting a setback;

selecting a spark rate;

detecting the occurrence of a spark;

reducing the power to said precipitator to zero in response to the detection of a spark;

retrieving from memory the appropriate fast and slow ramp

values corresponding to the selected setback and the firing angle;

automatically adjusting the retrieved slow ramp value according to the spark rate;

increasing the power to the precipitator over a fixed period of time along a fast ramp defined by the retrieved fast ramp value; and

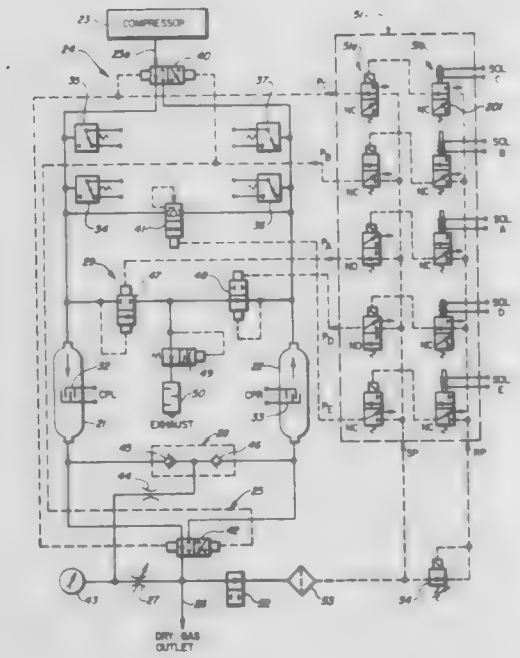
increasing the power to the precipitator until the precipitator sparks along a slow ramp defined by the retrieved slow ramp value as adjusted according to the spark rate, whereby the retrieved fast ramp value and retrieved slow ramp value as adjusted according to the spark rate cause the precipitator to spark at the selected spark rate thereby closely approximating the actual spark line and maximizing the operating efficiency of the precipitator.

4,605,425

HEATERLESS DRYER HAVING VARIABLE CYCLE

Marcel G. Verrando, Ocala; Michael B. Duich, Bellview, and Bradley T. Overton, Ocala, all of Fla., assignors to Pall Corporation, East Hills, N.Y.

Filed May 6, 1985, Ser. No. 731,563
Int. Cl.[4] B01D *53/04*
U.S. Cl. 55—20 **32 Claims**



1. A process for reducing the concentration of first gas in mixture thereof with a second gas to below a limiting maximum concentration thereof in the second gas, which comprises the steps of:

(a) during a predetermined time interval, passing an influent flow of the mixture through a bed of a sorbent having a preferential affinity for the first gas, adsorbing the first gas thereon to form a gaseous effluent having a concentration thereof below the maximum, and forming a concentration gradient of first gas in the bed progressively decreasing from one end to the other end as the adsorption continues and an increasing concentration of first gas in the second gas defining a concentration front progressively advancing in the bed from one end to the other end as sorbent capacity thereof decreases;

(b) sensing whether the first gas front in said sorbent bed has advanced by a predetermined extent at the end of said first predetermined time interval to decide whether purging of said sorbent bed is required after said predetermined time interval;

(c) at the end of said predetermined time interval, closing off the influent flow of gas, and in response to the decision in step (b), conditionally depressurizing the bed of said sorbent and introducing a purge gas to regenerate said sorbent; and thereafter,

(d) repeating steps (a), (b) and (c) above;

wherein said process further comprises,

recording a history of the decision in step (b) of whether purging of said sorbent bed is required, and

during the repetition of steps (a), (b) and (c) above, decreasing the duration of said predetermined time interval based upon said recorded history indicating that purging of said sorbent bed is frequently required, and increasing said predetermined time interval based upon said recorded history indicating that purging of said sorbent bed is infrequently required.

23. A control system for a pressure-swing desiccant gas dryer having a first desiccant bed and a second desiccant bed, gas to be dried being alternately directed by valves to pass through one of the beds providing adsorption of vapor while the other desiccant bed is being regenerated after depressurization or is in an idle condition in response to at least one cyclic bed select signal and at least one regeneration enable signal, respectively, the control system comprising, in combination,

a capacitance probe in each desiccant bed so that the level of condensate saturation of the desiccant in each bed is indicated by the capacitance of the respective probe,

a probe interface for generating a digital signal indicating the capacitance of the probe in the desiccant bed undergoing regeneration,

a microcomputer executing a stored sequence of instructions, said microcomputer comprising means for generating said bed select signal to switch the bed providing adsorption after a predetermined adsorption time interval,

means for receiving said digital signal generated by said probe interface at the end of said adsorption time interval, comparing said digital signal to a predetermined threshold signal representative of the condensate saturation level for which regeneration is required, and generating said regeneration enable signal in response to said means for comparing the final count to the predetermined threshold indicating that regeneration is required, and

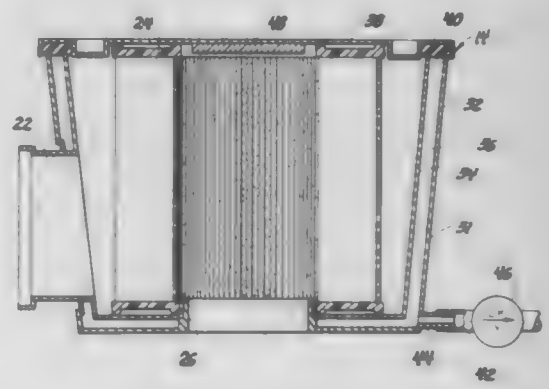
means for conditionally changing the duration of said adsorption time interval in response to said regeneration enable signal so that said duration of the adsorption interval decreases at a limited rate when purging is frequent and increases at a limited rate when purging is infrequent, and for limiting the duration of said adsorption time interval so as not to exceed a predetermined maximum and so as not to be less than a predetermined minimum.

4,605,426

INSULATED ENGINE AIR CLEANER

William F. Thornburgh, Rochester Hills, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Jul. 29, 1985, Ser. No. 760,170
Int. Cl.[4] B01D *35/30*
U.S. Cl. 55—267 **3 Claims**



1. In an engine air cleaner having a housing with an inlet and an outlet and a filter mounted in an air passage therebetween, the improvement comprising said housing having double wall means forming a vacuum chamber extending about said filter, and vacuum establishing means for establishing a subatmospheric pressure in said chamber to thereby vacuum insulate the air cleaner for both heat transfer and noise attenuation with respect to the air passing therethrough.

4,605,427

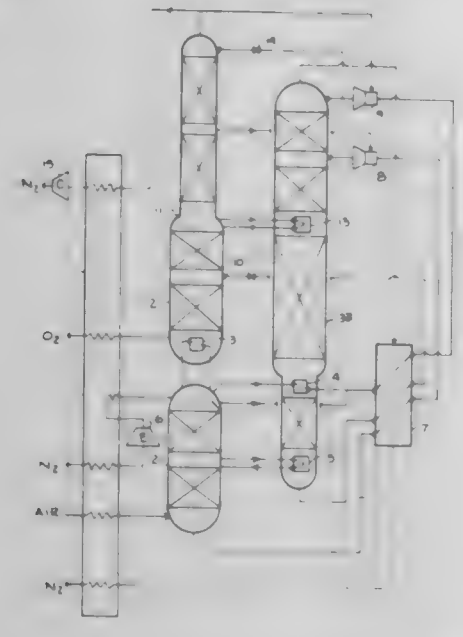
CRYOGENIC TRIPLE-PRESSURE AIR SEPARATION WITH LP-TO-MP LATENT-HEAT-EXCHANGE

Donald C. Erickson, 1704 S. Harbor La., Annapolis, Md. 21401

Continuation-in-part of Ser. No. 480,786, Mar. 31, 1983. This application Jun. 6, 1983, Ser. No. 501,264

Int. Cl.⁴ F25J *3/02*

U.S. Cl. 62—22 **21 Claims**



1. A process for producing oxygen of at least about 96% purity comprising

(a) feeding at least part of a supply of moisture and CO_2 free air to a high pressure (HP) rectification column;

(b) feeding at least part of the oxygen enriched liquid bottom product from the HP column to a medium pressure (MP) column;

(c) feeding substantially all of the further oxygen enriched liquid bottom product from the MP column to a low pressure (LP) column comprised of an argon stripping section and at least one rectification section;

(d) reboiling both the MP and LP columns by latent heat exchange with HP column vapor;

(e) exchanging latent heat between vapor from an intermediate height of the LP column and liquid from an intermediate height of the MP column, and returning reflux to the LP column and reboil to the MP column;

(f) withdrawing gaseous N_2 from the MP column overhead

(g) withdrawing oxygen of said purity from the bottom of said LP column.

12. An apparatus comprising: means designed for separating from air, oxygen of at least 96% purity by cryogenic distillation including a high pressure rectification column; a medium pressure distillation column which is reboiled in part by the HP column; a low pressure distillation column comprising rectifier and argon stripper which is reboiled by the HP column; a reboiler/reflux condenser which exchanges latent heat between LP column intermediate height vapor and MP column intermediate height liquid; and means for withdrawing oxygen of said purity from the bottom of said LP column And a conduit for withdrawal of gaseous N_2 from the MP column overhead.

4,605,428

SINTERED HIGH-SILICA GLASS AND ARTICLES COMPRISING SAME

David W. Johnson, Jr., Pluckemin; John B. MacChesney, Lebanon, and Eleizer M. Rabinovich, Berkeley Heights, all of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Aug. 3, 1984, Ser. No. 637,492

Int. Cl.⁴ C03B *19/06, 37/016*

U.S. Cl. 65—2 **9 Claims**

1. Method of fabricating a high silica glass body, the method comprising

(a) forming a first gel, the first gel formed either

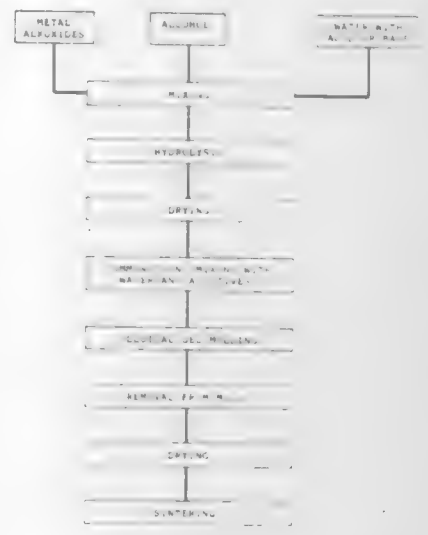
(i) by a first process that comprises forming a first sol by dispersing first particles in a liquid, with the first particles consisting substantially of colloidal silica particles, and gelling the first sol, or

(ii) by a second process comprising hydrolyzing at least one metal alkoxide;

(b) at least partially drying the first gel, thereby forming an intermediate high silica material;

(c) forming second particles by comminution of intermediate high silica material;

(d) forming a second sol by dispersing the second particles in a liquid;



(e) gelling the second sol to form a second gel;

(f) substantially drying the second gel, whereby a substantially dry porous body is formed, the porous body having a pore size distribution, such that at most about 5% of the total pore volume of the porous body is contributed by pores having an effective pore diameter greater than about 0.5 μm, and such that at least about 10% of the total pore volume of the porous body is contributed by pores having an effective pore diameter that is greater than about 0.02 μm; and

(g) sintering the porous body at a sintering temperature, whereby a high silica glass body is produced.

4,605,429

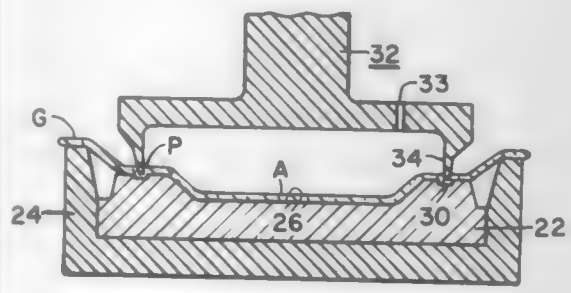
TRIMMING PRODUCTS FROM SHEET GLASS

Lawrence S. Rajnik, Corning, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed May 7, 1985, Ser. No. 731,362

Int. Cl.⁴ C03B *11/00*

U.S. Cl. 65—105 **10 Claims**



1. A method of separating a newly formed article from sheet glass while still in a semi-molten condition which comprises:

suspending the sheet glass over a shallow groove adjacent the periphery of the formed article,

initially maintaining the suspended portion of said sheet glass out of contact with surface portions of said groove and thus inhibiting the loss of heat from such peripheral portion through conduction,

forcing said suspended portion of said sheet into said groove and reducing the thickness of the sheet within the groove between the article and the remainder of the sheet,

terminating the reduction in thickness of the sheet within the peripheral groove while maintaining a thin integral con-

nection section between the article and the remainder of the sheet,

and cooling said thin section to cause a thermal crack-off separation between the article and the remainder of the sheet along said thin section within said shallow groove.

4,605,430

PLANT GROWTH PROMOTER FROM RICE BRAN AND PROCESSES FOR MAKING AND USING

Nadir B. Godrej, and Manmohan S. Thakur, both of Bombay, India, assignors to Godrej Soaps Private Limited, Bombay, India

Filed Nov. 9, 1984, Ser. No. 670,175
Int. Cl.[4] C05F *11/00*
U.S. Cl. 71—23 **56 Claims**

1. A process for the preparation of a plant growth promoter comprising the sequential steps of:

(A) saponifying under aqueous liquid phase conditions with alkali metal hydroxide a starting material consisting essentially of a residue,

(1) said residue having been derived from the distillation of crude fatty acids,

(2) said crude fatty acids having been derived from crude rice bran oil by at least one process selected from the group consisting of:

(a) distillative deacidification, and

(b) hydrolysis,

(3) said residue being characterized by comprising on a 100 weight percent total residue basis:

(a) from about 28 to 44.5 weight percent unsaponifiables,

(b) from about 6.8 to 7.2 weight percent free fatty acids, and

(c) from about 48.7 to 64.3 weight percent glycerides,

(4) said residue being further characterized by having a saponification value ranging from about 88.7 to 130.2, thereby to produce a resulting saponified reaction mixture containing alkali metal organic salts,

(B) contacting under aqueous liquid phase conditions alkaline earth metal salt with said resulting saponified reaction mixture, thereby to convert said alkali metal organic salts into alkaline earth metal salts, and

(C) separating the solids produced from said contacting from the resulting associated liquid phase.

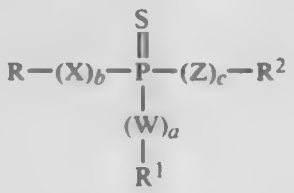
4,605,431

COMPOSITIONS AND METHODS FOR REDUCING HERBICIDAL INJURY

David E. Schafer, and Albert J. Czajkowski, both of Creve Coeur, Mo., assignors to Monsanto Company, St. Louis, Mo.

Continuation of Ser. No. 465,965, Feb. 14, 1983, Pat. No. 4,507,143, which is a division of Ser. No. 923,136, Jul. 10, 1978, Pat. No. 4,379,716, which is a continuation-in-part of Ser. No. 670,789, Mar. 26, 1976, abandoned. This application Dec. 24, 1984, Ser. No. 685,873
Int. Cl.[4] A01N *57/10, 37/00*
U.S. Cl. 71—87 **37 Claims**

1. A method of reducing injury to crops by thiolcarbamate herbicides which comprises applying to the soil, crop or crop seed an effective safening amount of a compound of the formula



wherein

a, b and c represent the integers zero or one, but cannot all be zero simultaneously;

W, X and Z independently represent oxygen or sulfur;

R, R^1 and R^2 independently represent hydrogen, C_{1-13} alkyl, lower alkyl substituted lower alkyl, nitro lower alkyl, halo lower alkyl, lower alkenyl, halo lower alkenyl, lower alkynyl, halo lower alkylcarbonyl, halo lower alkenylsulfonyl lower alkyl, mono-lower alkyl amino, di-lower alkyl amino, halo lower alkenyl thio lower alkyl, lower mono- or di-alkyl amino carbonyl lower alkyl, lower mono- or di-alkyl aminothiocarbonyl, halophenylthio, para-aminosulfonyl phenyl, para-nitrobenzoyl, halophenylthio lower alkyl, phenyl, benzyl, naphthyl, naphthyl substituted by one or two lower alkyl or halo moieties, α-nitromethylbenzyl, α-methylbenzyl, phenyl substituted by one to three C_{1-13} alkyl, lower alkenyl, halo, NO_2, CN, CF_3 and CH_3S- moieties; and no more than one of R, R^1 and R^2 can be quinolyl, 1-pyridinyl lower alkyl, 5-chlorothiophene-2-lower alkyl and N-lower alkyl di-lower alkyl anilino carbonyl lower alkyl; provided that when a is zero, c is one and Z is sulfur, R^2 cannot equal hydrogen or halophenyl; phenyl cannot be substituted with NO_2 and CF_3 simultaneously; when X and W are oxygen and Z is sulfur R, R^1 and R^2 cannot simultaneously equal CH_3; and when W, X and Z are oxygen R, R^1 and R^2 cannot simultaneously equal phenyl.

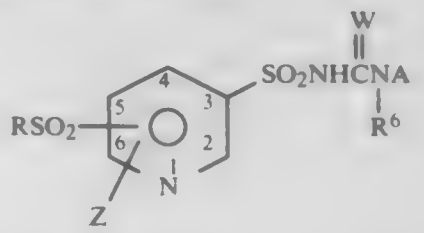
4,605,432

PYRIDYL SULFONE HERBICIDES

John B. Adams, Jr., Hockessin, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

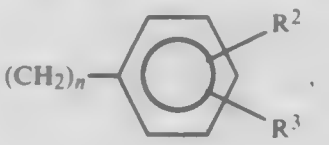
Division of Ser. No. 408,491, Aug. 16, 1982, Pat. No. 4,456,469, which is a continuation-in-part of Ser. No. 128,176, Apr. 24, 1980, abandoned. This application Apr. 9, 1984, Ser. No. 598,186
Int. Cl.[4] C07D *401/12;* A01N *47/36*
U.S. Cl. 71—92 **24 Claims**

1. A compound of the formula:



wherein

R is C_1–C_6 alkyl, C_3–C_6 alkenyl, C_2–C_4 alkoxyalkyl, C_5–C_6 cycloalkyl, $R^1OCH_2CH_2OCH_2$, $R^1OCH_2CH_2OCH_2CH_2$,



CF_3, CF_3CH_2 or HGLCCF$_2$, HCF_2;

R^1 is methyl or ethyl;

R^2 and R^3 are independently H, Cl, OCH_3, F, CH_3, Br, NO_2 or CF_3;

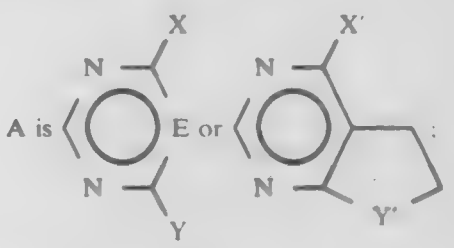
n is 0, 1 or 2;

G is F, Cl, Br or CF_3;

L is F, Cl or H;

Z is H, F, Cl, Br, CH_3, CH_3O or CH_3S;

W is O or S;



X is CH_3, CH_3O or Cl;

Y is CH_3, CH_3CH_2, CH_3O, CH_3CH_2O, CF_3CH_2O, $CH_3O(CH_2)_m$, $CH_3OCH_2CH_2O$, $R^4O_2CR^5CHO$, $(CH_3)_2N$, $CH_3(CH_2CN)N$, $NHCH_3$ or NH_2;

E is CH, CCH_3, CCH_2CH_3 or CCH_2CH_2Cl;

R^4 is H, CH_3 or CH_3CH_2;

R^5 is H or CH_3;

R^6 is H or CH_3;

m is 1 or 2;

X′ is H, CH_3, CH_3O or Cl; and

y' is O or CH_2;
and their agriculturally suitable salts, provided that:
(1) when W=S, then R^6 is H; and
(2) when X=Cl, then E=CH and Y=CH_3, C_2H_5, CH_3O, C_2H_5O, $CH_3O(CH_2)_m$—, NH_2, $NHCH_3$ or $N(CH_3)_2$.

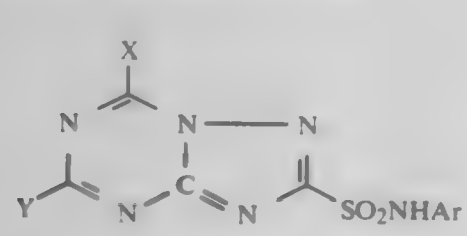
4,605,433

1,2,4-TRIAZOLO[1,5-A]-1,3,5-TRIAZINE-2-SULFONAMIDES AND COMPOSITIONS AND METHODS OF CONTROLLING UNDESIRED VEGETATION

Norman R. Pearson, Walnut Creek, and William A. Kleschick, Martinez, both of Calif., assignors to The Dow Chemical Company, Midland, Mich.

Filed May 30, 1985, Ser. No. 739,250
Int. Cl.[4] C07D *251/72, 487/04;* **A01N** *43/64, 43/90*
U.S. Cl. 71—93 **25 Claims**

1. A compound having the formula:



I

wherein X and Y independently represent hydroxy, carboxyl, hydrogen, C_1–C_4 alkyl, C_1–C_4 haloalkyl, C_1–C_4 alkoxy, C_1–C_4 haloalkoxy or halogen and Ar represents substituted or unsubstituted radicals which are phenyl; 1- or 2-naphthyl; 2-, 3- or 4-pyridyl; 2- or 3-thienyl; 2- or 3-furyl; 2-, 4- or 5-thiazolyl; 2-, 4-or 5-imidazolyl; 2-, 4- or 5-oxazolyl; 3-, 4- or 5-isothiazolyl; 3-, 4- or 5-isoxazolyl; 3-, 4- or 5-pyrazolyl; 2-benzthiazolyl; 2-benzoxazolyl; 2-benzimidazolyl or 1-benztriazolyl, wherein the substituents in the above radicals are halogen, —NO_2, C_1–C_4 haloalkyl, C_1–C_4 haloalkylsulfinyl, C_1–C_4 haloalkylthio, C_1–C_4 haloalkylsulfonyl, C_1–C_4 alkyl, cyano, —$CONH_2$, —$CONHR^8$, —$CONR^8R^9$, —$COOR^7$ and —SO_3R^8 wherein R^7, R^8 and R^9 represent C_1–C_4 alkyl.

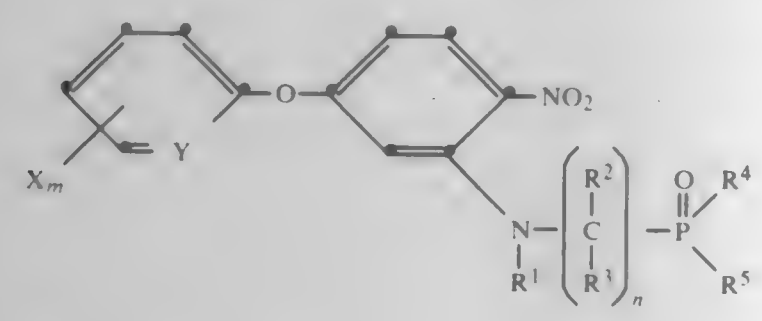
4,605,434

HERBICIDAL AND PLANT-GROWTH-REGULATING (2-NITRO-5-ARYLOXY-PHENYLAMINO)-ALKYLPHOSPHINE OXIDE DERIVATIVES AND COMPOSITIONS

Ludwig Maier, Arlesheim, Switzerland, assignor to CIBA-GEIGY Corporation, Ardsley, N.Y.

Filed Jul. 12, 1984, Ser. No. 630,131
Claims priority, application Switzerland, Jul. 20, 1983, 3989/83
Int. Cl.[4] C07F *9/58, 9/53;* **A01N** *51/24, 51/22*
U.S. Cl. 71—94 **26 Claims**

1. A (2-nitro-5-aryloxy-phenylamino)-alkylphosphine oxide derivative of the formula



wherein
X is halogen or CF_3,
Y is nitrogen or —CH=,
R^1 is hydrogen, C_1–C_4-alkyl, or aralkyl having 1–4 carbon atoms in the alkyl moiety,
R^2 is hydrogen or C_1–C_4-alkyl,
R^3 is hydrogen, C_1–C_4-alkyl, phenyl, benzyl or C_1–C_4-alkyl-benzyl,
R^4 and R^5 independently of one another are each C_1–C_4-alkyl, C_1–C_4-haloalkyl, C_2–C_6-alkoxyalkyl, or aralkyl having 1–4 carbon atoms in the alkyl moiety,
m is zero to 3, and
n is 1 to 3.

21. A method of controlling undesirable plant growth or for regulating plant growth, which method comprises applying to plants, to the locus thereof or to parts of plants an effective amount of a compound of claim 1.

4,605,435

RECYCLING OF STEEL PLANT DUSTS TO STEEL FURNACES

Willem P. C. Duyvesteyn, Benthuisen, Netherlands, assignor to Amax Inc., Greenwich, Conn.

Filed Jan. 31, 1985, Ser. No. 696,981
Int. Cl.[4] C22B *7/02*
U.S. Cl. 75—0.5 R **3 Claims**

1. A method for converting iron-containing steel plant dust into recyclable agglomerates, said steel plant dust containing by weight about 20 to 60 percent iron, about 5 to 40 percent zinc, about 0.5 to 6 percent lead and the balance essentially residual metal oxides, including cadmium oxide, and oxides of CA, Mn, Si, Mg, Al, Cu, Ba, Cr and Ni which comprises, hydrometallurgically treating said dust to remove substantially said zinc, lead and cadmium, mixing said hydrometallurgically treated steel plant dust with about 0.5 to 2 percent by weight of Portland cement and water sufficient for the dust to stick together as pellets, pelletizing said mixture to form rounded agglomerates having an average size ranging from about ½ to 2 inches, and air-drying said agglomerates to increase the strength thereof for mechanical handling.

4,605,436

METHOD OF PRODUCING TITANIUM ALLOYS

Hermann Andörfer, Fürth, Fed. Rep. of Germany, assignor to GfE Gesellschaft fur Elektrometallurgie mbH, Dusseldorf, Fed. Rep. of Germany

Filed Jun. 15, 1984, Ser. No. 621,046
Claims priority, application Fed. Rep. of Germany, Mar. 16, 1984, 3409614
Int. Cl.[4] C22B *4/00*
U.S. Cl. 75—10.65 **4 Claims**

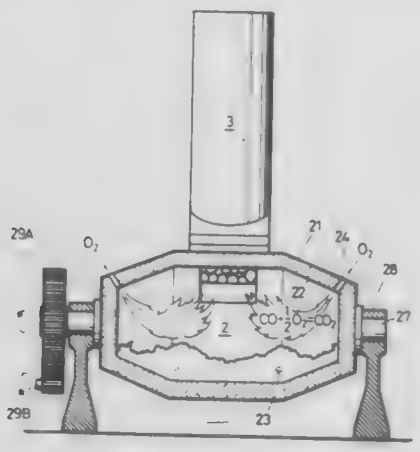
1. A method of making a titanium alloy containing titanium and, as alloying elements, tin, zirconium, molybdenum and aluminum, said method comprising the steps of:
(a) forming a master alloy of the following composition:
11 to 13% by weight tin,
11 to 13% by weight zirconium,
22 to 24% by weight molybdenum,
22 to 24% by weight chromium,
less than 0.5% by weight unavoidable impurities, and balance aluminum;
(b) constituting said master alloy as a melting electrode; and
(c) in a vacuum-electric-arc furnace utilizing said melting electrode, melting titanium to form a titanium alloy melt and casting same to form a titanium alloy containing all of said elements as alloying elements of the titanium alloy and at least some of said elements in relative proportions in the titanium alloy corresponding to their relative proportions by weight in said master alloy.

4,605,437

REACTOR IRON MAKING

Saburo Sugiura, Nagoya; Masanobu Ikeda, Mie, and Noboru Demukai, Nannou, all of Japan, assignors to Daido Tokushuko Kabushiki Kaisha, Nagoya, Japan

Filed Nov. 30, 1982, Ser. No. 445,534
Claims priority, application Japan, Feb. 1, 1982, 57-14443
Int. Cl.[4] C21C *11/00*
U.S. Cl. 75—43 4 Claims



1. A method of reactor iron making without using electric power in said reactor comprising:

continually charging iron scrap and a solid non-petroleum carbonaceous material selected from the group consisting of powdery coal and coke from above into molten iron in a reactor with space over the molten iron, said carbonaceous material being charged by injecting it with a stream of nitrogen gas or air, blowing oxygen gas into the molten iron beneath its surface so as to stir the molten iron and oxidize the non-petroleum carbonaceous material mainly into CO, simultaneously blowing oxygen into said space over the molten iron so as to oxidize the CO gas to CO_2, the amount of oxygen increasing as the amount of molten iron increases, heating the charged iron scrap to melt with heat generated through the oxidation, utilizing exhaust gas of a high temperature for preheating the iron scrap to be charged, and when the amount of molten iron attains a first predetermined level, tapping off the molten iron until the amount thereof decreases to a second predetermined level necessary for a subsequent cycle of operation, thereafter repeating the above steps.

4,605,438

APPARATUS AND METHOD FOR FORMING A WEAR-RESISTANT METAL COMPOSITION

Earl K. Keith, Clute; William E. Mercer, II, Brazoria, and Clarence R. Dick, Lake Jackson, all of Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Jun. 28, 1985, Ser. No. 749,855
Int. Cl.[4] C22B *21/00, 26/22;* F27B *13/00*
U.S. Cl. 75—67 A 10 Claims

1. An apparatus for forming a wear-resistant magnesium or magnesium alloy, the apparatus includes:

a vessel for containing a molten magnesium or magnesium alloy metal composition, the vessel includes a cover having an opening therein;

means for heating the vessel to melt the magnesium composition and to keep the magnesium composition in a molten state, the heater means is positioned external to the vessel and the vessel includes an inert atmosphere above the surface of the molten magnesium composition;

a pump having a suction side and a discharge side, the pump is mounted on the vessel, and it is suspended in the vessel below the surface of the molten metal;

the pump includes a feed tube, one end of the feed tube connects into the suction side of the pump, the opposite end of the feed tube defines an open end suitable for receiving a metal additive, the open end is positioned below the vessel cover, the feed tube has at least one suction opening therein located between the ends of the tube, and the feed tube is positioned such that part of the suction opening lies above the surface of the molten magnesium composition and part of it lies below the magnesium surface;

means for stirring the molten magnesium composition, the stirring means is mounted on the vessel and it is suspended in the vessel below the surface of the molten magnesium;

means for feeding the solid material into the open end of the feed tube, the feeder means is positioned above the vessel;

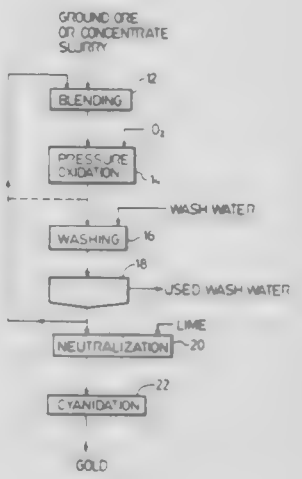
wherein, the suction action of the pump creates a vortex at the surface of the molten magnesium composition, the vortex pulls the molten magnesium through the suction opening in the feed tube, which causes the molten magnesium to mix with the metal additive, and the mixture is discharged into the vessel through the discharge side of the pump.

4,605,439

RECOVERY OF GOLD FROM REFRACTORY AURIFEROUS IRON-CONTAINING SULPHIDIC MATERIAL

Donald R. Weir, Fort Saskatchewan, Canada, assignor to Sherritt Gordon Mines Limited, Toronto, Canada

Filed Mar. 4, 1985, Ser. No. 708,203
Claims priority, application Canada, Sep. 27, 1984, 464182
Int. Cl.[4] C22B *11/04*
U.S. Cl. 75—118 R 7 Claims



1. A process for the recovery of gold from refractory auriferous iron-containing sulphidic material comprising providing an aqueous feed slurry of fresh feed material and oxidized solids from a subsequent pressure oxidation step, said feed slurry having a pulp density in the range of from about 30 to about 60% by weight, subjecting the slurry to pressure oxidation at a temperature of from about 120° to about 250° C. under a total pressure of from about 360 to about 6000 kPa to produce a slurry of oxidized solids, recycling a portion of the oxidized solids to the feed slurry, and recovering gold from the remaining oxidized solids.

4,605,440

BORON-CARBIDE-ALUMINUM AND BORON-CARBIDE-REACTIVE METAL CERMETS

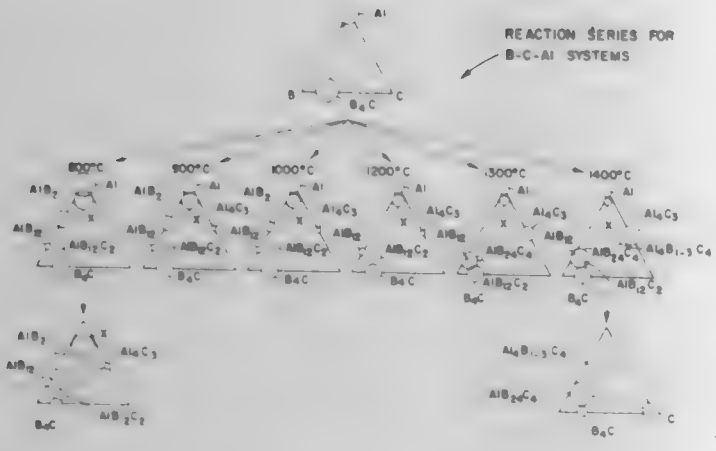
Danny C. Halverson, Manteca, Calif.; Aleksander J. Pyzik, and Ilhan A. Aksay, both of Seattle, Wash., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed May 6, 1985, Ser. No. 730,528
Int. Cl.[4] C22C *29/04*
U.S. Cl. 75—238 42 Claims

1. A composition of matter, comprising a boron-carbide-aluminum composite with a tailored microstructure having at least four of any of the following phases:

(a) AlB_2,

(b) α-AlB_{12},
(c) $AlB_{12}C_2$,
(d) Al_4C_3,
(e) $AlB_{24}C_4$,
(f) $Al_4B_{1-3}C_4$,



(g) a phase containing boron, carbon and aluminum and exhibiting an X-ray diffraction pattern shown in Table I,
(h) B_4C, and
(i) an aluminum phase, homogeneously distributed in the composite.

4,605,441

INK COMPOSITION FOR INDICATING PROGRESS AND COMPLETION OF VULCANIZATION OF RUBBER PRODUCTS

Yoshiaki Masuda, Hirakata; Hidetoshi Fukuo, Takarazuka, and Masaji Yamamoto, Amagasaki, all of Japan, assignors to Sakura Color Products Corporation, Osaka, Japan

Continuation-in-part of Ser. No. 419,443, Sep. 17, 1982, abandoned. This application Aug. 23, 1984, Ser. No. 643,452
Claims priority, application Japan, Sep. 24, 1981, 56-151875
Int. Cl.[4] C09D *11/00*
U.S. Cl. 106—21 **10 Claims**

1. An ink composition for indicating progress and completion of vulcanization of rubber articles comprising, per 100 parts by weight of the composition,
(i) 0.01 to 10 parts by weight of at least one methine dye,
(ii) 1 to 40 parts by weight of at least one member selected from the group consisting of rosin, rosin derivative, petroleum resin, phenol resin, xylene resin, alkyd resin, cumarone-indene resin, acrylic resin, epoxy resin, ketone resin and styrene-maleic acid resin,
(iii) 0.5 to 50 parts by weight of at least one high molecular weight component selected from the group consisting of cellulose resin, polyvinyl butyral, vinyl chloride-vinyl acetate copolymer, ethylene-vinyl acetate copolymer, polyamide, synthetic rubber and natural rubber,
(iv) 30 to 80 parts by weight of at least one organic solvent capable of dissolving the components (ii) and (iii), and
(v) chlorophthalic anhydrides and bromophthalic anhydrides.

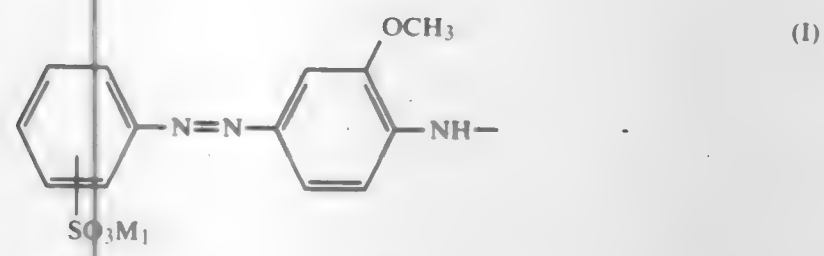
4,605,442

AQUEOUS INK COMPOSITION

Hideo Kawashita, Ibaraki; Takuo Ikeda, Yawata, and Sanae Sakaguchi, Nishinomiya, all of Japan, assignors to Taoka Chemical Company, Limited, Osaka, Japan

Filed Jun. 7, 1985, Ser. No. 742,275
Claims priority, application Japan, Jun. 14, 1984, 59-123290
Int. Cl.[4] C09D *11/02*
U.S. Cl. 106—22 **10 Claims**

1. An aqueous ink composition comprising a dyestuff, a wetting agent and water, characterized in that said dyestuff is a compound of the formula:



(I)

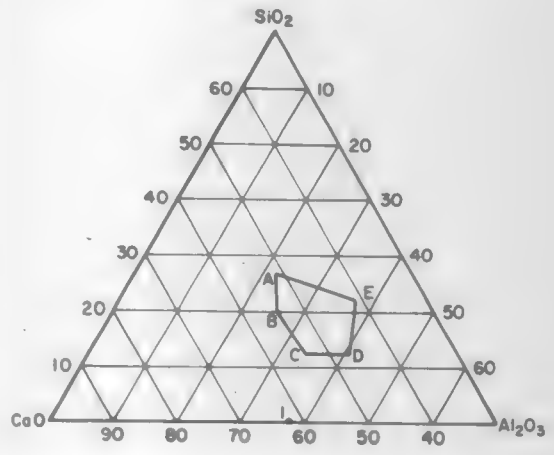
wherein M_1 and M_2 are, the same or different, each a hydrogen atom, an alkali metal atom, an ammonium group or an organic ammonium group and X is an alkylamine or alkoxyalkylamine residue having 6 to 18 carbon atoms.

4,605,443

CAO-AL_2O_3-SIO_2 GLASS HYDRAULIC CEMENTS

John F. MacDowell, Painted Post, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Jan. 28, 1985, Ser. No. 695,355
Int. Cl.[4] C04B *7/32*
U.S. Cl. 106—104 **4 Claims**



1. A hydraulic cement comprising a glass consisting essentially of a composition included within area ABCDEA of FIG. 1.

4,605,444

PROCESSES FOR PREPARING CASEINATES

Werner Wiedmann, and Christian Millauer, both of Stuttgart, Fed. Rep. of Germany, assignors to Werner & Pfleiderer, Fed. Rep. of Germany

Filed Oct. 24, 1984, Ser. No. 664,160
Claims priority, application Fed. Rep. of Germany, Nov. 5, 1983, 3340116
Int. Cl.[4] C08L *89/00;* **B28B** *3/20*
U.S. Cl. 106—138 **9 Claims**

1. In a process for the preparation of caseinates wherein, casein, water, and at least one compound selected from lyes and basic salts and water are fed to a baking extruding device with a product being formed under increased pressure and increased temperature and being expanded after discharge from the extruding device, the process comprises providing a twin-screw extruder with rotation in the same direction and having a product feed zone, a plasticizing zone and a discharge zone, feeding single components separately into said product feed zone to prepare a product mixture, maintaining a temperature in the plasticizing zone of greater than 100° C. by subject-

ing said mixture to return elements, maintaining a temperature in the range of 110° to 180° C. in the discharge zone and maintaining a residence time for the product mixture in the plasticizing zone of 0.5 to 1.5 sec.

4,605,445

UNFORTIFIED LIQUID PAPER SIZING COMPOSITION AND METHOD OF PREPARATION

Steven Abell, and Thomas L. Peltier, both of Chesterfield, Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Mar. 8, 1985, Ser. No. 709,625

Int. Cl.[4] C08J *3/02;* D21D *3/00*

U.S. Cl. 106—236 23 Claims

1. A rosin paper sizing composition comprising a homogeneous aqueous liquid which is fully miscible with water at 5° C., on a solids basis said composition containing between about 15% and about 75% by weight of an alkali metal soap of a condensation product of rosin and aldehyde, and between about 85% and 25% by weight urea.

4,605,446

PROCESS FOR PREPARING ORGANOSILICON HIGH CONDENSATION PRODUCTS

Osamu Isozaki, Yokohama, Japan, assignor to Kansai Paint Company, Limited, Japan

Continuation of Ser. No. 556,954, Dec. 1, 1983, abandoned. This application Sep. 16, 1985, Ser. No. 777,551

Int. Cl.[4] C09K *3/00;* C08G *77/04*

U.S. Cl. 106—287.12 7 Claims

1. A process for preparing an organosilicon high condensation product having no silanol group in the terminal of the molecule the process comprising the two steps of (i) hydrolyzing a mixture of 5 to 95% by weight of an organosilicon compound represented by the formula (A)



wherein R is C_1–C_4 alkyl and 5 to 95% by weight of an organosilicon compound represented by the formula (B)

$$R'Si(OR)_3$$

wherein R′ is methyl, ethyl or phenyl and R is C_1–C_4 alkyl in the presence of an acid catalyst at a pH of less than 6 at 20° C. to 10° C. for 0.5 to 10 hours and with the addition of 0.2 to 2 moles of water per mole of the RO group bonded to the Si group, and (ii) causing condensation reaction for 0.5 to 10 hours by adding an alkaline material to the reactin product to adjust its pH to 7 to 8.5.

4,605,447

METHODS OF MANUFACTURING SEMICONDUCTOR DEVICES

Stanley D. Brotherton, Forest Row; Audrey Gill, Horley, and Michael J. King, Red Hill, all of England, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 26, 1984, Ser. No. 604,285

Claims priority, application United Kingdom, May 16, 1983, 8313477

Int. Cl.[4] H01L *21/324, 21/26*

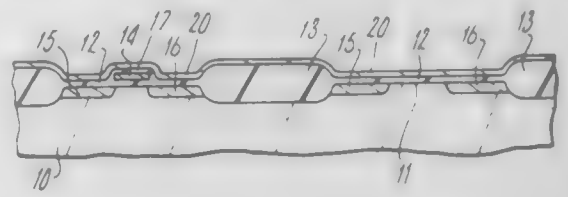
U.S. Cl. 148—1.5 26 Claims

1. A method of manufacturing a semiconductor device comprising the steps of

forming an insulating layer at a major surface of a semiconductor body,

covering said insulating layer by an additional layer of polycrystalline silicon,

performing a plasma and heating treatment to reduce the density of charge carrier traps adjacent the interface of said insulating layer and said semiconductor body, said



insulating layer being protected by said additional layer from direct bombardment by said plasma, and

removing said additional layer from at least most areas of said insulating layer following said plasma and heating treatment.

4,605,448

ALUMINUM ALLOY FORMING SHEET AND METHOD FOR PRODUCING THE SAME

Yoshio Baba, and Shin Tsuchida, both of Nagoya, Japan, assignors to Sumitomo Light Metal Industries, Ltd., Tokyo, Japan

Filed Dec. 10, 1981, Ser. No. 329,536

Claims priority, application Japan, Mar. 2, 1981, 56-028434

Int. Cl.[4] C22F *1/04*

U.S. Cl. 148—11.5 A 11 Claims

1. A method for producing an aluminum alloy forming sheet suitable for use in manufacturing both can body parts and can ends, said method comprising the steps of:

(1) heating an aluminum alloy in the form of a cast ingot consisting essentially of 0.30 to 1.50 wt. % of Mn, 0.50 to 1.25 wt. % of Mg, 0.52 to 1.00 wt. % of Si and the balance being Al and incidental impurities at a temperature of at least 570° C. for a period of at least 3 hours to homogenize said aluminum alloy;

(2) then hot rolling the homogenized alloy;

(3) then heating the hot-rolled alloy at a temperature in the range of 540° C. to 600° C. for a period of not more than 10 minutes;

(4) then rapidly cooling the heated alloy to a temperature not exceeding 100° C.; and

(5) final cold rolling the cooled alloy to a rolling reduction of at least 50% whereby to form said aluminum alloy forming sheet.

4,605,449

PROCESS FOR PRODUCING A ROLLED STEEL PRODUCT HAVING HIGH WELDABILITY, A HIGH YIELD STRENGTH AND A GOOD NOTCH IMPACT TOUGHNESS AT VERY LOW TEMPERATURES

Arthur Schummer; Jean de la Hamette; Guy Lessel; Jean-Paul Beck, all of Esch, and Armand Frantz, Luxembourg, all of Luxembourg, assignors to Arbed S.A., Luxembourg, Luxembourg

Continuation-in-part of Ser. No. 265,070, May 19, 1981, abandoned. This application Jan. 28, 1985, Ser. No. 695,386

Int. Cl.[4] C21D *7/14, 9/52*

U.S. Cl. 148—12 B 5 Claims

1. A process for producing rolled bodies of steel having a high yield strength, high energy absorption for the Charpy V impact test at very low temperatures and good weldability, especially concrete reinforcement bars, comprising the steps of:

forming a billet of a steel alloy essentially consisting of carbon in a concentration of less than 0.20% C, manganese, in a concentration MN, silicon in a concentration up to about 0.5%, molybdenum and vanadium in concentrations up to 0.3%, aluminum in a concentration of 0.03 to 0.3% and niobium in a concentration of NB of up to 0.3%, the balance iron;

heating said billet in a furnace to a control temperature T1 of 1000° C.±100° C. prior to rolling;

rolling the heated billet in a multiplicity of rolling passes to a bar of a diameter D;

cooling the billet prior to the last three rolling passes to a temperature corresponding to the transformation point Ar3;

cooling said billet following rolling by forced cooling throughout its cross section to a temperature below the recrystallization temperature of the alloy; and

controlling the temperature T1 prior to rolling, the temperature T2 which is 800° C.±75° C. during rolling, the temperature T3 which is 650° C.±50° C. subsequent to rolling and said concentrations in accordance with the relationships:

$$LE = 1035 + 510C \pm 192MN + 2270NB - 0.21T1 - 0.42T2 - 0.48T3 - 3.51D$$

and

$$KCV = 2202 - 2066C + 23.20MN - 2064NB - 0.77T1 - 1.24T2 - 0.23T3 - 1.98D$$

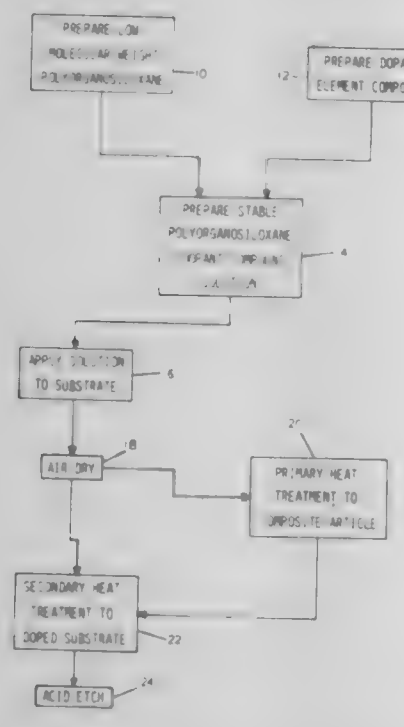
where LE is a high elastic limit in MPa and is at least 450 MPa and KCV is the energy absorption in Joule and is at least 35 Joule for a Charpy V impact test at −120° C.

4,605,450

PROCESS FOR FORMING A DOPED OXIDE FILM AND DOPED SEMICONDUCTOR

Ian M. Thomas, Temperance, Mich., and James J. Tillman, Toledo, Ohio, assignors to Owens-Illinois, Inc., Toledo, Ohio

Division of Ser. No. 347,834, Feb. 11, 1982, Pat. No. 4,571,366.
This application Jul. 17, 1985, Ser. No. 755,864
Int. Cl.⁴ H01L *21/385*
U.S. Cl. 148—188 **31 Claims**



31. A process for doping a semiconductor substrate material comprising:

a. combining a silicon tetra-alkoxide of the formula SiX_4 wherein X is OR, wherein R is an alkyl group of one to six carbon atoms, with less than a stoichiometric amount of water and a reactive dopant source compound containing a dopant element selected from a member of the group consisting of B, As, Sb and P, in the presence of an acid hydrolysis catalyst, to prepare a solution of a solvent soluble, further curable organosiloxane polymer reaction product;

b. admixing with the reaction product a sufficient amount of an organic epoxide to provide the reaction product solution with a pH of about 5–7;

c. forming a thin layer of said reaction product on said substrate material; and

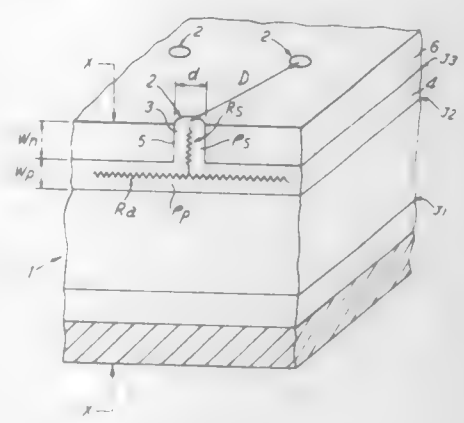
d. heating said reaction product layer coated substrate for a time sufficient and at a temperature sufficient to diffuse said dopant into said substrate material.

4,605,451

PROCESS FOR MAKING THYRISTOR DEVICES

John M. Garrett, Chippenham, England, assignor to Westinghouse Brake and Signal Company Limited, United Kingdom

Filed Aug. 8, 1984, Ser. No. 638,812
Int. Cl.⁴ H01L *21/383*
U.S. Cl. 148—191 **2 Claims**



1. In a process for producing a thyristor device having a semiconductor body comprising a plurality of superimposed layers of alternating conductivity type in which a controlling base region is produced by diffusing into a surface of said semicondutor body a p-dopant from a p-dopant source to a predetermined depth, wherein the improvement comprises:

removing said p-dopant source; and

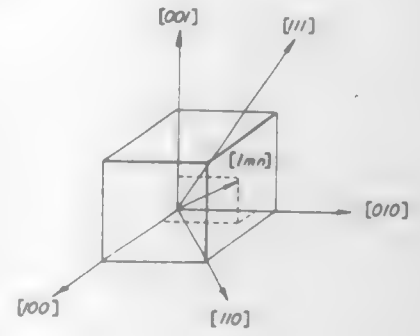
continuing said diffusion process in the absence of said p-dopant source for a time sufficient to simultaneously drive said p-dopant in said body further into said body to a depth sufficient to define said controlling base layer and to out-diffuse said p-dopant in said body from said surface to provide a graduated dopant concentration profile in said controlling base region having a maximum value at approximately the midpoint of said controlling base region.

4,605,452

SINGLE CRYSTAL ARTICLES HAVING CONTROLLED SECONDARY CRYSTALLOGRAPHIC ORIENTATION

Anthony E. Gemma, Middletown, and James A. Dierberger, Hebron, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Dec. 14, 1981, Ser. No. 330,757
Int. Cl.⁴ C22C *19/05*
U.S. Cl. 148—404 **11 Claims**



1. A single crystal article with orthogonal x, y, and z axes, made of a face centered cubic crystal structure metal, having a [001] crystal axis aligned within at least about 20 degrees of the z axis, characterized by a [110] crystal axis of the metal aligned

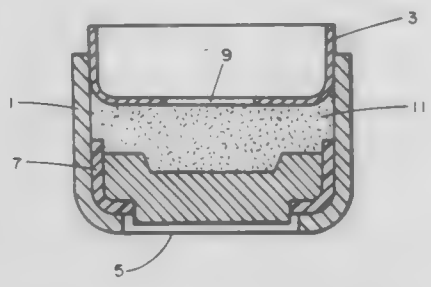
with a tangent to the surface of the article in a region which is prone to thermal fatigue cracks which run in the z axis direction.

4,605,453

FIRING CAP COMPOSITION CONTAINING LEAD STYPHNATE

Robert J. Spear, Flemington, and Lance D. Redman, Macedon, both of Australia, assignors to The Commonwealth of Australia, Australia

Filed Oct. 1, 1985, Ser. No. 782,696
Int. Cl.[4] C06B *41/02*
U.S. Cl. 149—24 **11 Claims**



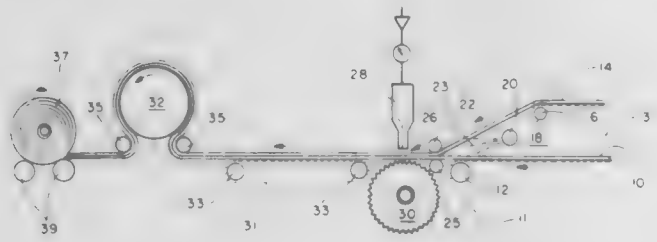
1. A conducting composition suitable for use in a firing cap, comprising normal lead styphnate which has a mean particle size not less than 55 microns, in admixture with carbon black which has a mean aggregate size between 5 microns and about 15 microns.

4,605,454

METHOD OF ULTRASONICALLY BONDING NONWOVEN WEBS

John J. Sayovitz, Cobb County; Kenneth J. Mitchell, Cherokee County, and Michael P. Mathis, Cobb County, all of Ga., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Continuation of Ser. No. 413,917, Sep. 1, 1982, abandoned. This application Jan. 18, 1985, Ser. No. 693,030
Int. Cl.[4] B32B *31/16*
U.S. Cl. 156—73.1 **6 Claims**



1. A method of forming a composite nonwoven web material having a basis weight in the range of from about 1.5 oz/yd^2 to 9.0 oz/yd^2 from component layers containing thermoplastic fibers, each having a basis weight in the range of from about 0.5 oz/yd^2 to 3.0 oz/yd^2 comprising the steps of:

(a) directing the component layers to a separation zone;

(b) applying water in the amount of from about 5% to 25% based on the weight of the combined layers as a mist or spray between component layers;

(c) combining the component layers;

(d) passing the combination through a sonic bonder operating within the range of up to about 40,000 cps against a patterned anvil to produce a corresponding pattern of thermal bond areas over about 3% to 25% of the surface area of the combination; and

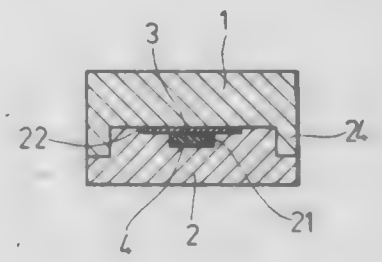
(e) drying said sonically bonded combination.

4,605,455

METHOD OF MANUFACTURING SHOES

An-Cheng Lai, No. 133, Chen Cheng Street, Su-Lin Town, Taipei District, Taiwan

Filed Oct. 10, 1984, Ser. No. 659,284
Int. Cl.[4] B32B *5/28;* B29C *39/18;* A43D *65/00, 95/14*
U.S. Cl. 156—78 **7 Claims**



1. A method of fabricating a shoe having a foamed outsole and an insole bonded to the outsole comprising:

(a) preparing a mold having an upper mold piece and a lower mold piece, the lower mold piece having a deeper mold cavity for shaping the outsole and a shallow cavity for receiving the insole, the shallow cavity being located above the deeper mold cavity;

(b) introducing an amount of foamable resin composition into the deeper cavity sufficient to produce an outsole;

(c) cutting a piece of insole from a sheet of insole material and placing it in the shallow cavity above the resin composition; and

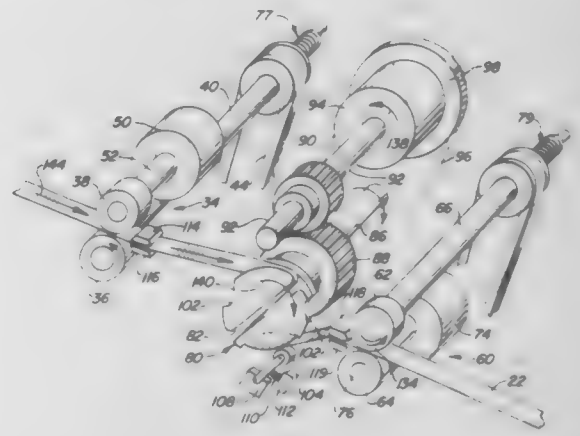
(d) heating the upper and lower mold pieces to cause the composition in the deeper cavity to foam and be formed into a foamed outsole and to cause the insole to be bonded to the outsole.

4,605,456

METHOD AND APPARATUS FOR FEEDING AND TENSIONING STRAP IN A STRAPPING MACHINE

James R. Annis, Jr., Palatine, Ill., assignor to Signode Corporation, Glenview, Ill.

Filed May 2, 1985, Ser. No. 729,624
Int. Cl.[4] B65B *13/22, 13/24*
U.S. Cl. 156—157 **13 Claims**



1. A strap feeding and tensioning assembly for a strapping machine in which a length of strap can be formed into a loop about an object and in which there are means for gripping the end of the strap in the loop, said assembly comprising:

(a) feeding means on said machine for feeding a length of said strap from which said loop is formed around said object;

(b) take-up means for taking up slack in said strap loop, said take-up means being mounted on said machine in spaced relation to said feeding means;

(c) a high tension member mounted for rotation on said machine generally between said feeding means and said take-up means, said high tension member defining a slot for accommodating said strap extending between said feeding means and said take-up means, said high tension

member defining a strap engaging surface on the periphery of said high tension member at an end of said slot; and

(d) means for rotating said high tension member to engage and pull said strap for applying high tension to said strap loop.

12. A method for feeding and tensioning strap in a strapping machine in which a length of strap is guided in a guideway to form a loop about an object and in which the strap end is gripped to permit tensioning of the loop, said feeding and tensioning method comprising the steps of:

(a) locating said strap in a path between a rotating feed wheel and an adjacent rotatable first pinch roll, between a rotating take-up wheel and an adjacent rotatable second pinch roll, and in a slot defined in a rotatable high tension member that is disposed generally between said feed wheel and said take-up wheel and that defines a strap engaging surface on the periphery of the high tension member at an end of the slot;

(b) effecting relative movement between said rotating feed wheel and first pinch roll to press said strap between said feed wheel and said first pinch roll for feeding a length of said strap in said guideway to form said loop from said length of strap;

(c) effecting relative movement between said rotating feed wheel and said first pinch roll to a second position for releasing the pressure on said strap from said feed wheel and said first pinch roll;

(d) gripping the end of said strap in said loop before, during, or after step (c);

(e) while continuing step (d), effecting relative movement between said rotating take-up wheel and said second pinch roll to press said strap between said take-up wheel and said second pinch roll for taking up slack in said strap; and

(f) while continuing step (d), rotating said high tension member to engage and pull said strap for applying high tension to said strap loop.

4,605,457

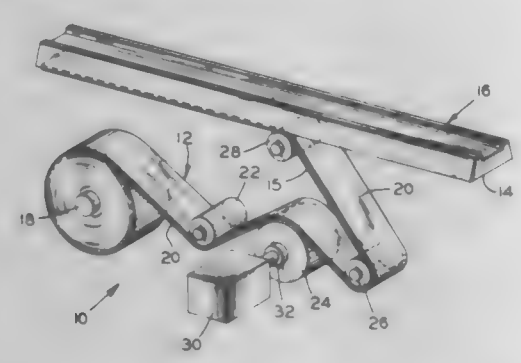
TAPE TENSION CONTROL SYSTEM

Robert R. Guy, North Royalton, Ohio, assignor to Lof Plastics Inc., Troy, Mich.

Filed May 8, 1984, Ser. No. 608,250

Int. Cl.⁴ B32B *31/00*; B65H *23/10, 59/14, 59/18*

U.S. Cl. 156—160 **3 Claims**



1. In a method of precisely tensioning a pressure sensitive adhesive tape and applying it to a substrate, the steps comprising:

(a) guiding the pressure sensitive adhesive face of a portion of the tape over a smooth peripheral surface of a rotating roll wherein the adhesive face of the tape temporarily sticks to the smooth peripheral surface of the roll and wherein the portion of the tape being guided over the rotating roll is only contacted on the adhesive face such that the opposite face thereof is exposed and uncontacted;

(b) applying the adhesive face of the tape to the face of a substrate; and

(c) variably braking the rotation of the rotary roll to induce a stretch in the tape extending between the substrate and the rotating roll to coordinate with any stretch in the substrate whereby the tape and substrate stretch and shrink in unison.

4,605,458

METHOD OF PRESSURE BONDING COMPOSITE MATERIALS

Masao Nakamura, Toyohashi, Japan, assignor to Taiho Kogyo Co., Ltd., Toyota, Japan

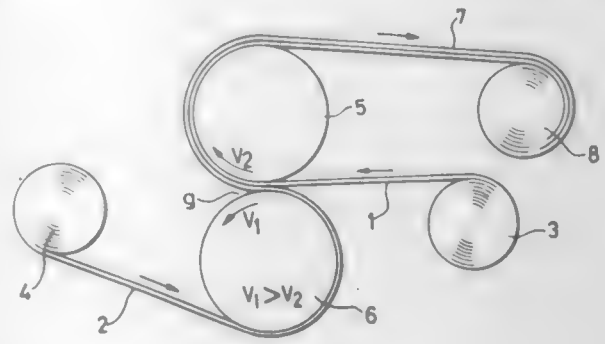
PCT No. PCT/JP83/00378, § 371 Date Jun. 25, 1984, § 102(e) Date Jun. 25, 1984, PCT Pub. No. WO84/01733, PCT Pub. Date May 10, 1984

PCT Filed Oct. 25, 1983, Ser. No. 626,835

Claims priority, application Japan, Oct. 25, 1982, 57-187300; May 23, 1983, 58-90178

Int. Cl.⁴ B32B *31/08*

U.S. Cl. 156—164 **8 Claims**



1. A method of pressure bonding composite material comprising passing a pair of strips through a nip defined between a pair of counterrotating abutting rolls and therewith bonding them together under pressure into a composite material strip, wherein the improvement comprises the steps of wrapping at least one of the following:

(1) the composite strip, which has passed through the nip, around one of said pair of abutting rolls, and

(2) one of said pair of strips, which is to be introduced into said nip, around the other of said pair of abutting rolls; and simultaneously driving said abutting pair of rolls at different peripheral speeds.

4,605,459

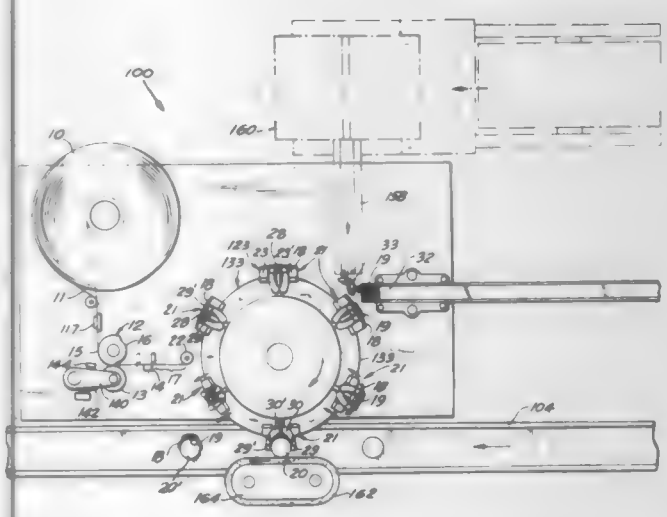
LITERATURE APPLYING MACHINE AND METHOD

Helmut Voltmer, Park Ridge, and Alfred F. Schwenzer, Totowa, both of N.J., assignors to New Jersey Machine Inc., Fairfield, N.J.

Filed Feb. 3, 1984, Ser. No. 576,730

Int. Cl.⁴ B65B *19/34*

U.S. Cl. 156—215 **15 Claims**



1. A banding system, for securing literature to containers, the banding system comprising in combination;

a supply of banding material including an adhesive for attachment to said containers;

metering means for metering portions of said banding material from said supply to provide a band segment;

a dispenser of literature;

receiving means for receiving a band segment from said

metering means and subsequently receiving said literature from said dispenser;

coupling means for coupling said receiving means to a container; and wherein

said receiving means includes dislodging means for dislodging said literature and said band segment upon said container, and

a set of spring loaded suction cups one of which holds said band segment by vacuum force and a second of which holds said literature by vacuum force, and an articulated arm assembly for placing said literature and said band segment upon a container at said third station, the vacuum forces of said cups being terminated upon the placement of the literature and the band segment upon the container.

12. A method of securing literature to a container and comprising steps of:

severing an imperforate band segment at a predetermined length including end portions, from a source of banding material having a thermo-sensitive adhesive everywhere on one face thereof;

placing the literature against said one face of the band segment in an overlapping area with the end portions of the band segment extending beyond the literature and with a portion of the literature extending beyond the band segment and holding the literature and the band segment together by applying suction to the band segment, but not the literature in the overlapping area, and to the end portions of the band segment and to the extending portion of the literature;

heating the end portions of the band segment without heatint the mid portion to activate the adhesive on said end portions but not the adhesive on the mid portion; and

pressing the end portions of the band segment against the container with the literature between the band segment and the container.

4,605,460

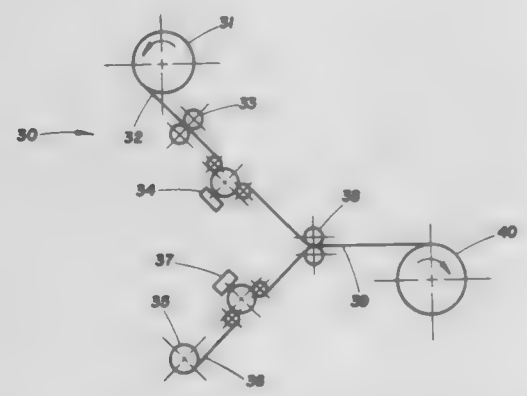
METHOD OF LAMINATING HIGH BARRIER SHRINK FILM

Henry G. Schirmer, Spartanburg, S.C., assignor to W. R. Grace & Co., Cryovac Div., Duncan, S.C.

Division of Ser. No. 538,738, Oct. 3, 1983, Pat. No. 4,542,075. This application Jul. 3, 1985, Ser. No. 752,201

Int. Cl.⁴ B32B *27/30, 27/00*

U.S. Cl. 156—229 **7 Claims**



1. A method for making a heat shrinkable, high barrier laminate film comprising:

(a) forming a hot blown, melt oriented high oxygen barrier film;

(b) stretch orienting a base film, the extent of orientation being sufficient such that its ultimate elongation is reduced so as not to substantially exceed that of said barrier film further provided that said barrier film has an ultimate elongation substantially less than that of said base film before orienting and said base film after orienting has a heat shrink tension substantially greater than that of said barrier film; and then

(c) laminating said barrier film to said base film.

4,605,461

METHOD OF TRANSFERRING A RETROREFLECTIVE PATTERN ONTO A FABRIC

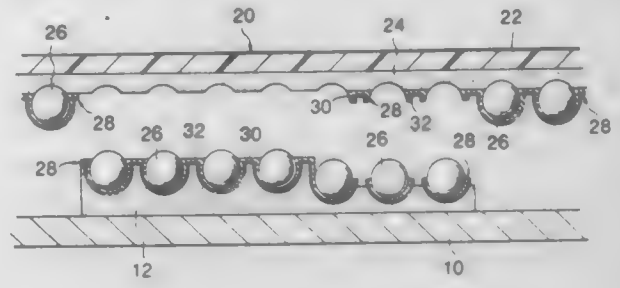
Hisao Ogi, Shiga, Japan, assignor to Ide Idustries Limited, Suzaku, Japan

Filed Dec. 6, 1984, Ser. No. 678,825

Claims priority, application Japan, Dec. 15, 1983, 58-237243

Int. Cl.⁴ B44C *1/16, 1/165;* **B32B** *31/00;* **D03D** *3/00*

U.S. Cl. 156—233 **6 Claims**



1. A method of transferring a retroreflective pattern onto a fabric, which comprises the steps of: coating a compression bonding adhesive on a surface of the fabric in a predetermined adhesive pattern, superposing on the surface of the fabric so coated with said adhesive a retroreflective pattern transfer sheet comprising a mass of transparent fine glass spheres deposited in spaced apart relation on a base film through an intermediary of a temporary holding adhesive so as to allow the fine spheres to be individually more than half exposed and a reflective film layer composed of a colored transparent film and a deposited metal film, which reflective film layer is laid over the exposed surface of said mass of transparent fine glass spheres and over the surface of the temporary holding adhesive present between individual adjacent glass spheres, with the reflective film side of said retroreflective pattern transfer sheet placed in face-to-face relation with the adhesive coated side of the fabric, applying pressure to the retroreflective pattern transfer sheet superposed on the fabric from the base film, thereby bringing the retroreflective pattern transfer sheet opposed to the pattern coat of the compression bonding adhesive into bond with the surface of the fabric through the compression bonding adhesive, applying a peel force to the retroreflective pattern transfer sheet so that the reflective film layer is scissioned at a gap defined by individual transparent fine glass spheres present along a borderline between a first portion of the transfer sheet which is in bond with the fabric through the compression bonding adhesive and a second portion of the transfer sheet including the area of the color transparent film and metal film between the spheres which is not in bond with the fabric and so that said portion of the transfer sheet not in bond with the fabric is stripped off, whilst at least the temporary holding adhesive and the base film are stripped off together from said portion in bond with the fabric of the transfer sheet so that a mass of transparent fine glass spheres, less than half exposed, and the associated reflective film layer at least are retained as retroreflective pattern means on the surface of the fabric the thickness of the adhesive coat being more than sufficient to fill the gaps between individual adjacent transparent fine glass spheres.

4,605,462

METHOD OF ATTACHING A SHEETLIKE OBJECT, E.G., A LABEL, TO A HOLLOW BODY OF PLASTICS

Alwin Lehner, Hard, Austria, assignor to Soplar SA, Altstätten, Switzerland

Continuation of Ser. No. 511,562, Jul. 6, 1983, abandoned. This application Jan. 14, 1985, Ser. No. 691,374

Claims priority, application Switzerland, Jul. 6, 1982, 4103/82

Int. Cl.⁴ B29C *49/24*

U.S. Cl. 156—245 **9 Claims**

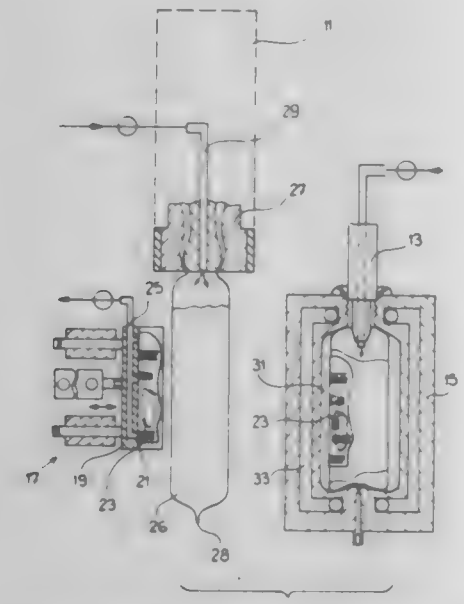
1. Method of blow-molding a hollow body of plastic material, especially of vessel or bottle shape, and applying a sheet-

like element (23) forming a label on the hollow body (26') as the hollow body is being made,

comprising the steps of

hot-extruding a hollow element from an extrusion nozzle (27);

applying the label to the hollow element as it is being extruded and while the hollow element is suspended from the extrusion nozzle, by pressing at least a portion of the label against the hot surface of the hollow element upon the hollow element being extruded by, and while still suspended from the extrusion nozzle in advance of blow-molding, while free of the blow mold and while still hot consequent to hot-extrusion, to preliminarily adhere the sheet-like element (23) on the hollow element;



then introducing the extruded hollow element, with the sheet-like element preliminarily and at least in part adhered thereto, into a blow mold (15) between the outer surface of the hollow element and the inner wall of the blow mold;

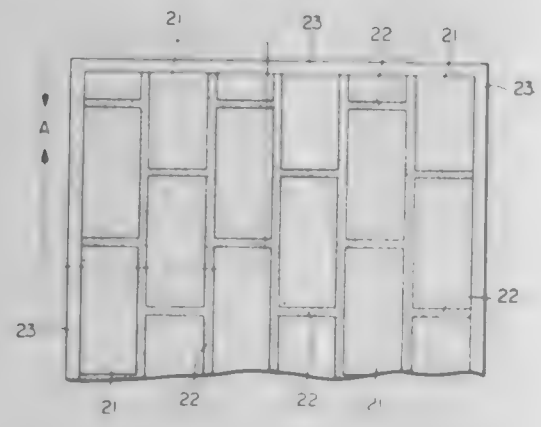
and then introducing pressurized gas into the blow mold to expand the hollow element, form the hollow element into the shape of the body and to finally adhere the sheet-like element to the hollow element over the entire surface of the sheet-like element as the sheet-like element and the plastic material are being pressed against the walls of the mold by blow-molding the hollow element.

4,605,463

PROCESS OF FORMING ORNAMENTAL JOINTS

Susumu Kidokoro, and Eiichi Tajima, both of Tokyo, Japan, assignors to Tajima Oyo Kako Kabushiki Kaisha, Chiyoda, Japan

Filed Oct. 9, 1984, Ser. No. 658,596
Claims priority, application Japan, Nov. 7, 1983, 58-208568
Int. Cl.⁴ B32B *31/18*
U.S. Cl. 156—247 **2 Claims**



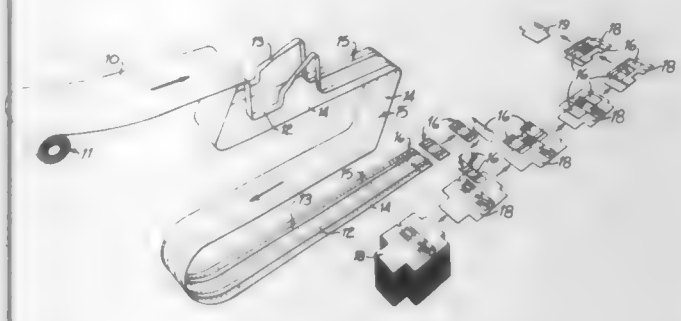
1. A process of forming ornamental joints which comprises sticking a sheet flooring material onto a floor base, thereafter drawing one desirably outlined standard line on said sheet flooring material, sticking a tape like material covering the surface of the standard line drawn on the sheet flooring material, said tape like material being transparent and wider than a groove for forming a joint, forming cuts on said tape like material and the sheet flooring material by sliding a cutter with a pair of cutting blades, disposed leaving a space corresponding to the joint width therebetween, on the tape like material with one cutting blade along said standard line which can be seen through this tape like material to thereby form two parallel cuts on said flooring material, forming the groove for forming the joint by stripping the sheet flooring material between these cuts and the tape like material stuck on its surface, thereby forming a masking by said tape like material remaining on its both edge sides, and charging said groove with a joint material under the state where said masking has been provided.

4,605,464

METHOD AND MACHINE FOR PRODUCING COMPLANCE CARRIER CARTONS

Julian B. Slevin, 221 Moylan Ave., Moylan, Pa. 19065

Filed May 25, 1983, Ser. No. 497,916
Int. Cl.⁴ B32B *31/08, 31/18*
U.S. Cl. 156—253 **6 Claims**



1. Apparatus for producing cell forming inserts for bottle carrier blanks from a continuous web of paperboard unwound from a roll comprising:

support means for supporting the roll of paperboard for free rotation about the axis of the roll;

a tensioning device receiving the web unwound from the roll and including a slide plate over which the web moves and at least one pressure roll for adjustably pressing the web against said slide plate so that a prescribed amount of force is required to pull the web through said tensioning device;

a slitter mechanism receiving the web from said tensioning device, said slitter mechanism including a backup roll over which the web passes, a drive shaft rotatably mounted for rotation about an axis normal to the longitudinal centerline of the web, a pair of spaced apart circular slitter knives mounted on said drive shaft for rotation therewith to engage the web and cut a continuous strip from opposite edges of the web, and a drive roll mounted on said shaft between said knives to engage the web moving over said backup roll so that said drive roll is rotated by the web moving thereby to rotate said slitting knives;

web guide means receiving the web from said slitter mechanism and including a shifting roll for shifting the web away from the strips cut therefrom;

strip guide means receiving the strips cut from the web, said strip guide means including a first pair of flanged rollers located in alignment with the strips so that each strip passes around one of said first rollers, a second pair of flanged rollers spaced from said first pair of rollers and located in alignment with the strips so that each strip passes around one of said second rollers, a pair of pivot arms pivoted between said first and second rollers, a flanged takeup roller rotatably mounted on each of said pivot arms so that one of said takeup rollers engages each of the strips between said first and second rollers and the weight of said pivot arm and takeup roller is exerted on

the strip to keep the strip taut, a pair of strip deflectors engaging the strips after passage around said second rollers to shift the strips inboard of the edges of the web passing through said web guide means, and a pair of flanged positioning rollers spaced inboard of the edges of the web and located above the web around which the strips shifted by said strip deflectors pass to locate the strips a prescribed distance inboard of the edges thereof;

a second backup roll rotatably mounted below said flanged positioning rolls and over which the web from said web guide means passes;

a pair of spaced apart pressure rollers mounted adjacent said second backup roll in alignment with the strips from said positioning rolls and under which the strips pass to press the strips against the web at the prescribed distances inboard of the edges thereof;

a pair of glue applicators positioned between said positioning rollers and said pressure rollers to apply an adhesive to that side of the strips which will lie against the web so that the pressing of the strips against the web by said pressure rollers adhesively attaches the strips to the web; and

a pair of driven rolls drivingly engaging the web with the strips adhesively attached thereto to pull the web and strips under tension from said tensioning device through said slitter mechanism, said web guide means, said strip guide means and between said second backup roll and said pressure rollers.

4,605,465

UV AND THERMALLY CURABLE, THERMOPLASTIC-CONTAINING COMPOSITIONS

Charles R. Morgan, Brookeville, Md., assignor to W. R. Grace & Co., New York, N.Y.

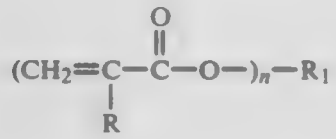
Continuation of Ser. No. 526,636, Aug. 26, 1983, abandoned, which is a continuation-in-part of Ser. No. 371,684, Apr. 26, 1982, abandoned. This application Oct. 4, 1984, Ser. No. 657,607

Int. Cl.[4] B32B *31/00*

U.S. Cl. 156—273.3 **10 Claims**

1. A process for adhering two substrates which consists of applying to at least one of said substrates an adhesive composition consisting essentially of

(1) a liquid, ethylenically unsaturated monomer, oligomer or prepolymer of the formula:



wherein R is H or CH_3, R_1 is an organic moiety and n is at least 2,

(2) a thermal initiator for (1) selected from the group consisting of azo compounds, thiurams, organic peroxides and mixtures thereof,

(3) a photoinitiator for (1) selected from the group consisting of aldehyde and ketone carbonyl compounds having at least one aromatic nucleus attached directly to the



group, benzoin alkyl ethers, diethoxyacetophenone and 2,2-dimethoxy-2-phenylacetophenone,

(4) a thermoplastic material, and

(5) a non-polymerizable plasticizer for (4), exposing said composition in air to UV radiation having an intensity in the range 0.0004 to 60.0 watts/cm^2 in the 200–400 nanometer region for a time sufficient to partially cure the adhesive in situ, contacting the substrates with the partially cured adhesive therebetween and, thereafter, heating the composition to a temperature in the range 80°–200° C. for a time sufficient to obtain a fully cured solid adhesive.

4,605,466

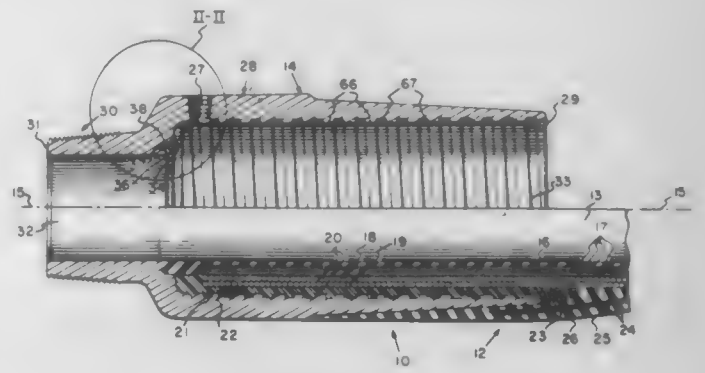
HOSE COUPLING METHOD

George W. Eisenzimmer, Akron, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Continuation of Ser. No. 401,797, Jul. 26, 1982, abandoned, which is a division of Ser. No. 210,944, Nov. 28, 1980, Pat. No. 4,353,581. This application Feb. 21, 1984, Ser. No. 581,636

Int. Cl.[4] B32B *31/00*

U.S. Cl. 156—293 **3 Claims**



1. A method of coupling hose for use at working pressures up to 20,000 psi, said hose having an innermost tube of elastomeric material and multiple plies of reinforcing elements to a unitary coupling having a nipple portion integrally joined to a sleeve portion, said nipple portion having a uniform diameter coaxial bore therethrough in communication with an untapered coaxial counterbore of greater dimension extending through said sleeve portion, said coupling further including an annular recess extending toward the nipple portion from the end of the counterbore, said recess having a mean diameter slightly greater than the diameter of the bore through the nipple portion, comprising the steps of:

(a) forming said recess in said coupling to form a radially innermost conical surface one end of which extends to the bore of the nipple and a radially outermost annular surface one end of which extends to the counterbore of the sleeve, the included angle between generator lines which define the radially innermost and outermost surfaces when viewed in an axial cross section of the coupling being from about 20° to about 60°;

(b) providing an uncured hose preform including a radially innermost tube of elastomeric material, multiple plies of reinforcing elements overlying said tube and bound down at an end of said tube, the tube extending axially beyond the reinforcing elements a small amount;

(c) filling the recess of said coupling with uncured elastomeric material which is capable of being adhered to the elastomer material of the tube of said hose preform and the surfaces defining the recess;

(d) inserting the hose preform into the sleeve portion of the coupling and axially forcing the coupling and hose preform together thereby causing intimate contact between the uncured elastomeric material and the end of the innermost tube of the hose preform and all surrounding coupling surfaces;

(e) sealing off the hose preform at the end of the sleeve portion distal the nipple portion of the coupling, thereby creating a void area between the tube and the inner walls of the sleeve portion;

(f) filling the void area with an anchoring material which will fixedly embed the reinforcing elements of the hose therein;

(g) applying a radially outermost cover layer of polymeric material to the hose preform; and

(h) applying heat and pressure to the hose and coupling assembly to cure the hose and securely bond the elastomeric material filling the recess to the innermost tube and

all surrounding coupling surfaces to form a fluid tight seal for sealing against internal pressure within the hose said seal being capable of resisting internal working pressures of up to 20,000 psi.

4,605,467

APPARATUS FOR PRODUCING STEAM HARDENED PRESSEDBOARD

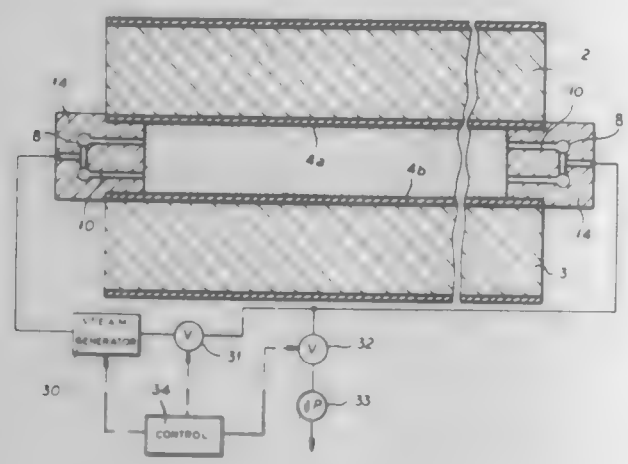
Friedrich Böttger, Haan, Fed. Rep. of Germany, assignor to G. Siempelkamp GmbH & Co., Krefeld, Fed. Rep. of Germany

Filed Mar. 29, 1985, Ser. No. 717,715

Claims priority, application Fed. Rep. of Germany, Mar. 29, 1984, 3411590

Int. Cl.[4] B32B *31/26*

U.S. Cl. 156—497 **9 Claims**



1. An apparatus for pressing and steam curing a wood-particle mat to produce a wood-particle board, comprising:

a pair of pressing belts for moving the wood-particle mat along a predetermined path, said belts being arranged with a spacing to define a pressing gap therebetween such that a compression zone and a sizing zone are provided in succession along said path; and

steam injection means extending laterally along each side of said path and including a first channel system bordering said pressing gap along said compression zone for injecting steam into the mat and a second channel system bordering said pressing gap at least along a section of said sizing zone for collecting and discharging steam.

4,605,468

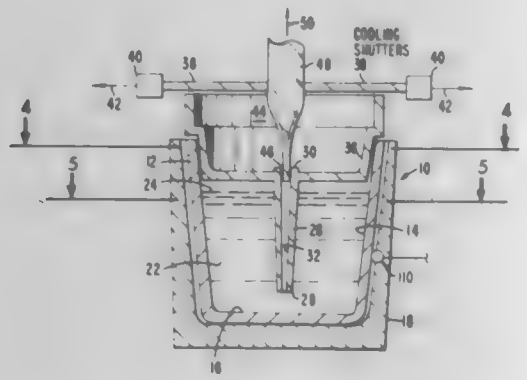
SHAPED CRYSTAL FIBER GROWTH METHOD

Antonio C. Pastor, Santa Monica, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed Jul. 10, 1984, Ser. No. 628,949

Int. Cl.[4] C30B *15/34*

U.S. Cl. 156—608 **4 Claims**



1. A method for pulling a shaped crystalline fiber of a given crystal-forming material from a liquid reservoir of said material comprising the steps of:

providing a liquid reservoir of said material having a top surface and maintaining the temperature of the liquid reservoir above the crystal-forming temperature of said material;

introducing said liquid material into the bottom end of the die having a tubular orifice, said bottom end of the die located below the top surface of the reservoir;

flowing said liquid material to a crystal-forming zone in said orifice, said crystal-forming zone having a cross-section which tapers outward toward the top end of the die and downstream relative to the flow of said liquid material and such that said liquid material is in direct contact with said crystal-forming zone;

providing a thermal gradient along the length of said crystal-forming zone so that a liquid/crystal interface occurs within said crystal-forming zone, the crystalline material at said liquid/crystal interface having an outer edge that forms directly adjacent the inner surface of said die and being shaped thereby; and

continually pulling said crystalline material from the crystal-forming zone to produce said shaped crystalline fiber.

4,605,469

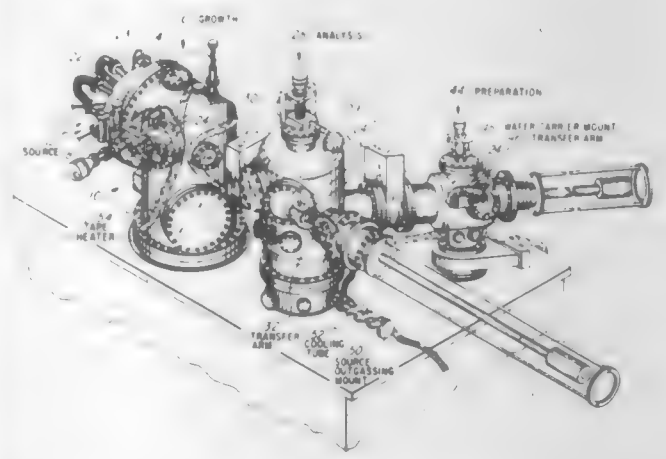
MBE SYSTEM WITH IN-SITU MOUNTING

Hung-Dah Shih, Plano, and Tommy J. Bennett, McKinney, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Nov. 10, 1983, Ser. No. 550,655

Int. Cl.[4] C30B *23/06*

U.S. Cl. 156—610 **24 Claims**



22. A method of epitaxal growth, comprising the steps of:

providing a plurality of wafers, on which molecular beam epitaxial growth is to be performed;

loading said wafers from atmospheric pressure into a first vacuum chamber and evacuating said first vacuum chamber;

holding a substrate holder and a retaining ring in a second vacuum chamber separate from said first vacuum chamber while said wafers are loaded into said first vacuum chamber and said first vacuum chamber is evacuated;

opening a valve to interconnect said first vacuum chamber and said second vacuum chamber;

transferring one of said wafers onto said substrate holder and assembling said retaining ring thereto, said substrate holder and said retaining ring mechanically defining a cavity therebetween having dimensions approximately equal to or slightly greater than those of said wafers, said retaining ring and substrate holder being assembled to hold one of said wafers therebetween;

transferring said substrate holder, wafer, and assembled retaining ring into a growth chamber, said growth chamber being held under ultrahigh vacuum, and performing molecular beam epitaxy in said growth chamber;

transferring said substrate holder, wafer, and assembled retaining ring out of said growth chamber, removing said retaining ring from said substrate holder, and removing said wafer from said substrate holder;

repeating ones of said proceding steps, until a plurality of

wafers have been exposed to epitaxial growth in said growth chamber;

transferring said wafers into said first chamber, while said retaining ring and substrate holder are retained in vacuum apart from said first chamber;

closing a vacuum valve to isolate said first chamber from said second chamber; and

removing said wafers from said first chamber to atmospheric pressure.

4,605,470

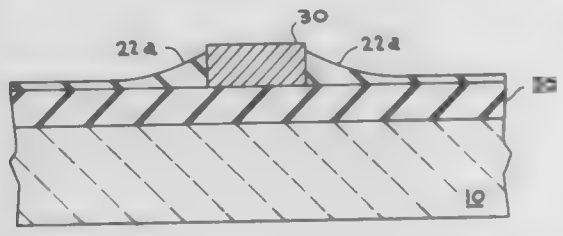
METHOD FOR INTERCONNECTING CONDUCTING LAYERS OF AN INTEGRATED CIRCUIT DEVICE

Peter S. Gwozdz, Cupertino, and Hubert M. Bath, Saratoga, both of Calif., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Jun. 10, 1985, Ser. No. 743,205

Int. Cl.[4] B44C *1/22;* C03C *15/00, 25/06;* B29C *17/08*

U.S. Cl. 156—643 **39 Claims**



1. An improved method for forming a conductive path through at least one layer of insulating material in an integrated circuit structure comprising a narrow portion and a sloped oversized portion, said method comprising:

(a) forming said sloped oversize portion of said conductive path by defining an opening in a layer of photoresist material applied over said layer of insulating material; and sloping said insulating layer to form said sloped oversized portion of said conductive path; and

(b) forming said narrow portion of said conductive path by etching at least a portion of said insulating layer to expose a selected section of said integrated circuit structure below said insulating layer.

4,605,471

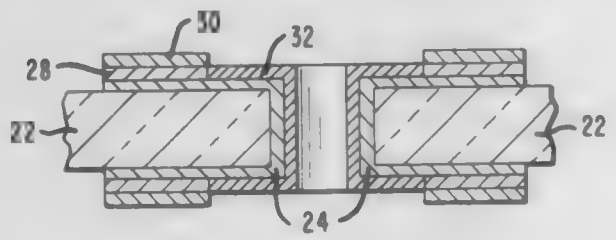
METHOD OF MANUFACTURING PRINTED CIRCUIT BOARDS

Curt E. Mitchell, Cambridge, Ohio, assignor to NCR Corporation, Dayton, Ohio

Filed Jun. 27, 1985, Ser. No. 749,594

Int. Cl.[4] C23F *1/02;* B44C *1/22;* C03C *15/00, 25/06*

U.S. Cl. 156—645 **6 Claims**



1. In a method of fabricating a printed circuit board having a solder mask applied over at least a portion of the circuit board other than connecting pads and holes therethrough of a prescribed electrical circuit pattern in a conductive material on the circuit, the improvement comprising the steps of:

(a) applying on a portion of the conductive material a thin coating of metallic etch resist composed of a nickel metal which will not flow detrimentally at the temperature of solder used in a subsequent solder operation;

(b) applying a solder resist on the board except the plated-through holes and other connecting sites;

(c) selectively removing the nickel from the plated-through holes and other connecting sites; and

(d) applying a layer of solder to the exposed plated-through holes and other connecting sites.

4,605,472

DRIVE ASSEMBLY FOR CLEANER FOR WIRE-SCREEN OR FELT-BLANKET BELT OF PAPERMAKING APPARATUS

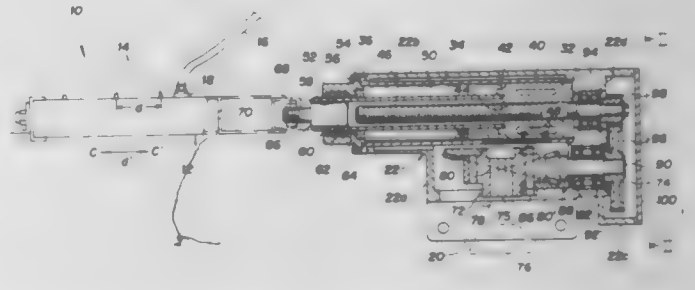
Tooru Nakamura, No. 2263-5, Imaizumi, Fuji City, Shizuoka Prefecture, Japan

Filed Jun. 27, 1984, Ser. No. 624,941

Claims priority, application Japan, Jul. 9, 1983, 58-124976

Int. Cl.[4] D21F *1/32*

U.S. Cl. 162—277 **19 Claims**



1. In a papermaking apparatus having a sheet forming station including an endless belt to forwardly carry a wet web of paper thereon and a shower pipe unit to clean the endless belt by applying streams of liquid to the belt, the shower pipe unit being movable in opposite directions substantially parallel with the direction of width of the belt, a cleaner drive assembly for driving said shower pipe unit alternately in said opposite directions, the cleaner drive assembly comprising:

a stationary housing;

an electric motor having an output shaft rotatable about an axis fixed with respect to said stationary housing;

a pair of sector-shaped driving bevel gears enclosed within said stationary housing and having a common axis of rotation substantially coincident with the axis of rotation of the motor output shaft, the driving bevel gears being substantially congruent in shape to each other about said common axis of rotation thereof and being, when viewed in axial direction of the combination of the gears, substantially symmetric to each other with respect to a diametrical line which passes through said common axis of rotation of the driving bevel gears, said motor output shaft being held in driving engagement with each of said driving bevel gears;

a driven bevel gear having an axis of rotation fixed with respect to said stationary housing and engageable with each of said driving bevel gears on planes which are parallel with each other on the opposite sides of a plane which passes through the axis of rotation of the driven bevel gear, said sector-shaped driving bevel gears being alternately meshable with the driven bevel gear to produce rotary motions in alternately opposite directions about the axis of rotation of the driven bevel gear;

an elongated, externally threaded screw rod which is held against axial movement with respect to said stationary housing and which is rotatable in opposite directions about the center axis thereof with respect to the stationary housing;

intermediate gears intervening between said driven bevel gear and said screw rod and operative to transmit rotation from the driven bevel gear to the screw rod; and

an internally threaded slide member engaging said screw rod and held against rotation about the center axis of the screw rod with respect to said housing structure, the slide member being axially movable in alternately opposite

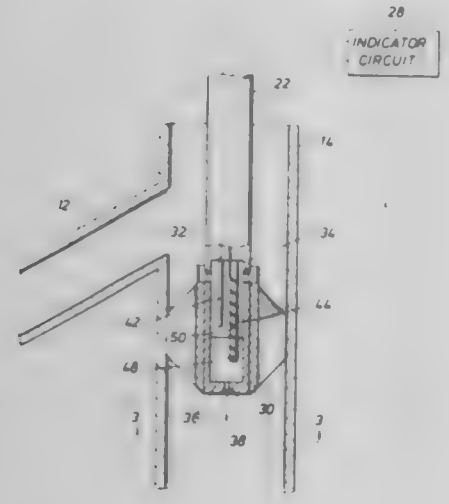
directions on and along the screw rod with respect to the stationary housing as the screw rod is driven for rotation about the center axis thereof with respect to said housing structure, the alternately opposite directions of movement of the slide member being respectively in correspondence with said alternatively opposite directions of rotation of said driven bevel gear, said slide member being connected to and movable with said shower pipe unit for driving the shower pipe unit alternately in said opposite directions thereof.

4,605,473

HYPOCHLORITE ACTIVATED GOLD ELECTRODE AND MEASURING SYSTEM AND METHOD

Lamar R. Dewald, Antioch, Calif., assignor to The Dow Chemical Company, Midland, Mich.

Filed Nov. 1, 1985, Ser. No. 793,819
Int. Cl.[4] G01N *27/30, 27/50*
U.S. Cl. 204—1 T **14 Claims**



1. A measuring device for use in measuring hypochlorite concentration from an electrolysis cell forming an electrolyte potentially having hypochlorite therein, the device comprising:

(a) electrolyte container means having an inlet for admitting electrolyte thereto from an electrolysis cell potentially having hypochlorite therein;

(b) an elongate probe;

(c) an exposed reference electrode supported by said probe;

(d) an exposed gold sensing electrode having a specified surface area, the surface area being etched to increase the surface area thereof;

(e) a coating of hypochlorite on said sensing electrode surface area;

(f) circuit means connected to said sensing electrode to measure and indicate hypochlorite concentration of electrolyte from the cell on contacting said electrodes with electrolyte in said container means.

11. A method of measuring hypochlorite concentration in the electrolyte discharged from the electrolysis cell wherein the electrolyte has varying amounts of hypochlorite therein, the method comprising the steps of:

(a) positioning container means subject to filling from the discharge of electrolyte from an electrolysis cell;

(b) positioning a reference electrode in said container means and adapted to be submerged in the electrolyte in said container means;

(c) positioning an exposed gold sensing electrode in said container means to be submerged by the electrolyte in said container means;

(d) conducting measurements utilizing said electrodes in the submerged electrolyte to thereby obtain a measurement indicative of hypochlorite concentration;

(e) and further including the preliminary step of placing a coating of hypochlorite on said sensing electrode.

4,605,474

ALKALINE CYANIDE BATH FOR ELECTROLYTIC DEPOSITION OF COPPER-TIN-ALLOY COATINGS

Gerd Hoffacker, Neue Strasse 74/6, 7070 Schwabisch Gmund, and Willi Müller, Obere Morgen 44, 7345 Deggingen, both of Fed. Rep. of Germany

Continuation of Ser. No. 666,318, Oct. 30, 1984, Pat. No. 4,565,608. This application Aug. 26, 1985, Ser. No. 769,343
Claims priority, application Fed. Rep. of Germany, Nov. 2, 1983, 3339541
The portion of the term of this patent subsequent to Jan. 21, 2003, has been disclaimed.
Int. Cl.[4] C25D *3/58, 3/60*
U.S. Cl. 204—44 **7 Claims**

1. In an alkaline cyanide bath for the electrolytic deposition of bright to brilliant copper-tin alloy coatings, the improvement comprising including in the bath at least one organic material from at least one of the following groups:

(a) fatty acid amidoalkyl dialkylamine oxides of the general formula

$$R_1CO—NH(CH_2)_n—N(R_2)_2\rightarrow 0,$$

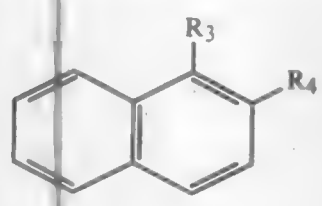
wherein
R_1 is an alkyl group having 11 to 17 carbon atoms,
R_2 is an alkyl group having 1 to 5 carbon atoms, and
n is 1–30

(b) fatty acid amidoalkyl-dialkylamine betaines of the general formula

$$R_1CO—NH(CH_2)_n—\oplus N(R_2)_2—CH_2—COO\ominus,$$

wherein
R_1 is an alkyl group having 11 to 17 carbon atoms,
R_2 is an alkyl group having 1 to 5 carbon atoms, and
n is 1–30, and

(c) ethoxylated naphthols of the general formula



wherein
R_3 is H or $O(CH_2—CH_2O)_mH$,
R_4 is $O(CH_2CH_2O)_mH$ or H
m = 10 to 14
in an amount of 0.05 to 5 g/l.

4,605,475

GAS SEPARATION PROCESS

Daryl L. Roberts, Fremont, and Richard M. Laine, Palo Alto, both of Calif., assignors to SRI International, Menlo Park, Calif.

Filed Jan. 28, 1985, Ser. No. 695,440
Int. Cl.[4] C25F *5/00*
U.S. Cl. 204—130 **3 Claims**

1. A continuous process for separating oxygen from gas mixtures containing oxygen comprises:

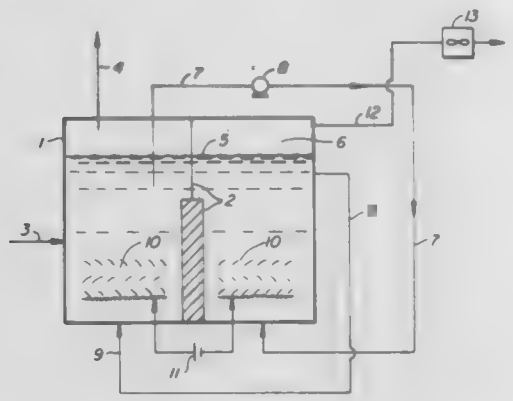
forming a solution consisting essentially of an organic solvent, an electrolyte and an organometallic complex oxygen carrier in which the metal is polyvalent and at a lower valence, the solvent, electrolyte and organometallic complex being chemically compatible,

providing a closed vessel having a central vertical divider separating said vessel into two compartments, the lower portion of said divider being a permeable membrane and the upper portion of said divider being an impermeable sheet, an electrode disposed near the bottom of each of said compartments and a cell so connected to the electrodes that one becomes a cathode and the other an anode,

said membrane being permeable in the sense that it prevents flow of said solution through it from either compartment to the other but provides liquid electrolytic communication between the compartments,

introducing said solution into both compartments of said vessel in amounts such that the upper level of the solution in each compartment intersects the impermeable sheet of the divider,

passing an oxygen containing gas into the cathode compartment of the vessel at a point near its bottom to cause oxygen absorption by said oxygen carrier and withdrawing gas depleted in oxygen from the top of the cathode compartment,



withdrawing solution from the cathode compartment at a point near the upper surface of solution contained in the cathode compartment and introducing the withdrawn solution into the bottom of the anode compartment, to cause oxidation of the metal component of the oxygen carrier and release of absorbed oxygen,

withdrawing gas enriched in oxygen from the top of the anode compartment; and

withdrawing solution from the anode compartment at a point near the upper surface of solution contained in the anode compartment, and introducing the withdrawn solution into the bottom of the cathode compartment to cause reduction of the metal of the oxygen carrier to a lower valence.

4,605,476

RESINOUS BLENDS OF EPOXY AND ACRYLIC RESINS AND THE USE THEREOF IN ELECTRODEPOSITION

Terence J. Hart, Allison Park; Rostyslaw Dowbenko, Gibsonia; Rudolf Maska; Ellor J. Van Buskirk, both of Pittsburgh, and Marvin T. Tetenbaum, Wexford, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Aug. 2, 1984, Ser. No. 637,251

Int. Cl.⁴ C25D *13/06*

U.S. Cl. 204—181.6 **9 Claims**

1. A method of anionically electrocoating an electrically conductive surface which comprises passing an electric current through the surface serving as an anode, and through a cathode in an electrical circuit with an electrodepositable composition, said composition comprising:

(A) a base-neutralized resinous blend of:

(i) from about 5 to 95 percent by weight of an amine-defunctionalized epoxy which is at least partially amidated with a polycarboxylic acid, an acid anhydride thereof or a functional equivalent thereof; and

(ii) from about 5 to 95 percent by weight of an acid group-containing vinyl addition resin having an acid value of 5 to 350; the percent by weight is based on total resin solids; and

(B) a curing agent comprising an aminoplast, phenoplast or blocked isocyanate;

the base-neutralization is from 60 to 150 percent.

4,605,477

ELECTRODIALYTIC RECOVERY OF α-AMINO ACID FROM ITS AMIDE

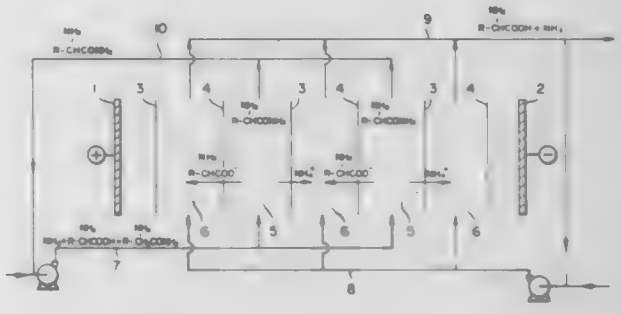
Masaharu Dōya; Toshio Kondō; Hideo Igarashi, and Takako Uchiyama, all of Niigata, Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Japan

Filed Feb. 25, 1985, Ser. No. 704,596

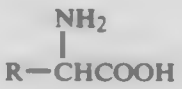
Claims priority, application Japan, Mar. 1, 1984, 59-39496

Int. Cl.⁴ B01D *13/02*

U.S. Cl. 204—182.6 **13 Claims**



1. A process for separating and recovering an α-amino acid which comprises subjecting an aqueous solution containing at least an α-amino acid and its corresponding α-amino acid amide to ion-exchange electrodialysis in the presence of ammonia, wherein the mol ratio of ammonia to α-amino acid is not less than 1 in a raw material aqueous solution, said α-amino acid being represented by the general formula:



where R denotes a hydrogen atom, lower alkyl group, substituted lower alkyl group, phenyl group, substituted phenyl group, furyl group, pyridyl group, thiazolyl group, imidazolyl group or indolyl group.

4,605,478

CATIONIC ELECTRODEPOSITABLE COMPOSITIONS CONTAINING FORMALDEHYDE SCAVENGER

Roger M. Christenson, Gibsonia; Joseph T. Valko, Pittsburgh; Joseph E. Plasynski, Arnold, and Roger L. Scriven, Gibsonia, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Division of Ser. No. 627,587, Jul. 3, 1984, Pat. No. 4,560,717. This application Oct. 3, 1985, Ser. No. 783,721

Int. Cl.⁴ C25D *13/10, 13/06*

U.S. Cl. 204—181.7 **11 Claims**

1. A method of coating a conductive substrate serving as a cathode in an electrical circuit comprising said cathode and an anode immersed in an aqueous cationic electrodeposition bath, said electrodeposition bath containing a positively charged film-forming resin and containing a material which has methylol or substituted methylol groups and is prepared from a formaldehyde-reactive material and formaldehyde; said material containing free formaldehyde and/or being capable of generating free formaldehyde which lowers the pH of the electrodeposition bath, said method comprising passing electric current between said cathode and said anode to cause a coating to deposit on said cathode, the electrodeposition bath further containing a formaldehyde scavenger which is non-ionic and which does not become ionic in the cationic electrodeposition bath; said formaldehyde scavenger being present in an amount sufficient to stabilize the pH of the electrodeposition bath.

2. The method of claim 1 in which the formaldehyde scavenger is water-soluble.

3. The method of claim 2 in which the formaldehyde scavenger is an amide which is reactive with formaldehyde under aqueous conditions.

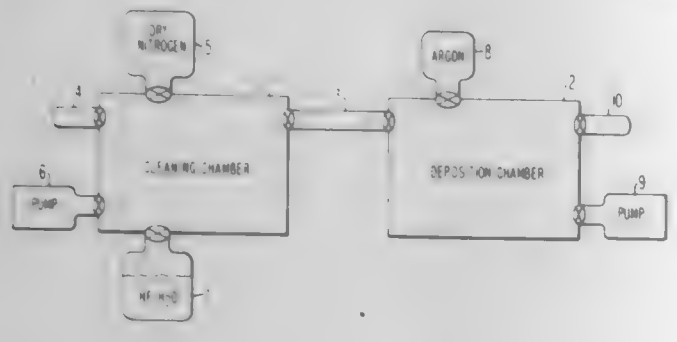
4. The method of claim 3 in which the formaldehyde scavenger is urea.

4,605,479

IN-SITU CLEANED OHMIC CONTACTS

Thomas J. Faith, Jr., Lawrenceville, N.J., assignor to RCA Corporation, Princeton, N.J.

Filed Jun. 24, 1985, Ser. No. 748,350
Int. Cl.[4] C23C *15/00*
U.S. Cl. 204—192 D 10 Claims



1. A process of forming an ohmic contact between a layer of metallization and a substrate wherein the metallization contacts the substrate in contact openings in a layer of dielectric material covering the substrate comprising:

(a) heating the substrate under vacuum to at least about 30° C.;

(b) contacting the substrate with an etchant comprising hydrogen fluoride and water vapor, the temperature of the etchant being at least 5° C. below that of the substrate, thereby removing impurities etchable by hydrogen fluoride from the contact openings;

(c) sequentially in a closed system, depositing a layer of metallization onto the substrate to contact the substrate in the contact openings; and

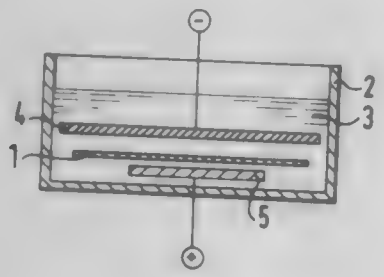
(d) heating the substrate to a temperature sufficient to sinter the coatings and alloy them to the substrate in the openings.

4,605,480

DEVICE FOR CONTINUOUSLY ANODICALLY OXIDIZING ALUMINUM STRIPS ON ONE SURFACE THEREOF AND USE OF THESE ALUMINUM STRIPS IN THE PRODUCTION OF OFFSET PRINTING PLATES

Joachim Stroszynski, Wiesbaden; Walter Niederstätter, Eltville, and Gerhard Sprintschnik, Taunusstein, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

PCT No. PCT/EP83/00152, § 371 Date Feb. 13, 1985, § 102(e) Date Feb. 13, 1985, PCT Pub. No. WO84/04934, PCT Pub. Date Dec. 20, 1984
PCT Filed Jun. 13, 1983, Ser. No. 704,313
Int. Cl.[4] C25D *17/00*
U.S. Cl. 204—211 11 Claims



1. A device for anodically oxidizing a surface of an aluminum or aluminum alloy strip, comprising:

(a) at least one treating bath containing an aqueous acid electrolyte;

(b) at least one anode positioned in said electrolyte;

(c) at least one cathode positioned in said electrolyte in spaced relationship to said at least one anode, the electrolyte surrounding said anode and the electrolyte surrounding said cathode being in continuous contact;

(d) means for applying a direct current to said anode and said cathode; and

(e) means for conveying an aluminum or aluminum alloy strip between said anode and said cathode;

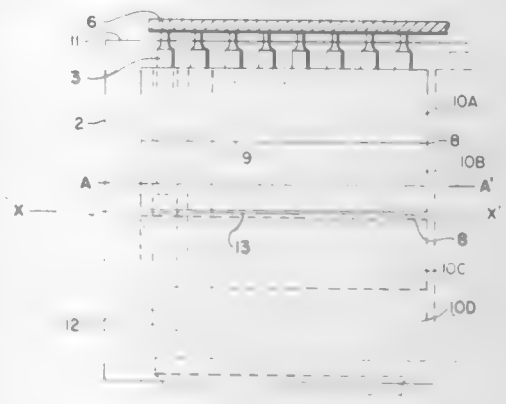
wherein a width of said anode perpendicular to a direction of conveyance of said strip is smaller than a width of said strip, and wherein a width of said cathode perpendicular to said direction of conveyance of said strip is larger than said width of said strip.

4,605,481

MODULAR CATHODIC BLOCK AND CATHODE HAVING A LOW VOLTAGE DROP FOR HALL-HEROULT ELECTROLYSIS TANKS

Bernard Langon, Saint Jean de Maurienne, France, assignor to Aluminium Pechiney, Paris, France

Filed May 29, 1985, Ser. No. 738,781
Claims priority, application France, Jun. 13, 1984, 84 10557
Int. Cl.[4] C25C *3/00*
U.S. Cl. 204—243 M 10 Claims



1. A carbonaceous cathodic block having a low voltage drop, which is intended for tanks for the production of aluminum by electrolysis using the Hall-Heroult process, said tanks comprising a parallelepipedic metal casing having major and minor axes supporting a cathode on which the layer of liquid aluminum is formed, said cathode being formed by the juxtaposition of parallelepipedic carbonaceous blocks of elongate shape having major and minor axes, having a ratio of the length of the major axis to the minor axis which is at least equal to two, and in which there is cut at least one groove into which is sealed a steel bar disposed in parallel relationship to the short side of the casing and the end of which issues at the long side of the casing and connects to at least one cathodic collector, characterised in that the sealing grooves (12) are cut in the direction which is perpendicular to the major axis AA' of the block which is itself disposed in parallel relationship to major axis of the casing.

4,605,482

FILTER PRESS TYPE ELECTROLYTIC CELL

Osamu Shiragami, Funabashi; Toshihiko Kuno, Ichihara; Yasuo Sajima, Yokohama; Kohji Saito, Chiba; Takahiro Uchibori, and Junjiro Iwamoto, both of Yokohama, all of Japan, assignors to Asahi Glass Company, Ltd., Tokyo, Japan

Filed Apr. 12, 1982, Ser. No. 367,386
Claims priority, application Japan, Apr. 28, 1981, 56-63378; May 26, 1981, 56-78686; Oct. 20, 1981, 56-166448
Int. Cl.[4] C25B *9/00, 11/03, 11/20*
U.S. Cl. 204—258 13 Claims

1. In a filter press type ion exchange membrane electrolytic cell comprising an anode compartment and a cathode compartment partitioned by a cation exchange membrane and being useful for obtaining a halogen, hydrogen and an alkali metal hydroxide from an alkali metal halide aqueous solution, or oxygen and hydrogen from an aqueous alkaline solution, an improvement characterized by:

(a) an anode compartment frame and a cathode compart-

ment frame, each having an essentially rectangular opening at its center constituting the non-conductive anode compartment or the non-conductive cathode compartment and four holes in the vicinity of its corners constituting passages for (1) an alkali metal halide aqueous solution or an aqueous alkaline solution, (2) a depleted brine and a halogen gas, or an aqueous alkaline solution and an oxygen gas, (3) water or a dilute alkali metal hydroxide aqueous solution and (4) an alkali metal hydroxide aqueous solution and a hydrogen gas, the former two holes being in communication with the opening constituting the anode compartment, and the latter two openings being in communication with the opening constituting the cathode compartment,

(b) a cation exchange membrane having four holes at positions corresponding to the four holes provided on the anode compartment frame and the cathode compartment



frame, or a cation exchange membrane having no such four holes and being smaller than said compartment frame but slightly larger than said openings of the compartment frames,

(c) an anode and a cathode having no four holes and being slightly larger than the openings of the anode compartment frame and the cathode compartment frame and smaller than the compartment frames, wherein a unit comprising said cathode compartment frame and said cathode disposed on each side thereof and a unit comprising said anode compartment frame and said anode disposed on each side thereof are alternately arranged via said cation exchange membrane, or wherein a unit comprising said anode and said anode compartment frame disposed on one side or each side thereof and a unit comprising said cathode and said cathode compartment frame disposed on one side or each side thereof are alternately arranged via said cation exchange membrane.

4,605,483

AN ELECTRODE FOR ELECTRO-PLATING NON-CONTINUOUSLY CONDUCTIVE SURFACES

Michaelson, Henry W., 744 Birchwood Ct., Westbury, N.Y. 11590

Filed Nov. 6, 1984, Ser. No. 668,701

Int. Cl.[4] C25B *11/02, 11/04;* **C25D** *17/06, 17/12*

U.S. Cl. 204—280 **15 Claims**

1. An electrode, for use in electro-plating an object, comprising:

a housing having a plurality of sides and an internal enclosed chamber, wherein at least one of the sides is flexible and conductive and the remaining sides are rigid and non-conductive;

a port extending through one of the sides and into the chamber for routing a pressurized fluid into the chamber; and

means for holding an object to be electro-plated against the electrode such that whenever sufficient fluid is routed into the chamber the flexible side distends into abutting electri-



cal contact with at least one conductive region situated on a surface of the object.

4,605,484

HYDROGEN-EVOLUTION ELECTRODE

Hiroyuki Shiroki, and Yasuhide Noaki, both of Miyazaki, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 549,755, Nov. 8, 1983, abandoned. This application May 6, 1985, Ser. No. 731,598

Claims priority, application Japan, Nov. 30, 1982, 57-208653; Mar. 8, 1983, 58-36620

Int. Cl.[4] C25B *11/00*

U.S. Cl. 204—290 R **7 Claims**

1. A hydrogen-evolution electrode comprising an electrically conductive substrate having thereon a coating comprising a chromium component and an oxide of at least one metal selected from the group consisting of nickel and cobalt produced by a method comprising:

(1) mixing a finely divided powder of at least one member selected from the first group consisting of nickel, cobalt, nickel oxide, cobalt oxide, nickel hydroxide, cobalt hydroxide, organic acid salts of nickel, organic acid salts of cobalt, inorganic acid salts of nickel and inorganic acid salts of cobalt with a finely divided powder of at least one member selected from the second group consisting of chromium, chromium oxide, chromium hydroxide, organic acid salts of chromium and inorganic acid salts of chromium in such an amount ratio as gives a mixture of the powders containing said chromium component in a proportion, in terms of atomic percentage, of 0.5 to 20%, said atomic percentage being defined by the following formula

$$\frac{A_{Cr}}{A_T} \times 100 \quad (1)$$

wherein A_{Cr} represents the number of chromium atoms in the coating and A_T represents the total number of atoms of chromium and said at least one metal in the coating; and

(2) applying the resulting mixture onto an electrically conductive substrate by melt spraying thereby to obtain a hydrogen-evolution electrode having thereon a coating containing an oxide of at least one metal selected from the group consisting of nickel and cobalt in an amount, in terms of degree of oxidation, of 20 to less than 100%, said degree of oxidation being defined by the formula

$$\frac{H_1}{H_1 + H_0} \times 100$$

where H_O represents the height of a peak of the highest

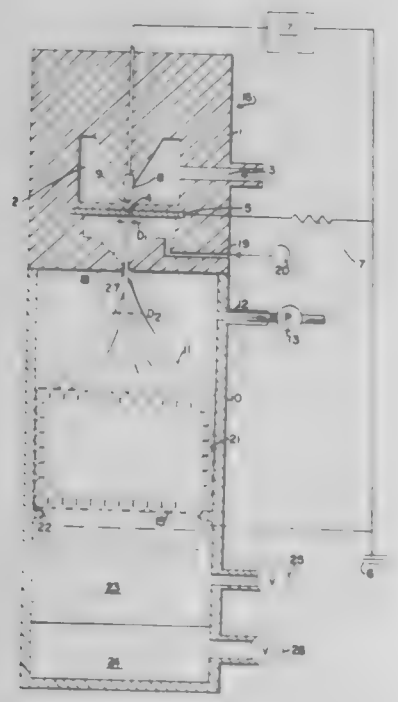
intensity X-ray diffraction line of a metal selected from the group consisting of nickel and cobalt when the coating is analyzed by X-ray diffractometry, or represents the arithmetic mean of the heights of peaks of the highest intensity X-ray diffraction lines respectively of nickel and cobalt in case the coating contains both nickel and cobalt; H_1 represents the height of a peak of the highest intensity X-ray diffraction line of an oxide of said metal, or represents the arithmetic mean of the heights of peaks of the highest intensity X-ray diffraction lines respectively of nickel oxide and cobalt oxide in case the coating contains both nickel oxide and cobalt oxide.

4,605,485

CHARGE INJECTION DEVICE

Anthony E. Cerkanowicz, Livingston, N.J., assignor to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Apr. 17, 1984, Ser. No. 601,253
Int. Cl.[4] B03C *5/00*
U.S. Cl. 204—302 **21 Claims**



1. A charge injection device of the kind having discharge means, including an orifice, for issuing free-charge injected fluid, and a first region of lower pressure downstream of said discharge means, said charge injection device comprising means arranged to raise the pressure in a second region immediately downstream of said orifice to above said downstream pressure such that fluid issuing from said discharge means passes through said second region before entering said first region.

4,605,486

COAL LIQUEFACTION PROCESS WITH INCREASED NAPHTHA YIELDS

Daniel F. Ryan, Friendswood, Tex., assignor to Exxon Research and Engineering Co., Florham Park, N.J.

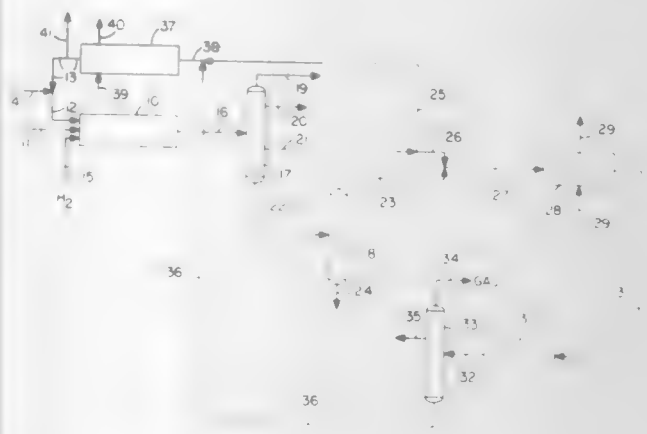
Filed Apr. 26, 1985, Ser. No. 727,976
Int. Cl.[4] C109 *1/00*
U.S. Cl. 208—412 **2 Claims**

1. A process for liquefying solid carbonaceous materials comprising the steps of:

(a) forming a slurry of finely divided solid carbonaceous material and a suitable solvent or diluent;

(b) subjecting the slurry from step (a) to liquefaction at an elevated temperature and pressure in the presence of molecular hydrogen to produce a normally gaseous product, a normally liquid product and a normally solid bottoms product;

(c) separating the product from step (b) into a gas phase, a liquid phase and a normally solid phase and further separating the liquid portion of the product into a naphtha boiling range product having an initial boiling point within the range from about 50° F. to about 100° F. and a final boiling point within the range from about 300° F. to about 450° F., a solvent boiling range product having an initial boiling point within the range from about 300° F. to about 450° F. and a final boiling point within the range from about 750° F. to about 850° F., and a vacuum gas-oil boiling range product having an initial boiling point equal to the final boiling point of the solvent boiling range material and a final boiling point within the range from about 950° F. to about 1050° F.;



(d) combining from about 5 wt % to about 20 wt % of the solvent boiling range product with from about 50 wt % to about 100 wt % of the vacuum gas-oil boiling range product and passing the mixture first to a hydrotreater and then to a catalytic cracker;

(e) separating the product from the catalytic cracker into a naphtha boiling range product and a solvent boiling range product;

(f) combining the solvent boiling range product from the catalytic cracker with the solvent boiling range materials separated from the liquid product; and

(g) hydrotreating the combined solvent boiling range streams.

4,605,487

USE OF METHANE, METHANE AND HYDROGEN, OR NATURAL GAS FOR PYROLYSIS GAS

Wolfgang Michel, Magdeburg; Heinz Paul, Möser; Andreas Rummel, Dessau; Gero Seher, Wernigerode; Manfred Ossowski, Magdeburg; Irmtrud Heberlein, Möser; Dieter Köstler, and Frank Wilhelm, both of Magdeburg, all of German Democratic Rep., assignors to VEB Schwermaschinenbau Karl Liebknecht Magdeburg, Magdeburg, German Democratic Rep.

Filed Sep. 26, 1984, Ser. No. 654,813
Claims priority, application German Democratic Rep., Dec. 22, 1983, 2584498
Int. Cl.[4] C10G *1/00*
U.S. Cl. 208—408 **4 Claims**

1. A method for the production of a liquid product from an organic bulk material which consists essentially of:

(a) providing a charge of dry organic bulk material, said charge being suitable for fluidization in a fluidized bed reaction chamber;

(b) passing said charge into a reaction chamber capable of containing a fluidized bed;

(c) conveying only a gas stream consisting essentially of methane or methane and hydrogen or natural gas into and through said charge in said reaction chamber, said gas stream being a fluidizing medium within said reaction chamber, so that said charge is fluidized within said reaction chamber;

(d) maintaining an elevated pyrolysis reaction temperature within said reaction chamber containing essentially only said dry organic bulk material and said gas stream,

whereby the concentration of the methane in said fluidizing medium is decreased, the proportion of liquid product formed in said fluidized charge in said reaction chamber is increased, and said liquid product has a substantially increased proportion of low-boiling short-chained hydrocarbon components, liquid product formation and refining of the liquid product thereby both taking place in said reaction chamber;

(e) withdrawing from said reaction chamber a refined liquid product in said reaction chamber; and

(f) withdrawing a spent gas stream from said reaction chamber.

4,605,488

CATALYTIC DEWAXING OF LIGHT AND HEAVY OILS IN DUAL PARALLEL REACTORS

Arthur W. Chester, Cherry Hill; William E. Garwood, Haddonfield, both of N.J., and James C. Vartuli, West Chester, Pa., assignors to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 606,495, May 3, 1984. This application May 13, 1985, Ser. No. 733,339

The portion of the term of this patent subsequent to Aug. 12, 2003, has been disclaimed.

Int. Cl.⁴ C10G *65/18, 65/12, 67/02*

U.S. Cl. 208—78 **16 Claims**

1. An integrated process for catalytically dewaxing a relatively light petroleum chargestock, characterized by a 50% boiling point of less than about 850° F. and a kinematic viscosity at 100° C. of less than about 9 centistokes, and a relatively heavy petroleum chargestock, characterized by a 50% boiling point of greater than about 850° F. and kinematic viscosity at 100° C. of greater than about 9 centistokes comprising:

contacting the relatively light petroleum chargestock in a first dewaxing reactor with a dewaxing catalyst of a crystalline zeolite having pore openings defined by: (1) a ratio of sorption of n-hexane to o-xylene, on a volume percent basis, of greater than about 3, which sorption is determined at a P/P_o of 0.1 and at a temperature of 50° C. for n-hexane and 80° C. for o-xylene and (2) by the ability of selectively cracking 3-methylpentane (3MP) in preference to the doubly branched 2,3-dimethylbutane (DMB) at 1000° F. and 1 atmosphere pressure from a 1/1/1 weight ratio mixture of n-hexane/3-methyl-pentane/2,3-dimethylbutane, with the ratio of rate constants k_{3MP}/k_{DMB} determined at a temperature of 1000° F. being in excess of about 2 to produce a catalytically dewaxed light stock,

contacting the relatively heavy petroleum chargestock in a second dewaxing reactor with a dewaxing catalyst of a crystalline zeolite having pore openings defined by: (1) a ratio of sorption of n-hexane to o-xylene, on a volume percent basis, of less than about 3, which sorption is determined at a P/P_o of 0.1 and at a temperature of 50° C. for n-hexane and 80° C. for o-xylene, (2) by the ability of selectively cracking 3-methylpentane (3MP) in preference to the doubly branched 2,3-dimethylbutane (DMB) at 1000° F. and 1 atmosphere pressure from a 1/1/1 weight ratio mixture of n-hexane/3-methyl-pentane/2,3-dimethylbutane, with the ratio of rate constants k_{3MP}/k_{DMB} determined at a temperature of 1000° F. being less than about 2, and (3) a Constraint Index value of greater than about 1, to produce a catalytically dewaxed heavy stock,

and subsequently hydrotreating the effluent from said first and second dewaxing reactors in a downstream hydrotreating reactor

4,605,489

UPGRADING SHALE OIL BY A COMBINATION PROCESS

Ajay Madgavkar, Katy, Tex., assignor to Occidental Oil Shale, Inc., Grand Junction, Colo.

Filed Jun. 27, 1985, Ser. No. 749,219

Int. Cl.⁴ C10G *21/16*

U.S. Cl. 208—87 **49 Claims**

29. A process for reducing the nitrogen content of shale oil comprising:

introducing shale oil feed to an extraction zone containing a solvent which is substantially immiscible with said shale oil, said solvent comprising an organic acid component selected from the group consisting of acetic acid, formic acid and mixtures thereof, and contacting said solvent for a time sufficient to form a nitrogen-lean raffinate and a nitrogen-rich extract comprising solvent and nitrogen-containing compounds;

separating the nitrogen-lean raffinate from the nitrogen-rich extract;

distilling the nitrogen-rich extact to form a first solvent distillate comprising at least a portion of the organic acid component substantially free of nitrogen-containing compounds and a residue comprising a high-nitrogen extract oil;

distilling the nitrogen-lean raffinate sufficiently to form a second solvent distillate comprising organic acid component that has dissolved in the raffinate and a shale oil distillate which is collected in a number of fractions wherein each fraction has a nitrogen content of no more than about 3,000 ppm, and a bottoms having a nitrogen content greater than that of the shale oil distillate; and

hydrotreating the bottoms sufficiently to reduce the nitrogen content of the bottoms to no more than about 3,000 ppm.

4,605,490

PROCESS FOR THE HYDROGENATION OF AROMATIC HYDROCARBONS

George J. Balinsky, Randolph, N.J.; Omer Biceroglu, Sarnia, Canada, and Joe S. Lin, Torrance, Calif., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Oct. 5, 1984, Ser. No. 658,376

Int. Cl.⁴ C10G *45/00, 45/54;* C07C *5/10*

U.S. Cl. 208—143 **11 Claims**

1. A process for the hydrogenation of aromatic hydrocarbons, which comprises contacting a hydrocarbonaceous feed comprising aromatic hydrocarbons and less than about 5 wppm organic nitrogen at hydrogenation conditions with added hydrogen and a hydrogen sulfide partial pressure of less than about 0.5 psia with a catalyst which has been pretreated by a method which comprises the steps of:

(a) contacting a catalyst having cracking activity and hydrogenation activity with a nitrogen-containing compound at conditions and for a time sufficient to decrease the cracking activity of said catalyst, whereby the hydrogenation activity of said catalyst is also decreased, said catalyst comprising at least one noble metal component of Group VIII of the Periodic Table of Elements composited with a Y-type crystalline aluminosilicate zeolite and a non-zeolitic inorganic oxide, and

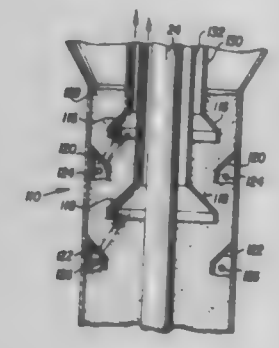
(b) contacting the nitrogen-contacted catalyst resulting from step (a) with a hydrogen-containing gas at conditions and for a time sufficient to increase the hydrogenation activity of said nitrogen-contacted catalyst.

4,605,491

FCC CATALYST STRIPPING METHOD

James H. Haddad, Princeton Junction, and Hartley Owen, Belle Mead, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Jul. 18, 1984, Ser. No. 632,085
Int. Cl.[4] C10G *11/18*
U.S. Cl. 208—161 8 Claims



1. A method of stripping hydrocarbons from separated catalyst in a fluid catalytic cracking process, said method comprising the steps of:

passing said separated catalyst through a stripper vessel having an entrance, a catalyst exit and a stripped hydrocarbon exit:

causing said separated catalyst to follow a circuitous path concentrically around a riser conversion zone while flowing from said entrance through said stripper vessel to said catalyst exit;

injecting a stripping gas at a plurality of stages such that stripping gas injected at one stage is exposed to only a portion of said separated catalyst above the stripping gas injecting location and moves through said portion in a direction having a net radial component and is mixed with stripping gas from another stage when passing through said stripped hydrocarbon exit; and

passing said stripping gas and hydrocarbons strippe d from said separated catalyst directly to said stripped hydrocarbon exit.

4,605,492

SEPARATION AND CONVERSION PROCESSES WITH TITANIUM-CONTAINING MOLECULAR SIEVES

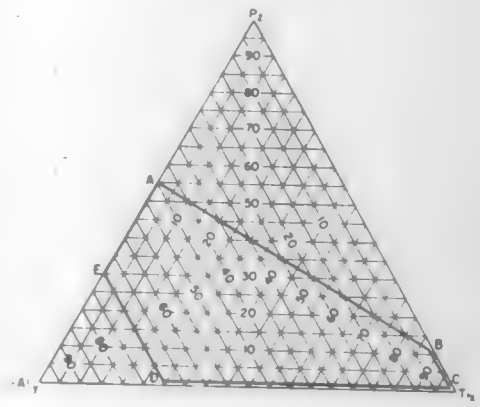
Brent M. T. Lok, New City; Bonita K. Marcus, Rye, and Edith M. Flanigen, White Plains, all of N.Y., assignors to Union Carbide Corporation, Danbury, Conn.

Division of Ser. No. 627,515, Jul. 3, 1984, Pat. No. 4,551,236, which is a division of Ser. No. 480,738, Mar. 31, 1983, Pat. No. 4,500,631. This application Oct. 30, 1985, Ser. No. 793,134
Int. Cl.[4] C10G *25/00;* C07C *12/62, 2/68*
U.S. Cl. 208—310 Z 25 Claims

1. Process for separating mixtures of molecular species wherein such mixtures contain molecular species having different degrees of polarity and/or kinetic diameters comprising contacting said mixture with at least one crystalline molecular sieve selected from the group consisting of crystalline molecular sieves comprising pores having nominal diameters of greater than about 3 Angstroms and whose chemical composition in the as-synthesize and anhydrous form is represented by the unit empirical formula:

$$mR:(Ti_xAl_yP_z)O_2$$

wherein "R" represents at least one organic templating agent present in the intracrystalline pore system; "m" represents the moles of "R" present per mole of $(Ti_xAl_yP_z)O_2$ has a value of between zero and about 5.0; and "x", "y" and "z" represent the mole fractions of titanium, aluminum and phosphorus, respectively, present as tetrahederal oxides, said mole fractions being



such that they are within the pentagonal compositional area defined by points A, B, C, D and E of the ternary diagram which is FIG. 1 of the drawings and points A, B, C, D and E representing the following values for "x", "y" and "z":

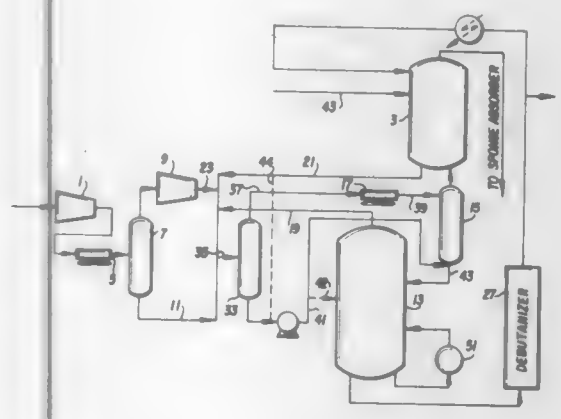
Point	Mole Fraction		
	x	y	z
A	0.001	0.45	0.549
B	0.88	0.01	0.011
C	0.98	0.01	0.01
D	0.29	0.70	0.01
E	0.001	0.70	0.299

4,605,493

METHOD FOR MINIMIZING RECYCLING IN AN UNSATURATED GAS PLANT

Mohsen N. Harandi, Sewell, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Dec. 31, 1984, Ser. No. 688,084
Int. Cl.[4] C10G *5/00, 7/02*
U.S. Cl. 208—341 12 Claims



1. A method of operating an unsaturated gas plant, wherein said plant comprises first means for receiving a low pressure gas input and for providing a liquid output and a gaseous output, an absorber for receiving an unstabilized gasoline input and a hydrocarbon oil input, a stripper and a low temperature separator for providing an overhead output to said absorber and a bottoms output to said stripper, said method comprising the steps of:

(a) mixing said liquid output from said first means, said gaseous output from said first means, bottoms product from said absorber and overhead products from said stripper;

(b) separating said mixture provided in step (a) into a liquid hydrocarbon portion and a gaseous portion;

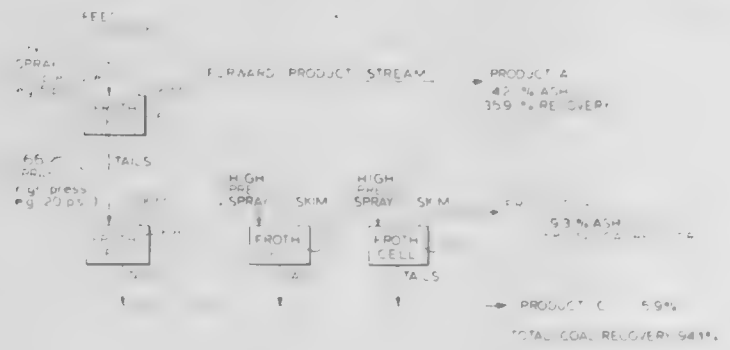
(c) introducing said liquid hydrocarbon portion into an upper section of said stripper; and
(d) introducing said gaseous portion into said low temperature separator.

4,605,494

MULTISTREAM, MULTIPRODUCT, PRESSURE MANIPULATION BENEFICIATION ARRANGEMENT

Lester E. Burgess, Media; Phillip E. McGarry, Palmerton, and David E. Herman, Jim Thorpe, all of Pa., assignors to Sohio Alternate Energy Development Co., Cleveland, Ohio

Filed Sep. 14, 1984, Ser. No. 650,961
Int. Cl.[4] B03D *1/02*
U.S. Cl. 209—166 **4 Claims**



1. A multiple stream, multiple product method for froth flotation separation of the components of an input slurry having particulate coal therein, comprising:

(a) mixing chemical reagents with the input slurry to condition the surfaces of the particulate coal in the slurry, said chemical reagents comprising a monomer, a catalyst and a fluid hydrocarbon;

(b) in a forward product stream, applying a first pressure to the particulate coal slurry mixture to force it through and cause it to spray from at least one nozzle onto the surface of a liquid to create a floating froth phase on the liquid surface having a first quantity of the particulate coal therein, and allowing the remainder of the particulate coal slurry mixture to separate from the froth phase by sinking in the liquid, and separating the froth phase as a first product; and

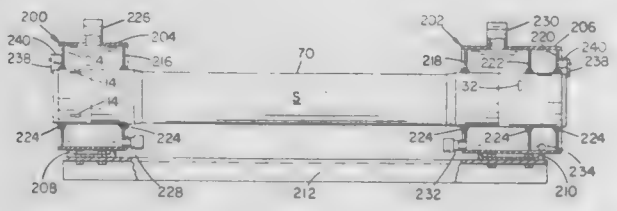
(c) in a second scavenger product stream, applying a second pressure, greater than said first pressure, to the remainder of the separated particulate coal slurry mixture to force it through and cause it to spray from at least one nozzle onto the surface of a liuqid to create a second floating froth phase on the liquid surface having a second quantity of the particulate coal therein, and allowing the remainder of the particulate coal slurry to separate from the froth phase by sinking in the liquid, and separating the second froth phase as a second product, whereby first and second separate product streams are separated from the input slurry.

4,605,495

HYDROCYCLONE SEPARATOR APPARATUS

Peter J. Flynn, North Attleboro, Mass., assignor to Bird Machine Company, Inc., South Walpole, Mass.

Continuation-in-part of Ser. No. 591,761, Mar. 19, 1984, abandoned. This application Jan. 18, 1985, Ser. No. 692,674
Int. Cl.[4] B04C *3/04, 3/06*
U.S. Cl. 209—211 **11 Claims**



1. Hydrocyclone separator apparatus including at least one hydrocyclone separator for separating a fibrous slurry into two fractions of solids composition differing from each other in response to centrifugal force, said separator comprising:

an elongated body with sealed ends having three axially spaced portions of its sidewall apertured to provide respectively an inlet for feed slurry and respective outlets for the two separated fractions thereof, one of said apertured portions being adjacent one sealed end and another of said apertured portions being adjacent the opposite sealed end of said body;

and manifold structure for demountably receiving said separator comprising:

a slurry feed manifold and two outflow manifolds for respective association with said three apertured body portions of said separator, arranged with their sidewalls in parallel with one another;

axially aligned seal-lined openings through all of said manifold sidewalls of shape and diameter such that said separator may be pushed endwise through all of said openings to an operative position in which the sealing material of all of said apertures is in sealing engagement with said separator body;

the sidewall spacing of said respective manifolds being such that in said operative position of said separator the seal-lined apertures of the sidewalls of each manifold are sealingly engaged around corresponding portions of said separator body at opposite sides of the respective apertured portion of said body intended to communicate with said manifold;

the body of said separator being reduced in outer diameter between said corresponding portions sufficiently to exert substantially no sealing pressure on the seals when moved through them, at least half the length of said separator body being of said reduced diameter.

4. Hydrocyclone separator apparatus including at least one hydrocyclone separator for separating a fibrous slurry into two fractions of solids composition differing from each other in response to centrifugal force, said separator comprising:

an elongated body with sealed ends, the sidewall of said body having an apertured portion adjacent one end of said body and having two axially spaced adjacent apertured portions near its opposite end, one of said apertured portions forming an inlet and the other two of said apertured portions forming respective outlets for said two fractions; and manifold structure comprising:

a single manifold and two side-by-side manifolds arranged with their sidewalls in parallel with one another and with the sidewalls of said single manifold, and with their sidewall nearest said single manifold spaced therefrom at least substantially half the length of said separator body, one of said manifolds being for feed slurry and the other two being outflow manifolds for separated slurry fractions;

axially aligned seal-lined openings through all of said manifold sidewalls of a shape and size such that said separator may be pushed endwise through all of said openings to an operative position in which the sealing material of all of said apertures is in sealing engagement with said separator body;

the sidewall spacing of said respective manifolds being such that in said operative position of said separator the said apertured portions thereof are between the sidewalls of corresponding said manifolds;

said manifold structure exposing the body portion of said separator between said single manifold and other manifolds in operative position for hand manipulation relative to said seal-lined openings.

4,605,496

CLASSIFICATION SCREEN

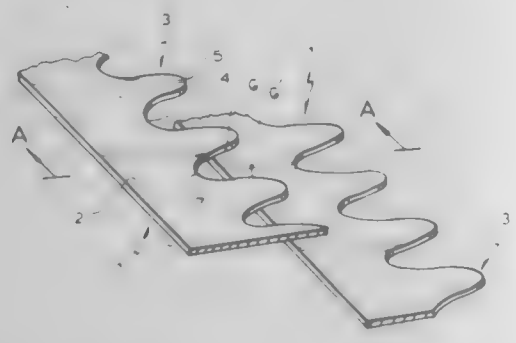
Jorge Becatti, Monserrat 2195 Barrio Crisol Sud, Cordoba, Province of Cordoba, Argentina

Filed Jun. 13, 1984, Ser. No. 620,124

Claims priority, application Argentina, Jun. 14, 1983, 293333; May 17, 1984, 296693

Int. Cl.[4] B07B *1/46*

U.S. Cl. 209—394 2 Claims



1. An adjustable classification screen for use with a machine which is provided with at least one screening bed subject to a vibrational movement and having a surface at least part of which is provided with a multiple number of passages for screening material, said classification screen comprising a plurality of substantially laminar elongated pieces stationary with respect to each other, each of said pieces being staggered with respect to the succeeding elongated piece without touching it, each of said pieces defining planes substantially parallel to each other, each of said pieces being located at a higher elevation than the piece which follows it with respect to the direction of advance of the material being screened to define a space separating the planes thereof, each of said pieces being substantially rigid and having a planar edge on one side of a planar portion, said planar portion having a portion of surface which is substantially free from any opening and an active edge on the side of the planar portion opposite the planar edge and having a plurality of projections which define alternating spaces, said projections defining notches having two sides in said active edge between each pair of projections, said pieces oriented with respect to the direction of advance of the material so that the material passes onto said planar portion first, and then onto said active edge, each of said pieces being inclined so that said planar portion is at a higher elevation than said active edge, each of said notches providing two points disposed on each side thereof, said points and a third intermediate point disposed on the planar edge of the piece located immediately adjacent to the active edge on the same bed, said third point being equidistant from each of said two points, said three points lying in a plane inclined in the direction of material advance so as to determine a passage greater than the space separating the planes of said pieces and defining a maximum mesh size of the screen, and a plurality of additional pieces each having a rearward edge and being slidably mounted onto a corresponding elongated piece, so that said additional piece may be reversably moved over the planar edge of the corresponding elongated piece to thereby adjustably reduce the size of said passage and providing said screen with a variable mesh size.

4,605,497

DEVICE FOR PROCESSING FLUID WITH SOLID BODIES

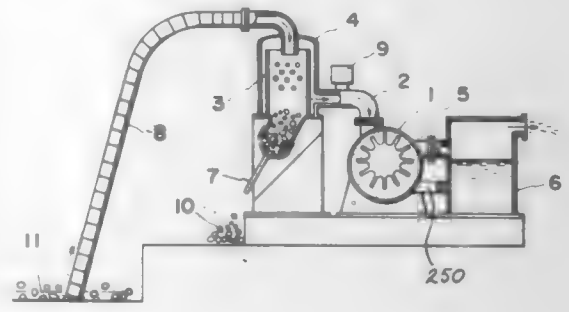
Toshinobu Araoka, Kitakyushu, and Shigeharu Suzuki, Osaka, both of Japan, assignors to Toyo Denki Kogyosho Co., Ltd., Kitakyushu, Japan

Filed Sep. 3, 1985, Ser. No. 772,261

Int. Cl.[4] E02F *5/28*

U.S. Cl. 210—111 2 Claims

1. A device comprising means for processing fluid containing solid bodies including a separation tank provided with a strainer therein, a flow path communicating with the inner portion of said strainer for sucking up fluid containing solid bodies, a fluid discharging suction unit communicating with said separation tank and a solid discharging mechanism communicating with the inner portion of said strainer, wherein said fluid discharging suction unit comprises a vacuum pump for sucking up the fluid with solid bodies through said flow path



into the inner portion of said strainer and thereafter discharging only fluid throughtout said strainer, and said solid discharging mechanism comprises a change-over valve which automatically opens to discharge or closes to prevent discharge, in response to the internal pressure of said separation tank.

4,605,498

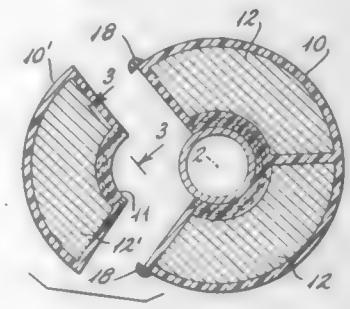
APPARATUS FOR MAGNETIC TREATMENT OF LIQUIDS

Peter A. Kulish, 175 West 6th St., Red Hill, Pa. 18076

Filed Apr. 6, 1984, Ser. No. 597,549

Int. Cl.[4] B01D *35/06*

U.S. Cl. 210—222 9 Claims



1. An apparatus for magnetic treatment of potable liquids, and comprising:

magnetic means for providing north and south magnetic fields and concentrating predominantly only one of said magnetic fields on a central axis to provide magnetic treatment of a liquid located generally along said central axis and substantially within said one magnetic field; and

a casing surrounding said magnetic means for holding said magnetic means onto a conduit through which said liquid flows, said casing defining an internal diameter means for mating with different diameters of said conduit according to removal of portions of said internal diameter means.

4,605,499

WATER FILTER

Lawrence Wise, 4330 Hillcrest Dr., Apt. #804, Hollywood, Fla. 33021

Filed Feb. 19, 1985, Ser. No. 703,125

Int. Cl.[4] B01D *23/14*

U.S. Cl. 210—282 4 Claims

1. A portable disposable water filter comprising:

a filter unit having a measured amount of filter medium;

a pouch of containing material for containing the filter medium;

a water container for containing filtered water having a mouth, a neck and a body; and

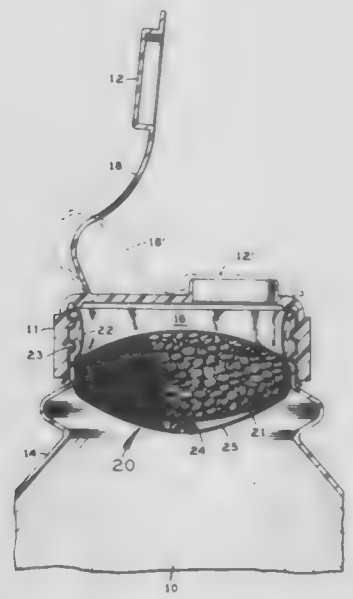
means for suspending the filter unit in the mouth of the water

container including a substantially circular skirt extending from said pouch of containing material;

said filter unit further comprising:

a larger sheet of containing material having a middle and a larger, substantially circular perimeter and an upper side;

a second smaller sheet of containing material, said second sheet having a smaller, substantially circular perimeter,



the second sheet attached along said second perimeter to the upper side of said first sheet of containing material, and leaving an outer part of said first larger sheet of containing material outside said smaller perimeter;

said first and second sheets forming between them said pouch for containing the filter medium; and

said outer part of said larger sheet forming said skirt.

4,605,500

HOLLOW-FIBER FILTER MODULE

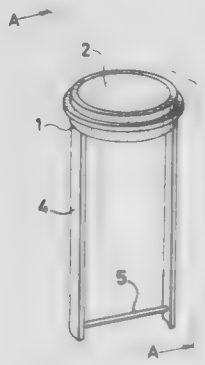
Tohru Takemura, Ohtake; Haruhiko Yoshida, Kuga; Takuma Mukai; Hiroshi Takahashi, both of Ohtake, and Yoshikazu Fujinaga, Toyohashi, all of Japan, assignors to Mitsubishi Rayon Co., Ltd., Tokyo, Japan

Filed Apr. 2, 1985, Ser. No. 719,237

Claims priority, application Japan, Apr. 24, 1984, 59-59330[U]; Apr. 25, 1984, 59-59873[U]; Jun. 1, 1984, 59-110943

Int. Cl.⁴ B01D *13/00, 31/00*

U.S. Cl. 210—321.1 **5 Claims**



1. A hollow-fiber module comprising (a) an annular member, (b) a filter membrane consisting of a large number of hollow fibers, (c) a fastening member attached to the inside surface of said annular member for bundling and fixing said hollow fibers in a U-shaped attern with their both ends left open, (d) a supporting member consisting of a plurality of supporting pillars or a cylinder, said supporting member being joined to said annular member and extending along the U-shaped portions of said hollow fibers, and (e) a hollow fiber retaining means designed for holding all of said fibers from the bottom in a substantially fixed, parallel relationship sufficient to preclude entangling and flexural fatigue thereof, wherein said means is joined to said supporting member and extends through the space enclosed in the U-shaped portions of said hollow fibers.

4,605,501

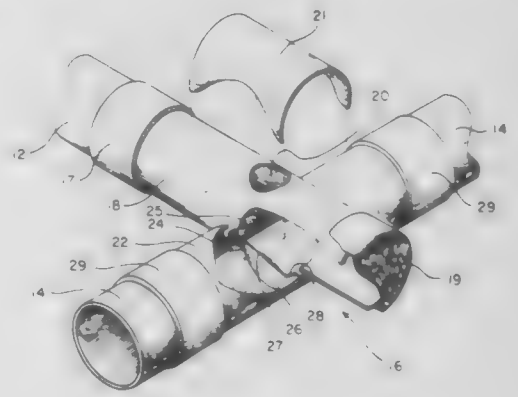
FLOW DIVIDER FOR DISTRIBUTION SYSTEMS

James E. Tyson, 10621 Six Forks Rd., Raleigh, N.C. 27614

Filed Jul. 12, 1985, Ser. No. 754,240

Int. Cl.⁴ B01D *21/24*

U.S. Cl. 210—519 **6 Claims**



1. An improved flow divider comprising: a septic tank means; an effluent line communicatively connected at one end to said septic tank means; an inlet portion communicatively connected to the end of said effluent line opposite said septic tank means; a distribution portion communicatively connected to a transverse opening in the lower portion of said inlet portion to define (an overhanging) lip from which effluent must drop when passing from said inlet portion to said distribution portion, said transverse opening having a diameter slightly smaller than the interior diameter of said distribution portion; and partition like flow divider means disposed generally beneath said lip and extending across said distribution portion, said divider means including a steeply sloping first edge extending downwardly from a point adjacent said lip and a second edge extending upwardly from the end of said first edge opposite said lip at an angle greater than ninety degrees, with said first and second edges being of the knife edge type, whereby the buildup of particulate and other solids on or adjacent the flow divider can be prevented.

4,605,502

METHODS FOR PURIFYING WATER OR WATER-CONTAINING MATERIAL USING MICROORGANISMS AND LIVING BACTERIAL PREPARATIONS AS WELL AS METHOD FOR PREPARING AND STORING SAME

Kosei Hata, Osaka, Japan, assignor to Seiken Kai Foundational Juridical Person, Osaka, Japan

Continuation of Ser. No. 958,469, Nov. 7, 1978, abandoned. This application Sep. 10, 1980, Ser. No. 185,718

Claims priority, application Japan, Dec. 3, 1977, 52-145546

Int. Cl.⁴ C02F *3/34*

U.S. Cl. 210—611 **7 Claims**

1. A method for purifying water or a water-containing material which comprises contacting said water or water-containing material with a purifying effective amount of a bacterial composition comprising one or more bacterial strains

(1) which can grow in an S-W medium consisting of 1 g of KH_2PO_4, 0.7 g $MgSo_4.7H_2O$, 1 g of NaCl, 4 g of $(NH_4)_2HPO_4$, 0.03 g of F_eSO_4. $7H_2O$ and 5 g of glucose

(2) which exhibit(s) a μ value larger than that exhibited by coliform bacteria under environmental conditions, and

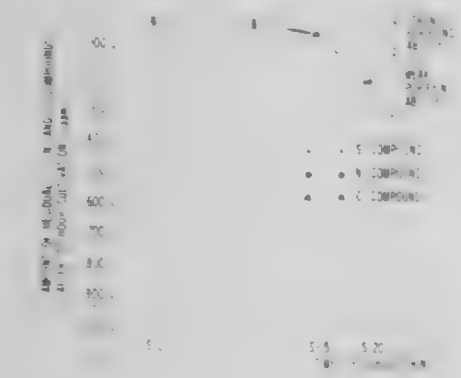
(3) which exhibits(s) promoted growth by the addition of at least one of (i) a foul smelling S compound,

(ii) a foul smelling N compound, or

(iii) a foul smelling C compound,

said one or more strains as a whole exhibiting each of S-, N- and C-actions, said one or more bacterial strains being selected

from the group consisting of Acinetobacter sp. SNC FRI No. 2544, Nitrobacter sp. SNC FRI No. 2545, Thiobacillus sp. SNC FRI No. 2546, Pseudomonas sp. SNC FRI No. 2822, Thiobacillus sp. SNC FRI No. 2823, Pseudomonas sp. SNC FRI No. 2927, Pseudomonas Sp. SNC FRI No. 2928, Thiobacillus sp. SNC FRI No. 2929, Thiobacterium sp. SNC FRI No. 3575, Thiobacterium sp. SNC FRI NO. 3576, Macromonas Sp. SNC FRI No. 3577, Macromonas Sp. SNC FRI No. 3578, Pseudomonas sp. SNC FRI No. 4264, Pseudomonas Sp. SNC FRI No. 4265, Thiobacillus Sp. SNC FRI No. 4268, Thiobacillus Sp. SNC FRI No. 4269, Acinetobacter sp. SNC FRI No.



4270, Bacillus sp. SNC FRI No. 4684, Bacillus sp. SNC FRI No. 4685, Streptococcus sp. SNC FRI No. 4686, Streptococcus sp. SNC FRI No. 4687, Corynebacterium sp. SNC FRI No. 4688, Corynebacterium sp. SNC FRI No. 4689, Vibrio sp. SNC FRI No. 4690, Vibrio sp. SNC FRI No. 4691, Photobacterium sp. SNC FRI No. 4692, Photobacterium sp. SNC FRI No. 4693, Flavobacterium sp. SNC FRI No. 4694, Flavobacterium sp. SNC FRI No. 4695, Aeromonas sp. SNC FRI No. 4696, Aeromonas sp. SNC FRI No. 4697, Alcaligenes sp. SNC FRI No. 4698, Alcaligenes sp. SNC FRI No. 4699, Nitrobacter sp. SNC FRI No. 4700 and Nitrobacter Sp. SNC FRI No. 4701.

4,605,503

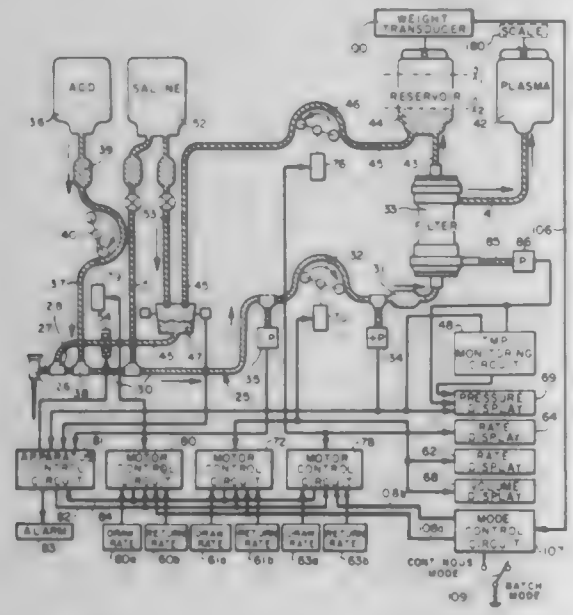
SINGLE NEEDLE BLOOD FRACTIONATION SYSTEM HAVING ADJUSTABLE RECIRCULATION THROUGH FILTER

Arnold C. Bilstad, Deerfield; Richard I. Brown, Northbrook, and Robert J. Kruger, Arlington Heights, all of Ill., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed May 26, 1983, Ser. No. 498,581

Int. Cl.[4] B01D *13/00*

U.S. Cl. 210—651 **14 Claims**



13. The method of separating a blood component from whole blood, utilizing a single lumen phlebotomy needle, and flow-through blood separating means, comprising the steps of:

continuously pumping in whole blood drawn from a donor through the single lumen of the needle through the separation means to continuously separate the blood into a desired blood fraction component and a fraction-depleted blood component;

continuously collecting the fraction-depleted blood component from the separation means in a reservoir;

intermittently pumping back a volume of the fraction-depleted blood component from the reservoir toward the single lumen needle by initiating said pumping back step when the volume of the fraction-depleted blood component in the reservoir rises above a predetermined maximum level and by terminating said pumping back step when the volume of the fraction-depleted blood component in the reservoir returns to a predetermined minimum level; and

maintaining said pumping back step at a higher rate than said pumping in step to return, during said pumping back step, a first portion of the intermittently pumped volume of the fraction-depleted blood component to the donor through the single lumen needle while recirculating a second portion of the intermittently pumped volume of the fraction-depleted blood component back through the separation means along with the whole blood which is being continuously pumped therethrough.

4,605,504

CHROMATOGRAPHIC SEPARATION OF METALS WITH POLYETHERURETHANE PARTICLES

Aris Van Elven, Leersum, and Henricus G. J. Overmars, Nijbeets, both of Netherlands, assignors to Nederlandse Centrale Organisatie voor Toegepast-Natuurwetenschappellijk Onderzoek, The Hague, Netherlands

Division of Ser. No. 485,418, Apr. 15, 1983, abandoned. This application May 6, 1985, Ser. No. 730,422

Claims priority, application Netherlands, Apr. 21, 1982, 8201654

Int. Cl.[4] B01D *15/08*

U.S. Cl. 210—656 **6 Claims**

1. A method for the extraction and separation of metal ions from a liquid sample which comprises

(a) preparing a chromatographic column containing non-sticky polyetherurethane particles having an absorptive activity, said polyetherurethane particles being prepared by first reacting a polyalkylene oxide having a molecular weight of at least 500 with a diisocyanate to form a prepolymer and subjecting said prepolymer to polycondensation in an aqueous suspension medium in the presence of an equivalent amount of a piperazine compound selected from the group consisting of piperazine and 2-methylpiperazine to form the polyetherurethane particles;

(b) applying the liquid sample to the column, whereupon the metal ions are absorbed into the polyetherurethane particles; and

(c) recovering the absorbed metal ions from the polyetherurethane particles by applying an eluant.

4,605,505

DRILLING FLUIDS

Makoto Yanagida, Tokyo; Yukihiko Sekimoto, Saitama, and Shoichi Kanda, Kanagawa, all of Japan, assignors to Nitto Chemical Industry Co., Ltd., Tokyo, Japan

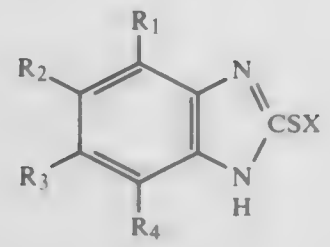
Filed Apr. 2, 1985, Ser. No. 719,388

Claims priority, application Japan, Apr. 2, 1984, 59-63407; Apr. 2, 1984, 59-63410; May 22, 1984, 59-101780

Int. Cl.[4] C09K *7/02*

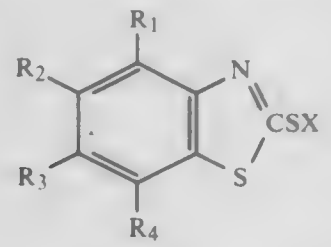
U.S. Cl. 252—8.514 **4 Claims**

1. A drilling fluid consisting essentially of sodium carboxymethyl cellulose present at a water loss controller, bentonite, water, and at least one compound selected from the group consisting of 2-mercaptobenzimidazole compounds, 2-mercaptobenzothiazole compounds, 2-mercaptothiazoline and 2-thioimidazolidone, wherein the 2-mercaptobenzimidazole compounds are represented by the formula (I):



(I)

wherein each of R_1, R_2, R_3, and R_4 represents a hydrogen atom or a lower alkyl group, and X represents a hydrogen atom, an alkali metal, or ammonium, and the 2-mercaptobenzothiazole compounds are represented by the formula (II)



(II)

wherein each of R_1, R_2, R_3, and R_4 represents a hydrogen atom or a lower alkyl group, and X represents a hydrogen atom, an alkali metal, or ammonium, and the concentration of said compounds contained in the drilling fluid is from about 0.001% to about 0.2% by weight, based on the total weight of drilling fluid.

4,605,506

FABRIC SOFTENING BUILT DETERGENT COMPOSITION

Harold E. Wixon, New Brunswick, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.

Filed Jun. 1, 1984, Ser. No. 616,467

Int. Cl.⁴ C11D *1/831, 3/12;* **D06M** *11/00, 13/46*

U.S. Cl. 252—8.75 **11 Claims**

1. A fabric softening built detergent composition comprising a detersive proportion, within the range of 5 to 30%, of a synthetic organic detergent selected from the group consisting of anionic detergents, nonionic detergents, and mixtures thereof, a building proportion, within the range of 5 to 40%, of polyacetal carboxylate builder for such detergent(s), which is of calculated weight average molecular weight in the range of about 3,000 to 20,000, and a fabric softening proportion within the range of 3 to 25%, of bentonite, in which detergent composition the fabric softening activity is greater than that attributable to the bentonite.

2. A detergent composition according to claim 1 which comprises an antistatic proportion of a quaternary ammonium compound which is a cationic antistatic agent which, upon washing of fabrics of synthetic organic polymers, inhibits development of static cling during automatic laundry drying.

4,605,507

PROCESSES FOR MAKING A SULFUR SUSPENSION AND A SULFURIZED CUTTING FLUID

Richard J. Windgassen, Wheaton, and J. Andrew Waynick, Bolingbrook, both of Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Continuation of Ser. No. 553,199, Nov. 18, 1983. This application May 13, 1985, Ser. No. 733,851

Int. Cl.⁴ C10M *135/02*

U.S. Cl. 252—45 **28 Claims**

1. A process for preparing a suspension of finely-divided sulfur in a fluid, which process comprises: (1) blending a base oil and a thickener in a mixing apparatus to form a suspending medium of an oil-thickener blend or blending a base oil and a lubricating grease in a mixing apparatus to form a suspending medium of an oil-grease blend, said base oil being either a mineral lubricating oil or a synthetic lubricating fluid; (2) introducing elemental sulfur into said suspending medium while continually agitating said suspending medium to form an unfinished suspension of sulfur in said suspending medium, said introducing being carried out for a period of time within the range of 1 minute to 1 hour, the amount of sulfur that is added being sufficient to provide a suspension containing up to about 70 wt% sulfur; and (3) homogenizing said unfinished suspension of sulfur in a high-shearing mechanical device by passing said unfinished suspension of sulfur through said high-shearing mechanical device from one to three times at a temperature within the range of room temperature to 121° C. (250° F.) to provide a suspension of finely-divided sulfur.

4,605,508

RAPIDLY DISSOLVING GRANULAR HYDRATED CALCIUM HYPOCHLORITE

David C. Dodge, Guilford; David F. Knoop, Bethany, both of Conn.; George T. Thomas, Martinez, Ga., and James P. Newman, Cleveland, Tenn., assignors to Olin Corporation, Cheshire, Conn.

Filed Nov. 1, 1984, Ser. No. 667,174

Int. Cl.⁴ C11D *3/395*

U.S. Cl. 252—95 **5 Claims**

1. A rapidly dissolving granular hydrated calcium hypochlorite product consisting essentially of hydrated calcium hypochlorite particles having at least 95 percent of said particles within a size range of from about 300 to about 850 microns and having a packed bulk density from about 0.90 to about 1.03 grams per cubic centimeter.

4,605,509

DETERGENT COMPOSITIONS CONTAINING SODIUM ALUMINOSILICATE BUILDERS

John M. Corkill, Wyoming; Bryan L. Madison, Cincinnati, and Michael E. Burns, Fairfield, all of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation-in-part of Ser. No. 359,293, May 11, 1973, abandoned. This application Mar. 11, 1974, Ser. No. 450,266

Int. Cl.⁴ C02F *1/42;* **C11D** *3/06, 3/12, 3/20*

U.S. Cl. 252—131 **56 Claims**

1. A detergent composition capable of rapidly reducing the free polyvalent metal ion content of an aqueous solution comprising:

(a) from about 5% to about 95% by weight of a water-insoluble crystalline aluminosilicate ion exchange material of the formula

$$Na_z[(AlO)_z.(SiO_2)_y]xH_2O$$

wherein z and y are integers of at least 6; the molar ratio of z to y is in the range from 1.0 to about 0.5, and x is an integer from about 15 to about 264; said aluminosilicate ion exchange material having a particle size diameter from about 0.1 micron to about 10 microns; a calcium ion exchange capacity on an anhydrous basis of at least about 200 milligrams equivalent of $CaCO_3$ hardness/gram; and a calcium ion exchange rate on an anhydrous basis of at least about 2 grains/gallon/minute gram;

(b) from about 5% to about 95% by weight of a water-soluble organic surface-active agent selected from the group consisting of anionic, nonionic, ampholytic and zwitterionic surface-active agents and mixtures thereof; and

(c) from about 5% to about 50% by weight of an auxiliary detergent builder salt.

4,605,510

LIQUID CRYSTAL COMPOSITION FOR ELECTROOPTICAL DEVICES FOR PRESENTATION OF INFORMATION

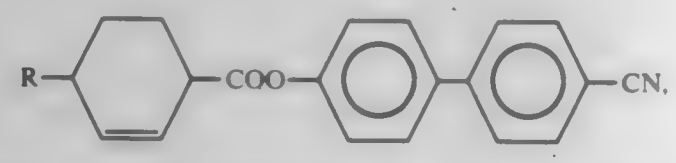
Vladimir S. Bezborodov; Viktor A. Konovalov; Jury L. Ptashnikov; Vladimir M. Astafiev; Anatoly A. Minko; Anatoly I. Dudarchik, all of Minsk; Galina A. Zanegina, and Anatoly M. Poimanov, both of Ordzhonikidze, all of U.S.S.R., assignors to Nauchno-Issledovatelsky Institut Prikladnykh Problem Imeni A.N. Sevchenko, Minsk, U.S.S.R.

Filed Jan. 25, 1985, Ser. No. 694,688

Int. Cl.[4] C09K *3/34*; G02F *1/13*

U.S. Cl. 252—299.66 **1 Claim**

1. A liquid crystal composition for electrooptical devices for presentation of information comprising liquid crystal 4-(4'-cyanodiphenyl)esters of trans-4''-n-alkylcyclohex-2-enecarboxylic acids of the general formula:



wherein R is a normal-structure CH_3—C_7H_{15} radical, and a liquid crystal 4-n-pentyl-4'-cyanodiphenyl, the components being employed in the following proportions, parts by weight:

4-(4'-cyanodiphenyl)esters of trans-4''-n-alkylcyclohex-2-enecarboxylic acids: 2 to 4

4-n-pentyl-4'-cyanodiphenyl: 6 to 8.

4,605,511

STABLE STILBENE FLUORESCENT BRIGHTENER SOLUTION

Werner Fringeli, Laufen, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

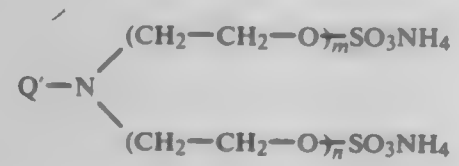
Continuation of Ser. No. 251,834, Apr. 8, 1981, abandoned, which is a continuation of Ser. No. 55,418, Jul. 6, 1979, abandoned. This application Jul. 12, 1982, Ser. No. 397,273

Claims priority, application Switzerland, Jul. 17, 1978, 7707/78

Int. Cl.[4] C09K *11/06*

U.S. Cl. 252—301.21 **2 Claims**

1. A stilbene fluorescent brightener solution which is stable to metal ions and metal catalysts and stable on storage, which contains a stilbene fluorescent brightener containing sulfonic acid groups and a stabilising fatty amine oxyalkylation product of the formula



in which Q' is the hydrocarbon radical of tallow fat amine and m and n are integers, the sum of m+n being 6 to 8.

4,605,512

SMALL PEPTIDES WITH THE SPECIFICITY OF FOOT AND MOUTH DISEASE VIRAL ANTIGENS

Heinz E. Schaller, Heidelberg, and Eberhard P. Pfaff, Schwaigern-II, both of Fed. Rep. of Germany, assignors to Biogen N.V., Curacao, Netherlands

Filed Mar. 25, 1983, Ser. No. 478,901

Claims priority, application United Kingdom, Mar. 26, 1982, 8209041

Int. Cl.[4] C07C *103/52*

U.S. Cl. 260—112.005 **1 Claim**

1. A peptide displaying the antigenicity of a FMD viral antigen selected from the group of peptides consisting of: Leu—Arg—Gly—Asp—Leu—Gln—Val—Leu—Ala—Gln—Lys—Val—Ala—Arg—Thr—Leu, Val—Pro—Asn—Leu—Arg—Gly—Asp—Leu—Gln—Val—Leu—Ala—Gln—Lys—Val—Ala—Arg—Thr—Leu—Pro—Thr, Arg—Tyr—Asn—Arg—Asn—Ala—Val—Pro—Asn—Leu—Arg—Gly—Asp—Leu—Gln—Val—Leu—Ala—Gln—Lys—Val—Ala—Arg—Thr—Leu—Pro—Thr, Cys—Arg—Tyr—Asn—Arg—Asn—Ala—Val—Pro—Asn—Leu—Arg—Gly—Asp—Leu—Gln—Val—Leu—Ala—Gln—Lys—Val—Ala—Arg—Thr—Leu, and Arg—Val—Pro—Asn—Leu—Arg—Gly—Asp—Leu—Gln—Val—Leu—Ala—Gln—Lys—Val—Ala—Arg—Thr—Leu.

4,605,513

PROCESS FOR INHIBITING PEPTIDE CARBAMYLATION

Richard D. DiMarchi, Carmel, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed Aug. 8, 1984, Ser. No. 638,848

Int. Cl.[4] C07K *7/40*

U.S. Cl. 530—303 **14 Claims**

1. Process for inhibiting carbamylation of peptides in a cyanate-containing or cyanate-generating medium during treatment of said peptides, which comprises carrying out said treatment in the presence of a carbamylation-inhibiting amount of an agent selected from the group consisting of 1,2-ethylene diamine and 1,2-ethylene diamine-like materials.

4,605,514

DES-4-LEUCINE-CALCITONIN

Ronald C. Orlowski, Frankfort; Jay K. Seyler, Bourbonnais, and Glenn L. Stahl, Bradley, all of Ill., assignors to Armour Pharmaceutical Company, Tarrytown, N.Y.

Filed Sep. 24, 1984, Ser. No. 653,748

Int. Cl.[4] C07K *7/36*

U.S. Cl. 530—307 **7 Claims**

1. A peptide having the structure:

Cys—Ser—Asn—Ser—Thr—Cys—Val—Leu—Gly—Lys—Leu—Ser—Gln—Glu—Leu—His—Lys—Leu—Gln—Thr—Tyr—Pro—Arg—Thr—Asn—Thr—Gly—Ser—Gly—Thr—Pro—NH_2: Salmon,

Cys—Ser—Asn—Ser—Thr—Cys—Val—Leu—Gly—Lys—Leu—Ser—Gln—Glu—Leu—His—Lys—Leu—Gln—Thr—Tyr—Pro—Arg—Thr—Asp—Val—Gly—Ala—Gly—Thr—Pro—NH_2: Eel, or

Cys—Gly—Asn—Ser—Thr—Cys—Met—Leu—Gly—Thr—Tyr—Thr—Gln—Asp—Phe—Asn—Lys—Phe—His—Thr—Phe—Pro—Gln—Thr—Ala—Ile—Gly—Val—Gly—Ala—Pro—NH_2: Human.

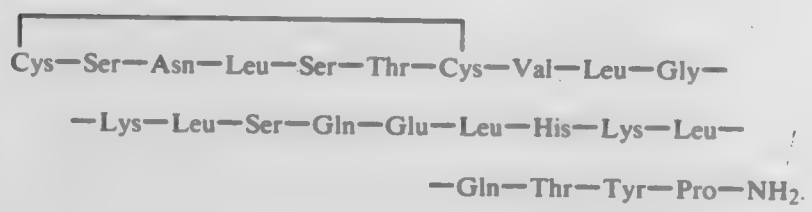
4,605,515

CALCITONIN-(1-23)-PEPTIDE AMIDE

Ronald C. Orlowski, Frankfort, and Glenn L. Stahl, Bradley, both of Ill., assignors to Armour Pharmaceutical Company, Tarrytown, N.Y.

Filed Oct. 24, 1984, Ser. No. 664,455
Int. Cl.[4] C07K *7/36*
U.S. Cl. 530—307 3 Claims

1. A peptide having the structure:



4,605,516

Patent Not Issued For This Number

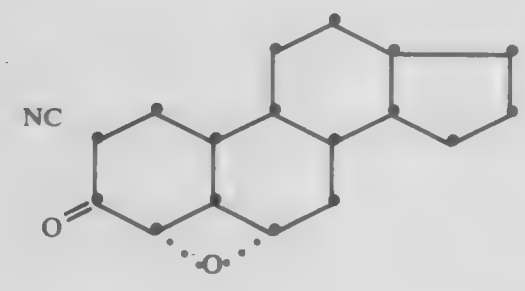
4,605,517

METHOD OF PREPARING STEROID COMPOUNDS OF CONTROLLED PARTICLE SIZE

Derek C. Riley, Tyne and Wear, and David Johnston, Newcastle upon Tyne, both of England, assignors to Sterling Drug Inc., New York, N.Y.

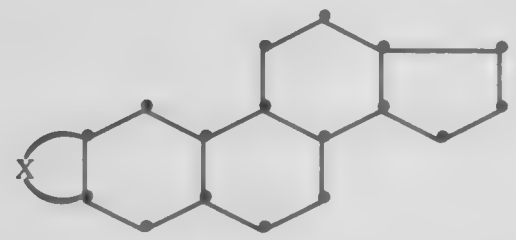
Filed Oct. 11, 1984, Ser. No. 659,594
Claims priority, application United Kingdom, Oct. 29, 1983, 8328929
Int. Cl.[4] C07J *43/00*
U.S. Cl. 540—52 17 Claims

1. The method of preparing a compound having a basic ring structure of the general formula:



(II)

or



(III)

wherein X represents the remainder of a heterocyclic ring, in particular a 5-membered ring having at least two heteroatoms, in the form of particles having a means equivalent sphere volume diameter less than about 20 μm, at least 95% of the particles having a particle size of less than about 50 μm, or having a specific surface area from about 0.1 to about 10 m^2g^{-1}, which method comprises dissolving the compound in an organic solvent, precipitating the compound by mixing an approximately equal volume of a non-solvent for the compound with the resulting solution, and controlling the mixing conditions so that the time of mixing is from about 0.5 to about 30 minutes and the mixture is agitated during mixing.

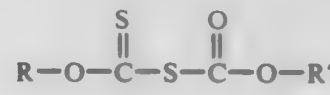
4,605,518

INDUSTRIAL PROCESS FOR THE MANUFACTURE OF ALKYL XANTHOGEN FORMATES

Ronald D. G. Crozier, 4 Daisy La., Ridgefield, Conn. 06877

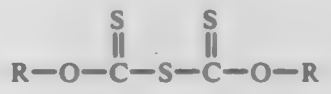
Continuation of Ser. No. 270,362, Jun. 4, 1981, Pat. No. 4,454,051. This application Jun. 1, 1982, Ser. No. 383,559
Int. Cl.[4] C07C *154/02*
U.S. Cl. 558—244 7 Claims

1. In the process for the preparation of alkyl xanthogen formate of the formula:

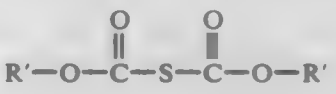


(I)

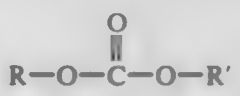
in which R and R′ are selected from the group consisting of alkyl groups with 1 to 6 carbon atoms, straight chained or branched, pure or in mixtures; said formate being prepared by reaction of an alkaline alkyl xanthate and an alkyl chloroformate, and wherein secondary reactions give rise to the following co-products;



(II)



(III)

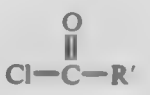


(IV)

the improvements comprising:

varying and controlling the relative concentrations of compounds I-IV by:

forming an aqueous emulsion of an alkyl chloroformate of the general formula:



slowly adding an alkaline xanthate dissolved in water or excess alcohol used in its manufacture, to the suction of

a pump feeding through a heat exchanger in a recirculation loop to a second reactor;

controlling the flows and reaction temperature to increase or limit the formation of compound (II);

regulating the reaction temperature in said heat exchanger within the range of 20° C. to 45° C., whereby the reaction mass in said reactor does not exceed 56° C.;

maintaining the molar ratio between the alkaline alkyl xanthate and the alkyl chloroformate between 1.03:1 and 1.5:1;

the amount of water employed to emulsify said alkyl chloroformate being the minimum amount required to keep the alkali chloride, formed in the reaction, in solution; and

washing the reaction mix with water to eliminate soluble impurities.

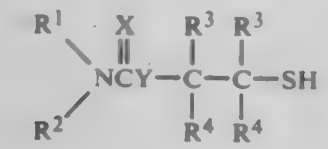
4,605,519

O- AND S-(2-MERCAPTOALKYL)- MONO- OR DIHYDROCARBYL CARBAMOTHIOATES AND S-(2-MERCAPTOALKYL)MONO- OR DIHYDROCARBYL CARBAMODITHIOATES

Roger W. Bergman, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Dec. 9, 1983, Ser. No. 560,006
Int. Cl.[4] C07C *155/02, 125/06*
U.S. Cl. 558—234 19 Claims

1. A 2-mercaptoalkyl carbamothioate which corresponds to the formula:



wherein

R^1 is hydrogen or $C_{1\text{-}20}$ hydrocarbyl;

R^2 is $C_{1\text{-}20}$ hydrocarbyl;

R^3 is separately in each occurrence hydrogen or $C_{1\text{-}20}$ hydrocarbyl;

R^4 is separately in each occurrence hydrogen or $C_{1\text{-}20}$ hydrocarbyl;

X is O or S; and

Y is O or S;

with the proviso that both X and Y cannot be oxygen and with the further proviso that at least one R^3 and one R^4 on the same carbon atom on each alkylene moiety must be hydrogen.

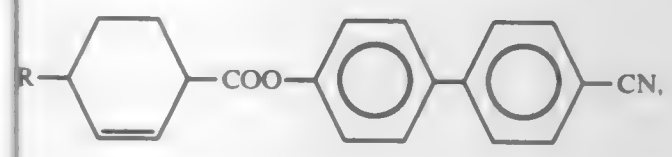
4,605,520

LIQUID CRYSTAL 4-(4'-CYANODIPHENYL) ESTERS OF TRANS-4''-N-ALKYLOCYCLOHEX-2-ENECARBOXYLIC ACIDS

Vladimir S. Bezborodov; Viktor A. Konovalov, and Jury L. Ptashnikov, all of Minsk, U.S.S.R., assignors to Nauchno-Issledovatelsky Institut Prikladnykh Fizicheskikh Problem Imeni A.N. Sevchenko, Minsk, U.S.S.R.

Filed Jan. 25, 1985, Ser. No. 694,684
Int. Cl.[4] G02F *1/13;* C09K *3/34;* C07C *121/48, 121/60*
U.S. Cl. 558—414 1 Claim

1. Liquid crystal 4-(4'-cyanodiphenyl) esters of trans-4''-n-alkylcyclohex-2-enecarboxylic acids of the general formula:



wherein

R^1 is a CH_3–C_7H_{15} radical of a normal structure.

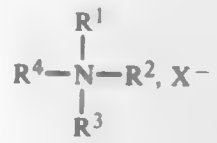
4,605,521

PROCESS FOR THE PREPARATION OF ORGANIC NITRILES FROM ORGANIC CARBOXYLIC ACID PRIMARY AMIDES

Robert J. I. Eubanks, and James G. Pacifici, both of Batesville, Ark., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 29, 1985, Ser. No. 717,926
Int. Cl.[4] C07C *120/10*
U.S. Cl. 558—313 12 Claims

1. A homogeneous process for preparing organic nitriles which comprises reacting an organic carboxylic acid primary amide selected from the group consisting of aliphatic carboxylic acid primary amide, cycloaliphatic carboxylic acid primary amide, heterocyclic carboxylic acid primary amide and aromatic carboxylic acid primary amide containing about 2 to about 22 carbon atoms with at least a stoichimetric amount of a dehydrating agent at a tenperature of about 25° C. to 90° C. in the presence of a catalytic amount of a quaternary ammonium salt having the formula:



wherein

R^1, R^2, R^3, and R^4 are each independently selected from alkyl of from 1 to 18 carbon atoms, alkylaryl of from 7 to 18 carbon atoms, arylalkyl of from 7 to 18 carbon atoms, and aryl of from 6 to 18 carbon atoms and X is an anion.

4,605,522

METHOD FOR PREPARATION OF N-PHOSPHONOMETHYLGLYCINE OR SALTS

Jeffery D. Robbins, Berkeley, Calif., assignor to Stauffer Chemical Company, Westport, Conn.

Continuation-in-part of Ser. No. 499,017, May 17, 1983, abandoned. This application Nov. 19, 1984, Ser. No. 672,323
Int. Cl.[4] C07F *9/38*
U.S. Cl. 260—502.5 F 5 Claims

1. A method for the production of N-phosphonomethylglycine and soluble salts thereof which comprises reacting glycinemethylenephosphinic acid or soluble salts thereof with an excess of an alkali or alkaline earth base for a period of time and at a temperature ranging from about 125° C. to about 135°

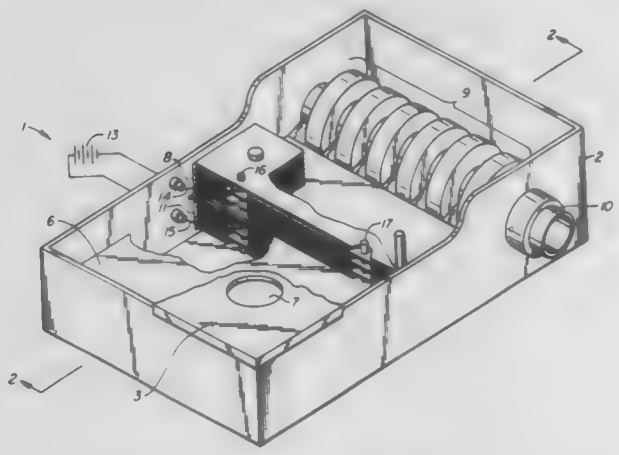
C., sufficient to cause oxidation of the glycinemethylenephosphinic acid or soluble salts thereof to N-phosphonomethylglycine salts, wherein there is present in solution an amount of alkali or alkaline earth base equivalent to from about 10 to about 37 moles of sodium hydroxide per mole of glycinemethylene phosphinic acid or disodium salt thereof.

4,605,523

APPARATUS FOR IMPROVED FUEL EFFICIENCY

Winston B. Smillie, 2760 Park Ave., Laguna Beach, Calif. 92651

Filed Jun. 4, 1984, Ser. No. 616,995
Int. Cl.[4] F02M *27/04*
U.S. Cl. 261—1 **2 Claims**



1. A device for enhancing the combustibility of a combustible fluid mixture which comprises:

an enclosed chamber having an inlet port, an outlet port and a channel for the continuous flow of said fluid mixture therebetween;

a plurality of regularly spaced parallel plate electrodes of alternating charge establishing an electric field across two portions of said channel in a direction perpendicular to the direction of flow of said fluid mixture; and

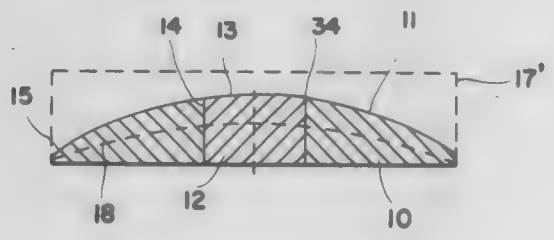
a plurality of regularly spaced parallel plates of ferromagnetic material of alternating polarity establishing a magnetic field across one portion of said channel between said electric field portions in a direction perpendicular to both the direction of flow of said fluid mixture and the direction of said electric fields.

4,605,524

METHOD AND MASTER-DIE FOR CASTING A BIFOCAL CONTACT LENS IN A SINGLE PIECE

Frederick J. Danker, Boonton, N.J., assignor to Danker Laboratories, Inc., Sarasota, Fla.

Filed Nov. 19, 1984, Ser. No. 672,840
Int. Cl.[4] B29D *11/00*
U.S. Cl. 264—2.5 **11 Claims**



1. Method of casting in one piece a bifocal contact lens for improving the vision of a living eye, comprising the steps of:

providing a carrier portion of a first metal master-die with a convex surface of a first value of radius of curvature surrounded by a narrow rounded-off rim portion of small radius of curvature, said first value of radius of curvature being of a magnitude for correction of near vision for a living eye by a contact lens;

providing a plug insert portion of said first metal master-die with a convex surface of a second value of radius of curvature, said second value of radius of curvature being of a magnitude for correction of distant vision for a living eye by a contact lens, said second radius of curvature being greater than first radius curvature;

cutting an aperture in said carrier portion of a shape and size suitable for a shrink-fit of said plug insert portion in said carrier portion;

inserting and shrink-fit securing said plug insert portion in said carrier portion of said first master-die with adjustment of said plug insert portion in said aperture to optimise the fit of said convex surfaces to each other before shrink-fit securing;

providing a second metal master-die having a concave curved surface of a third value of, radius of curvature differing from at least one of said first and second values or radius of curvature, said third value of radius of curvature being of a magnitude for fitting the cornea of a living eye by the posterior surface of a contact lens;

making first and second working dies respectively from said first and second master-dies, and

casting, between said first and second working dies, a lens, of a transparent synthetic polymeric material which is sufficiently thin to be usable as a contact lens for a living eye.

7. A master-die for making working dies usable in the manufacture of one-piece cast bifocal lenses for vision-improving use, comprising:

a carrier portion of a metal capable of having its surfaces ground and polished to an optical smoothness, said carrier portion having a convex surface on one side thereof which has a first value of radius of curvature and is surrounded by a narrow rounded-off rim portion of small radius of curvature, said carrier portion having an aperture therethrough, and

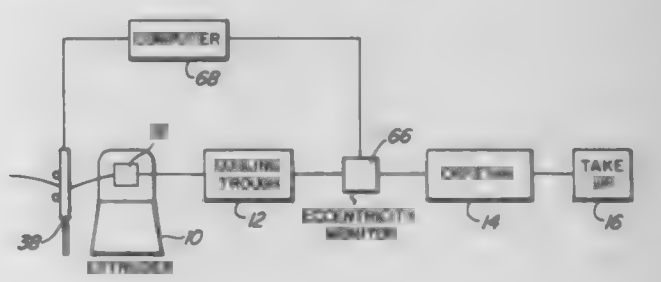
a plug insert portion of a metal capable of being ground and polished to an optically smooth surface and having a convex surface of a second value of radius of curvature which is greater than said first value of radius of curvature, said plug insert portion being tightly fitted in said aperture in said carrier portion in such a way that said convex surface of a second value of radius of curvature fits substantially as closely as possible to said convex surface of a first value of radius of curvature of said carrier portion.

4,605,525

METHOD FOR FORMING INSULATING ELECTRICAL CONDUCTOR

Gordon D. Baxter, Kingston, Canada, assignor to Northern Telecom Limited, Montreal, Canada

Filed Feb. 4, 1985, Ser. No. 697,805
Int. Cl.[4] B29C *47/92*
U.S. Cl. 264—40.5 **3 Claims**



1. A method of forming an insulation layer upon an electrical conductor comprising:

passing the conductor along a feedpath through a passage of a die insert with lateral clearance, towards an outlet orifice of the die insert and also, with lateral clearance, through the outlet orifice while lying in contact with a part only of the surface of the insert which defines the orifice, and passing

the conductor through a die orifice to extrude onto it elastomeric material for forming the layer while contact of the conductor with said surface part of the insert guides the conductor into a particular lateral position as it passes through the orifice;

monitoring the radial position of the conductor within the layer; and

controllably moving the conductor laterally of its feedpath at a position upstream from the outlet orifice of the die insert dependent upon the eccentricity of the conductor by combining movements of the conductor in two planes so as to cause the conductor to change its angle of approach to the outlet orifice to alter the angle of departure from the outlet orifice and hence its lateral position within the die orifice to achieve concentricity of the conductor within and surrounding clearance from a surface defining the die orifice.

2. Apparatus for forming an insulating layer upon an electrical conductor comprising an extruder having an extruder head provided with a die orifice and a die insert within the head, the insert having an outlet orifice for passage of the conductor along its feedpath towards the die orifice, and upstream of the outlet orifice, the apparatus defines a passage of larger section than the outlet orifice to allow for lateral clearance for the conductor on its feedpath, monitoring means to monitor the radial position of the conductor within the layer, and means to controllably move the conductor laterally of its feedpath within two planes and within the larger section passage so as to change the angle of approach of the conductor towards the outlet orifice.

4,605,526

PROCESS FOR PRODUCING DENSE MEMBRANES

Marinus J. Reynhout, and Albert van der Scheer, both of Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Filed Jan. 25, 1985, Ser. No. 694,739

Claims priority, application European Pat. Off., Oct. 15, 1984, 84201486.2

Int. Cl.[4] B29C *67/20*

U.S. Cl. 264—41 **11 Claims**

1. A process for producing dense membranes, wherein a solution comprising a polar polymer and/or a polar prepolymer in a polar solvent which is substantially soluble in a polar liquid is allowed to spread out over the surface of the polar liquid and the spread out solution is allowed to desolvate.

4,605,527

PROCESS FOR PRODUCING CLUTCH FACINGS

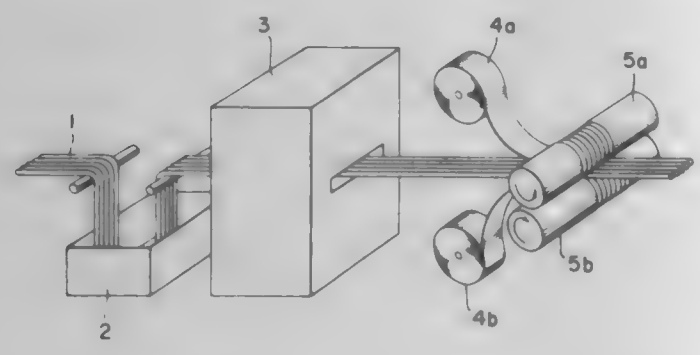
Hirofumi Kamiura, and Takashi Natori, both of Osaka, Japan, assignors to Nippon Valqua Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 30, 1984, Ser. No. 595,381

Claims priority, application Japan, Sep. 24, 1983, 58-176689

Int. Cl.[4] B29B *11/16*

U.S. Cl. 264—137 **9 Claims**



1. In a process for producing a clutch facing which comprises first causing a thermosetting resin and then a rubber composition to adhere to inorganic fibers, forming a preform therefrom and molding said preform under heat and pressure, the improvement which comprises adding organic fibers to said rubber composition as a processing aid in an amount of from 1 to 15% by weight, based on the weight of the rubber composition, forming said rubber composition containing said organic fibers into a sheet and causing said sheet to adhere to said inorganic fibers without using a hydrocarbon solvent.

4,605,528

PROCESS AND DEVICE FOR PRODUCTION OF PLASTIC SHEETS OF GOOD OPTICAL QUALITY

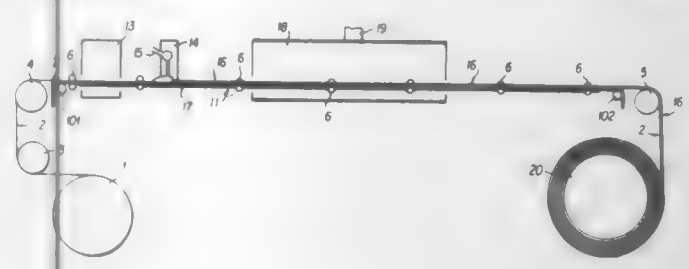
Jean-Marc Petitcollin, Le Plessis Brin, and André Taworski, Cambrone les Ribecourt, both of France, assignors to Saint-Gobain Vitrage, Courbevoie, France

Filed May 25, 1984, Ser. No. 614,120

Claims priority, application France, May 30, 1983, 83 08904

Int. Cl.[4] B29D *7/01*

U.S. Cl. 264—216 **6 Claims**



1. Process for production of plastic sheets of high optical quality, comprising:

applying a liquid mass comprising a curable plastic composition to a plane mobile support comprising a horizontally taut flexible strip, wherein said flexible strip is passed over two horizontal and longitudinal rectilinear supports, contact of each with said flexible strip being limited approximately to a generatrix, these two rectilinear supports extending over the entire length useful for production and being placed along the side edges of the strip, stretching said strip crosswise on these rectilinear supports in drumhead fashion, advancing said flexible strip and curing said liquid mass whereby said sheets are formed.

4,605,529

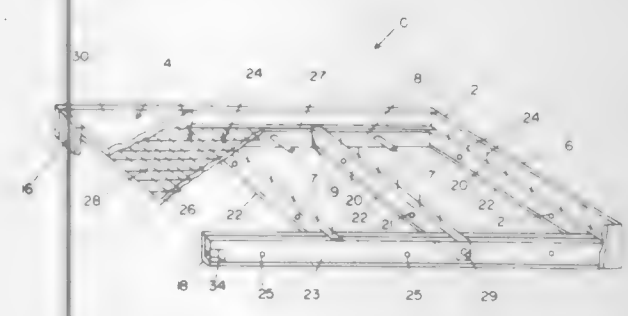
METHOD OF CONSTRUCTING A PREFABRICATED CONCRETE WALL STRUCTURE

Melvin M. Zimmerman, Blue Ball, Pa., assignor to Superior Walls of America, Ltd., East Earl, Pa.

Filed Aug. 5, 1985, Ser. No. 762,379

Int. Cl.[4] B28B *1/16*

U.S. Cl. 264—263 **4 Claims**



1. A method of constructing a prefabricated wall structure comprising:

orienting concrete studs in a horizontal configuration within a framing means such that the edges of studs which are exposed within the framing means have fasteners protruding from the edges and an essentially horizontal plane is formed by the edges of the studs within the framing means;

laying rigid insulation within the framing means, on top of the edges of the studs by piercing the fasteners through the insulation to form a continuous surface within the framing means;

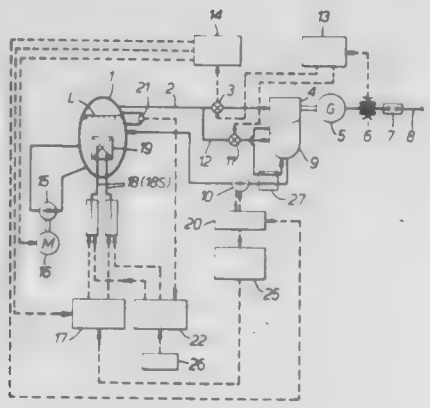
pouring concrete into the enclosure formed by the rigid insulation and the framing means so as to cover the rigid insulation and to enclose the fasteners;
permitting the poured concrete to set; and
removing the finished structure from the framing means.

4,605,530

OPERATING METHOD FOR NUCLEAR POWER PLANTS

Shinichiro Tatemichi, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Continuation of Ser. No. 487,449, Apr. 21, 1983, abandoned. This application Feb. 4, 1985, Ser. No. 697,437
Claims priority, application Japan, May 4, 1982, 57-73368
Int. Cl.⁴ G21C *7/06*
U.S. Cl. 376—237 **2 Claims**



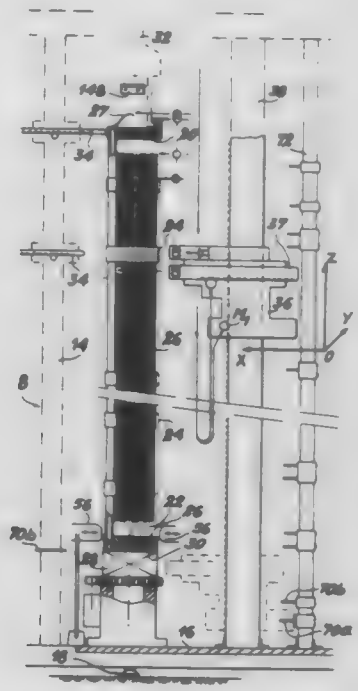
1. A method of safely operating a boiling water nuclear reactor power plant upon the occurrence of a failure, said reactor being changeable between several non-failure conditions and a plurality of failure conditions and having control rods for controlling the power level thereof, said control rods including a first group having all rods in the outermost peripheral region of said nuclear reactor and a second group having all rods not in the outermost peripheral region, said method comprising the steps of:
identifying a failure as a failure which occurs outside said power plant;
selecting control rods from said first group that are in a fully withdrawn position and that do not adjoin each other during normal operation;
selecting control rods only from those control rods in said second group which are in a fully withdrawn position and which are spaced from each other at a distance greater than the distance between adjoining rods during normal operation of said nuclear reactor;
said selected control rods from said first group and said second group being selected on the basis that if scrammed, the axial power distribution and natural circulation flow are maintained in a stable condition so that the power plant may operate at a reduced power level;
subjecting said selected control rods from said first group and said second group to a scram, whereby the power level of said nuclear reactor power plant is reduced to a power level lower than the normal operating power level but large enough to supply the needs of the power plant itself so that said nuclear reactor power plant can continue operating.

4,605,531

PROCESS FOR EXAMINING A FUEL ASSEMBLY OF A NUCLEAR REACTOR AND AN EXAMINING MACHINE FOR PERFORMING THIS PROCESS

André Leseur, Bures sur Yvette; Pierre Delaroche, Velizy; Robert Saglio, Antony, and Yves Vaubert, Gif sur Yvette, all of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Nov. 18, 1982, Ser. No. 442,645
Claims priority, application France, Nov. 25, 1981, 81 22063
Int. Cl.⁴ G21C *17/00*
U.S. Cl. 376—252 **16 Claims**



1. A machine for examining a fuel assembly of a nuclear reactor, comprising:
a plate;
a structure mounted on said plate;
a support block pivotably fitted on said plate and on which the fuel assembly is placed vertically;
a carriage slidably fitted on said structure;
means mounted on said carriage for examining the fuel assembly;
guidance means for guiding the fuel assembly with respect to the support block; and
a plurality of safety devices respectively located at a plurality of predetermined levels on said structure, each of said safety devices being positioned at a distance from the fuel assembly and including means for retaining said fuel assembly in an equilibrium position, said means for examining the fuel assembly being displaceable along the complete height of the fuel assembly.

4,605,532

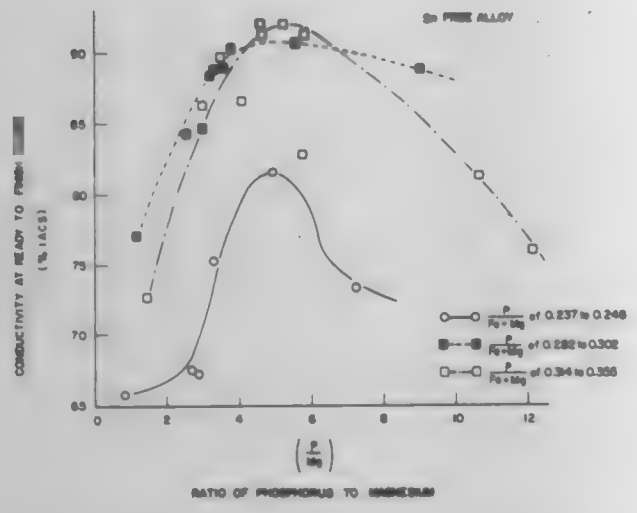
COPPER ALLOYS HAVING AN IMPROVED COMBINATION OF STRENGTH AND CONDUCTIVITY

David B. Knorr, Hamden, and John F. Breedis, Trumbull, both of Conn., assignors to Olin Corporation, New Haven, Conn.

Continuation-in-part of Ser. No. 645,957, Aug. 31, 1984, abandoned. This application Jun. 3, 1985, Ser. No. 740,388
Int. Cl.⁴ C22C *9/02*
U.S. Cl. 420—472 **25 Claims**

1. A copper base alloy having a combination of high strength and high conductivity consisting essentially of from about 0.3 to about 1.6% by weight iron, with up to one-half the iron content being replaced by an element selected from the group consisting of nickel, manganese, cobalt and mixtures thereof; from about 0.01 to about 0.20% by weight magnesium; from about 0.10 to about 0.40% by weight phosphorus; up to about 0.5% by weight of an element selected from the group consisting of tin, antimony, and mixtures thereof; and the balance copper; with the proviso that the phosphorus to magnesium

ratio comprises at least about 2.5 and that the ratio of phosphorus to the total content of phosphide formers (magnesium+iron+nickel+manganese+cobalt) ranges from about 0.22 to about 0.49.

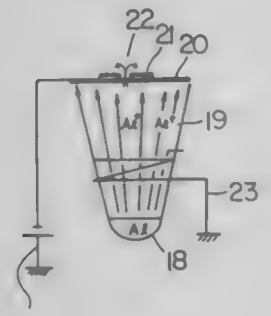


4,605,533

LEAD FRAME COATED WITH ALUMINUM AS A PACKAGING MATERIAL IN INTEGRATED CIRCUITS

Kazunao Kudoh, and Yoshikazu Hashimoto, both of Itami, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Apr. 19, 1985, Ser. No. 725,202
Int. Cl.[4] C22C *38/08;* H01I *21/60*
U.S. Cl. 428—622 **1 Claim**



1. In a lead frame for use in integrated circuits, in which a lead frame comprising an iron-nickel alloy substrate and a packaging ceramic are sealed with low-melting-point glass, the improvement in that both faces and sides of said iron-nickel alloy substrate containing nickel therein in a proportion of 42 to 49% by weight are coated with an aluminum layer of 0.2 to 10 microns thick such that the entire surface of the substrate in contact with the low melting point glass has a chemical layer thereupon.

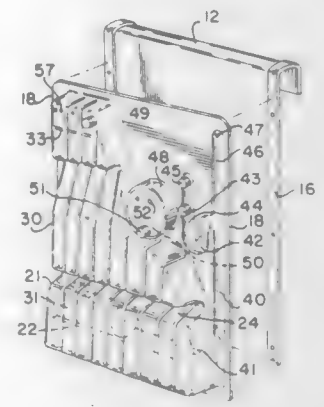
4,605,534

CLEANING AND DISINFECTING SYSTEMS INCLUDING COLOR DISPLAY MEANS

Gilbert K. Meloy, Cincinnati, Ohio, assignor to Twinoak Products, Inc., Plano, Ill.

Filed Nov. 2, 1983, Ser. No. 545,876
Int. Cl.[4] E03D *9/02;* A61L *2/16*
U.S. Cl. 422—37 **7 Claims**

1. In a method for detecting the depletion of a cleaning and disinfectant ingredient in a solution initially containing the ingredient, comprising the steps of locating said ingredient in a dispenser, positioning said dispenser in said solution, locating a solid composition in the dispenser adjacent said ingredient while providing communication within the dispenser between the respective locations of said ingredient and said composition, said composition having a critical porosity from between about 1 to about 10% by volume and comprising a color indicator, and a matrix supporting the color indicator and permitting gradual release of the indicator, amounts of said solution being introduced into said dispenser for contact in the dispenser with both said ingredient and said composition, said ingredient and said indicator being gradually released into the solution whereby a concentrated solution of said ingredient and said indicator is formed in the dispenser, said ingredient having a bleaching tendency relative to said color indicator



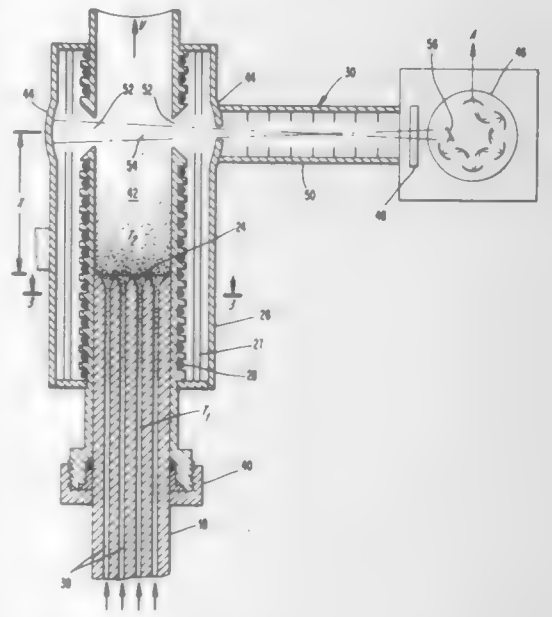
whereby the presence of the ingredient in the solution minimizes the display of color in the solution for as long as significant amounts of said ingredient are present, and whereby solution released from the dispenser is substantially free of color, and wherein continued release of said color indicator after depletion of said ingredient results in a substantial display of color in solution released from the dispenser whereby the depletion of said ingredient can be detected.

4,605,535

APPARATUS FOR MEASURING PARTICLE SIZE

William L. Dimpfl, Oakland, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Division of Ser. No. 366,236, Apr. 7, 1982, Pat. No. 4,486,535.
This application Aug. 24, 1984, Ser. No. 643,726
Int. Cl.[4] G01N *15/02*
U.S. Cl. 422—95 **19 Claims**



9. An apparatus for measuring the size of incandescently burnable particles in a population of particles suspended in a gas comprising:

means for heating the population of particles to a temperature sufficient to cause incandescent burning of the particles;

a detector for simultaneously detecting the intensity of radiant energy emitted by a plurality of heated burning particles in a detection zone; and

means for providing an output signal, responsive to said detector, related in value to the third derivative of the

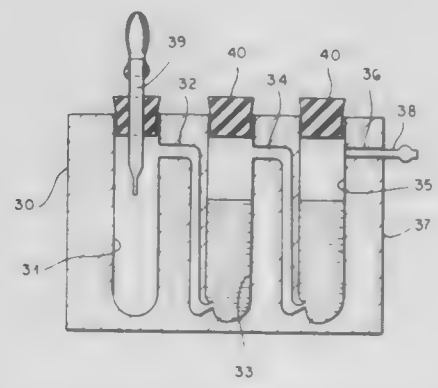
intensity of emitted radiant energy with respect to time, said output signal providing an indication of the size of the detected burning particles in the population.

4,605,536

CUVETTE FOR PROJECTION DISPLAY OF CHEMICAL EXPERIMENTS

Rudi Kuhnert, Halle, and Wolf-Dieter Legall, Merseburg, both of German Democratic Rep., assignors to Veb Metaplast Quedlinburg, Quedlinburg, German Democratic Rep.

Filed May 29, 1984, Ser. No. 614,869
Int. Cl.[4] B01L *3/00*
U.S. Cl. 422—99 14 Claims



1. A cuvette for demonstrating chemical experiments which comprises an elongated rectanguler parallelopipedal block of transparent material formed unitarily with plane-parallel broad surfaces transluminable for projection display and with parallel upper and lower surfaces, said block being formed between said broad surfaces with a plurality of upright vertically elongated compartments, at least one of which is upwardly open of the shape of chemical experiment vessels, spaced apart in said block, means defining in the material of said block at least one elongate passage communicating between said compartments and terminating in lateral or bottom walls of said compartments at opposite ends at respective ones of said compartments, the walls of said compartments and said passage being defined exclusively by said material unitarily with said block, and means on said block for inducing a chemical reaction in at least one of said compartments, all of said compartments opening at said upper surface.

4,605,537

SULFIDE AS A HYPOCHLORITE KILL AGENT

Freddie J. Touro, New Orleans, La., assignor to Freeport Minerals Company, New York, N.Y.

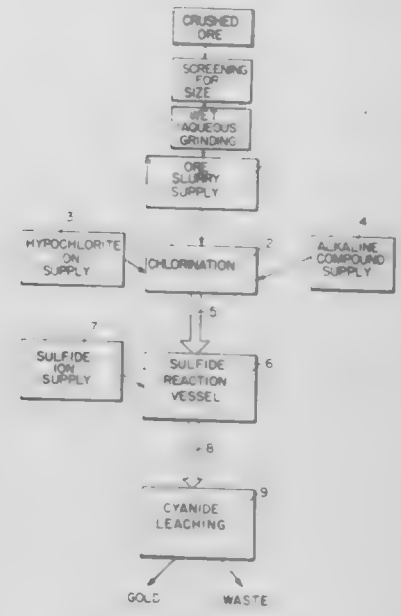
Filed Sep. 17, 1984, Ser. No. 651,087
Int. Cl.[4] B01D *11/00*
U.S. Cl. 423—29 18 Claims

1. A method for extracting precious metal from a precious metal-containing carbonaceous ore or a mixture of precious metal-containing carbonaceous and oxide ores comprising:

(a) chlorinating said ore in an aqueous slurry with a compound that provides hypochlorite ions;

(b) reacting said hypochlorite ions in said aqueous slurry with sulfide ions from a soluble, sulfide ion-providing compound to eliminate said hypochlorite ions remaining in said aqueous slurry; and

(c) leaching said hypochlorite ion-free slurry with a cyanide compound to separate said precious metal from said precious metal-containing carbonaceous ore or said mixture of precious metal-containing carbonaceous and oxide ores.



4,605,538

PRODUCTION OF PURE MOLYBDENUM

Clarence D. Vanderpool, Towanda, Pa., assignor to GTE Products Corporation, Stamford, Conn.

Filed Aug. 22, 1985, Ser. No. 768,387
Int. Cl.[4] C01G *39/00*
U.S. Cl. 423—55 4 Claims

1. A process for producing pure molybdenum, said process comprising:

(a) contacting a molybdate solution with a true liquid alkaloid that is capable of dissolving in an aqueous solution of molybdenum values when said solution is at a pH of from about 9 to 10 with the amount of the alkaloid being sufficient to form an alkaloid-molybdenum compound with essentially all of the molybdenum;

(b) adjusting the resulting alkaloid-treated solution to a pH of from aout 2 to about 4 to form a precipitate consisting essentially of said compound and a mother liquor;

(c) separating said precipitate from said mother liquor;

(d) dissolving said precipitate in ammonium hydroxide to form a two phase system consisting essentially of an alkaloid phase and a molybdenum phase;

(e) separating said alkaloid phase from said molybdenum phase; and

(f) crystallizing a pure ammonium molybdate compound from said molybdenum phase.

4,605,539

PHOSPHONITRILIC CHLORIDE TRIMER PURIFICATION

J. Robert Adams, Jr.; James R. Mitrano, and Matthew K. Juneau, all of Baton Rouge, La., assignors to Ethyl Corporation, Richmond, Va.

Filed Nov. 16, 1984, Ser. No. 671,942
Int. Cl.[4] C01B *25/10*
U.S. Cl. 423—300 20 Claims

1. A process for making a polymer-grade cyclic phosphonitrilic chloride trimer, said process comprising

(a) forming a solution of impure cyclic phosphonitrilic chloride in an inert halogenated hydrocarbon solvent,

(b) washing said solution with water,

(c) precipitating crystalline cyclic phosphonitrilic chloride trimer from the water-washed halogenated hydrocarbon solution,

(d) separating said precipitated crystalline cyclic phosphonitrilic chloride trimer from said water-washed solution and

distilling the separated cyclic trimer to obtain said polymer-grade cyclic phosphonitrilic chloride trimer.

4,605,540

LOW VOLATILE FLUORINE PROCESS FOR MAKING ELEMENTAL PHOSPHORUS

John E. Stauffer, 6 Pecksland Rd., Greenwich, Conn. 06830

Filed Nov. 1, 1985, Ser. No. 794,117
Int. Cl.[4] C01B *25/01*
U.S. Cl. 423—322 5 Claims

1. A process for the production of elemental phosphorus by collecting volatilized elemental phosphorus from a molten furnace burden formed by melting phosphorus ore, sand and carbon in an electric furnace, comprising incorporating alkali with the furnace burden in a proportion sufficient in the slag to suppress the formation of volatine fluorine compounds, the alkali being used in an amount equivalent to not less than about 5 to about 15 weight percent Na_2O in the slag.

4,605,541

RECOVERY OF NOBLE METAL VALUES FROM CARBONYLATION RESIDUES USING IMMISCIBLE LIQUIDS

Joseph Pugach, Ridgewood, N.J., assignor to The Halcon SD Group, Inc., Montvale, N.J.

Filed Aug. 26, 1985, Ser. No. 768,992
Int. Cl.[4] C01G *55/00*
U.S. Cl. 423—22 9 Claims

1. A process for recovering rhodium from the high molecular weight residues formed in rhodium-lithium catalyzed carbonylation reactions in which esters and ethers are combined with carbon monoxide in the presence of iodides to form anhydrides, comprising:

(a) separating and concentrating the residue from the carbonylation reaction mixture by removing volatile components thereof;

(b) treating at temperatures above ambient the separated residue of (a) with a mixture of immiscible liquids capable of precipitating a solid containing substantially all of the rhodium content of said residue and consisting of immiscible mixtures of water with aliphatic alcohols or hydrocarbons or mixtures thereof or immiscible mixtures of acetic anhydride with hydrocarbons; and

(c) separating the precipitated solid of (b).

4,605,542

PROCESS FOR PRODUCING SILICON CARBIDE WHISKER

Junzo Harada, Sodegaura, Japan, assignor to Idemitsu Kosan Company Limited, Tokyo, Japan

Filed May 29, 1985, Ser. No. 738,746
Claims priority, application Japan, Jun. 7, 1984, 59-115479
Int. Cl.[4] C01B *31/36*
U.S. Cl. 423—345 14 Claims

1. The process for producing silicon carbide whiskers comprising mixing a silicon source with carbon black to form a reaction mixture and heating said reaction mixture in an inert atmosphere to form silicon carbide whiskers, said silicon source being silica recovered from geothermal hot water having a silica content of from 200 to 1000 ppm.

4,605,543

PREPARATION OF SILANE FROM METHYLDICHLOROSILANE AND CHLOROSILANES

Jean-Luc Lepage, Sainte-Foy-les Lyon, and Gerard Soula, Meyzieu, both of France, assignors to Rhone-Poulenc Specialities Chimiques, Courbevoie, France

Filed Sep. 28, 1984, Ser. No. 655,730
Claims priority, application France, Sep. 28, 1983, 83 15405
Int. Cl.[4] C01B *33/04, 33/107;* C07F *7/08*
U.S. Cl. 423—347 24 Claims

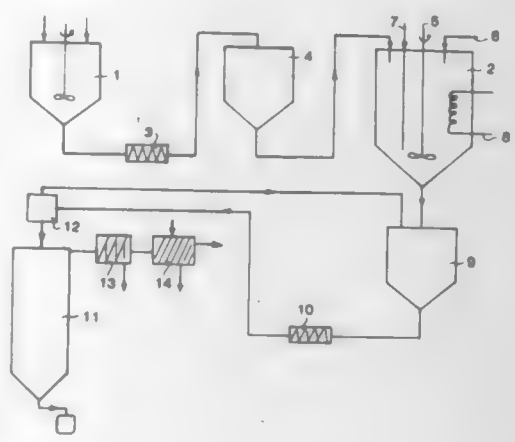
1. A process for the preparation of silane from methyldichlorosilane and trichlorosilane and/or tetrachlorosilane, comprising (A) in a first step, catalytically redistributing methyldichlorosilane with trichlorosilane or tetrachlorosilane, or admixture thereof, to form methyltrichlorosilane and dichlorosilane, and separating dichlorosilane from the resulting reaction medium, and (B) in a second step, catalytically disproportionating the dichlorosilane thus separated to form silane and trichlorosilane, and thence recovering silane thus formed and optionally recycling trichlorosilane to said step (A), the step (A) and step (B) reactions being catalyzed with (i) a quaternary ammonium salt having the formula R'_4NY or a quaternary phosphonium salt having the formula R'_4PY, in which each R', which may be identical or different, is a monovalent hydrocarbon radical and Y is halogen, (ii) a tertiary amine of the general formula $NR'R''R'''$ in which R', R'' and R''', which may be identical or different, are monovalent hydrocarbon radicals, (iii) an ion exchange resin containing tertiary amine or quaternary ammonium groups, or (iv) a catalytic system comprising an ionic inorganic salt M^+A^- and a compound which complexes the M^+ cation of said salt.

4,605,544

METHOD FOR PRODUCING SELENIUM SALTS

Arne Björnberg, Skelleftehamn; Ulf S. Martensson, Skellefteå, and Karin M. Paulsson, Skelleftehamn, all of Sweden, assignors to Boliden Aktiebolag, Stockholm, Sweden

PCT No. PCT/SE83/00400, § 371 Date Aug. 22, 1984, § 102(e) Date Aug. 22, 1984, PCT Pub. No. WO84/02513, PCT Pub. Date Jul. 5, 1984
PCT Filed Nov. 15, 1983, Ser. No. 644,728
Claims priority, application Sweden, Dec. 22, 1982, 8207344
Int. Cl.[4] C01B *19/00*
U.S. Cl. 423—508 7 Claims



1. A method for producing metal selenate comprising:

(a) dissolving metallic selenium in nitric acid to obtain selenious acid;

(b) reacting the selenious acid with a material selected from the group consisting of alkali metal hydroxide, alkali metal carbonate, metal oxide/hydroxide or mixtures thereof to form metal selenite;

(c) oxidizing the metal selenite with hydrogen peroxide at a temperature of from 60° to 75° C. and maintaining a pH of from 10 to 12 to form metal selenate; and

(d) drying the metal selenate.

4,605,545

METHOD FOR PRODUCING SODIUM DITHIONITE

William B. Darlington, Wadsworth, and Charles H. Hoelscher, Doylestown, both of Ohio, assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed May 20, 1985, Ser. No. 736,167
Int. Cl.[4] C01B *17/66*
U.S. Cl. 423—516 20 Claims

1. In the process of producing anhydrous sodium dithionite by reacting a sulfur dioxide-containing formamide solution and

sodium amalgam in a reaction vessel, separating a product formamide solution containing sodium dithionite from the sodium amalgam and precipitating sodium dithionite from such formamide solution by mixing a precipitating agent with such solution, the improvement wherein the precipitating agent is selected from the group consisting of isopropanol and n-propanol.

4,605,546

CATALYTIC PROCESS FOR THE PRODUCTION OF SULFUR FROM A GAS CONTAINING H_2S

Robert Voirin, Orthez, France, assignor to Societe Nationale Elf Aquitaine (Production), Courbevoie, France

Filed Jan. 30, 1984, Ser. No. 574,911

Claims priority, application France, Jan. 31, 1983, 83 01446

Int. Cl.⁴ B01D *53/36;* **C01B** *17/04*

U.S. Cl. 423—576 **21 Claims**

1. A catalytic process for production of sulphur from a gas, known as an "acid gas", containing H_2S, in which the acid gas is contacted, at a temperature between 200° and 1000° C. and in the presence of a H_2S-oxidation catalyst, with a controlled quantity of a gas containing free oxygen in order to form a gaseous effluent containing H_2S and SO_2 in a H_2S to SO_2 molar ratio substantially equal to 2:1 as well as sulphur, then said effluent, after cooling, is contacted with a CLAUS catalyst in order to form a further quantity of sulphur, wherein the H_2S-oxidation catalyst consists of agglomerates having a surface area of at least 5 m^2/g and comprising an active alumina and either:

(a) containing silica as a thermal stabilizer in an amount from 0.5 to 20% by weight of the alumina, to which is associated a compound of iron; or

(b) containing lanthanum oxide and neodymimium oxide as a thermal stabilizer in an amount from 0.5 to 20% by weight of the alumina, to which is associated a compound of iron.

4,605,547

CONTINUOUS HYDROGENATION OF LITHIUM INTO LITHIUM HYDRIDE

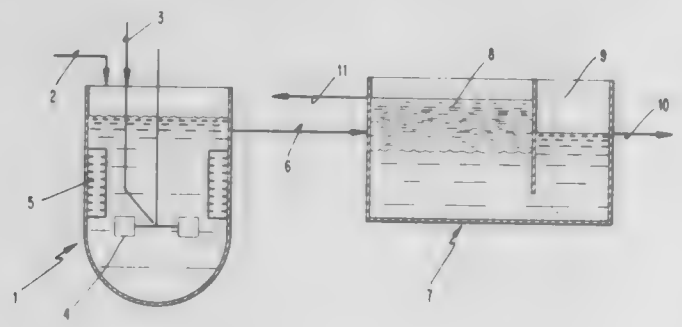
Jean-Yves Dumousseau, Paris; Jean Grosbois, L'Isle Adam, and Serge Jacubert, Viroflay, all of France, assignors to Rhone-Poulenc Specialites Chimiques, Courbevoie, France

Division of Ser. No. 527,834, Aug. 30, 1983. This application Mar. 1, 1985, Ser. No. 707,153

Claims priority, application France, Aug. 31, 1982, 82 14864

Int. Cl.⁴ C01B *6/04;* **C01F** *15/00*

U.S. Cl. 423—646 **8 Claims**



1. A process for the continuous preparation of lithium hydride, which comprises continuously hydrogenating in a first reaction zone, at elevated temperatures, an agitated intimate admixture of metallic lithium in a mixture of molten salts, continuously discharging the effluent of said hydrogenation reaction to a second zone of decantation, whereby said effluent is separated into a floating light phase essentially consisting of unreacted lithium metal and a heavy phase which comprises product lithium hydride dissolved in said mixture of molten salts, continuously recycling floating light phase back to the hydrogenation reaction zone, continuously withdrawing heavy phase from said zone of decantation, and recovering product lithium hydride from said withdrawn heavy phase.

4,605,548

DRUG ADMINISTRATION MATERIAL

Keiichi Ushiyama, and Hisashi Ichinose, both of Osaka, Japan, assignors to Nitto Electric Industrial Co., Ltd., Osaka, Japan

Division of Ser. No. 498,680, May 31, 1983, abandoned, which is a continuation of Ser. No. 288,957, Jul. 31, 1981, abandoned. This application Jul. 18, 1984, Ser. No. 632,149

Int. Cl.⁴ A61L *15/03;* **A61K** *9/24*

U.S. Cl. 424—15 **4 Claims**

1. A drug administration material for continuously administering an active drug at a controlled rate through an integument which comprises, in sequence, an adhesive film which comprises a film and a pressure sensitive layer, a barrier layer, a drug-retaining layer, a drug administration layer which continuously feeds an active drug to the integument, and a delaminatible protective film, said drug administration layer comprising a porous membrane containing in pores thereof, a liquid having a limited solubility for the active drug, wherein said liquid is stabily retained in the porous membrane by capillary pressure.

4,605,549

SYNERGISTIC PESTICIDAL COMPOSITIONS OF (S)α-CYANO-3-PHENOXY-BENZYL (1R,CIS) 2,2-DIMETHYL-3-(2,2-DIBROMOVINYL)-CYCLOPROPANE-1-CARBOXYLATE AND (R,S) ALLETHRONYL D-TRANS CHRYSANTHEMATE

Pierre R. Carle, Rognonas, France, assignor to Roussel Uclaf, Paris, France

Continuation of Ser. No. 347,279, Feb. 9, 1982, abandoned. This application Jul. 23, 1984, Ser. No. 633,146

Claims priority, application France, Feb. 20, 1981, 81 03403

Int. Cl.⁴ A61L *9/04;* **A01N** *25/00, 37/34, 53/00*

U.S. Cl. 424—18 **8 Claims**

1. An insecticidal composition consisting essentially of a synergistically effective amount of about 1:1 ratio by weight of (S) α-cyano-3-phenoxy-benzyl (1R,cis) 2,2-dimethyl-3-(2,2-dibromovinyl)-cyclopropane-1-carboxylate and (R,S) allethronyl d-trans chrysanthemate.

4,605,550

DELAYED RELEASE FORMULATIONS AND PROCESSES FOR MAKING THEM

Anthony J. Trill, Horsham, England, assignor to A. H. Robins Company, Inc., Richmond, Va.

Filed Jun. 5, 1984, Ser. No. 617,576

Claims priority, application United Kingdom, Jun. 6, 1983, 8315476

Int. Cl.⁴ A61K *9/16, 9/26, 31/78*

U.S. Cl. 424—22 **12 Claims**

1. A granular composition having particles of average particle size as determined by sieving in the range 70 to 500 microns the said particles comprising up to 55% of active ingredient having primary particles the maximum dimension (A) of which as determined by microscopy is less than 50 microns and a particulate water soluble extender having an average particle size (B) as determined by sieving in excess of 50 microns, the particles of active ingredient and water soluble extender being held in self-supporting spaced relationship by a water insoluble polymer film matrix providing the balance of the weight of the particle and being less than 50% by weight of the particle.

4,605,551

DRY OIL COATED ANTACID PROCESS

John D. Buehler, Germantown, Tenn.; Hans J. Medal, Fort Washington, and Gregory A. Rhoa, Collegeville, both of Pa., assignors to William H. Rorer, Inc., Fort Washington, Pa.

Filed Nov. 30, 1984, Ser. No. 676,634

Int. Cl.⁴ A61K *9/42, 33/06, 33/08, 33/10*

U.S. Cl. 424—38 **8 Claims**

1. In a process for the preparation of oil-coated antacid particles wherein particles of an antacid are contacted with a

mixture of electronegatively charged material in a non-toxic, inert, substantially water insoluble oil, the improvement comprising coating agitating particles of substantially anhydrous antacid with a solvent-free mixture of electronegatively charged material in said oil.

4,605,552

CALCIUM-ANTAGONIST COMPOSITIONS INTENDED FOR INHALATION AND PROCESS FOR THEIR MANUFACTURE

Edgar Fritschi, St. Peter, Fed. Rep. of Germany, assignor to Warner-Lambert Company, Morris Plains, N.J.

Filed Jul. 16, 1984, Ser. No. 631,049

Claims priority, application Fed. Rep. of Germany, Jul. 20, 1983, 3326089

Int. Cl.[4] A61L *9/04;* A61K *31/55*

U.S. Cl. 424—45 **2 Claims**

1. A method for treating angina pectoris which comprises administering to a patient in need thereof, by inhalation, an antianginal effective amount of the calcium antagonist diltiazem.

4,605,553

DRY PRESSED POWDER STICK COMPOSITION AND VEHICLE THEREFOR

Peter Passalacqua, 185 Prospect Ave., Hackensack, N.J. 07601

Filed Jan. 31, 1983, Ser. No. 462,305

Int. Cl.[4] A61K *7/32, 7/38, 7/42, 7/44*

U.S. Cl. 424—59 **18 Claims**

1. In an improved dry pressed powder stick composition consisting essentially of, by weight:

(a) about 1 to 10% of a metal stearate;

(b) about 1 to 10% of an alkaline metal carbonate;

(c) about 10% to 50% of a naturally or synthetically derived cellulose or derivative thereof;

(d) about 0.05% up to 50% of cosmetically active ingredient which is stable in the composition, wherein the improvement comprises about 10% to 60% of aluminum potassium silicate,

said dry pressed powder stick composition formed by mixing all of the above ingredients in a dry blend to form a homogeneous mixture, loading the mixture into a mold, and then applying pressures from about 100 psi to 3000 psi to the mixture in the mold at a temperature from 20° C. to 80° C. for a time sufficient to achieve the pressed stick composition.

4,605,554

ROLL-ON APPLICATION OF AQUEOUS MICROENCAPSULATED PRODUCTS

Samuel B. Prussin, Big Sur, Calif.; Ralph Levine, East Hills, N.Y., and Warren J. Hintz, Coltsneck, N.J., assignors to AE Development Corporation, Minneapolis, Minn.

Continuation of Ser. No. 275,314, Jun. 19, 1981, abandoned.

This application Jan. 17, 1985, Ser. No. 692,326

Int. Cl.[4] A61K *7/32, 7/34, 7/36, 7/38*

U.S. Cl. 424—66 **10 Claims**

1. A roll-on deodorant or antiperspirant powdery cream or lotion composition comprising a roll-on system for applying said composition to the axillae of a user comprising in combination:

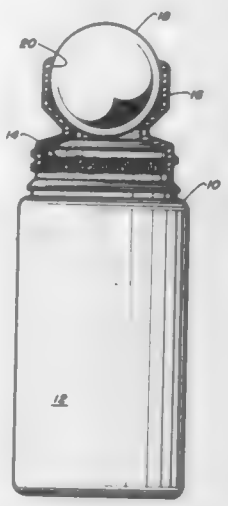
a container including;

a compartment within the container receiving;

said composition which comprises a stabilized water-in-air suspension including a discontinuous liquid phase comprising small, discrete, stable droplets of aqueous liquid, each droplet of said liquid being coated and stabilized with an interfacial barrier of very fine, hydrophobic metal oxide particles of the formula $_eO\text{-}MR_aXb$ where e represents the oxide surface; O is oxygen; M is metal selected from the group consisting of silicon, titamium, aluminum, zirconium, vanadium, iron or mixtures thereof, R is an organo group selected from the group consisting of alkyl, aryl, arylalkyl, alkoxy and aryloxy, a is a number from 1 through 3, X is a halogen or hydroxy b is a number from 0 through 2, a+b=3 and containing at least 0.5% by weight of said organo groups, said coated droplets being suspended in an external air phase such that the density is from 0.3 to 1.5 g/cc and the ratio of hydrophobic metal oxide to aqueous liquid being from 1/1 to 50/1 and the suspension including in parts by weight:

25% to 98.9% of aqueous liquid;

1% to 15% hydrophobic metal oxide, and



0.1% to 16% deodorant or antiperspirant compound;

a seat member; and

a rotating member received by solid seat member to define an outlet therebetween through which said suspension is dispersed onto said axillae from said compartment on rotation of said member;

said outlet being sized to apply preselected shear to said suspension in an amount sufficient to at least partially destabilize the suspension to coalesce at least 10% of said droplets into larger droplets.

4,605,555

COMPOSITION AND METHOD FOR TREATING KERATOSIC DISORDER OF SKIN AND MUCOSA

Mitsunobu Sato, Tokushima; Yasuhiro Katsuragi, Toyonaka; Yasuo Sakano, Amagasaki; Kunio Sugihara, Otsu, and Kenji Aimoto, Toyonaka, all of Japan, assignors to Sun Star Kabushiki Kaisha, Takatsuki, Japan

Filed Sep. 20, 1984, Ser. No. 652,465

Int. Cl.[4] A61K *45/02*

U.S. Cl. 424—85 **9 Claims**

1. A method for treating a human subject suffering from lichen planus or leukoplakia which comprises externally applying a pharmaceutical composition comprising an effective amount of human interferon, 15 to 70% by weight of a trihydric of higher polyhydric sugar alcohol, an organic acid buffer and a conventional pharmaceutical carrier or diluent, the pH of the composition being about 3 to 6.

4,605,556

COMPOSITION AND METHOD FOR TREATING ERYTHEMATODES AND MYCOSIS

Mitsunobu Sato, Tokushima; Yasuhiro Katsuragi, Toyonaka; Yasuo Sakano, Amagasaki; Kunio Sugihara, Otsu, and Kenji Aimoto, Toyonaka, all of Japan, assignors to Sun Star Kabushiki Kaisha, Takatsuku, Japan

Filed Sep. 20, 1984, Ser. No. 652,466

Claims priority, application Japan, Sep. 26, 1983, 58-178886

Int. Cl.[4] A61K *45/02*

U.S. Cl. 424—85 **9 Claims**

1. A method for treating a human subject suffering from lupus erythematodes discoides or candidasis which comprises externally applying a pharmaceutical composition comprising

an effective amount of human interferon, 15 to 70% by weight of a trihydric or higher polyhydric sugar alcohol, an organic acid buffer and a conventional pharmaceutical carrier or diluent, the pH of the composition being about 3 to 6.

4,605,557

METHOD OF PRODUCING ALLERGENIC EXTRACTS

Erik Stevens, Linden-Lubbeek, and Ernestina M. Van Hoeyveld, Lubbeek, both of Belgium, assignors to Tetra Consultants, Inc., New Rochelle, N.Y.

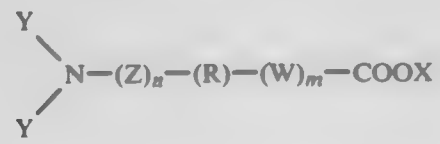
Filed Sep. 7, 1982, Ser. No. 415,567

The portion of the term of this patent subsequent to Jul. 15, 2003, has been disclaimed.

Int. Cl.[4] A61K *39/36, 39/00*

U.S. Cl. 424—91 **8 Claims**

1. In a method of producing a systemically administerable allergen containing extract which is suitable for use in the diagnosis or therapeutic treatment of allergic conditions in patients which comprises extracting the allergic material with a suitable solvent and obtaining the allergen containing extract thus produced wherein the improvement comprises adding to the allergic material and solvent mixture a compound of the formula,



wherein Y is H or lower alkyl; Z is CH_2; n is 0 or 1; R is alkylene or cycloalkylene; X is H, acyl or lower alkyl; m is 0 or 1; W is CH_2; and the non-toxic, pharmaceutically acceptable salts thereof, and wherein the compound is present in a concentration of from 0.001 M to 0.5 M.

2. The method of claim 1 wherein the compound is 6-aminohexanoic acid.

3. The method of claim 1 wherein the compound is trans-4(aminomethyl) cyclohexane carboxylic acid.

4,605,558

PROCESS FOR CELL SEPARATION

Wallace Shrimpton, 1015 Grandview Dr., South San Francisco, Calif. 94080

Filed Apr. 20, 1984, Ser. No. 602,461

Int. Cl.[4] A01N *1/02;* **A61K** *35/52, 35/14*

U.S. Cl. 424—105 **4 Claims**

1. In the known process for the separation of X sperm and Y sperm by phenotypic differences in a density separation process wherein sperm are suspended in a nutrient medium having a gradient in density from top to bottom within a vessel, the improvement comprising independently maintaining an osmolality gradient in the nutrient medium within said vessel.

3. The process for the preparation of a medium for the gravity separation of cellular biological material enclosed within a semi-permeable membrane, comprising:

a. providing at least one low density first nutrient medium and adjusting the osmolality to a desired value

b. providing at least one high density second nutrient medium and adjusting the osmolality to a lower value than the osmolality of said first nutrient medium,

c. placing said first and second nutrient media in a vessel to provide a gravity separation means having a high density and a low osmolality at one side and a low density and a high osmolality at the other side.

4,605,559

COMPOUND, FR-900447, PRODUCTION AND USE THEREOF

Yasuhiro Hori, Toyonaka; Motohiro Hino, Ikeda; Hiroshi Terano, Toyonaka; Masashi Hashimoto, Takarazuka, and Masanobu Kohsaka, Sakai, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

Filed Aug. 31, 1984, Ser. No. 646,090

Claims priority, application United Kingdom, Sep. 7, 1983, 8324006

Int. Cl.[4] A61K *35/74;* **C12P** *1/06*

U.S. Cl. 424—120 **3 Claims**

1. A compound, FR-900447, or pharmaceutically acceptable salt thereof having the following characteristics as its free form:

(1) has an elementary analysis (%): C59.05; H6.72; N5.57

(2) has a molecular weight: 928 [SIMS: m/z 929 ($M^+ + 1$)]

(3) has a melting point: 85° C. (dec.)

(4) has an optical rotation: $[\alpha]_D^{23°} = +291.4°$ (C=0.675, H_2O)

(5) has a characteristic ultraviolet absorption spectrum:
λ_{max}^{H2O}=276 nm ($E_{1cm}^{1\%}$390) 340 nm (sh) ($E_{1cm}^{1\%}$=80)
$\lambda_{max}^{H2O+HCl}$=272 nm ($E_{1cm}^{1\%}$=400), 330 nm (sh) ($E_{1cm}^{1\%}$=82)
$\lambda_{max}^{H2O+NaOH}$=243 nm ($E_{1cm}^{1\%}$275), 278 nm ($E_{1cm}^{1\%}$=350), 410 nm ($E_{1cm}^{1\%}$=31)

(6) has a characteristic infrared absorption spectrum:
ν_{max}^{KBr}=3400, 2950, 1650, 1560, 1465, 1435, 1395 (sh), 1375, 1280, 1150, 1075, 1040 (sh), 960, 895, 855, 840cm^{-1}

(7) has a characteristic nuclear magnetic resonance absorption spectrum:
δppm (pyridine-d_5): 10.62 (1H, t, J=6Hz), 8.38 (1H, s), 8.14 (1H, s), 6.90 (1H, s), 6.895 (1H, d, J=5 Hz), 6.43 (1H, s), 5.79 (1H, m), 5.80 (1H, d, J=10 Hz), 5.37 (1H, d, J=5 Hz), 4.48 (1H, q., J=6 Hz), 4.15 (1H, m), 3.9 (2H, m), 3.85 (1H, s), 3.63 (1H, t, J=10Hz), 3.47 (1H, m), 3.34 (1H, m), 3.12 (1H, m), 3.08 (2H, m), 3.07 (3H, s), 2.9 (1H, m), 2.82 (2H, m), 2.76 (6H, s), 2.74 (1H, m), 2.50 (6H, s), 2.19 (3H, s), 1.71 (3H, d, J=6Hz), 1.63 (2H, m), 1.62 (3H, d, J=6Hz), 1.47 (3H, d, J=5.4 Hz), 1.20 (3H, s)

(8) is soluble in water, and is sparingly soluble in acetone and methanol, and is insoluble in chloroform, n-hexane and diethyl ether

(9) is positive in color reaction with each of potassium permanganate, iodine vapor and ceric sulfate and is negative in Ehrlich's reaction, reaction with Dragendorff reagent and Molish's reaction

(10) has a characteristic ^{13}C-nuclear magnetic resonance absorption spectrum:
δ(ppm) (pyridine-d^5): 14.2, 17.3, 17.5, 19.4, 22.9, 31.1, 32.2, 33.5, 35.4, 36.1, 36.8, 40.2, 52.1, 55.6, 58.4, 64.6, 64.8, 68.3, 68.5, 70.5, 70.8, 72.2, 76.6, 78.1, 98.5, 107.1, 108.5, 121.6, 124.6, 124.9, 127.6, 131.0, 131.9, 132.4, 133.7, 137.0, 138.8, 155.1, 156.4, 162.5, 166.4, 174.7, 179.8, 187.3.

4,605,560

OVIPOSITIONAL DISRUPTION OF THE NAVEL ORANGEWORM

Robert A. Van Steenwyk, Pleasanton, and William W. Barnett, Clovis, both of Calif., assignors to The Regents of The University of California, Berkeley, Calif.

Filed Dec. 4, 1984, Ser. No. 677,841

Int. Cl.[4] A01N *65/00*

U.S. Cl. 424—195.1 **7 Claims**

1. A method for obtaining ovipositional disruption of navel or orangeworm, comprising

permeating the air of an almond orchard area where egg-laying by the moth of the navel orangeworm is expected, by a composition of matter incorporating as an active ingre-

dient an effective amount of a water emulsion of crude almond oil.

4,605,561

FONDANT AND FOOD BARS PRODUCED THEREFROM

Kevin W. Lang, Rivervale, N.J., assignor to General Foods Corporation, White Plains, N.Y.

Filed Apr. 15, 1985, Ser. No. 723,596

Int. Cl.[4] A23G *3/00*

U.S. Cl. 426—93 9 Claims

1. A polyhydric alcohol-free cooked fondant, which has a moisture content of 10–15%, useful in the production of food bars, produced by cooking, at from 227° to 234° F. for not more than 4 minutes, a mixture comprising:

(a) 15–20% granulated sugar;

(b) 10–35% of a 42–75 DE corn syrup containing from 70 to 81% solids;

(c) 5–25% of a 20–42 DE dextrin;

(d) 5–20% fat;

(e) 15–40% other sweeteners; and

(f) 8–15% added water.

4,605,562

HIGH SPEED EGG BREAKING METHOD

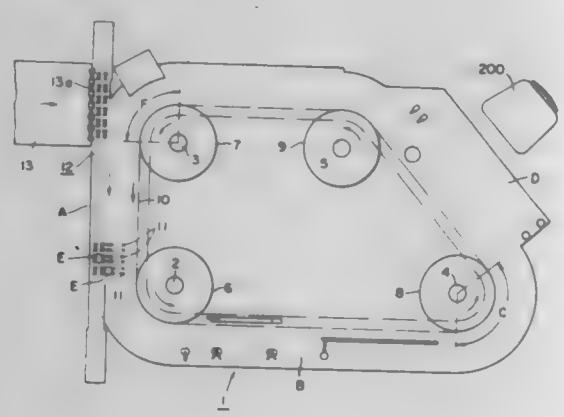
Gen Fujimura; Koichi Sotoma, both of Tokyo; Hiroshi Kunikyo; Masahito Hata, both of Yokohama, and Hidesuke Inoue, Tokyo, all of Japan, assignors to Kewpie Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 493,576, May 11, 1983, Pat. No. 4,534,284. This application Jun. 12, 1985, Ser. No. 731,731

Claims priority, application Japan, May 11, 1982, 57-78747; Jun. 12, 1982, 57-100981; Jun. 20, 1982, 57-110047; Aug. 18, 1982, 57-124087

Int. Cl.[4] A23J *1/09*

U.S. Cl. 426—299 9 Claims



1. A high-speed egg-breaking method comprises the steps of:

(a) transporting a multiplicity of shell eggs in successive transverse rows on an infeed conveyor;

(b) transferring each transverse row of shell eggs at one time from the infeed conveyor onto a transfer conveyor, the transfer conveyor extending at a right angle with the infeed conveyor, whereby the successive transverse rows of shell eggs on the infeed conveyor are rearranged into a single longitudinal row on the transfer conveyor;

(c) transferring the single longitudinal row of shell eggs from the transfer conveyor onto respective egg breaker assemblies being carried by a breaker conveyor along the transfer conveyor, the breaker conveyor being arranged to travel endlessly along a predetermined path including a linear portion extending along the transfer conveyor, the transfer conveyor being linearly arranged along the forward end of the infeed conveyor and the linear portion of the breaker conveyor, the shell eggs being transferred from the transfer conveyor onto the egg breaker assemblies while the transfer conveyor and the linear portion of the breaker conveyor are traveling side by side, in the same direction, and at the same speed;

(d) breaking the shell eggs by the egg breaker assemblies for the recovery of the white and yoke therefrom, the white and yoke of the shell eggs being recovered separately in the vertical direction below the breaker assemblies; and

(e) removing the broken egg shells from the egg breaker assemblies.

4,605,563

PROCESS FOR INCREASING THE VISCOSITY OF OILS

Christian Heine, Monheim, and Reinhold Wüst, Kaarst, both of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Fed. Rep. of Germany

Filed Oct. 19, 1984, Ser. No. 663,018

Claims priority, application Fed. Rep. of Germany, Nov. 10, 1983, 3340680

Int. Cl.[4] A23D *5/02*

U.S. Cl. 426—607 4 Claims

1. A process for increasing the viscosity of, or thickening, oils comprising adding to a low viscosity oil (A) from 1% to 10% by weight, based on the final composition, of a high-melting glyceride of saturated fatty acids having a chain length of from C_{14} to C_{24} and a melting point of above 50° C. to 90° C. selected from the group consisting of monoglyceride of palmitic acid, diglyceride of palmitic acid, triglyceride of palmitic acid, monoglyceride of stearic acid, diglyceride of stearic acid, triglyceride of stearic acid, monoglyceride of hydroxystearic acid, diglyceride of hydroxystearic acid, triglyceride of hydroxystearic acid, monoglyceride of behenic acid, diglyceride of behenic acid, triglyceride of behenic acid and mixtures thereof, and (B) from 2% to 10% by weight, based on the final composition, of a highly dispersed, pyrogenic silica having submicron particles, where the weight ratio of (A) to (B) is between 25:75 and 50:50, and recovering an oil having an increased viscosity.

4,605,564

COATING PROCESS FOR MAKING ANTIMICROBIAL MEDICAL IMPLANT DEVICE

James P. Kulla, Perrysburg, and Norman J. Huff, Swanton, both of Ohio, assignors to Biological & Environmental Control Laboratories, Inc., Toledo, Ohio

Filed Jan. 23, 1984, Ser. No. 572,744

Int. Cl.[4] A01N *1/02*

U.S. Cl. 427—2 4 Claims

1. A process for making an antimicrobial medical implant device comprising the steps of:

providing a medical implant device formed of a composition comprising a medical grade polymer or latex;

treating said polymer or latex with a solution of para-chloro-meta-xylenol having a very low solubility in water and aqueous body fluids, with the para-chloro-meta-xylenol dissolved in an organic solvent to cause swelling of the polymer or latex;

thereafter removing the solvent from the solution to trap or precipitate the para-chloro-meta-xylenol in the polymer or latex structure;

whereby the para-chloro-meta-xylenol is impregnated within the structure of the polymer or latex.

4,605,565

METHOD OF DEPOSITING A HIGHLY CONDUCTIVE, HIGHLY TRANSMISSIVE FILM

Prem Nath, Rochester, Mich., assignor to Energy Conversion Devices, Inc., Troy, Mich.

Filed Dec. 9, 1982, Ser. No. 448,139

Int. Cl.[4] B05D *3/06*

U.S. Cl. 427—39 13 Claims

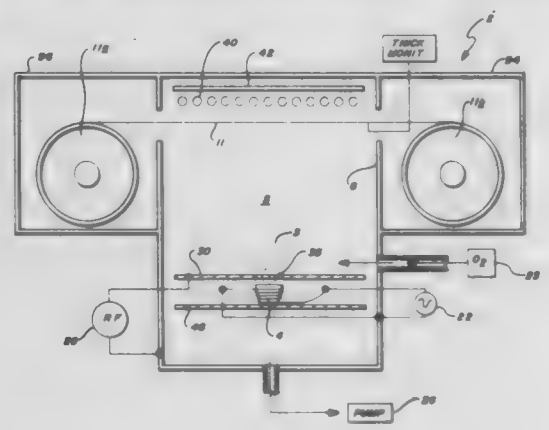
1. An improved method of depositing a thin, light transmissive, electrically conductive film onto a substrate said method consisting essentially of the steps of:

vacuumizing a chamber;

supporting an electrically conductive substrate in the chamber;

providing a source of metallic material, the oxide of said metallic material being conductive when deposited as a film by the subsequent process steps;

evaporating the metallic material in the vacuumized chamber for producing a metallic vapor in the zone formed between the substrate and the source of metallic material;



introducing oxygen gas into the zone;

disposing an r.f. powered cathode adjacent the source of metallic material; and

energizing the cathode to develop an ionized plasma from the oxygen gas atoms introduced into the zone and the metallic atoms evaporated into the zone, whereby a conductive metal oxide film is deposited onto the substrate.

4,605,566

METHOD FOR FORMING THIN FILMS BY ABSORPTION

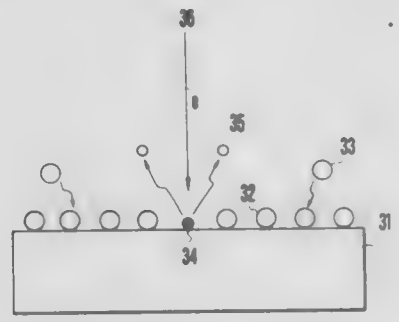
Shinji Matsui; Susumu Asada, and Katsumi Mori, all of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Aug. 22, 1984, Ser. No. 643,194

Claims priority, application Japan, Aug. 22, 1983, 58-152713; Aug. 31, 1983, 58-159814

Int. Cl.[4] B05D *3/06*

U.S. Cl. 427—43.1 **9 Claims**



1. A method of forming a film on a substrate, comprising the steps of:

placing the substrate in an atmosphere of gas containing molecules of a material that, upon decomposition, yield an element for forming a film on the substrate;

allowing said molecules to be absorbed by the substrate; and

decomposing said molecules into said element and a volatile material at patternwise locations on said substrate by irradiating said patternwise locations with an electron beam;

whereby said element forms a film on said predetermined portions of said substrate and said volatile material is discharged from said substrate.

4,605,567

CROSSLINKABLE ORGANOPOLYSILOXANES AND A METHOD FOR PREPARING THE CROSSLINKABLE ORGANOPOLYSILOXANES

Johann Müller; Christa Trieschmann, and Gerhard Preiner, all of Burghausen, Fed. Rep. of Germany, assignors to Wacker-Chemie GmbH, Munich, Fed. Rep. of Germany

Filed Sep. 30, 1985, Ser. No. 781,168

Claims priority, application Fed. Rep. of Germany, Dec. 27, 1984, 3447457

Int. Cl.[4] B05D *3/06*

U.S. Cl. 427—54.1 **18 Claims**

1. Crosslinkable organopolysiloxanes having the formula selected from the group consisting of

$$A_xR_{3-x}SiO(SiR_{2-x}A_xO)_nSiR_{3-x}A_x$$

and

$$(SiR_{2-x}A_xO)_y,$$

where R is selected from the group consisting of a monovalent hydrocarbon radical, a halogenated monovalent hydrocarbon radical and a monovalent aliphatic radical containing carbon, hydrogen, ether oxygen and fluorine atoms; A represents a SiC-bonded organic radical containing a carboxyl group and a carbonyl group to which is bonded an organic radical having at least one terminal carbon-carbon double bond; n is an integer having a value of at least 1; x is 0 or 1; and y is an integer having a value of from 3 to 10, in which the organopolysiloxanes contain at least one radical A per molecule.

4,605,568

APPLICATION OF FOAM TO IMPROVE FLOW CHARACTERISTICS OF WATER-INSOLUBLE PRODUCTS

Alfred E. Kober, Bridgewater, N.J., assignor to Apollo Technologies Int'l Corp., Morris Plains, N.J.

Filed May 2, 1985, Ser. No. 729,804

Int. Cl.[4] B05D *7/00;* **C09K** *3/00*

U.S. Cl. 427—220 **15 Claims**

1. The method of improving the flow characteristics of a mass of wet, water-insoluble solid particles having a size of approximately 4 mesh or larger which comprises (a) applying to said particles a foam of a substance having the property of improving the flow characteristics of said particles when applied in a non-foamed condition, said substance being selected from the group consisting of methyl and dimethyl napthalene sulfonates and ethoxylated linear secondary (C_{11}–C_{15}) alcohols, said water solution having a low viscosity, a high flash point and low toxicity, and (b) causing said mass of particles to flow from one location to another, whereby caking tendencies of the wet particles are inhibited, and freedom of flow of said particles between said locations is enhanced to a substantially greater degree than if said substance had not been applied as a foam.

4,605,569

METHOD AND APPARATUS FOR PANEL WIPING OPERATION

Yoshitaka Shimada, Yokohama; Kimihiro Kadowaki, Musashimurayama, and Teruo Inouchi, Izumiotsu, all of Japan, assignors to Nissan Motor Co., Ltd., Yokohama and Sunrise Meisei Corporation, Sakai, both of, Japan

Filed Nov. 21, 1983, Ser. No. 553,995

Claims priority, application Japan, Nov. 25, 1982, 57-205385; Nov. 25, 1982, 57-205386; Nov. 25, 1982, 57-206602

Int. Cl.[4] B05D *5/00, 1/28;* **B05C** *11/00;* **B25J** *9/00*

U.S. Cl. 427—256 **16 Claims**

1. A method of performing repetitive cycles of panel coating operation using a programmable manipulator including a manipulator arm movable along a plurality of axes, said manipula-

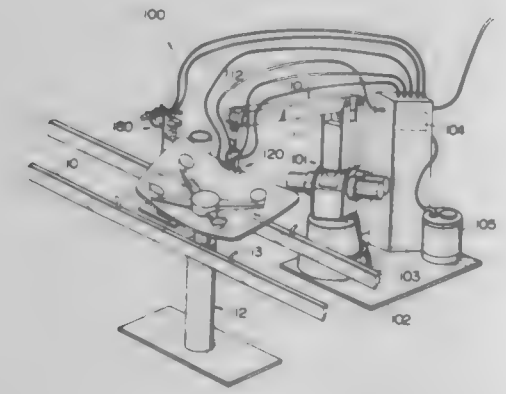
tor arm carrying thereon a hand unit holding a coating brush, comprising the steps of:

(a) moving said manipulator arm by means of a program into a position where said coating brush comes into resilient contact with an area of said panel to be coated;

(b) injecting coating material into said brush at a predetermined rate;

(c) holding said brush in resilient, sliding contact with said panel, while moving said manipulator arm by means of said program about said panel to coat a preselected area of said panel; and

(d) moving said manipulator arm by means of said program to move said brush out of contact with said panel when said preselected area is coated.



6. An apparatus for perfoming repetitive cycles of panel coating operation using a programmable manipulator including a manipulator arm movable along a plurality of axes and control means for controlling movement of said manipulator arm as programmed during an initial teaching operation, comprising:

(a) a hand unit carried on said manipulator arm for movement in unison therewith, said hand unit holding a coating brush;

(b) said control means including means for controlling movement of said manipulator arm to slide the coating brush on an area of a panel which requires coating; and

(c) a coating supplier for supplying a coating material at a predetermined rate to the coating brush during the sliding movement of the coating brush on the panel.

4,605,570

EPOXY-PHOSPHATE CERAMIC COMPOSITIONS AND METHODS OF PREPARATION

Richard E. Felter, East Hempfield Township, Lancaster County, and Dean A. Markley, Mountville, both of Pa., assignors to Armstrong World Industries, Inc., Lancaster, Pa.

Filed Aug. 9, 1985, Ser. No. 763,999
Int. Cl.[4] C08K *3/34, 3/32;* B05D *3/02*
U.S. Cl. 427—386 **36 Claims**

25. A process for preparing a coated substrate, said process comprising the steps of

selecting an epoxy resin and components suitable to provide a rigid, water-resistant phosphate ceramic material, said components comprising phosphoric acid, a metal oxide and calcium silicate;

intermixing said resin and said components to provide a substantially uniform coating composition;

disposing said composition on a substrate to be coated;

permitting said composition to self-cure on said substrate; and

optionally, applying a post-cure heat treatment to completely cure said composition.

4,605,571

PROCESS FOR IMPROVING ABRASION RESISTANCE OF TEXTILE BELTS

Akio Watanabe, Kyoto, and Sumio Goto, Moriyama, both of Japan, assignors to Dai-Ichi Kogyo Seiyaku Co., Ltd., Kyoto, Japan

Filed Feb. 14, 1985, Ser. No. 701,524
Claims priority, application Japan, Feb. 17, 1984, 59-29085
Int. Cl.[4] B05D *3/02*
U.S. Cl. 427—387 **9 Claims**

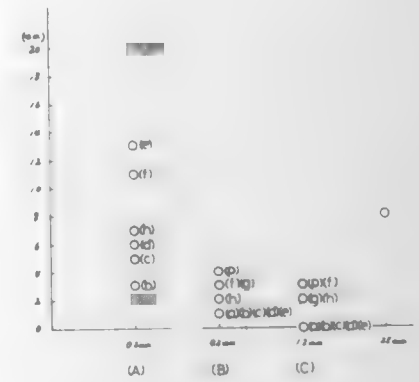
1. A process for improving the abrasion resistance of a textile belt which comprises treating a textile belt with an aqueous composition consisting essentially of a water-soluble or water-dispersible and heat-reactive blocked urethane prepolymer having an organosiloxane structure, and subjecting the treated textile belt to a heat treatment.

4,605,572

PROCESS FOR INHIBITING CORROSION OF STEEL MATERIALS BUILT IN INORGANIC MATERIALS

Kazuo Omata, Ichikawa; Toshihiko Shimizu, Narashino; Hiroshi Ibe, Higashikurume, and Kenji Hara, Chiba, all of Japan, assignors to Onoda Construction Materials Co., Ltd., Tokyo, Japan

Filed Mar. 12, 1985, Ser. No. 711,117
Claims priority, application Japan, Mar. 29, 1984, 59-59351
Int. Cl.[4] B05D *1/36*
U.S. Cl. 427—403 **5 Claims**



1. A process for inhibiting corrosion of steel materials built in inorganic materials, which comprises subjecting the surface of an inorganic material having a steel material built therein by applying an aqueous solution of calcium nitrite which has a corrosion-inhibiting effect on said steel material to the surface of the inorganic material to impregnate said inorganic material with the solution.

4,605,573

METHODS AND APPARATUS FOR APPLYING A FINISH LIQUID TO A BUNDLE OF FILMENTARY MATERIAL

Martin H. G. Deeg, Maplewood; Gunilla E. Gillberg-LaForce, Summit, and Alan Buckley, Berkeley Heights, all of N.J., assignors to Celanese Corporation, New York, N.Y.

Filed Feb. 11, 1985, Ser. No. 700,563
Int. Cl.[4] B05D *1/00*
U.S. Cl. 427—424 **14 Claims**

1. A method for applying a finish liquid to a bundle of running filamentary material, said method comprising the steps of:

running said bundle of filamentary material in monolayer form through a common passage,

conducting finish liquid under pressure through a supply duct and into at least two side-by-side capillaries which communicate with said duct and are each less than 0.06 inches in diameter and which are separated by a divider wall which terminates short of outlet ends of said capillaries whereby said outlet ends of said capillaries define part of a common slot, said slot being elongate transversely of the direction of travel of said filamentary material through

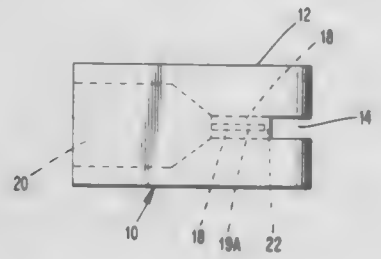
said passage and having a cross-sectional area greater than the combined cross-sectional areas of said capillaries,

liquid finish being discharged from said slot and onto the running monolayer of filamentary material.

7. An applicator for applying a finish liquid to a bundle of running filamentary material, said applicator comprising:

housing means having a passage formed therein, the width of said passage being at least as great as the sum of the diameters of the filamentary material so that the filamentary material forms a monolayer while running through said passage,

a supply duct, at least two capillaries extending side-by-side



through said housing means, said capillaries each having an inlet end communicating with said supply duct for receiving therefrom finish liquid under pressure and an outlet end, said capillaries being separated by divider wall means which terminates short of outlet ends of said capillaries such that said outlet ends define part of a common slot from which the finish liquid is discharged onto the running monolayer of filamentary material, said capillaries each having a diameter less than 0.06 inches, and said slot being elongate transversely of the direction of travel of said filamentary material through said passage and having a cross-sectional area greater than the combined cross-sectional areas of said capillaries.

4,605,574

METHOD AND APPARATUS FOR FORMING AN EXTREMELY THIN FILM ON THE SURFACE OF AN OBJECT

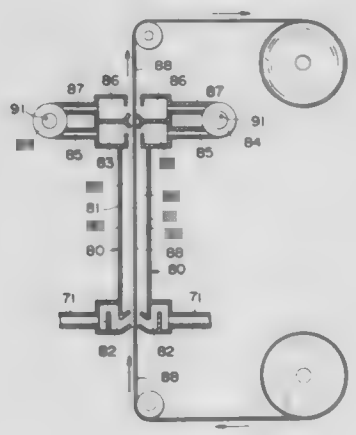
Takashi Yonehara, 26-3, Ontamachi 5-chome, Higashimurayama-shi, Tokyo, and Kanji Hayashi, 10-2, Omorihoncho 2-chome, Ota-ku, Tokyo, both of Japan

Filed Aug. 30, 1982, Ser. No. 412,988

Claims priority, application Japan, Sep. 14, 1981, 56-143817; Oct. 6, 1981, 56-159251; Nov. 5, 1981, 56-164354[U]; Nov. 16, 1981, 56-169468[U]; Dec. 12, 1981, 56-183102[U]; Mar. 17, 1982, 57-40842; Apr. 12, 1982, 57-51830[U]; Apr. 12, 1982, 57-51831[U]

Int. Cl.⁴ B05D *1/02, 1/04*

U.S. Cl. 427—424 **1 Claim**



1. A method for the surface treatment of an object comprising dissolving a small quantity of surface active agent consisting of fluorine surfactant in a solvent along with a treatment agent to form a solution having a surface tension of less than 30 dyne/cm, passing ultrasonic waves through the solution to form an aerosol above the surface of the solution having a uniform particle size of less than 5 μm, drawing the aerosol above the solution to a treatment chamber, passing the object through the treatment chamber to bring the object into contact with the aerosol to form a thin film of less than 400 nm thick on the object, the treatment chamber being elongated, the object to be treated being elongated, passing the object to be treated through the elongated treatment chamber while heaving a gap between at least one side of the object and the treatment chamber, supplying aerosol to an end of the treatment chamber which is upstream of the direction of movement of the object through the treatment chamber, introducing air into the treatment chamber for diluting the aerosol therein downstream of the point where the aerosol is being supplied to the treatment chamber, at a downstream end of the treatment chamber, removing the aerosol from the treatment chamber, diluting the aerosol with air and returning the diluted aerosol to the treatment chamber near the downstream end of the treatment chamber.

4,605,575

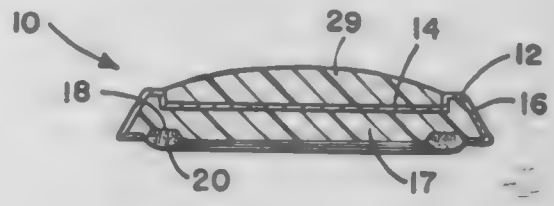
DECORATIVE EMBLEMS

David L. Auld, and Robert E. Waugh, both of Columbus, Ohio, assignors to The D. L. Auld Company, Columbus, Ohio

Continuation of Ser. No. 158,957, Jun. 12, 1980, abandoned, which is a continuation of Ser. No. 968,280, Dec. 11, 1978, abandoned. This application Apr. 25, 1985, Ser. No. 727,364

Int. Cl.⁴ A47G *35/00;* **A60R** *13/04*

U.S. Cl. 428—14 **4 Claims**



1. A complete, capped decorative emblem for attachment to an intended surface such as an automobile or appliance comprising a lens cap formed on a shaped foil substrate by the steps of:

(a) printing a decorative design on the upper surface of a foil substrate;

(b) forming said foil substrate into an emblem shape with an integral bezel peripherally around said decorative design;

(c) casting a fluent plastic material directly onto said upper surface of said foil so that it completely cover said decorative design and forms a meniscus-shaped lens cap within said peripheral bezel; and

(d) curing said fluent plastic so that it gives a lens effect to said decorative design beneath it.

4,605,576

MULTILAYER PLASTIC ARTICLES

Saleh A. Jabarin, Holland, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Oct. 22, 1984, Ser. No. 663,636

Int. Cl.⁴ B27N *5/02*

U.S. Cl. 428—35 **30 Claims**

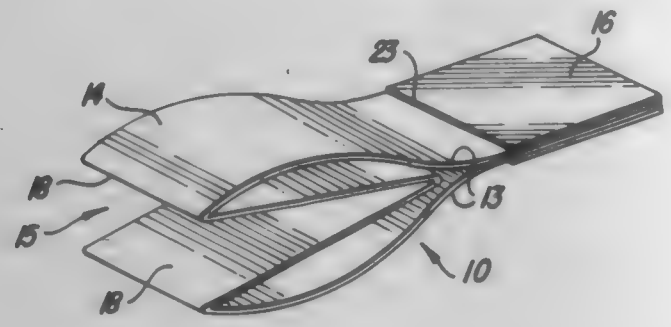
1. A multilayer plastic structure comprising a laminate of at least one layer of a high gas barrier polymer and at least one layer of an intimate blend of at least one propylene based polymer and at least one linear low density polyethylene wherein the total amount of the linear low density polyethylene is equal to or less than about 30 percent by weight of said blend, the structure having an outstanding balance of properties including gas barrier resistance including permeability to oxygen of not more than 3 cc-mil/100 sq. in. day, resistance to delamination, top load strength and low temperature drop impact resistance according to ASTM test 2463-74.

4,605,577

DOUBLE-FACED ADHESIVE TAPE SECURING SYSTEM AND METHOD OF USING SAME

Steven H. Bowytz, 146 Slater Dr., Pittsburgh, Pa. 15236

Filed Mar. 19, 1985, Ser. No. 713,614
Int. Cl.[4] B32B *7/06, 7/10, 31/04*
U.S. Cl. 428—40 12 Claims



1. A packaging system for double-faced adhesive tape, comprising:

means for covering both adhesive faces of the tape said covering means including a non-stick coating and comprising a strip of material folded in a W-shape to form a pocket for receiving the double-faced adhesive tape; and

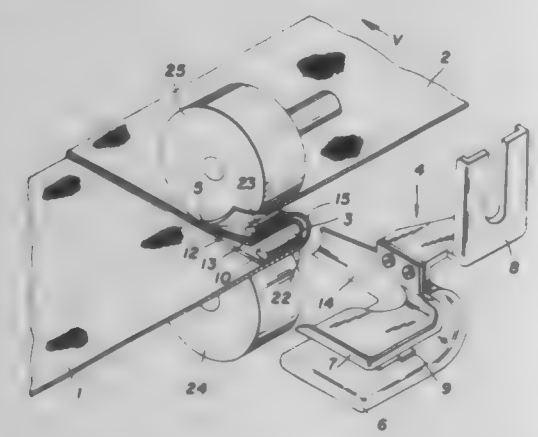
means connected to the covering means for removing said covering means from both faces of the tape simultaneously.

4,605,578

METHOD AND APPARATUS FOR CONNECTING TOGETHER MATERIAL PLIES WHICH ARE UNILATERALLY THERMOPLASTICALLY COATED

Reinhard Emrich, Kaiserslautern, and Kurt Appel, Reichenbach-Steegen, both of Fed. Rep. of Germany, assignors to Pfaff Industriemaschinen GmbH, Fed. Rep. of Germany

Division of Ser. No. 611,411, May 17, 1984, abandoned. This application Sep. 7, 1984, Ser. No. 648,697
Claims priority, application Fed. Rep. of Germany, May 20, 1983, 3318471
Int. Cl.[4] B32B *3/04, 3/06, 7/10, 7/14*
U.S. Cl. 428—57 4 Claims



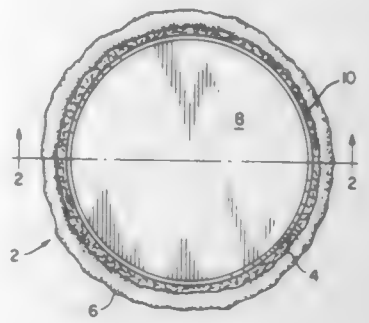
1. A fabric material connection for clothing comprising a first ply having a bottom which is coated with a thermoplastic and being folded along one edge upon itself to form a pocket, a thermoplastic strip folded lengthwise to form two leg portions and positioned in said pocket and a second ply having an edge portion overlying the folded-over portion of the first ply which is coated with a thermoplastic material on its overlying portion and is heat-sealed to said folded-over portion of said second ply and said strip and said folded-over portion are heat-sealed to the underlying portion of said first ply, said two leg portions of said strip being in direct contact with each other and heat sealed to each other.

4,605,579

DECORATIVE HEAT RETAINING PIZZA COVER

Michael Armeno, 508 E. Lincoln Ave., Cranford, N.J. 07016, and Ralph L. Parla, 4080 E. Ridgewood Ave., Las Vegas, Nev. 89120

Filed Aug. 19, 1985, Ser. No. 766,524
Int. Cl.[4] B65D *51/00*
U.S. Cl. 428—66 6 Claims



1. A cover for a pizza of the type which is baked so as to have a relatively soft inner portion and a relatively hard crust surrounding the soft inner portion, characterized by:

a top member substantially the size and shape of the soft inner portion;

a plurality of standoffs integral with the top member and engaging the soft inner portion just before the hard crust so as to support the top member above the soft inner portion; and

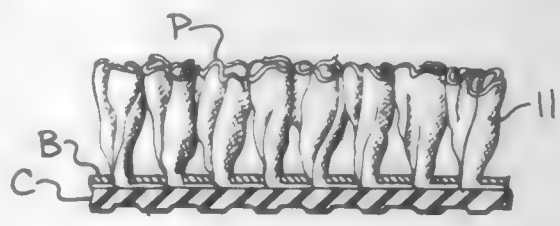
the cover being of a material having a relatively low heat transfer characteristic, whereby the cover tends to retain heat within the pizza which has been imparted to the pizza when said pizza is baked.

4,605,580

PILE FABRIC FORMED FROM FABRIC STRIPS

Thomas C. Goolsby, Dalton, and Dock Sanford, Ellijay, both of Ga., assignors to Cannon Rug Company, Dalton, Ga.

Filed Aug. 23, 1985, Ser. No. 768,860
Int. Cl.[4] B32B *3/02, 33/00*
U.S. Cl. 428—92 11 Claims



1. A tufted pile fabric comprising a backing and a plurality of fabric strips tufted into said backing and forming a pile surface on one face of said backing, said fabric strips each including a base portion of condensed strand configuration penetrating the backing and an upstanding cut pile tuft portion extending from said one face of said backing of uncondensed strip-like configuration.

4,605,581

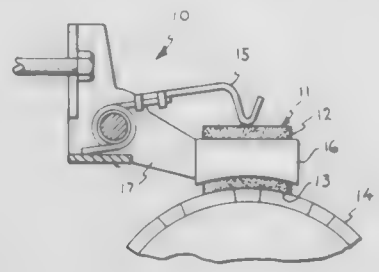
METHOD OF TREATING A CARBON CURRENT COLLECTION BRUSH BLANK AND BRUSH RESULTING THEREFROM

Robert W. Stevens, Bartonville, Pa., and Mark Markovitz, Schenectady, N.Y., assignors to General Electric Company, Salem, Va.

Filed Aug. 20, 1985, Ser. No. 767,397
Int. Cl.[4] B44D *1/20, 1/46*
U.S. Cl. 428—96 43 Claims

32. A current collection brush for use with dynamoelectric machines comprising a carbon brush blank impregnated with

the combination of an organometallic compound and an organic resin wherein the impregnating materials constitute



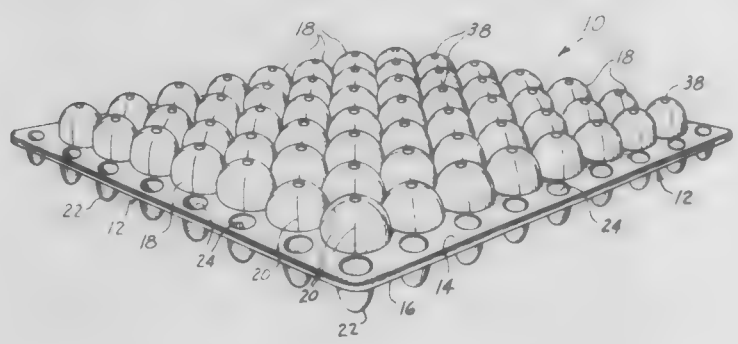
approximately one to nine percent of the total weight of the brush.

4,605,582

BODY SUPPORT PAD

Ralph M. Sias; Nancy J. Hurley, both of North Hollywood, Calif., and Melvin W. Dalebout, Salt Lake City, Utah, assignors to American Hospital Supply Corporation, Deerfield, Ill.

Filed May 23, 1985, Ser. No. 737,373
Int. Cl.[4] A61G *7/02;* A47C *27/22*
U.S. Cl. 428—120 **34 Claims**



1. A body support pad comprising:

a generally planar flexible base member having an upper surface and a lower surface;

a plurality of pillar means extending outwardly from the lower surface and arranged in discrete arrays of pillar means of substantially similar character for substantially evenly contacting any supportive surface upon which the pad is placed while a body is supported on the pad and for providing different resistive forces in each of such discrete arrays of pillar means; and

a plurality of pod means extending outwardly from the upper surface and arranged in discrete arrays wherein each array of pod means provides different resistive forces to the body but wherein such resistive forces are applied generally normal to the body and wherein the pod means are axially offset from the pillar means on the respective upper and lower surfaces.

4,605,583

HEAT INSULATING MODULE FOR A HIGH TEMPERATURE CHAMBER

Carl E. Frahme, Canyon Country, Calif., assignor to Industrial Insulations, Inc., City of Industry, Calif.

Filed Jul. 30, 1984, Ser. No. 635,974
Int. Cl.[4] B32B *3/02;* E04B *1/62, 1/80*
U.S. Cl. 428—126 **7 Claims**

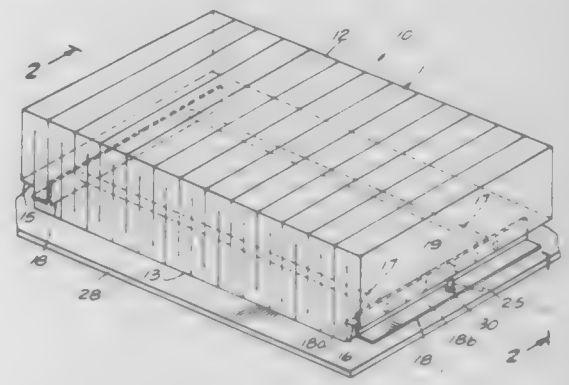
1. A heat insulating module for use in lining a high temperature chamber comprising:

a blanket of refractory fibers folded into a plurality of adjacent layers interconnected along the lateral edges of said layers by folds the outermost portions of alternate ones of which folds lie generally in spaced apart first and second parallel planes;

the opposite ends of said folded blanket spaced inwardly from the first one of said planes;

a plurality of L-shaped module mounting members having a first leg of each extending crosswise of a respective end of said blanket and a second leg of each lying coplanar with the interface between a respective adjacent pair of said blanket layers;

a plurality of tie members extending crosswise of said blanket layers and through a respective opening in said second legs of said L-shaped members and secured against disassembly therefrom and having a length effective to hold the layers of said blanket traversed thereby snugly pressed together; and



said first legs of said L-shaped mounting members lying generally coplanar with said first plane and provided with fastener means for securing said mounting members to a chamber side including a plurality of studs provided along one end thereof with a ring of low-height sharp edged axial flutes, said one end of said studs being rigidly securable normal to the inner wall of a high temperature chamber, and said first leg of said mounting members having an opening to receive said studs, and ring-like retainer means adapted to be forcibly assembled over said flutes and cooperating therewith to hold said mounting members assembled thereto.

4,605,584

DECORATIVE MATERIALS COMPRISING CRINKLED CHIPS

Richard E. Herr, Jr., Lancaster; William J. Kauffman, Penn Township, Lancaster County, and Cheryl W. Landers, Mountville, all of Pa., assignors to Armstrong World Industries, Inc., Lancaster, Pa.

Filed Dec. 3, 1984, Ser. No. 677,819
Int. Cl.[4] B32B *3/00, 27/08, 27/20, 27/22*
U.S. Cl. 428—142 **15 Claims**

1. A compounded mottle derived from

(a) a chip material having a substantially smooth reflective surface and exhibiting pearlescent or metallic properties, said chip material being large enough to be retained on a 25-mesh screen (U.S. Standard) but being not greater than about 0.25 inch in diameter and being derived from a particulate material having reflective or pearlescent properties, a millable general purpose resin, and a plasticizer;

(b) a particulate vinyl resin, and

(c) a plasticizer, said particulate resin and proportions of (a), (b) and (c) being selected such that said mottle is amenable to processing at 300° F. to provide a transparent vinyl matrix wherein said chips exhibit an enhanced crinkled appearance relative to the appearance of the uncompounded chips, said mottle being in a loose, unconsolidated form.

7. A surface covering comprising enhanced visual effects, said covering comprising a consolidated compounded mottle comprising chips which exhibit a crinkled appearance, said mottle being derived from

(a) a chip material having a substantially smooth and reflective surface and exhibiting pearlescent or metallic properties, said chip material being large enough to be retained

on a 25-mesh screen (U.S. Standard) but being not greater than about 0.25 inch in diameter and being derived from a particulate material having reflective or pearlescent properties, a millable general purpose resin, and a plasticizer;

(b) a particulate vinyl resin, and

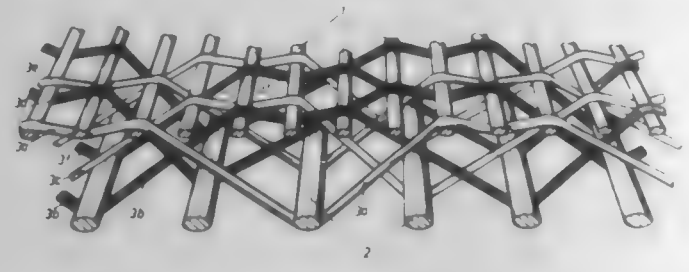
(c) a plasticizer, said particulate resin and proportions of (a), (b) and (c) being selected such that said mottle is amenable to processing at 300° F. to provide a transparent vinyl matrix wherein said chips exhibit an enhanced crinkled appearance relative to the appearance of the uncompounded chips, said surface covering being in consolidated sheet form.

4,605,585

FORMING FABRIC

Arne B. Johansson, Halmstad, Sweden, assignor to Nordiskafilt AB, Halmstad, Sweden

Filed Apr. 4, 1983, Ser. No. 481,901
Claims priority, application Sweden, Apr. 26, 1982, 8202578
Int. Cl.[4] B01D *39/08;* D03D *15/00;* D21F *7/08*
U.S. Cl. 428—224 5 Claims



1. An improved open mesh fabric for papermaking cellulose and similar machines, said fabric comprising:

a first system of synthetic yarns, said first system forming a layer which in position of use of said fabric faces the material to be formed;

a second system of synthetic yarns, said second system forming a layer which in position of use of said fabric faces the dewatering elements of said machine;

a third system of synthetic yarns in cross direction to said first and second systems, said third system interwoven with and interconnecting said first and second systems; and

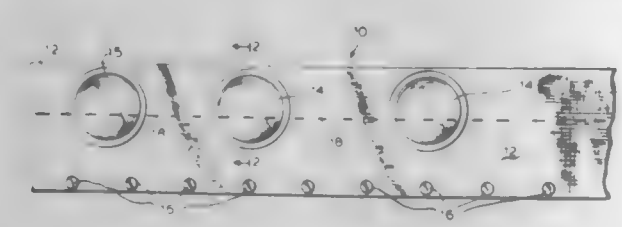
said third system consists of pairs of first and second yarns, said first and second yarns of each said pair together and alternately forming a pattern in the same phase in the face of said fabric which in position of use is to face the material to be formed and with first and second yarns of other pairs of adjoining yarns form a regular pattern when woven with said first system.

4,605,586

FIRE RESISTANT OIL SPILL BARRIER

Peter Lane, Orchard Park, N.Y., assignor to Globe International Inc., Buffalo, N.Y.

Filed Jul. 1, 1985, Ser. No. 750,292
Int. Cl.[4] B32B *5/16*
U.S. Cl. 428—240 7 Claims



1. A fire-resistant, portable, barrier for the containment of marine oil spills, which comprises;

(A) a continuous length of a fire-resistant fabric comprising interwoven yarns of heat-resistant material, coated with a liquid-impermeable film;

said fabric being impermeable to a hydrocarbon petroleum oil;

(B) a plurality of buoyant bodies attached to said fabric in a quantity and at positions sufficient to buoy the length of fabric on a body of water; and

(C) means for stabilizing the length of fabric when buoyed upon said body of water.

4,605,587

FLUOROCHEMICAL COMPOSITION FOR COATING SOIL RESISTANT YARN

Robert H. Thomas, Columbia, S.C.; Willis B. Hammond, Chatham, N.J.; Michael P. Friedberger, and William A. Archie, both of Petersburg, Va., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Filed Feb. 19, 1982, Ser. No. 350,544
Int. Cl.[4] B32B *7/00;* C07C *69/76;* D06M *13/34*
U.S. Cl. 428—265 17 Claims

1. A composition of matter comprising 90 to 50 percent by weight of fluorocarbon compounds of a mixture of meta and para pyromellitates having the structure

I.



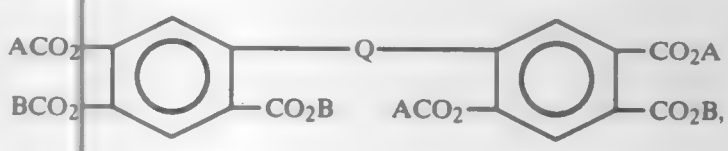
and

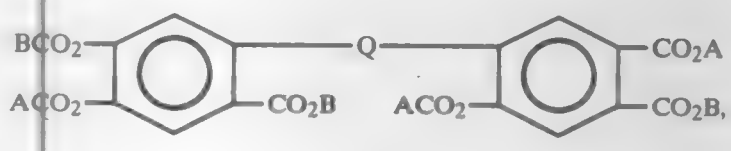
II.

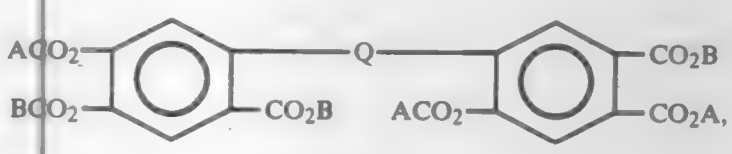


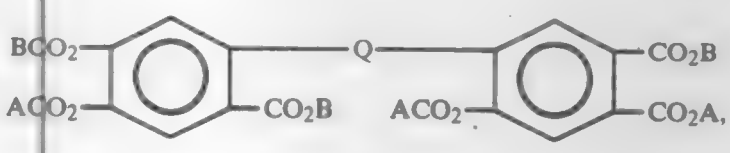
and 10 to 50 percent by weight of fluorocarbon compounds of a dimer of the same pyromellitates selected from the group consisting of

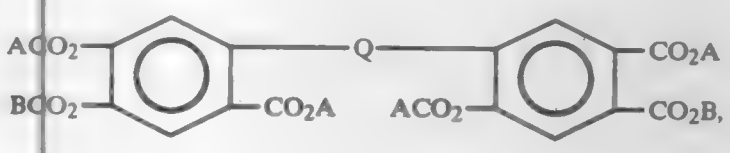
III.

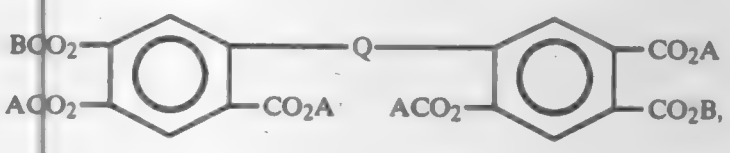




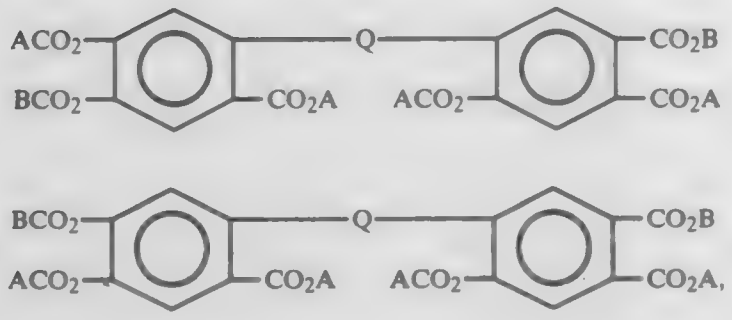




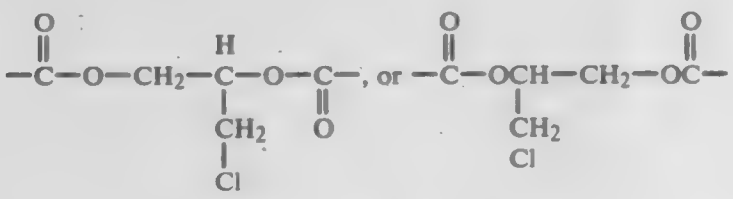




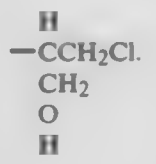
-continued



and mixtures thereof, wherein Q is



wherein A is $(CH_2)_2(CF_2)_nCF_3$ where n is 5 to 13 and B is $CH_2CHOHCH_2Cl$, and/or



4,605,588

BARRIER COATED CERAMIC FIBER AND COATING METHOD

Frederick H. Simpson, Seattle, and Juris Verzemnieks, Tacoma, both of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Mar. 14, 1985, Ser. No. 711,898
Int. Cl.⁴ D04H *1/58;* B32B *9/00*
U.S. Cl. 428—288 **24 Claims**

1. A method for coating a ceramic fiber that contains boron with boron nitride comprising the step of heating the fiber in the presence of a nitriding atmosphere to diffuse boron in the fiber to the fiber surface without forming liquid boron oxide or boric acid that can degrade the fiber and to react the boron at the surface with a suitable source of nitrogen in the atmosphere, the reaction occuring at a temperature of at least about 2200° F.

4,605,589

VINYL ACETATE-ETHYLENE COPOLYMER BINDER EMULSIONS FOR MEDICAL-SURGICAL NONWOVEN FABRICS

Gus G. Orphanides, Allentown, Pa., assignor to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Oct. 25, 1984, Ser. No. 664,816
Int. Cl.⁴ C08L *23/08, 31/04, 29/04*
U.S. Cl. 428—290 **22 Claims**

1. A vinyl acetate-ethylene copolymer binder emulsion for nonwoven products comprising an aqueous colloidal dispersion of a copolymer containing 50 to 80 wt % vinyl acetate and 20 to 50 wt % ethylene, based on monomers, prepared by the emulsion polymerization of the vinyl acetate and ethylene monomers in the presence of a stabilizingly effective amount of a stabilizing composition consisting essentially of a polyvinyl alcohol which is 50 to 99 mole % hydrolyzed and has about a 100 to 375 degree of polymerization.

4,605,590

RUBBER/METAL COMPOSITES

Jean-Marc Delseth, Gembloux; Albert F. Devaux, Mont Saint Guibert, and Eric R. Lynch, Brussels, all of Belgium, assignors to Monsanto Europe S. A., Brussels, Belgium

Filed Aug. 12, 1985, Ser. No. 764,706
Claims priority, application United Kingdom, Aug. 23, 1984, 8421432
Int. Cl.⁴ B32B *15/06, 25/12;* B60C *9/04*
U.S. Cl. 428—295 **16 Claims**

1. A rubber/metal composite comprising a sulphur-vulcanisable rubber composition containing sulphur and a vulcanisation accelerator, a component having a metal surface in contact with the composition and, as a rubber/metal adhesion promoter, a compound having the formula

$$[^{-}O_2C\ CH_2S—B—S\ CH_2CO_2^{-}]\ M^{++}$$

or a hydrate thereof, where B represents a divalent organic radical and M represents cobalt or nickel.

16. An article in which vulcanised rubber is bonded to a metal, the article having been obtained by heating a composite according to claim 1 to vulcanise the rubber.

4,605,591

THERMOPLASTIC RESIN FILM LAMINATE AND PRODUCTION THEREOF

Katsuhiko Nose; Hajime Suzuki, both of Ohtsu, and Osamu Makimura, Ohgaki, all of Japan, assignors to Toyo Boseki Kabushiki Kaisha, Osaka, Japan

Filed Oct. 24, 1984, Ser. No. 664,199
Claims priority, application Japan, Oct. 27, 1983, 58-202015; Dec. 16, 1983, 58-238358; Dec. 28, 1983, 58-249947
Int. Cl.⁴ B32B *27/08, 27/36*
U.S. Cl. 428—332 **12 Claims**

1. A thermoplastic resin film laminate which comprises a thermolastic resin film and a layer of a polyester resin composition provided on at least one surface of the film, said composition consisting essentially of

(A) a water-insoluble polyester copolymer of a mixed dicarboxylic acid component composed of 0.5 to 15 mole% of a dicarboxylic acid having a metal sulfonate group and 85 to 99.5 mole % of aromatic dicarboxylic acid having no metal sulfonate group reacted with a glycol component;

(B) inert particles having an average particle size of 0.01 to 10 microns;

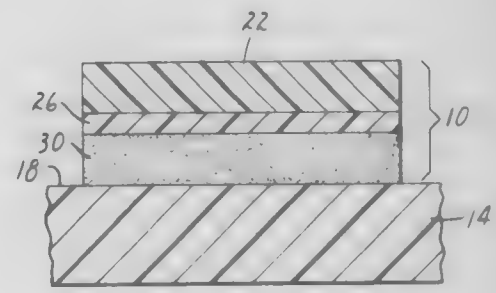
the weight ratio of (A)/(B)=100,000/0.5–3,000.

4,605,592

COMPOSITE DECORATIVE ARTICLE

Susan Z. Paquette, Saint Paul, and Dennis O. Falaas, Stillwater, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 409,496, Aug. 19, 1982, abandoned. This application Apr. 4, 1984, Ser. No. 596,627
Int. Cl.⁴ C09J *7/02;* B32B *27/40*
U.S. Cl. 428—334 **20 Claims**



1. A composite decorative article adapted for adherence to vinyl substrates containing migratable plasticizers, comprising:

(1) a first layer comprising a polyvinyl chloride film;

(2) a second layer of plasticizer tolerant pressure-sensitive

adhesive comprising the reaction product of reactants comprising (a) acrylic acid and/or methacrylic acid and/or acrylamide, and/or methacrylamide (b) an alkylacrylate and/or alkylmethacrylate having at least 4 carbon atoms and wherein the carbon atom attached to the oxy atom of the carbonyloxy group has at least one hydrogen atom attached thereto, and (c) at least one additional ethylenically unsaturated monomer; and

(3) a third layer between said first and second layers, said third layer adapted to inhibit migration of vinyl plasticizers through said third layer, said composite decorative article being wrinkle resistant and said adhesive being capable of providing an adherent bond to said vinyl substrate.

18. A method for marking a vinyl substrate having migratable plasticizers associated therewith, said method comprising bonding to said substrate a composite decorative article comprising an outer layer of vinyl film, an intermediate layer comprising a polyurethane resin or a vinyl resin, and an underlying layer of a plasticizer tolerant pressure-sensitive adhesive comprising the reaction product of reactants comprising (a) acrylic acid and/or methacrylic acid and/or acrylamide, and/or methacrylamide (b) an alkylacrylate and/or alkylmethacrylate, having at least 4 carbon atoms and wherein the carbon atom attached to the oxy atom of the carbonyloxy group has at least one hydrogen atom attached thereto, and (c) at least one additional ethylenically unsaturated monomer, said bonding being between said substrate and said adhesive.

4,605,593

PRESSURE SENSITIVE TRANSFERRING MEMBER

Fumio Iida, Nagareyama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 27, 1985, Ser. No. 770,304

Claims priority, application Japan, Sep. 4, 1984, 59-183669; Dec. 15, 1984, 59-264758

Int. Cl.[4] C09J *7/02*

U.S. Cl. 428—352 6 Claims

1. A pressure sensitive transfer member which comprises a flexible plastic film substrate and a pressure sensitive transferring image forming layer comprising a binder resin, a plasticizer for the binder resin and a coloring agent and overlying the flexible plastic film substrate, the plasticizer being oleyl oleate.

4,605,594

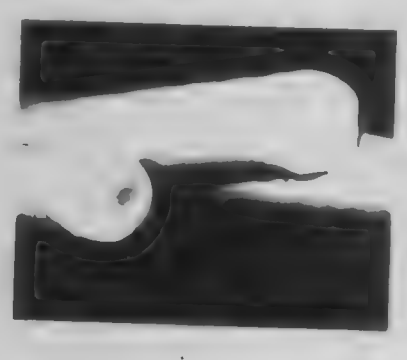
CERAMIC ARTICLES HAVING A NONPOROUS CORE AND POROUS OUTER LAYER

Kenneth E. Owens, Lake Elmo, and Robert A. Hatch, Maplewood, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Aug. 8, 1984, Ser. No. 638,859

Int. Cl.[4] D02G *3/00*

U.S. Cl. 428—373 51 Claims



1. A fired, non-vitreous, non-fused, monolithic, ceramic article characterized by having a core and a sheath or outer layer, at least a portion of said core being enveloped or covered by said sheath or outer layer, said sheath or outer layer having a structure characterized by interconnected micropores, said micropores having an average diameter of less than 300 Å, said core having a substantially non-porous structure.

4,605,595

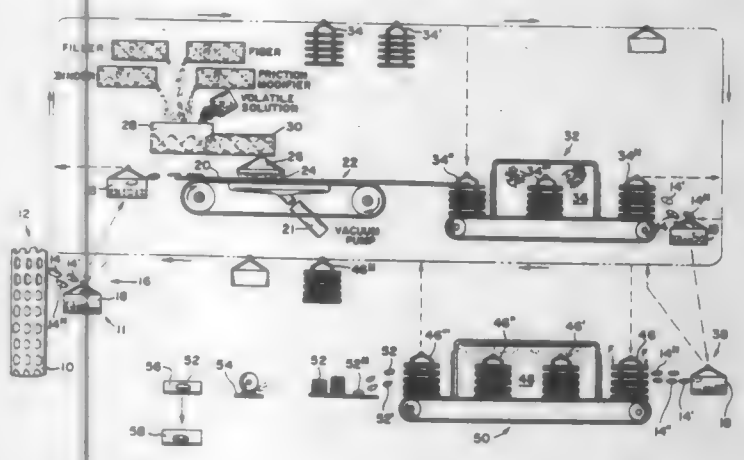
METHOD OF MANUFACTURING A FRICTION ARTICLE

Peter H. Tsang, Union Lake; Joseph P. Coyle, Warren, both of Mich.; Tung Liu, Granger, Ind., and John G. VanderPoorte, St. Clair Shores, Mich., assignors to Allied Corporation, Morristown, N.J.

Division of Ser. No. 553,288, Nov. 18, 1983, Pat. No. 4,537,823. This application Mar. 18, 1985, Ser. No. 713,353

Int. Cl.[4] B32B *3/26, 27/38;* F16D *69/00*

U.S. Cl. 428—413 6 Claims



1. A friction article for use in a brake comprising:

an open foam material selected from a group consisting of carbon, iron, silicon carbide, nickel, and aluminum, said open foam material having a first continuous and substantially uniform three dimensional matrix; and a slurry made up of fillers, friction modifiers, and a resin binder, said slurry being drawn into said first three dimensional matrix, said resin binder being cured to establish a second three dimensional matrix which holds said fillers and friction modifiers within said first three dimensional matrix, said first and second three dimensional matrices being distinct and functionally indepenedent to withstand stresses experienced during a brake application.

2. The friction article as rectied in claim 1 wherein said three dimensional matrix conducts heat away from an operational surface of said friction article.

3. The friction article as recited in claim 2 wherein said binder is an epoxy resin.

4,605,596

ADDITIVE FOR COATING COMPOSITIONS

Grant C. Fry, Lake Orion, Mich., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 451,249, Dec. 20, 1982, Pat. No. 4,451,600. This application Dec. 19, 1983, Ser. No. 562,512

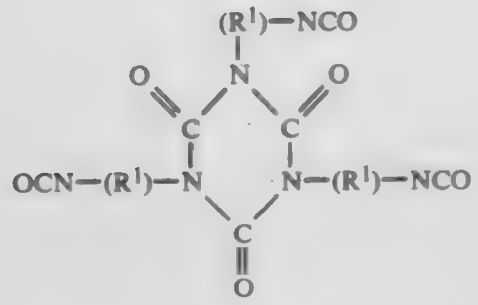
The portion of the term of this patent subsequent to May 29, 2001, has been disclaimed.

Int. Cl.[4] C08K *5/11, 5/34;* C08F *8/30*

U.S. Cl. 428—423.3 10 Claims

1. An additive for coating compositions which comprises about

(A) 20–50% by weight of a polyisocyanate of the formula



where R′ is $(CH_2)_6$;

(B) 1–15% by weight of an ester of [polyethylene glycol diethylhexoate]polyethylene glycol di(2-ethylhexoate);

(C) 1–10% by weight of a blend of ultraviolet light stabilizers consisting essentially of 2-[2′-hydroxy-3′,5′-1(1-1-dimethylpropyl)phenyl]benzotriazole and di-[4-(2,2,6,6-tetramethyl-piperidyl)]sebacate and

(D) 25–78% by weight of organic solvent comprising ethyl acetate, toluene and diethylene glycol monobutyl ether.

4,605,597

MAGNETIC RECORDING MEDIUM

Hiroshi Ogawa, and Yasuo Tamai, both of Kanagawa, Japan, assignors to Fuji Photo Film Co.,Ltd., Kanagawa, Japan

Filed Aug. 20, 1984, Ser. No. 642,283

Claims priority, application Japan, Aug. 18, 1983, 58-150512

Int. Cl.⁴ G11B *5/70*

U.S. Cl. 428—522 **13 Claims**

1. A magnetic recording medium comprising a support having coated thereon a magnetic layer containing a ferromagnetic powder dispersed in a binder and a copolymer of vinyl chloride and vinyl acetate having at least one terminal carboxyl group and a degree of magnetic of from about 20 to 80 and wherein the amount of said copolymer is about 0.1 to 10 wt % based on the amount of the ferromagnetic powder.

4,605,598

STEEL WIRE HAVING SUPERPOSED COATINGS RESISTING CORROSION

Bruno Thomas, Loos-en-Gohelle, and Guy Viart, Capelle Fermont, both of France, assignors to Fils et Cables D'Acier de Lens (Fical), Loison-Sous-Lens, France

Filed Jun. 26, 1984, Ser. No. 624,961

Claims priority, application France, Jun. 28, 1983, 83 10660

Int. Cl.⁴ B32B *15/00*

U.S. Cl. 428—659 **1 Claim**

1. A highly ductile hard steel wire having corrosion resistant superposed coatings, said wire being coated with a first inner Al-Fe-Zn alloy layer consisting essentially of between 15% and 45% Al, between 5% and 25% Fe and the balance being essentially Zn with minor amounts of one or more elements selected from the group consisting of Mg, Sn, Ni, Cu, Cr and mischmetal in an amount which does not exceed a total amount of 0.5% and a second outer alloy layer consisting essentially of between 3% and 20% Al, between 0.5% and 5% Fe and the remainder being essentially Zn with minor amounts, not to exceed a total amount of 0.5%, of one or more elements selected from the groups consisting of Mg, Sn, Ni, Cu, Cr, and Mischmetal.

4,605,599

HIGH DENSITY TUNGSTEN ALLOY SHEET

Thomas W. Penrice, Juliet, and James Bost, Mt. Juliet, both of Tenn., assignors to Teledyne Industries, Incorporated, Los Angeles, Calif.

Filed Dec. 6, 1985, Ser. No. 805,701

Int. Cl.⁴ B32B *15/00*

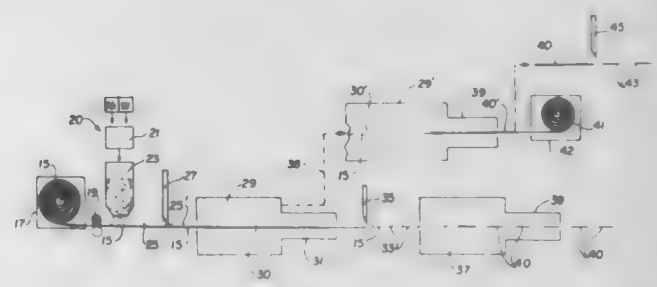
U.S. Cl. 428—665 **17 Claims**

1. A process for the manufacture of high density tungsten (W) alloy sheet comprising the steps of:

selecting at least first and second alloy constituents, wherein each of said constituents have a melting point below that of tungsten and wherein the first constituent has a higher melting point than said second constituent;

forming a substrate in sheet or foil form containing as a major portion said first alloy constituent;

loading said substrate with a metal powder mixture containing predetermined amounts of tungsten powder admixed with powder particles of at least said second alloy constituent;



heating said powder mixture and said substrate to form a partially consolidated tungsten alloy skeleton partially bonded to the substrate;

further heating said partially consolidated tungsten alloy skeleton and said substrate to a temperature above the melting point of said substrate, whereby said substrate melts and infiltrates the tungsten alloy skeleton to complete the densification thereof.

4,605,600

TRANSPARENT GAAS PHOTOELECTRIC LAYER

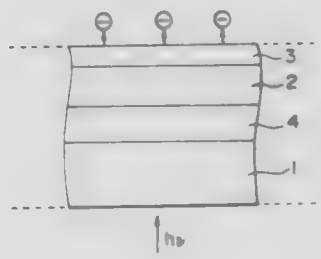
Minoru Niigaki; Tokuaki Nihashi, and Masashi Ohta, all of Hamamatsu, Japan, assignors to Hamamatsu Photonics Kabushiki Kaisha, Hamamatsu, Japan

Filed Apr. 30, 1985, Ser. No. 729,160

Claims priority, application Japan, May 8, 1984, 59-91500

Int. Cl.⁴ B32B *9/00*

U.S. Cl. 428—689 **3 Claims**



1. A transparent GaAs photoelectric layer formed on an optical window made of a GaP single crystal substrate via an $Al_xGa_{(1-x)}As$ buffer layer, characterized in that:

a gradual-lattice-constant layer of quadruple $Al_xGa_{(1-x)}PyAs_{(1-y)}$ compound crystal is formed between said GaP single crystal substrate and said $Al_xGa_{(1-x)}As$ buffer layer.

4,605,601

METHOD OF OPERATION OF A FUEL CELL

Marinus Alfenaar, Schinnen, Netherlands, assignor to Electrochemische Energieconversie N.V., Mol, Belgium

Filed Jan. 11, 1985, Ser. No. 690,622

Claims priority, application Netherlands, Jan. 14, 1984, 8400128

Int. Cl.⁴ H01M *8/24*

U.S. Cl. 429—13 **6 Claims**

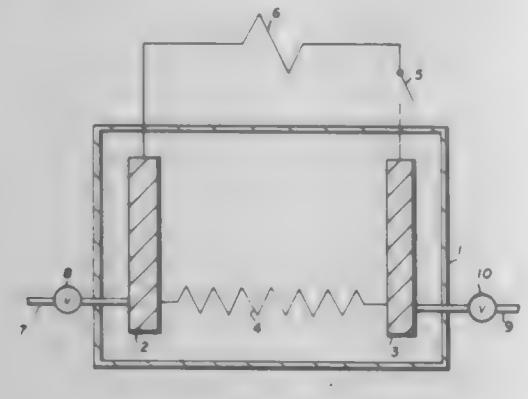
1. A method of operating a fuel cell, said fuel cell having an anode and a cathode and at least one anode chamber and at least one cathode chamber, said anode being electrically connected with said cathode within said fuel cell through at least

one electrical conductor, said fuel cell providing power to an external current driven source, wherein said method comprises:

supplying fuel and oxidant to said fuel cell;

providing a stoichiometric excess amount of fuel at said anode relative to the amount of oxidant in a cathode chamber;

subsequently at least virtually stopping the supply of oxidant to said fuel cell and stopping the drain of current by said external current drain source such that said anode chamber is left filled with fuel; and



maintaining at least one electrically conductive connection between said anode and said cathode after the external current drain from said fuel cell has been stopped,

maintaining, during said process after said current drain from said fuel cell to said external current driven source has been stopped and the supply of said oxidant is also stopped, at least one said electrical connection between said anode and said cathode within said fuel cell such that the arithmetic product of the total electrical resistance between said anode and said cathode electrically conductively connected together within said fuel cell, in Ω and the active surface area of said cathode in m^2, ranges between 10^{-4} Ωm^2 al 10 Ωm^2.

4,605,602

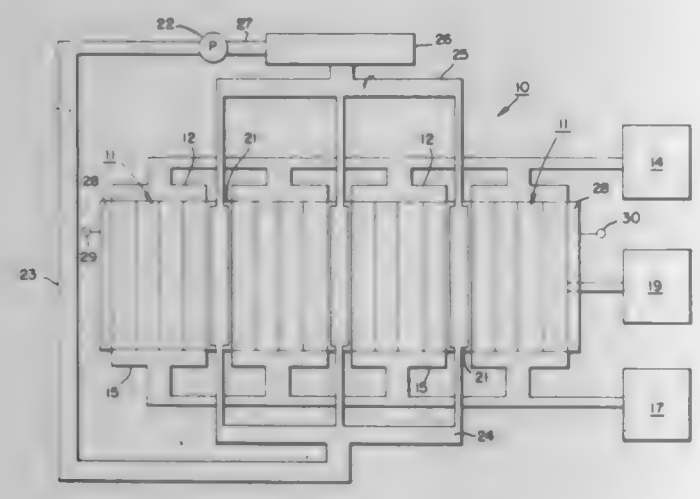
CORROSION PROTECTED, MULTI-LAYER FUEL CELL INTERFACE

Haim Feigenbaum, Ramat Ilan, Israel; Sheldon Pudick, Sayreville, and Chiu L. Wang, Edison, both of N.J., assignors to Engelhard Corporation, Menlo Park, N.J.

Filed Aug. 27, 1984, Ser. No. 644,822

Int. Cl.[4] H01M *8/24, 8/02*

U.S. Cl. 429—26 **12 Claims**



1. A fuel cell stack comprising a plurality of stacked elements, including at least one corrosion resistant, electrically conductive, fluid impervious interface arranged between two of said elements which are not adjacent to one another, said interface comprising a non-cupreous metal coating formed on at least one of said elements and a conductive layer bonded to at least said metal-coated element by a hot-pressed resin, said resin substantially filling any pores in said conductive layer.

4,605,603

HERMETICALLY SEALED METALLIC OXIDE-HYDROGEN BATTERY USING HYDROGEN STORAGE ALLOY

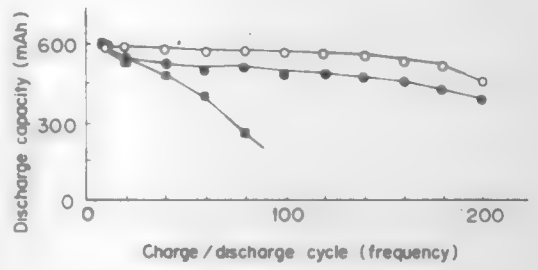
Motoya Kanda, and Yuji Sato, both of Yokohama, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Dec. 21, 1984, Ser. No. 684,587

Claims priority, application Japan, Dec. 26, 1983, 58-243708; Jun. 14, 1984, 59-120826; Jun. 30, 1984, 59-135908

Int. Cl.[4] H01M *10/34, 4/36*

U.S. Cl. 429—59 **9 Claims**



1. A hermetically sealed metallic oxide-hydrogen battery comprising a metallic oxide as a positive electrode active material and hydrogen as a negative electrode active material, wherein said negative electrode is comprised of a hydrogen storage alloy which contains both Mn and Al, said alloy being represented by the formula:

$$MNi_{5-(x+y)}Mn_xAl_y$$

wherein M is a mischmetal, a lanthanum element or a lanthanum-rich mischmetal; and x and y are values satisfying relations of $0<x<1$, $0<y<1$ and $0.2 \leqq x+y \leqq 1$, respectively.

4,605,604

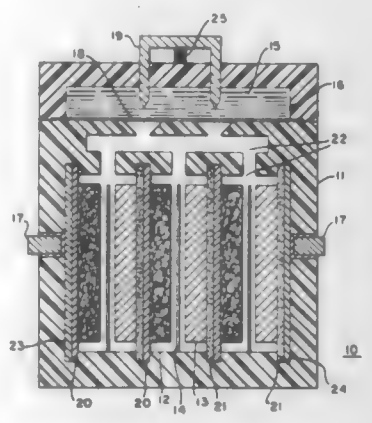
NICKEL-ALUMINUM DRY CHARGE RESERVE BATTERY

William Pollack, Scott Township, Allegheny County, and Edward S. Buzzelli, Export, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jun. 18, 1985, Ser. No. 745,979

Int. Cl.[4] H01M *6/36*

U.S. Cl. 429—116 **8 Claims**



1. A nickel-aluminum reserve battery comprising:

(1) a case within which are disposed at least one bipolar plate comprising:

(i) an electrode comprising battery material, the battery material consisting essentially of nickel hydroxide, said material containing —OH groups, and

(ii) an electrode comprising aluminum,

(2) a storage reservoir containing aqueous alkali hydroxide electrolyte near the case, and

(3) means to transfer stored electrolyte to the electrodes

where the nickel hydroxide containing electrode is connected to a current collector, which current collector is in turn connected to the aluminum electrode of the bipolar plate by means of an electrically conducting bonding medium.

7. A bipolar battery plate comprising:

(1) an electrode comprising battery material, the battery material consisting essentially of nickel hydroxide, said material containing —OH groups, and

(2) an electrode comprising aluminum, where the nickel hydroxide containing electrode contains battery material disposed within a fiber metal plaque selected from the group consisting of nickel fibers and nickel plated steel wool fibers, where said metal plaque is connected to a current collector selected from the group consisting of sheet nickel and nickel plated sheet, where said current collector is connected to the aluminum electrode by means of an electrically conducting bonding medium.

4,605,605

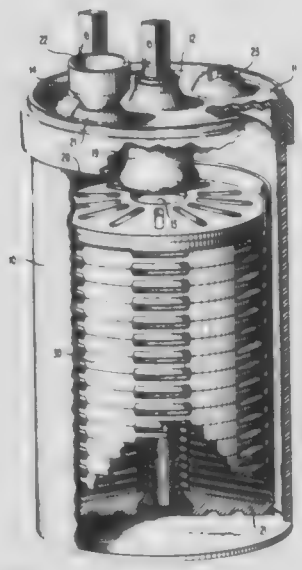
LEAD-ACID BATTERY HAVING POSITIVE POSTS OF LEAD-TIN ALLOY

Anthony G. Cannone, Cranford, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Continuation of Ser. No. 540,160, Oct. 7, 1983, abandoned. This application Sep. 19, 1985, Ser. No. 778,755

Int. Cl.⁴ H01M *2/08*

U.S. Cl. 429—174 **6 Claims**



1. A lead-acid battery comprising in combination

a. a battery receptacle containing positive electrode, negative electrode and electrolyte;

b. a cover for said receptacle in which there is at least one opening in said cover;

c. a positive electrode post mounted within said receptacle and extending through said opening; and

d. sealing means comprising epoxy seal for preventing leakage of electrolyte between said positive electrode post and said cover characterized in that the surface of the positive post to which the epoxy seal is made consists of lead-tin binary alloy, said alloy consisting of from 0.1 to 1.5 weight percent tin remainder lead.

4,605,606

GAUSSIAN LASER BEAM FILTER

Ronald A. Ferrante, Senecaville, Ohio, assignor to NCR Corporation, Dayton, Ohio

Continuation-in-part of Ser. No. 519,441, Aug. 1, 1983, abandoned. This application Feb. 28, 1985, Ser. No. 707,163

Int. Cl.⁴ G03H *1/10, 1/18*

U.S. Cl. 430—2 **3 Claims**

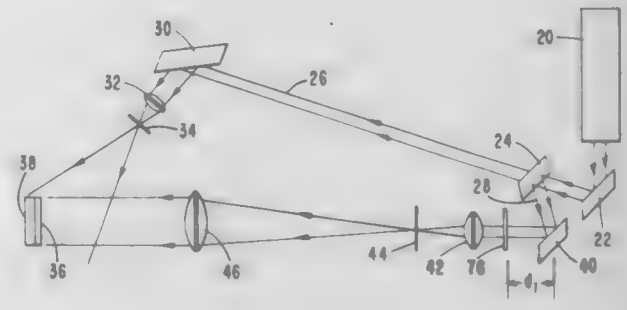
1. A method for the construction of a hologram for use in a scanning system comprising the steps of;

providing a source of coherent light having an intensity which varies from point to point over its cross-sectional area in accordance with a predetermined Gaussian function;

splitting the light beam into first and second unexpanded light beams;

focusing the first unexpanded light beam onto an object through a first spatial filter for expanding the light beam as it strikes the object;

positioning a photographic film in the second unexpanded light beam at a predetermined distance from the source of coherent light;



developing the exposed photographing film for a predetermined time period;

reinserting the developed film in the second unexpanded light beam at said predeveloped distance from the source to cause said unexpanded coherent light beam to have a uniform intensity when emerging from the film;

focusing the uniform intensity second light beam through a second spatial filter onto a collimating lens which emits a collimated light beam;

and directing the collimated light beam onto a recording medium located adjacent the object.

4,605,607

OPTICAL DATA STORAGE MEDIUM HAVING ORGANOMETALLIC CHROMOPHORE/POLYMER COORDINATED INFORMATION LAYER

David E. Nikles, Colonia; R. Sidney Jones, Jr., Randolph, and James E. Kuder, Fanwood, all of N.J., assignors to Celanese Corporation, New York, N.Y.

Filed Apr. 8, 1985, Ser. No. 720,633

Int. Cl.⁴ G03C *1/72;* G03F *7/26*

U.S. Cl. 430—17 **33 Claims**

15. A readable information medium comprising a relatively thick and thermally stable substrate and having coated thereon a layer comprising an information track comprised of a succession of spaced pits, said layer being comprised of a polymer and an organo macrocyclic chromophore containing a constituent metal atom, with the chromophore being chemically coordinated to the polymer through its constituent metal atom.

4,605,608

IMAGE-RECEIVING ELEMENT WITH CROSSLINKED HYDROPHILIC POLYMER CONTAINING PROCESSING COMPOSITION

Julian G. Bullitt, Waban, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Sep. 23, 1985, Ser. No. 779,281

Int. Cl.⁴ G03C *5/54, 5/30, 1/48*

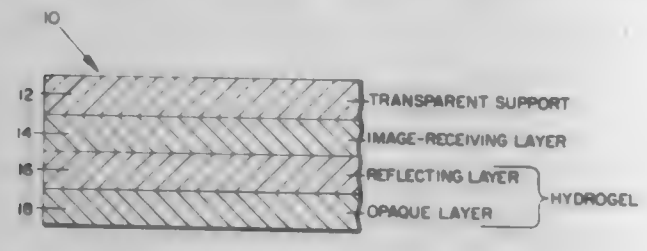
U.S. Cl. 430—206 **14 Claims**

10. A method for forming a diffusion transfer image which comprises the steps of

(a) exposing a photosensitive element comprising a first support carrying at least a first photosensitive silver halide emulsion layer;

(b) superposing an image-receiving element to the outermost layer of said photosensitive element; said image-receiving element comprising a second support carrying an image-receiving layer and a hydrogel, said hydrogel comprising

a hydrophilic polymer cross-linked with ionizing radiation and an aqueous alkaline photographic processing composition; whereby a sufficient quantity of said processing



composition is absorbed by said photosensitive element to develop said photosensitive silver halide layer, and transferring an imagewise distribution of image-forming material to said image-receiving layer.

4,605,609

IMAGE RECEIVING MATERIAL WITH LOW CALCIUM GELATIN

Koji Okazaki; Yasuo Tsubai, and Kimihisa Hamazoe, all of Nagaokakyo, Japan, assignors to Mitsubishi Paper Mills, Ltd., Chiyoda, Japan

Filed Aug. 21, 1984, Ser. No. 643,027

Claims priority, application Japan, Sep. 9, 1983, 58-166185; Dec. 26, 1983, 58-247118

Int. Cl.[4] G03C *5/54*

U.S. Cl. 430—232 **14 Claims**

1. A non-photosensitive image receptive material which comprises at least a support and an image receptive layer containing a gelatin having a calcium content of about 1,000 ppm or less and contains physical development nuclei and a jelly strength of 280 g or above as determined by the method of PAGI.

4,605,610

EMULSION RICH IN SILVER CHLORIDE, PHOTOGRAPHIC RECORDING MATERIAL AND PROCESS FOR THE PRODUCTION OF PHOTOGRAPHIC RECORDINGS

Sieghart Klötzer, Cologne, Fed. Rep. of Germany, assignor to Agfa-Gevaert Aktiengesellschaft, Leverkusen-Bayerwerk, Fed. Rep. of Germany

Filed Mar. 6, 1985, Ser. No. 708,722

Claims priority, application Fed. Rep. of Germany, Mar. 15, 1984, 3409445

Int. Cl.[4] G03C *7/26, 1/02*

U.S. Cl. 430—376 **8 Claims**

1. A photographic silver halide emulsion which substantially contains chloride as halide and the grains of which have a layered grain structure, wherein

at least 60 mol-% of the silver halide of the emulsion is silver chloride,

at least one region B contains at least 25 mol-% AgBr, but less than 50 mol-% AgBr,

the grains have a core encased by at least one region B.

4,605,611

METHOD FOR PROCESSING SILVER HALIDE COLOR PHOTOGRAPHIC MATERIAL

Shigeru Ohno, and Shinzo Kishimoto, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

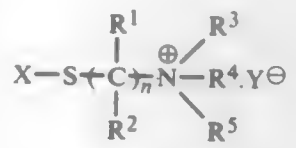
Filed Aug. 20, 1985, Ser. No. 767,536

Claims priority, application Japan, Aug. 20, 1984, 59-172957

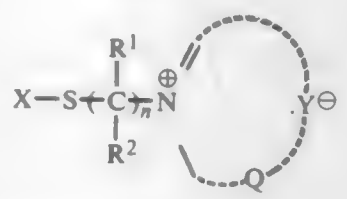
Int. Cl.[4] G03C *7/40, 7/42*

U.S. Cl. 430—393 **18 Claims**

1. A method for processing a silver halide color photographic material by subjecting a light-exposed silver halide color photographic material to a color development and then subjecting it to bleach processing and fix processing or to blix processing, which comprises performing said bleach processing or blix processing using a bleach bath or a blix bath containing a ferric ion complex salt as a bleaching agent, said bleach bath or blix bath, or a prebath for said bath containing at least one compound represented by the following general formula (I) or (II);

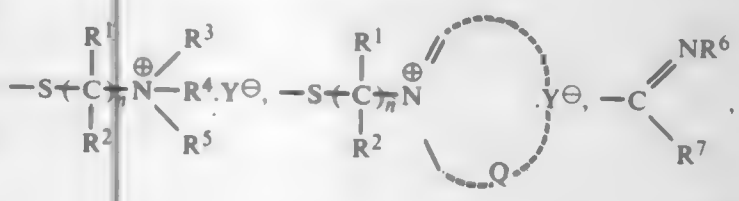


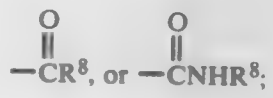
(I)



(II)

wherein, X represents a hydrogen atom,





Y⊖ represents an anion; Q represents an atomic group necessary for forming a quaternary nitrogen-containing unsaturated heterocyclic ring; n represents an integer of 1 to 5; R^1, R^2, R^6 and R^8 each represents a hydrogen atom or a lower alkyl group; R^3, R^4 and R^5 each represents a substituted or unsubstituted alkyl group or a substituted or unsubstituted aryl group; at least two of said R^3, R^4 and R^5 may combine with each other to form a ring; said R^3, R^4 or R^5 and said R^1 or R^2 may combine with each other to form a ring; and R^7 represents $-NR^9R^{10}$, $-OR^{11}$ or $-SR^{11}$ (wherein R^9 and R^{10} each represents a hydrogen atom or a lower alkyl group; R^{11} represents an atomic group necessary for forming a ring by combining with R^6; and said R^9 or R^{10} and R^6 may combine with each other to form a ring).

4,605,612

SUPPORT FOR PHOTOGRAPHIC PAPER HAVING ELECTRON BEAM CURED RESIN LAYER

Yasuzi Aono, and Takashi Takayanagi, both of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

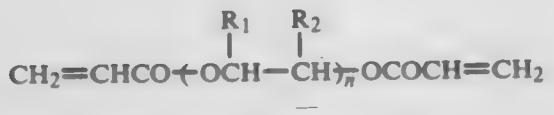
Filed Feb. 27, 1985, Ser. No. 706,354

Claims priority, application Japan, Feb. 27, 1984, 59-35736

Int. Cl.[4] G03C *1/76*

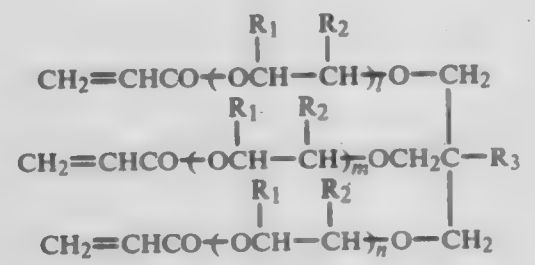
U.S. Cl. 430—538 **5 Claims**

1. A support for photographic paper which comprises a sheet of paper coated with a composition consisting essentially of an unsaturated bond-containing electron beam-polymerizable organic compound (A) and an inorganic white pigment (B), wherein the composition is subjected to electron beam irradiation for curing, wherein said unsaturated bond-containing organic compound (A) and said inorganic white pigment (B) are present in a weight ratio (A)/(B) of from 3/1 to 1/9, and said unsaturated bond-containing organic compound (A) comprises an unsaturated organic compound (C) containing two carbon-to-carbon double bonds per molecule and an unsaturated organic compound (D) containing three carbon-to-carbon double bonds per molecule, and the weight ratio (C)/(D) is from 49/51 to 1/99, wherein the unsaturated organic compound (C) is an ether-type acrylate represented by the formula



(I)

wherein R_1 and R_2 each represents —H, —OH, an alkyl group containing from 1 6 carbon atoms, an alkoxy group containing from 1 to 6 carbon atoms, or an aryl group, and is 1 to 15, and wherein the unsaturated organic compound (D) is an ether-type triacrylate represented by the formula



(II)

wherein R_1, R_2 and R_3 each represents —H, —OH, —CH_2OH, an alkyl group containing from 1 to 6 carbon atoms, an alkoxy group containing from 1 to 6 carbon atoms, or an aryl group, and l+m+n is from 1 to 20.

4,605,613

BALLASTED DYE COMPOUNDS WITH LINKAGES CONTAINING THREE AROMATIC NUCLEI FOR USE IN A DYE DIFFUSION TRANSFER PROCESS AND ELEMENT

Christian C. Van de Sande, Belsele; Armand M. Van den Bergh, Berchem; Wilhelmus Janssens, Aarschot, all of Belgium, and Hans Vetter, Cologne, Fed. Rep. of Germany, assignors to Agfa-Gevaert, N.V., Mortsel, Belgium

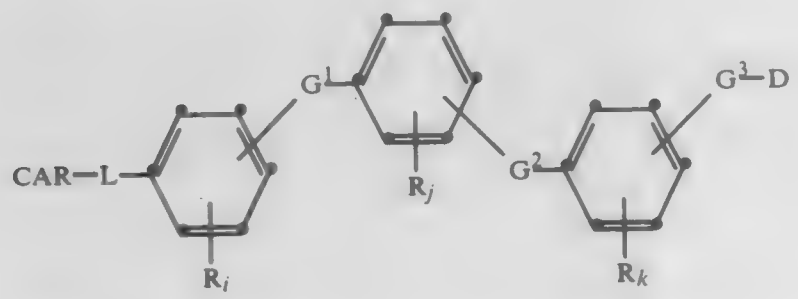
Filed Jul. 26, 1985, Ser. No. 759,345

Claims priority, application European Pat. Off., Aug. 11, 1984, 84201164.5

Int. Cl.⁴ G03C *1/40, 5/54*

U.S. Cl. 430—562 **6 Claims**

1. A photographic silver halide emulsion material containing a ballasted non-diffusing compound capable of releasing a diffusible mono-azo dye or dye precursor thereof from a carrier moiety, characterized in that said compound corresponds to the following general formula:



wherein:

CAR represents a ballasted carrier moiety making said compound non-diffusing in a hydrophilic colloid medium after wet alkaline conditions,

L represents a chemical group cleavable or releasable from the carrier moiety as a function of a redox-reaction or argentolytic reaction taking place in the development of a silver halide emulsion layer under alkaline conditions,

G^1 and G^3 (same or different) is a —SO_2NR^3— or —NR^3—SO_2— group wherein R^3 is hydrogen, an alkyl group or an aryl group,

G^2 is a chemical bond or a bivalent linking atom or group selected from the group consisting of —O—, —S—, —SO_2—, —CH_2—, —CH_2CH_2—, —NH^3—, —OCH_2CH_2O—, —OCH_2CH_2—, —$CONR^3$—, —SO_2NR^3—, —NR^3CO— or —NR^3SO_2—, wherein R^3 is hydrogen, an alkyl group or an aryl group,

R_i, R_j and R_k (same or different) is hydrogen or one or more substituents selected from the group consisting of halogen, an alkyl group, alkoxy, alkylthio, a R^4CONH— group or a R^4SO_2NH— group, wherein R^4 is an alkyl group or an aryl group, and

D is an azo dye part.

4,605,614

METHOD FOR MEASURING PLASMIN

Takeshi Nagasawa; Katsumasa Kuroiwa; Katsuyuki Takabayashi, and Yoshio Nakamura, all of Koriyama, Japan, assignors to Nitto Boseki Co., Ltd., Fukushima, Japan

Division of Ser. No. 417,377, Sep. 13, 1982, Pat. No. 4,452,736.

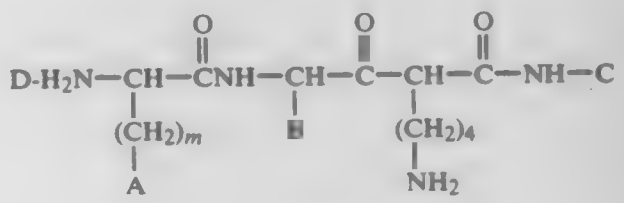
This application Feb. 13, 1984, Ser. No. 579,868

Claims priority, application Japan, Oct. 14, 1981, 56-163649

Int. Cl.⁴ C12Q *1/56, 1/38*

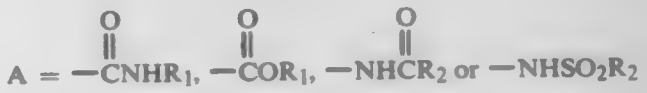
U.S. Cl. 435—13 **2 Claims**

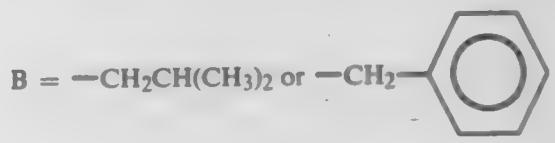
1. A method for measuring the activity of plasmin in plasma which comprises reacting a compound of the following formula or a salt thereof:

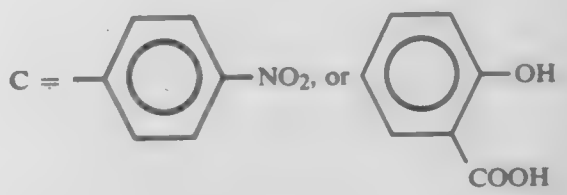


wherein

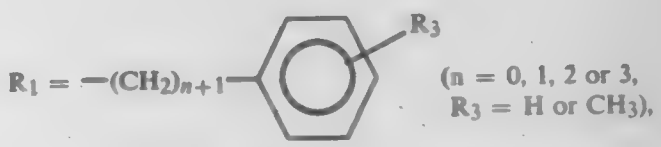
m = 1, 2, 3 or 4







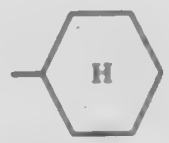
wherein



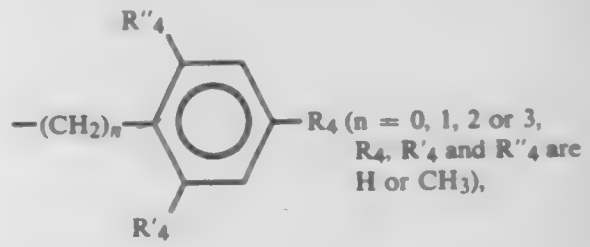
(n = 0, 1, 2 or 3, R_3 = H or CH_3),



$-(CH_2)_n-CH(CH_3)_2$ (n = 0, 1, 2 or 3)

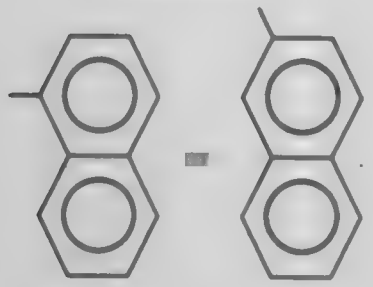


$R_2 = -(CH_2)_{n+1}-CH_3$ (n = 0, 1, 2 or 3)



R_4 (n = 0, 1, 2 or 3, R_4, R'_4 and R''_4 are H or CH_3),

-continued



with plasmin in a buffer solution having a pH of 7.2 to 7.6 and quantitatively determining the reaction product thereof.

4,605,615

L-GLUTAMIC ACID OXIDASE (H_2O_2-GENERATING), ITS PRODUCTION AND ANALYTICAL METHOD THEREFOR

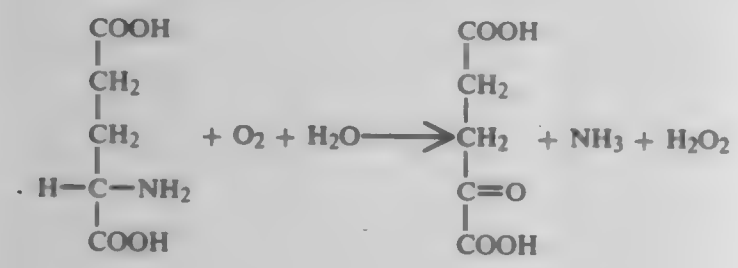
Hidehiko Ishikawa; Hideo Misaki, and Naoki Muto, all of Shizuoka, Japan, assignors to Toyo Jozo Kabushiki Kaisha, Shizuoka, Japan

Filed Mar. 2, 1983, Ser. No. 472,174
Claims priority, application Japan, Mar. 2, 1982, 57-33497
Int. Cl.[4] C12Q *1/52, 1/36, 1/26;* C12N *9/06;* C12R *1/465*
U.S. Cl. 435—16 14 Claims

1. L-glutamic acid oxidase having the following biochemical properties:

(a) substrate specificity: L-glutamic acid,

(b) enzyme action: catalyzes a reaction which forms one mole of α-ketoglutaric acid, one mole of ammonia and one mole of hydrogen peroxide from one mole of L-glutamic acid, one mole of oxygen and one mole of water, as follows:



[I]

4,605,616

DETERMINATION OF OXIDIZED α-1-PROTEINASE INHIBITOR IN SERUM OR PLASMA

James Travis, Athens, Ga., assignor to University of Georgia Research Foundation, Inc., Athens, Ga.

Continuation of Ser. No. 402,442, Jul. 27, 1982, Pat. No. 4,493,891. This application Sep. 27, 1984, Ser. No. 654,966
The portion of the term of this patent subsequent to Jan. 15, 2001, has been disclaimed.
Int. Cl.[4] C12Q *1/38;* C12N *9/99*
U.S. Cl. 435—23 2 Claims

1. A method for determining the presence of oxidized α-1-proteinase inhibitor in an unknown sample of serum or plasma, which comprises:

(a) determining the reduction in activity of an enzyme inhibitable by α-1-proteinase inhibitor in the presence of a first portion of said sample;

(b) determining the reduction in activity of an elastase enzyme in the presence of a second portion of said sample; and

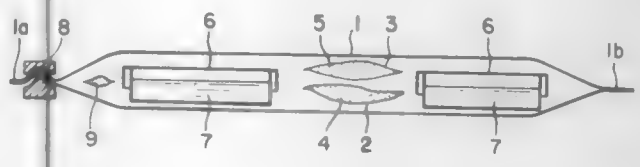
(c) comparing the relative amount of reduction of activity in steps (a) and (b) to the relative amount of reduction in activity of said enzyme inhibitable by α-1-proteinase inhibitor and said elastase enzyme in the presence of a reduced standard sample of α-1-proteinase inhibitor, wherein the same relative reduction in activity indicates reduced α-1-proteinase inhibitor and a lesser relative reduction in activity of elastase enzyme compared to activity of said enzyme inhibitable by α-1-proteinase inhibitor indicates the presence of oxidized α-1-proteinase inhibitor.

4,605,617

PROCESS FOR CULTURING ANAEROBIC BACTERIA AND AGENTS FOR PREPARING CULTURE ATMOSPHERE

Makoto Kasugai, Tokyo, Japan, assignor to Mate, Inc., Tokyo, Japan

Continuation of Ser. No. 424,328, Sep. 27, 1982, abandoned. This application Jan. 14, 1985, Ser. No. 691,370
Claims priority, application Japan, Sep. 30, 1981, 56-153830
Int. Cl.[4] C12Q *1/02;* C12N *1/20;* C12M *1/34*
U.S. Cl. 435—29 6 Claims



1. A process for detecting a plurality of types of anaerobic bacteria by culturing test samples in a closed culture vessel, comprising:

introducing into the culture vessel an inoculated culture meduim and an agent comprising a composition which removes oxygen and generates carbon dioxide such that the volume of removed oxygen is approximately twice as great as the volume of carbon dioxide generated;

closing the vessel; and

maintaining the interior atmosphere in the culture vessel in a state where the oxygen concentration does not exceed 0.1% by volume and the carbon dioxide concentration is between 10% and 12% by volume for the period of at least 3 to 24 hours after closing the vessel.

4,605,618

METHOD FOR MEASURING ANTI-INFLAMMATORY PROPERTIES OF A COMPOSITION

Philip B. Dunham, Syracuse, and Gerald Weissmann, New York, both of N.Y., assignors to New York University, New York; Syracuse University, Syracuse, both of, N.Y. and Marine Biological Laboratory, Woods Hole, Mass.

Filed Jul. 11, 1983, Ser. No. 512,629
Int. Cl.[4] C12Q *1/02;* G01N *21/59, 33/48*
U.S. Cl. 435—29 6 Claims

1. A method for measuring the anti-inflammatory properties of a composition by measuring the effect of the composition on marine sponge cell aggregation comprising:

(i) adding a predetermined amount of a composition to an aqueous suspension of dissociated marine sponge cells;

(ii) measuring the optical density of said suspension after a first predetermined time interval;

(iii) measuring the optical density of said suspension at a second predetermined time after said first time;

(iv) measuring the effect of the composition on marine sponge cell aggregation by comparing the optical density at said first time with the optical density at said later time as a measure of the anti-inflammatory properties of the composition.

4,605,619

PROCESS FOR PREPARING FRUCTOSE FROM STARCH

Robert O. Horwath, Westport, and Robert M. Irbe, Norwalk, both of Conn., assignors to Nabisco Brands, Inc., Parsippany, N.J.

Continuation-in-part of Ser. No. 393,589, Jun. 30, 1982, Pat. No. 4,458,017. This application Mar. 22, 1984, Ser. No. 592,123

The portion of the term of this patent subsequent to Jul. 3, 2001, has been disclaimed.

Int. Cl.[4] C12P *19/24;* C12N *9/30, 9/34, 9/92;* C12R *1/645*

U.S. Cl. 435—94 7 Claims

1. The process for preparing fructose which comprises liquefying starch by contacting starch with alpha-amylase contacting the resulting liquefied starch with glucoamylase to hydrolyze said starch to glucose, and isomerising at least part of the resulting glucose to fructose by contacting said glucose with glucose isomerase, wherein all three enzymes are obtained from the same organism of the Basidiomycetes class of fungi.

4,605,620

PROCESS FOR FERMENTING CARBOHYDRATE- AND PHOSPHATE-CONTAINING LIQUID MEDIA

Wolfram Andersch, Hildesheim; Hubert Bahl, Essen-Oldenburg, and Gerhard Gottschalk, Nörten-Hardenberg, all of Fed. Rep. of Germany, assignors to Gesellschaft fur Biotechnologische Forschung mbH (GBF), Braunschweig-Stockheim, Fed. Rep. of Germany

Filed Nov. 16, 1982, Ser. No. 442,093

Claims priority, application Fed. Rep. of Germany, Nov. 20, 1981, 3146084

Int. Cl.[4] C12N *1/20;* C12P *7/28, 7/26;* C12Q *3/00*

U.S. Cl. 435—148 8 Claims

1. In a process for producing butanol, acetone and/or ethanol by fermenting carbohydrate and phosphate containing liquid culture medium with bacteria capable of producing butanol, acetone and/or ethanol as fermentation products with a growth step followed by a fermentation step, the improvement comprising maintaining the total soluble phosphate concentration present in the medium between 0.4 and 0.75 mmolar during the fermentation.

4,605,621

CLAY-ENZYME COMPLEXES AND METHOD FOR PREPARING SAME

Thomas J. Pinnavaia; Max M. Mortland, and Stephen A. Boyd, all of East Lansing, Mich., assignors to Michigan State University, East Lansing, Mich.

Filed Nov. 29, 1984, Ser. No. 676,171

Int. Cl.[4] C12N *11/02*

U.S. Cl. 435—177 14 Claims

1. A method for preparing immobilized enzymes which comprises reacting an enzyme to be immobilized with an organoclay comprising a clay selected from the group consisting of smectite type clays, hectorite and vermiculite, at least some cations of which have been replaced by onium ions and/or organometallic cations to render the clay hydrophobic.

4,605,622

PROCESS FOR PRODUCING GRANULAR FIXED ENZYMES OR MICROORGANISMS

Eiichi Hasegawa; Takamitsu Iida, and Masahiro Sakamoto, all of Hiratsuka, Japan, assignors to Kansai Paint Co., Ltd., Hyogo, Japan

Filed Nov. 15, 1983, Ser. No. 551,928

Int. Cl.[4] C12N *11/04, 11/02, 11/10, 11/12*

U.S. Cl. 435—182 12 Claims

1. A liquid composition comprising (a) 100 parts by weight of a hydrophilic photocurable resin having a number average molecular weight in the range of from 300 to 100,000, at least two ethylenically unsaturated bonds per molecule, and a hydrophilic group selected from a hydroxyl group, a carboxyl group, a phosphoric acid group, a sulfonic acid group, an amino group and an ether linkage, (b) 0.01 to 10 parts by weight of a photopolymerization initiator, (c) 0.5 to 15 parts by weight of a water-soluble polysaccharide having a molecular weight in the range of from 3,000 to 2,000,000, a water solubility at 25° C. of at least 10 g/liter, and an ability to gel upon contact with at least one polyvalent metal ion, and (d) 0.001 to 50 parts by weight of an enzyme or microorganism strain.

4,605,623

METHOD OF ALTERING GROWTH AND DEVELOPMENT AND SUPPRESSING CONTAMINATION MICROORGANISMS IN CELL OR TISSUE CULTURE

William G. Malette, 667 Parkwood La., Omaha, Nebr. 68132, and Herbert J. Quigley, Jr., 9511 Mockingbird Dr., Omaha, Nebr. 68127

Continuation-in-part of Ser. No. 440,039, Nov. 8, 1982, Pat. No. 4,532,134. This application Aug. 15, 1983, Ser. No. 522,974

Int. Cl.[4] C12N *5/00, 5/02;* C12R *1/91;* A61K *30/12*

U.S. Cl. 435—240 12 Claims

1. A method for cultivating myocytes in suspension comprising growing myocytes in a culture media containing an amount of an aqueous chitosan solution sufficient to enable the three-dimensional growth of said myocytes and to inhibit certain undesired cells in the culture media including fibroblasts, tumor cells, mycoplasma and bacteria, wherein the source of chitosan is a chitosan derivative selected from polyglucosamine or chitosan salts which are essentially water soluble at ambient temperature.

4,605,624

NOCARDIA SPECIES CAPABLE OF PRODUCING NARGENICIN C_1

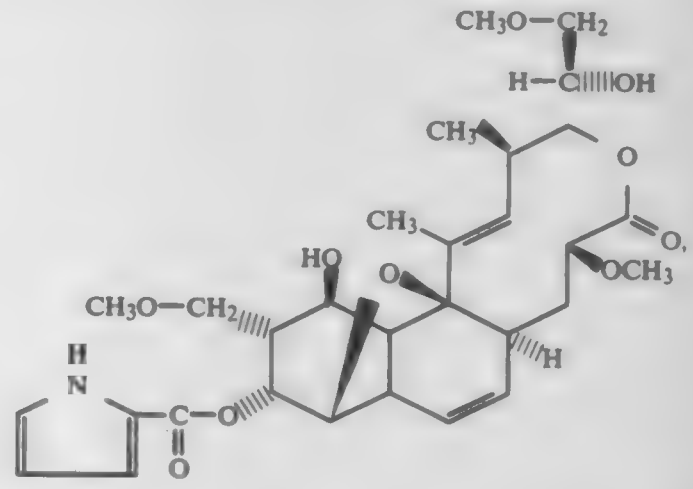
Walter D. Celmer, New London; Walter P. Cullen, East Lyme, both of Conn.; Riichiro Shibakawa, Handa, and Junsuke Tone, Chita, both of Japan, assignors to Pfizer Inc., New York, N.Y.

Division of Ser. No. 435,793, Oct. 21, 1982, Pat. No. 4,436,747. This application Jan. 13, 1984, Ser. No. 570,334

Int. Cl.[4] C12N *1/20;* C12R *1/365*

U.S. Cl. 435—253 2 Claims

1. A biologically pure culture of the microorganism Nocardia sp. ATCC 39177, said culture being capable of producing nargenicin C_1, the compound of the formula



in recoverable quantity upon cultivation in an aqueous nutrient medium containing assimilable sources of carbon and nitrogen.

4,605,625

PROCESS FOR PRODUCING S-ADENOSYL-L-HOMOCYSTEINE

Hideaki Yamada; Sakayu Shimizu, both of Kyoto, and Shozo Shiozaki, Kamakura, all of Japan, assignors to Nippon Zeon Co., Ltd., Tokyo, Japan

Filed Feb. 27, 1985, Ser. No. 706,393
Claims priority, application Japan, Feb. 27, 1984, 59-35566
Int. Cl.[4] C07P *41/00*; C12P *19/26, 19/28, 19/40*
U.S. Cl. 435—280 15 Claims

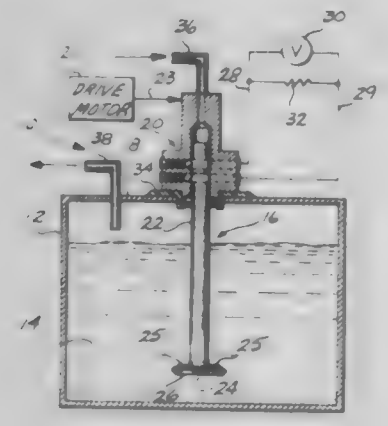
1. A process for producing S-adenosyl-L-homocysteine which comprises contacting adenosine with D-homocysteine in an aqueous medium in the presence of cells or treated cells of a microorganism of the genus Pseudomonas having the ability to racemize D-homocysteine to DL-homocysteine and in the present of S-adenosyl-L-homocysteine hydrolase, thereby synthesizing S-adenosyl-L-homocysteine and thereafter collecting it.

4,605,626

ELECTROCHEMICAL SYSTEM WITH ROTATING ELECTRODE/SPARGER ASSEMBLY

Theodore R. Beck, Seattle, Wash., assignor to Rohrback Technology Corporation, Seattle, Wash.

Filed May 1, 1985, Ser. No. 729,209
Int. Cl.[4] C12M *1/34*
U.S. Cl. 435—291 25 Claims



1. An electrode assembly for use in an electrochemical system for determining the concentration of an enzymatic agent in a liquid sample, the electrochemical system including mounting means for mounting the electrode assembly such that at least the lower end of the electrode assembly is immersed in the sample and drive means for rotating the electrode assembly, the electrode assembly comprising:

a shaft having a longitudinal axis and a longitudinally extending interior passage;

an electrode mounted in a fixed position with respect to the shaft such that when the shaft is mounted by the mounting means, the electrode is immersed in the sample;

sparging means mounted to the shaft such that the sparging means is immersed in the sample when the shaft is mounted by the mounting means, the sparging means being in communication with the passage; and

first conductor means for electrically connecting the electrode to the electrochemical system;

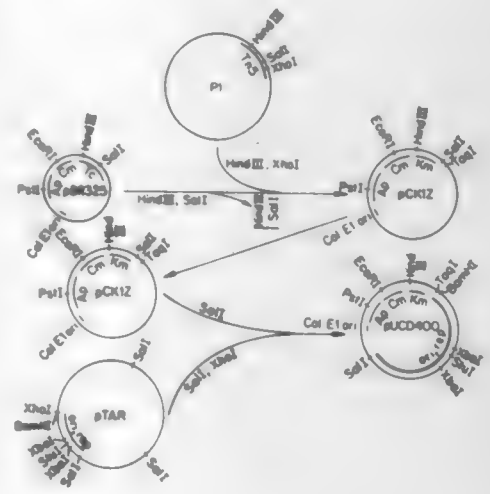
whereby rotation of the electrode assembly by the drive means and introduction of an inert gas into the passage results in the rapid removal of dissolved oxygen from the sample.

4,605,627

PLASMID VEHICLE FOR CLONING IN *AGROBACTERIUM TUMEFACIENS*

Clarence Kado; Robert C. Tait, and Ronald C. Lundquist, all of Davis, Calif., assignors to The Regents of the University of California, Berkeley, Calif.

Filed Jun. 7, 1983, Ser. No. 501,959
Int. Cl.[4] C12N *1/00, 15/00*; C07H *15/12*
U.S. Cl. 435—317 8 Claims



1. A DNA fragment of less than 10 kbp which includes a sequence that corresponds identically with that which possesses the minimum compatible with continued replication and which is derived from the origin of replication and associated replication functions which are located on a 7.5 kbp XhoI/SalI restriction fragment of the pTAR plasmid.

4,605,628

ELECTROCHEMICAL DETERMINATION OF HEMATOCRIT

Scot D. Abbott, Wilmington, Del.; Herman W. Levin, Philadelphia, Pa.; Robert K. Kobos, Wilmington, Del.; Henn Kilkson, Wilmington, Del., and Dale R. Peterson, Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Inc., Wilmington, Del.

Filed Oct. 4, 1984, Ser. No. 657,944
Int. Cl.[4] G01N *33/86*
U.S. Cl. 436—70 4 Claims

1. A method for measuring the hematocrit of blood, Hct, comprising:

(1) measuring the concentration of a preselected electrochemically detectable marker, $[Marker]_{BD}$, in a preselected volume of whole blood, V_{WB}, having an initial ratio of red ceil volume to plasma volume, the concentration of the marker within red cells being different from its concentration in plasma;

(2) decreasing the ratio of red cell volume to plasma volume by diluting the preselected volume of whole blood by adding a volume of diluent, V_{add}, not containing the marker;

(3) measuring the marker concentration after dilution, $[Marker]_{AD}$; and

(4) calculating the hematocrit using the equation:

$$Hct = \frac{1 + \frac{V_{add}}{V_{WB}} - \frac{[Marker]_{BD}}{[Marker]_{AD}}}{1 - \frac{[Marker]_{BD}}{[Marker]_{AD}}}$$

where:

Hct is hematocrit;

V_{add} is added diluent volume;

V_{WB} is volume of blood sample;

$[Marker]_{BD}$ is the measured marker concentration before dilution;

[Marker]$_{AD}$ is the measured marker concentration after dilution.

4,605,629

METHOD OF ELUTING REAGENT FROM REAGENT STRIPS FOR CHEMICAL ANALYSES AND REAGENT STRIP THEREFOR

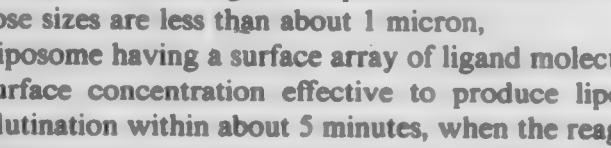
Hans Lange, Lampertheim; Edda Geisler, and Wolfgang Werner, both of Mannheim, all of Fed. Rep. of Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Fed. Rep. of Germany

Continuation of Ser. No. 328,313, Dec. 7, 1981, abandoned. This application Jul. 27, 1984, Ser. No. 634,667

Claims priority, application Fed. Rep. of Germany, Dec. 23, 1980, 3048799

Int. Cl.[4] G01N *21/78, 33/52*

U.S. Cl. 436—166 14 Claims



1. A method of reagent elution from a reagent strip having an elongated handle and a dry, absorbent carrier impregnated with a reagent on one end of the handle, the method comprising: providing a thin mesh stuck onto the handle at opposite sides of the absorbent carrier, substantially covering the absorbent carrier, and pressing the absorbent carrier toward the handle and another mesh between the handle and the absorbent carrier for improving the quantitative elution and the rate of elution of the reagent into a liquid when the absorbent carrier is immersed therein; and immersing the absorbent carrier in the liquid for the elution.

4,605,630

LARGE-LIPOSOME AGGLUTINATION REAGENT AND METHOD

Viola T. Kung, Menlo Park; Francis J. Martin, San Francisco, and Yolanda P. Vollmer, Daly City, all of Calif., assignors to Cooper Lipotech Inc., Menlo Park, Calif.

Filed Jul. 27, 1983, Ser. No. 517,826

Int. Cl.[4] G01N *33/544, 33/571;* B32B *5/16;* B01J *13/00*

U.S. Cl. 436—511 26 Claims

1. An agglutination assay reagent comprising

liposomes prepared by forming a dispersion of lipid vesicles having heterogeneous sizes both less than and greater than 1 micron, and treating the dispersion to remove vesicles whose sizes are less than about 1 micron,

each liposome having a surface array of ligand molecules at a surface concentration effective to produce liposome agglutination within about 5 minutes, when the reagent is incubated at room temperature with a multivalent ligand-binding analyte on a slide, and

a dye trapped by the liposomes at a concentration effective to allow said agglutination to be visualized directly without magnification on a slide.

9. A rapid agglutination assay method for determination of a multivalent ligand-binding analyte, said method comprising

providing a suspension of liposomes (a) prepared by forming a dispersion of lipid vesicles having heterogeneous sizes both less than and greater than 1 micron, and treating the dispersion to remove vesicles whose sizes are less than about 1 micron, and (b) having a surface array of ligand molecules and a trapped dye, and

mixing the suspension with the analyte on a slide to produce liposome agglutination which is readily detectable, without magnification, within about five minutes at room temperature.

4,605,631

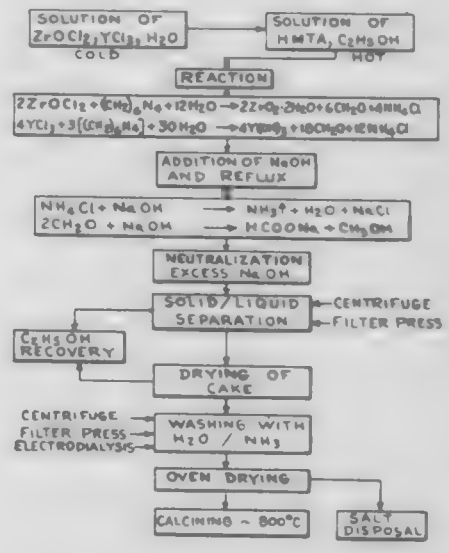
ADVANCED PREPARATION OF CERAMIC POWDERS

Giulio A. Rossi, Shrewsbury, Mass., assignor to Norton Company, Worcester, Mass.

Filed Mar. 19, 1984, Ser. No. 590,801

Int. Cl.[4] C04B *35/00, 35/48*

U.S. Cl. 501—1 12 Claims



1. A process for the preparation of sinterable metal oxide ceramic powders, comprising the steps of:

(a) forming a first solution of an ammonia donor in a water-miscible organic liquid and a second solution of salts of all the metals whose oxides are present in said metal oxide ceramic powders, said second solution also containing sufficient water to produce by reaction with the ammonia donor in said first solution a sufficient amount of ammonia to precipitate at least part of the cations of the metal salts in said second solution when such ammonia is released into the said second solution;

(b) mixing said first solution and said second solution while maintaining a temperature of at least 60° C. in the reaction vessel, so as to form a solid precipitate containing at least part of the ceramic metal content originally in said second solution;

(c) treating said solid precipitate with alkali for a sufficient time to prevent discoloration of the precipitate upon subsequent heating to 400° C.;

(d) neutralizing the alkali remaining after said treating of part (c) to produce a pH of 7.0±0.2 in the liquid phase in contact with said solid precipitate;

(e) separating the solid phase remaining after part (d) from the bulk of the liquid phase present therewith after part (d);

(f) washing the solid phase remaining after part (e) with sufficient aqueous ammonia to remove substantially all the soluble inorganic matter and the last traces of organic matter from said solid phase.

(g) drying and calcining the solid phase remaining after part (f) by heating it for a sufficient time at a temperature sufficient to yield a stable crystal phase and degree of hydration if any for sintering but not so high as to cause appreciable sintering or coarsening of particle size in said solid phase.

4,605,632

GLASS FOR TUNGSTEN-HALOGEN LAMPS

Thomas H. Elmer, Corning, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Oct. 24, 1984, Ser. No. 664,351

Int. Cl.[4] C03C *3/06*

U.S. Cl. 501—54 1 Claim

1. A transparent, high silica glass envelope for a tungsten-halogen incandescent lamp, said glass exhibiting an annealing point between about 900°–925° C. and a β_{OH} value below 0.4 mm^{-1} and consisting essentially, expressed in terms of weight

percent on the oxide basis, of about 1–2.5% Al_2O_3, 0.25–1% CaO, 0.1–0.25% Na_2O and/or K_2O, 2.5–3.5% B_2O_3, 0.15–0.3% F, and the remainder SiO_2.

4,605,633

REACTION SINTERED MULTIPHASE CERAMIC

Thomas P. DeAngelis, Horseheads, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Dec. 30, 1982, Ser. No. 454,673

The portion of the term of this patent subsequent to Aug. 13, 2002, has been disclaimed.

Int. Cl.⁴ C04B *35/56, 35/58*

U.S. Cl. 501—87 **21 Claims**

1. A reaction sintered multiphase ceramic body consisting essentially of a fine-grained, homogeneous, intimate interdispersion of:

(a) 5–95 mole percent of nitride phase or phases having a maximum grain size substantially not greater than 10 μm and being nitride of one or both of Al and Si, and

(b) 5–95 mole percent of second phase or phases having a maximum grain size substantially not greater than 10 μm and being boride, carbide, silicide, sulfide or combination thereof of one or more of the elements of Groups 3b including lanthanide and actinide series elements, 4b, 5b and 6b;

which body contains 0 to 4 weight percent oxygen and is prepared by the process comprising:

(c) admixing particulate reactants of maximum particle size substantially not greater than 150 μm and being elements, compounds, intermetallic compounds, alloys or combination thereof in stoichiometric proportions to substantially form the nitride and second phases, and

(d) shaping and heating the admixture to form the reaction sintered body, the heating being done in atmosphere that is nonreactive with the admixture and at temperature at which the reaction and sintering occurs between the reactants to substantially form the nitride and second phases.

4,605,634

REACTION SINTERED OXIDE-BORIDE

Thomas P. DeAngelis, Horseheads, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Continuation-in-part of Ser. No. 454,671, Dec. 30, 1982, abandoned. This application Jun. 27, 1985, Ser. No. 749,559

The portion of the term of this patent subsequent to Sep. 10, 2002, has been disclaimed.

Int. Cl.⁴ C04B *35/58*

U.S. Cl. 501—96 **24 Claims**

1. A reaction sintered oxide-boride ceramic body consisting essentially of a fine-grained, homogeneous, intimate interdispersion of:

(a) 10–90 mole percent of boride phase or phases having a maximum grain size substantially not greater than 15 μm and being boride of one or more of the elements of Groups 3b including lanthanide and actinide series elements, 4b, 5b and 6b, and

(b) 10–90 mole percent of oxide phase or phases having a maximum grain size substantially not greater than 15 μm and being oxide of one or more of the elements of Groups 3a, 4a, 3b, 4b, 5b, 6b and 8;

which body is prepared by the process comprising;

(c) admixing particulate reactants of maximum particle size substantially not greater than 150 μm and being elements, compounds, intermetallic compounds, alloys or combination thereof in stoichiometric proportions to substantially form the boride and oxide phases, and

(d) shaping and heating the admixture to form the reaction sintered body, the heating being done in nonreactive atmosphere and at temperature at which the reaction and sintering occurs between the reactants to substantially form the boride and oxide phases.

4,605,635

CARBON-CONTAINING REFRACTORY

Tadashi Zenbutsu, Tokyo; Hiroyuki Kokumai, Atsugi; Shinji Okikawa, and Keiji Saito, both of Zama, all of Japan, assignors to Shinagawa Refractories Co., Ltd., Tokyo, Japan

Filed Jan. 16, 1985, Ser. No. 691,982

Claims priority, application Japan, Jan. 17, 1984, 59-4769

Int. Cl.⁴ C04B *35/52, 35/54, 35/56, 35/58*

U.S. Cl. 501—96 **4 Claims**

1. A carbon-containing refractory composition consisting essentially of 0.1–10 parts by weight of silicon hexaboride, in 100 parts by weight of refractory material, said refractory material consisting essentially of 3–95 parts by weight of carbonaceous material and 97–5 parts by weight of refractory aggregate, said carbonaceous material consisting of natural and artificial graphite, foundry coke, iron coke, petroleum coke and carbon black.

4,605,636

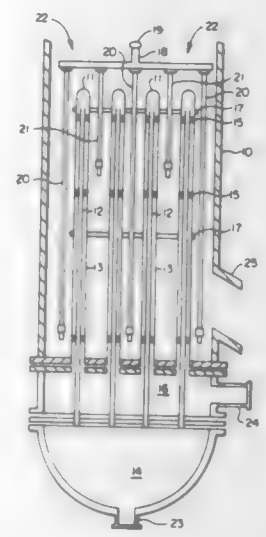
APPARATUS FOR COOLING FLUID SOLID PARTICLES IN A REGENERATION SYSTEM

Paul W. Walters, Ashland; H. Anthony Raiche, Russell, and Lloyd E. Busch, Ashland, all of Ky., assignors to Ashland Oil, Inc., Ashland, Ky.

Division of Ser. No. 688,469, Jan. 3, 1985. This application Sep. 27, 1985, Ser. No. 780,780

Int. Cl.⁴ B01J *29/38*

U.S. Cl. 502—39 **7 Claims**



1. In an improved solid particulate material regeneration system comprising collected fluidized mass(es) of said solid particulate material, the improvement which comprises:

A. regenerating the solid particulate material by combustion of deposited hydrocarbonaceous material on said solid particulate material in a plurality of separate stages arranged for sequential flow of solid particulate material therethrough under regeneration temperature conditions maintained less than 816° C. (1,500° F.);

B. accomplishing said regenerating of solid particulate material in the upper stage of regeneration under conditions providing a flue gas recovered therefrom at an elevated temperature up to about 760° C. (1,400° F.);

C. cooling said solid particulate material flowing downwardly counter-current to fluidized gas in a heat-exchange zone to provide partially-cooled solid particulate material, said heat-exchange zone being provided with a plurality of upwardly extending liquid-carrying heat-exchange conduit combinations and a means for charging said fluidizing gas to a lower half and an upper half of said heat-exchange zone, said means comprising a header means located near the upper end of said heat-exchange zone and having suspended from said header means a plurality of vertical aeration conduits, a first portion of said vertical aeration conduits having their lower ends located in said lower half of said heat-exchange zone and a second portion of said

vertical aeration conduits having their lower ends located in said upper half of said heat-exchange zone.

4,605,637

HYDROTHERMAL ACTIVATION OF ACID ZEOLITES WITH ALUMINUM PHOSPHATES

Clarence D. Chang, Princeton; and Joseph N. Miale, Lawrenceville, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 465,987, Feb. 14, 1983, Pat. No. 4,513,091. This application Jan. 22, 1985, Ser. No. 693,444

The portion of the term of this patent subsequent to Aug. 28, 2001, has been disclaimed.

Int. Cl.[4] B01J *29/06, 27/14*

U.S. Cl. 502—64 **1 Claim**

1. A hydrothermal method for enhancing acid catalytic activity of low acidity crystalline zeolite which comprises contacting said zeolite, an activating amount of aluminum phosphate and an aqueous liquid medium at elevated temperature under conditions to increase catalytic activity of the zeolite.

4,605,638

HIGHLY ACTIVE CATALYST COMPOSITION FOR POLYMERIZING ALPHA-OLEFINS

Thomas E. Nowlin, Kendall Park, and Klaus P. Wagner, East Windsor, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Division of Ser. No. 444,152, Nov. 24, 1982, Pat. No. 4,481,301, which is a continuation-in-part of Ser. No. 327,534, Dec. 4, 1981. This application Jul. 24, 1984, Ser. No. 633,991

The portion of the term of this patent subsequent to Nov. 6, 2001, has been disclaimed.

Int. Cl.[4] C08F *4/62, 4/64, 4/68*

U.S. Cl. 502—104 **76 Claims**

1. A process for preparing a supported catalyst composition for use in alpha-olefin polymerization reactions, said process consisting essentially of the steps of:

(i) contacting a solid, porous carrier having reactive OH groups with a liquid, said liquid containing at least one organomagnesium composition having the empirical formula

$$R_nMgR'_{(2-n)} \quad (I)$$

where R is a C_1–C_{12} hydrocarbyl group, R′ is a halogen, and n is a rational number from about 0.5 to 2, the number of moles of said organomagnesium composition being in excess of the number of moles of said OH groups on said carrier, whereby said organomagnesium composition is reacted with said OH groups on said carrier;

(ii) evaporating said liquid from step (i) to obtain a carrier, containing magnesium, in the form of a dry, free-flowing powder; and

(iii) reacting said powder of step (ii) with at least one transition metal compound in a liquid medium, the number of moles of said transition metal compound being in excess of the number of said OH groups on said carrier prior to the reaction of said carrier with said organomagnesium composition in step (i), said transition metal compound being soluble in said liquid medium, and the magnesium being substantially insoluble in said liquid medium, whereby a reacted form of transition metal which is insoluble in said liquid medium becomes supported on said carrier.

39. A process for preparing a supported catalyst composition for use in alpha-olefin polymerization reactions, said process consisting essentially of the steps of:

(i) contacting, in the absence of an organoaluminum or aluminum halide compound, a solid, porous carrier having reactive OH groups with a liquid, said liquid containing at least one organomagnesium composition having the empirical formula

$$R_nMgR'_{(2-n)} \quad (I)$$

where R and R′ are the same or different C_1–C_{12} hydrocarbyl groups, and n is a rational number from about 0.5 to 2, the number of moles of said organomagnesium composition being in excess of the number of moles of said OH groups on said carrier, whereby said organomagnesium composition is reacted with said OH groups on said carrier;

(ii) evaporating said liquid from step (i) to obtain a carrier, containing magnesium, in the form of a dry, free-flowing powder; and

(iii) reacting said powder of step (ii) with at least one transition metal compound in a liquid medium, the number of moles of said transition metal compound being in excess of the number of said OH groups on said carrier prior to the reaction of said carrier with said organomagnesium composition in step (i), said transition metal compound being soluble in said liquid medium, and the magnesium being substantially insoluble in said liquid medium, whereby a reacted form of transition metal which is insoluble in said liquid medium becomes supported on said carrier.

4,605,639

METHODS FOR MAKING A SUPPORTED IRON-COPPER CATALYST

Paul N. Dyer, Allentown, and Ronald Pierantozzi, Macungie, both of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Jul. 17, 1985, Ser. No. 755,986

Int. Cl.[4] B01J *21/04, 23/72, 23/78*

U.S. Cl. 502—331 **15 Claims**

1. A method for making a catalytically active composition for Fischer-Tropsch reaction processes comprising:

(a) depositing by chemical precipitation a solution of a copper-containing compound onto an alumina porous substrate;

(b) calcining said depositing copper-containing compound on alumina substrate to form copper oxide on alumina substrate;

(c) depositing by intergrinding an iron-containing compound with said copper oxide on alumina substrate; and

(d) calcining the interground mixture in an inert atmosphere to produce free iron in addition to the copper oxide on the alumina substrate.

4,605,640

OIL-ABSORBENT CELLULOSIC DERIVATIVES

George F. Fanta, Peoria, and William M. Doane, Morton, both of Ill., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed May 29, 1985, Ser. No. 738,815

Int. Cl.[4] B01D *17/04*

U.S. Cl. 502—402 **8 Claims**

1. A composition for absorbing oil from oil-in-water emulsions comprising the reaction product of a cellulose-containing substance having cationic exchange properties and a fatty quaternary ammonium salt.

6. A composition as described in claim 1 wherein said cellulose-containing substance is a graft copolymer of cellulose and a carboxylic acid or sulfonic acid-containing monomer, and wherein the amount of polymerized monomer does not exceed about 8% by weight of the graft copolymer.

4,605,641

SYNTHETIC VASOACTIVE INTESTINAL PEPTIDE ANALOGS

David R. Bolin, Deaville; Johannes A. Meienhofer, Upper Montclair, and Iou-Iou Sytwu, Fanwood, all of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Oct. 9, 1984, Ser. No. 658,736
Int. Cl.[4] A61K *37/24;* C07K *7/10*
U.S. Cl. 514—12 **29 Claims**

1. A compound of the formula

X-His-Ser-Asp-Ala-Val-Phe-Thr-Asp-R-Tyr-R_1-Lys-Gln-R_2-Ala-Val-Lys-Lys-Tyr-Leu-R_3-Leu-R_4

wherein R represents Asn or Ala; R_1 represents Thr-Arg-Leu-Arg, Thr-Lys-Leu-Lys, Thr-Arg-Leu-Lys, Thr-Orn-Leu-Arg, Ser-Arg-Phe-Arg or Thr-Lys-Leu-Arg; R_2 represents Leu, Ile or Nle; R_3 represents Asn-Ser-Ile, Asn-Thr-Ile, Thr-Ser-Ile or Asn-Ser-Val; R_4 represents Asn-NH_2 or Thr-NH_2; and X represents hydrogen or acetylation at the amino terminal, provided that when R_1 is Thr-Arg-Leu-Arg, R may not equal Nle,

and the pharmaceutically acceptable acid or base addition salts thereof.

4,605,642

CRF ANTAGONISTS

Catherine L. Rivier; Jean E. F. Rivier; Wylie W. Vale, Jr., all of La Jolla, and Marvin R. Brown, Del Mar, all of Calif., assignors to The Salk Institute for Biological Studies, San Diego, Calif.

Filed Feb. 23, 1984, Ser. No. 583,092
Int. Cl.[4] C07K *7/10;* A61K *37/24*
U.S. Cl. 514—12 **20 Claims**

4. A peptide having the formula: Y-R_8-R_9-leu-R_{11}-R_{12}-R_{13}-leu-leu-Arg-R_{17}-R_{18}-R_{19}-Glu-R_{21}-R_{22}-R_{23}-R_{24}-R_{25}-R_{26}-R_{27}-R_{28}-R_{29}-Gln-ala-R_{32}-R_{33}-Asn-Arg-R_{36}-R_{37}-R_{38}-R_{39}-R_{40}-R_{41}-NH_2 wherein Y is acetyl, formyl, acrylyl, benzoly or hydrogen; R_8 is ala, Gly, Gln, Ile, leu, Nle, Phe, Val or des-R_8; R_9 is Asp, Glu or des-R_9; R_{12}, R_{19} and R_{24} are selected from the group consisting of leu, Ile, ala, Asn, Gly, Val, Nle, Phe and Gln; R_{11} is Thr or Ser; R_{13} is His, Tyr or Glu; R_{17} is Glu, Asn or Lys; R_{18} is Val, Nle or Met; R_{21} is Met, Nva, Ile, ala, leu, Gly, Nle, Val, Phe or Gln; R_{22} is ala or Thr or Glu; R_{23} is Arg, Orn, Har or Lys; R_{25} is Asp or Glu; R_{26} is Gln, Asn or Lys; R_{27} is leu, Ile, ala, Val, Nva, Met, Nle, Phe, Asp, Asn, Gln or Glu; R_{28} is ala, Arg or Lys; R_{29} is Gln or Glu, R_{32} is His, Gly, Tyr or ala; R_{33} is Ser, Asn, leu, Thr or ala; R_{36} is Lys, Orn, Arg, Har or leu; R_{37} is leu or Tyr; R_{38} is Met or leu; R_{39} is Glu or Asp; R_{40} is Ile, Thr, Glu, ala, Val, leu, Nle, Phe, Nva, Gly or Gln; and R_{41} is ala, Ile, Gly, Val, leu, Nle, Phe, Nva or Gln; or a non toxic addition salt thereof.

4,605,643

OVINE GRF

Peter Bohlen, Encinitas, Calif.; Paul E. Brazeau, Outremont, Canada; Frederick S. Esch, Oceanside, Calif.; Nicholas C. Ling, and William B. Wehrenberg, both of San Diego, Calif., assignors to The Salk Institute for Biological Studies, San Diego, Calif.

Filed Mar. 2, 1984, Ser. No. 585,814
Int. Cl.[4] A61K *37/43;* C07K *7/10*
U.S. Cl. 514—12 **12 Claims**

1. A peptide having the formula: H-Tyr-Ala-Asp-Ala-Ile-Phe-Thr-Asn-Ser-Tyr-Arg-Lys-Ile-Leu-Gly-Gln-Leu-Ser-Ala-Arg-Lys-Leu-Leu-Gln-Asp-Ile-Met-Asn-Arg-Gln-Gln-Gly-Glu-Arg-Asn-Gln-Glu-Gln-Gly-Ala-Lys-Val-Arg-Leu-Ywherein Y is OH or NH_2 or a nontoxic salt of said peptide.

4,605,644

METHOD FOR STIMULATING RECOVERY FROM ISCHEMIA EMPLOYING RIBOSE AND ADENINE

John E. Foker, Minneapolis, Minn., assignor to Regents of the University of Minnesota, Minneapolis, Minn.

Filed Feb, 7, 1985, Ser. No. 699,037
Int. Cl.[4] A61K *31/70*
U.S. Cl. 514—45 **7 Claims**

1. A method for reducing the recovery time of tissue function following ischemic insult comprising:

(a) perfusing said tissue with a solution incorporating adenine and ribose in an amount effective to restore the tissue ATP level and tissue function to levels substantially equal to those present in the preischemic tissue; and

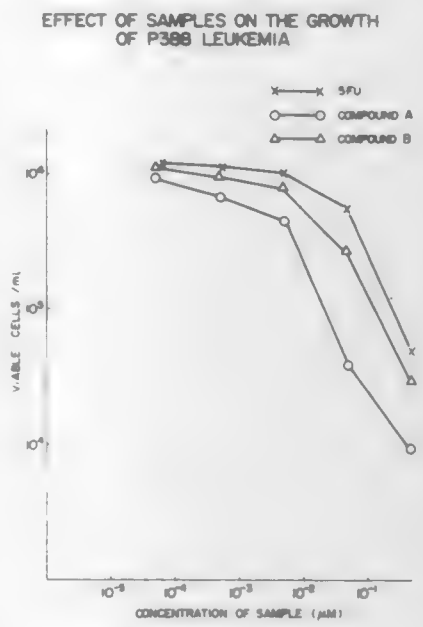
(b) continuing said perfusion until the tissue maintains its restored function and ATP level when the perfusion is discontinued.

4,605,645

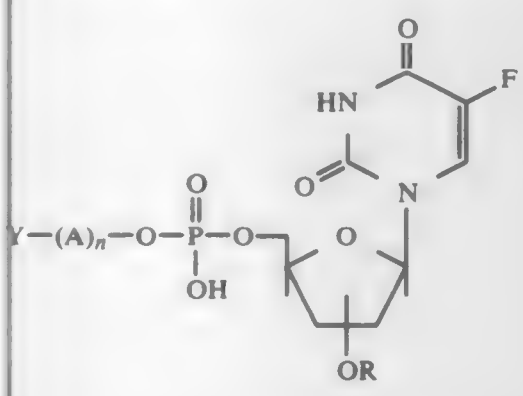
5-FLUORO-2'-DEOXYURIDINE DERIVATIVES AND A PROCESS FOR THE PREPARATION THEREOF

Kenzo Watanabe; Yoshinori Kato, both of Hino; Masahiko Saito, Tokorozawa; Takeo Oba, Hino; Hisashi Fukushima, and Takeshi Hara, both of Hachioji, all of Japan, assignors to Teijin Limited, Osaka, Japan

Filed Dec. 9, 1982, Ser. No. 448,087
Claims priority, application Japan, Dec. 9, 1981, 56-196939; May 6, 1982, 57-74478; Oct. 13, 1982, 57-178507
Int. Cl.[4] C07H *15/12, 17/00*
U.S. Cl. 514—51 **10 Claims**



1. 5-fluoro-2'-deoxyuridine derivatives expressed by general formula (1) and their pharmacologically permissible salts

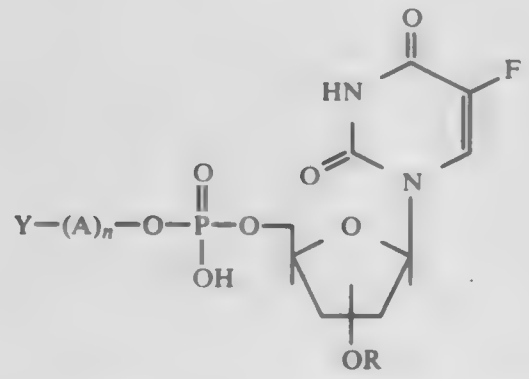


(1)

wherein A indicates a saturated or unsaturated divalent aliphatic hydrocarbon group having 1 to 30 carbon atoms; n indicates 0 or 1, and when n is 0, it indicated that Y is directly bound to an oxygen atom; Y represents a hydrogen atom, phenyl group, halogen-substituted phenyl group, alkyl-substituted phenyl group having 1 to 8 carbon atoms in the alkyl

group, or an acyl substituted phenyl group having 1 to 8 carbon atoms in the acyl group; however, when Y is a hydrogen atom, n is 1; R indicates hydrogen atom or alcohol-protecting group, and wherein, when Y in general formula (1) is a hydrogen atom, A is a member selected from saturated or unsaturated divalent aliphatic hydrocarbon groups having 8 to 24 carbon atoms.

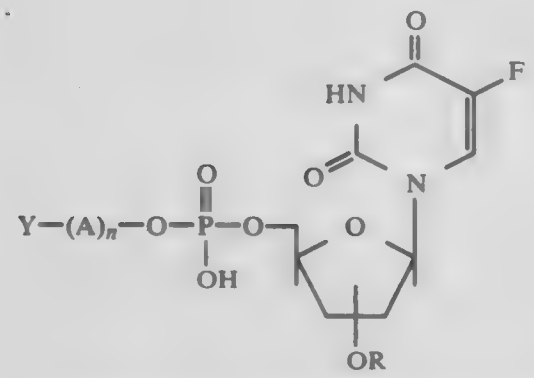
5. An anti-tumor agent comprising a pharmaceutically acceptable carrier and a composition having anti-tumor activity on tumors transplanted into test animals comprising an anti-tumor effective amount of one or more 5-fluoro-2'-deoxyuridine derivatives expressed by the general formula (1) and their pharmacologically permissible salts



(1)

wherein A indicates a saturated or unsaturated divalent aliphatic hydrocarbon group having 1 to 30 carbon atoms; n indicates 0 or 1, and when n is 0, it indicates that Y is directly bound to an oxygen atom; Y represents a hydrogen atom, phenyl group, halogen-substituted phenyl group, alkyl-substituted phenyl group having 1 to 8 carbon atoms in the alkyl group, or an acyl substituted phenyl group having 1 to 8 carbon atoms in the acyl group; however when Y is a hydrogen atom, n is 1; R indicates hydrogen atom or alcohol-protecting group, and wherein, when Y in general formula (1) is a hydrogen atom, A is a member selected from saturated or unsaturated divalent aliphatic hydrocarbon groups having 8 to 24 carbon atoms.

8. A method of anti-tumor therapy comprising the use of a composition having anti-tumor activity on tumors transplanted into test animals comprising an anti-tumor effective amount of 5-fluoro-2'-deoxyuridine derivatives expressed by the general formula (1) and their pharmacologically permissible salts



(1)

wherein A indicates a saturated or unsaturated divalent aliphatic hydrocarbon group having 1 to 30 carbon atoms; n indicates 0 or 1, and when n is 0, it indicates that Y is directly bound to an oxygen atom; Y represents a hydrogen atom, phenyl group, or substituted phenyl group; however, when Y is a hydrogen atom, n is 1; R indicates hydrogen atom or alcohol-protecting group, and wherein, when Y in general formula (1) is a hydrogen atom, A is a member selected from saturated or unsaturated divalent aliphatic hydrocarbon groups having 8 to 24 carbon atoms.

4,605,646

COMPOSITIONS BASED ON VEGETABLE FIBRE AND LACTULOSE

Roberto Bernardi, Milan, Italy, assignor to Farmaco Italiano Padil S.r.l., Milan, Italy

Filed Jul. 16, 1984, Ser. No. 631,106
Claims priority, application Italy, Mar. 28, 1984, 20257 A/84
Int. Cl.[4] A61K *31/70*
U.S. Cl. 514—53 6 Claims

1. A laxative composition comprising 5–10 grams of lactulose per 0.5–2.5 grams of raw fibre, and an inert excipient.

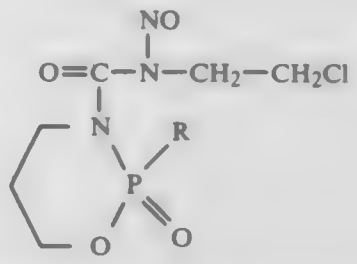
4,605,647

OXAAZAPHOSPHORINE COMPOUNDS AND PHARMACEUTICAL COMPOSITIONS

Gilbert Lavielle, and Claude Cudennec, both of La Celle St Cloud, France, assignors to ADIR, S.A.R.L., Neuilly-sur-Seine, France

Filed Jul. 5, 1985, Ser. No. 752,365
Claims priority, application France, Jul. 6, 1984, 84 10731
Int. Cl.[4] A61K *31/66, 31/675;* C07F *9/24, 9/65*
U.S. Cl. 514—85 8 Claims

1. Oxaazaphosphorine compounds corresponding to the formula I



I

in which R is selected from the group consisting of:

straight-chain and branched-chain alkyl containing from 1 to 6 carbon atoms inclusive,

cycloalkyl containing from 3 to 7 carbon atoms inclusive,

unsubstituted phenyl and phenyl substituted by, a radical selected from the group consisting of alkyl and alkoxy each containing from 1 to 4 carbon atoms inclusive, and halogen

phenylalkyl containing from 7 to 10 carbon atoms inclusive, and these radicals substituted on the phenyl ring by a substituent selected from the group consisting of halogen and alkyl and alkoxy each containing from 1 to 4 carbon atoms inclusive,

straight-chain and branched-chain alkoxy, containing from 1 to 4 carbon atoms inclusive,

phenoxy and thiophenoxy,

mono- and di-alkylamino containing from 1 to 8 carbon atoms inclusive and these groups mono- and di-substituted by halogen, and

pyrrolidin-1-yl, morpholin-4-yl and piperid-1-yl groups, unsubstituted piperazin-1-yl and piperazin-1-yl substituted in the 4-position, by a substituent selected from the group consisting of straight-chain and branched-chain alkyl containing from 1 to 4 carbon atoms inclusive, cycloalkyl containing from 5 to 7 carbon atoms inclusive, unsubstituted phenyl and unsubstituted phenylalkyl containing from 7 to 10 carbon atoms inclusive, and these phenyl and phenylalkyl substituted on the aromatic ring, by a substituent selected from the group consisting of halogen and straight-chain and branched-chain alkyl and alkoxy each containing from 1 to 4 carbon atoms inclusive,

and also, when R is piperazinyl, their pharmaceutically acceptable acid addition salts.

7. Pharmaceutical compositions containing as active ingredient at least one compound according to claims 1, in combination with one or more inert non-toxic excipients.

4,605,648

TREATMENT OF HERPES SIMPLEX VIRUSES

E. Pendleton Price, P.O. Box 102, Kitty Hawk, N.C. 27949

Filed Aug. 15, 1985, Ser. No. 766,100
Int. Cl.[4] A61K *31/56*
U.S. Cl. 514—180 4 Claims

1. A method for treating herpes simplex virus infections which comprises orally administering to a human in need of said treatment an antiviral effective amount of fluoxymesterone.

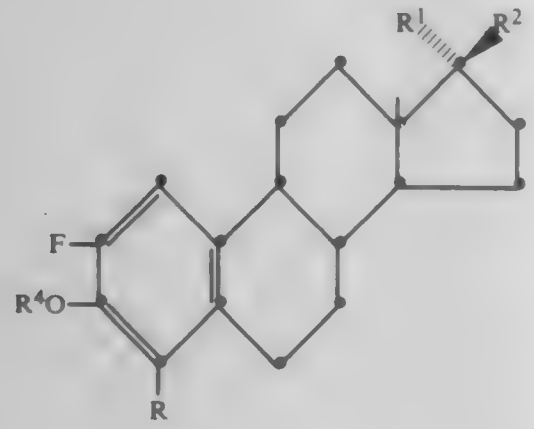
4,605,649

METHOD OF TREATMENT OF ESTROGEN DEFICIENCY DISEASE

Joachim G. Liehr, 115 Beverly La., Bellaire, Tex. 77401

Continuation-in-part of Ser. No. 468,519, Feb. 22, 1983, abandoned. This application Mar. 28, 1984, Ser. No. 594,067
Int. Cl.[4] A61K *31/56*
U.S. Cl. 514—182 12 Claims

1. The method of alleviating menopausal symptoms in human females having an inherited susceptibility to cancer of estrogen sensitive tissues which comprises administering to said menopausal female a menopausal symptom relieving dose of a compound of the formula



wherein R is H or F; R^1, when taken singly, is H or ethinyl; R^2, when taken singly, is OH; R^1 and R^2, when taken together, are O= and R^4 is H or CH_3, but can be CH_3 only when R^1 is not H, not to exceed 2 mg./day, thereby reducing the probability of said human female developing cancer in estrogen sensitive tissues induced by the ingestion of estrogens to relieve menopausal symptoms.

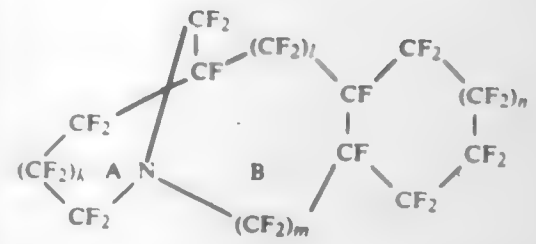
4,605,650

PERFLUORO-1-AZATRICYCLIC AMINE COMPOUNDS USEFUL AS OXYGEN CARRIERS IN ARTIFICIAL BLOOD AND INFUSION FLUIDS

Kazumasa Yokoyama, Toyonaka; Chikara Fukaya, Osaka; Yoshio Tsuda, Takarazuki; Taizo Ono, Osaka; Yoshio Arakawa, Suita; Yoshihisa Inoue, Kyoto; Youichiro Naito, Hirakata, and Tadakazu Suyama, Kyoto, all of Japan, assignors to The Green Cross Corporation, Osaka, Japan

Division of Ser. No. 505,322, Jun. 17, 1983, Pat. No. 4,542,147. This application Jul. 5, 1983, Ser. No. 751,850
Claims priority, application Japan, Aug. 7, 1982, 57-137663; Aug. 7, 1982, 57-137664; Aug. 7, 1982, 57-137665
Int. Cl.[4] A61K *31/40;* C07D *487/08*
U.S. Cl. 514—183 18 Claims

1. A perfluoro-1-azatricyclic amine compound represented by the formula:



wherein k, l and m are each an integer of from zero to 3 so as to make one of the rings A and B to be 5 membered and the other 7 or more membered; n is zero 1, or 2; any one fluorine of the formula being optionally replaced by a trifluoromethyl group.

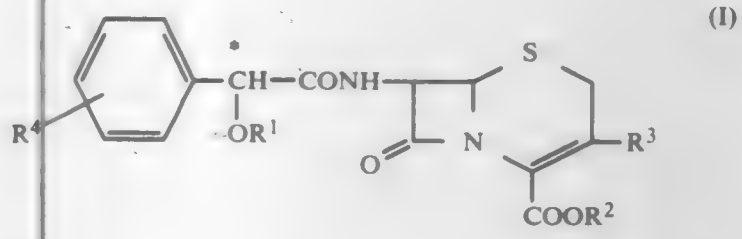
4,605,651

ANTIBIOTIC AMINO ACID DERIVATIVES OF CEPHALOSPORINS

Nobuharu Kakeya, Nagaokakyo; Susumu Nishizawa, Kyoto; Satoshi Tamaki, Moriyama, and Kazuhiko Kitao, Kyoto, all of Japan, assignors to Kyoto Pharmaceutical Industries, Ltd., Kyoto, Japan

Filed Oct. 11, 1983, Ser. No. 540,676
Claims priority, application PCT Int'l Appl., Nov. 10, 1982, PCT/JP82/00437
Int. Cl.[4] A61K *31/545;* C07D *501/36*
U.S. Cl. 514—200 20 Claims

1. A pharmacologically-acceptable antibacterial compound of the formula:



wherein

R^1 is an α-, β- or γ-amino acid moiety (bonded by the ester linkage), which is optionally substituted by one or two lower alkyl groups at the amino group thereof,

R^2 is a 1-alkanoyloxyalkyl, 1-alkoxycarbonyloxyalkyl, phthalidyl or 5-methyl-1,3-dioxolen-2-on-4-ylmethyl group,

R^3 is a carbamoyloxymethyl group, which is optionally substituted by one or two lower alkyl groups, or a heterocyclothiomethyl group, which is optionally substituted by one or more members selected from the group consisting of alkyl having from 1 to 6 carbon atoms, cycloalkyl having 5 or 6 ring carbon atoms, alkenyl having from 2 to 4 carbon atoms, phenyl, tolyl, halo, hydroxy and amino; the heterocycle of the heterocyclothiomethyl group being pyrrolyl, pyrrolinyl, imidazolyl, pyrazolyl, pyridyl or an N-oxide thereof, pyrimidyl, pyrazinyl, pyridazinyl, triazolyl, tetrazolyl, pyrrolidinyl, imidazolidinyl, piperidino, piperazinyl, indolyl, isoindolyl, indolidinyl, benzimidazolyl, quinolyl, isoquinolyl, indazolyl, benzotriazolyl, oxazolyl, isoxazolyl, oxadiazolyl, morpholinyl, benzoxazolyl, benzoxadiazolyl, thiazolyl, thiadiazolyl, thiazolidinyl, thienyl, benzothiazolyl, benzothiadiazolyl or dihydrooxo-as-triazinyl; and

R^4 is a hydrogen atom or a hydroxy group; or a non-toxic salt thereof.

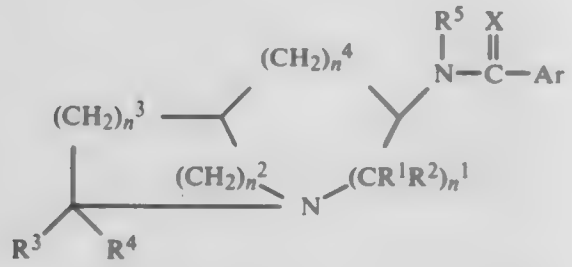
4,605,652

METHOD OF ENHANCING MEMORY OR CORRECTING MEMORY DEFICIENCY WITH ARYLAMIDO (AND ARYLTHIOAMIDO)-AZABICYCLOALKANES

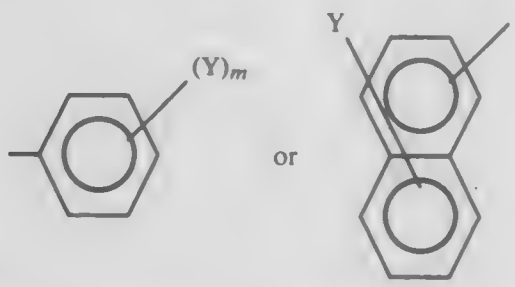
William J. Welstead, Jr., Richmond, Va., assignor to A. H. Robins Company, Inc., Richmond, Va.

Filed Feb. 4, 1985, Ser. No. 697,944
Int. Cl.[4] A61K *31/55*
U.S. Cl. 514—214 19 Claims

1. A method for enhancing learning or memory in living animals in need thereof which comprises administering thereto an effective amount for enhancing learning or memory in said animal of a compound selected from the group having the formula:



wherein n^1, n^2, n^3, and n^4 are zero to three inclusive; R^1, R^2, R^3, and R^4 are hydrogen, loweralkyl or phenyl; R^5 is hydrogen or loweralkyl; X is oxygen or sulfur; Ar is selected from



Y is hydrogen, loweralkoxy, loweralkylthio, halo, trifluoromethyl, amino, loweralkylamino, diloweralkylamino, arylamino, acyl, aminosulfonyl, nitro, or aminocarbonyl; m is one to three inclusive; and a pharmaceutically acceptable acid addition salt and a hydrate and an alcoholate thereof and an optical isomer thereof.

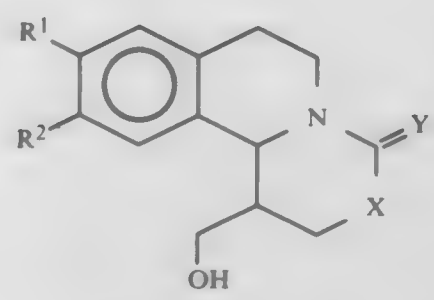
4,605,653

1-(HYDROXYMETHYL)-1,6,7,11B-TETRAHYDRO-2H,4H-[1,3]OXAZINO- OR -THIAZINO-[4,3-A]ISOQUINOLINE DERIVATIVES AND PHARMACEUTICAL COMPOSITIONS CONTAINING THEM

Gábor Bernáth; Jeno Kóbor; Ferenc Fölöp, all of Szeged; Attila Sohajda, Kisvárda; Alajos Kálmán, Budapest; Elemér Ezer, Budapest; György Hajós, Budapest; Éva Pálosi, Budapest; László Dénes, Budapest, and László Szporny, Budapest, all of Hungary, assignors to Richter Gedeon Vegyeszeti Gyar R.T, Budapest, Hungary

Filed Mar. 19, 1985, Ser. No. 713,533
Claims priority, application Hungary, Mar. 23, 1984, 1162/84
Int. Cl.[4] A61K *31/535, 31/54;* C07D *498/04, 513/04*
U.S. Cl. 514—226 6 Claims

1. 1-(Hydroxymethyl)-1,6,7,11b-tetrahydro-2H,4H[1,3]oxazino- or -thiazino[4,3-a]isoquinoline derivatives of the formula (I),



(I)

wherein

R^1 and R^2 are alkoxy having from 1 to 6 carbon atoms,

X is oxygen or sulfur,

Y is =O, =S or an $=NR^3$ group, wherein

R^3 is hydrogen, alkyl having from 1 to 6 carbon atoms, cycloalkyl having from 3 to 8 carbon atoms, phenyl or halo substituted phenyl,

and acid addition and quaternary salts thereof.

4. A pharmaceutical composition having vasodilating, antispasm and antidiarrhoeic activity comprising as its active ingredient an effective amount of at least one compound of the formula (I) as defined in claim 1 or pharmaceutically acceptable salts thereof, in association with pharmaceutical carriers and/or excipients.

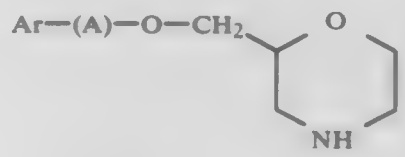
4,605,654

2-(ARYLALKYLOXYMETHYL)MORPHOLINES AND THE CENTRAL NERVOUS SYSTEM COMPOSITIONS

Henri Cousse; Gilbert Mouzin; Jean-Pierre Rieu; Mike Briley, and Antoine Stenger, all of Castres, France, assignors to P. F. Medicament, Paris, France

Filed Dec. 17, 1985, Ser. No. 809,698
Claims priority, application France, Dec. 20, 1984, 84 19553
Int. Cl.[4] A61K *31/535;* C07D *295/08, 413/12*
U.S. Cl. 514—237 3 Claims

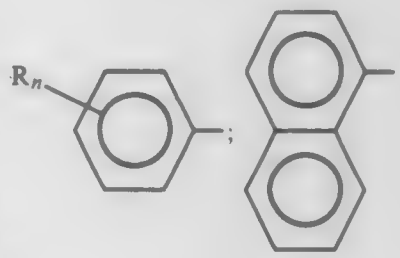
1. 2-(Arylalkyloxymethyl)morpholine derivatives corresponding to the general formula (I):



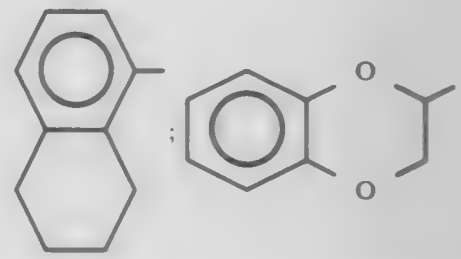
(I)

in which:

Ar denotes an aromatic group, and more especially the following radicals:



;



;

in the case where Ar denotes a phenyl radical, R denotes a hydrogen atom, an alkyl, alkoxy or halogen group, a trifluoromethyl radical, a nitro or amino group, a hydroxy group or an arylalkyloxy group,

n denotes the values 1 to 3;

in the case where n=2 or 3, the radicals R can be identical or different, or can form a methylenedioxy or 1,2-ethylenedioxy group; and

A denotes a linear or branched alkylene radical having 1 to 4 carbon atoms or an alkenylene radical having 2 to 3 carbon atoms,

as well as the salts thereof with therapeutically acceptable inorganic or organic acids.

4,605,655

ANTIPSYCHOTIC 1-FLUOROPHENYLBUTYL-4-(2-PYRIMIDINYL)PIPERAZINE DERIVATIVES

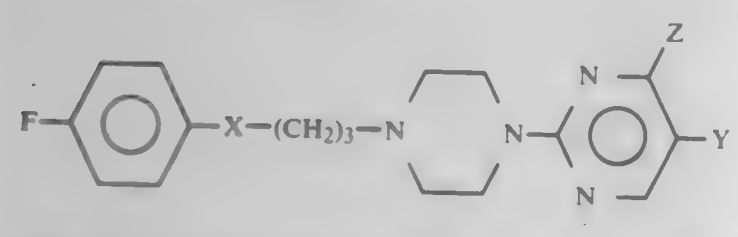
Joseph P. Yevich, Newburgh, and Walter G. Lobeck, Jr., Evansville, both of Ind., assignors to Bristol-Myers Company, New York, N.Y.

Continuation-in-part of Ser. No. 586,580, Mar. 6, 1984, abandoned. This application Dec. 18, 1984, Ser. No. 683,309

Int. Cl.[4] A61K *31/505;* C07D *403/04, 405/14*

U.S. Cl. 514—252 21 Claims

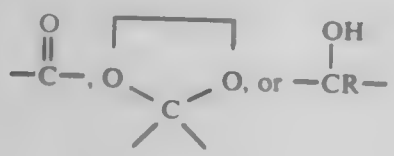
1. A compound of Formula XXI



XXI

and its pharmaceutically acceptable acid addition salts and/or hydrates thereof, wherein

X is



with R being C_{1-4} alkyl, hydrogen, or fluorophenyl,

Y is halogen; and

Z is lower alkoxy or hydrogen.

16. The method for ameliorating an undesirable psychotic state in a mammal comprising oral administration to said mammal of an effective antipsychotic amount of a compound claimed in claim 1.

4,605,656

PYRIDINE AND PYRAZINE OXIME COMPOUNDS AS FUNGICIDES

Franz Dorn, Dielsdorf, Switzerland, assignor to Hoffmann-La Roche Inc., Nutley, N.J.

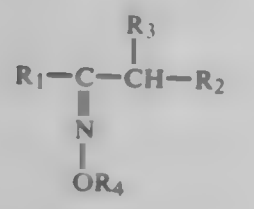
Continuation of Ser. No. 307,395, Oct. 1, 1981, abandoned. This application Oct. 21, 1983, Ser. No. 736,061

Claims priority, application Switzerland, Oct. 10, 1980, 7584/80; Jul. 15, 1981, 4642/81

Int. Cl.[4] C07D *213/53, 241/12;* A01N *35/04, 35/10*

U.S. Cl. 514—255 10 Claims

1. A compound of the formula



I

wherein R_1 is 2-halo-, 4-halo-, or 2,4-dihalophenyl, R_2 is 3-pyridyl or 2-pyrazinyl, R_3 is hydrogen or straight-chain C_{1-4}-alkyl, and R_4 is C_{1-6}-alkyl, C_{3-6}-cycloalkyl, C_{3-6}-alkenyl or C_{3-6}-alkynyl

and acid addition salts thereof.

4,605,657

4-QUINAZALONE FUNGICIDES

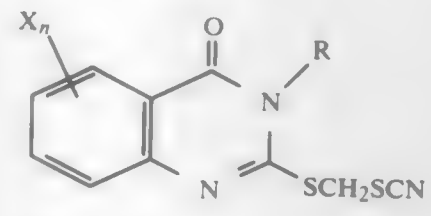
Laroy H. Edwards, Napa, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Apr. 30, 1985, Ser. No. 728,997

Int. Cl.[4] A61K *31/505;* C07D *239/95;* A01N *43/54*

U.S. Cl. 514—259 19 Claims

1. A compound of the formula:



wherein X is independently halogen, lower alkyl of 1 to 6 carbon atoms, lower alkoxy of 1 to 6 carbon atoms, nitro, the group $R^1—S(O)_m—$ wherein R^1 is lower alkyl of 1 to 6 carbon atoms and m is 0, 1 or 2, amino or trifluoro methyl; n is 0, 1, 2 or 3; and R is alkyl of 1 to 10 carbon atoms, cycloalkyl of 3 to 8 carbon atoms, lower alkenyl of 2 to 6 carbon atoms or lower alkynyl of 2 to 6 carbon atoms, all optionally substituted with 1 to 3 of the same or different halogen atoms; aryl of 6 to 12 carbon atoms or substituted aryl substituted with 1 to 3 substituents, independently selected from lower alkyl of 1 to 4 carbon atoms, lower alkoxy of 1 to 4 carbon atoms, lower alkyl thio of 1 to 4 carbon atoms, lower alkylsulfinyl of 1 to 4 carbon atoms, lower alkyl sulfonyl of 1 to 4 carbon atoms, nitro, cyano or halogen.

8. A method of controlling fungi which comprises contacting said fungi or their growth environment with a fungicidally effective amount of a compound of claim 1.

4,605,658

ANTIVIRALLY ACTIVE ADENINE DERIVATIVES

Antonin Holý, Prague, Czechoslovakia, and Erik de Clercq, Louvain, Belgium, assignors to Ceskoslovenska Akademie Ved., Prague, Czechoslovakia and Stichting Rega VZW, Louvain, Belgium

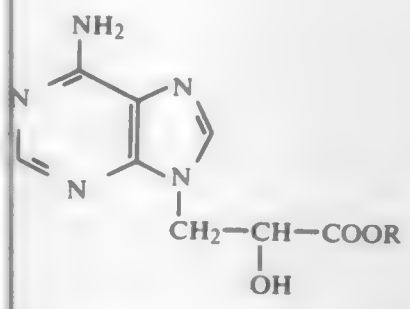
Filed Oct. 5, 1984, Ser. No. 658,438

Claims priority, application Czechoslovakia, Oct. 7, 1983, 7380-83

Int. Cl.[4] A61K *31/52*

U.S. Cl. 514—261 20 Claims

1. A method for treating virus diseases which comprises administering to a patient in need of said treatment an effective antiviral amount of a 3-(adenin-9-yl)-2-hydroxypropanoic acid ester of the formula (I):



(I)

wherein R is linear or branched alkyl with the exception of tert-butyl and n-pentyl, n-octyl, methoxyethyl, or cyclohexyl, in (R), (S), or (RS) form.

4,605,659

PURINYL OR PYRIMIDINYL SUBSTITUTED HYDROXYCYCLOPENTANE COMPOUNDS USEFUL AS ANTIVIRALS

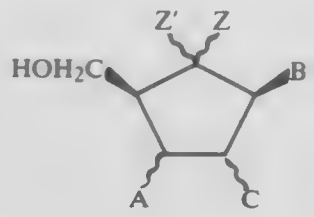
Julien P. H. Verheyden, Los Altos, Calif.; John C. Martin, Fayetteville, N.Y.; G. V. Bindu Madhaven, Palo Alto, Calif.; Daniel P. C. McGee, Mountain View, Calif., and Ernest J. Prisbe, Los Altos, Calif., assignors to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Filed Apr. 30, 1985, Ser. No. 728,954

Int. Cl.[4] A61K *31/52, 31/505;* C07D *473/18, 473/34, 239/36, 239/54*

U.S. Cl. 514—262 45 Claims

1. A compound of the formula



(I)

wherein

A is hydroxy; and

C is hydrogen or hydroxy;

B is a heterocyclic ring selected from the group consisting of 2-amino-6-hydroxypurin-9-yl, 6-aminopurin-9-yl, 2,4-dioxopyrimidin-1-yl optionally substituted at the 5-position by fluoro, methyl, iodo, trifluoromethyl, 2-bromovinyl, 2-chlorovinyl or 2-iodovinyl, and 4-amino-2-oxopyrimidin-1-yl optionally substituted at position-5 by iodo or trifluoromethyl;

Z is hydrogen and Z′ is hydroxy or fluoro; or

Z and Z′ are both fluoro; or

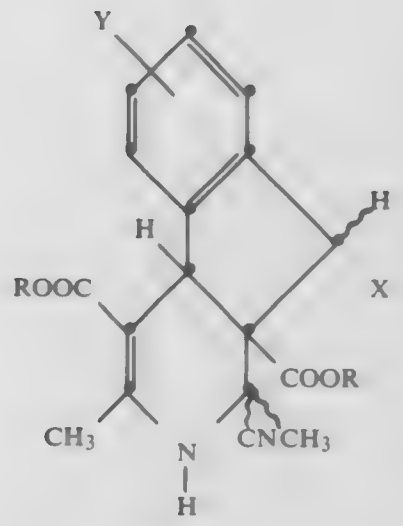
Z together with Z′ is oxo; and

the wavy line indicates that the group may be above or below the plane of the ring; and

the pharmaceutically acceptable acid addition salts thereof.

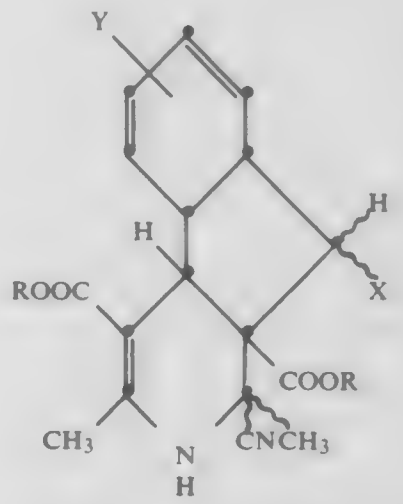
44. A pharmaceutical composition useful for treating viral infections in mammals which comprises an effective amount of at least one compound of claim **1** or a pharmaceutically acceptable acid addition salt thereof and a pharmaceutically acceptable excipient.

45. A method for treating mammals for viral infections which comprises administering an effective amount of a pharmaceutical composition of claim **44**.



wherein the bond designation indicates that the bond may be either above or below the plane of the molecule; X is hydroxy, halogen or acyloxy, Y is hydrogen, nitro, halogen or trifluoromethyl, and R is lower alkyl; wherein acyloxy is an ester group derived from R′COOH where R′ is from 1 to 6 carbon atoms.

10. A pharmaceutical composition useful in providing a calcium entry blocker in the chemotherapeutic treatment of cardiovascular diseases comprising a compound having the structure



wherein the bond designation indicates that the bond may be above or below the plane of the ring; X is hydroxy, halogen or acyloxy, Y is hydrogen, nitro, halogen or trifluoromethyl, and R is lower alkyl and pharmaceutically acceptable salts thereof; wherein acyloxy is an ester group derived from an aliphatic acid R′COOH where R′ is from 1 to 6 carbon atoms, and containing per dosage unit from about 10 to about 500 mg of the active ingredient.

4,605,660

INDENO[2,1-C]PYRIDINE COMPOUNDS, AND THEIR USE AS CALCIUM CHANNEL BLOCKERS

David C. Remy, North Wales, Pa., assignor to Merck & Co., Inc., Rahway, N.J.

Filed Jun. 3, 1985, Ser. No. 740,617

Int. Cl.[4] A61K *31/395;* C07D *221/16*

U.S. Cl. 514—290 11 Claims

1. A compound having the structure:

4,605,661

AROMASTASE INHIBITING α,α-DIARYLIMIDAZOLE-4(5)-PROPIONITRILES, α,α-DIARYLIMIDAZOLE-4(5)-PROPIONAMIDES, AND 4(5)-(2,2-DIARYLETHYL)IMIDAZOLES

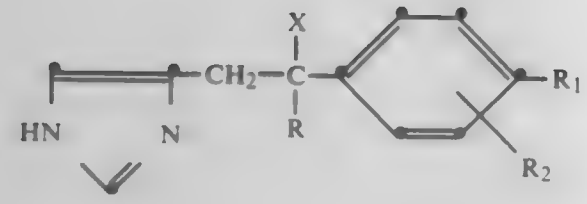
Kenneth S. Hirsch, New Palestine, and Richard P. Pioch, Indianapolis, both of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Jun. 18, 1984, Ser. No. 621,594

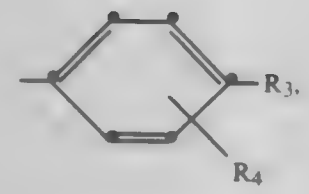
Int. Cl.[4] A61K *31/415, 31/44;* C07D *233/64, 401/06*

U.S. Cl. 514—400 18 Claims

1. A method of inhibiting aromatase in a mammal which comprises administering to said mammal an aromatase inhibiting amount of a compound of the formula

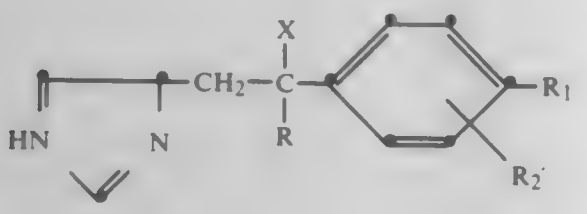


wherein
R is pyridyl or

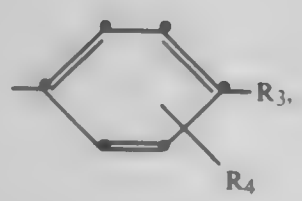


X is —CN, —$CONH_2$, or hydrogen, and
R_1, R_2, R_3, and R_4 are independently hydrogen, methyl, methoxy, fluoro, chloro, bromo, or trifluoromethyl,
or a pharmaceutically acceptable salt thereof.

16. A compound of the formula



wherein
R is pyridyl or



X is —$CONH_2$, and
R_1, R_2, R_3, and R_4 are independently hydrogen, methyl, methoxy, fluoro, chloro, bromo, or trifluoromethyl, or a pharmaceutically acceptable salt thereof.

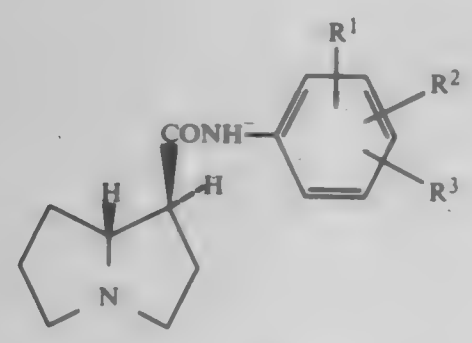
4,605,662

1-SUBSTITUTED PYRROLIZIDINE DERIVATIVES AND ANTIARRHYTHMIC USE THEREOF

Seiji Miyano, Fukuoka; Kunihiro Sumoto, Ohnojo; Fumio Satoh, Nagaokakyo, and Hidetsura Cho, Ibaraki, all of Japan, assignors to Suntory Ltd., Osaka, Japan

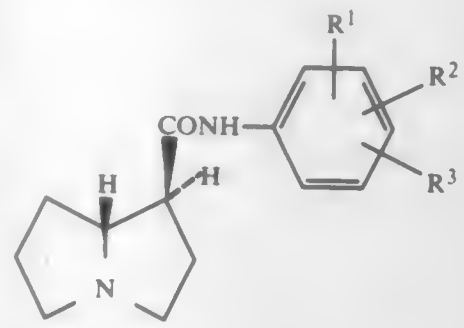
Filed Sep. 6, 1983, Ser. No. 529,548
Claims priority, application Japan, Sep. 9, 1982, 57-157819
Int. Cl.[4] C07D *487/04;* A61K *31/40*
U.S. Cl. 514—413 10 Claims

1. A 1-substituted pyrrolizidine compound of the formula:



(wherein R^1 is hydrogen or a lower alkyl group; R^2 is hydrogen, a lower alkyl or lower alkoxy group, or a halogen; R^3 is hydrogen, a lower alkyl, lower alkoxy or amino group, or a halogen).

6. A pharmaceutical composition useful for providing an antiarrhythmic effect, said composition comprised of an antiarrhythmic effective amount of a 1-substituted pyrrolizidine compound of the formula:



(wherein R^1 is hydrogen or a lower alkyl group; R^2 is hydrogen, a lower alkyl or alkoxy group, or a halogen; R^3 is hydrogen, a lower alkyl, lower alkoxy or amino group, or a halogen) and a pharmaceutical acceptable carrier.

8. A method of inhibiting arrhythmias in a host afflicted with such arrhythmias, which comprises administering to said host an antiarrhythmic effective amount of the pharmaceutical composition of claim 6.

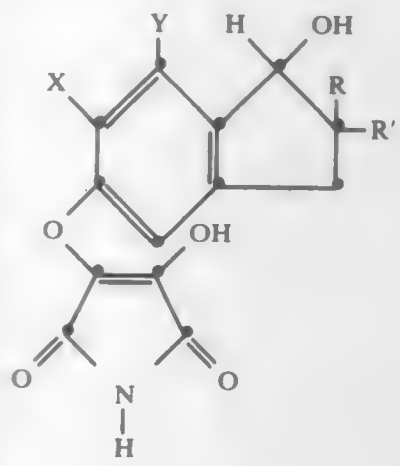
4,605,663

USE OF SUBSTITUTED-3-(2,3-DIHYDRO-1H-INDEN-5-YL)-4-HYDROXY-1H-PYRROLE-2,5-DIONES, FOR TREATMENT OF GREY MATTER EDEMA

Edward J. Cragoe, Jr., Lansdale, and Otto W. Woltersdorf, Jr., Chalfont, both of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Filed May 1, 1984, Ser. No. 606,085
Int. Cl.[4] A61K *31/40*
U.S. Cl. 514—425 1 Claim

1. A method of treating persons with grey matter edema which comprises administering to such a person an effective amount of a compound of the formula:



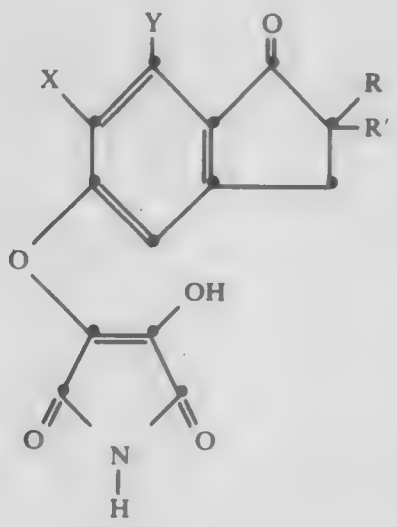
in which
R and R′ are different entities and wherein R is C_3–C_6 cycloalkyl, C_3–C_6 cycloalkyl lower alkyl, aryl selected from phenyl, halophenyl, methoxyphenyl, hydroxyphenyl, thienyl, aralkyl selected from benzyl and phenethyl, lower alkyl, lower alkenyl, lower, alkynyl;
R′ is lower alkyl, lower alkenyl, lower alkynyl; wherein the term lower indicates up to four carbon atoms;
X and Y are each selected from methyl and chloro; and the pharmaceutically acceptable salts thereof.

4,605,664
USE OF SUBSTITUTED-3-(2,3-DIHYDRO-1H-INDEN-5-YL)-4-HYDROXY-1H-PYRROLE-2,5-DIONES FOR TREATMENT OF GREY MATTER EDEMA

Edward J. Cragoe, Jr., Lansdale, and Otto W. Woltersdorf, Jr., Chalfont, both of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Filed May 1, 1984, Ser. No. 605,743
Int. Cl.[4] A61K *31/40*
U.S. Cl. 514—425 **1 Claim**

1. A method of treating persons with grey matter edema which comprises administering to such a person an effective amount of a compound of the formula:



in which

R and R′ are different entities and wherein R is cycloalkyl, cycloalkyl-lower alkyl, phenyl. halophenyl, methoxyphenyl, hydroxyphenyl, thienyl, benzyl, phenethyl, lower alkyl, lower alkenyl, lower alkynyl;

R′ is lower alkenyl, lower alkynyl or lower alkyl; wherein the term lower indicates up to four carbon atoms;

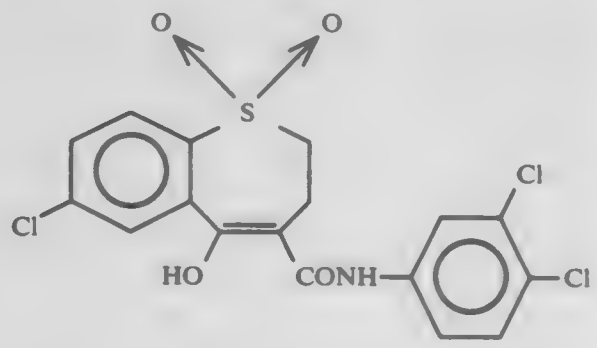
X and Y are each selected from methyl and chloro; and the pharmaceutically acceptable salts thereof.

4,605,665
SYSTEMIC TREATMENT OF SPLANCHNIC ISCHEMIA SHOCK USING 7-CHLORO-N-(3,4-DICHLOROPHENYL)-2,3-DIHYDRO-5-HYDROXY-1-BENZOTHIEPIN-4-CARBOXAMIDE 1,1-DIOXIDE AND PHARMACEUTICALLY ACCEPTABLE SALTS THEREOF

Hui L. Liauw, Wycoff; Howard H. Oei, Basking Ridge, and Edmond C. Ku, Upper Saddle River, all of N.J., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Feb. 28, 1985, Ser. No. 706,588
Int. Cl.[4] A61K *31/38*
U.S. Cl. 514—431 **4 Claims**

1. A method of treating shock induced by splanchnic ischemia in a mammal by parenterally administering an effective cyclooxygenase and lipoxygenase inhibiting amount of a compound of the formula



(I)

or a pharmaceutcally acceptable salt thereof to said mammal in need of the same.

4,605,666
PROCESS FOR PREPARING SPRAY-DRIED POWDERS CONTAINING A WATER-SOLUBLE VITAMIN AND POWDERS PREPARED THEREBY

Douglass N. Schmidt, Grosse Ile; Jeffrey L. Finnan, Southgate, and Rudolph E. Lisa, Grosse Ile, all of Mich., assignors to BASF Corporation, Wyandotte, Mich.

Continuation-in-part of Ser. No. 544,522, Oct. 24, 1983, abandoned. This application Oct. 23, 1984, Ser. No. 686,143
Int. Cl.[4] A61K *31/365*
U.S. Cl. 514—474 **11 Claims**

1. A process for preparing free flowing, lubricated, water-soluble vitamin powders, which are directly compressible into a tablet, which comprises spray drying

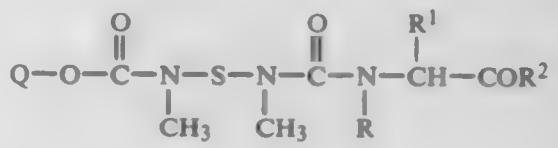
an aqueous slurry of a water-soluble vitamin and a binder in the presence of a lubricant which is added to the drying chamber wherein the amounts of water-soluble vitamin, binder, and lubricant are such that the resulting powder will contain at least 80 percent by weight of water-soluble vitamin, no more than 15 percent by weight of binder, and from 0.5 to 5.0 percent by weight of lubricant.

4,605,667
PESTICIDAL WATER-SOLUBLE AMINOACID SULFENYLATED CARBAMATES

Chennupati K. Rao, Bhopal, India, and Themistocles D. D'Silva, Chapel Hill, N.C., assignors to Union Carbide Corporation, Danbury, Conn.

Filed Mar. 29, 1985, Ser. No. 717,544
Int. Cl.[4] A01N *47/10, 37/34;* **C07C** *119/18, 149/43*
U.S. Cl. 514—477 **20 Claims**

1. A compound of the formula:

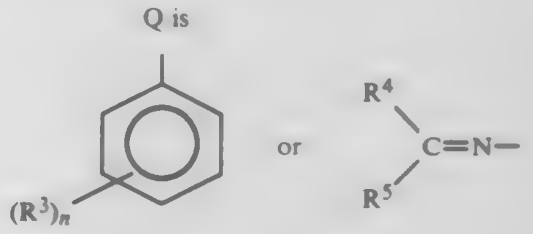


wherein

R is hydrogen or methyl; R^1 is hydrogen, alkyl, alkylthio, hydroxyalkyl, phenylalkyl, or hydroxyphenylalkyl containing from 1 to 6 aliphatic carbon atoms;

R^2 is hydroxy, amino, or an alkali metal, alkaline earth metal, ammonium or alkyl-ammonium salt thereof; or alkoxy, alkylamino or dialkylamino wherein each alkyl moiety may contain from 1 to 6 carbon atoms; and

Q is



wherein

n is 1, 2, 3 or 4;

each R^3 is independently halogen, alkyl, alkoxy, alkylthio, dialkylamino, or alkoxyamido wherein each R^3 independently contains no more than six aliphatic carbon atoms;

R^4 is aminocarbonyl, alkyl, alkylthioalkyl, alkoxyalkyl, cyanoalkyl, nitroalkyl, amidoalkyl, dialkylaminocarbonyl, aminocarbonylalkyl or dialkylaminocarbonylalkyl wherein each alkyl moiety can contain from one to six carbon atoms; and

R^5 is hydrogen, alkylthio, cyanoalkylthio or amidoalkylthio wherein each alkyl moiety can contain from one to six carbon atoms.

16. A method of controlling insects and mites which comprises subjecting them to an insecticidally or miticidally effective amount of a compound according to claim 1.

4,605,668

FUNGICIDAL CARBAMATE COMPOUNDS

Junya Takahashi; Toshiro Kato, both of Hyogo; Hiroshi Noguchi, Osaka; Yukio Oguri, Osaka; Shigeo Yamamoto, Osaka, and Katsuzo Kamoshita, Osaka, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

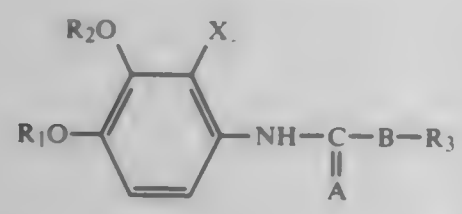
Filed Apr. 12, 1984, Ser. No. 599,625

Claims priority, application Japan, May 17, 1983, 58-87150; May 18, 1983, 58-87974

Int. Cl.[4] C07C *125/065;* A01N *47/20*

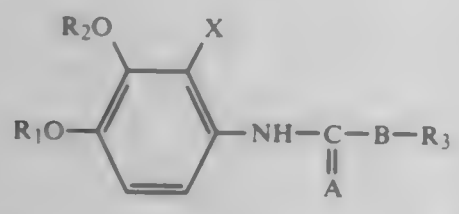
U.S. Cl. 514—485 8 Claims

1. A compound of the formula:



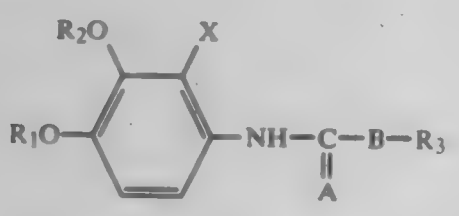
wherein R_1, R_2 and R_3 are, the same or different, each a lower alkyl group, X is a halogen atom or a lower alkyl group and A and B are each an oxygen atom.

4. A fungicidal composition which comprises as an active ingredient a fungicidally effective amount of a compound of the formula:



wherein R_1, R_2 and R_3 are, the same or different, each a lower alkyl group, X is a halogen atom or a lower alkyl group and A and B are each an oxygen atom, and an inert carrier or diluent.

7. A method for controlling drug-resistant strains of plant pathogenic fungi which comprises applying a fungicidally effective amount of at least one of the compounds of the formula:



wherein R_1, R_2, R_3, X, A and B are each as defined in claim 1, to said drug-resistant strains of plant pathogenic fungi.

4,605,669

LIPOXYGENASE INHIBITING NAPHTHOHYDROXAMIC ACIDS

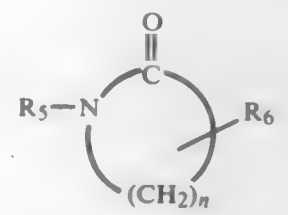
James B. Summers, Jr., Libertyville, Ill., assignor to Abbott Laboratories, North Chicago, Ill.

Filed Apr. 26, 1985, Ser. No. 727,464

Int. Cl.[4] A61K *31/185, 31/205;* C07C *83/10*

U.S. Cl. 514—575 9 Claims

1. A compound of the formula



where

R_1 is H, or C_1 to C_6 alkyl;

R_2 is selected from C_1 to C_{22} alkyl, cycloalkyl, aralcy or alkenyl; and

M is a pharmaceutically acceptable cation.

5. A method of inhibiting lipoxygenase activity in a human or lower animal host in need of such treatment, comprising administering to the human or lower animal host a compound according to claim 1 in an amount effective to inhibit lipoxygenase activity in the host.

4,605,670

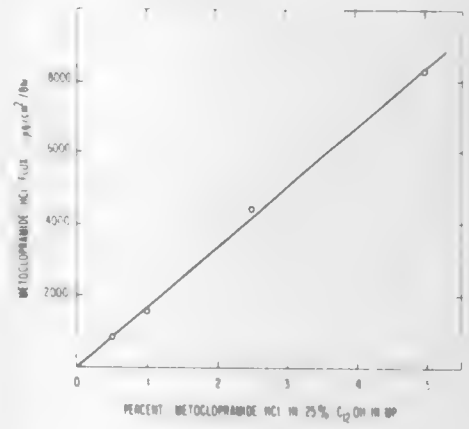
METHOD FOR PERCUTANEOUSLY ADMINISTERING METOCLOPRAMIDE

Kenichiro Saito, Menlo Park; Jorge Heller, Woodside, and Wilfred A. Skinner, Portla Valley, all of Calif., assignors to Nitto Electric Industrial Co., Ltd., Osaka, Japan

Filed Feb. 1, 1984, Ser. No. 576,087

Int. Cl.[4] A61K *31/165, 47/00*

U.S. Cl. 514—619 10 Claims



1. A method of percutaneously administering metoclopramide to a mammal which comprises applying to the skin of the mammal metoclopramide in a carrier system which comprises at least one member selected from the group consisting of a monovalent alcohol ester of an aliphatic monocarboxylic acid having 8 to 32 carbon atoms, an aliphatic monoalcohol having 6 to 24 carbon atoms, and mixtures thereof, at least one member selected from the group consisting of compounds of the formula:

where R_5 is H or a C_1–C_4 alkyl group, R_6 is a C_1–C_4 alkyl group and n is 3, 4 or 5, wherein the esters, alcohols and compounds of the formula have a melting point below 38° C. and a C_3–C_6 diol.

4,605,671

PARENTERAL FORMULATION

Joyce L. DeYoung, Wayne, Pa., assignor to American Home Products Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 655,976, Sep. 28, 1984, abandoned. This application Jul. 23, 1985, Ser. No. 757,992

Int. Cl.[4] A61U *31/135*

U.S. Cl. 514—647 6 Claims

1. A parenterally acceptable, aqueous composition consisting essentially of from 0.2 to about 2.0 percent weight/volume of (−)-13β-amino-5,6,7,8,9,10,11,12-octahydro-5α-methyl-5,11-methanobenzocyclodecen-3-ol; from about 30 to about 45 percent weight/volume propylene glycol; from about 0.5 to about 2.0 percent weight/volume of lactic acid buffered with a pharmaceutically acceptable base to afford a pH of from about 3.5 to about 5.0; and from 0 to 0.02 percent weight/volume of sodium or potassium metabisulfite, in water for injection.

4,605,672

DIETHYLAMINOALKOXYBENZHYDROL DERIVATIVES, PROCESS FOR THEIR PREPARATION AND PHARMACEUTICAL COMPOSITIONS CONTAINING THEM

Edit Tóth; József Törley; György Fekete; László Szporny; László Vereczkey; Éva Pálosi; Imre Klebovich; Pál Vittay; Sándor Görög, and István Hajdu, all of Budapest, Hungary, assignors to Richter Gedeon Vegyeszeti Gyar Rt., Budapest, Hungary

Filed Dec. 27, 1983, Ser. No. 565,912

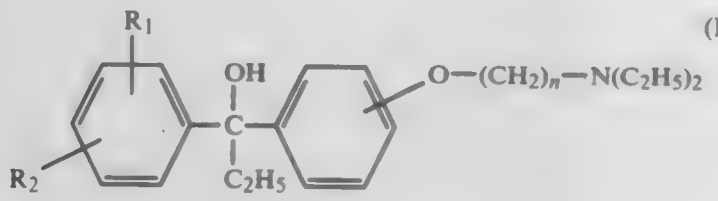
Claims priority, application Hungary, Dec. 28, 1982, 4182/82

The portion of the term of this patent subsequent to Nov. 5, 2002, has been disclaimed.

Int. Cl.[4] A61K *31/135, 31/205*

U.S. Cl. 514—648 9 Claims

1. Diethylaminoalkoxybenzhydrol derivatives of the formula (I)



(I)

wherein

R_1 is hydrogen, halogen, trihalomethyl, alkyl having from one to 4 carbon atoms, or alkoxy having from one to 4 carbon atoms,

R_2 is halogen, trihalomethyl, or alkoxy having from one to 4 carbon atoms, and

n is 1, 2, 3 or 4,

and a pharmaceutically acceptable acid addition and quaternary salts thereof.

5. A method of treating ethanol intoxication narcosis and depression which comprises administering to a susceptible subject an effective amount of a compound as defined in claim 1.

4,605,673

7H-DIBENZO(A,C,)CYCLOHEPTEN-5-ONE-(7) DERIVATIVES

Gerhard Satzinger, Denzlingen; Edgar Fritschi, and Manfred Herrmann, both of St. Peter, all of Fed. Rep. of Germany, assignors to Warner-Lambert Company, Morris Plains, N.J.

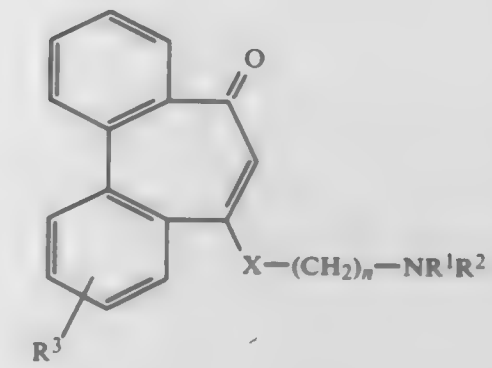
Filed Dec. 19, 1983, Ser. No. 562,690

Claims priority, application Fed. Rep. of Germany, Dec. 24, 1982, 3248094

Int. Cl.[4] A61K *31/135*

U.S. Cl. 514—654 9 Claims

1. A compound of the formula



(I)

wherein

R^1 and R^2 are independently hydrogen, an alkyl radical containing 1 to 3 carbon atoms or, together with the nitrogen atom to which they are attached form a heterocyclic ring containing 3 to 6 carbon atoms;

n is 2 or 3;

R^3 is a hydrogen atom or a halogen atom, and

X is either a methylene group or an oxygen atom

and the pharmacologically acceptable salts thereof with inorganic or organic acids.

4,605,674

SUBSTITUTED ACETOPHENONES AND COMPOSITIONS CONTAINING THEM

Morio Fujiu, Fujisawa; Yasuji Suhara, and Hideo Ishitsuka, both of Yokohama, all of Japan, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

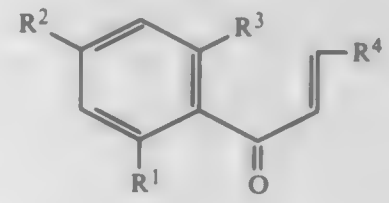
Continuation of Ser. No. 276,578, Jun. 23, 1981, abandoned, which is a continuation of Ser. No. 114,524, Jan. 23, 1980, abandoned. This application Apr. 24, 1984, Ser. No. 602,633

Claims priority, application United Kingdom, Jan. 26, 1979, 7902907

Int. Cl.[4] A61K *31/38, 31/34*

U.S. Cl. 514—685 15 Claims

1. A method for treating an animal afflicted with a viral infection, which method comprises administering to such animal a compound of the formula:



I

wherein

R^1 represents hydroxy; acyloxy derived from an aliphatic acid having 2–18 carbon atoms or derived from a heterocyclic carboxylic acid containing one or more nitrogen atoms; lower alkoxycarbonyloxy; aminoacyloxy or carboxyalkanoyloxy;

R^2 represents lower alkoxy;

R^3 represents hydrogen or lower alkoxy; and

R^4 represents phenyl which is unsubstituted or substituted by one or more substituents selected from the group consisting of lower alkyl, lower alkoxy, benzyloxy, allyloxy, alkylthio, dialkylamino, amino, cyano, hydroxy, halo and alkylenedioxy; or pyridyl, furyl, thienyl or pyrrolyl any of which is unsubstituted or substituted by lower alkyl, in an amount effective for inhibiting viral infections.

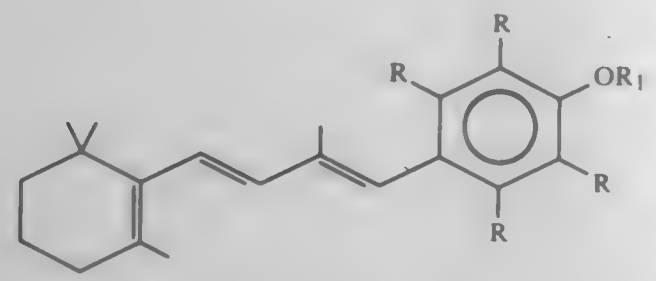
4,605,675

POLYENE COMPOUNDS USEFUL IN THE TREATMENT OF ALLERGIC RESPONSES

Bernard Loev, Scarsdale, and Wan-Kit Chan, Yorktown Heights, both of N.Y., assignors to USV Pharmaceutical Corp., Tarrytown, N.Y.

Filed Oct. 16, 1985, Ser. No. 787,843
Int. Cl.[4] A61K *31/05, 31/075*
U.S. Cl. 514—720 2 Claims

1. A therapeutic composition for the treatment of inflammatory conditions and allergic responses in a human host, in combination with at least one pharmaceutically acceptable extender, a therapeutically effective amount of a compound of the formula



in which R is H or an alkyl group of from 1 to 5 carbon atoms, R_1 is H, lower alkyl of from 1 to 8 carbon atoms or aralkyl, or a pharmaceutically acceptable salt thereof.

4,605,676

SYNTHESIS GAS CONVERSION USING ROR-ACTIVATED CATALYST

Thaddeus P. Kobylinski, Prospect; Charles L. Kibby, Gibsonia; Richard B. Pannell, Allison Park, and Elizabeth L. Eddy, Gibsonia, all of Pa., assignors to Chevron Research Company, San Francisco, Calif.

Continuation-in-part of Ser. No. 635,911, Jul. 30, 1984, which is a continuation-in-part of Ser. No. 310,969, Oct. 13, 1981, abandoned, and a continuation-in-part of Ser. No. 540,662, Oct. 11, 1983, Pat. No. 4,493,905, which is a division of Ser. No. 310,977, Oct. 13, 1981, Pat. No. 4,413,064. This application May 15, 1985, Ser. No. 734,189
The portion of the term of this patent subsequent to Aug. 12, 2003, has been disclaimed.
Int. Cl.[4] C07C *1/04*
U.S. Cl. 518—700 21 Claims

1. A process for the conversion of synthesis gas to a product containing liquid hydrocarbons with an activated, supported catalyst prepared by a process comprising

(A) depositing cobalt or nickel precursor on a refractory metal oxide support by impregnation or precipitation to distribute cobalt or nickel as crystallites on said support to form a supported catalyst, and

(B) activating said supported catalyst by subjecting said supported catalyst to the steps, in sequence, of (i) reduction in hydrogen gas, (ii) oxidation in an oxygen-containing gas and (iii) reduction in hydrogen gas, steps (i), (ii) and (iii) being conducted at a temperature of from about 100° to about 450° C. to form an, activated, supported catalyst more active for conversion of synthesis gas after said step (iii) than after said step (i), and

contacting synthesis gas comprising hydrogen and carbon monoxide under synthesis gas conversion conditions with said, activated catalyst to form a product containing liquid hydrocarbons.

4,605,677

PROCESS FOR C_1–C_4 ALKANOL PRODUCTION FROM SYNTHESIS GAS

John F. Knifton, Austin, Tex., assignor to Texaco Inc., White Plains, N.Y.

Filed Sep. 26, 1985, Ser. No. 780,348
Int. Cl.[4] C07C *27/06*
U.S. Cl. 518—700 17 Claims

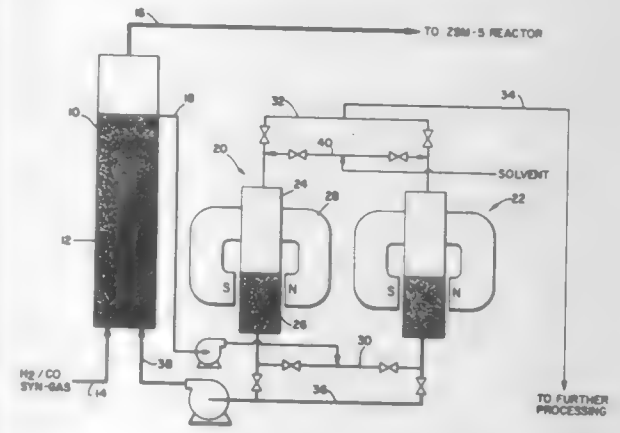
1. An improved process for making C_1–C_4 alkanols with an especially high proportion of ethanol which comprises contacting a mixture of synthesis gas (e.g. carbon monoxide and hydrogen) at a pressure of at least 30 atm and at a temperature of at least 150° C. with a catalyst system comprising a ruthenium-containing compound and a cobalt-containing compound dispersed in a low melting quaternary phosphonium salt wherein improved selectivity for total C_1–C_4 alkanols and ethanol in particular is achieved by use of an N-heterocyclic promoter.

4,605,678

SEPARATION OF CATALYST FROM SLURRY BUBBLE COLUMN WAX AND CATALYST RECYCLE

James A. Brennan; Arthur W. Chester, and Yung-Feng Chu, all of Cherry Hill, N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 479,523, Mar. 28, 1983, abandoned. This application Apr. 8, 1985, Ser. No. 720,916
Claims priority, application South Africa, Mar. 12, 1984, 84/1832
Int. Cl.[4] C07C *1/04*
U.S. Cl. 518—700 33 Claims



1. In an improved process for converting synthesis gas comprising hydrogen and carbon monoxide to hydrocarbons by means of a slurry Fischer-Tropsch synthesis wherein a catalyst having activity for reducing carbon monoxide is dispersed in a liquid to form a slurry in a reaction zone and a wax product is produced by said synthesis in said reaction zone, said wax product having magnetic catalyst fines contained therein, the improvement comprising:

removing said wax product from said slurry and passing said removed wax product through high magnetic field gradients, said high magnetic field gradients being produced by a magnetic filter element placed between the poles of a magnet, said wax product being passed through said filter element, whereby said catalyst fines are held by said magnetic field gradients and separated from said wax product to yield a purified wax product and separated catalyst fines, turning off said magnetic field, and backwashing said filter element with a portion of said purified wax product to return said catalyst fines to said slurry in said reaction zone, whereby the ratio of catalyst-to-slurry is maintained substantially constant.

4,605,679

ACTIVATED COBALT CATALYST AND SYNTHESIS GAS CONVERSION USING SAME

Thaddeus P. Kobylinski, Prospect; Charles L. Kibby, Gibsonia; Richard B. Pannell, Allison Park, and Elizabeth L. Eddy, Gibsonia, all of Pa., assignors to Chevron Research Company, San Francisco, Calif.

Continuation-in-part of Ser. No. 635,911, Jul. 30, 1984, which is a continuation-in-part of Ser. No. 310,969, Oct. 13, 1981, abandoned, and Ser. No. 540,662, Oct. 11, 1983, Pat. No. 4,493,905, which is a division of Ser. No. 310,977, Oct. 13, 1981, Pat. No. 4,413,064. This application May 15, 1985, Ser. No. 734,188

The portion of the term of this patent subsequent to Aug. 12, 2003, has been disclaimed.

Int. Cl.[4] C07C *1/04*

U.S. Cl. 518—700 17 Claims

1. A process for the conversion of synthesis gas to a product containing liquid hydrocarbons with an, activated, supported catalyst prepared by the steps, in sequence, of

(A) impregnating an alumina or silica support with a cobalt carbonyl,

(B) subjecting said cobalt carbonyl-impregnated alumina or silica support to an activation procedure comprising the steps of, in sequence, (i) reduction in hydrogen, (ii) oxidation with an oxygen-containing gas, and (iii) reduction in hydrogen, said activation procedure being conducted at a temperature below about 450° C., to produce an, activated catalyst having an activity after said step (iii) that is greater than the activity of the catalyst after said step (i), and

contacting a synthesis gas comprising hydrogen and carbon monoxide under synthesis conversion conditions with said, activated catalyst to form a product containing liquid hydrocarbons.

4,605,680

CONVERSION OF SYNTHESIS GAS TO DIESEL FUEL AND GASOLINE

Harold Beuther, Cheswick; Charles L. Kibby, Gibsonia; Thaddeus P. Kobylinski, Prospect, and Richard B. Pannell, Allison Park, all of Pa., assignors to Chevron Research Company, San Francisco, Calif.

Continuation of Ser. No. 301,973, Oct. 13, 1981, abandoned. This application Aug. 23, 1985, Ser. No. 768,923

Int. Cl.[4] C07C *1/04*

U.S. Cl. 518—715 30 Claims

1. A process for the conversion of synthesis gas to diesel fuel and gasoline, which comprises contacting synthesis gas consisting essentially of CO and hydrogen in a synthesis gas conversion zone with a synthesis gas conversion catalyst comprising cobalt and 0 to about 100 parts by weight of a Group IIIB or IVB metal oxide per 100 parts by weight of said cobalt, on a high surface area, high purity, low acidity alumina support of gamma-alumina, eta-alumina or mixtures thereof, said catalyst having a hydrogen chemisorption value of from about 100 to about 300 micromol of hydrogen per gram of total catalyst when measured at 25° C., said catalyst having been prepared by (A) impregnation of said alumina support with a non-aqueous, organic solvent impregnation solution of cobalt nitrate and (B) reduction of said impregnated alumina support by heating, in the presence of hydrogen gas, at a heating rate of from about 0.5° to about 5° C. per minute to a maximum hold temperature in the range of 180° to about 220° C. for a hold time of 6 to about 24 hours and thereafter heating said impregnated alumina support in the presence of hydrogen gas while heating up to a maximum hold temperature of from about 250° to about 400° C. for a hold time of 6 to about 65 hours, to produce a reaction effluent comprising straight chain hydrocarbons boiling in the diesel fuel boiling range and in the C_5–C_9 range, separating a stream comprising said straight chain paraffins in the C_5–C_9 range from the reaction effluent and subjecting said separated stream to dehydrocyclization in the presence of hydrogen and a dehydrocyclization catalyst in a dehydrocyclization conversion zone to produce a high octane gasoline product.

4,605,681

THERMOSETTING POLYURETHANES

Peter J. Grey, and Kevin Gardner, both of Burton on Trent, United Kingdom, assignors to BTR plc., London, United Kingdom

Filed Jun. 24, 1985, Ser. No. 747,831

Claims priority, application United Kingdom, Jun. 26, 1984, 8416320

Int. Cl.[4] C08G *18/14*

U.S. Cl. 521—51 15 Claims

1. A thermoset polyurethane material which exhibits high, temperature-insensitive damping over a broad temperature range and has a tan δ (as hereinbefore defined) greater than 0.1 over the temperature range of from −40° C. to 60° C., a hardness in the range of from 0 to 90 Shore A, a compression set (as hereinbefore defined) of less than 15% and a tensile strength (as hereinbefore defined), of less than 30 kg/cm^2, the polyurethane material being prepared by the reaction of

(a) an essentially primary hydroxyl tipped polyol having a molecular weight in the range of from 2,500 to 8,000;

(b) a polyhydric alcohol;

(c) an aliphatic monohydric primary alcohol containing up to 10 carbon atoms; and

(d) a polyisocyanate, the reaction being carried out at a isocyanate index of 1.0 or greater.

4,605,682

LIGHTLY CROSSLINKED POLYETHYLENE POLYSTYRENE BLEND FOAMS AND PROCESS FOR MAKING

Chung P. Park, Pickerington, Ohio, assignor to The Dow Chemical Company, Midland, Mich.

Filed Feb. 4, 1985, Ser. No. 697,653

Int. Cl.[4] C08J *9/14*

U.S. Cl. 521—81 4 Claims

1. A process for preparing a lightly crosslinked polymer foam material comprising the steps of:

(a) melt processing under pressure from about 95 to 50% by weight of a low density ethylene polymer and from about 5 to 50% by weight of a styrene polymer together with a volatile blowing agent and a sufficient amount of a free radical generating compound as a crosslinking agent, to form a flowable admixture; and

(b) extruding said admixture through a die to a zone of lower pressure and activating said blowing agent to expand said admixture of polymers to a cellular structure crosslinked with itself to form a lightly crosslinked polymer foam material.

4,605,683

POLYMERIC BUNS AND METHOD AND APPARATUS FOR ITS MANUFACTURE

Edwin Broslaw, Hackensack, N.J., assignor to Crest-Foam Corporation, Moonachie, N.J.

Filed Aug. 6, 1984, Ser. No. 637,907

Int. Cl.[4] C08G *18/14*; B29C *39/16, 39/42, 67/22*

U.S. Cl. 521—99 39 Claims

1. A method of manufacturing a flattopped polymeric bun comprising the steps of

forming a support surface into a trough,

dispensing liquid polymer which expands on reaction onto said support surface,

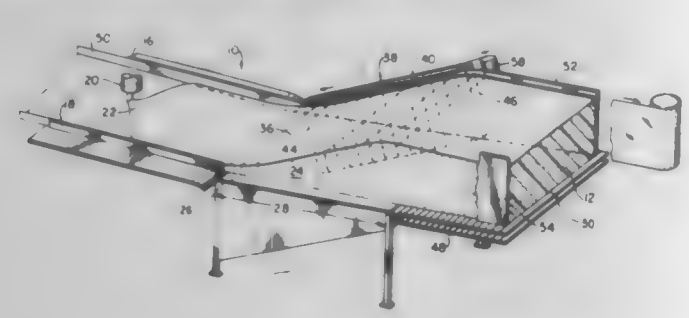
inclining said support surface to cause flow of said polymer to an expansion region in which said polymer expands,

introducing said polymer onto a supporting liquid which supports said polymer in a zone which is substantially coextensive with at least a major portion of said expansion region, said supporting liquid having a specific gravity

higher than that of said polymer, whereby said polymer floats on and advances across said supporting liquid in the form of an expanding mass having left and right sides, a flat bottom and a top which slopes upwardly in the direction of advance,

bringing conveying means into supporting relation to said expanding mass at said respective left and right sides of said expanding mass, said conveying means having polymer-supporting active surfaces which respectively lie in substantially vertical planes extending in the direction of advance,

interposing a protective film between said polymer and each of said polymer-supporting active surfaces,



advancing said polymer-supporting active surfaces of said conveying means to move along with said expanding mass with respect to said supporting liquid, the interposed protective films being thereby advanced therewith, and

orienting said conveying means so that the direction of advance of said polymer-supporting active surfaces is substantially parallel to said sloping top, the lower ends of said conveying means being submerged in said supporting liquid and being usptream of the higher ends thereof,

whereby upon completion of said expansion, a polymeric bun is formed having bottom, left, right, and top surfaces that are substantially flat.

11. A polymeric bun made by the method of claim 1.

4,605,684

ANTISTATIC POLYURETHANE FOAM

Michael P. Pcolinsky, Jr., 1009 Meade Ct., Hazleton, Pa. 18201

Filed Oct. 31, 1985, Ser. No. 793,163

Int. Cl.[4] C08J *9/00*

U.S. Cl. 521—107 **9 Claims**

1. In the method of preparing a flexible polyurethane foam from a polyol and a polyisocyanate the improvement which comprises adding to the foam-forming composition from about five to about 25 parts by weight per 100 parts by weight of polyol of an antistatic additive composition comprising one part by weight of a quaternary ammonium compound selected from the group consisting of soya dimethyl ethyl ammonium ethylsulfate, soya dimethyl ethyl ammonium ethylphosphate, and mixtures thereof and from about 0.4 to about 3 parts by weight of a plasticizer composition selected from the group consisting of N-ethyl-o- and p-toluene sulfonamide, o- and p-toluene sulfonamide, tetrakis (2 chloroethyl) ethylene diphosphate, and mixtures thereof, to provide a foam having a reduced tendency to develop and accumulate electrostatic charges.

4,605,685

METHOD FOR PREPARATION OF GRAFT POLYMERIC MEMBRANES

Takashi Momose, Urbana, Ill.; Kazuo Tomiie, Tokyo, Japan; Hiroyuki Harada, Yokohama, Japan; Hiroshi Miyachi, Okayama, Japan, and Hiroko Kato, Tamano, Japan, assignors to Chlorine Engineers Corp., Ltd., Tokyo, Japan

Filed Sep. 6, 1984, Ser. No. 648,018

Claims priority, application Japan, Sep. 6, 1983, 58-162512; Nov. 22, 1983, 58-218679; Dec. 13, 1983, 58-233680; Mar. 19, 1984, 59-51096

Int. Cl.[4] C25B *13/00;* C29C *7/04*

U.S. Cl. 522—124 **13 Claims**

1. A method for the preparation of a graft polymer membrane comprising an inactive polymer film selected from the group consisting of polyethylene film, polytetrafluoroethylene film, polychoroethylene film, polyvinylidene fluoride film, polyvinyl fluoride film, tetrafluoroethylene-hexafluoropropylene copoplymer film, tetrafluoroethyleneethylene copolymer film, tetrafluoroethylene propylene copolymer film, tetrafluoroethylene-perfluoroalkyl vinyl ether copolymer film, chlorotrifluoroethylene-ethylene copolymer film, and chlorotrifluoroethylene-propylene copolymer film having α,B,B-trifluorostyrene as a graft chain; comprising the steps of:

irradating the inactive polymer film alone with ionizing radiation at a dose of 1–30 Mrad to produce radicals; and graft-polymerizing the resulting irradiated film by contacting said film with α,B,B-trifluorostyrene at a temperature within the range of 10°–90° C. for a time of 1–50 hrs., said graft polymerization being carried out while said radicals retain their life and, in the case of holding the films, by a time not greater than about two weeks from irradiation depending on holding temperature.

4,605,686

LATEX FOR IMMUNOSEROLOGICAL TESTS AND A METHOD FOR THE PRODUCTION OF THE SAME

Satoshi Obana, Osaka, Japan, assignor to Sekisui Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Mar. 11, 1985, Ser. No. 710,234

Claims priority, application Japan, Mar. 13, 1984, 59-48447; Mar. 13, 1984, 59-48448; May 4, 1984, 59-89897; Jun. 5, 1984, 59-115785

Int. Cl.[4] C08L *41/00;* G01N *1/00*

U.S. Cl. 523—105 **20 Claims**

1. A latex for immunoserological tests containing polystyrene and/or polystyrene derivative particles which are prepared by polymerizing styrene or copolymerizing styrene and styrenesulfonates in the absence of emulsifying agents to form a suspension of polymer particles, and chlorinating said suspension to form particles having uniform diameters and a specific gravity ranging from 1.10 to 1.60.

4,605,687

MULTILAYER AUTOMOTIVE PAINT SYSTEM

Sol Panush, Farmington Hills, Mich., assignor to Inmont Corporation, Clifton, N.J.

Continuation of Ser. No. 631,041, Jul. 16, 1984, abandoned, which is a division of Ser. No. 526,724, Aug. 26, 1983, Pat. No. 4,499,143. This application Dec. 16, 1985, Ser. No. 808,675

Int. Cl.[4] C09D *5/29;* B32B *19/02;* C09C *1/62;* C08K *9/10*

U.S. Cl. 523—171 **1 Claim**

1. A transparent coating composition particularly adapted for use in automotive coatings consisting essentially of thermoplastic or thermosetting resin containing iron oxide encapsulated mica particles in a particle to weight ratio of about 0.0001 to about 0.32, the iron oxide encapsulation additionally containing about 1% to about 35% titanium dioxide and about 0.1% to about 3.5% chromium hydroxide, based on total weight of the particle, the mica particles being about 5 microns to about 60 microns nominal longitudinal dimension and having a thickness of about 0.25 micron to about 1 micron, the iron

oxide encapsulation representing about 10% to about 85% by weight of the total weight of the particle, the composition when used as a transparent topcoat portion of a multicoat coating system producing metallic color effects and stability to the elements.

4,605,688

METHOD FOR MAKING SYNTACTIC FOAM WITH IMPROVED PROCESSING CHARACTERISTICS USING A SILANE COUPLING AGENT IN COMBINATION WITH AN AMINATED ALKYLPHENOL ALKOXYLATE

Kathy B. Sellstrom, and Harold G. Waddill, both of Austin, Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Dec. 13, 1985, Ser. No. 808,694
Int. Cl.[4] C08J 9/32
U.S. Cl. 523—218 5 Claims

1. In a method for making syntactic foams with improved processibility and lower cure times, including combining a vicinal ployepoxide having an epoxy equivalency of greater than 1.8, a hollow granular filler and a curing amount of a curing agent for the polyepoxide, the improvement which comprises:

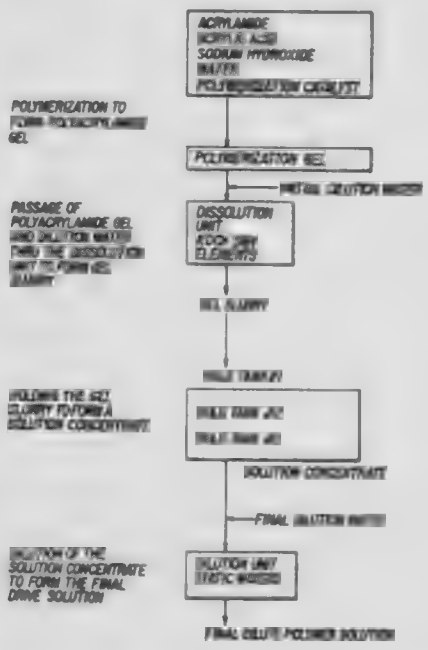
combining with the above ingredients an effective amount of an aminated alkylphenol alkoxylate and an effective amount of an aminosilane coupling agent. An alkylphenol alkoxylate and a silane coupling agent.

4,605,689

PREPARATION OF AQUEOUS POLYACRYLAMIDE SOLUTIONS FOR ENHANCED OIL RECOVERY

John M. Witheford, Wyckoff, N.J.; Joseph J. Pellon, New Canaan, and William P. Colman, Stamford, both of Conn., assignors to American Cyanamid Company, Stamford, Conn.

Filed Nov. 28, 1984, Ser. No. 675,491
Int. Cl.[4] C08K 5/20
U.S. Cl. 523—313 11 Claims



1. A process for producing a dilute polyacrylamide solution comprising:

(a) providing a polyacrylamide gel of from about 6 to about 15% polymer solids and having a solution viscosity of from about 3 to about 10 cps, as measured on a 0.1% polymer solution in 1N NaCl in a Brookfield viscometer equipped with UL adaptor at 60 rpm and at 25° C.;

(b) conveying the polyacrylamide gel and a minor amount of aqueous media through at least one static cutting device to provide a substantially non-degraded, concentrated aqueous slurry of finely divided gel particles;

(c) dissolving and homogenizing said concentrated gel slurry in said aqueous media to provide a homogeneous solution concentrate; and

(d) thereafter, diluting said solution concentrate with aqueous media until a dilute polyacrylamide solution of desired polymer solids content is obtained.

4,605,690

LOW VOLATILE ORGANIC CONTENT CATHODIC ELECTRODEPOSITION BATHS

Tapan K. Debroy, Novi, Mich.; Dave W. Braun, Toledo, Ohio, and Ding-Yu Chung, Farmington Hills, Mich., assignors to Inmont Corporation, Clifton, N.J.

Filed Apr. 15, 1985, Ser. No. 723,589
Int. Cl.[4] C09D 5/46, 3/58
U.S. Cl. 523—414 6 Claims

1. In a cathodic electrodepositable resin composition comprising an epoxy resin/amine adduct, wherein the epoxy/amine-adduct is mixed with a primary crosslinking agent and salted to form a principle emulsion, the improvement comprising the inclusion of an additional crosslinking agent having Tg below ambient temperature as a reactive diluent in the principle emulsion, thereby producing a principle emulsion which, when incorporated into a coating bath, produces smooth electrodeposited films, thereby eliminating or substantially reducing the need for volatile organic coalescent solvents.

4,605,691

CROSS-LINKED GELS OF HYALURONIC ACID AND PRODUCTS CONTAINING SUCH GELS

Endre A. Balazs, Riverdale, N.Y., and Adolf Leshchiner, Fairview, N.J., assignors to Biomatrix, Inc., Ridgefield, N.J.

Division of Ser. No. 678,895, Dec. 6, 1984, abandoned. This application Jul. 18, 1985, Ser. No. 755,976
Int. Cl.[4] C08B 37/08
U.S. Cl. 524—27 6 Claims



1. A method of preparing a cross-linked gel of hyaluronic acid comprising subjecting sodium hyaluronate in a dilute aqueous alkaline solution at a pH of not less than about 9 to a cross-linking reaction with divinyl sulfone at about 20° C.

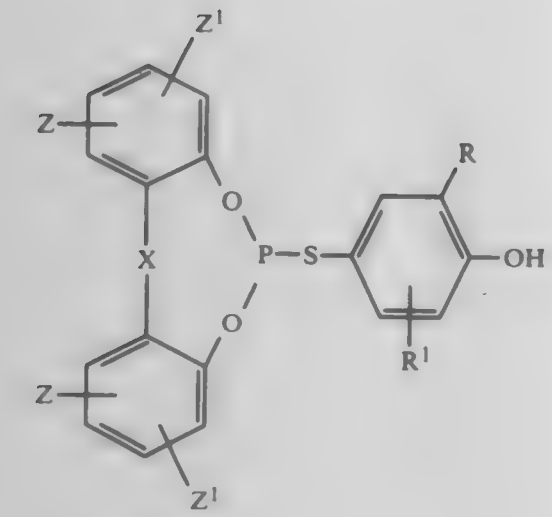
4,605,692

SUBSTITUTED DIBENZO DIOXAPHOSPHEPINS AND DIOXAPHOSPHOCINS AS STABILIZERS

John D. Spivack, Spring Valley, and Ramanathan Ravichandran, Yonkers, both of N.Y., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Dec. 17, 1984, Ser. No. 682,648
Int. Cl.[4] C07F 9/15
U.S. Cl. 524—117 13 Claims

1. A compound of the formula



wherein

R and R^1 independently are hydrogen, alkyl of 1 to 18 carbon atoms, cycloalkyl of 5 to 6 carbon atoms, phenyl, phenyl substituted by alkyl of 1 to 18 carbon atoms, aralkyl of 7 to 9 carbon atoms or said aralkyl substituted by alkyl of 1 to 12 carbon atoms;

Z and Z^1 independently are hydrogen, alkyl of 1 to 18 carbon atoms, cycloalkyl of 5 to 6 carbon atoms, phenyl or phenyl substituted by alkyl of 1 to 18 carbon atoms; and

X is a direct bond, sulfur or alkylidene of 1 to 12 carbon atoms.

4,605,693

RUBBER-METAL ADHESION PROMOTERS

Syed K. Mowdood, Akron, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Division of Ser. No. 584,180, Feb. 27, 1984, Pat. No. 4,521,558. This application Jan. 24, 1985, Ser. No. 694,380

Int. Cl.⁴ C08K *5/17*

U.S. Cl. 524—239 **13 Claims**

1. A composite comprising a rubber composition with a metal reinforcing element embedded therein, wherein said rubber composition contains from about 0.05 to about 10 parts per hundred parts of rubber by weight of at least one adhesion promoter selected from the group consisting of iminodiacetic acids, N-substituted iminodiacetic acids, salts of N-substituted iminodiacetic acids, and salts of iminodiacetic acids.

4,605,694

PLASTICIZING COMPOSITIONS FOR POLYVINYLCHLORIDE

John F. Walker, Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.

Filed Oct. 31, 1985, Ser. No. 793,508

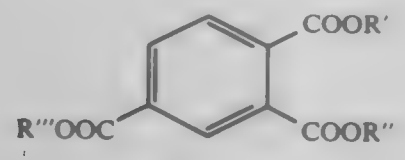
Int. Cl.⁴ C08K *5/12*

U.S. Cl. 524—292 **5 Claims**

1. A composition comprising:

(a) polyvinylchloride;

(b) at least one trimellitate ester having the structural formula



wherein R', R'', and R''' are independently branched or straight chain alkyls having about 6 to about 10 carbon atoms; and

(c) at least one pentaerythritol alkanoic acid ester, wherein the alkanoic acid is n-heptanoic acid or a mixture of straight chain C_5–C_{10} monocarboxylic alkanoic acids having an average carbon chain length of 6.5 to 7.5 and having less than about 15% by weight C_5 and C_{10} monocarboxylic alkanoic acids.

4,605,695

HEAT- AND ABRASION-RESISTANT COATING MATERIAL

Hiroshi Sakamaki, Utsunomiya; Yukio Horikoshi, Kazo, and Kikuji Yanagihashi, Yono, all of Japan, assignors to Nippon Piston Ring Co., Ltd., Tokyo, Japan

PCT No. PCT/JP84/00058, § 371 Date Oct. 17, 1984, § 102(e) Date Oct. 17, 1984, PCT Pub. No. WO84/03291, PCT Pub. Date Aug. 30, 1984

PCT Filed Feb. 21, 1984, Ser. No. 666,239

Claims priority, application Japan, Feb. 24, 1983, 58-28488

Int. Cl.⁴ C08K *3/04, 3/14, 3/20;* **C08L** *27/18*

U.S. Cl. 524—424 **1 Claim**

1. A heat- and abrasion-resistant coating material comprising a finely powdered resin mixture of 70 to 90 weight % of finely powdered tetrafluoroethylenehexafluoropropylene copolymer resin and 10 to 30 weight % of finely powdered polyimide resin containing 5 to 15 weight %, based on the total weight, of at least one inorganic member selected from the group consisting of ZrO_2, SiC, Si_3N_4, Al_2O_3, and C having a particle size of 0.2 to 1.0 micron meter, said material being adapted to be applied, as a supension, onto sliding members, and baked to form a coating thereon.

4,605,696

ENHANCED ADHESION OF RUBBER TO REINFORCING MATERIALS THROUGH THE USE OF PHENOLIC ESTERS

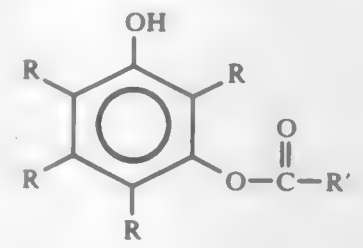
David A. Benko, Munroe Falls; Syed K. Mowdood, Akron; Paul H. Sandstrom, Tallmadge; Walter H. Waddell, III, Akron, and Lawson G. Wideman, Tallmadge, all of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Sep. 27, 1985, Ser. No. 781,081

Int. Cl.⁴ C08L *61/12*

U.S. Cl. 524—432 **19 Claims**

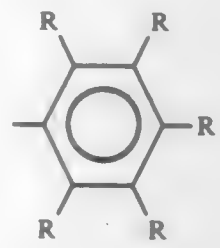
1. A vulcanizable rubber composition comprising rubber, a vulcanizing agent and the reaction product of (A) a methylene donor and (B) a methylene acceptor selected from at least one compound of the general structural formula (I):



(I)

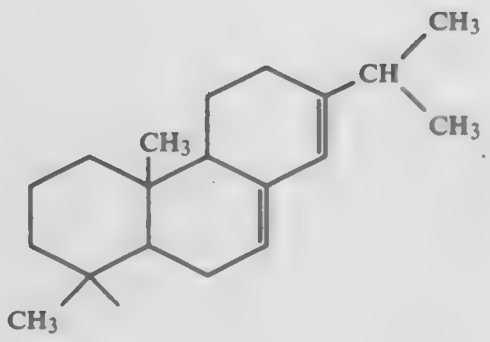
wherein R may be the same or different radicals selected from the group consisting of hydrogen, halogen, alkyl of 1 to 18 carbon atoms, alkoxy of 1 to 18 carbon atoms, and hydroxyl:

wherein R' is an aromatic radical the structural formula:



wherein R is defined as above;

or a radical of the structural formula:



4,605,697

SUBSTITUTED SULFONAMIDO COMPOUNDS, PHOTOSENSITIVE ELEMENTS, FILM UNITS, AND PROCESSES FOR RETAINING A PHOTOGRAPHIC IMAGE WITH SAME

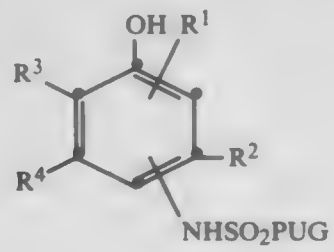
Claude F. Gerbal, Bonneuil-sur-Marne, France; Thomas E. Gompf, Rochester, N.Y., and Pierre D. Collet, Nogent-sur-Marne, France, assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation of Ser. No. 150,037, May 15, 1980, abandoned, which is a division of Ser. No. 3,972, Apr. 24, 1979, Pat. No. 4,258,120. This application Sep. 16, 1983, Ser. No. 533,075

Int. Cl.[4] C09B *43/00, 43/12, 43/124, 43/132*

U.S. Cl. 534—648 **5 Claims**

1. A nondiffusible sulfonamidonaphthol compound which is alkali-cleavable upon oxidation to release a diffusible photographically useful material, said nondiffusible sulfonamidonaphthol compound having the formula:



wherein:

(a) R^1 is alkyl, aryl, sulfamyl, carbamyl, carbonamido, carbonyl, carbonyloxy or sulfonamido;

(b) R^2 is alkyl having from 1 to 18 carbon atoms, aryl, or alkylphenyl having from 7 to 12 carbon atoms;

(c) R^3 and R^4, taken together with the phenol group, form a fused substituted naphthol group;

(d) PUG represents a photographically useful group; and

(e) at least one of R^1, R^2, R^3 or R^4, or any combination thereof, provides a molecular configuration of such size or shape as to render the compound nondiffusible under alkaline processing conditions.

4,605,698

POLYFUNCTIONAL AZIRIDINES FOR USE IN CROSSLINKING APPLICATIONS

Frank C. Briden, Morristown, N.J., assignor to Diamond Shamrock Chemicals Company, Dallas, Tex.

Division of Ser. No. 513,454, Jul. 13, 1983, Pat. No. 4,563,307. This application Sep. 12, 1985, Ser. No. 775,430

Int. Cl.[4] C08L *33/02*

U.S. Cl. 524—559 **11 Claims**

1. In a coating composition selected from the group consisting of aqueous and solvent based coating compositions containing crosslinkable carboxylated polymer and at least one polyfunctional aziridine crosslinking agent, the improvement comprising the presence of at least one polyfunctional aziridine crosslinking agent which is the reaction product of (1) ethylene imine and (2) acrylates of alkoxylated polyols selected from the group consisting of trimethylol propane, neopentyl glycol, pentaerythritol, bis phenol A, bis phenol F and glycerol having from about 2 to about 12 moles of at least one alkylene oxide selected from the group consisting of ethylene oxide and propylene oxide.

4,605,699

THERMOPLASTIC MOLDING COMPOSITIONS CONTAINING POLYCARBONATE AND AN ACRYLATE GRAFT COPOLYMER

Konrad Mitulla, Ludwigshafen; Juergen Hambrecht, Heidelberg; Adolf Echte; Johann Swoboda, both of Ludwigshafen; Peter Siebel, Limburgerhof; Josef Schwaab, Maikammer, and Herbert Frank, Weisenheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Apr. 11, 1985, Ser. No. 722,155

Claims priority, application Fed. Rep. of Germany, Apr. 14, 1984, 3414118

Int. Cl.[4] C08L *69/00*

U.S. Cl. 525—67 **9 Claims**

1. A thermoplastic molding composition consisting essentially of

(A) from 10 to 90 parts by weight of one or more aromatic polycarbonates

and

(B) from 90 to 10 parts by weight of one or more graft copolymers which are composed of

(b_1) one or more elastomers (rubbers) which account for from 10 to 80% by weight, based on (B) and consist of

(b_1a_1) from 50 to 99.9% by weight, based on (b_1), of one or more alkyl acrylates where alkyl is of 1 to 8 carbon atoms,

(b_1a_2) from 0 to 50% by weight, based on (b_1), of one or more copolymerizable unsaturated monomers

and

(b_1a_3) from 0.1 to 5% by weight, based on (b_1), of a copolymerizable polyfunctional crosslinking monomer

and

(b_2) a grafted shell on this elastomer, which shell accounts for from 90 to 20% by weight, based on (B), wherein the grafted shell (b_2) of the copolymer B is produced in three stages and contains, as copolymerized units,

(b_2a_1) from 5 to 40% by weight, based on (b_2), of one or more monoethylenically unsaturated aromatic hydrocarbons of not more than 12 carbon atoms

as graft monomers of the first stage,

(b_2a_2) from 15 to 50% by weight, based on (b_2), of a mixture of one or more monoethylenically unsaturated aromatic hydrocarbons of not more than 12 carbon atoms with one or more ethylenically unsaturated monomers which are copolymerizable with this, in a weight ratio of from 90:10 to 60:40,

as graft monomers of the second stage, and

(b_2a_3) from 10 to 85% by weight, based on (b_2), of an alkyl methacrylate or an alkyl acrylate where alkyl is of 1 to 8 carbon atoms, or a mixture of these,

as graft monomers of the third stage, the graft copolymer formed the elastomer (b_1) and the grafted shell (b_2) having a mean particle size of from 200 to 700 nm (d_{50} value of the integral mass distribution).

4,605,700

THERMODYNAMICALLY MISCIBLE POLYMER COMPOSITION

Bi Le-Khac, West Chester, Pa., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Oct. 21, 1985, Ser. No. 789,525

Int. Cl.[4] C08L *51/04, 55/02, 33/24, 25/12*

U.S. Cl. 525—73 **16 Claims**

1. A polymer composition comprising (A) a copolymer having from about 40 to about 60 mole % of a C_2 to C_4 α-olefin and from about 60 to about 40 mole % of an N-aryl substituted maleimide and (B) a polymer selected from the group consisting of (1) a copolymer matrix of from about 65 to about 85% by weight of a vinyl aromatic monomer selected from the

group consisting of styrene and α-methylstyrene and from about 15 to about 35% by weight acrylonitrile, and (2) a rubber grafted with a copolymer matrix of from about 65 to about 85% by weight of a vinyl aromatic monomer selected from the group consisting of styrene and α-methylstyrene, and from about 15 to about 35% by weight acrylonitrile, said rubber being employed in an amount within the range of from about 1 to about 40 parts per each 100 parts by weight of the total weight of vinyl aromatic monomer plus acrylonitrile wherein the weight ratio of component (A) to the copolymer matrix of component (B) is from 99:1 to 1:99; and wherein component (A) and the copolymer matrix of (B) are thermodynamically miscible with one another such that the polymer composition exhibits a single glass transition temperature value.

4,605,701

SMALL-GLOBULAR CROSSLINKED MONOALLYLAMINE POLYMER AND PROCESS FOR PRODUCING THE SAME

Suzuma Harada, Koriyama; Sakuro Hasegawa, Fujisawa, and Koichi Sato, Fukushima, all of Japan, assignors to Nitto Boseki Co., Ltd., Fukushima, Japan

Filed Oct. 19, 1984, Ser. No. 662,726
Claims priority, application Japan, Oct. 25, 1983, 58-198399
Int. Cl.[4] C08F *126/02, 271/00*
U.S. Cl. 525—107 8 Claims

1. A crosslinked homopolymer of monoallylamine having appendent primary amino groups and a particle size, when dry, of not more than 2 mm, said polymer being swellable but insoluble in water, wherein at least a part of the primary amine group of an uncrosslinked monoallylamine polymer is crosslinked with formaldehyde or a compound having at least two functional groups reactive with said primary amine groups, said crosslinked homopolymer being prepared by crosslinking the polymeric material while in the form of a dispersion in an immiscible liquid.

2. The homopolymer of claim 1 wherein the functional groups are at least one of the groups selected from halogen, aldehyde, epoxy, carboxyl, carboxylic acid anhydride, carboxylic acid halide, sulfonyl halide, N-chloroformyl, chloroformate, imido-ether, amidinyl, isocyanate and vinyl.

4,605,702

TEMPORARY WET STRENGTH RESIN

Gerald J. Guerro, Trumbull; Robert J. Proverb, Danbury, both of Conn., and Robert F. Tarvin, Roswell, Ga., assignors to American Cyanamid Company, Stamford, Conn.

Filed Jun. 27, 1984, Ser. No. 625,339
Int. Cl.[4] C08F *8/28*
U.S. Cl. 525—154 6 Claims

1. A glyoxylated cationic, water-soluble acrylamide polymer containing (a) from about 70–99%, by weight, of an acrylamide and (b) from about 1–30%, by weight, of a cationic monomer or mixture of cationic monomers copolymerizable with said acrylamide, up to about 10%, by weight, of said acrylamide being replaced by (c) a different comonomer than (b) copolymerizable with said acrylamide, the amount of said (c) being less than said (b) if said (c) is anionic, said acrylamide copolymer having a molecular weight ranging from about 500 to about 6000 before glyoxylation, and having sufficient glyoxal-reactive amide substituents and —CH_0HCHO substituents to be thermosetting, the ratio of glyoxol units to acrylamide units ranging from about 0.1–0.5:1.0.

4,605,703

ADHESIVES WITH A HIGH LEVEL OF ADHESION ON PLASTICS MATERIALS

Wolfgang Fischer, Meerbusch; Gerhard Klein, Monheim; Rudoph Hombach, Leverkusen, and Wilfried Kniege, Bergisch Gladbach, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed May 23, 1985, Ser. No. 737,232
Claims priority, application Fed. Rep. of Germany, Jun. 5, 1984, 3420924
Int. Cl.[4] C08L *61/32*
U.S. Cl. 525—157 3 Claims

1. Two-component adhesives comprising as a first component parts (a) to (e) as follows:

(a) from 5 to 70 parts by weight of polymer
(b) from 20 to 80 parts by weight of reactive diluent with a polymerizable group
(c) from 1 to 20 parts by weight of reactive diluent with several polymerizable groups,
(d) from 5 to 50 parts by weight of polymerizable isocyanate, and
(e) from 1 to 10% by weight of peroxidic compound, based on the sum of the parts of (a) to (d)

and as a second component, activators comprising an amine-/aldehyde condensation product.

4,605,704

GRAFT POLYMERS OF POLYMERIZABLE MONOMERS AND OLEFIN POLYMERS

David W. Eastman, Douglassville, Pa., and Leigh E. Walker, Lewiston, N.Y., assignors to Occidental Chemical Corporation, Niagara Falls, N.Y.

Filed Oct. 12, 1983, Ser. No. 541,229
Int. Cl.[4] C08F *255/02, 255/04, 255/06;* C08L *51/06*
U.S. Cl. 525—193 9 Claims

1. A process for preparing a transparent vinyl halide polyolefin graft copolymer which comprises:

(1) mixing a monomer component comprising vinyl halide alone or in combination with up to 50 percent by weight based on the total weight of monomer of an ethylenically unsaturated monomer copolymerizable therewith, in the liquid state, with an initiator and a solid polyolefin comprising a polymer of an aliphatic hydrocarbon monoolefin of 2 to about 8 carbon atoms, wherein the polyolefin is substantially insoluble in the monomer or monomers, but absorbs a substantial amount of the monomer or monomers,
(2) heating the resulting mixture at a temperature in the range of about 30 to about 90 degrees Celsius,
(3) mixing additional liquid monomer component with the product of step (2), and
(4) heating the resulting mixture at a temperature in the range of about 30 to about 90 degrees Celsius to produce a vinyl halide polyolefin graft copolymer that is capable of being molded to form a transparent product;

wherein the proportion of polyolefin in the final polymer product is in the range of about 2 to about 20 weight percent based on the weight of vinyl halide.

4,605,705

HEAT RESISTANT SULFUR-MODIFIED POLYCHLOROPRENE COPOLYMERS

Tsuneichi Takeshita, Chadds Ford, Pa., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Sep. 10, 1984, Ser. No. 648,594
Int. Cl.[4] C08F *8/00, 36/18;* C08L *11/02*
U.S. Cl. 525—330.9 9 Claims

1. A process for preparing a heat resistant sulfur-modified polychloroprene copolymer containing about 3–25% by weight of units derived from 2,3-dichloro-1,3-butadiene and units derived from 2-chloro-1,3-butadiene wherein about 92–96% by weight of said units have a 1,4-trans configuration,

said polychloroprene having a calculated Mooney viscosity ML 1+4′ (100° C.), of from about 25–75 which comprises

(I) emulsion polymerizing a mixture of 2-chloro-1,3-butadiene and 2,3-dichloro-1,3-butadiene to a total conversion of from about 65–85% by weight and at a temperature (T) in the range of from about 273–298K, said 2,3-dichloro-1,3-butadiene being employed in an amount of at least X parts to 20 parts per 100 parts 2-chloro-1,3-butadiene plus 2,3-dichloro-1,3-butadiene wherein

$$X=48.734-0.15325K, \quad (1)$$

said calculated Mooney viscosity of the resulting polychloroprene copolymer within the range of 25–75 being obtained by employing amounts of from 0.1–0.62 parts elemental sulfur (S), up to 1.0 parts diisopropyl xanthogen disulfide (P) or an equivalent amount of another dialkyl xanthogen disulfide, and 2,3-dichloro-1,3-butadiene (A), said (S), (P) and (A) expressed as parts per 100 parts of said 2-chloro-1,3-butadiene plus 2,3-dichloro-1,3-butadiene, at a given temperature of polymerization (T), expressed by the following equation:

$$ML\ 1+4'\ (100°\ C.) = \quad (2)$$

$$(11129.1)e^{(-3.97385S-2.34837P-.0138807T+.0281227A)},$$

and

(II) pepitizing the resulting polychloroprene copolymer latex to at least 60% of the theoretical maximum.

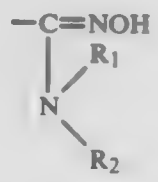
4,605,706

PROCESS FOR PRODUCING A CHELATE RESIN

Yushin Kataoka; Masaaki Matsuda; Kenji Ochi, and Masahiro Aoi, all of Niihama, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

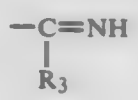
Division of Ser. No. 525,473, Aug. 22, 1983, Pat. No. 4,564,659. This application May 28, 1985, Ser. No. 738,369
Claims priority, application Japan, Sep. 1, 1982, 57-153028
Int. Cl.[4] C08F *8/32*
U.S. Cl. 525—340 **3 Claims**

1. A process for preparing a chelate resin having a functional group represented by the formula:



(I)

wherein R_1 and R_2 are each independently a hydrogen atom, an alkyl group, an aminoalkyl group, or a phenyl group and a functional group represented by the formula:



(II)

wherein R_3 is an amino group, an alkylamino group, a polyethylenepolyamino group, a hydrazo group, a hydrazino group, a hydrazono group, an amidino group, a guanidino group, or a semicarbazide group, the equivalent ratio of the functional group of the formula (II) to that of (I), (II)/(I), being 0.1 to 1, which comprises reacting a resin having nitrile groups with hydroxylamine and/or a derivative thereof and an amino compound other than said hydroxylamine and said derivatives thereof.

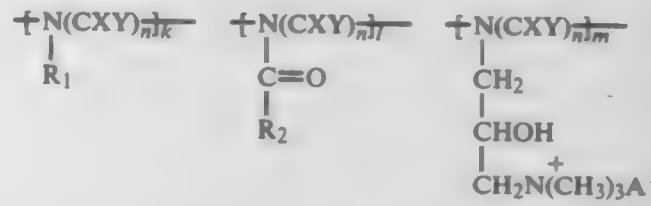
4,605,707

QUATERNARY POLYALKYLENE IMINE CONTAINING 2-HYDROXYPROPYLTRIMETHYL AMMONIUM SALT PENDENT SIDE CHAIN GROUPS

Herbert K. Reimschuessel, and Harry E. Ulmer, both of Morristown, N.J., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Filed Feb. 25, 1985, Ser. No. 704,849
Int. Cl.[4] C08G *73/00*; C08F *8/12*
U.S. Cl. 525—410 **8 Claims**

1. A substantially water soluble polyalkylene imine polymer comprising a polyalkyene imine backbone containing 2-hydroxypropyltrimethylammonium salt pendent side chains, said polymer having recurring units of the formula:



where n is an integer of 2 to 12; k, l and m are mole fractions within the ranges of 0 to 0.9, 0 to 0.9 and 0.1 to 1.0, respectively, and wherein R_1 and R_2 are the same or different and are hydrogen or alkyl radicals of 1 to 6 carbon atoms and X and Y are H or an alkyl radicals of 1 to 6 carbon atoms, and A is an anion derived from halide, nitrate, sulfate, alkyl sulfate, or perchlorate.

4,605,708

METHOD FOR PREPARING FLAME RETARDANT THERMOPLASTIC NYLON RESINS AND COMPOSITIONS THEREFOR

Yoav-Bar Yaacov, and Ram Minke, both of Beer-Sheva, Israel, assignors to Makteshim Chemical Works Ltd., Israel

Continuation of Ser. No. 489,561, Apr. 28, 1983, abandoned. This application Sep. 11, 1985, Ser. No. 775,104
Claims priority, application Israel, May 10, 1982, 65726
Int. Cl.[4] C08F *283/04*; C08L *63/00*
U.S. Cl. 525—423 **10 Claims**

1. A method for preparing a flame retardant thermoplastic nylon compositions comprising incorporating into the thermoplastic nylon a halogenated bisphenol-A epoxy resin having a halogen content of at least 20% and a molecular weight above 8,000 in an amount sufficient to impart flame retardance.

4,605,709

WET STRENGTH RESIN FROM METHYLBIS(AMINOPROPYL)AMINE, OXALIC ACID ESTER, SATURATED ALIPHATIC DIESTER AND EPIHALOHYDRIN

William W. Maslanka, Landenburg, Pa., assignor to Hercules Incorporated, Wilmington, Del.

Continuation of Ser. No. 517,159, Jul. 25, 1983, abandoned, which is a continuation-in-part of Ser. No. 488,894, Apr. 27, 1983, abandoned. This application Jan. 8, 1985, Ser. No. 689,739
Int. Cl.[4] C08G *69/48*
U.S. Cl. 525—430 **16 Claims**

1. A process for preparing an aqueous solution of a water-soluble, cationic thermosetting resin, which process consists of reacting N-bis (aminopropyl) methylamine with (a) a disester of oxalic acid selected from the group consisting of dimethyl oxalate, diethyl oxalate and dipropyl oxalate and (b) a diester from a saturated aliphatic dicarboxylic acid containing at least 4 carbon atoms and a C_1–C_3 saturated aliphatic monohydric alcohol to form a polyamino-copolyamide containing tertiary amine groups, the mole ratio of (a) to (b) being from about 0.25:1 to about 10:1 and the mole ratio of N-bis (aminopropyl) methylamine to the diesters being from about 0.9:1 to about 1.2:1, and reacting the resulting polyamino-copolyamide in the form of its free amine or a water-soluble acid salt in aqueous

solution with from about 1 mole to about 1.5 moles of an epihalohydrin per mole of tertiary amine groups present in said polyamino-copolyamide.

4,605,710

HIGH TEMPERATURE WIRE COATING POWDER

Curtis R. Guilbert, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Apr. 5, 1985, Ser. No. 720,334
Int. Cl.[4] C08L *67/02, 63/06*
U.S. Cl. 525—438 5 Claims

1. A powder composition suitable for providing a thermally stable electrically insulative coating on wire when said composition is fused and cured thereon, the composition comprising a blend of a carboxyl-terminated polyester resin derived from at least one aromatic diacid and at least one aliphatic glycol; at least about 5 percent by weight of at least one diimide diacid derived from the reaction product of at least one tricarboxylic acid anhydride and at least one diamine; and at least one triglycidyl isocyanurate, said isocyanurate being present at a mol ratio of epoxide functionality to total acid functionality of from about 0.8 to about 1.5.

4,605,711

MODIFIED POLY(OXAZOLIDONE/URETHANE) COMPOSITIONS

Anthony L. DiSalvo, Greenwich, Conn., and Chung-Chieh Tsai, South Salem, N.Y., assignors to Stauffer Chemical Company, Westport, Conn.

Division of Ser. No. 499,956, Jun. 1, 1983, Pat. No. 4,504,633.
This application Oct. 29, 1984, Ser. No. 665,676
The portion of the term of this patent subsequent to May 31, 2000, has been disclaimed.
Int. Cl.[4] C08F *283/00;* C08L *63/00*
U.S. Cl. 525—438 5 Claims

1. A thermoset composition containing oxazolidone and urethane linkages in its recurring unit which is essentially free of isocyanurate linkages, said oxazolidone linkages being present in the polymer backbone and separated from one another by ester linkages, said urethane linkages being present in side chains attached to the polymer backbone, the composition being modified by having grafted to the polymer backbone a polymeric moiety derived from polymerizing an ethylenically unsaturated monomer.

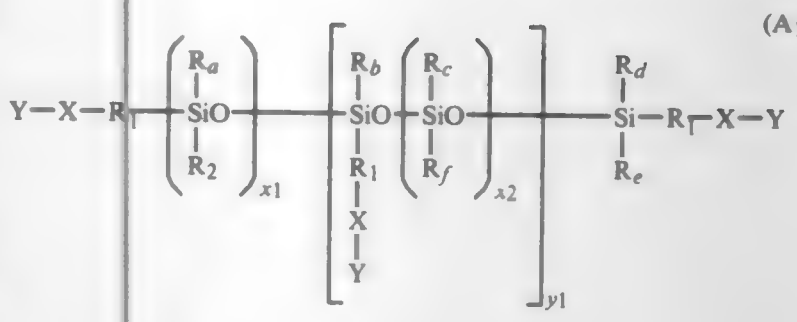
4,605,712

UNSATURATED POLYSILOXANES AND POLYMERS THEREOF

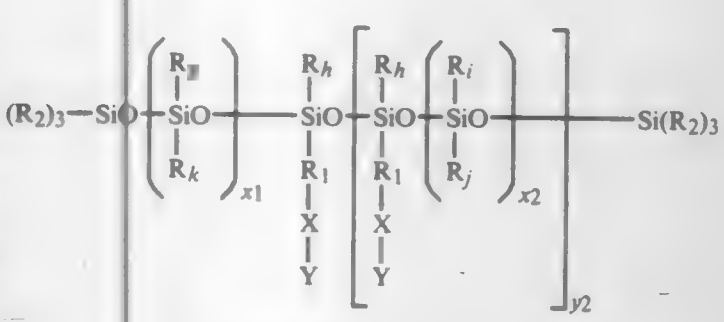
Karl F. Mueller, New York, N.Y.; Dieter Lohmann, Muenchenstein, Switzerland, and Robert A. Falk, New City, N.Y., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Sep. 24, 1984, Ser. No. 653,416
Int. Cl.[4] C08F *283/00*
U.S. Cl. 525—474 40 Claims

1. A linear or branched polysiloxane macromer having a molecular weight from about 400 to 100,000, as measured by end group analysis or gel permeation chromatography, said macromer containing at least one terminal or pendant, polymerizable olefinic group per each 5000 molecular weight unit of polysiloxane, said group being attached to the polysiloxane through one urethane, thiourethane or urea linkage, said macromer having the structure A_1, A_2, A_3 or A_4



(A1)



(A2)

$$Y_1-(T-R_4)_n-T-Y_1, \quad (A_3)$$

or

$$Y_1-(T_1-R_4)_n-T_1-Y_1, \quad (A_4)$$

wherein:

R_1 is a linear or branched alkylene group with 2–6 carbon atoms or a polyoxyalkylene group of structure G or G_1



(G)

$$-[CH_2CH_2CH_2CH_2O]_pCH_2CH_2CH_2CH_2- \quad (G_1)$$

wherein R_3 is hydrogen or methyl and p is an integer from 1–50, R_2, R_a, R_b, R_c, R_d, R_e, R_f, R_g, R_h, R_i, R_j and R_k are independently methyl or phenyl, x_1, x_2 are integers from 1 to 500 with the proviso that the sum of x_1+x_2 is 7 to 1300, y_1 is 0 to 14 and y_2 is 1 to 13 with the proviso that the ratio of

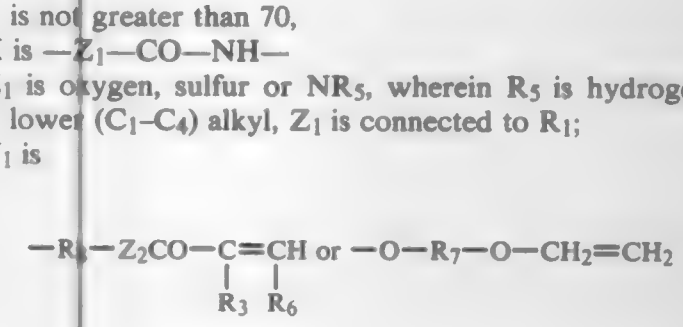
$$\frac{x_1+x_2}{y_1+2} \text{ or } \frac{x_1+x_2}{y_2+1}$$

is not greater than 70,

X is $-Z_1-CO-NH-$

Z_1 is oxygen, sulfur or NR_5, wherein R_5 is hydrogen or lower (C_1–C_4) alkyl, Z_1 is connected to R_1;

Y_1 is



wherein:

R_6 is: hydrogen, methyl, $-COOR_5$ or $-COOR_7OH$,

Z_2 = oxygen or $-NR_5-$

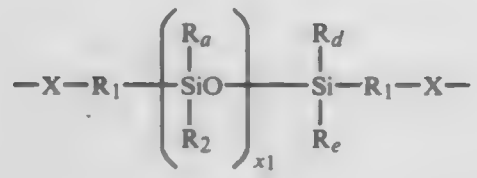
Y is the same as Y_1, or Y may also be H, alkyl of 1 to 8 carbon atoms, cyclohexyl, phenyl, o-tolyl, m-tolyl or p-tolyl, with the proviso that at least one of Y must have the same meaning as Y_1,

R_7 is a linear or branched alkylene of 2 to 10 carbon atoms, phenylene or phenylalkylene with 2 to 10 carbon atoms in the alkylene, or polyoxyalkylene of structure G or G_1;

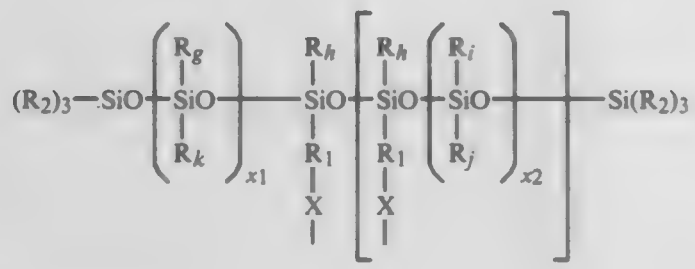
R_8 is an alkylene group of from 2 to 6 carbon atoms,

R_4 is a diradical obtained by removing the NCO-groups from an aliphatic, cycloaliphatic, araliphatic or aromatic diisocyanate;

T is the group



T_1 is the group



n is 0 to 10.

4,605,713

PROCESS FOR THE PRODUCTION OF POLYARYLENE SULPHIDES WITH FUNCTIONAL END GROUPS

Walter Heitz, Kirchhain, and Wolfgang Koch, Mittenaar, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed May 30, 1985, Ser. No. 739,143

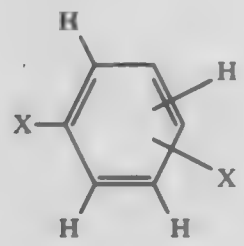
Claims priority, application Fed. Rep. of Germany, Jun. 9, 1984, 3421610

Int. Cl.[4] C08F *283/00*

U.S. Cl. 525—537 **3 Claims**

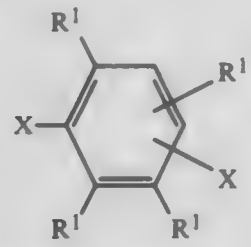
1. Process for the production of polyarylene sulphides with functional end groups wherein

(a) from 50 to 100 mol % of dihalogen aromatic substances correspond to the formula (I)



(I)

and from 0 to 50 mol % of dihalogen aromatic substances corresponding to the formula (II)



(II)

in which

X represents halogen in the meta or para position relative to each other,

R^1 is the same or different and each represents hydrogen, C_1–C_4-alkyl, C_5–C_{10}-cycloalkyl, C_6–C_{10}-aryl, C_7–C_{14}-alkylaryl C_7–C_{14}-arylalkyl, wherein two radicals R^1 in the ortho position relative to each other are bound to an aromatic or heterocyclic ring containing up to 10 ring atoms, wherein up to 3 ring carbon atoms are replaced by hetero atoms and one radical —R^1 is always different from hydrogen,

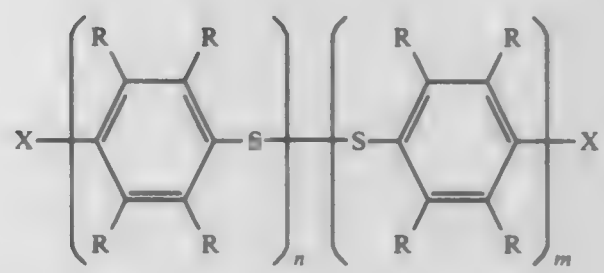
is reacted at 140° to 280° C. with

(b) alkali metal sulphide, the molar ratio of a:b lying in the range of from 1:1 to 1:3,

(c) organic solvent, the molar ratio of alkali sulphide (b) to the organic solvent (c) lying in the range of from 1:2 to 1:20,

(d) water in the form of water of hydration or free water, the molar ratio of b:d lying in the range of from 1:0 to 1:9, and

(e) a dihalogenated aromatic disulphide corresponding to formula (III)



(III)

in which

X represents halogen,

R represents hydrogen, a C_1–C_4-alkyl radical, a C_5–C_{10}-cycloalkyl radical, a C_7–C_{14}-aryl radical and the total number of carbon atoms in each aromatic substance is from 6 to 30, with the proviso that —R is hydrogen in at least 50 mol % of the disulphide used,

n and m are integers of from 1 to 5,

wherein the molar ratio of the disulphide to the p-dihalogen benzene corresponding to formulae (i) and (II) is in the range of 0.01:1 to 1.0:1,

whereby an intermediate polymer is produced and then reacting the intermediate polymer with a reducing agent in the presence of

(f) a compound which is monofunctional under the reaction conditions and which comprises a compound corresponding to the formula (IV)

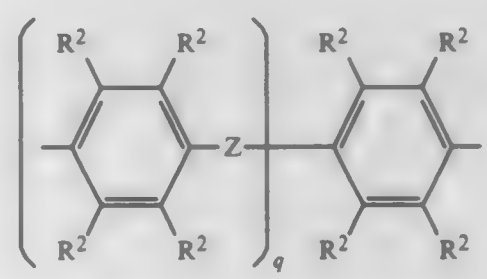
(IV)

wherein

D represents chlorine, bromine or a vinyl group

Y represents hydrogen, —O—CH=CH_2, —S—CH=CH_2, —OH, —OR^2, —SR^2, —NR^2, —NO_2, —CN, —$COOR^2$, or CHO,

Q represents an alkylene radical or a cycloalkylene radical containing from 1 to 10 carbon atoms, an arylene radical containing from 6 to 10 carbon atoms, or an arylene radical corresponding to formula (V)



(V)

t is 1 or 2 when Q is arylene containing 6 to 10 carbon atoms and is otherwise 1,

Z represents CH_2, $C(CH_3)_2$, sulphur or oxygen,

r^2 represents hydrogen, an alkyl radical, a cycloalkyl radical, an aryl radical or a mixture thereof, and p1 q represents the number 0 to 1.

4,605,714

CATALYST, PRODUCTION AND USE

Maurice G. Baker, Cleveland, England, assignor to Imperial Chemical Industries, PLC, Welwyn Garden City, England

Division of Ser. No. 573,344, Jan. 24, 1984, Pat. No. 4,548,916.
This application Sep. 12, 1985, Ser. No. 775,297
Claims priority, application United Kingdom, Feb. 2, 1983, 8302885

Int. Cl.[4] C08F *4/62, 4/64, 4/68*
U.S. Cl. 526—125
13 Claims

1. A process for the production of a polymer or copolymer of an unsaturated monomer wherein at least one ethylenically unsaturated hydrocarbon monomer is contacted under polymerisation conditions with a polymerisation catalyst which is the product obtained by mixing together;

(1) a solid material which is a mixture of (a) a solid composition containing at least one transition metal of Groups IVA, VA or VIA of the Periodic Table and (b) finely divided talc and/or a salt of aluminium or of a metal of Group IA or IIA of the Periodic Table and a carboxylic acid containing an aromatic group, wherein components (a) and (b) are present in the solid material in the relative proportions by weight of from 20:1 to 1:10; and

(2) an organic compound of aluminium or of a metal of Group IIA of the Periodic Table or a complex of an organic compound of a metal of Group IA or Group IIA of the Periodic Table together with an organic compound of aluminium.

2. The process of claim 1 wherein component 1(a) is titanium trichloride which also includes aluminium halides or is titanium tetrachloride supported on magnesium chloride.

4,605,715

PROCESS FOR POLYMERIZING OLEFINS IN THE PRESENCE OF A CATALYST PREPARED FROM ORGANOMAGNESIUM COMPOUND, EPIHALOHYDRIN REDUCING HALIDE SOURCE AND TRANSITION METAL COMPOUND

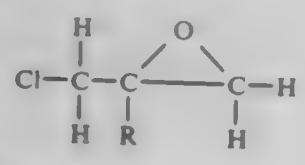
Gary K. Lund, Baton Rouge, La., assignor to The Dow Chemical Company, Midland, Mich.

Filed Sep. 20, 1982, Ser. No. 420,442
Int. Cl.[4] C08F *4/02, 10/00*
U.S. Cl. 526—143
8 Claims

1. In the process for the polymerization of one or more polymerizable ethylenically unsaturated monomers containing one or more polymerizable α-olefins under Ziegler polymerization conditions wherein the polymerization is conducted in the presence of a transition metal-containing catalyst; the improvement which comprises employing as the transition metal-containing catalyst a catalytic product resulting from admixing in an inert hydrocarbon diluent and in an atmosphere which excludes moisture and oxygen

(A) at least one hydrocarbon soluble organomagnesium material represented by the formula $R_2Mg.xMeR'_{x'}$ wherein each R is indenpendently a hydrocarbyl group having from 1 to about 20 carbon atoms; each R′ is independently a hydrogen, hydrocarbyl or hydrocarbyloxy group having from 1 to about 20 carbon atoms; Me is Al, Zn or B; x has a value from zero to 10 and is sufficient to render the organomagnesium component hydrocarbon soluble; and x′ has a value equal to the valence of Me;

(b) at least one epihalohydrin represented by the formula



wherein R is hydrogen or an alkyl group having from 1 to about 10 carbon atoms;

(c) at least one reducing halide source represented by the formula $Al(R^3)_{3-m}X_m$ and $B(R^3)_{3-m}X_m$ including mixtures thereof wherein each R^3 is independently hydrogen or a hydrocarbyl group as above defined, and m has a value from 1 to 2; and

(D) at least one transition metal (TM) compound represented by the formula TmY_nX_{z-n}, wherein Tm is a transition metal in its highest stable valence state and being selected from groups IV-B, V-B and VI-B of the Periodic Table of the Elements; Y is oxygen, OR″ or NR_2″; R″ is hydrogen or hydrocarbyl group having from 1 to about 20 carbon atoms; X is a halogen, preferably chlorine or bromine; z has a value corresponding to the valence of the transition metal, Tm; n has a value of from zero to 5 with the value of z−n being from zero up to a value equal to the valence state of the transition metal, Tm; and wherein

(1) the components are added in the order (A), (B), (C) and (D) or (A), (B), (D) and (C);

(2) the components are employed in quantities so as to provide the following atomic ratios Mg:Tm of from about 0.1:1 to about 100:1;

Cl (from Component C):Mg of from about 2:1 to about 20:1; and

the epoxide:total number of hydrocarbyl groups attached to a metal atom in component (A) is from about 0.5:1 to about 2:1; and

(3) the proviso that when the halide (form Component C):Mg atomic ratio is less than about 3:1 then the resultant mixture is heated at a temperature of from about 35° C. up to the boiling point of the inert hydrocarbon diluent, for a time to permit substantial reaction of the resultant mixture as indicated by a change in color of the mixture.

4,605,716

LEWIS BASE-CATALYZED POLYMERIZATION

Walter R. Hertler, Kennett Square, Pa., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Feb. 14, 1985, Ser. No. 701,681
Int. Cl.[4] C08F *4/16*
U.S. Cl. 526—190
12 Claims

1. Polymerization process comprising contacting under polymerizing conditions at least one polar monomer with (i) a tetracoordinate organosilicon, organotin or organogermanium polymerization initiator having at least one initiating site, and (ii) a co-catalyst which is a suitable Lewis base, to produce polymer having repeat units of the monomer.

4,605,717

PREPARATION OF ACRYLIC POLYMER SHEETS USING A TERNARY PEROXIDE INITIATOR SYSTEM

Barry J. Heitner, Bartlett, Tenn., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Jun. 21, 1985, Ser. No. 747,416
Int. Cl.[4] C08F *4/38, 20/14*
U.S. Cl. 526—228
8 Claims

1. In a process for preparing acrylic polymer sheet, said polymer selected from the group consisting of methyl methacrylate homopolymer, copolymers of methyl methacrylate with α,β-ethylenically unsaturated compounds and mixtures thereof, which process comprises polymerizing a syrup having a viscosity of 0.5–100 poises at 25° C. and containing about 10–40% by weight of methyl methacrylate homopolymer, copolymer of methyl methacrylate with α,β-ethylenically unsaturated compounds, said copolymer comprising a major portion of methyl methacrylate or mixtures thereof in monomeric methyl methacrylate in the presence of initiator, the improvement wherein the initiator comprises

(a) about from 0.3 to 16 moles per one million grams of syrup of a first peroxide initiator which has a half-life at 85° C. of about from 2 to 6 minutes and which emits a maximum of 1 mole of carbon dioxide per 2 moles of free radical generated;

(b) about from 0.3 to 16.0 moles per one million grams of syrup of a second peroxide initiator which has a half-life at 85° C. of about from 10 to 25 minutes and which emits a

maximum of 2 moles of carbon dioxide per 2 moles of free radicals generated; and

(c) about from 0.1 to 6.0 moles per one million grams of syrup of a third peroxide initiator which has a half-life at 110° C. of about from 1.0 to 3.5 minutes and which emits a maximum of one mole of carbon dioxide for each mole of free radical generated;

the process further comprising first heating the mixture of the syrup and the initiator solution to a temperature of about from 45° to 90° C. for about from 10 to 100 minutes wherein about 90% polymerization occurs, and subsequently heating the mixture to a temperature of about from 110° C. to 140° C. wherein at least about 97.5% polymerization occurs.

4,605,718

POLYALDEHYDE/POLYACETAL COMPOSITIONS

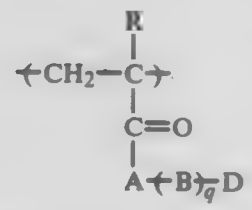
Roger H. Jansma, Park Forest, and Karen R. Sandberg, West Chicago, both of Ill., assignors to Nalco Chemical Company, Oak Brook, Ill.

Division of Ser. No. 625,421, Jun. 28, 1984, Pat. No. 4,508,594. This application Dec. 24, 1984, Ser. No. 685,428

Int. Cl.⁴ C08F *20/34, 20/60*

U.S. Cl. 526—240 **8 Claims**

1. A water-soluble polymer which contains at least two mole percent of a monomer unit represented by the chemical structure:

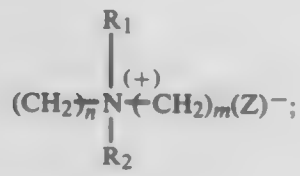


wherein

R is H, CH_3, or C_2H_5; and

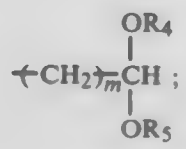
A is O, or $N(R_1)$; and

B is CH_2, CH_2CH_2O,



and

D is



and wherein R_1 is H, CH_3, C_2H_5, $(CH_2CH_2O)_nH$, or $(B)_qD$, and wherein q is from 1–6, except when B contains nitrogen in which case q is always one; and wherein R_2 is H, CH_3, C_2H_5, or $(CH_2CH_2O)_nH$; and wherein R_4 and R_5 may be the same or different and are, for each individual occurrence, H, CH_3, or C_2H_5; and wherein Z is from the group Cl, Br, I, NO_3, or SO_4; and wherein m ranges from 0–6; and wherein n is from 1–6.

4,605,719

LIQUID, CURABLE COATING COMPOSITION BASED ON A HYDROXYL GROUPS-CONTAINING ADDITION POLYMER AS BINDER

Frank C. Peelen, Hoogerheide, Netherlands, assignor to Akzo NV, Arnhem, Netherlands

Filed Aug. 5, 1985, Ser. No. 762,421

Claims priority, application Netherlands, Aug. 17, 1984, 8402531

Int. Cl.⁴ C08F *20/18*

U.S. Cl. 526—282 **9 Claims**

1. A liquid, curable coating composition comprising a hydroxyl groups-containing addition polymer as binder and a curing agent, wherein the addition polymer is a polymer which is partly built up from one or more polycyclic monomers selected from the group consisting of isobornyl acrylate, isobornyl methacrylate, monoalkenically unsaturated compounds of decahydronaphthalene and/or tricyclo(5.2.1.$0^{2,6}$)decane, and their substituted derivatives carrying one or more functional groups, said addition polymer having a number average molecular weight of 600–15,000 and a hydroxyl number of 30–320.

4,605,720

PREPARATION OF NONAQUEOUS DISPERSIONS WITH THE USE OF MONOFUNCTIONAL STABILIZER

Mohinder S. Chattha, Livonia, and Joseph C. Cassatta, Taylor, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Feb. 23, 1983, Ser. No. 468,901

The portion of the term of this patent subsequent to Oct. 30, 2001, has been disclaimed.

Int. Cl.⁴ C08L *51/08, 51/06, 51/00*; C08J *3/02*

U.S. Cl. 524—504 **11 Claims**

1. A stable dispersion containing crosslinked polymer particles characterized in that they are formed by reactions comprising addition polymerization of:

(a) between about 0.5 and about 20 weight percent each of a first and second monomer selected from (i) first and second ethylenically unsaturated monomers each bearing functionality capable of crosslinking reaction with the other or (ii) first and second monomers, wherein said first monomer bears ethylenic unsaturation and functionality capable of crosslinking reaction with other functionality present on said second monomer, said second monomer bearing at least two functional groups of said other functionality and bearing no ethylenic unsaturation; and

(b) between about 99 and about 60 weight percent of at least one other monoethylenically unsaturated monomer,

in the presence of (I) an organic liquid which is a solvent for the polymerizable monomers, but a non-solvent for the resultant polymer, and (II) polymeric dispersion stabilizer, wherein the reaction is carried out at elevated temperatures such that the dispersion polymer is first formed and then is crosslinked, said dispersion stabilizer being the reaction product of:

(A) long chain hydrocarbon molecules bearing only one reactive group per said molecules; and

(B) monomers bearing an ethylenic unsaturation and a functional group capable of reaction with said reactive group of said hydrocarbon molecules, wherein said hydrocarbon molecules and said monomers are reacted in amounts sufficient to allow reaction in about a 1:1 molar ratio.

4,605,721

NOVEL GRAFT COPOLYMERS AND PROCESS FOR THE PREPARATION THEREOF

Waylon L. Jenkins; James M. Hawkins, both of Kingsport, and I. Daniel Sand, Jonesborough, all of Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 605,341, Apr. 30, 1984, abandoned. This application Apr. 19, 1985, Ser. No. 725,186

Int. Cl.[4] C08G *81/00, 83/00*

U.S. Cl. 527—312 52 Claims

1. A novel polymeric composition of matter comprising the reaction product of an ethylenically unsaturated monomer and a carboxylated cellulose ester having an acid number of at least about 5, an inherent viscosity of from about 0.01 to about 1.00 and wherein the anhydroglucose units thereof have ring substituents comprising by weight based on total polymer weight, of from about 0.05 to about 20% hydroxyl groups, from about 0.5 to about 44% acetyl groups, from 0 to about 54% butyryl groups, from 0 to about 47% propionyl groups, from about 0.4 to about 4.0% total carboxyl groups wherein from about 20% to about 100% of these carboxyl groups are non-saponifiable backbone, and wherein the material has a lactone level of from about 4.52×10^{-5} to about 6.13×10^{-4}.

4,605,722

METHOD FOR SUPPRESSING THE GENERATION OF HYDROGEN GAS FROM CURED SILICONE MATERIALS

Toshio Suzuki, Ichihara, Japan, assignor to Toray Silicone Co., Ltd., Tokyo, Japan

Filed Jun. 17, 1985, Ser. No. 745,113

Claims priority, application Japan, Jun. 29, 1984, 59-134541

Int. Cl.[4] C08G *77/06*

U.S. Cl. 528—15 11 Claims

1. A method for suppressing the generation of hydrogen gas from cured silicone material which is cured by the addition reaction of lower alkenyl groups with silicon-bonded hydrogen atoms in the presence of a platinum catalyst comprising

bringing the cured silicone material into contact with a gaseous, liquid, or dissolved hydrogen gas suppressing material selected from the group consisting of phosphorus compound, sulfur compound, nitrogen compound, and compound containing an aliphatically unsaturated bond, and said hydrogen gas suppressing material containing at least 0.1 weight percent phosphorus, sulfur, nitrogen, or aliphatically unsaturated bond, and thereafter

removing the cured silicone material from the hydrogen gas suppressing material.

4,605,723

SHELF-STABLE, ISOCYANATE (NCO) FREE URETHANE UREA ACRYLATE RESINS

Werner Flakus, Recklinghausen, Fed. Rep. of Germany, assignor to Hüls Aktiengesellschaft, Marl, Fed. Rep. of Germany

Filed May 17, 1985, Ser. No. 735,132

Claims priority, application Fed. Rep. of Germany, Jun. 13, 1984, 3421826

Int. Cl.[4] C08G *18/10*

U.S. Cl. 528—49 11 Claims

1. A storage-stable, substantially NCO-free urethane urea acrylate which after radiation curing forms strongly adhering, solvent resistant, wear resistant coatings comprising isophorone diisocyanate (IPDI) or adducts thereof which have been partially acrylated with one or more hydroxyacrylates to the extent of about 10–25 equivalent %, which material subsequently has been reacted to the extent of about 10–75 equivalent % with one or more polyhydroxy compounds, wherein the remaining NCO equivalents have been fixed with urea bonds with one or more primary or secondary diamino compounds having about 2 to 18 carbon atoms.

4,605,724

HIGH SOLIDS LACTONE-POLYESTER POLYOLS AND COATING COMPOSITIONS THEREOF

Ronald R. Ambrose, Allison Park; Wen-Hsuan Chang; David T. McKeough, both of Gibsonia, and John R. Peffer, Pittsburgh, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Oct. 1, 1984, Ser. No. 656,555

Int. Cl.[4] C08G *18/32, 18/42*

U.S. Cl. 528—73 9 Claims

1. A polyester-urethane polyol which is prepared by reacting a polyisocyanate with a stoichiometric excess of being a polyester polyol; the polyester polyol being formed by:

(1) reacting a diol with a lactone or a functional equivalent thereof, wherein the diol is in an amount sufficient to produce a reaction product containing about 5 percent or higher of unreacted diol; followed by

(2) removing about 30 percent or higher of the unreacted diol under essentially non-reacting conditions.

4,605,725

POLYURETHANE SEALANT COMPOSITIONS AND THEIR USE AS THERMAL-BREAK SEALANTS

Donald L. Christman, Grosse Ile, Mich., assignor to BASF Corporation, Wyandotte, Mich.

Filed Nov. 14, 1984, Ser. No. 671,454

The portion of the term of this patent subsequent to Nov. 26, 2002, has been disclaimed.

Int. Cl.[4] C08G *18/32*

U.S. Cl. 528—77 19 Claims

1. A non-cellular polyurethane composition comprising the reaction product of.

(a) a polyoxyalkylene polyether polyol other than one derived from monoethanolamine,

(b) an ethylene oxide propylene oxide adduct of monoethanolamine having a molecular weight range from about 200 to about 500,

(c) optionally pigment, catalyst and inorganic filler, and

(d) an organic polyisocyanate.

4,605,726

POLYESTERCARBONATE FROM SPIRO DIHYDRIC PHENOL

Victor Mark, Evansville, Ind., assignor to General Electric Company, Mt. Vernon, Ind.

Division of Ser. No. 544,004, Oct. 21, 1983, Pat. No. 4,552,949. This application Sep. 6, 1985, Ser. No. 773,117

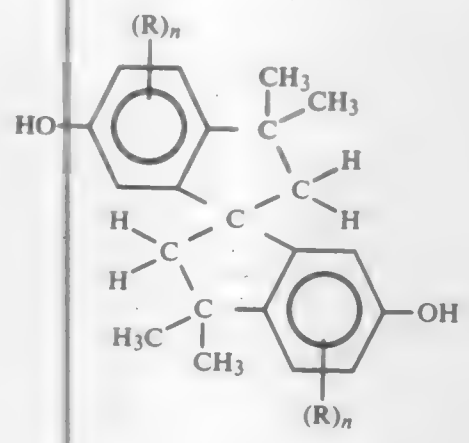
Int. Cl.[4] C08G *63/64*

U.S. Cl. 528—190 18 Claims

1. Aromatic thermoplastic polymer exhibiting improved heat distortion temperatures derived from:

(i) a carbonate precorsor; and

(ii) at least one spiro dihydric phenol selected from spiro dihydric phenols represented by the general formula



wherein:

R is independently selected from monovalent hydrocarbon radicals or halogen radicals; and

n is independently selected from positive integers having a value of from 0 to 3 inclusive; and

(iv) at least one difunctional carboxylic acid or an ester forming reactive derivative thereof.

4,605,727

HIGH MODULUS POLYESTER

Toshihide Inoue, Ichinomiya; Toshimasa Hirai, and Masaru Okamoto, both of Nagoya, all of Japan, assignors to Director General of the Agency of Industrial Science and Technology, Tokyo, Japan

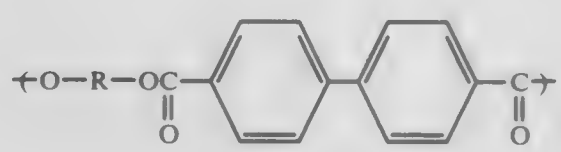
Filed Feb. 28, 1985, Ser. No. 706,948

Claims priority, application Japan, Mar. 9, 1984, 59-43767; Mar. 9, 1984, 59-43768

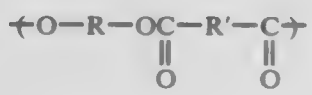
Int. Cl.⁴ C08G *63/02, 63/68*

U.S. Cl. 528—191 **9 Claims**

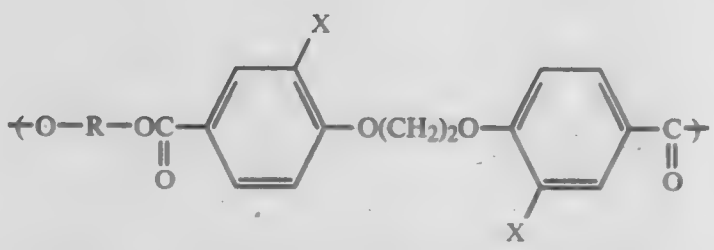
1. A high modulus polyester consisting essentially of the following structural units (I) and/or (II) and (III), the structural units (I) and (II) occupying 51–99 mol % of the whole and the structural unit (III) occupying 49-1 mol % of the whole:



(I)

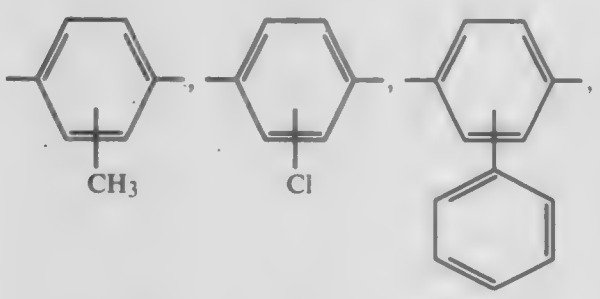


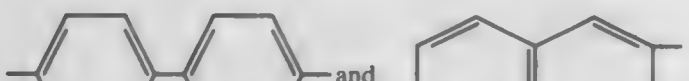
(II)



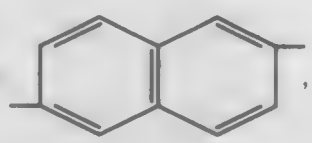
(III)

wherein R represents one or more divalent radicals selected from the group consisting of



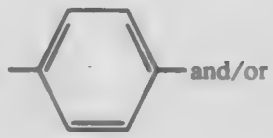


and

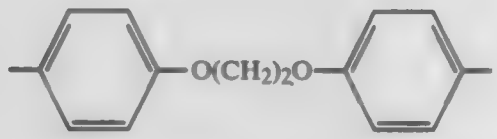


,

R′ represents



and/or



and X represents chlorine or bromine atom.

4,605,728

HIGH STRENGTH COPOLYESTER

William C. T. Tung, Tallmadge, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Sep. 9, 1985, Ser. No. 774,215

Int. Cl.⁴ C08G *69/44*

U.S. Cl. 528—289 **19 Claims**

1. A polyester comprised of repeat units which are derived from (a) at least one diacid component and (b) a diol component which is comprised of (1) from 2 to 90 mole percent of at least one bis-hydroxyalkyl pyromellitic diimide and (2) from 10 to 98 mole percent of one or more members selected from the group consisting of glycols containing from 2 to 12 carbon atoms, glycol ethers containing from 4 to 12 carbon atoms, and polyether glycols having the structural formula:

wherein A is an alkylene group containing from 2 to 6 carbon atoms and wherein n is an integer from 2 to 400.

4,605,729

PROCESS FOR THE PRODUCTION OF POLYETHERESTER POLYOLS AND THE PRODUCTS AND USE THEREOF

James M. Barnes, Wermelskirchen, and Werner Betz, Odenthal, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Oct. 4, 1985, Ser. No. 784,071

Claims priority, application Fed. Rep. of Germany, Oct. 17, 1984, 3437915

Int. Cl.⁴ C08G *63/66*

U.S. Cl. 528—301 **13 Claims**

1. A process for the production of polyetherester polyols comprising

(A) reacting

(1) at least one polyoxyalkylene ether polyol having a molecular weight of from 400 to 10,000 with

(2) at least one member selected from the group consisting of

(i) dicarboxylic acids,

(ii) di-C_1–C_4 alkyl ester of said acids,

(iii) anhydrides of said acids, and

(iv) mixtures thereof,

at a molar ratio of carboxyl resp. anhydride groups to hydroxyl groups of from (1.4)/n:1 to 8/n:1 where n=1 for components (2)(i) and (2)(ii) and where n=2 for component (2)(iii), and

(B) reacting the product of step (A) with at least one aliphatic and/or cycloaliphatic diol having a molecular weight of from 62 to 399 at a hydroxyl to carboxyl equivalent ratio of at least 1.6:1.

4,605,730

SURGICAL ARTICLES OF COPOLYMERS OF GLYCOLIDE AND ϵ-CAPROLACTONE AND METHODS OF PRODUCING THE SAME

Shalaby W. Shalaby, Lebanon, and Dennis D. Jamiolkowski, Long Valley, both of N.J., assignors to Ethicon, Inc., Somerville, N.J.

Division of Ser. No. 432,176, Oct. 1, 1982, abandoned. This application Jun. 10, 1985, Ser. No. 743,117

Int. Cl.⁴ C08G *63/10*

U.S. Cl. 528—357 **6 Claims**

1. A process for producing a copolymer of glycolide and ϵ-caprolactone comprising:

forming a low molecular weight pre-polymer of ϵ-caprolactone and glycolide, said pre-polymer comprising more than 50 weight percent of ϵ-caprolactone, and being produced at a temperature of below 220° C., and

adding additional glycolide to said pre-polymer and polymerizing said mixture containing the additional glycolide at a temperature above 140° C. for a period of time suffi-

cient to produce a conversion to copolymer of at least 80 percent and copolymer having a crystallinity of at least 5 percent.

4,605,731

METHOD FOR PREPARING LINEAR POLYCARBONATE FROM CYCLIC OLIGOMER WITH ARYL CARBANION GENERATING CATALYST

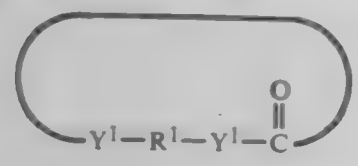
Thomas L. Evans, Clifton Park, and David A. Williams, Scotia, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Apr. 16, 1985, Ser. No. 723,672

Int. Cl.[4] C08G *63/62*

U.S. Cl. 528—371 **13 Claims**

1. In a method for preparing a resinous composition by contacting with a polycarbonate formation catalyst a composition comprising cyclic oligomers having the formula



(I)

wherein each R^1 is independently a divalent aliphatic, alicyclic or aromatic radical, each Y^1 is independently oxygen or sulfur and n is from 2 to about 30; the improvement which comprises employing as the polycarbonate formation catalyst at least one compound which generates aryl carbanions at temperatures up to about 300° C.

4,605,732

PROCESS FOR THE PRODUCTION OF POLYARYLENE SULPHIDES WITH FUNCTIONAL END GROUPS

Walter Heitz, Kirchhain, and Wolfgang Koch, Mittenaar, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed May 30, 1985, Ser. No. 739,204

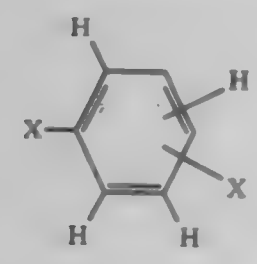
Claims priority, application Fed. Rep. of Germany, Jun. 9, 1984, 3421608

Int. Cl.[4] C08G *75/14*

U.S. Cl. 528—388 **1 Claim**

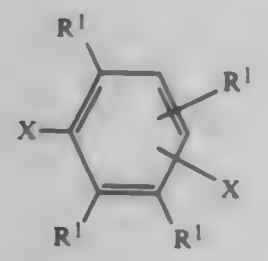
1. Process for the production of polyarylene sulphides with functional end groups wherein

(a) from 50 to 100 mol % of dihalogen aromatic substances correspond to the formula (I)



(I)

and from 0 to 50 mol % of dihalogen aromatic substances corresponding to the formula (II)



(II)

in which

X represents halogen in the meta or para position relative to each other,

R^1 is the same or different and each represents hydrogen, C_1–C_4-alkyl, C_5–C_{10}-cycloalkyl, C_6–C_{10}-aryl, C_7–C_{14}-alkylaryl, C_7–C_{14}-arylalkyl, wherein two radicals R^1 in the ortho position relative to each other are bound to an aromatic or heterocyclic ring containing up to 10 ring atoms, wherein up to 3 ring carbon atoms are replaced by hetero atoms and one radical —R^1 is always different from hydrogen,

is reacted at 140° to 280° C. with

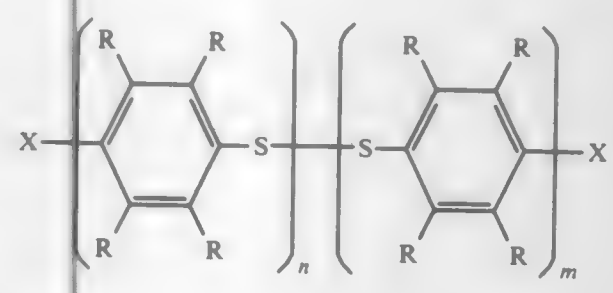
(b) alkali metal sulphide, the molar ratio of a:b lying in the range of from 1:1 to 1:2,

(c) organic solvent, the molar ratio of alkali sulphide (b) to the organic solvent (c) lying in the range of from 1:2 to 1:20, and

(d) water in the form of hydration or free water, the molar ratio of b:d lying in the range of from 1:0 to 1:9,

and further wherein the reaction is carried out in the presence of

(i) a dihalogenated aromatic disulphide corresponding to formula (III)



(III)

in which

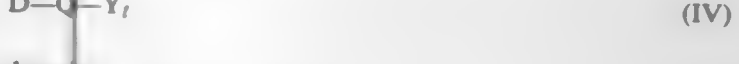
X represents halogen,

R represents hydrogen, a C_1–C_4-alkyl radical, a C_5–C_{10}-cycloalkyl radical, a C_7–C_{14}-aryl radical and the total number of carbon atoms in each aromatic substance is from 6 to 30, with the proviso that —R is hydrogen in at least 50 mol % of the disulphide used,

n and m are integers of from 1 to 5,

and with the further proviso that the molar ratio of the disulphide to the p-dihalogen benzene corresponding to formulae (I) and (II) is in the range of 0.01:1 to 1.0:1 and

(ii) a compound which is monofunctional under the reaction conditions which comprises a compound corresponding to the formula (IV)



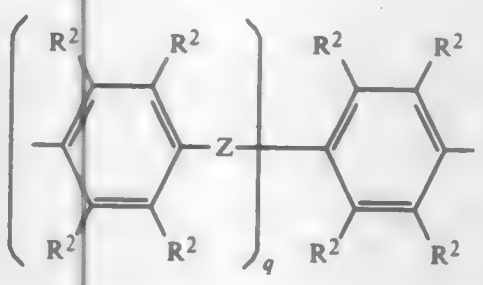
(IV)

wherein

D represents chlorine, bromine or a vinyl group

Y represents hydrogen, —O—CH=CH_2, —S—CH=CH_2, —OH, —OR^2, —SR^2, —NR^2, —NO_2, —CN, —$COOR^2$, or CHO,

Q represents an alkylene radical or a cycloalkylene radical containing from 1 to 10 carbon atoms, an arylene radical containing from 6 to 10 carbon atoms, or an arylene radical corresponding to formula (V)



(V)

t is 1 or 2 when Q is arylene containing 6 to 10 carbon atoms and is otherwise 1,

Z represents CH_2, $C(CH_3)_2$, sulphur or oxygen

R^2 represents hydrogen, an alkyl radical, a cycloalkyl radical, an aryl radical or a mixture thereof, and

q represents the number 0 or 1.

4,605,733

POLYARYLENE SULFIDE PREPARATION METHOD WITH DITHIONITE

Guy Senatore, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Aug. 31, 1984, Ser. No. 646,188
Int. Cl.[4] C08G *75/16*
U.S. Cl. 528—388 21 Claims

1. A method for the preparation of a poly(arylene sulfide) comprising:

contacting in a reaction mixture a dihaloaromatic compound, a sulfur-containing compound, a polar organic compound, and an alkali metal or alkaline earth metal dithionite, under suitable polymerization conditions for the formation of the poly(arylene sulfide), said sulfur-containing compound being selected from the group consisting of elemental sulfur, alkali metal sulfides, alkali metal bisulfides, alkali metal and alkaline earth metal thiosulfates, substituted and unsubstituted thioureas, thiocarbamates, thiocarbonates, carbon disulfide, carbon oxysulfide, mercaptans, mercaptides, thiomides and sulfides having an alpha or beta activating substituent.

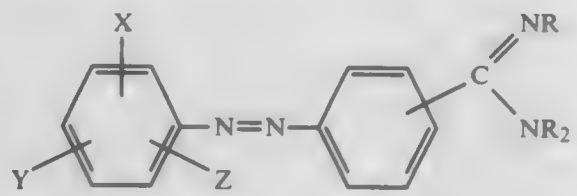
4,605,734

BASIC DERIVATIVES OF AZO BENZENE

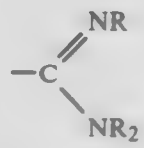
Douglas Shortridge, 36 Parkside Road, Leeds LS6 4QG, England

Filed Sep. 25, 1984, Ser. No. 654,319
Claims priority, application United Kingdom, Sep. 27, 1983, 8325755
Int. Cl.[4] C07C *107/06;* A61K *31/655*
U.S. Cl. 534—738 6 Claims

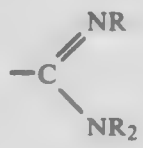
1. A compound of the formula



where X is $-NH_2$ or



Y is hydrogen or $-NH_2$, Z is hydrogen or hydroxyl, and each R is independently hydrogen, methyl or ethyl, provided that when X is



then Y is hydrogen and Z is hydroxyl and when X is $-NH_2$ then Y is $-NH_2$; or a compound of the above formula except that a ring carbon atom in either ring is replaced by a nitrogen atom; or an acid addition salt of said compounds.

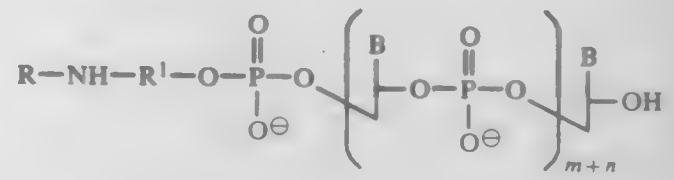
4,605,735

OLIGONUCLEOTIDE DERIVATIVES

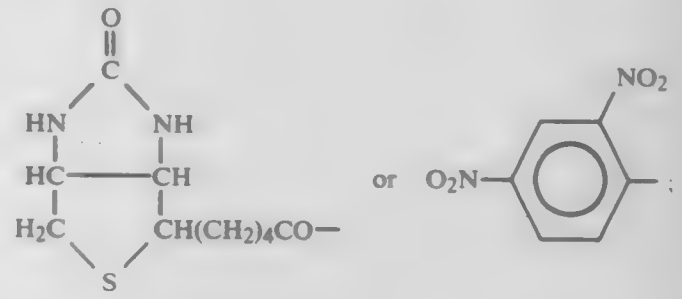
Kenichi Miyoshi; Masanori Suzuki, and Toru Fuwa, all of Hiroshima, Japan, assignors to Wakunaga Seiyaku Kabushiki Kaisha, Osaka, Japan

Filed Feb. 9, 1984, Ser. No. 578,678
Claims priority, application Japan, Feb. 14, 1983, 58-22516; Apr. 28, 1983, 58-75878
Int. Cl.[4] C07H *19/10, 19/20*
U.S. Cl. 536—27 5 Claims

1. A nucleotide comprising an oligonucleotide of the formula



wherein R is



(m+n) is an integer from 1 to 46; R^1 is a straight or branched C_2–C_{20} alkylene; and each B may be the same or different and is at least one nucleoside residue carrying a base B selected from the group consisting of adenine, cytosine, guanine and thymine.

4,605,736

TITANIUM-GLYCOL USEFUL, AS CROSSLINKING AGENTS, FOR POLYGALACTOMANNANS

Michael E. Morgan, Louisville, Ky., assignor to Celanese Corporation, New York, N.Y.

Filed Jun. 11, 1985, Ser. No. 743,246
Int. Cl.[4] C07H *1/00*
U.S. Cl. 536—114 13 Claims

1. A process for crosslinking polygalactamannans which comprises adding to an aqueous solution of polygalactomannans having a pH of about 4 to about 8 a crosslinking agent which is titanium tetrachloride dissolved in a water-soluble organic alcohol or diol at a concentration of about 1 to about 50 weight percent based on the total weight of titanium tetrachloride and water-soluble organic alcohol or diol, and wherein the pH after the addition is about 2.5 to about 6.

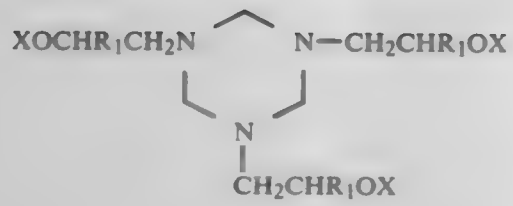
4,605,737

ACYL DERIVATIVES OF TRIS-HYDROXY-ETHYL-PERHYDRO-1,3,5-TRIAZINE

Andrew T. Au, Needham, Mass., assignor to The Dow Chemical Company, Midland, Mich.

Filed Apr. 23, 1984, Ser. No. 602,779
Int. Cl.[4] C07D *251/04*
U.S. Cl. 544—215 5 Claims

1. A compound corresponding to the formula:



wherein

R_1 is hydrogen, methyl or ethyl; and

X is hydrogen, $—CH_2CHR_1O)_nR$ or —C(O)R, where n is a number from zero to about 4, and R is alkyl, cycloalkyl, alkenyl or aryl of up to about 30 carbons,

provided that in at least on occurence, X is —C(O)R.

4,605,738

PRODUCTION OF 1-PHTHALIDYL-5-FLUOROURACIL DERIVATIVES

Susumu Kamata, Hyogo; Nobuhiro Haga, Osaka; Wataru Nagata, Hyogo, and Takeaki Matsui, Osaka, all of Japan, assignors to Shionogi & Co., Ltd., Osaka, Japan

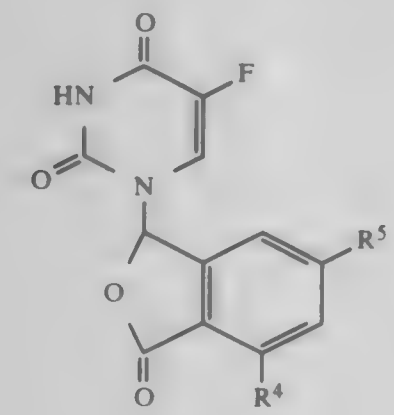
Filed Nov. 9, 1983, Ser. No. 550,219

Claims priority, application Japan, Nov. 18, 1982, 57-203482

Int. Cl.⁴ C07D *239/10, 307/83*

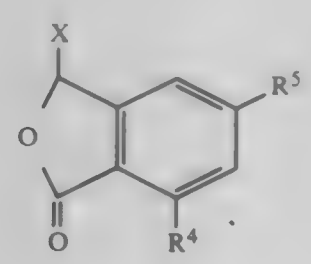
U.S. Cl. 544—310 **6 Claims**

1. A process for producing a 1-phthalidyl-5-fluorouracil of the formula



wherein

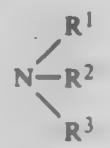
R^4 and R^5 each represents hydrogen, trialkylsilyloxy, alkoxy, nitro, cyano, carboxy or alkoxycarbonyl which consists essentially of reacting a phthalidyl compound of the formula:



wherein

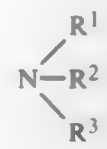
X represents halogen, trihalogenoacetyloxy, alkylsulfonyloxy or arylsulfonyloxy; and

R^4 and R^5 each has the same significance as defined above with a tertiary amine of the formula:

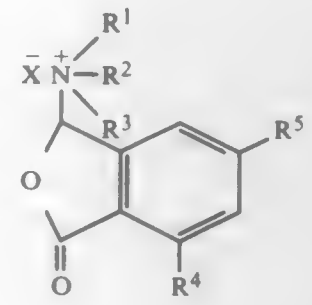


wherein

R^1, R^2 and R^3 each represents alkyl, or R^1 represents alkyl, and R^2 and R^3 taken together with the adjacent nitrogen atom form a saturated 5- or 6-membered ring which may contain an oxygen, or



represents quinuclidine, to yield a phthalidylammonium compound of the formula



wherein

X, R^1, R^2, R^3, R^4 and R^5 each has the same significance as defined above

and reacting the latter with 5-fluorouracil.

4,605,739

BENZOYL INDOLECARBOXYLATES

Setsuro Fujii, Toyonaka; Eizou Hattori, Sakado; Mitsuteru Hirata, Saitama; Hisashi Kunieda, Higashi-Murayama; Koichiro Watanabe, Niiza, and Hiroshi Ishihama, Higashi-Murayama, all of Japan, assignors to Kowa Co., Ltd., Nagoya, Japan

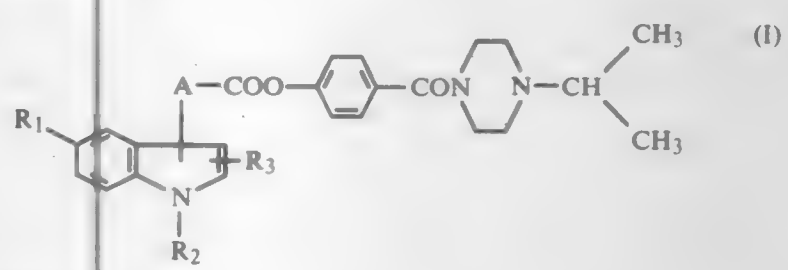
Filed May 10, 1984, Ser. No. 608,957

Claims priority, application Japan, May 19, 1983, 58-87899

Int. Cl.⁴ C07D *403/12;* **A61K** *31/495*

U.S. Cl. 544—373 **9 Claims**

1. A benzoyl indolecarboxylate having the following formula or a pharmaceutically acceptable acid addition salt thereof:



(I)

wherein

R_1 is a hydrogen or halogen atom, or a lower alkyl or lower alkoxy group;

R^2 is a hydrogen atom, or a lower alkyl, acetyl or benzoyl group;

R^3 is a hydrogen atom or a lower alkyl group; and

A is a direct bond, or a lower alkylene or vinylene group substituted at the 2-, 3- or 5-position of the indole nucleus.

4,605,740

PROCESS FOR THE PRODUCTION OF N-SUBSTITUTED ACRYLIC ACID AMIDES

Alfons Landscheidt, Krefeld, Fed. Rep. of Germany, assignor to Chemische Fabrik Stockhausen GmbH, Krefeld, Fed. Rep. of Germany

Filed Sep. 22, 1983, Ser. No. 534,535

Claims priority, application Fed. Rep. of Germany, Sep. 24, 1982, 3235398

Int. Cl.⁴ C07D *405/12, 102/06, 103/133, 307/93*

U.S. Cl. 544—376 **13 Claims**

1. A process for the production of N-substituted acrylic acid amides, which comprises converting a 2-carboalkoxy-t-

oxabicyclo(2,2,1)hept-5-ene to a 2-carboxamide-7-oxabicyclo(2,2,1)hept-5-ene with a primary or secondary amine selected from the group consisting of N,N-dimethylaminoethylamine, N,N-diethylaminoethylamine, N,N-dipropylaminoethylamine, N-ethylaminoethylamine, N-isopropylaminoethylamine, N-t-butylaminoethylamine, N,N-dimethylaminopropylamine, N,N,2,2-tetramethyl-1,3-diaminepropane, N,N-diethylaminopropylamine, N-methyl-piperazine and N-methyl-N'(2-aminoethyl)-piperazine, and thermally decomposing said 2-carboxamide-7-oxabicyclo(2,2,1)hept-5-ene to furane and the N-substituted acrylic acid amide.

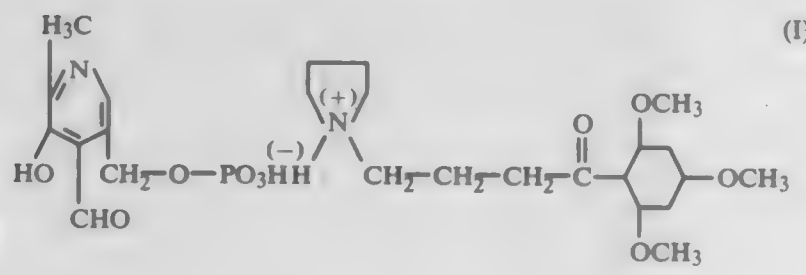
4,605,741

PHARMACEUTICALLY ACTIVE SALT DERIVATIVE OF 3-HYDROXY-5-(HYDROXYMETHYL)-2-METHYLISONICOTINALDEHYDE PHOSPHATE

Giorgio Zagnoli, Como; Ubaldo Conte, and Paolo Colombo, both of Pavia, all of Italy, assignors to Lisapharma Spa, Erba, Italy

Filed Nov. 13, 1985, Ser. No. 797,487
Int. Cl.[4] C07D *401/12*; C07F *9/58*
U.S. Cl. 546—24 **1 Claim**

1. Pharmacologically active salt derivative constituted by 4-(1-pyrrolidinyl)-1-(2,4,6-trimethoxyphenyl)-1-butanone 3-hydroxy-5-(hydroxymethyl)-2-methylisonicotinaldehyde-phosphate, having the following structural formula:



(I)

4,605,742

PROCESS FOR THE PRODUCTION OF PIPERIDINE

Shoichiro Mori; Tadamichi Aoki; Ryozo Hamana, and Yutaka Nomura, all of Ibaraki, Japan, assignors to Mitsubishi Petrochemical Co., Ltd., Tokyo, Japan

Filed Feb. 7, 1985, Ser. No. 699,125
Claims priority, application Japan, Feb. 13, 1984, 59-22901
Int. Cl.[4] C07D *295/02*
U.S. Cl. 546—184 **16 Claims**

1. A process for the production of piperidine, comprising:
continuously introducing hydrogen and liquid furfurylamine, tetrahydrofurfurylamine or a mixture thereof into a reaction zone;
hydrogenating said furfurylamine, tetrahydrofurfurylamine or mixture thereof reactant while maintaining liquid phase conditions within the reaction zone in the presence of a hydrogenation catalyst at a constant temperature; and
continuously withdrawing product piperidine from the reaction zone as a gas with excess hydrogen gas.

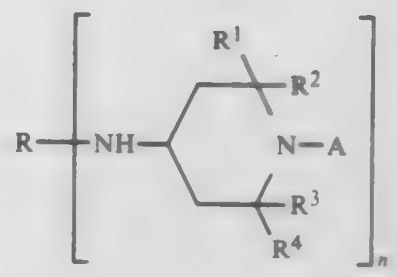
4,605,743

PROCESS FOR THE PRODUCTION OF 2,2,6,6-TETRAALKYL-4-PIPERIDYLAMINES

Russell E. Malz, Jr., Naugatuck, and Harold Greenfield, Watertown, both of Conn., assignors to Uniroyal Chemical Company, Inc., Middlebury, Conn.

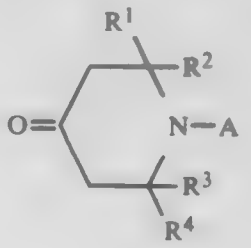
Filed Apr. 16, 1985, Ser. No. 723,770
Int. Cl.[4] C07D *401/12, 401/14*
U.S. Cl. 546—186 **14 Claims**

1. A process for producing compounds of the formula:



(I)

wherein:
R is C_1–C_{18} alkyl, C_5–C_6 cycloalkyl or C_7–C_9 aralkyl;
R^1, R^2, R^3 and R^4 are the same or different and are C_1–C_4 alkyl;
A is hydrogen, hydroxy, C_1–C_8 alkoxy, C_1–C_8 alkyl, C_2–C_{10} alkylcarbonyl or arylcarbonyl; and
n is 1, 2, 3 or 4;
with the proviso that when n is 2, 3 or 4, the R^1, R^2, R^3, R^4 and A substituents of the piperidine rings may each independently be different members within the scope of their definitions;
which process comprises reacting an amine of the formula $R(NH_2)_n$, wherein R and n are as defined above, with at least one 2,2,6,6-tetraalkyl-4-piperidone of the formula:



(II)

wherein A, R^1, R^2, R^3 and R^4 are as defined above; in the presence of a palladium catalyst employing a reaction medium selected from the group consisting of water and a mixture of water and C_1–C_3 aliphatic alcohols.

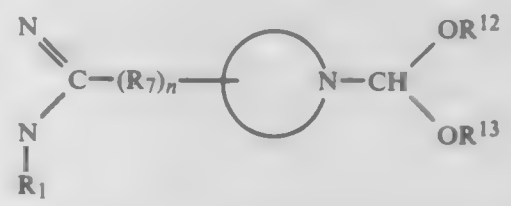
4,605,744

IMIDAZOLE DERIVATIVES

Chung-Chen Wei, Cedar Knolls, and Manfred Weigele, North Caldwell, both of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 568,329, Jan. 5, 1984, Pat. No. 4,537,969, which is a division of Ser. No. 359,326, Mar. 18, 1982, Pat. No. 4,431,653. This application May 20, 1985, Ser. No. 736,185
The portion of the term of this patent subsequent to Aug. 27, 2002, has been disclaimed.
Int. Cl.[4] C07D *401/06*
U.S. Cl. 546—210 **3 Claims**

1. A compound of the formula



wherein n is an integer from 0 to 1; R_1 is hydrogen or lower alkyl;



is a saturated 5 to 7 membered heterocyclic ring containing the nitrogen atom as the only hetero atom in said ring,

said ring being unsubstituted or substituted in one or more positions with lower alkyl;



is a 5 to 7 membered heterocyclic ring which contains no additional double bond or when it is 5 membered can be also aromatic; said ring being either unsubstituted or substituted in one or more positions with lower alkyl; R_{12} and R_{13} are lower alkyl or taken together form $—CH_2—$ $—(CH_2)_x—CH_2—$; x is an integer from 0 to 2; and R_7 is lower alkylene.

2. The compound of claim 1 wherein said compound is 4-[2-(4,5-dihydro-1H-imidazol-2-yl)ethyl]-1-piperidine carboxaldehyde dimethyl acetal.

4,605,745

N-NEOPENTYL-4-DIORGANOAMINO PYRIDINIUM COMPOUNDS

Daniel J. Brunelle, Scotia, N.Y., and Daniel A. Singleton, Minneapolis, Minn., assignors to General Electric Company, Schenectady, N.Y.

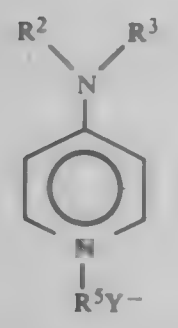
Division of Ser. No. 489,689, Apr. 28, 1983, Pat. No. 4,513,141. This application Dec. 24, 1984, Ser. No. 685,512

The portion of the term of this patent subsequent to Jul. 17, 2001, has been disclaimed.

Int. Cl.⁴ C07D *213/74, 401/04;* C07B *41/00, 43/00*

U.S. Cl. 546—304 **5 Claims**

1. Diorganoaminopyridinium salts of the formula,



where R^2 and R^3 are members selected from the class consisting of monovalent or divalent radicals selected from $C_{(1-13)}$ hydrocarbon radicals and $C_{(1-8)}$ divalent alkylene radicals which can be part of a cyclic structure forming a $C_{(4-12)}$ ring, R^5 is a neopentyl radical and Y is a counter ion.

4,605,746

NOVEL TETRASUBSTITUTED BICYCLIC AMIDE ACETALS AND PROCESS FOR THEIR MANUFACTURE

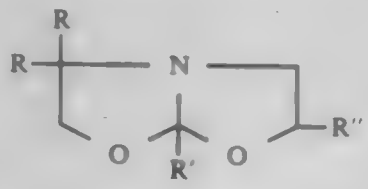
Anil B. Goel, Worthington, Ohio, assignor to Ashland Oil, Inc., Ashland, Ky.

Filed Aug. 16, 1984, Ser. No. 641,238

Int. Cl.⁴ C07D *498/04;* C10M *1/32*

U.S. Cl. 548—218 **4 Claims**

1. The composition conforming to the Formula



wherein R represents an Alkyl group having from 1 to 10 Carbon Atoms, R′ represents an Alkyl group having from 1 to 20 Carbon Atoms or an Aryl group having from 6 to 12 Carbon Atoms and R″ represents A member selected from the group consisting of $—CH_2OC_6H_5$ and $—CH_2OCH_2CH=CH_2$.

4,605,747

α-BENZYL-α-TRIAZOLYL PINACOLONE COMPOUNDS

Sugavanam Balasubramanyan, Vienna, Austria, and Margaret C. Shephard, Maidenhead, England, assignors to Imperial Chemical Industries PLC, London, England

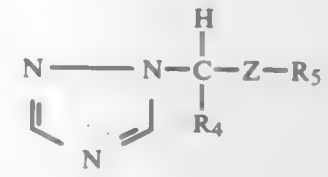
Continuation-in-part of Ser. No. 60,166, Jul. 24, 1979, abandoned, which is a continuation of Ser. No. 879,872, Feb. 21, 1978, abandoned, which is a continuation-in-part of Ser. No. 866,063, Dec. 30, 1977, abandoned, which is a division of Ser. No. 718,207, Aug. 26, 1976, Pat. No. 4,079,143. This application Aug. 13, 1985, Ser. No. 765,147

Claims priority, application United Kingdom, Aug. 26, 1975, 35208/75; Sep. 10, 1975, 37241/75; Jul. 2, 1976, 27649/76

Int. Cl.⁴ A01N *43/653;* C07D *249/08*

U.S. Cl. 548—262 **5 Claims**

1. A compound of the formula:



wherein R_4 is benzyl or benzyl ring-substituted with halogen, R_5 is t-butyl, and Z is C═O or C═NH, or a salt of said compound.

4,605,748

BENZOCYCLOALKANE-THIOPHENEMETHYL COMPOUNDS AS INTERMEDIATES

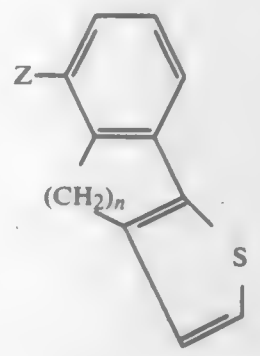
Ernest L. Plummer, Yardley, Pa., assignor to FMC Corporation, Philadelphia, Pa.

Division of Ser. No. 461,420, Jan. 27, 1983, Pat. No. 4,487,778. This application Apr. 18, 1984, Ser. No. 601,461

Int. Cl.⁴ C07D *333/80*

U.S. Cl. 549—43 **14 Claims**

1. Benzocycloalkanethiophenemethyl compounds of the formula



wherein Z is $Y—CH_2—$ or R_1, n is 2 or 3, Y is hydroxyl or a leaving group readily displaced by carboxylate anions, and R_1 is selected from chloro, cyano and hydroxycarbonyl.

4,605,749

PRODUCTION OF ALDEHYDES

Ouri Buchman, and Ilan Pri-Bar, both of Omer, Israel, assignors to State of Israel, Prime Minister's Office, Atomic Energy Commission, Beer-Sheva, Israel

Filed Jun. 20, 1985, Ser. No. 746,952

Int. Cl.⁴ C07C *45/49*

U.S. Cl. 549—70 **9 Claims**

1. A process for the production of aldehydes of the general formula

wherein R designates an aliphatic, aromatic, araliphatic, polycyclic, or heterocyclic group which may be substituted by one or more identical or different non-interfering substituents, which comprises reacting an organic halide of the formula

R—X

where R is as defined above and X is an iodine or bromine atom, with carbon monoxide at a superatmospheric pressure, of up to about 10 atmospheres and at a temperature of from 50° to 150° C., in a reaction mixture containing:

(a) a catalyst consisting of a palladium or cobalt metal compound or complex soluble in the reaction mixture;

(b) a hydrogen donor capable of transferring hydrogen in the reaction mixture, selected from the group consisting of poly (methylhydrosiloxanes), trialkylhydrosilanes and formic acid salts; and

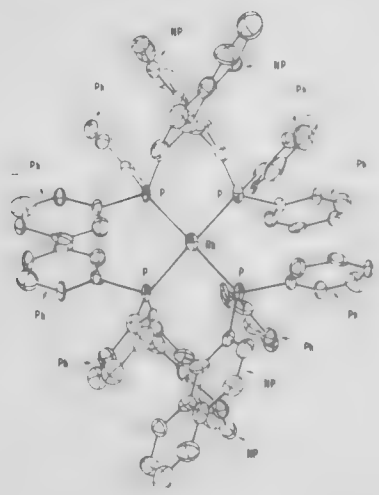
(c) a base which reacts with hydrogen halide formed during the reaction.

4,605,750

RHODIUM-PHOSPHINE COMPLEX

Hidenori Kumobayashi, and Susumu Akutagawa, both of Kanagawa, Japan, assignors to Takasago Perfumery Co., Ltd., Tokyo, Japan

Filed Sep. 17, 1984, Ser. No. 651,123
Claims priority, application Japan, Sep. 16, 1983, 58-169283
Int. Cl.[4] C07F *15/00*
U.S. Cl. 556—7 1 Claim



1. A rhodium-phosphine complex represented by the formula (I):

$$[Rh(BINAP)_2]^+Y^- \quad (I)$$

wherein BINAP represents 2,2'-bis(diphenylphosphino)-1,1'-binaphtyl; and Y represents ClO_4, PF_6, BF_4, PCl_6 or $B(C_6H_5)_4$.

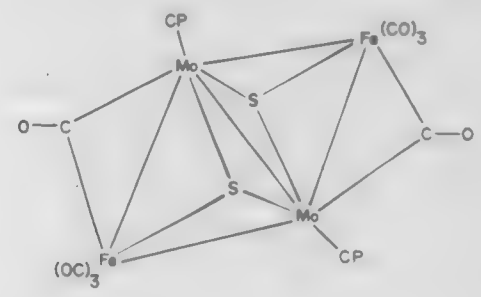
4,605,751

BIMETALLIC CLUSTER CATALYSTS

M. David Curtis; Johannes W. Schwank; Levi T. Thompson, and P. Douglas Williams, all of Ann Arbor, Mich., assignors to The Board of Regents Acting For and On Behalf of the University of Michigan, Ann Arbor, Mich.

Filed Jan. 17, 1984, Ser. No. 572,201
Int. Cl.[4] C07F *11/00, 15/02*
U.S. Cl. 556—29 16 Claims

1. The heterobimetallic cluster complex selected from the group consisting of $Cp_2Mo_2Fe_2(\mu\text{-}S)_2(CO)_8$; $Cp_2Mo_2Ni_2(\mu_3\text{-}S)_4(CO)_2$; $Cp_2Mo_2Co_2(\mu_3\text{-}S)_2(\mu_4\text{-}S)(CO)_4$; $Cp_2Mo_2Fe_2(\mu_3\text{-}S)_4(CO)_6$ and $Cp_4Mo_2Ni_2S_4$ where $Cp=\eta^5\text{-}C_5H_4R$ and R is $-CH_3$ or —H.

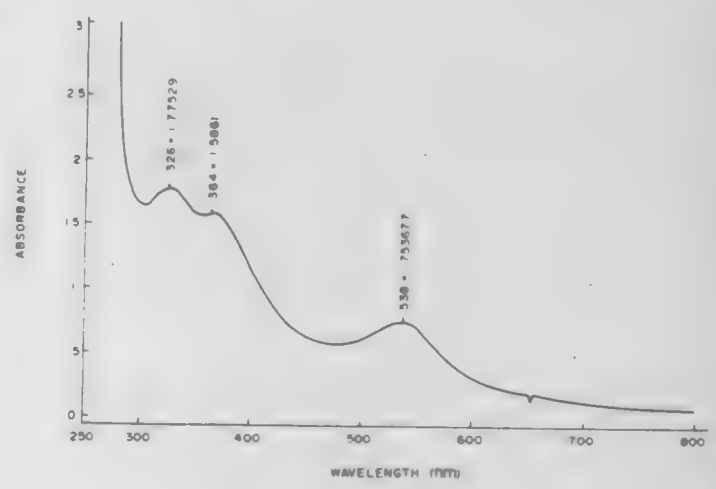


4,605,752

QUATERNARY AMMONIUM TETRATHIOVANADATES

Richard P. Rhodes, Westfield, and Thomas R. Halbert, Annandale, both of N.J., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Nov. 9, 1984, Ser. No. 669,900
Int. Cl.[4] C07F *9/00*
U.S. Cl. 556—42 9 Claims



1. A quaternary ammonium tetrathiovanadate having the following formula:

$$(R_1R_2R_3R_4N)_3VS_4$$

wherein R_1, R_2, R_3, R_4 may each be independently an alkyl group having from 1 to 30 carbon atoms or an aryl or alkylaryl group having from 6 to 30 carbon atoms.

4,605,753

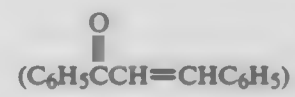
SILVER SULFINATE PHYSICAL DEVELOPER FOR HEAT-DEVELOPABLE PHOTOGRAPHIC FILMS

Ross A. Lee, Webster, N.Y., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 547,472, Oct. 31, 1983, Pat. No. 4,529,689.
This application Mar. 20, 1985, Ser. No. 714,195
Int. Cl.[4] C07F *1/10*
U.S. Cl. 556—111 4 Claims

1. A process for the synthesis of a silver sulfinate according to the following reaction:

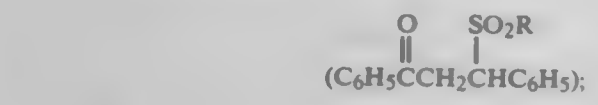
I. reacting a thiol (RSH) with chalcone



to form a sulfide



II. oxidizing said sulfide to a sulfone



III. converting said sulfone by means of an alkaline cleavage reaction to form a sodium sulfinate



and

IV. reacting said sodium sulfinate with silver nitrate to form silver sulfinate, where RSH in step I is a thiol taken from the group consisting of hexadecanethiol, dodecylthiol, nonylthiol, hexanethiol, 3-phenylpropanethiol, cyclohexanethiol, 1,4-butanedithiol, and 1,9-nonanedithiol.

4,605,754

ACETAMINOPHEN ANALOGS

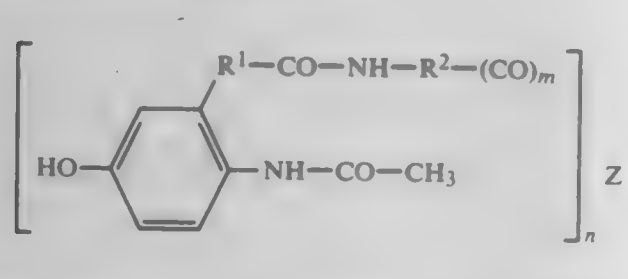
Pyare Khanna, San Jose, Calif., assignor to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Division of Ser. No. 552,955, Nov. 17, 1983, Pat. No. 4,504,413, which is a division of Ser. No. 364,836, Apr. 2, 1982, Pat. No. 4,424,150. This application Jan. 17, 1985, Ser. No. 692,791

Int. Cl.⁴ C07C *101/04, 101/24, 79/46*

U.S. Cl. 560—19 **8 Claims**

1. A compound of the formula:



wherein:

R^1 is an aliphatic linking group of from 1 to 12 carbon atoms;

R^2 is an aliphatic linking group of from 1 to 12 carbon atoms;

Z is hydrogen, hydroxyl, alkoxyl of from 1 to 6 carbon atoms, or a group capable of forming an activated ester capable of amide formation with an amino acid in an aqueous medium;

m is one; and

n is one.

4,605,755

PREPARATION OF 1,1-DIPHENYL-2-CARBOETHOXYCYCLOPROPANE

Andrea Leone-Bay, Ridgefield, Conn., assignor to Stauffer Chemical Company, Westport, Conn.

Filed Aug. 2, 1985, Ser. No. 761,987

Int. Cl.⁴ C07C *69/76*

U.S. Cl. 560—101 **19 Claims**

1. An improved process for preparing racemic 1,1-diphenyl-2-carboethoxycyclopropane from 1,1-diphenylethylene and ethyl diazoacetate as reactants, wherein the improvement comprises:

conducting the reaction in the absence of a metallic-based catalyst and at a reaction temperature from 110° C. to 150° C. to permit a yield of at least 20 percent to be obtained, based on the weight of 1,1-diphenylethylene.

4,605,756

PROCESS FOR THE IN SITU PRODUCTION OF UREA GROUP-CONTAINING ISOCYANATES IN POLYOLS

Gerhard Grögler, Leverkusen; Richard Kopp, Cologne, and Heinrich Hess, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Dec. 17, 1984, Ser. No. 682,623

Claims priority, application Fed. Rep. of Germany, Dec. 28, 1983, 3347247

Int. Cl.⁴ C07C *119/048*

U.S. Cl. 560—351 **5 Claims**

1. A process for the in situ production of dispersions or solutions of urea group-containing aromatic isocyanates by the reaction of aromatic isocyanates with water in solvents, characterized in that:

(a) aromatic diisocyanates and/or polyisocyanates are reacted in

(b) relatively high molecular weight liquid or low-melting di- or poly-hydric polyols having molecular weights of from 400 to 10,000 with

(c) from about 0.15 to about 0.40 mols of water per NCO equivalent, in the presence of

(d) from about 0.1 to about 2.5%, by weight, based on aromatic polyisocyanates, of catalysts which accelerate the NCO/water reaction to a greater extent than the NCO/hydroxyl reaction, at a temperature of up to 80° C. until the end of CO_2 evolution.

4,605,757

METHOD OF PREPARING HALOGEN BENZOIC ACIDS FROM TOLUENES HALOGENATED IN THE NUCLEUS

Marcel Feld, Cologne, Fed. Rep. of Germany, assignor to Dynamit Nobel AG, Troisdorf, Fed. Rep. of Germany

Filed Mar. 5, 1984, Ser. No. 586,110

Claims priority, application Fed. Rep. of Germany, Mar. 10, 1983, 3308448

Int. Cl.⁴ C07C *51/265*

U.S. Cl. 562—416 **10 Claims**

1. A method for preparing a halogen benzoic acid comprising oxidizing the corresponding nuclear halogenated toluene with oxygen or a gas containing oxygen, in acetic acid as solvent, in the presence of soluble cobalt and/or manganese compounds present in catalytic amounts and of a bromide ions supplying substance selected from the group consisting of NaBr, NH_4Br, KBr, HBr, and $CoBr_2$, at elevated temperatures of about 80° to 220° C. and pressures of about 1 to 50 bars, wherein for each weight-part of halogenated toluene, 1.5 to 4.5 wt-parts of a water-diluted acetic acid are used, containing 1 to 35 wt-% of water and a content of a soluble ammonium and/or alkali and/or alkaline earth compound of more than 1.0 equivalents per equivalent of a bromide ion-yielding compound used in the reaction mixture.

4,605,758

PREPARATION OF α-ARYLALKANOIC ACIDS

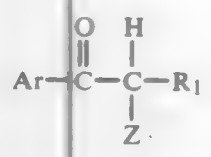
George C. Schloemer, Lyons, Colo., assignor to Syntex Pharmaceuticals International Ltd., Hamilton, Bermuda

Continuation of Ser. No. 329,672, Dec. 11, 1981, abandoned. This application Apr. 23, 1984, Ser. No. 602,834

Int. Cl.⁴ C07C *51/16*

U.S. Cl. 562—418 **24 Claims**

1. A process for producing a stereoisomer of the compound of the formula:

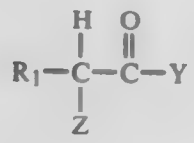


in the substantial absence of any other stereoisomer of said

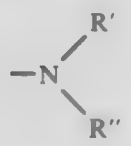
compound which comprises contacting an organometallic compound of the formula:

ArMX

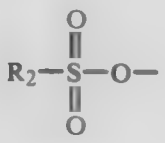
with an optically active acyl halide, acyl amine or acid anhydride of the formula:



wherein Ar is substituted or unsubstituted naphthyl, M is magnesium, R_1 is methyl, X is halogen, Y is halogen, the group of the formula:



wherein R′ and R″ are alkyl or aryl or when taken together with N form a heterocyclic moiety which optionally can contain other hetero atoms, or acyloxy, and Z is a protected hydroxy group or a sulfonyloxy group of the formula:



wherein R_2 is alkyl, cycloalkyl, alkenyl, alkynyl, aryl or arylalkyl.

4,605,759

PROCESS FOR PRODUCTION OF β-PHENYLSERINE

Ryuichi Mita; Toshio Katoh, both of Kawasaki; Chojiro Higuchi, and Akihiro Yamaguchi, both of Kamakura, all of Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan

Filed Jul. 31, 1984, Ser. No. 636,289

Claims priority, application Japan, Aug. 1, 1983, 58-139455; Mar. 13, 1984, 59-46529

Int. Cl.[4] C07C *99/00*

U.S. Cl. 562—444 5 Claims

1. Process for producing a β-phenylserine, which comprises reacting glycine and a benzaldehyde in the presence of an alkali and then treating the reaction product with an acid, said reaction being carried out in a mixed solvent composed of water and a hydrophobic organic solvent selected from the group consisting of a hydrocarbon, a halogenated hydrocarbon, an alcohol, an ether, a ketone and an ester.

4,605,760

PREPARATION OF AN ENANTIOMER OF A SUBSTITUTED FLUORENYLOXYACETIC ACID

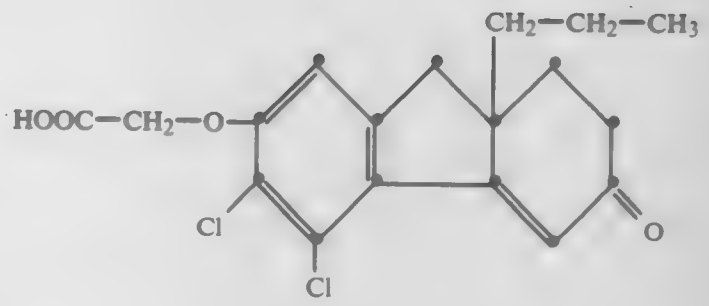
Apurba Bhattacharya, Rahway, N.J., assignor to Merck & Co., Inc., Rahway, N.J.

Filed Aug. 16, 1985, Ser. No. 766,376

Int. Cl.[4] C07C *69/94*

U.S. Cl. 562—461 10 Claims

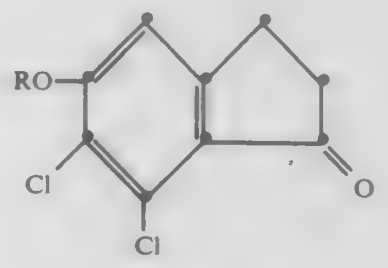
1. A process for preparing the (+) isomer of a compound of the formula:



I

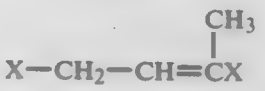
which comprises:

a. treating a compound of the formula:



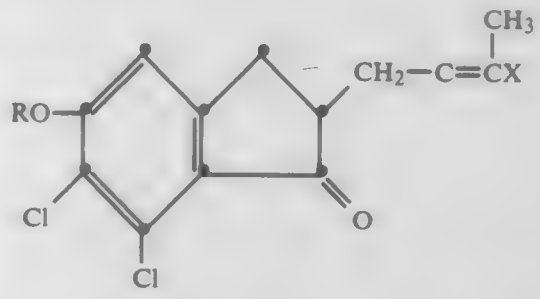
II

with



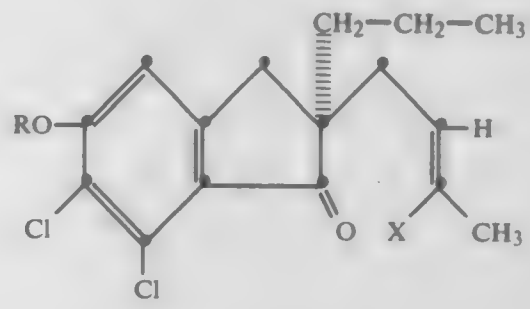
(IIa)

wherein X is Cl or Br and R is C_1-C_6-alkyl in a basic medium to obtain:



III

b. treating III with C_3H_7—X in the presence of a chiral catalyst to obtain:

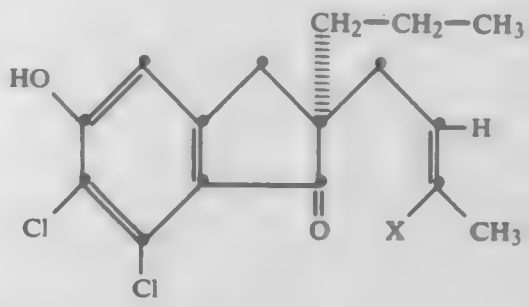


IV

rich in the (−) isomer;

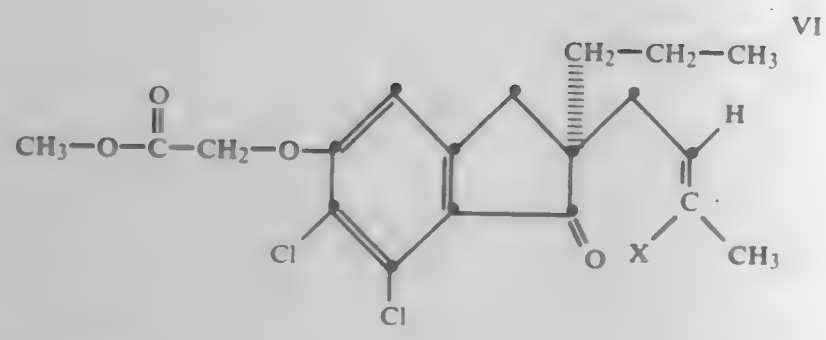
c. crystallizing IV to obtain pure (−) isomer,

d. treating the IV isomer from (c) with $NaNO_2$ in an aprotic solvent or LiCl in N-methylpyrrolidinone to obtain:



V

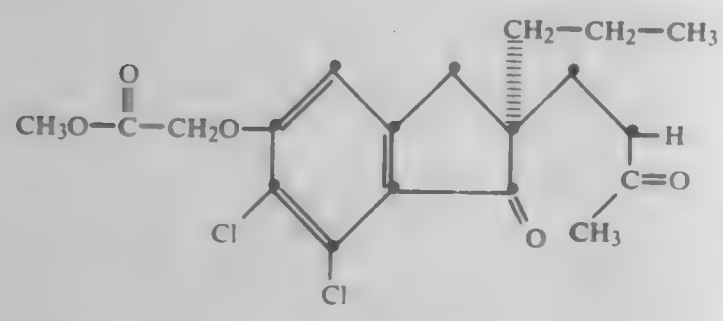
e. alkylating V to obtain:



VI

and

f. treating VI with H_2SO_4/CH_2Cl_2 to obtain:



VII

and

g. treating VII with a base to obtain I.

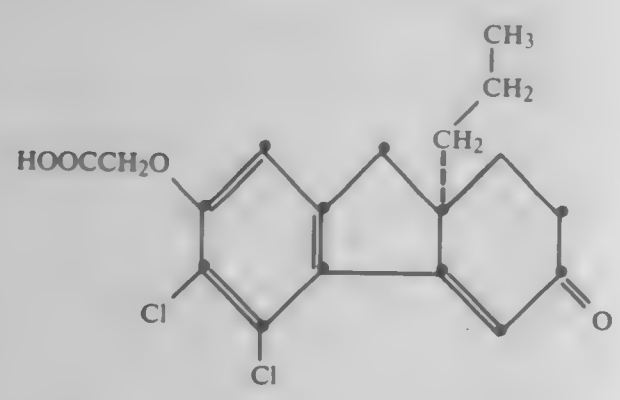
4,605,761

PROCESS USING ACHIRAL CO-CATALYST PROMOTER FOR CHIRAL PHASE TRANSFER ALKYLATION PROCESS FOR AN ENANTIOMER OF A SUBSTITUTED FLUORENYLOXYACETIC ACID

Ulf H. Dolling, Westfield, N.J., assignor to Merck & Co., Inc., Rahway, N.J.

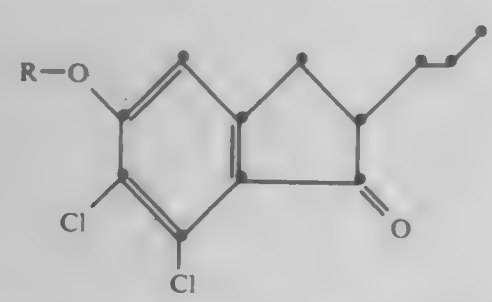
Filed Dec. 6, 1985, Ser. No. 805,689
Int. Cl.[4] C07C *69/94*
U.S. Cl. 562—461 7 Claims

1. The process for the preparation of the formula:

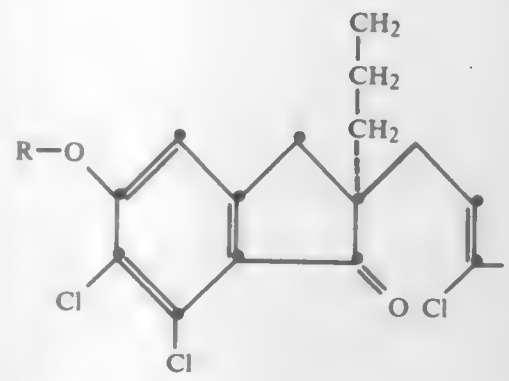


which comprises:

(a) treating a compound of the formula:

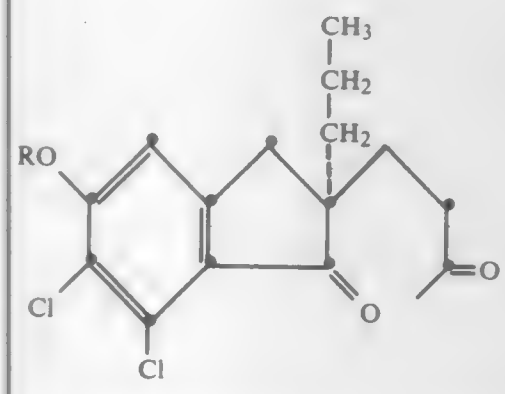


with 1,3-dichloro-2-butene under liquid-liquid base catalyzed phase transfer conditions in the presence of a chiral catalyst and an achiral, non-ionic surfactant co-catalyst to obtain a predominant amount of an enantiomer of the formula:



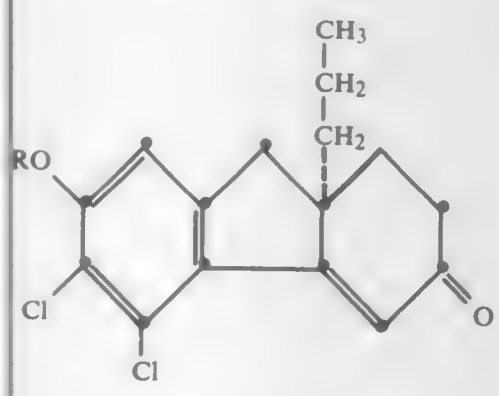
wherein R is a hydrocarbonyl radical selected from C_{1-6} alkyl and phenyl C_{1-6} alkyl;

(b) treating said enantiomer with concentrated sulfuric acid and water at a temperature of 0°–25° to obtain a reaction mixture containing a dichlorodiketo enantiomer of the formula:



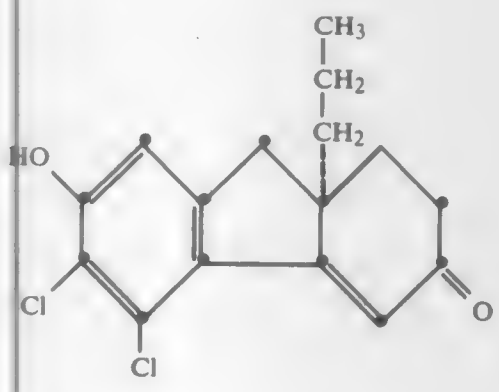
IV

(c) raising the temperature of the reaction mixture to effect cyclization and production of a fluorenone compound of the formula:



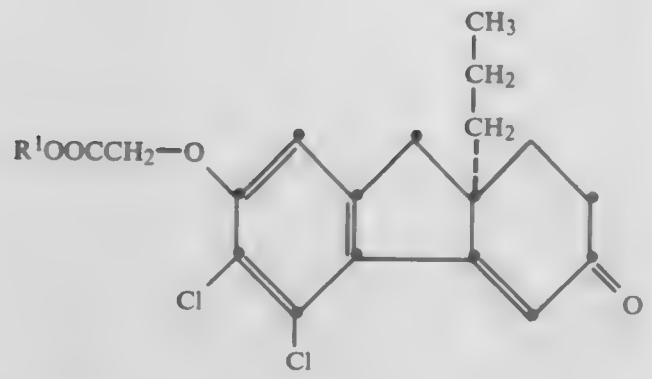
V

(d) treating said fluorenone compound with aluminum chloride to obtain a hydroxyfluorenone compound of the formula:



VI

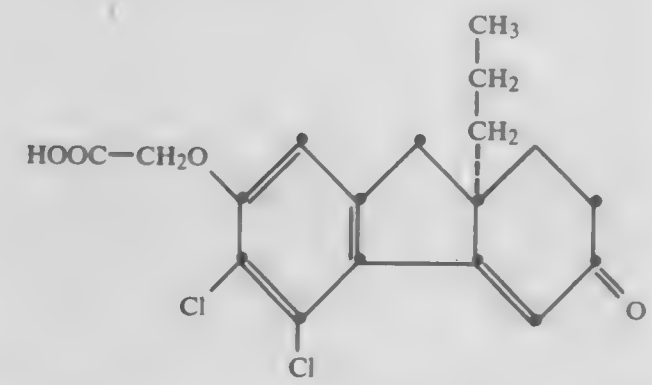
(e) treating said hydroxyfluorenone compound with a haloacetic acid ester in the presence of a base to obtain a fluorenyloxyacetic acid ester of the formula:



VII

wherein R^1 is loweralkyl C_1–C_5;

(f) hydrolyzing said ester to produce a fluorenyloxy acetic acid of the formula:



I

(g) and isolating said enantiomer I by crystallization.

4,605,762

DEPOLYMERIZATION OF CONDENSATION POLYMERS

Jorge W. Mandoki, Cujimalpa, Mexico, assignor to Celanese Mexicana S.A., Mexico City, Mexico

Continuation-in-part of Ser. No. 371,157, Apr. 23, 1982, abandoned. This application Dec. 21, 1983, Ser. No. 563,812

Int. Cl.[4] **C07C** *51/487, 27/02, 85/26;* **C07D** *487/00, 210/00*

U.S. Cl. 562—483 **25 Claims**

1. A continuous process for the hydrolytic depolymerization of condensation polymers which comprises:

subjecting condensation polymer waste material selected from the group consisting of polyester polymer, polyamide polymer and polycarbonate polymer to aqueous hydrolysis in a hydrolysis zone at a temperature of between 200° C. and 300° C. and superatmospheric pressure of at least 15 atmospheres;

introducing high pressure steam into the lower portion of the hydrolysis zone underneath the level of the condensation polymer waste material; and

withdrawing an aqueous solution of the product(s) of the hydrolysis reaction from an upper portion of the hydrolysis zone.

4,605,763

PROCESS FOR THE PURIFICATION OF TEREPHTHALIC ACID

Judy E. Kiefer, William V. Phillips, and Thomas E. Woodruff, all of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 31, 1984, Ser. No. 646,196

Int. Cl.[4] **C07C** *51/42*

U.S. Cl. 562—487 **20 Claims**

1. In a process for the purification of crude terephthalic acid, said purification process comprising contacting said crude terephthalic acid with oxygen-containing gas at elevated temperature and pressure in the presence of a solvent containing at least one lower alkanoic acid and a catalyst system comprising cobalt, the improvement comprising employing in said catalyst system a bromine source and pyridine.

4,605,764

SUBSTITUTED ACETAMIDE DERIVATIVES WITH AN ANTIDOTE ACTION, ANTIDOTE COMPOSITIONS CONTAINING SUCH COMPOUNDS, SELECTIVE HERBICIDE COMPOSITIONS CONTAINING THESE ANTIDOTES AND A PROCESS FOR THE PREPARATION OF SUBSTITUTED ACETAMIDE DERIVATIVES

György Matolosy; Barna Bordás; Antal Gimesi; Magdolna Kovács neé Kálmán, and Márton Tüske, all of Budapest, Hungary, assignors to Eszakmagyarorszagi Vegyimuvek, Sajobabony, Hungary

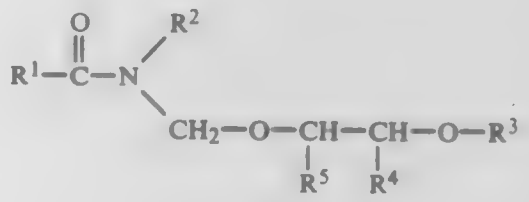
Filed Jul. 13, 1983, Ser. No. 513,215

Claims priority, application Hungary, Jul. 14, 1982, 2288/82

Int. Cl.[4] **C07C** *103/127, 103/34*

U.S. Cl. 564—209 **2 Claims**

1. A process for the preparation of a compound of the formula (III)



(III)

wherein

R^1 stand for a halogenated alkyl group containing 1 to 2 carbon atoms, preferably for a dichloro- or dibromoalkyl group;

R^2 stands for a straight or branched alkyl group containing 1 to 6 carbon atoms, or an alkenyl group containing 2 to 6 carbon atoms;

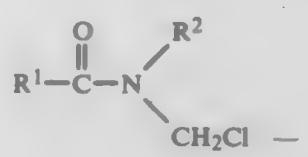
R^3 stands for an alkyl group containing 1 to 6 carbon atoms, an alkoxyalkyl group of altogether 2 to 6 carbon atoms, or a phenyl group;

R^3 and R^4 together may stand for a propylene or butylene group;

R^4 and R^5 stand independently from each other for hydrogen or a methyl group; or

R^4 and R^5 together may stand for a propylene or butylene group,

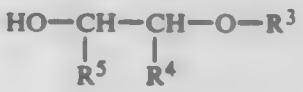
which comprises reacting an N-chloromethyl compound of the formula (IV),



(IV)

wherein

R^1 and R^2 are as defined above, with an alcohol of the formula (V)



(V)

wherein

R^3, R^4 and R^5 are as defined above.

4,605,765

NOVEL POLYAMINE

Akira Miyamoto; Katsuo Sato, and Masahiro Kurokawa, all of Kanagawa, Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

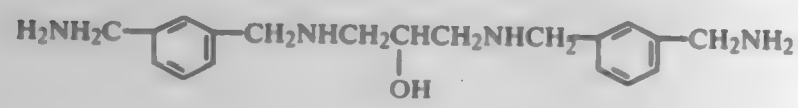
Division of Ser. No. 473,404, Mar. 8, 1983, abandoned. This application Oct. 29, 1984, Ser. No. 651,024

Claims priority, application Japan, Mar. 8, 1982, 57-36263

Int. Cl.[4] C07C *87/28*

U.S. Cl. 564—367 2 Claims

1. N,N'-Bis(3-aminomethylbenzyl)-2-hydroxytrimethylenediamine having the formula:



4,605,766

ALKYLATION PROCESS

Duane C. Hargis, Baton Rouge, La., assignor to Ethyl Corporation, Richmond, Va.

Continuation-in-part of Ser. No. 564,749, Dec. 22, 1983, abandoned. This application Sep. 14, 1984, Ser. No. 650,807

Int. Cl.[4] C07C *85/24*

U.S. Cl. 564—409 39 Claims

1. A process for alkylating an aromatic amine which comprises reacting at elevated temperature and in the presence of an iron oxide alkylation catalyst, an alkylatable aromatic amine with an ether co-reactive therewith whereby a portion of said ether alkylates the aromatic amine and a portion of said ether remains undecomposed.

4,605,767

PROCESS FOR THE PREPARATION OF 2,6-DICHLORO-4-NITROANILINE

Otto Arndt, Hofheim am Taunus, and Theodor Papenfuhs, Frankfurt am Main, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed May 16, 1985, Ser. No. 734,972

Claims priority, application Fed. Rep. of Germany, May 18, 1984, 3418495

Int. Cl.[4] C07C *85/24, 87/60*

U.S. Cl. 564—412 8 Claims

1. A process for the preparation of 2,6-dichloro-4-nitroaniline by chlorination of 4-nitroaniline with chlorine bleaching liquor in water using acids, which comprises chlorinating 1 mole of 4-nitroaniline in 3–6 moles of hydrochloric acid (HCl) or nitric acid (HNO_3) in the form of a dilute, aqueous acid in the presence of a dispersing agent which is stable under the reaction conditions, the chlorination initially being carried out at 5° to 10° C. and then at 15°–20° C. and, finally, after 90–95% of the 2-chloro-4-nitroaniline intermediately formed has been converted into 2,6-dichloro-4-nitroaniline, the temperature of the aqueous suspension being increased from 15°–20° C. to 70° C., without further addition of chlorine bleaching liquor, and then by post-chlorinating, by renewed addition of chlorine bleaching liquor, at temperatures between 20° and 70° C., bringing the pH of the aqueous suspension to 9.0 and filtering off the 2,6-dichloro-4-nitroaniline formed and washing it with dilute mineral acid.

5. A process for the preparation of substantially pure 2,6-dichloro-4nitroaniline by chlorinatin of 4-nitroaniline with chloring bleaching liquor in water using acids, which comprises chlorinating 1 mole of 4-nitroaniline in 3–6 mole of hydrochloric acid (HCl) or nitric acid (HNO_3) in the form of a dilute, aqueous acid in the presence of a dispersing agent which is stable under the reaction conditions, the chlorination initially being carried out at 5° to 10° C. and then at 15°–20° C. and, finally, after 90–95% of the 2-chloro-4-nitroaniline intermediately formed has been converted into 2,6-dichloro-4-nitroaniline, the temperature of the aqueous suspension being increased from 15°–20° C. to 70° C., without further addition of chlorine bleaching liquor, and then by post-chlorinating, by renewed addition of chlorine bleaching liquor, at temperatures between 20° and 70° C., bringing the pH of the aqueous sispension to 9.0 and filtering off the 2,6-dichloro-4-nitroaniline formed and washing it with dilute mineral acid to provide 2,6-dichloro-4-nitroaniline of a purity of 96% or above, and a melting point of 187°–191° C. and in a yield of 80% or above.

4,605,768

1-CYCLOALKYLAMINO-3-T-BUTYLAMINO-2-PROPANOLS, A METHOD OF PREPARING THE SAME, AND A METHOD OF USE THEREOF

Chantal Boyer, Le Pian Medoc; Jean C. Colleter, Blanquefort; Marie-Helene Creuzet, Bordeaux; Claude Feniou, Pessac; Michel Laguerre, Gradignan; Henri Pontagnier, Pessac, and Gisele Prat, Talence, all of France, assignors to Societe Cortial, Paris, France

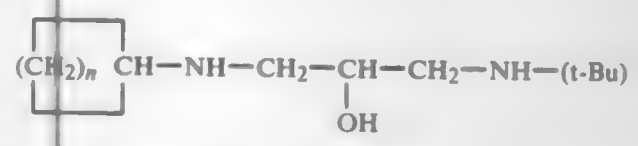
Filed Dec. 21, 1984, Ser. No. 684,949

Claims priority, application France, Dec. 22, 1983, 83 20748

Int. Cl.[4] C07C *87/32, 87/45*

U.S. Cl. 564—461 7 Claims

1. A compound having the formula (I):



(I)

wherein n is an integer between 7 and 11, inclusive; or the pharmaceutically acceptable salts thereof.

4,605,769

PREPARATION OF ALKANOLAMINE

Michael J. Green, Hedon, England, assignor to BP Chemicals Limited, London, England

Filed Jun. 12, 1985, Ser. No. 743,753

Claims priority, application United Kingdom, Jun. 21, 1984, 8415806

Int. Cl.[4] C07C *89/02, 85/02*

U.S. Cl. 564—477 12 Claims

1. A process for the preparation of an alkanolamine comprising reacting an alkylene oxide with either an amine or ammonia in the presence of an effective amount of a catalyst comprising a salt of a fluorosulphonic acid,

said fluorosulphonic acid being a compound of the formula RSO_3H where R is an alkyl, substituted alkyl, or aryl group, containing at least one fluorine atom adjacent to the sulphonic acid group, and

said amine having at least one hydrogen connected to the nitrogen atom.

4,605,770

NONCYCLIC POLYALKYLENE POLYAMINES BY THE REACTION OF AN ALKANOLAMINE COMPOUND AND AN ALKYLENEAMINE COMPOUND IN THE PRESENCE OF A GROUP IIA OR GROUP IIIB METAL ACID PHOSPHATE CATALYST

Michael E. Ford, Center Valley, and Thomas A. Johnson, Orefield, both of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Dec. 22, 1983, Ser. No. 564,594

The portion of the term of this patent subsequent to Mar. 25, 2003, has been disclaimed.

Int. Cl.[4] C07C *85/06*

U.S. Cl. 564—479 40 Claims

1. A process for preparing predominantly noncyclic polyalkylene polyamines which comprises:

contacting an alkanolamine compound having an amino group and a primary or secondary hydroxy group with an

alkyleneamine compound having two amino groups in the presence of a catalytically effective amount of a catalyst consisting essentially of a Group IIA or Group IIIB metal acid phosphate at a temperature sufficient to effect the reaction between the alkanolamine compound and the alkyleneamine compound under a pressure sufficient to maintain the reaction mixture essentially in liquid phase.

4,605,771

PROCESS AND INSTALLATION FOR THE PRODUCTION OF AN ORGANIC SOLUTION OF A WATER-INSOLUBLE ORGANIC BASE

Léon Ninane; Claude Breton, both of Dombasle-sur-Meurthe, France, and Constant Guerdon, Kraainem, Belgium, assignors to Solvay & Cie. (Societe Anonyme), Brussels, Belgium

Filed Apr. 26, 1984, Ser. No. 604,365
Claims priority, application France, Apr. 28, 1983, 83 07226
Int. Cl.[4] C07C *85/26, 87/06*
U.S. Cl. 564—497 **10 Claims**

1. Process for the production of an organic solution of a water-insoluble organic base comprising mixing together water, an organic solution of a water-immiscible chloride of an organic cation, and a basic reagent capable of decomposing the chloride of the organic cation to form the base, resulting in the formation of an organic solution phase containing the base and an aqueous phase containing a solid residue, separating the organic solution phase containing the base from the aqueous phase by difference in density, whereby an interface phase comprising an emulsion-like mixture of aqueous phase and organic solution phase containing suspended solid particles of said solid residue is formed between the organic phase and the aqueous phase, withdrawing at least a part of the interface phase which separates the organic solution phase and the aqueous phase and recycling the withdrawn interface phase to the mixture of the water, organic solution and the basic reagent.

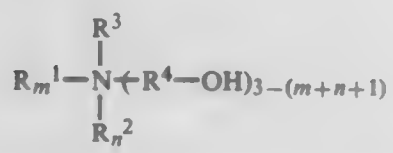
4,605,772

PROCESS FOR PREPARING N-ALKANE-N-ALKANOLAMINES

Nicholas Darby, Toronto, and Gordon C. Dunmore, Ft. Saskatchewan, both of Canada, assignors to The Dow Chemical Company, Midland, Mich.

Filed Dec. 24, 1984, Ser. No. 685,529
Int. Cl.[4] C07C *91/04, 91/12, 91/10, 87/06*
U.S. Cl. 564—503 **15 Claims**

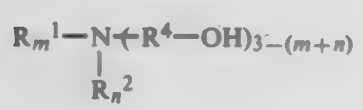
1. A method of producing an N-alkane-N-alkanolamine of the structure



(I)

wherein R^1, R^2, and R^3 are each independently hydrocarbon moieties having from 1 to 12 carbon atoms; each R^4 is independently a hydrocarbon moiety having 1 to 6 carbon atoms; and m and n are each independently 0, 1, or 2, provided that m and n are such that the nitrogen atom of (I) has a valence of 3; comprising

(a) contacting a compound of the structure



(II)

wherein R^1, R^2, R^4, m, and n are as defined above, with a haloalkane of the structure R^3X, wherein R^3 is as defined above; and X is a halogen;

(b) contacting the product of step (a) with a strong base; and

(c) deprotonating the product of step (b).

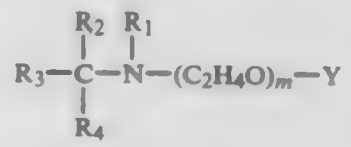
4,605,773

LOW-FOAMING, PH SENSITIVE, ALKYLAMINE POLYETHER SURFACE ACTIVE AGENTS AND METHODS FOR USING

James E. Maloney, Eagan, and James A. McDonell, St. Paul, both of Minn., assignors to Diamond Shamrock Chemicals Company, Dallas, Tex.

Division of Ser. No. 406,885, Aug. 10, 1982. This application May 10, 1984, Ser. No. 608,775
Int. Cl.[4] C07C *93/04*
U.S. Cl. 564—505 **5 Claims**

1. A foam controllable, pH sensitive alkylamine polyether of the structure:



wherein

(a) R_1 is alkyl and R_2, R_3 and R_4 are alkyl or hydrogen, the total number of carbon atoms in $R_1+R_2+R_3+R_4$ falling in the range of 7 to 36;

(b) The $-(C_2H_4O)_m-$ segment must be a poly(oxyethylene) homogeneous chain or block polymer, m having an average value in the range of 5–13; and

(c) Y is a homogeneous poly(oxypropylene) chain block polymer, of the structure $-(C_3H_6O)_nH$, n having an average value in the range of 6–30.

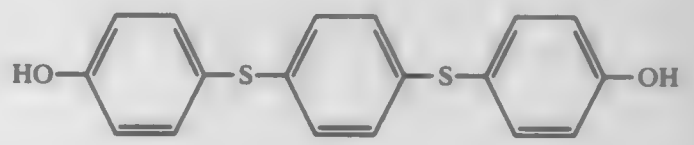
4,605,774

PREPARATION OF BIS(4-HYDROXYPHENYL THIO)BENZENES

Arthur L. Baron, and Parameswar Sivaramakrishnan, both of New Martinsville, W. Va., assignors to Mobay Corporation, Pittsburgh, Pa.

Filed Sep. 18, 1978, Ser. No. 943,517
Int. Cl.[4] C07C *148/00*
U.S. Cl. 568—48 **2 Claims**

1. A process for the production of the monomer of the structural formula



which comprises

(a) reacting 4-mercaptophenol with p-dibromobenzene in the presence of potassium carbonate and dimethyl formamide to form an impure product comprising bis-(4-hydroxyphenyl thio)-benzene and 4'-bromo-4-hydroxydiphenyl sulfide and

(b) removing 4'-bromo-4-hydroxydiphenyl sulfide from said impure product by extraction with cyclohexane and recovering said monomer in purified form.

4,605,775

SYNTHESIS OF HIGHER KETONES

David J. Elliott, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Apr. 22, 1985, Ser. No. 725,843
Int. Cl.[4] C07C *45/72*
U.S. Cl. 568—387 **21 Claims**

1. A process for preparing higher ketones comprising the step of contacting a mixture comprising

(a) at least one ketone selected from the group of ketones having from 3 to 5 carbon atoms per molecule, and

(b) carbon monoxide

with a catalyst composition comprising copper (II) oxide and

zinc oxide, under such conditions as to form a reaction product comprising at least one higher ketone having at least one carbon atom per molecule more than the feed ketone in said mixture.

4,605,776

PROCESS FOR PRODUCING ACETONE

Taiji Kamiguchi; Mutsuo Yamada; Yoshijiro Arikawa; Takanori Kuwahara; Hirotoshi Tanimoto; Yasuyuki Nishimura, and Hiroyaki Kaku, all of Kure, Japan, assignors to Babcock-Hitachi Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 23, 1985, Ser. No. 694,099

Claims priority, application Japan, Jan. 27, 1984, 59-012144; Mar. 8, 1984, 59-044469

Int. Cl.[4] C07C *45/35*

U.S. Cl. 568—401 19 Claims

1. A process for producting acetone by oxygen-oxidizing propylene in the presence of a metal complex catalyst, which process comprises employing a composite catalyst containing as the metal complex catalyst, a first complex (Mm Xn.Ll) capable of forming an oxygen complex by coordination of the complex with oxygen and a second complex (m′m′ Xn′.L′l′ Ll) capable of forming a propylene complex by coordination of the complex with propylene, wherein M is a transition metal belonging to group I, groups IV–VII and the iron group in group VIII of the Periodic Table; X, and anion; L, an organic phosphorus compound selected from the group consisting of triphenylphosphine oxide, hexamethylphosphoramide, mono-, di- and triesters formed by the reaction of phosphoric acid with methanol and ethanol, dimethyl methylphosphonate, methyl dimethylphosphinate, mono-, di- and triesters formed by the reaction of phosphorus acid with methanol and ethanol, phenylphosphinous acid esters, dimethylphosphinic acid esters, triethylphosphine and triphenylphosphine; M′, a transition metal belonging to the platinum group in group VIII of the Periodic Table; L′, a coordinating compound selected from the group consisting of acetonitrile, propionitrile, benzonitrile, tolunitrile, fluorinated toluene, benzotrifluoride; m, m′, n and n′, each a number determined by valences of the above transition metals and the above anion; and l and l′, each the number of ligands.

4,605,777

METHOD OF MANUFACTURING O- AND P-NITROBENZALDEHYDE

Boris Holm, Kariskoga, Sweden, assignor to Nobel Kemi AB, Kariskoga, Sweden

Filed Jan. 12, 1985, Ser. No. 744,143

Claims priority, application Sweden, Jun. 13, 1984, 8403147

Int. Cl.[4] C07C *79/36*

U.S. Cl. 568—424 11 Claims

1. Method of manufacturing o- and p-nitrobenzaldehyde from o-chloro or o-bromobenzaldehyde and p-chloro or p-bromobenzaldehyde, respectively, characterized in that the chlorine or bromine substituent of the starting substance is exchanged for a nitro group through a nucleophilic aromatic substitution reaction performed in an organic solvent with a nitrite salt selected from the group of potassium nitrite and sodium nitrite and in the presence of a copper salt as a catalyst.

4,605,778

PROCESS FOR THE PREPARATION OF AROMATIC MUSKS

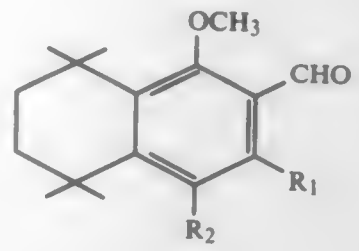
Brian J. Willis, Ramsey, N.J., and Teodosij Zazula, Rego Park, N.Y., assignors to Fritzsche Dodge & Olcott Inc., New York, N.Y.

Division of Ser. No. 494,674, May 13, 1983, Pat. No. 4,476,040, which is a continuation-in-part of Ser. No. 394,847, Jul. 2, 1982, abandoned. This application Jun. 6, 1984, Ser. No. 617,990

Int. Cl.[4] C07C *45/00, 45/90*

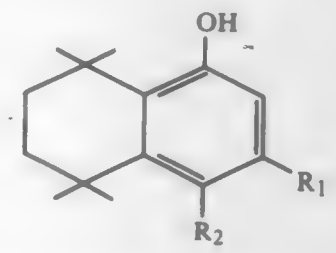
U.S. Cl. 568—433 10 Claims

1. The process of preparing compounds having the structure:

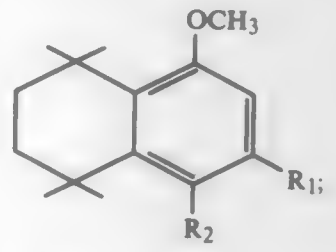


wherein R_1 and R_2 are hydrogen, methyl, or ethyl, which comprises:

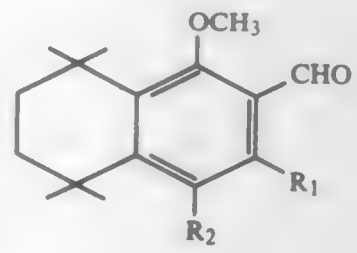
a. methylating compounds having the structure:



wherein R_1 and R_2 are hydrogen, methyl, or ethyl to produce methoxy derivatives having the structure:



b. formylating the methoxy derivatives to prepare compounds having the structure:



and

c. recovering said compounds.

4,605,779

METHOD FOR THE PRODUCTION OF TIGLIC ALDEHYDE

Teruo Matsuda, Ehime; Shinkichi Shimizu, Osaka, and Masaaki Iwasa, Ehime, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

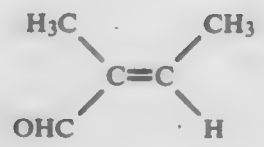
Filed Jul. 24, 1985, Ser. No. 758,017

Claims priority, application Japan, Jul. 24, 1984, 59-154635

Int. Cl.[4] C07C *45/67*

U.S. Cl. 568—450 3 Claims

1. A process for producing tiglic aldehyde of the formula:



which comprises isomerizing ethylacrolein at a temperature in the range of from 50° C. to 150° C. and in the presence of hydrogen gas in an amount of from 0 to 1 mole per mole of said ethylacrolein and at least one hydrogenating catalyst selected from the group consisting of palladium, platinum, rhodium and ruthenium.

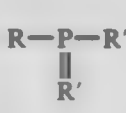
4,605,780

REACTIVATION OF RHODIUM COMPLEX HYDROFORMYLATION CATALYSTS

Ernst Billig, Charleston, and David B. Stanton, South Charleston, both of W. Va., assignors to Union Carbide Corporation, Danbury, Conn.

Filed Sep. 24, 1980, Ser. No. 190,280
Int. Cl.⁴ C07C *45/49*
U.S. Cl. 568—454 **14 Claims**

1. A process for converting alkyl substituted phosphine by-product to its corresponding phosphine oxide and improving the activity of a rhodium complex hydroformylation catalyst contained in a hydroformylation reaction medium, which catalyst has become partially deactivated from its employment in a continous hydroformylation reaction to produce aldehyde products by reacting an olefinic compound, carbon monoxide and hydrogen in the presence of a hydroformylation reaction medium contained in a reaction vessel, said process comprising stopping the hydroformylation reaction being conducted in said vessel and treating, under nonhydroformylation conditions, all or a proportionate part of the hydroformylation reaction medium derived therefrom which consists essentially of from about 5 to about 60 percent by weight of aldehyde products, from about 10 to about 70 percent by weight of higher boiling aldehyde condensation by-products, a partially deactivated soluble rhodium complex hydroformylation catalyst in an amount sufficient to provide a rhodium concentration in said derived medium of from about 25 ppm to about 1200 ppm of rhodium calculated as free metal, from about 0.1 to about 5 percent by weight of free alkyl substituted phosphite by-product of the formula



(I)

wherein R is an alkyl radical, R′ is an alkyl or aryl radical and R″ is an aryl radical, and from about 5 to about 25 percent by weight of free triarylphosphine ligand, said above mentioned weight percentages being based on the total weight of said derived hydroformylation reaction medium, with a sufficient amount of oxygen or oxygen containing gas for a sufficient period of time, at a temperature of from about 20° C. to about 80° C., until at least about 50 percent by weight of said alkyl substituted phosphine has been converted to its alkyl substituted phosphine oxide, while converting less than about 25 percent by weight of said triarylphosphine ligand to its triarylphosphine oxide.

4,605,781

PRODUCTION OF 2-METHYLBUTANAL

Kwoliang D. Tau, Corpus Christi, Tex., assignor to Celanese Corporation, New York, N.Y.

Filed Sep. 3, 1985, Ser. No. 772,219
Int. Cl.⁴ C07C *45/50*
U.S. Cl. 568—454 **14 Claims**

1. A continuous process for selectively producing 2-methylbutanal by selectively hydroformylating butene-2 which process comprises contacting, on a continuous process basis, in a hydroformylation zone:

(a) said butene-2;

(b) with carbon monoxide and hydrogen in the mole ratio of hydrogen to carbon monoxide within the range of 1/1 to 10/1;

(c) in the presence of an halogen-free rhodium complex catalyst of the empirical formula:

$$RhH_m(CO)_nL_p \qquad I$$

wherein "Rh" is rhodium, "H" is hydrogen, "CO" carbon monoxide and "L" is a triorganophosphine ligand, and wherein m is 1 or 3, n is from 1 to 3, and p is 1 or 2, the sum of m, n and p being from 4 to 6 said triorganophosphine ligand being selected from the group consisting of trialkylphosphines, tricycloalkylphosphines, wherein each of the three alkyl, including cycloalkyl, groups are alike or different, and each contains from 3 to 10 carbon atoms and wherein said triorganophosphine ligand has a cone angle within the range of 159 to 171 degrees and wherein the frequency of the A_1 carbonyl mode of the nickel tricarbonyl complex of the ligand, $Ni(CO)_3L$, in dichloromethane is within the range of 2056.1 to 2061.1 cm^{-1};

(d) wherein the triorganophosphorus ligand is not in substantial excess such that there is not any substantial amount of free triorganophosphorus ligand;

(e) at a pressure within the range of about 6 to 30 atmospheres absolute;

(f) at a temperature within the range of about 80° C. to 150° C.;

(g) so as to produce hydroformylation products of said butene-2 wherein the mole ratio of 2-methylbutanal to other oxygenated products is at least 4/1; and continuously recovering from said hydroformylation zone said hydroformylation products having a said mole ratio of 2-methylbutanal to other oxygenated products of at least 4/1.

4,605,782

PROCESS FOR THE PREPARATION OF AN ALDEHYDE

Christopher S. John, Amsterdam, Netherlands, assignor to Shell Oil Company, Houston, Tex.

Filed Aug. 5, 1985, Ser. No. 762,647
Claims priority, application United Kingdom, Oct. 15, 1984, 8426006
Int. Cl.⁴ C07C *45/41*
U.S. Cl. 568—484 **13 Claims**

1. A process for the preparation of an aldehyde from an aromatic carboxylic acid or an aliphatic carboxylic acid having at most one α-hydrogen atom in the acyl group, which process comprises contacting the carboxylic acid at elevated temperature with hydrogen in the presence of a catalyst consisting essentially of at least 25%w of iron oxide expressed as Fe_2O_3, calculated on the total catalyst, with the remainder being binding materials.

4,605,783

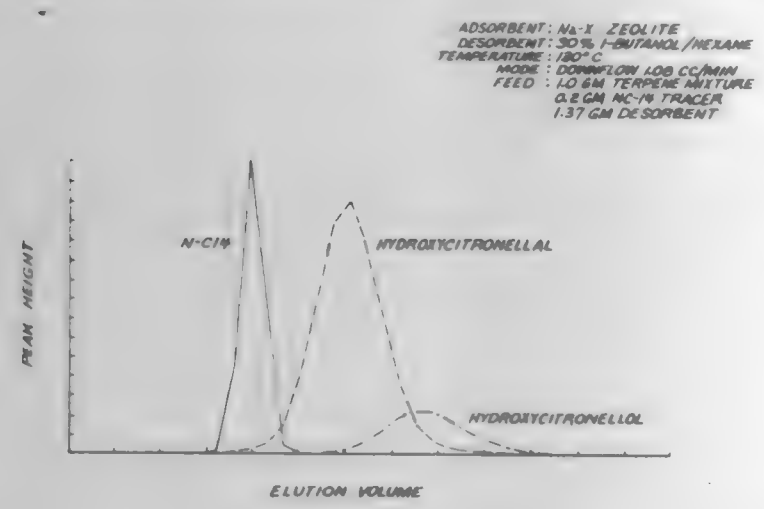
PROCESS FOR SEPARATING MONOTERPENES

Hermann A. Zinnen, Evanston, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed Mar. 21, 1985, Ser. No. 714,404
Int. Cl.⁴ C07C *45/78, 45/79*
U.S. Cl. 568—492 **12 Claims**

1. A process for separating monoterpene alcohols and aldehydes or ketones of monoterpenes from a feed mixture comprising an aldehyde and/or ketone of a monoterpene and an alcohol of a monoterpene, said process comprising: contacting said mixture at adsorption conditions which include a temperature of from about 25° C. to about 200° C. and a pressure sufficient to maintain liquid phase with an X-type zeolite containing sodium or potassium ions at cation exchange sites thereby selectively adsorbing said monoterpene alcohol to the

substantial exclusion of said monoterpene ketone and aldehyde; recovering a nonadsorbed raffinate component substantially free of said monoterpene alcohol; desorbing said selectively adsorbed component with a desorbed material comprising alcohols, ketones, paraffinic hydrocarbons or combinations thereof at desorption conditions in the same range as said adsorption conditions and recovering an adsorbed component substantially free of said monoterpene aldehyde or ketone.



4,605,784

PROCESS FOR THE PREPARATION OF ETHER-CONTAINING CHLORIDES

Robert J. I. Eubanks, and James G. Pacifici, both of Batesville, Ark., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation of Ser. No. 682,823, Dec. 19, 1984, abandoned, which is a continuation of Ser. No. 536,112, Sep. 26, 1983, abandoned. This application Jul. 18, 1985, Ser. No. 756,565

Int. Cl.[4] C07C *41/22, 41/18*

U.S. Cl. 568—614 **9 Claims**

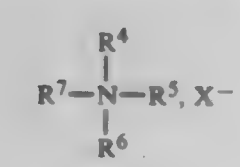
1. A process for the preparation of a compound having the formula

$$R^2(OR^3)_nCl \qquad III$$

by contacting a chlorinating agent selected from the group consisting of phosphorous pentachloride, phosphorous oxychloride and thionyl chloride with a compound of the formula

$$R^1(OR^3)_nOH \qquad I$$

in the presence of a catalytic amount of a quaternary ammonium salt of the formula



$$R^7-\overset{\overset{R^4}{|}}{\underset{\underset{R^6}{|}}{N}}-R^5,\ X^- \qquad II$$

wherein

n is an integer of from 1 to 20,

R^1 is alkyl of from 1 to 8 carbon atoms, aryl of from 6 to 10 carbon atoms, alkylaryl of from 7 to 18 carbon atoms, arylalkyl of from 7 to 10 carbon atoms, $HOCH_2CH_2$— or $ClCH_2CH_2$—;

R^2 is alkyl of from 1 to 8 carbon atoms, aryl of from 6 to 10 carbon atoms, alkylaryl of from 7 to 18 carbon atoms, arylalkyl of from 7 to 10 carbon atoms, or $ClCH_2CH_2$—, wherein said R^1 of the reactant corresponds to said R^2 of the product except that said R^2 is $ClCH_2CH_2$— when R^1 is $HOCH_2CH_2$—;

R^3 is an alkylene radical of from 2 to 3 carbon atoms;

R^4, R^5, R^6, and R^7 are each independently selected from alkyl of from 1 to 18 carbon atoms, alkylaryl of from 7 to 18 carbon atoms, arylalkyl of from 7 to 18 carbon atoms, and aryl of from 6 to 18 carbon atoms and X is a halide, hydrogen sulfate or hydroxide anion;

the reaction being conducted at a temperature of about 25° to about 90° C.

4,605,785

1,1-DIPHENYLPROPANOL DERIVATIVES, PROCESS FOR THEIR PREPARATION AND PHARMACEUTICAL COMPOSITIONS CONTAINING THEM

Edit Toth; Jozsef Torley; Eva Palosi; Szabolcs Szeberenyi; László Szporny; Sandor Gorog, and Istvan Hajdu, all of Budapest, Hungary, assignors to Richter Gedeon Vegyeszeti Gyar RT, Budapest, Hungary

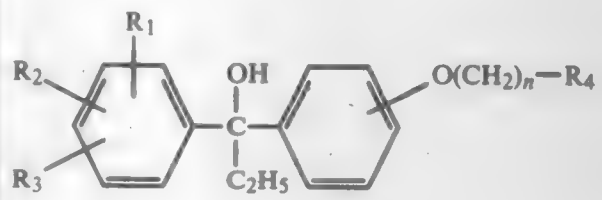
Filed Dec. 27, 1983, Ser. No. 565,838

Claims priority, application Hungary, Dec. 28, 1982, 4181/82

Int. Cl.[4] C07C *43/20*

U.S. Cl. 568—649 **6 Claims**

I. A compound of the Formula (I)



wherein

R_1 and R_2 independently represent hydrogen, halogen, trihalomethyl, C_1–C_4 alkyl or C_1–C_4 alkoxy;

R_3 is halogen, trihalomethyl, C_1–C_4 alkyl, or C_1–C_4 alkoxy;

R_4 is phenyl which can be substituted by one or more identical or different substituents selected from the group consisting of halogen, trihalomethyl, alkyl, alkoxy, cyano, nitro, amino, alkylamino, dialkylamino, hydroxyl, carboxyl, and substituted carboxyl; and

n is 1, 2, 3, 4 or 5.

4,605,786

PERFLUORO ETHER COMPOUND CONTAINING PERFLUOROCYCLOALKYL MOIETY

Kazumasa Yokoyama, Toyonaka; Yoshihisa Inoue, Kyoto; Taizo Ono, Tokyo; Chikara Fukaya, Osaka; Yoshio Arakawa, Suita; Youichiro Naito, Hirakata; Koichi Yamauchi, Sakai, and Tadakazu Suyama, Kyoto, all of Japan, assignors to The Green Cross Corporation, Osaka, Japan

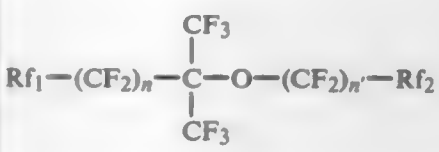
Filed Dec. 20, 1983, Ser. No. 563,436

Claims priority, application Japan, Dec. 21, 1982, 57-225226

Int. Cl.[4] C07C *43/12*

U.S. Cl. 568—669 **6 Claims**

1. A perfluoro ether compound represented by the formula



$$Rf_1-(CF_2)_n-\overset{\overset{CF_3}{|}}{\underset{\underset{CF_3}{|}}{C}}-O-(CF_2)_{n'}-Rf_2 \qquad (I)$$

wherein Rf_1 and Rf_2 are different from each other and are selected from a C_1 to C_3 perfluoroalkyl group, which may be interrupted by an oxygen atom, and a C_5–C_7 perfluorocycloalkyl group, and n and n′ are zero or an integer of 1; provided that one of Rf_1 and Rf_2 is C_5–C_7 perfluorocycloalkyl group and the the total number of carbon atoms is 9–11 inclusive.

4,605,787

PROCESS FOR THE PREPARATION OF ALKYL TERT-ALKYL ETHERS

Pochen Chu, West Deptford, and Guenter H. Kuehl, Cherry Hill, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Continuation of Ser. No. 641,412, Aug. 16, 1984, abandoned, which is a continuation of Ser. No. 532,939, Sep. 16, 1983, abandoned, which is a continuation of Ser. No. 232,800, Feb. 9, 1981, abandoned, which is a continuation of Ser. No. 121,759, Feb. 15, 1980, abandoned. This application Jun. 10, 1985, Ser. No. 742,375

Int. Cl.[4] C07C *41/05*

U.S. Cl. 568—697 5 Claims

1. A process for the preparation of methyl tert-butyl ether which comprises reacting in vapor phase at a temperature between 170°–220° F. methanol with isobutylene in the presence of a ZSM-5 or ZSM-11 acidic zeolite catalyst characterized by having a constraint index of from about 1 to 12 and a silica/alumina ratio of at least about 5.

4,605,788

CATALYTIC PREPARATION OF DIMETHYL ETHER

Loren D. Brake, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 702,842, Feb. 19, 1985, abandoned, which is a continuation of Ser. No. 573,598, Jan. 26, 1984, abandoned, which is a continuation of Ser. No. 394,120, Jul. 1, 1982, abandoned. This application Aug. 26, 1985, Ser. No. 768,936

Int. Cl.[4] C07L *41/04*

U.S. Cl. 568—698 3 Claims

1. In the preparation of dimethyl ether by the catalytic dehydration of methanol, the improvement which comprises using as the catalyst an aluminosilicate which consists of, by weight 1–20% of silica and 80–99% alumina, said aluminosilicate being a calcined coprecipitation product.

4,605,789

PROCESS FOR PREPARING SPIROBIINDANOLS

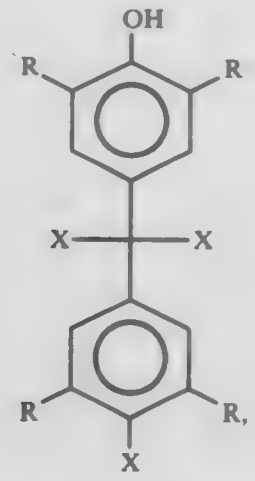
H. Craig Silvis, and Ted A. Morgan, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Dec. 23, 1985, Ser. No. 812,616

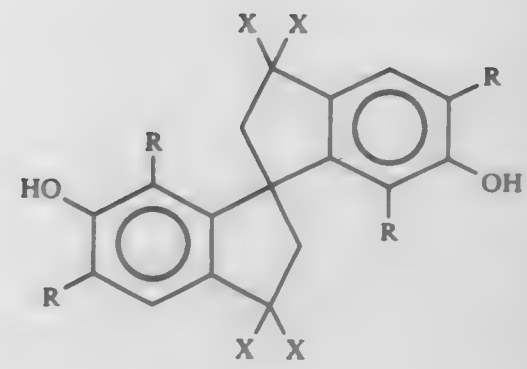
Int. Cl.[4] C07C *39/17*

U.S. Cl. 568—721 4 Claims

1. A process for making spirobiindanols which comprises refluxing the corresponding alkylaryl bisphenol derivative, having the general formula



in the presence of a dry heterogeneous acidic ion exchange resin as the catalyst in an aromatic hydrocarbon solvent, wherein said spirobiindanols have the general formula



wherein R is selected from the group consisting of hydrogen, hydrocarbon radicals, halogen radicals and mixtures thereof, and X is a linear alkyl hydrocarbon radical with a carbon chain length of 1 to 4.

4,605,790

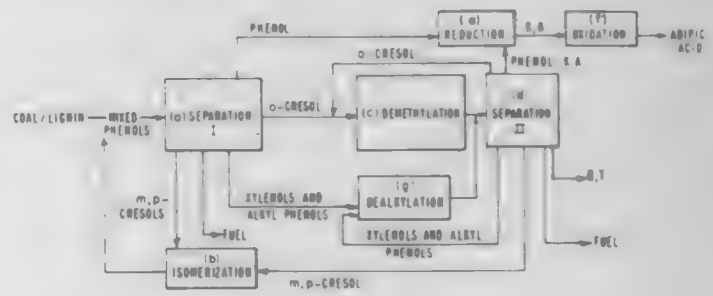
PHENOL FROM COAL AND BIOMASS

Paul W. Wojtkowski, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed May 21, 1985, Ser. No. 736,385

Int. Cl.[4] C07C *37/68*

U.S. Cl. 568—750 18 Claims



1. Process for preparing phenol from mixed phenols, which process comprises:

(a) separating the mixed phenols into at least phenol and o- and m- and/or p-cresols;

(b) isomerizing m- and/or p-cresols from (a) to o-cresol in a first vessel in the presence of an alumino-silicate zeolite catalyst; and

(c) demethylating o-cresol from (a) and (b) to phenol in a second vessel in the presence of hydrogen and a catalyst consisting essentially of nickel and silica and/or Kieselguhr having a Ni/Si gram atomic ratio of about 0.2 to about 20 at a temperature of about 200° C. to about 450° C.

4,605,791

PROCESS FOR PURIFICATION OF TECHNICAL GRADE PENTACHLOROPHENOL

Toyozo Yonezawa, Minami, Japan, assignor to Yonezawa Chemical Industry Co., Ltd., Kyoto, Japan

Filed Jun. 7, 1985, Ser. No. 743,471

Int. Cl.[4] C07C *37/68*

U.S. Cl. 568—755 24 Claims

1. A process for purification of technical grade pentachlorophenol which comprises:

immersing said technical grade pentachlorophenol in an aqueous mixture selected from the group consisting of an aqueous solution and an aqueous suspension of a member selected from the group consisting of sodium bicarbonate, potassium bicarbonate, ammonium carbonate, ammonia, and calcium carbonate;

separating an insoluble portion from dissolved material in the resultant mixture;

dissolving said insoluble portion in a member selected from the group consisting of an aqueous solution of sodium carbonate, an aqueous solution of potassium carbonate,

and a hot aqueous solution of an alkaline substance which is capable of dissolving pentachlorophenol at 90°–100° C.;
contacting the resulting solution with active charcoal;
separating said active charcoal with adsorbed material thereon from said resulting solution;
adding copper sulfate to the thus obtained solution;
separating and removing the resultant deposit from said solution; and
recovering pentachlorophenol from the finally obtained solution.

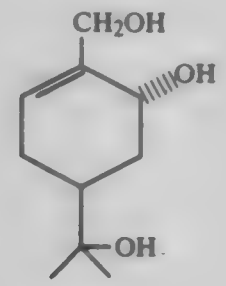
4,605,792

DERIVATIVE OF (−)-6,6-DIMETHYLBICYCLO[3.3.1]EPT-2-ENE-2-METHANOL HAVING MUCOSECRETOLYTIC ACTIVITY, A PROCESS FOR ITS PREPARATION AND PHARMACEUTICAL COMPOSITIONS THEREOF

Camillo Corvi Mora, Piacenza, Italy, assignor to Camillo Corvi S.p.A., Italy

Filed Jun. 7, 1985, Ser. No. 742,574
Claims priority, application Italy, Aug. 8, 1984, 22258 A/84
Int. Cl.⁴ C07C *35/18*
U.S. Cl. 568—823 3 Claims

1. A process for the preparation of a compound of formula (I)



characterized by the epoxidation of (−)-6,6-dimethylbicyclo[3.3.1]ept-2-ene-methanol in an anhydrous methylene chloride medium free from ethanol at a temperature of 5° to 10° C. in the presence of anhydrous sodium carbonate, by peracetic acid in a 40% acetic solution; the pure epoxide, as obtained upon separation from the salts, is subjected to hydration at a temperature from 1° to 20° C. in an weakly acid aqueous medium, extracted with ethyl acetate in the presence of a sodium chloride solution, and concentration of the organic phase, whereby the compound of formula (I), in crystalline form, is obtained.

4,605,793

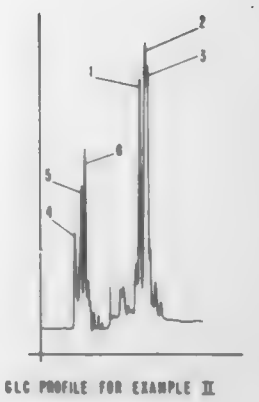
METHYL SUBSTITUTED PINYL OXOPENTENES, ORGANOLEPTIC USES THEREOF AND PROCESS FOR PREPARING SAME

Braja D. Mookherjee, Holmdel; Robert W. Trenkle, Bricktown; Robin K. Wolff, Point Pleasant; Richard M. Boden, Ocean, and Takao Yoshida, West Long Branch, all of N.J., assignors to International Flavors & Fragrances, Inc., New York, N.Y.

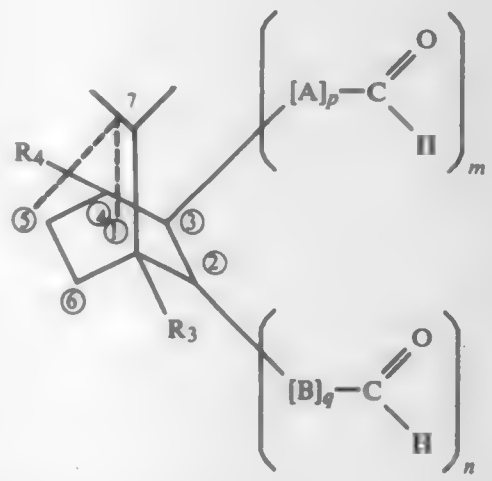
Division of Ser. No. 582,795, Feb. 23, 1984, Pat. No. 4,506,104, which is a division of Ser. No. 496,651, May 20, 1983, Pat. No. 4,510,340, which is a continuation-in-part of Ser. No. 396,485, Jul. 8, 1982, Pat. No. 4,424,378, which is a continuation-in-part of Ser. No. 362,237, Mar. 26, 1982, Pat. No. 4,428,387. This application Jul. 13, 1984, Ser. No. 630,727
The portion of the term of this patent subsequent to Sep. 16, 1997, has been disclaimed.
Int. Cl.⁴ C07C *35/22*
U.S. Cl. 568—820 2 Claims

1. A process for preparing at least one secondary alcohol comprising the steps of:

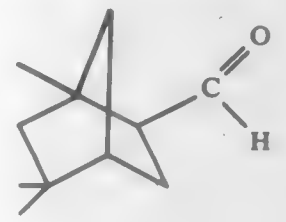
(a) reacting alpha pinene or beta pinene with a mixture of carbon monoxide and hydrogen in the presence of a hydroformylation catalyst in order to produce at least one compound defined according to the structure:



GLC PROFILE FOR EXAMPLE II



or the compound having the structure:



wherein in the mixture one of the dashed lines at the 7–5 or 7–4 positions represents a carbon-carbon single bond and the other of the dashed lines at the 7–5 or 7–4 position represents no bond; wherein one of R_3 or R_4 represents hydrogen and the other of R_3 or R_4 represents hydrogen or methyl; wherein m=0 or 1 and n=0 or 1 with the sum of m+n being equal to 1; wherein A and B each represents methylene defined according to the structure:



wherein p=0 or 1 and q=0 or 1 with the provisos that:

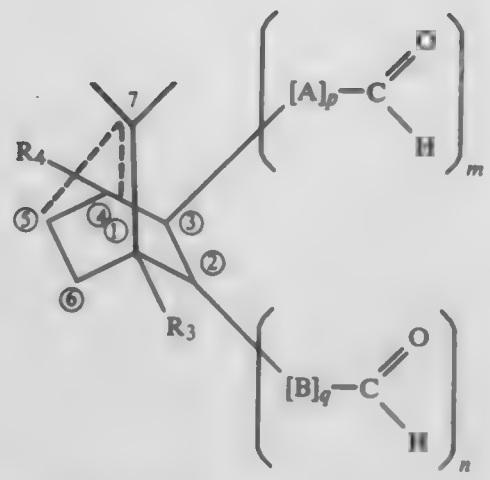
(i) when the dashed line at the 7–5 position is a carbon-carbon single bond, then R_3 and R_4 are both hydrogen, m is 0, n is 1 and q is 1;

(ii) when one of R_3 or R_4 is methyl and the other of R_3 or R_4 is hydrogen, then p and q are both 0;

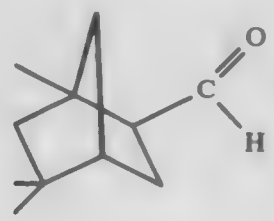
(iii) when R_3 is methyl, then R_4 is hydrogen and the dashed line at the 7–5 position or the dashed line at the 7–4 position is carbon-carbon single bond; and m is 0; n is 1 and q is 0;

(iv) when R_4 is methyl and R_3 is hydrogen, then n is 0 and m is 1 and p is 0 and one of the dashed lines at the 7–5 position or the 7–4 position is a carbon-carbon single bond,

(b) reacting the compound having the structure:



or the compound having the structure:



with methyl ethyl ketone in the presence of a basic catalyst; and

(c) reacting the resulting product with a reducing agent selected from the group consisting of alkali metal borohydrides and lithium aluminum hydride.

4,605,794

SORBITOL, PROCESS FOR ITS PREPARATION, AND USE THEREOF

Friedrich Reiff, Seeheim; Hartmut Härtner, Mühltal; Arno Basedow, Bad Vilbel; Hans-Wolfgang Hugenbusch, Höchst; Peter C. Schmidt, Marburg, and Hans Bardonner, Bad König, all of Fed. Rep. of Germany, assignors to Merck Patent Gesellschaft mit beschränkter Haftung, Darmstadt, Fed. Rep. of Germany

Division of Ser. No. 558,865, Dec. 7, 1983, Pat. No. 4,507,511. This application Jan. 23, 1985, Ser. No. 694,184

Claims priority, application Fed. Rep. of Germany, Dec. 7, 1982, 3245170

The portion of the term of this patent subsequent to Mar. 26, 2002, has been disclaimed.

Int. Cl.[4] C07C *29/76, 31/26*

U.S. Cl. 568—852 17 Claims

1. A process for producing a modified sorbitol-mannitol composition having improved tableting properties, comprising the step of spray drying a concentrated aqueous solution of sorbitol having no more than 2% impurities other than mannitol, and containing up to 15% by weight of mannitol relative to the weight of the sorbitol, at a drying gas temperature of 140°–170° C., under such conditions that the resultant spray dried sorbitol/mannitol composition has a moisture content of less than 1% by weight.

2. The modified sorbitol/mannitol composition produced by the process of claim 1.

4,605,795

CONTINUOUS PROCESS FOR THE PRODUCTION OF PENTANEDIOL-1,2

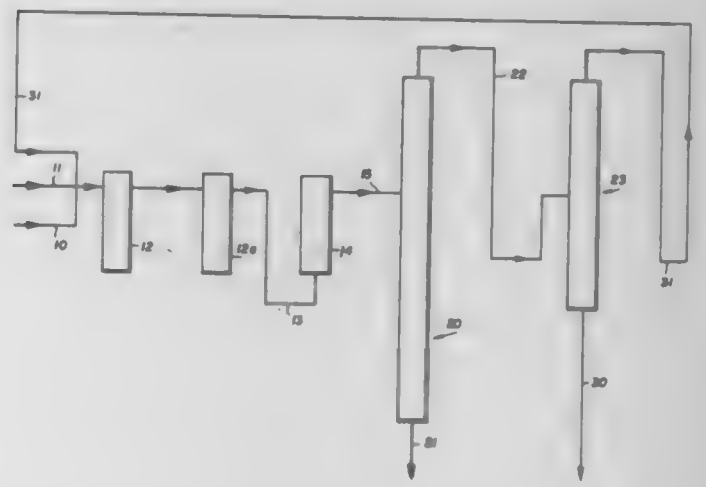
Rainer Siegmeier, Frankfurt; Günter Prescher, Hanau; Helmut Maurer, Rodenbach, and Günter Hering, Alzenau, all of Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Nov. 15, 1985, Ser. No. 798,798

Claims priority, application Fed. Rep. of Germany, Nov. 24, 1984, 3442937

Int. Cl.[4] C07C *29/00, 31/20*

U.S. Cl. 568—867 20 Claims



1. A continuous process for the production of pentanediol starting from pentene, oxidizing it to pentene oxide-1,2 using perpropionic acid and saponification of the epoxide with water at moderate temperature and moderate pressure comprising in a first step reacting pentene with a solution of perpropionic acid or a mixture of perpropionic acid and propionic acid in benzene at a mole ratio of pentene to perpropionic acid of 0.5 to 5:1 at a temperature of 20° to 110° C. and a pressure of 1 to 10 bar, fractionally distilling the epoxidation mixture in a fractionating column, returning the most volatile fraction, which consists chiefly of pentene, into the epoxidation with perpropionic acid solution, supplying the intermediately volatile fraction, which consists chiefly of pentene oxide and benzene, into the middle of a saponification column, in a second step saponifying it there with a sufficient amount of water to saponify the pentene oxide and in the presence of an acid catalyst at 30° to 150° C. and at 1 to 5 bar, withdrawing overhead a benzene-water mixture, separating this mixture into water and benzene, returning the separated water to the saponification column, at the bottom of the saponification column drawing off pentanediol-1,2 in aqueous acid, and withdrawing the least volatile fraction from the bottom of the fractionating column.

4,605,796

PROCESS FOR PRODUCING ETHANOL

Nobuo Isogai; Takashi Okawa; Motoyuki Hosokawa; Toshiyasu Watanabe, and Natsuko Wakui, all of Niigata, Japan, assignors to Agency of Industrial Science and Technology, Tokyo, Japan

Filed Dec. 17, 1984, Ser. No. 682,335

Claims priority, application Japan, Dec. 26, 1983, 58-244172

Int. Cl.[4] C07C *29/00, 31/08*

U.S. Cl. 568—902 9 Claims

1. A process for producing ethanol which comprises reacting methanol, carbon monoxide, and hydrogen in the presence of a catalyst consisting of:

(a) cobalt or a cobalt compound selected from the group consisting of cobalt carbonyls, dicobalt octacarbonyl, cobalt hydride tetracarbonyl, cobalt hydroxide, cobalt carbonate, basic cobalt carbonate, cobaltocene, and cobalt acetyle acetonate;

(b) tertiary phosphine selected from the group consisting of tri-n-butyl phosphine, triphenyl phosphine, tri-p-tolyl-

phosphine, tricyclohexyl phosphine; and a promoter consisting of an aromatic acid, or cobalt salt, or ester thereof, selected from the group consisting of benzoic acid, o-toluic acid, m-toluic acid, p-toluic acid, phthalic acid, terephthalic acid, isophthalic acid, trimellitic acid, and trimesic acid.

4,605,797

HYDROGENATION CATALYSTS AND SELECTIVE HYDROGENATION THEREWITH

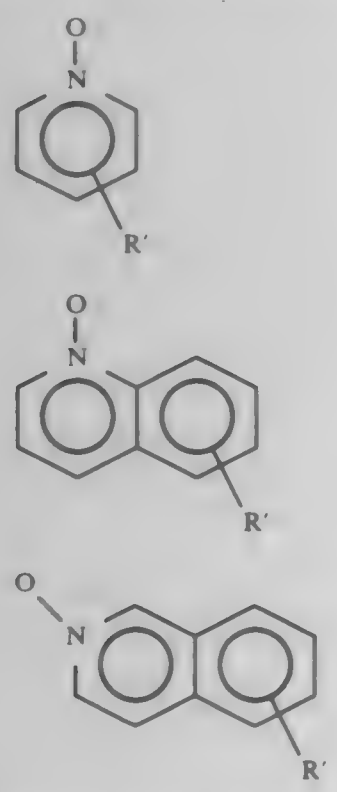
Charles A. Drake, Nowata, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Dec. 20, 1984, Ser. No. 684,399

Int. Cl.[4] C07C *17/00*

U.S. Cl. 570—101 11 Claims

1. A process for the selective conversion of an acetylenic compound to a cis-olefinic compound which comprises contacting said acetylenic compound under hydrogenation conditions with hydrogen and a catalyst consisting essentially of elemental palladium supported on calcium carbonate with lead acetate and about 1–20 parts by weight per part of elemental palladium of an aromatic amine oxide; wherein said aromatic amine oxide has from about 5 to about 18 carbon atoms per molecule and is selected from the group consisting of:



and mixtures of any two or more thereof; wherein R′ is H or C_1–C_4 alkyl.

4,605,798

CONTINUOUS PROCESS FOR THE GASEOUS-PHASE PREPARATION OF TRICHLOROTRIFLUOROETHANE, DICHLOROTETRAFLUOROETHANE AND MONOCHLOROPENTAFLUOROETHANE IN CONTROLLED PROPORTIONS

Michel Abel, Pierre-Benite; Francois Fine, St. Laurent de Mure; Louis Foulletier, Oullins, and Yvan Verot, Ecully, all of France, assignors to PCUK Products Chimiques Ugine Kuhlmann, Courbevoie, France

Filed Nov. 25, 1981, Ser. No. 324,823

Claims priority, application France, Dec. 31, 1980, 80 27865

Int. Cl.[4] C07C *17/00*

U.S. Cl. 570—164 9 Claims

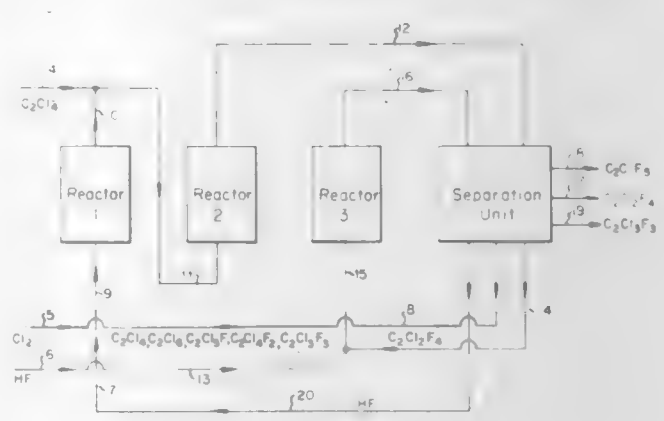
1. A continuous catalytic gaseous-phase process for the preparation of trichlorotrifluoroethane, dichlorotetrafluoroethane and monochloropentafluoroethane, in predetermined proportions, from tetrachloroethylene, chlorine and hydrofluoric acid comprising the steps of:

(a) reacting a mixture of chlorine, hydrofluoric acid and recycled products comprising tetrachloroethylene, hexachloroethane, pentachlorofluoroethane, tetrachlorodifluoroethane and trichlorodifluoroethane to produce a molar ratio of chlorine to recycled tetrachloroethylene of between about 1.1 and 5.0, in the gaseous phase in a first chlorination-fluorination reaction zone:

(b) mixing the gases leaving the first chlorination-fluorination reaction zone with fresh tetrachloroethylene to produce a molar ratio of chlorine to fresh tetrachloroethylene of between about 0.95 and 1.05;

(c) further reacting the effluent gases from the first chlorination-fluorination reaction zone with fresh tetrachloroethylene in a second gaseous-phase chlorination-fluorination reaction zone maintained at a lower temperature;

(d) feeding the effluents from the second reaction zone into a separation unit where the desired amounts of trichlorotrifluoroethane and dichlorotetrafluoroethane are extracted and from which excess dichlorotetrafluoroethane is sent to a fluorination-dismutation reaction zone;



(e) reacting in the fluorination-dismutation reaction zone a mixture of hydrofluoric acid and dichlorotetrafluoroethane that has been recycled from the separation unit, in a molar ratio of between about 0.1 and 1 to produce chloropentafluoroethane;

(f) sending the effluents from the fluorination-dismutation reaction zone into the separation unit;

(g) treating the gaseous products in the separation unti to recover the unused hydrofluoric acid and extract predetermined quantities of chloropentafluoroethane, dichlorotetrafluoroethane and trichlorotrifluoroethane;

(h) recycling the untransformed tetrachloroethylene, hexachloroethane, pentachlorofluoroethane, tetrachlorodifluoroethane and the excess trichlorotrifluoroethane to the first reaction zone; and

(i) recycling the excess dichlorotetrafluoroethane to the fluorination-dismutation reaction zone.

4,605,799

PROCESS FOR SEPARATING A HALOGENATED TOLUENE ISOMER

Kishio Miwa; Kuniyuki Tada, both of Kamakura, and Takehisa Inoue, Tokyo, all of Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Filed Jul. 29, 1981, Ser. No. 288,132

Claims priority, application Japan, Aug. 13, 1980, 55-110395; Nov. 27, 1980, 55-165821

Int. Cl.[4] C07C *17/38*

U.S. Cl. 570—211 8 Claims

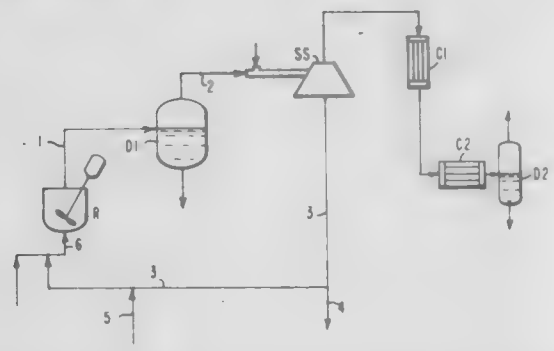
1. In an adsorptive-separation process for recovering the p-isomer from a mixture of monohalogenated toluene isomers containing the p-isomer and at least one other isomer, the improvement characterized by using as an adsorbent a Y type zeolite containing potassium ion and a desorbent containing at least one member selected from the group consisting of 3,4-dihalotoluene, 4-haloorthoxylene and a monocyclic alkyl aromatic hydrocarbon with one to four C_1–C_3 alkyl groups substituted onto the benzene ring whereby the p-isomer is selectively adsorbed and separated from said mixture.

4,605,800

PROCESS FOR THE MANUFACTURE OF CHLOROPRENE

Joseph F. Englert, Jr., La Place, La.; Louis J. Maurin, III, and Clare A. Stewart, Jr., both of Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jan. 17, 1983, Ser. No. 458,554
Int. Cl.[4] C07C *17/34*
U.S. Cl. 570—228 6 Claims



1. In a continuous process for manufacturing chloroprene by the dehydrochlorination of 3,4-dichlorobutene-1 with aqueous alkali in the presence of a quaternary ammonium compound catalyst in one or more reactors,

the improvement of separating the crude dehydrochlorination product into the aqueous phase and the organic phase, steam-stripping the organic phase at a temperature of at most about 80° C. to recover the dehydrochlorination product, discarding a small portion of the steam-stripping heels, and recirculating the remainder of the steam-stripping heels to the dehydrochlorination reaction.

4,605,801

MOLECULAR SIEVES AS CATALYSTS FOR PREPARATION OF 1,1,2-TRICHLOROETHANE

Roger L. Juhl; Mark S. Johnson, and Thomas E. Morris, all of Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Oct. 29, 1982, Ser. No. 437,711
Int. Cl.[4] C07C *17/10*
U.S. Cl. 570—253 6 Claims

1. A process for making 1,1,2-trichloroethane from 1,1-dichloroethane which comprises (1) mixing vapors of 1,1-dichloroethane with chlorine (2) reacting by passing said mixture over a Y-type molecular sieve (3) separating 1,1,2-trichloroethane from unreacted 1,1-dichloroethane and (4) recycling said 1,1-dichloroethane to the reaction.

4,605,802

PRODUCTION OF 1,1,1,3-TETRACHLOROPROPANE

Gary W. Astrologes, Hackensack, N.J., assignor to Halocarbon Products Corp., Hackensack, N.J.

Filed Apr. 1, 1982, Ser. No. 364,175
Int. Cl.[4] C07C *17/28*
U.S. Cl. 570—257 12 Claims

1. A process comprising reacting carbon tetrachloride with ethylene in the presence of a catalyst comprising a phosphite ester and powdered iron thereby to produce 1,1,1,3-tetrachloropropane.

4,605,803

ACID-CATALYZED ORGANIC COMPOUND CONVERSION

Clarence D. Chang, Princeton, and Joseph N. Miale, Lawrenceville, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 726,194, Apr. 22, 1985, abandoned, which is a continuation-in-part of Ser. No. 555,118, Nov. 25, 1983, Pat. No. 4,550,092, which is a division of Ser. No. 317,037, Nov. 21, 1981, Pat. No. 4,435,516. This application Oct. 15, 1985, Ser. No. 787,183
Int. Cl.[4] C07C *1/20, 1/253*
U.S. Cl. 585—408 16 Claims

1. A process for conducting acid-catalyzed conversion of feedstock comprising alcohol, compound containing a carbonyl group, ether or mixtures thereof to product comprising hydrocarbons which comprises contacting said feedstock at conditions sufficient to convert said feedstock to said product hydrocarbons with a catalyst comprising a zeolite composition prepared by a method comprising treating a crystalline zeolite having an initial silica-to-alumina mole ratio of at least 500 with an ammoniacal solution of an alkali metal aluminate for a period of time ranging from about 20 minutes to about 30 days at a temperature of from about 20° C. to about 50° C. and at a pH of at least 10.

4,605,804

ACID-CATALYZED ORGANIC COMPOUND CONVERSION

Clarence D. Chang, Princeton, and Joseph N. Miale, Lawrenceville, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 713,213, Mar. 18, 1985, abandoned, which is a continuation-in-part of Ser. No. 631,688, Jul. 16, 1984, Pat. No. 4,524,140, which is a continuation-in-part of Ser. No. 465,987, Feb. 14, 1983, Pat. No. 4,513,091. This application Oct. 15, 1985, Ser. No. 787,573
Int. Cl.[4] C07C *1/20, 1/253*
U.S. Cl. 585—408 18 Claims

1. A process for converting feedstock comprising organic compounds selected from the group consisting of alcohol, compound containing a carbonyl group, ether and mixtures thereof to conversion product comprising hydrocarbon compounds which comprises contacting said feedstock at conditions sufficient to convert said feedstick to said product hydrocarbons, with a catalyst composition prepared by a method for substituting aluminum or gallium for boron or iron contained in the robust framework of a high silica content crystalline zeolite, which method comprises hydrothermally treating said zeolite in the presence of a compound of said aluminum or gallium, said hydrothermal treatment being under conditions effective to induce said substitution.

4,605,805

ACID-CATALYZED ORGANIC COMPOUND CONVERSION

Clarence D. Chang, Princeton, and Joseph N. Miale, Lawrenceville, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 713,213, Mar. 18, 1985, abandoned, which is a continuation-in-part of Ser. No. 631,688, Jul. 16, 1984, Pat. No. 4,524,140, which is a continuation-in-part of Ser. No. 465,987, Feb. 14, 1983, Pat. No. 4,513,091. This application Oct. 15, 1985, Ser. No. 787,576
Int. Cl.[4] C07C *2/00*
U.S. Cl. 585—415 21 Claims

1. A process for converting feedstock comprising C_2^+ olefins, C_2–C_7 paraffins or a mixture thereof to conversion product comprising C_5^+ hydrocarbon compounds which comprises contacting said feedstock at conditions sufficient to convert said feedstock to said C_5^+ product hydrocarbons with a catalyst composition prepared by a method for substituting

aluminum or gallium for boron or iron contained in the robust framework of a high silica content crystalline zeolite, which method comprises hydrothermally treating said zeolite in the presence of a compound of said aluminum or gallium, said hydrothermal treatment being under conditions effective to induce said substitution.

4,605,806

PROTON-CATALYZED REACTIONS CATALYZED BY HYDROGEN ION-EXCHANGED LAYERED CLAYS

James A. Ballantine, West Cross, Wales; Reginald Gregory, Camberley, England; John H. Purnell, Bishopston, Wales; John M. Thomas, Cambridge, and David J. Westlake, Woking, both of England, assignors to The British Petroleum Company p.l.c., London, England

Division of Ser. No. 417,873, Sep. 14, 1982, abandoned, which is a continuation-in-part of Ser. No. 218,552, Dec. 22, 1980, abandoned. This application Feb. 1, 1985, Ser. No. 697,510

Claims priority, application United Kingdom, Dec. 22, 1979, 7944315; May 17, 1980, 8016384; Jul. 5, 1980, 8022102; Jul. 5, 1980, 8022101; Aug. 9, 1980, 8026028

Int. Cl.[4] C07C *2/68*

U.S. Cl. 585—467

11 Claims

1. A process for the production of an alkyl aromatic compound by reacting at elevated temperature an aromatic hydrocarbon with an alkylating agent selected from olefins and C_2 or higher alcohols in the presence of a hydrogen ion-exchanged layered clay catalyst.

4,605,807

PROCESS FOR CATALYTIC CONVERSION OF ETHYLENE TO HIGHER HYDROCARBONS

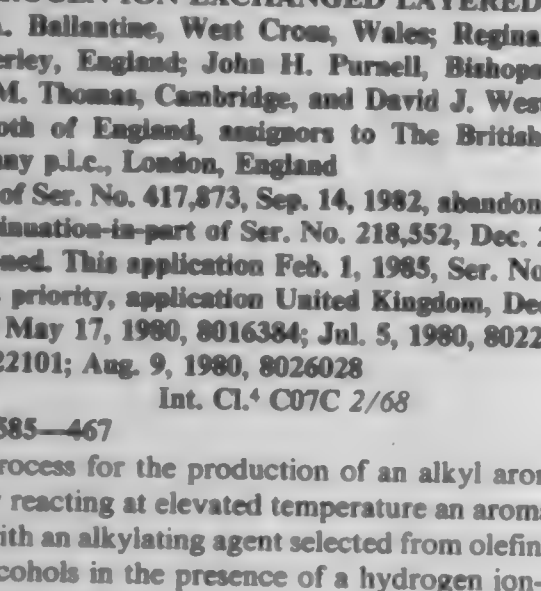
Harry Mazurek, Bala Cynwyd, Pa., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Continuation-in-part of Ser. No. 605,014, Apr. 27, 1984, abandoned. This application May 6, 1985, Ser. No. 730,886

Int. Cl.[4] C07C *2/02*

U.S. Cl. 585—517

19 Claims



1. A process for converting ethylene to normally liquid hydrocarbons which comprises contacting a gas comprising ethylene with a siliceous crystalline molecular sieve under high severity conditions including elevated temperatures and short olefin contact times, said conditions being selected such that the liquids productivity of the catalyst is greater than about 50% of the theoretical maximum.

4,605,808

CATIONIC POLYMERIZATION OF 1-OLEFINS

John N. R. Samson, Stirling, Scotland, assignor to BP Chemicals Limited, London, England

Filed Oct. 30, 1984, Ser. No. 666,567

Claims priority, application United Kingdom, Nov. 1, 1983, 8329082

Int. Cl.[4] C07C *3/18*

U.S. Cl. 585—525

15 Claims

1. A liquid phase process for the cationic polymerisation of a feedstock comprising 1-olefins in the presence of boron trifluoride as catalyst at a temperature between −100° and +50° C. characterised in that the catalyst is a preformed complex of boron trifluoride and an alcohol and the contact time of the polymerisation reaction is at least 8 minutes such that at least 70% of the unsaturated linkages in the polymer product are in the terminal position.

4,605,809

ALUMINOSILICATES AND SILICA GELS HAVING A LOW CONTENT OF TRANSITION ELEMENTS, A PROCESS FOR THEIR USE IN THE CONVERSION OF METHANOL TO OLEFINS

Heinz Litterer, Wiesbaden; Friedrich Wunder, Flörsheim am Main; Ernst I. Leupold, Neu-Anspach, and Herbert Baltes, Frankfurt am Main, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Division of Ser. No. 410,910, Aug. 24, 1982, abandoned. This application Oct. 27, 1983, Ser. No. 545,957

Claims priority, application Fed. Rep. of Germany, Aug. 26, 1981, 3133747

Int. Cl.[4] C07C *1/24*

U.S. Cl. 585—640

6 Claims

1. A method for preparing a C_2–C_4 olefin from methanol which comprises contacting methanol, with an aluminosilicate or silica gel which contains a transition element, said aluminosilicate or silica gel having been prepared by treating said aluminosilicate or silica gel with a solution of a complexing agent at a temperature of 70° to 150° C. to wherein the content of the transition element is reduced in an amount of from at least 1.8 percent by weight to 0.5 percent by weight or less whereby the selectivity of the C_2–C_4 olefin is improved.

4,605,810

ALLENE OR ALKYNE TREATMENT OF OLEFIN CONVERSION CATALYSTS

Robert L. Banks, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Aug. 9, 1985, Ser. No. 764,046

Int. Cl.[4] C07C *6/00*

U.S. Cl. 585—646

11 Claims

1. In a disproportionation process which comprises contacting at least one olefin from the group consisting of:

acyclic mono- and polyenes having at least 3 up to 10 carbon atoms per molecule, and cycloalkyl and aryl derivatives thereof;

cyclic mono- and polyenes having at least 4 up to 10 carbon atoms per molecule, and alkyl and aryl derivatives thereof;

mixtures of two or more of the above olefins; and

mixtures of ethylene with one or more of the above olefins capable of undergoing disproportionation with a tungsten oxide on silica disproportionation catalyst system under disproportionation conditions, the improvement comprising contacting said catalyst with an activating amount of at least one alkyne conforming to the formula:

$$R{-}C{\equiv}C{-}R$$

wherein each R is independently H or a C_1–C_6 carbon radical per mole of tungsten oxide.

4,605,811

PROCESS FOR RESTORING OR MAINTAINING THE ACTIVITY OF HETEROGENEOUS CATALYSTS FOR REACTIONS AT NORMAL AND LOW PRESSURES

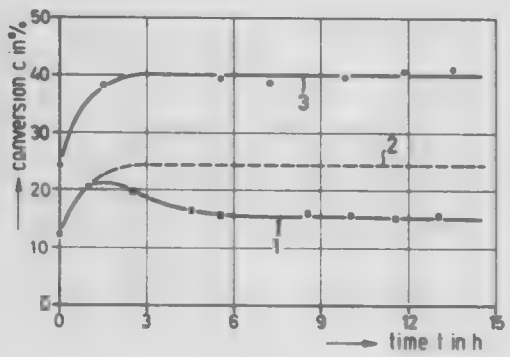
Helmut Tiltscher; Helmut Wolf; Joachim Scheichshorn, and Kurt Dialer, all of Hoechst Aktiengesellschaft, D-6230 Frankfurt/Main 80, Fed. Rep. of Germany

Continuation of Ser. No. 268,387, May 29, 1981, abandoned. This application May 6, 1985, Ser. No. 731,348

Claims priority, application Fed. Rep. of Germany, May 31, 1980, 3020698

Int. Cl.[4] C07C *5/23, 5/25, 2/68;* B01J *21/20*

U.S. Cl. 585—670 4 Claims



1. A process for reactivating or maintaining the activity of an oxide contact catalyst useful for catalytic isomerization of hexene by shifting of a double bond at atmospheric or low pressure wherein the oxide contact catalyst tends to decrease in activity by deposition, physisorption or chemisorption of organic or inorganic deactivating substances present at the start of said catalytic isomerization or formed during said isomerization, which comprises conducting said catalytic isomerization at an operating pressure above the critical pressure and a temperature of at least equal to the critical temperature of the fluid hexene reactant for a period of time at least sufficient to remove any deactivating substances on said catalyst and to avoid formation, deposition, physisorption or chemisorption thereof on said catalyst.

3. The process of claim 1 wherein the effective critical pressure and temperature of said reactants is lowered by addition of an effective amount of a compatible reaction auxiliary inert to said catalytic reaction.

4. The process of claim 1 wherein said catalyst is η-Al_2O_3 and said hexene is 1-hexene.

4,605,812

PROCESS FOR REMOVAL OF ARSENIC FROM GASES

G. P. Nowack, and M. M. Johnson, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jun. 5, 1984, Ser. No. 617,430

Int. Cl.[4] C07C *7/148;* C10G *29/04*

U.S. Cl. 585—845 21 Claims

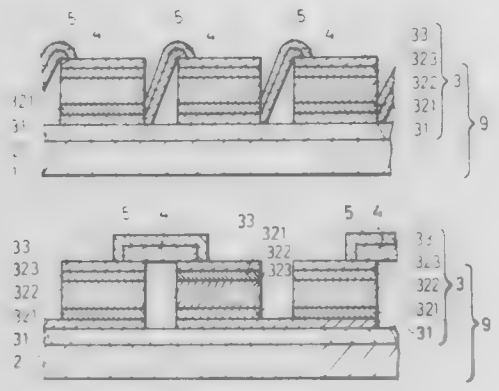
1. A process for removing arsine impurities from a gaseous stream or, alternatively, a liquid stream by contacting said stream with a sorbent consisting essentially of a material selected from the group consisting of (A) copper (II) chromite and (B) copper (II) chromite promoted by at least one alkaline earth metal oxide.

4,605,813

AMORPHOUS SILICON SOLAR BATTERY

Yukihisa Takeuchi, Chita; Masaaki Mori, Bisai; Kenji Maekawa, Kariya, and Toshiaki Nishizawa, Ohbu, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Continuation of Ser. No. 533,813, Sep. 19, 1983, abandoned. This application Jul. 11, 1985, Ser. No. 754,201
Claims priority, application Japan, Sep. 29, 1982, 57-170770
Int. Cl.[4] H01L *27/14, 31/06*
U.S. Cl. 136—244 8 Claims



1. A flexible amorphous silicon solar battery for attaching to a curved body portion comprising:

a metal foil as the substrate thereof;

an insulating layer which is amorphous silicon nitride containing hydrogen formed on said metal foil integrally by plasma chemical vapor deposition, the thickness of which is 0.05–0.2 μm; and

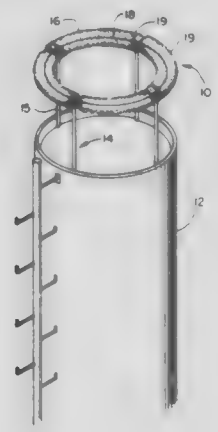
at least one amorphous silicon photoelectric conversion portion formed on said insulating layer.

4,605,814

LIGHTNING DETERRENT

Vernon A. Gillem, 9777 86th Ave. N., Seminole, Fla. 33543

Continuation-in-part of Ser. No. 436,042, Oct. 22, 1982, abandoned. This application Oct. 22, 1984, Ser. No. 663,415
Int. Cl.[4] H02G *13/00*
U.S. Cl. 174—2 10 Claims



1. A lightning deterrent for protecting a tall structure such as a tansmission tower comprising:

an electrically conductive core formed in an annular configuration and having a length at least sufficient to contain the vertical plane or planes which contain the vertical sides of the structure to be protected at its highest point;

a multiplicity of electrically conductive wires, each joined substantially at its midpoint to said core, said wires being disposed along the length of said core in a substantially uniform density per inch of length in a number sufficient to form a brush-like structure wherein the free ends of substantially all of said wires are out of contact with adjacent wires and the density thereof does not exceed about 250 wires per inch; and

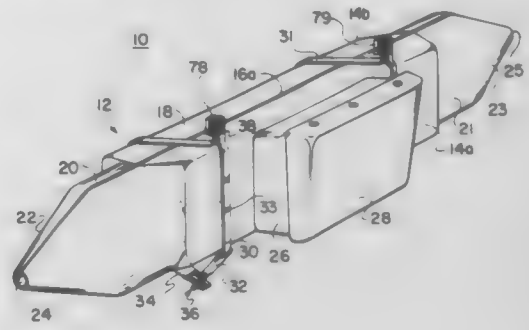
means for mounting said core on a structure to be protected above the highest point thereof.

4,605,815

FIXED COUNT TERMINAL

Ronald L. Wilson, 8970 Par Dr., Douglasville, Ga. 30134

Filed Aug. 3, 1984, Ser. No. 637,599
Int. Cl.[4] H02G *15/113, 7/08*
U.S. Cl. 174—41 11 Claims



1. A fixed count terminal for a multiconductor cable, comprising:

an elongate terminal shell having longitudinal cable ports and being formed of two half-shells having substantially identical interior conformations, each half-shell having transverse symmetry and truncated tapered ends;

a terminal block affixed to the outside of said shell;

a block compartment enclosing said terminal block and having fixed count entry ports; and

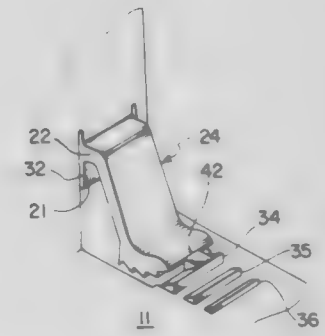
an articulated binding extending transversely around said shell, the articulated segments of said binding being affixed to said half-shells, respectively.

4,605,816

MOLDED OUTLET BOX WITH INTEGRAL CABLE CLAMP

Robert W. Jorgensen, Niles, Mich., and Thomas E. Lewis, South Bend, Ind., assignors to Harvey Hubbell Incorporated, Orange, Conn.

Filed Feb. 19, 1985, Ser. No. 703,041
Int. Cl.[4] H02G *3/08*
U.S. Cl. 174—65 R 5 Claims



1. A molded, thermoplastic outlet box comprising

a back wall and at least one side wall intersecting to form a box having a front opening;

means at a corner formed by the intersection of said back wall and said at least one side wall defining a generally L-shaped opening extending away from said corner into both of said side and back walls to receive a cable;

a flexible and resilient clamp arm unitarily formed on an inner surface of one of said side and back walls, said clamp arm having

a root portion extending inwardly from a location on said one of said walls spaced from the distal edge of said one of said walls at said opening,

an arm portion extending across said opening toward the other of said walls, and

a toothed portion at the end of said arm portion,

said clamp arm being swingable between a first position in which the distal end of said toothed portion is adjacent the distal edge of said other of said walls and a second

position in which said toothed portion is spaced inwardly from said other of said walls;

means defining first and second generally parallel slots in said one wall extending away from said opening on opposite sides of and beyond said location of said root portion on said one wall; and

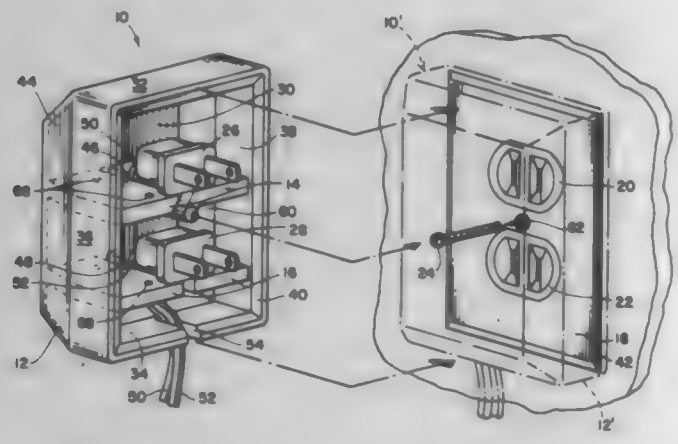
means on said other of said walls forming an abutment adjacent the distal edge thereof for engaging said toothed portion of said clamp arm and preventing movement thereof away from said first position until said clamp arm is flexed by an inward force exceeding a predetermined level.

4,605,817

SAFETY COVER FOR ELECTRICAL OUTLETS

Carlos A. Lopez, P.O. Box 391071, Mountain View, Calif. 94039

Filed Apr. 25, 1984, Ser. No. 603,673
Int. Cl.[4] H02G *3/18*
U.S. Cl. 174—67 18 Claims



1. A safety cover for an electrical outlet assembly having a cover plate and a separated pair of sockets extending through said cover plate, said safety cover comprising:

an enclosure provided with an opening adapted to fit over said cover plate;

first brace means located within said enclosure, said first brace means being provided with a first elongated slot extending from said opening of said enclosure towards the interior of said enclosure; and

second brace means separated from said first brace means, said second brace means being provided with a second elongated slot extending from said opening of said enclosure towards the interior of said enclosure.

4,605,818

FLAME-RESISTANT PLENUM CABLE AND METHODS OF MAKING

Candido J. Arroyo, Lilburn; Nicholas J. Cogelia, Duluth, and Palmer D. Thomas, Tucker, all of Ga., assignors to AT&T Technologies, Inc., Berkeley Heights and AT&T- Bell Laboratories, Murray Hill, both of, N.J.

Filed Jun. 29, 1984, Ser. No. 626,085
Int. Cl.[4] H01B *7/02, 7/22*
U.S. Cl. 174—107 17 Claims

1. A relatively low pair count cable which resists flame spread and smoke evolution, said cable comprising:

a core which includes at least one conductor enclosed in a plastic coating; and

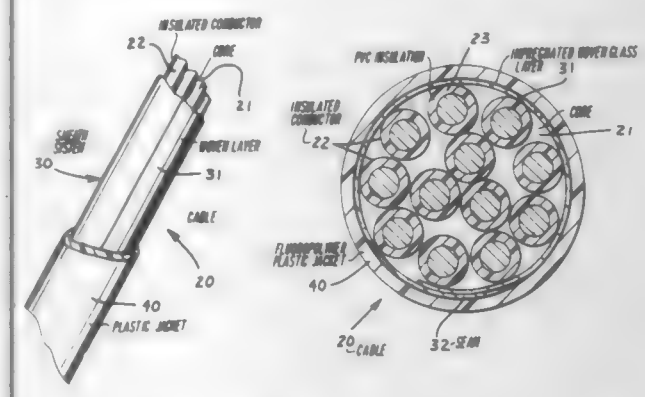
a sheath system which encloses said core and which has a relatively low thermal conductivity, said sheath system being effective to delay thermal decomposition of the conductor coating when the cable is subjected to a relatively high temperature and including;

a relatively thin layer of a woven material which encloses said core and which has a longitudinal overlapped seam, said layer of woven material being impregnated with the degree of impregnation being a function of the number of conductors in the core and having an air permeability in the range of about 0 to 35 cfm which is sufficiently low to minimize gaseous flow through said layer and to delay heat transfer to the core for a predetermined time; and

an extruded jacket of a fluoropolymer plastic material which encloses said layer of woven material.

14. A method of making a fire retardant plenum cable, said method comprising the steps of:

advancing a core comprising at least one conductor which is enclosed in a coating comprising a polyvinyl chloride composition along a path of travel;



wrapping a relatively thin strip of woven glass material which is impregnated with a plastic material and which has a relatively low air permeability that falls in the range of about 0–35 cfm, and a relatively low thermal conductivity about said core without duly compressing said core to form a longitudinal overlapped seam; and

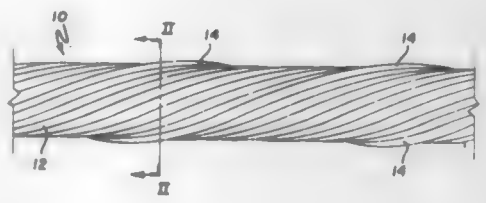
extruding a layer of a fluoropolymer plastic material about the strip of woven glass material to form a jacket.

4,605,819

CONDUCTOR FOR HIGH VOLTAGE ELECTRICITY

Frank W. Warburton, 2 Warburton La., Westboro, Mass. 01581

Filed Oct. 1, 1984, Ser. No. 656,491
Int. Cl.[4] H01B *5/08*
U.S. Cl. 174—127 3 Claims





1. Conductor for high voltage electricity comprising:

(a) a plurality of circular conductor wires which are wound helically to form a gernerally circular cable, said cable including an outermost annular layer, and

(b) a protrusion wire which forms part of said outermost annular layer and which extends helically along said cable with the wires of said outermost layer, a portion of, said protrusion wire protruding outwardly beyond the outer periphery of said cable, said protrusion wire being elongated in cross-section and having a major dimension which extends along a radial line which extends from the center of said cable and a minor dimension which is substantially equal to the diameter of said conductor wires, the dimension of said protrusion wire in a direction which

is normal to said radial line being no greater that said minor dimension at any point along said radial line.

3. Conductor for high voltage electricity comprising:

(a) a plurality of circular conductor wires which are wound helically to form a generally circular cable, said cable including an outermost annular layer, and

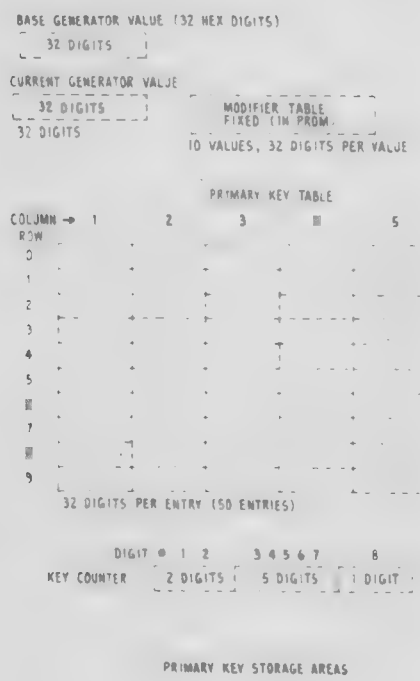
(b) a protrusion strand which forms part of said outermost annular layer and which extends helically along said cable, said protrusion strand protruding outwardly beyond the outer periphery of said cable, said protrusion strand being made entirely of a material having a low dielectric constant and high electrical resistence.

4,605,820

KEY MANAGEMENT SYSTEM FOR ON-LINE COMMUNICATION

Carl M. Campbell, Jr., Newtown Square, Pa., assignor to VISA U.S.A. Inc., San Mateo, Calif.

Filed Nov. 10, 1983, Ser. No. 550,885
Int. Cl.[4] H04L *9/00*
U.S. Cl. 178—22.09 13 Claims



1. A transaction terminal having a cryptographic key generator suitable for on-line encrypted communication between the terminal and a central host comprising:

means for encrypting data;

means for receiving and storing a base generator value;

storage means containing a plurality of modifier values;

means for generating a matrix table of encryption keys wherein the keys in a first column in the matrix table are generated by encrypting said modifier values using the base generator value as the encrypting key and wherein the keys of the second and each successive column in the table are generated by encrypting the modifier values with the first unused key in the previous column, and wherein any key that is used to generate a column of keys is immediately erased; and

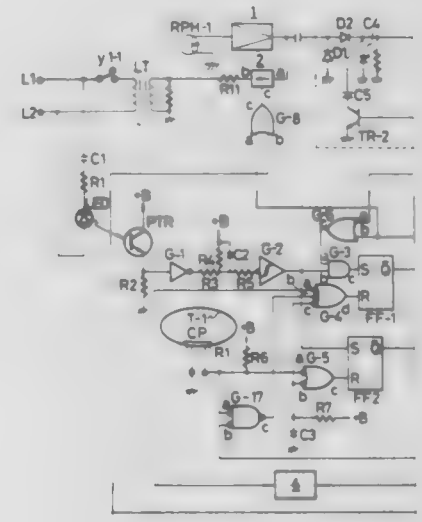
counter means, having at least as many digits as columns in said matrix, with the location of the digits in the counter means corresponding to a particular column in the matrix and with the value of each digit corresponding to a particular row in the matrix, whereby transmission of the value in the counter means to the host during a transaction will enable the host to determine the key used to encrypt the communication.

4,605,821

AUTOMATIC TELEPHONE ANSWERING APPARATUS

Kazuo Hashimoto, Tokyo, Japan, assignor to Hashimoto Corporation, Tokyo, Japan

Filed Oct. 26, 1983, Ser. No. 545,493
Claims priority, application Japan, Oct. 29, 1982, 57-190300
Int. Cl.[4] H04M *1/64*
U.S. Cl. 179—6.13 9 Claims



6. An automatic telephone answering apparatus, comprising means for detecting a condition of an incoming message tape, means for selectively transmitting only one of a first message or a second message from an outgoing message tape in response to an incoming call in response to said detecting means according to whether the incoming message tape is in a condition to record an incoming message, and means for detecting the start of the first message and/or the end of the second message for advancing the outgoing message tape through the non-transmitted second or first message respectively and stopping the outgoing message tape at the start of the first message and/or the end of the second message.

4,605,822

ACTIVE EQUALIZATION CIRCUIT

Johann Amstutz, Döttingen, and Bruno Wenger, Au, both of Switzerland, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

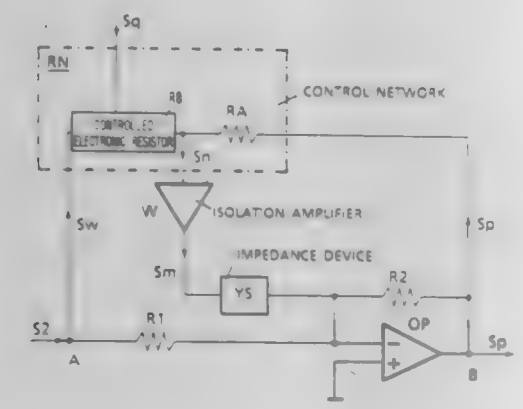
Filed Aug. 24, 1984, Ser. No. 644,088

Claims priority, application Switzerland, Sep. 30, 1983, 5325/83

Int. Cl.[4] H04B *3/08*

U.S. Cl. 179—16 AA

5 Claims



1. An active equalizer circuit with an equalization structure containing an addition amplifier inserted between an input terminal and an output terminal of the equalization structure as well as an impedance device inserted between an input of the addition amplifier and an output of an isolation amplifier whose input is connected both to the output terminal and the input terminal of the equalization structure, respectively, via attenuation means characterized in that the attenuator means comprises a resistor (RA or RB') of a fixed resistance and a controlled electronic resistor (RB or RA') of variable resistance, a controlling input of the controlled electronic resistor forming a controlling input of the active equalizer circuit; that the controlled electronic resistor contains first and second operational amplifiers (VA; VB) each driving a respective controlled current source (QA; QB), an output of one of the current sources (QA) being connected to the input of the isolation amplifier (W) and an output of the other current source (QB) being connected to either the input or output terminal of the equalization structure; and that this controlled electronic resistor contains a resistor (R4) inserted between two respective signal inverting inputs of the two operational amplifier (VA or VB), a non-inverting input of the first operational amplifier (VA) being connected to the inverting input of the second operational amplifier and, via a second resistor (R5), to the output of the one current source (QB) driven by the second operational amplifier, while the inverting input of the first operational amplifier (VA) is connected to a non-inverting input of the second operational amplifier (VB) and, via a third resistor (R3), to the output of the other current source (QA) and each one of these current sources (QA, QB), having a control input connected to the control input of the controlled electronic resistor.

4,605,823

PHONE CONFERENCE SYSTEM

Yozo Sudo, Yamato; Hiroyuki Mori, Tama, and Atsuya Murai, Kawasaki, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Nov. 7, 1983, Ser. No. 549,471

Claims priority, application Japan, Nov. 12, 1982, 57-171933[U]

Int. Cl.[4] H04M *1/60, 3/56*

U.S. Cl. 179—18 BC

5 Claims

1. A phone conference system having a plurality of microphones and speakers operatively connected to a telephone, comprising:

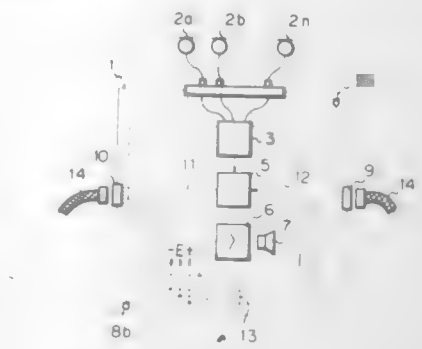
a receiving line operatively connected to the telephone;

an amplifier operatively connected to the receiving line; and

a plurality of units, each unit including:

a speaker operatively connected to the amplifier,

a preamplifier-mixer, operatively connected to the plurality of microphones and having an output, for unifying the outputs of the plurality of microphones, and



a summing amplifier, operatively connected to the preamplifier-mixer in the same unit and the preamplifier-mixer in another unit, for unifying the output of said preamplifier-mixer in the same unit and the output of the preamplifier-mixer in another unit, the plurality of units being connected in cascade to said telephone.

4,605,824

CIRCUIT ARRANGEMENT FOR TELECOMMUNICATION EXCHANGE SYSTEMS, PARTICULARLY TELEPHONE EXCHANGE SYSTEMS WITH SWITCH FACILITIES FOR EMITTING SIGNALS

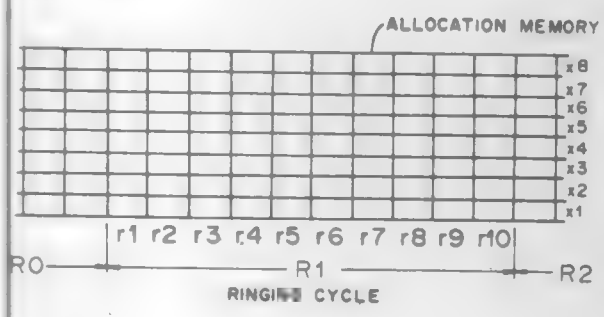
Josef Birlmeier, Deisenhofen; Klaus Eberlein, Wolfratshausen, and Werner Nagler, Munich, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Mar. 30, 1983, Ser. No. 480,321

Int. Cl.[4] H04M *3/02*

U.S. Cl. 179—18 HB

8 Claims



1. In a method for signalling subscribers in a telecommunication exchange system wherein

each subscriber connects via a subscriber line circuit to a central switching network for routing incoming calls to an identified subscriber;

an electrical current call generator as a signalling power source is provided which is connected to each of the subscriber line circuits so as to supply signal current pulses thereto for signalling the respective subscribers;

each subscriber line circuit having a call connector switch which in a first position connects the subscriber through the subscriber line circuit to the switching matrix network and in a second position switches said signal current from the call generator through to the subscriber;

and the signalling to the subscriber comprising a plurality of spaced signalling pulses;

wherein the improvement comprises the steps of:

providing an allocation control having an allocation memory, a writer device connected to the allocation memory, and a read device connected to the allocation memory, the allocation memory comprising a matrix with a plurality of storage positions and having a given number of divisions along a first dimension and a given number of divisions along a second dimension;

providing the matrix first dimension such that it corre-

sponds to a signalling cycle wherein a given subscriber being called receives a signal pulse, each division of the first dimension corresponding to a different phase during the ringing cycle;

providing the second dimension such that its given number of divisions corresponds to a maximum number of subscribers to which a signalling pulse is to be sent during a given phase of the ringing cycle;

after completion of a connection set-up to a given subscriber line circuit of a repsectively dialed subscriber by the switching matrix network, writing an identification of the respective subscriber line circuit with the write device into one of the positions of the allocation memory matrix;

reading the matrix with the read device along the first dimension such that subscriber identifications stored for each ringing phase during a ringing cycle are read out, said read out subscriber identifications being employed to switch the respective call connector switches and thus pass signalling current to the respective subscriber so as to provide the signalling pulse to each of the subscribers identified during the given phase, the call connector switch being disconnected from the current call generator as soon as the next phase is being read, the read device then repeating the reading of the phases for another ringing cycle so as to send another signal pulse to the subscriber; and

when the subscriber answers or when the switching matrix network indicates that the subscriber is no longer being called, the write device cancelling the respective subscriber identification from the matrix memory so that further signalling pulses to the subscriber do not occur.

4,605,825

FUNCTION KEY ASSIGNMENTS IN A KEY TELEPHONE SYSTEM

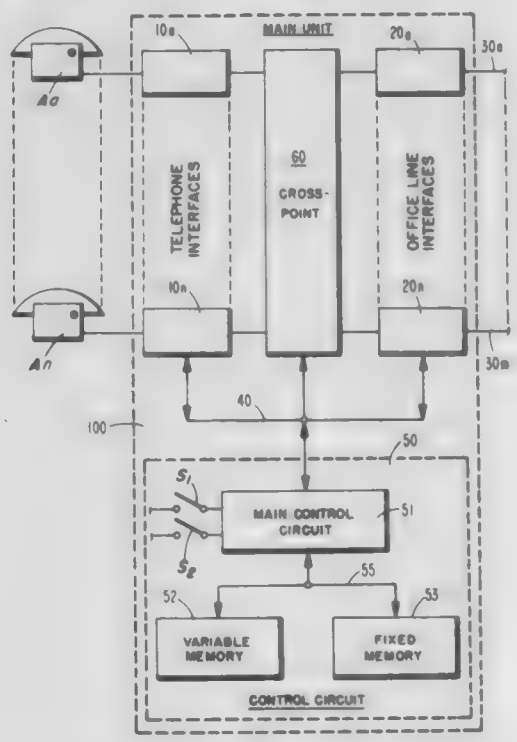
Isaku Komuro; Yoshikazu Sano, and Shinichi Shibata, all of Tokyo, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kanagawa, Japan

Filed Mar. 5, 1984, Ser. No. 586,040

Claims priority, application Japan, Mar. 3, 1983, 58-33782

Int. Cl.⁴ H04M *3/32*

U.S. Cl. 179—99 R **7 Claims**



1. Apparatus simultaneously assigning a chosen function to each of a plurality of assignable function keys on a key telephone set, said apparatus comprising:

memory means for storing a plurality of predetermined arrays of function assignments,

data input means coupled to said memory means for selecting the one of the stored arrays having the chosen functions corresponding to said assignable function keys; and

control means coupled to said set and said data input means for assigning the functions of said assignable function keys in accordance with the selected array.

4,605,826

ECHO CANCELER WITH CASCADED FILTER STRUCTURE

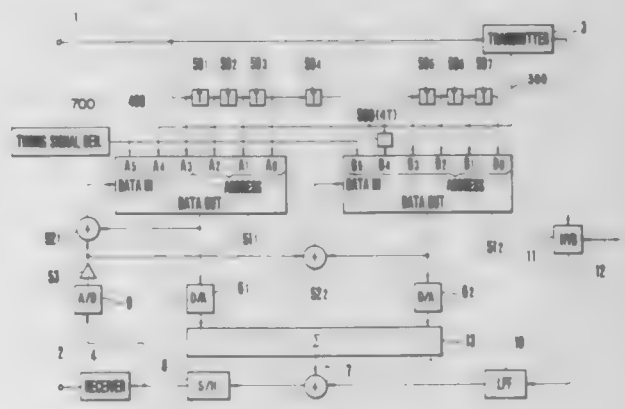
Akira Kanemasa, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jun. 21, 1983, Ser. No. 506,306

Claims priority, application Japan, Jun. 23, 1982, 57-107821; May 17, 1983, 58-86181

Int. Cl.⁴ H04B *3/20*

U.S. Cl. 179—170.2 **7 Claims**



1. An echo canceler for canceling an echo as a leakage component to a four-wire receiving end in a two-wire/four-wire conversion hybrid circuit when a transmitted signal is sent from a four-wire line to a two-wire line, comprising:

transmitting means for receiving a transmitted binary data sequence having a predetermined interval therebetween, converting the transmitted binary data sequence to a given coded signal including sign designation signals, and producing the given coded signal and sign designation signals at an output;

an adaptive digital filter including a plurality of delay elements for receiving the transmitted binary data sequence, delaying the transmitted binary data sequence by one sampling interval so as to obtain delayed data sequences, and dividing the delayed data sequences into a plurality of groups of signal components, the groups of signal components being produced as address signals, respectively, and

a plurality of memories respectively having memory cells the storage contents of which are read out in response to the address signals from said delay elements and sign designation signals such that a first memory among said plurality of memories directly receives the sign designation signal, and 2nd through Nth (n is 2, 3, 4, . . .) memories among said plurality of memories respectively receive the sign designation signals through delay lines so that the Nth memory receives the sign designation signal delayed by a time interval corresponding to delay time of an (N−1)th delay element among said plurality of delay elements, the number of said memories being equal to that of the plurality of groups of signal components;

a timing signal generator for generating additional address signals to said plurality of memories;

a plurality of D/A converters for converting readout digital signals from said plurality of memories to analog signals, respectively;

an analog adder for adding all the analog signals from said plurality of D/A converters to produce an echo replica;

a hybrid circuit for receiving the coded signal from said transmitting means, and a received signal, including additive noise, from said two-wire line, the coded signal being repreduced as said echo signal;

a low-pass filter for receiving the echo signal, the received signal including the additive noise and for eliminating a high frequency signal component therefrom;

a subtractor for receiving a filtered signal from said low-pass filter and the echo replica from said analog adder and for subtracting the echo replica from the filtered signal so as to produce an error signal;

a sample-and-hold circuit for receiving said error signal and for producing a sampled signal;

an A/D converter for receiving the sampled signal from said sample-and-hold circuit and for producing a digital signal; and

receiving means for receiving and decoding the sampled signal and for sending a decoded signal therefrom,

said adaptive digital filter further including a plurality of 2-input adders, each of which receives a signal from said A/D converter and one of the digital signals read out from said plurality of memories, the number of said 2-input adders being equal to that of said memories, and sum signals from said 2-input adders being stored in said memories, respectively.

4,605,827

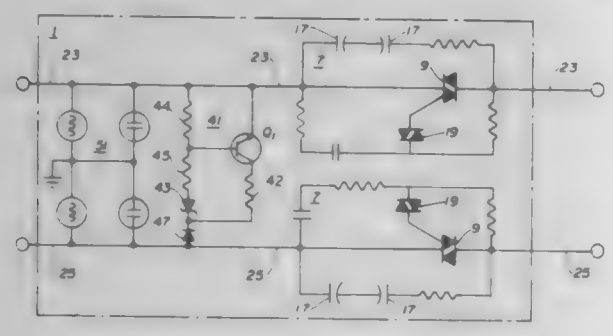
LINE FAULT DISCRIMINATOR

Leo M. Chattler, Moraga, Calif., assignor to DCM Industries, Inc., San Leandro, Calif.

Continuation of Ser. No. 119,487, Feb. 7, 1980, abandoned. This application Aug. 24, 1981, Ser. No. 295,677

Int. Cl.[4] H04B *3/46*

U.S. Cl. 179—175.3 F 14 Claims



12. In combination, a transmission line such as for use in a telephone installaion including a telephone on one end thereof, means including an electronic circuit in series in said line in proximity to said telephone and a remote test station including means controllable, via the transmission line, by an operator for determining the existence of a fault with respect to said electronic circuit without interfering with telephone communications over said transmission line, whereby, faults may be tested concurrently with normal telephone use.

4,605,828

MEMBRANE KEYBOARD SWITCH MOUNTING

Dominic A. Gostomski, Jr., Versailles, and Jerry G. Price, Paris, both of Ky., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 29, 1984, Ser. No. 614,614

Int. Cl.[4] H01H *13/70*

U.S. Cl. 200—5 A 13 Claims

1. A keyboard comprising

a matrix multilayer switch comprising:

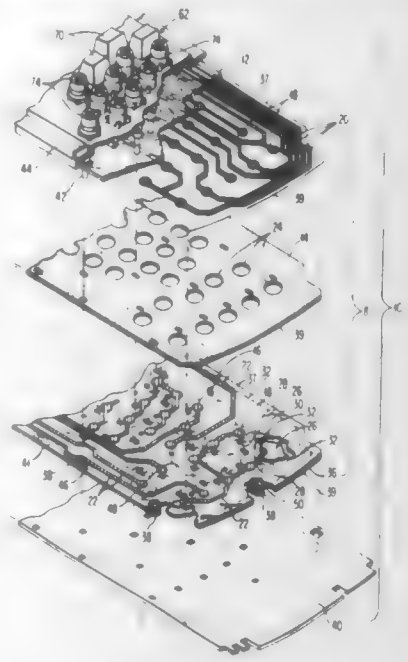
a first flexible sheet with a first and second surface with electrical circuit paths and plural switch contacts deposited on said first surface thereof;

a second flexible sheet with electrical circuit paths and plural switch contacts deposited on a first surface thereof;

a spacer sheet with at least an aperture formed therein, positioned between said first and second flexible sheets and with said aperture aligned with portions of said electrical circuits on each of said sheets to form a passage through which said circuit on said second flexible sheet may contact said circuit on said first flexible sheet and with said first surfaces in face-to-face relation with faces of said spacer,

at least a zone of adhesive interposed between said spacer and each of said flexible sheets to form a multilayer structure with each of said spacer and sheets restricted from movement with respect to each other in the plane of said spacer sheet; and

a rigid support plate and adhesive engaging a first surface thereof, said multilayer switch adhesively attached to said rigid support plate, said adhesive engaging said rigid support plate comprising at least a spot of adhesive



localized at and positioned between said support plate and said multilayer switch and adjacent said each of said switch contacts and engaging said second surface of said first flexible sheet, thereby stabilizing said electrical circuit path on said first flexible sheet, the substantial portion of the remainder of said second surface remaining without adhesive, and

actuator means aligned with and operable manually to actuate said multilayer switch, comprising a keybutton and a switch engaging member operable upon displacement of said keybutton to deflect switch contacts on said second sheet into contact with said switch contacts on said first sheet.

4,605,829

MEASURING THE LOAD ON LIFTING EQUIPMENT

Karl Zachariss, Schwerte, Fed. Rep. of Germany, assignor to Mannesmann Aktiengesselschaft, Duesseldorf, Fed. Rep. of Germany

Filed Jun. 27, 1984, Ser. No. 625,448

Claims priority, application Fed. Rep. of Germany, Jul. 1, 1983, 3323662

Int. Cl.[4] H01H *3/02*

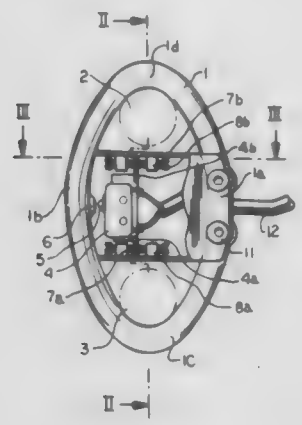
U.S. Cl. 200—52 R 16 Claims

1. A device measuring a load as it is effective on a lifting facility by virtue of the suspended load comprising:

a measuring device constructed as an oval closed ring chain link element with near rectangular cross-sections and being interposed in a load transmission path between said lifting facility and said suspended load to act along a long dimension of the chain link element having two curved long sides, said long sides being interconnected transversely by plate means, being secured to one of said long sides while permitting relative movement relative to the respective other long side, said long sides tend to straighten under tension load on the chain link element; and

a deformation sensing device including at least one switch

mounted on said plate means to thereby being interposed between said long sides and being actuated by the other



one of the long sides when said long sides approach each other under load.

4,605,830

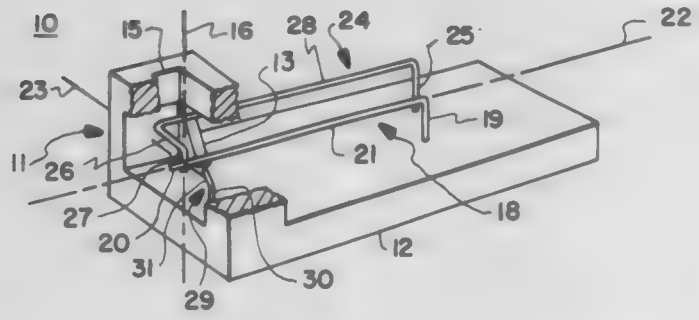
CAMMED WIRE SNAP SWITCH

Bruce E. Reid, Freeport, Ill., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Dec. 13, 1984, Ser. No. 681,177

Int. Cl.[4] H01H *5/04, 13/38*

U.S. Cl. 200—73 **21 Claims**



1. A snap acting mechanism comprising:

a plunger adapted for reciprocal movement between released and depressed positions, said plunger having intersecting end and side surfaces which define a plane transverse to the side surface and containing at least a portion of the end surface;

a first resilient element having a fixed end, and having a free end biased to a position proximate the end surface of said plunger; and

deflection means for deflecting the free end of said first resilient element across the end surface of said plunger toward the side surface thereof as said plunger is depressed, whereby when the free end of said first resilient element passes the intersection of the end and side surfaces its springs along the side surface away from the end surface, said deflection means including a stationary ramp surface extending traversely to the direction of movement of said plunger and passing through the plane defined by the end and side surfaces of said plunger at a location which moves toward the intersection of the end and side surfaces as said plunger is depressed.

4,605,831

SWITCH FOR PROTECTING A FREON COMPRESSOR

Ronald R. Mitchell, 248 Azalea Cir., Vinton, Va. 24179

Filed May 28, 1985, Ser. No. 737,862

Int. Cl.[4] H01H *35/40*

U.S. Cl. 200—83 R **5 Claims**

1. A device for sensing pressure and temperature within the crankcase of a refrigerant compressor and stopping the operation of the compressor when the sensed values of pressure and temperature suggest the possible existence of liquid refrigerant within said crankcase, said device comprising:

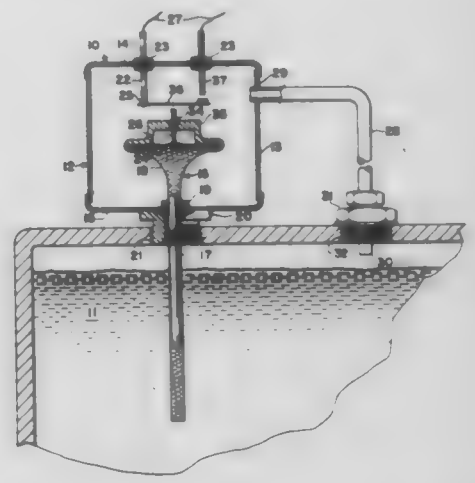
(a) a pressure-retaining chamber having a rigid wall structure,

(b) a sealed vessel containing liquid refrigerant, said vessel having

(1) an elongated portion which extends through the wall of said chamber and is configured to be positioned within said crankcase, and

(2) a head portion positioned within said chamber,

(c) pressure-displaceable means which seals the head portion of said sealed vessel,



(d) electrical contact means disposed within said chamber in operative association with said pressure-displaceable means and communicating through said chamber wall to joinder with electrical conductors, said contact means acting to make and break an electrical circuit which controls the operation of the compressor,

(e) a pressure equalizing conduit having a proximal extremity which communicates with the interior of said chamber, and a distal extremity configured to communicate with the interior of said crankcase, and

(f) means associated with the elongated portion of said sealed vessel for enabling said portion to penetrate said crankcase while preventing leakage of the contents of said crankcase.

4,605,832

DIFFERENTIAL BELLOWS PRESSURE SWITCH

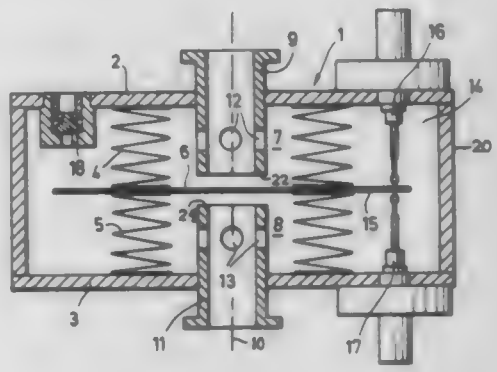
Gerd Koopmann, Rosrath, Fed. Rep. of Germany, assignor to Leybold Heraeus GmbH, Fed. Rep. of Germany

Filed Jun. 4, 1984, Ser. No. 617,003

Claims priority, application Fed. Rep. of Germany, Nov. 15, 1983, 8332797[U]

Int. Cl.[4] H01H *35/32*

U.S. Cl. 200—83 D **8 Claims**



1. Differential pressure switch containing switch means and a housing having two faces opposite each other, comprising:

(a) two approximately coaxial bellows arranged in the housing, with each bellows having one of its sides securely fastened to a face of the housing;

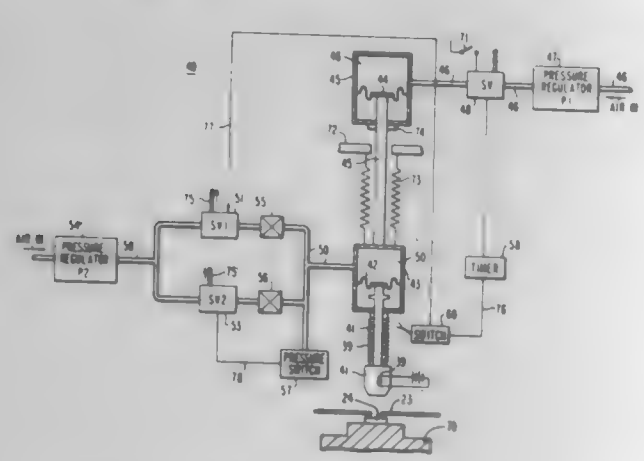
(b) a dividing sheet arranged between the bellows such that two separated work chambers are formed, each work chamber being defined by one face of the housing, by a bellows and by the dividing sheet, the dividing sheet having a section projecting sideways beyond the bellows for switch control of said switch means, wherein the two work chambers are each equipped, in the area of its housing face, with a fitting for connection to a receiver chamber containing a working fluid, with the fittings being arranged on both sides of the dividing sheet to prevent a strain of the bellows, and projecting so far into the work chambers that the fittings concurrently form support elements for the dividing sheet.

4,605,833

LEAD BONDING OF INTEGRATED CIRCUIT CHIPS

Frank A. Lindberg, Baltimore, Md., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Mar. 15, 1984, Ser. No. 589,912
Int. Cl.[4] B23K *31/00*
U.S. Cl. 219—56.22
6 Claims



1. A method of gang bonding metallic leads to metallic pads of an integrated circuit chip to minimize chip fracture, comprising the steps of

placing the leads and pads in bonding position beneath a thermode, said thermode being at a selected temperature above the actual bonding temperature of the metallic leads and pads, and said leads and pads being substantially at ambient temperature,

placing the thermode in physical contact with the leads,

increasing at a first selected rate the contact force of the thermode to a selected maximum force less than that required to effect the bond, said first rate being selected as a function of the temperature response of the chip to the thermode to raise the temperature of the leads and pads to a selected fraction of the bonding temperature,

increasing at a second selected rate that is substantially greater than the first selected rate the contact force of the thermode to a maximum pressure sufficient to effect the bond, and

withdrawing the thermode out of physical contact with the bonded leads and pads after a predetermined length of time sufficient to effect the bond.

4,605,834

PRECISION TW ELECTROEROSION WITH STAGGERING MULTIPLE V-NOTCHED GUIDES

Kiyoshi Inoue, Tokyo, Japan, assignor to Inoue-Japax Research Incorporated, Japan

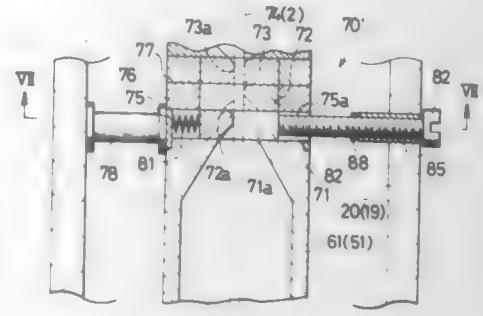
Filed Jan. 25, 1985, Ser. No. 694,811
Claims priority, application Japan, Nov. 8, 1983, 58-210374; Dec. 3, 1983, 58-228850; Jan. 26, 1984, 59-13162
Int. Cl.[4] B23H *7/10*
U.S. Cl. 219—69 W
2 Claims

1. An apparatus for electroerosively cutting an electrically conductive workpiece with a continuous electrode wire, comprising:

means for axially transporting the electrode wire through the workpiece while defining a cutting zone therewith flushed with a cutting liquid medium;

a pair of wire guide means disposed at opposite sides of the workpiece for providing a straight-line path for the traveling wire therebetween;

power supply means for electrically energizing said cutting zone to erosively remove material from the workpiece; and



cutting feed means for relatively displacing the workpiece and the traveling electrode wire transversely along a programmed cutting path to advance the erosive material removal in the workpiece, wherein at least one of said wire guide means comprises:

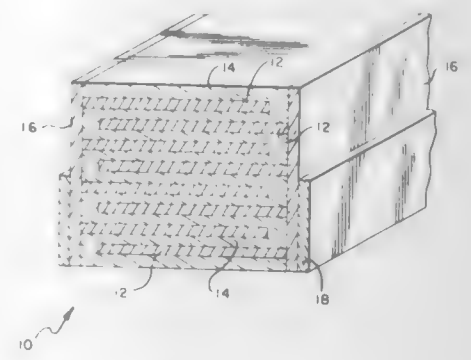
a plurality of planar notched members arranged in the direction of travel of the electrode wire and having respective wire-receptive notches, the notched members being staggered to form a composite opening of said notches such that an imaginary cylinder which can be inscribed therein has a diameter substantially equal to a nominal diameter of the electrode wire.

4,605,835

FORMING TERMINATIONS OF MLC CAPACITORS

Robert J. Deffeyes, Arlington, Tex., assignor to Graham Magnetics Incorporated, North Richland Hills, Tex.

Filed May 21, 1984, Ser. No. 612,728
Int. Cl.[4] B23K *1/19, 26/00*
U.S. Cl. 219—85 BM
8 Claims



1. A process for attaching a plurality of silver-based body electrodes of a multi-layer-ceramic capacitor blank to a conductive terminating material said process comprising the steps of

(a) placing a predetermined amount of fusible terminating material along exposed edges of said body electrodes,

(b) using a high-intensity radiation heat source to heat said terminating material to its fusing temperature, thereby adhering said terminating material to said exposed edges of said body electrodes, and

(c) terminating said heating so that said terminating material cools before said silver-based body electrodes can be heated to a temperature whereat any substantial quantity

of silver may diffuse out from said body electrode into said terminating material.

4,605,836

PROCESS FOR ACHIEVING PROPER WELD QUALITY IN COURSE OF THE WELDING OPERATION, MARKING THE FAULTS ON THE WORKPIECES AND CERTIFYING THE QUALITY

Ferenc Rétfalvi; László Lukács, both of Budapest; László Molnár, Dunaujváros; György Dózsa, Dunaujváros, and Ádám Szappanos, Dunaujváros, all of Hungary, assignors to Kohaszati Gyarepito Vallalat, Budapest, Hungary

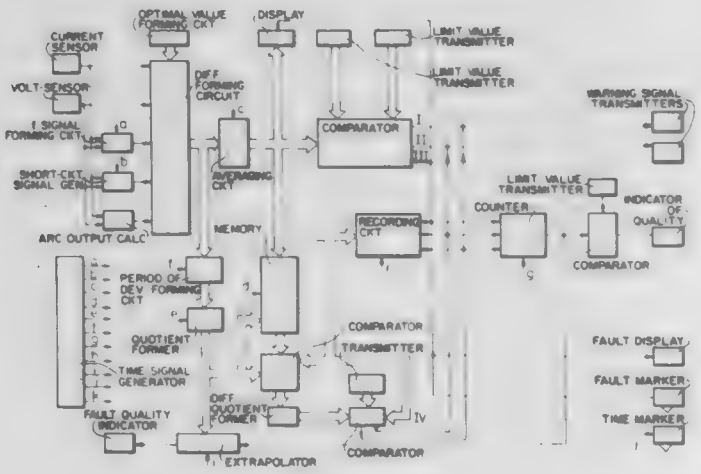
PCT No. PCT/HU84/00007, § 371 Date Sep. 21, 1984, § 102(e) Date Sep. 21, 1984, PCT Pub. No. WO84/02866, PCT Pub. Date Aug. 2, 1984

PCT Filed Jan. 26, 1984, Ser. No. 662,417

Claims priority, application Hungary, Jan. 26, 1983, 243/83

Int. Cl.[4] B23K *9/10*

U.S. Cl. 219—130.01 6 Claims



1. Process for maintaining weld quality during welding operation, comprising the marking of the fault spots on the workpiece and certifying of quality, in course of which momentary values of arc current and arc voltage characterizing manual or mechanized welding process are continuously measured and from the values thus obtained relative short-circuit time of the arc, drop frequency and arc power outputs are continuously calculated, said measured momentary values of arc current and arc voltage and said calculated values of relative short-circuit time of the arc, drop frequency and arc power outputs are compared with empirically determined optimal values, thus defining absolute values and signals representing the directions of deviations, duration of deviations, said directions and duration of deviations being related to a predetermined span of time averages of absolute values and, defining signals representing the directions of deviations, forming a quotient of the duration of deviations and of pre-determined durations; said averages of absolute values and said quotients of the duration of deviations and of predetermined durations are recorded and simultaneously averages of the absolute values are compared with a first and second limit value and at a magnitude between the first and second limit value, a warning signal is given for the welder, and at a magnitude exceeding the second limit value a further signal is given and simultaneously a fault spot is marked on the workpiece until said exceeding magnitude is reduced below the second limit value.

4,605,837

ELECTRIC AIR PREHEATER FOR AN INTERNAL COMBUSTION ENGINE

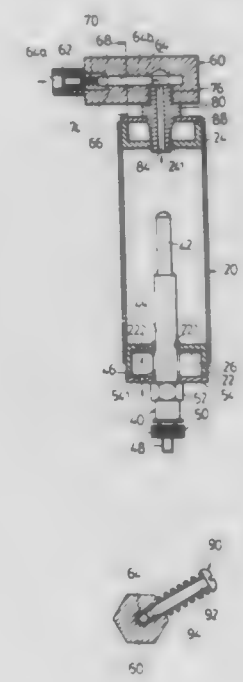
Lih-Ji Chen, No. 34, I-Hsin Third Street, Tai-Pin Hsiang, Tai-chung, Taiwan

Filed Aug. 6, 1984, Ser. No. 637,903

Int. Cl.[4] H05B *3/00;* F02M *31/12;* F24H *3/00*

U.S. Cl. 219—206 7 Claims

1. A preheater adapted to be connected to an internal combustion engine comprising a hollow cylinder, a cover element at each end of the hollow cylinder, said hollow cylinder and cover elements collectively defining an elongate closed heating chamber, an elongate electric heating element in the form of a cylindrical rod supported by the cover element at one end of the hollow cylinder in coaxial relation with the longitudinal axis of the hollow cylinder such as to define with the wall of said cylinder an annular space surrounding the heating element, said cover element at said one end containing an opening defining an air inlet passage into said annular space within said heating chamber, a valve body defining a flow passage closed at one end and open at the other, a coupling element connecting the valve body to the cover element at the other end of the hollow cylinder and embodying a flow passage in communication at one end with the annular space within said heating chamber and at the other end with the flow passage in the valve body intermediate the ends of the valve body flow passage and a spring-biased check valve element located in the flow passage in the valve body adjacent the open end, said spring-biased valve element being biased in a direction to permit flow from the heating chamber through the flow passage in the valve body in the direction of the open end and to prevent flow in a direction from the open end toward the closed end.



4,605,838

ELECTRIC VAPOR BOILER

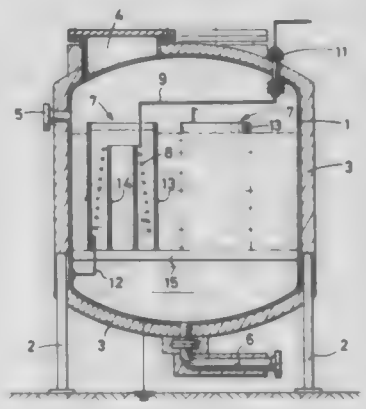
Georges J. Daney, Sceaux, France, assignor to Service National Electricite de France, France

Filed Nov. 28, 1984, Ser. No. 675,945

Claims priority, application France, Nov. 29, 1983, 83 19025

Int. Cl.[4] H05B *3/82;* F22B *1/28;* F24H *1/22*

U.S. Cl. 219—319 14 Claims



1. An electric vapor boiler comprising a closed vessel con-

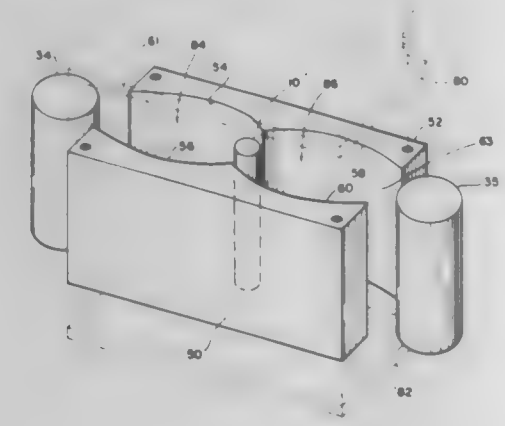
taining a liquid to be vaporized, a vapor outlet conduit connected to said vessel for discharge vapors therefrom, a supply conduit connected to said vessel for supplying liquid thereto, a plurality of multi-phase electric supply terminals connected through through said vessel, electric resistance heating means for vaporizing liquid in said vessel and having a plurality of bare wires each connected to one of said supply terminals and each immersed in the liquid, a plurality of outer insulating screens disposed in said vessel with each screen disposed around one of said bare wires, each bare wire having a plurality of parallel spires spaced vertically in said vessel and offset symmetrically with respect to each other on each side of a generatrix of an oblique surface extending obliquely to a vertical direction in said vessel, and mounting means connected to said bare wires for mounting said bare wires in said vessel so as to vibrate in said outer screens.

4,605,839

DUAL PARISON HEATING REFLECTOR AND METHOD

David E. Rasmussen, Thornton, and Bruce A. Moen, Golden, both of Colo., assignors to Adolph Coors Company, Golden, Colo.

Filed Dec. 21, 1984, Ser. No. 684,669
Int. Cl.[4] H05B *3/40*
U.S. Cl. 219—349 8 Claims



1. A device for heating a plurality of radiant absorbers comprising:

a source of radiant energy for heating said radiant absorbers with direct radiation which impinges directly upon said radiant absorbers and indirect radiation which does not impinge directly upon said radiant absorbers;

reflector means for reflecting said indirect radiation a single time to impinge upon said radiant absorbers whereby said reflector means is aligned with said source such that none of said indirect radiation is blocked by said source;

said reflector means defining:

a first elongate cavity means having an inwardly positioned end and an outwardly positioned end for directing radiant energy from said radiant energy source to a first radiant absorber located at a focus of said first cavity; and

a second elongate cavity means having and inwardly positioned end and an outwardly positioned end for directing radiant energy from said radiant energy source to a second radiant absorber located at a focus of said second cavity;

said first elongate cavity means and said second elongate cavity means each terminating at a common opening at said inwardly positioned ends thereof whereby said first cavity means and said second cavity means are positioned in contiguous relationship;

said radiant energy source being positioned at said common opening;

said outwardly positioned end of said first elongate cavity means terminating in a first outwardly positioned opening with said first radiant absorber being positioned outside of said first cavity means adjacent said first opening;

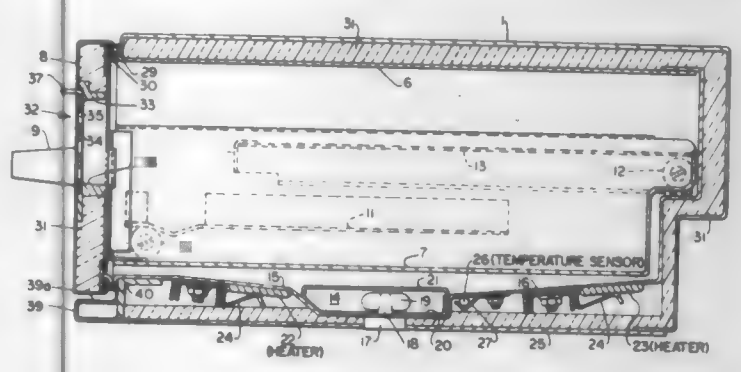
said outwardly positioned end of said second elongate cavity means terminating in a second outwardly positioned opening with said second radiant absorber being positioned outside of said second cavity means adjacent said second opening.

4,605,840

HORIZONTAL HOLDING CABINET FOR PREPARED FOOD

Peter J. Koopman, Richmond, Ind., assignor to Henny Penny Corporation, Eaton, Ohio

Filed Jul. 27, 1984, Ser. No. 635,119
Int. Cl.[4] F27D *7/02*
U.S. Cl. 219—401 18 Claims



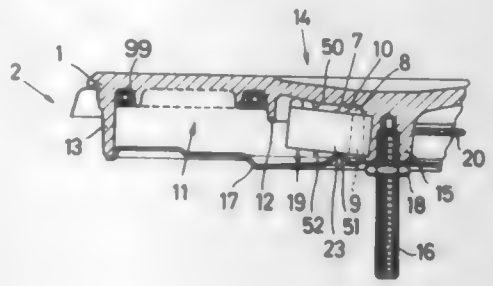
1. A horizontal holding cabinet comprising an elongated housing, a plurality of modules mounted within said housing in side-by-side relation, each of said modules comprising enclosing top, bottom, side and rear walls defining a drawer receiving cavity having an open front, a drawer assembly slidably received in said cavity, said drawer assembly having a front panel adapted to close the open front of the cavity, a heating element juxtaposed to the outersurface of a wall of said module to heat the cavity by conduction, and a water reservoir formed in the bottom wall of said cavity, whereby water vapor may be released within the cavity.

4,605,841

THERMOSTAT FOR ELECTRIC HOTPLATE

Karl Fischer, Oberderingen; Felix Schreder, Oberderdingen, and Robert Kicherer, Knittlingen, all of Fed. Rep. of Germany, assignors to E.G.O. Elektro-Gerate Blanc und Fischer, Fed. Rep. of Germany

Filed Jul. 6, 1983, Ser. No. 511,104
Claims priority, application Fed. Rep. of Germany, Jul. 7, 1982, 8219461[U]; Jul. 14, 1982, 3226264; Sep. 28, 1982, 8227145[U]; Jan. 20, 1983, 3301689
Int. Cl.[4] H05B *3/68*
U.S. Cl. 219—449 25 Claims



1. An electric hotplate comprising:

a hotplate body including a heated zone having heating resistors and electric circuitry for connecting the resistors to a source of electrical energy, said circuitry including a thermostat having:

a casing formed in one piece from an insulating material with

a bottom and four side walls defining one open-sided recess therebetween; and, a snap-action switch, a support and a bi-metallic strip mounted on the support and acting on the switch, the casing having slots formed therein for fixing the switch, support and strip in the recess, the improvement comprising:

the recess remaining open at the one side when the casing is mounted on the hotplate body and in contact therewith; and

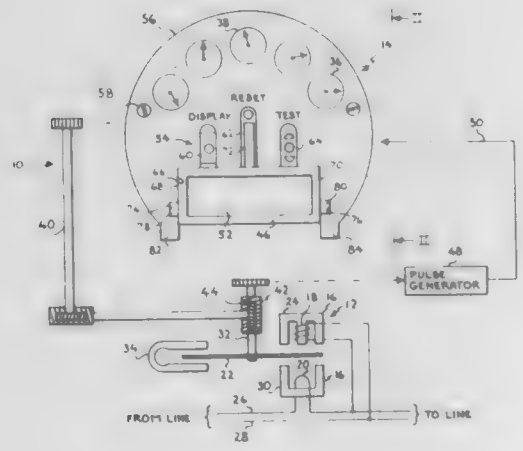
the support and the slots having locking means for preventing movement of the support out of the recess, the locking means including interfitting locking structure on the support and formed interiorly on at least one of the side walls, which structure can be brought to mutual engagement by movement of the support substantially parallel to the bottom of the casing.

4,605,842

SPRING-LOADED INSTALLATION FOR ELECTRONIC REGISTER MODULE

Peter F. Losapio, Dover, N.H., assignor to General Electric Company, Somersworth, N.H.

Filed Sep. 5, 1985, Ser. No. 772,700
Int. Cl.[4] G01R *19/16*; G06F *15/20*
U.S. Cl. 235—1 D **9 Claims**



1. An electronic register and meter frame for an electric meter comprising:

an electronic register module;

said meter frame including at least a face plate and a back plate;

means for affixing said back plate spaced a predetermined distance from said face plate, thereby providing a predetermined space therebetween;

said electronic register module including a skid plate affixed thereto;

said skid plate including at least a first cantilevered spring finger thereon;

a first button in said first cantilevered spring finger;

said first button contacting and sliding upon said back plate during insertion and removal of said electronic register module, and said first cantilevered spring finger providing a first resilient force urging said electronic register module toward said face plate; and

guidance means at a rear surface of said back plate for providing side-to-side guidance of said at least a first button during an intermediate stage of said insertion and removal.

4,605,843

EASY ACCESS TICKET TRANSPORT

Kenneth R. Aubrey, San Diego, Calif., assignor to Cubic Western Data, San Diego, Calif.

Filed Apr. 18, 1985, Ser. No. 724,652
Int. Cl.[4] G06K *13/00*; G07B *15/00*
U.S. Cl. 235—33 **20 Claims**

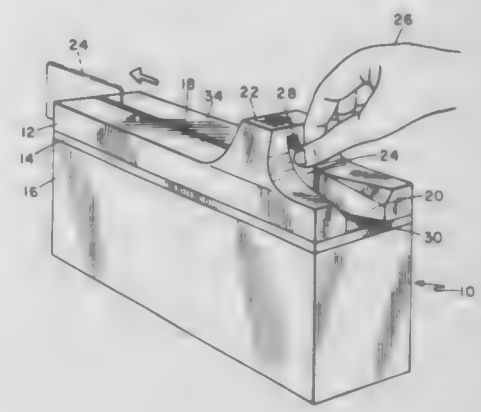
1. A ticket transport for processing fare tickets received from a patron comprising:

ticket transport means having an open longitudinal slot for receiving and processing fare tickets,

read means for reading information from fare tickets when fare tickets move longitudinally in said slot,

write means for writing information on fare tickets when fare tickets move longitudinally in said slot,

said slot being open at the entry for receiving fare tickets,



moving means for grasping fare tickets at the open end of said slot and moving fare tickets in said slot with a portion of the fare tickets projecting out of said slot,

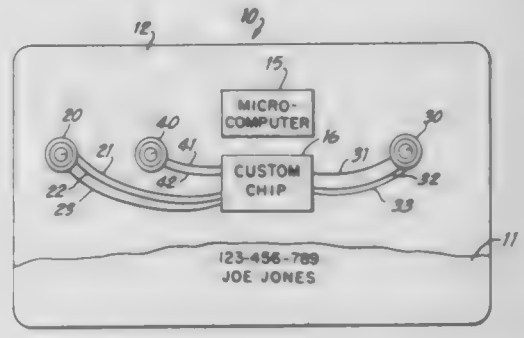
and enclosure means positioned over said slot adjacent the open end of said slot for covering a portion of the fare ticket, whereby fare tickets are removable from the patron's grasp when the patron inserts the fare ticket in the open end of said slot with the patron being able to grasp a portion of the fare ticket while in said slot.

4,605,844

COMPUTERIZED TRANSACTION CARD WITH INDUCTIVE DATA TRANSFER

Douglas E. Haggan, Somerset County, N.J., assignor to AT&T Technologies, Inc., Berkeley Heights, N.J.

Filed Feb. 11, 1985, Ser. No. 700,152
Int. Cl.[4] G06K *5/00*
U.S. Cl. 235—380 **16 Claims**



1. The improvement in a computerized transaction card insertable in a receptor therefor and containing microcomputer means, a power-transfer coil, and a power-transfer ferromagnetic member adapted when said card is in said receptor to flux link said coil with transformer primary means in said receptor for transfer of energy from said receptor to said microcomputer means to provide therefor both operating power and a clock signal transmitted to said coil from said receptor, said improvement comprising: a data-transfer coil in said card, a data-transfer ferromagnetic member juxtaposed in said card with said data-transfer coil, such coil and member being spaced in said card away from said power-transfer coil and member to be magnetically isolated therefrom and said data-transfer member being adapted when said card is in said receptor to flux link said data-transfer coil with inductor means in said receptor, and circuit means coupled to said card with said data-transfer coil for implementing transfer of data between said receptor and microcomputer means at least partly by a modulated wave which is produced by modulation of a carrier signal by a data signal, and which constitutes at least a component of the wave-

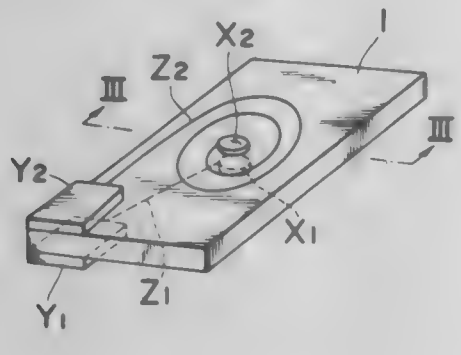
form both of current in said data-transfer coil and of magnetic flux linking such coil with said inductor means.

4,605,845

DETECTABLE CARD AND ENTRY AND DEPARTURE CHECKING APPARATUS UTILIZING THE SAME

Shigekazu Takeda, 21-9, Nishimine-machi, Ohta-ku, Tokyo, Japan

Filed Nov. 22, 1983, Ser. No. 555,212
Claims priority, application Japan, Dec. 14, 1982, 57-187941[U]; Feb. 14, 1983, 58-19067[U]
Int. Cl.⁴ G06K *5/00*
U.S. Cl. 235—382 8 Claims



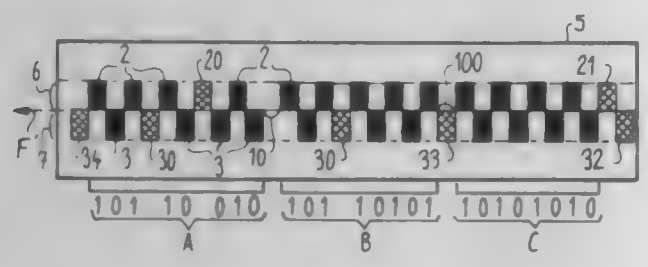
1. A detectable card shaped detector comprising:
a sheet substrate having a predetermined thickness and dielectric constant and made of a synthetic resin;
a first capacitor including a pair of central electrodes bonded to opposite surfaces of said substrate at a central portion thereof;
a second capacitor including a pair of peripheral electrodes bonded to opposite surfaces of said substrate at peripheries thereof;
a spiral conductor interconnecting one central electrode and one peripheral electrode which are disposed on one side of said substrate, said spiral conductor forming an inductance of an LC tuning circuit;
inner films made of a low melting-point synthetic resin and fused to the opposite surfaces of said substrate; and
outer films respectively overlying said inner films and made of a synthetic film, peripheries of said inner and outer films being hermetically fused together.

4,605,846

OPTICALLY READABLE CARD CARRYING DIGITAL DATA, AND AN ACCESS CONTROL SYSTEM USING SAID CARD

Bernard Duret, Brissac-Quince; Guido G. Dall'oro, Angers; Alain Jollivet, Beaufort, and Annie M. Szeger, Angers, all of France, assignors to Societe d'Electronique de la Region Pays de Loire, Paris, France

Filed Mar. 7, 1984, Ser. No. 586,918
Claims priority, application France, Mar. 11, 1983, 83 04054
Int. Cl.⁴ G06K *7/10*
U.S. Cl. 235—468 11 Claims



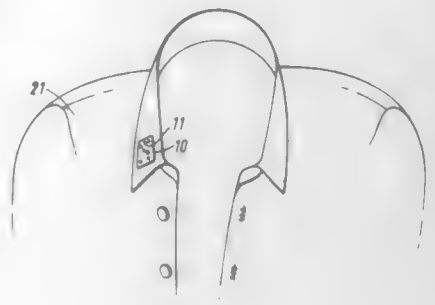
1. An optically readable card for carrying a digital data message, comprising:
at least one succession of marks and spaces having respective different optical properties, the marks and spaces being detectable by an opto-electronic pick-up means, the pick-up means including a source of light radiation and a detector therefor;
wherein the succession of marks includes genuine data-significant marks having a first optical spectral response to light emitted by the source of light radiation, the genuine data-significant marks being interspersed with dummy or decoy marks having the same appearance visually and photographically as the genuine data-significant marks, the dummy or decoy marks responding to light emitted by the source of light radiation with a second optical spectral response, the second response being analogous to the response of the spaces to the light radiation.

4,605,847

METHOD AND APPARATUS FOR THE CODED TAGGING OF ARTICLES, PARTICULARLY GARMENTS

Hermut Schittko, 9, Baumschulenstrasse, D-2072 Bargteheide, and Peter Schultz, 2/145, Kieler Strasse, D-2085 Quickborn, both of Fed. Rep. of Germany

Filed May 18, 1983, Ser. No. 495,608
Int. Cl.⁴ G06K *7/12*
U.S. Cl. 235—471 22 Claims



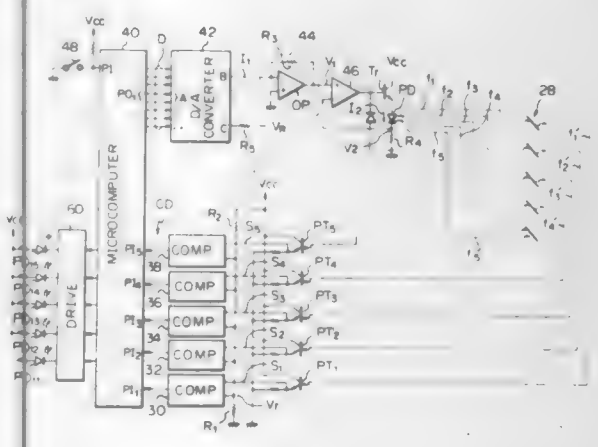
1. A method for the coded tagging of articles, such as garments, comprising securing to each of a plurality of optically opaque articles a tagging element bearing coded information in the form of portions of the element which permit the passage therethrough of a form of radiation which also passes through the optically opaque material of the articles but to which the rest of the element is opaque, conveying at least the portions of the articles bearing the tagging elements in succession between an emitter and a detector of said form of radiation, said detector producing an image of each tagging element which is scanned by a television camera the output of which is processed by a computer to store, display and/or process the coded information on the element.

4,605,848

PHOTOSENSOR AND OUTPUT CONTROL THEREFOR

Mutsuo Ogawa, Yokohama, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Oct. 17, 1983, Ser. No. 542,802
Claims priority, application Japan, Oct. 18, 1982, 57-181347
Int. Cl.⁴ G01J *1/32*
U.S. Cl. 250—205 9 Claims



1. A photosensor control apparatus comprising:

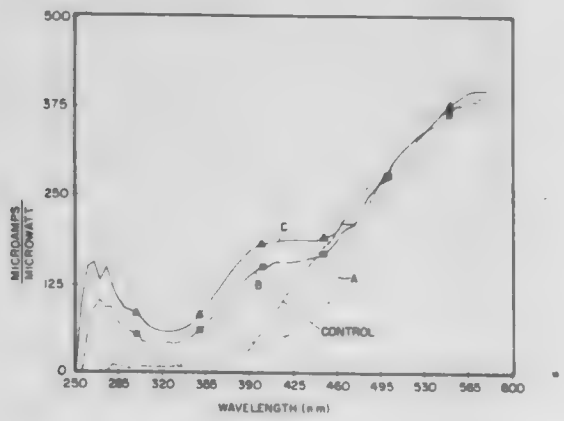
one light emitting means;
a plurality of photosensor means;
optical path means for conveying light from the light emitting means to all of the photosensor means;
computing means for feeding an output signal to the light emitting means, the quantity of light produced by the light emitting means corresponding to the magnitude of the output signal; and
switching means for sequentially connecting outputs of the photosensor means to the computing means;
the computing means including means, in response to each individual photosensor means being connected thereto by the switching means, for progressively increasing the value of the output signal fed to the light emitting means from an initial value, sensing the output level of said individual photosensor means, comparing said output level with a predetermined value and storing a value of the output signal at which said output level is substantially equal to the predetermined value.

4,605,849

PHOTOSENSITIVE DEVICES HAVING ENHANCED BLUE LIGHT RESPONSE

Peter O. Kliem, Weston; Alan B. Fischer, Cambridge, and Shai Inbar, Brookline, all of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Oct. 31, 1984, Ser. No. 666,890
Int. Cl.[4] H01J *3/14*
U.S. Cl. 250—216 **6 Claims**



1. A photosensitive element having enhanced blue light photoresponse comprising a solid state photosensitive device carrying on a surface thereof a thin layer comprising a donor dye and an acceptor dye uniformly dispersed in an optically transparent polymeric binder material, wherein said donor dye absorbs light in the blue region of the spectrum and said acceptor dye absorbs light in the green region of the spectrum, there is substantial overlap between the fluorescence emission spectrum of the donor dye and the absorption spectrum of the acceptor dye, said donor and acceptor dyes being present in relative amounts such that said donor dye is adapted to transfer at least a substantial portion of the energy from its singlet excited state nonradiatively to said acceptor dye.

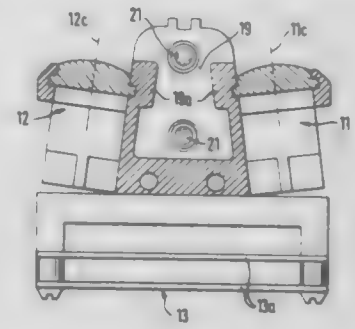
4,605,850

LIGHT BARRIER APPARATUS FOR MONITORING DOORWAYS

Christoph Anselment, and Karl H. Sackmann, both of Waldkirch, Fed. Rep. of Germany, assignors to Erwin Sick GmbH Optik-Elektronik, Waldkirch, Fed. Rep. of Germany

Filed Jun. 5, 1984, Ser. No. 617,384
Claims priority, application Fed. Rep. of Germany, Jun. 7, 1983, 3320528
Int. Cl.[4] G08B *13/18*
U.S. Cl. 250—221 **11 Claims**

1. Light barrier apparatus for monitoring doorways, the apparatus comprising a base member; a housing mountable over said base member, said housing having first and second oppositely disposed sides; first and second windows disposed in respective ones of said first and second sides, first and second light transmitter/receiver devices disposed within said housing and having respective substantially vertically directed optical axes, said optical axes being spaced apart from one another and lying in a common plane; first and second deflecting mirrors each mounted within said housing on said base member by a respective universally adjustable mounting, each of said first and second deflecting mirrors being positioned to deflect a respective substantially vertically directed beam of light from a respective one of said first and second light transmitter/receiver devices into a substantially horizontal direction and out of said housing through a respectively associated one of said first and second windows; first and second retroreflectors mountable outside of said housing, each said retroreflector being mounted, in operation, facing a respective one of said windows for reflecting the associated substantially horizontally directed beam of light emerging from that window back through that window and onto the associated one of said first and second deflecting mirrors for deflection back to the



associated one of said light transmitter/receiver devices; electronic circuitry associated with said first and second transmitter/receiver devices, said electronic circuitry having a first set of electrical connection terminals; a second set of complementary electrical connection terminals provided within said housing on said base member, said first and second sets of electrical connection terminals being connectable with each other; and a support element; wherein said first and second transmitter/-receiver devices and said electronic circuitry are connected together and mounted on said support element to form a unit, said unit being releasably connectable to said base member and being removable from said base member by movement in a direction at right angles to said plane; and wherein said base member includes a profiled pedestal extending at right angles to said common plane, and wherein said support element of said unit has an aperture having a profile the same as that of said profiled pedestal, and being slidable over said pedestal during movement of said unit in said direction at right angles to said plane.

4,605,851

PROCESS AND DEVICE FOR DETECTING FOREIGN BODIES IN A LIQUID

Pierre H. M. Ometz, and Jacques A. L. Labrador, both of Gironde, France, assignors to Societe Nationale Industrielle Aerospatiale, Paris, France

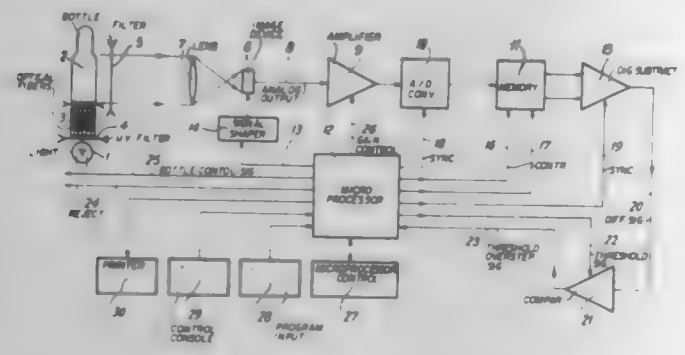
Filed Jan. 31, 1983, Ser. No. 462,448
Claims priority, application France, Feb. 1, 1982, 82 01542
Int. Cl.[4] G01N *9/04*
U.S. Cl. 250—223 B **13 Claims**

1. The process for detecting foreign bodies, particularly solids, in a liquid contained in at least one recipient transparent to a certain light, whereby the liquid is placed in movement and is illuminated so that an image thereof produced by reflection, diffraction or attenuation, corresponding substantially to all the continuous apparent surface of the liquid contained in said recipient, is formed on a light sensitive surface,

wherein, at an initial instant, a first image of said apparent surface as formed on said light sensitive surface is analyzed point by point, and the analog values of the results of this analysis are digitalized and memorized;

at a subsequent instant, a second image is analyzed point by point, the analog values of the results of the second analysis are digitalized and compared by digital subtraction point by point from the memorized results of the first analysis, and

the numerical value of each of said digital differences is compared with at least one pre-established digital numerical threshold indicative of foreign bodies considered as inadmissible,



wherein the value of said threshold significant of comparison varies as a function of time to take into account the slowing down of the movement of said liquid in the recipient and to obtain a substantially constant threshold of detection of the inadmissable foreign bodies, and wherein the difference of illumination taken into account on two different images, of which at least one is memorized, is compared with said varied threshold of detection.

4,605,852

CONDENSATION PREVENTION APPARATUS

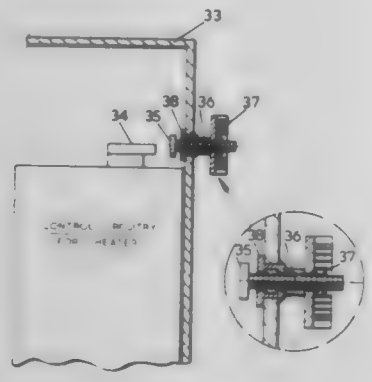
Allen D. Muirhead, Rossendale, England, assignor to Unicell Limited, Stockport, England

Filed Sep. 21, 1983, Ser. No. 534,189

Claims priority, application United Kingdom, Sep. 22, 1982, 8227084

Int. Cl.⁴ G01D *5/34*

U.S. Cl. 250—231 R **7 Claims**



1. An apparatus for preventing the formation of condensation within a cabinet, comprising a radiation source, radiation responsive means producing an output signal corresponding to the amount of radiation incident thereon from the source, a reflective surface positioned so as to reflect radiation from the source onto the radiation responsive means, which reflective surface is exposed to the conditions within the cabinet, means connected to an output of the radiation responsive means for detecting a reduction in the output of the radiation responsive means as a result of the formation of condensation on the reflective surface, and means for controlling the conditions within the cabinet to evaporate any detected condensation, the reflective surface being thermally linked to the exterior of the cabinet so that the temperature thereof responds more rapidly to changes in the external ambient temperature than does the interior of the cabinet, whereby the reflective surface is prone to the formation of condensation thereon before the interior of the cabinet and the contents thereof.

4,605,853

DETECTION DEVICE

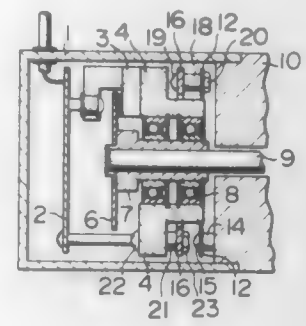
Shoji Kumada, and Hideyuki Asai, both of Iruma, Japan, assignors to Kabushiki Kaisha Yaskawa Denki Seisakusho, Kitakyushu, Japan

Filed Sep. 27, 1984, Ser. No. 655,373

Claims priority, application Japan, Nov. 9, 1983, 58-173359[U]

Int. Cl.⁴ G01D *5/36*

U.S. Cl. 250—231 SE **2 Claims**



1. In a detection device comprising a rotary detection section attached to a hollow shaft fixedly connected through its hollow to one end portion of a rotary shaft of a drive motor the load of which is coupled to the other end portion opposite to said one end portion, and a fixed detection section supported by a fixed housing at a side opposite to said load of said drive motor and mounted through a bearing on said hollow shaft; the detection device in which a plate spring generally of a ring shape is mounted on said fixed housing in spaced relation thereto, said plate spring having at least in part an elastic portion whose resilient force is directed along an axial direction of said rotary shaft under said mounting condition of said plate spring to said fixed housing; and a supporting plate generally of a ring shape having a plurality of elongated apertures formed therein along an concentric line relative to the center of said plate mounted on said plate spring in spaced relation thereto; and wherein said fixed detection section is fixedly connected with screws through said elongated apertures to said supporting plate, said screws being movable freely for adjustment along said concentric line relative to the center of said plate within said apertures.

4,605,854

MEASUREMENT OF FORMATION POROSITY USING FAST NEUTRON SPECTROSCOPY

Harry D. Smith, Jr., Houston, Tex., assignor to Halliburton Company, Duncan, Okla.

Filed Jul. 16, 1984, Ser. No. 631,353

Int. Cl.⁴ G01V *5/00*

U.S. Cl. 250—266 **7 Claims**

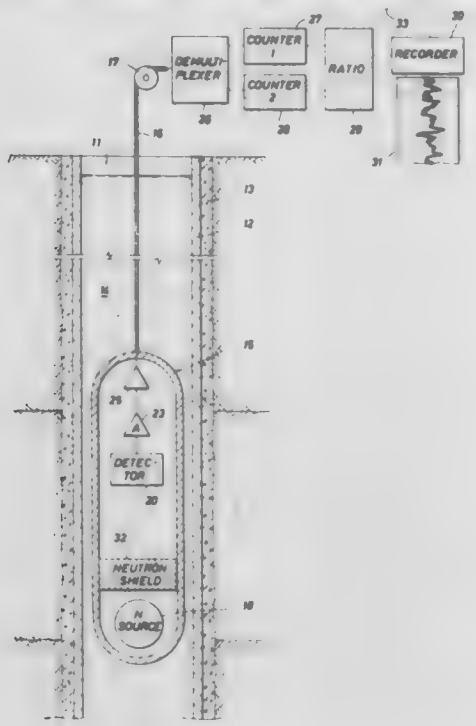
1. A method for determining the porosity of earth formations in the vicinity of a well borehole, comprising:

(a) irradiating the earth formations in the vicinity of the well borehole with a source of fast neutrons,

(b) detecting an energy spectrum of the fast neutrons at a single spaced distance from the neutron source in the borehole and generating a plurality of energy related pulse height spectral signals representative thereof, and

(c) deriving from the fast neutron spectral signals a measurement signal functionally related to the porosity of the earth formations in the vicinity of the borehole by forming

a ratio of the signals representing the count rates observed in a first pulse height range of the observed fast neutron



energy spectrum to those signals representing the count rates observed in a second pulse height range thereof.

4,605,855

GAS ANALYZER WITH COMPACT CELL STRUCTURE

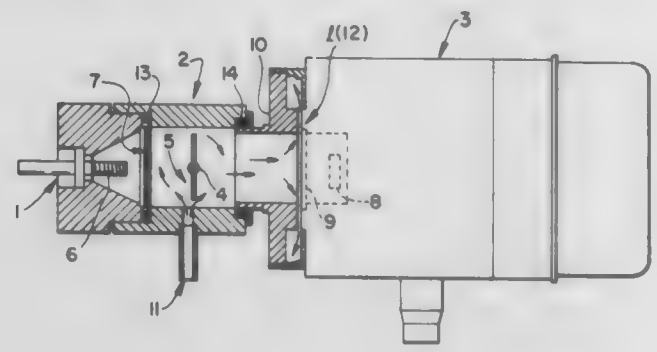
Takeshi Yamada, Kyoto, Japan, assignor to Horiba, Ltd., Kyoto, Japan

Filed Aug. 24, 1984, Ser. No. 644,104

Claims priority, application Japan, Aug. 30, 1983, 58-134971[U]

Int. Cl.⁴ G01J *1/00*

U.S. Cl. 250—343 **6 Claims**



1. A gas analyzer comprising: a light source having a window; an open-ended, hollow cylinder aligned with said light source and through which the light from said light source passes; a detector at the other end of said cell and having a window for receiving the light which has passed through said hollow cylinder; a chopper in said hollow cylinder and rotatable around an axis perpendicular to the optical path through said hollow cylinder for interrupting the light passing along said optical path; said hollow cylinder having a gas inlet therein at a portion where the optical path for said cell is not blocked thereby; the ends of said hollow cylinder being adjacent the light source window and the detector window which serve as cell windows, respectively, at least one of said windows being spaced from the end of said hollow cylinder to define an annular gap therebetween constituting a gas outlet for causing gas leaving the cell to flow out through the end corner of the cell adjacent said one window.

4,605,856

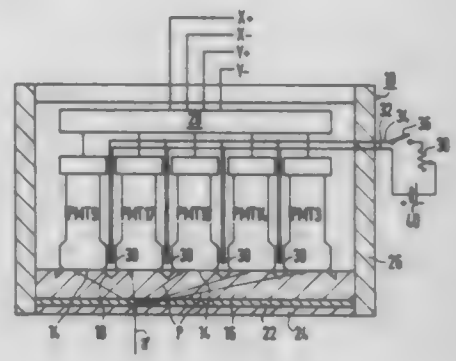
METHOD AND DEVICE FOR STABILIZING PHOTOMULTIPLIER TUBES OF A RADIATION IMAGE DEVICE AGAINST DRIFT

Dennis E. Persyk, Barrington, and Keith A. Ritter, Addison, both of Ill., assignors to Siemens Gammasonics, Inc., Des Plaines, Ill.

Filed Nov. 9, 1983, Ser. No. 549,937

Int. Cl.⁴ G01T *1/202*

U.S. Cl. 250—363 S **20 Claims**



1. A method for stabilizing the gain of a plurality of photomultiplier tubes of a radiation image device against drift by illuminating the photomultiplier tubes with light, comprising the steps of:

(a) arranging a predetermined number of said photomultiplier tubes in an array for operation in the radiation image device; and

(b) illuminating the complete array with light having an intensity to produce an average anode current in each of the photomultiplier tubes which is in the range of 1 to 50 μA; and

(c) timing the illumination for a predetermined interval of at least one day to obtain stabilization of the plurality of photomultiplier tubes.

4,605,857

TENSILE TESTER

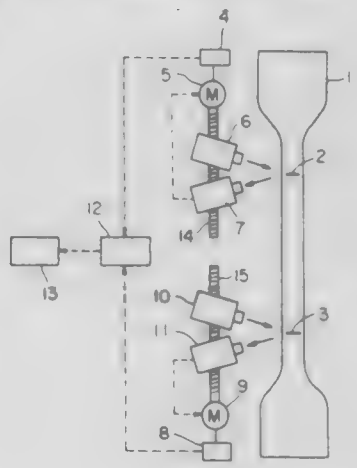
Sunao Ninomiya, Ichihara; Yasuhiro Miura, Chiba; Hiromu Iwata, Kisarazu, and Shuji Matsuyama, Ichihara, all of Japan, assignors to Sumitomo Chemical Company, Ltd., Osaka, Japan

Filed Jun. 8, 1984, Ser. No. 618,607

Claims priority, application Japan, Jun. 20, 1983, 58-110535

Int. Cl.⁴ G01T *1/22, 1/24*

U.S. Cl. 250—372 **5 Claims**



1. A tensile tester for use in detecting the amount of elongation in a stationary specimen marked with at least a pair of fluorescent coating bench marks comprising at least two pairs of projector-optic arrangements spaced along the length of and in the elongation direction of said specimen, each pair of projector-optic arrangements comprising an ultraviolet lamp projector means for irradiating ultraviolet light onto the respec-

tive one of said bench marks and optic means including a detector means for detecting luminescent light rays reflected from the respective one of said ultraviolet light irradiated bench marks on said specimen caused by irradiation from said projector means, said detecting means measuring the amount of incident light from said bench mark;

support metans for independently supporting each of said projector-optic arrangement for movement back and forth along the length of at least a portion of said specimen adjacent a respective one of said bench marks;

drive means for independently driving said projector-optic arrangement along said portion of said specimen;

elongation detector means for each said projector-optic arrangements for transmitting respective displacement signals indicative of the amount of movement of said projector-optic arrangements; and

control means for independently deactivating said drive means for stopping the movement of each said projector-optic arrangement when said detector means in said optic means detects said luminescent light rays from a respective one of said bench marks; and

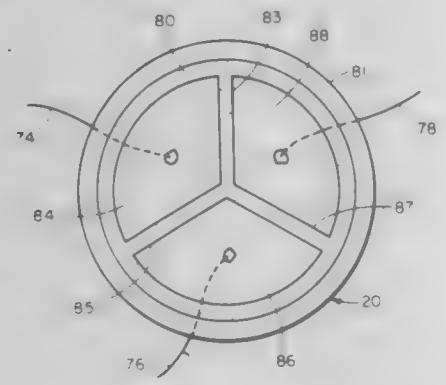
difference determining means responsive to both of said elongation detector means for determining and indicating the spacing between said bench marks.

4,605,858

PERSONAL RADIATION DOSIMETER

James H. Terhune, San Jose, Calif., assignor to General Electric Company, San Jose, Calif.

Filed Nov. 9, 1984, Ser. No. 669,884
Int. Cl.[4] G01T *1/18*
U.S. Cl. 250—374 **6 Claims**



1. A radiation dosimeter comprising:

at least a first capacitive ionization chamber adapted to gradually discharge in the presence of incident radiation;

a voltage source;

a load resistor coupled to said voltage source;

a first switch means coupled to said load resistor and said voltage source to form a first in-series circuit comprising said voltage source, said load resistor and said first switch means;

a second switch means coupled to said load resistor and said voltage source to form a second in-series circuit comprising said voltage source, said load resistor, said second switch means and said at least first capacitive ionization chamber;

peak voltage sensing means coupled across said load resistor for providing a peak voltage signal; and

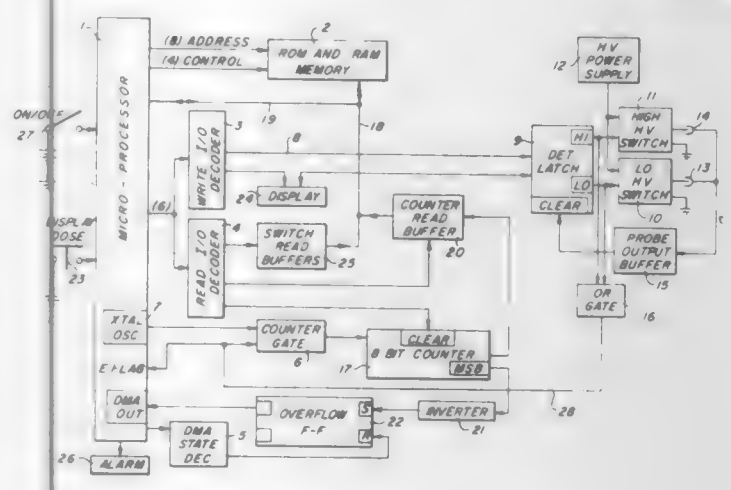
calculating means responsive to peak voltage measurements taken across said load resistor as said first and second switch means are sequentially actuated for calculating the amount of radiation incident on said dosimeter from said peak voltage measurements.

4,605,859

RADIATION MEASURING APPARATUS

Elmo J. Dilanni, Mountain Lake, N.J.; Harold J. Cooley, Spring Valley, N.Y.; Michio Fujita, Philadelphia, Pa., and Charles V. Noback, Cresskill, N.J., assignors to Nuclear Research Corp., Warrington, Pa.

Filed Dec. 19, 1983, Ser. No. 562,985
Int. Cl.[4] G01T *1/18*
U.S. Cl. 250—374 **30 Claims**



1. Apparatus for measuring radiation field strength comprising in combination,

(a) a biased potential radiation detector having an output circuit, said detector being of the type that is effective when biased to respond to impingement of radiation by generating an output pulse at its output circuit, and when not biased being ineffective to generate an output pulse when impinged by radiation,

(b) biasing means operatively coupled to said radiation detector for selectively biasing said radiation detector to generate an output pulse in response to impingement by radiation,

(c) time counting means including timing control means operable to start and terminate time counting, said radiation detector output circuit being operatively coupled to said time counting means and being effective upon generation of an output pulse to cause said time counting means to terminate time counting,

(d) master control means operatively coupled to

(1) said biasing means to selectively cause said biasing means to bias said radiation detector to respond to impingement by radiation,

(2) said time counting means and effective to cause said time counting means to start time counting simultaneously with the operative biasing of said radiation detector, said master control means receiving a signal when said radiation detector generates an output pulse.

4,605,860

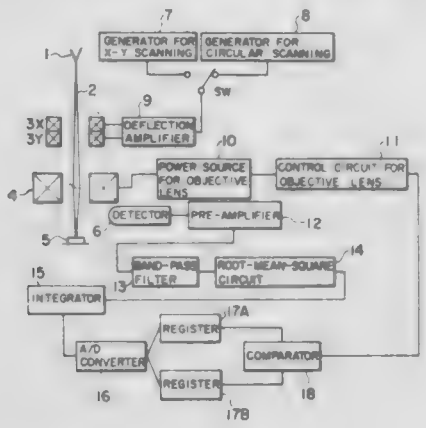
APPARATUS FOR FOCUSING A CHARGED PARTICLE BEAM ONTO A SPECIMEN

Satoru Fukuhara, Kokubunji; Mikio Ichihashi, Kodaira; Hisaya Murakoshi, and Shigemitsu Seitoh, both of Hachioji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 26, 1984, Ser. No. 654,457
Claims priority, application Japan, Sep. 28, 1983, 58-177954
Int. Cl.[4] G01K *1/08;* H01J *3/14*
U.S. Cl. 250—397 **6 Claims**

1. An apparatus for focusing a charged particle beam onto a specimen, comprising scanning means for scanning a preformed standard pattern with a charged particle beam, converging means having a current controlled lens means for converging said charged particle beam onto a specimen, detecting means for detecting secondary charged particles emitted as a result of scanning said standard pattern by said scanning means, means for deriving a standard frequency component of the detected signal from said detecting means determined by the period of scanning with said charged particle beam and the shape of the portion of said standard pattern in

the region being scanned with said charged particle beam, and means for controlling the current for said lens means of said



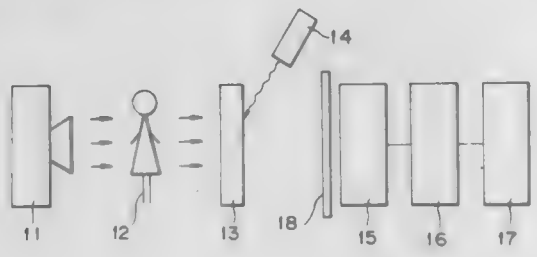
converging means to find the maximum value of the amplitude of said standard frequency component thereby identifying attainment of focusing of said charged particle beam.

4,605,861

RADIATION IMAGE RECORDING AND REPRODUCING METHOD

Takashi Nakamura, and Kenji Takahashi, both of Kaisei, Japan, assignors to Fuji Photo Film Co., Ltd., Japan

Filed Apr. 15, 1985, Ser. No. 723,357
Claims priority, application Japan, Apr. 13, 1984, 59-74364
Int. Cl.⁴ H05B *33/00*
U.S. Cl. 250—484.1 **8 Claims**



1. A radiation image recording and reproducing method comprising steps of:

(i) causing a divalent europium activated alkaline earth metal hydride halide phosphor having the formula (I):

$$M^{II}HX:xEu^{2+} \quad (I)$$

in which M^{II} is at least one alkaline earth metal selected from the group consisting of Ca, Sr and Ba; X is at least one halogen selected from the group consisting of Cl, Br and I; and x is a number satisfying the condition of $0<x\leqq 0.2$, to absorb a radiation having passed through an object or having radiated from an object;

(ii) exciting said phosphor with an electromagnetic wave having a wavelength within the range of 560–1000 nm to release the radiation energy stored therein as light emission; and

(iii) detecting the emitted light.

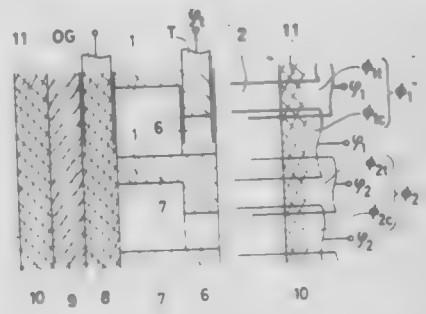
4,605,862

SOLID STATE IMAGE PICKUP APPARATUS

Kaneyoshi Takeshita, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

PCT No. PCT/JP83/00040, § 371 Date Oct. 18, 1983, § 102(e) Date Oct. 18, 1983, PCT Pub. No. WO83/03031, PCT Pub. Date Sep. 1, 1983
PCT Filed Feb. 10, 1983, Ser. No. 557,169
Claims priority, application Japan, Feb. 19, 1982, 57-25731
Int. Cl.⁴ H04N *3/14, 5/335*
U.S. Cl. 250—578 **2 Claims**

1. A solid state image pickup apparatus comprising a solid state image pickup device of the interline transfer type which has a photodetector (1) for producing signal charges in response to light received thereon and for storing the signal charges produced therein, a transfer gate area (6) formed adjacent said photodetector (1) for reading out the signal charges stored in the photodetectors (1), and vertical transfer portions (2) formed adjacent said transfer gate area (6) for transferring the signal charges read out from the photodetectors (1), said photodetectors (1), and said transfer portions (2) are free of a light shielding layer (11), a shutter mechanism is provided for the solid state image pickup device, and when the



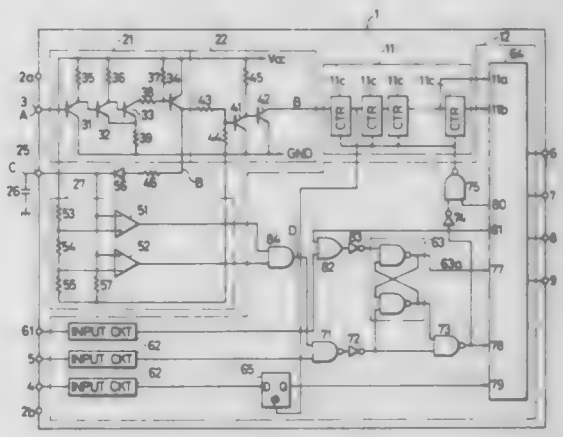
shutter mechanism is opened the relationship $P_r \leqq P_t < P_s$, where P_s, P_t and P_r are the potentials of the photodector (1), the transfer gate area (6) and the transfer portion (2), respectively are maintained during a light receiving period, and when the shutter mechanism is shut the relationship $P_s \leqq P_t < P_r$ is maintained during a reading out period, and when the shutter mechanism is shut the relationship of $P_t < P_s$ and $P_t < P_r$ is maintained during a charge transfer period, so as to produce an image pickup output signal in response to the signal charges transferred by the transfer portions (2).

4,605,863

DIGITAL CONTROL CIRCUIT

Kenzi Toudo; Motoshi Yiyanaka, and Yoshiki Hayata, all of Yanai, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 28, 1983, Ser. No. 536,501
Claims priority, application Japan, Oct. 27, 1982, 57-187419
Int. Cl.⁴ H03K *3/00, 5/19;* **G01R** *29/027*
U.S. Cl. 307—269 **15 Claims**



1. A digital control circuit comprising means for providing a clock pulse signal of predetermined magnitude; control means responsive to said clock pulse signal and at least one control signal for generating a first signal for controlling a load; means including a capacitor connected to said clock pulse signal providing means through a charge resistor for causing said capacitor to be charged by said clock pulse signal to a voltage level determined by the magnitude of the pulses of said clock pulse signal; discharge means including a discharge resistor connected in parallel to said capacitor for holding the charge on said capacitor at said predetermined level when said capacitor is receiving said clock pulse signal of predetermined magnitude; voltage detecting means connected to said capacitor for detecting the voltage of said capacitor and including means for generating a second signal when the charged voltage of said capacitor is unequal to a preset voltage; and means connected

to said voltage detection means for preventing generation of said first signal by said control means in response to receipt of said second signal.

4,605,864

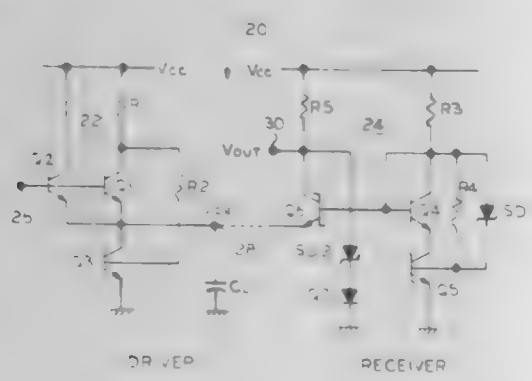
AFL (ADVANCED FAST LOGIC) LINE DRIVER CIRCUIT

Hemmige D. Varadarajan, Sunnyvale, and Nader Vasseghi, Mountain View, both of Calif., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Jan. 4, 1985, Ser. No. 688,719

Int. Cl.⁴ H03K *19/092, 19/01, 17/04, 17/60*

U.S. Cl. 307—270 **16 Claims**



1. A line driver circuit adapted for driving large capacitive lines comprising:

a driver circuit section including:

a pair of first and second bipolar transistors being connected together and to an input terminal, the collector of said first transistor being connected to a supply potential via a first resistor and the collector of said second transistor being connected to the supply potential;

a first Schottky transistor, the collector of said Schottky transistor being connected to the emitters of said first and second transistors and to an output node, the emitter of said Schottky transistor being connected to a ground potential;

a second resistor having its one end connected to the collector of the first transistor and its other end connected to the base of said Schottky transistor: and

a capacitive load being connected to the output node; and

a receiver circuit section including:

a third bipolar transistor, the collector of said third transistor being connected to the supply potential via a third resistor and to its base;

a second Schottky transistor having the collector connected to the emitter of said third transistor and its emitter connected to the ground potential;

a fourth resistor having its one end connected to the collector of said third transistor and its other end connected to the base of said second Schottky transistor;

a first Schottky diode having its anode connected to the collector of said third transistor and its cathode connected to the base of said second Schottky transistor;

a third Schottky transistor having its base connected to the base of said third transistor, its collector connected to the supply potential via a fifth resistor and to an output terminal, and its emitter connected to the output node of said driver circuit section;

a second Schottky diode having its anode connected to the output terminal; and

a fourth bipolar transistor connected as a diode and having its anode connected to the cathode of said second Schottky diode and its cathode connected to a ground potential.

4,605,865

INPUT DRIVE APPARATUS FOR POWER TRANSISTOR

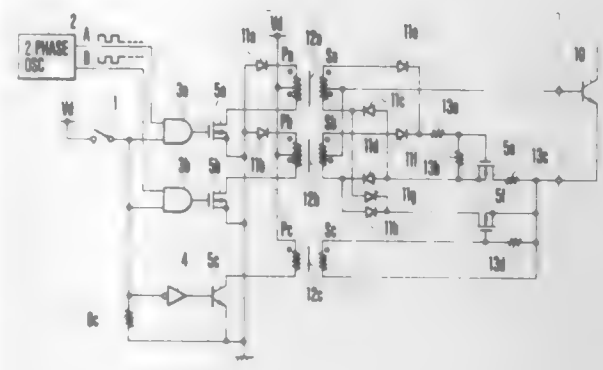
Itsuo Yuzurihara, Zama, Japan, assignor to Kyosan Electric Co., Ltd., Kanagawa, Japan

Filed Jun. 26, 1984, Ser. No. 624,633

Claims priority, application Japan, Jul. 4, 1983, 58-121385

Int. Cl.⁴ H03K *3/26, 17/60*

U.S. Cl. 307—270 **2 Claims**



1. An input drive apparatus of a power transistor having an input side circuit means and output side circuit means electrically insulated from each other by gaps between primary and secondary windings of at least one first transformer and a second transformer respectively, said input side circuit means including a power source, means for alternately connecting said power source to the primary windings of said at least one first transformer and said second transformer in accordance with a value of an instruction signal for controlling a bias voltage applied across a first and a second electrode of said power transistor, said output side circuit means comprising:

means for connecting a first electrode of said power transistor with a center tap of the secondary winding of said at least one first transformer,

at least one first diode having one electrode connected with one terminal of the secondary winding of the corresponding one of said at least one first transformer,

at least one second diode having one electrode of opposite polarity from that of the first diode connected with the other terminal of the secondary winding of the corresponding one of said at least one first transformer,

first transistor means having a first terminal connected with the second electrode of said power transistor, a second terminal connected with the other electrode of the second diode and a third terminal connected with the other electrode of the first diode, an internal current path from the first terminal to the second terminal of said first transistor means being established when a voltage is applied across the second and third terminals thereof,

at least one third diode having one electrode of opposite polarity from that of the second diode connected with the other terminal of the secondary winding of the corresponding one of said at least one first transformer,

second transistor means having a fourth terminal connected with the other electrode of the corresponding one of said third diode, a fifth terminal connected with the second electrode of said power transistor and sixth and seventh terminals respectively connected with one and the other terminals of the secondary winding of said second transformer, an internal current path from the fourth terminal to the fifth terminal being established when a voltage is applied across the sixth and seventh terminals; and

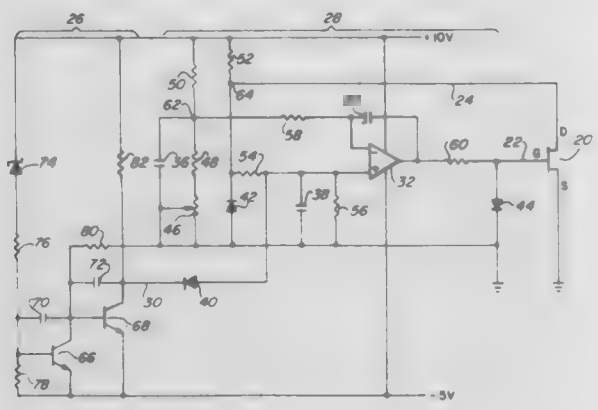
said input side circuit means comprising means for connecting each center tap of the primary winding of said at least one first transformer with said power source, and at least one fourth diode having one electrode connected with one terminal of the primary winding of the corresponding one of said at least one first transformer and the other electrode grounded so that the electromagnetic energy stored in said first transformer means is regenerated to said power source after charge carriers accumulated in said power transistor have been extinguished.

4,605,866

D.C. BIASSING OF MESFETS TO PREVENT OSCILLATION DURING POWER SUPPLY SWITCHING

David R. Conn, Nepean, Canada, assignor to Northern Telecom Limited, Montreal, Canada

Filed Apr. 11, 1984, Ser. No. 598,715
Int. Cl.[4] G01R *19/165*
U.S. Cl. 307—296 R 10 Claims



1. A d.c. biassing circuit for a MESFET having a gate and a controlled path including a drain and a source, comprising:

means connected to the controlled path for deriving current therefor from a supply voltage:

regulating means connected to the gate of the MESFET for controlling the gate to regulate the current in the controlled path; and

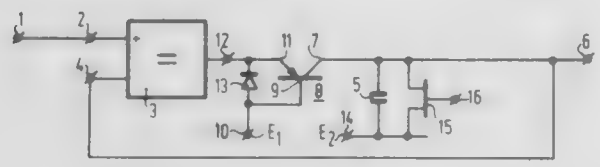
switching means responsive to the supply voltage being below a predetermined level for controlling the regulating means to limit the current in the controlled path.

4,605,867

PEAK DETECTOR

Johannus C. D. M. Veehof, Enschede, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed May 4, 1984, Ser. No. 607,335
Claims priority, application Netherlands, May 6, 1983, 8301602
Int. Cl.[4] H03K *5/153;* G01R *19/04*
U.S. Cl. 307—351 19 Claims



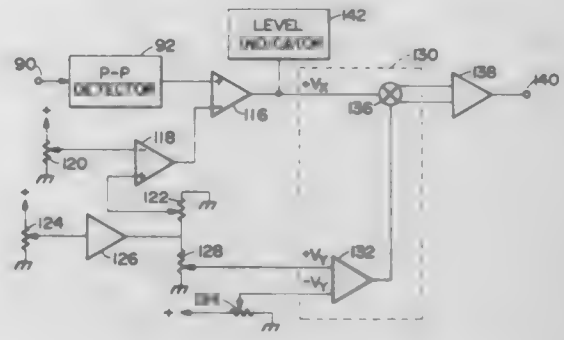
1. A peak detector comprising a capacitor storage element for storing a voltage value which is a measure of the peak value of an input voltage to be applied to the peak detector, a voltage comparator circuit having a first input for the input voltage, a second input coupled to the capacitor, and an output, a transistor having a collector coupled to the capacitor and a base-emitter path coupled to said comparator circuit output and to a voltage source supplying a fixed voltage E1 with the base of the transistor connected to the voltage source E_1 and the emitter to said comparator circuit output so that the transistor is operated in common base arrangement, and a diode connected between the base and the emitter of the transistor in anti-parallel with the base-emitter diode junction.

4,605,868

PEAK-TO-PEAK DETECTION APPARATUS

Bruce J. Penney, Portland, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Continuation of Ser. No. 479,390, Mar. 28, 1983, abandoned. This application Oct. 7, 1985, Ser. No. 786,132
Int. Cl.[4] H03K *5/153*
U.S. Cl. 307—351 3 Claims



1. Peak-to-peak detection apparatus comprising a peak-to-peak detector which has an input terminal for receiving an input signal having an a.c. component and also has an output terminal and defines a signal path between the input terminal and the output terminal, said peak-to-peak detector including a first diode connected in said signal path and a second diode connected between said signal path and a reference potential level, whereby the detector generates at its output terminal an output signal having a d.c. level and representing the envelope of the input signal applied to its input terminal, said apparatus also comprising means for compensating for the effect on the operating characteristic of the detector of the change in incremental resistance of the diodes with signal level, the compensating means comprising level-shifting means for receiving the output signal of the detector and generating therefrom an output signal having a desired d.c. level, and means for amplifying the output signal of the level-shifting means by an amount dependent on the difference between the d.c. level of the output signal of the detector and said desired d.c. level.

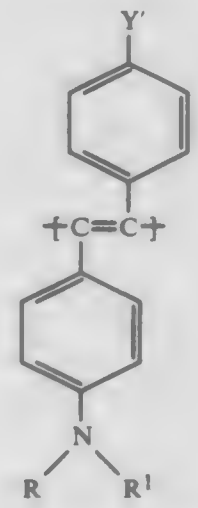
4,605,869

POLYACETYLENIC COMPOSITIONS

Eui W. Choe, Randolph, N.J., assignor to Celanese Corporation, New York, N.Y.

Division of Ser. No. 710,766, Mar. 11, 1985. This application Oct. 24, 1985, Ser. No. 791,127
Int. Cl.[4] G02F *2/00*
U.S. Cl. 307—425 1 Claim

1. A laser frequency converter device with a polymeric nonlinear optical component comprising an optically transparent medium of a polymer characterized by the recurring monomeric unit:



where R and R^1 are alkyl groups containing between about 1–4 carbon atoms, and R and R^1 taken together with the connecting nitrogen atom form an alicyclic substituent; Y' is a substitu-

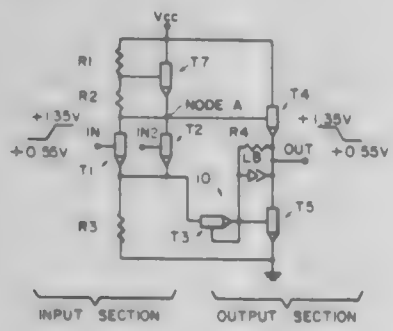
ent selected from nitro, cyano and trifluoromethyl radicals; and the weight average molecular weight of the polymer is in the range between about 1000–500,000.

4,605,870

HIGH SPEED LOW POWER CURRENT CONTROLLED GATE CIRCUIT

Allan H. Dansky, Poughkeepsie, and John P. Norsworthy, Fishkill, both of N.Y., assignors to IBM Corporation, Hopewell Junction, N.Y.

Filed Mar. 25, 1983, Ser. No. 478,613
Int. Cl.⁴ H03K *3/33, 17/04, 19/013, 19/088*
U.S. Cl. 307—443 **8 Claims**



1. A high speed, low power, current-controlled logic gate circuit comprising:

a power supply;

a first section including at least a first transistor having a logic input, which corresponds to the input of said gate circuit, and first and second outputs;

a second, push-pull, section having an output, which corresponds to the output of said gate circuit, said second section further including at least interconnected second and third transistors; the second transistor having an input connected to the first output of said first section; the third transistor having an input;

means for coupling the second output of said first section directly to the input of said third transistor, comprising means, including an asymmetrically conductive device and the inherent capacitance of said device, for overdriving and turning ON said third transistor during switching of said gate circuit from a state in which the output is at an UP level to a state in which the output is at a DOWN level;

a resistor, connected to said asymmetrically conductive device so as to form with said device a biasing network for maintaining the third, or active pulldown, transistor in a low current ON state, which is in the microampere range, when the output of said gate circuit is at said UP level, said resistor also being operable at that time for supplying current to forward bias said asymmetrically conductive device, said resistor further providing DC feedback to turn OFF said third transistor when the output of said gate circuit reaches said Down level such that a very low current then flows through said third transistor, said very low current having a value of approximately 1 microampere, which is serveral times lower than said low current;

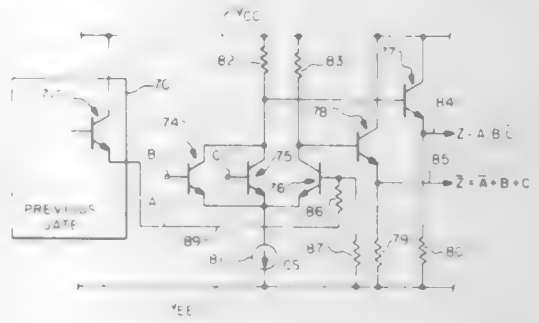
a Schottky diode connected as a dynamic feedback means from the output of said gate circuit to the input of said third transistor, said Schottky diode giving an output voltage undershoot, thereby turning itself ON and turning said third transistor OFF responsive to the output of said gate circuit switching to its DOWN level.

4,605,871

INVERTER FUNCTION LOGIC GATE

John E. Price, Palo Alto, and Larry W. De Clue, Saratoga, both of Calif., assignors to Amdahl Corporation, Sunnyvale, Calif.

Filed Mar. 12, 1984, Ser. No. 588,476
Int. Cl.⁴ H03K *19/086, 19/013, 19/092, 19/20*
U.S. Cl. 307—455 **14 Claims**



1. A bipolar gate circuit for Performing a logical operation on data represented by input signals including a logical operation on the complement of data represented by one of the input signals, comprising:

at least one input transistor;

a resistor connected between the collector of said at least one input transistor and the supply voltage, V_{CC};

at least one level shift input bipolar transistor means having its emitter connected to the emitter of said at least one input transistor and having its base coupled to the input signal whose complementary data is included in said logical operation;

a second resistor connected between the collector of said at least one level shift input bipolar transistor means and said supply voltage, V_{CC};

a current source connected to said common emitter connection of said at least one input transistor and said at least one level shift input bipolar transistor means;

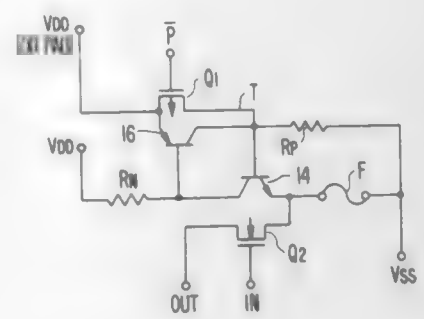
whereby said level shift input pipolar transistor means serves to shift the level of the input signal whose complementary data is included in said logical operation to a level below the standard ECL signal levels so that the signal delivered to the common emitter connection is a level shifted representation of said input signal whose complementary data is included in said logical operation.

4,605,872

PROGRAMMABLE CMOS CIRCUIT FOR USE IN CONNECTING AND DISCONNECTING A SEMICONDUCTOR DEVICE IN A REDUNDANT ELECTRICAL CIRCUIT

Robert D. Rung, Corvallis, Oreg., assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kanagawa, Japan

Filed Dec. 6, 1983, Ser. No. 558,455
Claims priority, application Japan, Dec. 9, 1982, 57-214609
Int. Cl.⁴ H03K *17/12*
U.S. Cl. 307—465 **18 Claims**



1. A programmable circuit for a semiconductor device formed on a semiconductor substrate for use in a redundant electrical circuit, said programmable circuit comprising:

an input terminal to receive a programming signal;

a switching device parasitic to said semiconductor device and intrinsic to the structure of said semiconductor substrate, said switching devices being coupled to said input terminal to generate a voltage output in response to receipt of the programming signal by said input terminal; and

disconnect means coupled to said semiconductor device and responsive to the voltage output generated by said switching device for disconnecting said semiconductor device from said redundant electrical circuit in response to the programming signal.

4,605,873

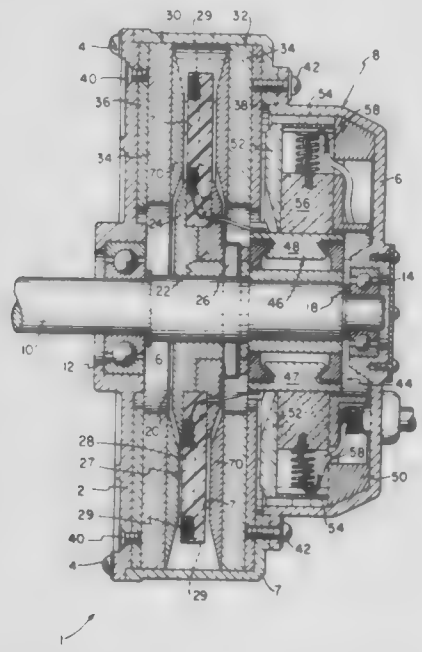
ELECTROMECHANICAL MACHINE

James H. Hahn, Lakeland, Fla., assignor to David H. Rush, Hollywood, Fla.

Continuation-in-part of Ser. No. 334,303, Dec. 24, 1981, which is a continuation of Ser. No. 22,422, Mar. 21, 1979, abandoned. This application Jul. 12, 1982, Ser. No. 397,480

Int. Cl.[4] H02K *21/76*

U.S. Cl. 310—154 **74 Claims**



1. An electromechanical machine comprising:

a machine housing;

a field producing assembly mounted in said housing so as to define an air gap circumferentially disposed about an axis of rotation, for producing a distribution of magnetic flux in said gap having P periodic extremes of flux density about said axis;

an armature disposed in said gap, said armature and field assembly being mounted for relative rotation, said armature having a circular array of C non-overlapping coils on each of a front and back free thereof, C being an integer greater than P, each coil of the coil array on one armature face being angularly offset about said axis relative to a coil of the coil array on the other armature face by an amount less than 360°/C, each coil of each armature face having the same arcuate extent, said arcuate extent being less than 360°/P.

4,605,874

BRUSHLESS D.C. DYNAMOELECTRIC MACHINE HAVING FERRITE MATERIAL MAGNETIC CIRCUIT

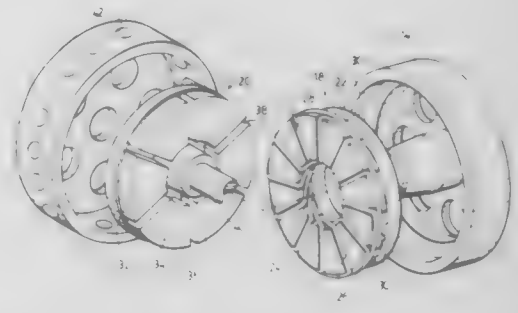
Eric Whiteley, Peterborough, Canada, assignor to Maghemite Inc., Mississauga, Canada

Filed Feb. 20, 1985, Ser. No. 703,388

Claims priority, application United Kingdom, Jun. 12, 1984, 8414953

Int. Cl.[4] H02K *1/16*

U.S. Cl. 310—268 **6 Claims**



1. A brushless D.C. dynamoelectric machine, which comprises:

a disc-like rotor element comprising hard ferrite toroid means providing a plurality of magnetic poles of alternating polarity and mounted for rotation about its axis,

a disc-like stator element comprising soft ferrite toroid means and mounted coaxially with and spaced apart from the rotor element, said soft ferrite toroid means being formed with radially-directed coil winding-receiving slots, and

electrical coil windings mounted to said stator in said slots and each spanning one rotor pole pitch.

4,605,875

PIEZOELECTRIC TRANSDUCER FOR YARN FEELERS, FOR USE ON SPINNING AND WEAVING MACHINES

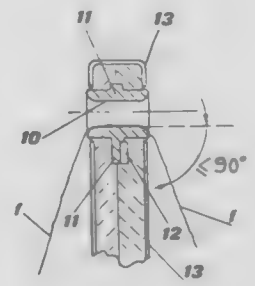
Paolo Bobbola, Vigliano Biellese, Italy, assignor to Roj Electrotex S.p.A., Biella, Italy

Filed Oct. 9, 1984, Ser. No. 658,806

Claims priority, application Italy, Oct. 7, 1983, 23198 A/83

Int. Cl.[4] H01L *41/08*

U.S. Cl. 310—323 **1 Claim**



1. A yarn feeler comprising a casing, and within the casing a piezoelectric transducer comprising a ceramic member having a yarn guide formed from said ceramic member and having a hole therethrough, said ceramic member being cemented direclty to a ceramic piezoelectric element within the casing, the size and shape of said ceramic member being such that its resonance frequencies are substantially different from those of the textile machines and devices to which the transducer is to be fitted, said yarn guide projecting from opposite sides of said casing.

4,605,876

PIEZOELECTRIC CERAMIC ENERGY TRAPPING ELECTRONIC DEVICE

Toshio Ogawa, Kyoto, and Toshihiko Kittaka, Shijonawate, both of Japan, assignors to Murata Manufacturing Co., Ltd., Kyoto, Japan

Continuation of Ser. No. 559,856, Dec. 12, 1983, abandoned, which is a continuation of Ser. No. 342,405, Jan. 25, 1982, abandoned. This application Nov. 7, 1984, Ser. No. 669,055
Claims priority, application Japan, Jan. 28, 1981, 56-11925
Int. Cl.[4] H01L *41/18*
U.S. Cl. 310—358 8 Claims

1. A piezoelectric ceramic energy trapping electronic device using the thickness expansion third overtone mode vibration, said device having a composition comprising as a principal component,

$$[Pb_{(1-3/2x)+\alpha}\ La_x][\ TiO_3,$$

and manganese contained therein as an additive in an amount of 0.1 to 2.0 wt % of MnO_2 with respect to the weight of 1 mole of said principal component, where $0.09 \leqq x \leqq 0.20$, and $-0.20 \leqq \alpha \leqq +0.20$, wherein the temperature coefficient for the third overtone mode vibration in thickness expansion mode (Cfr.t_3) is within the range of −5ppm/°C. to +5ppm/°C.

4,605,877

MOUNTING STRUCTURE FOR MULTI-FILAMENTS OF AN INCANDESCENT LAMP

Timothy C. Cho, Mayfield Hts., and Edwin J. Lohrey, Euclid, both of Ohio, assignors to General Electric Company, Schenectady, N.Y.

Filed Feb. 14, 1985, Ser. No. 701,821
Int. Cl.[4] H01J *1/88, 19/42;* H01K *1/18*
U.S. Cl. 313—272 6 Claims



1. A multi-filament incandescent lamp adapted to operate at different levels of illumination comprising:

an outer envelope sealed and connected to an electrically conductive screw-in base;

a minor and a major filament;

a three-pillar stem portion for spatially disposing said minor and major filament within said outer envelope, said three-pillar stem portion having an inner and outer lead wires extending through each of the three-pillar portions with one end of each of said outer lead wires appropriately connected to said electrically conductive screw-in base effective to obtain said different levels of illumination, said inner lead wires each having a desired configuration, one of said inner lead wires being common to both of said minor and major filament and having at least two hooked bends for respective clamp connections to one end of each said minor and major filaments, the other two inner lead-in wires each having a hooked bend for a clamped connection to the other respective opposite ends of said minor and major filaments, at least said minor filament being mounted in a transverse manner, each of said transverse filaments being mounted by at least a first and a second of said inner lead wires, at least one of said first and second inner lead wires being shorter than the other, wherein;

said first lead wire has its uppermost crimped connection located at a first predetermined distance relative the upper portion of the three-pillar stem and a first diameter both selected so as to be proportional to the location of a second crimped connection located at a second predetermined distance relative the upper portion of the three-pillar stem and a second diameter both of said second inner lead wire in accordance with the following relationship:

$$\text{second diameter} = \text{first diameter} \times \frac{\text{second distance}}{\text{first distance}} \quad \text{(a)}$$

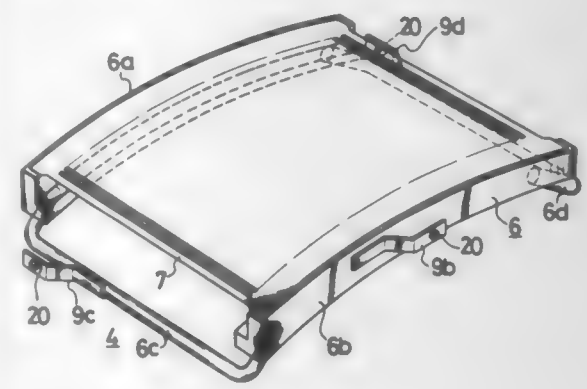
where the quantity (a) has a value in the range of about one-half (½) to about one (1).

4,605,878

SUPPORTING DEVICE FOR AN ELECTRON BEAM LANDING POSITION SELECTING MASK OF A COLOR CATHODE RAY TUBE

Koji Saita, Kanagawa; Kenichi Kanehira, and Tomohisa Uba, both of Tokyo, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed May 23, 1984, Ser. No. 613,384
Claims priority, application Japan, May 31, 1983, 58-81901[U]
Int. Cl.[4] H01J *29/80*
U.S. Cl. 313—406 2 Claims



1. A supporting device for an electron beam landing position selecting mask of a color cathode ray tube having an envelope, a color phosphor screen and an electron gun comprising:

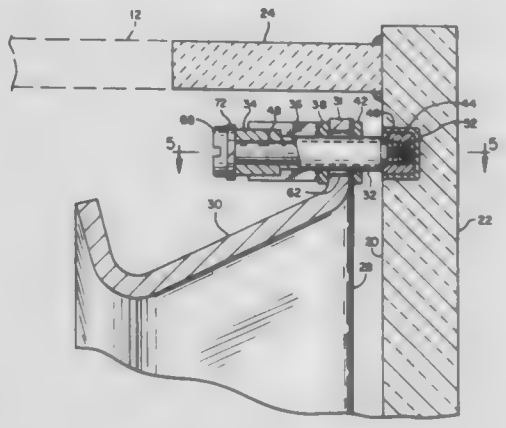
(a) a plurality of conical shaped metal stud pins arranged within an envelope of the color cathode ray tube; and

(b) a plurality of spring members attached to said electron beam landing position selecting mask, said spring members being engaged with said metal stud pins so that said electron beam selecting mask is disposed in opposed relation to said color phosphor screen, said spring members having a polygonal engaging aperture at their end portions with which said metal stud pins are engaged, wherein said stud pins contact with said polygonal engaging apertures at three generally opposed points to thereby determine the position of said electron beam selecting mask, the inner peripheral edge of said polygonal engaging aperture and a closely adjacent peripheral surface of said metal stud pins being welded together at at least one point other than said three contact points.

4,605,879
RIGID CRT SHADOW MASK ASSEMBLY

Dale R. Rath, Gales Creek, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Filed Sep. 14, 1984, Ser. No. 650,393
Int. Cl.[4] H01J *29/07*
U.S. Cl. 313—407 7 Claims



1. A shadow mask/faceplate assembly for a color cathode ray tube, comprising

a faceplate having inner and outer major surfaces,

a shadow mask frame carrying a mask membrane,

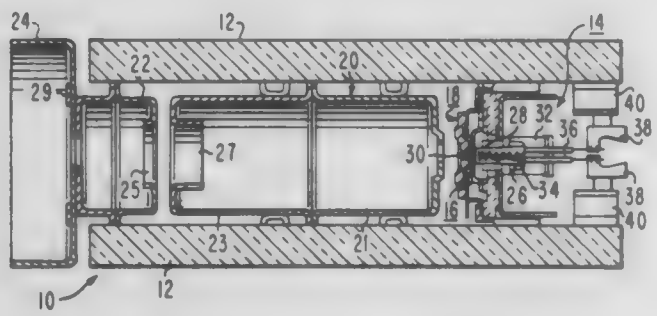
first fastener means fixedly secured to said faceplate at plural locations within the periphery of the inner surface of said faceplate, and

second fastener means in removable, threaded engagement with said first means and secured at corresponding plural locations to said shadow mask frame to rigidly lock said shadow mask/faceplate assembly to reduce vibration.

4,605,880
MULTIBEAM ELECTRON GUN HAVING A CATHODE-GRID SUBASSEMBLY AND METHOD OF ASSEMBLING SAME

Harry E. McCandless, and Sigmund T. Villanyi, both of Lancaster, Pa., assignors to RCA Corporation, Princeton, N.J.

Filed Aug. 22, 1984, Ser. No. 643,175
Int. Cl.[4] H01J *29/46, 29/50*
U.S. Cl. 313—414 5 Claims



1. In a multibeam electron gun comprising at least two spaced successive electrodes held in position from a common electrically-insulating support, one of said electrodes comprising a metal first plate having at least three precisely spaced beam-defining first apertures therein, the other electrode comprising a composite structure including a metal support plate and a metal second plate, said metal support plate having at least three windows therein, said windows being disposed opposite said beam-defining first apertures, said metal second plate having at least three precisely spaced beam-defining second apertures therein, said common electrically-insulating support and said metal support plate each having a pair of reference apertures therein, said metal first plate and said metal second plate each having a pair of alignment apertures therein, wherein the improvement comprises

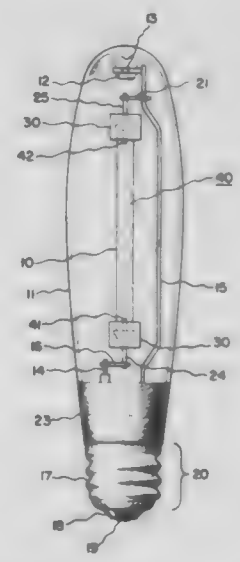
said metal second plate being affixed to said metal support plate and having said beam-defining second apertures disposed within said windows of said metal support plate, and

said pairs of alignment apertures in said metal first plate and in said metal second plate being polygonal-shaped, said metal first plate and said metal second plate having two adjacent sides bordering said polygonal-shaped alignment apertures which are mutually aligned with one another so that said polygonal-shaped alignment apertures are mutually aligned with one another and with said reference apertures in said common electrically-insulating support and in said metal support plate, whereby said beam-defining first apertures in said metal first plate and said beam defining second apertures in said metal second plate are aligned along common axes.

4,605,881
HIGH PRESSURE SODIUM IODIDE ARC LAMP WITH EXCESS IODINE

James T. Dakin, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Nov. 29, 1984, Ser. No. 676,349
Int. Cl.[4] H01J *17/20, 61/18*
U.S. Cl. 313—638 7 Claims



1. In a high pressure sodium iodide arc lamp having an arc tube for containing an arc discharge, an arc tube fill comprising

sodium iodide;

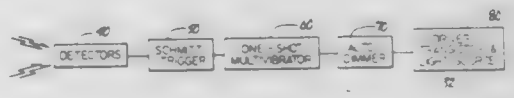
xenon buffer gas in an amount providing a xenon partial pressure in the range of about 100 torr and higher at room temperature; and

iodine in sufficient quantity to reduce, the partial pressure of sodium at the walls of said arc tube to substantially zero during operation of said lamp.

4,605,882
ELECTRONIC JEWELRY SIMULATING NATURAL FLICKERING LIGHT

Frederick P. DeLuca, 3520 Jewel Dr., Ames, Iowa 50010

Filed Jul. 2, 1984, Ser. No. 627,289
Int. Cl.[4] F21L *15/08;* H05B *37/02*
U.S. Cl. 315—158 20 Claims



1. Light-emitting electronic jewelry, comprising,

a base item of jewelry,

an electrically operated light-emission means on said jewelry,

an electrical circuit including means for applying an electrical potential across said light-emission means, thereby to emit light therefrom,

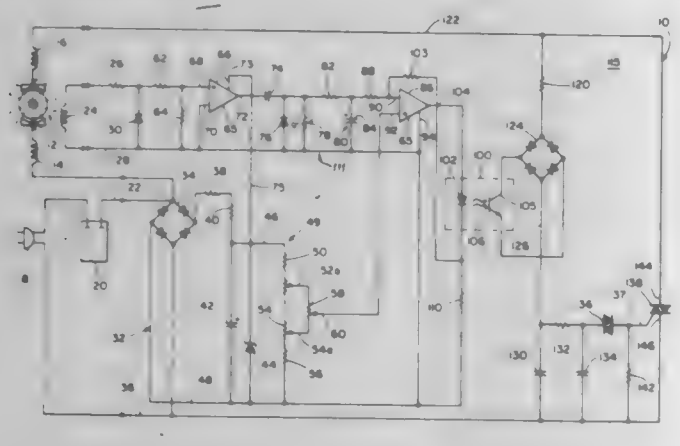
a light sensor electrically connected in said circuit,
means for mounting said light sensor on said jewelry for sensing ambient light intensity, and
circuit element means electrically connecting said light sensor and light emission means, said circuit element means being operative to intermittently interrupt the electrical potential across said light-emission means in response to changes in ambient light intensity sensed by said light sensor.

4,605,883

MOTOR SPEED CONTROL CIRCUIT

James B. Cockroft, Wauwautosa, Wis., assignor to Sunbeam Corporation, Oak Brook, Ill.

Filed Feb. 5, 1982, Ser. No. 345,972
Int. Cl.[4] G05B *5/00*
U.S. Cl. 318—312 **3 Claims**



1. A motor speed control circuit for use in controlling the speed of an electric motor of a household electrical appliance comprising; tachometer means located in proximity with a plurality of blades of a fan in driven connection with an electric motor and producing a tachometer signal when said electric motor rotates said fan blades past said tachometer means, clipping means connected to said tachometer means to produce a clipped tachometer signal having a preselected maximum amplitude, comparator means connected to said clipping means, and producing a rectangular wave signal in response to said clipped tachometer signal received from said clipping means, differentiating means connected to said comparator and receiving said rectangular wave signal therefrom and producing a differentiated pulse signal in response thereto, integrator means connected to said differentiating means and receiving said differentiated pulse signal from said differentiating means and producing a speed signal having an amplitude indicative of a speed of rotation of said electric motor, means for comparing said speed signal to a reference signal and producing an error signal indicative of a difference between said reference signal and said speed signal, isolation means receiving said error signal and producing an isolation error signal in response thereto, timing means receiving said isolation means error signal and producing a signal having a selected amplitude after a period of time proportional to a magnitude of said error signal, and a triac connected to said timing means to receive said selected amplitude signal therefrom and to change state in response thereto to control a flow of electric current received from an external power source through said electric motor of said household electric appliance.

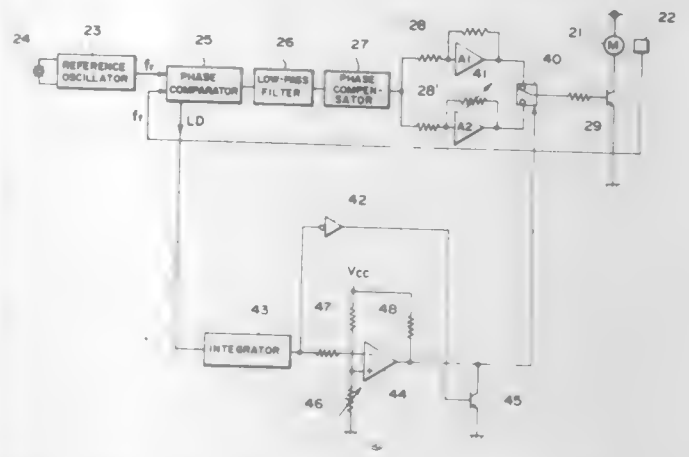
4,605,884

CONTROL UNIT

Ken Miyagi, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 488,176, Apr. 25, 1983, abandoned.
This application Feb. 1, 1985, Ser. No. 697,421
Claims priority, application Japan, Apr. 30, 1982, 57-71383
Int. Cl.[4] H02P *5/00*
U.S. Cl. 318—314 **18 Claims**

12. A control unit for a movable member comprising:
detection means for detecting movement of said movable member and for producing a detection output;
control means having first, second and third control modes for controlling said movable member in response to the detection output of said detection means to regulate an operation of the movable member; and
changing means for providing only the first control mode during the start of said movable member, changing from the first control mode to the second control mode of said



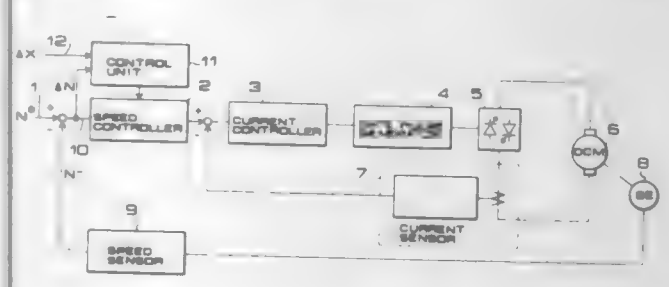
control means when the operation of said movable member reaches a first stage after the start of said movable member and changing from the second control mode to the third control mode when said movable member reaches a second stage after the start of said movable member.

4,605,885

METHOD OF CONTROLLING ROTATION SPEED OF MOTOR

Masamichi Mitsuhashi, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 3, 1985, Ser. No. 751,548
Claims priority, application Japan, Aug. 7, 1984, 59-166724
Int. Cl.[4] H02P *5/00*
U.S. Cl. 318—317 **2 Claims**



1. A method of controlling the rotation speed of a motor comprising the steps of:
detecting a deviation between the rotation speed detected by a speed sensor and a desired rotation speed;
detecting a difference between a detected current flowing in said motor and a current reference signal obtained through a computation executed in a speed controller on the basis of said deviation, and subsequently;
controlling the motor current in accordance with a signal obtained through a computation executed in a current controller on the basis of said difference, thereby maintaining the rotation speed of said motor at a desired value;
comparing a maximum ripple value with said deviation;
setting the gain of said speed controller at a predetermined first value, in response to the comparing step indicating said deviation is greater than said maximum ripple value, to provide for fast response in controlling the motor rotation speed; and
setting the gain of said speed controller at a second value which is lower than said predetermined first value, in response to the comparing step indicating that said deviation is smaller than said maximum ripple value, to stabilize

speed control by avoiding fast adjustments in speed due to ripple.

4,605,886

FEED-DEVIATION PREVENTIVE PATH-CONTROLLED MACHINING METHOD AND APPARATUS

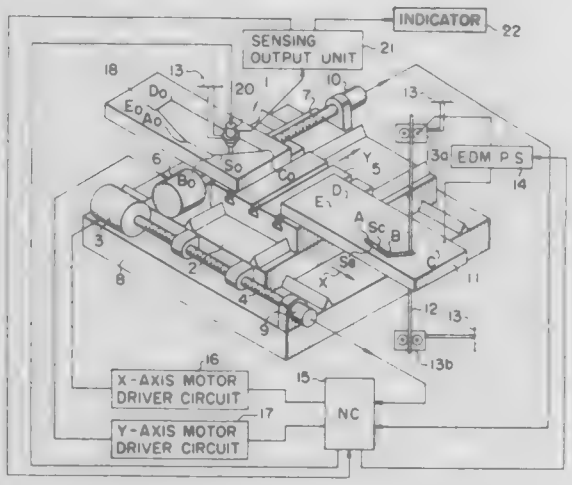
Kiyoshi Inoue, Tokyo, Japan, assignor to Inoue-Japax Research Incorporated, Kanagawaken, Japan

Filed Aug. 31, 1984, Ser. No. 646,623

Claims priority, application Japan, Sep. 2, 1983, 58-160419; Sep. 16, 1983, 58-169395

Int. Cl.[4] G05B *23/02*

U.S. Cl. 318—565 4 Claims



1. A method of machining a workpiece to generate a desired contour therein by means of a numerically path-controlled machine tool having first support means for supporting the workpiece, tool support means supported by second support means for positioning a tool member in machining relationship with the workpiece in a machining operation and drive means drivingly coupled with at least one of the first and second support means and operable in response to a predetermined sequential set of numerical commands for relatively displacing the first and second support means to correspondingly relatively displace the tool member and the workpiece along a prescribed machining feed path such as to generate the desired contour therein in the machining operation, the method comprising the steps of:

disposing and maintaining a record medium in a fixed positional relationship with one of said first and second support means;

in a preliminary operation in advance of said machining operation, disposing and maintaining plotting means in a fixed positional relationship with the other of said first and second supporting means while maintaining the plotting means in plotting engagement with said record medium, and furnishing said drive means with said predetermined sequential set of numerical commands whereby the consequential relative displacement between said first and second support means results in corresponding relative displacement between said plotting means and said record medium to produce a continuous plot equivalent to said prescribed machining feed path on said record medium and in the form of a visible trace; and

in said machining operation, disposing and maintaining sensing means in a fixed positional relationship with said other support means and in sensing engagement with said plotted record medium on said one support means so that said sensing means and said record medium are relatively displaced as said first and second support means are relatively displaced by said drive means furnished with said predetermined sequential set of numerical commands to continuously trace said continuous plot and optically produce an OK signal as long as the commanded relative displacement between the tool member and the workpiece proceeds along said prescribed machining feed path, and detecting a deviation of said commanded relative displacement from said prescribed machining feed path at any point thereon by sensing a disapperance of said OK signal.

4,605,887

ARRANGEMENT FOR CONTROLLING THE SPEED AND POSITIONING OF AN ELECTRIC MOTOR

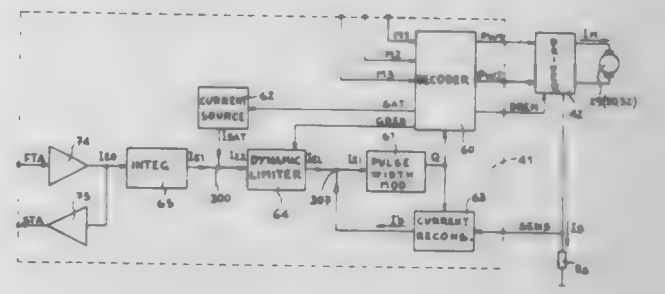
Marcello Boella, Loranzé Alto, and Ferruccio Mariotti, Banchette, both of Italy, assignors to Ing. C. Olivetti & C., S.p.A., Ivrea, Italy

Filed Sep. 1, 1983, Ser. No. 528,655

Claims priority, application Italy, Sep. 1, 1982, 68062 A/82

Int. Cl.[4] G05B *11/18*

U.S. Cl. 318—594 15 Claims



1. An arrangement for controlling the speed and the position of a direct-current electric motor connected to a rotatable part of an office machine, comprising:

encoder means associated with said motor for generating feedback signals indicative of the angular position of said motor and of the actual time (T_p) elapsed for covering a predetermined angular step (pa);

an electric control circuit connected to said motor for selectively shortcircuiting, accelerating and braking said motor; and

a microprocessor connected to said electric control circuit and to said encoder means, said microprocessor comprising memory means for storing the theoretical times (T_R) necessary for covering each angular step (pa) as a function of the full amplitude of the rotation of said motor from an actual position to a desired position, and comparator means for comparing for each angular step (pa) said actual time (T_p) with the corresponding theoretical time (T_R) and consequently generating logical signals which cause said electric control circuit to short-circuit, to accelerate or to brake said electric motor.

4,605,888

STARTING WINDING SWITCHING CIRCUIT FOR SINGLE-PHASE INDUCTION MOTORS

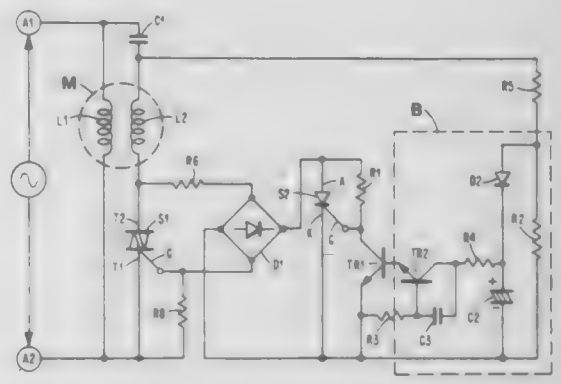
In S. Kim, 134-21, Cheongdam-dong, Apart 10-dong 615, Kangnam-ku, Samig, Rep. of Korea

Filed Feb. 17, 1984, Ser. No. 657,361

Claims priority, application Rep. of Korea, Feb. 21, 1983, 1983 [illegible]

Int. Cl.[4] H02P *1/64*

U.S. Cl. 318—786 2 Claims



1. A switching device for use with a single phase induction motor having a main winding, and a starting winding in series

with a starting capacitor, connected in parallel across first and second supply terminals, said switching device comprising:

a triac having first, second and gate terminals, said triac's first terminal connected to one terminal of the the starting winding, and said triac's second terminal connected to the second supply terminal;

a diode bridge having first and second a.c. terminals and first and second d.c. terminals, said first d.c. terminal outputting a reference potential and said second d.c. terminal outputting a positive rectified potential, said second a.c. terminal connected to said triac's gate terminal;

a first resistor connected between said triac's first terminal and said diode bridge's first a.c. terminal;

a second resistor connected between said triac's second terminal and said triac's gate terminal;

a silicon control rectifier (SCR) having anode, cathode and gate terminals, said SCR's anode terminal connected to said diode bridge's second d.c. terminal, and said SCR's cathode terminal connected to said diode bridge's first d.c. terminal;

a third resistor connected between said diode bridge's first a.c. terminal and said SCR's anode terminal;

a fourth resistor connected between said SCR's anode terminal and said SCR's gate terminal;

a PNP transistor having emitter, collector and base terminals, said PNP transistor's emitter terminal connected to said SCR's gate terminal, and said PNP transistors collector terminal connected to said SCR's cathode terminal;

an NPN transistor having emitter, collector and base terminals, said NPN transistor's collector terminal connected to said PNP transistor's base terminal;

a first capacitor connected between said NPN transistor's collector terminal and said NPN transistor's base terminal;

a fifth resistor connected between said NPN transistor's base terminal and said NPN transistor's emitter terminal;

a diode having anode and cathode terminals;

a sixth resistor connected between said NPN transistor's emitter terminal and said diode's anode terminal;

a second capacitor connected between said PNP transistor's emitter terminal and said diode's anode terminal;

a seventh resistor connected between said PNP transistor's emitter terminal and said diode's cathode terminal; and

an eighth resistor connected between said diode's cathode terminal and the other terminal of the starting winding.

4,605,889

BRUSHLESS TACHOMETER/SYNCHRO

John R. Lanean, Moultonborough, N.H., assignor to Resolvex Corporation, Center Harbor, N.H.

Filed Aug. 21, 1984, Ser. No. 642,992

Int. Cl.[4] H02P *9/14*; G01P *3/46*

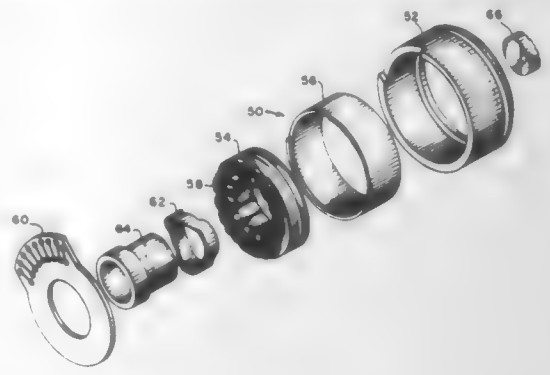
U.S. Cl. 322—61 9 Claims

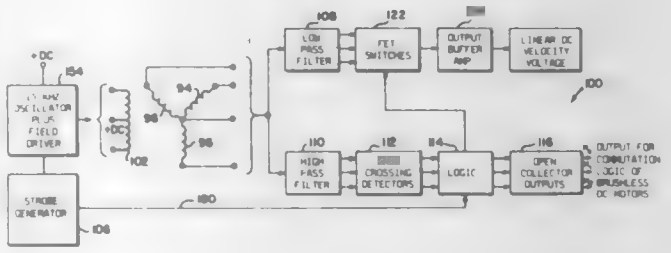
1. A generator, comprising:

means for providing a magnetic field including a constant field and an alternating field having a frequency of alternation;

means for detecting said magnetic field producing a corresponding detected field signal;

an armature for selectively coupling said field according to a physical motion of said armature through a range; and





output means receiving said detected field signal and producing a tachometer output and a position output therefrom.

4,605,890

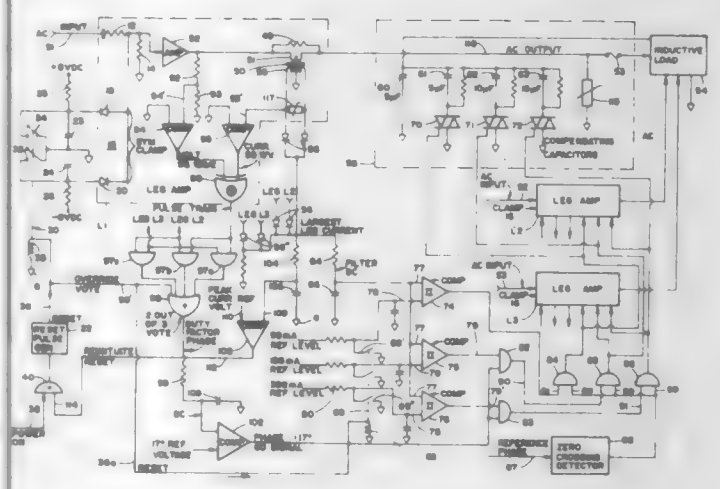
SYNCHRO POWER AMPLIFIER AND CONTROL CIRCUIT FOR AUTOMATICALLY TUNING AN INDUCTIVE LOAD

Dennis F. Ogle, ChulaVista; Charles A. Clark, Jr., Chatsworth, and Ramon H. Aires, Granada Hills, all of Calif., assignors to Vernitron Corporation, Lake Success, N.Y.

Filed Jun. 24, 1985, Ser. No. 747,850

Int. Cl.[4] G05F *1/70*

U.S. Cl. 323—209 9 Claims



1. A power amplifier control circuit for an inductive load driven by a plurality of synchro AC inputs, comprising:

a plurality of leg amplifiers respectively connected between said AC inputs and said load, each of said amplifiers having circuit means for deriving current samples drawn only by said load from said amplifiers;

a multiplicity of capacitors respectively connectable in parallel with said load upstream of said amplifiers; and

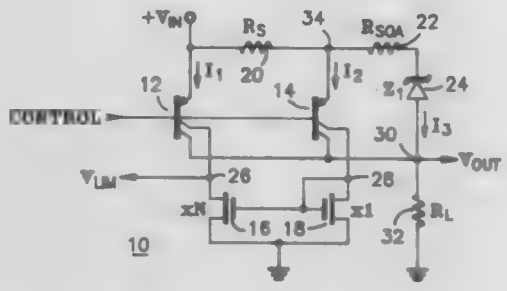
a plurality of switches connected respectively in circuit with said capacitors for selecting one of said capacitors and for connecting said selected capacitor in parallel with said load to compensate for inductance of said load.

4,605,891

SAFE OPERATING AREA CIRCUIT AND METHOD FOR AN OUTPUT SWITCHING DEVICE

Robert S. Wrathall, Tempe, Ariz., assignor to Motorola, Schaumburg, Ill.

Filed Jun. 21, 1984, Ser. No. 622,894
Int. Cl.[4] G05F *1/46;* H03K *5/08*
U.S. Cl. 323—313 16 Claims



1. A safe operating area circuit in combination with a current sensing circuit coupled to an input voltage line and having a control line input, said combination for providing a current limited output on an output voltage line in response thereto, comprising:

an output switching device having first, second and third terminals thereof, said first terminal being coupled to said input voltage line, said second terminal being connected to said control input line and said third terminal being connected to said output voltage line; and

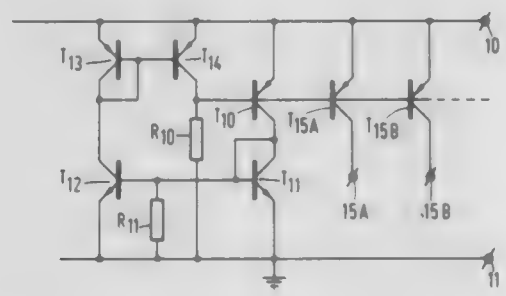
means coupling said input and output voltage lines for selectably controlling a level of said current on said output voltage line.

4,605,892

CURRENT-SOURCE ARRANGEMENT

Evert Seevinck, Delden, and Adrianus J. M. Van Tuijl, Nijmegen, both of Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 26, 1985, Ser. No. 705,763
Claims priority, application Netherlands, Feb. 29, 1984, 8400636
Int. Cl.[4] G05F *3/20*
U.S. Cl. 323—315 7 Claims



1. A current-source circuit operable between two power supply terminals, said power supply terminals being adapted to be connected to a supply voltage, comprising in combination

a first resistor of a predetermined resistance value,

a first transistor having a collector, and a base-emitter junction connected in series with said first resistor, and wherein a base-emitter voltage appears across said base-emitter junction, the series combination of said first resistor and said base-emitter junction being connected across said power supply terminals,

first current mirror circuit means having an input thereof coupled to the collector of said first transistor, and having a first current multiplication factor,

said first current mirror circuit means having

a second transistor, said second transistor having a base emitter junction and a collector, a low-impedance connection existing between the base and the collector of said second transistor, and

a third transistor having a collector and a base-emitter junction, said base emitter junction being connected in parallel with the base-emitter junction of said second transistor,

a second resistor being connected in parallel with the base-emitter junction of said second transistor,

said second and third transistors, and said second resistor being connected to one of said terminals, said first transistor defining a saturation voltage, and

second current mirror circuit means connected to the other of said power supply terminals, having an input thereof coupled to the collector of said third transistor, having an output thereof coupled to the base of said first transistor, and having a second current multiplication factor,

said second resistor having a resistance value substantially equal to the quotient of said first resistor value, and the product of (a) the base-emitter voltage of said first transistor, (b) said first current multiplication factor and (c) said second current multiplication factor,

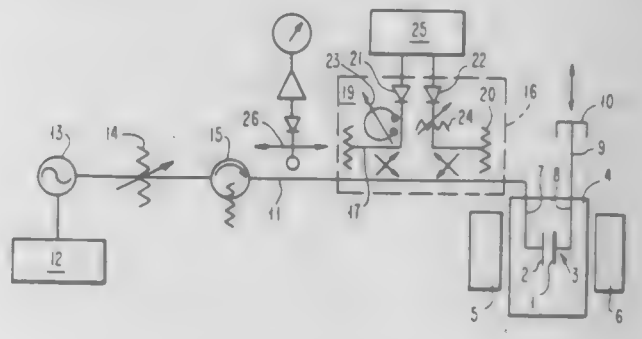
whereby said current-source circuit may supply a current substantially proportional to supply voltages which exceed a voltage substantially equal to the base emitter voltage plus the saturation voltage.

4,605,893

CONTACTLESS MEASUREMENT OF ELECTRICAL PROPERTIES OF WAFER SHAPED MATERIALS

Norman Braslau, Katonah, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 6, 1984, Ser. No. 647,785
Int. Cl.[4] G01R *27/04*
U.S. Cl. 324—58.5 B 13 Claims



1. Electrical measurement apparatus comprising in combination

a waveguide having a source of microwave power applied at one portion thereof, and a short circuit termination at a second separated portion thereof,

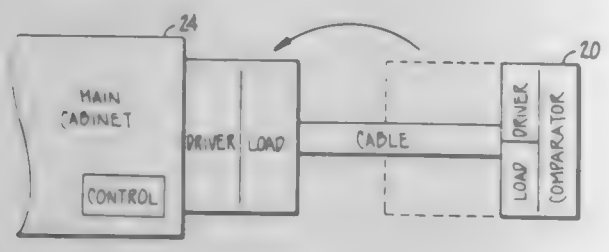
means for insertion of a material with substrate to be measured across the entire cross section of said waveguide, said means being positioned at a location in said waveguide sufficiently adjacent to said short circuit termination to compensate for the reactance of said substrate and between said short circuit and said source of microwave power, said insertion means having means for compensating for a change in waveguide impedance produced by said insertion means, and

microwave relfection comparison means located on said waveguide at a position intermediate the location of said insertion means and said source of microwave power.

4,605,894
HIGH DENSITY TEST HEAD

Gerald Cox, Fremont, and Bill DeHaven, Los Altos, both of Calif., assignors to GenRad Semiconductor Test, Inc., Milpitas, Calif.

Filed Aug. 29, 1983, Ser. No. 527,214
Int. Cl.⁴ G01R *31/26, 1/02, 17/02*
U.S. Cl. 324—73 R **12 Claims**



1. A method of configuring a system for automatically testing electronic assemblies wherein control means provide signals to control driver, load, and comparison circuitry, which circuitry supply test signals to and receive response signals from an electronic assembly under test and evaluate the received response signals, and further wherein the driver and load circuitry consume a first total amount of power, the method comprising the steps of

a. positioning the control means in a main cabinet;

b. partitioning the driver and load circuitry into a first portion which dissipates substantially all of the first total amount of power and a second portion which includes the remainder of the driver and load circuitry;

c. positioning substantially all of the first portion of the driver and load circuitry in the main cabinet;

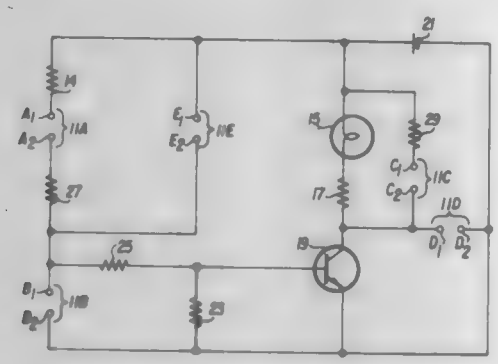
d. positioning the remainder of the first portion and all of the second portion of the driver and load circuitry in a test head, wherein the test head supports the electronic assembly under test, couples the test signals to the electronic assembly under test, and receives the response signals from the electronic assembly under test; and

e. coupling the second portion of the load and driver circuitry in the test head to the first portion of the load and driver circuitry in the main cabinet, whereby the amount of power dissipated in the test head is minimized.

4,605,895
DOMESTIC ELECTRICAL TESTER

Alan J. C. Park, Waterside Cottage, Bowden La., Chapel en le Frith, Stockport SK12.6QF, England

Filed Mar. 9, 1984, Ser. No. 587,968
Int. Cl.⁴ G01R *19/14*
U.S. Cl. 324—133 **11 Claims**



1. An electrical testing device, comprising:

at least a first, second and third measuring terminal pairs;

circuit means connected to said measuring terminal pairs for measuring a respective electrical parameter by means of each of said terminal pairs, said circuit means operating differently depending on which of said measuring terminal pairs are used for a measurement;

indicating means connected to said circuit means for indicating the result of a measurement using one of said measuring terminal pairs;

said circuit means being responsive to:

(a) said first pair of measuring terminals to energize said indicating means when an applied voltage thereat is in a first predetermined voltage range;

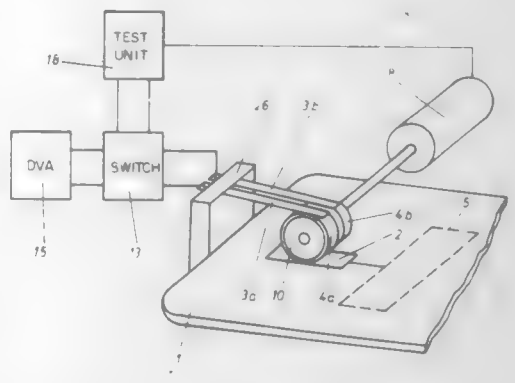
(b) said second pair of measuring terminals to energize said indicating means when an applied DC voltage thereat is in a second predetermined voltage range; and,

(c) said third pair of measuring terminals to energize said indicating means when a resistance applied across said third pair of measuring terminals is below a first predetermined value.

4,605,896
METHOD OF CONTACTING THE GALVANIC CONTACTS OF AN IDENTIFICATION CARD WITH AN EMBEDDED IC-MODULE

Werner Obrecht, Wielenbach, Fed. Rep. of Germany, assignor to GAO Gesellschaft für Automation und Organisation mbH, Fed. Rep. of Germany

Continuation of Ser. No. 261,548, May 7, 1981, abandoned. This application Mar. 13, 1985, Ser. No. 710,944
Claims priority, application Fed. Rep. of Germany, May 20, 1980, 3019206
Int. Cl.⁴ G01R *1/06, 31/02;* **G07F** *1/06;* **G06K** *7/01*
U.S. Cl. 324—158 F **9 Claims**



1. A method for establishing an electrical connection suitable for communicating a data signal between contact elements in a receiving station and contact areas provided on the surface of a member placed in the receiving station in proximity with the contact elements, said method comprising the steps of:

applying the contact elements to the contact areas for purposes of establishing an electrical connection suitable for communicating the data signal between the contact elements and contact areas;

thereafter retaining the contact elements at the points of initial application to the contact areas irrespective of whether the electrical connection exists or not;

initiating a test employing electrical phenomena associated with a signal other than the data signal for determining whether an electrical connection suitable for communicating the data signal exists between the contact elements and contact areas at the points of application of the contact elements;

determining by means of said other signal phenomena whether a suitable electrical connection for communicating the data signal exists at said points;

initiating a cleaning of the contact areas at said points if a suitable electrical connection does not exist, while simultaneously carrying out further testing for the existence of a suitable electrical connection;

terminating the cleaning of the contact areas when the existence of a suitable electrical connection between the contact elements and the contact areas is detected by means of said electrical phenomena associated with said other signal; and

commencing communication of the data signal between the contact elements and contact areas at the points of initial

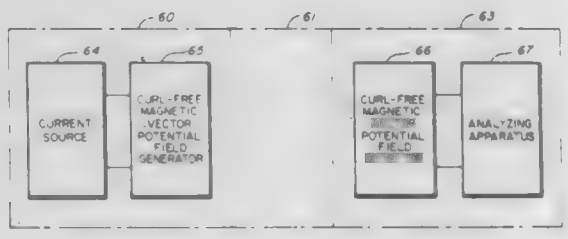
application of the contact elements to the contact areas when a suitable electrical connection exists.

4,605,897

APPARATUS AND METHOD FOR DISTANCE DETERMINATION BETWEEN A RECEIVING DEVICE AND A TRANSMITTING DEVICE UTILIZING A CURL-FREE MAGNETIC VECTOR POTENTIAL FIELD

Raymond C. Gelinas, Concord, Mass., assignor to Honeywell Inc., Minneapolis, Minn.

Continuation of Ser. No. 198,326, Oct. 20, 1980, abandoned.
This application Feb. 13, 1984, Ser. No. 579,846
Int. Cl.[4] G01B *7/14;* G01R *35/00, 33/00*
U.S. Cl. 324—207 **9 Claims**



1. A method for determining distance between a radiation transmitting apparatus and a radiation detection apparatus comprising the steps of:

a. generating a curl-free magnetic vector potential field having preselected characteristics by said transmitting apparatus;

b. calibrating output signals generated by said detection apparatus in response to detection of a magnetic vector potential field having predetermined characteristics as a function of distance between radiation transmitting apparatus and said radiation detecting apparatus; and

c. measuring an output signal of said detecting apparatus when said transmitting apparatus is generating a curl-free magnetic vector potential field with said preselected characteristics at an unknown distance from said receiving apparatus, said unknown distance being determined by comparison of said output signal resulting from a curl-free magnetic vector potential field having said predetermined characteristics and said output signal resulting from a curl-free magnetic vector potential field having said preselected characteristics, wherein said predetermined characteristics and said preselected characteristics have a known relationship.

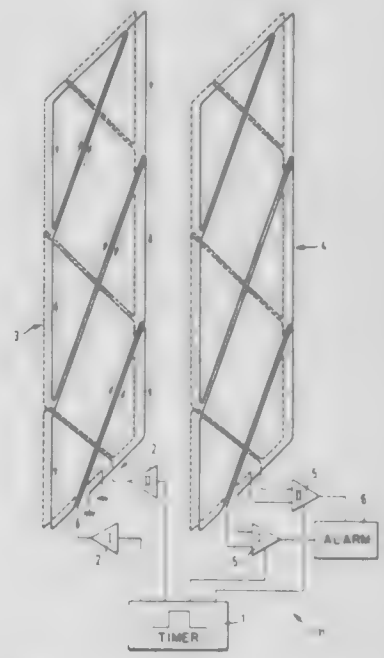
4,605,898

PULSE FIELD METAL DETECTOR WITH SPACED, DUAL COIL TRANSMITTER AND RECEIVER SYSTEMS

Kari T. J. Aittoniemi; Erkki S. Kiuru, both of Espoo; Aatu V. K. Lappalainen, Helsinki, and Kalevi Savolainen, Espoo, all of Finland, assignors to Outokumpu Oy, Helsinki, Finland

Continuation of Ser. No. 439,394, Nov. 4, 1982, abandoned. This application Jun. 27, 1985, Ser. No. 750,054
Claims priority, application Finland, Nov. 6, 1981, 813502
Int. Cl.[4] G01R *33/12;* G08B *13/24*
U.S. Cl. 324—232 **5 Claims**

1. An apparatus for detecting metal objects, the said apparatus comprising a transmitter coil system and a receiver coil system spaced and separated from said transmitter coil system to allow the passage of objects to be detected between the two systems, the transmitter coil system consisting of at least two coils for creating divergent primary fields which change their direction and size according to their location, which primary fields in turn create eddy currents in an object moving within the said primary fields, whereafter the secondary field created in the object induces a signal in the receiver coil system, as well as means for amplifying and processing the signal, wherein the transmitter coil system is formed of at least two planar coils, each planar coil comprising a plurality of planar loops extending in a given direction and encompassing a predetermined area, said planar coils being juxtaposed, one on top of the other, so as to lie substantially within the same plane in said predetermined area, with the loops of one of said coils being in mirror image relationship with respect to the loops of the other of said coils so that the magnetic fields created by the coils are divergent and that the receiver coil system is also comprised of the same number of coils as the transmitter coil system which



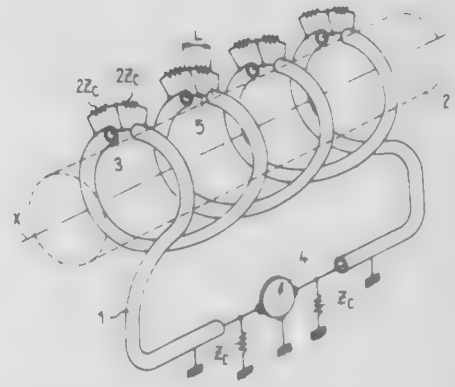
coils are placed with respect to each other in a similar relationship to that of the coils of the transmitter coil system, means for alternately energizing said at least two transmitter coils, and means synchronized with said energizing means for alternately sampling signals induced in said receiver coils and feeding said sampled signals to said means for amplifying and processing the signal.

4,605,899

MAGNETIC FIELD SENSOR USING A COAXIAL LINE WOUND INTO A COIL

Grégoire Eumurian, Argenteuil, and Jean-Pol Levan, Clamart, both of France, assignors to Thomson CSF, Paris, France

Filed Oct. 11, 1983, Ser. No. 541,004
Claims priority, application France, Oct. 15, 1982, 82 17296
Int. Cl.[4] G01R *33/02;* H01F *5/02, 15/04*
U.S. Cl. 324—258 **7 Claims**



1. A magnetic field sensor comprising:

a coaxial, constant characteristic impedance line having an internal conductor and an external conductor, said characteristic impedance being resistive, said line being terminated at two ends and being formed into a plurality of turns constituting a coil with each turn having a portion wherein the external conductor is removed generating an impedance break, said removed portions being regularly positioned along said line at intervals corresponding to the length of a turn, said coil forming a regular helix around a straight cylinder and said portions being aligned parallel to the axis of said cylinder;

auxiliary current measuring means connected between said ends of said impedance line for measuring the current induced in said impedance line,

first resistive matching means, connected to the said line ends respectively between said internal and external conductors for preserving said constant characteristic impedance value at said line ends connected to said measuring means, and

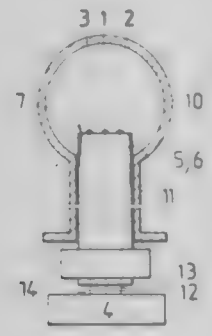
second resistive matching means connected between said internal and external conductors at each of said portions for compensating said impedance break and preserving said constant characteristic impedance value in said portions.

4,605,900

ELECTRODE SYSTEM FOR VOLTAMETRIC MEASUREMENTS

Juhani Moilanen, and Markku Pietikäinen, both of Kajaani, Finland, assignors to Kajaani OY, Finland

Filed May 11, 1983, Ser. No. 493,459
Claims priority, application Finland, May 12, 1982, 821670
Int. Cl.[4] G01N *27/00*
U.S. Cl. 324—439 **10 Claims**



1. An electrode system for voltametric measurements of oxidative and reductive compounds in aqueous solutions, comprising:

a working electrode,

a counter-electrode,

a reference electrode, and

a single pick-up, each of said three electrodes being mounted in said pick-up,

each of said electrodes being connected to a voltametric measuring apparatus,

said reference electrode being a metal electrode,

wherein a constant voltage is maintained between said reference and working electrodes by said voltametric measuring apparatus,

wherein said pick-up further comprises a frame part in contact with the aqueous solution being measured, said frame part made of insulating material, said electrodes at least partly projecting through the surface of the frame part so as to be in contact with the solution being measured.

4,605,901

FREQUENCY-VOLTAGE CONVERTER

Yasunori Kobori; Isao Fukushima; Hideo Nishijima; Yoshinori Masuda, all of Katsuta, and Norihisa Yamamoto, Gunma, all of Japan, assignors to Hitachi, Ltd. and Hitachi Microcomputer & Engineering, Ltd., both of Tokyo, Japan

Filed Apr. 20, 1983, Ser. No. 486,827
Claims priority, application Japan, Apr. 21, 1982, 57-65280
Int. Cl.[4] H03K *9/06*
U.S. Cl. 328—140 **6 Claims**

1. A frequency-voltage converter for a motor speed control system comprising:

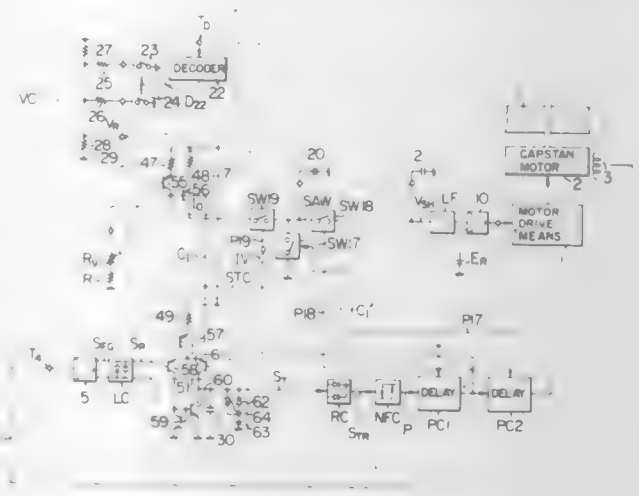
frequency signal generating means for generating a frequency signal corresponding to the speed of a motor driven by a motor driving means;

pulse generating means connected to receive the output of said frequency signal generating means for generating pulse signals in response to said frequency signal;

means connected to receive the output of said pulse generating means for generating a saw-tooth wave signal in response to said pulse signals and having a slope dependent upon an applied electric current;

sample-and-hold means connected to said saw-tooth wave signal generating means for sampling and holding a voltage of said saw-tooth wave signal;

means connected to said sample-and-hold means for comparing said sampled and held voltage of said saw-tooth wave signal with a reference voltage and for amplifying a difference between said sampled and held voltage and said reference voltage to output said amplified difference to said motor driving means;



a current source for supplying to said saw-tooth wave signal generating means an electric current which is dependent on the value of an applied supply voltage, said current source including a fixed resistor and a variable resistor to adjust the output current of said current source; and

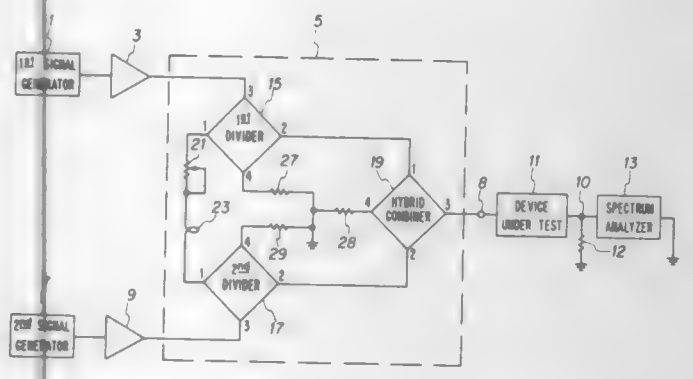
supply voltage changing means connected to said current source for supplying a voltage to said fixed and variable resistor and for changing the value of said supply voltage in accordance with an applied signbal indicating a desired speed of said motor.

4,605,902

HYBRID JUNCTION SIGNAL COMBINER

Timothy A. Harrington, Cedar Rapids, Iowa, assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Sep. 3, 1982, Ser. No. 414,751
Int. Cl.[4] H01P *5/12, 5/22;* G06G *7/12*
U.S. Cl. 328—158 **6 Claims**



1. A signal combiner for providing isolation between two signal sources that provide a first signal and a second signal, the combiner comprises:

a first divider means for dividing the first signal into a third and fourth signal;

a second divider means for dividing the second signal into a fifth and sixth signal;

cancellation means for cancelling the third and fifth signals and any leakage from the fourth and sixth signals; and

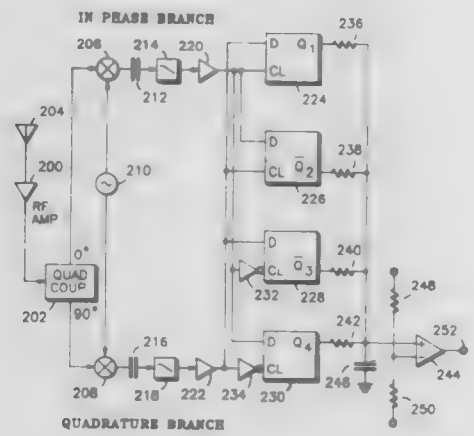
a first combiner means for combining the fourth signal with the sixth signal to obtain a seventh signal that is the combination of the first and second signal.

4,605,903

FSK DEMODULATOR WITH HIGH NOISE IMMUNITY DIGITAL PHASE DETECTOR

John M. Ihle, Lake Worth, Fla., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Nov. 7, 1985, Ser. No. 795,941
Int. Cl.[4] H03D *3/18*
U.S. Cl. 329—50 **7 Claims**



1. A detector, for use with means for receiving, splitting, phase shifting, and mixing with a local oscillator signal a received modulated signal to produce binary in-phase and binary quadrature phase signals respectively at in-phase and quadrature phase output, said detector comprising in combination:

first flip flop means, connected to said quadrature phase output, for clocking said quadrature phase signal on the leasing edge of said in-phase signal;

second flip flop means, connected to said in-phase output, for clocking said in-phase signal on the leading edge of said quadrature phase signal;

third flip flop means, connected to said quadrature phase output, for clocking said quadrature phase signal on the trailing edge of said in-phase signal;

fourth flip flop means, connected to said in-phase output, for clocking said in-phase signal on the trailing edge of said quadrature phase signal; and

averaging means, connected to said first, second, third, and fourth flip flop means, for averaging the output signals of said first, second, third, and fourth flip flop means.

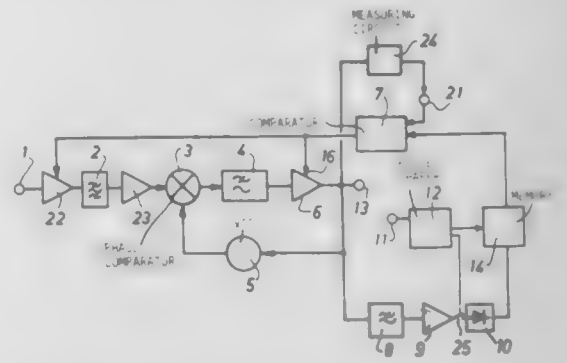
4,605,904

PHASE LOCKED LOOP FREQUENCY DEMODULATOR HAVING AN ADJUSTABLE BANDWIDTH

Mohammed Hajj-Chehade, Asnieres, France, assignor to U.S. Philips Corporation, New York, N.Y.

Filed May 8, 1985, Ser. No. 731,815
Claims priority, application France, May 15, 1984, 84 07500
Int. Cl.[4] H03D *3/00*
U.S. Cl. 329—50 **6 Claims**

1. A frequency demodulator whose bandwidth can be adjusted during operation, used in a TV picture receiver receiving inter alia synchronizing signals, this demodulator being of the phase control loop type formed in essence by a phase comparator, a filter and a voltage-controlled oscillator, characterized in that it comprises a sampling circuit for taking a sample of the demodulated signal from the output of the demodulator at the start of a synchronizing signal, the sampling circuit comprising a rectifier for rectifying said sample signal, a comparator for comparing the rectified sample signal with a predetermined d.c. voltage, and in that the output of this comparator which produces a correction signal is coupled to a



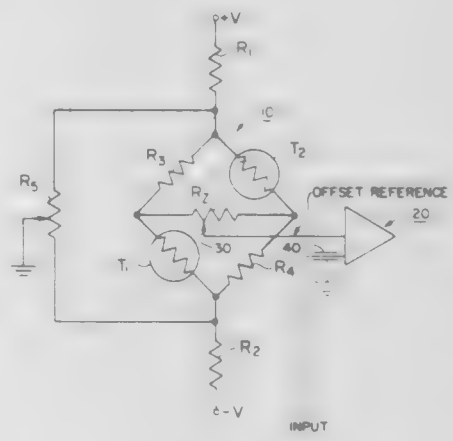
variable gain input of a variable-gain amplifier included in the control loop.

4,605,905

AMPLIFIER INPUT CIRCUITRY WITH COMPENSATION FOR PYROELECTRIC EFFECTS

Edward E. Aslan, Plainview, N.Y., assignor to The Narda Mircowave Corporation, Hauppauge, N.Y.

Filed Nov. 1, 1984, Ser. No. 667,324
Int. Cl.[4] H03F *1/02*
U.S. Cl. 330—9 **2 Claims**



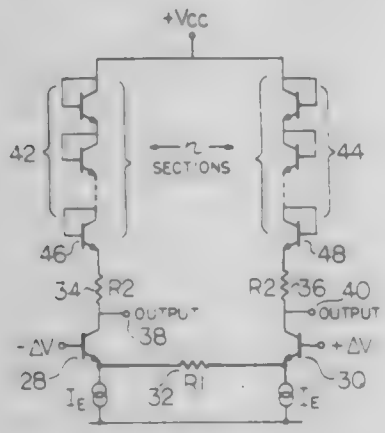
1. A high gain high impedance direct-current amplifier circuit including input circuitry with feedthrough capacitors subject to temperature related pyroelectric effects, comprising a bridge circuit having temperature responsive impedances in one set of opposing legs and fixed impedances in the second set of opposing legs, a potentiometric device connected across one diagonal of said bridge having control means for producing a zero reference voltage between those appearing across said one diagonal, a direct-current reference voltage connected across the other diagonal of said bridge, wherein means for establishing the magnitude of said direct-current reference voltage includes: first and second direct voltage sources of opposite polarity, impedances connecting said sources to opposite ends of said other diagonal of said bridge, variable impedance means connected across said other diagonal of said bridge and adjustable to set the voltage at either end thereof to a direct voltage level between said first and second sources, said control means yielding an offset voltage for application to said amplifier that compensates for said pyroelectric effects as the ambient temperature changes.

4,605,906

DIFFERENTIAL PAIR AMPLIFIER ENHANCEMENT CIRCUIT

Allen Miller, London, England, assignor to Gould Instruments, Ltd., Essex, England

Filed Jan. 28, 1985, Ser. No. 695,668
Int. Cl.[4] H03F *3/45, 1/32*
U.S. Cl. 330—149 11 Claims



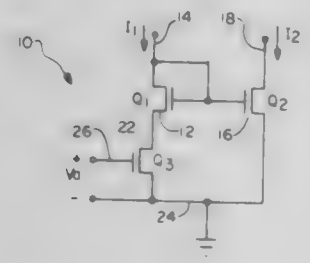
1. An enhanced differential pair amplifier circuit comprising:
first and second common lines, said first common line being at a different potential than said second common line;
first and second input transistors, each input transistor having a base, emitter, and collector, at least one of said bases being provided to receive a voltage input signal;
first and second current sources, said first current source connected between the emitter of said first input transistor and first common line, said second current source being connected between the emitter of said second transistor and first common line;
a gain-defining emitter degeneration transistor resistor connected between the emitters of said first and second transistors;
first and second diode means for linearity compensation, each diode means having first and second ends, said first end of said first diode means being connected to the collector of said first input transistor and said first end of said second diode means being connected to the collector of said second input transistor, said second ends of said first and second diode means being connected to said second common line such that said diode means are forward biased;
wherein each of said diode means comprises n diodes, where n is the integral gain of the amplifier; and
output signal means for taking an output signal from the collectors of said first and second input transistors.

4,605,907

PRECISELY ADJUSTABLE VOLTAGE CONTROLLED CURRENT MIRROR AMPLIFIER

Bruce D. Rosenthal, Sunnyvale, and Richard L. Gray, Palo Alto, both of Calif., assignors to Teledyne Industries, Inc., Mountain View, Calif.

Filed May 20, 1985, Ser. No. 735,652
Int. Cl.[4] H03F *3/45*
U.S. Cl. 330—257 26 Claims



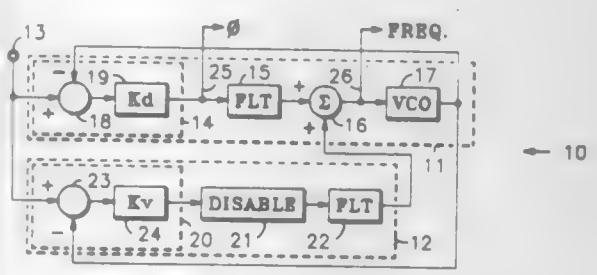
1. An adjustable current mirror circuit operating from a reference voltage level and responsive to a balance control signal comprising:
(a) first means for providing a first current path, said first means including current reference means for providing a current level control signal corresponding to the current level of said first current path with respect to a bias voltage level offset from said reference voltage level;
(b) second means for providing a second current path, said second means including current control means for controlling the current level of current through said second current path, said current control means being responsive to said current level control signal with respect to said reference voltage level; and
(c) third means, provided in series with said current reference means in said first current path, for adjusting said current level control signal by providing said bias voltage level variably in response to said balance control signal.

4,605,908

DISABLE CIRCUIT FOR A PHASE LOCKED LOOP DISCRIMINATOR CIRCUIT

Christopher D. Broughton, Mesa, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 23, 1985, Ser. No. 812,555
Int. Cl.[4] H03L *7/06*
U.S. Cl. 331—8 22 Claims



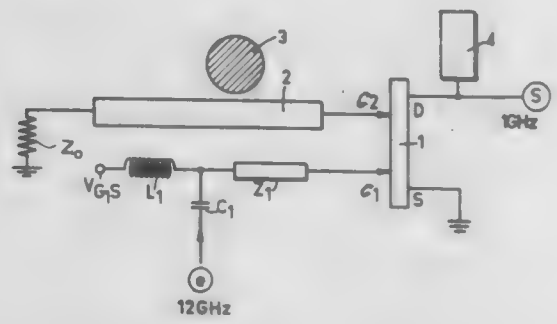
1. A disable circuit for use in a phase locked loop discriminator circuit, said phase locked loop discriminator circuit comprising (a) phase locked loop means for providing fine tuning in said phase locked loop discriminating circuit, said phase locked loop means having (i) a signal input coupled to a signal input of said phase locked loop discriminator circuit, (ii) an output, (iii) a fine adjusting input being coupled to said output of said phase locked loop means, and (iv) a course adjusting input, and (b) discriminator means for providing course tuning of said phase locked loop discriminating circuit said discriminator means having, (i) a signal input coupled to said signal input of said phase locked loop discriminator circuit, (ii) an adjusting input coupled to said output of said phase locked loop means, and (iii) an output, said disable circuit comprising:
a first resistor having a first node coupled to said output of said discriminator means, and a second node;
an operational amplifier having an input of a first polarity coupled to said second node of said first resistor, an input of a second polarity coupled to a ground, and an output coupled to said course adjusting input of said phase locked loop means;
a first diode having an cathode coupled to said output of said operational amplifier, and a anode;
a second diode having a anode coupled to said anode of said first diode and having an cathode coupled to said input of said first polarity of said operational amplifier;
a third diode having a anode coupled to said output of said operational amplifier and an cathode;
a fourth diode having a anode coupled to said cathode of said second diode, and an cathode coupled to said cathode of said third diode;
a first current generator having an output coupled to said anodes of said first and second diodes; and
a second current generator having an input coupled to said cathodes of said third and fourth diodes.

4,605,909

DUAL GATE FET OSCILLATOR MIXER

Christos Tsironis, Montgeron, France, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 28, 1982, Ser. No. 343,147
Claims priority, application France, Jan. 28, 1981, 81 01618
Int. Cl.[4] H03B 5/18
U.S. Cl. 331—96 6 Claims



1. A self-oscillating circuit arrangement comprising:

(a) a dual-gate field effect transistor including first and second gate electrodes, a drain electrode and a source electrode;

(b) a first input circuit comprising an input terminal, an input impedance electrically connected between said input terminal and the first gate electrode, and means for applying a bias voltage to said first gate electrode;

(c) a second input circuit comprising a strip-type transmission line having one end electrically connected to the second gate electrode, said transmission line being terminated in a load having an impedance equal to the characteristic impedance of the line and being electromagnetically coupled to a dielectric resonator having a predetermined resonant frequency;

(d) an output terminal coupled to the drain electrode; and

(e) means electrically connected to the source electrode for referencing said electrode to a predetermined voltage;

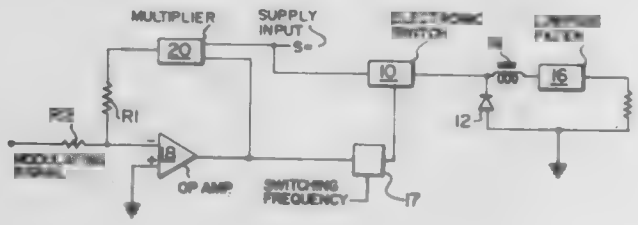
said circuit arrangement producing at the output terminal an output signal having a difference frequency equal to the difference between the frequency of an input signal applied to the input terminal and the resonant frequency.

4,605,910

AM PULSE DURATION MODULATOR

Dennis H. Covill, Tantallon, Canada, assignor to Nautical Electronic Laboratories Limited, Hacketts Cove and Tantallon Halifax Co., Nova Scotia, both of, Canada

Filed Jun. 28, 1984, Ser. No. 625,694
Int. Cl.[4] H03K 7/00
U.S. Cl. 332—9 R 12 Claims



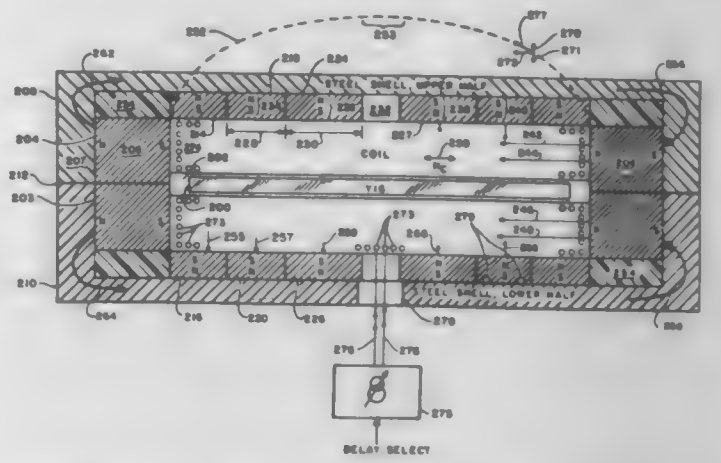
1. A circuit for producing a switching modulating signal from a modulating signal for controlling a pulse duration modulator of the type which switches a supply voltage to produce a modulated signal, said circuit including means to produce the reciprocal of the supply voltage and means to combine the reciprocal of the supply voltage with said modulating signal to produce said switching modulating signal whereby the modulated signal is substantially independent of fluctuations in the supply voltage.

4,605,911

MAGNETIC BIAS AND DELAY LINEARITY IN A MAGNETOSTATIC WAVE DELAY LINE

Korda K. Jin, Brea, Calif., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Oct. 24, 1984, Ser. No. 664,193
Int. Cl.[4] H03H 9/38
U.S. Cl. 333—144 21 Claims



1. Controllable laminar magnetic flux generating apparatus comprising:

first and second sources of magnetomotive force located at two displaced points along an axis and polarized to establish magnetic field flux lines starting at said first source, tending to extend along said axis in an outward curving line pattern, having flux line components both parallel and perpendicular to said axis and ending at said second source;

a third distributed element controllable source of magnetomotive force located in lengthwise dispersion along said axis between said first and second sources for subtractively and additionally modulating the strength of said first and second source magnetic field flux lines in response to a control signal;

means located along said axis for diverting said magnetic field flux lines from said curving line pattern to a pattern of flux lines extending parallel to said axis between said first and second sources; and

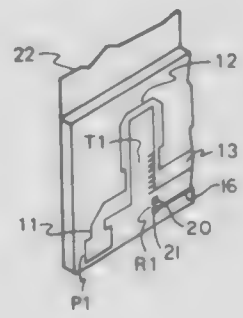
a cavity receptacle concentric with said axis and communicating therealong between said first and second sources.

4,605,912

CONTINUOUSLY VARIABLE PHASE SHIFTING ELEMENT COMPRISED OF INTERDIGITATED ELECTRODE MESFET

Ronald J. Naster; John A. Windyka, both of Liverpool, and Allen R. Wolfe, Sauquoit, all of N.Y., assignors to General Electric Company, Syracuse, N.Y.

Continuation-in-part of Ser. No. 327,133, Dec. 3, 1981, abandoned. This application Apr. 26, 1984, Ser. No. 604,192
Int. Cl.[4] H03H 11/20
U.S. Cl. 333—164 24 Claims



1. A variable phase shifting element for electrical signals

operable over a selected band of frequencies and suited to integrated fabrication, comprising:

A. a first transmission line for interconnection to electrical signals;

B. a variable resistance Field Effect Transistor (FET) having two principal electrodes and a gate electrode for control of conduction between said principal electrodes, the net impedance of said FET being primarily capacitively reactive when said gate is biased off and primarily resistive when said gate is biased on over said band, a first principal electrode of said FET being connected to said first transmission line;

C. a second transmission line exhibiting an inductive reactance over said band, said second transmission line being connected between said principal electrodes to form with said FET a parallel combination;

D. a third transmission line of interconnection, connected to the second principal electrode of said FET, the electrical signals transmitted through said phase shifting element, when said FET is maximally conductive, passing substantially undivided through said FET to effect a first phase shift; and when said FET is turned off, said signals dividing at said parallel combination to effect a second phase shift differing from said first phase shift; and

E. means for applying a control potential to said gate to cause said FET to assume a selected conductivity limited by said off state and said maximally conductive, on state, to effect a desired phase shift.

4,605,913

TRANSVERSAL FILTER HAVING AN ANALOG SHIFT REGISTER

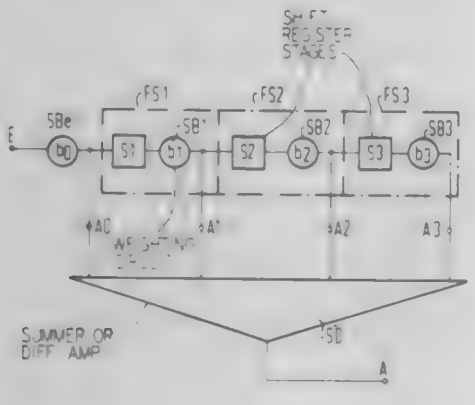
Hans-Joerg Pfleiderer, Zorneding, and Karl Knauer, Kirchseon, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jun. 29, 1983, Ser. No. 508,873

Claims priority, application Fed. Rep. of Germany, Sep. 27, 1982, 3235678

Int. Cl.⁴ H03H *15/02*

U.S. Cl. 333—166 **2 Claims**



1. A transversal filter comprising:

a filter input for receiving an input signal;

a shift register including a plurality of serially-connected stages including an input stage connected to said filter input and a plurality of parallel outputs each from a separate stage;

signal combining means connected to said plurality of parallel outputs for combining signals appearing at said outputs into an output signal representing a filtered input signal; and

a plurality n of weighting devices each associated with and connected to a respective shift register stage of a group n of said stages and serially interconnecting with the next succeeding stage and providing at each serial interconnection taps constituting said plurality of parallel outputs, said weighting devices including an input weighting device providing a weighting coefficient b_0 connected to the input stage and the remainder of weighting devices connected to the first through the nth stages of said group respectively providing weighting coefficients b_1–b_n determined such that the filtered signal meets the system function

$$H(z)=b_0\cdot(1+b_1\cdot z(1+b_2\cdot z\ (\ .\ .\ .\ (1+b_n\cdot z)))),$$

where z is the signal delay time through a single stage of said shift register.

4,605,914

SHUNT TRANSMISSION LINE FOR USE IN LEAKY COAXIAL CABLE SYSTEM

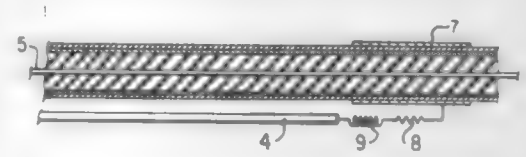
R. Keith Harman, Kanata, Canada, assignor to Senstar Security Systems Corp., Ontario, Canada

Filed Feb. 28, 1984, Ser. No. 584,445

Claims priority, application Canada, Jun. 16, 1983, 430532

Int. Cl.⁴ H01P *3/06;* H01Q *1/04*

U.S. Cl. 333—237 **21 Claims**



1. In a leaky cable system comprising a buried leaky coaxial cable transmission line which includes a center conductor and a coaxial shield, an external elongated conductor having width much smaller than the diameter of the shield and having length greater than one-half wavelength of signal carried by the cable, being fixed parallel to, and in proximity with the shield along the cable, but insulated therefrom.

4,605,915

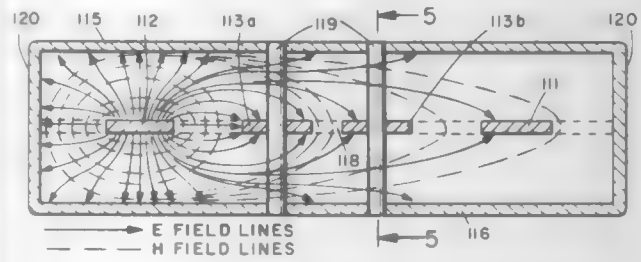
STRIPLINE CIRCUITS ISOLATED BY ADJACENT DECOUPLING STRIP PORTIONS

Henry D. Marshall, Ramona; Jeffrey K. Iida, La Jolla; Douglas J. Crow, Santee, and Lawrence O. Friend, San Diego, all of Calif., assignors to Cubic Corporation, San Diego, Calif.

Filed Jul. 9, 1984, Ser. No. 629,121

Int. Cl.⁴ H01P *3/08*

U.S. Cl. 333—238 **8 Claims**



5. A circuitboard assembly for electromagnetically isolating adjacent stripline circuits disposed therein, comprising:

a pair of substantially parallel outer groundplanes;

a dielectric material sandwiched between said pair of outer groundplanes;

a center groundplane disposed within said dielectric material parallel to said outer groundplanes, said center groundplane having at least one decoupling strip portion, each decoupling strip portion positioned adjacent and between adjacent stripline circuits disposed coplanar to said center groundplane wherein each decoupling strip portion includes a nonconductive gap within the decoupling strip portion;

at least one pair of additional decoupling strips disposed within said dielectric material, one of the additional decoupling strips of said additional decoupling strip pair positioned adjacent one of said decoupling strip portions

and between said one of said decoupling strip portions and one of said outer groundplanes, the other of the additional decoupling strips of said additional decoupling strip pair positioned adjacent said one of said decoupling strip portions and between said one of said decoupling strip portions and the other of said outer groundplanes wherein each additional decoupling strip includes a nonconductive gap within the additional decoupling strip;

a plurality of conductive connectors extending from one of said outer groundplanes through said dielectric material, through said center groundplane, and through each pair of additional decoupling strips to the other of said outer groundplanes, for electrically interconnecting said outer groundplanes to said center groundplane and each one of said pair of additional decoupling strips, certain ones of said conductive connectors extending through at least one of said decoupling strip portions and at least one of said additional decoupling strips at predetermined spaced apart intervals adjacent a respective nonconductive gap; and

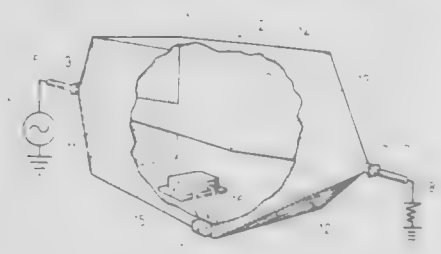
wherein said outer groundplanes, said certain ones of said conductive connectors, each of said decoupling strip portions and each of said pair of additional decoupling strips permit current loops to flow therethrough when a current is flowing through at least one stripline circuit so as to substantially reduce E-field and H-field coupling between an adjacent coplanar stripline circuit.

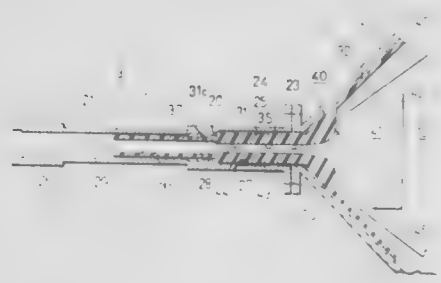
4,605,916

TRANSVERSE ELECTROMAGNETIC CELLS ADAPTED FOR ELECTROMAGNETIC PULSE TESTING

Ahikam Tehori, Nahariya, Israel, assignor to State of Israel, Ministry of Defense, Rafael Armament Auth., Haifa, Israel

Filed Mar. 22, 1984, Ser. No. 592,101
Claims priority, application Israel, Feb. 3, 1984, 70865
Int. Cl.[4] H01P *1/00, 3/06*
U.S. Cl. 333—245 **9 Claims**





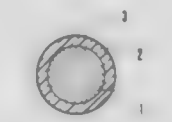
1. A transverse electromagnetic (TEM) cell adapted for electromagnetic pulse (EMP) testing, comprising: an outer metal shielded enclosure for enclosing the equipment to be tested and having a longitudinal axis and opposite tapered ends each defined by a plurality of inclined walls; an inner metal septum plate extending along the longitudinal axis of the shielding enclosure; and a respective connector assembly connected to each of the two tapered ends of the shielded enclosure for connection to a generator and a load, respectively; each of said connector assemblies comprising; an outer electrical conductor connected to a respective tapered end of the shielded enclosure; an inner electrical conductor connected to a respective end of the septum plate; and an insulating member having a first insulating section extending between the inner and outer conductors of the connector assembly, and a second insulating section extending between the tapered end of the shielded enclosure and the septum plate; said second insulating section of the insulating member comprising a plurality of insulating plates, one for each of said plurality of inclined walls, each plate being joined at one end to said first insulating section of the insulating member and extending therefrom substantially parallel to its respective inclined wall at the respective tapered end of the shielded enclosure.

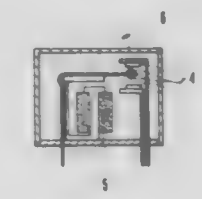
4,605,917

COIL WIRE

Tatsumi Ide; Toshifumi Sakurai, both of Tokyo; Masahiro Izumi, Kanagawa, and Kimio Sugimura, Aichi, all of Japan, assignors to NEC Corporation, Japan

Filed Sep. 14, 1983, Ser. No. 532,189
Claims priority, application Japan, Sep. 14, 1982, 57-161438; Sep. 14, 1982, 57-161439; Sep. 14, 1982, 57-161440
Int. Cl.[4] H01H *51/08*
U.S. Cl. 335—128 **14 Claims**





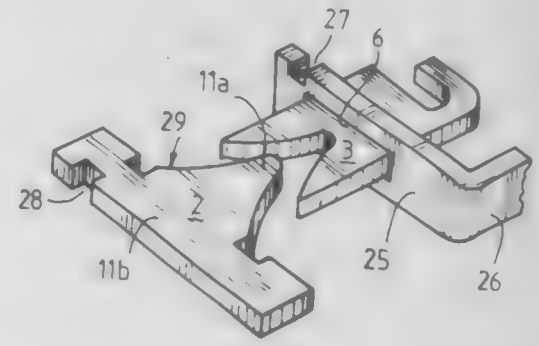
1. In an electric device comprising an excitation winding together with contact members in a container held in a given hermetic condition, said contact members being eletromagnetically driven by said excitation winding, the improvement which comprises a coil wire constituting said excitation winding, said coil wire comprising a conductor, an insulation film formed on the conductor, and a lubricant film formed on the outer surface of the insulation film, said lubricant film comprising a member of the group consisting of a polypropylene glycol, and a material obtained by substituting a reactive group for a hydrogen at at least one end of polypropylene glycol.

4,605,918

HIGH SPEED CURRENT MAXIMUM TRIPPING DEVICE

Pierre Lemarquand, and Luc Moreau, both of Dijon, France, assignors to La Telemecanique Electrique, France

Filed Mar. 20, 1985, Ser. No. 713,944
Claims priority, application France, Mar. 20, 1984, 84 04260
Int. Cl.[4] H01F *7/08*
U.S. Cl. 335—261 **10 Claims**



1. In a high speed current maximum tripping device for an apparatus providing protection against short circuits, comprising a coil associated with a magnetic circuit having a yoke and two cores one at least of which is mobile for controlling the break of the protection apparatus, the cores having complementary shapes and being disposed in the same plane while

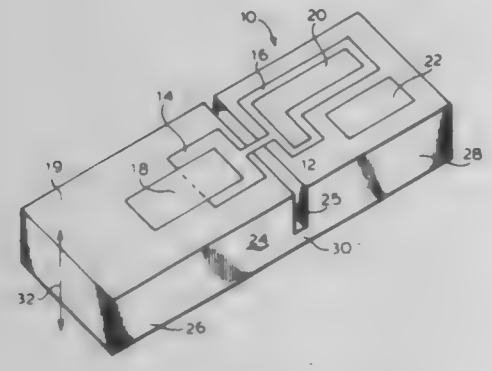
defining therebetween an air gap, said two cores are obtained by flat stamping and have complementary profiles of a generally curvilinear shape, that one of the two cores which is projecting comprising a nose and a body, the nose being connected to the body by sides whose slope with respect to the main axis of the projecting core increases progressively from the nose towards the body.

4,605,919

PIEZORESISTIVE TRANSDUCER

Leslie B. Wilner, Palo Alto, Calif., assignor to Becton, Dickinson and Company, Franklin Lakes, N.J.

Division of Ser. No. 432,620, Oct. 4, 1982, Pat. No. 4,498,229.
This application Sep. 21, 1984, Ser. No. 652,693
Int. Cl.[4] G01L *1/22*
U.S. Cl. 338—2 **10 Claims**



1. In a device for converting mechanical movement of two relatively movable parts of a mechanical device into electrical signals, characterized by

(a) a substrate comprised of piezoresistive semi-conductive material with the crystal orientation thereof being substantially in the (110) plane;

(b) groove means extending across said substrate defining said relative movable parts, and a hinge extending therebetween;

(c) the opposed walls of said groove means being in planes parallel to each other and at right angles to the floor of said groove means;

(d) at least one strain sensitive element extending across said groove means and perpendicular thereto;

(e) the crystal orientation of said at least one strain sensitive element being indexed substantially in the [111] direction;

(f) said at least one strain sesitive element being a unitary member having two end portions interconnected by and separated by an intermediate neck portion;

(g) said at least one unitary strain sensitive element being derived from the same piezoresistive semi-conductive material as said substrate;

(h) said end portions and said neck portion of said at least one strain sensitive element lying on a common axis;

(i) each of said end portions joined to one of said relatively movable parts of said substrate; and

(j) electrode means electrically connected to said end portions for detecting changes in electrical resistance between said end portions when said neck portion is subjected to stress resulting from relative movement of said substrate parts.

4,605,920

PRESCALING DEVICE AND METHOD

Alan C. Naisuler, Medford, Mass., assignor to Beckman Instruments, Inc., Fullerton, Calif.

Filed Mar. 2, 1983, Ser. No. 471,326
Int. Cl.[4] H03K *13/20*
U.S. Cl. 340—347 NT **25 Claims**

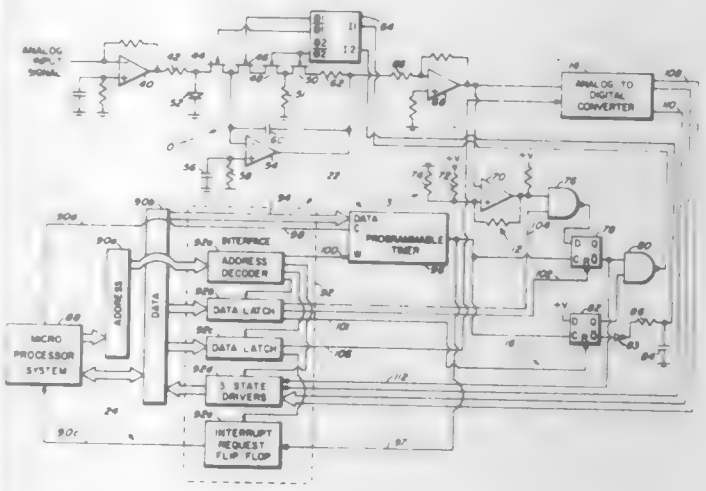
1. A prescaling device for integrating an input signal and for generating an integrator output signal scaled with respect to the input signal, comprising:

timer means for generating a timing signal at the end of each of a plurality of timing periods;

integrator means responsive to the input signal for integrating the input signal to generate an integrator output signal proportional thereto, the integrator means including means for holding the integrator output signal in response to a hold signal;

reference means for generating a reference signal;

comparator means responsive to the integrator output signal and the reference signal for generating a signal when the integrator output signal is in a predetermined relationship with the reference signal;



gating means for generating the hold signal in response to the comparator means signal and the timing signal whereby integration is halted at the end of one of the plurality of timing periods; and

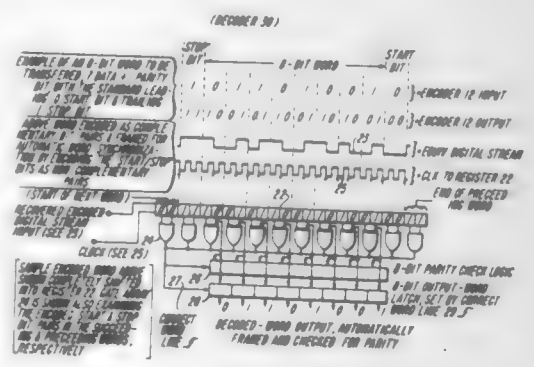
first counting means responsive to the timing signals for counting the number of timing periods before the integrator output signal was held to establish an integration timing range, such integration timing range providing an indication of a scaling factor to be applied to the integrator output signal.

4,605,921

DIGITAL WORD-FRAMING TECHNIQUE AND SYSTEM

Herbert S. Riddle, 2025 NW. Northrup, Suite 317, Portland, Oreg. 97209, and Mark Bodio, 4025 S. 45th Pl., Phoenix, Ariz. 85040

Filed Jun. 20, 1983, Ser. No. 506,197
Int. Cl.[4] H03M *13/00*
U.S. Cl. 340—347 DD **17 Claims**



1. A method for decoding an encoded signal that includes a series of encoded digital data messages, each message encoded in such a way that each bit thereof is contained in the ordering of a complementary bit pair, each encoded message being separated by a plurality of non-complementary bits, the method comprising:

analyzing simultaneously a plurality of adjacent bit pairs of the encoded signal and producing an output when there are identified (i) a string of complementary bit pairs having a length in pairs equal to the number of bits in one of

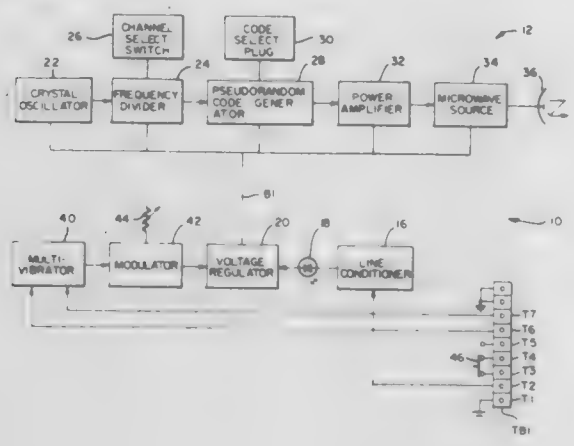
the messages and (ii) a plurality of non-complementary bits in at least one of the positions immediately preceding or immediately following the string.

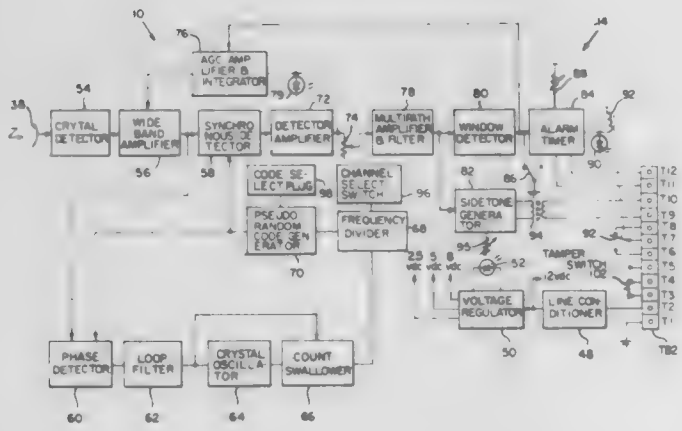
4,605,922

INTRUSION DETECTOR

Daniel A. Blattman, and Harold G. Middleton, both of King County, Wash., assignors to Racon, Inc., Seattle, Wash.

Filed Sep. 14, 1984, Ser. No. 650,820
Int. Cl.[4] G08B *13/18*
U.S. Cl. 340—552 **52 Claims**





1. An intrusion detector system comprising a transmitter and a receiver, said transmitter having:

transmitter clock means for generating a transmitter clock at a selected clock frequency;

transmitter pseudorandom code generator means responsive to said transmitter clock for generating a predetermined transmitter pseudorandom code sequence signal;

source means for generating an electromagnetic signal;

modulator means for spread-spectrum modulating said electromagnetic signal in accordance with said transmitter pseudorandom code sequence signal; and

transmitter antenna means for transmitting said modulated electromagnetic signal through a desired zone of protection;

and said receiver having:

receiver antenna means for receiving said modulated electromagnetic signal after being transmitted through said zone of protection;

demodulator means for detecting and demodulating said modulated electromagnetic signal to recover said transmitter pseudorandom code sequence signal;

receiver clock means for generating a receiver clock at said selected clock frequency;

receiver pseudorandom code generator means responsive to said receiver clock for generating a receiver pseudorandom code sequence signal corresponding to said transmitter pseudorandom code sequence signal;

detector means for comparing said received transmitter pseudorandom code sequence signal to said receiver pseudorandom code sequence signal, and generating a detection signal proportional to the signal amplitude of said received transmitter pseudorandom code sequence signal when said receiver pseudorandom code sequence signal matches said received transmitter pseudorandom code sequence signal; and

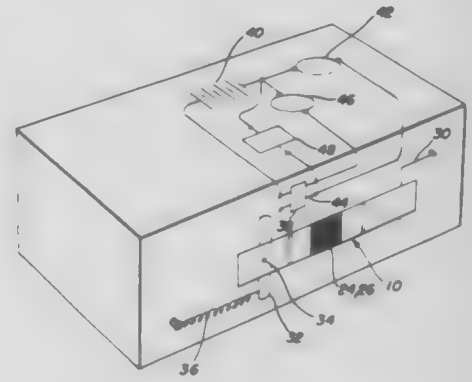
monitor means for detecting changes in said detection signal resulting from the entry or movement of an intruder in said zone of protection, and for generating a signal in response thereto.

4,605,923

METHOD AND APPARATUS FOR DETECTION OF ORGANIC FLUIDS

Allen T. Marshall, Little Rock, Ark., assignor to Ensco, Inc., Little Rock, Ark.

Filed Nov. 2, 1984, Ser. No. 667,558
Int. Cl.[4] G08B *21/00*; G01N *3/18*
U.S. Cl. 340—604 **15 Claims**



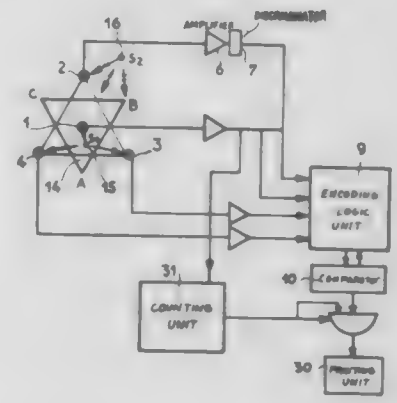
1. Apparatus for detecting of an organic fluid in or on a substrate, said apparatus comprising a pair of strips of fabric-material, one end of each strip being bonded to one end of the other strip at a joint by means of an organic fluid imbibing material sorbed therein, said imbibing material comprising a generally coherent mass of organic fluid imbibing latex polymer particles which swell and soften in the organic fluid, force applying means for placing said joint under tension so that said strips disjoin when said polymer has softened sufficiently, and sensing means for detecting the disjoining of said strips.

4,605,924

METHOD AND APPARATUS FOR ACOUSTICALLY MONITORING AN INDUSTRIAL PLANT

Jean Marini, Marly le Roi, and Bernard Audenard, Orgeval, both of France, assignors to Framatome & CIE, Courbevoie, France

Continuation-in-part of Ser. No. 301,848, Sep. 14, 1981, abandoned. This application Feb. 1, 1984, Ser. No. 575,491
Claims priority, application France, Oct. 2, 1980, 80 21163
Int. Cl.[4] G08B *23/00, 25/00*
U.S. Cl. 340—683 **2 Claims**



1. Apparatus for acoustically monitoring an industrial plant in a defined monitoring region of which incidental phenomena accompanied by acoustic waves may occur, the monitoring region being in the shape of an equilateral triangle and the apparatus comprising

(a) a set of four sensing devices arranged at the center of a first equilateral triangle constituting said monitoring region and at locations symmetrical with said center with respect to the sides of said first equilateral triangle, respectively, said sensing devices thus being arranged at the vertices and at the center of a second equilateral triangle having a common center with said first equilateral triangle; and

(b) for each of said sensing devices, an amplifier and a discriminator of signals emitted by said sensing device in response to the reception of acoustic waves, and a retriggerable monostable multivibrator following said discriminator and producing from the signal emitted and converted by said sensing device a signal of fixed amplitude and duration the initial instant of which corresponds to the exact instant of arrival of the signals at each of said sensing devices;

(c) a logic unit for determining the order of arrival of acoustic waves at said sensing devices by discrimination of the signals from said multivibrators;

(d) a comparator of said order of arrival with a predetermined coded order of arrival and an associated means for emitting a signal in the case of an identity of said orders of arrival; and

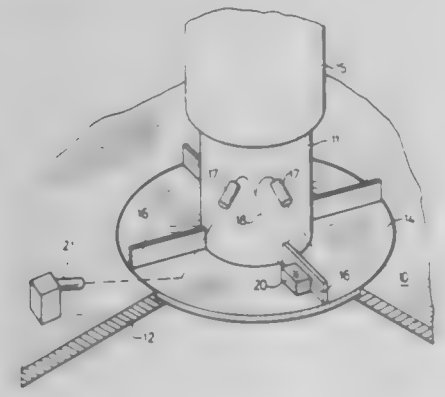
(e) alarm means which are triggered when said signal is emitted in the case of identity.

4,605,925

INFRA-RED TELEMETRY SYSTEM

James S. Mark, Peterborough, Canada, assignor to Canadian General Electric Co., Ltd., Toronto, Canada

Filed Jun. 15, 1984, Ser. No. 621,296
Claims priority, application Canada, Sep. 9, 1983, 436336
Int. Cl.[4] G08C *19/36*
U.S. Cl. 340—870.29
14 Claims



1. An infra-red telemetry system for transmitting information between a rotating member having a fixed axis of rotation and a stationary member, comprising

a plurality of infra-red sources and at least one infra-red detector, said infra-red sources being spaced equidistant from one another around the axis of said rotating member and mounted to one of said rotating member and said stationary member, and said at least one infra-red detector being mounted to the other of said rotating member and stationary member,

circuit means responsive to an input information signal to code said information into a pulse train and to energize said infra-red sources simultaneously in accordance with pulses in said pulse train, and

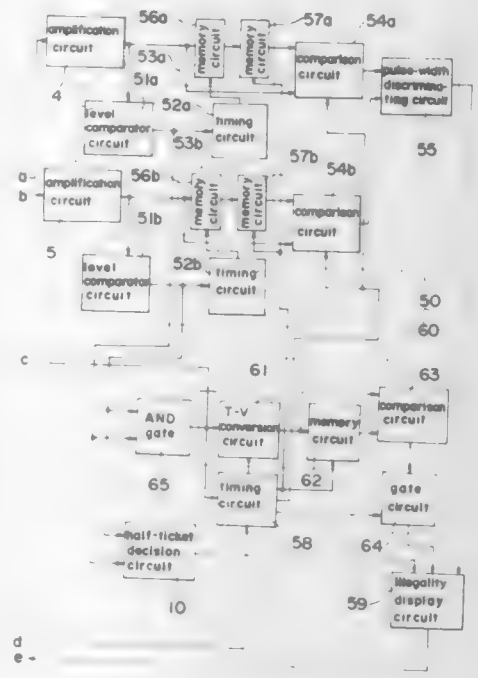
a surface exposed to at least one of said infra-red sources and at least one of said infra-red detectors during each revolution of said rotating member for bouncing infra-red radiation from one of said infra-red sources to one of said infra-red detectors.

4,605,926

ILLEGAL-SHEET-MATERIAL DETECTION APPARATUS IN SHEET MATERIAL MANUFACTURING MACHINE

Tetsuo Onishi, and Yoshihide Sugiyama, Wakayama, both of Japan, assignors to Duplo Seiko Corp. and Duplo Manufacturing Corp., both of, Japan

Filed Sep. 13, 1982, Ser. No. 417,601
Int. Cl.[4] H04Q *9/00*; B65H *7/12*; G08B *21/00*
U.S. Cl. 340—825.3
14 Claims



1. An abnormal sheet material detecting apparatus for use in a sheet material processing machine which is adapted to pass at intervals a given portion of every single sheet of material and to pick up the sheets, one by one, from a plurality of sheet materials, each one having approximately the same property, comprising:

a detecting circuit including a sensor for detecting a predetermined portion of a single sheet material at a given position in accordance with the amount of light transmitted through said single sheet material, with said amount of light being a variable value from sheet to sheet;

a first memory circuit for storing, in sequence, the detected value of each of said variable value of transmitted amount of light with respect to each of said single sheet material output from said detecting circuit and for outputting a representative signal;

a second memory circuit for storing an output signal from said first memory circuit after at least said single sheet material is passed through said sensor provided within said detecting circuit for detecting the transmitted amount of light;

a comparison circuit for outputting signals, each corresponding to the difference between said detected and memorized value of said transmitted amount of light with respect to the nth (n being an integer of 1 or more) single sheet material stored within said second memory circuit and said detected and variable value for said transmitted amount of light with respect to the n+1th single sheet material, said output signal provided when the detecting circuit determines a difference beyond a predetermined upper and lower limit; and

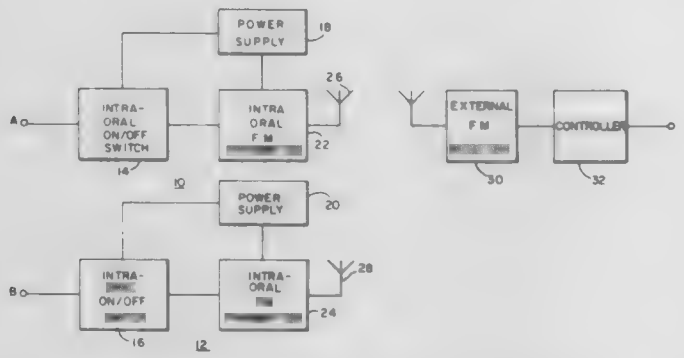
a discrimination circuit for outputting an abnormal condition detecting signal when said output signal of said comparison circuit is continued beyond a predetermined time period.

4,605,927

INTRA-ORAL CONTROL UNIT AND SYSTEM

Philip Katz, Princeton Junction; Henry S. Brenman, Cinnaminson, both of N.J.; Henry Hamarman, Philadelphia, and Harold Schwartz, King of Prussia, both of Pa., assignors to Thomas Jefferson University, Philadelphia, Pa.

Filed Aug. 26, 1983, Ser. No. 526,699
Int. Cl.[4] H04Q *9/00;* **H04B** *1/034;* **G08B** *21/00*
U.S. Cl. 340—825.19 **13 Claims**



1. An environmental control unit for transmitting control signals from patients to at least one external device comprising:

at least one intra-oral lingually operated switching means;

an intra-oral power supply; and

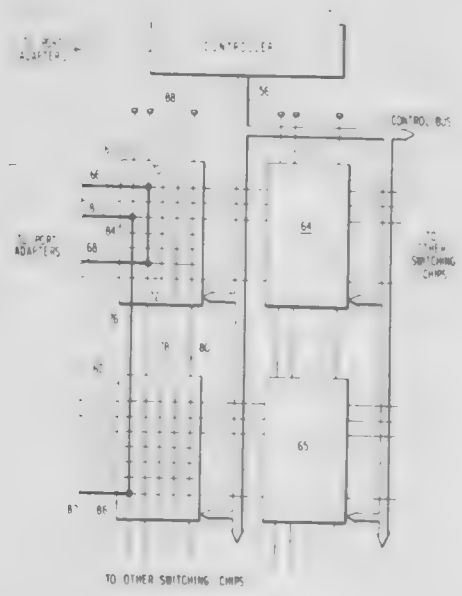
an intra-oral transmitter responsive to said switching means and to said power supply for transmitting radio frequency control signals from an intra-oral cavity to a position external to said patients upon lingual activation of said switching means.

4,605,928

FAULT-TOLERANT ARRAY OF CROSS-POINT SWITCHING MATRICES

Christos J. Georgiou, White Plains, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 24, 1983, Ser. No. 544,652
Int. Cl.[4] H04Q *1/00*
U.S. Cl. 340—825.94 **12 Claims**



1. A switching network, comprising:

a plurality of cross-point switching matrices (**60,62,64,65**), each comprising a plurality of first internal lines (**22–28**), a plurality of second internal lines (**30,32**) perpendicular to said first internal lines and switch points (**34,35**) between said first internal lines and said second internal lines at each intersection of a first internal line with a second internal line; and

an array of first external lines (**45–50**) and of second external lines (**52, 54**), each first external line being associated with a first internal line on plurality of said switching matrices and each second external line being associated with a second internal line on a plurality of said switching matrices;

wherein said cross-points are selectively activatable in pairs for interconnecting any two of said first external lines for communication therebetween through only one of said second internal lines, if said any two first external lines are associated with the same switching matrix, or through two of said second internal lines and only one of said second external lines, if said any two first external lines are not associated with the same switching matrix; and

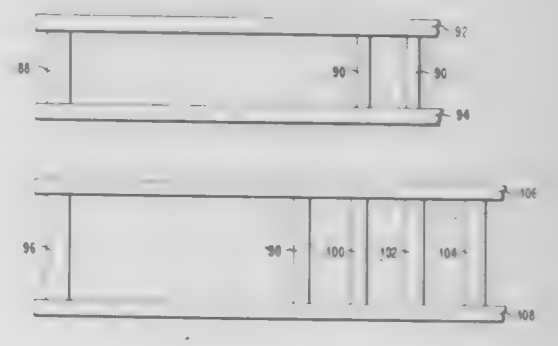
wherein any pair of first external lines are connectable by activating a pair of cross-points on any of a plurality of switching matrices if said pair of first external lines are associated with first internal lines of the same plurality of switching matrices, or by activating a cross-point on each of a selected pair of switching matrices, said pair of switching matrices being any pair of a plurality of pairs of switching matrices, if said pair of first external lines are associated with first internal lines of different pluralities of switching matrices, said selected pair of switching matrices being connected to a same second external line.

4,605,929

SURFACE ACOUSTIC WAVE PASSIVE TRANSPONDER HAVING OPTIMALLY-SIZED TRANSDUCERS

Halvor Skeie, San Jose, Calif., assignor to X-Cyte Inc., Mountain View, Calif.

Filed Jun. 30, 1983, Ser. No. 509,521
Int. Cl.[4] G01S *13/80;* **H03H** *9/42;* **H01L** *41/04*
U.S. Cl. 343—6.8 R **6 Claims**



1. In a passive transponder adapted for use in an interrogation system for transmitting a reply signal containing coded information in response to the receipt of an interrogating signal, said transponder comprising:

(a) a substrate having a substrate surface defining a path of travel for surface acoustic waves;

(b) a launch transducer arranged on said surface for converting said interrogating signal into a surface acoustic wave which propagates along said path of travel;

(c) a plurality of tap transducers arranged on said surface at spaced intervals along said path of travel for converting said surface acoustic wave into respective output signals; and

(d) circuit means connected to said tap transducers for combining said output signals to form said reply signal;

the improvement wherein said launch transducer and the one of said tap transducers closest to said launch transducer are sized such that C_1^2 is substantially equal to nC_2^2 where:

n is the number of tap transducers arranged in series along said path of travel;

C_1 is the energy coupling coefficient of said launch transducer; and

C_2 is the energy coupling coefficient of said one tap transducer.

5. In a passive transponder adapted for use in an interrogation system for transmitting a reply signal containing coded information in response to the receipt of an interrogating signal, said transponder comprising:

(a) a substrate having a substrate surface defining a path of travel for surface acoustic waves;

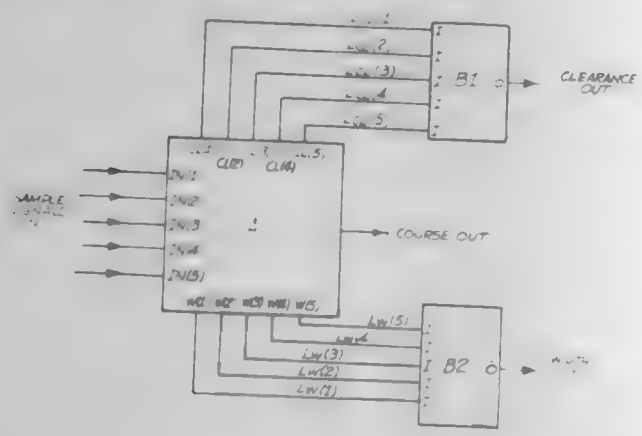
(b) a launch transducer arranged on said surface for converting said interrogating signal into a surface acoustic wave which propagates along said path of travel;
(c) a plurality of tap transducers arranged on said surface at spaced intervals along said path of travel for converting said surface acoustic wave into respective output signals; and
(d) circuit means connected to said tap transducers for combining said output signals to form said reply signal;
the improvement wherein said launch transducer is larger than the one of said tap transducers closest to said launch transducer, and wherein said tap transducers increase in size the farther they are away from said launch transducer, whereby all tap transducers produce output signals of substantially equal energy in response to a surface acoustic wave that propagates along said path of travel.

4,605,930

INTEGRAL MONITOR FOR ILS LOCALIZER

Robert W. Redlich, 9 Grand Park Blvd., Athens, Ohio 45701

Filed Apr. 20, 1983, Ser. No. 468,170
Int. Cl.[4] G01S *1/16*
U.S. Cl. 343—413 **1 Claim**



1. A system for ground based monitoring of the signals radiated by an Instrument Landing System Localizer antenna array operating at wavelength λ, said array consisting of N individual antennas disposed along a line perpendicular to a runway, each individual antenna being fitted with sampling means for obtaining a signal proportional to the radiofrequency current driving that antenna, each individual antenna being identified herein by a distinct index number n, the distance between antenna n and a reference point on the line of the array being identified here as S(n), said monitoring to consist of prediction of signals radiated by said array at three specified angles from the centerline of said runway, one such angle being zero degrees, the other two being identified here as θ_w and θ_{cl}, said monitoring system to consist of the combination of,

N input terminals designated here as IN(1) through IN(N), IN(n) being connected to said sampling means of antenna n by a transmission line of characteristic resistance R_o, all such lines being of equal length,

for each input terminal, the parallel combination of four circuits connected between that terminal and circuit ground, said four circuits being designated here as COURSE(n), WIDTH(n), CLEARANCE(n), and MATCHING(n), the index number of each circuit being that of the input terminal to which it is connected, and the four circuits being further defined as follows,

COURSE(n) consisting of a resistor R_c between IN(n) and a first output terminal, said output terminal being connected to ground through an impedance less than $R_c/20$,

WIDTH(n) consisting of a resistor R_w between IN(n) and one end of a transmission line of length $L_w(n)$ and characteristic resistance R_o, the other end of said line being connected to one terminal of a resistor R_o, the other terminal of said resistor R_o being connected to a second output terminal, said second terminal being connected to ground through an impedance less than $R_o/5$, and $L_w(n)$ being determined from the formula $L_w(n)=S(n)\times\sin(\theta_w)\times(2\pi/\lambda)$,

CLEARANCE(n) consisting of a resistor $R_{cl}(n)$ between IN(n) and one end of a transmission line of length $L_{cl}(n)$, characteristic resistance R_o, and attenuation A(n) decibels, the other end of said line being connected to one terminal of a resistor R_o, the other terminal of said resistor R_o being connected to a third output terminal, said third terminal being connected to ground through an impedance less than $R_o/5$, $L_{cl}(n)$ being determined from the formula $L_{cl}(n)=S(n)\times\sin(\theta_{cl})\times(2\pi/\lambda)$, and $R_{cl}(n)$ being determined from the formula $R_{cl}(n)=10^{(A(1)-A(n))/20}\times(R_{cl}(1)+R_o)-R_o$,

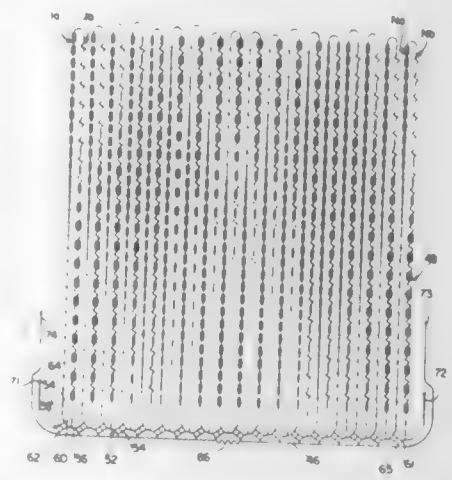
MATCHING(n) consisting of a resistor $R_m(n)$ between IN(n) and ground, $R_m(n)$ being determined from the formula $R_m(n)=(1/R_o-1/(R_o+R_w)-1/-(R_o+R_c)-1/(R_{cl}(n)+R_o))^{-1}$.

4,605,931

CROSSOVER TRAVELING WAVE FEED FOR MICROSTRIP ANTENNA ARRAY

James B. Mead, Brookside; Leonard Schwartz, Montville, both of N.J., and Emile J. Deveau, Pleasantville, N.Y., assignors to The Singer Company, Little Falls, N.J.

Filed Sep. 14, 1984, Ser. No. 650,631
Int. Cl.[4] H01Q *3/26, 9/38;* H03B *5/00*
U.S. Cl. 343—700 MS **10 Claims**



1. In a microstrip or stripline antenna, a feed system for accessing at least first and second radiating array groups, the system comprising:

a first traveling feed;

a plurality of crossover structures, each structure having first and second ports for transmitting a first signal therebetween, and third and fourth ports for transmitting a second signal therebetween;

means serially interconnecting the first and second ports of a plurality of structures thereby forming a second traveling feed;

means connecting the first and second ports of the interconnected structures to correspondingly positioned arrays of the first group;

means connecting the third ports of the interconnected structures to correspondingly positioned spaced points along the first traveling feed;

means connecting the fourth ports of the interconnectd structures to correspondingly positioned arrays of the second group;

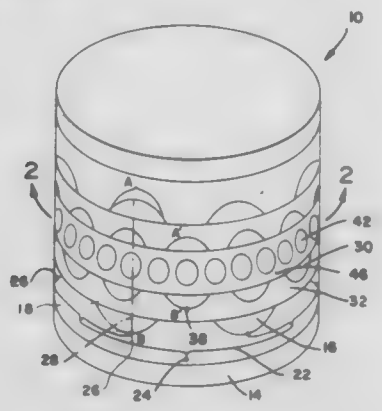
whereby the first and second traveling feeds couple their respective signals to the array groups without significant interaction therebetween.

4,605,932

NESTED MICROSTRIP ARRAYS

Frank D. Butscher, San Jose, and Michael J. Gogna, Menlo Park, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jun. 6, 1984, Ser. No. 618,013
Int. Cl.[4] H01Q *1/38*
U.S. Cl. 343—700 MS 10 Claims



1. A microstrip antenna system comprising:

(a) a first microstrip antenna for operating in a first frequency band, said first antenna having at least one microstrip radiating element spaced from a ground plane by a dielectric substrate, said at least one radiating element having a feed point located so that electric fields are present only in specific areas along the edges of said at least one element with the remainder of said at least one element having no appreciable electric field concentration;

(b) a second microstrip antenna for operating in a second higher frequency band, said second antenna having at least one microstrip radiating element spaced from a ground plane by a dielectric substrate, said second microstrip antenna being disposed over said first microstrip antenna so that said second microstrip antenna covers only areas of said first microstrip antenna having no appreciable electric field concentration; and

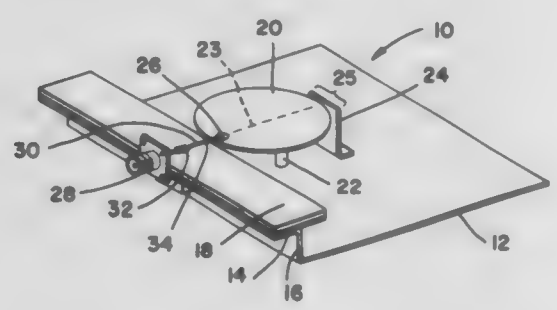
(c) a dielectric layer separating the ground plane of said second antenna from said first antenna.

4,605,933

EXTENDED BANDWIDTH MICROSTRIP ANTENNA

Frank D. Butscher, San Jose, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jun. 6, 1984, Ser. No. 618,011
Int. Cl.[4] H01Q *1/38*
U.S. Cl. 343—700 MS 10 Claims



1. A microstrip antenna having extended bandwidth comprising:

(a) a first conducting ground plane;

(b) a second conducting ground plane disposed parallel to and above said first ground plane, said second ground plane being smaller than said first ground plane and disposed above the rear of said first ground plane; said second ground plane being electrically connected to said first ground plane;

(c) a thin dielectric layer disposed on said second ground plane,

(d) a planar radiating element disposed above said first ground plane, said planar radiating element being disposed approximately coplanar with, in front of, and electrically separated from said second ground plane, and;

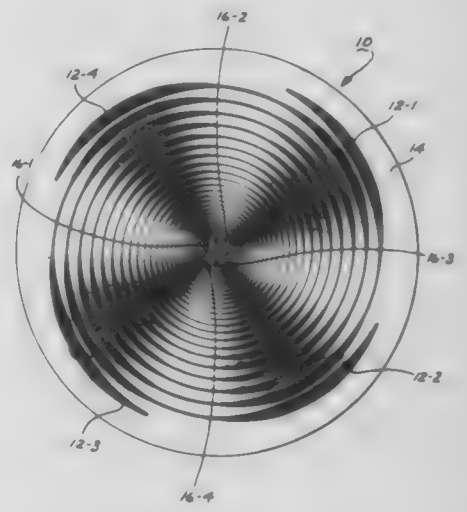
(e) means for feeding said planar radiating element, said means for feeding being disposed above said second ground plane on said dielectric layer, said means for feeding providing an approximately coplanar feed and a linearly polarized signal to said planar radiating element.

4,605,934

BROAD BAND SPIRAL ANTENNA WITH TAPERED ARM WIDTH MODULATION

George S. Andrews, Kent, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Aug. 2, 1984, Ser. No. 637,121
Int. Cl.[4] H01Q *1/36*
U.S. Cl. 343—895 17 Claims



1. A wide band multiarm spiral antenna for operation with both left-hand and right-hand circularly polarized radiation patterns, said spiral antenna comprising a plurality of conductive antenna arms that extend outwardly about an axis of rotation, each said antenna arm being formed by a series of cells that are configured and arranged to reflect current flowing outwardly in the antenna arm which includes those cells, the length of said cells increasing as a function of increasing distance from said axis of rotation, each said cell being configured and arranged to exhibit a monotonically decreasing electrical impedance over a first portion of the length of each said cell and a monotonically increasing electrical impedance over a second portion of said length of each said cell

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4,605,935

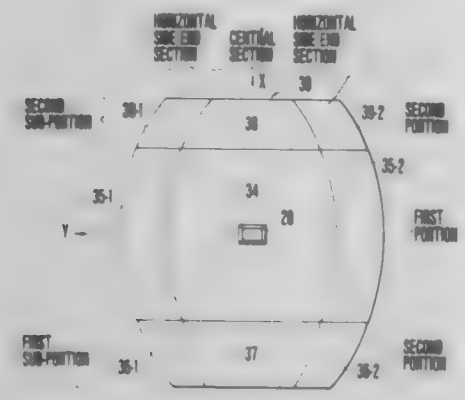
SHAPED BEAM REFLECTOR ANTENNA

Mitsuhiro Kusano, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Oct. 25, 1984, Ser. No. 664,712
Claims priority, application Japan, Oct. 28, 1983, 58-202372
Int. Cl.[4] H01Q *15/16*
U.S. Cl. 343—914 2 Claims

1. In a shaped beam antenna of the type comprising a main reflector and a feed horn for irradiating an electromagnetic wave upon said main reflector, said main reflector including, in sectional planes inclusive of a Y - Z plane and planes parallel thereto, a central section and horizontal side end sections adjoining said central section, where Cartesian coordinates are assumed having an origin near said feed horn, a Z-axis extending in a direction of the horizontal center axis of said feed horn, and X- and Y-axes extending in planes perpendicular to said Z-axis, the improvement wherein said central section has a

plurality of torus reflector segments and each of said side end sections has a plurality of parabolic reflector segments, and said torus and parabolic reflector segments are grouped into first and second portions, said first portion having the reflector segments which are symmetrical with respect to the Y - Z plane, said second portion having first and second sub-portions, the reflector segments of said first sub-portion and those of said second sub-portion being asymmetrical with respect to the Y - Z plane, whereby the maximum radiation direction of the beam reflected from said first portion lies in said Y - Z plane, and the maximum radiation direction of the beam reflected from said second portion lies in planes other than said Y - Z plane.

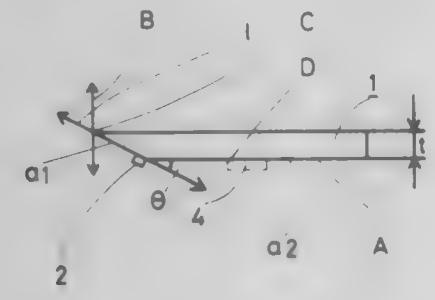


4,605,936

THERMAL HEAD WITH CUTAWAY SUBSTRATE

Yoichi Yamamoto, and Mitsuhiro Shimada, both of Nara, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Aug. 6, 1984, Ser. No. 637,979
Claims priority, application Japan, Aug. 25, 1983, 58-156730
Int. Cl.[4] G01D *15/10*
U.S. Cl. 346—76 PH **3 Claims**



1. A thermal head for a recording apparatus comprising:
a substrate having a first flat surface and a second surface generally opposed thereto and having a flat surface and an oblique surface therewith;
a group of thermal resistor elements formed on said oblique surface of said substrate;
wiring means for said group of thermal resistor elements; and
a driver element for driving said group of thermal resistor elements, said driving element being mounted on said flat surface of said second surface of said substrate.

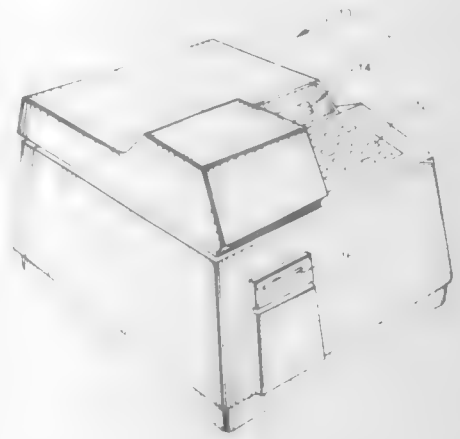
4,605,937

POSTAL METER THERMAL PRINTER CONTROL

Donald T. Dolan, Ridgefield; William A. Ross, Darien, and Kenneth A. Terry, Fairfield, all of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

Filed Jun. 19, 1984, Ser. No. 622,037
Int. Cl.[4] G01D *15/10;* **G07G** *1/00;* **B41J** *3/20*
U.S. Cl. 346—76 PH **4 Claims**

1. In an electronic postal meter of the type including accounting means and means for inputting postal data, the improvement comprising:
(a) means for obtaining said postal data in a first format indicative of postal value and other variable indicia; and
(b) printing means for printing postal value along with said other indicia, said printing means comprising:
(i) a thermal print head which includes a plurality of thermal heating elements operative to receive voltage pulses for heating thereof to a predetermined temperature;
(ii) a tape moving means for moving a tape past the individual elements of the print head;
(iii) a thermal transfer ribbon transportation means, said transfer ribbon having a meltable ink composition



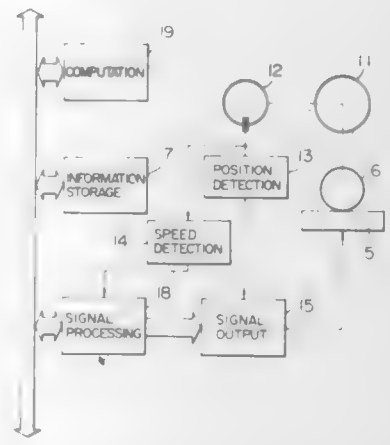
thereon, portions of said thermal transfer ribbon being carried into juxtaposition between said thermal elements and said tape wherein when said thermal elements are heated to said predetermined temperature the meltable composition adjacent said heated elements is transferable to the tape; and
(iv) means for converting the data in the first format into logic signals for controlling the time of the heating of said individual elements wherein the transfer of meltable ink composition by a predetermined sequential pattern of heating of individual heating elements enables the formation of a predetermined pattern of meltable ink composition on the tape.

4,605,938

THERMAL TRANSFER RECORDING APPARATUS

Jyunichi Matsuno, Toride; Masataka Kawauchi, Ishioka; Masashi Yoshida, Nakaminato, and Satoshi Kawamura, Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 23, 1985, Ser. No. 726,365
Claims priority, application Japan, Apr. 27, 1984, 59-83716
Int. Cl.[4] G01D *15/10*
U.S. Cl. 346—76 PH **16 Claims**



1. A recording apparatus of thermal transfer type comprising:
a carrier supporting a coating of a thermally transferable recording material and movable along a predetermined path;

a platen roller rotatably mounted for supporting and transporting a recording medium and disposed so that said supported recording medium faces said carrier moving through said predetermined path;

a thermal head having a plurality of linearly arrayed heat generating elements for being urged against said platen roller in a recording mode and selectively energizable, thereby producing a thermal energy adapted to transfer the recording material corresponding to the energized heat generating elements onto the recording medium supported by said platen roller:

driving means for continuously driving said platen roller;

rotation detecting means for detecting a rotation speed of said platen roller,

position detecting means for detecting an angular position in rotation of said platen roller;

means for producing a character and pattern signal in accordance with the rotational speed of said platen roller and a desired density tone of the record produced on said recording medium so that the thermal energy produced by the energized heat generating elements is at a level suitable to obtain the desired density tone of the record, and

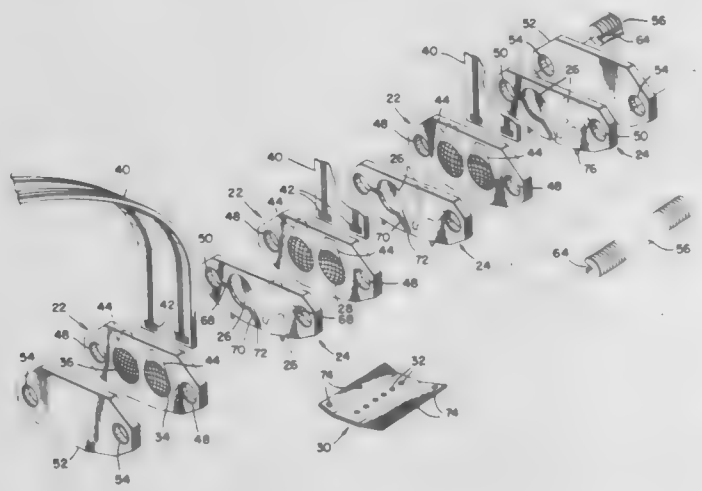
means for controlling the density tone in response to an output signal of said position detecting means while said platen roller is continuously driven so as to selectively energize said heat generating elements according to said character and pattern signal, thereby producing on said recording medium a record of dots with the desired density tone corresponding to said character and pattern signal.

4,605,939

INK JET ARRAY

David W. Hubbard, Stamford, and Frank E. Seestrom, Weston, both of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

Filed Aug. 30, 1985, Ser. No. 771,523
Int. Cl.[4] G01D *15/18*
U.S. Cl. 346—140 R **14 Claims**



1. An ink jet printing head comprising:

a plurality of successive pairs of first and second plates in an alternating sequence;

means joining said first and second plates in contiguous side by side relationship;

each of said first plates having at least one cavity therein adapted to receive printing ink therein, a first channel extending between the cavity and a source of supply of printing ink, and a second channel extending between the cavity and a nozzle through which the ink can be ejected in droplet form;

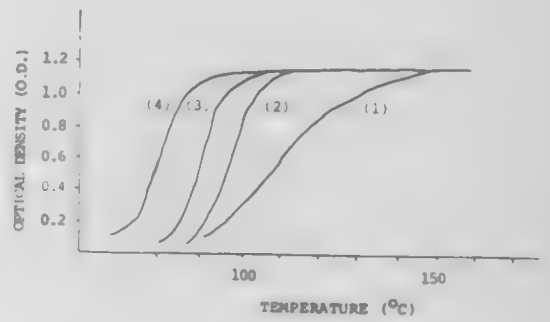
each of said second plates including monomorphic transducer means generally overlying each cavity in said first plate to form a chamber therewith and operable to induce pulsed pressure waves to the ink in its associated chamber to draw ink from the source of supply and eject it through the nozzle in droplet form, said second plates being effective, when held in contiguous side by side relationship against said first plates by said joining means, to confine the ink in said printing head to the chamber and each of said first and second channels.

4,605,940

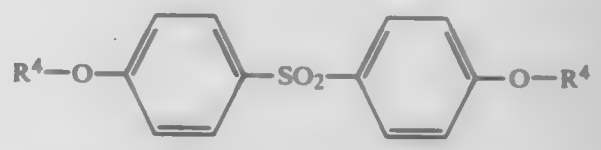
THERMORESPONSIVE RECORDING PAPER SHEET

Ryoichi Kinishi, Fukuoka; Eisaburo Kaku, Niiza, and Naoki Hanayama, Nakatsu, all of Japan, assignors to Yoshitomi Pharmaceutical Industries, Ltd., Osaka, Japan

PCT No. PCT/JP83/00015, § 371 Date Sep. 11, 1984, § 102(e) Date Sep. 11, 1984, PCT Pub. No. WO84/02882, PCT Pub. Date Aug. 2, 1984
PCT Filed Jan. 17, 1983, Ser. No. 653,010
Int. Cl.[4] B41M *5/18*
U.S. Cl. 346—209 **8 Claims**



1. A thermoresponsive recording paper sheet comprising a normally colorless or pale-colored chromogenic substance in combination with a phenolic compound and the underlying paper substrate, said sheet further comprises a diether of the formula:



wherein R^4 is alkyl of 1 to 5 carbon atoms, benzyl or phenethyl.

4,605,941

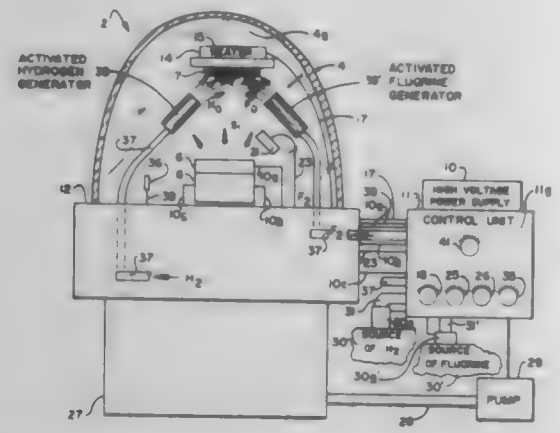
AMORPHOUS SEMICONDUCTORS EQUIVALENT TO CRYSTALLINE SEMICONDUCTORS

Stanford R. Ovshinsky, Bloomfield Hills, and Masatsugu Izu, Birmingham, both of Mich., assignors to Energy Conversion Devices, Inc., Troy, Mich.

Continuation of Ser. No. 428,092, Sep. 29, 1982, Pat. No. 4,485,389, which is a continuation of Ser. No. 193,072, Oct. 10, 1980, abandoned, which is a continuation-in-part of Ser. No. 104,285, Dec. 17, 1979, abandoned, which is a division of Ser. No. 884,664, Mar. 8, 1978, Pat. No. 4,217,374. This application Nov. 7, 1984, Ser. No. 669,194
Int. Cl.[4] H01L *45/00*
U.S. Cl. 357—2 **8 Claims**

1. An electrostatic image-producing device, the device including an improved amorphous semiconductor body formed from a solid host matrix of amorphous semiconductor alloy material; the amorphous semiconductor of said amorphous semiconductor alloy material selected from the group consisting essentially of silicon, germanium or mixtures thereof; said amorphous semiconductor alloy material disposed upon an electrically conductive substrate and having electronic config-

urations with an energy gap; said host matrix of the amorphous semiconductor alloy material further including at least one



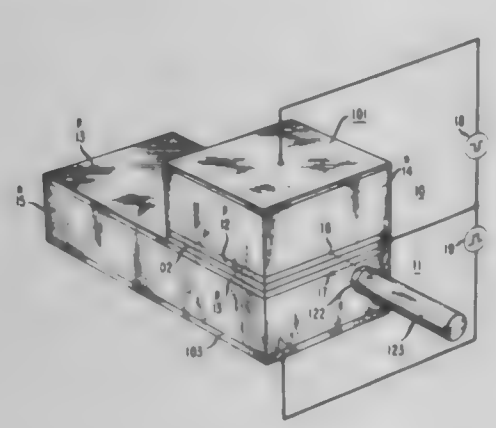
compensating material for reducing the density of localized states in said energy gap.

4,605,942

MULTIPLE WAVELENGTH LIGHT EMITTING DEVICES

Irfan Camlibel, Morris County; Aland K. Chin, Union County, and Brymer H. Chin, Somerset County, all of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Oct. 9, 1984, Ser. No. 658,568
Int. Cl.[4] H01L *33/00*; H01S *3/19*
U.S. Cl. 357—17 9 Claims



1. A multiwavelength light emitting device comprising:
two light emitting devices, each comprising a confined light emitting region which emits light at a different wavelength, said devices being bonded with a conductive material that forms a common electrode between them, the light emitting regions being sufficiently close together to couple light from both regions into a single optical fiber; and
means for electrically addressing each device separately.

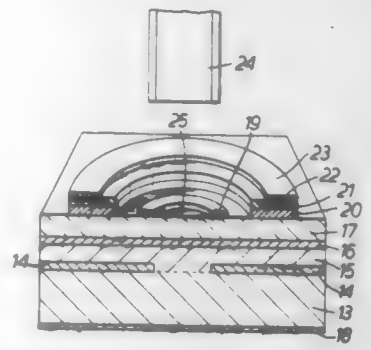
4,605,943

COMPOSITE OPTICAL SEMICONDUCTOR DEVICE

Masaru Nakamura, Kawaguchi; Kouichi Nitsuta, Yokohama, and Takeshi Ozeki, Tokyo, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Jan. 16, 1984, Ser. No. 571,379
Claims priority, application Japan, Jan. 14, 1983, 58-3359
Int. Cl.[4] H01L *33/00*
U.S. Cl. 357—17 10 Claims

1. A composite optical semiconductor device comprising:
a first region having a first conductivity type formed in a semiconductor substrate;
a second region having a second conductivity type formed on top of said first region, thereby forming a PN junction at the boundary between said first region and said second region;
a first electrode connected to said first region;
a second electrode formed on top of said second region;
said first and second electrodes and first and second regions thereby forming a light emitting diode so that is emitted when a voltage is applied between the first and second electrodes;
said second region including a light transmitting portion for transmitting light emitted by said light emitting diode;
a third region formed on top of said second region;
a third electrode formed on top of said third region;
said second and third electrodes and said second and third



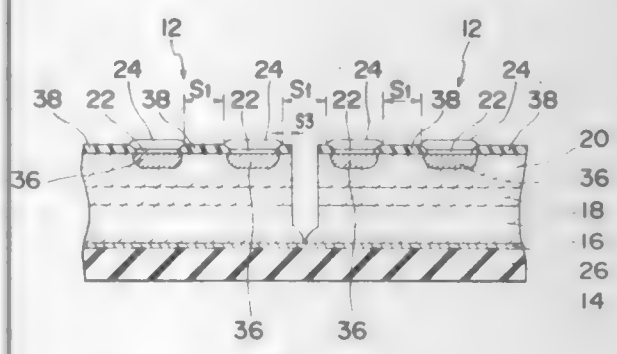
regions forming a photodetecting element for detecting light emitted from said light emitting diode;
said second electrode being arranged within the third electrode in the area of the light transmitting portion;
wherein the current path for the light emitting diode between said first electrode and said second electrode is separated from the current path of the photodetecting element between said second electrode and said third electrode.

4,605,944

LED ARRAY DEVICE FOR PRINTER

Toshihiko Ishii, and Hiromi Takasu, both of Tottori, Japan, assignors to Sanyo Electric Co., Ltd., Osaka and Tottori Sanyo Electric Co., Ltd., Tottori, both of, Japan

Filed Sep. 11, 1984, Ser. No. 649,340
Int. Cl.[4] H01L *33/00*
U.S. Cl. 357—17 11 Claims



1. An LED array device comprising:
a plurality of LED units, each having a plurality of LED elements aligned straight in a predetermined pitch with a predetermined spacing between neighboring LED elements, said plurality of LED units aligned straight with their end edges confronting each other such that an array of LED elements on one LED unit is in alignment with an array of LED elements on a next LED unit with said predetermined pitch being maintained, a spacing between an LED element positioned at the end of said LED unit and said end edge of said LED unit being less than a half of said predetermined spacing;
an electrode means extending from each LED element; and
board means for supporting said plurality of LED units.

4,605,945

SEMICONDUCTOR DEVICE

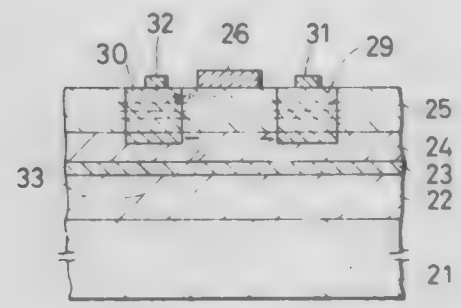
Yoshifumi Katayama, Tokorozawa; Yasuhiro Shiraki, Hino; Ken Yamaguchi, Higashikurume; Yoshimasa Murayama, Koganei; Yasushi Sawada; Toshiyuki Usagawa, both of Kokubunji, and Eiichi Maruyama, Kodaira, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed May 11, 1984, Ser. No. 609,446

Claims priority, application Japan, May 11, 1983, 58-80895

Int. Cl.[4] H01L *29/80*

U.S. Cl. 357—22 **22 Claims**



1. A semiconductor device having at least a first semiconductor layer and a second semiconductor layer which are in contact with each other so as to form a heterojunction therebetween, and in which the edge of the conduction band of the first semiconductor layer is lower in energy than the edge of the conduction band of the second semiconductor layer in the vicinity of the heterojunction, said device further comprising at least one pair of electrodes which are electrically connected with the first semiconductor layer, source and drain regions formed in the first and second semiconductor layers and respectively electrically connected to the at least one pair of electrodes, and means to control carriers generated in the vicinity of said heterojunction; wherein said second semiconductor layer includes a low impurity concentration region of a concentration of at most 10^{15} cm^{-3} formed between said source and drain regions except regions immediately adjacent the source and drain regions, and high impurity concentration regions immediately adjacent the source and drain regions in the region between the source and drain regions, and wherein the first semiconductor layer includes at least one region containing an impurity which has a conductivity type identical or opposite to that of the impurity contained in the source and drain regions, said at least one region being spaced from said heterojunction.

4,605,946

FET CHARGE SENSOR AND VOLTAGE PROBE

Paul A. Robinson, Jr., LaCanada, Calif., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Aug. 16, 1984, Ser. No. 641,146

Int. Cl.[4] H01L *29/78, 27/14*

U.S. Cl. 357—23.1 **8 Claims**

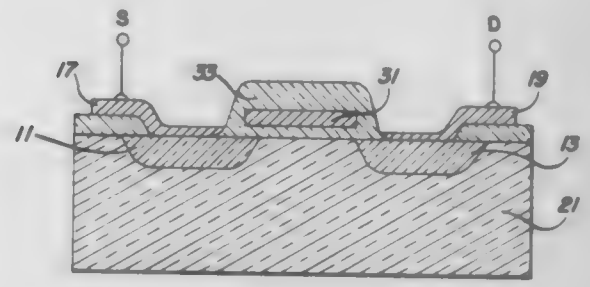
1. A voltage/charge sensor device for accumulating charges to be measured in an electric field, said sensor comprising

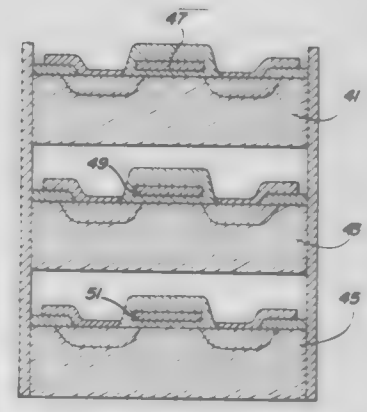
a first field effect transistor structure having a passivating overlay, a biased metal gate electrode and an inducible conducting channel between source-to-drain electrodes; and

a first modulating means accumulating a charge to be measured for modulating the source-to-drain conductivity in accordance with the charges that are accumulated;

said modulating means characterized by including

a first insulating layer that is a multiple of thicknesses greater than said passivating layer; and





said first layer surrounding only said metal gate electrode and also coming into contact with said conductive channel.

4,605,947

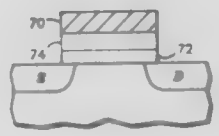
TITANIUM NITRIDE MOS DEVICE GATE ELECTRODE AND METHOD OF PRODUCING

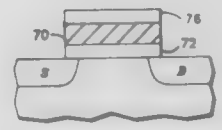
J. B. Price; Philip J. Tobin, both of Scottsdale; Fabio Pintchovski, Mesa, all of Ariz., and Christian A. Seelbach, San Jose, Calif., assignors to Motorola Inc., Schaumburg, Ill.

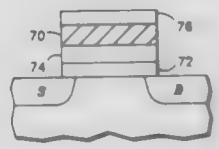
Division of Ser. No. 472,517, Mar. 7, 1983. This application Sep. 24, 1985, Ser. No. 779,533

Int. Cl.[4] H01L *29/78, 23/50, 23/52, 29/62*

U.S. Cl. 357—23.15 **3 Claims**







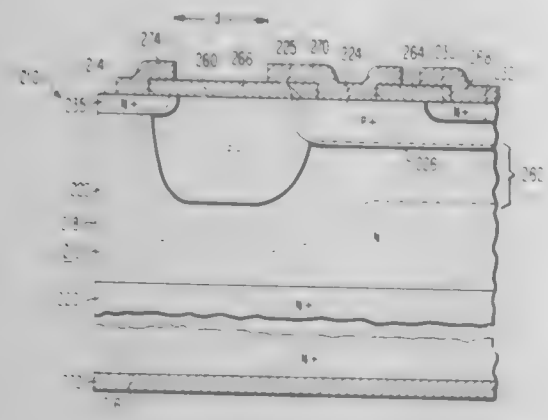
1. In a metal oxide semiconductor device, a gate electrode and interconnect overlying an insulator comprising: a layer of titanium nitride overlying the insulator; and a layer of silicon overlying the layer of titanium nitride.

4,605,948

SEMICONDUCTOR STRUCTURE FOR ELECTRIC FIELD DISTRIBUTION

Ramon U. Martinelli, Hightstown Borough, N.J., assignor to RCA Corporation, Princeton, N.J.

Filed Aug. 2, 1984, Ser. No. 637,027
Int. Cl.[4] H01L *29/72, 29/06, 29/90, 29/34*
U.S. Cl. 357—34 10 Claims



1. A semiconductor structure, comprising:
a silicon wafer having first and second opposing major surfaces and an edge,
a first region, of first conductivity type, contiguous with the second surface and including an edge portion which is contiguous with said edge at the first surface;
a second region, of second conductivity type, extending into the wafer from the first surface so as to form a PN junction with the first region at a predetermined depth from the first surface;
a third region, of second conductivity type, extending into the wafer from the first surface to a depth greater than said predetermined depth, the third region being disposed between and being contiguous with the second region and said edge portion, and having an areal charge concentration of approximately $1\text{-}2\times10^{12}$ cm^{-2};
an insulating layer overlying the third region on the first surface, said insulating layer overlying the boundary between the edge portion and the third region, and the boundary between the second region and the third region;
a first electrode contacting the edge portion at the first surface and overlying the insulating layer; and
a second electrode contacting the second region at the first surface, overlying the insulating layer, and being spaced a predetermined distance from the first electrode; said predetermined distance, in microns, being equal to the bulk breakdown voltage, in volts, divided by the critical field for avalanche breakdown, in volts per micron, of the PN junction between the first and second regions.

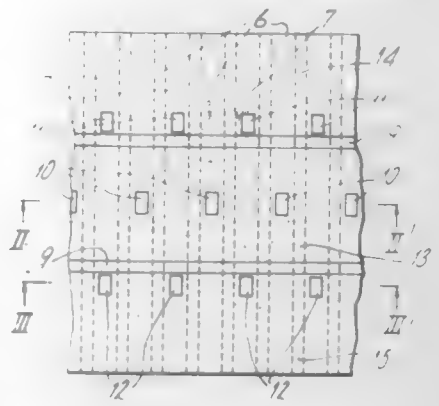
4,605,949

SEMICONDUCTOR DEVICE WITH INTERDIGITATED ELECTRODES

Michael J. Moore, Poynton, and David H. Paxman, Redhill, both of England, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jul. 26, 1984, Ser. No. 634,892
Claims priority, application United Kingdom, Aug. 26, 1983, 8322977
Int. Cl.[4] H01L *23/48*
U.S. Cl. 357—71 9 Claims

1. A semiconductor device comprising a semiconductor body having a major surface and alternate regions of opposite first and second conductivity types at said major surface, a first set of electrode fingers at a first metallization level on said major surface and contacting the regions of the first conductivity type, a second set of electrode fingers at the first metallization level on said major surface and contacting the regions of the second conductivity type, a first electrically-conductive bonding pad at a second metallization level and electrically connected to the electrode fingers of the first set, and a second electrically conductive bonding pad at said second metallization level, which second bonding pad is electrically isolated from the first bonding pad and is electrically connected to the electrode fingers of the second set, and and insulating layer overlying the two sets of electrode fingers, the first bonding pad extending at the second metallization level on the insulating layer transversely over the electrode fingers and being electrically connected to the first set of electrode fingers through at least one window in the insulating layer such that in



operation of the device the voltage drop along each electrode finger of said first set is substantially equal, and the second bonding pad extending at the second metallization level on the insulating layer transversely over the electrode fingers an being electrically connected to the second set of electrode fingers through at least one other window in the insulating layer such that in operation of the device the voltage drop along each electrode finger of said second set is substantially equal.

4,605,950

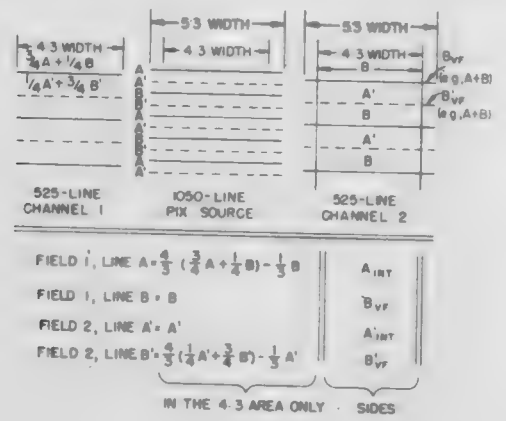
TWO CHANNEL COMPATIBLE HIGH DEFINITION TELEVISION BROADCAST SYSTEM

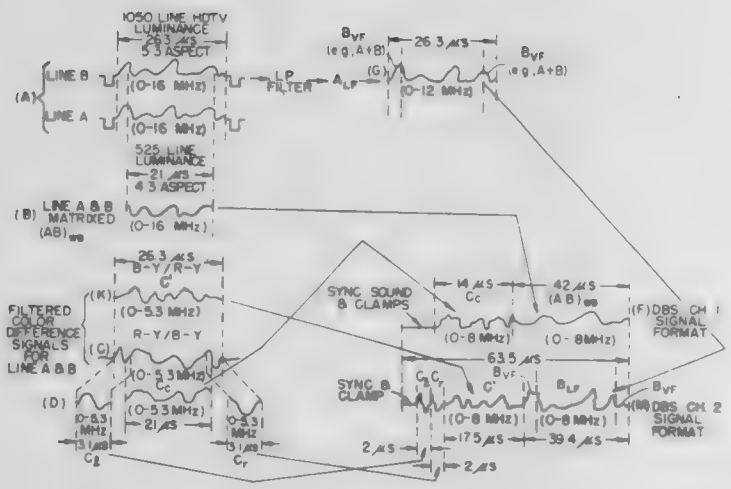
Abraham A. Goldberg, Stamford; Renville H. McMann, New Canaan, and John P. Rossi, Stamford, all of Conn., assignors to CBS Inc., New York, N.Y.

Filed Sep. 20, 1983, Ser. No. 534,026
Int. Cl.[4] H04N *9/42, 9/38*
U.S. Cl. 358—11 33 Claims

27. A television transmission system compatible with a television system having N television lines and a standard aspect ratio picture format, said system comprising:
a source of television picture signal having 2N television lines and a wider than standard aspect ratio picture format and the same height as said standard picture format,
first means for deriving from said source for transmission through a first transmission channel a first television signal having N lines and said standard aspect ratio, and
second means for deriving from said source for transmission through a second transmission channel simultaneously with the transmission of said first signal a second television signal having N lines and said wider than standard

aspect ratio and containing information which when combined with that of said first television signal produces a





high definition display having 2N lines and said wider than standard aspect ratio picture format.

4,605,951

APPARATUS FOR CONVERTING FIELD VIDEO SIGNALS INTO FRAME VIDEO SIGNALS

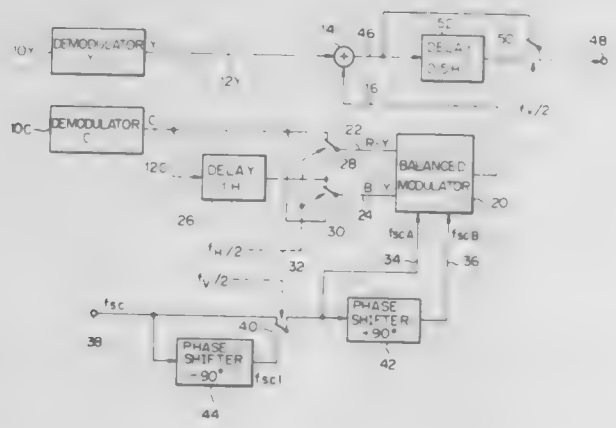
Michio Kuribayashi, Kaisei, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Oct. 5, 1984, Ser. No. 658,439

Claims priority, application Japan, Oct. 13, 1983, 58-189832

Int. Cl.⁴ H04N *11/20, 11/22, 9/80*

U.S. Cl. 358—11 **4 Claims**



1. An apparatus for converting field video signals into frame video signals comprising:

modulator means for modulating a chrominance subcarrier with a color signal contained in a field video signal;

signal composing means for combining the modulated subcarrier with a luminance signal of the field video signal;

signal converter means for producing a frame video signal including interlaced fields with a time delay applied to alternative ones of the fields of output signals delivered from said signal composing means, said time delay being substantially equal in period to half a horizontal scanning time period of the fields;

signal generator means, operative in response to a first signal which is substantially equal in frequency to the chrominance subcarrier, for generating a second signal which is shifter in phase by substantially 90 degrees with respect to said first signal; and

switching means for alternately selecting said first and second signals for each field, supplying said modulator means with the selected one of said first and second signals as the chrominance subcarrier.

4,605,952

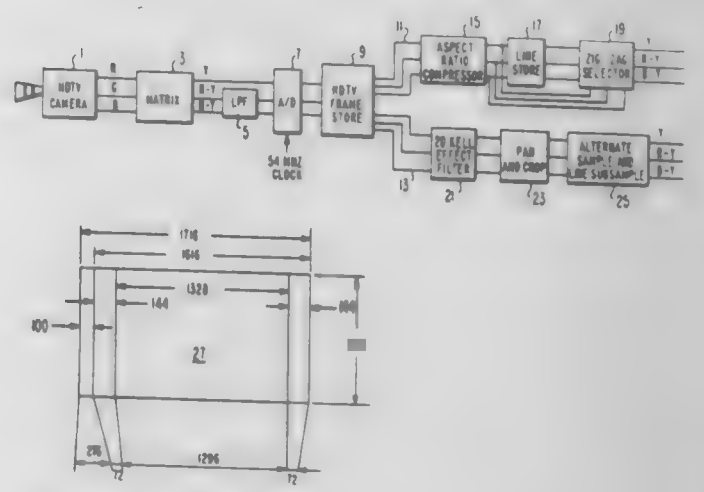
COMPATIBLE HDTV SYSTEM EMPLOYING NONLINEAR EDGE COMPRESSION/EXPANSION FOR ASPECT RATIO CONTROL

Kerns H. Powers, Princeton, N.J., assignor to RCA Corporation, Princeton, N.J.

Continuation-in-part of Ser. No. 485,446, Apr. 14, 1983, abandoned. This application Jun. 14, 1983, Ser. No. 504,374

Int. Cl.⁴ H04N *11/20, 11/04*

U.S. Cl. 358—13 **8 Claims**



1. A wide-angle television system compatible with a standard definition television system having a relatively narrow-angle field of view comprising:

generating means for generating video samples during an active line portion of a wide-angle television horizontal line, said video samples representing first and second portions of a scene, said first portion being representative of the active display portion of a standard definition television receiver and said second portion being representative of a part of said scene exclusive of said active display portion of said standard definition receiver;

compression means for time compressing said second portion of said scene such that the number of said video samples within said second portion are reduced by approximately a factor of 2; and

setting means for setting the total number of samples within said active line portion of said wide-angle television horizontal line to a value of 1440 samples which samples are compatible with the world standard studio-equipment sample rate of 13.5 MHz.

3. A wide-angle television system compatible with a standard definition television system having a relatively narrow-angle field of view comprising:

a source of television signals representative of a wide-angle view of an image of a scene, said signals being quantized at a first given rate to provide video samples representative of said wide-angle scene; said video samples including a first and second pluralities of samples representative of first and second portions of the active scan of said wide-angle scene and a third plurality of samples representative of a third portion of said active scan spatially positioned between said first and second portions; and

compression means for time compressing said samples, said

time compression being effected such that the third plurality of samples are compressed linearly so that the compressed third plurality of samples fit into the active display portion of a standard definition television receiver and the first and second pluralities are nonlinearly compressed to provide a wide-angle high-definition television system.

4,605,953

DIGITAL PAL COLOR TELEVISION SIGNAL DEMODULATORS

James H. Wilkinson, and David M. Creed, both of Basingstoke, assignors to Sony Corporation, Tokyo, Japan

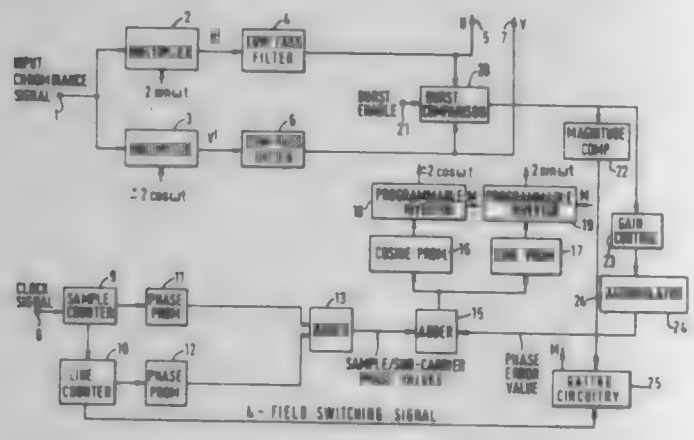
Filed Feb. 1, 1984, Ser. No. 575,756

Claims priority, application United Kingdom, Feb. 4, 1983, 8303068

Int. Cl.[4] H04N 9/65, 9/66, 11/18

U.S. Cl. 358—24

8 Claims



1. Apparatus for demodulating U and V color component signals from an input chrominance signal of a digital PAL color television signal which was derived from an analog PAL color television signal occurring in successive fields each formed of a plurality of successive horizontal lines and having said U and V color component signals modulated on a sub-carrier signal thereof, said digital television signal being derived by sampling said analog television signal at a sample frequency yielding a predetermined number of samples per horizontal line at corresponding sample positions such that said sub-carrier signal has a predetermined phase at each said sample position, said apparatus comprising:

first memory means for storing first values representing the phases of the sub-carrier signal at a first sample position of each of the successive lines of four successive fields of said analog television signal;

second memory means for storing second values representing relative phases of said sub-carrier signal at successive sample positions along a horizontal line relative to the phase at the first sample position thereof;

means to derive from said first and second values stored in said first and second memory means third values representing the phases at successive sample positions of each of the successive samples of said sub-carrier signal in eight successive fields of said analog television signal;

means to derive from said third values first and second quadrature amplitude values of said sub-carrier signal in synchronism with the sample frequency of said input chrominance signal; and

means to demodulate said input chrominance signal with each of said quadrature amplitude values of said sub-carrier signal to derive said U and V color component signals.

4,605,954

METHOD OF AND ARRANGEMENT FOR ADJUSTING COLOR SATURATION IN A VIDEO PRINTER

Friedrich Bestenreiner, Gruenwald; Immo Boie, Langenfeld, and Josef Helmberger, Munich, all of Fed. Rep. of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

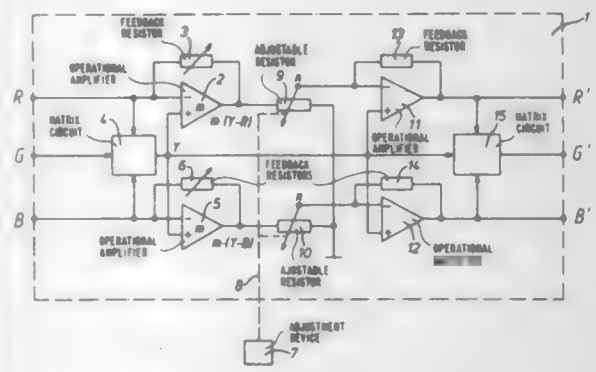
Filed Apr. 30, 1984, Ser. No. 605,494

Claims priority, application Fed. Rep. of Germany, Apr. 29, 1983, 3315616

Int. Cl.[4] H04N 9/68

U.S. Cl. 358—27

22 Claims



1. A method of adjusting color saturation in a color printer, particularly a video printer, comprising the steps of:

(a) generating a luminance signal for an image to be printed by processing a first blue signal representing a characteristic of the image in blue together with a first red signal and a first green signal respectively representing the characteristic in red and green;

(b) forming a pair of unadjusted difference signals by subtraction of said luminance signal and two selected ones of said first signals;

(c) adjusting each of said unadjusted difference signals to obtain a pair of adjusted difference signals;

(d) deriving a pair of modified signals for the two colors corresponding to said selected signals by subtraction of said luminance signal and said adjusted difference signals; and

(e) calculating a modified signal for the third color by combining said luminance signal with said pair of modified signals.

4,605,955

COLOR BALANCE ADJUSTING APPARATUS FOR COLOR TELEVISION CAMERAS

Takaaki Hashimoto, Noda; Kazushi Minagawa, Yokohama, and Yozo Iida, Komae, all of Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan

Filed May 2, 1983, Ser. No. 490,716

Claims priority, application Japan, May 7, 1982, 57-75313

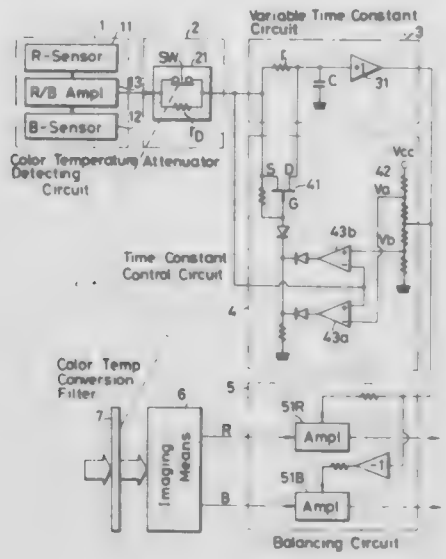
Int. Cl.[4] H04N 9/64

U.S. Cl. 358—29

3 Claims

1. In a color balance adjusting apparatus for automatically adjusting the gain of a chromaticity signal circuit of a color television camera including a color temperature conversion filter adapted to be moved into and out of an incident light path of imaging means in accordance with an output of a color temperature detecting circuit for detecting the color temperature of an illuminating light of an object for shooting, the combination comprising:

at least one attenuating circuit for selectively attenuating an output of said color temperature detecting circuit in dependence on whether said color temperature conversion filter is positioned in said incident light path.

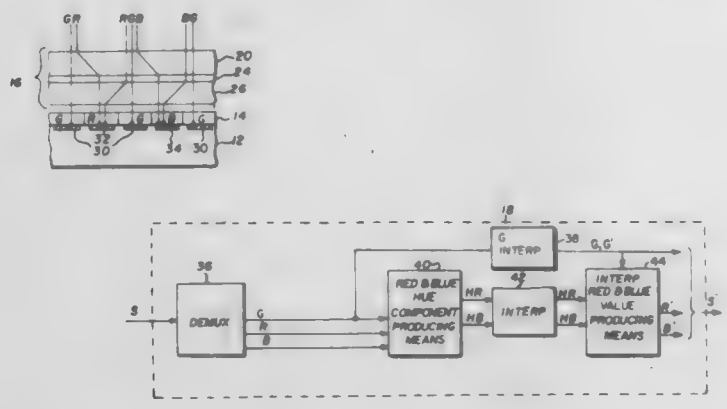


4,605,956

SINGLE-CHIP ELECTRONIC COLOR CAMERA WITH COLOR-DEPENDENT BIREFRINGENT OPTICAL SPATIAL FREQUENCY FILTER AND RED AND BLUE SIGNAL INTERPOLATING CIRCUIT

David R. Cok, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Sep. 10, 1984, Ser. No. 649,000
Int. Cl.[4] H04N *9/077, 9/07*
U.S. Cl. 358—44 **7 Claims**



2. An electronic color camera comprising:

(a) a solid-state color image sensor having red, green and blue image sensing elements for producing red., green and blue image signals, the red and blue image sensing elements each being located between neighboring pairs of green image sensing elements;

(b) color dependent birefringent optical spatial frequency filter means for deflecting red and blue light from portions of an image sampled by the green image sensing elements onto the red or blue image sensing elements located between them, and for substantially not deflecting the green light; and

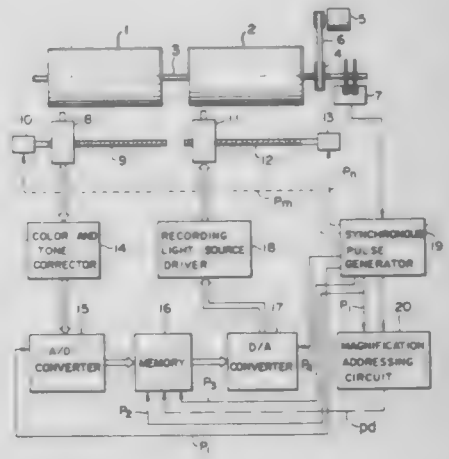
(c) signal processing means, including means for producing a signal representing red and blue hue component values at respective red and blue sampling locations, means for interpolating the red and blue hue component values, and means for producing interpolated red and blue signal values as a function of the interpolated hue component values and green signal values.

4,605,957

MACHINE AND METHOD FOR PICTURE REPRODUCTION WITH STEADILY VARIABLE REPRODUCTION SCALE

Mitsuhiko Yamada, Kyoto, Japan, assignor to Dainippon Screen Seizo Kabushiki Kaisha, Kyoto, Japan

Continuation of Ser. No. 170,127, Jul. 18, 1980, abandoned, which is a continuation of Ser. No. 933,714, Aug. 15, 1978, abandoned. This application Sep. 13, 1982, Ser. No. 417,437
Claims priority, application Japan, Aug. 25, 1977, 52-101976; Nov. 1, 1977, 52-131366
Int. Cl.[4] H04M *1/06*
U.S. Cl. 358—78 **5 Claims**



1. A picture reproducing method of variable enlargement scale, comprising:

successively scanning linear samples of an original picture to obtain analog input picture signals;

correcting color and tone of the analog input picture signals;

converting the analog input picture signals to digital input signals in an analog-digital converter in synchronization with first sampling pulses;

writing the digital input signals into a memory in synchronization with second sampling pulses, into memory locations with consecutively increasing addresses;

reading out the digital input signals stored in the memory as digital output signals in synchronization with third sampling pulses, addressing the successive memory locations by using addressing signals which repeatedly address selected memory locations for at least two periods of said third sampling pulse during each scan so that the values stored in such selected memory location are read out at least twice as digital output signals, such selected memory location being every "n"th memory address where "n" is an integer corresponding to the scale of picture enlargement;

converting the digital output signals into analog output picture signals in a digital-analog converter in synchronization with fourth sampling pulses;

and recording a reproduction of the original picture from the analog output signals, said first, second, third and fourth sampling pulses being provided at the same frequency.

4,605,958

METHOD AND APPARATUS FOR DETECTING THE CHANNEL TO WHICH AN ELECTRONIC RECEIVER SYSTEM IS TUNED

Patrick R. Machnik, Roseville; Bruce L. Petersen, Mounds View; Robert G. Schultz, New Brighton; Jerry T. Thatcher, Shoreview, all of Minn., and Roecella A. Whiting, Lanham, Md., assignors to Control Data Corporation, Minneapolis, Minn.

Filed Apr. 14, 1983, Ser. No. 486,003
Int. Cl.[4] H04N *17/04;* **H04H** *9/00*
U.S. Cl. 358—84 **56 Claims**

9. Apparatus for detecting which of a plurality of radio frequency carriers available over a radio frequency communi-

cations medium has been selected for reception by a communications system, said system including a selector, for selecting one of said carriers and a receiver, said apparatus comprising:

a multifrequency input adapted for coupling with said medium;

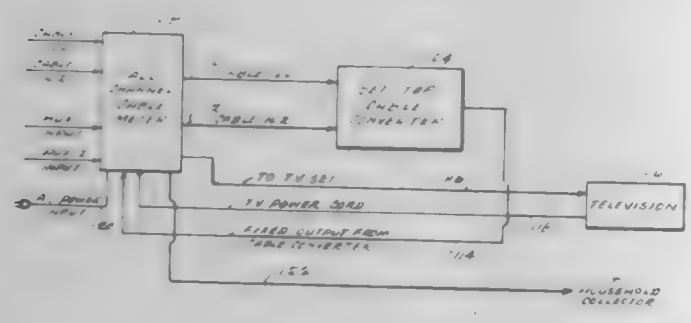
a multifrequency output coupled to said multifrequency input and adapted for coupling with said selector;

a single frequency input adapted for coupling with said selector;

a single frequency output adapted for coupling with said receiver; and

means, interconnecting said single frequency input and said single frequency output, for detecting the carrier frequency selected by said selector.

14. Apparatus for detecting which of a plurality of channels available over a medium has been selected for reception by a communications system, said system including a selector, cou-



pled to said medium, for selecting one of said channels, and having an output, and a receiver for receiving a channel selected by said selector, said apparatus comprising:

means, coupling said selector to said receiver, for intermittently monitoring said selector output; and

means for uncoupling said receiver from said selector during said intermittent monitoring.

45. A method of detecting which of a plurality of carriers has been selected for reception by a television system, said system including a selector for selecting one of said carriers, said method comprising the steps of:

counting the number of horizontal sync pulses between consecutive vertical sync pulses in television signals from said selector;

determining from said counting step when said television signals are acceptable; and

only after said determination is positive, detecting which of said carriers has been selected by said selector.

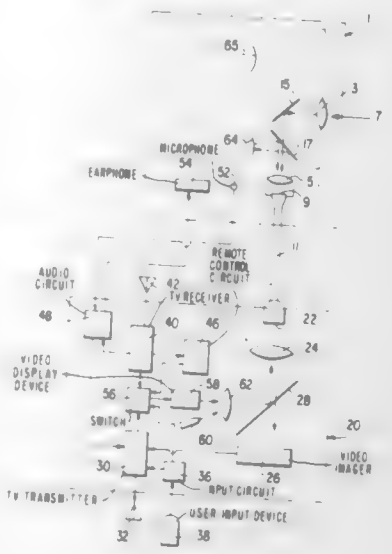
4,605,959

PORTABLE COMMUNICATIONS TERMINAL

Michael E. Colbaugh, Trafford, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Aug. 23, 1984, Ser. No. 643,503
Int. Cl.[4] H04N *7/14*
U.S. Cl. 358—93
11 Claims

1. Portable communication terminal composed of a headset to be worn on the head of a user and a portable transceiver set to be carried by the user, said terminal comprising: non-electrical optical fiber means mounted for transmitting optical images between a location at said headset and a location at said portable transceiver set; first optical means disposed at said headset for enabling an image transmitted to said location at said headset from said location at said transceiver set to be viewed by a user wearing said headset; second optical means disposed at said headset and associated with said location at said headset for causing an image of the scene in front of a user wearing said headset to be formed at said location at said transceiver set; television transmitter and receiver means at said transceiver set for transmitting a video signal and for forming a video display from signals conducted to said transmitter and receiver means; and third optical means at said transceiver set disposed between said transmitter and receiver means and said location at said transceiver set for supplying to said transmitter and receiver means images formed at said location at said transceiver set by light passing through said optical fiber means for conversion into a video signal, and for supplying to said location at



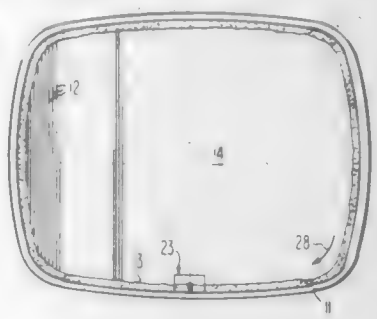
said transceiver set an image of the video display formed by said transmitter and receiver means for transmission via said optical fiber means to said location at said headset.

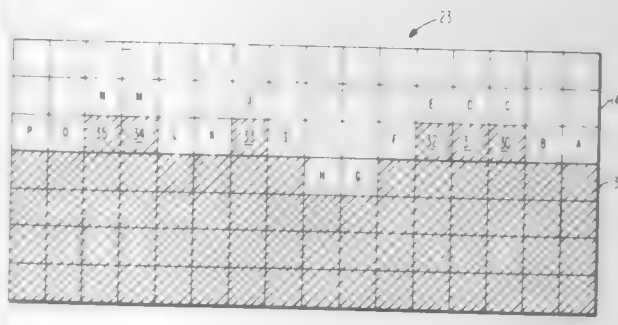
4,605,960

METHOD FOR AVOIDING IDENTIFYING PERIMETER VARIATIONS AS BLEMISHES IN A CCD IMAGE

Edward Cohen, Lancaster, Pa., assignor to RCA Corporation, Princeton, N.J.

Filed Oct. 22, 1984, Ser. No. 663,699
Int. Cl.[4] H04N *7/18*
U.S. Cl. 358—106
19 Claims





1. A method of avoiding the identification of permissible variations in the perimeter of an image on a CCD (charge coupled device) as blemishes in the proximity of said perimeter comprising the steps of:

detecting the charge levels of perimeter identifying pixels in a sequence of pixel motions, wherein a pixel motion is the detection of adjacent pixel charge levels and wherein adjacent pixels are pixels having contiguous sides or contiguous corners, said pixel motions being taken in directions defined by a pixel direction matrix wherein the pixel being detected is surrounded by adjacent pixels whereby the detection of side adjacent pixels results in straight pixel motions and the detection of corner adjacent pixels results in diagonal pixel motions; and:

further including the step of sequentially detecting the

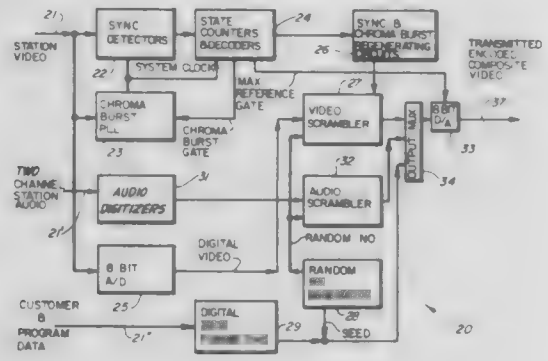
charge levels on a plurality of adjacent pixels and recording diagonal pixel motions as straight pixel motions where the first and the last pixel motions are diagonal in opposite directions and all intervening pixel motions are straight.

4,605,961

VIDEO TRANSMISSION SYSTEM USING TIME-WARP SCRAMBLING

Jeffrey E. Frederiksen, 603 W. Haven Dr., Arlington Heights, Ill. 60005

Filed Dec. 22, 1983, Ser. No. 565,023
Int. Cl.[4] H04N *7/167*
U.S. Cl. 358—119 **44 Claims**



1. An encoder for generating a scrambled composite video signal for secure transmission, the video signal having a plurality of video lines, each video line including a video data portion, said encoder comprising the combination of:

means for sampling the video data portion for each video line at a periodic rate and subdividing the video data portion for each video line into a plurality of segments,

a pseudorandom number generator for generating a plurality of pseudorandom number for at least some of said video lines, each pseudorandom number having multiple bits,

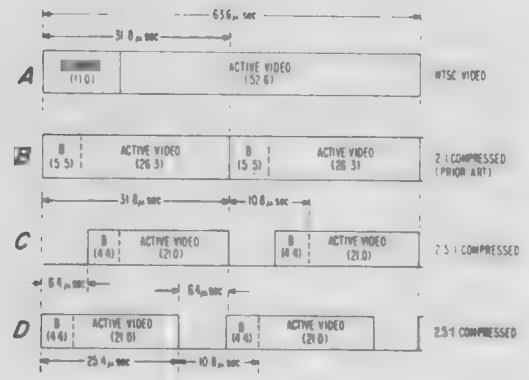
video scrambling means responsive to said pseudorandom numbers for inverting the polarity of the samples in selected segments, for reversing the order of the samples in selected segments, and for reversing the order of the segments in selected segment pairs.

4,605,962

PROGRESSIVE SCAN TELEVISION SYSTEM WITH VIDEO COMPRESSION EXCEEDING DISPLAY LINE RATE

Todd J. Christopher, Indianapolis, and Russell T. Fling, Fishers, both of Ind., assignors to RCA Corporation, Princeton, N.J.

Filed Nov. 30, 1984, Ser. No. 676,946
Int. Cl.[4] H04N *7/01*
U.S. Cl. 358—140 **4 Claims**



1. A television system, comprising:

a source for providing a video input signal having a given line rate;

processor means coupled to said source for time compressing said video input signal by a factor K and for increasing the line rate of the time compressed signal by a different factor N, K being greater than N, to provide a processed video output signal; and

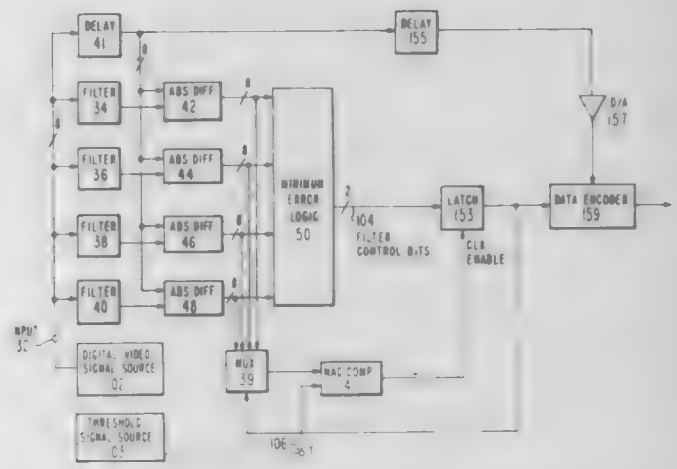
display means having a horizontal sweep rate equal to N-times said given line rate and coupled to said processor means for displaying said processed video output signal.

4,605,963

REDUCTION OF CONTROL BITS FOR ADAPTIVE SUB-NYQUIST ENCODER

Glenn A. Reitmeier, Trenton, and Curtis R. Carlson, Princeton, both of N.J., assignors to RCA Corporation, Princeton, N.J.

Filed Aug. 15, 1983, Ser. No. 523,823
Int. Cl.[4] H04N *7/04, 7/12*
U.S. Cl. 358—141 **5 Claims**



1. A method of transmitting data divided into first and second portions, each portion comprising a plurality of bytes, said method comprising transmitting said first portion, comparing at least one byte of the remaining untransmitted second portion to a plurality of selected combinations of bytes of said first portion, determining which of said selected combinations of bytes of said first portion is the closest match to said one byte of said second portion, transmitting control bits indicative of said closest match, and updating said control bits when said control bits no longer indicates a match within a selected tolerance.

4,605,964

METHOD AND APPARATUS FOR EDITING THE OUTPUT OF A TELEVISION SET

Frederick W. Chard, 7, Graham Avenue, St. Austell, Cornwall, England

PCT No. PCT/GB82/00352, § 371 Date Aug. 9, 1983, § 102(e) Date Aug. 9, 1983, PCT Pub. No. WO83/02208, PCT Pub. Date Jun. 23, 1983
PCT Filed Dec. 15, 1982, Ser. No. 525,034
Claims priority, application United Kingdom, Dec. 19, 1981, 8138341
Int. Cl.[4] H04N *7/087, 3/24*
U.S. Cl. 358—147 **9 Claims**

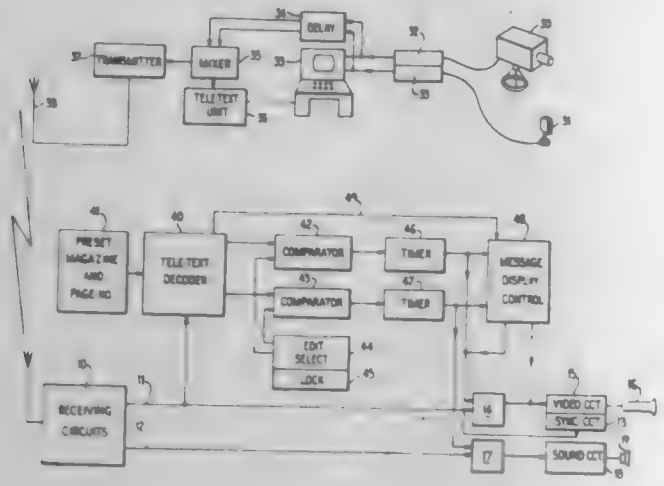
8. A controller for editing out undesired sound and visual events from a television signal where this signal includes coding individually identifying, as they occur, certain possibly-undesirable events forming part of a programme represented by the signal, the coding including an indication of the sound or visual nature of each said event; said controller comprising:

monitor means (**40**) for monitoring the television signal to identify said coding and output a corresponding coding signal,

signal processing means (**40,42,43,44**) connected to receive said coding signal and arranged to determine therefrom the time of occurrence and nature of said certain possibly-undesirable events, these latter events being events which are to be edited out, and produce inhibit signals in response thereto and

inhibit means (**14,17**) arranged to operate on said television signal in response to said inhibit signals such as to inhibit

the intelligible output from said controller of the sound portion of said television signal when the signal processing means (40,42,43,44) indicates the presence of a sound



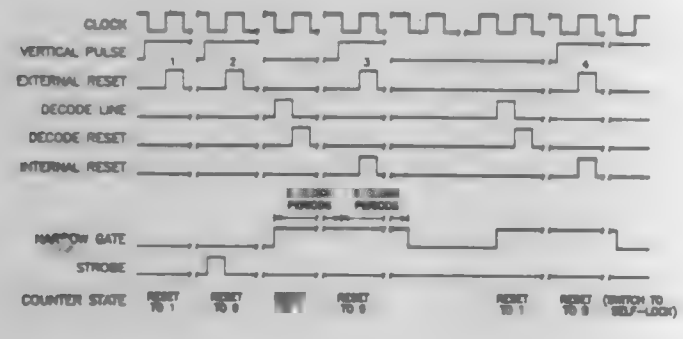
event to be edited out, and to inhibit the intelligible output from the controller of the vision portion of said television signal when the signal processing means (40,42,43,44) indicates the presence of a visual event to be edited out.

4,605,965

UNIVERSAL VERTICAL COUNTDOWN AND METHOD FOR VIDEO DISPLAY

Michael McGinn, Scottsdale, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed May 6, 1985, Ser. No. 730,525
Int. Cl.⁴ H04N *5/04*
U.S. Cl. 358—148 **35 Claims**



1. A universal vertical countdown for initiating vertical ramp retrace in a video display comprising:

means for deriving a plurality of external reset pulses in response to an external vertical pulse train;

means for initiating said vertical ramp retrace in response to said external reset pulses;

means for measuring a frequency value of said external reset pulses in response to first and second ones thereof;

means for storing said frequency value;

means coupled to said storing means for activating a gate signal at a predetermined time in anticipation of a third one of said external reset pulses in response to said stored frequency value;

means for generating a plurality of internal reset pulses at said stored frequency value;

means for detecting an occurrence of said third one of said external reset pulses within said gate signal; and

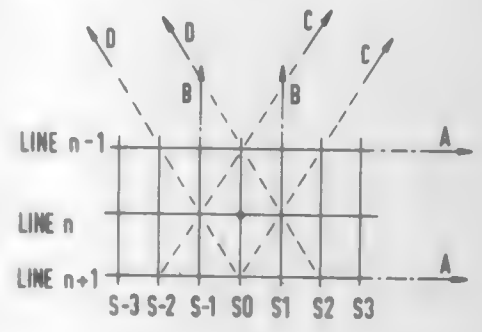
means for alternatively initiating said vertical ramp retrace in response to said internal reset pulses if said third external reset pulse occurs within said gate signal and a fourth one of said external reset pulses is coincident with one of said internal reset pulses.

4,605,966

ERROR CONCEALMENT IN DIGITAL TELEVISION SIGNALS

Mark C. Collins, Basingstoke, United Kingdom, assignor to Sony Corporation, Tokyo, Japan

Filed May 13, 1983, Ser. No. 494,324
Claims priority, application United Kingdom, May 14, 1982, 8214086
Int. Cl.⁴ H04N *5/14, 5/21*
U.S. Cl. 358—160 **10 Claims**



1. A method of concealing errors in a digital television signal, which television signal comprises a plurality of component sample signals corresponding respectively to sample positions along a horizontal scan line of a television picture made up of a plurality of such lines, the method comprising, in respect of each said sample signal which is in error:

calculating a first concealment accuracy by calculating from available sample signals disposed along a first direction of said television picture and to one side of the sample position of said error sample signal the expected value of a first sample signal adjacent to said sample position of said error sample signal, checking said expected value of said first sample signal against the actual value of said first sample signal, and suppressing said first concealment accuracy if its calculation involves the use of any error sample signal;

calculating a second concealment accuracy by calculating from available sample signals disposed along said first direction of said television picture and to the other side of said sample position of said error sample signal the expected value of a second sample signal adjacent to said sample position of said error sample signal, checking said expected value of said second sample signal against the actual value of said second sample signal, and suppressing said second concealment accuracy if its calculation involves the use of any error sample signal;

calculating a third concealment accuracy as the sum of said first and second concealment accuracies when neither said first nor said second concealment accuracy is suppressed;

calculating a fourth concealment accuracy by calculating from available sample signals disposed along a second direction different from said first direction of said television picture and to one side of said sample position of said error sample signal the expected value of a third sample signal adjacent to said sample position of said error sample signal, checking said expected value of said third sample signal against the actual value of said third sample signal, and suppressing said fourth concealment accuracy if its calculation involves the use of any error sample signal;

calculating a fifth concealment accuracy by calculating from available sample signals disposed along said second direction of said television picture and to the other side of said position of said error sample signal the expected value of a fourth sample signal adjacent to said sample position of said error sample signal, checking said expected value of said fourth sample signal against the actual value of said fourth sample signal, and suppressing said fifth concealment accuracy if its calculation involves the use of any error sample signal;

calculating a sixth concealment accuracy as the sum of said fourth and fifth concealment accuracies when neither said fourth nor said fifth concealment accuracy is suppressed;

selecting from the available said concealment accuracies a preferred direction of said television picture for correcting said error sample signal;

calculating a correction value for said error sample signal using available sample signals disposed along said preferred direction; and

substituting said correction value for said error sample signal so as to conceal the error.

4,605,967

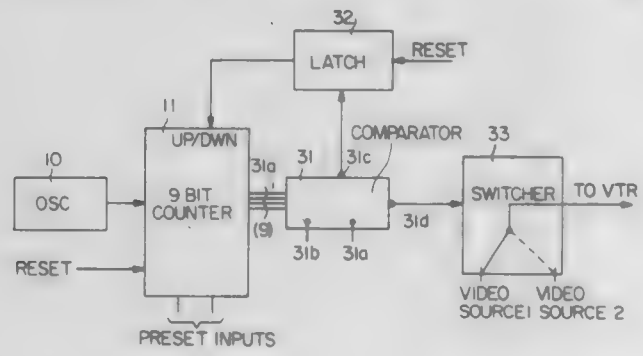
DIGITAL VIDEO SPECIAL EFFECTS GENERATOR

H. George Pires, 20 Surrey La., Parlin, N.J. 08859

Filed Mar. 12, 1984, Ser. No. 588,392

Int. Cl.[4] H04N *5/262*

U.S. Cl. 358—183 **7 Claims**



1. Apparatus for selectively connecting a first or a second television signal source to a video system carrying out horizontal and vertical scans at horizontal and vertical scan rates, respectively, comprising in combination

means for generating digital counting signals in a predetermined time relationship to a selected one of said scans and at a predetermined multiple of the associated one of said scan rates, and including first and second digital counting signal generating means respectively preset in synchronism with said horizontal and vertical scans,

keying signal generator means connected to said counting signal generator means for generating a first or second keying signal in response to predetermined one of said counting signals, and including generator means for comparing said counting signals to a predetermined count, and generating said first or said second keying signal when said counting signals signify a count greater than, or less than said predetermined count, respectively,

digital multiplier means having a first and second input connected to receive said counting signals, and including first and second multiplier means respectively having inputs connected to said first and second digital counting signal generating means, and first and second output terminals furnishing vertical and horizontal parabolic signals, respectively,

switch means for connecting said first or second television signal source to said video system in response to said first or second keying signal, respectively, and

adder means connected to said first and second multiplier means for adding said vertical to said horizontal parabolic signal, thereby creating an adder output signal for application to said keying signal generating means.

4,605,968

DIRECT BROADCASTING SATELLITE RECEIVER

Toshihide Hayashi, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Jul. 19, 1984, Ser. No. 632,614

Claims priority, application Japan, Jul. 21, 1983, 58-113542[U]

Int. Cl.[4] H04N *5/50, 5/445*

U.S. Cl. 358—188 **6 Claims**

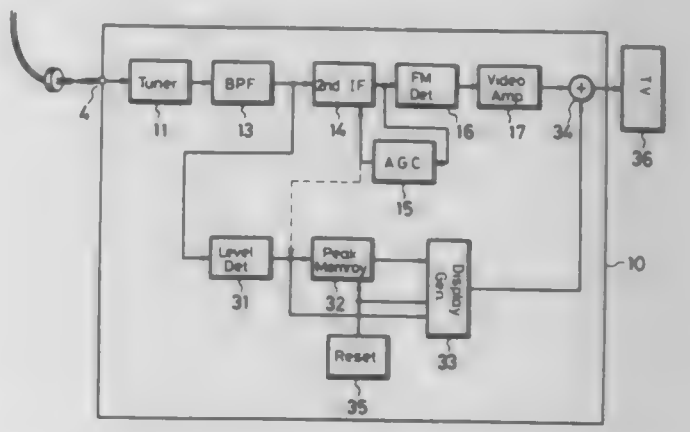
1. A direct broadcasting satellite receiver for receiving a broadcasting wave transmitted from a stationary artificial satellite through antenna means installed outdoors comprising:

a signal input terminal to which a signal from said antenna means is supplied through a signal cable;

a demodulating circuit for demodulating the signal fed in at said signal input terminal into a television signal;

a level detecting circuit for detecting a signal level of said signal fed in at said signal input terminal and producing an output signal representing said signal level;

a peak value holding circuit for holding the maximum value of the output level of said level detecting circuit output



signal and producing a signal representing said maximum value;

a display generator for developing video signals responsive to an output signal from said level detecting circuit and said signal representing said maximum value from said peak value holding circuit; and

signal superimposing means for superimposing said video signals from said display generator upon said television signal from said demodulating circuit, whereby the input signal level at said input terminal and a maximum value of the output level from the level detecting circuit are displayed on a television picture screen.

4,605,969

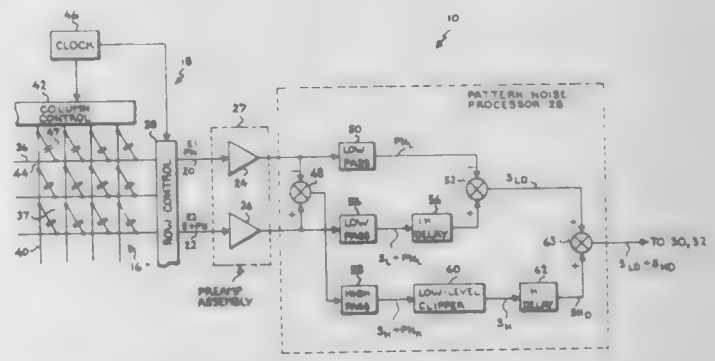
VIDEO PATTERN NOISE PROCESSOR

Wayne T. Green, Mexico, N.Y., assignor to General Electric Company, Charlottesville, Va.

Filed Aug. 21, 1984, Ser. No. 643,317

Int. Cl.[4] H04N *3/14*

U.S. Cl. 358—213 **14 Claims**



1. A pattern noise processor for cancelling pattern noise in a video signal from a charge-injection device, said charge-injection device being of a type which simultaneously reads out first and second signals, said first and second signals respectively containing contents of corresponding charge storage locations in first and second rows of said charge-injection device, said charge storage locations in said first row containing said video signal and pattern noise, and said charge storage locations in said second row containing only pattern noise, having had any video therein erased comprising:

means for delaying one of said first and second signals for a predetermined time, said predetermined time being suffi-

cient to coincide portions of said one of said first and second signals with portions of the other of said first and second signals originating in the same storage locations of the same row;

means for differencing the delayed and undelayed signals to produce a noise-reduced signal;

means for removing a high-frequency component of said noise-reduced signal above a predetermined frequency to produce a noise-reduced, low-frequency component;

means for passing a high-frequency component of at least said first signal, said high-frequency component including all frequencies above said predetermined frequency;

means for clipping portions of said high-frequency component having positive and negative amplitudes less than a predetermined value to produce a clipped high-frequency component;

means for delaying said high-frequency component for said predetermined time to produce a clipped delayed high-frequency component; and

means for adding said clipped high-frequency component and said noise-reduced, low-frequency component.

4,605,970

METHOD AND APPARATUS FOR CALIBRATING AN OPTICAL DOCUMENT DIGITIZER

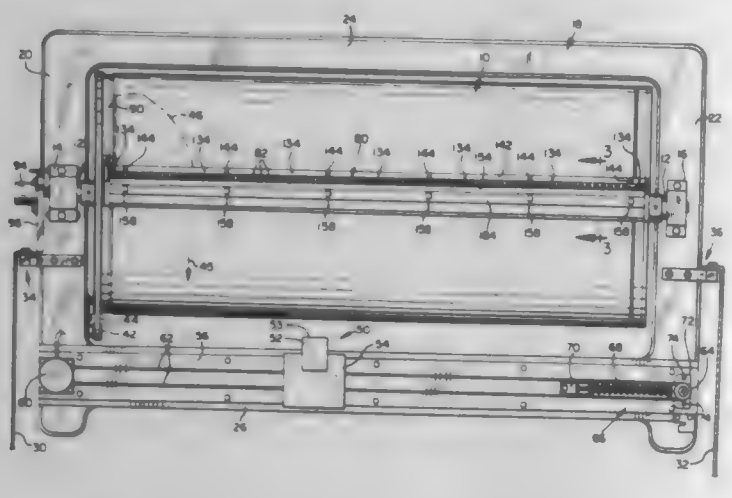
Jeffrey A. Hawkins, Lake Oswego, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Filed Oct. 1, 1984, Ser. No. 657,285

Int. Cl.[4] H04N *1/36*

U.S. Cl. 358—265

16 Claims



1. A calibration apparatus for an optical documents digitizer having a drum which is rotatable about an axis and an optical array of photo detectors for scanning the drum, the optical array having a scanning width comprising:

an elongated strip;

the strip having an optical pattern of contrasting light and dark areas on one surface thereof, the pattern including plural discrete blocks, each of the blocks having first and second orthogonal edges, the first edges being positioned along a scanning reference line;

the strip being adapted for mounting to the rotatable drum of the digitizing apparatus with the first edges, and thereby the scanning reference line, parallel to the axis of the drum.

4,605,971

DOCUMENT READING DEVICE

Shigeki Kimura, Ibaraki, Japan, assignor to Mita Industrial Co., Ltd., Osaka, Japan

Filed Jun. 6, 1985, Ser. No. 741,894

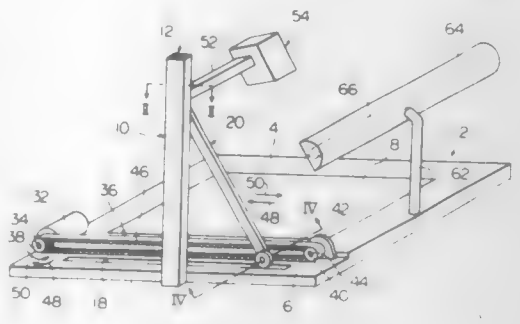
Claims priority, application Japan, Jun. 11, 1984, 59-119420

Int. Cl.[4] H04N *1/12*

U.S. Cl. 358—285

8 Claims

1. A document reading device comprising a document stand having a substantially plane document placing surface on which to place a document to be read, a guide member defining a guide passage extending in a direction toward and away from the document placing surface, an oscillating member mounted such that its one end can reciprocate freely along the document placing surface in a predetermined scanning direction and in a direction opposite to it and the other end can freely reciprocate along the guide passage, a driving source for oscillating the oscillating member which is capable of moving said one end of the oscillating member at a substantially constant speed in the scanning direction, and an optical reading



means provided in the oscillating member for reading the surface of the document placed on the document placing surface, whereby while said one end of the oscillating member is moved in the scanning direction at said substantially constant speed, the optical distance between the surface of the document placed on the document placing surface and the optical reading means is maintained substantially constant, and the optical reading means scans the surface of the document.

4,605,972

IMAGE FORMING METHOD

Isamu Hatanaka, Kaisei, Japan, assignor to Fuji Photo Film Co., Ltd., Tokyo, Japan

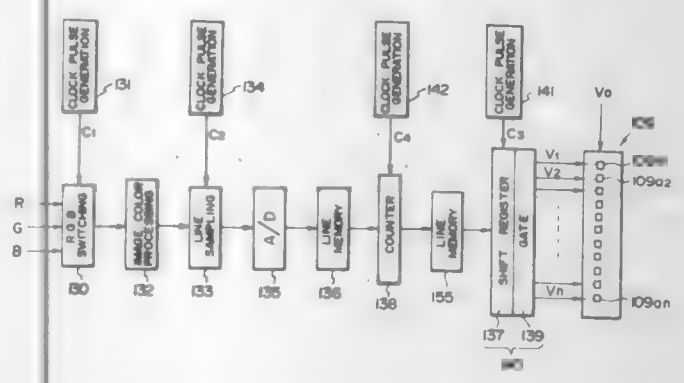
Filed Aug. 31, 1984, Ser. No. 646,911

Claims priority, application Japan, Sep. 5, 1983, 58-162909; Jul. 26, 1984, 59-156273

Int. Cl.[4] H04N *1/23;* G01D *15/14;* G02F *1/13*

U.S. Cl. 358—302

9 Claims



1. An image forming method in which a liquid crystal shutter array operable as a light valve is positioned between a photosensitive material and a light source, and light emitted by said light source to said photosensitive material is controlled by driving each liquid crystal shutter portion constituting a picture element of said liquid crystal shutter array, thereby conducting imagewise exposure of said photosensitive material to the light, wherein the improvement comprises controlling the drive of said liquid crystal shutter portion by supplying to said liquid crystal shutter portion driving pulses having a pulse width shorter than the response time of the liquid crystal and by changing the effective duration of said driving pulses as a function of image density information of an image signal, and using a photosensitive material which can express a half tone as said photosensitive material.

4,605,973
SYSTEM, APPARATUS AND METHOD FOR RECORDING AND EDITING BROADCAST TRANSMISSIONS

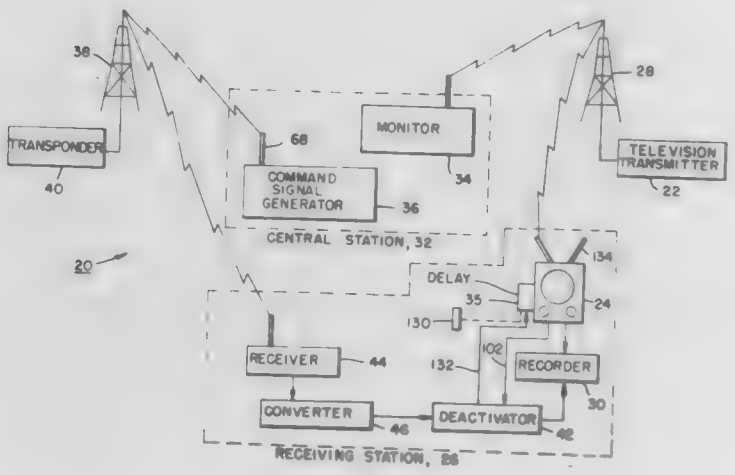
Henry Von Kohorn, 22 Perkins Rd., Greenwich, Conn. 06830

Continuation-in-part of Ser. No. 410,464, Aug. 23, 1982, Pat. No. 4,520,404. This application Mar. 29, 1985, Ser. No. 717,828

Int. Cl.[4] H04N *5/76;* H04H *1/00*

U.S. Cl. 358—335

41 Claims



1. A remote editing system for broadcast transmissions comprising:

monitoring system means for monitoring broadcast transmissions from a plurality of sources of such transmissions to determine the program content of each of said broadcast transmissions;

means for transmitting an editorial message based on said program content of individual ones of said broadcast transmissions to subscriber stations of said system;

first receiving means in each of said subscriber stations for receiving said broadcast transmissions, said first receiving means including means for presentation of data of the broadcast transmissions;

second receiving means in each of said subscriber stations for receiving said message;

means coupled between said first and said second receiving means for operating said first receiving means in accordance with the message received by said second receiving means; and wherein

said operating means includes means for delaying a presentation of data of said broadcast transmission relative to an occurrence of said editorial message to permit a monitoring of the broadcast transmissions by said monitoring means prior to the presentation of data of the broadcast transmissions at a subscriber station.

4,605,974
MAGNETIC RECORDING AND REPRODUCING APPARATUS

Atsuo Ochi, Moriguchi; Akio Hashima, Tsuzuki, and Masao Tomita, Neyagawa, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Nov. 21, 1983, Ser. No. 555,002

Claims priority, application Japan, Nov. 24, 1982, 57-206694; Nov. 24, 1982, 57-206695

Int. Cl.[4] G11B *15/12, 15/14*

U.S. Cl. 360—62

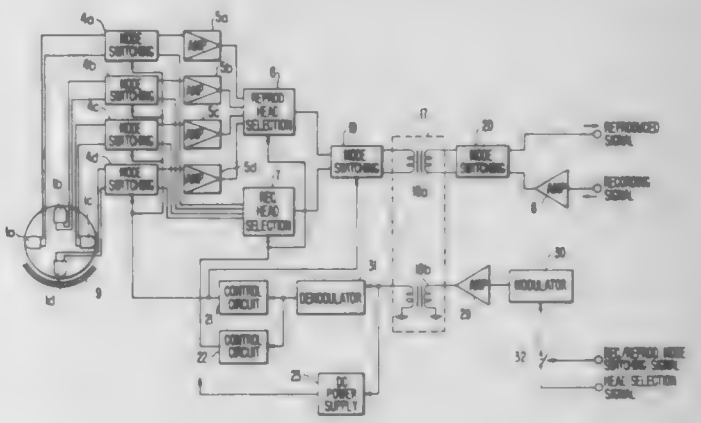
7 Claims

1. A magnetic recording/reproducing apparatus having an oscillator for generating a carrier signal and a modulating means for modulating said carrier signal by a recording/reproducing mode switching signal and a head selection signal so as to thereby obtain a modulated signal; and a cylinder unit comprising a rotor drum, a stator drum and a rotary transformer for transmitting signals between the rotor and stator drums, wherein said rotary transformer has a first channel for transmitting video signals and a second channel for transmitting said modulated signal from said stator drum to said rotor drum and wherein said rotor drum comprises:

a plurality of rotary magnetic heads for recording and reproducing video signals;

an amplifying means for amplifying signals reproduced by said plurality of rotary magnetic heads;

a recording/reproducing mode switching means for coupling said plurality of rotary magnetic heads to said amplifying means and for coupling said amplifying means to said first channel of said rotary transformer during a reproducing mode, and coupling said first channel of said rotary transformer to said plurality of rotary magnetic heads and isolating said amplifying means from said plurality of rotary magnetic heads during a recording mode;



a head selecting means for selecting one rotary magnetic head from among said plurality of rotary magnetic heads;

a control means for obtaining said recording/reproducing mode switching signal and said head selection signal for controlling said mode switching means and said head selecting means, respectively, from said carrier signal of said modulated signal transmitted from said stator drum through said second channel of said rotary transformer; and

a power source for prodcuing a DC voltage for energizing all of said means on said rotor drum from said modulated signal transmitted from said stator drum through said second channel of said rotary transformer.

4,605,975
PORTABLE NEWS-GATHERING CASSETTE RECORDER HAVING MICROPHONE TALK-OVER CAPABILITY

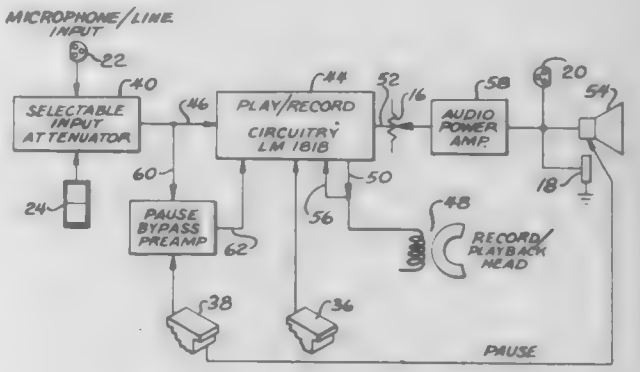
Franklin D. Beaman, 835 Forest Ave., Wilmette, Ill. 60091

Filed Jun. 27, 1983, Ser. No. 507,971

Int. Cl.[4] G11B *15/12*

U.S. Cl. 360—62

2 Claims



1. In a portable battery-operated tape recorder for news-gathering and reporting or the like having a tape transport; tape recorder control means including means for selecting a record mode; a playback mode, and a pause mode; an audio input connection operatively connected to a record amplifier means including record tape head means when the record mode is selected, playback audio output means operatively connected to a playback amplifier means including playback

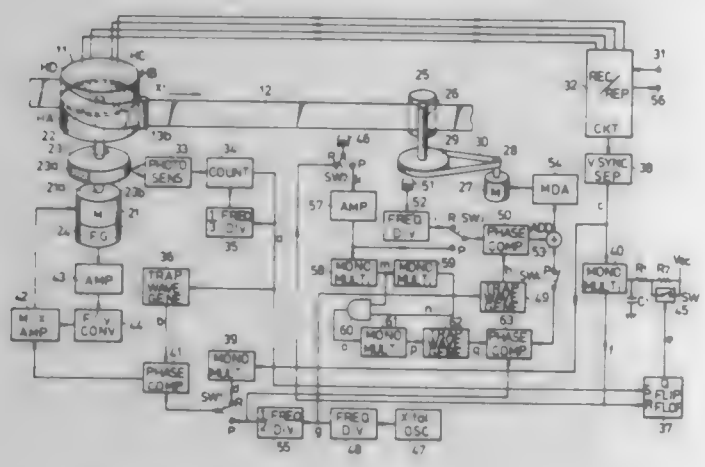
tape head means when the play mode is selected; the improvement comprising selectable means for operatively interconnecting the audio input connection and the audio output means when the tape recorder is in the play mode whereby audio may be routed to the output means from the input connection; wherein the selectable means for operatively interconnecting the input connection and output connection includes means operatively connected to the pause mode selecting means wherein said interconnecting means is enabled only in the pause mode.

4,605,976

RECORDING AND/OR REPRODUCING SYSTEM FOR A 4-HEAD TYPE RECORDING AND/OR REPRODUCING APPARATUS

Takeyoshi Ito, and Masahiko Tsuruta, both of Yokohama, Japan, assignors to Victor Company of Japan, Ltd., Yokohama, Japan

Filed May 22, 1984, Ser. No. 612,690
Claims priority, application Japan, May 24, 1983, 58-91372
Int. Cl.[4] G11B *21/04*
U.S. Cl. 360—70 7 Claims



1. A recording and/or reproducing system for a 4-head type recording and/or reproducing apparatus, said recording and/or reproducing apparatus comprising a rotary body having an outer peripheral surface to which a magnetic tape is wrapped around over an angular range which is slightly greater than 270°, a first motor for rotating said rotary body, four magnetic heads for successively recording and/or reproducing essentially one field of a video signal on and/or from one track on said magnetic tape, said four magnetic heads being made up of first and second pairs of magnetic heads, said first pair of magnetic heads having gaps of the same azimuth angle and being mounted at diametrical positions on said rotary body, said second pair of magnetic heads having gaps of the same azimuth angle which is different from the azimuth angle of the gaps of said first pair of magnetic heads, and being mounted at diametrical positions on said rotary body with an angular separation of 90° from the respective magnetic heads of said first pair, a capstan for moving said magnetic tape, a second motor for rotating said capstan, and a control head for recording and/or reproducing a control signal on said magnetic tape, said recording and/or reproducing system comprising:

first rotation detecting means for detecting a rotation of said rotary body which is rotated by said first motor, and for producing a detection signal in synchronism with a rotational phase of said rotary body;

frequency dividing means for frequency-dividing the output detection signal of said first rotation detecting means so that a frequency thereof becomes equal to ½ a field frequency of said video signal;

separating means for separating a vertical synchronizing signal from said video signal;

control and head discriminating signals generating means supplied with an output frequency divided signal from said frequency dividing means and the separated vertical synchronizing signal from said separating means, for generating a control signal in phase with said vertical synchronizing signal and a head discriminating signal having a period of four fields, said control signal and said head discriminating signal generated from said control and head discriminating signals generating means being supplied to said control head to be recorded on said magnetic tape and be reproduced from said magnetic tape;

second rotation detecting means for detecting a rotation of said capstan which is rotated by said second motor, and for producing a detection signal;

oscillator means for producing a signal having a constant frequency;

first phase comparing means for comparing the phase of the output detection signal of said second rotation detecting means and the phase of an output signal of said oscillator means during a recording mode of said recording and/or reproducing apparatus in which the video signal successively recorded on said magnetic tape by said magnetic heads, and for comparing the phase of a control signal which is reproduced from said magnetic tape by said control head and the phase of the output signal of said oscillator means during a reproducing mode of said recording and/or reproducing apparatus in which the video signal is successively reproduced from said magnetic tape by said magnetic heads;

obtaining means for obtaining said head discriminating signal from a signal which is reproduced from said magnetic tape by said control head;

second phase comparing means for comparing the phase of said head discriminating signal from said obtaining means and the phase of the output signal of said oscillator means having the period of four fields;

first rotation controlling means for applying to said second motor an output signal of said first phase comparing means during the recording mode, and for applying to said second motor an added signal obtained by adding the output signal of said first phase comparing means and an output signal of said second phase comparing means during the reproducing mode, so as to control the rotation of said second motor;

third phase comparing means for comparing the phase of the output signal of said frequency dividing means and the phase of a signal obtained from the separated vertical synchronizing signal during the recording mode, and for comparing the phase of a signal from said frequency dividing means and the phase of the output signal of said oscillator means during the reproducing mode; and

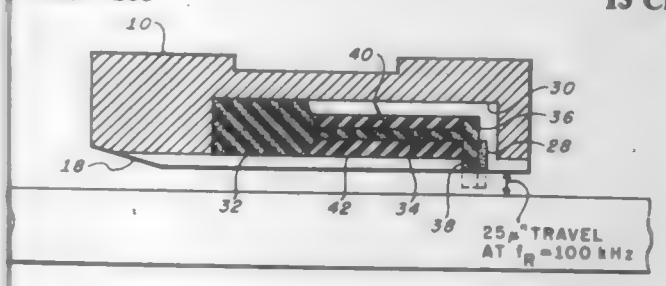
second rotation controlling means for applying an output signal of said third phase comparing means to said first motor, so as to control the rotation of said first motor.

4,605,977

AIR BEARING HEAD DISPLACEMENT SENSOR AND POSITIONER

Hugh B. Matthews, Boxboro, Mass., assignor to Sperry Corporation, New York, N.Y.

Filed Dec. 14, 1983, Ser. No. 561,365
Int. Cl.[4] G11B *21/20, 5/60*
U.S. Cl. 360—103 13 Claims



1. A suspension system for a flying head, comprising:

(a) slider means for supporting a magnetic transducer, having an air bearing surface for providing a running clearance above a moving magnetic medium, said surface fur-

ther comprised of respective leading and trailing ends relative to motion of a data track and a plurality of rails extending longitudinally between said ends defining a channel therein,

(b) means for displacing said magnetic transducer coupled to said slider means for maintaining said transducer at a predetermined height above said medium,

(c) displacement driving means, responsive to a correction signal, for providing energization of said means for displacing said magnetic transducer,

(d) said means for displacing said magnetic transducer further comprised of a nonmetallic beam disposed in said channel, having a proximal edge affixed to said leading end and a cantilevered distal edge, including flexure means disposed therebetween and a portion therebetween comprised of piezoelectric material, for supporting said magnetic transducer at said distal edge, and

(e) proximity sensor means coupled to said beam for capacitively sensing the displacement of said distal edge of said beam from said medium, integrally disposed upon said edge.

4,605,978

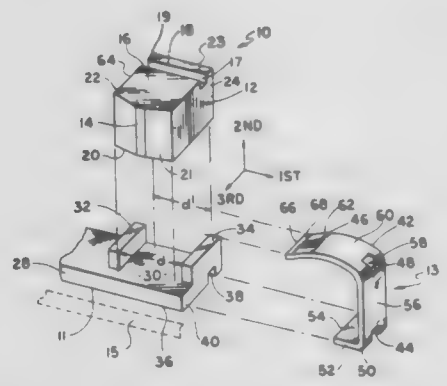
CLIP SYSTEM FOR IMMOVEABLY MOUNTING A MAGNETIC HEAD ON A SUPPORT

Mark Zeavin, 27 E. Las Flores Dr., Altadena, Calif. 91001

Filed Nov. 23, 1984, Ser. No. 674,214

Int. Cl.[4] G11B *5/50, 21/16;* **A41F** *1/00;* **B42F** *1/08*

U.S. Cl. 360—104 **26 Claims**



26. A magnetic head mounting and registration system for positioning the head against a magnetic recording surface comprising:

a support member having a top support surface, a bottom support surface opposite the top support surface, an outer edge defining a connecting surface between the top support surface and the bottom support surface, a first registration flange on the top support surface, extending away from the top support surface, and a second registration flange on the top surface, spaced a first distance from the first registration flange and extending away from the top support surface, the second registration flange being nearer the outer edge than the first registration flange, the support having an index notch having a first width in the corner region between the outer edge and the bottom support surface;

a head having a bottom head surface, a top head surface opposite the bottom head surface, a front head surface connecting the top and bottom head surfaces and having a magnetic contact area extending between the top and bottom head surfaces, a first side surface and a second side surface spaced from the first side surface a second distance substantially the same but very slightly smaller than the first distance for enabling the head to be positioned between the first and second registration flanges with the bottom head surface adjacent the top surface, for inhibiting side-to-side movement of the head between the first and second registration flanges, the head further having a first index cavity and a second index cavity in the top head surface, each cavity having a second width; and

a C-shaped clip having a base-portion, an edge portion, a first bend connecting the base portion to the edge portion, an arch portion, a second bend connecting the arch portion to the edge portion remote from the first bend, a lip portion, a third bend connecting the lip portion to the arch portion remote from the second bend, a notch tang having a third width near the first bend, a first tang, having a fourth width, near the second bend and a second tang having a fifth width near the third bend, the clip being dimensioned so that the base portion presses up against the bottom support surface and the arch portion presses down against the top head surface to hold the head with the bottom head surface immoveable pressed against the top support surface, the third width being substantially the same as the first width whereby the notch tang extends into and fits tightly in the index notch, the second, fourth and fifth widths being substantially the same whereby the first and second tangs fit tightly in the first and second index cavities, respectively, the arch portion being sized so that the third bend fits over the corner region between the top head surface and the first side surface, the notch tang and the first and second tangs holding the head immoveable against movement parallel to the registration flanges, the notch tang and first and second tangs positioned relative to each other so as to position the head relative to the support in a predefined position whereby the contact area contacts the magnetic recording surface.

4,605,979

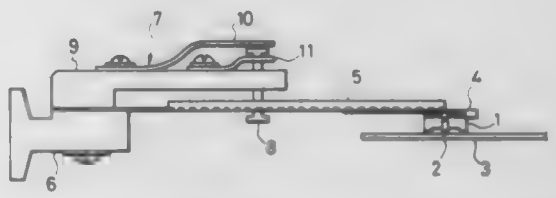
LOAD/UNLOAD SUSPENSION DEVICE FOR A MAGNETIC DISC APPARATUS

Yohichi Inoue; Katsuyuki Tanaka; Yoshinori Takeuchui; Isao Koromegawa, all of Ibaraki; Yuzoo Yamaguchi, Tsuchiura, and Yokuo Saitoh, Kanagawa, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 22, 1984, Ser. No. 592,256

Int. Cl.[4] G11B *5/54, 21/22, 5/48, 21/16*

U.S. Cl. 360—105 **4 Claims**



1. A load/unload suspension device for a magnetic disc apparatus comprising, a load arm, a magnetic head support supported by the load arm, a magnetic head section on the magnetic head support, a resilient member acting on the load arm and thereby on said magnetic head support to apply thereto a force acting in the direction of the magnetic disc, and an electrically heated means comprised of a shape memory alloy means for acting against the force applied by said resilient member during unloading, said shape memory alloy means constituted of a thermo-elastic, martensitic Ti-Ni alloy, such that, when the means is electrically heated up to a temperature equal to or above the transformation point, the alloy changes to an austenitic phase, thereby changing the shape of the shape alloy memory means to lift the magnetic head from the magnetic disc and to develop a driving force which is greater than the counteracting force of the resilient member.

4,605,980

INTEGRATED CIRCUIT HIGH VOLTAGE PROTECTION

Marc D. Hartranft, Scotts Valley, and Keith A. Garrett, San Jose, both of Calif., assignors to Zilog, Inc., Campbell, Calif.

Filed Mar. 2, 1984, Ser. No. 585,407

Int. Cl.[4] H02H *3/24*

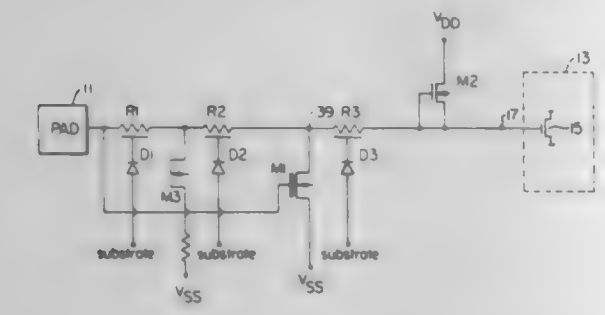
U.S. Cl. 361—56 **3 Claims**

1. As part of an integrated circuit chip formed on a semiconductor substrate, having a wire connection pad and an active

circuit to be protected from high voltage spikes introduced through said pad, a protection circuit located on said chip and disposed in an electrical current path therebetween, comprising:

a first effect transistor having a gate connected to said current path, and source and drain connections disposed between said current path and a first common point of the active circuit, said gate separated by an insulative layer a distance from said substrate such that the gate insulation remains effective during said high voltage spikes, whereby the existance of a high voltage spike causes the first transistor to turn on with a low impedance path between said current path and said first common point and thus limit the voltage in said current path,

a first resistance provided in said current path between said pad and said first field effect transistor, said gate of said



first transistor being connected on the pad side of said first resistance,

a punch through semiconductor device connected between said current path intermediate of said first resistance and said first common point, thereby to provide a second low impedance path between said current path and said first common point for high voltage spikes, and

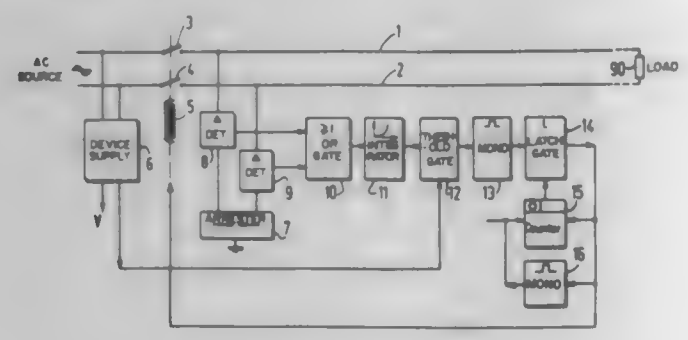
a second field effect transistor having a gate connected to said current path at an intermediate location between the first transistor and the active circuit, and source and drain connections disposed between said current path at said intermediate location and a second common point of the active circuit, said gate being separated by an insulative layer a distance from said substrate such that the gate insulation would irreversibly break down during said high voltage spikes but is protected therefrom by said first field effect transistor.

4,605,981

INDUSTRIAL OR DOMESTIC OVERVOLTAGE PROTECTIVE DEVICE

Jean-Marie Huvet, Rilly La Montagne, and Gerard J. Serrie, Jonchery Sur Vesle, both of France, assignors to Claude, S.A., Puteaux, France

Filed Jul. 10, 1984, Ser. No. 629,308
Claims priority, application France, Jul. 13, 1983, 83 11681
Int. Cl.[4] H02H *9/04*
U.S. Cl. 361—91 **7 Claims**



1. An industrial or domestic overvoltage protective device for disconnecting a load (90) and a corresponding protective module (7) from both conductors (1, 2) of a power line when said protective module (7) is not able to dissipate all the overvoltage energy without destructive effect, characterized in that it includes in combination:

a power supply circuit (6) connected upstream to the power line;

two detectors of overvoltage (8, 9) each connected downstream between a respective one of the power line conductors (1, 2) and a respective input of said protective module (7);

one OR-gate (10) having its inputs connected to the outputs of each of said detectors (8, 9);

a threshold gate (12) having one input coupled to the OR-gate output (10);

a first monostable trigger (13) having a first time constant, to which is applied the output signal of said threshold gate (12);

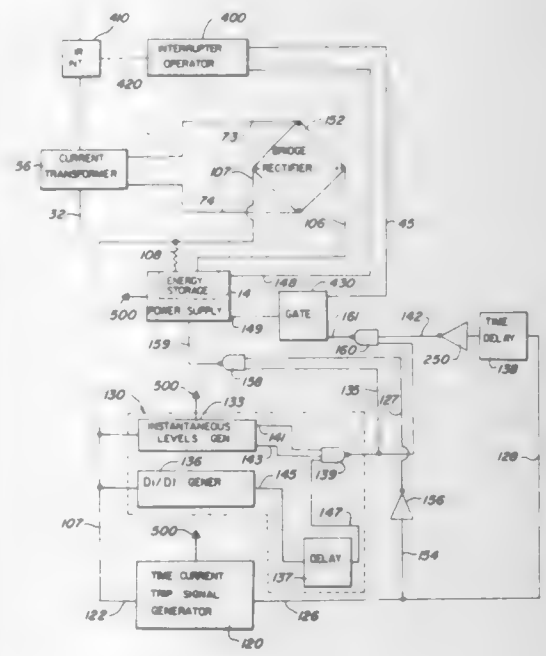
a first latch gate (14) to which is applied the output signal of said first monostable trigger (13), and having an output connected to means (5) for controlling the state of a bipolar insulating device (3, 4) located in series in both power line conductors (1, 2) between the downstream detector connection to the power line and the upstream connection to the power line of the power supply circuit (6).

4,605,982

CONTROL CIRCUIT FOR A CIRCUIT INTERRUPTER

Robert H. Harner, Park Ridge, and Joseph W. Ruta, Elmhurst, both of Ill., assignors to S&C Electric Company, Chicago, Ill.

Continuation-in-part of Ser. No. 506,942, Jun. 22, 1983, Pat. No. 4,511,658. This application Nov. 5, 1984, Ser. No. 668,110
Int. Cl.[4] H02H *3/44, 3/08*
U.S. Cl. 361—94 **16 Claims**



11. A control circuit for generating a trip signal in response to current above a selected threshold in an alternating-current line, said control circuit comprising:

trip signal generating means for generating a trip signal when the rate of change of the current in the line exceeds a selected rate, said trip signal generating means comprising means for delaying generation of said trip signal until the rate of change of the current independent of the current magnitude continuously exceeds the selected rate throughout a predetermined time interval, the time interval being measured from the time the rate of change of the current exceeds the selected rate.

4,605,983

DRIVE CIRCUITS

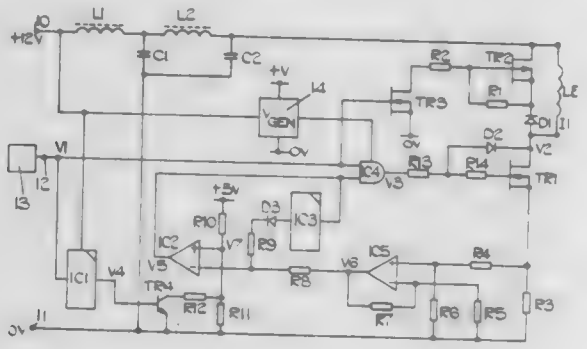
Ian J. Harvey, Cricklade, England, assignor to Lucas Industries public limited company, Birmingham, England

Filed Dec. 19, 1984, Ser. No. 683,511

Claims priority, application United Kingdom, Jan. 31, 1984, 8402470

Int. Cl.[4] H01H *47/32;* F02D *41/30*

U.S. Cl. 361—154 8 Claims



1. A drive circuit for controlling the flow of electric current in the solenoid of an electromagnetic device in response to a control signal comprising first and second terminals for connection to a DC supply, one end of said solenoid being connected in use to one of said supply terminals, a first semiconductor switch having a solenoid current path connected in series in use, between the other end of said solenoid and one end of a current sensing resistor the other end of which is connected to the other supply terminal, a current recirculation loop including a diode and a second semiconductor switch connected in parallel with said solenoid, a control signal input terminal, driving means for said second semiconductor switch, said driving means being connected to said control signal input terminal whereby when the control signal is supplied to said input terminal the current recirculation loop will be rendered operative, a comparator, first means for applying a voltage signal to one input terminal of the comparator dependent upon the magnitude of the current flow in said sensing resistor, second means for generating a reference voltage which is applied to the second input terminal of the comparator, an AND gate the output of which is utilized to render the solenoid current path of the first semiconductor switch conductive, one input of the AND gate being connected to said control signal input terminal and the other input to the output of said comparator, first monostable circuit means responsive to said control signal the output of the circuit acting to modify the reference voltage supplied to the comparator after a predetermined time following receipt of the control signal, and a second monostable circuit means responsive to the output of the comparator the output of the circuit being applied to the one input of the comparator, whereby the current flow in the solenoid will rise to a peak value as determined by a first value of the reference voltage and thereafter will switch at a frequency determined by said second monostable circuit means, the current flow in the solenoid being reduced to a peak holding value after said predetermined time, the peak holding value of the current being determined by a second value of the reference voltage, the current thereafter being switched by the action of said second monostable circuit means.

4,605,984

STATIC CONTROL STRAP

Robert A. Fiedler, Santa Ana, Calif., assignor to Beckman Industrial Corporation, Fulerton, Calif.

Filed Aug. 5, 1985, Ser. No. 762,249

Int. Cl.[4] H05F *3/02*

U.S. Cl. 361—220 6 Claims

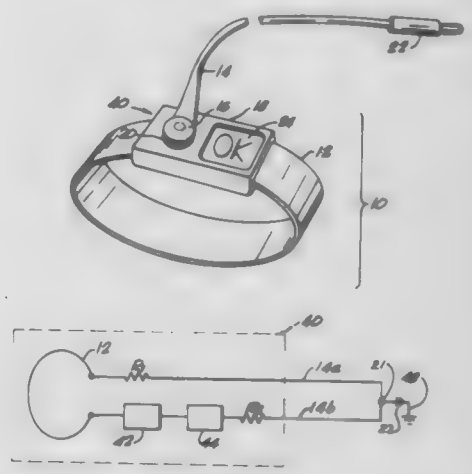
1. A grounding device for connecting the body of a person to a ground point to drain off electrostatic charge from the body of said person comprising:

a wrist band adapted to be worn on a bare wrist of a person using said grounding device, said wrist band being electrically conductive and adapted for making electrical contact with the body of said person;

a connecting cable having first and second insulated wires;

one end of said first and second wires being electrically connected at a common ground point;

an end of said first wire opposite said one end being electrically connected to said wrist band;



signal generating means coupled with indicating means electrically connecting said wrist band to said ground point through said second wire, said first wire serving as a return path for signals from said generating means so that electrical continuity between said wrist band and said ground point is indicated by receipt of said signals by said indicating means.

4,605,985

SENSOR ARRAY

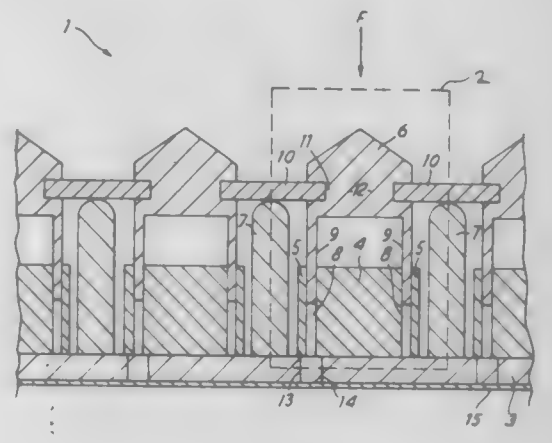
Jeremy D. M. Watson, Burgess Hill, England, assignor to Emi Limited, Hayes, England

Filed Sep. 6, 1985, Ser. No. 773,134

Claims priority, application United Kingdom, Sep. 14, 1984, 8423315

Int. Cl.[4] H01G *7/00, 5/01*

U.S. Cl. 361—283 6 Claims



1. A sensor array comprising: a plurality of sensor elements, each element having electrodes and a dielectric body which are relatively movable, from a rest position upon application of pressure to the element, such that the increase in penetration of the body between the electrodes is proportional to the amount of pressure applied; and a common resilient support connected to the elements thereby to return the electrodes or body of each of those elements to the rest position when pressure is removed from that element.

4,605,986

COOLED ELECTRICAL CIRCUIT COMPONENT, PARTICULARLY SWITCHING-TYPE SEMICONDUCTOR

Willy Bentz, Sachsenheim; Willi Gansert, Kornwestheim; Gert Jakob, Stuttgart; Kurt Stammler, Schwieberdingen, and Christoph Walter, Vaihingen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

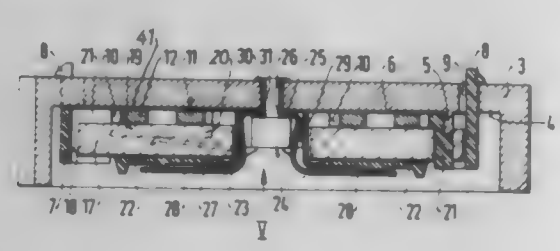
Filed Dec. 20, 1984, Ser. No. 684,091

Claims priority, application Fed. Rep. of Germany, Mar. 13, 1984, 3409037

Int. Cl.[4] H05K *7/20*

U.S. Cl. 361—386

18 Claims



1. A pre-assemblable, heat-spike resistant electrical circuit component and cooling structure combination

wherein the electrical circuit component (**11**) is a static, plate-like component having a thermally conductive portion (**12**) and two major surfaces (**19**, **41**) and, in operating, generates heat,

said combination having

a first, heat-transferring, base-plate, element (**3**) having an engagement surface (**4**), the component (**11**) being positioned with a first major surface (**41**) thereof against said engagement surface (**4**) of the base-plate heat-transferring element (**3**);

a spring (**24**) pressing the component (**11**) towards the engagement surface (**4**);

and comprising, in accordance with the invention,

a second heat-transferring element (**17**) positioned against the second major surface (**19**) of the component (**11**) and storing heat generated by operation of said component (**11**), particularly during peak operation thereof, and re-radiating said heat through said thermally conductive portion (**12**) of said component (**11**) to said base-plate element (**2**), thereby alleviating potentially damaging heat spikes in said component,

a resilient insulative holder (**7**) partially surrounding said component (**11**), said second heat-transferring element (**17**) and said spring (**24**), the spring (**24**) engaging a portion (**22**) of said holder (**7**) adjacent to the second heat-transferring element (**17**) and exerting pressure thereagainst, and thus pressing the second heat-transferring element (**17**) against the component (**11**), and the component (**11**) against the heat-transferring base-plate element (**3**); and

means (**8**, **30**) securing at least said spring (**24**), holder (**7**), and base-plate (**3**) together as an assembly adapted for use as part of a larger electrical circuit;

said spring (**24**) holding the component (**11**) between the first (**3**) and second (**17**) heat-transferring elements and in position on said base-plate heat-transferring element (**3**).

4,605,987

METHOD OF CONTROLLING PRINTED CIRCUIT BOARD SOLDER FILLETS AND PRINTED CIRCUIT BOARDS INCLUDING SOLDER FILLET CONTROL PATTERNS

Dana R. Allensworth, New Canton, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 22, 1983, Ser. No. 564,131

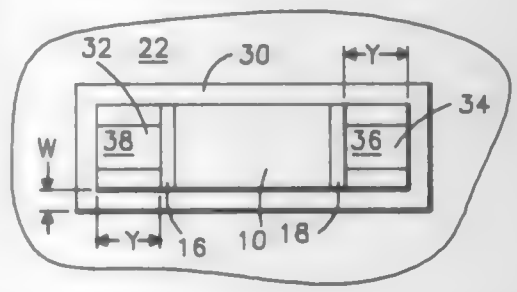
Int. Cl.[4] H05K *1/18*

U.S. Cl. 361—403

26 Claims

1. A printed circuit board having controlled solder fillets, on said board having a number of surface mounted components locations, which components having leadless electrodes of a predetermined height z are attached by a solder process, said board comprising:

a solder resist control pattern affixed on said board around at least some of said surface mounted component locations to define the solder fillets such that the maximum distance each said solder fillet extends from said leadless electrode is not less than z; and



means for controlling solder fillet width to be substantially uniform over the maximum distance each said solder fillet extends from said leadless electrode; whereby

at least some of said components affixed to said board in said solder resist control pattern by the solder process are provided a predictable solder quality.

4,605,988

ANTI-STATIC GROUNDING ARRANGEMENT FOR WORK ENVIRONMENT SYSTEM

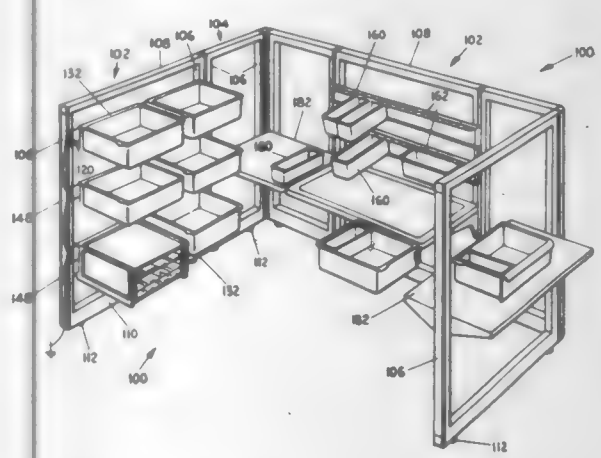
James H. Nienhuis, Wyoming, and Charles P. Schreiner, Saugatuck, both of Mich., assignors to Herman Miller, Inc., Zeeland, Mich.

Filed Feb. 25, 1983, Ser. No. 469,902

Int. Cl.[4] H02B *1/06;* H05F *3/02*

U.S. Cl. 361—429

9 Claims



1. In a work environment system for product assembly, storage, packaging and/or shipping operations, wherein the system comprises a plurality of support frames defining one or more work stations and/or storage areas and having relatively nonconductive surfaces, at least one or more work surfaces mounted to at least one support frame, a plurality of containers having conductive properties and means for removably mounting the containers to the support frames, wherein certain of the containers are removably mounted to the support frames, the improvement which comprises:

conductive interface means mounted intermediate the containers and the support frames, and providing a conductive interface therebetween;

interface grounding means interconnected to the conductive interface means and an earth ground providing a low impedance discharge path to earth ground from the containers, work surfaces and frames;

transport carts for transporting the removable containers between work stations;

means for removably suspending the removable containers on the carts;

transport interface means providing a conductive interface between the removable containers and the transport carts, and comprising metallic grounding plates conductively connected to the transport carts so that each of the containers suspended on the transport carts abuts at least one of the metallic grounding plates; and

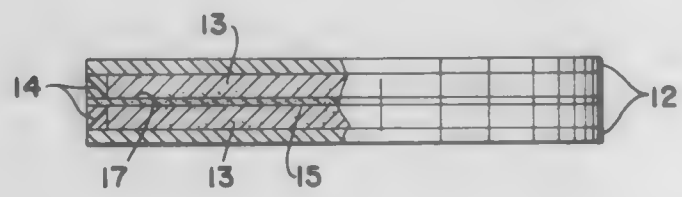
transport grounding means connected to the transport interface means and comprising at least open conductive caster in contact with ground level and mounted to each of the transport carts, and means to electrically interconnect each of the metallic grounding plates on one of the transport carts to the conductive caster on the one transport cart, wherein the grounding means continuously provides a low impedance discharge path from the transport carts and containers suspended thereon to an earth ground.

4,605,989

ELECTRODES FOR DOUBLE LAYER CAPACITORS

Allen V. Marse, Independence; Phil D. Bennett, Cleveland Hts., and Donald L. Boos, Garfield Hts., all of Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

Filed Aug. 12, 1985, Ser. No. 764,379
Int. Cl.[4] H01G *9/02*
U.S. Cl. 361—433 **6 Claims**



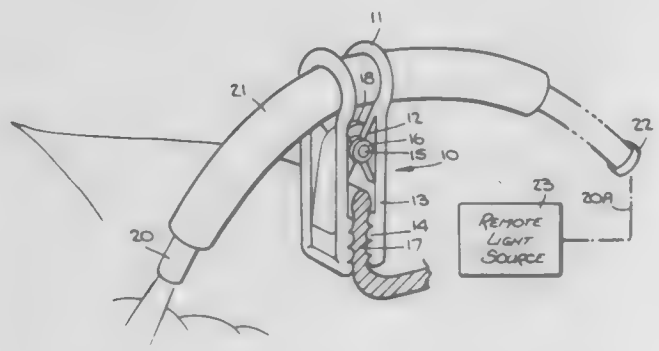
1. A double layer capacitor comprising a first and second electrode, said electrodes comprising a high surface area carbon constituent and an electrolyte, and an ionically conductive separator means between and in contact with said electrodes electronically separating said electrodes from each other, the improvement comprising providing in said electrodes at least 1%, by weight, of an inert particulate material selected from the group consisting of SiO_2, Al_2O_3, SiC and aluminum silicates to reduce the leakage current of said capacitor.

4,605,990

SURGICAL CLIP-ON LIGHT PIPE ILLUMINATION ASSEMBLY

Joseph R. Wilder, 151 W. 86th St., Apt. 9D, New York, N.Y. 10024, and Franklin G. Reick, 228 West Pl., Westwood, N.J. 07675

Continuation-in-part of Ser. No. 612,149, Jan. 21, 1984, Pat. No. 4,562,832. This application Sep. 24, 1984, Ser. No. 653,717
Int. Cl.[4] F21V *8/00*
U.S. Cl. 362—32 **7 Claims**



1. A light pipe illumination assembly to illuminate a work site, said assembly comprising:

A. a light pipe having an optical outlet at its front end and an optical inlet at its rear end, said rear end having means to couple the pipe to a light source;

B. detachable means to anchor said pipe adjacent the work site at a position in which the front section cantilevers form the anchor means into the site; and

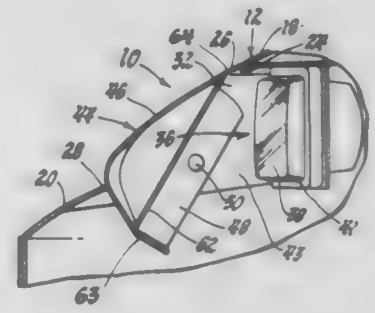
C. a bendable sleeve surrounding the front section having dead soft characteristics to render the front section orientable.

4,605,991

CONCEALED HEADLAMP

Michael S. Fylan, Lakeville, Mich., assignor to General Motors Corporation, Detroit, Mich.

Continuation-in-part of Ser. No. 552,410, Nov. 16, 1983, abandoned. This application Mar. 25, 1985, Ser. No. 715,616
Int. Cl.[4] B60Q *11/00*
U.S. Cl. 362—65 **3 Claims**



1. In a vehicle body having a headlamp opening in a forwardly sloping vehicle body panel defined by a lower leading edge, a trailing upper edge and laterally spaced apart side edges, a headlamp assembly for illuminating a roadway and being fixedly mounted in the headlamp opening below the upper trailing edge and rearwardly above the leading edge so that the fixed headlamp defines a rear wall of the headlamp opening and a space between the fixed headlamp and the lower leading edge of the headlamp opening, the improvement comprising:

first and second vertical side walls depending respectively from the side edges of the opening to define side walls extending between the headlamp and the upper trailing edge and lower leading edge of the headlamp opening;

a closure door having a first closure surface sized to fill the headlamp opening and contoured to match the forward slope of the vehicle body panel to thereby conceal the fixed headlamp and streamline airflow over the vehicle body when the closure door is closed;

pivot means acting between the closure door and the vehicle body to enable rotary movement of the closure door about an axis transversely of the vehicle body to move the first closure surface downwardly through the space between the fixed headlamp and the lower leading edge of the headlamp opening to an open position stored within the space between the fixed headlamp and the lower leading edge of the headlamp opening to thereby open the headlamp opening and expose the fixed headlamp for illumination of the roadway; and

said closure door having a second closure surface sized and configured differently from the first closure surface to define a horizontal floor substantially filling the space between the fixed headlamp and the lower leading edge of the headlamp opening and between the first and second side walls when the closure door is rotated about the transverse axis to the open position so that the headlamp, side walls and second closure surface cooperate to define a forwardly opening air entrapping recess which streamlines airflow by capturing a stagnant column of air.

4,605,992

LIGHTING FIXTURE INSULATION

Craig H. Cover, P.O. Box 755, Newtown, Pa. 18940

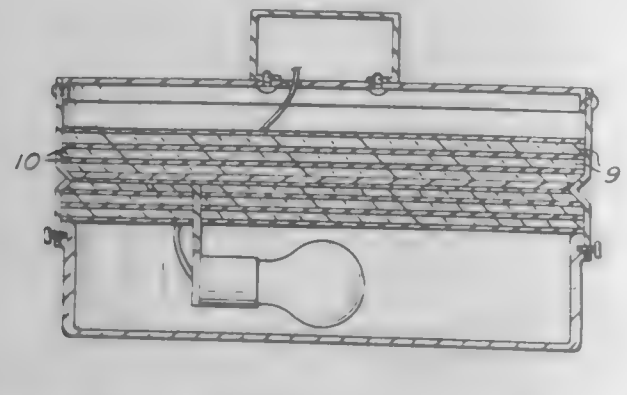
Filed Jun. 12, 1985, Ser. No. 743,784

The portion of the term of this patent subsequent to Oct. 1, 2002, has been disclaimed.

Int. Cl.[4] F21S *1/14*

U.S. Cl. 362—147

8 Claims



1. In a lighting fixture having a mounting pan for ceiling or wall mounting, thermal insulation affixed to said mounting pan, and a lightbulb, the improvement comprising; a batt of thermal insulation containing two or more layers bonded together, each layer being two-ply and composed of metal foil and fiberglass.

4,605,993

RECHARGING SPOT/FLOOD LANTERN

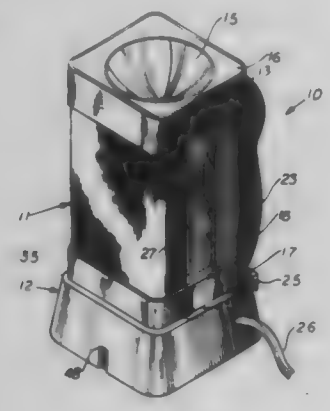
Francis J. Zelina, Jr., Lake City, Pa., assignor to Lighting Systems, Inc., Erie, Pa.

Filed Dec. 19, 1984, Ser. No. 683,343

Int. Cl.[4] F21L *7/00*

U.S. Cl. 362—183

9 Claims



2. In combination a light having a battery and a charger,
said battery comprising a lamp having a case and a lamp circuit,
a battery,
said case comprising a support surface area,
a first terminal on said support surface area, non-circular in cross section,
an annular terminal on said support surface area,
a battery charger stand,
said stand having a charging means thereof adapted to provide a charging current to the battery,
support means on said stand adapted to have said surface area supported thereon,
first terminal on said stand,
a second terminal means on said stand spaced from said first terminal means and adapted to engage said annular terminal on said case,
said first terminal means on said stand being adapted to engage said first terminal on said surface area whereby said charging means is connected to said battery,
said surface area on said case is non-circular in cross section,
said lamp has an end member,
said surface area being on said end member,
said end member has a shape complimentary to the shape of said stand and is adapted to be supported on said stand in a plurality of relative positions of rotation,
and guide means on said stand to guide said lamp into one of said plurality of positions,
said guide means on said stand comprises a rim extending upwardly from said support means on said stand and adapted to receive said end member of said body,
said restore circuit including a switch adapted to connect said restore circuit in paralled with said charging terminals when said battery is connected to said circuit to impress a restore charge voltage on said battery for charging,
said switch being adapted to switch said restore voltage away from said battery to connect a voltage lower than said restore charging voltage

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4,605,994

FLASH LAMP

Rudolf Krieg, Munich, Fed. Rep. of Germany, assignor to Patent-Treuhand-Gesellschaft für elektrische Glühlampen mbH, Munich, Fed. Rep. of Germany

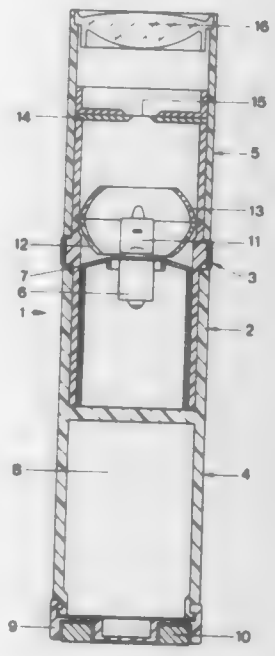
Filed Mar. 29, 1985, Ser. No. 717,702

Claims priority, application Fed. Rep. of Germany, Apr. 3, 1984, 3412476

Int. Cl.[4] F21L *7/00*

U.S. Cl. 362—202

9 Claims



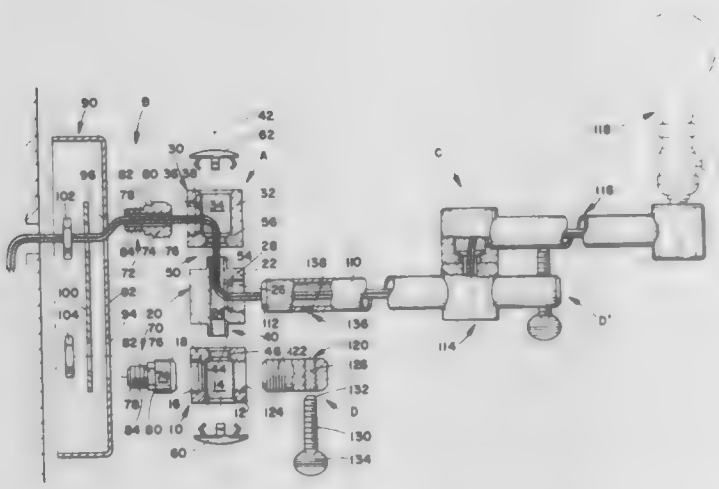
1. Flashlight (1) having
a housing (2) defining a battery chamber (8);
a halogen incandescent lamp (11) located and retained within the housing;
and a reflector-and-lens system secured to the housing, for projecting light from the halogen incandescent lamp,
said reflector-and-lens system comprising, in accordance with the invention:
a first reflector section formed by an elliptical reflector portion (12) defining a theoretical ellipse, said reflector partly surrounding the halogen incandescent lamp (11), the filament of the halogen incandescent lamp being located at one focal point of said theoretical ellipse;
a second reflector section formed by a part spherical reflector portion (13), the wide opening of which faces the elliptical reflector portion (12) and located downstream—in the direction of the light beam from the halogen incandescent lamp (11)—adjacent the elliptical reflector portion;
a spherical condenser lens (16) spaced, downstream, from the elliptical reflector portion and the part spherical reflector portion;
and a diaphragm (14) located between the part spherical reflector portion and the aspherical condenser lens (16).

4,605,995

LOCKING ARM LAMP SWIVEL

Louis D. Pike, Moreland Hills, Ohio, assignor to Pike Machine Products Company, Cleveland, Ohio

Filed Mar. 15, 1985, Ser. No. 712,187
Int. Cl.[4] F21V *21/26*
U.S. Cl. 362—287 17 Claims



1. A wall mountable lockable arm assembly for supporting a lighting fixture, the assembly comprising:

a first swivel member;

a second swivel member rotatably connected to the first swivel member to undergo rotating movement relative thereto about a swivel axis;

a mounting means for fixedly mounting the first swivel member to a supporting surface;

an arm mounted to the second swivel member such that the arm swivels relative to the supporting surface about the swivel axis, the arm being interconnectable with the lighting fixture;

a fixed member fixedly connected with the first swivel member in a preselected relationship to the supporting surface;

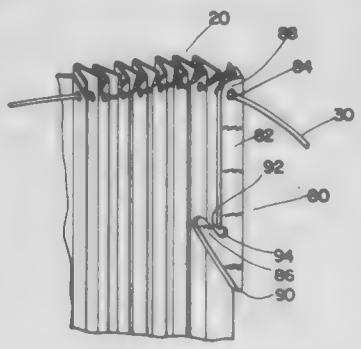
an interconnecting means for selectively interconnecting the fixed member and the arm to lock the arm relative thereto.

4,605,996

KNOCK DOWN LAMP SHADE

William J. Payne, Greensburg, Pa., assignor to Crown Creative Industries, Greensburg, Pa.

Filed Mar. 12, 1985, Ser. No. 710,930
Int. Cl.[4] F21V *1/06*
U.S. Cl. 362—352 22 Claims



1. A knock down lamp shade that may be assembled or dis-assembled comprising:

a. a length of pleated material having a top, a bottom and two ends, said two ends being connected;

b. apertures plated near the top of the material;

c. a flexible draw ring fit within the apertures that becomes taut when the material is assembled and loose when dis-assembled;

d. tensioning means for placing tension on the flexible draw ring and attached to the draw ring; and

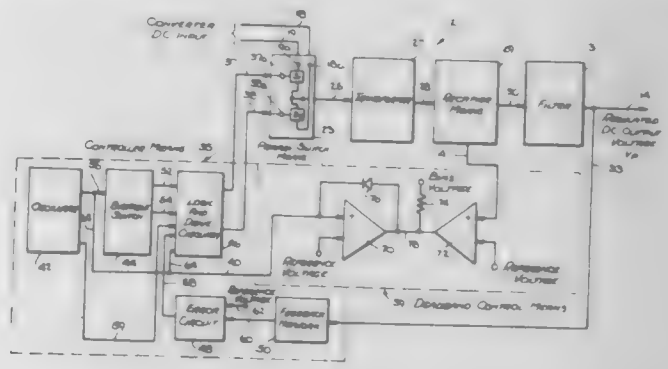
e. a rigid support structure attached to the tensioning means so that flexible draw ring remains taut and the lamp shade stable, and said rigid support structure adapted to be connected to a conventional lamp.

4,605,997

SWITCH MODE CONVERTER AND IMPROVED DEADBAND CONTROL THEREFOR

Glenn D. Kirk, El Toro, Calif., assignor to Mai Basic Four, Inc., New York, N.Y.

Filed Jan. 22, 1985, Ser. No. 693,476
Int. Cl.[4] H02M *3/335*
U.S. Cl. 363—16 27 Claims



1. A switch mode converter for providing an output voltage comprising:

primary switch means having control input means for receiving control signals, at least first and second voltage inputs and an output, the primary switch means including at least two primary switches and coupling the first and second voltage inputs to the output selectively through the primary switches in response to control signals applied to the control input means;

controller means coupled to the control input means of the primary switch means for providing control signals thereto, the controller means providing at least one turn-on control signal during first time periods to turn a first primary switch on during the first time periods, and at least one turn-on control signal during second time periods to turn a second primary switch on during the second time periods, the controller means providing a third time period between each adjacent first time period and second time period during which the no turn-on signals are provided by the controller means, the controller means providing the turn-on control signals during the first and second time periods in response to a condition of the output voltage;

means for generating a signal indicative of the state of the primary switch means; and

deadband control means coupled to receive the signal indicative of the state of the primary switch means and coupled to the controller means for causing the controller means to maintain a third time period whenever a primary switch is on during that third time period, the deadband control means comprising:

a first comparator having one input coupled to receive the signal indicative of the state of the primary switch means, and an output the level of which is responsive to the signal indicative of the state of the primary switch means, a second comparator having an input coupled to the controller means and an output coupled to the output of the first comparator, and means coupling the output of the second comparator and the input of the second comparator, such that the input to the second comparator is clamped at a level effective to cause the controller means to maintain a third time period whenever a primary switch is on during that third time period.

4,605,998
SWITCHING CONTROL CIRCUIT

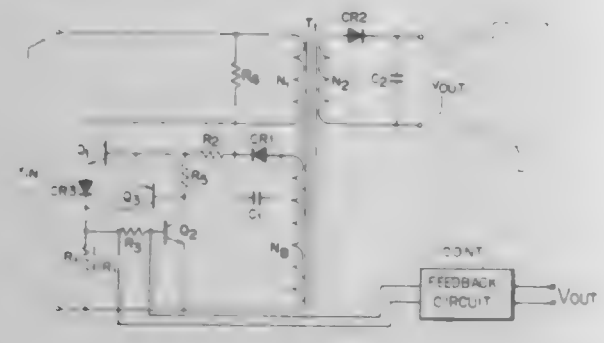
Shinya Higashi, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Apr. 12, 1984, Ser. No. 599,580

Claims priority, application Japan, Apr. 14, 1983, 58-55742[U]

Int. Cl.⁴ H02M *3/335*

U.S. Cl. 363—19 **1 Claim**



1. A switching control circuit for use in a switching regulator of self-excited ringing choke converter type, having a voltage transformer with at least primary, secondary and base windings, and operated such that an astable power supply voltage applied to said primary winding is transferred to said secondary winding in a self-excited manner so as to rectify a voltage appearing at said secondary winding, hence a direct current voltage is generated, and the output voltage is stabilized by controlling switching of the first winding due to deviation of the output voltage, said switching control circuit comprising:

a switching power transistor which is arranged to be turned on and off in accordance with a base current derived from a voltage induced in the base winding, and which is adapted to introduce into a collector current, a current flowing through the primary winding of said voltage transformer, and to switch the collector current;

a resistor which is serially connected to said switching power transistor, and through which the collector current and the base current flow;

a feed back circuit for feeding back a control voltage, proportional to the output voltage generated in the secondary of said transformer, to the primary of said transformer;

a switching control transistor which is controlled to be turned on and off due to a voltage across said resistor, and the control voltage, and which absorbs, as a collector current thereof, a base current of said switching power transistor to turn off said switching power transistor; and

a compensation transistor which is rendered conductive by the collector current of said switching control transistor, and which supplies the base current to said resistor in the same direction as the current which has been flowing into said resistor, so as to restrain the deviation of voltage across said resistor thereby stabilizing the on state of said switching control transistor.

4,605,999
SELF-OSCILLATING HIGH FREQUENCY POWER CONVERTER

Wayne C. Bowman, Rockaway; Randhir S. Malik, Succasunna; Harold Seidel, Warren; Weyman B. Suiter, Jr., Whippany, and Norman G. Ziesse, Chester, all of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Mar. 11, 1985, Ser. No. 710,506

Int. Cl.⁴ H02M *3/338*

U.S. Cl. 363—19 **23 Claims**

1. A self-oscillating power converter comprising:

input means for accepting a DC voltage source.

a semiconductor power switch including first and second main conduction path electrodes and a control electrode and further including at least an interelectrode capacitance between the first main conduction path electrode and the control electrode and having its first main conduction path electrode coupled to the input means,

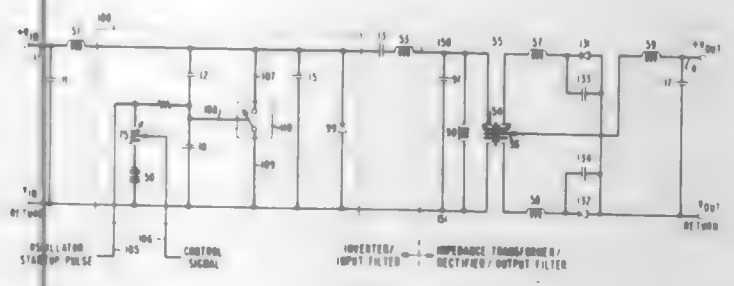
a feedback network for sustaining oscillations in the power converter including:

the interelectrode capacitance coupling the first main conduction path electrode and the control electrode, and

a variable inductive circuit coupling the control electrode to the second main conduction path electrode,

the interelectrode capacitance and the variable inductive circuit having reactive values such that a sinusoidal voltage is generated at the control electrode causing oscillations to occur whereby the interelectrode capacitance is sufficient to be operative as an exclusive feedback path;

a tuned network connected to the first main conduction path electrode and having an inductive reactive impedance and operative at a frequency of oscillation as established by the feedback network for controlling a voltage waveform at the first main conduction path electrode to be continuing for a portion of a cycle of operation while the semiconductor power switch is nonconducting and to be discontinued while the semiconductor power switch is conducting.



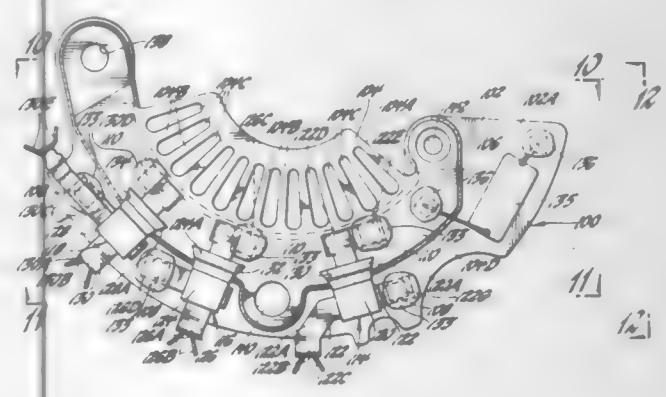
4,606,000
BRIDGE RECTIFIER

Roy B. Steele, Richmond; Thomas E. Kirk, Anderson; Melvin T. Robinson, Anderson, and Stephen W. Anderson, Anderson, all of Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed Mar. 27, 1985, Ser. No. 716,704

Int. Cl.⁴ H02M *1/00*

U.S. Cl. 363—145 **6 Claims**



1. A bridge rectifier for an alternating current generator comprising, a first metallic heat sink that is adapted to engage an end frame of an alternating current generator when the bridge rectifier is mounted to the generator, a second metallic heat sink, an electrical insulator sandwiched between said heat sinks for electrically insulating said heat sinks from each other, a first group of semiconductor diode chips supported by said first heat sink such that they are electrically connected to and in heat transfer relationship with said first heat sink, a second group of semiconductor diode chips supported by said second heat sink such that they are electrically connected to and in heat transfer relationship with said second heat sink, a plurality of insulator blocks supported by and secured to said second heat sink each carrying an electrical connector having a plurality of arms, each said electrical connector molded to a respective insulator block, each said insulator block having a dove-

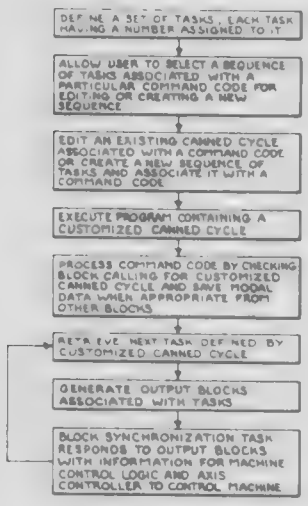
tail-shaped portion that is disposed within a complementary dovetail-shaped slot formed in said second heat sink, said connectors being adapted to be connected to the phase windings of an alternating current generator, a pair of arms of each electrical connector being electrically connected to the respective faces of a pair of semiconductor diode chips where one of the pair of diode chips is a diode chip of said first group of diode chips and the other diode chip of the pair is a diode chip of the second group of diode chips, and a coating of insulating material covering each diode chip, said coating engaging and adhering to a connector arm and surface areas of said heat sinks adjacent each chip to encapsulate a diode chip.

4,606,001

CUSTOMIZED CANNED CYCLES FOR COMPUTER NUMERICAL CONTROL SYSTEM

Werner P. Rieben, and Jill M. Willson, both of Charlottesville, Va., assignors to General Electric Company, Charlottesville, Va.

Filed May 22, 1984, Ser. No. 613,031
Int. Cl.[4] G05B *19/18;* G06F *9/46*
U.S. Cl. 364—167 2 Claims



1. A method for defining and executing canned cycles in a computer numerical controlled machine comprising the steps of:

(a) defining a set of executable tasks cable of being carried out by a machine, with an assigned number for each task;

(b) entering into memory the assigned numbers representing a desired customized sequence of tasks for a particular canned cycle command code;

(c) loading a part program into the computer numerical control having a canned cycle command code corresponding to the customized sequence entered into memory;

(d) processing the canned cycle command code to retrieve the customized sequence entered into memory; and

(e) executing the desired tasks in sequence to cover the desired action in the controlled machine.

4,606,002

B-TREE STRUCTURED DATA BASE USING SPARSE ARRAY BIT MAPS TO STORE INVERTED LISTS

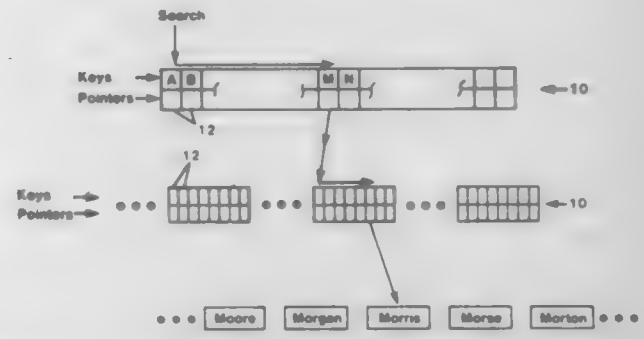
Amnon Waisman, Nashua, N.H., and Andrew M. Weiss, Paramus, N.J., assignors to Wang Laboratories, Inc., Lowell, Mass.

Continuation-in-part of Ser. No. 490,814, Aug. 17, 1983, abandoned. This application Aug. 17, 1983, Ser. No. 523,527
Int. Cl.[4] G06F *15/347, 7/00, 12/04*
U.S. Cl. 364—200 14 Claims

6. A method of storing an inverted list of record serial numbers in a data base system including the steps of:

dividing the list of possible record serial numbers into ranges having a predetermined number of record serial numbers, each range being assigned a consecutive range value;

storing the range values for each range which contains at least one record serial number which occurs in the inverted list; and



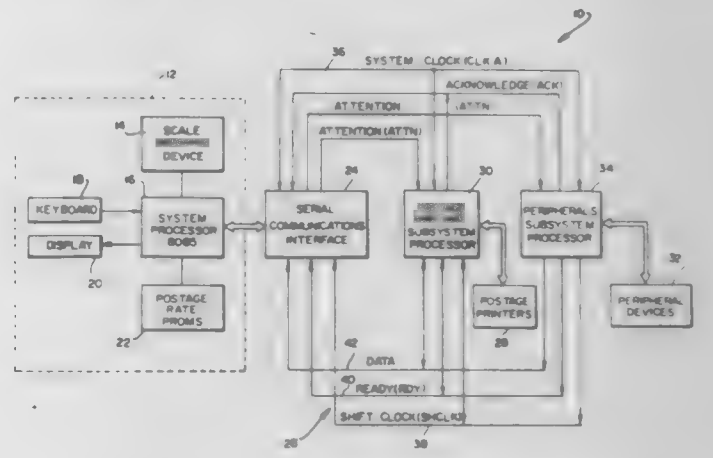
encoding the position in each stored range of each record serial number in the inverted list by means of a sparse array bit map.

4,606,003

MAILING SYSTEM PERIPHERAL INTERFACE WITH REPLACEABLE PROM FOR ACCESSING MEMORIES

Edward P. Daniels, Bridgeport, Conn., assignor to Pitney Bowes Inc., Stamford, Conn.

Filed Sep. 30, 1982, Ser. No. 430,220
Int. Cl.[4] G06F *12/12*
U.S. Cl. 364—200 5 Claims



1. A processing system for use with a memory, having memory expansion capability to replace a first memory by a second memory having a larger storage capacity, said first memory comprising a first memory chip having a first number of address inputs and a plurality of enable inputs, and said second memory comprising a second memory chip, the input configuration of which differs only in that selected inputs of said memories, which are used as enable inputs for said first memory, are used as high order address inputs for said second memory so as to allow addressing of the additional storage capacity of said second memory, said system comprising:

(a) a first connector means for mounting a memory chip;

(b) a second connector means for mounting a ROM chip, said second connector means being operably connected to said first connector means so that selected outputs of said ROM chip are connectable to said selected inputs and at least one other output of said ROM chip being operably connectable to at least one other of said plurality of enable inputs;

(c) a plurality of address lines, a low order group of said address lines being connectable to said first number of address inputs through said first connector and the remaining ones of said address lines being connectable to the address inputs of said ROM chip through said second connector;

(d) data lines connectable to the data outputs of said memory through said first connector;

(e) control lines connectable to said memory and to said

ROM chip through said first and second connectors respectively;

(f) system processor means operatively connected to said address, data, and control lines to transfer data to and from said memory;

(g) switch means for selectively operably connecting said other outputs of said ROM chip to said remaining inputs of said plurality of enable inputs;

(h) whereby said system may operate with said first memory by inserting said first memory chip in said first connector and a ROM chip in said second connector, said ROM chip being programmed so that said selected outputs of said ROM chip always generate an enable signal on said selected inputs of said memory when said memory is addressed and a high order group of said memory is addressed and a high order group of said remaining address lines asserts a pre-selected value on said address inputs of said ROM chip and said other output of said ROM chip is selected to generate an enable signal on said remaining enable signal inputs by said remaining enable signal inputs by said switch means only when said high order group of said remaining address lines asserts said preselected value on said address inputs of said ROM chip; and,

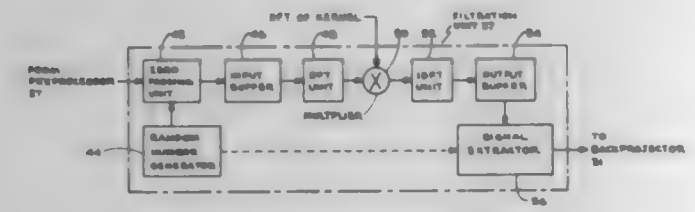
(i) whereby said system may operate with said second memory by inserting said second memory chip in said first connector, changing the setting of said switch means to change the selection of said other output of said ROM chip, and asserting a second preselected value on said high order group of said remaining address lines.

4,606,004

APPARATUS FOR REDUCTION OF FILTRATION TRUNCATION ERRORS

Carl R. Crawford, Milwaukee, and Kishore C. Acharya, West Allis, both of Wis., assignors to General Electric Company, Milwaukee, Wis.

Filed Mar. 21, 1984, Ser. No. 591,730
Int. Cl.[4] G06F *15/42*
U.S. Cl. 364—414 **36 Claims**



1. A device for convolving a plurality of input signals, which signals are provided by transducer means, with a common kernel by taking the inverse discrete Fourier transform (IDFT) of the product of the discrete Fourier transform (DFT) of each of said input signals with the DFT of a common kernel using a finite precision machine, wherein as a result of using the finite precision machine the resulting convolved signals have correlated noise, said device comprising:

means for obtaining the DFT of each signal forming part of said plurality of input signals;

means for obtaining a product of the DFT of each of said input signals and the DFT of said kernel;

means for taking the IDFT of said product; and

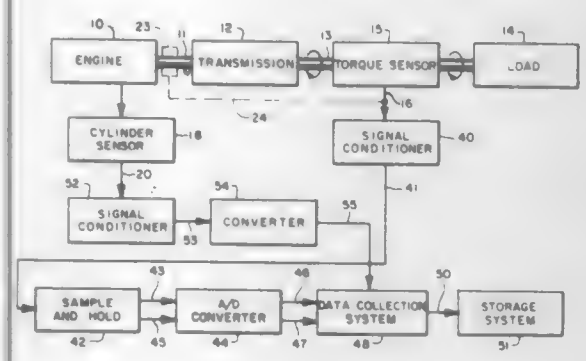
means for decorrelating the correlated noise, said decorrelating means including means for performing a rotational permutation operation on each of said input signals prior to obtaining the discrete Fourier transforms thereof, wherein the degree of rotational permutation is selectively variable for each of the input signals.

4,606,005

DRIVELINE CONTROL SYSTEM

William B. Ribbens, Ann Arbor, Mich., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Feb. 15, 1983, Ser. No. 466,745
Int. Cl.[4] G05D *17/02*; B60K *41/04*; G06F *15/20*
U.S. Cl. 364—431.01 **11 Claims**



2. In a system for regulating torque transfer through a driveline to a load, which driveline includes an engine unit and a transmission unit, at least one of which units is adjustable to vary the torque transferred to the load, a control system comprising:

torque sensing means coupled to the driveline to provide a torque information signal related to a component of driveline torque, for example, indicated torque;

signal processing means, coupled to the torque sensor, for providing a control signal which varies as a function of torque non-uniformity, including circuit means for providing signals denoting the maximum and minimum amplitudes of the torque information signal, and means for using the torque amplitude signals in providing the control signal; and

additional circuit means, coupled between said signal processing means and at least one of the engine and transmission units, for regulating the extent of torque non-uniformity as a function of said control signal.

10. For use in regulating an automotive engine which provides torque to a driveline, the method comprising the steps of:

sensing the instantaneous torque level at a point in the driveline, and providing a torque information signal related to the sensed instantaneous torque level;

operating upon the torque information signal to derive a first series of output signals connoting the maximum values of the torque information signal and a second series of output signals connoting the minimum values of the torque information signal;

using the first and second series of output signals to derive a torque non-uniformity signal; and

using the torque non-uniformity signal in the control of the automotive engine.

4,606,006

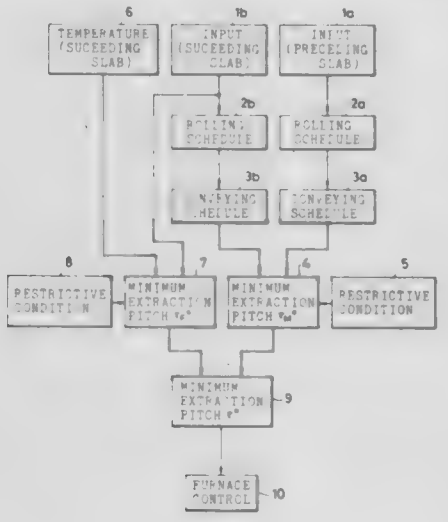
METHOD OF CONTROLLING THE ROLLING EFFICIENCY IN HOT ROLLING

Nariharu Kitao; Masayasu Fukui, both of Okayama; Yoshiharu Hamasaki, and Masaki Kutsuzawa, both of Hyogo, all of Japan, assignors to Mitsubishi Denki K.K., Tokyo and Kawasaki Steel Corp, Hyogo, both of, Japan

Filed Sep. 30, 1982, Ser. No. 431,533
Claims priority, application Japan, Oct. 5, 1981, 56-158430
Int. Cl.[3] G06F *15/46*; B21B *37/00*; F27D *3/00*; G06G *7/64*
U.S. Cl. 364—472 **1 Claim**

1. A method of continuous hot rolling which comprises the steps of arranging slabs on a mill line for passage through a heating furnace, passing the slabs into the heating furnace, heating the slabs in the heating furnace, extracting the slabs from the heating furnace, and passing the slabs through a finish mill, wherein the method further comprises the steps of determining a rolling schedule and a conveying schedule on the mill line for the slabs arranged in succession based on an aimed

extraction temperature of the slabs from the heating furnace and a predetermined temperature at an exit of the finish mill, calculating a first minimum extraction pitch for the slabs from the heating furnace under restrictions imposed on a mill line side, calculating a second minimum extraction pitch for slabs from the heating furnace under restrictions imposed on a heating furnace side based on slab temperature charged to the heating furnace and the aimed extraction temperature, determining an optimum extraction pitch for the slabs from the heating furnace to maximize the overall rolling efficiency by comparing both of said minimum extraction pitches, and controlling said hot rolling method in accordance with the optimum extraction pitch determination step.

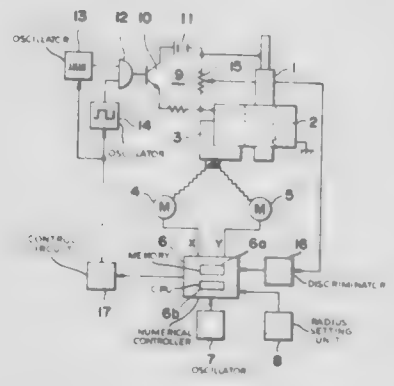


4,606,007

NC ELECTROEROSION METHOD AND APPARATUS

Kiyoshi Inoue, Tokyo, Japan, assignor to Inoue-Japax Research Incorporated, Kanagawaken, Japan

Filed Apr. 5, 1983, Ser. No. 482,155
Int. Cl.[4] G06F *15/46;* B23P *1/08*
U.S. Cl. 364—474 10 Claims



1. An electroerosion method of machining an electrically conductive workpiece with a tool electrode, the method comprising the steps of:

(a) effecting a succession of electrical discharges across an electrical discharge machining (EDM) gap between the tool electrode and the workpiece to electroerosively remove material from the workpiece while consecutively advancing the tool electrode relatively into the workpiece under numerical commands from a numerical controller whose commands in a set numerically prescribe a desired path and extent of the relative advancement;

(b) maintaining electrical parameters of said discharges in a given EDM mode during an initial period of the numerically commanded consecutive advancement of the tool electrode relative to the workpiece;

(c) sensing, by means of said numerical controller, arrival of the tool electrode at a predetermined position in said path relative to the workpiece spaced by a preselected distance from its final position determined by said numerically prescribed extent of the consecutive relative advancement to provide a signal; and

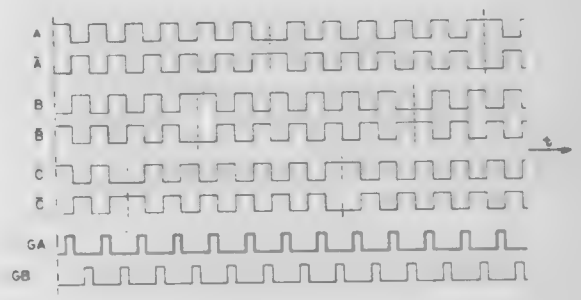
(d) in response to said signal, switching the electrical parameters of said discharges into another EDM mode, and maintaining said switched parameters until said tool electrode reaches said final position relative to said workpiece established in said numerical controller.

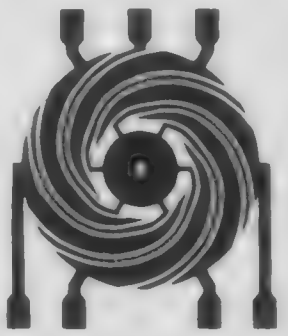
4,606,008

ANGULAR POSITION DETECTOR

Thomas D. Wason, Raleigh, N.C., assignor to Cain Encoder Company, Greenville, N.C.

Filed Jul. 25, 1983, Ser. No. 516,714
Int. Cl.[4] G01B *7/30*
U.S. Cl. 364—560 17 Claims





1. Method for detecting the presence and/or position of variations in the dielectric and/or permeability confronting a transducer of the type in which said transducer is a prescribed circular array of electrodes and/or pole pieces of the same size and shape, said method comprising the steps of:

(a) generating a plurality of phase modulated drive signal pairs, each pair comprised of a signal and its complement, each drive signal comprising a plurality of two-phase square waves having two levels of the same amplitude and the same frequency, wherein the transition of all drive levels occur synchronously, wherein for a prescribed number of cycles (n cycles) each of said drive signals changes phase by 180° each n/2 cycles; and wherein K equals the number of drive signals, each phase shift occurs n/K cycles ycles subsequent to the phase shift of the previous drive, and where n is selected such that 2n/K is an integer;

(b) feeding each of said drive signals to a separate electrode in said array, wherein each signal and its complement are fed to diametrically opposed ones of said electrodes, and wherein the relationship of said phase progression of the drive signals is proportional to the angular relationship of the electrodes;

(c) combining the drive signals onto a central node in such manner that the superposition of all drive signal pairs is constant in the absence of a variation, and in the presence of a variation the superposition of all drive signal pairs varies synchronously with the drive signals, and wherein the signal on the central node is the superposition of the algebraic sum of all drive signal pairs;

(d) sampling the resultant signal on the central node by generating a synchronous sample signal pulse train(s) which samples between transitions, said sample signal

pulse(s) being of a duration less than one-half the drive signal period and at the same frequency as the drive signal, whereby the resultant synchronously detected signal is in the form of a multi-step signal in which the number of steps is equal to the number of drives;

(e) wherein said synchronously detected signal is a multi-step approximation to a sine wave, wherein the phase angle between the sine wave and a timing point, which is the phase transition of a given drive signal, is proportional to the angular position of the dielectric variation confronting the transducer; and

(f) determining the phase angle of said multi-step sine wave approximation.

16. In combination with an apparatus for detecting the present and/or position of variations in the dielectric and/or permeability constant confronting a transducer of the type in which said transducer is a prescribed circular array of electrodes and/or pole pieces of the same size and shape, and in which a plurality of phase modulated drive signal pairs are generated, each of which drive signals are fed to a separate electrode in said ray and combined onto a central node, the resultant signal from which is sampled and synchronously detected to provide an indication of said angular position, apparatus for generating said drive signal pairs comprising:

(a) generating means for initiating three square wave signals, the phase transition of each differing from each other by 120° and for initiating a carrier signal;

(b) a plurality of exclusive OR gates for combining each of said square wave signals with said carrier signal and thus modulating the phase of said carrier signal by either 180° or 0°;

(c) means for splitting the output signal from each exclusive OR gate into two drive signals and inverting one of the drive signals to form a signal and its compliment;

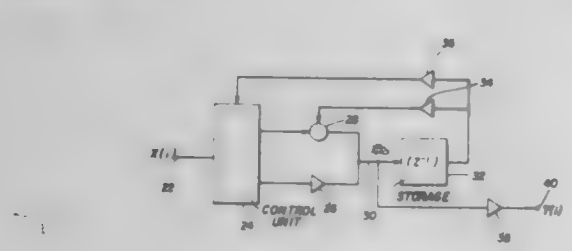
(d) a system clock means, a latch, and a sampling gate wherein said system clock means generates a signal to strobe all said drive signals through said latch responsive to the opening of said sampling gate means.

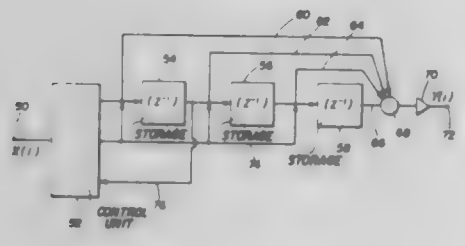
4,606,009

STEP RESPONSIVE AVERAGING FILTER

Thomas W. Wiesmann, Seattle, Wash., assignor to John Fluke Mfg. Co., Inc., Everett, Wash.

Filed Aug. 20, 1982, Ser. No. 409,859
Int. Cl.⁴ G06F *15/31*
U.S. Cl. 364—724 **18 Claims**





1. Signal processing apparatus for digital signals comprising:

input means for receiving digital input signals;

storage means for storing signals provided thereto as stored digital signals;

output means responsive to digital signals provided to said storage means for providing digital output signals; and

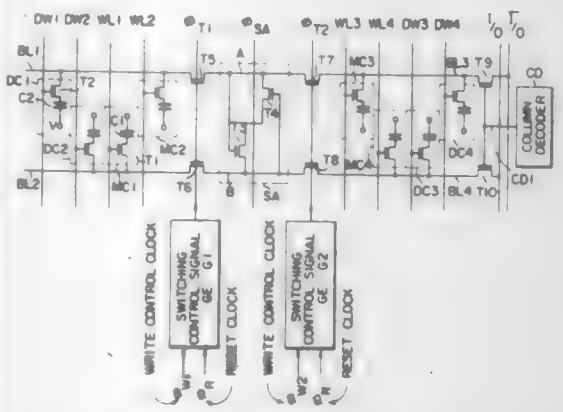
control means responsive to outputs of said input means and to said storage means for computing a difference between digital input signals and a predetermined portion of said digital signals stored in said storage means, comparing said difference with a predetermined difference indicative of noise and, in response to a said difference less than said predetermined difference, multiplying the magnitude of the stored digital signals by a predetermined factor to obtain a signal product and adding to the signal product said digital input signals.

4,606,010

DYNAMIC MEMORY DEVICE

Shozo Saito, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Sep. 24, 1982, Ser. No. 423,145
Claims priority, application Japan, Oct. 23, 1981, 56-169887
Int. Cl.³ G11C *11/24*
U.S. Cl. 365—149 **7 Claims**



1. A dynamic memory device with a plurality of column unit arrangements, each unit arrangement including:

a sense amplifier with a first input terminal and a second input terminal;

at least two pairs of bit lines having a first bit line connected through a first switching transistor to said first input terminal, a second bit line connected through a second switching transistor to said second input terminal, a third bit line connected through a third switching transistor to said first input terminal, and a fourth bit line connected through a fourth switching transistor to said second input terminal;

a fifth switching transistor for connecting said third bit line to one of a pair of data lines and a sixth switching transistor for connecting said fourth bit line to the other data line of said pair of said data lines, said fifth and sixth switching transistors being turned on and off by a column address signal;

a first group of memory cells of which a plurality of memory cells are connected to said first to fourth bit lines, respectively, each memory cell being selected by a combination of said column address signal and a row address signal; and

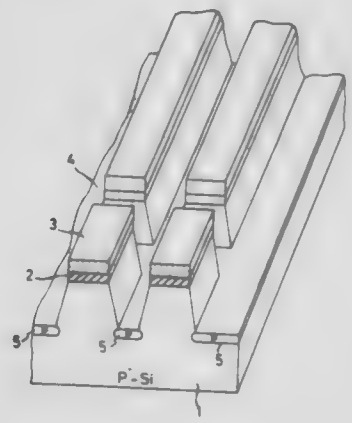
first switching control means for cutting off at least one of a first and a second group of switching transistors during only a given period of time including time points before and after a time point at which said column address signal is applied to the gates of said fifth and sixth switching transistors when data is written into a memory cell selected from said first group of memory cells through said pair of said data lines, whereby to rapidly charge the bit line containing said selected memory cell, said first group of switching transistors including said first and second switching transistors and said second group of switching transistors including said third and fourth switching transistors.

4,606,011

SINGLE TRANSISTOR/CAPACITOR SEMICONDUCTOR MEMORY DEVICE AND METHOD FOR MANUFACTURE

Masashi Wada, Yokohama; Shigeyoshi Watanabe, Tokyo, and Fujio Masuoka, Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Japan

Filed Oct. 24, 1985, Ser. No. 791,098
Claims priority, application Japan, Oct. 31, 1984, 59-229203
Int. Cl.[4] G11C *13/00*
U.S. Cl. 365—149
5 Claims



1. A semiconductor memory comprising:

(a) a plurality of memory cells formed on a substrate of a first conductivity type, each said memory cell including

(i) an MOS transistor having a gate and a conduction path, and

(ii) an MOS capacitor coupled to one side of said conduction path, said MOS capacitor including

(aa) a first electrode of a second conductivity type formed in said substrate in contact with said one side of said conduction path, said first electrode having at least three sides,

(bb) a thin insulation film formed on said first electrode to cover said three sides of said first electrode,

(cc) a second electrode formed on said thin insulation film and opposite each of said at least three faces, and

(dd) a device protection film formed on said second electrode;

(b) a plurality of word lines each coupled to the gates of ones of said plurality of MOS transistors in a different row; and

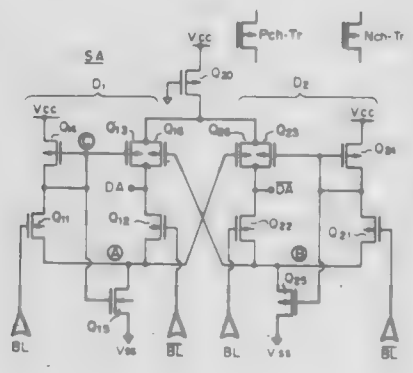
(c) a plurality of bit lines each coupled to the other side of the conduction paths of ones of said MOS transistors in a different column.

4,606,012

SENSE AMPLIFIER

Atuo Koshizuka, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Apr. 4, 1984, Ser. No. 596,707
Claims priority, application Japan, Apr. 7, 1983, 58-060032
Int. Cl.[4] G11C *7/00*; G01R *19/00*; H03F *3/45*
U.S. Cl. 365—189
7 Claims



1. A sense amplifier comprising

a pair of differential amplifier circuits, for receiving complementary input signals and producing complementary output signals, each of said differential amplifier circuits including:

a pair of differential input transistors for receiving said complementary input signals, each said differential input transistor having a source connected at a common connecting point of the respective differential amplifier circuit to the source of the other differential input transistor, a gate connected to receive a respective one of said complementary input signals, and a drain, wherein said complementary signals applied to a first one of the pair of differential amplifier circuits have respective phases opposite to the phases of said complementary signals applied to the other of said pair of differential amplifier circuits;

a feedback transistor having a drain connected to said commonly connecting point, a source connected to ground, and a gate connected to said drain of a first one of the differential input transistors;

first pull up means connected between a power supply and to said drain of the second of the differential input transistors; and

second pull up means including an output pull up transistor having a source and a drain connected between the power supply and the second differential input transistor,

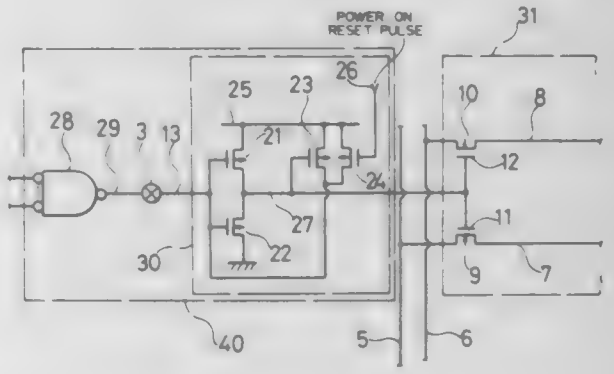
wherein each said output pull up transistor in each said differential amplifier circuit has a gate connected to receive an output of said feedback transistor in the other one of said differential amplifier circuits.

4,606,013

REDUNDANCY-SECURED SEMICONDUCTOR MEMORY

Masahiko Yoshimoto, Takarazuka, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 13, 1984, Ser. No. 579,604
Claims priority, application Japan, Feb. 17, 1983, 58-26463
Int. Cl.[4] G11C *11/40*
U.S. Cl. 365—200
13 Claims



1. A redundancy-secured semiconductor memory including a matrix of regular memory cells consisting of a plurality of regular memory cell trains, an extra memory cell train for redundant construction, and a taking-over system for enabling said extra memory cell train to take over the function of a faulty regular memory cell train including a faulty bit, wherein said taking-over system comprises:

first means for selecting one from said regular memory cell trains;

second means for selecting, a said extra memory cell train said selected extra memory cell train replacing a said faulty regular memory cell train;

said first selecting means including,

a decoder decoding an input address signal, and

a selectively breakable current conducting means connected to said decoder for disconnecting said faulty regular memory cell train, thereby disconnecting the

output of said decoder from said faulty regular memory cell train; and

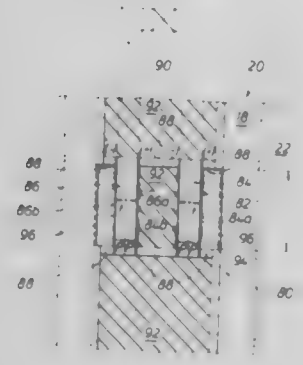
monostable latching means connected between said current conducting means and said selected one from said regular memory cell train, said monostable latching means developing a signal when said current conducting means is disconnected, whereby said faulty regular memory cell train is kept in an unselected state, said monostable latching means functioning as a driver between said decoder and said selected one of said regular memory cell trains when said current conducting means is not disconnected.

4,606,014

ACOUSTIC DIPOLE SHEAR WAVE LOGGING DEVICE

Graham A. Winbow, Houston, and Sen-Tsuen Chen, Sugar Land, both of Tex., assignors to Exxon Production Research Co., Houston, Tex.

Filed Jul. 6, 1982, Ser. No. 395,449
Int. Cl.⁴ G01V *1/40*
U.S. Cl. 367—75 **2 Claims**



1. A method of logging the earth surrounding a wall wherein an elongated member having two ends with at least one end attached to a housing which is lowered into a fluid contained by the well, said method comprising the sequential step of:

determining the approximate range of shear wave velocities of the earth surrounding the fluid;

vibrating the unattached portion of the elongated member to create in the fluid a positive compressional wave in one direction and simultaneously a negative compressional wave in the opposite direction, said two compressional waves interfering to produce a dipole shear wave in the earth surrounding the well wherein the frequencies of the dipole shear wave are in the preferred frequency range corresponding to the approximate range of shear wave velocities of the earth surrounding the fluid in accordance with the table below:

Approximate Range of Shear Wave Velocities	Preferred Frequency Range of Dipole Shear Wave
5000–6000 ft/sec	(10/d)(1.5–7.5) kHz
6000–7000 ft/sec	(10/d)(3–12) kHz
7000–8000 ft/sec	(10/d)(4–16) kHz
8000–9000 ft/sec	(10/d)(4.5–20) kHz

where d is the well diameter in inches; and

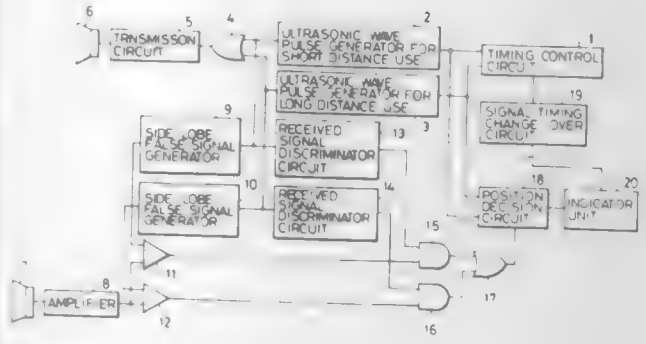
detecting at at least one selected location spaced longitudinally along the borehole from the member the refracted compressional wave in the fluid caused by refraction of the dipole shear wave.

4,606,015

METHOD AND APPARATUS FOR DETECTING POSITION OF OBJECT WITH ULTRASONIC WAVE

Kenichi Yamaguchi, Katsuta, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 22, 1983, Ser. No. 525,403
Claims priority, application Japan, Aug. 27, 1982, 57-147539
Int. Cl.⁴ G01S *15/12*
U.S. Cl. 367—95 **7 Claims**



1. A method for detecting the position of an object with an ultrasonic wave comprising the steps of:

transmitting alternately the pulses of at least first and second different kinds of ultrasonic wave pulses corresponding to different distance ranges to the object, including setting the pulse widths and the transmission intervals between the respective first and second kinds of ultrasonic wave pulses in accordance with the corresponding different distance ranges to the object;

receiving reflected ultrasonic wave pulses from the object in response to the transmitted ultrasonic wave pulses;

discriminating the received ultrasonic wave pulses; and

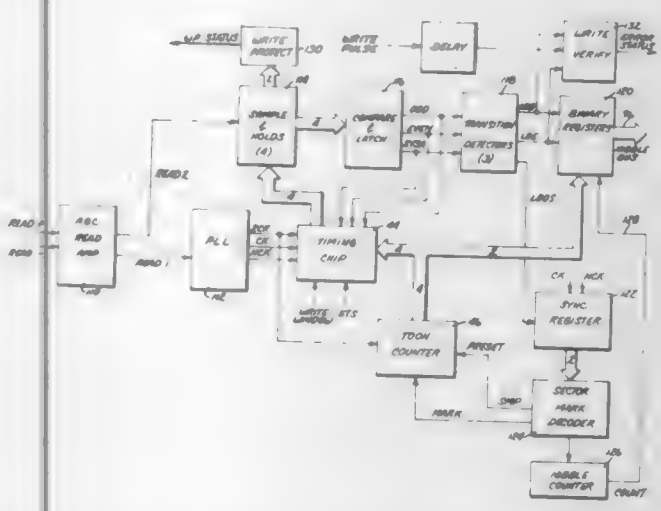
determining the position of the object depending on the time period from the transmission and reception of the discriminated ultrasonic wave pulses.

4,606,016

WRITE PROTECTION AND DATA DETECTION USING DIFFERENTIAL DETECTOR

Johannes J. Verboom, and Roger R. Bracht, both of Colorado Springs, Colo., assignors to Optical Storage International, N.Y.

Filed Feb. 8, 1984, Ser. No. 578,152
Int. Cl.⁴ G11B *3/90, 27/36*
U.S. Cl. 369—54 **7 Claims**



1. Apparatus for using differential data detection in write protection of an optical recording apparatus, comprising

a write protect byte of data recorded as the initial byte of every data block, said byte having a hole recorded at a predetermined position relative to a reference position;

read means for reading data from an optical recording surface immediately prior to writing data on the surface;

a pair of sample and hold cells responsive to read signals from said read means;

means for triggering a first of said sample and hold cells at said reference position;

means for triggering a second of said sample and hold cells at the position just prior to said predetermined position;

first comparator means for comparing the first sample and hold cell value with the second sample and hold cell value and for generating a comparator output when the latter exceeds the former by a predetermined amount;

means responsive the comparator output of said comparator means for terminating writing in the block when the optical system is writing a write protect byte of data.

4,606,017

OPTICAL RECORDING DISC

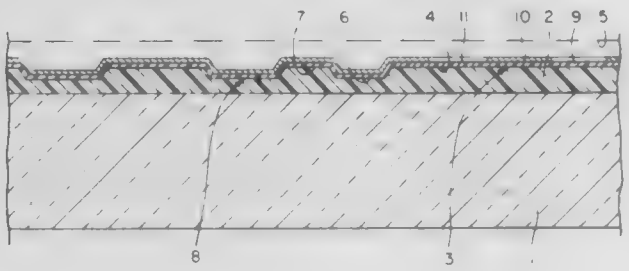
Dirk J. Broer, and Leendert Vriens, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 13, 1983, Ser. No. 503,987

Claims priority, application Netherlands, Mar. 17, 1983, 8300960

Int. Cl.⁴ G11B *7/24*

U.S. Cl. 369—275 **4 Claims**



1. An optical recording disc comprising a transparent substrate plate which on at least one side comprises a layer of a transparent formstable synthetic resin in which an optically readable information track is provided and which on the side of the layer of dimensionally stable synthetic resin comprises a recording layer in which recording layer optically readable information bits are formed by exposure to modulated laser light, characterized in that a thin synthetic resin layer of a linearly polymerized amorphous synthetic resin is provided between the layer of transparent formstable synthetic resin and the recording layer, the thin layer following the contours of the information track and reducing the energy which is minimally required to form an information bit in the recording layer by means of the laser light.

4,606,018

OPTICAL RECORDING MEDIUM

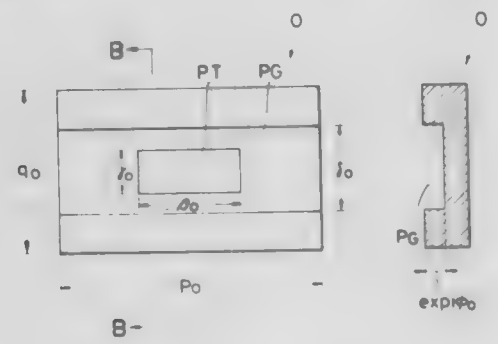
Mikio Sugiki, Yokohama, and Kenjiro Watanabe, Shin, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Nov. 14, 1983, Ser. No. 551,083

Claims priority, application Japan, Nov. 25, 1982, 57-206494

Int. Cl.⁴ G11B *7/24*

U.S. Cl. 369—279 **2 Claims**



1. A reflection-type optical recording medium having, on a surface thereof on which track guide grooves are formed, a layer of a recording material which has an increased energy reflection coefficient data is written therein, wherein the track guide grooves are formed such that a depth ϕ_0 thereof given by:

$$\phi_0 = 2 \cdot n \cdot d / \lambda \cdot 2\pi$$

(where n is a refractive index of the medium which covers said track guide grooves and which transmits input/output read light therethrough, d is an actual step of said track guide grooves, and λ is a wavelength of the read light) satisfies:

(i) sin $\phi_0 < 0$ for $\theta_2 - \theta_1 > 0$, or

(ii) sin $\phi_0 > 0$ for $\theta_2 - \theta_1 < 0$

where θ_1 is the phase of the reflected light before data is written on the recording material θ_2 is the phase of the reflected read light after data has been written on said recording material and which are defined by the equations:

$$r_1 = R_1 \exp i\theta_1$$

$$r_2 = R_2 \exp i\theta_2$$

$R_1 < R_2$

(where r_1 is a complex reflection coefficient before data has been written on said recording material and r_2 is a complex reflection coefficient after data has been written on said recording material, and R_1 is an absolute value of the complex reflection coefficient before data has been written on said recording material and R_2 is an absolute value of the complex reflection coefficient after data has been written on said recording material).

4,606,019

RECEIVE DATA PROCESSING DEVICE FOR TDMA SATELLITE COMMUNICATIONS NETWORK

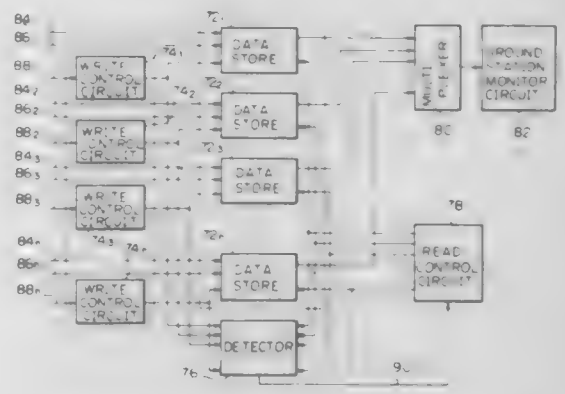
Haruki Takai, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed May 9, 1985, Ser. No. 732,421

Claims priority, application Japan, May 15, 1984, 59-97018

Int. Cl.⁴ H04J *1/16*

U.S. Cl. 370—13 **1 Claim**



1. A receive data processing device installed in a reference ground station which totally monitors and controls operating conditions of two or more other ground stations which constitute a ground traffic system of TDMA satellite communications channels, said device comprising:

data store means for temporarily storing channel monitoring information signals which respectively are associated with operating conditions of the ground stations and separated from *n* (particular positive integer) sequences of receive burst signals, which are received by way of an *n*-channel transponder loaded in a predetermined communication satellite, and predetermined burst identification signals for identifying the channel monitoring information signals in correspondence with the respective ground stations;

write control means for temporarily storing in the data store means associated with the *n* sequences of receive burst signals the channel monitoring information signals and burst identification signals associated respectively with

the predetermined ground stations which correspond to the respective sequences;

read control means for sequentially specifying in response to a predetermined read data sequence specify signal the channel monitoring information signals and the burst identification signals which are temporarily stored in the data store means and associated respectively with the ground stations which are associated with the *n* sequences of received burst signals, and then reading out the specified information signals each by an amount which is specified by the read data sequence specify signal;

detector means for detecting amounts of data stored in data store areas of the data store means which respectively are associated with the ground stations in the *n* sequences in response to predetermined write data amount indication signals and read data amount indication signals which respectively are outputted from the write control means and the read control means during a write control operation and a read control operation, and then generating the read data sequence specify signal which gives priority to a particular one of the data store areas having stored the greatest amount of data and specifies a particular amount of data to be read out;

multiplexer means for multiplexing the channel monitoring information signals and the burst identification signals which respectively are associated with the ground stations in the *n* sequences and sequentially read out of the data store means; and

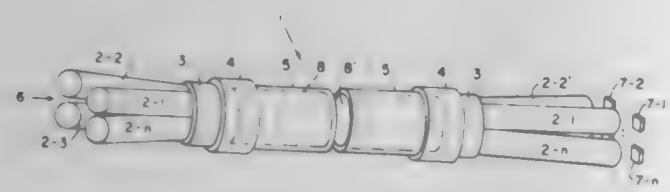
ground station monitor means for classifying the multiplexed channel monitoring information signals and the burst signals outputted from said multiplexer means and associated with the respective ground stations in the *n* sequences, and functioning to monitor use of the TDMA system which is related to operating conditions of the respective ground stations.

4,606,020

EFFICIENT DESIGN TECHNIQUE FOR WAVELENGTH DIVISION MULTIPLEXING

Paul B. Ruffin, Huntsville, Ala., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Feb. 3, 1984, Ser. No. 576,976
Int. Cl.⁴ H04B *9/00*
U.S. Cl. 370—3 **1 Claim**



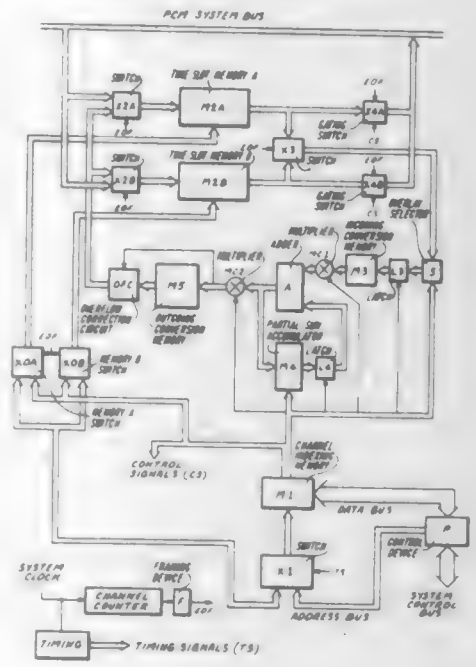
1. A multiplexer comprising a first set of a plurality of electromagnetic energy carrying members each transmitting electromagnetic signals of different wavelengths; one end of each of the members being packaged to form a bundle; each member carries a signal of a different wavelength; a larger electromagnetic energy carrying member being lined up and joined to said bundle so as to couple all of the electromagnetic signals into said larger member for multiplexing the signals; a second set of a plurality of electromagnetic carrying members equal in number to said first set of members; said second set of members being joined to an opposite end of said larger member for coupling said electromagnetic signals; said larger member is cut into first and second parts and is aligned spatially to transfer said signals; the first part of said larger member being joined to the first set of members being rotated relative to second part of said larger member; a plurality of demultiplexers individually connected to said second set of electromagnetic carrying members; the larger member is comparable in size to the size of said bundle; said electromagnetic carrying members are optical fibers; said fibers being joined in bundles and being spliced by an automatic splicing machine employing electric arc fusion; and a casing surrounding where the bundles are spliced for maintaining the efficiency of the bond.

4,606,021

DIGITAL CONFERENCE CIRCUIT

Walter K. Wurst, Wellington, Canada, assignor to ITT Corporation, New York, N.Y.

Filed Aug. 17, 1984, Ser. No. 641,625
Int. Cl.⁴ H04Q *11/04*
U.S. Cl. 370—62 **18 Claims**



1. A conference circuit for a communication system comprising:

means for combining conference signals, and

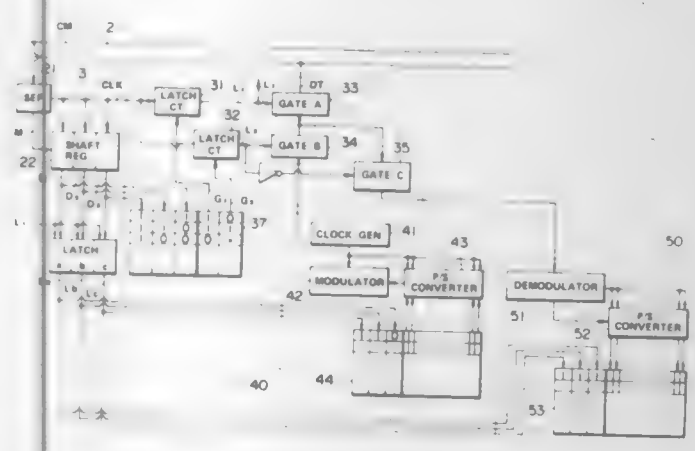
means, coupled to said combining means, for reducing additive background noise portions of said conference signals, wherein said reducing means comprises a logic device containing a conversion table having a plurality of overlayed modified sections.

4,606,022

DATA TRANSMISSION/RECEPTION NETWORK SYSTEM

Tadashi Suzuki; Norimasa Kishi, both of Yokohama; Minoru Tomikashi, Zushi, and Toru Futami, Yokosuka, all of Japan, assignors to Nissan Motor Company, Limited, Japan

Filed Mar. 23, 1984, Ser. No. 592,547
Claims priority, application Japan, Jun. 13, 1983, 58-105541
Int. Cl.⁴ H04J *3/02, 3/06*
U.S. Cl. 370—85 **5 Claims**



1. A network system for transmitting and receiving data between a plurality of stations via a data transmission line, said system comprising:

(a) first means for generating a clock pulse train having a predetermined period and being modulated with a predetermined code signal, and for applying the modulated

clock pulse train to a synchronous signal bus line connected to the plurality of stations, said code signal defining a specific address in each period of said clock pulse train,

(b) second means provided in each station connected to said signal bus line for receiving the modulated clock pulse train and for detecting a specific address allocated to such station from among successive addresses defined by said modulated clock pulse train; and

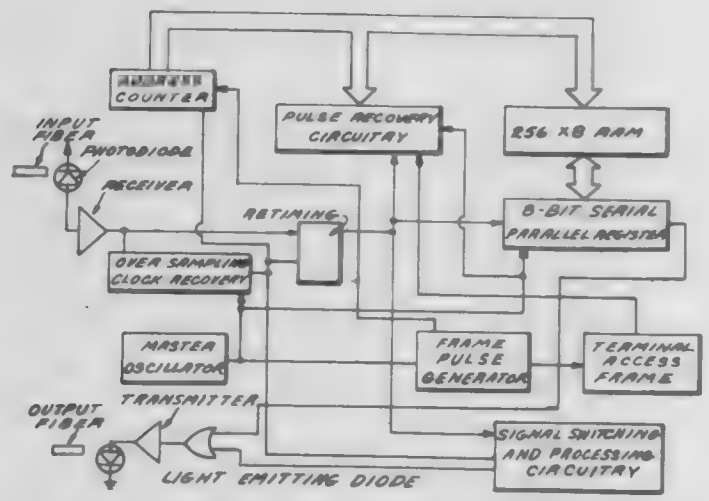
(c) third means provided in each station connected to said signal bus line for transmitting or receiving a plurality of bits of data serially via the transmission line during a period of said clock pulse train in which said second means detects the specific address that has been allocated to said station.

4,606,023

GUARD TIME ELIMINATION IN A TIME-DIVISION MULTIPLEXED, ACTIVE STAR-COUPLED, HALF-DUPLEX MODE, SYNCHRONOUS COMMUNICATIONS NETWORK

Robert E. Dragoo, Melbourne, Fla., assignor to Applied Dynamic Research, Inc., Rockville, Md.

Filed May 31, 1984, Ser. No. 615,555
Int. Cl.[4] H04J *3/24, 3/06;* **G02F** *1/00, 2/00*
U.S. Cl. 370—94 **17 Claims**



1. In a time-division multiplexed, active star-coupled, half-duplex mode, synchronous communications network having an active central node and a plurality of user terminals, each terminal connected to said central node by a single fiber-optic cable, the method of eliminating guard time at said central node between data packets received from the user terminals, comprising the steps of:

acquiring bit timing at each one of said user terminals;

acquiring frame information at said user terminals;

establishing word slot timing at each one of said user terminals; and

adjusting the transmit word slot timing of said terminals to eliminate guard time at the central node between the data packets received from the user terminals.

4,606,024

HIERARCHICAL DIAGNOSTIC TESTING ARRANGEMENT FOR A DATA PROCESSING SYSTEM HAVING OPERATIONALLY INTERDEPENDENT CIRCUIT BOARDS

Kathleen K. Glass, Boulder, and Lawrence J. Haas, Broomfield, both of Colo., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

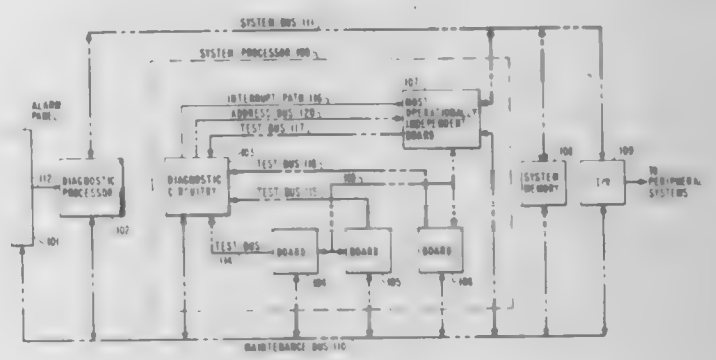
Filed Dec. 20, 1982, Ser. No. 451,258
Int. Cl.[4] G06F *11/00*
U.S. Cl. 371—16 **13 Claims**

1. A method of testing a data processor comprising a plurality of operationally interdependent discrete circuit groups hierarchically arranged with respect to operational dependency in processor function, said method comprising the steps of:

(1) storing a plurality of diagnostic test subroutines in a memory to sequentially test said plurality of discrete circuit groups,

(2) applying a diagnostic test subroutine address to said memory where said address represents the address of a first one of said diagnostic test subroutines associated with the testing of said first circuit group having the least operational dependency in said processor function,

(3) executing said first diagnostic test subroutine in response to the receipt of said address,



(4) collecting test data applied from circuit test points associated with said first circuit group during the execution of said first diagnostic test subroutine,

(5) comparing said collected test data from said first circuit group with priorly derived predicted test data for said first circuit group, and

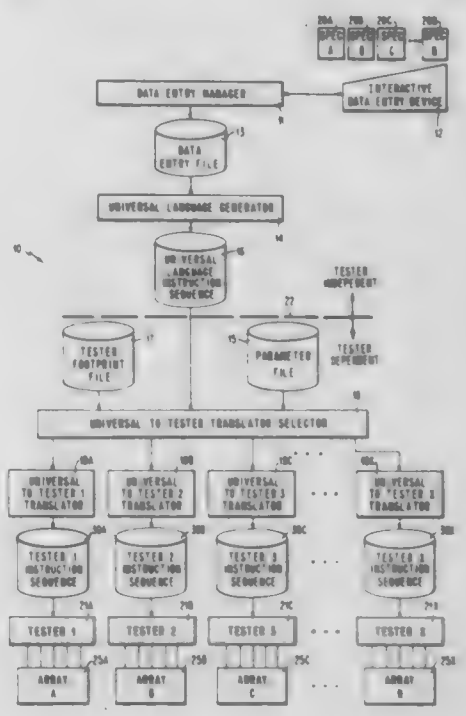
(6) testing in sequence based on operational dependency the others of said circuit groups of said hierarchy if said collected test data for said first circuit group matches said predicted data for said first circuit group.

4,606,025

AUTOMATICALLY TESTING A PLURALITY OF MEMORY ARRAYS ON SELECTED MEMORY ARRAY TESTERS

Robert M. Peters, Wappingers Falls; Henri D. Schnurmann, Monsey, and Louis J. Vidunas, Wappingers Falls, all of N.Y., assignors to International Business Machines Corp., Armonk, N.Y.

Filed Sep. 28, 1983, Ser. No. 536,597
Int. Cl.[4] G06F *31/28*
U.S. Cl. 371—20 **36 Claims**



1. A system for automatically testing an integrated circuit memory array solely on one of a plurality of different array testers, comprising:

an interactive data entry device for entering tester independent characterizing information, DC testing parameters, AC testing parameters and AC test pattern choices for said array;

a universal language generator for generating a tester independent universal language instruction sequence for carrying out DC parametric tests, AC parametric tests and AC pattern tests for said array, based upon said characterizing information, DC testing parameters, AC testing parameters and AC test pattern choices;

a plurality of universal to tester translators, each of which is associated with a respective one of said plurality of different array testers, for translating the entirety of said tester independent universal language instruction sequence into a respective tester dependent instruction sequence for carrying out said DC parametric tests, AC parametric tests, and AC pattern tests for said array on the associated tester; and,

means for applying said tester dependent instruction sequence to the associated tester to cause the associated tester to test said array thereon.

4,606,026

ERROR-CORRECTING METHOD AND APPARATUS FOR THE TRANSMISSION OF WORD-WISE ORGANIZED DATA

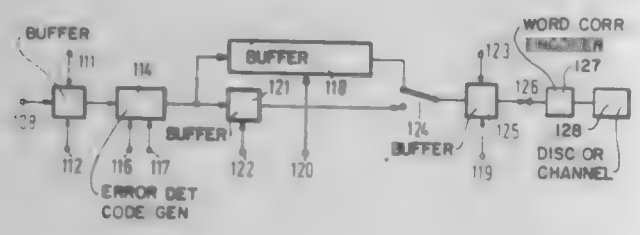
Constant P. M. J. Baggen, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 24, 1984, Ser. No. 573,522

Claims priority, application Netherlands, Jan. 25, 1983, 8300249

Int. Cl.⁴ G06F *11/10*

U.S. Cl. 371—39 **14 Claims**



1. Method for encoding word-wise organised data, comprising the steps of:

receiving a stream of user words of fixed lengths and generating therefrom successive groups of data words each group comprising a first number of user words and a second number of redundancy words according to an error detecting code;

replicating each of said first groups of data words a predetermined number of times thereby producing a plurality of corresponding versions of each of said first groups of data words;

creating respective delay times between respective corresponding versions, and reconstituting a serial stream of all first groups of data words so formed;

adding a first series of check words on the basis of a first error correcting code to said first groups of data words;

interleaving said first groups of data words and said first series of check words using mutually different delays, said delays having respective values differing by an interleaving increment, thereby generating second groups of words,

adding a second series of check words to said second groups of words on the basis of a second word error correcting code, thereby forming third groups of words having a recurrence period representing a frame; and wherein said respective delay times and said interleaving increment cause different versions of said data words to be mapped on different frames.

4,606,027

ERROR CORRECTION APPARATUS USING A VITERBI DECODER

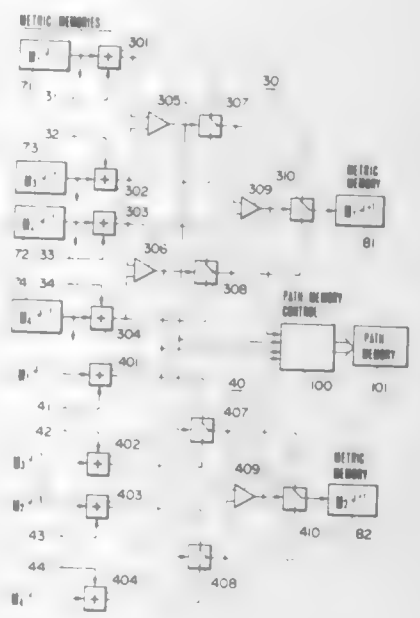
Susumu Otani, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Oct. 10, 1984, Ser. No. 659,533

Claims priority, application Japan, Oct. 12, 1983, 58-190511

Int. Cl.⁴ G06F *11/10*

U.S. Cl. 371—43 **5 Claims**



1. An error correcting apparatus comprising:

a source of path metrics associated respectively with states in a given time slot of a Viterbi trellis diagram, said path metrics being updated sequentially in response to new path metrics;

branch metric generating means for sequentially generating a branch metric in response to input convolutional code data and providing a plurality of sums of the branch metrics over successive branches diverging from said given time-slot states to later time-slot states;

adder means coupled to said source and to said branch metric generating means for adding the updated path metrics to a respective one of the branch metric sums to provide a plurality of second sums;

comparing means coupled to said adder means for comparing said second sums and detecting the highest of the compared second sums to provide a control signal representing the highest of the compared second sums;

selecting means coupled to said comparing means for selecting the detected highest second sum in response to said control signal for providing a new path metric to said source for updating a previous path metric; and

storage means coupled to said comparing means for storing data indicating the path associated with the selected highest second sum.

4,606,028

DIGITAL TRANSMISSION SYSTEM

Johannes Wagenmakers, Hilversum, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 14, 1984, Ser. No. 589,901

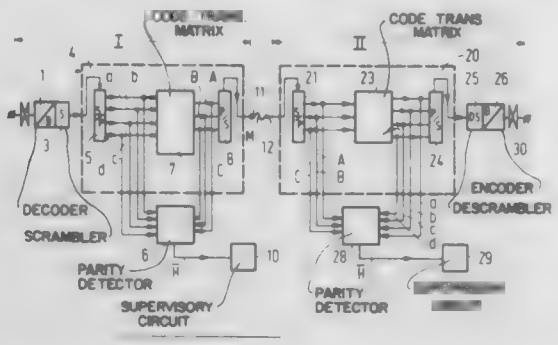
Claims priority, application Netherlands, Mar. 29, 1983, 8301098

Int. Cl.⁴ G06F *11/10*

U.S. Cl. 371—49 **4 Claims**

1. A digital transmission system comprising a transmitter section which includes an encoding arrangement and a receiver section which includes a decoding arrangement, at least one code translation matrix being provided between the input and the output of the encoding arrangement and at least one code translation matrix being provided between the input and the output of the decoding arrangement; code conversion supervisory means comprised in at least one of the receiver

section and the transmitter section, such code conversion supervisory means comprising a parity detector which is coupled to the inputs and to the outputs of the code translation matrix of the section in which such code conversion supervisory means is comprised; the parity detector being adapted to detect and invert exception parity conditions arising from the translation code used by the encoding and decoding arrangements.

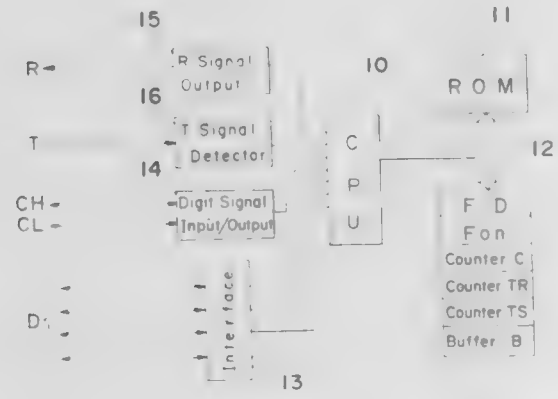


4,606,029

DATA TRANSMISSION SYSTEM

Toshiaki Nagao, Muko, and Toshio Shiho, Takatsuki, both of Japan, assignors to Omron Tateisi Electronics Co., Kyoto, Japan

Filed Dec. 1, 1983, Ser. No. 556,860
Claims priority, application Japan, Dec. 1, 1982, 57-211553
Int. Cl.⁴ G06F *11/14*
U.S. Cl. 371—69 **1 Claim**



1. A system for transmitting data between a transmitter and a receiver through a transmission line, comprising:

a transmitter on one end of the transmission line producing data to be transmitted on the transmission line from the transmitter for a predetermined time;

a control output device connected to the transmitter which outputs a number whose value depends on the state of operation of said control output device during the period of time data are transmitted through the transmission line; and

a receiver on another end of the transmission line comprising

setting means connected to the control output device for setting a number of times for repeatedly reading in said data by said receiver, said number being the number output by the control output device,

reading means for reading in repeatedly and consecutively said data the number of times set by the setting means during the predetermined time in which the data are produced on the transmission line, and

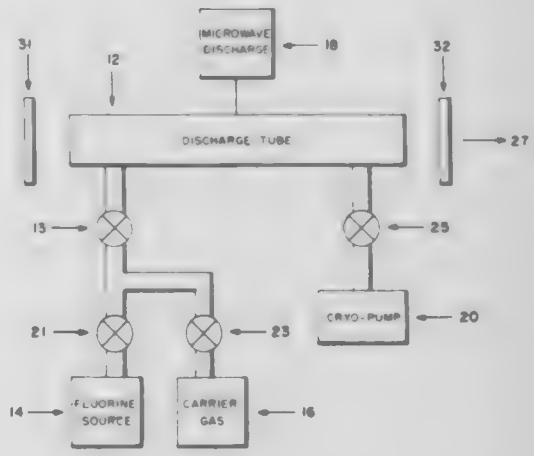
accepting means for accepting the data only when the data are read, without any change, for said number of times.

4,606,030

VACUUM ULTRAVIOLET LASER

Joseph Berkowitz, Hinsdale, Ill.; Branko M. Ruscic, Zagreb, Yugoslavia, and John P. Greene, Woodridge, Ill., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jul. 6, 1984, Ser. No. 628,700
Int. Cl.⁴ H01S *3/30*
U.S. Cl. 372—5 **9 Claims**



1. An atomic fluorine laser amplifier comprising:

a chamber;

a fluorine containing gas flowing in said chamber;

electric discharge means to dissociate said gas to provide a population inversion of fluorine atoms in an exited state; and

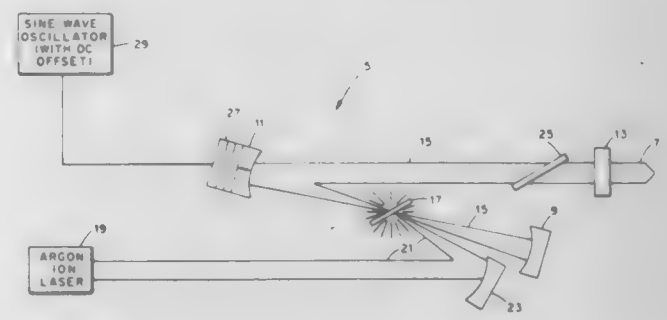
means for directing incident radiation at one or more wavelengths selected from the group consisting of 6089.2 Å, 6046.8 Å, 3592.7 Å, 3574.1 Å, 680.7 Å and 682.6 Å through said chamber to produce amplified spontaneous stimulated emission from said excited fluorine atoms at corresponding wavelengths.

4,606,031

DEVICE FOR FREQUENCY MODULATION OF A LASER OUTPUT SPECTRUM

James R. Beene, and Curtis E. Bemis, Jr., both of Oak Ridge, Tenn., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jul. 17, 1984, Ser. No. 631,693
Int. Cl.⁴ H01S *3/10*
U.S. Cl. 372—28 **3 Claims**



1. A device for frequency modulating the output of a dye laser, comprising:

a continuous wave laser, having a resonant laser cavity including at least one mirror disposed for movement along an optical axis to alter the beam path of said cavity and thus the laser output wavelength;

a piezoelectric transducer capable of mechanical resonance vibrations along a longitudinal axis thereof in the range of from about 40 to 400 kHz when excited by a low amplitude excitation signal of corresponding frequency applied to an input thereof, said transducer being coupled to said

at least one mirror to vibrate said mirror along said optical axis when an excitation signal is applied thereto; and

an oscillating voltage sine wave source connected to said input of said piezoelectric transducer for generating said excitation signal so that said at least one mirror is vibrated along said optical axis at a frequency equal to said mechanical resonance vibration frequency of said transducer, thereby frequency modulating the output of said dye laser.

4,606,032

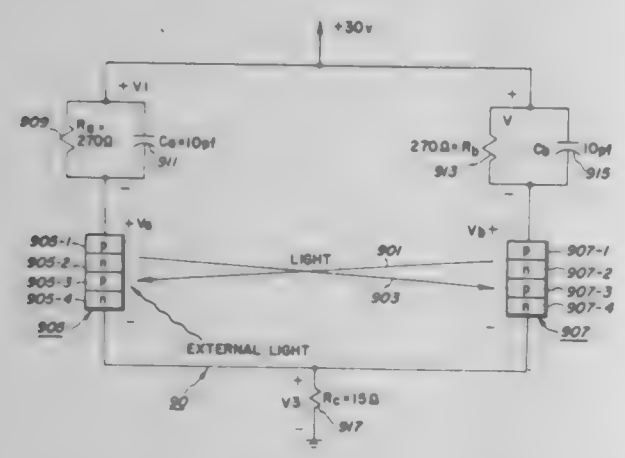
ASTABLE OPTICAL MULTI-VIBRATOR

Donald R. Scifres, Los Altos; William Streifer, Palo Alto, and Robert D. Burnham, Los Altos Hills, all of Calif., assignors to Xerox Corporation, Stamford, Conn.

Division of Ser. No. 589,796, Mar. 14, 1984, Pat. No. 4,555,785, which is a division of Ser. No. 336,750, Jan. 4, 1982, Pat. No. 4,450,567, which is a division of Ser. No. 56,765, Jul. 12, 1979, Pat. No. 4,316,156. This application Aug. 7, 1985, Ser. No. 763,381

Int. Cl.[4] H01S *3/19*

U.S. Cl. 372—38 2 Claims



1. An optical astable multivibrator utilizing plural layer semiconductor laser diodes which are electrically biased to the point wherein light input causes the laser diodes to commence lasing, the improvement being characterized by:

a first laser diode (**905**),

a first parallel circuit of a first resistor (**909**) and first capacitor (**911**) in series with said first laser diode (**905**),

a second laser diode (**907**) in close proximity to and in light relationship with said first laser diode (**905**),

a second parallel circuit of a second resistor (**913**) and second capacitor (**915**) in series with said second laser diode (**907**), said first laser diode (**905**) and first parallel circuit being in parallel circuit relationship with said second laser diode (**907**) and second parallel circuit,

a third resistor (**917**) and a bias supply voltage (V) in series with said laser diode and resistance/capacitance circuits, such that when an external light source is impinged on said first laser diode, said first laser diode will commence to emit laser light with a concomitant increase of current through said first capacitor (**911**) and third resistor (**917**) until the voltage across said third resistor (**917**) reaches a value sufficient to cause said first laser diode (**905**) to turn off, some of the light (**903**) emitted by said first laser diode (**905**) being caused to impinge on said second laser diode (**907**) which will in turn commence to emit laser light (**901**) with a concomitant increase of current through said second capacitor (**915**) and third resistor (**917**) until the voltage acrosss said third resistor (**917**) reaches a value sufficient to cause said second laser diode (**907**) to turn off, said alternate action of the first and second laser diodes continuing at least until the external light source is removed.

4,606,033

COMBINATION REFRACTIVE INDEX-GUIDING TYPE AND A GAIN-GUIDING TYPE SEMICONDUCTOR LASER DEVICE

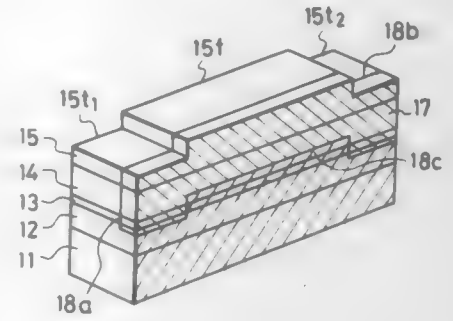
Masamichi Sakamoto, Isehara, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Sep. 26, 1983, Ser. No. 535,789

Claims priority, application Japan, Sep. 30, 1982, 57-172201

Int. Cl.[4] H01S *3/19*

U.S. Cl. 372—45 4 Claims



1. A semiconductor laser device which includes a resonant cavity and in which a first cladding layer, a light emitting active layer, a second cladding layer, a capping layer and a second electrode are formed on a first major surface of a semiconductor substrate having a first electrode on its second major surface wherein the improvement comprises:

(a) a stripe light emission region formed on said substantially flat active layer;

(b) refractive index-guiding operating means formed on at least one end portion of said stripe light emission region; and

(c) gain-guiding operating means formed at one inside portion of said stripe light emission region.

4,606,034

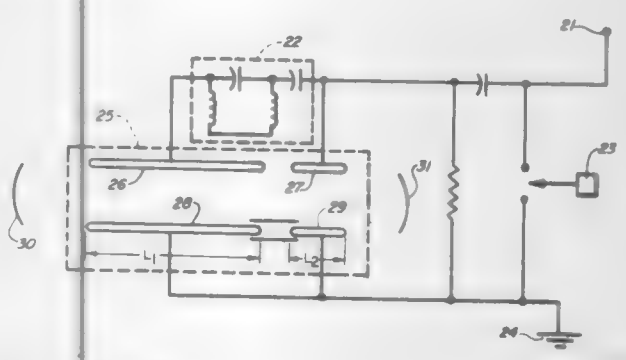
ENHANCED LASER POWER OUTPUT

James G. Eden, Champaign, Ill.; Andrew W. McCown, Los Alamos, N. Mex., and David B. Geohegan, Urbana, Ill., assignors to Board of Trustees, University of Illinois, Urbana, Ill.

Filed Feb. 19, 1985, Ser. No. 702,547

Int. Cl.[4] H01S *3/22*

U.S. Cl. 372—57 21 Claims



1. In a pulsed laser system having substantially no readily ionizable additive material therein and, including a resonator cavity, the improvement comprising means associated with said cavity for injecting a minor proportion of radiation energy into an excimer laser at a selected time interval prior to the emergence of a laser pulse therefrom, which interval exceeds 20 nanoseconds; such that a substantial enhancement of the energy of the emergent laser pulse is achieved.

4,606,035

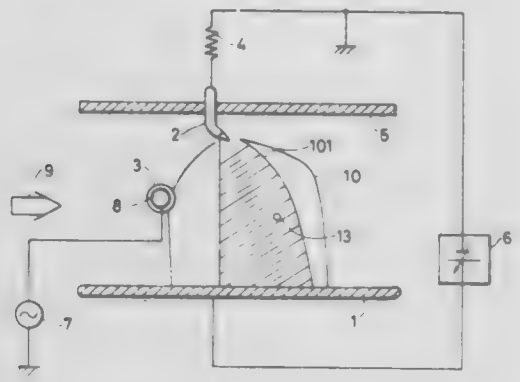
LATERAL EXCITATION TYPE GAS LASER

Masao Hishii; Masaaki Tanaka; Yukio Sato; Haruhiko Nagai, and Norikazu Tabata, all of Hyogo, Japan, assignors to Agency of Industrial Science and Technology, Tokyo, Japan

Filed Mar. 22, 1984, Ser. No. 592,207

Int. Cl.[4] H01S *3/097*

U.S. Cl. 372—87 14 Claims



1. In a lateral excitation type gas laser device, comprising:

anode means and cathode means arranged opposed to each other, a gap being formed therebetween;

means for providing a flow of laser gas between said anode means and cathode means;

a high voltage DC source for applying a high DC voltage for causing a glow discharge between said anode and cathode means;

a dielectric electrode disposed in said flow of laser gas upstream of said anode and cathode means in said flow of laser gas; and

a high voltage high frequency source for applying a high frequency high voltage for causing a silent discharge between said dielectric electrode and said anode and cathode means,

the improvement wherein said dielectric electrode has a diameter defined by:

$$3\ \text{mm} < D < d/2$$

where D is the diameter of said dielectric electrode and d is the length of the gap between said anode and cathode means,

and wherein said dielectric electrode is disposed in a region defined by:

$$0 \leqq l_1 \leqq 2d, \text{ and } 0 \leqq l_2 \leqq d$$

where l_1 is the distance in the direction of laser gas flow between said dielectric electrode and said cathode means, and l_2 is the distance between said dielectric electrode and said anode means.

4,606,036

DECENTERED ANNULAR RING RESONATOR WITH INTERNAL MISALIGNMENT CANCELLATION

Dale A. Holmes, Simi Valley, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Aug. 29, 1983, Ser. No. 527,593

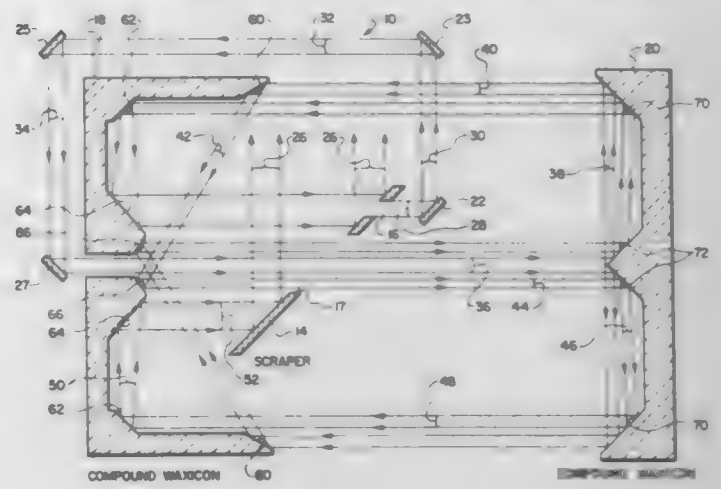
Int. Cl.[4] H01S *3/08*

U.S. Cl. 372—95 10 Claims

1. In a DARR in a laser, the improvement comprising:

means for reflecting the feedback beam on a first cycle around the DARR; and

means for reflecting the once-cycled beam in a second cycle around the DARR and for changing the azimuthal orientation of the once-cycled beam by 180° substantially at the start of the second cycle.



4,606,037

APPARATUS FOR MANUFACTURING SEMICONDUCTOR SINGLE CRYSTAL

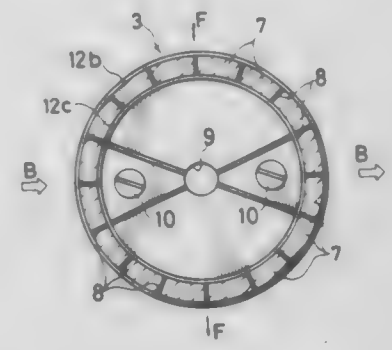
Kazutaka Terashima, Ebina, and Tsuguo Fukuda, Yokohama, both of Japan, assignors to Agency of Industrial Science & Technology and Ministry of International Trade & Industry, both of Tokyo, Japan

Filed Jan. 16, 1984, Ser. No. 571,194

Claims priority, application Japan, Jan. 18, 1983, 58-5182; Apr. 27, 1983, 58-73037

Int. Cl.[4] H05B *11/00*

U.S. Cl. 373—6 10 Claims



1. An apparatus for the manufacture of a semiconductor single crystal, comprising a furnace possessing a heater member adapted to heat a crucible for fusing raw materials for the crystal, insulative thermally resistant reinforcing members for reinforcing said heater member of said furnace, and a magnetic field applying device formed of at least one magnet means opposed across a space to the lateral side of said furnace.

4,606,038

PLANT FOR PRODUCING CALCIUM CARBIDE

Walter Lugscheider, Linz; Ernst Riegler, Enns, and Ernst Zajicek, Ottensheim, all of Austria, assignors to SKW Trostberg Aktiengesellschaft, Trostberg, Fed. Rep. of Germany

Filed Dec. 1, 1983, Ser. No. 557,354

Claims priority, application Austria, Dec. 22, 1982, 4637/82

Int. Cl.[4] H05H *1/42*

U.S. Cl. 373—24 7 Claims

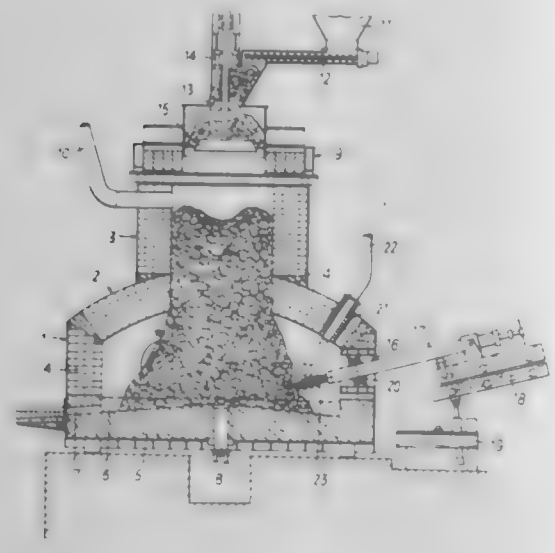
1. A plant for producing calcium by melting and reducing a burden including as components, coal and one or both of CaO and $CaCo_3$ comprising:

a melting furnace having a melting space defined by a bottom part, side walls and a vault part carried by side walls and having an opening therein,

at least one plasma burner penetrating said melting furnace into said melting space,

a bottom electrode disposed in said bottom part, said at least one plasma burner being directed towards said bottom electrode and forming a plasma torch therebetween,

said bottom part comprising an upper surface in the form of an upwardly extending cone, said bottom electrode extending through said bottom part to the top of said cone, the downwardly diverging surface of said cone meeting



said side walls to provide a groove for molten stock surrounding said bottom electrode, and

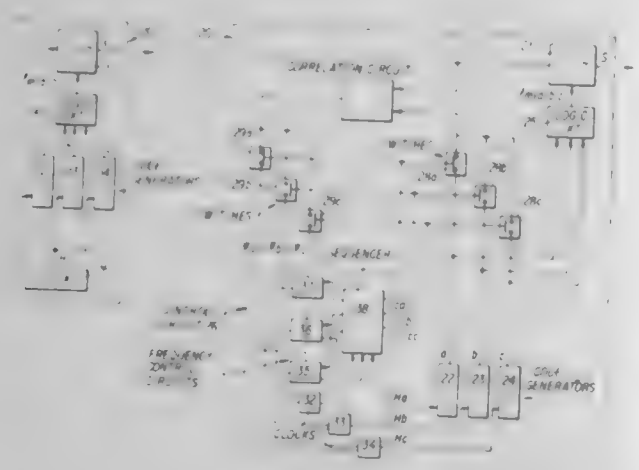
means for supplying said burden components into said melting space through said opening in the vault part to said bottom part in the region of said plasma torch to be melted and reduced thereby to produce CaC_2 and CO, the CO produced by the reaction of said components in the region of the plasma torch flowing through the unreacted portions of said burden components before they reach said region.

4,606,039

SPREAD SPECTRUM CODING METHOD AND APPARATUS

Michel J. R. Nicolas, Paris, and Bruno R. Sebilet, Suresnes, both of France, assignors to Societe Nationale d'Etudes et de Construction de Moteurs d'Aviation S.N.E.C.M.A., Paris, France

Filed Jul. 10, 1984, Ser. No. 629,510
Claims priority, application France, Jul. 21, 1983, 83 12043
Int. Cl.[4] H04L *9/02;* **H04B** *15/00*
U.S. Cl. 375—1 **7 Claims**



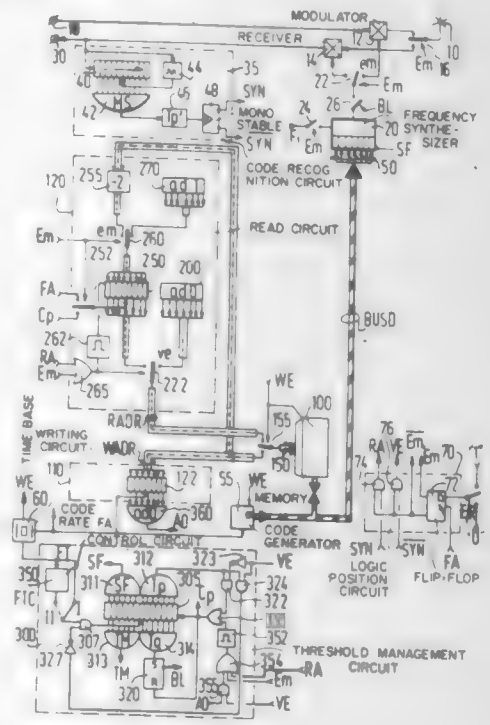
1. A process for coding and decoding an input signal for a spread spectrum transmission, including the steps of phase modulating said input signal by means of a O-pi modulator controlled by a code formed from a sequence of binary values generating the code to control the modulator by combining in accordance with a logical majority function an odd number of elementary codes generated from code generators and including pseudo random binary sequences including different numbers of bits, transmitting the modulated signal, receiving the transmitted signal, phase demodulating the received signal by means of a O-pi demodulator controlled by the same code as used in the transmitter to produce an output signal which is the output signal of said process and a duplicate of said input signal, generating in the receiver the code to control the demodulator from the same elementary codes as used in the transmitter, and synchronizing the code used in the receiver with that used for transmission by correlating each of the elementary codes with the received signal.

4,606,040

TRANSMITTING-RECEIVING STATION FOR A SYSTEM FOR TRANSMITTING DATA BY FREQUENCY HOPPING

Guy A. J. David, Thiais; Jean-Pierre H. Van Uffelen, Chevilly Larue, and Jean-Pierre M. Defeuilly, Cressely, all of France, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Sep. 20, 1984, Ser. No. 652,551
Claims priority, application France, Sep. 30, 1983, 83 15611
Int. Cl.[4] H04B *14/02, 15/00*
U.S. Cl. 375—1 **6 Claims**



1. In a transmitting-receiving system for transmitting data by frequency-hopping, comprising a code-generator for defining the use of a plurality of channels in accordance with a high-speed skip law in a transmitting mode or in a receiving mode and in accordance with a low-speed skip law in a stand-by mode, the high-speed skip law consisting in the sequential separate use of each of the channels for duration Tp, while the low-speed skip law governs the changes of the receiving channels employed during $N \times Tp$, each corresponding to a determined center channel of a sequence of N channels of said high-speed skip law, the center channel having a synchronizing code; the improvement wherein the system comprises a memory, a write circuit connected to the memory and generator for progressively storing the codes in the memory received from the generator, and a read circuit connected to the memory for reading the codes stored therein as a function of the position to which the transmitting receiving system has been adjusted.

4,606,041

FREQUENCY HOPPING DATA COMMUNICATION SYSTEM

Joseph Kadin, Florham Park, N.J., assignor to ITT Corporation, New York, N.Y.

Filed Oct. 19, 1984, Ser. No. 662,490
Int. Cl.[4] H04L *27/26, 1/08;* **H04B** *15/00*
U.S. Cl. 375—1 **17 Claims**

1. A frequency hopping data communication system comprising:

first means to produce identical first and second pseudo-noise code streams time displaced with respect to each other, each of said first and second code stream providing

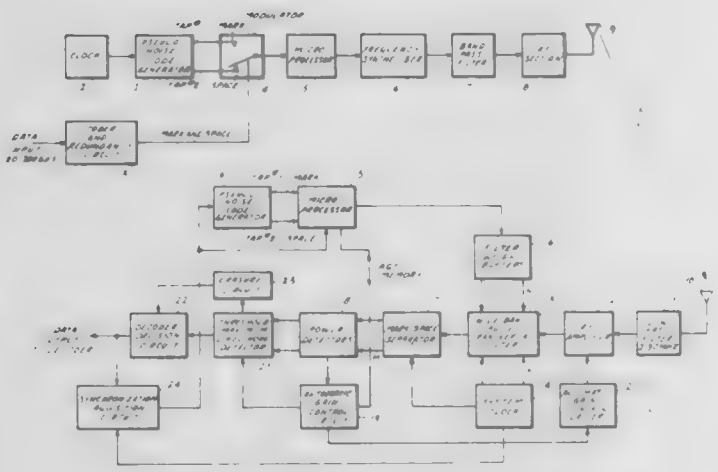
a frequency hopping rate equal to n times the rate of binary data being transmitted, and including redundancy circuit means for repeating said binary data x times, where n and x are integers greater than one;

second means coupled to said first means, said second means being responsive to said repeated data and said first and second code streams to provide a modulated signal for conveying said data, said modulated signal having different randomly occurring frequencies representing both binary conditions of said repeated data and random spacing between said randomly occurring frequencies representing each of said binary conditions of said repeated data, each bit of said repeated data being represented by n of said randomly occurring frequencies;

third means coupled to said second means to receive said modulated signal and to separate said randomly occurring frequencies representing each of said binary conditions from said received modulated signal;

fourth means coupled to said third means to recover said data from said separated, received modulated signal; and

fifth means coupled to said third means and said fourth means to synchronize said third means to said received modulated signal wherein said first means includes



a first pseudo-noise code generator having a pair of taps disposed to provide said first and second code streams time displaced with respect to each other and wherein said second means includes

switching means coupled to said first code generator responsive to said repeated data to couple said first code stream to its output upon each occurrence of one of said binary conditions and to couple said second code stream to its output upon each occurrence of the other of said binary conditions,

a first microprocessor coupled to said output of said switching means, said first microprocessor having a table of values each of which represents a different one of said different random frequencies, said first microprocessor responding to said first and second code streams to sequentially couple predetermined ones of said values to its output, and

frequency generating means coupled to said output of said first microprocessor responsive to said predetermined ones of said values to provide said different randomly occurring frequencies for both of said binary conditions.

4,606,042

METHOD FOR DIGITAL TRANSMISSION OF MESSAGES

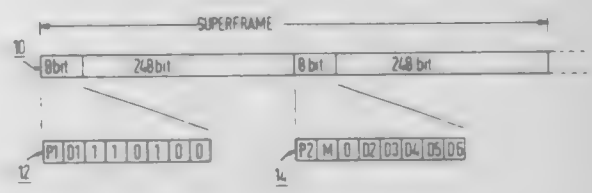
Klaus-Dieter Kahn, Germering; Friedrich Kuehne, and Hermann Barth, both of Munich, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Oct. 3, 1983, Ser. No. 538,296

Claims priority, application Fed. Rep. of Germany, Oct. 21, 1982, 3238973

Int. Cl.[4] H04L *9/00*

U.S. Cl. 375—2.1 **7 Claims**



1. In a method for digital transmission of messages in a digital radio relay system using a superframe for digital signals to permit the transmission of additional bits of data, the improvement comprising the steps of:

(a) creating a predetermined number m of superframes, wherein each superframe comprises two half-frames, each half-frame appearing in the superframe in equal, consecutive, predetermined time periods and each half frame containing one byte for additional bits of data;

(b) combining the m superframes into a multiple frame; and

(c) scrambling the digital signals, including the additional bits of data, of each superframe by adding a periodic bit pattern to the digital signals wherein the scrambling pattern has a period of the length of the multiple frame, wherein the byte of the first half frame contains at least one parity bit, one service bit and a plurality of frame alignment bits in a predetermined sequence, and the byte of the second half frame contains at least one parity bit, one marking bit, one frame alignment bit, and a plurality of service bits in a predetermined sequence.

4,606,043

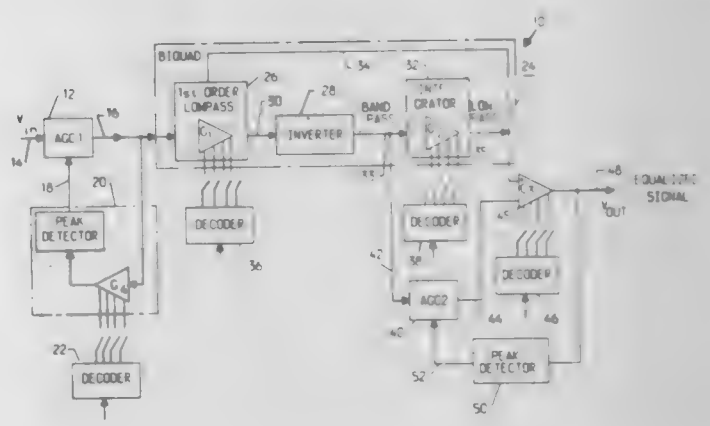
PROGRAMMABLE AUTOMATIC CABLE EQUALIZER

Thomas J. Aprille, Jr.; Yen-long Kuo, both of Andover, Mass., and Charles F. Walker, Derry, N.H., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Oct. 9, 1984, Ser. No. 658,773

Int. Cl.[4] H04B *3/14*

U.S. Cl. 375—12 **4 Claims**



1. An automatic cable equalizer, comprising:

a first automatic gain control means having an input node, an output node, and a control node;

a first peak detector means having an input node connected to the output node of the first gain control means and having an output node connected to the control node of the first gain control means;

a biquadratic filter means having an input node, a band pass

node, and a low pass node, the input node being connected to the output node of the first gain control means;

a second automatic gain control means having an input node, an output node, and a control node, the input node being connected to the band pass node of the biquadratic filter means;

a summing means including an inverting input node, a noninverting input node, and an output node, the noninverting input node being connected to the low pass node of the biquadratic filter means and the inverting input node being connected to the output node of the second gain control means, and

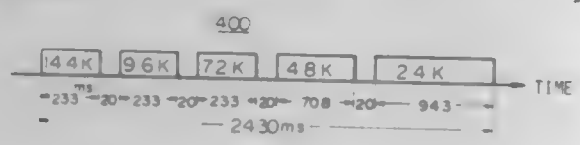
a second peak detector means having an input node connected to the output node of the summing means and having an output node connected to the control node of the second gain control means.

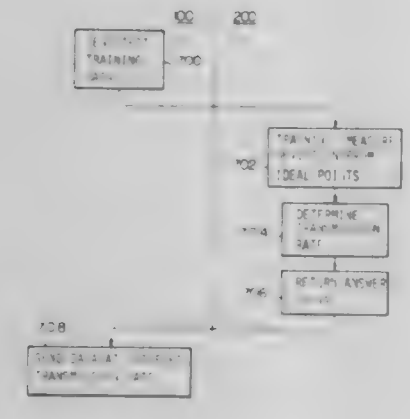
4,606,044

ADJUSTING DATA TRANSMISSION RATE BASED ON RECEIVED SIGNAL QUALITY

Shozo Kudo, Yokohama, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Mar. 5, 1984, Ser. No. 586,509
Claims priority, application Japan, Mar. 9, 1983, 58-37274
Int. Cl.[4] H04J *3/22*
U.S. Cl. 375—13 **9 Claims**





1. A data transmission control method for allowing remote transceiver stations to transmit data via an analog transmission line through modems which selectively use a plurality of transmission rates, said method comprising the steps of:

(a) transmitting test training data comprised of data bursts in phase modulated form including a plurality of vectors transmitted at a plurality of data rates from a transmit station to a receive station;

(b) training a modem of said receive station in response to said test training data;

(c) selecting a transmission rate adequate for communication between the transmit and receive stations by measuring deviation of the vectors of the test training data received by the receive station from ideal predetermined values, said measuring having a degree of accuracy which is sufficient to discriminate among the deviations of test training data vectors which are all closer to the same ideal predetermined value than to any other ideal predetermined value;

(d) notifying said selected transmission rate from the receive station to the transmit station; and

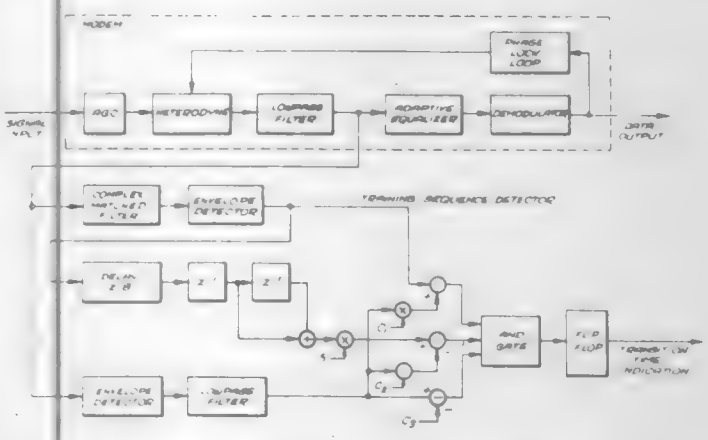
(e) transmitting data from the transmit station at said notified transmission rate.

4,606,045

METHOD AND APPARATUS FOR DETECTING AN EQUALIZER TRAINING PERIOD IN A RECEIVING-END MODEM

Chauncey S. Miller, Rancho Palos Verdes, Calif., assignor to TRW Inc., Redondo Beach, Calif.

Division of Ser. No. 404,194, Aug. 2, 1982, Pat. No. 4,462,108.
This application Mar. 16, 1984, Ser. No. 590,093
Int. Cl.[4] H03H *7/30;* **H03K** *5/159*
U.S. Cl. 375—13 **10 Claims**



1. For use in a receiving-end modem, a method for detection of the start of an equalizer training period, said method comprising the steps of:

filtering complex phasor signals provided by the modem, in a multistage complex matched filter having a plurality of serially connected stages that contribute to the output of said matched filter;

comparing output signals from the complex matched filter with a threshold signal; and

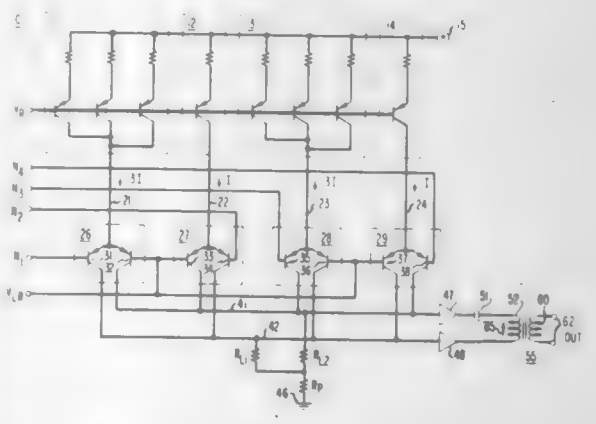
providing a modem timing signal based on the result of said comparing step wherein the output of said matched filter falls off sharply upon transition to the training sequence, when contributions from the early stages of the filter oppose contributions from the later stages.

4,606,046

CONVERTER/LINE DRIVER CIRCUIT FOR A LINE REPEATER

John J. Ludwick, Hampton, N.H., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Dec. 27, 1983, Ser. No. 565,723
Int. Cl.[4] H03H *7/30, 7/40*
U.S. Cl. 375—17 **8 Claims**



1. A converter circuit arranged for receiving N-rail logic signals and converting them into a precision N-level signal, the converter being characterized by

an output transformer having a primary winding and a secondary winding;

first and second line drivers, each having an input terminal and an output terminal, the output terminals of the first and second line drivers being coupled to the primary

winding of the output transformer in a balanced output arrangement;

an impedance including branches coupling the input terminals of the first and second line drivers to a reference potential; and

means, responsive to the N-rail logic signals, for selectively conducting, through at least two of the branches of the impedance, currents having magnitudes selected to cause the first and second line drivers to conduct various levels and polarities of current through the entire primary winding of the output transformer for producing a precision N-level signal in the secondary winding of the output transformer.

4,606,047

HIGH FREQUENCY COMMUNICATIONS

Robert G. Wilkinson, 3 Edwards Close, Waterlooville, Portsmouth P08 8RJ, Hampshire, United Kingdom

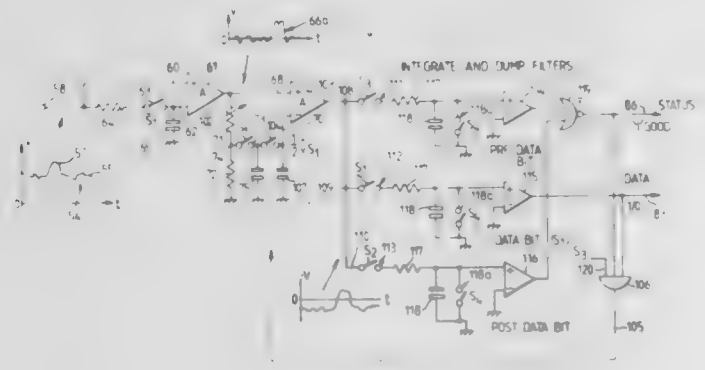
PCT No. PCT/GB82/00025, § 371 Date Sep. 28, 1982, § 102(e) Date Sep. 28, 1982, PCT Pub. No. WO82/02633, PCT Pub. Date Aug. 5, 1982

PCT Filed Jan. 27, 1982, Ser. No. 432,939

Claims priority, application United Kingdom, Jan. 29, 1981, 8102714

Int. Cl.⁴ H04B *1/10*

U.S. Cl. 375—38 **12 Claims**



1. A digital communications apparatus for receiving a digitally encoded message wherein each data bit of the encoded message is transmitted as a series of sequential signals in differing frequency channels, characterised in that the apparatus comprises:

a plurality of detectors each responsive to a respective frequency channel,

means for scanning each detector output sequentially to identify individual signals,

means to sample each detector output in the bit interval before (pre-data) and in the bit interval after (post-data) the appropriate message bit time interval,

comparing means for comparing the samples with a predetermined threshold level to determine a weighting factor dependent upon noise associated with the appropriate intervening message bit time interval,

means to take the product of the signal in the intervening message bit time interval with the associated noise weighting factor to give a weighted signal, and

means to combine the weighted signals from the differing channels to reconstruct the message.

4,606,048

RADIO COMMUNICATION SYSTEM

Susumu Sasaki, Fujisawa, and Hiroshi Nakamura, Sagamihara, both of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Mar. 29, 1984, Ser. No. 594,987

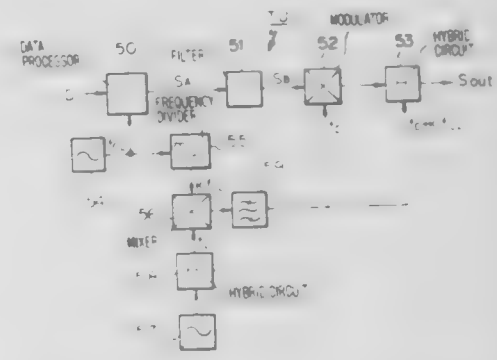
Claims priority, application Japan, Apr. 6, 1983, 58-59227; Apr. 6, 1983, 58-59228

Int. Cl.⁴ H04L *5/12, 23/02*

U.S. Cl. 375—39 **18 Claims**

1. A double sideband radio communication system operated under a quadrature amplitude modulation (QAM) method and communicating via a radio transmission path, said system comprising:

a transmitter unit, including a clock generator operating at a clock frequency f_{CL}, for modulating a digital data signal, clocked at the clock frequency f_{CL}, with a carrier signal having a carrier frequency f_O and for transmitting a modulated wave signal over the radio transmission path, said transmitter unit comprising insertion means for inserting a signal for carrier recovery into the modulated wave signal, said insertion means including a filter operatively connected to the radio transmission path and to receive the digital data signal, the signal for carrier recovery having a recovery frequency defined, using a constant k times the clock frequency, as $(f_O+k\cdot f_{CL})$, where an inequality of $0<|k|<1$ is satisfied, the filter creating zero nodes in the modulated wave signal at the recovery frequency $(f_O+k\cdot f_{CL})$ for positive and negative values of the constant k and said inserting means inserting the signal for carrier recovery in at least one of the zero nodes; and



a receiver unit for receiving a received modulated wave signal, including:

extraction means, operatively connected to the radio transmission path, for extracting received frequency components $(f_O+k\cdot f_{CL})$;

separation means, operatively connected to said extraction means, for separating received carrier frequency and received clock frequency components $(f_O+k\cdot f_{CL})$ from the received frequency components;

recovery means, operatively connected to said separation means, for recovering the clock frequency f_{CL} from the received clock frequency component $k\cdot f_{CL}$; and

reproducing means, operatively connected to said separation means, said recovery means and to receive the received modulated wave signal, for reproducing the digital data signal from the received modulated wave signal, the received carrier frequency component f_O and the clock frequency f_{CL}.

4,606,049

REMOTE TRANSMITTER CONTROL SYSTEM

Richard A. Daniel, Kingston, Wash., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 3, 1984, Ser. No. 677,434

Int. Cl.⁴ H04B *3/36*

U.S. Cl. 375—45 **5 Claims**

1. A remote transmitter control system comprising:

(a) a control station for generating a frequency modulated control signal that represents binary digital data, said control station including

(1) a variable frequency oscillator, said variable frequency oscillator providing two frequencies f_0 and f_1 that are harmonically related, in phase and f_0 is greater that f_1;

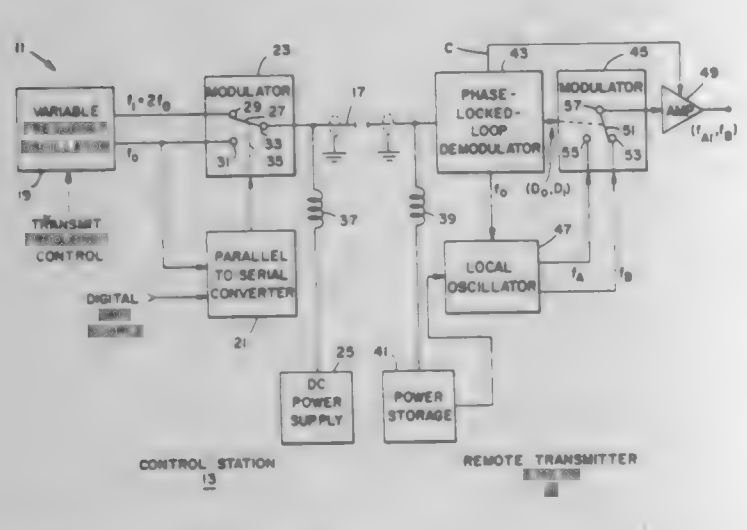
(2) a source of binary digital data;

(3) a first modulator, said first modulator being responsive to said f_0 and f_1 frequencies and to said source of binary digital data for generating a frequency modulated control

signal wherein f_0 and f_1 respectively represent the two states of said binary data; and

(b) a remote transmitter station including a control signal responsive means for receiving said frequency modulated control signal and independently generating a modulated transmission signal that represents said binary digital data, and a transmitter means, said control signal responsive means including

(1) a local oscillator, the output of said local oscillator being transmit frequencies f_A and f_B;



(2) a second modulator, said second modulator receiving the transmit frequencies f_A and f_B from said local oscillator, the output of said second modulator being applied to the input of said transmitter means; and

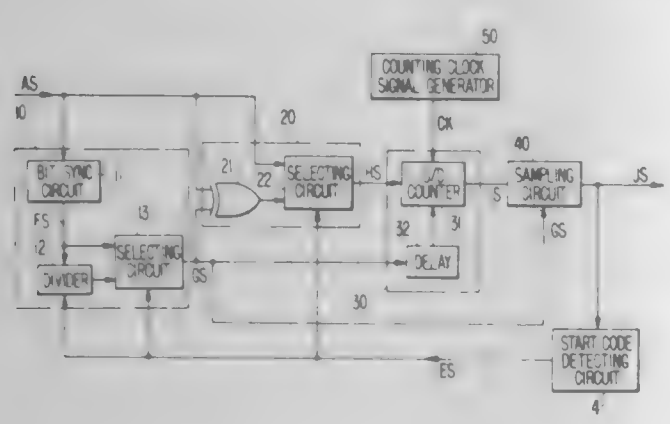
(3) a phase-locked-loop demodulator, said phased-locked-loop demoulator being responsive to said frequency modulated control signal for providing frequency f_0 to said local oscillator, providing control signals representing the digital data to said second modulator, and providing a power control signal to said transmitter when transmit frequencies f_A and f_B are present.

4,606,050

SYSTEM FOR DETECTING AND RECOVERING A TRANSMITTED SIGNAL

Tatsuaki Sekigawa; Akio Gotoh; Syuitsu Tsutsumi, all of Hachioji; Kuniyoshi Marui, Tokorozawa, and Naoto Honda, Hino, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kanagawa, Japan

Filed Jul. 22, 1983, Ser. No. 516,359
Claims priority, application Japan, Jul. 30, 1982, 57-133568
Int. Cl.⁴ H03D *3/18*
U.S. Cl. 375—75 **4 Claims**



1. A system for detecting and recovering the information encoded in a data signal having NRZ start codes and SPL information codes, wherein said NRZ start codes and said SPL information codes include a plurality of information bits, a portion of each of said bits having a determinable signal power, said system comprising:

start code detecting means for detecting the ends of said NRZ start codes and providing start code signals accordingly;

clock signal regenerating means responsive to said start code signals for receiving said data signal and regenerating a clock signal from said information bits;

converting means connected to said clock signal regenerating means and responsive to said start code signals for receiving said data signal and converting said SPL information codes to NRZ information codes;

counting clock signal generating means for generating a counting clock signal having a frequency higher than the frequency of said information bits;

selection means for selecting the plurality of information bits of one of said codes;

counting means connected to said clock signal generating means for counting said counting clock signal in a first direction when the level of the information bit selected by said selection means is at a predetermined first level and in a second direction when the information bit selected by said selection means is at a predetermined second level to produce a counting result, said counting means counting in said first and second direction at the same rate; and

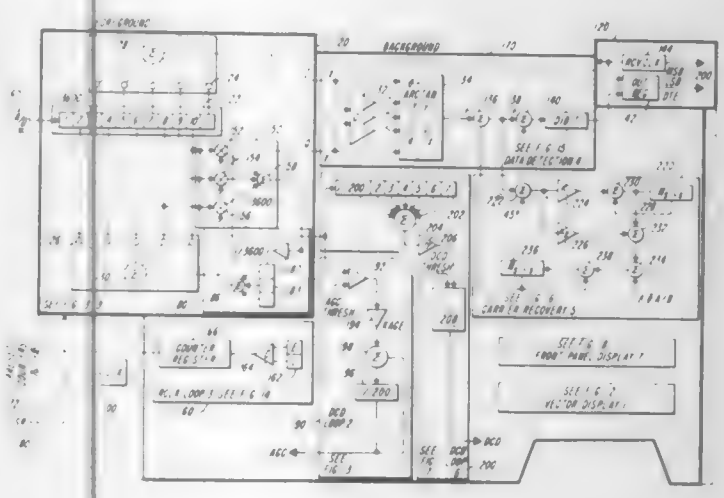
signal reproducing means for reproducing said data signal according to said counting result of said counting means.

4,606,051

QPSK DEMODULATOR WITH I AND Q POST-DETECTION DATA CORRECTION

Steven B. Crabtree, Taft, Tenn.; Harry Yedid, Huntsville, Ala., and James B. Sherman, Chapel Hill, N.C., assignors to Universal Data Systems, Inc., Huntsville, Ala.

Filed Nov. 10, 1983, Ser. No. 550,868
Int. Cl.⁴ H03D *3/00*; H04L *27/22*
U.S. Cl. 375—86 **10 Claims**



1. A quadrature phase shift keying receiver, including:

means for sampling a quadrature phase shift keyed signal according to a sample clock signal;

quadrature filter means receiving the output of the means for sampling and providing in-phase, quadrature, and error outputs;

error loop means receiving said error output from the quadrature filter means and providing an error signal;

sample clock means for providing said sample clock signal to said means for sampling, the position of which being adjusted according to said error signal; and

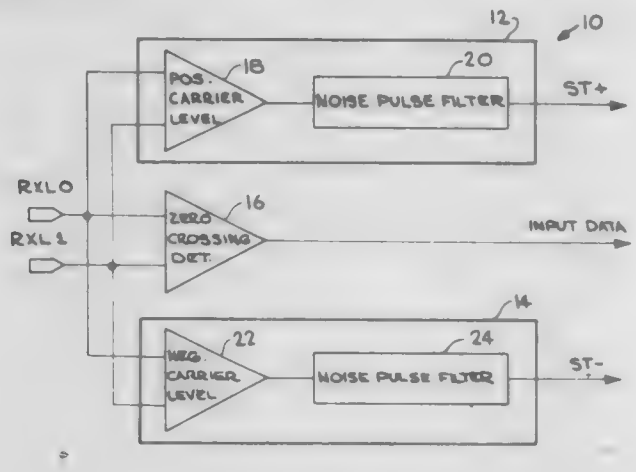
data demodulator means for providing a data signal according to the in-phase output and the quadrature output of said quadrature filter means.

4,606,052

METHOD FOR DETECTION OF LINE ACTIVITY FOR MANCHESTER-ENCODED SIGNALS

Frederic J. Hirzel, Cupertino, Calif., and Roy J. Levy, Ashland, Oreg., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Dec. 21, 1984, Ser. No. 684,085
Int. Cl.[4] H03K *5/153;* **H03M** *5/12*
U.S. Cl. 375—87 **5 Claims**



1. A method of detecting the presence of Manchester-encoded signals on a pair of signal lines, said Manchester-encoded signals being a serial Manchester-encoded bit stream having an inter-bit period T, comprising the steps of:

(a) detecting "line activity", when a signed voltage differential on said pair of signal lines during a first voltage transition, exceeds a first predetermined positive reference voltage or falls below a second predetermined negative reference voltage; and

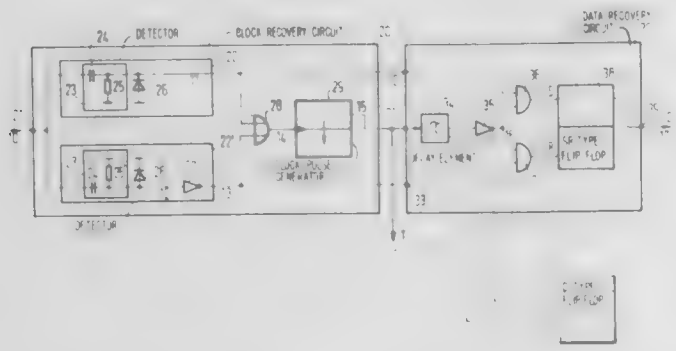
(b) determining said detected line activity to be "Manchester-encoded" when said voltage differential exceeding said first predetermined reference voltage of said first voltage transition, during a second voltage transition, falls below said second predetermined reference voltage within a time-window of $\frac{3}{4}\times T$ to $1\frac{1}{4}\times T$ or when said voltage differential falling below said second predetermined reference voltage of said first voltage transition, during said second voltage transition, exceeds said first predetermined reference voltage within said time-window.

4,606,053

BI-PHASE DECODER

Wolfgang Schröder, Pforzheim, Fed. Rep. of Germany, assignor to International Standard Electric Corporation, New York, N.Y.

Filed Aug. 16, 1983, Ser. No. 523,543
Claims priority, application Fed. Rep. of Germany, Aug. 19, 1982, 3230836
Int. Cl.[4] H03M *5/12;* **H04L** *7/02*
U.S. Cl. 375—87 **2 Claims**



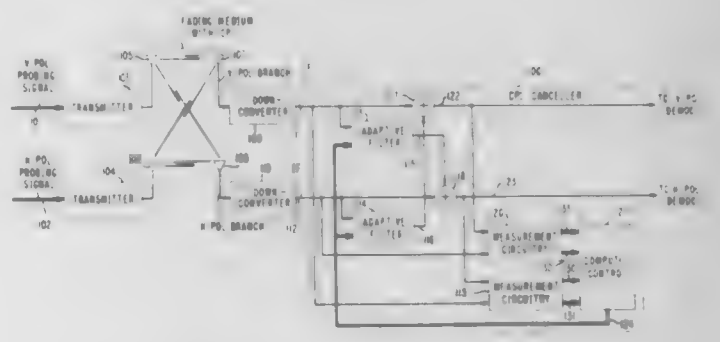
1. An evaluating circuit for an incoming data stream transmitted as a series of phase changes in two opposite directions occurring at predetermined instants of time, characterized in that it comprises a clock recovery circuit (**20**) containing one or more detectros (**22, 22'**) which generate output pulse stream(s) which represent said phase changes, the clock recovery circuit (**20**) containing a generator (**29**) which generates a clock pulse shorter than the shortest permissible distance between two valid changes of state and longer than half the longest permissible distance between two valid changes of state whenever a phase change is detected by the detector(s) (**22, 22'**) and if the preceding clock pulse has ended, and a data recovery circuit (**30**) that contains a storage element (**38**) into which data obtained in the data recovery circuit from the said output pulse stream(s) emerging from said detector(s) is transferred at each clock pulse generated by said clock recovery circuit, the storage element (**38**) being an SR flip-flop which is set via its set input S when a phase change occurs in one direciton (e.g., as a voltage rise) at an instant determined by the clock signal as the succession of clock pulses, and which is reset via its reset input R when a phase change occurs in the other direction (e.g., as a voltage drop) at an instant determined by the clock signal.

4,606,054

CROSS-POLARIZATION INTERFERENCE CANCELLATION

Noach Amitay, Tinton Falls, and Lawrence J. Greenstein, Edison, both of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Feb. 21, 1985, Ser. No. 704,069
Int. Cl.[4] H04B *1/10*
U.S. Cl. 375—102 **11 Claims**



11. A method of cancelling cross-polarization interference in first and second incoming signals having polarizations which are orthogonal to one another, said method comprising the steps of

coupling each of said incoming signals through a respective adaptive filter, each having a frequency response determined by a plurality of weighting coefficients,

adding the filtered first incoming signal and said second incoming signal and adding the filtered second incoming signal and said first incoming signal to form output signals, and

adjusting said weighting coefficients of said adaptive filters in response to said output signals and said incoming signals at selected times.

4,606,055

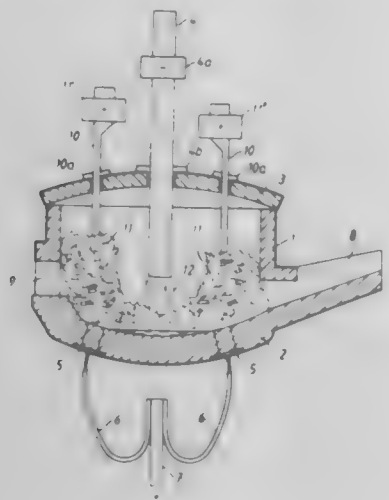
DC ARC FURNACE HAVING STARTING EQUIPMENT

Erik Lassander, Viken, and Sven-Einar Stenkvist, Västerås, both of Sweden, assignors to Asea AB, Västerås, Sweden

Filed Aug. 9, 1984, Ser. No. 639,145
Claims priority, application Sweden, Aug. 12, 1983, 8304384
Int. Cl.[4] H05B *7/00*
U.S. Cl. 373—108 **3 Claims**

1. A DC furnace including a hearth for containing a melt and having at least one melt electrode which becomes effective when covered by a melt, an enclosure for the hearth including a roof over the hearth, at least one arcing electrode depending downwardly through the roof for melting a charge of solid metal on the hearth, and at least two starting electrodes through which electric power is transmitted to the charge of solid metal until it is to cover the melt electrode, the starting electrodes depending downwardly through the roof and being

horizontally offset from the arcing electrode and moved to downward positions to press on the charge of solid scrap on the hearth until the charge is melted down to cover the melt electrode and thereafter moved to upward positions clear from the furnace interior, said starting electrodes being made of metal and each being of smaller diameter than is adequate to



singly carry the electric power required to power the arcing electrode, the starting electrodes being electrically interconnected in parallel so that together they can carry said power, the roof having substantially gas-tight seals through which the starting electrodes vertically slidingly depend, and said starting electrodes being long enough to remain in said seals when the starting electrodes are slid to their said upward positions.

4,606,056

METHOD OF ENCODING AND SERIALLY TRANSMITTING SELF-CLOCKING DATA AND CONTROL CHARACTERS

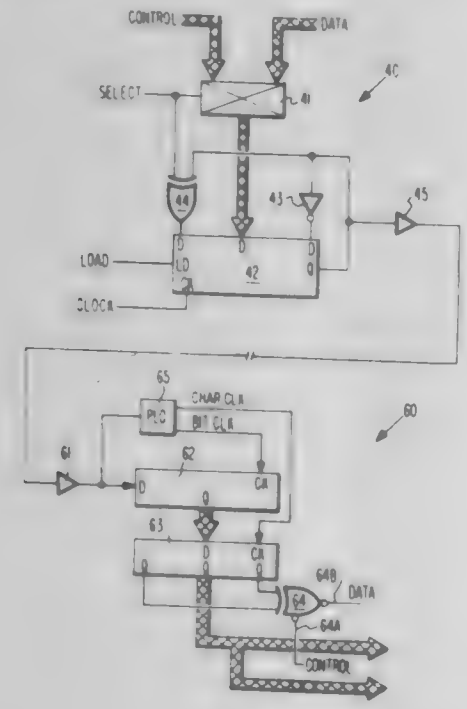
Ronald S. Perloff, San Diego, Calif., assignor to Burroughs Corporation, Detroit, Mich.

Filed Feb. 4, 1985, Ser. No. 698,138

Int. Cl.[4] H04L *7/02, 25/38;* **H04J** *3/06*

U.S. Cl. 375—110

10 Claims



1. A method of sending a plurality of self-clocking data characters and control characters in a sequence from a first communication node to a second node, including the steps of:

loading the characters of said sequence into a parallel-serial shift register;

inserting a one bit before and a one bit behind each loaded control character which is immediately preceded by a zero bit of a previously loaded character, and a zero bit before and a zero bit behind each remaining control character;

inserting a one bit before and a zero bit behind each loaded data character which is immediately preceded by a zero bit of a previously loaded character, and a zero bit before and a one bit behind each remaining data character; and

serially transmitting each loaded character with its inserted bits.

4,606,057

ARRANGEMENT FOR CHECKING THE COUNTING FUNCTION OF COUNTERS

Johannes van Baardewijk; Johan E. A. Hartman, and Nicolaas Bollmeyer, all of Hilversum, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

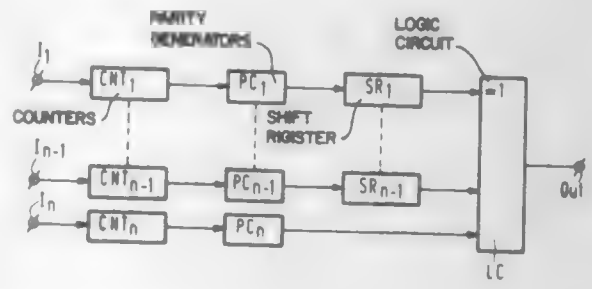
Filed Jul. 19, 1984, Ser. No. 632,497

Claims priority, application Netherlands, Aug. 1, 1983, 8302722

Int. Cl.[4] H03K *21/40*

U.S. Cl. 377—28

1 Claim



1. A logical subsystem for checking the counting function of a number of counters n, where (n≧2), which counters are operated isochronously, comprising:

a number n of counters, where n≧2;

a number n of parity generators, where n≧2;

each of said parity generators being connected to one of said counters and each of said counters being connected to one of said parity generators;

each of said parity generators having means for generating the parity of the instantaneous counting position of the counter to which it is connected;

(n−1) of said parity generators being connected to counters having the highest counting positions;

(n−1) shift registers being connected to said n−1 parity generators, such that each of said shift registers shifts the parity of the parity generator to which it is connected by a number of positions corresponding to the difference between the counting position of the counter to which it is connected and the counting position of the counter having the lowest counting position;

the output of each of said (n−1) shift registers, and the output of the parity generator connected to said counter having the lowest counting position being connected to a logic circuit such that said logic circuit outputs a first signal if the same parity is presented to all its inputs, and outputs a second signal if the parity presented to one input differs from the parity presented to at least one other input.

4,606,058

PROCESS FOR GENERATING CONTROL SIGNALS IN A PREDETERMINABLE PHASE POSITION, CIRCUIT ARRANGEMENT FOR EFFECTUATING THE PROCESS AND UTILIZATION OF THE CIRCUIT ARRANGEMENT

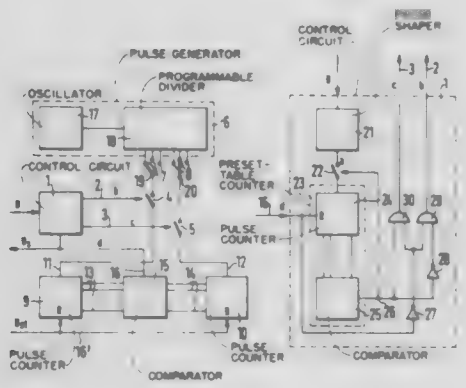
Tilmann Kruger, Neunkrichen; Erwin Potthof, Rothenbach, and Manfred Barwig, Wendelstein, all of Fed. Rep. of Germany, assignors to Diehl GmbH & Co., Fed. Rep. of Germany

Filed Jun. 8, 1984, Ser. No. 618,488

Claims priority, application Fed. Rep. of Germany, Jun. 15, 1983, 3321530

Int. Cl.[4] G04F *1/00;* H03K *5/153, 17/28*

U.S. Cl. 377—39 12 Claims



1. In a process for the generation of control signals in a presettable phase position relative to an alternating voltage with an at least a short term-stable frequency through the utilization of a higher-frequencied, at least short term-stable auxiliary timing pulse; the improvement comprising: determining the interval of a pregivable number of periods of the alternating voltage; counting the periods of a first auxiliary time pulse occurring during this interval; counting the periods of a second auxiliary timing pulse of different frequency which are correlated in time with the first auxiliary timing pulse; and generating the control signal at the coincidence of the period numbers of the first and second timing pulse.

4,606,059

VARIABLE FREQUENCY DIVIDER

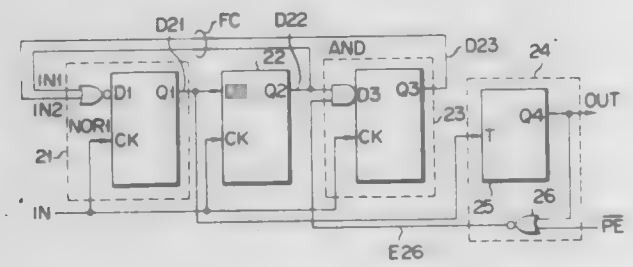
Yoshio Oida, Funabashi, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Mar. 23, 1984, Ser. No. 592,849

Claims priority, application Japan, Mar. 31, 1983, 58-55964

Int. Cl.[4] H03K *21/06*

U.S. Cl. 377—47 18 Claims



1. A variable frequency divider adapted to receive a clock signal and a division ratio instruction signal, said variable frequency divider comprising:

feedback shift register means, responsive to said clock signal and provided with a feedback gate having feedback input terminals, for providing first output data according to the logical state of said feedback input terminals and said clock signal;

delay shift register means, responsive to said clock signal and coupled to said feedback shift register means, for delaying said first output data by one clock period of said clock signal, and for providing second output data;

control shift register means, responsive to said clock signal and provided with a control gate having first and second control input terminals receiving, respectively, a control signal and said second output data, for providing third output data according to the logical state of said control input terminals and said clock signal;

feedback circuit means, coupled to said feedback input terminals and to said control shift register means, for feeding said second and third output data directly back to said feedback input terminals; and

expander means, coupled to said feedback shift register means and to said first control input terminal of said control gate, for providing said control signal according to said first output data and said division ratio instruction signal.

4,606,060

CHARGE COUPLED DEVICE (CCD) INPUT CIRCUIT OPERATING ACCORDING TO THE FILL AND SPILL PRINCIPLE

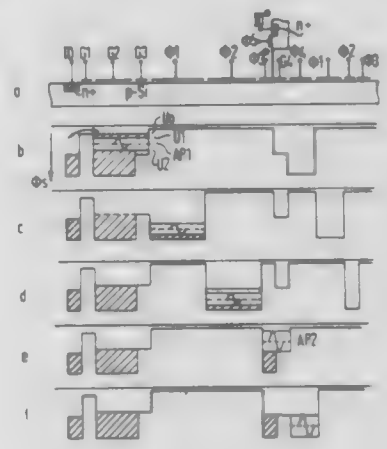
Heiner Klar, and Manfred Mauthe, both of Munich, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Continuation of Ser. No. 479,852, Mar. 28, 1983, abandoned, which is a continuation of Ser. No. 62,152, Jul. 30, 1979, abandoned. This application Feb. 11, 1985, Ser. No. 699,505

Claims priority, application Fed. Rep. of Germany, Aug. 21, 1978, 2836473

Int. Cl.[4] G11C *19/28;* H01L *29/78*

U.S. Cl. 377—60 1 Claim



1. In a charge-coupled device of the type having a substrate and an input which operates in accordance with the fill and spill principle in which a charge is moved over a barrier from one potential well to another, and which has an input diode, a plurality of linearly aligned input electrodes including first, second and third input electrodes, and a plurality of linearly aligned shift electrodes including first, second, third and fourth shift electrodes, the improvement therein comprising:

said first and second shift electrodes linearly mounted in a first direction and said first and second shift electrodes each having surface areas which are equal to the sum of the surface areas of said second input electrode and of said third input electrode; a distributor electrode aligned with and mounted adjacent to said second shift electrode for receiving a clock pulse;

a barrier electrode linearly mounted between said distributor electrode and said third shift electrode for receiving a fixed potential corresponding to half the clock-pulse amplitude; the surface area of said distributor electrode and the magnitude of the barrier producible by said barrier electrode being selected such that an undesired d.c. component of a signal charge remains beneath the distributor electrode and the a.c. component lies above the barrier; a transverse current path transverse to said first direction and having a drain-off gate for receiving a clock pulse and a drain-off diode connected to said substrate between said distributor and barrier electrodes for drawing off the d.c. component; said fourth shift electrode, and said third and

fourth shift electrodes linearly mounted in said first direction following said barrier electrode and arranged adjacent each other and on the side thereof opposite said distributor electrode for receiving shift pulses fifth and sixth shift electrodes and said third and fourth shift electrodes each having a greater surface area than the surface areas of said fifth and sixth shift electrodes.

4,606,061

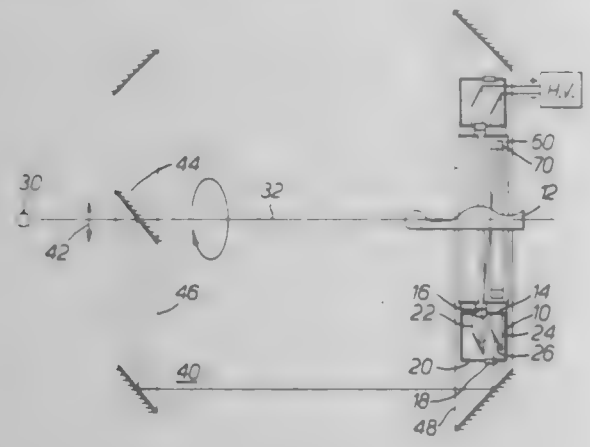
LIGHT CONTROLLED X-RAY SCANNER

Krishnamurti Ramamurti, Pittsburgh, Pa., assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Dec. 28, 1983, Ser. No. 566,158

Int. Cl.[4] H01J *35/06, 35/00;* **G01N** *23/00*

U.S. Cl. 378—10 **11 Claims**



1. An X-ray scanner comprising:

a. a source of X-rays, comprising an annular chamber for at least partially surrounding an object under observation, an X-ray penetrable window in said chamber opening toward said object along a circumferential surface of said chamber, a light penetrable window opening along a circumferential surface of said chamber, an anode extending annularly around the interior of said chamber, a cathode extending annularly around the interior of said chamber in spaced apart relation to said anode and with one surface of said cathode located with relation to said light penetrable window to receive light therethrough;

b. a light source;

c. optical means for selectively directing light from said light source through said light penetrable window onto portions of said one surface of said cathode such that said light scans said cathode to produce electrons therefrom;

d. means for providing a high-voltage potential between said cathode and anode to accelerate said electrons from said portions of said cathode toward corresponding portions of said anode to produce X-rays at said corresponding portions of said anode, at least some of said X-rays being directed through said X-ray penetrable window toward said object.

4,606,062

X-RAY COMPUTED TOMOGRAPHIC APPARATUS

Yasuo Saito, Ootawara, Japan, assignor to Kabushiki Kaishi Toshiba, Japan

Filed Nov. 16, 1984, Ser. No. 672,198

Claims priority, application Japan, Nov. 18, 1983, 58-216006

Int. Cl.[4] A61B *6/00;* **G03B** *41/16;* **H05G** *1/60*

U.S. Cl. 378—13 **6 Claims**

1. An X-ray computed tomographic apparatus comprising:

X-ray generating means, having an X-ray tube and a plurality of X-ray spot sizes to be selected, for generating a fan-shaped X-ray beam onto an object to be examined;

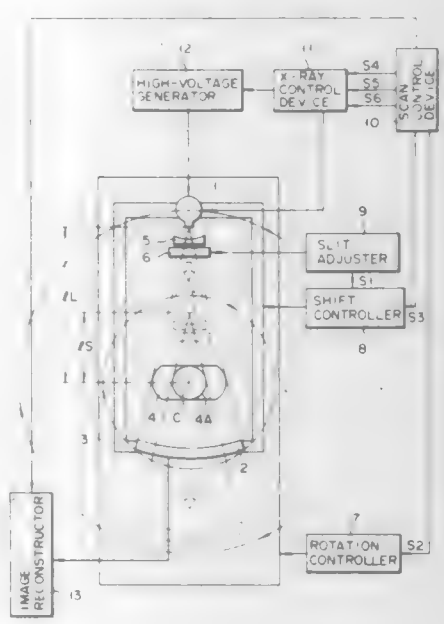
setting means having at least means for setting an X-ray tube voltage of said X-ray generating means, means for setting a start/stop of X-ray irradiation by said X-ray generating means, and means for setting an X-ray spot size of said X-ray generating means;

an X-ray detector having a position sensitivity in at least one direction;

rotating means for supporting said X-ray generating means and said X-ray detector to oppose each other and for rotating said X-ray generating means and said X-ray detector about an axis therebetween at which the object is arranged;

shift adjusting means for integrally shifting said X-ray generating means and said X-ray detector with respect to the axis which is a center of rotation of a rotational movement provided by said rotating means, and for adjusting a distance between said X-ray generating means and said X-ray detector so as to match a width of the fan-shaped X-ray beam with a range of the object;

scan control means for controlling said rotating means and said setting means so as to rotate said X-ray generating means and said X-ray detector around the object and for irradiating



the object with the fan-shaped X-ray beam for each predetermined projection angle; and

image reconstructing means for acquiring projection data obtained from said X-ray detector upon irradiation of the fan-shaped X-ray beam at various angles, said means for setting the X-ray spot size being interlocked with said shift adjusting means so as to select, when said X-ray generating means and the object are close to each other, a spot size smaller than that in the case wherein said X-ray generating means and the object are separated from each other, and said means for setting the tube voltage being interlocked with said shift adjusting means so as to select, when said X-ray generating means and the object are close to each other, a tube voltage higher than that in the case wherein said X-ray generating means and the object are separated from each other.

4,606,063

SHUTTER ARRANGEMENT FOR USE IN INTRA-ORAL RADIOGRAPHY

Nils Berghagen, Godsü garvägen 47, S-121 63 Johanneshov, Sweden

PCT No. PCT/SE83/00038, § 371 Date Sep. 25, 1984, § 102(e) Date Sep. 25, 1984, PCT Pub. No. WO84/03033, PCT Pub. Date Aug. 16, 1984

PCT Filed Feb. 3, 1983, Ser. No. 662,402

Int. Cl.[4] G03C *9/00*

U.S. Cl. 378—41 **3 Claims**

1. A method of creating stereophotographic X-ray pictures of a tooth for dental diagnosis purposes including the steps of:

positioning a tooth on a bite plate with the tooth lying on a first axis extending from the tooth through a shutter aperture of a shutter and an X-ray radiation screening and directing tube to a puntiform X-ray source,

taking an X-ray picture of the tooth along said first axis,

transversely moving the bite plate relative to the tube,

moving the shutter aperture transversely in the same direction as the bite plate, but a shorter distance to align the shutter aperture along a second axis between the bite plate and the puntiform X-ray source, which second axis extends at an angle relative to the first axis, and



taking another X-ray picture of the tooth to provide a pair of X-ray pictures which can be used to provide a stereographic view of the tooth.

4,606,064

RADIODIAGNOSTIC SYSTEM WITH A FLAT PICTURE INTENSIFIER

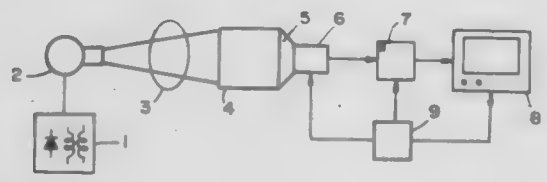
Joerg Haendle, Erlangen, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed May 21, 1984, Ser. No. 612,165

Claims priority, application Fed. Rep. of Germany, May 27, 1983, 3319309

Int. Cl.[4] H05G *1/64*

U.S. Cl. 378—99 **6 Claims**



1. In a diagnostic x-ray device for producing x-ray images having an x-ray tube, a panel type x-ray image intensifier coupled to a television camera system producing a video signal, a central unit and a monitor connected to the television camera system to receive the video signal for displaying the x-ray images, wherein the image displayed on the monitor comprises pixels arranged in rows and columns, the improvement comprising an image storage device connected to the television camera system and to the monitor, which is coupled by its clock input with the central unit, setting means provided at the central unit which act on the central unit such that the vertical-to-horizontal frequency ratio of the television camera system is reduced by a factor N, while the ratio of the pixel clock frequency of the image storage device to the horizontal frequency is increased by the same factor N and the read-in process into the image storage device is delayable in directions of the rows and columns of the monitor image, so only a selectable image detail is displayable on the monitor.

4,606,065

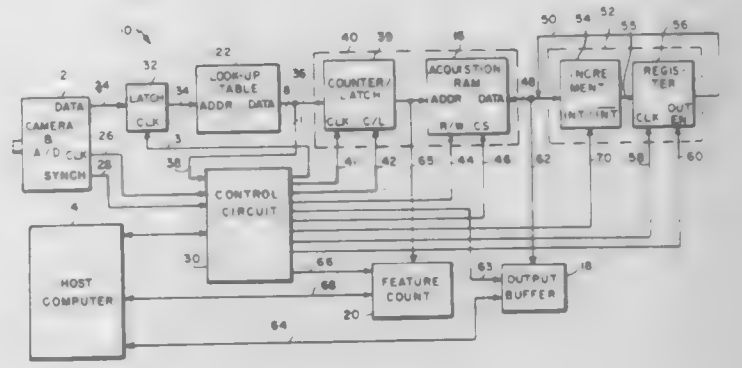
IMAGE PROCESSING-SYSTEM

Mirza R. Beg, Andover, and Julius Perl, Burlington, both of Mass., assignors to Imaging Technology Incorporated, Woburn, Mass.

Filed Feb. 9, 1984, Ser. No. 578,687

Int. Cl.[4] G06K *9/46*

U.S. Cl. 382—18 **2 Claims**



1. A combination circuit for performing feature-identification and histogram functions on the output of an imaging device that produces sequences of digital level signals representing the intensity levels of picture elements in an image and clock signals indicating when a new picture element is represented by the current level signal, the combination circuit comprising:

A. a programmable encoder, operable by application of programming signals thereto to establish a correspondence between digital level signals and digital code signals, for receiving level signals and producing in response the corresponding code signals, each code signal indicating whether a picture element whose intensity is represented by the corresponding level signal has a selected feature when the combination circuit performs feature identification and indicating the sorting bin to which a picture element whose intensity is represented by the corresponding level signal belongs when the combination circuit performs the histogram function;

B. a counter connected to receive the code signals, operable by application of load signals thereto to store the values of the code signals, and operable by application of count signals thereto to increment the value stored therein, for producing counter signals representing the stored value;

C. a memory circuit including a plurality of memory locations, connected to receive the counter signals, operable by application of write signals thereto to store in memory locations indicated by the counter signals the values of data signals applied thereto, and operable by application of read signals thereto to produce memory signals having the values stored in the memory locations indicated by the counter signals;

D. an increment circuit for storing an index value, the increment circuit being operable by application of mode-select signals thereto to assume one of a feature-identification state and a histogram state, connected to receive the memory signals and to apply data signals to the memory circuit, operable in the feature-identification state by application of increment signals thereto to increment the index value stored therein and produce data signals having the resultant value, and operable in the histogram state by application of increment signals thereto to increment the values of the received memory signals and produce data signals having the resultant values;

E. a control circuit selectively operable in a feature-identification mode and in a histogram mode, connected for reception of the clock signals and for application of load and count signals to the counter, read and write signals to the memory circuit, and mode-select and increment signals to the increment circuit, for,

i. in the feature-identification mode, applying mode-select signals to the increment circuit to cause it to assume its

feature-identification mode, applying increment signals to the increment circuit in response to the clock signals to cause it to apply data signals to the memory that indicate the position of the current picture element, receiving code signals from the encoder, applying a count signal to the counter whenever the code signal indicates that the level signal has the intended feature so that the counter signal represents the address of the next location in the memory, and operating the memory to cause it to store in the location indicated by the counter signal the value represented by the data signal from the increment circuit, the memory thereby storing in successive locations the positions of picture elements having the intended feature, and

ii. in the histogram mode, applying mode-select signals to the increment circuit to cause it to assume its histogram state, applying load signals to the counter circuit in response to the clock signals to cause it to store the code signals and produce counter signals indicating the bins to which the levels indicated by the level signals belong, operating the memory to cause it to produce memory signals representing the current value in the memory location addressed by the counter signals, applying increment signals to the increment circuit to cause it to increment the value represented by the memory signals and apply data signals to the memory that represent the resultant value, and applying write signals to the memory to cause it to store the incremented value in the location addressed by the counter signals, the memory thereby storing in memory locations representing sorting bins the number of picture elements that belong to those bins.

4,606,066

PROGRAMMABLE IMAGE PROCESSOR

Seiji Hata, Fujisawa; Hiroshi Horino, and Akira Miyakawa, both of Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

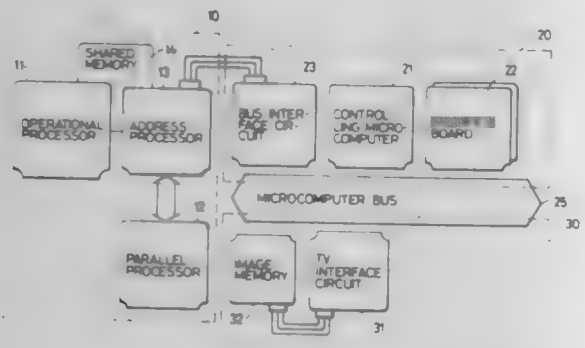
Filed Aug. 16, 1983, Ser. No. 523,786

Claims priority, application Japan, Sep. 9, 1982, 57-155987; Oct. 8, 1982, 57-176277

Int. Cl.⁴ G06K *9/00*

U.S. Cl. 382—41

31 Claims



1. A programmable image processor, comprising:

an image memory for digitizing and storing image data;

an address processor adapted to effect addressing with respect to desired pixels on said image memory and draw out the corresponding pixel data on desired portions;

a shared memory into which pixel data on said desired portions are successively written by said address processor; and

an operational processor adapted to receive the pixel data stored in said shared memory for each of said desired portions and successively effect necessary scanning and processing of the pixel data;

said shared memory being simultaneously accessible by said address processor and said operational processor to perform one read and one write operation on said pixel data during each processing cycle of said address processor and operational processor.

4,606,067

DEVICE FOR RECOGNIZING FAR-AWAY ELECTRO-MAGNETICALLY RADIATING OBJECTS

Valentin Ernst, Überlingen, Fed. Rep. of Germany, assignor to Bodenseewerk Gerätetechnic GmbH, Überlingen, Fed. Rep. of Germany

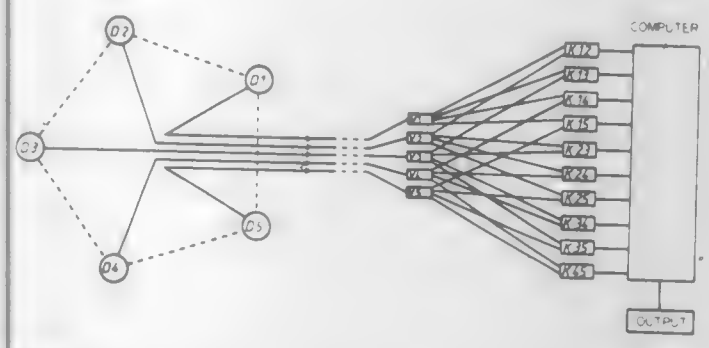
Filed Jan. 28, 1983, Ser. No. 462,030

Claims priority, application Fed. Rep. of Germany, Feb. 3, 1982, 3203528

Int. Cl.⁴ G06K *9/00*

U.S. Cl. 382—42

11 Claims



1. Method of recognizing, at distances beyond the resolution of optical imaging systems, randomly shaped objects from which electromagnetic radiation emanates, comprising the steps of

(a) two-dimensionally arranging, in fixed relative positions, a plurality of detectors responding to radiation of an object, each of the detectors representing a discrete point of no particular shape,

(b) providing a known object at a large distance from said detectors,

(c) exposing each detector directly to radiation emanating from said known object toward said detector, whereby said detectors provide first signals indicative of said radiation from the known object,

(d) correlating said first signal provided by each detector with each one of first signals provided by a plurality of associated other ones of said detectors to provide a first pattern of correlation signals indicative of said known object,

(e) storing said first pattern of correlation signals,

(f) exposing each detector directly to radiation emanating from an unknown object towards said detector, whereby said detectors provide second signals indicative of said radiation from the unknown object,

(g) correlating said second signal provided by each detector with each one of second signals provided by said plurality of associated other ones of said detectors to provide a second pattern of correlation signals indicative of said unknown object, and

(h) comparing said second pattern with said stored first pattern to determine whether said known and unknown objects are similar.

4,606,068

VIDEO COMPRESSOR FOR VIDEO FORMAT UNIT

Richard K. Habitzreiter, Dallas; Robert V. B. Pinney, Jr., Fort Worth, and Mark S. Woolston, Flower Mound, all of Tex., assignors to Recognition Equipment Incorporated, Irving, Tex.

Filed Aug. 13, 1984, Ser. No. 640,348

Int. Cl.⁴ G06K *9/62*

U.S. Cl. 382—56

2 Claims

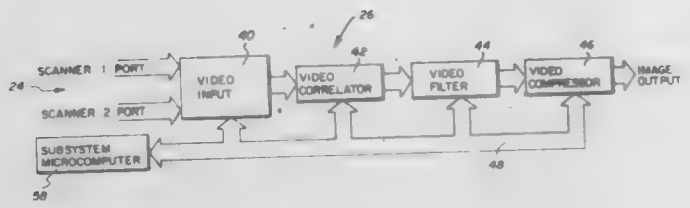
1. A video compressor for use in an image processing system comprising:

means for detecting a data image pattern and for generating a code representing the detected data image pattern;

means for counting the number of times a data image pattern is detected and for generating a repeat count;

means for storing said code in a fixed sized bit field;

means for storing said repeat count in a variable sized bit field; and



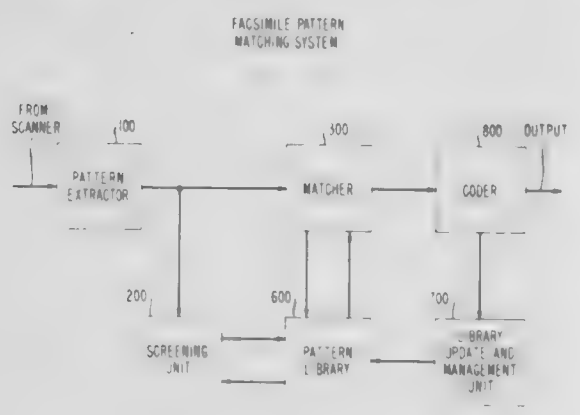
means for merging said fixed sized bit field and said variable sized bit field into a continuous bit field.

4,606,069

APPARATUS AND METHOD FOR COMPRESSION OF FACSIMILE INFORMATION BY PATTERN MATCHING

Ottar Johnsen, Middletown, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Jun. 10, 1983, Ser. No. 503,333
Int. Cl.[4] H04N *1/40*; G06K *9/68*
U.S. Cl. 382—56 **16 Claims**



1. A method of encoding a facsimile image including a plurality of picture elements (pixels) which lie along a series of scan lines, comprising the steps of:

(a) comparing incoming patterns contained in portions of said image with a sequence of previously processed patterns stored in a library to determine the existence of a match between said incoming and stored patterns,

(b) encoding, for each incoming pattern which matches a stored pattern, its location in said image and an identification number associated with said stored pattern, said encoding step being performed irrespective of whether said each incoming pattern intersects a border between said adjacent portions of said image, and

(c) storing patterns in said library for which no matching pattern is found,

wherein said storing step includes

(d) arranging said patterns so that frequently occurring patterns are processed in said comparing step before infrequently occurring patterns.

4,606,070

COMBINED WIND SCREEN AND BEACH BAG

Robert A. Schachter, 130 Elwa Pl., West Palm Beach, Fla. 33405

Filed Aug. 24, 1984, Ser. No. 643,919
Int. Cl.[4] B65D *30/00*
U.S. Cl. 383—4 **6 Claims**

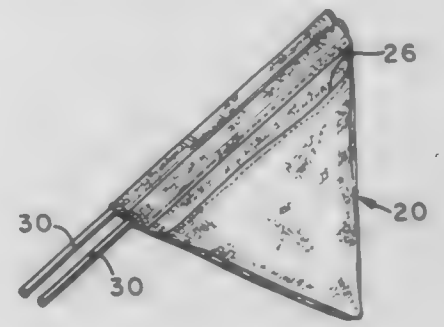
1. A combined windscreen and beach bag, comprising:

a flexible panel with side edges and opposite ends, foldable along a line intermediate the opposite ends;

stake means at the opposite ends for supporting the panel as a windscreen with the opposite ends perpendicular to a surface, the stake means being substantially parallel to the opposite ends and extending beyond a side edge of the panel to form handle means for carrying the panel as a beach bag;

at least one pocket formed in the panel substantially coextensive with approximately one-half of the panel, the pocket having an opening directed towards one of the ends;

the beach bag defined by two diagonal folds in which the stake means are substantially aligned with a side edge, and



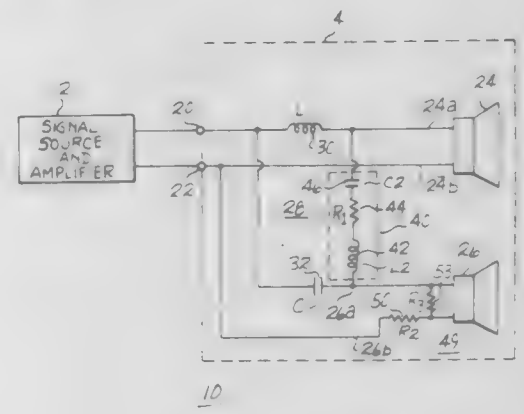
a further fold formed when the stake means are juxtaposed, the beach bag so defined having at least three substantially triangular pockets opening towards said stake and handle means, whereby said beach bag can be quickly and easily formed with articles fitting within and projecting out of the at least one pocket formed in the panel, and whereby articles fitting within and projecting out of all of the triangular pockets can be easily carried.

4,606,071

LOUDSPEAKER SYSTEM UTILIZING AN EQUALIZER CIRCUIT

Lahroy A. White, Jr., 4008 Pinehurst, Amarillo, Tex. 79109

Filed Aug. 13, 1984, Ser. No. 639,800
Int. Cl.[4] H04R *3/14*
U.S. Cl. 381—99 **7 Claims**



1. A loudspeaker system comprising:

first and second input terminals adapted to receive an electrical signal to be transduced by said loudspeaker system;

a low-frequency driver having first and second input contacts;

a high-frequency driver having first and second input contacts;

a first inductor coupled between said first input terminal and said low-frequency driver first contact, said first inductor having a predetermined inductance L_1 selected to attenuate signals above a predetermined first frequency;

a first capacitor coupled between said first input terminal and said high-frequency driver first contact, said first capacitor having a predetermined capacitance C_1 selected to attenuate signals below a predetermined crossover frequency; and

an equalizer circuit comprising a series connection of a second inductor, having an inductance L_2, a second capacitor, having a capacitance C_2, and a resistor, having a resistance R_1, said series connected equalizer components being coupled between said low-frequency driver first

contact and said high frequency driver first contact, said equalizer circuit exhibiting a predetermined impedance characteristic selected to compensate for resonant effects in said loudspeaker system.

4,606,072

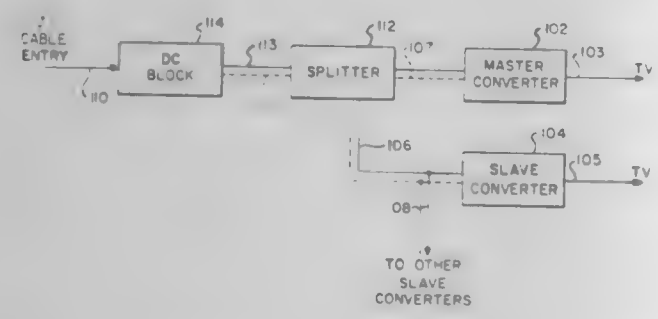
MASTER/SLAVE CONVERTER SYSTEM

Thomas F. Martin, Richardson; Robert W. Storey, Dallas; Carl F. Schoenenberger, Carrollton, and John S. Chenoweth, Denton, all of Tex., assignors to Tocom Inc., Irving, Tex.

Continuation of Ser. No. 503,397, Jun. 10, 1983, abandoned. This application Oct. 8, 1985, Ser. No. 786,144

Int. Cl.[4] H04H *1/04*; H04N *7/00*

U.S. Cl. 455—4 **15 Claims**



3. In a communications system having a transmitter at a central office for transmitting data signals over a communications link to a user's location where the data signals are received and tuned for use thereat, the combination comprising:

a master converter capable of tuning the data signals at the user's location having supervisory means for generating a master control signal,

at least one slave converter capable of tuning the data signals in communication with the master converter having disabling means responsive to the master control signal from the master converter for disabling the slave converter in response to the absence of communication of the master control signal to the slave converter,

splitter means in communication with the master converter and the slave converter for passing the data singals from the central office to the master and slave converters and wherein said master converter and slave converter are connected by the splitter means,

whereby said converters are arranged in an interdependent relationship wherein said master converter is independently capable of tuning the data signals and said slave converter is capable of tuning the data signals only upon communication of said master control signal.

4,606,073

ASSISTANCE SUMMONING SYSTEM

Alfred Z. Moore, 210 N. 2nd St., Smithfield, N.C. 27577

Continuation-in-part of Ser. No. 13,013, Feb. 21, 1979, abandoned. This application Aug. 29, 1980, Ser. No. 182,443

Int. Cl.[4] H03B *1/00*

U.S. Cl. 455—89 **13 Claims**

1. An assistance summoning system comprising: a two-way communication type transceiver having a transmitter section; a receiver/message component including a receiver section and a programmable message section; means operatively connecting said receiver section to said programmable message section; means for operatively connecting said programmable message section to said transmitter section of said transceiver whereby information from said programmable message section can be fed into and thus transmitted by said transceiver upon the happening of a predetermined programmed event; a control means within the confines of the assistance summoning system for causing a programmed message from said message section to be automatically transmitted a selected number of times by said transceiver after the elapse of a selected length of time from the activation of said control means; and a security code receiving means operatively connected to said summoning system to allow an authorized user to operate the system



with any unauthorized use causing the system to automatically transmit a programmed message.

4,606,074

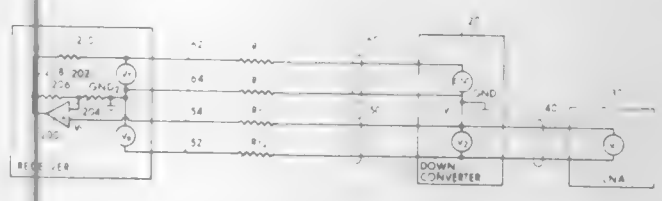
AUTOMATIC VOLTAGE LINE LOSS COMPENSATION CONTROL FOR AN ANTENNA RECEIVER

Charles E. Rodeffer, Evergreen, Colo., assignor to Winegard Company, Burlington, Iowa

Filed Jun. 14, 1984, Ser. No. 621,238

Int. Cl.[4] H04B *1/18, 1/26*

U.S. Cl. 455—131 **4 Claims**



4. An automatic control for compensating for the voltage drop, (V_L) between an antenna receiver (**10**) and an interconnecting down converter (**20**), said receiver (**10**) having a first cable (**60**) providing a tuning voltage, (V_T), over one line (**62**) and providing receiver ground (GND2) over a second line (**64**) to the down converter ground (GND1), said automatic compensation control comprising:

means (**200**) being connected to said down converter ground (GND1) carrying said voltage drop (V_L) above said ground (GND2) from said down converter (**20**) for delivering said voltage drop (V_L) back to said tuning voltage line (**62**) so that the value of said voltage drop (V_L) is added to the tuning voltage (V_T) to fully compensate for said voltage drop (V_L).

4,606,075

AUTOMATIC GAIN CONTROL RESPONSIVE TO COHERENT AND INCOHERENT SIGNALS

Bruce C. Eastmond, Downers Grove, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 534,512, Sep. 21, 1983, abandoned. This application Dec. 18, 1985, Ser. No. 814,518

Int. Cl.[4] H04B *1/16*

U.S. Cl. 455—234 **16 Claims**

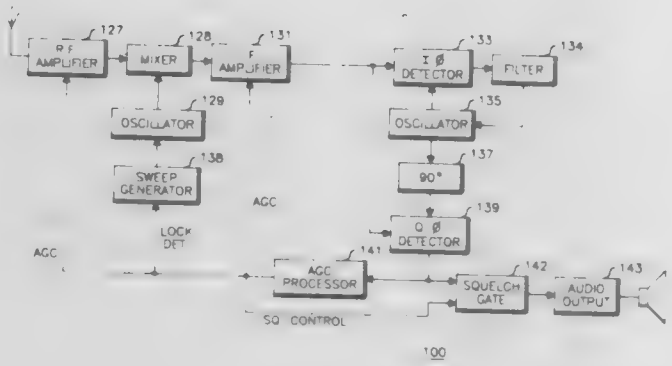
1. A method of generating an Automatic Gain Control (AGC) signal in a phase-locked receiver from a quadrature signal that is of appropriate bandwidth and that contains phase components that are both phase-coherent and phase-incoherent with the quadrature signal comprising the steps of:

selectively amplifying the quadrature signal such that relatively high frequency, phase-incoherent signals are amplified while relatively low frequency, phase-coherent sig-

nals are relatively unamplified; detecting the selectively amplified signal; and

generating an AGC signal that is, at least, a function of the difference between the detected selectively amplified signal and a reference signal,

whereby the AGC signal is generated for both phase-coherent and phase-incoherent signals and whereby the relative amplitude of the phase-coherent and phase-incoherent signals may be maintained.

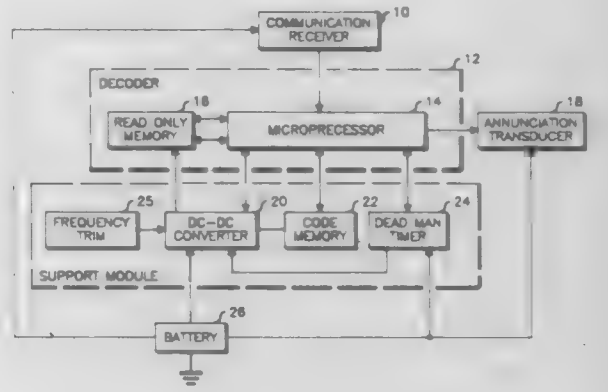


4,606,076

COMMUNICATION RECEIVER SYSTEM HAVING A VOLTAGE CONVERTER WITH AN OPERATING FREQUENCY BELOW THE RECEIVER IF

Walter L. Davis, Coral Springs, Fla., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Jan. 7, 1985, Ser. No. 689,368
Int. Cl.[4] H04B *1/16, 1/10;* H02M *3/325*
U.S. Cl. 455—343
5 Claims



1. A communication receiver system for receiving coded signals and of the type having at least one predetermined intermediate frequency (IF) signal, comprising:

decoder means for detecting and decoding received coded signals;

voltage converter means, connected to said decoder means, for generating a voltage greater than a supply voltage of said communication receiver system, and operating at a frequency below the frequency of the IF signal; and

frequency trim circuit means, connected to said voltage converter means, for controlling the operating frequency of said voltage converter means whereby interference with said IF signal is prevented.

DESIGN PATENTS

GRANTED AUG. 12, 1986

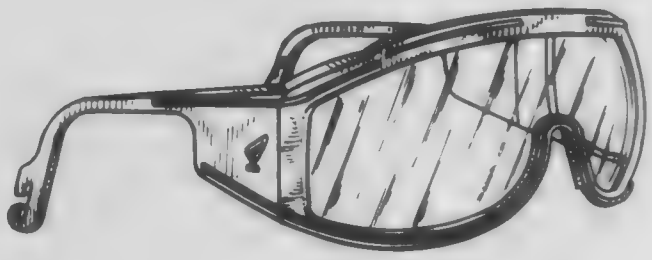
ERRATA

For CLASS	See PATENT NO.
D03–101	285,104

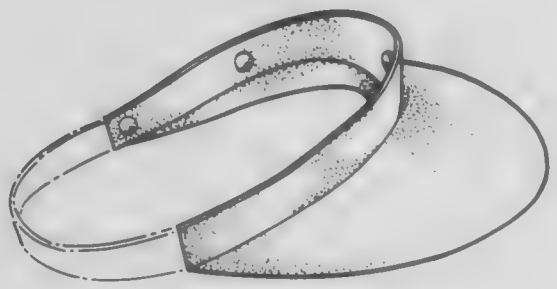
DESIGNS

AUGUST 12, 1986

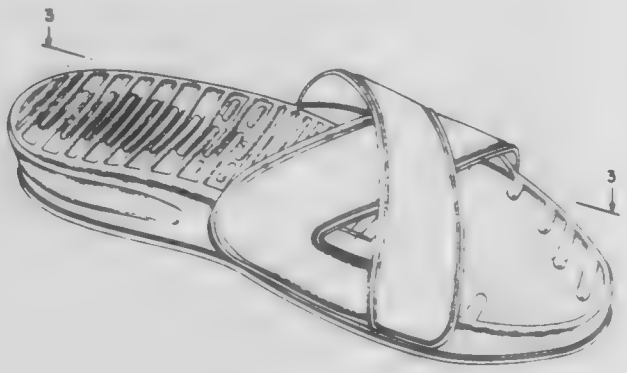
285,020
SPORT GOGGLE
Johann Schmidthaler, Linz, Austria, assignor to Optyl Eyewear Fashion International Corporation, Norwood, N.J.
Filed Feb. 22, 1983, Ser. No. 468,347
Claims priority, application Austria, Sep. 8, 1982, 23,087
Term of patent 14 years
U.S. Cl. D2—234



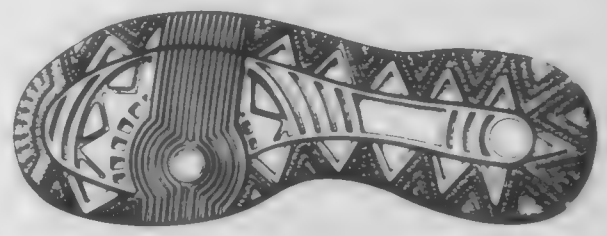
285,021
EYE SHADE
Jean E. Chandler, 10214 Bushman Dr., #10112, Oakton, Va. 22124
Filed Oct. 24, 1983, Ser. No. 544,479
Term of patent 14 years
U.S. Cl. D2—241



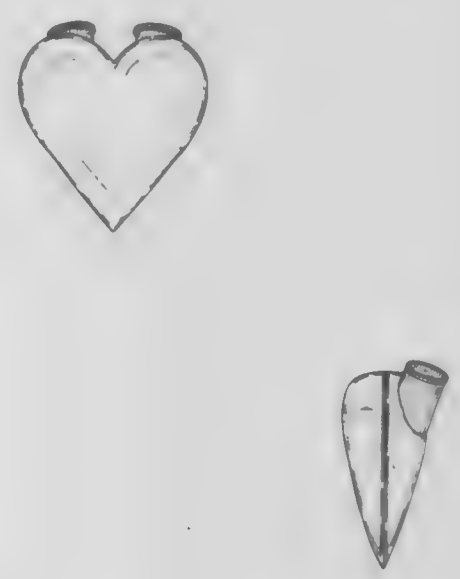
285,022
SANDAL
Michael M. Schornstein, Memphis, Tenn., assignor to Scholl, Inc., Memphis, Tenn.
Filed Apr. 20, 1984, Ser. No. 602,240
Term of patent 14 years
U.S. Cl. D2—283



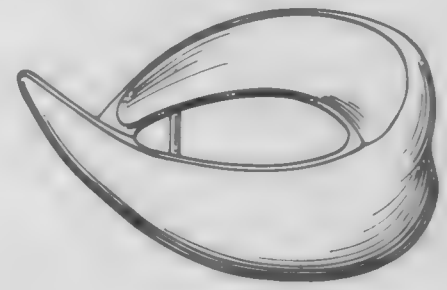
285,023
SHOE SOLE
James K. Tong, Beaverton, and Jerry D. Stubblefield, Portland, both of Oreg., assignors to Pensa, Inc., Portland, Oreg.
Filed Feb. 4, 1986, Ser. No. 825,979
Term of patent 14 years
U.S. Cl. D2—320



285,024
TWO-HAND MITTEN
Jeffrey H. Finkle, 2 Conklin La., Huntington, N.Y. 11743
Filed Apr. 10, 1984, Ser. No. 598,584
Term of patent 14 years
U.S. Cl. D2—366



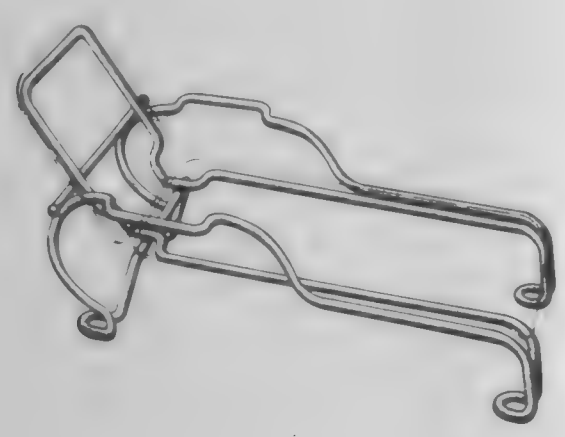
285,025
BELT BUCKLE
Alexis V. Kirk, New York, N.Y., assignor to Somersett Moon Ltd., New York, N.Y.
Filed Nov. 29, 1984, Ser. No. 676,014
Term of patent 14 years
U.S. Cl. D2—422



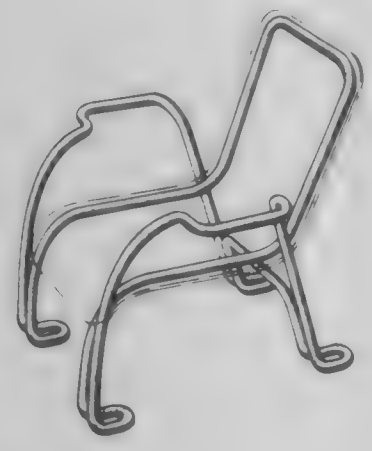
285,026
VIDEO CASSETTE STORAGE CASE
Johan H. E. Oskamp, Geldrop, Netherlands, assignor to Eindhoven Druk B.V., Eindhoven, Netherlands
Filed Feb. 27, 1984, Ser. No. 584,279
Claims priority, application Hague, Aug. 30, 1983, DM-002831
Term of patent 14 years
U.S. Cl. D3—35



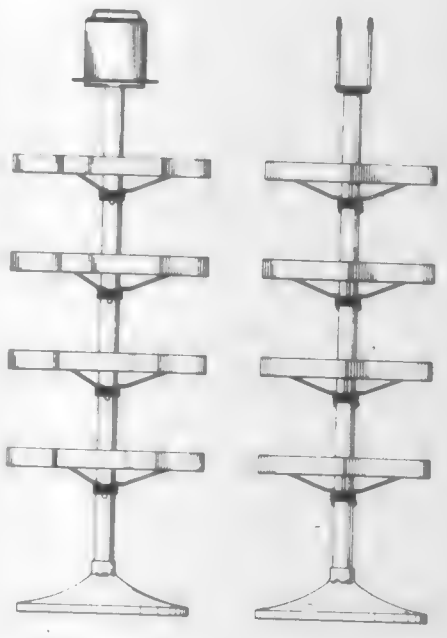
285,027
CHAISE FRAME
William McBride, 1110 W. Barry St., Chicago, Ill. 60657
Filed Jan. 25, 1984, Ser. No. 573,979
Term of patent 14 years
U.S. Cl. D6—361

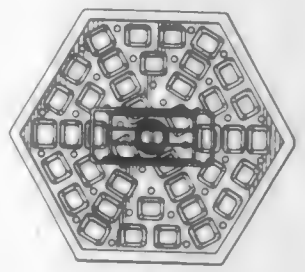


285,028
CHAIR FRAME
William McBride, 1110 W. Barry St., Chicago, Ill. 60657
Filed Jan. 25, 1984, Ser. No. 573,977
Term of patent 14 years
U.S. Cl. D6—375

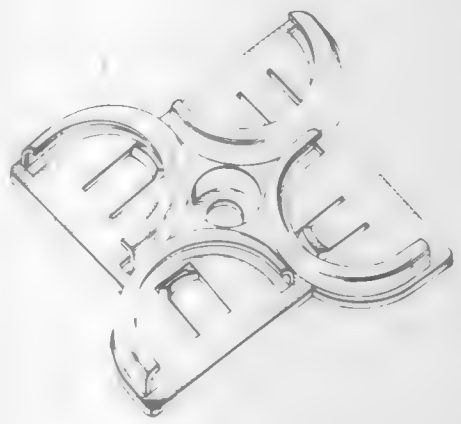


285,029
DISPLAY STAND WITH ROTATABLE SHELVES
Norton J. Cooper, New York, N.Y., assignor to Chatam International Incorporated, Philadelphia, Pa.
Filed Jan. 9, 1984, Ser. No. 568,992
Term of patent 14 years
U.S. Cl. D6—461





285,030
SUPPORT BRACKET FOR MULTIPLE BABY RATTLES
Arieh Solomon, 49, Hasaifan Street, Ramat Hasharon 47 248, Israel
Filed Sep. 5, 1984, Ser. No. 647,699
Term of patent 14 years
U.S. Cl. D6—491

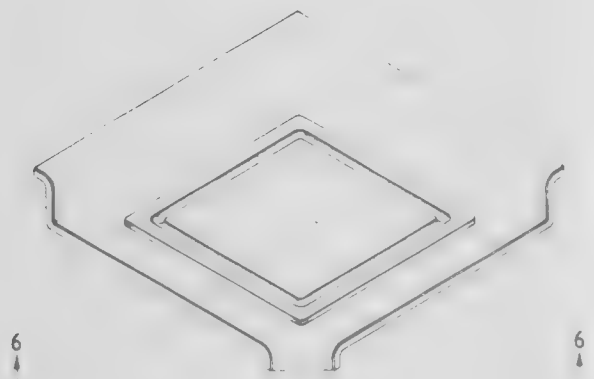


285,031

CORNER UNIT FOR A KITCHEN COUNTERTOP

Robert O. Clark, Homewood, Ill., assignor to Plastic Clad Corporation, Birmingham, Ala.

Filed Feb. 6, 1984, Ser. No. 577,162
Term of patent 14 years
U.S. Cl. D6—511

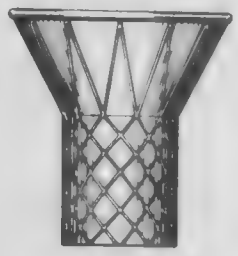


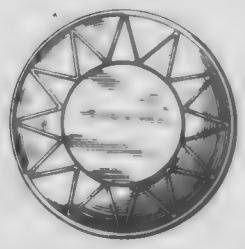
285,032

BEVERAGE TUMBLER OR THE LIKE

Patrick R. Alonzo, 2361 W. Birchwood Ave., Milwaukee, Wis. 53221

Filed Oct. 31, 1983, Ser. No. 547,390
Term of patent 14 years
U.S. Cl. D7—6





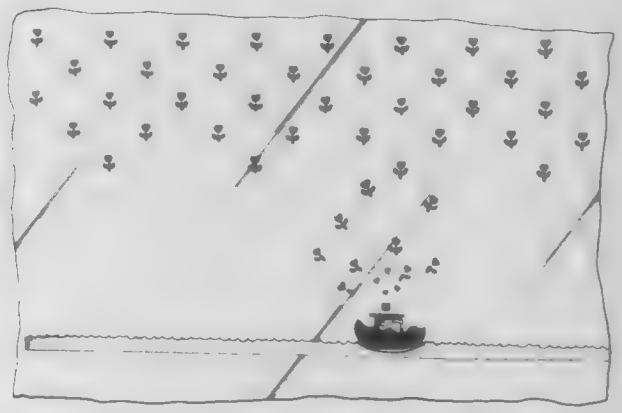
285,033

TUMBLER OR SIMILAR ARTICLE

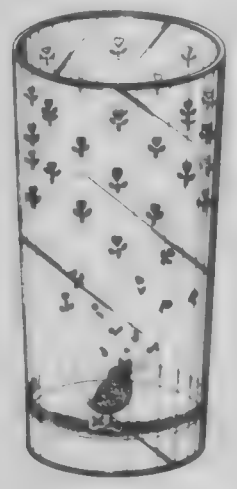
Peter A. Gobleck, Jr., Lancaster, Ohio, assignor to Anchor Hocking Corporation, Lancaster, Ohio

Division of Ser. No. 464,750, Feb. 7, 1983. This application Apr. 25, 1985, Ser. No. 727,094
Term of patent 14 years
U.S. Cl. D7—6



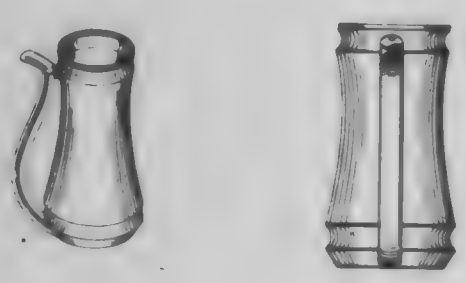


285,034
TUMBLER OR SIMILAR ARTICLE
Peter A. Gobleck, Jr., Lancaster, Ohio, assignor to Anchor Hocking Corporation, Lancaster, Ohio
Division of Ser. No. 464,750, Feb. 7, 1983. This application May 10, 1985, Ser. No. 732,713
Term of patent 14 years
U.S. Cl. D7—8

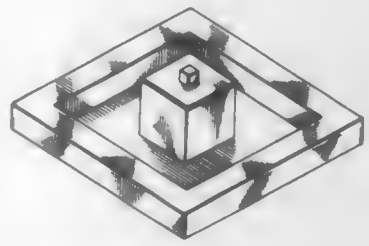




285,035
DRINKING CUP
Vladislav P. Petrasek, P.O. Box 113, El Segundo, Calif. 90245
Filed May 14, 1984, Ser. No. 609,870
Term of patent 14 years
U.S. Cl. D7—9

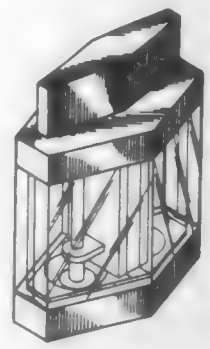


285,036
FLOATABLE TRAY
Jonathan L. Gilchrist, 4987 Campo Rd., and John A. Griffith, 23156 Cass Ave., both of Woodland Hills, Calif. 91364
Filed Jul. 25, 1983, Ser. No. 516,763
Term of patent 14 years
U.S. Cl. D7—37

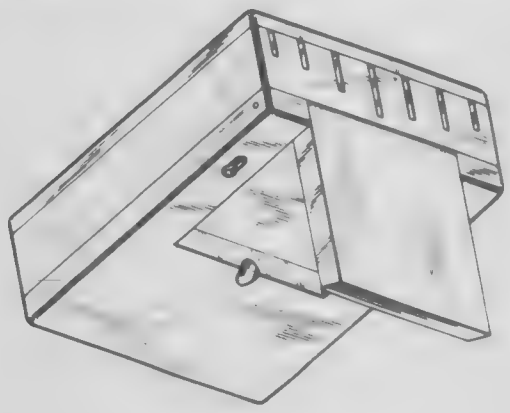


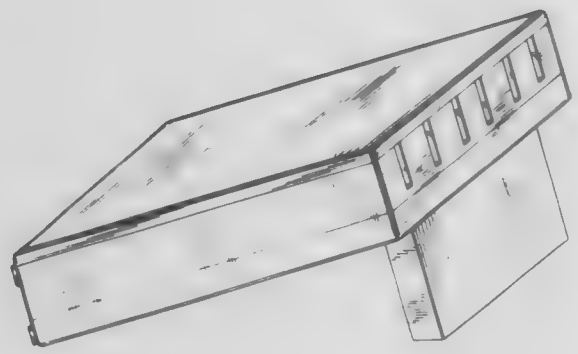


285,037
CONDIMENT MILL
William E. Bounds, P.O. Box 1547, Torrance, Calif. 90505
Filed Jan. 13, 1984, Ser. No. 570,387
Term of patent 14 years
U.S. Cl. D7—53

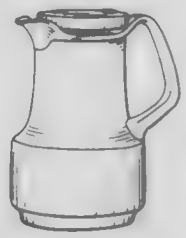


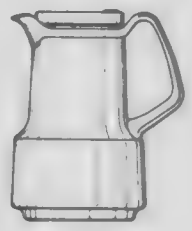
285,038
CUTLERY STORAGE BLOCK
Jerome S. Hahn, 94-26 Poinclara Pl., Fort Lauderdale, Fla. 33324
Filed Mar. 14, 1983, Ser. No. 475,151
Term of patent 14 years
U.S. Cl. D7—74



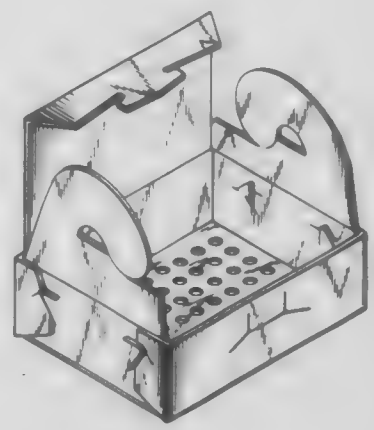


285,039
INSULATED JUG
Anso Zimmermann, Bad Hersfeld, Fed. Rep. of Germany, assignor to Rotpunkt Dr. Anso Zimmermann, Niederaula, Fed. Rep. of Germany
Filed Feb. 7, 1983, Ser. No. 464,214
Claims priority, application Fed. Rep. of Germany, Aug. 19, 1982, MR 181
Term of patent 14 years
U.S. Cl. D7—317

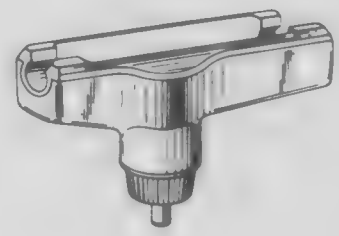




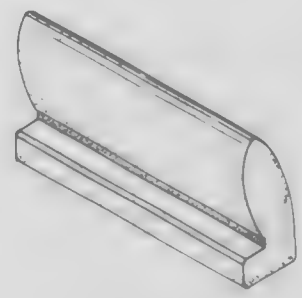
285,040
HANGING STEAMER PACKAGE
Karen Stinson, Mt. Laurel, N.J., assignor to General Foods Corporation, White Plains, N.Y.
Filed Aug. 15, 1983, Ser. No. 523,215
Term of patent 14 years
U.S. Cl. D7—360



285,041
CHUCK KEY
Robert I. Somers, Raleigh, N.C., assignor to Black & Decker Inc., Newark, Del.
Continuation-in-part of Ser. No. 507,221, Jun. 23, 1983. This application Dec. 16, 1983, Ser. No. 562,070
Term of patent 14 years
U.S. Cl. D8—21



285,042
SHARPENING HONE
Jimmy L. Sparks, 1399 Parkridge, Norco, Calif. 91760
Filed May 20, 1983, Ser. No. 496,609
Term of patent 14 years
U.S. Cl. D8—91



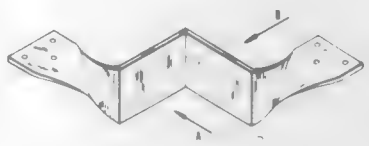
285,043
SELF-CLOSING DOOR HINGE
Kunihiko Takasaki, Chiba, Japan, assignor to Takigen Seizou Co. Ltd., Tokyo, Japan
Filed May 31, 1984, Ser. No. 615,951
Claims priority, application Japan, Jan. 18, 1984, 59-1021
Term of patent 14 years
U.S. Cl. D8—323



285,044
SLEEVE AND CAP GROMMET SET FOR ELECTRICAL WIRES
Douglas A.J. Mockett, 2634 Via Rivera, Palos Verdes Estates, Calif. 90274
Filed Jan. 6, 1984, Ser. No. 568,787
Term of patent 14 years
U.S. Cl. D8—354



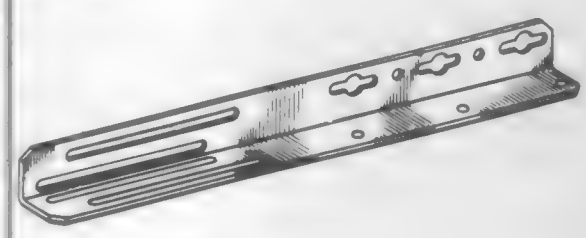
285,045
CHIMNEY BRACE
Nathaniel J. Mahoney, 666 Central St., Franklin, N.H. 03235
Filed Nov. 30, 1983, Ser. No. 556,386
Term of patent 14 years
U.S. Cl. D8—366



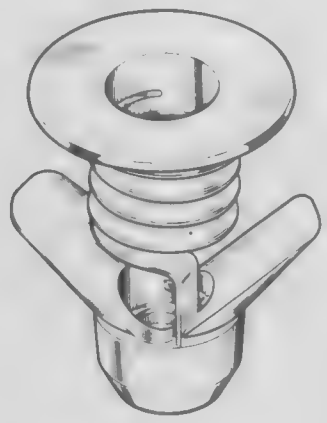
285,046
SPRING FOR FASTENING A RAIL TO A SLEEPER
Reijo Johde, Inhan tehtaat, Finland, assignor to Oy Fiskars AB, Helsinki, Finland
Filed Nov. 28, 1983, Ser. No. 555,370
Claims priority, application Finland, May 30, 1983, 480/83
Term of patent 14 years
U.S. Cl. D8—382



285,047
HEADBOARD BRACKET
Howard Dean; Andre Kocsis, and William H. Yee, all of Downsview, Canada, assignors to Andico Manufacturing Ltd., Downsview, Canada
Filed Aug. 17, 1983, Ser. No. 523,865
Claims priority, application Canada, May 16, 1983, 16-05-83-8
Term of patent 14 years
U.S. Cl. D8—382

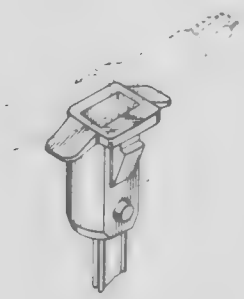


285,048
SCREW ANCHOR
Klaus Beck, Oxelösund, Sweden, assignor to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden
Filed Nov. 23, 1983, Ser. No. 555,112
Claims priority, application Sweden, Jun. 14, 1983, 83-1634
Term of patent 14 years
U.S. Cl. D8—385

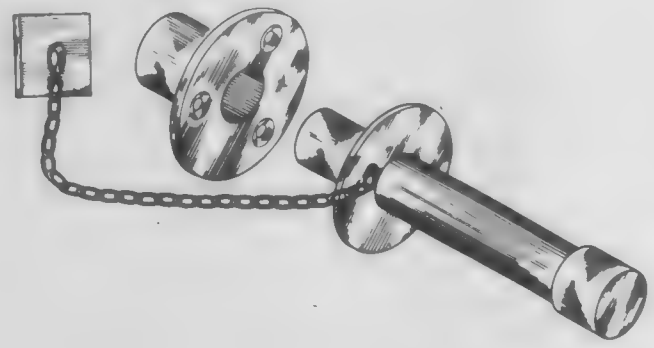


285,049
HARNESS CLIP FOR WIRE OR CABLE STRAPPING
Koji Watanabe, Fujisawa, Japan, assignor to Nifco, Inc., Yokohama, Japan
Filed Nov. 14, 1983, Ser. No. 551,566
Claims priority, application Japan, May 19, 1983, 58-20847
Term of patent 14 years
U.S. Cl. D8—396





285,050
COMBINED DOOR STOP AND RECEPTACLE UNIT
John W. Looney, 228 Finley Dr., Decatur, Ala. 35601
Filed May 3, 1983, Ser. No. 491,371
Term of patent 14 years
U.S. Cl. D8—402



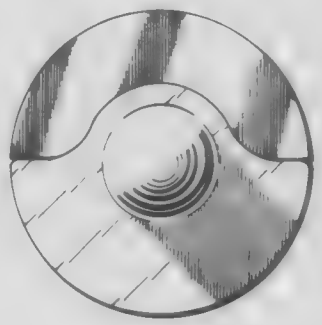
285,051
DECANTER
Marc Heriard-Dubreuil, Rouillac, France, assignor to A. De Luze & Fils & Cie, Cognac, France
Filed Oct. 25, 1983, Ser. No. 546,485
Claims priority, application United Kingdom, Aug. 10, 1983, 1014552
Term of patent 14 years
U.S. Cl. D9—318



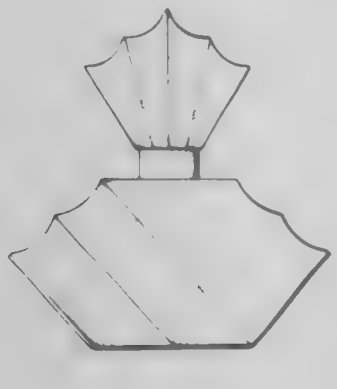




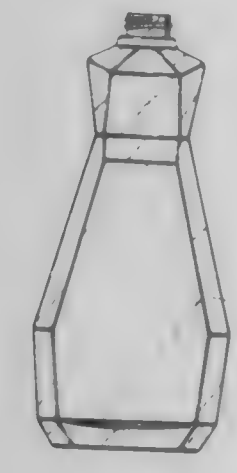
285,052
BOTTLE
Walter G. Bianchi, Via Rossini, 9, I-22055 Merate (Como), Italy, and Hironobu Imai, Via Lanzone, 3, I-20123, Milan, Italy
Filed Mar. 27, 1984, Ser. No. 594,894
Term of patent 14 years
U.S. Cl. D9—371



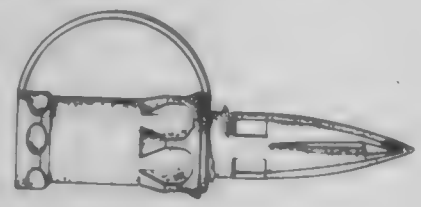
285,053
PERFUME BOTTLE
Anna Marchetti, Via Salgari, 40, Modena, Italy
Filed Mar. 23, 1984, Ser. No. 593,068
Claims priority, application Italy, Sep. 30, 1983, 29064/83[U]
Term of patent 14 years
U.S. Cl. D9—384



285,054
BOTTLE
Andrew S. Stones, Stones Rd., Ebenezer, N.S.W. 2756, Australia
Filed Sep. 12, 1983, Ser. No. 531,142
Claims priority, application Australia, Mar. 18, 1983, 3269/83
Term of patent 14 years
U.S. Cl. D9—389



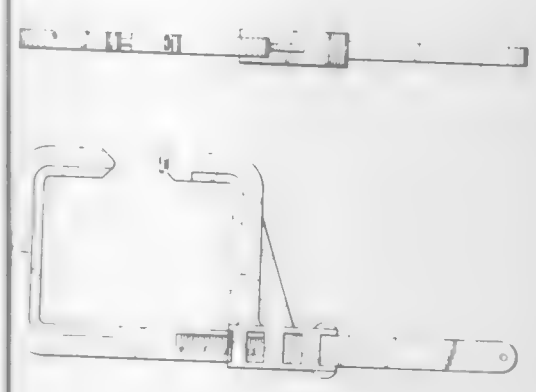
285,055
CARTON POURER
Walter Heubel, Raim, Fed. Rep. of Germany, assignor to Cannie Products Limited, Weybridge, England
Filed Jan. 20, 1984, Ser. No. 572,399
Claims priority, application United Kingdom, Jul. 22, 1983, 1014253
Term of patent 14 years
U.S. Cl. D9—434



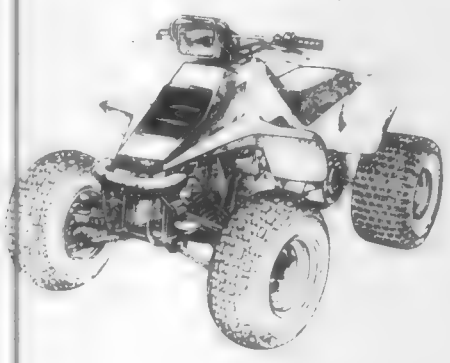
285,056
COMBINED CLOSURE AND OPENER FOR CONTAINER
David O. Allen, Wilmington, Ohio, assignor to Allen Tool Company, Inc., Wilmington, Ohio
Filed Aug. 25, 1983, Ser. No. 526,352
Term of patent 14 years
U.S. Cl. D9—454



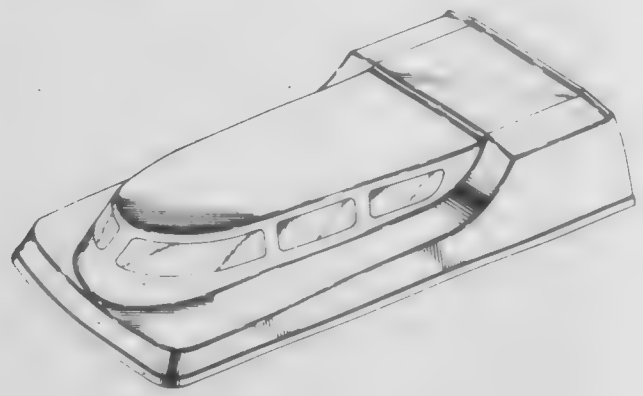
285,057
CALIPER
James R. LaBelle, Ferndale, Mich., assignor to LaBelle Enterprises, Ferndale, Mich.
Filed Aug. 15, 1983, Ser. No. 523,347
Term of patent 14 years
U.S. Cl. D10—73



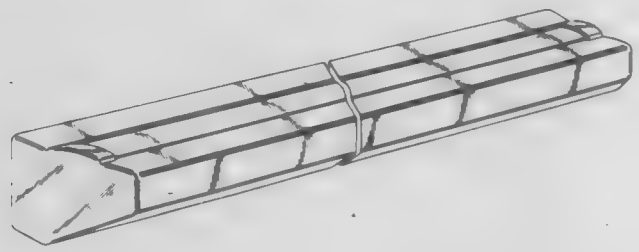
285,058
FOUR WHEELED MOTORCYCLE
Kazuyuki Takagaki, Kosai, Japan, assignor to Suzuki Jidosha Kogyo Kabushiki Kaisha, Shizuoka, Japan
Filed Apr. 20, 1984, Ser. No. 602,456
Claims priority, application Japan, Mar. 9, 1984, 59-9389
Term of patent 14 years
U.S. Cl. D12—107



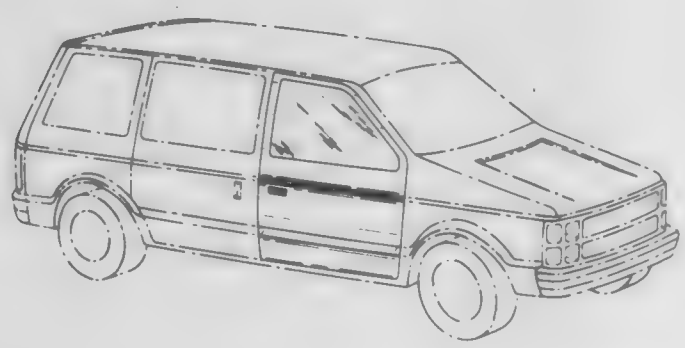
285,059
SPORT TOP FOR A VAN CONVERSION
Richard A. Nardi, Elkhart, Ind., assignor to Hoosier FRP, Inc., Elkhart, Ind.
Filed Aug. 1, 1983, Ser. No. 518,835
Term of patent 14 years
U.S. Cl. D12—156



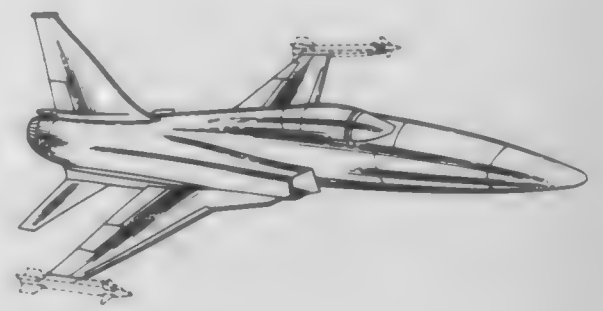
285,060
RUB RAIL FOR AN AUTOMOBILE
Claus Luthe, Munich, and Boyke Boyer, Seefeld, both of Fed. Rep. of Germany, assignors to Bayerische Motoren Werke Aktiengesellschaft, Fed. Rep. of Germany
Filed Apr. 8, 1983, Ser. No. 483,387
Claims priority, application Fed. Rep. of Germany, Oct. 11, 1982, MR 13163
Term of patent 14 years
U.S. Cl. D12—190



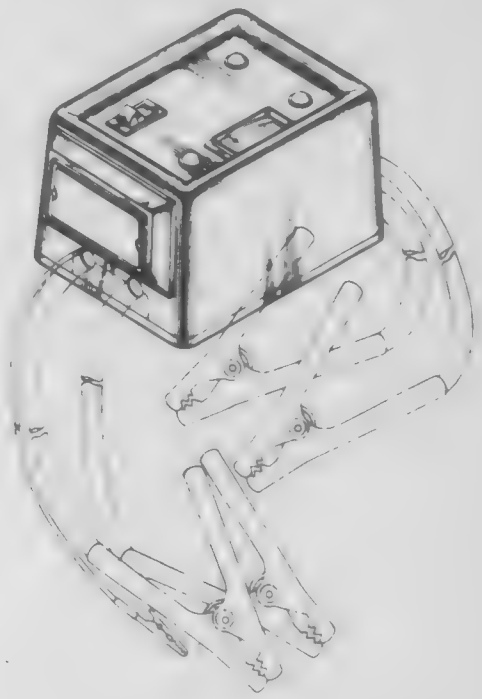
285,061
AUTOMOBILE DOOR PANEL EXTERIOR SURFACE
William A. Dayton, Northville; John E. Crain, Birmingham, and Robert N. Hubbach, Clarkston, all of Mich., assignors to Chrysler Corporation, Highland Park, Mich.
Division of Ser. No. 562,809, Dec. 19, 1983. This application Aug. 27, 1984, Ser. No. 644,605
Term of patent 14 years
U.S. Cl. D12—196



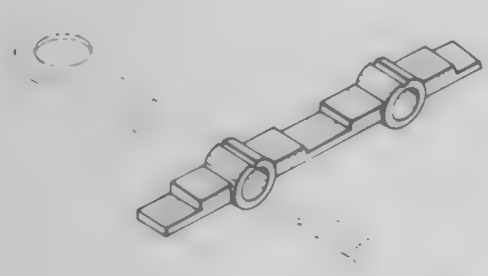
285,062
AIRCRAFT
Robert R. Sandusky, Jr., Los Alamitos; Victor C. Brock, Whittier, and Lionel O. Gay, Glendale, all of Calif., assignor to Northrop Corporation, Hawthorne, Calif.
Continuation of Ser. No. 186,675, Sep. 12, 1980, abandoned. This application Aug. 8, 1983, Ser. No. 521,222
Term of patent 14 years
U.S. Cl. D12—342



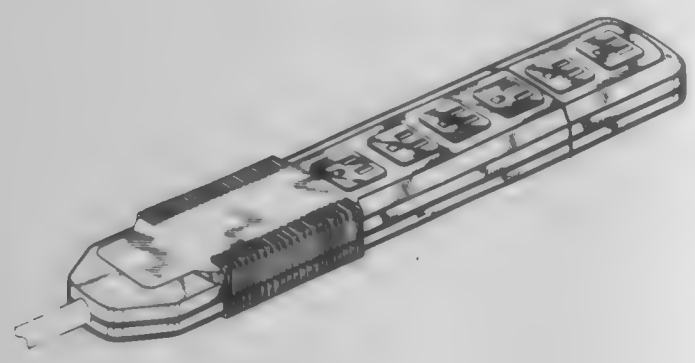
285,063
COMBINED JUMPER CABLE CONTROL BOX AND LAMP
Bobby L. Bates, San Dimas, Calif., assignor to Bates - Johnson & Co., Inc., San Dimas, Calif.
Filed Jan. 19, 1984, Ser. No. 571,837
Term of patent 14 years
U.S. Cl. D13—5



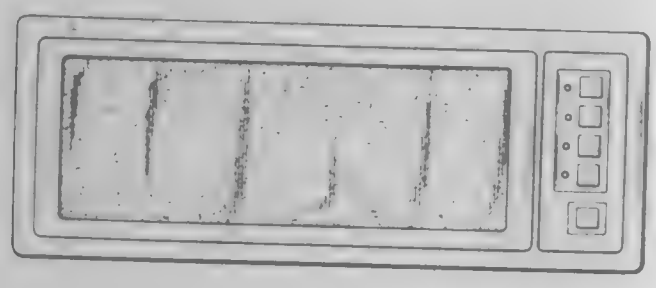
285,064
INTEGRALLY FORMED INSULATOR ASSEMBLY
Keiji Sonoda, Hirakata, Japan, assignor to Nichifu Terminal Industries Co., Ltd., Osaka, Japan
Filed Oct. 25, 1983, Ser. No. 545,324
Term of patent 14 years
U.S. Cl. D13—17



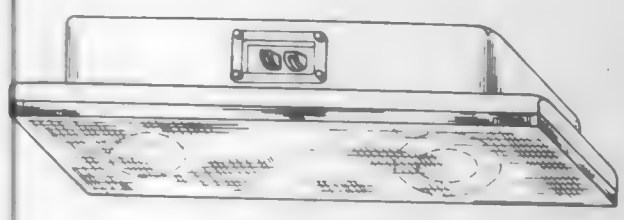
285,065
MULTIPLE OUTLET STRIP
Bert Bobrovniczky, Don Mills, Canada, assignor to Noma Inc., Scarborough, Canada
Filed Feb. 21, 1984, Ser. No. 581,875
Term of patent 14 years
U.S. Cl. D13—30



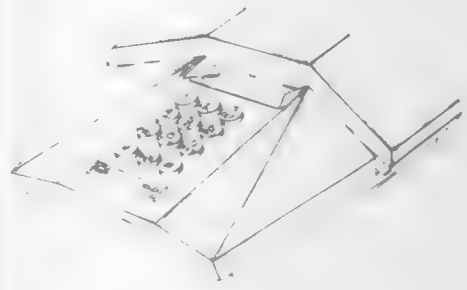
285,066
FACE PLATE FOR LIGHTING CONTROL
Zalman A. Liss, Allentown; Joel S. Spira, Coopersburg, and David G. Luchaco, Macungie, all of Pa., assignors to Lutron Electronics Co., Inc., Coopersburg, Pa.
Filed Aug. 19, 1983, Ser. No. 524,546
Term of patent 14 years
U.S. Cl. D13—35

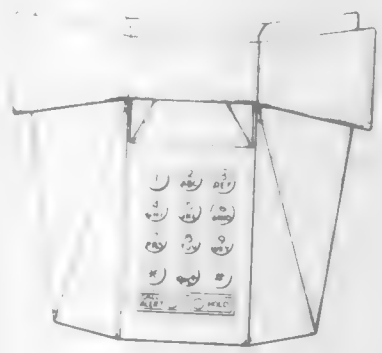


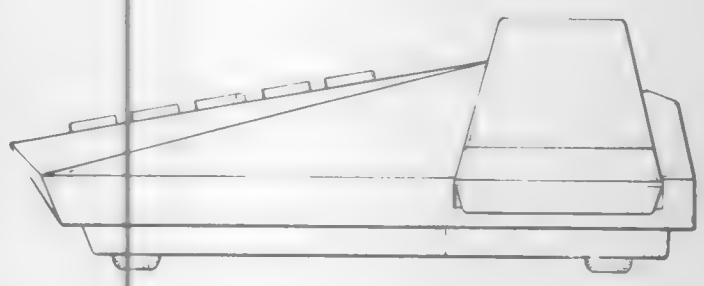
285,067
LOUDSPEAKER
Pascal Delbuck, 31220 La Baya Dr. #10, Westlake Village, Calif. 91362
Filed Jul. 18, 1983, Ser. No. 514,926
Term of patent 14 years
U.S. Cl. D14—30



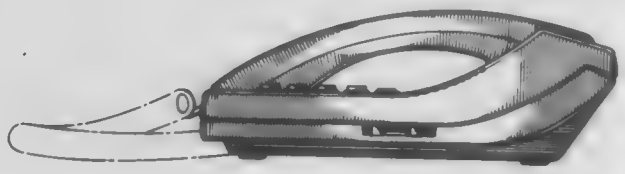
285,068
TELEPHONE
Erik Haugaard, Pasadena, Calif., assignor to TeleQuest, Inc., Burbank, Calif.
Filed Aug. 20, 1984, Ser. No. 642,161
Term of patent 14 years
U.S. Cl. D14—53

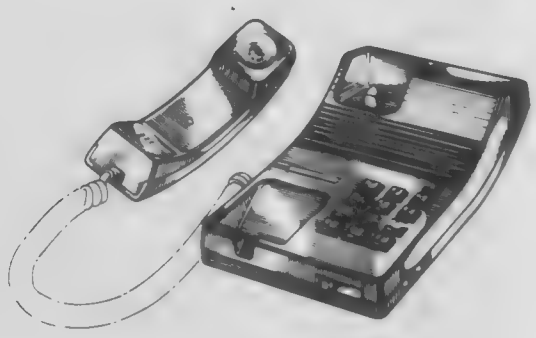




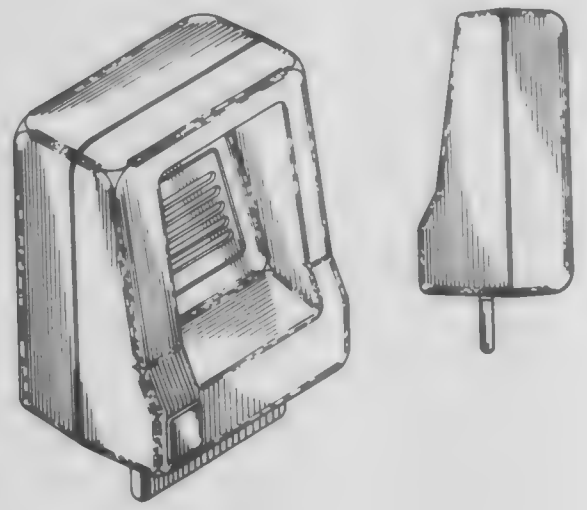


285,069
TELEPHONE UNIT
Masakazu Tsukamoto, and Satoru Tsukiyama, both of Tokyo, Japan, assignors to Iwatsu Electric Co., Ltd., Tokyo, Japan
Filed Oct. 6, 1983, Ser. No. 539,756
Claims priority, application Japan, Apr. 6, 1983, 58-14460
Term of patent 14 years
U.S. Cl. D14—53

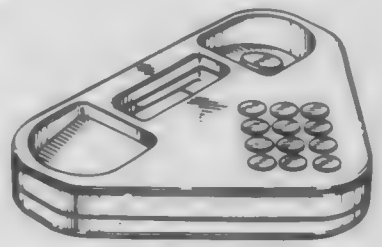


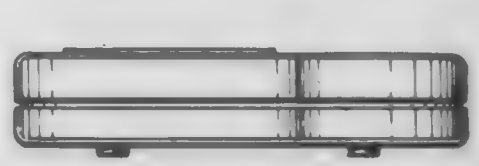


285,070
HANDSET TELEPHONE RECEPTACLE OR SIMILAR ARTICLE
Thomas G. Beaumont, Bedford, Tex., assignor to Motorola, Inc., Schaumburg, Ill.
Filed Apr. 10, 1984, Ser. No. 598,759
Term of patent 14 years
U.S. Cl. D14—61

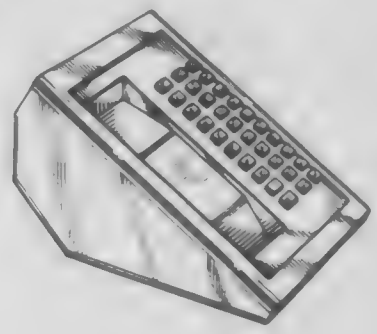


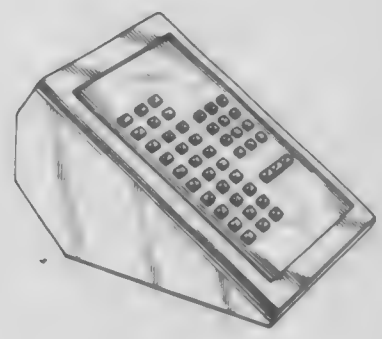
285,071
TELEPHONE SET BASE
Floyd J. Pushelberg, Ottawa, Canada, assignor to Northern Telecom Limited, Montreal, Canada
Filed Feb. 23, 1984, Ser. No. 582,957
Term of patent 14 years
U.S. Cl. D14—62



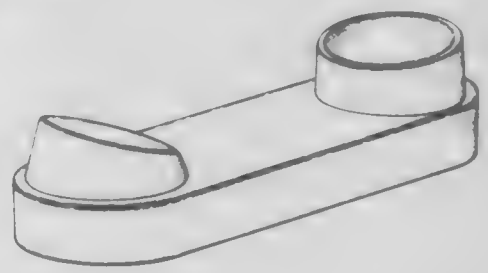


285,072
TELEPHONE DIALING BASE
Bryan B. Hill, Mississauga; Charles E. Hill, and Antonius A. Vander Park, both of Port Credit, all of Canada, assignors to Northern Telecom Limited, Montreal, Canada
Filed Jan. 9, 1984, Ser. No. 569,343
Term of patent 14 years
U.S. Cl. D14—62





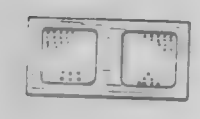
285,073
TELEPHONE HANDSET
David C. Danielson, New Canaan, Conn.; Donald M. Genaro, Haworth, N.J., and John N. McGarvey, Drexel Hill, Pa., assignors to AT&T Bell Laboratories, Murray Hill, N.J.
Filed Apr. 9, 1984, Ser. No. 598,388
Term of patent 14 years
U.S. Cl. D14—63



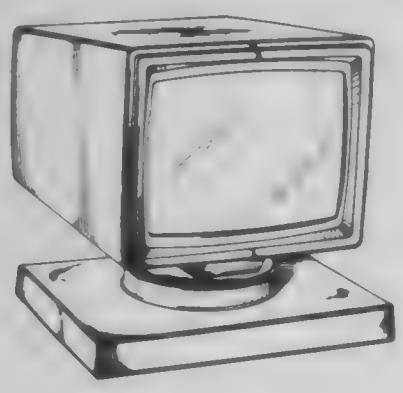
285,074
SATELLITE DISH ANTENNA OUTER RIM
John R. Winegard, Evergreen, and Keith B. Cowan, Arvada, both of Colo., assignors to Winegard Company, Iowa
Filed Dec. 29, 1983, Ser. No. 566,816
Term of patent 14 years
U.S. Cl. D14—90



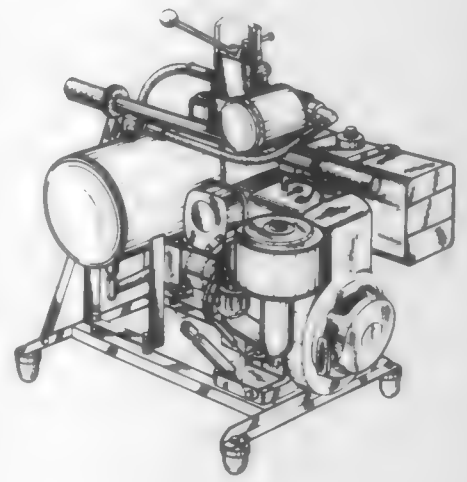
285,075
MAGNETIC DISK STORAGE SYSTEM
Dwaine S. Katai, San Jose, Calif., assignor to Amdahl Corporation, Sunnyvale, Calif.
Filed Aug. 2, 1983, Ser. No. 519,695
Term of patent 14 years
U.S. Cl. D14—102



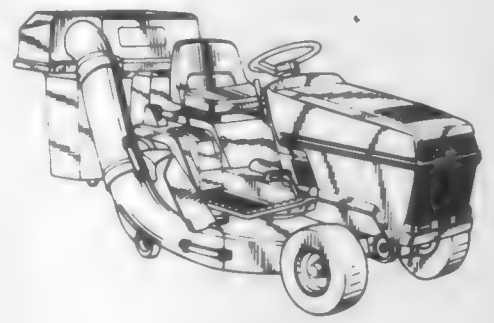
285,076
VIDEO DISPLAY TERMINAL HOUSING
William J. Proetta, Elburn, Ill.; Gordon E. Sylvester, Jamaica, N.Y., and Alvin R. Tilley, Redbank, N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.
Filed Apr. 5, 1984, Ser. No. 596,926
Term of patent 14 years
U.S. Cl. D14—113

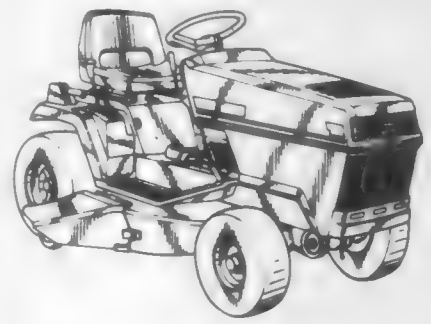


285,077
HYDRAULIC POWER GENERATOR UNIT
Albert L. Moody, Mableton, Ga., assignor to F. C. Brown Rentals, Inc., Atlanta, Ga.
Filed Apr. 25, 1984, Ser. No. 603,826
Term of patent 14 years
U.S. Cl. D15—1



285,078
LAWN TRACTOR
Sadao Mizushima, Tokyo, and Toshihiko Shibuya, Urawa, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Aug. 15, 1984, Ser. No. 640,836
Claims priority, application Japan, Feb. 17, 1984, 59-5791
Term of patent 14 years
U.S. Cl. D15—15



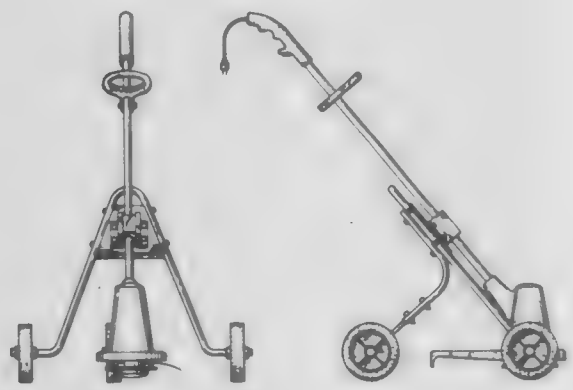


285,079

COMBINED GRASS TRIMMER AND WHEELED FRAME

Edward A. Huthmacher, 2807 Country Club Blvd., Sugar Land, Tex. 77478

Filed Sep. 10, 1984, Ser. No. 649,063
Term of patent 14 years
U.S. Cl. D15—16

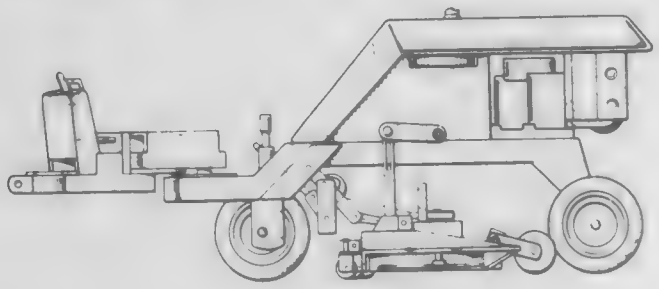


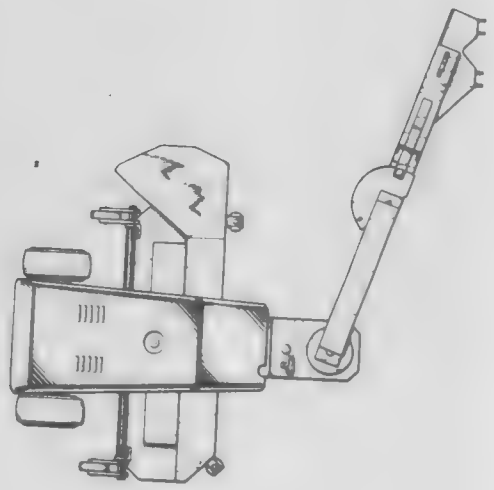
285,080

TRAILING LAWN MOWER

Edward Klein, Wilmette, Ill., assignor to Ingersoll Equipment Co., Inc., Winnecone, Wis.

Filed Oct. 29, 1984, Ser. No. 665,849
Term of patent 14 years
U.S. Cl. D15—27





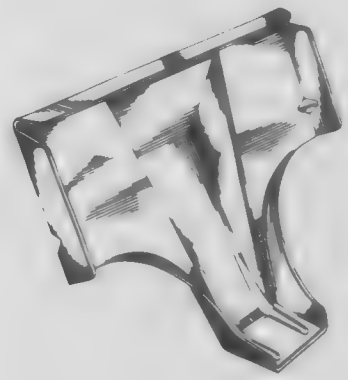
285,081

PLANTER ROW CENTER SUPPORT

Mark W. Wood, Moline, Ill., assignor to Deere & Company, Moline, Ill.

Filed May 8, 1985, Ser. No. 731,803
Term of patent 14 years
U.S. Cl. D15—33



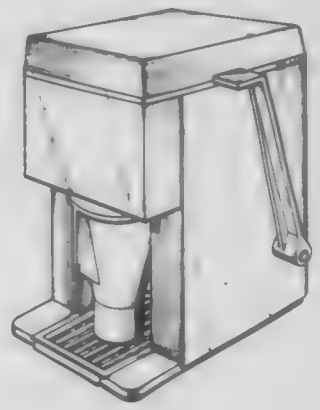


285,082

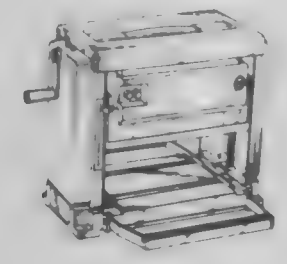
HOUSING FOR FROZEN DESSERT MIXER AND DISPENSER

Charles E. Verkler, Peoria, Ill., assignor to International Food Equipment Inc., Peoria, Ill.

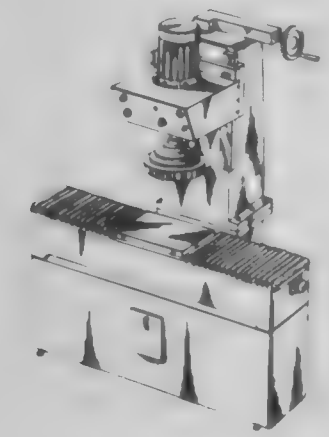
Filed Jul. 25, 1983, Ser. No. 516,818
Term of patent 14 years
U.S. Cl. D15—82



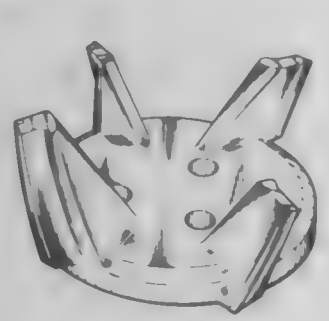
285,083
ELECTRIC PLANER
Kouichi Miyamoto, Hiroshima, Japan, assignor to Ryobi Ltd., Hiroshima, Japan
Filed Jul. 9, 1984, Ser. No. 629,021
Claims priority, application Japan, Feb. 8, 1984, 59-4383
Term of patent 14 years
U.S. Cl. D15—127



285,084
MILLING MACHINE
Rufus W. Aldridge, Jr., Huntsville, Ala., assignor to Spencer Wright Industries, Inc., Chattanooga, Tenn.
Filed Jul. 23, 1984, Ser. No. 633,693
Term of patent 14 years
U.S. Cl. D15—131

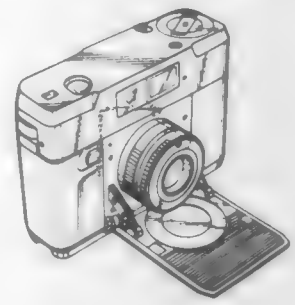


285,085
IMPELLER FOR COMMINUTING EQUIPMENT
Robert R. Fischer, Michigan City, and Joe R. Urschel, Valparaiso, both of Ind., assignors to Urschel Laboratories, Inc., Valparaiso, Ind.
Filed Oct. 27, 1983, Ser. No. 546,197
Term of patent 14 years
U.S. Cl. D15—139

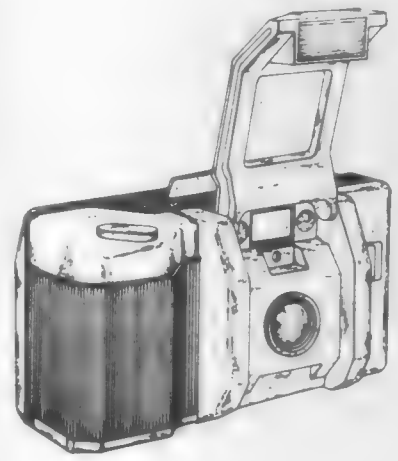




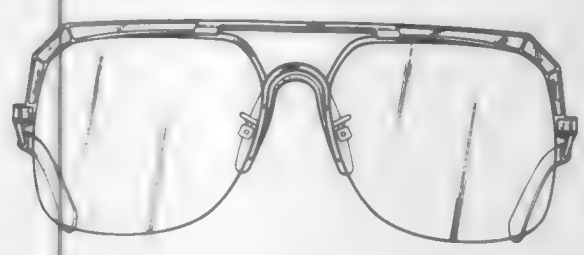
285,086
PHOTOGRAPHIC CAMERA
Toshio Kotake, Kyoto, Japan, assignor to Kyocera Corporation, Kyoto, Japan
Filed Apr. 11, 1984, Ser. No. 599,025
Claims priority, application Japan, Oct. 11, 1983, 58-44110
Term of patent 14 years
U.S. Cl. D16—5



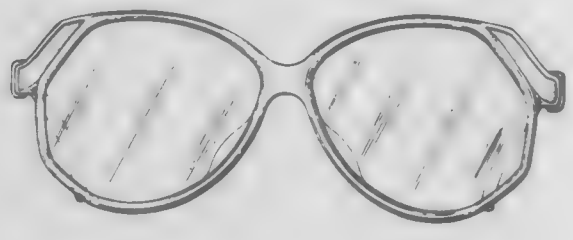
285,087
CAMERA WITH INTEGRAL FLASH UNIT
David E. Hansen, Fairport, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Sep. 10, 1984, Ser. No. 649,103
Term of patent 14 years
U.S. Cl. D16—6



285,088
EYEGLASSES
Barton M. Levoy, 130 Cutter Mill Rd., Great Neck, N.Y. 11022
Filed Aug. 6, 1984, Ser. No. 638,035
Term of patent 14 years
U.S. Cl. D16—102



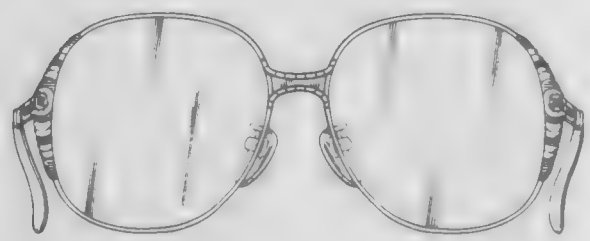
285,089
EYEGLASS FRAME
Ulrich J. Haas, Vienna, Austria, assignor to Optyl Eyewear Fashion International Corporation, Norwood, N.J.
Filed Aug. 23, 1984, Ser. No. 643,816
Claims priority, application Fed. Rep. of Germany, Mar. 2, 1984, 13 776
Term of patent 14 years
U.S. Cl. D16—102



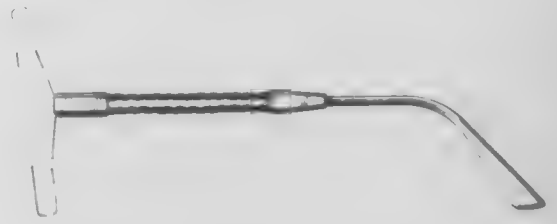
285,090
EYEGLASS FRAME
Ulrich J. Haas, Vienna, Austria, assignor to Optyl Eyewear Fashion International Corporation, Norwood, N.J.
Filed Dec. 10, 1984, Ser. No. 679,990
Claims priority, application Fed. Rep. of Germany, Aug. 6, 1984, 14010
Term of patent 14 years
U.S. Cl. D16—102



285,091
EYEGLASSES
Barton M. Levoy, 130 Cutter Mill Rd., Great Neck, N.Y. 11022
Filed Dec. 31, 1984, Ser. No. 687,749
Term of patent 14 years
U.S. Cl. D16—102



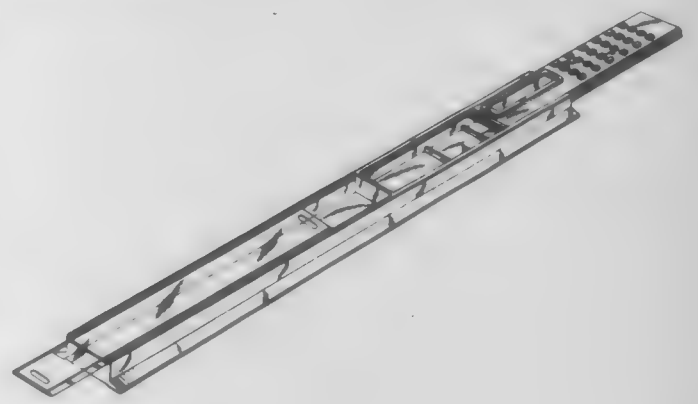
285,092
EYEGLASS TEMPLE
Barry L. Baum, 53 The Serpentine, Roslyn Estates, N.Y. 11576, assignor to Barry Lee Baum, Roslyn Estates, N.Y.
Filed Jul. 31, 1984, Ser. No. 636,405
Term of patent 14 years
U.S. Cl. D16—127



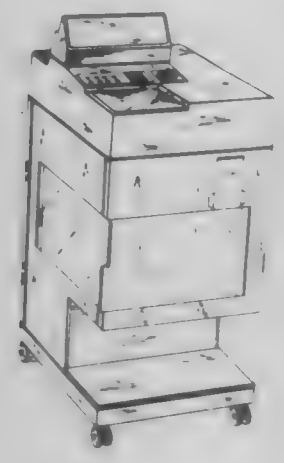
285,093
LYRE
Norbert Visser, Noordlaan 26, 1861 GN Bergen NH, Netherlands
Filed Aug. 10, 1983, Ser. No. 521,916
Claims priority, application Switzerland, Feb. 18, 1983, DM/002255
Term of patent 14 years
U.S. Cl. D17—14



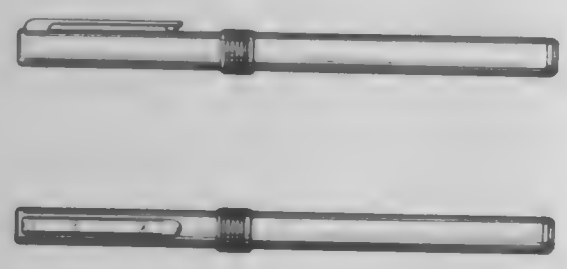
285,094
COMBINED CALCULATOR RULER, AND DESK TRAY
Robert S. K. Li, Central, Hong Kong, assignor to RJP Electronics Limited, Central, Hong Kong
Filed Mar. 16, 1984, Ser. No. 590,886
Claims priority, application United Kingdom, Jan. 26, 1984, 1017536
Term of patent 14 years
U.S. Cl. D18—2



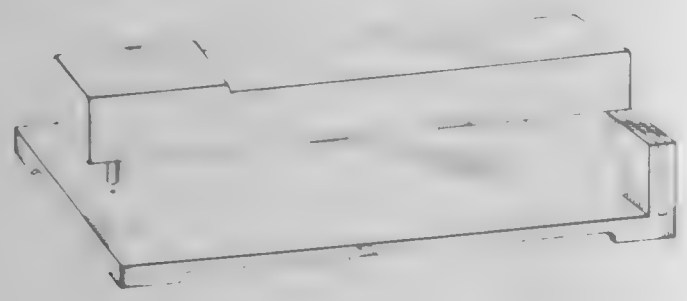
285,095
COIN PACKAGING MACHINE
Alvar I. Lundgren, and Anders B. A. Lundgren, both of Gothenburg, Sweden, assignors to Scan Coin AB, Malmo, Sweden
Filed Oct. 2, 1984, Ser. No. 657,072
Claims priority, application Sweden, Apr. 4, 1984, 841099
Term of patent 14 years
U.S. Cl. D18—3



285,096
WRITING INSTRUMENT
Franco Verona, Turin, Italy, assignor to Aurora S.p.A., Turin, Italy
Filed Nov. 10, 1982, Ser. No. 440,531
Claims priority, application Italy, May 21, 1982, 53317/82[U]
Term of patent 14 years
U.S. Cl. D19—48

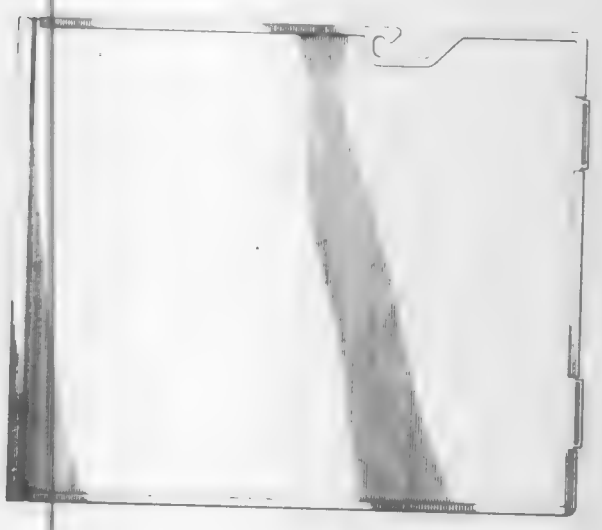


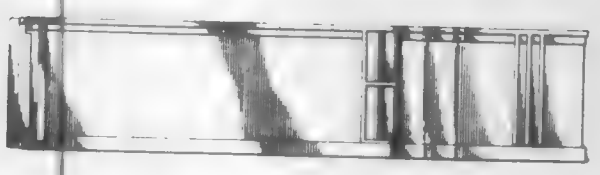
285,097
DIMPLE PUNCH FOR FORMING RISERS ON DRAFTSMEN'S TEMPLATE
C. Dennis Lord, Dallas, Tex., assignor to Rotex Company, Dallas, Tex.
Filed Jan. 5, 1984, Ser. No. 568,396
Term of patent 14 years
U.S. Cl. D19—72



285,098
FILING CONTAINER
Albert G. Ermanski, Auburn; Bernard T. Cournoyer, Holden, and David M. Wright, Shrewsbury, all of Mass., assignors to Wright Line Inc., Worcester, Mass.
Filed Jun. 20, 1983, Ser. No. 505,573
Term of patent 14 years
U.S. Cl. D19—90





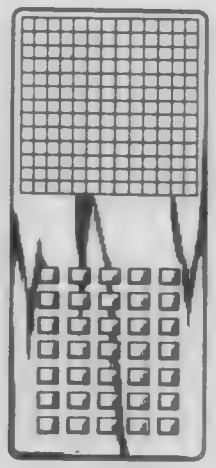


285,099

HOUSING FOR AN ELECTRONIC GAME

Boyd W. Fellows, 534 Monaco, St. Louis, Mo. 63122

Filed Aug. 11, 1983, Ser. No. 522,209
The portion of the term of this patent subsequent to Jun. 14, 1997, has been disclaimed.
Term of patent 14 years
U.S. Cl. D21—13

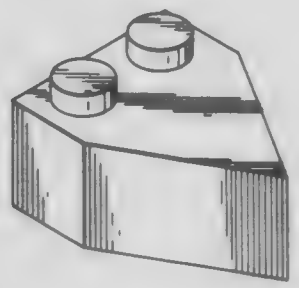


285,100

TOY BUILDING BLOCK

Leo S. Volpe, Collingswood, N.J., assignor to Tyco Industries, Inc., Moorestown, N.J.

Filed Feb. 29, 1984, Ser. No. 584,588
Term of patent 14 years
U.S. Cl. D21—108

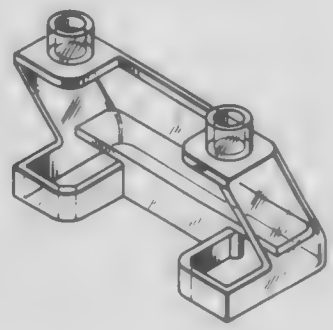


285,101

TOY INTERCONNECTING ANGLE BLOCK OR THE LIKE

Kiyohide Nakata, Tama, Japan, assignor to Kawada Co., Ltd., Tokyo, Japan

Filed Sep. 10, 1984, Ser. No. 648,529
Claims priority, application Japan, May 30, 1984, 59-21776
Term of patent 14 years
U.S. Cl. D21—108



285,102

NOVELTY FIGURE

Freddy T. Lee, 467 SE. Whitmore Dr., Port St. Lucie, Fla. 33452

Filed May 4, 1984, Ser. No. 607,316
Term of patent 14 years
U.S. Cl. D21—149

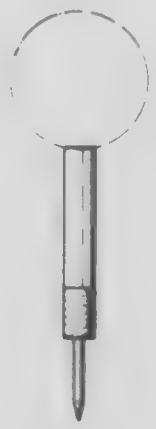


285,103

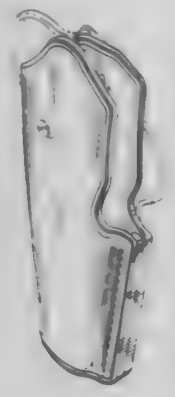
GOLF TEE RESEMBLING CIGARETTE

Richard E. Kurtz, 300 Keller Rd., Berwyn, Pa. 19312

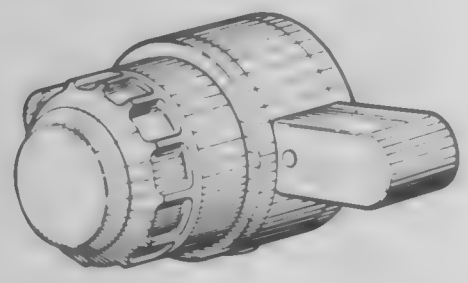
Filed Aug. 12, 1983, Ser. No. 522,655
Term of patent 14 years
U.S. Cl. D21—208



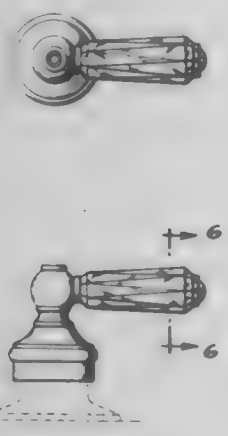
285,104
CUT-AWAY HOLSTER
G. William Davis, c/o Davis Leather Co., 118 A La Porte St., Arcadia, Calif. 91006
Filed Jan. 3, 1984, Ser. No. 567,747
Term of patent 14 years
U.S. Cl. D3—101



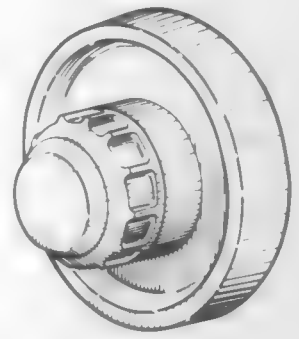
285,105
MIXING VALVE FOR SHOWERS OR THE LIKE
Kenneth A. Ogilvie, Naunton, United Kingdom, assignor to Walker Crosweller & Company Limited, England
Filed Apr. 11, 1985, Ser. No. 721,925
Claims priority, application United Kingdom, Dec. 4, 1984, 1023712
Term of patent 14 years
U.S. Cl. D23—19



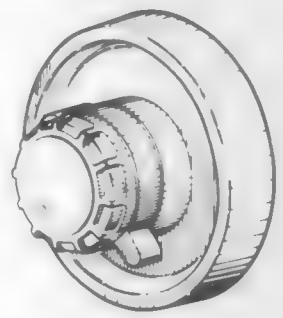
285,106
LEVER HANDLE FOR PLUMBING FIXTURE
Holly K. Yost, Van Nuys, Calif., assignor to Price Pfister, Inc., Pacoima, Calif.
Filed Mar. 8, 1984, Ser. No. 587,620
Term of patent 14 years
U.S. Cl. D23—28



285,107
COMBINED CONTROL HANDLE AND ESCUTCHEON FOR SHOWERS OR THE LIKE
Kenneth A. Ogilvie, Naunton, United Kingdom, assignor to Walker Crosweller & Company Limited, England
Filed Apr. 11, 1985, Ser. No. 721,924
Claims priority, application United Kingdom, Dec. 4, 1986, 1023713
Term of patent 14 years
U.S. Cl. D23—31



285,108
COMBINED CONTROL HANDLE AND ESCUTCHEON FOR SHOWERS OR THE LIKE
Kenneth A. Ogilvie, Naunton, United Kingdom, assignor to Walker Crosweller & Company Limited, England
Filed Apr. 11, 1985, Ser. No. 721,926
Claims priority, application United Kingdom, Dec. 4, 1984, 1023715
Term of patent 14 years
U.S. Cl. D23—31



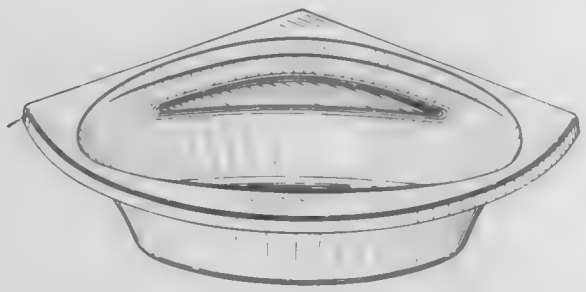
285,109
SEALING RING
Lennart Jörnhagen, Värnamo, Sweden, assignor to Forsheda AB, Forsheda, Sweden
Filed Oct. 16, 1984, Ser. No. 661,490
Term of patent 14 years
U.S. Cl. D23—47



285,110
CORNER BATH TUB

John D. Burgess, Loretto, and Thomas E. Taylor, Rexdale, both of Canada, assignors to Acriform Engineering, Inc., Newmarket, Canada

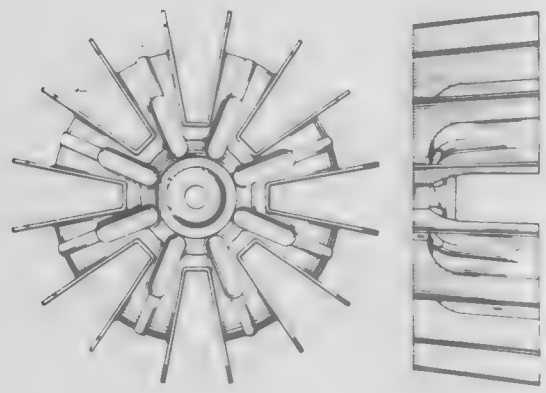
Filed Nov. 28, 1984, Ser. No. 675,917
Claims priority, application Canada, Jun. 22, 1984, 2206842
Term of patent 14 years
U.S. Cl. D23—55



285,111
IMPELLER

David J. Hanson, Newcastle, Me., assignor to Hanson Energy Products, Newcastle, Me.

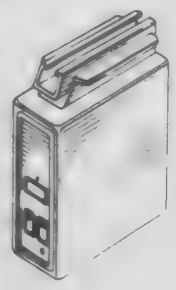
Filed Sep. 8, 1983, Ser. No. 530,381
Term of patent 14 years
U.S. Cl. D23—165



285,112
PHYSIOLOGICAL PRESSURE MONITORING INSTRUMENT

Stephens N. Sato, and Joseph J. Manno, both of San Diego, Calif., assignors to Camino Laboratories, San Diego, Calif.

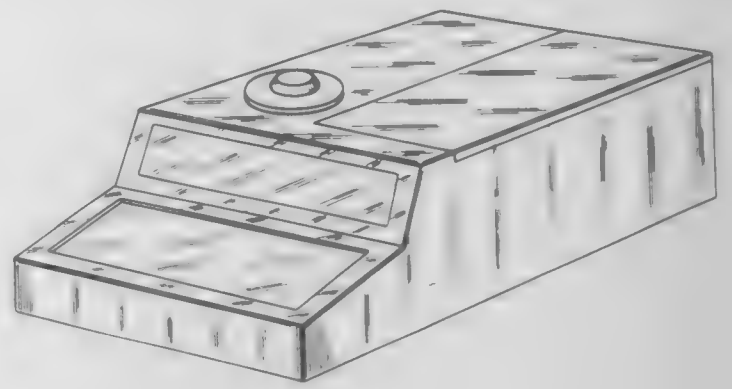
Filed Jun. 1, 1983, Ser. No. 500,033
Term of patent 14 years
U.S. Cl. D24—17



285,113
URINOMETER

Kevin Williams, Buffalo, N.Y., assignor to Warner-Lambert Technologies, Inc., Southbridge, Mass.

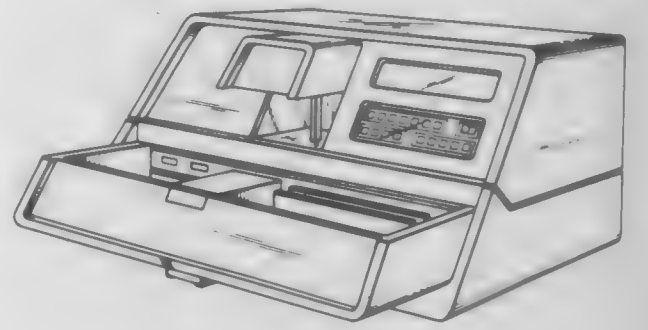
Filed Nov. 25, 1983, Ser. No. 555,223
Term of patent 14 years
U.S. Cl. D24—17



285,114
AUTOMATED URINALYSIS INSTRUMENT

Kenneth D. Collister, and Steven C. Johnson, both of Elkhart, Ind., assignors to Miles Laboratories, Inc., Elkhart, Ind.

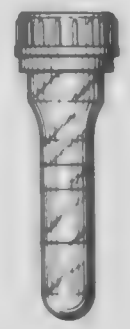
Filed May 26, 1983, Ser. No. 498,299
Term of patent 14 years
U.S. Cl. D24—17



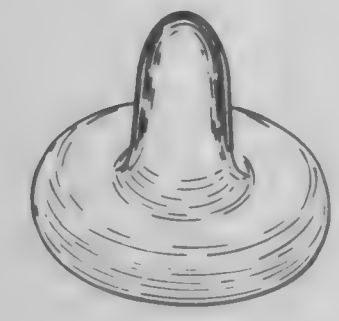
285,115
COLLECTOR FOR CAPILLARY BLOOD

Todd A. Proud, Claymont; Tom F. Lin, Bear, both of Del.; Wayne J. Mitchell, Elkton, Md., and James D. Kasper, Montpelier, Ohio, assignors to Terumo Medical Corporation, Elkton, Md.

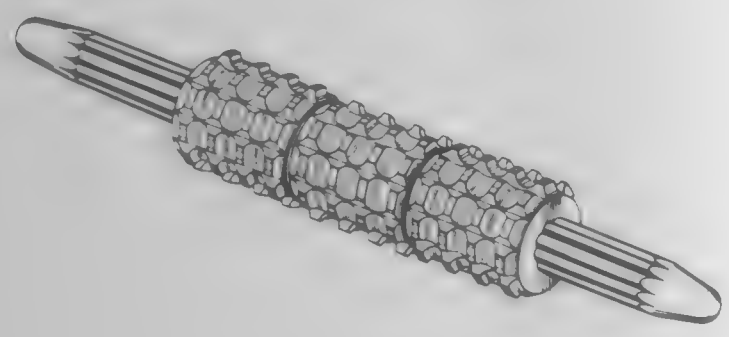
Filed Dec. 5, 1983, Ser. No. 558,027
Term of patent 14 years
U.S. Cl. D24—29



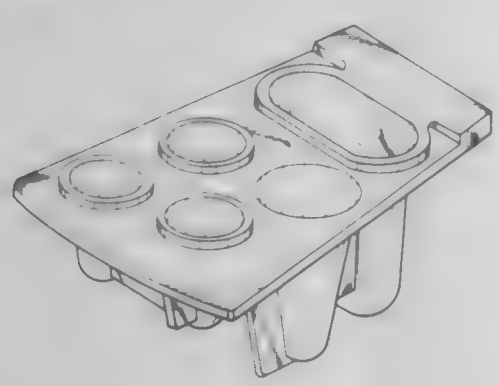
285,116
EXTERNAL BODY MASSAGE DEVICE
Richard Hoff, 1187 Delaware St., Berkeley, Calif. 94702
Continuation-in-part of Ser. No. 124,315, Feb. 25, 1980. This application Dec. 20, 1982, Ser. No. 451,251
Term of patent 14 years
U.S. Cl. D24—36



285,117
COMBINED BODY AND FOOT MASSAGER
Benjamin L. Snyder, 7216 Plaza De La Costa, Rancho La Costa, Carlsbad, Calif. 92008
Filed Apr. 23, 1985, Ser. No. 726,032
Term of patent 14 years
U.S. Cl. D24—36



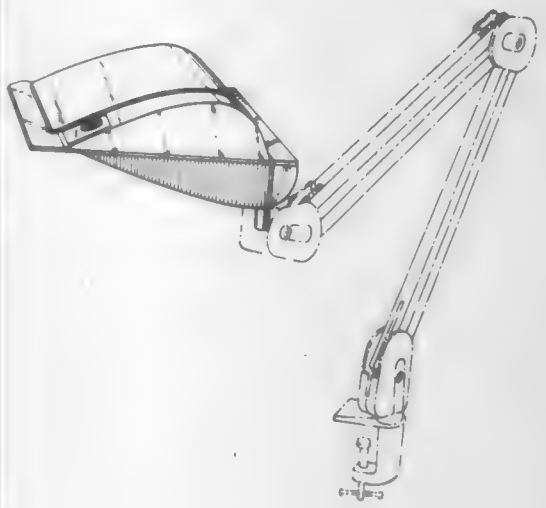
285,118
SAMPLE CUP
Tung-Ming Huang, Elk Grove Village, Ill., assignor to Abbott Laboratories, North Chicago, Ill.
Filed Jan. 19, 1983, Ser. No. 459,158
Term of patent 14 years
U.S. Cl. D24—56



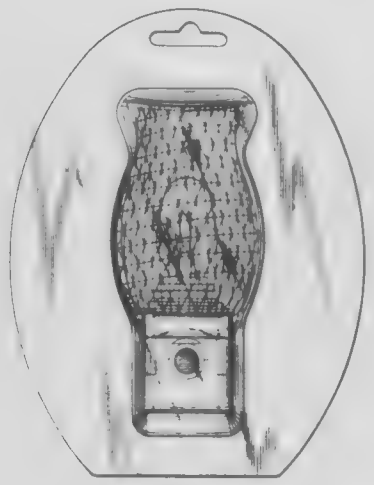
285,119
SMOKESTACK
Alfons O. Krautz, 10 Old Field-Woods Rd., Old Field, N.Y. 11733
Filed Apr. 21, 1983, Ser. No. 487,443
Term of patent 14 years
U.S. Cl. D25—35



285,120
LAMP
Jessen C. Krogsrud, Oslo, Norway, assignor to Jac Jacobsen A/S, Oslo, Norway
Filed Jan. 26, 1984, Ser. No. 574,290
Term of patent 14 years
U.S. Cl. D26—65



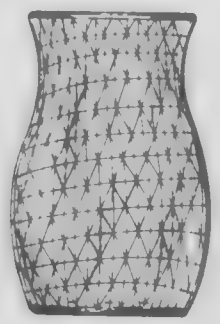
285,121
COMBINED NIGHTLIGHT AND PACKAGE THEREFOR
Frederic W. Schwartz, Providence, R.I., assignor to Cable Electric Products, Inc., Providence, R.I.
Filed Jan. 6, 1984, Ser. No. 568,982
Term of patent 14 years
U.S. Cl. D26—26



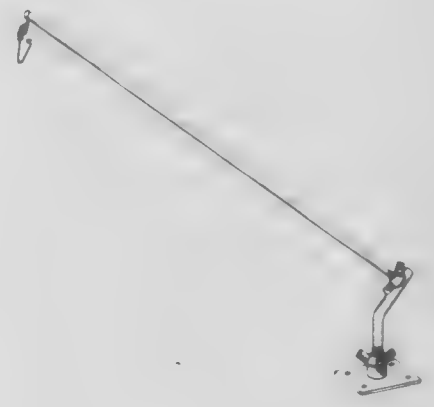
285,122
REAR COMBINATION LAMP FOR AN AUTOMOBILE
Tsutomu Fujita, Yokosuka, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan
Filed May 4, 1984, Ser. No. 606,945
Claims priority, application Japan, May 11, 1983, 57-25038
Term of patent 14 years
U.S. Cl. D26—35



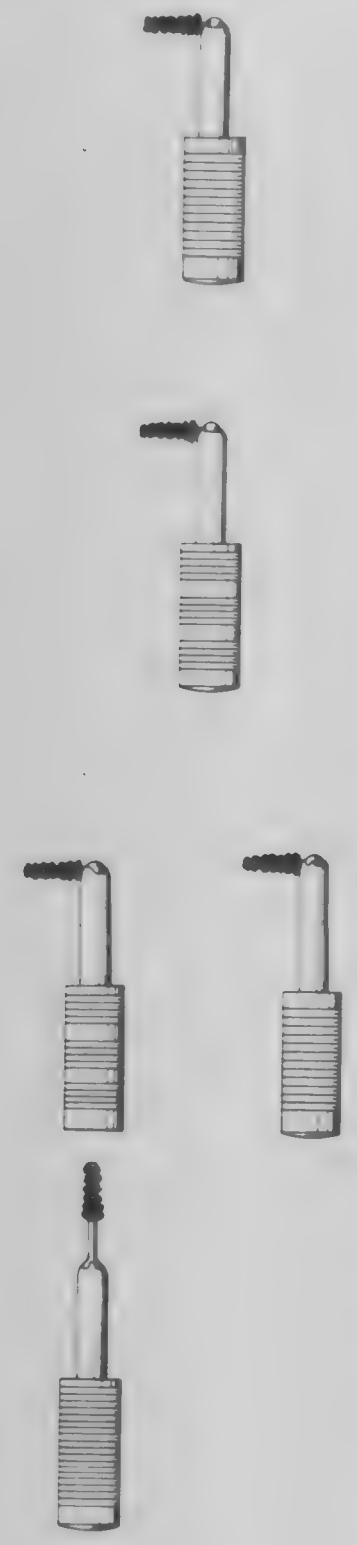
285,123
DIFFUSER FOR A NIGHT LIGHT OR SIMILAR ARTICLE
Frederic W. Schwartz, Providence, R.I., assignor to Cable Electric Products, Inc., Providence, R.I.
Filed Jan. 9, 1984, Ser. No. 569,098
Term of patent 14 years
U.S. Cl. D26—118



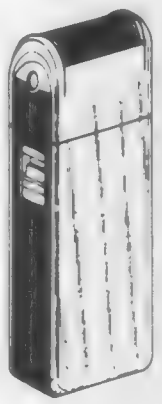
285,124
LANTERN HOLDER
Robert J. Hoover, Rte. 7, Box 352A, Spartanburg, S.C. 29303
Filed Aug. 15, 1983, Ser. No. 523,457
Term of patent 14 years
U.S. Cl. D26—138



285,125
ADJUSTABLE COSMETIC APPLICATOR
Gino H. Cassai, 924 E. 96th St., Brooklyn, N.Y. 11236, and Henry J. Cassai, 163-47 85 St., Howard Beach, N.Y. 11414
Filed Oct. 31, 1983, Ser. No. 547,004
Term of patent 14 years
U.S. Cl. D28—7



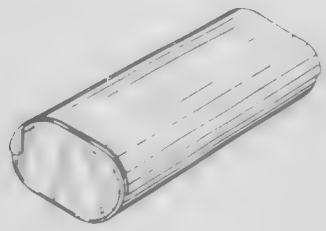
285,126
SHAVER
Kwok-Hung Liu, Kowloon, Hong Kong, assignor to Transistolite Manufacturing Ltd., Kowloon, Hong Kong
Filed Jan. 31, 1984, Ser. No. 575,450
Claims priority, application United Kingdom, Aug. 2, 1983, 1,014,434
Term of patent 14 years
U.S. Cl. D28—49

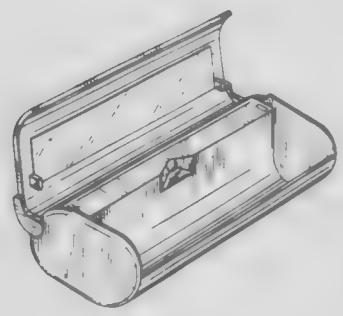


285,127
DENTAL FLOSS HOLDER
Helen Kesler, 27117 Hass, Dearborn Heights, Mich. 48127
Filed Nov. 14, 1983, Ser. No. 550,957
Term of patent 14 years
U.S. Cl. D28—64



285,128
ILLUMINATED LIPSTICK CASE
John S. Yuen, Kowloon, Hong Kong, assignor to John Manufacturing Limited, Kowloon, Hong Kong
Filed Apr. 4, 1984, Ser. No. 596,803
Claims priority, application United Kingdom, Oct. 5, 1983, 1 015 516
Term of patent 14 years
U.S. Cl. D28—85

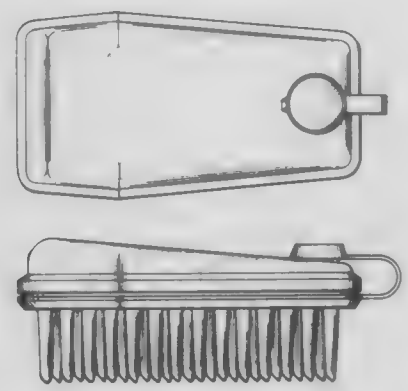




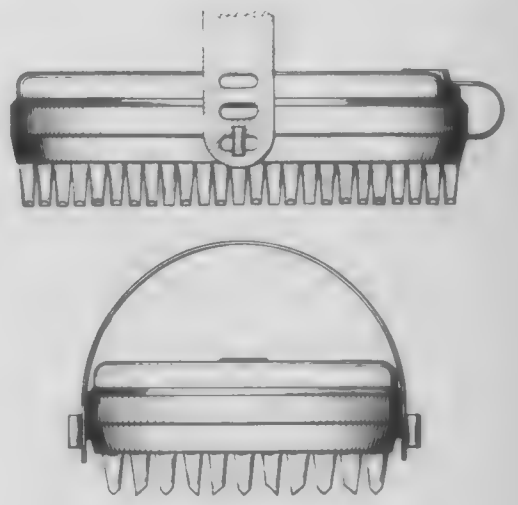
285,129
AQUARIUM
Douglas C. Phillips, and David P. Huber, both of 19230 Wyandotte St., Reseda, Calif. 91335
Filed Aug. 17, 1984, Ser. No. 641,595
Term of patent 14 years
U.S. Cl. D30—9



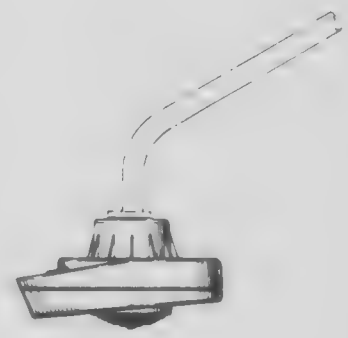
285,130
COMBINED APPLICATOR AND GROOMING BRUSH FOR ANIMALS
Charles N. Wilkeson, 114 Colina Pl., Ormond Beach, Fla. 32074
Filed Jan. 30, 1984, Ser. No. 575,054
Term of patent 14 years
U.S. Cl. D30—40



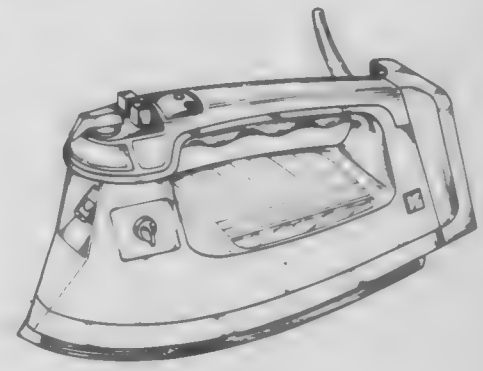
285,131
COMBINED APPLICATOR AND GROOMING BRUSH FOR ANIMALS
Charles N. Wilkeson, 114 Colina Pl., Ormond Beach, Fla. 32074
Filed Jun. 17, 1985, Ser. No. 745,495
Term of patent 14 years
U.S. Cl. D30—40



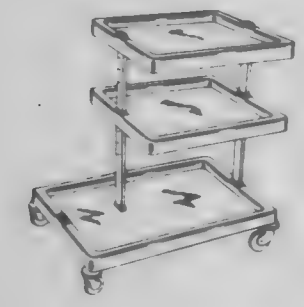
285,132
HEAD FOR A PORTABLE AIR BLOWER FOR YARD AND LAWN CARE
Raymond G. Smith, and Raymond M. Carter, both of Los Angeles, Calif., assignors to Hawaiian Motor Company, Long Beach, Calif.
Filed Nov. 7, 1983, Ser. No. 549,043
Term of patent 14 years
U.S. Cl. D32—18



285,133
PRESSING IRON
Bernard B. Bluestein, Des Plaines, Ill., assignor to John Zink Company, Tulsa, Okla.
Filed Apr. 27, 1984, Ser. No. 605,443
Term of patent 14 years
U.S. Cl. D32—70



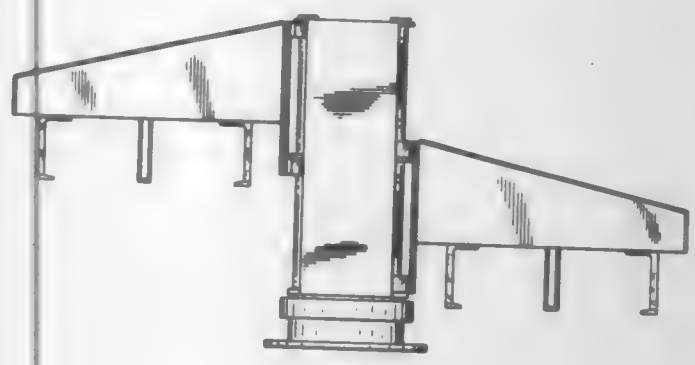
285,134
CART
Roland Schunter, Lorch-Waldhausen, Fed. Rep. of Germany, assignor to Floordress Reinigungsgeraete GmbH, Lorch-Waldhausen, Fed. Rep. of Germany
Filed Nov. 9, 1984, Ser. No. 670,141
Claims priority, application Fed. Rep. of Germany, May 9, 1984, 3042
Term of patent 14 years
U.S. Cl. D34—21



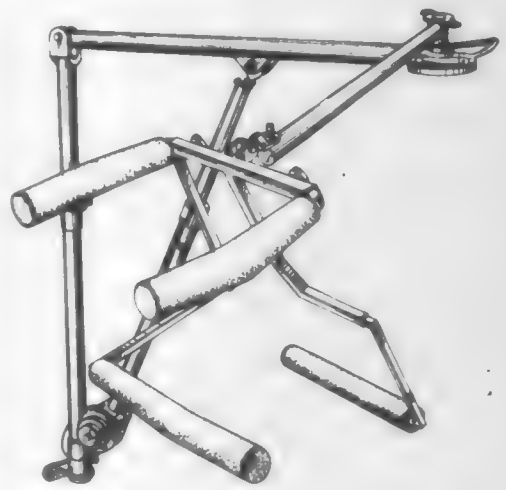
285,135
LUGGAGE CARRIER
Michael Gordon, New York, N.Y., assignor to Koret Inc., New York, N.Y.
Filed Dec. 5, 1983, Ser. No. 558,013
Term of patent 14 years
U.S. Cl. D34—26



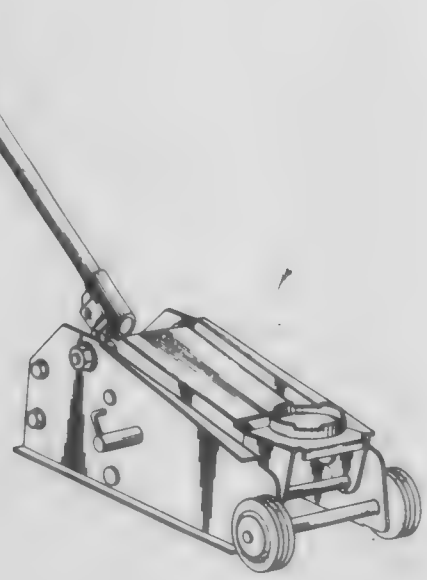
285,136
TURRET STACKER
Lawrence J. Richards, Elk Grove Village, Ill., assignor to Braner Enterprises Inc., Schiller Park, Ill.
Filed May 23, 1983, Ser. No. 497,031
Term of patent 14 years
U.S. Cl. D34—28



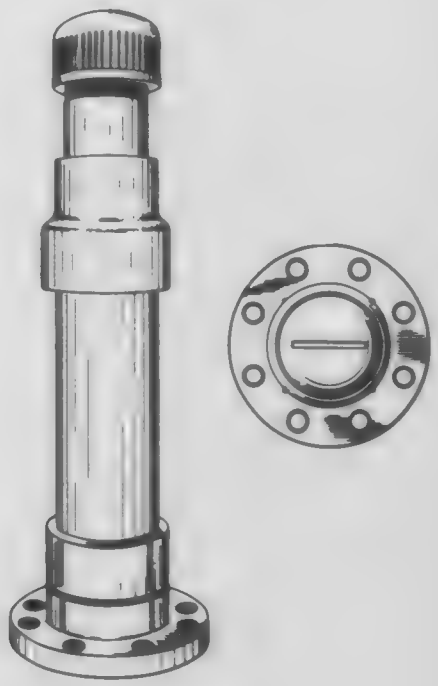
285,137
COMBINED LIFTING TOOL AND MOUNTED YOKE FOR HANDICAPPED PERSON
Ingemar D. A. Svensson, Långavallsgatan 13, 424 57 Angered, Sweden
Filed Jun. 1, 1983, Ser. No. 500,145
Claims priority, application Sweden, Dec. 2, 1982, 82-2882
Term of patent 14 years
U.S. Cl. D34—28



285,138
JACK
Takeshi Yamagishi, Shizuoka, Japan, assignor to Yasui Sangyo Co. Ltd., Fujinomiya, Japan
Filed Jan. 24, 1983, Ser. No. 460,470
Claims priority, application Japan, Aug. 20, 1982, 57-37739
Term of patent 14 years
U.S. Cl. D34—31



285,139
COIN BANK
Walter Miles, 279 S. Ellyn Ave., Glen Ellyn, Ill. 60137
Filed Feb. 16, 1984, Ser. No. 580,842
Term of patent 14 years
U.S. Cl. D99—35



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TO WHOM

PATENTS WERE ISSUED ON THE 12TH DAY OF AUGUST, 1986

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Trill, Anthony J., 4,605,550, Cl. 424-22.000.
Welstead, William J., Jr., 4,605,652, Cl. 514-214.000.

Abbott Laboratories: *See—*
Summers, James B., Jr., 4,605,669, Cl. 514-575.000.

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Hurd, Bruce; and Oda, Robert, 4,605,227, Cl. 273-54.00B.

Acharya, Kishore C.: *See—*
Crawford, Carl R.; and Acharya, Kishore C., 4,606,004, Cl. 364-414.000.

Achelpohl, Fritz; Mundus, Friedhelm; and Ebmeyer, Wilfried, to Windmoller & Holscher. Apparatus for making plastic carrier bags. 4,605,392, Cl. 493-196.000.

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Adell, Robert, to U.S. Product Development Company. Edge guard. 4,604,832, Cl. 49-462.000.

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Baker, Rodney C.; and van Rensburg, Philippus J., 4,604,971, Cl. 119-86.000.

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Hishii, Masao; Tanaka, Masaaki; Sato, Yukio; Nagai, Haruhiko; and Tabata, Norikazu, 4,606,035, Cl. 372-87.000.
Isogai, Nobuo; Okawa, Takashi; Hosokawa, Motoyuki; Watanabe, Toshiyasu; and Wakui, Natsuko, 4,605,796, Cl. 568-902.000.
Oinuma, Senzo; Tanaka, Kazumi; Shiino, Kazuo; and Watanabe, Hiroki, 4,605,003, Cl. 128-328.000.
Terashima, Kazutaka; and Fukuda, Tsuguo, 4,606,037, Cl. 373-6.000.

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Aimoto, Kenji: *See—*
Sato, Mitsunobu; Katsuragi, Yasuhiro; Sakano, Yasuo; Sugihara, Kunio; and Aimoto, Kenji, 4,605,555, Cl. 424-85.000.
Sato, Mitsunobu; Katsuragi, Yasuhiro; Sakano, Yasuo; Sugihara, Kunio; and Aimoto, Kenji, 4,605,556, Cl. 424-85.000.

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Ford, Michael E.; and Johnson, Thomas A., 4,605,770, Cl. 564-479.000.
Orphanides, Gus G., 4,605,589, Cl. 428-290.000.

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Watkins, Dennis W., 4,604,895, Cl. 73-204.000.

Aires, Ramon H.: *See—*
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Ogiwara, Osao, 4,605,105, Cl. 188-251.00M.

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Aksay, Ilhan A.: *See—*
Halverson, Danny C.; Pyzik, Aleksander J.; and Aksay, Ilhan A., 4,605,440, Cl. 75-238.000.

Akutagawa, Susumu: *See—*
Kumobayashi, Hidenori; and Akutagawa, Susumu, 4,605,750, Cl. 556-7.000.

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Peelen, Frank C., 4,605,719, Cl. 526-282.000.

Albers, August, to Hermann Berstorff Maschinenbau GmbH. Mixing and shearing roller-mill. 4,605,309, Cl. 366-76.000.

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Hodson, Homer J.; Shurney, Glenn A.; and Hartman, Eric E., 4,605,021, Cl. 132-33.00R.

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Busch, Edgar; and Albrecht, Ernst, 4,604,958, Cl. 112-443.000.

Albrecht, Leman P.; and Ellis, Darwin L., to Aluminum Company of America. Method and apparatus for sealing a container with a tamper-evident closure. 4,604,853, Cl. 53-487.000.

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Alexander, James L., to McCoy-Ellison, Inc. Strand tension controlling apparatus. 4,605,181, Cl. 242-149.000.

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Andersson, Jarl A.; and Hallgren, Leif, 4,605,060, Cl. 165-166.000.

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Bach, Lloyd G.; Myers, Lawrence R.; and Gaiser, Robert F., 4,604,870, Cl. 60-551.000.

Bartholomew, Roy E., 4,605,262, Cl. 303-84.00A.
Gaiser, Robert F., 4,604,866, Cl. 60-535.000.
Reimschuessel, Herbert K.; and Ulmer, Harry E., 4,605,707, Cl. 525-410.000.
Thomas, Robert H.; Hammond, Willis B.; Friedberger, Michael P.; and Archie, William A., 4,605,587, Cl. 428-265.000.
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Alling, Richard L.; Shepard, Richard W.; Landrum, Clyde L.; Tofield, Robert H.; and Podhajecki, Stephen T., to Torrington Company, The. Double row roller bearing retainer. 4,605,322, Cl. 384-575.000.

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Altherr, Russell G., to Amsted Industries Incorporated. Coupler knuckle. 4,605,133, Cl. 213-155.000.

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Hovland, Lyle W.; and Klingensmith, James D., 4,605,333, Cl. 403-27.000.

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Amitay, Noach; and Greenstein, Lawrence J., to AT&T Bell Laboratories. Cross-polarization interference cancellation. 4,606,054, Cl. 375-102.000.

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Cohen, Thomas S.; and Finan, Douglas F., 4,605,269, Cl. 339-17.0LC.
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Anguita, Waldemar. Greenhouse helmet. 4,605,000, Cl. 128-201.250.

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Schummer, Arthur; de la Hamette, Jean; Lessel, Guy; Beck, Jean-Paul; and Frantz, Armand, 4,605,449, Cl. 148-12.00B.

Arbter, Conrad, to Kolb & Schule AG. Apparatus for winding up flat material webs. 4,605,179, Cl. 242-72.00B.

Archie, William A.: *See*—
Thomas, Robert H.; Hammond, Willis B.; Friedberger, Michael P.; and Archie, William A., 4,605,587, Cl. 428-265.000.

Arenhold, Knut. Device for fixing a mud flap to the fender fold of a motor vehicle. 4,605,238, Cl. 280-154.50R.

Arff, Heino, to ITW-Ateco GmbH. Device for tensioning belts or the like. 4,604,772, Cl. 24-68.00R.

Ari Associates, Inc.: *See*—
Kalvatn, Ivar, 4,605,334, Cl. 403-291.000.

Arikawa, Yoshijiro: *See*—
Kamiguchi, Taiji; Yamada, Mutsuo; Arikawa, Yoshijiro; Kuwahara, Takanori; Tanimoto, Hirotoshi; Nishimura, Yasuyuki; and Kaku, Hiroyuki, 4,605,776, Cl. 568-401.000.

Arjomand, Jahanbakhsh. Pitch-angle-checker (P-A-C). 4,604,812, Cl. 33-387.000.

Armeno, Michael; and Parla, Ralph L. Decorative heat retaining pizza cover. 4,605,579, Cl. 428-66.000.

Armour Pharmaceutical Company: *See*—
Orlowski, Ronald C.; Seyler, Jay K.; and Stahl, Glenn L., 4,605,514, Cl. 530-307.000.
Orlowski, Ronald C.; and Stahl, Glenn L., 4,605,515, Cl. 530-307.000.

Armstrong World Industries, Inc.: *See*—
Feiler, Richard E.; and Markley, Dean A., 4,605,570, Cl. 427-386.000.
Heir, Richard E., Jr.; Kauffman, William J.; and Landers, Cheryl W., 4,605,584, Cl. 428-142.000.

Arndt, Otto; and Papenfuhs, Theodor, to Hoechst Aktiengesellschaft. Process for the preparation of 2,6-dichloro-4-nitroaniline. 4,605,767, Cl. 564-412.000.

Arroyo, Candido J.; Cogelia, Nicholas J.; and Thomas, Palmer D., to AT&T Technologies, Inc.; and AT&T- Bell Laboratories. Flame-resistant plenum cable and methods of making. 4,605,818, Cl. 174-107.000.

Arthroplasty Research & Development (Pty) Ltd.: *See*—
Grobbelaar, Charl J., 4,605,416, Cl. 623-23.000.

Asada, Susumu: *See*—
Matsui, Shinji; Asada, Susumu; and Mori, Katsumi, 4,605,566, Cl. 427-43.100.

Asahi Glass Company, Ltd.: *See*—
Shitagami, Osamu; Kuno, Toshihiko; Sajima, Yasuo; Saito, Kohji; Uchibori, Takahiro; and Iwamoto, Junjiro, 4,605,482, Cl. 204-258.000.

Asahi Kasei Kogyo Kabushiki Kaisha: *See*—
Shiroki, Hiroyuki; and Noaki, Yasuhide, 4,605,484, Cl. 204-290.00R.

Asahi Yukizai Kogyo Co., Ltd.: *See*—
Tsuno, Kazuhiko; and Sano, Nitiro, 4,605,202, Cl. 251-315.000.

Asai, Hideyuki: *See*—
Kumada, Shoji; and Asai, Hideyuki, 4,605,853, Cl. 250-231.0SE.

Asao, Yasuzi; and Takayanagi, Takashi, to Fuji Photo Film Co., Ltd. Support for photographic paper having electron beam cured resin layer. 4,605,612, Cl. 430-538.000.

Aschauer, George R. Marine jet propulsion unit. 4,605,376, Cl. 440-38.000.

Asea AB: *See*—
Lassander, Erik; and Stenkvist, Sven-Einar, 4,606,055, Cl. 373-108.000.

Asea Aktiebolag: *See*—
Lofgren, Folke; and Soderstrom, Sven-Erik, 4,605,302, Cl. 356-5.000.

Ashauer, Karl; Richter, Bernd; Kalversberg, Manfred; and Schmidt, Rudiger, to Volkswagenwerk Aktiengesellschaft. All-wheel drive system for vehicles. 4,605,087, Cl. 180-248.000.
Ashland Oil, Inc.: *See—*
Goel, Anil B., 4,605,746, Cl. 548-218.000.
Walters, Paul W.; Raiche, H. Anthony; and Busch, Lloyd E., 4,605,636, Cl. 502-39.000.
Aslan, Edward E., to Narda Mircowave Corporation, The. Amplifier input circuitry with compensation for pyroelectric effects. 4,605,905, Cl. 330-9.000.
Aslizadeh, Nejdeh. Cover for electrical outlet. 4,605,270, Cl. 339-40.000.
Astafiev, Vladimir M.: *See—*
Bezborodov, Vladimir S.; Konovalov, Viktor A.; Ptashnikov, Jury L.; Astafiev, Vladimir M.; Minko, Anatoly A.; Dudarchik, Anatoly I.; Zanegina, Galina A.; and Poimanov, Anatoly M., 4,605,510, Cl. 252-299.660.
Astrologes, Gary W., to Halocarbon Products Corp. Production of 1,1,1,3-tetrachloropropane. 4,605,802, Cl. 570-257.000.
AT&T Bell Laboratories: *See—*
Amitay, Noach; and Greenstein, Lawrence J., 4,606,054, Cl. 375-102.000.
Aprille, Thomas J., Jr.; Kuo, Yen-long; and Walker, Charles F., 4,606,043, Cl. 375-12.000.
Arroyo, Candido J.; Cogelia, Nicholas J.; and Thomas, Palmer D., 4,605,818, Cl. 174-107.000.
Bowman, Wayne C.; Malik, Randhir S.; Seidel, Harold; Suiter, Weyman B., Jr.; and Ziesse, Norman G., 4,605,999, Cl. 363-19.000.
Camlibel, Irfan; Chin, Aland K.; and Chin, Brymer H., 4,605,942, Cl. 357-17.000.
Cannone, Anthony G., 4,605,605, Cl. 429-174.000.
Glass, Kathleen K.; and Haas, Lawrence J., 4,606,024, Cl. 371-16.000.
Johnsen, Ottar, 4,606,069, Cl. 382-56.000.
Johnson, David W., Jr.; MacChesney, John B.; and Rabinovich, Eleizer M., 4,605,428, Cl. 65-2.000.
Ludwick, John J., 4,606,046, Cl. 375-17.000.
AT&T Technologies, Inc.: *See—*
Arroyo, Candido J.; Cogelia, Nicholas J.; and Thomas, Palmer D., 4,605,818, Cl. 174-107.000.
Haggan, Douglas E., 4,605,844, Cl. 235-380.000.
AT&T Teletype Corporation: *See—*
Blanchard, Robert C.; and Geis, David G., 4,605,323, Cl. 400-124.000.
Atlantic Richfield Company: *See—*
Le-Khac, Bi, 4,605,700, Cl. 525-73.000.
Mazurek, Harry, 4,605,807, Cl. 585-517.000.
Senese, Frank J.; and Baillie, Lloyd A., 4,604,893, Cl. 73-49.200.
Au, Andrew T., to Dow Chemical Company, The. Acyl derivatives of tris-hydroxy-ethyl-perhydro-1,3,5-triazine. 4,605,737, Cl. 544-215.000.
Aubrey, Kenneth R., to Cubic Western Data. Easy access ticket transport. 4,605,843, Cl. 235-33.000.
Audenard, Bernard: *See—*
Marini, Jean; and Audenard, Bernard, 4,605,924, Cl. 340-683.000.
Augat Inc.: *See—*
Stokoe, Philip T., 4,605,256, Cl. 294-99.200.
Auld, David L.; and Waugh, Robert E., to D. L. Auld Company, The. Decorative emblems. 4,605,575, Cl. 428-14.000.
Automation, Inc.: *See—*
Wales, R. Langdon; and Crowley, H. W., 4,605,083, Cl. 177-122.000.
Automation Industries, Inc.: *See—*
Burns, Edgar, 4,605,271, Cl. 339-45.00M.
Autote, Alexander J.: *See—*
Haas, David J.; and Autote, Alexander J., 4,605,246, Cl. 282-29.00A.
AVA International Corp.: *See—*
Akkerman, Neil H., 4,605,064, Cl. 166-237.000.
Avery, Dennis. Tile cleaning device for removing calcium build-up in pools. 4,604,766, Cl. 15-50.00C.
Avila, Robert M.; and Hoffman, Glenn A., Jr. Punch press. 4,604,930, Cl. 83-527.000.
Baarse, Dick, to Saturn Limited. Safety device, in particular for an overhead door. 4,604,828, Cl. 49-322.000.
Baba, Yoshio; and Tsuchida, Shin, to Sumitomo Light Metal Industries, Ltd. Aluminum alloy forming sheet and method for producing the same. 4,605,448, Cl. 148-11.50A.
Babcock-Hitachi Kabushiki Kaisha: *See—*
Kamiguchi, Taiji; Yamada, Mutsuo; Arikawa, Yoshijiro; Kuwahara, Takanori; Tanimoto, Hirotoshi; Nishimura, Yasuyuki; and Kaku, Hiroyuki; 4,605,776, Cl. 568-401.000.
Babcock & Wilcox Company, The: *See—*
Knudsen, James K.; Koller, Allen C.; Skuratovsky, Eugene; and Thomas, Gary S., 4,604,900, Cl. 73-716.000.
Weber, Lee A., 4,605,033, Cl. 137-84.000.
Bach, Lloyd G.; Myers, Lawrence R.; and Gaiser, Robert F., to Allied Corporation. Brake booster. 4,604,870, Cl. 60-551.000.
Badin Crouzet: *See—*
Gohin, Christian; and Leblond, Henri, 4,604,898, Cl. 73-701.000.
Baggen, Constant P. M. J., to U.S. Philips Corporation. Error-correcting method and apparatus for the transmission of word-wise organized data. 4,606,026, Cl. 371-39.000.
Bahl, Hubert: *See—*
Andersch, Wolfram; Bahl, Hubert; and Gottschalk, Gerhard, 4,605,620, Cl. 435-148.000.
Baillie, Lloyd A.: *See—*
Senese, Frank J.; and Baillie, Lloyd A., 4,604,893, Cl. 73-49.200.
Baker, Maurice G., to Imperial Chemical Industries, PLC. Catalyst, production and use. 4,605,714, Cl. 526-125.000.
Baker Oil Tools, Inc.: *See—*
Klumpyan, Joseph N.; and Ross, Richard J., 4,605,062, Cl. 166-127.000.
Ross, Richard J., 4,605,063, Cl. 166-216.000.
Baker, Rodney C.; and van Rensburg, Philippus J., to AECI Limited. Insecticidal grooming article. 4,604,971, Cl. 119-86.000.
Balasubramanyan, Sugavanam; and Shephard, Margaret C., to Imperial Chemical Industries PLC. α-Benzyl-α-triazolyl pinacolone compounds. 4,605,747, Cl. 548-262.000.
Balazs, Endre A.; and Leshchiner, Adolf, to Biomatrix, Inc. Cross-linked gels of hyaluronic acid and products containing such gels. 4,605,691, Cl. 524-27.000.
Baldwin, Roger A.: *See—*
Kauffman, Jim W.; Laughlin, William C.; and Baldwin, Roger A., 4,605,421, Cl. 44-1.00F.
Balinsky, George J.; Biceroglu, Omer; and Lin, Joe S., to Exxon Research and Engineering Co. Process for the hydrogenation of aromatic hydrocarbons. 4,605,490, Cl. 208-143.000.
Ballantine, James A.; Gregory, Reginald; Purnell, John H.; Thomas, John M.; and Westlake, David J., to British Petroleum Company p.l.c., The. Proton-catalyzed reactions catalyzed by hydrogen ion-exchanged layered clays. 4,605,806, Cl. 585-467.000.
Baltes, Herbert: *See—*
Litterer, Heinz; Wunder, Friedrich; Leupold, Ernst I.; and Baltes, Herbert, 4,605,809, Cl. 585-640.000.
Banks, Robert L., to Phillips Petroleum Company. Allene or alkyne treatment of olefin conversion catalysts. 4,605,810, Cl. 585-646.000.
Barbeau, Dennis E., to Teledyne Industries, Inc. Self-contained turbine engine lubrication system. 4,605,101, Cl. 184-6.110.
Barbosa, Joseph A.: *See—*
Cooper, Ellis D., 4,604,935, Cl. 84-1.010.
Bardonner, Hans: *See—*
Reiff, Friedrich; Hartner, Hartmut; Basedow, Arno; Hugenbusch, Hans-Wolfgang; Schmidt, Peter C.; and Bardonner, Hans, 4,605,794, Cl. 568-852.000.
Barfield, Virgil H. Method and apparatus for controlling borehole pressure in perforating wells. 4,605,074, Cl. 175-4.520.
Barnes, Bruce L. Briquet starter and outdoor stove. 4,604,986, Cl. 126-25.00B.
Barnes, James M.; and Betz, Werner, to Bayer Aktiengesellschaft. Process for the production of polyetherester polyols and the products and use thereof. 4,605,729, Cl. 528-301.000.
Barnett, William W.: *See—*
Van Steenwyk, Robert A.; and Barnett, William W., 4,605,560, Cl. 424-195.100.
Barnoff, Robert M.; and Nagle, Gordon A. Continuous, precast, prestressed concrete bridge deck panel forms, precast parapets, and method of construction. 4,604,841, Cl. 52-174.000.
Baron, Arthur L.; and Sivaramakrishnan, Parameswar, to Mobay Corporation. Preparation of bis(4-hydroxyphenyl thio)benzenes. 4,605,774, Cl. 568-48.000.
Barr, John D.; and Lamb, Haydn R., to NL Industries, Inc. Drill bit manufacturing method. 4,605,157, Cl. 228-132.000.
Barth, Hermann: *See—*
Kahn, Klaus-Dieter; Kuehne, Friedrich; and Barth, Hermann, 4,606,042, Cl. 375-2.100.
Bartholomew, Roy E., to Allied Corporation. Three way check valve. 4,605,262, Cl. 303-84.00A.
Barton, Harold A., to Owens-Illinois, Inc. Carton divider with positioning means. 4,605,158, Cl. 229-15.000.
Bartzick, Gunter; Buhne, Gerd; and Naydowski, Reinhard, to Hoesch Aktiengesellschaft. Device for the compensating storage of packing band in packaging machines. 4,605,178, Cl. 242-55.000.
Baru, Jury A.: *See—*
Kravchenko, Jury B.; Baru, Jury A.; Osyatinsky, Saul G.; Timoshin, Jury V.; Makogon, Anatoly I.; Lobas, Igor P.; Gasilovsky, Kim S.; Livshits, Inna Z.; and Besedin, Alexei N., 4,605,089, Cl. 181-114.000.
Barwig, Manfred: *See—*
Kruger, Tilmann; Potthof, Erwin; and Barwig, Manfred, 4,606,058, Cl. 377-39.000.
Basedow, Arno: *See—*
Reiff, Friedrich; Hartner, Hartmut; Basedow, Arno; Hugenbusch, Hans-Wolfgang; Schmidt, Peter C.; and Bardonner, Hans, 4,605,794, Cl. 568-852.000.
BASF Aktiengesellschaft: *See—*
Mitulla, Konrad; Hambrecht, Juergen; Echte, Adolf; Swoboda, Johann; Siebel, Peter; Schwaab, Josef; and Frank, Herbert, 4,605,699, Cl. 525-67.000.
BASF Corporation: *See—*
Christman, Donald L., 4,605,725, Cl. 528-77.000.
Schmidt, Douglass N.; Finnan, Jeffrey L.; and Lisa, Rudolph E., 4,605,666, Cl. 514-474.000.
Bastian, Donald G.; and Slepicka, Gregory L., to Harris Graphics Corporation. Quick change rotary punch. 4,604,931, Cl. 83-665.000.
Bath, Hubert M.: *See—*
Gwozdz, Peter S.; and Bath, Hubert M., 4,605,470, Cl. 156-643.000.

Bausch & Strobel Maschinenfabrik GmbH & Co.: *See—*
Bausch, Wilhelm L.; Strobel, Rolf; Bullinger, Siegfried; Harlass, Harald; and Busch, Walter, 4,605,047, Cl. 141-83.000.

Bausch, Wilhelm L.; Strobel, Rolf; Bullinger, Siegfried; Harlass, Harald; and Busch, Walter, to Bausch & Strobel Maschinenfabrik GmbH & Co. Filling device for bulk material, especially liquids. 4,605,047, Cl. 141-83.000.

Baxter, Gordon D., to Northern Telecom Limited. Method for forming insulating electrical conductor. 4,605,525, Cl. 264-40.500.

Baxter Travenol Laboratories, Inc.: *See—*
Bilstad, Arnold C.; Brown, Richard I.; and Kruger, Robert J., 4,605,503, Cl. 210-651.000.

Bayer Aktiengesellschaft: *See—*
Barnes, James M.; and Betz, Werner, 4,605,729, Cl. 528-301.000.
Fischer, Wolfgang; Klein, Gerhard; Hombach, Rudoph; and Kniege, Wilfried, 4,605,703, Cl. 525-157.000.
Grogler, Gerhard; Kopp, Richard; and Hess, Heinrich, 4,605,756, Cl. 560-351.000.
Heitz, Walter; and Koch, Wolfgang, 4,605,713, Cl. 525-537.000.
Heitz, Walter; and Koch, Wolfgang, 4,605,732, Cl. 528-388.000.

Bayrisches Druckgusswerk Thurner GmbH & Co. KG: *See—*
Thurner, Hans, 4,605,170, Cl. 239-444.000.

BCIRA: *See—*
Morley, John G., 4,605,052, Cl. 164-16.000.

Beam, Tony D. Cover member for rain gutters. 4,604,837, Cl. 52-12.000.

Beaman, Franklin D. Portable news-gathering cassette recorder having microphone talk-over capability. 4,605,975, Cl. 360-62.000.

Becatti, Jorge. Classification screen. 4,605,496, Cl. 209-394.000.

Bechtold, Thomas E.: *See—*
Goodrum, Richard W.; Bechtold, Thomas E.; and Klimek, Albert A., 4,605,123, Cl. 206-0.500.

Beck, Jean-Paul: *See—*
Schummer, Arthur; de la Hamette, Jean; Lessel, Guy; Beck, Jean-Paul; and Frantz, Armand, 4,605,449, Cl. 148-12.00B.

Beck, Theodore R., to Rohrback Technology Corporation. Electrochemical system with rotating electrode/sparger assembly. 4,605,626, Cl. 435-291.000.

Becker, Gert, to Overbeck GmbH & Co. Process and apparatus for producing consecutive packages for drinking straws or the like. 4,604,852, Cl. 53-444.000.

Beckman Industrial Corporation: *See—*
Fiedler, Robert A., 4,605,984, Cl. 361-220.000.

Beckman Instruments, Inc.: *See—*
Naisuler, Alan C., 4,605,920, Cl. 340-347.0NT.

Becor Western Inc.: *See—*
Lang, David M.; and Lewitzke, Richard W., 4,605,257, Cl. 296-26.000.

Becton, Dickinson and Company: *See—*
Wilner, Leslie B., 4,605,919, Cl. 338-2.000.

Beene, James R.; and Bemis, Curtis E., Jr., to United States of America, Energy. Device for frequency modulation of a laser output spectrum. 4,606,031, Cl. 372-28.000.

Beg, Mirza R.; and Perl, Julius, to Imaging Technology Incorporated. Image processing-system. 4,606,065, Cl. 382-18.000.

Beissel, Timothy J.: *See—*
Helmly, Paul K., Jr.; Forster, Fred D., Jr.; Gower, Patrick E.; Holdaway, Steven D.; Tutman, Stanley W.; Beissel, Timothy J.; Needham, Robert J.; and Lasky, Arthur J., 4,605,081, Cl. 177-25.000.

Bell & Howell: *See—*
Zemke, Edward H., deceased; Guenther, Kenneth L.; and Warden, Gerald D., 4,604,849, Cl. 53-266.00A.

Bellina, Joseph H. Laser surgery drape. 4,604,998, Cl. 128-132.00D.

Bemis, Curtis E., Jr.: *See—*
Beene, James R.; and Bemis, Curtis E., Jr., 4,606,031, Cl. 372-28.000.

Benelli Armi S.p.A.: *See—*
Benelli, Paolo, 4,604,942, Cl. 89-185.000.

Benelli, Paolo, to Benelli Armi S.p.A. Bolt assembly with a rotating locking bolt head and a floating bolt element for automatic firearms. 4,604,942, Cl. 89-185.000.

Benko, David A.; Mowdood, Syed K.; Sandstrom, Paul H.; Waddell, Walter H., III; and Wideman, Lawson G., to Goodyear Tire & Rubber Company, The. Enhanced adhesion of rubber to reinforcing materials through the use of phenolic esters. 4,605,696, Cl. 524-432.000.

Bennett, Phil D.: *See—*
Marse, Allen V.; Bennett, Phil D.; and Boos, Donald L., 4,605,989, Cl. 361-433.000.

Bennett, Tommy J.: *See—*
Shih, Hung-Dah; and Bennett, Tommy J., 4,605,469, Cl. 156-610.000.

Benson, Joseph B.: *See—*
Weber, Kathleen; and Benson, Joseph B., 4,604,773, Cl. 24-71.200.

Bentz, Willy; Gansert, Willi; Jakob, Gert; Stammler, Kurt; and Walter, Christoph, to Robert Bosch GmbH. Cooled electrical circuit component, particularly switching-type semiconductor. 4,605,986, Cl. 361-386.000.

Berghagen, Nils. Shutter arrangement for use in intra-oral radiography. 4,606,063, Cl. 378-41.000.

Bergman, Roger W., to Dow Chemical Company, The. O- and S-(2-mercaptoalkyl)- mono- or dihydrocarbyl carbamothioates and S-(2-mercaptoalkyl)mono- or dihydrocarbyl carbamodithioates. 4,605,519, Cl. 558-234.000.

Berkowitz, Joseph; Ruscic, Branko M.; and Greene, John P., to United States of America, Energy. Vacuum ultraviolet laser. 4,606,030, Cl. 372-5.000.

Bernardi, Roberto, to Farmaco Italiano Padil S.r.l. Compositions based on vegetable fibre and lactulose. 4,605,646, Cl. 514-53.000.

Bernath, Gabor; Kobor, Jeno; Folop, Ferenc; Sohajda, Attila; Kalman, Alajos; Ezer, Elemer; Hajos, Gyorgy; Palosi, Eva; Denes, Laszlo ; and Szporny, Laszlo , to Richter Gedeon Vegyeszeti Gyar R.T. 1-(hydroxymethyl)-1,6,7,11b-tetrahydro-2H,4H-[1,3]oxazino- or -thiazino-[4,3-a]isoquinoline derivatives and pharmaceutical compositions containing them. 4,605,653, Cl. 514-226.000.

Berrebi, Georges, to Europeenne de Retraitement de Catalyseurs. Apparatus for the transportation and heating of granulated materials. 4,605,371, Cl. 432-134.000.

Berry, Gordon C.: *See—*
McKernan, Thomas J.; and Berry, Gordon C., 4,605,266, Cl. 312-219.000.

Berson, Marceau: *See—*
Pourcelot, Leandre; Fleury, Gerard; and Berson, Marceau, 4,605,009, Cl. 128-660.000.

Bertoye, Andre G.: *See—*
Lemoir, Jeannine; Bertoye, Andre G.; and Bertoye, Renee, 4,605,305, Cl. 356-246.000.

Bertoye, Renee: *See—*
Lemoir, Jeannine; Bertoye, Andre G.; and Bertoye, Renee, 4,605,305, Cl. 356-246.000.

Besedin, Alexei N.: *See—*
Kravchenko, Jury B.; Baru, Jury A.; Osyatinsky, Saul G.; Timoshin, Jury V.; Makogon, Anatoly I.; Lobas, Igor P.; Gasilovsky, Kim S.; Livshits, Inna Z.; and Besedin, Alexei N., 4,605,089, Cl. 181-114.000.

Bessinger, Walter L.; and Rutledge, Jerry D., to Knape & Vogt Manufacturing Company. Drawer slide bumper. 4,605,265, Cl. 384-20.000.

Bestenreiner, Friedrich; Boie, Immo; and Helmberger, Josef, to Agfa-Gevaert Aktiengesellschaft. Method of and arrangement for adjusting color saturation in a video printer. 4,605,954, Cl. 358-27.000.

Betz, Werner: *See—*
Barnes, James M.; and Betz, Werner, 4,605,729, Cl. 528-301.000.

Beuther, Harold; Kibby, Charles L.; Kobylinski, Thaddeus P.; and Pannell, Richard B., to Chevron Research Company. Conversion of synthesis gas to diesel fuel and gasoline. 4,605,680, Cl. 518-715.000.

Bezborodov, Vladimir S.; Konovalov, Viktor A.; Ptashnikov, Jury L.; Astafiev, Vladimir M.; Minko, Anatoly A.; Dudarchik, Anatoly I.; Zanegina, Galina A.; and Poimanov, Anatoly M., to Nauchno-Issledovatelsky Institut Prikladnykh Problem Imeni A.N. Sevchenko. Liquid crystal composition for electrooptical devices for presentation of information. 4,605,510, Cl. 252-299.660.

Bezborodov, Vladimir S.; Konovalov, Viktor A.; and Ptashnikov, Jury L., to Nauchno-Issledovatelsky Institut Prikladnykh Fizicheskikh Problem Imeni A.N. Sevchenko. Liquid crystal 4-(4'-cyanodiphenyl) esters of trans-4''-N-alkylocyclohex-2-enecarboxylic acids. 4,605,520, Cl. 558-414.000.

Bhattacharya, Apurba, to Merck & Co., Inc. Preparation of an enantiomer of a substituted fluorenyloxyacetic acid. 4,605,760, Cl. 562-461.000.

Biber, Klaus: *See—*
Lang, Walter H.; Biber, Klaus; Lemcke, Ulrich; and Sander, Ulrich, 4,605,287, Cl. 350-513.000.

Biceroglu, Omer: *See—*
Balinsky, George J.; Biceroglu, Omer; and Lin, Joe S., 4,605,490, Cl. 208-143.000.

Biddle, Ronald A., to Dowty Meco Limited. Scraper chain conveyor. 4,605,122, Cl. 198-834.000.

Billig, Ernst; and Stanton, David B., to Union Carbide Corporation. Reactivation of rhodium complex hydroformylation catalysts. 4,605,780, Cl. 568-454.000.

Bilstad, Arnold C.; Brown, Richard I.; and Kruger, Robert J., to Baxter Travenol Laboratories, Inc. Single needle blood fractionation system having adjustable recirculation through filter. 4,605,503, Cl. 210-651.000.

Binnig, Gerd; Gerber, Christoph; Rohrer, Heinrich; and Weibel, Edmund, to International Business Machines Corporation. High-performance vibration filter. 4,605,194, Cl. 248-559.000.

Biogen N.V.: *See—*
Schaller, Heinz E.; and Pfaff, Eberhard P., 4,605,512, Cl. 260-112.005.

Biological & Environmental Control Laboratories, Inc.: *See—*
Kulla, James P.; and Huff, Norman J., 4,605,564, Cl. 427-2.000.

Biomatrix, Inc.: *See—*
Balazs, Endre A.; and Leshchiner, Adolf, 4,605,691, Cl. 524-27.000.

BioResearch Inc.: *See—*
Kurtz, Leonard D.; and LiCausi, Joseph M., 4,605,400, Cl. 604-319.000.

Bird Machine Company, Inc.: *See—*
Flynn, Peter J., 4,605,495, Cl. 209-211.000.

Birlmeier, Josef; Eberlein, Klaus; and Nagler, Werner, to Siemens Aktiengesellschaft. Circuit arrangement for telecommunication exchange systems, particularly telephone exchange systems with switch facilities for emitting signals. 4,605,824, Cl. 179-18.0HB.

Biscione, Mario: *See—*
DeFilippis, Pietro; Salvatore, Amedeo; and Biscione, Mario, 4,605,277, Cl. 339-262.00R.

Bishop, Joseph I. Ladder base swivel with a through water channel. 4,605,096, Cl. 182-51.000.

Bjornberg, Arne; Martensson, Ulf S.; and Paulsson, Karin M., to Boliden Aktiebolag. Method for producing selenium salts. 4,605,544, Cl. 423-508.000.

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Blumenthal, Oreste. Spectacle frame with resilient hinges. 4,605,293, Cl. 351-153.000.

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Mookherjee, Braja D.; Trenkle, Robert W.; Wolff, Robin K.; Boden, Richard M.; and Yoshida, Takao, 4,605,793, Cl. 568-820.000.

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Andrews, George S., 4,605,934, Cl. 343-895.000.
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Simpson, Frederick H.; and Verzemnieks, Juris, 4,605,588, Cl. 428-288.000.
Stephenson, Martin F., 4,605,187, Cl. 244-216.000.

Boella, Marcello; and Mariotti, Ferruccio, to Ing. C. Olivetti & C., S.p.A. Arrangement for controlling the speed and positioning of an electric motor. 4,605,887, Cl. 318-594.000.

Bohlen, Peter; Brazeau, Paul E.; Esch, Frederick S.; Ling, Nicholas C.; and Wehrenberg, William B., to Salk Institute for Biological Studies, The. Ovine GRF. 4,605,643, Cl. 514-12.000.

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van Baardewijk, Johannes; Hartman, Johan E. A.; and Bohlmeyer, Nicolaas, 4,606,057, Cl. 377-28.000.

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Bestenreiner, Friedrich; Boie, Immo; and Helmberger, Josef, 4,605,954, Cl. 358-27.000.

Boliden Aktiebolag: *See—*
Bjornberg, Arne; Martensson, Ulf S.; and Paulsson, Karin M., 4,605,544, Cl. 423-508.000.

Bolin, David R.; Meienhofer, Johannes A.; and Sytwu, Iou-Iou, to Hoffmann-La Roche Inc. Synthetic vasoactive intestinal peptide analogs. 4,605,641, Cl. 514-12.000.

Bollinger, Dwight A.: *See—*
Elliott, Martin R.; Bollinger, Dwight A.; Curry, Kris B.; and Plocik, Daniel C., 4,604,934, Cl. 83-880.000.

Bonaccorso, Francesco. Hydrostatic roller bearing. 4,605,317, Cl. 384-101.000.

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Bonn, Matthew A., to Advanced Micro Devices, Inc. Method of fabricating integrated circuit structure having CMOS and bipolar devices. 4,604,790, Cl. 29-576.00B.

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Boos, Donald L.: *See—*
Marse, Allen V.; Bennett, Phil D.; and Boos, Donald L., 4,605,989, Cl. 361-433.000.

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Matolosy, Gyorgy; Bordas, Barna; Gimesi, Antal; Kovacs nee Kalman, Magdolna; and Tuske, Marton, 4,605,764, Cl. 564-209.000.

Borg-Warner Corporation: *See—*
Ribbens, William B., 4,606,005, Cl. 364-431.010.

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Born, Gustav V. R.: *See—*
Kratzer, Michael; and Born, Gustav V. R., 4,604,894, Cl. 73-64.100.

Borruso, Rose M.: *See—*
Russel, Matthew J.; and Borruso, Rose M., 4,605,298, Cl. 355-3.0TR.

Bost, James: *See—*
Penrice, Thomas W.; and Bost, James, 4,605,599, Cl. 428-665.000.

Bottger, Friedrich, to G. Siempelkamp GmbH & Co. Apparatus for producing steam hardened pressedboard. 4,605,467, Cl. 156-497.000.

Bourassa, Ronald R., to Inmos Corporation. Process for fabricating polysilicon resistor in polycide line. 4,604,789, Cl. 29-576.00C.

Bourdier, Brigitte E.: *See—*
Bourdier, Jean-Claude; Bourdier, Frederic G.; Bourdier, Brigitte E.; and Bourdier, Claude H., 4,605,294, Cl. 353-28.000.

Bourdier, Claude H.: *See—*
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Bourdier, Frederic G.: *See—*
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Bourdier, Jean-Claude; Bourdier, Frederic G.; Bourdier, Brigitte E.; and Bourdier, Claude H. Composite optical display method and related apparatus. 4,605,294, Cl. 353-28.000.

Bourne, Henry A.: *See—*
McClaflin, Gifford G.; Bourne, Henry A.; and Whitfill, Donald L., 4,605,069, Cl. 166-310.000.

Bowman, J. Robert; and Pinkham, Eleanor T., to Globe Manufacturing Company. Firefighter's suit with waterproof collar. 4,604,759, Cl. 2-81.000.

Bowman, Wayne C.; Malik, Randhir S.; Seidel, Harold; Suiter, Weyman B., Jr.; and Ziesse, Norman G., to AT&T Bell Laboratories. Self-oscillating high frequency power converter. 4,605,999, Cl. 363-19.000.

Bowytz, Steven H. Double-faced adhesive tape securing system and method of using same. 4,605,577, Cl. 428-40.000.

Boyadjieff, George I., to Varco International, Inc. Top drive drilling systems. 4,605,077, Cl. 175-85.000.

Boyd, Stephen A.: *See—*
Pinnavaia, Thomas J.; Mortland, Max M.; and Boyd, Stephen A., 4,605,621, Cl. 435-177.000.

Boyd, Winnett. Brake actuator for bicycles and the like. 4,605,110, Cl. 192-5.000.

Boyer, Chantal; Colleter, Jean C.; Creuzet, Marie-Helene; Feniou, Claude; Laguerre, Michel; Pontagnier, Henri; and Prat, Gisele, to Societe Cortial. 1-cycloalkylamino-3-t-butylamino-2-propanols, a method of preparing the same, and a method of use thereof. 4,605,768, Cl. 564-461.000.

Boyer, Jon A.: *See—*
Remington, John L.; and Boyer, Jon A., 4,604,838, Cl. 52-73.000.

BP Chemicals Limited: *See—*
Green, Michael J., 4,605,769, Cl. 564-477.000.
Samson, John N. R., 4,605,808, Cl. 585-525.000.

Bracht, Roger R.: *See—*
Verboom, Johannes J.; and Bracht, Roger R., 4,606,016, Cl. 369-54.000.

Brake, Loren D., to Du Pont de Nemours, E. I., and Company. Catalytic preparation of dimethyl ether. 4,605,788, Cl. 568-698.000.

Brandenstein, Manfred; and Haas, Roland, to SKF Kugellagerfabriken GmbH. Clutch release, in particular for automobile clutches. 4,605,113, Cl. 192-98.000.

Brandenstein, Manfred; Haas, Roland; and Hans, Rudiger, to SKF Kugellagerfbriken GmbH. Roller bearing for seating a pedal bearing shaft. 4,605,321, Cl. 384-512.000.

Braslau, Norman, to International Business Machines Corporation. Contactless measurement of electrical properties of wafer shaped materials. 4,605,893, Cl. 324-58.50B.

Braun Aktiengesellschaft: *See—*
Ullmann, Roland; and Heintke, Hans E., 4,604,801, Cl. 30-43.920.

Braun, Dave W.: *See—*
Debroy, Tapan K.; Braun, Dave W.; and Chung, Ding-Yu, 4,605,690, Cl. 523-414.000.

Brazeau, Paul E.: *See—*
Bohlen, Peter; Brazeau, Paul E.; Esch, Frederick S.; Ling, Nicholas C.; and Wehrenberg, William B., 4,605,643, Cl. 514-12.000.

Breedis, John F.: *See—*
Knorr, David B.; and Breedis, John F., 4,605,532, Cl. 420-472.000.

Brenman, Henry S.: *See—*
Katz, Philip; Brenman, Henry S.; Hamarman, Henry; and Schwartz, Harold, 4,605,927, Cl. 340-825.190.

Brennan, James A.; Chester, Arthur W.; and Chu, Yung-Feng, to Mobil Oil Corporation. Separation of catalyst from slurry bubble column wax and catalyst recycle. 4,605,678, Cl. 518-700.000.

Breton, Claude: *See—*
Ninane, Leon; Breton, Claude; and Guerdon, Constant, 4,605,771, Cl. 564-497.000.

Briden, Frank C., to Diamond Shamrock Chemicals Company. Polyfunctional aziridines for use in crosslinking applications. 4,605,698, Cl. 524-559.000.

Bridgestone Corporation: *See—*
Iida, Kazuyoshi; Mizuno, Keiichiro; Yamaguchi, Michiyuki; and Kondo, Kazuo, 4,605,091, Cl. 181-224.000.

Bright Of America, Inc.: *See—*
McIntosh, Edwin J., 4,605,292, Cl. 350-641.000.

Briley, Mike: *See—*
Cousse, Henri; Mouzin, Gilbert; Rieu, Jean-Pierre; Briley, Mike; and Stenger, Antoine, 4,605,654, Cl. 514-237.000.

Brinker, Sheridan F. Continuous pivoted spacing tie. 4,604,845, Cl. 52-696.000.

Bristol-Myers Company: *See—*
Yevich, Joseph P.; and Lobeck, Walter G., Jr., 4,605,655, Cl. 514-252.000.

British Petroleum Company p.l.c., The: *See—*
Ballantine, James A.; Gregory, Reginald; Purnell, John H.; Thomas, John M.; and Westlake, David J., 4,605,806, Cl. 585-467.000.
Brivio, Lodovico R.: *See—*
De Bastiani, Giovanni; Brivio, Lodovico R.; Aldegheri, Roberto; and Faccioli, Giovanni, 4,604,997, Cl. 128-92.00A.
Broer, Dirk J.; and Vriens, Leendert, to U.S. Philips Corporation. Optical recording disc. 4,606,017, Cl. 369-275.000.
Broslaw, Edwin, to Crest-Foam Corporation. Polymeric buns and method and apparatus for its manufacture. 4,605,683, Cl. 521-99.000.
Brotherton, Stanley D.; Gill, Audrey; and King, Michael J., to U.S. Philips Corporation. Methods of manufacturing semiconductor devices. 4,605,447, Cl. 148-1.500.
Broughton, Christopher D., to Motorola, Inc. Disable circuit for a phase locked loop discriminator circuit. 4,605,908, Cl. 331-8.000.
Brouwers, Sytze; Bruhmann, Werner; and Kuschmierz, Heinz, to Robert Bosch GmbH. Speed governor for fuel injection pumps. 4,604,978, Cl. 123-374.000.
Brown, Allan H. G.: *See—*
Chater, Izak; and Brown, Allan H. G., 4,605,350, Cl. 411-75.000.
Brown, Kenneth W., to Welding Institute, The. Chuck assembly. 4,605,151, Cl. 228-2.000.
Brown, Marvin R.: *See—*
Rivier, Catherine L.; Rivier, Jean E. F.; Vale, Wylie W., Jr.; and Brown, Marvin R., 4,605,642, Cl. 514-12.000.
Brown, Richard I.: *See—*
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Bruhmann, Werner: *See—*
Brouwers, Sytze; Bruhmann, Werner; and Kuschmierz, Heinz, 4,604,978, Cl. 123-374.000.
Bruneau, Alain, to Alpia S.A. Anti-fail device for locking a drawing-board pillar against motion. 4,605,189, Cl. 248-162.100.
Brunelle, Daniel J.; and Singleton, Daniel A., to General Electric Company. N-neopentyl-4-diorganoamino pyridinium compounds. 4,605,745, Cl. 546-304.000.
Brustle, Klaus: *See—*
Rock, Erich; Brustle, Klaus; and Rupprechter, Helmut, 4,604,769, Cl. 16-238.000.
Bryant, Malcolm E.: *See—*
Camm, Samuel A.; and Bryant, Malcolm E., 4,605,380, Cl. 446-14.000.
BTR plc.: *See—*
Grey, Peter J.; and Gardner, Kevin, 4,605,681, Cl. 521-51.000.
Buchman, Ouri; and Pri-Bar, Ilan, to State of Israel, Prime Minister's Office, Atomic Energy Commission. Production of aldehydes. 4,605,749, Cl. 549-70.000.
Buckley, Alan: *See—*
Deeg, Martin H. G.; Gillberg-LaForce, Gunilla E.; and Buckley, Alan, 4,605,573, Cl. 427-424.000.
Budra Research Ltd.: *See—*
Rao, Dandina N., 4,604,988, Cl. 126-360.00A.
Buehl, Arnold L., to Slyman Manufacturing Corporation. Radiant burner. 4,605,369, Cl. 431-328.000.
Buehler, John D.; Medal, Hans J.; and Rhoa, Gregory A., to William H. Rorer, Inc. Dry oil coated antacid process. 4,605,551, Cl. 424-38.000.
Buhne, Gerd: *See—*
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Build-A-Sign, Inc.: *See—*
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Bukovitz, Ronald F.; and Vliet, Walter C., to Ingersoll-Rand Company. Carriage feed system. 4,605,078, Cl. 175-162.000.
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Bullinger, Siegfried: *See—*
Bausch, Wilhelm L.; Strobel, Rolf; Bullinger, Siegfried; Harlass, Harald; and Busch, Walter, 4,605,047, Cl. 141-83.000.
Bullitt, Julian G., to Polaroid Corporation. Image-receiving element with crosslinked hydrophilic polymer containing processing composition. 4,605,608, Cl. 430-206.000.
Bullivant, Roger A., to Roger Bullivant of Texas, Inc. Situ pile construction in ground liable to uplift. 4,605,339, Cl. 405-237.000.
Burandt, Wesley A., to Sundstrand Corporation. Integrated power drive and power transfer system. 4,605,358, Cl. 417-236.000.
Burgess, Lester E.; McGarry, Phillip E.; and Herman, David E., to Sohio Alternate Energy Development Co. Multistream, multiproduct, pressure manipulation beneficiation arrangement. 4,605,494, Cl. 209-166.000.
Burkhart, Richard P.; and Gemperle, Edward C., to Drackett Company, The. Wringer mop. 4,604,767, Cl. 15-119.00A.
Burlington Industries, Inc.: *See—*
Pritchard, Frederick D.; and Pittard, John E., 4,605,310, Cl. 366-142.000.
Burndy Corporation: *See—*
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Burnham, Robert D.: *See—*
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Burns, Edgar, to Automation Industries, Inc. Remote quick disconnect for breech-lok. 4,605,271, Cl. 339-45.00M.
Burns, Michael E.: *See—*
Corkill, John M.; Madison, Bryan L.; and Burns, Michael E., 4,605,509, Cl. 252-131.000.
Burns, Richard H., to Rockwell International Corporation. Coherent light vergence varying apparatus. 4,605,290, Cl. 350-619.000.
Burroughs Corporation: *See—*
Perloff, Ronald S., 4,606,056, Cl. 375-110.000.
Vallance, Leslie, 4,604,929, Cl. 83-524.000.
Burton, Guy C., Jr., to Burton, ReJane M., a part interest. Method and apparatus for completing well. 4,605,067, Cl. 166-285.000.
Burton, James A.; Colvin, Kenneth W.; and Keithahn, Julian D., to Hydril Company. Annular blowout preventer packing unit. 4,605,195, Cl. 251-1.200.
Burton, ReJane M.: *See—*
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Busch, Edgar; and Albrecht, Ernst, to Pfaff Industriemaschinen GmbH. Feed drive for the work holder of a zig-zag sewing machine. 4,604,958, Cl. 112-443.000.
Busch, Lloyd E.: *See—*
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Butscher, Frank D.; and Gegan, Michael J., to United States of America, Navy. Nested microstrip arrays. 4,605,932, Cl. 343-700.0MS.
Butscher, Frank D., to United States of America, Navy. Extended bandwidth microstrip antenna. 4,605,933, Cl. 343-700.0MS.
Buzzelli, Edward S.: *See—*
Pollack, William; and Buzzelli, Edward S., 4,605,604, Cl. 429-116.000.
Cahalan, Patrick T.; Holmblad, Carolann M.; Pike, Robert W., Jr.; and Schultz, Eileen L., to Medtronic, Inc. Method for fabricating prosthesis material. 4,605,406, Cl. 623-1.000.
Cain Encoder Company: *See—*
Wason, Thomas D., 4,606,008, Cl. 364-560.000.
Calwag S.A.: *See—*
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Camco, Incorporated: *See—*
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Camlibel, Irfan; Chin, Aland K.; and Chin, Brymer H., to AT&T Bell Laboratories. Multiple wavelength light emitting devices. 4,605,942, Cl. 357-17.000.
Camm, Samuel A.; and Bryant, Malcolm E., to Camm, Samuel A. Heartbeat doll. 4,605,380, Cl. 446-14.000.
Campbell, Carl M., Jr., to VISA U.S.A. Inc. Key management system for on-line communication. 4,605,820, Cl. 178-22.090.
Campbell Soup Company: *See—*
Goldhahn, Stephen L., 4,604,948, Cl. 99-470.000.
Canadian General Electric Co., Ltd.: *See—*
Mark, James S., 4,605,925, Cl. 340-870.290.
Cannon Rug Company: *See—*
Gooldy, Thomas C.; and Sanford, Dock, 4,605,580, Cl. 428-92.000.
Cannondale Corporation: *See—*
Graham, David R., 4,605,241, Cl. 280-281.00R.
Cannone, Anthony G., to AT&T Bell Laboratories. Lead-acid battery having positive posts of lead-tin alloy. 4,605,605, Cl. 429-174.000.
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Fujiwara, Ryoji; and Shimizu, Isamu, 4,605,285, Cl. 350-357.000.
Iida, Fumio, 4,605,593, Cl. 428-352.000.
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Carl Schenale GmbH & Co. KG: *See—*
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Carl-Zeiss-Stiftung: *See—*
Lang, Walter H.; Biber, Klaus; Lemcke, Ulrich; and Sander, Ulrich, 4,605,287, Cl. 350-513.000.
Leitz, Helmut; and Rometsch, Gunter, 4,605,304, Cl. 356-138.000.
Carle, Pierre R., to Roussel Uclaf. Synergistic pesticidal compositions of (S)α-cyano-3-phenoxy-benzyl (1R,cis) 2,2-dimethyl-3-(2,2-dibromovinyl)-cyclopropane-1-carboxylate and (R,S) allethronyl d-trans chrysanthemate. 4,605,549, Cl. 424-18.000.
Carlson, Curtis R.: *See—*
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Carmien, Joseph A. Reinforced handle and method of making same. 4,605,254, Cl. 294-57.000.
Carp, Ralph W.; Weber, Robert E.; and Wright, Danny O. Analog duty cycle to BCD converter. 4,604,983, Cl. 123-571.000.
Carpentier, Alain, to Universite Pierre et Marie Curie Paris VI. Artificial cardiac valve with active opening. 4,605,408, Cl. 623-2.000.
Carre, Jean-Jacques; and Escarabajal, Ghislain, to Societe Anonyme D.B.A. Multi-disc brake. 4,605,103, Cl. 188-71.500.
Carreras, Michelle. Device for the automatic contactless measurement of the volume of a layer deposited on a substrate. 4,604,892, Cl. 73-37.500.
Carson Products Company: *See—*
de la Guardia, Mario; and Hendrix, Charles R., Jr., 4,605,018, Cl. 132-7.000.
Carsonite International Corporation: *See—*
Schmanski, Donald W.; and Landis, Scott, 4,605,204, Cl. 256-19.000.

Cartisano, Roberto: *See—*
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Cascade Corporation: *See—*
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Goldberg, Abraham A.; McMann, Renville H.; and Rossi, John P., 4,605,950, Cl. 358-11.000.
Cederquist, Karl N., to Sunds Defibrator AB. Method for wet combustion of organic material. 4,604,957, Cl. 110-238.000.
Celanese Corporation: *See—*
Choe, Eui W., 4,605,869, Cl. 307-425.000.
Deeg, Martin H. G.; Gillberg-LaForce, Gunilla E.; and Buckley, Alan, 4,605,573, Cl. 427-424.000.
Morgan, Michael E., 4,605,736, Cl. 536-114.000.
Nikles, David E.; Jones, R. Sidney, Jr.; and Kuder, James E., 4,605,607, Cl. 430-17.000.
Roth, Douglas D.; and Ethridge, Fredrick A., 4,605,364, Cl. 425-72.00S.
Tau, Kwoliang D., 4,605,781, Cl. 568-454.000.
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Mandoki, Jorge W., 4,605,762, Cl. 562-483.000.
Celmer, Walter D.; Cullen, Walter P.; Shibakawa, Riichiro; and Tone, Junsuke, to Pfizer Inc. Nocardia species capable of producing nargenicin C_1. 4,605,624, Cl. 435-253.000.
Centre National de la Recherche Scientifique: *See—*
Lenoir, Jeannine; Bertoye, Andre G.; and Bertoye, Renee, 4,605,305, Cl. 356-246.000.
Cerkanowicz, Anthony E., to Exxon Research and Engineering Co. Charge injection device. 4,605,485, Cl. 204-302.000.
Ceskoslovenska Akademie Ved.: *See—*
Holy , Antonin; and de Clercq, Erik, 4,605,658, Cl. 514-261.000.
Chadwick, Curt H.; and Desai, Anil A., to KLA Instruments Corporation. Apparatus for accurately positioning an object at each of two locations. 4,604,910, Cl. 74-96.000.
Chan, Wan-Kit: *See—*
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Chandler Evans Inc.: *See—*
Sundberg, Jack G.; and Haynes, Paul L., Jr., 4,605,235, Cl. 277-87.000.
Chang, Clarence D.; Landis, Michael E.; and Miale, Joseph N., to Mobil Oil Corporation. Hydrothermal activation of acid zeolites with aluminum phosphates. 4,605,637, Cl. 502-64.000.
Chang, Clarence D.; and Miale, Joseph N., to Mobil Oil Corporation. Acid-catalyzed organic compound conversion. 4,605,803, Cl. 585-408.000.
Chang, Clarence D.; and Miale, Joseph N., to Mobil Oil Corporation. Acid-catalyzed organic compound conversion. 4,605,804, Cl. 585-408.000.
Chang, Clarence D.; and Miale, Joseph N., to Mobil Oil Corporation. Acid-catalyzed organic compound conversion. 4,605,805, Cl. 585-415.000.
Chang, Wen-Hsuan: *See—*
Ambrose, Ronald R.; Chang, Wen-Hsuan; McKeough, David T.; and Peffer, John R., 4,605,724, Cl. 528-73.000.
Chard, Frederick W. Method and apparatus for editing the output of a television set. 4,605,964, Cl. 358-147.000.
Chater, Izak; and Brown, Allan H. G. Expansion shell. 4,605,350, Cl. 411-75.000.
Chattha, Mohinder S.; and Cassatta, Joseph C., to Ford Motor Company. Preparation of nonaqueous dispersions with the use of monofunctional stabilizer. 4,605,720, Cl. 524-504.000.
Chattler, Leo M., to DCM Industries, Inc. Line fault discriminator. 4,605,827, Cl. 179-175.30F.
Chemische Fabrik Stockhausen GmbH: *See—*
Chmelir, Miroslav; and Kunschner, Alois, 4,605,401, Cl. 604-368.000.
Landscheidt, Alfons, 4,605,740, Cl. 544-376.000.
Chen, Lih-Ji. Electric air preheater for an internal combustion engine. 4,605,837, Cl. 219-206.000.
Chen, Sen-Tsuen: *See—*
Winbow, Graham A.; and Chen, Sen-Tsuen, 4,606,014, Cl. 367-75.000.
Chenoweth, John S.: *See—*
Martin, Thomas F.; Storey, Robert W.; Schoenenberger, Carl F.; and Chenoweth, John S., 4,606,072, Cl. 455-4.000.
Chester, Arthur W.; Garwood, William E.; and Vartuli, James C., to Mobil Oil Corporation. Catalytic dewaxing of light and heavy oils in dual parallel reactors. 4,605,488, Cl. 208-78.000.
Chester, Arthur W.: *See—*
Brennan, James A.; Chester, Arthur W.; and Chu, Yung-Feng, 4,605,678, Cl. 518-700.000.
Chevron Research Company: *See—*
Beuther, Harold; Kibby, Charles L.; Kobylinski, Thaddeus P.; and Pannell, Richard B., 4,605,680, Cl. 518-715.000.
Dimpfl, William L., 4,605,535, Cl. 422-95.000.
Edwards, Laroy H., 4,605,657, Cl. 514-259.000.
Kobylinski, Thaddeus P.; Kibby, Charles L.; Pannell, Richard B.; and Eddy, Elizabeth L., 4,605,676, Cl. 518-700.000.
Kobylinski, Thaddeus P.; Kibby, Charles L.; Pannell, Richard B.; and Eddy, Elizabeth L., 4,605,679, Cl. 518-700.000.
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Tanaka, Tadao; Chikamori, Sunao; Harara, Mitsuhiko; Taniguchi, Yasutaka; Suzumura, Masanaga; Tatemoto, Minoru; Kumagai, Naotake; Abe, Hiroki; and Takizawa, Shozo, 4,605,244, Cl. 280-707.000.
Chin, Aland K.: *See—*
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Chin, Brymer H.: *See—*
Camlibel, Irfan; Chin, Aland K.; and Chin, Brymer H., 4,605,942, Cl. 357-17.000.
Chiu, Norman H.; and Schneider, David A., to General Electric Company. Over-temperature warning system for refrigerator appliance. 4,604,871, Cl. 62-130.000.
Chive, Maurice: *See—*
Ringeisen, Victor; Chive, Maurice; and Toutain, Serge, 4,605,012, Cl. 128-804.000.
Chlorine Engineers Corp., Ltd.: *See—*
Momose, Takashi; Tomiie, Kazuo; Harada, Hiroyuki; Miyachi, Hiroshi; and Kato, Hiroko, 4,605,685, Cl. 522-124.000.
Chmelir, Miroslav; and Kunschner, Alois, to Chemische Fabrik Stockhausen GmbH. Material for the absorption of water, aqueous solutions and aqueous body fluids. 4,605,401, Cl. 604-368.000.
Cho, Hidetsura: *See—*
Miyano, Seiji; Sumoto, Kunihiro; Satoh, Fumio; and Cho, Hidetsura, 4,605,662, Cl. 514-413.000.
Cho, Timothy C.; and Lohrey, Edwin J., to General Electric Company. Mounting structure for multi-filaments of an incandescent lamp. 4,605,877, Cl. 313-272.000.
Choe, Eui W., to Celanese Corporation. Polyacetylenic compositions. 4,605,869, Cl. 307-425.000.
Christ, Alfred: *See—*
Lehmann, Rolf; and Christ, Alfred, 4,605,366, Cl. 425-143.000.
Christenberry, S. Kent. Fishing lure holder. 4,604,822, Cl. 43-57.100.
Christensen, Vern L., to North Carolina State University. Increasing the efficiency of poultry production. 4,604,968, Cl. 119-1.000.
Christenson, Roger M.; Valko, Joseph T.; Plasynski, Joseph E.; and Scriven, Roger L., to PPG Industries, Inc. Cationic electrodepositable compositions containing formaldehyde scavenger. 4,605,478, Cl. 204-181.700.
Christie, Nick J.; Cox, Randall A.; James, Robert E.; and Stevenson, James C., to Diamond Shamrock Chemicals Company. Aftertreatment of dyed cellulosic materials. 4,605,418, Cl. 8-192.000.
Christman, Donald L., to BASF Corporation. Polyurethane sealant compositions and their use as thermal-break sealants. 4,605,725, Cl. 528-77.000.
Christopher, Todd J.; and Fling, Russell T., to RCA Corporation. Progressive scan television system with video compression exceeding display line rate. 4,605,962, Cl. 358-140.000.
Chrysler Corporation: *See—*
Dolan, Courtney F., 4,604,908, Cl. 74-15.880.
Chu, Pochen; and Kuehl, Guenter H., to Mobil Oil Corporation. Process for the preparation of alkyl tert-alkyl ethers. 4,605,787, Cl. 568-697.000.
Chu, Yung-Feng: *See—*
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Ciba-Geigy Corporation: *See—*
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Liauw, Hui L.; Oei, Howard H.; and Ku, Edmond C., 4,605,665, Cl. 514-431.000.
Maier, Ludwig, 4,605,434, Cl. 71-94.000.
Mueller, Karl F.; Lohmann, Dieter; and Falk, Robert A., 4,605,712, Cl. 525-474.000.
Puck, Alfred; and Voirol, Peter, 4,605,385, Cl. 464-181.000.
Spivack, John D.; and Ravichandran, Ramanathan, 4,605,692, Cl. 524-117.000.
Cincinnati Milacron Inc.: *See—*
Bone, Kendall F., 4,605,349, Cl. 409-141.000.
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Kimura, Sosaku; Okabe, Takeshi; and Hatsuse, Toshikazu, 4,604,833, Cl. 51-165.800.
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Clark, Charles A., Jr.: *See—*
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Clarke, Stephen E.; Hendry, James D.; and Mijares, Ernest R., to Ford Aerospace & Communications Corp. Telescoped ammunition with dual split cartridge case. 4,604,954, Cl. 102-434.000.
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Claxton, Richard L.: *See—*
Springston, Preston S.; and Claxton, Richard L., 4,605,337, Cl. 404-35.000.
Clem, William E.; and Trethewey, William C., to Telewe', Inc. Electronically controlled bicycle transmission. 4,605,240, Cl. 280-236.000.
Clevepak Corporation: *See—*
Sprang, Richard W., 4,604,763, Cl. 4-391.000.
Clostermeyer, Gerhard, to Claas Ohg. Large baling press. 4,604,848, Cl. 53-118.000.
Cockroft, James B., to Sunbeam Corporation. Motor speed control circuit. 4,605,883, Cl. 318-312.000.
Cogelia, Nicholas J.: *See—*
Arroyo, Candido J.; Cogelia, Nicholas J.; and Thomas, Palmer D., 4,605,818, Cl. 174-107.000.
Cohen, Edward, to RCA Corporation. Method for avoiding identifying perimeter variations as blemishes in a CCD image. 4,605,960, Cl. 358-106.000.
Cohen, Thomas S.; and Finan, Douglas F., to AMP Incorporated. Printed circuit board header having coaxial sockets therein and matable coaxial plug housing. 4,605,269, Cl. 339-17.0LC.
Coin, Sheri K. Bridal headdress apparatus. 4,604,760, Cl. 2-209.200.
Cok, David R., to Eastman Kodak Company. Single-chip electronic color camera with color-dependent birefringent optical spatial frequency filter and red and blue signal interpolating circuit. 4,605,956, Cl. 358-44.000.
Colbaugh, Michael E., to Westinghouse Electric Corp. Portable communications terminal. 4,605,959, Cl. 358-93.000.
Colgate-Palmolive Company: *See—*
Wixon, Harold E., 4,605,506, Cl. 252-8.750.
Collet, Pierre D.: *See—*
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Colleter, Jean C.: *See—*
Boyer, Chantal; Colleter, Jean C.; Creuzet, Marie-Helene; Feniou, Claude; Laguerre, Michel; Pontagnier, Henri; and Prat, Gisele, 4,605,768, Cl. 564-461.000.
Collier, Byron T.: *See—*
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Collier, John C.; and Lehman, David L., to Burndy Corporation. Apparatus for installing terminals on wires and insulation pods on terminals. 4,604,795, Cl. 29-748.000.
Collins, Mark C., to Sony Corporation. Error concealment in digital television signals. 4,605,966, Cl. 358-160.000.
Colman, William P.: *See—*
Witheford, John M.; Pellon, Joseph J.; and Colman, William P., 4,605,689, Cl. 523-313.000.
Colombo, Paolo: *See—*
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Colvin, Kenneth W.: *See—*
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Commissariat a l'Energie Atomique: *See—*
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Commonwealth of Australia, The: *See—*
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Competition Aircraft, Inc.: *See—*
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Complex, Inc.: *See—*
Weston, Robert E.; and Hunter, Robert R., III, 4,605,399, Cl. 604-305.000.
Concrete Pipe and Products Corp.: *See—*
Melfi, Nicholas W., 4,605,090, Cl. 181-210.000.
Conn, David R., to Northern Telecom Limited. D.C. biassing of MESFETs to prevent oscillation during power supply switching. 4,605,866, Cl. 307-296.00R.
Conoco Inc.: *See—*
McClaflin, Gifford G.; Bourne, Henry A.; and Whitfill, Donald L., 4,605,069, Cl. 166-310.000.
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Continental Plastic Containers: *See—*
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Control Data Corporation: *See—*
Machnik, Patrick R.; Petersen, Bruce L.; Schultz, Robert G.; Thatcher, Jerry T.; and Whiting, Roscella A., 4,605,958, Cl. 358-84.000.
Cook, Ronald, to Tools & Machinery Builders, Inc. Apparatus for flanging can ends. 4,605,391, Cl. 493-159.000.
Cook, Stuart A.; Reed, Phillip G.; and Scarpa, Michael C., to CPG Products Corp. Figure wherein leg movement produces wing-like movement of arms. 4,605,382, Cl. 446-330.000.
Cooley, Harold J.: *See—*
Dilanni, Elmo J.; Cooley, Harold J.; Fujita, Michio; and Noback, Charles V., 4,605,859, Cl. 250-374.000.
Cooper, Ellis D., to Barbosa, Joseph A. Apparatus and method for processing audio signals. 4,604,935, Cl. 84-1.010.
Cooper Lipotech Inc.: *See—*
Kong, Viola T.; Martin, Francis J.; and Vollmer, Yolanda P., 4,605,630, Cl. 436-511.000.
Cordray, Robert K. Oscillating vane rotary pump or motor. 4,605,361, Cl. 418-38.000.
Corkill, John M.; Madison, Bryan L.; and Burns, Michael E., to Procter & Gamble Company, The. Detergent compositions containing sodium aluminosilicate builders. 4,605,509, Cl. 252-131.000.
Corning Glass Works: *See—*
DeAngelis, Thomas P., 4,605,633, Cl. 501-87.000.
DeAngelis, Thomas P., 4,605,634, Cl. 501-96.000.
Elmer, Thomas H., 4,605,632, Cl. 501-54.000.
MacDowell, John F., 4,605,443, Cl. 106-104.000.
Rajnik, Lawrence S., 4,605,429, Cl. 65-105.000.
Corvi Mora, Camillo, to Camillo Corvi S.p.A. Derivative of (−)-6,6-dimethylbicyclo[3.3.1]ept-2-ene-2-methanol having mucosecretolytic activity, a process for its preparation and pharmaceutical compositions thereof. 4,605,792, Cl. 568-823.000.
Coulahan, John F.: *See—*
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Cousse, Henri; Mouzin, Gilbert; Rieu, Jean-Pierre; Briley, Mike; and Stenger, Antoine, to P. F. Medicament. 2-(arylalkyloxymethyl)morpholines and the central nervous system compositions. 4,605,654, Cl. 514-237.000.
Cover, Craig H. Lighting fixture insulation. 4,605,992, Cl. 362-147.000.
Covill, Dennis H., to Nautical Electronic Laboratories Limited; and Tantallon Halifax Co. AM pulse duration modulator. 4,605,910, Cl. 332-9.00R.
Cox, Gerald; and DeHaven, Bill, to GenRad Semiconductor Test, Inc. High density test head. 4,605,894, Cl. 324-73.00R.
Cox, Randall A.: *See—*
Christie, Nick J.; Cox, Randall A.; James, Robert E.; and Stevenson, James C., 4,605,418, Cl. 8-192.000.
Coyle, Joseph P.: *See—*
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CPG Products Corp.: *See—*
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Crabtree, Steven B.; Yedid, Harry; and Sherman, James B., to Universal Data Systems, Inc. QPSK demodulator with I and Q post-detection data correction. 4,606,051, Cl. 375-86.000.
Cragoe, Edward J., Jr.; and Woltersdorf, Otto W., Jr., to Merck & Co., Inc. Use of substituted-3-(2,3-dihydro-1H-inden-5-yl)-4-hydroxy-1H-pyrrole-2,5-diones, for treatment of grey matter edema. 4,605,663, Cl. 514-425.000.
Cragoe, Edward J., Jr.; and Woltersdorf, Otto W., Jr., to Merck & Co., Inc. Use of substituted-3-(2,3-dihydro-1H-inden-5-yl)-4-hydroxy-1H-pyrrole-2,5-diones for treatment of grey matter edema. 4,605,664, Cl. 514-425.000.
Craigave Pty. Ltd.: *See—*
Grey, George E., 4,604,819, Cl. 40-1.500.
Crawford, Carl R.; and Acharya, Kishore C., to General Electric Company. Apparatus for reduction of filtration truncation errors. 4,606,004, Cl. 364-414.000.
Creed, David M.: *See—*
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Crest-Foam Corporation: *See—*
Broslaw, Edwin, 4,605,683, Cl. 521-99.000.
Creuzet, Marie-Helene: *See—*
Boyer, Chantal; Colleter, Jean C.; Creuzet, Marie-Helene; Feniou, Claude; Laguerre, Michel; Pontagnier, Henri; and Prat, Gisele, 4,605,768, Cl. 564-461.000.
Crider, Grantlin W. Emergency ventilator opener for livestock houses. 4,605,162, Cl. 236-49.000.
Crist, Owen K.: *See—*
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Crow, Douglas J.: *See—*
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Crowley, H. W.: *See—*
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Crowley, Michael J.; Dornbusch, Arthur H.; and Green, Paul J., to Procter & Gamble Company, The. Dispensing container for stick-solids. 4,605,330, Cl. 401-68.000.
Crown Creative Industries: *See—*
Payne, William J., 4,605,996, Cl. 362-352.000.
Crozier, Ronald D. G. Industrial process for the manufacture of alkyl xanthogen formates. 4,605,518, Cl. 558-244.000.
Crum, Wesley W.; and Fraley, Gary L. Bracket means providing full collapsibility to sawhorses. 4,605,099, Cl. 182-155.000.
Cubic Corporation: *See—*
Marshall, Henry D.; Iida, Jeffrey K.; Crow, Douglas J.; and Friend, Lawrence O., 4,605,915, Cl. 333-238.000.
Cubic Western Data: *See—*
Aubrey, Kenneth R., 4,605,843, Cl. 235-33.000.
Cucchi, Giovanni; and Cucchi, Pietro, to F. lli Cucchi S.r.l. Control device for the opening and closing of the metal bar sliding guides in an equipment for the feeding of metal bars to a multiple-spindle lathe. 4,604,924, Cl. 82-27.000.

Cucchi, Pietro: *See—*
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Cudennec, Claude: *See—*
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Curtis, M. David; Schwank, Johannes W.; Thompson, Levi T.; and Williams, P. Douglas, to Board of Regents Acting For and On Behalf of the University of Michigan, The. Bimetallic cluster catalysts. 4,605,751, Cl. 556-29.000.
Cuscovitch, John F.: *See—*
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Czajka, John. Reconstruction of a cruciate ligament. 4,605,414, Cl. 623-13.000.
Czajkowski, Albert J.: *See—*
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D. L. Auld Company, The: *See—*
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Dacar, Arlen M. Self-targeting electrical outlet box. 4,605,139, Cl. 220-3.400.
D'Agosta, Nino. Exercise method and apparatus. 4,605,221, Cl. 272-117.000.
Dai-Ichi High Frequency Co., Ltd.: *See—*
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Dai-Ichi Kogyo Seiyaku Co., Ltd.: *See—*
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Daido Tokushuko Kabushiki Kaisha: *See—*
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Dakin, James T., to General Electric Company. High pressure sodium iodide arc lamp with excess iodine. 4,605,881, Cl. 313-638.000.
Dalebout, Melvin W.: *See—*
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Dall'oro, Guido G.: *See—*
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Dallot, Mario, to Ultrasons Annemasse. Apparatus for cleaning a linear object in a solvent medium. 4,605,027, Cl. 134-108.000.
Daly, Timothy P., to International Business Machines Corporation. Slip sensitive robot gripper system. 4,605,354, Cl. 414-730.000.
Daney, Georges J., to Service National Electricite de France. Electric vapor boiler. 4,605,838, Cl. 219-319.000.
Daniel, Richard A., to United States of America, Navy. Remote transmitter control system. 4,606,049, Cl. 375-45.000.
Daniels, Edward P., to Pitney Bowes Inc. Mailing system peripheral interface with replaceable prom for accessing memories. 4,606,003, Cl. 364-200.000.
Danker, Frederick J., to Danker Laboratories, Inc. Method and master-die for casting a bifocal contact lens in a single piece. 4,605,524, Cl. 264-2.500.
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Dansky, Allan H.; and Norsworthy, John P., to International Business Machines Corporation. High speed low power current controlled gate circuit. 4,605,870, Cl. 307-443.000.
Darby, Nicholas; and Dunmore, Gordon C., to Dow Chemical Company, The. Process for preparing N-alkane-N-alkanolamines. 4,605,772, Cl. 564-503.000.
Darlington, William B.; and Hoelscher, Charles H., to PPG Industries, Inc. Method for producing sodium dithionite. 4,605,545, Cl. 423-516.000.
Daugherty, John W., to Inmont Corporation. Quick drying fountain solutions. 4,604,952, Cl. 101-451.000.
Daulton, Richard R.: *See—*
Gusching, Nagle V.; and Daulton, Richard R., 4,604,810, Cl. 33-178.00E.
David, Guy A. J.; Van Uffelen, Jean-Pierre H.; and Defeuilly, Jean-Pierre M., to U.S. Philips Corporation. Transmitting-receiving station for a system for transmitting data by frequency hopping. 4,606,040, Cl. 375-1.000.
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Davis, Robert J.; Anspach, Charles R.; and Venaleck, John T., to Competition Aircraft, Inc. Propeller. 4,605,355, Cl. 416-208.000.
Davis, Walter L., to Motorola, Inc. Communication receiver system having a voltage converter with an operating frequency below the receiver IF. 4,606,076, Cl. 455-343.000.
Davison, George G. Gaiter rands. 4,604,816, Cl. 36-1.500.
Day, James L. Air blending apparatus for heating, ventilating and air conditioning (HVAC). 4,605,160, Cl. 236-13.000.
Dazzi, Jean-Louis. Injection timing device. 4,604,981, Cl. 123-451.000.
DCM Industries, Inc.: *See—*
Chattler, Leo M., 4,605,827, Cl. 179-175.30F.
de la Guardia, Mario; and Hendrix, Charles R., Jr., to Carson Products Company. Method of treating hair and anhydrous composition related thereto. 4,605,018, Cl. 132-7.000.
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Schummer, Arthur; de la Hamette, Jean; Lessel, Guy; Beck, Jean-Paul; and Frantz, Armand, 4,605,449, Cl. 148-12.00B.
DeAngelis, Thomas P., to Corning Glass Works. Reaction sintered multiphase ceramic. 4,605,633, Cl. 501-87.000.
DeAngelis, Thomas P., to Corning Glass Works. Reaction sintered oxide-boride. 4,605,634, Cl. 501-96.000.
De Bastiani, Giovanni; Brivio, Lodovico R.; Aldegheri, Roberto; and Faccioli, Giovanni, to Orthofix S.r.l. Articulated mini external fixation device. 4,604,997, Cl. 128-92.00A.
Debetencourt, Jean, to Calwag S.A. Seal with tear lip for containers. 4,605,136, Cl. 215-232.000.
Debroy, Tapan K.; Braun, Dave W.; and Chung, Ding-Yu, to Inmont Corporation. Low volatile organic content cathodic electrodeposition baths. 4,605,690, Cl. 523-414.000.
Debus, Jurgen; and Ehrhardt, Claus-Dieter, to Rittal-Werk Rudolf Loh GmbH & Co. KG. Utility table for attachment to a vertical wall, particularly of a switch cabinet. 4,605,131, Cl. 211-90.000.
DeCaro, Charles J., to Textron Inc. Quick release adapter. 4,605,348, Cl. 408-239.00A.
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De Clue, Larry W.: *See—*
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Decoux, Pierre. Process and device for feeding machines for welding wire mesh with weft wires. 4,605,046, Cl. 140-112.000.
Deeg, Martin H. G.; Gillberg-LaForce, Gunilla E.; and Buckley, Alan, to Celanese Corporation. Methods and apparatus for applying a finish liquid to a bundle of filmentary material. 4,605,573, Cl. 427-424.000.
Defeuilly, Jean-Pierre M.: *See—*
David, Guy A. J.; Van Uffelen, Jean-Pierre H.; and Defeuilly, Jean-Pierre M., 4,606,040, Cl. 375-1.000.
Deffeyes, Robert J., to Graham Magnetics Incorporated. Forming terminations of MLC capacitors. 4,605,835, Cl. 219-85.0BM.
DeFilippis, Pietro; Salvatore, Amedeo; and Biscione, Mario, to Texas Instruments Incorporated. Connector and method of making. 4,605,277, Cl. 339-262.00R.
Degtev, Evgeny I.: *See—*
Fedorov, Svyatoslav N.; Anisimov, Sergei I.; Karavaev, Alexandr A.; Kisellev, Vladimir G.; Juzhelevsky, July A.; and Degtev, Evgeny I., 4,605,411, Cl. 623-6.000.
Degussa Aktiengesellschaft: *See—*
Siegmeier, Rainer; Prescher, Gunter; Maurer, Helmut; and Hering, Gunter, 4,605,795, Cl. 568-867.000.
Dehais, Claude. Apparatus for depositing a ring of material on the tips of ampoules or the like. 4,604,965, Cl. 118-219.000.
DeHaven, Bill: *See—*
Cox, Gerald; and DeHaven, Bill, 4,605,894, Cl. 324-73.00R.
Delaroche, Pierre: *See—*
Leseur, Andre ; Delaroche, Pierre; Saglio, Robert; and Vaubert, Yves, 4,605,531, Cl. 376-252.000.
Delseth, Jean-Marc; Devaux, Albert F.; and Lynch, Eric R., to Monsanto Europe S. A. Rubber/metal composites. 4,605,590, Cl. 428-295.000.
DeLuca, Frederick P. Electronic jewelry simulating natural flickering light. 4,605,882, Cl. 315-158.000.
Demukai, Noboru: *See—*
Sugiura, Saburo; Ikeda, Masanobu; and Demukai, Noboru, 4,605,437, Cl. 75-43.000.
Denes, Laszlo : *See—*
Bernath, Gabor; Kobor, Jeno; Folop, Ferenc; Sohajda, Attila; Kalman, Alajos; Ezer, Elemer; Hajos, Gyorgy; Palosi, Eva; Denes, Laszlo ; and Szporny, Laszlo , 4,605,653, Cl. 514-226.000.
Dent, John N.: *See—*
Hanning, Bernard W.; and Dent, John N., 4,605,214, Cl. 271-3.100.
Derman, Robert I.: *See—*
Sturgeon, Gerald E.; and Derman, Robert I., 4,605,362, Cl. 418-63.000.
Desai, Anil A.: *See—*
Chadwick, Curt H.; and Desai, Anil A., 4,604,910, Cl. 74-96.000.
Detzel, Josef; Reitmeier, Franz; and Heubuch, Remigius, to Internationale Octrooi Maatschapij "Octropa" B.V. Cylindrical container. 4,605,129, Cl. 206-623.000.
Devaux, Albert F.: *See—*
Delseth, Jean-Marc; Devaux, Albert F.; and Lynch, Eric R., 4,605,590, Cl. 428-295.000.
Deveau, Emile J.: *See—*
Mead, James B.; Schwartz, Leonard; and Deveau, Emile J., 4,605,931, Cl. 343-700.0MS.
Devon Industries, Inc.: *See—*
Sandel, Dan; and Hoftman, Michael, 4,605,124, Cl. 206-223.000.
Dewald, Lamar R., to Dow Chemical Company, The. Hypochlorite activated gold electrode and measuring system and method. 4,605,473, Cl. 204-1.00T.
DeWitt, Albert C.; Herriges, Donald W.; and Stanner, Donald, to General Motors Corporation. Material pick-up mechanism. 4,605,216, Cl. 271-18.300.
DeYoung, Joyce L., to American Home Products Corporation. Parenteral formulation. 4,605,671, Cl. 514-647.000.
Dialer, Kurt: *See—*
Tiltscher, Helmut; Wolf, Helmut; Schelchshorn, Joachim; and Dialer, Kurt, 4,605,811, Cl. 585-670.000.

Diamond Shamrock Chemicals Company: *See—*
Briden, Frank C., 4,605,698, Cl. 524-559.000.
Christie, Nick J.; Cox, Randall A.; James, Robert E.; and Stevenson, James C., 4,605,418, Cl. 8-192.000.
Maloney, James E.; and McDonell, James A., 4,605,773, Cl. 564-505.000.

Dick, Clarence R.: *See—*
Keith, Earl K.; Mercer, William E., II; and Dick, Clarence R., 4,605,438, Cl. 75-67.00A.

Diehl GmbH & Co.: *See—*
Kruger, Tilmann; Potthof, Erwin; and Barwig, Manfred, 4,606,058, Cl. 377-39.000.

Dierberger, James A.: *See—*
Gemma, Anthony E.; and Dierberger, James A., 4,605,452, Cl. 148-404.000.

Dierks & Sohne GmbH & Co. KG: *See—*
Ahlert, Dieter, 4,605,172, Cl. 241-33.000.

Diesel Kiki Co., Ltd.: *See—*
Kobayashi, Tadashi; Nozaki, Shinya; and Yamada, Keiichi, 4,604,979, Cl. 123-449.000.
Ohnishi, Masanori, 4,604,977, Cl. 123-365.000.

Difonzo, Alexander J.; and Seshamani, Venkatraman, to Foster Wheeler Energy Corporation. Seal assembly for a vapor generator. 4,604,972, Cl. 122-510.000.

Di Giovanni, John; and Kula, John, to Ethicon, Inc. Surgical instrument for applying fasteners said instrument including force supporting means (case IV). 4,605,004, Cl. 128-334.00R.

DiIanni, Elmo J.; Cooley, Harold J.; Fujita, Michio; and Noback, Charles V., to Nuclear Research Corp. Radiation measuring apparatus. 4,605,859, Cl. 250-374.000.

DiMarchi, Richard D., to Eli Lilly and Company. Process for inhibiting peptide carbamylation. 4,605,513, Cl. 530-303.000.

Dimpfl, William L., to Chevron Research Company. Apparatus for measuring particle size. 4,605,535, Cl. 422-95.000.

Director General of the Agency of Industrial Science and Technology: *See—*
Inoue, Toshihide; Hirai, Toshimasa; and Okamoto, Masaru, 4,605,727, Cl. 528-191.000.

DiSalvo, Anthony L.; and Tsai, Chung-Chieh, to Stauffer Chemical Company. Modified poly(oxazolidone/urethane) compositions. 4,605,711, Cl. 525-438.000.

Distin, Robert G., Jr., to Advanced Energy Concepts '81 Ltd. Epicyclic transmission having cam driven roller retainer. 4,604,916, Cl. 74-805.000.

Djabbarah, Nizar F., to Mobil Oil Corporation. Oil recovery method employing carbon dioxide flooding with improved sweep efficiency. 4,605,066, Cl. 166-273.000.

Doane, William M.: *See—*
Fanta, George F.; and Doane, William M., 4,605,640, Cl. 502-402.000.

Dobson Park Industries Plc.: *See—*
Allen, Archelaius D., 4,605,341, Cl. 405-297.000.

Dr. Ing. Rudolf Hell GmbH: *See—*
Gossner, Matthias, 4,605,320, Cl. 384-494.000.

Dodge, David C.; Knoop, David F.; Thomas, George T.; and Newman, James P., to Olin Corporation. Rapidly dissolving granular hydrated calcium hypochlorite. 4,605,508, Cl. 252-95.000.

Doi, Masashi: *See—*
Yamaguchi, Yoshiharu; and Doi, Masashi, 4,604,774, Cl. 24-389.000.

Doiron, Gerald J., to Omark Industries, Inc. Safety chain for chain saws. 4,604,932, Cl. 83-830.000.

Dolan, Courtney F., to Chrysler Corporation. Transfer case planetary with power take-off. 4,604,908, Cl. 74-15.880.

Dolan, Donald T.; Ross, William A.; and Terry, Kenneth A., to Pitney Bowes Inc. Postal meter thermal printer control. 4,605,937, Cl. 346-76.0PH.

Dolle , Jacques. Apparatus for the preparation of skewers of meat, vegetables, or the like products. 4,604,771, Cl. 17-45.000.

Dolling, Ulf H., to Merck & Co., Inc. Process using achiral co-catalyst promoter for chiral phase transfer alkylation process for an enantiomer of a substituted fluorenyloxyacetic acid. 4,605,761, Cl. 562-461.000.

Dorn, Franz, to Hoffmann-La Roche Inc. Pyridine and pyrazine oxime compounds as fungicides. 4,605,656, Cl. 514-255.000.

Dornbusch, Arthur H.: *See—*
Crowley, Michael J.; Dornbusch, Arthur H.; and Green, Paul J., 4,605,330, Cl. 401-68.000.

Dow Chemical Company, The: *See—*
Au, Andrew T., 4,605,737, Cl. 544-215.000.
Bergman, Roger W., 4,605,519, Cl. 558-234.000.
Darby, Nicholas; and Dunmore, Gordon C., 4,605,772, Cl. 564-503.000.
Dewald, Lamar R., 4,605,473, Cl. 204-1.00T.
Juhl, Roger L.; Johnson, Mark S.; and Morris, Thomas E., 4,605,801, Cl. 570-253.000.
Keith, Earl K.; Mercer, William E., II; and Dick, Clarence R., 4,605,438, Cl. 75-67.00A.
Lund, Gary K., 4,605,715, Cl. 526-143.000.
Park, Chung P., 4,605,682, Cl. 521-81.000.
Pearson, Norman R.; and Kleschick, William A., 4,605,433, Cl. 71-93.000.
Silvis, H. Craig; and Morgan, Ted A., 4,605,789, Cl. 568-721.000.

Dowbenko, Rostyslaw: *See—*
Hart, Terence J.; Dowbenko, Rostyslaw; Maska, Rudolf; Van Buskirk, Ellor J.; and Tetenbaum, Marvin T., 4,605,476, Cl. 204-181.600.

Downs, John, to Lucas Industries public limited company. Cam follower shoe. 4,604,784, Cl. 29-415.000.

Dowty Meco Limited: *See—*
Biddle, Ronald A., 4,605,122, Cl. 198-834.000.

Doya, Masaharu; Kondo, Toshio; Igarashi, Hideo; and Uchiyama, Takako, to Mitsubishi Gas Chemical Company, Inc. Electrodialytic recovery of α-amino acid from its amide. 4,605,477, Cl. 204-182.600.

Dozsa, Gyorgy: *See—*
Retfalvi, Ferenc; Lukacs, Laszlo ; Molnar, Laszlo ; Dozsa, Gyorgy; and Szappanos, Adam, 4,605,836, Cl. 219-130.010.

Dracketт Company, The: *See—*
Burkhart, Richard P.; and Gemperle, Edward C., 4,604,767, Cl. 15-119.00A.

Dragoo, Robert E., to Applied Dynamic Research, Inc. Guard time elimination in a time-division multiplexed, active star-coupled, half-duplex mode, synchronous communications network. 4,606,023, Cl. 370-94.000.

Drake, Charles A., to Phillips Petroleum Company. Hydrogenation catalysts and selective hydrogenation therewith. 4,605,797, Cl. 570-101.000.

Drury, Philip J.: *See—*
Black, Martin M.; Drury, Philip J.; and Tindale, Wendy B., 4,605,407, Cl. 623-2.000.

D'Silva, Themistocles D.: *See—*
Rao, Chennupati K.; and D'Silva, Themistocles D., 4,605,667, Cl. 514-477.000.

Duchess Industries, Inc.: *See—*
Sellier, Quentin, 4,605,312, Cl. 368-282.000.

Dudarchik, Anatoly I.: *See—*
Berborodov, Vladimir S.; Konovalov, Viktor A.; Ptashnikov, Jury L.; Astafiev, Vladimir M.; Minko, Anatoly A.; Dudarchik, Anatoly I.; Zanegina, Galina A.; and Poimanov, Anatoly M., 4,605,510, Cl. 252-299.660.

Duesberg, Joseph D.; and Mills, Raymond C., Sr., to United States of America, Administrator, National Aeronautics and Space Administration. Method of repairing hidden leaks in tubes. 4,605,155, Cl. 228-119.000.

Duffy, Geoffrey G., to Fibre Dynamics Limited. Hydraulic transportation of objects. 4,605,329, Cl. 406-49.000.

Dufieux: *See—*
Gehans, Michel, 4,605,115, Cl. 198-341.000.

DuFries, Ronald W.: *See—*
Schaetzke, William R.; and DuFries, Ronald W., 4,604,883, Cl. 72-280.000.

Duich, Michael B.: *See—*
Verrando, Marcel G.; Duich, Michael B.; and Overton, Bradley T., 4,605,425, Cl. 55-20.000.

Dumoulseau, Jean-Yves; Grosbois, Jean; and Jacubert, Serge, to Rhone-Poulenc Specialites Chimiques. Continuous hydrogenation of lithium into lithium hydride. 4,605,547, Cl. 423-646.000.

Dunham, Philip B.; and Weissmann, Gerald, to New York University; Syracuse University; and Marine Biological Laboratory. Method for measuring anti-inflammatory properties of a composition. 4,605,618, Cl. 435-29.000.

Dunmore, Gordon C.: *See—*
Darby, Nicholas; and Dunmore, Gordon C., 4,605,772, Cl. 564-503.000.

Dupke, Conrad E. Filter wrench. 4,604,920, Cl. 81-64.000.

Duplo Manufacturing Corp.: *See—*
Onishi, Tetsuo; and Sugiyama, Yoshihide, 4,605,926, Cl. 340-825.300.

Duplo Seiko Corp.: *See—*
Onishi, Tetsuo; and Sugiyama, Yoshihide, 4,605,926, Cl. 340-825.300.

Du Pont de Nemours, E. I., and Company: *See—*
Abbott, Scot D.; Levin, Herman W.; Kobos, Robert K.; Kilkson, Henn; and Peterson, Dale R., 4,605,628, Cl. 436-70.000.
Adams, John B., Jr., 4,605,432, Cl. 71-92.000.
Brake, Loren D., 4,605,788, Cl. 568-698.000.
Englert, Joseph F., Jr.; Maurin, Louis J., III; and Stewart, Clare A., Jr., 4,605,800, Cl. 570-228.000.
Fry, Grant C., 4,605,596, Cl. 428-423.300.
Hasircoglu, Alexander W., 4,605,276, Cl. 339-176.0MF.
Heitner, Barry J., 4,605,717, Cl. 526-228.000.
Herller, Walter R., 4,605,716, Cl. 526-190.000.
Lee, Ross A., 4,605,753, Cl. 556-111.000.
Petitjean, Gilles, 4,605,146, Cl. 226-97.000.
Takeshita, Tsuneichi, 4,605,705, Cl. 525-330.900.
Wojtkowski, Paul W., 4,605,790, Cl. 568-750.000.

Duret, Bernard; Dall'oro, Guido G.; Jollivet, Alain; and Szeger, Annie M., to Societe d'Electronique de la Region Pays de Loire. Optically readable card carrying digital data, and an access control system using said card. 4,605,846, Cl. 235-468.000.

Durham, Randy E. Combination automatic and manual vise apparatus. 4,605,208, Cl. 269-32.000.

Duyvesteyn, Willem P. C., to Amax Inc. Recycling of steel plant dusts to steel furnaces. 4,605,435, Cl. 75-0.50R.

Dyer, Paul N.; and Pierantozzi, Ronald, to Air Products and Chemicals, Inc. Methods for making a supported iron-copper catalyst. 4,605,639, Cl. 502-331.000.

Dynamit Nobel AG: *See—*
Feld, Marcel, 4,605,757, Cl. 562-416.000.

Dysan Corporation: *See—*
James, Richard N., 4,605,125, Cl. 206-312.000.

E.G.O. Elektro-Gerate Blanc und Fischer: *See—*
Fischer, Karl; Schreder, Felix; and Kicherer, Robert, 4,605,841, Cl. 219-449.000.

East, John; and Maxwell, Ian, to Metal Box Public Limited Company. Continuous extrusion of metals. 4,604,880, Cl. 72-9.000.

Eastman, David W.; and Walker, Leigh E., to Occidental Chemical Corporation. Graft polymers of polymerizable monomers and olefin polymers. 4,605,704, Cl. 525-193.000.

Eastman Kodak Company: *See—*
Cok, David R., 4,605,956, Cl. 358-44.000.
Eubanks, Robert J. I.; and Pacifici, James G., 4,605,521, Cl. 558-313.000.
Eubanks, Robert J. I.; and Pacifici, James G., 4,605,784, Cl. 568-614.000.
Gerbal, Claude F.; Gompf, Thomas E.; and Collet, Pierre D., 4,605,697, Cl. 534-648.000.
Jenkins, Waylon L.; Hawkins, James M.; and Sand, I. Daniel, 4,605,721, Cl. 527-312.000.
Kiefer, Judy E.; Phillips, William V.; and Woodruff, Thomas E., 4,605,763, Cl. 562-487.000.
Russel, Matthew J.; and Borruso, Rose M., 4,605,298, Cl. 355-3.0TR.

Eastmond, Bruce C., to Motorola, Inc. Automatic gain control responsive to coherent and incoherent signals. 4,606,075, Cl. 455-234.000.

Ebeling, Peter: *See—*
Kluting, Bernd; Ebeling, Peter; and Strowik, Willibald, 4,605,192, Cl. 248-394.000.

Eberlein, Klaus: *See—*
Birlmeier, Josef; Eberlein, Klaus; and Nagler, Werner, 4,605,824, Cl. 179-18.0HB.

Ebisawa, Kaoru: *See—*
Sasaki, Chuichi; Sasaki, Haruo; Miyajima, Katumi; and Ebisawa, Kaoru, 4,604,859, Cl. 56-341.000.

Ebmeyer, Wilfried: *See—*
Achelpohl, Fritz; Mundus, Friedhelm; and Ebmeyer, Wilfried, 4,605,392, Cl. 493-196.000.

Echte, Adolf: *See—*
Mitulla, Konrad; Hambrecht, Juergen; Echte, Adolf; Swoboda, Johann; Siebel, Peter; Schwaab, Josef; and Frank, Herbert, 4,605,699, Cl. 525-67.000.

Economy Industrial Corporation: *See—*
Allen, Thomas R., Jr., 4,605,055, Cl. 164-479.000.

Eddens, Fletcher C., to General Electric Company. Method of making fuel channel. 4,604,785, Cl. 29-463.000.

Eddy, Elizabeth L.: *See—*
Kobylinski, Thaddeus P.; Kibby, Charles L.; Pannell, Richard B.; and Eddy, Elizabeth L., 4,605,676, Cl. 518-700.000.
Kobylinski, Thaddeus P.; Kibby, Charles L.; Pannell, Richard B.; and Eddy, Elizabeth L., 4,605,679, Cl. 518-700.000.

Eden, James G.; McCown, Andrew W.; and Geohegan, David B., to Board of Trustees, University of Illinois. Enhanced laser power output. 4,606,034, Cl. 372-57.000.

Eder Instrument Company, Inc.: *See—*
Welber, Stanley; and Lakatos, Nick, 4,605,280, Cl. 350-96.200.

Edman, David C., to Build-A-Sign, Inc. Modular sign. 4,604,820, Cl. 40-605.000.

Edmonds, Harvey A. Size reduction machine. 4,605,173, Cl. 241-36.000.

Edstrom, Kjell E. E.: *See—*
Nilsson, Goran A.; Edstrom, Kjell E. E.; and Wiklund, Henry W., 4,605,073, Cl. 173-51.000.

Edwards, Laroy H., to Chevron Research Company. 4-quinazalone fungicides. 4,605,657, Cl. 514-259.000.

Edwards, William H. Filled calender roll and method of building same. 4,604,778, Cl. 29-123.000.

Ehrhardt, Claus-Dieter: *See—*
Debus, Jurgen; and Ehrhardt, Claus-Dieter, 4,605,131, Cl. 211-90.000.

Eisenzimmer, George W., to Goodyear Tire & Rubber Company, The. Hose coupling method. 4,605,466, Cl. 156-293.000.

Ekstrom, Leif E. J. Anchorage device. 4,604,846, Cl. 52-704.000.

Elastometal Limited: *See—*
Fyfe, Edward R.; and Slater, William M., 4,605,106, Cl. 188-374.000.

Electrochemische Energieconversie N.V.: *See—*
Alfenaar, Marinus, 4,605,601, Cl. 429-13.000.

Eli Lilly and Company: *See—*
DiMarchi, Richard D., 4,605,513, Cl. 530-303.000.
Hirsch, Kenneth S.; and Pioch, Richard P., 4,605,661, Cl. 514-400.000.

Elliott, David J., to Phillips Petroleum Company. Synthesis of higher ketones. 4,605,775, Cl. 568-387.000.

Elliott, Martin R.; Bollinger, Dwight A.; Curry, Kris B.; and Plocik, Daniel C., to PPG Industries, Inc. Carriage train precision linear positioning system. 4,604,934, Cl. 83-880.000.

Ellis, Darwin L.: *See—*
Albrecht, Leman P.; and Ellis, Darwin L., 4,604,853, Cl. 53-487.000.

Ellis, Donald G.: *See—*
Moulding, Thomas S., Jr.; and Ellis, Donald G., 4,604,847, Cl. 53-75.000.

Elmer, Thomas H., to Corning Glass Works. Glass for tungsten-halogen lamps. 4,605,632, Cl. 501-54.000.

Emi Limited: *See—*
Watson, Jeremy D. M., 4,605,985, Cl. 361-283.000.

Emrich, Reinhard; and Appel, Kurt, to Pfaff Industriemaschinen GmbH. Method and apparatus for connecting together material plies which are unilaterally thermoplastically coated. 4,605,578, Cl. 428-57.000.

Endress u. Hauser GmbH u. Co.: *See—*
Massen, Robert, 4,604,904, Cl. 73-861.060.

Energy Conversion Devices, Inc.: *See—*
Nath, Prem, 4,605,565, Cl. 427-39.000.
Ovshinsky, Stanford R.; and Izu, Masatsugu, 4,605,941, Cl. 357-2.000.

Engelhard Corporation: *See—*
Feigenbaum, Haim; Pudick, Sheldon; and Wang, Chiu L., 4,605,602, Cl. 429-26.000.

Engelhardt, Gunther; and Lohrmann, Gerhard, to Mannesmann AG. Sheet separating structure. 4,605,145, Cl. 226-74.000.

Englert, Joseph F., Jr.; Maurin, Louis J., III; and Stewart, Clare A., Jr., to Du Pont de Nemours, E. I., and Company. Process for the manufacture of chloroprene. 4,605,800, Cl. 570-228.000.

Ensco, Inc.: *See—*
Marshall, Allen T., 4,605,923, Cl. 340-604.000.

Environmental Research & Technology, Inc.: *See—*
Kebabian, Paul L., 4,605,313, Cl. 374-121.000.

Enzo, Fava. Tap for the delivery of liquids for the conversion from automatic to manual. 4,604,764, Cl. 4-623.000.

Erickson, Donald C. Cryogenic triple-pressure air separation with LP-to-MP latent-heat-exchange. 4,605,427, Cl. 62-22.000.

Ernst, Valentin, to Bodenseewerk Geratetechnic GmbH. Device for recognizing far-away electro-magnetically radiating objects. 4,606,067, Cl. 382-42.000.

Erwin Sick GmbH Optik-Elektronik: *See—*
Anselment, Christoph; and Sackmann, Karl H., 4,605,850, Cl. 250-221.000.

Esau, Edward W.; and Ratzlaff, Howard J., to Hesston Corporation. Plunger cleanout apparatus for underfed crop baler. 4,604,858, Cl. 56-341.000.

Escarabajal, Ghislain: *See—*
Carre, Jean-Jacques; and Escarabajal, Ghislain, 4,605,103, Cl. 188-71.500.

Esch, Frederick S.: *See—*
Bohlen, Peter; Brazeau, Paul E.; Esch, Frederick S.; Ling, Nicholas C.; and Wehrenberg, William B., 4,605,643, Cl. 514-12.000.

Esposito, Augustine G.: *See—*
Klievoneit, Harold R.; and Esposito, Augustine G., 4,605,249, Cl. 285-98.000.

Esposito, John M. Tomb module. 4,604,839, Cl. 52-124.200.

Eszakmagyarorszagi Vegyimuvek: *See—*
Matolosy, Gyorgy; Bordas, Barna; Gimesi, Antal; Kovacs nee Kalman, Magdolna; and Tuske, Marton, 4,605,764, Cl. 564-209.000.

Ethicon, Inc.: *See—*
Di Giovanni, John; and Kula, John, 4,605,004, Cl. 128-334.00R.
Shalaby, Shalaby W.; and Jamiolkowski, Dennis D., 4,605,730, Cl. 528-357.000.

Ethridge, Fredrick A.: *See—*
Roth, Douglas D.; and Ethridge, Fredrick A., 4,605,364, Cl. 425-72.00S.

Ethyl Corporation: *See—*
Adams, J. Robert, Jr.; Mitrano, James R.; and Juneau, Matthew K., 4,605,539, Cl. 423-300.000.
Goodrum, Richard W.; Bechtold, Thomas E.; and Klimek, Albert A., 4,605,123, Cl. 206-0.500.
Hargis, Duane C., 4,605,766, Cl. 564-409.000.

Eubanks, Robert J. I.; and Pacifici, James G., to Eastman Kodak Company. Process for the preparation of organic nitriles from organic carboxylic acid primary amides. 4,605,521, Cl. 558-313.000.

Eubanks, Robert J. I.; and Pacifici, James G., to Eastman Kodak Company. Process for the preparation of ether-containing chlorides. 4,605,784, Cl. 568-614.000.

Eumurian, Gregoire; and Levan, Jean-Pol, to Thomson CSF. Magnetic field sensor using a coaxial line wound into a coil. 4,605,899, Cl. 324-258.000.

Europeenne de Retraitement de Catalyseurs: *See—*
Berrebi, Georges, 4,605,371, Cl. 432-134.000.

Evans, Lyn T.: *See—*
Ryder, Geoffrey A., 4,605,135, Cl. 215-220.000.

Evans, Robert: *See—*
Gordon, Alan J.; Sterritt, David W.; and Evans, Robert, 4,604,964, Cl. 118-50.000.

Evans, Thomas L.; and Williams, David A., to General Electric Company. Method for preparing linear polycarbonate from cyclic oligomer with aryl carbanion generating catalyst. 4,605,731, Cl. 528-371.000.

Evans, Trevor G.: *See—*
Ryder, Geoffrey A., 4,605,135, Cl. 215-220.000.

Everett, Charles J., to Robertshaw Controls Company. Method of making a control device. 4,604,793, Cl. 29-622.000.

Everett, Seth L., Jr., to United States of America, Army. Dot matrix color printer. 4,605,326, Cl. 400-201.000.

EWAB Ejvin Wahren AB: *See—*
Wahren, Mats E., 4,605,121, Cl. 198-803.010.

Exxon Production Research Co.: *See—*
Ortloff, John E.; Ziarnik, Allen P.; Filson, John J.; and Gadbois, John F., 4,604,961, Cl. 114-230.000.
Winbow, Graham A.; and Chen, Sen-Tsuen, 4,606,014, Cl. 367-75.000.

Exxon Research and Engineering Co.: *See—*
Balinsky, George J.; Biceroglu, Omer; and Lin, Joe S., 4,605,490, Cl. 208-143.000.
Cerkanowicz, Anthony E., 4,605,485, Cl. 204-302.000.
Rhodes, Richard P.; and Halbert, Thomas R., 4,605,752, Cl. 556-42.000.
Ryan, Daniel F., 4,605,486, Cl. 208-412.000.
Ezer, Elemer: *See—*
Bernath, Gabor; Kobor, Jeno; Folop, Ferenc; Sohajda, Attila; Kalman, Alajos; Ezer, Elemer; Hajos, Gyorgy; Palosi, Eva; Denes, Laszlo ; and Szporny, Laszlo , 4,605,653, Cl. 514-226.000.
F. F. Seeley Nominees Pty Ltd.: *See—*
Seeley, Frederic F., 4,604,874, Cl. 62-298.000.
F.I.P. Formatura Iniezione Polimeri, S.p.A.: *See—*
Bonissone, Giancarlo; and Mulas, Piero, 4,605,199, Cl. 251-171.000.
F. L. Smidth & Co. A/S: *See—*
Hundebol, Soren, 4,605,370, Cl. 432-14.000.
F. lli Cucchi S.r.l.: *See—*
Cucchi, Giovanni; and Cucchi, Pietro, 4,604,924, Cl. 82-27.000.
Faccioli, Giovanni: *See—*
De Bastiani, Giovanni; Brivio, Lodovico R.; Aldegheri, Roberto; and Faccioli, Giovanni, 4,604,997, Cl. 128-92.00A.
Faith, Thomas J., Jr., to RCA Corporation. In-situ cleaned ohmic contacts. 4,605,479, Cl. 204-192.00D.
Faiveley Entreprises: *See—*
Monot, Bernard, 4,605,108, Cl. 192-0.02R.
Falaas, Dennis O.: *See—*
Paquette, Susan Z.; and Falaas, Dennis O., 4,605,592, Cl. 428-334.000.
Falk, Robert A.: *See—*
Mueller, Karl F.; Lohmann, Dieter; and Falk, Robert A., 4,605,712, Cl. 525-474.000.
Fanta, George F.; and Doane, William M., to United States of America, Agriculture. Oil-absorbent cellulosic derivatives. 4,605,640, Cl. 502-402.000.
Farmaco Italiano Padil S.r.l.: *See—*
Bernardi, Roberto, 4,605,646, Cl. 514-53.000.
Farrens, Eldon F.; and Tillery, Arthur M., to Tillery, Arthur M.; and Tillery, Elinor E. Stapling machine. 4,605,149, Cl. 227-7.000.
Fedorov, Svyatoslav N.; Anisimov, Sergei I.; Karavaev, Alexandr A.; Kisellev, Vladimir G.; Juzhelevsky, July A.; and Degtev, Evgeny I., to Moskovsky Nauchno-Issledovatelsky Institut Mikrokhirurgii Glaza. Anterior-chamber intraocular prosthetic lens. 4,605,411, Cl. 623-6.000.
Feigenbaum, Haim; Pudick, Sheldon; and Wang, Chiu L., to Engelhard Corporation. Corrosion protected, multi-layer fuel cell interface. 4,605,602, Cl. 429-26.000.
Fekete, Gyorgy: *See—*
Toth, Edit; Torley, Jozsef; Fekete, Gyorgy; Szporny, Laszlo ; Vereczkey, Laszlo ; Palosi, Eva; Klebovich, Imre; Vittay, Pal; Gorog, Sandor; and Hajdu, Istvan, 4,605,672, Cl. 514-648.000.
Feld, Marcel, to Dynamit Nobel AG. Method of preparing halogen benzoic acids from toluenes halogenated in the nucleus. 4,605,757, Cl. 562-416.000.
Felter, Richard E.; and Markley, Dean A., to Armstrong World Industries, Inc. Epoxy-phosphate ceramic compositions and methods of preparation. 4,605,570, Cl. 427-386.000.
Fema Corporation: *See—*
Casey, Gerald F.; and Schultz, Richard A., 4,605,197, Cl. 251-30.010.
Fender Musical Instruments Corporation: *See—*
Page, John F.; and Schaller, Helmut, 4,604,936, Cl. 84-313.000.
Feniou, Claude: *See—*
Boyer, Chantal; Colleter, Jean C.; Creuzet, Marie-Helene; Feniou, Claude; Laguerre, Michel; Pontagnier, Henri; and Prat, Gisele, 4,605,768, Cl. 564-461.000.
Ferag AG: *See—*
Reist, Walter, 4,604,851, Cl. 53-430.000.
Fergason, James L., to Manchester R & D Partnership. Encapsulated liquid crystal and method. 4,605,284, Cl. 350-334.000.
Ferguson, Arthur R., to Outboard Marine Corporation. Trim and tilt control for marine propulsion devices. 4,605,375, Cl. 440-1.000.
Fernz, James A., to Boeing Company, The. Vibration isolation device used with a jet engine thrust reverser unit. 4,605,186, Cl. 244-110.00B.
Ferrante, Ronald A., to NCR Corporation. Gaussian laser beam filter. 4,605,606, Cl. 430-2.000.
Ferrari, Leonard A., to University of California, The Regents of the. Acoustical imaging system. 4,605,008, Cl. 128-660.000.
Fibre Dynamics Limited: *See—*
Duffy, Geoffrey G., 4,605,329, Cl. 406-49.000.
Fiedler, Robert A., to Beckman Industrial Corporation. Static control strap. 4,605,984, Cl. 361-220.000.
Fils et Cables D'Acier de Lens (Fical): *See—*
Thomas, Bruno; and Viart, Guy, 4,605,598, Cl. 428-659.000.
Filson, John J.: *See—*
Ortloff, John E.; Ziarnik, Allen P.; Filson, John J.; and Gadbois, John F., 4,604,961, Cl. 114-230.000.
Finan, Douglas F.: *See—*
Cohen, Thomas S.; and Finan, Douglas F., 4,605,269, Cl. 339-17.0LC.
Fine, Francois: *See—*
Abel, Michel; Fine, Francois; Foulletier, Louis; and Verot, Yvan, 4,605,798, Cl. 570-164.000.
Finlay, John R. Door lock. 4,605,251, Cl. 292-288.000.
Finnan, Jeffrey L.: *See—*
Schmidt, Douglass N.; Finnan, Jeffrey L.; and Lisa, Rudolph E., 4,605,666, Cl. 514-474.000.
Fischer, Alan B.: *See—*
Kliem, Peter O.; Fischer, Alan B.; and Inbar, Shai, 4,605,849, Cl. 250-216.000.
Fischer, Hermann, to M.A.N.-Roland Druckmaschinen Aktiengesellschaft. Longitudinal folding apparatus for traveling webs, particularly paper webs received from a rotary printing machine. 4,605,209, Cl. 270-40.000.
Fischer, Karl; Schreder, Felix; and Kicherer, Robert, to E.G.O. Elektro-Gerate Blanc und Fischer. Thermostat for electric hotplate. 4,605,841, Cl. 219-449.000.
Fischer, Wolfgang; Klein, Gerhard; Hombach, Rudoph; and Kniege, Wilfried, to Bayer Aktiengesellschaft. Adhesives with a high level of adhesion on plastics materials. 4,605,703, Cl. 525-157.000.
Fisher, Alan R., to Ford Motor Company. Automatic power transmission mechanism with a pressurized brake band anchor. 4,604,914, Cl. 74-688.000.
Fisher, Alfred J., III; and Schmidt, Timothy J., to General Safety Corporation. Seat belt retractor assembly. 4,605,180, Cl. 242-107.40A.
Fisher, Don E.; Fuqua, John W.; and Wilkie, Arnold E., to Monsanto Company. Pigtail guide for staple spinning. 4,604,863, Cl. 57-352.000.
Fistner, David C., Sr.: *See—*
McGarry, Phillip E.; Herman, David E.; Treskot, Robert A.; and Fistner, David C., Sr., 4,605,420, Cl. 44-1.00R.
Fitzwater, Dennis L.: *See—*
Tseo, Gus G.; and Fitzwater, Dennis L., 4,605,396, Cl. 604-32.000.
Flakus, Werner, to Huls Aktiengesellschaft. Shelf-stable, isocyanate (NCO) free urethane urea acrylate resins. 4,605,723, Cl. 528-49.000.
Flanigen, Edith M.: *See—*
Lok, Brent M. T.; Marcus, Bonita K.; and Flanigen, Edith M., 4,605,492, Cl. 208-310.00Z.
Fleischauer, K. E. Prosthetic joint. 4,605,417, Cl. 623-49.000.
Fleischer, Joachim; and Fleischer, Willy, to Willy Fleischer Metallwarenfabrik GmbH & Co. Height-adjustable table for work places with video screen. 4,604,955, Cl. 108-147.000.
Fleischer, Willy: *See—*
Fleischer, Joachim; and Fleischer, Willy, 4,604,955, Cl. 108-147.000.
Fleury, Gerard: *See—*
Pourcelot, Leandre; Fleury, Gerard; and Berson, Marceau, 4,605,009, Cl. 128-660.000.
Fling, Russell T.: *See—*
Christopher, Todd J.; and Fling, Russell T., 4,605,962, Cl. 358-140.000.
Flynn, Peter J., to Bird Machine Company, Inc. Hydrocyclone separator apparatus. 4,605,495, Cl. 209-211.000.
FMC Corporation: *See—*
Plummer, Ernest L., 4,605,748, Cl. 549-43.000.
Foker, John E., to University of Minnesota, Regents of the. Method for stimulating recovery from ischemia employing ribose and adenine. 4,605,644, Cl. 514-45.000.
Folop, Ferenc: *See—*
Bernath, Gabor; Kobor, Jeno; Folop, Ferenc; Sohajda, Attila; Kalman, Alajos; Ezer, Elemer; Hajos, Gyorgy; Palosi, Eva; Denes, Laszlo ; and Szporny, Laszlo , 4,605,653, Cl. 514-226.000.
Ford Aerospace & Communications Corp.: *See—*
Clarke, Stephen E.; Hendry, James D.; and Mijares, Ernest R., 4,604,954, Cl. 102-434.000.
Ford, Michael E.; and Johnson, Thomas A., to Air Products and Chemicals, Inc. Noncyclic polyalkylene polyamines by the reaction of an alkanolamine compound and an alkyleneamine compound in the presence of a Group IIA or Group IIIB metal acid phosphate catalyst. 4,605,770, Cl. 564-479.000.
Ford Motor Company: *See—*
Chattha, Mohinder S.; and Cassatta, Joseph C., 4,605,720, Cl. 524-504.000.
Fisher, Alan R., 4,604,914, Cl. 74-688.000.
Forster, Fred D., Jr.: *See—*
Helmly, Paul K., Jr.; Forster, Fred D., Jr.; Gower, Patrick E.; Holdaway, Steven D.; Tutman, Stanley W.; Beissel, Timothy J.; Needham, Robert J.; and Lasky, Arthur J., 4,605,081, Cl. 177-25.000.
Foster Wheeler Energy Corporation: *See—*
Difonzo, Alexander J.; and Seshamani, Venkatraman, 4,604,972, Cl. 122-510.000.
Foulletier, Louis: *See—*
Abel, Michel; Fine, Francois; Foulletier, Louis; and Verot, Yvan, 4,605,798, Cl. 570-164.000.
Fox, Paul L., to Pyramid Optical, Inc. Line lens and method of design therefor. 4,605,282, Cl. 350-167.000.
Foxboro Company, The: *See—*
Sgourakes, George E.; Angelosanto, John P.; and Malloy, Barry T., 4,604,891, Cl. 73-4.00R.
Frahme, Carl E., to Industrial Insulations, Inc. Heat insulating module for a high temperature chamber. 4,605,583, Cl. 428-126.000.
Fraley, Gary L.: *See—*
Crum, Wesley W.; and Fraley, Gary L., 4,605,099, Cl. 182-155.000.
Framatome & CIE: *See—*
Marini, Jean; and Audenard, Bernard, 4,605,924, Cl. 340-683.000.
Frank, Herbert: *See—*
Maulla, Konrad; Hambrecht, Juergen; Echte, Adolf; Swoboda, Johann; Siebel, Peter; Schwaab, Josef; and Frank, Herbert, 4,605,699, Cl. 525-67.000.

Frantz, Armand: *See—*
Schummer, Arthur; de la Hamette, Jean; Lessel, Guy; Beck, Jean-Paul; and Frantz, Armand, 4,605,449, Cl. 148-12.00B.

Frayberg, Naum: *See—*
Kulgevich, Alexander, 4,604,985, Cl. 124-56.000.

Frederiksen, Jeffrey E. Video transmission system using time-warp scrambling. 4,605,961, Cl. 358-119.000.

Freeport Minerals Company: *See—*
Touro, Freddie J., 4,605,537, Cl. 423-29.000.

Freermann, Johannes, to Carl Schmale GmbH & Co. KG. Method of and apparatus for automatically orienting a fabric with aligned nap zone and napless zone. 4,604,926, Cl. 83-18.000.

Frey, Thomas; Grunwald, Werner; Imhof, Ernst; Komaroff, Iwan; Reum, Helmut; Schmid, Gunther; and Schmid, Kurt, to Robert Bosch GmbH. Apparatus for injecting fuel into a secondary flow of combustion air from a combustion chamber. 4,604,975, Cl. 123-145.00A.

Fricke, Hans D., to Orgo-Thermit Inc. Art of mold welding. 4,605,053, Cl. 164-54.000.

Fridman, Robert, to Pace, Incorporated. Device for attaching modular electronic components to or removing them from an insulative substrate. 4,605,152, Cl. 228-6.200.

Friedberger, Michael P.: *See—*
Thomas, Robert H.; Hammond, Willis B.; Friedberger, Michael P.; and Archie, William A., 4,605,587, Cl. 428-265.000.

Friend, Lawrence O.: *See—*
Marshall, Henry D.; Iida, Jeffrey K.; Crow, Douglas J.; and Friend, Lawrence O., 4,605,915, Cl. 333-238.000.

Fringeli, Werner, to Ciba-Geigy Corporation. Stable stilbene fluorescent brightener solution. 4,605,511, Cl. 252-301.210.

Frito-Lay, Inc.: *See—*
Wisdom, Lawrence W., 4,604,925, Cl. 83-13.000.

Fritschi, Edgar, to Warner-Lambert Company. Calcium-antagonist compositions intended for inhalation and process for their manufacture. 4,605,552, Cl. 424-45.000.

Fritschi, Edgar: *See—*
Satzinger, Gerhard; Fritschi, Edgar; and Herrmann, Manfred, 4,605,673, Cl. 514-654.000.

Fritzsche Dodge & Olcott Inc.: *See—*
Willis, Brian J.; and Zazula, Teodosij, 4,605,778, Cl. 568-433.000.

Fry, Grant C., to Du Pont de Nemours, E. I., and Company. Additive for coating compositions. 4,605,596, Cl. 428-423.300.

Fuji Jukogyo Kabushiki Kaisha: *See—*
Takano, Toshio, 4,605,112, Cl. 192-0.033.

Fuji Photo Film Co., Ltd.: *See—*
Asao, Yasuzi; and Takayanagi, Takashi, 4,605,612, Cl. 430-538.000.
Hatanaka, Isamu, 4,605,972, Cl. 358-302.000.
Kuribayashi, Michio, 4,605,951, Cl. 358-11.000.
Nakamura, Takashi; and Takahashi, Kenji, 4,605,861, Cl. 250-484.100.
Ogawa, Hiroshi; and Tamai, Yasuo, 4,605,597, Cl. 428-522.000.
Ohno, Shigeru; and Kishimoto, Shinzo, 4,605,611, Cl. 430-393.000.

Fujii, Setsuro; Hattori, Eizou; Hirata, Mitsuteru; Kunieda, Hisashi; Watanabe, Koichiro; and Ishihama, Hiroshi, to Kowa Co., Ltd. Benzoyl indolecarboxylates. 4,605,739, Cl. 544-373.000.

Fujikawa, Kazuhiko: *See—*
Moriwaki, Hiroshi; Yamamura, Yukio; and Fujikawa, Kazuhiko, 4,604,993, Cl. 128-24.200.

Fujikura Rubber Ltd.: *See—*
Koizumi, Kenichi, 4,605,095, Cl. 182-48.000.

Fujimura, Gen; Sotoma, Koichi; Kunikyo, Hiroshi; Hata, Masahito; and Inoue, Hidesuke, to Kewpie Kabushiki Kaisha. High speed egg breaking method. 4,605,562, Cl. 426-299.000.

Fujinaga, Yoshikazu: *See—*
Takemura, Tohru; Yoshida, Haruhiko; Mukai, Takuma; Takahashi, Hiroshi; and Fujinaga, Yoshikazu, 4,605,500, Cl. 210-321.100.

Fujino, Toshihiro: *See—*
Nishijima, Tamotsu; and Fujino, Toshihiro, 4,604,882, Cl. 72-71.000.

Fujisawa Pharmaceutical Co., Ltd.: *See—*
Hori, Yasuhiro; Hino, Motohiro; Terano, Hiroshi; Hashimoto, Masashi; and Kohsaka, Masanobu, 4,605,559, Cl. 424-120.000.

Fujita, Michio: *See—*
DiIanni, Elmo J.; Cooley, Harold J.; Fujita, Michio; and Noback, Charles V., 4,605,859, Cl. 250-374.000.

Fujitsu Limited: *See—*
Koshizuka, Atuo, 4,606,012, Cl. 365-189.000.
Sasaki, Susumu; and Nakamura, Hiroshi, 4,606,048, Cl. 375-39.000.
Sudo, Yozo; Mori, Hiroyuki; and Murai, Atsuya, 4,605,823, Cl. 179-18.0BC.

Fujiu, Morio; Suhara, Yasuji; and Ishitsuka, Hideo, to Hoffmann-La Roche Inc. Substituted acetophenones and compositions containing them. 4,605,674, Cl. 514-685.000.

Fujiwara, Ryoji; and Shimizu, Isamu, to Canon Kabushiki Kaisha. Electrochromic device. 4,605,285, Cl. 350-357.000.

Fukaya, Chikara: *See—*
Yokoyama, Kazumasa; Fukaya, Chikara; Tsuda, Yoshio; Ono, Taizo; Arakawa, Yoshio; Inoue, Yoshihisa; Naito, Youichiro; and Suyama, Tadakazu, 4,605,650, Cl. 514-183.000.
Yokoyama, Kazumasa; Inoue, Yoshihisa; Ono, Taizo; Fukaya, Chikara; Arakawa, Yoshio; Naito, Youichiro; Yamauchi, Koichi; and Suyama, Tadakazu, 4,605,786, Cl. 568-669.000.

Fukuchi, Hisashi; Shibuya, Masayuki; and Takahashi, Yasuie, to Toyota Jidosha Kabushiki Kaisha. Totally synchronized manual transmission unit for use in a vehicle. 4,605,109, Cl. 192-4.00C.

Fukuda, Tsuguo: *See—*
Terashima, Kazutaka; and Fukuda, Tsuguo, 4,606,037, Cl. 373-6.000.

Fukuhara, Satoru; Ichihashi, Mikio; Murakoshi, Hisaya; and Seitoh, Shigemitsu, to Hitachi, Ltd. Apparatus for focusing a charged particle beam onto a specimen. 4,605,860, Cl. 250-397.000.

Fukui, Masayasu: *See—*
Kitao, Nariharu; Fukui, Masayasu; Hamasaki, Yoshiharu; and Kutsuzawa, Masaki, 4,606,006, Cl. 364-472.000.

Fukumoto, Ryoichi: *See—*
Shiraishi, Daiichi; Iwasaki, Eiji; and Fukumoto, Ryoichi, 4,604,829, Cl. 49-352.000.

Fukuo, Hidetoshi: *See—*
Masuda, Yoshiaki; Fukuo, Hidetoshi; and Yamamoto, Masaji, 4,605,441, Cl. 106-21.000.

Fukushima, Hisashi: *See—*
Watanabe, Kenzo; Kato, Yoshinori; Saito, Masahiko; Oba, Takeo; Fukushima, Hisashi; and Hara, Takeshi, 4,605,645, Cl. 514-51.000.

Fukushima, Isao: *See—*
Kobori, Yasunori; Fukushima, Isao; Nishijima, Hideo; Masuda, Yoshinori; and Yamamoto, Norihisa, 4,605,901, Cl. 328-140.000.

Fuqua, John W.: *See—*
Fisher, Don E.; Fuqua, John W.; and Wilkie, Arnold E., 4,604,863, Cl. 57-352.000.

Futami, Toru: *See—*
Suzuki, Tadashi; Kishi, Norimasa; Tomikashi, Minoru; and Futami, Toru, 4,606,022, Cl. 370-85.000.

Fuwa, Toru: *See—*
Miyoshi, Kenichi; Suzuki, Masanori; and Fuwa, Toru, 4,605,735, Cl. 536-27.000.

Fyfe, Edward R.; and Slater, William M., to Elastometal Limited. Displacement control device. 4,605,106, Cl. 188-374.000.

Fylan, Michael S., to General Motors Corporation. Concealed headlamp. 4,605,991, Cl. 362-65.000.

G. Siempelkamp GmbH & Co.: *See—*
Bottger, Friedrich, 4,605,467, Cl. 156-497.000.

Gabriel, Albert L. Swing wing glider. 4,605,183, Cl. 244-46.000.

Gadbois, John F.: *See—*
Ortloff, John E.; Ziarnik, Allen P.; Filson, John J.; and Gadbois, John F., 4,604,961, Cl. 114-230.000.

Gaiser, Robert F., to Allied Corporation. Master cylinder. 4,604,866, Cl. 60-535.000.

Gaiser, Robert F.: *See—*
Bach, Lloyd G.; Myers, Lawrence R.; and Gaiser, Robert F., 4,604,870, Cl. 60-551.000.

Gansert, Willi: *See—*
Bentz, Willy; Gansert, Willi; Jakob, Gert; Stammler, Kurt; and Walter, Christoph, 4,605,986, Cl. 361-386.000.

GAO Gesellschaft fur Automation und Organisation mbH: *See—*
Obrecht, Werner, 4,605,896, Cl. 324-158.00F.

Gardner, F. Philip: *See—*
Bock, Harry S.; Gregory, Stanley O.; Gardner, F. Philip; and Reid, Russell H., 4,604,807, Cl. 33-3.00C.

Gardner, Kevin: *See—*
Grey, Peter J.; and Gardner, Kevin, 4,605,681, Cl. 521-51.000.

Garland Commercial Ranges Limited: *See—*
Tchitdjian, John K., 4,605,038, Cl. 137-399.000.

Garrett, John M., to Westinghouse Brake and Signal Company Limited. Process for making thyristor devices. 4,605,451, Cl. 148-191.000.

Garrett, Keith A.: *See—*
Hartranft, Marc D.; and Garrett, Keith A., 4,605,980, Cl. 361-56.000.

Garwood, William E.: *See—*
Chester, Arthur W.; Garwood, William E.; and Vartuli, James C., 4,605,488, Cl. 208-78.000.

Gasilovsky, Kim S.: *See—*
Kravchenko, Jury B.; Baru, Jury A.; Osyatinsky, Saul G.; Timoshin, Jury V.; Makogon, Anatoly I.; Lobas, Igor P.; Gasilovsky, Kim S.; Livshits, Inna Z.; and Besedin, Alexei N., 4,605,089, Cl. 181-114.000.

Gates Rubber Company, The: *See—*
Westhoff, William L., 4,605,389, Cl. 474-153.000.

Gegan, Michael J.: *See—*
Butscher, Frank D.; and Gegan, Michael J., 4,605,932, Cl. 343-700.0MS.

Geis, David G.: *See—*
Blanchard, Robert C.; and Geis, David G., 4,605,323, Cl. 400-124.000.

Geisler, Edda: *See—*
Lange, Hans; Geisler, Edda; and Werner, Wolfgang, 4,605,629, Cl. 436-166.000.

Gelinas, Raymond C., to Honeywell Inc. Apparatus and method for distance determination between a receiving device and a transmitting device utilizing a curl-free magnetic vector potential field. 4,605,897, Cl. 324-207.000.

Gemma, Anthony E.; and Dierberger, James A., to United Technologies Corporation. Single crystal articles having controlled secondary crystallographic orientation. 4,605,452, Cl. 148-404.000.

Gemperle, Edward C.: *See—*
Burkhart, Richard P.; and Gemperle, Edward C., 4,604,767, Cl. 15-119.00A.

Genans, Michel, to Dufieux; and Societe Nationale des Chemins de fer Francais. Device designed to move a section being machined past machining means and in the long direction of the section. 4,605,115, Cl. 198-341.000.

General Dynamics Corporation/Convair Div.: *See—*
Stenger, Donald D.; and Coulahan, John F., 4,605,156, Cl. 228-127.000.
General Electric Company: *See—*
Brunelle, Daniel J.; and Singleton, Daniel A., 4,605,745, Cl. 546-304.000.
Chiu, Norman H.; and Schneider, David A., 4,604,871, Cl. 62-130.000.
Cho, Timothy C.; and Lohrey, Edwin J., 4,605,877, Cl. 313-272.000.
Crawford, Carl R.; and Acharya, Kishore C., 4,606,004, Cl. 364-414.000.
Dakin, James T., 4,605,881, Cl. 313-638.000.
Eddens, Fletcher C., 4,604,785, Cl. 29-463.000.
Evans, Thomas L.; and Williams, David A., 4,605,731, Cl. 528-371.000.
Green, Wayne T., 4,605,969, Cl. 358-213.000.
Hibbs, Louis E., Jr.; and Sogoian, George C., 4,605,343, Cl. 407-119.000.
Losapio, Peter F., 4,605,842, Cl. 235-1.00D.
Mark, Victor, 4,605,726, Cl. 528-190.000.
Naster, Ronald J.; Windyka, John A.; and Wolfe, Allen R., 4,605,912, Cl. 333-164.000.
Rieben, Werner P.; and Willson, Jill M., 4,606,001, Cl. 364-167.000.
Stevens, Robert W.; and Markovitz, Mark, 4,605,581, Cl. 428-96.000.
Sturgeon, Gerald E.; and Derman, Robert I., 4,605,362, Cl. 418-63.000.
Terhune, James H., 4,605,858, Cl. 250-374.000.
Thompson, Robert A., 4,604,834, Cl. 51-165.710.
General Foods Corporation: *See—*
Lang, Kevin W., 4,605,561, Cl. 426-93.000.
General Motors Corporation: *See—*
DeWitt, Albert C.; Herriges, Donald W.; and Stanner, Donald, 4,605,216, Cl. 271-18.300.
Fylan, Michael S., 4,605,991, Cl. 362-65.000.
Koors, Mark A., 4,605,140, Cl. 220-233.000.
Steele, Roy B.; Kirk, Thomas E.; Robinson, Melvin T.; and Anderson, Stephen W., 4,606,000, Cl. 363-145.000.
Thornburgh, William F., 4,605,426, Cl. 55-267.000.
General Safety Corporation: *See—*
Fisher, Alfred J., III; and Schmidt, Timothy J., 4,605,180, Cl. 242-107.40A.
GenRad Semiconductor Test, Inc.: *See—*
Cox, Gerald; and DeHaven, Bill, 4,605,894, Cl. 324-73.00R.
Geohegan, David B.: *See—*
Eden, James G.; McCown, Andrew W.; and Geohegan, David B., 4,606,034, Cl. 372-57.000.
Georgiev, Georgi I.: *See—*
Samokovlitski, David A.; Georgiev, Georgi I.; Peychev, Rumen P.; Levi, Sami S.; and Petrov, Lazar O., 4,605,148, Cl. 226-174.000.
Georgiou, Christos J., to International Business Machines Corporation. Fault-tolerant array of cross-point switching matrices. 4,605,928, Cl. 340-825.940.
Geoscience Ltd: *See—*
Sabin, Cullen M.; and Poppendiek, Heinz F., 4,604,902, Cl. 73-861.040.
Gerbal, Claude F.; Gompf, Thomas E.; and Collet, Pierre D., to Eastman Kodak Company. Substituted sulfonamido compounds, photosensitive elements, film units, and processes for retaining a photographic image with same. 4,605,697, Cl. 534-648.000.
Gerber, Christoph: *See—*
Binnig, Gerd; Gerber, Christoph; Rohrer, Heinrich; and Weibel, Edmund, 4,605,194, Cl. 248-559.000.
Gesellschaft fur Biotechnologische Forschung mbH (GBF): *See—*
Andersch, Wolfram; Bahl, Hubert; and Gottschalk, Gerhard, 4,605,620, Cl. 435-148.000.
GfE Gesellschaft fur Elektrometallurgie mbH: *See—*
Andorfer, Hermann, 4,605,436, Cl. 75-10.650.
Giese, John D., to Mepaco, Inc. Meat press. 4,604,949, Cl. 100-194.000.
Giess, Helmut: *See—*
Trachte, Dietrich; and Giess, Helmut, 4,605,171, Cl. 239-453.000.
Gill, Audrey: *See—*
Brotherton, Stanley D.; Gill, Audrey; and King, Michael J., 4,605,447, Cl. 148-1.500.
Gillberg-LaForce, Gunilla E.: *See—*
Deeg, Martin H. G.; Gillberg-LaForce, Gunilla E.; and Buckley, Alan, 4,605,573, Cl. 427-424.000.
Gillem, Vernon A. Lightning deterrent. 4,605,814, Cl. 174-2.000.
Gimesi, Antal: *See—*
Matolosy, Gyorgy; Bordas, Barna; Gimesi, Antal; Kovacs nee Kalman, Magdolna; and Tuske, Marton, 4,605,764, Cl. 564-209.000.
Giordanengo, Giovanni; and Cavallera, Giorgio, to La Nuova Seolpitrice S.p.A. Multiple carving machine. 4,605,049, Cl. 144-144.00R.
Giovannelli, Antonio: *See—*
Taragna, Luigi; and Giovannelli, Antonio, 4,605,137, Cl. 215-254.000.
Taragna, Luigi; and Giovannelli, Antonio, 4,605,138, Cl. 215-254.000.
Giughese, Michel. Drilling apparatus with wall-covering protection. 4,605,345, Cl. 408-95.000.
GKN Automotive Components Incorporated: *See—*
Kurzeja, Patrick L.; Sutton, Noel W.; and Hahn, Steven C., 4,605,384, Cl. 464-111.000.
Glaser, Dieter, to PEG Perego Pines Deutschland GmbH. Folding pushchair. 4,605,243, Cl. 280-642.000.
Glass, Kathleen K.; and Haas, Lawrence J., to AT&T Bell Laboratories. Hierarchical diagnostic testing arrangement for a data processing system having operationally interdependent circuit boards. 4,606,024, Cl. 371-16.000.
Globe International Inc.: *See—*
Lane, Peter, 4,605,586, Cl. 428-240.000.
Globe Manufacturing Company: *See—*
Bowman, J. Robert; and Pinkham, Eleanor T., 4,604,759, Cl. 2-81.000.
Goddard, Errol D.; and Leung, Pak S., to Union Carbide Corporation. Oil-in-alcohol microemulsion. 4,605,422, Cl. 44-51.000.
Godrej, Nadir B.; and Thakur, Manmohan S., to Godrej Soaps Private Limited. Plant growth promoter from rice bran and processes for making and using. 4,605,430, Cl. 71-23.000.
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Godrej, Nadir B.; and Thakur, Manmohan S., 4,605,430, Cl. 71-23.000.
Goedken, James H.; and Waltke, David L., to Hoover Universal, Inc. Pallet and tank assembly. 4,605,126, Cl. 206-386.000.
Goel, Anil B., to Ashland Oil, Inc. Novel tetrasubstituted bicyclic amide acetals and process for their manufacture. 4,605,746, Cl. 548-218.000.
Goetz, Oliver R.; Schnurr, Richard D.; and Kronstadt, Victor, to Mack Trucks, Inc. Vibration damping clutch and pinion assembly. 4,605,114, Cl. 192-106.200.
Goetz, Werner, to Siemens Aktiengesellschaft. Apparatus for seating a terminal or similar office equipment. 4,605,188, Cl. 248-157.000.
Gohin, Christian; and Leblond, Henri, to Badin Crouzet. Pressure measuring device. 4,604,898, Cl. 73-701.000.
Goi, Kowichi, to Laurel Bank Machine Co., Ltd. Bill feeding apparatus. 4,605,217, Cl. 271-124.000.
Goldbach, Manfred, to Hauni-Werke Korber & Co. KG. Method and apparatus for forming discrete batches of tobacco particles. 4,605,013, Cl. 131-80.000.
Goldberg, Abraham A.; McMann, Renville H.; and Rossi, John P., to CBS Inc. Two channel compatible high definition television broadcast system. 4,605,950, Cl. 358-11.000.
Golden Valley Foods Inc: *See—*
Andreas, David W., 4,604,854, Cl. 53-552.000.
Goldfarb, Adolph E. Transparent self-adhesive bumpers for protecting household or office surfaces or articles inconspicuously. 4,604,768, Cl. 16-86.00A.
Goldhahn, Stephen L., to Campbell Soup Company. Continuous food sterilization system with hydrostatic sealed treatment chamber. 4,604,948, Cl. 99-470.000.
Goldsmith, John W.; and Rullman, Paul B., to J. M. Huber Corporation. Insulating union and method. 4,605,248, Cl. 285-52.000.
Gompf, Thomas E.: *See—*
Gerbal, Claude F.; Gompf, Thomas E.; and Collet, Pierre D., 4,605,697, Cl. 534-648.000.
Goodhart, Milton E., to Hydril Company. Method for forming boreholes. 4,605,076, Cl. 175-61.000.
Goodrum, Richard W.; Bechtold, Thomas E.; and Klimek, Albert A., to Ethyl Corporation. Infusion package. 4,605,123, Cl. 206-0.500.
Goodyear Tire & Rubber Company, The: *See—*
Benko, David A.; Mowdood, Syed K.; Sandstrom, Paul H.; Waddell, Walter H., III; and Wideman, Lawson G., 4,605,696, Cl. 524-432.000.
Eisenzimmer, George W., 4,605,466, Cl. 156-293.000.
Mowdood, Syed K., 4,605,693, Cl. 524-239.000.
Sloan, Gary W.; and Nelson, Walter H., 4,605,051, Cl. 157-13.000.
Tung, William C. T., 4,605,728, Cl. 528-289.000.
Goolsby, Thomas C.; and Sanford, Dock, to Cannon Rug Company. Pile fabric formed from fabric strips. 4,605,580, Cl. 428-92.000.
Gordon, Alan J.; Sterritt, David W.; and Evans, Robert, to Shandon Southern Products Limited. Tissue processing apparatus. 4,604,964, Cl. 118-50.000.
Gorog, Sandor: *See—*
Toth, Edit; Torley, Jozsef; Fekete, Gyorgy; Szporny, Laszlo ; Vereczkey, Laszlo ; Palosi, Eva; Klebovich, Imre; Vittay, Pal; Gorog, Sandor; and Hajdu, Istvan, 4,605,672, Cl. 514-648.000.
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Gossner, Matthias, to Dr. Ing. Rudolf Hell GmbH. Device for supporting spindles. 4,605,320, Cl. 384-494.000.
Gostomski, Dominic A., Jr.; and Price, Jerry G., to International Business Machines Corporation. Membrane keyboard switch mounting. 4,605,828, Cl. 200-5.00A.
Goto, Sumio: *See—*
Watanabe, Akio; and Goto, Sumio, 4,605,571, Cl. 427-387.000.
Goto, Taiji: *See—*
Shomura, Eiichi; and Goto, Taiji, 4,605,328, Cl. 400-662.000.
Gotoh, Akio: *See—*
Sekigawa, Tatsuaki; Gotoh, Akio; Tsutsumi, Syuitsu; Marui, Kuniyoshi; and Honda, Naoto, 4,606,050, Cl. 375-75.000.
Gottschalk, Gerhard: *See—*
Andersch, Wolfram; Bahl, Hubert; and Gottschalk, Gerhard, 4,605,620, Cl. 435-148.000.
Gould Instruments, Ltd.: *See—*
Miller, Allen, 4,605,906, Cl. 330-149.000.
Gower, Patrick E.: *See—*
Helmly, Paul K., Jr.; Forster, Fred D., Jr.; Gower, Patrick E.; Holdaway, Steven D.; Tutman, Stanley W.; Beissel, Timothy J.;

Needham, Robert J.; and Lasky, Arthur J., 4,605,081, Cl. 177-25.000.

Graham, David R., to Cannondale Corporation. Racing bicycle frameset. 4,605,241, Cl. 280-281.00R.

Graham Magnetics Incorporated: *See—*
Deffeyes, Robert J., 4,605,835, Cl. 219-85.0BM.

Grasberger, Christine L.; and Martin, Eileen M. Safety bib for engaging a pacifier. 4,604,758, Cl. 2-49.00R.

Gray, Richard L.: *See—*
Rosenthal, Bruce D.; and Gray, Richard L., 4,605,907, Cl. 330-257.000.

Grebel, Robert E.; Neunherz, Robert K.; and McGrath, David W., to Wright Line Inc. Adjustment mechanism for work station. 4,604,956, Cl. 108-147.000.

Green Cross Corporation, The: *See—*
Yokoyama, Kazumasa; Fukaya, Chikara; Tsuda, Yoshio; Ono, Taizo; Arakawa, Yoshio; Inoue, Yoshihisa; Naito, Youichiro; and Suyama, Tadakazu, 4,605,650, Cl. 514-183.000.
Yokoyama, Kazumasa; Inoue, Yoshihisa; Ono, Taizo; Fukaya, Chikara; Arakawa, Yoshio; Naito, Youichiro; Yamauchi, Koichi; and Suyama, Tadakazu, 4,605,786, Cl. 568-669.000.

Green, Michael J., to BP Chemicals Limited. Preparation of alkanolamine. 4,605,769, Cl. 564-477.000.

Green, Paul J.: *See—*
Crowley, Michael J.; Dornbusch, Arthur H.; and Green, Paul J., 4,605,330, Cl. 401-68.000.

Green, Wayne T., to General Electric Company. Video pattern noise processor. 4,605,969, Cl. 358-213.000.

Greene, John P.: *See—*
Berkowitz, Joseph; Ruscic, Branko M.; and Greene, John P., 4,606,030, Cl. 372-5.000.

Greenfield, Harold: *See—*
Malz, Russell E., Jr.; and Greenfield, Harold, 4,605,743, Cl. 546-186.000.

Greenstein, Lawrence J.: *See—*
Amitay, Noach; and Greenstein, Lawrence J., 4,606,054, Cl. 375-102.000.

Gregory, Reginald: *See—*
Ballantine, James A.; Gregory, Reginald; Purnell, John H.; Thomas, John M.; and Westlake, David J., 4,605,806, Cl. 585-467.000.

Gregory, Stanley O.: *See—*
Bock, Harry S.; Gregory, Stanley O.; Gardner, F. Philip; and Reid, Russell H., 4,604,807, Cl. 33-3.00C.

Greiner, Waldemar H., to Seal-Air Control Systems Inc. Damper construction. 4,605,198, Cl. 251-58.000.

Grendahl, Dennis T., to Surgidev Corporation. Intraocular lens. 4,605,410, Cl. 623-6.000.

Grenier, Claude A., to Plummer, Walter Allen. Snap-on heat insulating jacket and method for enclosing ducting. 4,605,043, Cl. 138-149.000.

Grey, George E., to Craigave Pty. Ltd. Imitation medal. 4,604,819, Cl. 40-1.500.

Grey, Peter J.; and Gardner, Kevin, to BTR plc. Thermosetting polyurethanes. 4,605,681, Cl. 521-51.000.

Grieben, Karl-Heinz, to Hauni-Werke Korber & Co. KG. Method of tip turning filter cigarettes or the like. 4,605,015, Cl. 131-94.000.

Grigoleit Company, The: *See—*
Howie, Robert K., Jr., 4,604,786, Cl. 29-513.000.

Grobbelaar, Charl J., to Arthroplasty Research & Development (Pty) Ltd. Apparatus for hip arthroplasty. 4,605,416, Cl. 623-23.000.

Grogler, Gerhard; Kopp, Richard; and Hess, Heinrich, to Bayer Aktiengesellschaft. Process for the in situ production of urea group-containing isocyanates in polyols. 4,605,756, Cl. 560-351.000.

Grosbois, Jean: *See—*
Dumousseau, Jean-Yves; Grosbois, Jean; and Jacubert, Serge, 4,605,547, Cl. 423-646.000.

Grund, Klaus J. Method of and device for repairing slide-valve spindles. 4,605,031, Cl. 137-15.000.

Grunwald, Werner: *See—*
Frey, Thomas; Grunwald, Werner; Imhof, Ernst; Komaroff, Iwan; Reum, Helmut; Schmid, Gunther; and Schmid, Kurt, 4,604,975, Cl. 123-145.00A.

GTE Products Corporation: *See—*
Mizuhara, Howard, 4,604,945, Cl. 92-176.000.
Vanderpool, Clarence D., 4,605,538, Cl. 423-55.000.

Guendling, Fred W., Jr. Method of putting a golf ball. 4,605,228, Cl. 273-77.00R.

Guenther, Kenneth L.: *See—*
Zemke, Edward H., deceased; Guenther, Kenneth L.; and Warden, Gerald D., 4;604,849, Cl. 53-266.00A.

Guerdon, Constant: *See—*
Ninane, Leon; Breton, Claude; and Guerdon, Constant, 4,605,771; Cl. 564-497.000.

Gueret, Jean-Louis H., to L'Oreal. Make-up powder compact and its applicator brush. 4,605,022, Cl. 132-82.00R.

Guerro, Gerald J.; Proverb, Robert J.; and Tarvin, Robert F., to American Cyanamid Company. Temporary wet strength resin. 4,605,702, Cl. 525-154.000.

Guibault, Denis. Modular floating dock. 4,604,962, Cl. 114-266.000.

Guilbert, Curtis R., to Minnesota Mining and Manufacturing Company. High temperature wire coating powder. 4,605,710, Cl. 525-438.000.

Gullfiber Akustik AB: *See—*
Karlen, Lennart, 4,605,093, Cl. 181-295.000.

Gurol, Ismail M., to John Fluke Mfg. Co., Inc. Method of making molded circuit board. 4,604,799, Cl. 29-897.000.

Gusching, Nagle V.; and Daulton, Richard R., to Monarch Machine Tool Company, The. Post process diameter gage. 4,604,810, Cl. 33-178.00E.

Gutjahr, Lothar, to Klockner-Werke Aktiengesellschaft. Mold closing unit of an injection molding machine. 4,605,367, Cl. 425-150.000.

Guy, Robert R., to Lof Plastics Inc. Tape tension control system. 4,605,457, Cl. 156-160.000.

Gwozdz, Peter S.; and Bath, Hubert M., to Advanced Micro Devices, Inc. Method for interconnecting conducting layers of an integrated circuit device. 4,605,470, Cl. 156-643.000.

Haas, David J.; and Autote, Alexander J., to Temtec Inc. Writing board. 4,605,246, Cl. 282-29.00A.

Haas, Lawrence J.: *See—*
Glass, Kathleen K.; and Haas, Lawrence J., 4,606,024, Cl. 371-16.000.

Haas, Roland: *See—*
Brandenstein, Manfred; and Haas, Roland, 4,605,113, Cl. 192-98.000.
Brandenstein, Manfred; Haas, Roland; and Hans, Rudiger, 4,605,321, Cl. 384-512.000.

Habitzreiter, Richard K.; Pinney, Robert V. B., Jr.; and Woolston, Mark S., to Recognition Equipment Incorporated. Video compressor for video format unit. 4,606,068, Cl. 382-56.000.

Haddad, James H.; and Owen, Hartley, to Mobil Oil Corporation. FCC catalyst stripping method. 4,605,491, Cl. 208-161.000.

Haendle, Joerg, to Siemens Aktiengesellschaft. Radiodiagnostic system with a flat picture intensifier. 4,606,064, Cl. 378-99.000.

Haga, Nobuhiro: *See—*
Kamata, Susumu; Haga, Nobuhiro; Nagata, Wataru; and Matsui, Takeaki, 4,605,738, Cl. 544-310.000.

Haggan, Douglas E., to AT&T Technologies, Inc. Computerized transaction card with inductive data transfer. 4,605,844, Cl. 235-380.000.

Hahn, James H., to Rush, David H. Electromechanical machine. 4,605,873, Cl. 310-154.000.

Hahn, Norbert; and Olson, Arthur A., Jr., to Rite-Hite Corporation. Vehicle restraint. 4,605,353, Cl. 414-401.000.

Hahn, Steven C.: *See—*
Kurzeja, Patrick L.; Sutton, Noel W.; and Hahn, Steven C., 4,605,384, Cl. 464-111.000.

Haines, Richard F., to United States of America, National Aeronautics and Space Administration. Simulator scene display evaluation device. 4,605,303, Cl. 356-73.000.

Hajdu, Istvan: *See—*
Toth, Edit; Torley, Jozsef; Fekete, Gyorgy; Szporny, Laszlo ; Vereczkey, Laszlo ; Palosi, Eva; Klebovich, Imre; Vittay, Pal; Gorog, Sandor; and Hajdu, Istvan, 4,605,672, Cl. 514-648.000.
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Hajj-Chehade, Mohammed, to U.S. Philips Corporation. Phase locked loop frequency demodulator having an adjustable bandwidth. 4,605,904, Cl. 329-50.000.

Hajos, Gyorgy: *See—*
Bernath, Gabor; Kobor, Jeno; Folop, Ferenc; Sohajda, Attila; Kalman, Alajos; Ezer, Elemer; Hajos, Gyorgy; Palosi, Eva; Denes, Laszlo ; and Szporny, Laszlo , 4,605,653, Cl. 514-226.000.

Halbert, Thomas R.: *See—*
Rhodes, Richard P.; and Halbert, Thomas R., 4,605,752, Cl. 556-42.000.

Halcon SD Group, Inc., The: *See—*
Pugach, Joseph, 4,605,541, Cl. 423-22.000.

Halford, Wayne R.; and Nakano, Walter S., to Mattel, Inc. Toy vehicle game with launcher and return means. 4,605,230, Cl. 273-129.0AP.

Hallgren, Leif: *See—*
Andersson, Jarl A.; and Hallgren, Leif, 4,605,060, Cl. 165-166.000.

Halliburton Company: *See—*
Smith, Harry D., Jr., 4,605,854, Cl. 250-266.000.

Hallidy, William M.; and Shutt, Donald P., to Western Gear Corporation. Slip clutch with slip detector and electrical disconnect. 4,605,107, Cl. 192-0.02R.

Halocarbon Products Corp.: *See—*
Astrologes, Gary W., 4,605,802, Cl. 570-257.000.

Halverson, Danny C.; Pyzik, Aleksander J.; and Aksay, Ilhan A., to United States of America, Energy. Boron-carbide-aluminum and boron-carbide-reactive metal cermets. 4,605,440, Cl. 75-238.000.

Hamamatsu Photonics Kabushiki Kaisha: *See—*
Niigaki, Minoru; Nihashi, Tokuaki; and Ohta, Masashi, 4,605,600, Cl. 428-689.000.

Hamana, Ryozo: *See—*
Mori, Shoichiro; Aoki, Tadamichi; Hamana, Ryozo; and Nomura, Yutaka, 4,605,742, Cl. 546-184.000.

Hamarman, Henry: *See—*
Katz, Philip; Brenman, Henry S.; Hamarman, Henry; and Schwartz, Harold, 4,605,927, Cl. 340-825.190.

Hamasaki, Yoshiharu: *See—*
Kitao, Nariharu; Fukui, Masayasu; Hamasaki, Yoshiharu; and Kutsuzawa, Masaki, 4,606,006, Cl. 364-472.000.

Hamazoe, Kimihisa: *See—*
Okazaki, Koji; Tsubai, Yasuo; and Hamazoe, Kimihisa, 4,605,609, Cl. 430-232.000.

Hambrecht, Juergen: *See—*
Mituña, Konrad; Hambrecht, Juergen; Echte, Adolf; Swoboda, Johann; Siebel, Peter; Schwaab, Josef; and Frank, Herbert, 4,605,699, Cl. 525-67.000.

Hamilton, Don A. Breakdown boat paddle with variable configuration. 4,605,378, Cl. 440-102.000.

Hammond, Willis B.: *See—*
Thomas, Robert H.; Hammond, Willis B.; Friedberger, Michael P.; and Archie, William A., 4,605,587, Cl. 428-265.000.

Hanayama, Naoki: *See—*
Kinishi, Ryoichi; Kaku, Eisaburo; and Hanayama, Naoki, 4,605,940, Cl. 346-209.000.

Hankel, Rainer; Pham, Minh-Chanh; and Peuser, Sieghart, to Robert Bosch GmbH. Contactless relative movement sensor. 4,605,308, Cl. 356-373.000.

Hanning, Bernard W.; and Dent, John N. Label handling apparatus. 4,605,214, Cl. 271-3.100.

Hans, Rudiger: *See—*
Brandenstein, Manfred; Haas, Roland; and Hans, Rudiger, 4,605,321, Cl. 384-512.000.

Hara, Kenji: *See—*
Omata, Kazuo; Shimizu, Toshihiko; Ibe, Hiroshi; and Hara, Kenji, 4,605,572, Cl. 427-403.000.

Hara, Takeshi: *See—*
Watanabe, Kenzo; Kato, Yoshinori; Saito, Masahiko; Oba, Takeo; Fukushima, Hisashi; and Hara, Takeshi, 4,605,645, Cl. 514-51.000.

Harada, Hiroyuki: *See—*
Momose, Takashi; Tomiie, Kazuo; Harada, Hiroyuki; Miyachi, Hiroshi; and Kato, Hiroko, 4,605,685, Cl. 522-124.000.

Harada, Junzo, to Idemitsu Kosan Company Limited. Process for producing silicon carbide whisker. 4,605,542, Cl. 423-345.000.

Harada, Susumu; Hasegawa, Sakuro; and Sato, Koichi, to Nitto Boseki Co., Ltd. Small-globular crosslinked monoallylamine polymer and process for producing the same. 4,605,701, Cl. 525-107.000.

Harandi, Mohsen N., to Mobil Oil Corporation. Method for minimizing recycling in an unsaturated gas plant. 4,605,493, Cl. 208-341.000.

Harara, Mitsuhiko: *See—*
Tanaka, Tadao; Chikamori, Sunao; Harara, Mitsuhiko; Taniguchi, Yasutaka; Suzumura, Masanaga; Tatemoto, Minoru; Kumagai, Naotake; Abe, Hiroki; and Takizawa, Shozo, 4,605,244, Cl. 280-707.000.

Hargis, Duane C., to Ethyl Corporation. Alkylation process. 4,605,766, Cl. 564-409.000.

Harlass, Harald: *See—*
Bausch, Wilhelm L.; Strobel, Rolf; Bullinger, Siegfried; Harlass, Harald; and Busch, Walter, 4,605,047, Cl. 141-83.000.

Harman, R. Keith, to Senstar Security Systems Corp. Shunt transmission line for use in leaky coaxial cable system. 4,605,914, Cl. 333-237.000.

Harner, Robert H.; and Ruta, Joseph W., to S&C Electric Company. Control circuit for a circuit interrupter. 4,605,982, Cl. 361-94.000.

Harrel, Gad J. Reinforced box structure. 4,605,159, Cl. 229-116.000.

Harrington, Timothy A., to Rockwell International Corporation. Hybrid junction signal combiner. 4,605,902, Cl. 328-158.000.

Harris, Gerald R. Compact variable speed pulley assembly. 4,605,386, Cl. 474-8.000.

Harris Graphics Corporation: *See—*
Bastian, Donald G.; and Slepicka, Gregory L., 4,604,931, Cl. 83-665.000.

Harris, Richard T.: *See—*
Harris, Theodore R.; and Harris, Richard T., 4,605,092, Cl. 181-280.000.

Harris, Theodore R.; and Harris, Richard T. Large, high r.p.m. diesel engine exhaust muffler. 4,605,092, Cl. 181-280.000.

Hart, Terence J.; Dowbenko, Rostyslaw; Maska, Rudolf; Van Buskirk, Ellor J.; and Tetenbaum, Marvin T., to PPG Industries, Inc. Resinous blends of epoxy and acrylic resins and the use thereof in electrodeposition. 4,605,476, Cl. 204-181.600.

Hartman, Eric E.: *See—*
Hodson, Homer J.; Shurney, Glenn A.; and Hartman, Eric E., 4,605,021, Cl. 132-33.00R.

Hartman, Johan E. A.: *See—*
van Baardewijk, Johannes; Hartman, Johan E. A.; and Bohlmeyer, Nicolaas, 4,606,057, Cl. 377-28.000.

Hartmann, Gunter, to Siemens Aktiengesellschaft. Device for drilling holes in a stack of plates. 4,605,344, Cl. 408-95.000.

Hartner, Hartmut: *See—*
Reiff, Friedrich; Hartner, Hartmut; Basedow, Arno; Hugenbusch, Hans-Wolfgang; Schmidt, Peter C.; and Bardonner, Hans, 4,605,794, Cl. 568-852.000.

Hartranft, Marc D.; and Garrett, Keith A., to Zilog, Inc. Integrated circuit high voltage protection. 4,605,980, Cl. 361-56.000.

Harvey Hubbell Incorporated: *See—*
Jorgensen, Robert W.; and Lewis, Thomas E., 4,605,816, Cl. 174-65.00R.

Harvey, Ian J., to Lucas Industries public limited company. Drive circuits. 4,605,983, Cl. 361-154.000.

Hasegawa, Eiichi; Iida, Takamitsu; and Sakamoto, Masahiro, to Kansai Paint Co., Ltd. Process for producing granular fixed enzymes or microorganisms. 4,605,622, Cl. 435-182.000.

Hasegawa, Sakuro: *See—*
Harada, Susumu; Hasegawa, Sakuro; and Sato, Koichi, 4,605,701, Cl. 525-107.000.

Hashima, Akio: *See—*
Ochi, Atsuo; Hashima, Akio; and Tomita, Masao, 4,605,974, Cl. 360-62.000.

Hashimoto Corporation: *See—*
Hashimoto, Kazuo, 4,605,821, Cl. 179-6.130.

Hashimoto, Kazuo, to Hashimoto Corporation. Automatic telephone answering apparatus. 4,605,821, Cl. 179-6.130.

Hashimoto, Masashi: *See—*
Hori, Yasuhiro; Hino, Motohiro; Terano, Hiroshi; Hashimoto, Masashi; and Kohsaka, Masanobu, 4,605,559, Cl. 424-120.000.

Hashimoto, Takaaki; Minagawa, Kazushi; and Iida, Yozo, to Nippon Kogaku K.K. Color balance adjusting apparatus for color television cameras. 4,605,955, Cl. 358-29.000.

Hashimoto, Yoshikazu: *See—*
Kudoh, Kazunao; and Hashimoto, Yoshikazu, 4,605,533, Cl. 428-622.000.

Hasircoglu, Alexander W., to Du Pont de Nemours, E. I., and Company. Two row coaxial cable connector. 4,605,276, Cl. 339-176.0MF.

Haskel, Inc.: *See—*
Aldred, Derek L., 4,604,918, Cl. 81-57.380.

Hata, Kosei, to Seiken Kai Foundational Juridical Person. Methods for purifying water or water-containing material using microorganisms and living bacterial preparations as well as method for preparing and storing same. 4,605,502, Cl. 210-611.000.

Hata, Masahito: *See—*
Fujimura, Gen; Sotoma, Koichi; Kunikyo, Hiroshi; Hata, Masahito; and Inoue, Hidesuke, 4,605,562, Cl. 426-299.000.

Hata, Seiji; Horino, Hiroshi; and Miyakawa, Akira, to Hitachi, Ltd. Programmable image processor. 4,606,066, Cl. 382-41.000.

Hatanaka, Isamu, to Fuji Photo Film Co., Ltd. Image forming method. 4,605,972, Cl. 358-302.000.

Hatch, Robert A.: *See—*
Owens, Kenneth E.; and Hatch, Robert A., 4,605,594, Cl. 428-373.000.

Hatcher, Clive D.; Hill, Alan; and King, Geoffrey W., to W. R. Grace & Co. Closure lining machine. 4,605,351, Cl. 413-58.000.

Hatsuse, Toshikazu: *See—*
Kimura, Sosaku; Okabe, Takeshi; and Hatsuse, Toshikazu, 4,604,833, Cl. 51-165.800.

Hattori, Eizou: *See—*
Fujii, Setsuro; Hattori, Eizou; Hirata, Mitsuteru; Kunieda, Hisashi; Watanabe, Koichiro; and Ishihama, Hiroshi, 4,605,739, Cl. 544-373.000.

Hauk, Rolf: *See—*
Langner, Klaus; Papst, Gero; Hauk, Rolf; and Nagl, Michael, 4,605,205, Cl. 266-160.000.

Hauni-Werke Korber & Co. KG: *See—*
Goldbach, Manfred, 4,605,013, Cl. 131-80.000.
Grieben, Karl-Heinz, 4,605,015, Cl. 131-94.000.
Wahle, Gunter, 4,605,014, Cl. 131-94.000.

Hawkins, James M.: *See—*
Jenkins, Waylon L.; Hawkins, James M.; and Sand, I. Daniel, 4,605,721, Cl. 527-312.000.

Hawkins, Jeffrey A., to Tektronix, Inc. Method and apparatus for calibrating an optical document digitizer. 4,605,970, Cl. 358-265.000.

Haworth, Inc.: *See—*
McKernan, Thomas J.; and Berry, Gordon C., 4,605,266, Cl. 312-219.000.

Hayashi, Kanji: *See—*
Yonehara, Takashi; and Hayashi, Kanji, 4,605,574, Cl. 427-424.000.

Hayashi, Mitsutoshi; Nagaoka, Kazunobu; and Ohkawa, Michihiro, to Honda Giken Kogyo Kabushiki Kaisha. Air vent device for fuel tank on vehicle. 4,605,032, Cl. 137-44.000.

Hayashi, Toshihide, to Sony Corporation. Direct broadcasting satellite receiver. 4,605,968, Cl. 358-188.000.

Hayashi, Yoshimasa, to Nissan Motor Co., Ltd. Evaporative cooled engine having manual control for service facilitation. 4,604,973, Cl. 123-41.210.

Hayashi, Yoshimasa, to Nissan Motor Co., Ltd. Passenger room heating system for use with boiling liquid engine cooling system. 4,605,163, Cl. 237-2.00A.

Hayashi, Yoshimasa; and Ogawa, Naoki, to Nissan Motor Co., Ltd. Cabin heating arrangement for vehicle having evaporative cooled engine. 4,605,164, Cl. 237-2.00A.

Hayata, Yoshiki: *See—*
Toudo, Kenzi; Yiyanaka, Motoshi; and Hayata, Yoshiki, 4,605,863, Cl. 307-269.000.

Haynes, Hendrick W.; and Mayer, Harry W., to Mayer, Harry W. Constant mesh gear transmission. 4,605,084, Cl. 180-70.100.

Haynes, Paul L., Jr.: *See—*
Sundberg, Jack G.; and Haynes, Paul L., Jr., 4,605,235, Cl. 277-87.000.

Heberlein, Irmtrud: *See—*
Michel, Wolfgang; Paul, Heinz; Rummel, Andreas; Seher, Gero; Ossowski, Manfred; Heberlein, Irmtrud; Kostler, Dieter; and Wilhelm, Frank, 4,605,487, Cl. 208-408.000.

Hechler, Hatto, to M.A.N.-Roland Druckmaschinen Aktiengesellschaft. Apparatus for folding traveling webs using a series of roller pairs. 4,605,210, Cl. 270-41.000.

Hechler, Hatto, to M.A.N. Roland Druckmaschinen Aktiengesellschaft. Apparatus for continuous handling of folded paper products. 4,605,213, Cl. 270-55.000.

Heine, Christian; and Wust, Reinhold, to Henkel Kommanditgesellschaft auf Aktien. Process for increasing the viscosity of oils. 4,605,563, Cl. 426-607.000.

Heintke, Hans E.: *See—*
Ullmann, Roland; and Heintke, Hans E., 4,604,801, Cl. 30-43.920.

Heitner, Barry J., to Du Pont de Nemours, E. I., and Company. Preparation of acrylic polymer sheets using a ternary peroxide initiator system. 4,605,717, Cl. 526-228.000.

Heitz, Walter; and Koch, Wolfgang, to Bayer Aktiengesellschaft. Process for the production of polyarylene sulphides with functional end groups. 4,605,713, Cl. 525-537.000.

Heitz, Walter; and Koch, Wolfgang, to Bayer Aktiengesellschaft. Process for the production of polyarylene sulphides with functional end groups. 4,605,732, Cl. 528-388.000.

Held, Kurt. Pressurized writing device with needle weight having valve means. 4,605,331, Cl. 401-258.000.

Heller, Jorge: *See—*
Saito, Kenichiro; Heller, Jorge; and Skinner, Wilfred A., 4,605,670, Cl. 514-619.000.

Hellewell, Byron A. Self-aligning fiber optic connector. 4,605,281, Cl. 350-96.210.

Hellmer, Ernest W.; and Pfohl, Frank W., to Continental Plastic Containers. Swivel hose connection and adjustable mounting of support member for cam follower and swivels. 4,605,368, Cl. 425-195.000.

Helmberger, Josef: *See—*
Bestenreiner, Friedrich; Boie, Immo; and Helmberger, Josef, 4,605,954, Cl. 358-27.000.

Helmly, Paul K., Jr.; Forster, Fred D., Jr.; Gower, Patrick E.; Holdaway, Steven D.; Tutman, Stanley W.; Beissel, Timothy J.; Needham, Robert J.; and Lasky, Arthur J., to Standard Oil Company (Indiana). Automatic truck measuring system and process. 4,605,081, Cl. 177-25.000.

Hendrix, Charles R., Jr.: *See—*
de la Guardia, Mario; and Hendrix, Charles R., Jr., 4,605,018, Cl. 132-7.000.

Hendry, James D.: *See—*
Clarke, Stephen E.; Hendry, James D.; and Mijares, Ernest R., 4,604,954, Cl. 102-434.000.

Henkel Kommanditgesellschaft auf Aktien: *See—*
Heine, Christian; and Wust, Reinhold, 4,605,563, Cl. 426-607.000.

Henny Penny Corporation: *See—*
Koopman, Peter J., 4,605,840, Cl. 219-401.000.

Heraly, Neil H., to Medtronic, Inc. Temporary package for an electrical component. 4,605,007, Cl. 128-419.0PT.

Hercules Incorporated: *See—*
Maslanka, William W., 4,605,709, Cl. 525-430.000.
Walker, John F., 4,605,694, Cl. 524-292.000.

Hering, Gunter: *See—*
Siegmeier, Rainer; Prescher, Gunter; Maurer, Helmut; and Hering, Gunter, 4,605,795, Cl. 568-867.000.

Herman, David E.: *See—*
Burgess, Lester E.; McGarry, Phillip E.; and Herman, David E., 4,605,494, Cl. 209-166.000.
McGarry, Phillip E.; Herman, David E.; Treskot, Robert A.; and Fistner, David C., Sr., 4,605,420, Cl. 44-1.00R.

Herman Miller, Inc.: *See—*
Nienhuis, James H.; and Schreiner, Charles P., 4,605,988, Cl. 361-429.000.

Hermann Berstorff Maschinenbau GmbH: *See—*
Albers, August, 4,605,309, Cl. 366-76.000.

Herr, Richard E., Jr.; Kauffman, William J.; and Landers, Cheryl W., to Armstrong World Industries, Inc. Decorative materials comprising crinkled chips. 4,605,584, Cl. 428-142.000.

Herrick, Robert S. Dispensing device for container having fluid to be controllably dispensed into an eye. 4,605,398, Cl. 604-300.000.

Herriges, Donald W.: *See—*
DeWitt, Albert C.; Herriges, Donald W.; and Stanner, Donald, 4,605,216, Cl. 271-18.300.

Herrmann, Manfred: *See—*
Satzinger, Gerhard; Fritschi, Edgar; and Herrmann, Manfred, 4,605,673, Cl. 514-654.000.

Hertler, Walter R., to Du Pont de Nemours, E. I., and Company. Lewis base-catalyzed polymerization. 4,605,716, Cl. 526-190.000.

Hess, Heinrich: *See—*
Grogler, Gerhard; Kopp, Richard; and Hess, Heinrich, 4,605,756, Cl. 560-351.000.

Hesston Corporation: *See—*
Esau, Edward W.; and Ratzlaff, Howard J., 4,604,858, Cl. 56-341.000.

Heubuch, Remigius: *See—*
Detzel, Josef; Reitmeier, Franz; and Heubuch, Remigius, 4,605,129, Cl. 206-623.000.

Hewison, George D., to ITW Limited. Adjustable control assemblies. 4,604,921, Cl. 81-429.000.

Heybourn, Frank, to Molins, Limited. Conveying rod-like articles. 4,605,117, Cl. 198-493.000.

Hi-Shear Corporation: *See—*
Olander, Donald E.; and Woods, Harold J., 4,604,953, Cl. 102-272.000.

Hibbs, Louis E., Jr.; and Sogoian, George C., to General Electric Company. Sintered polycrystalline diamond compact construction with integral heat sink. 4,605,343, Cl. 407-119.000.

Hibril, Dalal: *See—*
Tucker, J. Camille, 4,605,403, Cl. 604-385.100.

Higashi, Shinya, to Kabushiki Kaisha Toshiba. Switching control circuit. 4,605,998, Cl. 363-19.000.

Higuchi, Chojiro: *See—*
Mita, Ryuichi; Katoh, Toshio; Higuchi, Chojiro; and Yamaguchi, Akihiro, 4,605,759, Cl. 562-444.000.

Hill, Alan: *See—*
Hatcher, Clive D.; Hill, Alan; and King, Geoffrey W., 4,605,351, Cl. 413-58.000.

Hino Jidosha Kogyo Kabushiki Kaisha: *See—*
Tsuchihashi, Keiichi; Yamada, Shinji; Arakawa, Makoto; Aizawa, Osamu; and Otomo, Nobuyuki, 4,605,236, Cl. 277-235.00B.

Hino, Motohiro: *See—*
Hori, Yasuhiro; Hino, Motohiro; Terano, Hiroshi; Hashimoto, Masashi; and Kohsaka, Masanobu, 4,605,559, Cl. 424-120.000.

Hintz, Warren J.: *See—*
Prussin, Samuel B.; Levine, Ralph; and Hintz, Warren J., 4,605,554, Cl. 424-66.000.

Hirai, Toshimasa: *See—*
Inoue, Toshihide; Hirai, Toshimasa; and Okamoto, Masaru, 4,605,727, Cl. 528-191.000.

Hiramitsu, Tetsushi: *See—*
Sugita, Hiroshi; and Hiramitsu, Tetsushi, 4,604,912, Cl. 74-484.00R.

Hirata, Mitsuteru: *See—*
Fujii, Setsuro; Hattori, Eizou; Hirata, Mitsuteru; Kunieda, Hisashi; Watanabe, Koichiro; and Ishihama, Hiroshi, 4,605,739, Cl. 544-373.000.

Hirsch, Kenneth S.; and Pioch, Richard P., to Eli Lilly and Company. Aromastase inhibiting α,α-diarylimidazole-4(5)-propionitriles, α,α-diarylimidazole-4(5)-propionamides, and 4(5)-(2,2-diarylethyl-)imidazoles. 4,605,661, Cl. 514-400.000.

Hirzel, Frederic J.; and Levy, Roy J., to Advanced Micro Devices, Inc. Method for detection of line activity for Manchester-encoded signals. 4,606,052, Cl. 375-87.000.

Hishii, Masao; Tanaka, Masaaki; Sato, Yukio; Nagai, Haruhiko; and Tabata, Norikazu, to Agency of Industrial Science and Technology. Lateral excitation type gas laser. 4,606,035, Cl. 372-87.000.

Hitachi, Ltd.: *See—*
Fukuhara, Satoru; Ichihashi, Mikio; Murakoshi, Hisaya; and Seitoh, Shigemitsu, 4,605,860, Cl. 250-397.000.
Hata, Seiji; Horino, Hiroshi; and Miyakawa, Akira, 4,606,066, Cl. 382-41.000.
Inoue, Yohichi; Tanaka, Katsuyuki; Takeuchui, Yoshinori; Koromegawa, Isao; Yamaguchi, Yuzoo; and Saitoh, Yokuo, 4,605,979, Cl. 360-105.000.
Katayama, Yoshifumi; Shiraki, Yasuhiro; Yamaguchi, Ken; Murayama, Yoshimasa; Sawada, Yasushi; Usagawa, Toshiyuki; and Maruyama, Eiichi, 4,605,945, Cl. 357-22.000.
Kobori, Yasunori; Fukushima, Isao; Nishijima, Hideo; Masuda, Yoshinori; and Yamamoto, Norihisa, 4,605,901, Cl. 328-140.000.
Matsuno, Jyunichi; Kawauchi, Masataka; Yoshida, Masashi; and Kawamura, Satoshi, 4,605,938, Cl. 346-76.0PH.
Sakai, Junji; Morimoto, Syogo; Morikawa, Minoru; and Machashi, Yoshitsugu, 4,605,057, Cl. 164-519.000.
Toudo, Kenzi; Yiyanaka, Motoshi; and Hayata, Yoshiki, 4,605,863, Cl. 307-269.000.
Uchida, Kenji; Sakamoto, Masakatsu; Saito, Makoto; and Kamino, Yukishige, 4,605,356, Cl. 417-102.000.
Yamada, Kazuji; Sato, Hideo; Kawakami, Kanji; Kato, Kazuo; and Sasayama, Takao, 4,604,899, Cl. 73-708.000.
Yamaguchi, Kenichi, 4,606,015, Cl. 367-95.000.

Hitachi Microcomputer & Engineering, Ltd.: *See—*
Kobori, Yasunori; Fukushima, Isao; Nishijima, Hideo; Masuda, Yoshinori; and Yamamoto, Norihisa, 4,605,901, Cl. 328-140.000.

Hitchins, William G. Hinged window-guard assembly. 4,604,827, Cl. 49-57.000.

Ho, Thomas K. Y.: *See—*
Van Den Brekel, Jacques; and Ho, Thomas K. Y., 4,605,153, Cl. 228-56.300.

Hodson, Homer J.; Shurney, Glenn A.; and Hartman, Eric E., to Alberto-Culver Company. Self-tensioning hair waving rod. 4,605,021, Cl. 132-33.00R.

Hoechst Aktiengesellschaft: *See—*
Arndt, Otto; and Papenfuhs, Theodor, 4,605,767, Cl. 564-412.000.
Litterer, Heinz; Wunder, Friedrich; Leupold, Ernst I.; and Baltes, Herbert, 4,605,809, Cl. 585-640.000.
Stroszynski, Joachim; Niederstatter, Walter; and Sprintschnik, Gerhard, 4,605,480, Cl. 204-211.000.

Hoelscher, Charles H.: *See—*
Darlington, William B.; and Hoelscher, Charles H., 4,605,545, Cl. 423-516.000.

Hoesch Aktiengesellschaft: *See—*
Bartzick, Gunter; Buhne, Gerd; and Naydowski, Reinhard, 4,605,178, Cl. 242-55.000.

Hoffacker, Gerd; and Muller, Willi. Alkaline cyanide bath for electrolytic deposition of copper-tin-alloy coatings. 4,605,474, Cl. 204-44.000.

Hoffman, Glenn A., Jr.: *See—*
Avila, Robert M.; and Hoffman, Glenn A., Jr., 4,604,930, Cl. 83-527.000.

Hoffmann-La Roche Inc.: *See—*
Bolin, David R.; Meienhofer, Johannes A.; and Sytwu, Iou-Iou, 4,605,641, Cl. 514-12.000.
Dorn, Franz, 4,605,656, Cl. 514-255.000.
Fujiu, Morio; Suhara, Yasuji; and Ishitsuka, Hideo, 4,605,674, Cl. 514-685.000.
Wei, Chung-Chen; and Weigele, Manfred, 4,605,744, Cl. 546-210.000.

Hoffmann, Reinhold. Imitation gem. 4,604,876, Cl. 63-32.000.

Hoffmeister, Lawrence D.; and Thompson, Richard J., to United States of America, Army. Lightweight composite launcher pod. 4,604,939, Cl. 89-1.816.

Hofmann, Norbert, to Triumph Adler AG. Ribbon cassette with releasable locking mechanism. 4,605,325, Cl. 400-207.000.

Hoftman, Michael: *See—*
Sandel, Dan; and Hoftman, Michael, 4,605,124, Cl. 206-223.000.
Hohn, Roland. Vehicle, especially camping vehicle. 4,605,258, Cl. 296-164.000.
Hokusei Nikkei Household Utensils Co., Ltd.: *See—*
Kita, Toshiyuki, 4,604,989, Cl. 126-369.000.
Holdaway, Steven D.: *See—*
Helmly, Paul K., Jr.; Forster, Fred D., Jr.; Gower, Patrick E.; Holdaway, Steven D.; Tutman, Stanley W.; Beissel, Timothy J.; Needham, Robert J.; and Lasky, Arthur J., 4,605,081, Cl. 177-25.000.
Holm, Boris, to Nobel Kemi AB. Method of manufacturing o- and p-nitrobenzaldehyde. 4,605,777, Cl. 568-424.000.
Holmblad, Carolann M.: *See—*
Cahalan, Patrick T.; Holmblad, Carolann M.; Pike, Robert W., Jr.; and Schultz, Eileen L., 4,605,406, Cl. 623-1.000.
Holmes, Dale A., to Rockwell International Corporation. Decentered annular ring resonator with internal misalignment cancellation. 4,606,036, Cl. 372-95.000.
Holy , Antonin; and de Clercq, Erik, to Ceskoslovenska Akademie Ved.; and Stichting Rega VZW. Antivirally active adenine derivatives. 4,605,658, Cl. 514-261.000.
Hombach, Rudoph: *See—*
Fischer, Wolfgang; Klein, Gerhard; Hombach, Rudoph; and Kniege, Wilfried, 4,605,703, Cl. 525-157.000.
Honaga, Susumu; and Suzuki, Mikio, to Toyoda Koki Kabushiki Kaisha. Power steering. 4,605,085, Cl. 180-143.000.
Honda Giken Kogyo Kabushiki Kaisha: *See—*
Hayashi, Mitsutoshi; Nagaoka, Kazunobu; and Ohkawa, Michihiro, 4,605,032, Cl. 137-44.000.
Isobe, Yoshinobu; and Iwasaki, Hiroaki, 4,604,984, Cl. 123-589.000.
Otani, Junji; Okubo, Akira; and Iwashita, Kanau, 4,604,865, Cl. 60-293.000.
Honda, Masahiro, to Ube Industries, Ltd. Section conveying and cooling apparatus. 4,604,928, Cl. 83-151.000.
Honda, Naoto: *See—*
Sekigawa, Tatsuaki; Gotoh, Akio; Tsutsumi, Syuitsu; Marui, Kuniyoshi; and Honda, Naoto, 4,606,050, Cl. 375-75.000.
Honeywell Inc.: *See—*
Gelinas, Raymond C., 4,605,897, Cl. 324-207.000.
Lim, Wah L., 4,605,307, Cl. 356-350.000.
Reid, Bruce E., 4,605,830, Cl. 200-73.000.
Hooper, Jack L.; and Radiel, Harold E. Pneumatic jack. 4,605,203, Cl. 254-93.0HP.
Hoover Universal, Inc.: *See—*
Goedken, James H.; and Waltke, David L., 4,605,126, Cl. 206-386.000.
Hoovler, Marcia J.: *See—*
Ligon, Kathy D.; and Hoovler, Marcia J., 4,605,397, Cl. 604-179.000.
Hori, Yasuhiro; Hino, Motohiro; Terano, Hiroshi; Hashimoto, Masashi; and Kohsaka, Masanobu, to Fujisawa Pharmaceutical Co., Ltd. Compound, FR-900447, production and use thereof. 4,605,559, Cl. 424-120.000.
Horiba, Ltd.: *See—*
Yamada, Takeshi, 4,605,855, Cl. 250-343.000.
Horikawa, Takashi: *See—*
Okubo, Kenji; Kuroki, Yasuaki; and Horikawa, Takashi, 4,605,387, Cl. 474-112.000.
Horikoshi, Yukio: *See—*
Sakamaki, Hiroshi; Horikoshi, Yukio; and Yanagihashi, Kikuji, 4,605,695, Cl. 524-424.000.
Horino, Hiroshi: *See—*
Hata, Seiji; Horino, Hiroshi; and Miyakawa, Akira, 4,606,066, Cl. 382-41.000.
Horiuchi, Shigeyuki, to Mattel, Inc. Toy block transformed into a robot. 4,605,383, Cl. 446-376.000.
Horse Health Products, Inc.: *See—*
Sparks, Jimmy L., 4,604,804, Cl. 30-294.000.
Horton, Paul D. Parallel-blade/twist-lock adapter plug. 4,605,273, Cl. 339-75.00P.
Horvath, Lorand: *See—*
Kaffka, Karoly; Nadai, Bela; Czabaffy, Andras; and Horvath, Lorand, 4,605,306, Cl. 356-334.000.
Horwath, Robert O.; and Irbe, Robert M., to Nabisco Brands, Inc. Process for preparing fructose from starch. 4,605,619, Cl. 435-94.000.
Hosokawa, Motoyuki: *See—*
Isogai, Nobuo; Okawa, Takashi; Hosokawa, Motoyuki; Watanabe, Toshiyasu; and Wakui, Natsuko, 4,605,796, Cl. 568-902.000.
Hosoya Fireworks Co., Ltd.: *See—*
Oinuma, Senzo; Tanaka, Kazumi; Shiino, Kazuo; and Watanabe, Hiroki, 4,605,003, Cl. 128-328.000.
Hounsel, Mack A., to J T Thorpe Company. Suspended seal ring for ladle preheater. 4,605,206, Cl. 266-283.000.
Hovland, Lyle W.; and Klingensmith, James D., to Aluminum Company of America. Dish antennae mounting structure. 4,605,333, Cl. 403-27.000.
Howie, Robert K., Jr., to Grigoleit Company, The. Method of making a composite article including a body having a decorative metal plate attached thereto. 4,604,786, Cl. 29-513.000.
Huang, Francke L. D. Safety cutlery case with sharpening device. 4,604,836, Cl. 51-214.000.
Hubbard, David W.; and Seestrom, Frank E., to Pitney Bowes Inc. Ink jet array. 4,605,939, Cl. 346-140.00R.
Huck Manufacturing Company: *See—*
Sukharevsky, Boris P., 4,604,889, Cl. 72-391.000.
Huff, Norman J.: *See—*
Kulla, James P.; and Huff, Norman J., 4,605,564, Cl. 427-2.000.
Hugenbusch, Hans-Wolfgang: *See—*
Reiff, Friedrich; Hartner, Hartmut; Basedow, Arno; Hugenbusch, Hans-Wolfgang; Schmidt, Peter C.; and Bardonner, Hans, 4,605,794, Cl. 568-852.000.
Hughes Aircraft Company: *See—*
Pastor, Antonio C., 4,605,468, Cl. 156-608.000.
Hughes Tool Company: *See—*
Abercrombie, Bolling A., 4,605,065, Cl. 166-250.000.
Hull, Scott A.: *See—*
Neary, Ralph E.; and Hull, Scott A., 4,604,879, Cl. 70-224.000.
Huls Aktiengesellschaft: *See—*
Fiakus, Werner, 4,605,723, Cl. 528-49.000.
Hundebol, Soren, to F. L. Smidth & Co. A/S. Method and apparatus for burning away organic components in raw phosphate. 4,605,370, Cl. 432-14.000.
Hundstad, Richard L. Infrared radiation responsive target. 4,605,232, Cl. 273-348.100.
Hunter, Robert R., III: *See—*
Weston, Robert E.; and Hunter, Robert R., III, 4,605,399, Cl. 604-305.000.
Huppee, Robert. Faucet valve. 4,605,200, Cl. 251-258.000.
Hurd, Bruce; and Oda, Robert, to Accuswing, Incorporated. Athlete's arm restrainer. 4,605,227, Cl. 273-54.00B.
Hurlburt, Joseph C., to New Holland Inc. Operator's cab for crop harvesting machine. 4,605,259, Cl. 296-190.000.
Hurley, Nancy J.: *See—*
Sias, Ralph M.; Hurley, Nancy J.; and Dalebout, Melvin W., 4,605,582, Cl. 428-120.000.
Huvet, Jean-Marie; and Serrie, Gerard J., to Claude, S.A. Industrial or domestic overvoltage protective device. 4,605,981, Cl. 361-91.000.
Hydril Company: *See—*
Burton, James A.; Colvin, Kenneth W.; and Keithahn, Julian D., 4,605,195, Cl. 251-1.200.
Goodhart, Milton E., 4,605,076, Cl. 175-61.000.
Hydrino AB: *See—*
Zettergren, Ted, 4,605,042, Cl. 137-596.120.
Hydro Thermal Corp.: *See—*
Pelczynski, John F., 4,604,806, Cl. 30-417.000.
Hyltoft, Hans C., to Mercante International A/S. Processing station for an electrophotographic information printer. 4,605,215, Cl. 271-9.000.
Ibe, Hiroshi: *See—*
Ohata, Kazuo; Shimizu, Toshihiko; Ibe, Hiroshi; and Hara, Kenji, 4,605,572, Cl. 427-403.000.
Ichihashi, Mikio: *See—*
Fukuhara, Satoru; Ichihashi, Mikio; Murakoshi, Hisaya; and Seitoh, Shigemitsu, 4,605,860, Cl. 250-397.000.
Ichikawa, Ieyasu; and Arai, Shigeji, to Komori Printing Machinery Co., Ltd. Intaglio printing machine. 4,604,951, Cl. 101-153.000.
Ichikawa, Souji, to Mitutoyo Mfg. Co., Ltd. Cable connecting device. 4,605,274, Cl. 339-89.00R.
Ichinose, Hisashi: *See—*
Ushiyama, Keiichi; and Ichinose, Hisashi, 4,605,548, Cl. 424-15.000.
Ichiya, Mitsuo: *See—*
Yamamoto, Tadashi; Ichiya, Mitsuo; and Yamaguchi, Keizo, 4,604,800, Cl. 30-41.000.
Ide Idustries Limited: *See—*
Ogi, Hisao, 4,605,461, Cl. 156-233.000.
Ide, Tatsumi; Sakurai, Toshifumi; Izumi, Masahiro; and Sugimura, Kimio, to NEC Corporation. Coil wire. 4,605,917, Cl. 335-128.000.
Idemitsu Kosan Company Limited: *See—*
Harada, Junzo, 4,605,542, Cl. 423-345.000.
Igarashi, Hideo: *See—*
Doya, Masaharu; Kondo, Toshio; Igarashi, Hideo; and Uchiyama, Takako, 4,605,477, Cl. 204-182.600.
Ihle, John M., to Motorola, Inc. FSK demodulator with high noise immunity digital phase detector. 4,605,903, Cl. 329-50.000.
Iida, Fumio, to Canon Kabushiki Kaisha. Pressure sensitive transferring member. 4,605,593, Cl. 428-352.000.
Iida, Jeffrey K.: *See—*
Marshall, Henry D.; Iida, Jeffrey K.; Crow, Douglas J.; and Friend, Lawrence O., 4,605,915, Cl. 333-238.000.
Iida, Kazuyoshi; Mizuno, Keiichiro; Yamaguchi, Michiyuki; and Kondo, Kazuo, to Bridgestone Corporation. Sound insulating apparatus. 4,605,091, Cl. 181-224.000.
Iida, Takamitsu: *See—*
Hasegawa, Eiichi; Iida, Takamitsu; and Sakamoto, Masahiro, 4,605,622, Cl. 435-182.000.
Iida, Yozo: *See—*
Hashimoto, Takaaki; Minagawa, Kazushi; and Iida, Yozo, 4,605,955, Cl. 358-29.000.
Ikeda, Masanobu: *See—*
Sugiura, Saburo; Ikeda, Masanobu; and Demukai, Noboru, 4,605,437, Cl. 75-43.000.
Ikeda, Takuo: *See—*
Kawashita, Hideo; Ikeda, Takuo; and Sakaguchi, Sanae, 4,605,442, Cl. 106-22.000.
Ikehara, Ichiro, to Nippon Notion Kogyo Co., Ltd. Button setting apparatus with optical position indicator. 4,605,150, Cl. 227-18.000.
Imaging Technology Incorporated: *See—*
Beg, Mirza R.; and Perl, Julius, 4,606,065, Cl. 382-18.000.
Imhof, Ernst: *See—*
Frey, Thomas; Grunwald, Werner; Imhof, Ernst; Komaroff, Iwan; Reum, Helmut; Schmid, Gunther; and Schmid, Kurt, 4,604,975, Cl. 123-145.00A.

Imperial Chemical Industries, PLC: *See—*
Baker, Maurice G., 4,605,714, Cl. 526-125.000.
Balasubramanyan, Sugavanam; and Shephard, Margaret C., 4,605,747, Cl. 548-262.000.
INA Walzlager Schaeffler KG: *See—*
Kaiser, Theodor, 4,605,318, Cl. 384-482.000.
Inbar, Shai: *See—*
Kliem, Peter O.; Fischer, Alan B.; and Inbar, Shai, 4,605,849, Cl. 250-216.000.
Index-Werke Komm. Ges. Hahn & Tessky: *See—*
Link, Helmut F.; and Schafer, Erich E., 4,604,923, Cl. 82-1.00C.
Industrial Insulations, Inc.: *See—*
Frahme, Carl E., 4,605,583, Cl. 428-126.000.
Ing. C. Olivetti & C., S.p.A.: *See—*
Boella, Marcello; and Mariotti, Ferruccio, 4,605,887, Cl. 318-594.000.
Musso, Pietro, 4,605,324, Cl. 400-144.200.
Ing. h.c.F. Porsche AG: *See—*
Soffge, Friedhelm; and Knauss, Hans-Peter, 4,604,915, Cl. 74-790.000.
Ingersoll-Rand Company: *See—*
Bukovitz, Ronald F.; and Vliet, Walter C., 4,605,078, Cl. 175-162.000.
Keith, Jeffrey S., 4,605,357, Cl. 417-228.000.
Pauley, Reginald W., 4,604,943, Cl. 91-59.000.
Inglese, Giulio S., to Uniprode. Ladder extension lock. 4,605,100, Cl. 182-213.000.
Inmont Corporation: *See—*
Daugherty, John W., 4,604,952, Cl. 101-451.000.
Debroy, Tapan K.; Braun, Dave W.; and Chung, Ding-Yu, 4,605,690, Cl. 523-414.000.
Panush, Sol, 4,605,687, Cl. 523-171.000.
Inmos Corporation: *See—*
Bourassa, Ronald R., 4,604,789, Cl. 29-576.00C.
Inouchi, Teruo: *See—*
Shimada, Yoshitaka; Kadowaki, Kimihiro; and Inouchi, Teruo, 4,605,569, Cl. 427-256.000.
Inoue, Hachiro, to Kabushiki Kaisha Tokyo Seisakusho. Under reaming pile bore excavating bucket and method of its excavation. 4,604,818, Cl. 37-195.000.
Inoue, Hidesuke: *See—*
Fujimura, Gen; Sotoma, Koichi; Kunikyo, Hiroshi; Hata, Masahito; and Inoue, Hidesuke, 4,605,562, Cl. 426-299.000.
Inoue-Japax Research Incorporated: *See—*
Inoue, Kiyoshi, 4,605,834, Cl. 219-69.00W.
Inoue, Kiyoshi, 4,605,886, Cl. 318-565.000.
Inoue, Kiyoshi, 4,606,007, Cl. 364-474.000.
Inoue, Kiyoshi, to Inoue-Japax Research Incorporated. Precision TW electroerosion with staggering multiple V-notched guides. 4,605,834, Cl. 219-69.00W.
Inoue, Kiyoshi, to Inoue-Japax Research Incorporated. Feed-deviation preventive path-controlled machining method and apparatus. 4,605,886, Cl. 318-565.000.
Inoue, Kiyoshi, to Inoue-Japax Research Incorporated. NC electroerosion method and apparatus. 4,606,007, Cl. 364-474.000.
Inoue, Takehisa: *See—*
Miwa, Kishio; Tada, Kuniyuki; and Inoue, Takehisa, 4,605,799, Cl. 570-211.000.
Inoue, Toshihide; Hirai, Toshimasa; and Qkamoto, Masaru, to Director General of the Agency of Industrial Science and Technology. High modulus polyester. 4,605,727, Cl. 528-191.000.
Inoue, Yohichi; Tanaka, Katsuyuki; Takeuchui, Yoshinori; Koromegawa, Isao; Yamaguchi, Yuzoo; and Saitoh, Yokuo, to Hitachi, Ltd. Load/unload suspension device for a magnetic disc apparatus. 4,605,979, Cl. 360-105.000.
Inoue, Yoshihisa: *See—*
Yokoyama, Kazumasa; Fukaya, Chikara; Tsuda, Yoshio; Ono, Taizo; Arakawa, Yoshio; Inoue, Yoshihisa; Naito, Youichiro; and Suyama, Tadakazu, 4,605,650, Cl. 514-183.000.
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Insitute po Technicheska Kibernetika iRobotika: *See—*
Samokovlitski, David A.; Georgiev, Georgi I.; Peychev, Rumen P.; Levi, Sami S.; and Petrov, Lazar O., 4,605,148, Cl. 226-174.000.
Institut Pasteur De Lyon Et Du Sud-Est: *See—*
Lenoir, Jeannine; Bertoye, Andre G.; and Bertoye, Renee, 4,605,305, Cl. 356-246.000.
Interco, Incorporated: *See—*
Bock, Harry S.; Gregory, Stanley O.; Gardner, F. Philip; and Reid, Russell H., 4,604,807, Cl. 33-3.00C.
International Business Machine Corp.: *See—*
Kohn, Harold, 4,604,966, Cl. 118-406.000.
International Business Machines Corporation: *See—*
Binnig, Gerd; Gerber, Christoph; Rohrer, Heinrich; and Weibel, Edmund, 4,605,194, Cl. 248-559.000.
Braslau, Norman, 4,605,893, Cl. 324-58.50B.
Daly, Timothy P., 4,605,354, Cl. 414-730.000.
Dansky, Allan H.; and Norsworthy, John P., 4,605,870, Cl. 307-443.000.
Georgiou, Christos J., 4,605,928, Cl. 340-825.940.
Gostomski, Dominic A., Jr.; and Price, Jerry G., 4,605,828, Cl. 200-5.00A.
Knepper, James A.; and Rose, Leroy, 4,605,218, Cl. 271-238.000.
Peters, Robert M.; Schnurmann, Henri D.; and Vidunas, Louis J., 4,606,025, Cl. 371-20.000.
International Flavors & Fragrances, Inc.: *See—*
Mookherjee, Braja D.; Trenkle, Robert W.; Wolff, Robin K.; Boden, Richard M.; and Yoshida, Takao, 4,605,793, Cl. 568-820.000.
Van Loveren, Augustinus G.; Munteanu, Marina A.; and Seaber, Geoffrey B., 4,605.165, Cl. 239-6.000.
International Standard Electric Corporation: *See—*
Schroder, Wolfgang, 4,606,053, Cl. 375-87.000.
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Detzel, Josef; Reitmeier, Franz; and Heubuch, Remigius, 4,605,129, Cl. 206-623.000.
Irbe, Robert M.: *See—*
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Ishihama, Hiroshi: *See—*
Fujii, Setsuro; Hattori, Eizou; Hirata, Mitsuteru; Kunieda, Hisashi; Watanabe, Koichiro; and Ishihama, Hiroshi, 4,605,739, Cl. 544-373.000.
Ishii, Toshihiko; and Takasu, Hiromi, to Sanyo Electric Co., Ltd.; and Tottori Sanyo Electric Co., Ltd. LED array device for printer. 4,605,944, Cl. 357-17.000.
Ishikawa, Hidehiko; Misaki, Hideo; and Muto, Naoki, to Toyo Jozo Kabushiki Kaisha. L-glutamic acid oxidase (H_2O_2-generating), its production and analytical method therefor. 4,605,615, Cl. 435-16.000
Ishikawa, Kiichiro: *See—*
Kojima, Shinichi; and Ishikawa, Kiichiro, 4,604,783, Cl. 29-410.000.
Ishino, Tokio: *See—*
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Ishitsuka, Hideo: *See—*
Fujiu, Morio; Suhara, Yasuji; and Ishitsuka, Hideo, 4,605,674, Cl. 514-685.000.
Iskra, Michael J., to Personal Products Company. Softening of a composite absorbent product. 4,605,402, Cl. 604-368.000.
Isobe, Yoshinobu; and Iwasaki, Hiroaki, to Honda Giken Kogyo Kabushiki Kaisha. Air intake side secondary air supply system for an internal combustion engine. 4,604,984, Cl. 123-589.000.
Isogai, Nobuo; Okawa, Takashi; Hosokawa, Motoyuki; Watanabe, Toshiyasu; and Wakui, Natsuko, to Agency of Industrial Science and Technology. Process for producing ethanol. 4,605,796, Cl. 568-902.000.
Isozaki, Osamu, to Kansai Paint Company, Limited. Process for preparing organosilicon high condensation products. 4,605,446, Cl. 106-287.120.
Italcaps S.p.A.: *See—*
Taragna, Luigi; and Giovannelli, Antonio, 4,605,137, Cl. 215-254.000.
Taragna, Luigi; and Giovannelli, Antonio, 4,605,138, Cl. 215-254.000.
Ito, Takeyoshi; and Tsuruta, Masahiko, to Victor Company of Japan, Ltd. Recording and/or reproducing system for a 4-head type recording and/or reproducing apparatus. 4,605,976, Cl. 360-70.000.
Itoh, Shoji; Yanagawa, Yukio; and Wakabayashi, Kouzo, to Toyo Seikan Kaisha, Ltd.; and Tokan Kogyo Co., Ltd. Synthetic resin vessel and heat sealed lid. 4,605,142, Cl. 220-359.000.
ITT Corporation: *See—*
Kadin, Joseph, 4,606,041, Cl. 375-1.000.
Wurst, Walter K., 4,606,021, Cl. 370-62.000.
ITW-Ateco GmbH: *See—*
Arff, Heino, 4,604,772, Cl. 24-68.00R.
ITW Limited: *See—*
Hewison, George D., 4,604,921, Cl. 81-429.000.
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Iwamoto, Junjiro: *See—*
Shiragami, Osamu; Kuno, Toshihiko; Sajima, Yasuo; Saito, Kohji; Uchibori, Takahiro; and Iwamoto, Junjiro, 4,605,482, Cl. 204-258.000.
Iwasa, Masaaki: *See—*
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Iwasaki, Hiroaki: *See—*
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Iwashita, Kanau: *See—*
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Iwata, Hiromu: *See—*
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Izu, Masatsugu: *See—*
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J. M. Huber Corporation: *See—*
Goldsmith, John W.; and Rullman, Paul B., 4,605,248, Cl. 285-52.000.
J T Thorpe Company: *See—*
Hounsel, Mack A., 4,605,206, Cl. 266-283.000.
Jaakonmaki, Matti; and Raura, Pentti, to Rauma-Repola Oy Loviisan Tehtaat. Blade ring for shaver. 4,605,176, Cl. 241-240.000.
Jabarin, Saleh A., to Owens-Illinois, Inc. Multilayer plastic articles. 4,605,576, Cl. 428-35.000.

Jacques, Roberta C., to Minnesota Mining and Manufacturing Company. Hypothermic protection pad. 4,605,006, Cl. 128-401.000.
Jacubert, Serge: *See*—
Dumousseau, Jean-Yves; Grosbois, Jean; and Jacubert, Serge, 4,605,547, Cl. 423-646.000.
Jakob, Gert: *See*—
Bentz, Willy; Gansert, Willi; Jakob, Gert; Stammler, Kurt; and Walter, Christoph, 4,605,986, Cl. 361-386.000.
Jalabert, Georges E. P.: *See*—
Ott, Renaud P. L.; and Jalabert, Georges E. P., 4,604,843, Cl. 52-426.000.
James, Richard N., to Dysan Corporation. Miniature flexible magnetic disk assembly with motion limit stop. 4,605,125, Cl. 206-312.000.
James, Robert E.: *See*—
Christie, Nick J.; Cox, Randall A.; James, Robert E.; and Stevenson, James C., 4,605,418, Cl. 8-192.000.
Jamiolkowski, Dennis D.: *See*—
Shalaby, Shalaby W.; and Jamiolkowski, Dennis D., 4,605,730, Cl. 528-357.000.
Janome Sewing Machine Co., Ltd.: *See*—
Shomura, Eiichi; and Goto, Taiji, 4,605,328, Cl. 400-662.000.
Jansma, Roger H.; and Sandberg, Karen R., to Nalco Chemical Company. Polyaldehyde/polyacetal compositions. 4,605,718, Cl. . 526-240.000.
Janssens, Wilhelmus: *See*—
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Japan Tobacco Inc.: *See*—
Nagata, Tomizou; Mutoh, Yoshiyuki; Sakakibara, Kouzou; and Miyaoka, Norikuni, 4,605,390, Cl. 493-84.000.
Soga, Kiyomi; Tenjin, Nobuyoshi; Tohira, Hiroyuki; Ninomiya, Naoyoshi; and Nishikata, Yasuhiro, 4,605,016, Cl. 131-297.000.
Jeannet, Jean-Pierre; Zumbrunnen, Eric; and Cartisano, Roberto, to Tesa S.A. Instrument for measuring linear magnitudes. 4,604,808, Cl. 33-143.00M.
Jenkins, Waylon L.; Hawkins, James M.; and Sand, I. Daniel, to Eastman Kodak Company. Novel graft copolymers and process for the preparation thereof. 4,605,721, Cl. 527-312.000.
Jennings, Alfred R., Jr., to Mobil Oil Corporation. Apparatus for plugging a wellbore in high impulse fracturing. 4,605,061, Cl. 166-63.000.
Jin, Korda K., to United States of America, Air Force. Magnetic bias and delay linearity in a magnetostatic wave delay line. 4,605,911, Cl. 333-144.000.
Jodock, Marvin S.; and Maternus, Fred, to Lockheed Missiles & Space Company, Inc.; and National Carbide Tool, Inc. High speed drill reamer. 4,605,347, Cl. 408-224.000.
Johansson, Arne B., to Nordiskafilt AB. Forming fabric. 4,605,585, Cl. 428-224.000.
John, Christopher S., to Shell Oil Company. Process for the preparation of an aldehyde. 4,605,782, Cl. 568-484.000.
John Fluke Mfg. Co., Inc.: *See*—
Gurol, Ismail M., 4,604,799, Cl. 29-897.000.
Wiesmann, Thomas W., 4,606,009, Cl. 364-724.000.
Johnsen, Ottar, to AT&T Bell Laboratories. Apparatus and method for compression of facsimile information by pattern matching. 4,606,069, Cl. 382-56.000.
Johnson, David W., Jr.; MacChesney, John B.; and Rabinovich, Eleizer M., to AT&T Bell Laboratories. Sintered high-silica glass and articles comprising same. 4,605,428, Cl. 65-2.000.
Johnson, Jefrey K. Portable erectile vehicle shelter structure. 4,605,030, Cl. 135-117.000.
Johnson, M. M.: *See*—
Nowack, G. P.; and Johnson, M. M., 4,605,812, Cl. 585-845.000.
Johnson, Mark S.: *See*—
Juhl, Roger L.; Johnson, Mark S.; and Morris, Thomas E., 4,605,801, Cl. 570-253.000.
Johnson, Myron J.; and Kao, Mark C. C., to Stewart-Warner Corporation. Runaway protective fuse valve. 4,605,039, Cl. 137-460.000.
Johnson, Thomas A.: *See*—
Ford, Michael E.; and Johnson, Thomas A., 4,605,770, Cl. 564-479.000.
Johnston, David: *See*—
Riley, Derek C.; and Johnston, David, 4,605,517, Cl. 540-52.000.
Johnston, David F. Method and apparatus for controlling power to an electronic precipitator. 4,605,424, Cl. 55-2.000.
Johnstone Railway Supply Mfg., Co. Inc.: *See*—
Rhodes, Wayne A., 4,605,154, Cl. 228-102.000.
Jollivet, Alain: *See*—
Duret, Bernard; Dall'oro, Guido G.; Jollivet, Alain; and Szeger, Annie M., 4,605,846, Cl. 235-468.000.
Jolly, Thomas A. Cathode ray tube screen viewing aid. 4,605,291, Cl. 350-623.000.
Jones, Fred A., to Jones, Fred A.; and Jones, Jean. Soil cultivating apparatus. 4,605,072, Cl. 172-236.000.
Jones, Jean: *See*—
Jones, Fred A., 4,605,072, Cl. 172-236.000.
Jones, R. Sidney, Jr.: *See*—
Nikles, David E.; Jones, R. Sidney, Jr.; and Kuder, James E., 4,605,607, Cl. 430-17.000.
Jorgensen, Robert W.; and Lewis, Thomas E., to Harvey Hubbell Incorporated. Molded outlet box with integral cable clamp. 4,605,816, Cl. 174-65.00R.
Juhl, Roger L.; Johnson, Mark S.; and Morris, Thomas E., to Dow Chemical Company, The. Molecular sieves as catalysts for preparation of 1,1,2-trichloroethane. 4,605,801, Cl. 570-253.000.
Julius Blum Gesellschaft m.b.H.: *See*—
Rock, Erich; Brustle, Klaus; and Rupprechter, Helmut, 4,604,769, Cl. 16-238.000.
Juneau, Matthew K.: *See*—
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Juzhelevsky, July A.: *See*—
Fedorov, Svyatoslav N.; Anisimov, Sergei I.; Karavaev, Alexandr A.; Kisellev, Vladimir G.; Juzhelevsky, July A.; and Degtev, Evgeny I., 4,605,411, Cl. 623-6.000.
Kabushiki Kaisha Kito: *See*—
Ohno, Masayuki; and Maeda, Kazuo, 4,605,111, Cl. 192-16.000.
Kabushiki Kaisha Tokyo Seisakusho: *See*—
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Kabushiki Kaisha Toshiba: *See*—
Higashi, Shinya, 4,605,998, Cl. 363-19.000.
Kanda, Motoya; and Sato, Yuji, 4,605,603, Cl. 429-59.000.
Miyazaki, Koichi; and Yamazaki, Masaya, 4,604,872, Cl. 62-156.000.
Wada, Masashi; Watanabe, Shigeyoshi; and Masuoka, Fujio, 4,606,011, Cl. 365-149.000.
Kabushiki Kaisha Toyota Chuo Kenkyusho: *See*—
Tachi, Kazuyuki; Okuda, Chikaaki; and Suzuki, Shoichi, 4,605,168, Cl. 239-112.000.
Kabushiki Kaisha Yaskawa Denki Seisakusho: *See*—
Kumada, Shoji; and Asai, Hideyuki, 4,605,853, Cl. 250-231.0SE.
Kabushiki Kaishi Toshiba: *See*—
Saito, Yasuo, 4,606,062, Cl. 378-13.000.
Kadin, Joseph, to ITT Corporation. Frequency hopping data communication system. 4,606,041, Cl. 375-1.000.
Kado, Clarence; Tait, Robert C.; and Lundquist, Ronald C., to University of California, The Regents of the. Plasmid vehicle for cloning in *Agrobacterium tumefaciens*. 4,605,627, Cl. 435-317.000.
Kadowaki, Kimihiro: *See*—
Shimada, Yoshitaka; Kadowaki, Kimihiro; and Inouchi, Teruo, 4,605,569, Cl. 427-256.000.
Kaffka, Karoly; Nadai, Bela; Czabaffy, Andras; and Horvath, Lorand, to Kozponti Elelmiszeripari Kutato Intezet. Grating monochromator. 4,605,306, Cl. 356-334.000.
Kagan, Michael. Suspendable display receptacle. 4,605,191, Cl. 248-318.000.
Kagi, Bruno, to St Sensortechnik AG. Hydraulic pressure receiver. 4,604,901, Cl. 73-731.000.
Kahn, Klaus-Dieter; Kuehne, Friedrich; and Barth, Hermann, to Siemens Aktiengesellschaft. Method for digital transmission of messages. 4,606,042, Cl. 375-2.100.
Kaiser, Theodor, to INA Walzlager Schaeffler KG. Elastic seal for use in antifriction bearings. 4,605,318, Cl. 384-482.000.
Kajaani OY: *See*—
Moilanen, Juhani; and Pietikainen, Markku, 4,605,900, Cl. 324-439.000.
Kakeya, Nobuharu; Nishizawa, Susumu; Tamaki, Satoshi; and Kitao, Kazuhiko, to Kyoto Pharmaceutical Industries, Ltd. Antibiotic amino acid derivatives of cephalosporins. 4,605,651, Cl. 514-200.000.
Kaku, Eisaburo: *See*—
Kinishi, Ryoichi; Kaku, Eisaburo; and Hanayama, Naoki, 4,605,940, Cl. 346-209.000.
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Kalina, Alexander I. Method and apparatus for implementing a thermodynamic cycle with intercooling. 4,604,867, Cl. 60-653.000.
Kalman, Alajos: *See*—
Bernath, Gabor; Kobor, Jeno; Folop, Ferenc; Sohajda, Attila; Kalman, Alajos; Ezer, Elemer; Hajos, Gyorgy; Palosi, Eva; Denes, Laszlo ; and Szporny, Laszlo , 4,605,653, Cl. 514-226.000.
Kalvatn, Ivar, to Ari Associates, Inc. Linkage mechanism for coupling two movable members. 4,605,334, Cl. 403-291.000.
Kalversberg, Manfred: *See*—
Ashauer, Karl; Richter, Bernd; Kalversberg, Manfred; and Schmidt, Rudiger, 4,605,087, Cl. 180-248.000.
Kamakura Koki Kabushiki Kaisha: *See*—
Shimofuruta, Akihiro, 4,605,288, Cl. 350-552.000.
Kamata, Susumu; Haga, Nobuhiro; Nagata, Wataru; and Matsui, Takeaki, to Shionogi & Co., Ltd. Production of 1-phthalidyl-5-fluorouracil derivatives. 4,605,738, Cl. 544-310.000.
Kamiguchi, Taiji; Yamada, Mutsuo; Arikawa, Yoshijiro; Kuwahara, Takanori; Tanimoto, Hirotoshi; Nishimura, Yasuyuki; and Kaku, Hiroyuki, to Babcock-Hitachi Kabushiki Kaisha. Process for producing acetone. 4,605,776, Cl. 568-401.000.
Kamino, Yukishige: *See*—
Uchida, Kenji; Sakamoto, Masakatsu; Saito, Makoto; and Kamino, Yukishige, 4,605,356, Cl. 417-102.000.
Kamiura, Hirofumi; and Natori, Takashi, to Nippon Valqua Kogyo Kabushiki Kaisha. Process for producing clutch facings. 4,605,527, Cl. 264-137.000.
Kamoshita, Katsuzo: *See*—
Takahashi, Junya; Kato, Toshiro; Noguchi, Hiroshi; Oguri, Yukio; Yamamoto, Shigeo; and Kamoshita, Katsuzo, 4,605,668, Cl. 514-485.000.
Kamp, Harry W. Cane keeper. 4,605,190, Cl. 248-316.700.
Kanda, Motoya; and Sato, Yuji, to Kabushiki Kaisha Toshiba. Hermetically sealed metallic oxide-hydrogen battery using hydrogen storage alloy. 4,605,603, Cl. 429-59.000.

Kanda, Shoichi: *See*—
Yanagida, Makoto; Sekimoto, Yukihiko; and Kanda, Shoichi, 4,605,505, Cl. 252-8.514.

Kanehira, Kenichi: *See*—
Saita, Koji; Kanehira, Kenichi; and Uba, Tomohisa, 4,605,878, Cl. 313-406.000.

Kanemasa, Akira, to NEC Corporation. Echo canceler with cascaded filter structure. 4,605,826, Cl. 179-170.200.

Kansai Paint Co., Ltd.: *See*—
Hasegawa, Eiichi; Iida, Takamitsu; and Sakamoto, Masahiro, 4,605,622, Cl. 435-182.000.
Isozaki, Osamu, 4,605,446, Cl. 106-287.120.

Kao, Mark C. C.: *See*—
Johnson, Myron J.; and Kao, Mark C. C., 4,605,039, Cl. 137-460.000.

Karavaev, Alexandr A.: *See*—
Fedorov, Svyatoslav N.; Anisimov, Sergei I.; Karavaev, Alexandr A.; Kisellev, Vladimir G.; Juzhelevsky, July A.; and Degtev, Evgeny I., 4,605,411, Cl. 623-6.000.

Karlen, Lennart, to Gullfiber Akustik AB. Device for absorption of sound waves. 4,605,093, Cl. 181-295.000.

Kasugai, Makoto, to Mate, Inc. Process for culturing anaerobic bacteria and agents for preparing culture atmosphere. 4,605,617, Cl. 435-29.000.

Kataoka, Yushin; Matsuda, Masaaki; Ochi, Kenji; and Aoi, Masahiro, to Sumitomo Chemical Company, Limited. Process for producing a chelate resin. 4,605,706, Cl. 525-340.000.

Katayama, Yoshifumi; Shiraki, Yasuhiro; Yamaguchi, Ken; Murayama, Yoshimasa; Sawada, Yasushi; Usagawa, Toshiyuki; and Maruyama, Eiichi, to Hitachi, Ltd. Semiconductor device. 4,605,945, Cl. 357-22.000.

Kato, Heizaburo, to Sankyo Manufacturing Company, Ltd. Roll feed apparatus. 4,605,147, Cl. 226-156.000.

Kato, Hiroko: *See*—
Momose, Takashi; Tomiie, Kazuo; Harada, Hiroyuki; Miyachi, Hiroshi; and Kato, Hiroko, 4,605,685, Cl. 522-124.000.

Kato, Kazuo: *See*—
Yamada, Kazuji; Sato, Hideo; Kawakami, Kanji; Kato, Kazuo; and Sasayama, Takao, 4,604,899, Cl. 73-708.000.

Kato, Toshiro: *See*—
Takahashi, Junya; Kato, Toshiro; Noguchi, Hiroshi; Oguri, Yukio; Yamamoto, Shigeo; and Kamoshita, Katsuzo, 4,605,668, Cl. 514-485.000.

Kato, Yoshinori: *See*—
Watanabe, Kenzo; Kato, Yoshinori; Saito, Masahiko; Oba, Takeo; Fukushima, Hisashi; and Hara, Takeshi, 4,605,645, Cl. 514-51.000.

Katoh, Toshio: *See*—
Mita, Ryuichi; Katoh, Toshio; Higuchi, Chojiro; and Yamaguchi, Akihiro, 4,605,759, Cl. 562-444.000.

Katsuragi, Yasuhiro: *See*—
Sato, Mitsunobu; Katsuragi, Yasuhiro; Sakano, Yasuo; Sugihara, Kunio; and Aimoto, Kenji, 4,605,555, Cl. 424-85.000.
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Katz, Philip; Brenman, Henry S.; Hamarman, Henry; and Schwartz, Harold, to Thomas Jefferson University. Intra-oral control unit and system. 4,605,927, Cl. 340-825.190.

Kauffman, Jim W.; Laughlin, William C.; and Baldwin, Roger A., to Kerr-McGee Chemical Corporation. Process for the preparation of a carbonaceous-derived solid fuel product. 4,605,421, Cl. 44-1.00F.

Kauffman, William J.: *See*—
Herr, Richard E., Jr.; Kauffman, William J.; and Landers, Cheryl W., 4,605,584, Cl. 428-142.000.

Kawachi Aluminium Casting Co., Ltd.: *See*—
Sumida, Akio, 4,605,054, Cl. 164-147.100.

Kawakami, Kanji: *See*—
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Kawakami, Koichi; and Sawada, Mitsuo, to Yoshida Kogyo K.K. Method and apparatus for automatically threading separable slide fastener stringers through sliders. 4,604,782, Cl. 29-409.000.

Kawamura, Satoshi: *See*—
Matsuno, Jyunichi; Kawauchi, Masataka; Yoshida, Masashi; and Kawamura, Satoshi, 4,605,938, Cl. 346-76.0PH.

Kawanami, Shumpei; and Nakama, Hiroshi, to Dai-Ichi High Frequency Co., Ltd. Apparatus for dimensional inspection of a pipe spool, or for making or cutting and finishing at its both ends. 4,604,813, Cl. 33-529.000.

Kawasaki Steel Corp: *See*—
Kitao, Nariharu; Fukui, Masayasu; Hamasaki, Yoshiharu; and Kutsuzawa, Masaki, 4,606,006, Cl. 364-472.000.

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Ohtsubo, Hiroshi; Takada, Isao; and Kawasaki, Tatsuo, 4,604,887, Cl. 72-368.000.

Kawasaki, Tatsuo: *See*—
Ohtsubo, Hiroshi; Takada, Isao; and Kawasaki, Tatsuo, 4,604,887, Cl. 72-368.000.

Kawasaki, Yoshihiko: *See*—
Uchida, Hiroshi; Nakanishi, Kazuo; and Kawasaki, Yoshihiko, 4,605,177, Cl. 242-35.50A.

Kawashita, Hideo; Ikeda, Takuo; and Sakaguchi, Sanae, to Taoka Chemical Company, Limited. Aqueous ink composition. 4,605,442, Cl. 106-22.000.

Kawauchi, Masataka: *See*—
Matsuno, Jyunichi; Kawauchi, Masataka; Yoshida, Masashi; and Kawamura, Satoshi, 4,605,938, Cl. 346-76.0PH.

Keane Monroe Corporation: *See*—
Sorber, Robert, 4,604,826, Cl. 49-31.000.

Kebabian, Paul L., to Environmental Research & Technology, Inc. Infrared detector for NDIR gas analysis. 4,605,313, Cl. 374-121.000.

Keiper Recaro GmbH & Co.: *See*—
Kluting, Bernd; Ebeling, Peter; and Strowik, Willibald, 4,605,192, Cl. 248-394.000.

Keith, Earl K.; Mercer, William E., II; and Dick, Clarence R., to Dow Chemical Company, The. Apparatus and method for forming a wear-resistant metal composition. 4,605,438, Cl. 75-67.00A.

Keith, Jeffrey S., to Ingersoll-Rand Company. Lubrication system for a compressor. 4,605,357, Cl. 417-228.000.

Keithahn, Julian D.: *See*—
Burton, James A.; Colvin, Kenneth W.; and Keithahn, Julian D., 4,605,195, Cl. 251-1.200.

Keller, Paul, to Kellex Industries Ltd. Ice machine. 4,604,875, Cl. 62-354.000.

Kellex Industries Ltd.: *See*—
Keller, Paul, 4,604,875, Cl. 62-354.000.

Kells Medical, Inc.: *See*—
Sheehan, Joseph C. M., 4,605,005, Cl. 128-335.000.

Kelly, William W., to Stanadyne, Inc. Accumulator injector. 4,605,166, Cl. 239-96.000.

Kelman, Charles D. Intraocular lens with miniature optic having expandable and contractible glare-reducing means. 4,605,409, Cl. 623-6.000.

Keltner, Heidi. Heated stadium cushion. 4,604,987, Cl. 126-204.000.

Kendall, Sherman L.: *See*—
Reynolds, Gordon S.; and Kendall, Sherman L., 4,605,019, Cl. 132-9.000.

Kennedy, Robert E.; and Neef, James D., to United States of America, Navy. Arresting and recovery system for test missiles. 4,604,938, Cl. 89-1.800.

Kerr, James A.: *See*—
Long, James R.; and Kerr, James A., 4,604,798, Cl. 29-764.000.

Kerr-McGee Chemical Corporation: *See*—
Kauffman, Jim W.; Laughlin, William C.; and Baldwin, Roger A., 4,605,421, Cl. 44-1.00F.

Keuschnigg, Josef; and Kissich, Arnulf, to Voest-Alpine Aktiengesellschaft. Drive arrangement for the loading arms of a loading ramp for heading machines or longwall shearing machines. 4,605,119, Cl. 198-514.000.

Kewpie Kabushiki Kaisha: *See*—
Fujimura, Gen; Sotoma, Koichi; Kunikyo, Hiroshi; Hata, Masahito; and Inoue, Hidesuke, 4,605,562, Cl. 426-299.000.

Khanna, Pyare, to Syntex (U.S.A.) Inc. Acetaminophen analogs. 4,605,754, Cl. 560-19.000.

Kibby, Charles L.: *See*—
Beuther, Harold; Kibby, Charles L.; Kobylinski, Thaddeus P.; and Pannell, Richard B., 4,605,680, Cl. 518-715.000.
Kobylinski, Thaddeus P.; Kibby, Charles L.; Pannell, Richard B.; and Eddy, Elizabeth L., 4,605,676, Cl. 518-700.000.
Kobylinski, Thaddeus P.; Kibby, Charles L.; Pannell, Richard B.; and Eddy, Elizabeth L., 4,605,679, Cl. 518-700.000.

Kicherer, Robert: *See*—
Fischer, Karl; Schreder, Felix; and Kicherer, Robert, 4,605,841, Cl. 219-449.000.

Kidokoro, Susumu; and Tajima, Eiichi, to Tajima Oyo Kako Kabushiki Kaisha. Process of forming ornamental joints. 4,605,463, Cl. 156-247.000.

Kiefer, Judy E.; Phillips, William V.; and Woodruff, Thomas E., to Eastman Kodak Company. Process for the purification of terephthalic acid. 4,605,763, Cl. 562-487.000.

Kikuchi, Masashi; and Matsuoka, Masahiro, to Shiseido Company Ltd. 5,8-dihydroxy naphthalene-1,4-dione derivative and a hair dye composition containing the same. 4,605,419, Cl. 8-426.000.

Kilkson, Henn: *See*—
Abbott, Scot D.; Levin, Herman W.; Kobos, Robert K.; Kilkson, Henn; and Peterson, Dale R., 4,605,628, Cl. 436-70.000.

Kim, In S. Starting winding switching circuit for single-phase induction motors. 4,605,888, Cl. 318-786.000.

Kim, Kyusik. Aerodynamic heated steam generating apparatus. 4,605,184, Cl. 244-58.000.

Kimball, James F. Support for a bicycle and rider. 4,605,242, Cl. 280-294.000.

Kimberly-Clark Corporation: *See*—
Lassen, Frederich O., 4,605,405, Cl. 604-389.000.
Sayovitz, John J.; Mitchell, Kenneth J.; and Mathis, Michael P., 4,605,454, Cl. 156-73.100.

Kimura, Shigeki, to Mita Industrial Co., Ltd. Document reading device. 4,605,971, Cl. 358-285.000.

Kimura, Sosaku; Okabe, Takeshi; and Hatsuse, Toshikazu, to Citizen Watch Co., Ltd. Table mechanism. 4,604,833, Cl. 51-165.800.

King, Geoffrey W.: *See*—
Hatcher, Clive D.; Hill, Alan; and King, Geoffrey W., 4,605,351, Cl. 413-58.000.

King, Michael J.: *See*—
Brotherton, Stanley D.; Gill, Audrey; and King, Michael J., 4,605,447, Cl. 148-1.500.

Kinishi, Ryoichi; Kaku, Eisaburo; and Hanayama, Naoki, to Yoshitomi Pharmaceutical Industries, Ltd. Thermoresponsive recording paper sheet. 4,605,940, Cl. 346-209.000.

Kira, Takehiro, to Ushio Denki Kabushiki Kaisha. Exposure method of semiconductor wafer by mercury-vapor lamp. 4,605,301, Cl. 355-69.000.

Kirk, Glenn D., to Mai Basic Four, Inc. Switch mode converter and improved deadband control therefor. 4,605,997, Cl. 363-16.000.

Kirk, Thomas E.: *See*—
Steele, Roy B.; Kirk, Thomas E.; Robinson, Melvin T.; and Anderson, Stephen W., 4,606,000, Cl. 363-145.000.

Kirkham, James A. Digital graphic image analyzer. 4,604,963, Cl. 116-300.000.

Kisellev, Vladimir G.: *See*—
Fedorov, Svyatoslav N.; Anisimov, Sergei I.; Karavaev, Alexandr A.; Kisellev, Vladimir G.; Juzhelevsky, July A.; and Degtev, Evgeny I., 4,605,411, Cl. 623-6.000.

Kishi, Norimasa: *See*—
Suzuki, Tadashi; Kishi, Norimasa; Tomikashi, Minoru; and Futami, Toru, 4,606,022, Cl. 370-85.000.

Kishimoto, Shinzo: *See*—
Ohno, Shigeru; and Kishimoto, Shinzo, 4,605,611, Cl. 430-393.000.

Kissich, Arnulf: *See*—
Keuschnigg, Josef; and Kissich, Arnulf, 4,605,119, Cl. 198-514.000.

Kita, Toshiyuki, to Hokusei Nikkei Household Utensils Co., Ltd. Cooking vessel. 4,604,989, Cl. 126-369.000.

Kitagawa Industries Co., Ltd.: *See*—
Takahashi, Katsumasa, 4,604,776, Cl. 24-453.000.

Kitamura, Kengo; and Murata, Hitoshi, to Nissan Motor Company, Limited. Method for automatically attaching sub-assembly to main assembly and system thereof using industrial robots. 4,604,797, Cl. 29-783.000.

Kitao, Kazuhiko: *See*—
Kakeya, Nobuharu; Nishizawa, Susumu; Tamaki, Satoshi; and Kitao, Kazuhiko, 4,605,651, Cl. 514-200.000.

Kitao, Nariharu; Fukui, Masayasu; Hamasaki, Yoshiharu; and Kutsuzawa, Masaki, to Mitsubishi Denki K.K.; and Kawasaki Steel Corp. Method of controlling the rolling efficiency in hot rolling. 4,606,006, Cl. 364-472.000.

Kittaka, Toshihiko: *See*—
Ogawa, Toshio; and Kittaka, Toshihiko, 4,605,876, Cl. 310-358.000.

Kiuru, Erkki S.: *See*—
Aittoniemi, Kari T. J.; Kiuru, Erkki S.; Lappalainen, Aatu V. K.; and Savolainen, Kalevi, 4,605,898, Cl. 324-232.000.

KLA Instruments Corporation: *See*—
Chadwick, Curt H.; and Desai, Anil A., 4,604,910, Cl. 74-96.000.

Klar, Heiner; and Mauthe, Manfred, to Siemens Aktiengesellschaft. Charge coupled device (CCD) input circuit operating according to the fill and spill principle. 4,606,060, Cl. 377-60.000.

Klebovich, Imre: *See*—
Toth, Edit; Torley, Jozsef; Fekete, Gyorgy; Szporny, Laszlo ; Vereczkey, Laszlo ; Palosi, Eva; Klebovich, Imre; Vittay, Pal; Gorog, Sandor; and Hajdu, Istvan, 4,605,672, Cl. 514-648.000.

Klein, Gerhard: *See*—
Fischer, Wolfgang; Klein, Gerhard; Hombach, Rudoph; and Kniege, Wilfried, 4,605,703, Cl. 525-157.000.

Kleschick, William A.: *See*—
Pearson, Norman R.; and Kleschick, William A., 4,605,433, Cl. 71-93.000.

Kliem, Peter O.; Fischer, Alan B.; and Inbar, Shai, to Polaroid Corporation. Photosensitive devices having enhanced blue light response. 4,605,849, Cl. 250-216.000.

Klievoneit, Harold R.; and Esposito, Augustine G., to St. Florian Company. Rotary coupling for fluids. 4,605,249, Cl. 285-98.000.

Klimek, Albert A.: *See*—
Goodrum, Richard W.; Bechtold, Thomas E.; and Klimek, Albert A., 4,605,123, Cl. 206-0.500.

Klingensmith, James D.: *See*—
Hovland, Lyle W.; and Klingensmith, James D., 4,605,333, Cl. 403-27.000.

Klockner, Alfred. Apparatus for cooling or drying coarse-grained bulk material. 4,604,814, Cl. 34-172.000.

Klockner-Werke Aktiengesellschaft: *See*—
Gutjahr, Lothar, 4,605,367, Cl. 425-150.000.

Klotzer, Sieghart, to Agfa-Gevaert Aktiengesellschaft. Emulsion rich in silver chloride, photographic recording material and process for the production of photographic recordings. 4,605,610, Cl. 430-376.000.

Klumpyan, Joseph N.; and Ross, Richard J., to Baker Oil Tools, Inc. Subsurface injection tool. 4,605,062, Cl. 166-127.000.

Kluting, Bernd; Ebeling, Peter; and Strowik, Willibald, to Keiper Recaro GmbH & Co. Seat rail. 4,605,192, Cl. 248-394.000.

Knape & Vogt Manufacturing Company: *See*—
Bessinger, Walter L.; and Rutledge, Jerry D., 4,605,265, Cl. 384-20.000.

Knauer, Karl: *See*—
Pfleiderer, Hans-Joerg; and Knauer, Karl, 4,605,913, Cl. 333-166.000.

Knauss, Hans-Peter: *See*—
Soffge, Friedhelm; and Knauss, Hans-Peter, 4,604,915, Cl. 74-790.000.

Knepper, James A.; and Rose, Leroy, to International Business Machines Corporation. Constant force roll assembly. 4,605,218, Cl. 271-238.000.

Kniege, Wilfried: *See*—
Fischer, Wolfgang; Klein, Gerhard; Hombach, Rudoph; and Kniege, Wilfried, 4,605,703, Cl. 525-157.000.

Knifton, John F., to Texaco Inc. Process for C_1–C_4 alkanol production from synthesis gas. 4,605,677, Cl. 518-700.000.

Knoop, David F.: *See*—
Dodge, David C.; Knoop, David F.; Thomas, George T.; and Newman, James P., 4,605,508, Cl. 252-95.000.

Knorr, David B.; and Breedis, John F., to Olin Corporation. Copper alloys having an improved combination of strength and conductivity. 4,605,532, Cl. 420-472.000.

Knudsen, James K.; Koller, Allen C.; Skuratovsky, Eugene; and Thomas, Gary S., to Babcock & Wilcox Company, The. Adhesive joint for diaphragm to sensor connection in pressure transducers. 4,604,900, Cl. 73-716.000.

Kobayashi, Tadashi; Nozaki, Shinya; and Yamada, Keiichi, to Diesel Kiki Co., Ltd. Electronically controlled distributor type fuel injection pump for internal combustion engines. 4,604,979, Cl. 123-449.000.

Kober, Alfred E., to Apollo Technologies Int'l Corp. Application of foam to improve flow characteristics of water-insoluble products. 4,605,568, Cl. 427-220.000.

Kober, Marvin: *See*—
Tsipenyuk, Pyotr; and Kober, Marvin, 4,604,796, Cl. 29-764.000.

Kobler, Ingo, to M.A.N. Roland Druckmaschinen Aktiengesellschaft. Device on a folding gripper cylinder to accept folded products. 4,605,212, Cl. 270-54.000.

Kobor, Jeno: *See*—
Bernath, Gabor; Kobor, Jeno; Folop, Ferenc; Sohajda, Attila; Kalman, Alajos; Ezer, Elemer; Hajos, Gyorgy; Palosi, Eva; Denes, Laszlo ; and Szporny, Laszlo , 4,605,653, Cl. 514-226.000.

Kobori, Yasunori; Fukushima, Isao; Nishijima, Hideo; Masuda, Yoshinori; and Yamamoto, Norihisa, to Hitachi, Ltd.; and Hitachi Microcomputer & Engineering, Ltd. Frequency-voltage converter. 4,605,901, Cl. 328-140.000.

Kobos, Robert K.: *See*—
Abbott, Scot D.; Levin, Herman W.; Kobos, Robert K.; Kilkson, Henn; and Peterson, Dale R., 4,605,628, Cl. 436-70.000.

Kobylinski, Thaddeus P.; Kibby, Charles L.; Pannell, Richard B.; and Eddy, Elizabeth L., to Chevron Research Company. Synthesis gas conversion using ROR-activated catalyst. 4,605,676, Cl. 518-700.000.

Kobylinski, Thaddeus P.; Kibby, Charles L.; Pannell, Richard B.; and Eddy, Elizabeth L., to Chevron Research Company. Activated cobalt catalyst and synthesis gas conversion using same. 4,605,679, Cl. 518-700.000.

Kobylinski, Thaddeus P.: *See*—
Beuther, Harold; Kibby, Charles L.; Kobylinski, Thaddeus P.; and Pannell, Richard B., 4,605,680, Cl. 518-715.000.

Koch, Wolfgang: *See*—
Heitz, Walter; and Koch, Wolfgang, 4,605,713, Cl. 525-537.000.
Heitz, Walter; and Koch, Wolfgang, 4,605,732, Cl. 528-388.000.

Kohaszati Gyarepito Vallalat: *See*—
Retfalvi, Ferenc; Lukacs, Laszlo ; Molnar, Laszlo ; Dozsa, Gyorgy; and Szappanos, Adam, 4,605,836, Cl. 219-130.010.

Kohler, David E.: *See*—
Malisiewski, Theodore V.; and Kohler, David E., 4,605,174, Cl. 241-52.000.

Kohn, Harold, to International Business Machine Corp. Continuous solder paste dispenser. 4,604,966, Cl. 118-406.000.

Kohsaka, Masanobu: *See*—
Hori, Yasuhiro; Hino, Motohiro; Terano, Hiroshi; Hashimoto, Masashi; and Kohsaka, Masanobu, 4,605,559, Cl. 424-120.000.

Koizumi, Kenichi, to Fujikura Rubber Ltd. Vertical elongated chute. 4,605,095, Cl. 182-48.000.

Kojima, Shinichi; and Ishikawa, Kiichiro, to Yoshida Kogyo K. K. Method of and apparatus for forming element-free spaces in continuous slide fastener chain with fly strips. 4,604,783, Cl. 29-410.000.

Kokoszka, Joseph M.; and Tommasini, Rocco M., to United Technologies Corporation. Temperature probe for rotating machinery. 4,605,315, Cl. 374-144.000.

Kokumai, Hiroyuki: *See*—
Zenbutsu, Tadashi; Kokumai, Hiroyuki; Okikawa, Shinji; and Saito, Keiji, 4,605,635, Cl. 501-96.000.

Kolb & Schule AG: *See*—
Arbter, Conrad, 4,605,179, Cl. 242-72.00B.

Koller, Allen C.: *See*—
Knudsen, James K.; Koller, Allen C.; Skuratovsky, Eugene; and Thomas, Gary S., 4,604,900, Cl. 73-716.000.

Komaroff, Iwan: *See*—
Frey, Thomas; Grunwald, Werner; Imhof, Ernst; Komaroff, Iwan; Reum, Helmut; Schmid, Gunther; and Schmid, Kurt, 4,604,975, Cl. 123-145.00A.

Komori Printing Machinery Co., Ltd.: *See*—
Ichikawa, Ieyasu; and Arai, Shigeji, 4,604,951, Cl. 101-153.000.

Komuro, Isaku; Sano, Yoshikazu; and Shibata, Shinichi, to Tokyo Shibaura Denki Kabushiki Kaisha. Function key assignments in a key telephone system. 4,605,825, Cl. 179-99.00R.

Kondo, Kazuo: *See*—
Iida, Kazuyoshi; Mizuno, Keiichiro; Yamaguchi, Michiyuki; and Kondo, Kazuo, 4,605,091, Cl. 181-224.000.

Kondo, Toshio: *See*—
Doya, Masaharu; Kondo, Toshio; Igarashi, Hideo; and Uchiyama, Takako, 4,605,477, Cl. 204-182.600.

Konishi, Keizo, to Tokai Rubber Industries, Ltd. Fluid-filled resilient bushing. 4,605,207, Cl. 267-57.10R.

Konishi, Takeshi: *See*—
Maeda, Tatsuo; and Konishi, Takeshi, 4,604,830, Cl. 49-374.000.

Konovalov, Viktor A.: *See*—
Bezborodov, Vladimir S.; Konovalov, Viktor A.; Ptashnikov, Jury L.; Astafiev, Vladimir M.; Minko, Anatoly A.; Dudarchik,

Anatoly I.; Zanegina, Galina A.; and Poimanov, Anatoly M., 4,605,510, Cl. 252-299.660.
Bezborodov, Vladimir S.; Konovalov, Viktor A.; and Ptashnikov, Jury L., 4,605,520, Cl. 558-414.000.

Koog, Wolfgang, to Texaco Development Corporation. Apparatus for generating and cooling synthesis gas. 4,605,423, Cl. 48-69.000.

Koopman, Peter J., to Henny Penny Corporation. Horizontal holding cabinet for prepared food. 4,605,840, Cl. 219-401.000.

Koopmann, Gerd, to Leybold Heraeus GmbH. Differential bellows pressure switch. 4,605,832, Cl. 200-83.00D.

Koors, Mark A., to General Motors Corporation. Tube closure member having toggle action. 4,605,140, Cl. 220-233.000.

Kopp, Richard: *See*—
Grogler, Gerhard; Kopp, Richard; and Hess, Heinrich, 4,605,756, Cl. 560-351.000.

Korenhof, Abraham, to SKF Industrial Trading and Development Company B.V. Sealing ring for a rolling bearing. 4,605,319, Cl. 384-484.000.

Korf Engineering GmbH: *See*—
Langner, Klaus; Papst, Gero; Hauk, Rolf; and Nagl, Michael, 4,605,205, Cl. 266-160.000.

Koromegawa, Isao: *See*—
Inoue, Yohichi; Tanaka, Katsuyuki; Takeuchui, Yoshinori; Koromegawa, Isao; Yamaguchi, Yuzoo; and Saitoh, Yokuo, 4,605,979, Cl. 360-105.000.

Koroyanagi, Masatoshi: *See*—
Suzuki, Masahiko; Koroyanagi, Masatoshi; Moriguchi, Kouichi; and Matsui, Kazuma, 4,605,359, Cl. 417-270.000.

Koshizuka, Atuo, to Fujitsu Limited. Sense amplifier. 4,606,012, Cl. 365-189.000.

Kostler, Dieter: *See*—
Michel, Wolfgang; Paul, Heinz; Rummel, Andreas; Seher, Gero; Ossowski, Manfred; Heberlein, Irmtrud; Kostler, Dieter; and Wilhelm, Frank, 4,605,487, Cl. 208-408.000.

Kotler, Richard G. Reclaiming device. 4,605,118, Cl. 198-509.000.

Kovacs nee Kalman, Magdolna: *See*—
Matolosy, Gyorgy; Bordas, Barna; Gimesi, Antal; Kovacs nee Kalman, Magdolna; and Tuşke, Marton, 4,605,764, Cl. 564-209.000.

Kowa Co., Ltd.: *See*—
Fujii, Setsuro; Hattori, Eizou; Hirata, Mitsuteru; Kunieda, Hisashi; Watanabe, Koichiro; and Ishihama, Hiroshi, 4,605,739, Cl. 544-373.000.

Kozponti Elelmiszeripari Kutato Intezet: *See*—
Kaffka, Karoly; Nadai, Bela; Czabaffy, Andras; and Horvath, Lorand, 4,605,306, Cl. 356-334.000.

Kratzer, Michael; and Born, Gustav V. R. System for measuring bleeding time in vitro. 4,604,894, Cl. 73-64.100.

Kravchenko, Jury B.; Baru, Jury A.; Osyatinsky, Saul G.; Timoshin, Jury V.; Makogon, Anatoly I.; Lobas, Igor P.; Gasilovsky, Kim S.; Livshits, Inna Z.; and Besedin, Alexei N., to Spetsialnoe Proektno-Konstruktorskoe I Tekhnologicheskoe Bjuro Po Pogruzhnomu Elektrooborudovaniju Dlya Burenia Skvazhin I Dobychi Nefti VNPO "Potentsial" . Method of and apparatus for generating shear seismic waves. 4,605,089, Cl. 181-114.000.

Krieg, Rudolf, to Patent-Treuhand-Gesellschaft fur elektrische Gluhlampen mbH. Flash lamp. 4,605,994, Cl. 362-202.000.

Krieger, Eberhard; and Moser, Theo, to Robert Bosch GmbH. Carton blank removal, erection and transfer apparatus. 4,605,393, Cl. 493-317.000.

Krieger, George H., to Cuscovitch, John F. Holder for detachable blades. 4,604,805, Cl. 30-330.000.

Krone, Bernard; and Ahler, Wilhelm, to Maschinenfabriken Bernard Krone GmbH. Wrapping apparatus for round bales in baling presses. 4,604,855, Cl. 53-64.000.

Kronstadt, Victor: *See*—
Goetz, Oliver R.; Schnurr, Richard D.; and Kronstadt, Victor, 4,605,114, Cl. 192-106.200.

Kruger, Robert J.: *See*—
Bilstad, Arnold C.; Brown, Richard I.; and Kruger, Robert J., 4,605,503, Cl. 210-651.000.

Kruger, Tilmann; Potthof, Erwin; and Barwig, Manfred, to Diehl GmbH & Co. Process for generating control signals in a predeterminable phase position, circuit arrangement for effectuating the process and utilization of the circuit arrangement. 4,606,058, Cl. 377-39.000.

Ku, Edmond C.: *See*—
Liauw, Hui L.; Oei, Howard H.; and Ku, Edmond C., 4,605,665, Cl. 514-431.000.

Kuder, James E.: *See*—
Nikles, David E.; Jones, R. Sidney, Jr.; and Kuder, James E., 4,605,607, Cl. 430-17.000.

Kudo, Shozo, to Ricoh Company, Ltd. Adjusting data transmission rate based on received signal quality. 4,606,044, Cl. 375-13.000.

Kudoh, Kazunao; and Hashimoto, Yoshikazu, to Sumitomo Electric Industries, Ltd. Lead frame coated with aluminum as a packaging material in integrated circuits. 4,605,533, Cl. 428-622.000.

Kuehl, Guenter H.: *See*—
Chu, Pochen; and Kuehl, Guenter H., 4,605,787, Cl. 568-697.000.

Kuehne, Friedrich: *See*—
Kahn, Klaus-Dieter; Kuehne, Friedrich; and Barth, Hermann, 4,606,042, Cl. 375-2.100.

Kuhl, David K.: *See*—
Rothfuss, Robert G.; Kuhl, David K.; and Murray, Michael A., 4,605,001, Cl. 128-305.000.

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Kulgevich, Alexander, to Frayberg, Naum. Fire arm. 4,604,985, Cl. 124-56.000.

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Kulla, James P.; and Huff, Norman J., to Biological & Environmental Control Laboratories, Inc. Coating process for making antimicrobial medical implant device. 4,605,564, Cl. 427-2.000.

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Kumagai, Naotake: *See*—
Tanaka, Tadao; Chikamori, Sunao; Harara, Mitsuhiko; Taniguchi, Yasutaka; Suzumura, Masanaga; Tatemoto, Minoru; Kumagai, Naotake; Abe, Hiroki; and Takizawa, Shozo, 4,605,244, Cl. 280-707.000.

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Kung, Viola T.; Martin, Francis J.; and Vollmer, Yolanda P., to Cooper Lipotech Inc. Large-liposome agglutination reagent and method. 4,605,630, Cl. 436-511.000.

Kunieda, Hisashi: *See*—
Fujii, Setsuro; Hattori, Eizou; Hirata, Mitsuteru; Kunieda, Hisashi; Watanabe, Koichiro; and Ishihama, Hiroshi, 4,605,739, Cl. 544-373.000.

Kunikyo, Hiroshi: *See*—
Fujimura, Gen; Sotoma, Koichi; Kunikyo, Hiroshi; Hata, Masahito; and Inoue, Hidesuke, 4,605,562, Cl. 426-299.000.

Kuno, Toshihiko: *See*—
Shiragami, Osamu; Kuno, Toshihiko; Sajima, Yasuo; Saito, Kohji; Uchibori, Takahiro; and Iwamoto, Junjiro, 4,605,482, Cl. 204-258.000.

Kunschner, Alois: *See*—
Chmelir, Miroslav; and Kunschner, Alois, 4,605,401, Cl. 604-368.000.

Kuo, Yen-long: *See*—
Aprille, Thomas J., Jr.; Kuo, Yen-long; and Walker, Charles F., 4,606,043, Cl. 375-12.000.

Kuparinen, Pertti K. Foldable music stand. 4,605,193, Cl. 248-460.000.

Kuribayashi, Michio, to Fuji Photo Film Co., Ltd. Apparatus for converting field video signals into frame video signals. 4,605,951, Cl. 358-11.000.

Kuroiwa, Katsumasa: *See*—
Nagasawa, Takeshi; Kuroiwa, Katsumasa; Takabayashi, Katsuyuki; and Nakamura, Yoshio, 4,605,614, Cl. 435-13.000.

Kurokawa, Masahiro: *See*—
Miyamoto, Akira; Sato, Katsuo; and Kurokawa, Masahiro, 4,605,765, Cl. 564-367.000.

Kuroki, Yasuaki: *See*—
Okubo, Kenji; Kuroki, Yasuaki; and Horikawa, Takashi, 4,605,387, Cl. 474-112.000.

Kurtz, Leonard D.; and LiCausi, Joseph M., to BioResearch Inc. Surgical drainage apparatus. 4,605,400, Cl. 604-319.000.

Kurzeja, Patrick L.; Sutton, Noel W.; and Hahn, Steven C., to GKN Automotive Components Incorporated. Self-aligning tripod joint tulip cover and constant velocity joint incorporating same. 4,605,384, Cl. 464-111.000.

Kusano, Mitsuhiro, to NEC Corporation. Shaped beam reflector antenna. 4,605,935, Cl. 343-914.000.

Kusayama, Masahiro, to Yoshida Kogyo, K. K. Sealing slide fastener. 4,604,775, Cl. 24-389.000.

Kuschmierz, Heinz: *See*—
Brouwers, Sytze; Bruhmann, Werner; and Kuschmierz, Heinz, 4,604,978, Cl. 123-374.000.

Kutsuzawa, Masaki: *See*—
Kitao, Nariharu; Fukui, Masayasu; Hamasaki, Yoshiharu; and Kutsuzawa, Masaki, 4,606,006, Cl. 364-472.000.

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Kamiguchi, Taiji; Yamada, Mutsuo; Arikawa, Yoshijiro; Kuwahara, Takanori; Tanimoto, Hirotoshi; Nishimura, Yasuyuki; and Kaku, Hiroyuki, 4,605,776, Cl. 568-401.000.

Kyonomine, Masaru, to Toyota Jidosha Kogyo Kabushiki Kaisha. Parking brake releasing mechanism. 4,604,913, Cl. 74-540.000.

Kyosan Electric Co., Ltd.: *See*—
Yuzurihara, Itsuo, 4,605,865, Cl. 307-270.000.

Kyoto Pharmaceutical Industries, Ltd.: *See*—
Kakeya, Nobuharu; Nishizawa, Susumu; Tamaki, Satoshi; and Kitao, Kazuhiko, 4,605,651, Cl. 514-200.000.

Kyoto Prefectural Government: *See*—
Oinuma, Senzo; Tanaka, Kazumi; Shiino, Kazuo; and Watanabe, Hiroki, 4,605,003, Cl. 128-328.000.

La Nuova Scolpitrice S.p.A.: *See*—
Giordanengo, Giovanni; and Cavallera, Giorgio, 4,605,049, Cl. 144-144.00R.

La Telemecanique Electrique: *See*—
Lemarquand, Pierre; and Moreau, Luc, 4,605,918, Cl. 335-261.000.

Labrador, Jacques A. L.: *See*—
Ometz, Pierre H. M.; and Labrador, Jacques A. L., 4,605,851, Cl. 250-223.00B.

Lacombe, Jacques: *See—*
Rose, Christian S.; and Lacombe, Jacques, 4,605,395, Cl. 604-9.000.
Lading, Stig: *See—*
Rasmussen, Erik; Lundquist, Gunnar; and Lading, Stig, 4,605,035, Cl. 137-240.000.
LaFlame, Thomas R. Support for a percussion instrument. 4,605,144, Cl. 224-265.000.
LaForest, Lance J.; and Taylor, Rita L., to Medical Engineering Corp. Mammary prosthesis having adjustable projection. 4,605,412, Cl. 623-8.000.
Laguerre, Michel: *See—*
Boyer, Chantal; Colleter, Jean C.; Creuzet, Marie-Helene; Feniou, Claude; Laguerre, Michel; Pontagnier, Henri; and Prat, Gisele, 4,605,768, Cl. 564-461.000.
Lai, An-Cheng. Method of manufacturing shoes. 4,605,455, Cl. 156-78.000.
Laine, Richard M.: *See—*
Roberts, Daryl L.; and Laine, Richard M., 4,605,475, Cl. 204-130.000.
Lakatos, Nick: *See—*
Welber, Stanley; and Lakatos, Nick, 4,605,280, Cl. 350-96.200.
Lamb, Haydn R.: *See—*
Barr, John D.; and Lamb, Haydn R., 4,605,157, Cl. 228-132.000.
Landers, Cheryl W.: *See—*
Herr, Richard E., Jr.; Kauffman, William J.; and Landers, Cheryl W., 4,605,584, Cl. 428-142.000.
Landis, Michael E.: *See—*
Chang, Clarence D.; Landis, Michael E.; and Miale, Joseph N., 4,605,637, Cl. 502-64.000.
Landis, Scott: *See—*
Schmaltski, Donald W.; and Landis, Scott, 4,605,204, Cl. 256-19.000.
Landrum, Clyde L.: *See—*
Alling, Richard L.; Shepard, Richard W.; Landrum, Clyde L.; Tofield, Robert H.; and Podhajecki, Stephen T., 4,605,322, Cl. 384-575.000.
Landscheidt, Alfons, to Chemische Fabrik Stockhausen GmbH. Process for the production of N-substituted acrylic acid amides. 4,605,740, Cl. 544-376.000.
Lane, Peter, to Globe International Inc. Fire resistant oil spill barrier. 4,605,586, Cl. 428-240.000.
Lang, David M.; and Lewitzke, Richard W., to Becor Western Inc. Expandable operator's cab. 4,605,257, Cl. 296-26.000.
Lang, Kevin W., to General Foods Corporation. Fondant and food bars produced therefrom. 4,605,561, Cl. 426-93.000.
Lang, Thomas J. Selectively adjustable hinge. 4,604,770, Cl. 16-363.000.
Lang, Thomas P. Machine for the bending of stranded material. 4,604,885, Cl. 72-306.000.
Lang, Walter H.; Biber, Klaus; Lemcke, Ulrich; and Sander, Ulrich, to Carl-Zeiss-Stiftung. Surgical microscope for two surgeons. 4,605,287, Cl. 350-513.000.
Lange, Hans; Geisler, Edda; and Werner, Wolfgang, to Boehringer Mannheim GmbH. Method of eluting reagent from reagent strips for chemical analyses and reagent strip therefor. 4,605,629, Cl. 436-166.000.
Langner, Klaus; Papst, Gero; Hauk, Rolf; and Nagl, Michael, to Korf Engineering GmbH; and Voest-Alpine Aktiengesellschaft. Arrangement comprising a gasifier and a direct reduction furnace. 4,605,205, Cl. 266-160.000.
Langon, Bernard, to Aluminium Pechiney. Modular cathodic block and cathode having a low voltage drop for Hall-Heroult electrolysis tanks. 4,605,481, Cl. 204-243.00M.
Laporte Industries Limited: *See—*
Page, Michael J., 4,605,059, Cl. 165-163.000.
Lappalainen, Aatu V. K.: *See—*
Aittoniemi, Kari T. J.; Kiuru, Erkki S.; Lappalainen, Aatu V. K.; and Savolainen, Kalevi, 4,605,898, Cl. 324-232.000.
Larson, David A., to LFF & Associates. Method for making electro-acoustic transducer apparatus. 4,604,792, Cl. 29-594.000.
Larson, Leigh R. Milking inflation including air vent. 4,604,969, Cl. 119-14.360.
Lasky, Arthur J.: *See—*
Helmly, Paul K., Jr.; Forster, Fred D., Jr.; Gower, Patrick E.; Holdaway, Steven D.; Tutman, Stanley W.; Beissel, Timothy J.; Needham, Robert J.; and Lasky, Arthur J., 4,605,081, Cl. 177-25.000.
Lassander, Erik; and Stenkvist, Sven-Einar, to Asea AB. DC arc furnace having starting equipment. 4,606,055, Cl. 373-108.000.
Lassen, Frederich O., to Kimberly-Clark Corporation. Dynamically moveable napkin. 4,605,405, Cl. 604-389.000.
Laughlin, William C.: *See—*
Kauffman, Jim W.; Laughlin, William C.; and Baldwin, Roger A., 4,605,421, Cl. 44-1.00F.
Laurel Bank Machine Co., Ltd.: *See—*
Goi, Kowichi, 4,605,217, Cl. 271-124.000.
Lavielle, Gilbert; and Cudennec, Claude, to ADIR, S.A.R.L. Oxaazaphosphorine compounds and pharmaceutical compositions. 4,605,647, Cl. 514-85.000.
Lavoie, Michel. Comb. 4,605,020, Cl. 132-11.00R.
Lavrids Knudsen Maskinefabrik A/S: *See—*
Rasmussen, Erik; Lundquist, Gunnar; and Lading, Stig, 4,605,035, Cl. 137-240.000.
Leblanc, Jean, to Robert Bosch GmbH. Fuel injection pump. 4,604,980, Cl. 123-450.000.
Leblond, Henri: *See—*
Gohin, Christian; and Leblond, Henri, 4,604,898, Cl. 73-701.000.
Lee, Ching C. Foldable portable reclining chair. 4,605,261, Cl. 297-16.000.
Lee, Ross A., to Du Pont de Nemours, E. I., and Company. Silver sulfinate physical developer for heat-developable photographic films. 4,605,753, Cl. 556-111.000.
Legall, Wolf-Dieter: *See—*.
Kuhnert, Rudi; and Legall, Wolf-Dieter, 4,605,536, Cl. 422-99.000.
Legille, Edouard; Ulveling, Leon; and Mailliet, Pierre, to Paul Wurth S.A. Device for introducing dosed quantities of pulverized solid materials into a carrier gas stream. 4,605,342, Cl. 406-129.000.
Lehman, David L.: *See—*
Collier, John C.; and Lehman, David L., 4,604,795, Cl. 29-748.000.
Lehmann, Rolf; and Christ, Alfred, to Sulzer-Escher Wyss AG. Calender for pressure and thermal treatment of material webs. 4,605,366, Cl. 425-143.000.
Lehner, Alwin, to Soplar SA. Method of attaching a sheetlike object, e.g., a label, to a hollow body of plastics. 4,605,462, Cl. 156-245.000.
Leibee, Donald L.; and Crist, Owen K., to Marmon Group, The. Drill bit. 4,605,079, Cl. 175-410.000.
Leighton, John M. H.: *See—*
Tunnicliffe, Robert W.; and Leighton, John M. H., 4,604,831, Cl. 49-434.000.
Leitz, Helmut; and Rometsch, Gunter, to Carl-Zeiss-Stiftung. Angle-measuring instrument with a coarse-fine drive arrangement. 4,605,304, Cl. 356-138.000.
Le-Khac, Bi, to Atlantic Richfield Company. Thermodynamically miscible polymer composition. 4,605,700, Cl. 525-73.000.
Lemarquand, Pierre; and Moreau, Luc, to La Telemecanique Electrique. High speed current maximum tripping device. 4,605,918, Cl. 335-261.000.
Lemcke, Ulrich: *See—*
Lang, Walter H.; Biber, Klaus; Lemcke, Ulrich; and Sander, Ulrich, 4,605,287, Cl. 350-513.000.
Lemelson, Jerome H. Speech recognition control system and method. 4,605,080, Cl. 177-4.000.
Lenoir, Jeannine; Bertoye, Andre G.; and Bertoye, Renee, to Centre National de la Recherche Scientifique; and Institut Pasteur De Lyon Et Du Sud-Est. Laser nephelometer for sensing antigens and antibodies characterized in having measuring cell comprised of capiliary tube with the diameter of laser beam. 4,605,305, Cl. 356-246.000.
Leone-Bay, Andrea, to Stauffer Chemical Company. Preparation of 1,1-diphenyl-2-carboethoxycyclopropane. 4,605,755, Cl. 560-101.000.
Lepage, Jean-Luc; and Soula, Gerard, to Rhone-Poulenc Specialities Chimiques. Preparation of silane from methyldichlorosilane and chlorosilanes. 4,605,543, Cl. 423-347.000.
Leseur, Andre ; Delaroche, Pierre; Saglio, Robert; and Vaubert, Yves, to Commissariat a l'Energie Atomique. Process for examining a fuel assembly of a nuclear reactor and an examining machine for performing this process. 4,605,531, Cl. 376-252.000.
Leshchiner, Adolf: *See—*
Balazs, Endre A.; and Leshchiner, Adolf, 4,605,691, Cl. 524-27.000.
Lesher, Ernest G.; and Mieras, Cornelius E., to North American Products Corp. Carbide-tipped circular saw for metal cutting at low surface speeds. 4,604,933, Cl. 83-851.000.
L'Esperance, Paul M.: *See—*
Nikkel, Ronnie D.; and L'Esperance, Paul M., 4,604,990, Cl. 126-418.000.
Lessel, Guy: *See—*
Schummer, Arthur; de la Hamette, Jean; Lessel, Guy; Beck, Jean-Paul; and Frantz, Armand, 4,605,449, Cl. 148-12.00B.
Leung, Pak S.: *See—*
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Leupold, Ernst I.: *See—*
Litterer, Heinz; Wunder, Friedrich; Leupold, Ernst I.; and Baltes, Herbert, 4,605,809, Cl. 585-640.000.
Leuty, David S. Truck bumper step. 4,605,098, Cl. 182-92.000.
Levan, Jean-Pol: *See—*
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Levi, Sami S.: *See—*
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Abbott, Scot D.; Levin, Herman W.; Kobos, Robert K.; Kilkson, Henn; and Peterson, Dale R., 4,605,628, Cl. 436-70.000.
Levine, Edward H.; and Newbold, F. E. Dixon, to Rhode Gear USA. Bicycle mirror assembly. 4,605,289, Cl. 350-606.000.
Levine, Ralph: *See—*
Prussin, Samuel B.; Levine, Ralph; and Hintz, Warren J.; 4,605,554, Cl. 424-66.000.
Levy, Roy J.: *See—*
Hirzel, Frederic J.; and Levy, Roy J., 4,606,052, Cl. 375-87.000.
Lewis, Thomas E.: *See—*
Jorgensen, Robert W.; and Lewis, Thomas E., 4,605,816, Cl. 174-65.00R.
Lewitzke, Richard W.: *See—*
Lang, David M.; and Lewitzke, Richard W., 4,605,257, Cl. 296-26.000.
Leybold Heraeus GmbH: *See—*
Koepmann, Gerd, 4,605,832, Cl. 200-83.00D.
LFF & Associates: *See—*
Larson, David A., 4,604,792, Cl. 29-594.000.
Liauw, Hui L.; Oei, Howard H.; and Ku, Edmond C., to Ciba-Geigy Corporation. Systemic treatment of splanchnic ischemia shock using 7-chloro-N-(3,4-dichlorophenyl)-2,3-dihydro-5-hydroxy-1-benzo-

thiepin-4-carboxamide 1,1-dioxide and pharmaceutically acceptable salts thereof. 4,605,665, Cl. 514-431.000.
LiCausi, Joseph M.: *See*—
Kurtz, Leonard D.; and LiCausi, Joseph M., 4,605,400, Cl. 604-319.000.
Liehr, Joachim G. Method of treatment of estrogen deficiency disease. 4,605,649, Cl. 514-182.000.
Lienert, Gerold, to Rockwell International Corporation. Shot peening machine. 4,604,881, Cl. 72-53.000.
Lighting Systems, Inc.: *See*—
Zelina, Francis J., Jr., 4,605,993, Cl. 362-183.000.
Ligon, Kathy D.; and Hoovler, Marcia J. Apparatus for supporting and managing a medical pig tail type fluid infusion device. 4,605,397, Cl. 604-179.000.
Lim, Wah L., to Honeywell Inc. Apparatus for laser gyro. 4,605,307, Cl. 356-350.000.
Lin, Joe S.: *See*—
Balinsky, George J.; Biceroglu, Omer; and Lin, Joe S., 4,605,490, Cl. 208-143.000.
Lindberg, Frank A., to Westinghouse Electric Corp. Lead bonding of integrated circuit chips. 4,605,833, Cl. 219-56.220.
Ling, Nicholas C.: *See*—
Bohlen, Peter; Brazeau, Paul E.; Esch, Frederick S.; Ling, Nicholas C.; and Wehrenberg, William B., 4,605,643, Cl. 514-12.000.
Link Electronics Limited: *See*—
Munnion, Derek, 4,605,296, Cl. 354-223.000.
Link, Helmut F.; and Schafer, Erich E., to Index-Werke Komm. Ges. Hahn & Tessky. Method of machining a workpiece between centers and a clamping device for performing this method. 4,604,923, Cl. 82-1.00C.
Lisa, Rudolph E.: *See*—
Schmidt, Douglass N.; Finnan, Jeffrey L.; and Lisa, Rudolph E., 4,605,666, Cl. 514-474.000.
Lisapharma Spa: *See*—
Zagnoli, Giorgio; Conte, Ubaldo; and Colombo, Paolo, 4,605,741, Cl. 546-24.000.
Litterer, Heinz; Wunder, Friedrich; Leupold, Ernst I.; and Baltes, Herbert, to Hoechst Aktiengesellschaft. Aluminosilicates and silica gels having a low content of transition elements, a process for their use in the conversion of methanol to olefins. 4,605,809, Cl. 585-640.000.
Liu, Tung: *See*—
Tsang, Peter H.; Coyle, Joseph P.; Liu, Tung; and VanderPoorte, John G., 4,605,595, Cl. 428-413.000.
Livingston, James J.; and Sorli, Duncan C., to Polaroid Corporation. Method of and apparatus for controlling the application of processing fluid. 4,605,297, Cl. 354-303.000.
Livshits, Inna Z.: *See*—
Kravchenko, Jury B.; Baru, Jury A.; Osyatinsky, Saul G.; Timoshin, Jury V.; Makogon, Anatoly I.; Lobas, Igor P.; Gasilovsky, Kim S.; Livshits, Inna Z.; and Besedin, Alexei N., 4,605,089, Cl. 181-114.000.
Lobas, Igor P.: *See*—
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Lobeck, Walter G., Jr.: *See*—
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Lockheed Missiles & Space Company, Inc.: *See*—
Jodock, Marvin S.; and Maternus, Fred, 4,605,347, Cl. 408-224.000.
Loev, Bernard; and Chan, Wan-Kit, to USV Pharmaceutical Corp. Polyene compounds useful in the treatment of allergic responses. 4,605,675, Cl. 514-720.000.
Lof Plastics Inc.: *See*—
Guy, Robert R., 4,605,457, Cl. 156-160.000.
Lofgren, Folke; and Soderstrom, Sven-Erik, to Asea Aktiebolag. Cloud height measuring device with compensation for window fouling. 4,605,302, Cl. 356-5.000.
Lohmann, Dieter: *See*—
Mueller, Karl F.; Lohmann, Dieter; and Falk, Robert A., 4,605,712, Cl. 525-474.000.
Lohrey, Edwin J.: *See*—
Cho, Timothy C.; and Lohrey, Edwin J., 4,605,877, Cl. 313-272.000.
Lohrmann, Gerhard: *See*—
Engelhardt, Gunther; and Lohrmann, Gerhard, 4,605,145, Cl. 226-74.000.
Loitz, Jurgen, to Aline Loitz-Triebold. Electronic watch having a stepping motor. 4,605,311, Cl. 368-77.000.
Lok, Brent M. T.; Marcus, Bonita K.; and Flanigen, Edith M., to Union Carbide Corporation. Separation and conversion processes with titanium-containing molecular sieves. 4,605,492, Cl. 208-310.00Z.
Long, James R.; and Kerr, James A., to United States of America, Army. Extractor for spring-lock pin connectors. 4,604,798, Cl. 29-764.000.
Lopez, Carlos A. Safety cover for electrical outlets. 4,605,817, Cl. 174-67.000.
L'Oreal: *See*—
Gueret, Jean-Louis H., 4,605,022, Cl. 132-82.00R.
Losapio, Peter F., to General Electric Company. Spring-loaded installation for electronic register module. 4,605,842, Cl. 235-1.00D.
Lucas Industries public limited company: *See*—
Downs, John, 4,604,784, Cl. 29-415.000.
Harvey, Ian J., 4,605,983, Cl. 361-154.000.
Ludwick, John J., to AT&T Bell Laboratories. Converter/line driver circuit for a line repeater. 4,606,046, Cl. 375-17.000.
Lugscheider, Walter; Riegler, Ernst; and Zajicek, Ernst, to SKW Trostberg Aktiengesellschaft. Plant for producing calcium carbide. 4,606,038, Cl. 373-24.000.
Lukacs, Laszlo : *See*—
Retfalvi, Ferenc; Lukacs, Laszlo ; Molnar, Laszlo ; Dozsa, Gyorgy; and Szappanos, Adam, 4,605,836, Cl. 219-130.010.
Lund, Gary K., to Dow Chemical Company, The. Process for polymerizing olefins in the presence of a catalyst prepared from organomagnesium compound, epihalohydrin reducing halide source and transition metal compound. 4,605,715, Cl. 526-143.000.
Lundquist, Gunnar: *See*—
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Lundquist, Ronald C.: *See*—
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Luneau, John R., to Resolvex Corporation. Brushless tachometer/synchro. 4,605,889, Cl. 322-61.000.
Lupoli, Peter J., to Casco Products Inc. Control circuit for use with air-diverter valve of internal combustion engine. 4,604,864, Cl. 60-290.000.
Lynch, Eric R.: *See*—
Delseth, Jean-Marc; Devaux, Albert F.; and Lynch, Eric R., 4,605,590, Cl. 428-295.000.
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Fischer, Hermann, 4,605,209, Cl. 270-40.000.
Hechler, Hatto, 4,605,210, Cl. 270-41.000.
Hechler, Hatto, 4,605,213, Cl. 270-55.000.
Kobler, Ingo, 4,605,212, Cl. 270-54.000.
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Rinkewich, Isaac, 4,605,267, Cl. 312-297.000.
MacBain, Ronald H.; and Rhodes, Tony, to Mattel, Inc. Animated figure toy having a unitary, multiple-function spring. 4,605,381, Cl. 446-321.000.
MacChesney, John B.: *See*—
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MacDowell, John F., to Corning Glass Works. CaO-Al_2O_3-SiO_2 glass hydraulic cements. 4,605,443, Cl. 106-104.000.
Machnik, Patrick R.; Petersen, Bruce L.; Schultz, Robert G.; Thatcher, Jerry T.; and Whiting, Roscella A., to Control Data Corporation. Method and apparatus for detecting the channel to which an electronic receiver system is tuned. 4,605,958, Cl. 358-84.000.
Mack Trucks, Inc.: *See*—
Goetz, Oliver R.; Schnurr, Richard D.; and Kronstadt, Victor, 4,605,114, Cl. 192-106.200.
Macsea Marine Services Company, Inc.: *See*—
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Madgavkar, Ajay, to Occidental Oil Shale, Inc. Upgrading shale oil by a combination process. 4,605,489, Cl. 208-87.000.
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Verheyden, Julien P. H.; Martin, John C.; Madhaven, G. V. Bindu; McGee, Daniel P. C.; and Prisbe, Ernest J., 4,605,659, Cl. 514-262.000.
Madison, Bryan L.: *See*—
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Mitchell, Curt E., to NCR Corporation. Method of manufacturing printed circuit boards. 4,605,471, Cl. 156-645.000.

Mitchell, Kenneth J.: *See*—
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Mitchell, Ronald R. Switch for protecting a freon compressor. 4,605,831, Cl. 200-83.00R.

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Adams, J. Robert, Jr.; Mitrano, James R.; and Juneau, Matthew K., 4,605,539, Cl. 423-300.000.

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Kitao, Nariharu; Fukui, Masayasu; Hamasaki, Yoshiharu; and Kutsuzawa, Masaki, 4,606,006, Cl. 364-472.000.

Mitsubishi Denki Kabushiki Kaisha: *See*—
Mitsuhashi, Masamichi, 4,605,885, Cl. 318-317.000.
Morishita, Akira; and Okamoto, Kyoichi, 4,604,907, Cl. 74-7.00E.
Yoshimoto, Masahiko, 4,606,013, Cl. 365-200.000.

Mitsubishi Gas Chemical Company, Inc.: *See*—
Doya, Masaharu; Kondo, Toshio; Igarashi, Hideo; and Uchiyama, Takako, 4,605,477, Cl. 204-182.600.
Miyamoto, Akira; Sato, Katsuo; and Kurokawa, Masahiro, 4,605,765, Cl. 564-367.000.

Mitsubishi Jidosha Kogyo Kabushiki Kaisha: *See*—
Tanaka, Tadao; Chikamori, Sunao; Harara, Mitsuhiko; Taniguchi, Yasutaka; Suzumura, Masanaga; Tatemoto, Minoru; Kumagai, Naotake; Abe, Hiroki; and Takizawa, Shozo, 4,605,244, Cl. 280-707.000.

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Okazaki, Koji; Tsubai, Yasuo; and Hamazoe, Kimihisa, 4,605,609, Cl. 430-232.000.

Mitsubishi Petrochemical Co., Ltd.: *See*—
Mori, Shoichiro; Aoki, Tadamichi; Hamana, Ryozo; and Nomura, Yutaka, 4,605,742, Cl. 546-184.000.

Mitsubishi Rayon Co., Ltd.: *See*—
Takemura, Tohru; Yoshida, Haruhiko; Mukai, Takuma; Takahashi, Hiroshi; and Fujinaga, Yoshikazu, 4,605,500, Cl. 210-321.100.

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Mita, Ryuichi; Katoh, Toshio; Higuchi, Chojiro; and Yamaguchi, Akihiro, 4,605,759, Cl. 562-444.000.

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Mitutoyo Mfg. Co., Ltd.: *See*—
Ichikawa, Souji, 4,605,274, Cl. 339-89.00R.

Miura, Yasuhiro: *See*—
Ninomiya, Sunao; Miura, Yasuhiro; Iwata, Hiromu; and Matsuyama, Shuji, 4,605,857, Cl. 250-372.000.

Miura, Yasunao: *See*—
Yoshida, Hitoshi; Takeuchi, Yukihisa; and Miura, Yasunao, 4,604,869, Cl. 60-311.000.

Miwa, Kishio; Tada, Kuniyuki; and Inoue, Takehisa, to Toray Industries, Inc. Process for separating a halogenated toluene isomer. 4,605,799, Cl. 570-211.000.

Mixon, James L., Jr., to AMP Incorporated. Electrical terminal. 4,605,279, Cl. 339-276.00R.

Miyachi, Hiroshi: *See*—
Momose, Takashi; Tomiie, Kazuo; Harada, Hiroyuki; Miyachi, Hiroshi; and Kato, Hiroko, 4,605,685, Cl. 522-124.000.

Miyagi, Ken, to Canon Kabushiki Kaisha. Control unit. 4,605,884, Cl. 318-314.000.

Miyajima, Katumi: *See*—
Sasaki, Chuichi; Sasaki, Haruo; Miyajima, Katumi; and Ebisawa, Kaoru, 4,604,859, Cl. 56-341.000.

Miyakawa, Akira: *See*—
Hata, Seiji; Horino, Hiroshi; and Miyakawa, Akira, 4,606,066, Cl. 382-41.000.

Miyamoto, Akira; Sato, Katsuo; and Kurokawa, Masahiro, to Mitsubishi Gas Chemical Company, Inc. Novel polyamine. 4,605,765, Cl. 564-367.000.

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Nagata, Tomizou; Mutoh, Yoshiyuki; Sakakibara, Kouzou; and Miyaoka, Norikuni, 4,605,390, Cl. 493-84.000.

Miyazaki, Kenji: *See*—
Matsuura, Takayuki; and Miyazaki, Kenji, 4,604,860, Cl. 57-9.000.
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Miyazaki, Tadao, to Okumura Engineering Works Co., Ltd. Butterfly valve. 4,605,201, Cl. 251-305.000.

Miyoshi, Kenichi; Suzuki, Masanori; and Fuwa, Toru, to Wakunaga Seiyaku Kabushiki Kaisha. Oligonucleotide derivatives. 4,605,735, Cl. 536-27.000.

Mizuhara, Howard, to GTE Products Corporation. Thermally insulated piston. 4,604,945, Cl. 92-176.000.

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Iida, Kazuyoshi; Mizuno, Keiichiro; Yamaguchi, Michiyuki; and Kondo, Kazuo, 4,605,091, Cl. 181-224.000.

Mobay Corporation: *See*—
Baron, Arthur L.; and Sivaramakrishnan, Parameswar, 4,605,774, Cl. 568-48.000.

Mobil Oil Corporation: *See*—
Brennan, James A.; Chester, Arthur W.; and Chu, Yung-Feng, 4,605,678, Cl. 518-700.000.
Chang, Clarence D.; Landis, Michael E.; and Miale, Joseph N., 4,605,637, Cl. 502-64.000.
Chang, Clarence D.; and Miale, Joseph N., 4,605,803, Cl. 585-408.000.
Chang, Clarence D.; and Miale, Joseph N., 4,605,804, Cl. 585-408.000.
Chang, Clarence D.; and Miale, Joseph N., 4,605,805, Cl. 585-415.000.
Chester, Arthur W.; Garwood, William E.; and Vartuli, James C., 4,605,488, Cl. 208-78.000.
Chu, Pochen; and Kuehl, Guenter H., 4,605,787, Cl. 568-697.000.
Djabbarah, Nizar F., 4,605,066, Cl. 166-273.000.
Haddad, James H.; and Owen, Hartley, 4,605,491, Cl. 208-161.000.
Harandi, Mohsen N., 4,605,493, Cl. 208-341.000.
Jennings, Alfred R., Jr., 4,605,061, Cl. 166-63.000.
Nowlin, Thomas E.; and Wagner, Klaus P., 4,605,638, Cl. 502-104.000.
Reiman, George J., 4,604,927, Cl. 83-55.000.

Mochimaru, Hideaki, to Ricoh Company, Ltd. Image forming apparatus with sized processing kits. 4,605,299, Cl. 355-3.00R.

Modin, Jimmie D. Hairstyling brush and a method for handling hairstyling brushes. 4,605,023, Cl. 132-85.000.

Moen, Bruce A.: *See*—
Rasmussen, David E.; and Moen, Bruce A., 4,605,839, Cl. 219-349.000.

Moffat, Allen J.; and Ours, Tom, to Airmatic-Allied, Inc. Solenoid operated valve. 4,605,196, Cl. 251-84.000.

Moilanen, Juhani; and Pietikainen, Markku, to Kajaani OY. Electrode system for voltametric measurements. 4,605,900, Cl. 324-439.000.

Molins, Limited: *See*—
Heybourn, Frank, 4,605,117, Cl. 198-493.000.

Molnar, Laszlo : *See*—
Retfalvi, Ferenc; Lukacs, Laszlo ; Molnar, Laszlo ; Dozsa, Gyorgy; and Szappanos, Adam, 4,605,836, Cl. 219-130.010.

Momose, Takashi; Tomiie, Kazuo; Harada, Hiroyuki; Miyachi, Hiroshi; and Kato, Hiroko, to Chlorine Engineers Corp., Ltd. Method for preparation of graft polymeric membranes. 4,605,685, Cl. 522-124.000.

Monarch Machine Tool Company, The: *See*—
Guschwg, Nagle V.; and Daulton, Richard R., 4,604,810, Cl. 33-178.00E.

Mondon, Charles. Double glazing and a process for obtaining it. 4,604,840, Cl. 52-172.000.

Monot, Bernard, to Faiveley Entreprises. Device for releasing a rotational-locking actuating member. 4,605,108, Cl. 192-0.02R.

Monsanto Company: *See*—
Abell, Steven; and Peltier, Thomas L., 4,605,445, Cl. 106-236.000.
Fisher, Don E.; Fuqua, John W.; and Wilkie, Arnold E., 4,604,863, Cl. 57-352.000.

Schafer, David E.; and Czajkowski, Albert J., 4,605,431, Cl. 71-87.000.

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Delseth, Jean-Marc; Devaux, Albert F.; and Lynch, Eric R., 4,605,590, Cl. 428-295.000.

Mookherjee, Braja D.; Trenkle, Robert W.; Wolff, Robin K.; Boden, Richard M.; and Yoshida, Takao, to International Flavors & Fragrances, Inc. Methyl substituted pinyl oxopentenes, organoleptic uses thereof and process for preparing same. 4,605,793, Cl. 568-820.000.

Moore, Alfred Z. Assistance summoning system. 4,606,073, Cl. 455-89.000.

Moore, Michael J.; and Paxman, David H., to U.S. Philips Corporation. Semiconductor device with interdigitated electrodes. 4,605,949, Cl. 357-71.000.

Morano, Robert E.; Vogel, Victor J.; and Pawchak, Peter, to American Standard Inc. Transportation system having multiple direction cargo carrier door opener. 4,605,102, Cl. 186-37.000.

Moreau, Luc: *See*—
Lemarquand, Pierre; and Moreau, Luc, 4,605,918, Cl. 335-261.000.

Morgan, Charles R., to W. R. Grace & Co. UV and thermally curable, thermoplastic-containing compositions. 4,605,465, Cl. 156-273.300.

Morgan Construction Company: *See*—
Schaetzke, William R.; and DuFries, Ronald W., 4,604,883, Cl. 72-280.000.

Morgan, Craig D.: *See*—
Stephens, David C.; and Morgan, Craig D., 4,604,995, Cl. 128-69.000.

Morgan, Michael E., to Celanese Corporation. Titanium-glycol useful, as crosslinking agents, for polygalactomannans. 4,605,736, Cl. 536-114.000.

Morgan, Ted A.: *See*—
Silvis, H. Craig; and Morgan, Ted A., 4,605,789, Cl. 568-721.000.

Mori, Hiroyuki: *See*—
Sudo, Yozo; Mori, Hiroyuki; and Murai, Atsuya, 4,605,823, Cl. 179-18.0BC.

Mori, Katsumi: *See*—
Matsui, Shinji; Asada, Susumu; and Mori, Katsumi, 4,605,566, Cl. 427-43.100.

Mori, Masaaki: *See*—
Takeuchi, Yukihisa; Mori, Masaaki; Maekawa, Kenji; and Nishizawa, Toshiaki, 4,605,813, Cl. 136-244.000.

Mori, Shoichiro; Aoki, Tadamichi; Hamana, Ryozo; and Nomura, Yutaka, to Mitsubishi Petrochemical Co., Ltd. Process for the production of piperidine. 4,605,742, Cl. 546-184.000.

Moriguchi, Kouichi: *See*—
Suzuki, Masahiko; Koroyanagi, Masatoshi; Moriguchi, Kouichi; and Matsui, Kazuma, 4,605,359, Cl. 417-270.000.

Morikawa, Minoru: *See*—
Sakai, Junji; Morimoto, Syogo; Morikawa, Minoru; and Maehashi, Yoshitsugu, 4,605,057, Cl. 164-519.000.

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Sakai, Junji; Morimoto, Syogo; Morikawa, Minoru; and Maehashi, Yoshitsugu, 4,605,057, Cl. 164-519.000.

Morishita, Akira; and Okamoto, Kyoichi, to Mitsubishi Denki Kabushiki Kaisha. Reduction gear device for a coaxial type starter. 4,604,907, Cl. 74-7.00E.

Moriwaki, Hiroshi; Yamamura, Yukio; and Fujikawa, Kazuhiko, to Matsushita Electric Works, Ltd. Vibratory massage device. 4,604,993, Cl. 128-24.200.

Morley, John G., to BCIRA. Curing binders for foundry moulds and cores. 4,605,052, Cl. 164-16.000.

Morris, Arthur J., to Camco, Incorporated. Redundant safety valve system and method. 4,605,070, Cl. 166-380.000.

Morris, Thomas E.: *See*—
Juhl, Roger L.; Johnson, Mark S.; and Morris, Thomas E., 4,605,801, Cl. 570-253.000.

Morrissey, James. Head guide and batting helmet. 4,605,226, Cl. 273-26.00C.

Mortland, Max M.: *See*—
Pinnavaia, Thomas J.; Mortland, Max M.; and Boyd, Stephen A., 4,605,621, Cl. 435-177.000.

Morton Thiokol, Inc.: *See*—
Thompson, Arnold R., 4,605,104, Cl. 188-72.400.

Moser, Roman. Fly fishing junction leader. 4,604,821, Cl. 43-44.980.

Moser, Theo: *See*—
Krieger, Eberhard; and Moser, Theo, 4,605,393, Cl. 493-317.000.

Moskovsky Nauchno-Issledovatelsky Institut Mikrokhirurgii Glaza: *See*—
Fedorov, Svyatoslav N.; Anisimov, Sergei I.; Karavaev, Alexandr A.; Kisellev, Vladimir G.; Juzhelevsky, July A.; and Degtev, Evgeny I., 4,605,411, Cl. 623-6.000.

Motomiya, Takehiko; and Ogawa, Shigeu, to Ohkura Electric Co., Ltd. Pattern-switching temperature control apparatus. 4,605,161, Cl. 236-15.0BC.

Motorola: *See*—
Wrathall, Robert S., 4,605,891, Cl. 323-313.000.

Motorola, Inc.: *See*—
Allensworth, Dana R., 4,605,987, Cl. 361-403.000.
Broughton, Christopher D., 4,605,908, Cl. 331-8.000.
Davis, Walter L., 4,606,076, Cl. 455-343.000.
Eastmond, Bruce C., 4,606,075, Cl. 455-234.000.
Ihle, John M., 4,605,903, Cl. 329-50.000.
McGinn, Michael, 4,605,965, Cl. 358-148.000.
Price, J. B.; Tobin, Philip J.; Pintchovski, Fabio; and Seelbach, Christian A., 4,605,947, Cl. 357-23.150.

Moulding, Thomas S., Jr.; and Ellis, Donald G. Medicine package, method of opening the package, and machine for performing the method. 4,604,847, Cl. 53-75.000.

Mouzin, Gilbert: *See*—
Cousse, Henri; Mouzin, Gilbert; Rieu, Jean-Pierre; Briley, Mike; and Stenger, Antoine, 4,605,654, Cl. 514-237.000.

Mowdood, Syed K., to Goodyear Tire & Rubber Company, The. Rubber-metal adhesion promoters. 4,605,693, Cl. 524-239.000.

Mowdood, Syed K.: *See*—
Benko, David A.; Mowdood, Syed K.; Sandstrom, Paul H.; Waddell, Walter H., III; and Wideman, Lawson G., 4,605,696, Cl. 524-432.000.

Mueller, Karl F.; Lohmann, Dieter; and Falk, Robert A., to Ciba-Geigy Corporation. Unsaturated polysiloxanes and polymers thereof. 4,605,712, Cl. 525-474.000.

Muirhead, Allen D., to Unicell Limited. Condensation prevention apparatus. 4,605,852, Cl. 250-231.00R.

Mukai, Takuma: *See*—
Takemura, Tohru; Yoshida, Haruhiko; Mukai, Takuma; Takahashi, Hiroshi; and Fujinaga, Yoshikazu, 4,605,500, Cl. 210-321.100.

Mulas, Piero: *See*—
Bonissone, Giancarlo; and Mulas, Piero, 4,605,199, Cl. 251-171.000.

Muller, Johann; Trieschmann, Christa; and Preiner, Gerhard, to Wacker-Chemie GmbH. Crosslinkable organopolysiloxanes and a method for preparing the crosslinkable organopolysiloxanes. 4,605,567, Cl. 427-54.100.

Muller, Willi: *See*—
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Mundus, Friedhelm: *See*—
Achelpohl, Fritz; Mundus, Friedhelm; and Ebmeyer, Wilfried, 4,605,392, Cl. 493-196.000.

Munnion, Derek, to Link Electronics Limited. Mounting arrangement for a camera viewfinder. 4,605,296, Cl. 354-223.000.

Munteanu, Marina A.: *See*—
Van Loveren, Augustinus G.; Munteanu, Marina A.; and Seaber, Geoffrey B., 4,605,165, Cl. 239-6.000.

Murai, Atsuya: *See*—
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Murakoshi, Hisaya: *See*—
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Murasaki, Motoshi: *See*—
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Murata, Hitoshi: *See*—
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Murata Kikai Kabushiki Kaisha: *See*—
Uchida, Hiroshi; Nakanishi, Kazuo; and Kawasaki, Yoshihiko, 4,605,177, Cl. 242-35.50A.

Murata Manufacturing Co., Ltd.: *See*—
Ogawa, Toshio; and Kittaka, Toshihiko, 4,605,876, Cl. 310-358.000.

Murayama, Yoshimasa: *See*—
Katayama, Yoshifumi; Shiraki, Yasuhiro; Yamaguchi, Ken; Murayama, Yoshimasa; Sawada, Yasushi; Usagawa, Toshiyuki; and Maruyama, Eiichi, 4,605,945, Cl. 357-22.000.

Murray, Michael A.: *See*—
Rothfuss, Robert G.; Kuhl, David K.; and Murray, Michael A., 4,605,001, Cl. 128-305.000.

Musso, Pietro, to Ing. C. Olivetti & C., S.p.A. Electronic typewriter with a device for zero positioning of a rotary character-carrying device. 4,605,324, Cl. 400-144.200.

Muto, Naoki: *See*—
Ishikawa, Hidehiko; Misaki, Hideo; and Muto, Naoki, 4,605,615, Cl. 435-16.000.

Mutoh, Yoshiyuki: *See*—
Nagata, Tomizou; Mutoh, Yoshiyuki; Sakakibara, Kouzou; and Miyaoka, Norikuni, 4,605,390, Cl. 493-84.000.

Myers, Lawrence R.: *See*—
Bach, Lloyd G.; Myers, Lawrence R.; and Gaiser, Robert F., 4,604,870, Cl. 60-551.000.

Myers, Melvin K.; and Pospisil, Frank, to Reynolds Industries, Inc. High voltage electrical connector. 4,605,272, Cl. 339-60.00M.

Myzska, Edward M.: *See*—
Taschner, Edwin C.; and Myzska, Edward M., 4,604,896, Cl. 73-583.000.

Nabisco Brands, Inc.: *See*—
Horwath, Robert O.; and Irbe, Robert M., 4,605,619, Cl. 435-94.000.

Nadai, Bela: *See*—
Kaffka, Karoly; Nadai, Bela; Czabaffy, Andras; and Horvath, Lorand, 4,605,306, Cl. 356-334.000.

Nagai, Haruhiko: *See*—
Hishii, Masao; Tanaka, Masaaki; Sato, Yukio; Nagai, Haruhiko; and Tabata, Norikazu, 4,606,035, Cl. 372-87.000.

Nagano, Satoshi; and Sakai, Masanori, to Tsubakimoto Chain Company. Sheet metal pulley for toothed belts and manufacturing process thereof. 4,605,388, Cl. 474-152.000.

Nagao, Toshiaki; and Shiho, Toshio, to Omron Tateisi Electronics Co. Data transmission system. 4,606,029, Cl. 371-69.000.

Nagaoka, Kazunobu: *See*—
Hayashi, Mitsutoshi; Nagaoka, Kazunobu; and Ohkawa, Michihiro, 4,605,032, Cl. 137-44.000.

Nagasawa, Takeshi; Kuroiwa, Katsumasa; Takabayashi, Katsuyuki; and Nakamura, Yoshio, to Nitto Boseki Co., Ltd. Method for measuring plasmin. 4,605,614, Cl. 435-13.000.

Nagata, Tomizou; Mutoh, Yoshiyuki; Sakakibara, Kouzou; and Miyaoka, Norikuni, to Japan Tobacco Inc. Packing container forming apparatus. 4,605,390, Cl. 493-84.000.

Nagata, Wataru: *See—*
Kamata, Susumu; Haga, Nobuhiro; Nagata, Wataru; and Matsui, Takeaki, 4,605,738, Cl. 544-310.000.

Nagl, Michael: *See—*
Langner, Klaus; Papst, Gero; Hauk, Rolf; and Nagl, Michael, 4,605,205, Cl. 266-160.000.

Nagle, Gordon A.: *See—*
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Nagler, Werner: *See—*
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Naisuler, Alan C., to Beckman Instruments, Inc. Prescaling device and method. 4,605,920, Cl. 340-347.0NT.

Naito, Youichiro: *See—*
Yokoyama, Kazumasa; Fukaya, Chikara; Tsuda, Yoshio; Ono, Taizo; Arakawa, Yoshio; Inoue, Yoshihisa; Naito, Youichiro; and Suyama, Tadakazu, 4,605,650, Cl. 514-183.000.
Yokoyama, Kazumasa; Inoue, Yoshihisa; Ono, Taizo; Fukaya, Chikara; Arakawa, Yoshio; Naito, Youichiro; Yamauchi, Koichi; and Suyama, Tadakazu, 4,605,786, Cl. 568-669.000.

Nakajima, Yoshiaki: *See—*
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Nakamura, Hiroshi: *See—*
Sasaki, Susumu; and Nakamura, Hiroshi, 4,606,048, Cl. 375-39.000.

Nakamura, Masao, to Taiho Kogyo Co., Ltd. Method of pressure bonding composite materials. 4,605,458, Cl. 156-164.000.

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Nakamura, Takashi; and Takahashi, Kenji, to Fuji Photo Film Co., Ltd. Radiation image recording and reproducing method. 4,605,861, Cl. 250-484.100.

Nakamura, Tooru. Drive assembly for cleaner for wire-screen or felt-blanket belt of papermaking apparatus. 4,605,472, Cl. 162-277.000.

Nakamura, Yoshio: *See—*
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Nakanishi, Kazuo: *See—*
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Nakano, Walter S.: *See—*
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Nalco Chemical Company: *See—*
Jansma, Roger H.; and Sandberg, Karen R., 4,605,718, Cl. 526-240.000.

Narda Mircowave Corporation, The: *See—*
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Narita, Yoshinori; and Makino, Hirohisa, to NGK Spark Plug Co., Ltd. Method of producing a cylinder head with a port liner. 4,604,779, Cl. 29-156.4WL.

Naslund, Jan I. Cell sampling apparatus. 4,605,011, Cl. 128-752.000.

Naster, Ronald J.; Windyka, John A.; and Wolfe, Allen R., to General Electric Company. Continuously variable phase shifting element comprised of interdigitated electrode MESFET. 4,605,912, Cl. 333-164.000.

Nath, Prem, to Energy Conversion Devices, Inc. Method of depositing a highly conductive, highly transmissive film. 4,605,565, Cl. 427-39.000.

National Carbide Tool, Inc.: *See—*
Jodock, Marvin S.; and Maternus, Fred, 4,605,347, Cl. 408-224.000.

Natori, Takashi: *See—*
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Nauchno-Issledovatelsky Institut Prikladnykh Fizicheskikh Problem Imeni A.N. Sevchenko: *See—*
Bezborodov, Vladimir S.; Konovalov, Viktor A.; and Ptashnikov, Jury L., 4,605,520, Cl. 558-414.000.

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Bezborodov, Vladimir S.; Konovalov, Viktor A.; Ptashnikov, Jury L.; Astafiev, Vladimir M.; Minko, Anatoly A.; Dudarchik, Anatoly I.; Zanegina, Galina A.; and Poimanov, Anatoly M., 4,605,510, Cl. 252-299.660.

Nautical Electronic Laboratories Limited: *See—*
Covill, Dennis H., 4,605,910, Cl. 332-9.00R.

Navish, Francis W., Jr.: *See—*
Mendelsohn, Morris A.; and Navish, Francis W., Jr., 4,604,940, Cl. 89-1.816.

Naydowski, Reinhard: *See—*
Bartzick, Gunter; Buhne, Gerd; and Naydowski, Reinhard, 4,605,178; Cl. 242-55.000.

NCR Corporation: *See—*
Ferrante, Ronald A., 4,605,606, Cl. 430-2.000.
Mitchell, Curt E., 4,605,471, Cl. 156-645.000.

Neary, Ralph E.; and Hull, Scott A., to Schlage Lock Company. Cylindrical lock. 4,604,879, Cl. 70-224.000.

NEC Corporation: *See—*
Ide, Tatsumi; Sakurai, Toshifumi; Izumi, Masahiro; and Sugimura, Kimio, 4,605,917, Cl. 335-128.000.
Kanemasa, Akira, 4,605,826, Cl. 179-170.200.
Kusano, Mitsuhiro, 4,605,935, Cl. 343-914.000.
Matsui, Shinji; Asada, Susumu; and Mori, Katsumi, 4,605,566, Cl. 427-43.100.
Otani, Susumu, 4,606,027, Cl. 371-43.000.
Takai, Haruki, 4,606,019, Cl. 370-13.000.

Nederlandse Centrale Organisatie voor Toegepast-Natuurwetenschappelijk Onderzoek: *See—*
Van Elven, Aris; and Overmars, Henricus G. J., 4,605,504, Cl. 210-656.000.

Needham, Robert J.: *See—*
Helmly, Paul K., Jr.; Forster, Fred D., Jr.; Gower, Patrick E.; Holdaway, Steven D.; Tutman, Stanley W.; Beissel, Timothy J.; Needham, Robert J.; and Lasky, Arthur J., 4,605,081, Cl. 177-25.000.

Neef, James D.: *See—*
Kennedy, Robert E.; and Neef, James D., 4,604,938, Cl. 89-1.800.

Nelson, Walter H.: *See—*
Sloan, Gary W.; and Nelson, Walter H., 4,605,051, Cl. 157-13.000.

Neunherz, Robert K.: *See—*
Griebel, Robert E.; Neunherz, Robert K.; and McGrath, David W., 4,604,956, Cl. 108-147.000.

New Holland Inc.: *See—*
Hurlburt, Joseph C., 4,605,259, Cl. 296-190.000.

New Jersey Machine Inc.: *See—*
Voltmer, Helmut; and Schwenzer, Alfred F., 4,605,459, Cl. 156-215.000.

New York University: *See—*
Dunham, Philip B.; and Weissmann, Gerald, 4,605,618, Cl. 435-29.000.

Newbold, F. E. Dixon: *See—*
Levine, Edward H.; and Newbold, F. E. Dixon, 4,605,289, Cl. 350-606.000.

Newman, James P.: *See—*
Dodge, David C.; Knoop, David F.; Thomas, George T.; and Newman, James P., 4,605,508, Cl. 252-95.000.

NGK Spark Plug Co., Ltd.: *See—*
Narita, Yoshinori; and Makino, Hirohisa, 4,604,779, Cl. 29-156.4WL.

Nicolas, Michel J. R.; and Sebilet, Bruno R., to Societe Nationale d'Etudes et de Construction de Moteurs d'Aviation S.N.E.C.M.A. Spread spectrum coding method and apparatus. 4,606,039, Cl. 375-1.000.

Niederstatter, Walter: *See—*
Stroszynski, Joachim; Niederstatter, Walter; and Sprintschnik, Gerhard, 4,605,480, Cl. 204-211.000.

Nienhuis, James H.; and Schreiner, Charles P., to Herman Miller, Inc. Anti-static grounding arrangement for work environment system. 4,605,988, Cl. 361-429.000.

Nihashi, Tokuaki: *See—*
Niigaki, Minoru; Nihashi, Tokuaki; and Ohta, Masashi, 4,605,600, Cl. 428-689.000.

Niigaki, Minoru; Nihashi, Tokuaki; and Ohta, Masashi, to Hamamatsu Photonics Kabushiki Kaisha. Transparent GaAs photoelectric layer. 4,605,600, Cl. 428-689.000.

Nikkel, Ronnie D.; and L'Esperance, Paul M., to Phillips Petroleum Company. Collector means for solar energy collecting system. 4,604,990, Cl. 126-418.000.

Nikles, David E.; Jones, R. Sidney, Jr.; and Kuder, James E., to Celanese Corporation. Optical data storage medium having organometallic chromophore/polymer coordinated information layer. 4,605,607, Cl. 430-17.000.

Nilsson, Goran A.; Edstrom, Kjell E. E.; and Wiklund, Henry W. Device in needle hammers. 4,605,073, Cl. 173-51.000.

Ninane, Leon; Breton, Claude; and Guerdon, Constant, to Solvay & Cie. (Societe Anonyme). Process and installation for the production of an organic solution of a water-insoluble organic base. 4,605,771, Cl. 564-497.000.

Ninomiya, Naoyoshi: *See—*
Soga, Kiyomi; Tenjin, Nobuyoshi; Tohira, Hiroyuki; Ninomiya, Naoyoshi; and Nishikata, Yasuhiro, 4,605,016, Cl. 131-297.000.

Ninomiya, Sunao; Miura, Yasuhiro; Iwata, Hiromu; and Matsuyama, Shuji, to Sumitomo Chemical Company, Ltd. Tensile tester. 4,605,837, Cl. 250-372.000.

Nippon Gakki Seizo Kabushiki Kaisha: *See—*
Kumano, Shinji; and Murasaki, Motoshi, 4,604,937, Cl. 84-435.000.

Nippon Kogaku K.K.: *See—*
Hashimoto, Takaaki; Minagawa, Kazushi; and Iida, Yozo, 4,605,955, Cl. 358-29.000.

Nippon Light Metal Company Limited: *See—*
Ohno, Atsumi, 4,605,056, Cl. 164-490.000.

Nippon Motion Kogyo Co., Ltd.: *See—*
Ikehara, Ichiro, 4,605,150, Cl. 227-18.000.

Nippon Piston Ring Co., Ltd.: *See—*
Sakamaki, Hiroshi; Horikoshi, Yukio; and Yanagihashi, Kikuji, 4,605,695, Cl. 524-424.000.

Nippon Seiko Kabushiki Kaisha: *See—*
Okubo, Kenji; Kuroki, Yasuaki; and Horikawa, Takashi, 4,605,387, Cl. 474-112.000.

Nippon Valqua Kogyo Kabushiki Kaisha: *See—*
Kamiura, Hirofumi; and Natori, Takashi, 4,605,527, Cl. 264-137.000.

Nippon Zeon Co., Ltd.: *See—*
Yamada, Hideaki; Shimizu, Sakayu; and Shiozaki, Shozo, 4,605,625, Cl. 435-280.000.
Nippondenso Co., Ltd.: *See—*
Suzuki, Masahiko; Koroyanagi, Masatoshi; Moriguchi, Kouichi; and Matsui, Kazuma, 4,605,359, Cl. 417-270.000.
Takeuchi, Yukihisa; Mori, Masaaki; Maekawa, Kenji; and Nishizawa, Toshiaki, 4,605,813, Cl: 136-244.000.
Yoshida, Hitoshi; Takeuchi, Yukihisa; and Miura, Yasunao, 4,604,869, Cl. 60-311.000.
Nishijima, Hideo: *See—*
Kobori, Yasunori; Fukushima, Isao; Nishijima, Hideo; Masuda, Yoshinori; and Yamamoto, Norihisa, 4,605,901, Cl. 328-140.000.
Nishijima, Tamotsu; and Fujino, Toshihiro, to Yazaki Corporation. Forming apparatus for production of stranded conductor. 4,604,882, Cl. 72-71.000.
Nishikata, Yasuhiro: *See—*
Soga, Kiyomi; Tenjin, Nobuyoshi; Tohira, Hiroyuki; Ninomiya, Naoyoshi; and Nishikata, Yasuhiro, 4,605,016, Cl. 131-297.000.
Nishimura, Yasuyuki: *See—*
Kamiguchi, Taiji; Yamada, Mutsuo; Arikawa, Yoshijiro; Kuwahara, Takanori; Tanimoto, Hirotoshi; Nishimura, Yasuyuki; and Kaku, Hiroyuki, 4,605,776, Cl. 568-401.000.
Nishizawa, Susumu: *See—*
Kakeya, Nobuharu; Nishizawa, Susumu; Tamaki, Satoshi; and Kitao, Kazuhiko, 4,605,651, Cl. 514-200.000.
Nishizawa, Toshiaki: *See—*
Takeuchi, Yukihisa; Mori, Masaaki; Maekawa, Kenji; and Nishizawa, Toshiaki, 4,605,813, Cl. 136-244.000.
Nissan Motor Co., Ltd.: *See—*
Hayashi, Yoshimasa, 4,604,973, Cl. 123-41.210.
Hayashi, Yoshimasa, 4,605,163, Cl. 237-2.00A.
Hayashi, Yoshimasa; and Ogawa, Naoki, 4,605,164, Cl. 237-2.00A.
Kitamura, Kengo; and Murata, Hitoshi, 4,604,797, Cl. 29-783.000.
Ohashi, Toshio; and Yamamoto, Yasushi, 4,604,873, Cl. 62-158.000.
Shimada, Yoshitaka; Kadowaki, Kimihiro; and Inouchi, Teruo, 4,605,569, Cl. 427-256.000.
Suzuki, Tadashi; Kishi, Norimasa; Tomikashi, Minoru; and Futami, Toru, 4,606,022, Cl. 370-85.000.
Watanabe, Takeaki, 4,604,946, Cl. 98-2.090.
Watanabe, Takeaki, 4,604,974, Cl. 123-41.570.
Nitsuta, Kouichi: *See—*
Nakamura, Masaru; Nitsuta, Kouichi; and Ozeki, Takeshi, 4,605,943, Cl. 357-17.000.
Nitto Boseki Co., Ltd.: *See—*
Harada, Susumu; Hasegawa, Sakuro; and Sato, Koichi, 4,605,701, Cl. 525-107.000.
Nagasawa, Takeshi; Kuroiwa, Katsumasa; Takabayashi, Katsuyuki; and Nakamura, Yoshio, 4,605,614, Cl. 435-13.000.
Nitto Chemical Industry Co., Ltd.: *See—*
Yanagida, Makoto; Sekimoto, Yukihiko; and Kanda, Shoichi, 4,605,505, Cl. 252-8.514.
Nitto Electric Industrial Co., Ltd.: *See—*
Saito, Kenichiro; Heller, Jorge; and Skinner, Wilfred A., 4,605,670, Cl. 514-619.000.
Ushiyama, Keiichi; and Ichinose, Hisashi, 4,605,548, Cl. 424-15.000.
NL Industries, Inc.: *See—*
Barr, John D.; and Lamb, Haydn R., 4,605,157, Cl. 228-132.000.
Meador, Richard A., 4,605,268, Cl. 339-16.00C.
Noaki, Yasuhide: *See—*
Shiroki, Hiroyuki; and Noaki, Yasuhide, 4,605,484, Cl. 204-290.00R.
Noback, Charles V.: *See—*
DiIanni, Elmo J.; Cooley, Harold J.; Fujita, Michio; and Noback, Charles V., 4,605,859, Cl. 250-374.000.
Nobel Kemi AB: *See—*
Holm, Boris, 4,605,777, Cl. 568-424.000.
Noguchi, Hiroshi: *See—*
Takahashi, Junya; Kato, Toshiro; Noguchi, Hiroshi; Oguri, Yukio; Yamamoto, Shigeo; and Kamoshita, Katsuzo, 4,605,668, Cl. 514-485.000.
Nolin, Rosemary D. Comb for dispensing treatment solution to hair. 4,605,026, Cl. 132-112.000.
Nomoto, Yoshitaka; and Matsuoka, Tsutomu, to Mazda Motor Corporation. Cleaner control for diesel engine exhaust gases. 4,604,868, Cl. 60-286.000.
Nomura, Yutaka: *See—*
Mori, Shoichiro; Aoki, Tadamichi; Hamana, Ryozo; and Nomura, Yutaka, 4,605,742, Cl. 546-184.000.
Nordiskafilt AB: *See—*
Johansson, Arne B., 4,605,585, Cl. 428-224.000.
Norsworthy, John P.: *See—*
Dansky, Allan H.; and Norsworthy, John P., 4,605,870, Cl. 307-443.000.
North American Philips Corporation: *See—*
Stanton, Douglas A., 4,605,283, Cl. 350-127.000.
North American Products Corp.: *See—*
Lesher, Ernest G.; and Mieras, Cornelius E., 4,604,933, Cl. 83-851.000.
North American Specialties Corporation: *See—*
Seidler, Jack, 4,605,278, Cl. 339-275.00B.
North Carolina State University: *See—*
Christensen, Vern L., 4,604,968, Cl. 119-1.000.
Northern Telecom Limited: *See—*
Baxter, Gordon D., 4,605,525, Cl. 264-40.500.
Conn, David R., 4,605,866, Cl. 307-296.00R.
McGettigan, Philip A.; and Roberge, Jean M., 4,604,862, Cl. 57-264.000.
Van Den Brekel, Jacques; and Ho, Thomas K. Y., 4,605,153, Cl 228-56.300.
Norton Christensen, Inc.: *See—*
Radford, Steven R.; and Davis, J. Stanley, 4,605,075, Cl. 175-58.000.
Norton Company: *See—*
Rossi, Giulio A., 4,605,631, Cl. 501-1.000.
Nose, Katsuhiko; Suzuki, Hajime; and Makimura, Osamu, to Toyo Boseki Kabushiki Kaisha. Thermoplastic resin film laminate and production thereof. 4,605,591, Cl. 428-332.000.
Nowack, G. P.; and Johnson, M. M., to Phillips Petroleum Company. Process for removal of arsenic from gases. 4,605,812, Cl. 585-845.000.
Nowlin, Thomas E.; and Wagner, Klaus P., to Mobil Oil Corporation. Highly active catalyst composition for polymerizing alpha-olefins. 4,605,638, Cl. 502-104.000.
Nozaki, Shinya: *See—*
Kobayashi, Tadashi; Nozaki, Shinya; and Yamada, Keiichi, 4,604,979, Cl. 123-449.000.
Nuclear Research Corp.: *See—*
DiIanni, Elmo J.; Cooley, Harold J.; Fujita, Michio; and Noback, Charles V., 4,605,859, Cl. 250-374.000.
Nunamaker, David M.; and Richardson, Dean W. External skeletal fixator. 4,604,996, Cl. 128-87.00R.
Nyzell, Jan-Erik, to Affarsverket FFV. Training means for a weapon. 4,605,372, Cl. 434-16.000.
O.C.C. Company Limited: *See—*
Ohno, Atsumi, 4,605,056, Cl. 164-490.000.
O.K. Industries Inc.: *See—*
Tsipenyuk, Pyotr; and Kober, Marvin, 4,604,796, Cl. 29-764.000.
Oba, Takeo: *See—*
Watanabe, Kenzo; Kato, Yoshinori; Saito, Masahiko; Oba, Takeo; Fukushima, Hisashi; and Hara, Takeshi, 4,605,645, Cl. 514-51.000.
Obana, Satoshi, to Sekisui Kagaku Kogyo Kabushiki Kaisha. Latex for immunoserological tests and a method for the production of the same. 4,605,686, Cl. 523-105.000.
Obrecht, Werner, to GAO Gesellschaft fur Automation und Organisation mbH. Method of contacting the galvanic contacts of an identification card with an embedded IC-module. 4,605,896, Cl. 324-158.00F.
Occidental Chemical Corporation: *See—*
Eastman,. David W.; and Walker, Leigh E., 4,605,704, Cl. 525-193.000.
Occidental Oil Shale, Inc.: *See—*
Madgavkar, Ajay, 4,605,489, Cl. 208-87.000.
Ochi, Atsuo; Hashima, Akio; and Tomita, Masao, to Matsushita Electric Industrial Co., Ltd. Magnetic recording and reproducing apparatus. 4,605,974, Cl. 360-62.000.
Ochi, Kenji: *See—*
Kataoka, Yushin; Matsuda, Masaaki; Ochi, Kenji; and Aoi, Masahiro, 4,605,706, Cl. 525-340.000.
Oda, Robert: *See—*
Hurd, Bruce; and Oda, Robert, 4,605,227, Cl. 273-54.00B.
Odam, Societe Anonyme: *See—*
Ringeisen, Victor; Chive, Maurice; and Toutain, Serge, 4,605,012, Cl. 128-804.000.
O'Donovan, Wendy O.: *See—*
Oglevee, J. Robert; Tammen, James F.; and O'Donovan, Wendy O., 4,604,824, Cl. 47-1.00A.
Oei, Howard H.: *See—*
Liauw, Hui L.; Oei, Howard H.; and Ku, Edmond C., 4,605,665, Cl. 514-431.000.
Ogawa, Hiroshi; and Tamai, Yasuo, to Fuji Photo Film Co.,Ltd. Magnetic recording medium. 4,605,597, Cl. 428-522.000.
Ogawa, Mutsuo, to Ricoh Company, Ltd. Photosensor and output control therefor. 4,605,848, Cl. 250-205.000.
Ogawa, Naoki: *See—*
Hayashi, Yoshimasa; and Ogawa, Naoki, 4,605,164, Cl. 237-2.00A.
Ogawa, Shigeu: *See—*
Motomiya, Takehiko; and Ogawa, Shigeu, 4,605,161, Cl. 236-15.0BC.
Ogawa, Toshio; and Kittaka, Toshihiko, to Murata Manufacturing Co., Ltd. Piezoelectric ceramic energy trapping electronic device. 4,605,876, Cl. 310-358.000.
Ogi, Hisao, to Ide Idustries Limited. Method of transferring a retroreflective pattern onto a fabric. 4,605,461, Cl. 156-233.000.
Ogiwara, Osao, to Akebono Brake Industry Co., Ltd. Brake system. 4,605,105, Cl. 188-251.00M.
Ogle, Dennis F.; Clark, Charles A., Jr.; and Aires, Ramon H., to Vernitron Corporation. Synchro power amplifier and control circuit for automatically tuning an inductive load. 4,605,890, Cl. 323-209.000.
Oglevee Associates, Inc.: *See—*
Oglevee, J. Robert; Tammen, James F.; and O'Donovan, Wendy O., 4,604,824, Cl. 47-1.00A.
Oglevee, J. Robert; Tammen, James F.; and O'Donovan, Wendy O., to Oglevee Associates, Inc. Lily products. 4,604,824, Cl. 47-1.00A.
Oguri, Yukio: *See—*
Takahashi, Junya; Kato, Toshiro; Noguchi, Hiroshi; Oguri, Yukio; Yamamoto, Shigeo; and Kamoshita, Katsuzo, 4,605,668, Cl. 514-485.000.
Ohashi, Toshio; and Yamamoto, Yasushi, to Nissan Motor Co., Ltd. Air conditioning unit for automobiles. 4,604,873, Cl. 62-158.000.
Ohkawa, Michihiro: *See—*
Hayashi, Mitsutoshi; Nagaoka, Kazunobu; and Ohkawa, Michihiro, 4,605,032, Cl. 137-44.000.

Ohkura Electric Co., Ltd.: *See*—
Motomiya, Takehiko; and Ogawa, Shigeu, 4,605,161, Cl. 236-15.0BC.

Ohnishi, Masanori, to Diesel Kiki Co., Ltd. Centrifugal governor for internal combustion engines. 4,604,977, Cl. 123-365.000.

Ohno, Atsumi, to Nippon Light Metal Company Limited; and O.C.C. Company Limited. Process and apparatus for the horizontal continuous casting of a metal molding. 4,605,056, Cl. 164-490.000.

Ohno, Masayuki; and Maeda, Kazuo, to Kabushiki Kaisha Kito. Hoist. 4,605,111, Cl. 192-16.000.

Ohno, Shigeru; and Kishimoto, Shinzo, to Fuji Photo Film Co., Ltd. Method for processing silver halide color photographic material. 4,605,611, Cl. 430-393.000.

Ohno, Yoshimi; Tsurukawa, Ikuya; and Ishino, Tokio, to Ricoh Company, Ltd. Single lens reflex camera. 4,605,295, Cl. 354-154.000.

Ohta, Masashi: *See*—
Niigaki, Minoru; Nihashi, Tokuaki; and Ohta, Masashi, 4,605,600, Cl. 428-689.000.

Ohtsubo, Hiroshi; Takada, Isao; and Kawasaki, Tatsuo, to Kawasaki Steel Corporation. Duplex stainless steel seamless pipe and a method for producing the same. 4,604,887, Cl. 72-368.000.

Oida, Yoshio, to Tokyo Shibaura Denki Kabushiki Kaisha. Variable frequency divider. 4,606,059, Cl. 377-47.000.

Oinuma, Senzo; Tanaka, Kazumi; Shiino, Kazuo; and Watanabe, Hiroki, to Agency of Industrial Science & Technology; Kyoto Prefectural Government; and Hosoya Fireworks Co., Ltd. Lithotriptor. 4,605,003, Cl. 128-328.000.

Okabe, Takeshi: *See*—
Kimura, Sosaku; Okabe, Takeshi; and Hatsuse, Toshikazu, 4,604,833, Cl. 51-165.800.

Okamoto, Kyoichi: *See*—
Morishita, Akira; and Okamoto, Kyoichi, 4,604,907, Cl. 74-7.00E.

Okamoto, Masaru: *See*—
Inoue, Toshihide; Hirai, Toshimasa; and Okamoto, Masaru, 4,605,727, Cl. 528-191.000.

Okamoto, Yuji: *See*—
Sakakibara, Yozo; and Okamoto, Yuji, 4,605,260, Cl. 296-201.000.

Okawa, Takashi: *See*—
Isogai, Nobuo; Okawa, Takashi; Hosokawa, Motoyuki; Watanabe, Toshiyasu; and Wakui, Natsuko, 4,605,796, Cl. 568-902.000.

Okazaki, Koji; Tsubai, Yasuo; and Hamazoe, Kimihisa, to Mitsubishi Paper Mills, Ltd. Image receiving material with low calcium gelatin. 4,605,609, Cl. 430-232.000.

Okikawa, Shinji: *See*—
Zenbutsu, Tadashi; Kokumai, Hiroyuki; Okikawa, Shinji; and Saito, Keiji, 4,605,635, Cl. 501-96.000.

Okubo, Akira: *See*—
Otani, Junji; Okubo, Akira; and Iwashita, Kanau, 4,604,865, Cl. 60-293.000.

Okubo, Kenji; Kuroki, Yasuaki; and Horikawa, Takashi, to Nippon Seiko Kabushiki Kaisha. Tensioner. 4,605,387, Cl. 474-112.000.

Okuda, Chikaaki: *See*—
Tachi, Kazuyuki; Okuda, Chikaaki; and Suzuki, Shoichi, 4,605,168, Cl. 239-112.000.

Okumura Engineering Works Co., Ltd.: *See*—
Miyazaki, Tadao, 4,605,201, Cl. 251-305.000.

Olander, Donald E.; and Woods, Harold J., to Hi-Shear Corporation. Void-sensing fuze. 4,604,953, Cl. 102-272.000.

Olin Corporation: *See*—
Dodge, David C.; Knoop, David F.; Thomas, George T.; and Newman, James P., 4,605,508, Cl. 252-95.000.
Knorr, David B.; and Breedis, John F., 4,605,532, Cl. 420-472.000.

Olson, Arthur A., Jr.: *See*—
Hahn, Norbert; and Olson, Arthur A., Jr., 4,605,353, Cl. 414-401.000.

Olson, John E., to Cascade Corporation. Load clamp having motor-powered screw-type clamping actuator capable of accurate positioning and high clamping force. 4,605,255, Cl. 294-67.330.

Olympus Optical Company, Ltd.: *See*—
Sato, Ken, 4,604,992, Cl. 128-6.000.

Omark Industries, Inc.: *See*—
Doiron, Gerald J., 4,604,932, Cl. 83-830.000.

Omata, Kazuo; Shimizu, Toshihiko; Ibe, Hiroshi; and Hara, Kenji, to Onoda Construction Materials Co., Ltd. Process for inhibiting corrosion of steel materials built in inorganic materials. 4,605,572, Cl. 427-403.000.

Ometz, Pierre H. M.; and Labrador, Jacques A. L., to Societe Nationale Industrielle Aerospatiale. Process and device for detecting foreign bodies in a liquid. 4,605,851, Cl. 250-223.00B.

Omron Tateisi Electronics Co.: *See*—
Nagao, Toshiaki; and Shiho, Toshio, 4,606,029, Cl. 371-69.000.

Onishi, Tetsuo; and Sugiyama, Yoshihide, to Duplo Seiko Corp.; and Duplo Manufacturing Corp. Illegal-sheet-material detection apparatus in sheet material manufacturing machine. 4,605,926, Cl. 340-825.300.

Ono, Taizo: *See*—
Yokoyama, Kazumasa; Fukaya, Chikara; Tsuda, Yoshio; Ono, Taizo; Arakawa, Yoshio; Inoue, Yoshihisa; Naito, Youichiro; and Suyama, Tadakazu, 4,605,650, Cl. 514-183.000.
Yokoyama, Kazumasa; Inoue, Yoshihisa; Ono, Taizo; Fukaya, Chikara; Arakawa, Yoshio; Naito, Youichiro; Yamauchi, Koichi; and Suyama, Tadakazu, 4,605,786, Cl. 568-669.000.

Onoda Construction Materials Co., Ltd.: *See*—
Omata, Kazuo; Shimizu, Toshihiko; Ibe, Hiroshi; and Hara, Kenji, 4,605,572, Cl. 427-403.000.

Optical Storage International: *See*—
Verboom, Johannes J.; and Bracht, Roger R., 4,606,016, Cl. 369-54.000.

Orgo-Thermit Inc.: *See*—
Fricke, Hans D., 4,605,053, Cl. 164-54.000.

Orlowski, Ronald C.; Seyler, Jay K.; and Stahl, Glenn L., to Armour Pharmaceutical Company. Des-4-leucine-calcitonin. 4,605,514, Cl. 530-307.000.

Orlowski, Ronald C.; and Stahl, Glenn L., to Armour Pharmaceutical Company. Calcitonin-(1-23)-peptide amide. 4,605,515, Cl. 530-307.000.

Orphanides, Gus G., to Air Products and Chemicals, Inc. Vinyl acetate-ethylene copolymer binder emulsions for medical-surgical nonwoven fabrics. 4,605,589, Cl. 428-290.000.

Orthofix S.r.l.: *See*—
De Bastiani, Giovanni; Brivio, Lodovico R.; Aldegheri, Roberto; and Faccioli, Giovanni, 4,604,997, Cl. 128-92.00A.

Ortloff, John E.; Ziarnik, Allen P.; Filson, John J.; and Gadbois, John F., to Exxon Production Research Co. Vessel mooring system. 4,604,961, Cl. 114-230.000.

Ossowski, Manfred: *See*—
Michel, Wolfgang; Paul, Heinz; Rummel, Andreas; Seher, Gero; Ossowski, Manfred; Heberlein, Irmtrud; Kostler, Dieter; and Wilhelm, Frank, 4,605,487, Cl. 208-408.000.

Osyatinsky, Saul G.: *See*—
Kravchenko, Jury B.; Baru, Jury A.; Osyatinsky, Saul G.; Timoshin, Jury V.; Makogon, Anatoly I.; Lobas, Igor P.; Gasilovsky, Kim S.; Livshits, Inna Z.; and Besedin, Alexei N., 4,605,089, Cl. 181-114.000.

Otani, Junji; Okubo, Akira; and Iwashita, Kanau, to Honda Giken Kogyo Kabushiki Kaisha. Exhaust system air introduction device. 4,604,865, Cl. 60-293.000.

Otani, Susumu, to NEC Corporation. Error correction apparatus using a Viterbi decoder. 4,606,027, Cl. 371-43.000.

Otomo, Nobuyuki: *See*—
Tsuchihashi, Keiichi; Yamada, Shinji; Arakawa, Makoto; Aizawa, Osamu; and Otomo, Nobuyuki, 4,605,236, Cl. 277-235.00B.

Otrusina, Edward C. Quick-release connector with teardrop-shaped configuration. 4,605,335, Cl. 403-348.000.

Ott, Renaud P. L.; and Jalabert, Georges E. P., to Societe Anonyme Dite "Etablissements Paturle" Lost-form concrete falsework. 4,604,843, Cl. 52-426.000.

Otto Zollinger, Inc.: *See*—
Zollinger, Otto, 4,605,182, Cl. 242-149.000.

Ours, Tom: *See*—
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Wilbur, Leonard P., Jr.; and Anthony, Wallace B., 4,604,967, Cl. 118-668.000.
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Rabinovich, Joshua E., 4,605,037, Cl. 137-390.000.
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Rebuffat, Carlo. Purse-string instrument. 4,605,002, Cl. 128-321.000.
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Habitzreiter, Richard K.; Pinney, Robert V. B., Jr.; and Woolston, Mark S., 4,606,068, Cl. 382-56.000.
Redlich, Robert W. Integral monitor for ILS localizer. 4,605,930, Cl. 343-413.000.
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Spear, Robert J.; and Redman, Lance D., 4,605,453, Cl. 149-24.000.
Reed, Phillip G.: *See—*
Cook, Stuart A.; Reed, Phillip G.; and Scarpa, Michael C., 4,605,382, Cl. 446-330.000.
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Richez, Raymond M., 4,605,415, Cl. 623-16.000.
Reick, Franklin G.: *See—*
Wilder, Joseph R.; and Reick, Franklin G., 4,605,990, Cl. 362-32.000.
Reid, Bruce E., to Honeywell Inc. Cammed wire snap switch. 4,605,830, Cl. 200-73.000.
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Bock, Harry S.; Gregory, Stanley O.; Gardner, F. Philip; and Reid, Russell H., 4,604,807, Cl. 33-3.00C.
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Reimann, George J., to Mobil Oil Corporation. Razor blade cutter assembly. 4,604,927, Cl. 83-55.000.
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Reist, Walter, to Ferag AG. Method and apparatus for the intermediate storage of printed products arriving in an imbricated product formation such as newspapers, periodicals and the like. 4,604,851, Cl. 53-430.000.
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Remy, David C., to Merck & Co., Inc. Indeno[2,1-c]pyridine compounds, and their use as calcium channel blockers. 4,605,660, Cl. 514-290.000.
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Sealfon, Andrew I., 4,604,994, Cl. 128-79.000.
Resolvex Corporation: *See—*
Luneau, John R., 4,605,889, Cl. 322-61.000.
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Myers, Melvin K.; and Pospisil, Frank, 4,605,272, Cl. 339-60.00M.
Rheinmetall GmbH: *See—*
Zielinski, Erich; and Meschke, Harry, 4,604,941, Cl. 89-47.000.
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Rademacher-Dubbick, Kristian, 4,604,905, Cl. 73-861.120.
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Mikulas, Martin M., Jr.; and Rhodes, Marvin D., 4,604,844, Cl. 52-632.000.
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Rhodes, Wayne A., to Johnstone Railway Supply Mfg., Co. Inc. Radiator heater solder pouring process. 4,605,154, Cl. 228-102.000.
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Dumousseau, Jean-Yves; Grosbois, Jean; and Jacubert, Serge, 4,605,547, Cl. 423-646.000.
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Lepage, Jean-Luc; and Soula, Gerard, 4,605,543, Cl. 423-347.000.
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Richter Gedeon Vegyeszeti Gyar R.T: *See—*
Bernath, Gabor; Kobor, Jeno; Folop, Ferenc; Sohajda, Attila; Kalman, Alajos; Ezer, Elemer; Hajos, Gyorgy; Palosi, Eva; Denes, Laszlo ; and Szporny, Laszlo , 4,605,653, Cl. 514-226.000.
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Kudo, Shozo, 4,606,044, Cl. 375-13.000.
Mochimaru, Hideaki, 4,605,299, Cl. 355-3.00R.
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Riddle, Herbert S.; and Bodio, Mark. Digital word-framing technique and system. 4,605,921, Cl. 340-347.0DD.
Ridgway, Steve H. Trailer for storing and drying harvested crops. 4,604,815, Cl. 34-201.000.
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Lugscheider, Walter; Riegler, Ernst; and Zajicek, Ernst, 4,606,038, Cl. 373-24.000.
Rieke, Herbert W., to Scott Paper Company. Dispensing carrier box and blank. 4,605,128, Cl. 206-611.000.
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Rigaku Keisoku Kabushiki Kaisha: *See—*
Sato, Kimio, 4,605,233, Cl. 277-80.000.
Riley, Derek C.; and Johnston, David, to Sterling Drug Inc. Method of preparing steroid compounds of controlled particle size. 4,605,517, Cl. 540-52.000.
Ringeisen, Victor; Chive, Maurice; and Toutain, Serge, to Odam, Societe Anonyme. Applicator for supplying radio-frequency energy to and from an object. 4,605,012, Cl. 128-804.000.
Rinkewich, Isaac, to M.I.T. Polycart Corp. Security cart. 4,605,267, Cl. 312-297.000.
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Hahn, Norbert; and Olson, Arthur A., Jr., 4,605,353, Cl. 414-401.000.
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Debus, Jurgen; and Ehrhardt, Claus-Dieter, 4,605,131, Cl. 211-90.000.
Ritter, Keith A.: *See—*
Persyk, Dennis E.; and Ritter, Keith A., 4,605,856, Cl. 250-363.00S.
Rivier, Catherine L.; Rivier, Jean E. F.; Vale, Wylie W., Jr.; and Brown, Marvin R., to Salk Institute for Biological Studies, The. CRF antagonists. 4,605,642, Cl. 514-12.000.
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Bentz, Willy; Gansert, Willi; Jakob, Gert; Stammler, Kurt; and Walter, Christoph, 4,605,986, Cl. 361-386.000.
Brouwers, Sytze; Bruhmann, Werner; and Kuschmierz, Heinz, 4,604,978, Cl. 123-374.000.
Frey, Thomas; Grunwald, Werner; Imhof, Ernst; Komaroff, Iwan; Reum, Helmut; Schmid, Gunther; and Schmid, Kurt, 4,604,975, Cl. 123-145.00A.
Hankel, Rainer; Pham, Minh-Chanh; and Peuser, Sieghart, 4,605,308, Cl. 356-373.000.
Krieger, Eberhard; and Moser, Theo, 4,605,393, Cl. 493-317.000.
Leblanc, Jean, 4,604,980, Cl. 123-450.000.
Trachte, Dietrich; and Giess, Helmut, 4,605,171, Cl. 239-453.000.

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Robertshaw Controls Company: *See*—
Everett, Charles J., 4,604,793, Cl. 29-622.000.

Robinson, Melvin T.: *See*—
Steele, Roy B.; Kirk, Thomas E.; Robinson, Melvin T.; and Anderson, Stephen W., 4,606,000, Cl. 363-145.000.

Robinson, Paul A., Jr., to United States of America, National Aeronautics and Space Administration. Fet charge sensor and voltage probe. 4,605,946, Cl. 357-23.100.

Robinson, Thomas C., to Thoratec Laboratories Corporation. Arterial graft prosthesis. 4,604,762, Cl. 62-1.000.

Rock, Erich; Brustle, Klaus; and Rupprechter, Helmut, to Julius Blum Gesellschaft m.b.H. Hinge. 4,604,769, Cl. 16-238.000.

Rockwell International Corporation: *See*—
Burns, Richard H., 4,605,290, Cl. 350-619.000.
Harrington, Timothy A., 4,605,902, Cl. 328-158.000.
Holmes, Dale A., 4,606,036, Cl. 372-95.000.
Lienert, Gerold, 4,604,881, Cl. 72-53.000.

Rodeffer, Charles E., to Winegard Company. Automatic voltage line loss compensation control for an antenna receiver. 4,606,074, Cl. 455-131.000.

Roger Bullivant of Texas, Inc.: *See*—
Bullivant, Roger A., 4,605,339, Cl. 405-237.000.

Rohrback Technology Corporation: *See*—
Beck, Theodore R., 4,605,626, Cl. 435-291.000.

Rohrer, Heinrich: *See*—
Binnig, Gerd; Gerber, Christoph; Rohrer, Heinrich; and Weibel, Edmund, 4,605,194, Cl. 248-559.000.

Roj Electrotex S.p.A.: *See*—
Bobbola, Paolo, 4,605,875, Cl. 310-323.000.

Rollo, Richard P. Open end ratchet socket wrench. 4,604,919, Cl. 81-58.200.

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Leitz, Helmut; and Rometsch, Gunter, 4,605,304, Cl. 356-138.000.

Romocki, Julian M. E.: *See*—
Young, Peter J.; and Romocki, Julian M. E., 4,605,068, Cl. 166-307.000.

Roosen, Reiner. Holding unit for mounting and aligning printing plates. 4,604,811, Cl. 33-184.500.

Rose, Christian S.; and Lacombe, Jacques, to Universite Rene Descartes (Paris V). Hydrocephaly treatment device including a variable impedance filter. 4,605,395, Cl. 604-9.000.

Rose, Leroy: *See*—
Knepper, James A.; and Rose, Leroy, 4,605,218, Cl. 271-238.000.

Rosen, Bernard A. Training device for setting broken limbs. 4,605,373, Cl. 434-274.000.

Rosenthal, Bruce D.; and Gray, Richard L., to Teledyne Industries, Inc. Precisely adjustable voltage controlled current mirror amplifier. 4,605,907, Cl. 330-257.000.

Ross, Richard J., to Baker Oil Tools, Inc. Chemical injection tubing anchor-catcher. 4,605,063, Cl. 166-216.000.

Ross, Richard J.: *See*—
Klumpyan, Joseph N.; and Ross, Richard J., 4,605,062, Cl. 166-127.000.

Ross, William A.: *See*—
Dolan, Donald T.; Ross, William A.; and Terry, Kenneth A., 4,605,937, Cl. 346-76.0PH.

Rossi, Giulio A., to Norton Company. Advanced preparation of ceramic powders. 4,605,631, Cl. 501-1.000.

Rossi, John P.: *See*—
Goldberg, Abraham A ; McMann, Renville H.; and Rossi, John P., 4,605,950, Cl. 358-11.000.

Roth, Douglas D.; and Ethridge, Fredrick A., to Celanese Corporation. Melt-spinning apparatus for polyester filaments. 4,605,364, Cl. 425-72.00S.

Rothfuss, Robert G.; Kuhl, David K.; and Murray, Michael A., to Senmed, Inc. Surgical stapling instrument with dual staple height mechanism. 4,605,001, Cl. 128-305.000.

Rotpunkt Dr. Anso Zimmermann: *See*—
Zimmermann, Anso, 4,605,134, Cl. 215-13.00A.
Zimmermann, Anso, 4,605,225, Cl. 222-566.000.

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Carle, Pierre R., 4,605,549, Cl. 424-18.000.

Ruffin, Paul B., to United States of America, Army. Efficient design technique for wavelength division multiplexing. 4,606,020, Cl. 370-3.000.

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Goldsmith, John W.; and Rullman, Paul B., 4,605,248, Cl. 285-52.000.

Rummel, Andreas: *See*—
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Rung, Robert D., to Tokyo Shibaura Denki Kabushiki Kaisha. Programmable CMOS circuit for use in connecting and disconnecting a semiconductor device in a redundant electrical circuit. 4,605,872, Cl. 307-465.000.

Rupprechter, Helmut: *See*—
Rock, Erich; Brustle, Klaus; and Rupprechter, Helmut, 4,604,769, Cl. 16-238.000.

Ruscic, Branko M.: *See*—
Berkowitz, Joseph; Ruscic, Branko M.; and Greene, John P., 4,606,030, Cl. 372-5.000.

Rush, David H.: *See*—
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Russel, Matthew J.; and Borruso, Rose M., to Eastman Kodak Company. Electrographic transfer roller drive mechanism. 4,605,298, Cl. 355-3.0TR.

Russell, Chesley G. Self supporting outdoor sleeping system. 4,605,029, Cl. 135-104.000.

Ruta, Joseph W.: *See*—
Harner, Robert H.; and Ruta, Joseph W., 4,605,982, Cl. 361-94.000.

Rutledge, Jerry D.: *See*—
Bessinger, Walter L.; and Rutledge, Jerry D., 4,605,265, Cl. 384-20.000.

Ryan, Daniel F., to Exxon Research and Engineering Co. Coal liquefaction process with increased naphtha yields. 4,605,486, Cl. 208-412.000.

Ryder, Geoffrey A., to Evans, Trevor G.; Ryder, Geoffrey A.; and Evans, Lyn T. Screw-topped containers having safety means. 4,605,135, Cl. 215-220.000.

S&C Electric Company: *See*—
Harner, Robert H.; and Ruta, Joseph W., 4,605,982, Cl. 361-94.000.

Sabin, Cullen M.; and Poppendiek, Heinz F., to Geoscience Ltd. Means and techniques useful in mass flowmeters for multiphase flows. 4,604,902, Cl. 73-861.040.

Sackmann, Karl H.: *See*—
Anselment, Christoph; and Sackmann, Karl H., 4,605,850, Cl. 250-221.000.

Saglio, Robert, to Commissariat a l'Energie Atomique. Multitransducer ultrasonic probe with transducers of different sizes. 4,604,897, Cl. 73-626.000.

Saglio, Robert: *See*—
Leseur, Andre ; Delaroche, Pierre; Saglio, Robert; and Vaubert, Yves, 4,605,531, Cl. 376-252.000.

St. Florian Company: *See*—
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Saita, Koji; Kanehira, Kenichi; and Uba, Tomohisa, to Sony Corporation. Supporting device for an electron beam landing position selecting mask of a color cathode ray tube. 4,605,878, Cl. 313-406.000.

Saitama Kako Co., Ltd.: *See*—
Torii, Masakatsu, 4,605,224, Cl. 272-146.000.

Saito, Keiji: *See*—
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Saito, Kenichiro; Heller, Jorge; and Skinner, Wilfred A., to Nitto Electric Industrial Co., Ltd. Method for percutaneously administering metoclopramide. 4,605,670, Cl. 514-619.000.

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Shiragami, Osamu; Kuno, Toshihiko; Sajima, Yasuo; Saito, Kohji; Uchibori, Takahiro; and Iwamoto, Junjiro, 4,605,482, Cl. 204-258.000.

Saito, Makoto: *See*—
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Watanabe, Kenzo; Kato, Yoshinori; Saito, Masahiko; Oba, Takeo; Fukushima, Hisashi; and Hara, Takeshi, 4,605,645, Cl. 514-51.000.

Saito, Shozo, to Tokyo Shibaura Denki Kabushiki Kaisha. Dynamic memory device. 4,606,010, Cl. 365-149.000.

Saito, Yasuo, to Kabushiki Kaishi Toshiba. X-ray computed tomographic apparatus. 4,606,062, Cl. 378-13.000.

Saitoh, Yokuo: *See*—
Inoue, Yohichi; Tanaka, Katsuyuki; Takeuchui, Yoshinori; Koromegawa, Isao; Yamaguchi, Yuzoo; and Saitoh, Yokuo, 4,605,979, Cl. 360-105.000.

Sajima, Yasuo: *See*—
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Sakaguchi, Sanae: *See*—
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Sakai, Junji; Morimoto, Syogo; Morikawa, Minoru; and Maehashi, Yoshitsugu, to Hitachi, Ltd. Process for producing core for casting. 4,605,057, Cl. 164-519.000.

Sakai, Masanori: *See—*
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Sakakibara, Kouzou: *See—*
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Sakakibara, Yozo; and Okamoto, Yuji, to Toyota Jidosha Kabushiki Kaisha. Vehicle door structure. 4,605,260, Cl. 296-201.000.
Sakamaki, Hiroshi; Horikoshi, Yukio; and Yanagihashi, Kikuji, to Nippon Piston Ring Co., Ltd. Heat- and abrasion-resistant coating material. 4,605,695, Cl. 524-424.000.
Sakamoto, Masahiro: *See—*
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Sakamoto, Masamichi, to Sony Corporation. Combination refractive index-guiding type and a gain-guiding type semiconductor laser device. 4,606,033, Cl. 372-45.000.
Sakano, Toshiyuki, to Tsudakoma Corp. Takeup motion control device for looms. 4,605,044, Cl. 139-304.000.
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Sato, Mitsunobu; Katsuragi, Yasuhiro; Sakano, Yasuo; Sugihara, Kunio; and Aimoto, Kenji, 4,605,555, Cl. 424-85.000.
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Sakurai, Toshifumi: *See—*
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Bohlen, Peter; Brazeau, Paul E.; Esch, Frederick S.; Ling, Nicholas C.; and Wehrenberg, William B., 4,605,643, Cl. 514-12.000.
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Samson, John N. R., to BP Chemicals Limited. Cationic polymerization of 1-olefins. 4,605,808, Cl. 585-525.000.
Samuelsson, Soren. Squeegee blade trimmer. 4,604,802, Cl. 30-124.000.
Sand, I. Daniel: *See—*
Jenkins, Waylon L.; Hawkins, James M.; and Sand, I. Daniel, 4,605,721, Cl. 527-312.000.
Sandberg, Karen R.: *See—*
Jansma, Roger H.; and Sandberg, Karen R., 4,605,718, Cl. 526-240.000.
Sandel, Dan; and Hoftman, Michael, to Devon Industries, Inc. Disposable cover for surgical light handle. 4,605,124, Cl. 206-223.000.
Sander, Ulrich: *See—*
Lang, Walter H.; Biber, Klaus; Lemcke, Ulrich; and Sander, Ulrich, 4,605,287, Cl. 350-513.000.
Sandling, Michael J.: *See—*
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Sankyo Manufacturing Company, Ltd.: *See—*
Kato, Heizaburo, 4,605,147, Cl. 226-156.000.
Sano, Nitiro: *See—*
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Sanyo Electric Co., Ltd.: *See—*
Ishii, Toshihiko; and Takasu, Hiromi, 4,605,944, Cl. 357-17.000.
Sasaki, Chuichi; Sasaki, Haruo; Miyajima, Katumi; and Ebisawa, Kaoru, to Sasaki Nouki Kabushiki Kaisha. Agricultural baler. 4,604,859, Cl. 56-341.000.
Sasaki, Haruo: *See—*
Sasaki, Chuichi; Sasaki, Haruo; Miyajima, Katumi; and Ebisawa, Kaoru, 4,604,859, Cl. 56-341.000.
Sasaki Nouki Kabushiki Kaisha: *See—*
Sasaki, Chuichi; Sasaki, Haruo; Miyajima, Katumi; and Ebisawa, Kaoru, 4,604,859, Cl. 56-341.000.
Sasaki, Susumu; and Nakamura, Hiroshi, to Fujitsu Limited. Radio communication system. 4,606,048, Cl. 375-39.000.
Sasayama, Takao: *See—*
Yamada, Kazuji; Sato, Hideo; Kawakami, Kanji; Kato, Kazuo; and Sasayama, Takao, 4,604,899, Cl. 73-708.000.
Sato, Hideo: *See—*
Yamada, Kazuji; Sato, Hideo; Kawakami, Kanji; Kato, Kazuo; and Sasayama, Takao, 4,604,899, Cl. 73-708.000.
Sato, Katsuo: *See—*
Miyamoto, Akira; Sato, Katsuo; and Kurokawa, Masahiro, 4,605,765, Cl. 564-367.000.
Sato, Ken, to Olympus Optical Company, Ltd. Endoscope system. 4,604,992, Cl. 128-6.000.
Sato, Kimio, to Rigaku Keisoku Kabushiki Kaisha. Magnetic fluid sealing device. 4,605,233, Cl. 277-80.000.
Sato, Koichi: *See—*
Harada, Susumu; Hasegawa, Sakuro; and Sato, Koichi, 4,605,701, Cl. 525-107.000.
Sato, Mitsunobu; Katsuragi, Yasuhiro; Sakano, Yasuo; Sugihara, Kunio; and Aimoto, Kenji, to Sun Star Kabushiki Kaisha. Composition and method for treating keratosic disorder of skin and mucosa. 4,605,555, Cl. 424-85.000.
Sato, Mitsunobu; Katsuragi, Yasuhiro; Sakano, Yasuo; Sugihara, Kunio; and Aimoto, Kenji, to Sun Star Kabushiki Kaisha. Composition and method for treating erythematodes and mycosis. 4,605,556, Cl. 424-85.000.
Sato, Yuji: *See—*
Kanda, Motoya; and Sato, Yuji, 4,605,603, Cl. 429-59.000.
Sato, Yukio: *See—*
Hishii, Masao; Tanaka, Masaaki; Sato, Yukio; Nagai, Haruhiko; and Tabata, Norikazu, 4,606,035, Cl. 372-87.000.
Satoh, Fumio: *See—*
Miyano, Seiji; Sumoto, Kunihiro; Satoh, Fumio; and Cho, Hidetsura, 4,605,662, Cl. 514-413.000.
Saturn Limited: *See—*
Baarse, Dick, 4,604,828, Cl. 49-322.000.
Satzinger, Gerhard; Fritschi, Edgar; and Herrmann, Manfred, to Warner-Lambert Company. 7H-dibenzo(a,c,)cyclohepten-5-one-(7) derivatives. 4,605,673, Cl. 514-654.000.
Savolainen, Kalevi: *See—*
Aittoniemi, Kari T. J.; Kiuru, Erkki S.; Lappalainen, Aatu V. K.; and Savolainen, Kalevi, 4,605,898, Cl. 324-232.000.
Sawada, Mitsuo: *See—*
Kawakami, Koichi; and Sawada, Mitsuo, 4,604,782, Cl. 29-409.000.
Sawada, Yasushi: *See—*
Katayama, Yoshifumi; Shiraki, Yasuhiro; Yamaguchi, Ken; Murayama, Yoshimasa; Sawada, Yasushi; Usagawa, Toshiyuki; and Maruyama, Eiichi, 4,605,945, Cl. 357-22.000.
Sawazaki, Masatoshi; and Yorisue, Shozo, to Precision Fukuhara Works, Ltd. Needle selection device for knitting machines. 4,604,877, Cl. 66-224.000.
Sawby, Scott. Folding knife. 4,604,803, Cl. 30-161.000.
Sayovitz, John J.; Mitchell, Kenneth J.; and Mathis, Michael P., to Kimberly-Clark Corporation. Method of ultrasonically bonding nonwoven webs. 4,605,454, Cl. 156-73.100.
Scarpa, Michael C.: *See—*
Cook, Stuart A.; Reed, Phillip G.; and Scarpa, Michael C., 4,605,382, Cl. 446-330.000.
Scarpa, Thomas J. Flowmeter. 4,604,906, Cl. 73-861.740.
Schachter, Robert A. Combined wind screen and beach bag. 4,606,070, Cl. 383-4.000.
Schaetzke, William R.; and DuFries, Ronald W., to Morgan Construction Company. Mass flow control system for wire drawing machine. 4,604,883, Cl. 72-280.000.
Schafer, David E.; and Czajkowski, Albert J., to Monsanto Company. Compositions and methods for reducing herbicidal injury. 4,605,431, Cl. 71-87.000.
Schafer, Erich E.: *See—*
Link, Helmut F.; and Schafer, Erich E., 4,604,923, Cl. 82-1.00C.
Schaller, Heinz E.; and Pfaff, Eberhard P., to Biogen N.V. Small peptides with the specificity of foot and mouth disease viral antigens. 4,605,512, Cl. 260-112.005.
Schaller, Helmut: *See—*
Page, John F.; and Schaller, Helmut, 4,604,936, Cl. 84-313.000.
Schelchshorn, Joachim: *See—*
Tiltscher, Helmut; Wolf, Helmut; Schelchshorn, Joachim; and Dialer, Kurt, 4,605,811, Cl. 585-670.000.
Schirmer, Henry G., to W. R. Grace & Co., Cryovac Div. Method of laminating high barrier shrink film. 4,605,460, Cl. 156-229.000.
Schittko, Hermut; and Schultz, Peter. Method and apparatus for the coded tagging of articles, particularly garments. 4,605,847, Cl. 235-471.000.
Schlage Lock Company: *See—*
Neary, Ralph E.; and Hull, Scott A., 4,604,879, Cl. 70-224.000.
Schloemer, George C., to Syntex Pharmaceuticals International Ltd. Preparation of α-arylalkanoic acids. 4,605,758, Cl. 562-418.000.
Schmanski, Donald W.; and Landis, Scott, to Carsonite International Corporation. Collapsible recreational fence. 4,605,204, Cl. 256-19.000.
Schmid, Gunther: *See—*
Frey, Thomas; Grunwald, Werner; Imhof, Ernst; Komaroff, Iwan; Reum, Helmut; Schmid, Gunther; and Schmid, Kurt, 4,604,975, Cl. 123-145.00A.
Schmid, Kurt: *See—*
Frey, Thomas; Grunwald, Werner; Imhof, Ernst; Komaroff, Iwan; Reum, Helmut; Schmid, Gunther; and Schmid, Kurt, 4,604,975, Cl. 123-145.00A.
Schmidt, Douglass N.; Finnan, Jeffrey L.; and Lisa, Rudolph E., to BASF Corporation. Process for preparing spray-dried powders containing a water-soluble vitamin and powders prepared thereby. 4,605,666, Cl. 514-474.000.
Schmidt, Peter C.: *See—*
Reiff, Friedrich; Hartner, Hartmut; Basedow, Arno; Hugenbusch, Hans-Wolfgang; Schmidt, Peter C.; and Bardonner, Hans, 4,605,794, Cl. 568-852.000.

Schmidt, Rudiger: *See*—
Ashauer, Karl; Richter, Bernd; Kalversberg, Manfred; and Schmidt, Rudiger, 4,605,087, Cl. 180-248.000.
Schmidt, Timothy J.: *See*—
Fisher, Alfred J., III; and Schmidt, Timothy J., 4,605,180, Cl. 242-107.40A.
Schneider, David A.: *See*—
Chiu, Norman H.; and Schneider, David A., 4,604,871, Cl. 62-130.000.
Schneider, Donald; and Schneider, Stanley. Releasable affixation of article of manufacture to an environment. 4,604,856, Cl. 54-76.000.
Schneider, Stanley: *See*—
Schneider, Donald; and Schneider, Stanley, 4,604,856, Cl. 54-76.000.
Schnurmann, Henri D.: *See*—
Peters, Robert M.; Schnurmann, Henri D.; and Vidunas, Louis J., 4,606,025, Cl. 371-20.000.
Schnurr, Richard D.: *See*—
Goetz, Oliver R.; Schnurr, Richard D.; and Kronstadt, Victor, 4,605,114, Cl. 192-106.200.
Schoenenberger, Carl F.: *See*—
Martin, Thomas F.; Storey, Robert W.; Schoenenberger, Carl F.; and Chenoweth, John S., 4,606,072, Cl. 455-4.000.
Schrader Machine & Tool, Inc.: *See*—
Trevarrow, David J., 4,605,346, Cl. 408-147.000.
Schreder, Felix: *See*—
Fischer, Karl; Schreder, Felix; and Kicherer, Robert, 4,605,841, Cl. 219-449.000.
Schreiner, Charles P.: *See*—
Nienhuis, James H.; and Schreiner, Charles P., 4,605,988, Cl. 361-429.000.
Schroder, Wolfgang, to International Standard Electric Corporation. Bi-phase decoder. 4,606,053, Cl. 375-87.000.
Schultz, Dennis B. Article retaining device. 4,604,765, Cl. 5-413.000.
Schultz, Eileen L.: *See*—
Cahalan, Patrick T.; Holmblad, Carolann M.; Pike, Robert W., Jr.; and Schultz, Eileen L., 4,605,406, Cl. 623-1.000.
Schultz, Peter: *See*—
Schittko, Hermut; and Schultz, Peter, 4,605,847, Cl. 235-471.000.
Schultz, Richard A.: *See*—
Casey, Gerald F.; and Schultz, Richard A., 4,605,197, Cl. 251-30.010.
Schultz, Robert G.: *See*—
Machnik, Patrick R.; Petersen, Bruce L.; Schultz, Robert G.; Thatcher, Jerry T.; and Whiting, Roscella A., 4,605,958, Cl. 358-84.000.
Schummer, Arthur; de la Hamette, Jean; Lessel, Guy; Beck, Jean-Paul; and Frantz, Armand, to Arbed S.A. Process for producing a rolled steel product having high weldability, a high yield strength and a good notch impact toughness at very low temperatures. 4,605,449, Cl. 148-12.00B.
Schwaab, Josef: *See*—
Mitulla, Konrad; Hambrecht, Juergen; Echte, Adolf; Swoboda, Johann; Siebel, Peter; Schwaab, Josef; and Frank, Herbert, 4,605,699, Cl. 525-67.000.
Schwank, Johannes W.: *See*—
Curtis, M. David; Schwank, Johannes W.; Thompson, Levi T.; and Williams, P. Douglas, 4,605,751, Cl. 556-29.000.
Schwartz, Harold: *See*—
Katz, Philip; Brenman, Henry S.; Hamarman, Henry; and Schwartz, Harold, 4,605,927, Cl. 340-825.190.
Schwartz, Leonard: *See*—
Mead, James B.; Schwartz, Leonard; and Deveau, Emile J., 4,605,931, Cl. 343-700.0MS.
Schwenzer, Alfred F.: *See*—
Voltmer, Helmut; and Schwenzer, Alfred F., 4,605,459, Cl. 156-215.000.
Scifres, Donald R.; Streifer, William; and Burnham, Robert D., to Xerox Corporation. Astable optical multi-vibrator. 4,606,032, Cl. 372-38.000.
Scott, Andrew M.; Quist, Bernardus B.; and Terlouw, Teunis, to Shell Oil Company. Centrifugal pump for pulverized material. 4,605,352, Cl. 414-217.000.
Scott Paper Company: *See*—
Rieke, Herbert W., 4,605,128, Cl. 206-611.000.
Scott, William D.: *See*—
Swartout, James J.; and Scott, William D., 4,605,048, Cl. 144-136.00B.
Scriven, Roger L.: *See*—
Christenson, Roger M.; Valko, Joseph T.; Plasynski, Joseph E.; and Scriven, Roger L., 4,605,478, Cl. 204-181.700.
Seaber, Geoffrey B.: *See*—
Van Loveren, Augustinus G.; Munteanu, Marina A.; and Seaber, Geoffrey B., 4,605,165, Cl. 239-6.000.
Seal-Air Control Systems Inc.: *See*—
Greiner, Waldemar H., 4,605,198, Cl. 251-58.000.
Sealfon, Andrew I., to Repro-Med Systems, Inc. Implantable medical prosthesis for obviating male impotency. 4,604,994, Cl. 128-79.000.
Sebilet, Bruno R.: *See*—
Nicolas, Michel J. R.; and Sebilet, Bruno R., 4,606,039, Cl. 375-1.000.
Seelbach, Christian A.: *See*—
Price, J. B.; Tobin, Philip J.; Pintchovski, Fabio; and Seelbach, Christian A., 4,605,947, Cl. 357-23.150.
Seeley, Frederic F., to F. F. Seeley Nominees Pty Ltd. Evaporative coolers. 4,604,874, Cl. 62-298.000.
Seestrom, Frank E.: *See*—
Hubbard, David W.; and Seestrom, Frank E., 4,605,939, Cl. 346-140.00R.
Seevinck, Evert; and Van Tuijl, Adrianus J. M., to U.S. Philips Corporation. Current-source arrangement. 4,605,892, Cl. 323-315.000.
Seher, Gero: *See*—
Michel, Wolfgang; Paul, Heinz; Rummel; Andreas; Seher, Gero; Ossowski, Manfred; Heberlein, Irmtrud; Kostler, Dieter; and Wilhelm, Frank, 4,605,487, Cl. 208-408.000.
Seidel, Harold: *See*—
Bowman, Wayne C.; Malik, Randhir S.; Seidel, Harold; Suiter, Weyman B., Jr.; and Ziesse, Norman G., 4,605,999, Cl. 363-19.000.
Seidler, Jack, to North American Specialties Corporation. Solder-bearing leads. 4,605,278, Cl. 339-275.00B.
Seiken Kai Foundational Juridical Person: *See*—
Hata, Kosei, 4,605,502, Cl. 210-611.000.
Seitoh, Shigemitsu: *See*—
Fukuhara, Satoru; Ichihashi, Mikio; Murakoshi, Hisaya; and Seitoh, Shigemitsu, 4,605,860, Cl. 250-397.000.
Sekigawa, Tatsuaki; Gotoh, Akio; Tsutsumi, Syuitsu; Marui, Kuniyoshi; and Honda, Naoto, to Tokyo Shibaura Denki Kabushiki Kaisha. System for detecting and recovering a transmitted signal. 4,606,050, Cl. 375-75.000.
Sekimoto, Yukihiko: *See*—
Yanagida, Makoto; Sekimoto, Yukihiko; and Kanda, Shoichi, 4,605,505, Cl. 252-8.514.
Sekisui Kagaku Kogyo Kabushiki Kaisha: *See*—
Obana, Satoshi, 4,605,686, Cl. 523-105.000.
Sellier, Quentin, to Duchess Industries, Inc. Watchband/watchcase connection. 4,605,312, Cl. 368-282.000.
Sellstrom, Kathy B.; and Waddill, Harold G., to Texaco Inc. Method for making syntactic foam with improved processing characteristics using a silane coupling agent in combination with an aminated alkylphenol alkoxylate. 4,605,688, Cl. 523-218.000.
Senatore, Guy, to Phillips Petroleum Company. Polyarylene sulfide preparation method with dithionite. 4,605,733, Cl. 528-388.000.
Senese, Frank J.; and Baillie, Lloyd A., to Atlantic Richfield Company. Leak detector. 4,604,893, Cl. 73-49.200.
Senior, Robert M.: *See*—
Urry, Dan W.; and Senior, Robert M., 4,605,413, Cl. 623-11.000.
Senmed, Inc.: *See*—
Rothfuss, Robert G.; Kuhl, David K.; and Murray, Michael A., 4,605,001, Cl. 128-305.000.
Senstar Security Systems Corp.: *See*—
Harman, R. Keith, 4,605,914, Cl. 333-237.000.
Serrie, Gerard J.: *See*—
Hovet, Jean-Marie; and Serrie, Gerard J., 4,605,981, Cl. 361-91.000.
Service National Electricite de France: *See*—
Duney, Georges J., 4,605,838, Cl. 219-319.000.
Seshamani, Venkatraman: *See*—
Difonzo, Alexander J.; and Seshamani, Venkatraman, 4,604,972, Cl. 122-510.000.
Sette, Paul R., to Pitney Bowes Inc. Worm gear rack movement system. 4,604,950, Cl. 101-110.000.
Seyler, Jay K.: *See*—
Orlowski, Ronald C.; Seyler, Jay K.; and Stahl, Glenn L., 4,605,514, Cl. 530-307.000.
Sgourakes, George E.; Angelosanto, John P.; and Malloy, Barry T., to Foxboro Company, The. Reference pressure devices for calibrating pressure-measuring instruments. 4,604,891, Cl. 73-4.00R.
Shahan, Donald J., to RCA Corporation. Kinescope panel/mask frame assembly thumper and flush device and method. 4,605,379, Cl. 445-39.000.
Shalaby, Shalaby W.; and Jamiolkowski, Dennis D., to Ethicon, Inc. Surgical articles of copolymers of glycolide and ϵ-caprolactone and methods of producing the same. 4,605,730, Cl. 528-357.000.
Shandon Southern Products Limited: *See*—
Gordon, Alan J.; Sterritt, David W.; and Evans, Robert, 4,604,964, Cl. 118-50.000.
Shannon, Gary L. Weightlifting exercise bar. 4,605,222, Cl. 272-122.000.
Sharp Kabushiki Kaisha: *See*—
Yamamoto, Yoichi; and Shimada, Mitsuhiro, 4,605,936, Cl. 346-76.0PH.
Sheehan, Joseph C. M., to Kells Medical, Inc. Wound closure device and method for using same. 4,605,005, Cl. 128-335.000.
Shell Oil Company: *See*—
John, Christopher S., 4,605,782, Cl. 568-484.000.
Reynhout, Marinus J.; and van der Scheer, Albert, 4,605,526, Cl. 264-41.000.
Scott, Andrew M.; Quist, Bernardus B.; and Terlouw, Teunis, 4,605,352, Cl. 414-217.000.
Shepard, Richard W.: *See*—
Alling, Richard L.; Shepard, Richard W.; Landrum, Clyde L.; Tofield, Robert H.; and Podhajecki, Stephen T., 4,605,322, Cl. 384-575.000.
Shephard, Margaret C.: *See*—
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Sherman, James B.: *See*—
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Sherritt Gordon Mines Limited: *See*—
Weir, Donald R., 4,605,439, Cl. 75-118.00R.

Shibakawa, Riichiro: *See—*
Celmer, Walter D.; Cullen, Walter P.; Shibakawa, Riichiro; and Tone, Junsuke, 4,605,624, Cl. 435-253.000.
Shibata, Shinichi: *See—*
Komuro, Isaku; Sano, Yoshikazu; and Shibata, Shinichi, 4,605,825, Cl. 179-99.00R.
Shibuya, Masayuki: *See—*
Fukuchi, Hisashi; Shibuya, Masayuki; and Takahashi, Yasuie, 4,605,109, Cl. 192-4.00C.
Shih, Hung-Dah; and Bennett, Tommy J., to Texas Instruments Incorporated. MBE system with in-situ mounting. 4,605,469, Cl. 156-610.000.
Shiho, Toshio: *See—*
Nagao, Toshiaki; and Shiho, Toshio, 4,606,029, Cl. 371-69.000.
Shiino, Kazuo: *See—*
Oinuma, Senzo; Tanaka, Kazumi; Shiino, Kazuo; and Watanabe, Hiroki, 4,605,003, Cl. 128-328.000.
Shimada, Mitsuhiro: *See—*
Yamamoto, Yoichi; and Shimada, Mitsuhiro, 4,605,936, Cl. 346-76.0PH.
Shimada, Yoshitaka; Kadowaki, Kimihiro; and Inouchi, Teruo, to Nissan Motor Co., Ltd.; and Sunrise Meisei Corporation. Method and apparatus for panel wiping operation. 4,605,569, Cl. 427-256.000.
Shimizu, Isamu: *See—*
Fujiwara, Ryoji; and Shimizu, Isamu, 4,605,285, Cl. 350-357.000.
Shimizu, Sakayu: *See—*
Yamada, Hideaki; Shimizu, Sakayu; and Shiozaki, Shozo, 4,605,625, Cl. 435-280.000.
Shimizu, Shinkichi: *See—*
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Shimizu, Toshihiko: *See—*
Omata, Kazuo; Shimizu, Toshihiko; Ibe, Hiroshi; and Hara, Kenji, 4,605,572, Cl. 427-403.000.
Shimofuruta, Akihiro, to Kamakura Koki Kabushiki Kaisha. Zoom interlocking mechanism for binocular. 4,605,288, Cl. 350-552.000.
Shinagawa Refractories Co., Ltd.: *See—*
Zenbutsu, Tadashi; Kokumai, Hiroyuki; Okikawa, Shinji; and Saito, Keiji, 4,605,635, Cl. 501-96.000.
Shionogi & Co., Ltd.: *See—*
Kamata, Susumu; Haga, Nobuhiro; Nagata, Wataru; and Matsui, Takeaki, 4,605,738, Cl. 544-310.000.
Shiozaki, Shozo: *See—*
Yamada, Hideaki; Shimizu, Sakayu; and Shiozaki, Shozo, 4,605,625, Cl. 435-280.000.
Shiragami, Osamu; Kuno, Toshihiko; Sajima, Yasuo; Saito, Kohji; Uchibori, Takahiro; and Iwamoto, Junjiro, to Asahi Glass Company, Ltd. Filter press type electrolytic cell. 4,605,482, Cl. 204-258.000.
Shiraishi, Daiichi; Iwasaki, Eiji; and Fukumoto, Ryoichi, to Toyota Jidosha Kabushiki Kaisha; and Aisin Seiki Co., Ltd. Door window regulator. 4,604,829, Cl. 49-352.000.
Shiraki, Yasuhiro: *See—*
Katayama, Yoshifumi; Shiraki, Yasuhiro; Yamaguchi, Ken; Murayama, Yoshimasa; Sawada, Yasushi; Usagawa, Toshiyuki; and Maruyama, Eiichi, 4,605,945, Cl. 357-22.000.
Shiroki, Hiroyuki; and Noaki, Yasuhide, to Asahi Kasei Kogyo Kabushiki Kaisha. Hydrogen-evolution electrode. 4,605,484, Cl. 204-290.00R.
Shiseido Company Ltd.: *See—*
Kikuchi, Masashi; and Matsuoka, Masahiro, 4,605,419, Cl. 8-426.000.
Shomura, Eiichi; and Goto, Taiji, to Janome Sewing Machine Co., Ltd. Polychrome printing platen of a printer. 4,605,328, Cl. 400-662.000.
Shortridge, Douglas. Basic derivatives of azo benzene. 4,605,734, Cl. 534-738.000.
Shrimpton, Wallace. Process for cell separation. 4,605,558, Cl. 424-105.000.
Shurney, Glenn A.: *See—*
Hodson, Homer J.; Shurney, Glenn A.; and Hartman, Eric E., 4,605,021, Cl. 132-33.00R.
Shutt, Donald P.: *See—*
Hallidy, William M.; and Shutt, Donald P., 4,605,107, Cl. 192-0.02R.
Sias, Ralph M.; Hurley, Nancy J.; and Dalebout, Melvin W., to American Hospital Supply Corporation. Body support pad. 4,605,582, Cl. 428-120.000.
Sickels, Anthony R., to Soundfold, Inc. Multidirectional sound absorber. 4,605,088, Cl. 181-30.000.
Siebel, Peter: *See—*
Mitulla, Konrad; Hambrecht, Juergen; Echte, Adolf; Swoboda, Johann; Siebel, Peter; Schwaab, Josef; and Frank, Herbert, 4,605,699, Cl. 525-67.000.
Siegmeier, Rainer; Prescher, Gunter; Maurer, Helmut; and Hering, Gunter, to Degussa Aktiengesellschaft. Continuous process for the production of pentanediol-1,2. 4,605,795, Cl. 568-867.000.
Siemens Aktiengesellschaft: *See—*
Amstutz, Johann; and Wenger, Bruno, 4,605,822, Cl. 179-16.0AA.
Birlmeier, Josef; Eberlein, Klaus; and Nagler, Werner, 4,605,824, Cl. 179-18.0HB.
Goetz, Werner, 4,605,188, Cl. 248-157.000.
Haendle, Joerg, 4,606,064, Cl. 378-99.000.
Hartmann, Gunter, 4,605,344, Cl. 408-95.000.
Kahn, Klaus-Dieter; Kuehne, Friedrich; and Barth, Hermann, 4,606,042, Cl. 375-2.100.
Klar, Heiner; and Mauthe, Manfred, 4,606,060, Cl. 377-60.000.
Pfleiderer, Hans-Joerg; and Knauer, Karl, 4,605,913, Cl. 333-166.000.
Utecht, Manfred, 4,605,316, Cl. 384-99.000.
Siemens Gammasonics, Inc.: *See—*
Persyk, Dennis E.; and Ritter, Keith A., 4,605,856, Cl. 250-363.00S.
Signode Corporation: *See—*
Annis, James R., Jr., 4,605,456, Cl. 156-157.000.
Silver Seiko Ltd.: *See—*
Ueki, Junzo; and Nakajima, Yoshiaki, 4,605,327, Cl. 400-208.000.
Silvers, Ralph H., Jr., to Transamerica Delaval Inc. Tool changer for manipulator arm. 4,604,787, Cl. 29-568.000.
Silvis, H. Craig; and Morgan, Ted A., to Dow Chemical Company, The. Process for preparing spirobiindanols. 4,605,789, Cl. 568-721.000.
Simo-Company, Angel. Internal brake for doors. 4,605,250, Cl. 292-171.000.
Simpson, Frederick H.; and Verzemnieks, Juris, to Boeing Company, The. Barrier coated ceramic fiber and coating method. 4,605,588, Cl. 428-288.000.
Singer Company, The: *See—*
Mead, James B.; Schwartz, Leonard; and Deveau, Emile J., 4,605,931, Cl. 343-700.0MS.
Singleton, Daniel A.: *See—*
Brunelle, Daniel J.; and Singleton, Daniel A., 4,605,745, Cl. 546-304.000.
Sir Pegasus, Inc.: *See—*
McKibben, David P., 4,605,071, Cl. 168-12.000.
Sivaramakrishnan, Parameswar: *See—*
Baron, Arthur L.; and Sivaramakrishnan, Parameswar, 4,605,774, Cl. 568-48.000.
Skeie, Halvor, to X-Cyte Inc. Surface acoustic wave passive transponder having optimally-sized transducers. 4,605,929, Cl. 343-6.80R.
SKF Industrial Trading and Development Company B.V.: *See—*
Korenhof, Abraham, 4,605,319, Cl. 384-484.000.
SKF Kugellagerfabriken GmbH: *See—*
Brandenstein, Manfred; and Haas, Roland, 4,605,113, Cl. 192-98.000.
SKF Kugellagerfbriken GmbH: *See—*
Brandenstein, Manfred; Haas, Roland; and Hans, Rudiger, 4,605,321, Cl. 384-512.000.
Skinner, Wilfred A.: *See—*
Saito, Kenichiro; Heller, Jorge; and Skinner, Wilfred A., 4,605,670, Cl. 514-619.000.
Skuratovsky, Eugene: *See—*
Knudsen, James K.; Koller, Allen C.; Skuratovsky, Eugene; and Thomas, Gary S., 4,604,900, Cl. 73-716.000.
Skurkovich, Simon V., to Skurkovich, Simon V. Methods for the treatment of pathological conditions by removing interferon from the organism. 4,605,394, Cl. 604-4.000.
SKW Trostberg Aktiengesellschaft: *See—*
Lugscheider, Walter; Riegler, Ernst; and Zajicek, Ernst, 4,606,038, Cl. 373-24.000.
Slater, William M.: *See—*
Fyfe, Edward R.; and Slater, William M., 4,605,106, Cl. 188-374.000.
Slaw, Robert A., Sr. Joint construction of concrete members. 4,605,336, Cl. 404-6.000.
Slepicka, Gregory L.: *See—*
Bastian, Donald G.; and Slepicka, Gregory L., 4,604,931, Cl. 83-665.000.
Slevin, Julian B. Method and machine for producing complance carrier cartons. 4,605,464, Cl. 156-253.000.
Sloan, Gary W.; and Nelson, Walter H., to Goodyear Tire & Rubber Company, The. Apparatus for trimming tires. 4,605,051, Cl. 157-13.000.
Slyman Manufacturing Corporation: *See—*
Buehl, Arnold L., 4,605,369, Cl. 431-328.000.
Smillie, Winston B. Apparatus for improved fuel efficiency. 4,605,523, Cl. 261-1.000.
Smith, Harry D., Jr., to Halliburton Company. Measurement of formation porosity using fast neutron spectroscopy. 4,605,854, Cl. 250-266.000.
Smith, Russell G.; and Sandling, Michael J., to Xomox Corporation. Valve housing with removable self-contained valving unit. 4,605,036, Cl. 137-327.000.
Sneider, Vincent R. Disposable pad for panty hose. 4,605,404, Cl. 604-385.100.
Societe Anonyme D.B.A.: *See—*
Carre, Jean-Jacques; and Escarabajal, Ghislain, 4,605,103, Cl. 188-71.500.
Societe Anonyme Dite "Etablissements Paturle" : *See—*
Ott, Renaud P. L.; and Jalabert, Georges E. P., 4,604,843, Cl. 52-426.000.
Societe Cortial: *See—*
Boyer, Chantal; Colleter, Jean C.; Creuzet, Marie-Helene; Feniou, Claude; Laguerre, Michel; Pontagnier, Henri; and Prat, Gisele, 4,605,768, Cl. 564-461.000.
Societe d'Electronique de la Region Pays de Loire: *See—*
Duret, Bernard; Dall'oro, Guido G.; Jollivet, Alain; and Szeger, Annie M., 4,605,846, Cl. 235-468.000.
Societe Nationale des Chemins de fer Francais: *See—*
Genans, Michel, 4,605,115, Cl. 198-341.000.
Societe Nationale d'Etudes et de Construction de Moteurs d'Aviation S.N.E.C.M.A.: *See—*
Nicolas, Michel J. R.; and Sebilet, Bruno R., 4,606,039, Cl. 375-1.000.

Societe Nationale Elf Aquitaine (Production): *See—*
Voirin, Robert, 4,605,546, Cl. 423-576.000.
Societe Nationale Industrielle Aerospatiale: *See—*
Ometz, Pierre H. M.; and Labrador, Jacques A. L., 4,605,851, Cl. 250-223.00B.
Soderstrom, Sven-Erik: *See—*
Lofgren, Folke; and Soderstrom, Sven-Erik, 4,605,302, Cl. 356-5.000.
Soffge, Friedhelm; and Knauss, Hans-Peter, to Ing. h.c.F. Porsche AG. Drive system for a rotary-, pivot-, and propelling-drive of a vehicle especially of an excavating machine. 4,604,915, Cl. 74-790.000.
Soga, Kiyomi; Tenjin, Nobuyoshi; Tohira, Hiroyuki; Ninomiya, Naoyoshi; and Nishikata, Yasuhiro, to Japan Tobacco, Inc. Process for preparing tobacco flavoring formulations. 4,605,016, Cl. 131-297.000.
Sogoian, George C.: *See—*
Hibbs, Louis E., Jr.; and Sogoian, George C., 4,605,343, Cl. 407-119.000.
Sohajda, Attila: *See—*
Bernath, Gabor; Kobor, Jeno; Folop, Ferenc; Sohajda, Attila; Kalman, Alajos; Ezer, Elemer; Hajos, Gyorgy; Palosi, Eva; Denes, Laszlo ; and Szporny, Laszlo , 4,605,653, Cl. 514-226.000.
Sohio Alternate Energy Development Co.: *See—*
Burgess, Lester E.; McGarry, Phillip E.; and Herman, David E., 4,605,494, Cl. 209-166.000.
McGarry, Phillip E.; Herman, David E.; Treskot, Robert A.; and Fistner, David C., Sr., 4,605,420, Cl. 44-1.00R.
Solar Turbines Incorporated: *See—*
Metcalfe, Arthur G., 4,604,780, Cl. 29-156.80R.
Solvay & Cie. (Societe Anonyme): *See—*
Ninane, Leon; Breton, Claude; and Guerdon, Constant, 4,605,771, Cl. 564-497.000.
Sonobe, Hiraku, to Canon Kabushiki Kaisha. Automatic sheet processing device having tiltable collecting tray adjacent corner binder station. 4,605,211, Cl. 270-53.000.
Sony Corporation: *See—*
Collins, Mark C., 4,605,966, Cl. 358-160.000.
Hayashi, Toshihide, 4,605,968, Cl. 358-188.000.
Saita, Koji; Kanehira, Kenichi; and Uba, Tomohisa, 4,605,878, Cl. 313-406.000.
Sakamoto, Masamichi, 4,606,033, Cl. 372-45.000.
Sugiki, Mikio; and Watanabe, Kenjiro, 4,606,018, Cl. 369-279.000.
Takeshita, Kaneyoshi, 4,605,862, Cl. 250-578.000.
Wilkinson, James H.; and Creed, David M., 4,605,953, Cl. 358-24.000.
Soplar SA: *See—*
Lehner, Alwin, 4,605,462, Cl. 156-245.000.
Sorber, Robert, to Keane Monroe Corporation. Automatic sliding door operator. 4,604,826, Cl. 49-31.000.
Sorenco, Inc.: *See—*
Reynolds, Gordon S.; and Kendall, Sherman L., 4,605,019, Cl. 132-9.000.
Sorli, Duncan C.: *See—*
Livingston, James J.; and Sorli, Duncan C., 4,605,297, Cl. 354-303.000.
Sotoma, Koichi: *See—*
Fujimura, Gen; Sotoma, Koichi; Kunikyo, Hiroshi; Hata, Masahito; and Inoue, Hidesuke, 4,605,562, Cl. 426-299.000.
Soula, Gerard: *See—*
Lepage, Jean-Luc; and Soula, Gerard, 4,605,543, Cl. 423-347.000.
Soundfold, Inc.: *See—*
Sickels, Anthony R., 4,605,088, Cl. 181-30.000.
Soutsos, Michael D. Drill pipe turning device. 4,604,922, Cl. 81-57.170.
Sparks, Jimmy L., to Horse Health Products, Inc. Cutting device for limb wrappings. 4,604,804, Cl. 30-294.000.
Spear, Robert J.; and Redman, Lance D., to Commonwealth of Australia, The. Firing cap composition containing lead styphnate. 4,605,453, Cl. 149-24.000.
Spector, George: *See—*
Mahana, Elliott; and Spector, George, 4,605,219, Cl. 272-75.000.
Sperry Corporation: *See—*
Matthews, Hugh B., 4,605,977, Cl. 360-103.000.
Spetsialnoe Konstruktorskoe Bjuro "Transprogress" : *See—*
Alexandrov, Adolf M.; Bulginov, Evgeny F.; Yashin, Jury A.; Tsernes, Vladimir Y.; and Volyansky, Igor I., 4,605,247, Cl. 285-9.200.
Spetsialnoe Proektno-Konstruktorskoe I Tekhnologicheskoe Bjuro Po Pogruzhnomu Elektrooborudovaniju Dlya Burenia Skvazhin I Dobychi Nefti VNPO "Potentsial" : *See—*
Kravchenko, Jury B.; Baru, Jury A.; Osyatinsky, Saul G.; Timoshin, Jury V.; Makogon, Anatoly I.; Lobas, Igor P.; Gasilovsky, Kim S.; Livshits, Inna Z.; and Besedin, Alexei N., 4,605,089, Cl. 181-114.000.
Spivack, John D.; and Ravichandran, Ramanathan, to Ciba-Geigy Corporation. Substituted dibenzo dioxaphosphepins and dioxaphosphocins as stabilizers. 4,605,692, Cl. 524-117.000.
Sprang, Richard W., to Clevepak Corporation. Seal means for a flush valve assembly. 4,604,763, Cl. 4-391.000.
Springston, Preston S.; and Claxton, Richard L., to United States of America, Navy. Expedient runway surfacing with post tensioning system for expeditionary airfields. 4,605,337, Cl. 404-35.000.
Sprintschnik, Gerhard: *See—*
Stroszynski, Joachim; Niederstatter, Walter; and Sprintschnik, Gerhard, 4,605,480, Cl. 204-211.000.
SRI International: *See—*
Roberts, Daryl L.; and Laine, Richard M., 4,605,475, Cl. 204-130.000.
St Sensortechnik AG: *See—*
Kagi, Bruno, 4,604,901, Cl. 73-731.000.
Stahl, Glenn L.: *See—*
Orlowski, Ronald C.; Seyler, Jay K.; and Stahl, Glenn L., 4,605,514, Cl. 530-307.000.
Orlowski, Ronald C.; and Stahl, Glenn L., 4,605,515, Cl. 530-307.000.
Stammler, Kurt: *See—*
Bentz, Willy; Gansert, Willi; Jakob, Gert; Stammler, Kurt; and Walter, Christoph, 4,605,986, Cl. 361-386.000.
Standadyne, Inc.: *See—*
Kelly, William W., 4,605,166, Cl. 239-96.000.
Standard Oil Company, The: *See—*
Boos, Donald L., 4,604,788, Cl. 29-570.000.
Marse, Allen V.; Bennett, Phil D.; and Boos, Donald L., 4,605,989, Cl. 361-433.000.
Standard Oil Company (Indiana): *See—*
Helmly, Paul K., Jr.; Forster, Fred D., Jr.; Gower, Patrick E.; Holdaway, Steven D.; Tutman, Stanley W.; Beissel, Timothy J.; Needham, Robert J.; and Lasky, Arthur J., 4,605,081, Cl. 177-25.000.
Windgassen, Richard J.; and Waynick, J. Andrew, 4,605,507, Cl. 252-45.000.
Stanley Works, The: *See—*
Remington, John L.; and Boyer, Jon A., 4,604,838, Cl. 52-73.000.
Stanner, Donald: *See—*
DeWitt, Albert C.; Herriges, Donald W.; and Stanner, Donald, 4,605,216, Cl. 271-18.300.
Stanton, David B.: *See—*
Billig, Ernst; and Stanton, David B., 4,605,780, Cl. 568-454.000.
Stanton, Douglas A., to North American Philips Corporation. Blackened optical transmission system. 4,605,283, Cl. 350-127.000.
State of Israel, Ministry of Defense, Rafael Armament Auth.: *See—*
Tehori, Ahikam, 4,605,916, Cl. 333-245.000.
State of Israel, Prime Minister's Office, Atomic Energy Commission: *See—*
Buchman, Ouri; and Pri-Bar, Ilan, 4,605,749, Cl. 549-70.000.
Stauffer Chemical Company: *See—*
DiSalvo, Anthony L.; and Tsai, Chung-Chieh, 4,605,711, Cl. 525-438.000.
Leone-Bay, Andrea, 4,605,755, Cl. 560-101.000.
Robbins, Jeffery D., 4,605,522, Cl. 260-502.50F.
Stauffer, John E. Low volatile fluorine process for making elemental phosphorus. 4,605,540, Cl. 423-322.000.
Stayer Company, Inc., The: *See—*
Wilens, Seymour, 4,605,058, Cl. 165-80.200.
Steele, Roy B.; Kirk, Thomas E.; Robinson, Melvin T.; and Anderson, Stephen W., to General Motors Corporation. Bridge rectifier. 4,606,000, Cl. 363-145.000.
Stenger, Antoine: *See—*
Cousse, Henri; Mouzin, Gilbert; Rieu, Jean-Pierre; Briley, Mike; and Stenger, Antoine, 4,605,654, Cl. 514-237.000.
Stenger, Donald D.; and Coulahan, John F., to General Dynamics Corporation/Convair Div. Cold welded joint. 4,605,156, Cl. 228-127.000.
Stenkvist, Sven-Einar: *See—*
Lassander, Erik; and Stenkvist, Sven-Einar, 4,606,055, Cl. 373-108.000.
Stenmark, Lars. Spectral discrimination pyrometer. 4,605,314, Cl. 374-127.000.
Stephan, Karl. Pile splice. 4,605,340, Cl. 405-252.000.
Stephens, David C.; and Morgan, Craig D. Spinal stabilizer. 4,604,995, Cl. 128-69.000.
Stephenson, Martin F., to Boeing Company, The. Wing flap mechanism. 4,605,187, Cl. 244-216.000.
Sterling Drug Inc.: *See—*
Riley, Derek C.; and Johnston, David, 4,605,517, Cl. 540-52.000.
Sterritt, David W.: *See—*
Gordon, Alan J.; Sterritt, David W.; and Evans, Robert, 4,604,964, Cl. 118-50.000.
Stevens, Erik; and Van Hoeyveld, Ernestina M., to Tetra Consultants, Inc. Method of producing allergenic extracts. 4,605,557, Cl. 424-91.000.
Stevens, Robert W.; and Markovitz, Mark, to General Electric Company. Method of treating a carbon current collection brush blank and brush resulting therefrom. 4,605,581, Cl. 428-96.000.
Stevenson, James C.: *See—*
Christie, Nick J.; Cox, Randall A.; James, Robert E.; and Stevenson, James C., 4,605,418, Cl. 8-192.000.
Stewart, Clare A., Jr.: *See—*
Englert, Joseph F., Jr.; Maurin, Louis J., III; and Stewart, Clare A., Jr., 4,605,800, Cl. 570-228.000.
Stewart-Warner Corporation: *See—*
Johnson, Myron J.; and Kao, Mark C. C., 4,605,039, Cl. 137-460.000.
Stichting Rega VZW: *See—*
Holy , Antonin; and de Clercq, Erik, 4,605,658, Cl. 514-261.000.
Stokoe, Philip T., to Augat Inc. Locking tool for manipulation of electronic components. 4,605,256, Cl. 294-99.200.
Storey, Robert W.: *See—*
Martin, Thomas F.; Storey, Robert W.; Schoenenberger, Carl F.; and Chenoweth, John S., 4,606,072, Cl. 455-4.000.

Streifer, William: *See—*
Scifres, Donald R.; Streifer, William; and Burnham, Robert D., 4,606,032, Cl. 372-38.000.

Strobel, Rolf: *See—*
Bausch, Wilhelm L.; Strobel, Rolf; Bullinger, Siegfried; Harlass, Harald; and Busch, Walter, 4,605,047, Cl. 141-83.000.

Stroszynski, Joachim; Niederstatter, Walter; and Sprintschnik, Gerhard, to Hoechst Aktiengesellschaft. Device for continuously anodically oxidizing aluminum strips on one surface thereof and use of these aluminum strips in the production of offset printing plates. 4,605,480, Cl. 204-211.000.

Strowik, Willibald: *See—*
Kluting, Bernd; Ebeling, Peter; and Strowik, Willibald, 4,605,192, Cl. 248-394.000.

Sturdy, Harry D., to Sturdy Truck Equipment, Inc. Road and engine speed governor with linear actuator. 4,604,976, Cl. 123-361.000.

Sturdy Truck Equipment, Inc.: *See—*
Sturdy, Harry D., 4,604,976, Cl. 123-361.000.

Sturgeon, Gerald E.; and Derman, Robert I., to General Electric Company. Rotary compressor and method of assembly. 4,605,362, Cl. 418-63.000.

Sudo, Yozo; Mori, Hiroyuki; and Murai, Atsuya, to Fujitsu Limited. Phone conference system. 4,605,823, Cl. 179-18.0BC.

Sugihara, Kunio: *See—*
Sato, Mitsunobu; Katsuragi, Yasuhiro; Sakano, Yasuo; Sugihara, Kunio; and Aimoto, Kenji, 4,605,555, Cl. 424-85.000.
Sato, Mitsunobu; Katsuragi, Yasuhiro; Sakano, Yasuo; Sugihara, Kunio; and Aimoto, Kenji, 4,605,556, Cl. 424-85.000.

Sugiki, Mikio; and Watanabe, Kenjiro, to Sony Corporation. Optical recording medium. 4,606,018, Cl. 369-279.000.

Sugimura, Kimio: *See—*
Ide, Tatsumi; Sakurai, Toshifumi; Izumi, Masahiro; and Sugimura, Kimio, 4,605,917, Cl. 335-128.000.

Sugita, Hiroshi; and Hiramitsu, Tetsushi, to Toyoda Gosei Co., Ltd. Steering wheel. 4,604,912, Cl. 74-484.00R.

Sugiura, Saburo; Ikeda, Masanobu; and Demukai, Noboru, to Daido Tokushuko Kabushiki Kaisha. Reactor iron making. 4,605,437, Cl. 75-43.000.

Sugiyama, Yoshihide: *See—*
Onishi, Tetsuo; and Sugiyama, Yoshihide, 4,605,926, Cl. 340-825.300.

Suhara, Yasuji: *See—*
Fujiu, Morio; Suhara, Yasuji; and Ishitsuka, Hideo, 4,605,674, Cl. 514-685.000.

Suiter, Weyman B., Jr.: *See—*
Bowman, Wayne C.; Malik, Randhir S.; Seidel, Harold; Suiter, Weyman B., Jr.; and Ziesse, Norman G., 4,605,999, Cl. 363-19.000.

Suk, Young J. Golf club head covers. 4,605,050, Cl. 150-52.00G.

Sukharevsky, Boris P., to Huck Manufacturing Company. Automated installation tool for blind fasteners. 4,604,889, Cl. 72-391.000.

Sukup, Eugene G. Drying bin floor. 4,604,842, Cl. 52-263.000.

Sulzer-Escher Wyss AG: *See—*
Lehmann, Rolf; and Christ, Alfred, 4,605,366, Cl. 425-143.000.

Sumi, Akiyasu, to Canon Kabushiki Kaisha. Motor built-in lens mounting. 4,605,286, Cl. 350-429.000.

Sumida, Akio, to Kawachi Aluminium Casting Co., Ltd. Casting apparatus including a conductor for electromagnetic induction heating. 4,605,054, Cl. 164-147.100.

Sumitomo Chemical Company, Limited: *See—*
Kataoka, Yushin; Matsuda, Masaaki; Ochi, Kenji; and Aoi, Masahiro, 4,605,706, Cl. 425-340.000.
Matsuda, Teruo; Shimizu, Shinkichi; and Iwasa, Masaaki, 4,605,779, Cl. 568-450.000.
Ninomiya, Sunao; Miura, Yasuhiro; Iwata, Hiromu; and Matsuyama, Shuji, 4,605,857, Cl. 250-372.000.
Takahashi, Junya; Kato, Toshiro; Noguchi, Hiroshi; Oguri, Yukio; Yamamoto, Shigeo; and Kamoshita, Katsuzo, 4,605,668, Cl. 514-485.000.

Sumitomo Electric Industries, Ltd.: *See—*
Kudoh, Kazunao; and Hashimoto, Yoshikazu, 4,605,533, Cl. 428-622.000.
Matsuura, Takayuki; and Miyazaki, Kenji, 4,604,860, Cl. 57-9.000.
Matsuura, Takayuki; and Miyazaki, Kenji, 4,604,861, Cl. 57-9.000.

Sumitomo Light Metal Industries, Ltd.: *See—*
Baba, Yoshio; and Tsuchida, Shin, 4,605,448, Cl. 148-11.50A.

Summers, James B., Jr., to Abbott Laboratories. Lipoxygenase inhibiting naphthohydroxamic acids. 4,605,669, Cl. 514-575.000.

Sumoto, Kunihiro: *See—*
Miyano, Seiji; Sumoto, Kunihiro; Satoh, Fumio; and Cho, Hidetsura, 4,605,662, Cl. 514-413.000.

Sun Star Kabushiki Kaisha: *See—*
Sato, Mitsunobu; Katsuragi, Yasuhiro; Sakano, Yasuo; Sugihara, Kunio; and Aimoto, Kenji, 4,605,555, Cl. 424-85.000.
Sato, Mitsunobu; Katsuragi, Yasuhiro; Sakano, Yasuo; Sugihara, Kunio; and Aimoto, Kenji, 4,605,556, Cl. 424-85.000.

Sunbeam Corporation: *See—*
Cockroft, James B., 4,605,883, Cl. 318-312.000.

Sundberg, Jack G.; and Haynes, Paul L., Jr., to Chandler Evans Inc. High thrust capacity shaft seal assembly for fuel pumps. 4,605,235, Cl. 277-87.000.

Sunds Defibrator AB: *See—*
Cederquist, Karl N., 4,604,957, Cl. 110-238.000.

Sundstrand Corporation: *See—*
Burandt, Wesley A., 4,605,358, Cl. 417-236.000.
Walsh, Richard E., 4,605,363, Cl. 418-131.000.

Sunrise Meisei Corporation: *See—*
Shimada, Yoshitaka; Kadowaki, Kimihiro; and Inouchi, Teruo, 4,605,569, Cl. 427-256.000.

Suntory Ltd.: *See—*
Miyano, Seiji; Sumoto, Kunihiro; Satoh, Fumio; and Cho, Hidetsura, 4,605,662, Cl. 514-413.000.

Superior Walls of America, Ltd.: *See—*
Zimmerman, Melvin M., 4,605,529, Cl. 264-263.000.

Supplee, Frank H., Jr.: *See—*
Tcheng, Ping; and Supplee, Frank H., Jr., 4,604,903, Cl. 73-862.040.

Surgidev Corporation: *See—*
Grendahl, Dennis T., 4,605,410, Cl. 623-6.000.

Sutton, Noel W.: *See—*
Kurzeja, Patrick L.; Sutton, Noel W.; and Hahn, Steven C., 4,605,384, Cl. 464-111.000.

Suyama, Tadakazu: *See—*
Yokoyama, Kazumasa; Fukaya, Chikara; Tsuda, Yoshio; Ono, Taizo; Arakawa, Yoshio; Inoue, Yoshihisa; Naito, Youichiro; and Suyama, Tadakazu, 4,605,650, Cl. 514-183.000.
Yokoyama, Kazumasa; Inoue, Yoshihisa; Ono, Taizo; Fukaya, Chikara; Arakawa, Yoshio; Naito, Youichiro; Yamauchi, Koichi; and Suyama, Tadakazu, 4,605,786, Cl. 568-669.000.

Suzuki, Hajime: *See—*
Nose, Katsuhiko; Suzuki, Hajime; and Makimura, Osamu, 4,605,591, Cl. 428-332.000.

Suzuki, Masahiko; Koroyanagi, Masatoshi; Moriguchi, Kouichi; and Matsui, Kazuma, to Nippondenso Co., Ltd. Radial plunger pump. 4,605,359, Cl. 417-270.000.

Suzuki, Masanori: *See—*
Miyoshi, Kenichi; Suzuki, Masanori; and Fuwa, Toru, 4,605,735, Cl. 536-27.000.

Suzuki, Mikio: *See—*
Honaga, Susumu; and Suzuki, Mikio, 4,605,085, Cl. 180-143.000.

Suzuki, Shigeharu: *See—*
Araoka, Toshinobu; and Suzuki, Shigeharu, 4,605,497, Cl. 210-111.000.

Suzuki, Shoichi: *See—*
Tachi, Kazuyuki; Okuda, Chikaaki; and Suzuki, Shoichi, 4,605,168, Cl. 239-112.000.

Suzuki, Tadashi; Kishi, Norimasa; Tomikashi, Minoru; and Futami, Toru, to Nissan Motor Company, Limited. Data transmission/reception network system. 4,606,022, Cl. 370-85.000.

Suzuki, Toshio, to Toray Silicone Co., Ltd. Method for suppressing the generation of hydrogen gas from cured silicone materials. 4,605,722, Cl. 528-15.000.

Suzumura, Masanaga: *See—*
Tanaka, Tadao; Chikamori, Sunao; Harara, Mitsuhiko; Taniguchi, Yasutaka; Suzumura, Masanaga; Tatemoto, Minoru; Kumagai, Naotake; Abe, Hiroki; and Takizawa, Shozo, 4,605,244, Cl. 280-707.000.

Swartout, James J.; and Scott, William D. Stair step routing template. 4,605,048, Cl. 144-136.00B.

Swartwood, James M. Reversible expansible chamber hydraulic pump. 4,605,360, Cl. 417-518.000.

Swoboda, Johann: *See—*
Mitulla, Konrad; Hambrecht, Juergen; Echte, Adolf; Swoboda, Johann; Siebel, Peter; Schwaab, Josef; and Frank, Herbert, 4,605,699, Cl. 525-67.000.

Syntex Pharmaceuticals International Ltd.: *See—*
Schloemer, George C., 4,605,758, Cl. 562-418.000.

Syntex (U.S.A.) Inc.: *See—*
Khanna, Pyare, 4,605,754, Cl. 560-19.000.
Verheyden, Julien P. H.; Martin, John C.; Madhaven, G. V. Bindu; McGee, Daniel P. C.; and Prisbe, Ernest J., 4,605,659, Cl. 514-262.000.

Syracuse University: *See—*
Dunham, Philip B.; and Weissmann, Gerald, 4,605,618, Cl. 435-29.000.

Sytwu, Iou-Iou: *See—*
Bolin, David R.; Meienhofer, Johannes A.; and Sytwu, Iou-Iou, 4,605,641, Cl. 514-12.000.

Szappanos, Adam: *See—*
Retfalvi, Ferenc; Lukacs, Laszlo ; Molnar, Laszlo ; Dozsa, Gyorgy; and Szappanos, Adam, 4,605,836, Cl. 219-130.010.

Szeberenyi, Szabolcs: *See—*
Toth, Edit; Torley, Jozsef; Palosi, Eva; Szeberenyi, Szabolcs; Szporny, Laszlo ; Gorog, Sandor; and Hajdu, Istvan, 4,605,785, Cl. 568-649.000.

Szeger, Annie M.: *See—*
Duret, Bernard; Dall'oro, Guido G.; Jollivet, Alain; and Szeger, Annie M., 4,605,846, Cl. 235-468.000.

Szporny, Laszlo : *See—*
Bernath, Gabor; Kobor, Jeno; Folop, Ferenc; Sohajda, Attila; Kalman, Alajos; Ezer, Elemer; Hajos, Gyorgy; Palosi, Eva; Denes, Laszlo ; and Szporny, Laszlo , 4,605,653, Cl. 514-226.000.
Toth, Edit; Torley, Jozsef; Fekete, Gyorgy; Szporny, Laszlo ; Vereczkey, Laszlo ; Palosi, Eva; Klebovich, Imre; Vittay, Pal; Gorog, Sandor; and Hajdu, Istvan, 4,605,672, Cl. 514-648.000.
Toth, Edit; Torley, Jozsef; Palosi, Eva; Szeberenyi, Szabolcs; Szporny, Laszlo ; Gorog, Sandor; and Hajdu, Istvan, 4,605,785, Cl. 568-649.000.

Tabata, Norikazu: *See—*
Hishii, Masao; Tanaka, Masaaki; Sato, Yukio; Nagai, Haruhiko; and Tabata, Norikazu, 4,606,035, Cl. 372-87.000.

Tachi, Kazuyuki; Okuda, Chikaaki; and Suzuki, Shoichi, to Kabushiki Kaisha Toyota Chuo Kenkyusho. Rotating spraying type coating apparatus with wash shroud. 4,605,168, Cl. 239-112.000.

Tada, Kuniyuki: *See—*
Miwa, Kishio; Tada, Kuniyuki; and Inoue, Takehisa, 4,605,799, Cl. 570-211.000.

Taiho Kogyo Co., Ltd.: *See—*
Nakamura, Masao, 4,605,458, Cl. 156-164.000.

Tait, Robert C.: *See—*
Kado, Clarence; Tait, Robert C.; and Lundquist, Ronald C., 4,605,627, Cl. 435-317.000.

Tajima, Eiichi: *See—*
Kidokoro, Susumu; and Tajima, Eiichi, 4,605,463, Cl. 156-247.000.

Tajima Oyo Kako Kabushiki Kaisha: *See—*
Kidokoro, Susumu; and Tajima, Eiichi, 4,605,463, Cl. 156-247.000.

Takabayashi, Katsuyuki: *See—*
Nagasawa, Takeshi; Kuroiwa, Katsumasa; Takabayashi, Katsuyuki; and Nakamura, Yoshio, 4,605,614, Cl. 435-13.000.

Takada, Isao: *See—*
Ohtsubo, Hiroshi; Takada, Isao; and Kawasaki, Tatsuo, 4,604,887, Cl. 72-368.000.

Takahashi, Hiroshi: *See—*
Takemura, Tohru; Yoshida, Haruhiko; Mukai, Takuma; Takahashi, Hiroshi; and Fujinaga, Yoshikazu, 4,605,500, Cl. 210-321.100.

Takahashi, Junya; Kato, Toshiro; Noguchi, Hiroshi; Oguri, Yukio; Yamamoto, Shigeo; and Kamoshita, Katsuzo, to Sumitomo Chemical Company, Limited. Fungicidal carbamate compounds. 4,605,668, Cl. 514-485.000.

Takahashi, Katsumasa, to Kitagawa Industries Co., Ltd. Spacer for mounting boards. 4,604,776, Cl. 24-453.000.

Takahashi, Kenji: *See—*
Nakamura, Takashi; and Takahashi, Kenji, 4,605,861, Cl. 250-484.100.

Takahashi, Yasuie: *See—*
Fukuchi, Hisashi; Shibuya, Masayuki; and Takahashi, Yasuie, 4,605,109, Cl. 192-4.00C.

Takai, Haruki, to NEC Corporation. Receive data processing device for TDMA satellite communications network. 4,606,019, Cl. 370-13.000.

Takano, Toshio, to Fuji Jukogyo Kabushiki Kaisha; and Van Doorne's Transmissie B.V. Control system for an infinitely variable transmission with an electromagnetic powder clutch. 4,605,112, Cl. 192-0.033.

Takasago Perfumery Co., Ltd.: *See—*
Kumobayashi, Hidenori; and Akutagawa, Susumu, 4,605,750, Cl. 556-7.000.

Takasu, Hiromi: *See—*
Ishii, Toshihiko; and Takasu, Hiromi, 4,605,944, Cl. 357-17.000.

Takayanagi, Takashi: *See—*
Asao, Yasuzi; and Takayanagi, Takashi, 4,605,612, Cl. 430-538.000.

Takeda, Shigekazu. Detectable card and entry and departure checking apparatus utilizing the same. 4,605,845, Cl. 235-382.000.

Takemura, Tohru; Yoshida, Haruhiko; Mukai, Takuma; Takahashi, Hiroshi; and Fujinaga, Yoshikazu, to Mitsubishi Rayon Co., Ltd. Hollow-fiber filter module. 4,605,500, Cl. 210-321.100.

Takeshita, Kaneyoshi, to Sony Corporation. Solid state image pickup apparatus. 4,605,862, Cl. 250-578.000.

Takeshita, Tsuneichi, to Du Pont de Nemours, E. I., and Company. Heat resistant sulfur-modified polychloroprene copolymers. 4,605,705, Cl. 525-330.900.

Takeuchi, Hiroaki: *See—*
Ando, Masamoto; Takeuchi, Hiroaki; Yamada, Toyohisa; and Yamanaka, Toshihiko, 4,605,263, Cl. 303-116.000.

Takeuchi, Yukihisa; Mori, Masaaki; Maekawa, Kenji; and Nishizawa, Toshiaki, to Nippondenso Co., Ltd. Amorphous silicon solar battery. 4,605,813, Cl. 136-244.000.

Takeuchi, Yukihisa: *See—*
Yoshida, Hitoshi; Takeuchi, Yukihisa; and Miura, Yasunao, 4,604,869, Cl. 60-311.000.

Takeuchui, Yoshinori: *See—*
Inoue, Yohichi; Tanaka, Katsuyuki; Takeuchui, Yoshinori; Koromegawa, Isao; Yamaguchi, Yuzoo; and Saitoh, Yokuo, 4,605,979, Cl. 360-105.000.

Takizawa, Shozo: *See—*
Tanaka, Tadao; Chikamori, Sunao; Harara, Mitsuhiko; Taniguchi, Yasutaka; Suzumura, Masanaga; Tatemoto, Minoru; Kumagai, Naotake; Abe, Hiroki; and Takizawa, Shozo, 4,605,244, Cl. 280-707.000.

Tamai, Yasuo: *See—*
Ogawa, Hiroshi; and Tamai, Yasuo, 4,605,597, Cl. 428-522.000.

Tamaki, Satoshi: *See—*
Kakeya, Nobuharu; Nishizawa, Susumu; Tamaki, Satoshi; and Kitao, Kazuhiko, 4,605,651, Cl. 514-200.000.

Tammen, James F.: *See—*
Oglevee, J. Robert; Tammen, James F.; and O'Donovan, Wendy O., 4,604,824, Cl. 47-1.00A.

Tanaka, Katsuyuki: *See—*
Inoue, Yohichi; Tanaka, Katsuyuki; Takeuchui, Yoshinori; Koromegawa, Isao; Yamaguchi, Yuzoo; and Saitoh, Yokuo, 4,605,979, Cl. 360-105.000.

Tanaka, Kazumi: *See—*
Oinuma, Senzo; Tanaka, Kazumi; Shiino, Kazuo; and Watanabe, Hiroki, 4,605,003, Cl. 128-328.000.

Tanaka, Masaaki: *See—*
Hishii, Masao; Tanaka, Masaaki; Sato, Yukio; Nagai, Haruhiko; and Tabata, Norikazu, 4,606,035, Cl. 372-87.000.

Tanaka, Tadao; Chikamori, Sunao; Harara, Mitsuhiko; Taniguchi, Yasutaka; Suzumura, Masanaga; Tatemoto, Minoru; Kumagai, Naotake; Abe, Hiroki; and Takizawa, Shozo, to Mitsubishi Jidosha Kogyo Kabushiki Kaisha. Vehicle suspension apparatus. 4,605,244, Cl. 280-707.000.

Taniguchi, Yasutaka: *See—*
Tanaka, Tadao; Chikamori, Sunao; Harara, Mitsuhiko; Taniguchi, Yasutaka; Suzumura, Masanaga; Tatemoto, Minoru; Kumagai, Naotake; Abe, Hiroki; and Takizawa, Shozo, 4,605,244, Cl. 280-707.000.

Tanimoto, Hirotoshi: *See—*
Kamiguchi, Taiji; Yamada, Mutsuo; Arikawa, Yoshijiro; Kuwahara, Takanori; Tanimoto, Hirotoshi; Nishimura, Yasuyuki; and Kaku, Hiroyuki, 4,605,776, Cl. 568-401.000.

Tantalon Halifax Co.: *See—*
Covill, Dennis H., 4,605,910, Cl. 332-9.00R.

Taoka Chemical Company, Limited: *See—*
Kawashita, Hideo; Ikeda, Takuo; and Sakaguchi, Sanae, 4,605,442, Cl. 106-22.000.

Taragna, Luigi; and Giovannelli, Antonio, to Italcaps S.p.A. Bottle cap. 4,605,137, Cl. 215-254.000.

Taragna, Luigi; and Giovannelli, Antonio, to Italcaps S.p.A. Bottle cap. 4,605,138, Cl. 215-254.000.

Tarvin, Robert F.: *See—*
Guerro, Gerald J.; Proverb, Robert J.; and Tarvin, Robert F., 4,605,702, Cl. 525-154.000.

Taschner, Edwin C.; and Myzska, Edward M., to United States of America, Air Force. Rotor blade test apparatus. 4,604,896, Cl. 73-583.000.

Tatemichi, Shinichiro, to Tokyo Shibaura Denki Kabushiki Kaisha. Operating method for nuclear power plants. 4,605,530, Cl. 376-237.000.

Tatemoto, Minoru: *See—*
Tanaka, Tadao; Chikamori, Sunao; Harara, Mitsuhiko; Taniguchi, Yasutaka; Suzumura, Masanaga; Tatemoto, Minoru; Kumagai, Naotake; Abe, Hiroki; and Takizawa, Shozo, 4,605,244, Cl. 280-707.000.

Tau, Kwoliang D., to Celanese Corporation. Production of 2-methylbutanal. 4,605,781, Cl. 568-454.000.

Taub Family Trust: *See—*
Taub, Ronald H., 4,605,130, Cl. 211-59.200.

Taub, Ronald H., to Taub Family Trust. Article display stand with self-feeding hopper. 4,605,130, Cl. 211-59.200.

Taworski, Andre : *See—*
Petitcollin, Jean-Marc; and Taworski, Andre , 4,605,528, Cl. 264-216.000.

Taylor, Rita L.: *See—*
LaForest, Lance J.; and Taylor, Rita L., 4,605,412, Cl. 623-8.000.

Tcheng, Ping; and Supplee, Frank H., Jr., to United States of America, Administrator, National Aeronautics & Space Administration. Two-axis, self-nulling skin friction balance. 4,604,903, Cl. 73-862.040.

Tchitdjian, John K., to Garland Commercial Ranges Limited. Float valve control. 4,605,038, Cl. 137-399.000.

Tehori, Ahikam, to State of Israel, Ministry of Defense, Rafael Armament Auth. Transverse electromagnetic cells adapted for electromagnetic pulse testing. 4,605,916, Cl. 333-245.000.

Teijin Limited: *See—*
Watanabe, Kenzo; Kato, Yoshinori; Saito, Masahiko; Oba, Takeo; Fukushima, Hisashi; and Hara, Takeshi, 4,605,645, Cl. 514-51.000.

Tektronix, Inc.: *See—*
Hawkins, Jeffrey A., 4,605,970, Cl. 358-265.000.
Penney, Bruce J., 4,605,868, Cl. 307-351.000.
Rath, Dale R., 4,605,879, Cl. 313-407.000.

Teledyne Industries, Inc.: *See—*
Barbeau, Dennis E., 4,605,101, Cl. 184-6.110.
Penrice, Thomas W.; and Bost, James, 4,605,599, Cl. 428-665.000.
Rosenthal, Bruce D.; and Gray, Richard L., 4,605,907, Cl. 330-257.000.

Teledyne Penn-Union: *See—*
Martin, William C., 4,604,890, Cl. 72-453.160.

Telewe', Inc.: *See—*
Clem, William E.; and Trethewey, William C., 4,605,240, Cl. 280-236.000.

Temtec Inc.: *See—*
Haas, David J.; and Autote, Alexander J., 4,605,246, Cl. 282-29.00A.

Tenjin, Nobuyoshi: *See—*
Soga, Kiyomi; Tenjin, Nobuyoshi; Tohira, Hiroyuki; Ninomiya, Naoyoshi; and Nishikata, Yasuhiro, 4,605,016, Cl. 131-297.000.

Teramachi, Hiroshi. Recirculating-ball rotary-to-linear converter with an improved ball return guide. 4,604,911, Cl. 74-424.80R.

Terano, Hiroshi: *See—*
Hori, Yasuhiro; Hino, Motohiro; Terano, Hiroshi; Hashimoto, Masashi; and Kohsaka, Masanobu, 4,605,559, Cl. 424-120.000.

Teraoka Seiko Co., Ltd.: *See—*
Matsuura, Yoshikazu, 4,605,082, Cl. 177-25.000.

Terashima, Kazutaka; and Fukuda, Tsuguo, to Agency of Industrial Science & Technology; and Ministry of International Trade & Industry. Apparatus for manufacturing semiconductor single crystal. 4,606,037, Cl. 373-6.000.

Terhune, James H., to General Electric Company. Personal radiation dosimeter. 4,605,858, Cl. 250-374.000.

Terlouw, Teunis: *See—*
Scott, Andrew M.; Quist, Bernardus B.; and Terlouw, Teunis, 4,605,352, Cl. 414-217.000.

Terry, Kenneth A.: *See—*
Dolan, Donald T.; Ross, William A.; and Terry, Kenneth A., 4,605,937, Cl. 346-76.0PH.

Tesa S.A.: *See—*
Jeannet, Jean-Pierre; Zumbrunnen, Eric; and Cartisano, Roberto, 4,604,808, Cl. 33-143.00M.
Tetenbaum, Marvin T.: *See—*
Hart, Terence J.; Dowbenko, Rostyslaw; Maska, Rudolf; Van Buskirk, Ellor J.; and Tetenbaum, Marvin T., 4,605,476, Cl. 204-181.600.
Tetra Consultants, Inc.: *See—*
Stevens, Erik; and Van Hoeyveld, Ernestina M., 4,605,557, Cl. 424-91.000.
Tetra Pak Developpement S.A.: *See—*
Reil, Wilhelm, 4,604,850, Cl. 53-423.000.
Teumer, Henry E. Check valve. 4,605,041, Cl. 137-527.000.
Texaco Development Corporation: *See—*
Koog, Wolfgang, 4,605,423, Cl. 48-69.000.
Texaco Inc.: *See—*
Knifton, John F., 4,605,677, Cl. 518-700.000.
Sellstrom, Kathy B.; and Waddill, Harold G., 4,605,688, Cl. 523-218.000.
Texas Instruments Incorporated: *See—*
DeFilippis, Pietro; Salvatore, Amedeo; and Biscione, Mario, 4,605,277, Cl. 339-262.00R.
Shih, Hung-Dah; and Bennett, Tommy J., 4,605,469, Cl. 156-610.000.
Textron Inc.: *See—*
DeCaro, Charles J., 4,605,348, Cl. 408-239.00A.
Thaddey, Kurt, to Prontophot Holding AG. Device for exposing and separating photographic strip-material for the production of margin-less copies. 4,605,300, Cl. 355-29.000.
Thakur, Manmohan S.: *See—*
Godrej, Nadir B.; and Thakur, Manmohan S., 4,605,430, Cl. 71-23.000.
Thatcher, Jerry T.: *See—*
Machnik, Patrick R.; Petersen, Bruce L.; Schultz, Robert G.; Thatcher, Jerry T.; and Whiting, Roscella A., 4,605,958, Cl. 358-84.000.
Thomas, Bruno; and Viart, Guy, to Fils et Cables D'Acier de Lens (Fical). Steel wire having superposed coatings resisting corrosion. 4,605,598, Cl. 428-659.000.
Thomas, Gary S.: *See—*
Knudsen, James K.; Koller, Allen C.; Skuratovsky, Eugene; and Thomas, Gary S., 4,604,900, Cl. 73-716.000.
Thomas, George T.: *See—*
Dodge, David C.; Knoop, David F.; Thomas, George T.; and Newman, James P., 4,605,508, Cl. 252-95.000.
Thomas, Ian M.; and Tillman, James J., to Owens-Illinois, Inc. Process for forming a doped oxide film and doped semiconductor. 4,605,450, Cl. 148-188.000.
Thomas Jefferson University: *See—*
Katz, Philip; Brenman, Henry S.; Hamarman, Henry; and Schwartz, Harold, 4,605,927, Cl. 340-825.190.
Thomas, John M.: *See—*
Ballantine, James A.; Gregory, Reginald; Purnell, John H.; Thomas, John M.; and Westlake, David J., 4,605,806, Cl. 585-467.000.
Thomas, Palmer D.: *See—*
Arroyo, Candido J.; Cogelia, Nicholas J.; and Thomas, Palmer D., 4,605,818, Cl. 174-107.000.
Thomas, Robert H.; Hammond, Willis B.; Friedberger, Michael P.; and Archie, William A., to Allied Corporation. Fluorochemical composition for coating soil resistant yarn. 4,605,587, Cl. 428-265.000.
Thompson, Arnold R., to Morton Thiokol, Inc. Actuator device. 4,605,104, Cl. 188-72.400.
Thompson, Levi T.: *See—*
Curtis, M: David; Schwank, Johannes W.; Thompson, Levi T.; and Williams, P. Douglas, 4,605,751, Cl. 556-29.000.
Thompson, Patricia A.; and Wood, Dot M. Permanent wave cape. 4,605,017, Cl. 132-1.00R.
Thompson, Richard J.: *See—*
Hoffmeister, Lawrence D.; and Thompson, Richard J., 4,604,939, Cl. 89-1.816.
Thompson, Robert A., to General Electric Company. Method and apparatus for optimizing grinding. 4,604,834, Cl. 51-165.710.
Thomson CSF: *See—*
Eumurian, Gregoire; and Levan, Jean-Pol, 4,605,899, Cl. 324-258.000.
Thoratec Laboratories Corporation: *See—*
Robinson, Thomas C., 4,604,762, Cl. 62-1.000.
Thornburgh, William F., to General Motors Corporation. Insulated engine air cleaner. 4,605,426, Cl. 55-267.000.
Thurner, Hans, to Bayrisches Druckgusswerk Thurner GmbH & Co. KG. Apparatus for wetting mold surfaces with a liquid. 4,605,170, Cl. 239-444.000.
Tillery, Arthur M.: *See—*
Farrens, Eldon F.; and Tillery, Arthur M., 4,605,149, Cl. 227-7.000.
Tillery, Elinor E.: *See—*
Farrens, Eldon F.; and Tillery, Arthur M., 4,605,149, Cl. 227-7.000.
Tillman, James J.: *See—*
Thomas, Ian M.; and Tillman, James J., 4,605,450, Cl. 148-188.000.
Tiltscher, Helmut; Wolf, Helmut; Schelchshorn, Joachim; and Dialer, Kurt. Process for restoring or maintaining the activity of heterogeneous catalysts for reactions at normal and low pressures. 4,605,811, Cl. 585-670.000.
Timoshin, Jury V.: *See—*
Kravchenko, Jury B.; Baru, Jury A.; Osyatinsky, Saul G.; Timoshin, Jury V.; Makogon, Anatoly I.; Lobas, Igor P.; Gasilovsky, Kim S.; Livshits, Inna Z.; and Besedin, Alexei N., 4,605,089, Cl. 181-114.000.
Tindale, Wendy B.: *See—*
Black, Martin M.; Drury, Philip J.; and Tindale, Wendy B., 4,605,407, Cl. 623-2.000.
Tobin, Philip J.: *See—*
Price, J. B.; Tobin, Philip J.; Pintchovski, Fabio; and Seelbach, Christian A., 4,605,947, Cl. 357-23.150.
Tocom Inc.: *See—*
Martin, Thomas F.; Storey, Robert W.; Schoenenberger, Carl F.; and Chenoweth, John S., 4,606,072, Cl. 455-4.000.
Todd, Terry J. M.; and Vulakovic, Josip, to Papaiz of Canada Limited. Latch actuator cam of door locks. 4,604,878, Cl. 70-139.000.
Todorof, William J. Method for producing multi-layer, thin-film, flexible silicon alloy photovoltaic cells. 4,604,791, Cl. 29-581.000.
Tofield, Robert H.: *See—*
Alling, Richard L.; Shepard, Richard W.; Landrum, Clyde L.; Tofield, Robert H.; and Podhajecki, Stephen T., 4,605,322, Cl. 384-575.000.
Tohira, Hiroyuki: *See—*
Soga, Kiyomi; Tenjin, Nobuyoshi; Tohira, Hiroyuki; Ninomiya, Naoyoshi; and Nishikata, Yasuhiro, 4,605,016, Cl. 131-297.000.
Tokai Rubber Industries, Ltd.: *See—*
Konishi, Keizo, 4,605,207, Cl. 267-57.10R.
Tokan Kogyo Co., Ltd.: *See—*
Itoh, Shoji; Yanagawa, Yukio; and Wakabayashi, Kouzo, 4,605,142, Cl. 220-359.000.
Tokyo Shibaura Denki Kabushiki Kaisha: *See—*
Komuro, Isaku; Sano, Yoshikazu; and Shibata, Shinichi, 4,605,825, Cl. 179-99.00R.
Nakamura, Masaru; Nitsuta, Kouichi; and Ozeki, Takeshi, 4,605,943, Cl. 357-17.000.
Oida, Yoshio, 4,606,059, Cl. 377-47.000.
Ramamurti, Krishnamurti, 4,606,061, Cl. 378-10.000.
Rung, Robert D., 4,605,872, Cl. 307-465.000.
Saito, Shozo, 4,606,010, Cl. 365-149.000.
Sekigawa, Tatsuaki; Gotoh, Akio; Tsutsumi, Syuitsu; Marui, Kuniyoshi; and Honda, Naoto, 4,606,050, Cl. 375-75.000.
Tatemichi, Shinichiro, 4,605,530, Cl. 376-237.000.
Tomiie, Kazuo: *See—*
Momose, Takashi; Tomiie, Kazuo; Harada, Hiroyuki; Miyachi, Hiroshi; and Kato, Hiroko, 4,605,685, Cl. 522-124.000.
Tomikashi, Minoru: *See—*
Suzuki, Tadashi; Kishi, Norimasa; Tomikashi, Minoru; and Futami, Toru, 4,606,022, Cl. 370-85.000.
Tomita, Masao: *See—*
Ochi, Atsuo; Hashima, Akio; and Tomita, Masao, 4,605,974, Cl. 360-62.000.
Tommasini, Rocco M.: *See—*
Kokoszka, Joseph M.; and Tommasini, Rocco M., 4,605,315, Cl. 374-144.000.
Tone, Junsuke: *See—*
Celmer, Walter D.; Cullen, Walter P.; Shibakawa, Riichiro; and Tone, Junsuke, 4,605,624, Cl. 435-253.000.
Tonsor, Andrew J., to Caterpillar Inc. Track shoe deflection stop for endless track assemblies. 4,605,264, Cl. 305-47.000.
Tools & Machinery Builders, Inc.: *See—*
Cook, Ronald, 4,605,391, Cl. 493-159.000.
Toray Industries, Inc.: *See—*
Miwa, Kishio; Tada, Kuniyuki; and Inoue, Takehisa, 4,605,799, Cl. 570-211.000.
Toray Silicone Co., Ltd.: *See—*
Suzuki, Toshio, 4,605,722, Cl. 528-15.000.
Torgrimson, Donald L., to Main Electric Construction, Inc. Wire reel carriage. 4,605,237, Cl. 280-47.240.
Torii, Masakatsu, to Saitama Kako Co., Ltd. Exercise apparatus. 4,605,224, Cl. 272-146.000.
Torley, Jozsef: *See—*
Toth, Edit; Torley, Jozsef; Fekete, Gyorgy; Szporny, Laszlo ; Vereczkey, Laszlo ; Palosi, Eva; Klebovich, Imre; Vittay, Pal; Gorog, Sandor; and Hajdu, Istvan, 4,605,672, Cl. 514-648.000.
Toth, Edit; Torley, Jozsef; Palosi, Eva; Szeberenyi, Szabolcs; Szporny, Laszlo ; Gorog, Sandor; and Hajdu, Istvan, 4,605,785, Cl. 568-649.000.
Torrington Company, The: *See—*
Alling, Richard L.; Shepard, Richard W.; Landrum, Clyde L.; Tofield, Robert H.; and Podhajecki, Stephen T., 4,605,322, Cl. 384-575.000.
Toth, Edit; Torley, Jozsef; Fekete, Gyorgy; Szporny, Laszlo ; Vereczkey, Laszlo ; Palosi, Eva; Klebovich, Imre; Vittay, Pal; Gorog, Sandor; and Hajdu, Istvan, to Richter Gedeon Vegyeszeti Gyar Rt. Diethylaminoalkoxybenzhydrol derivatives, process for their preparation and pharmaceutical compositions containing them. 4,605,672, Cl. 514-648.000.
Toth, Edit; Torley, Jozsef; Palosi, Eva; Szeberenyi, Szabolcs; Szporny, Laszlo ; Gorog, Sandor; and Hajdu, Istvan, to Richter Gedeon Vegyeszeti Gyar RT. 1,1-diphenylpropanol derivatives, process for their preparation and pharmaceutical compositions containing them. 4,605,785, Cl. 568-649.000.
Tottori Sanyo Electric Co., Ltd.: *See—*
Ishii, Toshihiko; and Takasu, Hiromi, 4,605,944, Cl. 357-17.000.
Toudo, Kenzi; Yiyanaka, Motoshi; and Hayata, Yoshiki, to Hitachi, Ltd. Digital control circuit. 4,605,863, Cl. 307-269.000.
Touro, Freddie J., to Freeport Minerals Company. Sulfide as a hypochlorite kill agent. 4,605,537, Cl. 423-29.000.

Toutain, Serge: *See—*
Ringeisen, Victor; Chive, Maurice; and Toutain, Serge, 4,605,012, Cl. 128-804.000.
Toyo Boseki Kabushiki Kaisha: *See—*
Nose, Katsuhiko; Suzuki, Hajime; and Makimura, Osamu, 4,605,591, Cl. 428-332.000.
Toyo Denki Kogyosho Co., Ltd.: *See—*
Araoka, Toshinobu; and Suzuki, Shigeharu, 4,605,497, Cl. 210-111.000.
Toyo Jozo Kabushiki Kaisha: *See—*
Ishikawa, Hidehiko; Misaki, Hideo; and Muto, Naoki, 4,605,615, Cl. 435-16.000.
Toyo Seikan Kaisha, Ltd.: *See—*
Itoh, Shoji; Yanagawa, Yukio; and Wakabayashi, Kouzo, 4,605,142, Cl. 220-359.000.
Toyoda Gosei Co., Ltd.: *See—*
Sugita, Hiroshi; and Hiramitsu, Tetsushi, 4,604,912, Cl. 74-484.00R.
Toyoda Koki Kabushiki Kaisha: *See—*
Honaga, Susumu; and Suzuki, Mikio, 4,605,085, Cl. 180-143.000.
Toyota Jidosha Kabushiki Kaisha: *See—*
Fukuchi, Hisashi; Shibuya, Masayuki; and Takahashi, Yasuie, 4,605,109, Cl. 192-4.00C.
Sakakibara, Yozo; and Okamoto, Yuji, 4,605,260, Cl. 296-201.000.
Shiraishi, Daiichi; Iwasaki, Eiji; and Fukumoto, Ryoichi, 4,604,829, Cl. 49-352.000.
Toyota Jidosha Kogyo Kabushiki Kaisha: *See—*
Kyonomine, Masaru, 4,604,913, Cl. 74-540.000.
Trachte, Dietrich; and Giess, Helmut, to Robert Bosch GmbH. Fuel injector having fuel-filled damping chamber. 4,605,171, Cl. 239-453.000.
Transamerica Delaval Inc.: *See—*
Silvers, Ralph H., Jr., 4,604,787, Cl. 29-568.000.
Travis, James, to University of Georgia Research Foundation, Inc. Determination of oxidized α-1-proteinase inhibitor in serum or plasma. 4,605,616, Cl. 435-23.000.
Tremblay, Gregory D. Method and apparatus for application of artificial fingernails. 4,605,024, Cl. 132-88.500.
Trenkle, Robert W.: *See—*
Mookherjee, Braja D.; Trenkle, Robert W.; Wolff, Robin K.; Boden, Richard M.; and Yoshida, Takao, 4,605,793, Cl. 568-820.000.
Treskot, Robert A.: *See—*
McGarry, Phillip E.; Herman, David E.; Treskot, Robert A.; and Fistner, David C., Sr., 4,605,420, Cl. 44-1.00R.
Trethewey, William C.: *See—*
Clem, William E.; and Trethewey, William C., 4,605,240, Cl. 280-236.000.
Trevarrow, David J., to Schrader Machine & Tool, Inc. Tool wear compensator. 4,605,346, Cl. 408-147.000.
Trieschmann, Christa: *See—*
Muller, Johann; Trieschmann, Christa; and Preiner, Gerhard, 4,605,567, Cl. 427-54.100.
Trill, Anthony J., to A. H. Robins Company, Inc. Delayed release formulations and processes for making them. 4,605,550, Cl. 424-22.000.
Triumph Adler AG: *See—*
Hofmann, Norbert, 4,605,325, Cl. 400-207.000.
Troxel, Tim L., to Wikco Industries, Inc. Ankle exerciser. 4,605,220, Cl. 272-96.000.
TRW Inc.: *See—*
Miller, Chauncey S., 4,606,045, Cl. 375-13.000.
Tsai, Chung-Chieh: *See—*
DiSalvo, Anthony L.; and Tsai, Chung-Chieh, 4,605,711, Cl. 525-438.000.
Tsang, Peter H.; Coyle, Joseph P.; Liu, Tung; and VanderPoorte, John G., to Allied Corporation. Method of manufacturing a friction article. 4,605,595, Cl. 428-413.000.
Tseo, Gus G.; and Fitzwater, Dennis L., to Warner-Lambert Company. Gravity flow cassette with rotary valve. 4,605,396, Cl. 604-32.000.
Tsernes, Vladimir Y.: *See—*
Alexandrov, Adolf M.; Bulginov, Evgeny F.; Yashin, Jury A.; Tsernes, Vladimir Y.; and Volyansky, Igor I., 4,605,247, Cl. 285-9.200.
Tsipenyuk, Pyotr; and Kober, Marvin, to O.K. Industries Inc. IC extractor tool. 4,604,796, Cl. 29-764.000.
Tsironis, Christos, to U.S. Philips Corporation. Dual gate FET oscillator mixer. 4,605,909, Cl. 331-96.000.
Tsubai, Yasuo: *See—*
Okazaki, Koji; Tsubai, Yasuo; and Hamazoe, Kimihisa, 4,605,609, Cl. 430-232.000.
Tsubakimoto Chain Company: *See—*
Nagano, Satoshi; and Sakai, Masanori, 4,605,388, Cl. 474-152.000.
Tsubouchi, Kaoru, to Aisin Seiki Kabushiki Kaisha. Housing of pneumatic booster device. 4,604,944, Cl. 92-98.00D.
Tsuchida, Shin: *See—*
Baba, Yoshio; and Tsuchida, Shin, 4,605,448, Cl. 148-11.50A.
Tsuchihashi, Keiichi; Yamada, Shinji; Arakawa, Makoto; Aizawa, Osamu; and Otomo, Nobuyuki, to Hino Jidosha Kogyo Kabushiki Kaisha; and Marusan Packing Manufacturing Co. Cylinder head gasket construction. 4,605,236, Cl. 277-235.00B.
Tsuda, Yoshio: *See—*
Yokoyama, Kazumasa; Fukaya, Chikara; Tsuda, Yoshio; Ono, Taizo; Arakawa, Yoshio; Inoue, Yoshihisa; Naito, Youichiro; and Suyama, Tadakazu, 4,605,650, Cl. 514-183.000.
Tsudakoma Corp.: *See—*
Sakano, Toshiyuki, 4,605,044, Cl. 139-304.000.
Tsuno, Kazuhiko; and Sano, Nitiro, to Asahi Yukizai Kogyo Co., Ltd. Ball valve. 4,605,202, Cl. 251-315.000.
Tsurukawa, Ikuya: *See—*
Ohno, Yoshimi; Tsurukawa, Ikuya; and Ishino, Tokio, 4,605,295, Cl. 354-154.000.
Tsuruta, Masahiko: *See—*
Ito, Takeyoshi; and Tsuruta, Masahiko, 4,605,976, Cl. 360-70.000.
Tsutsumi, Syuitsu: *See—*
Sekigawa, Tatsuaki; Gotoh, Akio; Tsutsumi, Syuitsu; Marui, Kuniyoshi; and Honda, Naoto, 4,606,050, Cl. 375-75.000.
Tucker, J. Camille, to Hibril, Dalal. Sanitary napkin disposal system. 4,605,403, Cl. 604-385.100.
Tung, William C. T., to Goodyear Tire & Rubber Company, The. High strength copolyester. 4,605,728, Cl. 528-289.000.
Tunnicliffe, Robert W.; and Leighton, John M. H., to Ventrolla Limited. Reduction of draughts through sliding sash windows. 4,604,831, Cl. 49-434.000.
Turetsky, Isadore. Controlling and swjtching mechanism. 4,604,982, Cl. 123-477.000.
Tuske, Marton: *See—*
Matolosy, Gyorgy; Bordas, Barna; Gimesi, Antal; Kovacs nee Kalman, Magdolna; and Tuske, Marton, 4,605,764, Cl. 564-209.000.
Tutman, Stanley W.: *See—*
Helmly, Paul K., Jr.; Forster, Fred D., Jr.; Gower, Patrick E.; Holdaway, Steven D.; Tutman, Stanley W.; Beissel, Timothy J.; Needham, Robert J.; and Lasky, Arthur J., 4,605,081, Cl. 177-25.000.
Twinoak Products, Inc.: *See—*
Meloy, Gilbert K., 4,605,534, Cl. 422-37.000.
Tyson, James E. Flow divider for distribution systems. 4,605,501, Cl. 210-519.000.
Uba, Tomohisa: *See—*
Saita, Koji; Kanehira, Kenichi; and Uba, Tomohisa, 4,605,878, Cl. 313-406.000.
Ube Industries, Ltd.: *See—*
Honda, Masahiro, 4,604,928, Cl. 83-151.000.
Uchibori, Takahiro: *See—*
Shiragami, Osamu; Kuno, Toshihiko; Sajima, Yasuo; Saito, Kohji; Uchibori, Takahiro; and Iwamoto, Junjiro, 4,605,482, Cl. 204-258.000.
Uchida, Hiroshi; Nakanishi, Kazuo; and Kawasaki, Yoshihiko, to Murata Kikai Kabushiki Kaisha. Bobbin transporting and treating system. 4,605,177, Cl. 242-35.50A.
Uchida, Kenji; Sakamoto, Masakatsu; Saito, Makoto; and Kamino, Yukishige, to Hitachi, Ltd. Apparatus for continuously pressure-feeding slurry. 4,605,356, Cl. 417-102.000.
Uchiyama, Takako: *See—*
Doya, Masaharu; Kondo, Toshio; Igarashi, Hideo; and Uchiyama, Takako, 4,605,477, Cl. 204-182.600.
Ueki, Junzo; and Nakajima, Yoshiaki, to Silver Seiko Ltd. Print ribbon cassette including ribbon tensioning means. 4,605,327, Cl. 400-208.000.
Ullmann, Roland; and Heintke, Hans E., to Braun Aktiengesellschaft. Shaver with insertable auxiliary frame. 4,604,801, Cl. 30-43.920.
Ulmer, Harry E.: *See—*
Reimschuessel, Herbert K.; and Ulmer, Harry E., 4,605,707, Cl. 525-410.000.
Ultrasons Annemasse: *See—*
Dallot, Mario, 4,605,027, Cl. 134-108.000.
Ulveling, Leon: *See—*
Legille, Edouard; Ulveling, Leon; and Mailliet, Pierre, 4,605,342, Cl. 406-129.000.
Unicell Limited: *See—*
Muirhead, Allen D., 4,605,852, Cl. 250-231.00R.
Union Carbide Corporation: *See—*
Billig, Ernst; and Stanton, David B., 4,605,780, Cl. 568-454.000.
Goddard, Errol D.; and Leung, Pak S., 4,605,422, Cl. 44-51.000.
Lok, Brent M. T.; Marcus, Bonita K.; and Flanigen, Edith M., 4,605,492, Cl. 208-310.00Z.
Rao, Chennupati K.; and D'Silva, Themistocles D., 4,605,667, Cl. 514-477.000.
Uniprode: *See—*
Inglese, Giulio S., 4,605,100, Cl. 182-213.000.
Uniroyal Chemical Company, Inc.: *See—*
Malz, Russell E., Jr.; and Greenfield, Harold, 4,605,743, Cl. 546-186.000.
United States of America
Administrator, National Aeronautics and Space Administration: *See—*
Duesberg, Joseph D.; and Mills, Raymond C., Sr., 4,605,155, Cl. 228-119.000.
Administrator, National Aeronautics & Space Administration: *See—*
Tcheng, Ping; and Supplee, Frank H., Jr., 4,604,903, Cl. 73-862.040.
Agriculture: *See—*
Fanta, George F.; and Doane, William M., 4,605,640, Cl. 502-402.000.
Air Force: *See—*
Jin, Korda K., 4,605,911, Cl. 333-144.000.
Taschner, Edwin C.; and Myzska, Edward M., 4,604,896, Cl. 73-583.000.
Army: *See—*
Everett, Seth L., Jr., 4,605,326, Cl. 400-201.000.

Hoffmeister, Lawrence D.; and Thompson, Richard J., 4,604,939, Cl. 89-1.816.
Long, James R.; and Kerr, James A., 4,604,798, Cl. 29-764.000.
Ruffin, Paul B., 4,606,020, Cl. 370-3.000.

Energy: *See—*
Beene, James R.; and Bemis, Curtis E., Jr., 4,606,031, Cl. 372-28.000.
Berkowitz, Joseph; Ruscic, Branko M.; and Greene, John P., 4,606,030, Cl. 372-5.000.
Halverson, Danny C.; Pyzik, Aleksander J.; and Aksay, Ilhan A., 4,605,440, Cl. 75-238.000.

National Aeronautics and Space Administration: *See—*
Haines, Richard F., 4,605,303, Cl. 356-73.000.
Mikulas, Martin M., Jr.; and Rhodes, Marvin D., 4,604,844, Cl. 52-632.000.
Robinson, Paul A., Jr., 4,605,946, Cl. 357-23.100.

Navy: *See—*
Butscher, Frank D.; and Gegan, Michael J., 4,605,932, Cl. 343-700.0MS.
Butscher, Frank D., 4,605,933, Cl. 343-700.0MS.
Daniel, Richard A., 4,606,049, Cl. 375-45.000.
Kennedy, Robert E.; and Neef, James D., 4,604,938, Cl. 89-1.800.
Springston, Preston S.; and Claxton, Richard L., 4,605,337, Cl. 404-35.000.

U.S. Philips Corporation: *See—*
Baggen, Constant P. M. J., 4,606,026, Cl. 371-39.000.
Broer, Dirk J.; and Vriens, Leendert, 4,606,017, Cl. 369-275.000.
Brotherton, Stanley D.; Gill, Audrey; and King, Michael J., 4,605,447, Cl. 148-1.500.
David, Guy A. J.; Van Uffelen, Jean-Pierre H.; and Defeuilly, Jean-Pierre M., 4,606,040, Cl. 375-1.000.
Hajj-Chehade, Mohammed, 4,605,904, Cl. 329-50.000.
Moore, Michael J.; and Paxman, David H., 4,605,949, Cl. 357-71.000.
Seevinck, Evert; and Van Tuijl, Adrianus J. M., 4,605,892, Cl. 323-315.000.
Tsironis, Christos, 4,605,909, Cl. 331-96.000.
van Baardewijk, Johannes; Hartman, Johan E. A.; and Bohlmeyer, Nicolaas, 4,606,057, Cl. 377-28.000.
Veehof, Johannus C. D. M., 4,605,867, Cl. 307-351.000.
Wagenmakers, Johannes, 4,606,028, Cl. 371-49.000.

U.S. Product Development Company: *See—*
Adell, Robert, 4,604,832, Cl. 49-462.000.

United Technologies Corporation: *See—*
Gemma, Anthony E.; and Dierberger, James A., 4,605,452, Cl. 148-404.000.
Kokoszka, Joseph M.; and Tommasini, Rocco M., 4,605,315, Cl. 374-144.000.
Mayers, John L., 4,605,169, Cl. 239-265.290.

Universal Data Systems, Inc.: *See—*
Crabtree, Steven B.; Yedid, Harry; and Sherman, James B., 4,606,051, Cl. 375-86.000.

Universite Francois Rabelais: *See—*
Pourcelot, Leandre; Fleury, Gerard; and Berson, Marceau, 4,605,009, Cl. 128-660.000.

Universite Pierre et Marie Curie Paris VI: *See—*
Carpentier, Alain, 4,605,408, Cl. 623-2.000.

Universite Rene Descartes (Paris V): *See—*
Rose, Christian S.; and Lacombe, Jacques, 4,605,395, Cl. 604-9.000.

University of Alabama at Birmingham, The: *See—*
Urry, Dan W.; and Senior, Robert M., 4,605,413, Cl. 623-11.000.

University of California, The Regents of the: *See—*
Ferrari, Leonard A., 4,605,008, Cl. 128-660.000.
Kado, Clarence; Tait, Robert C.; and Lundquist, Ronald C., 4,605,627, Cl. 435-317.000.
Van Steenwyk, Robert A.; and Barnett, William W., 4,605,560, Cl. 424-195.100.

University of Georgia Research Foundation, Inc.: *See—*
Travis, James, 4,605,616, Cl. 435-23.000.

University of Michigan, The Regents of the: *See—*
Weber, Kathleen; and Benson, Joseph B., 4,604,773, Cl. 24-71.200.

University of Minnesota, Regents of the: *See—*
Foker, John E., 4,605,644, Cl. 514-45.000.

University of Sheffield, The: *See—*
Black, Martin M.; Drury, Philip J.; and Tindale, Wendy B., 4,605,407, Cl. 623-2.000.

UOP Inc.: *See—*
Zinnen, Hermann A., 4,605,783, Cl. 568-492.000.

Upmeier, Hartmut, to Windmoller & Holscher. Blowing head for making tubular plastic films. 4,605,365, Cl. 425-72.00R.

Urry, Dan W.; and Senior, Robert M., to University of Alabama at Birmingham, The. Stimulation of chemotaxis by chemotactic peptides. 4,605,413, Cl. 623-11.000.

Urushida, Yoshihisa, to Citizen Watch Co., Ltd. Gas flow control system for an anesthesia apparatus. 4,605,034, Cl. 137-88.000.

Usagawa, Toshiyuki: *See—*
Katayama, Yoshifumi; Shiraki, Yasuhiro; Yamaguchi, Ken; Murayama, Yoshimasa; Sawada, Yasushi; Usagawa, Toshiyuki; and Maruyama, Eiichi, 4,605,945, Cl. 357-22.000.

Ushio Denki Kabushiki Kaisha: *See—*
Kira, Takehiro, 4,605,301, Cl. 355-69.000.

Ushiyama, Keiichi; and Ichinose, Hisashi, to Nitto Electric Industrial Co., Ltd. Drug administration material. 4,605,548, Cl. 424-15.000.

USV Pharmaceutical Corp.: *See—*
Loev, Bernard; and Chan, Wan-Kit, 4,605,675, Cl. 514-720.000.

Utecht, Manfred, to Siemens Aktiengesellschaft. Flexibly damped shaft bearing arrangement, particularly for use in electrical machinery. 4,605,316, Cl. 384-99.000.

Uwani, Tetsuo: *See—*
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Vale, Wylie W., Jr.: *See—*
Rivier, Catherine L.; Rivier, Jean E. F.; Vale, Wylie W., Jr.; and Brown, Marvin R., 4,605,642, Cl. 514-12.000.

Valko, Joseph T.: *See—*
Christenson, Roger M.; Valko, Joseph T.; Plasynski, Joseph E.; and Scriven, Roger L., 4,605,478, Cl. 204-181.700.

Vallance, Leslie, to Burroughs Corporation. Self-aligning guillotine. 4,604,929, Cl. 83-524.000.

Van Doorne's Transmissie B.V.: *See—*
Takano, Toshio, 4,605,112, Cl. 192-0.033.

van Baardewijk, Johannes; Hartman, Johan E. A.; and Bohlmeyer, Nicolaas, to U.S. Philips Corporation. Arrangement for checking the counting function of counters. 4,606,057, Cl. 377-28.000.

Van Buskirk, Ellor J.: *See—*
Hart, Terence J.; Dowbenko, Rostyslaw; Maska, Rudolf; Van Buskirk, Ellor J.; and Tetenbaum, Marvin T., 4,605,476, Cl. 204-181.600.

Van den Bergh, Armand M.: *See—*
Van de Sande, Christian C.; Van den Bergh, Armand M.; Janssens, Wilhelmus; and Vetter, Hans, 4,605,613, Cl. 430-562.000.

Van Den Brekel, Jacques; and Ho, Thomas K. Y., to Northern Telecom Limited. Shaped solder pad for reflow soldering of surface mounting cylindrical devices on a circuit board. 4,605,153, Cl. 228-56.300.

Vanderlinde, Leendert A.; and Collier, Byron T., to Mid-West Conveyor Company, Inc. Shaft driven accumulation conveyor arrangement. 4,605,120, Cl. 198-781.000.

Vanderpool, Clarence D., to GTE Products Corporation. Production of pure molybdenum. 4,605,538, Cl. 423-55.000.

VanderPoorte, John G.: *See—*
Tsang, Peter H.; Coyle, Joseph P.; Liu, Tung; and VanderPoorte, John G., 4,605,595, Cl. 428-413.000.

van der Scheer, Albert: *See—*
Reynhout, Marinus J.; and van der Scheer, Albert, 4,605,526, Cl. 264-41.000.

Van de Sande, Christian C.; Van den Bergh, Armand M.; Janssens, Wilhelmus; and Vetter, Hans, to Agfa-Gevaert, N.V. Ballasted dye compounds with linkages containing three aromatic nuclei for use in a dye diffusion transfer process and element. 4,605,613, Cl. 430-562.000.

Van Elven, Aris; and Overmars, Henricus G. J., to Nederlandse Centrale Organisatie voor Toegepast-Natuurwetenschappellijk Onderzoek. Chromatographic separation of metals with polyetherurethane particles. 4,605,504, Cl. 210-656.000.

Van Hoeyveld, Ernestina M.: *See—*
Stevens, Erik; and Van Hoeyveld, Ernestina M., 4,605,557, Cl. 424-91.000.

Van Loveren, Augustinus G.; Munteanu, Marina A.; and Seaber, Geoffrey B., to International Flavors & Fragrances Inc. Constant rate volatile composition dispensing article and process for using same. 4,605,165, Cl. 239-6.000.

van Rensburg, Philippus J.: *See—*
Baker, Rodney C.; and van Rensburg, Philippus J., 4,604,971, Cl. 119-86.000.

van Seumeren, Adelbert M. D. G. Lifting tool. 4,605,132, Cl. 212-185.000.

Van Steenwyk, Robert A.; and Barnett, William W., to University of California, The Regents of The. Ovipositional disruption of the navel orangeworm. 4,605,560, Cl. 424-195.100.

Van Tuijl, Adrianus J. M.: *See—*
Seevinck, Evert; and Van Tuijl, Adrianus J. M., 4,605,892, Cl. 323-315.000.

Van Uffelen, Jean-Pierre H.: *See—*
David, Guy A. J.; Van Uffelen, Jean-Pierre H.; and Defeuilly, Jean-Pierre M., 4,606,040, Cl. 375-1.000.

Varadarajan, Hemmige D.; and Vasseghi, Nader, to Advanced Micro Devices, Inc. AFL (advanced fast logic) line driver circuit. 4,605,864, Cl. 307-270.000.

Varco International, Inc.: *See—*
Boyadjieff, George I., 4,605,077, Cl. 175-85.000.

Vartuli, James C.: *See—*
Chester, Arthur W.; Garwood, William E.; and Vartuli, James C., 4,605,488, Cl. 208-78.000.

Vasseghi, Nader: *See—*
Varadarajan, Hemmige D.; and Vasseghi, Nader, 4,605,864, Cl. 307-270.000.

Vaubert, Yves: *See—*
Leseur, Andre ; Delaroche, Pierre; Saglio, Robert; and Vaubert, Yves, 4,605,531, Cl. 376-252.000.

Veb Metaplast Quedlinburg: *See—*
Kuhnert, Rudi; and Legall, Wolf-Dieter, 4,605,536, Cl. 422-99.000.

VEB Schwermaschinenbau Karl Liebknecht Magdeburg: *See—*
Michel, Wolfgang; Paul, Heinz; Rummel, Andreas; Seher, Gero; Ossowski, Manfred; Heberlein, Irmtrud; Kostler, Dieter; and Wilhelm, Frank, 4,605,487, Cl. 208-408.000.

Veehof, Johannus C. D. M., to U.S. Philips Corporation. Peak detector. 4,605,867, Cl. 307-351.000.

Venaleck, John T.: *See—*
Davis, Robert J.; Anspach, Charles R.; and Venaleck, John T., 4,605,355, Cl. 416-208.000.

Ventrolla Limited: *See—*
Tunnicliffe, Robert W.; and Leighton, John M. H., 4,604,831, Cl. 49-434.000.
Verboom, Johannes J.; and Bracht, Roger R., to Optical Storage International. Write protection and data detection using differential detector. 4,606,016, Cl. 369-54.000.
Vereczkey, Laszlo : *See—*
Toth, Edit; Torley, Jozsef; Fekete, Gyorgy; Szporny, Laszlo ; Vereczkey, Laszlo ; Palosi, Eva; Klebovich, Imre; Vittay, Pal; Gorog, Sandor; and Hajdu, Istvan, 4,605,672, Cl. 514-648.000.
Verheyden, Julien P. H.; Martin, John C.; Madhaven, G. V. Bindu; McGee, Daniel P. C.; and Prisbe, Ernest J., to Syntex (U.S.A.) Inc. Purinyl or pyrimidinyl substituted hydroxycyclopentane compounds useful as antivirals. 4,605,659, Cl. 514-262.000.
Vernitron Corporation: *See—*
Ogle, Dennis F.; Clark, Charles A., Jr.; and Aires, Ramon H., 4,605,890, Cl. 323-209.000.
Verot, Yvan: *See—*
Abel, Michel; Fine, Francois; Foulletier, Louis; and Verot, Yvan, 4,605,798, Cl. 570-164.000.
Verrando, Marcel G.; Duich, Michael B.; and Overton, Bradley T., to Pall Corporation. Heaterless dryer having variable cycle. 4,605,425, Cl. 55-20.000.
Verzemnieks, Juris: *See—*
Simpson, Frederick H.; and Verzemnieks, Juris, 4,605,588, Cl. 428-288.000.
Vetter, Hans: *See—*
Van de Sande, Christian C.; Van den Bergh, Armand M.; Janssens, Wilhelmus; and Vetter, Hans, 4,605,613, Cl. 430-562.000.
Viart, Guy: *See—*
Thomas, Bruno; and Viart, Guy, 4,605,598, Cl. 428-659.000.
Victor Company of Japan, Ltd.: *See—*
Ito, Takeyoshi; and Tsuruta, Masahiko, 4,605,976, Cl. 360-70.000.
Vidunas, Louis J.: *See—*
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Villanyi, Sigmund T.: *See—*
McCandless, Harry E.; and Villanyi, Sigmund T., 4,605,880, Cl. 313-414.000.
Vinup, Karl J. Demonstrator for teaching pressure blow forming of plastics. 4,605,374, Cl. 434-365.000.
VISA U.S.A. Inc.: *See—*
Campbell, Carl M., Jr., 4,605,820, Cl. 178-22.090.
Vittay, Pal: *See—*
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Vliet, Walter C.: *See—*
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Voest-Alpine Aktiengesellschaft: *See—*
Keuschnigg, Josef; and Kissich, Arnulf, 4,605,119, Cl. 198-514.000.
Langner, Klaus; Papst, Gero; Hauk, Rolf; and Nagl, Michael, 4,605,205, Cl. 266-160.000.
Vogel, Victor J.: *See—*
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Voirin, Robert, to Societe Nationale Elf Aquitaine (Production). Catalytic process for the production of sulfur from a gas containing H_2S. 4,605,546, Cl. 423-576.000.
Voirol, Peter: *See—*
Puck, Alfred; and Voirol, Peter, 4,605,385, Cl. 464-181.000.
Volkswagenwerk Aktiengesellschaft: *See—*
Ashauer, Karl; Richter, Bernd; Kalversberg, Manfred; and Schmidt, Rudiger, 4,605,087, Cl. 180-248.000.
Vollmer, Yolanda P.: *See—*
Kung, Viola T.; Martin, Francis J.; and Vollmer, Yolanda P., 4,605,630, Cl. 436-511.000.
Voltmer, Helmut; and Schwenzer, Alfred F., to New Jersey Machine Inc. Literature applying machine and method. 4,605,459, Cl. 156-215.000.
Volyansky, Igor I.: *See—*
Alexandrov, Adolf M.; Bulginov, Evgeny F.; Yashin, Jury A.; Tsernes, Vladimir Y.; and Volyansky, Igor I., 4,605,247, Cl. 285-9.200.
Von Kohorn, Henry. System, apparatus and method for recording and editing broadcast transmissions. 4,605,973, Cl. 358-335.000.
Vriens, Leendert: *See—*
Broer, Dirk J.; and Vriens, Leendert, 4,606,017, Cl. 369-275.000.
Vulakovic, Josip: *See—*
Todd, Terry J. M.; and Vulakovic, Josip, 4,604,878, Cl. 70-139.000.
W. R. Grace & Co.: *See—*
Hatcher, Clive D.; Hill, Alan; and King, Geoffrey W., 4,605,351, Cl. 413-58.000.
Morgan, Charles R., 4,605,465, Cl. 156-273.300.
W. R. Grace & Co., Cryovac Div.: *See—*
Schirmer, Henry G., 4,605,460, Cl. 156-229.000.
Wachi, Kiyoshi, to Macsea Marine Services Company, Inc. Apparatus for cleaning underwater surfaces. 4,604,960, Cl. 114-222.000.
Wacker-Chemie GmbH: *See—*
Muller, Johann; Trieschmann, Christa; and Preiner, Gerhard, 4,605,567, Cl. 427-54.100.
Wada, Masashi; Watanabe, Shigeyoshi; and Masuoka, Fujio, to Kabushiki Kaisha Toshiba. Single transistor/capacitor semiconductor memory device and method for manufacture. 4,606,011, Cl. 365-149.000.
Waddell, Walter H., III: *See—*
Benko, David A.; Mowdood, Syed K.; Sandstrom, Paul H.; Waddell, Walter H., III; and Wideman, Lawson G., 4,605,696, Cl. 524-432.000.
Waddill, Harold G.: *See—*
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Wagenmakers, Johannes, to U.S. Philips Corporation. Digital transmission system. 4,606,028, Cl. 371-49.000.
Wagner, Klaus P.: *See—*
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Kojima, Shinichi; and Ishikawa, Kiichiro, 4,604,783, Cl. 29-410.000.
Kusuyama, Masahiro, 4,604,775, Cl. 24-389.000.
Yamaguchi, Yoshiharu; and Doi, Masashi, 4,604,774, Cl. 24-389.000.
Yamamoto, Yukio, 4,605,252, Cl. 292-338.000.
Yoshida Kogyo K.K.: *See—*
Kawakami, Koichi; and Sawada, Mitsuo, 4,604,782, Cl. 29-409.000.
Yoshida, Masashi: *See—*
Matsuno, Jyunichi; Kawauchi, Masataka; Yoshida, Masashi; and Kawamura, Satoshi, 4,605,938, Cl. 346-76.0PH.
Yoshida, Takao: *See—*
Mookherjee, Braja D.; Trenkle, Robert W.; Wolff, Robin K.; Boden, Richard M.; and Yoshida, Takao, 4,605,793, Cl. 568-820.000.
Yoshimoto, Masahiko, to Mitsubishi Denki Kabushiki Kaisha. Redundancy-secured semiconductor memory. 4,606,013, Cl. 365-200.000.

Yoshitomi Pharmaceutical Industries, Ltd.: *See*—
Kinishi, Ryoichi; Kaku, Eisaburo; and Hanayama, Naoki, 4,605,940, Cl. 346-209.000.

Young, Peter J.; and Romocki, Julian M. E., to Amerigo Technology Limited. Well treating composition and method. 4,605,068, Cl. 166-307.000.

Yuasa Battery Company Limited: *See*—
Marui, Takao; and Uwani, Tetsuo, 4,604,794, Cl. 29-623.100.

Yuzurihara, Itsuo, to Kyosan Electric Co., Ltd. Input drive apparatus for power transistor. 4,605,865, Cl. 307-270.000.

Zacharias, Karl, to Mannesmann Aktiengesselschaft. Measuring the load on lifting equipment. 4,605,829, Cl. 200-52.00R.

Zagnoli, Giorgio; Conte, Ubaldo; and Colombo, Paolo, to Lisapharma Spa. Pharmaceutically active salt derivative of 3-hydroxy-5-(hydroxymethyl)-2-methylisonicotinaldehyde phosphate. 4,605,741, Cl. 546-24.000.

Zajicek, Ernst: *See*—
Lugscheider, Walter; Riegler, Ernst; and Zajicek, Ernst, 4,606,038, Cl. 373-24.000.

Zanegina, Galina A.: *See*—
Bezborodov, Vladimir S.; Konovalov, Viktor A.; Ptashnikov, Jury L.; Astafiev, Vladimir M.; Minko, Anatoly A.; Dudarchik, Anatoly I.; Zanegina, Galina A.; and Poimanov, Anatoly M., 4,605,510, Cl. 252-299.660.

Zazula, Teodosij: *See*—
Willis, Brian J.; and Zazula, Teodosij, 4,605,778, Cl. 568-433.000.

Zeavin, Mark. Clip system for immoveably mounting a magnetic head on a support. 4,605,978, Cl. 360-104.000.

Zelina, Francis J., Jr., to Lighting Systems, Inc. Recharging spot/flood lantern. 4,605,993, Cl. 362-183.000.

Zemke, Anne, legal representative: *See*—
Zemke, Edward H., deceased; Guenther, Kenneth L.; and Warden, Gerald D., 4,604,849, Cl. 53-266.00A.

Zemke, Edward H., deceased (by Zemke, Anne, legal representative); Guenther, Kenneth L.; and Warden, Gerald D., to Bell & Howell. Insertion machine drive. 4,604,849, Cl. 53-266.00A.

Zenbutsu, Tadashi; Kokumai, Hiroyuki; Okikawa, Shinji; and Saito, Keiji, to Shinagawa Refractories Co., Ltd. Carbon-containing refractory. 4,605,635, Cl. 501-96.000.

Zettergren, Ted, to Hydrino AB. Pilot oil supply arrangement. 4,605,042, Cl. 137-596.120.

Ziarnik, Allen P.: *See*—
Ortloff, John E.; Ziarnik, Allen P.; Filson, John J.; and Gadbois, John F., 4,604,961, Cl. 114-230.000.

Zielinski, Erich; and Meschke, Harry, to Rheinmetall GmbH. Emergency chambering device. 4,604,941, Cl. 89-47.000.

Ziesse, Norman G.: *See*—
Bowman, Wayne C.; Malik, Randhir S.; Seidel, Harold; Suiter, Weyman B., Jr.; and Ziesse, Norman G., 4,605,999, Cl. 363-19.000.

Zilog, Inc.: *See*—
Hartranft, Marc D.; and Garrett, Keith A., 4,605,980, Cl. 361-56.000.

Zimmerman, Melvin M., to Superior Walls of America, Ltd. Method of constructing a prefabricated concrete wall structure. 4,605,529, Cl. 264-263.000.

Zimmermann, Anso, to Rotpunkt Dr. Anso Zimmermann. Reinforced recessed pourer in insulating jug. 4,605,134, Cl. 215-13.00A.

Zimmermann, Anso, to Rotpunkt Dr. Anso Zimmermann. Pouring spout having an insert. 4,605,225, Cl. 222-566.000.

Zinnen, Hermann A., to UOP Inc. Process for separating monoterpenes. 4,605,783, Cl. 568-492.000.

Zollinger, Otto, to Otto Zollinger, Inc. Yarn tension control device. 4,605,182, Cl. 242-149.000.

Zumbrunnen, Eric: *See*—
Jeannet, Jean-Pierre; Zumbrunnen, Eric; and Cartisano, Roberto, 4,604,808, Cl. 33-143.00M.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 12TH DAY OF AUGUST, 1986

NOTE—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Adams, John M. Variable dilution filter. Re. 32,221, Cl. 131-336.000.

Basu, Samir: *See*—
Fuller, Paul; Gillender, John B.; Shacklady, Michael; and Basu, Samir, Re. 32,226, Cl. 364-900.000.

Drutchas, Gilbert H., to TRW Inc. Steering gear. Re. 32,222, Cl. 180-79.100.

Fuller, Paul; Gillender, John B.; Shacklady, Michael; and Basu, Samir, to Roneo Alcatel Limited. Electronic franking machines. Re. 32,226, Cl. 364-900.000.

Gillender, John B.: *See*—
Fuller, Paul; Gillender, John B.; Shacklady, Michael; and Basu, Samir, Re. 32,226, Cl. 364-900.000.

Harvey Hubbell Incorporated: *See*—
Neuroth, David H., Re. 32,225, Cl. 174-103.000.

Kreeger, Elsmer W.; and Stahl, Edward L., to Pinckney Molded Plastics, Inc. Multilevel stacking container. Re. 32,223, Cl. 206-506.000.

Neuroth, David H., to Harvey Hubbell Incorporated. Oil well cable. Re. 32,225, Cl. 174-103.000.

Pinckney Molded Plastics, Inc.: *See*—
Kreeger, Elsmer W.; and Stahl, Edward L., Re. 32,223, Cl. 206-506.000.

Raedisch, Helmer: *See*—
Schafer, Wolfgang; and Raedisch, Helmer, Re. 32,224, Cl. 428-423.100.

Roneo Alcatel Limited: *See*—
Fuller, Paul; Gillender, John B.; Shacklady, Michael; and Basu, Samir, Re. 32,226, Cl. 364-900.000.

Saint-Gobain Industries: *See*—
Schafer, Wolfgang; and Raedisch, Helmer, Re. 32,224, Cl. 428-423.100.

Schafer, Wolfgang; and Raedisch, Helmer, to Saint-Gobain Industries. Polyurethane coated safety glass. Re. 32,224, Cl. 428-423.100.

Shacklady, Michael: *See*—
Fuller, Paul; Gillender, John B.; Shacklady, Michael; and Basu, Samir, Re. 32,226, Cl. 364-900.000.

Stahl, Edward L.: *See*—
Kreeger, Elsmer W.; and Stahl, Edward L., Re. 32,223, Cl. 206-506.000.

TRW Inc.: *See*—
Drutchas, Gilbert H., Re. 32,222, Cl. 180-79.100.

LIST OF REEXAMINATION PATENTEES

TO WHOM

CERTIFICATES WERE ISSUED

Allmanna Svenska Elektriska Aktiebolaget: *See*—
Andersson, Georg, B1 3,764,305, Cl. 75-130.00R.

Andersson, Georg, to Allmanna Svenska Elektriska Aktiebolaget. Method of storage and heat-retaining for treated nodular cast iron. B1 3,764,305, 8-12-86, Cl. 75-130.00R.

Armco Steel Corporation: *See*—
Evans, Ralph E.; and Blower, Howard E., B1 3,815,213, Cl. 29-446.000.

Astec Industries, Inc.: *See*—
Brock, J. Donald, B1 4,348,146, Cl. 414-332.000.

Avnet Inc.: *See*—
Rafal, Marc; Joines, William T.; and Burton, Larry W., B1 4,475,242, Cl. 455-3.000.

Blower, Howard E.: *See*—
Evans, Ralph E.; and Blower, Howard E., B1 3,815,213, Cl. 29-446.000.

Brock, J. Donald, to Astec Industries, Inc. Self-erecting surge bin. B1 4,348,146, 8-12-86, Cl. 414-332.000.

Burton, Larry W.: *See*—
Rafal, Marc; Joines, William T.; and Burton, Larry W., B1 4,475,242, Cl. 455-3.000.

Evans, Ralph E.; and Blower, Howard E., to Armco Steel Corporation. Method of making an improved slot drainage culvert. B1 3,815,213, 8-12-86, Cl. 29-446.000.

Joines, William T.: *See*—
Rafal, Marc; Joines, William T.; and Burton, Larry W., B1 4,475,242, Cl. 455-3.000.

Lowrance Electronics, Inc.: *See*—
Weber, Ronald G., B1 4,322,827, Cl. 367-99.000.

Meyer, Edward P.; and Wright, William L., to Picker Electronics, Inc. Sector scanning ultrasonic inspection apparatus. B1 4,014,207, 8-12-86, Cl. 73-621.000.

Picker Electronics, Inc.: *See*—
Meyer, Edward P.; and Wright, William L., B1 4,014,207, Cl. 73-621.000.

Rafal, Marc; Joines, William T.; and Burton, Larry W., to Avnet Inc. Microwave communications system. B1 4,475,242, 8-12-86, Cl. 455-3.000.

Shivers, Charles C. Method for circulating grain stored in a circular bin. B1 3,563,399, 8-12-86, Cl. 414-786.000.

Weber, Ronald G., to Lowrance Electronics, Inc. Range expander for sonar system. B1 4,322,827, 8-12-86, Cl. 367-99.000.

Wright, William L.: *See*—
Meyer, Edward P.; and Wright, William L., B1 4,014,207, Cl. 73-621.000.

LIST OF DESIGN PATENTEES

A. De Luze & Fils & Cie: *See*—
Heriard-Dubreuil, Marc, 285,051, Cl. D9-318.000.

Abbott Laboratories: *See*—
Huang, Tung-Ming, 285,118, Cl. D24-56.000.

Acriform Engineering, Inc.: *See*—
Burgess, John D.; and Taylor, Thomas E., 285,110, Cl. D23-55.000.

Aldridge, Rufus W., Jr., to Spencer Wright Industries, Inc. Milling machine. 285,084, 8-12-86, Cl. D15-131.000.

Allen, David O., to Allen Tool Company, Inc. Combined closure and opener for container. 285,056, 8-12-86, Cl. D9-454.000.

Allen Tool Company, Inc.: *See*—
Allen, David O., 285,056, Cl. D9-454.000.

Alonzo, Patrick R. Beverage tumbler or the like. 285,032, 8-12-86, Cl. D7-6.000.

Amdahl Corporation: *See*—
Katai, Dwaine S., 285,075, Cl. D14-102.000.

Anchor Hocking Corporation: *See*—
Gobleck, Peter A., Jr., 285,033, Cl. D7-6.000.
Gobleck, Peter A., Jr., 285,034, Cl. D7-8.000.

Andico Manufacturing Ltd.: *See—*
Dean, Howard; Kocsis, Andre; and Yee, William H., 285,047, Cl. D8-382.000.

AT&T Bell Laboratories: *See—*
Danielson, David C.; Genaro, Donald M.; and McGarvey, John N., 285,073, Cl. D14-63.000.
Proetta, William J.; Sylvester, Gordon E.; and Tilley, Alvin R., 285,076, Cl. D14-113.000.

Aurora S.p.A.: *See—*
Verona, Franco, 285,096, Cl. D19-48.000.

Bates, Bobby L., to Bates - Johnson & Co., Inc. Combined jumper cable control box and lamp. 285,063, 8-12-86, Cl. D13-5.000.

Bates - Johnson & Co., Inc.: *See—*
Bates, Bobby L., 285,063, Cl. D13-5.000.

Baum, Barry L., to Baum, Barry Lee. Eyeglass temple. 285,092, 8-12-86, Cl. D16-127.000.

Baum, Barry Lee: *See—*
Baum, Barry L., 285,092, Cl. D16-127.000.

Bayerische Motoren Werke Aktiengesellschaft: *See—*
Luthe, Claus; and Boyer, Boyke, 285,060, Cl. D12-190.000.

Beaumont, Thomas G., to Motorola, Inc. Handset telephone receptacle or similar article. 285,070, 8-12-86, Cl. D14-61.000.

Beck, Klaus, to Telefonaktiebolaget LM Ericsson. Screw anchor. 285,048, 8-12-86, Cl. D8-385.000.

Bianchi, Walter G.; and Imai, Hironobu. Bottle. 285,052, 8-12-86, Cl. D9-371.000.

Black & Decker Inc.: *See—*
Somers, Robert I., 285,041, Cl. D8-21.000.

Bluestein, Bernard B., to John Zink Company. Pressing iron. 285,133, 8-12-86, Cl. D32-70.000.

Bobrovniczky, Bert, to Noma Inc. Multiple outlet strip. 285,065, 8-12-86, Cl. D13-30.000.

Bounds, William E. Condiment mill. 285,037, 8-12-86, Cl. D7-53.000.

Boyer, Boyke: *See—*
Luthe, Claus; and Boyer, Boyke, 285,060, Cl. D12-190.000.

Braner Enterprises Inc.: *See—*
Richards, Lawrence J., 285,136, Cl. D34-28.000.

Burgess, John D.; and Taylor, Thomas E., to Acriform Engineering, Inc. Corner bath tub. 285,110, 8-12-86, Cl. D23-55.000.

Cable Electric Products, Inc.: *See—*
Schwartz, Frederic W., 285,121, Cl. D26-26.000.
Schwartz, Frederic W., 285,123, Cl. D26-118.000.

Camino Laboratories: *See—*
Sato, Stephens N.; and Manno, Joseph J., 285,112, Cl. D24-17.000.

Cannie Products Limited: *See—*
Heubel, Walter, 285,055, Cl. D9-434.000.

Carter, Raymond M.: *See—*
Smith, Raymond G.; and Carter, Raymond M., 285,132, Cl. D32-18.000.

Cassai, Gino H.; and Cassai, Henry J. Adjustable cosmetic applicator. 285,125, 8-12-86, Cl. D28-7.000.

Cassai, Henry J.: *See—*
Cassai, Gino H.; and Cassai, Henry J., 285,125, Cl. D28-7.000.

Chandler, Jean E. Eye shade. 285,021, 8-12-86, Cl. D2-241.000.

Chatam International Incorporated: *See—*
Cooper, Norton J., 285,029, Cl. D6-461.000.

Chrysler Corporation: *See—*
Dayton, William A.; Crain, John E.; and Hubbach, Robert N., 285,061, Cl. D12-196.000.

Clark, Robert O., to Plastic Clad Corporation. Corner unit for a kitchen countertop. 285,031, 8-12-86, Cl. D6-511.000.

Collister, Kenneth D.; and Johnson, Steven C., to Miles Laboratories, Inc. Automated urinalysis instrument. 285,114, 8-12-86, Cl. D24-17.000.

Cooper, Norton J., to Chatam International Incorporated. Display stand with rotatable shelves. 285,029, 8-12-86, Cl. D6-461.000.

Cournoyer, Bernard T.: *See—*
Ermanski, Albert G.; Cournoyer, Bernard T.; and Wright, David M., 285,098, Cl. D19-90.000.

Cowan, Keith B.: *See—*
Winegard, John R.; and Cowan, Keith B., 285,074, Cl. D14-90.000.

Crain, John E.: *See—*
Dayton, William A.; Crain, John E.; and Hubbach, Robert N., 285,061, Cl. D12-196.000.

Danielson, David C.; Genaro, Donald M.; and McGarvey, John N., to AT&T Bell Laboratories. Telephone handset. 285,073, 8-12-86, Cl. D14-63.000.

Davis, G. William. Cut-away holster. 285,104, 8-12-86, Cl. D3-101.000.

Dayton, William A.; Crain, John E.; and Hubbach, Robert N., to Chrysler Corporation. Automobile door panel exterior surface. 285,061, 8-12-86, Cl. D12-196.000.

Dean, Howard; Kocsis, Andre; and Yee, William H., to Andico Manufacturing Ltd. Headboard bracket. 285,047, 8-12-86, Cl. D8-382.000.

Deere & Company: *See—*
Wood, Mark W., 285,081, Cl. D15-33.000.

Delbuck, Pascal. Loudspeaker. 285,067, 8-12-86, Cl. D14-30.000.

Eastman Kodak Company: *See—*
Hansen, David E., 285,087, Cl. D16-6.000.

Eindhoven Druk B.V.: *See—*
Oskamp, Johan H. E., 285,026, Cl. D3-35.000.

Ermanski, Albert G.; Cournoyer, Bernard T.; and Wright, David M., to Wright Line Inc. Filing container. 285,098, 8-12-86, Cl. D19-90.000.

F. C. Brown Rentals, Inc.: *See—*
Moody, Albert L., 285,077, Cl. D15-1.000.

Fellows, Boyd W. Housing for an electronic game. 285,099, 8-12-86, Cl. D21-13.000.

Finkle, Jeffrey H. Two-hand mitten. 285,024, 8-12-86, Cl. D2-366.000.

Fischer, Robert R.; and Urschel, Joe R., to Urschel Laboratories, Inc. Impeller for comminuting equipment. 285,085, 8-12-86, Cl. D15-139.000.

Floordress Reinigungsgeraete GmbH: *See—*
Schunter, Roland, 285,134, Cl. D34-21.000.

Forsheda AB: *See—*
Jornhagen, Lennart, 285,109, Cl. D23-47.000.

Fujita, Tsutomu, to Toyota Jidosha Kabushiki Kaisha. Rear combination lamp for an automobile. 285,122, 8-12-86, Cl. D26-35.000.

Genaro, Donald M.: *See—*
Danielson, David C.; Genaro, Donald M.; and McGarvey, John N., 285,073, Cl. D14-63.000.

General Foods Corporation: *See—*
Stinson, Karen, 285,040, Cl. D7-360.000.

Gilchrist, Jonathan L.; and Griffith, John A. Floatable tray. 285,036, 8-12-86, Cl. D7-37.000.

Gobleck, Peter A., Jr., to Anchor Hocking Corporation. Tumbler or similar article. 285,033, 8-12-86, Cl. D7-6.000.

Gobleck, Peter A., Jr., to Anchor Hocking Corporation. Tumbler or similar article. 285,034, 8-12-86, Cl. D7-8.000.

Gordon, Michael, to Koret Inc. Luggage carrier. 285,135, 8-12-86, Cl. D34-26.000.

Griffith, John A.: *See—*
Gilchrist, Jonathan L.; and Griffith, John A., 285,036, Cl. D7-37.000.

Haas, Ulrich J., to Optyl Eyewear Fashion International Corporation. Eyeglass frame. 285,089, 8-12-86, Cl. D16-102.000.

Haas, Ulrich J., to Optyl Eyewear Fashion International Corporation. Eyeglass frame. 285,090, 8-12-86, Cl. D16-102.000.

Hahn, Jerome S. Cutlery storage block. 285,038, 8-12-86, Cl. D7-74.000.

Hansen, David E., to Eastman Kodak Company. Camera with integral flash unit. 285,087, 8-12-86, Cl. D16-6.000.

Hanson, David J., to Hanson Energy Products. Impeller. 285,111, 8-12-86, Cl. D23-165.000.

Hanson Energy Products: *See—*
Hanson, David J., 285,111, Cl. D23-165.000.

Haugaard, Erik, to TeleQuest, Inc. Telephone. 285,068, 8-12-86, Cl. D14-53.000.

Hawaiian Motor Company: *See—*
Smith, Raymond G.; and Carter, Raymond M., 285,132, Cl. D32-18.000.

Heriard-Dubreuil, Marc, to A. De Luze & Fils & Cie. Decanter. 285,051, 8-12-86, Cl. D9-318.000.

Heubel, Walter, to Cannie Products Limited. Carton pourer. 285,055, 8-12-86, Cl. D9-434.000.

Hill, Bryan B.; Hill, Charles E.; and Vander Park, Antonius A., to Northern Telecom Limited. Telephone dialing base. 285,072, 8-12-86, Cl. D14-62.000.

Hill, Charles E.: *See—*
Hill, Bryan B.; Hill, Charles E.; and Vander Park, Antonius A., 285,072, Cl. D14-62.000.

Hoff, Richard. External body massage device. 285,116, 8-12-86, Cl. D24-36.000.

Honda Giken Kogyo Kabushiki Kaisha: *See—*
Mizushima, Sadao; and Shibuya, Toshihiko, 285,078, Cl. D15-15.000.

Hoosier FRP, Inc.: *See—*
Nardi, Richard A., 285,059, Cl. D12-156.000.

Hoover, Robert J. Lantern holder. 285,124, 8-12-86, Cl. D26-138.000.

Huang, Tung-Ming, to Abbott Laboratories. Sample cup. 285,118, 8-12-86, Cl. D24-56.000.

Hubbach, Robert N.: *See—*
Dayton, William A.; Crain, John E.; and Hubbach, Robert N., 285,061, Cl. D12-196.000.

Huber, David P.: *See—*
Phillips, Douglas C.; and Huber, David P., 285,129, Cl. D30-9.000.

Huthmacher, Edward A. Combined grass trimmer and wheeled frame. 285,079, 8-12-86, Cl. D15-16.000.

Imai, Hironobu: *See—*
Bianchi, Walter G.; and Imai, Hironobu, 285,052, Cl. D9-371.000.

Ingersoll Equipment Co., Inc.: *See—*
Klein, Edward, 285,080, Cl. D15-27.000.

International Food Equipment Inc.: *See—*
Verkler, Charles E., 285,082, Cl. D15-82.000.

Iwatsu Electronic Co., Ltd.: *See—*
Tsukamoto, Masakazu; and Tsukiyama, Satoru, 285,069, Cl. D14-53.000.

Jac Jacobsen A/S: *See—*
Krogsrud, Jessen C., 285,120, Cl. D26-65.000.

Johde, Reijo, to Oy Fiskars AB. Spring for fastening a rail to a sleeper. 285,046, 8-12-86, Cl. D8-382.000.

John Manufacturing Limited: *See—*
Yuen, John S., 285,128, Cl. D28-85.000.

John Zink Company: *See—*
Bluestein, Bernard B., 285,133, Cl. D32-70.000.

Johnson, Steven C.: *See—*
Collister, Kenneth D.; and Johnson, Steven C., 285,114, Cl. D24-17.000.

Jornhagen, Lennart, to Forsheda AB. Sealing ring. 285,109, 8-12-86, Cl. D23-47.000.

Kasper, James D.: *See—*
Proud, Todd A.; Lin, Tom F.; Mitchell, Wayne J.; and Kasper, James D., 285,115, Cl. D24-29.000.

Katai, Dwaine S., to Amdahl Corporation. Magnetic disk storage system. 285,075, 8-12-86, Cl. D14-102.000.

Kawada Co., Ltd.: *See—*
Nakata, Kiyohide, 285,101, Cl. D21-108.000.
Kesler, Helen. Dental floss holder. 285,127, 8-12-86, Cl. D28-64.000.
Kirk, Alexis V., to Somersett Moon Ltd. Belt buckle. 285,025, 8-12-86, Cl. D2-422.000.
Klein, Edward, to Ingersoll Equipment Co., Inc. Trailing lawn mower. 285,080, 8-12-86, Cl. D15-27.000.
Kocsis, Andre: *See—*
Dean, Howard; Kocsis, Andre; and Yee, William H., 285,047, Cl. D8-382.000.
Koret Inc.: *See—*
Gordon, Michael, 285,135, Cl. D34-26.000.
Kotake, Toshio, to Kyocera Corporation. Photographic camera. 285,086, 8-12-86, Cl. D16-5.000.
Krautz, Alfons O. Smokestack. 285,119, 8-12-86, Cl. D25-35.000.
Krogsrud, Jessen C., to Jac Jacobsen A/S. Lamp. 285,120, 8-12-86, Cl. D26-65.000.
Kurtz, Richard E. Golf tee resembling cigarette. 285,103, 8-12-86, Cl. D21-208.000.
Kyocera Corporation: *See—*
Kotake, Toshio, 285,086, Cl. D16-5.000.
LaBelle Enterprises: *See—*
LaBelle, James R., 285,057, Cl. D10-73.000.
LaBelle, James R., to LaBelle Enterprises. Caliper. 285,057, 8-12-86, Cl. D10-73.000.
Lee, Freddy T. Novelty figure. 285,102, 8-12-86, Cl. D21-149.000.
Levoy, Barton M. Eyeglasses. 285,088, 8-12-86, Cl. D16-102.000.
Levoy, Barton M. Eyeglasses. 285,091, 8-12-86, Cl. D16-102.000.
Li, Robert S. K., to RJP Electronics Limited. Combined calculator ruler, and desk tray. 285,094, 8-12-86, Cl. D18-2.000.
Lin, Tom F.: *See—*
Proud, Todd A.; Lin, Tom F.; Mitchell, Wayne J.; and Kasper, James D., 285,115, Cl. D24-29.000.
Liss, Zalman A.; Spira, Joel S.; and Luchaco, David G., to Lutron Electronics Co., Inc. Face plate for lighting control. 285,066, 8-12-86, Cl. D13-35.000.
Liu, Kwok-Hung, to Transistolite Manufacturing Ltd. Shaver. 285,126, 8-12-86, Cl. D28-49.000.
Looney, John W. Combined door stop and receptacle unit. 285,050, 8-12-86, Cl. D8-402.000.
Lord, C. Dennis, to Rotex Company. Dimple punch for forming risers on draftsmen's template. 285,097, 8-12-86, Cl. D19-72.000.
Luchaco, David G.: *See—*
Liss, Zalman A.; Spira, Joel S.; and Luchaco, David G., 285,066, Cl. D13-35.000.
Lundgren, Alvar I.; and Lundgren, Anders B. A., to Scan Coin AB. Coin packaging machine. 285,095, 8-12-86, Cl. D18-3.000.
Lundgren, Anders B. A.: *See—*
Lundgren, Alvar I.; and Lundgren, Anders B. A., 285,095, Cl. D18-3.000.
Luthe, Claus; and Boyer, Boyke, to Bayerische Motoren Werke Aktiengesellschaft. Rub rail for an automobile. 285,060, 8-12-86, Cl. D12-190.000.
Lutron Electronics Co., Inc.: *See—*
Liss, Zalman A.; Spira, Joel S.; and Luchaco, David G., 285,066, Cl. D13-35.000.
Mahoney, Nathaniel J. Chimney brace. 285,045, 8-12-86, Cl. D8-366.000.
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Collister, Kenneth D.; and Johnson, Steven C., 285,114, Cl. D24-17.000.
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Mockett, Douglas A.J. Sleeve and cap grommet set for electrical wires. 285,044, 8-12-86, Cl. D8-354.000.
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Walker Crosweller & Company Limited: *See—*
Ogilvie, Kenneth A., 285,105, Cl. D23-19.000.
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Williams, Kevin, 285,113, Cl. D24-17.000.
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Winegard, John R.; and Cowan, Keith B., 285,074, Cl. D14-90.000.
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van der Jagt, Martinus, 5,781, Cl. 76.000.
Duffett, William E., to Yoder Brothers, Inc. Chrysanthemum plant named Rejoice. 5,779, 8-12-86, Cl. 74.000.
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CLASSIFICATION OF PATENTS

ISSUED AUGUST 12, 1986

NOTE.—First number, class; second number, subclass; third number, patent number

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489	4,605,040
527	4,605,041
596.12	4,605,042

CLASS 138

149	4,605,043

CLASS 139

304	4,605,044
[illegible]	4,605,045

CLASS 140

112	4,605,046

CLASS 141

83	4,605,047

CLASS 144

136 B	4,605,048
144 R	4,605,049

CLASS 148

1.5	4,605,447
11.5 A	4,605,448
12 B	4,605,449
188	4,605,450
191	4,605,451
404	4,605,452

CLASS 149

24	4,605,453

CLASS 150

52 G	4,605,050

CLASS 156

73.1	4,605,454
78	4,605,455
157	4,605,456
160	4,605,457
164	4,605,458
215	4,605,459
229	4,605,460
233	4,605,461
245	4,605,462
247	4,605,463
253	4,605,464
273.3	4,605,465
293	4,605,466
497	4,605,467
[illegible]	4,605,468
610	4,605,469
643	4,605,470
645	4,605,471

CLASS 157

13	4,605,051

CLASS 162

277	4,605,472

CLASS 164

16	4,605,052
54	4,605,053
147.1	4,605,054
479	4,605,055
490	4,605,056
519	4,605,057

CLASS 165

80.2	4,605,058
163	4,605,059
166	4,605,060

CLASS 166

63	4,605,061
127	4,605,062
216	4,605,063
237	4,605,064
250	4,605,065
273	4,605,066
285	4,605,067
307	4,605,068
310	4,605,069
380	4,605,070

CLASS 168

12	4,605,071

CLASS 172

236	4,605,072

CLASS 173

51	4,605,073

CLASS 174

2	4,605,814
41	4,605,815
65 R	4,605,816
67	4,605,817
103	Re.32,225
107	4,605,818
127	4,605,819

CLASS 175

4.52	4,605,074
58	4,605,075
61	4,605,076
85	4,605,077
162	4,605,078
410	4,605,079

CLASS 177

4	4,605,080
25	4,605,081

4,605,082
122 4,605,083

CLASS 178

22.09 4,605,820

CLASS 179

6.13 4,605,821
16 AA 4,605,822
18 BC 4,605,823
18 HB 4,605,824
99 R 4,605,825
170.2 4,605,826
175.3 F 4,605,827

CLASS 180

70.1 4,605,084
79.1 Re.32,222
143 4,605,085
202 4,605,086
248 4,605,087

CLASS 181

30 4,605,088
114 4,605,089
210 4,605,090
224 4,605,091
280 4,605,092
295 4,605,093

CLASS 182

20 4,605,094
48 4,605,095
51 4,605,096
92 4,605,097
4,605,098
155 4,605,099
213 4,605,100

CLASS 184

6.11 4,605,101

CLASS 186

37 4,605,102

CLASS 188

71.5 4,605,103
72.4 4,605,104
251 M 4,605,105
374 4,605,106

CLASS 192

0.02 R 4,605,107
4,605,108
0.033 4,605,112
4 C 4,605,109
5 4,605,110
16 4,605,111
98 4,605,113
106.2 4,605,114

CLASS 198

341 4,605,115
364 4,605,116
493 4,605,117
509 4,605,118
514 4,605,119
781 4,605,120
803.01 4,605,121
834 4,605,122

CLASS 200

5 A 4,605,828
52 R 4,605,829
73 4,605,830
83 D 4,605,832
83 R 4,605,831

CLASS 204

1 T 4,605,473
44 4,605,474
130 4,605,475
181.6 4,605,476
181.7 4,605,478
182.6 4,605,477
192 D 4,605,479
211 4,605,480
243 M 4,605,481
258 4,605,482
280 4,605,483
290 R 4,605,484
302 4,605,485

CLASS 206

0.5 4,605,123
223 4,605,124
312 4,605,125
386 4,605,126
506 Re.32,223
525 4,605,127
611 4,605,128
623 4,605,129

CLASS 208

78 4,605,488
87 4,605,489
143 4,605,490
161 4,605,491
310 Z 4,605,492
341 4,605,493
408 4,605,487
412 4,605,486

CLASS 209

166 4,605,494
211 4,605,495
394 4,605,496

CLASS 210

111 4,605,497[9]
222 4,605,498
282 4,605,499
321.1 4,605,500
519 4,605,501
611 4,605,502
651 4,605,503
656 4,605,504

CLASS 211

59.2 4,605,130
90 4,605,131

CLASS 212

185 4,605,132

CLASS 213

155 4,605,133

CLASS 215

13 A 4,605,134
220 4,605,135
232 4,605,136
254 4,605,137
4,605,138

CLASS 219

56.22 4,605,833
69 W 4,605,834
85 BM 4,605,835
130.01 4,605,836
206 4,605,837
319 4,605,838
349 4,605,839
401 4,605,840
449 4,605,841

CLASS 220

3.4 4,605,139
233 4,605,140
269 4,605,141
359 4,605,142

CLASS 222

566 4,605,225

CLASS 224

214 4,605,143
265 4,605,144

CLASS 226

74 4,605,145
97 4,605,146
156 4,605,147
174 4,605,148

CLASS 227

7 4,605,149
18 4,605,150

CLASS 228

2 4,605,151
6.2 4,605,152
56.3 4,605,153
102 4,605,154
119 4,605,155
127 4,605,156
132 4,605,157

CLASS 229

15 4,605,158
116 4,605,159

CLASS 235

1 D 4,605,842
33 4,605,843
380 4,605,844
382 4,605,845
468 4,605,846
471 4,605,847

CLASS 236

13 4,605,160
15 BC 4,605,161
49 4,605,162

CLASS 237

2 A 4,605,163
4,605,164

CLASS 239

6 4,605,165
96 4,605,166
102 4,605,167
112 4,605,168
265.29 4,605,169
444 4,605,170
453 4,605,171

CLASS 241

33 4,605,172
36 4,605,173
52 4,605,174
56 4,605,175
240 4,605,176

CLASS 242

35.5 A 4,605,177
55 4,605,178
72 B 4,605,179
107.4 A 4,605,180
149 4,605,181
4,605,182

CLASS 244

46 4,605,183
58 4,605,184
60 4,605,185
110 B 4,605,186
216 4,605,187

CLASS 248

157 4,605,188
162.1 4,605,189
316.7 4,605,190
318 4,605,191
394 4,605,192
460 4,605,193
559 4,605,194

CLASS 250

205 4,605,848
216 4,605,849
221 4,605,850
223 B 4,605,851
231 R 4,605,852
231 SE 4,605,853
266 4,605,854
343 4,605,855
363 S 4,605,856
372 4,605,857
374 4,605,858
4,605,859
397 4,605,860
484.1 4,605,861
578 4,605,862

CLASS 251

1.2 4,605,195
30.01 4,605,197
58 4,605,198
84 4,605,196
171 4,605,199
258 4,605,200
305 4,605,201
315 4,605,202

CLASS 252

8.514 4,605,505
8.75 4,605,506
45 4,605,507
95 4,605,508
131 4,605,509
299.66 4,605,510
301.21 4,605,511

CLASS 254

93 HP 4,605,203

CLASS 256

19 4,605,204

CLASS 260

112.005 4,605,512
502.5 F 4,605,522

CLASS 261

1 4,605,523

CLASS 264

2.5 4,605,524
40.5 4,605,525
41 4,605,526
137 4,605,527
216 4,605,528
263 4,605,529

CLASS 266

160 4,605,205
283 4,605,206

CLASS 267

57.1 R 4,605,207

CLASS 269

32 4,605,208

CLASS 270

40 4,605,209
41 4,605,210
53 4,605,211
54 4,605,212
55 4,605,213

CLASS 271

3.1 4,605,214
9 4,605,215
183 4,605,216
124 4,605,217
238 4,605,218

CLASS 272

75 4,605,219
96 4,605,220
117 4,605,221
122 4,605,222
130 4,605,223
146 4,605,224

CLASS 273

26 C 4,605,226
54 B 4,605,227
77 R 4,605,228
86 R 4,605,229
129 AP 4,605,230
157 A 4,605,231
348.1 4,605,232

CLASS 277

80 4,605,233
81 R 4,605,234
87 4,605,235
235 4,605,236

CLASS 280

47.24 4,605,237
154.5 R 4,605,238
158 R 4,605,239
236 4,605,240
281 R 4,605,241
294 4,605,242
642 4,605,243
707 4,605,244

CLASS 281

34 4,605,245

CLASS 282

29 A 4,605,246

CLASS 285

9.2 4,605,247
52 4,605,248
98 4,605,249

CLASS 292

171 4,605,250
288 4,605,251
338 4,605,252

CLASS 294

8.6 4,605,253
57 4,605,254
67.33 4,605,255
99.2 4,605,256

CLASS 296

26 4,605,257
164 4,605,258
190 4,605,259
201 4,605,260

CLASS 297

16 4,605,261

CLASS 303

84 A 4,605,262
116 4,605,263

CLASS 305

47 4,605,264

CLASS 307

269 4,605,863
270 4,605,864
4,605,865
296 R 4,605,866
351 4,605,867
4,605,868
425 4,605,869
443 4,605,870
455 4,605,871
465 4,605,872

CLASS 310

154 4,605,873
268 4,605,874
323 4,605,875
358 4,605,876

CLASS 312

219 4,605,266
297 4,605,267

CLASS 313

272 4,605,877
406 4,605,878
407 4,605,879
414 4,605,880
638 4,605,881

CLASS 315

158 4,605,882

CLASS 318

312 4,605,883
314 4,605,884
317 4,605,885
565 4,605,886
594 4,605,887
786 4,605,888

CLASS 322

61 4,605,889

CLASS 323

209 4,605,890
313 4,605,891
315 4,605,892

CLASS 324

58.5 B 4,605,893
73 R 4,605,894
133 4,605,895
158 F 4,605,896
207 4,605,897
232 4,605,898
258 4,605,899
439 4,605,900

CLASS 328

140 4,605,901
158 4,605,902

CLASS 329

50 4,605,903
4,605,904

CLASS 330

9 4,605,905
149 4,605,906
257 4,605,907

CLASS 331

8 4,605,908
96 4,605,909

CLASS 332

9 R 4,605,910

CLASS 333

144 4,605,911
164 4,605,912
166 4,605,913
237 4,605,914
238 4,605,915
245 4,605,916

CLASS 335

128 4,605,917
261 4,605,918

CLASS 338

2 4,605,919

CLASS 339

16 C 4,605,268
17 LC 4,605,269
40 4,605,270
45 M 4,605,271
60 M 4,605,272
75 P 4,605,273
89 R 4,605,274
119 R 4,605,275
176 MF 4,605,276
262 R 4,605,277
275 B 4,605,278
276 R 4,605,279

CLASS 340

347 DD 4,605,921
347 NT 4,605,920
552 4,605,922
604 4,605,923
683 4,605,924
825.19 4,605,927
825.3 4,605,926
825.94 4,605,928
870.29 4,605,925

CLASS 343

6.8 R 4,605,929
413 4,605,930
700 MS 4,605,931
4,605,932
4,605,933
895 4,605,934
914 4,605,935

CLASS 346

76 PH 4,605,936
4,605,937
4,605,938
140 R 4,605,939
209 4,605,940

CLASS 350

96.20 4,605,280
96.21 4,605,281
127 4,605,283
167 4,605,282
334 4,605,284
357 4,605,285
429 4,605,286
513 4,605,287
552 4,605,288
606 4,605,289
619 4,605,290
623 4,605,291
641 4,605,292

CLASS 351

153 4,605,293

CLASS 353

28 4,605,294

CLASS 354

154 4,605,295
223 4,605,296
303 4,605,297

CLASS 355

3 R 4,605,299
3 TR 4,605,298
29 4,605,300
69 4,605,301

CLASS 356

5 4,605,302
73 4,605,303
138 4,605,304
246 4,605,305
334 4,605,306
350 4,605,307
373 4,605,308

CLASS 357

2 4,605,941
17 4,605,942
4,605,943
4,605,944
22 4,605,945
23.1 4,605,946
23.15 4,605,947
34 4,605,948
71 4,605,949

CLASS 358

11 4,605,950
4,605,951
13 4,605,952
24 4,605,953
27 4,605,954
29 4,605,955
44 4,605,956
78 4,605,957
84 4,605,958
93 4,605,959
106 4,605,960
119 4,605,961
140 4,605,962
141 4,605,963
147 4,605,964
148 4,605,965
160 4,605,966
183 4,605,967
188 4,605,968
213 4,605,969
265 4,605,970
285 4,605,971
302 4,605,972
335 4,605,973

CLASS 360

62 4,605,974
4,605,975
70 4,605,976
103 4,605,977
104 4,605,978
105 4,605,979

CLASS 361

56 4,605,980
91 4,605,981
94 4,605,982
154 4,605,983
220 4,605,984
283 4,605,985
386 4,605,986
403 4,605,987
429 4,605,988
433 4,605,989

CLASS 362

32 4,605,990
65 4,605,991
147 4,605,992
183 4,605,993
202 4,605,994
287 4,605,995
352 4,605,996

CLASS 363

16 4,605,997
19 4,605,998
4,605,999
145 4,606,000

CLASS 364

167 4,606,001
200 4,606,002

4,606,003
414 4,606,004
431.01 4,606,005
472 4,606,006
474 4,606,007
560 4,606,008
724 4,606,009
900 Re.32,226

CLASS 365

149 4,606,010
4,606,011
189 4,606,012
200 4,606,013

CLASS 366

76 4,605,309
142 4,605,310

CLASS 367

75 4,606,014
95 4,606,015
99 B1 4,322,827

CLASS 368

77 4,605,311
282 4,605,312

CLASS 369

54 4,606,016
275 4,606,017
279 4,606,018

CLASS 370

3 4,606,020
13 4,606,019
62 4,606,021
85 4,606,022
94 4,606,023

CLASS 371

16 4,606,024
20 4,606,025
39 4,606,026
43 4,606,027
49 4,606,028
69 4,606,029

CLASS 372

5 4,606,030
28 4,606,031
38 4,606,032
45 4,606,033
57 4,606,034
87 4,606,035
95 4,606,036

CLASS 373

6 4,606,037
24 4,606,038
108 4,606,055

CLASS 374

121 4,605,313
127 4,605,314
144 4,605,315

CLASS 375

1 4,606,039
4,606,040
4,606,041
2.1 4,606,042
12 4,606,043
13 4,606,044
4,606,045
17 4,606,046
38 4,606,047
39 4,606,048
45 4,606,049
75 4,606,050
86 4,606,051
87 4,606,052
4,606,053
102 4,606,054
110 4,606,056

CLASS 376

237 4,605,530
252 4,605,531

CLASS 377

28 4,606,057
39 4,606,058
47 4,606,059
60 4,606,060

CLASS 378

10 4,606,061
13 4,606,062
41 4,606,063
99 4,606,064

CLASS 381

4,606,071

CLASS 382

18 4,606,065
41 4,606,066
42 4,606,067
56 4,606,068
4,606,069

CLASS 383

4 4,606,070

CLASS 384

20 4,605,265
99 4,605,316
101 4,605,317
482 4,605,318
484 4,605,319
494 4,605,320
512 4,605,321
575 4,605,322

CLASS 400

124 4,605,323
144.2 4,605,324
201 4,605,326
207 4,605,325
208 4,605,327
662 4,605,328

CLASS 401

68 4,605,330
258 4,605,331

CLASS 403

23 4,605,332
27 4,605,333
291 4,605,334
348 4,605,335

CLASS 404

6 4,605,336
35 4,605,337

CLASS 405

124 4,605,338
237 4,605,339
252 4,605,340
297 4,605,341

CLASS 406

49 4,605,329
129 4,605,342

CLASS 407

119 4,605,343

CLASS 408

95 4,605,344
4,605,345
147 4,605,346
224 4,605,347
239 A 4,605,348

CLASS 409

141 4,605,349

CLASS 411

75 4,605,350

CLASS 413

58 4,605,351

CLASS 414

217 4,605,352
332 B1 4,348,146
401 4,605,353
730 4,605,354
786 B1 3,563,399

CLASS 416

208 4,605,355

CLASS 417

102 4,605,356
228 4,605,357
236 4,605,358
270 4,605,359
518 4,605,360

CLASS 418

38 4,605,361
63 4,605,362
131 4,605,363

CLASS 420

472 4,605,532

CLASS 422

37 4,605,534
95 4,605,535
99 4,605,536

CLASS 423

22 4,605,541
29 4,605,537
55 4,605,538
300 4,605,539
322 4,605,540
345 4,605,542
347 4,605,543
508 4,605,544
516 4,605,545
576 4,605,546
646 4,605,547

CLASS 424

15 4,605,548
18 4,605,549
22 4,605,550
38 4,605,551
45 4,605,552
59 4,605,553
[redacted] 4,605,554
85 4,605,555
4,605,556
91 4,605,557
105 4,605,558
120 4,605,559
195.1 4,605,560

CLASS 425

72 R 4,605,365
72 S 4,605,364
143 4,605,366
150 4,605,367
195 4,605,368

CLASS 426

93 4,605,561
299 4,605,562
607 4,605,563

CLASS 427

2 4,605,564
39 4,605,565
43.1 4,605,566
54.1 4,605,567
220 4,605,568
256 4,605,569
386 4,605,570
387 4,605,571
403 4,605,572
424 4,605,573
4,605,574

CLASS 428

14 4,605,575
35 4,605,576
40 4,605,577
57 4,605,578
66 4,605,579
92 4,605,580
96 4,605,581
120 4,605,582
126 4,605,583
142 4,605,584
224 4,605,585
240 4,605,586
265 4,605,587
288 4,605,588
290 4,605,589
295 4,605,590
332 4,605,591
334 4,605,592
352 4,605,593
373 4,605,594
413 4,605,595
423.1 Re.32,224
423.3 4,605,596
522 4,605,597
622 4,605,533
659 4,605,598
665 4,605,599
689 4,605,600

CLASS 429

13 4,605,601
26 4,605,602
59 4,605,603
116 4,605,604
174 4,605,605

CLASS 430

2 4,605,606
17 4,605,607
206 4,605,608
232 4,605,609
376 4,605,610
393 4,605,611
538 4,605,612
562 4,605,613

CLASS 431

328 4,605,369

CLASS 432

14 4,605,370
134 4,605,371

CLASS 434

16 4,605,372
274 4,605,373
365 4,605,374

CLASS 435

13 4,605,614
16 4,605,615
23 4,605,616
29 4,605,617
4,605,618
94 4,605,619
148 4,605,620
177 4,605,621
182 4,605,622
240 4,605,623
253 4,605,624
280 4,605,625
291 4,605,626
317 4,605,627

CLASS 436

70 4,605,628
166 4,605,629
511 4,605,630

CLASS 440

1 4,605,375
38 4,605,376
61 4,605,377
102 4,605,378

CLASS 445

59 4,605,379

CLASS 446

14 4,605,380
321 4,605,381
330 4,605,382
376 4,605,383

CLASS 455

3 B1 4,475,242
4 4,606,072
89 4,606,073
131 4,606,074
234 4,606,075
343 4,606,076

CLASS 464

111 4,605,384
181 4,605,385

CLASS 474

8 4,605,386
112 4,605,387
152 4,605,388
153 4,605,389

CLASS 493

84 4,605,390
159 4,605,391
196 4,605,392
317 4,605,393

CLASS 501

1 4,605,631
54 4,605,632
87 4,605,633
96 4,605,634
4,605,635

CLASS 502

39 4,605,636
64 4,605,637
104 4,605,638
331 4,605,639
402 4,605,640

CLASS 514

12 4,605,641
4,605,642
4,605,643
45 4,605,644
51 4,605,645
53 4,605,646
85 4,605,647
180 4,605,648
182 4,605,649
183 4,605,650
200 4,605,651
214 4,605,652
226 4,605,653
237 4,605,654
252 4,605,655
255 4,605,656
259 4,605,657
261 4,605,658
262 4,605,659
290 4,605,660
400 4,605,661
413 4,605,662
425 4,605,663
4,605,664
431 4,605,665
474 4,605,666
477 4,605,667
485 4,605,668
575 4,605,669
619 4,605,670
647 4,605,671
648 4,605,672
654 4,605,673
685 4,605,674
720 4,605,675

CLASS 518

700 4,605,676
4,605,677
4,605,678
4,605,679
715 4,605,680

CLASS 521

51 4,605,681
81 4,605,682
99 4,605,683
107 4,605,684

CLASS 522

124 4,605,685

CLASS 523

105 4,605,686
171 4,605,687
218 4,605,688
313 4,605,689
414 4,605,690

CLASS 524

27 4,605,691
117 4,605,692
239 4,605,693
292 4,605,694
424 4,605,695
432 4,605,696
504 4,605,720
559 4,605,698

CLASS 525

67 4,605,699
73 4,605,700
107 4,605,701
154 4,605,702
157 4,605,703
193 4,605,704
330.9 4,605,705
340 4,605,706
410 4,605,707
423 4,605,708
430 4,605,709
438 4,605,710
4,605,711
474 4,605,712
537 4,605,713

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CLASSIFICATION OF DESIGNS

D2—	234	285,020		317	285,039		156	285,059		[illegible]	285,079	D21—	13	285,099	D26—	26	285,121
	241	285,021		360	285,040		190	285,060		27	285,080		108	285,100		35	285,122
	283	285,022	D8—	21	285,041		196	285,061		[illegible]	285,081			285,101		65	285,120
	320	285,023		91	285,042		342	285,062		[illegible]	285,082		149	285,102		118	285,123
	366	285,024		323	285,043	D13—	[illegible]	285,063		127	285,083		208	285,103		138	285,124
	422	285,025		354	285,044		17	285,064		131	285,084	D23—	19	285,105	D28—	7	285,125
D3—	35	285,026		366	285,045		30	285,065		[illegible]	285,085		28	285,106		49	285,126
	101	285,104		382	285,046		35	285,066	D16—	5	285,086		31	285,107		64	285,127
D6—	361	285,027			285,047	D14—	30	285,067		6	285,087			285,108		85	285,128
	375	285,028		385	285,048		53	285,068		[illegible]	285,088		47	285,109	D30—	9	285,129
	461	285,029		396	285,049			285,069			285,089		55	285,110		40	285,130
	491	285,030		402	285,050		61	285,070			285,090		165	285,111			285,131
	511	285,031	D9—	318	285,051		62	285,071			285,091	D24—	17	285,112	D32—	18	285,132
D7—	[illegible]	285,032		371	285,052			285,072		127	285,092			285,113		70	285,133
		285,033		384	285,053		63	285,073	D17—	14	285,093			285,114	D34—	21	285,134
	8	285,034		389	285,054		90	285,074	D18—	2	285,094		29	285,115		26	285,135
	[illegible]	285,035		434	285,055		102	285,075		3	285,095		36	285,116		28	285,136
	37	285,036		454	285,056		113	285,076	D19—	[illegible]	285,096			285,117			285,137
	53	285,037	D10—	73	285,057	D15—	1	285,077		72	285,097		56	285,118		31	285,138
	74	285,038	D12—	107	285,058		15	285,078		90	285,098	D25—	35	285,119	D99—	35	285,139

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P.—	[illegible]	5,780		74	5,778			5,779		76	5,781

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55 : 285,032

PLANT PATENTS

: 5,779
39 : 5,780

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OFFICIAL GAZETTE of the UNITED STATES PATENT AND TRADEMARK OFFICE

August 19, 1986 Volume 1069 Number 3

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The following are mailed under direction of the Superintendent of Documents, Government Printing Office, Washington, D.C., 20402, to whom all subscriptions should be made payable and all communications addressed:

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PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty (PCT) Information

For information concerning the PCT member countries see the notice appearing in the *Official Gazette* at 1052 O.G. 52 on Mar. 26, 1985.

For use of the European Patent Office as Searching Authority for PCT applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52 on Sept. 28, 1982.

Certain domestic PCT fees for international applications have been changed effective Oct. 5, 1985 in the rule change notice titled "Revision of Patent Fees" published at 1057 O.G. 24 on Aug. 20, 1985.

The Search fee of the European Patent Office has been changed as of Feb. 9, 1986 and is announced in the *Official Gazette* at 1061 O.G. 30 on Dec. 31, 1985.

International PCT fees have been changed effective Jan. 1, 1986 and were announced in the *Official Gazette* at 1061 O.G. 30 on Dec. 31, 1985.

Note that the amount of the international search fee for the European Patent Office and the amounts of the International PCT fees will change effective June 1, 1986. For information on these fee changes see the notice appearing in the *Official Gazette* at 1065 O.G. 41 on Apr. 29, 1986.

The current schedule of PCT fees is as follows:

Transmittal fee:	170.00
Search Fee	
U.S. Patent and Trademark Office as Searching Authority	
—No corresponding prior U.S. national application filed	420.00
—Corresponding prior U.S. national application filed	250.00
European Patent Office as Searching Authority	
if paid before June 1, 1986	830.00
if paid on or after June 1, 1986	930.00
International fees	
Basic fee (first 30 pages):	
if paid before June 1, 1986	325.00
if paid on or after June 1, 1986	375.00
Basic Supplemental fee (for each page over 30):	
if paid before June 1, 1986	6.00
if paid on or after June 1, 1986	7.00
Designation fee for the first 10 national or regional offices:	
if paid before June 1, 1986	80.00
if paid on or after June 1, 1986	90.00
Designation fee for 11th and subsequent designations	No charge

DONALD J. QUIGG,
Assistant Secretary and Commissioner of Patents and Trademarks.

Mar. 31, 1986.

Notice of Maintenance Fees Payable

Title 37, Code of Federal Regulations, Section 1.362(d), effective Nov. 1, 1984, provides that maintenance fees may be paid without surcharge for a six-month period beginning 3, 7, and 11 years after the date of issue of patents based on applications filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(k) or (l), as amended effective Oct. 5, 1985. If the maintenance fee is not paid in a patent requiring such payment the patent will expire on the 4th, 8th or 12th anniversary of the grant.

Attention is drawn to the patents which were issued on Aug. 16, 1983, for which maintenance fees due at 3 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,398,305 through 4,399,566
Reissue Patents based on the above identified patents.

No maintenance fees are required for design or plant patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

The current amounts of the maintenance fees due at 3 years and six months are set forth in 37 CFR 1.20(e) and (h), as amended effective Oct. 5, 1985, which are reproduced below:

37 CFR §1.20 Post-issuance fees

"(e) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant . . . $ 225.00"

"(h) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Aug. 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant:
By a small entity (§1.9(f)) . . . . . $ 225.00
By other than a small entity . . . . . $ 450.00"

The amounts of the surcharges as amended effective Oct. 5, 1985, are set forth in 37 CFR 1.20 (k) and (l) which are reproduced below:

"(k) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982 . . . . . $ 110.00"

"(l) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Aug. 27, 1982:
By a small entity (§1.9(f)) . . . . . $ 55.00
By other than a small entity . . . . . $ 110.00"

Section 1.20 paragraph (m) as amended as a result of enactment of Public Law 98–622 effective Nov. 8, 1984, is reproduced below:

"(m) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee where the delay in payment is shown to the satisfaction of the Commissioner to have been unavoidable . . . . . $ 500.00"

Notice of Expiration of Patents Due to Failure to Pay Maintenance Fees

35 U.S.C. 41 and 37 CFR 1.362(g) provide that if the required maintenance fee and any applicable surcharge are not paid in a patent requiring such payment, the patent will expire at the end of the 4th, 8th, or 12th anniversary of the grant of the patent depending on the first maintenance fee which was not paid.

According to the records of the Office, the patents listed below have expired due to failure to pay the required maintenance fee and any applicable surcharge.

PATENTS WHICH EXPIRED JUNE 1, 1986 DUE TO FAILURE TO PAY MAINTENANCE FEES

Patent Number	Serial Number	Issue Date
4,332,064	06/231,374	6/01/82
4,332,182	06/222,895	6/01/82
4,332,240	06/220,675	6/01/82
4,332,241	06/218,550	6/01/82
4,332,337	06/227,517	6/01/82
4,332,385	06/223,518	6/01/82
4,332,542	06/256,573	6/01/82
4,332,555	06/221,961	6/01/82
4,332,626	06/256,437	6/01/82
4,332,650	06/226,749	6/01/82
4,332,683	06/259,948	6/01/82
4,332,691	06/251,036	6/01/82
4,332,721	06/235,816	6/01/82
4,332,723	06/265,303	6/01/82
4,332,744	06/224,776	6/01/82
4,332,807	06/228,449	6/01/82
4,332,810	06/228,483	6/01/82
4,332,811	06/246,352	6/01/82
4,332,841	06/219,219	6/01/82
4,332,910	06/239,196	6/01/82
4,332,943	06/292,805	6/01/82
4,332,957	06/219,012	6/01/82
4,332,958	06/275,180	6/01/82
4,332,971	06/216,399	6/01/82
4,332,991	06/216,065	6/01/82
4,333,027	06/229,919	6/01/82

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.19(a)).

4,424,525 Re. S.N. 869,669, Filed June 2, 1986, Cl. 354/402, HIGH ELECTRON MOBILITY SINGLE HETEROJUNCTION SEMICONDUCTOR DEVICES, Takashi Mimura, Owner of Record: *Fujitsu Ltd., Kawasaki, Japan,* Attorney or Agent: H. J. Staas, Ex. Gp.: 344

4,428,835, Re. S.N. 824,212, Filed Jan. 30, 1986, Cl. 210/172, STRAINER, Akira Nagashima, Owner of Record: *Kioritz Corp., Tokyo, Japan,* Attorney or Agent: Ernest A. Wegner, et al., Ex. Gp.: 136

4,432,933, Re. S.N. 868,960, Filed May 29, 1986, Cl. 376/152, PROCESS FOR THE FABRICATION OF THERMONUCLEAR FUEL PELLETS AND THE PRODUCT THEREOF, Robert J. Teitel, et al., Owner of Record: *K M S Fusion, Inc., Ann Arbor, Mich.,* Attorney or Agent: Arthur Raisch, et al., Ex. Gp.: 221

4,445,061, Re. S.N. 855,515, Filed Apr. 23, 1986, Cl. 310/156, WIDE AIR GAP PERMANENT MAGNET MOTORS, John T. Jackson, Owner of Record: *Synektron Corp., Portland, Ore.,* Attorney or Agent: J. Pierre Kolisch, et al., Ex. Gp.: 212

4,446,179, Re. S.N. 848,572, Filed Apr. 7, 1986, Cl. 428/31, TRIM STRIP FOR AUTOMOBILE BODIES, Robert E. Waugh, Owner of Record: *D. L. Auld Co., Columbus, Ohio,* Attorney or Agent: Richard A. Killworth, et al., Ex. Gp.: 156

4,450,832, Re. S.N. 869,201, Filed May 29, 1986, Cl. 128/80G, BODY WEIGHT SUPPORT SYSTEM, Thomas P. Waddell, Owner of Record: *Inventor,* Attorney or Agent: Austin R. Miller, et al., Ex. Gp.: 337

4,454,578, Re. S.N. 873,174, Filed June 11, 1986, Cl. 364/200, DATA PROCESSING UNIT WITH PIPELINED OPERAND, Hideaki Matsumoto, et al., Owner of Record: *Hitachi Ltd., Tokyo, Japan,* Attorney or Agent: Donald R. Antonelli, et al., Ex. Gp.: 237

4,456,924, Re. S.N. 872,898, Filed June 11, 1986, Cl. 358/75, SCREENED IMAGE REPRODUCTION, Gideon Rsoenfeld, Owner of Record: *Scitex Corp., Herzlia, Israel,* Attorney or Agent: Robert A. Cesari, et al., Ex. Gp.: 262

4,527,732, Re. S.N. 876,320, Filed June 19, 1986, Cl. 229/17G, POURING SPOUT OPENING CONFIGURATION FOR A GABLE TOP OF A CONTAINER, Wesley H. Smith, Owner of Record: *International Paper Co., New York, N.Y.,* Attorney or Agent: Walt T. Zienlinski, et al., Ex. Gp.: 241

4,538,461, Re. S.N. 859,474, Filed May 2, 1986, Cl. 73/505, VIBRATORY ANGULAR RATE SENSING SYSTEM, William F. Juptner, et al., Owner of Record: *Piezoelectric Technology Investors, Ltd., Laguna Hills, Calif.,* Attorney or Agent: Paul D. Flehr, et al., Ex. Gp.: 265

4,553,380, Re. S.N. 861,328, Filed May 9, 1986, Cl. 56/305, ADJUSTABLE HOLD DOWN FOR THE SICKLE OF A RECIPROCATING CUTTER ASSEMBLY, Michael L. O'Halloran, Owner of Record: *Hesston Corp., Hesston, Kans.,* Attorney or Agent: Stephen D. Timmons, et al., Ex. Gp.: 333

REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19(a)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

No Publications This Issue.

PATENT NOTICES

Certificates of Correction for the Week of Aug. 19, 1986

PP. 5,496
D. 281,323
D. 281,863
4,162,647
4,324,858
4,340,452
4,366,246
4,395,454
4,403,340
4,403,920
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Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The following libraries, designated as Patent Depository Libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent years to all or most of the patents issued since 1790.

These patent collections are open to public use and each of the Patent Depository Libraries, in addition, offers the publications of the U.S. Patent Classification System (e.g. The Manual of Classification, Index to the U.S. Patent Classification, Classification Definitions, etc.) and provides technical staff assistance in their use to aid the public in gaining effective access to information contained in patents. With one exception, as noted in the table following, the collections are organized in patent number sequence.

Facilities for making paper copies from either microfilm in reader-printers or from the bound volumes in paper-to-paper copies are generally provided for a fee.

Owing to variations in the scope of patent collections among the Patent Depository Libraries and in their hours of service to the public, anyone contemplating use of the patents at a particular library is advised to contact that library, in advance, about its collection and hours, so as to avert possible inconvenience.

State	*Name of Library*	*Telephone Contact*
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	Birmingham Public Library	(205) 226-3680
Alaska	Anchorage Municipal Libraries	(907) 264-4481
Arizona	Tempe: Science Library, Arizona State University	(602) 965-7607
Arkansas	Little Rock: Arkansas State Library	(501) 371-2090
California	Los Angeles Public Library	(213) 612-3273
	Sacramento: California State Library	(916) 322-4572
	San Diego Public Library	(619) 236-5813
	Sunnyvale: Patent Information Clearinghouse*	(408) 730-7290
Colorado	Denver Public Library	(303) 571-2122
Delaware	Newark: University of Delaware Library	(302) 451-2432
Florida	Fort Lauderdale: Broward County Main Library	(305) 357-7444
	Miami-Dade Public Library	(305) 375-2665
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4508
Idaho	Moscow: University of Idaho Library	(208) 885-6235
Illinois	Chicago Public Library	(312) 269-2865
	Springfield: Illinois State Library	(217) 782-5430
Indiana	Indianapolis-Marion County Public Library	(317) 269-1706
Louisiana	Baton Rouge: Troy H. Middleton Library, Louisiana State University	(504) 388-2570
Maryland	College Park: Engineering and Physical Sciences Library, University of Maryland	(301) 454-3037
Massachusetts	Amherst: Physical Sciences Library, University of Massachusetts	(413) 545-1370
	Boston Public Library	(617) 536-5400 Ext. 265
Michigan	Ann Arbor: Engineering Transportation Library, University of Michigan	(313) 764-7494
	Detroit Public Library	(313) 833-1450
Minnesota	Minneapolis Public Library & Information Center	(612) 372-6570
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 390
Montana	Butte: Montana College of Mineral Science and Technology Library	(406) 496-4283
Nebraska	Lincoln: University of Nebraska-Lincoln, Engineering Library	(402) 472-3411
Nevada	Reno: University of Nevada Library	(702) 784-6579
New Hampshire	Durham: University of New Hampshire Library	(603) 862-1777
New Jersey	Newark Public Library	(201) 733-7815
New Mexico	Albuquerque: University of New Mexico Library	(505) 277-5441
New York	Albany: New York State Library	(518) 474-5125
	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 714-8529
North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
Ohio	Cincinnati & Hamilton County, Public Library of	(513) 369-6936
	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 255-7055 Ext. 212
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Oregon	Salem: Oregon State Library	(503) 378-4239
Pennsylvania	Cambridge Springs: Alliance College Library	(814) 398-2098
	Philadelphia: Franklin Institute Library	(215) 448-1227
	The Free Library	(215) 686-5330
	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
Rhode Island	Providence Public Library	(401) 521-8726
South Carolina	Charleston: Medical University of South Carolina Library	(803) 792-2372
Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 725-8876
	Nashville: Vanderbilt University Library	(615) 322-2775
Texas	Austin: McKinney Engineering Library, University of Texas.	(512) 471-1610
	College Station: Sterling C. Evans Library, Texas A & M University	(409) 845-2551
	Dallas Public Library	(214) 749-4176
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
Utah	Salt Lake City: Marriott Library, University of Utah	(801) 581-8394
Virginia	Richmond: Virginia Commonwealth University Library	(804) 257-1104
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3247

All of the above-listed libraries offer CASSIS (Classification And Search Support Information System), which provides direct, on-line access to Patent and Trademark Office data.

*Collection organized by subject matter.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

JAMES E. DENNY, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF July 5, 1986

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, AND ENGINEERING, GROUP 110—D. E. TALBERT, Director	4-01-85
ORGANIC CHEMISTRY AND BIOTECHNOLOGY, GROUP 120—C. E. VAN HORN, Director	2-22-84
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 130—R. F. WHITE, Director	4-01-85
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY, STOCK MATERIALS AND COMPOSITIONS, GROUP 150—J. O. THOMAS, Director	10-12-84
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—G. GOLDBERG, Director	4-18-84
SPECIAL LAWS ADMINISTRATION, GROUP 220—K. L. CAGE, Director	4-11-84
INFORMATION PROCESSING, STORAGE, AND RETRIEVAL, GROUP 230—E. LEVY, Director	11-21-83
PACKAGES, CLEANING, TEXTILES, AND GEOMETRICAL INSTRUMENTS, GROUP 240—E. E. KUBASIEWICZ, Director	2-13-85
ELECTRONIC AND OPTICAL SYSTEMS AND DEVICES, GROUP 250—S. S. MATTHEWS, Director	3-30-83
COMMUNICATIONS, MEASURING, TESTING AND LAMP/DISCHARGE GROUP, GROUP 260—S. G. KUNIN, Director	9-26-83
DESIGN, GROUP 290—K. L. CAGE, Director	2-06-84
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director	7-12-83
MATERIAL SHAPING, ARTICLE MANUFACTURING AND TOOLS, GROUP 320—S. N. ZAHARNA, Director	12-24-84
MECHANICAL TECHNOLOGIES AND HUSBANDRY PERSONAL TREATMENT INFORMATION, GROUP 330—R. E. AEGERTER, Director	8-18-83
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 340—D. J. STOCKING, Director	7-31-84
GENERAL CONSTRUCTIONS, PETROLEUM AND MINING ENGINEERING, GROUP 350—A. L. SMITH, Director	7-01-85

Expiration of patents: The patents within the range of numbers indicated below expire during July 1986, except those which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents ..... Numbers 3,452,362 to 3,458,862, inclusive

Plant Patents ..... Numbers 2,897 to 2,913 inclusive

DEPARTMENT OF COMMERCE

Patent and Trademark Office

37 CFR Part 1

[Docket No. 60594-6094]

Rules for Extension of Patent Term

AGENCY: Patent and Trademark Office, Commerce.

ACTION: Notice of proposed rulemaking.

SUMMARY: The Patent and Trademark Office proposes to amend the rules of practice in patent cases, Part 1 of Title 37, Code of Federal Regulations, to provide the rules and procedures under which extensions in the terms of patents may be sought pursuant to the provisions of 35 U.S.C. 156 which was enacted on September 24, 1984 in Title II of Pub. L. 98-417, the "Drug Price Competition and Patent Term Restoration Act of 1984." The new 35 U.S.C. 156 provides that, upon application to the Commissioner of Patents and Trademarks, the term of a particular patent, which claims a product or a method of using or manufacturing a product as defined in the Public Law, may be extended under certain circumstances and conditions where the product has been subject to a regulatory review as defined in Public Law 98-417 and by the Secretary of Health and Human Services, before its commercial marketing or use. The proposed rules for amending Part 1 of Title 37 would provide specific procedures for the submission of such applications to the Patent and Trademark Office and for the determination and issuance of certificates of patent term extension by the Patent and Trademark Office on the applications submitted.

DATES: Comments must be submitted on or before September 10, 1986; a public hearing will be held on September 15, 1986 at 9:30 a.m., requests to present oral testimony should be received on or before September 10, 1986.

ADDRESS: Address written comments and requests to present oral testimony to the Commissioner of Patents and Trademarks, Washington, D.C. 20231, Attention: Charles E. Van Horn, Room CP2-9A09. The hearing will be held in Room 11C10, on the 11th floor of Building 3, Crystal Plaza, located at 2021 Jefferson Davis Highway, Arlington, Virginia. Written comments and a transcript of the public hearing will be available for public inspection in Room 9A09 of Building 2, Crystal Plaza at 2011 Jefferson Davis Highway, Arlington, Virginia.

FOR FURTHER INFORMATION CONTACT: Charles E. Van Horn by telephone at (703) 557-3637 or by mail marked to his attention and addressed to the Commissioner of Patents and Trademarks, Washington, D.C. 20231.

SUPPLEMENTARY INFORMATION: These proposed rules are designed primarily to implement Title II of Pub. L. 98-417 by (1) establishing the rules and procedures for the submission of applications for the extension of patent term to the Patent and Trademark Office and (2) by defining the procedures governing the extension determination and issuance of certificates of patent term extension by the Patent and Trademark Office based on the applications submitted.

Since new section 35 U.S.C. 156 came into effect on the date of enactment (September 24, 1984) of Public Law 98-417, initial operating guidelines were published as "Guidelines For Extension of Patent Term Under 35 U.S.C. 156" in the *Official Gazette* of the Patent and Trademark Office on October 9, 1984. The guidelines were also published in *BNA's Patent, Trademark and Copyright Journal* on September 27, 1984. It is intended that those guidelines will continue in effect until the promulgation of final rules based on the proposed rulemaking. These proposed rules follow in most respects the practice and procedures set out in the guidelines but the proposed rules make some clarifications and additions to the guidelines. For example, proposed new §§ 1.775, 1.776, and 1.777 set out how the period of patent term extension is to be calculated, which was not covered in the guidelines.

The new section 35 U.S.C. 156 requires the Commissioner of Patents and Trademarks to notify the Secretary of Health and Human Services within sixty days of the submittal of an application for extension of patent term which complies with the section and to submit to the Secretary a copy of the application. Not later than thirty days after receipt of the application from the Commissioner, the Secretary is charged with determining the length of the applicable regulatory review period, notifying the Commissioner of the determination and publishing in the **Federal Register** a notice of such determination.

The Secretary of Health and Human Services is responsible for publishing regulations to give guidance concerning the handling of applications for patent term extension in the Department of Health and Human Services.

Discussion of Specific Rules

Section 1.1, if amended as proposed, would indicate that applications for extension of patent terms and any communications relating thereto intended for the Patent and Trademark Office should be directed to "Box Patent Ext."

The filing of an application for an extension of the term of a patent would be considered timely if received in the Patent and Trademark Office on or before the statutory deadline, or if the application is deposited with the U.S. Postal Service in accordance with the provisions of § 1.8 or § 1.10 of this part before the statutory deadline. The filing of an application for an extension of the term of a patent would be treated in the same manner as the filing of any paper required to be filed in the Patent and Trademark Office within a set period of time and not subject to the exceptions enumerated in 37 CFR 1.8(a).

Section 1.20, if amended a proposed, would add paragraph (n) to establish a fee of $550.00 for filing an application for extension of the term of a patent pursuant to § 1.740. This amount is appropriate to cover the costs to the Patent and Trademark Office of receiving and acting upon applications for extension of patent term as provided in 35 U.S.C. 156(h).

A new "Subpart F—Extension of Patent Term" is proposed to be added to Part 1 to include §§ 1.710 through 1.785.

Section 1.710, if added as proposed, would define the patents subject to extension of the patent term. Paragraph (a) of proposed § 1.710 defines the patents subject to extension in terms of the subject matter being claimed therein. Under paragraph (a) of proposed § 1.710 a patent to (1) a product, (2) a method of using a product, (3) or a method of manufacturing a product can be extended as long as the product meets the definition contained in paragraph (b) of proposed § 1.710, and as long as the other conditions and requirements for extension of patent term are met. Paragraph (b) of proposed § 1.710 follows the language of 35 U.S.C. 156 and defines a "product" as meaning (1) a human drug product or (2) any medical device, food additive, or color additive subject to regulation under the Federal Food, Drug, and Cosmetic Act. The term "human drug product" as defined in paragraph (b) of proposed § 1.710 means the active ingredient of a new drug, antibiotic drug, or human biological product (as those terms are used in the

Federal Food, Drug, and Cosmetic Act and the Public Health Service Act) including any salt or ester of the active ingredient, as a single entity or in combination with another active ingredient.

Section 1.720, if added as proposed, would define the conditions under which the term of a patent may be extended. The conditions for extension would be:

(1) The patent must claim a product or a method of using or manufacturing a product as defined in proposed § 1.710;

(2) The term of the patent must never have been previously extended except for any interim extension issued pursuant to § 1.760;

(3) An application for extension must be submitted pursuant to proposed § 1.740;

(4) The product must have been subject to a regulatory review period as defined in 35 U.S.C. 156(g) before its commercial marketing or use;

(5) The product must have received permission for commercial marketing or use and (i) the application must be submitted within the sixty day period beginning on the date the product first received permission for commercial marketing or use under the provision of law under which the applicable regulatory review period occurred, or (ii) in the case of a patent claiming a method of manufacturing the product which primarily uses recombinant DNA technology in the manufacture of the product, the application for extension must be submitted within the sixty day period beginning on the date of the first permitted commercial marketing or use of a product manufactured under the process claimed in the patent;

(6) The term of the patent must not have expired before the submission of an application pursuant to proposed § 1.740; and

(7) No other patent must have been extended for the same regulatory review period for the product.

Section 1.730, if added as proposed, would require that an application for extension of a patent be submitted by the owner of record of the patent or its agent and that the application must comply with the requirements of proposed § 1.740. The application papers submitted would be required to clearly reflect and establish the authority of the person submitting the application to do so on behalf of the owner. See proposed § 1.740(c). For example, if the person submitting the application is the owner of record, the application papers would be required to so reflect. If the person submitting the application is doing so as the agent of the owner of record, the application papers must so reflect and establish the authority of the agent to act on behalf of the owner, e.g., as an officer of a corporate owner. A mere power of attorney to prosecute a patent application before the Patent and Trademark Office would not establish the agency relationship to apply for a patent term extension.

Section 1.740, if added as proposed, would establish the contents and requirements of an application for extension of patent term. Paragraph (a) of proposed § 1.740 requires that the application be made in writing to the Commissioner of Patents and Trademarks and establishes as the filing date of the application the date on which the complete application for extension as defined in paragraph (b) of the section and a duplicate of the papers thereof, certified as such, are received in the Patent and Trademark Office or filed pursuant to the "Certificate of Mailing" provisions of 37 CFR 1.8 or by "Express Mail" pursuant to the provisions of § 1.10. The certified duplicate of the application papers will serve as the copy to be submitted by the Commissioner to the Secretary of Health and Human Services in order that the Secretary may determine the applicable regulatory review period as required by Pub. L. 98-417.

Paragraph (b) of proposed § 1.740 specifies the contents of a complete application for extension of patent. The complete application, and a certified duplicate thereof, must be submitted in order that a filing date for the application can be established. If the application is not complete when submitted it will be refused a filing date until such time as the omission is corrected. In accordance with paragraph (b) of proposed § 1.740, a complete application for the extension of the term of a patent comprises:

(1) A complete identification of the approved product as by appropriate chemical and generic name, physical structure or characteristics that would permit the Commissioner to make a determination of whether the patent claims the approved product, or a method of making or using the approved product;

(2) A complete identification of the Federal statute including the applicable provision of law under which the regulatory review occurred;

(3) An identification of the date on which the product received permission for commercial marketing or use under the provision of law under which the applicable regulatory review period occurred;

(4) In the case of a human drug product, an identification of each active ingredient in the product and as to the product and each active ingredient, a statement that they have not been previously approved for commercial marketing or use under the Federal Food Drug and Cosmetic Act, or a statement of when the active ingredient was approved for commercial marketing or use (either alone or in combination with other active ingredients) and the provision of law under which it was approved.

(5) A statement that the application is being submitted within the sixty day period permitted for submission pursuant to proposed § 1.720 (e) and an identification of the date of the last day on which the application could be submitted;

(6) A complete identification of the patent for which an extension is being sought by the name of the inventor, the patent number, and the date of issue;

(7) A copy of the patent for which an extension is being sought, including the entire specification (including claims) and drawings;

(8) A copy of any disclaimer, certificate of correction, receipt or statement of maintenance fee payment, or reexamination certificate issued in the patent;

(9) A statement beginning on a new page that the patent claims the approved product or a method of using or manufacturing the approved product, and a showing which lists each applicable patent claim and demonstrates the manner in which each applicable patent claim reads on the approved product or a method of using or manufacturing the approved product;

(10) A statement beginning on a new page of the relevant dates and information pursuant to 35 U.S.C. 156 (g) in order to enable the Secretary of Health and Human Services to determine the applicable regulatory review period.

(i) For a human drug product, this information will include the effective date of the investigational new drug (IND) application and the IND number; the date on which a new drug application (NDA) was initially submitted and the NDA number; and the date on which the NDA was approved;

(ii) For a food or color additive, this information will include the date a major health or environmental effects test on the additive was initiated and any available substantiation of that date; the date on which a petition for product approval under the Federal Food, Drug and Cosmetic Act was initially submitted and the petition number; and the date on which the application was approved;

(iii) For a medical device, this information will include the effective date of the investigational device exemption (IDE) and the IDE number, if applicable, or the date on which the applicant began the first clinical investigation involving the device if no IDE was submitted and any available substantiation of that date; the date on which an application for product approval under section 515 of the Federal Food, Drug and Cosmetic Act was initially submitted and the number of the application; and the date on which the application was approved.

In the cases where there is no regulatory event to reflect the commencement of the testing or approval phase of the regulatory review period, applicants should include in applications the dates that they claim initiate either the approval or the testing phases and an explanation of their reasonable basis for why they conclude that these dates are the relevant dates. For instance, when the clinical trials are conducted outside the United States, the testing phase for a medical device begins on the date the clinical investigation involving the device was begun. An applicant should include an explanation as to why the date claimed is the date on which such clinical investigations had commenced. If the applicant had any means of substantiating that date, that information should be included in the application.

Finally, on this separate page in the application there should be a statement as to the length of the regulatory review period claimed including an explanation of how the applicant determined the length of the regulatory review period. It should be noted in the application that this particular calculation is made solely with respect to section 156(G)(1) thru (3) of Title 35 of the United States Code and does not take into account any other limitations or restrictions on the length of possible patent extension.

(11) A brief description beginning on a new page of the activities undertaken by the applicant during the applicable regulatory review period with respect to the approved product and the significant dates applicable to such activities. This description should include a summary of any communication of substance with the Food and Drug Administration (FDA) and the significant dates related to such communication and activities. For example, these activities would include the dates of the submission of any new data to the FDA, any communications between FDA and the applicant with respect to the appropriate protocols for testing the product, and any communications between FDA and the applicant that are attempts to define the particular requirements for premarketing approval of this particular product.

(12) A statement beginning on a new page that in the opinion of the applicant the patent is eligible for the extension and a statement as to the length of extension claimed, including how the length of extension was determined and whether the 14 year limit of 35 U.S.C. 156(c)(3), the five year limit of 35 U.S.C. 156(g)(4)(A) or (B) or the two year limit of 35 U.S.C. 156(g)(4)(C) applies.

(13) A statement that applicant acknowledges a duty to disclose to the Commissioner of Patents and Trademarks and the Secretary of Health and Human Services any information which is material to the determination of entitlement to the extension sought (see § 1.765);

(14) The prescribed fee for receiving and acting upon the application for extension (see § 1.20(n));

(15) The name, address, and telephone number of the person to whom contacts and correspondence relating to the application for patent term extension are to be directed; and

(16) An oath or declaration as set forth in paragraph (c) of proposed §1.740.

Paragraph (c) of proposed § 1.740 requires that an oath or declaration signed by the owner of record of the patent or its agent accompany the application as a part thereof. An application for extension filed without an oath or declaration is not a complete application and is not entitled to a filing date. The oath or declaration filed as a part of the application must specifically identify the application papers and the patent for which an extension is sought and include averments that the person signing the oath or declaration:

(1) Is the owner, an official of a corporate owner authorized to obligate the corporation, or has specific written authorization to sign the oath or declaration on behalf of the owner;

(2) Has reviewed and understands the contents of the application being submitted pursuant to § 1.740;

(3) Believes the patent is subject to extension pursuant to § 1.710;

(4) Believes an extension of the length claimed is fully justified under 35 U.S.C. 156 and the applicable regulations; and

(5) Believes the patent for which the extension is being sought meets the conditions for extension of the term of a patent as set forth in § 1.720.

In signing the oath or declaration referred to in paragraph (c) of proposed § 1.740 an official of a corporate owner or a person having specific written authorization to sign the oath or declaration on behalf of the owner is representing that he or she is the agent of the owner and has authority to act on behalf of the owner in filing the application for patent term extension. Note also proposed § 1.730.

Paragraph (d) of proposed §1.740 provides for review of a holding that an application for patent term extension is incomplete by the filing of a petition under 37 CFR 1.182. The failure to timely comply with any requirement of these regulations which is not an explicit requirement of the statute may be waived under appropriate circumstances. 37 CFR 1.183. While timely action is expected, relief under 37 CFR 1.183 may be appropriate in view of the tight time deadlines and other circumstances involved in filing an application for extension of the patent term. The petition must be filed with the required fee (37 CFR 1.17(h)) within such time as may be set, or if no time is set, within one month of the holding.

Section 1.750, if added as proposed, would cover the determination of eligibility for extension of the term of a patent which will be made by the Patent and Trademark Office on the application for extension. As provided for by Pub. L. 98–417, and as set forth in this section, it is intended that the determination as to whether a patent is eligible for an extension can be made solely on the representations contained in the application for extension filed pursuant to proposed new §1.740 of this part. Proposed § 1.750 does, however, provide that further information may be required by the Commissioner or other officials before a final determination is made on whether a patent is eligible for extension. In circumstances where further information is required by the Office the applicant will be given a time period within which to respond. The failure to file a response within the period provided will result in a final determination adverse to the granting of an extension of patent term unless the response period is extended. An extension of time to respond may be requested under the provisions of 37 CFR 1.136(b). The intentional failure to provide the information requested also will result in a final adverse determination. A final determination may be made at any time after an application is filed, but no later than when a certificate of extension is issued. Proposed § 1.750 provides that a single request for reconsideration of a final determination may be filed within one month or within such other time period set in the final determination. Proposed § 1.750 also provides that the determination may be delegated to

appropriate Patent and Trademark Office officials. A notice will be mailed to applicant containing the determination as to eligibility of the patent for extension and the period of time of the extension of the term, if any. This notice shall constitute the final determination as to eligibility and any period of extension of the patent term.

Section 1.760, if added as proposed, would provide for one or more interim extensions for periods of up to one year where a complete application pursuant to proposed § 1.740 has been filed by an applicant and a final determination pursuant to proposed § 1.750 has not been made on the application. Proposed § 1.760 provides that the Commissioner may issue an interim extension with or without a request by the applicant. In order for an interim extension to be granted the application pursuant to proposed § 1.740 must have been filed prior to the expiration date of the patent even though the interim extensions may not actually be granted until after the original expiration date of the patent. In no event will interim extensions be granted under proposed § 1.760 for a period of extension longer than that to which the applicant would be eligible.

Section 1.765, if added as proposed, would define the duty of disclosure in patent term extension proceedings. Paragraph (a) of propossed § 1.765 specifies the individuals on whom the duty rests and the extent of the duty. Paragraph (b) of proposed § 1.765 requires that disclosures pursuant to the section be accompanied by a copy of each written document being disclosed and specifies to whom the submission is to be made, i.e., the Patent and Trademark Office or the Secretary, as appropriate. Such disclosures would be able to be made through and attorney or agent

Paragraph (c) of proposed § 1.765 precludes a determination of eligibility for an extension or the issuance of a certificate if clear and convincing evidence of fraud or attempted fraud on the Office or the Secretary is determined to be present or the duty of disclosure is determined to have been violated through bad faith or gross negligence in connection with the patent term extension proceeding. Since the determination as to whether a patent is eligible for extension pursuant to proposed § 1.750 may be made solely on the basis of the representations made in the application for extension, a final determination to refuse a patent term extension because of fraud or a violation of the duty of disclosure is expected to be rare.

Paragraph (d) of proposed § 1.765 precludes submissions to the Patent and Trademark Office by or on behalf of third parties, thereby making patent term extension proceedings in the Office an *ex parte* matter between the patent owner or its agent and the Commissioner. Under paragraph (d) of proposed § 1.765, submissions by third parties to the Office will be returned, or otherwise disposed of, without consideration.

Paragraph (d) does not affect submissions authorized by Public Law 98–417 to be made to the Secretary during determination of the applicable regulatory review period.

Section 1.770, if added as proposed, would provide for the express withdrawal of an application for extension of the term of a patent if the written declaration of withdrawal signed by the owner of record or its agent is filed in the Office, in duplicate, before a determination is made pursuant to proposed § 1.750. Under proposed § 1.770, and application for extension of the term of a patent may not be expressly withdrawn after the date of the final determination pursuant to proposed § 1.750. Proposed § 1.770 also provides that an express withdrawal is effective when acknowledged in writing by the Office and that the filing and acceptance of an express withdrawal does not entitle applicant to a refund of the filing fee for the application for patent term extension or any portion thereof.

Section 1.775, if added as proposed, would provide the procedure for calculating the patent term extension for a human drug product.

Proposed paragraph (a) would specify that the extension will run from the original expiration date of the patent or any earlier date set by terminal disclaimer.

Proposed paragraph (b) of § 1.775 would provide that the patent term would be extended by the length of the regulatory review period for the product as determined by the Secretary of Health and Human Services but reduced, where appropriate, by the time periods provided in proposed paragraph (d).

Proposed paragraph (c) defines the length of the regulatory review period which is determined by the Secretary of Health and Human Services.

For a human drug product, the regulatory review period is defined in 35 U.S.C. 156(g)(1)(B) as the sum of:

(1) The number of days in the period beginning on the date an exemption under section 505 or 507 of the Federal Food, Drug, and Cosmetics Act became effective for the approved human drug product and ending on the date an application was initially submitted for the drug product under section 505 or 507 above or under section 351 of the Public Health Service Act; and

(2) The number of days in the period beginning on the date the application was initially submitted for the approved human drug product under section 351 of the Public Health Service Act or subsection (b) of section 505 or 507 of the Federal Food, Drug, and Cosmetic Act and ending on the date the application was approved under the section.

This period is then reduced, where appropriate, by the time periods described in proposed paragraph (d).

Paragraph (d) of proposed § 1.775, would define the term of the patent extension by indicating that

(1) The time period determined from proposed paragraph (c) would be reduced, where appropriate by

(i) The number of days in the periods of proposed paragraph (c)(1) and (c)(2) of § 1.775 which were on and before the date on which the patent issued

(ii) The number of days from paragraphs (c)(1) and (c)(2) of § 1.775 during which it is determined under 35 U.S.C. 156(d)(2)(B) by the Secretary of Health and Human Services that applicant did not act with due diligence; and

(iii) One-half the number of days remaining in the period defined by proposed paragraph (c)(1) after the period has been reduced in accordance with paragraphs (d)(1)(i) and (d)(1)(ii) of § 1.775. Half days will be ignored for purposes of subtraction.

(2) Adding the number of days determined in proposed paragraph (d)(1) to the original term of the patent as shortened by any terminal disclaimer;

(3) Adding 14 years to the date of approval of the application under section 351 of the Public Health Service Act, or subsection (b) of section 505 or section 507 of the Federal Food, Drug, and Cosmetic Act;

(4) Comparing the dates for the ends of the periods obtained from (d)(2) and (d)(3) with each other and selecting the earlier date;

(5) If the original patent issued after September 24, 1984:

(i) By adding 5 years to the original expiration date of the patent or any earlier date set by terminal disclaimer; and

(ii) By comparing the dates obtained in paragraphs (d)(4) and (d)(5)(i) with each other and selecting the earlier date.

(6) If the original patent was issued before September 24, 1984:

(i) If no request was submitted for an exemption under subsection (i) of

section 505 or subsection (d) of section 507 of the Federal Food, Drug, and Cosmetic Act, by (A) adding 5 years to the original expiration date of the patent or any earlier date set by terminal disclaimer and (B) by comparing the dates obtained in paragraphs (d)(4) and (d)(6)(i)(A) with each other and selecting the earlier date:

(ii) If a request was submitted for an exemption under subsection (i) of section 505 or subsection (d) of section 507 of the Federal Food, Drug, and Cosmetic Act, and the commercial marketing or use of the product was not approved before September 24, 1984, by (A) adding 2 years to the original expiration date of the patent or any earlier date set by terminal disclaimer, and (B) by comparing the dates obtained in paragraph (d)(4) and (d)(6)(ii)(A) with each other and selecting the earlier date.

Section 1.776, if added as proposed, would provide the procedure for calculating the patent term extension for a food additive or color additive. The paragraphs correspond to those proposed for § 1.775.

Section 1.777, if added as proposed, would provide the procedure for calculating the patent term extension for a medical device. The paragraphs correspond to those proposed for § 1.775 with the major difference being in the calculation of the regulatory review period.

Section 1.780, if added as proposed, would specify that once a determination is made pursuant to proposed § 1.750 that a patent is eligible for extension, a certificate of extension, under seal, will be issued to the applicant for the extension of the term of the patent. Section 1.780 would also provide that the certificate would be recorded in the official file of the patent and will be considered as part of the original patent. Section 1.780 would also provide for notification of the issuance of the certificate of extension to be published in the *Official Gazette* of the Patent and Trademark Office.

No certificate or extension would be issued if the term of a patent cannot be extended, even though the patent is otherwise determined to be eligible for extension. In such situations the final determination made pursuant to § 1.750 would indicate that no certificate will issue.

Section 1.785, if added as proposed, would specify the procedures to be followed where multiple applications are filed for extension of the same patent or of different patents for the same regulatory review period for a product. Pub. L. 98–417 and proposed § 1.785 provide that only one patent may be extended for a regulatory review period for any product. Under proposed § 1.785, if more than one application for extension of the same patent is filed, the certificate of extension of the term of the patent, if appropriate, would be issued based upon the first filed application for extension of patent term. If applications are filed for extension of the terms of different patents based upon the same regulatory review period for a product, the certificate of extension would be issued on the patent having the earliest date of issuance, if that patent is determined to be eligible for extension pursuant to proposed § 1.750 and if the application for its extension is filed prior to the issuance of a certificate of extension of the later issued patent.

Other alternatives to proposed § 1.785 were considered, but were not proposed in view of a number of complications which appeared to be present therein. For example, another alternative was to give preference to a patent owner who was also the marketing applicant before the FDA. However, neither patent owner may have been the marketing applicant, or each patent owner may have contributed resources which ultimately led to the approval for commercial marketing. In view of the complications which are apparent in the PTO attempting to make value judgments as to the relative contributions of different patent owners it was decided to propose an administratively straight forward approach and seek public comments as to other possible workable alternatives.

Environmental, energy, and other considerations: The rule change will not have a significant impact on the quality of the human environment or conservation of energy resources. The rule change is in conformity with the requirements of the Regulatory Flexibility Act (Pub. L. 96–354), Executive Order 12291, and the Paperwork Reduction Act of 1980, 44 U.S.C. 3501 et seq.

The General Counsel of the Department of Commerce certified to the Small Business Administration that the rule change will not have a significant adverse economic impact on a substantial number of small entities because patented drugs are generally not commercialized by small entities (Regulatory Flexibility Act, Pub. L. 96–364).

The Patent and Trademark Office has determined that this rule change is not a major rule under Executive Order 12291. The annual effect on the economy will be less than $100 million.

There will be no major increase in costs or prices for consumers, individual industries, federal, state, or local government agencies, or geographic regions. There will be no significant adverse effects on competition, employment, investment, productivity, innovation, or on the ability of United States-based enterprises to compete with foreign-based enterprises in domestic or export markets.

The information collection requirement contained in this proposed rule has been submitted to OMB for review under section 3504(h) of the Paperwork Reduction Act. Comments relating to this requirement should be directed to the Office of Information and Regulatory Affairs of OMB, Attention: Desk Officer for Commerce, Patent and Trademark Office.

List of Subjects in 37 CFR Part 1

Administrative practice and procedure, Authority delegations (government agencies), Conflict of interest, Courts, Inventions and patents, Lawyers.

Notice is hereby given that pursuant to the authority granted to the Commissioner of Patents and Trademarks by 35 U.S.C. 6 and Pub. L. 98–417, the Patent and Trademark Office is proposing to amend Title 37 of the Code of Federal Regulations as set forth below.

PART 1—[AMENDED]

1. The authority citation for 37 CFR Part 1 continues to read as follows:

Authority: 35 USC 6, unless otherwise noted.

2. Section 1.1 is proposed to be amended by adding a new paragraph (f) to read as follows:

§ 1.1 All communications to be addressed to the Commissioner of Patents and Trademarks.

* * * * *

(f) All applications for extension of patent term and any communications relating thereto intended for the Patent and Trademark Office should be additionally marked "Box Patent Ext." When appropriate, the communication should also be marked to the attention of a particular individual, as where a decision has been rendered.

3. Section 1.20 is proposed to be amended by adding a new paragraph (n) to read as follows:

§ 1.20 Post-issuance fees.

* * * * *

(n) For filing an application for extension of the term of a patent (§ 1.740)	550 (h)

* * * * *

4. A new "Subpart F—Extension of Patent Term" is proposed to be added to read as follows:

Subpart F—Extension of Patent Term

Sec.

1.710 Patents subject to extension of the patent term.
1.720 Conditions for extension of patent term.
1.730 Applicant for extension of patent term.
1.740 Application for extension of patent term.
1.750 Determination of eligibility for extension of patent term.
1.760 Interim extension of patent term.
1.765 Duty of disclosure in patent term extension proceedings.
1.770 Express withdrawal of application for extension of patent term.
1.775 Calculation of the patent term extension for a human drug product.
1.776 Calculation of patent term for a food additive or color additive.
1.777 Calculation of patent term for a medical device.
1.780 Certificate of extension of patent term.
1.785 Multiple applications for extension of term of the same patent or of different patents for the same regulatory review period for a product.

Authority: 35 USC 6 and 156.

Subpart F—Extension of Patent Term

§ 1.710 Patents subject to extension of the patent term.

(a) A patent is eligible for extension of the patent term if the patent claims a product as defined in paragraph (b) of this section, or a method of using such a product, or a method of manufacturing such a product, and meets all other conditions and requirements of this part.

(b) The term "product" referred to in paragraph (a) of this section means (1) a human drug product which means the active ingredient of a new drug, antibiotic drug, or human biological product (as those terms are used in the Federal Food, Drug, and Cosmetic Act and the Public Health Service Act) including any salt or ester of the active ingredient, as a single entity or in combination with another active ingredient; or (2) any medical device, food additive, or color additive subject to regulation under the Federal Food, Drug, and Cosmetic Act.

§ 1.720 Conditions for extension of patent term.

The term of patent may be extended if:

(a) The patent claims a product or a method of using or manufacturing a product as defined in § 1.710 of this part;

(b) The term of the patent has never been previously extended except for any interim extension issued pursuant to § 1.760 of this part;

(c) An application for extension is submitted pursuant to § 1.740 of this part;

(d) The product has been subject to a regulatory review period as defined in 35 U.S.C. 156(g) before its commercial marketing or use;

(e) The product is an approved product, that is it has received permission for commercial marketing or use and (i) the application is submitted within the sixty day period beginning on the date the product first received permission for commercial marketing or use under the provisions of law under which the applicable regulatory review period occurred, or (ii) in the case of a patent claiming a method of manufacturing the product which primarily uses recombinant DNA technology in the manufacture of the product, the application for extension is submitted within the sixty day period beginning on the date of the first permitted commercial marketing or use of a product manufactured under the process claimed in the patent;

(f) The term of the patent has not expired before the submission of an application pursuant to § 1.740 of this part; and

(g) No other patent has been extended for the same regulatory review period for the product.

§ 1.730 Applicant for extension of patent term.

Any application for extension of a patent term must be submitted by the owner of record of the patent or its agent and must comply with the requirements of § 1.740 of this part.

§ 1.740 Application for extension of patent term.

(a) An application for extension of patent term must be made in writing to the Commissioner of Patents and Trademarks. The filing date of an application for extension of patent term is the date on which the complete application for extension as set forth in paragraph (b) of this section, and a duplicate of the papers thereof, certified as such, are received in the Patent and Trademark Office or filed pursuant to the "Certificate of Mailing" provisions of 37 CFR 1.8 or "Express Mail" provisions of § 1.10 of this part.

(b) A complete application for the extension of patent term comprises:

(1) A complete identification of the approved product as by appropriate chemical and generic name, physical structure or characteristics;

(2) A complete identification of the Federal statute including the applicable provision of law under which the regulatory review occurred;

(3) An identification of the date on which the product received permission for commercial marketing or use under the provision of law under which the applicable regulatory review period occurred;

(4) In the case of human drug product, an identification of each active ingredient in the product and as to each active ingredient, a statement that it has not been previously approved for commercial marketing or use under the Federal Food Drug and Cosmetic Act, or a statement of when the active ingredient was approved for commercial marketing or use (either alone or in combination with other active ingredients) and the provision of law under which it was approved.

(5) A statement that the application is being submitted within the sixty day period permitted for submission pursuant to § 1.720(e) and an identification of the date of the last day on which the application could be submitted;

(6) A complete identification of the patent for which an extension is being sought by the name of the inventor, the patient number, and the date of issue;

(7) A copy of the patent for which an extension is being sought, including the entire specification (including claims) and drawings;

(8) A copy of any disclaimer, certificate of correction, receipt of maintenance fee payment, or reexamination certificate issued in the patent;

(9) A statement beginning on a new page that the patent claims the approved product or a method of using or manufacturing the approved product, and a showing which lists each applicable patent claim and demonstrates the manner in which each applicable patent claim reads on the approved product or a method of using or manufacturing the approved product;

(10) A statement beginning on a new page of the relevant dates and information pursuant to 35 U.S.C. 156(g) in order to enable the Secretary of Health and Human Services to determine the applicable regulatory review period as follows:

(i) For a patent that claims a human drug product, the effective date of the investigational new drug (IND) application and the IND number; the date on which a new drug application (NDA) was initially submitted and the NDA number; and the date on which the NDA was approved;

(ii) For a patent that claims a food or color additive, the date a major health or environmental effects test on the additive was initiated and any available substantiation of that date; the date on which a petition for product approval under the Federal Food, Drug and Cosmetic Act was initially submitted

and the petition number; and the date on which the FDA published a **Federal Register** notice listing the additive for use:

(iii) For a patent that claims a medical device, the effective date of the investigational device exemption (IDE) and the IDE number; if applicable, or the date on which the applicant began the first clinical investigation involving the device if no IDE was submitted and any available substantiation of that date; the date on which an application for product approval under section 515 of the Federal Food, Drug and Cosmetic Act was initially submitted and the number of the application; and the date on which the application was approved.

(11) A brief description beginning on a new page of the activities undertaken by the applicant during the applicable regulatory review period with respect to the approved product and the significant dates applicable to such activities;

(12) A statement beginning on a new page that in the opinion of the applicant the patent is eligible for the extension and a statement as to the length of extension claimed, including how the length of extension was determined;

(13) A statement that applicant acknowledges a duty to disclose to the Commissioner of Patents and Trademarks and the Secretary of Health and Human Services any information which is material to the determination of entitlement to the extension sought (see § 1.765 of this part);

(14) The prescribed fee for receiving and acting upon the application for extension (see § 1.20(n) of this part);

(15) The name, address, and telephone number of person to whom inquiries and correspondence relating to the application for patent term extension are to be directed; and

(16) An oath or declaration as set forth in paragraph (c) of this section.

(c) Any application for extension of the term of a patent submitted pursuant to paragraph (a) and (b) of this section must include an oath of declaration signed by the owner of record of the patent or its agent which specifically identifies the papers and the patent for which an extension is sought and avers that the person signing the oath or declaration:

(1) Is the owner, an official of a corporate owner authorized to obligate the corporation, or has specific written authorization to sign the oath or declaration on behalf of the owner;

(2) Has reviewed and understands the contents of the application being submitted pursuant to this section;

(3) Believes the patent is subject to extension pursuant to § 1.710 of this part;

(4) Believes an extension of the length claimed is fully justified under 35 U.S.C. 156 and the applicable regulations; and

(5) Believes the patent for which the extension is being sought meets the conditions for extension of the term of a patent as set forth in § 1.720 of this part.

(d) If any application for extension of patent term submitted pursuant to this section is held to be incomplete, applicant may seek to have that holding reviewed by filing a petition with the required fee pursuant to § 1.182 or § 1.183, as appropriate, within such time as may be set, or if no time is set, within one month of the date on which the application was held incomplete.

§ 1.750 Determination of eligibility for extension of patent term.

A determination as to whether a patent is eligible for extension may be made by the Commissioner solely on the basis of the representations contained in the application for extension filed pursuant to § 1.740 of this part. This determination may be delegated to appropriate Patent and Trademark Office officials and may be made at any time before the certificate of extension is issued. The Commissioner or other appropriate officials may require further information before a final determination is made on whether a patent is eligible for extension. A notice will be mailed to applicant containing the determination as to the eligibility of the patent for extension and the period of time of the extension, if any. This notice shall constitute the final determination as to the eligibility and any period of extension of the patent. A single request for reconsideration of a final determination may be made if filed by the applicant within such time as may be set or, if no time is set, within one month from the date of the final determination.

§ 1.760 Interim extension of patent term.

An applicant who has filed a complete application for extension pursuant to § 1.740 of this part may request one or more interim extensions for periods of up to one year pending a final determination on the application pursuant to § 1.750 of this part. Any such request should be filed at least three months prior to the expiration date of the patent. The Commissioner may issue interim extensions, without a request by the applicant, for periods of up to one year until a final determination is made. In no event will the interim extensions granted under this section be longer than the maximum period of extension to which the applicant would be eligible.

§ 1.765 Duty of disclosure in patent term extension proceedings.

(a) A duty of candor and good faith toward the Patent and Trademark Office and the Secretary of Health and Human Services rests on the patent owner or its agent, on each attorney or agent who represents the patent owner, and on every other individual who is substantively involved on behalf of the patent owner in a patent term extension proceeding. All such individuals who are aware, or become aware, of information material to the determination of entitlement to the extension sought, which has not been previously made of record in the patent term extension proceeding must bring such information to the attention of the Office or the Secretary, as appropriate, in accordance with paragraph (b) of this section, as soon as it is practical to do so after the individual becomes aware of the information. Information is material where there is a substantial likelihood that the Office or the Secretary would consider it important in determinations to be made in the patent term extension proceeding.

(b) Disclosures pursuant to this section must be accompanied by a copy of each written document which is being disclosed. The disclosure must be made to the Office or the Secretary, as appropriate, unless the disclosure is material to determinations to be made by both the Office and the Secretary, in which case duplicate copies, certified as such, must be filed in the Office and with the Secretary. Disclosures pursuant to this section may be made to the Office or the Secretary, as appropriate, through an attorney or agent having responsibility on behalf of the patent owner or its agent for the patent term extension proceeding or through a patent owner acting on his or her own behalf. Disclosure to such an attorney, agent or patent owner shall satisfy the duty of any other individual. Such an attorney, agent or patent owner has no duty to transmit information which is not material to the determination of entitlement to the extension sought.

(c) No patent will be determined eligible for extension and no extension will be issued if it is determined that fraud on the Office or the Secretary was practiced or attempted or the duty of disclosure was violated through bad faith or gross negligence in connection with the patent term extension proceeding. If it is established by clear and convincing evidence (1) that any fraud was practiced or attempted on the Office of the Secretary in connection

with the patent term extension proceeding or (2) that there was any violation of the duty of disclosure through bad faith or gross negligence in connection with the patent term extension proceeding, a final determination will be made pursuant to § 1.750 that the patent is not eligible for extension.

(d) The duty of disclosure pursuant to this section rests on the individuals identified in paragraph (a) of this section and no submission on behalf of third parties, in the form of protests or otherwise, will be considered by the Office. Any such submission by third parties to the Office will be returned to the party making the submission, or otherwise disposed of, without consideration by the Office.

§ 1.770 Express withdrawal of application for extension of term.

An application for extension of patent term may be expressly withdrawn before a determination is made pursuant to § 1.750 by filing in the Office, in duplicate, a written declaration of withdrawal signed by the owner of record of the patent or its agent. An application may not be expressly withdrawn after the date of the final determination on the application. An express withdrawal pursuant to this section is effective when acknowledged in writing by the Office. The filing of an express withdrawal pursuant to this section and its acceptance by the Office does not entitle applicant to a refund of the filing fee (§ 1.20(n)) or any portion thereof

§ 1.775 Calculation of patent term extension for a human drug product.

(a) If a determination is made pursuant to § 1.750 of this part that a patent for a human drug product is eligible for extension, the term shall be extended by the time as calculated in days in the manner indicated by this section. The patent term extension will run from the original expiration date of the patent or any earlier date set by terminal disclaimer (§ 1.321).

(b) The term of the patent for a human drug product will be extended by the length of the regulatory review period for the product as determined by the Secretary of Health and Human Services, reduced as appropriate pursuant to paragraphs (d)(1)–(6) of this section.

(c) The length of the regulatory review period for a human drug product will be determined by the Secretary of Health and Human Services. Under 35 U.S.C. 156(g)(1)(B), it is the sum of

(1) The number of days in the period beginning on the date an exemption under subsection (i) of section 505 or subsection (d) of section 507 of the Federal Food, Drug, and Cosmetic Act became effective for the approved human drug product and ending on the date an application was initially submitted for such drug product under those sections or under section 351 of the Public Health Service Act; and

(2) The number of days in the period beginning on the date the application was initially submitted for the approved human drug product under section 351 of the Public Health Service Act, subsection (b) of section 505 or section 507 of the Federal Food, Drug, and Cosmetic Act and ending on the date such application was approved under such section.

(d) The term of the patent as extended for a human drug product will be determined by

(1) Substracting from the number of days determined by the Secretary of Health and Human Services to be in the regulatory review period:

(i) The number of days in the periods of paragraphs (c)(1) and (c)(2) of this section which were on and before the date on which the patent issued;

(ii) The number of days in the periods of paragraphs (c)(1) and (c)(2) of this section during which it is determined under 35 U.S.C. 156(c)(2)(B) by the Secretary of Health and Human Services that applicant did not act with due diligence;

(iii) One-half the number of days remaining in the period defined by paragraph (c)(1) of this section after that period is reduced in accordance with paragraphs (d)(1)(i) and (ii) of this section; half days will be ignored for purposes of subtraction;

(2) By adding the number of days determined in paragraph (d)(1) of this section to the original term of the patent as shortened by any terminal disclaimer;

(3) By adding 14 years to the date of approval of the application under section 351 of the Public Health Service Act, or subsection (b) of section 505 or section 507 of the Federal Food, Drug, and Cosmetic Act;

(4) By comparing the dates for the ends of the periods obtained pursuant to paragraphs (d)(2) and (d)(3) of this section with each other and selecting the earlier date;

(5) If the original patent was issued after September 24, 1984,

(i) By adding 5 years to the original expiration date of the patent or any earlier date set by terminal disclaimer; and

(ii) By comparing the dates obtained pursuant to paragraphs (d)(4) and (d)(5)(i) of this section with each other and selecting the earlier date;

(6) If the original patent was issued before September 24, 1984,

If not request was submitted for an exemption under subsection (i) of section 505 or subsection (d) of section 507 of the Federal Food, Drug, and Cosmetic Act, by (A) adding 5 years to the original expiration date of the patent or earlier date set by terminal disclaimer and (B) by comparing the dates obtained pursuant to paragraphs (d)(4) and (d)(6)(i)(A) of this section with each other and selecting the earlier date;

(ii) If a request was submitted for an exemption under subsection (i) of section 505 or subsection (d) of section 507 of the Federal Food, Drug, or Cosmetic Act and the commercial marketing or use of the product was not approved before September 24, 1984, by (A) adding 2 years to the original expiration date of the patent or earlier date set by terminal disclaimer, and (B) by comparing the dates obtained pursuant to paragraphs (d)(4) and (d)(6)(ii)(A of this section with each other and selecting the earlier date.

§ 1.776 Calculation of patent term extension for a food additive or color additive.

(a) If a determination is made pursuant to § 1.750 of this part that a patent for a food additive or color additive is eligible for extension, the term shall be extended by the time as calculated in days in the manner indicated by this section. The patent term extension will run from the original expiration date of the patent or earlier date set by terminal disclaimer (§ 1.321).

(b) The term of the patent for a food additive or color additive will be extended by the length of the regulatory review period for the product as determined by the Secretary of Health and Human Service, reduced as appropriate pursuant to paragraph (d)(1)–(6) of this section.

(c) The length of the regulatory review period for a food additive or color additive will be determined by the Secretary of Health and Human Services. Under 35 U.S.C. 156(g)(2)(B), it is the sum of

(1) The number of days in the period beginning on the date of major health or environmental effects test on the additive was initiated and ending on the date a petition was initially submitted with respect to the approved product under the Federal Food, Drug, and Cosmetic Act requesting the issuance of a regulation for use of the product; and

(2) The number of days in the period beginning on the date a petition was initially submitted with respect to the

approved product under the Federal Food, Drug, and Cosmetic Act requesting the issuance of a regulation for use of the product, and ending on the date such regulation became effective or, if objections were filed to such regulation, ending on the date such objections were resolved and commercial marketing was permitted or, if commercial marketing was permitted and later revoked pending further proceedings as a result of such objections, ending on the date such proceedings were finally resolved and commercial marketing was permitted.

(d) The term of the patent as extended for a food additive or color additive will be determined by

(1) Subtracting from the number of days determined by the Secretary of Health and Human Services to be in the regulatory review period:

(i) The number of days in the periods of paragraphs (c)(1) and 9c)(2) of this section which were on and before the date on which the patent issued:

(ii) The number of days in the periods of paragraphs (c)(1) and (c)(2) of this section during which it is determined under 35 U.S.C. 156(d)(2)(B) by the Secretary of Health and Human Services that applicant did not act with due diligence:

(iii) The number of days equal to one-half the number of days remaining in the period defined by paragraph (c)(1) of this section after that period is reduced in accordance with paragrphs (d)(1)(i) and (ii) of this section; half days will be ignored for purposes of subtraction:

(2) By adding the number of days determined in paragraph (d)(1) of this section to the original term of the patent as shortened by an terminal disclaimer:

(3) By adding 14 years to the date a regulation for use of the product became effective or, if objections were filed to such regulation, to the date such objections were resolved and commercial marketing was permitted or, if commercial marketing was permitted and later revoked pending further proceedings as a result of such objections, to the date such proceedings were finally resolved and commercial marketing was permitted:

(4) By comparing the dates for the ends of the periods obtained pursuant to paragraphs (d)(2) and (d)(3) of this section with each other and selecting the earlier date:

(5) If the original patent was issued after September 24, 1984.

(i) By adding 5 years to the original expiration date of the patent or earlier date set by terminal disclaimer; and

(ii) By comparing the dates obtained pursuant to paragraphs (d)(4) and (d)(5)(i) of this section with each other and selecting the earlier date:

(6) If the original patent was issued before September 24, 1984.

(i) If no major health or environmental effects test was initiated and no petition for a regulation or application for registration was submitted, by (A) adding 5 years to the original expiration date of the patent or earlier date set by terminal disclaimer and (B) by comparing the dates obtained pursuant to paragraphs (d)(4) and (d)(6)(i)(A) of this section with each other and selecting the earlier date;

(ii) If a major health or environmental effects test was initiated or a petition for a regulation or application for registration was submitted, and the commercial marketing or use of the product was not approved before September 24, 1984, by (A) adding 2 years to the original expiration date of the patent or earlier date set by terminal disclaimer, and (B) by comparing the dates obtained pursuant to paragraphs (d)(4) and (d)(6)(ii)(A) of this section with each other and selecting the earlier date.

§ 1.777 Calculation of patent term extension for a medical device.

(a) If a determination is made pursuant to § 1.750 of this part that a patent for a medical device is eligible for extension, the term shall be extended by the time as calculated in days in the manner indicated by this section. The patent term extension will run from the original expiration date of the patent or earlier date as set by terminal disclaimer (§ 1.321)

(b) The term of the patent for a medical device will be extended by the length of the regulatory review period for the product as determined by the Secretary of Health and Human Services, reduced as appropriate pursuant to paragraphs (d)(1)–(6) of this section.

(c) The length of the regulatory review period for a medical device will be determined by the Secretary of Health and Human Services. Under 35 U.S.C. 156(g)(3)(B), it is the sum of

(1) The number of days in the period beginning on the date a clinical investigation on humans involving the device was begun and ending on the date an application was initially submitted with respect to the device under section 515 of the Federal Food, Drug, and Cosmetic Act; and

(2) The number of days in the period beginning on the date the application was initially submitted with respect to the device under section 515 of the Federal Food, Drug, and Cosmetic Act, and ending on the date such application was approved under such Act or the period beginning on the date a notice of completion of a product development protocol was initially submitted under section 515(f)(5) of the Act and ending on the date the protocol was declared completed under section 515(f)(6) of the Act.

(d) The term of the patent as extended for a medical device will be determined by

(1) Subtracting from the number of days determined by the Secretary of Health and Human Services to be in the regulatory review period pursuant to paragraph (c) of this section:

(i) The number of days in the periods of paragraphs (c)(1) and (c)(2) of this section which were on and before the date on which the patent issued:

(ii) The number of days in the periods of paragraphs (c)(1) and (c)(2) of this section during which it is determined under 35 U.S.C. 156(d)(2)(B) by the Secretary of Health and Human Services that applicant did not act with due diligence:

(iii) One-half the number of days remaining in the period defined by paragraph (c)(1) of this section after that period is reduced in accordance with paragraphs (d)(1) (i) and (ii) of this section; half days will be ignored for purposes of subtraction

(2) By adding the number of days determined in paragraph (d)(1) of this section to the original term of the patent as shortened by any terminal disclaimer:

(3) By adding 14 years to the date of approval of the application under section 515 of the Federal Food, Drug, and Cosmetic Act or the date a product development protocol was declared completed under section 515(f)(6) of the Act:

(4) By comparing the dates for the ends of the periods obtained pursuant to paragraphs (d)(2) and (d)(3) of this section with each other and selecting the earlier date:

(5) If the original patent was issued after September 24, 1984.

(i) By adding 5 years to the original expiration date of the patent or earlier date set by terminal disclaimer; and

(ii) By comparing the dates obtained pursuant to paragraphs (d)(4) and (d)(5)(i) of this section with each other and selecting the earlier date:

(6) If the original patent was issued before September 24, 1984.

(i) If no clinical investigation on humans involving the device was begun or no product development protocol was submitted under section 515(f)(5) of the Federal Food, Drug, and Cosmetic Act, by (A) adding 5 years to the original expiration date of the patent or earlier date set by terminal disclaimer and (B)

by comparing the dates obtained pursuant to paragraphs (d)(4) and (d)(6)(i)(A) of this section with each other and selecting the earlier date;

(ii) If a clinical investigation on humans involving the device was begun or a product development protocol was submitted under section 515(f)(5) of the Federal Food, Drug, and Cosmetic Act and the commercial marketing or use of the product was not approved before September 24, 1984, by (A) adding 2 years to the original expiration date of the patent or earlier date set by terminal disclaimer, and (B) by comparing the dates obtained pursuant to paragraphs (d)(4) and (d)(6)(ii)(A) of this section with each other and selecting the earlier date.

§ 1.780 Certificate of extension of patent term.

If a determination is made pursuant to § 1.750 of this part that a patent is eligible for extension and that the term of the patent is to be extended, a certificate of extension, under seal, will be issued to the applicant for the extension of the patent term. Such certificates will be recorded in the official file of the patent and will be considered as part of the original patent. Notification of the issuance of the certificate of extension will be published in the Official Gazette of the Patent and Trademark Office. No certificate of extension will be issued if the term of the patent cannot be extended, even though the patent is otherwise determined to be eligible for extension. In such situations the final determination made pursuant to § 1.750 will indicate that no certificate will issue.

§ 1.785 Multiple applications for extension of term of the same patent or of different patents for the same regulatory review period for a product.

Only one patent may be extended for a regulatory review period for any product (§ 1.720(g)). If more than one application for extension of the same patent is filed, the certificate of extension of patent term, if appropriate, will be issued based upon the first filed application for extension. If applications are filed for extension of the terms of different patents based upon the same regulatory review period for a product, the certificate of extension of patent term will be issued to the patent having the earliest date of issuance, if the patent is determined to be eligible for extension of patent term pursuant to § 1.750 and if the application for its extension is filed prior to the issuance of a certificate of extension of patent term of the later issued patent.

Dated: May 23, 1986

Donald J. Quigg,

Assistant Secretary and Commissioner of Patents and Trademarks.

[FR Doc. 86-17054 Filed 7-29-86; 8:45 am]

BILLING CODE 3510-16-M

REEXAMINATIONS

AUGUST 19, 1986

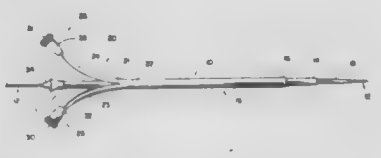
Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination.

B1 Re. 31,855 (557th)

TEAR APART CANNULA

Thomas A. Osborne, Bloomington, Ind., assignor to Cook, Inc., Bloomington, Ind.

Reexamination Request No. 90/000,797, Jun. 13, 1985.
Reexamination Certificate for Reissue Patent Re. 31,855, issued Mar. 26, 1985, Ser. No. 443,321, Nov. 22, 1982.
Original No. 4,306,562, dated Dec. 22, 1981, Ser. No. 173,960, Jul. 31, 1980. Continuation of Ser. No. 965,703, Dec. 1, 1978, abandoned.
Int. Cl.[4] A61M *5/18*
U.S. Cl. 604—161



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–16** is confirmed.

1. A cannula comprising

a tubular structure having one end which has a pair of open ended slits, said tubular structure being compatible for insertion within the body and having an opposite end adapted to be inserted in the body with said one end extending out of the body, said tubular structure being formed of flexible material having the physical property of molecular orientation whereby a tear in said material runs readily only in a longitudinal direction along the length of said tubular structure, said tubular structure being flexible from its inner diameter to its outer diameter and continuously smooth on its inner surface and outer surface, said slits each having a closed end located between said one end and said opposite end;

a first tab defined by said slits on one side of one end of said tubular structure; and

a second tab defined by said slits on the other side of said one end of said tubular structure whereby when said tabs are pulled apart, said structure tears longitudinally along its length beginning at said closed ends and extending to the opposite end of said tubular structure.

B1 3,348,683 (558th)

METHOD OF SEPARATING PARTICLES IN LIQUID SUSPENSION IN A HYDROCYCLONE FOR SEPARATING ARTICLES IN LIQUID SUSPENSION

Nils A. L. Wikdahl, 16 Burevagen, Djursholm, Sweden

Reexamination Request No. 90/000,864, Sep. 17, 1985.
Reexamination Certificate for Patent No. 3,348,683, issued Oct. 24, 1967, Ser. No. 136,833, Sep. 8, 1961.
Claims priority, application Sweden, Sep. 13, 1960, 8723/60
Int. Cl.[4] B01D *21/26*
U.S. Cl. 210—787

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–3** is confirmed.

1. In a method of separating in a hydrocyclone including a separation chamber, discrete particles contained in a liquid suspension into a heavy fraction and a light fraction, the steps of providing several inlet ducts connected with said separation chamber and distributed in symmetric relationship about a lengthwise axis of the separation chamber substantially tangentially oriented in reference to said axis, feeding the suspension to one end of said ducts at an inlet pressure between 0.5 and 2.5 atmospheres, and discharging the suspension from the ducts at the other end thereof into the separation chamber in the form of substantially tangentially directed partial flows having an entry speed of 1 to 8 meters per second into the chamber, whereby a minor portion of the inlet pressure energy of the suspension is converted into kinetic energy while the suspension is flowing through said ducts.



B1 4,133,034 (559th)

METHOD AND MEANS OF ASSIMILATING UTILITY METER DATA

Berwyn E. Etter, 368 Boca Ciega Point Blvd. S., Madeira Beach, Fla. 33708

Reexamination Request No. 90/000,154, Feb. 4, 1982.
Reexamination Certificate for Patent No. 4,133,034, issued Jan. 2, 1979, Ser. No. 819,350, Jul. 27, 1977.
Int. Cl.[4] G06K *1/00*
U.S. Cl. 364—464



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **1–9** are cancelled.

[**1**. A method of assimilating utility meter data at the meter locations, comprising,

accumulating on an input information electronic storage means customer profile information for a plurality of meter customers, said profile information including the customer identity and account information,

placing said input information electronic storage means in a portable computer capable of being manually carried to the site of a given meter, said portable computer having an output information storage means and having the capability of updating, printing and presenting various of said customer profile information for said meter customers

before and after receiving current customer profile information,

actuating said computer to segregate and to visually present from the customer profile information for a plurality of meter customers stored on said input information electronic storage means at least the meter number and customer identity information of a given meter customer,

imposing into said computer the current meter reading of said given meter customer at the site of the meter being read,

actuating said computer to calculate the charge for utility usage based upon the previous meter reading and said current meter reading,

actuating said computer to print a bill for said meter customer at the site of said meter based upon said calculation and imposing on said output information storage means the updated customer profile information,

and depositing said bill at the service address of said given meter customer.]

B1 4,282,385 (560th)

HYPERACIDIC SOLID METAL LACTATES AND PROCESS FOR PRODUCING SAME

Ulrich Metz, Seebruck, Austria, and Horst Michaud, Trostberg, Fed. Rep. of Germany, assignors to SKW Trostberg Aktiengesellschaft, Trostberg, Fed. Rep. of Germany

Reexamination Request No. 90/000,300, Dec. 3, 1982.
Reexamination Certificate for Patent No. 4,282,385, issued Aug. 4, 1981, Ser. No. 33,000, Apr. 25, 1979.
Claims priority, application Fed. Rep. of Germany, May 12, 1978, 2820942
Int. Cl.⁴ C07C *59/08*
U.S. Cl. 562—589

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **1–6** and **10** are cancelled.

Claims **7–9**, **11** and **12** are determined to be patentable as amended.

New claim **13** is added and determined to be patentable.

13. A process for the production of hyperacidic, nonhygroscopic, noncaking, free-flowing, water-soluble, dry, solid metal lactates comprising:

(a) heating a dilute aqueous solution of lactic acid having a maximum concentration of 50% for a sufficient period of time to hydrolyze the lactic acid esters therein and to reduce the residual polylactic acid content thereof to a maximum amount of 0.5% 8c by weight of said solution;

(b) reacting x plus n moles of said dilute solution with one mole of a metal compound selected from the group consisting of compounds of lithium and alkaline earth metals in a quantity corresponding stoichiometrically to the desired hyperacidic metal lactate to be formed; and

(c) removing the water solvent by drying the reaction product in a vacuum of 10 to 50 TORR and at a temperature of from 40° C. to 90° C. in the shortest possible time to produce said hyperacidic solid metal lactate having the formula $M(C_3H_5O_3)_x(C_3H_6O_3)_n$ wherein n is a number from 4 to 12 and x corresponds to the equivalence of the metal M, said solid metal lactate having a melting point within the range of from about 133° C. to about 149° C.

B1 4,381,548 (561st)

APPARATUS AND METHOD FOR GUIDING VEHICLE WHEEL ALIGNMENT ADJUSTMENTS TO KNOWN ALIGNMENT REQUIREMENTS

James M. Grossman, Chesterfield, and Daniel B. January, Bel Ridge, both of Mo., assignors to Hunter Engineering Company, Bridgeton, Mo.

Reexamination Request No. 90/000,920, Dec. 6, 1985.
Reexamination Certificate for Patent No. 4,381,548, issued Apr. 26, 1983, Ser. No. 178,747, Aug. 18, 1980.
Int. Cl.⁴ G01B *5/24*
U.S. Cl. 364—551



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–8** and **14–19** is confirmed.

Claims **9** and **10** are determined to be patentable as amended.

Claims **11–13**, dependent on an amended claim, are determined to be patentable.

New claims **20–28** are added and determined to be patentable.

9. A method for *electronically* guiding vehicle wheel alignment adjustments to alignment requirements for a specific vehicle, said method comprising:

(a) *supplying a programmable computer for* storing required alignment specification data corresponding to the desired wheel alignment data for the specific vehicle;

(b) generating actual wheel alignment data from the specific vehicle;

(c) selecting specific actual alignment data from the specific vehicle for comparison with the *computer* stored required alignment data matching the selected specific actual alignment data; [and]

(d) electronically comparing in the programmable computer said selected specific actual alignment data with said computer stored required matching alignment data; and

[(d)] *(e) electronically* visually displaying the existence of differences between selected specific actual alignment data and the *computer* stored required matching alignment data, such that the display of the differences guides the operator in performing adjustments required by the specific vehicle.

REISSUES

AUGUST 19, 1986

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

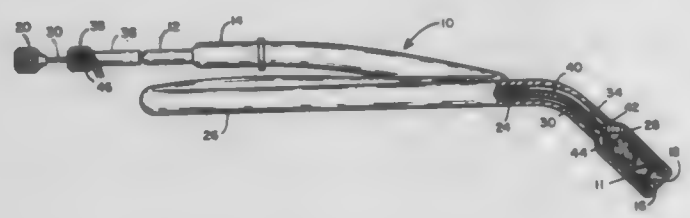
Re. 32,227
"J" STYLET WIRE

Robert G. Dutcher, Columbia Heights, Minn., assignor to Medtronic, Inc., Minneapolis, Minn.

Original No. 4,381,013, dated Apr. 26, 1983, Ser. No. 244,933, Mar. 19, 1981. Application for reissue Apr. 16, 1985, Ser. No. 723,698

Int. Cl.⁴ A61N *1/36*

U.S. Cl. 128—785 **23 Claims**



20. A body implantable lead assembly comprising a lead having a proximal end and a distal end, said proximal end adapted to be connected to electrical means for supplying or receiving electrical pulses, said distal end being adapted to be connected to tissue of a living body, said lead comprising a sheath of material inert to body materials or fluids and at least one wire conductor having a proximal end and a distal end and extending from said proximal end of said lead within said sheath to said distal end of said lead, a terminal structure electrically coupled to said proximal end of said wire conductor and adapted to electrically couple said proximal end of said wire conductor to said electrical means, an electrode assembly including an electrode, said distal end of said wire conductor being electrically connected to said electrode, said electrode including a tubular body which has a proximal end and a distal end and said sheath being coupled to said proximal end of said tubular body and having a proximal end and a distal end, a corkscrew shaped securing device within said tubular body and having a proximal end and a distal end, a mounting member being received in said tubular body and having said proximal end of said securing device mounted on one end thereof, flexible drive means for rotation within said sheath, having a proximal end and a distal end extending from said proximal end of said lead to said distal end of said lead, being coupled at its distal end to the proximal end of said mounting member in said tubular body, said flexible drive means defining a lumen or cylindrical envelope about the central area of said lead through which and in which a stylet is adapted to be received, and a drive member at the proximal end of said lead fixed for rotation, said drive member having two ends and having one end thereof connected to the proximal end of said flexible drive means and the other end thereof extending from said lead assembly, said drive member further being adapted to be rotated to screw said securing device into living tissue and having a passageway therethrough opening into said lumen at one end and to the environment at the other end and into which passageway a stylet is adapted to be inserted for passage through said drive means for stiffening said lead, and said flexible drive means enabling one to rotate said corkscrew shaped securing device without twisting a curved distal portion of said lead.

Re. 32,228
METHOD OF MAKING A SLEEVE FOR A PRINTING CYLINDER

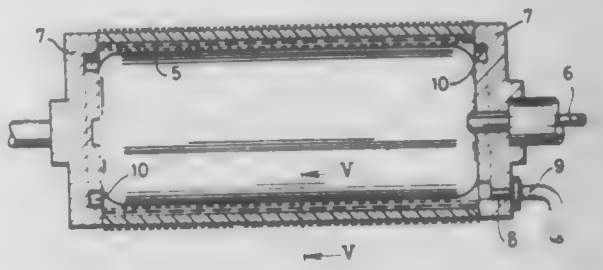
Hendricus J. van der Velden, Cuyk, Netherlands, assignor to Stork Screens B.V., Boxmeer, Netherlands

Original No. 4,391,898, dated Jul. 5, 1983, Ser. No. 277,866, Jun. 26, 1981. Application for reissue Jul. 1, 1985, Ser. No. 750,139

Claims priority, application Netherlands, Jul. 4, 1980, 8003895

Int. Cl.⁴ G03F *7/02*

U.S. Cl. 156—215 **8 Claims**



1. A method of forming a cylindrical sleeve for a printing cylinder, comprising the steps of disposing a thin-walled cylindrical screen about the outer surface of a temporary, rigid, cylindrical support, said [screen] *support* defining a pattern of interconnected channels extending to the lateral edges of said surface, applying a sheet of elastomeric composition which is hardenable under the influence of radiation about said screen, said sheet comprising a photopolymer, applying a vacuum to said channels for removing any accumulated gases between the outer surface of said support and said sheet, wrapping a thin plastic foil about said sheet, and therein subjecting said sheet to a heat treatment for securing said screen and sheet together by curing.

PLANT PATENTS

GRANTED AUGUST 19, 1986

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

5,782

STRAWBERRY PLANT NAMED MAXIM

Johannes A. Somers, AB Bergen op Zoom, Netherlands, assignor to Stichting Tuinbouw Proef-en Selectiebedrijf, Netherlands

Filed Oct. 6, 1983, Ser. No. 539,655
Int. Cl.[4] A01H *5/03*
U.S. Cl. Plt.—48 **1 Claim**

1. A new and distinct variety of strawberry plant named Maxim, as described and illustrated, and particularly characterized by its generally round and very large fruit.

5,783

IMPATIENS PLANT NAMED PULSAR

James C. Mikkelsen, Ashtabula, Ohio, assignor to Mikkelsens, Inc., Ashtabula, Ohio

Filed Oct. 19, 1984, Ser. No. 664,399
Int. Cl.[4] A01H *5/00*
U.S. Cl. Plt.—68 **1 Claim**

1. A new and distinct cultivar of New Guinea Impatiens plant named Pulsar, as described and illustrated, and particularly characterized by its compact plant size and vigorous self-branching growth habit, distinct cherry-red flowers, multiple flowering from the leaf axils, extremely floriferous nature of plant, good keeping quality of flowers, and by its adaptability to various environments of use.

5,784

CARNATION NAMED LONDORGA

Nicole Barberet, and Yves Ducloux, both of Antibes, France, assignors to Laboratoire de Physiologie Vegetale de la Londe, La Londe, France

Filed May 24, 1984, Ser. No. 613,712
Int. Cl.[4] A01H *5/00*
U.S. Cl. Plt.—70 **1 Claim**

1. A new and distinctive carnation variety, substantially as herein shown and described, characterized by its high productivity of very light yellow flowers of medium size having fan-shaped petals with thin striae of red and white.

5,785

CHRYSANTHEMUM PLANT NAMED DARK YELLOW GARLAND

Herman Hellberg, 70 E. Hillcrest Ave., Chalfont, Pa. 18914

Filed Oct. 29, 1984, Ser. No. 665,923
Int. Cl.[4] A01H *5/00*
U.S. Cl. Plt.—74 **1 Claim**

1. A new and distinct cultivar of *Chrysanthemum morifolium*, Ramat., plant named Dark Yellow Garland, as described and illustrated, and particularly characterized as to uniqueness by the combined characteristics of flat capitulum form; daisy capitulum type; dark yellow ray floret color; diameter across face of capitulum ranging from 7 to 9 cm. at maturity; uniform nine week flowering response; tall plant height and upright branching pattern.

5,786

CHRYSANTHEMUM PLANT NAMED GOLD CHAMP

William E. Duffett, Salinas, Calif., assignor to Yoder Brothers, Inc., Barberton, Ohio

Filed Nov. 28, 1984, Ser. No. 675,565
Int. Cl.[3] A01H *5/00*
U.S. Cl. Plt.—78 **1 Claim**

1. A new and distinct cultivar of *Chrysanthemum morifolium*, Ramat., plant named Gold Champ, as described and illustrated, and particularly characterized as to uniqueness by the combined characteristics of flat capitulum form; decorative capitulum type; yellow ray floret color; diameter across face of capitulum ranging from 7 to 9 cm. at maturity; uniform nine week flowering response; medium plant height and spreading branching pattern that adapts equally well to pinched disbud or spray pot mum programs.

PATENTS

GRANTED AUG. 19, 1986

ERRATA

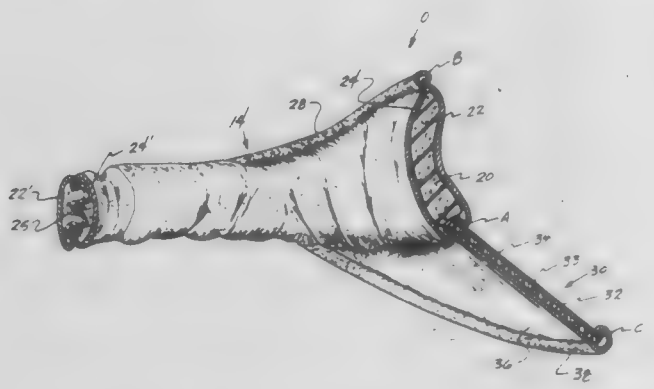
For CLASS	See PATENT NO.
137–433	4,606,365
384–012	4,606,587
358–331	4,606,610
352–169	4,606,625
530–387	4,606,855
530–307	4,606,856
540–540	4,606,858
540–122	4,606,859
548–183	4,606,860
558–257	4,606,864
558–283	4,606,865
432–058	4,606,896
514–025	4,607,101
357–009	4,607,192

PATENTS

GRANTED AUGUST 19, 1986

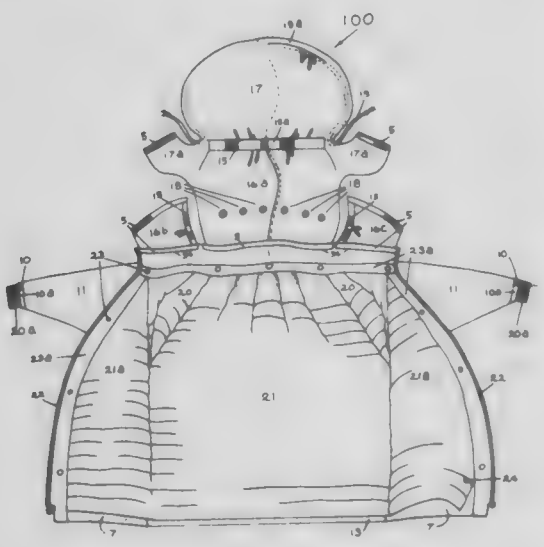
GENERAL AND MECHANICAL

4,606,077
SUN VISOR
Robert F. Phillips, P.O. Drawer 811, Spartanburg, S.C. 29304
Filed May 1, 1985, Ser. No. 729,235
Int. Cl.[4] A61F *9/00*
U.S. Cl. 2—012 **13 Claims**



1. An improved sun visor comprising a generally circular flexible body section for receipt about a human head, said body section having front, side and rear portions, said body section having a base material of polymeric foam along at least a major portion of the circumference of same and adjustment means located along at least one of said side and rear portions, said body section having an outer covering material and an inner covering material, said covering material being secured about said base material, and a flexible bill section secured to said body section along a lower edge of said front portion of same to form a generally convex curvature, said bill section being of a polymeric material inert as to water and including top and bottom covering materials secured thereabout, said bill section where secured to said lower edge of said body section being secured within said outer and inner covering materials of said body section so as to achieve reversibility where said inner covering material of said body section becomes the outer covering and said bottom covering material of said bill section becomes the top covering.

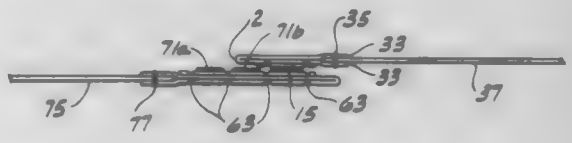
4,606,078
MATERNITY COAT AND BABY CARRIER
Mary C. L. Tkacsik, P.O. Box 9016, Virginia Beach, Va. 23450
Filed Mar. 22, 1985, Ser. No. 714,943
Int. Cl.[4] A41D *3/00*; A61G *1/00*
U.S. Cl. 2—84 **4 Claims**



1. A coat suitable to fit over two persons, the first person being the wearer of the coat and the second person being smaller than, and is carried by, said first person comprising:

a garment body being of sufficient girth to extend substantially completely around said first and second persons;
a pair of sleeves attached to said garment body and extending from said garment body;
an opening in the front of said garment body extending from the bottom of said garment to the top of said garment body;
mechanical means by which said opening in the front of said garment body may be opened or closed;
a collar at the top of said garment body; said collar comprising of an inner collar panel and an outer collar panel;
the bottom of said inner collar panel and the bottom of said outer collar panel being stitched to said garment body;
and means by which the top of said inner collar panel may be temporarily fastened to the top of said outer collar panels;
a deployable front hood;
the bottom of said hood being sewn to said collar in the front of said garment body and between said inner collar panel and said outer collar panel; whereby said deployable front hood may be worn by said second person when said second person is carried in the front of said first person;
a deployable back hood;
the bottom of said back hood being sewn to said collar in the back of said garment body and between said inner collar panel and said outer collar panel; said back hood being of sufficient length to cover the heads of said second person and said first person when said second person is carried on the back of said first person;
and each of said sleeves being tapered from relatively larger sleeve circumference at the point of said attachment of said sleeve said garment body, to relatively narrower sleeve circumference at the outmost extremity of said sleeve.

4,606,079
FASTENERS FOR APPAREL AND METHODS OF MANUFACTURING THEM
Irvin S. DeWoskin, St. Louis County, Mo., assignor to Barnhart Industries, Inc., Barnhart, Mo.
Division of Ser. No. 553,105, Nov. 18, 1983. This application Oct. 16, 1985, Ser. No. 787,993
Int. Cl.[4] A41F *15/00*; A44B *19/34*
U.S. Cl. 2—338 **1 Claim**



1. A shoulder strap guard comprising:
a relatively narrow band of heat-sealable material,
an end portion of the band being folded over on a fold line extending across the band adjacent one end of the band and overlying one face of the band, said fold line constituting one end of the guard,
a segment of heat-sealable hook fastener material and a segment of heat-sealable plush fastener material heat-sealed to the band,
one of said segments overlying said folded-over end portion of the band and heat-sealed thereto by a heat seal spaced inwardly from said fold line and said folded-over end portion being heat-sealed to said band at said heat seal, whereby the folded-over end portion forms a loop at said one end of the guard for receiving a safety pin,
the other of said segments being heat-sealed to said band adjacent the other end of the band,
the band being adapted to be folded around a shoulder strap

on a fold line extending across the band between the two segments to bring said hook material and plush material segments together and the band being adapted to be secured around the strap by pressing together the said hook material and plush material segments.

4,606,080

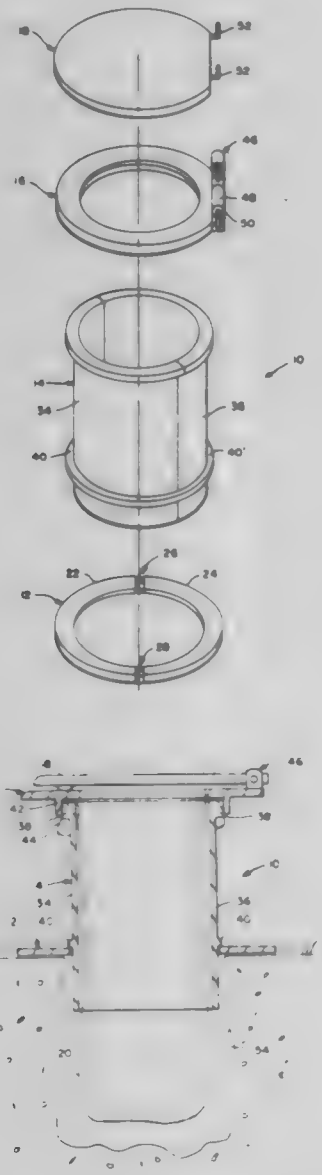
PORTABLE TOILET

Edwin A. Clementino, 116 Sunnyhill Dr., Petaluma, Calif. 94952

Filed Apr. 16, 1985, Ser. No. 723,887

Int. Cl.[4] A47K *11/02;* E04H *1/12*

U.S. Cl. 4—460 4 Claims



1. A sanitary, portable toilet adapted for rapid and easy assembly, disassembly and transport, including the combination of a barrel-shaped stool comprised of a hollow cylinder opened at opposite top and bottom ends, the cylinder being comprised of a pair of longitudinally split half-cylinders, an annular baseplate having an inner diameter commensurate with the outer diameter of the cylinder and detachably fitted about the bottom end thereof, said baseplate adapted for placement about a hole formed in the surface of the ground; an annular seat detachably fitted about the top end of the stool; a lid pivotally mounted on the seat; said half-cylinders being detachably captured together by the baseplate and seat; means forming an outwardly extending bead about the outer surface of each half-cylinder at a pre-determined location from the lower end of the stool with the beads abutting the inner circumference of the baseplate when in assembled relationship therewith.

4,606,081

PARTITION WALL STRUCTURE

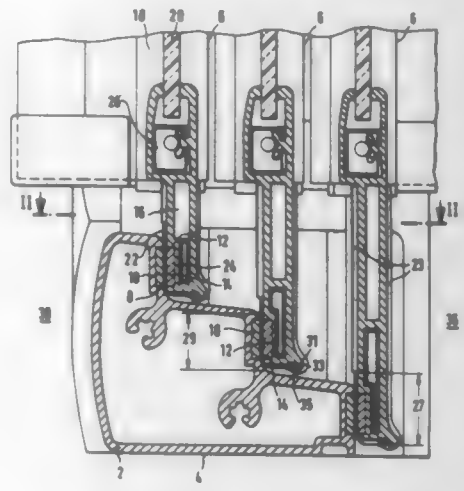
Heinz G. Baus, Wartbodenstrasse 35, CH-3626 Hünibach-Thun, Switzerland

Filed Sep. 24, 1985, Ser. No. 779,637

Claims priority, application Fed. Rep. of Germany, Sep. 29, 1984, 3435905

Int. Cl.[4] A47K *3/4, 3/08, 3/22, 3/14*

U.S. Cl. 4—557 18 Claims



1. A partition wall structure having at least one vertically suspended slidable wall panel provided with a bordering frame having a lower horizontal frame member joined, at the ends thereof, by corner connectors to vertical frame members, said lower frame member having a vertical outer surface; said structure further having an elongated lower guide member defining a vertical guiding wall surface constantly facing said lower frame outer surface and said connectors during displacement of said door panel; said structure additionally having magnet means including a first part mounted on said lower frame member and having an outward face flush with said lower frame outer surface and a second part mounted on said guide member so as to have an outward face flush with said guiding wall surface, the improvement therewith in the provision of gap-defining means holding said outward faces of said magnet parts spaced a predetermined distance from one another, said gap-defining means comprising:

spacing strips solid with said connectors and overlapping the ends of said first part of said magnetic means over a portion of said outward face of said first part so as to hold said first part outward face at said predetermined distance away from said second part during displacement of said slidable wall panel and against a magnetic force developing between said magnet part.

4,606,082

CHAIR LIFT APPARATUS

Harvey G. Kuhlman, N56 W21466 Silver Spring Rd., Menomonee Falls, Wis. 53051

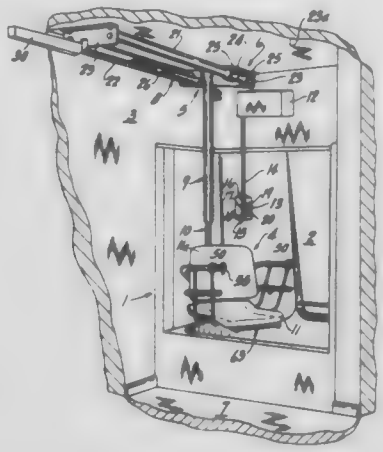
Filed Jul. 6, 1984, Ser. No. 628,607

Int. Cl.[4] A47K *3/12*

U.S. Cl. 4—561 18 Claims

1. A power chair lift apparatus for moving of a person from and to a restricted area, comprising a horizontal hydraulic piston-cylinder power unit adapted to be rigidly affixed in upwardly spaced relation above a restricted area and having a movable member movable transversely into and from said area, a carriage secured to said movable member of said horizontal hydraulic power unit for selective positive positioning in alignment with the restricted area and outside said restricted area, a chair lift power piston-cylinder unit fixedly secured to said carriage and depending downwardly thereform to define a firm support, said chair power piston-cylinder unit including a vertically movable member, a chair unit secured directly to said movable member of said chair power unit for corresponding positive vertical positioning, hydraulic fluid supply means

for said power piston-cylinder units, and a control means for selectively connecting said hydraulic fluid supply means to the



opposite ends of said power units for corresponding positioning of the carriage and the chair.

4,606,083

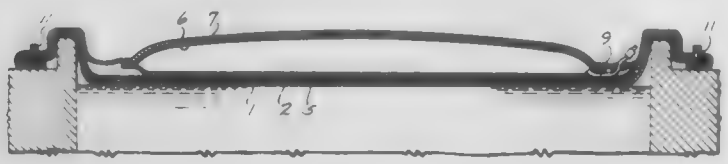
TUB COVER

James E. Kingston, Arlington, Wash., assignor to Marlys A. Sliger, LaConner, Wash.

Filed Mar. 19, 1984, Ser. No. 591,303

Int. Cl.⁴ A47K *3/02*

U.S. Cl. 4—580 **1 Claim**



1. A buoyant flexible cover for a water tub having a curb above the surface of the water in the tub, said cover comprising a multiplicity of flexible sheets of water-impervious material including a bottom sheet, an intermediate sheet and a top sheet, said sheets having their margins secured together for forming two closed pockets between, respectively, said bottom sheet and said intermediate sheet and said intermediate sheet and said top sheet, said secured margins of said sheets being adapted to be anchored outside the tub curb with sufficient marginal slack of all three of said sheets to drape over the tub curb and extend loosely downward closely adjacent to the inner wall of the tub curb so that the underside of said bottom sheet contiguously lies on substantially the entire surface area of the water in the tub despite minor changes in the level of the water, an inflatable bladder having upper and lower sheet surfaces separate from said top and intermediate sheets, of a size smaller than the internal area of the tub but covering at least the major portion of the internal area of the tub and received in the pocket between said intermediate sheet and said top sheet, substantially the entire lower sheet surface of said bladder when inflated being flat and substantially contiguously contacting said intermediate sheet, and a layer of flexible, buoyant, heat-insulating sheet material received in the pocket between said bottom sheet and said intermediate sheet, of a size sufficient to cover substantially the entire internal area of the tub and sufficiently buoyant to floatingly support said sheets and said bladder without any appreciable supporting force being supplied by the marginal portions of said three sheets draped over the tub curb, said bladder being inflatable for providing sufficient buoyancy to support the weight of a person on the cover without appreciable supporting force being supplied by the marginal portion of said three sheets draped over the tub curb.

4,606,084

SHOWER PARTITION

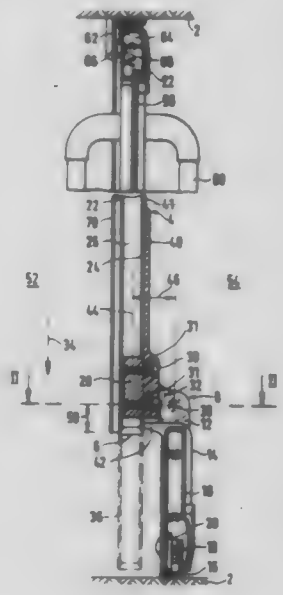
Heinz G. Baus, Wartbodenstrasse 35, CH-3626 Hünibach-Thun, Switzerland

Filed Sep. 3, 1985, Ser. No. 771,767

Claims priority, application Fed. Rep. of Germany, Sep. 8, 1984, 3433135

Int. Cl.⁴ A47K *3/22, 3/08*

U.S. Cl. 4—607 **13 Claims**



1. A shower partition for a shower stall having an entrance opening, said partition comprising:

a shower door swingable between a closure position where said door stands across and closes said entrance opening and an open position where said door is swung away from said entrance opening and frees said opening, said door extending in a general vertical plane and having circumscribing edges;

a jamb member having a vertical edge defining one side of said entrance opening, said jamb member standing on one side of said door and extending along one of said cricumscribing edges of said door;

at least one hinge means having a first hinge part on said vertical edge of said jam member and a second hinge part on said one of said circumscribing edges of said door, said hinge parts cooperating together to allow swinging of said door, between said positions, about a vertical axis lying away from said door plane, and

means securing said second hinge part to said one of said circumscribing edges of said door and at one of a plurality of selectable locations disposed linearly transversely of said door plane, whereby to allow selectively locating said one circumscribing edge of said door with respect to said vertical edge of said jamb member by displacement of said door in said door plane.

4,606,085

HAND WASHING DEVICE

Joseph R. Davies, 220 W. Haven Ave., New Lenox, Ill. 60451

Filed Mar. 27, 1985, Ser. No. 716,538

Int. Cl.⁴ E03C *1/05*

U.S. Cl. 4—623 **19 Claims**

1. For use by health care personnel and others in washing their hands with water and a cleanser, the improved combination comprising:

a sealed source of the cleanser, and means to pump the cleanser, while yet sealed, from the source for discharge onto the person's hands;

a number of indicators;

valve means activated by such personnel when individually ready to begin washing by manual body action other than below the wrist, operable to start and stop water flow for discharge onto the person's hands,

timer means;

means activated upon the water beginning to flow, operable to activate the timer means and initiate the wash cycle;

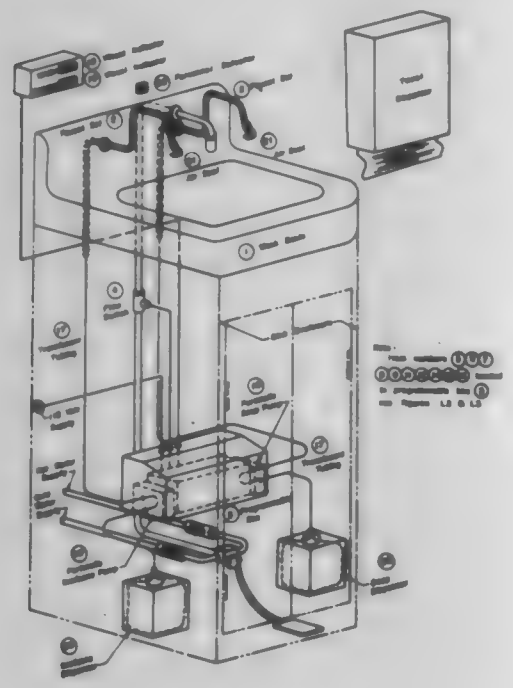
said timer means being operable upon the water flow starting, to:

remain operating independently of the subsequent condition of the valve means and the continued or discontinued flow of water;

activate the cleanser pump means, for a short timed duration, for discharging the cleanser onto the person's hands, and;

activate one of the indicators, for an extended timed duration corresponding to the washing phase of the wash cycle, for advising the person that the wash cycle is in the washing phase;

said timer means being operable sequentially after the timed washing phase of the wash cycle, to:



activate another of the indicators, for an extended timed duration corresponding to the rinsing phase of the wash cycle, for advising the person that the wash cycle is in the rinsing phase;

said timer means being operable at the start of the timed washing phase of the wash cycle, at the start of the timed rinsing phase of the wash cycle, and at the end of the timed rinsing phase of the wash cycle, to:

activate yet a third of the indicators, for a short duration compared to the duration of the corresponding wash or rinse phases of the wash cycle, to advise the person that the changes in the timed phases should then be taking place;

operable thereby to advise a person washing his/her hands what phase of the overall wash cycle, the washing or rinsing, the person should be in to satisfy the corresponding duration needed to be effective for proper degermification.

4,606,086

LOUNGE CHAIR FOR READING

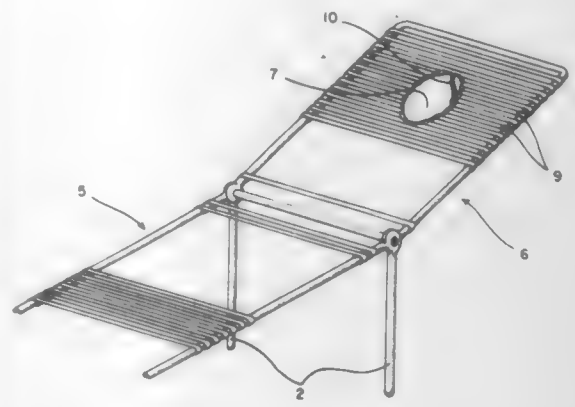
David B. Rowland, 1521 Woodcroft Dr., Raleigh, N.C. 27609

Filed Jun. 21, 1985, Ser. No. 747,330

Int. Cl.[4] A47C *17/64*

U.S. Cl. 5—111 4 Claims

1. An improved pool lounge chair adjustable from a sitting to a prone position wherein a portion of said chair capable of supporting the upper body of a user has provided therein an adjustable opening to receive and support a person's face without obstruction of the user's eyes, nose and mouth, and wherein the said opening is made adjustable by use of a drawstring attached around said opening, the ends of said drawstring capable of being connected loosely or tightly to adjust to the size of the user's face.



4,606,087

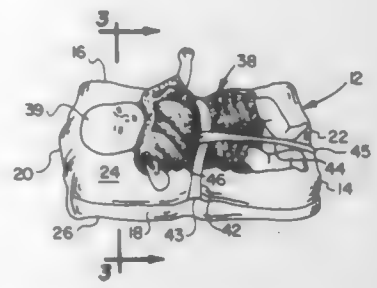
CONVERTIBLE BODY SUPPORTING PADS

Margaret A. Alivizatos, 11056 Shady Trail, Suite 113, Dallas, Tex. 75229

Continuation-in-part of Ser. No. 650,800, Sep. 14, 1984. This application Dec. 18, 1984, Ser. No. 683,067

Int. Cl.[4] A47D *13/00, 15/00*

U.S. Cl. 5—424 9 Claims



1. A convertible support pad for infants comprising: a generally rectangular flexible fabric cover forming a closure defining an interior space which is partially filled with a flowable material for conforming to a body or limb supported on a support surface formed along one panel of said cover and distributing support forces uniformly thereover;

first flexible restraining strap means extending from one longitudinal side of said pad across to the other longitudinal side of said pad, said first strap means being releasably connectable to one of said sides; and

second flexible restraining strap means extending from one tranverse end of said cover to a point substantially midway between opposite ends of said first strap means and secured to said first strap means, said strap means being cooperable to restrain an infant on said support surface, said cover being invertable at one end of said pad to form a cavity whereby said pad is convertible to a carrying bag for carrying articles in said cavity and carried by at least one of said strap means.

4,606,088

FURNITURE CUSHION

Jan Michaelsen, Them, and Peer Herbsleb, Silkeborg, both of Denmark, assignors to Jorck & Larsen A/S, Them, Denmark

PCT No. PCT/DK84/00007, § 371 Date Sep. 25, 1984, § 102(e) Date Sep. 25, 1984, PCT Pub. No. WO84/02897, PCT Pub. Date Aug. 2, 1984

PCT Filed Jan. 27, 1984, Ser. No. 662,418

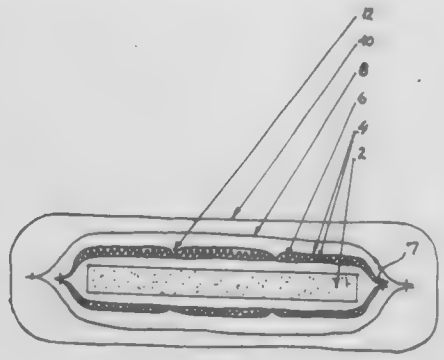
Claims priority, application Denmark, Jan. 27, 1983, 312/83

Int. Cl.[4] A47G *9/00;* A47C *27/22*

U.S. Cl. 5—434 8 Claims

1. A washable, form retaining cushion or pillow, in particu-

lar for making upholstered furniture and comprising a generally block- or plate-shaped foam core and a tight casing of a fibrous stuffing material surrounding the core, characterized in



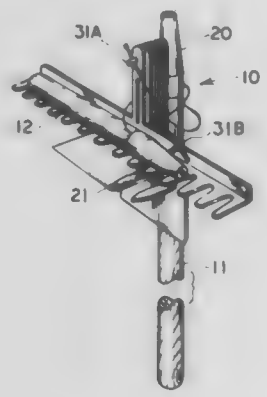
that said stuffing material comprises at least one continuous layer of long, continuous, and generally uniformly oriented cable fibers without free or loose fibers therein, said layer being dimensioned to completely enclose the core.

4,606,089

GROUND WORKING IMPLEMENT ASSEMBLY

Garry L. King, 3641 Baumberger Rd., Stow, Ohio 44224

Filed May 9, 1985, Ser. No. 732,450
Int. Cl.[4] B25F *1/02*
U.S. Cl. 7—114 **6 Claims**



1. A ground working implement assembly comprising:
a plurality of removable implement heads, each said head having a ground working member and a tang having a reinforcing boss therein, said boss defining a protrusion on one side of said tang and a corresponding recess on the opposite side of said tang;
handle means, one end of said handle means having socket means adapted to receive said tang of a said implement head; and
means for removably securing said tang of said implement head to said socket means when said tang is received thereby;
said implement heads being nestable with each other for storage with said tang of one said implement head in juxtaposition with said tang of a next adjacent said implement head whereby said protrusion of said one implement head nests with said recess of said next adjacent implement head.

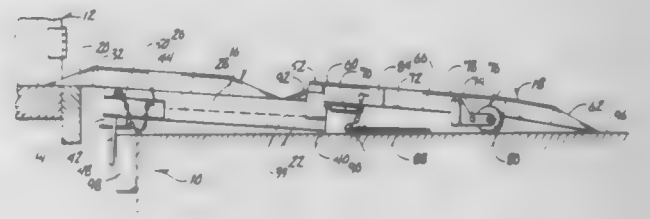
4,606,090

AUXILIARY LOADING DOCK RAMP

Robert J. Beard, Indianapolis, Ind., assignor to Woodford Manufacturing Company, Colorado Springs, Colo.

Filed Jun. 8, 1984, Ser. No. 618,878
Int. Cl.[4] E01D *15/00*
U.S. Cl. 14—72.5 **5 Claims**

1. A loading dock ramp, comprising:
first and second deck portions each having forward and rearward ends and opposite sides;
coupling means on the rearward end of said first deck portion and on the forward end of said second deck portion for detachably securing said deck portions together in an overlapping relationship so as to provide an elongated continuous surface over which a load is movable;
said coupling means including an ear attached to each side of said first deck portion adjacent the second end thereof and extending upwardly therefrom, and a recess means on



each side of said rearward deck portion for matingly receiving said ears thereby securing said first and second deck portions adjacent the forward end thereof together;
each of said ears terminating in an angularly disposed tip extending upwardly and outwardly with respect to said first deck portion so as to guide said second deck portion into position with respect to said first deck portion.

4,606,091

METHOD FOR THE EMBODIMENT OF BROOMS, BRUSHES AND SIMILAR ARTICLES, AND A BROOM OR BRUSH OBTAINED THEREWITH

Francesco Sartori, Via San Felice, 44 - 40122 Bologna, Italy

Filed Jun. 12, 1985, Ser. No. 743,921
Claims priority, application Italy, Nov. 30, 1984, 5127/84[U]
Int. Cl.[4] A46B *9/02*
U.S. Cl. 15—195 **12 Claims**



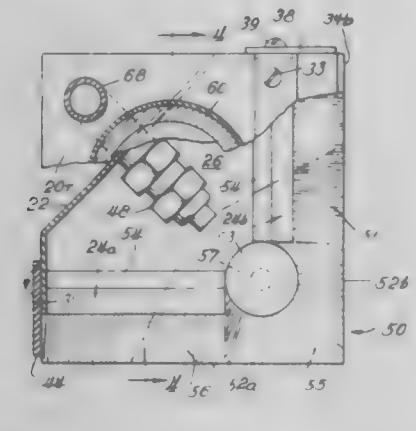
1. A Method for making, brushes and similar articles, comprising the following essential steps:
providing a solid back which carries tufted fibers and exhibits a surface, at the opposite side to that where a handle is ultimately attached, providing at least along the stretches nearest to its outermost ends a series of sloping lands which create an acute angle with said surface and of which the inclination relative to the surface becomes progressively less accentuated the nearer the land is located to the middle section of the solid back;
forming in each sloping land holes or seats the axis of which are disposed substantially normal to the land; and forming, in the remaining part of the same said surface, uniformly distributed holes or seats, inserting tufted fibers of desired length in the holes of the sloping lands, and in the holes of the middle section of the same said surface, and providing the tips of all the tufted fibers lie within a common plane.

4,606,092

LIQUID-VACUUM WASHER FOR BASEBOARD CORNER

John J. Henning, 910 Crestview, Palatine, Ill. 60007

Filed Jan. 22, 1985, Ser. No. 693,642
Int. Cl.[4] A47L *11/30*
U.S. Cl. 15—322 8 Claims



1. For use with a spray-vacuum cleaning system having a source of high pressure cleaning liquid and a source of vacuum, and including a hollow wand, an improved spray-vacuum tool to clean an interior corner defined between two meeting surfaces, comprising the combination of

a housing open-sided on two adjacent faces and defining an interior cavity, and a partition dividing the cavity into adjacent liquid and vacuum chambers each open to both open housing faces;

a pair of squeegees secured to and projected beyond the open housing faces from opposite housing sides paralleling the partition;

each squeegee having wiping edges that meet across a sharp exterior angle corresponding to the interior corner angle between the surfaces to be cleaned;

a pair of end guides also secured to and projected beyond the open housing faces from the other interconnecting housing sides;

said end guides also extending slightly beyond the ends of the squeegees and the squeegees extending at their ends to be substantially flush against the end guides;

said end guides projecting from the housing somewhat less than the squeegees do, and each end guide having a flat edge adapted to be fitted flush against one of the respective surfaces to be cleaned, whereupon the squeegees simultaneously contact the surfaces to be cleaned and are then somewhat flexed;

the end guides and squeegees being operable together then to isolate the chambers from the exterior of the cleaning tool while communicating the chambers together in the region adjacent the corner and surfaces to be cleaned;

nozzle means in the liquid chamber operable to spray the liquid directly into the corner and against the surfaces to be cleaned; and

means to swivel the tool housing relative to the hollow wand and to communicate the source of the vacuum with the vacuum chamber.

4,606,093

SKINNING BLADE FOR MEAT SKINNING MACHINES

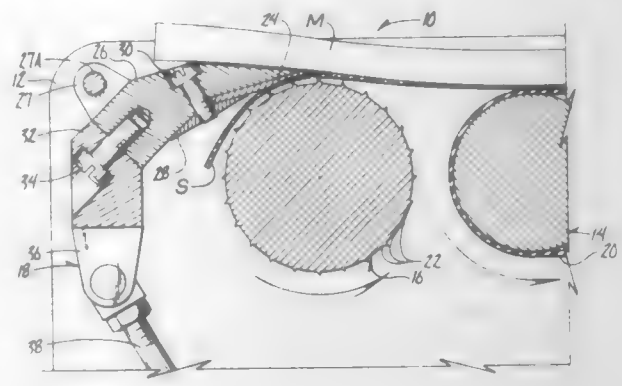
Ray T. Townsend, Des Moines, Iowa, assignor to Townsend Engineering Company, Des Moines, Iowa

Filed Mar. 18, 1985, Ser. No. 713,311
Int. Cl.[4] A22B *5/16;* A22C *17/12*
U.S. Cl. 17—21 7 Claims

1. A skinning blade, comprising,

an elongated blade body having a top surface, a bottom surface, a forward cutting edge and a rearward edge,

an elongated concave portion formed in the skinning blade and having forward and rearward ends, and being in



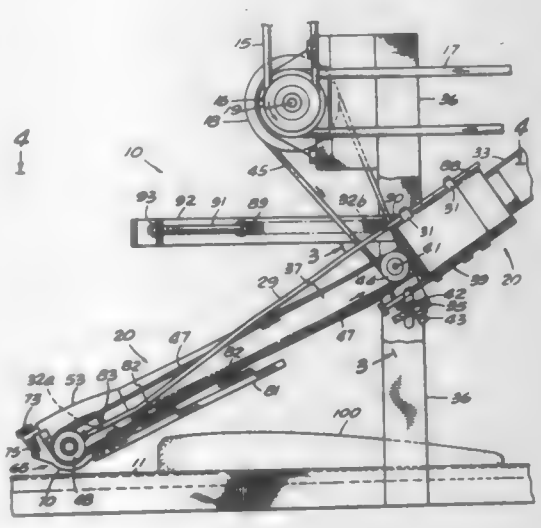
spaced relation to the forward cutting edge and rearward edge of said skinning blade.

4,606,094

AUTOMATIC SURFACE DRESSING MACHINE

Vincent J. Evich, 1315 S. Leland, San Pedro, Calif. 90731

Continuation-in-part of Ser. No. 585,441, Mar. 2, 1984, abandoned. This application Feb. 20, 1985, Ser. No. 703,514
Int. Cl.[4] A22C *25/14, 25/17*
U.S. Cl. 17—50 50 Claims



31. That method of dressing fish fillets which comprises:

advancing a row of fillets sequentially past successive power driven dressing roller means having the axes thereof extending horizontally transversely of the path of advance of said fillets and each positioned to dress a respective different longitudinal strip of the surface layer of said fillets as said fillets advance past said dressing roller means while maintaining said dressing roller means under generally uniform pressure contact with said fillets;

mounting said dressing roller means for limited pivotal movement in opposite directions about an axis extending lengthwise of the advance of said fillets past said dressing station and closely adjacent the surface undergoing dressing by the associated one of said dressing roller means; and

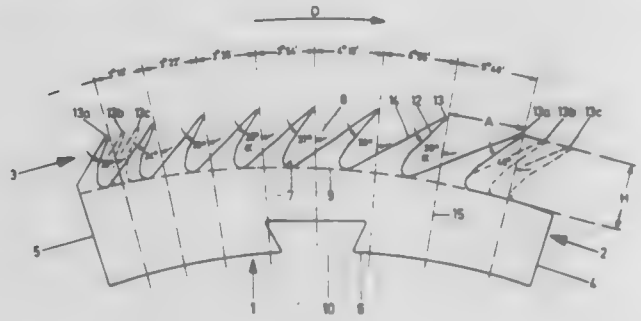
utilizing the pressurized contact of said dressing roller means with said fish fillets to pivot said roller means in a direction to remove a strip of substantially uniform thickness from said fillets.

4,606,095

SAW-TOOTHED STAMPED METAL PART AS OUTFIT FOR A COMB SEGMENT OF A PORCUPINE

Josef Egerer, Schwabach, Fed. Rep. of Germany, assignor to Staedtler & Uhl, Fed. Rep. of Germany

Filed Sep. 17, 1985, Ser. No. 776,844
Claims priority, application Fed. Rep. of Germany, Oct. 18, 1984, 8430562[U]
Int. Cl.[4] D01G *19/10, 15/14*
U.S. Cl. 19—97 7 Claims



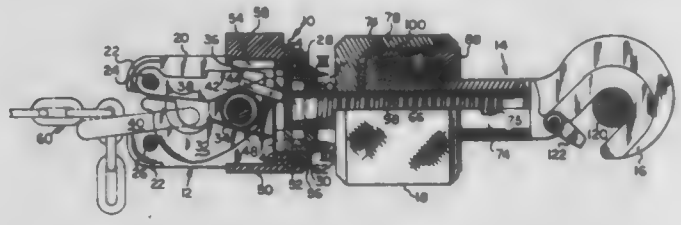
1. A saw-toothed stamped metal part as outfit for a comb segment of a porcupine for textile machines, specially combing machines, comprising a stilt functioning as the holding component in the comb segment and a plurality of outwardly extending teeth formed on the said stilt being inclined in pointed angle to the radial direction of the comb segment in the direction of rotation, wherein the height of centers increases in the direction of rotation.

4,606,096

CHAIN TENSIONER

Sherman L. Wood, Horton, and Charles F. Crissy, Jackson, both of Mich., assignors to Aeroquip Corporation, Jackson, Mich.

Filed Apr. 26, 1985, Ser. No. 727,753
Int. Cl.[4] F16B *7/12*
U.S. Cl. 24—68 CT 12 Claims



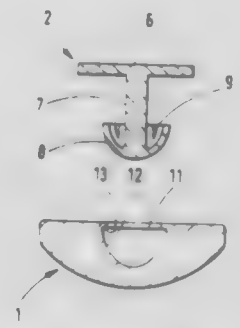
1. A tensioning device comprising, in combination, a first member having an outer end and an elongated stem, a second member having an outer end and a tubular inner end telescopingly received upon said first member stem, a head mounted upon said first member outer end, a latch mounted on said head pivotal between operative and release positions, latch operating means mounted upon said head operating said latch between said operative and release positions, a tension connection fitting defined on said second member outer end, a housing adjustably selectively axially positionable upon said stem, and compressible resilient tension force cushioning means interposed between said housing and said second member inner end whereby tension forces transmitted between said first and second member are imposed on said resilient tension force cushioning means.

4,606,097

SNAP-FIT-BUTTON

Kam Yau Lam; Kam Kheong Lam, and Kam Hoong Lam, all of C-17 Kuan Woh Yuen, Ipoh, Perak, Malaysia

Filed Jun. 19, 1985, Ser. No. 746,357
Claims priority, application United Kingdom, Jun. 20, 1984, 8415713
Int. Cl.[4] A44B *1/38*
U.S. Cl. 24—108 5 Claims



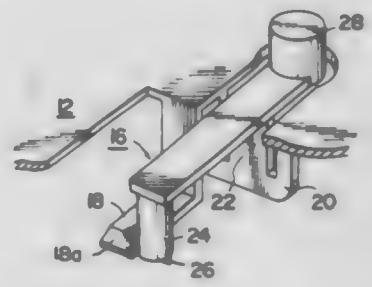
1. A button comprising a body and a retainer for securing the body to a material; the retainer having a T cross-sectionally shaped member with the leg of the T cross-sectionally shaped member remote from a cross piece of said T cross-sectionally shaped member connected to the inside top end of a dished, cup-shaped resiliently expandable member, a rim of the resiliently expandable member remote from said top end being directed toward said cross piece and circumferentially surrounding but not contacting the said leg; said body being provided with a blind bore having an outer part of smaller cross section than the normal cross section of said resiliently expandable member, the blind end of said bore inwardly of said outer part opening into a receptacle having an approximately similar dished, cup-shape to said resiliently expandable member for receiving the resiliently expandable member therein; and lip means about the receptacle at the confluence of the bore for engaging over the rim of the resiliently expandable member, the rim of the resiliently expandable member being adapted to contract when pushed through said outer part of the bore and subsequently expandably returning to substantially normal cross section inside the receptacle to be secured therein with the outer surfaces of the resiliently expandable member at least in partial contact with the inside surfaces of the receptacle, the proximity of the contacting surfaces being such that the cup-shape of the resiliently expandable member cannot be turned inside out.

4,606,098

PENDULUM ROD IMMOBILIZING DEVICE

Masahiro Akahane, Nagano, Japan, assignor to Rhythm Watch Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 351,435, Feb. 23, 1982, abandoned.
This application Sep. 21, 1984, Ser. No. 654,034
Claims priority, application Japan, Feb. 26, 1981, 56-26539[U]
Int. Cl.[4] A44B *21/00*
U.S. Cl. 24—326 1 Claim



1. A pendulum rod immobilizing device in a clock of the type including a dust cover and a pendulum rod pivotally coupled to the dust cover, said immobilizing device comprising:

an opening in said cover comprising an elongated slot and a circular hole formed at and overlapping one end of said elongated slot;

a support member extending perpendicularly to and formed integrally with said dust cover adjacent an end of said elongated slot opposite said circular hole, said support member being made of a resilient material and comprising a three-prong shape with two outer prongs coupled to said dust cover on each side of said elongated slot and a center prong extending into said elongated slot;

a retainer member integrally formed on and perpendicular to said center prong of said support member, said retainer member being provided in said slot and lying substantially in a same plane as said dust cover;

a release member integrally formed with said retainer member and provided within said circular hole;

an L-shaped guide member integrally formed with said dust cover and having a long side of the L of the L-shaped guide member perpendicular to the dust cover;

a cylindrical pendulum rod catch integrally formed with said retainer member and extending perpendicularly from said retainer member toward a short side of the L of the L-shaped guide member;

a claw formed on the end of the cylindrical pendulum rod catch for engaging with an engagement hole formed in said pendulum rod; and

a guide face formed on the short side of the L of the L-shaped guide member for guiding the pendulum rod into said immobilizing device.

4,606,099

METHOD AND APPARATUS FOR MANUFACTURING AN ARMOR SHUTTER

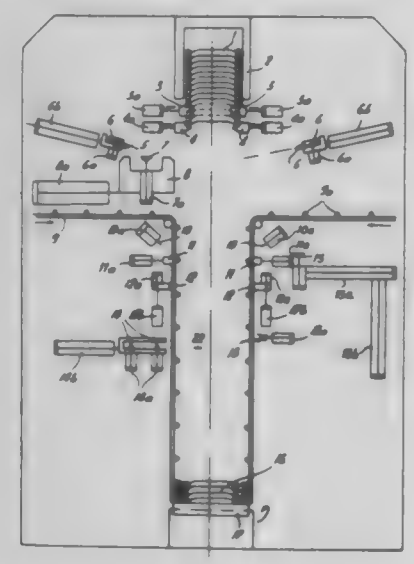
René Schluep, Tobel, and Franz Buser, Buckten, both of Switzerland, assignors to Griesser AG, Switzerland

Filed Mar. 19, 1984, Ser. No. 590,700

Claims priority, application Switzerland, Mar. 24, 1983, 1625/83

Int. Cl.⁴ B23P *19/04*

U.S. Cl. 29—24.5 **8 Claims**



1. A method of manufacturing a slatted armor shutter in which slats with beaded edges are connected to each other by carrier strips which are provided with loops to be engaged on connecting elements inserted in the beaded edges of the slats, comprising arranging the slats in horizontal, superadjacent position into a vertical stack, removing the slats therefrom individually starting from below and moving them in parallel position downwardly into a receiving station, holding the slats firmly in the receiving station, introducing connecting elements from the side into the beaded edges of each slat as it is held, at a fastening station interengaging the connecting elements with loops which are provided on the carrier strips which are fed in by pairs vertically donwwardly, moving each slat by steps corresponding to the spacing of the loops on the carrier strips downwardly while it is held until the last slat to be assembled into the armor shutter has left the fastening station and has reached a cutting station, cutting the carrier strip through at the cutting station a distance above the last slat, and letting the last slat also drop onto a stack already formed in a supporting area of the slats fixed to the cut portions of the carrier strips.

4,606,100

ELEMENT GUIDE IN APPARATUS FOR MANUFACTURING SLIDE FASTENERS WITH FLIES

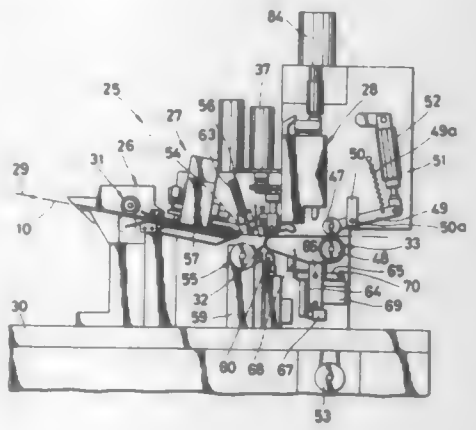
Akio Yanoki, Namerikawa; Tatsuo Osaki, Uozu, and Masaaki Fuda, Kurobe, all of Japan, assignors to Yoshida Kogyo K. K., Tokyo, Japan

Filed Oct. 18, 1984, Ser. No. 662,358

Claims priority, application Japan, Oct. 18, 1983, 58-194496

Int. Cl.⁴ B21D *53/52*

U.S. Cl. 29—33.2 **3 Claims**



1. An apparatus for automatically manufacturing a succession of slide fasteners with flies from a continuous slide fastener chain having a pair of intermeshed rows of coupling elements with element-free spaces therein and stringer tapes supporting the rows of coupling elements, respectively, with the flies sewn to one of the tapes, comprising:

(a) a feed path along which the chain can be fed;

(b) first means in said feed path for folding one of the flies on itself at a time;

(c) second means in said feed path for mounting sliders one at a time on the rows of coupling elements;

(d) a feed roller assembly for feeding the chain along said feed path in selective engagement with the intermeshed rows of coupling elements;

(e) third means in said feed path for applying a bottom stop to the rows of coupling elements and cutting off the chain across one of the element-free spaces to produce a slide fastener with a fly;

(f) a discharge roller assembly actuatable in synchronism with said feed roller assembly for discharging the produced slide fastener with the fly;

(g) said feed roller assembly comprising a driven roller rotatable in synchronism with said discharge roller assembly, a fluid cylinder, and an idling roller coacting with said driven roller for feeding the chain along said feed path, said idling roller being movable by said fluid cylinder toward and away from said driven roller;

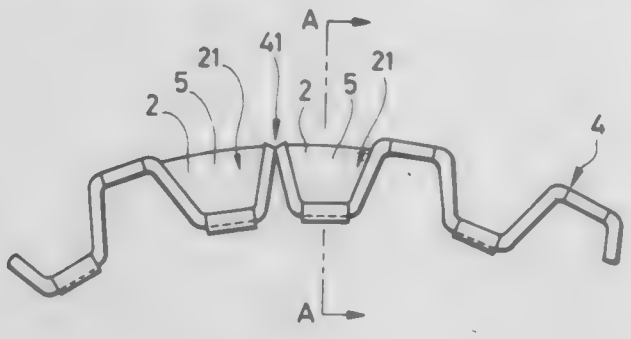
(h) means operatively coupled with said feed roller assembly for guiding the rows of coupling elements along said feed path across said feed roller assembly, said guiding means comprising an angularly movable element guide having guide legs disposed upstream and downstream of said feed roller assembly in said feed path, said guide legs having guide grooves, respectively, aligned with said feed path; and

(i) a spring acting on said element guide for normally urging said element guide into an angular position to cause one of said guide legs to guide said rows of coupling elements in the guide groove therein while allowing the mounting slider to move past the other guide leg.

4,606,101
METHOD OF MANUFACTURING A RADIALLY CORRUGATED EXPANDER-SPACER FOR A PISTON OIL RING ASSEMBLY

Takeo Koroki, Tokyo, and Koji Takeuchi, Saitama, both of Japan, assignors to Nippon Piston Ring Co., Ltd., Tokyo, Japan

Filed Apr. 10, 1985, Ser. No. 721,703
Claims priority, application Japan, Apr. 12, 1985, 59-71882
Int. Cl.[4] B23P *15/06;* B29C *35/00;* F02F *5/00*
U.S. Cl. 29—156.5 R 4 Claims



1. A method of manufacturing a radially corrugated expander-spacer having two terminal ends, in which inner and outer crowns are alternately and successively laid, said inner crowns each including an inner peripheral piece having a length and an opening having a width which is larger than the length of said inner peripheral piece, and said outer crowns each including an outer peripheral piece having a length and an opening having a width which is larger than the length of said outer peripheral piece, said method comprising the steps of:

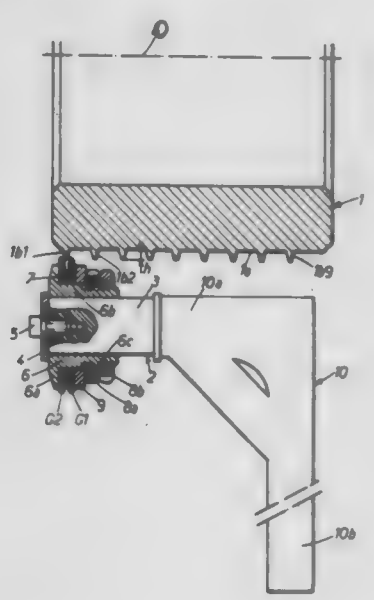
filling thermosetting synthetic resin that bonds strongly to metals into the openings of the inner crowns located at said two terminal ends; and

curing said thus filled thermosetting synthetic resin, thereby bonding said thermosetting synthetic resin to the openings of said inner crowns at said two terminal ends.

4,606,102
PROCESS FOR REPAIRING LABYRINTH SEAL FLANGES

Jean R. L. Riethmuller, Chilly, France, assignor to S.N.E.C.-M.A., Paris, France

Filed Apr. 2, 1985, Ser. No. 719,251
Claims priority, application France, Apr. 19, 1984, 84 05274
Int. Cl.[4] B23P *15/00, 6/00;* B21D *3/14*
U.S. Cl. 29—156.8 R 9 Claims

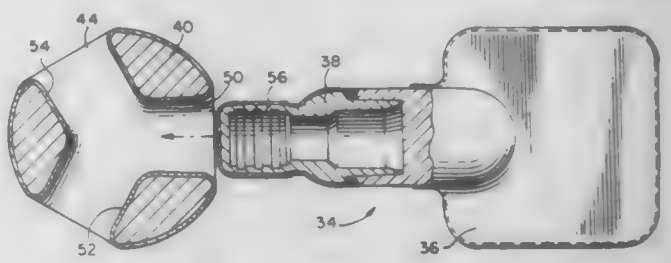


1. A process for repairing labyrinth seal flanges having a height h less than a desired height h_0 comprising the step of spin-forming each seal flange until the height h is at least equal to h_0.

4,606,103
METHOD FOR FABRICATING AN IMPELLER ASSEMBLY AND SHAFT HAVING AN INTERFERENCE FIT

Richard Koehl, Niederbronn les Bains, France, and Michael J. Lerman, Edison, N.J., assignors to De Dietrich (USA), Inc., Union, N.J.

Division of Ser. No. 552,991, Nov. 21, 1983, Pat. No. 4,491,421.
This application Sep. 14, 1984, Ser. No. 650,740
Int. Cl.[4] B21K *3/04;* B23P *11/02;* F16B *4/00*
U.S. Cl. 29—156.8 R 3 Claims

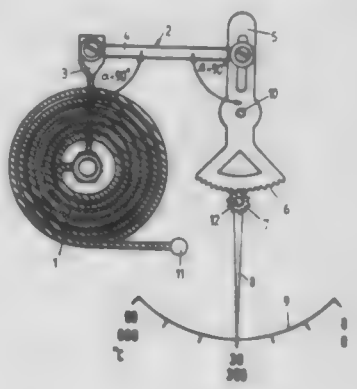


1. A method of connecting a shaft and an impeller assembly formed by at least one axial tier of blade members and at least one blade member in each tier, said shaft and impeller assembly being coated throughout their entire exposed surfaces with a coating of corrosion resistant material, and said connection being an interference fitted connection between coatings comprising providing a region at a distal end of said shaft for supporting said impeller assembly, each blade member of said impeller assembly being formed by a blade portion and an integral arm having an end providing a tolerance ground outer cylindrical surface remote from the blade portion, forming a number of tolerance ground cylindical bores in said region at radially spaced locations equal to the number of axial tiers and blade members in each tier, locating the end of each said arm at an opening into a bore and in position that the axes of the cylindical surface and cylindical bore are coaxial, and moving said arm of each blade member of said impeller assembly in movement relative to said shaft whereby said arm enters into a bore to form said interference fitted connection which, alone, secures each said blade member in said bore against centrifugal forces and forces tending to induce a turning moment of said blade member about said axis or to otherwise permit said blade member release from said bore.

4,606,104
METHOD OF MAKING A GAS PRESSURE THERMOMETER

Johannes G. Stiller, Roden, Netherlands, assignor to Stiko Holding B.V., Roden, Netherlands

Filed Oct. 11, 1984, Ser. No. 659,624
Claims priority, application Netherlands, Oct. 12, 1983, 8303509
Int. Cl.[4] B21D *53/00;* B23Q *17/00;* G01K *5/00*
U.S. Cl. 29—157 R 3 Claims



1. In a method of making a gas pressure thermometer, in which a measuring system comprising a container for the gas, a Bourdon tube, and a capillary of no more than about 20 m which connects said container to one end of the Bourdon tube is filled with the gas to a superatmospheric pressure prevailing

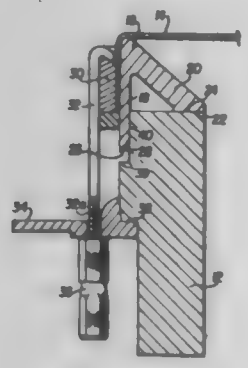
at the ambient temperature; the system is hermetically sealed; the free end of the Bourdon tube is connected to a temperature indicator or recorder through a transmission mechanism constituted by a multi-membered linkage including a lever bar, a draw link, and a rack bar with a pinion, with adjustable angles α between the central draw link and said lever bar, and β between said draw link and said rack bar, the free end of the Bourdon tube being connected to the free end of said lever bar, and the toothed free end of the rack bar being connected to the temperature indicator or recorder through the ends thereof which contains said pinion, and the combination of the Bourdon tube, the transmission mechanism and the temperature indicator or recorder is housed in a cabinet which when a temperature indicator is used is further provided with a graduated dial; the improvement comprising the steps of providing, for use in the measuring system, a Bourdon tube having a long overall spring movement of at least 22 mm and an effective spring movement of about 11 mm, filling the measuring system with the gas to a pressure, prevailing at ambient temperature, of at least about 5 bar, and compensating for the non-linear indication that occurs as the Bourdon tube is uncoiled by adjusting said angles α and β.

4,606,105

METHOD OF BANJO CONSTRUCTION

Harry C. Snavely, 115 Plymouth Ave., Winston-Salem, N.C. 27104

Division of Ser. No. 440,306, Nov. 9, 1982, Pat. No. 4,483,234.
This application Nov. 15, 1984, Ser. No. 671,774
The portion of the term of this patent subsequent to Nov. 20, 2001, has been disclaimed.
Int. Cl.[4] B29D *17/00*
U.S. Cl. 29—169.5 **6 Claims**



1. A method of constructing a banjo pot sub-assembly including a tone ring and a cylindrical rim, comprising the steps of:

providing a cylindrical rim having an outside diameter;

providing an annular tone ring having a flange portion with an inside diameter smaller than the outside diameter of the rim;

forcibly expanding the tone ring flange portion outwardly to an inside diameter substantially equal to or larger than the outside diameter of the rim;

inserting the rim into the expanded flange portion; and

permitting inward contraction of the flange portion so that the flange portion tightly and permanently grips the rim with substantially uniform radial compression within the elastic limits of said rim and ring.

4,606,106

SEAL INSTALLATION TOOL

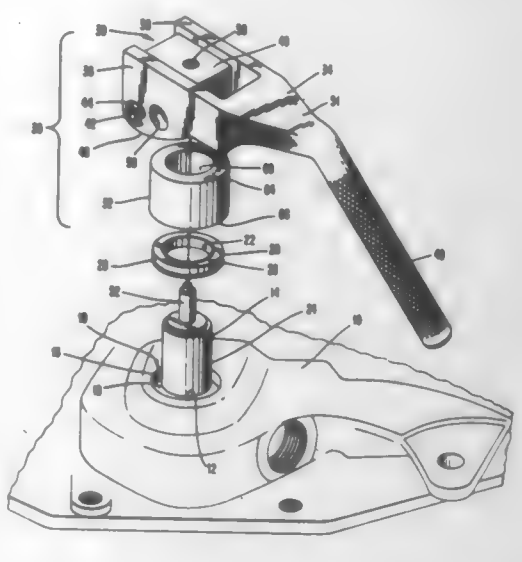
Ernest H. Dutton, Rte. 2, Box 363B, Smiths, Ala. 36877

Filed Oct. 19, 1984, Ser. No. 662,520
Int. Cl.[4] B23P *19/04*
U.S. Cl. 29—235 **7 Claims**

1. A tool for installing an oil retention seal about a linkage piece extending into a transmission casing, said tool comprising:

a body having a smooth bore for receiving said linkage piece and means for temporarily securing said body to said received linkage piece;

a manually operable cam pivotally connected to said body; and



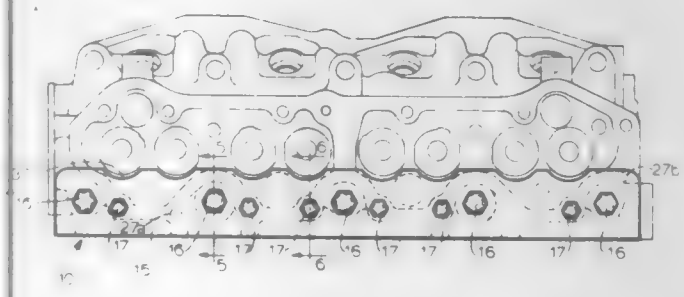
a collar having an aperture to slidingly receive said linkage piece, said collar having a bearing surface for receiving said cam.

4,606,107

AUTOMOBILE CYLINDER HEAD REMOVAL TOOL

Theos E. Theofanous, 4747 Kester Rd., Winston-Salem, N.C. 27103

Filed May 28, 1985, Ser. No. 738,341
Int. Cl.[4] B23P *19/04*
U.S. Cl. 29—256 **1 Claim**



1. A tool for removing the cylinder head from the engine block of an engine of the Fiat model type 128, 1300, 1500, or X-1.9, said cylinder head mounting a series of upstanding valve springs and having a series of off-vertical threaded holes normally used for securing a camshaft housing and being released from securement to said block on one side by removal of a plurality of bolts and on an opposite side being secured to said block by a plurality of studs having their securing nuts removed and exposed threaded ends extending from the block above a flat bearing surface on the block with the shanks of the studs frozen in the cylinder head, comprising:

(a) an elongated bar having:

(i) a flat, smooth, bottom bearing surface;

(ii) a length substantially equal to the length of the cylinder head being removed;

(iii) a thickness in excess of the length of the exposed threaded ends of the studs securing the cylinder head to the engine block;

(iv) a width sufficient to provide a bearing surface surrounding each said exposed stud end when said bar is mounted on said cylinder head;

(v) a first series of threaded holes located on said bar in off-vertical relation to the plane of the bottom surface of said bar to mate said off-vertical series of threaded holes in said cylinder head normally used to secure said camshaft housing thereon;

(vi) a second series of threaded holes located on said bar in vertical relation to the plane of the bottom surface of

said bar, said second series of threaded holes located on said bar being alignable with and adapted for loosely receiving the exposed threaded ends of said plurality of studs securing the cylinder head to the engine block; and

(vii) a series of arc-shaped cutouts along one side of said bar adapted to fit adjacent valve springs on said cylinder head;

(b) a first set of bolts threadably received by said first series of off-vertical threaded holes in said bar and screwed into said series of off-vertical threaded holes in said cylinder head to fixedly secure said bar to said cylinder head; and

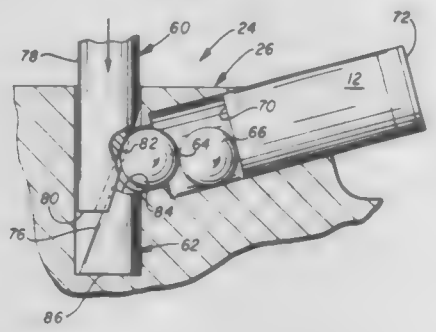
(c) a second set of bolts threadably received by said second series of threaded holes in said bar and adapted to be screwed down onto the top faces of the exposed threaded ends of said studs so as to gradually force said cylinder head upward and free of the shanks of said studs as said second set of bolts are tightened down onto the said top faces of said exposed threaded ends of said studs.

4,606,108

DRILL BIT METHOD AND APPARATUS

Kenneth Davis, Midland, Tex., assignor to W. Wesley Perry, Midland, Tex.

Filed Dec. 2, 1985, Ser. No. 803,326
Int. Cl.[4] B23P *6/00*; B26D *1/00*
U.S. Cl. 29—402.03 **10 Claims**



1. In a drill bit having a lower cutting face which includes a plurality of stud assemblies radially spaced from a longitudinal axial centerline of the bit, each stud assembly being mounted within a stud receiving socket which is formed in the bit cutting face, the method of removing the stud assemblies from the sockets of the bit face, comprising the steps of:

forming a socket passageway along the longitudinal axial centerline of said stud receiving socket and extending the passageway rearwardly of the socket;

forming a blind passageway which extends from the bit cutting face into the bit body, and into intersecting relationship respective to the socket passageway; while arranging said socket passageway and said blind passageway laterally respective to one another;

forming a wedge face on one side of a tool, forming a support post which has one side inclined to receive the wedge face of the tool thereagainst;

forcing a ball to move from the cutting face of the bit, into the blind passageway, onto the support post, then into the socket passageway, and into abutting engagement with a rear end portion of the stud assembly;

placing the wedge face against the side of the ball which is opposed to the stud assembly; forcing the tool to move into the blind passageway while part of the tool engages the blind passageway and the wedge face engages the ball and thereby forces the ball to move in a direction away from the blind passageway;

applying sufficient force to the tool to cause the ball to engage the stud assembly with sufficient force to be moved outwardly in a direction away from the socket, thereby releasing the stud assembly from the socket.

8. Method of building and repairing a drill bit having a cutting face formed at the lower end of the main body thereof, comprising the steps of:

(1) providing an elongated stud assembly and forming a cutting face at one end thereof;

(2) forming a stud receiving socket into the bit at the cutting face of the bit, and orienting the longitudinal axial centerline of the socket respective to the longitudinal axial centerline of the bit body so that when a stud assembly is forced into the socket, at least part of the cutting face of the stud assembly is located below the bit face to thereby bring the cutting face of the bit into a position to engage and penetrate a formation;

(3) forming a counterbore from the bit face, into the bit body; forming a socket passageway which extends rearwardly from the socket into communication with a medial length of the counterbore;

(4) forcing a stud assembly into the socket;

(5) using the bit downhole in a borehole until one edge portion of the cutting face of the stud assembly has worn away;

(6) renewing the cutting ability of the bit by selecting a tool of a size which can be received within the counterbore;

(7) supporting a ball along a marginal length of the counterbore by placing a ball support device in the counterbore;

(8) imparting a marginal length of a tool with a ball engaging inclined surface, so that the tool can simultaneously wedgedly engage the ball and a sidewall of the counterbore;

(9) forcing the ball through the counterbore, into the socket passageway and against a stud assembly;

(10) engaging a sidewall of the counterbore and a sidewall of the ball with the tool and forcing the tool into the counterbore to thereby force the stud from the socket;

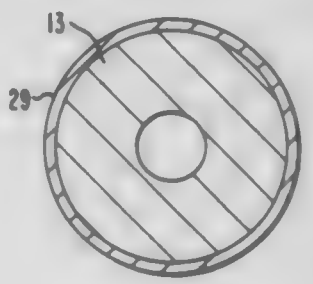
(11) placing a stud assembly within the socket.

4,606,109

ELEMENT IMMERSED IN COOLANT OF NUCLEAR REACTOR

Albert Weiss, Whitehall, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jan. 13, 1984, Ser. No. 570,487
Int. Cl.[4] B23P *17/00*
U.S. Cl. 29—421 R **8 Claims**



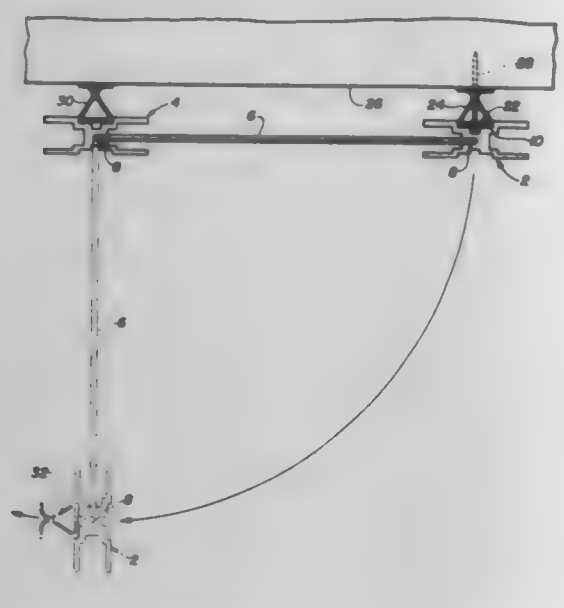
1. The method of processing an element of a nuclear reactor, said element including a stack of pellets enclosed in a metallic cladding, the said method including: positioning said element in a vessel, reducing the pressure of the air in said vessel to a lower magnitude at which there is appreciable oxygen in the atmosphere of the vessel, conducting current through the cladding of said element to elevate the temperature of said cladding, while the cladding is at said temperature introducing gas into said vessel to elevate the pressure in said vessel, the temperature of said cladding reducing the yield strength of said cladding to a magnitude such that said yield strength is exceeded by said elevated pressure and the cladding is collapsed on the pellets of said stack whereby the formation, by exposure to neutron flux, of an unsupported gap in said cladding which would collapse under the pressure and/or at the temperature of the coolant of said reactor is prevented.

4,606,110

TOOL AND METHOD FOR POSITIONING CEILING RUNNERS

J. Thomas Goserud, Midlothian, Va., assignor to Armstrong World Industries, Inc., Lancaster, Pa.

Filed Jul. 11, 1985, Ser. No. 753,980
Int. Cl.[4] B23P *11/00*
U.S. Cl. 29—432 1 Claim



1. A method for positioning and holding ceiling runners in position on the underside of floor joists, said method using a layout jig having a first holder with a recess to receive and hold on horizontal flange of a ceiling runner, a second holder of the same construction, and a means pivotally connected to both first and second holders to hold said first and second holders a fixed distance apart, the steps comprising:

(a) fastening a first runner in position on a underside of a number of floor joists in its proper location,

(b) attaching the first holder to the horizontal flange of said first runner by inserting said flange in the recess of the holder and frictionally holding the flange in said recess,

(c) permitting said second holder to hang down from the runner to which the first holder is fastened due to the pivotally connected means holding the first and second holders together a fixed distance apart,

(d) placing and holding a second runner in the recess of the second holder,

(e) swinging the second holder with its runner up against the floor joists to position said second runner a fixed distance from said first runner due to the means connecting the both holders together a fixed distance apart,

(f) fastening said second runner in position on an underside of a number of floor joists and then disconnecting said first holder from said first runner, and

(g) repeating steps (d), (e), and (f) using said first holder to receive a third runner.

4,606,111

METHOD OF MANUFACTURING UNDETACHABLE FLANGE JOINT

Yoichiro Okazaki, Sagamihara, and Shigeaki Akazawa, Isehara, both of Japan, assignors to Mitsubishi Jokogyo Kabushiki Kaisha and The Yokohama Rubber Co., Ltd., both of Tokyo, Japan

Division of Ser. No. 454,033, Dec. 28, 1982, abandoned. This application Nov. 28, 1983, Ser. No. 555,574
Claims priority, application Japan, Jan. 12, 1982, 57-2327
Int. Cl.[4] B21D *39/02*
U.S. Cl. 29—463 1 Claim

1. A method of manufacturing an undetachable flange joint characterized in that it is practiced by way of the steps of

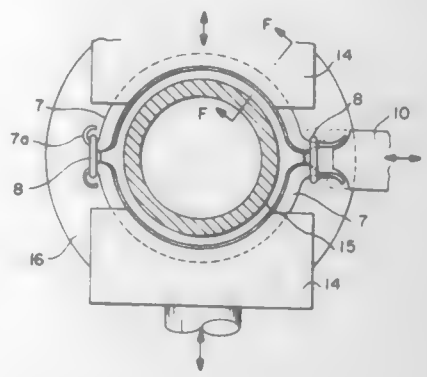
preparing two semi-circular clamp halves having a concave cross-sectional configuration by press forming a strip of sheet metal into a V-shaped cross-sectional configuration,

providing each said clamp half with a first and a second end part,

arranging said clamp halves opposite to one another with said first end parts having an annular link hung thereabout,

causing said first end parts to be subjected to a curling operation in such a manner as to encase said annular link in the curled said first end parts to join said clamp halves at said first end parts,

mounting the pair of half assembled clamp halves around two whole flanges to be joined to one another so that the



internal circumferential lateral surface of said clamp halves is caused to come in contact with the external circumferential lateral surfaces of said two flanges to be connected together,

hanging an annular link around said second end parts of said clamp halves,

causing the latter to be subjected to another curling operation in the same manner as described above so as to join said clamp halves at said second end parts, and

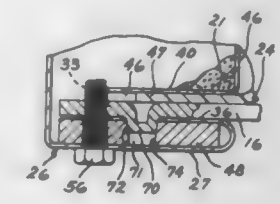
said curling operations are performed by advancing a curl punch between said clamp halves.

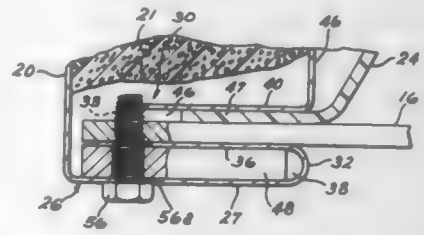
4,606,112

METHOD OF ASSEMBLING A REFRIGERATOR CABINET

Thomas E. Jenkins, and Robert R. Sisler, both of Louisville, Ky., assignors to General Electric Company, Louisville, Ky.

Filed Jun. 28, 1985, Ser. No. 749,820
Int. Cl.[4] B23Q *3/00*
U.S. Cl. 29—464 4 Claims





1. A method of assembling a refrigerator cabinet of the type having on outer metal shell with side walls and a front face, an inner liner and a partition separating a freezer and fresh food compartments comprising:

forming said front face to include spaced first and second wall portions parallel to said front face;

providing vertically spaced aligned apertures in said front face and said first wall portion;

forming a metal cross member having fastener openings at each end thereof spaced vertically a distance such that when said fastener openings are aligned with said aligned

apertures said outer metal shell will have the correct cabinet width;

inserting a mounting bracket having apertures therein between said front face and said first wall such that the apertures in said mounting bracket communicate with said aligned apertures in said first wall portion and said front face;

inserting fastening means in said aligned apertures for securing the cross member to said front face by sandwiching said cross member, mounting bracket, first wall portion and front face together to form a locked joint between said cross member and said cabinet to thereby insure that said side walls and said cross members are maintained in a substantially perpendicular relationship.

4,606,113

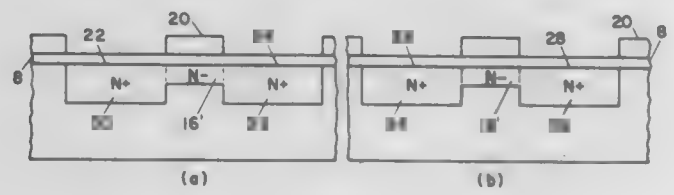
METHOD OF MANUFACTURING METAL-SEMICONDUCTOR FIELD EFFECT TRANSISTORS USING ORIENTATION DEPENDENT ETCHED RECESSES OF DIFFERENT DEPTHS

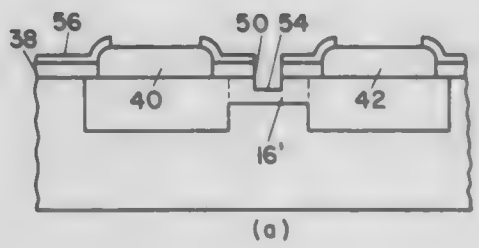
Ajit G. Rode, Beaverton, Oreg., assignor to TriQuint Semiconductor, Inc., Beaverton, Oreg.

Continuation of Ser. No. 517,162, Jul. 25, 1983, abandoned. This application Mar. 25, 1985, Ser. No. 715,545

Int. Cl.⁴ H01L *21/265, 21/302*

U.S. Cl. 29—571 **10 Claims**





1. A method of manufacturing field effect transistors utilizing a substrate of monocrystralline compound semiconductor material having impurity ions implanted therein to a predetermined depth below a main surface of the substrate in at least two regions of the substrate, said method comprising defining two elongated gate areas of said main surface, over said two regions respectively, which gate areas have their longitudinal dimensions so oriented with respect to the crystal axes of the substrate that the substrate material is more readily etchable through one of said gate areas than through the other gate area, etching the semiconductor material through both said gate areas simultaneously with the same etchant, whereby recesses of different respective depths, each less than said predetermined depth, are formed in the substrate, and depositing metal into said recesses.

4,606,114

MULTILEVEL OXIDE AS DIFFUSION SOURCE

Karl H. Kraus, Missouri City, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Aug. 29, 1984, Ser. No. 645,583

Int. Cl.⁴ H01L *21/385*

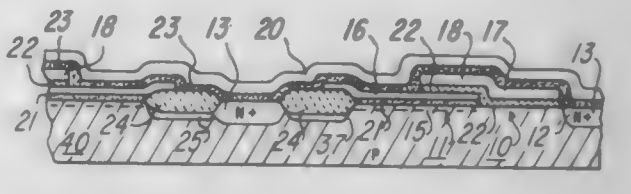
U.S. Cl. 29—571 **10 Claims**

1. A method of making a semiconductor device comprising the steps of:

applying a conductor layer to a face of a semiconductor body and patterning said layer to define a mask for self-alignment,

applying a coating of doped insulator to said face,

heating said body to simultaneously cause densification of said device and diffusing of conductivity determining impurity from said insulator into said face, using said conductor layer as a mask,



opening contact holes in said insulator,

again heating said body for reflowing said doped insulator to smooth the contour of said sontact holes,

and depositing a metallic layer over said insulator and into said contact holes.

4,606,115

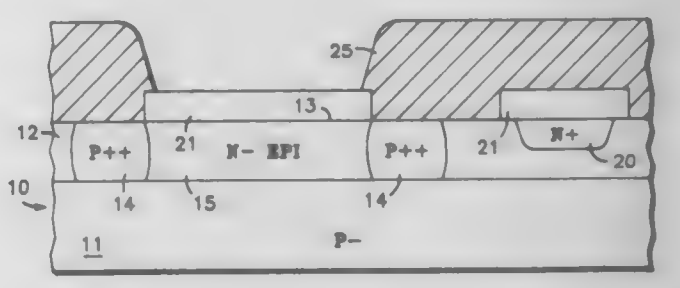
METHOD OF MANUFACTURING OPTICALLY SENSITIVE SEMICONDUCTOR DEVICES INCLUDING ANTI-REFLECTIVE COATINGS

Douglas J. Kervin, Mesa, and Carl E. Derrington, Tempe, both of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed May 14, 1985, Ser. No. 733,550

Int. Cl.⁴ H01L *27/14, 27/78*

U.S. Cl. 29—572 **4 Claims**



1. A method of manufacturing an optically sensitive semiconductor device including an anti-reflective coating comprising the steps of:

forming an optically sensitive semiconductor device having an active area, said active area having a face which comprises a portion of a first major surface of a body of semiconductor material;

forming a first electrode of a capacitor on another portion of said first major surface of said body of semiconductor material;

depositing a layer of silicon nitride over all of said first major surface;

patterning said layer of silicon nitride to leave said active area and said first electrode covered by said layer of silicon nitride so said silicon nitride deposited on said active area acts as an antireflective layer and said silicon nitride deposited on said first electrode acts as a dielectric;

depositing a passivation layer overlying said first major surface and said layer of silicon nitride; and

opening said passivation layer over said active area.

4,606,116

NON-LINEAR RESISTOR AND METHOD OF MANUFACTURING THE SAME

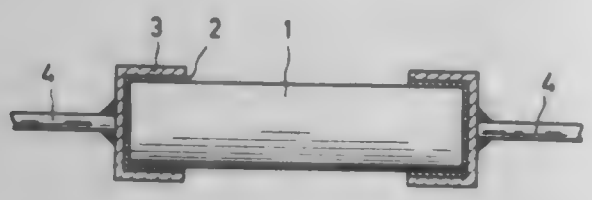
Detlev Hennings; Axel Schnell, and Herbert Schreinemacher, all of Aachen, Fed. Rep. of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Division of Ser. No. 382,909, May 28, 1982, Pat. No. 4,551,269. This application Jul. 11, 1985, Ser. No. 753,836

Claims priority, application Fed. Rep. of Germany, May 29, 1981, 3121290

Int. Cl.⁴ H01C *17/00*

U.S. Cl. 29—610 R **13 Claims**



1. A method of manufacturing a non-linear resistor having a ceramic sintered body consisting of a polycrystalline alkaline titanate doped to n-type conductance with a metal oxide and which body has a Perowskite structure, consists of an alkaline earth metal titanate containing excess TiO_2, has a formula selected from the group consisting of $(Sr_{1-x}Ln_x)TiO_3.yTiO_2$ and $Sr(Ti_{1-x}Me_x)O_3.yTiO_2$ wherein Ln is a rare earth metal, Me is a metal having a valence of at least 5, $0.0005 < x <$ solubility limit of the Ln in the Perowskite phase and $y = 0.001$ to 0.02, which sintered body is provided on its grain boundaries with insulating layers produced by re-oxidation, characterized in that the ceramic body is first sintered in a reducing atmosphere and that said sintered body is then re-oxidized in an oxidizing atmosphere, preferably in air, in which the sintered body becomes adjustable in its non-linear resistance variation by a selection of the re-oxidation temperature and the duration of the re-oxidation in such manner that an initially present NTC-characteristic is observable as a function of the oxidation state gradually only at increasing temperatures and in the range of the operating temperature of the resistor changes into a VDR-characteristic.

4,606,117

APPARATUS FOR AUTOMATICALLY MOUNTING CHIP TYPE CIRCUIT ELEMENTS ON PRINTED CIRCUIT BOARDS

Tetsuo Takahashi; Yoshinobu Taguchi, and Tatsuo Umeya, all of Tokyo, Japan, assignors to TDK Corporation, Tokyo, Japan

Filed Mar. 1, 1984, Ser. No. 585,284

Claims priority, application Japan, May 13, 1983, 58-82803; Dec. 26, 1983, 58-247073

Int. Cl.⁴ B23P *19/00*

U.S. Cl. 29—740 **7 Claims**

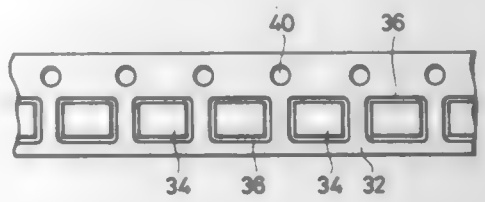
1. In an apparatus for automatically mounting chip type circuit elements on printed circuit boards, including a vertically movable mounting head for individually removing chip type circuit elements from a chip tape having said chip type circuit elements held thereon in a row in the longitudinal direction of said chip tape, and for mounting said chip type circuit elements on said printed circuit boards, and a mechanism for winding up a cover tape of said chip tape, the improvement comprising:

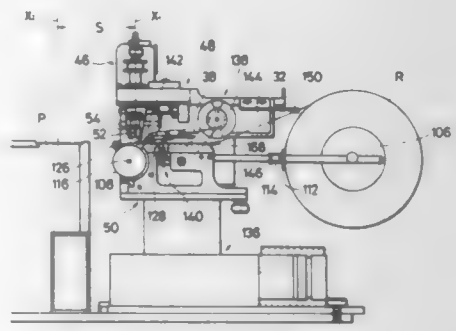
an upper frame for longitudinally moving said mounting head between a position at which said chip type circuit elements are to be removed from said chip tape and a position at which said chip type circuit elements are to be mounted on said printed circuit boards;

a lower frame for longitudinally movably supporting said upper frame thereon;

a feed wheel rotatably mounted on a shaft on said lower frame at a position for forward delivery of said chip tape to carry out the delivery of said chip tape and for rotation in only one direction, and a one way clutch on said shaft for driving said feed wheel in only said one direction;

lever means pivotally mounted on said shaft of said feed wheel to extend toward said upper frame, said lever means being connected to said one way clutch and including means for biasing said lever means in a direction opposite said one direction; and





cam means provided on said upper frame operatively to abut against and press said lever means to cause said feed wheel to rotate in said one direction;

wherein said chip tape is intermittently fed by said feed wheel in response to successive longitudinal movements of said mounting head on said upper frame relative to said lower frame.

4,606,118

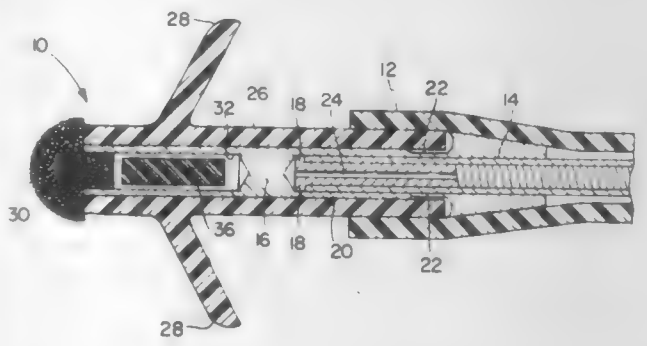
METHOD OF MAKING A DRUG DISPENSING BODY

Norbert H. Cannon, St. Paul, Minn., and James E. Graf, Ames, Iowa, assignors to Medtronic, Inc., Minneapolis, Minn.

Filed Feb. 27, 1985, Ser. No. 706,214

Int. Cl.⁴ H01R *43/00*

U.S. Cl. 29—825 **2 Claims**



1. A method of manufacturing a drug eluting electrode, comprising the ordered steps of:

fabricating an electrode body including a drug chamber open to the exterior of said electrode body;

inserting an absorbent plug into said drug chamber of said electrode;

packaging and sterilizing said electrode; and

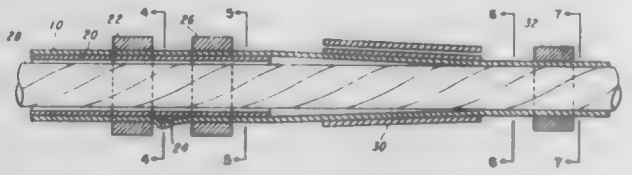
after said inserting step and said packaging and sterilizing step, soaking said electrode body in a liquid solution of a desired drug until said absorbent plug is saturated with said drug.

4,606,119

METHOD AND APPARATUS FOR FORMING A SMOOTH TUBE FROM A FLAT TAPE

Edward R. Byzio, and Peter Stewart-Hay, both of Winnipeg, Canada, assignors to Canada Wire and Cable Limited, Toronto, Canada

Continuation of Ser. No. 371,575, Apr. 26, 1982, abandoned. This application Nov. 1, 1984, Ser. No. 667,062
Claims priority, application Canada, Apr. 27, 1981, 376346
Int. Cl.[4] H01B *13/26*
U.S. Cl. 29—828 **4 Claims**



1. A method for forming a tube from a flat tape of form-retaining material, said flat tape having a centre portion and two edges, said method comprising the steps of:

(a) moving said flat tape longitudinally along a straight path, and simultaneously deflecting the two edges of the tape laterally toward each other around and against a cylindrical mandrel that has an inner surface and an outer surface, thereby forming a tube of tape in which the tape is increasingly stretched longitudinally from the centre portion towards the two edges;

(b) providing an eccentric projection on the outer surface of the cylindrical mandrel, the eccentric projection being defined by a circular arc, having a maximum projection portion extending outwardly and transversely from the outer surface of the mandrel, and smoothly joining the outer surface of the mandrel at points that are spaced circumferentially from the maximum projection;

(c) passing the tube of tape longitudinally over and in contact with the eccentric projection thereby passing the centre portion of the tape over and in contact with the maximum projection portion of the eccentric projection, thereby longitudinally and laterally stretching the tape inwardly of the two edges; and

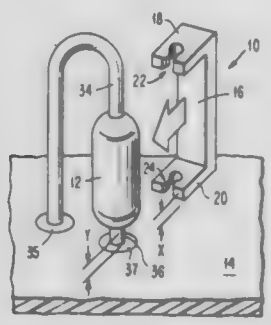
(d) moving the tube of tape along said straight path after the tube of tape is passed over and in contact with the eccentric projection.

4,606,120

PROCESS FOR MOUNTING COMPONENTS ON A PRINTED CIRCUIT BOARD

James A. McAndrew, Endwell, N.Y., assignor to General Electric Company, Binghamton, N.Y.

Continuation-in-part of Ser. No. 545,559, Oct. 26, 1983, abandoned. This application Nov. 20, 1984, Ser. No. 673,303
Int. Cl.[4] H05K *3/30*
U.S. Cl. 29—837 **3 Claims**



1. In a process for assembling an electrical component having leads extending therefrom to a mounting board, the steps comprising:

(a) inserting an electrical component having at least two axially aligned leads extending therefrom into the receiving areas in two spatially separated support arms of a component support element through resilient passages in said arms,

(b) inserting one of said component leads held in the receiving areas in one of said arms into an opening on a mounting board so as to space said component from said support mounting board by a predetermined distance,

(c) affixing said lead to said mounting board while maintaining the component at said predetermined distance from said mounting board,

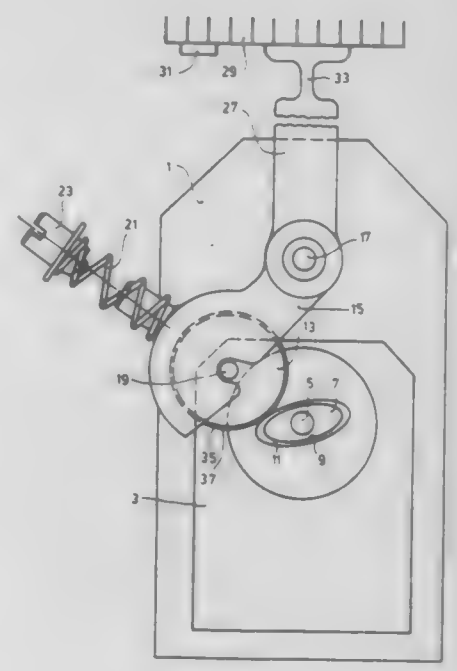
(d) removing said support element from said lead thereby leaving said component affixed to the mounting board and spaced therefrom by said predetermined distance.

4,606,121

DRIVE MECHANISM FOR A VIBRATION-TYPE DRY-SHAVER

Gerhard Diefenbach, Aachen, Fed. Rep. of Germany; Hugo Schemmann, Schaesberg, Netherlands, and Romuald L. Bukoschek, Klagenfurt, Austria, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 4, 1985, Ser. No. 698,002
Claims priority, application Fed. Rep. of Germany, Feb. 8, 1984, 3404296
Int. Cl.[4] B26B *19/02*
U.S. Cl. 30—43.92 **5 Claims**



1. A drive mechanism for a dry shaver comprising a shear foil and a cutter reciprocatory relative to the shear foil, which includes a single-phase synchronous motor having a drive shaft; a cam mounted on said drive shaft; and a transmission roller constantly in contact with said cam; the surface of at least one of said cam and said transmission roller being provided with a layer approximately 1 mm in thickness of an elastic material.

4,606,122

SHAVING HEAD FRAME WITH UP AND DOWN RAMPS

Roland Ullmann, Offenbach; Kurt Beutel, Flörsheim, and Hans-Eberhard Heintke, Wächtersbach, all of Fed. Rep. of Germany, assignors to Braun Aktiengesellschaft, Kronberg, Fed. Rep. of Germany

Filed Apr. 17, 1985, Ser. No. 724,084
Claims priority, application Fed. Rep. of Germany, Apr. 21, 1984, 3415121
Int. Cl.[4] B26B *19/38*
U.S. Cl. 30—43.92 **8 Claims**

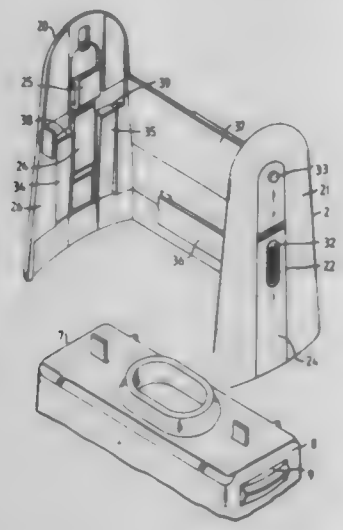
1. A dry shaver comprising:

a housing having spring means and locking elements movably disposed in said housing to project from said housing under tension of said spring means;

a removable cutter head frame member for coupling to an

outer cutter, said frame member having opposite end walls;

up guide ramp means on said end walls for guiding and locking with respect to said locking elements; and



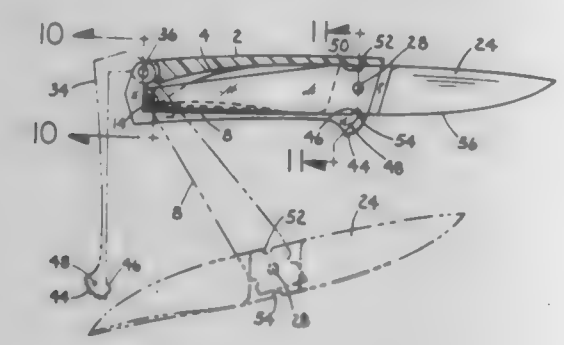
operating elements having an activated position and an at rest position, movably connected to said end walls and including down guide ramp means for guiding and unlocking with respect to said locking elements when said operating elements are in the activated position.

4,606,123

CUTLERY APPARATUS WITH INTERCHANGEABLE CUTTING TOOL

Robert A. Wrench, Renton, Wash., assignor to Wraven Products Inc., Seattle, Wash.

Continuation-in-part of Ser. No. 503,023, Jun. 10, 1983, abandoned. This application Oct. 26, 1984, Ser. No. 665,444
Int. Cl.[4] B26B *1/04*
U.S. Cl. 30—153 **24 Claims**



1. Cutlery apparatus comprising:

a handle having a longitudinally extending slot formed therein;

a cutting tool positionable in said slot;

a generally U-shaped tool holding member having two relatively long, flexible arms;

first mounting means pivotally mounting the base end of the tool holding member to one end of the handle along a first axis transverse to the principal plane of the handle slot, said tool holding member being pivotable from a first position disposed within the handle slot and oriented such that the arms of the tool holding member are parallel to and in engagement with the sides of the handle slot and a longest dimension of each arm is parallel to a longest dimension of said slot, to a second position primarily outside said slot with said arms primarily clear of the sides of said slot;

second mounting means pivotally mounting the cutting tool on the arms of the tool holding member along a second axis parallel to said first axis and situated at the other end of the tool holding member;

a lock arm;

third mounting means mounting one end of the lock arm on the handle for pivotable movement about a thrid axis adjacent and parallel to said first axis, said lock arm being pivotable to and from a locked position in engagement with said tool holding member when the latter is in its first position disposed within said handle slot, and an open, unlocked position primarily clear of said handle and slot; and

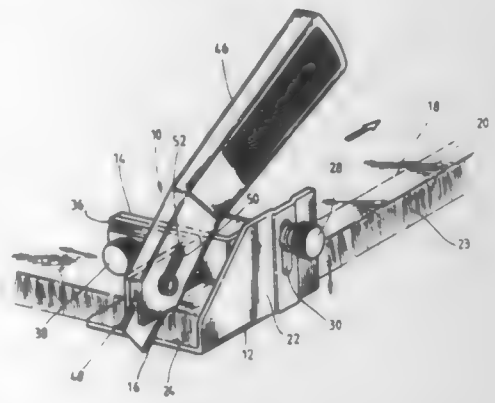
means for positively locking said lock arm in place in its first position to fixedly retain said tool holding member and cutting tool in said handle.

4,606,124

METHOD OF AND APPARATUS FOR CUTTING A CARPET

LeRoy R. Figueroa, 6723 Desert Rose, Houston, Tex. 77086

Filed Apr. 19, 1985, Ser. No. 724,869
Int. Cl.[4] B26B *29/00*
U.S. Cl. 30—293 **2 Claims**



1. A hand held carpet cutting knife for cutting a straight edge along a carpet edge comprising,

an L-shaped body having a guide wall for engaging an edge of a carpet, and having a base perpendicular to the guide wall for engaging one surface of the carpet,

a rigid flat support plate positioned parallel to the base for engaging the second surface of the carpet, a vertically extending track and groove connection between the plate and the guide wall for adjustably moving the plate towards and away from the base for accommodating carpets of various thicknesses,

a cutting blade, a horizontally extending track and groove connection between the blade and plate for adjusting the distance between the cutting blade and the guide wall for adjusting the amount of carpet to be cut off, said cutting blade extending between the plate and base and extending behind the base for cutting a carpet positioned between the plate and the base, and

a handle connected to the apparatus for moving the apparatus relative to the carpet.

4,606,125

THROWING WEAPON

Harvey W. Jensen, 28128 Laura La Plante, Agoura Hills, Calif. 91301

Filed Jul. 8, 1985, Ser. No. 752,664
Int. Cl.[4] B26B *3/00*
U.S. Cl. 30—302 **4 Claims**

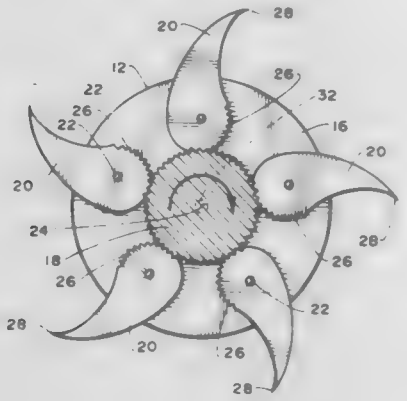
1. A throwing weapon comprising:

a first sheet material plate having a first planer inner surface, said first plate having a first center axis perpendicular to said first planar inner surface, said first plate having a drive gear mounted on said first planar inner surface, said drive gear having a center point located on said first center axis;

a second sheet material plate having a second planar inner surface, said second plate having a second center axis perpendicular to said second planar inner surface, said second plate being connected to said first plate with said

first and second center axes coinciding, said second planar inner surface being located directly adjacent said first planar inner surface but spaced therefrom forming a gap; and

a plurality a knife blades mounted within said gap, each said knife blade being pivotally mounted on said second plate, each said knife plate having a series of gear teeth, said gear



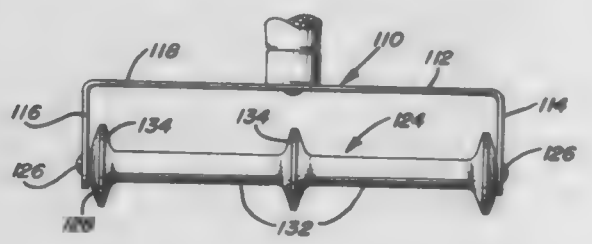
teeth being in continuous contact with said drive gear, said knife blades being pivotable from a retracted position to an extended position by rotating said second plate relative to said first plate, said retracted position being when said knife blades are totally confined within said gap, said extended position being when said knife blades are protruding exteriorly of said gap.

4,606,126

DOUGH CUTTER

Nina Davis, 3232 San Mateo, NE. #215, Albuquerque, N. Mex. 87110

Filed Mar. 5, 1985, Ser. No. 708,550
Int. Cl.[4] A21C *5/00*
U.S. Cl. 30—307 **8 Claims**



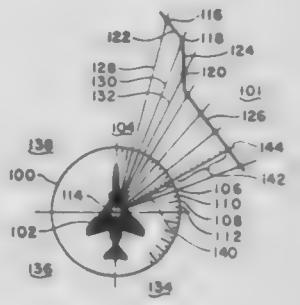
1. A dough cutter for various different shapes or dough sections, said cutter including a generally U-shaped bracket having a pair of generally parallel legs interconnected at one pair of corresponding ends by a bight portion extending between and secured relative to said one pair of ends, an elongated handle having one end mounted from the longitudinal mid-portion of said bight portion with the other handle and end projecting outwardly from the side of the bight portion opposite the side from which the other ends of said legs project, an elongated one-piece roller extending between and journalled from the other ends of said legs, said roller including a circumferential cylindrical outer surface and at least two circumferential grooves formed therein spaced apart longitudinally of said roller and from the opposite ends of said cylindrical outer surface, said grooves including inwardly convergent opposite side surfaces defining an included angle of approximately 30 degrees and cylindrical bottom surfaces, the intersections between each of said cylindrical bottom surfaces and the corresponding side surfaces being radiused, said adjacent grooves being separated by a portion of said circumferential cylindrical outer surface of said roller having approximately 0.025 inches in width to thereby extrude dough therebeneath.

4,606,127

LARGE PATTERN TRANSPOSING

Harry L. Task, Dayton; Michael B. Tutin, and William N. Kama, both of Huber Heights, all of Ohio, assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed May 1, 1985, Ser. No. 729,390
Int. Cl.[4] G01B *3/00;* **B43L** *5/00, 13/00*
U.S. Cl. 33—1 G **18 Claims**



1. Apparatus for transposing a small template image pattern to a larger pattern receiving work surface comprising:

a template member locatable within a pattern receiving area on said work surface and including a small size first image of the pattern to be transposed related thereon, said template member also having a reference pivot point located in a position proximate said first image thereon;

linear means originating at said reference pivot point and extendable radially and rotatably outward therefrom over said first image and said work surface for extending the locus of points in said small size first image to larger second image points radially aligned therewith and distal of said first image on said work surface;

first means for measuring first distance magnitudes along said extended linear means from said reference pivot point to the coincidence of said linear means with said first image points;

second means for measuring the magnitude of said second distances along said extended linear means from said reference pivot point to said second image points located on said work surface distal of said first image;

whereby the location of said larger second image points on said work surface is determined by radial alignment with said first image points and extended distance from said pivot point.

4,606,128

CALIPER FOR MEASURING DEFORMABLE OBJECTS

Helmut Wyrwich, Jülich, Fed. Rep. of Germany; Georgi Graschew, Sofia, Bulgaria; Johann Chatzipetros, Frechen, and Ludwig E. Feinendegen, Jülich, both of Fed. Rep. of Germany, assignors to KFA - Kernforschungsanlage Jülich GmbH, Jülich, Fed. Rep. of Germany

Division of Ser. No. 612,568, May 21, 1984. This application Aug. 29, 1985, Ser. No. 770,707
Claims priority, application Fed. Rep. of Germany, May 24, 1983, 3318823; Mar. 22, 1984, 3410509
Int. Cl.[4] G01B *3/24, 5/06*
U.S. Cl. 33—143 C **7 Claims**

1. An instrument for measuring the size of an easily deformable object such as a body of tumor tissue, comprising:

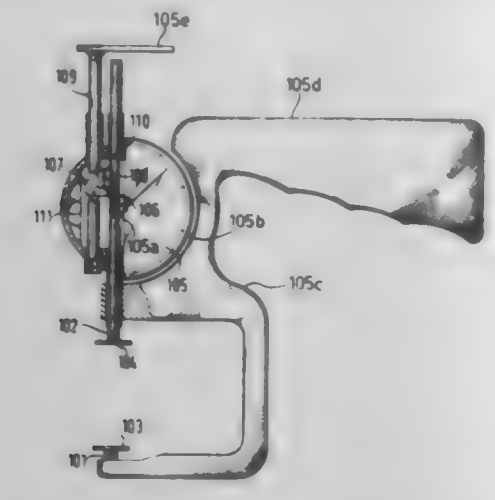
a pair of relatively movable members defining a measuring caliper and formed at respective ends with contact plates adapted to receive said object between them;

an indicator operatively connected between said plates and displaying a measurement of the size of said object as a function of the separation between said plates;

means for effecting relative displacement of said plates to embrace said object between them; and

means interposed between one of said plates and the respective member for controlling the contact pressure of said one of said plates against said object, said means inter-

posed between said one of said plates and said one of said members including a slider movable in a direction of measurement, and coupling means between said slider and said one of said plates for blocking further movement of



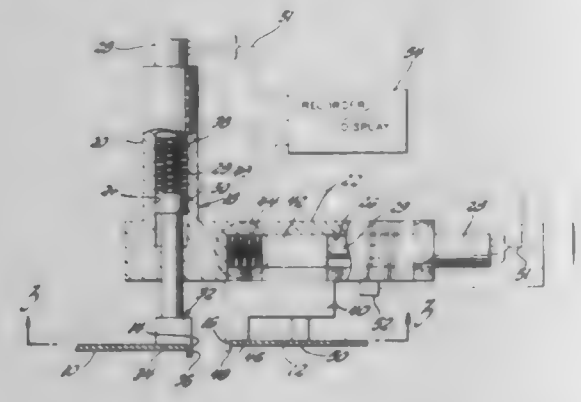
said slider when said contact pressure is achieved, said coupling means including a lever for locking said slider to a rod carrying said one of said plates in a form-locked manner upon the attainment of said contact pressure.

4,606,129

GAP AND FLUSHNESS MEASURING TOOL

Thomas Barrowman, Warren, and Michael J. Noblett, Mt. Clemens, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Oct. 18, 1985, Ser. No. 788,966
Int. Cl.⁴ G01B *7/14*
U.S. Cl. 33—143 L **9 Claims**



1. A device for simultaneously measuring the gap between edges of adjacent panels and the flushness of panel surfaces comprising;

a device body,

first and second probes mounted on the body, each probe having a finger for extending into the gap to contact a panel edge and a pad for contacting a panel surface,

the first probe being mounted for movement relative to a first reference position in a direction to ensure engagement of both probe fingers with panel edges,

the second probe being mounted for movement from a second reference position in a direction to ensure engagement of both probe pads with the panel surfaces, and

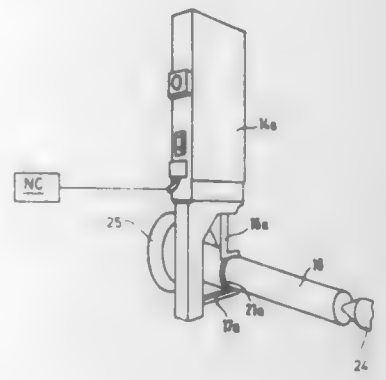
means for measuring the displacement of each probe from its respective reference position to obtain a measure of the gap between the panels and the flushness of the panel surfaces.

4,606,130

APPARATUS FOR MONITORING THE DIAMETERS AND AXIAL POSITIONS OF WORKPIECES IN MACHINE TOOLS

Ulrich Vetter, Stuttgart, Fed. Rep. of Germany, assignor to Schaudt Maschinenbau GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jan. 10, 1985, Ser. No. 690,128
Claims priority, application Fed. Rep. of Germany, Jan. 13, 1984, 3401081
Int. Cl.⁴ G01B *7/02, 7/12*
U.S. Cl. 33—178 E **17 Claims**



1. Apparatus for ascertaining the diameters and axial positions of round workpieces which are treated in a machine wherein the axis of the workpiece which is being treated coincides with a predetermined axis, comprising a diameter measuring assembly including a first sensor movable at right angles to said predetermined axis into engagement with the workpiece so that the position of said first sensor with reference to said predetermined axis is indicative of the diameter of the workpiece; at least one second sensor movable by a workpiece which is being treated with reference to a given axis which is normal to said predetermined axis so that its position with reference to said given axis is indicative of the axial position of the workpiece, said second sensor being disposed substantially diametrically opposite said first sensor with reference to said predetermined axis and being movable into engagement with the workpiece at right angles to said predetermined axis so that its position is indicative of the diameter of the workpiece; and measuring means for monitoring the positions of said first and second sensors with reference to said predetermined axis and said given axis, respectively.

4,606,131

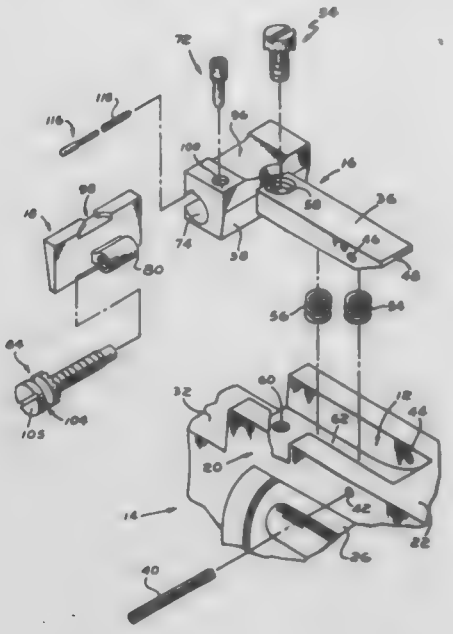
INTERCHANGEABLE GUN SIGHT

Robert E. Domian, Somers, Conn., assignor to Kingston Tool Co. Inc., Monson, Mass.

Filed Aug. 22, 1983, Ser. No. 523,336
Int. Cl.⁴ F41G *1/26, 1/18*
U.S. Cl. 33—257 **27 Claims**

21. An adjustable rear sight for a handgun comprising a main sight body having an elongated forward portion for attaching the main body to the top of a handgun; a sight block having one end integrally attached to the rear of the forward portion, said block having a dovetail channel along its opposite end for slidably housing a sight blade therein for horizontal movement along the channel; a sight leaf adapted to be slidably received within said dovetail channel; said leaf comprising an upstanding plate having a key-shaped windage bar integrally attached to one face of it, wherein said bar has a threaded through bore and is adapted to be slidably received in said dovetail channel; a windage screw having a head that fits into a portion of said channel and a threaded midportion that is screwably received within said threaded bore of said windage bar and also received in said channel; and, a pin that fits through the top of the sight block and into a groove in the head of the windage screw,

whereby the pin removably holds the windage screw and the windage bar in the block but at the same time permits the



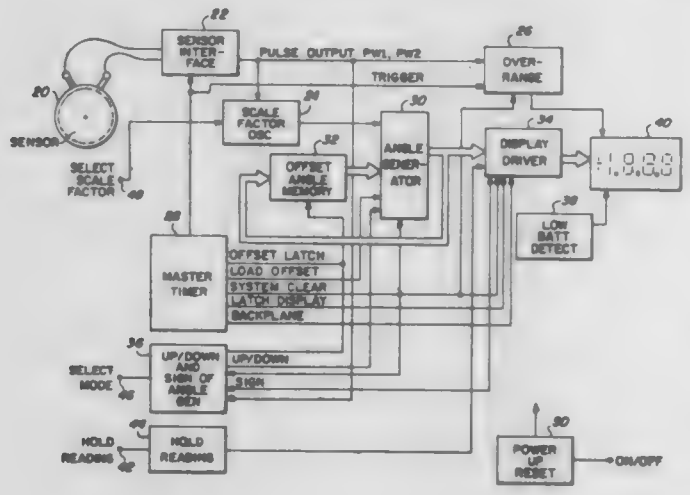
windage bar to be screwably advanced or retracted in the channel as the screw is being turned.

4,606,132

DIGITAL ELECTRONIC INCLINATION GAUGE

Michael S. Briney, Mesa; Jeffrey C. Heidel, Phoenix, and Harold L. Swartz, Glendale, all of Ariz., assignors to Sperry Corporation, New York, N.Y.

Filed Feb. 26, 1985, Ser. No. 705,948
Int. Cl.[4] G01C *9/06*
U.S. Cl. 33—366 **22 Claims**



1. A digital display apparatus for use with a gravitational sensor providing pulse signals indicative of the algebraic sign and magnitude of inclination of said sensor with respect to a reference axis, comprising:

(a) means for providing clock pulses,

(b) means responsive to differences of pulse widths of said sensor signals for deriving a gating pulse representative of said magnitude,

(c) divider means responsive to said clock pulses and said gating pulse for providing a first digital count signal representative of said magnitude and a predetermined scale factor,

(d) gate means responsive to said sensor signals for providing a signal indicative of said sign of inclination, and

(e) up/down counter means responsive to said first digital count signal,

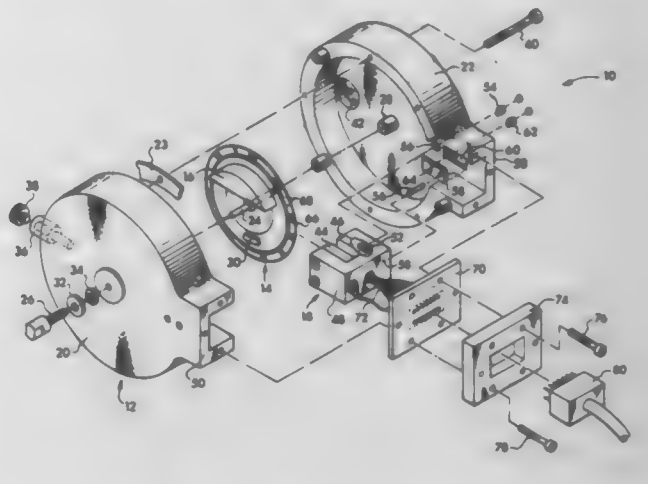
(f) said gate means also coupled to said up/down counter means for providing a gating pulse and incrementing or decrementing said counter means in accordance with said sensor signals.

4,606,133

HIGH RESOLUTION DIGITAL INCLINOMETER

Floyd J. Mills, 815 Alpine #4, Boulder, Colo. 80302

Filed May 28, 1985, Ser. No. 737,786
Int. Cl.[4] G01C *9/06, 9/12*
U.S. Cl. 33—366 **42 Claims**



1. An inclinometer for producing data signals indicative of inclination angles comprising:

disk encoder means disposed to rotate in said inclinometer and aligned with gravitational field forces, said disk encoder means and having a plurality of encoding marks substantially symmetrically spaced on said disk encoder means for providing high resolution positional data indicative of the position of said disk encoder means in said inclinometer;

phase plate means alternatively aligned with said encoding marks to provide directional information indicative of directional movement of said disk encoder means;

fluid means surrounding said disk encoder means for providing a supporting medium for said disk encoder;

buoyance means for maintaining said disk encoder means in equilibrium in said fluid to substantially eliminate frictional forces on said disk encoder means; and

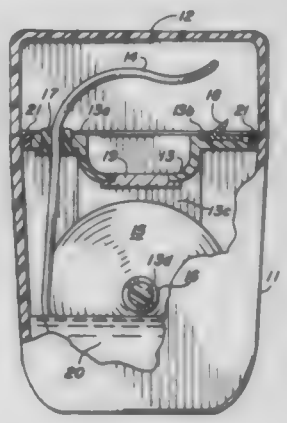
detector means for sensing said directional information and said high resolution positional data to produce said data signals representative of inclination of said inclinometer.

4,606,134

DISPOSABLE STRIKING LINE DISPENSER

Robert A. Flick, 2401 County Barn Rd., Naples, Fla. 33962

Filed Nov. 4, 1985, Ser. No. 794,839
Int. Cl.[4] B44D *3/38;* **B26D** *7/00*
U.S. Cl. 33—414 **4 Claims**



1. A dispenser for pre-inked disposable striking lines comprising

an open-topped case made of thermoplastic material,

a cover sealing the open top of the case, said cover including a hole, a clear plastic window and a knifeedged metal cutter mounted on said cover,

an axle mounted within said case,

a hub rotatably mounted on said axle,

a spool of pre-inked striking line mounted on said hub with the end of said line exiting from said case through the hole in the cover, and

an annular flexible gasket mounted on said cover and surrounding the line exiting from the case.

4,606,135

DEVICE FOR PRODUCING A FLUIDIZATION

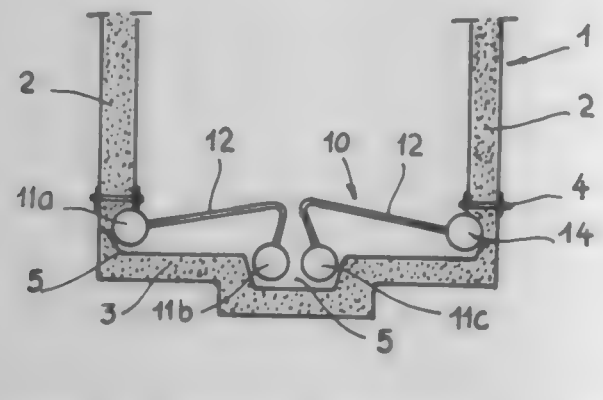
Jean-Xavier Morin, Le Creusot, France, assignor to Framatome & Cie, Courbevoie, France

Filed Mar. 19, 1985, Ser. No. 713,679

Claims priority, application France, Mar. 20, 1984, 84 04272

Int. Cl.[4] F26B *17/10*

U.S. Cl. 34—57 B 8 Claims



1. A device for producing a fluidization of a particulate material, said device being disposed at the base of a fluidization chamber and comprising gaseous fluid distributing means which include manifolds, small parallel tubes provided with radial perforations and connected to the manifolds, said tubes being transversely arranged relative to the manifolds in a plurality of parallel rows and spaced apart at a pitch which is determined for a uniform distributin of the gaseous fluid at the base of the fluidization chamber and for covering the entire area of the fluidized bed, the tubes of each row having an "L" shape and being inclined relative to the horizontal so as to discharge solid particles and satisfy criteria of mechanical and thermal performance.

4,606,136

SIPHON FOR USE IN PAPER OR CARDBOARD MACHINE DRYERS

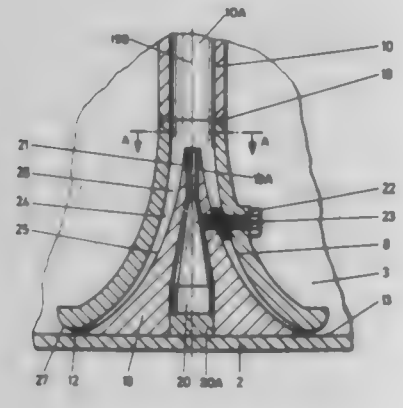
Dieter Pflug, Bad Vilbel, Fed. Rep. of Germany, assignor to V.I.B.-Apparatebau GmbH, Maintal, Fed. Rep. of Germany

Filed Jun. 17, 1985, Ser. No. 724,159

Claims priority, application Fed. Rep. of Germany, Apr. 18, 1984, 3414605

Int. Cl.[4] F26B *13/08*

U.S. Cl. 34—125 22 Claims



1. In a dryer, particularly in a paper machine dryer, the combination of a rotary cylindrical shell having an internal surface and defining an internal chamber which is surrounded by said surface; means for admitting into said chamber steam to heat said shell whereby a layer of condensate accumulates along said internal surface; and means for evacuating condensate from said chamber, including at least one rotary siphon having a housing adjacent to but spaced apart from and defining a suction gap with said internal surface, and an insert installed in and spaced apart from said housing and defining therewith an annular channel which communicates with said gap, said channel having a diameter which decreases substantially radially inwardly of and away from said internal surface, and said evacuating means additionally comprising a steam passage which extends through said housing and said insert and includes an intake portion communicating with and receiving steam from said chamber, said passage further including an outlet orifice disposed radially inwardly of said intake portion and communicating with said channel so that steam flowing from said intake portion into and from said orifice draws condensate from said internal surface via said gap and into said channel, and said evacuating means also comprising condensate evacuating conduit means extending from said chamber and having an inlet communicating with said channel radially inwardly from said insert.

4,606,137

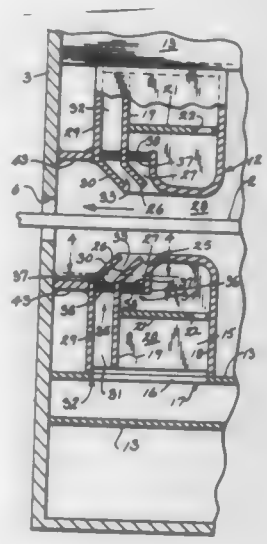
WEB DRYER WITH CONTROL OF AIR INFILTRATION

Rodger E. Whipple, Neenah, Wis., assignor to Thermo Electron Web Systems, Inc., Auburn, Mass.

Filed Mar. 28, 1985, Ser. No. 717,082

Int. Cl.[4] F26B *13/20*

U.S. Cl. 34—156 22 Claims



1. For use in a web dryer (1) for drying a moving flexible web (2) of material and wherein the dryer forms at least two adjacent zones, each having different ambient air therein, air infiltration control means for controlling air tending to ifiltrate from one zone to another through the boundary therebetween, said control means comprising, in combination:

(a) a nozzle assembly (**11, 12, 44**) adapted to be disposed adjacent a said zone boundary and adapted to be connected to air source means, said nozzle assembly having a head end disposed to face a moving web,

(b) said assembly including a Coanda nozzle (**27, 58**) for discharging air from said air source means and through said head end of said assembly and hence in a given direction between the said web and said head end of said assembly and away from said zone boundary,

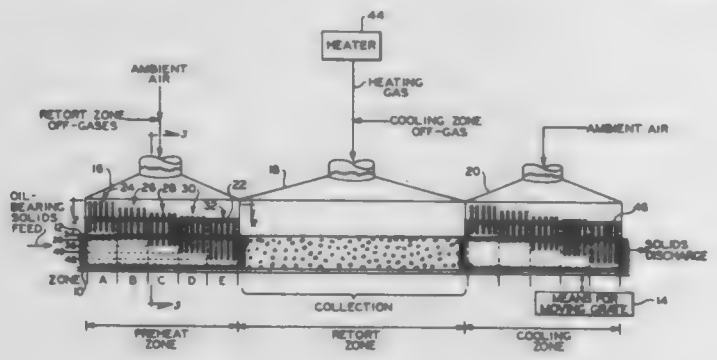
(c) and a secondary nozzle (**33, 65**) disposed closely adjacent said Coanda nozzle and adapted to be disposed between said Coanda nozzle and said zone boundary, and with said secondary nozzle forming means for discharging air from said air source means so that the discharged air flows only in said given direction and toward said Coanda nozzle,

(d) said secondary nozzle (**33, 65**) further comprising means for supplying induction air to the vicinity of said Coanda nozzle (**27, 58**).

4,606,138
APPARATUS FOR GAS TREATMENT OF A BED OF PARTICLES

Cecil C. Gentry, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jan. 18, 1985, Ser. No. 692,457
Int. Cl.[4] F26B *17/04*
U.S. Cl. 34—182 7 Claims



1. An apparatus for gas treating a bed of solid particles comprising:

a support member having a surface for supporting the bed of particles thereon;

means for moving said support member in a generally horizontal direction;

at least one conduit having a longitudinal axis generally perpendicular to said direction, wherein at least a portion of said conduit has a sidewall having a plurality of holes therethrough which are located at a plurality of different distances from said support member surface, distance being measured along lines generally normal to said direction, wherein said conduit portion has a lower end positioned above and closely adjacent to said support member surface, and wherein for first and second longitudinally separated sections of said conduit portion, said second section being closest to said conduit end, the second section includes a greater number of holes than the first section;

a means for passing a gas through said at least one conduit so that gas is released from said holes;

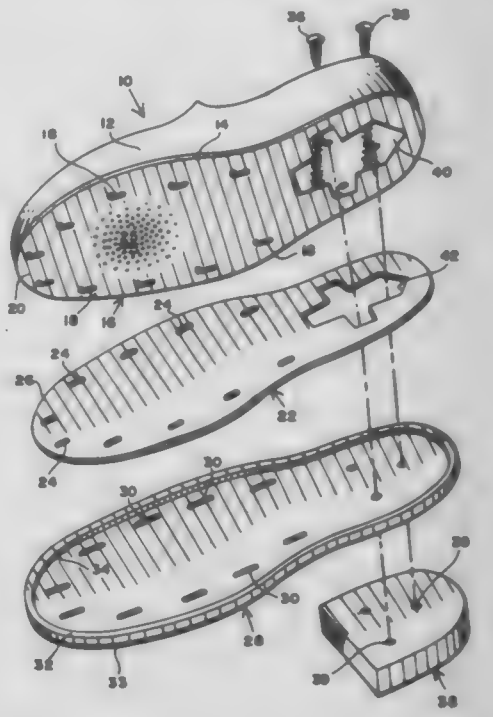
whereby the bed of particles can be moved in said direction while gas is released in the bed at a plurality of depths therein.

4,606,139
PREFABRICATED SHOE CONSTRUCTION

Samuel Silver, 13953 Kendale Lake Cir. #307, Miami, Fla. 33183

Continuation-in-part of Ser. No. 565,909, Dec. 27, 1983, abandoned, which is a continuation-in-part of Ser. No. 324,803, Nov. 25, 1981, abandoned. This application Apr. 16, 1985, Ser. No. 723,831
Int. Cl.[4] A43B *13/28, 7/08, 3/24*
U.S. Cl. 36—15 7 Claims

1. A prefabricated shoe construction, comprising: a shoe upper including a substantially flat bottom surface; a thin upper mid-sole member of a shape conforming to the shape of the bottom surface of the shoe upper, the upper mid-sole member being secured to the shoe upper, the upper mid-sole comprising a plurality of spaced-apart hooks located at the periphery of the mid-sole, oriented in the same direction and being substantially parallel to each other; a lower mid-sole comprising a plurality of slots formed and located respectively with each of said hooks to permit said upper mid-sole member to slide into complementary connection with said lower mid-sole member, said hooks pressing against the lower surface of said lower mid-sole member when said lower mid-sole member is slid into complementary connection with said upper mid-sole member; a bottom sole having, on its upper surface, a plurality of spaced-apart recesses being smaller than and aligned with said slots such that said hooks slide beneath said lower mid-sole member in said slot and is locked below the lower surface of said upper mid-sole member, and attachment means passing through said upper and lower mid-sole members, through the

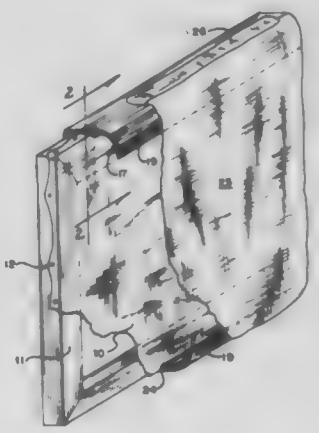


bottom sole and into a heel, to lock the upper and lower mid-sole members in position with respect to each other after the hooks are slid into said recesses.

4,606,140
PAINTING PROTECTION VISOR

Sheila R. Mitchell, 1185 Merritt Ct., Shakopee, Minn. 55379, and Phyllis A. Urbach, 4211 Grainwood Cir., N.E., Prior Lake, Minn. 55372

Filed Jan. 30, 1984, Ser. No. 574,746
Int. Cl.[4] G09F *1/12*
U.S. Cl. 40—157 3 Claims



1. The assembly of a painting canvas mounted on a frame of perimeter members and visor means for spacing a temporary protective cover over said painting canvas, wherein each said perimeter member has an inner face surface lying proximately beneath the plane of the canvas, an inner side disposed in a plane intersecting the plane of the canvas, a rear side lying substantially parallel to the plane of the canvas, and an outer side disposed in a plane intersecting the plane of the canvas, said visor means consisting essentially of semi-rigid organic plastics strips of uniform cross-sectional contour, said cross-sectional contour being characterized by a clip portion comprising a clamp section inserted against said inner side of said perimeter member, a rear section extending along the rear side of said perimeter member, and an outside section extending along the outer side of said perimeter member, and a visor portion projecting forwardly from said outer section as a curved continuation thereof and oriented in spaced relationship over edge areas of the front surface of said canvas.

4,606,141

INDICIA DISPLAY MODULE

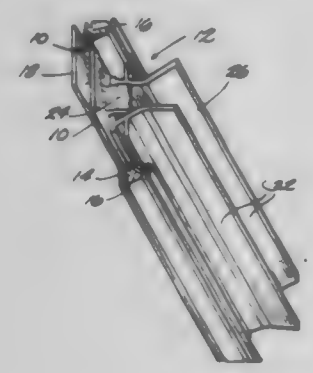
Ledell L. Murray, Noblesville, Ind., assignor to General Indicator Corporation, Pardeeville, Wis.

Continuation of Ser. No. 552,295, Nov. 16, 1983, abandoned, which is a continuation-in-part of Ser. No. 424,151, Sep. 27, 1980, abandoned. This application Mar. 5, 1985, Ser. No. 708,234

The portion of the term of this patent subsequent to Jan. 7, 2003, has been disclaimed.

Int. Cl.[4] G09F *11/18*

U.S. Cl. 40—518 7 Claims



1. A display module comprising,
a bezel having an aperture therein,
a light reflecting and support member mounted on the back of the bezel in alignment with the aperture, said light reflecting and support member being in the general shape of a U-shaped channel having spaced legs connected at one end by a cross member, said light reflecting and support member lying on its side with said cross member comprising the front of the light reflecting and support member while the space between the legs is open, said spaced legs having planar reflective surfaces which converge and diverge, said converging and diverging surfaces reflecting light entering between said spaced legs to and through said cross member,
a pre-coiled indicia strip, said pre-coiled indicia strip being mounted on said light reflecting and support member with a portion of said pre-coiled indicia strip across said front surface of said light reflecting and support member to be illuminated by the light passing through said cross member, said pre-coiled indicia strip having coiled ends separated and supported by said legs on the outside of the channel while light is transmitted between the legs.

4,606,142

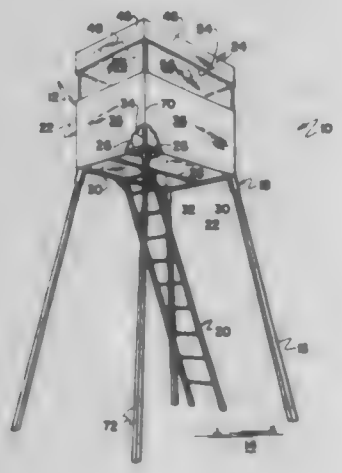
ELEVATED GAME BLIND

Charles F. Reneau, 2124 Marnel St., Houston, Tex. 77055

Filed Jan. 22, 1985, Ser. No. 693,247

Int. Cl.[4] A01M *31/02*

U.S. Cl. 43—1 11 Claims



1. An elevated game blind, comprising
a platform having a rectilinear base providing four corners and a hunter's compartment supported thereon, the base having a pair of intersecting beams at each corner;
a plurality of elongate legs and means for arranging the legs in diverging load supporting relation relative to the platform, the arranging means comprising
a bracket on each corner of the base, each of the brackets having a planar metal section secured to the pair of intersecting beams adjacent a corner and a section of elongate rigid square tubing free of movable parts, the tubing section being affixed to the metal section, the tubing sections defining a plurality of downwardly diverging axes;
the legs being received in the square tubing sections for unobstructed movement along the axes and being free of interconnecting braces;
means for securing the legs in the square tubing sections during erection, the securing means comprising an interiorly threaded boss opening into the inside of the square tubing section and a set screw extending through the boss; and
a ladder extending from the base toward an underlying ground surface.

4,606,143

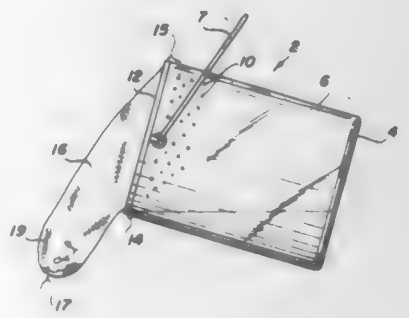
BAIT BUCKET

Gerald M. Murphy, Jr., 20420 Meadow Pond Pl., Gaithersburg, Md. 20879

Filed Sep. 5, 1984, Ser. No. 647,526

Int. Cl.[4] A01K *97/04*

U.S. Cl. 43—56 22 Claims



1. A hand-held live baint bucket, comprising:
a rigid container having a bait-removing opening therein and an inner pouring surface running from a sidewall of said container and extending longitudinally to said bait-removing opening;
support means surrounding said opening movably connected with said container from a first closed position to a second open position;
connection means for connecting said container with said support means and for allowing said movement from said first to said second position; and
a flexible substantially non-resilient bait-receiving member connected with said support means and being arranged in the path of said pouring surface such that when said support means is in said closed position said bait-receiving member covers said opening and live bait can be poured from said rigid container along said pouring surface through said opening and into said flexible bait-receiving member without encountering any substantial obstructions and when said support member is in said open position bait can be removed from said bait-receiving member.

4,606,144

MONOFILAMENT OF IMPROVED VINYLIDENE FLUORIDE-BASED RESIN

Tohru Sasaki; Kunizoh Kidoh, and Hiroyuki Endoh, all of Iwaki, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Nihonbashi, Japan

Continuation-in-part of Ser. No. 438,362, Oct. 18, 1982, abandoned, which is a continuation-in-part of Ser. No. 213,220, Dec. 5, 1980, abandoned, which is a continuation of Ser. No. 70,123, Aug. 27, 1979, abandoned, which is a continuation-in-part of Ser. No. 3,861, Jan. 16, 1979, abandoned. This application Feb. 4, 1985, Ser. No. 697,869
Claims priority, application Japan, Jan. 31, 1978, 53-9737
Int. Cl.[4] A01K *91/00;* D02G *3/00*
U.S. Cl. 43—44.98 14 Claims

1. A flexible bubble-free monofilament of at least 0.08 mm in diameter, excellent in transparency, high in impact strength and durability and having a specific gravity of 1.65 to 1.83, a tensile strength of not less than 30 kg/mm^2 and a modulus of elasticity of 60 to 120 kg/mm^2, which is essentially composed of a vinylidene fluoride-based resin, a polymeric substance containing at least 85% by weight of methyl acrylate and a polyester plasticizer and is prepared by the process comprising the steps of:

melt-spinning of a resin composition consisting essentially of 100 parts by weight of said vinylidene fluoride based resin selected from homopolymers of vinylidene fluoride and copolymers thereof; 5 to 15 parts by weight of said polymeric substance selected from homopolymers of methyl acrylate, copolymers comprising at least 85% by weight of methyl acrylate units and at most 15% by weight of isobutylene units and mixture thereof; and 2 to 7 parts by weight of said polyester plasticizer selected from the group consisting of polyesters of 1,100 to 5,000 in molecular weight obtained from an alcohol of 4 to 7 carbon atoms and a carboxylic acid of 4 to 8 carbon atoms and polyesters of 1,500 to 4,000 in molecular weight obtained from a dihydric alcohol of 2 to 4 carbon atoms and a dicarboxylic acid of 4 to 6 carbon atoms, thereby obtaining an unstretched monofilament,

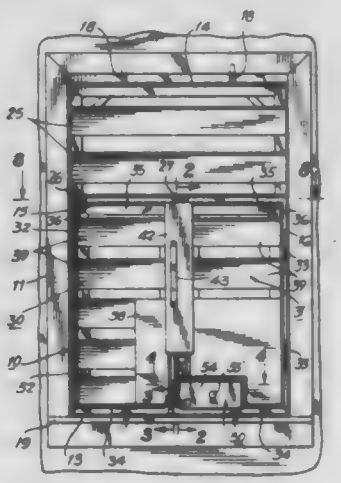
stretching the thus obtained unstretched monofilament in a heating medium.

4,606,145

SHUTTER-TYPE WINDOW PANEL

David T. Trombettas, 41-35 45th St., Long Island City, N.Y. 11104

Continuation-in-part of Ser. No. 375,403, May 6, 1983, abandoned. This application Sep. 27, 1984, Ser. No. 654,938
Int. Cl.[4] E06B *3/68*
U.S. Cl. 49—57 10 Claims



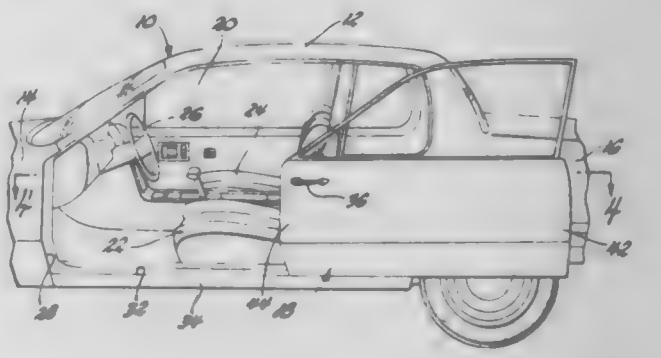
1. In a shutter-type window gate device for mounting in a window opening of a building and including a first shutter panel, means pivotally mounting the first shutter panel in the window opening on a vertical axis to permit opening and closing of the shutter panel, and bolt means for locking the first shutter panel in a closed position; the improvement wherein said device comprises a rectilinear frame for mounting in said window opening and means for affixing said frame in said window opening, said means for affixing comprising projection means extending upwardly from said angle iron frame and adapted to be received in corresponding recesses of said window opening; means hinging a first side of said first shutter panel to one side of said frame for pivoting about a vertical axis, a vertical guide in the second side of said shutter panel opposite said first side, said bolt means comprising a vertically slidable bolt in said guide and having an upper position and a lower position, projection means on said frame positioned to engage said slidable bolt in said upper position to inhibit opening of said first shutter panel and to clear said slidable bolt in said lower position to enable opening of said first shutter panel, the projection means on said frame comprising downwardly extending latch patch means depending from the top of the frame, and hook means affixed to the bottom of the frame, said slidable bolt means including a lower projection engageable with said hook means when said slidable bolt is in said upper position, a horizontally movable resiliently biased bolt mounted on said first shutter panel, and a latching projection on said slidable bolt, said latching projection being positioned to extend above said resiliently biased bolt in said upper position of said slidable bolt, whereby said latching projection engages the top of said resiliently biased bolt to hold said slidable bolt in said upper position of said slidable bolt, said latching projection being horizontally aligned with said resiliently biased bolt in said lower position of said slidable bolt, whereby said resiliently biased bolt is inhibited from blocking vertical movement of said slidable bolt in said lower position of said slidable bolt.

4,606,146

SLIDING VEHICLE DOOR

Thadius F. Jozefozak, Warren, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Jul. 31, 1985, Ser. No. 761,202
Int. Cl.[4] E05D *15/10*
U.S. Cl. 49—216 1 Claim



1. Support and guide mechanism for a swingable and slidable door assembly of a vehicle adapted to cover a vehicle body opening defined between forward and rearward pillars and between an upper roof edge portion and a lower body edge portion, said support and guide mechanism permitting the door to be moved translationally from a fully closed position to a fully open position while remaining substantially parallel to the body edge portions, said mechanism comprising:

extended arm means having one end pivotally attached to one end portion of the door and the other arm means end provided with guide and support roller means engaging a body track formed in the vehicle body;

said body track extending along said lower body edge portion in parallel relation to said door and positioned under said door when said door is in the closed operative position;

a link arm supporting the other end portion of said door when said door is in the closed operative position, said link arm being mounted on the other pillar member for pivotal

movement about a substantially vertical axis from a closed door position in which the link arm is in a generally fore and aft orientation to an open door position in which the link arm projects laterally outward from the vehicle body;

upper and lower tracks formed in the vehicle door in vertically spaced relation and each of said upper and lower door tracks lying in a generally horizontal plane, the end of said upper door track adjacent said door leading edge having an opening adapted to have auxiliary support rollers selectively inserted into and removed from said upper door track;

said link arm having upper and lower projecting portions;

a roller carriage member supported on the end of one of said projecting portions and mounted to permit rotation about a vertical axis;

rollers supported by said carriage member for rotation about both horizontal and vertical axes for engagement with one of said tracks in said door;

a plurality of spaced pivot and guide rollers mounted on the end of the other projecting portion of said link arm and pivotal about generally vertical axes;

the first of said spaced rollers mounted in line with the axis of the other link arm projecting portion and a second of said spaced rollers being offset mounted so as to be spaced laterally outward from the first spaced roller when the link member is in a closed operative position whereby the first and second spaced rollers move into alignment with each other and the other of said door-mounted tracks as the pivotal link arm swings laterally outward from its closed door operative position;

a cam guide member adjacent the end of said other door-mounted track and having curved guide surface means extending in substantial horizontal orientation and opening to the other door-mounted track, one of said plurality of spaced rollers engaging said guide surface during swinging movement of said link arm from the laterally outward orientation of said second roller with respect to said first roller when the door is closed to the aligned orientation between said first and second spaced rollers and said other door-mounted track when said door is opening by movement of both of said first and second spaced rollers through said other door-mounted track;

and an auxiliary support arm mounted on the vehicle body rearwardly of said door opening and within the rear quarter body panel to pivot about a vertical axis and having auxiliary support rollers rotatably mounted on one end thereof, said auxiliary support arm having link means pivotally connected thereto and located within the rear quarter body panel and pivotally connecting with said link arm so that said auxiliary support arm one end extends rearwardly of the vehicle when said door is in the operative closed position, and said link means is moved by pivoting movement of said link arm when said door is moved to the door open position to extend said auxiliary support arm laterally of the vehicle through an opening in the rear quarter body panel and align said auxiliary support rollers with said upper track opening so that said auxiliary support rollers are received within said upper track and engage same in supporting relation to provide auxiliary support to said door when said door is in the open operative position.

4,606,147

SEALING JAMB LINER FOR DOUBLE-HUNG WINDOW SASH

Vera T. DeWitt, and Garry P. Haltof, both of Rochester, N.Y., assignors to Caldwell Manufacturing Company, Rochester, N.Y.

Filed Jun. 19, 1984, Ser. No. 622,103
Int. Cl.[4] E05D *15/16*
U.S. Cl. 49—434 18 Claims

1. In a double-hung window sash jamb liner formed of a substantially rigid resin jamb liner extrusion having a pair of sash runs separated by a parting bead and extending to outer sash run edges respectively adjacent a pair of trim stops, the improvement comprising:

a. flange elements interconnected with said outer sash run edges of said jamb liner extrusion, said flange elements being formed of a resin material that is substantially more resilient and has a substantially lower spring rate than said jamb liner extrusion; and



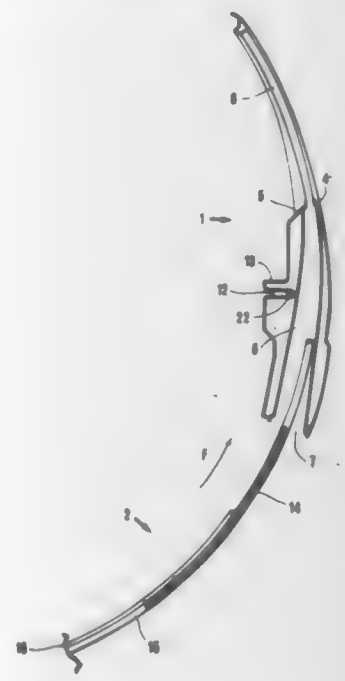
b. said flange elements each having a sealing fin disposed for resiliently engaging and sealing against said adjacent trim stop and for extending obliquely across a space wider than the distance between said adjacent trim stop and a sash in said sash run so that a sash engaging portion of said sealing fin is resiliently compressed for sealing between said adjacent trim stop and said sash and for biasing said sash against said parting bead.

4,606,148

DOOR FOR VEHICLES HAVING A BOX STRUCTURE, AND A PROCESS FOR THE MANUFACTURE THEREOF

Marcello Gandini, Turin, Italy, assignor to Clama S.R.L., Turin, Italy

Filed May 31, 1984, Ser. No. 615,766
Claims priority, application Italy, Jun. 10, 1983, 67638 A/83
Int. Cl.[4] B60J *5/04*
U.S. Cl. 49—502 9 Claims



1. A door for vehicles, comprising a box structure having an inner side, an outer side, an inner cavity and a lower opening, and a glass assembly, including a glass, guide means for said glass and lifting mechanisms, said glass assembly being separately assembled and being slip inserted into said inner cavity of the box structure, extending from said lower opening.

4,606,149

DOOR CONSTRUCTION IN MOTOR VEHICLE

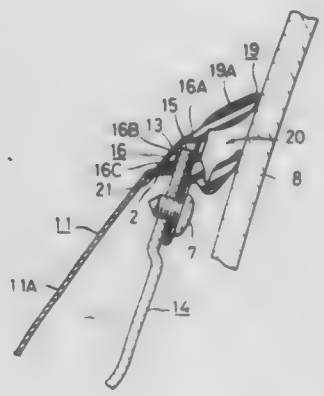
Eiichi Hamada, and Hiroyuki Watanabe, both of Toyota, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Japan

Filed Jul. 3, 1984, Ser. No. 627,642

Claims priority, application Japan, Jul. 5, 1983, 58-104299[U]

Int. Cl.[4] B60J *5/04*

U.S. Cl. 49—502 18 Claims



1. A door construction in a motor vehicle, wherein there is provided a door outer panel, which has the upper portion being first inwardly bent in the direction of the door thickness and then upwardly bent in a substantial crank shape, to thereby constitute a ledge portion and an upper end welded flange upwardly extending from the inner end of said ledge portion, said upper end welded flange of the door outer panel is welded to another upper end welded flange of a reinforcing panel, and a belt molding, the width thereof is made smaller at the top portion than at the other portions, covering the outer surface, top end face and inner surface of said welded flanges is solidly secured to said reinforcing panel, characterized in that the lengths of said upper end welded flanges, which are projected from the ledge portion of the door outer panel and the reinforcing panel are reduced to the minimum lengths required for welding, and the width in the direction of the door thickness of a belt line portion at the top end of said belt molding is made smaller than a width substantially equal to the weld thickness of the pair of upper end welded flanges.

4,606,150

GRINDING MACHINE

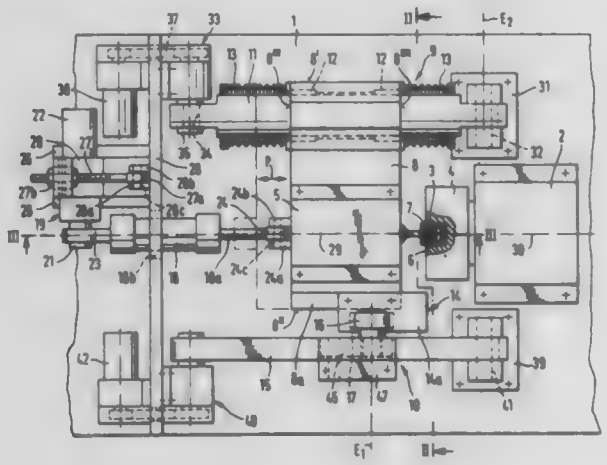
Hans Grimm, Esslingen, Fed. Rep. of Germany, assignor to Maschinenfabrik Gehring Gesellschaft mit beschränkter Haftung & Co. Kommanditgesellschaft, Ostfildern, Fed. Rep. of Germany

Filed Oct. 3, 1985, Ser. No. 783,406

Claims priority, application Fed. Rep. of Germany, Oct. 3, 1984, 3436226

Int. Cl.[4] B24B *9/00*

U.S. Cl. 51—34 C 25 Claims



1. A grinding machine for machining inner surfaces of workpieces; said machine includes a bench, at least one headstock, for workpieces, connected to said bench, and a carriage that supports a grinder unit and is displaceably guided on said bench via guide means operatively connected to the latter, with said grinder unit having an axis about which a grinding tool thereof rotates;

the improvement wherein said guide means are disposed on opposite sides of said grinder unit, and wherein respective adjusting devices are provided for respectively pivoting a given one of said guide means about an axis that is disposed at right angles to said axis of said grinder unit.

4,606,151

METHOD AND APPARATUS FOR LAPPING AND POLISHING OPTICAL SURFACES

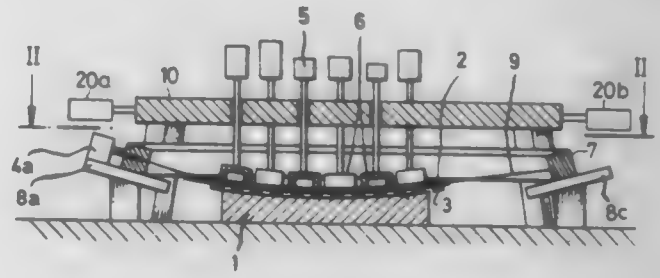
Erich Heynacher, Heidenheim, Fed. Rep. of Germany, assignor to Carl-Zeiss-Stiftung, Heidenheim, Fed. Rep. of Germany

Filed Nov. 21, 1984, Ser. No. 673,864

Claims priority, application Fed. Rep. of Germany, Aug. 18, 1984, 3430499

Int. Cl.[4] B24B *13/00*

U.S. Cl. 51—62 12 Claims



1. Method of lapping or polishing optical surfaces of optical workpieces including aspherical surfaces wherein the optical surface to be lapped or polished is first measured and the lapping or polishing steps are controlled in correspondence to the form deviations of the actual form of said surface from a predetermined desired form, the method comprising the steps of:

laying down a lapping or polishing tool in the form of a flexible membrane upon substantially all of the surface of the workpiece to be processed;

applying a plurality of pressure forces to said membrane at a corresponding plurality of locations on the side of said membrane facing away from said surface;

adjusting said pressure forces individually to obtain a pressure distribution corresponding to said form deviations whereby respectively different removals of material V are obtained at said locations when said membrane is moved;

imparting an oscillatory movement to said membrane in a predetermined direction transverse to said pressure forces so as to cause said membrane to move relative to the latter and to substantially maintain said pressure distribution relative to said surface thereby effecting said removals of material at respective ones of said locations; and,

stopping the movement of said membrane and measuring said surface again to determine if the removed material V corresponding to the measured deviations between said actual form and said desired form has been obtained, said removed material V being computed for each of said locations by multiplying together in pressure force P, processing time t, and relative velocity v between said membrane and said surface.

6. Apparatus for lapping or polishing optical surfaces of optical workpieces including aspherical surfaces and wherein a tool is controlled in correspondence to the deviations of the actual form of the optical surface to be processed from its desired form, the apparatus comprising:

an elastic membrane defining said tool and having a first side and a second side, said membrane having a lapping or polishing base disposed on said first side thereof for engaging said optical surface;

a plurality of loading devices arranged on said second side of said membrane facing away from said optical surface for

applying a plurality of pressure forces to said second side at a corresponding plurality of locations thereon, each of said devices including: a loading unit for applying a pressure force to a subarea of said membrane to press the latter with said base against said optical surface; and, a low friction bearing disposed between said membrane and said loading unit for supporting the latter on said membrane;

means for adjusting the respective pressure forces of said loading devices individually to obtain a pressure distribution corresponding to said deviations whereby respectively different removals of material are obtained at said locations when said membrane is moved;

drive means for imparting an oscillatory movement of a predetermined amplitude to said membrane in a predetermined direction transverse to said pressure forces so as to cause said membrane to move relative to the latter and to substantially maintain said pressure distribution relative to said surface thereby effecting said removals of material at respective ones of said locations; and,

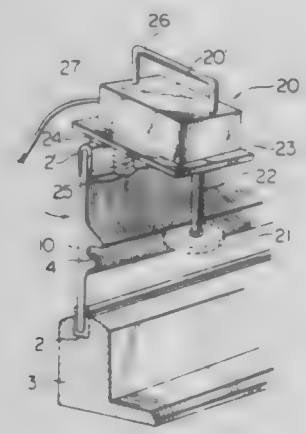
holding means for holding said loading units in a fixed position relative to the movement of said membrane.

4,606,152

METHOD OF POLISHING METAL REED BLADES OF AIR JET LOOM AND APPARATUS THEREFOR

Shinji Michihara, and Akiyoshi Shimizu, both of Kanazawa, Japan, assignors to Kiji Reed Manufacturing Co., Ltd., Kanazawa, Japan

Filed Jan. 31, 1985, Ser. No. 696,708
Claims priority, application Japan, Mar. 9, 1984, 59-43772
Int. Cl.⁴ B24B *19/00*
U.S. Cl. 51—241 S **2 Claims**



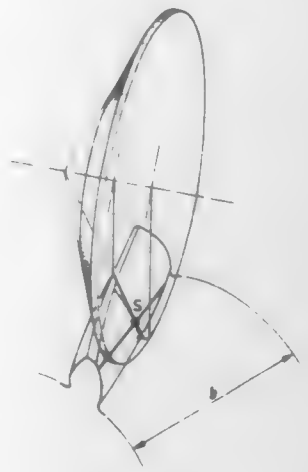
2. Apparatus for abrasively polishing an air guide recess in the middle portion of metal reed blades opened in the direction of the fell of the cloth of an air jet loom, comprising a support base 3 for rigidly supporting the lower slay 2 of said metal reeds to be polished, a polishing device 20 slidably mounted on the upper slay 2' of said metal reeds to be polished, said polishing device 20 including a driving motor box 20', a rotary buffer 21 driven by a driven shaft 22 extending downward from said motor box 20', a slide plate 24 with side rollers 25 for precisely shifting said polishing device 20 along the upper slay 2' of said metal reeds, and the direction of rotation of said polishing buffer 21 is in the direction of forcedly bending the blades 10 in the direction of the air jet while contacting the inner surface of said blades, whereby after said rotating buffer 21 passed by said bended blades, a tapered nozzle configuration of said air guide recess will be provided.

4,606,153

METHOD FOR CONTROLLING A GRINDING STROKE IN A GEAR TOOTH FLANK GRINDING MACHINE OPERATING ON THE INDEXING GENERATING PRINCIPLE

Peter Bloch, Mutschellen, and Robert Wydler, Zürich, both of Switzerland, assignors to MAAG Gear-Wheel & Machine Company Limited, Zürich, Switzerland

Filed Jun. 26, 1984, Ser. No. 624,763
Claims priority, application Switzerland, Jul. 8, 1983, 3760/83
Int. Cl.⁴ B24B *19/00*
U.S. Cl. 51—287 **4 Claims**



1. A method for controlling a magnitude and position of a stroke motion of a gear tooth flank grinding machine operating on an indexing generating principle when grinding a helically toothed gear by means of a doubly conical grinding wheel reciprocatable in grinding strokes along the gear tooth flanks being ground and wherein the stroke motion is controlled in dependence of measured values of a generating motion and of a momentary position of the grinding wheel upon the gear tooth flank being ground, comprising the steps of:

establishing a grinding reference polygon P_1 P_2 P_3 P_4 P_5 P_6 P_7 P_8 defining grinding stroke limits H_o, H_u from gearing specifications in accordance with hereinafter given formula Tables 1, 2, 3 and 4;

determining an effective grinding point S of the grinding wheel at predetermined time intervals from measurements of momentary generation and stroke positions W and H of the gear tooth flank grinding machine;

determining spacing Q of said effective grinding point S from the subsequent grinding stroke limit H_o, H_u in a direction of said stroke motion; and

controlling a path and speed of said stroke motion such that the stroke motion reverses at each grinding stroke limit H_o, H_u defined by the grinding reference polygon P_1 P_2 P_3 P_4 P_5 P_6 P_7 P_8;

Tables 1 and 2 for the case where b is greater than b':

ZONE	UPPER GRINDING STROKE LIMIT H_o
P_0–P_1	$H_o = \frac{Q_2 - Q_1}{Q_2 - Q_1} \cdot \frac{\sin\alpha_t}{\sin\gamma} \cdot W + \frac{Q_1(Q_2 - Q_1)}{Q_2 - Q_1}$ $= \frac{\sin\alpha_t}{\sin\gamma} \cdot W + Q_1$
P_1–P_2	$H_o = \frac{(Q_4 + Q_7) - Q_2}{Q_7 - (Q_2 - Q_1)} \cdot \frac{\sin\alpha_t}{\sin\gamma} \cdot W + \frac{Q_2Q_7 - (Q_4 + Q_7)(Q_2 - Q_1)}{Q_7 - (Q_2 - Q_1)}$ $= \sin^2\gamma \cdot \frac{\sin\alpha_t}{\sin\gamma} \cdot W +$

-continued

	$\frac{Q_2Q_7 - (Q_4 + Q_7)(Q_2 - Q_1)}{Q_7 - (Q_2 - Q_1)}$
P_2-P_3	$H_o = \frac{Q_6 - (Q_4 + Q_7)}{(Q_6 - Q_4) - Q_7} \cdot \frac{\sin\alpha_t}{\sin\gamma} \cdot W +$
	$\frac{(Q_4 + Q_7)(Q_6 - Q_4) - Q_6Q_7}{(Q_6 - Q_4) - Q_7}$
	$= \frac{\sin\alpha_t}{\sin\gamma} \cdot W + \frac{(Q_4 + Q_7)(Q_6 - Q_4) - Q_6Q_7}{(Q_6 - Q_4) - Q_7}$
P_3-P_4	$H_o = \frac{Q_3 - Q_6}{(Q_3 + Q_1) - (Q_6 - Q_4)} \cdot \frac{\sin\alpha_t}{\sin\gamma} \cdot W +$
	$\frac{Q_6(Q_3 + Q_1) - Q_3(Q_6 - Q_4)}{(Q_3 + Q_1) - (Q_6 - Q_4)}$
	$= \sin^2\gamma \cdot \frac{\sin\alpha_t}{\sin\gamma} \cdot W +$
	$\frac{Q_6(Q_3 + Q_1) - Q_3(Q_6 - Q_4)}{(Q_3 + Q_1) - (Q_6 - Q_4)}$
P_0-P_8	$H_o = \frac{-Q_3 - Q_1}{-(Q_3 + Q_1)} \cdot \frac{\sin\alpha_t}{\sin\gamma} \cdot W + \frac{-Q_1(Q_3 - Q_1)}{-(Q_3 + Q_1)}$
	$= \frac{\sin\alpha_t}{\sin\gamma} \cdot W + Q_1$

ZONE LOWER GRINDING STROKE LIMIT H_u

P_0-P_4	$H_u = \frac{Q_3 + Q_1}{Q_3 + Q_1} \cdot \frac{\sin\alpha_t}{\sin\gamma} \cdot W + \frac{-Q_1(Q_3 + Q_1)}{Q_3 + Q_1}$
	$= \frac{\sin\alpha_t}{\sin\gamma} \cdot W - Q_1$
P_0-P_5	$H_u = \frac{-Q_2 + Q_1}{-(Q_2 - Q_1)} \cdot \frac{\sin\alpha_t}{\sin\gamma} \cdot W + \frac{Q_1(Q_2 - Q_1)}{-(Q_2 - Q_1)}$
	$= \frac{\sin\alpha_t}{\sin\gamma} \cdot W - Q_1$
P_5-P_6	$H_u = \frac{-(Q_4 + Q_7) + Q_2}{-Q_7 + (Q_2 - Q_1)} \cdot \frac{\sin\alpha_t}{\sin\gamma} \cdot W +$
	$\frac{Q_2Q_7 - (Q_4 + Q_7)(Q_2 - Q_1)}{-Q_7 + (Q_2 - Q_1)}$
	$= \sin^2\gamma \cdot \frac{\sin\alpha_t}{\sin\gamma} \cdot W +$
	$\frac{Q_2Q_7 - (Q_4 + Q_7)(Q_2 - Q_1)}{-Q_7 + (Q_2 - Q_1)}$
P_6-P_7	$H_u = \frac{-Q_6 + (Q_4 + Q_7)}{-(Q_6 - Q_4) + Q_7} \cdot \frac{\sin\alpha_t}{\sin\gamma} \cdot W +$
	$\frac{(Q_4 + Q_7)(Q_6 - Q_4) - Q_6Q_7}{-(Q_6 - Q_4) + Q_7}$
	$= \frac{\sin\alpha_t}{\sin\gamma} \cdot W + \frac{(Q_4 + Q_7)(Q_6 - Q_4) - Q_6Q_7}{-(Q_6 - Q_4) + Q_7}$
P_7-P_8	$H_u = \frac{-Q_3 + Q_6}{-(Q_3 + Q_1) + (Q_6 - Q_4)} \cdot \frac{\sin\alpha_t}{\sin\gamma} \cdot W +$
	$\frac{Q_6(Q_3 + Q_1) - Q_3(Q_6 - Q_4)}{-(Q_3 + Q_1) + (Q_6 - Q_4)}$
	$= \sin^2\gamma \cdot \frac{\sin\alpha_t}{\sin\gamma} \cdot W +$

-continued

	$\frac{Q_6(Q_3 + Q_1) - Q_3(Q_6 - Q_4)}{-(Q_3 + Q_1) + (Q_6 - Q_4)}$

Formula Tables 3 and 4 for the case where b is less than b':

ZONE UPPER GRINDING STROKE LIMIT H_o

P_0-P_2	$H_o = \frac{(Q_4 + Q_7) - [Q_2 + (Q_1 - Q_2)\sin^2\gamma]}{Q_7} \cdot \frac{\sin\alpha_t}{\sin\gamma} \cdot$
	$W + \frac{[Q_2 + (Q_1 - Q_2)\sin^2\gamma]Q_7}{Q_7}$
	$= \sin^2\gamma \cdot \frac{\sin\alpha_t}{\sin\gamma} \cdot W + [Q_2 + (Q_1 - Q_2)\sin^2\gamma]$
P_2-P_3	$H_o = \frac{Q_6 - (Q_4 + Q_7)}{(Q_6 - Q_4) - Q_7} \cdot \frac{\sin\alpha_t}{\sin\gamma} \cdot W +$
	$\frac{(Q_4 + Q_7)(Q_6 - Q_4) - Q_6Q_7}{(Q_6 - Q_4) - Q_7}$
	$= \frac{\sin\alpha_t}{\sin\gamma} \cdot W + \frac{(Q_4 + Q_7)(Q_6 - Q_4) - Q_6Q_7}{(Q_6 - Q_4) - Q_7}$
P_3-P_4	$H_o = \frac{Q_3 - Q_6}{(Q_3 + Q_1) - (Q_6 - Q_4)} \cdot \frac{\sin\alpha_t}{\sin\gamma} \cdot W +$
	$\frac{Q_6(Q_3 + Q_1) - Q_3(Q_6 - Q_4)}{(Q_3 + Q_1) - (Q_6 - Q_4)}$
	$= \sin^2\gamma \cdot \frac{\sin\alpha_t}{\sin\gamma} \cdot W +$
	$\frac{Q_6(Q_3 + Q_1) - Q_3(Q_6 - Q_4)}{(Q_3 + Q_1) - (Q_6 - Q_4)}$
P_0-P_5	$H_o = \frac{Q_2 - [Q_2 + (Q_1 - Q_2)\sin^2\gamma]}{-(Q_1 - Q_2)} \cdot \frac{\sin\alpha_t}{\sin\gamma} \cdot W +$
	$\frac{-[Q_2 + (Q_1 - Q_2)\sin^2\gamma](Q_1 - Q_2)}{-(Q_1 - Q_2)}$
	$= \sin^2\gamma \cdot \frac{\sin\alpha_t}{\sin\gamma} \cdot W + [Q_2 + (Q_1 - Q_2)\sin^2\gamma]$
P_5-P_8	$H_o = \frac{-Q_3 - Q_2}{-(Q_3 + Q_1) + (Q_1 - Q_2)} \cdot \frac{\sin\alpha_t}{\sin\gamma} \cdot W +$
	$\frac{-Q_2(Q_3 + Q_1) - Q_3(Q_1 - Q_2)}{-(Q_3 + Q_1) + (Q_1 - Q_2)}$
	$= \frac{\sin\alpha_t}{\sin\gamma} \cdot W + \frac{-Q_2(Q_3 + Q_1) - Q_3(Q_1 - Q_2)}{-(Q_3 + Q_2)}$

ZONE LOWER GRINDING STROKE LIMIT H_u

P_0-P_1	$H_u = \frac{-Q_2 + [Q_2 + (Q_1 - Q_2)\sin^2\gamma]}{(Q_1 - Q_2)} \cdot \frac{\sin\alpha_t}{\sin\gamma} \cdot W +$
	$\frac{-[Q_2 + (Q_1 - Q_2)\sin^2\gamma](Q_1 - Q_2)}{(Q_1 - Q_2)}$
	$= \sin^2\gamma \cdot \frac{\sin\alpha_t}{\sin\gamma} \cdot W - [Q_2 + (Q_1 - Q_2)\sin^2\gamma]$
P_1-P_4	$H_u = \frac{Q_3 + Q_2}{(Q_3 + Q_1) - (Q_1 - Q_2)} \cdot \frac{\sin\alpha_t}{\sin\gamma} \cdot W +$

-continued

$$\frac{-Q_2(Q_3 + Q_1) - Q_3(Q_1 - Q_2)}{(Q_3 + Q_1) - (Q_1 - Q_2)}$$

$$= \frac{\sin\alpha_t}{\sin\gamma} \cdot W + \frac{-Q_2(Q_3 + Q_1) - Q_3(Q_1 - Q_2)}{Q_3 + Q_2}$$

P_0-P_6 $$H_u = \frac{-(Q_4 + Q_7) + [Q_2 + (Q_1 - Q_2)\sin^2\gamma]}{Q_7} \cdot \frac{\sin\alpha_t}{\sin\gamma} \cdot$$

$$W + \frac{-[Q_2 + (Q_1 - Q_2)\sin^2\gamma]Q_7}{Q_7}$$

$$= \sin^2\gamma \cdot \frac{\sin\alpha_t}{\sin\gamma} \cdot W - [Q_2 + (Q_1 - Q_2)\sin^2\gamma]$$

P_6-P_7 $$H_u = \frac{-Q_6 + (Q_4 + Q_7)}{-(Q_6 - Q_4) + Q_7} \cdot \frac{\sin\alpha_t}{\sin\gamma} \cdot W +$$

$$\frac{(Q_4 + Q_7)(Q_6 - Q_4) - Q_6Q_7}{-(Q_6 - Q_4) + Q_7}$$

$$= \frac{\sin\alpha_t}{\sin\gamma} \cdot W + \frac{(Q_4 + Q_7)(Q_6 - Q_4) - Q_6Q_7}{-(Q_6 - Q_4) + Q_7}$$

P_7-P_8 $$H_u = \frac{-Q_3 + Q_6}{-(Q_3 + Q_1) + (Q_6 - Q_4)} \cdot \frac{\sin\alpha_t}{\sin\gamma} \cdot W +$$

$$\frac{Q_6(Q_3 + Q_1) - Q_3(Q_6 - Q_4)}{-(Q_3 + Q_1) + (Q_6 - Q_4)}$$

$$= \sin^2\gamma \cdot \frac{\sin\alpha_t}{\sin\gamma} \cdot W +$$

$$\frac{Q_6(Q_3 + Q_1) - Q_3(Q_6 - Q_4)}{-(Q_3 + Q_1) + (Q_6 - Q_4)}$$

wherein:

P_o=Point of impingement upon the normal projection of two adjacent gear tooth flanks the projection of points P_{o1} and P_{o2};

P_{o1}=point of impingement of normal through generation point W_o on basic rack tooth profile flank 1;

P_{o2}=point of impingement of normal through generation point W_o on basic rack tooth profile flank 2;

P_1-P_8=respective apex reference points of said grinding reference polygon;

Q_1-Q_4, Q_6 and Q_7=respective spacings from said point of impingement P_o to exit points of said grinding wheel from surfaces of said gear tooth flanks at tooth tip flank lines and tooth root flank lines in a normal projection of two adjacent gear tooth flanks (intersection of generatrices or extensions of said generatrices with said tooth tip flank lines and said tooth root flank lines);

H_o=an upper value of grinding stroke limit;

H_u=a lower value of said grinding stroke limit;

α_t=transverse pressure angle;

γ=angle between flank contact line and root line;

w=Generating travel.

4,606,154

FLEXIBLE AND EXTENSIBLE COATED ABRASIVE MATERIAL

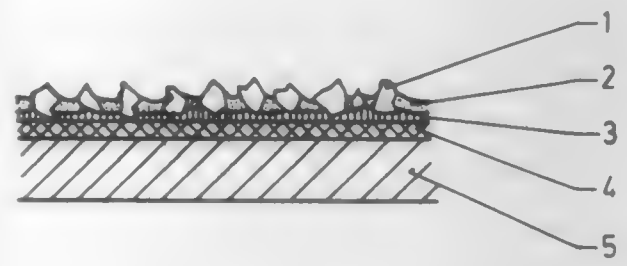
Lotte Herrmann, Schlatt; Jakob Ackermann, Wigoltingen, and Armin Steiner, Wiesendangen, all of Switzerland, assignors to SIA Schweizer Schmirgel- und Schleif-Industrie AG, Switzerland

Filed Nov. 18, 1983, Ser. No. 553,135

Claims priority, application Switzerland, Nov. 22, 1982, 6768/82

Int. Cl.[4] B24D *11/00*

U.S. Cl. 51—401 **8 Claims**



1. A coated abrasive material which is flexible and extensible, having an extensibility at least in one direction of at least 10% at an applied load of about 100 N/5 cm (=11.3 lb/inch) comprising a flexible and extensible textile backing material; an intermediate layer applied on at least a grain side of said backing material, said layer containing at least one elastic polymer and having a modulus of elasticity of not greater than about 300 N/mm^2; a base binder means on said intermediate layer; and abrasive particles in said base binder means.

4,606,155

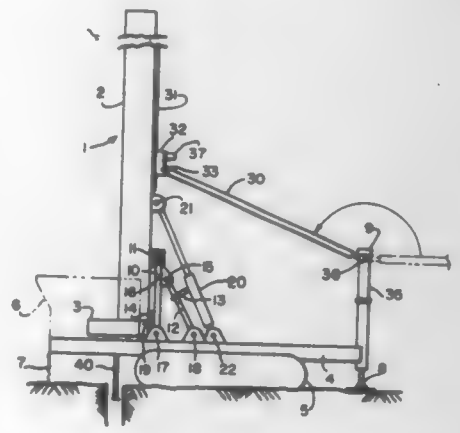
ANGLE DRILLING APPARATUS

Ronald F. Bukovitz, Wooster, and J. David Anthony, Smithville, both of Ohio, assignors to Ingersoll-Rand Company, Woodcliff Lake, N.J.

Filed Jun. 16, 1983, Ser. No. 505,360

Int. Cl.[4] E04H *12/34*

U.S. Cl. 52—116 **5 Claims**



1. A drilling apparatus having a mast structure deployable between a horizontal and a vertical position and supported on a platform, said mast having a base, a bottom end and upper end, said apparatus including:

means for supporting said mast in a horizontal position and for deploying said mast from said horizontal position to a vertical position wherein said means comprises:

a permanently attached first pivot point fixed on said mast towards the mast base, a permantly attached second pivot point fixed on said mast disposed on said mast towards the upper end of said mast; a first permanently attached pivot point on said platform adjacent to said base of said mast, a permantly attached second pivot point fixed on said platform towards said upper end of said mast when said mast is in a horizontal position; and a permantly attached third pivot point the phrase on said platform outboard of said second pivot point fixed on said platform toward said

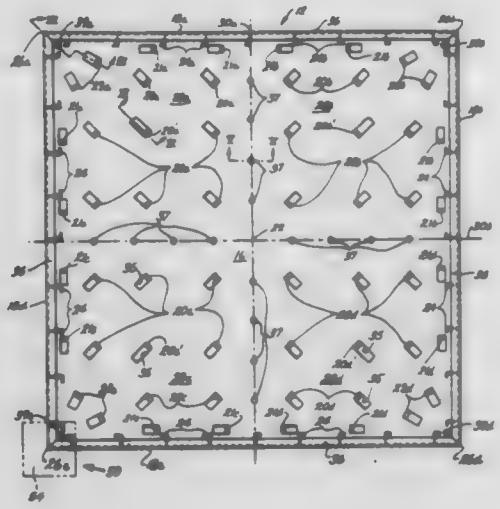
upper end of said mast when said mast is in a horizontal position; a first non-extensible pivot leg between said first pivot point on said mast and said first pivot point on said platform; a first extensible leg permanently attached between said second pivot point on said platform and a trunnion an upper portion of said non-extensible pivot leg for effecting rotation of said non-extensible link about said first platform pivot point; an extensible deploying cylinder attached between said third pivot point on said platform and said second pivot point on said mast for effecting rotation of said mast about said first pivot point on said mast or alternately about said first platform pivot point, and lock means for securing said bottom end of said mast to said first non-extensible pivot leg to fix rotation of said mast about said first pivot point on said mast; whereby during deployment to said horizontal and vertical positions of said mast, said first pivot leg and said deployable cylinder are not decoupled from said first and second pivot points permanently attached on said mast and said first, second and third permanently attached pivot points on said platform; and further where said first extensible leg is not decoupled from said trunnion and said second pivot point on said platform during said deployment.

4,606,156

ACCESS FLOORING PANEL

Kenneth M. Sweers, Grand Rapids; G. Jack Cooper, Alto, and R. Jack Munsey, Caledonia, all of Mich., assignors to C-Tec, Inc., Grand Rapids, Mich.

Filed Aug. 4, 1983, Ser. No. 519,468
Int. Cl.⁴ E04B *2/28*
U.S. Cl. 52—126.6 **23 Claims**



1. An access flooring kit comprising:

pedestal means for supporting access flooring panels above a structural floor; and

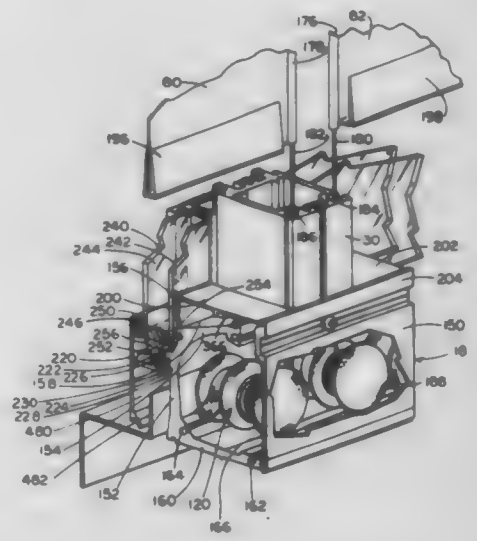
a plurality of composite access flooring panels to be removably supported on said pedestal means above the structural floor, each of said panels comprising a rectangular pan and a cementitious core substantially overlying said pan whereby said pan is between said core and said pedestal means when said panel is supported on said pedestal means, said pan including a plurality of integral lanced tabs extending therefrom into said core to mechanically bond said core and said pan, each of said tabs forming an aperture radially outward of the tab, each of said tabs being angularly offset from the peripheral edges of said pan whereby horizontal sheer forces exerted radially outwardly on said tabs by said core under a downward force on the center of said panel will not tend to enlarge said apertures or rip said tabs from said pan.

4,606,157

SHADE ARRANGEMENT FOR SOLAR GREEN-HOUSES AND THE LIKE

Christopher Esposito, West Bay Shore, N.Y., assignor to Four Seasons Solar Products Corp., Farmingdale, N.Y.

Continuation-in-part of Ser. No. 455,475, Jan. 4, 1983. This application May 23, 1984, Ser. No. 613,339
Int. Cl.⁴ E04H *14/00*
U.S. Cl. 52—173 R **23 Claims**



1. A solar greenhouse comprising glazing means; support means supporting said glazing means to define an at least partly enclosed space, said glazing means being permeable to solar radiation to allow said radiation to pass into said space, shade means in said space and adapted for being drawn across at least part of said glazing means whereby to intercept at least part of the radiation passing through said glazing means, said shade means having first and second ends, first means coupled to said first end and adapted for applying a constant force to said first end, second means coupled to said second end and selectively functioning to play out or take up said shade means whereby to control intercepting of the radiation, said second means including a roller and power means to drive the roller and roll the shade means thereupon or unroll the shade means therefrom, said first means being a constant torque means, said first means including a roller and a spring coupled to and tending to rotate said roller of the first means with a constant torque, and a cable coupling said first end of the shade means to the roller of the first means whereby the cable and not the shade means is rolled onto the roller of the first means.

4,606,158

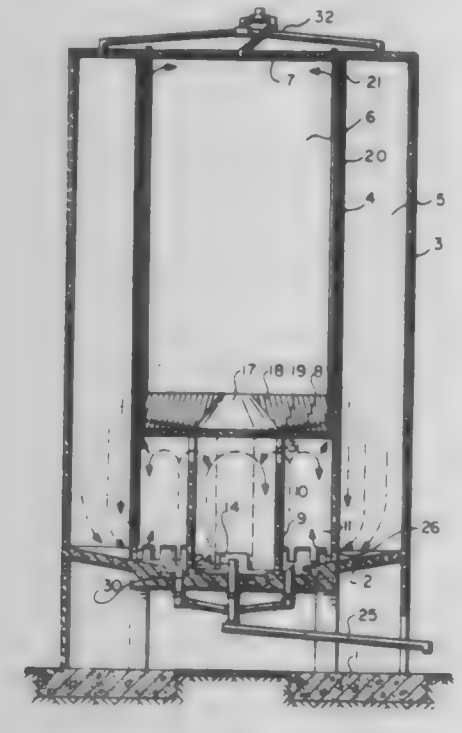
DOUBLE SILO

Werner Krauss, Hamburg, Fed. Rep. of Germany, assignor to Claudius Peters Aktiengesellschaft, Hamburg, Fed. Rep. of Germany

Filed Sep. 11, 1984, Ser. No. 649,317
Claims priority, application Fed. Rep. of Germany, Nov. 24, 1983, 3342507
Int. Cl.⁴ B01F *5/12;* E04H *7/24*
U.S. Cl. 52—192 **9 Claims**

1. In a double silo with an inner silo part and an outer silo part which surrounds it annularly and is separated from it by a vertical silo dividing wall, with an annular aerated emptying chamber at the bottom of the inner silo part for the silo area formed in the outer silo part, which emptying chamber is connected to the silo area by a plurality of openings in the silo dividing wall near the bottom, wherein the annular aerated mixing chamber (11) is divided into a plurality of separate chambers for the material emanating from the outer silo area, and which encloses a central aerated mixing chamber (10) for the material emanating from the inner silo area; said central chamber is connected to the inner silo part area (6) by a vertical chamber dividing wall (9), arranged concentrically to a silo

dividing wall (4); wherein inner silo area (6) is connected to the inner mixing chamber by at least one spacious shaft (13) which



runs down close to the bottom (2) of inner mixing chamber (10).

4,606,159

GLASS AUTO WINDOW FOR, AND METHOD OF, QUICK INSTALLATION

Heinz Kunert, Cologne, Fed. Rep. of Germany, assignor to Vegla Vereinigte Glaswerke GmbH, Aachen, Fed. Rep. of Germany

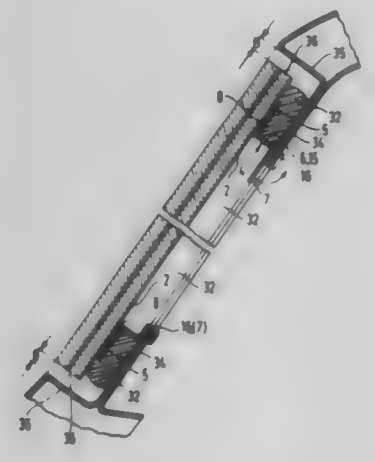
Filed Jan. 4, 1985, Ser. No. 688,751

Claims priority, application Fed. Rep. of Germany, Jan. 9, 1984, 3400428

Int. Cl.[4] B65B *11/00*

U.S. Cl. 52—208

10 Claims



1. A glass pane for installing directly onto a mounting flange of a window frame by means of an adhesive material, comprising

a glass body, said glass body having an inner surface, an outer surface, and an outer periphery adapted to conform to the shape of said window frame,

a frame-like non-transparent layer located on said inner surface and in the region of said outer periphery, said layer substantially conforming to the contour of said outer periphery, and

mounting strips mounted at intervals on the interior surface of said glass body, said mounting strips comprising base sections, substantially planar middle sections, and substantially planar terminal sections, said base sections being affixed to said frame-like layer, said terminal sections being adapted to be received by said mounting flange to fix the position of said auto glass pane within said window frame, said mounting strips being made from a plastically deformable metal whereby said metallic terminal sections can be bent about said mounting flange to retain said auto glass pane in said fixed position until said adhesive hardens.

10. A method for directly installing a glass pane onto a mounting flange of a window frame, said glass pane comprising a glass body, said glass body having an inner surface, an outer surface, and an outer periphery adapted to conform to the shape of said window frame, a frame-like non-transparent layer located on said inner surface and in the region of said outer periphery, said layer substantially conforming to the contour of said outer periphery, and mounting strips mounted at intervals on the interior surface of said glass body along said frame-like layer, said mounting strips being made from a plastically deformable metal, said mounting strips including planar portions, said method comprising

applying an adhesive material to said frame-like layer,

positioning said glass body within said window frame by means of said mounting strips, said adhesive material being brought into contact with said window frame, and

bending a planar portion of said mounting strips about said mounting flange to fix the position of said glass pane in said window frame until said adhesive hardens.

4,606,160

PLASTER BACKING PANEL FOR VENTILATED CURTAIN WALL SYSTEM

Albert Kubbutat, Wittislingen, Fed. Rep. of Germany, assignor to Stotmeister GmbH, Stuehlingen-Weizen, Fed. Rep. of Germany

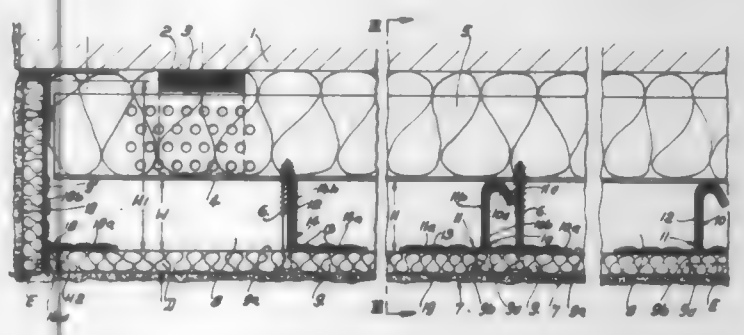
Filed May 14, 1985, Ser. No. 733,734

Claims priority, application Fed. Rep. of Germany, May 22, 1984, 3418964

Int. Cl.[4] E04B *2/88*

U.S. Cl. 52—235

15 Claims



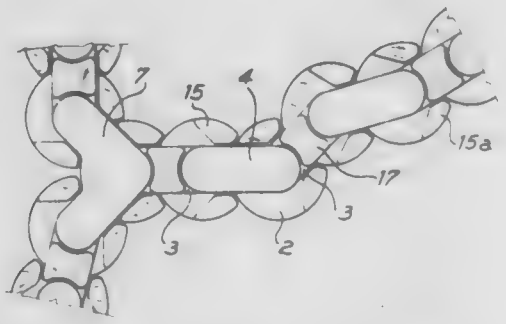
1. A plaster backing panel structure for a ventilated curtain wall system comprising a rectangular light-weight wood fiber panel for mounting on a framework attached to a vertical building wall so as to leave a ventilation space of a predetermined width behind the panel, wherein the panel includes respective angle sections affixed to a rear face of the panel adjacent respective longitudinal edges thereof, the angle sections having respective first webs engaging the rear face of the panel and formed with an array of holes filled with adhesive and respective second webs extending rearwardly from the rear face of the panel, the second webs each being bent to form a hook in cross section, the second web of a first of the angle sections being bent toward the center of the panel and the second web of the second angle section being bent away from the center of the panel, the respective second webs being of complimentary shape so that when mounting adjacent panels, the second web of a first angle section on one panel interfits with the second web of the second angle section on the adjacent panel to form a male and female connection.

4,606,161

TUBULAR ELEMENTS AND JOINTS FOR THEIR MUTUAL ARTICULATED CONNECTION TO FORM A PARTITION WALL OF VARIABLE SHAPE

Isao Hosoe, Milan, Italy, assignor to Sacea S.a.s. di Tirinnanzi Giampietro & C., Italy

Filed May 10, 1985, Ser. No. 732,586
Claims priority, application Italy, Jun. 1, 1984, 21995/84[U]
Int. Cl.[4] E04B *2/74*
U.S. Cl. 52—239 8 Claims



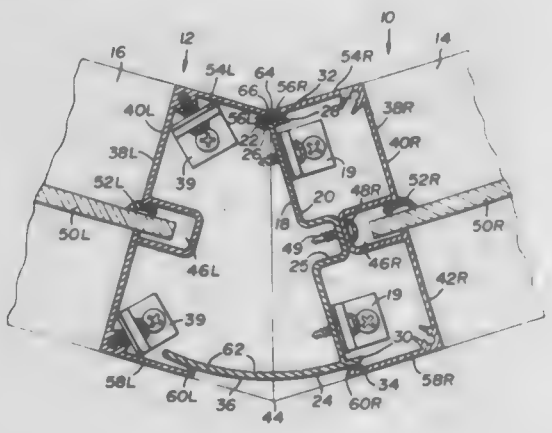
1. Tubular elements and joints to be mutually articulately connected to form a partition wall capable of assuming a continuously variable shape which can be varied without any disassembling operation on the elements composing the same; wherein the tubular elements are generally cylindrical sections, each having a cross-section of circular shape for the major part and the remainder with a concave profile, and there is provided head plug members, each suitable to fit into the ends of said elements and having the same cross-section thereof, and said joints are elongated plates, each provided with a pair of pins adapted to fit into elements placed side by side, whereby each element can rotate with its concave portion about the convex circumferential portion of the adjacent element to vary the curved pattern of the vertical generating lines forming the wall's cylindrical configuration, the rotation radius being equal to the center-to-center distance of a pair of pins of a plate linking these two elements, each plug member having two lateral raised portions cooperable with said plates for limiting the angle range of relative rotation between two adjacent elements.

4,606,162

ADJUSTABLE GLAZED PARTITION SYSTEM

Alan C. Wendt, Barrington, Ill., assignor to United States Gypsum Company, Chicago, Ill.

Filed Aug. 21, 1984, Ser. No. 642,766
Int. Cl.[4] E04B *1/00;* E06B *5/00*
U.S. Cl. 52—282 4 Claims



1. A glazing system comprising:

a first and a second generally E-shaped glazing rail coupled in opposing relationship, each rail comprising:

an elongate, U-shaped, pane-receiving channel having a base, a first leg, and a second leg,

a posterior web joined to the first leg and an inner flange joined to the posterior web,

an anterior web joined to the second leg and an outer flange joined to the anterior web,

the inner and outer flanges having opposing terminal hooks which are parallel to their respective webs; and

a mullion articulating with and spanning the inner and outer flanges, which comprises:

an elongate web portion attached to the base of the pane-receiving channel of the first glazing rail,

a socket body connected transversely to one longitudinal edge of the web portion and having a concave seat with which the inner flange hooks are pivotably engaged, and

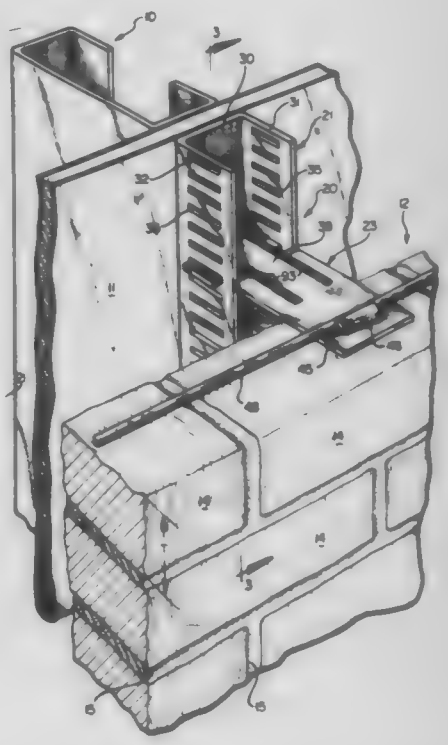
an arcuate flange connected to the opposite longitudinal edge of the web portion and having a convex outer surface, the arcuate flange releasably attached to the outer flange hook of the first glazing rail and slidably engaged on its convex surface by the outer flange hook of the second glazing rail.

4,606,163

APERTURED CHANNEL VENEER ANCHOR

Mario J. Catani, Buffalo Grove, Ill., assignor to Dur-O-Wal, Inc., Arlighton Heights, Ill.

Filed Sep. 9, 1985, Ser. No. 774,072
Int. Cl.[4] E04B *1/38, 1/41*
U.S. Cl. 52—434 6 Claims



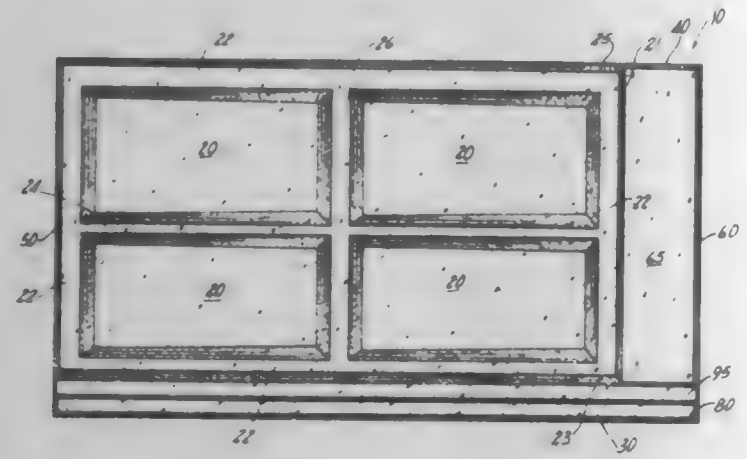
2. An anchor system for connecting a veneer to a backup, the backup including at least one vertically elongated stud, the anchor comprising an elongate anchor channel affixed to the stud over substantially the entire length of the stud, whereby to stiffen the combined stud and channel against bending and deflection, the channel including a bight portion for affixation to the stud and two legs, each leg affixed to the bight portion and defining a regular array of apertures to provide a multiplicity of locations making it possible to accommodate most locations of veneer mortar joints, and anchor tie means including a strap having a head element adapted to engage an aperture in each channel leg for rigid connection to the channel means and extending to the veneer for connection therewith.

4,606,164

ROOF TILE

Fernando Mendez, 10370 NW. 135th St., Hialeah Gardens, Fla. 33016

Filed Jul. 12, 1985, Ser. No. 754,608
Int. Cl.[4] E04D *1/04*
U.S. Cl. 52—536 5 Claims



1. A roof tile, comprising:

A. a substantially rectangular top member having front, rear, left and right walls, and further including parallel to and substantially close to its right side, an upper lateral rib and groove members and said top member further includes cooperating underside lateral groove and rib members below said upper rib and groove members so that laterally contiguous tile may be interlockingly connected; and

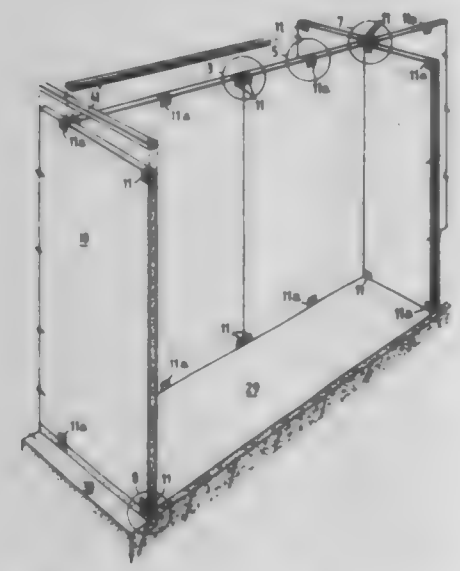
B. a substantially rectangular frame structure attached to the underside of said top member having longitudinal and lateral reinforcement members within said frame and defining at least four cavities, said frame structure being adjacent to said rear wall and having a smaller longitudinal length and width than said tile so that an interlocking cavity is formed with the front portion of the underside of said top member and said frame thereby allowing the housing of a portion of the rear part of a longitudinally contiguous tile within said interlocking cavity.

4,606,165

BUILDING PANELS

Ronald F. Allan, Townsville, Australia, assignor to Ron Allan Industries (Australia) Pty. Ltd., Queensland, Australia

PCT No. PCT/AU84/00200, § 371 Date Jun. 20, 1985, § 102(e) Date Jun. 20, 1985, PCT Pub. No. WO85/01766, PCT Pub. Date Apr. 25, 1985
PCT Filed Oct. 12, 1983, Ser. No. 760,747
Claims priority, application Australia, Oct. 20, 1983, PG1948
Int. Cl.[4] E04B *2/82*
U.S. Cl. 52—583 5 Claims



1. A building panel of rectangular shape and substantially uniform thickness and having connectors for attachment to connectors of an adjacent similar panel, or to the floor below or superstructure above, wherein:

the connectors comprise corner connectors inset and secured into the four corners of the panel; and

each corner connector is a tubular member with its ends at opposite faces of the panel and with a bolt hole with its axis substantially perpendicular to a side edge of the panel, and a further bolt hole with its axis substantially perpendicular to the bottom edge or top edge of the panel, and wherein

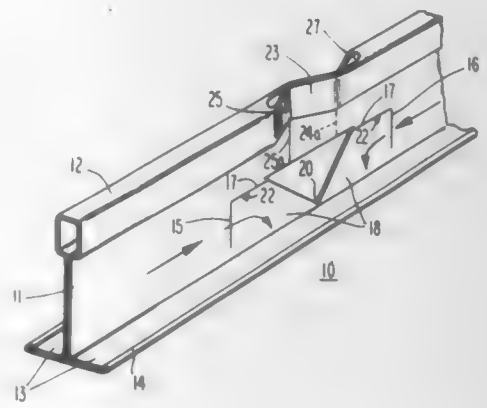
said attachment is accomplished by means of fasteners extending through said bolt holes to an adjacent panel, or to the floor or superstructure as aforesaid.

4,606,166

FIRE-RATED BEAM WITH EXPANSION RELIEF SECTION

William J. Platt, Collingdale; Daniel C. Ziegler, Millersville, and Eugene E. Brady, Horsham, all of Pa., assignors to National Rolling Mills Inc., Malvern, Pa.

Filed May 13, 1985, Ser. No. 733,628
Int. Cl.[4] E04B *1/68, 5/52*
U.S. Cl. 52—664 4 Claims



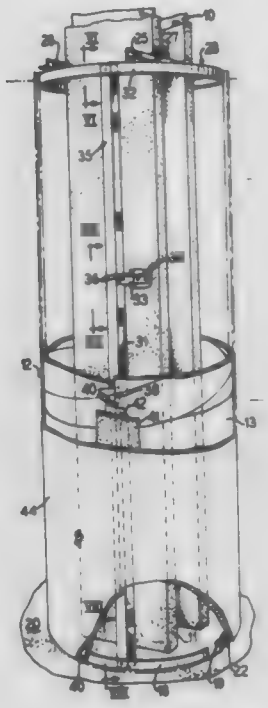
1. In a beam for a fire-rated suspended ceiling structure wherein the beam has an inverted-T construction and includes a central web having a bulb at the top and a pair of oppositely disposed flanges at the bottom for supporting ceiling tiles, and improved expansion relief section of said beam comprising a section of said web having a pair of spaced vertical cuts in said web and a horizontal cut extending between said vertical cuts to form a tab extending upwardly from said pair of flanges, said tab having an edge contacting an edge of said cuts for blocking upward movement of the tab to prevent the flanges of the beam from bending upwardly when the beam is subjected to expansion forces, said tab having an inverted triangular cut-out portion with the apex thereof adjacent said pair of flanges and dividng said tab into two portions, and a section of said bulb having a crushed portion opposite said apex of said triangular cut-out portion, said crushed portion of said bulb having a configuration such that when said beam is subjected to expansion forces accompanying fire conditions the configuration of said crushed portion of said bulb is bent at two points along the axis of said beam and said flanges of said beam are bent downwardly adjacent said apex of said triangular cut-out portion to relieve the expansion forces without substantial twisting of said beam thereby avoiding displacement of the support for the ceiling tiles.

4,606,167

FABRICATED ROUND INTERIOR COLUMN AND METHOD OF CONSTRUCTION

Parker Thorne, 2839 Sheridan Pl., Evanston, Ill. 60201

Filed Oct. 31, 1984, Ser. No. 666,657
Int. Cl.[4] E04C *3/30*
U.S. Cl. 52—727 11 Claims



1. A round interior column structure comprising:

a round fiber tube means having an exterior surface with a true round configuration and being adapted to enclose a structural supporting column of a building, said fiber tube means being split along its length to form opposed split edges, said fiber tube means being inherently resilient to urge said opposed split edges together;

a mounting frame means arranged to support said fiber tube means in a co-axial, rigid orientation relative to said structural supporting column;

fastening means for attaching said fiber tube means to said mounting frame means; and

a troweled on coating applied to said exterior surface to aesthetically finish said round interior column structure.

10. A method of aesthetically finishing an interior structural column of a building, comprising the steps of:

attaching a first mounting ring to the floor of a building, coaxial with a steel structural supporting column;

attaching a second mounting ring adjacent to the ceiling of a building, coaxial with said steel structural supporting column and in vertical alignment with said first mounting ring;

connecting a stud means to said first and second mounting rings to extend vertically therebetween;

selecting a fiber tube section with a diameter and a length to enclose said steel structural supporting column and to seat on said mounting rings;

applying a moisture proof barrier to an external surface of said fiber tube section;

slitting said fiber tube section along its full length;

opening said slit and positioning said fiber tube section to enclose said steel structural supporting column and with said slit aligned with said stud means;

attaching said fiber tube section to said first and second mounting rings;

attaching said fiber tube section to said stud means along said split; and

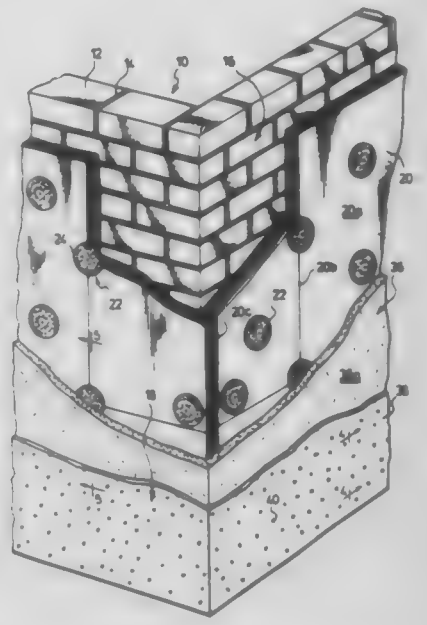
applying a finishing coat of plaster over said water proof barrier of said fiber tube section.

4,606,168

SUSPENDED INSULATED BUILDING EXTERIOR CLADDING

John P. R. Fuhrer, R.R. #5, Bolton, Canada

Filed Nov. 29, 1984, Ser. No. 676,481
Int. Cl.[4] E04B *1/62, 2/04*
U.S. Cl. 52—741 9 Claims



1. A method for applying a suspended, insulated building exterior cladding system comprising affixing a plurality of batts of semi-rigid, vapor permeable, fibrous insulation over an existing building exterior surface to be covered with said cladding system, said plurality of batts abutting one another as applied to provide an essentially continuous insulated layer on said building exterior surface, said step of affixing said plurality of batts comprising the use of fasteners extending through each said insulation batt to secure each said battt to said building exterior surface, each of said fasteners being firmly secured to said building exterior surface and being of sufficient length to preclude over-compression of each of said batts, a fastener head portion has a rigid plate connected thereto where said rigid plate includes a plurality of apertures extending therethrough, applying over said affixed plurality of batts a continuous layer of cementitious material which hardens when set, forcing said cementitious material through the apertures in each said plate adjacent said fasteners, allowing said applied cementitious layer to harden to secure thereby said hardened cementitious layer to said fastener rigid plates, and applying a vapor permeable finish coat to said cementitious layer, said hardened layer being vapor permeable, in said step of affixing said plurality of batts, a sufficient number of said fastener rigid plates being used to suspend in a cantilever manner said hardened cementitious layer from said building exterior surface independent of said fibrous insulation layer to accommodate thereby expansion and contraction movements in said fibrous insulation without cracking said hardened cementitious layer.

4,606,169

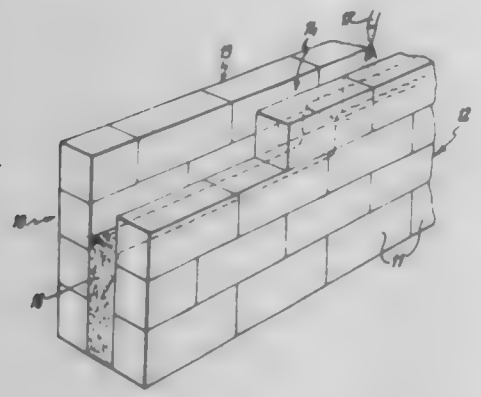
WALL CONSTRUCTION

Peter T. Noon, 292 Whalley Rd., Clayton-le-Moors, Accrington, and Ronald Pennor, Fleet Green, Higher Tatham, Lower Gill, Lancaster, United Kingdom

Filed Oct. 5, 1983, Ser. No. 538,824
Claims priority, application United Kingdom, Oct. 9, 1982, 8228942
Int. Cl.[4] E04B *1/00*
U.S. Cl. 52—747 4 Claims

1. Method of constructing a cavity wall having first and second spaced single wall portions with a cavity therebetween, said method comprising laying a plurality of building blocks in successive courses in block to block contact without a bonding material therebetween to construct at least said second wall portion and form said cavity wall, and, after each successive

temporarily uppermost course of blocks is laid, injecting said foamable material into said cavity in a quantity sufficient when



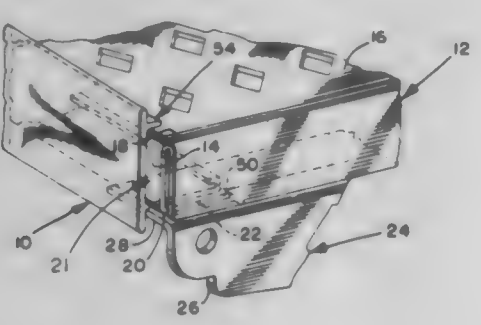
foamed to partially fill the portion of said cavity lying within the temporarily uppermost course of blocks prior to laying the next successive temporarily uppermost course.

4,606,170

SHELF EDGING STRIP

Walter M. Mendenhall, 512 Lillian Dr., Madeira Beach, Fla. 33738

Filed Sep. 13, 1984, Ser. No. 650,176
Int. Cl.[4] E04C *2/38*
U.S. Cl. 52—823 4 Claims



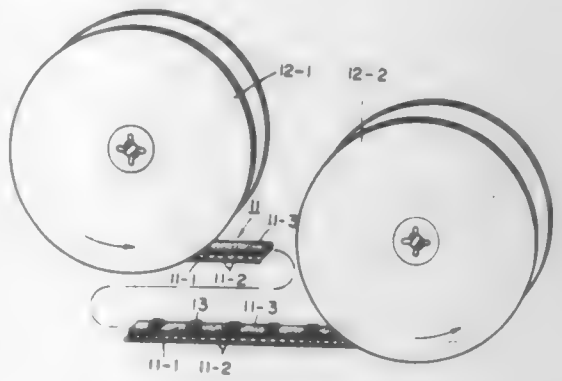
1. In combination, a sheet metal shelf and a shelf edging strip; said shelf having a front wall, a substantially planar top wall extending away from said front wall, and a bottom wall extending away from said front wall; said top wall forming an upper corner with said front wall and said bottom wall forming a lower corner with said front wall; said bottom wall having a distal end spaced by a predetermined distance from said front wall; said shelf edging strip comprising a molded article formed from a resiliently deflectable plastic material; said molded article including a substantially planar front portion, a substantially planar top rib extending away from said substantially planar front portion, and a bottom leg extending away from said substantially planar front portion; said front portion and said bottom leg of said shelf edging strip being juxtaposed, respectively, to said front and bottom walls of said shelf; said planar top rib of said shelf edging strip having a surface engaged with a mating surface of said planar top wall; said bottom leg of said shelf edging strip extending away from said front portion by a distance that is greater than the distance said top rib extends away from said front portion, and the distal end of said bottom leg having a hook that is hooked about said distal end of said bottom wall of the shelf; the top rib and the bottom leg of the shelf edging strip forming respective corners with the front portion of the shelf; the distance between the hook at the distal end of the bottom leg and the distal end of the top rib being less than the distance between the distal end of the bottom lip of the shelf and the corner formed between the front wall of the shelf and the top surface wall of the shelf; so that when the hook of the shelf edging strip is hooked about the distal end of the bottom lip of the shelf the planar top rib is resiliently urged into engagement with the planar top wall of the shelf; the front portion of the shelf edging strip being held in juxtaposed relation to the front wall of the shelf when the top rib of the shelf edging strip is being resiliently urged against the top surface of the shelf.

4,606,171

TAPING PACKAGE METHOD FOR SMALL-SIZE ELECTRONIC PARTS

Kazuo Ohshima, c/o Okuitoku Co., Ltd., 11-11, 4-chome, Tenma, Kita-ku, Osaka City, Osaka Prefecture, and Tomio Jinzaki, 8-17, 4-chome, Nishi-Tenma, Kita-ku, Osaka City, Osaka Prefecture, both of Japan

Filed Sep. 10, 1984, Ser. No. 648,687
Claims priority, application Japan, Feb. 23, 1984, 59-33840
Int. Cl.[4] B65B *15/04*
U.S. Cl. 53—397 1 Claim



1. A method for packaging small-sized electronic parts having leads with a carrier tape, said tape including a tape base having tape feed holes and a electrically conductive body of carbon and foamed plastic attached to the tape base, comprising the steps of:

(a) providing a surface on the body remote from and substantially co-planar with the tape;

(b) causing the leads of the electronic parts to pierce and deform the tape body and the tape body to grip the leads to hold the electronic parts in place on said surface;

(c) winding the carrier tape with the electronic parts retained on the tape body around a reel;

(d) slitting said tape body transversely at spaced longitudinal intervals prior to winding on the reel; and

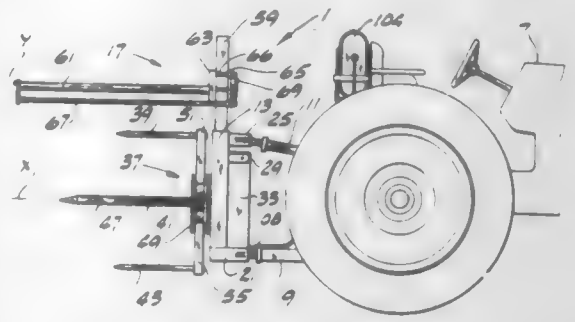
(e) coating said carrier tape with silicone prior to winding on the reel, thereby rendering said carrier tape nonstretchable and non-contractable.

4,606,172

DEVICE FOR AND METHOD OF WRAPPING A BALE OF RUMINANT ANIMAL FEEDSTUFF AND INJECTING IT WITH A CHEMICAL TREATMENT

Bob L. Miller, Box 47A, R.R. #1, Salisbury, Mo. 65281

Continuation-in-part of Ser. No. 523,093, Aug. 15, 1983, abandoned. This application Apr. 29, 1985, Ser. No. 728,394
Int. Cl.[4] B65B *13/02*
U.S. Cl. 53—399 15 Claims



1. A device for wrapping a bale of ruminant animal feedstuff and for injecting a chemical treatment into the bale thereby to increase the crude protein content of the bale, said device comprising:

a frame adapted to be carried by a vehicle such as a tractor;

means on the frame for holding a bale of feedstuff off the ground and rotating it relative to the frame;

means on the frame for holding a supply of wrapping material;

means for rotating said bale-holding means and a bale thereon with said wrapping material attached to the bale, said wrapping material being adapted to wrap around the bale as the bale rotates with the bale-holding means;

said bale-holding means comprising a turntable rotatable on the frame about an axis adapted to extend in front-to-back direction with respect to said vehicle, and a plurality of spikes on said turntable extending generally parallel to said axis and terminating in pointed outer ends for impaling a bale when said vehicle is driven toward the bale;

a source of volatile chemical treatment; and

means for injecting chemical treatment from said source through said spikes into said bale when the bale is impaled on said spikes.

4,606,173

METHOD AND APPARATUS FOR THE INTERMEDIATE STORAGE OF PRINTED PRODUCTS ARRIVING IN AN IMBRICATED PRODUCT FORMATION

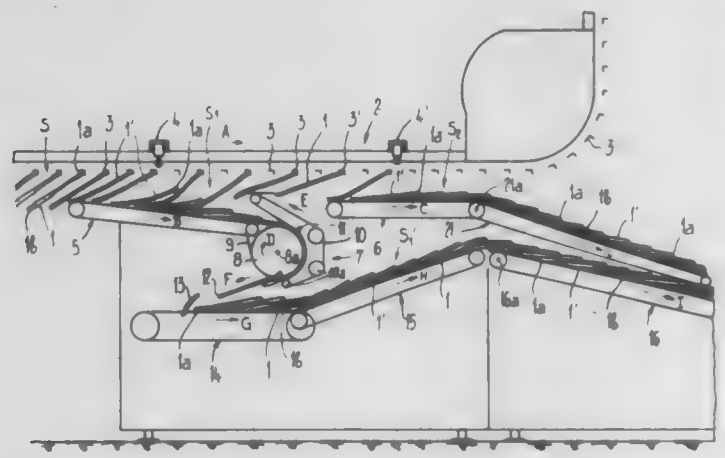
Jacques Meier, Bäretswil, Switzerland, assignor to Ferag AG, Hinwil, Switzerland

Filed Jun. 4, 1984, Ser. No. 616,676

Claims priority, application Switzerland, Jun. 9, 1983, 3160/83

Int. Cl.[4] B65B *63/04*; B65H *29/70*

U.S. Cl. 53—430 **23 Claims**



1. A method for the intermediate storage of printed products arriving in imbricated product formation, such as newspapers, periodicals and the like, comprising the steps of:

conveying said printed products to a winding mandril;

dividing said arriving imbricated product formation of printed products into two imbricated product subformations;

altering the position of the printed products in one of said two imbricated product subformations such that edges of the printed products which trailed in the arriving imbricated product formation become leading edges in said one altered imbricated product subformation;

superposing the two imbricated product subformations;

subsequently winding up the two superposed imbricated product subformations conjointly such that the one altered imbricated product subformation is outermost in relation to said winding mandril and said altered leading edges, which were trailing edges in the arriving imbricated product formation, lie on a side of the one altered imbricated product subformation which is nearer to the winding mandril; and

performing the winding of the printed products upon the winding mandril conjointly with a winding band maintained under tension and operatively connected with the winding mandril.

4,606,174

METHOD AND AN ARRANGEMENT FOR THE MANUFACTURE OF PACKING CONTAINERS

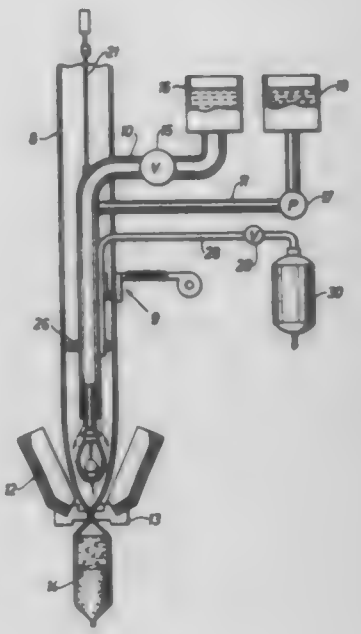
Rune Berg, Lausanne, Switzerland, assignor to Tetra Pak International AB, Lund, Sweden

Filed Feb. 19, 1985, Ser. No. 702,735

Claims priority, application Sweden, Mar. 8, 1984, 8401288

Int. Cl.[4] B65B *3/12, 3/26*

U.S. Cl. 53—451 **15 Claims**



1. A method for the feeding of liquid contents and solid particles during the manufacture of packing containers by repeated transverse flattening and sealing of packing material in the form of a tube, comprising, transversly flattening and sealing said packing material, feeding the solid particles to the tube in the form of a metered quantity after said transverse flattening of the packing material has been completed, feeding the liquid during a period longer than feeding of the solid particles, said longer feeding period being ended only when the feeding of solid particles has been ended, flushing wall surfaces of the tube with the liquid, and subsequently transversely flattening and sealing said packing material to form a packing container having said liquid and solid particles therein.

4,606,175

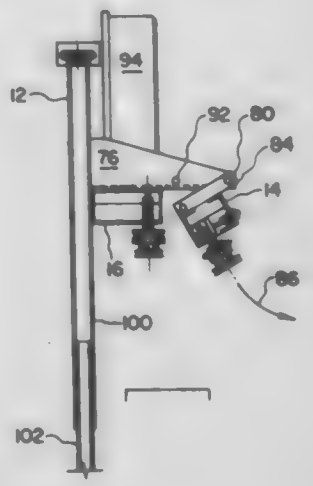
BAG CLOSING AND SEALING MACHINE

Charles E. De Crane, 802 Janna St., West Monroe, La. 71291

Division of Ser. No. 524,656, Aug. 19, 1983, Pat. No. 4,578,924. This application Sep. 26, 1985, Ser. No. 780,178

Int. Cl.[4] B65B *7/04, 7/08, 51/18*

U.S. Cl. 53—479 **14 Claims**



1. A method of quickly and easily releasing a jammed stepped end bag from a bag closing and sealing machine having a frame comprising the steps of:

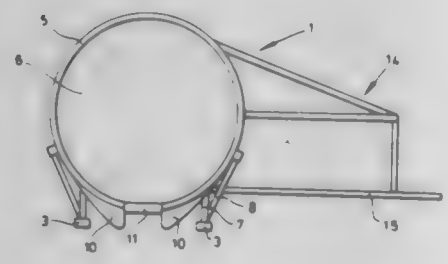
(a) providing a machine having a feeding and creasing section, a folding and heating section and a compression section;
(b) splitting at least a portion of the sections into two pieces, one piece being fixedly attached to the frame and the other piece being pivotably attached to the frame;
(c) providing means for retaining the pivotable section in an operative upright generally horizontal position; and
(d) providing means for quickly moving the pivotable section to a non-operative position downwardly generally vertical position so that the jammed bag may be easily removed from the machine.

4,606,176

BALE-SHEATHING DEVICE

David J. Cundall, Stone Lodge Farm, Medge Hall, Thorne, Doncaster, S. Yorkshire, United Kingdom (DN8 4SW)

Filed Mar. 23, 1984, Ser. No. 592,951
Claims priority, application United Kingdom, Mar. 26, 1983, 8308367; Jun. 23, 1983, 8317030; Jul. 27, 1983, 8320176; Dec. 16, 1983, 8333571
Int. Cl.[4] B65B *43/42*
U.S. Cl. 53—567 7 Claims



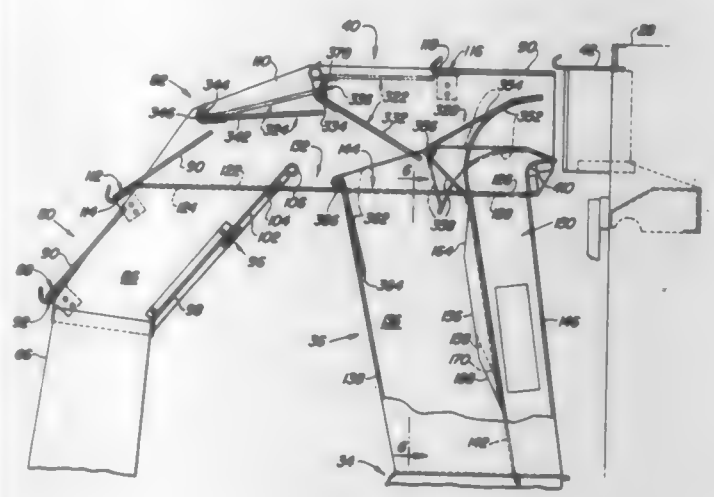
1. A bale-sheathing device for placing a tubular sheath around bales, said device comprising:
a. tractor means,
b. mobile sheath-carrying means having a direction of advance in use of the device and comprising an open-ended tubular structure axially aligned with said direction advance and having forward and rearward ends, said tubular structure being arranged to support and hold open an axially closed-up portion of said tubular sheath surrounding said tubular structure, enabling said closed-up portion to be opened out progressively by pulling said sheath portion rearwardly off the said rearward end of said tubular structure,
c. a permanent attachment of the sheath carrying means to the tractor during placement of said bales within said tubular sheath;
d. bale lifting and guide means carried by the said mobile sheathing-carrying means and arranged to lift up a bale to be sheathed and guide it through said tubular structure as said sheath carrying means are advanced relative to the bale, whereby, in use of the device, said bale, after passage through said tubular structure emerges from the rearward end of said structure and comes to rest within an axially opened-out part of the sheath pulled from said tubular structure during advance of the device, said lifting and guide means comprising a guide structure which projects forwardly and downwardly from the sheath-carrying structure to engage beneath a bale as the bale-sheathing device is advanced, whereby stationary bales are sequentially and continuously lifted by the lifting and guide means as the device is advanced,
e. the tractor means providing continuous forward movement of said sheath carrying means and of loading of said bales into said tubular sheath.

4,606,177

COTTON CLEANING STRUCTURE FOR A COTTON HARVESTER

Francis E. Schlueter, Des Moines, Iowa, assignor to Deere & Company, Moline, Ill.

Filed Jan. 22, 1985, Ser. No. 693,425
Int. Cl.[4] A01D *46/10*
U.S. Cl. 56—30 33 Claims



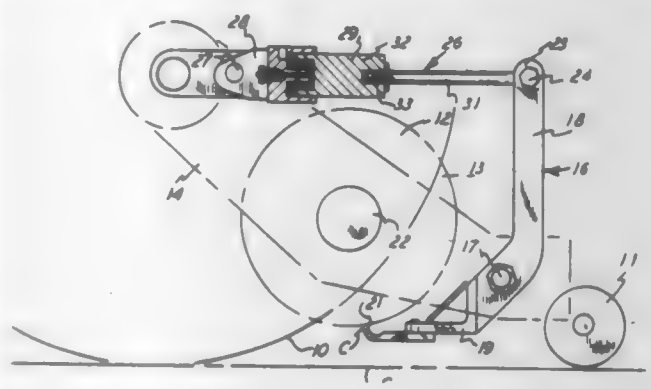
1. In a conveying system for harvested cotton having trash content, a duct section for conveying cotton, a cleaning machine having an input duct for receiving cotton and trash and an output duct for conveying cleaned cotton from the machine, a cotton receptacle, movable cotton-diverting structure located adjacent the duct section and movable between a first position wherein cotton from the duct section is directed into the input duct of the cleaning machine and a second position wherein the cotton is directed into the receptacle, said diverting structure including a movable grate for diverting the cotton into the cleaner input duct while permitting trash to pass through the grate when the diverting structure is in the first position, and a deflector sheet movable with the grate for directing trash passed through the grate away from the receptacle.

4,606,178

LAWNMOWER REEL-TO-BEDKNIFE ADJUSTMENT SYSTEM

Anthony J. Saila, South Milwaukee, Wis., assignor to Textron Inc., Providence, R.I.

Filed Dec. 24, 1984, Ser. No. 685,484
Int. Cl.[4] A01D *55/20*
U.S. Cl. 56—249 18 Claims



1. In a lawn mower of the type including a mower frame, two cutting members mounted on said frame and consisting of a cutting reel and a bedknife with both having cutting edges and with one of said cutting members being pivotally mounted and having a pivot axis, to be movable toward and away from

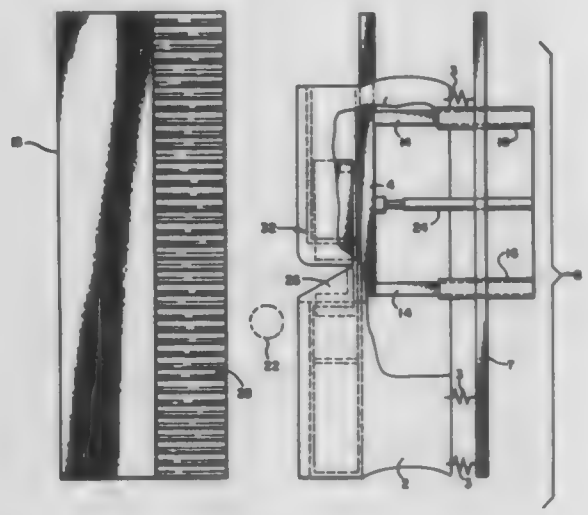
the other of said cutting members to thereby establish a clearance between said cutting edges, the improvement comprising a link having one end articularly connected with said one of said cutting members at a location thereon to one side of said pivot axis, the other end of said link being articularly mounted relative to said frame, said link including two relatively movable pieces in end-to-end relationship and movable toward and away from each other in lost motion for extension and contraction of the overall length of said link, the distance of said lost motion in said link being proportional to the desired clearance between said cutting edges, means for extending said link to pivot said one of said cutting members about said pivot axis and thus move said one of said cutting members into contact with the other of said cutting members, a spring operative between said frame and said one of said cutting members through said lost motion for yieldingly urging said cutting edge away from said other of said cutting members and thereby proportionately transfer said lost motion distance to between said cutting edges, and a stop operative on said one of said cutting members for limiting movement of its said cutting edge in its movement away from said other of said cutting members.

4,606,179

APPARATUS TO IMPROVE THE OPERATION OF A CONTINUOUSLY MOVING HARVESTER FOR TREE CROPS

Donald L. Peterson, Martinsburg, W. Va., assignor to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed May 9, 1985, Ser. No. 732,320
Int. Cl.[4] A01D *46/24*
U.S. Cl. 56—329 **11 Claims**



1. An apparatus for preventing damage to a tree during retraction from the trunk of the tree of the shaker mechanism of a continuously moving shake-catch harvester, comprising

(a) a main track system on which the shaker mechanism operates;

(b) a trunk release track attached to said shaker mechanism;

(c) a bearing plate with slide bearings for movement on the trunk release track;

(d) a release rod for positioning the bearing plate on the trunk release track, said release rod being attached to the bearing plate and to a movable member of the shaker mechanism;

(e) a connecting plate pivotally attached to the bearing plate for clockwise rotation; and

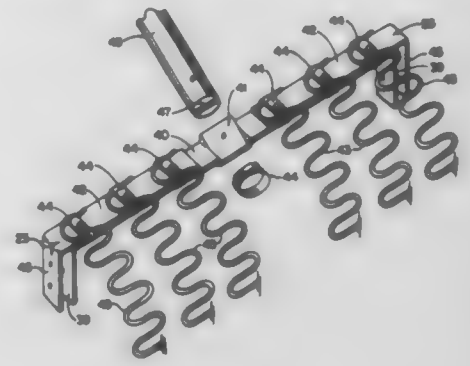
(f) an angle iron pivotally attached to the main track system, said angle iron being provided with equally spaced tabs for engagement with the aforesaid connecting plate.

4,606,180

GARDENING TOOL

Gene R. Archer, 8225 Gale Rd. Southwest, Hebron, Ohio 43025

Filed Oct. 15, 1984, Ser. No. 660,809
Int. Cl.[4] A01D *7/00*
U.S. Cl. 56—400.11 **17 Claims**



1. A gardening tool comprising:

(a) a handle with a bridge member laterally connected to one end; and

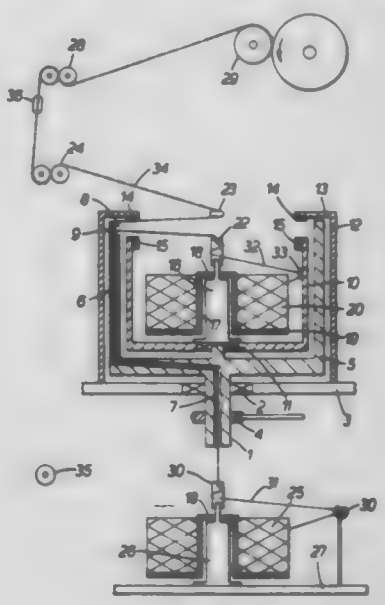
(b) at least one tine of a sinuous wave shape and at least one banding clamping means readily and removably clamping each at least one tine on the bridge member by tension in each individual banding clamping means and compression on the bridge member, the banding clamping means being readily removable by reducing the tension in the banding clamping means and reducing the compression of the tine on the bridge member, without removing the banding clamping means.

4,606,181

METHOD AND APPARATUS FOR PRODUCING SPUN YARNS OF VARIOUS CONSTRUCTIONS

James Lappage, Southbridge, and James Bedford, Christchurch, both of New Zealand, assignors to Wool Research Organisation of New Zealand (Inc.), Canterbury, New Zealand

Filed Feb. 15, 1983, Ser. No. 466,562
Claims priority, application New Zealand, Feb. 15, 1982, 199738
Int. Cl.[4] D02G *3/38*; D01H *1/10, 5/28, 7/86*
U.S. Cl. 57—58.38 **30 Claims**



1. A method of producing in a continuous operation of spun and plied or cabled yarn, the method including the steps of:

supporting a first package of raw material within a balloon in a running yarn;

supporting a second package of raw material spaced from the first package;

withdrawing both ends of the material from their respective packages under controlled and constant low tensions;

guiding and ducting the raw materials from their respective

packages to a means for forming a balloon in a running yarn;

simultaneously spinning and plying the running yarns to produce a spun and plied or cabled yarn; and

drafting the spun and plied or cabled yarn in a drafting zone with the temporary insertion of false twist before the yarn is delivered to a take-up station.

7. A method of producing in a continuous operation a spun singles yarn, the method including the steps of:

supporting a package of raw material within a balloon in a running yarn;

withdrawing the end of the raw material from the package under controlled and constant low tension;

guiding and ducting the raw material from the package to a means for forming the balloon in a running yarn;

spinning by two-for-one twist insertion the raw material to produce a spun singles yarn; and

drafting the spun yarn in a drafting zone with the temporary insertion of false twist before the yarn is delivered to a take-up station.

4,606,182

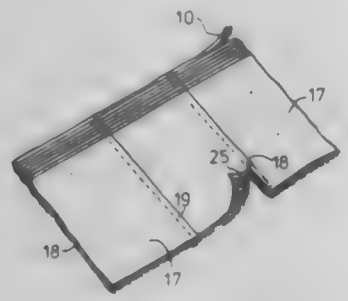
METHOD OF MAKING FUR BEARING STRANDS

Herman S. Krehm, 19 Rosemary Lane, Toronto, Ontario; Jacob Leidner, North York, and Malcolm E. Rode, Brantford, all of Canada, assignors to Herman S. Krehm, Toronto, Canada

Filed Sep. 4, 1984, Ser. No. 646,746

Int. Cl.⁴ A41H *41/00*; C14B *15/10*; D02G *3/06*

U.S. Cl. 57—200 **30 Claims**



1. A method of making fur bearing strands from hides of fur bearing animals, comprising:

joining side by side a plurality of hide portions with the fur grain in each portion running in the same direction, said hide portions being joined at seams by means of leather strips adhered longitudinally over the back of abutting edges of adjacent hide portions, said grain running parallel to the joining seams; and

cutting strands transversely of said joined hide portions.

4,606,183

LUBRICATED AND THERMOPLASTIC IMPREGNATED WIRE ROPE

Peter P. Riggs, Ballaugh Glen, United Kingdom, assignor to AMSTED Industries Incorporated, Chicago, Ill.

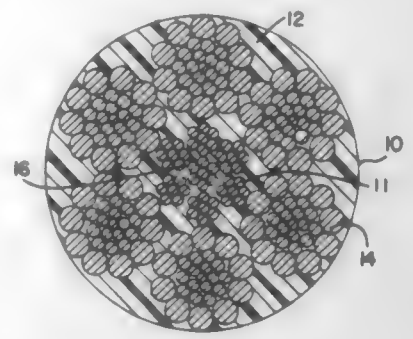
Filed Nov. 20, 1984, Ser. No. 673,547

Int. Cl.⁴ D07B *1/10, 1/16, 7/12*

U.S. Cl. 57—221 **13 Claims**

1. A wire rope comprising a core and a plurality of outer strands surrounding said core strand,

a lubricant blend permeating the core strand and the outer strands and a thermoplastic encapsulating the core strand and the outer strands,



wherein said lubricant blend comprises amorphous polypropylene and a lubricant capable of bonding to the thermoplastic.

4,606,184

ARRANGEMENT FOR STOPPING AND STARTING AN OPEN-END FRICTION SPINNING UNIT

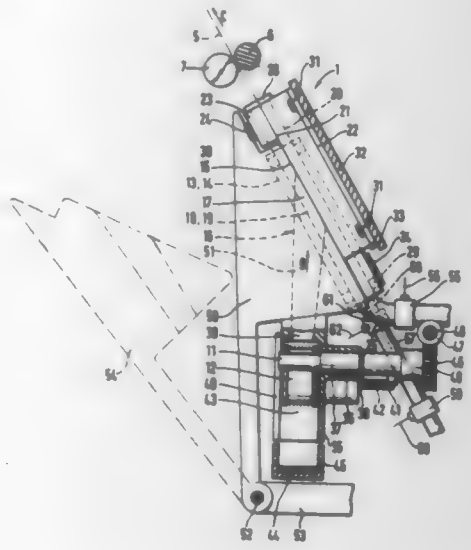
Fritz Stahlecker, Josef-Neidhart-Strasse 18, 7347 Bad Ükerkingen, and Hans Stahlecker, Haldenstrasse 20, 7334 Süssen, both of Fed. Rep. of Germany, assignors to Hans Stahlecker and Fritz Stahlecker, both of, Fed. Rep. of Germany

Filed Jan. 17, 1985, Ser. No. 692,113

Claims priority, application Fed. Rep. of Germany, Jan. 17, 1984, 3401316

Int. Cl.⁴ D01H *15/02, 1/135*

U.S. Cl. 57—263 **17 Claims**



1. A process for operating an open-end friction spinning machine of the type having at least one spinning unit with:

drivable friction surface means defining a yarn formation zone,

friction surface driving means for driving the friction surface means during spinning operations,

fiber feeding means for feeding separated fiber to the yarn formation zone,

yarn withdrawal means for withdrawing formed yarn in the longitudinal direction of the yarn formation zone,

suction means for applying suction forces to the yarn formation zone,

yarn winding means for winding the spun yarn on a spool,

and auxiliary suction means for holding a yarn end, said auxiliary suction means being configured to apply suction forces against the yarn withdrawal direction in the area of the yarn formation zone,

said process comprising:

stopping of the friction surface driving means,

interrupting of the fiber feeding means,

switching off of the suction means, and

activating the auxiliary suction means to hold a yarn end in such a manner that the yarn end formed by means of the

interruption of the fiber feeding means remains in an area in which the suction force generated by the auxiliary suction means is capable of acting before a restarting of the spinning unit.

4,606,185

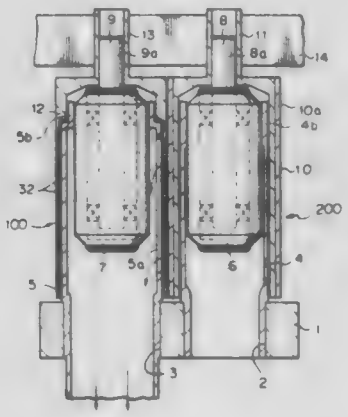
FRICTION SPINNING FRAME

Meiji Anahara, Kariya, and Shigeru Muramatsu, Okazaki, both of Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Aichi, Japan

Filed Aug. 26, 1985, Ser. No. 769,593

Int. Cl.[4] D01H *1/135, 7/885*

U.S. Cl. 57—401 5 Claims



1. A friction spinning frame comprising a pair of twisting rollers disposed substantially in parallel and driven in the same direction to each other at a small gap therebetween to form a yarn forming zone of a valley shaped profile on upper surfaces of said twisting rollers along the gap, at least one of said twisting rollers being a perforated hollow roller comprising an outer shell having a plurality of perforations on the entire outer surface thereof and means for providing a suction force through said perforations on said yarn forming zone, whereby staple fibers are twisted to form a yarn while being sucked and held on said yarn forming zone, characterized in that:

a suction pipe, a part of which is accommodated in the interior of said outer shell and having a suction mouth extending close to an inside wall of said outer shell in the axial direction of said perforated roller is fixedly secured to a machine frame;

a bearing is fixedly accommodated in the interior of said suction pipe; and

a shaft is rotatably supported by said bearing at one end portion thereof and fixedly secured to said outer shell at the other end portion thereof.

4,606,186

AUXILIARY ROLLER DRIVE FOR OPEN-END FRICTION SPINNING MACHINE

Fritz Stahlecker, Josef-Neidhart-Strasse 18, 7347 Bad Überkingen, Fed. Rep. of Germany, assignor to Hans Stahlecker and Fritz Stahlecker, both of, Fed. Rep. of Germany

Filed Oct. 18, 1984, Ser. No. 662,186

Claims priority, application Fed. Rep. of Germany, Oct. 26, 1983, 3338834

Int. Cl.[4] D01H *7/882, 11/00, 13/02*

U.S. Cl. 57—401 5 Claims

1. An open-end friction spinning machine comprising:

a plurality of adjacently arranged spinning units, each spinning unit including a pair of friction rollers with cylindrical outer surfaces disposed adjacent one another to form a yarn forming wedge-shaped gap therebetween,

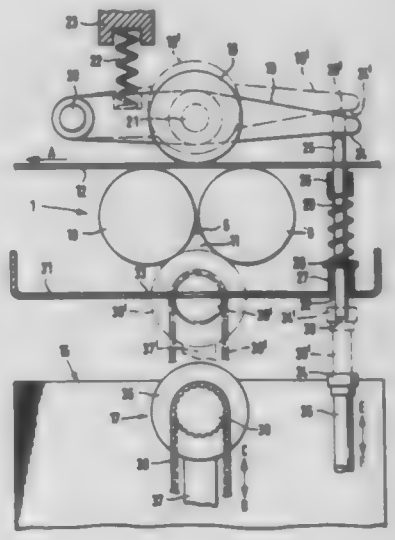
common driving means for driving the friction rollers of at least one of the spinning units,

and servicing means selectively operable at respective spinning units to perform servicing operations,

said servicing means including auxiliary drive means for driving the friction rollers of a spinning unit during servicing operations, said auxiliary drive means including an auxiliary drive element directly engageable simultaneously with said outer surfaces of both friction rollers of a respective spinning unit,

said common driving means having a joint drive element which runs simultaneously against the shell surfaces of both friction rollers of the respective spinning units,

said joint drive element comprising a tangential belt passing through in longitudinal direction of the spinning machine resting against the shell surfaces of both friction rollers of respective spinning units and which, at each spinning unit,



is loaded in the direction of the shell surfaces of the friction rollers by means of a tension roll arranged in the plane of the wedge-shaped gap,

said servicing means being part of a mobile servicing unit which is selectively movable between spinning units, said auxiliary drive element being carried with the mobile servicing unit, and wherein each spinning unit is provided with a lever mechanism affecting the holding of the tension roll, and the mobile servicing unit is provided with an actuating element for this lever mechanism.

4,606,187

FIBER FEEDING AIR FLOW ARRANGEMENT FOR OPEN-END FRICTION SPINNING

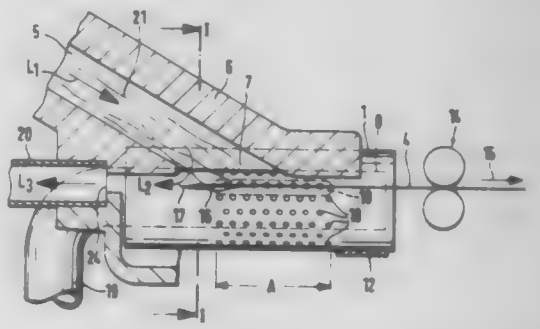
Fritz Stahlecker, Josef-Neidhart-Strasse 18, 7347 Bad Überkingen, Fed. Rep. of Germany, assignor to Hans Stahlecker and Fritz Stahlecker, both of, Fed. Rep. of Germany

Filed Jan. 25, 1985, Ser. No. 694,779

Claims priority, application Fed. Rep. of Germany, Feb. 4, 1984, 3403964

Int. Cl.[4] D01H *7/898, 15/00*

U.S. Cl. 57—401 24 Claims



1. An open-end friction spinning unit arrangement comprising:

drivable friction surface means defining a yarn formation zone, said drivable friction surface means generating a friction effect in said yarn formation zone,

fiber feeding means including fiber feeding duct means having a mouth opening to a scatter zone at the yarn formation zone, said scatter zone including a yarn tip forming region,

yarn withdrawal means for withdrawing yarn from said yarn formation zone in a yarn withdrawal direction,

primary suction device means for generating an air current directed toward the area of the scatter zone of the yarn formation zone, and

additional suction device means for directing an air flow at the yarn tip forming region for the purpose of reducing the friction effect acting on a yarn tip formed in said yarn tip forming region, said air flow being in a direction opposite the withdrawal direction of the yarn.

4,606,188

ELONGATED CONNECTING CHAIN LINK

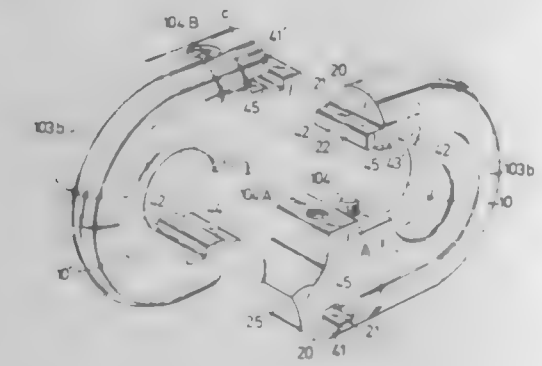
Hans M. Osnes, Bergvik, and Rolf Fallgren, Söderhamn, both of Sweden, assignors to Kockums Industri AB, Soderhamn, Sweden

Filed Aug. 14, 1984, Ser. No. 640,755

Claims priority, application Sweden, Aug. 17, 1983, 8304441; Feb. 14, 1984, 8400771

Int. Cl.⁴ F16G *13/06*

U.S. Cl. 59—85 **28 Claims**



1. An elongated connecting chain link having an outer periphery with two vertices, a longitudinal axis passing through said vertices, and a transverse axis bisecting the longitudinal axis, said link comprising a central portion bisected by the transverse axis and having a predetermined length along the longitudinal axis, and two vertex portions each joining from one side the central portion and defining therewith two loops for accomodating other chain links and having each an inner periphery, the connecting link being assembled of two identical main link parts, each comprising one said vertex portion and a part of said central portion confined by a central limiting surface, said two main parts bearing one against another along a first contact surface and a second contact surface which is complementary shaped to the first one, both said contact surfaces extending between an origin at said outer periphery and a termination at the inner periphery of one of said loops and being composed of several sections differently oriented relative said axes, a locking means passing through said central portion transversely to the longitudinal axis and holding all parts of the connecting link releasably together, wherein said origin and termination of each contact surface lie on the same side of and spacedly from the transverse axis, the origin being closer to the transverse axis then the termination, the contact surface terminations being further from said transverse axis than the longitudinally innermost portions of the inner periphery of said loops, and the central limiting surfaces being closer to the longitudinal axis than the transversely outermost portions of the inner periphery of said loops, and wherein, the first contact surface comprises:

an initial section extending from said origin a predetermined distance inwardly in the general direction of the transverse axis to an inner end of the section;

a first engagement section projecting at said inner end distally from the initial section in the direction of the longitudinal axis to a distal end and defining together with the initial section the limitation of a first recess for accomodating a first lug means of the other main link part;

a terminal section extending from said termination outwardly in the general direction of the transverse axis;

a second engagement section extending generally in the direction of the transverse axis between an inner end and an outer end and located between the first engagement section and the terminal section;

a connecting section projecting from the outer end of the second engagement section proximally generally in the direction of the longitudinal axis, and defining together with the second engagement section a bottom limitation and one side limitation of a second recess for the accomodation of a second lug means on the other main link part, the second side limitation of said second recess being defined by an outward part of said terminal section whereto the connecting section is attached;

a composite intermediate section comprising at least two sub-sections and extending between said first and second engagement sections and defining together with the first engagement section a third lug means co-operating with the first lug means in opposing transverse stresses, and defining at the same time together with the second engagement section a fourth lug means co-operating with said second lug means in opposing longitudinal stresses.

4,606,189

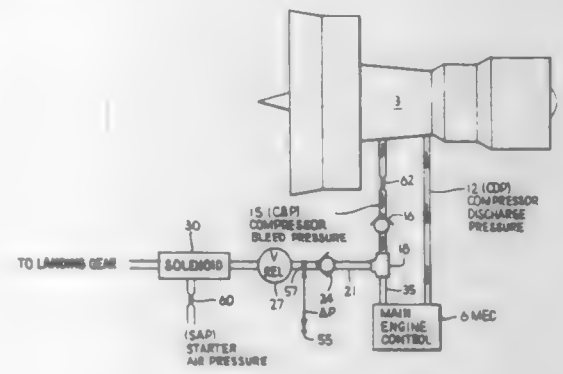
FUEL CONTROL

Michael G. Charrier, Cincinnati, Ohio, assignor to General Electric Company, Cincinnati, Ohio

Filed Mar. 29, 1984, Ser. No. 594,627

Int. Cl.⁴ F02C *9/28*

U.S. Cl. 60—39.03 **4 Claims**



1. In a gas turbine engine control which responds to a compressor discharge pressure (CDP) and a compressor bleed pressure (CBP), the improvement comprising:

(a) sensing means for sensing whether the aircraft is on the ground and

(b) means coupled to the sensing means for artificially increasing the ratio of CBP/CDP which is sensed by the control, during engine startup, while the aircraft is on the ground.

4,606,190

VARIABLE AREA INLET GUIDE VANES

Walter Greene, South Windsor, and William R. Liebke, Vernon, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Continuation-in-part of Ser. No. 632,577, Jul. 19, 1984, abandoned, which is a division of Ser. No. 400,787, Jul. 22, 1982, Pat. No. 4,542,622. This application Oct. 4, 1985, Ser. No. 783,808

Int. Cl.⁴ F02C *9/00;* F02G *3/00*

U.S. Cl. 60—39.23 **2 Claims**

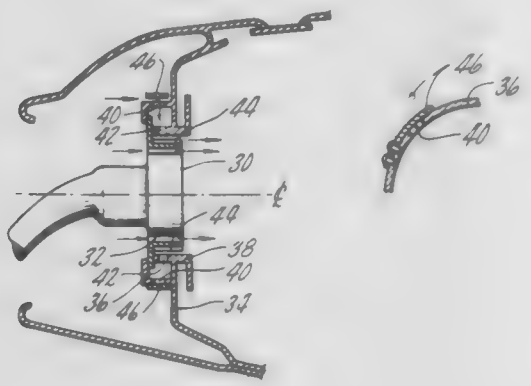
1. The method of admitting air to aerating fuel nozzles of the combustor of a gas turbine engine which fuel nozzles has a primary fuel system and a secondary fuel system comprising the steps of:

flowing fuel through the primary fuel system for injecting a

continuous spray of fuel into the combustor during the entire gas turbine engine operating envelope,

admitting air into the combustor through a primary swirler for imparting a swirl component so that the air surrounds the spray of fuel injected from the primary fuel system,

flowing fuel through the secondary fuel system for injecting a continuous spray of fuel into the combustor during a higher power operating regime of the engine operating



envelope in such a manner as to surround and be contiguous with the spray of fuel from the primary fuel system,

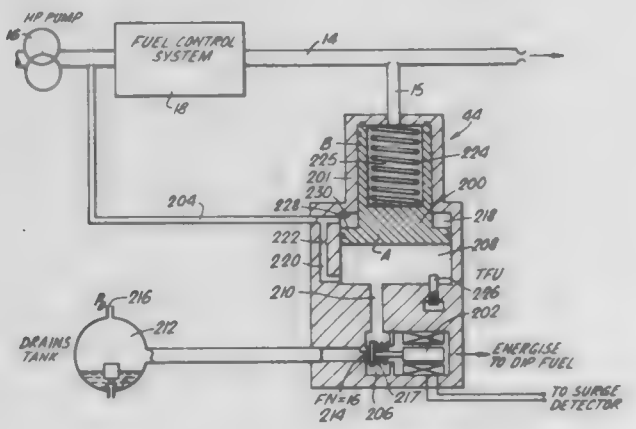
admitting additional air into the combustor through a secondary swirler solely when the temperature adjacent the combustor is at a predetermined value for imparting a swirl component so that the additional air surrounds the spray of fuel from the primary fuel system, the secondary fuel system and the primary swirling air.

4,606,191

CONTROL SYSTEMS FOR GAS TURBINE AEROENGINES

Brian J. Collins, and Reginald J. Butler, both of Derby, England, assignors to Rolls-Royce Limited, London, England

Filed Jul. 16, 1985, Ser. No. 755,434
Int. Cl.⁴ F02C *9/26*
U.S. Cl. 60—39.281 **4 Claims**



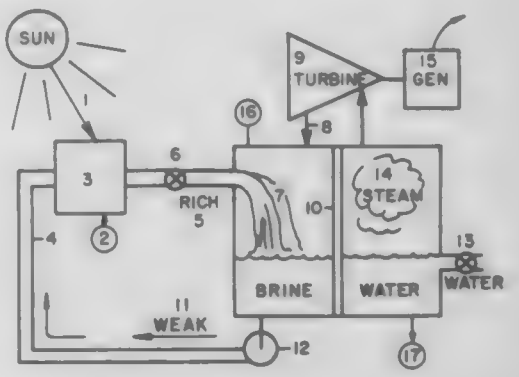
1. A fuel control unit for a gas turbine aeroengine, the fuel control unit being adapted to form part of a control system of the aeroengine and to be in communication with a main fuel line leading to the aeroengine, the fuel control unit being controllable by the control system to take fuel from the fuel line to reduce temporarily but substantially the mass flow of fuel to the aeroengine, thereby to combat surge conditions in the aeroengine; the fuel control unit comprising a housing and free piston means provided therein to divide the housing into at least first and second variable volumes, the position of the free piston means within the housing being controlled by pressure differentials across the free piston means, the first variable volume having means for communication with a first point in the fuel line near the fuel line's point of entry into the aeroengine and the second variable volume having means for communication with a second point in the fuel line substantially upstream of the first point, the fuel pressure at the second point being substantially higher than at the first point, whereby under normal operating conditions the balance of pressure across the free piston means positions the free piston means such that the first variable volume is minimised; the fuel control unit further being provided with discharge means for discharging the contents of the second variable volume to a location having a lower pressure than the pressure in the first variable volume, and valve means adapted to obturate the discharge means under normal operating conditions but upon receipt of a signal signifying the occurence of a surge, to open the discharge means whereby the balance of pressure across the free piston means alters and the free piston means moves under the influence of the fuel pressure at the first point in the fuel line to discharge the fuel from the second variable volume and to take fuel into the first variable volume from the fuel line.

4,606,192

SOLAR POWER GENERATION

William G. Brown, II, 720 NW. 31st St., Corvallis, Oreg. 97330

Division of Ser. No. 486,087, Apr. 18, 1983, Pat. No. 4,549,604, which is a continuation-in-part of Ser. No. 122,357, Feb. 14, 1980, abandoned, which is a continuation-in-part of Ser. No. 816,501, Jul. 17, 1977, abandoned, which is a continuation-in-part of Ser. No. 788,207, Apr. 18, 1977, abandoned. This application Aug. 14, 1985, Ser. No. 765,822
Int. Cl.⁴ F01K *25/06*
U.S. Cl. 60—649 **2 Claims**



1. An absorption power generating process comprising:

demineralizing water to produce feedwater;

injecting low pressure steam into an absorber chamber;

injecting rich desiccant into said absorber chamber;

absorbing at least a portion of said injected low pressure steam into said rich desiccant to release heat from said desiccant and produce a weakened desiccant;

removing at least a portion of said weakened desiccant from said absorber chamber;

evaporating at least a portion of the water from said weakened desiccant into the open atmosphere to enrich said weakened desiccant;

transferring said heat from said absorber chamber into a stream of said feedwater to produce high pressure steam;

expanding said high pressure steam through a turbine to produce power and said low pressure steam.

4,606,193

FREEWHEEL FLYWHEEL TRANSMISSION SYSTEM

Antonio F. Molina, 3674 SW. 25th St., Miami, Fla. 33133

Continuation-in-part of Ser. No. 502,564, Jun. 9, 1983. This application Jan. 3, 1984, Ser. No. 567,615
Int. Cl.⁴ F02B *73/00*
U.S. Cl. 60—698 **11 Claims**

1. A freewheel flywheel transmission system comprising:

a frame;

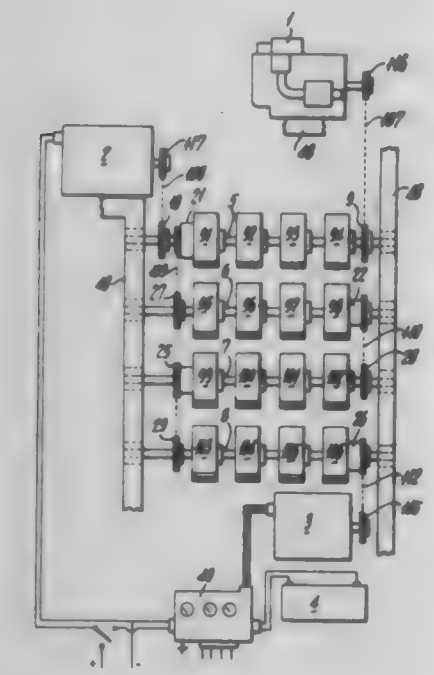
a plurality of shafts rotatively supported by said frame;

a plurality of flywheels mounted on each shaft of said plurality of shafts;

a power means mounted on said frame for providing rotational movement;

a plurality of transmission means for transmitting rotational movement when said power means is activated in succes-

sion from said power means to a first through a last shaft of said plurality of shafts and thereby to the plurality of flywheels mounted on each shaft of said plurality of shafts; and



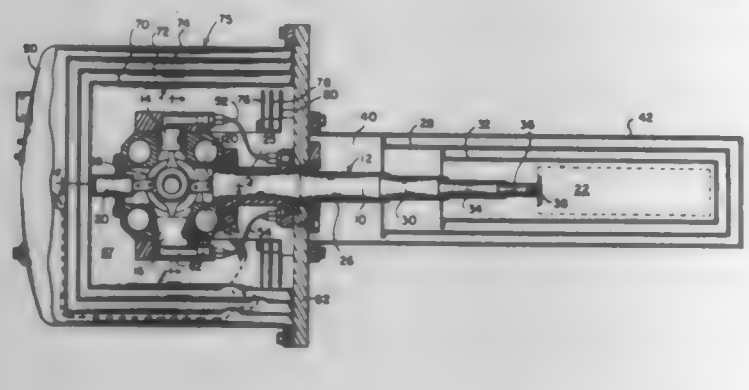
a means for converting the rotational movement of said plurality shafts and said plurality of flywheels mounted on each of said shafts to electrical power.

4,606,194

CRYOCOOLER HAVING LOW MAGNETIC SIGNATURE

F. William Pirtle, Stow; Harry G. Nicoll, Norwell, and Peter K. Bertsch, Harvard, all of Mass., assignors to Helix Technology Corporation, Waltham, Mass.

Filed Nov. 18, 1983, Ser. No. 553,368
Int. Cl.⁴ F25B *9/00*
U.S. Cl. 62—6 **9 Claims**



1. A cryogenic refrigerator comprising a gap regenerator which comprises:

a support member adapted to serve as a radiation shield;

a drive member extending through the support member;

a ceramic displacer driven by the drive member;

a vacuum tight rigid cermaic cold finger which is substantially helium impenetrable supported by the support member and surrounding the displacer and forming a gap regenerator therewith;

a dome supported by the support member on the side thereof opposite to the cold finger, the dome forming a vacuum vessel and serving as a high magnetic permeability radiation shield;

counterbalance rotary-to-linear electromagnetic drive means within the dome for driving the displacer driver member;

a plurality of dome-like high magnetic permeability radiation shields supported by the support member and surrounding the electromagnetic drive means; and

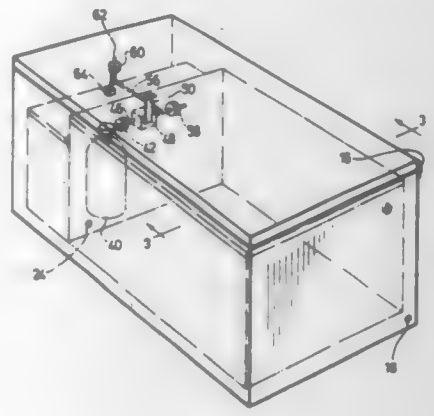
a plurality of radiation shields surrounding the displacer driver member and positioned between the support member and the electromagnetic drive means.

4,606,195

HYPERBARIC CONTAINER

Richard C. Winkler, 26 Rondeau, Kirkland, Quebec, Canada H9H 3V4

Filed Mar. 14, 1985, Ser. No. 711,626
Int. Cl.⁴ F17C *1/00*
U.S. Cl. 62—45 **20 Claims**



1. Hyperbaric storage device comprising:

walled inner container,

a first panel included in the walls of said inner container movable to expose an opening to the inside of said inner container in one position and, in another position, to seal to the remainder of said inner container walls to reduce leakage of gas therefrom,

a walled outer container surrounding said inner container in spaced relationship to the walls of the latter to define a plenum chamber therebetween,

a second panel included in the walls of the outer container movable to allow access to said first panel and through said opening to the inside of said inner container,

a compressed gas supply contained within said device,

a conduit from said gas supply to an outlet in said inner container,

control valve for said conduit,

said control being responsive to pressures above and below a predetermined value for closing and opening said valve respectively,

said value being above atmospheric pressure,

wherein a vent in said outer container wall allows said plenum to be normally at ambient pressures; and wherein a second conduit extends from said gas supply to open into said plenum,

second control valve for said second conduit,

temperature sensor located inwardly of said device,

said second control valve and said temperature sensor being designed to open and close said second valve for temperatures above and below, respectively, a predetermined temperature.

4,606,196

VACUUM INSULATION SYSTEM

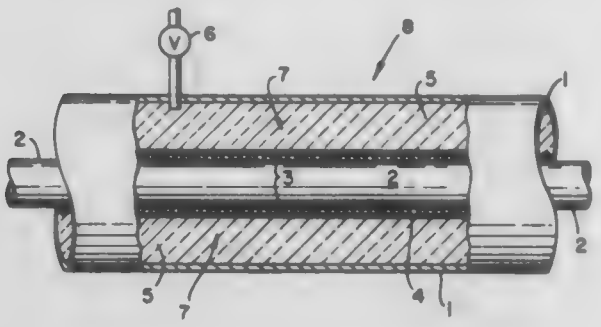
Arun Acharya, East Amherst; Michael F. Patterson, Clarence Center, and Jeffert J. Nowobilski, Orchard Park, all of N.Y., assignors to Union Carbide Corporation, Danbury, Conn.

Filed Dec. 19, 1984, Ser. No. 683,572
Int. Cl.⁴ F17C *1/00*
U.S. Cl. 62—45 **19 Claims**

1. An insulation system for maintaining material at a cryogenic temperature comprising an insulating volume, evacuated to a pressure less than 1000 microns of mercury, containing:

(a) insulating material having heat transfer characteristics

which change less than one order of magnitude over the pressure range of from 1 to 500 microns of mercury; and



(b) hydrophobic molecular sieve adsorbent having a water capacity of less than 12 percent.

4,606,197

COMPRESSOR CONTROL UNIT FOR AUTOMOBILE AIR CONDITIONER

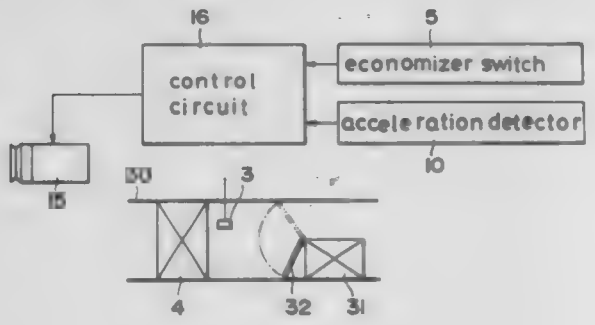
Tadahiro Takahashi, and Shinji Sutoh, both of Konan, Japan, assignors to Diesel Kiki Co., Ltd., Tokyo, Japan

Filed Mar. 13, 1985, Ser. No. 711,209

Claims priority, application Japan, Mar. 22, 1984, 59-41077[U]

Int. Cl.⁴ B60H *1/32*

U.S. Cl. 62—133 **6 Claims**



1. A compressor control unit for an automobile air conditioner comprising:

an economizer switch for selecting an ordinary driving mode or an economical driving mode;

an acceleration detector for detecting an acceleration of said automobile;

an electromagnetic clutch for disconnectably connecting an automobile engine to a driving shaft of said compressor;

a discharge adjusting means for adjusting an amount of a discharge of said compressor;

a control circuit for issuing its outputs as control signals: one of said control signals is fed to said discharge adjusting means to enable said means to have said compressor discharge a large amount of refrigerant in a case where signals from both said economizer switch and said acceleration detector are received by said control circuit to confirm that the ordinary driving mode is selected by said economizer switch and where the acceleration detector detects no acceleration of said automobile; another of said control signals from said control circuit is fed to said discharge adjusting means to enable said means to have said compressor discharge a small amount of said refrigerant in a case where said ordinary driving mode is selected by said economizer switch and an acceleration of said automobile is detected by said acceleration detector, or in a case where the economical driving mode is selected and said acceleration detector detects no acceleration; and other of said control signals from said control circuit are fed to said electromagnetic clutch to enable said clutch to disconnect said driving shaft of said compressor from said automobile engine in a case where said economical driving mode is selected by said economizer switch and an acceleration of said automobile is detected by said acceleration detector.

4,606,198

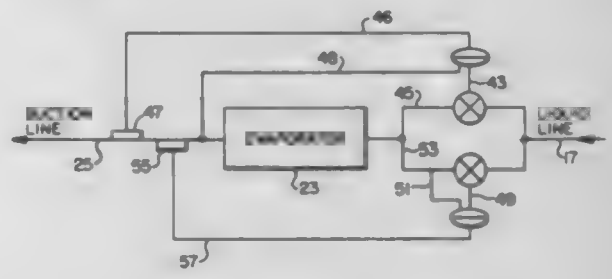
PARALLEL EXPANSION VALVE SYSTEM FOR ENERGY EFFICIENT AIR CONDITIONING SYSTEM

Daniel L. Latshaw, Columbus, and Stephen C. Silliato, Marietta, both of Ohio, assignors to Liebert Corporation, Columbus, Ohio

Filed Feb. 22, 1985, Ser. No. 704,322

Int. Cl.⁴ F25B *41/04*

U.S. Cl. 62—205 **6 Claims**



1. An improved air conditioning system of the type having a refrigerant which sequentially flows through variable speed compressor means responsive to varying outdoor air temperature for attenuating refrigerant mass flow corresponding to lower outdoor air temperature and which compresses vaporous refrigerant supplied by evaporator means, condenser means which is in heat exchange relationship with outdoor air for condensing refrigerant circulated from said condenser means, expansion means which expands said liquid refrigerant from said condenser means, and evaporator means which is in direct or indirect heat exchange relationship with air in a confined space for maintaining said confined space air at a desired set point of temperature and/or humidity, said evaporator supplying said refrigerant to said compressor means, the improvement which comprises said expansion means comprising two refrigerant expansion valve means which are connected in parallel by a refrigerant line from said condenser means and which passes said refrigerant to said evaporator means, the secondary valve means being of greater capacity than the primary valve means, said primary refrigerant expansion valve means having its equalizing line connected to the refrigerant line exiting said evaporator, said secondary valve means its equalizing line connected to the refrigerant line between said secondary valve means and said evaporator means, said two refrigerant expansion valve means being responsive to attenuated refrigerant mass flow for maintaining adequate refrigerant mass flow to the evaporator means and an adequate pressure drop across said expansion means for maintaining constant the desired set point of temperature and/or humidity of the confined space at varying outdoor air temperature.

4,606,199

EXPANSION VALVE

Rudibert Götzenberger, Remseck, Fed. Rep. of Germany, assignor to Ernst Flitsch GmbH & Co., Fellbach, Fed. Rep. of Germany

Filed Dec. 6, 1984, Ser. No. 678,643

Claims priority, application Fed. Rep. of Germany, Dec. 12, 1983, 3344816

Int. Cl.⁴ F25B *41/04*

U.S. Cl. 62—225 **9 Claims**

1. In a refrigeration control system including a compressor, a condenser, and an evaporator operatively connected to one another, and wherein a suction line connects said condenser to said evaporator, said evaporator having an outlet, and temperature sensing means located near said evaporator outlet for furnishing a control signal varying in dependence on the tem-

perature prevailing at said evaporator outlet, and an electrically operated expansion valve located near an inlet of said evaporator for injecting a refrigerant into said evaporator, the improvement comprising

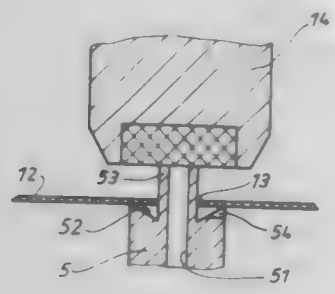
expansion valve seating means disposed in said suction line,

a membrane formed with a hole, said hole having a predetermined hole diameter,

valve lifter means mounted for movement in a predetermined direction having

a shoulder abutting said membrane,

an end region coacting with said expansion valve seating means,



a pin-shaped end portion opposite said end region, facing away from said expansion valve seating means, having a prearranged diameter less than said predetermined diameter of said membrane hole, so that an annular passage is formed between said pin-shaped end portion and a boundary defining said membrane hole, said pin-shaped end portion passing through said membrane hole, and being formed with a central axial capillary bore extending along said predetermined direction, and

plunger means responsive to said control signal for opening and closing said capillary bore of said pin-shaped end portion in accordance with said control signal, whereby a wide range of cooling powers is controllable by said expansion valve.

4,606,200

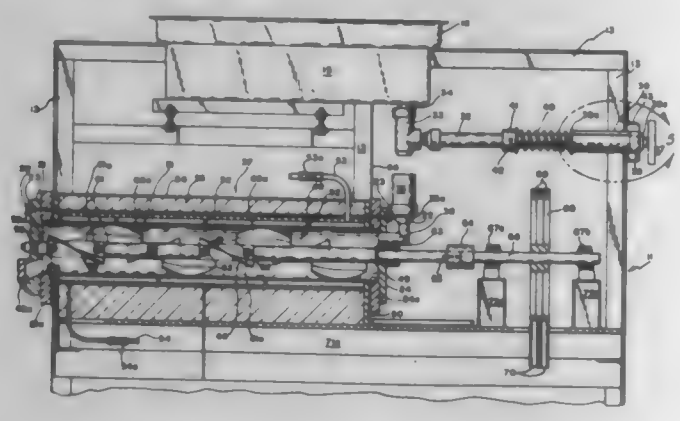
MODULAR CUSTARD FREEZING MACHINE

Steven L. Nielsen, 177 E. Oakridge Dr., Bountiful, Utah 84101

Filed Jul. 22, 1985, Ser. No. 757,243

Int. Cl.[4] F25D *23/02;* A23G *9/00*

U.S. Cl. 62—302 12 Claims



1. A modular custard freezing machine comprising, a cabinet for containing components of the custard freezing machine that includes interior support members for supporting certain of said components; pan means supported within said cabinet to receive and hold a custard mix therein and to pass that mix through a drain thereof; a mix control valve for fitting across said pan means drain for controlling mix flow therefrom and passing it into a freezing barrel of a custard freezing chamber that includes, a shaft that is secured on one end to turn a flow control means within said mix control valve, said shaft including a collar secured intermediate thereon that connects to one end of a spring means that is telescoped over said shaft which spring means opposite end is connected to a sleeve that is also telescoped over said shaft end distal from said coupling to said flow control means, which sleeve includes a handle means secured across its end, with said spring means fitted through said sleeve to bias said handle means outwardly, which handle means is arranged for turning by an operator from without the cabinet and includes, opposite to the end of said shaft, an engaging means for coupling to and turning said shaft, and means on said shaft end for coupling to and to be turned by said engaging means when said handle means is depressed against the biasing of said spring means, stop means to limit travel of said handle means responsive to said spring biasing; a platform means whereon said custard freezing chamber that includes said freezing barrel surrounded by a coolant gas chamber and insulation is arranged, which platform means also includes mounts secured thereto aligned with an open end of said freezing barrel that include bearings wherethrough a shaft is fitted, said shaft arranged to turn a paddle assembly journaled within said freezing barrel; means for turning said paddle assembly; means for releasably aligning and securing said platform means to said support members within said cabinet; means for supplying a source of coolant gas under pressure to said coolant gas chamber; means for closing off the ends of said freezing barrel that include means for passing mix into said freezing barrel, bearing means for supporting turning of said paddle assembly within said freezing barrel, and means for dispensing, on demand, congealed mix from said freezing barrel; and means for controlling operation of the components of the modular custard freezing machine.

4,606,201

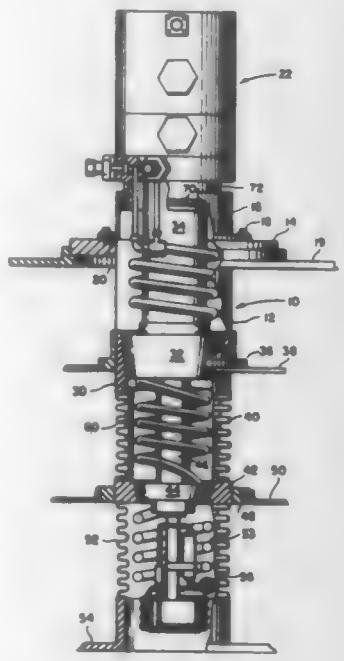
DUAL THERMAL COUPLING

Ralph C. Longsworth, Allentown, Pa., assignor to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Oct. 18, 1985, Ser. No. 789,004

Int. Cl.[4] F25B *19/00*

U.S. Cl. 62—514 JT 20 Claims



1. An apparatus to be cooled by a refrigerator having fixed axially spaced first and second heat stations comprising in combination:

a first generally cylindrical sleeve adapted to position a first heat station, said first heat station adapted to mate in close physical contact with a first heat station on said refrigerator inserted in said apparatus;

a second generally cylindrical flexible sleeve axially aligned with said first sleeve and said first heat station, said second generally flexible sleeve adapted to position a second heat station spaced axially from said first heat station and to mate in close physical contact with a said second heat station on said refrigerator; whereby when said refrigerator is inserted inside said axially aligned sleeves said second heat station can be moved relative to said first heat station by said refrigerator to provide thermal contact

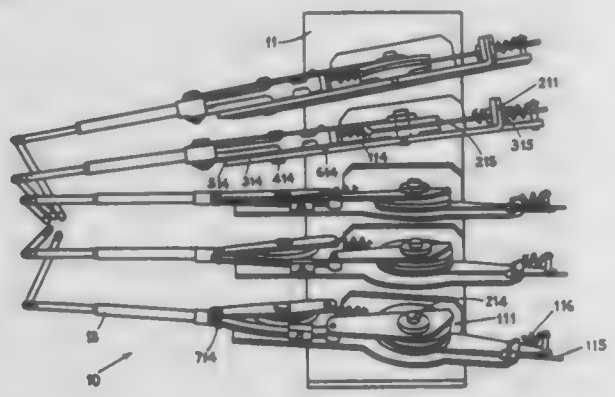
between said first refrigerator heat station and said first heat station on said apparatus and said second refrigerator heat station and said second heat station on said apparatus.

4,606,202

FEEDER-STRIPPER DEVICE FOR CIRCULAR KNITTING MACHINES

Piero Del Bene, Scandicci, and Ettore Negri, Florence, both of Italy, assignors to Officine Savio S.p.A., Pordenone, Italy

Continuation of Ser. No. 412,372, Aug. 27, 1982, abandoned.
This application Jan. 14, 1985, Ser. No. 690,838
Claims priority, application Italy, Sep. 2, 1981, 83453 A/81
Int. Cl.[4] D04B *15/50, 15/61*
U.S. Cl. 66—134 **28 Claims**



1. A feeder-striper device for circular knitting machines having needle cylinders, comprising a plurality of yarn carriers which can be moved independently of each other between a position of rest and a position at work near the feed of the yarn, a carrying structure consisting of a plurality of firm supporting surfaces to support said yarn carriers, said firm supporting surfaces being mutually sloped fan-wise in both a substantially radial direction and a substantially tangential direction in relation to the needle cylinders, said yarn carriers being fitted in a relatively movable manner in relation to said firm surfaces so as to enable ends thereof to follow a continuous substantially radial direction and therafter in a direction substantially tangential to the needle cylinders during their movement between their working position and their position of rest, a linkage positioning and supporting means for each yarn carrier having at least one pivot of rotation and revolvably anchored to its respective firm supporting surface, suitable actuation means for each yarn carrier rotating the respective linkage means, bias means for each yarn carrier acting on the linkage means and cooperating with the carrying structure and a plurality of means for each yarn carrier which cause three-dimensional adjustment of the working position of the ends of said yarn carriers.

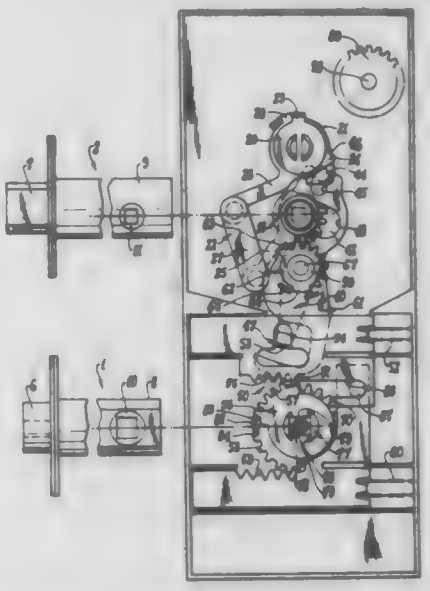
4,606,203

LATCH AND DEADBOLT LOCK SET

Hans Esser, Keysborough, Australia, assignor to Ogden Industries Pty. Ltd., Huntingdale, Australia

Filed May 1, 1984, Ser. No. 606,871
Claims priority, application Australia, May 4, 1983, PF9174/83
Int. Cl.[4] E05B *59/00*
U.S. Cl. 70—107 **21 Claims**

1. Lock set control mechanism including, a housing, latch bolt actuator means mounted on said housing and being movable relative thereto between latch bolt operative and inoperative positions, deadbolt actuator means mounted on said housing and being movable relative thereto between deadbolt operative and inoperative positions, a lock actuator mounted on said housing and being operable to cause operation of locking means which renders the latch bolt actuator means inoperable, said lock actuator is connected to the deadbolt actuator means to activate or deactivate said locking means according to whether said deadbolt actuator means is moved into its deadbolt operative or inoperative position respectively, and drive means interconnecting the two said bolt actuator means so that each is responsive to operation of the other such that movement of either said bolt actuator means towards its respective bolt inoperative position causes corresponding movement of the other said bolt actuator means, wherein said drive means includes transfer means which responds to operation of either said bolt actuator means to cause operation of the other said bolt actuator means and a lost motion connection provided between said transfer means and said deadbolt actuator means, said lost motion connection is operative to disconnect the



deadbolt actuator means from the influence of the transfer means when the deadbolt actuator means is in the deadbolt inoperative position and said latchbolt actuator means is moved between the latchbolt operative and inoperative positions, but drivably connects the deadbolt actuator means to the transfer means when the deadbolt actuator means is operated to move towards the deadbolt operative position and wherein said transfer means includes a rack slidably mounted on said housing and a pinion mounted for rotation with said latchbolt actuator means and drivably engaging said rack.

4,606,204

SYSTEM AND APPARATUS FOR OPENING CYLINDER LOCKS

Robert G. Cooke, Jr., Rte. 2, P.O. Box 29, Ahoskie, N.C. 27910

Filed Dec. 27, 1983, Ser. No. 565,403
Int. Cl.[4] B25D *11/00*
U.S. Cl. 70—394 **4 Claims**



1. A lock opening device for unlocking various types of pin cylinder locks comprising:

a. A flexible spring arm member;

b. an adapter assembly having

(i) a base member provided with a finger extension having essentially straight, flat top and bottom surfaces extending substantiall parallel to each other

(ii) a clamp member

(iii) fastener means for detachably mounting one end of said flexible spring arm member between said clamp member and said base member; and

c. an oscillator unit having:

(i) a rotary shaft member for providing a rotary force to said flexible spring arm member, said shaft member provided with detachable fastener means for securing

one end of said flexible spring arm member to said shaft member

(ii) varible driver means for driving said shaft member at varibles speeds and in a back and forth motion to thereby impart a rotary force through said flexible spring arm member to said finger extension and causing rotary forces to be applied to a lock plug facilating the opening of the lock without mechanical impact to tumbler pins.

4,606,205

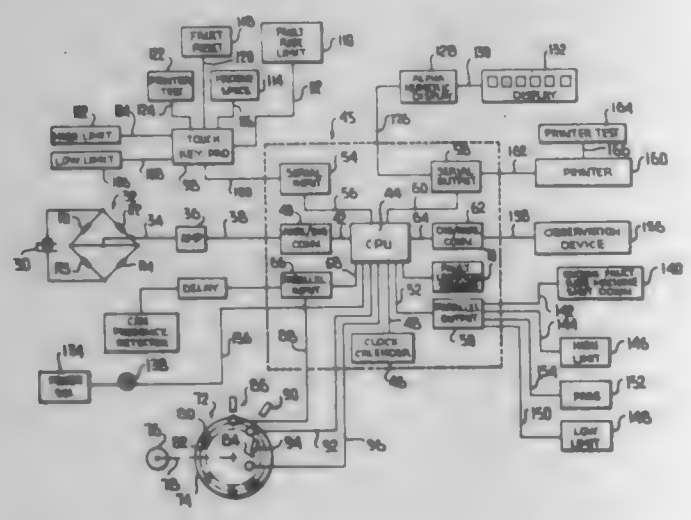
APPLIED FORCE MONITOR FOR APPARATUS FOR FORMING PRODUCTS FROM SHEET MATERIAL

Anthony F. Segredo, Bloomingdale; Richard E. Prendergast, Western Springs; Ralph E. Martin, Oak Lawn; Jack W. Pluister, Tinley Park, and Manuel T. Techico, Downers Grove, all of Ill., assignors to Continental Can Company, Inc., Stamford, Conn.

Continuation-in-part of Ser. No. 669,716, Nov. 9, 1984, Pat. No. 4,600,347. This application Oct. 1, 1985, Ser. No. 782,463

Int. Cl.[4] B21B *37/08*

U.S. Cl. 72—19 19 Claims



1. In a product forming apparatus comprising force applying means for applying a force to the forming apparatus, and monitoring means associated with said force applying means for monitoring the force applied in the forming of a product; said monitoring means including said force applying means having a part deformable under stress during a force application, strain gauge means attached to said part, means connected to said strain gauge means for determining when a fault in the form of a high or a low force is applied through said force applying means, storage means for storing good and fault operations, and means for supplying a fault signal when the relationship of fault to good operations exceeds a preset norm.

4,606,206

METHOD AND APPARATUS FOR EDGE PREPARATION OF SPINNING BLANKS

Anwar R. Daudi, E. Lansing, Mich., assignor to Motor Wheel Corporation, Lasning, Mich.

Filed Jan. 30, 1985, Ser. No. 696,335

Int. Cl.[4] B21D *22/18*

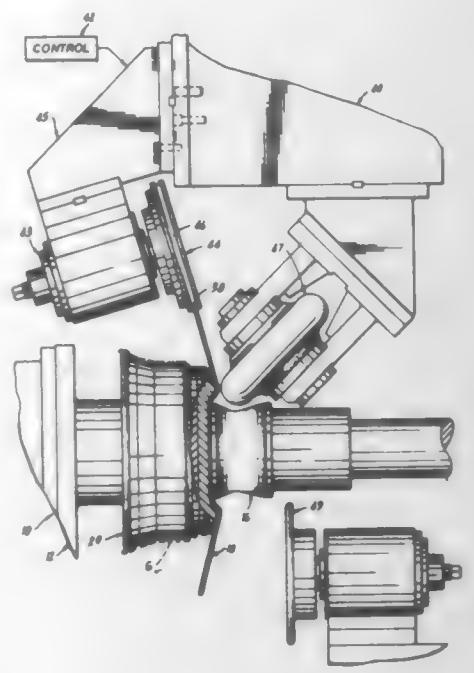
U.S. Cl. 72—68 14 Claims

1. A method of forming an annular article from a circular blank workpiece comprising the steps of:

(a) clamping said blank in a rotatable chuck such that a peripheral portion of said blank is spaced from said chuck;

(b) causing said chuck to rotate said workpiece about an axis of revolution thereof;

(c) while said workpiece is being so rotated, cold work edge conditioning said peripheral blank portion by engagement with an edge conditioning roller with sufficient force and cycle time to impart an upset condition thereto and wherein an edge surface of said peripheral portion engaged by said roller is smoothed and hardened to a given rounded curvature in radial cross section thereto and controlled thickness increase is obtained in said peripheral blank portion; and



(d) then further processing said workpiece through a permanent deformation cold working to change the contour of said workpiece in a zone of said peripheral blank portion adjacent said upset edge portion of said workpiece blank.

4,606,207

FORMING NECKS ON HOLLOW BODIES

Mark N. Slade, Faringdon, United Kingdom, assignor to Metal Box Public Limited Company, Berkshire, England

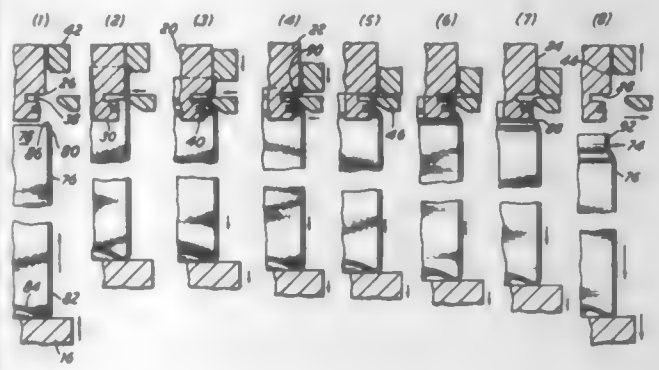
PCT No. PCT/GB83/00355, § 371 Date Aug. 29, 1984, § 102(e) Date Aug. 29, 1984, PCT Pub. No. WO84/02667, PCT Pub. Date Jul. 19, 1984

PCT Filed Dec. 29, 1983, Ser. No. 646,375

Claims priority, application United Kingdom, Dec. 30, 1982, 8236977

Int. Cl.[4] B21D *19/06*

U.S. Cl. 72—96 34 Claims



1. A method of forming a neck about an open end of a hollow body having its other end closed and comprising a thin cylindrical sidewall, an end portion of which has a terminal edge defining the open end, the method comprising:

(i) supporting the closed end of the hollow body by support means;

(ii) engaging, within the end portion of the sidewall, a primary chuck element having a primary tood edge formed circumferentially of the chuck element;

(iii) applying to the closed end of the hollow body a continuous axial force sufficient to hold the closed end against the support means;

(iv) controlledly increasing the axial distance between the chuck element and the support means, so as to move the terminal edge past the primary tool edge, whilst applying guide means to prevent radial deformation of the part of the

end portion for the time being around the primary chuck element; and

(v) applying, during step (iv), external rolling means to the sidewall immediately forward of the primary tool edge, with relative rotation as between the hollow body and the rolling means, about the axis of the body, so that the rolling means forms the neck by rolling, the said axial force on the closed end being maintained throughout step (v) as the axial distance between the latter and the primary chuck element is increased the steps (i) through (v) being performed absent the application of significant axial force being applied to the sidewall.

4,606,208

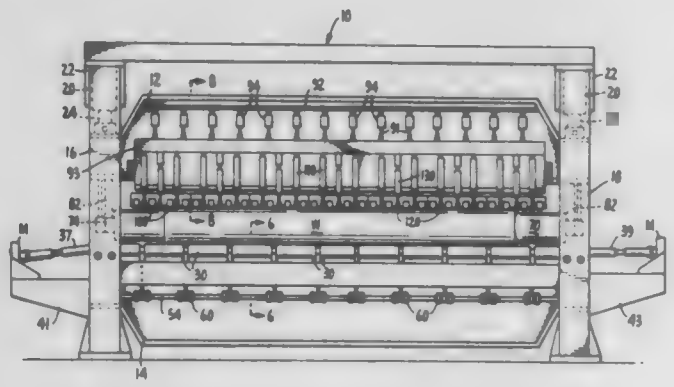
PIPE FORMING APPARATUS

Calvin C. Williamson, Napa, Calif., assignor to Kaiser Steel Corporation, Fontana, Calif.

Filed May 16, 1984, Ser. No. 610,707

Int. Cl.[4] B21D *5/14*

U.S. Cl. 72—133 **14 Claims**



1. Apparatus for forming a steel plate section into a pipe shape comprising:

frame means;

an elongated mandrel having a longitudinal axis;

a plurality of bending roll assemblies mounted on the frame means, each of said roll assemblies being separately and rotatably mounted on pivotable support bracket means positioned adjacent to said mandrel and having a pair of driven bending rolls adapted to respond to pressure exerted on said mandrel so that the roll of said pair of driven bending rolls receiving the leading edge of said plate section moving between said driven bending rolls and said mandrel pivots on said support bracket to press said plate section firmly against said mandrel and the trailing roll of said pair of driven rolls pivots on said support bracket to maintain said plate section in a planar alignment to thereby provide a lever arm to assist in bending said blank section about said mandrel as said plate section passes therethrough and is bent about said mandrel to a final desired radius;

means for driving said bending rolls;

means for supporting said mandrel at the ends thereof on said frame means whereby said mandrel is restrained from horizontal movement and is vertically movable until finally positioned for the forming operation; and

means carried by the frame means for applying pressure to said mandrel at points spaced longitudinally along the mandrel (a) to bend the plate section druing forming of the plate section between said mandrel and the pair of bending rolls and (b) to offset deflection of said mandrel and said bending rolls to maintain the same spatial relationship between said mandrel and said bending rolls throughout the length of said mandrel so that said plate section is uniformly bent along the length thereof to said desired final radius.

4,606,209

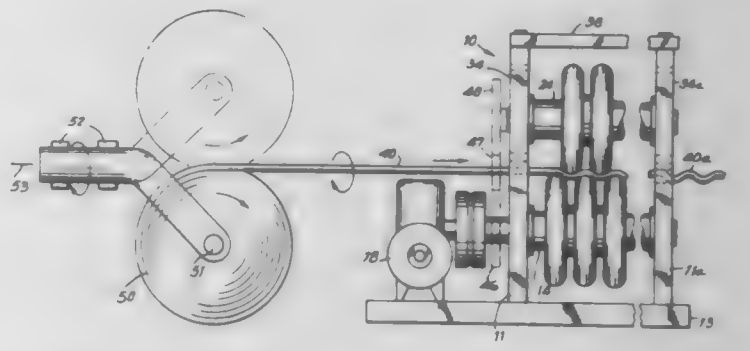
DISC ROLLER MECHANISM FOR FORMING HELICAL SHAPES

Frantisek L. Eisinger, Demarest, N.J., assignor to Foster Wheeler Energy Corporation, Livingston, N.J.

Continuation-in-part of Ser. No. 701,440, Feb. 12, 1985, Pat. No. 4,546,631, which is a continuation of Ser. No. 481,135, Apr. 1, 1983, abandoned. This application Mar. 11, 1985, Ser. No. 710,652

Int. Cl.[4] B21E *3/02*

U.S. Cl. 72—135 **14 Claims**



1. A disc roller mechanism for forming elongated helical-shaped structures using multiple disc-shaped forming rollers, comprising:

(a) a support frame having a fixed member and an adjustable member, each said member being adapted for rotatably supporting a shaft each carrying multiple parallel disc-shaped rollers;

(b) a first set of disc-shaped forming rollers including at least two disc-shaped rollers spaced apart from each other and rotatably mounted in said support frame fixed member, said first set of rollers being rotatably driven;

(c) a second set of disc-shaped forming rollers including at least one disc-shaped roller rotatably mounted in said support frame adjustable member, and arranged in a staggered pattern relative to the rollers of said first set of rollers, said second disc-shaped roller set being substantially parallel with and transversely adjustable relative to the first set, the axes of said forming rollers in said first and second sets being oriented parallel to the centerline of a feed wire for drawing said wire through said first and second sets of disc-shaped forming rollers solely by a frictional drawing force exerted on the wire by said sets of forming rollers, and thereby form the wire passing through the rollers into a sinusoidal pattern;

(d) drive means coupling together all said driven rollers of said first set so as to rotate said driven rollers at a common surface speed; and

(e) means for rotating said feed wire about its own axis while said feed wire is being drawn through said first and second disc-shaped forming roller sets, so as to bend the wire and thereby form it into a helical-shaped structural product.

4,606,210

EXTRUSION PRESS FOR MANUFACTURING EXTRUDED SECTIONS FROM METAL BILLETS

Alfred Wagner, Steisslingen; Adolf Ames, Hilzingen, and Ulf Hodel, Engen, all of Fed. Rep. of Germany, assignors to Swiss Aluminum Ltd., Chippis, Switzerland

Continuation-in-part of Ser. No. 501,431, Jun. 6, 1983, abandoned, which is a continuation of Ser. No. 247,825, Mar. 26, 1981, abandoned. This application Dec. 3, 1984, Ser. No. 677,510

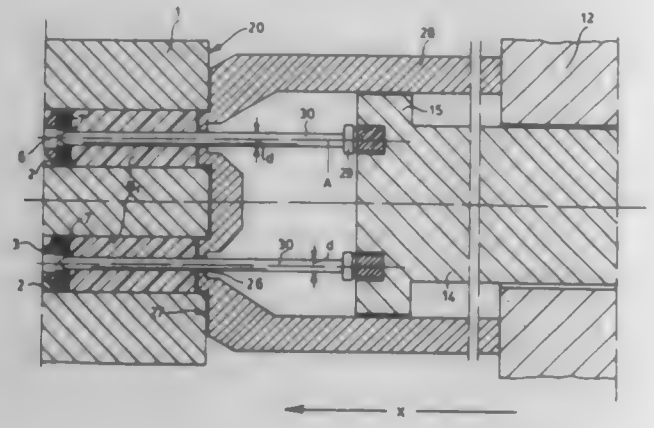
Claims priority, application Fed. Rep. of Germany, Apr. 2, 1980, 3012757

Int. Cl.[4] B21C *23/08, 27/00*

U.S. Cl. 72—261 **16 Claims**

1. An extrusion press for manufacturing seamless pipe or hollow section extrusions from metal hollow billets by indirect extrusion which comprises a movable container, a plurality of channels in said container, a plurality of extrusion stems each

of which is adapted to be received within one of the plurality of channels in the container, a plurality of shape-giving stationary dies each mounted on one of said plurality of extrusion stems in operative relationship to each of said channels, means for fixing said hollow billets adjacent each of said dies, a compression cylinder in operative relationshhip to each of said dies for pressing said hollow billets therethrough wherein said container is movable with said compression cylinder at the



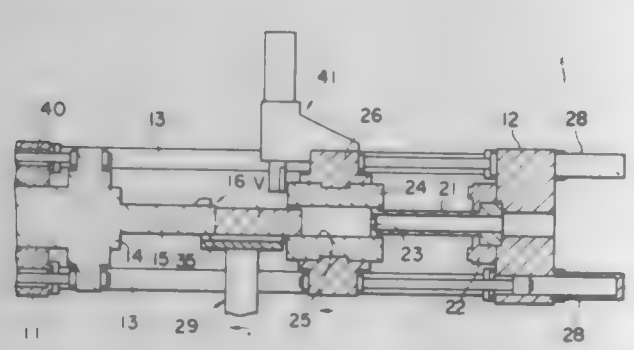
same speed thereof, and a plurality of mandrels mounted on said compression cylinder and movable therewith in the extrusion direction towards the corresponding die, said mandrels being provided in line with said channels and said dies wherein each hollow billet is deformed in said shape-giving stationary die wherein the diameter of each mandrel d_D is less than 0.4 times the diameter of its corresponding billet to be extruded (d_{on}).

4,606,211

INDIRECT EXTRUSION PRESS

Tatsuhiko Noyori, and Masakazu Ueda, both of Kobe, Japan, assignors to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan

Filed Feb. 21, 1985, Ser. No. 703,616
Claims priority, application Japan, Feb. 25, 1984, 59-26174[U]
Int. Cl.[4] B21C *33/00*
U.S. Cl. 72—270 **4 Claims**



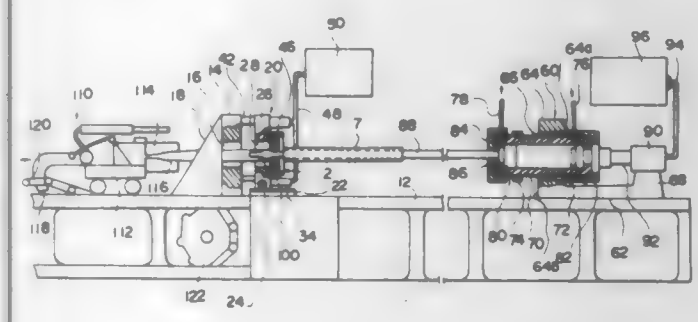
1. An indirect extrusion press assembly, comprising:
a container having a billet receiving bore;
a pressure stem;
a seal block having a disc portion to be fitted in said billet receiving bore of said container and having a cylindrical portion contiguous to the disc portion and an outside diameter larger than said billet receiving bore;
a die stem disposed in front of and coaxial with said pressure stem;
means for loading a billet onto an axis of the press and charging said billet into said billet receiving bore of the container from a pressure stem side and then extruding said billet through said die stem in a state in which one end of the billet receiving bore of the container is closed with the seal block, wherein a plurality of circumferentially spaced notches are formed in a press axis direction on an outer periphery of the cylindrical portion of the seal block;
means for moving said container and said billet loader toward said pressure stem; and
a billet support portion mounted to a fore end of the billet loader and which includes a plurality of projections adapted to engage said notches of said cylindrical portion of said seal block and be guided thereby, said projections being formed in a press axis direction.

4,606,212

DEVICE FOR COLD DRAWING SEAMLESS METAL TUBES HAVING UPSET PORTIONS ON BOTH ENDS

Yutaka Sunaga, Kawasaki, and Toshio Sakurai, Yokohama, both of Japan, assignors to Sanwa Kokan Co., Ltd., Yokohama, Japan

Filed Apr. 13, 1984, Ser. No. 599,825
Int. Cl.[4] B21C *1/24*
U.S. Cl. 72—283 **9 Claims**



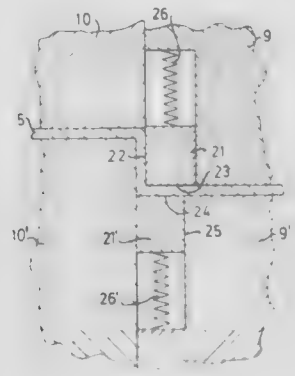
6. A draw bench for drawing seamless metal tubes having an upset portion on each end, comprising:
a longitudinally extending bed;
a front stopper mounted on a longitudinally middle portion of said bed;
a die control device on said bed adjacent said front stopper, said die control device including a die holder longitudinally movable on said bed, means for driving said die holder longitudinally on said bed, and a closed periphery reducing die having an internal surface, held by said die holder so that a mother tube can be drawn longitudinally therethrough within said internal surface;
a plug control device on an entry side of said bed longitudinally rearward of said die control device and coaxial with said die control device, said plug control device including a rear stopper having a lateral opening, mounted on said bed, a compressed air cylinder having an outer cylindrical body having external threads, rotatably and slidably penetrating said lateral opening and including a piston longitudinally slidably fitted in an interior space thereof, a pair of screw nuts longitudinally adjustably threadedly screwed on said compressed air cylinder on longitudinally opposite sides of said rear stopper so as to restrict longitudinal movement of said compressed air cylinder by contact therewith, a plug fixing push-pull main rod connected to said piston through a front end portion of said compressed air cylinder, a compressed air supply pipe connected to a rear portion of said compressed air cylinder so as to communicate with said interior space rearward of said piston, a compressed air exhaust pipe connected to front portion of said compressed air cylinder so as to communicate with said interior space forward of said piston, and means connected to said cylindrical body, for driving said compressed air cylinder and said main rod longitudinally;
a plug secured to a front portion of said main rod so as to move longitudinally therewith adjacent said reducing die, whereby said reducing die and said plug are longitudinally movable with respect to each other between positions defined by the longitudinal positions of said screw nuts, for diametrically changing a reducing area between said internal surface of said reducing die and said plug by fixing said reducing die and said plug at selected positions; and
drawing means for drawing the mother tube through said reducing die and around said plug.

4,606,213

TOOL FOR PRODUCING BENDS IN CURVED SURFACES

Bengt G. Persson, Olofström, Sweden, assignor to AB Volvo, Gothenburg, Sweden

Filed Jul. 30, 1984, Ser. No. 636,002
Claims priority, application Sweden, Aug. 5, 1983, 8304103
Int. Cl.[4] B21D *11/20*
U.S. Cl. 72—300 4 Claims



1. In an apparatus for producing steps in sheet material having at least one corrugation therein with the step extending transverse to the direction of corrugation, comprising a first pair of opposed tools for engaging opposite sides of a said sheet and having sheet-engaging surfaces having the curvature of teh sheet, a second pair of opposed tools disposed adjacent the first pair of tools for engaging opposite sides of a different portion of the sheet and having sheet-engaging surfaces having the curvature of the sheet, said first pair of tools and said second pair of tools being arranged so that sides of said first pair of tools face sides of said second pair of tools, and means for moving the second pair of tools together relative to the first pair of tools in a direction at right angles to the direction of the corrugation thereby to form a said step; the improvement comprising a third pair of opposed tools carried by and movable with the second pair of tools on the same side of the second pair of tools as said first pair of tools for engaging opposite sides of a said sheet so that sides of said third pair of tools face said first tool sides, said third pair of tools having sheet-engaging surfaces having the shape that is to be imparted to the sheet adjacent the formed step, means supporting the third pair of tools on the second pair of tools for movement relative to the second pair of tools, and means acting between the third pair of tools and the second pair of tools yieldably to urge said third pair of tools toward the sheet relative to said second pair of tools.

4,606,214

METAL FORMING APPARATUS

Takeshi Miyazaki, Inazawa, Japan, assignor to Toyoda Gosei Co., Ltd., Nishikasugai, Japan

Filed Nov. 30, 1984, Ser. No. 677,098
Claims priority, application Japan, Nov. 30, 1983, 58-226480
Int. Cl.[4] B21D *41/02*
U.S. Cl. 72—318 4 Claims

1. Apparatus for forming one end portion of a rod-like metallic work comprising:

a holding member for holding the work along its axis;

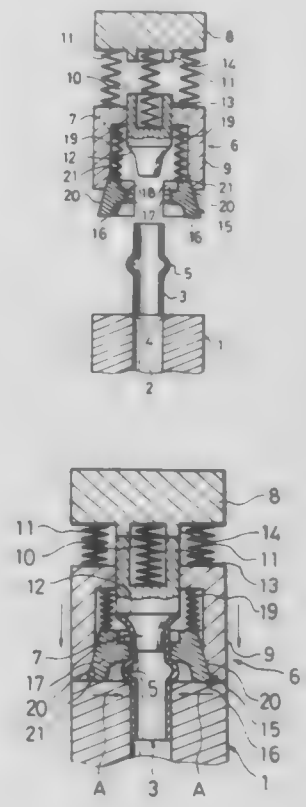
a pressure die movably mounted along said axis towards and away from said holding members and adapted for relative movement with respect to one end of the work along the axis thereof to shape the axial end portion of the work, said pressure die comprising:

a die body engageable with the end portion of the work;

a split die comprising at least two movable die members for gripping and covering the outer peripheral surface of the work; and

a holder for the split die movable axially relative thereto and therewith, said die body being mounted within said holder and said split die being carried by said holder,

said split die having a first engaging portion and said holder having a second engaging portion which engages said first engaging portion to move said split die members in directions perpendicular to the axis of the work on said relative movement of said pressure die axially toward said holding



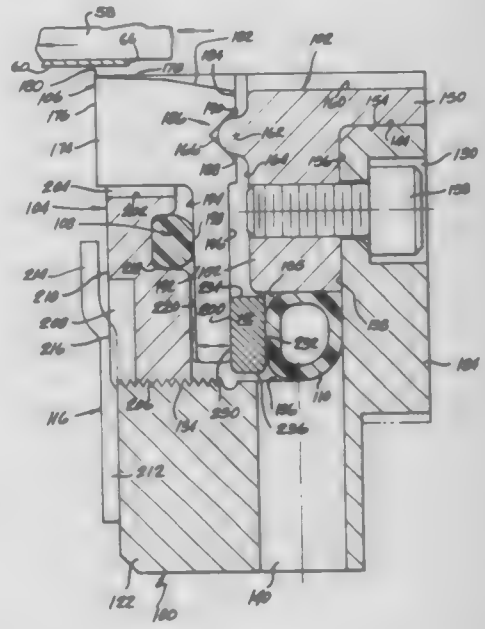
member and toward the work so that said split die is clamped to and covers the peripheral surface of the end portion of the work and then the end portion is plastically formed into shape by said die body when held by said split die.

4,606,215

APPARATUS AND METHOD FOR STRIPPING WORKPIECES

Danny L. McMillin, Arvada, Colo., assignor to PAC International, Inc., Arvada, Colo.

Filed Jul. 8, 1985, Ser. No. 753,032
Int. Cl.[4] B21D *45/00*
U.S. Cl. 72—344 22 Claims



1. Apparatus for stripping a cylindrical workpiece such as a can body member from a cylindrical supporting device such as a punch of a can body making machine comprising:

housing means for supporting the apparatus circumjacent

the cylindrical workpiece and the cylindrical supporting device;

a plurality of circumferentially spaced separate finger segment means having separate pivotal axes extending transversely to the path of movement of the workpiece and the supporting device and being separately mounted in said housing means for simultaneous uniform pivotal movement between a retracted radially outwardmost position whereat each of said segment means are continuously radially outwardly spaced from both the workpiece and the supporting device without contact with either of them and an extended radially inwardmost position whereat each of said segment means engage only an end surface of the workpiece without engagement with the supporting device so that axial movement of the supporting device results in disengagement of the workpiece from the supporting device;

actuating means spaced from and located in noncontacting relationship with the workpiece and the supporting device and being operably associated with said segment means for causing pivotal movement thereof about said separate pivotal axes between said retracted position and said extended position and being operable without engagement of said finger segment means with the workpiece and the supporting device; and

resilient compressible means for biasing said segment means toward said retracted position and for enabling limited pivotal movement thereof from said retracted position to said extended position.

4,606,216

VEHICLE CLAMPING AND SUPPORT APPARATUS

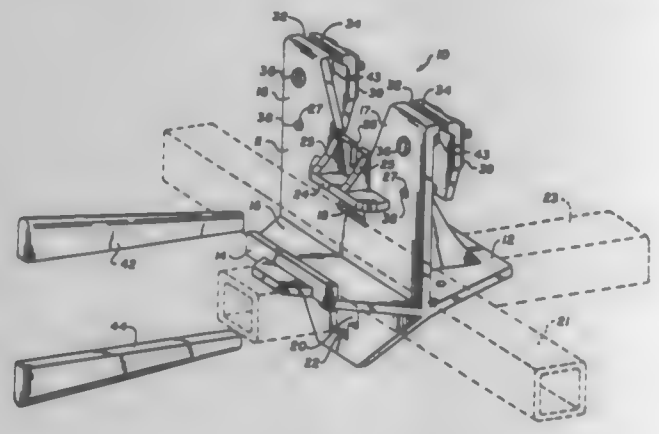
Raine R. Riutta, Vancouver, Canada, assignor to American Wedge Clamp Ltd., British Columbia, Canada

Continuation-in-part of Ser. No. 543,798, Oct. 21, 1983, abandoned, which is a continuation-in-part of Ser. No. 367,197, Apr. 12, 1982, abandoned. This application Oct. 23, 1985, Ser. No. 790,550

Claims priority, application Canada, Sep. 18, 1981, 386200; Mar. 10, 1982, 398046

Int. Cl.⁴ B21D *1/14*

U.S. Cl. 72—422 **29 Claims**



1. A clamping device, comprising:

(a) clamping means disposed towards an upper end of the device for clamping to a vehicle body and for supporting the clamped position of the vehicle body in a fixed position; and,

(b) securing means disposed towards a lower end of the device for releasably securing first and second transverse support members; said securing means comprising:

(i) a first thin support plate for supporting said first transverse support member; and

(ii) a second thin support plate affixed perpendicular to said first support plate, said second support plate having an aperture for slidably receiving and supporting said second transveres support member;

the device being separable from said support members, whereby the device may be clamped to the vehicle body before said support members are engaged with and secured by the device.

4,606,217

SCREW PRESS HAVING A SHIFTING COUPLING AND A CONTINUOUSLY ROTATING FLYWHEEL

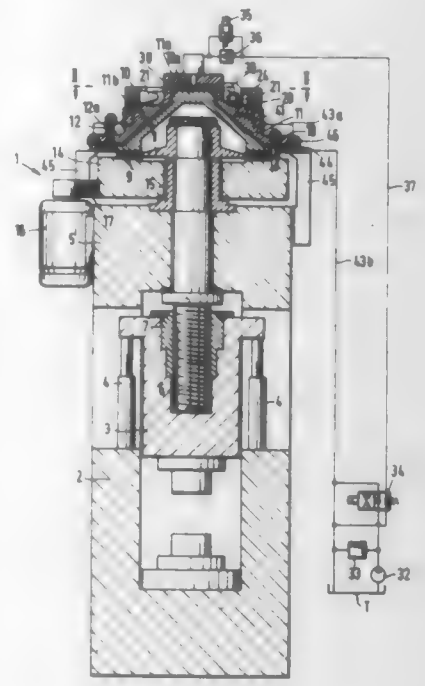
Werner Schiller, Leverkusen; Manfred Benedix, Leichlingen, and János Szákacsi, Bergisch-Gladbach, all of Fed. Rep. of Germany, assignors to Eumuco Aktiengesellschaft für Maschinenbau, Leverkusen, Fed. Rep. of Germany

Filed Dec. 14, 1984, Ser. No. 681,761

Claims priority, application Fed. Rep. of Germany, Dec. 22, 1983, 3346329

Int. Cl.⁴ B21J *9/18*

U.S. Cl. 72—454 **22 Claims**



1. In a screw press including a shifting coupling for the press spindle having a spindle disk, means for continuously rotating a flywheel, coupling means operatively located between the flywheel and the spindle disk, a reaction mass coupled with the flywheel and a shifting mechanism dependent upon angular deceleration and controlled for the purpose of actuating the coupling means, the shifting mechanism comprising:

(a) a hydraulically actuatable coupling means,

(b) a hydraulically prestressed valve located between the reaction mass and a rotating coupling portion connected to the flywheel, and

(c) means for hydraulically operating on the coupling means,

(d) said prestressed valve being affected by the hydraulic pressure medium acting upon the coupling means,

(e) the reaction mass comprises a ring disk,

(f) the ring disk and the coupling portion each have at least one radial projection extending toward each other, the prestressed valve is spring-loaded and located between said projections, and

(g) the prestressed valve is inserted in the outlet line of the hydraulic pressure medium for the shifting coupling means.

4,606,218

COMPACT BIDIRECTIONAL METER PROVER MECHANISM

William E. Chisman, III, Houston, Tex., assignor to Daniel Industries, Inc., Houston, Tex.

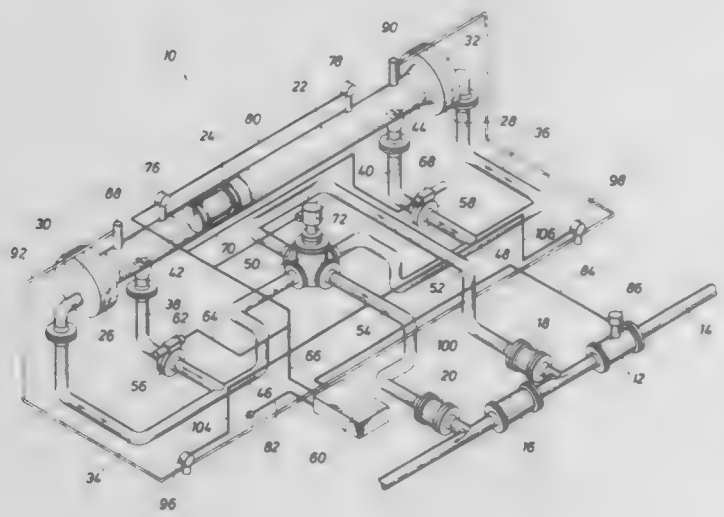
Filed Jan. 16, 1985, Ser. No. 691,849

Int. Cl.⁴ G01F *25/00*

U.S. Cl. 73—3 **15 Claims**

1. A bidirectional compact meter prover mechanism for connection to a flow line incorporating a flow meter, comprising:

(a) a straight elongated calibration barrel having a displacer piston longitudinally movable therein, said calibration barrel having first and second closed end walls each forming bypass openings, said calibration barrel forming launch openings near each end thereof in spaced relation with said end walls and forming piston receptacles between said launch openings and said end walls;
(b) detector means provided near each extremity of said elongated calibration barrel for detecting movement of said displacer piston toward each extremity of said elongated calibration barrel, said detector means establishing a proving section within said elongated calibration barrel and between said launch openings;
(c) conduit means for conducting fluid flow passing through said flow meter to said elongated calibration barrel;
(d) control valve means being interconnected with said conduit means and being selectively positionable to control the direction of fluid flow through said elongated calibration barrel, said fluid flow inducing movement of said displacer piston within said elongated calibration barrel;



(e) a pair of manifold conduits being coupled with said control valve means;
(f) a pair of launch conduits each coupled with respective launch openings and with respective manifold conduits;
(g) a pair of bypass conduits each coupled with respective bypass openings and respective manifold conduits;
(h) a pair of butterfly type piston launch valves being respectively interconnected in said launch conduits;
(i) first valve operator means controlling opening and closing of said piston launch valves;
(j) second valve operator means controlling positioning of said control valve means; and
(k) control means accomplishing selective energization of said first and second valve operator means to achieve selective positioning of said control valve means prior to selective positioning of said piston launch valves, said displacer piston being launched toward the opposite extremity of said elongated calibration barrel upon controlled operation of said piston launch valves.

4,606,219

GAS DETECTORS

Bernardus J. Bout, Walkerville; Ernest P. van Eeden, Johannesburg, and Nicolaas T. van der Walt, Mondeor, all of South Africa, assignors to Crucible S.A., Luxembourg, Luxembourg

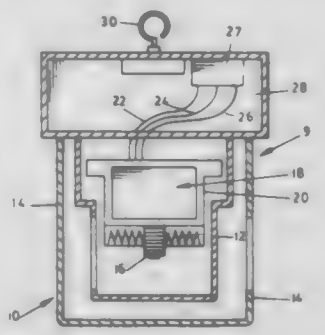
Filed Jun. 28, 1984, Ser. No. 625,710

Claims priority, application South Africa, Jul. 5, 1983, 83/4894

Int. Cl.⁴ G01N *27/04*

U.S. Cl. 73—23 **10 Claims**

1. A gas detector which comprises a housing, a gas cell transducer mounted in the housing and responsive to change its electrical characteristic with changes of concentration of selected gas in the housing, an electrical monitoring circuit supported in the housing and electrically connected to the transducer which is arranged to produce monitoring signals correponding to the electrical characteristic of the transducer, and a remote control station electrically connected to the monitoring circuit which supplies power to the monitoring circuit and receives the monitoring signals indicative of the concentration of the gas, the monitoring circuit including circuit means for producing monitoring signals having a maxi-



mum value when the concentration of gas is at a predetermined minimum, and which reduce in value as the concentration of gas increases toward a predetermined maximum, so that a failure of the gas detector or an interruption in the electrical connections between the remote control station and the monitoring circuit will cause an indication at the remote control station of a dangerous gas concentration, thus providing fail-safe operation of the gas detector.

4,606,220

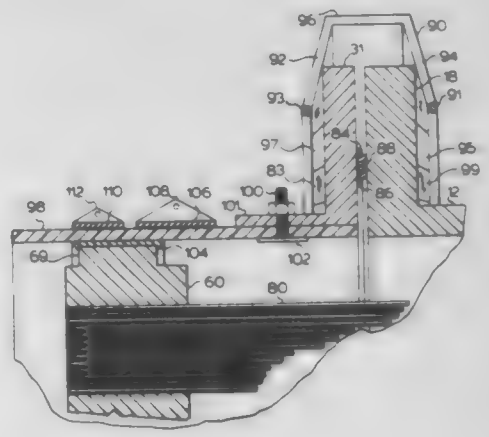
APPARATUS FOR LOCATING LEAKS IN A HEAT EXCHANGER

Emil Rudiger, S.S. 2, Site 18, Compartment 10, Fort St. John, British Columbia V1J 4M7, Canada

Filed Mar. 8, 1985, Ser. No. 709,603

Int. Cl.⁴ G01M *3/28*

U.S. Cl. 73—40.5 R **10 Claims**



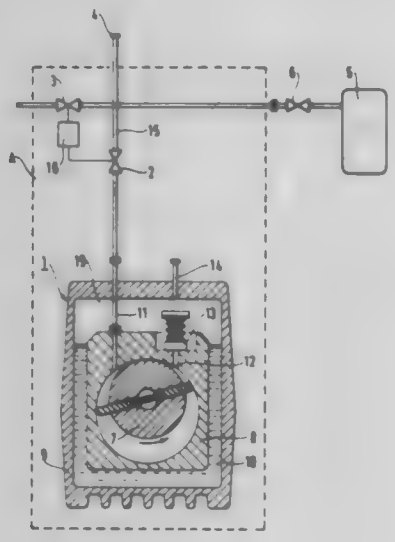
1. Apparatus for locating leaks in a heat exchanger of a type having a plurality of tubular elements supported at one end by a fixed tube sheet and at the other end by a floating tube sheet contained within an elongated cylindrical housing with the housing having flanges for attachment thereto by end vessels, comprising:
(a) an elastomeric sleeve couplable to a corresponding flange of said housing proximate said floating tube sheet;
(b) means for affixing said sleeve with said corresponding flange in sealing contact therewith;
(c) means for sealing said elastomeric sleeve to said floating tube sheet, and
(d) means for applying pressure to fluid in said heat exchanger between the tubular elements when the elastomeric sleeve is coupled to the housing in sealing contact with said corresponding flange and with said floating tube sheet, whereby any leak in any of said tubular elements with be observed by the appearance of fluid in the leaking tube, and any leak between a tube and a tube sheet will be observed by the appearance of fluid at the tube sheet.

4,606,221

METHOD OF DEPOLLUTING A HELIUM LEAK DETECTOR AND APPARATUS IMPLEMENTING THE METHOD

Jacques Tallon, and Jacques Morel, both of Annecy, France, assignors to Compagnie Industrielle des Telecommunications Cit-Alcatel, Paris, France

Filed Mar. 20, 1985, Ser. No. 713,734
Claims priority, application France, Mar. 23, 1984, 84 04565
Int. Cl.[4] G01M *3/20*
U.S. Cl. 73—40.7 7 Claims



1. A method of de-polluting a helium leak detector comprising a pumping station and a gas analyzer connected to the pumping station via an air inlet duct provided with an insertion valve, the pumping station comprising a sliding vane rotary vacuum pump comprising an assembly of a rotor and a stator, the assembly being placed in a pump sump partially filled with oil, a suction duct connecting the interior of the stator to the exterior of the sump, and exhaust channel connecting the interior of the stator to the interior of the sump which is in communication with the exterior via a point of the sump which is situated above the oil level, the pumping station further including a link duct having a fastening for connection to an apparatus to be tested at one end and having its other end connected to said suction duct via a pump isolating valve, an air inlet valve being placed in addition on a duct having one end which is open to the exterior and the other end being connected to said link duct between the connection fastening and the isolating valve, said helium leak detector being operated under a method including the steps of:

closing said air inlet valve and said insertion valve to the gas analyzer,

opening said isolating valve, and

connecting said link duct to the apparatus to be tested,

switching said pump on to evacuate the apparatus to be tested,

closing the isolating valve between the apparatus to be tested and the pump,

opening the insertion valve to the gas analyzer, and

performing measurements by directing a jet of helium against the walls of the apparatus to be tested such that, if said apparatus has a leak, helium enters the apparatus and then passes via the link duct to the analyzer which detects and measures the presence of helium and thus a leak in the apparatus under test,

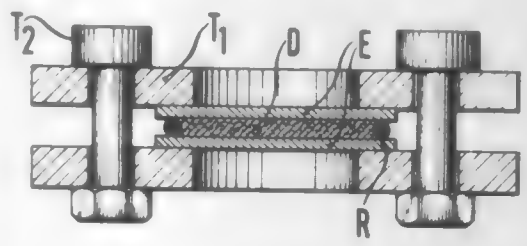
the improvement comprising closing the insertion valve to the analyzer and causing the air contained in the free space in the sump above the oil level to be thoroughly swept prior to performing a leak test.

4,606,222

EXTERNAL ENERGYLESS SAMPLE FOR DETERMINING THE CONTENT OF DISSOCIABLE POLAR LIQUIDS

Rolf Stockmeyer, Linnich-Tetz, Fed. Rep. of Germany, assignor to Kernforschungsanlage Julich, Fed. Rep. of Germany

Filed Aug. 2, 1983, Ser. No. 519,553
Claims priority, application Fed. Rep. of Germany, Aug. 17, 1982, 3230507
Int. Cl.[4] G01N *13/00*
U.S. Cl. 73—73 12 Claims



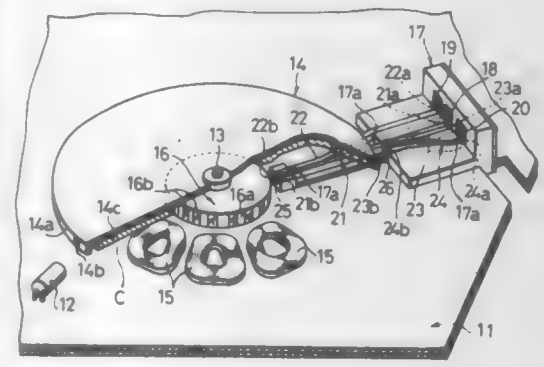
3. An apparatus for the determination of the content of dissociable polar liquids in gases, expanded solid bodies, charges of granular material, or electrically non-conductive liquids, wherein said apparatus does not require external energy; comprising two oppositely spaced electrodes defining a space therebetween, at least one component pressure-tightly enclosing at least a portion of the space intermediate the electrodes; and a powder within the space subjected to pressure, said component permanently maintaining said powder under pressure, said powder having a grain size in the range of between 0.001 and 1 mm, consituted of an elastically deformable material of crystalline or amorphic structure with an at least partial ionic bond and a specific resistance of at least 10^5 Ohm/cm, wherein at least one electrode and at least a portion of the component pressure-tightly enclosing said sapce is permeable to moisture encompassing the apparatus, whereby said permanently maintained pressure elastically deforms said powder and upon adsorption and desorption of molecules of said polar liquid produces a continuous current dependent upon the amount of adsorption and desorption of molecules of said polar liquid within the gas, liquid or solid being tested thereby indicating the content of polar liquids therein.

4,606,223

DEVICE FOR DETECTING ROTATING SPEED OF THIN SHAPE MOTOR

Hiroshi Matsunaga; Yoji Shimojima; Ichiro Tokunaga, all of Furukawa; Kosei Obata, and Yukihiko Yasuhara, both of Miyagi, all of Japan, assignors to Alps Electric Co., Ltd., Japan

Filed Jun. 11, 1984, Ser. No. 619,033
Claims priority, application Japan, Sep. 6, 1983, 58-87096[U]
Int. Cl.[4] G01M *15/00*
U.S. Cl. 73—116 6 Claims



1. In a device for detecting a rotating speed of a thin shape motor of a type comprising a vertical shaft rotatably mounted on a base plate, a rotor of a planar shape secured to the vertical

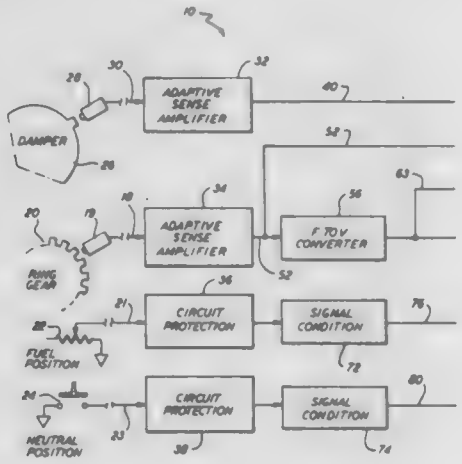
shaft in a spaced apart relation from the base plate, and a stator provided downwardly from the rotor on the base plate, the improvement comprising a rotatable disc of a diameter smaller than that of said rotor secured to said vertical rotatable shaft between said rotor and base plate, said rotatable disc having planar reflecting indices on a peripheral vertical surface thereof, a luminous element and a light-receiving element provided outwardly of said planar rotor, and a light-projecting optical fiber and a light-receiving optical fiber extending along said base plate such that one end of the light-projecting optical fiber is located to opposite said luminous element, while one end of the light-receiving optical fiber is located to opposite said light-receiving element, and that the other ends of said two optical fibers are placed in opposition to the peripheral surface of said rotatable disc.

4,606,224

DECELERATION BASED COMPRESSION TEST

Rinaldo R. Tedeschi, Newington, Conn., and Robert A. Edwards, Woodstock, England, assignors to United Technologies Corporation, Hartford, Conn.

Filed Apr. 1, 1985, Ser. No. 718,760
Int. Cl.[4] G01M *15/00*
U.S. Cl. 73—117.3 **1 Claim**



1. Apparatus for measuring compression in a vehicle mounted internal combustion engine having ring gear teeth which are spaced at crankshaft intervals and which rotate at engine speed, and having an accelerator and a transmission clutch for controlling engine speed above idle and for engaging and disengaging the engine from the vehicle load, respectively, in response to operator control, the apparatus comprising:

tooth sensor means for sensing rotation of the ring gear tooth and providing a ring gear tooth (RGT) signal having periodic pulses spaced at the same crankshaft angle intervals as the teeth, and having a pulse frequency proportional to engine speed;

converter means for converting said RGT signal pulse frequency into a corresponding speed signal having an amplitude representative of the engine's sub-cyclic speed resulting from the sub-cycle intervals of the engine cylinders;

transmission sensor means; for sensing the vehicle tranmission setting and providing a transmission signal indicative of disengagement of the engine from the vehicle; and

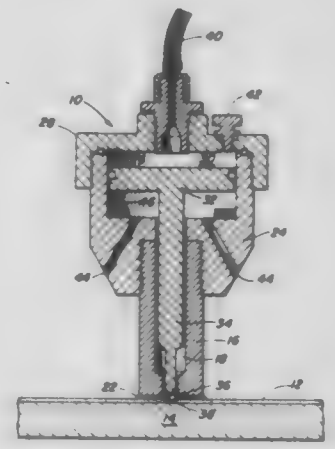
signal processing means, responsive to said RGT signal, said sub-cyclic speed signal, and said transmission signal, and including memory means for storing signals, for sampling and storing in said memory means said sub-cyclic speed signal values occurring at each RGT signal pulses during deceleration of the engine from a cruise speed to the idle speed, in the presence of said transmission signal, said processing means summing said stored sub-cyclic speed samples to calculate a deceleration increment associated with the compression interval of each cylinder and for comparing said deceleration increments of all cylinders to provide an indication of cylinder compression.

4,606,225

METHOD FOR NONDESTRUCTIVE TESTING OF COATING ADHESION

William H. Thomason, and Randall G. Ivie, both of Ponca City, Okla., assignors to Conoco Inc., Ponca City, Okla.

Filed Nov. 7, 1984, Ser. No. 669,127
The portion of the term of this patent subsequent to May 6, 2003, has been disclaimed.
Int. Cl.[4] G01N *19/04*
U.S. Cl. 73—150 A **7 Claims**



1. A method of testing an adhesive bond of a coating to a substrate to meet a minimum specification in a tensile mode comprising the steps of providing a dolly having an axially centered opening therethrough; bonding the dolly to the coating with bonding means having a bond strength in excess of an adhesive bond strength of an adhesive bond between the coating and the substrate; attaching piston and cylinder means to the dolly, the piston and cylinder means including an axially centered ram, the ram passing through the axially centered opening of the dolly; applying pressure to the piston and cylinder means to force the ram into pressure engagement against the coating and increasing the pressure to a predetermined monitored pressure at which a tensile force developed in the dolly meets the minimum specification.

4,606,226

LIQUID LEVEL SENSOR

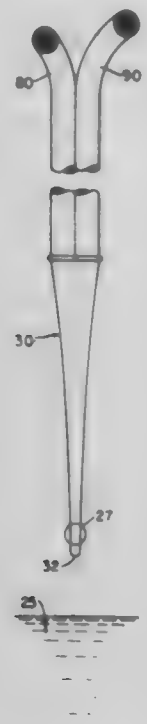
David A. Krohn, Hamden, Conn., assignor to Eotec Corporation, West Haven, Conn.

Filed Jul. 19, 1984, Ser. No. 632,409
Int. Cl.[4] G01F *23/02*
U.S. Cl. 73—293 **13 Claims**

1. A sensor for use in an optical liquid level sensor of the type interposing a submersible, prism-like sensor in a light transmission path, said sensor comprising:

a sensor element made of a solid, light transmitting material, said element being formed in a frusto-conical shape with a height L, an upper diameter D and a lower diameter d and a sensing surface located substantially near the bottom thereof, said sensor element tapering gradually from a portion of diameter D to the portion of diameter d, a region of said sensor element in the vicinity of said portion of diameter d being dimensioned to be no greater than the minimum diameter that a droplet of the liquid can assume and shaped so as to draw upwardly and away from said sensing surface any droplet of liquid formed on said sensor element when the level of liquid has dropped below said sensor to avoid false level indications;

means for coupling the top of said sensor element to a source of light; and



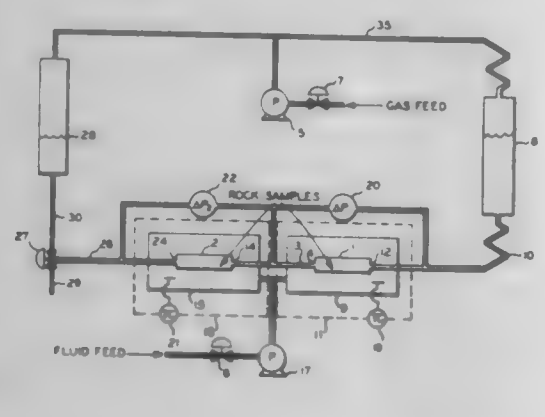
means for coupling the top of said element to photo-detecting means.

4,606,227

APPARATUS AND METHOD FOR SIMULATING DIAGENESIS

John P. Walters, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Feb. 21, 1985, Ser. No. 703,787
Int. Cl.[4] G01N *15/00*
U.S. Cl. 73—432 SD **19 Claims**



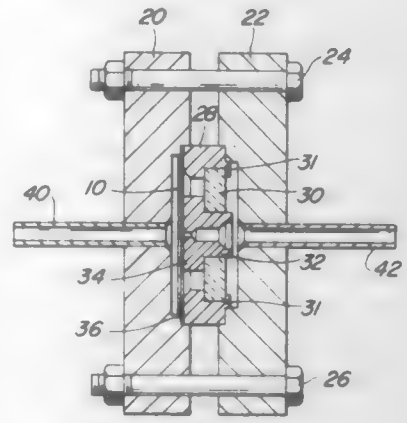
1. A process for simulating diagenesis, comprising:
maintaining a first rock sample in a first sample chamber of a first containment vessel at a first temperature;
maintaining a second rock sample in a second sample chamber of a second containment vessel at a second temperature;
passing fluids under pressure at a controlled rate into and through said first rock sample in said first sample chamber of said first containment vessel and then passing said fluid into and through said second rock sample in said second sample chamber of said second containment vessel.

4,606,228

DIAPHRAGM FOR TRANSDUCER MEASURING LOW PRESSURE DIFFERENTIALS

Raymond A. Whitmore, Llano, Calif., assignor to General Signal Corporation, Stamford, Conn.

Filed Jan. 7, 1985, Ser. No. 689,414
Int. Cl.[4] G01L *9/12*
U.S. Cl. 73—718 **4 Claims**



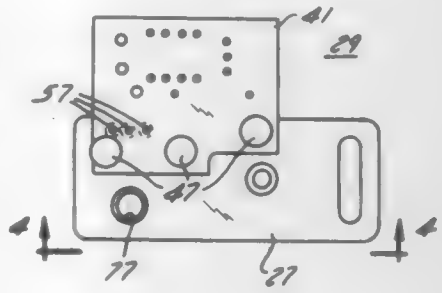
1. A diaphragm for a transducer for measuring pressure differences in a particular range comprising:
a circular diaphragm of resilient material having slots arranged to reduce the modulus of resilience of said diaphragm, said slots being regularly spaced convolutes extending from an outer diameter slightly less than the diameter of said diaphragm to an inner diameter defining a central area which has no slots and which can form a plate for a capacitive type pressure transducer; and
a slack sealing cover placed over said slots, said sealing cover being of material of sufficient strength to prevent extrusion or bunching of said material into said slots upon application of a pressure difference in said range to said diaphragm and of sufficient flexibility to follow deflections of the diaphragm without significant resistance.

4,606,229

DIFFERENTIAL PRESSURE TRANSMITTER

Scott L. Spence, Goshen, Ind., assignor to Johnson Service Company, Milwaukee, Wis.

Filed Apr. 1, 1985, Ser. No. 718,745
Int. Cl.[4] G01L *7/08, 9/14;* **H01L** *43/06*
U.S. Cl. 73—722 **7 Claims**



7. A differential pressure transmitter including:
a housing;
a first chamber within said housing for receiving an input pressure, said first chamber being defined by a rigid wall member and a continuously formed, highly resilient diaphragm;
a second chamber within said housing for receiving a transmitter for generating an electrical signal representative of said input pressure, said diaphragm maintaining said first chamber and said second chamber in fluid flow isolation one from the other;
a resilient reaction member confined within said second chamber for sensing a position of said diaphragm resulting

from the magnitude of said input pressure, said reaction member including a leaf spring supported at a first end and coacting with said diaphragm for sensing the position thereof, said reaction member having a magnetized structure mounted thereon, said magnetized structure including a plurality of generally planar magnets disposed in close juxtaposition one to the other in a generally coplanar attitude;

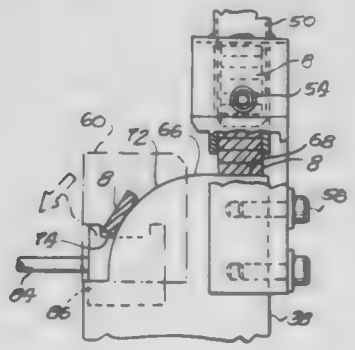
said transmitter including a Hall effect transducer for detecting the relative position of said structure with respect to said transducer and responsively generating said electrical signal.

4,606,230

TENSILE TEST APPARATUS EMBODYING NOVEL SPECIMEN BAR MAGAZINE

Richard L. Scott; William A. Kirksey, and James K. Rieke, all of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Jul. 8, 1985, Ser. No. 752,752
Int. Cl.[4] G01N *3/02*
U.S. Cl. 73—856 **7 Claims**



1. In a testing apparatus, a magazine for holding a plurality of elongated test specimens, said magazine comprising opposed upstanding members spaced apart and having channels for receiving the opposite end portions of the test specimens so that a group of test specimens is horizontally disposed but is in vertically stacked relationship and spans the space between said channels, a structure on which said upstanding members are mounted, said structure and said upstanding members defining slots at the lower ends of each channel to provide an escape passage for test specimens exiting said channels at their lower ends, a shoulder adjacent to each said slot and upon which the lowermost test specimen rests preparatory to removal of said lowermost test specimen from the magazine, seats on each upstanding member for receiving the exiting test specimen, said seats being clear of the associated slot and shoulder, said slots being sized for one-by-one removal therethrough of said test specimens; and an article transfer device having fingers for engaging each of said specimens when the specimen becomes the lowermost specimen of the stack and serving to withdraw said specimen from the stack through the slots, slide means on said magazine permitting specimens that are withdrawn through said slots to move along the slide means one-by-one onto said seats, and means for moving said fingers to a position engaging said test specimen on said seat.

4,606,231

STRAIN GAUGE MEASURING SYSTEM

Thomas E. Beling, Saxonville, Mass., assignor to Sigma Instruments, Inc., Braintree, Mass.

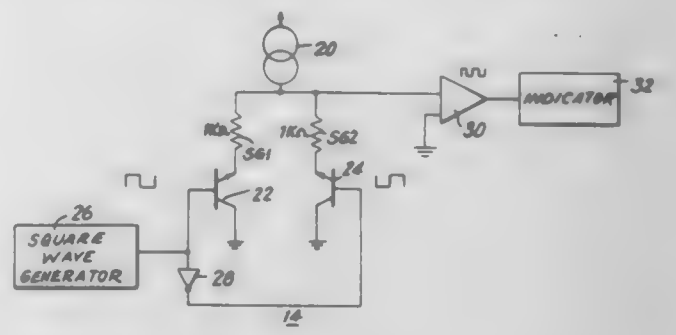
Filed Mar. 6, 1985, Ser. No. 708,730
Int. Cl.[4] G01D *3/04*
U.S. Cl. 73—862.63 **24 Claims**

1. A strain guage arrangement, comprising:

a pair of strain gauges arranged mechanically for achieving opposite impedance effects in response to a strain;

said gauges having predetermined impedances;

driver means for driving current alternately through one of said gauges and then the other of said gauges;



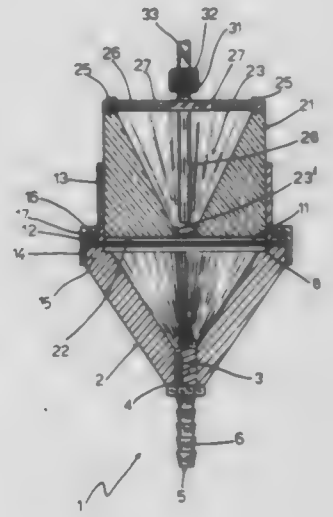
measuring means for measuring differences in the alternating currents through said gauges.

4,606,232

DEVICE FOR SEPARATING AIRBORNE PARTICLES IN DEPENDENCE ON GRAIN SIZE

Vittorio Prodi, Via Martinelli, 7, 40137 Bologna, Italy

Filed Apr. 16, 1985, Ser. No. 723,820
Claims priority, application Italy, Apr. 19, 1984, 3434 A/84
Int. Cl.[4] G01N *1/00*
U.S. Cl. 73—863.23 **9 Claims**



1. A device for separating airborne particles into grain size classes, characterised by the fact that it comprises:

a hollow base body (2) in which, in use, there is created a depression by means of an external member;

an upper body (21) along the longitudinal axis of which is formed a through channel (23) in which, in use, particle-bearing air is conveyed, and which has a lower end (23') of circular outline;

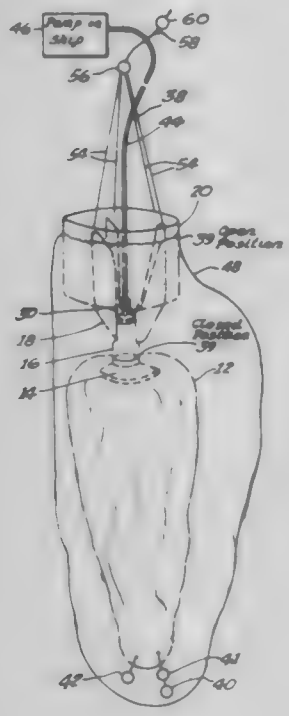
a mesh (8) positioned between the said base body (2) and the said upper body (21) and operable to support a filter (11) defining with the lower face of the said upper body (21) a cavity (22) which is in communication, through the said lower end (23') with the said through passage (23);

a nozzle (28) within the said channel (23), operating to eject close to the lower end (23) of this latter, filtered air in such a way that the particles in the fluid comprising the particle-bearing air and the filtered air after having traversed the said lower end (23') are separated according to their aerodynamic diameter and become deposited on the upper surface of the said filter starting from particles of greater diameter.

4,606,233
BAG SAMPLER

Curtis M. Burney, Fort Lauderdale, Fla., assignor to Nova University, Ft. Lauderdale, Fla.

Filed Jul. 30, 1984, Ser. No. 636,092
Int. Cl.[4] G01N *1/12, 1/14*
U.S. Cl. 73—864.63 11 Claims



1. A system adapted for sampling water, said system comprising:

a flexible container means for enclosing a sample of said water, said container means having a mouth;

means for operating said mouth, said means for operating comprising means for holding said mouth open, and means for hermetically sealing said mouth, said means for operating comprising a frame and an elastic ring means for clamping said mouth against said frame; and wherein:

said elastic ring is fixed about the perimeter of said mouth;

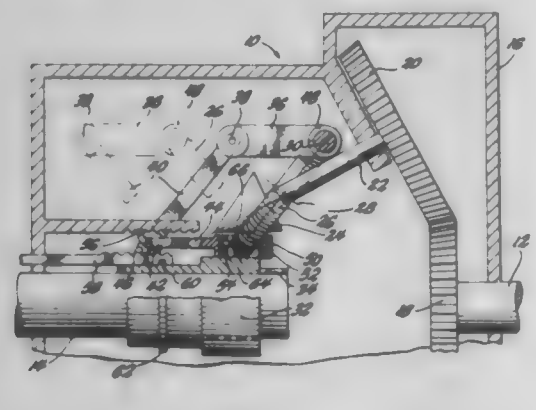
said means for holding comprises a rim portion of said frame, and said means for hermetically sealing comprises a chamber portion of said frame;

wherein said elastic ring means is effective to hold open said mouth if elastically clamping said mouth about said rim, and said elastic ring means is effective to hermetically seal said mouth if elastically clamping about said chamber.

4,606,234
RATIO CONTROL MECHANISM FOR A FRICTION DRIVE TRANSMISSION

Edward D. Klomp, Mt. Clemens, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Jun. 27, 1985, Ser. No. 749,516
Int. Cl.[4] F16H *15/00, 15/16, 15/42*
U.S. Cl. 74—192 4 Claims

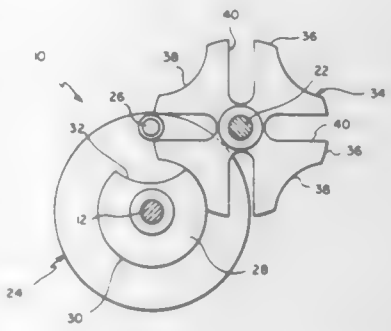


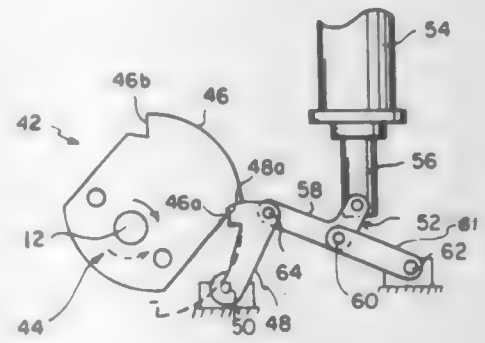
1. A ratio control for a toroidal drive mechanism having torus means adjustably disposed in friction drive relation between an input drive member and an output drive member for transmitting drive forces at a plurality of ratios therebetween, said control comprising; a linearly movable control rack; a gear member meshing with said control rack; a stationary reaction rack meshing with said gear member; a four-bar linkage means including said torus means and having one bar member secured to said gear member for rotation about the center thereof in response to linear movement of said control rack, and a second bar member connected between the center of said gear member and said torus means and being movable linearly with the center of said gear member in response to linear movement of said control rack, said torus means moving linearly between said input and output drive members and simultaneously rotating between said input and output drive members in response to the linear movement of said second bar member and the rotational movement of said first bar member to thereby change the drive ratio between said input and output drive members.

4,606,235
GENEVA DRIVE

Robert J. Kindt, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Sep. 29, 1983, Ser. No. 537,202
Int. Cl.[4] F16H *55/17*
U.S. Cl. 74—113 5 Claims





1. In a bidirectional Geneva drive having a rotatable output shaft and an input shaft that is selectively rotatable in opposite directions through active angles which respectively effect rotation of said output shaft, means for prepositioning said input shaft for predictable rotation through either of its active angles, said prepositioning means comprising:

a member coupled to said input shaft, said member including a pair of spaced, oppositely directed, abutment surfaces,

means, engageable with one of said surfaces during rotation of said input shaft in one direction and the other of said surfaces during rotation of said input shaft in the opposite direction, for locating said input shaft at positions from which rotation of said input shaft through one of its respective active angles is predictable; and

means for selectively actuating said locating means to (i) engage one or the other of said surfaces and locate said input shaft at one of such respective positions, and (ii) disengage such surface to enable said input shaft to thereafter rotate through its respective active angle to rotate said output shaft at a predictable time.

4,606,236

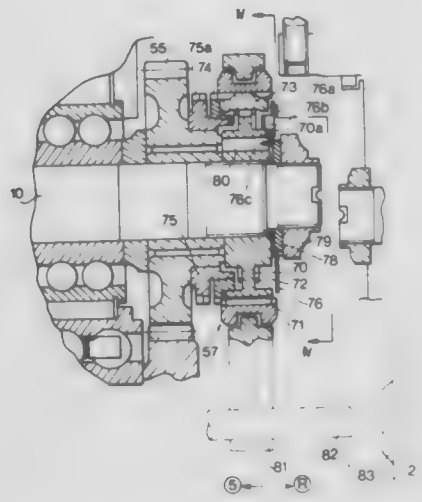
SYNCHRONIZER IN A TRANSMISSION FOR A MOTOR VEHICLE

Toshio Kobayashi, Tokyo, and Shinichirou Mura, Mitaka, both of Japan, assignors to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 21, 1985, Ser. No. 747,506

Int. Cl.[4] F16H *3/38*

U.S. Cl. 74—339 **3 Claims**



1. A synchronizer in a transmission for a motor vehicle, the synchronizer having a hub having a boss at a central portion thereof and secured to a shaft of the transmission, a sleeve axially slidably engaged with the hub with splines, synchronizer keys provided between the hub and the sleeve, and a synchronizer ring provided on one side of the hub, comprising;

the hub having a hole at the other side of thereof;

an annular cover plate having a central hole, axially projected projections provided at an outer portion adjacent the periphery thereof, and an axially projected lug;

the cover plate being secured to the hub at the other side by a nut engaged with the shaft, engaging the projections with the periphery of the boss and the lug with the hole of the hub, and locating the outer portion adjacent to the synchronizer keys.

4,606,237

CONTROL DEVICE

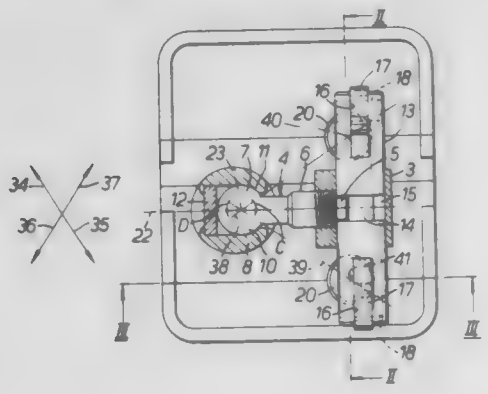
David J. Crack, Chelmsford, England, assignor to Teleflex Morse Limited, Basildon, England

Filed Jun. 6, 1983, Ser. No. 501,071

Claims priority, application United Kingdom, Jun. 14, 1982, 8217181

Int. Cl.[4] G05G *9/00*

U.S. Cl. 74—471 XY **21 Claims**



1. A control device comprising a pivotal lever means, a pair of axially movable output members which are movable in response to pivotal movement of the lever means, a cross shaft mounted for rotation about its axis in said lever means, a pair of links one for each output member and pivotally connected to opposite ends of the cross shaft and each to the respective output member, and a ball stud carried by said lever means and of which the ball is mounted in a fixed ball housing by which to mount said lever means for said pivotal movement thereof.

4,606,238

MOUNTING CONSTRUCTION OF SHIFT LEVER RETAINER CASING IN CHANGE-SPEED GEARING UNIT

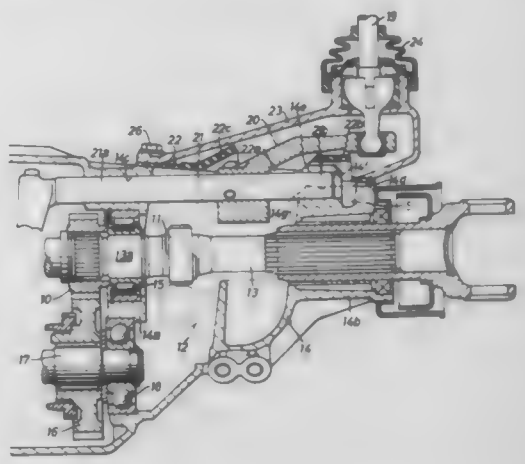
Kazuhito Ikemoto; Nobuaki Katayama; Yukio Terakura, all of Toyota, and Kan Sasaki, Aichi, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Jul. 29, 1981, Ser. No. 288,018

Claims priority, application Japan, Aug. 20, 1980, 55-117922[U]; Nov. 20, 1980, 55-167919[U]

Int. Cl.[4] G05G *9/12*

U.S. Cl. 74—473 R **4 Claims**



1. A change-speed gearing unit including an extension housing having an upper seating face, a retainer casing having an outer peripheral portion with mounting holes formed therein and a manual shift lever having a lower end mounted on said retainer casing in a selectively shiftable manner, comprising:

an oil buffer member formed of an elastic material and disposed between said upper seating face of said extension housing and said outer peripheral portion of said retainer casing and wherein said oil buffer member has an outer peripheral portion;

a first plurality of fastening bolts directly engaged with an upper face of said outer peripheral portion of said retainer casing adjacent said lower end of said shift lever and adapted to attach said retainer casing to said extension housing, said first plurality of fastening bolts being adapted to cooperate with said retainer casing and said extension housing;

a plurality of elastic members operatively associated with said mounting holes of said outer peripheral portion of said retainer casing; and

a second plurality of fastening bolts respectively engaged through each of said plurality of elastic members with said upper face of said outer peripheral portion of said retainer casing and adapted to floatably secure said retainer casing to said extension housing such that vibrations acting on said retainer casing are absorbed by floating displacement of said retainer casing with respect to said extension housing due to resiliency of said oil buffer member.

4,606,239

LOCKING AND UNLOCKING DEVICE FOR A GYROSCOPIC ROTOR

Jacques C. Guerin, Saint-Denis, France, assignor to Societe d'Etudes et de Realisations Electroniques, France

Filed Mar. 1, 1983, Ser. No. 470,921

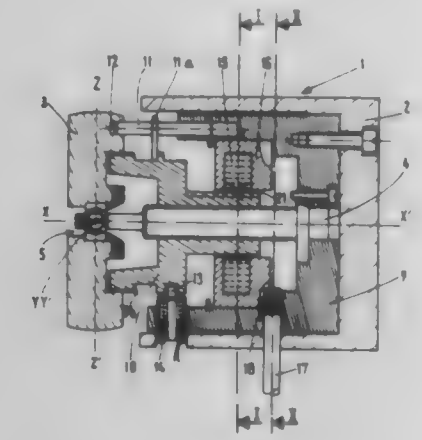
Claims priority, application France, Jun. 24, 1982, 82 11049

Int. Cl.[3] G01C *19/26*

U.S. Cl. 74—5.12 **8 Claims**

1. A locking and unlocking device for the rotor of a gyro-

scope enclosed in a housing and rotatably mounted on an internal cardan carried at the end of a shaft fixed to said housing, comprising: a screwthread on said shaft, and a bushing having a first screwthread corresponding to that of said shaft and cooperating therewith and a second screwthread of the same pitch as said first screwthread and cooperating with a



corresponding screwthread on said rotor, the arrangement being such that said bushing, when rotated, moves along said shaft between a position in which said second screwthread engages said screwthread of the rotor, and another position in which said second screwthread is disengaged from the screwthreaded of the rotor.

4,606,240

STEERING WHEEL

Katsunobu Sakane, Ichinomiya, Japan, assignor to Toyoda Gosei Co., Ltd., Nishikasugai, Japan

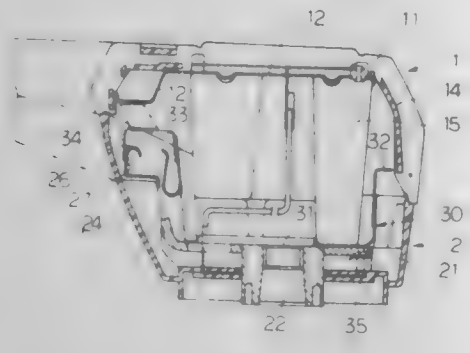
Filed Jun. 11, 1985, Ser. No. 743,491

Claims priority, application Japan, Jun. 11, 1984, 59-120614; Sep. 28, 1984, 59-204533; Sep. 28, 1984, 59-148025[U]; Oct. 2, 1984, 59-206567

Int. Cl.[4] B62D *1/04*

U.S. Cl. 74—552

5 Claims



1. A steering wheel comprising:

(a) a boss assembly including a boss plate;

(b) a wheel pad disposed on said boss assembly;

(c) a brittle plastic impact energy absorber in said wheel pad;

(d) bracket means provided in said wheel pad for holding said absorber therein and having a front connector and a rear connector; and

(e) a support secured in said boss assembly adjacent to the rear end thereof, said front connector being engaged with the front edge of said boss plate, while said rear connector is engaged with said support, whereby said wheel pad is secured to said boss assembly.

4,606,241

ADJUSTABLE CRANK ASSEMBLY

Verner Fredriksson, Industrigatan 35, S-335 00 Gnosjö , Sweden

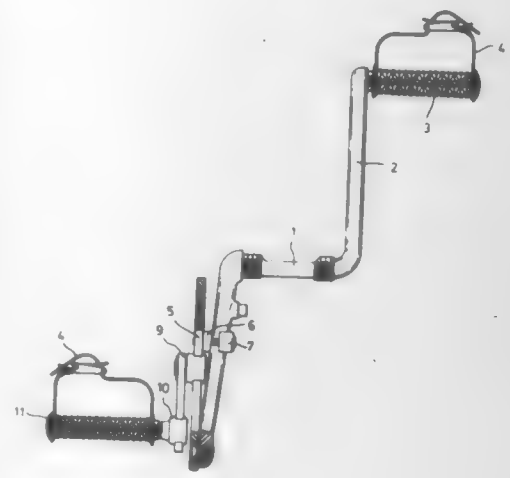
Filed Apr. 27, 1984, Ser. No. 604,938

Claims priority, application Sweden, Apr. 29, 1983, 8302431

Int. Cl.[4] G05G *1/14*

U.S. Cl. 74—594.1

7 Claims



I. A crank assembly adjustable both as to the crank radius and the height of crank movement, comprising:

a hub assembly including an axle;

a crank lever affixed to said axle and having a length;

a pivot arm rotatably connected to a bearing arrangement;

an adjustment member affixed to and generally parallel to said crank lever for adjustably positioning said bearing arrangement at positions alongside said crank lever, said bearing arrangement being slidably connected to said adjustment member and provided with means for securing said bearing arrangement to said adjustment member at positions along said adjustment member;

a pedal; and

anchorage means for adjustably positioning said pedal on said pivot arm.

4,606,242

PARKING DEVICE

Hiromi Hasegawa, Obu; Yoshinobu Iwase, Toyokawa; Yutaka Taga, Aichi; Isamu Minemoto, and Takahiro Sakai, both of Toyota, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya City and Toyota Jidosha Kabushiki Kaisha, Toyota, both of, Japan

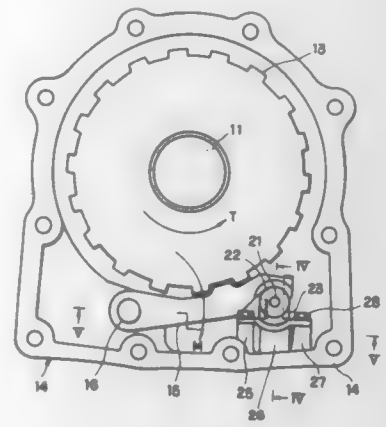
Filed Jul. 10, 1985, Ser. No. 753,449

Claims priority, application Japan, Jul. 16, 1984, 59-106413

Int. Cl.[4] F16H *57/2*

U.S. Cl. 74—606 R

8 Claims



1. A parking device comprising:

a parking gear;

a pawl having one end pivotally mounted on a transmission housing and the other end arranged to be pivoted radially towards and away from said parking gear;

a parking cam arranged for sliding against said pawl and

movable axially of said parking gear for pivoting said pawl realtive to said parking gear for bringing said pawl into and out of engagement with said parking gear;

a boss having a flat supporting surface and provided on the transmission housing so as to be situated on a side of said pawl opposite said parking cam; and

a plurality of fastening bolts;

said boss and said plurality of bolts retaining a cam guide for said parking cam and a reaction supporting bracket in position, said reaction supporting bracket being received on the flat supporting surface of said boss.

4,606,243

HOUSING FOR A DRIVING GEAR FOR ALL-WHEEL-DRIVE VEHICLES

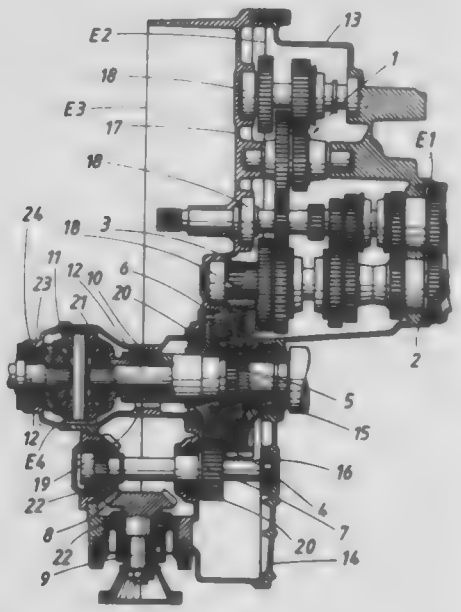
Noboru Ashikawa, Sayama, Japan; Karl Friedrich, Leibnitz, and Herwig Leinfellner, Graz, both of Austria, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 4, 1984, Ser. No. 657,544

Claims priority, application Japan, Oct. 5, 1983, 58-186091

Int. Cl.[4] F16H *37/08, 57/02*

U.S. Cl. 74—700 **2 Claims**



1. A drive gear for all-wheel-drive vehicles, comprising a transmission provided with a plurality of shafts parallel with the wheel axles, an interaxle differential gear having an axis parallel with said shafts in said transmission and adapted to output the driving force from said transmission in a divided manner, an interwheel differential gear provided coaxially with said interaxle differential gear and adapted to apply one output therefrom in a divided manner to right and left wheels which are closer to said transmission, a bevel gear train interposed between a driving shaft and said interaxle differential gear, said driving shaft being provided so as to cross the axes of said two differential gears at right angles thereto and apply the other output from said interaxle differential gear to right and left wheels which are more distant from said transmission, and a housing in which all of said parts are held, said housing consisting of a combination of first, second and third sections of which all of the boundary surfaces extend in parallel with one another and at right angles to the axes of said shafts in said transmission, said first, second and third sections being arranged along the axial direction of said transmission and in the mentioned order from said transmission toward said interwheel differential gear, said first section holding said transmission therein and having a wall which extends toward said driving shaft and which is provided thereon with a plurality of bearings for said interaxle differential gear, one shorter driving shaft connected to one output end of said interwheel differential gear, and an input shaft of said gear train, said second section being provided therein with a plurality of bearings for supporting said shafts in said transmission, said interaxle differential gear and said input shaft of said gear train, said third section being formed to include a funnel shaped portion for holding said interwheel differential gear therein, and provided with the remaining bearings for supporting said gear train.

4,606,244

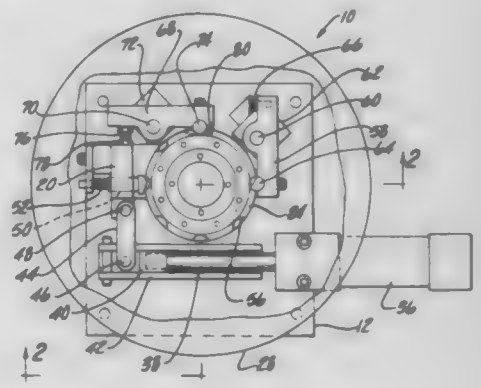
INDEXING TURNTABLE ASSEMBLY

Anthony K. Schneemann, 25761 Briarbank, Southfield, Mich. 48034

Filed Jul. 7, 1983, Ser. No. 511,745

Int. Cl.[4] B23Q *17/00*

U.S. Cl. 74—816 **8 Claims**



1. An indexing turntable assembly for causing rotation of a turntable to a plurality of work station positions comprising:

a spindle;

an indexing hub rotatably mounted to said spindle and defining a plurality of circumferentially spaced notches;

an indexing yoke rotatably mounted to said spindle;

actuation means causing said indexing yoke to angularly reciprocate between an indexed and a retracted position;

a driving dog affixed to said yoke and biased to engage with a first one of said notches when said yoke is in its indexed position and disengage from that notch when said indexing yoke is moved from its indexed position to its retracted position whereupon said driving dog engages another of said notches for driving said indexing hub to a new indexed position;

a one-way clutch dog engaging a second one of said notches, spaced circumferentially from said first notch, when said yoke is in its indexed position and operative to prevent rotation of said indexing hub when said indexing yoke is moved from its indexed position to its retracted position, said clutch dog allowing rotation of said indexing hub when said indexing yoke is moved from its retracted to its indexed position; and

a locking pawl assembly including a locking pawl engaging a third one of said notches, spaced circumferentially from said first and second notches, when said yoke is in its indexed position and movable out of engagement with said hub as said hub is driven to a new indexed position by said yoke.

7. In an indexing turntable assembly for causing rotation of a turntable to a plurality of work station positions including an angularly reciprocating indexing yoke having a driving dog which engages a plurality of notches formed by a hub, drive means acting on said yoke moving said yoke from an indexed position wherein said driving dog engages a first one of said notches to a retracted position wherein said driving dog engages another of said notches whereupon said hub is caused to rotate as said yoke is returned to its indexed position, and one-way clutch dog means engageable with a second one of said notches spaced circumferentially from said first notch, when said yoke is in its indexed position, the improvement wherein said assembly further includes;

a lever having a first and second end and a pivot therebetween, a locking pawl affixed to said first end and engageable with a third of said notches, spaced circumferentially from said first and second notches, when said yoke is in its indexed position and means on said indexing yoke contacting said second end of said lever when said yoke is in its

indexed position whereby said locking pawl is locked into position within said third notch to thereby coact with said driving dog and said one-way clutch dog to prevent rotation of said turntable.

8. In an indexing turntable assembly for causing rotation of a turntable to a plurality of work stations including an angularly reciprocating indexing yoke having a driving dog, drive means acting on said yoke, said yoke moveable between a first position wherein said driving dog engages a first notch formed by a hub to a second position wherein said driving dog engages another notch whereupon said hub is rotatably driven when said yoke is returned to said first position, one-way clutch dog means engageable with a second notch, spaced circumferentially from said first notch, and a locking pawl means engageable with a third notch, spaced circumferentially from said first and second notches, the improvement wherein said drive means comprises;

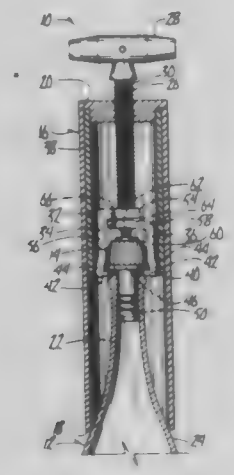
a linearly translating actuation means pivotably affixed to a rigid link having a first and second end, said first end being pivotably affixed to said actuation means, said second link end being pivotably affixed to said indexing yoke such that a line passing through said first and second link ends forms a right angle with respect to the direction of movement of said linearly translating actuation means when said indexing yoke is at or near said first position.

4,606,245

OPENING MECHANISM FOR BOTTLES HAVING CLOSURE ELEMENTS

Joseph F. Veverka, P.O. Box 324, and Jerold L. Williams, P.O. Box 226, both of Prairie City, Iowa 50228

Filed Mar. 28, 1985, Ser. No. 717,016
Int. Cl.[4] B67B *7/02*
U.S. Cl. 81—3.36 **10 Claims**



1. An opening mechanism for sparkling wine bottles having a shoulder and a sealing stopper comprising:

a sleeve means having a top end and an open bottom, said open bottom end being position able over and around the top and neck of a bottle to be opened, said lower end being braceable against the shoulder of said bottle;

leverage means operatively associated with said sleeve means being movable with respect to said sleeve means and said bottle;

grasping means for grasping said sealing stopper of said bottle being movable between a grasping closed state and a non-grasping open state, said grasping means being operatively connected to said leverage means and being movable between a raised position and a lowered position within said sleeve means in response to movement of said leverage means;

a control means connected to said sleeve means and having an actuation portion, said control means being in the path of said grasping means between said raised and said lowered positions and between said open bottom end and said top end of said sleeve means;

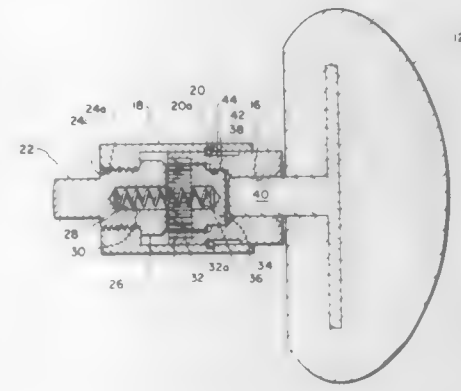
said grasping means contacting said actuation portion of said control means when said grasping means is aligned with said sealing stopper of said bottle when said sleeve means is positioned upon said bottle and has engaged the shoulder of said bottle causing said grasping means to move into said closed grasping state and into grasping engagement with said sealing stopper of said bottle.

4,606,246

SOCKET WRENCH COUPLER

John R. Gunther, 1880 Delann La, Salt Lake City, Utah 84121

Filed Jan. 2, 1985, Ser. No. 688,319
Int. Cl.[4] B25B *13/00*
U.S. Cl. 81—58.3 **1 Claim**



1. A socket wrench coupler comprising

a first housing

a second housing, said first and second housing being mounted to reciprocate and to rotate with respect to one another;

handle means connected to the first said housing and rotatable therewith;

a socket post fitting fixed to, projecting from and extending into the second housing and having a blind base extending centrally thereinto to receive one end of a spring;

means limiting the extent of reciprocation of the housings relative to one another, said means comprising a narrow groove in the inside wall of the second housing, a snap ring in the narrow groove and extending outwardly thereof; and a wide groove in an outer wall in the first housing to receive the snap ring;

teeth means on an inner wall of the first housing;

a plug positioned in the first housing adjacent the teeth means,

corner means on the socket post fitting inside the second housing arranged to be surrounded and engaged by the teeth means of the first housing whereby rotation of the first housing will rotate the second housing; and

a spring having one end in the blind bore of the socket post fitting and the other end thereof in a blind bore formed in the plug, said spring biasing the housings apart, whereby the teeth means are out of engagement with the corner means and the handle and first housing will rotate together independently of the second housing.

4,606,247

VERSATILE CHAINED TOOL SET

Charles H. Graham, Salt Lake City, Utah, assignor to Professional Business Management Associates, North Salt Lake, Utah

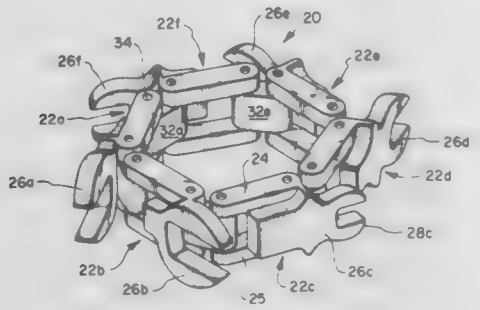
Filed Sep. 16, 1985, Ser. No. 776,426
Int. Cl.[4] B25B *23/16*
U.S. Cl. 81—177.6 **68 Claims**

1. A versatile tool set comprising:

at least three or more tools each comprising a working tip and means for linking said tools together to form a chain wherein each said working tip is attached to wherein said working tips and linking means are connected from front end to back end so as to be each oriented in the same direction; and

means for connecting said linking means such that each said linking means is pivotally connected to at least one adjacent

linking means, whereby said chain is operable so as to be foldable into two parallel, abutting rows of tools which



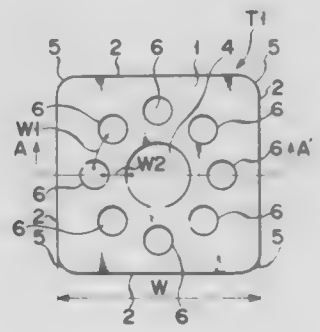
thereby form an essentially rigid hand piece having at least one said working tip extending from the hand piece so as to be operable on a workpiece.

4,606,248

CUTTING TOOL

Hiroshi Shikata, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Continuation of Ser. No. 422,098, Sep. 23, 1982, abandoned. This application Jan. 16, 1985, Ser. No. 691,735
Claims priority, application Japan, Dec. 18, 1981, 56-205019
Int. Cl.[4] B23B *1/00, 27/14*
U.S. Cl. 82—1 C **32 Claims**



1. A method of reducing the amount of super hard material used in making a throw-away tip made from a given type of super hard material without running the risk of catastrophic failure, the throw-away tip:

(a) having a rake face, an attaching face parallel to the rake face, at least one cutting blade edge, and a central axis perpendicular to the rake and attaching faces;

(b) having given exterior dimensions; and

(c) being designed for use in cutting a work piece rotating at a given rotational speed and made from a given type of material at a given maximum feed rate of f distance units per revolution of the work piece,

said method comprising the steps of:

(d) providing a plurality of cavities in at least one of the rake and attaching faces of the throw-away tip, none of said plurality of cavities being a mounting throughhole, each of said plurality of cavities being at least partially defined by a first side surface which is the side surface of each of said plurality of cavities closest to the nearest cutting blade edge and a second side surface which is the side surface of each of said plurality of cavities closest to the nearest adjacent one of said plurality of cavities, each one of said plurality of cavities extending at least a major portion of the distance between the rake and attaching faces and a major portion of the distance between the nearest cutting blade edge and the central axis of the throw-away tip and at least one of said plurality of cavities being a through-hole penetrating from the rake face to the attaching face, whereby said plurality of cavities replace a substantial amount of the super hard material;

(e) selecting a minimum distance w_3 between said first side surface of each of said plurality of cavities and the nearest cutting blade edge which falls within the range $f \leqq w_3 \leqq 5f$; and

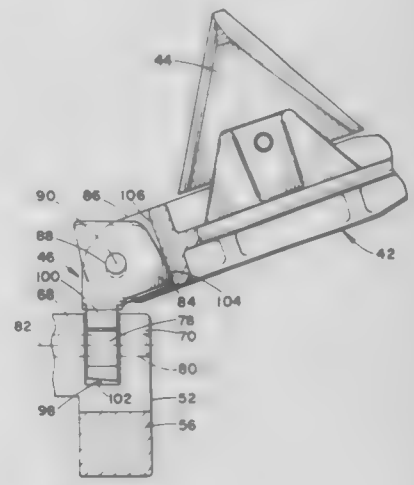
(f) selecting a minimum distance w_1 between said second side surfaces of adjacent ones of said plurality of cavities which falls within the range $f \leqq w_1 \leqq 5d$.

4,606,249

REAMING TOOL FOR THREADING MACHINES

Robert J. Hayes, Westlake, and James C. Redman, Amherst, both of Ohio, assignors to Emerson Electric Co., St. Louis, Mo.

Filed Jan. 30, 1985, Ser. No. 696,404
Int. Cl.[4] B23B *27/00*
U.S. Cl. 82—36 R **21 Claims**



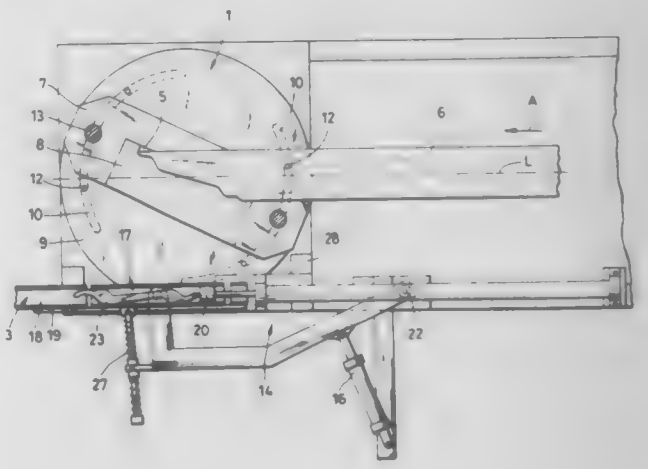
1. A reaming tool independently mountable on tool carriage means of a threading machine having a horizontal axis, said tool comprising arm means having opposite ends, reamer blade means on said arm means between said opposite ends, and means on one of said opposite ends of said arm means for mounting said arm means on said carriage means for independent pivotal movement relative thereto about angularly related plural axes at said one end of said arm means and between use and storage positions, said arm means in said use position extending horizontally across said threading machine axis and in said storage position being laterally offset from said axis and axially inclined relative to vertical.

4,606,250

APPARATUS FOR PRODUCING BLANKS FROM A WEB

Peter Krösbacher, Fulpmes, and Johann Wetzinger, Telfes, both of Austria, assignors to Eumuco Aktiengesellschaft fur Maschinenbau, Fed. Rep. of Germany

Filed Jul. 25, 1985, Ser. No. 758,715
Int. Cl.[4] B23D *15/08;* B26D *7/06*
U.S. Cl. 83—161 **20 Claims**



1. Apparatus for producing blanks from a web comprising a pair of relatively movable upper and lower blades for severing

therebetween blanks from a web along a predetermined cut line established by cooperative cutting edges of said blades, means for defining a predetermined infeed path of travel for a web at a predetermined selective angle to the predetermined cut line, means for defining a predetermined discharge path of travel for blanks severed by said blades, means for rotating said blades to selectively vary the predetermined selective angle to thereby selectively alter the angular relationship of the predetermined cut line to the web infeed path of travel whereby blanks of varying sizes, shapes and/or cut line orientation can be severed from a web, and means for transferring each blank from a position adjacent said blades after severance to a position more remote from said blades and to said discharge path of travel through an arc of movement corresponding to at least the predetermined selected angle whereby the blanks are continuously moved to congruent positions of delivery along said discharge path of travel.

4,606,251

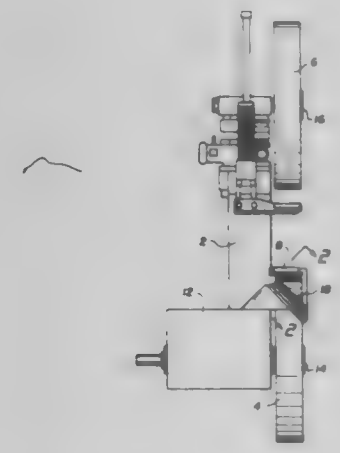
ADJUSTABLE SAWDUST SHEAR FOR BANDMILLS

Sidney N. Boileau, Surrey, Canada, assignor to CAE Machinery Ltd., Vancouver, Canada

Filed Jul. 31, 1985, Ser. No. 761,209

Int. Cl.[4] B27B *13/00*

U.S. Cl. 83—168 **7 Claims**



1. A sawdust shear apparatus to enable cleaning of the band saw of a band mill, the apparatus comprising:

a shear to contact the band saw;

a housing to carry the shear;

a first recess within the housing;

a base;

a piston extending from the base and being received within the first recess with a fluid tight, slidable fit;

means to supply fluid under pressure to the recess to move the shear outwardly from the base; and

means tending to urge the shear towards the base.

4,606,252

CHAIN SAW WOOD CUTTING APPARATUS

Terry Lahti, R.R. 1, Box 98, Houghton, Mich. 49931

Filed May 20, 1983, Ser. No. 496,512

Int. Cl.[4] B27B *17/02*

U.S. Cl. 83—574 **5 Claims**

1. A chain saw wood cutting apparatus comprising:

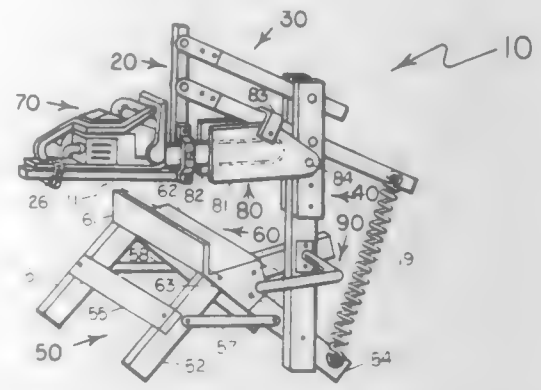
a chain saw mounting assembly, said assembly consisting of a vertical member and a horizontal member, said vertical member being attached ridgidly at its lower end to one end of the horizontal member, the horizontal member's long axis substantially perpendicular to the vertical member's long axis, the resulting assembly resembling a backward "L" shape;

the means to clamp the chain saw securely to the chain saw mounting assembly, the chain saw resting along the assembly's horizontal member, the chain saw's cutting bar projecting out past the junction of vertical member and the horizontal member, the long axis of the chain saw's cutting bar being roughly perpendicular to the long axis of the assembly's vertical member;

an upper link arm and a lower link arm, both link arms each having pivot attachment holes at both ends, both link arms having equal distances between said pivot attachment holes;

two pivot attachment holes, located in the upper part of the vertical member of the chain saw mounting assembly, used for attaching the upper link arm and the lower link arm to the chain saw mounting assembly, said pivotally attached link arms extending out and away from the chian saw in roughly the same direction as the chain saw's cutting bar;

a vertical beam assembly containing two separate pivot attachment holes, located in it's upper end; said pivot attachment holes being the same distance apart as the similiar attachment holes located in the vertical member of the chain saw mounting assembly;



said pivot attachment holes, in the vertical beam assembly, used for pivotally attaching the upper and lower link arms to the vertical beam assembly, said link arms being attached at their other ends to the chain saw mounting assembly;

a leg assembly, which supports the vertical beam assembly, and also contains the means to support the log in the proper relationship to the chain saw;

whereby the exact geometric relationship between the chain saw mounting assembly, the upper and lower link arms, and the vertical beam assembly causes the chain saw to move through a controlled and infinately repeatable path, and that the motion that the saw travels through is translational relative to any horizontal plane as the saw is raised and lowered for the purpose of cutting through the log supported beneath.

4,606,253

CUTTING LINK FOR A CHAIN CUTTER

Henri Weigel, Paris, France, assignor to Hew & Milan Development S.A., Switzerland

Filed Mar. 25, 1983, Ser. No. 479,034

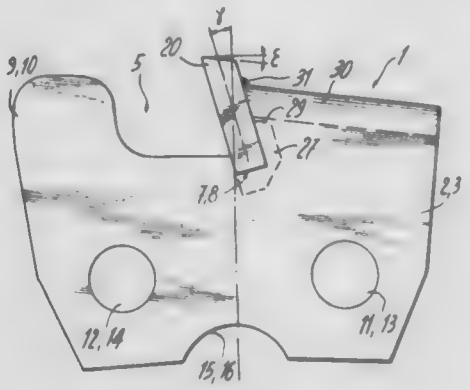
Claims priority, application Switzerland, Mar. 25, 1982, 1821/82

Int. Cl.[4] B27B *33/14*

U.S. Cl. 83—830 **11 Claims**

1. A cutting link for a chain cutter comprising a support member adapted to slide on a guide, and a cutting element solidly connected to the support member, which cutting link is characterised in that the support member comprises two parallel longitudinally extending flanks, interconnected by a cross-piece at one end thereof, each flank having a notch therein adjacent said cross-piece, said cutting element taking the form of a small plate of hard metal and being disposed transversely with respect to the two flanks of the support member in said notches wherein said cutting element is rigidly maintained in said support member, such that the cutting edges thereof

project beyond the cross-piece, and the rear surface of the cutting element relative to the direction of cutting movement,



a central stud on said cutting element which is enclosed by the two flanks and the connecting cross-piece.

4,606,254

ARRANGEMENT FOR MANUFACTURING CURVED WALL PORTIONS OF HEAT INSULATING WALLS

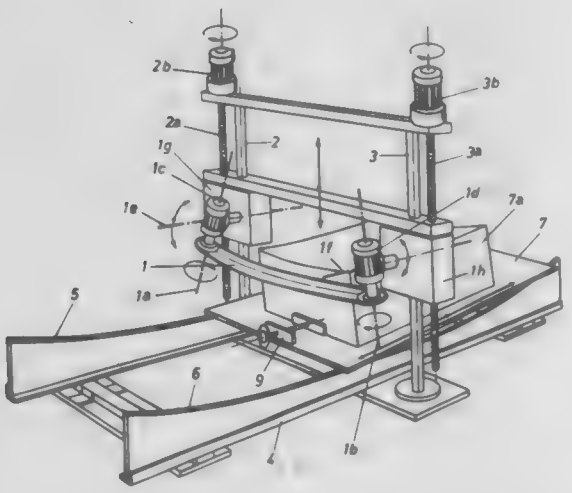
Gerhardt Schmalz, Schillerweg, Fed. Rep. of Germany, assignor to Wezel GmbH & Co. KG, Biedenkopf, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 277,216, Jun. 25, 1981, abandoned. This application Nov. 30, 1984, Ser. No. 678,007

Claims priority, application Fed. Rep. of Germany, Oct. 29, 1980, 3040694; European Pat. Off., Dec. 15, 1980, 80107904.7; Spain, Jun. 26, 1981, 503.410; Japan, Jul. 23, 1981, 56-114528

Int. Cl.[4] B26D *3/28;* B27B *17/02*

U.S. Cl. 83—871 **13 Claims**



1. An arrangement for manufacturing curved wall portions of a heat insulating wall for a container and particularly for cutting a block for a heat-insulating synthetic foam material with a contour embracing a section of a container surface to be insulated, the arrangement comprising a chain saw having a cutting tool which runs along an outer edge of a flexible web and has turning axes in which it is driven for running, said chain saw having two spaced ends; means for running said cutting tool along said outer edge of said flexible web of said chain saw and including two rotary elements; upright guiding elements each located at a respective one of the end of the chain saw and arranged to guide the latter for upward and downward movement between a plurality of vertical positions; means for displacing said chain saw in a vertical direction and including two displacing elements each arranged to act upon a respective one of the end of the chain saw in synchronism with one another and being parallel to said guiding elements; means for allowing the turning axes of the cutting tool of the chain saw to be inclined relative to one another and about a horizontal axis extending in a cutting direction between a plurality of inclined positions; and means for moving the block in vertical and horizontal directions relative to said chain saw.

4,606,255

GUITAR FOR GUITAR SYNTHESIZER

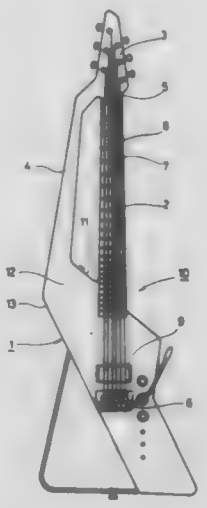
Yoshiaki Hayashi, and Akira Matsui, both of Matsumoto, Japan, assignors to Roland Corporation, Osaka, Japan

Continuation-in-part of Ser. No. 484,881, Apr. 14, 1983, abandoned. This application Sep. 26, 1984, Ser. No. 655,326

Claims priority, application Japan, May 6, 1982, 57-66215

Int. Cl.[4] G10H *3/18*

U.S. Cl. 84—1.16 **4 Claims**



1. A guitar synthesizer, comprising a guitar body, a bridge provided on the upper surface of said body, a neck having one end attached to said body, a nut and a head provided in the top end portion of said neck, strings stretched between said bridge and said nut, and a pickup for providing a guitar string signal including a fundamental frequency component according to the vibration of each of said strings and a harmonic frequency component thereof; and synthesizer means for generating a guitar synthetizer signal associated with said fundamental frequency component in response to said guitar string signal, said body of said guitar comprising projecting means (**11**, **12**, **13**) including a non-vibratory projecting portion (**12**) located in the vicinity from which said neck extends toward said head, and a mechanical reinforcing frame (**4**) extending from said non-vibratory projecting portion of said body toward said head, said mechanical reinforcing frame (**4**) firmly connecting said body and said head along the shortest distance for suppressing vibrations of said neck to prevent an early attenuation of said fundamental frequency component, and wherein said projecting means have two vibratory portions (**11**, **13**), at least one of which intersects with said neck, said non-vibratory projecting portion (**12**) of said body extending between said vibratory portions in a direction permitting said mechanical reinforcing frame member (**4**) to extend toward said head.

4,606,256

SIGHT SYSTEM FOR A STABILIZED GUN

Mervyn C. De'Ath, Pulborough, England, assignor to The Marconi Company Limited, England

Filed Oct. 24, 1978, Ser. No. 957,311

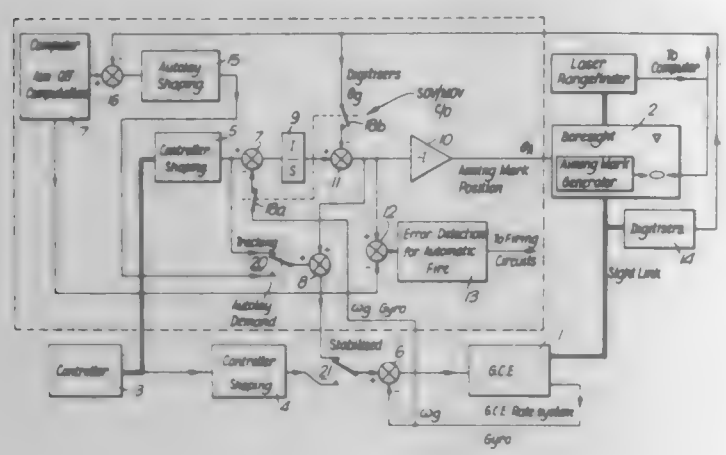
Claims priority, application United Kingdom, Nov. 1, 1977, 45428/77

Int. Cl.[4] F41G *3/22*

U.S. Cl. 89—41.09 **13 Claims**

1. A sight system for a stabilised gun, the sight system including a boresight mark for permanent alignment with the gun boresight, means for injecting an electronically generated aiming mark into the sight, manually operable means for producing a demand signal designating required movement of the aiming mark with respect to the boresight, and means for

subtracting from said demand signal a gun movement signal, the arrangement being such that the aiming mark is controlled



with respect to the target scene in accordance with the demand signal and irrespective of the rate of gun movement.

4,606,257

ELECTROPNEUMATIC DRIVE SYSTEM FOR CRUST BREAKING DEVICES AND PROCESS FOR OPERATING THE SAME

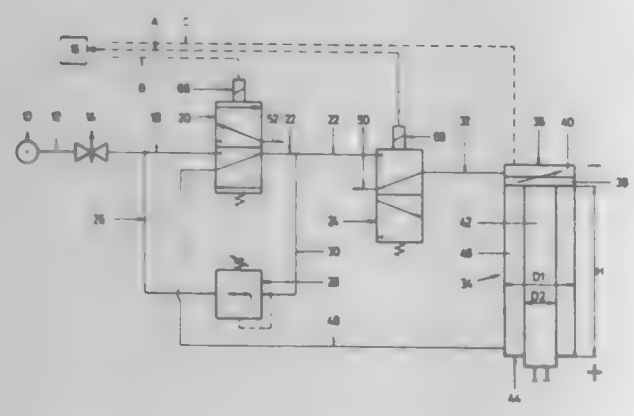
Hans Pfister, Duebendorf, Switzerland, assignor to Swiss Aluminium Ltd., Chippis, Switzerland

Filed Apr. 23, 1984, Ser. No. 602,698

Claims priority, application Switzerland, May 3, 1983, 2386/83

Int. Cl.⁴ F15B *15/22*

U.S. Cl. 91—27 **9 Claims**



1. An electropneumatic drive system fed compressed air from a compressed air network for crust breaker devices for fused salt aluminum reduction cells which comprises:

a compressed air network;

a slide valve downstream from the compressed air network;

a 5/2 channeling valve downstream from said slide valve and including an actuating means;

a pressure reducing valve downsteam from said slide valve and parallel to the 5/2 channeling valve;

a 3/2 channeling valve downstream from both said 5/2 channeling valve and pressure reducing valve and including an actuating means;

a working cylinder including a cylinder head, a piston and piston rod therein and a crust breaking device connected to said piston rod, said cylinder including a positive side penetrated by the piston rod and a negative or working side;

means including evacuable compressed air lines connecting the working cylinder on the negative side to the 3/2 channeling valve and on the positive side to the 5/2 channeling valve;

means including a microprocessor connected to said working cylinder indicating the completion of the piston thrust movement, said means also being connected to said 3/2 valve actuating means and said 5/2 valve actuating means;

compressed air lines from said network to said 5/2 valve and from said 5/2 valve to said 3/2 valve, and compressed air lines connecting said pressure reducing valve (1) upstream of said 5/2 valve and downstream of said slide valve, and (2) downstream of said 5/2 valve and upstream of said 3/2 valve;

whereby during the piston thrust stroke the working cylinder along with the 3/2 channeling valve form a circuit supplied with compressed air via said pressure reducing valve.

4,606,258

SELF-PRESSURIZING HYDRAULIC CONTROL SYSTEM

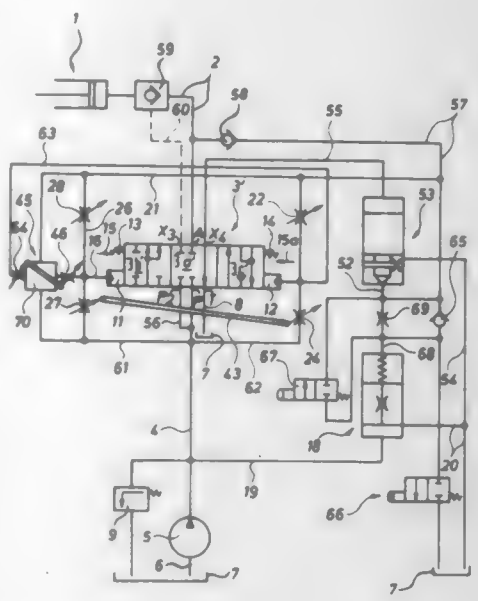
Wolfgang Kauss, Lohr-Wombach, Fed. Rep. of Germany, assignor to Manneshann Rexroth GmbH, Lohr, Fed. Rep. of Germany

Filed Nov. 13, 1984, Ser. No. 670,312

Claims priority, application Fed. Rep. of Germany, Nov. 10, 1983, 3340676

Int. Cl.⁴ F15B *13/042*

U.S. Cl. 91—433 **12 Claims**



1. A hydraulic system for operating a pressurizable load off a pressure source having a high-pressure side and a low-pressure side, the system comprising:

a main valve having a load side connected to the load and a source side connected to both sides of the source and displaceable between one position permitting flow from the source to the load and another position for opposite flow;

respective fluid-operated actuators for displacing the valve into its positions;

control means having an input side connected to the high-pressure sides of the source at the source side of the valve and an output side connected to the load at the load-side of the valve and with the sump at the source side of the valve, the control means also being connected to the actuators for pressurizing same alternately and thereby moving the valve between its positions; and

pressurizing means connected at least to the source side of the pump and to both sides of the valve and of the control means for maintaining a generally constant pressure drop across the valve and the control means.

4,606,259

AIR CURTAIN

Karl G. Nyström, Växjö, Sweden, assignor to Flakt Aktiebolag, Nacka, Sweden

Filed Aug. 6, 1985, Ser. No. 762,929

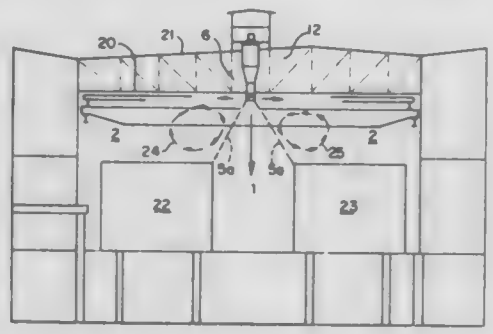
Claims priority, application Sweden, Aug. 7, 1985, 8403995

Int. Cl.⁴ F24F *9/00*

U.S. Cl. 98—36 **9 Claims**

1. Apparatus to establish an air curtain in a free air space comprising nozzle means, supply means to cause a first air current to pass through said nozzle means and to form in said

curtain at least one directed narrow air jet, and ejection means to cause a second air current by means of co-ejection to establish a surface layer for the air curtain in the form of a first circulation path in the free air space extending along said



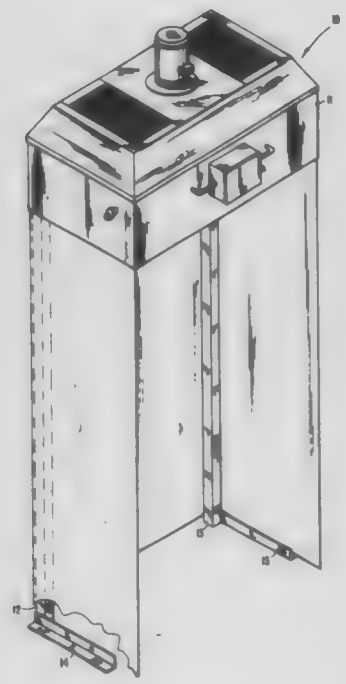
curtain and back to said nozzle means, characterized in that means are provided to form a third air current in a second air circulation path adjacent said nozzle means in the air space in a direction counter to the first circulation path to thereby diminish the air circulating in said first path.

4,606,260

MOVEABLE WELDING STATION

Donald G. Cox, 14 Briar Patch Rd., Bargersville, Ind. 46106

Filed Aug. 9, 1985, Ser. No. 764,085
Int. Cl.[4] B05B *15/12*
U.S. Cl. 98—115.3 **16 Claims**



1. An air treatment and recycler for a single welding station within a building comprising:

a frame forming a hood and configured to form a single welding station, said frame including an air passage having an entrance opening within said single welding station and an exit opening on said frame and into ambient air within said building:

curtain means mounted to said frame and depending therefrom surrounding said single welding station on at least two sides thereof;

a motorized fan mounted to said frame operable to draw air from within said single welding station through said passage and forcing said air outwardly of said frame recirculating air between said welding station and ambient air within said building;

first filter means mounted in said passage and operable to filter air moving in a normal direction therethrough;

pulsing means operably associated with said filter means and operable to direct pulses of pressurized air flow in an direction opposite from said normal direction and of a magnitude greater than said air moving in said normal direction through said filter means unlodging foreign particulate matter from said filter means; and,

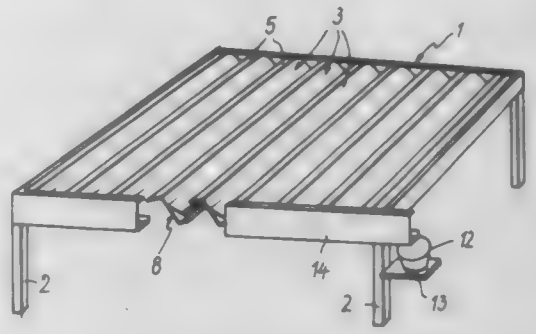
holding means mounted to said frame and positioned to receive said foreign particulate matter from said filter means as said pulsing means unlodges same.

4,606,261

GRIDIRON FOR GRILLING FOOD ITEMS BY REFLECTED HEAT

Dario Bernardi, Via Giuseppe Mazzini 5, Cattolica, Italy

Filed Nov. 27, 1984, Ser. No. 675,364
Claims priority, application Italy, Nov. 30, 1983, 44035 A/83
Int. Cl.[4] A47J *37/00*
U.S. Cl. 99—445 **1 Claim**



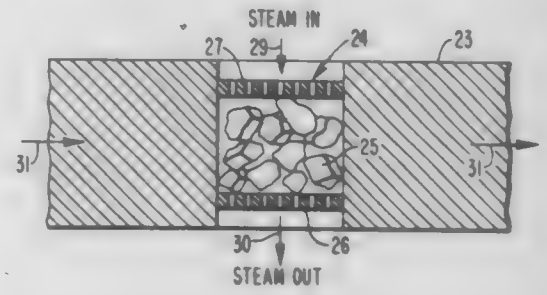
1. A gridiron for grilling food items by reflected heat, comprising a frame, a plurality of parallel slats having opposite ends rigidly attached to said frame and forming a grilling surface, each slat including an inclined flat portion defining a top edge and a bottom edge, said flat portion being formed with a first longitudinal lip, said first longitudinal lip being bent downwards from said top edge of said flat portion and forming a roof panel, said flat portion being further formed with a second longitudinal lip, said second longitudinal lip being bent upwards from said bottom edge of said flat portion and forming a gutter, said top and bottom edges of adjacent slats in said plurality of parallel slats at least partly overlapping each other, wherein said gutter has a bottom surface and said flat portion is formed with a longitudinal fold, and said gridiron further comprises an angle member, said angle member being made rigid with said flat portion of said slats, said angle member partially enveloping said bottom surface of said gutter, a bottom portion of said angle member and a bottom portion of said slat diverging from each other at said longitudinal fold.

4,606,262

APPARATUS FOR HEAT TREATING FOOD

Albert H. Robinson, Jr., Plymouth Meeting, Pa., and Walter W. Egee, deceased, late of Wallingford, Pa. (by Elizabeth J. Egee, executrix), assignors to Campbell Soup Company, Camden, N.J.

Continuation-in-part of Ser. No. 634,404, Jul. 25, 1984, abandoned, which is a division of Ser. No. 435,242, Oct. 19, 1982, abandoned. This application Jun. 18, 1985, Ser. No. 745,954
Int. Cl.[4] A23B *7/00*
U.S. Cl. 99—470 **16 Claims**



1. An apparatus for heat treating discrete pieces of fresh

foods in a continuous manner without significantly affecting their organoleptic properties comprising:

a plurality of confined treatment zones for retaining separate, finite portions of essentially immobile discrete food pieces, said zones having opposing inlet and outlet sides which allow the passage of fluid therethrough;

means for conveying said confined treatment zones through a thermal processing zone comprising a heating zone and a cooling zone;

means for flowing a heating fluid through said confined treatment zones in said heating zone in sufficient quantity and velocity to rapidly purge air from said confined treatment zones and to rapidly heat by direct contact the entire mass of food pieces to an elevated temperature;

means for flowing a cooling fluid through said confined treatment zones in the cooling zone; and

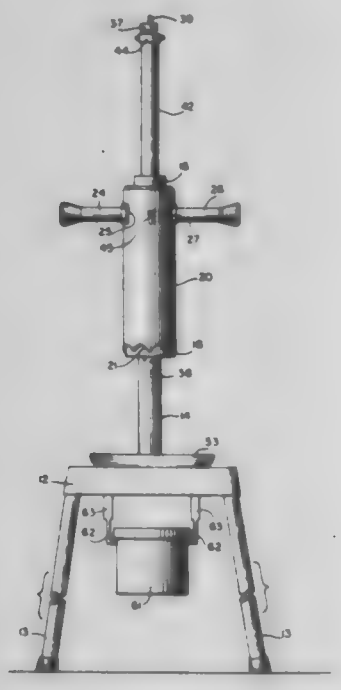
means for discharging cooled food pieces from said confined treatment zones into containers for packaging under purified conditions.

4,606,263

APPARATUS FOR PEELING PINEAPPLES

Edward E. Ross, San Rafael, and Jurgen H. Strasser, Lafayette, both of Calif., assignors to Del Monte Corporation, San Francisco, Calif.

Filed Jun. 7, 1985, Ser. No. 742,455
Int. Cl.[4] A23N *4/20, 7/00, 7/08*
U.S. Cl. 99—542 19 Claims



1. Apparatus for removing the peel from a pineapple comprising

(a) an elongated, substantially cylindrical body provided with a toothed cutting edge on one end of said cylindrical body that is designed to cut through a pineapple,

(b) elongated guide means telescopically positioned within said elongated, substantially cylindrical body and provided with a first support means for maintaining the guide means in a substantially fixed position,

(c) a cutting pad positioned in opposing relationship to and spaced a sufficient distance from the toothed cutting edge of said elongated, substantially cylindrical body to permit a pineapple to be interposed between the cutting pad and the elongated, substantially cylindrical body,

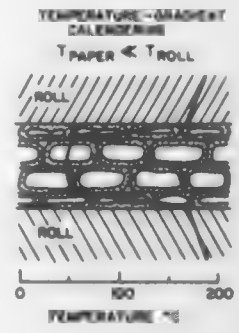
(d) means for moving said elongated, substantially cylindrical body towards said cutting pad with sufficient force to enable said toothed cutting edge to engage and to pass through a pineapple interposed between the cutting pad and the elongated, substantially cylindrical body.

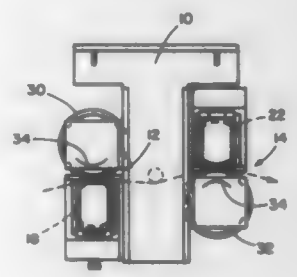
4,606,264

METHOD AND APPARATUS FOR TEMPERATURE GRADIENT CALENDERING

Ronald D. Agronin, and Paul J. Klemmer, both of Appleton, Wis., assignors to Wartsila-Appleton, Incorporated, Appleton, Wis.

Filed Jan. 4, 1985, Ser. No. 688,650
Int. Cl.[4] B30B *13/00, 3/04, 15/34*
U.S. Cl. 100—38 4 Claims





1. A method for temperature gradient calendering of a paper web to obtain a high gloss, smooth surface while maintaining web density substantially constant comprising the steps of:

(a) providing at least one nip for each surface of the web to be calendered, said nip being formed by an iron roll and a compliant roll;

(b) heating the iron roll to a temperature of at least 350° F., sufficient to cause the surface fibers in the paper web to deform but less than the temperature required to deform the interior fibers, thereby to leave the interior fibers relatively cooler and substantially unchanged; and

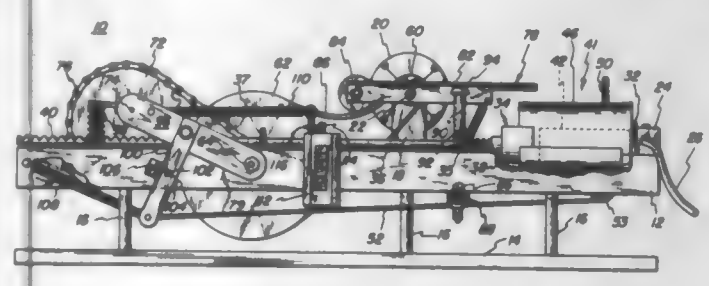
(c) passing said web through each nip to obtain said high gloss, smooth surface.

4,606,265

APPARATUS FOR CRUSHING CANS

Herman C. Meier, RD Box 31 Flint Mine Rd., Coxsackie, N.Y. 12051

Filed Oct. 26, 1984, Ser. No. 665,070
Int. Cl.[4] B30B *9/32*
U.S. Cl. 100—53 10 Claims



1. An apparatus for crushing a cylindrical can which comprises:

(a) a base,

(b) a horizontal frame affixed to said base and having two opposed ends,

(c) an anvil mounted near one end of said frame,

(d) a movable ram positioned on said frame and facing said anvil,

(e) a crushing chamber affixed to said frame for supporting said can in the horizontal position between the anvil and the ram, such that one end of said can is positioned adjacent said anvil and the other end of said can is positioned adjacent said ram, and

(f) a drive means for moving the ram toward the anvil and includng a power means, a means for transmitting said power means to the movable ram, and means for engaging and disengaging said power means, to crush said can disposed therebetween, said drive means comprising a first drive mechanism including a driver pulley mounted on the motor shaft, a driven pulley mounted on a first shaft, and a belt operatively connecting the driver pulley to the driven pulley to impart rotational motion to the first shaft; a second drive mechanism, including a first chain wheel mounted on said first shaft, a second chain wheel mounted on a second shaft and a drive chain for operatively connecting the first chain wheel to the second chain wheel and imparting rotational motion to the second shaft; and a third drive mechanism including a pinion gear mounted on said second drive shaft and a ram assembly slidably mounted on said horizontal frame, said ram assembly having the ram affixed to one end thereof and having a rack gear affixed to the other end of said rod, and

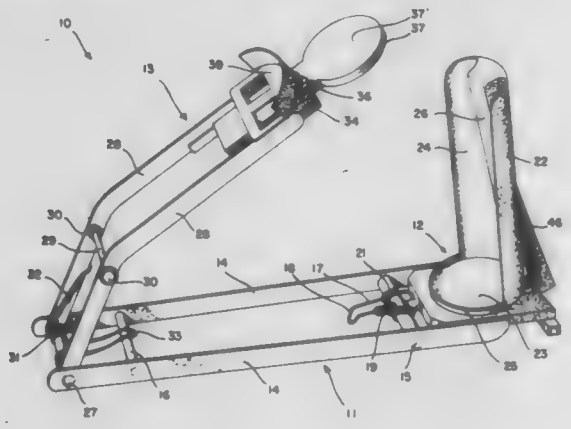
(g) a means for moving said ram away from said anvil to allow removal of the crushed can.

4,606,266

COMBINATION CAN CRUSHING AND EXERCISING MEANS

James A. Hyman, Sr., 227 Olive St., Rocky Mount, N.C. 27801

Filed Apr. 24, 1985, Ser. No. 726,610
Int. Cl.[4] B30B *9/32*
U.S. Cl. 100—233 **7 Claims**



1. A combination can crushing and exercising means comprising: a base means; means for supporting a can on said base; a jaw means pivotally mounted to said base remote from said can supporting means and having swinging movement toward and away from said base means; means for urging said jaw means away from said base means; means associated with said can supporting means for tilting a can in the direction of said jaw means at a predetermined angle depending on the height of the can; and means associated with said jaw means for engaging and crushing the can as said jaw means is moved in the direction of the base means whereby a combination can crusher, physical exerciser and frustration reliever is provided.

4,606,267

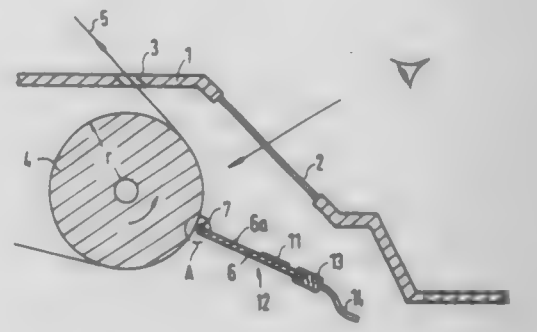
ELECTROTHERMAL PAGE PRINTER

Gerhard Wessel, Stuttgart, and Heinz Ebner, Ditzingen, both of Fed. Rep. of Germany, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Nov. 13, 1984, Ser. No. 670,778
Int. Cl.[4] B41J *3/02*
U.S. Cl. 101—93.04 **21 Claims**

1. A page printer with an electronic dot-matrix printing mechanism having a platen adapted for transporting a recording medium at least one print plate disposed along a print line of said platen, comprising:

at least one carrier plate having a front surface to be applied to the recording medium when in an operative position, and at least one lateral face adjacent said front surface, said front surface having a coating thereon, said coating being hard with respect to said carrier plate to provide a wear resistant surface,



a plurality of closely spaced heating elements, disposed on said lateral face of said carrier plate and flush with said front surface of said carrier plate, said heating elements being in direct contact with said recording medium when said carrier plate is in said operative position, and

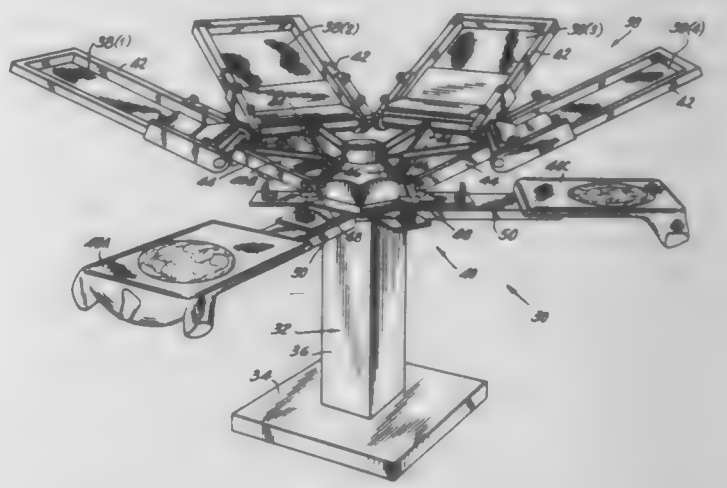
individual conducting paths, connected to said heating elements, to provide control instructions to said heating elements.

4,606,268

MULTI-STATION, MULTI-COLOR SCREEN PRINTING APPARATUS AND METHOD FOR USING SAME

David Jaffa, Franklin Lakes, N.J., assignor to Precision Screen Machines, Inc., Hawthorne, N.J.

Filed Aug. 4, 1980, Ser. No. 175,228
Int. Cl.[4] B41F *15/04*; B05C *17/06*
U.S. Cl. 101—115 **23 Claims**



1. Apparatus for printing a plurality of colors on a workpiece, said apparatus comprising:

a plurality of workpiece supporting pallets mounted radially a given distance from a vertical axis and spaced apart from each other by 120 degrees,

a plurality of printing screens mounted radially about the vertical axis and rotatable in unison about the vertical axis, relative to said pallets,

said screens being equally spaced apart from each other by 60 degrees along an arc of less than 360 degrees, and

said screens being positioned at the same distance radially as said pallets.

11. A method of printing a plurality of different colors on a workpiece utilizing a plurality of different printing screens that are supported as a single, rotatable unit with respect to a workpiece supporting means in the form of a plurality of pallets, said method comprising the steps of:

loading a first workpiece on a first one of the pallets,
rotating the screens as a unit to thereby place a first screen in operative relationship with the first workpiece whereby a first color is printed thereon,
loading a second workpiece on a second pallet,
rotating the screens as a unit a second time and printing a second color on the first workpiece,
rotating the screens as a unit a third time and printing a third color on the first workpiece and a first color on the second workpiece,
rotating the screens as a unit a fourth time and printing a fourth color on the first workpiece and a second color on the second workpiece,
rotating the screens as a unit a fifth time and printing a third color on the second workpiece,
unloading the fully printed first workpiece,
rotating the screens as unit a sixth time and printing a fourth color on the second workpiece,
loading a third workpiece on the first one of the pallets,
rotating the screens as a unit a seventh time and printing a first color on the third workpiece,
unloading the fully printed second workpiece,
rotating the screens as a unit an eighth time and printing a second color on the third workpiece, and
loading a fourth workpiece on the second one of the pallets.

4,606,269

REGISTER ADJUSTMENT DEVICE FOR A ROTARY PRINTING MACHINE

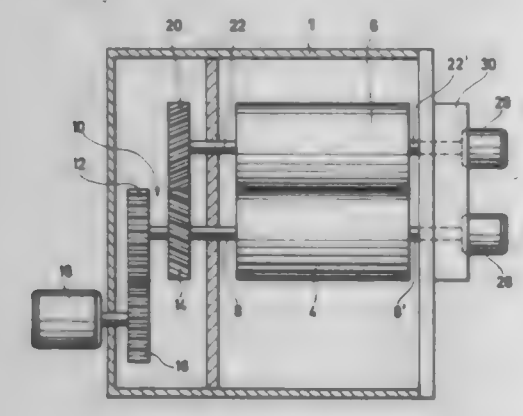
Willi Jeschke, Heidelberg, and Anton Rodi, Leimen, both of Fed. Rep. of Germany, assignors to Heidelberger Druckmaschinen AG, Heidelberg, Fed. Rep. of Germany

Filed Mar. 14, 1985, Ser. No. 711,988

Claims priority, application Fed. Rep. of Germany, Mar. 14, 1984, 3409194

Int. Cl.[4] **B41F** *13/14;* **B41L** *35/06*

U.S. Cl. 101—248 **6 Claims**



1. In a rotary printing machine, a register adjustment device for adjusting circumferential register and lateral register of a plate cylinder mounted for displacement in axial direction thereof and being connected to a device for displacing the plate cylinder in axial direction, comprising a double gear having first and second toothings thereon, one of said toothings having obliquely extending teeth and the other of said toothings having teeth extending in a direction differing from the direction in whch the teeth of said one toothing extend, both said first and said second toothings being immovable relative to one another, said double gear being also mounted for displacement in axial direction thereof and being connected to a device for displacing said double gear; a drive gear meshing with said first toothing; and a further gear meshing with said second toothing, said further gear being connected with the plate cylinder and fixed thereto against relative rotation therewith and against relative displacement in axial direction thereof, said other toothing being formed of straight teeth extending parallel to the axis of said double gear.

4,606,270

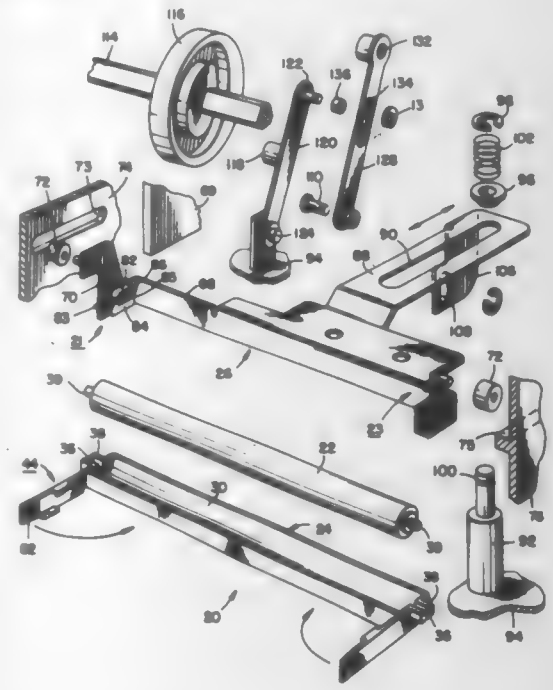
INKING APPARATUS FOR A VALUE PRINTING DEVICE

Danilo P. Buan, Easton, Conn., assignor to Pitney Bowes Inc., Stamford, Conn.

Continuation of Ser. No. 593,228, Mar. 27, 1984, abandoned. This application Sep. 10, 1985, Ser. No. 774,392

Int. Cl.[4] **B41F** *1/46, 1/50*

U.S. Cl. 101—359 **1 Claim**



1. Apparatus for inking the print characters of a value printing device comprising:
(a) a cartridge having a housing and an inking means for imparting printing ink to said print characters of said device;
(b) a carriage member including:
means for detachably mounting said cartridge to said carriage in a fixed position relative thereto,
a bracket member having a generally elongated slot, said device having a fixably mounted post having a portion of said post extending through said bracket slot and slidably mounted therethrough such that said carriage can slidably experience longitudinal reciprocating motion thereon and
guide mean constituant to said device for guiding said carriage in a defined longitudinal path;
(c) a drive shaft having a cam centrally and fixably mounted thereto
(d) a linkage assembly including:
a first link member pivotal mounted at one end about a fixed point in said device, and coupled to said cam at a point there along, said first link member extending generally radially relative to said cam and driven by said cam such that rotational motion of said cam by said drive shaft causes reciprocating articular motion of said first link member,
a second linkage member having a slot located therealong and pivotally mounted at one end at a fixed position in said device, said first link member having a pin fixably mounted at its other end and sidably confined in said slot of said second link,
said bracket member having a bracket extension, generally parallel to the plane of said bracket slot said bracket extension having a generally elongated slot, said bracket extension slot elongation being generally orientated perpendicular to said elongation of said slot in said bracket,
a second pin traversing and pivotally mounted in said second link member's other end and slidably mounted in said bracket extension slot, whereby rotational motion of said drive shaft causes said cam to pivot said first link member which in turn pivotally displaces said second link member which then in turn causes said carriage to

linearly displace reciprocally along said path defined by said guide means.

(e) said slots being so located and of suitable elongation to cooperatively engage said respective pins so as to define a cycle of operation per rotational cycle of said cam wherein said carriage is displaced traversely from a home position to a inking position, subsequent thereto said carriage is caused to dwell and further subsequently said carriage is reciprocated to said home position.

4,606,271

FUSE WITH A PIERCING HEAD FOR A PROJECTILE

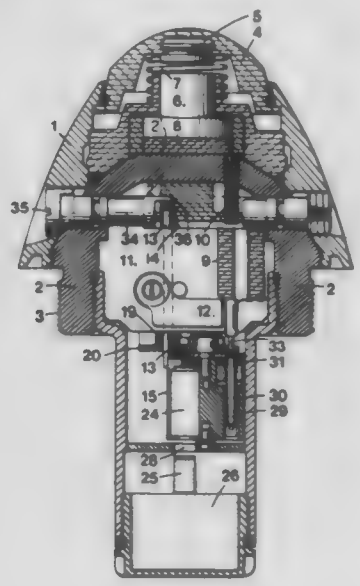
Jean-Pierre Golay, Viry, France, and Denis Jaunin, Geneva, Switzerland, assignors to Mefina S.A., Fribourg, Switzerland

Filed Mar. 7, 1984, Ser. No. 587,051

Claims priority, application Switzerland, Mar. 7, 1983, 1218/83

Int. Cl.⁴ F42C *11/02, 9/14, 15/24, 15/34*

U.S. Cl. 102—210 **6 Claims**



1. In a fuse for a projectile having a target piercing head of armor-piercing material, an electric firing device and means for delaying the firing, the improvement wherein, said electric firing device includes an impact-actuated strike, hammer and piezoelectric element all fully disposed forward of said piercing head, said piercing head having a forward-most substantially planar medial area providing an anvil for said piezoelectric element, said piezoelectric element juxtaposed said piercing head forward-most anvil area, said means for delaying the firing including a time delay device initiated during launch of the projectile, an electric primer, said time delay device and primer disposed rearwardly of said piercing head medial area, and means directly electrically connecting said piezoelectric element to said primer for igniting said primer by means of energy generated by said piezoelectric element.

4,606,272

INITIATION DELAY SYSTEM FOR WARHEADS WITH TANDEM MOUNTED SHAPED CHARGES

Alain L. Kerdraon, Bourges, France, assignor to Etat Francais, France

Filed Feb. 12, 1985, Ser. No. 701,033

Claims priority, application France, Feb. 20, 1984, 84 02487

Int. Cl.⁴ F42B *1/02*

U.S. Cl. 102—308 **12 Claims**

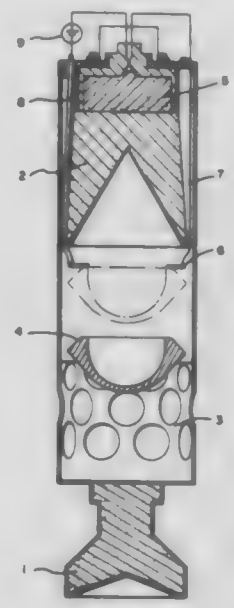
1. An initiation delay mechanism for warheads comprising:

a forward shaped charge and a rear shaped charge mounted in tandem, said rear charge being initiated after a delay of a predetermined interval has elapsed following the initiation of the forward charge;

an electrical circuit for initiating said rear charge;

an initiation means for said forward charge; and,

a screen placed between the forward charge and the rear charge, said screen moving backward to a second position as a result of an explosion of the first charge causing said electrical circuit of said rear charge to close, said predetermined interval of said delay comprising the time it takes the screen to move from an initial position to said second position.



4,606,273

RAILWAY CARRIAGE WITH SET-OFF APPARATUS

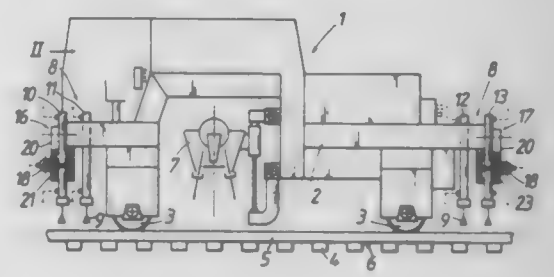
Josef Theurer, Vienna, and Friedrich Oellerer, Linz, both of Austria, assignors to Franz Plasser Bahnbaumaschinen-Industriegesellschaft m.b.H., Vienna, Austria

Filed Nov. 23, 1984, Ser. No. 674,004

Claims priority, application Austria, Feb. 24, 1984, 619/84

Int. Cl.⁴ B61K *5/00*

U.S. Cl. 104—1 R **3 Claims**



1. A railway carriage comprising a frame having four corners at respective ends of the frame, two undercarriages supporting the frame for mobility on a track and a set-off apparatus for moving the carriage transversely off the track, the set-off apparatus including

(a) at least eight vertically adjustable jacks arranged in four pairs,

(1) two of the jacks of two of the pairs being arranged in each one of the frame corners, and

(2) two of said pairs of jacks being arranged at each of said frame ends, one of said pairs of jacks being stationary with respect to the frame and the other pair of jacks being displaceable with respect to the frame in a direction extending transversely to the track, and

(b) a horizontally extending, double-acting cylinder-piston device for displacing each other pair of jacks transversely whereby the carriage may be transversely set off stepwise while supported in a stilt-like manner.

4,606,274

TRAVELLING RAILROAD TIE REMOVAL MACHINE

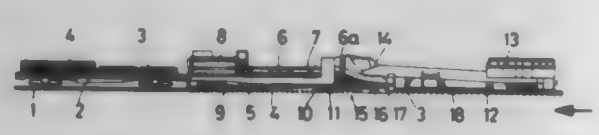
Ivo Cicin-Sain, Bussigny, and Tibor Aubermann, Vevey, both of Switzerland, assignors to Matisa Materiel Industriel S.A., Crissier, Switzerland

Filed Jul. 10, 1984, Ser. No. 629,218

Claims priority, application Switzerland, Jul. 15, 1983, [illegible]

Int. Cl.[4] E01B *29/10*

U.S. Cl. 104—6 22 Claims



1. Travelling railroad tie removal machine comprising a frame, bogies for supporting said frame for movement in a forward direction above a railroad bed from which ties are to be removed, a pair of laterally spaced ramps supported below said frame in stationary position, said ramps having upper surfaces inclined upwardly and rearwardly relative to the forward direction of movement of said frame, means for extracting ties from said railroad bed and pushing them onto said ramps, said extracting means comprising laterally spaced driving members rotatable about a horizontal axis and push fingers on said driving members for engaging said ties, a belt conveyor mounted on said frame above said ramps, said conveyor having a tie-receiving end above said ramps and extending from said end forwardly relative to the forward direction of movement of the machine, means for lifting ties from said ramps to the level of said belt conveyor, said lifting means comprising spaced lifting levers rotatable about a horizontal axis between a lower position in which they lie below said upper surfaces of said ramps and an upper position in which they are at the level of said conveyor and means for pushing ties from said lifting levers when in said upper position onto said conveyor.

4,606,275

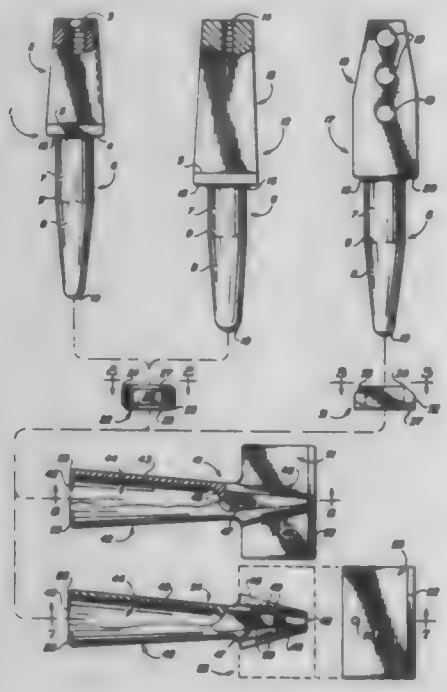
TAMPING TOOLS

Michael R. Grant, 112 Cedarbrook La., Haughton, La. 71037

Continuation-in-part of Ser. No. 664,545, Oct. 25, 1984. This application Nov. 27, 1985, Ser. No. 803,609

Int. Cl.[4] E01B *27/16*

U.S. Cl. 104—10 37 Claims



1. A tamping tool for a ballast tamping apparatus comprising a shaft having one end adapted for mounting in the ballast tamping apparatus; a shank extending from the opposite end of said shaft; weld ring means inserted on said shank and located against said opposite end of said shaft; a tool foot and an interior receptacle extending into one end of said tool foot, said interior receptacle shaped to receive said shank with said one end of said tool foot seated against said weld ring means; blade means provided on the opposite end of said tool foot; a first weld connecting said opposite end of said shaft to said weld ring means; and a second weld connecting said one end of said tool foot to said weld ring means, whereby said tool foot is secured to said shaft.

4,606,276

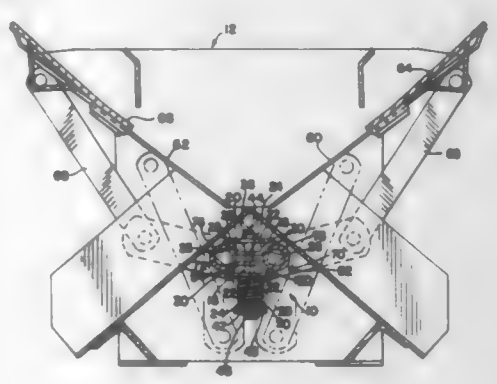
MOTION RETARDER

Edward S. LeMarbe, Plainfield, Ill., assignor to Miner Enterprises, Inc., Geneva, Ill.

Filed Apr. 22, 1985, Ser. No. 725,834

Int. Cl.[4] B61D *7/00*

U.S. Cl. 105—250 2 Claims



1. In a hopper-type railroad car particularily suited for transporting ballast for selective distribution to a roadbed below said car, said car having gate assemblies to provide regulation of said ballast discharge by selective positioning of doors over outlets in each said gate assembly with said door position being in part controlled by motion retarding means carried by said gate assembly, an improvement of said motion retarding means comprising:

an upright bolt positioned between a pair of door shafts carried by said gate assembly and operatively connected to said doors respectively,

an outer tension unit formed with aperture means and threaded locking means aligned with said aperture means to receive a complementarily formed threaded end of said bolt and form a rotational resistant joint therewith,

an inner tension unit formed with aperture means with said bolt disposed therein to position said inner tension unit next to said outer tension unit,

holding means for respective disposition of said door shafts, said holding means defined by opposing positioned arcuate shaped spaced end segments of a pressure member of said inner and outer tension units respectively with each said end segment having an inner friction surface for engagement with said shaft, said bolt positioned in said tension unit apertures means in closer proximity to one said holding means than said other holding means, and

spring means disposed on said bolt between a lower head portion of said bolt and said inner tension unit to move said unit end segment friction surfaces into selective engagement with said shaft with an area of said engagement being limited to an outer surface of said shaft located between an intersection by a vertical axis of said shaft with said shaft surface and a horizontal axis of shaft with said shaft surface,

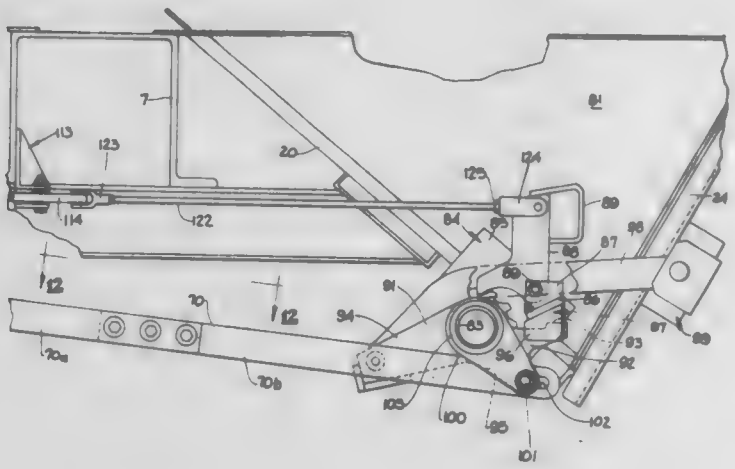
wherein said gate assembly doors may be opened to effect a discharge of said ballast with said position of said doors being in part maintained by engagement of said retarder tension unit end segment friction surfaces with said shaft outer surfaces respectively to inhibit movement of said shafts and insure said discharge remains at a constant rate.

4,606,277

ACTUATING AND LOCKING APPARATUS FOR LONGITUDINAL HOPPER DOORS OF A RAILROAD HOPPER CAR

Robert E. Molloy, Cincinnati, Ohio, assignor to Ortner Freight Car Company, Milford, Ohio

Filed Nov. 30, 1984, Ser. No. 676,636
Int. Cl.[4] B61D *7/26*
U.S. Cl. 105—290 16 Claims



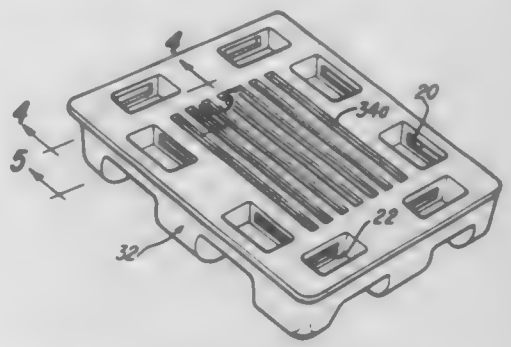
1. An apparatus for opening, closing and locking pairs of hopper doors of a railroad hopper car of the type having a longitudinal center sill and pairs of longitudinally extending first and second chutes, said first and second chutes of a pair being located opposite each other on each side of said center sill and being configured to discharge lading to each side of said hopper car, a first door for said first chute and a second door for said second chute of a pair, each of said first and second doors being swingable between a downwardly depending open position and a closed position closing its respective chute, said apparatus for each pair of hopper doors comprising first and second shafts, said first and second shafts being rotatively mounted on the underside of said first and second chutes of said pair respectively, with their end portions extending beyond their respective chutes and their axes parallel to said center sill, an operating cam being non-rotatively affixed to each end portion of each of said first and second shafts, a connecting link pivotablly joining said operating cams on corresponding end portions of said first and second shafts, a door actuating link pivotally connecting each of said operating cams to the adjacent one of said first and second hopper doors, a toothed ratchet wheel being non-rotatively affixed to a corresponding end portion of each of said first and second shafts, a ratchet pawl being pivotally supported on each of said first and second chutes to cooperate with the adjacent one of said ratchet wheels, means connecting said ratchet pawls such that both ratchet pawls are manually shiftable between a ratchet wheel engaging position and a ratchet wheel releasing position simultaneously from either side of said hopper car, each of said first and second shafts and its respective operating cams being rotatable between a door-open position and an over-center, door-closed position, means in association with at least one of said operating cams on each of said first and second shafts for engagement of either of said operating cams by an appropriate tool to rotate said tool engaged operating cam and its respective one of said first and second shafts to said door-open position and rotating the other of said first and second shafts to said door-open position by means of said connecting links, and means engageable by an appropriate tool mounted on at least one end portion of each of said first and second shafts for manual rotation of said shafts individually to said over-center, door-closed positions.

4,606,278

TWIN SHEET PALLET

Lyle H. Shuert, 817 Fieldstone, Rochester, Mich. 48063

Filed Sep. 28, 1984, Ser. No. 655,870
Int. Cl.[4] B65D *19/18*
U.S. Cl. 108—51.1 4 Claims



1. A twin sheet plastic sheet comprising:

(a) a lower polygonal plastic sheet defining an upwardly opening continuous U-shaped substantially constant depth groove extending in a closed loop around the total periphery of said lower sheet to define a continuous circumferential footprint on the undersurface of said lower sheet;

(b) an upper polygonal plastic sheet defining a plurality of circumferentially spaced upwardly opening U-shaped protrusions extending downwardly from the general plane of the sheet and sized to nest within the groove of the lower sheet, whereby said upper sheet is positioned over said lower sheet with said protrusions positioned at circumferentially spaced locations in said groove and said sheets are fused together to form double thickness U-shaped wall structures at the interfaces of the protrusions and the groove and a continuous circumferential footprint beneath said pallet to facilitate movement of said pallet over various transfer surfaces and devices; and

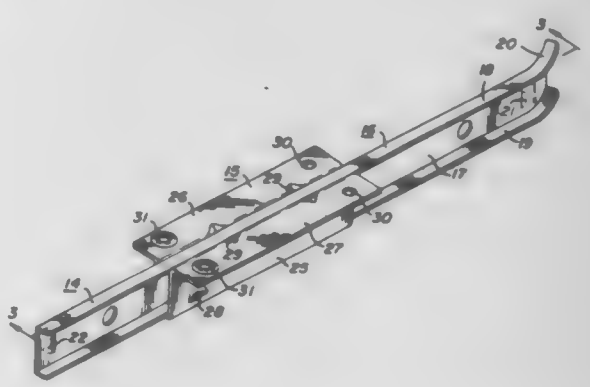
(c) aligned horizontally extending slots in the opposite sides of said U-shaped wall structures to allow passing of the forks of a forklift truck.

4,606,279

TABLE LEAF SLIDE SUPPORT

Herbert J. Tucker, Huntingdon Valley, and Frederick A. Tucker, Glenside, both of Pa., assignors to Tucker Industries, Inc., Bensalem, Pa.

Filed Jul. 7, 1983, Ser. No. 511,547
Int. Cl.[4] A47B *1/04, 1/10*
U.S. Cl. 108—78 4 Claims



1. A two piece table leaf slide support comprising in combination a U-shaped channel member and a support bracket slidably supporting said channel member,

(a) said elongated U-shaped channel member having a vertical base wall, and a top flange and a bottom flange extending longitudinally orthogonally of said base wall, one end of said channel being curved with said top and bottom flanges remaining substantially in their respective planes, and means carried by said channel member effective to

prevent said channel member from shifting endwise out of said support bracket,

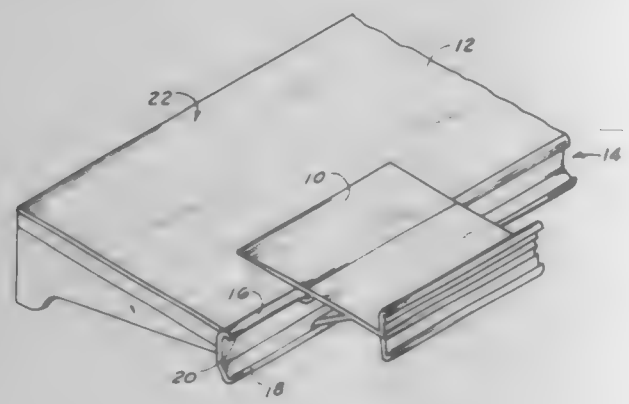
(b) said support bracket having a generally rectangular elongated bottom wall and a pair of parallel side walls extending upward from the long edges of said bottom wall and turning outward in a common plane in opposite directions at the upper edges of said side walls as a pair of top flanges, said top flanges including means by which said bracket may be secured to the underside of a table, and means carried by said support bracket effective to retain said channel member in the bracket below the level of said top flanges, said last named means comprising a lancing through one of said side walls which extends inward into closely overlying relationship to said bottom flange of said U-shaped channel member.

4,606,280

ONE PIECE SHELF EXTENDER

Brent Poulton, 18 Crawford Ct., Santa Rosa, Calif. 95401, and Benjamin L. Garfinkle, Lafayette, Calif., assignors to Brent Poulton, Santa Rosa, Calif.

Filed Aug. 12, 1985, Ser. No. 764,563
Int. Cl.[4] A47B *57/00*
U.S. Cl. 108—97 **13 Claims**



1. Shelf extender means for attachment to a shelf having a top surface extending forward to a leading edge and a forwardly facing channel along the leading edge which includes at least two parallel inwardly turning lips, the shelf extender comprising: a generally rectangular plate having forward and rear parallel edges along two sides of the rectangle and first and second side edges along the other two sides of the rectangle and having a relatively flat upper surface for supporting objects when the shelf extender is in place on a shelf, the lower surface of said plate including first and second ribs projecting from said lower surface extending parallel to said forward and rear edges between said first and second edges, said first rib being closest to said forward edge and extending angularly from said lower surface toward said rear edge and said second rib extending from said lower surface a distance shorter than said first rib, said first rib terminating in a first lip projecting generally toward said forward edge and said second rib terminating in a second lip projecting generally toward said rear edge such that said first and second lips will cooperatively engage the inwardly turning lips of the forwardly facing channel on a shelf and the portion of said plate between said second rib and said rear edge rests on the top surface of a shelf when the shelf extender means is attached to a shelf.

4,606,281

THIEF-TRAPPING APPARATUS

Louis T. La Voie, 201 W. Huron St., Buffalo, N.Y. 14201

Filed May 29, 1984, Ser. No. 615,033
Int. Cl.[4] E05G *3/00*
U.S. Cl. 109—3 **15 Claims**

1. A thief-trapping apparatus for a room having an object within to be safeguarded, a room wall, an opening in the wall permitting room ingress and egress, and a closure for the opening being movable between a first condition at which the room opening is closed and a second condition at which the room opening is open, said apparatus comprising:

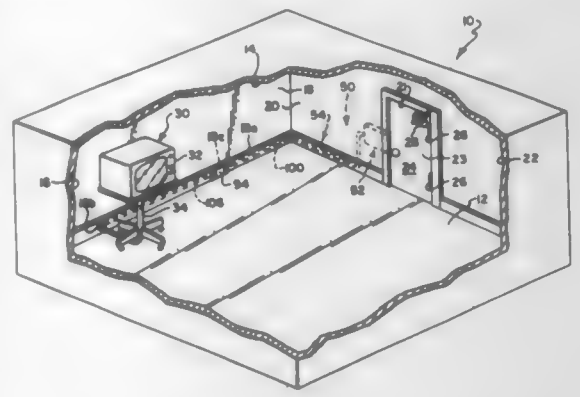
a locking mechanism for the room closure including

(a) means defining a bolt receptacle,

(b) a bolt for cooperating with said receptacle means, one of said bolt and said receptacle means being operatively mountable on said closure and the other being operatively mountable on the room wall so that when said bolt and said receptacle means are operatively mounted on the room wall and closure, said bolt is movable between a first position at which said bolt cooperates with said receptacle means to lock the closure in its closed condition and a second position at which the closure is unlocked, and

(c) means for biasing said bolt from its said second position to its said first position; and

cord means through which said bolt is connectable to the room object to be safeguarded and having two opposite



ends and a frangible link connected between said ends, one of said ends being fastened to said bolt so that when said cord means is pulled from its other end, said bolt moves to its said second position, said other end of said cord means being connectable to the room object to be safeguarded so that if, after said other end of said cord means is pulled and connected to the room object so as to hold said bolt in its said second position, said bolt is disconnected from the object, said bolt is moved by said biasing means to its said first position, said frangible link being of sufficient strength to hold said opposite ends of said cord means together when said cord means is connected so as to hold said bolt in said second position and adapted to break when said two opposite ends are pulled beyond a predetermined level of force so that when the object to be safeguarded is pulled in opposition to said one cord end beyond said predetermined level of force, said bolt is disconnected from the object by the breaking of said frangible link.

4,606,282

SELF FEEDING WOOD BURNING STOVE

Karl Steindal, 4870 North Douglas Hwy., Juneau, Ak. 99801

Filed Dec. 9, 1985, Ser. No. 806,296
Int. Cl.[4] F23K *3/16*
U.S. Cl. 110—116 **20 Claims**

1. A wood burning stove comprising:

an upright housing, the bottom portion of which defines a sump, the opposing side walls of which are symmetrically arrayed about a generally horizontal axis, substantially in parallel therewith, and slope downwardly toward the bottom line of the sump disposed in the vertical plane of said axis,

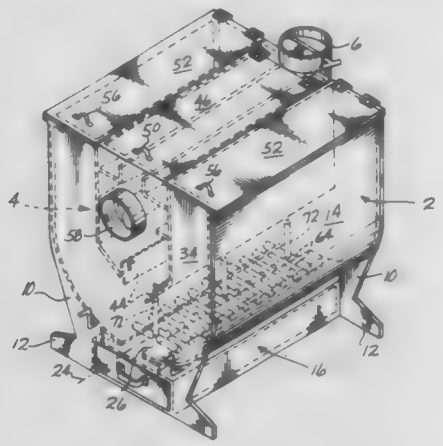
there being an elongated slot formed in the bottom of the sump along the line of the plane, and means under the sump for feeding controlled amounts of air to the sump through the slot,

means in the housing defining a pair of spaced septa which depend within the sump on opposite sides of the axis, substantially in parallel therewith, and cooperate with the

sidewalls of the sump in defining a pair of log feed magazines in each of which a plurality of elongated logs can be stacked on top of one another substantially on parallels to the axis to form a pair of sloping, single-log-wide, axially extending stacks of the same which converge in the bottom of the sump at points above the slot adjacent the plane of the axis,

there being a vertical gap at said points between the bottoms of the septa and the bottom of the sump, in which the bottommost logs of the respective stacks can collect when the logs are stacked in the magazines,

means in the gap defining a pair of spaced abutments which are disposed upright in the vertical plane of the axis so as



to engage between the opposing faces of the bottommost logs and form an air flow channel therebetween above the slot when the bottommost logs collect at said points in the gap,

means on the septa forming a chamber above the gap which opens into the channel between the bottommost logs above the slot to confine the flames and the flow of combustion products from the channel to the space between the septa when the opposing faces of the bottommost logs are ignited, and

means connected with the chamber to discharge the combustion products from the same to a low pressure zone outside of the housing where the products can escape to atmosphere or the like.

4,606,283

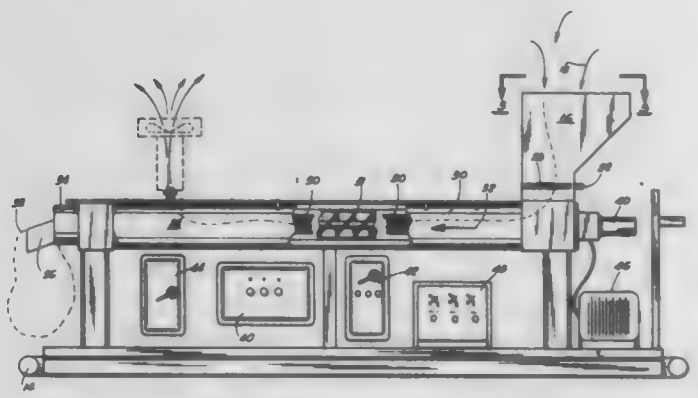
SYSTEM FOR EXTRACTING CONTAMINANTS AND HYDROCARBONS FROM CUTTINGS WASTE IN OIL WELL DRILLING

Farrell P. DesOrmeaux; Thomas F. DesOrmeaux, and Mark R. DesOrmeaux, all of P.O. Box 30059, Lafayette, La. 70503

Filed Mar. 13, 1985, Ser. No. 711,590

Int. Cl.[4] F23G *5/00;* F26B *10/02;* F27B *9/06, 5/14*

U.S. Cl. 110—250 **9 Claims**



1. An apparatus for drying, decontaminating and incinerating oil well cuttings containing water and hydrocarbons, the apparatus comprising:

a. a base portion;

b. at least one horizontally disposed cylindrical chamber mounted on the base portion, the chamber having a continuous wall defining a continuous bore therethrough and a first end for receiving the wet oil well cuttings thereinto;

c. auger means disposed coaxially withand along the length of the chamber bore for moving the cuttings from the first end to the second end of the chamber;

d. heating means, positioned radially around the wall of the chamber along its entire length, for providing heat within the chamber to a temperature of at least 750 degrees F. for incinerating the wet oil field cuttings moving through the chamber, the heating means including a plurality of electrical heating rods disposed within the internal wall of the drying chamber and positioned radially around the chamber wall;

e. heat conducting means comprising a continuous layer over the chamber wall forming a composite layer with the wall of the drying chamber that is positioned between the heating rods and the wall of the drying chamber for providing uniform conduction of heat from the rods into the chamber along substantially the entire length of the chamber.

4,606,284

UNDERFEED STOKERS

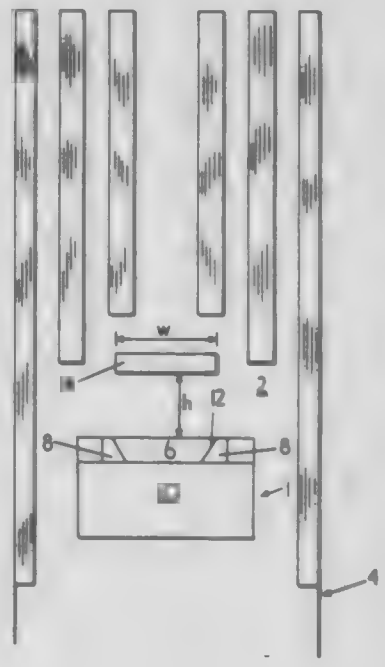
Brian M. Carpenter, Cheltenham, England, assignor to Coal Industry (Patents) Limited, England

Filed Mar. 15, 1983, Ser. No. 475,392

Claims priority, application United Kingdom, Apr. 6, 1982, 8210129

Int. Cl.[4] F23M *9/00*

U.S. Cl. 110—318 **4 Claims**



1. An underfeed stoker including a retort for combusting solid fuel and having a tuyere with port means, and an arch for reflecting heat and deflecting combustion products located vertically above and spaced from the retort, wherein the ratio of the minimum arch width to the height of the arch above the tuyere is greater than 1.5 and less than 2.

4,606,285

LOOPER DRIVING SYSTEM IN AN EMBROIDERY MACHINE

Ikuo Tajima, Nagoya, Japan, assignor to Tokai Kogyo Mishin Kabushiki Kaisha, Kasugai, Japan

Filed Apr. 23, 1985, Ser. No. 726,239

Claims priority, application Japan, May 9, 1984, 59-93573

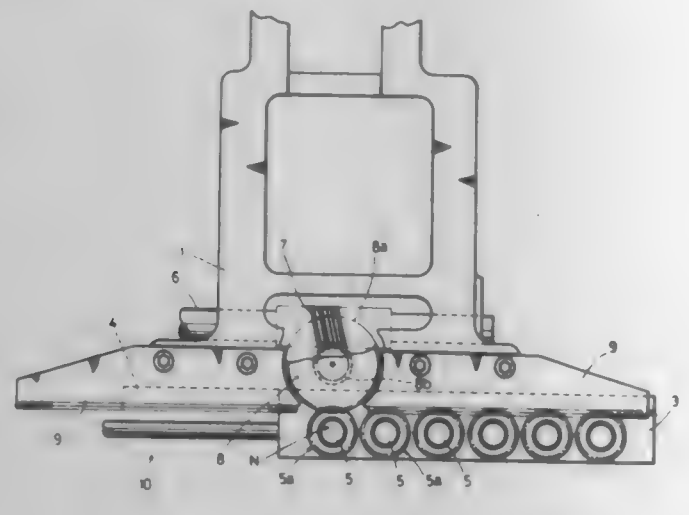
Int. Cl.[4] D05C *3/02*

U.S. Cl. 112—98 **6 Claims**

1. In an embroidery machine of the chain stitch type having a looper support frame, a reciprocable needle and a plurality of

loopers for embroidering a cloth in a multicolored pattern, means for driving any desired one of said loopers comprising:

(a) a looper case mounted to said looper support frame, said looper case being adapted to support said loopers therein in aligned relation and for rotation about their axes and to move in the direction of alignment of said loopers for selectively positioning one of said loopers at the location where the needle passes through the cloth;



(b) a transmission shaft rotatable about its axis and axially movably mounted to said looper support frame in parallel relation thereto;

(c) a first means for converting both the axial and rotational movements of said transmission shaft into a single rotational movement of one of said loopers selectively moved to the needle location; and

(d) a second means for rotating the selected one of loopers when said looper is moved to the needle location from a position away from the needle location.

4,606,286

PLACKET LINING MACHINE

Elbert Engle, Ashville, Ala., assignor to Chesebrough-Pond's Inc., Greenwich, Conn.

Filed May 31, 1984, Ser. No. 498,463

Int. Cl.⁴ D05B *21/00, 33/00*

U.S. Cl. 112—121.12 **15 Claims**

MICROFICHE APPENDIX INCLUDED

(1 Microfiche, 19 Pages)

1. Apparatus for sewing a first piece of material having a straight edge to a second piece of material having a segmented edge when said second piece is in a flattened condition, comprising:

a work-table;

a sewing machine having a sewing head mounted to receive and sew material on said work table;

means for supplying said first piece to said sewing head;

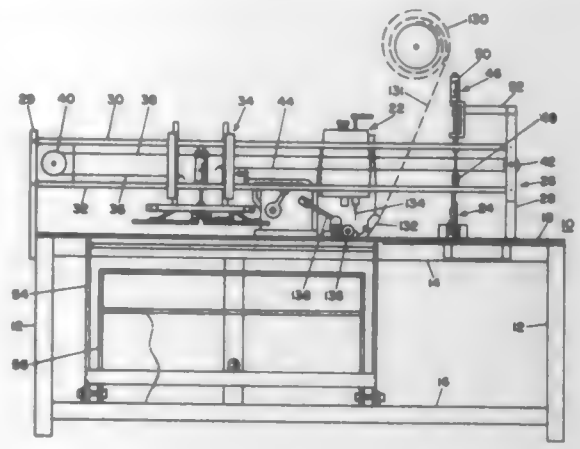
a carriage arranged for horizontal transport with respect to said sewing head;

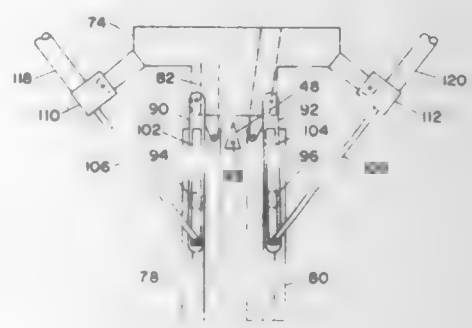
a first clamp, mounted on said carriage and arranged for vertical motion with respect to said work table to clamp against said work table, said first clamp being arranged for pivoting about a first vertical axis;

a second clamp, mounted on said carriage and arranged for vertical motion with respect to said work table to clamp against said work table;

means for adjusting the relative positions of said first pivot axis and said second clamp;

and control means for operating said carriage, said clamps and said adjusting means to clamp said second piece of material adjacent segments of said segmented edge in said flattened condition, to pivot said clamp and adjust said pivot axis to straighten said segmented edge, and to transport said edge past said sewing head while said supplying means supplies said first piece.





4,606,287

APPARATUS AND DEVICE FOR FOLDING-IN OR TUCKING-IN ENDS OF WAISTBANDS INTO A WAISTBAND, AND METHOD

Reinhold Papajewski, Friedrichstal, and Gerd Rögner, Karlsruhe, both of Fed. Rep. of Germany, assignors to MSI Mechanische Systeme Industrienahautomaten Gesellschaft mit beschranker Haftung, Karlsruhe, Fed. Rep. of Germany

Filed Jun. 26, 1984, Ser. No. 624,595

Claims priority, application Fed. Rep. of Germany, Jun. 30, 1983, 3323541

Int. Cl.⁴ D05B *21/00, 35/08*

U.S. Cl. 112—121.27 **17 Claims**

1. Apparatus for folding-in protruding ends of a U-shaped waistband (**7**), in which the legs of the U form an upper part (*7a*) and a lowerpart (*7b*), said waistband being attached, in regions approaching the protruding ends, to a edge of the garment (**8**), such as a trouser or a skirt,

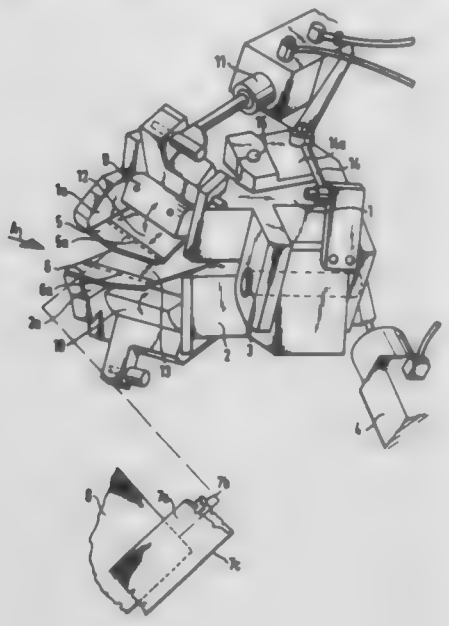
in which the upper rim of the garment is sewn between the upper and lower parts (*7a,7b*) of the waistband, comprising

a pair of holder modules (**1,2**), the modules of the pair being movable relative to each other between a spread-apart position and the closed, or adjacent position;

a pair of waistband holding elements (**5,6,9,10**; **18,19**), each holding element being located on a respective module and each holding element being dimensioned and arranged to grip the end portions of a respective upper and lower part (*7a,7b*) of the waistband (**7**);

and means for moving the respective holding elements on the modules in the direction having a component transverse to the movement of the modules between said

spread-apart and closed positions, to thereby fold the end protruding portions of the waistband back into the space



defined betweeh the legs of the U forming the upper and lower parts (*7a*) of the waistband.

4,606,288

SEWING MACHINE NEEDLE GUIDING AND ALIGNING DEVICE

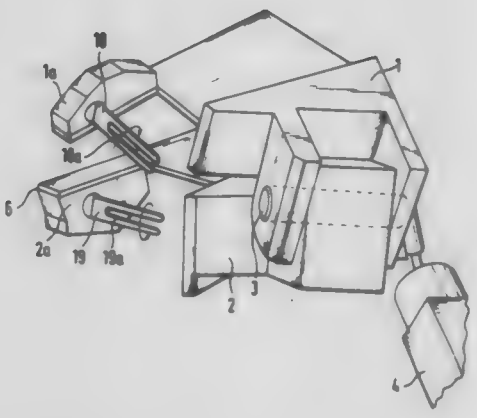
Erwin F. Jürgens, Hemmingen, Fed. Rep. of Germany, assignor to Union Special G.m.b.H., Stuttgart, Fed. Rep. of Germany

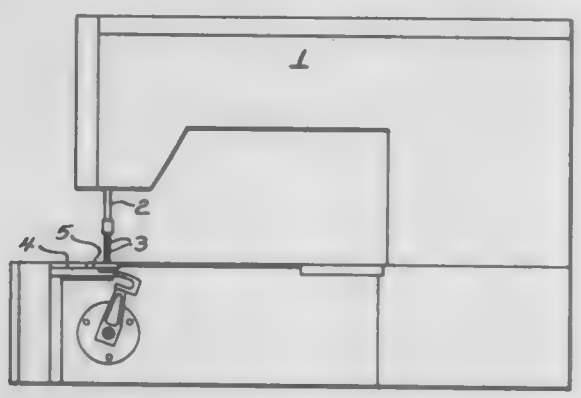
Filed Oct. 7, 1985, Ser. No. 785,194

Claims priority, application Fed. Rep. of Germany, Oct. 27, 1984, 3439387

Int. Cl.⁴ D05B *55/06*

U.S. Cl. 112—227 **3 Claims**





1. In a sewing machine having at least one needle means and one looper means underneath a throat plate means including a guiding and aligning device means comprising:

a permanent magnet means positioned underneath said throat plate means in the cloth feeding direction on one side only of the needle means and positioned sufficiently close to the needle means to attract the needle means to said side toward the magnet means whereby the needle means is guided and aligned with respect to the looper means.

4,606,289

SEWING THREAD CUTTING DEVICE

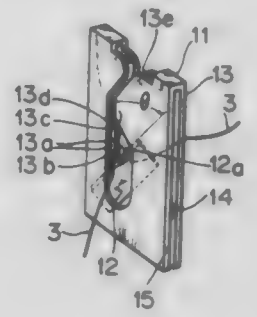
Kazumasa Hara, Tokyo; Masashi Sato, Kanagawa; Mikio Koike, and Kenji Kaneko, both of Tokyo, all of Japan, assignors to Janome Sewing Machine Co., Ltd., Tokyo, Japan

Filed Nov. 29, 1982, Ser. No. 445,032

Claims priority, application Japan, Dec. 7, 1981, 56-195654

Int. Cl.⁴ D05B *65/00*

U.S. Cl. 112—295 **11 Claims**



1. A thread cutting device of a sewing machine, comprising a blade having a thread cutting edge; and a blade cover member including two plates spaced from each other to form a space therebetween to accomodate said blade, said cover member having an end side and being formed with a thread-guiding opening at said end side and with a recess, said opening merging into said recess, said recess defining on said plates two parallel guide edges spaced from each other, said blade being positioned between said plates so that said cutting edge intersects said guide edges at a predetermined acute angle, whereby as the thread is moved through said opening and said recess towards the cutting edge of said blade and is received in said space so that said guide edges and said cutting edge impart tension to the threead received in said space while the thread is pressed against said guide edges.

4,606,290

PROCESS FOR THE MANUFACTURE OF A WOOL FABRIC FOR BEDS, MORE PARTICULARLY A MATTRESS COVER, AND FABRIC OBTAINED BY SAID PROCESS

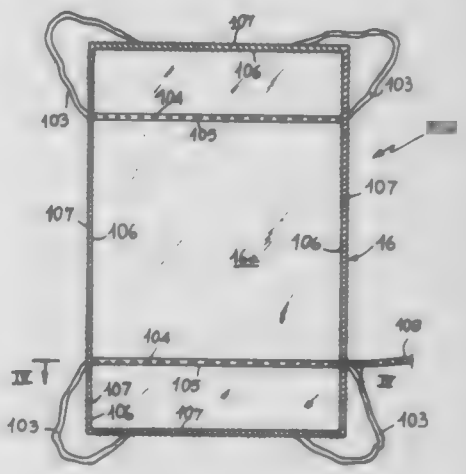
Gaetano Marzotto, Cornedo, Italy, assignor to Manifattura Lane Gaetano Marzotto & Figli S.p.A., Vicenza, Italy

Filed Apr. 11, 1985, Ser. No. 722,730

Claims priority, application Italy, Apr. 13, 1984, 20535 A/84; May 8, 1984, 21721/84[U]; Sep. 21, 1984, 22760 A/84

Int. Cl.⁴ A47C *31/00*; B32B *5/08, 7/08*

U.S. Cl. 112—429 **14 Claims**



1. A process of manufacturing a wool fabric capable of

withstanding rubbing stresses and wear and eliminating electrostatic charges wherein a raw wool fabric is subjected to a loosening step during which wool flock is pulled out from the fabric and given a uniform direction; the loosened fabric is subjected to a shearing step to clip the previously raised flock; the sheared fabric is subjected to a moistening step and the moistened fabric is subjected to a pressing step to enhance uniform adhesion of flock to the fabric weft; and said pressed fabric is subjected to further trimming steps to apply electrically conductive elements thereto as well as a shunt for grounding said elements.

9. The wool fabric produced by the process of claim 1.

4,606,291

CATAMARAN WITH HYDROFOILS

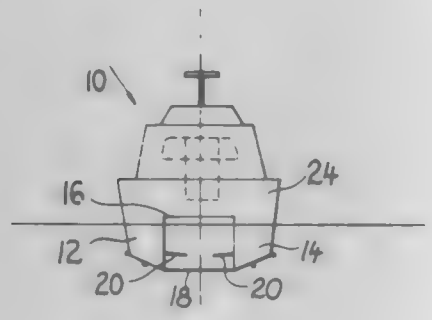
Karl-Günther W. Hoppe, Somerset-West, South Africa, assignor to Universiteit Van Stellenbosch, Stellenbosch, South Africa

Filed May 9, 1983, Ser. No. 492,703

Claims priority, application South Africa, May 19, 1982, 82/3455

Int. Cl.⁴ B63B *1/12*

U.S. Cl. 114—61 **20 Claims**



1. A catamaran type boat having two similar boat demi-hulls which are spaced apart and which are substantially parallel, each demi-hull having a base line (BL) extending longitudinally tangentially to the lowest boundary of the surface of the demi-hull at the midship ordinate, the boat further including:

(a) a superstructure connecting the two demi-hulls transversely;

(b) an open space in the form of a tunnel defined between the superstructure and the two demi-hulls;

(c) a longitudinal centre of gravity position (LCG) for the boat;

(d) at least one main hydrofoil, having a chord line (CL) extending between its leading edge and trailing edge and extending at least partially across the tunnel, and being adapted to be under water; said main hydrofoil being located substantially in the vicinity of the LCG;

(e) at least one trim hydrofoil having a chord line (CL) extending between its leading edge and trailing edge, said trim hydrofoil being located in the stern region of the boat and extending at least partially across the tunnel; the projected area of the main hydrofoil being 3 to 5 times larger than the combined projected area of all trim hydrofoils; and

(f) attachment means for attaching all hydrofoils to the demi-hulls substantially along a transverse plane (TP), which is substantially at right angles to the longitudinal vertical centre plane at the boat, and having an angle between 1° and 7° to the base line (BL) of the demi-hulls at the main foil, and with the hydrofoil chord lines (CL) being at an angle of between 0° and 6° to the transverse plane (TP), the attachment means being adapted to locate the hydrofoils such that their combined resultant lift-force at speed is adapted to act lengthwise through a point in the vicinity of the longitudinal centre of gravity (LCG) and wherein said attachment means locates each hydrofoil such that at highest speed the average water height is 20% to 50% of the chord length.

4,606,292

APPARATUS FOR REEFING SAILS ON A BOAT AND SPECIALLY-DESIGNED BOOM INCLUDING SUCH AN APPARATUS

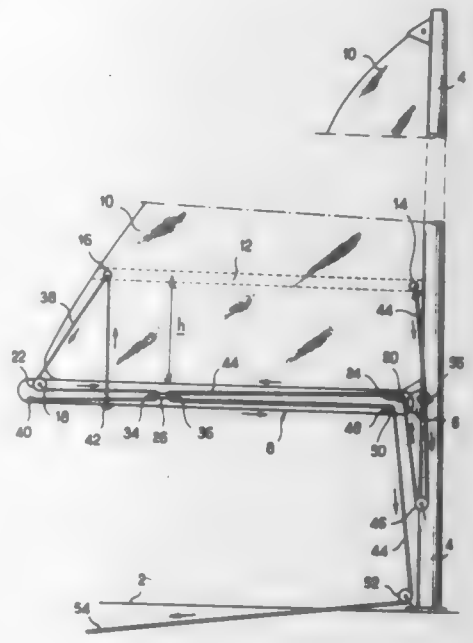
Christian du Temple de Rougemont, Paris, France, assignor to S.A.R.L. Isomat, France

Filed Aug. 20, 1985, Ser. No. 767,526

Claims priority, application France, May 6, 1985, 85 08450

Int. Cl.⁴ B63H *9/10*

U.S. Cl. 114—104 **5 Claims**



1. An apparatus for reefing the sail of a ship, rigged on a hollow boom extrusion, comprising:

(i) a traveller block, freely moveable inside the boom along at least most of the boom's length, said traveller block including two pulley wheels one at each end of the traveller block;

(ii) a reefing leech line consisting of a fixed length of roping, at least one end of which is tied to a fixed point near the after end of the boom, said roping passing afterwards to the interior of the boom, across the after-end pulley wheel of the traveller block, then across a pulley wheel mounted at the after end of the boom before reaching a reefing leech eye of the sail;

(iii) a reefing luff line which has one accessible free end, said line entering the boom via a guide element placed at the forward end of the boom passing across the forward-end pulley wheel of the traveller block and exiting the boom, across a second pulley wheel on the forward end of the boom before reaching a reefing luff eye of the sail.

4,606,293

EXPLOSIVELY ACTUATED MINE CABLE MARKER DEVICE

James L. Kirkland, Panama City, Fla., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sep. 13, 1985, Ser. No. 776,058

Int. Cl.⁴ B63B *9/00*

U.S. Cl. 114—221 A **7 Claims**

5. A device for use in combination with a cable cutter having a cutter body defining a cable engaging first recess and a chisel operable to sever a cable in said first recess, said device comprising:

a V-shaped rigid body member having a pair of arms extending from an apex portion and defining a second recess;

means for mounting said body member with said second recess aligned with said first recess for simultaneous engagement by a cable to be cut and marked;

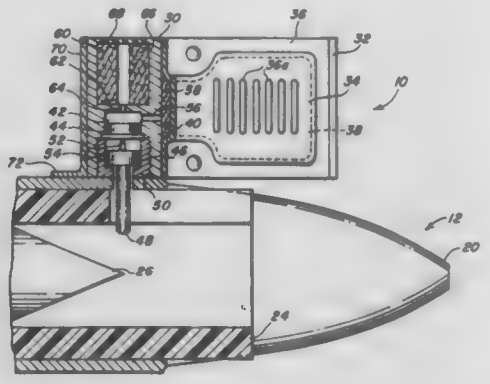
a clamp member having explosively deformable arm portions extending from an apex portion and nested in said

second recess so as to receive said cable between said arm portions;

explosive material sandwiched between said arm portions of said clamp member and said arms of said body member;

said body member having a bore in said apex portion and defining passage means communicating between said bore and said explosive material;

a primer charge disposed in said bore;



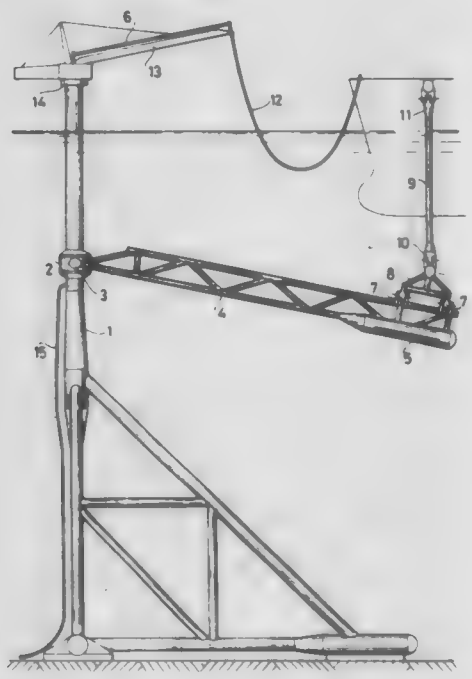
plunger means reciprocable in said bore and including a firing pin aligned with said primer charge and a member extending into the path of said chisel so that actuation of said chisel will displace said plunger and cause said firing pin to fire said primer charge and detonate said explosive material, whereby said clamp member is deformed into clamping engagement with said cable.

4,606,294

FIXED STRUCTURE MOORING SYSTEM FOR TANKER SHIPS

Vincenzo Di Tella; Roberto Brandi, and Roberto Carraro, all of Padua, Italy, assignors to Tecnomare S.p.A., Venice, Italy

Filed Mar. 12, 1984, Ser. No. 588,459
Claims priority, application Italy, Mar. 14, 1983, 84105 A/83
Int. Cl.[4] E02B *17/00*
U.S. Cl. 114—230 **4 Claims**



1. An apparatus for mooring tanker ships in the water which comprises

a fixed structure extending from the bottom to above the surface of the water,

a hinged arm member extending from the fixed structure at a location below the surface of the water, one end portion of said hinged arm member being rotatably, movably attached to said fixed structure,

a rocker assembly pivotally connected to the other end portion of said hinged arm member, said rocker arm assembly containing arm members which extend outwardly from said hinged arm member, and

lateral tie members having one end thereof connected at a location below the surface of the water by pivot members to the end portions of the arm members of said rocker assembly, the other ends of said lateral tie members adapted to be hinged to opposite sides of the tanker ship, above the surface of the water.

4,606,295

MECHANICAL DOOR CHIME POWERED BY MOTION OF THE DOOR

Kam Y. Tang, 548 Wyandotte Ave., Daly City, Calif. 94104

Filed Feb. 13, 1984, Ser. No. 579,500
Int. Cl.[4] G08B *3/02*
U.S. Cl. 116—100 **8 Claims**



1. A mechanical door chime powered by movement of a pivoting door in a frame comprising in combination,

(a) means for mechanically storing energy having an input and an output,

(b) means for producing sound operatively coupled to the output of the eneergy storing means,

(c) a surface rigidly coupled to the door,

(d) a base mounted proximate a pivoting junction between the door and its frame,

(e) a rigid plunger with a rotatable contact arbored at one end, the plunger being slideable restrained to rectilinear motion in said base with the end of the plunger extending to abut the rotatable contact against the surface rigidly coupled to the door as the door pivots open causing linear movement of the plunger reletive to the base as the door is opened, and

(f) a means coupling the plunger to the energy storing means for energizing the energy storing means responsive to the liner movement of the plunger.

4,606,296

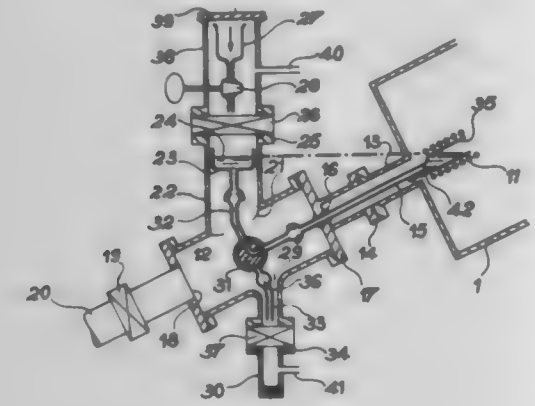
EVAPORATION CELL FOR A LIQUID COMPOUND SUITABLE FOR EPITAXY BY MOLECULAR JETS

Jean P. Gailliard; Alain Million, both of Grenoble, and Jean Piaquet, Eybens, all of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Mar. 22, 1985, Ser. No. 714,955
Claims priority, application France, Mar. 30, 1984, 84 05050
Int. Cl.[4] C23C *16/00*
U.S. Cl. 118—726 **2 Claims**

1. An evaporation cell device for a liquid compound suitable for molecular jet epitaxy on a substrate from a compound which is liquid at ambient temperature, said device comprising: a main ultravacuum enclosure; an evaporation cell in said main ultravacuum enclosure and having a predetermined free sur-

face area; heating means in said enclosure for bringing about emission of the molecular-jet from the cell so as to be directed onto the substrate; a preliminary vacuum enclosure tightly connected to the main ultravacuum enclosure and having: a first opening provided with a valve and a pipe for forming and regulating a preliminary vacuum in said preliminary vacuum enclosure; a second, upwardly oriented opening connected to



a chamber containing a first reservoir of a relatively large free surface area compared with that of said cell, for receiving a liquid compound stock; and a third, downwardly oriented opening connected to a second, disassemblable reservoir for emptying the liquid compound; and a three-way cock in said preliminary vacuum enclosure for connecting the cell selectively to the first or to the second reservoir.

4,606,297

RINSER FOR PAIL MILKING SYSTEMS

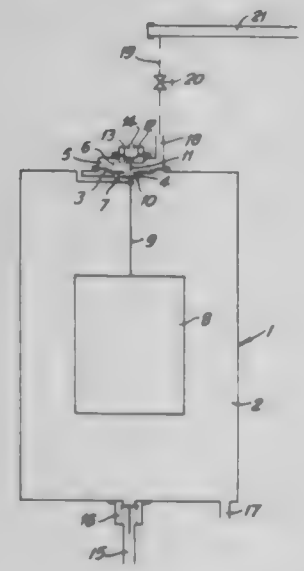
Heinrich Bücker, Langenberg, Fed. Rep. of Germany, assignor to Westfalia Separator AG, Oelde, Fed. Rep. of Germany

Filed Jun. 5, 1984, Ser. No. 617,411

Claims priority, application Fed. Rep. of Germany, Jun. 16, 1983, 3321752

Int. Cl.⁴ A01J *3/00*

U.S. Cl. 119—14.05 **7 Claims**



1. In a rinser for a milking system for suctioning rinse from a rinsing tub through a teat cup, wherein the rinser is mounted above the rinsing tub and connected to a partial vacuum line during use and includes an operating space having a connection connectable to the teat cup for communicating with the rinse in the rinsing tub and means including a float in the operating space for alternately effecting communication of the operating space to the partial vacuum line and the atmosphere, the improvement wherein the means comprises: means forming a partial vacuum chamber in constant communication with the partial-vacuum line during rinsing; an air inlet in constant communication with the atmosphere; a first diaphragm separating the partial vacuum chamber from the operating space and movable in response to a pressure differential in the partial vacuum chamber and the operating space from a first position wherein the first diaphragm closes the air inlet to a second position wherein the air inlet is open, wherein the first diaphragm has an aperture therein providing communication between the partial vacuum chamber and the operating space; means biasing the first diaphragm into the first position; a shift rod connected to the float and having sealing means thereon for closing the aperture in the diaphragm when a preselected level of rinse is present in the operating space; and means for opening the aperture when the first diaphragm moves into the second position.

4,606,298

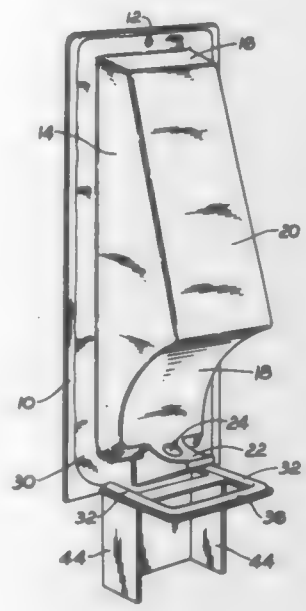
COMBINATION BIRD FEEDER AND SHELTER

Ian N. Bridge, Beckbury, England, assignor to Silverthorne-Gillot Limited, Dudley, England

Filed Jan. 17, 1985, Ser. No. 692,221

Int. Cl.⁴ A01K *39/00*

U.S. Cl. 119—51 R **3 Claims**



1. A disposable pack intended for use as a combination bird feeder and shelter, comprising a blister pack secured to a backing, said blister pack including an upper main portion having a substantially vertical outward wall and a substantially horizontal bottom wall portion containing bird food, and a recessed lower portion into which bird food is free to flow by gravity from the upper main portion, and a perch arranged below said lower portion, said lower portion being in the form of a recess containing a port which provides access for a bird to bird food in said substantially horizontal bottom wall portion extending outward to form the upper side of said recess and sheltering in said recess a bird obtaining bird food from said port.

4,606,299

INCUBATOR APPARATUS

Emil Grumbach, Gartenstrasse 2, D-6330 Wetzlar 13, Fed. Rep. of Germany

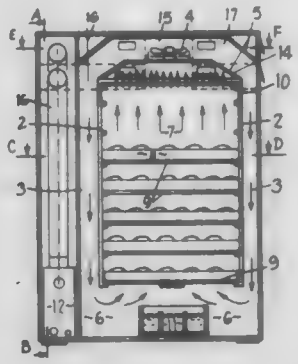
Filed Dec. 12, 1984, Ser. No. 680,672

Int. Cl.⁴ A01K *41/02, 41/04*

U.S. Cl. 119—35 **9 Claims**

1. In an incubator apparatus for the brooding of any egg types comprising a bottom wall, plural sidewalls and a top wall defining a closed chamber having therein means defining a brooding chamber with support means for supporting at least one brooding tray, and a door providing access to said closed chamber and said brooding chamber, the improvement wherein said means defining said brooding chamber inside said closed chamber includes plural crosswalls which also define plural air-conducting channels, said crosswalls being spaced from said walls of said closed chamber so that said air channels have uniformly sized cross sections, wherein said air channels terminate at means defining an inlet to said brooding chamber

over a region below said at least one brooding tray and at an equal distance from said walls defining said closed chamber, wherein at least one fan with a heat source is provided and is arranged on a central axis of said brooding chamber equidistant from said inlet means, wherein between said at least one fan and said brooding chamber there is arranged a dust filter extending over a majority of a cross-sectional area of said brooding chamber and at a location remote from said inlet means, said air channels being connected to a pressure side of said at least one fan and receiving equal volumes of air from said at least one fan, wherein a heatable water tank is provided with two connections, first means for connecting one of said connections to said pressure side of said at least one fan and second



means for connecting the other of said connections to a suction side of said at least one fan, and said second means for connecting said water tank to said suction side of said at least one fan terminating in a region between said dust filter and said at least one fan, whereby said air channels are connected to said heatable water tank so that the pressure difference between said suction side and said pressure side of said at least one fan effects a flushing of air over the surface of water in said water tank, whereby said air corresponding with the water temperature is enriched with moisture, and wherein a control of the relative humidity of said air passing through said brooding chamber is regulated by a controllable water heating system on said water tank.

4,606,300

FISH FEED DISCHARGING APPARATUS

Mikael Sterner, Björkvägen 38, S-793 00 Leksand, Sweden

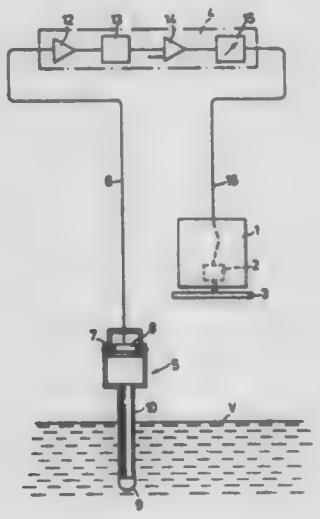
PCT No. PCT/SE84/00292, § 371 Date Apr. 25, 1985, § 102(e) Date Apr. 25, 1985, PCT Pub. No. WO85/01184, PCT Pub. Date Mar. 28, 1985

PCT Filed Sep. 7, 1984, Ser. No. 732,700

Claims priority, application Sweden, Sep. 9, 1983, 8304853

Int. Cl.⁴ A01K *61/02*

U.S. Cl. 119—51 R **5 Claims**



1. Apparatus for discharging fish feed, including a fish feed portioning device (1–3) with a probe device (5) connected thereto and at least partially immersed in water, the device (5) being excitable by fish for activating the portioning device such as to discharge a quantity of feed to the fish, characterized in that the probe device (5) includes an element (8) sensitive to sound and/or pressure waves, said element reacting for pushes against the probe device achieved by the fish and accordingly sending signals to an electrical device (4) for activating the portioning device (1–3).

4,606,301

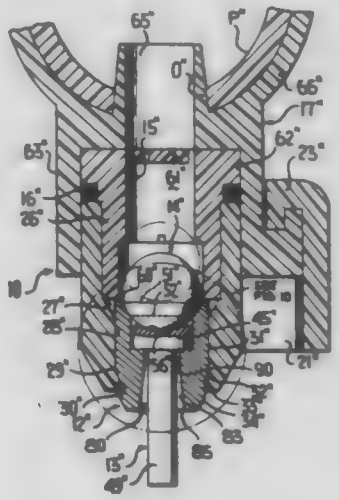
NIPPLE FOR FEEDING LIQUIDS TO FOWL AND/OR SMALL ANIMALS

Frederick W. Steudler, Jr., New Providence, Pa., assignor to Val Products, Inc., Bird-in-Hand, Pa.

Continuation-in-part of Ser. No. 595,577, Apr. 2, 1984, Pat. No. 4,524,724. This application Apr. 29, 1985, Ser. No. 728,090

Int. Cl.⁴ A01K *7/06*

U.S. Cl. 119—72.5 **7 Claims**



1. A nipple particularly adapted for feeding liquid to fowl and/or small animals comprising a housing including means for defining a passage through which liquid is adapted to pass from an upstream passage portion to a downstream passage portion, valve means in said passage for controlling the flow of liquid therethrough, said valve means including a movable valve and a valve seat within said passage, said valve being seated under the influence of gravity/liquid pressure upon said valve seat in a closed position of said valve means, a stem defined by a head and a pin, the pin having a cylindrical outer surface housed within the downstream passage portion, a metallic insert fit within said housing, said metallic insert defining said valve seat and said downstream passage portion, the downstream passage portion including a frusto-conical outlet surface defined in part by an axial outermost major diameter and an axially innermost minor diameter, said metallic insert having an annular seat upon which the head normally rests, a cylindrical flow-control surface between the annular seat and the minor diameter of the frusto-conical outlet surface, the flow-control surface defining with the pin cylindrical outer surface a generally annular flow-control channel through which liquid passes when the frusto-conical outlet surface is of a predetermined maximum angle to the axis thereof, and the flow-control surface having an angle to its axis ranging above 0° and up to but not including the predetermined maximum angle of the frusto-conical outlet surface, and said predetermined maximum angle is generally 7°.

4,606,302

THERMOSTAT INSERT FOR THE COOLING CIRCULATION OF LIQUID-COOLED INTERNAL COMBUSTION ENGINES

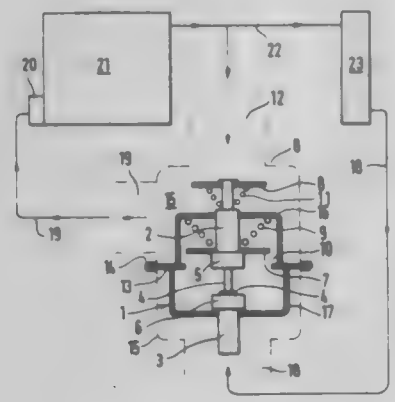
Gerhart Huemer, Ismaning, and Athanasios Michassouridis, Munich, both of Fed. Rep. of Germany, assignors to Bayerische Motoren Werke Aktiengesellschaft, Fed. Rep. of Germany

Filed Dec. 24, 1984, Ser. No. 685,260

Claims priority, application Fed. Rep. of Germany, Dec. 24, 1983, 3347002

Int. Cl.[4] F01P *7/16*

U.S. Cl. 123—41.1 **12 Claims**



1. A thermostat insert for a cooling medium mixing thermostat means in a cooling circulatory system for liquid-cooled internal combustion engines, comprising a radiator return valve means for a radiator return line, a by-pass valve means for a by-pass line, a first expansion means having a first actuating temperature and including a first expansion capsule and a piston rod means, the first expansion capsule being operatively connected with both valve means and being arranged substantially between said two valve means, a valve housing means, the piston rod means effectively forming a connection to a support means in the housing means, which is arranged opposite the first expansion capsule in relation to the radiator return valve means, a second expansion means including a second expansion capsule arranged between the piston rod means and the support means thereof, said second expansion means having a second actuating temperature which is lower compared to the first actuating temperature.

4,606,303

RECIPROCATING PISTON INTERNAL COMBUSTION ENGINE

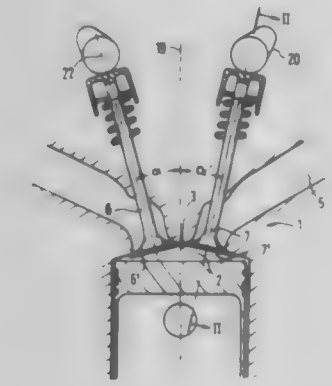
Hans Mezger, Freiberg, and Walter Wurster, Weissach-Flacht, both of Fed. Rep. of Germany, assignors to Dr. Ing. h.c.F. Porsche AG, Fed. Rep. of Germany

Filed Jun. 25, 1984, Ser. No. 623,927

Claims priority, application Fed. Rep. of Germany, Jun. 23, 1983, 3322544

Int. Cl.[4] F02B *25/08*

U.S. Cl. 123—51 BD **16 Claims**



1. A mixture-compression reciprocating piston internal combustion engine having at least a cylinder axis and cylinder walls and externally controlled ignition, comprising

a cylinder head having first and second center planes orthogonally disposed with respect to each other and substantially parallel to the cylinder axis, a spark plug, suspended valve means with end faces and arranged inclined to the cylinder axis, a combustion space means having a control vertex formed in an upwardly arcuately shaped recess means of the cylinder head,

said combustion space means being disposed substantially symmetrically to the cylinder axis and having a boundary including two circular arcs substantially oppositely disposed from each other on each side of said first center plane,

each circular arc adjoined respectively by at least one arc of smaller radius,

the valve means being positioned close to the combustion space boundary and forming narrow spaces with the same,

the combustion space further defined by transitional arcs, which extend to the cylinder walls, parallel to said first center plane and extending from the boundary to the valve end faces and to said second center plane,

the radius of each transitional arc to a predetermined point thereof being greater than a corresponding radius of the contiguous transitional arc more remote from the first center plane at a point thereof corresponding to said predetermined point.

4,606,304

ONE-PIECE ENGINE BLOCK

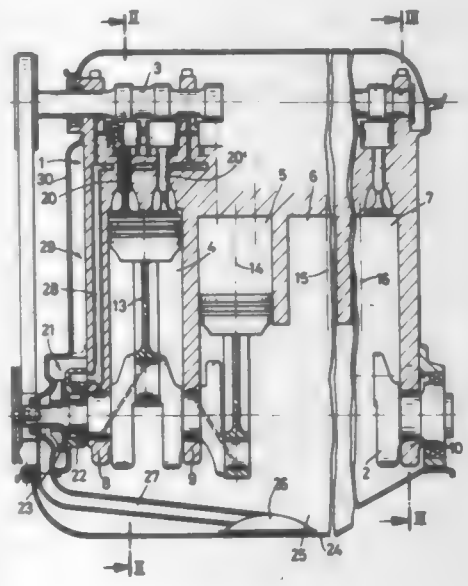
Hermann Krüger, and Hermann Deutsch, both of Wolfsburg, Fed. Rep. of Germany, assignors to Volkswagenwerk AG, Wolfsburg, Fed. Rep. of Germany

Filed Nov. 18, 1981, Ser. No. 322,724

Claims priority, application Fed. Rep. of Germany, Nov. 27, 1980, 3044700; Jun. 13, 1981, 3123527

Int. Cl.[4] F02F *1/02;* **F01M** *9/10*

U.S. Cl. 123—90.27 **11 Claims**



1. An internal combustion engine comprising a single-piece cast engine block; a plurality of parallel cylinders and cooling chambers defined in the single-piece cast engine block; said cooling chambers extending adjacent and parallel to said cylinders and using solely oil as a liquid coolant; intake valves, exhaust valves, overhead valve control means and crankshaft bearings supported in said one-piece cast engine block; said cooling chambers being accessible from opposite sides of said one-piece cast engine block where said crankshaft bearings and said valve control means are supported; said one-piece cast engine block further defining at least one oil port arranged at a height level of said valve control means.

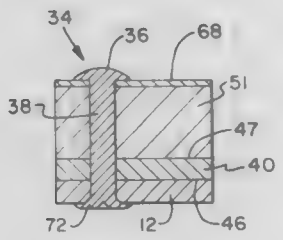
4,606,305
EXTERNAL MAGNET FLYWHEEL MOUNTING

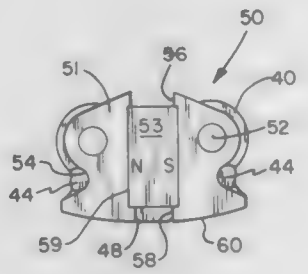
Kenneth W. Campen, Kiel, Wis., assignor to Tecumseh Products Company, Tecumseh, Mich.

Continuation-in-part of Ser. No. 563,690, Dec. 20, 1983, Pat. No. 4,550,697. This application Sep. 12, 1985, Ser. No. 775,445

Int. Cl.⁴ F02P *1/00*

U.S. Cl. 123—149 D **18 Claims**





1. A flywheel assembly for a small internal combustion engine of the type supporting a permanent magnet structure near the flywheel outer periphery for cooperating with a fixed ignition assembly and inducing spark creating voltages in the ignition assembly as the magnet structure rotates past the ignition assembly and comprising:

a ferro-magnetic flywheel;

a permanent magnet structure including a permanent magnet and a pair of flux transmitting pole shoes adjacent the respective poles of the permanent magnet, the poles of said magnet and the pole shoes circumferentially arranged near the periphery of said flywheel, each said pole shoe including a generally concave recessed portion in its outer peripheral surface circumferentially outwardly of said magnet, each said pole shoe further including a pair of shoulder portions along its radial inner peripheral surface adjacent said permanent magnet and forming a recess between said shoulder portions, said magnet disposed in said pole shoe recesses and restrained thereby from radial movement with respect to the axis of said flywheel;

a substantially non-magnetic spacer axially positioned intermediate the flywheel and the permanent magnet structure for reducing flux leakage between the pole shoes by way of the flywheel, said spacer including a plurality of protuberances, said protuberances extending toward said pole shoes, each said protuberance cooperating with a respective said pole shoe concave recessed surface portion whereby said pole shoes are restrained from pivoting movement in a plane perpendicular to said flywheel axis; and

a solid generally cylindrical fastener of substantially non-magnetic material passing through apertures in the magnet structure, spacer and flywheel, said fastener expanded radially in said apertures to tightly engage the magnet structure, spacer and flywheel.

4,606,306
GLOW PLUG CONTROL CIRCUIT

LaVerne A. Caron, Naperville, and Edward F. Handley, Clarendon Hills, both of Ill., assignors to Navistar International Corporation, Chicago, Ill.

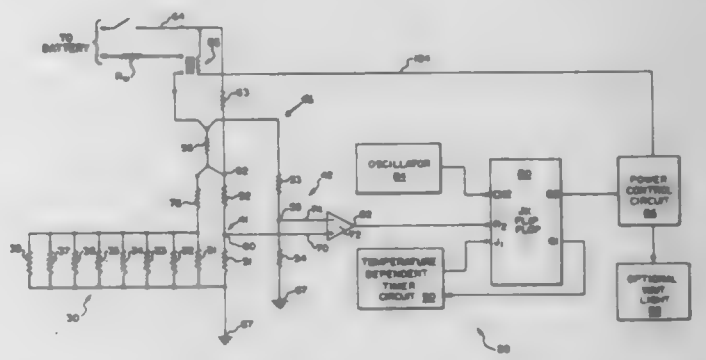
Continuation-in-part of Ser. No. 570,064, Jan. 12, 1984, Pat. No. 4,530,321. This application May 24, 1985, Ser. No. 738,146

The portion of the term of this patent subsequent to Jul. 23, 2002, has been disclaimed.

Int. Cl.⁴ F02P *19/02*

U.S. Cl. 123—179 H **8 Claims**

1. An apparatus for controlling the rapid heating of one or more glow plugs which are mounted in a diesel engine, said apparatus comprising a power control circuit for controlling energization of the glow plugs; a bi-stable multivibrator for controlling energization of said power control circuit; an afterglow timer circuit coupled to said multivibrator; means for causing said bi-stable multivibrator to output a logic high signal to cause said power control circuit to energize the plugs; means for comparing a voltage which is related to the resistance of the one or more glow plugs and which is altered by the heating up of the glow plugs subsequent to their initial energization by said power control circuit against a reference voltage which is a fixed percentage of supply voltage and which corresponds to a predetermined set temperature of the one or more glow plugs; means for supplying a control signal to said bi-stable multivibrator when the voltage related to the temperature of the one or more glow plugs is equal to said reference voltage (1) to reset an output of said multivibrator to



a logic low to de-energize said power control circuit and (2) to initiate a timing out of said afterglow timer circuit; means for supplying a clock signal to said multivibrator to cause said multivibrator to re-energize said power control circuit to re-energize the glow plugs; means for timing out said timer circuit for a predetermined time period related to the ambient temperature while control signals and clock signals are being generated intermittently to heat the glow plugs until the time period has expired; means for de-energizing said multivibrator after said time period, said voltage comparing means comprising a comparator; and means for ensuring that no false reset signals are generated by said comparator.

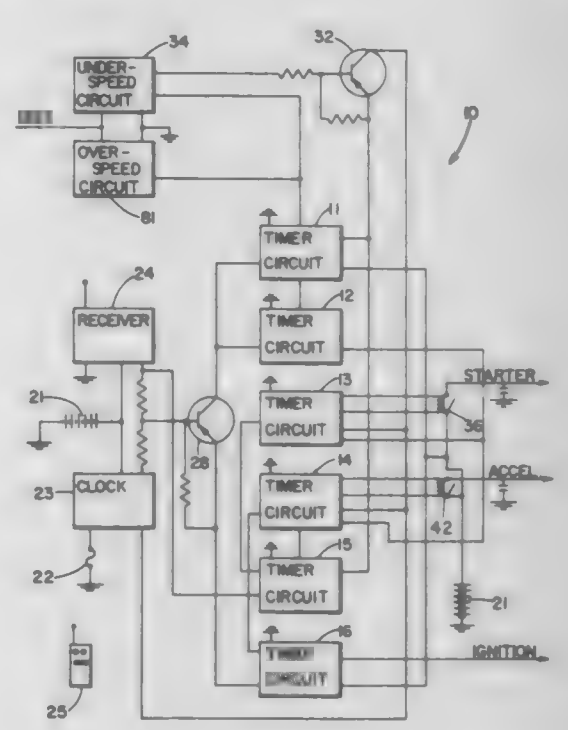
4,606,307
AUTOMATIC STARTING SYSTEM

Norman E. Cook, 9025 Broken Arrow Rd., Indianapolis, Ind. 46234

Filed Dec. 1, 1983, Ser. No. 556,989

Int. Cl.⁴ F02N *11/08*

U.S. Cl. 123—179 B **39 Claims**



1. An automatic starting system for a vehicle which includes a starter circuit, a battery and an internal combustion engine

with a throttle-gas pedal linkage, said starting system comprising:

system energizing means electrically connectable to the battery of said vehicle, said system energizing means being selectively actuatable for conducting a current signal from said battery;

a plurality of switch means designed and arranged and electrically operable to couple said current signal from said system energizing means to the starter circuit of said vehicle;

gas pedal pumping means connectable to the throttle-gas pedal linkage of said vehicle; and

means for alternatively energizing and deenergizing said gas pedal pumping means for a finite time interval thereby creating a pumping action of said throttle-gas pedal linkage, said energizing and deenergizing means including a plurality of electrical timers with different time-on intervals, means for initiating a variable number of time-on intervals of one timer within the time-on interval of a second connected timer, and means for supplying an output signal from said second timer to said one timer to disable further initiation of time-on intervals of said one timer when said second timer times out.

4,606,308

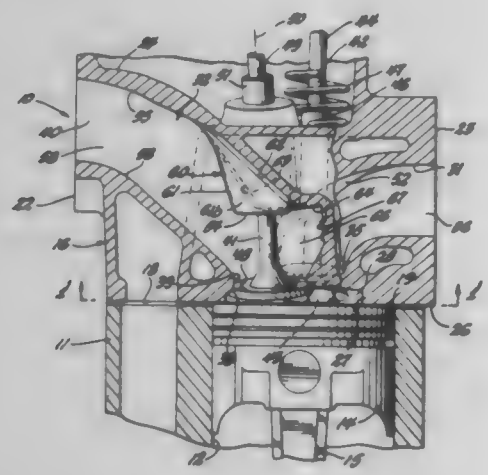
ENGINE CYLINDER INTAKE PORT

C. Gregory Furlong, Oxford, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Sep. 16, 1985, Ser. No. 776,493

Int. Cl.⁴ F02F *1/42*

U.S. Cl. 123—188 M **8 Claims**



1. In an internal combustion engine, means defining a cylinder closed at one end and having an axis, means defining an inlet passage through the cylinder defining means and communicating with the cylinder through the closed end, and a poppet inlet valve including a stem and head having a valve axis and disposed in the passage for reciprocation on said valve axis to control communication of the inlet passage with the cylinder, said inlet passage being characterized by

a throat of generally circular cross-section opening into the cylinder and adapted to be closed by the inlet valve,

an entrance portion spaced from the throat and offset from the valve axis, and

means defining a fluid flow path extending from the entrance portion toward and around opposite sides of the valve axis and below the valve head when open to the throat, said fluid flow path defining means having a top wall including first and second ramp portions and a shelf portion spaced from and opposite the throat, said ramp portions sloping downwardly and merging with the shelf portion on generally opposite sides of the valve axis, the ramp portions lying at steep angles to the shelf portion and one of the ramp portions having a substantially steeper angle than the other to slow and direct downwardly fluid flow passing the one of said sides of the valve axis below said one steeper ramp relative to the higher speed and less downward direction of flow passing the other of said sides of the valve axis, whereby preferential entry of swirl developing flow into the shelf area from below the ramp of lower slope is encouraged.

4,606,309

DEVICE FOR CONTROLLING THE COMBUSTION CHAMBERS EXHAUST AND/OR INTAKE FOR INTERNAL COMBUSTION ENGINES

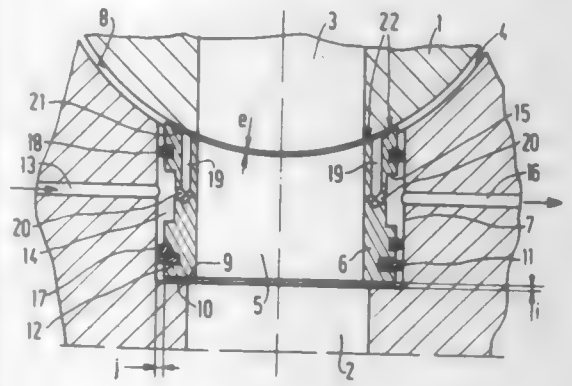
Jean-Claude Fayard, Lyons, France, assignor to Elf France, Paris, France

Continuation-in-part of Ser. No. 517,030, Jul. 25, 1983, Pat. No. 4,506,636. This application Jan. 31, 1985, Ser. No. 696,764

Claims priority, application France, Feb. 3, 1984, 84 01675; Jan. 17, 1985, 85 00637

Int. Cl.⁴ F01L *7/16*

U.S. Cl. 123—190 DL **17 Claims**



1. A device for controlling the circulation of gases to and from a combustion chamber of an internal combustion engine, comprising:

a sealing ring slidably positioned in a first bore of said engine such that a space is defined between said sealing ring and said bore, said sealing ring including a connecting orifice having one end in fluid communication with said chamber;

a transverse bore in fluid communication between an opposite end of said orifice and one of an intake and exhaust orifice;

a rotary throttle including a cut-out section defining a passage, said throttle positioned within said transverse bore and continuously revolving during operation, in synchronism with operation of the engine, to cyclically connect the connecting orifice with said passage;

at least one sealing element surrounding said sealing ring to prevent fluid flow within said space between said chamber and said passage;

said sealing ring normally biased in the direction of said rotary throttle by pressure in the combustion chamber; and

fluid injection means for injecting a liquid in a gap between a sealing surface of the sealing ring and an external surface of said throttle via said space.

4,606,310

CRANKCASE FOR MULTI-CYLINDER ENGINE

Sakae Makino, Hamakita, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Filed Sep. 25, 1984, Ser. No. 654,651

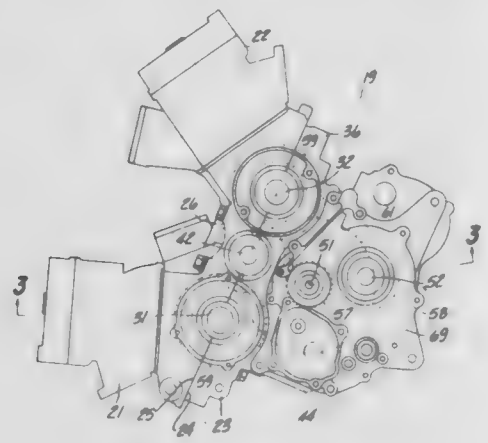
Claims priority, application Japan, Sep. 26, 1983, 58-177568

Int. Cl.⁴ F02B *75/06*

U.S. Cl. 123—192 B **14 Claims**

1. A combined engine transmission case comprising a first casing forming a portion of the crank chamber of said engine, a second casing forming a transmission case and fixed relative to said first casing, an engine output shaft journaled within said crank chamber at an interface between said first and second casings for rotation about a first axis lying in a plane defined by said interface, said second casing being formed with an internal

cavity sealed from said crank chamber and an opening in one side thereof facing in a direction parallel to said first axis, a transmission shaft insertable into said internal cavity through



said opening, means for driving said transmission shaft from said engine output shaft, and a cover plate closing said second casing opening and at least in part journaling said transmission shaft for rotation about a second axis parallel to said first axis.

4,606,311

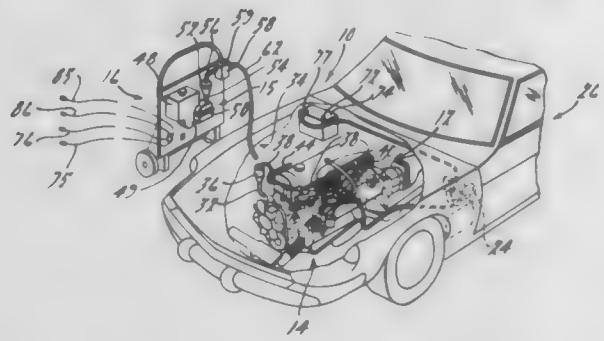
FUEL INJECTION CLEANING SYSTEM AND APPARATUS

Angelito Reyes, Woodland Hills, and Fred Abbott, Glendale, both of Calif., assignors to Miller Special Tools, Div. of Triangle Corp., Garden City, Mich.

Continuation of Ser. No. 336,870, Jan. 4, 1982, abandoned. This application Sep. 14, 1984, Ser. No. 651,635

Int. Cl.[4] B08B *3/08*; B02B *77/04*

U.S. Cl. 123—198 A **16 Claims**



1. An apparatus for cleaning the fuel injection valve system of an engine, said valve system including at least one fuel injection valve operably secured to and associated with said engine and responsive to a charge of electricity to input fuel to said engine, means for supplying fuel to said at least one valve, means for controlling said at least one valve to feed fuel to said engine, and means for powering said controlling means, said apparatus comprising:

means for feeding a solvent-fuel mixture into said fuel supplying means of said engine, comprising:

an outlet conduit,

a storage tank for a supply of said solvent-fuel mixture separate from said fuel supply means,

means separate from said fuel supplying means for pumping said solvent-fuel mixture from said storage tank to said outlet conduit, and

means for communicating said storage tank with said pumping means;

a control for said solvent-fuel mixture feeding means comprising

means for charging said fuel injection valves with electricity to operate said valves, said charging means disposed in operable association with said engine,

switch means for determining the commencement or cessation of operation of said feeding means, and

means for operably associating said valve operating means and said switch means with said powering means,

a device for transporting said control, said communicating means, said pumping means, said storage tank, and said outlet conduit to and from operable association with said engine; and

means for operably associating said outlet conduit of said feeding means with said valve fuel supplying means and disabling said valve fuel supplying means to permit said feeding means to be the source of the fuel supply for said at least one fuel injection valve, wherein said apparatus is removed prior to use of said fuel supplying means to operate said engine.

4,606,312

SYSTEM FOR DETECTING ABNORMALITIES IN GAS ENGINES

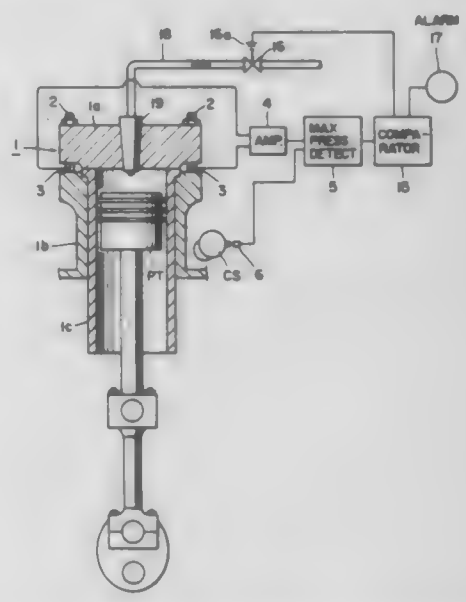
Hideaki Nakano, Akashi; Tadahiro Ozu, and Tatsuo Fujii, both of Kobe, all of Japan, assignors to Kawasaki Jukogyo Kabushiki Kaisha, Kobe, Japan

Filed Jul. 23, 1985, Ser. No. 758,078

Claims priority, application Japan, Jul. 31, 1984, 59-118692[U]

Int. Cl.[4] F02B *77/08*

U.S. Cl. 123—198 DB **6 Claims**



1. A system for detecting abnormalities in a gas engine with at least one cylinder and a fuel gas shut-off valve and means for closing the shut-off valve upon detection of an abnormality, said system comprising: pressure detecting means for detecting the pressure within each cylinder to generate corresponding detection values; maximum pressure detecting means for determining from said detection values the maximum pressure within the cylinder for every cycle of the engine operation; comparator means for comparing each maximum pressure thus determined with reference values of a specific range and, when said maximum pressure is outside of said range, generating a corresponding signal; and actuating means operating in response to said signal to actuate the shut-off valve.

4,606,313

METHOD OF AND SYSTEM FOR CONTROLLING HYDRAULIC POWER SYSTEM

Eiki Izumi; Hiroshi Watanabe; Yukio Aoyagi; Kazuo Honma, and Kichio Nakajima, all of Ibaraki, Japan, assignors to Hitachi Construction Machinery Co., Ltd., Tokyo, Japan

PCT No. PCT/JP81/00270, § 371 Date Jun. 9, 1982, § 102(e) Date Jun. 9, 1982, PCT Pub. No. WO82/01396, PCT Pub. Date Apr. 29, 1982

PCT Filed Oct. 8, 1981, Ser. No. 387,884

Int. Cl.[4] F02M *39/00*

U.S. Cl. 123—386 **31 Claims**

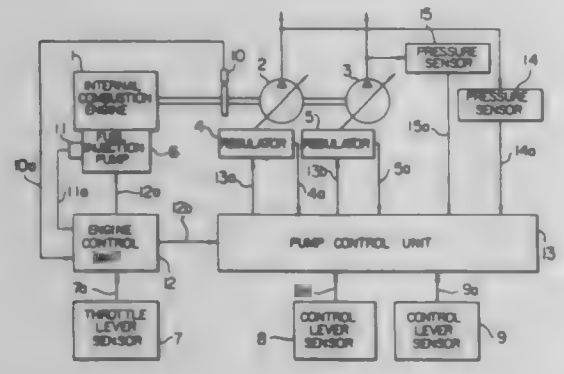
1. A method of controlling a hydraulic power system com-

prising an internal combustion engine receiving a supply of fuel from a fuel injection pump, and at least one variable displacement hydraulic pump driven by the internal combustion engine, the method comprising the steps of:

(a) obtaining an engine speed deviation from the difference between a target speed set by an accelerator operation of the internal combustion engine and an output speed of the engine;

(b) obtaining a fuel injection target value based on at least said engine speed deviation, said fuel injection target value being in predetermined functional relationship to said deviation;

(c) controlling a fuel injection rate of said fuel injection pump based on said fuel injection target value;



(d) determining, at the same time, a displacement volume target value of said hydraulic pump based on at least said engine speed deviation and an actual discharge pressure of the hydraulic pump in such a manner that an input torque of said hydraulic pump decreases as the engine speed deviation increases;

(e) controlling the displacement volume of the hydraulic pump based on the displacement volume target value; and

wherein in step (b), said fuel injection target value is in a functional relationship to said engine speed deviation in such a manner that the target value increases substantially linearly until the deviation reaches a predetermined value and has a substantially constant maximum value after the deviation has reached the predetermined value.

4,606,314

IGNITION ANGLE ADVANCER FOR INTERNAL COMBUSTION ENGINE

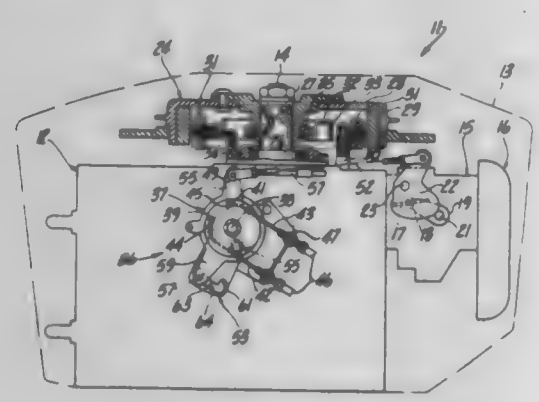
Toshiyuki Yamazaki, Iwata, Japan, assignor to Sanshin Kogyo Kabushiki Kaisha, Hamamatsu, Japan

Filed Jul. 27, 1984, Ser. No. 634,992

Claims priority, application Japan, Jul. 29, 1983, 58-137643; Nov. 8, 1983, 58-208253

Int. Cl.⁴ F02P *5/02*

U.S. Cl. 123—413 **4 Claims**



1. In a throttle and spark advance control system for an internal combustion engine having a spark advance mechanism and a throttle valve comprising an operator controlled element, a throttle control lever supported for pivotal movement about an axis and directly connected to said operator controlled element for rotation under operator control, means for positively connecting said throttle control lever to said throttle valve for positioning said throttle valve in response to movement of said throttle control lever, a spark advance control lever supported for pivotal movement about an axis, motion transmitting means for operatively connecting said spark advance control lever to said throttle control lever for pivotal movement of said spark advance control lever about its axis in response to pivotal movement of said throttle control lever about its axis and said spark control lever to said spark advance mechanism for controlling the position of said spark advance mechanism in response to the position of said throttle control lever, the improvement comprising said motion transmitting means effecting pivotal movement of said spark control lever at a different angular velocity than that of said throttle control lever during at least a range of angular movement of said throttle control lever, said control levers being supported for pivotal movement with their axes being juxtaposed to but offset from each other, said levers being in superimposed relationship with one of said control levers lying over the other of the control levers said motion transmitting means for operatively connecting the control levers comprising a slot formed in one of said control levers and follower means received in said slot for controlling the relative movement therebetween.

4,606,315

IGNITION CONTROL SYSTEM FOR AN INTERNAL COMBUSTION ENGINE

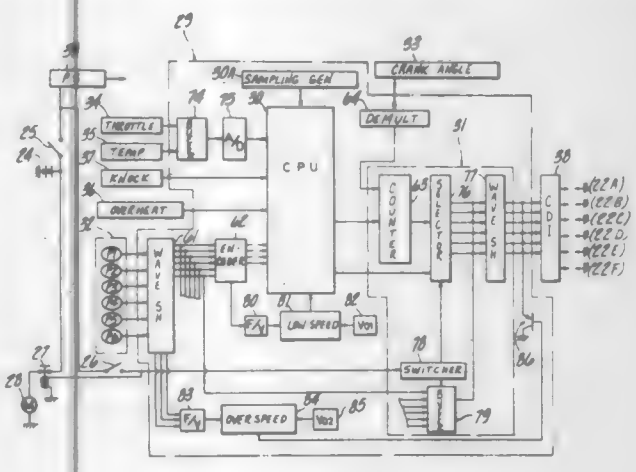
Motoi Tobinaga; Shigeo Okumura; Kenichi Handa, all of Hamamatsu, and Shinya Atsumi, Kobayashi, all of Japan, assignors to Sanshin Kogyo Kabushiki Kaisha, Japan

Filed May 18, 1984, Ser. No. 611,846

Claims priority, application Japan, May 19, 1983, 58-86672; May 19, 1983, 58-86673; May 19, 1983, 58-86674

Int. Cl.⁴ F02P *5/00*

U.S. Cl. 123—417 **18 Claims**



1. In an ignition system for an internal combustion engine, an ignition control system, comprising:

means for providing a speed signal indicative of the speed of said engine;

means for providing a flow signal indicative of the air flow to the induction system of said engine;

means for providing a temperature signal indicative of the temperature of said engine;

means for detecting the crank angle of said engine;

ignition timing means for generating a spark timing signal which is responsive to said speed and flow signals during predetermined operating conditions of said engine, and which is responsive only to said speed signal during a predetermined low speed running condition of said engine, said low speed running condition representing an engine speed below a predetermined low speed level, said ignition timing means including means for detecting said low speed running condition and means for generating said spark timing signal with a value which represents a predetermined advance angle in response to the detection of said low speed running condition and maintaining said

predetermined advance angle value for said spark timing signal for a predetermined number of crankshaft rotations of said engine;

means for generating an ignition signal in response to said crank angle detecting means and said spark timing signal during the running of said engine, including means for generating an ignition signal having a predetermined advance during the starting of said engine.

4,606,316

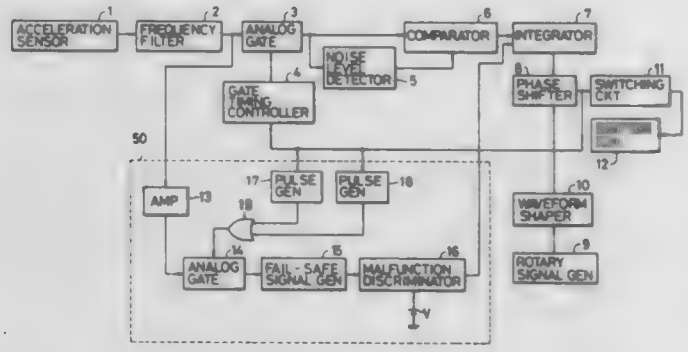
IGNITION TIMING CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINE

Satoshi Komurasaki, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 381,661, May 24, 1982, abandoned. This application Feb. 25, 1985, Ser. No. 705,399

Int. Cl.[4] F02P *5/14*

U.S. Cl. 123—425 **9 Claims**



1. An ignition timing control system for an internal combustion engine of the type comprising switching means for interrupting the power supply to an ignition coil in response to an ignition signal, ignition signal generating means for generating said ignition signal in synchronism with the revolution of said engine, an acceleration sensor for detecting the vibratory acceleration of said engine, and control means for controlling the timing of said switching means by said ignition signal in accordance with engine knocking as determined by said acceleration sensor, wherein the improvement comprises:

malfunction detection means for generating a malfunction detection signal in response to detection of a malfunction in said ignition timing control system, said malfunction detection means including gate means for receiving said sensor output and for cyclically blocking the passage of said sensor output within the malfunction detection means for at least one predetermined time interval in synchronism with operation of said switching means responsive to said ignition signals; and

means in said control means responsive to said malfunction detection signal for controlling the timing of said switching means independently of the presence or absence of engine knocking,

wherein said switching means supplies power to said ignition coil during intervals each beginning with a starting time and terminating with a blocking time, and said gate means blocks said sensor output in response to gate control signals, said malfunction detection means further comprising gate control means for generating said gate control signals only at one or both of said starting times or blocking times.

4,606,317

FUEL INJECTION SYSTEM

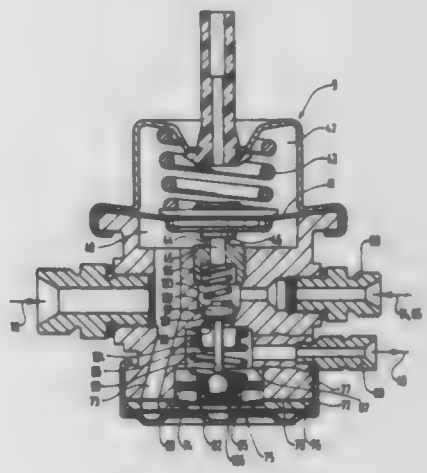
Gerhard Jauch, Markgröningen; Ernst Lang, Gerlingen; Ulrich Leu, Stuttgart, and Willi Strohl, Schwieberdingen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Dec. 31, 1984, Ser. No. 687,891

Claims priority, application Fed. Rep. of Germany, Apr. 5, 1984, 3412746

Int. Cl.[4] F02M *39/00*

U.S. Cl. 123—452 **2 Claims**



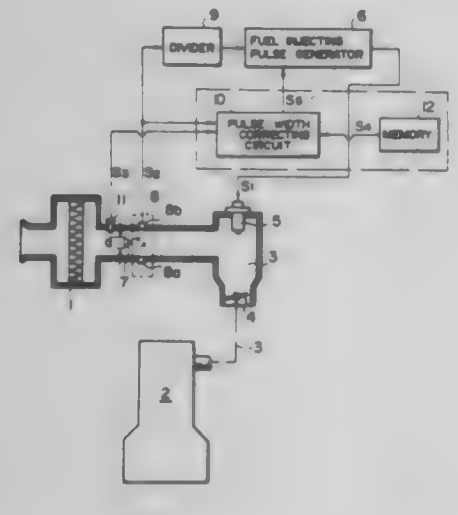
1. A fuel injection system for mixture-compressing internal combustion engines with externally supplied ignition, comprising fuel metering valves in a fuel supply line, said fuel metering valves having a movable metering valve element and a respective regulating valve associated with each said movable metering valve element, a movable regulating valve element arranged to receive varying pressures on different sides thereof, a pressure limiting valve located along said fuel supply line, said pressure limiting valve having a movable valve element which divides a spring chamber from a system pressure chamber arranged to communicate with said fuel supply line and a relief throttle, said system pressure chamber further including a valve seat with which said movable valve element cooperates, with said seat arranged to rest on an outflow line which communicates via a control throttle with a differential pressure control line, said differential pressure control line arranged to communicate with a sealing valve, said sealing valve including a valve seat and a sealing valve element said sealing valve element being urged in a closing direction toward said valve seat by a closing spring means, a tappet secured to said sealing valve element, said tappet extending downwardly into a return flow chamber in supporting engagement with an acutation member seated on a spring plate, a switch spring which forces said spring plate toward a switch diaphragm upon which said spring plate is seated, said switch diaphragm engages said sealing valve element remote from said outflow line, said switch diaphragm separates a switch chamber from said return flow chamber and is arranged to be acted upon on a side remote from said sealing valve element by said fuel pressure in said fuel supply line and said diaphragm further arranged to move counter to the force of said closing spring and said switch spring wherefore said sealing valve element is movable in the opening direction of said sealing valve, beyond a predetermined fuel pressure in said fuel supply line.

4,606,318

FUEL INJECTION CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINE

Tsuyoshi Tsuchida, and Yoshinobu Kido, both of Hiroshima, Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Filed May 26, 1983, Ser. No. 498,326
Claims priority, application Japan, May 28, 1982, 57-91104
Int. Cl.[4] F02B *3/00*; G01F *1/32*
U.S. Cl. 123—488 2 Claims



1. A fuel injection control system for an internal combustion engine having an air intake passage, said fuel injection control system comprising:

a Karman vortex generator means, disposed in said air intake passage of the engine, for generating Karman vortices;

a Karman vortex frequency detecting means, comprising an ultrasonic wave oscillator and an ultrasonic wave receiver each disposed downstream of said Karman vortex generator means, for detecting the frequency of the generated Karman vortices;

a control signal generating means, operably connected to said Karman vortex frequency detecting means, for generating a control signal comprising a plurality of pulses with a predetermined width, said control signal generating means varying the number of said pulses in said control signal in proportion to the detected frequency of the generated Karman vortices, the constant of proportionality being the Strouhal Number which varies with the detected frequency of the generated Karman vortices and the temperature of the intake air;

a fuel injector means, driven by the control signal generated by said control signal generating means, for injecting fuel into said air intake passage, said fuel injector valve means varying the amount of fuel injected into the air intake passage in response to the number of pulses and the width of the pulses in said control signal;

an intake air temperature detecting means for detecting the temperature of the intake air;

a memory means for storing pulse width correction values corresponding to respective combinations of detected frequency of the generated Karman vortices and temperature of intake air so ao to compensate for variations of the Strouhal Number with the detected frequency of the generated Karman vortices and the temperature of the intake air; and

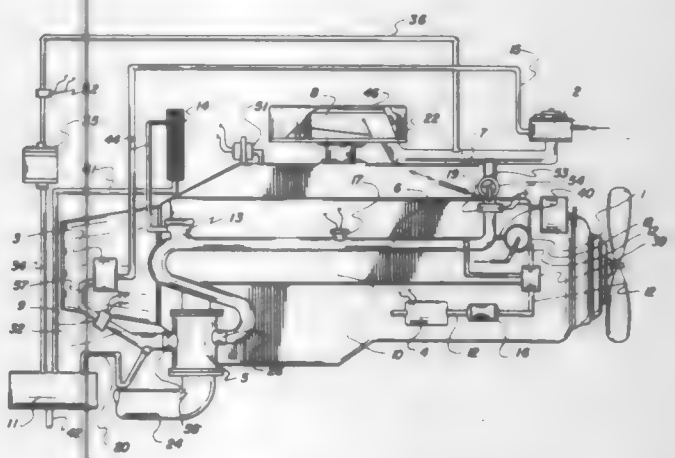
a pulse width correcting means, operably connected to said Karman vortex frequency detecting means, said intake air temperature detecting means, said control signal generating means and said memory means, for correcting the pulse width of said plurality of pulses in said control signal in accordance with the correction value stored in said memory means for the combination of detected frequency of the generated Karman vortices and temperature of intake air.

4,606,319

SYSTEM AND METHOD OF VAPORIZING LIQUID FUEL FOR DELIVERY TO AN INTERNAL COMBUSTION ENGINE

Robert E. Silva, 6452 N. 8th St., Fresno, Calif. 93710

Filed Aug. 20, 1984, Ser. No. 642,057
Int. Cl.[4] F02M *31/00, 13/08*
U.S. Cl. 123—525 26 Claims



1. An improved fuel supply system for use with an internal combustion engine having a carburetor with an air intake, a vapor fuel intake and a mixing chamber for mixing the vapor fuel with the air, said improvement comprising

a fuel mixing chamber which is in flow communication with said vaporized fuel intake of said carburetor and is adapted to feed vapor fuel to said vaporized fuel intake;

a source of first fuel that exists in the vapor state at normal atmospheric pressures and temperatures;

a source of second fuel that exists in the liquid state at normal atmospheric pressures and temperatures;

means for feeding said first fuel to said fuel mixing chamber;

vaporizing means for heating a liquid fuel and converting the liquid fuel into the vapor state;

means for feeding said second fuel in the liquid state to said vaporizing means;

means for delivering vaporized fuel from the vaporizing means to said fuel mixing chamber; and

means for automatically controlling the feed of said first fuel to said mixing chamber such that vaporized second fuel is preferentially used in amounts as available from the vaporizing means to provide the fuel requirements of the engine, and said first fuel is fed to the mixing chamber in amounts as necessary to supplement the second fuel when the supply of vaporized second fuel from said vaporizing means is inadequate or in amounts up to the total fuel requirements of the engine whenever said vaporizing means is inoperative or otherwise not producing vaporized second fuel.

4,606,320

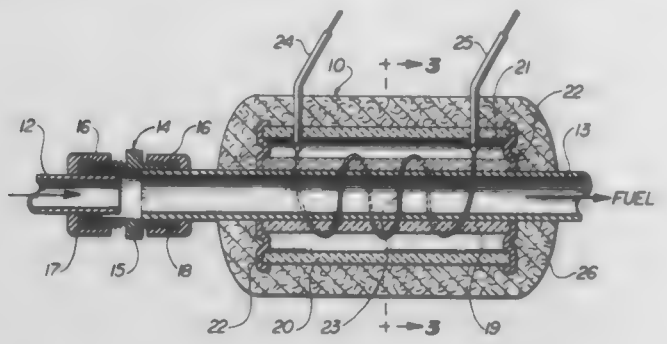
FUEL PREHEATING UNIT

Keith F. McGee, Rte. 6, Box 869, New Iberia, La. 70560

Filed Jan. 14, 1986, Ser. No. 818,749
Int. Cl.[4] F02M *31/00*
U.S. Cl. 123—557 4 Claims

1. A fuel preheating unit for engines comprising an interior metal tube adapted for connection in a fuel line, first and second insulator sleeves surrounding said tube in spaced substantially concentric relationship, end plates surrounding said tube and being interengaged with the ends of said sleeves and holding said sleeves in said spaced concentric relationship, an electrical wire heating element surrounding the innermost of the first and second sleeves and having plural turns on the innermost sleeve extending for a major portion of the length of such sleeve and the length of the unit, and a body of thermal insulat-

ing material surrounding and enclosing at least a portion of said tube and completely enclosing said sleeves and end plates, and



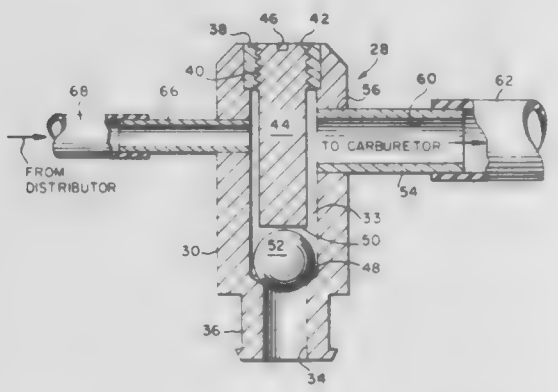
said heating element having end terminals projecting exteriorly of said body of thermal insulating material.

4,606,321

CRANKCASE POSITIVE VENTILATION VALVE

Hector H. Gallegos del Bosque, Avenida Jose F. Ortiz No. 292, Colonia las Margaritas 27130, Torreon, Coahiula, Mexico

Filed Feb. 1, 1985, Ser. No. 697,228
Claims priority, application Mexico, May 25, 1984, 201454
Int. Cl.[4] F02M *25/00*
U.S. Cl. 123—574 2 Claims



1. An improved adjustable positive crankcase ventilation valve comprising a valve body, and interior cavity in the valve body, a valve seat at one end of the cavity, a valve ball within the cavity adapted to close and open the valve at the valve seat, a valve adjusting pin, said adjusting pin positioned in said cavity and sized to permit passage of air thereabout, thread means mounting the adjusting pin above the valve ball to thereby regulate the opening and closing of the valve, a first tube connecting the valve cavity upstream of the valve seat and about the adjusting pin to a source of reduced pressure, and a second tube connecting the valve cavity upstream of the valve seat and about the adjusting pin with a normal pressure zone.

4,606,322

DUAL FUEL CONTROL AND SUPPLY SYSTEM FOR INTERNAL COMBUSTION ENGINES

Harvey M. Reid, 11 Wakefield Street; Neil R. Poletti, both of Lower Hutt; Jonathon B. Rainey, Wellington, and George L. Jones, Wainuiomata, all of New Zealand, assignors to Harvey Marshall Reid, New Zealand

Filed Jul. 25, 1984, Ser. No. 634,369
Claims priority, application New Zealand, Aug. 4, 1983, 205140
Int. Cl.[4] F02M *39/00*
U.S. Cl. 123—575 18 Claims

1. An electronically controllable dual fuel system for an internal combustion engine having a liquid fuel injection system incorporating an injector pump for delivering prescribed quantities of a principal liquid fuel under pressure to individual injectors for the cylinders of the engine, comprising:

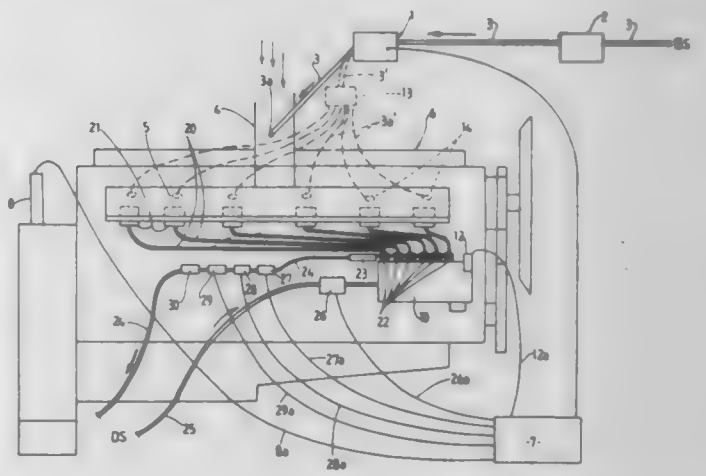
an electronic control unit,

an electrically controllable first variable flow regulator arranged to receive a combustible alternative fuel under pressure and deliver controlled quantities of said alternative fuel to the engine as determined by electrical signals received by and transmitted form said electronic controlled unit,

a by-pass control system, including:

by-pass bleed means for bleeding liquid fuel from the principal liquid fuel injection system at the output side of the injector pump and before the injectors and by-passing the bleed fuel through the by-pass control system,

a second electrically controllable variable control regulator to control the quantity of principal liquid fuel capable of being bled and by-passed from the output side of the injector pump, and



a by-pass flow meter arranged to measure the quantity of principal liquid fuel bled from the output side of the injection system and supply a corresponding electrical signal to said electronic control unit,

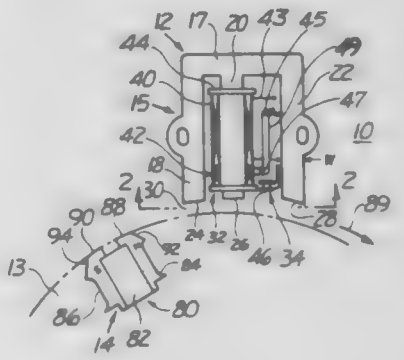
said electronic control unit determining the energy value of the proportion of principal liquid fuel normally intended to be supplied to the engine to meet the engine's demands at that time but bled from the injection system and controlling the prescribed amount of electric power to said variable flow regulator to enable delivery to the engine of the prescribed quantities of alternative fuel proportional in energy value to that necessary to maintin the required power rating and/or speed of the engine for normal efficient operation.

4,606,323

MAGNETO FOR IGNITION SYSTEM

Donald R. Nash, Berkey, Ohio, assignor to Allied Corporation, Morris Township, N.J.

Filed Apr. 30, 1985, Ser. No. 728,991
Int. Cl.[4] F02P *1/00*
U.S. Cl. 123—602 15 Claims



4. A magneto for an engine ignition system comprising:

an E-type pickup or stator comprising a core including three parallel extending poles terminating at ends;

a rotor comprising permanent magnet means for producing

a varying flux field in said stator, said poles defining a first spacing between a second or center pole and a first pole and a second spacing between said center pole and a third pole, said stator positioned relative to said rotor such that said rotor moves across said stator from said first pole toward said third pole;

a first or charge coil wound about said center pole;

a second or trigger coil wound about said center pole;

a third or suppression coil wound about a ferromagnetic core positioned in said second spacing remote from said core proximate said end face of said center pole and electrically isolated, from said trigger coil.

4,606,324

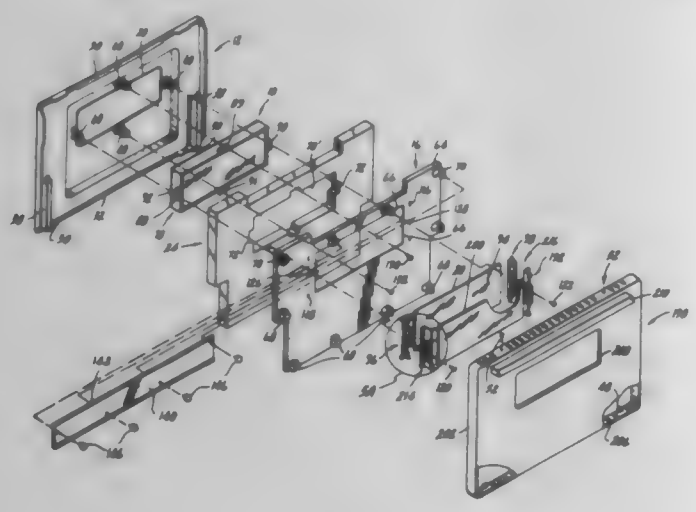
OVEN DOOR

Joseph W. Katona, Walled Lake, Mich., assignor to Mills Products, Inc., Farmington, Mich.

Filed Dec. 28, 1984, Ser. No. 687,054

Int. Cl.⁴ F24C *15/02*

U.S. Cl. 126—198 **15 Claims**



1. An oven door comprising spaced generally parallel back and front panels, an inner panel between and in spaced generally parallel relation to said back panel and front panel, said back panel and inner panel and front panel have aligned window openings therein, a first window assembly between said back panel and inner panel having at least one glass pane aligned with said window openings and having first mounting bracket means, a layer of insulation between said back panel and said inner panel, said insulation layer having a window opening aligned with the window openings in said back, inner and front panels and receiving said first window assembly, a second window assembly between said inner panel and front panel having a second glass pane spaced forwardly of said one glass pane and aligned with said window openings and having second mounting bracket means, a third window assembly between said second window assembly and said front panel having a third glass pane spaced forwardly of said second glass pane and aligned with said window openings and covering the window opening in said front panel, said third window assembly including third bracket means, said first bracket means comprising a bracket on each side of said first window assembly, said second bracket means comprising a bracket on each side of said second window assembly, said third bracket means comprising a bracket on each side of said third window assembly, the brackets of said first, second and third bracket means being aligned respectively with one another, fastening means for securing said first, second and third window assemblies and said inner panel to said back panel, said fastening means including a first fastener connecting said inner panel and the aligned brackets on one side of said first, second and third window assemblies to said back panel, and a second fastener connecting said inner panel and the aligned brackets on the other side of said first, second and third window assemblies to said back panel, said front panel having a peripheral frame which is connected to said back panel, means defining an air passage to allow air to flow upwardly through the door in the spaces between said glass panes, and a heat shield above said window assemblies and between said inner panel and said front panel to cooperate with said inner panel in channeling the upward flow of air therebetween.

4,606,325

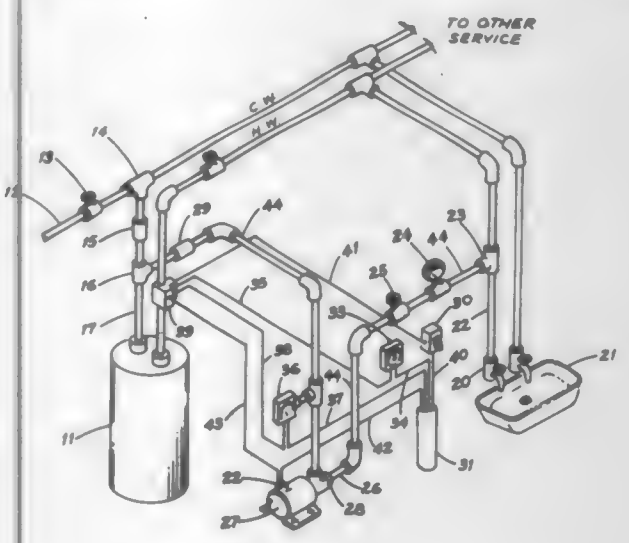
MULTI-CONTROLLED WATER CONSERVATION SYSTEM FOR HOT WATER LINES WITH LOW PRESSURE UTILIZATION DISABLE

Albert G. Lujan, Jr., 625 W. Calle Castille, Tucson, Ariz. 85706

Continuation-in-part of Ser. No. 669,451, Nov. 8, 1984, abandoned. This application Dec. 17, 1985, Ser. No. 814,002

Int. Cl.⁴ F24H *1/00*

U.S. Cl. 126—362 **2 Claims**



1. An improved water conservation system for use in a dwelling or other building having a pressurized main water supply, a hot water heater, a recirculating cooled hot water supply line, said hot water heater having a cold water inlet side and a hot water outlet side, said inlet side being primarily connected to said main water supply through a first check valve and secondarily connected to said recirculating cooled hot water supply line by means of a tee connection located upstream of said inlet side and downstream of said first check valve, said hot water outlet side being connected to a plurality of hot water lines which feed hot water outlet faucets at wash basins, sinks or the like, comprising:

a second check valve, said second check valve being located in said recirculating cooled hot water supply line upstream of said tee connection;

an electrically controlled recirculating centrifugal pump in said recirculating cooled hot water supply line, said pump being located upstream of said second check valve, said pump also being capable of producing water pressure which is sufficient to open said second check valve and close said first check valve when said pump is electrically energized;

a hot water faucet tee connection, said hot water faucet tee connection being located in close proximity to said hot water outlet faucets at said wash basins, said hot water faucet tee connection couples said hot water lines feeding said hot water faucets and said recirculating cooled hot water supply line;

an in-line temperature gauge in said recirculating cooled hot water supply line, said in-line temperature gauge having a visual numerical temperature value readout and being located in close proximity to said hot water faucet tee connection to better sense the temperature of the water at said hot water outlet faucets;

a manually-operated electrical on/off switch connected to an electrical source for controlling discretionary utilization of said water conservation system, said electrical on/off switch being conveniently located at each location of said hot water outlet faucets near said in-line temperature gauge whereby said electrical on/off switch can be

manually operated at user's discretion to energize said recirculating centrifugal pump to recirculate the cooled hot water until said in-line temperature gauge readout indicates that the temperature of the hot water at said hot water faucets has reached a desired temperature; and

a pressure switch located upstream and in close proximity of said hot water heater outlet side, said pressure switch sensing the water pressure of the system and said pressure switch electrically wired in series with said electrical on/off switch and said recirculating centrifugal pump for preventing the electrical energizing of said recirculating centrifugal pump by said manual-operated electrical on/-off switch if the water pressure from said main water supply has fallen below a predetermined pressure.

4,606,326

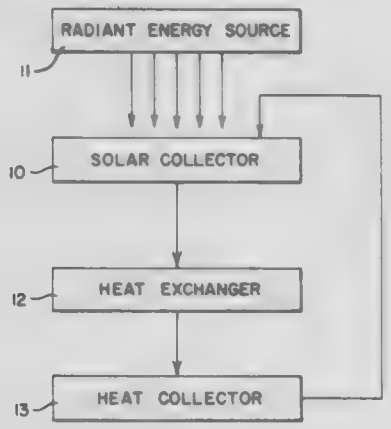
IONICALLY POLYMER-BOUND TRANSITION METAL COMPLEX FOR PHOTOCHEMICAL CONVERSION OF LIGHT ENERGY

Paul J. Giordano, Jr., Hudson, and Richard C. Smierciak, Streetsboro, both of Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

Division of Ser. No. 630,097, Jul. 12, 1984, Pat. No. 4,565,799. This application Mar. 28, 1985, Ser. No. 717,158

Int. Cl.⁴ B01J *31/08*

U.S. Cl. 126—400 **22 Claims**



1. A process for the photochemical conversion and storage of radiant energy through the conversion of strained cyclic non-conjugated carbon containing compounds to their corresponding conjugated forms comprising the steps of:

adding a catalyst formed by ionically bonding a transition metal complex having a square planar geometry and multiple sites of coordination with an anion-exchange resin to a strained cyclic non-conjugated carbon containing compound; and,

converting said non-conjugated carbon containing compound to its corresponding conjugated form with the release of heat energy.

4,606,327

SOLAR WATER HEATING APPARATUS

Trevor J. Bloor, and Lawrence J. Walton, both of 8 Sunshine Blvd., Miami Keys, Gold Coast, Queensland, Australia (4217)

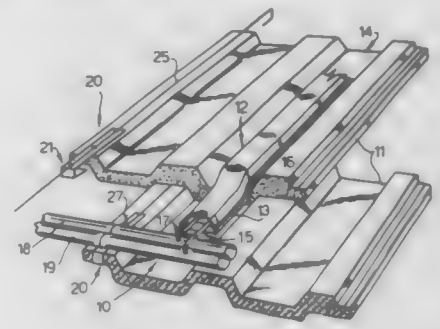
Continuation-in-part of Ser. No. 549,594, Nov. 7, 1983, Pat. No. 4,517,961. This application Dec. 12, 1984, Ser. No. 680,981

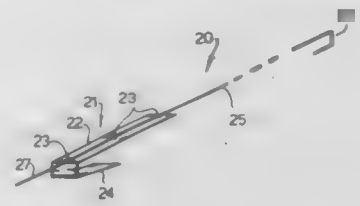
Claims priority, application Australia, Nov. 9, 1982, PF6712

Int. Cl.⁴ F24J *2/00*

U.S. Cl. 126—417 **17 Claims**

1. A clip assembly for securing a body to a tile, said clip assembly including first and second portions adapted to be engaged with respective opposite ends of said tile; an elongated deformable member slidably engaging at least one of said first and second portions and interconnecting said first and second portions in such a manner as to permit said portions to move relatively towards each other to permit detachment from said tile said elongated member further defining constraining means operable to constrain said first and second portions against substantial movement away from each other whereby said clip





assembly when engaged with said clip assembly when engaged with said tile may be prevented from detachment therefrom.

4,606,328

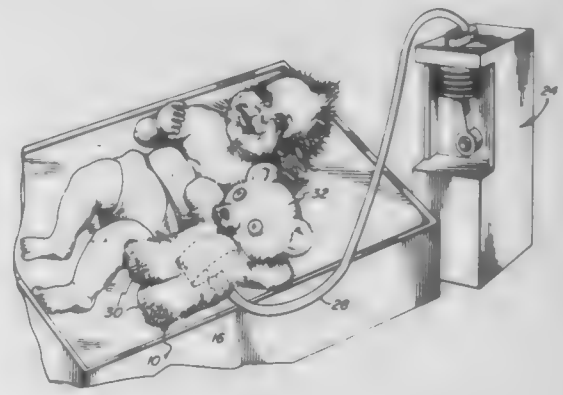
METHOD AND APPARATUS FOR TREATING BREATHING IRREGULARITIES

Evelyn B. Thoman, 796 Stafford Rd., Storrs, Conn. 06268

Filed Jun. 16, 1983, Ser. No. 504,823

Int. Cl.⁴ A61B *19/00*

U.S. Cl. 128—1 C **6 Claims**



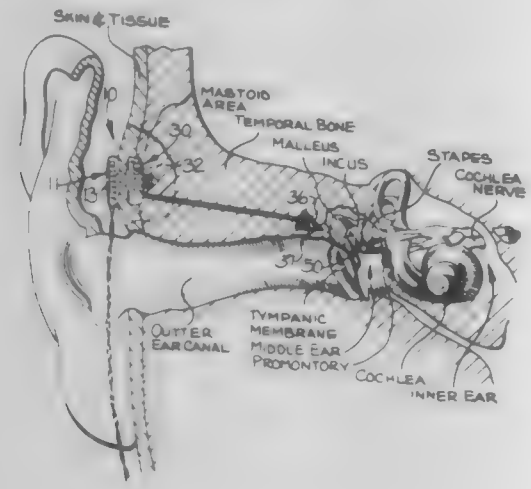
1. Apparatus for simulating natural breathing motions of a live subject which comprises a simulated animal adapted to be positioned within the immediate vicinity of such a live subject, said simulated animal having a torso including a back portion and a front portion, said portions being peripherally joined and enclosing an inflatable bladder member to simulate lungs of said simulated animal within its pleural cavity section formed between said back and front portions, said back portion being substantially stiffer across the area of said baldder member than said front portion, and said front portion being easily flexible, a plurality of appendages to simulate a head and manipulative or locomotive means, each of said appendages being flexibly connected to said torso adjacent the periphery of said bladder member, and air pump means for cyclically inflating said bladder member sufficiently to produce movement of the external surface of said front portion of said pleural cavity section relative to said back portion and to move at least one of said appendages to simulate motion accompanying a natural breathing pattern for said simulated animal, said pattern being relatable to the vestibular and tactile senses of said live subject, said air pump including means for heating the air supplied to said bladder, said bladder member including means permitting the air to bleed through the wall thereof.

4,606,329

IMPLANTABLE ELECTROMAGNETIC MIDDLE-EAR BONE-CONDUCTION HEARING AID DEVICE

Jack V. D. Hough, Yukon, Okla., assignor to Xomed, Inc., Jacksonville, Fla.

Filed Jun. 17, 1985, Ser. No. 736,766
Int. Cl.[4] H04R *25/00*
U.S. Cl. 128—1 R
13 Claims



1. Implantable electromagnetic middle-ear bone-conduction hearing aid device characterized by the absence of electrodes entering the middle-ear and variability to meet a variety of pathological entities of the hearing impaired user; said device comprising:

sound processing means for converting sound into an electromagnetic signal and including an output transmitter adapted to be placed supercutaneously on the skull of the user for transmitting the electromagnetic signal transcutaneously;

signal receiving and transmitting means adapted to be implanted subcutaneously in the bone of the user outside of the middle-ear for receiving the transcutaneous electromagnetic signal from said sound processing means transmitter and for transmitting an electromagnetic signal subcutaneously into the middle-ear of the user; and

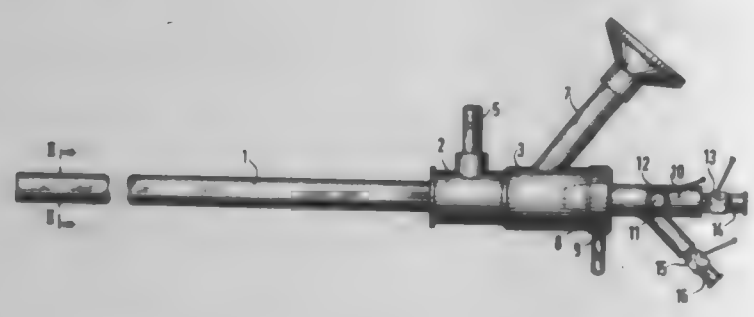
vibration generating means adapted to be implanted in the small bones of the ossicular chain in the middle-ear for receiving the subcutaneous electromagnetic signal from said signal receiving and transmitting means and for vibrating the ossicular chain in response to such electromagnetic signal to stimulate the inner ear to create the perception of sound in the hearing impaired user.

4,606,330

DEVICE FOR DISINTEGRATING STONES IN BODILY CAVITIES OR DUCTS

Ludwig Bonnet, Kaittlingen, Fed. Rep. of Germany, assignor to Richard Wolf GmbH, Fed. Rep. of Germany

Filed Jul. 19, 1984, Ser. No. 632,302
Claims priority, application Fed. Rep. of Germany, Aug. 9, 1983, 8322900[U]
Int. Cl.[4] A61B *1/00*
U.S. Cl. 128—7
7 Claims



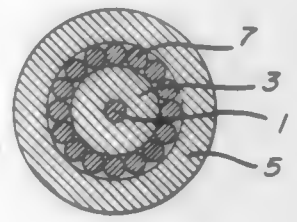
7. A device for visually locating and shattering stones in bodily cavities or ducts which comprises a sheath assembly for insertion into the body, the sheath assembly having elongated shaft with distal end and proximal end, optical means received in said shaft including fiber optic light carrying means and an optical observation system, eyepiece means projecting from said sheath assembly adjacent its proximal end at an angle to an axis of the sheath assembly, an instrument channel extending through said shaft from said distal end to said proximal end, an insertion element removably coupled to said sheath assembly, first and second passages through said insertion element, said insertion element having distal end and proximal end, said distal end of said insertion assembly communicating with said instrument channel of said shaft, said first and second passages having independent means for closing said passages, said first passage having a proximal end, said first passage aligned parallel with the axis of said sheath assembly and said proximal end of said first passage open axially whereby an instrument for shattering stones can be inserted linearly axially through said first passage, said insertion element, said sheath assembly and said channel, said second passage having portions extending through said insertion element parallel to portions of said first passage and communicating with said instrument channel, said second passage having a proximal end extending at an obtuse angle to the axis of said sheath assembly.

4,606,331

ELECTRODE FOR FIBER OPTIC SCOPES

William R. Shene, Plattsburgh, N.Y., assignor to Monghan Medical Corporation, Plattsburgh, N.Y.

Filed Sep. 3, 1985, Ser. No. 772,039
Int. Cl.[4] A61B *17/36, 1/06*
U.S. Cl. 128—24.1
12 Claims



1. An electrode for use in fiber optic scopes, said electrode having a connecting end and a discharge end, and comprising:

an elongated, flexible, center conductor;

an inner insulation sleeve extending along and covering said conductor;

an outer insulation sleeve extending along and covering said inner insulation sleeve, and leaving a gap therebetween, to define an irrigant conduit between said inner and outer insulation sleeves;

a metallic sleeve extending along said irrigant conduit, said metallic sleeve being of a woven braided material, whereby to permit passage of said irrigant through said irrigant conduit; and

irrigant input means in communication with said irrigant conduit.

4,606,332

BACK TREATMENT APPARATUS

Howard W. Gibson, Star Rte., Tribune, Kans. 67879

Filed Sep. 10, 1984, Ser. No. 649,220
Int. Cl.[4] A61F *5/00*
U.S. Cl. 128—71
7 Claims

1. A back treatment apparatus adapted to receive a person's body thereon for treatment of medical back problems or the like, comprising:

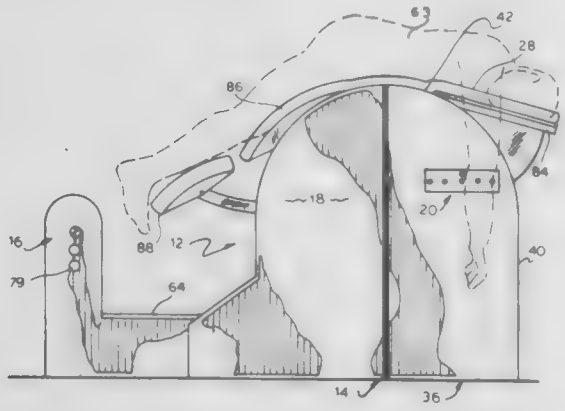
(a) a main housing means;

(b) an adjustable body support means mounted on said main housing means including (1) a forward body support assembly pivotally connected to said main housing means; (2) a middle body support assembly pivotally connected to

a midportion of said main housing means; and (3) a rear body support assembly movably connected to a rear portion of said main housing;

(c) said forward body support assembly, said middle body support assembly, and said rear body support assembly in one adjusted extreme closed condition forms a continuous support surface for a person's head, chest, mid-body portion, and lower body portion in a generally semicircular shape; and

(d) a control means operably connected to said adjustable body support means to independently and automatically (1) move said forward body support assembly in a vertical inclined arcuate path; (2) move a portion of said middle body support assembly in a vertical inclined, arcuate path;



and (3) move a portion of said rear body support assembly in a rearwardly inclined arcuate path;

(e) said main housing means includes a first body support housing and a second body support housing movably mounted on said first body support housing; and

(f) said first body support housing and said second body support housing having an upper body support surface between said forward body support assembly and said middle body support assembly; and

(g) a housing separator assembly connected between said first body support housing and said second support housing and operably connected to said control means for selective movement of said second body support housing laterally of said first body support housing.

4,606,333

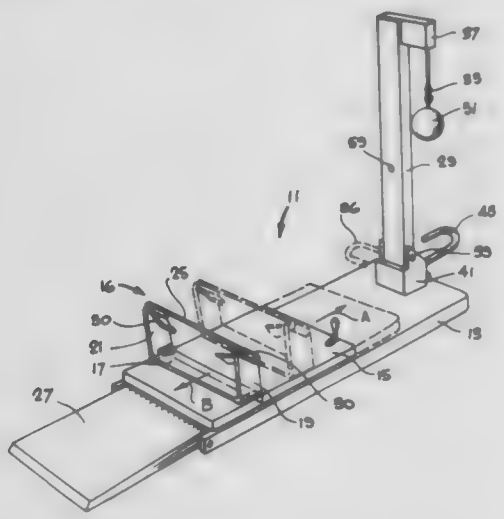
PORTABLE CERVICAL SPINE TRACTION DEVICE

Erwin W. Graham, 13565 Wendy La., Saratoga, Calif. 95070

Continuation-in-part of Ser. No. 585,361, Mar. 1, 1984, Pat. No. 4,593,684. This application Oct. 17, 1984, Ser. No. 662,333

Int. Cl.[4] A61H *1/02*

U.S. Cl. 128—75 **19 Claims**



1. A portable cervical spine traction apparatus comprising,

a horizontally disposable, elongated support base,

a carriage slidably mounted over the base and having a resilient elastomeric head support band connected thereto engaging the occipital region by elastomeric flexing, and

a gravitational traction means foldably connected to the base, said traction means employing a mechanical advantage of at least 2:1 ratio for transferring traction force to the carriage and having a collapsed position parallel to the base wherein the traction means has a length no greater than the length of the base, the length of the folded apparatus not exceeding four feet.

4,606,334

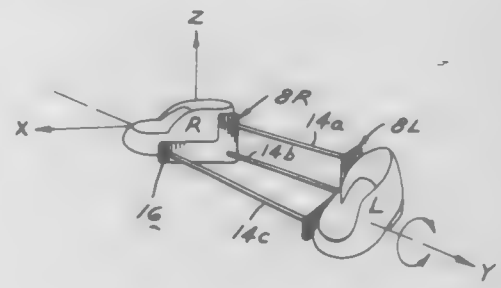
ORTHOPEDIC FOOT SPLINT AND METHOD FOR USING SAME

Michael E. Salmon, Flint, Mich., assignor to GMI Engineering & Management Institute, Flint, Mich.

Filed Sep. 11, 1984, Ser. No. 649,550

Int. Cl.[4] A61F *3/00*

U.S. Cl. 128—80 A **10 Claims**



1. An orthopedic foot splint for treating a patient's feet, comprising:

a right and left attachment means for fixed connection to the feet of the patient; and

linkage means for interconnecting said attachment means to maintain same in constant spaced apart and parallel relation with respect to a longitudinal axis while preventing relative rotation about said longitudinal axis and allowing free limited rotation about a transverse axis and allowing relative longitudinal and vertical movement therebetween.

4,606,335

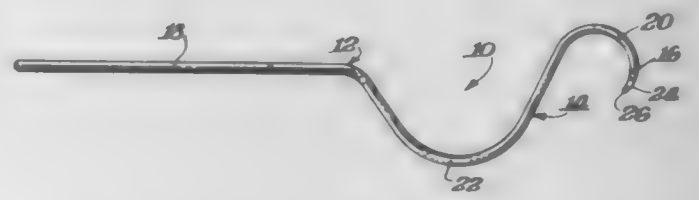
CERCLAGE WIRE PASSER

Robert S. Wedeen, Coatesville, Pa., assignor to Highland Orthopedic Center, Cochranville, Pa.

Filed Aug. 20, 1984, Ser. No. 642,366

Int. Cl.[4] A61F *5/04*

U.S. Cl. 128—92 E **12 Claims**

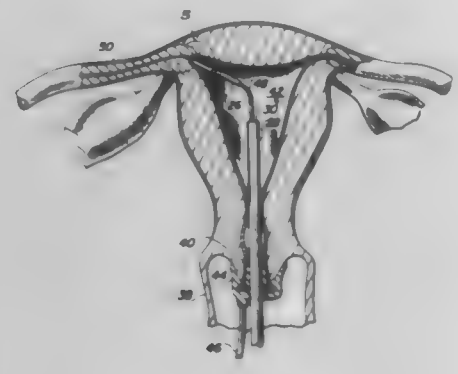


1. A cerclage wire passer for encircling a femur bone with orthopedic wire comprising a proximal portion with handle means and an S-shaped distal portion with an eyelet hole at the outer end thereof, the S-shaped distal portion including a primary curved segment constructed and arranged to fit around the femur bone being cerclaged and a secondary reverse curved segment positioned between the proximal portion and the primary curved segment constructed and arranged to accommodate the quadriceps mass surrounding the bone.

4,606,336
METHOD AND APPARATUS FOR NON-SURGICALLY STERILIZING FEMALE REPRODUCTIVE ORGANS

James W. Zeluff, 1010 E. McDowell Rd., Suite 300, Phoeniz, Ariz. 85006

Filed Nov. 23, 1984, Ser. No. 674,244
Int. Cl.[4] A61F *5/46;* A61M *31/00*
U.S. Cl. 128—130 31 Claims



1. An ostial occlusion device for forming an hermetic seal around the tubal ostium of the female reproductive system comprising:

a. a hub fabricated from a rigid, non-porous material including a circumferential edge and an upper surface and a lower surface;

b. means fabricated from a rigid, non-porous material oriented perpendicular to and extending outward from the lower surface of the hub insertable into the uterotubal junction of the female reproductive system for centering the hub about the tubal ostium; and

c. a ring of porous material surrounding the circumferential edge of the hub and including an exposed lower surface for contacting the tissue surrounding but not including the tubal ostium and for receiving fibroblast ingrowth to create an hermetic seal surrounding but not including the tubal ostium to provide fluid isolation between the fallopian tube and the uterine cavity to thereby render the female reproductive system infertile,

whereby the non-porous lower surface of the hub extends radially outward from the hub centering means over the tissue immediately adjacent to the tubal ostium to prevent fibroblast ingrowth into said tissue.

19. A method for forming an hermetic seal at the junction between the fallopian tube and the uterine cavity of the female reproductive system to render a female infertile, comprising the steps of:

a. introducing an ostial occlusion device through the vagina and cervix into the uterine cavity, the ostial occlusion device including (1) a hub having a circumferential edge and upper and lower surfaces; (2) hub centering means extending outward from the lower surface of the hub; and (3) a ring of porous material surrounding the circumferential edge of the hub and including an exposed lower surface;

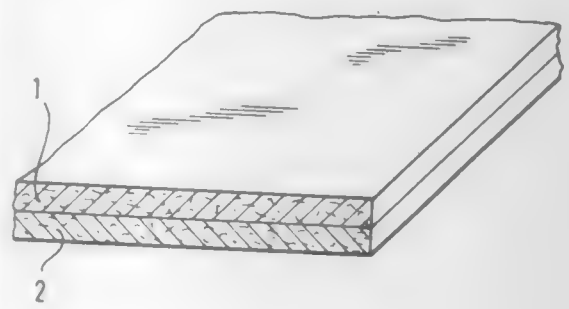
b. inserting the hub centering means of the ostial occlusion device into the uterotubal junction until the exposed lower surface of the ring of porous material contacts the tissue surrounding the tubal ostium area of the uterotubal junction; and

c. maintaining the lower surface of the ring of porous material in contact with the tissue surrounding the uterotubal junction until fibroblast ingrowth into the porous material commences.

4,606,337
RESORPTIVE SHEET MATERIAL FOR CLOSING AND HEALING WOUNDS AND METHOD OF MAKING THE SAME

Eberhard Zimmermann, Münster-Nienberge, and Michael Stroetmann, Münster, both of Fed. Rep. of Germany, assignors to Serapharm GmbH & Co. KG, Muenster, Fed. Rep. of Germany

Filed Apr. 19, 1983, Ser. No. 486,580
Claims priority, application Fed. Rep. of Germany, Apr. 19, 1982, 3214337
Int. Cl.[4] A61L *15/00*
U.S. Cl. 128—156 54 Claims

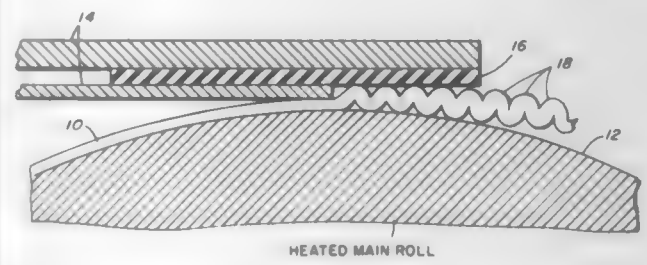


30. A resorptive sheet material for closing and healing wound(s) consisting essentially of a glycoprotein matrix containing substances which cause and respectively, are conducive to the coagulation of blood, including fibrinogen and thrombin, wherein the sheet material is dry and of multi-layered structure; at least one layer is free from thrombin and contains in the glycoprotein matrix thereof, the fibrinogen in a substantially homogeneously distributed form; and at least one further layer is free from fibrinogen and contains in the glycoprotein matrix thereof, the thrombin in a substantially homogeneously distributed form and wherein said multi-layered structure is obtained by the lyophilization of at least two different substantially homogeneous predominately aqueous solutions or suspensions, or both, containing glycoprotein each aqueous solutions or suspensions, or both, forming a layer, and said layers boned to each other by said lyophilization.

4,606,338
SLIP RESISTANT BANDAGE

J. Michael Greenway, Westwood; Peter J. Schoots, Walpole, both of Mass., and Donald Patience, Cary, Ill., assignors to The Kendall Company, Boston, Mass.

Filed May 6, 1985, Ser. No. 731,185
Int. Cl.[4] A61L *15/00*
U.S. Cl. 128—156 16 Claims



1. A bandage comprising a compacted nonwoven fabric formed from at least one layer of hydroentangled fibers, said fabric having a series of wave-like configurations having crests and valleys, said crests having an adhesive disposed thereon, on at least one surface of said fabric, said valleys being substantially free of adhesive.

4,606,339

CONTROL VALVE FOR A BREATHING MASK

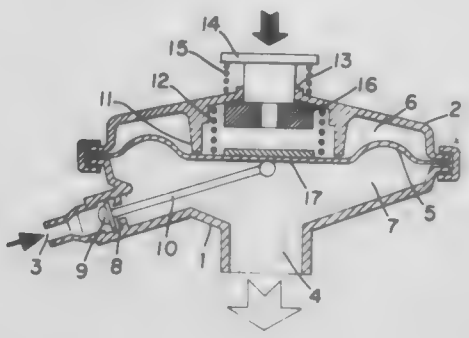
Hans-Joachim Walther, Lubeck, Fed. Rep. of Germany, assignor to Drägerwerk AG, Fed. Rep. of Germany

Filed Jan. 14, 1985, Ser. No. 691,446

Claims priority, application Fed. Rep. of Germany, Jan. 17, 1984, 3401383

Int. Cl.[4] A62B *7/04*

U.S. Cl. 128—204.19 5 Claims



1. A breathing gas control valve for a breathing mask, comprising a housing with an interior chamber, a diaphragm extending across said chamber and dividing said chamber into an outer chamber on one side of said diaphragm and a breathing gas chamber on the other side of said diaphragm, a respiratory gas inlet connected into said breathing gas chamber, a discharge from said breathing gas chamber adapted to be connected to said mask, a valve disposed in said respiratory gas inlet for opening and closing said inlet, coupling means connected between said valve and said diaphragm so as to move said valve for opening and closing said inlet when said diaphragm is moved, a key extending through and movably mounted on said housing and having an outer end and an inner end facing said diaphragm, magnetically attractable elements mounted on said key end and said diaphragm being magnetically attractable and magnetically interengageable, spring means biasing said key and said diaphragm into a separated position, whereby said key is manually movable such that said key end and said diaphragm are engageable together in an attracted position so as to hold said valve closed to stop the flow of respiratory gas, said key and said diaphragm being constructed to generate a magnetic attraction force therebetween of a magnitude such that the attraction force can be overcome by said spring means upon added inhalation effort.

4,606,340

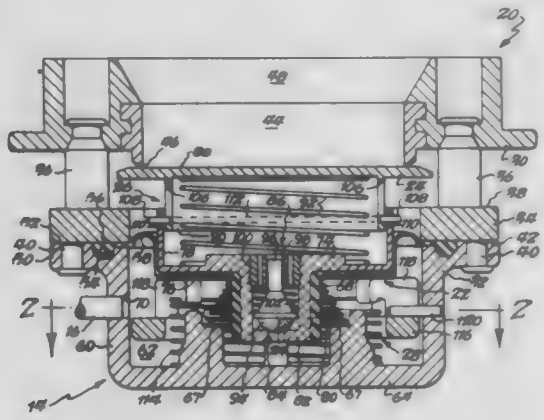
COMBINED PRESSURE COMPENSATING EXHALATION AND ANTI-SUFFOCATION VALVE

William K. Ansite, Glendale, Calif., assignor to Figgie International Inc., Willoughby, Ohio

Filed Jul. 14, 1983, Ser. No. 513,699

Int. Cl.[4] A62B *7/00*

U.S. Cl. 128—205.24 10 Claims



1. A combined pressure compensating exhalation and anit-suffocation valve in combination with a breathing mask of the type having a mask cavity adjacent the wearer's nose and/or mouth, said mask cavity normally being supplied with breathing gas from a pressurized supply; said valve including

a valve body provided with an exhaust port and a compensating pressure chamber having an orifice in one wall thereof, said orifice being fluidically connected to the mask cavity;

a movable diaphragm assembly mounted to said valve body, such that said diaphragm assembly moves toward and away from said exhaust port the inner surface of which forms one wall of said pressure chamber, and the outer surface of the diaphragm assembly being exposed to ambient pressures, means for biasing said diaphragm assembly outwardly from said pressure chamber toward said exhaust port; and

an exhaust port plate movably mounted on said diaphragm assembly to move towards and away from said diaphragm assembly, means for biasing said exhaust port plate away from said diaphragm assembly toward said exhaust port said diaphragm assembly and said exhaust port plate being oriented on said valve body such that said exhaust port plate covers said exhaust port during inhalation, and said exhaust port plate normally moving away from exhaust port toward said diaphragm assembly during exhalation to uncover said exhaust port;

said combined pressure compensated exhalation and anti-suffocation valve further being characterized by the provision of;

lost motion connection means extending between the diaphragm assembly and the exhaust port plate and capable of permitting the exhaust port plate to move relative to the diaphragm assembly within a predetermined range of movements, the parts being so arranged and constructed that if during an inspiratory effort the diaphragm assembly attempts to move away from the exhaust port plate a distance greater than that permitted by the lost motion connection means, as would be the case as a result of negative inhalation pressure sensed in the pressure chamber, the diaphragm assembly acting through the lost motion connection means will cause corresponding movement of the exhaust port plate thereby opening the mask cavity to ambient.

4,606,341

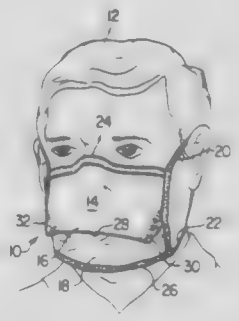
NONCOLLAPSIBLE SURGICAL FACE MASK

Vance M. Hubbard, and Welton K. Brunson, both of Bedford, Tex., assignors to Tecnol, Inc., Fort Worth, Tex.

Filed Sep. 23, 1985, Ser. No. 778,880

Int. Cl.[4] A62B *7/00*

U.S. Cl. 128—206.19 13 Claims



1. A method of fabricating a surgical face mask including a face panel having an upper edge, a lower edge, opposite side edges, an outer surface, an inner surface, an upper section, a central section and a lower section to prevent collapsing thereof when worn, comprising the steps of:

forming a pleat on the outer surface of the face panel by overlapping the central section of the face panel by folding it in opposite directions along two parallel longitudinal lines substantially transverse to the side edges of the panel such that the upper section extends above the uppermost parallel line and the lower section extends below the lowermost parallel line and said pleat defines a longitudinal overlapping folded edge along the lowermost longitudinal line;

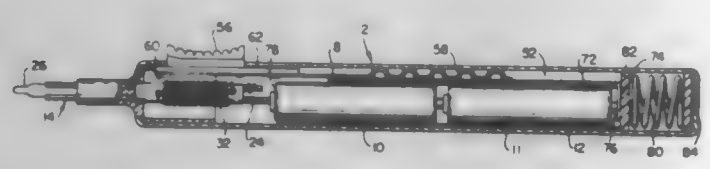
forming nonfolded edges of the pleat on each side of the folded edge and diagonal to the side edges of the panel;
bonding the diagonal nonfolded edges together;
reinforcing the pleat along the folded longitudinal edge; and
fixing a plurality of fastening strings to said face panel for fastening said panel to the face of a person.

4,606,342

CAUTERY DEVICE HAVING A VARIABLE TEMPERATURE CAUTERY TIP

Eugene Zamba, and Lynan Zamba, both of Brooklyn, Conn., assignors to National Patent Development Corporation, New York, N.Y.

Filed Feb. 15, 1985, Ser. No. 702,119
Int. Cl.[4] A61B *17/36*
U.S. Cl. 128—303.17 **10 Claims**



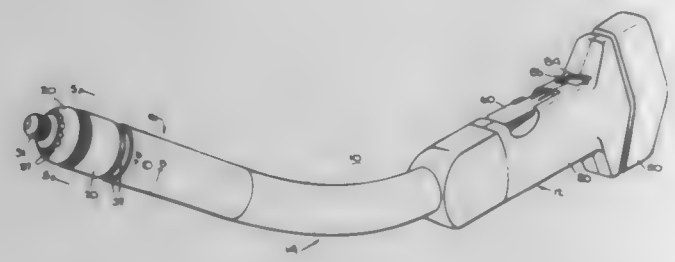
1. A variable temperature cauterizing device comprising a housing containing power supply means having a first terminal and a second terminal; an electrically heatable cautery tip extending from said housing and having a first terminal means and a second terminal means, said first terminal means electrically connected to the first terminal of said power supply means; a resistive element electrically connected to the second terminal means of said cautery tip; a conductor means having a first end and a second end, said first end electrically connected to the second terminal of said power supply means; a moveable activator means having a first end and a second end, said first end electrically connected to the second end of said conductor means and said second end moveable from a first position where it is not in contact with the resistive element to a second position where it contacts the resistive element and is slidable upon said resistive element so that when said activator means is in the second position to contact said resistive element a complete circuit is produced in which the power supply means will be applied to the cautery tip and when the activator means is slid along said resistive element the power applied to the cautery tip will change so as to vary the power fed to the cautery tip and thereby vary the temperature of said cautery tip.

4,606,343

SELF-POWERED SURGICAL FASTENING INSTRUMENT

Robert L. Conta, and Harvey N. Wallach, both of Trumbull, Conn., assignors to United States Surgical Corporation, Norwalk, Conn.

Filed Aug. 18, 1980, Ser. No. 177,231
Int. Cl.[4] A61B *17/04, 17/32*
U.S. Cl. 128—305 **24 Claims**



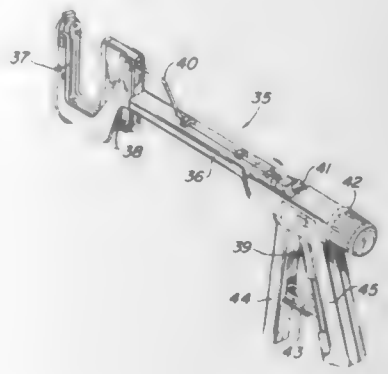
1. A self-powered surgical fastening instrument for performing a surgical fastening procedure at a location remote from the location at which the instrument is manipulated comprising:
an elongated member having opposite distal and proximal ends;
means located at the distal end of the elongated member for performing the surgical fastening procedure and including self-powering means for providing the force required to perform at least part of the surgical fastening procedure and further including releasable retention means for retaining the self-powering means in a restrained position and for controlling the release of the self-powering means;
control means mounted on the proximal end of the elongated member; and
means located within the elongated member for transmitting control forces between the control means and the releasable retention means so taht the self-powering means is remotely controlled by the control means.

4,606,344

SURGICAL INSTRUMENT FOR APPLYING FASTENERS HAVING IMPROVED GAP INDICATING MEANS (CASE V)

John Di Giovanni, Woodbridge, N.J., assignor to Ethicon, Inc., Somerville, N.J.

Filed Jul. 16, 1984, Ser. No. 631,117
Int. Cl.[4] A61B *17/00, 17/12*
U.S. Cl. 128—334 R **4 Claims**



1. In a surgical instrument for stitching tissue by means of staples said instrument comprising: a support body, a pair of jaws mounted at one end of said support body, a staple housing mounted in one of said jaws, means mounted on said support body for moving said jaw containing said staple housing towards the other jaw to close the gap and clamp tissue placed therebetween, drive means mounted on said support body for driving the staples from the jaw on which the staple housing is mounted towards the opposite jaw, actuating means mounted at the end of said support body opposite said end on which the jaws are mounted for actuating said staple drive means, the improvement comprising indicating means mounted adjacent the actuating means for indicating when an appropriate gap has been set between the jaws, said indicating means comprising a pointer member pivotally mounted at one end thereof to the support body with the other end of said pointer being a free end, a member mounted on the means for moving the jaw containing the staple housing to contact the pointer member adjacent its pivotal mount whereby slight movement of the means for moving the jaw containing the staple housing causes substantial movement of the free end of the pointer member.

4,606,345

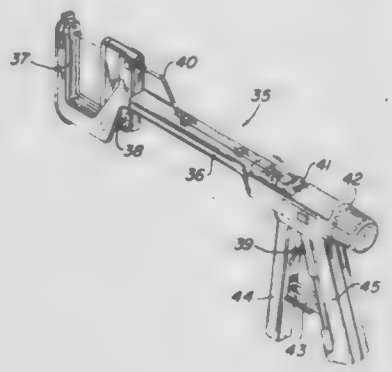
SURGICAL INSTRUMENT FOR APPLYING TWO-PIECE FASTENERS COMPRISING U-SHAPED STAPLES AND FRICTIONALLY HELD RECEIVERS (CASE II)

Glen C. Dorband, Somerville; Stephen J. Failla, Chester, and John Kula, Budd Lake, all of N.J., assignors to Ethicon, Inc., Somerville, N.J.

Filed Jul. 16, 1984, Ser. No. 631,118
Int. Cl.[4] A61B *17/00, 17/12*
U.S. Cl. 128—334 R **3 Claims**

1. In a surgical instrument for stitching tissue by means of two-piece fasteners, said fasteners comprising a substantially U-shaped staple member and a receiver to engage the legs of

said U-shaped staple and lock therewith, said instrument having a pair of oppositely disposed jaws with the U-shaped staple members disposed in one jaw and the cooperating receivers disposed in said oposite jaw, said instrument including means for positioning the jaws with respect to each other while the tissue is therebetween to form an appropriate gap between the



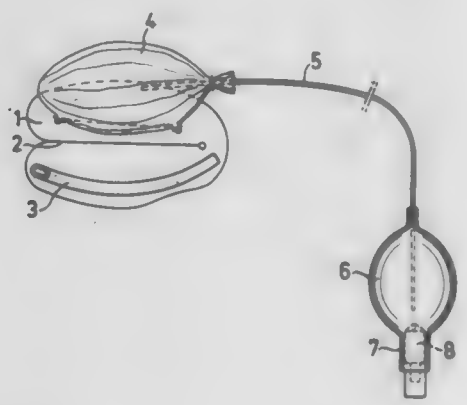
jaws and said instrument including means for driving the legs of the U-shaped member through the tissue to be joined and causing said legs to lock with the receiver in the opposite jaw, the improvement comprising friction means disposed in the jaw holding the receivers for holding said receivers in said jaw until the legs of the staple are locked with said receiver.

4,606,346

INTRANASAL DEVICE

Olle Berg, Elfviksvägen 66, S-181 90 Lidingö , and Lars Lejdeborn, Västergöksvägen 70, S-162 24 Vällingby, both of Sweden

Filed Jan. 3, 1985, Ser. No. 688,483
Claims priority, application Sweden, Jan. 11, 1984, 8400125
Int. Cl.[4] A61M *29/00*
U.S. Cl. 128—342 **6 Claims**



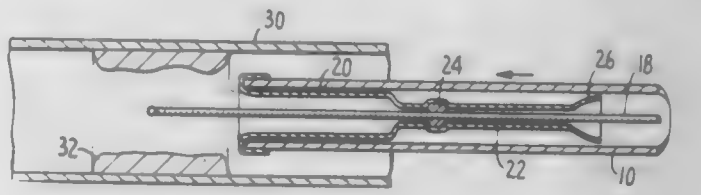
1. An intranasal device for insertion into a nasal cavity following a septum operation, comprising a thin plate which is shaped to conform to the interior anatomy of the nasal cavity, a breathing channel attached to one side of said plate, an inflatable balloon of thin-walled material attached to said one side of said plate in laterally spaced side-by-side relation to said breathing channel, the side of said plate opposite to said one side being adapted to abut the nasal septum to provide support for the septum when said plate and the breathing channel and balloon attached thereto are inserted into the nasal cavity, and inflation means attached to said balloon for inflating said balloon, said inflation means including means for maintaining a controlled pressure in said balloon.

4,606,347

INVERTED BALLOON CATHETER HAVING SEALED THROUGH LUMEN

Thomas J. Fogarty, 770 Welch Rd., Palo Alto, Calif. 94305; James C. Finn, III, Stanford, and Thomas B. Kinney, Mountain View, both of Calif., assignors to Thomas J. Fogarty, San Mateo, Calif.

Continuation of Ser. No. 478,708, Mar. 25, 1983, abandoned.
This application Aug. 8, 1985, Ser. No. 763,639
Int. Cl.[4] A61M *29/02*
U.S. Cl. 128—344 **9 Claims**



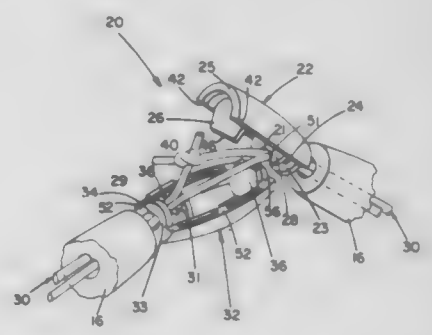
1. A dilatation catheter comprising a flexible catheter body, a balloon attached to the distal end of said body and inverted within said body, means including a tubular extension attached to said balloon defining a through lumen, closure means within said lumen operable to maintain said balloon in sealed condition for eversion and subsequent radial expansion, said closure means being closed in the absence of any element passing therethrough and being penetrable by a guide wire, thin cannula, or other thin element, to provide a passage sealed in slidable engagement therewith without loss of the sealed condition of said balloon and functioning to maintain the sealed condition upon removal of such element therefrom.

4,606,348

CLOSURE BEAD

Richard L. Panicci, Hanover, Mass., assignor to Kiddie Products, Inc., Avon, Mass.

Filed Dec. 22, 1983, Ser. No. 564,518
Int. Cl.[4] A61J *17/00*
U.S. Cl. 128—359 **17 Claims**



1. A closure body for a string comprising

two members joined together to define a central cavity for receiving and encapsulating a knotted portion of said string, and openings at opposite ends of said body for passage of said string into said cavity, said openings defining a longitudinal axis, and

a pair of generally parallel, generally planar walls, a first wall of said pair being positioned adjacent at least one said opening, and a second wall of said pair being spaced axially inwardly from said first wall, each said wall being positioned transverse to said axis and intersecting said axis, said walls being spaced apart a distance less than the diameter of said string so that said string is squeezed therebetween to prevent separation of said closure and said string, the walls of said wall pair extending from opposite body members.

4,606,349

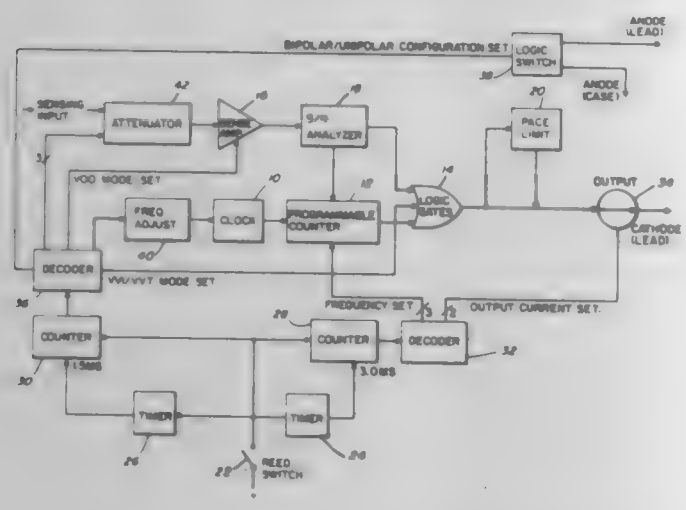
IMPLANTABLE CARDIAC PACER HAVING DUAL FREQUENCY PROGRAMMING AND BIPOLAR/UNIPOLAR LEAD PROGRAMMABILITY

John H. Livingston, Coral Gables, and Barry M. Yomtov, Pembroke Pines, both of Fla., assignors to Cordis Corporation, Miami, Fla.

Division of Ser. No. 618,767, Jun. 11, 1984, Pat. No. 4,561,441, which is a continuation of Ser. No. 291,430, Aug. 10, 1981, abandoned. This application Jul. 10, 1985, Ser. No. 753,593

Int. Cl.[4] A61N *1/36*

U.S. Cl. 128—419 PG 6 Claims



1. A cardiac pacer system including an implantable programmable pulse generator having a case, at least a portion of which can serve as an electrode, together with a pervenous bipolar pacing lead having at least two electrodes, said pulse generator including a source of voltage, one of the electrodes on said pacing lead being normally connected so as to function as a cathode, wherein the improvement further comprises

means responsive to an externally generated programming data signal for storing a value indicative of bipolar or unipolar operation, and

switch means for connecting either said case or said other pacing lead electrode as the anode according to said stored value.

4,606,350

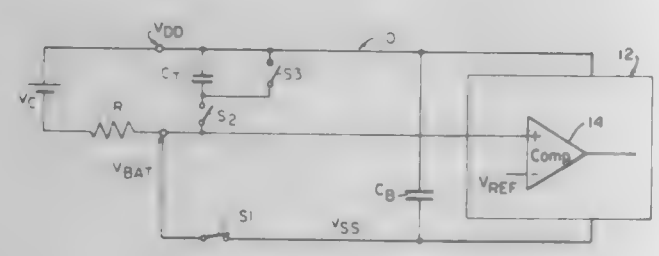
PACEMAKER BATTERY IMPEDANCE TEST CIRCUIT AND METHOD OF OPERATION

John G. Frost, Santa Clara, Calif., assignor to Telectronics N.V., Curacao, Netherlands Antilles

Filed Nov. 28, 1984, Ser. No. 675,625

Int. Cl.[4] A61N *1/38*

U.S. Cl. 128—419 PG 5 Claims



1. A test system for ascertaining the remaining life of the battery of an implantable medical device by determining its internal impedance; said medical device including a battery, circuitry, and means for connecting said battery across said circuitry; the test system comprising test capacitor means; first switch means for disconnecting said battery from across said circuitry; second switch means for connecting said battery across said test capacitor means; means for operating both of said first and second switch means simultaneously; means for comparing the potential across said test capacitor means with a reference level; and means for measuring the time interval required for the potential across said test capacitor means to reach said reference level while said first and second switch means are operated simultaneously.

4,606,351

OPTICAL INDICATOR DEVICE FOR THE REMOTE MEASUREMENT OF PHYSICAL CHANGES IN A TEST SUBJECT

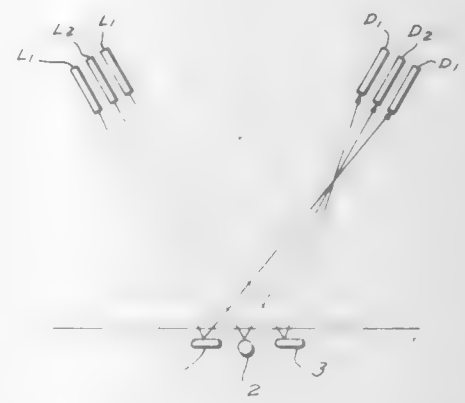
Dietrich W. Lübbers, Dortmund, Fed. Rep. of Germany, assignor to Max Planck Gesellschaft zur Foerderung der Wissenschaften, Goettingen, Fed. Rep. of Germany

Filed Apr. 14, 1980, Ser. No. 142,141

Claims priority, application Fed. Rep. of Germany, Apr. 14, 1979, 2915367

Int. Cl.[4] A61B *5/00*

U.S. Cl. 128—633 2 Claims



1. An optical indicator device for the remote indication and measurement of physical changes in a test subject, the said device comprising at least one source of light which is a monochromator remote from the test subject, the said indicator including a fluid-tight, light-permeable membrane enclosing an inner space,

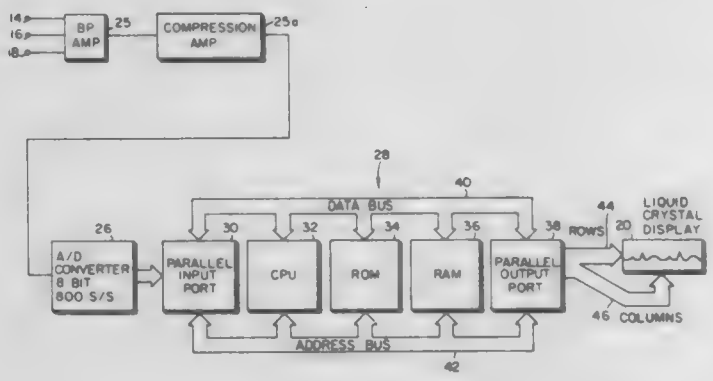
a liquid crystal compound disposed in said inner space of the indicator, the said compound being adapted to be excited by light vaves from said source of light, so as to become fluorescent, and wherein said liquid crystal compound is further adapted to undergo variations in the intensity of such fluorescence in response to variations in temperature,

detector means for indicating and measuring the variations in the intensity of the fluorescence in and the response of said compound to said light waves, and two additional indicators, disposed in direct contact with said test subject, a first additional indicator having an oxygen permeable membrane enclosing said inner space and having a prene butyric acid compound in said inner space, the said compound being adapted to become fluorescent in response to the light waves from one of said sources of light and being adapted to undergo changes in the intensity of such fluorescence in response to amount of oxygen, and a second of said additional indicators likewise being provided with an oxygen permeable and glucose permeable membrane and having in its inner space pyrene butyric acid together with glycose oxidase, the glycose oxidase being adapted to react with permeating gluose, a difference of measurement of the pure oxygen in the first additional indicator and of the oxygen residue, after reaction of the glucose with the glycose oxidase, in the second additional indicator resulting in a difference of the intensity of the fluorescence in said two additional indicators which difference is proportional to glucose concentration, thus enabling corresponding detectors to measure glucose concentration in said test subject while said detector means determines simultaneously temperature prevailing surrounding said first defined indicator.

4,606,352
PERSONAL ELECTROCARDIOGRAM MONITOR

Leslie A. Geddes, and Neal E. Fearnot, both of West Lafayette, Ind., assignors to Purdue Research Foundation, West Lafayette, Ind.

Filed Jul. 13, 1984, Ser. No. 630,589
Int. Cl.[4] A61B *5/04*
U.S. Cl. 128—702 **7 Claims**



1. A pocket-sized, self-contained electrocardiogram monitor, comprising:

(a) a pocket-sized housing having first and second sides;

(b) a plurality of electrodes mounted on said second side of said housing;

(c) circuit means contained within said housing for processing an electrocardiogram signal appearing upon said electrodes when said electrodes are placed in contact with a patient's chest, said circuit means including

(1) means for selectively amplifying small signals near the baseline of said electrocardiogram signal without clipping said electrocardiogram signal;

(2) A/D converter means for converting said electrocardiogram signal to a digital signal; and

(3) digital processing means coupled to said A/D converter means for sampling said digital signal, selecting the maximum and minimum values in a set of at least four consecutive samples, and generating display drive signal values representative of said maximum and minimum values at a rate which is an integral fraction of the sampling rate; and

(d) a dot-matrix, liquid-crystal display on said first side of said housing, said liquid-crystal display being coupled to said circuit means and responsive thereto to display said display drive signal values.

4,606,353
NOCTURNAL PENILE TUMESCENCE AND RIGIDITY MONITOR AND METHOD

Gerald W. Timm, Minneapolis, Minn., assignor to Dacomed Corporation, Minneapolis, Minn.

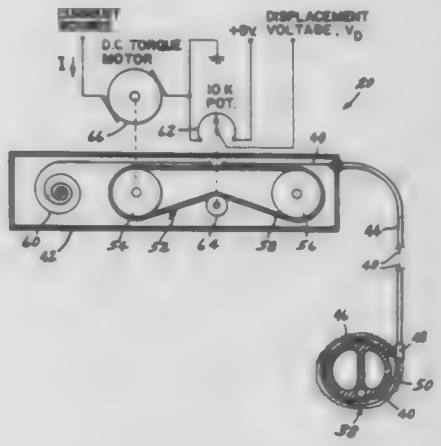
Continuation of Ser. No. 503,872, Jun. 13, 1983, abandoned.
This application Mar. 19, 1985, Ser. No. 713,452
The portion of the term of this patent subsequent to May 7, 2002, has been disclaimed.
Int. Cl.[4] A61B *5/10*
U.S. Cl. 128—774 **8 Claims**

1. A penile rigidity and tumescence monitor and apparatus, comprising:

(a) first transducer means for providing output signals indicative of penile rigidity and tumescence throughout a penile tumescence event;

(b) second transducer means for providing output signals indicative of penile rigidity and tumescence throughout a penile tumescence event; and

(c) control means operatively interconnected to said transducer means for providing control of said transducer

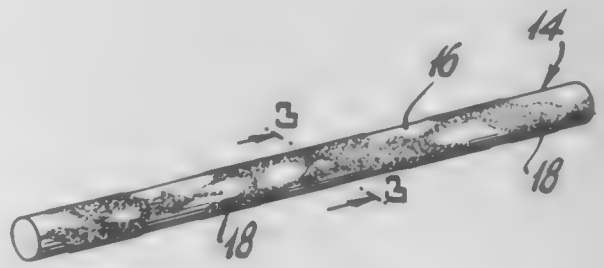


means, said control means further providing for acquisition of said output signals.

4,606,354
GOLD COATED CARBON IMPLANT AND METHOD OF TREATING ARTHRITIS THEREWITH

Ezekiel J. Jacob, 25 Monroe Pl., Brooklyn, N.Y. 11201

Filed May 21, 1985, Ser. No. 736,562
Int. Cl.[4] A61N *1/00, 1/30*
U.S. Cl. 128—784 **2 Claims**



2. A method of continuously treating arthritis comprising,

providing a core element comprising a carbon fiber,

coating said carbon fiber in a discontinuous manner with gold such that the carbon fiber is exposed in patches,

permanently implanting the thus coated carbon fiber within an arthritic joint,

whereby the gold and carbon fiber form a galvanic couple and in the presence of body fluids continuously release gold ions for relieving the pain of the arthritis.

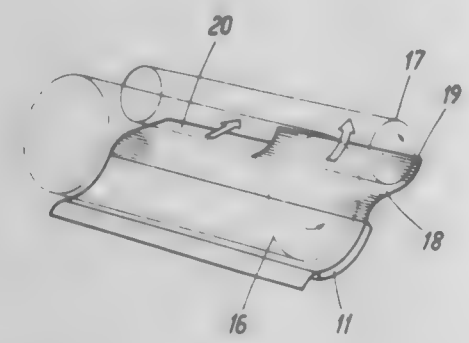
4,606,355
HARVESTER THRESHER

Johannes Dammann, Harsewinkel, Fed. Rep. of Germany, assignor to Claas OHG, Harsewinkel, Fed. Rep. of Germany

Filed Feb. 19, 1985, Ser. No. 702,874
Claims priority, application Fed. Rep. of Germany, Mar. 17, 1984, 3409951
Int. Cl.[4] A01F *12/18*
U.S. Cl. 130—27 T **6 Claims**

1. A harvester thresher, comprising a housing; an axial threshing and separating arrangement located in said housing and having two threshing drums rotatable about substantially parallel axes of rotation, and two thresh basket-sieve casing units each circumferentially surrounding a respective one of said threshing drums with retaining a small gap, each of said casing units having a product supply opening at its one end and a product discharge opening at its other end, said product supply openings being spaced from one another in substantially vertical direction and including an upper product supply opening and a lower product supply opening; a radial threshing

mechanism operating in accordance with a radial flow and located upstream of said axial threshing and separating arrangement; and means for guiding a product threshed by said radial threshing mechanism toward said axial threshing and separating arrangement, said guiding means including a guiding member having two guiding parts, one of said guiding parts



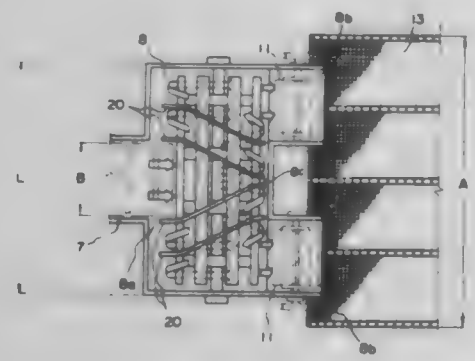
being bent upwardly so as to guide the product threshed by said radial threshing mechanism toward said upper product supply opening, whereas the other of said guiding parts being bent downwardly so as to guide the product threshed by said radial threshing mechanism toward said lower product supply opening.

4,606,356

COMBINE HARVESTER

Tetsuichi Odahara, Sakai, Japan, assignor to Kubota, Ltd., Osaka, Japan

Continuation of Ser. No. 381,881, May 25, 1982, abandoned.
This application Nov. 2, 1984, Ser. No. 667,395
Claims priority, application Japan, May 25, 1981, 56-75907
Int. Cl.[4] A01F *7/04, 12/18*
U.S. Cl. 130—27 R 3 Claims



1. A combine harvester comprising:
a reaping section disposed forwardly of a harvester body and adapted to bring a reaped crop substantially to a mid-position transversely of the harvester body;
a conveyor having a transverse dimension B for conveying the reaped crop rearwardly and upwardly;
threshing chamber means having a transverse dimension L greater than said transverse dimension B of said conveyor, for housing a threshing drum and receiving the crop delivered by said conveyor at an inlet disposed centrally in the front of the threshing chamber, said chamber including distributing guide means disposed on an upper inner wall of said threshing chamber to separate and distribute the crop sideways from a mid-position transversely of said threshing chamber as the crop revolves with said threshing drum in an upward, forward and downward direction, and a guide surface disposed at a transversely intermediate position in a rear part of said threshing chamber to guide the crop revolving in an upward direction, and straw walkers disposed rearwardly of said threshing chamber and having a transverse dimension A greater than the transverse dimension L of said threshing chamber, said threshing chamber further including outlets disposed laterally of said guide surface and opening onto an inlet portion of said straw walkers, respectively;
beater means disposed at said outlets to assist in discharge of the threshed crop therefrom, said beater means transferring said crop from each of said outlets to said inlet portion of said straw walkers to distribute said crop rearwardly and laterally relative to said outlets over said transverse dimension A of said straw walkers;
said threshing drum including partition means mounted about a central periphery of said threshing drum for assisting in sideways separation of said crop; and
said partition means including a plurality of constituent elements secured to said threshing drum at said central periphery thereof, said constituent elements being alternately inclined in opposite directions to distribute the crop transversely relative the direction of revolution of said threshing drum, each of said constituent elements having a forward portion substantially parallel to a forward direction of rotational movement of said threshing drum and a rearward portion angularly oriented relative to said forward direction, adjacent elements of said constitutent elements at said central periphery having said rearward portions thereof disposed in alternating angular relationships and said rearward portions of each of said constitutent elements angularly extending rearwardly relative to said forward direction and overlapping the forward portion of an immediately rearwardly adjacent one of said constitutent elements.

4,606,357

TOBACCO COMPOSITION

Russell L. Dusek, 3 Middle Patent Rd., Armonk, N.Y. 10504, and Robert J. Posten, 236 Glen Ave., Glen Rock, N.J. 07452

Filed Nov. 19, 1984, Ser. No. 672,800
Int. Cl.[4] A24B *15/00, 15/10*
U.S. Cl. 131—359 15 Claims

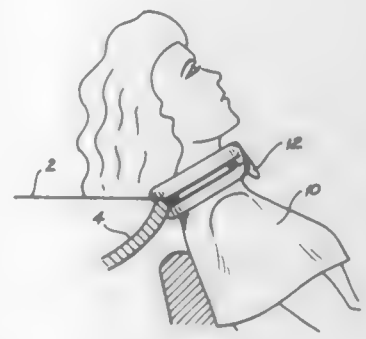
1. A smokeless tobacco compositon comprising a resilient composition having a three-dimensional network comprising a hydrophilic foamable polyurethane prepolymer, an aqueous reactant and tobacco flavor.

4,606,358

COLLAR

Brian J. Higgins, Bay Beach, New South Wales, Australia (2300)

Filed Feb. 3, 1984, Ser. No. 576,702
Claims priority, application Australia, Sep. 6, 1983, PG1251
Int. Cl.[4] A24D *1/04*
U.S. Cl. 132—9 13 Claims



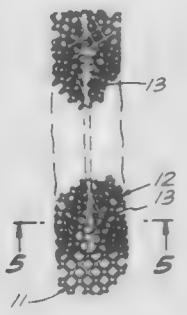
1. A collar positioned between a person's neck and the concave region of a salon neck tray profiled to accommodate a person's neck comprising
(a) a waterproof flexible outer layer of sheet material
(b) a cushioning inner layer configured to coact with the concave region of the salon neck tray when compressed by the wearer against said concave region so that the collar forms a fluid tight seal between the neck tray and the wearer's neck; and
(c) means to fix the collar in an operative position.

4,606,359

HAIRPIECE CONSTRUCTION

Albert J. Palumbo, Los Angeles, Calif., and Chen Kuo Chao, Hong Kong, Hong Kong, assignors to West Coast Hair Products, Inc., Los Angeles, Calif.

Filed Jun. 10, 1981, Ser. No. 272,341
Int. Cl.[4] A41G *3/00*
U.S. Cl. 132—53 11 Claims



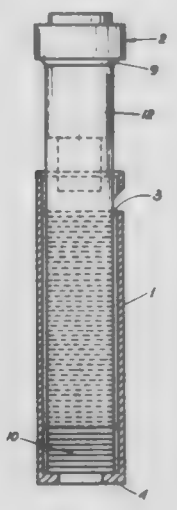
1. An improved hairpiece foundation means, comprising:
a sheetlike fibrous woven fabric base having spaces between adjacent fibers; and
a further fibrous sheetlike woven fabric member having air spaces between adjacent fibers sonically welded to the base along a plurality of mutually spaced lines.

4,606,360

COUNTING AND WRAPPING OF COINS

Pearson O. Mills, 39 Lyncroft Rd., New Rochelle, N.Y. 10804

Filed Apr. 6, 1984, Ser. No. 597,268
Int. Cl.[4] B65B *1/04, 35/50*
U.S. Cl. 133—1 A 4 Claims



2. A method of wrapping a predetermined number of coins including the steps of stacking a plurality of coins in a column in a tubular container, removing from said stacked column coins in excess of said predetermined number, assembling a tubular coin wrapper in a coin receiving position, flaring a leading end of said coin wrapper, placing said flared end over the stack of coins and sliding the wrapper, flared end first, downwardly into the space between said coin stack and the internal walls of the tubular container until all coins are wrapped within said wrapper and folding the ends of the wrapper over the end coins of said stack.

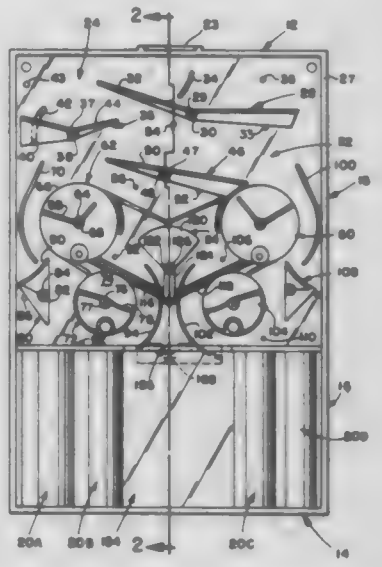
4. A coin counting and wrapping device including a tubular container having an open top end and a partially closed bottom end and being dimensioned to accommodate a stack of coins, a slot extending peripherally part way around the tubular container at a location spaced from the container bottom by a distance equal to the height of a stack of predetermined number of coins in such manner that coins in excess of said predetermined number will be discharged from the top of said stack through said slot, a plug member having axially aligned stepped first, second and third cylindrical portions, said first cylindrical portion being dimensioned axially to enter the opening in the bottom end of the container, said second cylindrical portion being dimensioned axially closely to fit within a coin wrapper to hold said wrapper in an open coin receiving condition, and said third cylindrical portion being of larger diameter than said first and second cylindrical portions and a bevelled surface interconnecting said second and third cylindrical portions to provide means for flaring an end of said coin wrapper to facilitate intertion over a stack of coins.

4,606,361

COIN SORTING BANK

John R. Nottingham, 60 Stonewood Dr., and John W. Spirk, Jr., 50 Stonewood Dr., both of Moreland Hills, Ohio 44022

Filed Jul. 13, 1984, Ser. No. 630,883
Int. Cl.[4] G07D *3/00*
U.S. Cl. 133—3 R 12 Claims

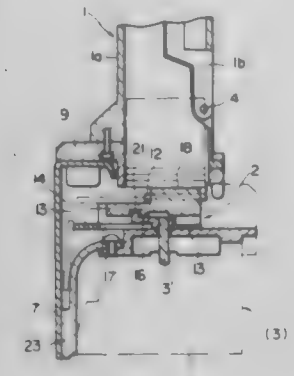


1. A coin sorting bank comprising a housing having an inlet for receiving a coin in an upright orientation, a coin storage area comprising a plurality of coin bins disposed in said housing, each of said coin bins being dimensioned to receive a different diameter coin, and a sorting mechanism for directing different diameter coins to respective coin bins; said housing and said sorting mechanism cooperating to receive a coin from said inlet in an upright orientation and to guide said coin by gravitational/inertial forces between said inlet and said coin storage area while maintaining the coin in the upright orientation throughout its passage toward said coin bins said sorting mechanism including a pivotal sorting ramp supported in the housing; the pivotal sorting ramp having a pivot and a surface for engaging a coin moving between the inlet and the coin storage area; said pivot being located intermediate the ends of the surface of the pivotal sorting ramp; and a stop member fixed to the housing and spaced from the surface of the sorting ramp by a predetermined amount; the sorting ramp being biased in a direction that causes coins disposed thereon to move toward one end of the surface of the pivotal sorting ramp; the spacing between the surface of the sorting ramp and the stop member being great enough to allow certain diameter coins to move along the surface of the sorting ramp toward said one end of the sorting ramp without being impeded by said stop member and being close enough to the surface of the sorting ramp to impede other diameter coins after such coins have moved a distance along the surface of the sorting ramp; the sorting ramp being pivotal against its bias by a coin that is impeded by said stop member toa position in which such a coin reverses direction on said surface of said sorting ramp and moves toward the other end of the surface of the sorting ramp; the coins directed toward different ends of the surface of the sorting ramp moving along different paths toward said coin storage area.

4,606,362
CHANGE DELIVERY DEVICE IN COIN SORTING CONTROLLER

Osamu Kobayashi, and Kouji Yukimoto, both of Kawagoe, Japan, assignors to Kabushiki Kaisha Nipponcoinco, Tokyo, Japan

Filed Aug. 30, 1984, Ser. No. 646,894
Claims priority, application Japan, Sep. 1, 1983, 58-134419[U]
Int. Cl.[4] G07D *1/00*
U.S. Cl. 133—5 R **1 Claim**



1. A change delivery device and a coin sorting controller, comprising:

a motion changing mechanism for changing a rotational motion into a horizontal reciprocating motion and discharging coins successively by virture of said reciprocating motion, said motion changing mechanisms being disposed below a change enclosing cylinder, said change enclosing cylinder being provided at the lower portion thereof through a gap with a pair of change receiving pieces which are opposed right and left to each other and said motion changing mechanism comprises a slide member and a sectorial pivoting member, said slide member having an upper plate and a lower plate, said upper plate having a longitudinally extending projecting portion formed on the upper surface thereof and adapted to move between said paired change receiving pieces, said upper plate having a transversely extending recess formed in the lower surface thereof, said lower plate having a longitudinally extending guide aperture, said sectorial pivoting member being interposed between said upper and lower plates of said slide member and provided at an outer marginal part of its upper surface with a pin which engages said recess of said upper plate and also being provided at an upper end part of its inner surface with a connection which engages said guide aperture of said lower plate; and

a drive unit for imparting a rotational motion to said motion changing mechanism, said drive unit being disposed below said motion changing mechanism, said drive unit having an output shaft connected to said connection.

4,606,363
AUTOMOTIVE AIR CONDITIONING SYSTEM FLUSHING APPARATUS

Frank J. Scales, 901 S. Second St., San Jose, Calif. 95112

Continuation-in-part of Ser. No. 652,747, Sep. 19, 1984. This application Mar. 1, 1985, Ser. No. 707,048
Int. Cl.[4] B08B *9/00*
U.S. Cl. 134—111 **13 Claims**

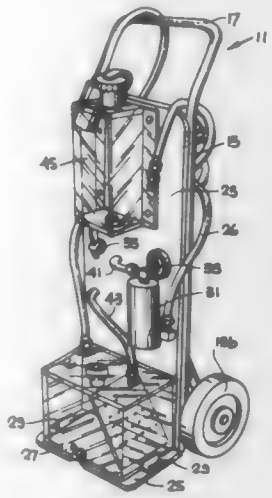
1. An apparatus for flushing of dirty fluid chambers using an external supply of fluidic pressure comprising,

a support frame having two wheels contacting the ground,

a solvent tank connected to the frame, the tank having an inlet and an outlet, with a hose extending downwardly from the outlet,

a filter mounted on the frame and having an inlet and an outlet, with a filter element interposed therebetween, the filter having a fluid material inlet means for receiving fluid material from a dirty fluid chamber, said filter mounted in vertical alignment with said solvent tank,

a pressure tank mounted on the frame, in vertical alignment below said solvent tank and above said filter, said pressure tank having an input means and an output means, the output means for connection to a dirty fluid chamber whereby pressurized fluid may be directed from the pressure tank, through the dirty fluid chamber, toward the filter,



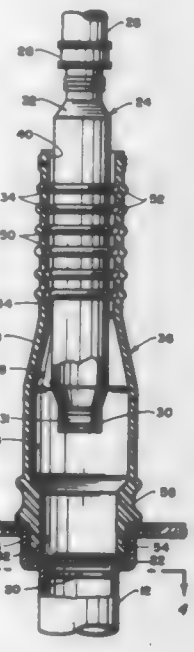
a pressure gauge mounted to said pressure tank, and

a valve associated with the pressure tank, said valve having fluidic connections to said solvent tank outlet hose, to said pressure tank input, and to an external supply of fluidic pressure, said valve having a rotating handle which, when turned, sequentially admits solvent from the solvent tank to said pressure tank in a first position, then pressurizes said solvent with said fluidic pressure supply means in a second position, then releases pressure in a third position.

4,606,364
FLUSHING DEVICE ADAPTER

George Tash, 19438 Business Ctr. Dr., Northridge, Calif. 91324

Filed Oct. 1, 1984, Ser. No. 656,344
Int. Cl.[4] B08B *9/02*
U.S. Cl. 134—167 C **6 Claims**



1. A drain flushing assembly, comprising

(a) a flushing device having

(1) an elongated, elastomeric, hollow tubular member having

(i) a middle portion free to expand radially under water pressure,

(ii) a rear inlet end fitted with a hose connection,

(iii) a front outlet end, and

(iv) a valve member secured within said outlet end which is openable upon expansion of said middle portion, and

(b) an adapter for releasably interconnecting said tubular member to a drain pipe which contains an obstruction therein preventing insertion of said middle portion into said drain pipe, said adapter comprising,

(1) an elongated tubular member having

(i) an inlet end adapted to receive the outlet end of said flushing device,

(ii) an outlet end adapted to be inserted into said drain pipe to form a water-tight seal with said drain pipe, and

(iii) a hollow intermediate portion connecting said inlet and outlet ends of said adapter, and

(c) mating means disposed on the outside of said flushing device and the inside of said adapter for preventing withdrawal of said flushing device from said adapter during use of said flushing assembly.

4,606,365

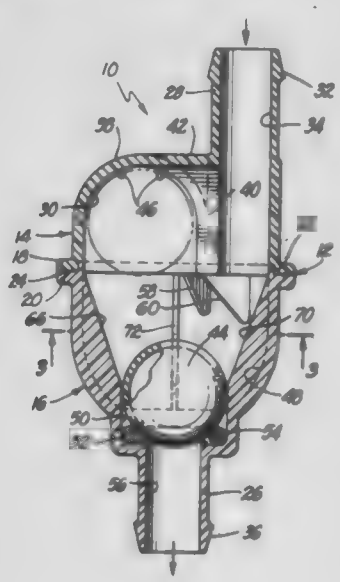
BUOYANT BLOOD STOP VALVE

George G. Siposs, 2855 Velasco La., Costa Mesa, Calif. 92626

Filed Jul. 2, 1985, Ser. No. 751,309

Int. Cl.[4] F16K *31/22, 33/00*

U.S. Cl. 137—433 14 Claims



1. A stop valve to stop the flow in a physiological liquid line when liquid is exhausted and is followed by gas, said valve comprising:

a body, walls defining a chamber within said body, an inlet passage in the top of said body for connection to a physiological liquid reservoir and an outlet passage in the bottom of said body for connection for physiological liquid utilization so that said valve body can be oriented in a generally upright position during use;

a valve seat within said chamber adjacent said outlet from said chamber, a ball free within said chamber, said ball being sized to rest on said valve seat to prevent downward flow of gas from said inlet out through said outlet, said ball being of such density as to float on physiological liquid passing downward through said valve and sink to said valve seat when physiological liquid is substantially depleted within said chamber;

walls within said chamber defining a cup sized to receive said ball beside and away from said inlet to said chamber, said cup having a rim positioned so that when said ball is floating in physiological liquid within said chamber said ball is substantially above said rim to be out of the direct physiological liquid flow path between said inlet and said outlet, ball guides positioned within said chamber to guide said ball from said cup to said seat and vanes within said chamber to guide said ball from said seat to said cup and away from said inlet; and

walls defining a slot interconnecting the top of said cup and said inlet passage to define an opening between the top of said cup and said inlet passage so that air flows through said opening and into said cup before air reaches down to said rim to cause downward motion of said ball toward said valve seat before air reaches said rim.

4,606,366

PROTECTIVE SHELTER, SUCH AS AN UMBRELLA WITH OFFSET SUPPORT

Jean Collet, Chemin de la Tuilerie, 74410 Saint-Jorioz, France

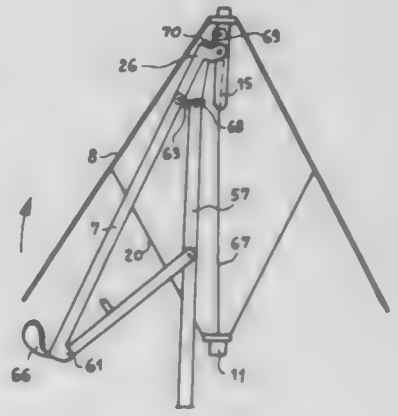
PCT No. PCT/FR82/00073, § 371 Date Dec. 23, 1982, § 102(e) Date Dec. 23, 1982, PCT Pub. No. WO82/03538, PCT Pub. Date Oct. 28, 1982

PCT Filed Apr. 23, 1982, Ser. No. 456,030

Claims priority, application France, Apr. 23, 1981, 81 08505; Jan. 27, 1982, 82 01747

Int. Cl.[4] A45B *11/00, 25/08*

U.S. Cl. 135—20 A 20 Claims



1. An unbrella with offset mast, comprising a fixed support structure (1) and at least one fabric cover (17) maintained in position by at least one frame formed of radial ribs hinged to a first hub (14) and counter ribs (20) hinged to a second hub (11) and to the ribs, at least one radial arm (7) hinged to said fixed structure and able to open out between a first position in which the arm is folded against the support structure (1) and an opened out position in which it is held stretched substantially horizontally, locking means for selectively maintaining the radial arm in one or the other of the endmost position, one of the frames at least being mounted at the end of the radial arm so as to be offset with respect to the support structure, the ribs of the frame forming a cone and means for permanently maintaining a radial portion of the fabric cover in close proximity to the radial arm, one of the hubs being attached to said radial arm, the other hub being mobile so as to allow opening out and folding up of the ribs, the mobile hub being urged by guide means limiting movement thereof towards the center of the cover with respect to the fixed hub, the frame comprising a central truncated mast (15) integral with said one of the hubs (14), said mast to receive the other hub, further comprising a cable (67) fixed to the mobile hub (11), which passes into the tubular central mast (15), is guided by a pulley along the radial arm, and is fixed to the support structure, producing the automatic opening out of the ribs during opening out of the radial arm.

4,606,367

APPARATUS AND METHOD FOR RELIEVING PRESSURE WITHIN A HIGH PRESSURE TANK

Franklin J. Britt, 3744 Hartland Rd., Gasport, N.Y. 14067

Filed Apr. 4, 1985, Ser. No. 719,690

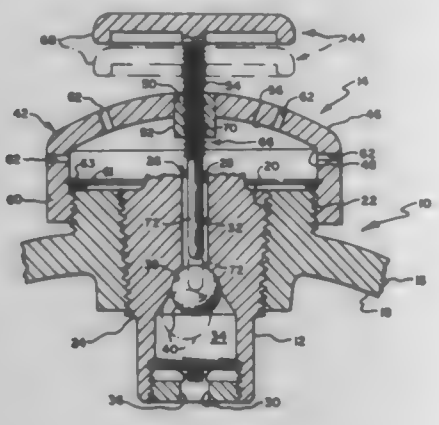
Int. Cl.[4] F16K *17/40, 24/00;* F17C *13/12*

U.S. Cl. 137—15 15 Claims

14. A method for relieving the pressure within a high pressure tank containing contents under pressure and having a circular throat opening plugged by a portion of a broken safety valve and an externally-threaded annular flange surrounding the tank opening, said safety valve portion including a spherical ball and a flow passage defining an outlet opening externally of the tank and an inlet opening into the tank interior, said

flow passage extending generally along the central axis of the tank opening and having a ball chamber in which the spherical ball is received, the ball chamber having an outlet end aligned with said central axis and providing a contoured surface positioned within the throat of the tank, said contoured surface sealingly accepting the ball as said ball is biased into sealing engagement with said chamber outlet end of the pressure of the tank contents so that the tank contents are prevented from escaping through said valve portion flow passage, said method comprising the steps of:

providing an apparatus including means for securement to the threads of the annular flange of said tank and associated ball-engaging means, said securement means defining a cup-shaped surface of such shape that when said securement means is operatively accepted by said annular flange, said cup-shaped surface and the outer surface of said tank bounded by said annular flange collectively define a substantially enclosed cavity, said ball-engaging means being attached to said securement means for movement relative



thereto and including stem means for extending into the valve portion flow passage and for extending said stem means at least beyond said contoured surface to allow said ball to be floatingly received within said ball chamber when said ball is moved out of sealing engagement with said contoured surface for moving the ball relative to said ball chamber outlet end in opposition to the pressure of the tank contents when said ball-engaging means is moved relative to said securement means;

positioning said stem means in relationship to said securement means so that when said securement means are operatively secured to said annular flange, said stem means are spaced from said spherical ball in said ball chamber outlet end;

securing said securement means about the threads of said annular flange of the tank; and

moving said ball-engaging means relative to said securement means to thereby move said stem means through said flow passage and into said ball chamber and thereby unseat said ball.

4,606,368

BALL VALVE FOR PIPELINE

John J. McCafferty, Coalpit Heath, England, assignor to Forsac Valves Limited, Edinburgh, England

Filed Jul. 20, 1984, Ser. No. 632,843

Claims priority, application United Kingdom, Jul. 22, 1983, 8319853

Int. Cl.[4] F16K *43/00, 5/06, 25/00*

U.S. Cl. 137—15 5 Claims

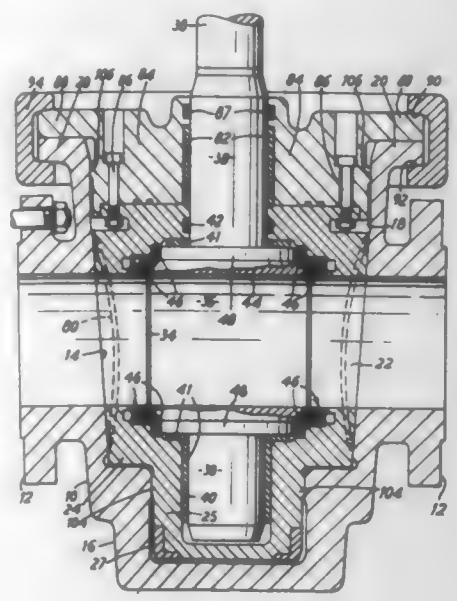
5. A method of servicing a ball valve assembly which assembly comprises:

(a) a ball member having a first through passage;

(b) a core assembly within which the ball member is rotatably mounted, the core assembly having a second through passage arranged so that rotation of the ball member is effectable to move the first and second through passages selectively into and out of communication; the core assembly having external surface portions which define portions of a cone penetrated by the second through passage, and a downwardly-facing abutment surface; and

(c) a body portion having a third through passage, the body portion being adapted for connection in a pipeline with its through passage in line with the flow passage of the pipeline; the body comprising side and bottom wall portions defining a socket for releasably receiving the core assembly, said socket having the form of a cup, being closed at the bottom by the bottom wall portion and open at the top and closed by a bonnet means, said bonnet means being attached to the core assembly and means releasably clamping the bonnet means to the body portion; at least part of the side wall portions defining the frustum of a cone complementary to the conical portions of the core assembly and penetrated by the third through passage; there being an upwardly facing abutment surface in the socket for cooperating with the abutment surface of the core assembly;

and wherein the core assembly comprises a housing for the ball member which housing provides bearing means in which the ball member is journalled; and wherein first seal means are provided for sealing between the ball member and the core assembly, comprising a respective annular



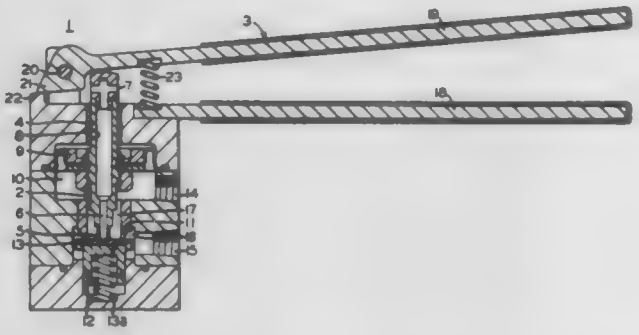
assembly at either side of the core assembly, each annular assembly surrounding a respective opening of the second through passage and also surrounding a respective opening of the first through passage when this is in communication with the second through passage; each annular assembly having seal means for sealing to both the ball member and the core assembly, and resilient means for urging said sealing to the ball member; the core assembly having respective annular seal housing cavities in which the first seal means are housed; the core assembly further including second seal means for sealing between the core asembly and the body portion, said second seal means comprising at either axial side of the core assembly a respective sealing ring surrounding the second and third through passages; the core assembly being provided with respective sealing ring housing means for retaining the rings to it, which method comprises removing from the assembly, as a single unit, a modular unit comprising said bonnet means, said ball member and said core assembly and which provides said bearing means for the ball member and said first and second seal means and inserting, as a single unit, a like modular unit until said abutment surfaces of the core assembly and the socket abut.

4,606,369

MANUALLY-OPERABLE FLUID PRESSURE REGULATING VALVE DEVICE

Albert A. McKay, Stoney Creek, Canada, assignor to WABCO Ltd., Hamilton, Canada

Filed Jul. 1, 1985, Ser. No. 750,798
Int. Cl.[4] G05D *16/08*
U.S. Cl. 137—116.5 9 Claims



1. A manually-operable regulating valve device for controlling a delivery fluid under pressure comprising:

(a) a valve body;

(b) a self-lapping valve assembly including:

(i) valve means in said valve body for controlling the supply and exhaust of the delivery fluid pressure;

(ii) an actuating stem reciprocally movable in said valve body and having one end projecting therefrom and the other end engageable with said valve means, whereby movement of said actuating stem in one direction effects the supply of delivery pressure, and movement of said actuating stem in the other direction effects the exhaust of delivery pressure; and

(iii) a feedback piston connected to said actuating stem, said feedback piston being subject on one side thereof to the delivery fluid pressure to urge movement of said actuating stem in said other direction; and

(c) a handle mechanism comprising:

(i) a flexible lever having one end pivotally-connected to said body and the other end free, said lever being directly engageable with said projecting end of said actuating stem at a point intermediate said pivot end and said other end to effect said movement of said actuating stem in said one direction according to the force of flexure of said lever.

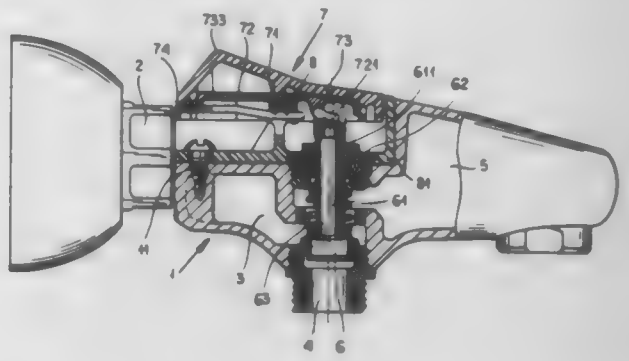
4,606,370

FLOW-SWITCHING WATER-MIXING FAUCET ASSEMBLY

Werner Geipel, Iserlohn; Bruno Heimann, Fröndenberg-Ardey, and Vinzenz Grendel, Hemer, all of Fed. Rep. of Germany, assignors to Friedrich Grohe Armaturenfabrik GmbH & Co., Hemer, Fed. Rep. of Germany

Filed Jan. 16, 1985, Ser. No. 692,036
Claims priority, application Fed. Rep. of Germany, Jan. 17, 1984, 3401352
Int. Cl.[4] G05D *11/00*
U.S. Cl. 137—119 15 Claims

1. In an operating mechanism for a fluid flow shifting valve of a sanitary mixing faucet assembly and the like of a bathtub and shower or the like, which operates a shifting valve stem guided in the mixing valve body so as to shift the water flow between the bathtub and the shower at will, the improvement wherein said valve stem is pivotally connected to an operating lever which is also pivotally attached to a pivot bearing, and the lever arms of said operating lever are so proportioned that a reduced applied force is required to operate said flow shifting valve, said pivot bearing being disposed in a boxshaped, rectangular cross section lever case having a front side wall adjacent said shifting valve stem and an opposing rear side wall with a substantial rear wall opening therein, said lever case having a top opening extending over substantially the entire top of said case, said lever case being fastened in a cavity conformed to hold said lever case in said faucet body of said mixing faucet assembly, and said pivotable operating lever is



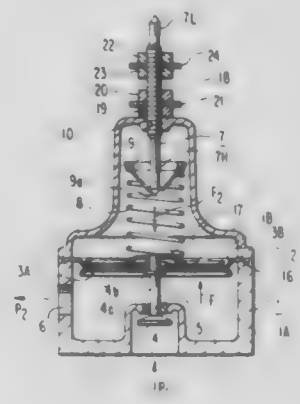
rotatably attached to said pivot bearing by a snap coupling, wherein said top opening of said lever case is substantially covered by said operating lever.

4,606,371

GAS PRESSURE REGULATOR WITH REVERSIBLE SETTING ROD

Noboru Maekawa, Nakatsugawa, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 11, 1985, Ser. No. 743,724
Claims priority, application Japan, Jun. 21, 1984, 59-93011[U]
Int. Cl.[4] F16K *31/126*
U.S. Cl. 137—270 6 Claims

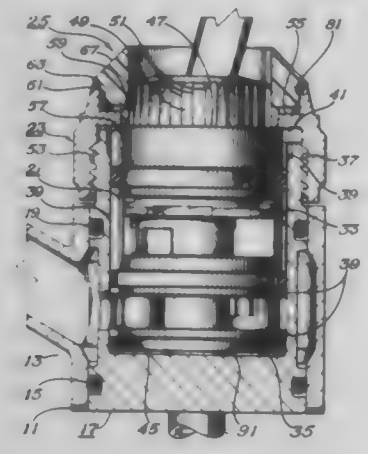


1. A gas pressure regulator, comprising: a housing (1), a flexible diaphragm (2) mounted within the housing and dividing it into first and second chambers, a gas inlet (5) and a gas outlet (6) defined in housing walls of the first chamber, a valve (4) disposed in the gas inlet and connected to the diaphragm for movement thereby, biasing means (8) disposed in the second chamber for imparting a force to the diaphragm in a direction to open the valve, and a pressure regulation level setting rod (7) extending into the second chamber and positively engaging the biasing means for varying the force imparted to the diaphragm by the biasing means, wherein the rod is elongate, has first and second opposite ends, and abutment means (19, 22; 30) are provided on the rod intermediate said ends for establishing predetermined lengths by which each of said ends may be selectively extended into the second chamber to establish desired gas outlet pressures for two different types of gas which may be supplied by inserting an appropriate end of the rod into the second chamber to a length determined by the abutment means.

4,606,372
FAUCET VALVE BONNET LOCKING MEANS

Dennis J. Hayman, Plano, Tex., assignor to United States Brass Corporation, Plano, Tex.

Filed May 29, 1985, Ser. No. 738,829
Int. Cl.[4] F16K *11/065*
U.S. Cl. 137—315 5 Claims



1. In a faucet valve, the combination comprising:

a. valve body means defining a chamber having a generally cylindrical side wall, a bottom end wall and an open top, with said valve body means having external threads adjacent said open top,

b. an assembly of faucet valve parts disposed within said chamber, and having cylindrical exterior surfaces that are matingly received by said generally cylindrical side wall,

c. a bonnet having internal threads engaging said valve body external threads for retaining said assembly within said chamber,

d. bonnet locking means comprising:

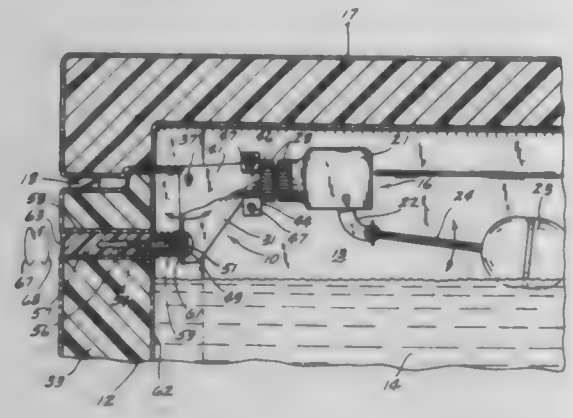
i. means for preventing rotational movement of said assembly of faucet valve parts relative to said valve body means, and

ii. locking means interengaging said assembly of faucet valve parts and said bonnet for preventing rotational movement of said bonnet relative to said assembly of faucet valve parts and consequently preventing rotational movement of said bonnet relative to said valve body means when said faucet valve is assembled.

4,606,373
FLOAT VALVE CONTROL ASSEMBLY

Wayne B. Noland, 340 Crescent Dr., Carlisle, Iowa 50047

Filed Nov. 8, 1985, Ser. No. 796,249
Int. Cl.[4] F16K *31/24, 33/00;* A01K *7/04*
U.S. Cl. 137—426 6 Claims



1. An assembly for controlling the level of fluid comprising in combination:

a container for holding the fluid;

a source of supply for discharging the fluid into said container;

a valve connected to said fluid source of supply for controlling the flow of fluid into said container;

a float pivotally connected to said valve and adapted to move from a first position operatively holding said valve open to the flow of fluid therethrough, to a second position operatively holding said valve closed to the fluid flow therethrough;

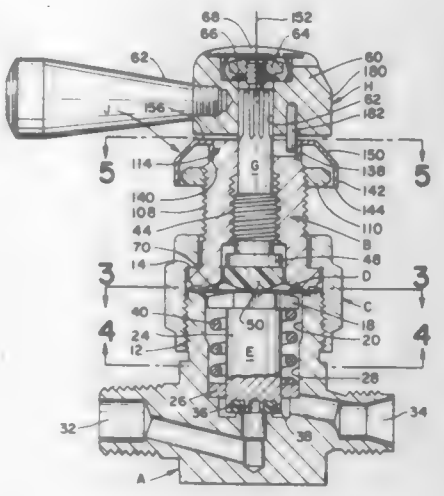
bracket means pivotally mounted to said container and connected to hold said valve stationary with said holding means; and

adjustment means mounted in said container and having an outer end exposed to the exterior of said container and having further an inner end in contacting relationship with said bracket means, said adjustment means adapted upon manipulation of said outer end to pivot said bracket means whereby to pivot said valve and float relative to said container as a single unit for selecting different fluid levels.

4,606,374
VALVE

Terrence J. Kolenc, Eastlake; Carl R. Bork, Jr., Euclid; William C. Steiss, Parma; Earl D. Shufflebarger, Mentor, and William P. Tobbe, Lyndhurst, all of Ohio, assignors to Nupro Company, Willoughby, Ohio

Filed Apr. 5, 1983, Ser. No. 482,218
Int. Cl.[4] F16K *37/00, 51/00*
U.S. Cl. 137—556.3 15 Claims



1. A valve bonnet having a cylindrical outer end portion, said outer end portion being circumferentially cut-away over an arc greater than 90° and less than 180° to define a cut-away portion having opposite end surfaces at least one of which defines a stop for cooperation with a stop projection on a valve operating member, said cut-away portion having a bottom, an outwardly extending circumferential shoulder on said bonnet end portion axially-spaced from said bottom of said cut-away portion, and said outer end portion including a continuous outer cylindrical portion between said bottom of said cut-away portion and said shoulder.

4,606,375
FLUIDIC DEVICE

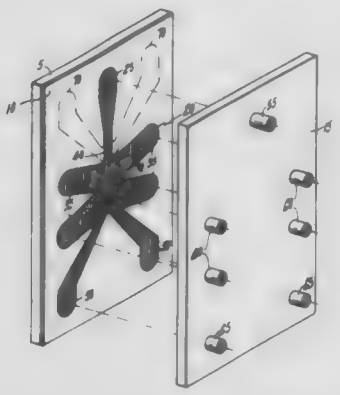
Bruce D. Hockaday, Vernon, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Jun. 4, 1985, Ser. No. 741,085
Int. Cl.[4] F15C *1/04, 1/08*
U.S. Cl. 137—828 5 Claims

1. In a fluidic device accommodating a continuous fluid flow therethrough, said fluidic device comprising a supply nozzle and at least one outlet port, a desired output of said fluidic device, defined by the flow conditions at said outlet port, being attained by the input of a control signal to said fluid flow for regulating the flow conditions thereof, the improvement characterized by:

said control signal comprising an optical signal;

said fluidic device including a passage disposed upstream of said outlet port and accommodating said fluid flow, said passage comprising a wall structure, at least a portion which is formed from an optically absorbent material; and



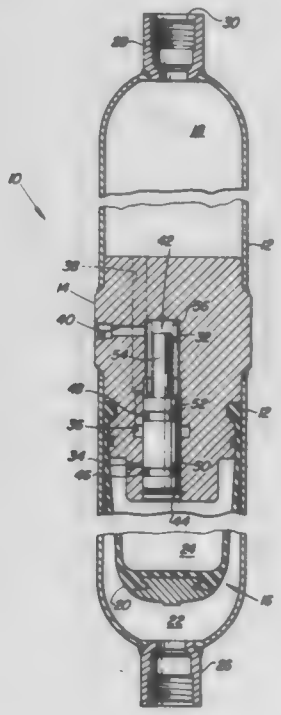
means for controlling the drag on said flow due to contact thereof with said optically absorbent wall portion by the direct application of said optical signal to said optically absorbent wall portion, thereby regulating the velocity profile of said fluid flow within said device to attain said desired output therefrom.

4,606,376

ACCUMULATOR WITH INTEGRAL HIGH PRESSURE RESERVOIR AND RECHARGE VALVE

Jerald D. Bernard, Cedar Falls; Sarkis A. Koltookian, Waterloo, and Kenneth S. Mealhow, Jesup, all of Iowa, assignors to Deere & Company, Moline, Ill.

Filed May 2, 1985, Ser. No. 730,005
Int. Cl.[4] F16L *55/04*
U.S. Cl. 138—30 2 Claims



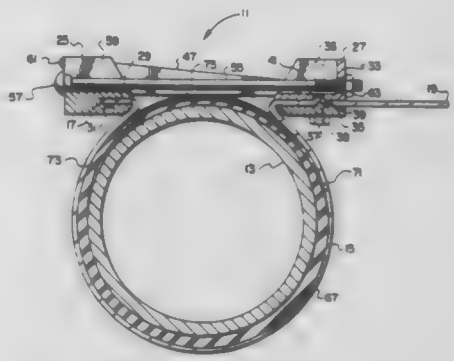
1. An hydraulic accumulator comprising:
a housing having a partition therein dividing the interior of the housing into a first chamber, and a second chamber for holding highly pressurized gas;
a bladder in the housing dividing the first chamber into an hydraulic fluid-receiving chamber and into a gas-receiving precharge chamber;
a recharge passage extending through the partition from the second chamber to the precharge chamber, the passage comprising a blind bore having one end open to the precharge chamber, an outlet passage communicating the bore with the precharge chamber and an inlet passage communicating the bore with the second chamber;
a recharge valve in the recharge passage for permitting gas flow from the second chamber to the precharge chamber only when pressure in the precharge chamber is less than a desired pressure, the recharge valve comprising a valve member slidable in the bore and exposed at one end to pressure in the precharge chamber, the valve member being movable from a first position blocking communication between the inlet and outlet passages to a second position communicating the inlet passage with the outlet passage, the recharge valve also comprising a spring urging the valve member toward its second position, pressure in the precharge chamber urging the valve member towards its first position; and
a vent passage for communicating an inner end of the blind bore with atmosphere and for exposing the other end of the valve member to atmospheric pressure, the valve member moving in response to a pressure differential between atmosphere and pressure in the precharge chamber.

4,606,377

PIPE REPAIR CLAMP

Ronald S. Montgomery, Gainesville, Tex., assignor to Muenster Clamp, Inc., Muenster, Tex.

Filed Oct. 30, 1984, Ser. No. 666,472
Int. Cl.[4] F16L *55/16*
U.S. Cl. 138—99 18 Claims



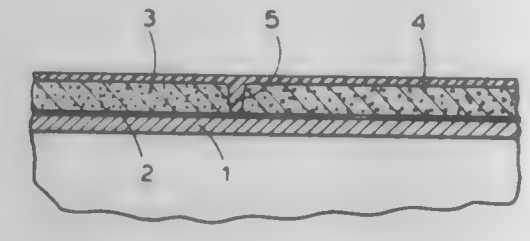
18. A clamp for repairing a pipe, which comprises:
a flexible metal band having a pair of ends with a length therebetween sufficient to at least partially encircle said pipe and a pair of edges with a width therebetween;
a pair of lugs connected to said ends of said metal band;
an elastomeric gasket sheet having an outside surface facing said metal band on an oppositely facing inside surface with a portion of said outside surface being attached to said metal band and said gasket sheet having two free ends, said gasket sheet including a pair of edges with a width therebetween greater than the width of said metal band with one of said edges of said gasket sheet being coincedent with one edge of said metal band whereby the other edge of said gasket sheet extends outwardly of said metal band, wherein said inside surface of said gasket sheet along the edge coincedent with said metal band includes a lengthwise extending reduced thickness portion defining a lengthwise extending channel in said inside surface and wherein said outside surface of said gasket sheet along the edge thereof which extends outwardly of said metal band includes a lengthwise extending reduced thickness portion, said gasket sheet having a length sufficient to encircle said pipe with one of said free ends overlapping the other of said free ends;
and means for drawing together said lugs when said metal band is wrapped around said pipe to urge said gasket sheet into sealing engagement with said pipe.

4,606,378

WEIGHTCOATED SUBSEA PIPELINE SECTION

Erik B. Meyer, Liederen 16, N–4950 Risor, Norway

PCT No. PCT/NO82/00017, § 371 Date Nov. 30, 1982, § 102(e) Date Nov. 30, 1982, PCT Pub. No. WO82/03438, PCT Pub. Date Oct. 14, 1982
Continuation of Ser. No. 451,205, Nov. 30, 1982, abandoned.
This PCT application Apr. 2, 1982, Ser. No. 746,929
Claims priority, application Norway, Apr. 7, 1981, 811189; Mar. 12, 1982, 820812
Int. Cl.[4] F16L *1/04*
U.S. Cl. 138—103 5 Claims



1. In a subsea pipe line section of the type including a steel pipe covered with a continuous weight coating, the improvement wherein said weight coating comprises:

a relatively thick layer of a composite material consisting of from 85 to 95% by weight of granulated heavy metal ore bound and embedded in a matrix of an epoxy, polyester or acrylic thermosetting resin;

a protective sheathing in the form of a high strength, durable plastic tube covering said layer of composite material; and

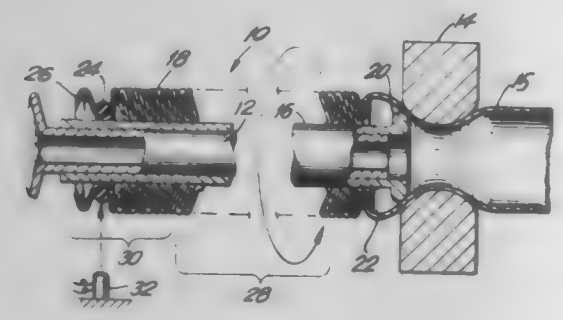
lugs integral with said tube and extending therefrom into said layer of composite material and thereby anchoring said tube to said layer.

4,606,379

ARTICLE FOR CONTROLLING CASING DEPLETION

Joseph A. Nausedas, Oak Forest, Ill., assignor to Union Carbide Corporation, Danbury, Conn.

Filed Mar. 31, 1983, Ser. No. 481,034
Int. Cl.[4] F16L *11/12*
U.S. Cl. 138—118.1 11 Claims



1. A tubular casing article for use in producing encased food products, said article comprising:

(a) a substantially rigid tubular core, said core having an axial bore to accommodate passage of a food product;

(b) a tubular strand of shirred casing carried by said core, said strand including a fore end from which casing is first to deshirr, and a trailing end which is last to deshirr;

(c) said tubular strand of shirred casing having its inner peripheral surface over substantially its full length in gripping contact about the outer peripheral surface of said core to provide a resistance to relative motion between said strand and tubular core, the magnitude of said resistance decreasing as casing is deshirred and pulled forward from said strand until said gripping contact of a remaining rear portion of said shirred strand is insufficient to resist, and is less than, the force required to deshirr and pull casing forward from said strand; and

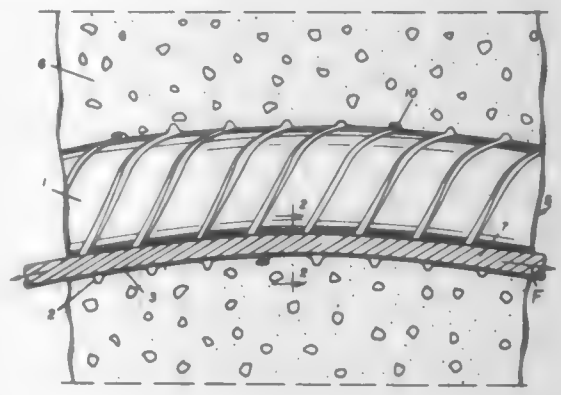
(d) means solely carried by said core and engaging said rear portion for preventing the movement of said trailing end relative to said core until the complete deshirring of said casing strand forward of said means and at least the partial deshirring of said rear portion has obtained.

4,606,380

PRESTRESS CONDUITS

Pierre Jartoux, Epernon, France, assignor to Freyssinet International Stup, Boulogne-Billancourt, France

Continuation of Ser. No. 496,987, May 23, 1983, abandoned.
This application Jun. 4, 1985, Ser. No. 741,037
Claims priority, application France, May 21, 1982, 82 08902
Int. Cl.[4] E04C *5/10*
U.S. Cl. 138—122 2 Claims



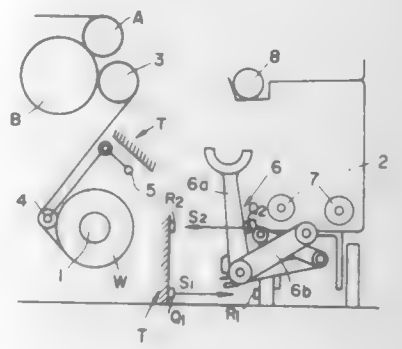
1. An elongated continuous tubular conduit for placement in a concrete structure for receiving at least a cable that can be pulled for therein prestressing the concrete structure, said conduit being formed from a single helically wound elongated, metal strip, wherein one face of said metal strip that is to become the interior face of said tubular conduit is intimately coated with a metal phosphate layer, said metal phosphate layer being in turn covered with a soap, said metal strip being subsequently wound and fastened into tubular form with overlapping adjacent turns so that an improved interior surface is created over small areas of which the cable can be slidably pulled.

4,606,381

METHOD AND APPARATUS FOR AUTOMATICALLY EXCHANGING CLOTH ROLLERS IN A LOOM

Mitsuru Suwa, and Shoichi Kuwabara, both of Kanazawa, Japan, assignors to Tsudakoma Kogyo Kabushiki Kaisha, Kanazawa, Japan

Filed Feb. 14, 1985, Ser. No. 701,501
Claims priority, application Japan, Feb. 16, 1984, 59-28079; Mar. 26, 1984, 59-58676; Mar. 27, 1984, 59-60366
Int. Cl.[4] D03D *49/00*
U.S. Cl. 139—1 R 9 Claims



1. A method for automatically exchanging first, and second, cloth rollers between a loom and a truck disposed adjacent to the loom, comprising the steps of:

(a) transferring a first, cloth roller during a take-up motion of cloth woven from the loom to a take-up device on the truck, wherein the first, cloth roller continues the take-up motion;

(b) transferring a second, empty roller from the truck to the loom;

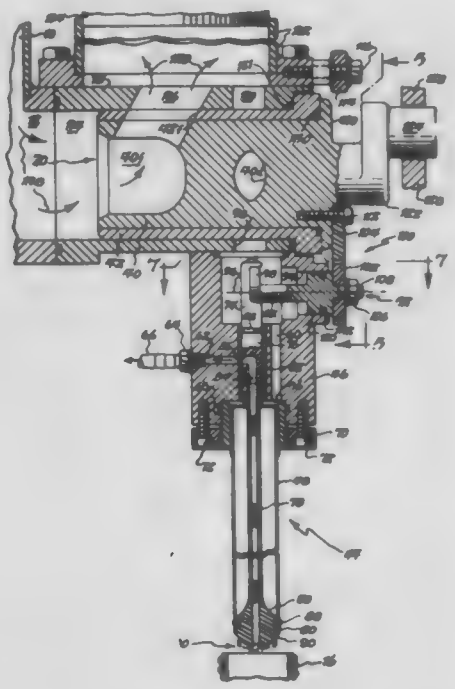
(c) mounting the second, empty roller on the loom;
(d) transversely cutting the cloth being taken up by the first, cloth roller transferred to the truck; and
(e) causing the second, empty roller to take up the loom-side end of the cut cloth.

4,606,382

NOZZLE ASSEMBLY FOR A FILLING APPARATUS

Victor Biller, Penfield, N.Y., and Adelmar Faessler, Hendersonville, N.C., assignors to Figgie International Inc., Willoughby, Ohio

Filed Mar. 12, 1984, Ser. No. 588,856
Int. Cl.[4] B65B *3/04*
U.S. Cl. 141—1 12 Claims



11. A method of filling a container comprising the following steps:

providing a source of fluent material, a generally vertically extending filling tube through which fluent material may be discharged into a container, a valve assembly between the source of fluent material and the filling tube, said valve assembly initially being in a closed position and shiftable to an open position, and a sealing foot movable relative to said filling tube and initially disposed in sealing relationship at the lower end of the filling tube;

positioning a container below the filling tube;

moving the container and tube relative to each other to position the lower end of the filling tube near the bottom of the container;

simultaneously moving the valve assembly to the open position and moving the sealing foot away from the lower end of the filling tube;

initiating the flow of fluent material from the source of fluent material through the valve assembly and through the filling tube into the container;

moving the container and the filling tube relative to each other as the container is being filled;

stopping the flow of fluent material from the source of fluent material through the valve assembly and through the filling tube into the container; and

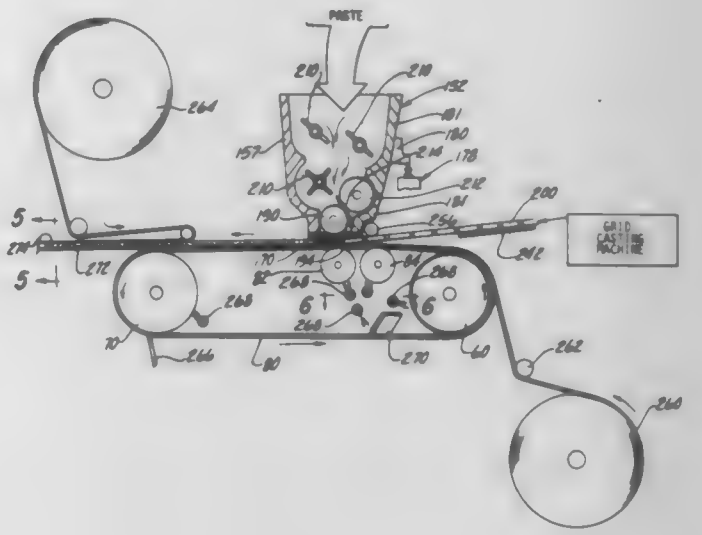
simultaneously shifting the valve assembly back to its closed position and moving the sealing foot back to its sealing position.

4,606,383

BATTERY GRID PASTING MACHINE

David Yanik, Port Huron, Mich., assignor to Wirtz Manufacturing Company, Inc., Port Huron, Mich.

Continuation of Ser. No. 568,213, Dec. 15, 1983, abandoned.
This application Jul. 9, 1985, Ser. No. 753,184
Int. Cl.[4] H01M *4/20*
U.S. Cl. 141—32 35 Claims



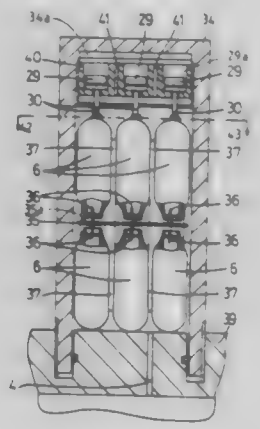
1. A battery grid pasting machine having a conveyor, an endless metal belt carried by said conveyor and having a top run with a generally horizontally extending outer face on which battery grids are adapted to be supported and conveyed in one direction, a belt support roller on the underside of and supporting the top run of the belt, a paste hopper having an orifice plate spaced above the belt and overlying said belt support roller, said orifice plate having an orifice slot therethrough which overlies and extends transversely across the belt, means in the hopper for feeding paste downwardly through said orifice slot at a predetermined rate, the entire bottom of said orifice plate being spaced throughout from and above the outer face of the underlying portion of the top run of said belt to provide a clearance therebetween at least slightly greater than the thickness of the grid to be pasted, said bottom of the orifice plate having a portion adjacent and downstream of the orifice slot which is spaced from and above the outer face of the underlying portion of the top run of said belt so that there is a clearance therebetween slightly greater than the thickness of the grid to be pasted for controlling the thickness of the paste applied to the grid, at least a portion of the bottom of said orifice plate adjacent to and upstream of said orifice slot being spaced from and above the outer surface of an underlying portion of the top run of said belt such that there is a clearance therebetween greater than said clearance between said bottom portion downstream of said orifice and its associated underlying portion of the top run of said belt, said orifice slot having an upstream edge located at least slightly upstream from the uppermost portion of said belt support roller and guide means constructed and arranged to guide a grid between said belt and said orifice plate at an angle inclined to the outer surface of at least a portion of the top run of said belt adjacent to and upstream of said orifice slot so that as such grid passes beneath the orifice slot the face of such grid adjacent said belt is spaced slightly from and above the outer surface of the immediately underlying portion of the top run of said belt to provide a clearance therebetween such that paste being fed from said orifice slot passes through the grid and enters into such clearance, whereby both faces of the grid are covered with paste and the grid is overpasted.

4,606,384

GAS SUPPLY DEVICE INCLUDING A PLURALITY OF GAS FLASKS INSERTED IN A PRESSURIZED GAS CONTAINER

Peter A. Neukomm, Wettingen, Switzerland, assignor to Pewa Technic AG, Dietikon, Switzerland

Filed Feb. 26, 1985, Ser. No. 705,908
Claims priority, application Switzerland, Mar. 2, 1984, 1027/84
Int. Cl.[4] B67C *9/00*
U.S. Cl. 141—329 20 Claims



1. A gas supply device, comprising:

a pressurized gas container having an interior space and an operational position;

a connection location for said pressurized gas container;

a plurality of gas flasks inserted into said pressurized gas container;

hermetic means for gas-tightly connecting said pressurized gas container to said connection location when said pressurized gas container is in said operational position;

each gas flask of said plurality of gas flasks having an interior space communicating with said interior space of said pressurized gas container through a small aperture serving as a throttling orifice;

each said gas flask being pressure-resistant and partially filled with a liquid gas before being inserted into said pressurized gas container;

an openable closure component for closing each said gas flask;

an opening device associated with each said openable closure component and effective at initiation of a state of operational readiness of the gas supply device when said pressurized gas container is connected and gas-tightly sealed to said connection location;

at least one of said opening devices being structured to open a therewith associated one of said openable closure components under the influence of an external force;

a tightening device installed in said pressurized gas container for pushing said plurality of gas flasks conjointly with at least one said opening device together when a state of operational readiness of the gas supply device is to be established;

said tightening device comprising two partial tightening devices structured to act in temporal sequence such that a first partial tightening device of said two partial tightening devices is capable of opening a first-to-be-opened gas flask of said plurality of gas flasks while remaining gas flasks of said plurality of gas flasks remain closed;

said first partial tightening device being structured to be effective only until said openable closure component of said first-to-be-opened gas flask is open;

a second partial tightening device of said two partial tightening devices being structured to be effective until said openable closure components of said remaining gas flasks are open;

said first partial tightening device being externally actuatable under the influence of an external force;

said second partial tightening device being actuatable by said gas escaping from said first-to-be-opened gas flask; and

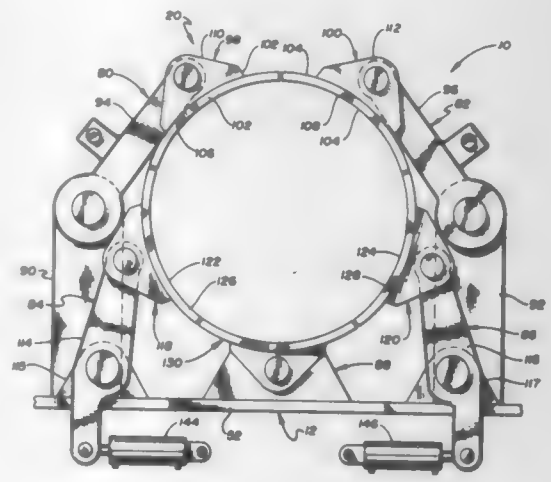
said first partial tightening device defining said connecting means for connecting said gas container to said connection location.

4,606,385

TREE LIMB REMOVING APPARATUS

Gunnar Williamson, P.O. Box 268, Two Harbors, Minn. 55616

Filed Nov. 28, 1984, Ser. No. 675,691
Int. Cl.[4] B27L *1/00*
U.S. Cl. 144—2 Z 5 Claims



1. An apparatus for removing the limbs from the trunk of a felled tree, comprising:

means for grasping said tree;

a blade assembly; and

means operably coupling said grasping means and said blade assembly for shifting said grasping means relative to said blade assembly,

said blade assembly including

lowermost, intermediate, and uppermost cutting mechanisms positioned about and defining a center axis, along which said tree is shifted by said grasping means for cutting engagement of said limbs with said blade assembly, said intermediate cutting mechanism comprising a pair of spaced apart, arcuate, cutting blades oriented on opposed sides of said center axis, and said uppermost cutting mechanism comprising a pair of spaced apart, arcuate cutting blades oriented on opposed sides of said center axis;

means for urging said cutting blades of said uppermost and intermediate cutting mechanisms towards said center axis and into engagement with said tree trunk at respective points of contact; and

means pivotally coupling said cutting blades to said urging means at respective, centered connection points on said cutting blades, said connection points of said uppermost cutting mechanism blades being oriented above said center axis, and said connection points of said intermediate cutting mechanism blades being oriented below said connection points of said uppermost cutting mechanism blade and above said lowermost cutting mechanism, whereby said blades pivot about said connection points upon contact with said trunk to inherently self-center said blades about their respective points of contact with said trunk.

4,606,386

UNIVERSAL PROFILING MACHINE

Carl R. Walker, 6308 Millcreek La., Knoxville, Tenn. 37921

Filed Oct. 26, 1983, Ser. No. 545,665
Int. Cl.[4] B23C *1/18, 5/10*
U.S. Cl. 144—134 B 21 Claims

21. A universal profiling apparatus for producing a selected one of an unlimited number of design patterns in/on a work

piece by a work engaging member of said apparatus, which comprises:

a frame;

a work carrying means supported on said frame by a first adjustment means, said first adjustment means comprising:

a. a platform fixedly secured to said frame,

b. an undercarriqge carried by said platform, said undercarriage provided with a first pair of parallel slide ways and with means for adjusting elevation of said undercarriage,

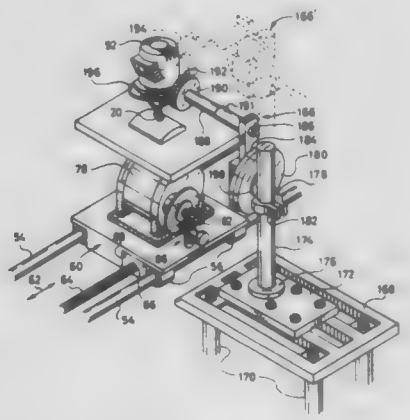
c. a carriage provided with bearings engaged with said slide ways, with means for controllably moving said carriage along said slide ways for translation of said work carrying means, and with a circular recess in a surface opposite said undercarriage,

d. a base plate rotatably received within said recess in said carriage, said base plate provided with means to selectively fix said base plate at a selected rotational position within said recess, and

e. a dividing head carried on said carriage having a base end attached to said base plate, and a second end attached to said work carrying means, said dividing head adapted for selected rotation and selected tilt of said work carrying means;

means for carrying said work engaging member supported on said frame by a second adjustment means, said second adjustment means comprising:

a. a second pair of parallel slide ways adjustably supported from said frame above said work carrying means, said



second pair of slide ways being substantially horizontal and oriented at right angles to said first pair of slide ways,

b. a second carriage slidably carried on said second pair of slide ways, said second carriage provided with means for selectively moving said second carriage along said second pair of slide ways for translation of said work engaging member, said second carriage having a first portion carried by said second pair of slide ways and with a second portion pivotally mounted from said first portion with a pivot having an axis perpendicular to said second pair of slide ways, said second portion provided with a second circular recess,

c. means attached between said first portion and said second portion of said second carriage for selectively tilfing said second portion with respect to said first portion about said pivot,

d. a mounting plate, for mounting said work engaging member, rotatably received within said second circular recess, and

e. means attached to said mounting plate and to said second portion of said second carriage to selectively rotate said mounting plate, and

means for imparting relative movement between said work carrying means and said work engaging member, along a preselected path, while said work engaging member contacts said work piece whereby portions of preselected design patterns can be produced in/on said work piece and whereby said first and second adjustment means provide an infinite number of selectable positional relationships between said work piece and said work engaging member along said preselected path thereby providing for an infinite choice of said preselected design patterns.

4,606,387

MACHINE AND METHOD FOR TRIMMING A STACK OF VENEERS

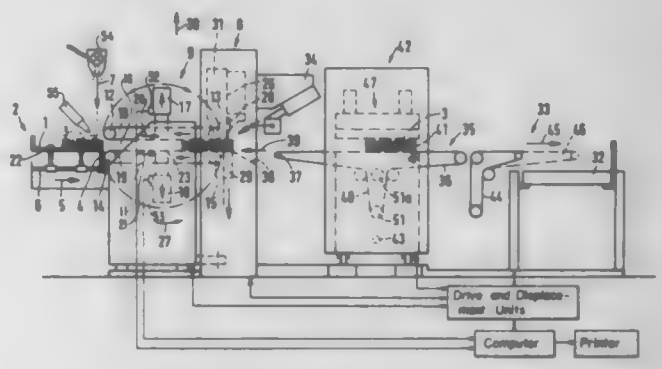
Horst D. Weislogel, Gerlingen, and Burkhard Oelte, Schw. Hall, both of Fed. Rep. of Germany, assignors to Carl Rückle Maschinenbau GmbH, Fed. Rep. of Germany

Filed Feb. 11, 1985, Ser. No. 700,394

Claims priority, application European Pat. Off., Feb. 9, 1984, 84101309.7

Int. Cl.⁴ B27B *1/00*

U.S. Cl. 144—356 **46 Claims**



1. A machine for trimming the longitudinal edges of a stack of veneers comprising, determining means for determining at least one lengthwise reference line for cutting an edge of the stack at a cutting plane, a turning mechanism (**9**) having an entrance end at an axis of rotation (**23**) parallel to a surface of the stack for turning the stack and having means for holding the veneer stack (**3**), with said determining means (**2,7**) being provided at the entrance end of the turning mechanism, said turning mechanism having an exit end, and trimming means at the exit end of said turning mechanism for trimming the stack at the cutting plane.

29. A method of trimming a stack of veneers on at least two lengthwise edges thereof, comprising, turning the stack through 180° between two cutting operations for cutting the edges, and determining two lengthwise cutting lines for the edges prior to introducing the stack into a cutting area of a trimming machine, during the determination, measuring the distance of each of the lines from a cutting plane of the trimming machine, displacing the stack into the trimming machine through a distance equal to the spacing of a first of the cutting lines from the cutting plane, trimming the stack at the cutting plane and at the first of the cutting lines, turning the stack upside down as it is being firmly held by means of a turning mechanism, displacing the stack through a distance equal to the spacing of a second one of cutting lines from the cutting plane, and trimming the stack at the cutting plane and at the second of the cutting lines.

4,606,388

PROCESS FOR DENSIFYING LOW DENSITY WOODS

Peter Favot, 5 Milne Crescent, Kanata, Ontario, Canada

Filed Mar. 28, 1985, Ser. No. 717,145

Int. Cl.⁴ B27M *1/02*

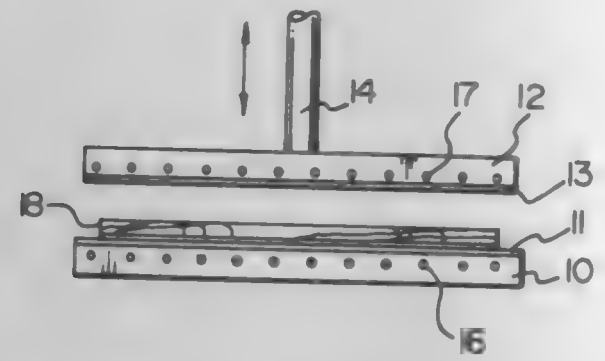
U.S. Cl. 144—361 **19 Claims**

1. A process for densifying solid wood which comprises the steps of:

(a) impregnating a high moisture containing solid wood member with anhydrous ammonia whereby the wood member is plasticized to a sponge-like form saturated with water and ammonia,

(b) placing the plasticized wood member beteen perforated press plates of a cyclic press and, while maintaining the temperature of the plasticized wood member below 100°

C., subjecting it to a plurality of compression cycles with the entire wood member being substantially simultaneously compressed to a predetermined thickness, held at that thickness for a short period of time and released during each cycle, whereby water and ammonia are squeezed out of the wood member through the faces



thereof down to a moisture content of less than 30% to obtain a damp wood member of predetermined reduced thickness,

(c) transferring the damp wood member of reduced thickness to a drying chamber, and

(d) drying the damp compressed wood member to obtain a dry, permanently densified solid wood product.

4,606,389

FRONT WHEEL TIRE TREAD FOR A MOTORCYCLE

Johann Haas, Munich, Fed. Rep. of Germany, assignor to Metzeler Kautschuk GmbH, Munich, Fed. Rep. of Germany

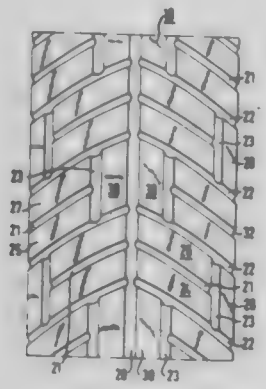
Filed Dec. 12, 1984, Ser. No. 680,758

Claims priority, application Fed. Rep. of Germany, Dec. 12, 1983, 8335597[U]

Int. Cl.[4] B60C *11/08*

U.S. Cl. 152—209 R

1 Claim



1. Front wheel tire for motorcycles, comprising a tread pattern including a tread edge, a circumferential central groove, relatively long mutually parallel transverse grooves, emanating diagonally from said central groove to the tread edge, said transverse grooves extending in the shape of an arrow in the direction of traction subtending an angle of substantially between 60° and 85° to said central groove, relatively short circumferential grooves each extending parallel to said central groove between two respective transverse grooves, and first and second groups of parallelogrammatic blocks enclosed by said circumferential and transverse grooves and alternatingly disposed at opposite sides of said central groove, each block having two edges extending in circumferential direction, each first group including a block extending in circumferential directin and two mutually parallel blocks extending diagonally outward between said circumferential block and the tread edge, and each second group including two blocks extending diagonally outward from said central groove and one block extending in circumferential direction parallel to the tread edge between said two blocks of said second group and said tread edge.

4,606,390

VEHICLE RIM WITH TIRE BEAD RETAINING HUMPS

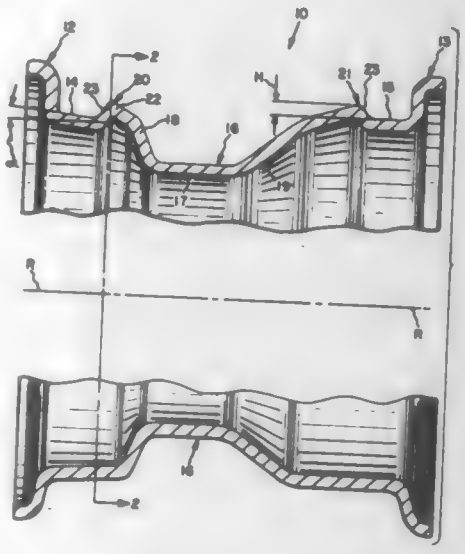
Anthony Shute, Colmar-Berg, Luxembourg, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Aug. 22, 1985, Ser. No. 768,380

Int. Cl.[4] B60B *25/12*

U.S. Cl. 152—381.4

12 Claims



1. A rim for supporting a pneumatic tire, said rim comprising a pair of circumferentially extending flanges in axially spaced apart relationship, and a pair of bead seats for seating the bead portion of a tire and each of which extends axially inwardly from a respective flange, at least one of the bead seats being provided at its axially inner margin with a bead retaining means comprising a plurality of radially outwardly projecting humps formed integrally with the rim and forming a circumferentially extending abutment face characterized in that the abutment face is of varying radial height with respect to the bead seat and comprises a plurality of circumferentially extending humps which merge one into another, each hump having a radial height which gradually and continuously increases circumferentially from the minimum radius of said bead seat to a maximum height and subsequently gradually and continuously decreases circumferentially to said minimum radius of the bead seat where adjacent humps merge, the radially outer surface of said humps between the points of maximum height for any pair of circumferentially adjacent humps being a continuous arc having a radius greater than the minimum radius of the bead seats and forming a tangent to said bead seats midway between said points of maximum height.

4,606,391

VALVE CAP WITH PRESSURE DROP INDICATION FOR PNEUMATIC TIRES

Rainer Achterholt, Paul-Zoll-Str. 3, 8963 Waltenhofen, Fed. Rep. of Germany

Filed Oct. 26, 1984, Ser. No. 665,311

Claims priority, application Fed. Rep. of Germany, Oct. 28, 1983, 3339095; Jun. 19, 1984, 3422725

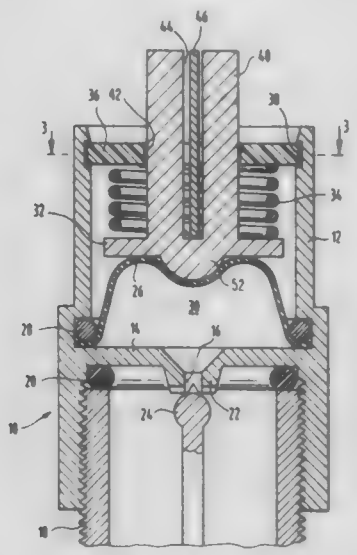
Int. Cl.[4] B60C *23/04*

U.S. Cl. 152—431

25 Claims

1. A valve cap for pneumatic tires having a valve tube with a valve mounted therein, the valve cap comprising a sleeve mountable on the valve tube and including an actuating member for opening the valve when the sleeve is mounted on the valve tube, a compressed-air chamber disposed within the sleeve and communicating with the interior of the tire through the open valve, the compressed-air chamber including a movable wall structure sealing the compressed-air chamber relative to ambient pressure, said movable wall structure moving in a first axial direction in response to an increase in pressure in the compressed-air chamber, an indicator mounted for axial movement through the sleeve and actuated by the movable wall structure, a marking member cooperatively arranged with the indicator for movement in the first axial direction through the

sleeve, a return movement inhibitor operatively associated with the marking member for inhibiting movement thereof, and a spring cooperating with the indicator and biased toward the opposite axial direction whereby an increase in pressure in the compressed-air chamber axially moves the indicator and



marking member in the first axial direction relative to the sleeve and a decrease in pressure in the compressed-air chamber axially moves the indicator in the opposite axial direction relative to the sleeve while the return movement inhibitor retains the marking member in its position relative to the sleeve.

4,606,392

REINFORCING CORD FOR ELASTOMERIC PRODUCT

Wolfgang Weidenhaupt, Erkelenz; Günther Wepner, Waldfeucht-Neuhaaren, and Peter Dismon, Heinsberg-Proselen, all of Fed. Rep. of Germany, assignors to Akzo NV, Arnhem, Netherlands

Filed May 16, 1984, Ser. No. 610,878

Claims priority, application Fed. Rep. of Germany, May 16, 1983, 3317712

Int. Cl.⁴ D02G *3/48*; B60C *9/00, 15/00*

U.S. Cl. 152—451 **23 Claims**

1. A reinforcing cord comprising at least one strand of metal wires for reinforcing an elastomeric product, the metal wires having each a substantially rectangular cross-section defining opposite broad and narrow sides and having rounded edges, the metal wires in the strand contacting one another along their broad sides to provide a strand of a substantially rectangular cross-section, the strand being twisted about its longitudinal axis and the ratio of adjoining sides of the strand being between 2:1 and 1:1.

4,606,393

TIRE REMOVAL MACHINE WITH A SIMULTANEOUSLY MOVABLE TOOL CARRYING HEAD AND AUTOMATIC CENTERING UNIT

Maria Cuccolini, Correggio Emilia, Italy, assignor to Corghi Electromeccanica S.p.A., Correggio Emilia, Italy

Filed May 8, 1984, Ser. No. 608,111

Claims priority, application Italy, May 10, 1983, 46837 A/83

Int. Cl.⁴ B60C *25/08*

U.S. Cl. 157—1.24 **10 Claims**

1. A tire removal machine having a simultaneously movable tool carrying head and automatic unit, characterized by comprising,

an operating platform (1),

a rotatable lateral pivot (4) mounted on said platform,

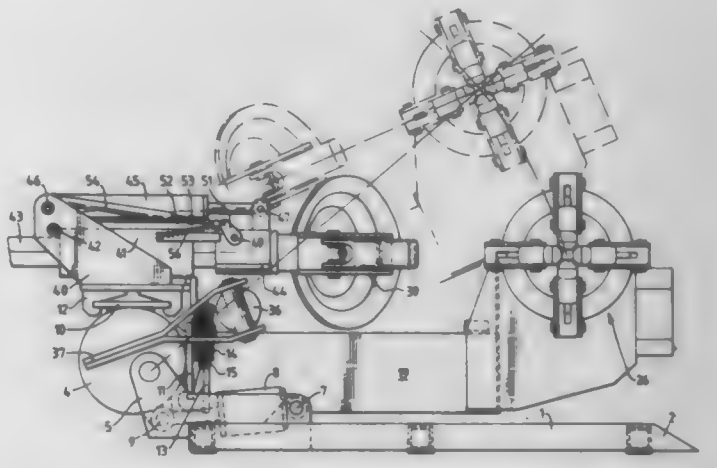
two longitudinal slides (13, 12), each having a longitudinal axis, disposed on said pivot,

a single drive unit (14, 15, 36) operatively connected to said slides for simultaneous approach and withdrawl motion of said slides,

a rotatable automatic centering unit (26) mounted on the first said slide for locking the wheel rims,

a slidable tool carrying head (39) mounted on the second said slide,

said longitudinal axis being mutually orthogonal and incident during the bead-disengagement/removal/mounting operations,



automatic release/locking means (60, 61, 62, 63, 64) between said head (39) and said second slide 12 for alternately raising and lowering said head (39) with respect to said second slide (12) in order to dispose said head (39) beyond the profile of the tire (3) being worked upon,

and automatic means (49, 51, 52, 54) for alternately releasing and locking the rotation of said head (39) when this latter is completely withdrawn.

4,606,394

BARRIER SYSTEMS AND THE LIKE

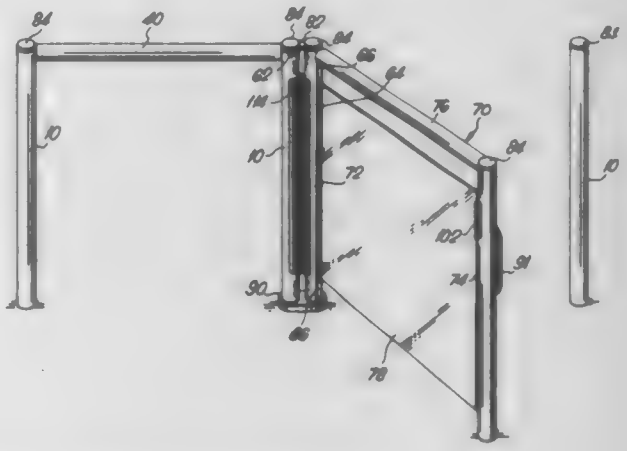
Brian C. Bannister, North Mymms, England, assignor to Marler Haley Exposystems Ltd., Hertfordshire, England

Continuation of Ser. No. 418,550, Sep. 15, 1982. This application Sep. 7, 1984, Ser. No. 648,609

Claims priority, application United Kingdom, Sep. 18, 1981, 8128363

Int. Cl.⁴ E04H *17/00*

U.S. Cl. 160—351 **11 Claims**



7. A barrier system comprising:

a plurality of fixed vertical posts, each of said posts including an elongate central member of substantially uniform cross-section throughout the length of the post, said central member having a plurality of circumferentially spaced, first and second channels longitudinally extending along the outer periphery thereof;

interconnecting means including at least one horizontal rail member extending between adjacent posts, said interconnecting means having opposed end portions carrying ribbed attachment means thereon for insertion into inter-engaging portions of the first channels in said central portions to rigidly secure said interconnecting means thereto;

cladding means carrying longitudinally extending ribbed portions for insertion within the second channels of the central member, said cladding means covering the outer periphery of the central member and substantially all portions of said first channels which are unoccupied by the inserted attachment means carried by said interconnecting means;

each horizontal rail member comprising a central member and cladding means which are substantially identical to those of the fixed vertical posts, and wherein the central members of said fixed vertical posts and the central members of said horizontal rail members each have a central through passage formed therein, each of said posts including a tie bolt fitted within the central passage of the central member of each post, each of said tie bolts adapted to be rigidly secured to floor mounted base means, and wherein the attachment means carried by the horizontal rail member includes an insert fitted within the central through passage at opposed ends thereof, each of said inserts including a head portion extending outwardly from the ends of the rail member for insertion into a first channel of an adjacent post and including a shank portion integral with said head portion and adjustably postioned within said central through passage to permit axial adjustment of said inserts relative to the rail member, whereby a variation in spacing between adjacent posts may be accommodated.

4,606,395

METHOD OF PRODUCING FIBER-REINFORCED COMPOSITE MATERIAL

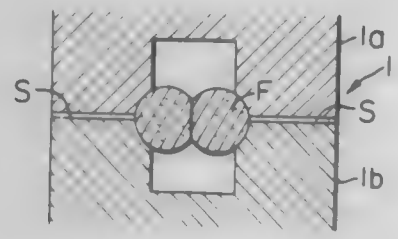
Keisuke Ban, Fujimi; Akimasa Daimaru, Oomiya; Yasuo Muraoka, Kawagoe, and Noriaki Miyake, Ueda, all of Japan, assignors to Art Kinzoku Honda Giken Kogyo Kabushiki Kaisha and Kogyo Kabushiki Kaisha, both of Tokyo, Japan

Filed Nov. 6, 1981, Ser. No. 318,975

Claims priority, application Japan, Nov. 6, 1980, 55-156386

Int. Cl.[4] **B22D** *19/14*

U.S. Cl. 164—98 **2 Claims**



1. A method of producing a fiber-reinforced composite material comprising the steps of:

(a) mounting a fiber body on mounting surfaces in a cavity of a mold consisting of plural mold parts, said mounting surfaces being in fluid communication with the outside of said mold through air relieving means formed in joint surfaces of said plural mold parts;

(b) pouring a molten matrix metal into said mold cavity;

(c) filling said molten matrix metal into said fiber body under application of a high hydrostatic pressure while expelling the air in said fiber body to the outside of said mold through said air relieving means;

(d) filling said air relieving means with said molten matrix metal;

(e) solidifying said molten matrix metal in said air relieving means to seal said mold cavity from the ambient atmosphere; and

(f) solidifying under high pressure said molten matrix metal in said mold cavity.

4,606,396

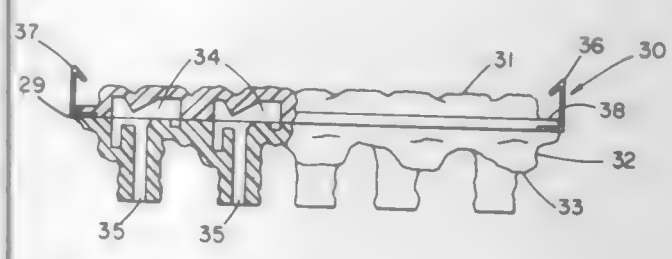
SAND MOLD AND APPARATUS FOR REDUCED PRESSURE CASTING

George D. Chandley, and Richard L. Sharkey, both of Amherst, N.H., assignors to Hitchiner Manufacturing Co., Inc., Milford, N.H.

Continuation of Ser. No. 368,671, Apr. 15, 1982, abandoned, which is a division of Ser. No. 154,230, May 29, 1980, Pat. No. 4,340,108, which is a continuation-in-part of Ser. No. 75,169, Sep. 12, 1979, abandoned, which is a continuation-in-part of Ser. No. 947,621, Oct. 2, 1978, abandoned. This application Jan. 27, 1984, Ser. No. 574,938

Int. Cl.[4] **B22C** *9/02, 9/08;* **B22D** *18/06*

U.S. Cl. 164—255 **13 Claims**



1. Casting apparatus including

a container for holding molten metal to provide a molten metal surface in a generally horizontal plane

a mold support including a chamber positioned above the surface of molten metal in said container, said chamber having a downwardly extending side wall and a peripheral sealing surface

a rigid, self supporting, gas permeable, low temperature bonded sand grain mold having side surfaces extending between vertically spaced upper and lower surfaces, a peripheral sealing surface, and mold cavity means spaced between said upper and lower surfaces, said mold cavity means having gate passage means extending downwardly therefrom, said gate passage means having its lower open end terminating at the lower surface of said mold

said mold being supported from above by said mold support with their peripheral sealing surfaces in peripheral contact, with at least a substantial portion of said mold side surfaces and the entire lower surface of said mold extending downwardly beyond said chamber side wall

power means supporting said mold support for relative movement to move the entire lower surface of said mold including the open end of said gate passage means beneath the surface of molten metal in said container with said mold support side wall spaced thereabove, and

vacuum means for relatively varying the pressure within said chamber and said mold to fill said mold after lowering said entire lower surface of said mold beneath the surface of molten metal in said container with said mold support side wall spaced thereabove

wherein said mold further comprises upper and lower low temperature bonded mold halves adhesively secured together in a general horizontal mold parting plane with said upper and lower surfaces generally parallel to and vertically spaced on opposite sides of said mold parting plane

said mold cavity means extending to said generally horizontal mold parting plane and spaced between said upper and lower surfaces, and

said gate passage means extending vertically from said mold cavity means through said lower mold half to said lower mold half lower surface and terminating with its lover open end exposed at said lower surface,

said gate passage means having a restricted portion having a maximum width in at least one dimension of 0.75 inches.

5. A unitary, rigid, self supporting, gas permeable, low temperature bonded, sand grain mold having peripheral side surfaces extending between vertically spaced upper and lower surfaces with mold cavity means spaced therebetween and vertical gate passage means with its lower open end exposed at

said lower surface, for use in a method of vacuum casting metal comprising:

submerging said lower surface and said open end of said gate passage means beneath an underlying surface of molten metal while maintaining said upper surface and at least a portion of said side surfaces thereabove;

applying a reduced pressure to the upper surface of said mold to simultaneously fill said gate passage means and said mold cavity means with molten metal;

solidifying said molten metal throughout the transverse dimension of at least a portion of said gate passage means; and

thereafter removing said mold and the submerged open end of said gate passage means from contact with said underlying surface of molten metal before said solidified metal in said gate passage means portion remelts due to contact with said underlying surface of molten metal,

said mold comprising

upper and lower low temperature bonded mold halves adhesively secured together in a generally horizontal mold parting plane with said upper and lower surfaces generally parallel to and vertically spaced on opposite sides of said mold parting plane

mold cavity means extending to said generally horizontal mold parting plane and spaced between said upper and lower surfaces, and

gate passage means extending vertically from said mold cavity means through said lower mold half to said lower mold half lower surface and terminating with its lower open end exposed at said lower surface,

said gate passage means having a restricted portion having a maximum width in at least one dimension of 0.75 inches for said solidification of metal therein.

4,606,397

APPARATUS AND PROCESS FOR ELECTRO-MAGNETICALLY FORMING A MATERIAL INTO A DESIRED THIN STRIP SHAPE

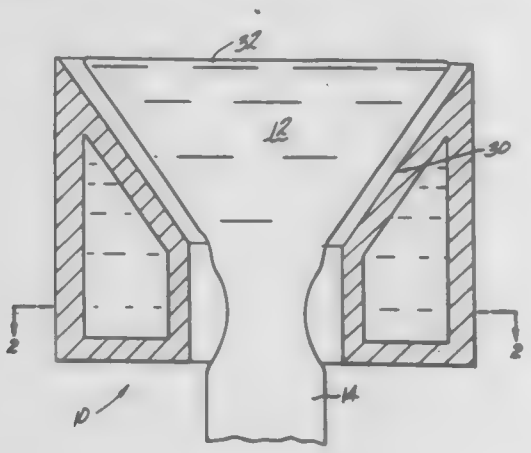
John C. Yarwood, Madison; Gary L. Ungarean, Woodbridge, and Derek E. Tyler, Cheshire, all of Conn., assignors to Olin Corporation, New Haven, Conn.

Continuation of Ser. No. 488,848, Apr. 26, 1983, Pat. No. 4,471,832, which is a continuation of Ser. No. 213,125, Dec. 4, 1980, abandoned. This application Jun. 27, 1984, Ser. No. 625,288

The portion of the term of this patent subsequent to Sep. 18, 2001, has been disclaimed.

Int. Cl.[4] B22D *27/02*

U.S. Cl. 164—467 **5 Claims**



1. A casting process comprising the steps of:

electromagnetically forming a molten material into a desired thin strip shape having a thickness of less than approximately 2.5 millimeters, said forming step comprising the steps of:

providing an electromagnetic casting apparatus having a first axis extending therethrough in the direction of casting;

delivering said molten material into said electromagnetic casting apparatus;

applying a first electromagnetic field to contain and form said molten material into a cross-sectional shape substantially the same as said desired thin strip shape;

applying a second electromagnetic field, position downstrean and adjacent said first electromagnetic field, to said molten material having said cross-sectional shape so that distortion caused by surface tension in said cross-sectional shape is reduced and the desired thin strip shape is maintained, the second field applying step including the step of providing a shaped inductor having an inner surface forming a substantially closed inner periphery surrounding said molten material, said inner surface being formed of two pairs of opposing side walls with the side walls of each pair being substantially identical, said inner surface of each of said side walls being simultaneously contoured concavely longitudinally of said first axis and convexly transversely of said first axis; and

applying a third electromagnetic field at the liquid to solid boundary of the material, said third electromagnetic field acting in conjunction with the surface tension in the molten thin strip for balancing the hydrostatic pressure head in the molten material so that the desired thin strip shape is maintained.

4,606,398

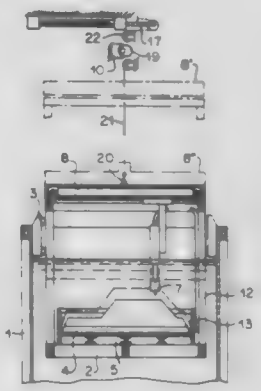
METHOD AND APPARATUS FOR ELECTROHYDROBLASTING OF CASTINGS

Valery V. Prikhodko, ulitsa Chaikovskogo, 6a, kv. 54; Boris V. Kostyrkin, prospekt Lenina, 158, kv. 25, and Pavel I. Tsarenko, ulitsa Frunze, 84, kv. 85, all of Nikolaev, U.S.S.R.

Division of Ser. No. 367,878, Apr. 13, 1982, Pat. No. 4,490,180. This application Aug. 2, 1984, Ser. No. 636,966

Int. Cl.[4] B22D *27/08, 29/00*

U.S. Cl. 164—510 **5 Claims**



1. An apparatus for electrohydroblasting of castings with a view to removing core and molding sand therefrom, comprising:

a vessel to accommodate castings to be electrohydroblasted;

a working liquid filling said vessel and having a conductivity level required for the electrohydroblasting process;

an electrode submersible in said working liquid so that a discharge gap is formed between said electrode and the surface of the castings to be electrohydroblasted;

a pulse current generator electrically connected to said electrode so as to apply current pulses to said discharge gap and thus produce a series of electrohydraulic shocks in said working liquid to loosen and remove core and molding sand from the castings;

a lifting platform to carry the castings to be electrohydroblasted;

vertical guides installed in said vessel;

a mechanism for driving said lifting platform along said guides, having an actuator interacting with said lifting platform;

a mechanism for positioning said electrode, mounted above said vessel for positioning said electrode in relation to the castings so as to form said discharge gap;

a mechanism for setting the castings in reciprocating motion and thus providing conditions for the removal of core and molding sands from the internal cavities of the castings, coupled to said lifting platform, said casting-reciprocationg mechanism having a platform arranged in said vessel on said lifting platform to carry castings to be electrohydroblasted;

means for synchronizing said electrode-positioning mechanism and said casting-reciprocating mechanism so as to maintain a constant width of said discharge gap;

a frame mounted on said platform and coupled to said electrode-positioning mechanism so that the latter is in abutting relation with said platform, whereby movement of said electrode is synchronized with that of the castings; and

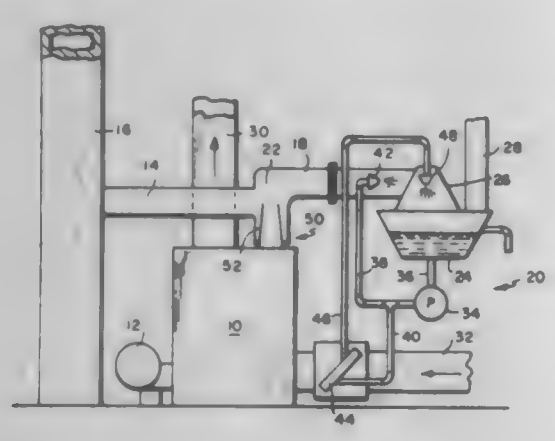
an actuator interacting with said platform.

4,606,399

HEAT RECOVERY SYSTEM WITH COMBUSTION GAS ACCELERATOR

Philip Zacuto, Winchester, Mass., assignor to Heat Extractor, Inc., Melrose, Mass.

Filed Jul. 17, 1985, Ser. No. 755,816
Int. Cl.[4] F23L *15/02*
U.S. Cl. 165—4 **4 Claims**



1. A system for recovering heat from high temperature combustion gases generated by a heater such as for example a warm air furnace, boiler or the like, said system comprising: a first conduit leading to a chimney, a second conduit leading to a heat recovery unit which in turn is connected to a vent; a T connection interconnecting said first and second conduits to each other and to the heater, the first conduit having a natural draft induced therein by virtue of its connection to the chimney; means associated with the heat recovery unit for artificially inducing a draft in the second conduit to overcome the natural draft in the first conduit and to thereby divert combustion gases from the first conduit through the second conduit, the heat recovery unit and the vent; and accelerator means for increasing the velocity of the combustion gases flowing past the first conduit into the second conduit, said accelerator means comprising a tapered third conduit having an inlet end which is larger than its outlet end, said third conduit being located within said T connection with said inlet end arranged to receive combustion gases from said heater and with said outlet end arranged to direct said combustion gases past said first conduit and into said second conduit.

4,606,400

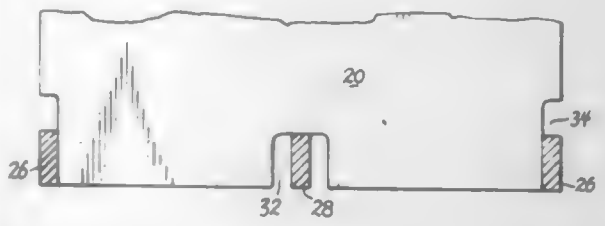
ELEMENT BASKET FOR HEAT EXCHANGER

Robin B. Rhodes, Wellsville, N.Y., assignor to The Air Preheater Company, Inc., Wellsville, N.Y.

Filed Jun. 13, 1985, Ser. No. 744,177
Int. Cl.[4] F28D *19/04*
U.S. Cl. 165—10 **2 Claims**

1. An element basket for a rotary regenerative heat exchanger having an open-ended frame that encloses a plurality of heat transfer element plates packed therein in spaced relationship to provide a series of passageways therethrough for the flow of fluid between the plates, the ends of said plates having aligned recesses formed in the ends thereof that extend transverse to the plates to form a transverse groove, and retaining bars lying within said groove secured at opposite ends thereof to said frame to maintain the plates securely within the frame, characterized in that:

a. the aligned recesses formed in each of the element plates



comprise substantially U-shaped recesses having a dimension greater than a corresponding dimension of an adjacent segment of the retaining bars lying therein whereby relative movement between the retaining bars and the element plates may occur; and

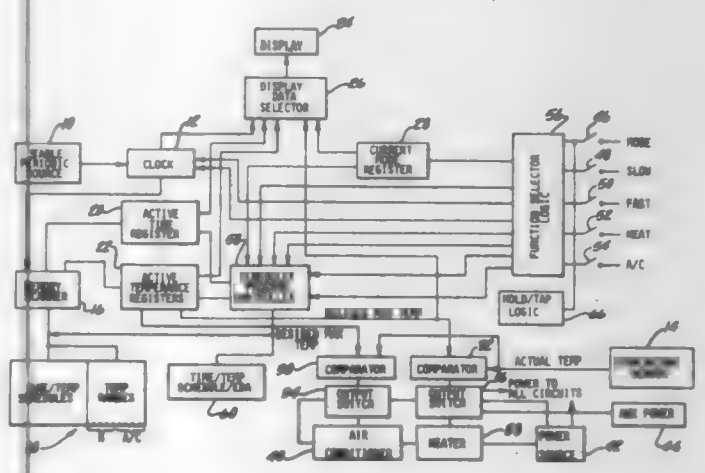
b. each of the aligned recesses in the element plates has rounded corners that lie spaced from the retaining means lying in said groove.

4,606,401

PROGRAMMABLE THERMOSTAT

Michael R. Levine; James T. Russo; Anthony C. Cairo, and Victor H. Rigotti, all of Ann Arbor, Mich., assignors to Honeywell, Inc., Minneapolis, Minn.

Filed Mar. 8, 1985, Ser. No. 709,918
Int. Cl.[4] F23N *5/20*
U.S. Cl. 165—12 **16 Claims**



1. A thermostat for controlling the application of electrical power to temperature modifying loads comprising:

a clock operative to generate digital electrical signals having values representataive of real time;

a programmable, digital memory;

program input means for loading said memory with a plurality of separate entries each entry including a pair of digital signals representing two temperatures defining limits of a desired temperature range at a particular time over the a repetitive time cycle;

display means for displaying a particular time and said corresponding temperature range;

circuitry for applying the output of the clock to the memory to generate a digital electric signal representative of the upper and lower limits of the desired temperature range at a particular time as stored in a selected entry; and

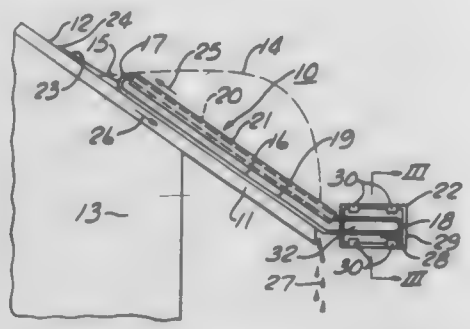
means for receiving an electrical signal having a characteristic which is a function of the ambient temperature and for receiving the generated output of the memory and for generating control signals for said loads.

4,606,402

SOLAR ICE MELTER FOR ROOF EAVES

Herman K. Dupre, Seven Springs, Champion, Pa. 15622

Filed Oct. 10, 1980, Ser. No. 195,781
Int. Cl.[4] F24H *3/00;* F24J *3/02*
U.S. Cl. 165—47 6 Claims



1. A solar ice melter for roof eaves comprising, an endless or closed loop elongated tube of heat conductive material providing top and bottom tube loop ends connecting two intermediate elongated tube sections, a fluid heat transfer medium filling said endless tube, solar collector means secured to said bottom tube loop end for solar heat transfer to said fluid, insulation covering one of said elongated tube sections, and means to secure said endless tube to the upper side of a roof eave with said solar collector means depending over the bottom edge of the roof eave for exposure to solar radiation.

4,606,403

APPARATUS AND METHOD FOR CLEANING CONDENSER TUBES OF A REFRIGERATOR

Masakazu Fujimoto, and Naoyuki Inoue, both of Tokyo, Japan, assignors to Ebara Corporation, Japan

Filed Jan. 15, 1985, Ser. No. 691,535
Int. Cl.[4] F28F *27/00*
U.S. Cl. 165—95 13 Claims



1. In an apparatus for cleaning at least one condenser tube of a refrigerator including a condenser in which the at least one tube is disposed and an evaporator, wherein a cleaning brush movably mounted within the at least one tube is moved therethrough by reversing a flow of fluid such as cooling liquid therethrough, so that an inner wall of the tube is cleaned by the moving cleaning brush, and wherein temperature control means for a cooling and heating medium in the evaporator controls refrigeration capacity depending upon temperature of the cooling and heating medium during the refrigeration operation, the improvement comprising

pressure restriction means for restricting internal pressure of the condenser to not exceed a predetermined value, and

switching means for selectively actuating the temperature control means or said pressure restriction means, said switching means switching control from the temperature control means over to said pressure restriction means before flow of the fluid through the at least one condenser tube is changed for cleaning thereof,

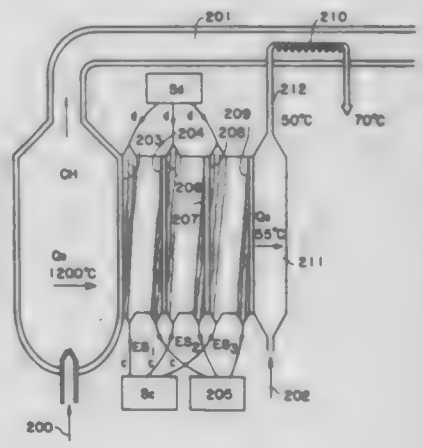
whereby the internal pressure of the condenser is controlled to not exceed the predetermined value.

4,606,404

METHOD AND APPARATUS FOR RECYCLING THERMAL ENERGY

Pierre Y. J. Le Goff, Vandoeuvre, France, assignor to Centre National de la Recherche Scientifique, France

Division of Ser. No. 291,145, Aug. 7, 1981, Pat. No. 4,527,621.
This application Nov. 29, 1984, Ser. No. 658,843
Claims priority, application France, Aug. 11, 1980, 80 17676; Jul. 16, 1981, 81 13846
Int. Cl.[4] F23D *21/00;* F25D *15/00*
U.S. Cl. 165—104.12 5 Claims



1. A system for producing heat at a desired temperature, the system comprising:

a boiler having a heated external wall;

at least one evaporator-separator device having a surface contiguous to said heated external wall of said boiler for producing a concentrated solution from a diluted solution; and

at least one evaporator-mixer, using said concentrated solution produced by said evaporator-separator and a source of heat at a lower temperature, for producing heat at said desired temperature, the evaporator-mixed including:

a first wall for conducting heat therethrough;

a first liquid consituting said source of heat at the lower temperature flowing adjacent a first surface of the first wall;

a second liquid flowing across a second surface of the first wall for absorbing heat transferred through the first wall, from the first liquid and causing evaporation of the second liquid;

a second wall located in spaced confronting relation to the first wall;

a third liquid, constituted by said concentrated solution produced by said evaporator-separator, flowing across a surface of the second wall which confronts the first wall and upon which the evaporated second liquid condenses thereby mixing with the third liquid and elevating the temperature thereof above that of the first liquid; and

a fourth liquid flowing across an opposite surface of the second wall and collecting heat transferred therethrough for elevating the temperature of the fourth liquid to said desired temperature level higher than the first liquid;

a heat exchange means between said fourth liquid to be heated at said desired temperature and at least some of the concentrated and diluted solutions treated in said evaporator-separator device;

said third liquid in mixture with said evaporated liquid having condensed upon said surface of the second wall confronting the first wall, forming said diluted solution at the bottom of said surface.

2. A system for producing heat at a desired temperature, the system comprising:

a boiler having a heated external wall;

a plurality of evaporator-separators having surfaces contiguous to said heated external wall of said boiler for produc-

ing a concentrated solution from a diluted solution, the plurality of evaporator-separators being serially cascaded and wherein the temperature of the evaporator-separators decrease progressively from the first stage to the last stage; and

at least one evaporator-mixer, using said concentrated solution produced by said evaporator-separator and a source of heat at a lower temperature, for producing heat at said desired temperature, the evaporator-mixer including:

a first wall for conducting heat therethrough;

a first liquid constituting said source of heat at the lower temperature flowing adjacent a first surface of the first wall;

a second liquid flowing across a second surface of the first wall for absorbing heat transferred through the first wall, from the first liquid and causing evaporation of the second liquid;

a second wall located in spaced confronting relation to the first wall;

a third liquid, constituted by said concentrated solution produced by said evaporator-separator, flowing across a surface of the second wall which confronts the first wall and upon which the evaporated second liquid condenses thereby mixing with the third liquid and elevating the temperature thereof above that of the first liquid; and

a fourth liquid flowing across an opposite surface of the second wall and collecting heat transferred therethrough for elevating the temperature of the fourth liquid to said desired temperature level higher than the first liquid;

said third liquid in mixture with said evaporated liquid having condensed upon said surface of the second wall confronting the first wall, forming said diluted solution at the bottom of said surface.

4,606,405

HEAT TRANSFER WALL

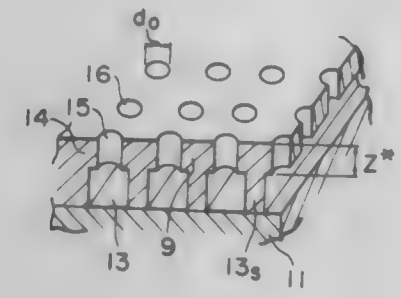
Wataru Nakayama, Kashiwa; Tadakatsu Nakajima, Ibaraki; Heikichi Kuwahara, Ibaraki; Akira Yasukawa, Ibaraki; Takahiro Daikoku, Ibaraki, and Hiromichi Yoshida, Hitachi, all of Japan, assignors to Hitachi, Ltd. and Hitachi Cable, Ltd., both of Tokyo, Japan

Filed Feb. 13, 1985, Ser. No. 701,161

Claims priority, application Japan, May 11, 1984, 59-92859

Int. Cl.[4] F28F *13/02*

U.S. Cl. 165—133 **1 Claim**



1. A heat transfer wall comprising a number of elongated voids formed in an outer layer of said heat transfer wall, upper lids forming a part of said heat transfer wall for partitioning said voids and an outer surface of said heat transfer wall, passages for communicating the respective voids and the outer surface of said heat transfer wall with each other, and restricted openings formed in said passages, said restricted openings having a cross-sectional area smaller than a maximum cross-sectional area of said voids and being independent of each other, and said heat transfer wall being made of a single kind of heat conductive material, wherein a thickness of said upper lids defined by a distance Z^* (cm) between an upper end of each of said voids and the outer surface of said heat transfer wall and a length l (cm) of each of said passage extending from said voids to the outer surface of said heat transfer wall simultaneously meet the following condition in combination of the material of said heat transfer wall and a fluid flowing on said heat transfer wall:

$$\begin{cases} erf\left(\dfrac{Z^*}{2\sqrt{C_\tau a_w}}\right) \geqq \dfrac{4Ts\cdot\sigma\cdot\lambda_l\times10^{-7}}{C_q\cdot q_w\rho_v h_{fg}\cdot d_O+4Ts\cdot\sigma\cdot\lambda_l\times10^{-7}} \\ Z^* \leqq C_f\cdot d_O^3\cdot\dfrac{1}{\nu_v}\cdot\dfrac{h_{fg}}{q_w}\cdot\dfrac{N_A}{A}\cdot\sigma, \text{ and} \end{cases}$$

$$\begin{cases} l \geqq C_h\cdot\dfrac{q_w}{h_{fg}}\cdot\dfrac{A}{N_A}\cdot C_{pl}\cdot\dfrac{1}{\lambda_l} \\ l \leqq C_f\cdot d_O^3\cdot\dfrac{1}{\nu_v}\cdot\dfrac{h_{fg}}{q_w}\cdot\dfrac{N_A}{A}\cdot\sigma \end{cases}$$

where erf is the error function erf

$$(\beta) = \frac{2}{\sqrt{\pi}}\int_0^\beta e^{-\xi 2}\,d\xi;\ a_w$$

is the thermal diffusivity of the heat transfer wall (cm^2/sec); Ts is the saturation temperature of the boiling liquid (K); σ is the surface tension of the boiling liquid (dyn/cm); λ_l is the thermal conductivity of the boiling liquid (W/kcm); θ_v is the density of vapor of the vapor (g/cm^3); h_{fg} is the evaporation latent heat of the boiling liquid (J/g); ν_v is the dynamic viscosity coefficient of the vapor (cm^2/sec); d_o is the diameter of the restricted openings (cm); q_w is the heat flux based on the projected area (W/cm^2); N_A/A is the number density of bubbling points ($N_A/A = C_b\cdot d_o^{0.4}\cdot q_w^{0.5}$ where $C_b=80$ in case of Freon or liquefied nitrogen, and $C_b=95$ in case of water); and C_τ, C_q, C_f and C_h are the constants determined by physical characteristics of the boiling liquid, where $C_\tau \div 0.02$, $C_q \div 0.0007$, $C_f \div 0.1$ and $C_h \div 0.06$.

4,606,406

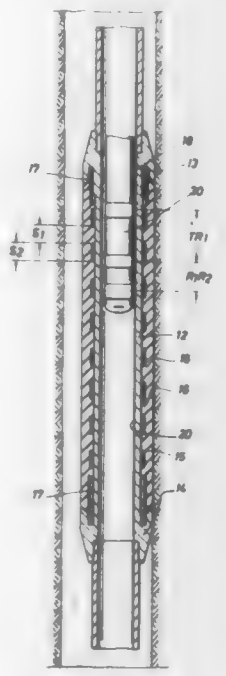
INFLATABLE PACKER COMPATIBLE WITH CBL

Edward T. Wood, Kingwood, Tex., assignor to Completion Tool Company, Houston, Tex.

Filed Jan. 28, 1985, Ser. No. 695,538

Int. Cl.[4] E21B *33/127*

U.S. Cl. 166—187 **3 Claims**



1. An inflatable packer for use in a wellbore including

a centrally disposed tubular steel mandrel having end means for attachment to a string of pipe;

a tubular expandable sleeve formed from a suitable elastomer and positioned about said tubular mandrel, where the mandrel extends out of the ends of the sleeve;

said sleeve being expandable from a first condition where the inner surface of the sleeve is in contact with the tubular mandrel to a second condition where the outer surface of the sleeve is in contact with a borehole wall;

means for admitting a cement slurry in the interior of the mandrel to the interior between the sleeve and the mandrel for expanding said sleeve from said first condition to said second condition;

said mandrel surface between the ends of said sleeve having intermittent coatings of grit-like materials bonded to the outer surface for contacting the sleeve and for preventing the sleeve in its first condition from moving axially relative to the mandrel while going in a borehole, said intermittent coatings providing uncoated intermittent portions on said mandrel where the spacing between two intermittent coatings and an intermediate uncoated portion on the mandrel are functionally related to the spacing between a transmitter and first receiver of a cement bond logging tool for providing an uncoated section of mandrel relative to a transmitter/receiver spacing on a cement bond logging tool.

4,606,407

PROGRAMMED GELATION OF POLYMERS FOR OIL RESERVOIR PERMEABILITY CONTROL

Paul Shu, Princeton Junction, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Nov. 29, 1984, Ser. No. 676,376
Int. Cl.[4] E21B *33/138*
U.S. Cl. 166—270 **33 Claims**

6. A method for introducing a polymeric gel into a subterranean formation which comprises:

(i) reacting a solution of a cross-linkable polymer with a rapid cross-linking agent to cross-link the polymer partly and gel the polymer partly to form a viscous liquid,

(ii) injecting the viscous liquid, additionally containing a delayed cross-linking agent, into the formation,

(iii) cross-linking the polymer further within the formation by reaction with the delayed cross-linking agent to form a polymer gel within the formation.

4,606,408

METHOD AND APPARATUS FOR GRAVEL-PACKING A WELL

Gary D. Zunkel, Chickasha; Lee W. Stepp, Commanche, and David D. Szarka, Duncan, all of Okla., assignors to Halliburton Company, Duncan, Okla.

Filed Feb. 20, 1985, Ser. No. 703,623
Int. Cl.[4] E21B *43/04, 43/10*
U.S. Cl. 166—278 **20 Claims**

1. A system for gravel-packing a plurality of spaced zones of a well comprising:

a liner string including:

a liner hanger means for hanging said liner string within a well bore;

a production screen means for each of said zones;

a selectively openable valve means located above each of said production screen means, for directing gravel laden slurry to a well annulus between said well bore and said liner string; and

zone isolation packer means for sealing said well annulus between successive zones;

an operating string including:

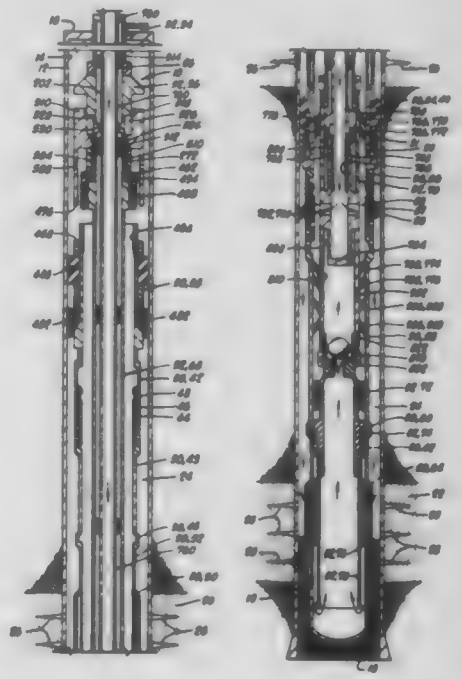
an outer tubing string;

a liner hanger setting tool connected to a lower end of said outer tubing string and having a housing means with a lower end detachably connected to said liner hanger means, said housing means having a housing bore disposed therethrough and having a ball valve means disposed in said housing bore, said ball valve means being rotatable between a closed position closing said housing bore and an open position wherein a ball valve bore of said ball valve is aligned with said housing bore, said setting tool further including a differential pressure responsive liner setting means operatively associated with said liner hanger means for setting said liner hanger means in response to an increase in fluid pressure in a tubing bore of said outer tubing string;

an isolation gravel packer, located in said operating string below said liner hanger setting means and concentrically received within said liner string, said gravel packer including a stinger receptacle, a gravel laden slurry passage means for communicating said stinger receptacle with a selected one of said valve means of said liner string, and a return fluid passage means isolated from said gravel-laden slurry passage means and communicated with said bore of said outer tubing string; and

positioner means for opening and closing said valve means of said liner string in response to reciprocation of said operating string within said liner string; and

a concentric inner tubing string, adapted to be received through said ball valve bore when said ball valve is in its



open position, and having a lower stinger adapted to be stabbed into and sealingly received in said stinger receptacle of said isolation gravel packer, thus defining a flow path for gravel laden slurry from a surface location, down said concentric inner tubing string into said stinger receptacle, through said gravel laden slurry passage means, then through said selected one of said valve means to a selected one of said zones, and thus defining a return fluid path from said selected one zone in through a selected one of said production screen means, then through said return fluid passage means of said isolation gravel packer, then through an annular space between said ball valve bore and said concentric inner tubing string, then up through a tubing annulus between said outer tubing string and said concentric inner tubing string to said surface location.

12. A method of gravel-packing a production zone of a well, said method comprising the steps of:

(a) making up a tool string including a setting tool with a liner string detachably connected to a lower end thereof and with an operating string also connected to said lower end of said setting tool, said operating string being concentrically received within said liner string, said setting tool including a rotatable ball valve disposed in a housing bore of a housing of said setting tool;

(b) lowering said tool string on an outer tubing string into

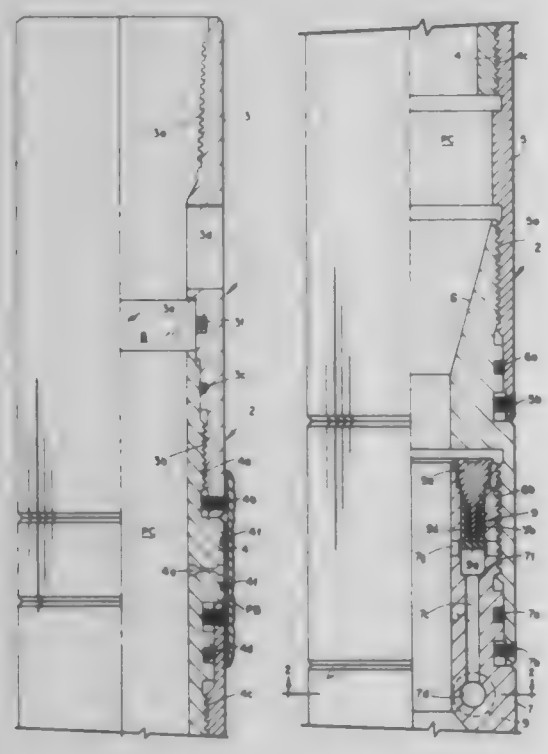
said well until a liner hanger of said liner string is located at a desired location;
(c) setting said liner hanger within said well at said desired location;
(d) opening said ball valve of said setting tool;
(e) lowering a concentric inner tubing string through said outer tubing string, then through a ball valve bore of said open ball valve and into operable engagement with said operating string; and
(f) directing gravel laden slurry down one of said outer tubing string and said concentric inner tubing string to a location adjacent said production zone, and directing return fluid from said location adjacent said production zone up the other of said outer tubing string and said concentric inner tubing string.

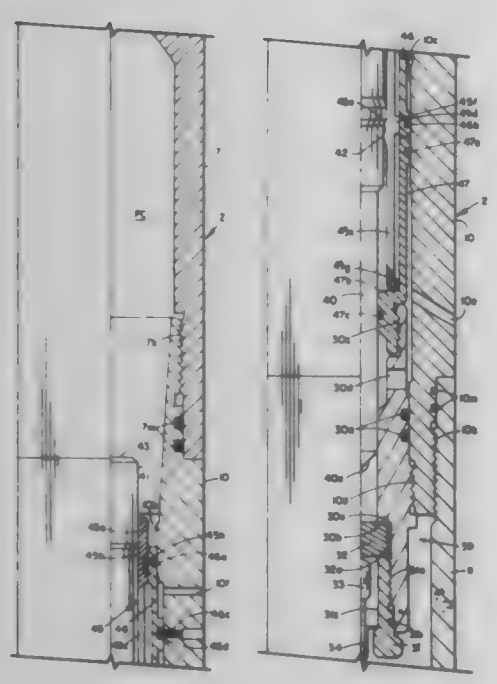
4,606,409

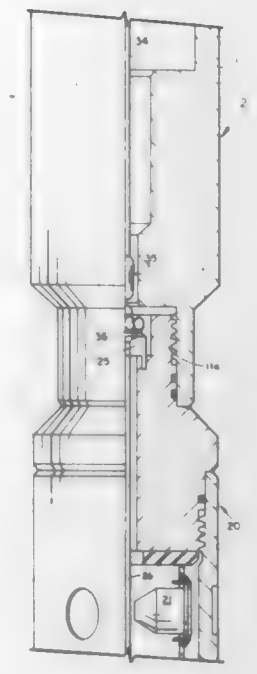
FLUID PRESSURE ACTUATED FIRING MECHANISM FOR A WELL PERFORATING GUN

Elmer R. Peterson, Houston, and Gregg W. Stout, Montgomery, both of Tex., assignors to Baker Oil Tools, Inc., Houston, Tex.

Filed Jun. 10, 1985, Ser. No. 743,045
Int. Cl.[4] E21B *43/116*
U.S. Cl. 166—297 **21 Claims**







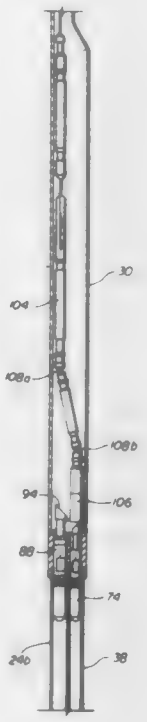
17. The method of firing a well perforating gun having an impact detonatable primer at one end of a fluid pressure chamber and a hammer slidably and sealably mounted in said chamber and releasably secured in spaced relation to said primer, the steps of:
(1) providing fluid connections between opposite ends of the fluid pressure chamber and a source of pressured fluid;
(2) trapping pressured fluid entering the end of the fluid pressure chamber remote from the primer charge;
(3) reducing the pressure of the fluid pressure source to create an increasing fluid pressure differential on said hammer urging the hammer toward the primer; and
(4) releasing the hammer to impact the primer when the fluid pressure differential acting on the hammer reaches a predetermined level.

4,606,410

SUBSURFACE SAFETY SYSTEM

Billy G. Becker, and Charles V. Swafford, both of Ventura, Calif., assignors to BST Lift Systems, Inc., Ventura, Calif.

Division of Ser. No. 482,584, Apr. 6, 1983, Pat. No. 4,508,166.
This application Dec. 3, 1984, Ser. No. 677,396
Int. Cl.[4] E21B *23/03*
U.S. Cl. 166—313 **4 Claims**



1. A method of inserting a tubular valve into the secondary

bore of a mandrel having a main bore and a laterally offset secondary bore, which comprises the steps of:

positioning a whipstock plug in said main bore, said whipstock plug having a sloping upper surface;

orienting said whipstock plug such that said upper surface slopes toward said secondary bore;

deflecting said tubular valve off said upper surface to place said tubular valve into said secondary bore;

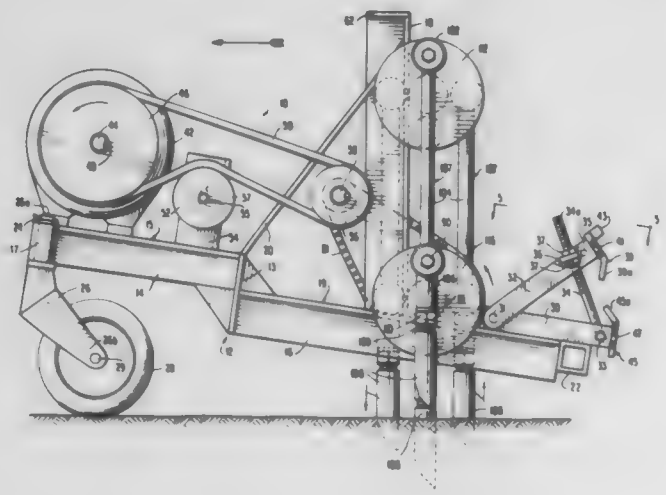
and removing said whipstock plug from said main bore after said tubular valve is placed in said secondary bore.

4,606,411

SELF-PROPELLED LAWN AERATION MACHINE

Alvin T. Classen, P.O. Box 172, Norfolk, Nebr. 68701

Filed Jan. 22, 1985, Ser. No. 693,439
Int. Cl.[4] A01B *45/02*
U.S. Cl. 172—22 **8 Claims**



1. In a lightweight, compact self-propelled lawn aeration machine including:

a generally horizontal chassis platform,

an internal combustion engine mounted on said platform,

at least one tine support and drive mechanism mounted to said platform,

means operatively coupling said at least one mechanism to said engine,

said at least one tine support and drive mechanism including a plurality of tines for cyclic movement downwardly of said platform to effect penetration of the underlying turf for aeration thereof and retraction therefrom,

the improvement comprising:

means for fixedly mounting upper and lower vertically spaced hollow cylindrical wheel mounting journals to said platform with their axes horizontal,

a shaft rotatably mounted within each journal and protruding to each side thereof,

a first wheel rigidly fixed to the end of each shaft,

a second wheel removably mounted to the other end of each shaft; whereby, upper and lower wheels on opposite sides of the wheel mounting journals form wheel sets,

said wheels having a plurality of holes at uniformly circumferentially spaced positions at equal radial positions outwardly of the wheel axis,

a hollow cylindrical jack shaft journal for each of said wheels,

bolt and nut means rotatably mounting a jack shaft journal at a given one of said holes of each wheel,

a jack shaft fixedly connected between and joining said jack shaft journals of each set of wheels,

said jack shaft journals of one wheel set being bolt connected to holes within that set of wheels angularly offset by less than 180 degrees from jack shaft journals mounted to wheel holes of the other wheel set, such that the wheels are kept in time by the jack shafts and the timing and direction of rotation of the wheels sets are determined by the direction and degree of the angular offset of the jack shafts, and

tines fixedly mounted to the jack shaft journals of the lower wheels of both sets and projecting downwardly and in line with the jack shafts joining the jack shaft journals of each wheel set;

whereby, the tines enter and leave the turf perpendicular to the ground, only one tine may enter the turf at a time and machine propulsion is automatically effected as a result of driving of the tines into the turf and the retraction therefrom, and

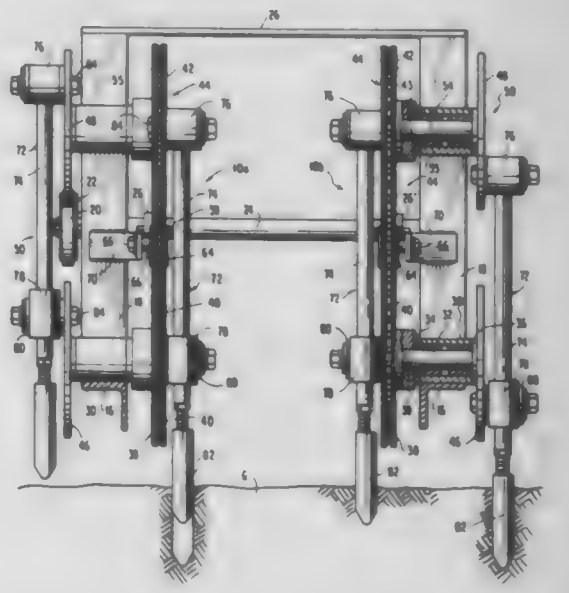
whereby the timing of penetration of the tines into the turf and retraction therefrom may be readily varied by selectively changing the angular position of the jack shaft journals of one wheel set relative to that of the other wheel set for said at least one mechanism.

4,606,412

TINE SUPPORT AND DRIVE MECHANISM FOR A COMPACT SELF-PROPELLED LAWN AERATION MACHINE HAVING MEANS FOR VARYING BOTH FORWARD TRAVEL SPEED AND DEPTH OF TINE PENETRATION

Alvin T. Classen, P.O. Box 172, Norfolk, Nebr. 68701

Continuation-in-part of Ser. No. 693,439, Jan. 22, 1985. This application Feb. 11, 1985, Ser. No. 700,164
Int. Cl.[4] A01B *45/02*
U.S. Cl. 172—22 **7 Claims**



1. An improved, tine support and drive mechanism for a lightweight, compact self-propelled lawn aeration machine, said machine comprising:

a generally horizontal chassis platform for movement over underlying lawn turf,

said at least one tine support and drive mechanism being mounted to said platform and including a plurality of tines for cyclic movement downwardly of said platform for penetration within the underlying turf for aeration thereof and retraction therefrom, such that machine propulsion is automatically effected as a result of driving of the tines sequentially into the turf and retraction therefrom,

and wherein said tine support and drive mechanism comprises a plurality of wheel sets mounted transversely in side-by-side fashion on said platform,

each said wheel set comprising upper and lower vertically aligned wheels mounted for rotation about parallel axes, with said wheel sets having said tines mounted thereto for cyclic movement as a result of rotation of said wheels,

the improvement wherein:

at least one of said wheel sets comprise upper and lower sprocket wheels,

means for mounting said upper and lower sprocket wheels to said platform as idlers for free rotation about their axes,

a crank arm,

a crank pin pivotably mounting one end of said crank arm to the side of said upper sprocket wheel at a position radially outwardly of the axis of rotation of said upper sprocket wheel,

a cylindrical guide bushing rotatably mounted to the side of said lower sprocket wheel radially outward of the axis of rotation of said lower sprocket wheel, said guide bushing being axially in line with and slidably receiving said crank arm,

a tine fixed to the end of said crank arm remote from said crank pin connection to said upper sprocket wheel and projecting below said platform,

means for selectively radially adjusting the pivotable connection of said upper end of said crank arm to said upper sprocket wheel and the rotatable connection of said guide bushing to said lower sprocket wheel,

an endless chain trained about said upper and lower sprocket wheels, and

means for connecting said endless chain to a power source such that said sprocket wheels are driven by said chain and maintained in timed synchronism, whereby the radial position of the connection of the upper end of said crank arm to the upper sprocket wheel controls the depth of tine penetration into the turf, and the radial position of said guide bushing bearing said crank arm on said lower sprocket wheel controlling the forward travel speed of the machine as a result of sequential penetration of the tines into the turf and removal of the tines from the turf.

4,606,413

HYDRAULIC LEVELER ARRANGEMENT

Kenneth A. Hake, Beloit, Kans., assignor to Kent Manufacturing Co., Inc., Tipton, Kans.

Filed Feb. 25, 1985, Ser. No. 705,368
Int. Cl.[4] A01B *59/00*
U.S. Cl. 172—328 **12 Claims**



1. An agricultural frame apparatus comprising:

(a) an agricultural implement frame mounting agricultural tools and having a front end;

(b) ground engaging means connected to said frame, mobilely engaging the ground, and supporting said frame in one of a lowered ground working position, a raised transport position, and a position therebetween;

(c) frame lift means connected between said frame and said ground engaging means and operable to move said frame between said positions;

(d) hitch crank means pivotally connected to said front end of said frame to form a fulcrum pivot, said crank means including a lift arm pivotally connected to said fulcrum pivot and pivotally connected to said frame lift means to form a lift pivot and moving in response to the movement of said frame means and a hitch arm pivotally connected to said fulcrum pivot and having a hitch pivot at a free end thereof;

(e) a hitch member connected to said hitch pivot of said hitch arm; and

(f) frame pitch adjustment means cooperating with said lift arm and said hitch arm of said crank means, said adjustment means being adjustable to vary an angle between said lift arm and said hitch arm to thereby adjust the pitch angle of said frame.

4,606,414

PERCUSSIVE AIR TOOL

Vladimir V. Klimashko; Nikolai P. Chepurnoi, both of Novosibirsk; Vladimir D. Makeev, Minsk; Vladimir P. Naboko, Minsk; Alexandr D. Filonov, Minsk, and Petr N. Svita, Minsk, all of U.S.S.R., assignors to Institut Gornogo Dela Sibirskogo Otdelenia Akademii Nauk SSSR, Moscow, U.S.S.R.

Filed Mar. 4, 1982, Ser. No. 354,753
Int. Cl.[4] B25D *17/08*
U.S. Cl. 173—128 **4 Claims**



1. A percussive air tool comprising:

a hollow tubular housing having a forward and a rear end portion; a piston hammer disposed inside said housing for axial reciprocation therein, said piston hammer having a rear end chamber; an air distributing valve arranged in the rear end portion of said housing and received by said rear end chamber of said piston hammer; a headpiece fixedly secured in the forward end portion of said housing and subjected to impact of said piston hammer;

a separate retainer received on and surrounding the forward end portion of said housing and disposed coaxially with said housing and said headpiece to improve radial rigidity and strength of the forward end portion of said housing and to connect said forward end portion to a member to be driven;

a self-jamming conical joint for interconnecting the forward end portion of said housing and said retainer, said self-jamming conical joint including an outer surface on said headpiece which is tapered toward the forward end portion of said housing, an inner surface of said housing which is tapered toward the forward end portion thereof for matingly receiving said outer surface of said headpiece, so as to increase the self-jamming effect between the retainer, housing and headpiece when said said piston hammer impacts said headpiece, and to seal off an inner space of the housing at the headpiece as an impact is transmitted from the piston hammer through the headpiece and the housing to said retainer.

4,606,415

METHOD AND SYSTEM FOR DETECTING AND IDENTIFYING ABNORMAL DRILLING CONDITIONS

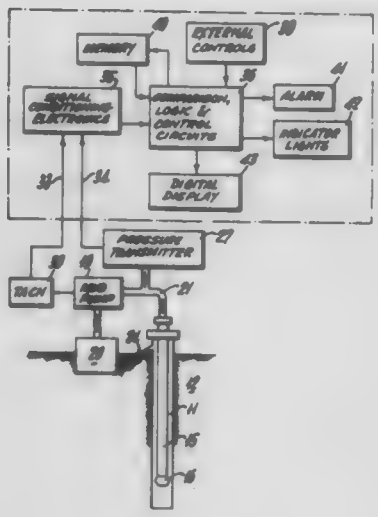
Charles L. Gray, Jr.; Herbert A. Rundell, and Thomas M. Williams, all of Houston, Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Nov. 19, 1984, Ser. No. 672,983
Int. Cl.[4] E21B *21/08, 47/06*
U.S. Cl. 175—24 **17 Claims**

1. In well drilling wherein a fluid is circulated for removing drilled formation from the hole and wherein a pump is employed to circulate said fluid, a method for detecting and identifying abnormal conditions, comprising

determining the speed-pressure ratio for normal drilling conditions,

measuring the output pressure from said pump,



measuring the speed of said pump, and

detecting a change in said normal speed-pressure ratio whereby an abnormal condition is indicated.

4,606,416

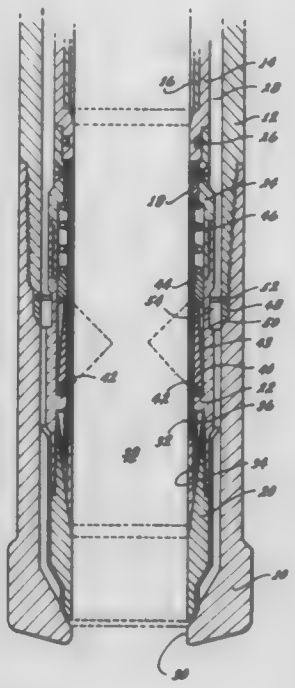
SELF ACTIVATING, POSITIVELY DRIVEN CONCEALED CORE CATCHER

Kelly Knighton, West Jordan; J. Stanley Davis, Sandy, and Steven R. Radford, West Jordan, all of Utah, assignors to Norton Christensen, Inc., Salt Lake City, Utah

Filed Aug. 31, 1984, Ser. No. 646,577

Int. Cl.⁴ E21B *25/00, 49/02*

U.S. Cl. 175—58 **10 Claims**



1. An improvement in full closure catcher disposed within a coring tool, said tool having a longitudinally displaceable inner barrel, said tool for cutting the core comprising:

a plurality of closable valves disposed outside of said inner barrel and displaceable within said inner barrel space to fully close said inner barrel; and

compression spring-loaded cam means for selectively positively displacing each of said plurality of valves into said inner barrel space, when said inner barrel is longitudinally displaced to unconceal said cam means,

whereby full closure of said inner barrel is provided without dependency upon relative descent of said core within said inner barrel.

10. A method for cutting and disposing a core within a coring tool without substantial disturbance of said core comprising the steps of:

cutting said core;

disposing said cut core within a smooth inner tube;

longitudinally displacing said inner tube within said coring tool to expose a core catcher; and

activating said core catcher to retain said core within said coring tool, wherein said step of activating said core catcher is by expanding a preloaded compression spring to drive a cam means longitudinally downward within said coring tool, said cam means forcing said core catcher radially inward into the inner barrel of said coring tool,

where said step of activating said core catcher is comprised of the step of fully uncovering said core catcher to permit said core catcher to assume a preferred fully closed configuration, said fully closed configuration being a biased configuration of said core catcher;

where said step of activating said core catcher is further comprised of the step of fully uncovering a split spring core catcher to permit said split spring to assume a preferred configuration of diametrical interference contact between said split spring core catcher and said core, said split spring core catcher and full closure core catcher being concealed prior to activation,

whereby a core is cut and disposed within a coring tool without substantial disturbance of said core and said core catcher is activated without dependence upon gravity or diametrical interference fit with said core.

4,606,417

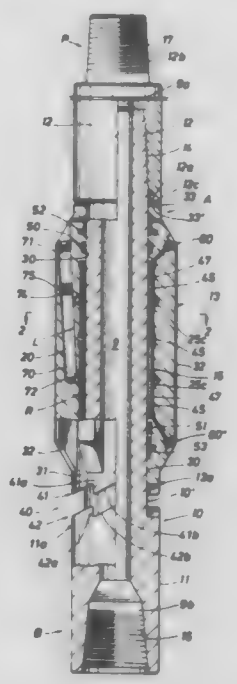
PRESSURE EQUALIZED STABILIZER APPARATUS FOR DRILL STRING

Derrel D. Webb, and Edwin A. Anderson, both of P.O. Box 567, Houston, Tex. 77001

Filed Apr. 8, 1985, Ser. No. 720,980

Int. Cl.⁴ E21B *7/10*

U.S. Cl. 175—76 **3 Claims**



1. Apparatus for controlling the direction of a well bore being drilled by a drill string with the bit thereon comprising:

a tubular mandrel having an enlargement adjacent each end thereof to provide a mandrel section between said enlargements which is of smaller outer diameter than the diameter of said enlargements;

a stabilizer member on said mandrel section;

said stabilizer member having a plurality of longitudinally extending, circumferentially spaced projections for frictionally engaging the well bore wall to maintain said stabilizer member fixed against rotation while the drill string is rotated to drill the well bore;

said stabilizer member being of less longitudinal extent than the length of said mandrel section between said enlargements to accomodate relative longitudinal movement between said tubular mandrel section and stabilizer member;

isolating means between said mandrel section and stabilizer member;

said isolating means including seal means and wiper means adjacent each end of said stabilizer member for sealably engaging between said mandrel section and stabilizer member to form a longitudinally extending reservoir therebetween to receive lubricant therein;

bearing means extending longitudinally between said seal means within said lubricant reservoir and movable therewith to accomodate relative longitudinal and rotational movement between said tubular mandrel section and stabilizer member;

pressure equalizing means carried by said stabilizer member and movable longitudinally and rotatably therewith to communicate pressure from the well bore to the lubricant reservoir between said mandrel section and stabilizer member irrespective of the longitudinal position of said reservoir along said mandrel section between said isolating means;

said pressure equalizing means comprising passage means having one end communicating with the well bore and the other end communicating with the lubricant reservoir, and piston means in the passage means between the ends thereof, said piston means having seal means sealably engaging the passage means to transmit pressure from the well bore to said lubricant reservoir while inhibiting communication therebetween; and

a clutch mechanism between said mandrel and stabilizer member to accommodate rotation of said mandrel relative to said stabilizer member in one direction while preventing rotation between said stabilizer member and mandrel in the opposite direction.

4,606,418

CUTTING MEANS FOR DRAG DRILL BITS

Charles M. Thompson, Coppell, Tex., assignor to Reed Tool Company, Houston, Tex.

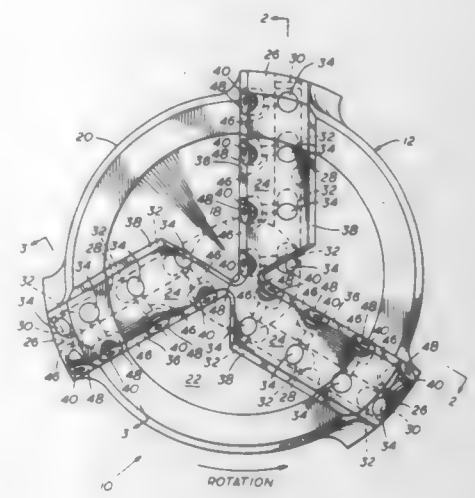
Filed Jul. 26, 1985, Ser. No. 759,459
Int. Cl.⁴ E21B *10/56, 10/60*
U.S. Cl. 175—329 **18 Claims**

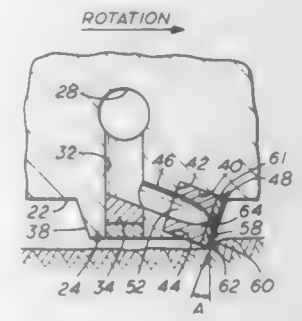
1. A rotary drill bit of the drag type comprising:

a generally cylindrical bit body having a fluid passage therein and adapted to be connected to a drill string for rotation therewith and to receive drilling fluid therefrom, said bit body having an outer surface with a plurality of spaced openings therein in fluid communication with said fluid passage to receive drilling fluid therefrom; and

a plurality of cutting elements comprising stud inserts received within said openings, each cutting element projecting outwardly from said outer surface and having an outer planar cutting face with a negative rake between around five degrees and thirty-five degrees for contacting in cutting relation a formation to be cut;

at least a substantial number of said cutting elements each having a fluid discharge port therein in fluid communication with an associated opening in the bit body to receive drilling fluid therefrom for discharge, said fluid discharge port extending through at least a portion of said planar cutting face and directing drilling fluid in a stream generally perpendicular to the plane of said planar cutting face and toward the formation to be cut.



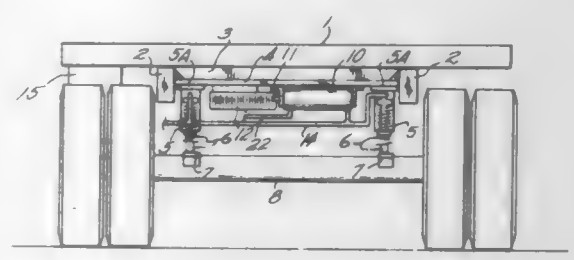


4,606,419

TRUCK MOUNTED LOAD SCALE

Richard L. Perini, Creswell, Oreg., assignor to ACCU-Weigh Systems, Inc., Creswell, Oreg.

Filed Oct. 25, 1984, Ser. No. 664,675
Int. Cl.⁴ G01G *19/08, 19/10, 5/04*
U.S. Cl. 177—138 **7 Claims**



1. A load indicating system for installation on a vehicle having an air pressure system, a load receiving bed and a wheel equipped axle, said system comprising in combination,

a fluid reservoir for communication with the air pressure system of the vehicle for pressurizing the reservoir,

air pressure control means in communication with said air pressure source and with said reservoir,

a displacement cylinder in fluid communication with said reservoir and including extensible load indicator means,

a scale proximate said load indicator means,

fluid chargeable load cylinders with piston assemblies for installation on the vehicle frame above said axle, each of the load cylinders having internal biasing means normally raising the piston assembly to a retracted inoperable position, said piston assembly extensible upon load cylinder pressurization into contact with the vehicle axle prior to loading of the vehicle, conduit means communicating said reservoir with said load cylinders, each piston assembly adapted to be partially and upwardly displaced by closing

movement between the trailer bed and the vehicle axle during loading of the vehicle bed,

fluid valve means in conduit communication with said reservoir and displacement cylinder and said load cylinders whereby fluid discharged from the load cylinders during loading of the vehicle will be directed to said displacement cylinder to actuate the load indicator means, and

repositioning of said fluid valve means and said air pressure control means permitting the normally raised piston assembly of each of the load cylinder to be retracted upwardly by the internal biasing means out of contact with the vehicle axle prior to vehicle travel.

4,606,420

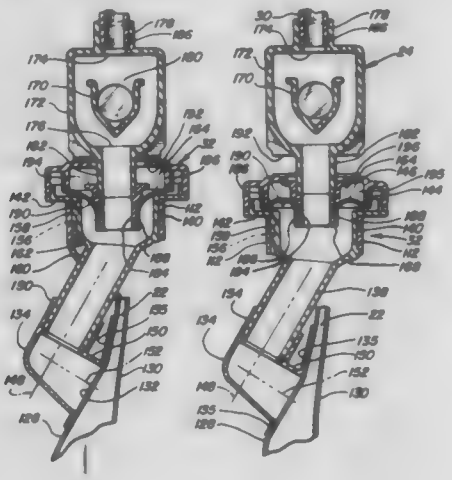
APPARATUS WITH FORCE ISOLATION FOR MEASURING WEIGHT OF COLLECTED FLUID AND METHOD

Brian H. Silver, Hoffman Estates, Ill., assignor to The Kendall Company, Boston, Mass.

Filed May 6, 1985, Ser. No. 730,740

Int. Cl.[4] G01G *19/00;* A61B *5/00*

U.S. Cl. 177—160 **26 Claims**



1. Apparatus for measuring the weight of fluid entering a container of a system obtained from the downstream end of a fluid drainage tube, comprising:

a weighing apparatus having a frame and a weighing mechanism which moves relative to the frame during changes of the weight being weighed thereby;

means for connecting the container to the weighing mechanism to be weighed thereby, said container moving with the weighing mechanism relative to the frame as increasing amounts of fluid are introduced into the container;

means for holding the downstream end of the tube against movement relative to the frame; and

means for coupling the drainage tube with the container for relative fluid communication therewith including means for substantially mechanically isolating the end of the tube from application of significant force to the container whereby the accuracy of the measurement of the weight of the container and its contents is not significantly affected by the coupling means.

4,606,421

SHIFT-ERROR ADJUSTMENT FOR LOAD CELL SUPPORT

Karl S. Schroeder, Clayton, Ohio, assignor to Hobart Corporation, Troy, Ohio

Filed Aug. 9, 1985, Ser. No. 764,030

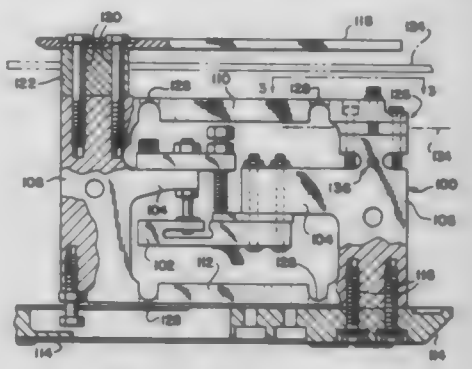
Int. Cl.[4] G01G *3/14, 3/08;* G01L *25/00, 1/22*

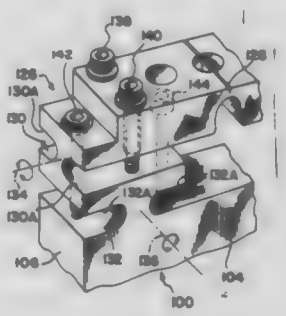
U.S. Cl. 177—211 **10 Claims**

1. In a transducer supporting flexure for a platform load cell comprising first and second vertically oriented end sections which are interconnected by upper and lower deflection sections to form a substantially parallelogram flexure structure, a flexure shift-error adjuster for compensating for off-center loading of said flexure comprising:

first and second flex means formed into one of said end sections for respectively defining a first axis substantially parallel to said deflection sections and a second axis substantially perpendicular to said first axis; and

first and second adjustable control means associated, respec-





tively, with said first and second flex means for setting bends into said one of said end sections about said first and second axes to adjust the vertical spacing between the interconnections of said one of said end sections and said upper and lower deflection sections.

4,606,422

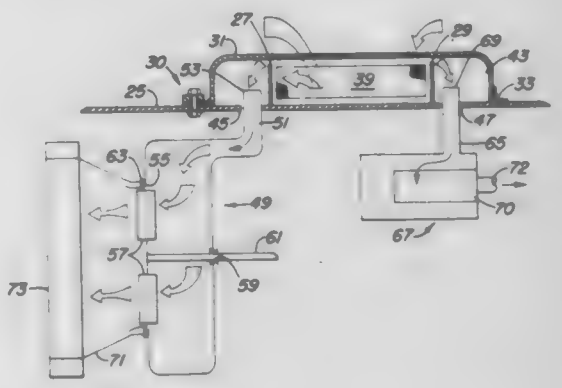
COOLING AIR DELIVERY SYSTEMS

James W. Jewett, Dubuque, Iowa, assignor to Deere & Company, Moline, Ill.

Filed Mar. 6, 1985, Ser. No. 708,775

Int. Cl.[4] B60K *13/00*

U.S. Cl. 180—68.1 **2 Claims**



1. A cooling air delivery system for a vehicle, said vehicle having an engine compartment enclosing an engine driving fan having radially spaced blades located opposite a radiator, and a shroud mounted between said radiator and said fan, comprising:

said compartment having a hood, at least a first and second baffle fixedly mounted to the external surface of said hood; said baffles being in longitudinal spaced apart relationship, extending transversely across said hood and projecting upwardly therefrom; a first generally rectangular shaped opening in said hood rearward of said baffles, and a second generally rectangular shaped opening in said hood forward of said baffles; a cover pivotally mounted to said hood such that in a first position said cover encloses said baffles and said first and second openings in said hood and in a second position said baffles and said first and second openings are exposed; said cover being in a vertically spaced apart relationship to said baffles and having a

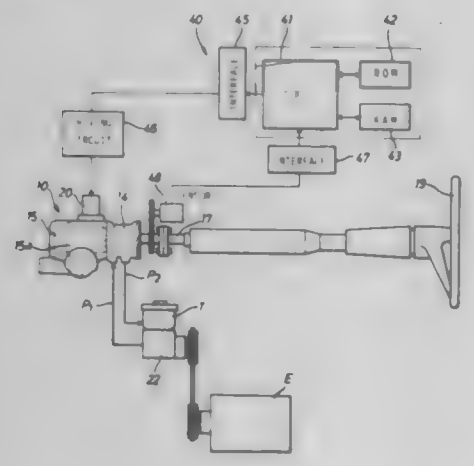
plurality of screened openings forming part of said cover and extending between the said projecting baffles for admitting air into said cover.

4,606,423

CONTROL APPARATUS FOR POWER-ASSISTED STEERING SYSTEM

Hidetoshi Fujiwara, and Tetsushi Kawamura, both of Okazaki, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota and Toyoda Koki Kabushiki Kaisha, Kariya, both of, Japan

Filed Oct. 3, 1984, Ser. No. 657,408
Claims priority, application Japan, Oct. 3, 1983, 58-185539
Int. Cl.[4] B62D *5/04, 5/06*
U.S. Cl. 180—79.1 4 Claims



1. A control apparatus for a power-assisted steering system in a wheeled vehicle including a steering shaft arranged to be rotated by steering effort applied thereto; a source of fluid under pressure in the form of a fluid pump driven by a prime mover of the vehicle; a hydraulic cylinder having a power piston mounted for reciprocating movement in said cylinder and operatively connected to driven members of the steering system; and a servo valve interconnecting said fluid pump and said cylinder and being responsive to rotary motion of said steering shaft for selectively directing the flow of fluid under pressure from said fluid pump to one of opposite fluid chambers of said cylinder and permitting the flow of fluid from the other fluid chamber to a fluid reservoir to effect reciprocating movement of said power piston;

the control apparatus comprising:

an electrically operated control valve of normally closed type disposed within a bypass passage for providing bypass flow of fluid passing therethrough from said fluid pump to said reservoir in its energized condition;

a sensor for detecting rotary motion of said steering shaft to produce an output signal indicative of rotary angle of said steering shaft corresponding with a moving stroke of said piston;

a computer arranged to memorize a control pattern defining a relationship between a desired control valve and rotary angle of said steering shaft and programmed to determine the desired control value in response to the output signal from said sensor on a basis of the control patter and to produce a control signal indicative of the desired control value when a value of said output signal reaches a predetermined value indicative of approach of said steering shaft to its rotary end; and

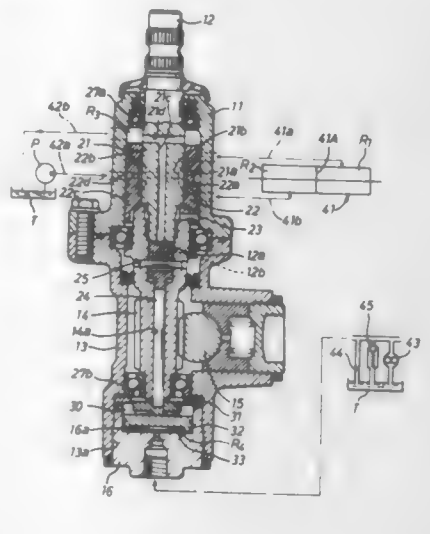
means for energizing said control valve in response to the control signal in such a way to increase the opening degree of said control valve in accordance with the value of the control signal wherein said means for energizing said control valve is a driving circuit responsive to the control signal from said computer for producing a control current indicative of the desired control valve and applying it to said control valve.

4,606,424

POWER STEERING APPARATUS

Akira Hasegawa, Toyota, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Nov. 21, 1984, Ser. No. 673,932
Claims priority, application Japan, Nov. 21, 1983, 58-219309
Int. Cl.[4] B62D *5/08*
U.S. Cl. 180—143 8 Claims



1. A power steering apparatus for an automotive vehicle including means for actuating a steering mechanism, a primary source of fluid under pressure, a secondary source of fluid under pressure responsive to the vehicle speed for supply of fluid under pressure in proportion to the vehicle speed, and a hydraulic power cylinder for providing a hydraulic power assist to the driver's steering effort applied to the steering mechanism of the vehicle, the power steering apparatus comprising:

a housing;

an input member rotatably mounted in said housing;

an output member, directly connected to said means for actuating said steering mechanism, rotatably mounted in said housing and arranged coaxially with said input member for relative rotation;

a valve rotor integral with said input member;

a valve sleeve rotatably mounted in said housing and arranged in surrounding relationship with said valve rotor, said valve sleeve being connected integrally with said output member to cooperate with said valve rotor for selectively directing fluid under pressure from said primary source to opposite ends of said power cylinder in response to relative rotation between said input and output members;

a cam mechansim including a cam follower element axially movable in an internal-axial bore in said output member and being engaged at the inner end thereof with the inner end of said input member in such a manner as to permit relative rotation of said input and output members and to effect axial movement of said cam follower element upon the application of a predetermined manual torque to said input member, said cam follower element including a cam piece axially movable in the inner end portion of said internal axial bore in said output member and directly engaged with the inner end portion of said output member for rotation therewith, and a rod portion extending outwardly from said cam piece and arranged axially movably in said internal axial bore, said cam piece being formed with a pair of solid cam surfaces and said input member being formed in its inner end with a pair of recessed cam surfaces which directly engage with said solid cam surfaces; and

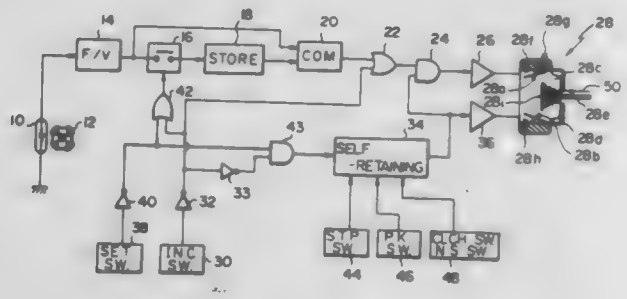
a pressure mechanism arranged to apply a hydraulic pressure from said secondary source to the outer end of said rod portion of said cam follower element for increasing a resistance to relative rotation between said input and output members in accordance with increase of the vehicle speed.

4,606,425

VEHICLE SPEED CONTROL APPARATUS

Kazuhiko Hayashi, Toyota, and Jiro Masuda, Kobe, both of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha and Fujitsu Ten Limited, both of Aichi, Japan

Division of Ser. No. 294,155, Aug. 19, 1981, Pat. No. 4,470,478.
This application Apr. 30, 1984, Ser. No. 605,666
Claims priority, application Japan, Sep. 9, 1980, 55-123977; Sep. 9, 1980, 55-123978; Sep. 9, 1980, 55-123979
Int. Cl.[4] B60K *31/00*
U.S. Cl. 180—177 6 Claims



1. A vehicle speed control apparatus of an automobile having a throttle valve for adjusting the vehicle speed, the speed control apparatus comprising:

a set instruction switch means for producing a first electrical signal when actuated;

an increase and resume instruction switch means for producing a second electrical signal when actuated;

means for detecting the actual vehicle speed of the automobile to produce a third electrical signal which indicates the detected vehicle speed;

means for producing, in response to said first electrical signal, a fourth electrical signal which indicates a desired vehicle speed of the automobile, the level of said fourth electrical signal being equal to the level of said third electrical signal at a time just before said first electrical is cut off;

means for comparing the level of said third electrical signal with the level of said fourth electrical signal to produce a fifth electrical signal which indicates the difference between the detected vehicle speed and the desired vehicle speed;

means responsive to said fifth electrical signal or said second electrical signal for adjusting the opening degree of said throttle valve, said adjusting means increasing or decreasing the opening degree of said throttle valve in accordance with said fifth electrical signal so as to reduce the difference between the actual vehicle speed and the desired vehicle speed, said adjusting means continuously increasing the opening degree of said throttle valve when said second electrical signal is applied thereto;

means for generating a sixth electrical signal for preventing the operation of said means for adjusting the opening degree of said throttle valve when said preventing means is in a first predetermined state, said preventing means changing to a second predetermined state in response to said first signal to permit the operation of said means for adjusting the opening degree of the throttle valve; and

means for preventing said first electrical signal from being applied to said means for generating said sixth electrical signal when said second electrical signal is generated.

4,606,426

ANTI-THEFT DEVICE

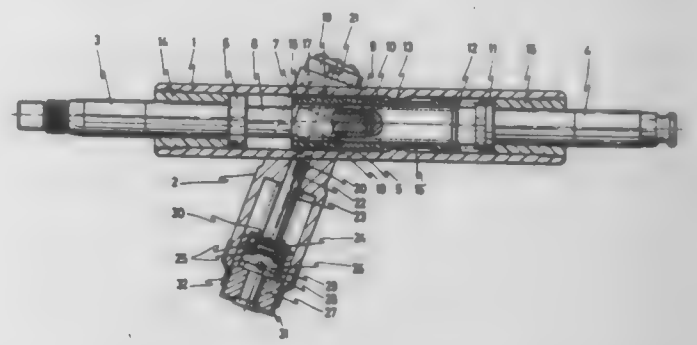
Manuel de la Orden Azuaga, c./ Cardenal Rodrigo de Castro, 5, Sevilla, Spain

Filed Nov. 2, 1984, Ser. No. 667,534
Claims priority, application Spain, Nov. 8, 1983, 275.583[U]
Int. Cl.[4] B60R *25/04*
U.S. Cl. 180—287 1 Claim

1. An anti-theft device for an automobile having a steering column, comprising:

axially aligned first and second sections of said steering column arranged with their ends in juxtaposition and respectively journalled for rotation within a fixed housing;

axial splines on said first and second section and located within said housing, the splines on one said section being axially longer than the splines on the other said section; and,



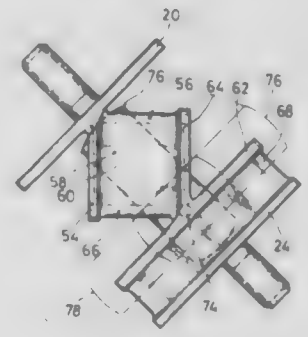
an internally splined sleeve positioned within said housing and slidable on and meshing with the splines of said first and second sections in one position of said sleeve, and, having an internal portion of an axial length and diameter greater than the splines of said other sections and in which said splines of said other section are received in the opposite position of said sleeve.

4,606,427

MOTOR VEHICLE ENGINE MOUNTING ARRANGEMENT

Wilhelm Beer, Ruselsheim, Fed. Rep. of Germany, assignor to General Motors Corporation, Detroit, Mich.

Filed Oct. 3, 1985, Ser. No. 784,357
Claims priority, application Fed. Rep. of Germany, Oct. 6, 1984, 3436822
Int. Cl.[4] B60K *5/012*
U.S. Cl. 180—300 6 Claims



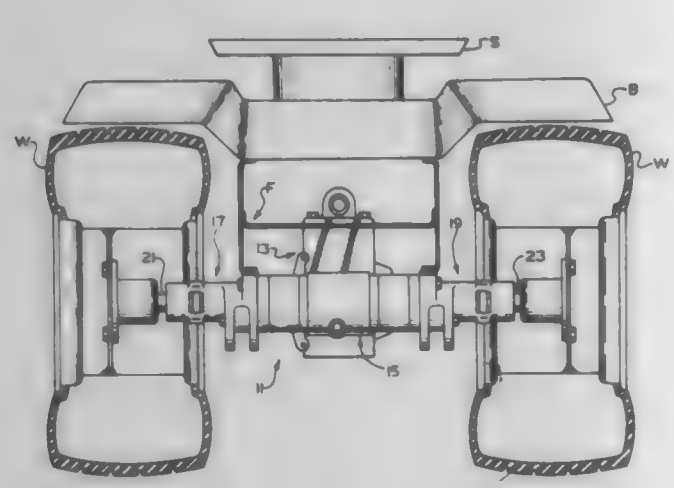
1. Mounting assembly for mounting an engine on a chassis of a motor vehicle comprising an upper portion connected to the engine, a lower portion connected to the chassis, a core member located between said portions, said core member and one of said portions having two sets of surfaces that face each other and are located on opposite sides of a centerline passing through said portions and core member, the surfaces of each aforesaid set being inclined relative to said centerline and oppositely those of the other aforesaid set, said core member and the other portion having two sets of surfaces that face each other and are located on opposite sides of and perpendicular to said centerline, a block of elastomeric material located between and connecting each set of oppositely facing surfaces whereby relative movement between said portions in the direction of said centerline causes rotary movement of said core member about said centerline, and oblong shaped flyweights located in recesses in said mounting assembly between said blocks of elastomeric material and connected to said core member on opposite sides of said centerline so as to adjustably swing outward about pivot axes perpendicular to said centerline from positions proximate said centerline to thereby vary the moment of inertia of said core member and thus damping thereby.

4,606,428

TRANSAXLE DIFFERENTIAL

David W. Giere, Chaska, Minn., assignor to Eaton Corporation, Cleveland, Ohio

Filed Apr. 18, 1985, Ser. No. 724,852
Int. Cl.[4] B60K *17/00*
U.S. Cl. 180—307 14 Claims



1. A hydrostatic transaxle assembly for use on a vehicle having a vehicle frame, a source of motive power, a fluid pump driven by said source of power, and a pair of driven wheels, the pump having a fluid inlet and a fluid outlet; said transaxle assembly comprising a centrally-disposed manifold and first and second motor assemblies; said manifold defining a fluid inlet adapted to be in fluid communicatin with the fluid outlet of the fluid pump; and a fluid outlet adapted to be in fluid communication with the fluid inlet of the pump, and first and second fluid passage means communicating between said fluid inlet and said fluid outlet of said manifold and flowing through said first and second motor assemblies, respectively; each of said first and second motor assemblies having a rotary fluid pressure actuated device and axle means operable to transmit the rotary output of said fluid pressure actuated device to the respective driven wheel, said fluid pressure actuated devices having substantially equal fluid displacement; characterized by:

(a) interwheel differential means including first and second rotary fluid displacement mechanisms disposed in series flow relationship in said first and second fluid passage means, respectively, said first and second fluid displacement mechanisms having substantially equal fluid displacement and including first and second rotor elements, respectively, said first and second rotor elements being connected for common rotation;

(b) selector valve means in fluid communication with at least one of said fluid displacement mechanisms and operable selectively between:

(i) a first position in which fluid flowing from the fluid pump into said fluid inlet of said manifold flows through said first and second fluid displacement mechanisms in two substantially equal flows, substantial fluid communication between said first and second fluid passage means is prevented, downstream of said first and second fluid displacement mechanisms, to maintain substantially equal flows through said fluid pressure actuated devices of the motor assemblies and substantially equal speeds of the driven wheels; and

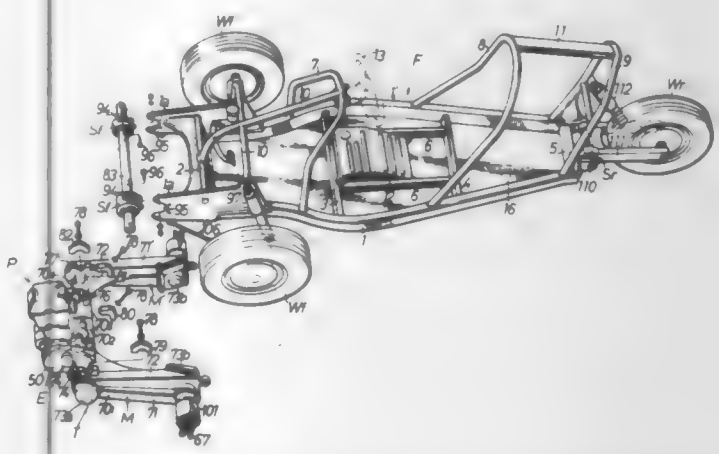
(ii) a second position in which the fluid flows through the fluid pressure devices of the motor assemblies are not maintained substantially equal, thus permitting normal differentiation between said motor assemblies and the speeds of the driven wheels.

4,606,429

VEHICLE DRIVE SYSTEM

Noboru Kurata, Saitama, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 18, 1984, Ser. No. 601,433
Claims priority, application Japan, Apr. 26, 1983, 58-73434; Apr. 26, 1983, 58-73435; Apr. 26, 1983, 58-73436
Int. Cl.[4] B62D *21/00*
U.S. Cl. 180—312 11 Claims



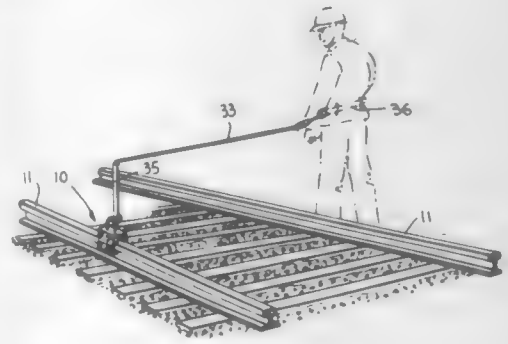
1. A vehicle having driving wheels both on the left and right sides of the chassis frame thereof comprising: a power unit including an engine and a transmission system for transmitting the power from an output shaft of said engine to said driving wheels independently, said power unit having a casing constructed as a rigid member for supporting said driving wheels and pivotally connected through a pivot shaft to said chassis frame so as to permit vertical movement of said driving wheels, said transmission system including a differential gear means having a case connected through speed reduction gears to said output shaft, said differential gear means including left and right side output gears, said transmission system including left and right input drive shafts extending laterally from said left and right side output gears of said differential gear means, said transmission system including left and right output sections to which said input drive shafts are drivingly connected and output shafts connected to the respective driving wheels, and said output sections including V-belt type automatic transmissions connected between the input drive shafts and the output shafts.

4,606,430

RAIL MOUNTED SAFETY RESTRAINT DEVICE

William R. Roby, Powder Springs, Ga., and Charles M. Russell, Kernersville, N.C., assignors to Southern Railway Company, Atlanta, Ga.

Filed Oct. 4, 1985, Ser. No. 784,047
Int. Cl.[4] A62B *35/00*
U.S. Cl. 182—3 6 Claims



1. A safety restraint device adapted to be mounted on a rail of a railway track, comprising a substantially U-shaped hood having a pair of hinged sections adapted for surrounding the ball of the rail, at least a first pair of upper and lower rollers mounted on one of said sections, and at least a second pair of upper and lower rollers mounted on the other of said sections,

said upper and lower rollers respectively engaging upper and lower surfaces of the rail ball to facilitate rolling movement of said hood along the rail, removable means extending between said sections for maintaining said rollers engaeable with the rail ball, and means on one of said sections for anchoring a lanyard to the rail.

4,606,431

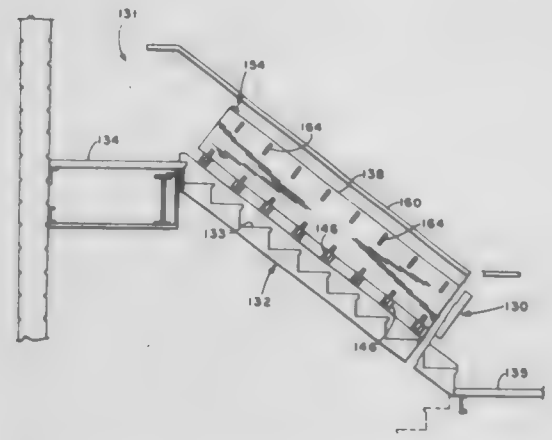
EVACUATION SLIDES FOR MULTI-STORY BUILDINGS

Fred A. Ruder, Sr., 39975 Jones Rd., Wellington, Ohio 44090

Filed Mar. 19, 1984, Ser. No. 591,200

Int. Cl.[4] A62B *1/20*

U.S. Cl. 182—49 **13 Claims**



1. In a multi-story building having an interior stairwell including multiple flights of steps between associated landings, the improvement comprising an escape device including a substantially flat elongate slide, and means for mounting said slide in said stairwell for swinging movement from a generally upright storage position adjacent a side wall of said stairwell to a lowered position overlying one of said flights of steps.

4,606,432

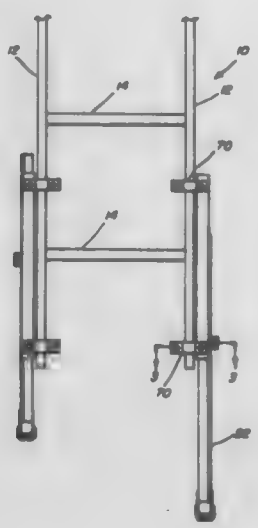
ADJUSTABLE LADDER LEG

Ned W. Belt, 3501 Crestwood Dr., Cleveland, Tenn. 37311

Filed Oct. 29, 1984, Ser. No. 619,352

Int. Cl.[4] E06C *7/44*

U.S. Cl. 182—204 **5 Claims**



1. Ladder leveling apparatus adapted to be secured to a rail of a ladder, said rail having at least a pair of spaced surfaces separated and interconnected by an outer wall remote from the rungs of the ladder, said apparatus comprising an elongated substantially rectangular hollow guide channel, said guide channel having a first wall including a plurality of holes spaced apart in the direction of elongation, said channel having a second wall spaced from said first wall, an elongated slot formed in said second wall and opening outside said channel, a substantially rectangular elongated leveling leg telescopically disposed within said channel for movement relative to the channel in said direction of elongation, means defining a hole in said leg disposed for alignment with a selected one of the holes in said first wall, releaseable detent means mounted in said leg aligned with said hole in said leg and adapted for entry through said hole and a selected one of the holes in said channel, said detent means including a control member extending through said leg and said elongated slot for access by an operator, and at least a pair of spaced clamping means for securing said guide channel to the rail at spaced locations, each clamping means comprising bracket means secured to said channel and a clamp adjustably fastened to said bracket means, said clamp and said bracket means including frictional gripper members for tightly grasping said pair of spaced surfaces of said rail when said clamp is fastened to said bracket means.

4,606,433

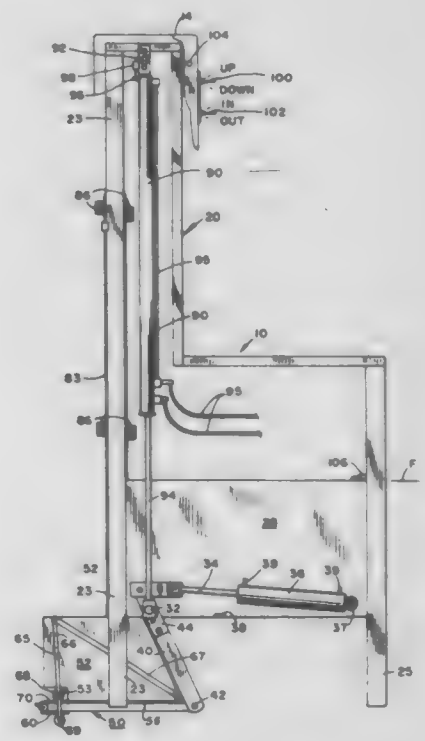
STEP CONVERTIBLE PLATFORM LIFT

Raymond L. Smalley; Melvin G. Risner, both of Carey, and William D. Sherman, Upper Sandusky, all of Ohio, assignors to REB Manufacturing, Inc., Carey, Ohio

Filed Oct. 29, 1984, Ser. No. 665,727

Int. Cl.[4] B66B *9/20*

U.S. Cl. 187—9 R **33 Claims**



1. A convertible step-platform lift for a vehicle comprising:

(A) a step-platform assembly comprising:

(1) an upper step-platform section having an outer edge hinge shaft,

(2) a riser step-platform section hinged at its upper edge to said outer edge hinge shaft and having a lower edge hinge shaft,

(3) a lever means affixed to and projecting from beyond the upper edge of an end of said riser.

(4) a lower step-platform section hinged at its inner edge to said lower edge hinged shaft of said riser,

(5) a reciprocating motor means connected between said upper step-platform section and the upper end of said lever means for folding and unfolding said step and riser platform sections from their step position to their platform position and vice versa, and

(6) means for maintaining said step sections horizontal; and

(B) means for vertically raising and lowering said platform assembly attached to the end of said outer edge hinge shaft of said upper step-platform section.

4,606,434

RESISTIVE CERAMIC BUSHINGS FOR BRAKE LINING WEAR SENSOR

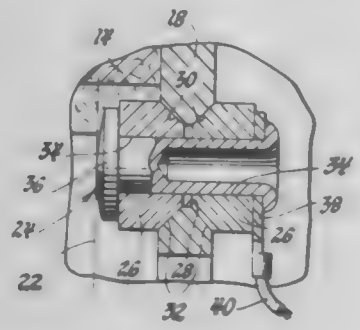
Theodore R. Vasilow, Flint; Bernard J. Busovne, Jr., Davison, and Gregory J. Johnson, Grand Blanc, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Sep. 10, 1984, Ser. No. 649,060

The portion of the term of this patent subsequent to Aug. 19, 2003, has been disclaimed.

Int. Cl.[4] B60Q *1/00;* F16D *66/02*

U.S. Cl. 188—1.11 3 Claims



1. A brake lining wear sensor for brakes having an electrically grounded lining support and an electrically grounded rotor, comprising:

a conductive contact on the lining support at a position corresponding to the desired lining wear limit for making contact with the rotor when the wear limit is attained; and

ceramic means for mounting the contact on the grounded lining support to provide an electrically semiconductive path between the contact and grounded lining support, the ceramic means comprising a material containing silicon carbide and having a bulk resistivity on the order of 10,000 to 100,000 ohm/cm, whereby there is normally a substantial resistance between the contact and ground and when the lining is worn to the limit there is an electrical short from the contact to ground.

4,606,435

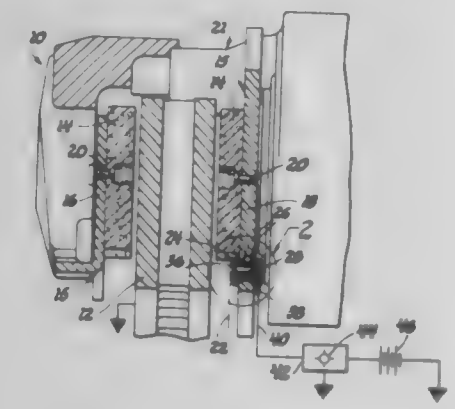
BRAKE LINING WEAR SENSOR AND INDICATOR CIRCUIT

Gregory J. Johnson, Grand Blanc, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Sep. 10, 1984, Ser. No. 649,134

Int. Cl.[4] F16D *66/00;* B60Q *1/00*

U.S. Cl. 188—1.11 6 Claims



1. A brake lining wear sensor for brakes having an electrically grounded lining support and an electrically grounded rotor, comprising

an electrically conductive contact on the lining support at a position corresponding to the desired lining wear limit for making contact with the rotor when the wear limit is attained; and

means for mounting the contact on the grounded lining support to provide an electrically resistive path having a resistance in the range of about 2 to 85,000 ohms between the contact and grounded lining support, whereby there is normally a substantial resistance between the contact and ground and when the lining is worn to the limit there is an electrical short from the contact to ground.

4. A brake lining wear sensor means for brakes having an electrically grounded lining support and an electrically grounded rotor, comprising

a conductive contact on the lining support at a position corresponding to the desired lining wear limit for making contact with the rotor when the wear limit is attained,

an indicator circuit coupled by a lead to the contact, means for mounting the contact on the grounded lining support to provide an electrically resistive path between the contact and grounded support, whereby there is normally a substantial resistance between the contact and ground, when the lining is worn to the limit there is an electrical short from the contact to ground, and when there is an open circuit to the contact there is an essentially infinite resistance from the indicator circuit to ground whereby the indicator circuit responds to the resistance between the circuit and ground to provide an output signal indicating lining conditions and any open circuit to the contact.

4,606,436

THERMALLY PROTECTED SHIELD ASSEMBLY FOR MULTI-DISC BRAKES

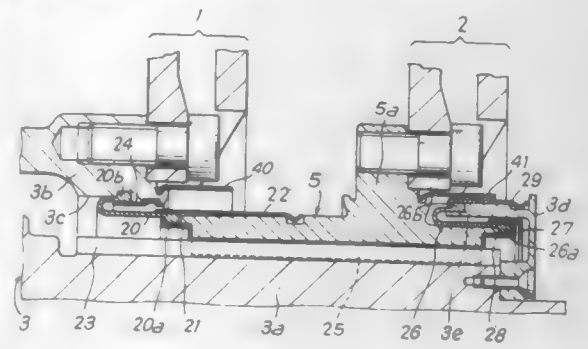
Jean-Claude Mery, Pavillons sous Bois, and Guy Meynier, Aulnay sous Bois, both of France, assignors to Societe Anonyme DBA, Paris, France

Filed Jun. 21, 1984, Ser. No. 622,915

Claims priority, application France, Jun. 30, 1983, 83-10919

Int. Cl.[4] F16D *55/224, 65/847*

U.S. Cl. 188—18 A 8 Claims



1. A multi-disc brake comprising a first rotary disc fixedly secured to a hub and a second rotary disc mounted on a splined portion of the hub for sliding movement parallel to the axis of the latter, the axis of the hub and of the said discs coinciding with one another, and an assembly of friction pads incorporating friction linings frictionally engageable with the faces of the discs, actuating means for effecting frictional engagement between said discs and friction linings, said second disc including an internally splined sleeve slidable on and drivingly engaged with said splined portion of said hub, said internally splined sleeve being connected to the hub on both sides of the second disc by means of deformable diaphragm seals of generally cylindrical shape, characterized in that said deformable diaphragm seals are disposed at least partially within protective annular metal surfaces forming a part of said hub and coaxially surrounding portions of the splined portion of the hub on which said sleeve slides.

4,606,437

DISC BRAKE

Stanley J. Mikina, 4782 Coquinia Key Dr., St. Petersburg, Fla. 33705

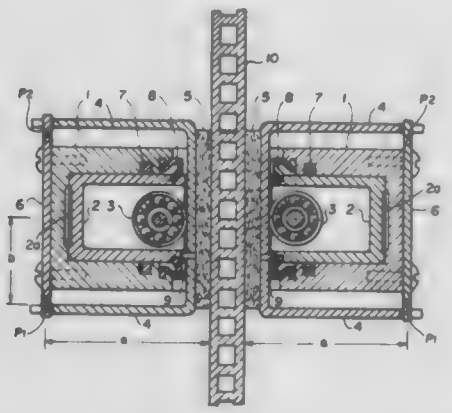
Filed Jun. 4, 1984, Ser. No. 617,514

Int. Cl.[4] F16D *55/18*

U.S. Cl. 188—72.4 18 Claims

1. A disc brake for a disc rotatable about an axis, caliper means mounted so as to slide in the direction of the disc axis,

said caliper means including a pair of cylinders, only one being a hydraulic cylinder, including a single piston movable along said axis and with oil and dust seals, a pair of brake shoes for engaging opposite surfaces of said disc, two shaped levers for the brake shoes and surrounding said cylinders, fulcrum means



for said levers in remotely spaced parallel relation to said shoes, an anti-friction bearing between the piston and one of said levers, said bearing being movable along said axis, anti-rotation means on the single piston, and an anti-friction bearing between the body of said caliper means and the other lever.

4,606,438

SLIDING CALIPER DISK BRAKE

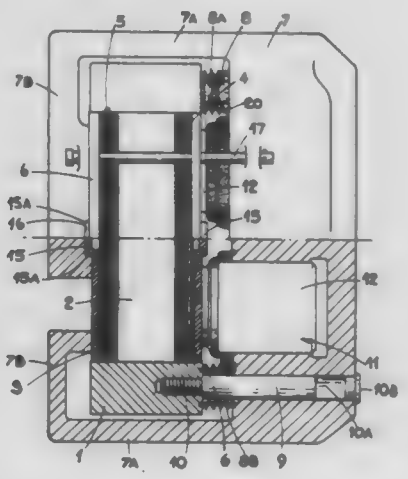
Christopher N. Mathias, Henley-in-Arden, Great Britain, assignor to Lucas Industries Public Limited Company, Birmingham, England

Filed Dec. 16, 1983, Ser. No. 562,066

Claims priority, application United Kingdom, Dec. 24, 1982, 8236747

Int. Cl.⁴ F16D *65/02*

U.S. Cl. 188—73.32 **5 Claims**



1. A sliding caliper disc brake comprising a carrier mountable on a vehicle in a fixed position straddling a rotatable brake disc carried by a member to be braked, a pair of brake pads mounted on the carrier respectively at either side of the disc, and a caliper slidably mounted on the carrier for movement relative to the carrier in a direction parallel to the axis of rotation of the disk and having an access opening in a wall thereof, the caliper including a first portion supported for sliding movement and containing actuating means for directly actuating one of said pads by urging it into braking engagement with the disc, and a second portion projecting outwardly of said first portion and straddling the disc to cause indirect actuation of the other of said pads upon sliding movement of the caliper as a result of said direct actuation of said one pad, and the brake including means for minimizing vibrations in said second portion of the caliper comprising interengaging formations on the caliper and the indirectly actuated pad having mating surfaces which lie in plates perpendicular to the direction of said sliding caliper movement, said formations being configured and disposed for additional support of said outwardly projecting caliper part on the carrier via said indirectly actuated pad and for radial sliding of the indirectly actuated pad on the outwardly projecting caliper part permitting withdrawal of the indirectly actuated pad from the carrier through said caliper opening without effecting displacement of the caliper relative to the carrier.

4,606,439

DISC BRAKE

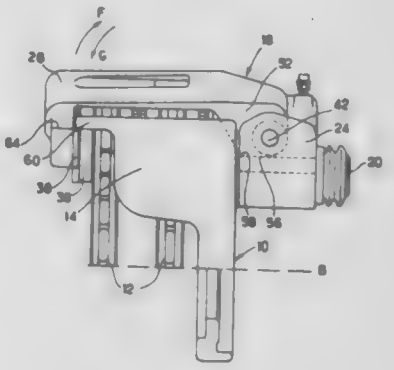
Guy Meynier, Aulnay-sous-Bois, and Jean-Paul Sauvee, Aubervilliers, both of France, assignors to Societe Anonyme D.B.A., Paris, France

Filed Jul. 11, 1985, Ser. No. 754,367

Claims priority, application France, Jul. 20, 1984, 84 11587

Int. Cl.⁴ F16D *69/04*

U.S. Cl. 188—73.32 **10 Claims**



1. Disc brake of the type incorporating a sliding caliper (18) straddling a rotating disc (12) to be braked, the caliper (18) incorporating a first portion (24) sliding on a fixed support (10) by means of at least one axial pillar (20), incorporating a brake actuator (26) capable of acting directly upon a first friction component (30) and, by reaction through the sliding caliper, of acting indirectly upon a second friction component (36) by means of a second portion (28) of the caliper which is astride the disc (12), characterized in that the second portion (28) is hinged to the first portion (24) along an axis of articulation (D) parallel to the plane of the said disc (12) and situated radially nearer the axis (B) of rotation of the disc than a line of action (C—C) of the brake actuator (26) and in that an abutment (56-58) positioned between the first portion (24) and second portion (28) lies in a plane perpendicular to the plane of the disc (12) and parallel to the said axis of articulation (D).

4,606,440

VEHICLE DAMPING APPARATUS WITH SIMULTANEOUS BLEED ORIFICE AND BLOWOFF CONTROL

Harry C. Buchanan, Jr., Spring Valley; Wayne V. Fannin, Xenia, and Byron L. Watson, Beavercreek, all of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Dec. 13, 1984, Ser. No. 681,137

Int. Cl.⁴ F16F *9/48*

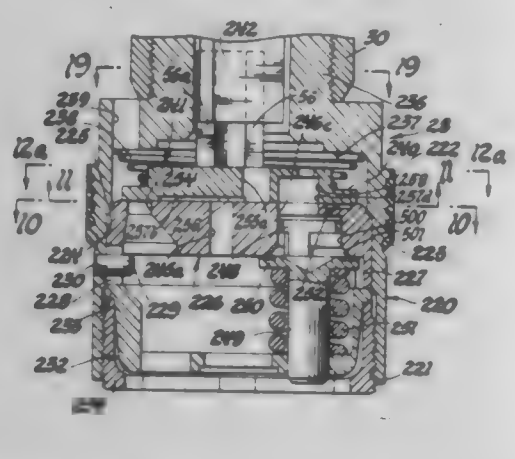
U.S. Cl. 188—319 **5 Claims**

1. Variable damping apparatus for a wheeled vehicle having sprung and unsprung masses connected thereby, the damping apparatus comprising a housing defining a pair of chambers having a conduit therebetween and containing a non-compressible fluid, means effective to pump said fluid between said chambers through said conduit in response to vertical movement between said sprung and unsprung masses, adjustable valve means in said conduit effective to control the flow of said fluid therethrough and means effective to adjust said valve means to control the ride characteristics of the vehicle, said valve means comprising, in combination:

a stationary plate in said conduit, the stationary plate having a bleed orifice and at least two additional orifices opening axially therethrough, each said additional orifice including

a blowoff valve closed at low pressure and opening at a higher pressure and having some blowoff characteristic differing from that of the other;

a rotatable plate having a bleed orifice and an additional orifice opening axially therethrough, the rotatable plate being disposed adjacent the stationary plate so that the orifices of the separate plates are brought into and out of axial communication as the rotatable plate is rotated, the rotatable plate defining a position of full bleed orifice communication with respect to the stationary plate in which fluid communication between the bleed orifices of the rotatable and stationary plates is maximum and a plurality of additional positions with respect to the stationary plate, in each rotational direction from the position of full bleed orifice communication, in which bleed orifice communication between the plates is progressively reduced, the additional orifice of the rotatable plate communicating with one and not the other of the additional orifices of the stationary plate in the position of full bleed orifice communication and with rotation of the the rotatable plate in one direction therefrom and communicating with the other additional orifice of the stationary plate with rotation of the rotatable plate in the opposite direction from the position of full bleed orifice communication; and



means effective to couple said valve adjustment means to said rotatable plate to adjust said valve means by rotating the rotatable plate with respect to said stationary plate, whereby more than one set of blowoff characteristics may be chosen for selected degrees of bleed orifice communication in the adjustment of the ride characteristics of the vehicle.

4,606,441

DEVICE FOR DAMPING IMPACT LOAD

Vladimir A. Markov, Moscow, U.S.S.R., assignor to Vsesojuzny Nauchno-Issledovatelsky Institut Textilno-Galantereinoi Promyshlennosti, Moscow, U.S.S.R.

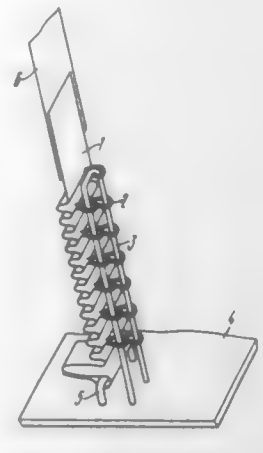
PCT No. PCT/SU82/00007, § 371 Date Oct. 21, 1983, § 102(e) Date Oct. 21, 1983, PCT Pub. No. WO83/02902, PCT Pub. Date Sep. 1, 1983

PCT Filed Feb. 24, 1982, Ser. No. 552,177

Int. Cl.⁴ A62B *35/00*

U.S. Cl. 188—371 **4 Claims**

1. A device for damping impact load in a safety system, comprising: a support; a flexible untearable band incorporating an energy-absorbing means destructible under the effect of an impact load, said energy-absorbing means including a plurality of independent loops made of a flexible, elongated material, each of the loops connected to the band at spaced positions therealong; a holder means onto which said loops are put one after another; and an end of the band and the holder means are connected to the support, wherein the flexible band is a woven ribbon provided on at least one side with at least one row of woven loops integral with said ribbon, said loops having a width less than the width of the band and comprising a base weave formed from interwoven ground warp threads and weft threads, and disposed in the base weave between the ground warp threads is at least one system of loop warp threads, whereon are formed, by virtue of interweaving with weft threads, a plurality of interloop sections and a row of the loops, which are associated with the warp interloop sections through successively arranged tying sections made up of the loop warp



threads, the tying sections of each loop being different in length and the weft density of each loop increasing in the direction from a longer to a shorter tying section.

4,606,442

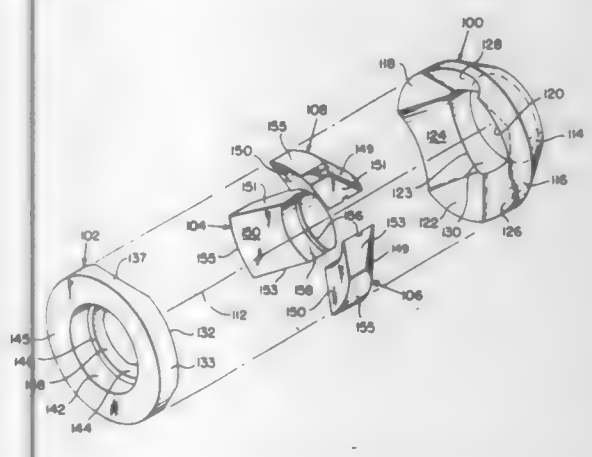
FRICTIONAL DAMPING ASSEMBLY FOR SUSPENSION STRUT

H. Neil Paton, 2521 W. Montlake Pl. East, Seattle, Wash. 98112, and Frank F. Smith, Seattle, Wash., assignors to H. Neil Paton and John B. Skilling, both of Seattle, Wash.

Filed Nov. 28, 1984, Ser. No. 675,618

Int. Cl.⁴ F16F *11/00*

U.S. Cl. 188—381 **2 Claims**



1. An improved frictional damping assembly suitable for use with a suspension strut, comprising: two spaced apart wedge rings and a plurality of damper wedges engaged between said wedge rings such that axial compression between said wedge rings will cause said damper wedges to move inwardly in generally radial directions with respect to a bore which extends through said wedge rings; each of said damper wedges having an anterior surface which fronts upon said bore, and which is bounded by two parallel side surfaces and two opposed wedge ring contact surfaces; at least one of said wedge ring contact protruding outwardly into and conforming to a radial groove formed by one of said wedge rings so that said anterior surface has two portions, a first portion bounded by said side surfaces and a second portion bounded by said one wedge ring contact surface, whereby the aggregate area of said anterior surfaces is equal to the the areas of said first portions together with the areas of said second portions.

4,606,443

PLANETARY DRIVE WITH OVERLOAD CLUTCH RELEASE MEANS FOR AN ANTENNA

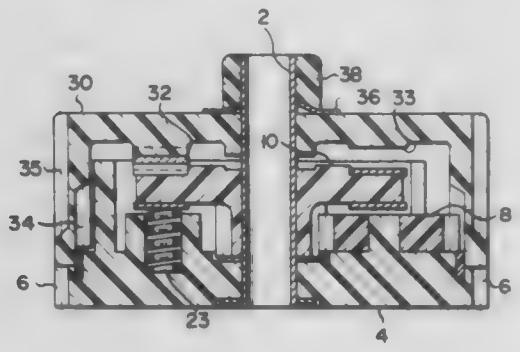
Misao Kimura, Yokosuka, Japan, assignor to Harada Industry Co., Ltd., Tokyo, Japan

Filed Nov. 23, 1984, Ser. No. 674,080

Claims priority, application Japan, Nov. 30, 1983, 58-226644; Nov. 30, 1983, 58-226645

Int. Cl.[4] F16D *3/06, 7/00, 13/76*

U.S. Cl. 192—20 7 Claims



1. A clutch apparatus for an antenna which is rendered telescopic by a driving force from a motor, comprising:

a main shaft;

a driving rotary member which is fitted around said main shaft and is rotated by a driving force from a motor;

an intermediate gear which is rotatably fitted around an axis which is provided on one surface of said driving rotary member and is different from said main shaft;

a clutch gear which is fitted around said main shaft so as to be rotatable together with and relative to said driving rotary member, said clutch gear having a gear portion meshing with said intermediate gear, and a clutch disk member;

at least one clutch plate which is provided at said main shaft to be rotatable together with said driving rotary member while being in contact with said clutch disk member of said clutch gear;

contact means for bringing said clutch plate into contact with said clutch disk member of said clutch gear; and

a driven rotary member which is fitted around said main shaft so as to supply the driving force transmitted from said driving rotary member to the antenna, said driven rotary member having a gear portion meshing with said intermediate gear on an inner surface thereof,

wherein when a telescopic operation of the antenna is performed, said driving and driven rotary members are rotated together by the driving force from the motor and the antenna is thereby raised or lowered by a rotating force of said driven rotary member, and when the telescopic operation of the antenna is completed, said driven rotary member is stopped and thereafter said driving rotary member continues to be rotated for a predetermined interval.

4,606,444

SPRING OPERATED CLUTCH

Thomas C. Sekella, Elmira, N.Y., assignor to Facet Enterprises, Inc., Tulsa, Okla.

Filed Aug. 3, 1983, Ser. No. 519,967

Int. Cl.[4] F16D *59/02, 7/02, 11/00, 27/10*

U.S. Cl. 192—48.2 29 Claims

1. A spring operated clutch comprising:

input means having an input shaft; a sleeve secured to said input shaft for rotation therewith; and at least a first frictional surface attached to said sleeve;

friction brake means mounted to said sleeve, said friction brake means having at least a second frictional surface disposed adjacent said first frictional surface;

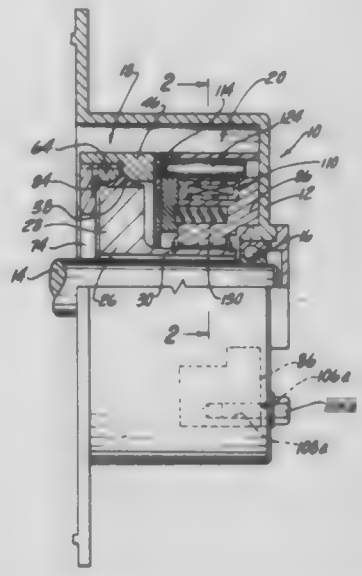
first biasing means biasing said second frictional surface of said friction brake means and said first frictional surface of said input means into engagement such that a predetermined torque is required to rotate said friction brake means relative to said input means;

a first plurality of teeth extending from said friction brake means;

output means;

gear means movably interconnected to said output means, such as to be selectively movable towards and away from said friction brake means;

a second plurality of teeth extending from said gear means towards said first plurality of teeth and selectively engageable therewith when said gear means is selectively moved towards said friction brake means;



second biasing means biasing said gear means towards said friction brake means and, thereby, biasing said second plurality of teeth into engagement with said first plurality of teeth; and

electromagnetic biasing means selectively operable to bias said gear means away from said friction brake means, said electromagnetic biasing means overcoming the force of said second biasing means when selectively operated.

4,606,445

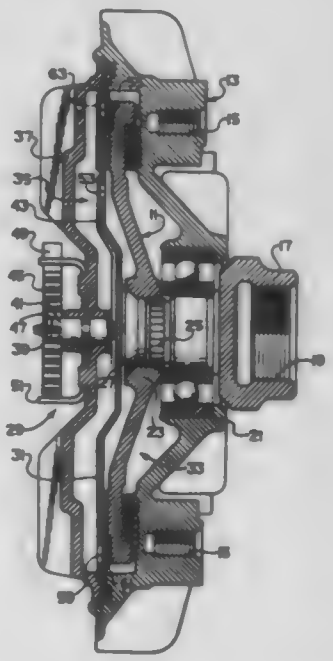
FLUID COUPLING DEVICE WITH IMPROVED FLUID COOLING CAPABILITY

Carl E. Rockey, Marshall, Mich., assignor to Eaton Corporation, Cleveland, Ohio

Filed Sep. 19, 1984, Ser. No. 651,967

Int. Cl.[4] F16D *35/00, 13/72, 43/25*

U.S. Cl. 192—58 B 7 Claims



1. A fluid coupling device of the type including a first rotatable coupling member, cover means associated with said first

member to define a fluid chamber therebetween, a valve plate disposed to separate said fluid chamber into a fluid operating chamber and a fluid reservoir chamber, a second rotatable coupling member disposed in said fluid operating chamber and being rotatable relative to said first member, said valve plate defining a fluid inlet opening adapted to permit the flow of fluid from said reservoir chamber to said operating chamber, temperature-responsive valve means operatively associated with said fluid inlet opening to control the flow of fluid therethrough in response to variations in a predetermined temperature condition, said valve plate defining a first fluid discharge opening adapted to permit the flow of fluid from said operating chamber to said reservoir chamber; characterized by:

(a) a temperature-responsive valve member disposed in one of said fluid operating chamber and said fluid reservoir chamber and being operatively associated with said valve plate and said first fluid discharge opening;

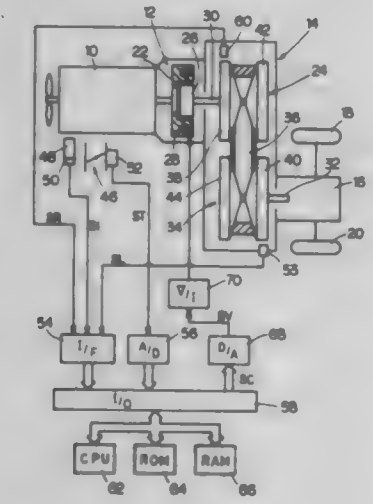
(b) said temperature-responsive valve member being movable, in response to changes in the temperature of the fluid in said operating and reservoir chambers, between a first position in which said valve member restricts the flow of fluid through said first discharge opening when said fluid temperature is less than a predetermined maximum temperature, and a second position in which said valve member permits relatively unrestricted flow of fluid through said first discharge opening when said fluid temperature is greater than said predetermined maximum temperature, whereby fluid flows from said operating chamber to said reservoir chamber to reduce the temperature of the fluid.

4,606,446

APPARATUS FOR CONTROLLING A MAGNETIC PARTICLE CLUTCH FOR USE IN A VEHICLE

Tomoyuki Watanabe, Susono, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Japan

Filed Apr. 4, 1984, Ser. No. 596,806
Claims priority, application Japan, Apr. 8, 1983, 58-062798
Int. Cl.[4] F16D *27/00*
U.S. Cl. 192—0.076 **8 Claims**



1. A vehicle comprising an engine, a continuously variable transmission including a driving pulley comprising a fixed member and a movable member, the movable member being actuated by an hydraulic cylinder to form an opening between the movable member and the fixed member, a driven pulley with another fixed member and another movable member, said another movable member being similarly actuated by another hydraulic cylinder to form another opening between the movable member and the fixed member, and a belt member spanning the pulleys so that an effective diameter of the pulleys can be varied with regard to each other to obtain different speed ratios, a magnetic particle clutch including a field coil therein, the magnetic particle clutch being provided between the engine and the continuously variable transmission and functioning to control the torque transmitted from the engine to the continuously variable transmission according to the magnitude of an electric current fed into the field coil, and an apparatus for controlling the amount of the torque transmitted by controlling the electric current fed into the field coil, comprising:

an engine rotation speed detecting means for detecting an actual engine speed;

an engine load detecting means for detecting an engine load applied onto the engine;

an engine output torque determining means for determining actual engine output torque according to the engine speed detected by the engine rotation speed detecting means and the engine load detected by the engine load detecting means;

an electric current control means for determining the amount of the electric current to be fed into the field coil according to the actual engine output torque determined by the engine output torque determining means, and for setting a predetermined value for the transmitted torque of the magnetic particle clutch so that the magnetic particle clutch only transmits torque having a value less than said predetermined value;

a vehicle speed detecting means for detecting a vehicle speed; and

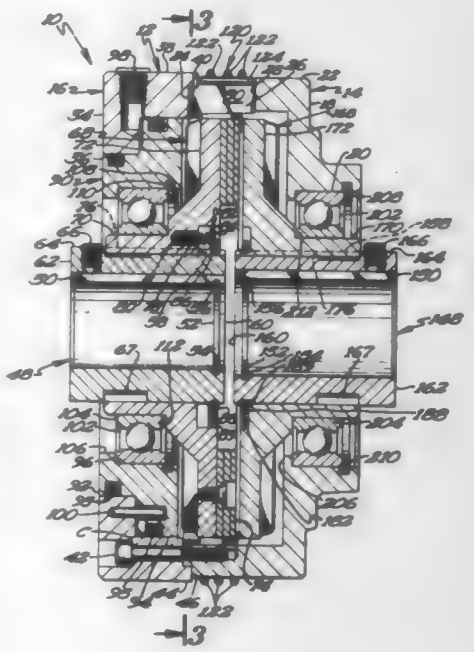
a clutch engagement blocking means for reducing the electric current fed into the field coil to disengage the magnetic particle clutch.

4,606,447

COUPLING CLUTCH AND A SELF-CONTAINED, NON-REMOVABLE GUARD

Leonid Dayen, Plymouth, and Charles D. Raines, Blaine, both of Minn., assignors to Horton Manufacturing Co., Inc., Minneapolis, Minn.

Filed Jul. 12, 1984, Ser. No. 630,374
Int. Cl.[4] F16D *25/061, 13/72*
U.S. Cl. 192—85 C **20 Claims**



1. Coupling clutch comprising, in combination: a first hub for receipt of a first shaft in a non-rotatable condition; a second hub for receipt of a second shaft in a non-rotatable condition; a first disc; means for slideably mounting the first disc on the first hub; means for biasing the first disc in a first axial direction towards a first axial position on the first hub; a second disc, with the second disc being selectively engageable with the first disc to rotatably relate the first disc and the second disc; means for slideably mounting the second disc on the second hub; a first shell section; a second shell section; means for interconnecting the first shell section to the second shell section to form a clutch housing; means for rotatably mounting the first shell section on the second disc; with the first shell section including an axially extending annular flange terminating in an abutment edge, with the abutment edge abutting with the second shell section in an interconnected relation, with the annular flange

having an outer diameter; circumferentially spaced cooling air openings formed in the housing extending axially from the abutment edge of the flange; a piston reciprocally received in the housing; a cylinder for receipt of fluid pressure for reciprocating the piston within the housing in the opposite axial direction towards a second axial position and wherein the first disc engages with the second disc; means for sealing between the piston and the housing; means for axially relating the piston and the first disc and for rotatably mounting the piston with respect to the first disc wherein the tolerances of the piston and the cylinder and the sealing means allow the canting of the first disc with respect to the first hub to take up horizontal misalignment of the first and second shafts; means for substantially preventing slideable movement of the second disc with respect to the second hub and for allowing the canting of the second disc with respect to the second hub to take up angular misalignment of the first and second shafts; and guard means for allowing entry of cooling air into the cooling air openings, for preventing entry of a finger into the cooling air openings, and for preventing removal of the guard means without the disassembly of the first and second shell sections from each other, with the guard means comprising, in combination: a plurality of circumferential ring members having a shape and an inner diameter substantially equal to but slightly larger than the outer diameter of the annular flange and for receipt thereon; and cross braces for holding the ring members in a spaced relation, with the cross braces being secured on the inner diameter of the ring members in circumferentially spaced relation corresponding to and for receipt within the cooling air openings.

4,606,448

SUPPLY PRESSURE CONTROL DEVICE FOR AIR CLUTCH

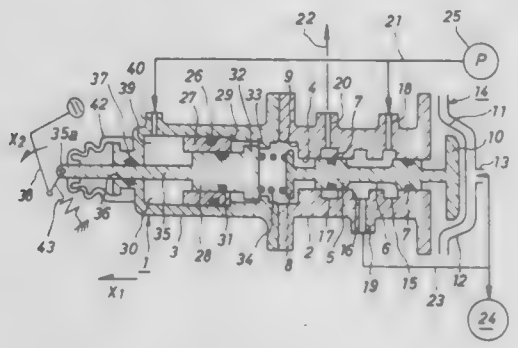
Takenori Kamio, Osaka, Japan, assignor to Kabushiki Kaisha Daikin Seisakusho, Osaka, Japan

Filed Sep. 10, 1984, Ser. No. 648,975

Claims priority, application Japan, Sep. 29, 1983, 58-182276; Sep. 30, 1983, 58-184082

Int. Cl.⁴ F16D *25/02*

U.S. Cl. 192—85 R **10 Claims**



1. A supply pressure control device for a pneumatic clutch comprising:

a valve for controlling pneumatic pressure supplied to a pneumatic clutch, having means for connection to a source of pneumatic pressure, and means for supplying clutch supply pressure to a pneumatic clutch;

means for connection to a clutch pedal;

a pneumatic feed-back mechanism providing pneumatic clutch supply pressure to said valve in the direction which tends to reduce clutch supply pressure,

a control spring elastically urging said valve in the direction which tends to increase clutch supply pressure against the pneumatic feedback mechanism,

a spring bearing operable to change a resilient force of the control spring, the spring bearing being connected the means for connection to a clutch pedal in order to actuate the spring bearing in the direction of reducing the resilient force of the control spring when the clutch pedal is depressed, and

a stepping force loading mechanism for resisting movement of the spring bearing in response to movement of the means for connection to a clutch pedal corresponding to depression of the clutch pedal,

wherein the spring bearing operable to change the resilient force of said control spring is formed in a piston-shape, wherein an air spring chamber urging the control spring in the direction of compression is formed in a cylinder part of the valve which receives the spring bearing, wherein the air spring chamber serves as said stepping force loading mechanism, and

wherein a cylindrical member is fitted so as to freely slide in said cylinder part, a column formed on said spring bearing is fitted so as to freely slide in the cylindrical member, and a shouldered part is formed on an inner peripheral surface of the cylinder part limiting sliding motion of the cylindrical member to the control spring side.

4,606,449

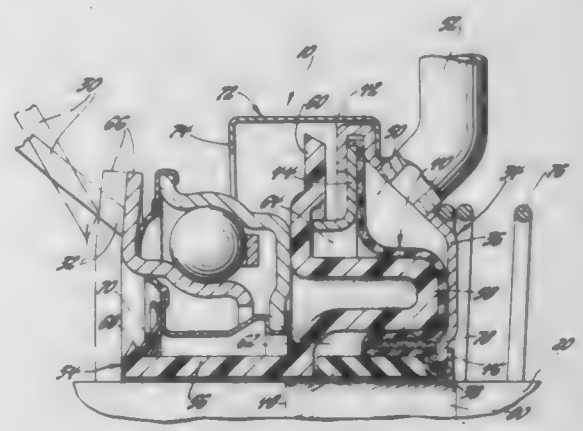
HYDRAULIC CLUTCH RELEASE MECHANISM

Frederick E. Lederman, Sandusky, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Jun. 7, 1985, Ser. No. 742,424

Int. Cl.⁴ F16D *25/04, 25/08, 13/75*

U.S. Cl. 192—91 A **3 Claims**



1. A hydraulic clutch release mechanism of the type in which hydraulic fluid is introduced into a fluid chamber to expand it from an unexpanded state to move a clutch member from a clutch engaged to a clutch disengaged position relative to a transmission, said clutch being of the type in which said clutch engaged position of said clutch member shifts progressively relative to said transmission as said clutch wears throughout the life of the clutch, said mechanism providing for a constant volume of hydraulic fluid within said mechanism throughout the life of the clutch, comprising,

a housing movable between said clutch member and transmission within which said expandable fluid chamber is located and including means for the introduction of hydraulic fluid to said fluid chamber,

a release member movable relative to said housing toward said clutch member by the expansion of said fluid chamber,

resilient means biased between said transmission and housing to move said housing toward said clutch member and to maintain said housing at an operative position with respect to said clutch member so that said release member lightly engages said clutch member at every clutch engaged position throughout the life of the clutch and to maintain said fluid chamber in said unexpanded state with an initial volume that is constant at said operative position, and,

anchoring means operable upon the initial introduction of hydraulic fluid to said fluid chamber at its initial volume to fix said housing at said operative position, whereby the same volume of hydraulic fluid may be introduced to said fluid chamber to expand it sufficiently from said initial volume to thereby move said release member toward said clutch member sufficiently to move said clutch member to its clutch disengaged position, thereby providing for a

constant total volume of fluid within said mechanism throughout the life of the clutch.

4,606,450

FRICTION CLUTCH DRIVEN PLATE

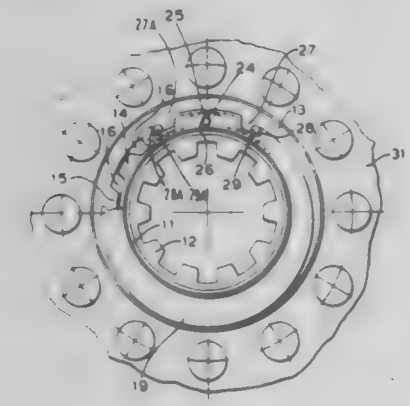
Robert J. Ball, Leamington Spa, and Denzil J. W. Symonds, Warwick, both of United Kingdom, assignors to Automotive Products plc, Warwickshire, England

Filed Mar. 8, 1985, Ser. No. 709,924

Claims priority, application United Kingdom, Mar. 9, 1984, 8406198

Int. Cl.[4] F16D *3/14, 3/77*

U.S. Cl. 192—106.2 9 Claims



1. A friction clutch driven plate comprising an inner hub, a sleeve rotatably mounted on the inner hub, means for limiting the relative angular movement between the hub and the sleeve, a friction facing carrier carried by the sleeve, means for controlling said relative angular movement comprising at least one circumferentially extending spring arranged to be loaded in bending during said movement, axial abutments on the inner hub and on the sleeve for each spring whereby each spring acts as a circlip to provide axial location between the hub and the sleeve.

4,606,451

CLUTCH PLATE WITH TWO STAGE DAMPING MEANS

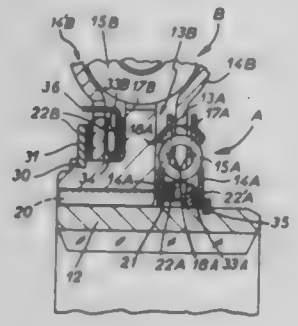
Cecilio Martinez-Corral, Madrid, Spain, and Marcel Blond, Savigny-le-Temple, France, assignors to Valeo, Paris, France

Filed Sep. 11, 1984, Ser. No. 649,303

Claims priority, application France, Sep. 14, 1983, 83 14610

Int. Cl.[4] F16D *3/14, 3/66, 13/64*

U.S. Cl. 192—106.2 10 Claims



1. A clutch plate comprising a friction disc carrying friction facings and a hub mounted for angular movement relative to each other within a predetermined range of angular displacement, first and second stage torsion damping means coupling said friction disc and hub together, the first stage torsion damping means being lower rated than the second stage torsion damping means, each of said torsion damping means including a radial flange, two guide washers fixed to each other and disposed an axially opposite sides of the associated flange, and resilient means interposed circumferentially between each of the flanges and the associated guide washers, the first stage damping means being operatively connected between said hub and said second stage damping means and the flange of the second stage damping means being mounted with angular clearance on said hub, said friction disc being fixed to one of said guide washers of said second stage damping means, said flange of said first stage damping means being defined by a selected one of said guide washers of the second stage damping means and said guide washers of said first stage damping means being fixed for rotation with said hub.

4,606,452

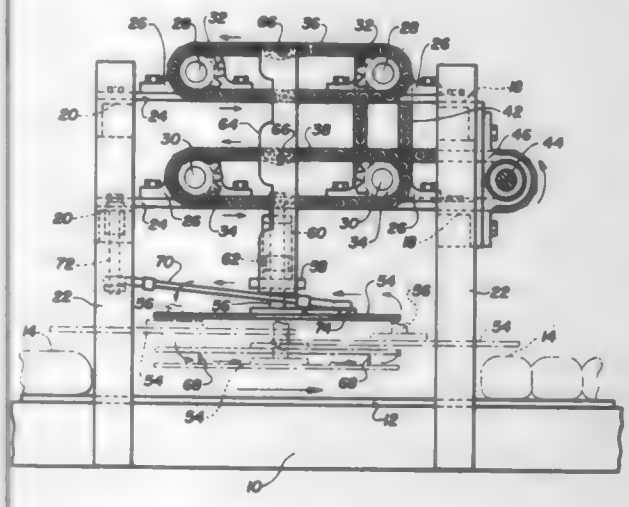
CONVEYOR AND WORK STATION FOR TURNING BAKERY PRODUCTS

Dale S. Lecrone, 2410 W. Main St., Jackson, Mich. 49202

Filed Jan. 24, 1985, Ser. No. 694,670

Int. Cl.[4] B65G *47/24*

U.S. Cl. 198—411 6 Claims



1. A conveyor and work station system operable to rotate elongated baked products from one position on the conveyor to a second position thereon in which they are adapted for current types of packaging, said system comprising in combination, a stationary frame, a conveyor movable longitudinally therealong, means to deposit said elongated products upon said conveyor with the axes extending in said one direction thereon, a work station comprising at least one pad supported for rotation about an axis perpendicular to said conveyor, means mounted above said conveyor on said frame and operable to engage said pad sequentially with said products and move said pad at the same speed and direction as said conveyor while said pad is rotated positively about an axis perpendicular to said conveyor and thereby rotate said products to said second position upon said conveyor, means operable sequentially to effect disengagement of said pad from said products substantially at the completion of turning said products as aforesaid, and means to rotate said pad positively while the axis thereof moves at the speed of the conveyor, said rotating means comprising means extending between and respectively connected to a part of said pad and a fixed location upon said stationary frame and operable to retard the movement of said part of said pad and effect rotation thereof and baked products engaged thereby while the axis of said pad moves at the speed and in the same direction of said conveyor.

4,606,453

EYEGLASSES VISOR AND CASE

Catherine T. Burns, 1159 Cimarron Ct., Clarkston, Ga. 30021

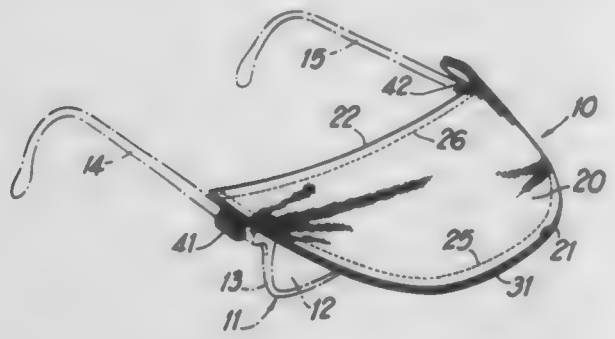
Filed Apr. 22, 1985, Ser. No. 725,762

Int. Cl.[4] A45C *11/04*

U.S. Cl. 206—5 5 Claims

1. A visor to be mounted to the limbs of a pair of eyeglasses or the like and worn in front of the forehead to shade the eyes, comprising two plies of approximately cresent-shaped material in overlying relationship having aligned concave edges for placement adjacent the forehead and aligned convex edges for extending away from the forehead, said plies of material being attached to each other along their convex edges and unattached along their concave) edges to form a pocket therebetween, the pocket formed by said plies of material being of a

size large enough to substantially contain the eyeglasses, and limb attachment means connected to said plies of material



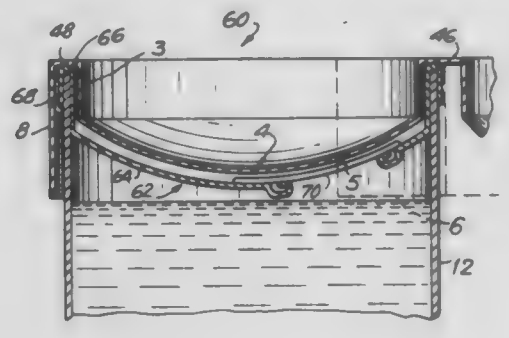
adjacent the ends of the convex edges for attaching the visor to the limbs of a pair of eyeglasses.

4,606,454

PROTECTIVE PACKAGING SYSTEM FOR A PLURALITY OF CONTAINERS

Thomas P. Hambleton, R.D. 1, Box 522, Pine Bush, N.Y. 12566; Harold F. Tighe, Jr., 142 N. Beacon St., and John J. Michels, Apt. 30-D Rockwood Garden Apartments, both of Middletown, N.Y. 10940

Filed Oct. 11, 1984, Ser. No. 659,634
Int. Cl.[4] B65D *75/00*
U.S. Cl. 206—150 7 Claims



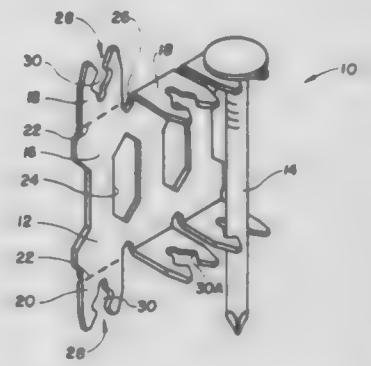
1. A protective packaging system for a plurality of containers comprising a top protective cover engaging and protecting the top end closures of a plurality of containers with each container having an upper unchimed rim and a concave top end closure, each top end closure including a generally upwardly directed flange member and a generally downwardly directed sealing skirt, said flange and skirt sandwiching the upper rim of each container, an enclosing means disposed around at least a portion of the plurality of containers and the top protective cover for maintaining the top protective cover in contact with the top end closures of the containers, said top protective cover includes a plurality of spaced apart depressions disposed therein contoured and fitting against the upper surface of the end closures, a downwardly extending flange circumferentially disposed around the periphery of the top protective cover, container top end receiving grooves formed adjacent to at least a portion each depression and receiving therein at least a portion of the top edge of the end closure of an associated, and downwardly extending hollow spacers disposed from the bottom surface of the top protective cover member, the spacers having walls contoured and fitting against the sealing skirt portions of adjacent containers.

4,606,455

COLLATED FASTENER STRIP

Raimonds Grikis, Morton Grove, and Allen R. Obergfell, Des Plaines, both of Ill., assignors to Duo-Fast Corporation, Franklin Park, Ill.

Filed Aug. 17, 1984, Ser. No. 642,066
Int. Cl.[4] B65D *85/24*
U.S. Cl. 206—347 5 Claims



1. A carrier for a series of fasteners of the type having an integral body of flexible plastic material with an elongated web portion and a first plurality of spaced tabs extending in a first direction transverse to the web along a first elongated edge thereof, the improvement which comprises

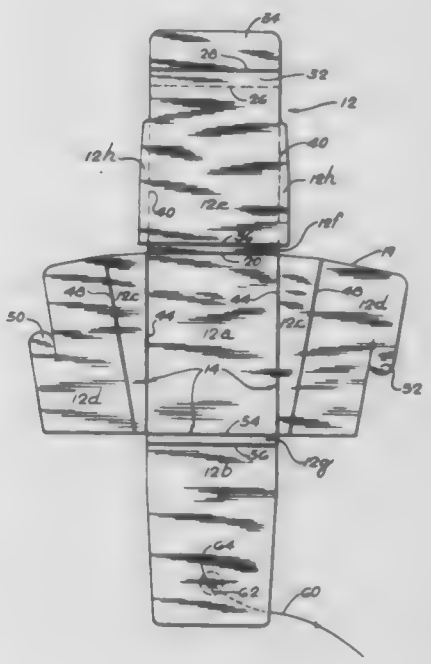
an open-ended slot extending in each of said first plurality of tabs in said first direction such that the center line of said slot is perpendicular to said first elongated edge and including an enlarged opening defined by a plurality of straight line segments, said opening including two generally V-shaped edges on opposite sides of the slot, the apexes of said V-shaped edges being positioned in a line in a second direction transverse to said first direction and the leg portions of each of said V-shaped edges being of substantially equal length.

4,606,456

MULTI-USE PACKAGE

Darryl L. Kaminski, Greendale, Wis., assignor to EZ Paintr Corporation, Milwaukee, Wis.

Filed Mar. 20, 1985, Ser. No. 713,974
Int. Cl.[4] B65D *75/14, 5/50*
U.S. Cl. 206—362.4 8 Claims



1. A storage container for use with variable size paint brushes erectable from a one piece integral blank of scored, pliant material comprising:

a main panel adapted to form the rear side of the container generally parallel to one face of a brush;

a pair of opposed, generally tapered side panels foldably

connected along a score line to the side edges of said main panel;

a pair of interlocking closure flaps foldably connected along a score line to the forward edges of said side panels;

a front wall panel foldably connected along a score line to the bottom edge of the main panel; and

an innerlying, adjustable spacer panel foldably connected along a score line to the upper edge of the main panel, said spacer panel comprising at least two score lines, one of said score lines providing means to size the brush receiving opening and the second score line providing means for varying the depth of said innerlying adjustable spacer panel to accommodate brushes having different bristle lengths.

4,606,457

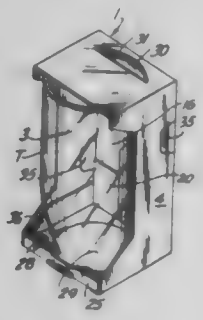
MODULAR DISPLAY PACKAGE

Richard E. Pugh, Lancaster, Ohio, assignor to Anchor Hocking Corporation, Lancaster, Ohio

Division of Ser. No. 639,902, Aug. 13, 1984. This application May 30, 1985, Ser. No. 739,281

Int. Cl.[4] B65D *85/44*

U.S. Cl. 206—426 **1 Claim**



1. A display package for discrete articles, comprising:

a. top and bottom wall panels,

b. a pair of side wall panels comprising first and second side wall panels, said side wall panels being hingedly connected to opposite edges of said top wall panel,

c. the bottom wall panel being hingedly connected to said first side wall panel on the end opposite that connected to said top wall panel,

d. said second side wall panel having adhesive flap means extending therefrom hingedly connected to said bottom wall panel,

e. a pair of rear wall panels with each of said first and second side wall panels having one of said rear wall panels extending therefrom and foldable relative thereto along a fold line and each rear wall panel having an interlocking tab extending therefrom and an adhesive area,

f. each of said top and bottom wall panels having a rear flap panel hingedly extending therefrom,

g. interlock means, whereby when said modular display package is folded into operative assembly with said adhesive flap means being adhesively secured to said bottom wall panel, said interlock means interlocks said rear wall panels to each other and against said rear flap panels,

h. a retaining tongue cut in said top wall panel and a retaining wall panel hingedly connected to said bottom wall panel,

i. said retaining wall panel having an arcuate tongue cut therein,

j. said retaining wall panel having a front step panel defined by a fold line thereacross

k. each of said side panels include a cutout package locking tongue extending from the fold line between the side wall panels and the rear wall panels, and flap panels extending from opposite sides of and foldable relative to said retaining wall panel.

4,606,458

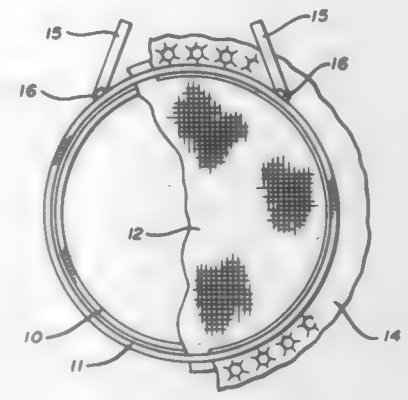
JEWELRY HOLDING DEVICE

Lisa V. LaBate, Chippewa Riviera Condo 1102, 2902-2910 Darlington Rd., Beaver Falls, Pa. 15101

Filed Jun. 10, 1985, Ser. No. 742,871

Int. Cl.[4] B65D *73/00;* **D05C** *1/04;* **D06C** *3/08*

U.S. Cl. 206—566 **1 Claim**



1. A jewelry holding and display device comprising in combination a flexible mesh screen for receiving and holdling an article to be displayed and a support frame for said flexible mesh screen, said support frame comprises a pair of interdependent coaxially arranged hoops supporting said flexible mesh screen therebetween, an annular band of decorative material positioned between said interdependent hoops and extending downwardly and horizontally outwardly therefrom to be parallel with said mesh screen, said band of material wedgably retaining said flexible mesh screen between said interdependent hoops.

4,606,459

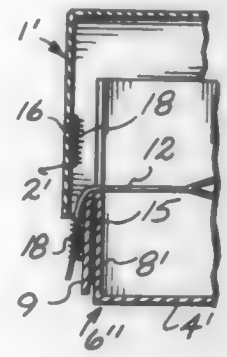
PROTECTIVE PACKAGING

Howard L. Luray, 15730 Beach Dr. Northeast, Seattle, Wash. 98155

Filed Oct. 15, 1984, Ser. No. 660,581

Int. Cl.[4] B65D *81/02*

U.S. Cl. 206—583 **11 Claims**



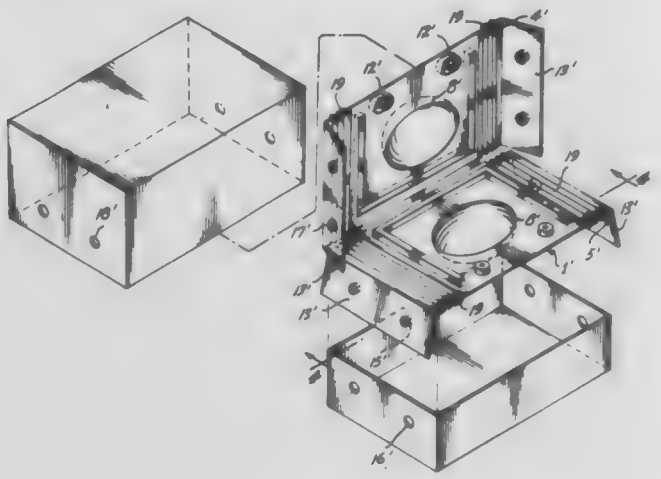
1. In protective packaging for a fragile article, such package including a substantially rigid outer box and a hammock for supporting the article inside the box and out of contact with the box, the improvement comprising the packaging including an insert closely fittable inside the box, said insert including opposite upright end walls having slots extending downward from the tops of said upright end walls, respectively, the bases of said slots being located about midway between the tops and bottoms of said end walls, and tabs swingably connected to said insert end walls, respectively, at the bases of said slots, the hammock having opposite end portions fittable in said slots and securable to said tabs, respectively, so that the hammock extends between said tabs and the corresponding insert end walls, each of said tabs being swingable outward and toward the outer side of its end wall so as to tension the central portion of the hammock between said tabs, said insert being proportioned so that said tabs are held in position tensioning the hammock when said insert is fitted inside the box.

4,606,460

PROTECTIVE PACKAGES

Howard L. Luray, 15730 Beach Dr. NE., Seattle, Wash. 98155

Continuation-in-part of Ser. No. 351,042, Feb. 22, 1982, abandoned. This application Nov. 1, 1983, Ser. No. 547,818
Int. Cl.[4] B65D *81/02*
U.S. Cl. 206—583 2 Claims



1. A protective package for a fragile article comprising a substantially rigid outer box having an open-topped base with opposite upright ends and upright sides extending between said ends, and a separate, one-piece, shock-absorbing cradle of thin, substantially rigid plastic sheet material having elongated top and bottom sections of the same size and shape integrally hinged together along corresponding longitudinal sides and bendable toward each other into a folded condition in face-to-face contact, said cradle sections in folded condition forming between them a closed cavity for the article which cavity is located centrally between the opposite ends of said cradle sections, said cradle sections having complemental interfitting projections and recesses including respective projections and recesses located at opposite sides of said cavity for maintaining said cradle sections in folded condition, the opposite end portions of said cradle extending downward along the outer surfaces of the opposite upright ends of said box base with the central article-enclosing portion of said cradle disposed inside said box and supporting the article out of contact with the walls of said box, the opposite longitudinal sides of said cradle being in unconnected relationship relative to said sides of said box so that said cradle is supported only at its opposite end portions and is free to flex up and down in the area of said cavity relative to said box, said box including an open-bottomed lid having opposite upright ends fitted over the downward-extending opposite end portions of said cradle so that said end portions of both of said cradle sections are fitted between said box base and lid with said cradle top section adjacent to said box lid and said cradle bottom section adjacent to said box base, and including means for securing the opposite end portions of said cradle bottom section to the opposite ends of said box base and means for securing said opposite end portions of said cradle top section to said opposite ends of said box lid for maintaining said box base, said cradle and said lid in connected relationship with the article enclosed inside said cradle and protected against breakage by shock-absorbing flexing of said cradle in said box.

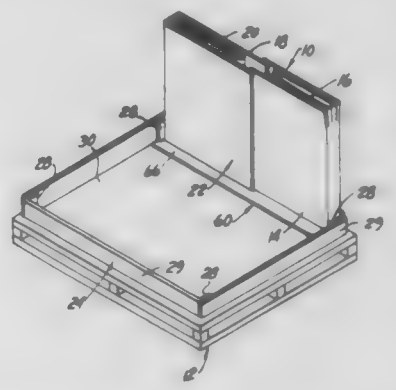
4,606,461

COLLAPSIBLE CONTAINER

Stanley S. Bolton, Sr., Monroe, Mich., assignor to Ace Paper Products Co., Monroe, Mich.

Filed Apr. 18, 1985, Ser. No. 724,525
Int. Cl.[4] B65D *19/00*
U.S. Cl. 206—600 20 Claims

1. A collapsible container comprising an enclosure made of four interconnected wall panels of cardboard-like material, two opposite ones of said wall panels being unscored wall panels and the two remaining opposite ones of said wall panels being scored with a billow score line disposed substantially at the center of each of said two remaining opposite wall panels parallel to each corner formed between each of said two remaining opposite wall panels and the two opposite ones of said unscored wall panels, a tray having a bottom panel and four side panels of predetermined height, said tray being so dimensioned that said enclosure may be placed in said tray, a scored sheet of pliable material having a pair of longitudinally disposed spaced apart score lines extending from one end to another end of said sheet each a predetermined distance from and parallel to an edge of said sheet, said score lines defining a first marginal portion, a central portion and a second marginal portion each foldable relative to an adjoining portion, means permanently attaching one of said marginal portions to the bottom of one of the opposite unscored wall panels of said enclosure, means permanently attaching the other of said lateral portions to the bottom panel of said tray proximate a side panel thereof, wherein each billow score line allows each of the scored wall panels to be inwardly foldable between the unscored wall panels for collapsing said enclosure to a predetermined thickness, and said scored sheet enables the resulting collapsed enclosure to pivot about the longitudinally disposed score line between the marginal portion of said scored sheet permanently attached to the bottom panel of said tray and said central portion of said scored sheet for folding said collapsed enclosure within said tray and to pivot about the longitudinally disposed score line between the marginal portion of said scored sheet permanently attached to the bottom of said one of the unscored wall panels and said central portion of said scored sheet, said central portion having a width larger than the thickness of the collapsed enclosure and narrower than the height of the side panels of said tray



4,606,462

TUBULAR CONTAINER HAVING A TEAR OPENING MEANS

Ingemar S. B. Bogren, 193 00 Sigtuna, Sweden

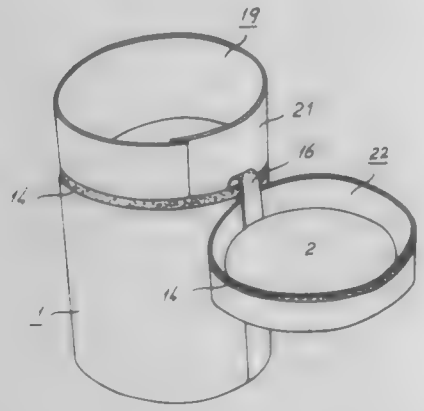
PCT No. PCT/SE84/00182, § 371 Date Jan. 7, 1985, § 102(e) Date Jan. 7, 1985, PCT Pub. No. WO84/04512, PCT Pub. Date Nov. 22, 1984
PCT Filed May 15, 1984, Ser. No. 694,671
Int. Cl.[4] B65D *3/04, 17/40*
U.S. Cl. 206—606 5 Claims

1. A container comprising a tubular sleeve having opposite end portions and a pair of end closures secured to said end portions to close the sleeve, said sleeve being formed from an initially flat substantially rectangular blank of a stiff base material, such as cardboard, that has a layer of weldable material over the surface thereof that is at the interior of the sleeve, said blank having a pair of opposite end edges which are at the end portions of the sleeve and having a pair of opposite side edges which are adjacent to one another at a side seam extending along the sleeve from one to the other of its said end portions, said container being characterized by:

A. a joining strip at the interior of the sleeve and adhering to said weldable layer, overlapping the margins of the blank at its side edges and all along said side seam to hold said side edges in abutting relationship to one another and seal the side seam;

B. said blank having a tear opening tongue which is spaced from both of said end edges of the blank and which projects from one of said side edges and across the other one and overlies the exterior surface of the sleeve near the side seam;

C. said sleeve having therein an outer pair and an inner pair of spaced apart cut lines all of which extend around the sleeve parallel to said end edges of the blank and which cooperate to define a tear strip that is removable by pulling outward on the tongue and removal of which divides



the container into two parts that are hingedly connected with one another by said joining strip,

(1) said outer cut lines being substantially aligned, respectively, with opposite edges of the tongue and extending partway into the base material from the outer surface thereof, and

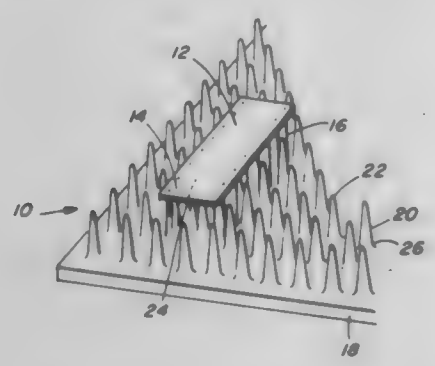
(2) said inner cut lines being between said outer cut lines and spaced from both of them and extending from the inner surface of the blank through said weldable material and partway into the base material.

4,606,463

INTEGRATED CIRCUIT DEVICE CARRIER

Leonard A. Stavis, Easton, Mass., assignor to American Paper Box Company, Inc., Charlestown, Mass.

Filed May 18, 1983, Ser. No. 495,796
Int. Cl.[4] A47F *7/00*
U.S. Cl. 211—13 **7 Claims**



1. A carrier for supporting integrated circuit devices that have pins extending downwardly from the underside of the device, comprising:

base means, and

a plurality of elongate, upright, flexible support members fixed to said base means and extending upwardly from said base means, said support members having lengths exceeding the length of said pins,

said elongate, upright, flexible support members terminating at their upward ends in support tips for supporting and cushioning said devices by supportably engaging the undersides of said devices,

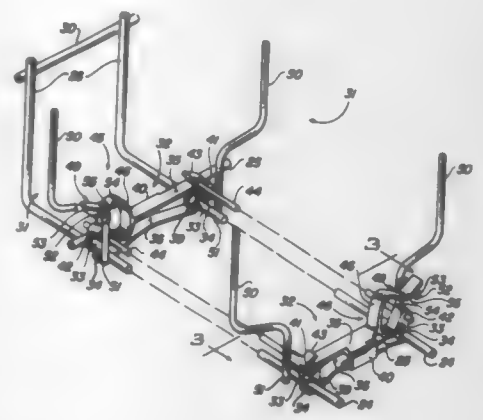
wherein said elongate, upright, flexible support members are spaced apart, defining distances between adjacent support members that are less than the width of said devices said support members being adapted to provide lateral support to said pins.

4,606,464

DISHWASHER RACK WITH PIVOTED DIVIDER ASSEMBLY

Lawrence J. Jordan, and Paul F. Schell, both of Newton, Iowa, assignors to The Maytag Company, Newton, Iowa

Filed Jan. 17, 1985, Ser. No. 692,216
Int. Cl.[4] A47G *19/08*
U.S. Cl. 211—41 **15 Claims**



1. A dishwasher rack assembly having a pivoted divider member, comprising: means defining a basic rack having a bottom wall including a plurality of spaced-apart longitudinal and lateral wire members; pivoted divider means having a selectable upright position and comprising a plurality of generally upstanding wire elements connected to at least one generally horizontal wire element; and at least one unitary support member for pivotally supporting one end portion of said pivoted divider means on said bottom wall for movement between said upright position and a folded-down position, said support member including a body portion and integral attaching means engageable with wire members of said dishwasher rack for attaching said support member to said bottom wall, means integral with said body portion defining at least one pivot aperture for receiving said end portion of said pivoted divider means, means for receiving and pivotally supporting the other end portion of said pivoted divider means, and combination camming and resilient biasing means integral with said body portion and engageable with a portion of said pivoted divider means for biased movement thereof from an intermediate position toward one of said upright and folded-down positions.

4,606,465

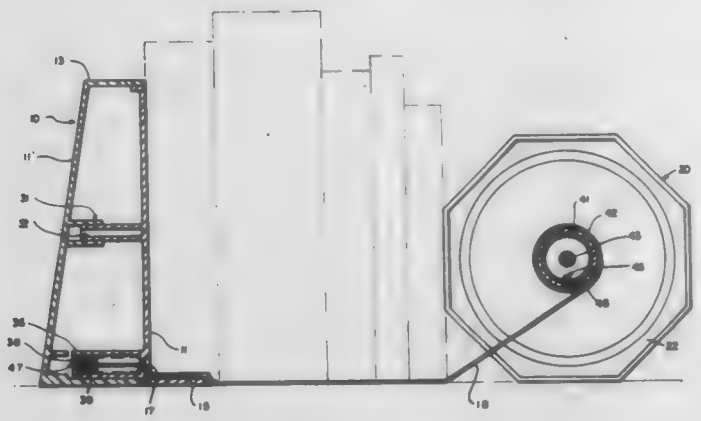
EXPANSIBLE SPRING-LOADED RETENTION CLAMP FOR BOOKS OR OTHER OBJECTS

Matthew A. Moustakas, Poughkeepsie, N.Y., assignor to Ketcham & McDougall, Inc., Roseland, N.J.

Filed Jan. 8, 1985, Ser. No. 689,674
Int. Cl.[4] A47B *65/00*
U.S. Cl. 211—43 **6 Claims**

1. A pair of geometrical elements arranged to be secured in an operative position, comprising a rotatable first body having an axis and a continuous perimeter, said perimeter formed by at least one polygonal wall, said first body being provided with oppositely disposed faces terminating in said at least one polygonal wall, a second body having at least a front wall, a rear wall, a top wall, and a pair of side walls, said second body being further provided with tensioning means disposed proximately to said bottom wall and secured to one extremity of a tethering means, the opposite extremity of said tethering means being secured to a retention means therefor provided on said

rotatable first body, where a series of objects may be placed between said bodies and retained in upstanding relation via the



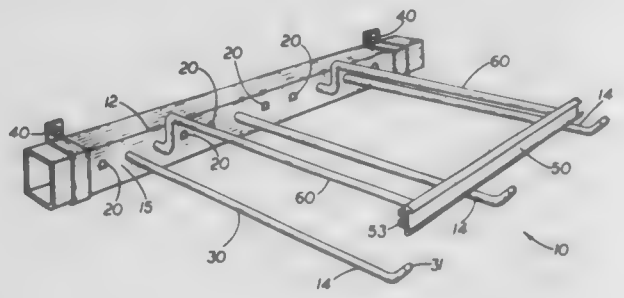
coaction of said tensioning means and said retention means when said first body is rotated about its axis.

4,606,466

PEGBAR DISPLAY DEVICE HAVING A CARRIER FOR GRAPHIC IDENTIFICATION

Howard J. Fredrickson, Cannon Valley Township, Goodhue County, Minn., assignor to Cannon Equipment Company, Cannon Falls, Minn.

Filed Apr. 2, 1984, Ser. No. 596,126
Int. Cl.[4] A47F 7/00
U.S. Cl. 211—59.1 20 Claims



1. A pegbar display system comprising:

a. a peg support having peg support means for accepting and supporting pegs;

b. a merchandise peg acceptable in said support means, said peg having means for displaying goods;

c. an information carrier having means for presenting graphic information associated with goods on said merchandise peg;

d. at least one carrier support peg having

1. a toe acceptable in and radially indexable in said support means,

2. an elongate standoff extending forward of and from said toe, and

3. means on an outer end for engaging and supporting the carrier; and

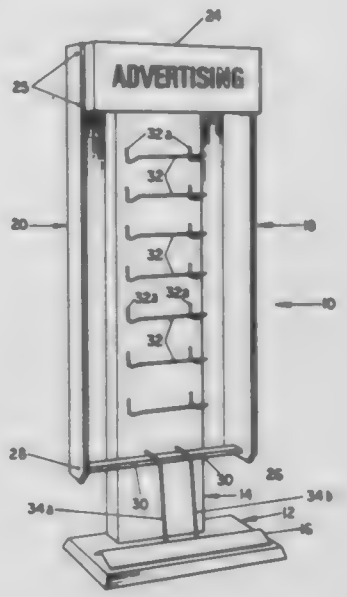
e. means in said carrier and on said outer end for selectively radially indexing said carrier support peg to said carrier, and for selectively releasing such radial index while the carrier support peg and the carrier are engaged, enabling turning of the carrier support peg with respect to the carrier and the support bar for removal of the carrier and carrier support peg as an assembly from the support bar.

4,606,467

DISPLAY STAND STRUCTURE

Lynn E. Everett, New Philadelphia, Ohio, assignor to Tusco Manufacturing Co., Gnadenhutten, Ohio

Filed Jun. 24, 1985, Ser. No. 747,577
Int. Cl.[4] A47F 7/00
U.S. Cl. 211—60.1 6 Claims



1. A display stand for displaying elongate products, said stand comprising;

(a) a base;

(b) a column having at least a front panel and two opposed side panels mounted on said base;

(c) a pair of elongate angle-shaped wing panels each having a side wing, one mounted on each opposed side of said column with said side wing of said angle-shaped wing in spaced relation to the adjacent opposed side panel of said column;

(d) means extending between and secured to the side wings of said pair of wing panels and to the front panel of said column; and

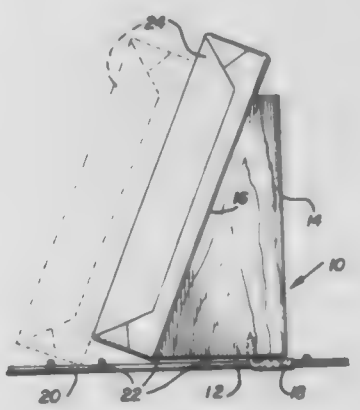
(e) means for horizontally supporting the elongate products on the front panel of said column between the side wings of said pair of elongate angle-shaped wing panels.

4,606,468

ATTACHMENT FOR DISPLAY SHELVES

Tracy A. Parker, 300 W. 10th St., and Ted L. Fronk, 928 W. Main St., both of St. Anthony, Id. 83445

Filed Jan. 4, 1985, Ser. No. 689,090
Int. Cl.[4] A47F 7/00
U.S. Cl. 211—184 7 Claims



1. An attachment for use in combination with a merchandise display shelf having spaced wire rods extending lengthwise the shelf, the attachment comprising a generally planar wedge-shaped element having securement means along one edge thereof for releasably securing the element in selected location on a shelf in a manner whereby another edge of the element provides a support surface against which a row of products can

be stacked whereby a forwardmost one of the products may be displayed at the front of the shelving wherein the securement means comprises a pair of rotatable screw-in hooks for engaging a selected rod of a shelf, the rotatable hooks enabling either one of the other edges of the element to be presented toward the front of the shelf.

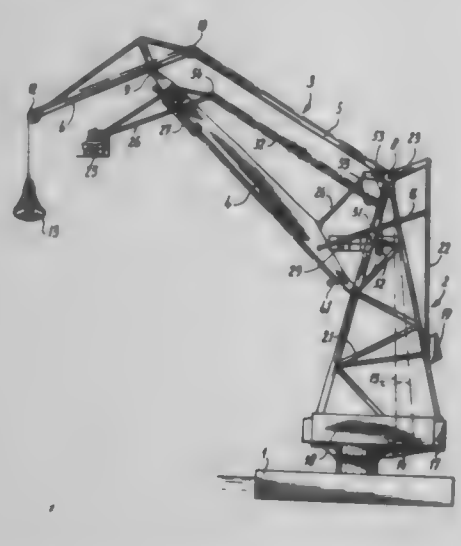
4,606,469

DOUBLE LINK LEVEL LUFFING CRANE

Jan D. A. Van Deijk, Barendrecht, Netherlands, assignor to Frans Swarttour B. V., Rotterdam, Netherlands

Continuation of Ser. No. 523,666, Aug. 15, 1983, abandoned.
This application Sep. 23, 1985, Ser. No. 778,298
Claims priority, application Netherlands, Aug. 16, 1982, 8203338

Int. Cl.[4] B66C *23/10, 23/52*
U.S. Cl. 212—256 2 Claims



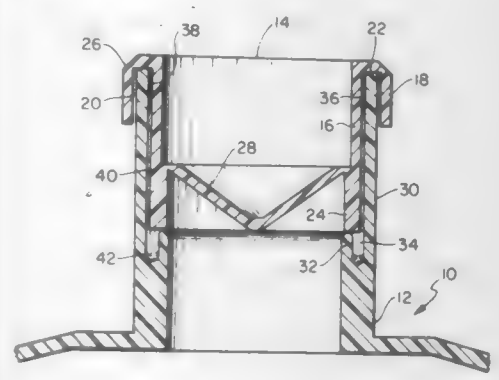
1. A double line level luffing crane comprising:
a base,
a jib including a strut member having first and second ends, said first end of said strut member hinged to said base,
a backstay member having first and second ends, said first end hinged to said base,
a jib head member having first and second ends, said first end including means suspended therefrom adapted to hoist a load, said second end being hinged to said second end of said strut member and to said second end of said backstay member,
drive means for luffing said jib in and out,
means coupled to said first end of said jib head for hoisting a load,
a driver cab,
a cab link having first and second ends,
said driver cab hinged on said first end of said cab link,
a carriage movably mounted on said strut member,
said cab link being pivotally mounted on said carriage,
at least one telescopic cab backstay member being mounted between said second end of said cab link and said base, cable means mounted on said telescopic cab backstay member, said cable means having a respective first and second end, said first end of said cable means being mounted on said base and
drive means mounted on said strut member and operatively connected to said second end of said cable means and to said carriage for moving said carriage along said strut member and simultaneously extending or retracting said telescopic cab backstay member.

4,606,470

SPIN FUSION METHOD AND CONTAINER MADE THEREFROM

John J. Barlics, North Edison, N.J., assignor to Superpac Vending (Curacao) N.V., The Bahamas

Filed Nov. 9, 1984, Ser. No. 670,353
Int. Cl.[4] B65D *41/02*
U.S. Cl. 215—232 7 Claims



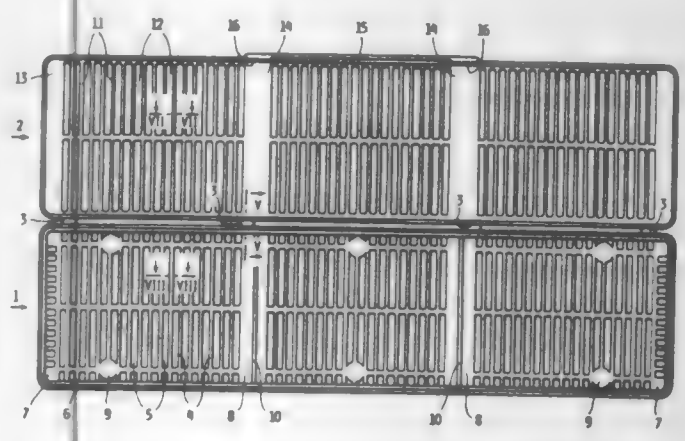
1. A container having a neck adapted for spin fusion to a closure for the container, comprising collecting means within the container for collecting fines generated during the spin fusion of the neck to the closure, the collecting means including a trough positioned within the neck of the container; sealing means for sealing fines in the trough, the sealing means including a skirt on the closure for the container, the skirt extending into the neck of the container and being engageable with the trough so as to seal fines therein; and a rim on the closure, the rim being beveled so as to function as a spin surface.

4,606,471

CAGE BOX OF PLASTICS WITH AN INTEGRAL COVER

Alessandro Quercetti, Strada S. Vito Revigliasco 48, I-10133 Torino, Italy

Filed Jun. 25, 1985, Ser. No. 748,610
Claims priority, application Italy, Jul. 17, 1984, 53644 B/84
Int. Cl.[4] B65D *1/24, 1/36, 57/00*
U.S. Cl. 220—22 9 Claims



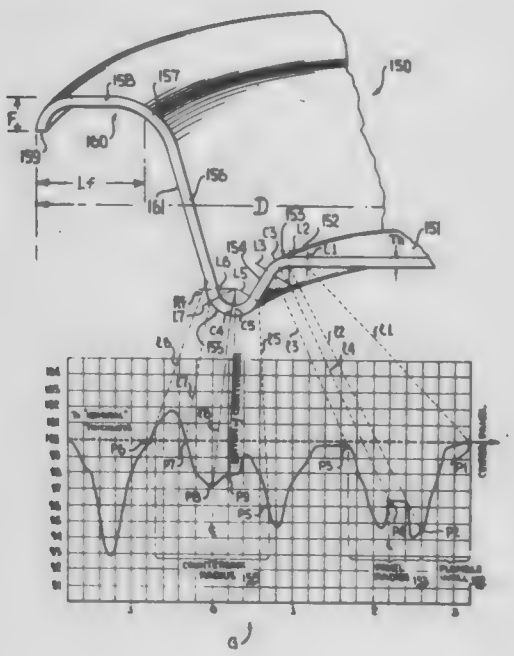
1. A box, particularly suitable for containing small items, which is made of a semiflexible plastic material, and comprises a box-type body, a cover and lamellar hinges connecting to one another said body and said cover, both the walls of the body and the main wall of the cover comprising a number of material elements between which there are open spaces whose global surface prevails over the global surface of said material elements, thus forming a cage structure.

4,606,472

REINFORCED CAN END

William L. Taube, Murrietta, Calif., and David A. Roberts, Wokingham, England, assignors to Metal Box, p.l.c., England

Division of Ser. No. 579,977, Feb. 14, 1984, Pat. No. 4,571,978.
This application Dec. 9, 1985, Ser. No. 806,979
Int. Cl.[4] B65D *8/08*
U.S. Cl. 220—66 13 Claims



1. A reinforced pressure resistant can end comprising a metallic blank having a generally circular center panel, a panel radius joining the center panel to a generally frusto-conical peripherally inner wall converging in a direction toward said panel radius and defining therewith and with said center panel a generally interior frusto-conical chamber subject to internal pressure when the can end is flanged to an associated can body, an annular exteriorly opening reinforcing countersink radius joining said frusto-conical peripherally inner wall with a generally frusto-conical peripherally outer wall, said frustoconical walls being in diverging relationship relative to each other in a direction away from said countersink radius, said outer frusto-conical wall merging with a flange adapted to be seamed to a can body, said metallic blank having a nominal unformed thickness reflected by the cross-sectional thickness of unformed portions of said center panel, and at least a portion of the cross-sectional thickness of said countersink radius being greater than the cross-sectional thickness of the unformed portions of said center panel.

4,606,473

READILY REPAIRABLE AND LIGHTWEIGHT INSULATING COVER FOR A HEATED METAL CONTAINER

Thomas M. Miller, North Olmsted, and Raymond J. Schraff, Cleveland, both of Ohio, assignors to Eltech Systems Corporation, Boca Raton, Fla.

Division of Ser. No. 656,826, Oct. 2, 1984, Pat. No. 4,530,441.
This application Jul. 12, 1985, Ser. No. 754,479
Int. Cl.[4] B65D *6/10*
U.S. Cl. 220—215 26 Claims

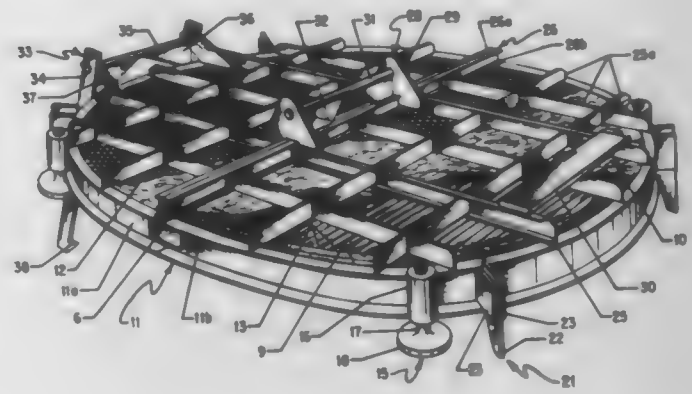
1. A lightweight insulation cover adapted for retaining heat in a heated metal container, which cover comprises:

a frame member sized at least substantially to the upper aperture of a heated metal container;

ceramic fiber insulation filler in form-stable structural units within said frame member, there being units of different orientation within said frame member, said units including perimeter units positioned along the inner facing of said frame member and in snug relationship therewith;

a foraminous covering over said insulation filler;

securing means connecting said insulation filler to said foraminous covering; and



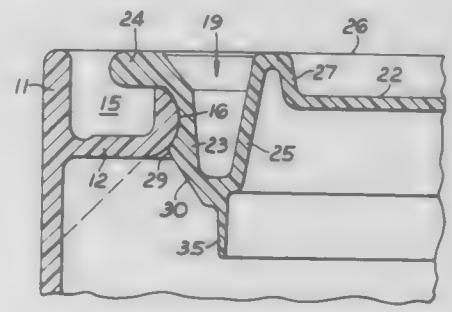
stiffening members over said foraminous covering and affixed to said frame member.

4,606,474

CONTAINER WITH PLUG-FITTING LID

Henryk Dudzik, Mansfield, England, assignor to Mardon Illingworth Limited, Nottinghamshire, England

Filed Dec. 9, 1985, Ser. No. 807,166
Claims priority, application United Kingdom, Dec. 19, 1984, 8431993
Int. Cl.[4] B65D *39/00*
U.S. Cl. 220—307 13 Claims



1. A container comprising a plastics moulded body and a plastics moulded lid;

(i) the body comprising a cylindrical main wall, a bottom closing one end of the main well, an inwardly directed peripheral flange adjacent the opposite end of the main wall and spaced from said opposite end, and a peripheral lip integral with the flange, the lip having an inner surface defining a mouth of the body and an outer surface defining a peripheral channel with the flange and the main wall, said inner surface of the lip being convex in cross-section;

(ii) the lid comprising a main closure portion, a skirt integrally connected with the main closure portion and surrounding the latter and a peripheral rim projecting outwardly of the skirt, said skirt having an outer peripheral surface which is concave in cross-section and extends adjacent said rim, said outer peripheral surface being complementary to the peripheral inner surface of said lip of the body;

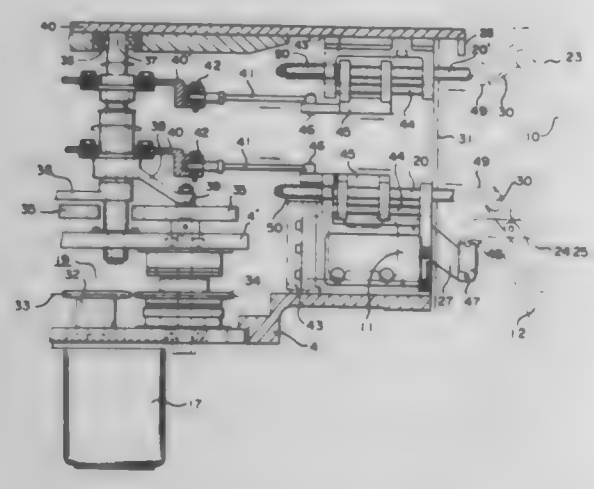
(iii) whereby said skirt can be snap-fitted into firm, sealing, plug-fitting engagement in said lip with said rim of the lid extending over said flange of the body so that a tool can be fitted between said flange and said rim to lever off the lid.

4,606,475

COMBINATION MEASURING APPARATUS

Mitsugu Usagawa, 2-19-8, Ujinakaigan, Minami-ku, Hiroshima-shi, Hiroshima-ken, Japan

Filed Jul. 10, 1984, Ser. No. 630,580
Claims priority, application Japan, Jul. 19, 1983, 58-130277
Int. Cl.[4] B67D *5/08*
U.S. Cl. 222—58 14 Claims



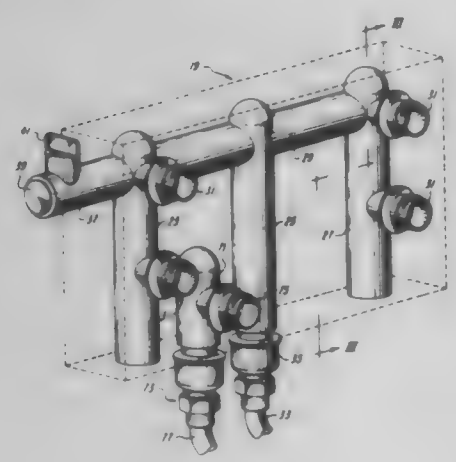
1. In a combination measuring apparatus of the type in which a large number of troughs are arranged radially around a dispersion table and pool hoppers and measuring hoppers are positioned vertically so as to correspond to each of said troughs, and a driving device for push rods mating with cover-operating links for covers of said pool and measuring hoppers is positioned within the circle of said pool and measuring hoppers, the improvement wherein comprising sliders connected to said driving device by connecting rods connected to rotary links said sliders providing clutches for the selective engagement of each of the sliders to each corresponding push rods, and wherein said push rods can move back and forth in the radial direction relative to subframes disposed on a frame and can engage with said clutches of said sliders disposed on said sub-frames.

4,606,476

SYSTEM FOR SANITIZING BEVERAGE DISPENSING SYSTEMS

Richard L. Pocock, 88 Stockbridge Rd., Scituate, Mass. 02066, and Kevin M. Looney, 27 Old Billerica Rd., Bedford, Mass. 01730

Filed Jun. 17, 1985, Ser. No. 745,599
Int. Cl.[4] B67D *1/08;* B08B *3/00*
U.S. Cl. 222—148 7 Claims



1. A system for sanitizing beverage dispensing systems that utilize collapsible bag and box type beverage containers, said dispensing system including a collapsible bag, having one port, supported by a box, said port being attached to a bag hose through a hose end fitting, said bag hose being attached to a pump for drawing liquid from said bag, and said pump being connected to a dispensing head through a pump hose, said sanitizing system comprising:

(a) a manifold block including a main manifold chamber having one input and at least one output, and a vented portion, said at least one output having attached thereto a manifold fitting capable of releasably sealably mating with said hose end fitting of said bag hose;

(b) said input to said manifold chamber being connected to an input hose having, at its distant end, an input fitting of substantially identical sealing structure as said hose end fitting of said bag hose;

(c) said manifold block also including at least one secondary chamber having an input and an output, said input being attachable through a secondary chamber input hose to a fluid source, and said output being fitted with a fitting of substantially identical sealing structure as said manifold fitting, said output fitting being capable of mating in a sealable relationship with said input fitting at the distant end of said input hose; and

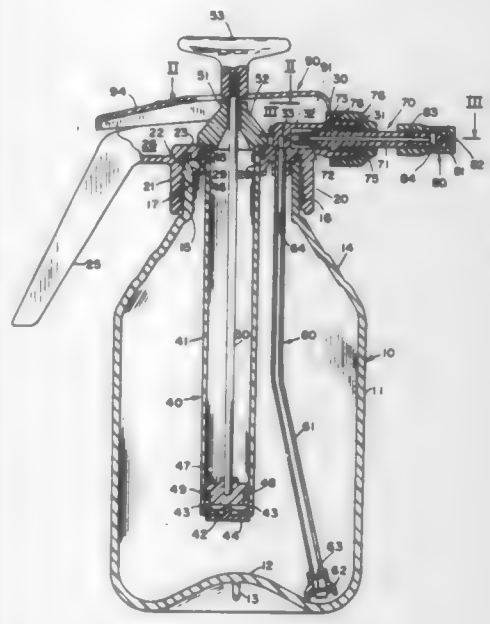
(d) a cleaning fluid container connected through said input fitting to said distant end of said input hose such that cleaning fluid may be drawn through said input hose, into said main manifold chamber, out of said at least one output port, through a bag hose attached to said at least one output port, through said pump, said pump hose and said dispensing head.

4,606,477

PORTABLE PRESSURE SPRAYER

William E. Spengler, Toledo, and William C. Ramsey, Bryan, both of Ohio, assignors to Tolco Corporation, Toledo, Ohio

Division of Ser. No. 514,510, Jul. 18, 1983, Pat. No. 4,537,334.
This application Apr. 18, 1985, Ser. No. 724,534
Int. Cl.[4] B67B *5/00*
U.S. Cl. 222—153 34 Claims



1. A portable pressure sprayer comprising:

(A) a reinforced plastic container with a neck,

(B) a plastic cap means threaded on said neck having an integral handle, a nozzle connecting means, and a pair of parallel ribs forming a channel between said handle and said nozzle connecting means,

(C) a manually operated pump means supported by said cap means including means for snap-locking said pump means in said channel to said cap means comprising diametrically opposite resilient hooks on said pump means which snap lock into opposing slots in said pair of parallel ribs.

(D) a plastic siphon tube depending from said cap means into said container, and being in fluid communication with said nozzle connecting means,

(E) a nozzle means connectable to said nozzle connecting means and having a normally resiliently closed valve means, and

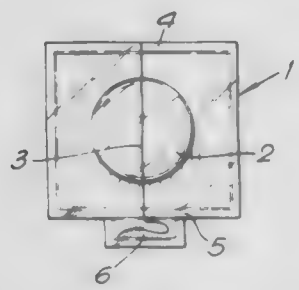
(F) a lever means in said channel adjacent said integral handle for operating said valve means.

4,606,478

DEVICE FOR CONTROLLING ECTOPARASITES

Richard J. Hack, Wilmington, Del.; Jakie A. Hair, Stillwater, Okla.; John N. Hall, Newark, Del.; John L. Alexander, Wilmington, Del., and Stanley D. Samluk, Newark, Del., assignors to NOR-AM Chemical Company, Wilmington, Del.

Filed Sep. 26, 1983, Ser. No. 535,650
Int. Cl.[4] B67D *3/00*
U.S. Cl. 222—187 5 Claims



1. A device for dispensing liquid pesticide comprising a reservoir of liquid pesticide, a fibrous wick extending through said reservoir in communication with said liquid pesticide, said wick having a first end and a second end remote from said first end, said first end extending sealably outwardly beyond said reservoir to comprise a means for applying the pesticide to an animal by means of a wicking action, said second end being exposed to the atmosphere to prevent a negative pressure developing inside said reservoir, said wick having a diameter of less than three millimeters, means for attaching said device to an animal, said end of said wick which comprises said applicating means being maintained in a sealed chamber to seal said wick end from the atmosphere until the time of intended use, including a tag having a fold line to comprise a first part on one side of said fold line and a second part on the other side of said fold line, said parts being folding into contact with each other with said reservoir therebetween, said reservoir being in the form of a bulbous sachet, and one of said tag parts having a cut away portion through which said sachet protrudes.

4,606,479

PUMP FOR DISPENSING LIQUID FROM A CONTAINER

Owen F. Van Brocklin, Bristol, Conn., assignor to Risdon Corporation, Naugatuck, Conn.

Filed Apr. 16, 1984, Ser. No. 600,428
Int. Cl.[4] B67D *5/42*
U.S. Cl. 222—321 13 Claims

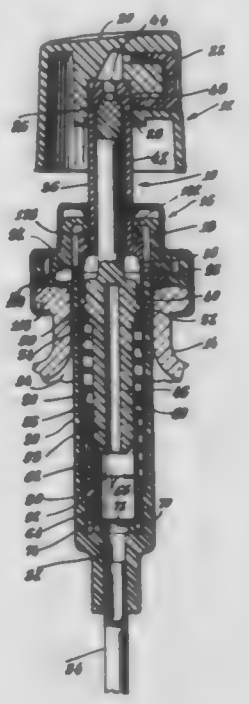
1. A non-throttling pump for dispensing liquid from a container comprising:

a cylinder having an inlet for receiving liquid from said container:

a piston slidable reciprocally in said cylinder, said piston having a interior chamber along its length and having an opening at one end thereof for dispensing liquid from said chamber, said piston being slidable against a bias through a downward stroke and with said bias through an upward stroke;

a valve member positioned in said chamber and having a dispensing valve at one end portion biased toward a position closing said opening, said valve member moveable under liquid pressure against said bias away from said opening to dispense liquid from said chamber, said valve member having a second end portion having a cylindrical surface;

an inlet valve for opening and closing said inlet of said cylinder, said inlet valve including a cylindrical surface having a diameter sized to frictionally engage, provide a liquid seal, and slide with respect to said cylindrical surface of said valve member, said inlet valve moving with said second end portion of said valve member until seated on and prevented from further movement with respect to said inlet, said inlet valve sliding with respect to said valve member end portion and moving with respect to said piston during further travel of said valve member with respect to said cylinder, said movement of said piston reducing the volume of said chamber thereby increasing



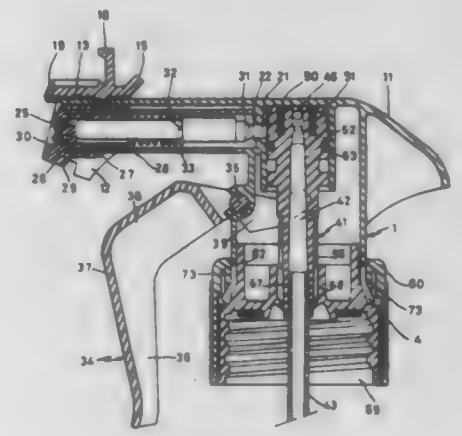
pressure in said chamber to provide a positive pressure differential between said chamber and said container, said inlet valve moving with said valve member and away from said inlet and opening said inlet during an initial portion of said upward stroke of said piston to open said inlet and suction liquid during substantially the entire upward stroke of said piston.

4,606,480

LIQUID SPRAYER

Francisco Rodriguez Gazulla, Barcelona, Spain, assignor to Monturas Y Fornituras, S.A., Barcelona, Spain

Filed Jul. 9, 1984, Ser. No. 628,909
Claims priority, application Spain, Jul. 14, 1983, 273.524
Int. Cl.[4] B67D *5/42*
U.S. Cl. 222—341 14 Claims



1. A liquid sprayer of the type comprising:

(a) a body having therein a cylinder defining a pump chamber, a discharge conduit and a passage between said chamber and said conduit, with a port forming a valve seat in the conduit side of said passage;

(b) a stem housed in said discharge conduit having an end forming a valve body capable of sealingly engaging said port;

(c) a first spring urging said stem in engagement with said port;

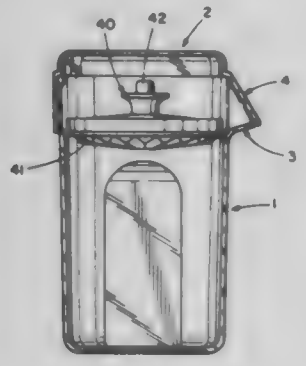
(d) a tubular piston extended by a dip tube, capable of sliding in said cylinder between a minimum insertion position and a maximum insertion position and having a check valve controlling the communication between said dip tube and said pump chamber;
(e) a second spring urging said piston to the minimum insertion position thereof in said cylinder;
(f) a rocking trigger adapted to cause the sliding movement of said piston;
(g) means for mounting said trigger to said body; and
(h) means for attaching the sprayer to a receptacle containing liquid to be sprayed; and
wherein said piston is provided with a planar front surface which in the maximum insertion position of the piston engages the upper inner surface of said cylinder, said planar front surface being interrupted by an opening leading to a cavity of the tubular piston and by a longitudinal annular groove generally coaxial with the piston and whose radial inner and outer walls surround the whole of said second spring in the maximum compression position thereof.

4,606,481

DISPENSING CLOSURE FOR SPOUTED CONTAINER

Rino Conti, Stoughton, Mass., and Jody A. Trivision, Wooster, Ohio, assignors to Dart Industries, Northbrook, Ill.

Filed Feb. 17, 1984, Ser. No. 581,490
Int. Cl.[4] B65D *47/00*
U.S. Cl. 222—562 **1 Claim**



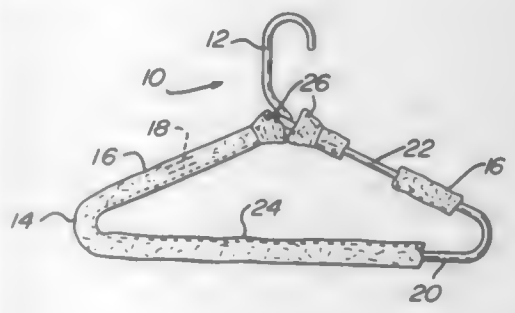
1. An improved dispensing closure for a spouted container, the container being of the type having an upright peripheral wall terminating in a top rim which circumscribes an upwardly opening wide container mouth, the container further having a container spout including an outwardly projecting portion of said wall and two upright outwardly projecting portions of said wall and two upright outwardly directed wall extensions bounding a U-shaped container spout opening formed in the upper extent of said wall, the closure including a cover having a downwardly opening in a bottom edge, the skirt having a projecting portion for covering the container spout opening, the improvement comprising:
said container wall extensions being triangular walls having out edges sloping downwardly and outwardly from said top rim,
said projecting portion of said cover having an inverted spout comprising an outwardly sloping skirt portion and two upright, outwardly directed skirt extensions, said skirt extensions having outer edges sloping upwardly and outwardly from said skirt bottom edge, said skirt extensions bounding an inverted U-shaped spout opening formed in the lower extent of said skirt, said cover spout being complementary in shape to said container spout, said cover further comprising a cover bottom extending above said skirt and a circumferential shoulder disposed between said cover bottom and said skirt for resting atop said container rim, the volume of the interior of said cover bottom above said shoulder being predetermined for measuring a desired colume of material dispensed from said container, and
secondary closure means disposed within said container,
said secondary closure means disposed within said container, said secondary closure means comprising a three-part press type seal seatable upon a ledge formed about the inner circumference of said container wall disposed below said container spount opening.

4,606,482

NON-SLIP GARMENT HANGER

Dolores B. McHugh, 210 Wesley Rd., Ocean City, N.J. 08226

Filed Oct. 28, 1985, Ser. No. 791,835
Int. Cl.[4] A41D *27/22*
U.S. Cl. 223—88 **4 Claims**



1. A covered garment hanger in the form of an elongated unitary member comprising a hook section and a hanging section having first and second inclined rod portions, said hanging section also including a horizontal rod portion whereby said inclined rod positions and said horizontal rod portion are integrally attached and upon which garments may be hung, said first inclined rod portion being connected to the said hook section, said second inclined rod portion of said hanging section comprising releasable securable means for connecting said second inclined rod portion of said hanging section to the said end of said first inclined rod portion which is adjacent to said hook section, and a longitudinally extending continuous sleeve of material arranged to be removably supported onto all three of said rod portions, said releasable securable means comprising hook means, said hook means comprising a generally U-shaped free end of said hanging section, said hook means having flattened areas and wherein said first inclined portion of said hanging section has flattened areas which abut said hook means flattened areas when said hook means engage the end of said first inclined rod portion, whereby said continuous sleeve upon opening said releasable securing means can be slipped onto all three of said rod portions.

4,606,483

BOOTGRIPPER

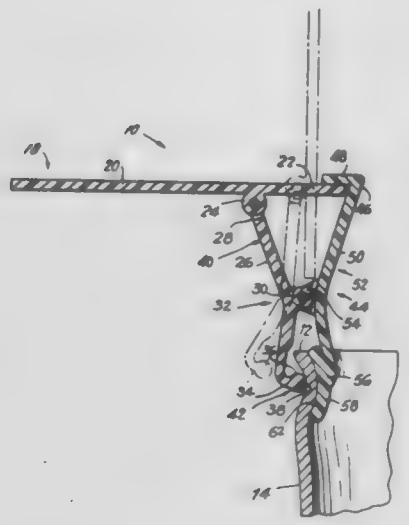
Salvatore Scarlata, 101-02 95th Ave., Queens, N.Y. 11209

Filed Mar. 27, 1985, Ser. No. 716,557
Int. Cl.[4] A47J *51/02*
U.S. Cl. 223—119 **7 Claims**

1. A gripper assisting in pulling boots on the foot of a user, said gripper comprising
a handle comprising a forward bearing surface and a mid-point hinge connection,
said handle comprising a T with the leg of the T being pushed downwardly by the user while the head is moved upwardly
a first jaw member hingedly connected at the extremity of one end to said mid-point hinge connection, the other end of said jaw member comprising a gripping surface
a second jaw member having a front bearing surface at one end thereof and a stop cooperating with the forward bearing surface of said handle, said second jaw member comprising a gripping surface located opposite to the gripping surface of said first jaw member,
said first and second jaw members being hingedly joined together at their respective mid-points,
said handle being movable from a first vertical position in which said gripping surfaces are spaced apart sufficiently to permit the top end of a boot to be inserted therebetween to

a second horizontal position in engagement with said stop in which the top end of said boot is gripped by said gripping surfaces,

said bearing surface of said handle moving against the bearing



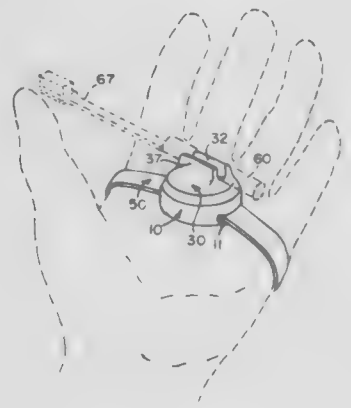
surface of said second jaw member as said handle is forced to the horizontal position to hold said boot, the bearing surface of said handle being maintained in tension against the bearing surface of said second jaw member when the shoe is held between said gripping surfaces.

4,606,484

TOOL HOLDING APPLIANCE FOR PERSONS WITH LIMITED USE OF HANDS

Sybil B. A. Winter, 2773 N. 72nd St., Milwaukee, Wis. 53210, and Albert Weiss, Racine, Wis., assignors to Sybil B. A. Winter, Milwaukee, Wis.

Filed Oct. 18, 1985, Ser. No. 789,192
Int. Cl.[4] A45F *5/00*
U.S. Cl. 224—218 **13 Claims**



1. In a tool holding appliance, a tool holding socket, a rotatable body that is a tool holding socket support, and a fixed body having an axis on which said rotatable body is rotatable, said fixed body being provided with slots to receive an attachment strap for attaching said body to the limb of a user, the novelty comprising:

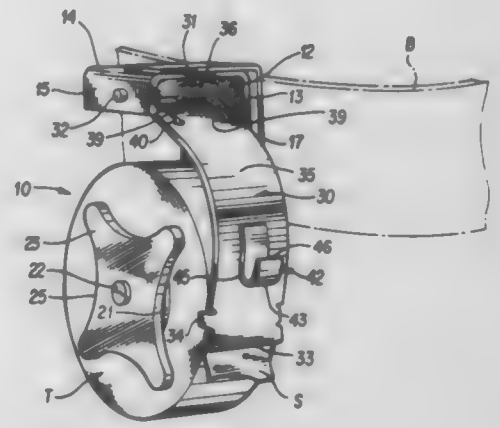
the fixed body comprising a circumferential outer rim about the rotatable body having an axis coaxial with the axis of the fixed body, the rotatable body being provided with an outwardly opening circumferential O-ring groove and said fixed body being provided with an inwardly opening O-ring groove complementary to said outwardly opening O-ring groove whereby an O-ring may be placed in one of said grooves and the rotatable body and the rim may be snapped together with the O-ring snapping into said complementary grooves to retain the parts assembled, the O-ring being of a size to control the frictional engagement between the parts by engagement with said grooves whereby to hold the rotatable body in a desired position unless a force greater than the frictional force between the O-ring and the grooves is exerted by a user.

4,606,485

SURVEYOR'S RIBBON DISPENSER

Freddy D. Rankin, Rte. 2, Box 998, Bladenboro, N.C. 28320

Filed Jun. 19, 1985, Ser. No. 746,423
Int. Cl.[4] B65D *85/672*
U.S. Cl. 225—78 **9 Claims**



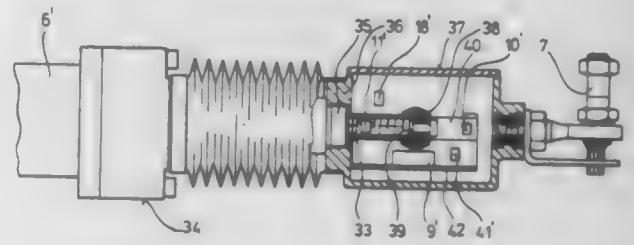
1. A dispensing apparatus for dispensing selective segments of material from a reel of material comprising a frame member having an elongated side wall and an upper wall extending outwardly with respect to said side wall, an elongated clip means attached to said frame member so as to be in generally parallel relationship to said side wall, a spindle means having a first end mounted to said side wall and a second end extending outwardly therefrom in spaced relationship to said upper wall of said frame member, a plate means mounted to said seoond end of said spindle, a material engaging retention means carried by said frame member and having first and second ends and inner and outer surfaces, said first end of said retention means being disposed in underlying relationship adjacent said upper wall of said frame member, said second end portion of said retention means extending outwardly between said plate means and said side wall of said frame member, means for biasing said second end of said retention means toward said spindle means, and a cutter means mounted to said outer surface of said retention means in spaced relationship from said second end thereof.

4,606,486

TILT-BOX CONTROL SYSTEM

Gerhard Brunner, Augsburg; Arnold Sigel, Streitheim, and Margrit Scharschinger, Augsburg, all of Fed. Rep. of Germany, assignors to Erhardt & Leimer GmbH, Augsburg, Fed. Rep. of Germany

Filed Oct. 26, 1983, Ser. No. 545,745
Claims priority, application Fed. Rep. of Germany, Oct. 26, 1982, 3239565
Int. Cl.[4] B65H *23/038*
U.S. Cl. 226—19 **7 Claims**



1. In combination with a tilt-box arrangement for controlling the transverse displacement of a web and having

a stationary support frame;

a roller frame pivotal on the support frame about a frame axis and carrying at least one roller rotatable about a roller axis transverse to the frame axis, the web being engaged

over the roller and moving in a transport direction transverse to the frame axis and to the roller axis; and

a drive connected between the support and roller frames and operable to pivotally displace the roller frame in opposite angular directions from a center position with the roll axis perpendicular to the transport direction toward respective end positions and thereby laterally deflect the web engaged by the roller, the drive including

a threaded spindle generally fixed on the support frame and extending transversely of the travel direction and frame axis; and

a nut on the spindle and generally fixed on the roller frame, whereby relative rotation of the spindle and nut angularly displaces the roller frame on the support frame;

a control system comprising:

a sensor holder mounted on the support frame and carrying the nut;

two respective end-position sensors and a center-position sensor mounted on the sensor holder;

a stop holder constituted by the spindle;

respective end-position and center-position stops mounted on the stop holder and juxtaposable and cooperating with the sensors generally only in the respective positions of the roller frame on the support frame; and

control means connected between the sensors and the drive for operating the drive in accordance with the frame position detected by the sensors.

4,606,487

APPARATUS FOR ATTACHING FASTENERS TO WEB-LIKE MATERIALS

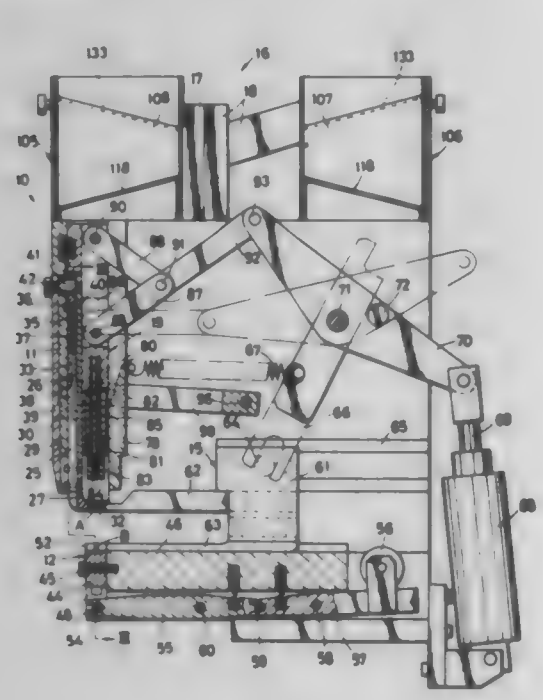
Hisashi Douri, Kurobe, Japan, assignor to Nippon Notion Kogyo Co., Ltd., Tokyo, Japan

Filed Dec. 28, 1984, Ser. No. 687,584

Claims priority, application Japan, Dec. 29, 1983, 58-199958[U]; Dec. 29, 1983, 58-199959[U]; Dec. 29, 1983, 58-199960[U]

Int. Cl.⁴ A41H *37/04*

U.S. Cl. 227—8 **9 Claims**



1. An apparatus for attaching a fastener composed of a first fastener member and a second fastener member to be combined together through a web-like material therebetween, comprising:

(a) a lower pocket mechanism for supporting the second fastener member thereon;

(b) a punch mechanism movable toward said lower pocket mechanism for fixing the first fastener member to the second fastener member with the web-like material interposed therebetween;

(c) an upper pocket mechanism for supporting the first fastener member, said upper pocket mechanism being movable toward said lower pocket mechanism and having means for centering the first fastener member in alignment with the second fastener member, said supper pocket mechanism including a slide ram, a pair of pocket holders pivotably mounted on said slide ram and defining a first pocket in ends thereof, said pocket holders having a pair of cam followers on opposite ends thereof, said means for centering comprising a presser mechanism including a cam plate slidably disposed in said slide ram and having cam surfaces engaging said cam followers, respectively, and spring means for normally urging said cam plate in a direction to cause said cam surfaces and said cam followers to turn said pocket holders to close said first pocket;

(d) a safety mechanism operatively coupled with said upper pocket mechanism for actuating said punch mechanism only when said upper pocket mechanism reaches a predetermined position with respect to said lower pocket mechanism; and

(e) a feeder mechanism having first and second hoppers for storing the first and second members therein and first and second pickup means movable rectilinearly for feeding the first and second fastener members out of said first and second hoppers into said first and second pocket mechanism, respectively.

4,606,488

WELDING APPARATUS FOR A MOTORCAR BODY

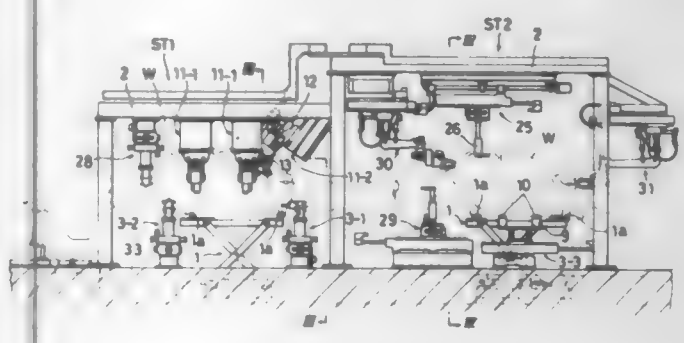
Takashi Yanagisawa, Hidaka, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 7, 1983, Ser. No. 456,349

Claims priority, application Japan, Jan. 9, 1982, 57-1362

Int. Cl.⁴ B23K *37/02*

U.S. Cl. 228—45 **1 Claim**



1. A welding apparatus for a motorcar body comprising a first welding station having a longitudinal axis and a second welding station adjacent said first welding station along said axis; said first welding station including: a pair of front under portion welding robots on opposite left and right sides of said axis for welding a front portion of a joined portion of an under body member and a pair of side members of a temporarily assembled motorcar body, a pair of rear under portion welding robots on opposite left and right sides of said axis adjacent said pair of front under portion welding robots for welding a rear portion of the joined portion of the under body and the side members, both pairs of said front and rear under portion welding robots being positioned on a floor surface surrounding said first welding station, a first machine frame extending laterally of said axis over said motorcar body, a pair of first opening portion welding robots suspended from said first machine frame on opposite left and right sides of said axis for welding peripheral edges of openings in the side members, and a second opening portion welding robot for welding a peripheral edge of a front window opening portion of the motorcar body, said second opening portion welding robot being suspended from said first machine frame in front of a middle portion of a lateral dimension of the motorcar body, each of said opening portion welding robots comprising a supporting arm mounted on said first machine frame for advancing and retreating movement relative to its respective opening portion to be welded and having a front end portion extending in the direction of the

opening portion, means for advancing and retreating said supporting arm, a gun-holding arm rotatably mounted on said front end portion having opposite ends, means for rotating said gun-holding arm around a complete circle in any plane perpendicular and inclined to the direction of movement of the supporting arm, and a welding gun mounted on one of said opposite ends of said gun-holding arm; said second welding station including a pair of middle under portion welding robots on opposite left and right sides of said axis for welding a middle portion of the joined portion of the under body member and the side members between said front portion and said rear portion, said pair of middle portion welding robots being positioned on a floor surface surrounding said second welding station, a second machine frame extending laterally of said axis over said motorcar body, and a pair of upper portion welding robots suspended on opposite left and right sides of said axis from said second machine frame for welding a joined portion of a roof panel and the side members of the motorcar body.

4,606,489

PROCESS AND APPARATUS FOR CONTROLLEDLY DECELERATING A MOBILE TOOL OR WORKPIECE

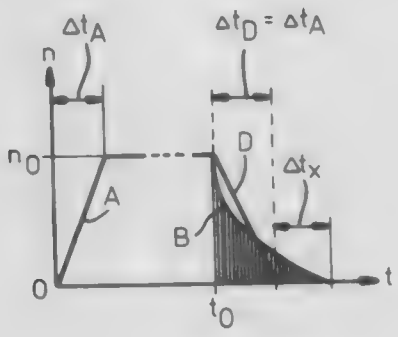
Wilhelm Steinhart, Friedberg, and Rüdolf Mitschele, Augsburg, both of Fed. Rep. of Germany, assignors to Kuka Schweissanlagen & Roboter GmbH, Augsburg, Fed. Rep. of Germany

Filed Jul. 14, 1983, Ser. No. 514,151

Claims priority, application Fed. Rep. of Germany, Jul. 14, 1982, 3226362

Int. Cl.[4] B23K *20/12*

U.S. Cl. 228—102 6 Claims



1. A process for progressively reducing to standstill the speed of a motor-driven machine part to arrest a load entrained thereby in a predetermined end position, said machine part being subjected to a countervailing force significantly resisting its advance, comprising the steps of:

(a) energizing a motor driving said machine part, in a trial run substantially duplicating a subsequent production run, with a forward torque overcoming the countervailing force and accelerating said machine part to an initial speed;

(b) at a starting instant, upon an approach of said end position by the entrained load, reducing said forward torque to a steady value insufficient to overcome said countervailing force so as to slow the machine part down to eventual standstill;

(c) plotting throughout the slowdown of step (b), a multiplicity of points of a deceleration characteristic representing a braking displacement setpoint curve with time by ascertaining and registering incremental advances of said machine part during a succession of predetermined time intervals including a final interval in which the load comes to rest in a stop position;

(d) in a subsequent production run, energizing said motor to accelerate said machine part to the initial speed of step (a);

(e) determining from the sum of said incremental advances a starting position from which a progressive speed reduction with time in conformity with said deceleration characteristic establishes a stop position coinciding with said end position;

(f) reducing the forward torque of said motor, on passage through said starting position, to an adjustable value substantially corresponding to the steady value of step (b);

(g) measuring incremental advances of said machine part in a succession of time intervals corresponding to those of step (c) and comparing at the end of each time interval a resulting actual advance with a prescribed advance according to said deceleration characteristic as determined from the incremental advances registered in step (c) for the preceding time intervals; and

(h) modifying said adjustable value, in response to an error signal obtained from the comparison in step (g), to maintain the slowdown of the machine part in said production run substantially in conformity with said deceleration characteristic.

4,606,490

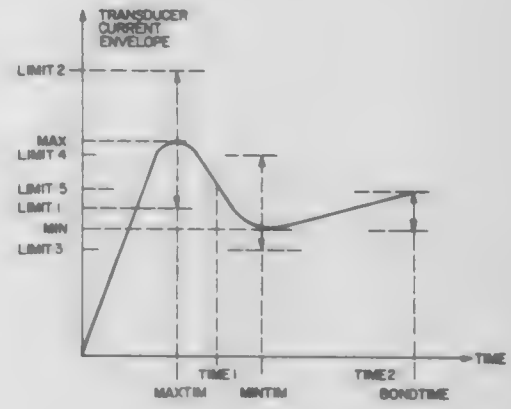
APPARATUS AND METHOD FOR AUTOMATIC EVALUATION OF A BOND CREATED BY AN ULTRASONIC TRANSDUCER

Lo Kwan Chan, and Heico J. Frima, both of Hong Kong, Hong Kong, assignors to ASM Assembly Automation Limited, Kowloon, Hong Kong

Filed Aug. 24, 1982, Ser. No. 410,944

Int. Cl.[4] B23K *21/02*

U.S. Cl. 228—103 5 Claims



1. The method of determining if the bond produced by an ultrasonic transducer during a bonding operation is acceptable, comprising the steps of:

(a) identifying expected parameters of a current driving said ultrasonic transducer which produces an acceptable bond, comprising the steps of:

(i) providing a pre-established range for a maximum current value,

(ii) providing a pre-established range for a relative minimum current value occurring following said maximum current value, and

(iii) providing a pre-established value which said current should exceed following detection of said minimum current value:

(b) obtaining actual parameters for a current driving said ultrasonic transducer during a bonding operation, comprising the steps of

(i) obtaining a maximum current value,

(ii) obtaining a relative minimum current value occurring following said maximum current value, and

(iii) obtaining a current value for said ultrasonic transducer driving current following said minimum current value;

(c) comparing said actual and said expected current parameters; and thereafter

(d) producing a signal when said step of comparing said current parameters indicates a difference between said actual and said expected current values is greater than a predetermined value.

4,606,491

PROCESS FOR SEALING A LEAK IN A ROLLED TUBE/TUBEPLATE JOINT

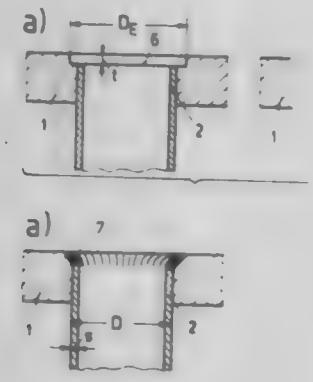
Son Le Mong, Baden, Switzerland, assignor to BBC Brown, Boveri & Company, Limited, Baden, Switzerland

Filed Dec. 27, 1984, Ser. No. 686,898

Claims priority, application Switzerland, Nov. 7, 1984, 5326/84

Int. Cl.[4] B23K *31/00*

U.S. Cl. 228—119 3 Claims



1. Process for sealing a leak in a rolled tube/tubeplate joint, in which the end (2; 3) of a heat exchanger tube is non-positively fixed in a hole in a tubeplate (1), serving as a partition in a heat exchange unit, by radial expansion by means of a rolling-in tool with pressure prestressing, the leak being eliminated by welding, characterized in:

(a) that, at the end face of the tube end (1; 2), a milling cut (6) is made which is coaxial to the longitudinal axis of the heat exchanger tube and the diameter (D_E) of which is greater by substantially twice the wall thickness (s) of the heat exchanger tube than the external diameter (D) of the latter, so that an annular portion is milled out of the tubeplate around the tube end;

(b) that the end face of the tube end (1; 2) is joined by a weld seam (7) to the surface formed by the milling cut (6) in the tubeplate (1);

(c) that the weld seam (7) is made with a lens-shaped cross-section; and

(d) that the depth (t) of the milling cut (6) is substantially equal to the wall thickness (s) of the heat exchanger tube.

4,606,492

METHOD AND APPARATUS FOR SOLDERING

Vladimir S. Guslits, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 3, 1984, Ser. No. 657,311

Int. Cl.[4] B23K *31/02*

U.S. Cl. 228—179 9 Claims

1. Soldering apparatus comprising:

a frame member;

a reciprocating member movably mounted on said frame member,

means for driving said reciprocating member through an advance stroke and a return stroke,

an anvil member arranged to support a component to be soldered in alignment with said reciprocating member,

a soldering tip mounted on said reciprocating member and having a soldering face which is moved into contact with said component supported on said anvil member during said advance stroke and out of contact with said component during said return stroke,

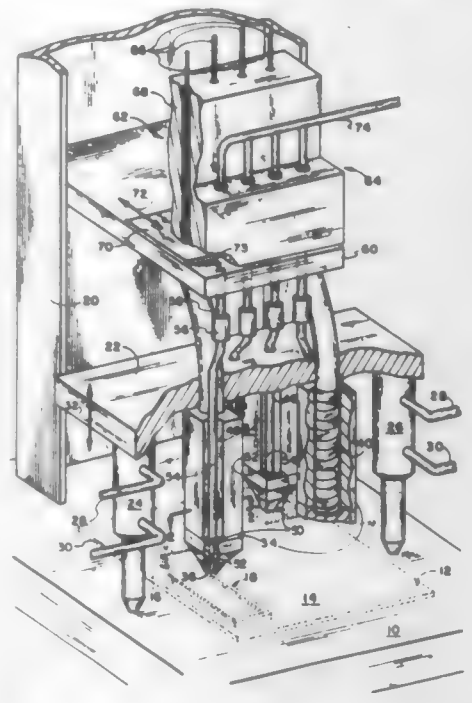
means for heating said soldering tip,

means forming a generally vertical passage through said soldering tip opening at the lower end through said soldering face,

flux-cored solder wire supply means,

cutting means for separating a predetermined quantity of flux-cored solder from said solder wire supply means, and

means for introducing said predetermined quantity of flux-cored solder into the upper end of said generally vertical passage after said soldering tip has been moved into



contact with and heated said component whereby the solder is melted by contact with said component.

4,606,493

METHOD AND APPARATUS FOR SOLDERING PLATE-SHAPED CIRCUIT CARRIERS INSIDE AN INERT GAS SOLDERING MEANS

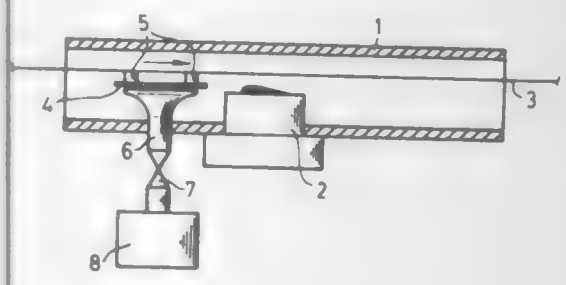
Heinz Christoph, Erkental; Jürgen Gamalski, Berlin; Eduard Lenz, Berlin; Ulrich Neumann, Berlin, and Reinhard von der Schmidt, Berlin, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Mar. 14, 1984, Ser. No. 589,549

Claims priority, application Fed. Rep. of Germany, Mar. 15, 1983, 3309648

Int. Cl.[4] B23K *31/02*

U.S. Cl. 228—180.1 7 Claims



1. A method for inert gas soldering printed circuit boards in an enclosed reaction chamber sealed from ambient, said reaction chamber defining a longitudinal channel having opposed inlet and exit open ends, means for transporting circuit boards longitudinally from the inlet end to the outlet end from through said chamber channel, a solder bath means in said channel, and flow means for feeding inert gas under pressure into said channel, said method comprising:

disposing said flow means in the form of at least one jet having an opening facing upwardly and perpendicular to the transport path of said circuit boards at a place in front of said solder bath,

transporting said circuit boards over said at least one jet such that inert gas flow is directed only against the solder sides of said circuit boards, and

heating said inert gas in said flow means to a temperature higher than a desired temperature for the solder side of the circuit board upon its arrival at the solder bath means.

4. Apparatus for inert gas soldering printed circuit boards in

an enclosed reaction chamber sealed from ambient, said reaction chamber defining a longitudinal channel having opposed inlet and exit open ends, a solder bath means in said channel, a flow means for feeding inert gas under pressure into said channel, and means for transporting circuit boards longitudinally from the inlet end to the outlet end through said channel, the improvement comprising wherein said flow means comprises at least one jet having an opening facing upward and perpendicular to the transport path of said circuit boards at a place in front of said solder bath along the transport path, said means for transporting passing said circuit boards over said at least one jet opening such that inert gas flow is directed only against the solder sides of said circuit boards, and means for heating said inert gas in said flow means to a temperature higher than a desired temperature for the solder side of the circuit board upon its arrival at the solder bath means.

4,606,494

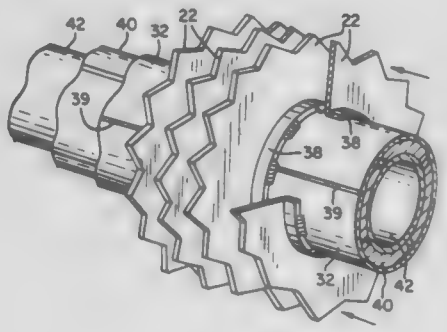
METHOD OF WELDING DISCS TO A SPLIT HUB ASSEMBLY

Franz Kroell, 13405 NW. Greenwood Dr., Portland, Oreg. 97229

Division of Ser. No. 676,499, Nov. 29, 1984. This application Jan. 2, 1986, Ser. No. 815,631

Int. Cl.⁴ B23K *31/02*

U.S. Cl. 228—182 **3 Claims**



1. A method of making a disc assembly for a disc separator comprising the following sequential steps:

providing an expandable hub having an open seam, the hub having a predetermined initial inner and outer diameter;

providing a plurality of annular discs, each of the discs having an extruded collar around a central aperture, the inner diameter of the collar being greater than the predetermined initial outer diameter of the hub;

sliding a first one of the discs onto the hub to a predetermined mounting position;

expanding the outer diameter of the hub to meet the inner diameter of the collar of the disc;

welding the collar of the disc to the hub at the predetermined position;

relaxing the outer diameter of the hub; and

sliding another of the discs onto the hub adjacent the first disc and repeating the steps of expanding, welding, and relaxing until a plurality of discs are welded to the hub.

4,606,495

UNIFORM BRAZE APPLICATION PROCESS

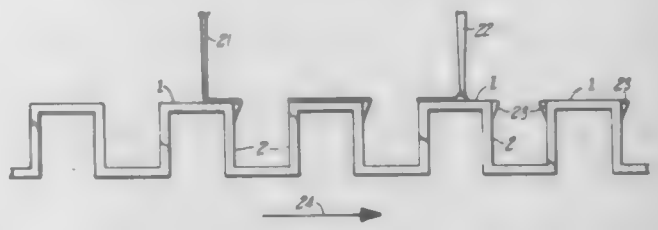
Robert C. Stewart, Jr., West Suffield; Carl K. Johnson, Manchester, and Leonard J. Bonville, Jr., Marlborough, all of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Continuation of Ser. No. 564,450, Dec. 22, 1983, abandoned. This application Jan. 14, 1986, Ser. No. 818,899

Int. Cl.⁴ B23K *1/04, 1/12*

U.S. Cl. 228—183 **1 Claim**

1. A method of forming high quality braze joints between metal surfaces and U-shaped cross-section heat exchanger fins having a top portion and a side wall portion, comprising admixing powdered metal or alloy braze with a liquid polymeric binder to form a slurry, forcing the slurry through a curtain coating head to form a thin vertical curtain of the slurry, depositing the curtain onto the top portion of the heat exchanger fins by passing such fins under the curtain, wiping the slurry from the top portion of the fins with a squeegee blade to produce slurry fillets approximately equal in size on the side



portions of the fins which form braze joints when contacted with the metal surfaces to be bonded, placing the metal surfaces to be bonded to the fins against the top portion of the fins in contact with the fillet, and heating the contacted surfaces to effect the bond and form the braze joints.

4,606,496

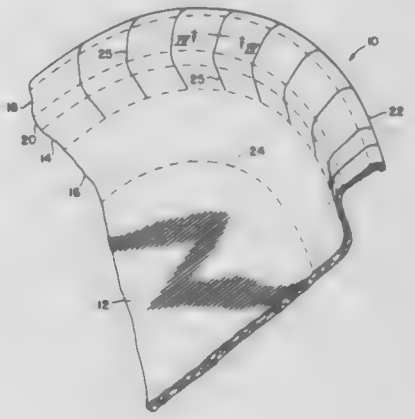
RIGID PAPERBOARD CONTAINER

Ronald P. Marx, Lakewood; Patrick H. Wnek, Menasha, and Denny R. Grans, Appleton, all of Wis., assignors to James River Corporation of Virginia, Norwalk, Conn.

Continuation of Ser. No. 591,557, Mar. 20, 1984, abandoned. This application Sep. 20, 1985, Ser. No. 777,873

Int. Cl.⁴ B65D *1/00*

U.S. Cl. 229—2.5 R **27 Claims**



1. A paperboard container, comprising:

(a) a bottom wall, an upwardly extending side wall, a first curved portion joining said side wall to the periphery of said bottom wall, an outwardly extending rim, and a second curved portion joining said rim to the periphery of said side wall;

(b) said container being integrally formed from a substantially homogeneous paperboard blank by a press such that the thickness of said side wall, second curved portion and rim is less than that of said bottom wall and first curved portion; and

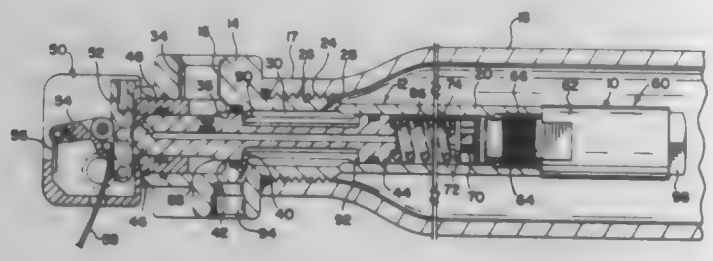
(c) a plurality of densified regions radially extending through and circumferentially spaced about annular sections of said side wall, second curved portion and rim, said densified regions being formed from pleats including at least three layers of said paperboard reformed into substantially integrated, fibrous structures being generally inseparable into their constituent layers and having a density substantially greater than and a thickness substantially equal to circumferentially adjacent areas of the side wall, second curved portion and rim.

4,606,497

TEMPERATURE COMPENSATOR FOR PRESSURE REGULATOR

John F. Heimovics, Jr., Akron, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Continuation-in-part of Ser. No. 456,230, Jan. 7, 1983, Pat. No. 4,513,881. This application Feb. 21, 1985, Ser. No. 703,852
The portion of the term of this patent subsequent to Apr. 30, 2002, has been disclaimed.
Int. Cl.[4] G05D *27/00*
U.S. Cl. 236—92 R 6 Claims



1. A temperature compensator for a gas pressure regulator having a valve member movable to open a pressurized gas discharge orifice, said temperature compensator comprising a temperature sensitive adjusting means for adjusting the amount of valve member movement in response to increases and reductions in temperature providing smaller orifice openings at lower temperatures and larger orifice openings at higher temperatures to maintain an optimum flow of gas to an aspirator for filling inflatables with a gas and air mixture under pressure wherein said temperature sensitive adjusting means comprises:

(A) a piston and cylinder assembly mounted on said regulator and connected to said valve member where said assembly includes:

(1) a piston; and

(2) a cylinder which is in threaded engagement with a regulator supporting member for positioning said cylinder in a predetermined location relative to said regulator and said cylinder has a chamber; and

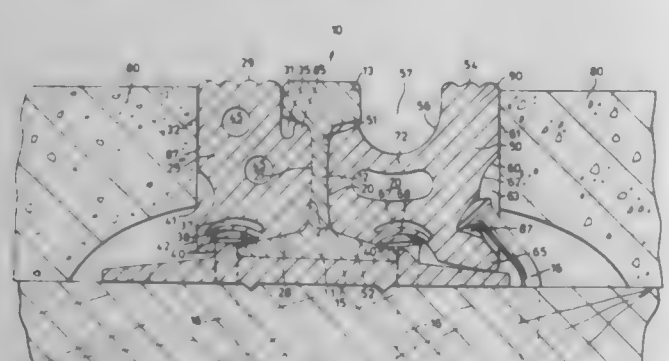
(B) a vulcanized polymer plug in said chamber, said plug being expandable and contractable in response to an increase or reduction of temperature whereby said piston of said assembly is moved to different temperature compensating positions for adjusting the amount of valve member movement.

4,606,498

RAIL SEAL

Owen G. Grant, Kitchener, and Frank Williams, Waterloo, both of Canada, assignors to Epton Industries Inc., Kitchener, Canada

Filed Aug. 23, 1984, Ser. No. 643,687
Int. Cl.[4] E01C *9/04*
U.S. Cl. 238—8 6 Claims



1. A flexible seal for railroad rails in a road level crossing or other road level railbed, wherein at least two rails are mounted on a support structure, each rail having base, intermediate and head portions, and each pair of rails having inner sides facing one another and outer sides facing away from one another, the seal comprising:

a first resiliently flexible elongate member extending longitudinally along the outer side of each rail having:

side and bottom surface portions contoured to fit snugly against the intermediate and base portions of the rail;

a longitudinally ribbed top surface approximately level with the top of the rail from which depends an inner planar side surface portion, said planar inner side surface portion and said contoured side surface portion joining at a longitudinal groove positionable beneath the rail head; an outer side surface having an upper planar portion and a lower concave portion defining a lower outside longitudinally extending groove; at least two bores extending longitudinally therethrough providing compression chambers for the members; and

a longitudinally extending bore near the bottom thereof defining a thin membrane capable of accommodating displacement along the bottom surface for rail spike heads or the like being spaced along the length of the rail; and

a second resiliently flexible elongate member extending longitudinally along the inner side of each rail having:

side and bottom surface portions contoured to fit snugly against the intermediate and base portions of the rail;

a longitudinally ribbed top surface approximately level with the top of the rail and spaced therefrom by a concave top surface portion defining a longitudinally extending top groove having a depth and width sufficient to accommodate the flange of a railroad car wheel;

an outer side surface having an upper planar portion and a lower concave portion defining a lower outside longitudinally extending groove, the thickness of the second member between the upper planar portion of the outer surface and the concave top surface portion being sufficient to prevent collapse of the member under the influence of automobile and truck traffic passing over the road level railbed so as to obstruct the longitudinally extending top groove;

a first bore extending longitudinally therethrough beneath said concave top surface portion and having a width approximating that of the top surface portion, said bore defining a resilient membrane between the bore and concave top surface which allows for downward displacement by a railcar wheel flange, the resilient membrane thereby ensuring free passage of the railcar wheel flange along the longitudinally extending groove; and

a second longitudinally extending bore near the bottom thereof defining a thin membrane capable of accommodating displacement along the bottom surface for rail spike heads or the like being spaced along the length of the rail.

4,606,499

VARIABLE THROAT NOZZLE

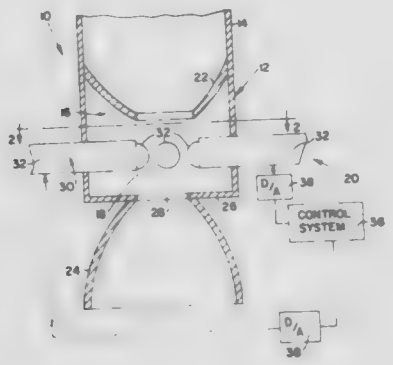
David T. Langley, Jr., 226 S. Main St., Los Angeles, Calif. 90012

Filed Jul. 2, 1984, Ser. No. 626,884
Int. Cl.[4] B05B *17/04;* B63H *11/10;* F02K *1/06*
U.S. Cl. 239—11 16 Claims

16. A method of varying a throat of a converging-diverging nozzle, comprising the steps of:

(a) forming a throat area between spaced converging and diverging nozzles by directing a plurality of impinging ion

streams toward a common point within the throat area; and



(b) changing the ion streams independently of one another, and varying the size and symmetry of the throat area as desired.

4,606,500

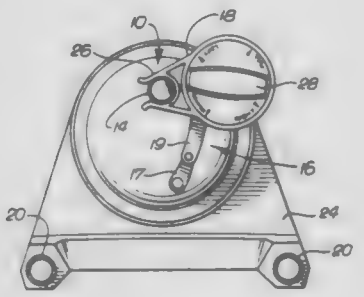
RELEASABLE COUPLING ASSEMBLY FOR OSCILLATING WAVE LAWN SPRINKLER

Karl J. Mussler, Alta Loma, and Alvin F. Godsey, Jr., Corona, both of Calif., assignors to Rain Bird Consumer Products Mfg. Corp., Duarte, Calif.

Filed Oct. 1, 1984, Ser. No. 655,759

Int. Cl.[4] B05B *3/16*

U.S. Cl. 239—242 19 Claims



1. In an oscillating wave lawn sprinkler of the type having a spray tube, a fluid-driven motor, and a drive linkage, which includes a crank link, said linkage being coupled between the motor and the spray tube for transforming rotational motion of the motor into angularly osillatory motion of the spray tube, the improvement comprising:

a releasable coupling assembly for releasably coupling said drive linkage to said spray tube, said coupling assembly including:

an indentation formed on one of said crank link and said spray tube;

a tab located on the other of said crank link and said spray tube for engaging said indentation, the one of said indentation and said tab on said spray tube being formed integrally with said spray tube; and

means for permitting said spray tube to move relative to said crank link by releasably securing said tab in engagement with said indentation for normal angular oscillatory driving of said spray tube by said crank link, said securing means being disengageable from said indentation or tab whenever said spray tube is subjected to an externally applied rotational force exceeding a predetermined magnitude to permit said spray tube to rotate relate to said crank link and move independently of said drive linkage.

4,606,501

MINIATURE SPRAY GUNS

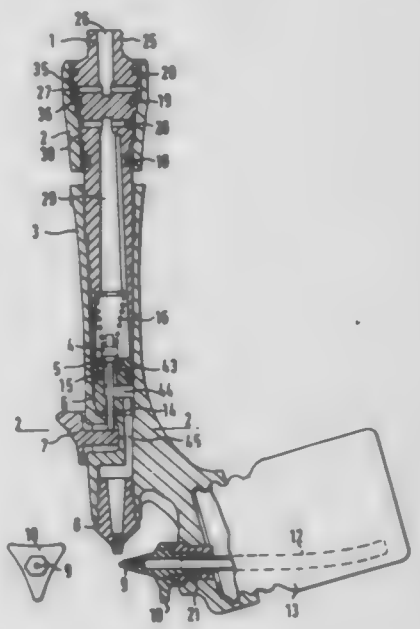
Anthony J. Bate, Winton, and Rowland C. Smith, Wimborne, both of England, assignors to The DeVilbiss Company Limited, Bournemouth, England

Filed Sep. 7, 1984, Ser. No. 648,392

Claims priority, application United Kingdom, Sep. 9, 1983, 8324265

Int. Cl.[4] B05B *7/30*

U.S. Cl. 239—346 6 Claims



1. An external mix miniature spray gun including a body carrying an air nozzle and having means defining a flow path for compressed gas from a compressed gas source through a reducing valve into said body and thence through a separate trigger-operated valve to said air nozzle so that upon actuation of said trigger-operated valve a jet of gas from the compressed gas source is directed over a capillary paint nozzle, said reducing valve having a gas inlet at one end thereof for connection to the source and a gas outlet at the other end thereof for discharge into the body of the spray gun, said other end of said reducing valve being gas tightly fitted into said body of the spray gun, said reducing valve including a valve body of circular end profile with said inlet leading from said one end of said reducing valve to first generally radial flow passages that are defined within said valve body and open into the side of said valve body, second generally radial flow passages defined within said valve body in spaced relation to said first generally radial flow passages and opening from said side of said valve body nearer said other end of said reducing valve, said second generally radial flow passages leading to said gas outlet, and a sleeve that is rotatably retained on said valve body to open and close said reducing valve, said sleeve having threads thereon that are in engagement with threads on the side of said valve body, said valve body threads including threads that are located between said first and second radial passages, the second flow passages opening through the threaded region of the valve body that is covered by the threaded region of the sleeve when the reducing valve is closed, the interengaging threads of said sleeve and valve body defining a flow path upstream of said second passages for the flow of gas along said interengaging threads from said first passages to said second passages at small degrees of valve opening, said flow path exhibiting a flow resistance which is dependent upon the length of the said interengaging threads upstream of said second passages, said flow resistance being varied by rotation of said sleeve relative to said valve body to vary the length of said interengaging threads along which gas flows upstream of said second passages thereby to control the gas flow at small degrees of opening of said reducing valve, and a tapered surface on the interior of said sleeve between said first and second passages upstream of said interengaging threads, such that said tapered surface approaches or withdraws from a portion of said valve body to diminish or enlarge the gap between said surface and said valve

body as said sleeve is rotated relative to said valve body to control the gas flow at large degrees of opening of said reducing valve.

4,606,502

JET NOZZLE

Anton Naschberger, Oberau, Austria, assignor to Johannes Zimmer Gesellschaft m.b.H., Kufstein, Austria

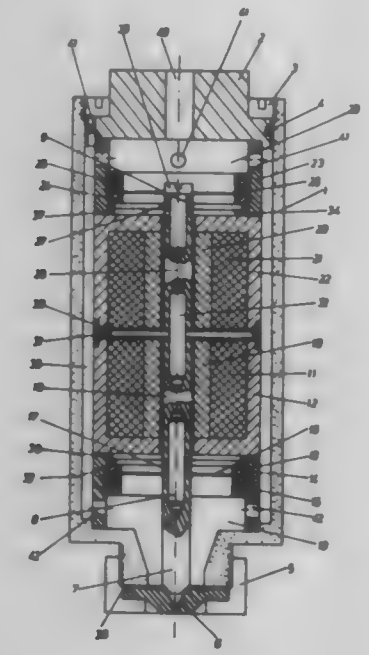
PCT No. PCT/AT81/00021, § 371 Date Apr. 15, 1982, § 102(e) Date Apr. 15, 1982, PCT Pub. No. WO82/00604, PCT Pub. Date Mar. 4, 1982

PCT Filed Aug. 20, 1981, Ser. No. 373,501

Claims priority, application Austria, Aug. 21, 1980, 4269/80

Int. Cl.[4] B05B *1/32, 1/30;* F16K *31/08*

U.S. Cl. 239—585 6 Claims



1. A jet nozzle for high speed actuation in the application of a dye to a substrate, said nozzle comprising:

a housing formed with a nozzle orifice;

a magnet system in said housing including at least one electromagnet energizable for the selective opening and closing of said orifice;

a needle in said housing traversing said magnet system and engageable in said orifice to block the same, said needle being retractable by said magnet system from said orifice to open said orifice;

a first sealing diaphragm bridged between said housing and said needle proximal to said orifice and defining in said housing a first compartment between said first sealing diaphragm and said orifice;

a second sealing diaphragm bridged between said needle and said housing remote from said orifice for defining a second compartment within said housing whereby said diaphragms separate said compartments from said magnet system and said magnet system is located between said sealing diaphragms, said diaphragms having the same area;

means for feeding said dye to one of said compartments and a passage formed in said housing communicating between said compartments whereby said dye fills said compartments with pressure equalization on opposite sides of the two diaphragms in a blocked condition of said orifice; and

a pair of guide discs fixed in said housing and engaging said needle at axially spaced locations between said diaphragms for guiding said needle in said housing in said magnet system.

4,606,503

PROCESS FOR WET GRINDING OF NATURAL AND SYNTHETIC CARBONATES

Joerg A. Bleeck, Tigard, Oreg., assignor to Columbia River Carbonates, Woodland, Wash.

Filed Dec. 13, 1983, Ser. No. 561,153

Claims priority, application Fed. Rep. of Germany, Dec. 14, 1982, 3246232

Int. Cl.[4] B02L *1/00;* B04B *15/04*

U.S. Cl. 241—16 17 Claims

1. A method of wet grinding carbonates comprising the steps of:

forming a slurry by combining a carbonate, water and a zeolite for reducing the viscosity of said slurry; and

wet grinding said slurry.

4,606,504

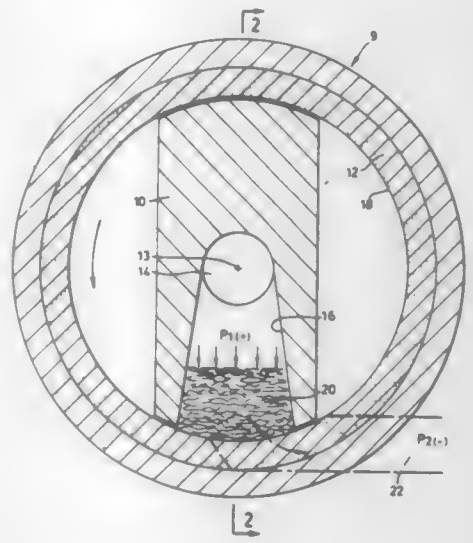
PRESSURE-ASSISTED CENTRIFUGAL GRINDING

Allan J. Wildey, Brantford, Canada, assignor to AMCA International Limited, Brantford, Canada

Filed May 10, 1985, Ser. No. 732,654

Int. Cl.[4] B02C *19/12*

U.S. Cl. 241—28 12 Claims



1. A method of grinding woodchips into pulp, utilizing an internal grinding surface of circular section which defines a cavity in which is rotatably mounted a rotor that provides at least one pocket extending to said grinding surface from an inlet spaced inwardly from said grinding surface, the method including the steps of delivering woodchips to said pocket, forming a compact plug of woodchips in said pocket by rotating said rotor which gives rise to centrifugal force urging said woodchips against said grinding surface, grinding said plug of woodchips to pulp by continued rotation of said rotor, placing a gaseous pressure differential across said plug of woodchips while in said pocket to further urge said plug towards said grinding surface, and removing said pulp from said surface to a discharge, said gaseous pressure differential ensuring that the woodchips are pressed against said surface with a satisfactory grinding force without requiring an excessive rotor rotational speed.

4,606,505

COMMINUTING MACHINE, ESPECIALLY FOR EMULSIFYING OR FINE COMMINUTING OF MEAT PRODUCTS

Knud Simonsen, Strudsbergsvej 44, 4200 Slagelse, Denmark

Filed May 22, 1984, Ser. No. 613,041

Claims priority, application Denmark, May 24, 1983, 2309/83

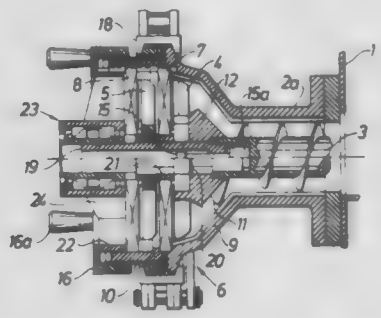
Int. Cl.[4] B02C *18/36*

U.S. Cl. 241—82.5 8 Claims

1. A fine-comminuting machine, especially for emulsifying or finely comminuting meat products into forcemeat, said machine comprising:

an inlet hopper,

a conveying worm located in said inlet hopper and including a feed section and an exit section,
a tubular worm housing extending from said inlet hopper,
a cutting device housing extending from said tubular worm housing, said conveying worm conveying meat products from said inlet hopper through said tubular worm housing to said cutting device housing,
a cutting device located in said cutting device housing, said cutting device housing including at least one cutter set cooperating with at least one perforated disc secured in said cutting device housing, one cutter set located closest to said conveying worm cooperates with a side of one



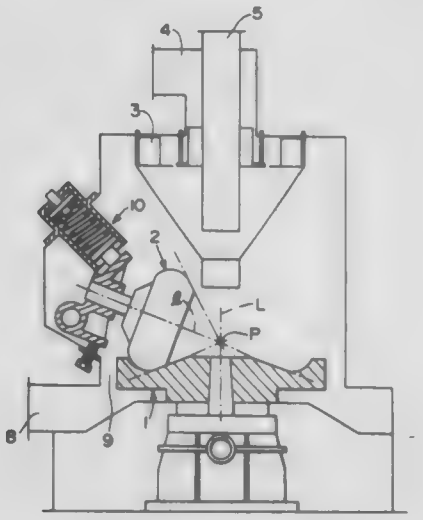
respective performated disc located facing said conveying worm,
a radius of a circumcircle of said one cutter set being at least approximately twice as large as a radius of a circumcircle of said feed section of said conveying worm, and
an internal diameter of a portion of said cutting device housing surrounding said exit section of said conveying worm and said one cutter set increases in the direction of conveying, and said one cutter set and said exit section of said conveying worm are rotated at such a speed of rotation that said one cutter set and said exit section together with said portion of the cutting device housing act as a centrifugal pump with axial entry and exit.

4,606,506

VERTICAL TYPE ROLLER MILL

Gensuke Okada, Tokyo, and Tatsuo Hagiwara, Funabashi, both of Japan, assignors to Kawasaki Jukogyo Kabushiki Kaisha, Kobe, Japan

Filed May 4, 1984, Ser. No. 607,180
Int. Cl.⁴ B02C *15/00*
U.S. Cl. 241—109 **1 Claim**



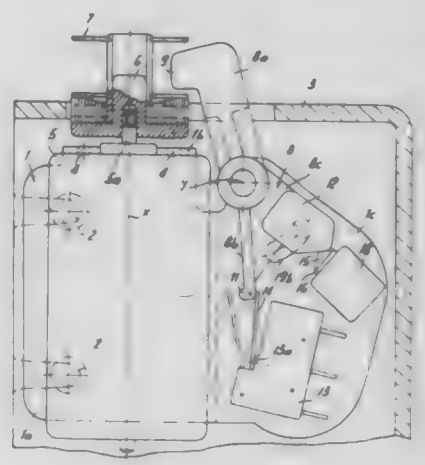
1. A vertical type roller mill comprising:
a grinding table located horizontally and driven for rotation about a vertical center axis;
a plurality of grinding rollers supported on said grinding table for rotation each about its own axis while being maintained in contact with the grinding table, and means for feeding material to be ground into said mill;
said grinding table having a grinding surface composed of a first table surface portion and a second table surface portion located outwardly of and contiguously with the first table portion, said first table surface portion constituting a portion of a conical surface having an apex on the vertical center axis of the grinding table and said second table surface portion comprising a curved table surface portion;
said grinding rollers each having a grinding surface composed of a first roller surface portion and a second roller surface portion located outwardly of and contiguous with the first roller surface portion, said first roller surface portion constituting a frusto-conical surface having a longitudinal centerline intersecting the apex of the table conical surface, and said second roller surface portion comprising a curved surface portion of a greater curvature than the curving surface portion of the grinding surface of said grinding table, said first surface portions being located upstream of said second surface portions with respect to the feeding direction of the material; said first table surface portion and said first roller surface portion of each grinding roller defining a coarse grinding zone for grinding a material into coarse particles, and said second table surface portion and said second roller surface portion of each grinding roller defining a fine grinding zone for grinding the coarse particles into fine particles.

4,606,507

SPOOLING DEVICE FOR SEWING MACHINES

Hans-Ulrich Lerch, and Willi Oberholzer, both of Steckborn, Switzerland, assignors to Fritz Gegauf Aktiengesellschaft Bernina-Nähmaschinenfabrik, Steckborn, Switzerland

Filed Jan. 28, 1985, Ser. No. 695,292
Claims priority, application Switzerland, Feb. 8, 1984, 581/84
Int. Cl.⁴ B65H *63/08*; D05B *59/00*
U.S. Cl. 242—22 **4 Claims**



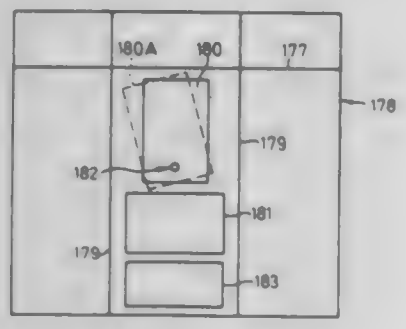
1. A spooling device for a sewing machine, said spooling device having associated therewith a bobbin operatively connected to a low-voltage motor which comprises:
a winder shaft for winding thread on the bobbin and driven to be turned on and off, said winder shaft being mounted on the output shaft of the low-voltage motor,
a switch operably associated with the low-voltage motor, and
a switching element operably associated with and responsive to the winding process whereby when the bobbin is wound to a predetermined extent, the switching element operates the switch to disengage the low-voltage motor, said switching element comprises a three armed lever pivotable in the axial plane of the winder shaft, a first arm extending in the vicinity of the bobbin and provided with a feeler cam for scanning the extent of the thread being formed on the bobbin, a second arm provided with a switching cam for operating an on/off switch of the low-voltage motor, and a third arm provided with a trigger cam which cooperates with a spring-biased wedge-shaped dual ramp for initiating the switch-off operation of the switch when the bobbin is fully wound.

4,606,508

BOBBIN INSERTING DEVICE

Günter Gärtner, Lucerne, Switzerland, assignor to Rieter Machine Works, Ltd., Winterthur, Switzerland

Filed May 18, 1984, Ser. No. 611,852
Claims priority, application United Kingdom, May 20, 1983, 8313994; Dec. 15, 1983, 8333471
Int. Cl.[4] B65H *54/26*
U.S. Cl. 242—35.5 R
14 Claims



1. A service tender for a yarn handling machine having at least one operating station for winding one of a cylindrical package and a conical package, said tender comprising

a main frame; and

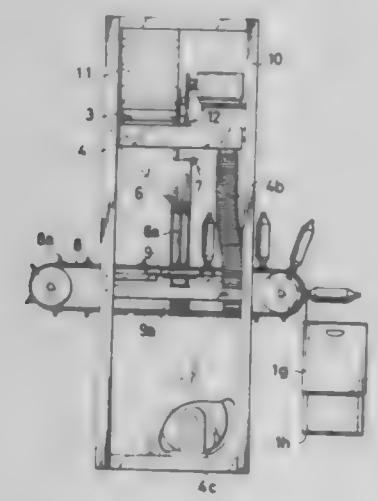
a sub-frame having a plurality of operating elements mounted thereon for performing a plurality of service functions at said operating station, said sub-frame being adjustably mounted on said main frame between two positions wherein in a first of said positions said operating elements are positioned to service said station for winding of a cylindrical package at said operating station and with said sub-frame in a second of said positions said elements are positioned to service said station for winding of a conical package at said operating station.

4,606,509

APPARATUS FOR FINDING THE PICKING END OF YARN

Sanno Hiroaki, Nonoichi, Japan, assignor to Murao Boki Kabushiki Kaisha, Kanazawa, Japan

Filed Jun. 19, 1985, Ser. No. 746,276
Claims priority, application Japan, Jun. 27, 1984, 59-132785
Int. Cl.[4] B65H *54/00, 67/08*
U.S. Cl. 242—35.6 R
3 Claims



1. An apparatus for facilitating the finding of the picking end portions of yarns wound around bobbins each of which has an axial through bore, said apparatus comprising:

(a) a bobbin holding means for supporting each bobbin horizontally;

(b) a sucking means provided adjacent to said bobbin holding means, said sucking means including:

(i) a first sucking means for subjecting the axial through bore of each bobbin to a longitudinal sucking pressure and

(ii) a second sucking means for sucking each bobbin laterally, said second sucking means forming an L-shape with said first sucking means;

(c) a chute for allowing each bobbin to fall down, said chute being sized and shaped so that each bobbin rolls down longitudinally;

(d) a conveyor for receiving the bobbins thereon, said conveyor including hollow pegs sized, shaped, and positioned for erecting the bobbins thereon;

(e) a suction pipe provided under said conveyor so that said suction pipe sucks the air in the axial through bore of each bobbin when said suction pipe is in agreement with each hollow peg;

(f) means for guiding a sucked yarn, said means being provided in said second sucking means;

(g) a first cutting means provided between said bobbin holding means and said first sucking means, said first cutting means being sized, shaped, and positioned so as to cut a tail end of the yarn when each bobbin is subjected to sucking pressure from said first sucking means; and

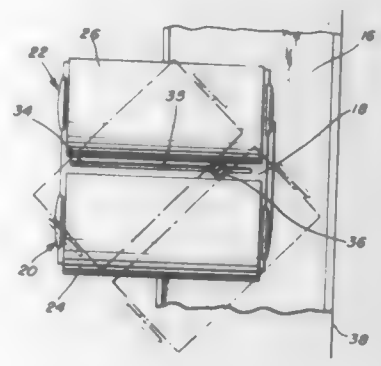
(h) a second cutting means provided between said means for guiding a sucked yarn and said conveyor, said second cutting means being sized, shaped, and positioned so as to cut the picking end portion of the yarn on each bobbin to a fixed length.

4,606,510

PAPER TOWEL HOLDER SUPPORT

W. L. McEntire, 420-B Glenhill Cir., Chattanooga, Tenn. 37415

Filed Jun. 3, 1985, Ser. No. 740,891
Int. Cl.[4] B65H *19/10, 16/02*
U.S. Cl. 242—55.3
5 Claims



1. A paper towel roll dispenser support for mounting a pair of rolls of paper towels from a ledge beneath a wall mounted cabinet with the rolls in spaced front to back relationship, said dispenser support comprising a platform, first and second paper towel roll holders fastened to said platform in spaced relationship, each of said holders having a pair of roll mounting cylindrical hubs for carrying a roll of towels therebetween, the holders being disposed such that the axes of the hubs of the first holder is spaced from and substantially parallel to the axes of the hubs of the second holder, means defining an elongated slot in said platform intermediate said holders and extending in a direction substantially parallel to the axes of the hubs of said holders, a journal member disposed through said slot, said journal member having an abutment means on one end thereof larger than the width of said slot for precluding withdrawal of said one end through said slot, and means for securing the journal member to said ledge thereby permitting said platform to slide relative to said journal member in the direction of said slot and to rotate about said journal member.

4,606,511

TAPE REEL

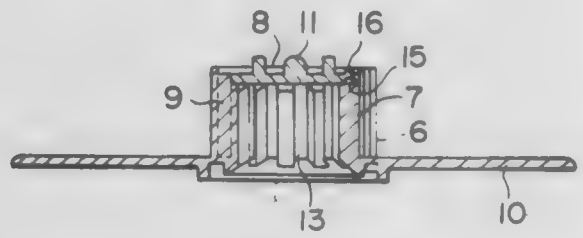
Kazutoshi Machida, Odawara, Japan, assignor to Fuji Photo Film Co., Ltd., Tokyo, Japan

Filed Jul. 29, 1985, Ser. No. 760,278

Claims priority, application Japan, Aug. 17, 1984, 59-125201[U]

Int. Cl.[4] B65H *75/14*

U.S. Cl. 242—71.8 6 Claims



1. A magnetic recording cassette tape reel comprising a reel lower portion consisting of a hub about which magnetic recording tape is reeled, a shaft hole wall and shaft hole bottom wall which form a shaft hole open at one end for communicating turning force to said hub, a protruding shaft formed concentrically on the side of the shaft hole bottom wall opposite to the shaft hole and which forms a contact point during the rotation of the reel, a plurality of connecting ribs which connect the hub to the outer surface of the shaft hole wall, said shaft hole wall having an upper end opposite said shaft hole including an inner generally annular shoulder, said shaft hole bottom wall having a peripheral edge seated on said shoulder of the shaft hole wall; a lower flange which supports the reeled magnetic recording tape, and which is also provided with an upper flange which is fixed to the reel lower portion to prevent mis-reeling of said magnetic recording tape, said upper end of said shaft hole wall also including a plurality of joining projections extending upwardly therefrom adjacent said shoulder into the shaft hole bottom wall, said reel being integrally and simultaneously double injection molded of different resins, with said shaft hole bottom wall and said protruding shaft being molded of a more wear resistant resin than the reel portion consisting of said reel hub, shaft hole wall, connecting ribs, lower flange, and projections, whereby said projections prevent deformation of the hub resulting from the mold shrinkage of the two different resins.

4,606,512

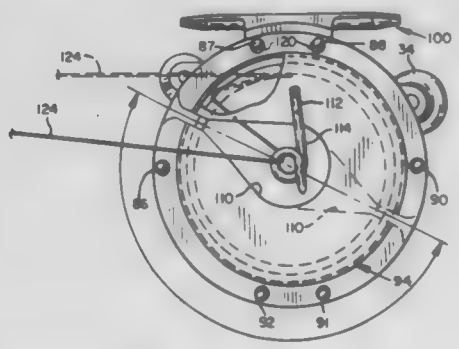
BIMODAL FISHING REEL ASSEMBLY

Robert R. Dennison, 2220 S.W. Troy, Portland, Oreg. 97219

Filed Feb. 19, 1985, Ser. No. 702,943

Int. Cl.[4] A01K *89/015, 89/04*

U.S. Cl. 242—84.2 C 6 Claims



1. A bimodal fishing reel comprising

a real housing including a housing side plate and a mounting shoe disposed above said housing side plate used in attaching the reel to a fishing rod,

a spindle mounted on the housing side plate and projecting outwardly therefrom,

a spool rotatably and detachably mountable on said spindle,

a detachable side plate spaced from and disposed opposite said housing side plate, said housing and detachable side plates extending in covering relation over the ends of a spool mounted on said spindle,

a line-passing channel extending from the center of the detachable side plate to an edge thereof and having an entrance communicating with an edge portion of the side plate, and

mounting means comprising a series of posts extending outwardly from adjacent the periphery of said housing side plate mounting said detachable side plate on said reel housing with said side plate detachably and fixably held in one position where said channel is oriented to extend upwardly and forwardly in the reel, said posts being symmetrically distributed about the periphery of the housing side plate to have corresponding positions on opposite sides of a plane bisecting said housing side plate and providing for the detachable and fixed holding of the side plate in another position where said channel is oriented to extend in the opposite direction in the reel, the first position of the side plate accommodating use of the reel for spin-casting purposes and the second position of the side plate accommodating use of the reel for fly-casting purposes.

4,606,513

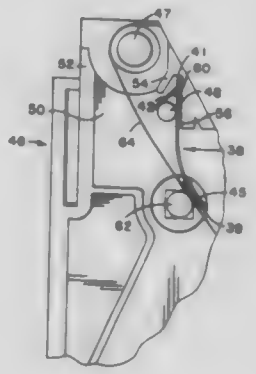
TAPE CASSETTE PRESSURE FLAP ASSEMBLY

Anthony L. Gelardi; Paul J. Gelardi, both of Cape Porpoise, and Robert B. MacLeod, Jr., Kennebunkport, all of Me., assignors to Shape Inc., Biddeford, Me.

Division of Ser. No. 615,875, May 31, 1984, Pat. No. 4,569,492, which is a continuation-in-part of Ser. No. 417,658, Sep. 13, 1982, abandoned. This application Oct. 21, 1985, Ser. No. 789,845

Int. Cl.[4] G11B *15/32*

U.S. Cl. 242—199 19 Claims



1. A pressure flap for contacting magnetic tape running in a tape cassette, comprising;

(a) a substantially flat pressure flap element made of a flexible material and having first and second ends and an opening formed between the first end and the second end,

wherein at least the first end has a low coefficient of friction relative to said tape, and

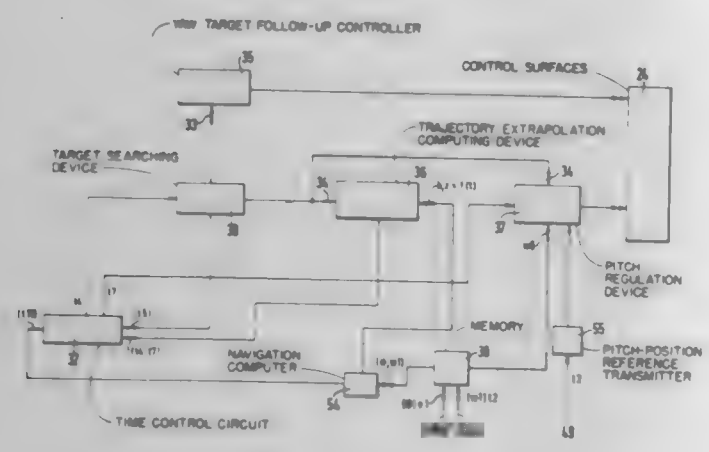
wherein the second end's height, which is perpendicular to the longitudinal axis of the pressure flap, is greater than the corresponding height of the first end; and

(b) a flange formed between the second end and the opening of the pressure flap element extending therefrom in substantially one plane at an angle to the plane of the pressure flap element, the flange having a first portion integrally formed of the pressure flap element substantially perpendicular to the longitudinal axis of the pressure flap and a second portion being a free portion extending from the pressure flap element.

4,606,514
METHOD FOR HOMING A PROJECTILE ONTO A TARGET AND FOR DETERMINING THE BALLISTIC TRAJECTORY THEREOF AS WELL AS ARRANGEMENTS FOR IMPLEMENTING THE METHOD

Peter Sündermeyer, Lauf/Pegn., Fed. Rep. of Germany, assignor to Martin-Marietta Corporation, Bethesda, Md. and Diehl GmbH & Co., Nuremberg, Fed. Rep. of Germany

Filed Aug. 10, 1984, Ser. No. 639,921
Int. Cl.[4] F41G *7/22*
U.S. Cl. 244—3.15 10 Claims

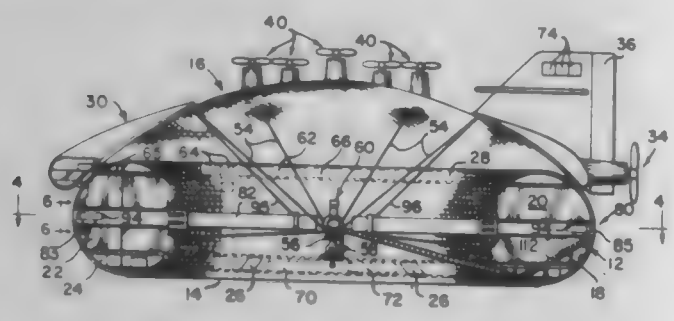


1. In a method for homing a projectile onto a target wherein said projectile is self-steering in its end flying phase along an extended trajectory, such as an artillery projectile, from which there is effected a target searching and target homing sequence; the improvement comprising: initially maintaining the extended trajectory subsequent to detecting the target object which is to be homed on; thereafter effecting a pitch angle control for transition from the extended trajectory into a steeper target approach trajectory at a further shortening of the distance towards the target object; determining the theroretical impact point on board the projectile from given firing data and from pregiven conditions during transition from an initial ballistic trajectory into said extended trajectory; and calculating on board said projectile, for said steeper target approach path towards the target object, the delay time period for transiently maintaining the extended trajectory up to the time point of leaving said extended trajectory into the target approach path at a steeper pitch angle.

4,606,515
HYBRID ANNULAR AIRSHIP

John J. Hickey, 27 Bowdoin St., Apt. 4-A, Boston, Mass. 02114

Filed May 29, 1984, Ser. No. 614,819
Int. Cl.[4] B64B *1/36, 1/26*
U.S. Cl. 244—29 3 Claims



1. Combined means of stabilization and guidance for a hybrid annular airship having an annulus containing a plurality of gas cells, said combined means comprising:

(a) a pair of tubes;

(b) a plurality of doors for selectively closing off one of said pair of tubes

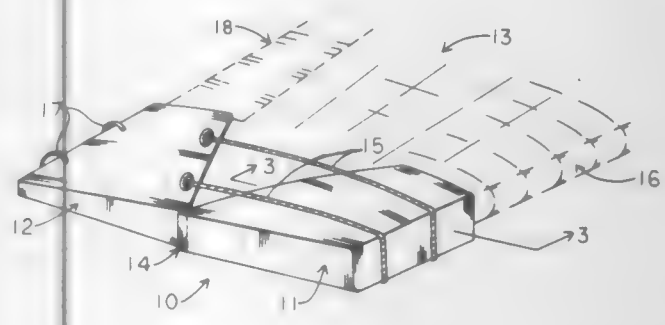
(c) said pair of tubes being diametrically mounted within said annulus and normal to one another;

(d) each of said pair of tubes having opposed ends being flush with said annulus and said plurality of doors being mounted intermediate of said opposed ends, said annulus having a plurality of indents on its inside adjacent said pair of tubes, and a plurality of rings having holes mounted about said pair of tubes, said pair of tubes provided with a plurality of holes in operative association with said rings, and means for rotating said rings about said tubes.

4,606,516
AIRCRAFT PROTECTIVE DEVICE

George R. Willison, Box 5255, High Point, N.C. 27262

Filed May 10, 1984, Ser. No. 608,719
Int. Cl.[4] B64D *45/00*
U.S. Cl. 244—121 5 Claims

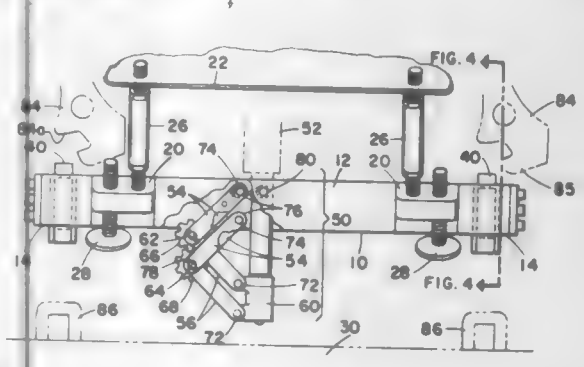


1. A protective device for an air control surface having a leading and trailing edge and a tip comprising: a pair of independent rigid laminated envelopes for opposingly enveloping the control surface, the first of said pair of laminated envelopes for envelopment of the leading edge of the control surface and the second of said laminated envelopes for envelopment of the trailing edge of the control surface, securing means, said securing means attached to one of said envelopes, said securing means extending therefrom to the other of said envelopes for maintaining said envelopes on the control surface, and said first envelope and said second envelope coacting to extend protection along the entire tip.

4,606,517
STORE ADAPTER

Arthur E. Adams, Culver City, Calif., assignor to Northrop Corporation, Los Angeles, Calif.

Filed Dec. 12, 1983, Ser. No. 560,685
Int. Cl.[4] B64D *1/06*
U.S. Cl. 244—137 A 13 Claims



1. A carrier for releasably suspending a load from a hook of a vehicle by a lug attached to the load comprising

a suspension link means having a hook engageable first end and a set of openable jaws for gripping the lug at the other end,

means for mounting said link means for movement toward and away from the hook between a first position in which the first end of the link means is engaged by the hook and the jaws are closed to capture and support the load by its lug, and a second position in which the link means is free of the hook and the jaws open to release the load, said mounting means supporting said link means throughout its range of travel between said positions,

means associated with said link means, and said mounting means for positively moving said jaws between jaws open and jaws closed positions as the link means moves between the first and second positions in the mounting means,

said link means comprising

an opposed pair of link halves each having two sets of projections directed towards each other in an overlapping relationship and spaced apart to define an opening for the hook at said first end, said link means bounded at the hook end by a set of projections which remain closed during travel between positions while the jaws open and close,

one set of projections at the first end being adapted to engage the hook to move the same from open to closed position to engage the link means through said opening,

the other set of projections being adapted to receive lug movement to push the link means into first position.

4,606,518

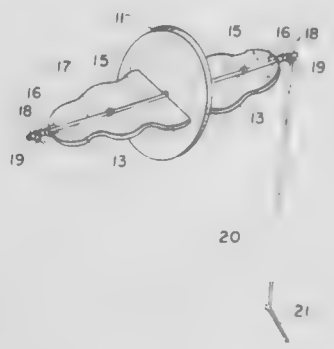
SPACE SPINNER

Daniel Jeffrey, 108 N. 5th St., Martins Ferry, Ohio 43935

Filed Feb. 25, 1985, Ser. No. 704,966

Int. Cl.[4] B64C *31/06*

U.S. Cl. 244—153 A **1 Claim**



1. A space spinning kite, comprising a stabilizing disc and a wing formed of a rigid lightweight material, assembled at right angles to each other, wherein the disc is chordwise secured to the center of the wing, said wing being frictionally retained in a slotted opening in the disc and tapered towards its peripheral edges, a solid dowel extending lengthwise externally to the median plane of the wing and detachably secured thereto by rubber bands which extend through rubber band holes in the wing on opposite sides of said disc and which are stretched over the ends of the solid dowel, thereby detachably and yieldably holding the solid dowel in place, said rubber bands constituting the sole fastening means between the dowel and wing to facilitate ease of assembly and replacement of said dowel, two spacers of resilient material on each end of said solid dowel, a bearing in the form of a thin plate having a hole surrounding said dowel and stationarily held between each of said pair of spacers, a V-bridle of string tied to another hold of said bearings, and said spacers being arranged to hold said bearing in place on said dowel and to provide extra safety by protecting the eyes of the flyer and a mooring line of string attached to the apex of said V-bridle and extending to the ground, whereby said rubber bands not only hold the dowel to the wing and make use of different size interchangeable dowels possible, but also allows the assembly to conform more to the wind, thereby retaining the strength and resistance of the structure to deterioration even during times of strong wind forces.

4,606,519

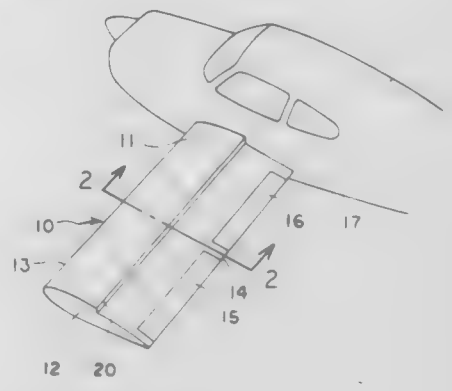
AIRFOIL

Demeter G. Fertis, 186 Court Dr., Apartment 301, Akron, Ohio 44313, and Larry L. Smith, 5 Court St., Canfield, Ohio 44406

Filed Aug. 6, 1984, Ser. No. 637,908

Int. Cl.[4] B64C *3/26*

U.S. Cl. 244—200 **25 Claims**



1. A lifting body comprising:

a leading edge;

a trailing edge located longitudinally rearward of said leading edge;

a continuous lower surface extending from said leading edge of said trailing edge, said lower surface defining a lower camber;

a first upper surface extending rearwardly from said leading edge and terminating in at least one offset forwardly of said trailing edge, said first upper surface defining a positive upper camber portion; and

at least a second upper surface extending rearwardly from a said offset, said second upper surface defining a negative upper camber portion.

4,606,520

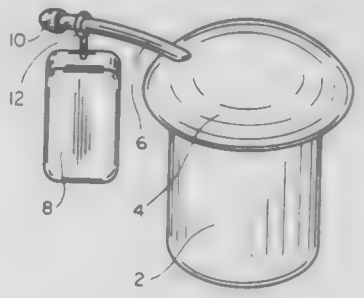
SOAP HOLDER

Walter J. Riniker, 1059 Aileen St., Lafayette, Calif. 94549

Filed Apr. 11, 1984, Ser. No. 598,862

Int. Cl.[4] A47B *91/00*

U.S. Cl. 248—121 **4 Claims**

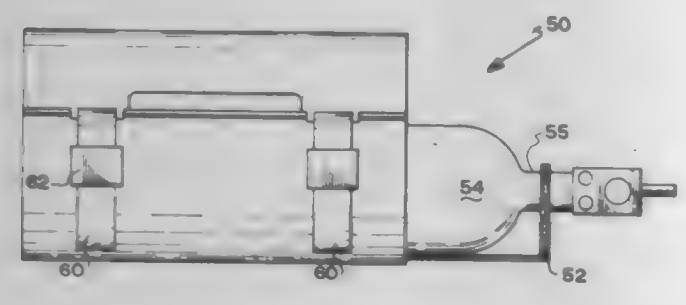


1. A device for supporting a bar of soap comprising a portable weighted base portion having a relative flat bottom configured to be freely supportable on a horizontal surface, a weighted upright columnar portion extending vertically from the base portion when the flat bottom is supported on the horizontal surface, a weighted cap portion and a support arm extending outwardly from said cap portion and substantially at right angles to the vertical axis of the columnar portion and of a length significantly greater than the cross-sectional width of said soap, said support arm being configured for engagement with a hook embedded in the soap to support said soap over a tub or basin.

4,606,521
CYLINDER HOLDER

Gary R. Williams, 943 Daisy Ave., Carlsbad, Calif. 92008

Filed Oct. 6, 1983, Ser. No. 539,664
Int. Cl.[4] F16M *13/00*
U.S. Cl. 248—214 10 Claims

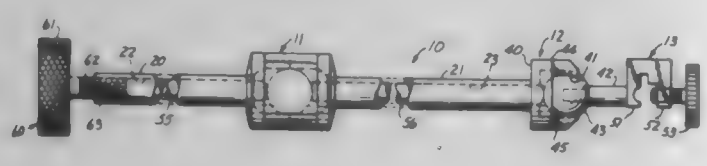


1. A holder for a compressed gas cylinder, comprising:
a curvate section for receiving the cylinder, providing an open portion therefore;
a bracket section integrally connected to said curvate setion and having a curvate retaining lip;
means for securing said cylinder in said curvate section; and
wherein said retaining lip is adapted to be pivotally disposed over the railing of a stretcher allowing said holder to rotate thereby and said means for securement comprises:
a retention bracket attached to a bottom of said holder and having an extended portion which includes a notch for receiving said cylinder;
a pair of elastomeric cushions disposed in said holder along either side of said retention bracket;
a plurality of slots in said curvate and said bracket sections; and
a plurality of straps received by said slots and passing over said open portion of said curvate section;
wherein said straps are adapted to contact said cylinder and apply downward pressure thereto.

4,606,522
POSITION ADJUSTABLE INSTRUMENT HOLDER

Milton D. Heifetz, 704 N. Bedford Dr., Beverly Hills, Calif. 90210

Filed Aug. 23, 1984, Ser. No. 644,170
Int. Cl.[3] E04G *3/00*; F16C *11/06*
U.S. Cl. 248—276 14 Claims

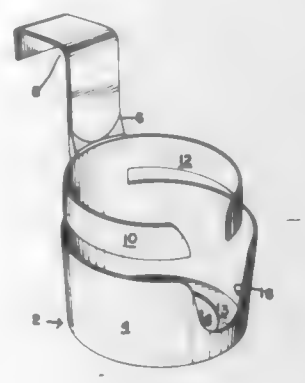


1. A jointed holder for holding an article in an adjusted position, comprising:
a link joint comprising a first and a second rigid link shaft, each said link shaft having an axial passage therethrough and a swivel head adjacent to an end thereof, said head extending around and projecting beyond the outer wall of its respective shaft, a link joint housing having an axis, an internal axial chamber, a first and a second port entering said chamber coaxially on its axis, a first and a second swivel seat in said chamber coaxial with said ports and with said axis, and facing toward each other, each said link shaft passing through a respective port, with its swivel head in contact with a respective swivel seat, each said link shaft having an outer diameter smaller than the least transverse dimension of its respective port to enable the link shaft to be moved angularly relative to the swivel seat, and a force transmission member axially movably disposed inside said chamber;
a terminal joint comprising a terminal joint base fixed to one of said link shafts, a terminal joint swivel seat supported by, spaced from, and facing said terminal joint base, a terminal shaft, a swivel head on said terminal shaft engaged to said terminal joint swivel seat for swivel movement, the terminal shaft having an outer diameter smaller than the least transverse dimension of said terminal joint swivel seat, and its swivel head having a diameter larger than said least transverse dimension whereby said shaft swivel head is trapped by said terminal joint swivel seat, the axial passage in said last named link shaft continuing through said terminal joint base;
a first drive pin slidingly fitting in the axial passage in said first link shaft, and a second drive pin slidingly fitted in the axial passage in said second link passage, said drive pins being so proportioned as to bear against said force transmission members, and said second drive pin being so proportioned and arranged as also to bear against said terminal joint swivel head;
clamp means on said terminal shaft to engage an article to be positioned; and
drive means interlinking said first link shaft and said first drive pin to press said first drive pin against said force transmission means, said force transmission means against said second drive pin, and said second drive pin against said terminal joint swivel head to cause said terminal joint swivel head to engage and lock with said terminal joint swivel seat, thereby to draw said second link joint swivel head against said second swivel seat, and drawing said first link joint swivel seat against said first link joint swivel head, all to extend said holder whereby lock all interfaces of swivel seats and swivel heads against swivel motion.

4,606,523
CUP HOLDER

Robert E. Statz, 8528 Antietam Rd., 22110, and Wayne A. Treichel, 9910 Lake Occoquan Ave., both of Manassas, Va.

Filed Nov. 29, 1982, Ser. No. 444,996
Int. Cl.[4] A47G *29/00*
U.S. Cl. 248—311.2 1 Claim



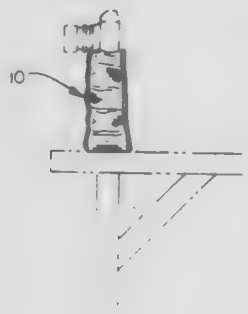
1. A drinking cup holder comprising a hollow upwardly open socket having a generally cylindrical side wall with front and rear sides and a top and bottom,
a hook having a shank extending upwardly from the rear side of the socket side wall, said hook shank being integral with and extending upwardly from the rear side of the socket,
and a pair of flexibly resilient arms extending forwardly from the hook shank, said arms being spaced upwardly from and over-lying the socket, said arms when unflexed being normally disposed along the arc of a circle of lesser diameter than the top of the socket,
said socket having at the bottom of the side wall thereof an inwardly-extending annular flange defining an aperture for receiving a generally frusto-conical drinking cup,
said socket having in the front of the side wall thereof an upwardly open notch which notch extends downwardly from the upper edge of the socket and which terminates above the bottom of the socket providing access of the user's lips to a cup engaged in said aperture.

4,606,524

CAMERA SUPPORT CUSHION

Paul T. Conee, 99 N. Beacon St., Hartford, Conn. 06105

Continuation-in-part of Ser. No. 422,858, Sep. 24, 1982, Pat. No. 4,501,401. This application Jun. 21, 1983, Ser. No. 506,408
The portion of the term of this patent subsequent to Feb. 26, 2002, has been disclaimed.
Int. Cl.[4] A47G *29/00*
U.S. Cl. 248—346 17 Claims



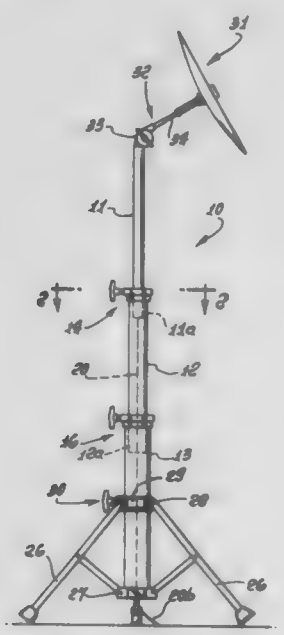
1. A cushion for supporting a camera or the like, comprising: a substantially matched pair of panels joined to one another in spaced relationship by a peripheral wall extending thereabout, said panels and said peripheral wall cooperatively defining a space within said cushion; first means for tying together said panels said second means for tying together two opposite portions of said peripheral wall, said tying means extending between said panels and said wall portions respectively and limiting the outward movement thereof; and a free-flowing filler material contained within said cushion and substantially completely filling said space therewithin, said tying means being so configured as to avoid undue interference with the free flow of said filler material within said space, at least said panels and said peripheral wall being made of a relatively supple material to permit deformation of said cushion and conformation to the camera, said tying means limiting and localizing distortion caused by forces exerted upon said cushion, and minimizing bulging, sagging and loss of form.

4,606,525

HEIGHT ADJUSTMENT OF MUSIC STAND

Don Lombardi, c/o Drum Workshop, Inc., 2697 Lavery Ct. Unit 16, Newbury Park, Calif. 91320

Filed Dec. 27, 1983, Ser. No. 565,573
Int. Cl.[4] A47B *97/04*
U.S. Cl. 248—460 5 Claims



1. In height adjustment means for a music stand having upper, middle and lower telescoping sections at least one of which is tubular, and in combination with said stand, the combination comprising

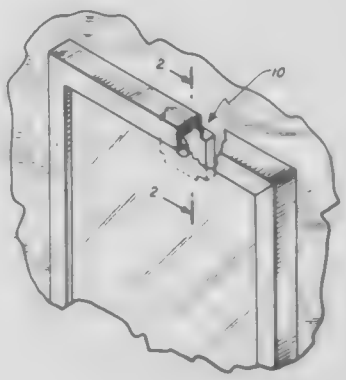
(a) a height limiting flexible strand extending lengthwise within said tubular section or sections,
(b) the strand having an upper portion attached to an upper one of said sections, and
(c) the strand having a lower portion attached to a lower one of said sections,
(d) the length of the strand between said attachments when taut blocking further elevation of the upper section related to the lower section, the length of the strand substantially exceeding the length of each section,
(e) the lower section having an open end via which the lower portion of the strand is accessible to adjust its taut length within the sections,
(f) there being a clamp on the lower section acting to adjustably clamp said lower portion of the strand, adjacent said lower section lower end,
(g) there being a transverse pin in the lower end of the upper section to which the strand upper portion is attached, the lower end of the upper section being open, but received in the middle section, the attachment of the strand to said transverse pin being adjustable via the open lower end of the upper section when the upper section is removed from the middle section.

4,606,526

FRAME HANGER

Fred Rabinowitz, 127 N. 19th St., Kenilworth, N.J. 07033

Filed Sep. 13, 1984, Ser. No. 650,368
Int. Cl.[4] A47G *1/16*
U.S. Cl. 248—489 19 Claims



1. A picture frame hanger for use in mounting on a wall a picture frame of the type having an internally facing accessible channel at the frame sections thereof; said hanger comprising a block of material having two opposing substantially planar surfaces with sides extending therebetween and, adapted to be secured to a supporting wall or columnar member, said block of material having a projection extending laterally along at least two sides thereof, each forming a lip receivable into said accessible frame channel, for supporting said frame when said block is secured upon said wall, at least one said projection being formed by said block side being bevelled in a direction wherein said block side diverges away from said block surface which is adapted to be secured to said supporting wall.

4,606,527

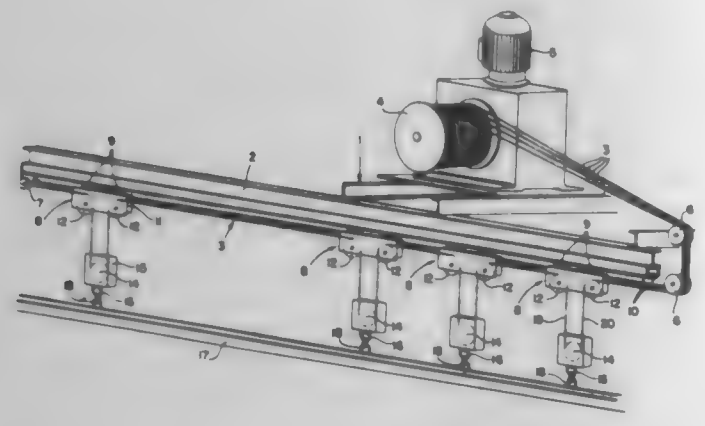
THEATRE SCENERY HOISTING MECHANISM

Alexander Ziller, Luisenstrasse 11, D-4230 Wesel, and Helmut Grosser, Andreas-Herz-Strasse 7, D-8011 Baldham, both of Fed. Rep. of Germany, assignors to Alexander Ziller; Helmut Grosser; Richard E. Nicholson and Vince Silveri, East Bloomfield, N.Y.

Filed Dec. 21, 1984, Ser. No. 684,455
Claims priority, application European Pat. Off., Dec. 29, 1983, 83201850.1
Int. Cl.[4] A63J *1/02;* B66D *1/12*
U.S. Cl. 254—336 5 Claims

1. Theatre scenery hoisting mechanism comprising:

(a) framework means forming a track substantially extending horizontally at an elevation above a stage,
(b) a plurality of carriages moveable along said track, each of said carriages having
(i) a housing,
(ii) frictional shoes connected to said housing and being in sliding frictional cooperative relationship with said tract for selectively sliding said carriage serially along said tract to selected positions along said track, and
(iii) first and second pulleys rotatably mounted within said housing at substantially equal elevations above said stage,
(c) a plurality of operating cables, each one of said cables corresponding to a given one of said carriages,



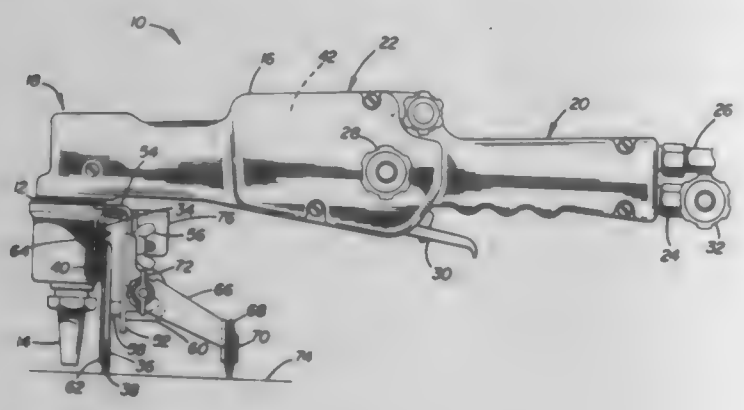
(i) all of said cables being fixed at one end thereof to a point near one end of said longitudinal track,
(ii) all of said plurality of cables extending through all of said housings of said carriages,
(iii) each said cable in said plurality of cables corresponding to a given one of said carriages being disposed over said first and second pulleys of said given one of said carriage and having a downwardly extending loop between said first and second pulleys,
(d) a plurality of pulley blocks, one riding on said loop associated with each of said carriages, and
(e) means for applying a pulling force to all of said cables in said plurality of cables at the same time thereby simultaneously raising said pulley blocks and raising theatrical scenery suspended from said pulley blocks.

4,606,528

MOTORIZED HAND TORCH WITH IMPROVED BRAKE MECHANISM

Roger D. Zwicker, Arlington, Tex., assignor to Victor Equipment Company, Denton, Tex.

Filed Apr. 25, 1985, Ser. No. 727,148
Int. Cl.[4] B23K *7/10*
U.S. Cl. 266—66 **13 Claims**



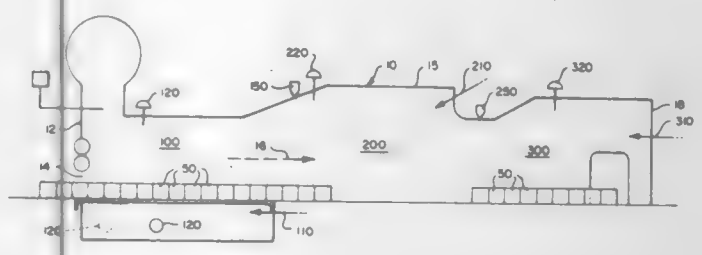
1. A machine for cutting comprising:
a housing;
a device head mounted on said housing and having a cutting torch tip;
conduit means for supplying fuel and oxidizer to said torch tip;
a drive cylinder mounted for rotation about said device
a motor;
power transmission means operatively connecting said motor with said drive cylinder so as to drive said drive cylinder in response to said motor;
control means for controlling said motor;
bracket means mounted for rotation about said device head;
locking means on said device head for selectively locking said bracket means to said housing whereby said bracket means is restrained from rotating about said device head,
a circle cutting attachment mounted on said bracket means; and
means for preventing locking of said bracket means when said circle cutting attachment is mounted on said bracket means.

4,606,529

FURNACE CONTROLS

Charles A. Tooch, Moon Township, Allegheny County, Pa., assignor to Davy McKee Equipment Corporation, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 533,980, Sep. 20, 1983, abandoned. This application Oct. 9, 1984, Ser. No. 658,708
Int. Cl.[4] C21D *1/00*
U.S. Cl. 266—80 **4 Claims**



1. A furnace control for a furnace for heating a material having at least first and second adjacent independently temperature controlled heating zones through which blocks of material to be heated are consecutively transported in series comprising:
(a) surface temperature sensing means mounted on the furnace in said second zone to directly measure the surface temperature of said material as it enters said second zone from said first zone; and
(b) means responsive to said temperature sensing means for controlling the furnace temperature in said first zone.

4,606,530

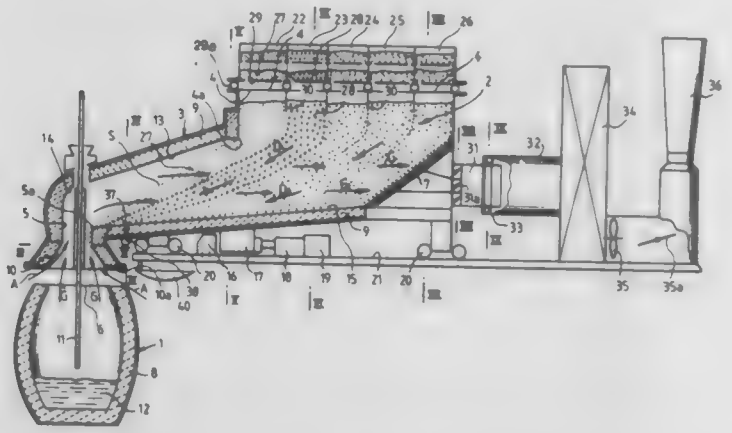
INSTALLATION AND PROCESS FOR CONTINUOUSLY CHARGING A REACTOR WITH SOLID MATERIAL AND HEATING SAID MATERIAL WITH THE GASES EMITTED FROM SAID REACTOR

Victor Litchinko, Résidence St-Sébastien, Tour C, 11 rue Haguenauer, 54000 Nancy; Igor Litchinko, 24 rue de la Sygrie, 92140 Petit-Clamart, and Catherine Litchinko, Résidence St-Sébastien, Tour C, 11 rue Haguenauer, 54000 Nancy, all of France

Filed Mar. 19, 1985, Ser. No. 713,629
Claims priority, application France, Mar. 28, 1984, 8404827
Int. Cl.[4] C21C *5/40*
U.S. Cl. 266—158 **13 Claims**

1. An installation for continuously charging solid material (2) into a reactor (1) and heating said material by heat exchange with the hot gases (G) emitted from said reactor (1), wherein said installation comprises a compartment (3) provided with a top opening (4) for charging solid material (2) and a bottom opening (5) for discharging said material, said bottom opening being placed above the opening (6) through which the hot gases (G) are discharged from the reactor (1) in order to enable said hot gases to penetrate into said compartment (3), means for displacing said solid material between the charge opening

(4) and the discharge opening (5) of the compartment and for producing a heat-exchange surface between said solid material (2) and the gases (G) emitted from the reactor (1), the compartment (3) being further provided with a discharge opening (7) for the gases emitted from the reactor, said discharge opening



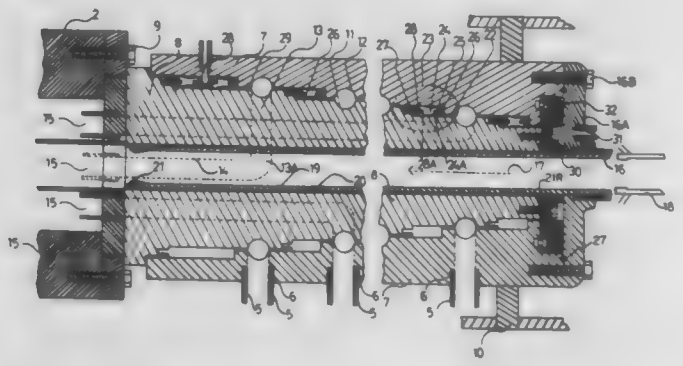
being located opposite to the opening (5) for admission of said gases and beneath the opening (4) for charging solid material (2) so as to ensure that said gases (G) circulate in countercurrent flow with respect to the direction of displacement (D) of said solid material (2).

4,606,531

ROTARY JOINT APPARATUS FOR INTRODUCING AND TRANSPORTING SEVERAL INDEPENDENT FLUIDS AND SOLID FINES INTO A METALLURGICAL CONVERTER

Arturo Lazcano-Navarro, and Miguel A. Alcantara, both of Saltillo, Mexico, assignors to Instituto Mexicano de Investigaciones Siderurgicas, Saltillo, Mexico

Filed Aug. 20, 1984, Ser. No. 642,254
Int. Cl.[4] C21C *7/00*
U.S. Cl. 266—216 **1 Claim**



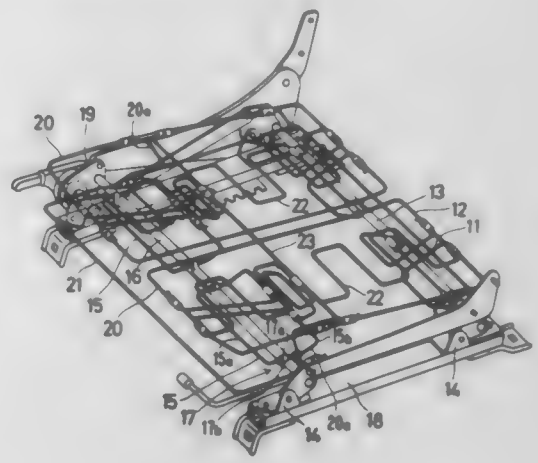
1. A rotary joint apparatus for introducing and transporting several independent fluids, some including solid fines from a static system into a rotating furnace metal converter system, comprising in combination, means connecting a set of static lines to a corresponding set of ports integrated in a static sleeve of hollow cylindrical shape for receiving a plurality of separate fluids, shaft means rotating with the converter in a central axis space of the sleeve having a rotary fluid conveying shaft, a plurality of axially incorporated channels on said shaft for receiving the corresponding separate fluids from said static ports, a plurality of circumferential channels axially located along said shaft which rotate with said shaft and which transport fluids to said converter and which are directly connected to rotate with said rotating shaft and which are sealed axially from one another along said rotating shaft, and wherein said rotating shaft has a central bore passing completely through said shaft from end to end thereof along the central pivotal axis of said shaft for transporting solid fines with a carrier gas including axial sealing means between said shaft and said sleeve for sealing the separate channels axially of said rotary shaft to avoid leakage of the fluids or penetration of the solid fines therebetween.

4,606,532

SEAT FOR VEHICLES

Kenichi Kazaoka, Nagoya, and Hiroshi Okazaki, Toyota, both of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Japan

Filed Jul. 19, 1984, Ser. No. 632,241
Claims priority, application Japan, Jul. 30, 1983, 58-140215
Int. Cl.[4] F16F *3/02*
U.S. Cl. 267—102 **7 Claims**



1. A seat mounted on forward and rearward pairs of brackets in a vehicle, having a seat cushion and comprising:
a seat spring for supporting said seat cushion,
a pair of forward and rearward connecting members for interconnecting said pairs of said forward and rearward brackets mounted on the lower side of said seat;
a rearward spring pivotally connecting a rear portion of said seat spring to said rearward connecting member, and
a forward spring pivotally connecting a first front portion of said seat spring and a second front portion of said seat spring, rearward of said first front portion, to said forward connecting member, said first front portion of said seat spring being forward of said forward connecting member and said second front portion of said seat spring extending substantially between said forward and rearward connecting members, said forward spring also including means for allowing slidable movement forward and rearward on said forward connecting member.

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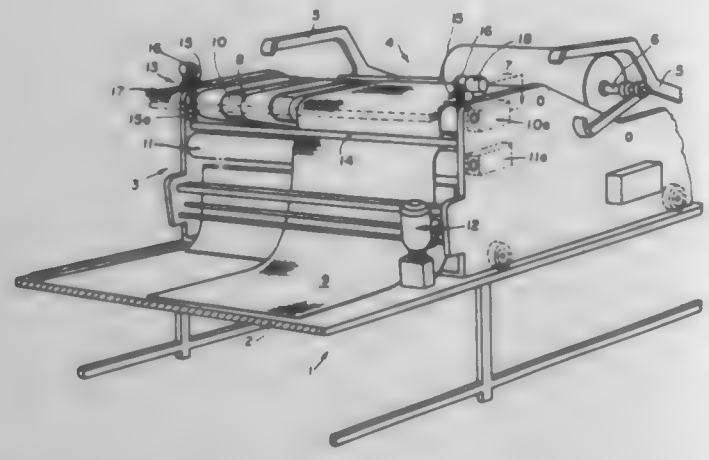
MACHINE FOR CONVERTING ROLLED CLOTH INTO SHEETS

Carlo Fonio, Galliate, Italy, assignor to Rockwell-Rimoldi S.p.A., Italy and Officina Mecannica Mario Fonio, Italy

Filed Dec. 16, 1985, Ser. No. 809,634
Claims priority, application Italy, May 31, 1985, 22051/85[U]
Int. Cl.[4] B65H *29/46*
U.S. Cl. 270—31 **6 Claims**

1. In a machine for converting rolled cloth into sheets wherein there is provided at least one surface for stacking the sheets of fabric or similar material, a mobile carriage located on the said stacking surface and a loading device having forked levers designed to hold and move the axial bar of the roll between loading and unwinding portion, the combination comprising a device for controlling the fabric feed rate, which device comprises a bar extending transverse to the direction in which the said fabric is fed and held oscillatably by the said

carriage in a position tending to form a hollow in the fabric itself, and a speed regulator which is able to detect the oscilla-



tions of the said bar and to control a variable-speed electric motor which causes the said fabric to be fed.

4,606,534

COMBINED SEPARATING, BURSTING AND SORTING APPARATUS FOR A CONTINUOUS WEB OF MULTI-FORMS

Jacobus F. Gombault, Drachten, Netherlands, assignor to Hadewe B.V., Drachten, Netherlands

Filed Oct. 8, 1985, Ser. No. 785,550

Claims priority, application Netherlands, Oct. 8, 1984, 8403057

Int. Cl.[4] B65H *41/00*

U.S. Cl. 270—52.5 **8 Claims**



1. A combined separating, bursting and sorting apparatus for a continuous web of multi-forms having sheet divisions fixed by perforation lines, provided with a bursting device for subdividing said continuous web along the perforation lines, a path of travel for conveying said continuous web in separated condition and a sorting device consisting of a plurality of receptacles for separated and bursted sheets of said continuous web, said bursting device consisting of an infeed, a bursting knife edge, and an outfeed provided with a pair of outfeed rollers, and said path of travel for conveying said continuous web in separated condition beginning before the bursting knife edge at a separating device having a plurality of plate-shaped infeed elements to which are connected one or a plurality of elongated guide elements which extend substantially linearly to a deflection at a receptacle and are capable of being tensioned in their longitudinal direction by tension elements engaging with their ends, at least said pair of outfeed rollers being provided with circumferential recesses or interruptions for bunchwise unaffectedly passing the guide elements, characterized in that the infeed elements for inserting a layer of the continuous web of multi-forms are capable of being deflected or swivelled away from each other and are combined to a packet by inserting thin distance plates in the side edge regions on both sides of the path of travel and the guide function of a guide element receding at the point of deflection is taken over by a guide plate which extends to the next deflection and follows same, and adjoins the path of travel on one side, the other side of which is formed by belt conveyor means or by conveyor wheels.

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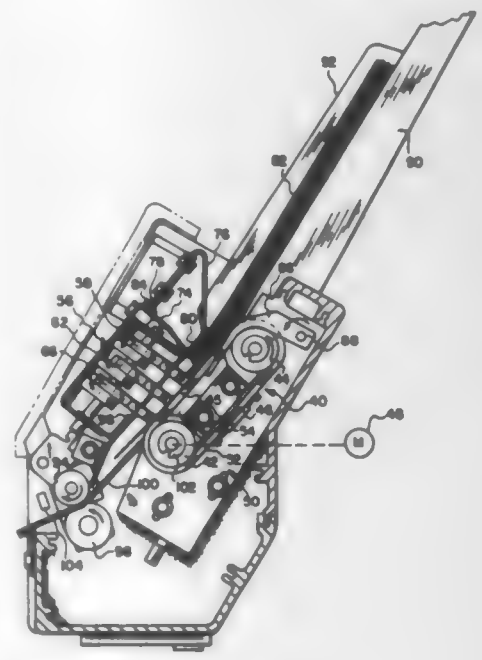
SHEET FEEDING DEVICE

Bradley W. Larson, Garland, Tex., assignor to The Mead Corporation, Dayton, Ohio

Filed Nov. 30, 1984, Ser. No. 677,110

Int. Cl.[4] B65H *3/04, 3/52*

U.S. Cl. 271—10 **12 Claims**



1. A sheet feeding device comprising:

downwardly angled tray means for supporting a stack of sheets such that a minimal amount of frictional force is exerted between individual sheets thereof;

a drive belt assembly including an endless drive belt having an upper run extending downwardly from said tray means for conveying sheets therefrom;

a pair of axles extending longitudinally of said belt and on opposite sides thereof;

a plurality of retard members spaced along and above said upper run downstream of said tray means, said retard members being arranged in two intermeshing sets and attached to said axles for independent pivotal movement toward and away from said upper run; and

means for independently biasing said retard members downwardly toward said upper run such that sheets from said tray passing beneath said retard members are urged against said upper run by said retard members.

4,606,536

STOPPER PLATE APPARATUS FOR AUTOMATIC DOCUMENT FEEDER

Koji Ohara, Huntington Beach, Calif., assignor to Ricoh Electronics, Inc., Irvine, Calif.

Filed Apr. 12, 1985, Ser. No. 722,852

Int. Cl.[4] B65H *3/06*

U.S. Cl. 271—118 **19 Claims**

1. Apparatus for automatically feeding individual sheets from a stack of individual sheets comprising:

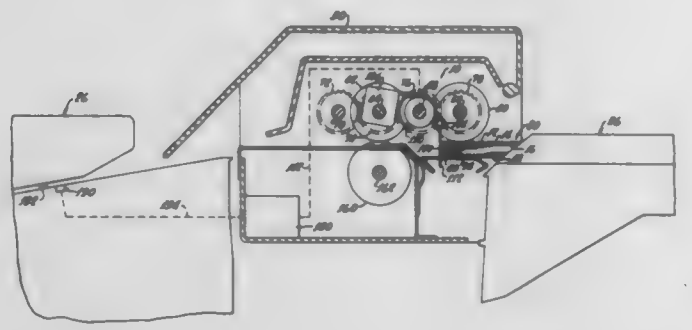
support means for holding a stack of individual sheets;

stopper means for releasably engaging said stack in order to position said stack on said support means and for preventing premature feeding of individual sheets from said stack, said stopper means being mounted to enable the stopper

means to moved by individual sheets as the individual sheets are fed therepast;

primary feed roller means positioned over a top sheet of said stack;

means for supporting said primary feed roller means and for causing said primary feed roller means to selectively engage and disengage said top sheet, said primary feed roller



means feeding said top sheet outwardly from said stack when engaged with said top sheet; and

means, in an operative relationship with said means for supporting said primary feed roller, for disengaging said stopper means from said stack and for enabling the primary feed roller means to feed individual sheets into and past said stopper means.

4,606,537

APPARATUS FOR STACKING FLAT ARTICLES

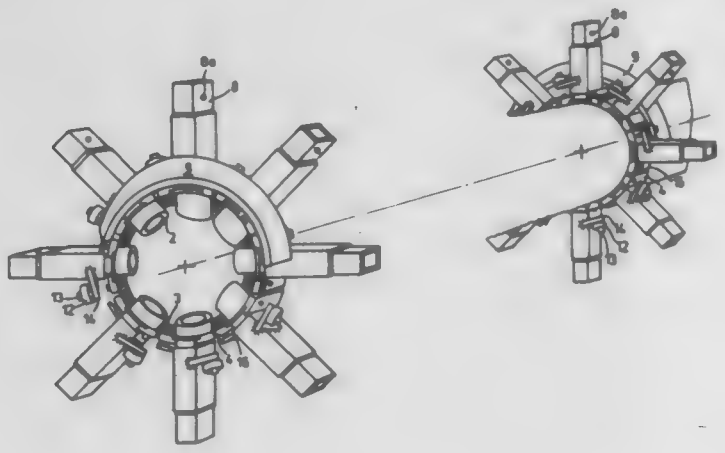
Fritz Achelpohl, Lengerich, Fed. Rep. of Germany, assignor to Windmoller & Holscher, Lengerich, Fed. Rep. of Germany

Continuation of Ser. No. 499,356, May 31, 1983, abandoned. This application Oct. 21, 1985, Ser. No. 788,697

Claims priority, application Fed. Rep. of Germany, Jun. 3, 1982, 3220946

Int. Cl.[4] **B65H** *29/40*

U.S. Cl. 271—196 **5 Claims**



1. Apparatus for carrying flat articles such as tube sections, bags or the like, comprising:

a rotatable spoked wheel having at least one row of first radial arms arranged in star formation at equal angular spacings, a row of second radial arms arranged in star formation at equal angular spacings, said row of second radial arms spaced from said row of first radial arms along an axis of rotation for gripping an article, the sides of the arms of said row of first radial arms being equipped with at least one row of radially aligned suction apertures on a side facing in the direction of rotation of the wheel for communication with a source of suction for holding a flat article, the arms of said row of first radial arms being mounted on the wheel for rotation about their longitudinal axes, means for rotating the rotatable arms about their longitudinal axes through an acute angle in a direction away from said row of second radial arms after the rotatable arms have passed a first predetermined point in the path of rotation of the wheel to draw the flat articles taut between first and second radial arms for positive and accurate conveyance of the articles to a predetermined position when the apertures in said first radial arms are in communication with a source of suction, and means for rotating the arms back to their starting positions after the rotatable arms have passed a second predetermined point in the path of rotation of the wheel to release the tension in the articles and deposit them at a predetermined position.

4,606,538

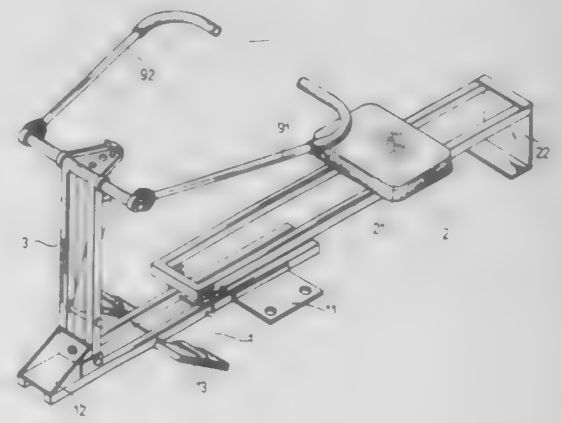
PHYSICAL EXERCISE DEVICE

Kuo L. Wang, 456-1, Sec. 2, Chung Shan Rd., Tai Ping Hsiang, Tai Chung Hsien, Taiwan

Filed Apr. 4, 1985, Ser. No. 719,693

Int. Cl.[4] **A63B** *69/06, 21/00*

U.S. Cl. 272—72 **10 Claims**



1. A physical exercise device comprising:

a base having a bracket at one end;

a seat member detachably engaged with said base;

a supporting frame having two rods extending out therefrom in opposite directions and having one end detachably engaged with said bracket;

a handling means having a connecting plate, pivotally engaged to the other end of said supporting frame, two handle bars, two sleeves sleeved on said rods respectively, each sleeve being connected to said connecting plate at one end and having an ear element at the other end for pivotally connecting to said respective handle bar, so that said handle bars can be rotated in a horizontal direction, and two plastic resistors respectively sleeved on to the connective portions between said handle bars and said sleeves for resisting the movement of said handle bars; and

a hydraulic cylinder comprised of a piston and a piston rod having the piston end connected to said supporting frame and the piston rod detachable connected to said connecting plate for producing hydraulic resistance.

4,606,539

PHYSICAL THERAPY DEVICE

Richard D. Farnham, 48 Garrett Rd., Ithaca, N.Y. 14850

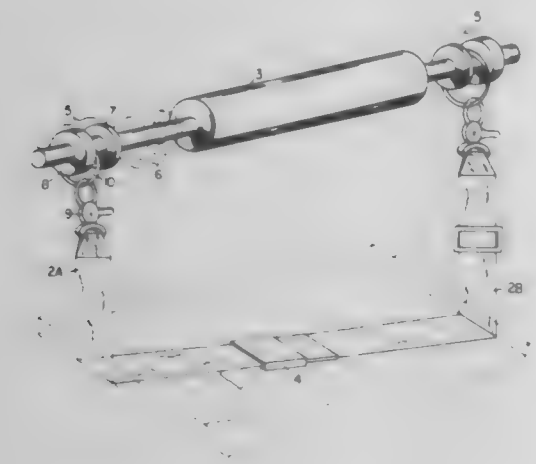
Filed Dec. 6, 1983, Ser. No. 558,482

Int. Cl.[4] **A63B** *21/00*

U.S. Cl. 272—93 **10 Claims**

1. A physical therapy device, comprising, in combination: a roller, having a length with two end portions and a central portion therebetween, the roller comprising a cylindrical rod of elastic material and a cylindrical layer of padding surrounding the central portion of said rod; tethering means attaching

said roller to a treatment surface, and attachment means rotatably attaching said tethering means to said rod at a selected



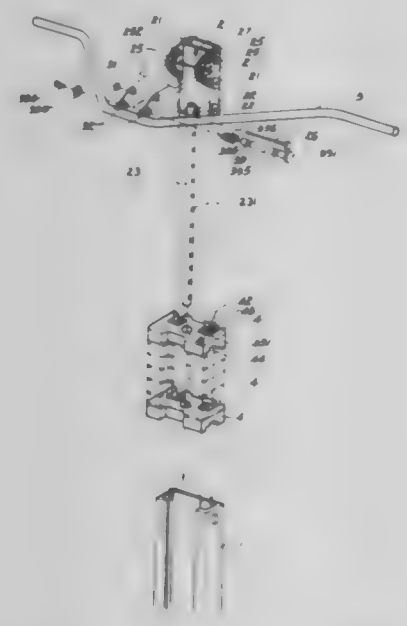
location on each end portion along the length of said rod such that the rod may rotate relative to the tethering means.

4,606,540

SINGLE COLUMN GYM SET

Chiu Chin-Sen, No. 200, Jen Hsin Road, Jen Wu Hsiang, Kaohsiung Hsien, Taiwan

Filed Aug. 15, 1984, Ser. No. 640,812
Int. Cl.[4] A63B *21/06*
U.S. Cl. 272—118 **19 Claims**



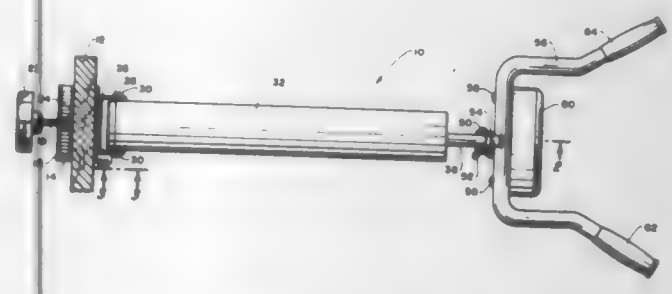
1. A gym set, comprising:
(a) a base mountable on a support surface;
(b) an upright column supported by the base,
(i) said column having a planar front wall, a pair of planar side walls extending rearwardly and perpendicularly of the front wall, and a pair of planar rear walls extending toward each other in a plane generally parallel to, and spaced from, the front wall and terminating short of each other to form a rear opening which extends lengthwise along the column,
(ii) said front, side and rear walls bounding an interior channel;
(c) a weight bed reciprocally movable lengthwise along the column,
(i) said weight bed including a vertically-arranged stack of weight blocks, and means for selecting, at the option of an exerciser, the number of the weight blocks which will participate in the reciprocal movement of the weight bed,
(ii) each weight block having a pair of cut-outs in which the rear walls are positioned,
(iii) each weight block further having an interior block portion located within the channel, an exterior block portion located outside the channel, and an intermediate block portion between the interior and exterior block portions and extending through the rear opening,
(iv) said blocks being located rearwardly of the front wall, and being reliably guided along the column, throughout the reciprocal movement; and
(d) user-engaging means engageable by the exerciser, and operatively connected to the weight bed, for reciprocally moving the same along the column.

4,606,541

DOOR MOUNTED EXERCISING DEVICE

Thomas L. Kirkpatrick, 3509 Quincy Ave., Simi Valley, Calif. 93063

Filed May 31, 1985, Ser. No. 739,527
Int. Cl.[4] A63B *21/04*
U.S. Cl. 272—136 **5 Claims**



1. In combination with a door, said door having a bottom edge to be located directly adjacent a floor, an exercising device to be connected to said door comprising:
an attaching bracket assembly to be fixedly mounted on said door, said attaching bracket assembly having a pair of L-shaped slots, said L-shaped slots being spaced apart;
a tube having a pair of pins attached thereto in a protruding manner, said pins to removably connect with said L-shaped slots, with said pins engaged with said L-shaped slots said tube being capable of a limited amount of pivoting movement relative to said attaching bracket assembly, said tube having an internal chamber;
a rod, said rod having an inner end located within said internal chamber and an outer end located exteriorly of said tube, said rod being movable relative to said tube;
a spring mounted about said rod and located within said internal chamber, said spring exerting a continuous bias tending to locate said rod almost totally confined within said internal chamber, movement of said rod to further space said outer end from said tube causes compressing of said spring; and
a graspable handle attached by mounting means to said outer end of said tube, said graspable handle assembly to facilitate manual grasping by the user and movement of said rod relative to said tube.

4,606,542

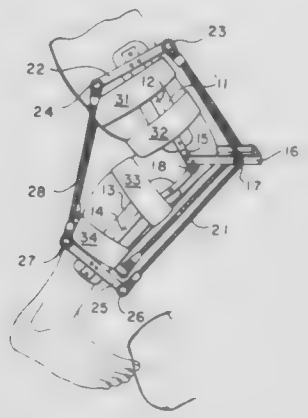
LIMB MUSCLE EXERCISING

David Segal, 229 Fuller St., W. Newton, Mass. 02165

Filed Oct. 30, 1984, Ser. No. 666,489
Int. Cl.[4] A63B *21/02*
U.S. Cl. 272—137 **6 Claims**

1. Limb exerising apparatus comprising,
upper means for snugly engaging the upper portion of a limb,
lower means for snugly engaging the lower portion of a limb seprated from the limb upper portion by a joint pivotable about a joint axis,
means for hingeably attaching said upper means to said lower means about a hinge axis substantially coinciding with said joint axis,
and resilient elastomeric means in tension connected between said upper means and said lower means for exerting a torque about the axis of said means for hingeably attach-

ing against which limb muscles may work when the upper portion of a limb is secured to said upper means and the lower portion of said limb is secured to said lower means



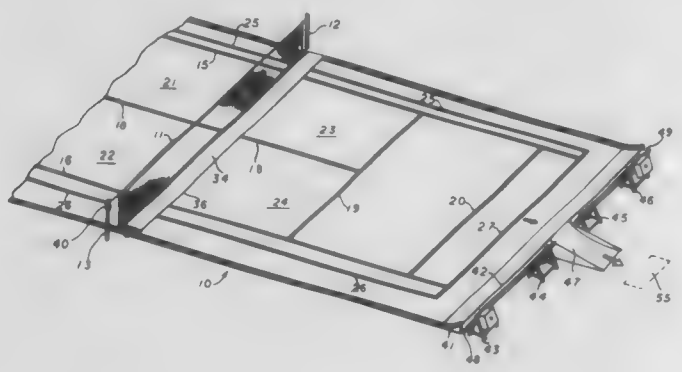
and said limb is extended and contracted about said joint and for allowing movement against said tension between said upper and lower portions while exercising said limb.

4,606,543

PRACTICE TENNIS COURT

Albert C. Hartland, 1738 Nocturne, Houston, Tex. 77043

Continuation-in-part of Ser. No. 302,046, Sep. 14, 1981, Pat. No. 4,456,252. This application Jun. 25, 1984, Ser. No. 623,954
Int. Cl.⁴ A63B *61/00*
U.S. Cl. 273—29 A **12 Claims**



1. A practice court for tennis comprising

a flat surface marked with lines defining at least a portion of a regulation tennis court,

supporting posts and a tennis net supported therebetween on said surface,

said lines including longitudinally and transversely extending lines defining the complete front or receiving half of a regulation tennis court in front of said posts and net and including at least the lines of defining the sidelines and the service line defining the service area of the court beyond said posts and net, and

in combination therewith

means to collect and recover spent practice tennis balls comprising a wheeled rake extending over the entire width of said court and between said support posts for said net and reversible motor means supported thereon and operatively connected to said wheels, said rake having an initial position behind the user at the front or receiving end of the court and movable by said reversible motor means over the entire length of the court under the playing net to an end point a predetermined distance beyond said service area and back to said initial position, and

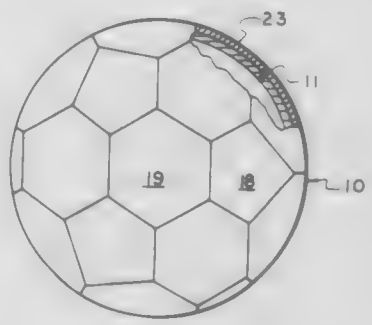
a trough adjacent to said end point of movement of said rake means to receive said balls for discharge to a predetermined discharge point.

4,606,544

GAME BALL

Frank H. Olazabal, Jr., 2135 Las Colinas Ave., Los Angeles, Calif. 90041

Filed Feb. 28, 1985, Ser. No. 706,937
Int. Cl.⁴ A63B *41/00*
U.S. Cl. 273—65 R **4 Claims**



1. An inflatable spherical playing ball comprised of:

(a) an internally disposed rubber bladder adapted to be inflated to a spherical shape, and having an air intake valve,

(b) a first or inner winding comprised of two layers of intertwisted nylon fiber cords arranged about seven cords per inch, the cords of one layer crossing the cords of the other layer at an angle between about 70° and 90°, said cords wound in great circles from one continuous length and adhered to the outer surface of the inflated bladder,

(c) a second or outer winding continguous to said first winding and comprised of two layers of nylon strands having little twist arranged about 14 strands per inch, the strands of one layer crossing the cords of the other layer at an angle between about 70° and 90°,

(d) a cover layer having an inwardly directed boundary in bonded contact with said outer winding, and an outwardly directed boundary comprised of a multitude of sections of equilateral pentagonal and hexagonal perimeters and having a scuff-resistance pebbled surface configuration,

(e) the diameter of said ball, measured between diametrically opposed outwardly directed boundary surfaces being between 13 and 14 inches,

(f) said bladder, first and second windings and cover layer constituting a wall having a thickness between 5/32 and 7/32 inches; and

(g) the weight of said ball being between 24 and 30 ounces.

4,606,545

BI-LEVEL PINBALL MACHINE PROVIDING INTERLEVEL BALL TRAVEL

Steven S. Ritchie, Carpentersville, Ill., assignor to Williams Electronics, Inc., Chicago, Ill.

Continuation of Ser. No. 200,489, Oct. 24, 1980, abandoned. This application Nov. 10, 1981, Ser. No. 320,012
Int. Cl.⁴ A63F *7/02*
U.S. Cl. 273—121 A **1 Claim**

1. An improved pinball machine having an inclined first playfield which includes targets and at least one flipper operable by a player for propelling a ball in play on the first playfield, the improvement comprising:

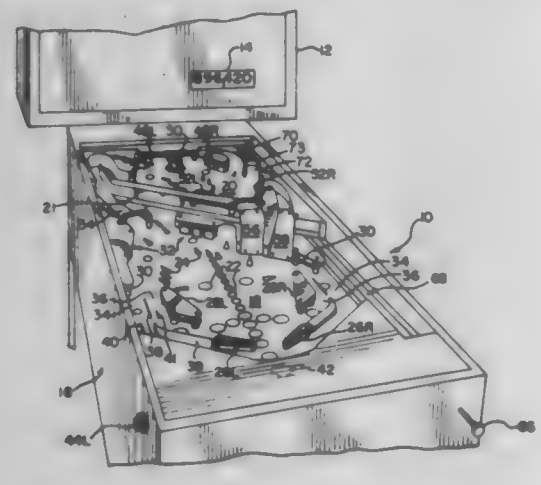
(a) a second playfield substantially parallel above said first playfield;

(b) a bidirectional ball path having a first open end on said first playfield and a second open end connected to said second playfield, said first end opening toward said flipper so that the latter can directly propel a ball on said first playfield via said path onto said second playfield or a ball may travel from second playfield to said first playfield, said second end disposed on said second playfield so that a ball may descend to said first playfield or ascend to said second playfield;

(c) another flipper disposed on said second playfield adjacent said second open end of the path for propelling a ball

on said second playfield away from said path, said another flipper selectively operable by the player to prevent a ball on the second playfield from entering said path and descending to the first playfield thereby providing the player with the opportunity to keep a ball in play on the second playfield; and

(d) a plunger adjacent the lower end of said first playfield, a track means extending from the free end of said plunger



for guiding a ball propelled by the plunger, an arcuate channel having a ball entrance disposed below the surface of the second playfield to receive a ball from the track means, and a ball disposed above the level of said second playfield so that balls enter the second playfield traveling in a direction 180 degrees opposite from the direction of travel of the balls just prior to entering the arcuate channel and substantially at the level of the second playfield.

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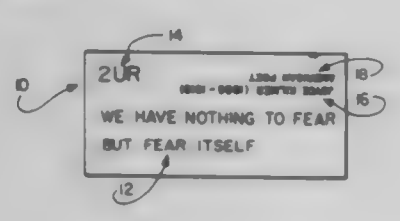
EDUCATIONAL GAME

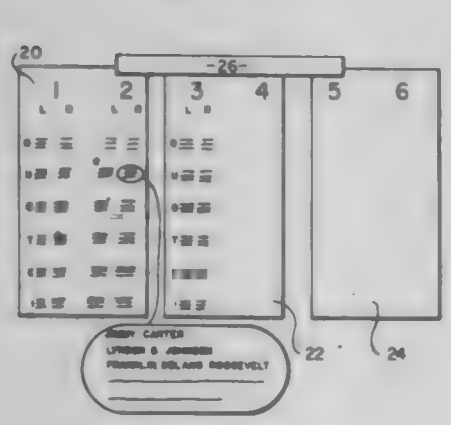
William J. Rita, Springfield, Va., assignor to Summer Afternoon, Inc., Springfield, Va.

Filed Mar. 25, 1985, Ser. No. 715,245

Int. Cl.[4] A63F *3/00*

U.S. Cl. 273—269 **14 Claims**





1. A game for entertaining a number of players comprising:

a plurality of cards, the cards are divided into at least two card groups, each card is provided with at least one question on one side of the card, and at least one answer, corresponding to the question, on the other side of the card, the card is also provided with a location code for the question on the question side of the card;

a random group selection generating means for selecting from which group of cards a single card is to be selected;

a plurality of answer boards which are divided into at least two answer board groups, each answer board is provided with a series of answer sets comprising a plurality of answers, each answer set can be identified by the location code, whereby during play a player is provided with at least two answer boards that corresponds to at least two groups of cards being selected for play, when a card is selected from one of the groups of cards, as determined by the random group selection generating means, the location code determines the location of an answer set on the answer board for the selected group of cards, a player can then make the correct answer selection for the question from the answers in the located answer set.

4,606,547

COMPOSITE MACHINE HOUSING AND SEALS THEREFOR

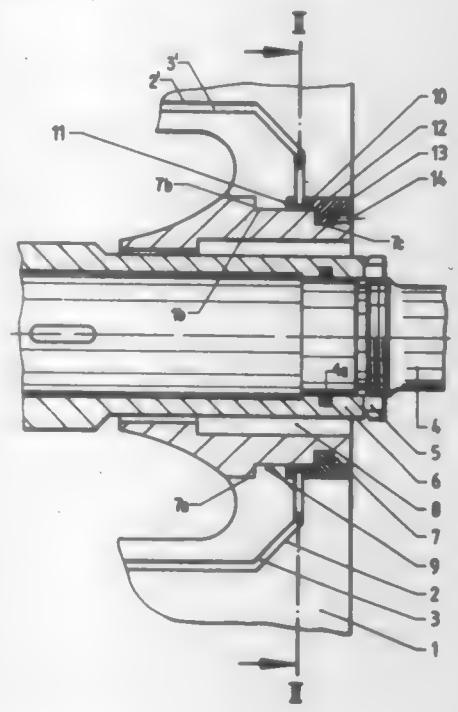
Armin Görisch, Offstein, Fed. Rep. of Germany, assignor to Klein, Schanzlin & Becker Aktiengesellschaft, Frankenthal, Fed. Rep. of Germany

Filed Feb. 27, 1985, Ser. No. 706,126

Claims priority, application Fed. Rep. of Germany, Mar. 3, 1984, 3408011

Int. Cl.[4] F16J *15/10*; H02K *5/10*

U.S. Cl. 277—12 **19 Claims**



1. A composite machine housing comprising two neighboring components having adjoining surfaces, at least one of said surfaces having a groove and said components defining an opening; an insert disposed in said opening and having a peripheral surface; a sealing ring surrounding said peripheral surface; sealing means disposed in said groove and sealingly contacting the other of said adjoining surfaces as well as sealing ring; and means for biasing said sealing ring into sealing engagement with said components and with said peripheral surface, said biasing means including a second ring adjacent to said sealing ring and means for urging said second ring axially against said sealing ring.

4,606,548

SKI SCOOTER

Stevin G. Little, 3926 N. Safford, Fresno, Calif. 93704

Filed Dec. 6, 1984, Ser. No. 679,025

Int. Cl.[4] B62B *13/04*

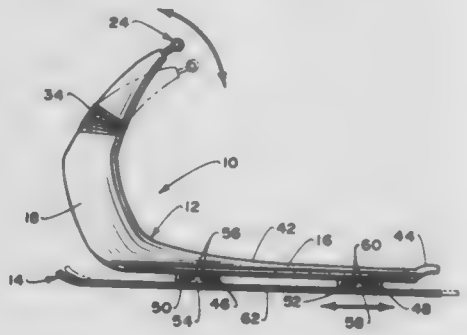
U.S. Cl. 280—12 H **3 Claims**

1. A ski scooter comprising:

an arcuate frame assembly defining an upstanding forward wall and an elongated bottom wall, said bottom wall having a bottom surface and an upper surface, said upper surface being adapted to support a human being in standing position, said arcuate frame assembly including a rigid tubular center support extending the entire length of said frame assembly, said frame assembly including a plurality

of spaced-apart supporting ribs, said supporting ribs being substantially planar, said supporting ribs being mounted substantially transverse to said center support, said frame assembly including a body, said body being supported on said supporting ribs;

a handle assembly adapted to be grasped by a human being, said handle assembly being connected by connection means to said forward wall, said connection means including a shock absorbing assembly; and



a ski runner attached by attaching means to said bottom surface, said attaching means being fixedly secured onto said tubular center support, said attaching means permitting longitudinal adjustment of said ski runner in respect to said frame assembly, whereby said ski runner is adapted to slide upon the surface on which it rests during movement of said ski scooter.

4,606,549

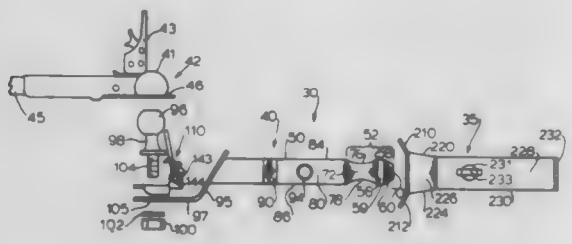
AUTOMATIC TRAILER HITCH

Thomas M. Williams, Jr., Rte. 8, Box 414, Durham, N.C. 27704

Continuation-in-part of Ser. No. 674,524, Nov. 23, 1984, Pat. No. 4,560,184, and a continuation-in-part of Ser. No. 699,354, Feb. 7, 1985. This application Nov. 25, 1985, Ser. No. 801,422

Int. Cl.[4] B62D *1/16*

U.S. Cl. 280—478 B **11 Claims**



1. An automatic trailer hitch assembly for use with a towing vehicle and a towed trailer or other towed vehicle having a metal-formed housing of the type having a forward ledge portion with a ball socket at its towing end, comprising:

(a) an elongated shank unit on the towed vehicle, said shank unit extending between leading and trailing ends and including:

(i) at the trailing end a ball member supported on a threaded stud secured to said trailing end and releasably coupled in the ball socket of said housing to support said trailing end therefrom;

(ii) at the leading end formed surfaces facilitating the guidance of said leading end when in contact with guide surfaces; and

(iii) a leveler assembly mounted on said trailing end comprising:

(aa) a plate member supported on and releasably secured to said trailing end, said trailing end of said shank unit and said plate member being provided with mating holes in which said ball member threaded stud is received and secured to secure both said ball member and said plate member on said shank structure; and

(bb) clamping means including a clamping member pivotally supported on and above said plate member and operative utilizing the weight of said shank unit extending outwardly from said ball member for grasping the forward ledge portion of said housing to support said elongated shank unit appropriately positioned for coupling to a receiving unit;

(b) a receiving unit on the towing vehicle having an entry wall portion formed for guiding said shank unit leading end and leading therefrom a tubular portion providing a bore for receiving a predetermined length of said shank unit; and

(c) spring-loaded locking means mounted on said receiving unit and having a first cocked position in which said locking means is held latched and sufficiently free of said bore to permit passage of said shank unit therein and an uncocked position in which said locking means is unlatched and freed for releasably locking said shank unit and tubular structure together, said shank unit and locking means being operatively associated such that entry of said shank unit into said bore acts to release said locking means from said cocked to said uncocked position.

4,606,550

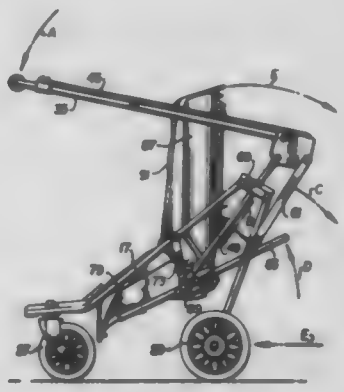
COLLAPSIBLE STROLLER

Richard E. Cone, Dayton, Ohio, assignor to Spalding & Evenflo Companies, Inc., Tampa, Fla.

Continuation of Ser. No. 306,633, Sep. 28, 1981, abandoned. This application Nov. 7, 1983, Ser. No. 549,223

Int. Cl.[4] B62B *11/00*

U.S. Cl. 280—642 **6 Claims**



1. A collapsible stroller comprising

a first U-shaped rod member;

a wheel mounted adjacent each of the outer ends of the bight of said first U-shaped member;

first and second rear leg members;

a wheel mounted at one end of each of said rear frame members;

first and second rigid members;

means for pivotally connecting the open ends of said first U-shaped member to said first and second rigid members respectively;

means for pivotally connecting the other ends of said rear frame members to said first and second rigid members respectively;

a seat support frame;

a molded seat and back secured on said seat frame;

means for pivotally mounting said seat support frame between said first and second rear leg members;

first and second connecting rods slidably passing through said first and second rigid members respectively;

means for pivotally connecting one end of said first and second connecting rods to said seat support frame between the legs of said first U-shaped and said first and second rear leg members;

first and second releasable locking means;

means for pivotally connecting said first and second releasable locking means to the other ends of said first and second connecting rods respectively;

a U-shaped handle;

means for securing the open ends of said U-shaped handle to said first and second locking means respectively;

a release bar slidably mounted to the legs of said second U-shaped handle adjacent the bight of said handle;

first and second release rods connected at one end to said release bar and connected at the other end of said first and second releasable locking means respectively whereby movement of said release bar toward the bight of said second U-shaped member releases said locking means and permits said stroller to be collapsed.

4,606,551

OSCILLATION-DAMPING DEVICE FOR A MOTOR VEHICLE

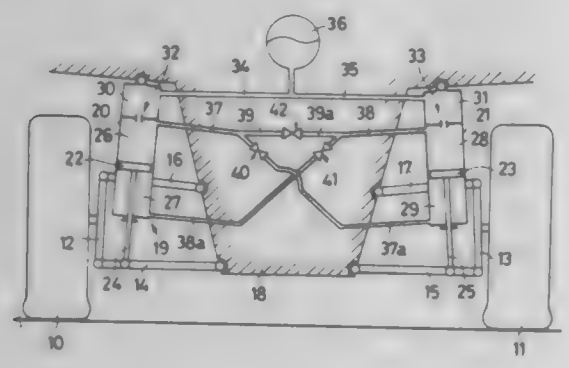
Gabriele Toti; Franco Marinoni, both of Milan; Pasquale Amato, Gallarate, and Claudio Nenna, Arese, all of Italy, assignors to Alfa Romeo Auto S.p.A., Naples, Italy

Filed Mar. 20, 1984, Ser. No. 591,549

Claims priority, application Italy, Aug. 4, 1983, 22433 A/83

Int. Cl.[4] B62D *9/02*

U.S. Cl. 280—772 **3 Claims**



1. A damping device for a motor vehicle constituted by a body, wheels, suspensions and resilient means interposed between the body and wheels, said device comprising at least one pair of cylinders and double acting pistons which are slidable in a sealed manner in the respective cylinders, wherein the cylinders and pistons, which are connected to the body and to a pair of wheels, define lower and upper variable volume chambers filled with fluid, said device being characterised in that the variable volume chambers of said pair of cylinders are interconnected by at least two conduits, each of which connects the upper chamber of one cylinder to the lower chamber of the other cylinder, said two conduits being in their turn connected together by groups of normally closed damping constrictions which are of variable cross-section in order to vary the resistance to the passage of the fluid as the velocity of said fluid varies, and which are capable of a symmetrical damping action in the two flow directions.

4,606,552

LOCK FOR SAFETY BELTS

Lars Hultqvist, Västra Frölunda, Sweden, assignor to Broderna Holmbergs Fabriks AB, Andestorp, Sweden

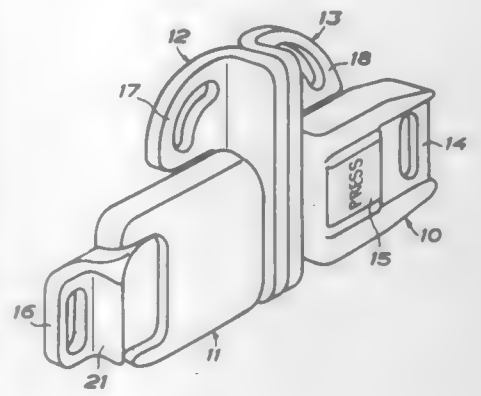
Filed Mar. 21, 1985, Ser. No. 714,633

Claims priority, application Sweden, Mar. 23, 1984, 8401617

Int. Cl.[4] B60R *22/00*

U.S. Cl. 280—801 **7 Claims**

1. Lock for safety belts having two hip strap portions and at least one further strap portion, comprising a lock housing to be attached to one hip strap portion, a lock mechanism having a release member for manual operation, said lock mechanism being enclosed by said lock housing, a lock tongue to be attached to the other hip strap portion, which can be inserted into the lock housing for co-operation with the lock mechanism, a support element displaceably mounting said lock tongue, spring means biasing the lock tongue to a withdrawn position, the lock tongue being manually displaceable to a projected position against the spring bias, a latch member engaging the lock tongue in the withdrawn position thereof to prevent displacement of the lock tongue to the projected position, and at least one fitting for said further strap portion to be passed onto the lock tongue in the withdrawn position thereof, said fitting engaging the latch member to release the lock



tongue for displacement to the projected position against the spring bias.

4,606,553

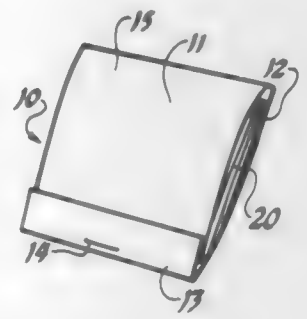
MAP CONSTRUCTION

Roy Nickerson, Charlotte, N.C., assignor to Royall Communications Incorporated, Charlotte, N.C.

Filed Jun. 5, 1985, Ser. No. 741,571

Int. Cl.[4] B42D *15/04;* **G09B** *29/04;* **G09F** *1/00*

U.S. Cl. 281—5 **3 Claims**



1. A map construction adapted to be unfolded for use in a single, continuous, manual movement and refolded in a single, continuous manual movement when desired, said map construction comprising:

a. a foldable single sheet, matchbook-like cover; and

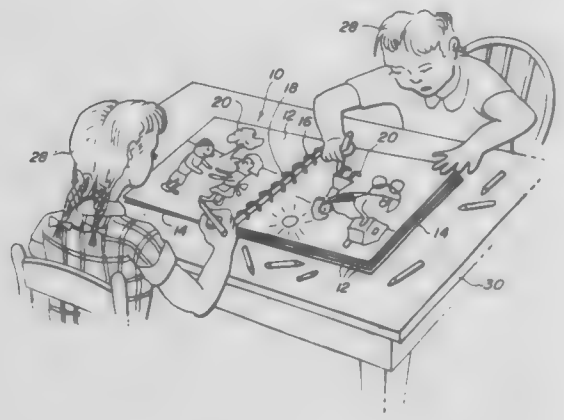
b. a foldable, imperforate, paper sheet fastened by one corner thereof to said cover and folded in a first plurality of accordion folds from side-to-side to expose a free, unfolded corner for being grasped between the thumb and forefinger, and then folded in a second plurality of accordion folds from top to bottom, the number and size of said side-to-side and top-to-bottom folds being sufficient to reduce the size of said sheet to within the perimeter of said cover for being enclosed therein when said sheet is fully folded in a folded configuration wherein the perimeter of the folded sheet is the size of a single panel of the sheet defined by the intersection of the top-to-bottom and side-to-side folds, said folds being made in such manner as to maintain said free, unfolded corner in position to be grasped by the thumb and forefinger and pulled in a continuous movement diagonally against the direction of both the side-to-side and top-to-bottom folds simultaneously while holding the cover in the other hand, whereby the sheet is spread to its open position for use; and to close, by moving the sheet with the thumb and forefinger diagonally towards the cover to aid said sheet in reassuming its side-to-side and top-to-bottom folds for storage within said cover.

4,606,554

TOPSY-TURVY BOOK

Elsie J. Lederman, 630 Victory Blvd., Apt. 6-G, Staten Island, N.Y. 10301

Filed Nov. 21, 1985, Ser. No. 800,449
Int. Cl.[4] B42D *1/00, 3/08;* A63F *1/02;* G09B *11/04*
U.S. Cl. 281—15 R 6 Claims



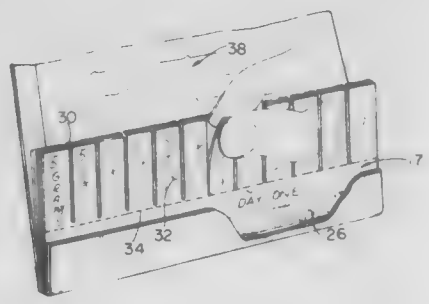
1. A topsy-turvy book, comprising in combination, a plurality of sheets and a pair of covers, said sheets being positioned between said covers, said book in opened up position showing a left side page and a right side page of an adjacent pair of said sheets, and pictorial and textual indicia printed on one side page being topsy-turvy to the other side page.

4,606,555

DIET CONTROL DEVICE AND METHOD

Florence Adams, 25 Hastings Rd., Old Bridge, N.J. 08857

Filed Oct. 25, 1984, Ser. No. 664,839
Int. Cl.[4] B42D *15/00*
U.S. Cl. 283—52 6 Claims



1. A diet control device for use by a dieter in administering a diet plan of particular food items, comprising:

a booklet having a first cover and a second cover foldable relative to each other;

at least one of said first and second covers having printed thereon predetermined information relating to the food items in said diet plan;

at least seven cards attached to said first cover, each card being marked to represent a different day in the diet plan;

each of said cards including a plurality of slits to form a plurality of individually removable and disposable tabs;

each of said tabs being detachably connected to one of said cards and being marked with predetermined diet information; and

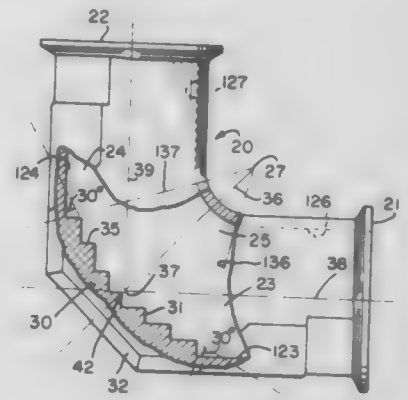
said tabs adapted to be removed from said booklet when the dieter selects a particular food item to be consumed within the diet plan.

4,606,556

WEAR RESISTANT ELBOW

Robert E. Metzger, Allentown, Pa., assignor to Fuller Company, Bethlehem, Pa.

Filed May 28, 1985, Ser. No. 737,747
Int. Cl.[4] F16L *55/00*
U.S. Cl. 285—16 4 Claims



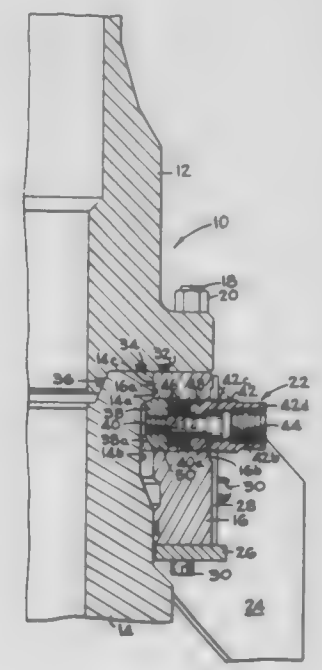
1. A wear resistant pipe elbow for use in transporting fluent material comprising an inlet leg and an outlet leg, an arcuate channel connecting the inlet leg and the outlet leg, and a wear resistant surface on the inside of the outer wall of the arcuate channel including a plurality of steps extending symmetrically toward the inlet leg and the outlet leg from a position located on a radius extending from the center of curvature of the arcuate channel through the junction of the longitudinal axis of the inlet leg and the longitudinal axis of the outlet leg and outside the junction of the longitudinal axis of the inlet leg and the longitudinal axis of the outlet leg.

4,606,557

SUBSEA WELLHEAD CONNECTOR

William M. Coffey, Houston, Tex., assignor to FMC Corporation, Chicago, Ill.

Filed May 3, 1983, Ser. No. 491,109
Int. Cl.[4] F16L *37/00*
U.S. Cl. 285—18 17 Claims



1. A pipe connector especially suitable for connecting a marine riser to a subsea wellhead, said connector comprising:

(a) an annular connector body;

(b) means for attaching the connector body to a marine riser; and

(c) a plurality of lockdown screw assemblies extending through radial ports in the connector body, each of said screw assemblies comprising:

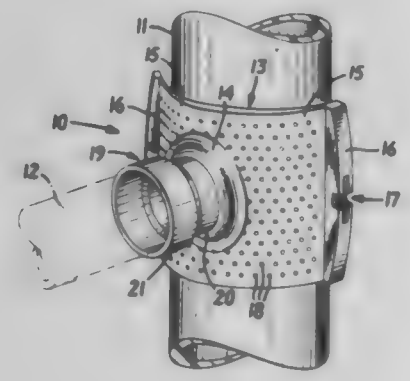
(1) a lockdown dog;
(2) a lockdown screw movably secured to its respective port in the connector body, said lockdown screw having a central bore and a counterbore communicating therewith;
(3) a dog retainer secured to the lockdown dog and slidably extending through the central bore of the lockdown screw, said dog retainer being bolt-shaped with a shank and a head, said shank extending through said bore and said head residing in said counterbore; and
(4) a spring system between the lockdown dog and the lockdown screw to bias the dog from the screw.

4,606,558

PLASTIC PIPE FITTING

John H. C. Davidson, 226 Leopard Cir., Waynesville, N.C. 28786

Filed Feb. 10, 1984, Ser. No. 578,889
Int. Cl.[4] F16L *13/10*
U.S. Cl. 285—21 11 Claims



1. In a plastic pipe fitting for joining a first plastic pipe to a second plastic pipe of a given diameter and including a mounting section to be secured by bonding to the exterior of the second pipe, a stem portion projecting from the mounting section and terminating in a collar for receiving an end of the first pipe, and a passage through the fitting defined by the collar, stem, and mounting section; the improvement comprising:

flexible arms on the mounting section diverging outwardly from the given diameter and of a length to extend partially around the second pipe;

means on the flexible arms for facilitating clamping of the mounting section with the arms flexed inward tightly into intimate engagement with the second pipe, said means for facilitating clamping being exteriorly accessible when said fitting is in place on the second pipe for bonding of engaging surfaces of the fitting and the second pipe;

means, on a pipe engagement surface of the mounting section and in encircling relation to the passage, for retaining solvent prior to application of the fitting to the second pipe, said means for retaining solvent including a groove formed in the pipe engagement surface; and

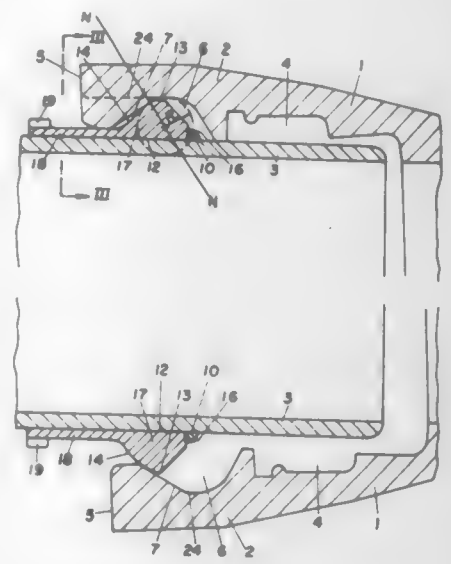
means for emitting the retained solvent upon application of the fitting to the second pipe, said means for emitting the solvent including a compressible ring located in the groove end projecting beyond the surface for deformation upon application of the fitting of the second pipe, said groove having a portion thereof departing from the shape of the ring and opening to the surface to receive and hold solvent when the ring is relaxed, and the dimensions of said groove portion and said projecting portion of the ring being such that upon application of the fitting to the second pipe, the ring bulges into said groove portion to expel the retained solvent.

4,606,559

AXIALLY SECURE SLEEVE CONNECTION FOR SOCKET TUBES

Jurgen Rammelsberg, Herne, Fed. Rep. of Germany, assignor to Thyssen Industrie AG, Fed. Rep. of Germany

Filed Oct. 10, 1984, Ser. No. 659,340
Claims priority, application Fed. Rep. of Germany, Oct. 11, 1983, 3336855
Int. Cl.[4] F16L *35/00*
U.S. Cl. 285—39 17 Claims



1. A sleeve connector for connecting the ends of two tubes together, the tubes having a longitudinal axis, comprising:

a socket adapted for association with one tube end to be connected, and having an annular recess bounded by a tapered surface tapering radially inwardly toward an end of said socket;

a retaining collar adapted to be secured around another tube to be connected adjacent an end of the other tube;

at least one locking member disposed in said socket recess and having a radially inner cylindrical contact surface adapted for engagement on the other tube and for engagement against said retaining collar, said locking member having a radially outer curved contact surface having a sectional toroidal shape for contact with said tapered surface, said sectional toroidal shape of said curved contact surface having a cross section with a diameter which is smaller than an axial length of said cylindrical contact surface for said locking member, and with all normal lines that can be drawn through said curved contact surface intersecting said cylindrical contact surface whereby forces exerted by said tapered surface on said curved contact surface are transmitted to said cylindrical contact surface;

said tapered surface being conical and extending at an angle to said longitudinal axis so that no part of said locking member comes into contact with said conical surface except for said curved contact surface having said sectional toroidal shape.

4,606,560

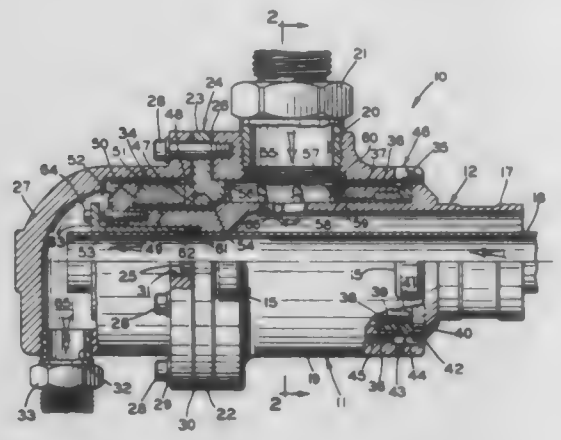
THRUST BEARING ROTARY JOINT

Donald G. McCracken, Horton, Mich., assignor to Aeroquip Corporation, Jackson, Mich.

Filed Dec. 23, 1985, Ser. No. 812,819
Int. Cl.[4] F16L *39/04*
U.S. Cl. 285—93 17 Claims

1. A rotary joint structure for transmitting fluid to and removing fluid from a rotating device comprising, in combination, a stationary tubular housing open at its ends, a rotatable sleeve extending concentrically into said tubular housing from one end, a replaceable seal unit encircling said rotatable sleeve at said one end of said tubular housing, means on said rotatable sleeve against which said seal unit abuts, a seat member encircling said rotatable sleeve and affixed to said tubular housing at

its other end, a sleeve flange removably affixed to said rotatable sleeve outside of said seat member, a combination seal and thrust bearing encircling said rotatable sleeve between said seat member and said sleeve flange, and means between said seat member and said replaceable seal unit urging said sleeve flange



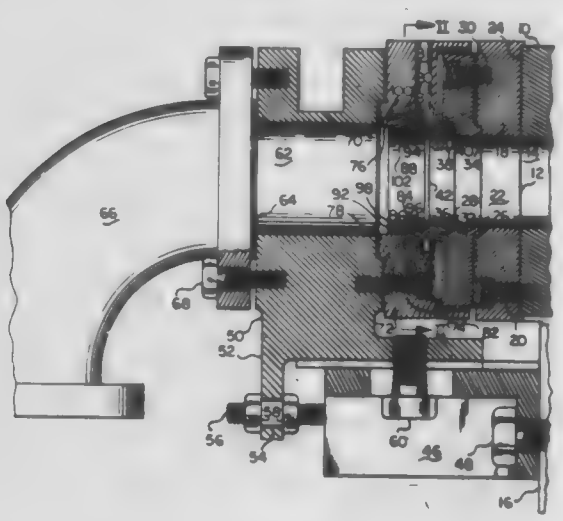
and said replaceable seal unit axially apart to thereby urge said combination seal and thrust bearing into sealing engagement with said sleeve flange and said replaceable seal unit into sealing engagement with said means against which said seal unit abuts.

4,606,561

JOURNAL MOUNTED ROTARY JOINT

Eldon D. Jackson, Three Rivers, Mich., assignor to The Johnson Corporation, Three Rivers, Mich.

Filed May 31, 1985, Ser. No. 739,864
Int. Cl.[4] F16L *39/04*
U.S. Cl. 285—134 **9 Claims**



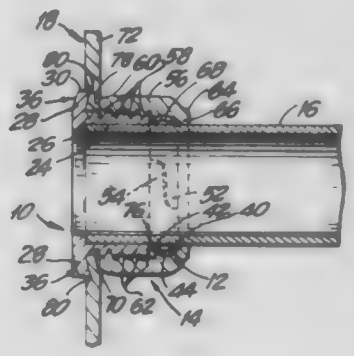
1. A rotary joint for direct engagement with the end face of the journal of a rotary heat exchanging drum wherein the journal is of a cylindrical configuration having a concentric bore and a flat end face substantially perpendicular to the journal axis, comprising, in combination, an annular flange concentrically mounted upon the journal end face for rotation therewith, an annular adapter concentrically mounted upon said flange for rotation therewith, said adapter having a bore concentric with the journal bore, a first annular seal mounted on said adapter concentric to said adapter bore having a radial sealing face, a body having an internal chamber and an opening in communication with said chamber, a bracket supporting said body in fixed relation to the drum journal, an annular seal plate mounted upon said body in opposed axial alignment with said adapter, a cylindrical bore defined in said seal plate coaxial with said adapter bore, a second annular seal sealingly mounted within said seal plate bore relatively axially movable therein, an annular seal surface defined on said second seal engaging said first seal face, first and second radially disposed opposed differential pressure surfaces defined on said second seal exposed to the fluid pressure within said body chamber imposing opposed axial forces on said second seal, fluid pressure on said first surface forcing said second seal toward said first seal and fluid pressure on said second surface forcing said second seal away from said first seal, the area of said first surface being greater than the area of said second surface, a plurality of compression springs mounted on said seal plate radially outwardly spaced from said seal plate bore, said second seal isolating said springs from said housing chamber and exposure to the fluid within said joint body, said springs engaging said second seal and biasing said second seal toward said first seal, and conduit means affixed to said body in communication with said opening.

4,606,562

JUNCTION BOX CONNECTOR

Anthony Saraceno, Brooklyn, N.Y., assignor to Pristine Manufacturing Corp., Brooklyn, N.Y.

Filed Nov. 23, 1984, Ser. No. 674,416
Int. Cl.[4] F16L *5/00*
U.S. Cl. 285—159 **7 Claims**



1. A junction box connector for coupling a conduit to a junction box, said connector comprising:

a one-piece nipple having a radially outwardly extending flange disposed around one end of said one-piece nipple;

said one-piece nipple having an externally threaded body portion extending from said flange to an opposite end of said one-piece nipple;

said one-piece nipple having a predetemined size for permitting insertion of said body portion through an aperture in the junction box with said flange abutting against an inner wall of the junction box;

an internal bore extending longitudinally through said one-piece nipple;

a shoulder portion provided at said one end of said one-piece nipple, said shoulder portion extending from said flange into said bore;

walls of said bore being smooth within said body portion from said shoulder portion to said opposite end of said one-piece nipple;

said walls of said bore having a predetermined size for receiving the conduit when inserted into said opposite end of said one-piece nipple so that the conduit abuts against said shoulder portion;

said flange including teeth means for biting into the inner wall of the junction box as the flange is tightened against the inner wall;

said teeth means including a plurality of radially outwardly extending circumferentially spaced apart tangs, said tangs being twisted about their respective radial axes toward said body portion, and leading edges of said tangs being bent from respective rear edges toward said body portion so that said leading edges lie in a predetermined position over said body portion for biting into the inner wall of the junction box;

a compression cap having an opening extending through said compression cap for receiving said body portion of said one-piece nipple;

first walls of said opening being internally threaded commencing from one end of said compression cap and ex-

tending only partially along an interior length of said opening for threaded engagement on said body portion of said one-piece nipple;

a radially directed lip provided at an opposite end of said compression cap, said lip extending into said opening;

an arcuate seat portion provided in second walls of said opening between said threaded first walls and said lip;

a compression ring having an arcuate cross section;

said compression ring being received in said seat portion of said compression cap for placement around the conduit;

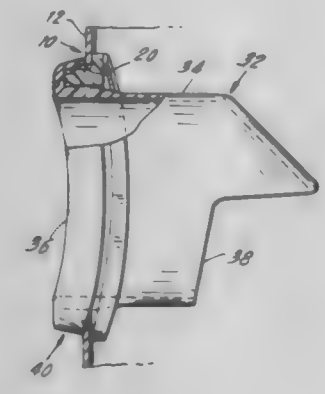
said interior length of said opening of said compression cap from said one end of said compression cap to said lip being greater than longitudinal length of said threaded body portion of said one-piece nipple by an amount less than width of said compression ring so that when said compression cap is being securely threaded onto said body portion of said one-piece nipple which extends through the aperture in the junction box with the conduit therein, said opposite end of said one-piece nipple will compress said compression ring against said lip of said compression cap and force said compression ring into said seat portion so that said compression ring will be engaged against the conduit to secure the conduit within said compression cap, and simultaneously when said compression cap is disposed against an outer wall of the junction box, said leading edges of said tangs of said flange of said one-piece nipple will bite into the inner wall of the junction box to secure said one-piece nipple to the junction box, thus coupling the conduit to the junction box.

4,606,563

CONDUIT FIXTURE FOR TANK WALL

Robert C. Berfield, Jersey Shore, and Robert L. Crevling, Williamsport, both of Pa., assignors to Shop-Vac Corporation, Williamsport, Pa.

Filed Oct. 24, 1984, Ser. No. 664,214
Int. Cl.⁴ F16L *5/00*
U.S. Cl. 285—189 **8 Claims**



1. A tubular fitting for installation in a wall, or the like, wherein the wall has a hole in which the fitting is to be installed; the fitting comprising:

a first fitting part, having a tubular element with an outer diameter slightly smaller than the diameter of the hole in the wall for enabling the tubular element to fit into the hole;

first flange means on the tubular element and including a first radially outwardly projecting wall and a first axially projecting flange located radially outwardly on the first radially outwardly projecting wall and located at the side of the first radially outwardly projecting wall for contacting the wall with the hole;

first detent means on the exterior of the tubular element and located axially therealong to be radially beneath the first flange;

a second fitting part comprising a ring with an opening therein that is sized to about the diameter of the tubular element for being received on the tubular element; the ring having a side that is directed to contact the wall with the hole;

the first and second fitting parts are resilient, and the first and second detent means are placed for slightly resiliently deforming the first flange when the first and second detent means are in engagement;

radially outwardly of the opening of the ring, the ring having a plurality of generally flat thin plates which are attached to the ring and which extend axially in the direction toward the first radially outwardly projecting wall; the plates being of a length and thickness to extend along the tubular element of the first part, into and through the hole in the wall in which the tubular element is placed;

at least some of the plates including second detent means thereon which are shaped, positioned and adapted for engaging the first detent means which the first and the second fitting parts are installed in the wall with the hole, with the first flange means and the ring being on opposite sides of the wall with the hole and with the first flange and the ring contacting the wall with the hole;

each of the first detent means comprising a short, generally radially directed wall defined in the tubular element and facing away from the wall with the hole, and each of the second detent means comprising a hook projecting radially inwardly of a respective plate for engaging a respective one of the first detent means wall on the tubular element when the first and second fitting parts have been pressed together at the wall with the hole;

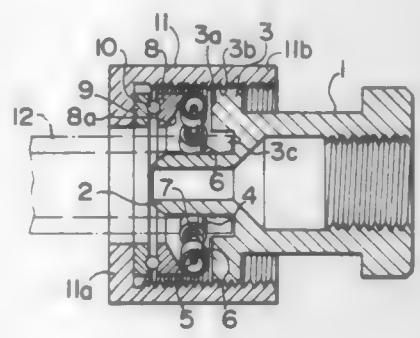
a plurality of radially directed posts at circumferentially spaced intervals around the first radially projecting wall of the first flange means, the posts being placed for fitting between adjacent plates on the second fitting part when the first and second fitting parts are moved to engage the first and second detent means for orienting the first and second detent means for their interengagement.

4,606,564

DEVICE FOR COUPLING HOSE OR THE LIKE

Hisaharu Kurachi, 11, Kawasakimachi-2-chome, Chikusa-ku, Nagoya, Japan

Filed Nov. 15, 1983, Ser. No. 551,944
Claims priority, application Japan, Nov. 17, 1982, 57-200265
Int. Cl.⁴ F16L *33/00*
U.S. Cl. 285—248 **15 Claims**



1. A hose coupling device comprising:

a first thrust surface formed on one end of an objective member having a tubular connecting portion to which a hose is to be coupled, said first thrust surface extending radially outwardly around the base portion of said tubular connecting portion;

a second thrust surface formed on the end surface of an annular thrusting member adjacent to said objective member, said annular thrusting member being disposed around and coaxially with said tubular connecting portion with an annular gap therebetween and movable axially relative to said tubular connecting portion, said second thrust surface opposing said first thrust surface such that the space defined between said first and second thrust surfaces is converged radially outwardly;

a radially contractable and expandable annular tightening member contacted at its both sides by said first thrust surface and said second thrust surface, respectively, and

disposed coaxially with said tubular connecting portion, said annular tightening member including a non-expandable circular core wire ring, a plurality of short sleeves having bores loosely receiving said core wire ring so that said short sleeves may be moved radially inwardly and outwardly with respect to the core wire, and a plurality of compressive tubular resilient members having bores loosely receiving said core wire ring so that said resilient member may be moved radially inwardly and outwardly with respect to the core wire, said short sleeves and said compressive tubular resilient members being arranged alternately along the circumference of said core wire ring so that each compressive tubular resilient member resiliently urges the adjacent short sleeves away from each other; and

a driving means for driving said annular thrusting member axially towards and away from said objective member;

whereby, when said annular thrusting member is driven by said driving means towards said objective member, said short sleeves of said annular tightening member are clamped between said thrust surfaces and urged radially inwardly, thereby to fasten and tighten strongly said hose around said tubular connecting portion of said objective member.

4,606,565

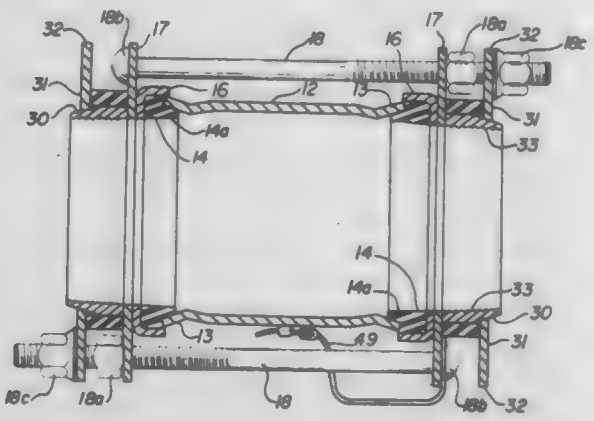
PIPE COUPLINGS

James M. Royston, Pittsburgh, Pa., assignor to Coupling Systems, Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 531,034, Sep. 12, 1983. This application Aug. 15, 1985, Ser. No. 765,674

Int. Cl.⁴ F16L *17/00*

U.S. Cl. 285—337 **4 Claims**



1. A coupling for joining two spaced coaxial pipe ends anchored against longitudinal movement comprising an elongate sleeve adapted to receive coaxially two opposing pipe ends to be connected, said sleeve having frusto-conical enlarged ends opening outwardly, a pair of cylindrical elastomeric gaskets having frusto-conical end portions adapted to fit into the frusto-conical ends of said sleeve in sliding engagement around the pipe ends to be connected, a follower member bearing on each of said gaskets to force them into the sleeve ends, tightening means acting on the follower member to move at least one of the follower member toward the other axially whereby the gaskets are forced into the frusto-conical ends of the sleeve in sealing engagement with said ends and the pipe ends to be connected, a pair of back up rings, one spaced from each follower members on the side opposite the sleeve member, each back up ring having a frusto-conical opening adapted to surround one of the pipe ends being connected, a frusto-conical jaw member having at least one slot therein permitting expansion and contraction thereof one of said pipe ends to be connected with the frusto-conical opening in said back-up ring, surface engaging means on the jaw member adapted to engage the exterior surface of each of said pipe ends to be connected and auxiliary tightening means between each follower member and one of the back up rings for drawing said one back up ring axially toward the said each follower means to force the frusto-conical jaw means into tight radial engagement with each said pipe end, said tightening means and auxiliary tightening means operative in at least two pairs, each pair connecting the two follower members and one back up ring so that axial movement of the two back up rings away from one another draws the two follower members toward each other.

4,606,566

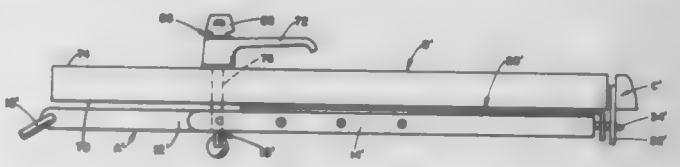
BAR TYPE LOCK

Ned Bott, 1163 Tr. 2156 Rt. #4, Ashland, Ohio 44805

Filed Apr. 30, 1984, Ser. No. 605,229

Int. Cl.⁴ E05C *5/02*

U.S. Cl. 292—57 **22 Claims**



1. A bar type lock mechanism adapted for use on a door or the like having first and second edges with the second edge being positioned adjacent a striker plate when the door is closed, the lock mechanism comprising:

a locking bar for selectively locking an associated door in a closed position, said locking bar including a main portion having a longidudinal axis, a first end having a locking portion, and a second end having a handle portion;

a frame means secured to an associated door frame of said associated door for slidably and rotatably supporting said locking bar for movement between a retracted position wherein said locking portion is retracted from the second edge of said associated door, and a projected position wherein said locking portion extends past the door second edge, wherein said frame means includes at least one frame member and further includes a bar brace for strengthening and guiding said locking bar, said bar brace being adapted to be secured to said associated door and including a pair of spaced means for supporting said locking bar; and,

said locking bar locking portion having a flattened side and a curved side, said flattened side of said locking portion contacting a striker plate of said associated door when said locking bar is first placed into the projected position, said locking portion then being rotatable to its curved side to generate a camming action against the striker plate thereby more securely closing the door.

4,606,567

DOOR LATCH OPERATING DEVICE

Yuichi Kato, Tokyo, and Ichiro Okamoto, Sagamihara, both of Japan, assignors to Nissan Motor Co., Ltd. and Ohi Seisakusho Co., Ltd., both of Yokohama, Japan

Filed Oct. 27, 1983, Ser. No. 546,135

Claims priority, application Japan, Nov. 2, 1982, 57-191801

Int. Cl.⁴ E05C *13/00*

U.S. Cl. 292—336.3 **11 Claims**

1. A door latch operating device locking and unlocking a door relative to a fixed member, comprising:

a stationary member secured to the door;

a first movable member movable relative to said stationary member between a first position to cause the door latch device to assume its door lock condition and a second position to cause the door latch device to assume its door unlock condition;

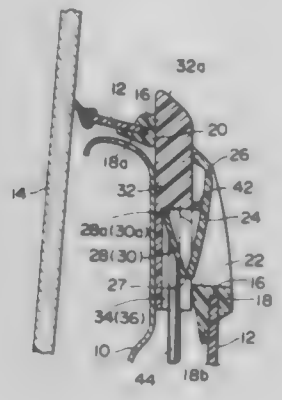
a second movable member having one end hingedly connected to said stationery member; and

a third movable member having one end hingedly connected to the other end of said second movable member and having the other end pivotally connected to said first movable member, so that the movement of said second

movable member induces the movement of said first movable member, and vice versa;

wherein said third movable member is arranged with respect to said second movable member to always define therebetweeen an acute angle; and

wherein said first movable member is formed with first and second stopper members, said first stopper member being



brought into engagement with said stationary member to suppress its excess movement beyond the second position thereof, said second stopper member being brought into engagement with said second movable member to suppress the excess movement of said second movable member in a direction to cause said first movable member to move from said first position to said second position.

4,606,568

SIDE LIFTING APPARATUS

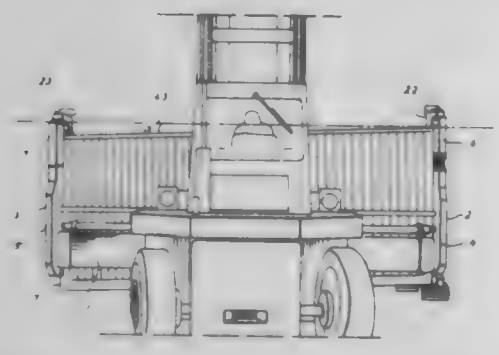
Jan Karlsson, Ryssby, Sweden, assignor to Kalmar LMV, Ljungby, Sweden

Filed Dec. 10, 1984, Ser. No. 679,743

Claims priority, application Sweden, Jan. 4, 1984, 8400036; Feb. 6, 1984, 8400585

Int. Cl.⁴ B66F *9/18*

U.S. Cl. 294—81.4 **10 Claims**



1. A side lifting apparatus for detachable connection to a container and arranged to be supported by the lifting stand of a fork truck to be raised and lowered along said lifting stand, and comprising a horizontal main girder and two vertical columns directed upwardly from the girder and rigidly mounted to its ends, each of said columns carrying a bearing housing having a downwardly directed locking pin arranged turnably in the bearing housing to be brought into locking engagement with a top corner fitting of the container, each of said columns comprising an upper member carrying said locking pin and a lower member rigidly mounted to the horizontal main girder, said lower and upper members of each column being relatively axially displaceable to alter the distance of the locking pin to the main girder, whereby to enable, when handling an inclined container, the locking pins to be set at different levels, said different levels corresponding to the inclination of the container.

4,606,569

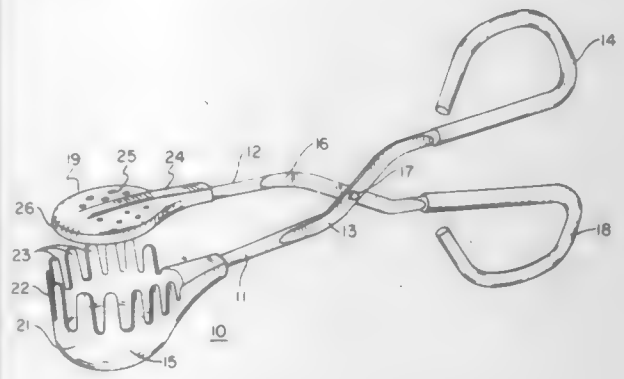
TONGS FOR GRASPING FOOD

James R. Dunn, Fairfield, Conn., and Lee R. Chasen, Port Chester, N.Y., assignors to Coats & Clark, Inc., New Rochelle, N.Y.

Filed Feb. 21, 1985, Ser. No. 703,910

Int. Cl.⁴ B25B *7/02*; A01B *1/18*

U.S. Cl. 294—118 **5 Claims**



1. A pair of tongs for grasping food, comprising:

a first tong member having:

a first stem,

a first handle at one end of the first stem, and a ladle bowl at the other end of the first stem,

said ladle bowl having a bottom with a plurality of small apertures, an imperforate lower side wall, and an upper side wall structure comprising a plurality of spaced-apart fingers extending upwardly from said lower side wall; and

a second tong member having:

a second stem pivotally mounted to said first stem,

a second handle at one end of the second stem adjacent said first handle, and

a substantially flat holding member at the other end of the second stem,

said holding member having a major surface with a plurality of small apertures and being dimensioned to permit it to enter into and substantially cover said ladle bowl below the level of said upper side wall structure to hold the food within the ladle bowl.

4,606,570

FLEXIBLE BULK CONTAINER

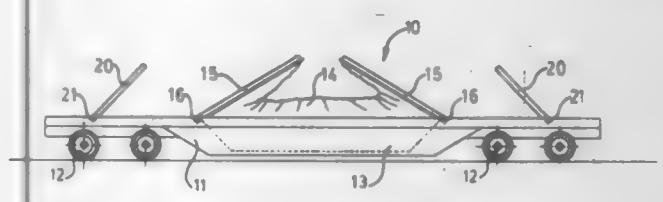
Dietmar J. Neumann, 67 Lakeshore Rd., Pointe Claire, Que., H9S 4H5, Canada

Filed Aug. 6, 1984, Ser. No. 637,798

Claims priority, application United Kingdom, Aug. 5, 1983, 8321164

Int. Cl.⁴ B60P *3/42*

U.S. Cl. 296—10 **19 Claims**



1. A collapsible flexible bulk container integral with a wheeled flat vehicle comprising;

main frame with two laterally spaced longitudinal members,

two floor panel sections, each hinged at outside edges across the top surfaces of the longitudinal members, the two panel sections having a closed position providing a substantially flat floor, and an open position wherein the two panel sections slope upwards and outwards from each other,

flexible liner means attached to the two panel sections and the main frame for providing a bulk container when the two panel sections are in the open position,

strut support means at the end of each of the longitudinal members for supporting the two panel sections in the open position, and,

discharge hopper means between the longitudinal members, for emptying the bulk container.

4,606,571

ADJUSTABLE FRONT WINDSHIELD STRUCTURE OF OPEN-TOP VEHICLE

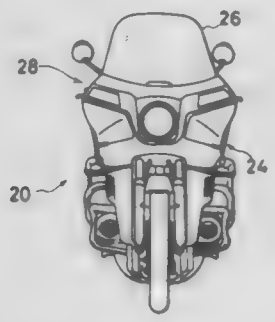
Haruyasu Fujita, Tokyo, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 17, 1984, Ser. No. 601,328

Claims priority, application Japan, Apr. 20, 1983, 58-59094[U]; Jun. 29, 1983, 58-117733; Jun. 29, 1983, 58-117734; Jun. 29, 1983, 58-117735

Int. Cl.[4] B60J *1/06*

U.S. Cl. 296—89 **18 Claims**



1. An adjustable front windshield structure for an open-top vehicle, comprising

a front structural member which forms part of the body structure of the open-top vehicle,

a front windshield panel upstanding from said front structural member and vertically movable with respect to the front structural member,

guide means to guide the vertical movement of the windshield panel with respect to the front structural member,

a pair of guide members fast on the front structural member and each having a vertically extending portion,

slide members respectively engaging said guide members and each movable at least in part along the vertically extending portion of each of the guide members,

drive means operative to drive said slide member for movement along said guide members, respectively, and

fastening means securely connecting said slide members to said windshield panel so that the windshield panel is movable with the slide members along the respective vertically extending portions of the guide members,

said guide members being constituted by a pair of generally vertical threaded guide rods secured to said front structural member and spaced apart substantially in parallel from each other laterally of the body structure of the vehicle and each rotatable about the center axis thereof with respect to the front structural member,

said slide member being constituted by a pair of internally threaded nut members threadedly engaging said threaded guide rods, respectively, and operative to move on and along the threaded guide rods as the guide rods are caused to turn about the respective center axes thereof, said drive means being operative to drive said threaded guide rods for rotation about the respective center axes of the guide rods with respect to said front structural member,

said drive means comprising a pair of drive gears coaxially rotatable with said threaded guide rods, respectively, and a pair of driving gears in mesh with the drive gears and rotatable about axes substantially aligned with each other,

each of said driving and driven gears being constituted by a helical gear and the driving helical gears being securely carried on a common drive shaft which is rotatable about an axis substantially perpendicular in non-intersecting relationship to the axes of rotation of the driven helical gears, a flexible drive member being connected to said common drive shaft.

4,606,572

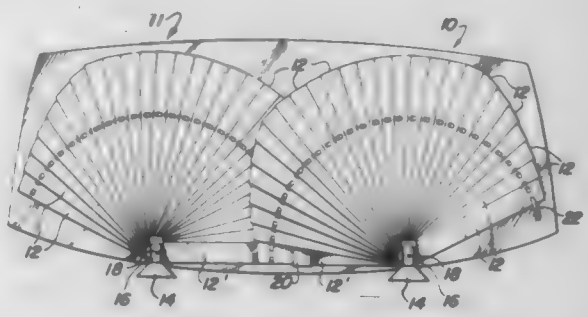
AUTOMOBILE SUN SHADE AND METHOD OF MAKING SAME

Paul R. Maguire, Los Angeles, Calif., assignor to Bonatrade International Inc., Santa Ana, Calif.

Filed Jul. 8, 1985, Ser. No. 752,977

Int. Cl.[4] B60J *3/00*

U.S. Cl. 296—95 R **10 Claims**



1. In a shade for automobile windows and the like, the combination which comprises:

(a) a plurality of substantially flat elongated blades pinned together at one end and being arranged to be opened in a fan-like manner or folded to occupy substantially the space of a single blade, each of the blades defining a slot centrally located with respect to the edges of the blade and intermediate the ends thereof and a pair of passageways on each side of the central slot; and

(b) a joinder ribbon secured to the blades within the central slot and passageways, the ribbon passing from a front face of the blade through the central slot to the rear face of the blade, then through the passageway nearest the central slot on one side of the blade to the front face back through the passageway nearest the outer edge on said one side to the rear face of the blade, through the central slot to the front face of the blade, then through the passageway nearest the outer edge on the other side of the slot to the rear face back through the passageway nearest the central slot on said other side of the slot to the front face and then back through the central slot to the rear face and then on to the front face of the next adjacent blade.

4,606,573

CONVERTIBLE ROOF CONVERSION KIT

Bernd Schneider, Löhdorferstrasse 178, 5650 Solingen 12, Fed. Rep. of Germany

Filed Nov. 19, 1984, Ser. No. 672,806

Claims priority, application Fed. Rep. of Germany, Nov. 18, 1983, 8333168

Int. Cl.[4] B62D *25/06*

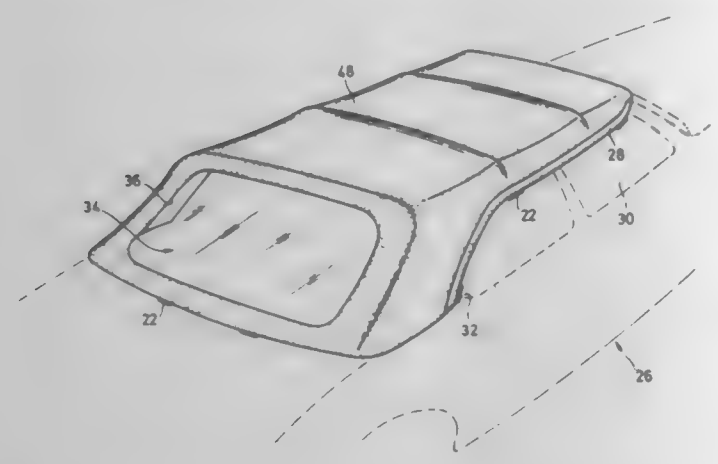
U.S. Cl. 296—210 **11 Claims**

1. A simulated convertible roof conversion kit for an automobile with a rigid roof and a rear window, comprising:

a skeleton-like frame forming a tub-shaped supporting structure having at least one protruding stay perpendicular to the longitudinal direction of the roof when the structure is mounted;

a covering for the supporting structure, connected to the supporting structure and having an opening in a rear section thereof alignable with the rear window; and,

fastening means disposed on edge sections of the supporting structure for engaging roof trim structure of the automobile, whereby the conversion may be effected without permanently altering the automobile.

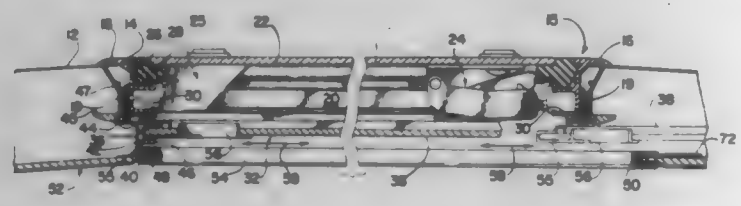


4,606,574

SUN SHADE FOR VEHICLE SUNROOFS

Gerald A. Kwan, Pasadena, Calif., assignor to LeVan Specialty Co., Inc., City of Industry, Calif.

Filed Jul. 29, 1983, Ser. No. 518,474
Int. Cl.[4] B60J *7/11, 7/185*
U.S. Cl. 296—218 **3 Claims**



1. A sun shade apparatus in combination with a vehicle sunroof of the type having a hinged panel, said combination comprising:

a vehicle sunroof having a substantially rectangular frame structure;

a glass panel hingedly mounted to said sunroof-frame structure;

hinge means mounted between said glass panel and said sunroof-frame structure; a latching-handle means mounted between said glass panel and said sunroof-frame structure, wherein said hinge means and said latching-handle means are formed having a low profile, whereby said hinge and latching-handle means are positioned within the opening defined by said sunroof-frame structure so as not to project below said sunroof-frame structure when said panel is in either an opened or a closed mode; and

a sun-shade appartus comprising:

a sun-shade framework adapted to be positioned below said sunroof-frame structure an secured thereto,

said sun-shade framework having a first channel formed therein,

a sun-shade panel adapted to b slidably mounted within said first channel,

means formed on said sun-shade framework for attaching the headliner of said vehicle thereto,

means formed within said channel for positioning said sun-shade panel longitudinally within said channel between a closed and and opened mode, and

means formed within said channel for limiting the rearward movement of said sun-shade panel to prevent said shade from being removed from said channel;

said attaching means comprising:

an extended peripheral flange member; and clamping means adapted to clamp said headliner to said flange member, said sun-shade framework being formed having a substantially U-shaped configuration defined by a forward, transverse, channel section and a pair of parallel, rearwardly extending, side-channel sections; and

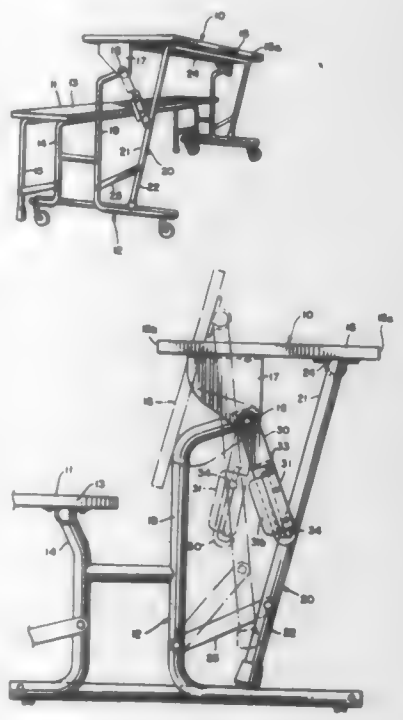
said channel sections including at least one tranverse strut member connecting said parallel, side-channel sections.

4,606,575

LOCK RELEASE FOR FOLDING TABLE

Reuben P. Kodet, Kiel, Wis., assignor to Hamilton Industries, Two Rivers, Wis.

Filed Feb. 21, 1984, Ser. No. 582,178
Int. Cl.[4] A47B *85/04*
U.S. Cl. 297—124 **11 Claims**



1. A link lock assembly for a folding table, said assembly including an elongated planar link member having a guide slot for guiding a connecting element during folding movement of a table to which said link member is adapted to be connected; said guide slot being L-shaped and including an elongated main leg portion extending longitudinally along said link member and a relatively short leg portion; and a stop plate overlying a portion of said link member along which said main leg portion of said guide slot extends and being mounted upon said link member for pivotal movement about an axis extending along the plane of said link member between a first position obstructing travel of a connecting element along said main leg portion of said guide slot and a second position displaced from said link member to permit such travel.

4,606,576

TRAY FOR A HIGH CHAIR

Richard O. Jones, 1306 Frontera, Millbrae, Calif. 94030

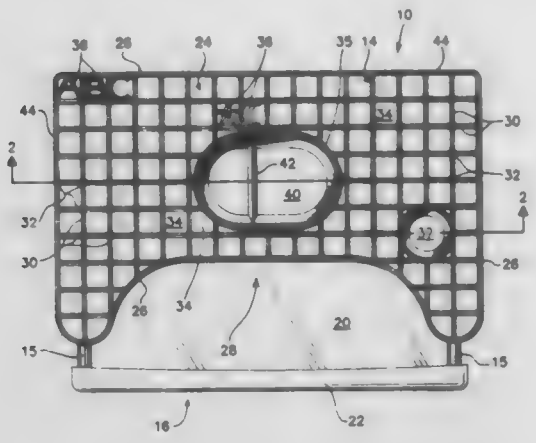
Filed May 10, 1985, Ser. No. 732,662
Int. Cl.[4] A47B *39/00*
U.S. Cl. 297—153 **17 Claims**

1. A tray for a high chair comprising:

a base having a bottom portion and a contiguous wall portion rising from said bottom portion, said base serving as a receptacle for liquids and solids; and

a rigid lattice supported by an upper section of said wall portion of said base, said lattice including a plurality of lattice segments rigidly attached together at lattice points to form polygonal interstices, and indicia members disposed within at least some of said interstices and rigidly attached to at least two lattice segments, wherein an upper surface of at least some of said lattice segments are bevelled to reduce the horizontal surface area of said upper

surface of said lattice segments, and wherein at least some of said indicia members have bevelled upper surfaces to



reduce the horizontal area of said upper surfaces of said indicia members.

4,606,577

AUTOMOTIVE FOLDING SEAT

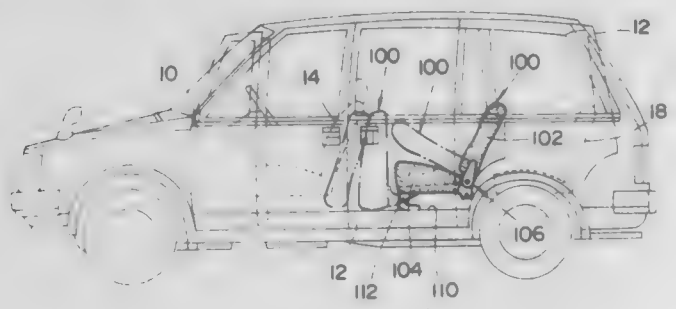
Yasuo Hirama, Chigasaki, and Yoshihiro Umetsu, Zama, both of Japan, assignors to Nissan Motor Company, Ltd., Yokohama and Nissan Shatai Company, Ltd., Hiratsuka, both of, Japan

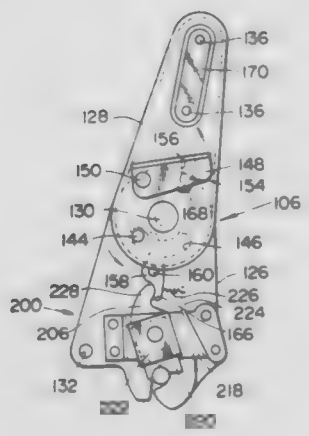
Filed Aug. 22, 1983, Ser. No. 525,502

Claims priority, application Japan, Aug. 23, 1982, 57-144818; Aug. 23, 1982, 57-145879; Aug. 23, 1982, 57-145881

Int. Cl.[4] B60N *1/04, 1/10*

U.S. Cl. 297—331 **9 Claims**





1. An automotive folding seat comprising:

a seat assembly including a seat cushion and a seat back pivotably connected to said seat cushion;

a hinge mechanism for pivotal movement of said seat back relative to said seat cushion between a first position at which said seat back is positioned essentially vertically and a second position in which said seat back is positioned essentially parallel to said seat cushion;

a pivot means, provided between the front end section of said seat cushion and a vehicle floor and connecting said front end section of said seat cushion to said vehicle floor, and allowing pivotal movement of said seat cushion relative to said vehicle floor between a third position wherein said seat cushion is positioned essentially parallel to said floor and a fourth position wherein said seat cushion is positioned essentially vertically with respect to said vehicle floor;

a lock mechanism engageable with a striker fixed to the vehicle body and automatically movable into the locking state when said seat cushion moves from said fourth position to said third position and movable into the released state when said seat back is moved from said first position to said second position;

said hinge mechanism having a base member fixedly secured to the rear end of said seat cushion, a hinge arm member fixedly secured to said seat back, a pivot pin pivotably connecting said base member and said hinge arm member, a guide pin extending substantially parallel to said pivot pin, and a guide formed in said base member and engageable to said guide pin, said guide defining the range of motion of said back with respect to said seat cushion;

said hinge mechanism having a manually operable latch means including a latching groove formed in said base member and a latching pin extending from an operation lever pivotably connected to said hinge arm member via said pivot pin and engageable with said latching groove, said latching pin adapted to automatically engage said latching groove when said seat back moves from said second position to said first position for holding said seat back at said first position and responsive to manual operation of said operation lever to release from said latching groove for allowing movement of said seat back from said first position to said second position;

an automatic latch for retaining the seat cushion in the third position, the automatic latch being automatically engaged when the seat cushion is moved from the fourth to the third position and automatically disengaged when the seat back is moved from the first to the second position;

a striker including means for retaining locking engagement between said automatic latch and said striker until the locking engagement is manually canceled, said striker including a first portion engageable with said automatic latch for establishing locking engagement and a second portion formed at least at one end of said first portion and having a greater cross-section than that of said first portion for restricting movement of said automatic latch relative to said first portion; and

wherein said lock mechanism has a hook engageable with said striker at its lower end, a latch member connected to said base member, a link member pivotably connected to said base member and having a lower end adapted to contact the upper end of said latch member and an upper end adapted to contact said guide pin, and a bias spring biasing said hook of said latching member for engagement with said striker; and

wherein upon actuation of the manually operable latch means, and subsequent pivoting of the seat from its first to its second position, the guide pin bears against the upper end of the link member causing pivotal rotation thereof, the lower end of the link member then bears against the latching member to move it out of engagement with the striker, thereby permitting movement of the seat from its third to its fourth position.

4,606,578

HEAD-REST

Takashi Yasui, Akishima, Japan, assignor to Tachikawa Spring Co., Ltd., Akishima, Japan

Filed Jul. 30, 1984, Ser. No. 635,821

Claims priority, application Japan, Aug. 2, 1983, 58-120363[U]

Int. Cl.[4] A47C *7/38*

U.S. Cl. 297—408 **6 Claims**

1. A head rest for a vehicle seat comprising, in combination:

a pair of separated elongated head rest stays;

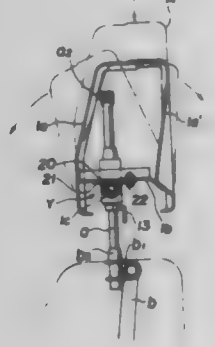
means adapted for rigidly connecting a lower end of each

said head rest stay to said vehicle seat such that said head rest stays extend above said vehicle seat;

a head rest body having forward and rearward separated walls and a central support plate rigidly connected at each of its respective ends to said forward and rearward walls such that said support plate is positioned within a space defined between said separated head rest stays;

adjustment means for coupling said head rest body to said head rest stays to permit said head rest body to be reciprocally movable relative to said head rest stays between raised and lowered positions and to permit said head rest body to be pivotally movable about an adjustment axis between forward and rearward inclined positions, said adjustment means including:

(a) a pair of holders each defining an elongate aperture for slidably receiving a respective one of said head rest stays therein such that each said holder is slidable along said respective head rest stay between positions corresponding to said raised and lowered positions of said head rest body;



(b) a support shaft extending transversely to said support plate and rigidly interconnecting said pair of holders to establish said adjustment axis;

(c) coupling means for coupling said support plate to said support shaft,

(d) said coupling means including friction retaining means for frictionally gripping said support shaft to retain said head rest body in one of a plurality of inclined positions between said forward and rearward positions, inclusive, while yet permitting said head rest body to be forcibly pivoted about said adjustment axis into said one inclined position, wherein

(e) said coupling means also couples said support plate to each said holder via said support shaft such that said support plate, and thus said head rest body, is reciprocally movable together with said holders between said raised and lowered positions when said holders are slidably moved along said head rest stays.

4,606,579

REMOVABLE ARM FOR WHEELCHAIRS

John Douglass, Creve Coeur, Mo., assignor to Smith & Davis Manufacturing Company, St. Louis, Mo.

Filed Oct. 31, 1983, Ser. No. 546,975

Int. Cl.⁴ A47C *7/54*

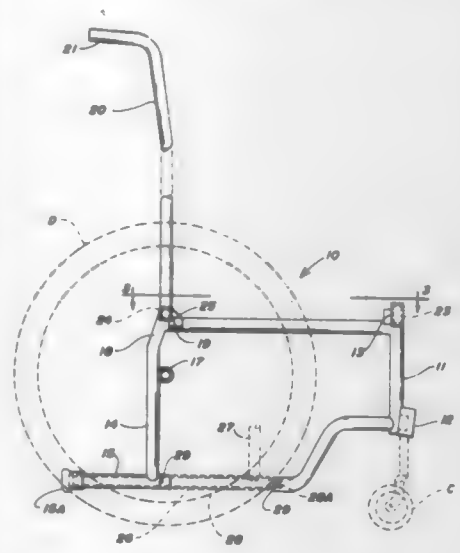
U.S. Cl. 297—416 **4 Claims**

1. In a wheelchair adapted to be associated with supporting wheels and comrising

a side frame assembly having front and rear axially elongated posts connected in spaced relationship by an upper rail and a lower rail, said posts and rails lying in a common plane, the improvement of:

(a) first and second socket arranged such that a socket is carried by each of said front and rear posts with both said sockets being spaced apart a predetermined distance and being positioned at the same side of the common plane, each of said sockets having an internal opening and a first one of said sockets having its internal opening elongated as measured in the direction substantially parallel with the common plane larger than its dimension at right angles thereto, and the second one of said sockets having a substantially circular shaped opening having a dimension substantially the same as the second mentioned dimension of said first socket; and

(b) a removable arm assembly providing front and rear legs having ends in the form of axially elongated circular plug elements in position to enter said sockets and fit snugly in said internal openings to oppose motion in a direction perpendicular to the common plane for achieving side-



wards rigidity, with one of said plug elements having a loose fit in said first one of said sockets and the other of said plug elements as measured in a direction substantially parallel with the common plane and a close tolerance fit in a direction perpendicular to said common plane, and whereby both of said sockets act on said circular plug elements of said arm assembly to resist movement of said arm assembly in a direction substantially perpendicular to said common plane.

4,606,580

LOOSE-CUSHION SEAT

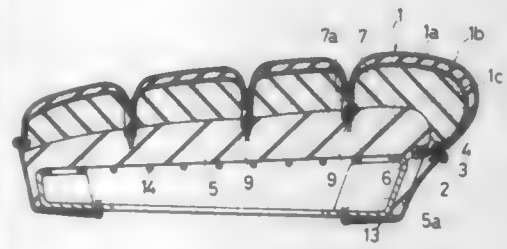
Toshio Yoshizawa, Akishima, Japan, assignor to Tachikawa Spring Co., Ltd., Tokyo, Japan

Filed Mar. 8, 1985, Ser. No. 709,441

Claims priority, application Japan, Mar. 22, 1984, 59-55845

Int. Cl.⁴ A47C *23/00*

U.S. Cl. 297—458 **5 Claims**



1. A loose-cushion seat for use in a vehicle, comprising:

a seat frame;

a main pad placed on said seat frame, said main pad having a skirt portion to cover the outside surfaces of said seat frame;

a sub-pad placed on said main pad;

a top member covering said sub-pad;

a gore portion connected with said top member, said gore portion at a lower end portion thereof being fixedly secured to said seat frame;

an insert wire embedded in said skirt portion of said main pad; and

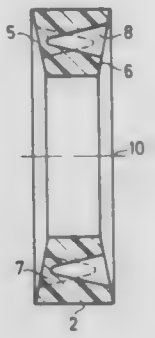
means defining in said skirt portion a plurality of portions for partially exposing said insert wire, whereby a peripheral end of said top member is partially secured through said means to said insert wire.

4,606,581

INTERMEDIATE RING FOR PLURAL WHEEL SETS

Hans-Rudolf Zepf, Hirsackerstrasse 30, Horgen, Switzerland

Filed Jun. 30, 1982, Ser. No. 393,740
Claims priority, application Switzerland, Jul. 7, 1981, 4466/81
Int. Cl.[4] B60B *11/00*
U.S. Cl. 301—36 WP 4 Claims



1. An intermediate ring for installation between adjacent tires of a plural tire assembly on a vehicle, comprising:

an annular body having generally flat, axially extending, inner and outer faces and radially extending side faces, said annular body having an axial thickness between said side faces and an axis;

a plurality of substantially uniformly distributed cavities axially extending inwardly into said annular body from each of said side faces in an alternating manner around said annular body, each of said cavities being located substantially midway between said inner and outer faces and extending axially for a distance greater than one-half of said axial thickness;

a web between said cavities having radial web walls sloping relative to said axis; and

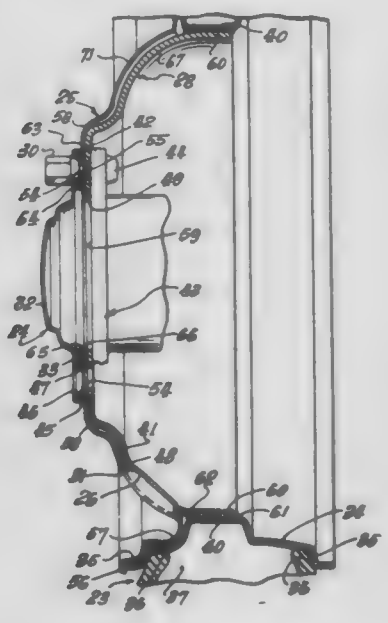
at least one ring part of solid, uninterrupted material on said annular body.

4,606,582

DECORATIVE WHEEL COVERING

Perry A. Warren, Campbell, Calif., assignor to Kaper II, Inc., Paramount, Calif.

Filed Jul. 23, 1984, Ser. No. 633,718
Int. Cl.[4] B60B *7/06*
U.S. Cl. 301—37 S 7 Claims



7. For use on a motor vehicle having a plurality of wheel-receiving hubs each including a planar surface and a plurality of threaded wheel studs extending therefrom, a plurality of wheels each having a hub mounting surface configured to mate with said planar surface and defining a first plurality of apertures spaced in accordance with said wheel studs and a wheel web extending generally outward from said hub mounting surface and an outer rim configured to receive and support a tire, a plurality of lug nuts threaded to receive said studs and a mounting plate having a flat annular configuration defining inner and outer edges and defining a second plurality of apertures arranged to receive said wheel studs, a wheel covering comprising:

a wheel cover having,

a first portion configured to mate with and mount to said hub mounting surface having a third plurality of apertures corresponding to said wheel studs and interposed between said hub mounting surface of said wheel and said mounting plate;

a second portion extending radially outward from said first portion and configured to overly said wheel web in a substantially constant spaced apart relationship therewith, and

a third portion connected to and continuous with said second portion and configured to overly said outer rim in a substantially constant spaced relationship, and a plate cover having,

a first portion configured to mate with said mounting plate and defining a fourth plurality of apertures in a spaced relationship corresponding to said wheel studs,

a second portion extending radially outward from said first portion and overlapping and surrounding at least a portion of said outer edge of said mounting plate, and

a third portion extending radially inward from said first portion and defining a generally convex dome-shaped center surface;

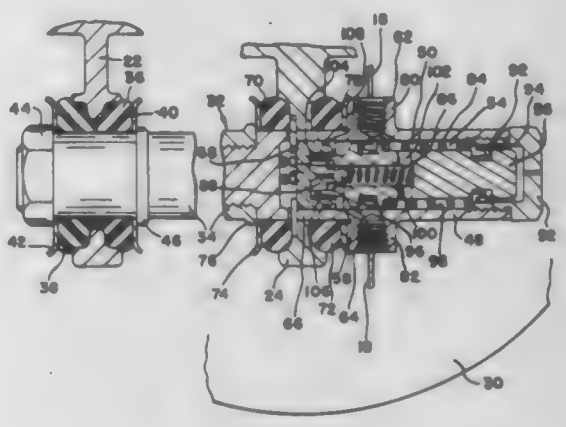
said wheel studs and said lug nuts extending through said first, second, third and fourth pluralities of apertures to secure said wheel, said first portion of said wheel cover, said mounting plate and said first portion of said plate cover to said planar surface of said wheel-receiving hub.

4,606,583

BRAKE SYSTEM

Robert F. Gaiser, Stevensville, Mich., assignor to Allied Corporation, Morristown, N.J.

Filed Sep. 5, 1984, Ser. No. 647,495
Int. Cl.[4] B60T *8/22*
U.S. Cl. 303—6 C 19 Claims



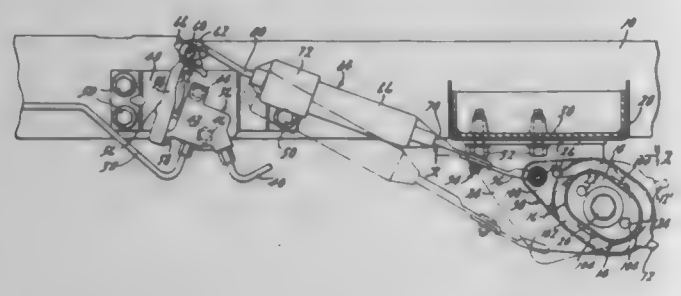
1. A brake system for a vehicle having a wheel assembly supported by an axle coupled to a vehicle body by suitable means, the wheel assembly including a brake assembly operable during braking to retard rotation of the wheel assembly, proportioning valve means directly responsive to wheel braking torque and fluidly communicating with the brake assembly to selectively reduce communication of fluid pressure thereto during braking, and a control rod extending between the axle and the body to limit movement of the axle relative to the body during braking and transmit wheel braking torque in conjunction with the axle, the proportioning valve means carried by said control rod and the axle cooperating with the proportioning valve means to substantially define a rest position therefor, the control rod defining a cavity receiving a piston, the piston cooperating with a poppet fixedly disposed relative to said axle in order to control fluid communication through said cavity and control rod, the axle including a projection extending into

said cavity to position the poppet, and wheel braking torque transmitted by the axle to the control rod and proportioning valve means affecting said communication of fluid pressure.

4,606,584
SPRING BUSHING ACTIVATED BRAKE PORPORTIONER

Raymond J. Kowal, West Bloomfield; Arthur G. Sabat, Warren, and Patrick Salva, Sterling Heights, all of Mich., assignors to Chrysler Corporation, Highland Park, Mich.

Filed Dec. 24, 1984, Ser. No. 685,875
Int. Cl.[4] B60T *8/22*
U.S. Cl. 303—22 R 4 Claims



1. In a vehicle having a brake and a suspension system including a longitudinally oriented rear leaf spring between sprung and unsprung portions of the vehicle, a selectively activated brake fluid pressurizer, front and rear wheel brakes, an input force responsive brake fluid pressure proportioning valve between the selective fluid pressurizer and the rear brakes to regulate the transmission of fluid brake pressure thereto and an improved vehicle load sensor and force generator operably connected thereto comprising:

the rear leaf spring having a forwardly oriented end portion directly secured to the sprung portion of the vehicle in a manner permitting only pivotal angulations thereof as the vehicle sprung portion moves with respect to the unsprung portion caused by changes in vehicle loading;

following means overlying the pivotally mounted forward end portion of the rear leaf spring for following and exactly duplicating the angular movements thereof produced by relative movements between sprung and unsprung portions caused by changes in vehicle loading;

edge portions of the following means overlyingly engaging portions of the spring end portion so that the pivotal movements of the end portion exactly produces corresponding pivotal movements of the following means;

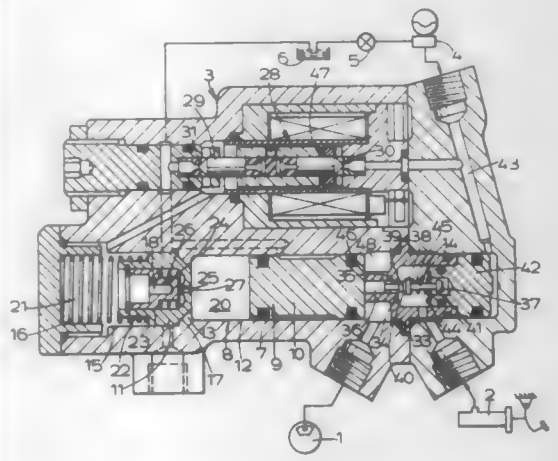
an outwardly extending arm portion of the following means movable therewith through a significant amplitude in response to pivoting of the spring end portion;

a yieldable, axially extendable connector means between the proportioning valve and the arm of the following means whereby movement of the arm corresponding to movements of the end portion of the spring caused by changes in loading extends and contracts the connector means to generate resultant forces on the force input of the proportioning valve to appropriately increase and decrease the brake fluid pressure transmitted to the rear brakes as the vehicle load increases and decreases, respectively.

4,606,585
ANTI-SKID HYDRAULIC BRAKING SYSTEMS FOR VEHICLES

Glyn P. R. Farr, Warwickshire; Ivan Mortimer, West Midlands, and Anthony W. Harrison, Birmingham, all of England, assignors to Lucas Industries Public Limited Company, Birmingham, England

Filed Jan. 7, 1985, Ser. No. 689,179
Claims priority, application United Kingdom, Jan. 14, 1984, 8400991
Int. Cl.[4] B60T *8/02*
U.S. Cl. 303—92 4 Claims



1. An anti-skid hydraulic braking system for vehicles comprising a wheel, a brake for braking said wheel, skid sensing means responsive to the behaviour of said wheel and adapted to emit skid signals, a source of hydraulic fluid for applying said brake, a modulator assembly for modulating the supply of fluid from said source to said brake in response to said signals from said skid sensing means, said modulator assembly comprising a housing having a bore, a de-boost piston assembly located in said bore in said housing and movable between an advanced position and a retracted position, means in said housing defining an expander chamber connected to said brake, a first valve disposed between said source and said expander chamber, means for providing a fluid-sustained support force, and a second valve for controlling the application to said de-boost piston assembly of said fluid-sustained support force to determine the relative position of said de-boost piston assembly in said bore, said second valve normally being so operative that said support force holds said de-boost piston assembly in said advanced position in which the effective volume of said expander chamber is at a minimum value, said first valve normally being open to provide communication between said source and said brake at least when the deboost piston assembly is in the said advanced position, and means responsive to a skid signal to manipulate said second valve in order to reduce said support force whereafter said de-boost piston assembly can move away from said advanced position and into said retracted position in which the effective volume of the expander chamber is increased thereby reducing the pressure applied to said brake, the reduction in said support force also permitting said first valve to close, wherein said first valve comprises a seating member, and a valve member movable with respect to said seating member in response to movement of said de-boost piston assembly in said bore between said advanced and retracted positions, and safety means responsive to said pressure which provides said fluid-sustained support force is adapted to co-operate with one of said members to permit said seating member and said valve member to engage each other to permit said first valve to close unless the said pressure is inoperative, wherein said safety means comprises a first piston working in a bore in said housing and co-operating with said valve member, said first piston and said valve member being both moveable together in first and second opposite directions towards and away from said seating member when an assembly defined by said first piston and said valve member is subjected to a net force acting in one of said first and second directions.

4,606,586

BRAKE FORCE REGULATING SYSTEM

Konrad Eckert, Stuttgart; Franz Maurer, Schwieberdingen; Egbert Müller, Hochdorf, and Werner Stumpe, Kornwestheim, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

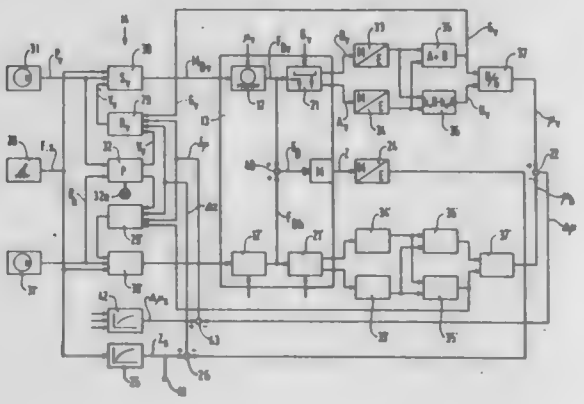
PCT No. PCT/DE83/00033, § 371 Date Nov. 15, 1983, § 102(e) Date Nov. 15, 1983, PCT Pub. No. WO83/03230, PCT Pub. Date Sep. 29, 1983

PCT Filed Feb. 18, 1983, Ser. No. 556,248

Claims priority, application Fed. Rep. of Germany, Mar. 15, 1983, 3209314

Int. Cl.[4] B60T *8/00, 17/22*

U.S. Cl. 303—93 6 Claims



1. A brake force regulating system including a fluid supply means for motor vehicles having at least one pair of axles comprising a brake pedal means (20,25), a brake regulator means (29,30) for establishing the braking moment (M_B) at the wheels of the motor vehicle, a plurality of transducers (24,33,34) for ascertaining driving-situation variables which act upon said brake regulator means, and comparing means (22,26,43) characterized in that a signal indicating a continuous desired value (Z_s) of a driving-situation variable can be prespecified by said brake pedal means, one (24) of said transducers ascertaining a driving-situation variable which represents an actual value (Z), and that the brake regulator means is controllable by said comparing means in accordance with the difference between the desired value (Z_s) and the actual deceleration value (Z), said comparing means (26) receives electrical signals from said one transducer (24) and said brake pedal means, other of said transducers (33,34) ascertaining forces (A, B, C) of the wheel suspension of said vehicle, means (42) for prespecifying a desired difference ($\Delta\mu_s$) between adhesion forces (μ_r, μ_h) at the axles, computing stages (35,36,37) operatively connected to said other transducers (33,34) for determining the horizontal and vertical forces (u,g) engaging the wheels as well as actual adhesion forces (μ_r, μ_h) at the axles of the motor vehicle wherein said comparing means (22,43) is operatively connected to said computer stages for determining an actual difference value ($\Delta\mu$) between the adhesion forces (μ_r, μ_h) at the axles and to said means (42) prespecifying a desired difference for determining the deviation ($\Delta\mu$) between said desired adhesion difference value ($\Delta\mu_s$) and said actual difference adhesion value ($\Delta\mu$) which serves to regulate brake pressure axle-by-axle.

4,606,587

PRECISION AIR SLIDE

Vern C. Thompson, Minneapolis, Minn., assignor to Automated Quality Technologies, Inc., Minneapolis, Minn.

Filed Jan. 8, 1985, Ser. No. 690,462

Int. Cl.[4] F16C *32/06*

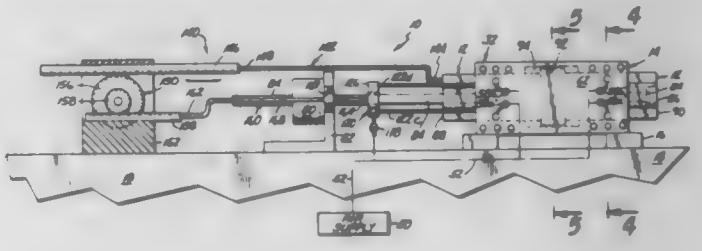
U.S. Cl. 384—12 20 Claims

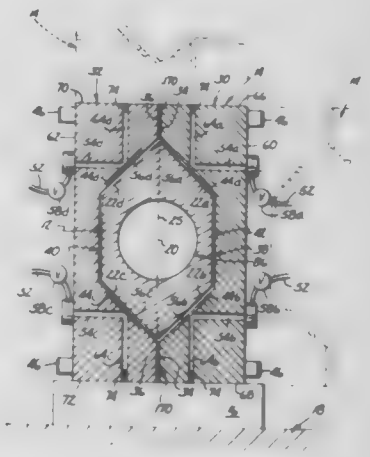
1. A gas bearing slide assembly for controlled linear motion, the gas bearing slide assembly comprising:

housing means having a throughbore extending therethrough along a first longitudinal axis, said throughbore being partially defined by a plurality of opposed planar and longitudinally extending housing slide surfaces in the housing means;

an elongated slide ram adapted to be slidably received in the throughbore of the housing means, the slide ram having its exterior partially defined by a plurality of planar ram slide surfaces which are adapted to slidably mate with the housing slide surfaces and permit longitudinal movement of the slide ram relative to the housing means along the first longitudinal axis;

means for supplying pressurized gas between the slide surfaces of the housing means and slide ram and creating a





hydrostatic bearing to separate said slidably mating surfaces under fluid pressure and support the slide ram for movement with respect to the housing means;

means for moving the slide ram longitudinally with respect to the housing means;

counterbalance means longitudinally movably mounted on the slide ram for limiting lateral movement of the slide ram relative to the first longitudinal axis; and

means for moving the counterbalance means responsive to movement of the slide ram in direction opposite to the direction of longitudinal movement of the slide ram.

4,606,588

GUIDE STRUCTURE FOR A DRAWABLE FURNITURE PART

Gerhard Koch, Nagold-Vollmaringen, Fed. Rep. of Germany, assignor to Häfele KG, Fed. Rep. of Germany

Filed Apr. 8, 1985, Ser. No. 720,810

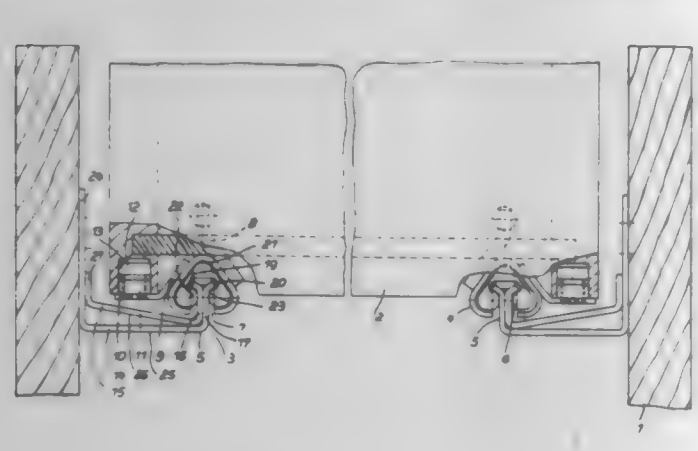
Claims priority, application Fed. Rep. of Germany, Apr. 17, 1984, 3414405

Int. Cl.[4] A47B *88/00*

U.S. Cl. 312—339 8 Claims

1. A guide structure, particularly for a drawable part of furniture, comprising an outer rail and a triangularly shaped inner rail, said outer rail extending into said triangularly shaped inner rail and at least three sets of balls arranged within said triangularly shaped outer rail, said inner rail comprising two

strips which overlie and abut each other, each having longitudinal end portions closed in the hollow triangular part which



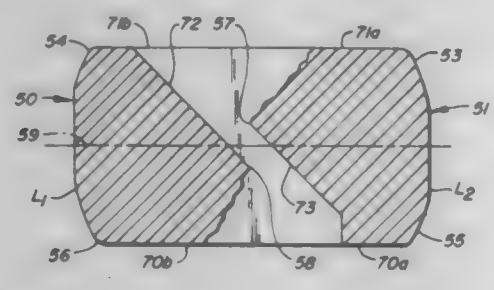
are angled apart and define a track for the balls arranged adjacent the apex of said triangular shaped structure.

4,606,589

COMPLIANT PIN

Charles N. Elsbree, Jr., Cupertino; Hector A. Regner, Newport Beach, both of Calif.; Claude Rodriguez, Carlloton, Tex., and Anthony Ravlich, Huntington Beach, Calif., assignors to H & V Services, Fountain Valley, Calif.

Filed Jan. 12, 1984, Ser. No. 570,065
Int. Cl.[4] H01R *4/24*
U.S. Cl. 339—17 C 11 Claims



1. A compliant pin for insertion into a conductive aperture extending between the upper and lower surfaces of a backpanel of the type including one or more conductive layers preferably sandwiched between non-conductive layers, said pin comprising:

a connector portion for placement through and protrusion from one end of said aperture in said backpanel;

a compliant portion adjacent said connector portion, said compliant portion being substantially coextensive with said aperture;

a stop portion adjacent said compliant portion, said stop for registry to the surface of said backpanel to limit the penetration of said pin at said compliant portion;

said compliant portion having first and second compliant legs separated at a first defined eye adjacent said stop portion and joined together at a second defined eye adjacent said connector portion, said first and second compliant legs each defining a wedge including a longitudinal apex disposed on the inside of said legs and disposed towards the center of said pin and a pair of longitudinal shoulders for contact with said aperture disposed on the outside of said legs;

said defined eyes including an absence of material between said wedge and said connector and stop portions before insertion of said pin to permit compliant movement of said compliant legs from an expanded disposition when said pin is exterior of said conductive aperture to a contracted position with said pin is positioned in said conductive aperture, whereby each leg is free to compliantly move towards and away from said other leg to maintain said legs in said conductive aperture; and

the wedge apex of said first leg being offset with respect to the wedge apex of said second leg to cause said wedges when urged together during insertion into said conductive aperture to move towards one another along a sliding interface,

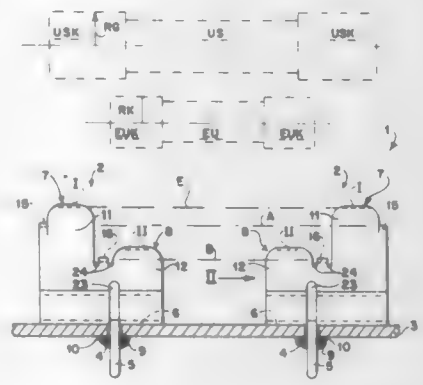
said wedges having been separated from one another by a predetermined distance before insertion of said pin into said conductive aperture, and said pin has an essentially rectangular cross-section normal to the longitudinal axis of said pin, and said sliding interface is inclined relative to the major axis of said rectangular cross-section.

4,606,590

FUSE HOLDER CLIP AND CLIP-TYPE FUSE HOLDER FOR SELECTIVELY HOLDING DIFFERENT ELECTRICAL FUSES

Urs Kauffmann, Kastanienbaum, and Jost Degen, Lucerne, both of Switzerland, assignors to Schurter AG, Lucerne, Switzerland

Continuation-in-part of Ser. No. 543,171, Oct. 19, 1983, abandoned. This application Feb. 6, 1985, Ser. No. 698,825
Claims priority, application Switzerland, Feb. 24, 1984, 914/84
Int. Cl.[4] H01R *33/05, 33/90*
U.S. Cl. 339—32 M 22 Claims



1. A fuse holder clip formed of an electrically conductive material for selectively accommodating one end cap of the first end caps of a first electrical fuse of a first type and of a second electrical fuse of a second type each having oppositely situated first and second end caps, comprising:

a substantially U-shaped first clip means having two first legs and a connecting web;

said two first legs having related substantially arcuate first clamping regions and substantially conjointly defining a first hypothetical longitudinal axis of said first clip means about which said first clamping regions are substantially concentric;

said two first legs extending in a substantially common direction at related predetermined transverse distances from and on opposite sides of said first hypothetical longitudinal axis;

a substantially U-shaped second clip means having two second legs connected by a connecting web;

said two second legs having related substantially arcuate second clamping regions substantially conjointly defining a second hypothetical longitudinal axis of said second clip means about which said second clamping regions are substantially concentric and which second hypothetical longitudinal axis extends in a direction substantially parallel to said first hypothetical longitudinal axis;

said two second legs extending substantially in said substantially common direction of said two first legs and at related predetermined transverse distances from and on opposite sides of said second hypothetical longitudinal axis;

said two first clamping regions being configured to accommodate the first end cap of the first electrical fuse;

said two second clamping regions being configured to accommodate the first end cap of the second electrical fuse;

each of said two first legs having a first inner end;

said first inner ends mutually defining a hypothetical plane extending substantially parallel to said first hypothetical longitudinal axis;

the first end cap of the first electrical fuse having a predetermined first radius;

the first end cap of the second electrical fuse having a predetermined second radius;

said second radius defining a hypothetical cylinder about said second hypothetical longitudinal axis;

said first clip means and said second clip means being mutually electrically and mechanically connected essentially by means of the related connecting webs;

said two first legs of said first clip means and said two second legs of said second clip means being arranged in a mutually substantially independent and substantially juxtaposed relationship with respect to said first hypothetical longitudinal axis; and

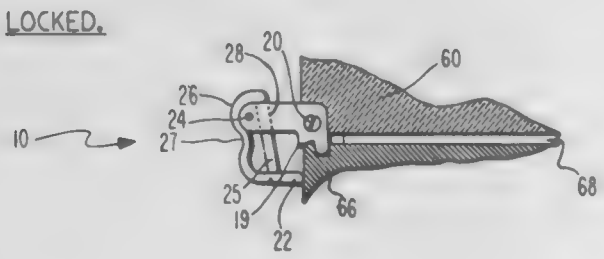
said hypothetical plane being spaced from said hypothetical cylinder defined by said second radius of said first end cap of said second electrical fuse by an amount which does not exceed the value of said predetermined first radius of said first and end cap of said first.

4,606,591

LOCK/EJECTOR SYSTEM FOR PRINTED WIRING BOARD

Kenneth A. Bloch, Monrovia, Calif., assignor to Burroughs Corporation, Detroit, Mich.

Filed Mar. 18, 1985, Ser. No. 712,837
Int. Cl.[4] H01R *13/62*
U.S. Cl. 339—45 M **5 Claims**



1. In an apparatus for facilitating the insertion/ejection of a printed wiring board into a card guide for connection to a mother board, whererby said card guide is held by a rack having a rack edge and a rack slot, a lock/ejector assembly comprising:

(a) a leverage body pivotally connected to said printed wiring board and including:

(a1) a cam-boss for contacting a rack edge;

(a2) a leverage body foot for insertion into said rack slot when said cam-boss contacts said rack edge;

(a3) means for tensionally locking said leverage body and said wiring board against said rack edge, wherein said means for locking includes:

(i) a bowed snap lock having a forward arm attached to a flexibly-bowed contoured-bend arm; and

(ii) said flexibly-bowed contoured-bend arm provides an extended lock foot capable of being pressured-positioned against said rack edge;

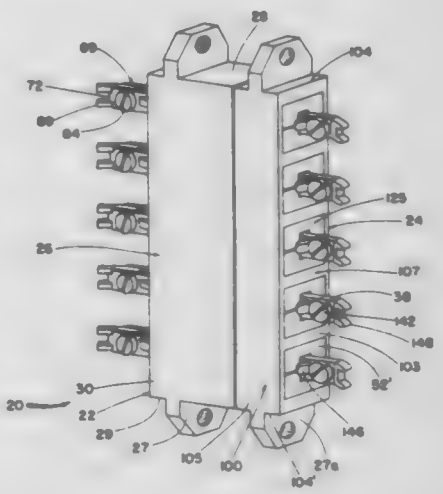
(a4) a transverse body slot for guiding said forward arm of said bowed snap lock.

4,606,592

ELECTRICAL CONNECTOR ASSEMBLY WITH INTEGRAL PLUG AND SOCKET MODULES

Ralph D. Neff, Pittsfield, N.H., assignor to Veraitron Corporation, Lake Success, N.Y.

Continuation of Ser. No. 359,355, Mar. 18, 1982, abandoned. This application Jun. 11, 1984, Ser. No. 619,584
Int. Cl.[4] H01R *9/24*
U.S. Cl. 339—59 M **6 Claims**



1. An electrical connector assembly comprising:

mutually interfitting dielectric socket and plug connector blocks;

each of said blocks having spaced side walls joined by integral transverse walls defining a plurality of cavities in each block open at opposite ends of each block;

each of said cavities having smaller and larger opposite ends defined by tapered interior walls;

a first plurality of modules wholly within said socket connector block, each module having a shape of a quadralateral pyramid;

a second plurality of modules wholly within said plug connector block, each module having a shape of a quadralateral pyramid; and

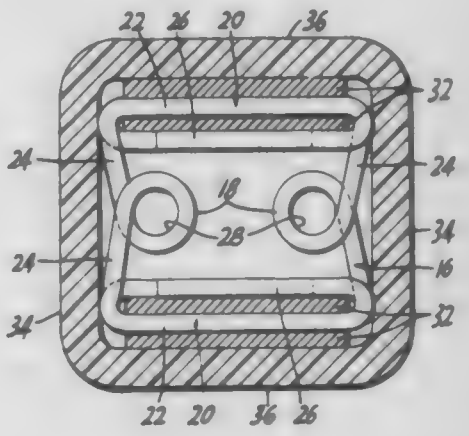
each of said modules in each of said blocks comprising a casing defined by two identical dielectric module sections abutted together and retaining a first portion of and enclosing an electrical contact member, each contact member having another portion extending out of said casing for attaching a circuit wire thereto.

4,606,593

ELECTRIC WIRE CONNECTOR

Thomas J. McKenzie, 6230 N. Camino Pimeria Alta, Tucson, Ariz. 85718

Filed Jun. 3, 1985, Ser. No. 740,857
Int. Cl.[4] H01R *4/48*
U.S. Cl. 339—61 R **10 Claims**



1. An electrical connector comprising:

a dielectric housing having at least a pair of oppositely facing flexible walls;

a plurality of electrically conductive flexible spring wires arranged in a closely aligned parallel assembly one with another and enclosed within said housing;

each of said wires having at least one circumferential loop integrally formed thereon between its ends and arranged to cooperate with the loops of adjoining wires to form at least one channel for receiving electrical conductors to be interconnected;

each of said flexible wires having end portions spaced from opposite sides of its loop;

means bonding said wire ends together;

said ends being arranged in close proximity to the flexible walls of said housing whereby squeezing pressure upon said flexible housing walls, and thereby upon said opposite wire ends moves said wire ends toward each other resulting in the enlargement of said loops thereby permitting easy insertion and removal of said conductors from said channel whose inner diameter is slightly less than the diameter of conductors for which the connector has been designed to accomodate, and whereby when a conductor has been inserted within a channel it will be tightly gripped by the accumulated pressure of the plurality of loops forming the channel; and

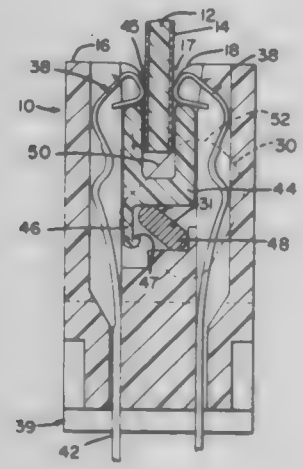
said housing is provided with openings aligned with the channel openings for the insertion within and removal of conductors from said channels.

4,606,594

ZIF CONNECTOR WITH WIPE

Dimitry G. Grabbe, Middletown, and Iosif Korsunsky, Harrisburg, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Apr. 22, 1985, Ser. No. 725,695
Int. Cl.[4] H01R *9/09*
U.S. Cl. 339—74 R **5 Claims**



1. A multicontact electrical connector of the type comprising an insulating housing having a channel extending into one surface thereof for reception of edge portions of a substrate, the substrate having oppositely facing major surfaces and having terminal traces on the major surfaces adjacent to the edge portions thereof, contact terminals in the housing on each side of the channel, each terminal having a contact surface for engagement with a terminal trace, a rotatable camming rod extending through the housing and a cam follower in the housing which is moved towards and away from the one surface of the housing upon rotation of the camming rod in opposite directions, the cam follower being in engagement with the terminals and being effective to control movement of the contact surfaces towards and away from the channel upon rotation of the camming rod, the connector being characterized in that:

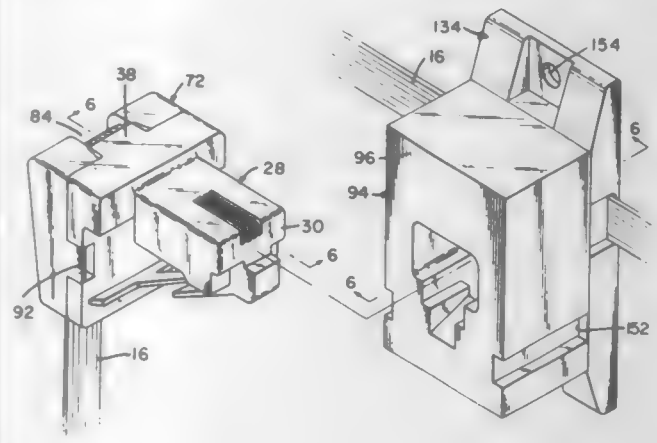
a wiping camming means is provided for moving the substrate in its own plane relative to the contact surfaces on a substrate positioned in the channel thereby to wipe the contact surfaces relatively over the terminal traces and ensure clean contact surfaces on the terminal traces and the contact surfaces, the wiping camming means comprising at least one cam lobe on the camming rod which is engageable with the one edge of the substrate.

4,606,595

PREMISE WIRING SYSTEM AND COMPONENTS THEREFOR

Frank P. Dola, Hudson, Fla., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Apr. 25, 1984, Ser. No. 603,803
Int. Cl.[4] H01R *4/24*
U.S. Cl. 339—99 R **18 Claims**



1. A two signal wiring system to provide on-site wiring of telephone and like two wire circuits in which wires to all components must have like proper orientation in order for the system to be functional, the said system comprising:

a three-wire flat cable formed by three elongate conductors in fixed parallel spaced relation within an extruded insulation, the outer conductors forming a first circuit and the central conductor forming a second circuit, the central conductor having a cross-sectional area substantially equal to the sum of the cross-sectional areas of said outer conductors; and

at least one termination device having a front housing of insulative material defining a cable receiving rear face with at least two terminal receiving cavities opening on said rear face, a terminal received in each said cavity with at least one insulation piercing conductor engaging portion extending from said face, and a cover enclosing said rear face.

4,606,596

STRESS RELIEF APPARATUS FOR ELECTRICAL CONNECTORS

David E. Whiting, Dillsburg, Pa., and Mark S. Schell, Palatine, Ill., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

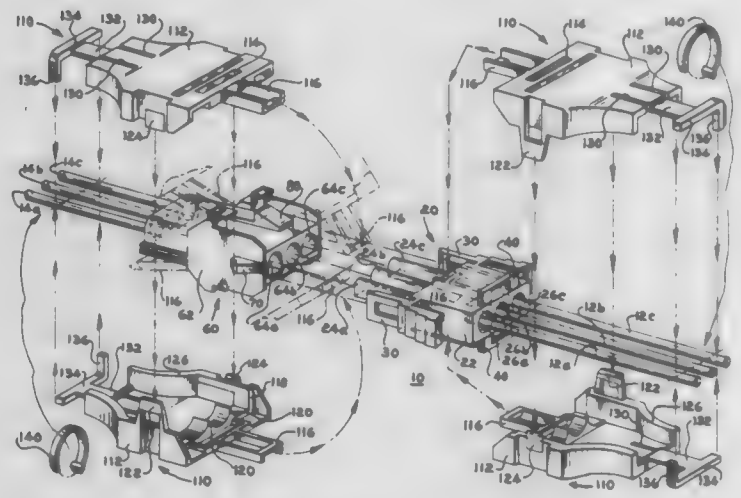
Filed Nov. 19, 1984, Ser. No. 672,901
Int. Cl.[4] H01R *13/58*
U.S. Cl. 339—107 **10 Claims**

1. A device for relieving stress between an electrical connector component and a plurality of individual wires terminating at that connector component, all of the wires entering a rear end of the connector component and extending substantially parallel to a longitudinal axis of the connector, said connector component having a forward mating end the stress relief device comprising:

first and second hermaphroditic interlocking stress relief elements, each element including a forward position and a rear portion;

a first and a second means located at the forward portion of each stress relief element for releasably engaging the connector component to prevent relative axial motion of the stress relief element and the connector component, said first means comprising a slot and said second means comprising a stirrup extending axially along the connector component, each said stress relief element releasably en-

gaging the connector component by means of either said slot or said stirrup, said slot being capable of receiving a tab projecting outward from the connector component and said stirrup being capable of receiving a latch member through an aperture of said stirrup, said latch member being cantilevered outward from the connector component and extending in the same direction as the stirrup to engage a nesting connector;



a latch on one side of the stress relief element and a tab on the other side, said latch on one element interlocking with the tab on the other stress relief element;

means located at the rear portion of the stress relief element and extending axially from the connector component along the wires for gathering up all the wires into a group; and

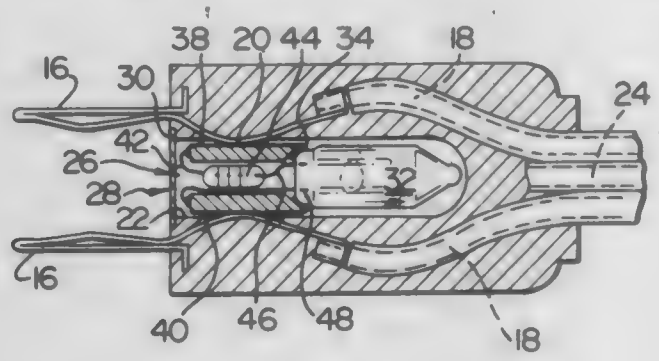
means for receiving a wire tie around both elements and the gathered wires for binding the wires and the stress relief elements together.

4,606,597

ELECTRICAL CONNECTOR

Gerhard Bielefeld, P.O. Box 368, Stony Plain, Alberta, T0E 2G0, Canada

Filed Feb. 20, 1985, Ser. No. 703,336
Claims priority, application Canada, Nov. 9, 1984, 467462
Int. Cl.[4] H01R *3/00*
U.S. Cl. 339—113 L **6 Claims**



1. An electrical connector, comprising:

a body;

a cavity formed within said body;

a lamp unit replaceably accommodated in said cavity;

at least one aperture in said body through which light can pass from said lamp unit to the exterior of said body;

electrically conductive members within said body for conducting electricity through said connector, said cavity being located between said electrically conductive members;

said lamp unit comprising a lamp, contact members provided on said lamp unit and frictionally engaging said electrically conductive members at opposite sides of said lamp unit for connecting said lamp across said electrically conductive members and voltage reduction means connected between said lamp and one of said contact members for reducing the voltage applied across said lamp by said electrically conductive members;

said lamp, said contact members and said voltage reduction means being formed as integral members of said lamp unit;

said body being molded in one piece around said electrically conductive members;

said cavity having an opening to the exterior of said body to permit the insertion of said lamp into said cavity; and

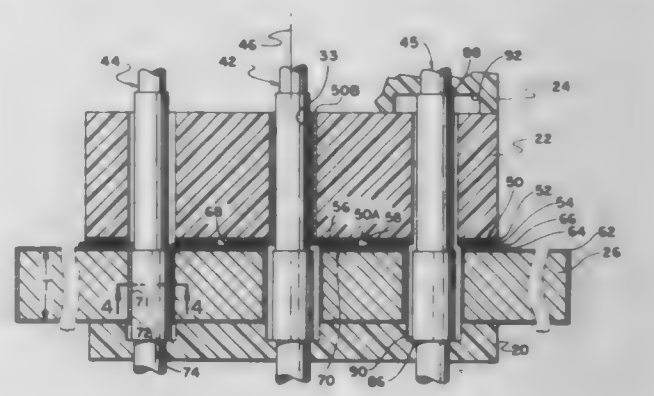
closure means for closing said opening.

4,606,598

GROUNDING PLATE CONNECTOR

Francis A. Drzymkowski, Laguna Niguel, Calif., and Kenneth B. Turnbaugh, Mesa, Ariz., assignors to ITT Corporation, New York, N.Y.

Filed May 2, 1985, Ser. No. 729,836
Int. Cl.[4] H01R *4/66*
U.S. Cl. 339—147 R **12 Claims**



1. A connector comprising:

a metal grounding plate having a plurality of holes, and having forward and rearward faces;

an insulator lying adjacent to one of said faces, said insulator having a plurality of holes aligned with said holes in said plate and said insulator having faces;

a plurality of metal contacts extending through said aligned holes in said plate and insulator;

a plating layer of conductive material lying on the face of said insulator which lies adjacent to said grounding plate, said layer plating at least one of the holes in said insulator, a first of said contacts engaged with said plating layer in said hole but out of contact with the walls of a corresponding hole in said grounding plate; and

a layer of dielectric material lying between said plating layer and said grounding plate to form a capacitor between them.

4,606,599

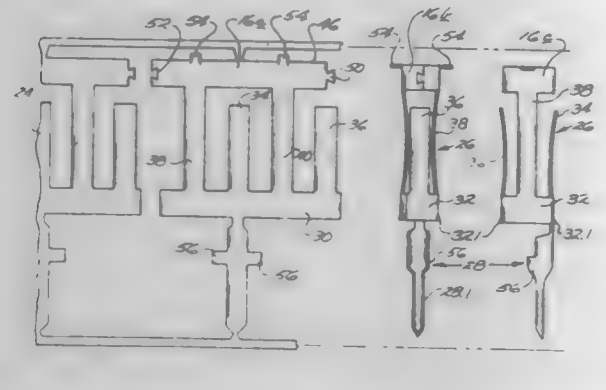
LOW INSERTION FORCE CONNECTOR

John L. Grant, Sherborn; Emanuel D. Torti, Newton; Austin S. O'Malley, Rehoboth; Thomas W. Galligan, Norton, and Stephen D. DelPrete, Rehoboth, all of Mass., assignors to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 331,728, Dec. 17, 1981, Pat. No. 4,466,684.
This application Jul. 25, 1984, Ser. No. 634,327
The portion of the term of this patent subsequent to Aug. 21, 2001, has been disclaimed.
Int. Cl.[4] H01R *11/22*
U.S. Cl. 339—258 R **1 Claim**

1. A conductor for use in an opening in a connector, said conductor having an integral bridge part and having two pairs of leaf members extending from the bridge part with leaf members of each of the two pairs being disposed in facing relation to each other around a common axis, at least one pair of the leaf members comprising leaf springs each having a first surface disposed obliquely relative to the axis to initially intercept and be moved by a terminal being inserted between the springs along the axis to establish a selected spring force in the leaf spring and having an adjacent contact surface to electrically engage a terminal with said selected spring force when the

terminal is positioned in said opening on said axis, the conductor comprising a blanked and formed element of a metal strip material and having an integral gauge part forming a gauge aperture limiting the cross-section of a terminal permitted to be inserted between the leaf members, the gauge part comprising an integral strip portion of the strip material joined to at least one of the leaf members and extended to define the perimeter of said gauge aperture as a four-sided, generally square gauge aperture having sides of selected length and having opposite



ends of said strip portion secured together to prevent enlargement of the perimeter of the gauge aperture if an attempt is made to insert an oversize terminal through the aperture, one end of said strip portion having a dove-tail formed therein and the opposite end of the strip portion having a dove-tail groove, the dove-tail and groove having a size to be accommodated within one side of said square gauge aperture perimeter and being fitted snugly together within said one perimeter side to limit the gauge aperture perimeter defined by said strip portion.

4,606,600

PASSIVE INFRARED MOVEMENT DETECTOR

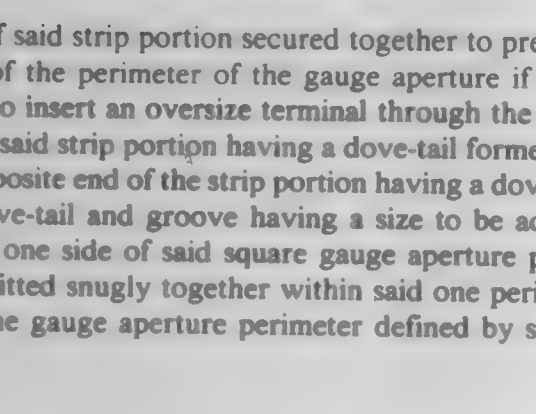
Bernd Schmidt, Solingen, Fed. Rep. of Germany, assignor to Inovatronic elektronische Systeme GmbH, Solingen, Fed. Rep. of Germany

Filed Dec. 26, 1984, Ser. No. 686,819

Claims priority, application Fed. Rep. of Germany, Jan. 3, 1984, 3400067

Int. Cl.[4] G02B *5/132*

U.S. Cl. 350—1.1 **4 Claims**



1. A passive infrared movement detector having a reflector which directs the radiation from a plurality of fields of vision to an infrared detector arrangement and for this purpose consists of a plurality of individual reflectors, wherein the individual reflectors of the passive infrared movement detector are spherical reflectors (4) which are separately arranged on a reflector carrier (1) so as to be shiftable in different directions.

4,606,601

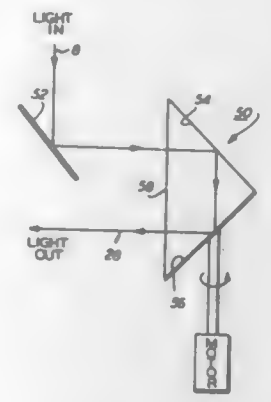
SINGLE FACET WOBBLE FREE SCANNER

Gary K. Starkweather, Saratoga, Calif., assignor to Xerox Corporation, Stamford, Conn.

Division of Ser. No. 422,783, Sep. 24, 1982, Pat. No. 4,475,787, which is a continuation-in-part of Ser. No. 232,109, Feb. 6, 1981, abandoned. This application Jun. 18, 1984, Ser. No. 621,345

Int. Cl.[4] G02B *27/17*

U.S. Cl. 350—6.4 **2 Claims**



1. A light scanner which eliminates the effects of wobble caused by mechanical or other factors including a right angle prism mirror assembly, wherein said mirror assembly is positioned such that a light beam impinges on a first mirrored surface, then is reflected therefrom and enters said prism mirror assembly through the unmirrored hypotenuse surface thereof, passes through the body of said mirror assembly to one of the right angle and mirrored surfaces of said mirror assembly, which internally reflects said light beam across the right angle body of said mirror assembly to the other right angle and mirrored surfaces of said mirror assembly, which internally reflects said light beam back towards and through the unmirrored hypotenuse surface of said mirror assembly, said right angle prism mirror assembly being rotated about an axis through the path of said light beam internally reflected across the right angle body of said mirror assembly, wherein said light beam defines a light plane perpendicular to the axis of rotation of said mirrior assembly, the angles of incidence equalling the angles of reflection in relation to said mirror assembly such that when and if wobble is introduced to said mirror assembly as it rotates, the light beam defines parallel planes within the range of the introduced wobble, and

lens means in the path of said light beam from said assembly for focussing the light to a fine point of light defining a scan line essentially devoid of any effects of said wobble.

4,606,602

SELECTIVELY DISPERSIVE OPTICAL WAVEGUIDE FILMS

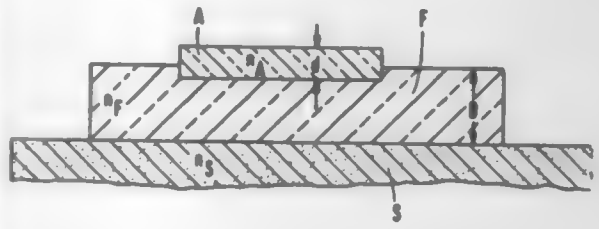
Hans-Georg Unger, and Jörn Jacob, both of Brunswick, Fed. Rep. of Germany, assignors to Ant Nachrichtentechnik, Backnang, Fed. Rep. of Germany

Filed Dec. 1, 1982, Ser. No. 445,995

Claims priority, application Fed. Rep. of Germany, Dec. 1, 1981, 3147488

Int. Cl.[4] G02B *6/26*

U.S. Cl. 350—96.12 **18 Claims**



1. Planar waveguide film structure for propagating light waves in an integrated optical system, comprising: a carrier substrate having a first index of refraction n_S; a film having a

second index of refraction n_F greater than the first index of refraction applied onto said substrate for substantially guiding the light waves being propagated in said structure; and an optically effective coating applied to said film, said coating having an index of refraction n_A and forming with the portion of said film therebelow an optical component, wherein:

$n_S = 1.4$;

$n_F = 1.51$;

$n_A = 1.53$;

the ratio of the thickness of said coating to the thickness of said portion of said film is 1:10; and

the thickness of said coating is approximately 0.65 times λ, where λ is the free space wavelength of the light waves to be guided by said structure;

so that at

$$\frac{2\pi}{\lambda} \cdot d \sqrt{(n_A)^2 - (n_S)^2} \approx 2.7,$$

where d is the thickness of said coating, said optical component has a minimum dispersion value.

4,606,603

UNDERWATER CONNECTOR INCLUDING INTEGRAL BLADDER AND SEAL WITH A SET OF CONSTRICTING MEANS

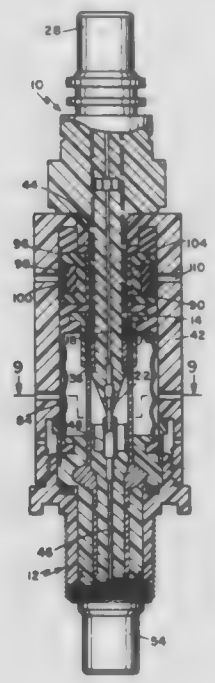
James L. Cairns, Mims, Fla., assignor to Lockheed Corporation, Burbank, Calif.

Filed Apr. 7, 1983, Ser. No. 482,919

The portion of the term of this patent subsequent to Feb. 15, 2000, has been disclaimed.

Int. Cl.[4] G02B *6/38;* H01R *4/00*

U.S. Cl. 350—96.21 43 Claims



1. An underwater connector, comprising:

a male unit having a probe;

a female unit having a hollow body and a forward opening for receiving the probe;

a flexible bladder positioned within the body of the female unit;

a seal mounted in the female body at a position adjacent the forward opening and having an elastomeric sleeve integrally molded to the bladder through which the probe will fit for insertion into the bladder, an elastomeric grommet surrounding the sleeve, and a constricting ring surrounding and squeezing the grommet and sleeve and holding the sleeve in closed condition upon withdrawal of the probe therefrom;

support means for holding said bladder and seal in position; and

a socket in the body adjacent the opening and enclosed in the bladder for receiving the probe.

25. An underwater fiber optic connector comprising:

an elongate male unit having a probe for holding a first optical fiber extending longitudinally therethrough;

an elongate female unit having a hollow body portion and means for holding a second optical fiber extending longitudinally through a remaining portion of the female unit;

a socket in the hollow body portion for receiving the probe and holding one end of the second optical fiber;

a flexible bladder positioned within the body of the female unit and enclosing the means for holding the second fiber and the socket;

an elastomeric, watertight seal, integral with said bladder and adjacent said socket, for being penetrated by the probe; and

optical coupling means in the probe and socket for permitting light signals to be transmitted between the first and second optical fibers when the probe is received in the socket.

4,606,604

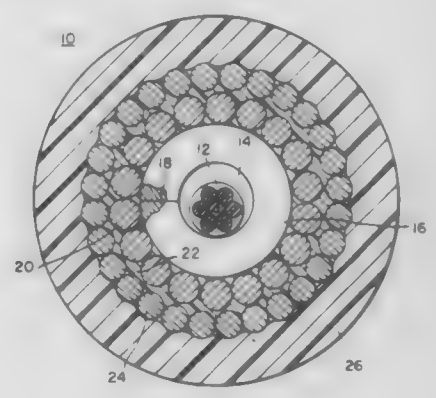
OPTICAL FIBER SUBMARINE CABLE AND METHOD OF MAKING

Charles Soodak, Silver Spring, Md., assignor to Optelecom, Inc., Gaithersburg, Md.

Filed May 16, 1984, Ser. No. 610,837

Int. Cl.[4] G02B *6/44*

U.S. Cl. 350—96.23 6 Claims



1. An optical fiber submarine cable comprising;

(a) at least one optic fiber;

(b) a longitudinally precompressed electrically conductive tube defining a hermetic cavity in which said optic fiber is disposed;

(c) an inner armor layer having a plurality of electrically conductive inner wires helically wound tightly around said tube in one direction at a pitch of between 8° and 20°; and

(d) an external insulation layer;

and wherein said cable is less than ½" in diameter, and wherein said tube is longitudinally precompressed to approximately 50% of its yield point such that said tube will return from a stressed yield condition to within 0.1% of its precompressed length.

4,606,605

OPTICAL FIBER HAVING IN-LINE POLARIZATION FILTER

Arthur Ashkin, and Rogers H. Stolen, both of Rumson, N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Jun. 29, 1984, Ser. No. 626,064
Int. Cl.[4] G02B *6/18*
U.S. Cl. 350—96.31 **20 Claims**



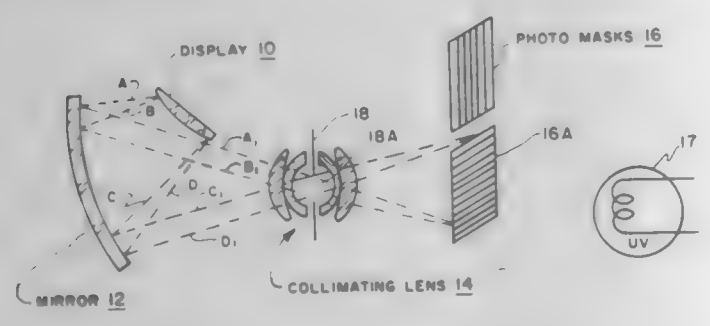
1. An optical device comprising a birefringent single mode optical fiber, said fiber having principal axes and periodic integral perturbations with the period of said perturbations being approximately equal to the birefringence beat length.

4,606,606

METHOD AND APPAPARATUS FOR CORRECTING DISTORTION AND CURVATURE OF FIELD IN A DISPLAY SYSTEM

Charles F. Freeman, Springfield, Va., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed May 1, 1984, Ser. No. 605,965
Int. Cl.[4] G02B *27/02*
U.S. Cl. 350—145 **3 Claims**



1. A method for identifying distortion in the optical elements of a head mounted display system mounted in optically off-set orientation, said method comprising the steps of:

aligning a display focal surface having a glass substrate optical element thereon with a surface conforming to said focal surface and an off-set single optical element circular toroidal reflector in said display system;

placing a collimating lens having an aperture at the focal plane of said display system where a virtual image of the display emitted from said display focal surface would be viewed by an observer;

selectively positioning evenly spaced horizontal and vertical undistorted linear grid patterns on the output side of said collimating lens wherein the overlay of said horizontal and vertical grid patterns form a high resolution undistorted rectilinear grid pattern; and

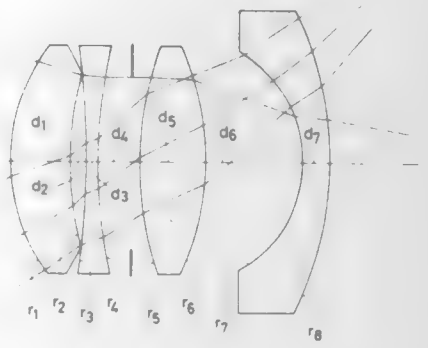
using optical projection photolithography methods to project a separate image of each of said horizontal and said vertical undistorted linear grid patterns in two separate photolithographic steps to etch a curved cross grid pattern of rectilinear lines on said glass substrate optical element wherein said curved cross grid pattern is a direct image of said high resolution undistorted rectilinear grid pattern identifying distortion inherent in said single optical element reflector and in said glass substrate optical element to provide said high resolution undistorted rectilinear grid pattern overlaying said display for comparing with the scene as viewed by an observer.

4,606,607

PHOTOGRAPHIC LENS SYSTEM WITH A SHORT OVERALL LENGTH

Takashi Kurihara, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Jan. 4, 1984, Ser. No. 568,147
Claims priority, application Japan, Jan. 27, 1983, 58-10543
The portion of the term of this patent subsequent to Jun. 4, 2002, has been disclaimed.
Int. Cl.[4] G02B *13/08, 9/34*
U.S. Cl. 350—432 **7 Claims**



1. A photographic lens system with a short overall length comprising:

first, second, third and fourth lens components wherein said first lens component is a positive meniscus lens arranged to be convex toward the object side, said third lens component is a biconvex lens, and said fourth lens component is a negative meniscus lens arranged to be concave toward the object side, and in which the surface on the object side of said second lens component is arranged as an aspherical surface expressed by the formula shown below, where, reference symbol r_i represents the radii of curvature of the vertex portions of said aspherical surfaces, reference symbol x represents the distances from arbitrary points on said aspherical surfaces to the tangential planes which are tangential to said aspherical surfaces at the vertexes thereof, and reference symbol y represents the distances from said arbitrary points to the optical axis and, moreover, the amount of deviation Δ_3' in x axis direction of said aspherical surface of said second lens component from its reference spherical surface at the position of the maximum effective diameter thereof fulfills the condition (1) shown below:

$$x = \frac{\frac{y^2}{r_i}}{1 + \sqrt{1 - \left(\frac{y}{r_i}\right)^2}} + \Delta x_i \qquad (1)$$

$$\Delta x_i = A_2(i)y^2 + A_4(i)y^4 + A_6(i)y^6 + A_8(i)y^8 + A_{10}(i)y^{10}$$

$$-2.5 \times 10^{-3} < \frac{\Delta x_3'}{f} < 0$$

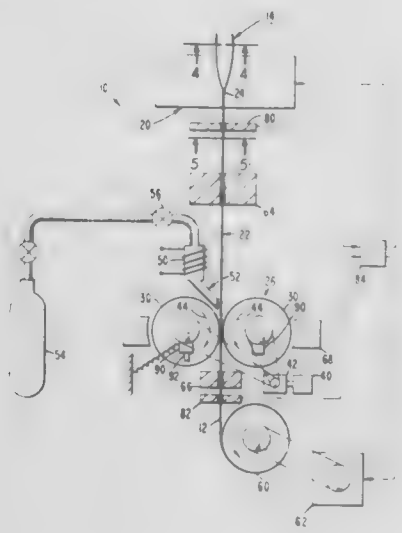
where, reference symbols $A_2^{(i)}$, $A_4^{(i)}$, . . . $A_{10}^{(i)}$ respectively represent coefficients of aspherical surface, and reference symbol f represents the focal length of the lens system as a whole; and wherein at least one of the surfaces of said fourth lens component is arranged as an aspherical surface.

4,606,608

PROCESS AND APPARATUS FOR PREPARING GLASS FIBERS COATED WITH AMORPHOUS METALLIC ALLOY, AND FIBERS COATED THEREBY

Joseph A. Wysocki, Oxnard, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed Feb. 4, 1985, Ser. No. 697,826
Int. Cl.⁴ C03C *25/04*
U.S. Cl. 350—96.33 **14 Claims**



1. A process for preparing a length of glass fiber coated with an amorphous metallic coating, comprising the steps of:

drawing a length of glass fiber;

coating the length of glass fiber with a glass-forming liquid metallic alloy to form a liquid metal-coated fiber, said step of coating to occur immediately after, but continuously with, said step of drawing; and

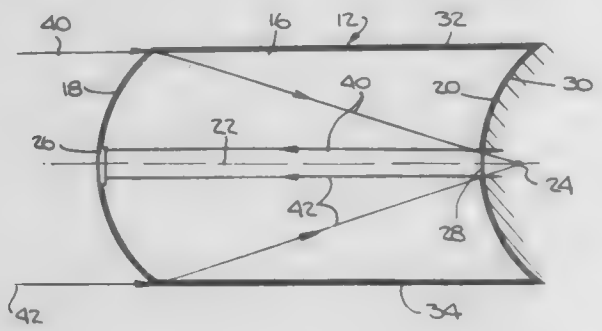
solidifying the liquid layer of the liquid-coated fiber at a cooling rate sufficiently high to form an amorphous metallic coating on the glass fiber.

4,606,609

PROJECTION SCREEN

Sung K. Hong, San 111-1 Bijeon-Ri, Pyoung Taek-up, Kyunggi-Do, Rep. of Korea (180)

Filed Aug. 12, 1985, Ser. No. 764,416
Int. Cl.⁴ G03B *21/60*
U.S. Cl. 350—128 **12 Claims**



1. An optical unit cell for a projection screen comprising,

(a) a elongated body portion formed of a light transmissive material,

(b) said body portion having one end formed as a convex lens surface, and an opposite end formed with a predetermined spherical surface countour, said convex lens surface and said spherical surface having coincident axes and predetermined radii of curvature such that a projection of said convex lens surface onto a plane perpendicular to said coincident axes is substantially coextensive with a projection of said spherical surface onto said plane,

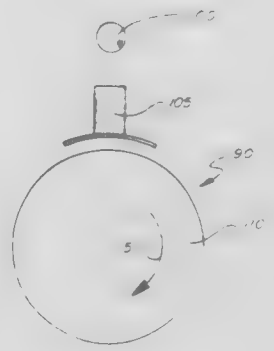
(c) a light diffusing material provided at the axial portion of said convex lens surface, and a light reflecting material provided at the axial portion of said spherical surface, said light reflecting material having a reflecting surface directed toward said convex lens surface.

4,606,610

IMAGING SYSTEM USING TELLURIUM-BASED ENERGY SENSITIVE SHEET AND VARIABLE IMAGE DISPLAYING MEANS

Zvi Yaniv, Southfield; Vincent D. Cannella, Birmingham; Terry T. Yu, Mt. Clemens, and Christopher Fulton, Royal Oak, all of Mich., assignors to Energy Conversion Devices, Inc., Troy, Mich.

Filed May 3, 1984, Ser. No. 606,696
Int. Cl.⁴ G02F *1/13*
U.S. Cl. 350—331 R **40 Claims**



1. A system for creating images comprising:

a source of energy;

input means for generating electrical control signals;

means for displaying an image, said means for displaying an image being connected to said input means for generating electrical control signals and adapted to display an image in response to said electrical control signals;

an energy sensitive medium adapted to display thereon an image generated by said means for displaying an image and comprising a selected tellurium based imaging material deposited on a substrate; and

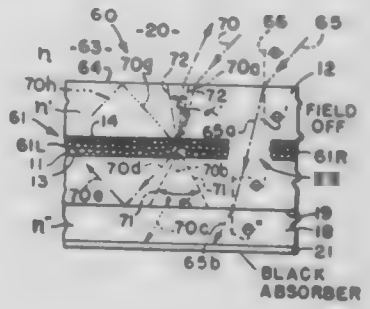
said means for displaying an image being disposed between said source of energy and the energy sensitive medium so as to control the spatial impingement of energy from said source of energy onto the energy sensitive medium.

4,606,611

ENHANCED SCATTERING IN VOLTAGE SENSITIVE ENCAPSULATED LIQUID CRYSTAL

James L. Fergason, Kent, Ohio, assignor to Manchester R & D Partnership, Pepper Pike, Ohio

Continuation-in-part of Ser. No. 302,780, Sep. 16, 1981, Pat. No. 4,435,047. This application Mar. 21, 1983, Ser. No. 477,138
The portion of the term of this patent subsequent to Mar. 6, 2001, has been disclaimed.
Int. Cl.⁴ G02F *1/13*
U.S. Cl. 350—334 **112 Claims**



1. Liquid crystal apparatus comprising liquid crystal means for selectively primarily scattering or transmitting light in response to a prescribed input, said liquid crystal means comprising operationally nematic liquid crystal material having positive dielectric anistropy, a support medium means for

supporting said liquid crystal means, and reflecting means for effecting total internal reflection of light scattered by said liquid crystal means.

99. A method of making a liquid crystal apparatus, comprising forming a plurality of volumes of operationally nematic liquid crystal material in a containment medium such that the walls of such volumes tend to distort the natural structure of such liquid crystal material in the absence of an electric field to scatter light incident on such volumes, placing such volumes of liquid crystal material for support by a support medium that has an optical internal reflection characteristic, providing a further medium at an interface with such support medium and selecting the index of refraction of such support medium to be greater than the index of refraction of such further medium, whereby light scattered by such liquid crystal material at an angle greater than the internal reflection angle at such interface is totally internally reflected back to such liquid crystal material, and such liquid crystal material being responsive to the presence of an electric field to align with respect thereto and thereby to reduce scattering.

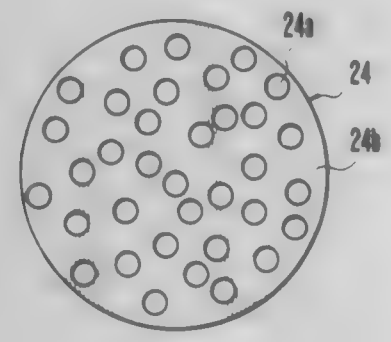
100. The method of claim **99**, said providing comprising providing an air interface.

4,606,612

OPTICAL PHASE FILTER USING LIQUID CRYSTAL

Kiyoshi Iizuka, Kanagawa, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 1, 1984, Ser. No. 616,550
Claims priority, application Japan, Jun. 10, 1983, 58-102695; Jun. 10, 1983, 58-102696; Oct. 6, 1983, 58-187396
Int. Cl.⁴ G02F *1/13*
U.S. Cl. 350—336 **6 Claims**



1. An optical phase filter comprising:
a liquid crystal layer; and
a transparent electrode for applying an electric field to said liquid crystal layer, said transparent electrode having a plurality of openings distributed at random.

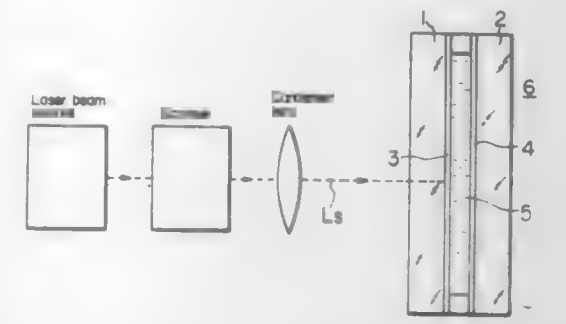
4,606,613

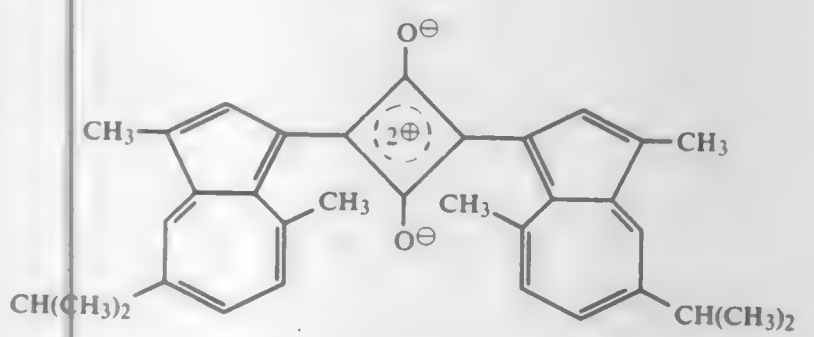
LIQUID CRYSTAL DISPLAY DEVICE CONTAINING LASER-ABSORBING DYE

Tetsuo Urabe, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Apr. 25, 1984, Ser. No. 603,748
Claims priority, application Japan, Apr. 26, 1983, 58-73322
Int. Cl.⁴ G02F *1/13*
U.S. Cl. 350—349 **1 Claim**

1. A liquid crystal display device comprising a laser beam source, a liquid crystal cell so formed that a liquid crystal layer in which a liquid crystal of cyano-biphenyl system is added with a dichromatic dye of 1,3 di (1,4-dimethyl-7-isopropylazulenyl)-cyclobutene diylium having a formula





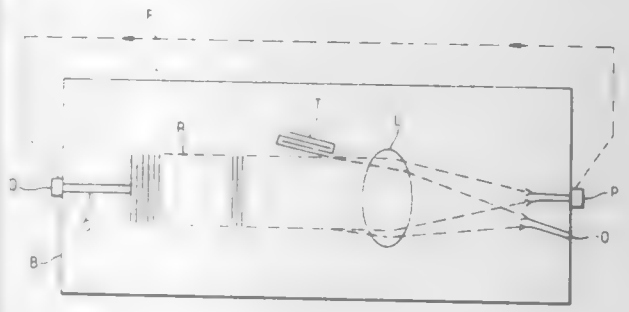
is interposed between opposing transparent electrode plates, and means for irradiating to said cell a laser beam generated from said laser beam source.

4,606,614

ACOUSTO-OPTIC ISOLATOR

John S. Heeks, Old Harlow, and John D. Jackson, Harlow, both of England, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Nov. 2, 1982, Ser. No. 438,670
Int. Cl.⁴ G02F *1/11*
U.S. Cl. 350—358 **5 Claims**



1. An optical isolator arrangement for a monochromatic light source comprising, in combination, an acousto-optic Bragg diffraction device in the output path of the light source, and an optical filter tuned to the optical frequency of the light source, the optical filter being interposed between the diffraction device and the light source, and further comprising means for detecting undiffracted light from the optical filter and feedback control means responsive to said detecting means for stabilizing the light source frequency with respect to the filter.

4,606,615

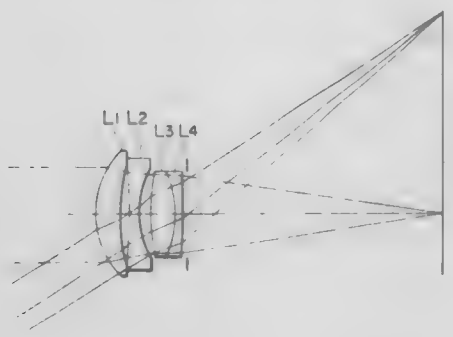
BEHIND STOP LENS

Koichi Wakamiya, Tokyo, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan

Filed Nov. 7, 1983, Ser. No. 549,326
Claims priority, application Japan, Nov. 18, 1982, 57-202442
Int. Cl.⁴ G02B *9/14*
U.S. Cl. 350—476 **6 Claims**

1. A behind stop lens having an angle of view of 60 degrees or more and brightness of the order of F3.5 in which aberrations, especially coma and chromatic aberration, are well corrected including, in succession from the object side, a first lens which is a positive meniscus lens having its convex surface

facing the object side, a second lens which is a biconcave negative lens, a third lens which is a biconvex positive lens, and a fourth lens which is a negative meniscus lens having its convex surface facing the image side, said third lens and said



fourth lens being cemented together to form a positive cemented lens, the dispersion of said third lens being higher than that of said fourth lens so as to correct coma and chromatic aberration, said behind stop lens satisfying the following conditions:

$$\Sigma d < 0.29f \quad (1)$$
$$0.05 < n_3 - n_4 < 0.18 \quad (2)$$
$$0.35f < r_6 < -0.22f \quad (3)$$
$$0.57f < r_5 < 0.73f \quad (4)$$
$$\nu_4 - \nu_3 > 6 \quad (5)$$
$$\left.\begin{array}{l} 48.0 < \nu_3 < 49.6 \\ 30.0 < \nu_2 < 33.0 \end{array}\right\} \quad (6)$$
$$0.25f < r_1 < 0.31f \quad (7)$$
$$-0.38f < f_2 < -0.30f \quad (8)$$

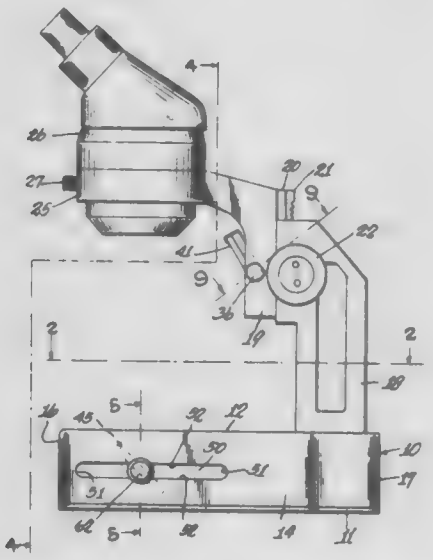
where f represents the total focal length of the entire system, Σd represents the distance from the vertex of the object side lens surface of said first lens to the vertex of the image side lens surface of said fourth lens, f_2 represents the focal length of said second lens, r represents the radius of curvature of each lens surface, n and ν represents the refractive index and the Abbe number, respectively, of each lens, and the subscript numbers mean the order from the object side.

4,606,616

MICROSCOPES

Douglas I. Parker, 316 Youngstown-Kingsville Rd., Vienna, Ohio 44473

Filed May 18, 1983, Ser. No. 495,706
Int. Cl.⁴ G02B *21/06*
U.S. Cl. 350—521 **7 Claims**



1. A microscope including a housing having a top wall, a first opening in said top wall in which a glass stage is supported said stage being adapted to support a specimen to be examined, a supporting arm fixed to and extending upwardly from said top wall and a focusing block mounted on said supporting arm for adjustment toward and away from said top wall, a lens body carried by said focusing block and movable therewith along an optical axis which is substantially perpendicular to and centrally of said stage, and a second opening in said top wall adjacent to said first opening, the improvement comprising:

a first mirror within said housing and mounted for bodily movement below said stage and along a horizontal path, said first mirror being rotatable about an axis transverse to said horizontal path,

a light source within said housing and adapted to emit light rays along said horizontal path and also along a vertical path up and through said second opening, and

a second mirror carried by said focusing block and adapted to receive light rays passing along said vertical path and reflect the same downwardly and onto said stage, said second mirror being swingable about a horizontal pivot to direct light to any selected position on said stage,

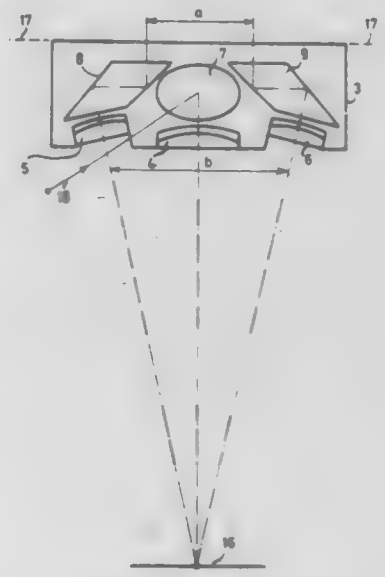
said first mirror being movable along its horizontal path to a position adjacent to said light source, and being rotatable in such position to block the passage of light rays along said horizontal path.

4,606,617

ADAPTER FOR ILLUMINATION OR LASER RADIATION FOR SURGICAL MICROSCOPES

Franz Muchel, Königsbronn, Fed. Rep. of Germany, assignor to Carl-Zeiss-Stiftung, Heidenheim on the Brenz, Fed. Rep. of Germany

Filed Oct. 1, 1984, Ser. No. 656,445
Claims priority, application Fed. Rep. of Germany, Oct. 5, 1983, 3336125
Int. Cl.⁴ G02B *21/06*
U.S. Cl. 350—527 **2 Claims**



2. An adapter for mounting on a conventional stereomicroscope as a replacement for a conventional objective of such conventional stereomicroscope, to provide a larger stereo viewing base as well as a separation of illuminating ray paths from observation ray paths for a reduction of disturbing reflections, said adapter comprising a housing, two observation objectives mounted in said housing laterally spaced from each other at a distance substantially greater than a conventional stereoscopic viewing base of the microscope with which said adapter is used, an illumination objective mounted in said housing approximately between said two observation objectives, reflecting means mounted in said housing behind said illumination objective in position to receive an incoming illumination beam and reflect said beam to said observation objective to-pass therethrough toward an object being viewed, and two reflecting prisms mounted in said housing, one behind

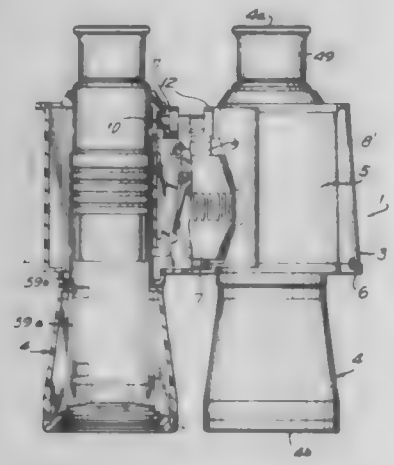
each of said observation objectives, to reflect respective observation rays coming from said object being viewed to and through said respective observation objectives to said respective prisms, to bring said observation rays closer together to a spacing substantially equal to said conventional stereoscopic viewing base of the microscope with which said adapter is used.

4,606,618

OPTICAL DEVICE WHICH IS CONVERTIBLE TO A TOY ROBOT

Steven E. Geller, Old Brookview, N.Y., assignor to ARCO Industries, Harbour City, Hong Kong

Filed May 23, 1985, Ser. No. 737,101
Int. Cl.[4] G02B *23/18;* A63H *33/22*
U.S. Cl. 350—556 **4 Claims**



1. A toy whose moveable parts are manipulated to transform the toy between an optical device and a toy robot comprising:

(a) a housing of said optical device;

(b) at least one leg tube slidably attached to an inside wall of said housing and extending through said housing, said leg tube sliding in a first direction toward a bottom side of said housing to form a leg of the toy robot and sliding in a second direction toward a top side of said housing to operate as the optical device;

(c) a viewing means housed in said leg tube for magnifying a distant object, said viewing means having an ocular lens inserted in one end of said leg tube which is held in front of one eye to aid in viewing said distant object coupled with an objective lens attached to a second end of said leg tube which is directed toward said object to increase its visual angle and magnify the object;

(d) at least one extension member rotatably attached to a top portion of said housing unfolding from said housing to extend into an arm of said toy robot and collapsing into a position near said housing to appear as a part of the body frame of the optical device; and

(e) a second extension member rotatably attached to the top portion of said housing in a manner permitting said second extension member to rotate in one direction away from said top side to form a head of the robot and rotate in a second direction toward said topside to simulate a forcusing knob of said optical device.

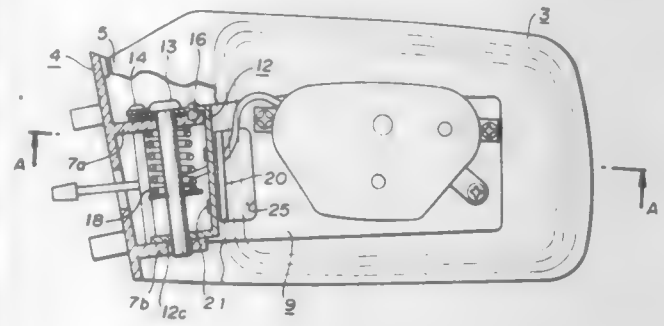
4,606,619

REAR-VIEW MIRROR FOR VEHICLES

Toharu Yamana, Fujieda, Japan, assignor to Murakami Kaimeido Co., Ltd., Shizuoka, Japan

PCT No. PCT/JP84/00066, § 371 Date Nov. 27, 1984, § 102(e) Date Nov. 27, 1984, PCT Pub. No. WO85/00788, PCT Pub. Date Feb. 28, 1985
PCT Filed Feb. 24, 1984, Ser. No. 682,049
Claims priority, application Japan, Aug. 12, 1983, 58-124399
Int. Cl.[4] G02B *7/18*
U.S. Cl. 350—604 **9 Claims**

1. A rear-view mirror, the mirror body of which is attached to its base so that said mirror body can be folded backward or forward with respect to said base, comprising arms provided on said base, a body support fastened to the inside of said mirror body, said arms and said body support being connected with each other through the intermediary of a hinge bracket



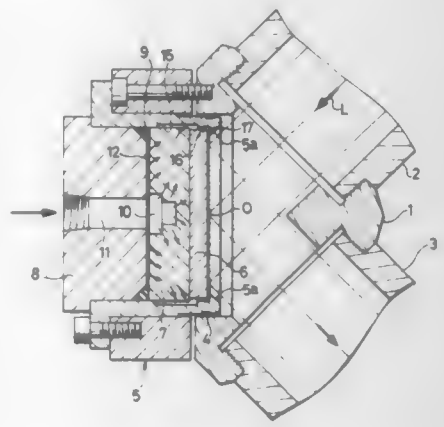
having two hinge shafts at the front and rear thereof, and means for keeping said mirror body in a folded state being disposed between at least one of said arms and said hinge bracket.

4,606,620

DEVICE FOR COOLING REFLECTING MIRROR

Yasuaki Nagano, Matsutoh, Japan, assignor to Shibuya Kogyo Co., Ltd., Kanazawa, Japan

Filed Oct. 16, 1985, Ser. No. 787,839
Int. Cl.[4] G03B *5/08*
U.S. Cl. 350—610 **7 Claims**



1. A reflecting mirror cooling device comprising a holder, a reflecting mirror accommodated in said holder for reflecting a laser beam, and a porous member also accommodated in said holder for permitting flow of a cooling medium and having a high thermal conductivity, said porous member being in contact with the back side of said reflecting mirror opposite a laser beam reflecting surface, said porous member having a bore coincident with the center of said reflecting surface, at which said laser beam is reflected, and open on the side opposite said reflecting mirror, said reflecting mirror cooling device being further provided with a fluid passage for supplying a cooling fluid into said bore of said porous member and a discharge passage for discharging the cooling medium having flown from said bore in said porous member through said porous member to the outer periphery thereof.

4,606,621

DEVICE FOR REGULATING THE INCLINATION OF THE INDIVIDUAL RODS WITH RESPECT TO THE FRONT PART OF A GLASSES FRAME

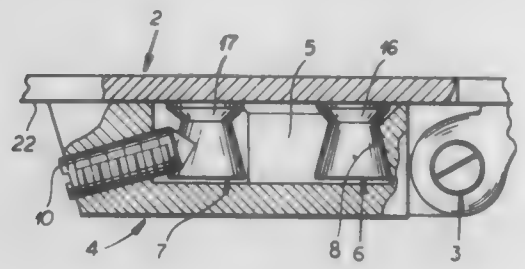
Giorgio Nannini, via Grandi 153, Modena, Italy

Filed Sep. 12, 1984, Ser. No. 650,294
Int. Cl.[4] G02C *5/20, 5/14*
U.S. Cl. 351—115 **4 Claims**

1. A device for regulating the inclination of individual temple rods with respect to a front part of an eyeglass frame, said device comprising:

a hinge element pivoted to said front part of said eyeglass frame and capable of rotating around a hinge axis fixed with respect to said eyeglass frame and provided with a cavity of elongated form;

a first truncated cone projecting pin disposed within said cavity and connecting over a part of a truncated cone lateral outer surface a complementary connection seat formed in said cavity, said first pin having an axis substantially perpendicular to the hinge axis; and



a second truncated cone projecting pin disposed within an enlargement of said cavity with play, said second pin having an axis and being positioned with respect to said cavity through the combined action of two parallel adjusting and locking screws moving in respective clearance threaded holes formed in the said hinge element and acting by means of respective ends, on two parts of a truncated cone lateral surface of said second pin on opposite sides of a common plane containing the axes of said first and second pins.

4,606,622

MULTI-FOCAL SPECTACLE LENS WITH A DIOPTRIC POWER VARYING PROGRESSIVELY BETWEEN DIFFERENT ZONES OF VISION

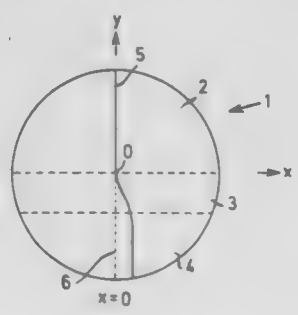
Gerhard Fuëter, Ellwangen, and Hans Lahres, Aalen, both of Fed. Rep. of Germany, assignors to Carl-Zeiss-Stiftung, Heidenheim/Brenz, Oberkochen, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 258,995, Apr. 30, 1981, abandoned. This application Jan. 13, 1984, Ser. No. 570,589

Claims priority, application Fed. Rep. of Germany, May 2, 1980, 3016935

Int. Cl.⁴ G02C *7/06*

U.S. Cl. 351—169 **23 Claims**



1. A multi-focal continuous-focus spectacle lens with dioptric power varying progressively between different zones of vision and having a progressive surface which has an intermediate progressive zone between a far-vision zone and a nearvision zone, said surface being aspherical and being based on a non-linear principal sight line which is inclined toward the nose at least in its course through the progressive zone, the curvature of said surface at each horizontal section taken through said lens being substantially symmetrical on opposite sides of the intercept of said each horizontal section with the principal sight line; whereby, for binocular viewing through a suitably corrected pair of such lenses, and whatever the instantaneous horizontal deflection of the eyes to view an object in any of said zones, each eye views the object through its associated spectacle lens via substantially the same lens curvature.

4,606,623

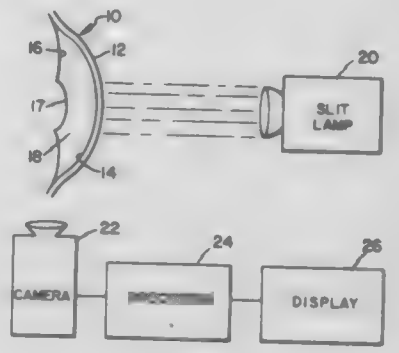
METHOD FOR MEASURING INTRAOPERATIVE AND IMMEDIATE POSTOPERATIVE EFFECTS OF RADIAL KERATOTOMY

Ronald A. Schachar, 1020 Highway 75 North, Denison, Tex. 75020

Filed Oct. 30, 1981, Ser. No. 316,665

Int. Cl.⁴ A61B *3/10*

U.S. Cl. 351—212 **9 Claims**



1. A method for measuring intraoperative and immediate postoperative effects of astigmatic correctional surgery and radial keratotomy, comprising:

measuring the preoperative thickness of the cornea;

measuring the preoperative radius of curvature of the posterior surface of the cornea;

measuring the radius of curvature of the posterior surface of the cornea when edema is present as a result of surgery, the radius of curvature of the posterior surface of the cornea not substantially altered by edema; and

determining the anterior radius of curvature of the cornea that will result after the cornea has healed and returned to the preoperative thickness.

4,606,624

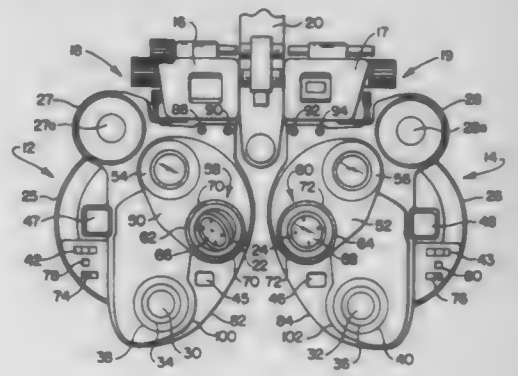
REFRACTOR HAVING SIMPLIFIED CYLINDER LENS ASSEMBLY

David E. Wood, Grove City, Ohio, assignor to R. H. Burton Company, Grove City, Ohio

Filed Oct. 13, 1983, Ser. No. 541,552

Int. Cl.⁴ A61B *3/02*

U.S. Cl. 351—234 **5 Claims**



1. A refractor of the type having a housing which has a patient eye position for viewing along a sight axis extensible therethrough;

a pair of superimposed cylinder lens assemblies within said housing, each assembly having carriers rotably mounted for rotation about a common axis, each said carrier retaining a plurality of rotable lens cells containing at least one lens;

means for positioning select said lens cells into an aligned orientation with said sight axis;

axis control means engageable with a positioned said cylinder lens cell for effecting the rotation to a select cylinder axis orientation;

a cross-cylinder assembly operative in axis and power modes

mounted upon said housing and having cross-cylinder lens means with a select power axis, rotable lens mount means supporting said cross-cylinder lens means and movable to position said cross-cylinder lens in alignment with said sight axis;

means coupling said cylinder lens assemblies and said cross-cylinder assembly to synchronously maintain their axes in parallel at all times;

the improvement comprising:

said positioning means including an internally threaded cylinder axis drive gear having a lock shaft, said gear located outside of said housing and having its lock shaft extending through an opening in said housing coincident with said carriers' common axis, said shafted cylinder axis drive gear riding upon bearing means disposed between it and said housing;

said housing opening for said lock shaft having a sleeve within said housing circumscribing said opening, there being an annular space between said lock shaft and said sleeve, said sleeve retaining first bearing means followed by a first said carrier, the shaft of a shafted cell drive gear fitting between the annular space formed between said sleeve and said lock and locking onto said lock shaft for synchronous movement of said cell drive gear and said axis drive gear, there being bearing means between said cell drive gear and said first carrier;

a second said carrier then fitting over said lock shaft, there being bearing means disposed between said second carrier and said cell drive gear;

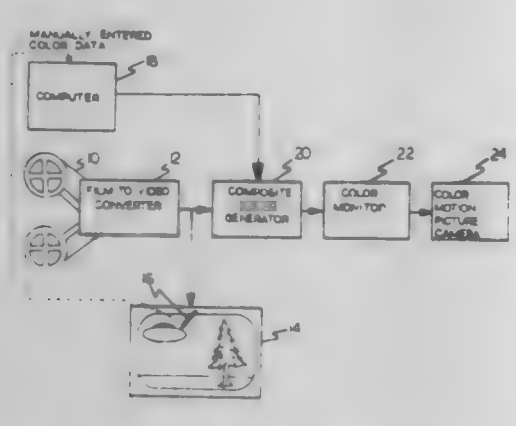
a threaded pin which screws into said internal threads in said lock shaft to secure both said cylinder lens assemblies to said housing.

4,606,625

METHOD FOR COLORIZING BLACK AND WHITE FOOTAGE

David M. Geshwind, 184-14 Midland Parkway, Jamaica, N.Y. 11432

Filed May 9, 1983, Ser. No. 492,816
Int. Cl.[4] G03B *19/18, 21/32;* H04N *1/46*
U.S. Cl. 352—38 **14 Claims**



1. A method of colorizing a series of black and white frames having relatively high resolution and containing only black and white information in a motion picture motion sequence, comprising the steps of:

(a) generating color information for a single frame in a sequence,

(b) blurring all portions of all said color information, and

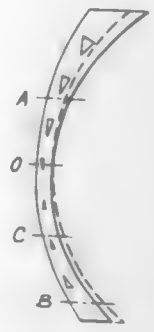
(c) combining said blurred color information with said relatively high resolution black and white information to generate a colored frame corresponding to said black and white frame and having high density luminence information and low deposing color information.

4,606,626

PROGRESSIVE MULTIFOCAL OPHTHALMIC LENSES WITH PRISM FOR CORRECTING CHROMATIC ABERRATION

Toshihide Shinohara, Suwa, Japan, assignor to Seiko Epson Corporation, Tokyo, Japan

Filed Dec. 5, 1983, Ser. No. 557,978
Claims priority, application Japan, Dec. 13, 1982, 57-218004; Jul. 29, 1983, 58-138768
Int. Cl.[4] G02C *7/06*
U.S. Cl. 351—169 **10 Claims**



1. A progressive multifocal ophthalmic lens comprising a lens surface have a far vision viewing zone, a near vision viewing zone and an intermediate vision viewing zone disposed intermediate said far and near vision viewing zones, said far vision viewing zone having a prescription for correcting myopia in a wearer, and a prism having a base added to said lens, said prism altering the chromatic aberration of said lens, said base of said prism being in the direction of 90° to said lens surface, wherein the following relationship is present to improve the chromatic aberration altered by the addition of said prism to said lens:

$$Pt > -k \times (PW + ADD) - 0.2 \times \nu,$$

where $1.5 < k < 2.5$,

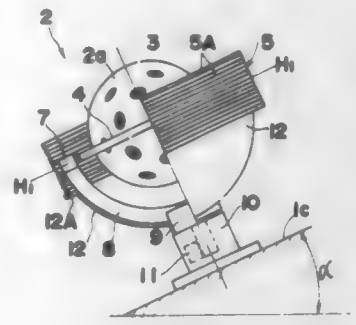
wherein "Pt" is the magnitude of said prism, "ν" is the Abbe's number of the lens material, "PW" is the power of said lens, and ADD is the additional power.

4,606,627

LIGHT SHUTTER MECHANISM FOR PLANETARIUM

Masamitu Hattori, Toyokawa, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Feb. 25, 1985, Ser. No. 704,835
Claims priority, application Japan, Apr. 24, 1984, 59-82686
Int. Cl.[4] G09B *27/00*
U.S. Cl. 353—88 **18 Claims**



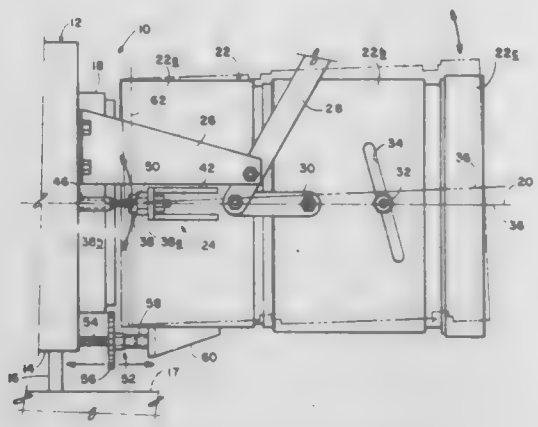
1. In a planetarium having a lens projector with variable projecting direction and a predetermined projection field angle, a light shutter machanism comprising a plurality of inwardly slanted annular plate memebers positioned in surrounding relation to the lens projector and stacked at prescribed intervals in substantially parallel relationship to each other for shielding light toward a region below a projection limit while allowing passage of light toward a region above the projection limit.

4,606,628

VIDEO PROJECTOR LENS ANGULATION MECHANISM

Dennis W. Vance, Portola Valley, Calif., assignor to Vivid Systems Incorporated, Fremont, Calif.

Filed Dec. 4, 1984, Ser. No. 678,151
Int. Cl.[4] G03B *3/00*
U.S. Cl. 353—101 8 Claims



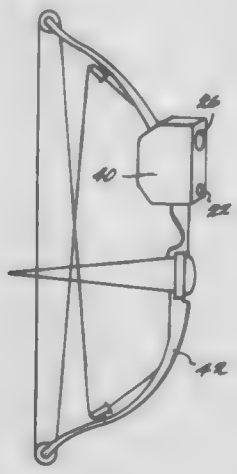
1. A lens angulation mechanism comprising:
projection means having a frame;
a projection lens with front and rear ends;
support means operatively interposed between said lens and said frame, said support means including a universal hinge having one element mounted adjacent said rear end of said lens and another element mounted on said frame and allowing movement in more than one plane, said support means further including horizontal lens rotation means and vertical lens rotation means for displacing said lens along horizontal and vertical axes; and
adjustment means for adjusting the inclination of said lens and positively holding said lens in an adjusted position.

4,606,629

LASER ARCHERY DISTANCE DEVICE

Robin H. Hines; Michael R. Glasscock; D. Bruce Johnson, all of Tullahoma, and Paul L. Plummer, Nashville, all of Tenn., assignors to Quantime, Inc., Tullahoma, Tenn.

Filed Dec. 13, 1983, Ser. No. 560,978
Int. Cl.[4] G01C *3/00, 5/00;* F41G *1/00*
U.S. Cl. 356—1 9 Claims



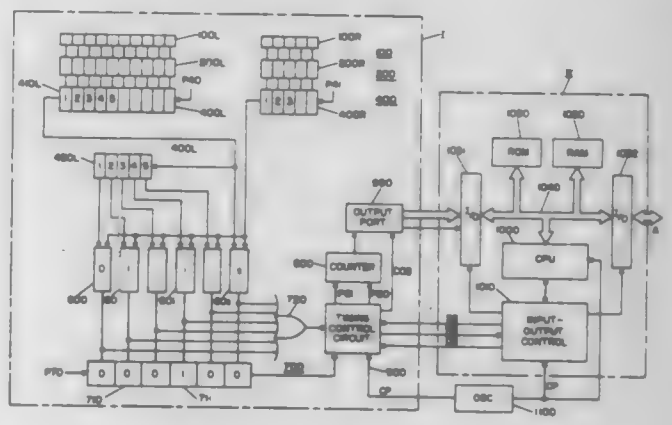
1. Apparatus for determining distance from a bow to a target comprising:
means for producing a beam of collimated light;
linear-shaped photosensitive means for producing an output signal indicating the linear position of an incident beam of reflected light, said linear-shaped photosensitive means comprising a linear photodiode producing first and second current signals the amplitudes of which vary with the position of the incident reflected beam;
means for mounting said light producing means and said photosensitive means adjacent to each other on a bow so that said beam is reflected from a target to said photosensitive means when the bow is aimed at said target and the linear position of the incident beam on the photosensitive means varies with the distance to said target; and
circuit means connected to said photosensitive means for receiving said output signal and producing an output indicating the distance to said target, said circuit means including:
(a) means for producing a train of clock pulses;
(b) an automatic gain control amplifier;
(c) switching means controlled by said clock pulses for alternatively applying the first and second current signals to said gain control amplifier;
(d) a single hold circuit for receiving the output of said gain control amplifier and controlled by said clock pulses to alternately produce an output indicating the respective amplitudes of said first and second current signals;
(e) a summing circuit for receiving said hold circuit output and controlling said gain control circuit in accordance with the sum of the amplitudes of said first, and second current signals;
(f) a difference circuit for receiving said hold circuit output and producing a difference output indicating the difference between the amplitudes of said first and second current signals and therefore the position of the incident beam; and
(g) means for displaying said difference output.

4,606,630

RANGEFINDER

Hiromu Haruki, Yokohama; Shotaro Yokoyama, and Takashi Nishibe, both of Yokosuka, all of Japan, assignors to Fuji Electric Corporate Research and Development Co., Ltd. and Fuji Electric Company, Ltd., both of, Japan

Filed Jul. 10, 1984, Ser. No. 629,318
Claims priority, application Japan, Jul. 14, 1983, 58-128452
Int. Cl.[4] G03B *3/00;* G01C *3/00*
U.S. Cl. 356—1 7 Claims



1. A rangefinder comprising a pair of optical sensor arrays, each sensor array having a plurality of optical sensors for receiving light from an object through spaced light paths and generating signal trains representing the distribution of light intensity of a corresponding image of the object, a plurality of evaluative signals generating circuits for combining both signal trains from the optical sensor arrays in a manner so that the signal trains are delayed by a number corresponding to a number of optical sensors in the arrays and for generating signals in parallel representing the correlation between both the signal trains at the delay intervals, an optimum delay decision circuit for determining an optimum delay corresponding to the highest correlation between both the signal trains among the plurality of the evaluative signals, range signal computing circuit means for computing a range signal representing the range of the object from the optimum decision circuit output delay, and control circuit means responsive to the range signal for controlling a selected portion of a device for utilizing the range signal wherein the evaluative signal generating circuits and the optimum delay decision circuit are incorporated in a first

circuit device, and the control circuit means is incorporated in a second circuit device arranged separately from the first circuit device, the first circuit device being responsive to a command from the second circuit device to initiate a range determination and to transmit a range signal after determining the optimum delay.

4,606,631

PARTICLE COUNTER

Gousuke Anno, and Yoshinori Suzuki, both of Yokohama, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

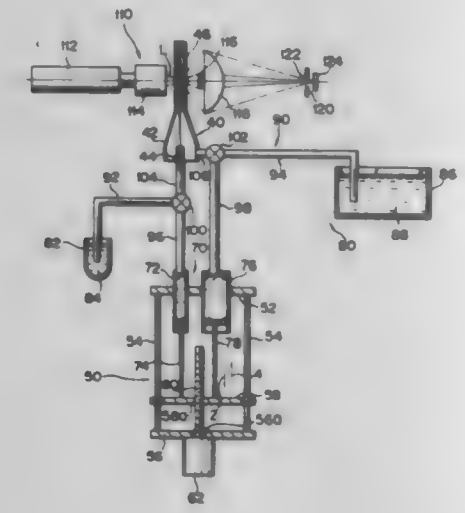
Filed May 4, 1984, Ser. No. 607,311

Claims priority, application Japan, May 12, 1983, 58-83422; May 12, 1983, 58-83423

Int. Cl.[4] G01N *33/49, 1/14*

U.S. Cl. 356—39

9 Claims



1. A grain counter for forming a water sheath consisting of two flows of solution one of which is a flow of sample solution and the other of which is a flow of sheath solution existing around the flow of sample solution and sensing the state of the grains contained in the flow of sample solution, comprising:

a sample solution receptacle for storing therein a sample solution,

a sheath solution receptacle for storing therein a sheath solution,

a flow cell having an inner tube connected to said sample solution receptacle and an outer tube connected to said sheath solution receptacle and forming a flow of said sheath solution fed into said outer tube around a flow of said sample solution fed into said inner tube thereby producing a water sheath consisting of said two flows of solution,

a measuring means for sensing the state of the grains contained in said flow of sample solution of said water sheath,

a first syringe pump having a first plunger and sucking said sample solution from said sample solution receptacle by the movement of said first plunger and feeding said sample solution into said inner tube of said flow cell,

a second syringe pump having a cross sectional area greater than that of said first syringe pump, said second syringe pump having a second plunger and sucking said sheath solution from said sheath solution receptacle by the movement of said second plunger and feeding said sheath solution into said outer tube of said flow cell,

a connecting member to which said first and second plungers are mechanically connected,

a drive means for moving said connecting member, thereby moving said first and second plungers at the same speed,

a first three-way valve,

a second three-way valve,

first, second, and third pipes connecting said first three-way valve to the sample solution receptacle, said first syringe pump, and said inner tube, respectively, and

fourth, fifth, and sixth pipes connecting said second three-way valve to the sheath solution receptacle, said second syringe pump, and said outer tube, respectively,

whereby, when said first or second syringe pump sucks said sample solution or sheath solution in said sample solution receptacle or sheath solution receptacle, respectively, said first or second three-way valve is set so as to allow the communication between said first and second pipes, or the communication between said fourth and fifth pipes, and whereby, when said first and second syringe pump feeds said sample solution or sheath solution, respectively, into said inner tube or outer tube, said first and second three-way valves are respectively set so as to allow the communication between said second and third pipes, or the communication between said fifth and sixth pipes.

4,606,632

METHOD OF MEASURING IMPULSE DURATIONS, ERROR LOCATIONS AND ATTENUATION (OR ABSORPTION) ON CABLES AND LIGHTWAVE CONDUCTORS

Bernd Hillerich, Ulm, Fed. Rep. of Germany, assignor to Philips Kommunikations Industrie AG, Fed. Rep. of Germany

Division of Ser. No. 356,479, Mar. 9, 1982, Pat. No. 4,527,113.

This application Jan. 24, 1985, Ser. No. 682,142

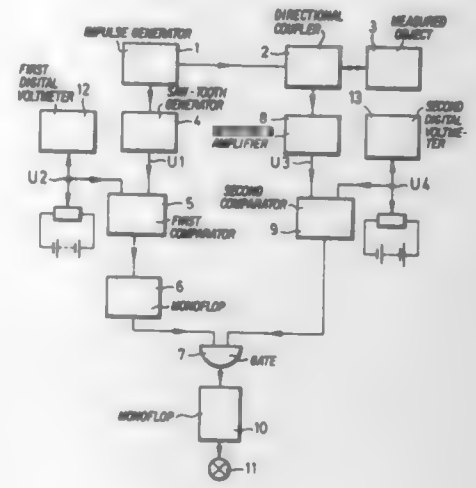
Claims priority, application Fed. Rep. of Germany, Apr. 15, 1981, 3115200

The portion of the term of this patent subsequent to Jul. 2, 2002, has been disclaimed.

Int. Cl.[4] G01N *21/88*

U.S. Cl. 356—73.1

7 Claims



1. A method for measuring fault locations in a light wave conductor and light pulse transit time to and from the fault being measured, including a generator for generating light impulses which are fed into the light wave conductor through a directional coupler which also separates the impulses reflected back from the light wave conductor to a detector, and a saw-tooth generator for generating a saw-tooth signal upon the receipt of each impulse from said generator, comprising the steps of:

comparing the amplitude of said saw-tooth signal to a predetermined adjustable first direct current voltage and generating a first impulse signal when said amplitude exceeds said first direct current voltage;

comparing the output voltage from said detector to a predetermined adjustable second direct current voltage and generating a second impulse signal when the output voltage of said detector exceeds said second direct current voltage;

detecting the time coincidence of said first and second impulse signals and producing a third impulse signal when said first and second impulse signals coincide in time; and

displaying said time coincidence of said first and second impulse signals, whereby said time coincidence corresponds to the light pulse transit time and the fault location of said light wave conductor.

4,606,633

TEST METHOD FOR EVALUATING FAULTS ON PRINTED SHEETS AND WEBS AND APPARATUS FOR PERFORMING THE METHOD

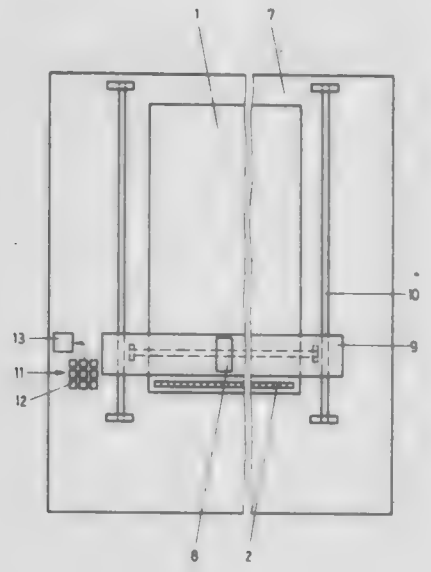
Willi Jeschke, Heidelberg, and Gerhard Löffler, Weisenheim/-Sand., both of Fed. Rep. of Germany, assignors to Heidelberger Druckmaschinen AG, Heidelberg, Fed. Rep. of Germany

Filed Jul. 14, 1978, Ser. No. 924,812

Claims priority, application Fed. Rep. of Germany, Jul. 14, 1977, 27318429

Int. Cl.[4] G01N *21/32*

U.S. Cl. 356—237 11 Claims



1. Method of evaluating faults on printed sheets which comprises:

printing four test fields one of which is a full tone field and the other three are line screen test fields having screen lines disposed at varying angles yet exhibiting equal screen width and equal screen tone values in an ink film from which the test fields are printed,

detecting reflectance values of the test fields by a measuring technique,

mathematically determining the screen tone value in a print, deducting any effect of slip and mackling from the measured four reflectance values or from the screen tone values in the three line screen test fields ascertainable therefrom; and selectively indicating these values.

4,606,634

SYSTEM FOR DETECTING SELECTIVE REFRACTIVE DEFECTS IN TRANSPARENT ARTICLES

Robert J. Bieringer, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Jul. 27, 1984, Ser. No. 634,930

Int. Cl.[4] G01N *21/41, 21/89*

U.S. Cl. 356—240 6 Claims

1. Method of inspecting transparent objects for refractive defects comprising producing a generally planar source of diffuse light of uniform brightness, positioning a lens of focal length F greater than 0 in front of the source thereby producing in front of the lens, an angular spectrum of beams that originate from points on the source that are of the same flux density, placing a mask over the source to limit the angular spectrum of illumination in front of the lens to angles where the intensity distribution is uniform and equal to or less than the angle θ_o between a line extending from the edge of the mask through the center of the lens and the axis of the lens, moving objects to be inspected normal to the lens axis in front of the lens, thereby optically enhancing refractive defects having angles greater than θ_o and discriminating defects from gradual refractive variations having angles less than θ_o, and viewing the objects with a linear array camera focused on the surface of the object to thereby detect those refractive defects

having angles greater than θ_o by variations in the level of light received by the camera.

4,606,635

DEFECT DETECTING METHOD AND SYSTEM

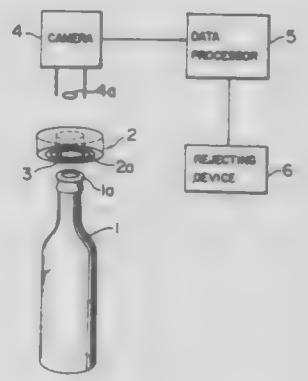
Takashi Miyazawa; Hiroyuki Fukuchi, and Sosuke Tateishi, all of Tokyo, Japan, assignors to Kirin Beer Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 24, 1985, Ser. No. 694,627

Claims priority, application Japan, Jan. 31, 1984, 59-15870

Int. Cl.[4] G01N *21/90*

U.S. Cl. 356—240 6 Claims



4. A system for detecting a defect in a part of an object, said part having a surface which is substantially a surface of revolution, said system comprising:

an illuminating device having an annular portion for emitting light rays, said annular portion being coaxially disposed with said surface of said part when said object is being examined;

image forming means for receiving light rays reflected at said surface of said part to form an image of said part, said image being constituted of pixels corresponding to the respective positions of said surface of said part;

storage means for storing signals having a value indicative of the brightness of said pixels in relation to the respective positions of said pixels in said image;

means referring to the stored signals to repeatedly read out, as a set of signals, a predetermined number of the signals of the pixels positioned along an imaginary line extending radially through a central point in said image corresponding to the axis of said surface of said part and positioned and distributed within a radial range extending along said imaginary line; and

judging means for judging whether or not there is a defect in accordance with comparison of the signals of each set with a preset value, and with comparison between signals

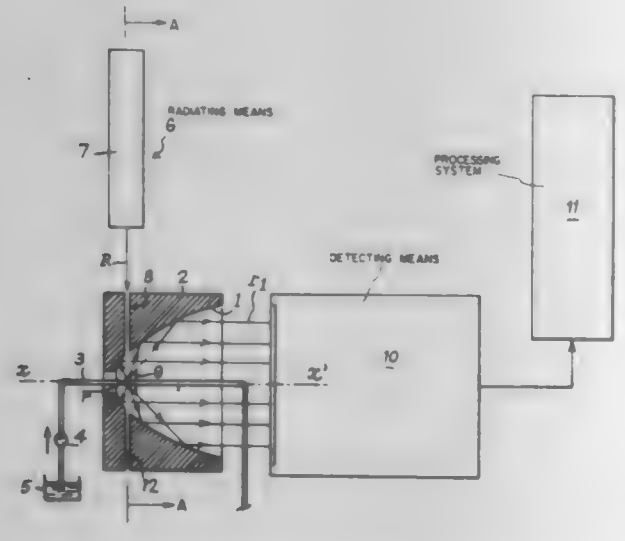
of two sets which are positioned along two of said imaginary lines which are proximate to each other.

4,606,636

OPTICAL APPARATUS FOR IDENTIFYING THE INDIVIDUAL MULTIPARAMETRIC PROPERTIES OF PARTICLES OR BODIES IN A CONTINUOUS FLOW

Jean Monin; Bernard Faure; Georges Soldat, and Jean-Claude Healy, all of Saint-Etienne, France, assignors to Universite de Saint-Etienne, France

Filed Oct. 25, 1983, Ser. No. 545,100
Int. Cl.[4] G01N *21/49*
U.S. Cl. 356—338 12 Claims



1. An optical apparatus for identifying individual multiparametric properties of particles or bodies moving in a continuous flow, said apparatus comprising:

an open-ended, non divergent quadric reflector having a focal point,

a transparent, continuous capillary tube passing through said focal point of said reflector and providing for the movement, individually, of particles in suspension in a fluid medium,

radiating means capable of directing a beam of radiation normal to the direction of particle movement in said capillary tube through said focal point, said beam of radiation upon striking said particle producing different rays,

a mask obstructing a portion of said diffracted rays scattered by a particle intersecting the incident beam of the radiating means at the reflector focus and not striking the reflector,

a detecting means for receiving the various reflected scattered rays for producing a signal thereof,

and means for processing and using said signals supplied by said detecting means.

4,606,637

DITHERED RING LASER GYROSCOPE WITH RESIDUAL LOCK-IN ERROR COMPENSATION

John A. Geen, Berkshire, England, assignor to British Aerospace Public Limited Company, London, England

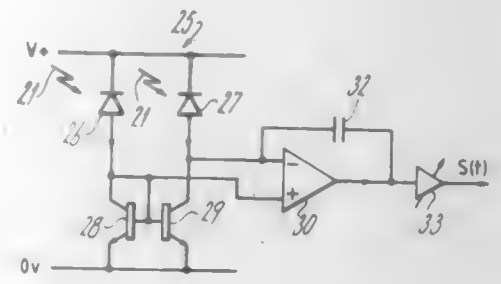
Filed Aug. 26, 1983, Ser. No. 526,870
Claims priority, application United Kingdom, Aug. 26, 1982, 8224583
Int. Cl.[4] G01C *19/64*
U.S. Cl. 356—350 5 Claims

1. A dithered ring-laser gyroscope wherein an oscillatory non-reciprocal phase change is imparted to the clockwise and counterclockwise components of the gyroscope laser beam to reduce lock-in errors of the rotation-sensitive output signal of the gyroscope, the gyroscope comprising residual lock-in error compensating means which includes:

receiving means coupled to the optical cavity of the gyroscope for receiving and combining respective portions of said beam components to form an interference fringe pattern;

two photo-sensors coupled to said receiving means for forming respective output signals indicative of the fringe intensity;

comparator means connected to said photo-sensors for forming a difference signal indicative of the difference between the photo-sensor output signals;



integrating means connected to the comparator means for integrating said difference signal with respect to time; and

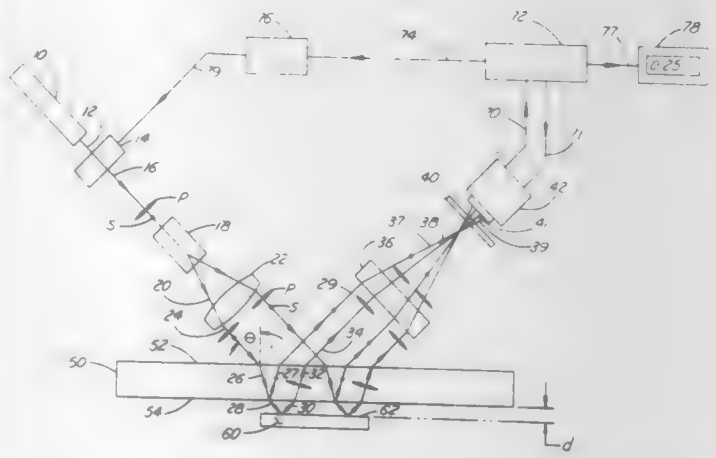
combining means connected to the integrating means and operable for algebraically summing the integrated difference signal from the integrating means with said rotation sensitive gyroscope output signal to form a compensated gyroscope output signal containing at least reduced residual lock-in errors.

4,606,638

DISTANCE MEASURING INTERFEROMETER AND METHOD OF USE

Gary E. Sommargren, Madison, Conn., assignor to Zygo Corporation, Middlefield, Conn.

Filed Nov. 3, 1983, Ser. No. 548,248
Int. Cl.[4] G01B *9/02*
U.S. Cl. 356—351 5 Claims



1. An optical interferometer system capable of measuring the absolute distance between a plano test surface and a plano reference surface which are in close proximity to each other comprising: (1) a source of a beam of coherent, single wavelength, linearly polarized energy; (2) means for varying the relative phase of the orthogonal polarization components of said beam; (3) means for spatially filtering and expanding the diameter of said beam; (4) means for converting said expanded beam into a reference wavefront comprised of one of the polarization components and a measurement wavefront comprised of the other polarization component, said expanded beam converting means (4) comprising a surface polarizer coating on a transparent substrate which is the reference surface in a Fizeau interferometer; (5) means for producing an interference pattern between said reference wavefront and said measurement wavefront after it interacts with the test surface; (6) means for photosensing the radiant energy of said interference pattern over a two-dimensional array of points over a time period of at least one full cycle of said phase modulation;

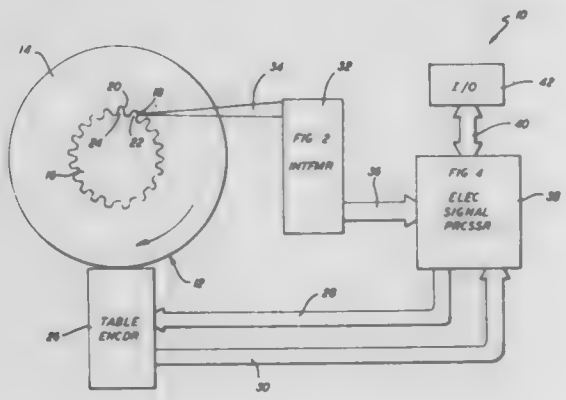
(7) means for imaging the test surface onto the photosensitive surface of said camera; and (8) means for converting said photosensed radiant energy in said interference pattern into the absolute distance between the test surface and said reference surface.

4,606,639

BROAD BANDWIDTH INTERFEROMETRIC GAUGING SYSTEM

Francois M. Mottier, West Hartford, and Martin C. Foster, Plantsville, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Dec. 17, 1984, Ser. No. 682,721
Int. Cl.[4] G01B *9/02*
U.S. Cl. 356—358 2 Claims



1. An optical gauge for measuring the distance between surfaces of a workpiece, comprising:

light source means, for providing an optical signal;

fixture means, for positioning the workpiece to provide transient registration of each workpiece surface with a measurement optical path, and for providing an encoder signal having incremental values indicative of incremental distances between moving surfaces;

optical interference means, for dividing said optical signal into first and second optical beams reflected along first and second optical paths, respectively, said first optical path being coincident with said measurement path for reflecting said first beam off each workpiece surface registered therewith, said interference means recombining said beams at the output of said optical paths producing optical interference in said recombined beam in the presence of registration of each workpiece surface at a selected spatial position in said measurement path;

means for providing an electrical signal equivalent of said optical interference; and

signal processing means, responsive to said encoder signal and to said electrical interference signal, and including memory means for storing signals, for

periodically sampling and storing in said memory means, samples of said electrical interference signal amplitude and said encoder signal incremental value associated therewith,

calculating a maximum amplitude value from among said plurality of sampled values stored in said memory means and identifying said stored encoder signal value associated therewith, and

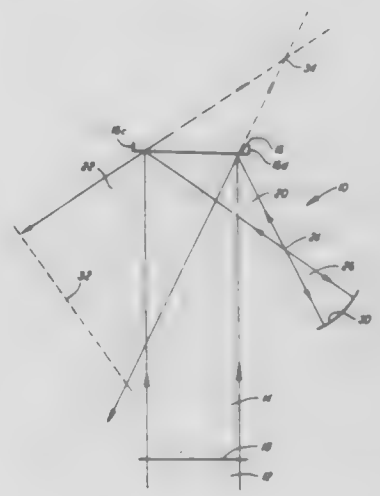
comparing a encoder value associated with a present maximum amplitude with the preceding encoder value associated with a preceding maximum amplitude to provide the signal difference value therebetween as indicative of the distance between successive workpiece surfaces.

4,606,640

METHOD AND APPARATUS FOR OPTICALLY TESTING CYLINDRICAL SURFACES

George E. Hirst, Irvine, Calif., assignor to The Perkin-Elmer Corporation, Norwalk, Conn.

Filed Apr. 2, 1984, Ser. No. 595,782
Int. Cl.[4] G01B *9/02*
U.S. Cl. 356—360 10 Claims



1. An apparatus for the optical evaluation of the figure quality of a cylindrical surface comprising:

means generating a planar monochromatic light wavefront;

a planar, blazed diffraction grating having a blazed order and an anti-blazed order to diffract a first order cylindrical wavefront in the blaze direction;

a cylindrical surface to be evaluated positioned to return said wavefront to the grating; and

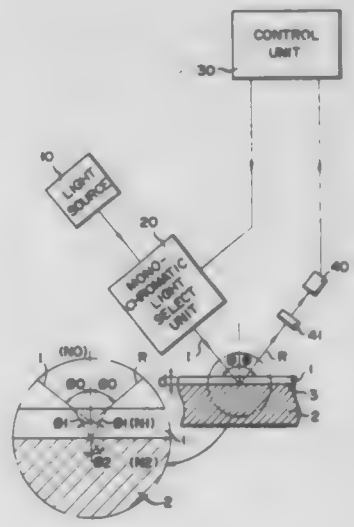
means located to intercept the first order diffraction cylindrical diverging wavefront from the grating in the anti-blaze direction which interferes with the specular reflected wavefront of the wavefront returned from said cylindrical surface to form fringe patterns on said means to intercept representative of the figure quality of the cylindrical surface.

4,606,641

APPARATUS FOR MEASURING FILM THICKNESS

Takeo Yamada, Yokohama, and Kousaku Takasaka, Kawasaki, both of Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 30, 1984, Ser. No. 645,924
Claims priority, application Japan, Aug. 31, 1983, 58-159981
Int. Cl.[4] G01B *11/06;* G01N *21/21*
U.S. Cl. 356—369 4 Claims



1. An apparatus for measuring a film thickness, comprising:

a light source for emitting light having continuous spectral components;

polarization controlling means for polarizing the light along

a predetermined direction and radiating polarized light onto the object;

a photodetector for detecting an amount of light reflected by the object and generating a light amount signal;

means for detecting data representing a wavelength of a spectral component in accordance with the light amount signal such that the amount of light reflected by the object and incident on the photodetector becomes zero; and

film thickness calculating means for calculating the thickness of the film formed on the object in accordance with the detected data.

4,606,642

MEASURING ARRANGEMENT FOR THE CLEAR SCANNING OF AT LEAST ONE REFERENCE MARK ALLOCATED TO A GRADUATION

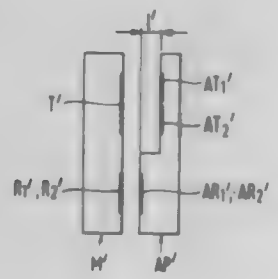
Guenther Nelle, Bergen, Fed. Rep. of Germany, assignor to Dr. Johannes Heidenhain GmbH, Traunreut, Fed. Rep. of Germany

Filed May 25, 1984, Ser. No. 614,333

Claims priority, application Fed. Rep. of Germany, Jul. 16, 1983, 3325803

Int. Cl.[4] G01B *11/14*

U.S. Cl. 356—374 11 Claims



1. In a measuring system for measuring the relative position of two objects, of the type comprising: a scale which defines a graduation and at least one reference mark absolutely positioned with respect to the graduation; a scanning unit which includes at least one scanning plate for scanning the graduation and the reference mark along respective optical paths and for generating reference pulses in response to the reference marks; and means for utilizing the reference pulses as an indication of absolute position; wherein the scale and the scanning plate are shiftable with respect to one another at a predetermined spacing therebetween; the improvement comprising;

at least one graduation scanning field defined by the at least one scanning plate;

at least one reference mark scanning field defined by the at least one scanning plate; and

means for providing a phase difference between (1) the optical path length between the graduation and the graduation scanning field and (2) the optical path length between the reference mark and the reference mark scanning field.

4,606,643

FINE ALIGNMENT SYSTEM

Wai-Ming Tam, Danbury, Conn., assignor to The Perkin-Elmer Corporation, Norwalk, Conn.

Filed Jun. 20, 1983, Ser. No. 505,592

Int. Cl.[4] G01B *11/00*

U.S. Cl. 356—401 7 Claims

1. An alignment system for use with lithographic projection systems comprising, in combination:

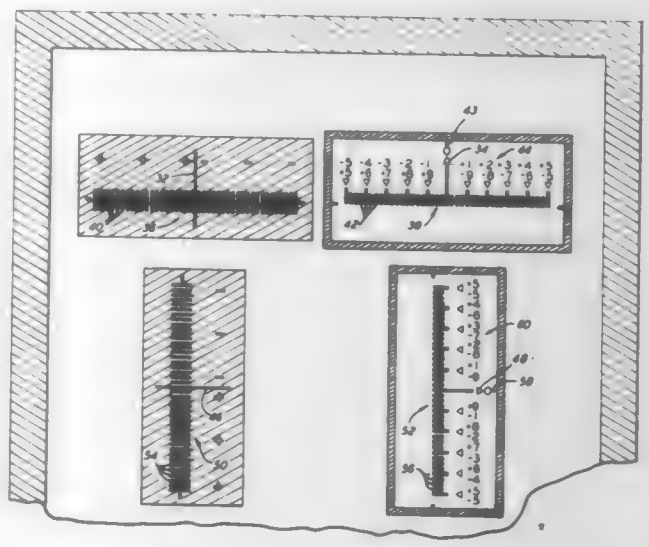
first indicia disposed on first and second members;

second indicia disposed on first and second members;

the space between said indicia when the first indicia of one member is projected onto the second indicia of the other member coarsely indicating the degree of misalignment between said members when making a fine motion alignment measurement;

a first scale disposed on said first and said second members, a said second scale disposed on said first and said second members;

each of said scales including a plurality of spaced fingers, all of said fingers being of substantially the same width;



the pitch of the fingers of one scale being different than the pitch of the fingers on the other scale so that when the first scale of one member is projected onto the second scale of the other member, the pair of fingers which coincide indicates a fine degree of fine motion alignment measurement from an alignment axis; and

one of said members being a test mask and the other of said members being a wafer-tool.

4,606,644

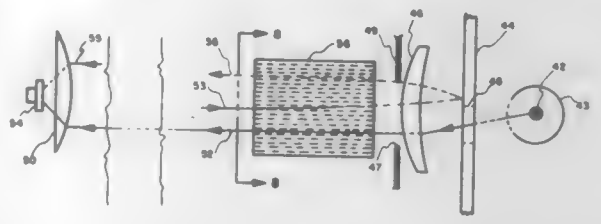
GAS MEASURING APPARATUS WITH MEANS TO REDUCE THERMAL RADIATION EFFECTS

Daniel A. Gordon, San Jose, Calif., assignor to Measurex Corporation, Cupertino, Calif.

Continuation of Ser. No. 513,189, Jul. 12, 1983, abandoned. This application Jul. 15, 1985, Ser. No. 755,222

Int. Cl.[4] G01N *21/00*

U.S. Cl. 356—438 6 Claims



1. A system for monitoring a gas in the presence of thermal radiation comprising:

(a) an optical system including a first source of a beam of radiation and a detector to receive the beam, said optical system being constructed so that the beam of radiation passes through the monitored gas;

(b) chopper means located between said first source and said detector and coupled to the optical system to chop the beam;

(c) a collimating lens located between said chopper means and said detector; and

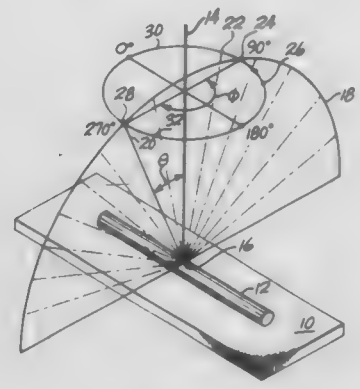
(d) radiation control means coupled to the optical system to prevent thermal radiation, which is generated by a second source of radiation located to the side of said lens opposite said first source, from traveling through said lens, thereafter reflecting from said chopper means, and thereafter being collimated by said collimating lens and impinging on said detector.

4,606,645

METHOD FOR DETERMINING LOCALIZED FIBER ANGLE IN A THREE DIMENSIONAL FIBROUS MATERIAL

Peter C. Matthews, Poole, England, and Jon F. Soest, Sumner, Wash., assignors to Weyerhaeuser Company, Tacoma, Wash.

Filed Oct. 29, 1984, Ser. No. 665,609
Int. Cl.[4] G01N *21/47*
U.S. Cl. 356—446 45 Claims



1. A method of measuring fiber angle in a fibrous material relative to three mutually orthogonal reference axes which comprises:

a. designating an arbitrary point on the surface of the material as the origin point of the axes;

b. illuminating an area on the surface of the material including the origin point with an incident beam of light;

c. sensing the light reflected from the illuminated area using a sufficient number of photosensing means located in space in order to measure the azimuthal angular intensity distribution around the origin point of the reflected light;

d. determining the azimuthal angular positions of the intensity maxima of the reflected light;

e. providing an algorithm relating said azimuthal angular positions of the reflected light maxima to the fiber angle; and

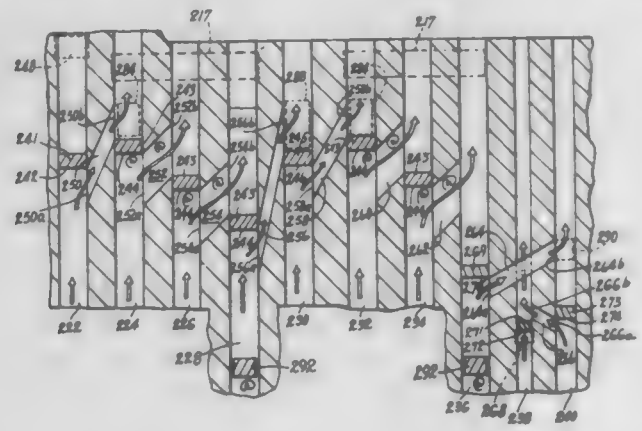
f. calculating the fiber angle relative to all three axes.

4,606,646

ROTARY PROCESSORS FOR DEVOLATILIZING MATERIALS

Pradip S. Mehta; Lefteris N. Valsamis, both of West Haven, Conn., and Zehev Tadmor, Haifa, Israel, assignors to USM Corporation, Flemington, N.J.

Division of Ser. No. 532,166, Sep. 14, 1983, Pat. No. 4,529,320.
This application Mar. 8, 1985, Ser. No. 709,893
Int. Cl.[4] B01F *5/12, 13/06*
U.S. Cl. 366—75 9 Claims



1. A rotary processor for processing viscous or viscoelastic liquid materials containing volatiles dispersed therein and comprising:

(a) at least two substantially annular devolatilizing channels carried by a rotatable element, each having opposed side walls extending radially inwardly from the surface of the rotatable element, and enclosed by a coaxial closure surface provided by a stationary element to provide annular devolatilizing passages;

(b) an inlet, an outlet and a blocking member for each passage, all associated with the stationary element, the blocking members extending into the devolatilizing channels to provide a material collecting end wall for each passage;

(c) a non-pressurizing transfer groove interconnecting each adjacent pair of devolatilizing passages, each transfer groove being formed in the closure surface and providing the outlet of an upstream passage and the inlet of a downstream passage to provide in-series operation of the devolatilizing passages;

(d) vacuum means operationally arranged to remove volatiles from the devolatilizing passages, to maintain a vacuum level in the devolatilizing passages to induce foaming of the material in the passages; and wherein

(e) the devolatilizing passages and the transfer grooves interconnecting them provide a spatial geometrical arrangement wherein the cross-sectional areas available for the passage of material through each devolatilizing passage and through each transfer groove are sufficiently large in relation to the volumetric processing rate of material in each passage and each transfer groove to assure that the material being processed occupies no more than a predetermined portion of the processing volume capacity of each devolatilizing passage and of the transfer volume capacity of each transfer groove; so that

(f) the material is carried through partially filled devolatilizing passages in a substantially plug-flow fashion, providing periods of time during which the material under vacuum undergoes substantially no shearing or pressurization, permitting substantially unrestrained formation and growth of bubbles within the material; and

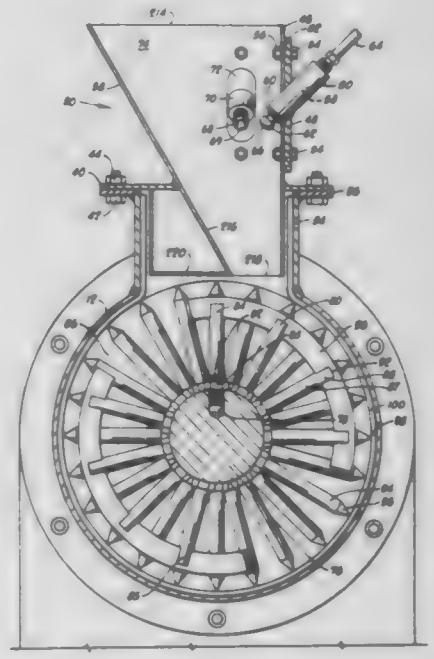
(g) the material passes through partially filled transfer grooves, permitting shearing of the material at nonpressurizing shearing zones within each transfer groove and at the end wall of each passage except the most downstream passage so that the bubbles are ruptured and the volatiles released with minimal repressurization of the material and minimal redissolution of the volatiles.

4,606,647

PIN MIXER

James A. Frye, c/o Los Alamos Technical Associates, Inc., P.O. Box 410, Los Alamos, N. Mex. 87544

Filed Aug. 17, 1984, Ser. No. 641,747
Int. Cl.[4] B01F *15/02, 7/08*
U.S. Cl. 366—150 41 Claims



1. An apparatus for mixing materials comprising:

an enclosure defining a cavity therein and having an inlet and an outlet;

a rotor rotatably disposed in said enclosure; and

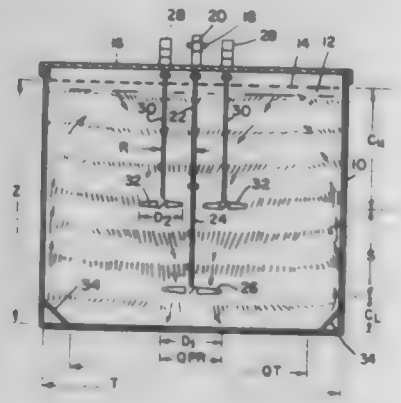
a plurality of spaced pins extending radially outwardly from said rotor and forming a plurality of helices around, and axially along, said rotor for mixing and moving said materials from said inlet to said outlet, wherein the pins forming each helix are angularly and axially staggered such that any pin on one helix is angularly displaced with respect to adjacent pins on the other helices at an angle less than the angular displacement between pins on a single helix.

4,606,648

CLUSTERED MIXING SYSTEM

Chandler K. Coyle, Pittsford, and Ronald N. Salzman, Rochester, both of N.Y., assignors to General Signal Corporation, Stamford, Conn.

Filed Jul. 31, 1984, Ser. No. 636,329
Int. Cl.[4] B01F *7/22*
U.S. Cl. 366—300
27 Claims



1. A mixer for fluids comprising:

a vessel having a fluid therein;

a first mixing means having a first impeller of a first diameter in a first plane in said vessel and having a vertical axis of rotation;

a plurality of second mixing means, each having a second impeller of a second diameter smaller than said first diameter, in a second plane in said vessel, and having a vertical axis of rotation spaced radially from said vertical axis of said first mixing means; and

a plurality of drive means connected to said first and second mixing means for individually and independently rotating said first and second impellers to combine their flow patterns to produce single flow pattern in said fluid in said vessel.

4,606,649

ASSEMBLY FOR CONCURRENT THERMOGRAVIMETRY AND DIFFERENTIAL THERMAL ANALYSIS

Shaheer A. Mikhail, Nepean, Canada, assignor to Her Majesty the Queen in right of Canada, as represented by the Minister of Energy, Mines and Resources, Ottawa, Canada

Filed Jan. 14, 1985, Ser. No. 690,946
Int. Cl.[4] G01N *25/00*
U.S. Cl. 374—10
2 Claims

1. Assembly for concurrent TG-DTA measurement comprising

(a) a furnace for providing a controlled temperature program;

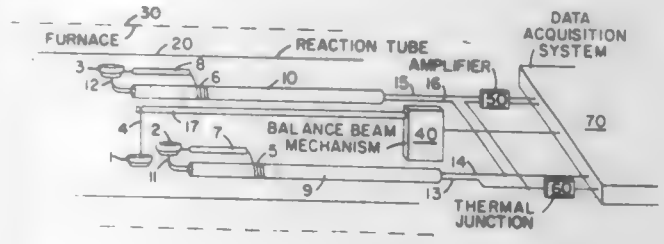
(b) three containers comprising crucibles substantially identical in size and shape to one another for respectively supporting a first active sample of a material to be analysed, a second active sample of said material and a third reference sample of an inert material, said first and second samples being substantially identical to each other in amount and shape;

(c) a balance beam for weighing a first of said containers supporting said first sample while located in the furnace and providing a first output signal representative of said weight;

(d) means mounting a second and a third of said containers respectively supporting said second and third samples in the furnace in the vicinity of the first sample;

(e) a pair of thermocouples in contact with respective ones of said second and third containers;

(f) circuit means for providing a second output signal representative of the difference in temperature of said second



and third samples and for providing a third output signal representative of the temperature of the second sample; and

(g) a data acquisition system connected to receive said output signals for plotting the first and third output signals against each other to provide a TG measurement and for plotting the second and third output signals against each other to provide a DTA measurement;

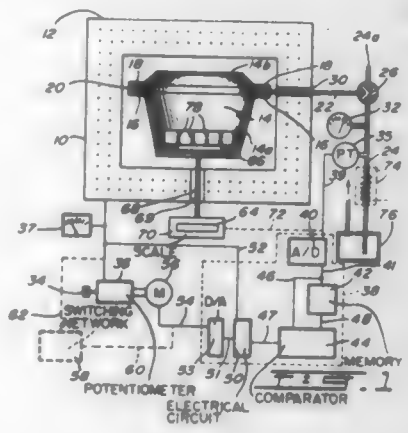
(h) wherein the balance beam, the thermocouples and the three containers are located in a reaction tube of the furnace closely surrounding the three containers, the balance beam and said means mounting the second and third containers all entering the tube from a single end thereof.

4,606,650

MICROWAVE, A CLOSED VESSEL AND METHODS OF DETERMINING VOLATILE MATERIAL CONTENT

Robert G. Harris, Montreal, Canada, assignor to Domtar Inc., Montreal, Canada

Filed Nov. 26, 1984, Ser. No. 674,981
Int. Cl.[4] G01N *25/02*; G01G *23/00*
U.S. Cl. 374—14
12 Claims



1. A microwave vacuum oven for rapidly determining the volatile material content in samples susceptible to damage due to pyrolysis and heat degeneration comprising in combination: a vacuum chamber for receiving at least one open sample container containing at least one sample to be tested, and in combination therewith, a microwave source for rapidly liberating volatile material from said at least one sample, adjusting means for varying the energy emitted from said microwave source, a valve means connected to said chamber for alternatively creating a vacuum in said chamber or releasing from said chamber said vacuum, or releasing from said chamber said vacuum, means to detect the liberation of the volatile material out of said vacuum chamber, means to determine the rate of

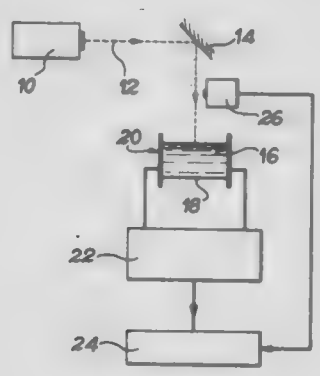
volatilization of said sample, means to convert said rate of volatilization as a signal, and to convey and sense said signal to a control means to determine said rate of volatilization of said at least one sample over time, and wherein (said adjusting means responsive to) said control means delivers an input to said adjusting means, whereby said adjusting means automatically varies the energy emitted from said microwave source, whereby upon vacuum conditions and initial heating the rate of volatilization decreases, and at near a point of inflection when said rate of volatilization decreases, said control means actuates said adjustment means to lower said microwave energy, while maintaining said vacuum in said chamber throughout until said means to detect liberation of the volatile material out of said vacuum chamber detects complete liberation of the volatile material out of said vacuum chamber, and thereafter releasing from said chamber, said vacuum with said valve means.

4,606,651

ENERGY MEASURING PROCESS AND APPARATUS

Oleg Anitoff, Bievres, France, assignor to Commissariat a l'Energie Atomique, Paris, France

Filed Oct. 26, 1982, Ser. No. 436,794
Claims priority, application France, Nov. 10, 1981, 81 21024
Int. Cl.⁴ G01K *17/20*
U.S. Cl. 374—32 **12 Claims**



1. A process for the fast measurement of energy contained in an energy beam, comprising the steps of:

supplying said beam to a material having a high dipole moment and dipoles which can be freely oriented, said material being placed between two armatures of a frequency tuning capacitor of a frequency oscillator and being able to absorb the energy contained in said beam, the interaction between said beam and said material leading to a variation of the dielectric constant of said material; and

measuring the variation of the oscillation frequency of said oscillator, said frequency variation being proportional to said variation of the dielectric constant of said material and using said variation of the oscillation frequency of said oscillator as an indication of the energy contained in said energy beam.

4,606,652

SHAFT SEAL FOR TURBOMACHINERY

Judson S. Swearingen, Malibu, Calif., assignor to Rotoflow, Corporation, Los Angeles, Calif.

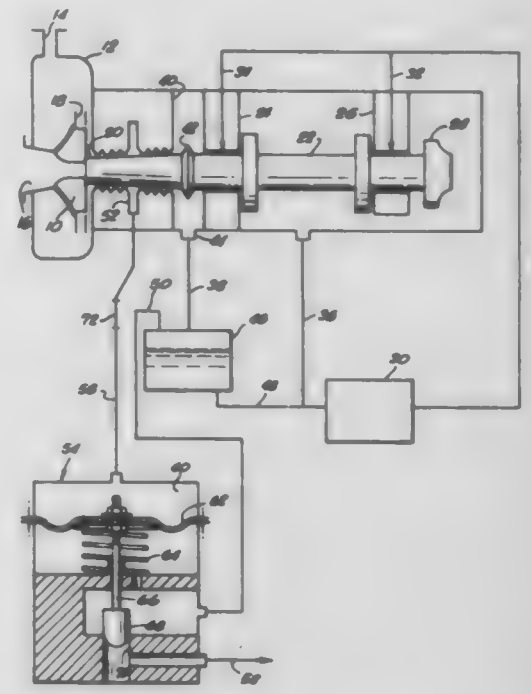
Filed Jun. 20, 1984, Ser. No. 622,703
Int. Cl.⁴ F16C *33/72*; F01M *9/00*
U.S. Cl. 384—130 **8 Claims**

1. A shaft seal for turbomachinery having a rotatably mounted shaft, a pressure lubricated bearing supporting said shaft and pressurized working fluid, comprising

a labyrinth seal between the bearing and the source of pressurized working fluid and about the shaft, said labyrinth seal having an annular groove intermediate the ends of said labyrinth seal;

an outlet between the bearing and said labyrinth seal; and

a control valve including a diaphragm, a first side of said diaphragm being in pressure communication with said annular groove and a second side of said diaphragm being in pressure communication with said outlet, bias means for



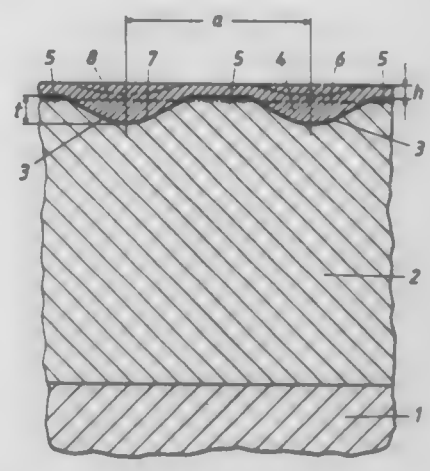
biasing said diaphragm in the direction of said first side and a valve controlled by said diaphragm to selectively vent said outlet.

4,606,653

HIGH-DUTY SLIDING SURFACE BEARING

Otto Ehrentraut, Gmunden, and Ulf G. Ederer, Laakirchen, both of Austria, assignors to Miba Gleitlager Aktiengesellschaft, Laakirchen, Austria

Filed Feb. 15, 1985, Ser. No. 702,364
Claims priority, application Austria, Feb. 27, 1984, 627/84
Int. Cl.⁴ F16C *33/24*
U.S. Cl. 384—283 **3 Claims**



1. A high-duty sliding surface bearing comprising

(a) a backing shell having an inside surface,

(b) an annular bearing metal layer on the inside surface of the shell, the bearing metal layer having an inside surface formed with axially spaced, generally peripherally extending elongate recesses and with lands between the recesses, the recesses being distributed over the axial extent of the inside surface of the bearing metal layer and having an axial center spacing not in excess of 10 millimeters, the axial center spacing not exceeding an upper limit

$$a_o = 500 + 0.5d + 0.01d^2$$

in micrometers, wherein d is the inside diameter of the bearing in millimeters, and

(c) a bearing material which is softer than the bearing metal of said layer filling the recesses and forming a covering layer over the inside surface of the bearing metal layer

including said lands, the covering layer having a thickness not exceeding 1.5 times the depth of the elongate recesses.

4,606,654

CROSS ROLLER BEARING

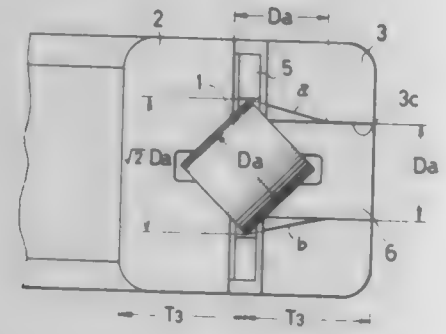
Takashi Yatsu, Himeji, and Tatsuo Mottate, Mitaka, both of Japan, assignors to Nippon Thompson Co., Ltd., Tokyo, Japan

Filed Dec. 3, 1984, Ser. No. 677,258

Claims priority, application Japan, Dec. 6, 1983, 58-187499[U]

Int. Cl.[4] F16C *19/30*

U.S. Cl. 384—447 9 Claims



1. A roller bearing assembly comprising:

an inner ring provided with a first groove extending circumferentially along an outer periphery thereof;

an outer ring provided with a second groove extending circumferentially along an inner periphery thereof, whereby said first and second grooves define a channel when said inner and outer rings are set in position relative to each other, said outer ring being provided with at least one radial hole extending through said outer ring in the direction of a selected radius of said outer ring;

a plurality of rollers of predetermined shape which are set in position by being inserted through said radial hole into and along said channel to be in rolling contact with said inner and outer rings thereby allowing said inner and outer rings to rotate relative to each other;

said radial hole having a first section means which is cylindrical in shape, extending from the outer periphery of said outer ring inwardly over a predetermined distance, and having a diameter of a size that said rollers pass therethrough only when the axes of rotation of said rollers are coextensive with that axis of said radial hole which extends along said selected radius; and

a second section means which is flared out from the inward end of said first section toward the inner periphery of said outer ring wherein said flared out section means is shaped to allow said rollers to turn at least 45° to be properly set in position in said channel so as to define an intended cross arrangement; and

an insert which may be fixedly set in position as inserted in said radial hole thereby plugging said radial hole after insertion of said rollers into said channel.

4,606,655

ROLLER BEARING

Heinrich Hofmann, Schweinfurt, Fed. Rep. of Germany, assignor to FAG Kugelfischer Georg Schafer (KGaA), Fed. Rep. of Germany

Filed Aug. 16, 1983, Ser. No. 524,125

Claims priority, application Fed. Rep. of Germany, Aug. 21, 1982, 3231138

Int. Cl.[4] F16L *35/077, 43/04*

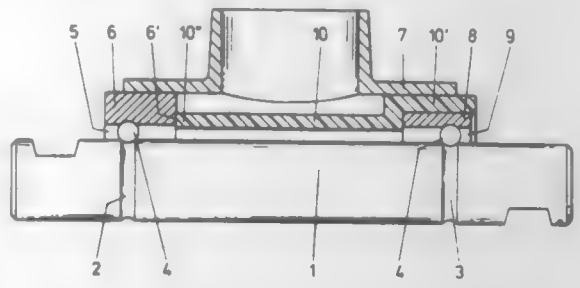
U.S. Cl. 384—458 14 Claims

1. An anti-friction bearing unit for a housing which is disposable around a shaft, said bearing unit comprising:

said housing being hollow so that said shaft may extend through said housing;

a pair of anti-friction bearings spaced from each other along said shaft area; each said bearings comprising a pair of races, one of said races is an inner race locatable on said shaft; and an outer ring for each of said bearings; the outer race of each of said bearings being located on the outer ring for that said bearing; and

a single piece hollow stepped relatively rigid bushing having a larger diameter section and having an opposite smaller diameter end section;



said outer ring of one of said bearings being supported within the hollow of said bushing at said larger diameter end section of said bushing; said large diameter end section being supported within said housing;

said outer ring of the other said bearings being supported within said housing; said smaller diameter end section of said bushing having an end extending up to and engaging the side of said outer ring of said other bearing.

4,606,656

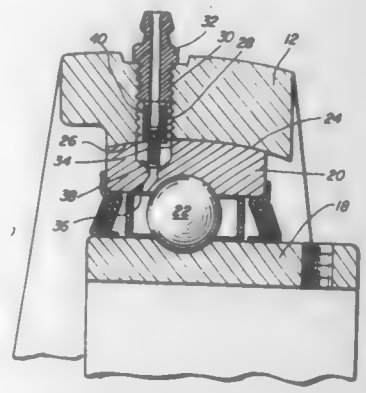
OUTER RACE LOCK PIN FOR BEARINGS

Albert M. LaRou, Naperville, Ill., assignor to Emerson Electric Co., St. Louis, Mo.

Filed Jul. 8, 1985, Ser. No. 752,813

Int. Cl.[4] F16C *33/66, 43/04*

U.S. Cl. 384—475 4 Claims



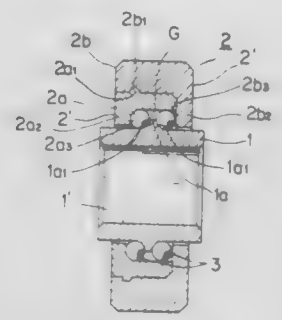
1. A bearing comprising a housing; an inner race and an outer race spaced from the inner race; anti-friction elements in the space between the races; the inner and outer races and the anti-friction elements being received in the housing; a lubrication passage through the housing; a dimple in the outer race having a bottom wall and being aligned with the lubrication passage; a small diameter passageway through the outer race joining the dimple and the space between the races; a locking pin in the lubrication passage which extends into the dimple and seats on the bottom thereof, said locking pin having an outer sleeve and an inner telescoping member; and a grease fitting threadably received in the lubrication passage which when set can exert an axial compressive force on the locking pin, whereby the locking pin telescopes to a lesser length when an axial compressive force is applied thereto.

4,606,657

SYNTHETIC RESIN BALL BEARING

Kouichi Tanaka, Nagoya, Japan, assignor to Kabushiki Kaisha Chubu Bearing Seisakusho, Japan

Filed Jul. 12, 1985, Ser. No. 754,224
Claims priority, application Japan, Jul. 13, 1984, 59-144324
Int. Cl.[4] F16C *33/60*
U.S. Cl. 384—492
5 Claims



1. A synthetic resin ball bearing comprising

an outer race of a synthetic resin material to receive external load thereon, said race including a first cup-shaped member and a second cup-shaped member, each cup-shaped member having an annular wall with a brim end and a bottom end and a floor wall integrally extending from said bottom end to define a recess therein, said floor wall having an opening in a center thereof, said first cup-shaped member being sized to snugly fit generally in said recess of the second cup-shaped member, said brim end of the first cup-shaped member abutting against the floor wall of the second cup-shaped member therewithin, said openings in the floor walls of the respective first and second cup-shaped members being in alighnment with each other;

an inner race of a synthetic resin material having an annular shape to be positioned to extend through said respective openings in the first and second cup-shaped members to define annular chamber in cooperation of said first cup-shaped member and said floor wall of the second cup-shaped member, said inner race having an annular projection extending into said chamber to define a pair of ball receiving sections; and

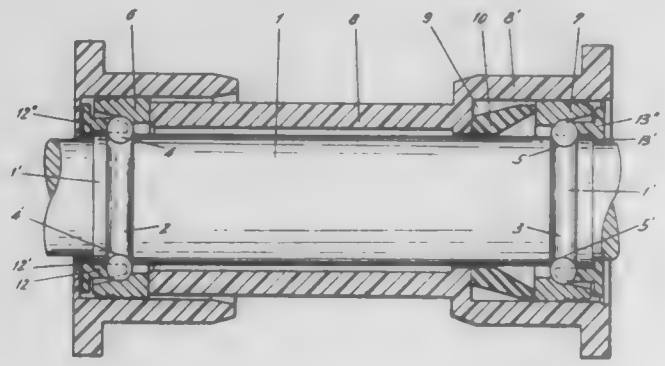
a plurality of balls within each receiving section annularly around said inner race.

4,606,658

CAGE FOR TWO-ROW ANGULAR-CONTACT BALL BEARING

Heinrich Hofmann, Schweinfurt, and Günter Markfelder, Üchtelhausen, both of Fed. Rep. of Germany, assignors to FAG Kugelfischer Georg Schafer (KGaA), Fed. Rep. of Germany

Filed Nov. 15, 1985, Ser. No. 798,752
Claims priority, application Fed. Rep. of Germany, Dec. 22, 1984, 3447148
Int. Cl.[4] F16C *19/08*
U.S. Cl. 384—510
8 Claims



1. A two-row angular-contact bearing on a shaft, comprising

a first and a second inner race being defined in and around the shaft at axially spaced locations along the shaft; a first and a second outer ring disposed around and having respective first and second outer races around the respective first and second inner races; bearing rolling members rollingly supported between each inner race and the respective outer race;

a bushing around the shaft and extending between the first and second outer rings and holding the outer rings apart; between one of the outer rings and the bushing, an axial spring is disposed for biasing the one outer ring away from the other outer ring;

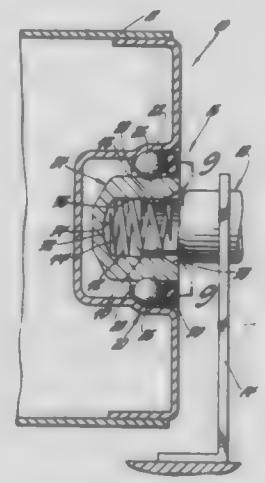
a respective cage for the bearing rolling members at each of the outer rings; at least one of the cages being shaped for engaging the rolling members supported thereby both radially and axially, and the cage including elements thereof which define respective pockets each for a respective rolling member; each pocket of the one cage including a resilient expansible element and the rolling members being in engagement with the expansible element of the respective pocket; the resilient expansible pocket element being so disposed that stretching thereof causes the diameter of the respective ring of rolling members to become larger, and the ring of rolling members being expansible to an extent such that the encircling envelope around the shaft defined by the rolling members outside the respective inner race is at least equal to the diameter of the shaft axially outside the inner race, for enabling the balls to be moved over, the shaft and into the inner race.

4,606,659

BEARING AND STUB SHAFT ASSEMBLY

Martin J. Hogan, Sandusky, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Apr. 1, 1985, Ser. No. 718,548
Int. Cl.[4] B65G *39/09*; F16C *13/00*
U.S. Cl. 384—518
3 Claims



1. An improved bearing and stub shaft assembly for a belt conveyor of the type having a cylindrical roller, one end of which is supported on a fixed stub shaft by a bearing having rolling bearing elements held between an outer race fixed to said roller end and an inner race connected to said stub shaft, said improved assembly providing both a non-rotational connection between said inner race and stub shaft and a preload means for said rolling bearing elements, comprising:

a central cup formed in said inner race having a generally elliptical inner surface,

a substantially cylindrical hollow end on said stub shaft deformable to give an elliptical outer surface sized sufficiently complementary to the elliptical inner surface of said central cup so that said inner race may be connected to said stub shaft by inserting said stub shaft end after deformation into said central cup, with said outer and inner surfaces of said stub shaft end and central cup re-

spectively interfitting with a clearance sufficiently small to prevent relative rotation therebetween, and

a substantially cylindrical coil spring sized to fit substantially closely within said stub shaft end before deformation of said deformable end so that said stub shaft end after deformation also cooperates to elliptically deform and thereby grip said cylindrical coil spring with one end of said spring projecting from said stub shaft end, said one end of said spring being compressed within said central cup when said stub shaft end is inserted into said central cup to thereby provide a preload to said rolling bearing elements.

4,606,660

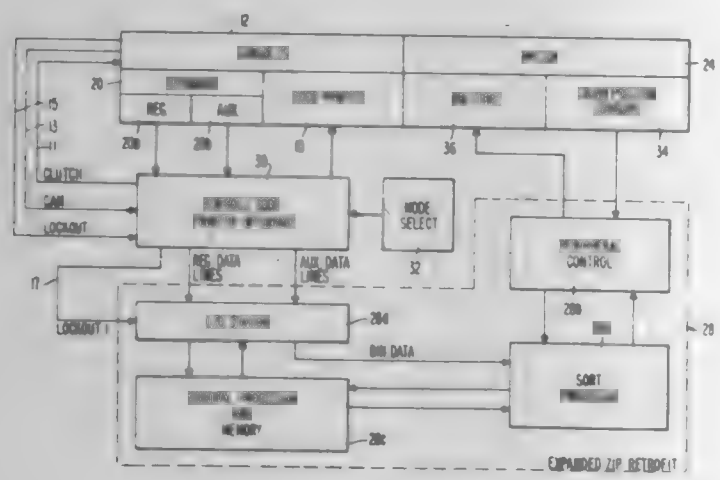
PRINTER KIT FOR LETTER SORTING MACHINES

Robert S. Bradshaw; S. James Lazzarotti, both of Broomall; Paul E. Tartar, Chester, and Richard D. Hermes, Downingtown, all of Pa., assignors to System Development Corporation, Camarillo, Calif.

Filed Jul. 12, 1984, Ser. No. 630,253

Int. Cl.[4] B41J *5/08*; B07C *3/18*; G06K *1/00, 5/00*

U.S. Cl. 400—62 **10 Claims**



1. A printer kit for use with a letter sorting machine having an input console which includes an operator-controlled keyboard for the entry of destination data for each mail piece and an Expanded ZIP Retrofit (EZR) for converting such data into a sort bin designation, comprising in combination:

a printer operatively mounted on said console for printing coded address information on each mail piece;

a mode select unit having operator-actuated switching means for selectively placing said console in a plurality of print and no-print modes;

a console code printer interface coupled between said printer and said EZR, said console code printer interface including a main processor and memory, an I/O data bus controller having an input and an output terminal coupled to said main processor and memory, a data path controller having a plurality of input terminals coupled to said keyboard for receiving said destination data therefrom and a plurality of output terminals coupled to said EZR for providing said last mentioned data thereto, a keyboard I/O interface unit interposed between said data path controller and said I/O data bus controller, said keyboard I/O interface unit having a plurality of input and output terminals for the transmission of data between the last mentioned controllers;

said mode select unit being coupled to said data path controller for causing the latter to send said destination data directly to said EZR for a no-print mode and to said I/O data bus controller via said keyboard I/O interface unit for a print mode, said mode select unit being further coupled to said I/O data bus controller whereby said main processor and memory are conditioned to execute a predetermined program stored in the latter in accordance with the mode select unit; said main processor accessing said destination data in said I/O data bus controller, assembling the same and determining the code equivalent thereto for printing on said mail piece, said main processor and memory further transmitting said keyboard data to said EZR via said data path controller;

said main processor and memory being comprised of a CPU, a PROM, and a RAM:

said PROM storing program code and being coupled in common to said CPU, said I/O data bus controller and said RAM via a bidirectional data bus; said program code comprising modes of console operation selectable in accordance with the switch setting of said mode select unit, program initialization, and table lookup for cross referencing destination data and code to be imprinted on said mail piece;

said CPU being further coupled to said I/O data bus controller, said PROM and said RAM via a unidirectional address bus; said CPU also providing a R/W signal to said PROM, said RAM and said I/O data bus controller, means for applying an interrupt signal to said CPU in response to signals from said console indicative of an operator-paced or machine-paced print mode, said CPU having first and second output terminals coupled respectively to said EZR and said console, said CPU providing a lockout pulse on said first output terminal for synchronizing the destination data transmitted to said EZR via said data path controller, and a clutch signal on said second output terminal for synchronizing the movement of said mail piece in said console with the keying of said destination data;

said RAM storing key code information identifying user-programmable keys present on said keyboard.

4,606,661

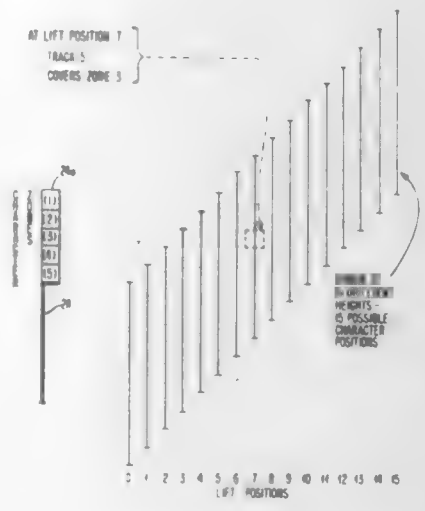
PROPORTIONAL VERTICAL AND HORIZONTAL RIBBON TRACKING FOR IMPACT PRINTERS

Charles S. Aldrich; James R. Booth; William M. Schuller, and Lloyd P. Young, all of Lexington, Ky., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 7, 1984, Ser. No. 607,551

Int. Cl.[4] B41J *33/54, 33/56*

U.S. Cl. 400—213 **12 Claims**



1. A method for proportional ribbon tracking on a printer, said printer including first means for effecting elevation of a ribbon to multiple predetermined positions aligned with a printhead and a print-receiving medium so that indicia may be printed on said print-receiving medium, said method comprising:

receiving a character to be printed;

characterizing said character in accordance with a predetermined plurality of characteristics;

said characterizing step including the step of assigning arbitrary zones to the characters to be printed and designating on which zones the characters are positioned on the printhead; and assigning a height to the characters based upon the number of zones encompassed by said characters; and,

adding with respect to a position on the ribbon upon which

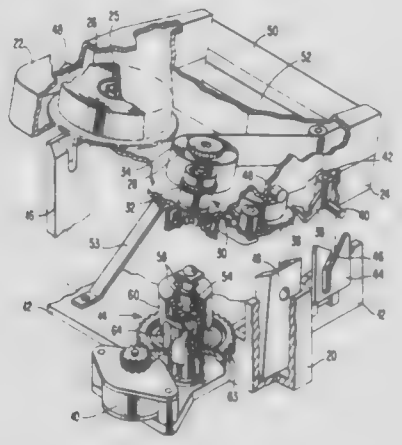
at least one prior character has been printed, the height of the character to be printed to determine a new print position, and outputting said new print position to said first means for effecting elevation of said ribbon to one of a multiple of said predetermined positions to approximately maximize the number of predetermined positions of said ribbon with characters printed therefrom without character overlap.

4,606,662

SINGLE STEPPING MOTOR RIBBON AND CORRECTION FEED AND LIFT SYSTEM

Steven R. Komplin, Lexington, Ky., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 31, 1985, Ser. No. 696,990
Int. Cl.[4] B41J *35/22*
U.S. Cl. 400—214 6 Claims



1. A ribbon feed and lift system for a printing device having an oscillating ribbon cartridge containing ribbon and an oscillating correction tape cartridge containing correction tape, said system comprising in combination:

a carrier including means thereon for permitting oscillation of at least said ribbon cartridge relative thereto; said ribbon cartridge having means for coupling said cartridge in pivoting relation relative to said carrier, said ribbon cartridge including ribbon feed driver means, said correction tape cartridge mounted with said ribbon cartridge, and ribbon feeding and oscillating means comprising a depending coupling mounted on said ribbon cartridge for rotating said ribbon feed driver means and thereby feeding said ribbon;

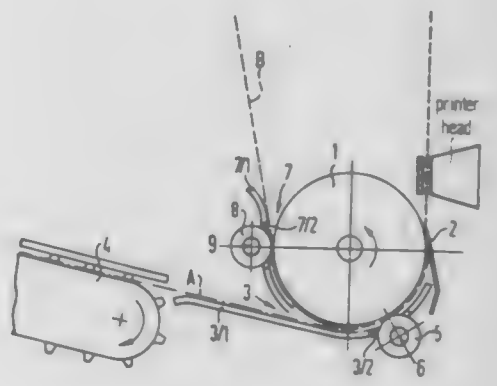
a cam and cam follower means, and a single drive power means coupled to one of said cam and cam follower means, the other of said cam and cam follower means being connected to said ribbon feedig and oscillating means for oscillating said ribbon cartridge about said pivot means; said cam comprising a profile defining multiple steps in oscillation of said ribbon cartridge about said pivot means thereby presenting said ribbon or tape for printing without effecting rotation of said coupling; and stop means on said profile of said cam for effecting rotation of said coupling commencing upon rotation of said cam follower a predetermined amount, to rotate said ribbon feed driver means.

4,606,663

SWITCHABLE PAPER TRANSPORT DEVICE FOR SINGLE SHEETS AND CONTINUOUS PAPER IN PRINTERS

Günter Christoph, Munich, and Heinz Stickel, Gröbenzell, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Nov. 8, 1984, Ser. No. 669,561
Claims priority, application Fed. Rep. of Germany, Nov. 29, 1983, 3343196
Int. Cl.[4] B41J *11/51*
U.S. Cl. 400—605 3 Claims



1. A paper transport mechanism for feeding single sheets and continuous paper to a printer head in a manner that paper feed is switchable between single sheets and continuous paper without degradation of printing thereon, comprising:

(a) a platen;

(b) a tractor operating to feed continous paper to the platen at a paper feed rate, said tractor and platen being centrally driven;

(c) means for feeding single sheets of paper to the platen;

(d) means for frictionally engaging the platen with paper fed thereto; and

(e) a switching mechanism coordinating operation of said platen, tractor, feeding means and frictionally engaging means in a manner that when said switching mechanism is adjusted to feed single sheets of paper to the printer head, platen speed is established at a first circumferential speed and determines the paper feed rate, and when said switching mechanism is adjusted to feed continuous paper to the printer head, the tractor determines the paper feed rate and platen speed is established at a second circumferential speed which is different from said first circumferential speed and is greater than the paper feed rate established by the tractor, said switching mechanism comprising

(e1) a primary drive gear,

(e2) first and second secondary drive gears which are constantly engaged with the primary drive gear,

(e3) first and second arms connected respectively to the first and second secondary drive gears and moving them between engaging and disengaging positions with other gears while maintaining engagement with the primary drive gear, and

(e4) means for moving the first and second arms between a first configuration in which the first secondary drive gear is engaged in driving relation with the tractor and the second secondary drive gear is engaged with the platen and a second configuration in which the first secondary drive gear is engaged with the platen and the second secondary drive gear is disengaged from the platen.

4,606,664

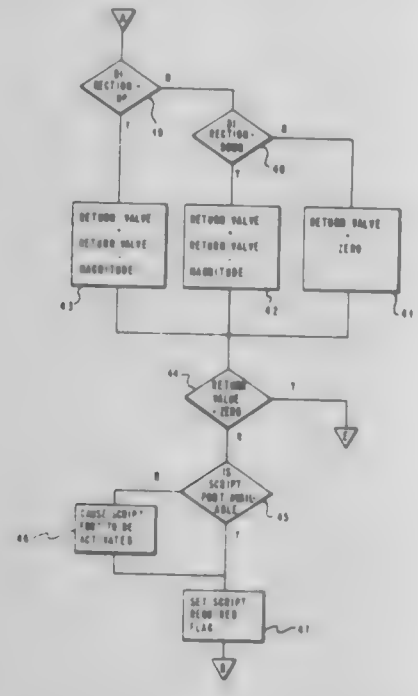
CONTROL OF MOVEMENT OF PRINTING BASE LINE

Robert A. Pascoe, Austin, Tex., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 29, 1984, Ser. No. 584,580
Int. Cl.[4] B41J *11/40, 11/42, 19/96*
U.S. Cl. 400—904 4 Claims

1. A method controlling text presentation base line move-

ment, said method comprising building a data stream control sequence including direction of move, and magnitude of move



without regard to text line spacing and including a precision control in said control sequence when cosmetic requirements are to be separated from physical requirements.

4,606,665

BALL-POINT PEN WITH INTEGRAL STAMPING EQUIPMENT

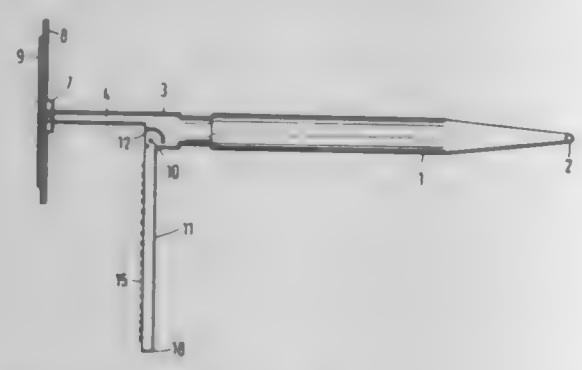
Ludwig Schleif, Aloys-Schreiber-Str. 61, 7580 Buhl, and Kurt Lobstadt, Danziger Str. 26, 7550 Rastatt, both of Fed. Rep. of Germany

Filed Nov. 5, 1984, Ser. No. 668,252

Claims priority, application Fed. Rep. of Germany, Nov. 8, 1983, 3340293

Int. Cl.[4] B43K *29/00*

U.S. Cl. 401—195 3 Claims



1. A writing utensil, such as a ball point pen, having a writing end and a rear end, said writing utensil comprising:

(a) an extension extending longitudinally from said rear end and being rounded on one longitudinal side thereof, the end of said extension being bifurcated and having a crosstie therebetween;

(b) a stamp support supporting a stamp thereon and being freely pivotally mounted at about its longitudinal center on said crosstie to pivot between a position parallel to the longitudinal axis of said writing utensil and a position perpendicular to the longitudinal axis, said extension having a length approximately one-half the length of said stamp support and including a stop to prevent said stamp support pivoting beyond the position perpendicular to the longitudinal axis;

(c) a stamp pad support supporting a stamp pad thereon pivotally mounted at the rear end of said writing utensil to pivot between a position parallel to the longitudinal axis of said writing utensil and a position approximately perpendicular to said longitudinal axis, said stamp pad support having a length which is slightly greater than the combined length of said extension and one-half the length of said stamp support;

(d) a spur gear at the pivoting end of said stamp pad support cooperating with a spring loaded spur rack slidably disposed in the rear end of said writing utensil so that said stamp pad support automatically pivots from said position parallel to the longitudinal axis of said writing utensil to said position approximately perpendicular to said longitudinal axis; and

(e) a covering cap slidably mounted on said writing utensil for enclosing said extension, said stamp support and said stamp pad support when said supports are positioned parallel to the longitudinal axis of said writing utensil, said covering cap being adapted to be slidably pushed over said writing utensil to uncover said extension, said stamp support and said stamp pad support.

4,606,666

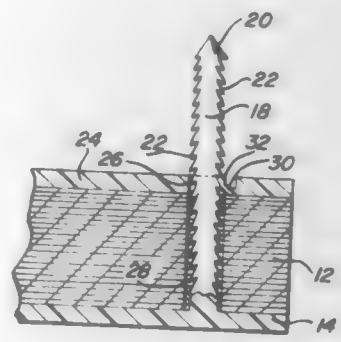
PAPER BINDER

David D. Patton, 9109 Industrial Ct., Gaithersburg, Md. 20877

Filed Mar. 22, 1984, Ser. No. 592,463

Int. Cl.[4] B42F *13/14*

U.S. Cl. 402—62 2 Claims



1. A binder for retaining a plurality of paper sheets in assembled and stacked relation in which the paper sheets have apertures formed therein, said binder comprising a base strip, a plurality of pegs extending upwardly from said strip, each of said pegs including a plurality of serrations, and a clamping strip having apertures receiving said pegs, and a single tongue extending into each aperture in the strip to engage the serrations to lock the clamping strip in adjusted position, each aperture being laterally elongated with the tongue extending from one end thereof, said tongue having a thickness substantially less than the clamping strip and being integral with and flush with the bottom edge of the aperture and extending inwardly and upwardly and terminating in a tapered upper end engaged with the serrations, the tapered upper end of the tongue terminating generally in the same plane as the upper surface of the clamping strip, said strips, pegs and tongues being of plastic material and of unitary construction.

4,606,667

CONTROLLED DECELERATION STOPPING DEVICE FOR ROBOT BASE

Edward J. Bailey, Cincinnati, Ohio, assignor to Cincinnati Milacron Inc., Cincinnati, Ohio

Filed Apr. 8, 1985, Ser. No. 720,776

Int. Cl.[4] F16C *11/00*

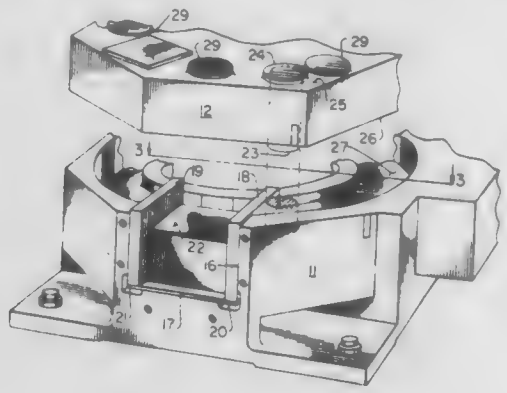
U.S. Cl. 403—117 2 Claims

1. In a robot having a relatively stationary base and a relatively moving base, improved means for controlling deceleration and stopping of said moving base, comprising:

(a) a lug affixed to, and depending from, said moving base, said lug defining a lug path while moving;

(b) an elastomeric block supported on said stationary base, said base having means for rigidly backing said block, said block being located in line with said lug path and interposed between said lug and said means for rigidly backing said block;

(c) a striker plate having an impact surface and an edge defined around said surface, said plate being located next to said block and edge-wise supported on said stationary base with a portion of said impact surface extending into



said lug path between said elastomeric block and said lug; and

(d) means for permitting substantially pivoting of said striker plate about its supported edge as said plate is contacted by said lug.

4,606,668

AXIAL BALL JOINT FOR ARTICULATED LINKAGES IN MOTOR VEHICLES AND METHOD OF FABRICATING SAME

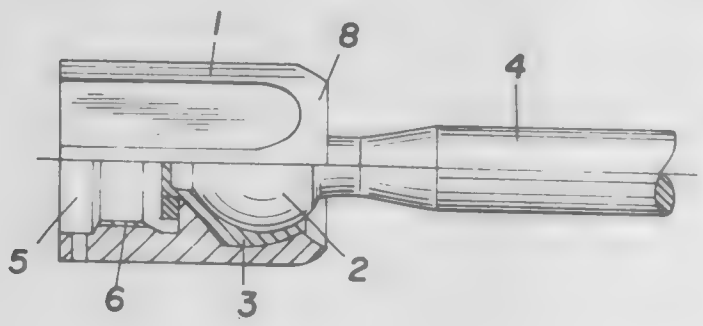
Andreas Schmidt, Meerbusch, Fed. Rep. of Germany, assignor to Lemforder Metallwaren AG., Fed. Rep. of Germany

Filed Mar. 13, 1985, Ser. No. 711,398

Claims priority, application Fed. Rep. of Germany, Mar. 19, 1984, 3409989

Int. Cl.[4] F16C *11/00*

U.S. Cl. 403—140 9 Claims



1. An axial ball joint for articulated linkages in motor vehicles, comprising a ball part including a shank and a ball portion, a socket of a resilient material embracing the ball portion, and a one-piece metallic, outwardly substantial cylindrical housing having a frontal opening through which the ball portion and socket are inserted in a first direction and from which the shank protrudes, and defining a cavity in which the ball portion and socket are disposed, the cavity being shaped to preclude movement of the ball portion and socket further in the first direction, the ball portion and socket being held in place in the housing cavity by a radially inwardly bent rim of the housing, the housing having a rim zone close to the shank with a material accumulation, so that in this rim zone, at least over a part of a circumference of the rim, the housing wall is thicker than in an axially adjacent zone remoter from the rim of the housing such that the rim is bent only radially in toward the shank to hold the ball portion in the cavity, the material accumulation being displaced only radialy into a zone within a cross sectional area of the outer substantially cylindrical surface of the housing.

4,606,669

CONNECTOR

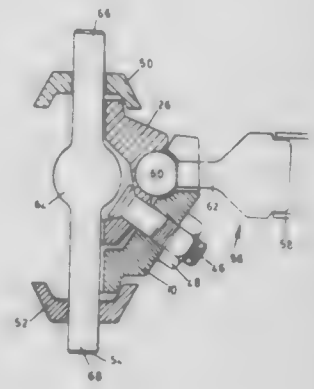
Michael C. DeBliquy, Illovo, South Africa, assignor to Dymet Dymensions (Proprietary) Limited, Randburg, South Africa

Filed Nov. 5, 1984, Ser. No. 668,121

Claims priority, application South Africa, Nov. 9, 1983, 83/8331

Int. Cl.[4] F16B *7/04*

U.S. Cl. 403—170 6 Claims



1. A space frame connector which includes two inner shells, two outer shells which respectively at least overlie the inner shells, and means for securing the shells to each other with the inner shells opposing each other, the inner shells having opposing faces respectively in which are formed opposing depressions, each pair of opposing depressions forming a socket which is engageable with a complemental formation on an end of a respective elongate member, and at least one inner shell and an outer shell including formations which are engageable with ends of elongate members.

4,606,670

FIXING RIGID INSERTS IN FLEXIBLE MATERIAL

Cyril N. E. Angell, Trowbridge, England, assignor to Avon Industrial Polymers Limited, Melksham, England

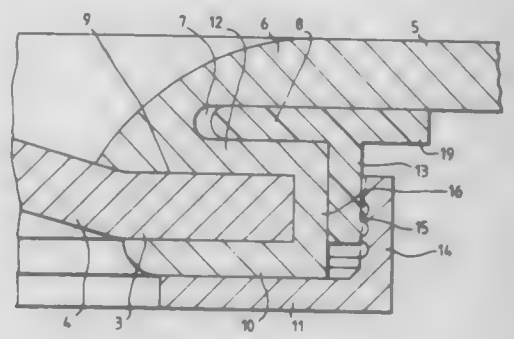
PCT No. PCT/GB82/00285, § 371 Date May 17, 1983, § 102(e) Date May 17, 1983, PCT Pub. No. WO83/01280, PCT Pub. Date Apr. 14, 1983

PCT Filed Oct. 4, 1982, Ser. No. 499,160

Claims priority, application United Kingdom, Sep. 20, 1982, 8226755; Oct. 4, 1983, 8130486

Int. Cl.[4] F16D *1/00*

U.S. Cl. 403—291 15 Claims



1. A rigid insert for fixing in an orifice which is bounded by an endless edge of flexible material, wherein the rigid insert has two radially extending endless flanges, borne respectively on discrete parts of the insert, at least one of the parts having an axially extending endless wall, the parts being constructed and arranged to be brought into an axial relationship wherein their flanges entrap between them and exert an axial pressure on at least an edge portion of the flexible material by axial movement of one of the parts over the axial wall of the other, each part having an inclined surface, the parts then being retained in that relationship by interengagement between the parts through interengagement of said inclined surfaces, one on each part and tending to establish a preferred relative axial position of the two parts, the relative axial position being one of greater axial

approach of the flanges than that at which the said axial pressure occurs.

4,606,671

COUPLING FOR CONNECTING A HUB AND SHAFT

Ivar Rasmussen, Sonderborg, Denmark, assignor to Danfoss A/S, Nordborg, Denmark

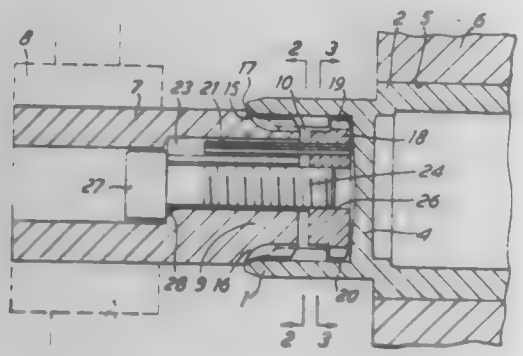
Filed May 16, 1984, Ser. No. 610,863

Claims priority, application Fed. Rep. of Germany, Jun. 6, 1983, 3320444

Int. Cl.[4] F16B 7/02

U.S. Cl. 403—359

8 Claims



1. A coupling for making a connection secured against relative rotational and axial displacement, comprising, a hub member having keys and grooves at the internal circumference thereof and a shaft memeber in coaxial relation thereto having keys and grooves at the external circumference thereof, said hub member having a circumferential groove undercutting said keys thereof, a shaft insert member having keys of a lessor axial length than said circumferential groove disposed in said circumferential groove, fastening means attaching said insert member to said hub member for rotation therewith which includes axially extending bores in said insert and shaft members equally radially offset from the axes of said members, said bores being circumferentially offset from each other by an angle equal to one half the circular pitch of said keys, said fastening means including pin means extending in and between said bores, said shaft member having a central bore and a central counterbore, said insert member having a central threaded bore, said keys of said insert and hub members having adjacent abuttingly engageable surfaces when said pin means is installed in said radially offset bores and said keys of said hub member engages said grooves of said shaft member in a driving relationship, and a screw in said shaft member central bore threadedly engaging said insert member central bore to hold said engageable surfaces in abutting engagement.

4,606,672

CONSTANT UPSTREAM LEVEL GATE

James R. LeSire, 4244 35th St., San Diego, Calif. 92104

Filed Oct. 31, 1984, Ser. No. 666,925

Int. Cl.[4] E02B 7/42

U.S. Cl. 405—87

6 Claims

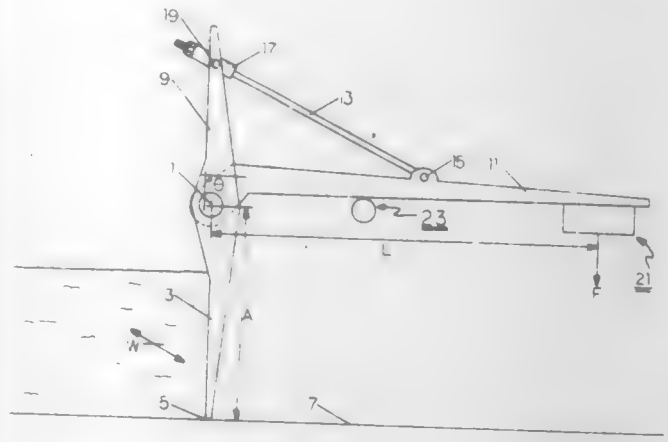
1. A waterstream gate, for maintaining a desired upstream level, comprising:

(a) a pivotal axis transverse to the water stream;

(b) a gate depending from said axis directly into the water stream and adapted to move through an arc between a fully closed-off position against the stream bottom and various open positions downstream thereof;

(c) an arm extending downstream from said gate and at a fixed angle thereto; and,

(d) ballast means slideably attached to said arm for positioning therealong to create a counterforce to balance the



force of the water stream against said gate at any desired upstream level.

4,606,673

SPAR BUOY CONSTRUCTION HAVING PRODUCTION AND OIL STORAGE FACILITIES AND METHOD OF OPERATION

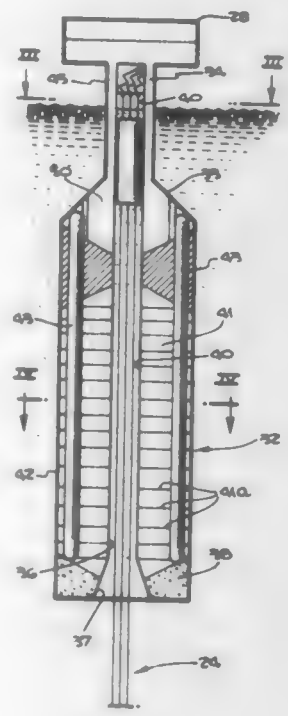
Alan F. Daniell, Epsom, England, assignor to Fluor Corporation, Irvine, Calif.

Filed Dec. 11, 1984, Ser. No. 680,361

Int. Cl.[4] B65D 89/10

U.S. Cl. 405—210

17 Claims



1. In a floating structure including oil storage capacity and production facilities and adapted to be anchored by catenary mooring lines at a subsea well location, the combination of:

a vertical elongated hull means having means to maintain the hull means in vertical position;

said hull means including

a vertical oil storage chamber means for storing oil and extending for a major portion of the height of the floating structure;

a plurality of vertical variable ballast chamber means extending from the bottom of the storage chamber means to above the top of the oil storage chamber means and selectively filled with ballast to maintain the center of gravity of the structure a selected distance from the center of buoyancy of the structure;

work chamber means in said hull means above said oil storage chamber means;

means in the work chamber means and in the variable ballast

chamber means for controlling the amount of ballast in the variable ballast means;

means in the oil storage chamber means and in the work chamber means for feeding oil to said oil storage chamber means and for removing water therefrom as oil is introduced therein;

a central longitudinal passageway through the hull means;

a riser means extending into said passageway from said subsea well location and terminating at said work chamber means;

said riser means including buoyant tank means carried at the upper end thereof to maintain said riser means under tension;

means on said riser buoyant tank means and on said hull means in said central passageway for guiding relative movement between said hull means and said riser means;

said controlling means for said variable ballast chamber means being operable to maintain said floating structure under conditions of constant draft and constant distance between center of gravity and center of buoyancy to stabilize such relative movement.

4,606,674

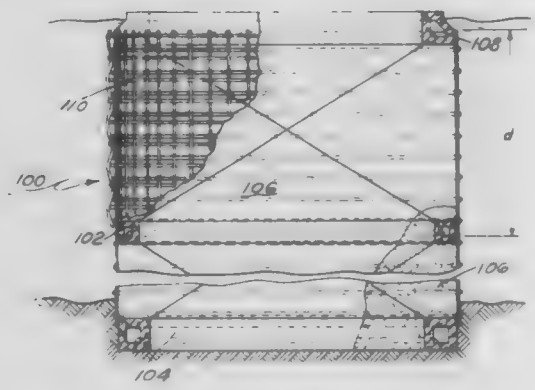
STRUCTURAL WHEEL ELEMENT

Mark E. Capron, 1771 Via Escondido, San Lorenzo, Calif. 94580

Filed Apr. 23, 1984, Ser. No. 602,795

Int. Cl.[4] E02D *5/54*

U.S. Cl. 405—224 9 Claims



1. A structural system for efficiently distributing forces impinging thereupon, comprising:

at least two rim members, spaced a preselected distance apart, each said rim member having an axis perpendicular to the plane of the rim, said axes being aligned so as to be generally parallel with each other, for transferring said impinging forces by means of compression loads in said rims, said perpendicular axes of said at least two rim members being coaxial, thereby forming a common axis of symmetry of said system, each said rim member further comprising a toroidal ring of a preselected cross section;

tension member means, disposed between and fixedly attached around the periphery of each rim of directly adjacent pairs of said rim members, for selectively connecting together each said adjacent pair of rims in such a way as to maintain a preselected distance between rim members, said tension member means further comprising a plurality of spokes connectably strung in a preseleected uniform pattern between said directly adjacent rim pairs, each said spoke being fixedly attached at one end thereof to one rim of said pair and at the other end thereof to the other rim of said pair, said preselected spoke pattern being tangentail, each spoke being disposed at a preselected angular offset from a diametrical orientation such that the attaching point on the opposite rim serves also as the starting point for the next spoke, and continuing until the final spoke end attached at the starting point of the first spoke, said pattern thereby forming a central volume therethrough;

separating means, applied symmetrically around the periphery of each said rim member so as to axially separate each said rim member from adjacent rim members, for producing a tension load in said tension member means, said tension load in turn producing said corresponding compression load in each said rim member thereby producing a balance of said tension and compression forces throughout said structural system;

cylindrical membrane means, disposed around the outer periphery of each of said at least two rim members;

a plurality of membrane reinforcing circular hoops, fixedly attached to the exterior of said membrane at uniform intervals, for providing increased radial strength; and

wherein said separating means further comprises earth fill, disposed throughout the internal volume of said cylindrical membrane means, said tension member means having been first placed in tension by an externally applied force such that upon removal of said externally applied force said earth fill then maintains rim member separation hence holding said tension members in tension.

4,606,675

METHOD OF AND APPARATUS FOR SOIL STABILIZATION

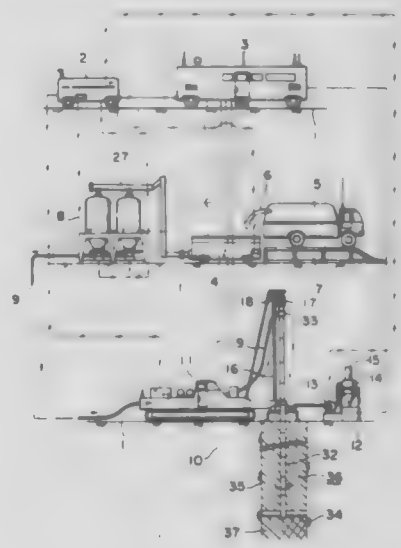
Takeshi Mitani, Shizuoka, and Hideo Aiko, Kobe, both of Japan, assignors to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan

Filed Jan. 16, 1985, Ser. No. 691,885

Claims priority, application Japan, Feb. 2, 1984, 59-16132

Int. Cl.[4] E02D *3/12*

U.S. Cl. 405—263 11 Claims



1. A method of soil stabilization by jetting the powdery stabilizing agent into the ground and mixing and agitating the same with the soil and utilizing compressed air, a transportation tube, a rotary shaft having a mixing blade integrally attached to and extending from a base of said shaft and a nozzle in communication with said blade, which comprises:

inserting a rotary shaft into the ground;

pneumatically feeding the powdery stabilizing agent from above the ground at a constant rate together with said compressed air by way of said transportation tube positioned within the rotary shaft;

jetting out the powdery stabilizing agent and the compressed air from said nozzle in communication with the mixing blade;

mixing and agitating the powdery stabilizing agent with the underground soil by rotation of the mixing blade to thereby solidifcate said agent and said soil;

inducing the carrier air jetted through the ground and then discharging the air outside the ground after filtration of said air; and

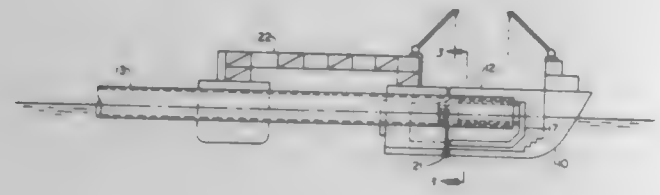
controlling the supply of the powdery stabilizing agent in accordance with a predetermined condition.

4,606,676

MANUFACTURE OF ARTICLES

Frederick A. Goldstone, 400 Burnley Street, Burnley, Victoria 3121, Australia

Filed Aug. 22, 1983, Ser. No. 525,474
Int. Cl.[4] F16L *1/04;* E02D *29/06*
U.S. Cl. 405—303 12 Claims



1. A method of manufacturing articles in a body of water comprising the steps of

partially fabricating the article in a horizontal work area constituting a forward portion of a buoyant platform, which horizontal work area is at least partially below the level of water within which the buoyant platform is located,

moving the partially fabricated article horizontally and rearwardly through a seal, gland or the like which prevents water ingress to the work area, and

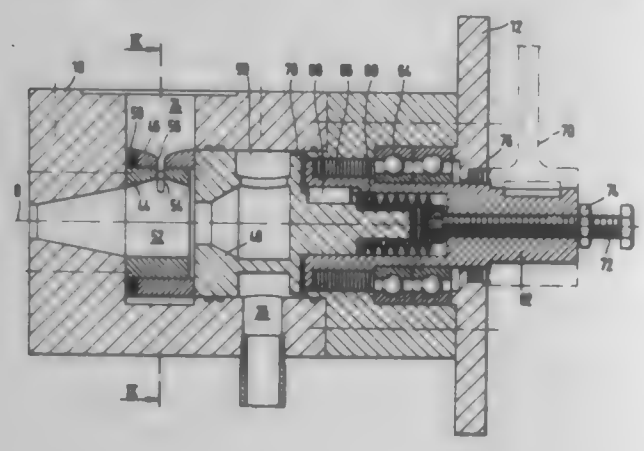
supporting the article by a rearward portion of the platform while fabrication of the article is continued in the forward portion.

4,606,677

DEVICE FOR INTRODUCING DOSED QUANTITIES OF PULVERIZED SOLID MATERIALS INTO A CARRIER GAS STREAM

Edouard Legille, Luxembourg; Leon Ulveling, and Pierre Mailliet, both of Howald, all of Luxembourg, assignors to Paul Wurth S.A., Luxembourg, Luxembourg

Filed Nov. 10, 1983, Ser. No. 550,565
Claims priority, application Luxembourg, Nov. 10, 1982, 84462; May 19, 1983, 84812
Int. Cl.[4] B65G *53/46*
U.S. Cl. 406—129 16 Claims



1. A device for introducing pulverized materials in a carrier gas stream comprising:

housing means, said housing means having an axial flow passage for a pressurized carrier gas stream;

aperture means in said housing for delivery of pulverized material;

inner sleeve means in said housing means and extending across said aperture means, said inner sleeve means having an axial bore, said bore providing a passage for the carrier gas stream;

outer sleeve means, said outer sleeve means being coaxial with said inner sleeve means and extending across said aperture means, at least one of said outer and inner sleeve means being rotatable about its longitudinal axis;

means for rotating at least one of said outer and inner sleeve means wherein at least one of said sleeve means defines a rotatable sleeve means;

at least a first slot on said inner sleeve means and at least a second slot on said outer sleeve means, said first and second slots being capable of mutual overlapping alignment with each other and with said aperture means to define a variable sized passage whereby pulverized material is delivered therethrough to said carrier gas stream;

an annular friction ring, said friction ring being located between said housing means and said rotatable sleeve means; and

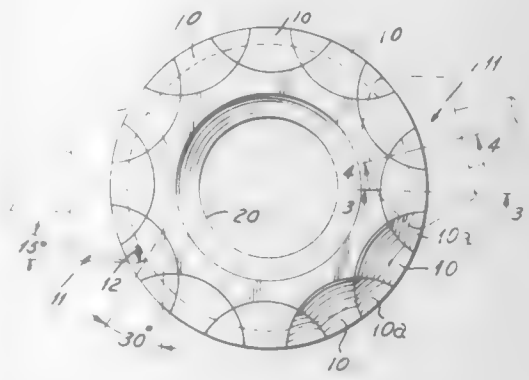
spring means, said spring means being normally in contact with and acting on said rotatable sleeve means to urge said sleeve means against said friction ring.

4,606,678

CIRCULAR CHIP CONTROL INSERT

Raymond Zweekly, Royal Oak, Mich., assignor to GTE Valeron Corporation, Troy, Mich.

Filed Apr. 22, 1985, Ser. No. 725,639
Int. Cl.[4] B23B *27/22;* B26D *1/00*
U.S. Cl. 407—114 12 Claims



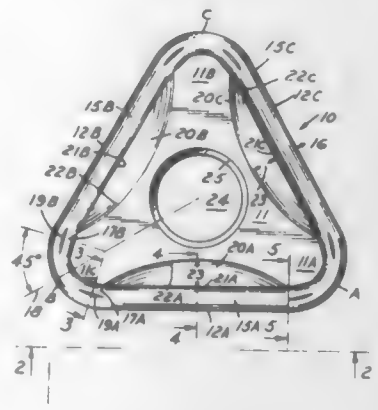
A circular chip breaking insert with a cutting face having a circular cutting edge characterized by a plurality of chip breaking depressions around the cutting face periphery intersecting each other and the cutting edge, each depression comprising segments of a pair of opposed base conical frustums connected by an arcuate juncture of their intersecting sides.

4,606,679

CUTTING INSERT WITH CHIP CONTROL

Robert W. Jeremias, Royal Oak, Mich., assignor to GTE Valeron Corporation, Troy, Mich.

Continuation-in-part of Ser. No. 527,318, Aug. 29, 1983, abandoned. This application May 28, 1985, Ser. No. 737,929
Int. Cl.[4] B23B *27/22;* B26D *1/00*
U.S. Cl. 407—114 6 Claims



1. In a tool for cutting chip forming materials having a substantially polygonal chip engaging surface and a continuous flank surface intersecting the chip engaging surface along each side of the polygon and at a cutting corner at each corner of the polygon, the improvement comprising:

an arcuate cutting edge extending between each pair of

cutting corners having its lowest point substantially midway between each pair of cutting corners:

a first chip control groove surface formed in the chip engaging surface and having a first cross sectional radius, a substantially uniform width, and extending to a first depth below the plane of the chip engaging surface, the first control surface intersecting the cutting edge and extending parallel thereto along straight flank portions and around arcuate corners at adjacent ends of said straight portions,

a second chip control groove surface formed in the chip engaging surface adjacent to and merging at its outer boundary with the inner boundary of the first control surface along said straight flank portions, the second control surface having a second cross sectional radius larger than the first cross sectional radius, a second depth less than the first depth, and a width varying from a maximum at a point substantially midway between each pair of cutting corners to zero width at the end of each straight flank portion of the polygon.

4,606,680

REAMER CORE DRILL WITH CUTTING BITS

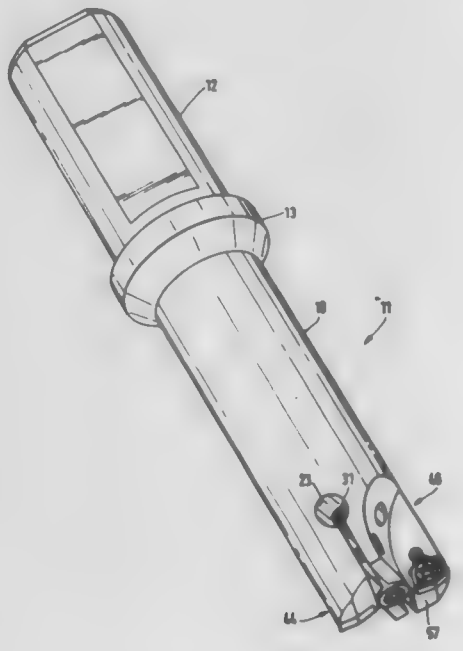
Georg Striegl, List Strasse 25, 7410 Reutlingen, Fed. Rep. of Germany

Filed Sep. 14, 1983, Ser. No. 532,275

Claims priority, application Fed. Rep. of Germany, Sep. 15, 1982, 3234238

Int. Cl.[4] B23B *51/00, 51/06*

U.S. Cl. 408—156 **16 Claims**



1. In a reamer-core drill having a longitudinal axis, a diameter which can be fine-set relative to said longitudinal axis, a clamping zone and a shank,

said shank having an outer side and a front end zone, two cutting bits, each having a core cutting edge zone, fastened in opposite directions in said front end zone, and a chip space in front of each of said cutting bits,

the improvement wherein,

said shank has a longitudinal slot oriented radially with respect to said geometrical longitudinal axis which divides said shank into shank halves, said longitudinal slot having one end which opens at said front end zone and an opposite end which extends inwards into said shank towards said clamping zone a distance adequate to enable said shank halves to bend at said front end zone to a degree adequate to permit fine setting of said diameter of said core-reamer drill,

each of said shank halves has a first shank half portion and a second shank half portion having a cross section that is substantially smaller than said first half portion,

each of said first shank half portions has one of said two cutting bits secured thereto and lays behind and at about the same level as said cutting bit,

each of said second shank half portions lays between one of said chip spaces and said longitudinal slot,

coaxial with said longitudinal axis, said shank has a tapped hole that extends at one end further inwards into said shank towards said clamping zone than said longitudinal slot, and a rest hole that extends at one end outwards towards said front end zone,

a first screw has a screw shank with a first screw shank portion engaged in said tapped hole, a second screw shank portion passing through said rest hole, and a screw head with a slightly conical circumferential surface which tapers toward said screw shank coaxially with said longitudinal axis,

said shank has a tapered hole at said outward end of said rest hole which is complementary with said circumferential surface of said screw head into which said screw head can be inserted to expand said longitudinal slot and widen said diameter of said reamer-core drill,

second and third screws pass transversely through said longitudinal slot on each side of said geometrical longitudinal axis substantially closer to said open end than said inward end of said longitudinal slot, which narrows said longitudinal slot when said second and third screws are tightened, and

said shank has said two cutting bits arranged thereon with said cutting edges of said cutting bits disposed rotationally coincident at said outer side of said shank.

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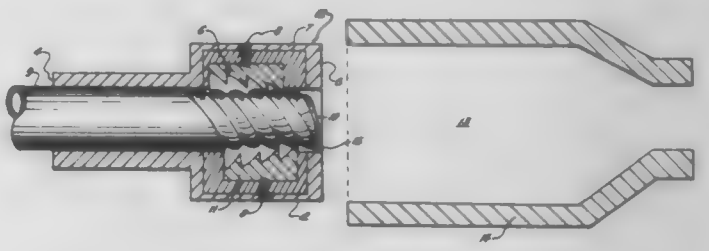
TUD RETHREADING AND CLEANING DEVICE

Bobby W. Collins, 4200 A Chateau Blvd., Kenner, La. 70062

Continuation-in-part of Ser. No. 06/214,965, Dec. 10, 1980, abandoned. This application Apr. 27, 1983, Ser. No. 489,008

Int. Cl.[4] B23G *5/04*

U.S. Cl. 408—215 **4 Claims**



1. A device for rethreading and cleaning threaded pipe or studs and attachable to a torque means, which comprises:

(a) a casing having an elongated pipe receiving end and a die assembly end, said casing having a hollow straight, guide channel through both of said ends of said casing; said die assembly end of the casing having an exterior shape to matingly receive the torque means for rotation of the casing and having a rear opening of the channel;

(b) multiple cutting die assemblies perpendicularly attached to and spaced about the inside sidewalls of said channel in said die assembly end, each die assembly having multiple teeth which, commencing with the tooth closest to the elongated pipe receiving end, are consecutively projecting further into said channel, each of said teeth being angled to correspond to the helix angle of the threads of said pipe stud, the tooth being farthest from the elongated pipe receiving end projecting to the bottom of the grooves of said threads, each of the die assemblies being axially offset from the adjacent one a distance equal to the pitch of the threads of said pipe or stud, and a front channel opening in said elongated pipe receiving end located at the opposite end of the casing and having a diameter sufficiently large to receive the pipe.

4,606,682

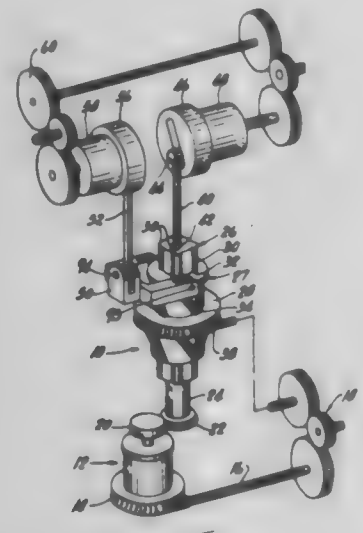
GEAR SHAPING MACHINE

John R. Miller, 4510 Hewitts Pt. Rd., Oconomowoc, Wis. 53066

Filed Sep. 17, 1984, Ser. No. 651,180

Int. Cl.[4] B23F *9/08*

U.S. Cl. 409—34 15 Claims



1. A gear cutting machine having first rotating means for rotating a gear blank,

a cutter,

second rotating means for rotating said cutter,

first cyclic means for cyclicly moving said cutter axially into engagement with the gear blank while the two are rotating so that gear teeth are cut into said blank,

first guide means including helical guide disposed between and coupling the second rotating means and the first guide means, said first guide means being axially movable independently of said second rotating and first cyclic means for altering the rotary speed of said cutter relative to said gear blank during each cycle and while the same are being rotated and said cutter is being cycled axially so that a helix is formed on the teeth being cut into said gear blank,

second cyclic means coupled to said guide means for cycling the same, adjusting means for adjusting the stroke of said second cyclic means independent of the second rotating means and first cyclic means so that the angle of the gear helix being cut into said blank can be changed in successive gear blanks without removing said second rotating means, first cyclic means or first guide means.

4,606,683

METHOD AND DEVICE FOR PRODUCING THREAD

Helmut F. Link, Aichwald, and Günther Trautmann, Kirchheim-Nabern, both of Fed. Rep. of Germany, assignors to Index-Werke Komm. -Ges. Hahn & Tessky, Esslingen, Fed. Rep. of Germany

Filed Jan. 23, 1985, Ser. No. 693,922

Claims priority, application Fed. Rep. of Germany, Jan. 27, 1984, 3402743

Int. Cl.[4] B23G *1/34*

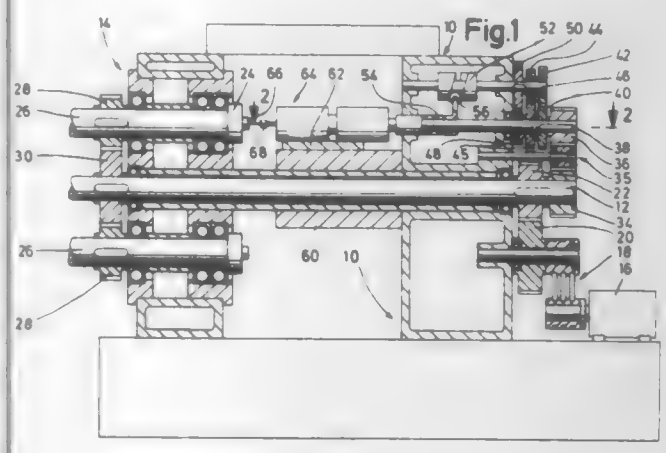
U.S. Cl. 409—66 11 Claims

1. A method for forming a thread on a workpiece while rotating about an axis of such workpiece thread to be formed, by a milling cutter having several cutting teeth which are arranged along at least one thread; the latter thread having a pitch identical to that of the workpiece thread, and a thread direction opposite to that of the workpiece thread; said cutting teeth having a profile corresponding with the profile of the workpiece thread and defining a diameter which differs from the diameter of the workpiece thread; said workpiece and said cutter comprising two members one of which has an opening for reception of the second member; said method comprising the steps of:

(a) rotating the milling cutter and workpiece; said milling cutter being rotated in a direction of rotation opposite to the direction of rotation of the workpiece, about a tool axis which extends approximately parallel to the axis of the workpiece thread;

(b) inserting said second member into the opening of said one member,

(c) advancing one of said two members relative to the other along a feed path parallel to the axis of the workpiece thread and along the entire length of the workpiece thread while maintaining said milling cutter in contact with the workpiece in such manner that said cutting teeth mill the



workpiece thread to its entire depth in a single run along the length of the workpiece thread; the advancement s per rotation of the workpiece being in accordance with the equation:

$$s = h \cdot (1 - l) \text{ with } i = n_F / n_S \neq 1$$

wherein h is the pitch of the workpiece thread and i is the rotational speed ratio of cutter and workpiece; n_F being the rotational speed of the cutter and n_S being the rotational speed of the workpiece.

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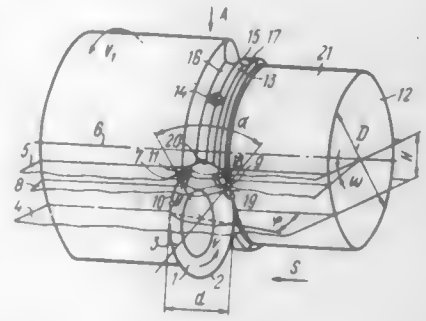
METHOD FOR MACHINING BODIES OF REVOLUTION WITH USE OF ROTARY TOOL

Gennady F. Shaturov; Sergei S. Malyavko, both of Mogilev, and Alexei M. Nadvikov, Moscow, all of U.S.S.R., assignors to Mogilevskoe Otdelenie Fiziko-Teknicheskogo Instituta, Mogilev, U.S.S.R.

Filed Feb. 16, 1983, Ser. No. 466,867

Int. Cl.[4] B23B *1/00;* B23C *3/04*

U.S. Cl. 409—132 5 Claims



1. A method for machining a workpiece comprising a body of rotation, having a diameter D, with a machine tool having a rotary cutting tool, the workpiece having an axis of rotation about which it rotates and a base plane extending through the axis of rotation of the workpiece, the rotary cutting tool contacting the workpiece and having an axis of rotation, a circular cutting edge having a diameter d, a nose on said cutting edge, and points on said cutting edge, found in a plane extending through said axis of rotation of the workpiece and said nose of said cutting edge, said points being on opposite sides of said axis of rotation of said cutting tool, which comprises: setting said axis of rotation of said cutting tool in a plane parallel with said baseplane of the machine tool, said parallel plane being at

a distance H from said base plane not greater than d/2, the plane of said cutting edge being set at an angle ϕ to said axis of rotation of the workpiece, said nose of said cutting edge being in a plane extending through said axis of rotation of the workpiece at an angle to said base plane, wherein the angle ϕ at which said plane of said cutting edge is set in relation to said axis of rotation of the workpiece and the distance H between said plane of said axis of rotation of said tool and said base plane is selected so that the difference between the distances from said points on said cutting edge to said axis of rotation of the workpiece is equal to or greater than the amount of elastic deformation of the workpiece material caused by machining and wherein it is determined by the relation

$$H = \frac{1}{2}\left(D \frac{\mathrm{Sin}\phi}{\sqrt{\tan^2 \frac{\alpha}{2} + \mathrm{Sin}^2\phi}} + d \cos \frac{\alpha}{z} \right)$$

wherein α is the center angle between the points of the cutting edge formed on the opposite sides of the axis of rotation of the tool in the plane extending through the axis of rotation of the workpiece and the nose of the cutting edge; D is the diameter of the machined workpiece and d is the diameter of the circular cutting edge of the tool.

4,606,685

ROUTER WITH DUST EXHAUST

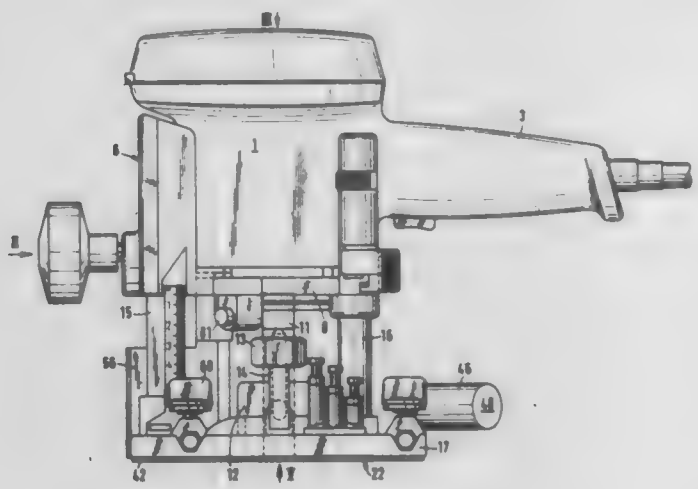
Peter Maier, Gerokstrasse 1, 7311 Neidlingen; Karl Attinger, Seestrasse 21, 7311 Holzmaden; Albert Sigel, Scholderplatz 21, 7315 Weilheim; Gernot Hänsel, Gerstenstrasse 31, 7000 Stuttgart 70; Erwin Kutscher, Hohenstaufenstr. 24, 7333 Ebersbach-Bünzwangen, and Hartmut Walter, Im Saemann 71, 7050 Waiblingen, all of Fed. Rep. of Germany

Filed Apr. 18, 1984, Ser. No. 601,636

Claims priority, application Fed. Rep. of Germany, Apr. 21, 1983, 3314419

Int. Cl.⁴ B23C *1/06*

U.S. Cl. 409—137 **13 Claims**



1. A router, comprising a drive unit housing, a rotatable cutter shaft extending out of said housing for carrying a cutter, guide column means extending out of said housing in the same direction as that of said cutter shaft, a rest plate having a contact surface for engaging a workpiece, said rest plate guided on said column means for movements toward and away from said housing and having an aperture therethrough for the passage of a cutter on the cutter shaft and aligned with the cutter shaft, said rest plate having a cutting cavity in said contact surface surrounding the aperture and surrounding a cutter carried on the shaft, said cavity extending outwardly for exhausting chips cut by the cutter away from the aperture, said rest place having an exhaust connection with an inlet communicating with said cutting cavity for removing chips from the cavity, a chip screen mounted on said rest plate along the periphery thereof, said chip screen extending parallel to the shaft and being lowerable to a maximum lowered position in a direction parallel to the shaft below said contact surface, a slide stop mounted on said rest plate adjacent said chip screen and extending parallel to the shaft and lowerable below the contact surface in a direction parallel to the shaft, and means on said chip screen and slide stop which are engageable at the maximum lowered position of said chip screen so that said chip screen can be lowered only as far as said slide stop is lowered and said chip screen can be lowered to a lesser extent than said slide stop.

4,606,686

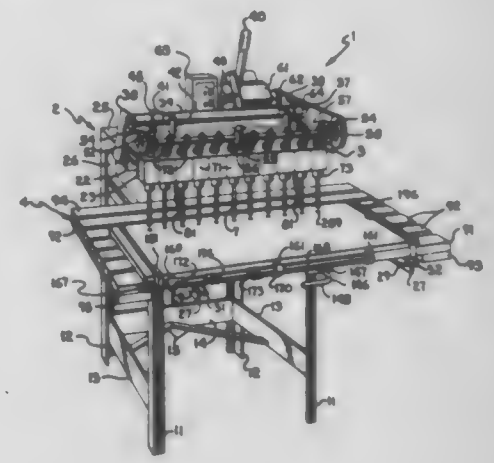
TOOL INDEXING DEVICE

Allen J. Weaver, 1108 S. 37th St., Kansas City, Kans. 66106

Filed Nov. 10, 1983, Ser. No. 550,368

Int. Cl.⁴ B23B *39/16*

U.S. Cl. 409—221 **17 Claims**



1. A device for indexing a tool with respect to a workpiece, which comprises:

(a) a stand with a track structure;

(b) a platform for a workpiece mounted on said stand and movable in a first direction;

(c) first indexing means for indexing said platform in said first direction relative to said stand, said first indexing means including detent means mounted on one of said stand and platform and engagement means on the other of said stand and platform for engaging said detent means at a respective predetermined position from front-to-back with respect to said stand;

(d) second indexing means for indexing said workpiece in a second direction relative to said platform, said second indexing means including a pivotable index arm connected to said platform and adapted for engaging said workpiece;

(e) a multiple drill including a plurality of drill means with upright drill bits;

(f) a vertical guide standard attached to and extending from one of said stand and said multiple drill;

(g) a guide sleeve attached to the other of said stand and said multiple drill, said guide sleeve slidably receiving said guide standard;

(h) a mounting apparatus attached to said stand and adapted to mounting said multiple drill on said stand;

(i) a motor mounted on said mounting apparatus and operably connected to said multiple drill; and

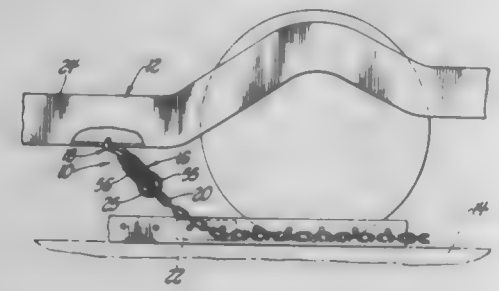
(j) said multiple drill being vertically reciprocable with respect to the workpiece by said mounting apparatus.

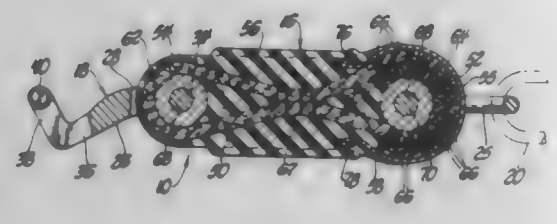
4,606,687

RESILIENT TIE-DOWN DEVICE

Ralph F. Mantela, Union Lake, and Thomas L. Savich, Brighton, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Mar. 15, 1985, Ser. No. 712,418
Int. Cl.[4] B60P *3/06*
U.S. Cl. 410—23 3 Claims





1. A restraint system for securing the frame of a vehicle to the support platform of a transporter, said restraint system including a hook device one end of which is provided with a head adapted to be connected to said frame and the other end of which is connected to a transversely extending pin, a chain adapted to be anchored at one end to said transporter, and a resilient tie-down device interconnecting said pin of said hook member to said chain, the improvement wherein said resilient tie-down device comprises a strap made of woven yarn of synthetic material having the two ends thereof overlapped and sewn together to provide an overlapped joint, a pair of guide spool members, said strap being folded so as to provide a pair of spaced loop portions with said overlapped joint forming one of said spaced loop portions, one of said pair of guide spool members being located in said one of said spaced loop portions and the other of said pair of guide spool members being located in the other of said spaced loop portions so as to permit said strap to have a breaking elongation of at least 30% when a separating force is applied to said spaced guide spool members, said guide spool members adapted to be pivotally connected to said chain and to said pin of said hook, and said strap being pretensioned and encapsulated in a jacket of elastomeric material so that said elastomeric material together with the strap serves to reduce forces transmitted to the vehicle from the transporter during shipping.

4,606,688

REMOVABLE FASTENING ASSEMBLY

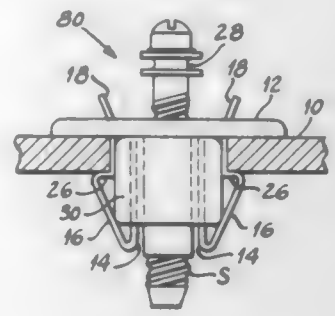
Thomas M. Moran, Cleveland, Ohio, and Donald N. Oehlke, Troy, Mich., assignors to Eaton Corporation, Cleveland, Ohio

Filed Dec. 15, 1982, Ser. No. 449,970
Int. Cl.[4] F16B *37/04*
U.S. Cl. 411—175 6 Claims

1. A removable fastening assembly adapted to be inserted into an article opening and to receive and secure and externally threaded member thereto and to enable the assembly to be removed from the same side of the article opening into which the threaded member is received, said assembly comprising:

a bridging member, said bridging member adapted to lay against the article and having a bridging portion thereof that bridges across the side of the article opening into which the threaded member is to be received, said bridging portion having an aperture therethrough for receiving the threaded member disposed intermediate pair of receiving openings respectively disposed therethrough on opposite sides of the aperture, and said bridging portion having means at least partially surrounding the aperture for engaging the threads of the threaded member and enabling the threaded member to advance through the aperture and into the article opening in response to rotation of the threaded member about a rotational axis associated therewith,

a pair of spaced-apart resilient arms respectively extending for a distance into the article opening from the side of the bridging portion facing towards the article opening intermediate the aperture and each receiving opening and thence angularly away from each other in a direction towards the side of the bridging portion facing toward the article opening to provide an enlarged section thereof taken in a direction substantially parallel to the plane of the article opening that in an expanded condition is larger than the distance between opposite edges of the article wall surrounding the opening by an amount sufficient to enable the arms to respectively press against said opening opposite edges and secure the assembly to the article and



then through the respective receiving opening to respective free-ends thereof that extend away from the side of the bridging member facing away from the opening for a distance sufficient to enable the arms to be contacted towards each other by hand an amount sufficient to contract the emlarged section an amount necessary to enable the removal of the assembly from the same side of the article opening in which the threaded member is received, and

nut means disposed between the arms extending away from the side of the bridging portion facing towards the article opening, said nut means having an opening therethrough that is substantially coaxially aligned with the aperture through the bridging portion and adapted to receive the threaded member and enhance the securement of the threaded member to the assembly and said nut means having at least one open-sided outwardly facing slot disposed along one of the sides thereof facing towards one of the pair of spaced-apart arms extending away from the bridging portion with at least a portion of said arm being contained within the slot to the extent required to enable the arm to prevent rotation of the nut in response to rotation of the threaded member.

4,606,689

METHOD AND APPARATUS FOR PRODUCING BOOK COVERS, FOLDERS, BOOKLETS AND THE LIKE

Sture H. Wiholm, Johanneshov, Sweden, assignor to Bind-O-Matic AB, Stockholm, Sweden

Filed Jul. 5, 1985, Ser. No. 752,469
Int. Cl.[4] B42C *9/00, 13/00*
U.S. Cl. 412—3 12 Claims

1. A method of producing book cover and the like from a blank, the book cover including at least one cover, a spine connected to the cover by at least one crease line, and a bond-

ing agent for adhering pages and the like inserted in the book cover to the inside of the spine, comprising the steps of:

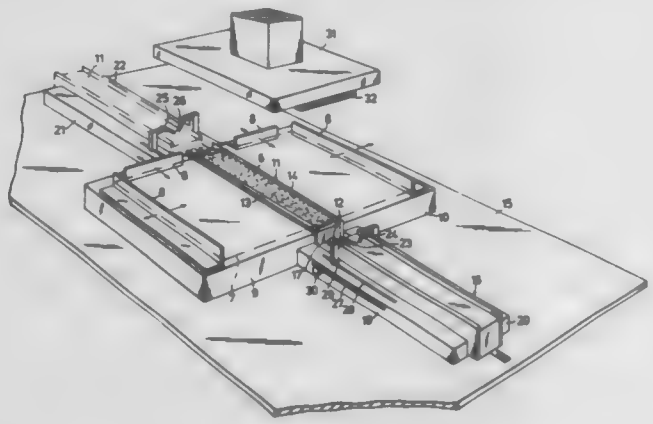
forming said bonding agent by depositing it as a liquid in a gutter means;

cooling said liquid to a semi-solid state;

aligning said blank to a predetermined position relative to the gutter means; and

pressing the blank, the gutter means and the bonding agent in semi-solid state against each other by means of press means to attach the bonding agent to the inside of the spine by adhesion.

5. An apparatus for producing a book cover and the like from a blank, the book cover including at least one cover, a



spine connected to the cover by at least one crease line, and a bonding agent for binding pages and the like inserted in the book cover to the inside of the spine, comprising:

a substantially horizontal gutter means having two spaced, parallel side walls;

a device for deposition of bonding agent in liquid state to said gutter means;

drive means for relative displacement between the deposition device and the gutter means during deposition of the bonding agent; and

press means for pressing the blank aligned above the gutter means, the gutter means and the bonding agent in semi-solid state against each other to attach the bonding agent to the inside of the spine.

4,606,690

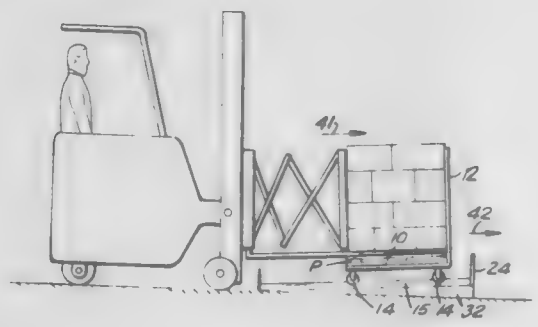
METHOD AND APPARATUS FOR LOAD TRANSFER

Lloyd R. Svendsen, East Hanover, N.J., assignor to Nabisco Brands, Inc., Parsippany, N.J.

Filed May 8, 1984, Ser. No. 608,055

Int. Cl.[4] B65G *67/00*

U.S. Cl. 414—343 **8 Claims**



1. An apparatus for use with a load-elevating carrying device having a load discharging push mechanism for single operation direct transference of a load from the elevating members of said load-elevating carrying device, said apparatus comprising:

means including a platform member for receiving the load from the load-elevating carrying device upon the transference of said load from the elevating members by the load-discharging push mechanism during an off-loading operation, said platform member having a generally vertical wall fixed to and extending upwardly from a part of the edge of said platform member;

means for enabling and guiding motion of said platform member during said off-loading operation along a path corresponding to the path of movement of said enabling and guiding means in response to a force applied to said platform member in the horizontal direction during said off-loading operation, said enabling and guiding means being connected to said platform member;

a transfer track which has a first end and a second end each having a stopping means to prevent linear travel of said enabling and guiding means from said track, and which has means for preventing lateral movement therefrom whereby a confined rectilinear path is defined, said enabling and guiding means being mounted on said confined rectilinear path with said platform member correspondingly confined to movement on said rectilinear path for receiving said load as it is discharged in response to the horizontal component of force imparted to said platform member during said off-loading operation; and further including a return means which comprises an upward incline extending from said first end to said second end, whereby the force of gravity urges said platform member toward said first end so that the load can be removed from said platform at said first end.

7. A method for transferring a load from a load-elevating carrying device having a load-discharging push mechanism with a single pushing operation comprising:

positioning a load mounted on the elevating portion of said device over a receiving platform having a generally vertical wall extending upwardly from the far end thereof, and mounted on moving means for restricted travel on a transfer track, said transfer track having a first end and a second end each having a means for stopping said platform from linear travel off said track and a means for preventing lateral movement from said track, and said second end elevated from said first end whereby an inclined rectilinear path is formed on which said platform member rises to meet said load in response to a horizontal component of force imparted to said platform member during off-loading, and

pushing the load from said elevating member of said device to discharge said load against said vertical wall and onto said platform member until said load clears said elevating member.

4,606,691

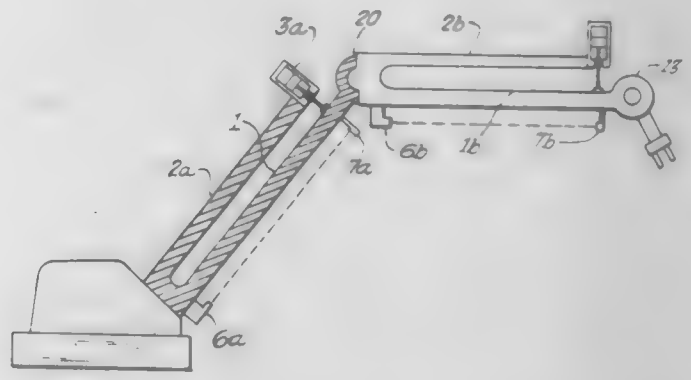
BEAM BENDING COMPENSATION

Alex Zalucky, 632 NW. 13th St., Boca Raton, Fla. 33432

Filed Apr. 30, 1983, Ser. No. 490,975

Int. Cl.[4] B25J *9/16*

U.S. Cl. 414—680 **6 Claims**



2. In a robot apparatus, the apparatus comprising at least one elongate mechanical member, said member exposed to mechanical load, a means for neutralizing load-induced deformation of said elongate mechanical member, said means comprising a correction means adapted to exert a force on said elongate mechanical member effective to offset said deformation;

wherein said correction means comprises a further mechani-

cal member movably coupled to said elongate mechanical member;

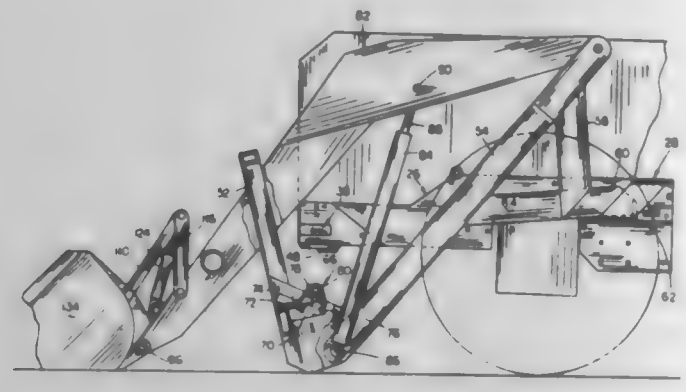
wherein said correction means comprises a coupling means connected between said elongate mechanical member and said further mechanical member for transmitting said force from said further mechanical member to said elongate mechanical member, a detector means connected between said elongate mechanical member and said further mechanical member for determining the magnitude and direction of said deformation of said elongate mechanical member, and a feedback means for causing said correction means to exert said force on said elongate mechanical member.

4,606,692

QUICK-MOUNT LOADER FOR ARTICULATED TRACTORS

Joseph W. Langenfeld, and Neal W. Westendorf, both of Onawa, Iowa, assignors to Westendorf Mfg. Co., Inc., Onawa, Iowa

Filed Aug. 22, 1983, Ser. No. 525,135
Int. Cl.[4] B66C *23/00*
U.S. Cl. 414—686 **1 Claim**



1.

A materials handling apparatus for a tractor having a rearward end, forward end, opposite sides, a pair of front wheels and a pair of rear wheels, comprising,

first and second support frames secured to opposite sides of the tractor and having rearward and forward ends,

each of said first and second support frames having a front connector element and a rear connector element,

a generally U-shaped frame means adapted to be detachably secured to and supported on the connector elements on said support frames,

said U-shaped frame means comprising a front frame portion having upper and lower ends and opposite sides, said front frame portion being positioned forwardly of the forward end of the tractor when said U-shaped frame means is mounted on said support frames, first and second elongated frame members secured to opposite sides of said front frame portion adjacent the lower end thereof and extending upwardly and rearwardly therefrom over the axles of the front wheels of the tractor when said U-shaped frame means is mounted on said support frames, third and fourth frame members extending rearwardly from said first and second frame members respectively,

first and second boom arms pivotally secured at one end thereof to the rearward ends of said first and second frame members and extending forwardly therefrom,

a first hydraulic cylinder pivotally secured at one end thereof to said first frame member adjacent the forward end thereof and extending upwardly and rearwardly therefrom, the other end of said first hydraulic cylinder being pivotally secured to said first boom arm forwardly of the rearward end thereof,

a second hydraulic cylinder pivotally secured at one end thereof to said second frame member adjacent the forward end thereof and extending upwardly and rearwardly therefrom, the other end of said second hydraulic cylinder being pivotally secured to said second boom arm forwardly of the rearward end thereof,

a materials handling attachment on the forward end of said boom arms,

the rearward end of said third frame member being adapted for selective connection to said rear connector element on said first support frame,

the rearward end of said fourth frame member being adapted for selective connection to said rear connector element on said second support frame,

first connection means at one side of said front frame portion for selective connection to said front connector element on said first support frame,

second connection means at the other side of said front frame portion for selective connection to said front connector element on said second support frame,

each of said rear connector elements comprising a generally rectangular shaped pocket adapted to receive and embrace the rearward end of the associated frame member,

each of said pockets comprising spaced-apart top and bottom walls extending outwardly from said frame member, and an outer wall extending between said top and bottom walls, the rearward end of said bottom wall terminating forwardly of the rearward end of said top wall, the forward end of said top wall terminating rearwardly of the forward end of said bottom wall,

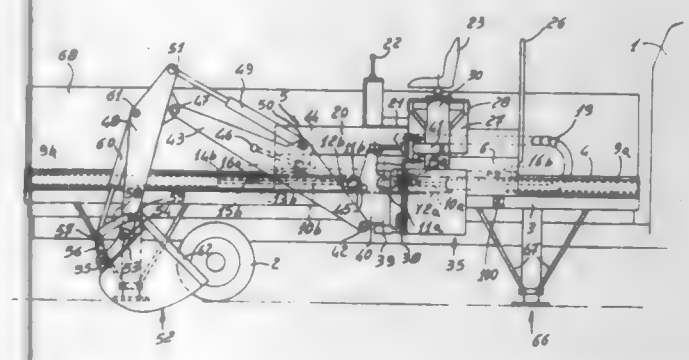
each of said third and fourth frame members having a downwardly extending finger mounted thereon for selective engagement with the rearward end of said bottom wall on said pocket.

4,606,693

RIGGED TRUCK, IN PARTICULAR FOR DITCH CLEARING

Cesare Pizzirani, Via Giardini 13, Bologna, Italy

Filed Jul. 31, 1984, Ser. No. 636,441
Claims priority, application Italy, Aug. 8, 1983, 3529 A/83
Int. Cl.[4] B66F *9/06*
U.S. Cl. 414—694 **8 Claims**



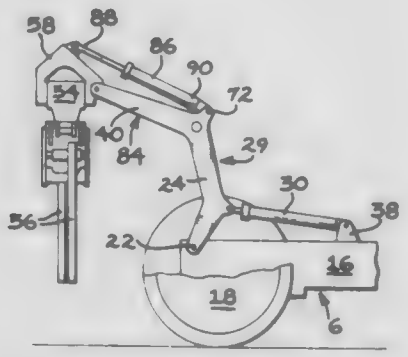
1. A rigged truck, characterized in that it comprises runways defined on the truck platform and extending longitudinally thereto close to a corresponding side thereof, a carriage mounted for controlled movement along said runways, a tower mounted for contolled rotation on said carriage and having at the top a rotatable seat for an operator, a main support carried, through a horizontal axis articulated parallelogram, cantilever-fashion on said tower and being controllably movable in a vertical direction, a secondary support mounted for controlled rotation about a vertical axis on said main support, an arm mounted to oscillate at one end thereof, under control and on a horizontal axis substantially parallel to the plane of said articulated parallelogram, to said secondary support, a boom mounted for controlled oscillation to the other end of said arm and being terminated with a tool, preferably an implement of the bucket type.

4,606,694

LOAD SKIDDING VEHICLE

Thomas C. Meisel, Jr., and Lyle E. York, both of Peoria, Ill., assignors to Caterpillar Inc., Peoria, Ill.

Continuation of Ser. No. 258,504, Apr. 29, 1981, abandoned.
This application Jan. 5, 1983, Ser. No. 455,766
Int. Cl.[4] B66C *3/16*
U.S. Cl. 414—732 17 Claims



1. A log skidding vehicle (2), comprising:
a chassis (16) having a forward and a rearward end;
a support assembly (29) mounted on and extending rearwardly from said chassis (16);
log engaging means (42) for holding one portion of a log above the ground with another portion of the log remaining in contact with the ground during forward movement of said chassis (16), said log engaging means (42) being pivotally connected to said support assembly (29) about a substantially horizontal axis and being freely laterally pivotable about an axis parallel to the longitudinal axis of the chassis (16); and
means (62,70,74,86) for controllably pivoting said log engaging means (42) about said substantially horizontal axis both toward and away from said chassis (16).

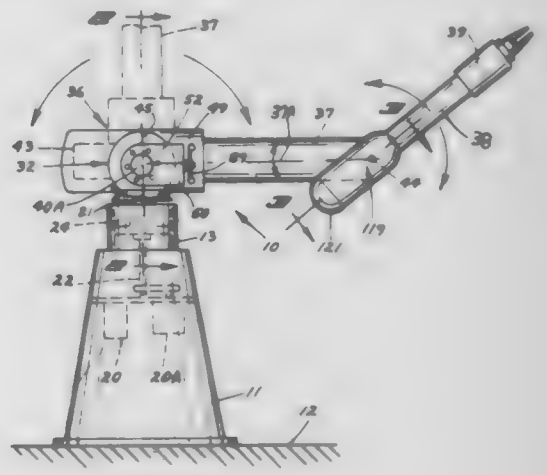
4,606,695

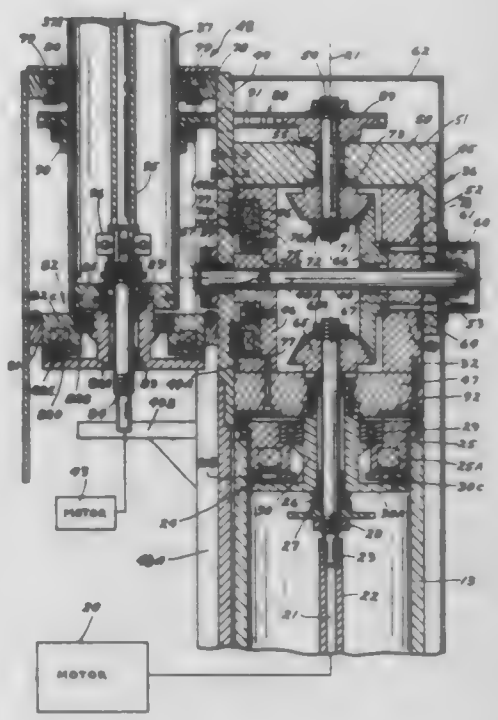
MULTIPLE AXIS ROBOT ARM

John O. Lenz, Coon Rapids, Minn., assignor to Kurt Manufacturing Company, Inc., Minneapolis, Minn.

Filed May 18, 1984, Ser. No. 611,685
Int. Cl.[4] B25J *9/00, 17/00*
U.S. Cl. 414—735 12 Claims

12. A robot joint comprising a support;
a single drive shaft, said drive shaft being drivably mounted on said support for rotation about a first axis;
a gear housing rotatably mounted relative to said drive shaft and said support and including a cross shaft perpendicular to the first mentioned drive shaft;
a yoke mounted on said cross shaft and rotatable relative thereto;
a third shaft generally perpendicular to said cross shaft, and having an axis lying in a plane with the drive shaft perpendicular to the cross shaft;
first and second gears drivably mounted on said drive shaft and on said third shaft, respectively, and a coupling gear on said cross shaft for drivably connecting said first and second gears; and
first, second and third brake means each having first and second portions connected between the respective elements it brakes and means operable between the respective brake portions to selectively control rotation of said gear housing relative to the support, said yoke relative to





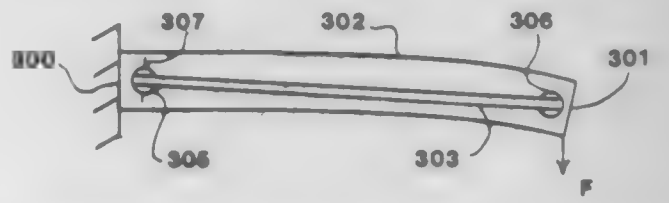
the cross shaft and said third shaft relative to the yoke about their respective axes.

4,606,696

MECHANISM TO DETERMINE POSITION AND ORIENTATION IN SPACE

Alexander H. Slocum, P.O. Box 268, 1290 Balls Hill Rd., McLean, Va. 22101

Filed Jun. 25, 1984, Ser. No. 624,256
Int. Cl.[4] B66C *23/00*
U.S. Cl. 414—744 R 38 Claims



1. A mechanism to determine at least one of the exact endpoint location and orientation of a structural beam with respect to a reference coordinate system that includes a reference line, irrespective of loads applied to the structural beam, which loads subject the structural beam to small bending movement about transverse axes and twisting movement about its longitudinal axis, that comprises:
a structural beam for supporting a load at one end thereof, said structural beam being attached at the other end thereof to an

anchor that serves as the reference coordinate system, which structural beam is pivotally connected to said anchor, changes in the linear distance between endpoints of said structural beam because of said bending as a function of loading due to deflections caused by said loading and twists due to torque forces caused by said loading about its longitudinal axis;

drive means connected to pivot the structural beam relative to the anchor;

a measuring beam associated with the structural beam, that is employed in measurement of the changes in the linear distance between endpoints of the structural beam by virtue of said bending movement and angular changes between the structural beam and the measuring beam by virtue of twisting and bending movements caused by said torque forces;

means to support the measuring beam at each end at a known point in the vicinity of a respective joint axis of the structural beam such that any deflections of the structural beam which are to be detected do not impose any loads on the measuring beam;

angular measuring means disposed at least at one joint axis of the measuring beam to measure any twist and slope difference angles between the central axis of the measuring beam and said other end of said structural beam and to measure any twist angle between the measuring beam and the reference line in the anchor coordinate system due to said twisting and bending movements; and

a linear measuring device that provides measurements needed to determine the changes in endpoint-to-endpoint linear distance of the structural beam, as a function of loading of the structural beam.

4,606,697

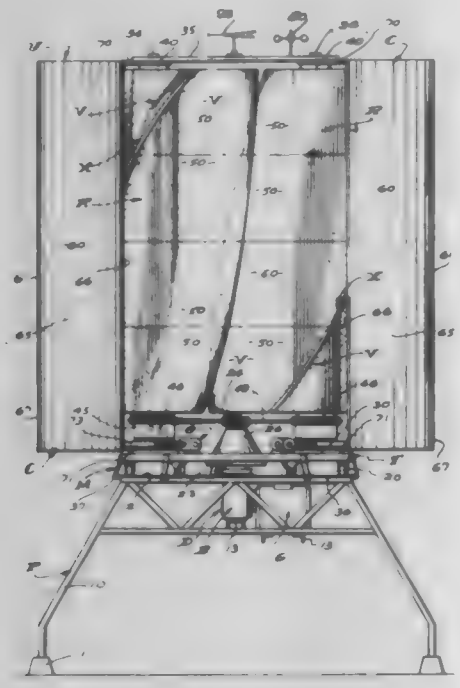
WIND TURBINE GENERATOR

Gerhard H. Appel, San Pedro, Calif., assignor to Advance Energy Conversion Corporation, Torrance, Calif.

Filed Aug. 15, 1984, Ser. No. 641,016

Int. Cl.[4] F03D *3/02*

U.S. Cl. 415—2 R 12 Claims



1. A wind-powered prime mover comprising a platform, a power shaft rotatably carried by the platform, a horizontal turn table rotatably supported atop the platform, a pair of elongate laterally spaced vertical columns projecting up from the turn table, a pair of elongate vertical rotors about and rotatably carried by the pair of columns and defining a vertically extending forwardly and rearwardly opening wind gate opening therebetween, a transmission means is engaged with and between the rotors and shaft and causes counter rotation of the rotors and rotation of the shaft when the rotors are drivingly turned, said rotors include a plurality of circumferentially spaced longitudinally extending radially outwardly projecting vanes which are positioned so that the vanes of each rotor occur between adjacent pairs of vanes of the other rotor when the rotors turn and the vanes advance rearwardly through the wind gate opening, said vanes have curved trailing reactive surfaces curved radially outwardly and circumferentially in the direction of rotation of the rotors and disposed forwardly, laterally, inwardly and rearwardly as they advance laterally inwardly, rearwardly and laterally outward relative to the wind gate opening; and air flow control means comprising a pair of laterally spaced shrouds positioned about the outer portions of the pair of rotors, said shrouds have laterally inwardly opening recesses freely rotatably accommodating the outer portions of the rotors and vanes and have vertical forward edges that define the front of the wind gate opening, the pairs of shrouds have wind directing surfaces projecting forwardly and outward from said edges and which direct air laterally inwardly and rearwardly to said wind gate opening.

4,606,698

CENTRIFUGAL BLOOD PUMP WITH TAPERED SHAFT SEAL

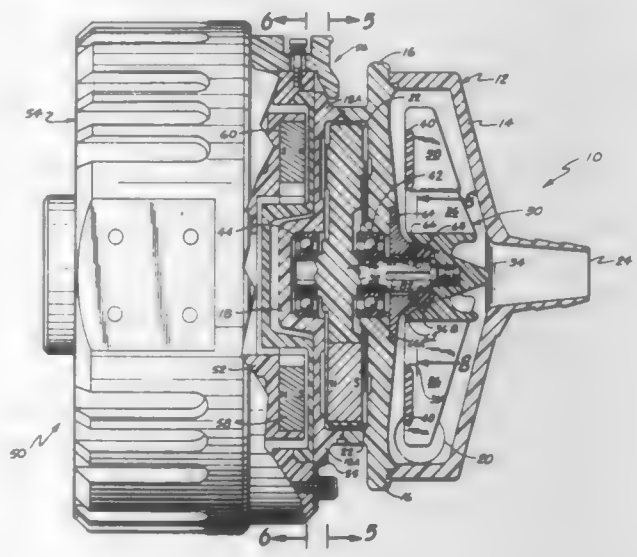
Earl W. Clausen, Wayzata, and Lloyd C. Hubbard, Minnetonka, both of Minn., assignors to MICI Limited Partnership IV, Minneapolis, Minn.

Filed Jul. 9, 1984, Ser. No. 628,727

The portion of the term of this patent subsequent to May 20, 2003, has been disclaimed.

Int. Cl.[4] F04D *29/12;* F16J *15/38*

U.S. Cl. 415—170 A 28 Claims



1. A centrifugal pump for pumping a biological fluid such as blood, the pump comprising:

a pump housing having a pumping chamber therein and having an inlet and an outlet connected to the pumping chamber;

a shaft extending in an axial direction into the pump housing to define a rotational axis;

an impeller for rotation about the rotational axis within the pumping chamber, the impeller having a hub; and

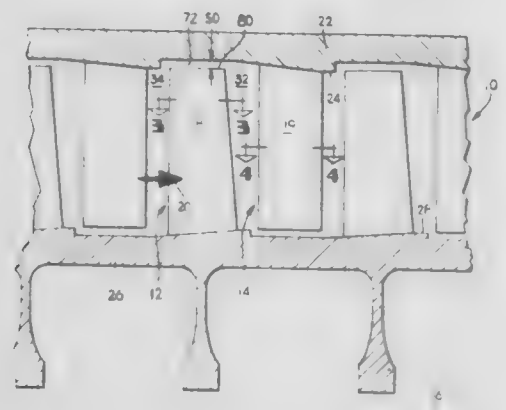
a tapered seal between a wall of the pump housing and the hub for providing a fluid-tight seal interface surrounding the shaft at an intermediate position between the wall and the hub, the tapered seal having a maximum radial dimension adjacent the wall and a minimum radial dimension adjacent the hub; wherein an outer surface of the tapered seal and an outer surface of the hub form an essentially continuous tapered outer surface so that the seal interface is located in a high fluid flow area within the housing and trapped air within the biological fluid will not tend to accumulate adjacent the seal interface.

4,606,699

COMPRESSOR CASING RECESS

Martin C. Hemsworth, Cincinnati, Ohio, assignor to General Electric Company, Cincinnati, Ohio

Filed Feb. 6, 1984, Ser. No. 577,397
Int. Cl.[4] F01D *11/08*
U.S. Cl. 415—170 R 6 Claims



1. In a compressor of an axial flow turbomachine having a first airfoil relatively rotatable with respect to a radially disposed surface and a second airfoil, aft of said first airfoil, and fixed with respect to said surface, said surface bounding a flowpath for aft moving fluid, the improvement comprising:

a circumferentially extending recess in said surface, radially disposed relative to said first and second airfoils with a clearance between said first airfoil and said surface;

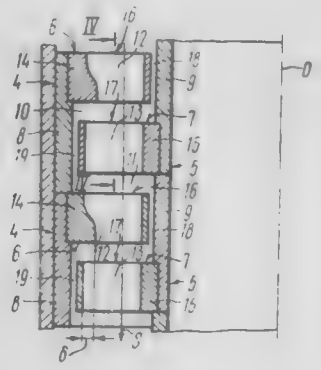
wherein said recess includes a generally aft facing wall, a generally axially directed wall, and a generally forward facing wall, said aft facing wall being oriented so as to provide a barrier to the forward flow of said fluid in said clearance, and said forward facing wall being oriented so as to provide an aerodynamically smooth transition from said recess into said flowpath.

4,606,700

TURBODRILL MULTISTAGE TURBINE

Sergei J. Brudny-Chelyadinov, Ljubertsy Moskovskoi; Vigdor S. Budyansky, Moscow; Viktor K. Sorokoumov, Moscow, and Viktor A. Filimonov, Moscow, all of U.S.S.R., assignors to Vsesojuzny Naucho-Issledovatelsky Institut Burovoi Tekhniki, Moscow, U.S.S.R.

Filed Oct. 15, 1979, Ser. No. 84,733
Int. Cl.[4] F01D *15/00*
U.S. Cl. 415—199.5 7 Claims



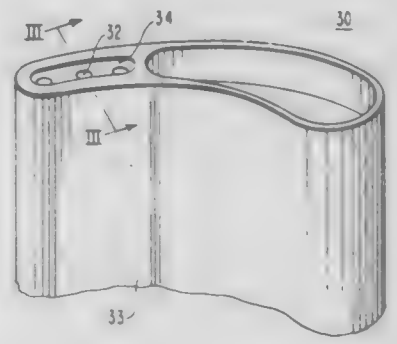
1. A turbodrill multistage turbine each stage of which comprises: a stator having a spacing sleeve separating adjacent stators of stages from one another, and a ring provided with a hub carrying a blading which defines a flow channel for passing a flowing medium; a rotor also having a spacing sleeve separating adjacent rotors of stages from one another, and a ring including a hub carrying a blading which defines a flow channel for passing a flowing medium, said rotor being disposed coaxially with said stator so that there are formed respective radial clearances between said ring of said stator and said spacing sleeve of said rotor, and also between said ring of the rotor and said spacing sleeve of the stator, and at least in a number of said rings the hubs are made such that there are pairs of adjacent rings in which at least a preceding (upstream) ring partially overlaps by its hub the flow channel of a subsequent (downstream) ring on the side of the radial clearance thereof, wherein the relationship between the cross-sectional area of a flow channel at the exit of a preceding ring and the cross-sectional area of a flow channel at the entrance of a subsequent ring for each said pair of adjacent rings is the same and lies substantially within the limits of 0.9 to 0.5.

4,606,701

TIP STRUCTURE FOR A COOLED TURBINE ROTOR BLADE

Augustine C. McClay, Ridley Township, Delaware County; James M. Allen, Marple Township, Delaware County, and William E. North, Concord Township, Delaware County, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Continuation of Ser. No. 298,819, Sep. 2, 1981, abandoned. This application Jun. 1, 1984, Ser. No. 616,786
Int. Cl.[4] F01D *5/18*
U.S. Cl. 416—92 5 Claims



1. A turbine rotor blade having a root portion for securing the blade in a rotor disc, an airfoil portion contoured to define concave and convex sides for intercepting the flow of hot motive gases, air channels within the root and airfoil portions for supporting the flow of cooling air therethrough, and a tip portion structured to provide an exhaust path for cooling air from the airfoil portion, said tip portion comprising:

an outwardly facing cavity defined substantially by an outward radial extension of blade walls;

a trailing edge end of said tip portion being too thin to support blade wall extension, so that said cavity cannot extend to the trailing edge end of said tip portion;

apertures in the exterior surface of said tip portion within said cavity for venting cooling air from the airfoil portion into said cavity;

at least one aperture in the exterior surface of said edge end of said tip portion outside said cavity; and

means for recessing said outside aperture from the exterior surface of said tip end portion to a depth less than the depth of said cavity so as to maintain the structural integrity of the tip end portion, so that an outside aperture is not sealed by a blade tip smear.

4,606,702

REVERSIBLE FAN WITH CYLINDRICAL RESILIENT RUBBER SPRING

Nelson E. Dinger, Erie, Pa., assignor to Huber Reversible Fan, Inc., Erie, Pa.

Filed Jan. 10, 1985, Ser. No. 690,477
Int. Cl.[4] F04D *29/36*
U.S. Cl. 416—206 1 Claim

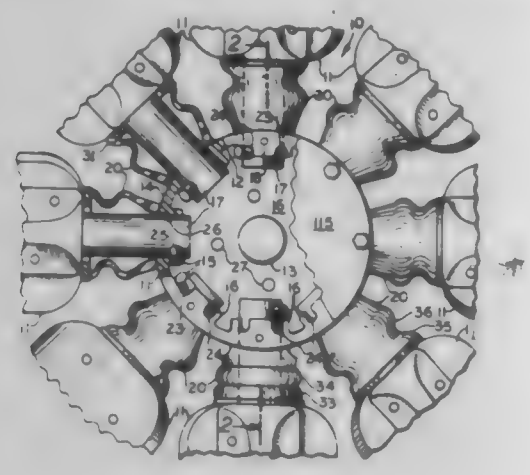
1. In combination a fan for an engine comprising a fanring,

circumferentially spaced diametrically extending bore means in said ring,

a plurality of blades,

a shaft on each said blade,

each said shaft baeing slidably received in one of said bore means,
limit means on each said shaft limiting the outward movement of an rotation of said blades on said ring,
resilient sleeve means on each said shaft urging said blades to move radially outwardly against said limit means,
said blades being adapted to be moved radially inwardly from said limit means and rotated between a first position to a second position,
said resilient sleeve means comprising a hollow cylinder made of resilient material having the properties of neoprene, said sleeve means having an outer end, an inner end and an intermediate part,
the walls of said sleeve at said ends being relatively thick and tapered to a relatively thin wall at said intermediate part,



said sleeve in normal position having a barrel shaped inner periphery,
said cylindrical walls of said sleeve in their compressed position taking a wavy shape,
one of said ends of said sleeve having a relatively rigid ring made of nylon material attached thereto resting on a said blade providing a low frictional resistance against blade rotation and the other said thickened ends resting on said fan ring,
said hollow cylinders being compressed longitudinally by said blades whereby said sleeve walls urge said blades to move outwardly,
and said nylon ring being adapted to slide on said blade when said blade is rotated.

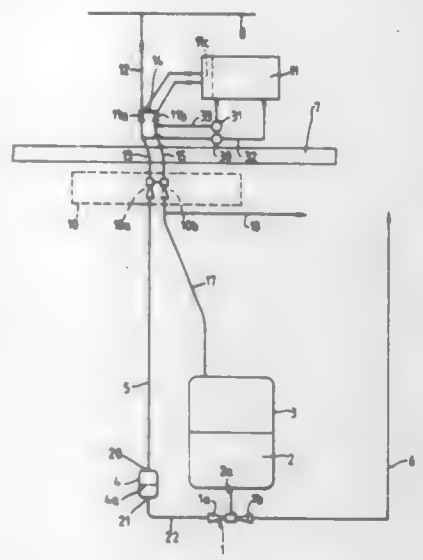
4,606,703

FLUIDIC PUMPING SYSTEMS WITH CONTROL MEANS RESPONSIVE TO LIQUID LEVEL

Joga S. Baines, Thornton Cleveleys, England, assignor to United Kingdom Atomic Energy Authority, London, England

Filed Apr. 2, 1985, Ser. No. 718,506
Claims priority, application United Kingdom, Apr. 4, 1984, 8408623
Int. Cl.[4] F04B *23/14*; F04F *1/02*
U.S. Cl. 417—86 **2 Claims**

1. A fluidic pumping system comprising a vessel for a liquid to be pumped, a reverse flow diverter positioned at a level below the level of the liquid to be pumped to receive liquid from the vessel, a charge vessel, a delivery pipe, said reverse flow diverter operatively positioned between the charge vessel and the delivery pipe, compressed gas supply means for the system, and control means connected to the gas supply means for effecting alternate pressurizing and venting of the charge vessel to effect pumping of the liquid, the control means including a conduit communicating with the charge vessel, pressure-responsive means for detecting the liquid level at at least one position in the operating cycle of the pump system, valve means operable in response to signals generated by the pressure-responsive means for effecting said alternate pressurizing and venting of the charge vessel, the control means further comprising a primary controller having an air drive pump connected to the conduit and a suction pump connected to the vessel for liquid to be pumped, and a secondary controller comprising the valve means and the pressure-responsive



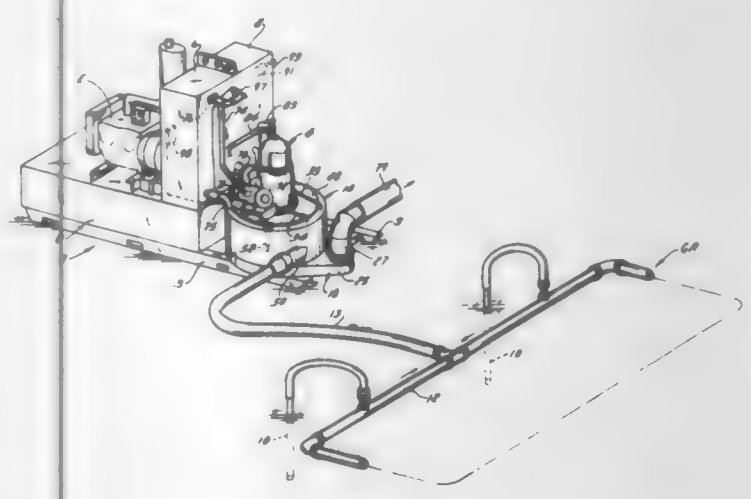
means, the primary controller, charge vessel, reverse flow diverter, and vessel for liquid to be pumped being located within a shield.

4,606,704

WELL POINT SYSTEM AND APPARATUS

Albert H. Sloan, 4201 Kean Rd., Ft. Lauderdale, Fla. 33314

Filed Jan. 7, 1985, Ser. No. 689,188
Int. Cl.[4] F04B *23/08, 17/00, 35/00;* F01D *25/00*
U.S. Cl. 417—199 A **13 Claims**



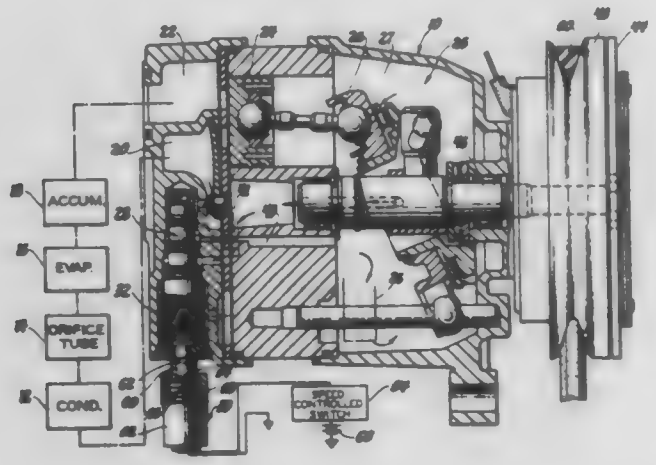
1. Well point pumping apparatus of the portable type comprising:
a power source having a generally horizontal power output shaft,
a tank on said apparatus, said power source output shaft extending through said tank,
enclosed tank means having a water inlet and a water outlet, said tank means having a water inlet chamber including a bottom,
an impeller type water pump assembly in said water inlet chamber and having a vertical axis of rotation, said water pump assembly having an impeller rotatable about said vertical axis and having an inlet eye facing in an upward direction for the reception of water downwardly into said impeller and by gravity feed thereto, said impeller having an upwardly extending shaft fixed thereto, and
a right angle gear unit drivingly connected between said impeller shaft and power source output shaft whereby said power source drives said impeller to pump water out of said tank means water outlet.

4,606,705

VARIABLE DISPLACEMENT COMPRESSOR CONTROL VALVE ARRANGEMENT

Dinesh V. Parekh, E. Amherst, N.Y., assignor to General Motors Corporation, Detroit, Mich.

Filed Aug. 2, 1985, Ser. No. 761,760
Int. Cl.[4] F04B *1/28*
U.S. Cl. 417—222 2 Claims



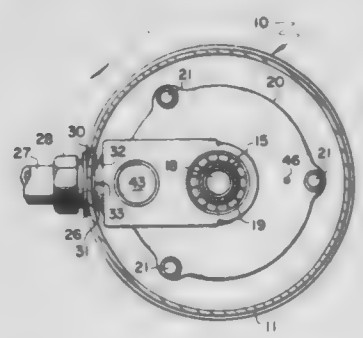
1. In a variable displacement wobble plate type compressor having compression chambers each with a suction valve for admitting fluid thereto at a suction pressure and a discharge valve for delivering the fluid therefrom at a discharge pressure, a sealed crankcase containing a variable angle wobble plate mechanism whose angle and thereby the piston stroke and thus displacement of the compression chambers is made to vary by pressurizing the crankcase using fluid at discharge pressure wherein the displacement is at its minimum when crankcase pressure rises to discharge pressure and is at its maximum when crankcase pressure falls to suction pressure, and a displacement control valve continuously acted upon and normally responsive to at least compressor suction pressure for controlling the pressure in the compressor's crankcase relative to suction pressure so as to normally increase the piston stroke and thereby displacement with increasing suction pressure: the improvement comprising speed responsive control means for directly acting on and positively conditioning said displacement control valve irrespective of the suction pressure so as to increase the crankcase pressure to discharge pressure above but not below a prescribed compressor life limiting speed and thereby decrease the piston stroke and thus displacement to its minimum above but not below said speed.

4,606,706

INTERNAL COMPLIANT SEAL FOR COMPRESSOR

Robert E. Utter, Genoa, Wis., assignor to American Standard Inc., New York, N.Y.

Filed Oct. 21, 1985, Ser. No. 789,891
Int. Cl.[4] F04B *21/00, 39/12;* F16L *27/00*
U.S. Cl. 417—313 14 Claims



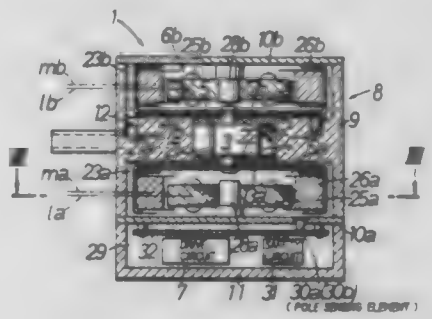
1. In a compressor having an outer shell and an internal chamber spaced apart from the inner surface of the outer shell, a seal extending between a first port disposed in the outer shell and a second port disposed in the chamber, said seal comprising: a tubular member sized to closely fit through the first port in sealing engagement therewith and including a radially extending flange on one end which is compliant under a compressive force directed along the longitudinal axis of the tubular member, said flange overlying and abutting the outer surface of the chamber around the second port, whereby the seal is operative to substantially confine fluid flow in the space between the first and second ports.

4,606,707

PUMP APPARATUS HAVING TWO DRIVE MOTORS

Hirotaka Kumata, Tokorozawa, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed May 22, 1985, Ser. No. 736,791
Claims priority, application Japan, Jun. 27, 1984, 59-132723
Int. Cl.[4] F04B *17/00;* H02K *7/00*
U.S. Cl. 417—354 18 Claims



1. A pump apparatus comprising:

a casing with an axis, said casing including an annular wall having an inner surface and an internal flange portion which projects radially inwardly from said wall to an axially central portion thereof, and opposite closed end walls, said internal flange portion and said end walls cooperatively defining a pair of motor chambers in the casing on opposite sides of said flange portion;

a rotary pump including a rotatable shaft having opposite ends projecting into the pair of motor chambers and a rotor secured to said shaft, said shaft and said rotor being disposed within a pump chamber defined within said internal flange;

a pair of brushless motors respectively disposed in said motor chambers, said motors each including a motor stator mounted on a respective one of said end walls and a motor rotor drivingly connected to the projecting end of said rotatable shaft for integral rotation therewith and in concentric relation with the respective stator;

and drive circuit means for driving said brushless motors;

the motor stator and the motor rotor of each pair of motors being axially offset from each other in the same direction as the other pair to apply axial force to said rotatable shaft opposing axial fluctuation thereof during rotation.

4,606,708

INTERNAL COMBUSTION DRIVEN PUMPING SYSTEM AND VARIABLE TORQUE TRANSMISSION

Garry E. Clark, 1102 Mountain View Dr., De Soto, Tex. 75115

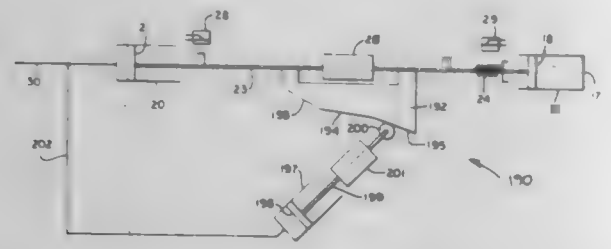
Division of Ser. No. 514,167, Jul. 15, 1983, Pat. No. 4,541,243, which is a continuation of Ser. No. 266,933, May 26, 1981, Pat. No. 4,459,084. This application Jul. 1, 1985, Ser. No. 750,581
Int. Cl.[4] F04B *35/00*
U.S. Cl. 417—380 8 Claims

1. In an internal combustion driven fluid pumping apparatus, including a two-stroke combustion cylinder having a first reciprocable piston therein operative to perform a combustion stroke and a compression stroke, and a compression cylinder in fluid communication with a hydraulic circuit having an optimum fluid flow rate associated therewith, said compression cylinder having a second reciprocable piston therein, the improvement comprising:

means for drivingly connecting said first and second pistons including:

a mass defining a cam surface connected to said first piston; and

a cam follower engaging said cam surface and connected to said second piston;



said cam surface being a slope increasing in steepness with respect to the axis of said first piston as said cam surface moves past said cam follower during said combustion stroke.

4,606,709

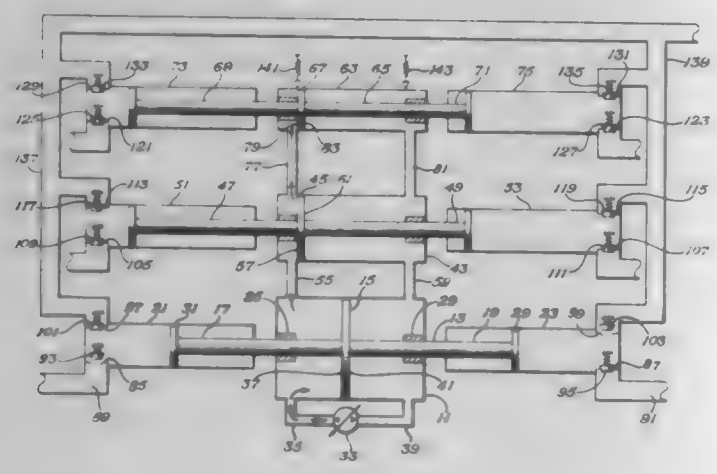
LIQUID PUMP WITH SEQUENTIAL OPERATING FLUID PISTONS

James P. Chisolm, Sand Springs, Okla., assignor to Special Projects Mfg. Co., Fort Worth, Tex.

Continuation-in-part of Ser. No. 632,685, Jul. 20, 1984, abandoned, which is a continuation of Ser. No. 408,759, Aug. 17, 1982, abandoned. This application Aug. 26, 1985, Ser. No. 769,314

Int. Cl.[4] F04B *9/10*

U.S. Cl. 417—347 **6 Claims**



1. A pump for pumping a liquid working fluid comprising in combination:

primary and secondary operating fluid cylinders, having ports in each end and containing primary and secondary pistons, respectively;

reversible pump means for alternately supplying operating fluid simultaneously to the ports of the operating fluid cylinders on one side of the pistons while draining from the ports on the opposite side of the pistons to cause the pistons to stroke in two directions;

the primary and secondary pistons having shaft portions extending outward and received within primary and secondary working fluid chambers, respectively;

the working fluid chambers having inlets leading to a common source of working fluid, and outlets connected in parallel to a common discharge conduit;

the diameters of the pistons and their shaft portions being selected such that for a given operating fluid pressure initially applied to both of the pistons, a greater output pressure will be initially created in the primary working fluid chamber than in the secondary working fluid chamber, which is applied to the outlet of the secondary working fluid chamber, delaying movement of the secondary piston during each stroke, until the primary piston reaches the end of its stroke, the reversible pump means then increasing the operating fluid pressure sufficient in the secondary operating fluid cylinder to cause the secondary piston to stroke while the primary piston remains stationary; and

fluid cushion means at the end of each operating fluid cylinder, for trapping a residual amount of operating fluid between each piston and the nearest port as the piston nears the end of its stroke, and for retarding the flow of the residual amount out the nearest port to dampen the movement of the piston as it nears the end of its stroke; the fluid cushion means of the degree of dampening than the fluid cushion means of the primary operating fluid chamber, to provide time for the reversible pump means to reverse flow before the secondary piston reaches the limit of its travel.

4,606,710

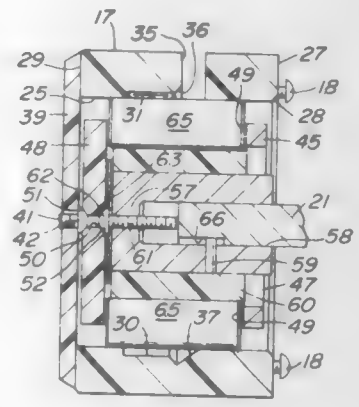
PERISTALTIC PUMP

Stephen B. Maguire, 400 W. Knowlton Rd., Media, Pa. 19063

Filed Oct. 9, 1985, Ser. No. 785,665

Int. Cl.[4] F04B *43/12*

U.S. Cl. 417—477 **11 Claims**



1. A peristaltic pump comprising an outer casing, an annular cage centrally in said casing, cage mounting means mouting said cage for rotation in said casing, an annular array of rollers carried by said cage for planetary motion rotating with said cage and relative to said cage, said rollers being dimensioned to project both radially inwardly of and outwardly beyond said cage, a rotary drive in said cage in driving engagement with said rollers for rotating the latter in said planetary motion, drive mounting means mounting said drive in said cage, and flexible tubing interposed between said casing and rollers for peristaltic squeezing of said tubing by successive rollers upon said planetary motion, said casing having an internal sector formation for receiving said flexible tubing, said casing having through openings at opposite ends of said formation for passing spaced locations of said tubing through said casing, and said casing having a through slot along said sector formation for lateral insertion and withdrawal of said tube into and out of said formation and openings.

4,606,711

FLUID PUMP WITH ECCENTRICALLY DRIVEN C-SHAPED PUMPING MEMBER

Takao Mitsui, Aichi; Toshiharu Tatsunaka; Hideaki Sasaya, both of Okazaki, and Youji Kitamura, Anjo, all of Japan, assignors to Nippon Soken, Inc., Nishio and Nippondenso Co., Ltd., Kariya, both of, Japan

Continuation-in-part of Ser. No. 735,728, May 20, 1985, abandoned, which is a division of Ser. No. 568,143, Jan. 4, 1984, abandoned. This application Jul. 8, 1985, Ser. No. 752,016

Claims priority, application Japan, Jan. 10, 1983, 58-2514; Feb. 7, 1983, 58-19307

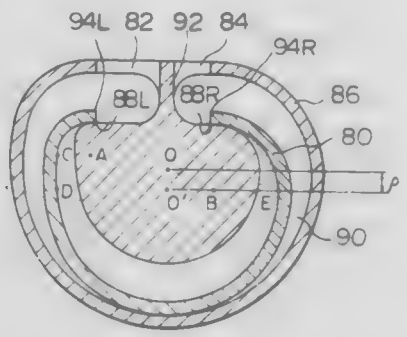
Int. Cl.[4] F04C *2/04, 18/04*

U.S. Cl. 418—59 **4 Claims**

1. An improved fluid pump of the type in which a pumping member in the form of a section of a split-tube having an open-ended, generally C-shaped transversal cross-section throughout the entire length thereof is received within an

enclosed pumping chamber and is driven by an eccentric drive so that any point on said pumping member cyclically oscillates along a circular trajectory to draw the fluid into said pumping chamber through an inlet located at one end thereof and to discharge the pressurized fluid through an outlet located at the other end thereof, said pumping chamber having a length substantially equal to that of said pumping member and having a cross-sectional contour following the profile of said pumping member with the width of said pumping member, as measured along the line normal to the general line thereof, being substantially equal to the wall thickness of said pumping member plus the diameter of said circular trajectory, the improvement wherein:

said pumping member and said pumping chamber are so shaped that, in their transversal cross-section, the tangential lines drawn to the walls of said pumping member and



said pumping chamber at the ends thereof are parallel with each other, whereby at the top-dead-center and the bottom-dead-center positions of said pumping member with respect to said pumping chamber, the pumping member has a close sealing contact with the walls of said pumping chamber to thereby prevent fluid leakage therethrough, and wherein.

in their transversal cross-section, said pumping member and said pumping chamber are asymmetric with respect to a central plane passing through the axis of rotation of said eccentric drive so that the halves of said pumping member and said pumping chamber located at the side of said outlet have portions having larger radius of curvature than that of the other halves located at the side of said inlet and wherein said inlet has a larger cross-sectional area than that of said outlet.

4,606,712

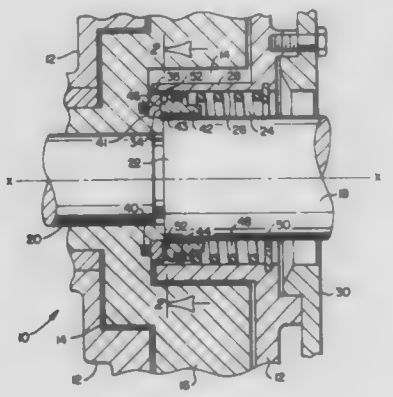
SELF-PUMPING PUMP SHAFT SEAL

Lubomir Vondra, Kansasville, Wis., assignor to Abex Corporation, Stamford, Conn.

Filed Nov. 14, 1984, Ser. No. 671,346

Int. Cl.⁴ F04C *2/18, 15/00;* F16J *15/34, 15/54*

U.S. Cl. 418—88 **1 Claim**



1. A positive displacement fluid pump having a stationary housing, a pump chamber in the housing having an inlet and an outlet; a drive shaft rotatably mounted in the housing; a rotary impeller located in the pump chamber and mounted on the drive shaft to pump fluid from the inlet to the outlet; an annular drive shaft chamber opening into the pump chamber in the housing through which the drive shaft extends and having an inner surface concentric with the drive shaft axis; and sealing means for sealing the drive shaft chamber from the pump chamber comprising a rotary seal member mounted for rotation with the impeller, a stationary seal member mounted on the drive shaft chamber inner surface surrounding the drive shaft, and means biasing the seal members into contact; an outer surface on the rotary seal member which opposes the drive shaft chamber inner surface, a peripheral pocket being defined by the drive shaft chamber inner surface, the stationary seal member, and the rotary seal member, the peripheral pocket being in communication with the pump chamber; charactertized by the rotary seal member having its outer end surface spaced a non-uniform radial distance from the adjacent inner surface of the drive shaft chamber so that when the drive shaft is rotated the changing radial distance between the inner and outer surfaces causes a continuous pumping of material into and out of the peripheral pocket.

4,606,713

ROTARY POSITIVE-DISPLACEMENT FLUID-PRESSURE MACHINES

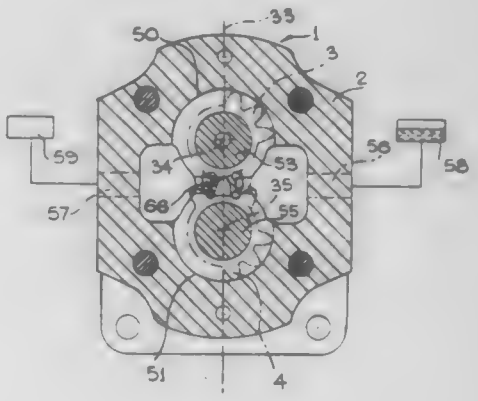
Brian R. Lipscombe, Cheltenham, England, assignor to Dowty Hydraulic Units Limited, Cheltenham, England

Filed Jun. 11, 1985, Ser. No. 743,401

Claims priority, application United Kingdom, Jun. 21, 1984, 8415879

Int. Cl.⁴ F04C *18/27*

U.S. Cl. 418—131 **9 Claims**



1. A rotary positive-displacement fluid-pressure machine of a bi-directional type including a casing, at least two intermeshing rotors of toothed form, each having their rotational axes formed in a plane, housed for rotation in said casing, first end plate means having a face engaging said rotors and having an end face opposite to said face and thus remote from said rotors, a pressure-balancing arrangement associated with said end face and comprising sealing means which separate, one from another, a plurality of areas on said end face, some of which are subjectable to high fluid pressures and others of which are subjectable to low fluid pressures, further sealing means, a further area on said end face in a zone thereof which is opposite and thus in positional correspondence with that zone of said face engaging said rotors which is in registry with the region where the teeth of said rotors are in mesh, and fluid passage means connecting the high fluid pressure side of said machine to said further sealing means, said further area (a) being defined by the profile of said further sealing means, (b) being disposed symmetrically with respect to the plane containing the rotational axes of said rotors, (c) being disposed the same distance away from each of said rotational axes, and (d) being continuously subjected, during operation of the machine, only to high pressure, prevailing in said passage means, which is applied thereto through the intermediary of said further sealing means.

4,606,714

TIRE PRESS MECHANISM

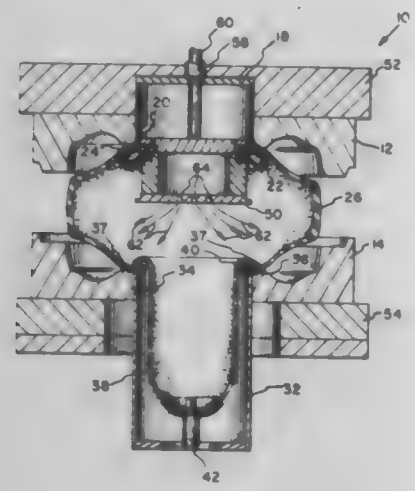
Bryan E. Nixon, Akron; George M. Stoila, Kent, and Stephen L. Williams, Doylestown, all of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Continuation of Ser. No. 583,006, Feb. 23, 1984, abandoned, which is a division of Ser. No. 508,277, Jun. 27, 1983, Pat. No. 4,444,715, which is a continuation-in-part of Ser. No. 480,713, Mar. 31, 1983, abandoned. This application Mar. 27, 1985, Ser. No. 716,470

Int. Cl.[4] B29H *5/02*

U.S. Cl. 425—28 R

31 Claims



1. A tire press comprising a center mechanism for mounting in a central opening in an upper half of a tire press including an upper well having a generally cylindrical side member, an upper bead ring of said press attached to an edge of said cylindrical side member, a clamping bladder center support assembly movable into and out of said upper well, an annular clamping bladder having at least one portion fastened to the outer periphery of said support assembly, said support assembly having a radially outer surface spaced from the radially inner surface of said cylindrical side member to provide space for said clamping bladder upon retraction of said support assembly into said upper well, means for raising and lowering said upper well in said central opening of said tire press, means to raise and lower said clamping bladder center support assembly in said upper well, means for inflating said clamping bladder to clamp a bead of an uncured tire against said upper bead ring in the extended position of said clamping bladder center support assembly when out of said upper well, and means for deflating said clamping bladder for storage between said upper well and said support assembly in the retracted position of said assembly when in said upper well during vulcanization.

4,606,715

APPARATUS FOR MAKING BUILDING PANELS IN A CONTINUOUS OPERATION

Roger E. Larson, P.O. Box 7123, Carmel, Calif. 93921

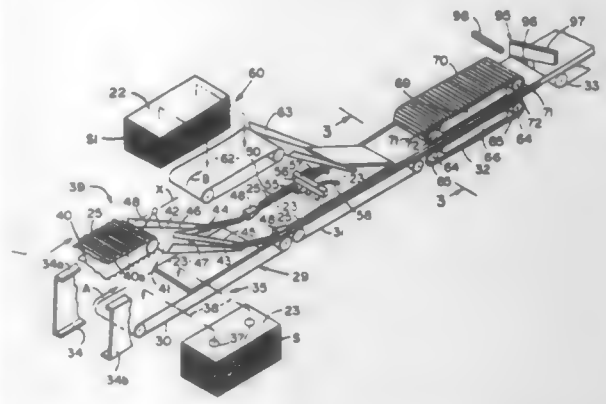
Continuation of Ser. No. 635,573, Jul. 30, 1984, abandoned, which is a division of Ser. No. 450,732, Dec. 17, 1982. This application Nov. 6, 1985, Ser. No. 794,610

Int. Cl.[4] B29C *65/00, 11/04, 39/12*

U.S. Cl. 425—110

13 Claims

1. Apparatus for making building panels in a continuous operation comprising conveying means having a flat forwardly-moving support surface, a first feed mechanism positioned adjacent said support surface and arranged to remove individual rigid flat sheets from a supply of sheets and deposit them sequentially in single file end-to-end relation on said surface to form a line of lower sheets, guide means mounted alongside each side edge of said support surface and projecting upwardly to an elevation higher than the elevation of said surface, dispensing means downstream from said first feed mechanism for depositing foamable material on the upper surface of said lower sheets downstream from said first feed mechanism, and a second feed mechanism adjacent said support surface and arranged to remove individual flat rigid sheets from a supply of sheets and deposit them sequentially in end-to-end relation over the foamable material on said support surface to form a



continuous column wherein foamable material in the act of expanding and solidifying is carried along between two rigid sheets.

4,606,716

MOLD AND BISCUIT CUTTER

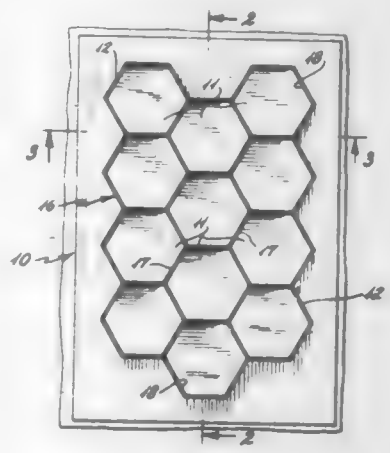
Charles N. McCaffrey, P.O. Box 2001, Hattiesburg, Miss. 39401

Filed Jun. 19, 1984, Ser. No. 622,325

Int. Cl.[4] A21C *5/00, 11/10*

U.S. Cl. 425—289

6 Claims



1. An apparatus for preparing a plurality of biscuits from a batch of dough without leaving any waste or excess dough comprising a mold having a cavity therein in which the dough is evenly received, said cavity being defined by a plurality of generally straight side wall portions which are disposed in a zigzag relationship with respect to one another around the periphery thereof, a cutter element cooperatively receivable within said cavity and dividing said cavity into a plurality of equal volumes, said cutter element having a plurality of substantially straight wall segments which are connected in angular relationship with respect to one another, said cutter element being insertable within said cavity so as to be in substantially a sliding engagement therewith and cooperating with said sidewall portions thereof so that said plurality of equal volumes are defined by at least six sides whereby said mold and said cutter element cooperate to divide the batch of dough into a plurality of substantially equally shaped portions which will create generally circular edible products when cooked.

4,606,717

APPARATUS FOR THE PREPARATION OF HOLLOW BODIES FROM A THERMOPLASTIC MATERIAL BY THE BLOW MOLDING PROCESS

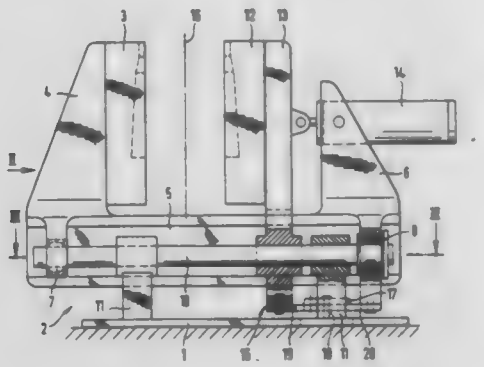
Gerhard Polak, Rührmoos, Austria, and Norbert Dini, Deisenhofen, Fed. Rep. of Germany, assignors to Krauss-Maffei AG, Fed. Rep. of Germany

Filed Jul. 30, 1985, Ser. No. 760,534

Claims priority, application Fed. Rep. of Germany, Aug. 4, 1984, 3428823

Int. Cl.[4] B29C *49/30*

U.S. Cl. 425—541 5 Claims



1. An apparatus for production of hollow bodies from a thermoplastic material by a blow molding process with a locking unit comprising:

first and second means for supporting mold halves, each bearing one half of a mold;

synchronizing means, kinematically joining said first and second means for supporting, for affecting a synchronous closing motion of said first and second means for supporting with respect to each other;

spar means for guiding said means for supporting wherein said first means for supporting is fixedly attached to said spar means;

cylinder means for displacing said second means for supporting parallel to the first means for supporting on the spar means articulated on one end to said second means for supporting and on the other end to a cylinder support fixedly joined to said first means for supporting, wherein said cylinder means and said second means for supporting are located between said cylinder support and said first means for supporting;

rigid support frame means for fixedly connecting said cylinder support to said first means for supporting wherein said support frame is a single piece with a high bending rigidity;

said spar means being supported in an axially displaceable manner on a bottom stand.

4,606,718

METHOD AND APPARATUS FOR SHUTTING DOWN THE BURNER OF A FLAME ATOMIC ABSORPTION

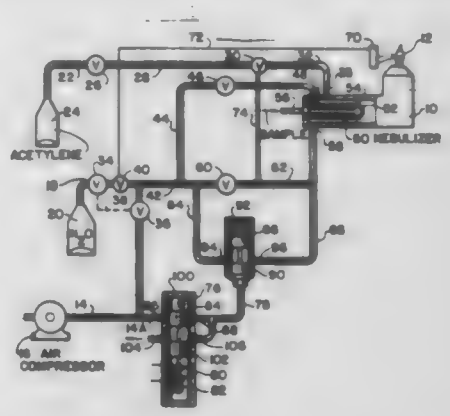
Michael W. Kendall-Tobias, Danbury, Conn., assignor to The Perkin-Elmer Corporation, Norwalk, Conn.

Filed Nov. 13, 1984, Ser. No. 670,712

Int. Cl.[4] F23N *5/00*

U.S. Cl. 431—6 17 Claims

1. An improved method for shutting down a burner system in a flame atomic absorption spectrophotometer while using nitrous oxide as the oxidant for a fuel without shifting to a different oxidant such as air which is used for iniating the flame atomic absorption spectrophotometer, comprising flooding the burner with a substantial excess of nitrous oxide to blow out the flame in response to either failure of electrical means con-



trolling the burner system or a decrease in pressure of the different oxidant.

4,606,719

COMBUSTION APPARATUS

Keiichi Mori, Izumiotsu; Katsuhiko Yamamoto, Nabari; Mitsuhiro Imajima, Yamatokooriyama, and Kuniaki Uchida, Kashihara, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

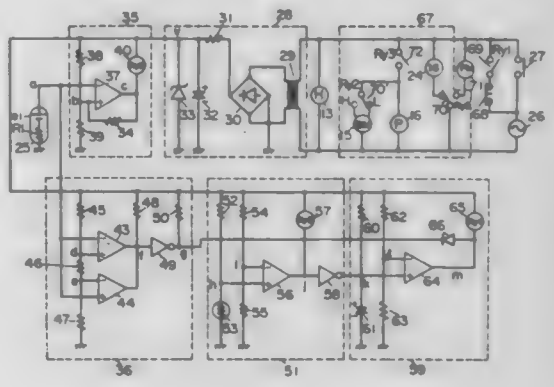
PCT No. PCT/JP84/00194, § 371 Date Dec. 18, 1984, § 102(e) Date Dec. 18, 1984, PCT Pub. No. WO84/04150, PCT Pub. Date Oct. 25, 1984

PCT Filed Apr. 17, 1984, Ser. No. 682,672

Claims priority, application Japan, Apr. 19, 1983, 58-69432; Apr. 20, 1983, 58-70332; May 27, 1983, 58-94311

Int. Cl.[4] F23H *5/00*

U.S. Cl. 431—63 5 Claims



1. A combustion apparatus comprising:

burner means for burning a mixture of fuel supplied by a fuel supply device and air from a combustion air blower motor;

sensor means for detecting a combustion condition of said burner as a function of the oxygen concentration in said mixture;

ignition circuit means for igniting said burner; and

ignition detection means for detecting an electromotive force of said sensor obtained by the ignition of said burner means as an ignition signal,

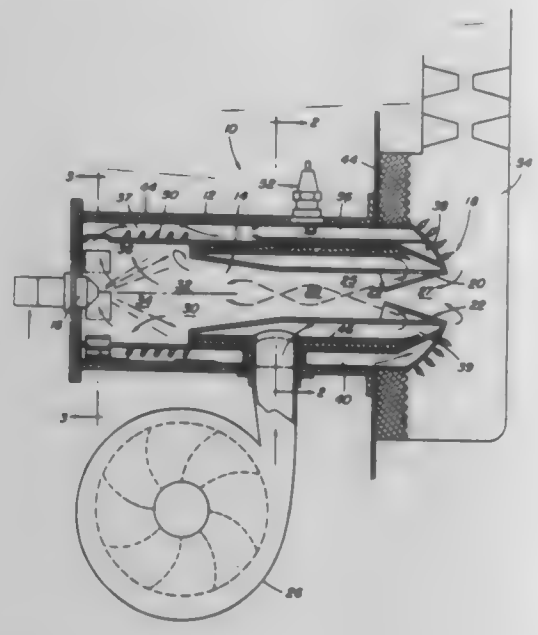
said circuit means being provided with means for changing over the amount of air to be fed by the combustion air blower motor so as to maintain said burner at a low air/fuel ratio until said ignition detecting means detects said ignition signal upon actual ignition of said burner.

4,606,720

PRE-VAPORIZING LIQUID FUEL BURNER

Andrew C. Harvey, Waltham, Mass., assignor to Foster-Miller, Inc., Waltham, Mass.

Filed Sep. 17, 1984, Ser. No. 651,172
Int. Cl.[4] F23J *5/02*
U.S. Cl. 431—115 9 Claims



1. A burner comprising:

(a) a housing formed with an internal chamber;

(b) eductor means mounted to said housing at a forward end of said chamber, said eductor means formed with a passageway having an inlet and an outlet, a plurality of air ducts disposed within said passageway, said air ducts arranged to direct air flowing therein into a path toward the longitudinal axis of said chamber from said forward end of said chamber to a rear end thereof;

(c) first means for introducing air into said chamber through said air ducts, recirculated combustion gas being drawn into said eductor means inlet, through said passageway and out said eductor means outlet by air flowing through said ducts, said gas and air entering said chamber in interleaving streams of gas and air, said gas and air mixing in said chamber;

(d) second means for introducing fuel into the rear of said chamber in the flow path of said streams of gas and air, said fuel mixing with said mixture of combustion gas and air in the rear portion of said chamber to form a mixture of combustion gas, fuel, and air; and

(e) flameholder means for supporting a flame, said flameholder means positioned at said eductor means inlet, said combustion gas being drawn from the flame on said flameholder means into said eductor means inlet, and means for delivering the mixture of combustion gas, fuel and air to said flameholder means about said eductor means.

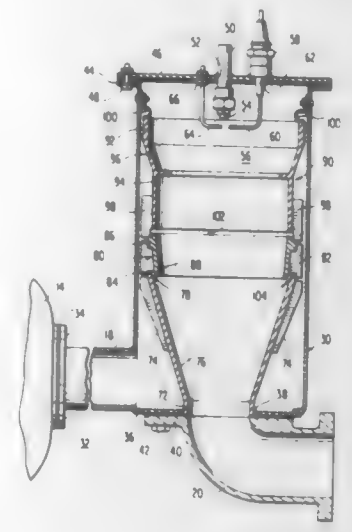
4,606,721

COMBUSTION CHAMBER NOISE SUPPRESSOR

Arnold M. Livingston, Millington, N.J., assignor to Tifa Limited, Millington, N.J.

Filed Nov. 7, 1984, Ser. No. 669,186
Int. Cl.[4] F23C *9/02*
U.S. Cl. 431—116 4 Claims

1. A combustion chamber for a hot fog generating machine comprising a hollow cylinderical combustion chamber shell having a closure plate at one end and outlet means at the opposite end for directing hot combustion gasses to a fogging nozzle, air inlet means disposed adjacent said outlet means, fuel inlet means and ignition means mounted in said closure plate and liner means disposed concentrically within said cylindrical combustion chamber for controlling the flow of air and combustion gasses within said shell, said liner means including a liner base having a frustroconical configuration with the smaller diameter end thereof disposed in communication with said outlet means and with the larger diameter end thereof disposed in spaced relation to said shell, a plurality of circumferentially spaced, longitudinally extending fins extending outwardly from said liner base intermediate said liner base and said shell, a cylindrical liner midsection having a plurality of circumferentially spaced fins extending outwardly therefrom between said midsection and said shell with said fins supporting said midsection on said larger diameter end of said liner base to define a circumferentially extending passage between



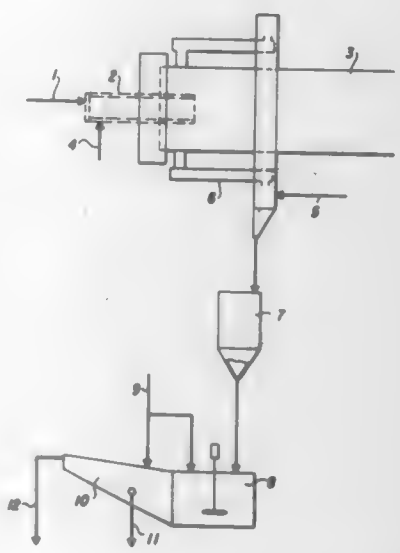
said liner base and said liner midsection and a substantially cylindrical liner throat section having a plurality of circumferentially spaced longitudinally extending fins extending outwardly therefrom between said liner throat member and said shell with said fins supporting said liner throat section on said liner midsection in spaced relation thereto, said fins on said liner base, said liner midsection and said liner throat being circumferentially spaced in a spiral arrangement to define a spiral passage for air from said inlet means to the portion of said combustion chamber adjacent said fuel inlet means and ignition means.

4,606,722

FIRING OF LIME SLUDGE REBURNING KILNS WITH A SOLID FUEL

Lars G. Olauson, Angered, Sweden, assignor to AF-Industrins Processkonsult AB, Stockholm, Sweden

Filed Dec. 18, 1984, Ser. No. 683,138
Claims priority, application Sweden, Dec. 21, 1983, 8307080
Int. Cl.[4] F27B *15/00*
U.S. Cl. 432—14 10 Claims



1. Method for firing a lime sludge reburning kiln with a solid fuel when reburning lime sludge ($CaCO_3$) to burnt lime sludge (CaO) in said lime sludge reburning kiln, in which kiln cold aqueous lime sludge is introduced at one end and reburnt in

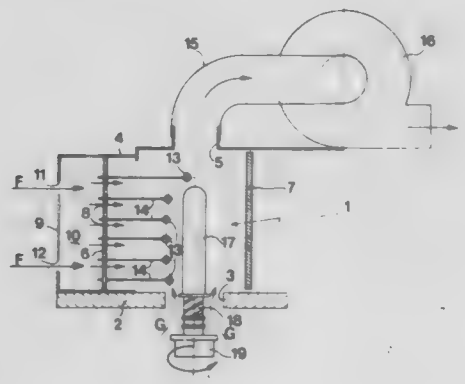
counterflow to hot flue gases formed at the opposite end of the kiln, said method comprising gasification of the fuel under supply of air to form the hot flue gases, and being characterized in that the gasification of the solid fuel is carried out in a cyclone gasifier built in conjunction with the lime sludge reburning kiln at a temperature in excess of 1000° C., at which temperature ashes formed melt; and that the molten ashes collected on the walls of the cyclone gasifier by the effect of the cyclone are separated.

4,606,723

METHOD AND APPARATUS FOR HEATING THERMOPLASTIC BOTTLE PREFORMS

Michel Pasternicki, Saint Arnoult en Yvelines, France, assignor to Sidel, Le Havre, France

Filed Mar. 28, 1985, Ser. No. 717,369
Claims priority, application France, Mar. 28, 1984, 84 04984
Int. Cl.[4] F27B *9/14, 9/06;* F25B *13/00*
U.S. Cl. 432—124 **6 Claims**



1. An apparatus for heating thermoplastic preforms (17) preparatory to blow molding hollow articles therefrom, comprising: a tunnel (1) enclosed laterally by reflector walls (6, 7), at least one (6) of which is equipped with infra-red radiators (13), and perpendicular to such walls, by two surfaces of which one (2) contains a longitudinal slot (3) running the entire length of the tunnel, preform support means (19) situated outside the tunnel for individually internally supporting preforms having finally configured necks (18) such that the preforms extend through the slot and into the tunnel with the necks being externally exposed, disposed proximate the slot, and defining gaps therewith, said preform support means being capable of moving along a longitudinal axis of the tunnel while simultaneously revolving on their own axes, an forcible suction means (16) connected to the tunnel for establishing a low pressure therein to draw in air through the gaps between the longitudinal slot and the preform necks to cool the preform necks and prevent their thermal deformation.

4,606,724

SIMULATOR FOR FIRING SMALL-BORE GUNS AT SIMULATED TARGETS

Henri Chanforan, Cergy, and Alain Pelletier, Plaisirs, both of France, assignors to Thomson CSF, Paris, France

Filed Nov. 29, 1983, Ser. No. 556,117
Claims priority, application France, Nov. 30, 1982, 82 20044
Int. Cl.[4] G09B *9/00*
U.S. Cl. 434—20 **6 Claims**

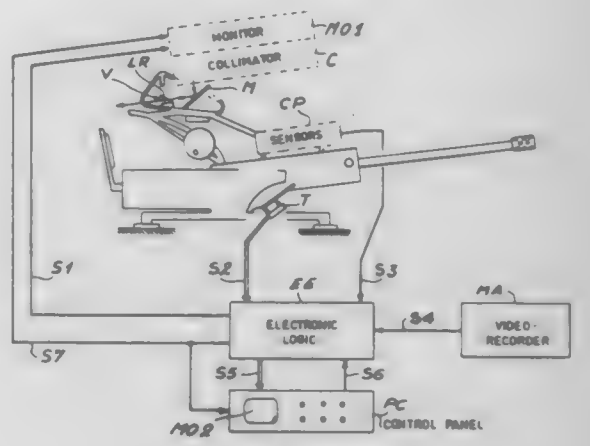
1. A simulator for simulating firing small-bore guns at simulated targets, said simulator being mounted on a gun provided with a gunsight and with controls for aiming said gun and firing a fictitious shot, comprising:

orientation sensor means, fixed to said gun, for delivering signals which determine orientation of said gun;

firing sensor means, fixed on the firing control of said gun, for delivering a signal indicating instants of firing said gun;

first monitor means, coupled to said gunsight, for introducing in said gunsight an image of a simulated target, an image of tracers, an aiming-point image, and skylines;

video recorder means for reading a magnetic tape on which is recorded a video signal representing a target which is located at a center of said images and has a size and attitude which vary as a function of a predetermined simulated trajectory, and digital data recorded in field blanking intervals of said video signal and representing coordinates of said target and coordinates of an aiming point to be superimposed on said target in said gunsight by orienting said gun;



control means having second monitor means for displaying the same images as are displayed in said first monitor means plus a target indicator, and controls for selecting modes of operation of said simulator, for providing control signals which control the firing simulation; and

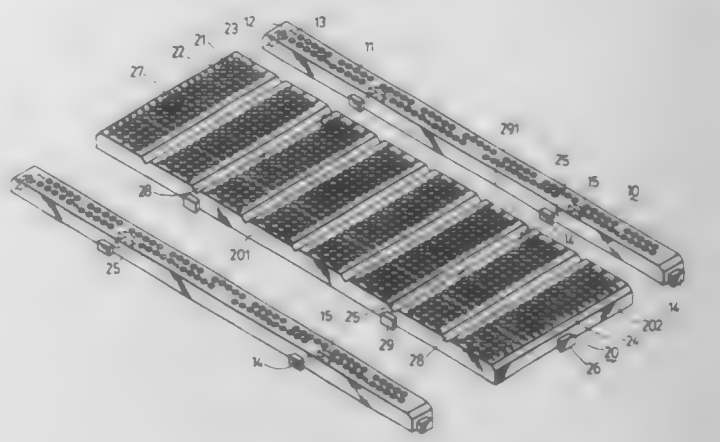
logic means for receiving the signals of said orientation sensor means and said firing sensor means and said video recorder means and said control means, and for generating image signals and a mixed synchronizing signal to be transmitted to said first and second monitor means.

4,606,725

LOGIC TRAINING BOARD ASSEMBLY

Chuy-Nan Chio, F 9-3, No. 333, Fu Hsing North Road, Taipei, Taiwan

Filed Oct. 23, 1985, Ser. No. 790,465
Int. Cl.[4] G09B *23/18*
U.S. Cl. 434—224 **3 Claims**



1. A logic training board assembly, mountable on a base, for receiving in an orderly way electronic elements such as DIP IC's, comprising:

a plurality of power distribution strips each of which has a plurality of first circular terminal slots;

a plurality of element terminal plates each of which has two parallel longer sides and two parallel shorter sides and each of which has a plurality of second circular terminal slots arranged in intersecting rows, first grooves of V-shaped cross-section extending on the surface of said plates parallel with said shorter sides, each of said shorter sides having a bevel face adjacent to the top surface of said

plate, said bevel face of one of said plates cooperating with said bevel face of another adjacent plate to define a second groove which is the same size and shape as said first grooves, wherein said terminal slots located along the border of said second grooves are at the same distance from each other as, and located in the same rows as, said terminal slots located along the border of said first grooves on the surface of said element terminal plates, which distance corresponds to the distance between opposite pins of said DIP IC;

means for connecting said strips and said plates in a side by side relationship, including dovetail protrusions and dovetail recesses provided at the sides of said strips and said plates; and

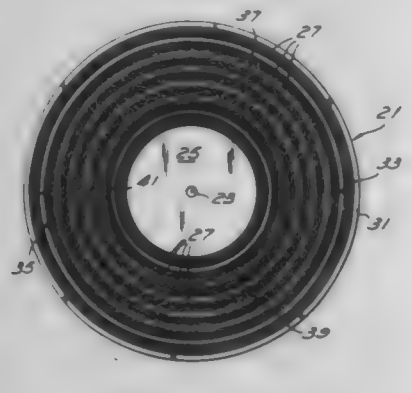
means for mounting said strips and said plates on said base, including concealed threaded holes adapted for receiving a screw at the bottom side of said strips and said plates.

4,606,726

MULTIPLE SEGMENT NONSEQUENTIAL RECORDING

James E. Pash, Vista; James V. Patton; Denise A. Patton, both of San Juan Capistrano, and Don R. Murray, Oceanside, all of Calif., assignors to Tummies Limited Partnership, San Clemente, Calif.

Filed Nov. 8, 1984, Ser. No. 670,395
Int. Cl.[4] G09B *5/04*
U.S. Cl. 434—321 29 Claims



1. A user interactive recording comprising:

a phonograph record disk having a plurality of user selectable recorded segments on one side thereof, said recorded segments forming concentric annular bands on said record disk;

at least some of said recorded segments ending in lock-off grooves;

the location on the record disk of each of said selectable recorded segments is identified by a visual indicium; and

at least some of said recorded segments having an initial program portion ending in a multiple choice selection portion, wherein said multiple choice selection portion instructs the user to select another segment from a plurality of specified segments.

4,606,727

ANCHORING ARRANGEMENT FOR A TANKER, INCLUDING A FLUID TRANSFER SYSTEM

Dieter Koenig, Seevetal; Hansjörg Klante, Wedel; Manfred Niemann, Hamburg; Wilhelm Jenny, Hamburg, and Jürgen Engelskirchen, Hamburg, all of Fed. Rep. of Germany, assignors to Blohm & Voss AG, Hamburg, Fed. Rep. of Germany

Filed Dec. 7, 1984, Ser. No. 679,563
Claims priority, application Fed. Rep. of Germany, Dec. 7, 1983, 3344116
Int. Cl.[4] B63B *21/52*
U.S. Cl. 441—5 19 Claims

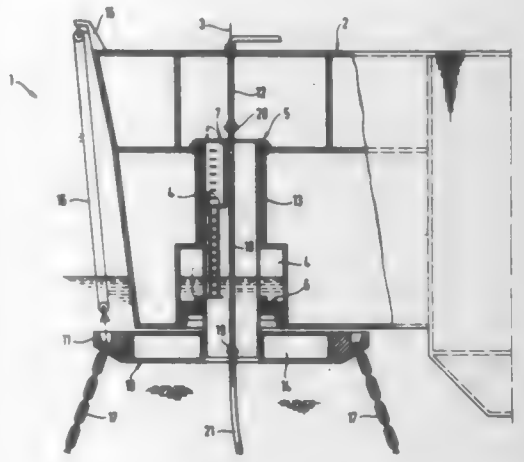
1. An anchoring system for a tanker, including a fluid transfer tube line entering the tanker, said anchoring system using a buoy and comprising:

a vertical hollow shaft which is integrated into a stern portion of the tanker, said buoy being disposed in use completely under said stern portion and under said vertical hollow shaft;

said buoy being anchored by a plurality of anchor cables;

said buoy including a vertically extending hollow columnar superstructure which is disposed above said buoy and rigidly connected thereto to surround said transfer tube line;

said hollow columnar superstructure being pivoted for relative rotation inside of and substantially concentric with said vertical hollow shaft;



said anchoring system including pivot bearing means supporting said hollow columnar superstructure in radial and axial directions with respect to said vertical hollow shaft; and

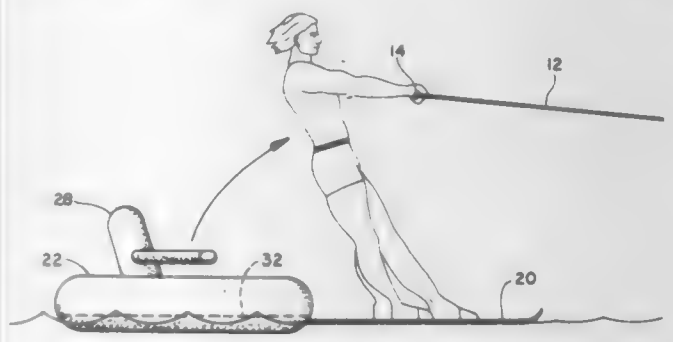
said pivot bearing means preventing any relative vertical movement of said stern portion with respect to said buoy, but permitting relative rotary motion between said hollow columnar superstructure and said stern portion.

4,606,728

WATER SKI AID

James D. Simpson, 38981 Harris Rd., Yucaipa, Calif. 92399

Filed Feb. 11, 1985, Ser. No. 700,094
Int. Cl.[4] A63C *15/00*
U.S. Cl. 441—66 4 Claims



1. A water ski aid for supporting a water skier comprising:

an inflatable seat member; and a pair of inflatable arm members having free ends for securing the skier to the inflatable seat member, the free ends of said arm members overlapping the chest area and body of said skier when said skier is in said secure position in said seat member, said arm members having means to secure said free ends together, said free ends being secured to each other when said skier is secured in said inflatable seat member and said skier and said water ski aid are moving at relatively slow speeds, said free ends separating when said skier gains sufficient speed to overcome the drag of said inflatable water ski aid and said skier moves from a seated position to a standing ski position enabling the skier to be released from said water ski aid.

4,606,729

METHOD OF MANUFACTURING A DEFLECTION UNIT FOR COLOR TELEVISION DISPLAY TUBES WHICH IS PRE-ADJUSTED FOR COLOR PURITY

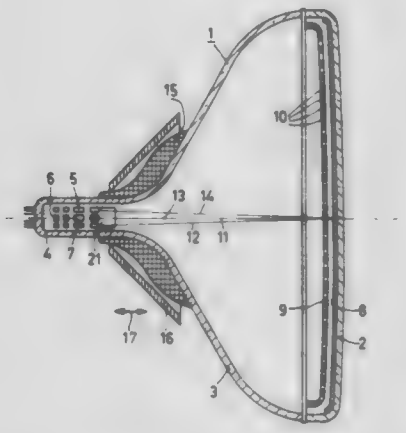
Albert J. Kuiper, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 47,978, Jun. 13, 1979, abandoned. This application Oct. 27, 1980, Ser. No. 200,667

Claims priority, application Netherlands, Jun. 30, 1978, 7807176

Int. Cl.[4] H01J *9/236*

U.S. Cl. 445—3 3 Claims



1. A method of manufacturing a deflection unit for a color television display tube of the type having a neck portion containing means for generating a plurality of electron beams and a cone portion with a display screen remote from said neck portion, and further having a pre-adjusted color purity magnet, said deflection unit comprising line and field deflection coils and a magnet core which cooperates with said deflection coils, said method comprising placing said deflection coils around the transition neck-cone of said color display tube in such manner that said deflection coils substantially engage the tube, placing said magnet core over said deflection coils, adjusting said tube so as to be color pure by energizing said deflection coils and display tube and moving said magnet core along the longtitudinal axis of said tube with respect to said deflection coils to adjust for color purity, and securing together said magnet core and said deflection coils.

4,606,730

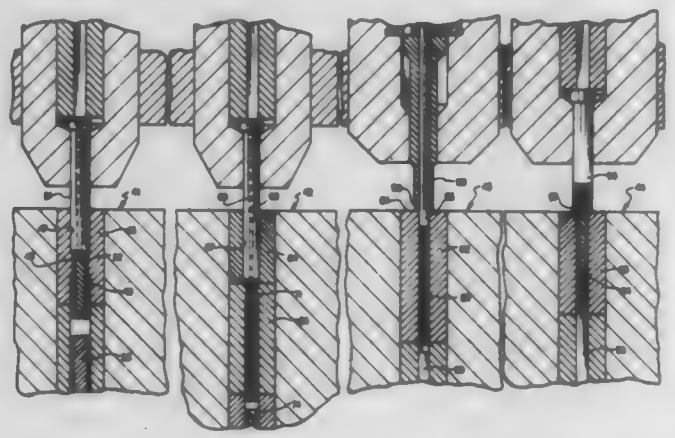
BIMETAL ELECTRODES FOR SPARK PLUGS OR THE LIKE AND METHOD OF MAKING SAME

Nelson I. Kin, Tiffin, and William W. Sprau, McCutchenville, both of Ohio, assignors to The National Machinery Company, Tiffin, Ohio

Filed Sep. 21, 1983, Ser. No. 534,483

Int. Cl.[4] H01T *21/02*

U.S. Cl. 445—7 8 Claims



1. A method of forming a bimetal electrode for spark plugs or the like comprising forming a first metal into a cup having a central opening extending from an open end to a closed end, forming a core of a second metal different from said first metal, positioning said core in said central opening, seating said core in said cup so that said core deforms and engages the adjacent surface of said cup with the end of said core recessed within said open end to form a cup and core assembly, forming a first extrusion by pressing said assembly into a first extrusion die closed end first with tool applying force to said core and reducing said assembly from said closed end to a point adjacent said open end while leaving said open end unreduced, and thereafter forming a second extrusion by pressing said first extrusion into a second and smaller extrusion die closed end first to first reduce said unreduced portion to said first extrusion diameter by engaging said core with a tool having a diameter of said first extrusion and then reducing said assembly to said second diameter from said closed end back to a point adjacent said open end.

4,606,731

BUBBLE PIPE

Samuel Span, c/o Span Products, Inc., 93 Belmont Ave., Paterson, N.J. 07509

Filed Jun. 27, 1984, Ser. No. 625,031

Int. Cl.[4] A63H *33/28*

U.S. Cl. 446—19 9 Claims





1. A bubble pipe, which comprises a hollow tubular member having first and second open ends, a mouthpiece closing said first end and having an orifice therein communicating with the interior of said hollow member, said second end being adapted to support a film of a bubble solution thereacross, said bubble pipe including means for producing a single chain of more than three serially connected bubbles when the pipe is used, said chain-producing means comprising a film-dividing means at said second end wholly within said hollow tubular member for dividing said film of bubble solution supported by said second end and the cross-sectional area of the opening at said second end being about sixteen times the cross-sectional area of said orifice.

4,606,732

INTERLOCKING TOY BUILDING BLOCKS WITH INTERCONNECTING, RELEASABLE HINGES

Ronald Lyman, 11140 Squanan River Ct., Rancho Cordova, Calif. 95670

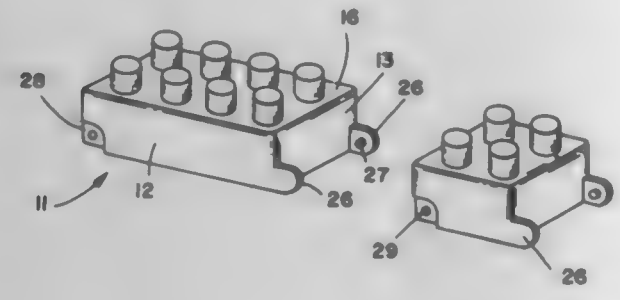
Filed Jun. 15, 1984, Ser. No. 621,232

Int. Cl.[4] A63H *33/06, 33/04, 33/12, 33/08*

U.S. Cl. 446—120 40 Claims

1. A toy building block system, comprising; a plurality of blocks, each having first interconnection means extending from one exterior face thereof and second interconnecting means extending from an opposed exterior face, said first and

second interconnecting means being mutually engagable in releasable frictional engagement with second and first interconnecting means of other like blocks for stackable interconnection therebetween in a longitudinal direction, third interconnecting means disposed at one end of each block and fourth interconnecting means disposed at an opposite end, said third and fourth interconnecting means being mutually engagable in



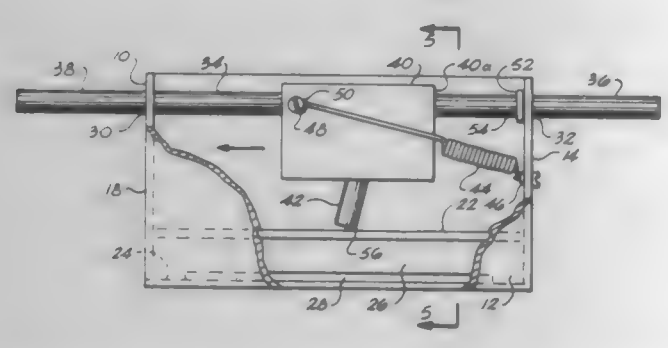
releasable frictional engagement with fourth and third interconnecting means of other blocks for end-to-end interconnection therebetween, and means for providing substantial pivoting angular movement between said mutually engaged third and fourth interconnecting means about an axis generally orthogonal to said longitudinal direction and offset laterally from said exterior faces.

4,606,733

SLATE BOX TURKEY CALL

Alvin D. Willis, Rte. 1, Travelers Rest, S.C. 29690

Filed Feb. 4, 1985, Ser. No. 698,034
Int. Cl.[4] A63H *5/00*
U.S. Cl. 446—397 **22 Claims**



1. A device for simulating the calls of a wild turkey and the like comprising:

an open top box having a sidewall enclosure and a bottom enclosure;

a striker plate forming a top wall of said bottom enclosure;

an acoustical chamber formed in said bottom enclosure below said striker plate;

a reciprocating striker block carried within said open top box for generally parallel movement to said striker plate;

a cylindrical striker peg carried by said striker block for striking and moving relative to said striker plate at a predetermined angle;

reciprocating means for moving said striker block and peg in a rectilinear motion in a first direction within said box over said striker plate and predetermined call strokes to simulate a desired one of a variety of said calls:

a peg contact surface formed by a flat cut on an end of said striker peg and terminating at an outer arcuate edge of said cylindrical peg creating a crescent shaped striker edge surface which engages said striker plate at such a configuration and angle to produce a call sound emanating from said acoustical chamber during striker movement in such a manner that said call sound is produced only as said striker peg is moved in one direction of said reciprocating rectilinear motion to accurately simulate said wild turkey calls; and

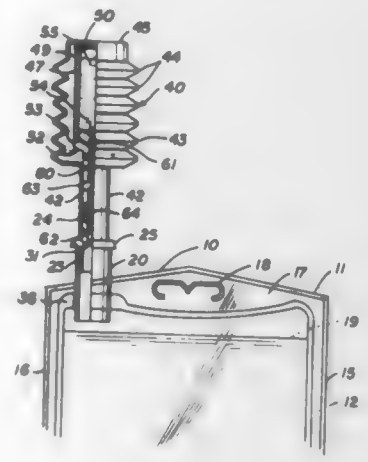
biasing means acting on said striking block urging said striker peg against said striker plate with a generally constant predetermined biasing force.

4,606,734

CONTAINER MIXING SYSTEM WITH EXTERNALLY MOUNTED DRUG CONTAINER

Mark E. Larkin, Lindenhurst, and Ralph M. Quin, Ingleside, both of Ill., assignors to Abbott Laboratories, North Chicago, Ill.

Filed Feb. 22, 1984, Ser. No. 582,249
Int. Cl.[4] A61J *1/00;* **A61M** *5/00*
U.S. Cl. 604—84 **11 Claims**



1. A container mixing system for separately storing a component for subsequent mixing with the fluid contents of a container comprising:

a flexible plastic container having wall means defining a compartment for a first fluid material and a port member with a pierceable diaphragm;

a rigid container for a second fluid material adapted to be placed in fluid communication with said flexible plastic container;

pierceable sealing means closing said rigid container;

flexible enclosure means sealingly enclosing said rigid tubular container;

a guide member extending from said enclosure means adapted to receive a portion of said flexible plastic container port; and

a piercing member having a passage therein positioned in said guide member;

said enclosure means operatively positioned in conjunction with said rigid container, said pierceable sealing means and said piercing member to effect movement of said pierceable sealing means with respect to said piercing member;

so that when said guide member is positioned in fluid communication with said flexible plastic container port member and a force is directed on said flexible enclosure means and in the direction of said flexible plastic container, a piercing of said pierceable sealing means of said rigid tubular container and said port diaphragm of said flexible plastic container will be effected along with delivery of said second fluid material from said rigid tubular container into said flexible plastic container for mixing with said first fluid material.

4,606,735

MEDICAL TUBING HOLDER

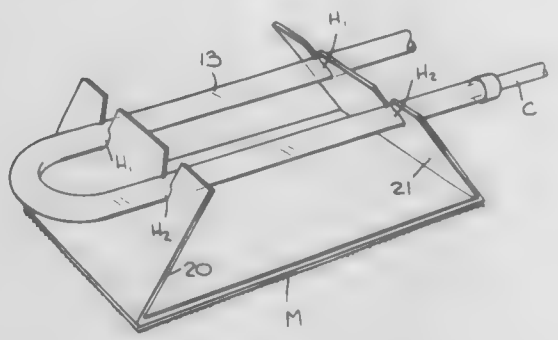
Joseph R. Wilder, 151 W. 86th St., Apt. 9D, New York, N.Y. 10024, and Franklin G. Reick, 228 W. Place, Westwood, N.J. 07675

Filed Sep. 24, 1984, Ser. No. 653,718
Int. Cl.[4] A61M *25/02*
U.S. Cl. 604—180 **5 Claims**

1. A detachable holder for immobilizing a flexible tubing at a site adjacent its point of connection to a catheter or other

medical device used to feed fluid to a patient or to withdrawn fluid therefrom, said holder comprising:

A. A strip of flexible synthetic plastic material forming a base having upstanding end wings each having a slotted keyhold therein, the keyholes being in axial alignment and having holes therein adapted to receive a short section of the tubing which then bridges the wings and is held thereby, each of said holes having a slot leading thereto



defined by walls, at least one of which may be flexed to enlarge the slot to facilitate entry of the tubing, said base having holding means on the underside thereof, said wings being inclined to define with said short section a structurally stable trapezoid which resists folding of the wings; and

B. detachable means cooperating with said holding means to detachably anchor said base on the skin surface of the patient at said site.

4,606,736

COVER ASSEMBLY FOR CLOSED BODILY FLUID DRAINAGE UNIT

Mary R. Van De Weghe, Ridgewood, N.J., assignor to Van De Weghe Associates, Inc., Ridgewood, N.J.

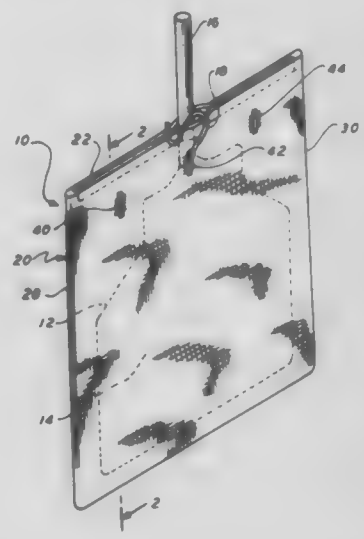
Filed Jan. 23, 1985, Ser. No. 693,795

Int. Cl.[4] A61M *1/00*

U.S. Cl. 604—322 **10 Claims**

1. In combination with a bodily fluid drainage unit of the type comprising a flexible plastic bag having an upwardly extending flexible filler tube connectible to a patient for receiving bodily fluids; and said bag being provided with at least one hanger means extending from the upper end of same for enabling attachment of said bag to a receiving surface associated with the patient's environment; an enclosure for receiving said drainage unit therein to attractively conceal same, while simultaneously not impairing the functioning of said unit; said enclosure comprising:

a generally flattened flexible envelope openable along one end thereof for receiving said drainage unit, said openable end being provided on the opposed facing edges with mateable closure means to enable closure of said end, and



for enabling simultaneous nesting and stabilizing of the upwardly extending flexible filler tube of said drainage unit by said surrounding closure means; and

said envelope being provided at one flattened surface thereof, and adjacent to the said openable end, with at least one button-hole type openings extending through said envelope into the interior of same, said openings being alignable with said hanger means of a said drainage unit emplaced within said envelope, to receive said hanger means through the openings, to enable the hanging functioning of same.

4,606,737

FLUOROCHEMICAL ALLOPHANATE COMPOSITIONS AND FIBROUS SUBSTRATES TREATED THEREWITH

Richard M. Stern, Woodbury, Minn., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Filed Jun. 26, 1984, Ser. No. 625,028
Int. Cl.[4] C07C *125/06;* C10M *105/76*
U.S. Cl. 8—115.6 29 Claims

1. Fluorochemical allophanates comprising one or more monovalent fluoroaliphatic radicals having at least three fully fluorinated terminal carbon atoms and one or more allophanate moieties, said radicals and moieties bonded together by first organic linking groups, which may contain hetero atoms, said first linking groups being free of groups with active hydrogen atoms, and where said fluorochemical allophanates contain amino or acid moieties, one or more linked fluoroaliphatic radicals and allophanate moieties are present, and where said fluorochemical allophanates are free of amino and acid moieties, two or more of said linked fluoroaliphatic radicals and allophanate moieties are bonded together by polyvalent second organic linking groups, which may contain hetero atoms; said second linking groups being free of groups with active hydrogen atoms.

4,606,738

RANDOMLY-ORIENTED POLYCRYSTALLINE SILICON CARBIDE COATINGS FOR ABRASIVE GRAINS

Stephen C. Hayden, Columbus, Ohio, assignor to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 249,756, Apr. 1, 1981, abandoned. This application Mar. 31, 1983, Ser. No. 479,118
Int. Cl.[4] B24D *3/04, 3/10*
U.S. Cl. 51—295 11 Claims

1. An improved composite abrasive particle comprising a core abrasive crystal and a silicon carbide coating adherently bonded thereto, said silicon carbide coating being conformationally irregular and comprising silicon carbide crystals having a random orientation substantially independent of the structure of said core abrasive crystal and made by the steps comprising:

(a) providing core crystals coated with non-diamond carbonaceous material;

(b) infiltrating said crystals with fluid silicon under a partial vacuum at a temperature of about 1400° C., cooling and recovering the resulting mass of core crystals bonded together by a bonding medium of silicon carbide and elemental silicon, the outer surfaces of said core crystals having silicon carbide adherently bonded to substantially all of the exterior surfaces thereof;

(c) leaching substantially all of said silicon from said bonded mass with a silicon leaching agent; and

(d) sub-dividing the resulting leached mass and recovering said composite abrasive particles.

4,606,739

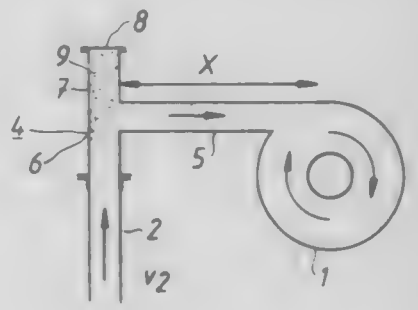
METHOD OF INCREASING THE SEPARATING EFFICIENCY OF A CYCLONE SEPARATOR AND A CYCLONE FOR CARRYING OUT THE METHOD

Roine Brännström, Finspong, Sweden, assignor to ASEA Stal AB, Västerås, Sweden

Filed Aug. 13, 1984, Ser. No. 640,261
Claims priority, application Sweden, Aug. 16, 1983, 8304429
Int. Cl.[4] B04C *5/02, 5/00*
U.S. Cl. 55—1 20 Claims

1. A method of increasing the separating efficiency without a corresponding increase in the erosion rate of a cyclone separator for removing particles from a gas-particulate mixture, said cyclone separator having an inlet downstream of a means for supplying a gas-particle mixture comprising a flow of gas and a flow of larger and smaller sized particles having substantially the same velocity as said gas, and said substantially the same velocity being sufficient for said large particles to cause erosion of said cyclone separator, said method comprising: retarding said particles in a region between said supply means and the inlet into said cyclone separator so as to decrease the velocity of said particles relative to the velocity of said gas; and accelerating said retarded particles with said gas flow over a transport distance between said retarding region and said cyclone separator inlet, said gas velocity and said transport distance being selected such that said smaller sized particles achieve substantially higher velocities than said larger sized particles at said separator inlet.

14. An apparatus for increasing the separating efficiency without a corresponding increase in the erosion rate of a cyclone separator for removing particles from a gas-particle mixture, said cyclone separator having an inlet downstream of a means for supplying a gas-particle mixture comprising a flow of gas and a flow of larger and smaller sized particles having substantially the same velocity as said gas, said apparatus comprising:



means for retarding said particles in a region between said supply means and the inlet into said cyclone separator so as to decrease the velocity of said particles relative to the velocity of said gas; and,

transport means attached to and extending between said retarding means and said cyclone separator inlet for accelerating said retarded particles with said gas flow over a transport distance between said retarding means and said cyclone separator inlet, said gas velocity and said transport distance being such that said smaller sized particles achieve substantially higher velocities than said larger sized particles at said separator inlet and providing a velocity profile of the velocities of said particles relative to the size of said particles which substantially increases the separating efficiency of said separator for said smaller particles without substantially decreasing the separating efficiency of said separator for said larger particles.

4,606,740

SEPARATION OF POLAR GASES FROM NONPOLAR GASES

Santi Kulprathipanja, Hoffman Estates, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed Apr. 15, 1985, Ser. No. 723,397
Int. Cl.[4] B01D *53/22*
U.S. Cl. 55—16 22 Claims

1. A multicomponent membrane, useful for the separation of fluid components of a fluid feed mixture, comprising a mixture of a glycol plasticizer and an organic polymer cast on a porous support which has been subjected to treatment prior to the casting of said mixture thereon by contact with a polyhydric alcohol.

11. A process for the separation of a polar gas from a nonpolar gas in a feed mixture containing said gases which comprises contacting said mixture with the upstream face of a multicomponent membrane which comprises a mixture of a glycol plasticizer having a molecular weight of from about 200 to about 600 and an organic polymer cast on a porous support, said support having a ratio of total surface area to total pore cross-sectional area of from about 5:1 to about 900:1 and which has been subjected to pretreatment prior to the casting of said mixture thereon by contact with a polyhydric alcohol, at separation conditions, in which said polar gas has a greater steady

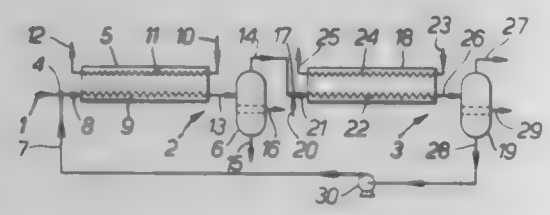
state permeability than said nonpolar gas, and recovering the permeate which emanates from the downstream face of said membrane, said permeate comprising a product mixture in which the proportion of polar gas to nonpolar gas is greater than the proportion of polar gas to nonpolar gas in said feed mixture.

4,606,741

PROCESS FOR PURIFYING NATURAL GAS

Claude J. Moreau, Chaville; Joseph Y. Larue, Chambourcy, and Alexandre Rojey, Garches, all of France, assignors to Compagnie Francaise des Petroles and Institut Francais du Petrole, both of, France

Continuation of Ser. No. 640,919, Aug. 14, 1984, abandoned.
This application Aug. 9, 1985, Ser. No. 763,896
Claims priority, application France, Aug. 26, 1983, 83 13767
Int. Cl.[4] B01D *59/10*
U.S. Cl. 55—16 **5 Claims**



1. In a process for purifying a natural gas containing undesirable components of at least water or carbon dioxide or hydrogen sulfide comprising; injecting methanol into said natural gas, lowering the temperature of said mixture of natural gas and methanol thus produced to a temperature, called the absorption temperature, at which an absorption of the undesirable components present in said natural gas by the methanol is produced, and separating the natural gas thus purified from said methanol phase which has absorbed said undesirable components, the improvement comprising; subjecting said natural gas to be purified to a succession of purification stages each of said stages having an outlet and as separator thereat, in each stage injecting methanol into said natural gas; the mixture of said natural gas and said methanol thus produced subjected to said absorption temperature and said natural gas is separated and withdrawn from said methanol phase at an upper portion of said separator, a liquid phase formed by hydrocarbons which have condensed withdrawn from an intermediate portion of said separator and spent methanol is withdrawn from a lower portion of said separator, wherein the partially purified natural gas which leaves a stage other than the last of said stages enters the next stage which follows it with purified natural gas being obtained at the outlet of said last stage, said methanol injected into said natural gas in any of said stages other than said last stage is separated at the outlet following said stage, and at least a part of the methanol at the outlet of the first of said stages being regenerated by removing at least a part of said undesirable components which it has absorbed and at least a part of the methanol regenerated in this way is injected into said last stage, wherein, methanol containing a weight proportion of water of between 5 and 50% is injected into said natural gas in said last stage.

4,606,742

NOVEL HEAT RECOVERY PROCESS

Gerhard Dummer, Burgkirchen; Ludwig Schmidhammer, Haiming; Peter Hirschmann, and Gerhard Stettner, both of Burghausen, all of Fed. Rep. of Germany, assignors to Wacker-Chemie GmbH, Fed. Rep. of Germany

Filed Jun. 10, 1985, Ser. No. 743,161
Claims priority, application Fed. Rep. of Germany, Oct. 2, 1984, 3436139
Int. Cl.[4] B01D *53/14*
U.S. Cl. 55—27 **2 Claims**

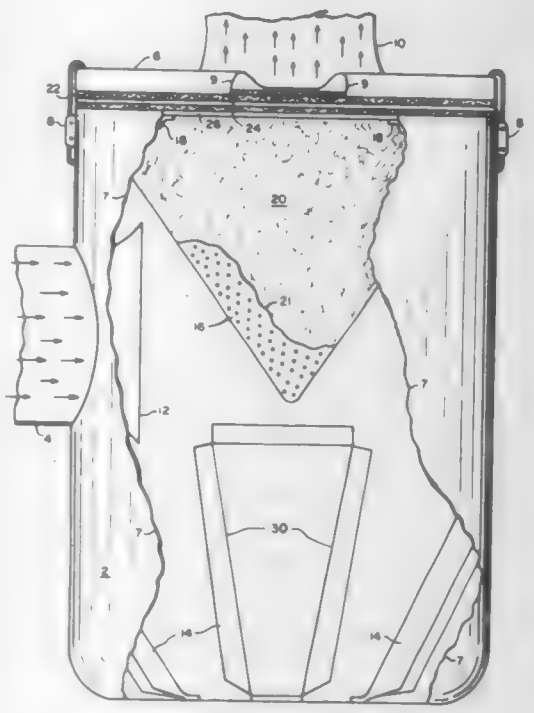
1. In a method of recoverying heat from flue gas resulting from the combustion of chlorinated organic compounds at 900° to 1300° C. at a pressure of 0.9 to 1.5 bar absolute whereby the flue gas is cooled with the recovery of heat and hydrogen chloride is processed, the improvement comprising (a) cooling the flue gas in a first step to a temperature of 250° to 350° C. with a contact time of 0.05 to 0.15 seconds, (b) cooling the flue gas in a second step to a minimum of 140° C. with a contact time of 1.3 to 2.0 seconds, the cooling medium in both stages being water flowing at an initial temperature of 100° to 140° C. in step (b) counter to the flue gas direction and added to cooling stage (a) at a temperature of 200° to 220° C. and (c) cooling the flue gas in a third stage to its dew point and scrubbing it with water to recover the hydrogen chloride therein in solution.

4,606,743

TWO STAGE ENGINE AIR BREATHER FILTER

Curtis F. Shuman, Rte. #2 Box 451, Tremonton, Utah 84337

Filed Jun. 28, 1985, Ser. No. 749,708
Int. Cl.[4] B01D *50/00*
U.S. Cl. 55—323 **5 Claims**



1. An air filter for filtering particulate matter from an airstream comprising:

a cylindrical canister having an open upper end and a closed lower end forming a base;

an unfiltered air inlet formed in the side wall of said canister;

an air deflector disposed within said canister for directing the flow of air entering said canister via said unfiltered air inlet into a cyclonic path to swirl around the interior of said canister;

a plurality of spaced collector baffles attached to the inner lower wall of said canister;

a rigid cone-shaped screen supported in an inverted position by means in the open end of said canister;

a cone-shaped primary filter element disposed over the exterior surface of said cone-shaped screen;

a flat circular secondary filter pad covering the open base of said cone-shaped primary filter element; and

a detachable cover member covering the open end of said canister and having a filtered air outlet formed therein.

4,606,744

METHOD AND APPARATUS FOR LIQUEFYING A LOW-BOILING GAS

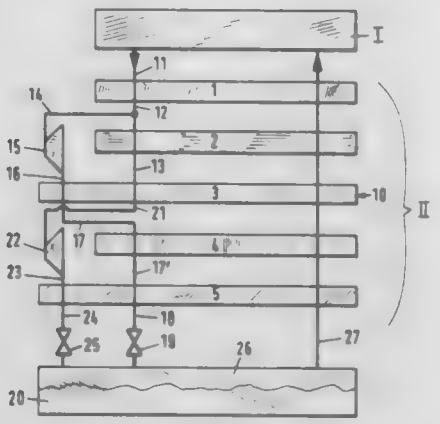
Andres Kündig, Stafa, Switzerland, assignor to Sulzer Brothers Limited, Winterthur, Switzerland

Filed Oct. 10, 1984, Ser. No. 659,444

Claims priority, application Switzerland, Jul. 20, 1984, 3550/84

Int. Cl.[4] F25J *3/00*

U.S. Cl. 62—22 16 Claims



1. A method of liquefying a low-boiling gas in a circuit having a pre-cooling stage for producing a high pressure gas flow at a pre-cooling temperature; a cooling stage for cooling the high pressure flow to close to the temperature of liquefied gas, said cooling stage including a plurality of counter-current heat exchangers and a plurality of expansion means; and a low temperature consumer for receiving at least some liquefied gas from said cooling stage and for re-cycling a low-pressure gas flow to said cooling stage,

said method comprisini the steps of

passing the high pressure flow from the precooler through a first of the heat exchangers in the cooler;

dividing the flow into two sub-flows;

expanding one of the sub-flows in a first of the expansion means to a first intermediate pressure with the performance of work;

directing the second sub-flow through a second of the heat exchangers;

passing the two sub-flows through a third of the heat-exchangers simultaneously and separately from one another;

directing said second sub-flow from the third heat-exchanger through a second of the expansion means for expansion to a second intermediate pressure with the performance of work;

directing said first sub-flow from the third heat-exchanger through a fourth of the heat exchangers;

thereafter passing said two sub-flows through a fifth of the heat exchangers simultaneously and separately from one another; and

then expanding said two sub-flows in an expansion means to the pressure of the low-pressure flow, at least some liquid gas being formed and being fed to the low-temperature consumer.

4,606,745

CONDENSER-EVAPORATOR FOR LARGE AIR SEPARATION PLANT

Ikuo Fujita, Yokohama, Japan, assignor to Nippon Sanso Kabushiki Kaisha, Tokyo, Japan

Filed May 28, 1985, Ser. No. 738,589

Claims priority, application Japan, May 30, 1984, 59-110127

Int. Cl.[4] F25J *3/04*

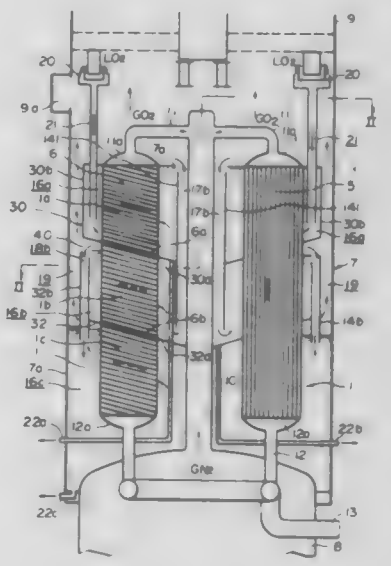
U.S. Cl. 62—42 11 Claims

1. A condenser-evaporator for use in a large air separation plant in which the condenser-evaporator is provided between an upper column and a lower column, the condenser-evaporator condensing nitrogen gas, ascending from the lower column through first conduit means, by heat exchange with liquid oxygen flowing down from an upper column through second conduit means, the improvement which comprises:

(a) a plurality of vertical evaporator blocks each having upper and lower ends and lateral edges and including first corrugated fins for forming nitrogen passages as nitrogen chambers, second corrugated fins for forming oxygen passages as oxygen chambers, the first fins and the second fins being each alternatively laminated through a separating plate to vertically form the nitrogen passages each opening at the upper and the lower ends of the condenser block and to form the oxygen passages each opening at the lateral edges of the condenser block, the oxygen chambers of each condenser block being divided into vertically disposed multistage groups;

(b) a first header provided to the upper end of each condenser block, the first header being connected to the first conduit means for introducing nitrogen gas from the lower column into the nitrogen chambers of the condenser blocks;

(c) a second header provided to the lower end of each condenser block;



(d) a third conduit means, connected to each second header, for extracting nitrogen condensed in the nitrogen chambers of the condenser blocks;

(e) means for forming vertically disposed multistage compartments for holding liquid oxygen including a lowermost stage compartment, the compartments forming means including a head portion of the lower column for forming the lowermost compartment;

(f) overflowing means, provided to each compartment disposed above the lowermost compartment, for overflowing liquid oxygen supplied from the upper column substantially at a level to immerse each group of the oxygen chambers in the liquid oxygen;

(g) fourth conduit means, communicated to the overflowing means, for introducing the liquid oxygen overflowing from one compartment into another lower compartment disposed just below the one compartment; and

(h) oxygen gas ascending means, communicated to each compartment, for ascending and introducing into the upper column oxygen gas produced in each compartment by heat exchange with nitrogen gas.

4,606,746

METHOD OF MONITORING THE POSITION OF TWO MOVABLE SIDE PORTIONS OF A MOULD OF A GLASSWARE FORMING MACHINE

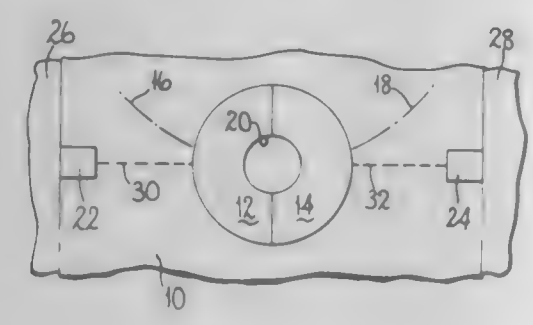
René Keller, Wettswil, Switzerland, assignor to Emhart Industries, Inc., Farmington, Conn.

Filed Sep. 23, 1985, Ser. No. 779,190

Claims priority, application United Kingdom, Sep. 28, 1984, 8424613

Int. Cl.[4] C03B *9/40*

U.S. Cl. 65—29 5 Claims



1. A method of monitoring the positions of two movable side portions of a mould of a glassware forming machine which, in the operation of the machine, are moved in opposite directions into engagement with one another so that the side portions are in a mould-closed condition thereof in which they co-operate in defining a mould cavity in which molten glass can be moulded, and are subsequently moved apart to allow removal of moulded glass, the monitoring being to determine whether the mould portions reach their mould-closed condition, the method comprising transmitting ultrasonic radiation from a first source so that the radiation is reflected to a first detector from a first of the side portions or a support on which the first side portion is mounted, producing a first signal indicative of the time taken by the radiation to travel from the first source to the first detector, transmitting ultrasonic radiation from a second source so that the radiation is reflected to a second detector from a second of the side portions or a support on which the second portion is mounted, producing a second signal indicative of the time taken by the radiation to travel from the second source to the second detector, using the first and the second signals to produce a third signal indicative of the time taken by the radiation to travel from the first source to the first detector plus the time taken by the radiation to travel from the second source to the second detector, and comparing the third signal with a standard representing the expected time for the radiation travel when the side portions are in their closed condition.

4,606,747

PROCESS FOR THE CONTACT-LESS REMOVAL OF MATERIAL FROM THE SURFACE OF A GLASS OBJECT

Hans-Joachim Steinhoff, Zwiesel, Fed. Rep. of Germany, assignor to Schott-Zwiesel-Glaswerke AG, Zwiesel, Fed. Rep. of Germany

Continuation of Ser. No. 437,174, Oct. 28, 1982, abandoned.

This application Apr. 29, 1985, Ser. No. 727,195

Claims priority, application Fed. Rep. of Germany, Nov. 14, 1981, 3145278

Int. Cl.[4] C03C *23/00;* C03B *19/00;* B23K *9/00*

U.S. Cl. 65—31 9 Claims

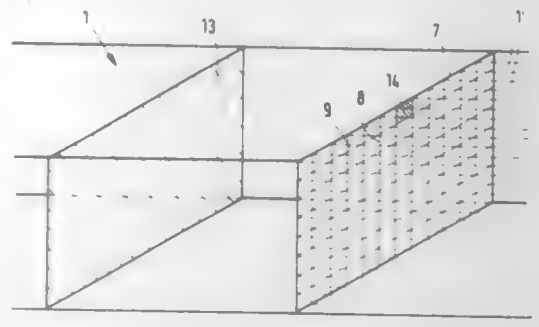
1. A process for the removal of a portion from an article of glass, ceramic or plastic which comprises the steps of:

(a) positioning at least one partially absorbent matrix between a laser beam source and the article,

(b) positioning a mask between said laser beam source and said article,

(c) passing a laser beam from said laser beam source (1) through said matrix to divide said beam into a plurality of smaller beams having varied intensities and (2) through said mask to provide a pattern of markings on the surface of said article

(d) passing the resulting plurality of smaller beams into contact with the article to remove portions of said article, and



(e) effecting relative movement between the matrix and the article while said beams are in contact with the article to provide a smooth finish on the article.

4,606,748

METHOD FOR PRODUCING CERAMIC-GLASS-CERAMIC SEALS BY MICROWAVE HEATING

Rodger D. Blake, Santa Fe, and Thomas T. Meek, Los Alamos, both of N. Mex., assignors to The United States of America as represented by the Department of Energy, Washington, D.C.

Filed Oct. 10, 1984, Ser. No. 659,586

The portion of the term of this patent subsequent to Jul. 16, 2002, has been disclaimed.

Int. Cl.[4] C03B *23/20*

U.S. Cl. 65—36 10 Claims

1. A method for producing a ceramic-glass-ceramic seal comprising the steps of:

a. preparing a mixture comprising a glass sealing material, a coupling agent, and an oxidizer;

b. applying said mixture to a plurality of ceramic workpieces for sealing;

c. enclosing said ceramic workpieces with other such workpieces;

d. surrounding said mixture and plurality of ceramic workpieces with an insulative material;

e. microwaving said mixture and plurality of ceramic workpieces at a power, time and frequency sufficient to ignite the oxidizer and to cause a liquid phase seal to form; and

f. allowing said seal and workpieces to cool, thereby securing a ceramic-glass-ceramic seal.

4,606,749

APPARATUS FOR AND METHOD OF BENDING GLASS SHEETS

Masaaki Nushi, and Naohiro Iida, both of Tokyo, Japan, assignors to Nippon Sheet Glass Co., Ltd., Osaka, Japan

Filed Sep. 26, 1985, Ser. No. 780,688

Claims priority, application Japan, Sep. 26, 1984, 59-201200

Int. Cl.[4] C03B *23/03*

U.S. Cl. 65—106 11 Claims

1. An apparatus for bending a glass sheet, comprising:

a vertically movable lower mold having a first, upwardly facing, shaping surface for shaping a central area of the glass sheet;

a plurality of conveyor rolls for conveying horizontally glass sheet as heated horizontally to a prescribed position over said first shaping surface;

means in said lower mold for accommodating said conveyor rolls when said lower mold is moved upwardly;

a vertically movable main ring mold disposed around said lower mold in space relation to an outer peripheral surface thereof, said main ring mold having a second, downwardly facing, shaping surface for shaping a peripheral edge of the glass sheet;

means in said main ring mold for accommodating said conveyor rolls when said main ring mold is moved upwardly;

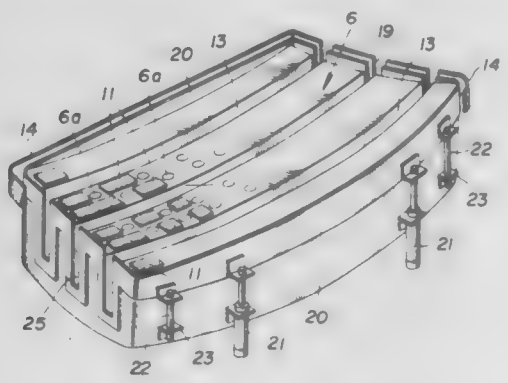
an auxiliary ring mold vertically movably disposed between said lower mold and said main ring mold, said auxiliary ring mold having an upwardly facing support surface for supporting the glass sheet between the central area and peripheral edge thereof; and

means in said auxiliary ring mold for accommodating said conveyor rolls when said auxiliary ring mold is moved upwardly.

8. A method of bending a glass sheet, comprising:

conveying a heated glass sheet by a plurality of conveyor rolls to a prescribed position over a first, upwardly facing, shaping surface of a lower mold for shaping a central area of the glass sheet;

lifting an auxiliary ring mold between said lower mold and a



main ring mold having a second, upwardly facing, shaping surface and disposed around said lower mold in spaced relation to an outer peripheral surface thereof, prior to upward movement of said lower mold;

raising said glass sheet off said conveyor rolls by a substantially horizontal upwardly facing flat support surface of said auxiliary ring mold;

arresting upward movement of said auxiliary ring mold;

lifting said lower mold and said main ring mold to transfer the glass sheet from said support surface of the auxiliary ring mold to said first and second shaping surfaces of said lower mold and said main ring mold;

lowering said auxiliary ring mold; and

shaping the central area of the glass area on said first shaping surface of the lower mold and shaping a peripheral edge of the glass sheet on said second shaping surface of the main ring mold.

4,606,750

MOLD FOR DIRECT PRESS MOLDING OF OPTICAL GLASS ELEMENT

Hideo Torii, Higashiosaka; Masaki Aoki, Minou; Hideyuki Okinaka, Toyonaka; Satoru Yuhaku, Osaka, and Shoji Nakamura, Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

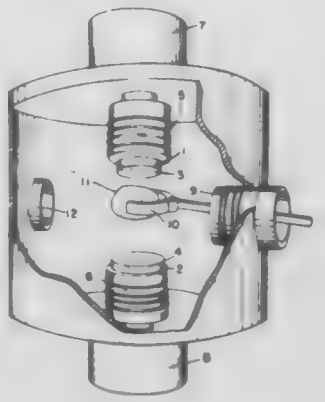
Filed Dec. 7, 1984, Ser. No. 679,292

Claims priority, application Japan, Dec. 9, 1983, 58-231257

Int. Cl.[4] C03C *9/34*; B26B *7/34*

U.S. Cl. 65—374.13 **6 Claims**

1. A mold used for manufacturing optical glass parts by direct press molding of lumps of raw optical glass, characterized in that a pressing surface of said mold is made of a material



comprising at least one of α type silicon carbide and amorphous silicon carbide.

4,606,751

BIOLOGICAL METHOD OF CONTROLLING JOHNSON GRASS AND SIMILAR WEEDS IN AGRICULTURAL CROPS

Cecil G. Van Dyke, and Richard S. Winder, both of Raleigh, N.C., assignors to North Carolina State University, Raleigh, N.C.

Filed Dec. 7, 1984, Ser. No. 679,260

Int. Cl.[4] A01N *63/04*

U.S. Cl. 71—79 **6 Claims**

1. A method for selectively controlling johnson grass in an agricultural field containing crop plants and postemergent johnson grass, said method comprising inoculating said agricultural field with an effective amount of the fungus *Bipolaris sorghicola* which is selectively toxic to said johnson grass without causing substantial harm to said crop plants.

4,606,752

BENZODIOXANE HERBICIDES

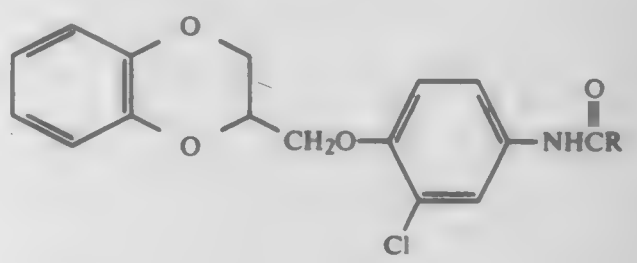
Don R. Baker, Orinda, Calif., assignor to Stauffer Chemical Co., Westport, Conn.

Division of Ser. No. 539,771, Oct. 7, 1983, abandoned, which is a division of Ser. No. 381,136, May 24, 1982, Pat. No. 4,423,237, which is a division of Ser. No. 114,867, Jan. 24, 1980, abandoned, which is a continuation of Ser. No. 738,590, Aug. 31, 1978, abandoned. This application Mar. 11, 1985, Ser. No. 710,775

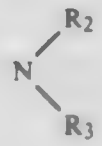
Int. Cl.[4] A01N *43/32*; C07D *319/16*

U.S. Cl. 71—88 **18 Claims**

1. A compound having the formula



wherein R is



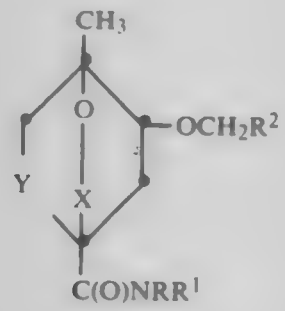
wherein R_2 is alkyl having from 1 to 6 carbon atoms or alkoxy having from 1 to 6 carbon atoms, and R_3 is hydrogen or alkyl having from 1 to 6 carbon atoms.

4,606,753
4-SUBSTITUTED-2-OXABICYCLO[2.2.1]HEPTANE ETHER HERBICIDES

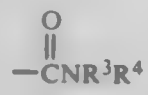
James E. Powell, Ripon, Calif., assignor to Shell Oil Company, Houston, Tex.

Filed Jun. 15, 1984, Ser. No. 621,011
Int. Cl.[4] A01N *43/00;* C07D *311/00*
U.S. Cl. 71—88 12 Claims

1. A compound of the formula



wherein R is H or —C(O)R[3] in which R[3] is a hydrogen atom; an alkyl group containing 1 to 6 carbon atoms; R[1] is



in which R[3] is a hydrogen atom, an alkyl group containing 1 to 6 carbon atoms or an alkenyl or alkynyl group containing 3 or 4 carbon atoms and R[4] is a hydrogen atom or an alkyl group containing from 1 to 6 carbon atoms, —SO_2R^3 in which R[3] has the above meaning, —$P(O)(ZR^3)_2$ in which Z is O, N or S and R[3] has the above meaning, —C(O)R[3] in which R[3] has the above meaning; —OR[3] in which R[3] has the above meaning; —C—OR[3] in which R[3] has the above meaning; (1,3,3-trimethyl-6-(phenylmethoxy)-2-oxabicyclo[2.2.1]heptan-4-yl)carbonylaminocarbonyl; or R and R[1] when taken together are =C=O; X is —$C(CH_3)_2$— and Y is a single bond; and R[2] is a phenyl group optionally substituted by one or two halogen atoms of atomic number 9 to 17 or by a methyl group, and stereoisomer forms or mixtures thereof.

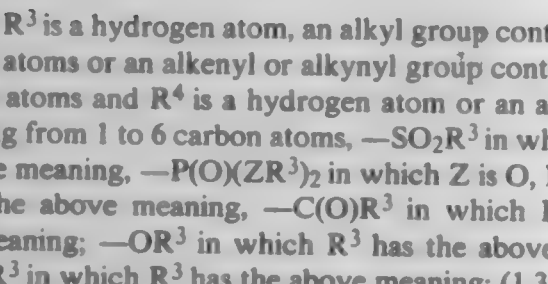
11. A method for controlling undesirable plant growth at a locus comprises applying to the locus or the plant an effective amount of an active compound according to claim 1.

4,606,754
HERBICIDAL ORTHO-(AZINYL)-BENZENESULFONAMIDES

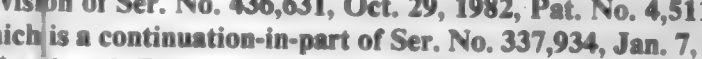
Rafael Shapiro, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

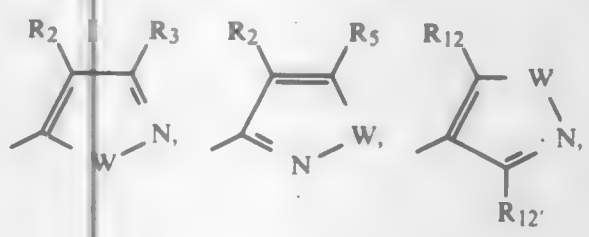
Division of Ser. No. 437,325, Oct. 28, 1982, Pat. No. 4,494,980. This application Dec. 3, 1984, Ser. No. 677,600
Int. Cl.[4] A01N *47/36;* C07D *401/12*
U.S. Cl. 71—92 9 Claims

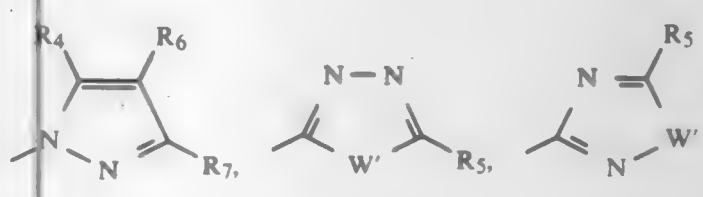
1. A compound of the formula:

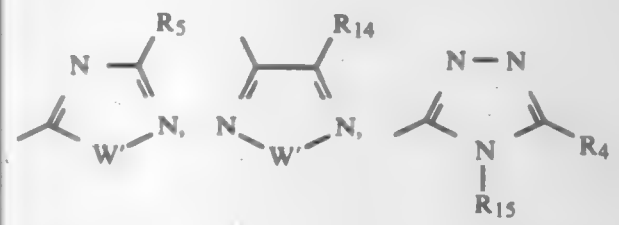


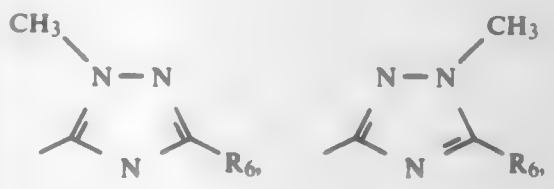
wherein
Q is











R[1] is H, F, Cl, CH_3 or OCH_3;
R[2] R[3] and R[17] are independently H or CH_3;
X is CH_3, OCH_3 or Cl;
Y is CH_3, C_2H_5, CH_2OCH_3, OCH_3, OC_2H_5, $CH(OCH_3)_2NH_2$, $NHCH_3$ or $N(CH_3)_2$;
Z is CH;
provided that (1) when X is Cl, then Y is OCH_3, OC_2H_5, NH_2, $NHCH_3$ or $N(CH_3)_2$; (2) when R[1] is CH_3, then R[1] is in the 3-, 4- or 5-position of the benzene ring; and their agriculturally suitable salts.

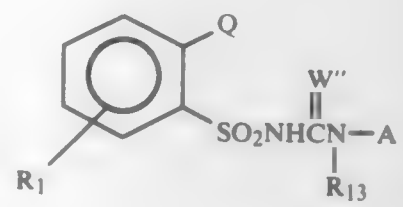
8. A method for controlling the growth of undesired vegetation which comprises applying to the locus to be protected an effective amount of a compound of claim 1.

4,606,755
HERBICIDAL SULFONAMIDES

Morris P. Rorer, Newark, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

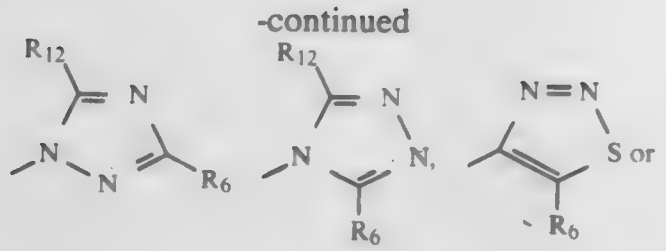
Division of Ser. No. 436,631, Oct. 29, 1982, Pat. No. 4,511,392, which is a continuation-in-part of Ser. No. 337,934, Jan. 7, 1982, abandoned. This application Dec. 21, 1984, Ser. No. 685,026
Int. Cl.[4] A01N *90/12;* C07D *403/10*
U.S. Cl. 71—93 38 Claims

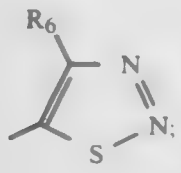
1. A compound of the formula



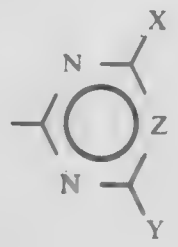
where
Q is

-continued

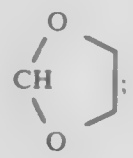




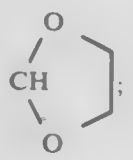
W'' is O or S;
W is O, S or NR;
W' is O or S;
R is H or C_1–C_4 alkyl;
R_1 is H, F, Cl, Br, CH_3, CF_3 or OCH_3;
R_2 is H, CH_3, C_2H_5, Cl or Br;
R_3 is H, CH_3, C_2H_5, Cl, Br, OCH_3, OC_2H_5 or SCH_3;
R_4 is H or C_1–C_4 alkyl;
R_5 is H, CH_3, C_2H_5, Cl, Br, OCH_3, OC_2H_5 or SCH_3;
R_6 is H, CH_3 or C_2H_5;
R_7 is H or C_1–C_4 alkyl;
R_{12} is H or CH_3;
R_{12}' is H or CH_3;
R_{13} is H or CH_3;
R_{14} is H, CH_3, C_2H_5, Cl, OCH_3, OC_2H_5 or SCH_3;
R_{15} is C_1–C_3 alkyl;
A is



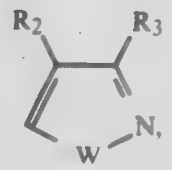
X is CH_3 or OCH_3;
Y is CH_3, C_2H_5, CH_2OCH_3, OCH_3, OC_2H_5, $CH(OCH_3)_2$, NH_2, $NHCH_3$, $N(CH_3)_2$, $OCH_2CH_2OCH_3$, OCH_2CF_3, SCH_3, CF_3 or



Z is N;
and their agriculturally suitable salts; provided that
(a) when R_2 is Cl or Br, then W is O or S;
(b) when W'' is S, then R_{13} is H, and Y is CH_3, OCH_3, C_2H_5, OC_2H_5, CH_2OCH_3, $CH(OCH_3)_2$ or

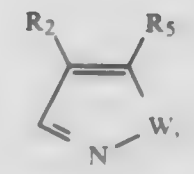


(c) when Q is



then one of R_2 or R_3 must be H, CH_3 or C_2H_5;

(d) when Q is



then one of R_2 or R_5 must be H, CH_3 or C_2H_5;
(e) the total number of carbon atoms of Q must be less than or equal to 8.

35. A method for controlling the growth of undesired vegetation which comprises applying to the locus to be protected an effective amount of a compound of claim 1.

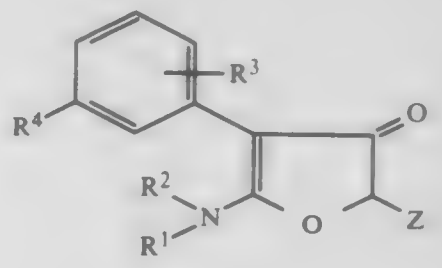
4,606,756

HERBICIDAL 2-(NITROGEN HETEROCYCLE)5-AMINO-3-OXO-4-(SUBSTITUTED-PHENYL)-2,3-DIHYDROFURANS

Carl E. Ward, San Jose, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Oct. 26, 1984, Ser. No. 666,074
Int. Cl.[4] C07D *401/14, 405/04;* A01N *43/08*
U.S. Cl. 71—94 29 Claims

1. A compound having the formula:



wherein
R^1 is hydrogen or alkyl having 1 through 4 carbon atoms;
R^2 is hydrogen, alkyl having 1 through 4 carbon atoms, alkenyl having 3 or 4 carbon atoms, lower alkoxycarbonylalkyl having 1 through 4 carbon atoms in the alkoxy moiety and 1 through 4 carbon atoms in the alkyl moiety, lower alkoxyalkyl wherein the alkoxy and alkyl moieties independently have 1 through 3 carbon atoms, or lower alkylthioalkyl wherein the alkyl moieties independently have 1 through 3 carbon atoms; or
R^1 and R^2 together with the nitrogen atom to which they are joined form a saturated nitrogen heterocycle having 3 through 6 carbon atoms one of which is the joining nitrogen atom and the remainder are carbon atoms or unsaturated heterocycle selected from the group of 2-pyrrolin-1-yl; 3-pyrrolin-1-yl; 1,2,3,4-tetrahydropyrid-1-yl or 1,2,5,6-tetrahydropyrid-1-yl;
R^3 is hydrogen, lower alkyl, lower alkoxy, halo, or trifluoromethyl and can be set at any available position on the phenyl ring;
R^4 is lower alkyl, lower alkoxy, halo, lower haloalkyl having 1 through 4 carbon atoms and 1 through 4 carbon atoms and 1 through 3 of the same or different halo atoms, lower haloalkoxy having 1 through 4 carbon atoms and 1 through 3 of the same or different halo atoms, or lower haloalkylthio having 1 through 4 carbon atoms and 1 through 3 of the same or different halo atoms; and
Z is a saturated or unsaturated nitrogen heterocycle radical having 6-ring atoms one of which ring atoms is nitrogen and the remainder of said ring atoms are carbon atoms; or a saturated or unsaturated substituted nitrogen heterocycle having 6-ring atoms one of which is nitrogen and the remainder of which are carbon atoms and wherein said nitrogen atom is substituted with a methyl or ethyl group; with the proviso that said nitrogen heterocycle and said substituted heterocycle are not attached to the furan moi-

ety of Formula I via the 2-position of said nitrogen heterocycle;
or a compatible cation salt thereof.

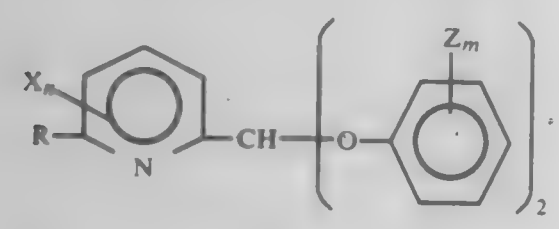
4,606,757

DIPHENOXYMETHYLPYRIDINES HAVING HERBICIDAL PROPERTIES

Sudarshan K. Malhotra, Walnut Creek, and Ingrid L. Evoy, Antioch, both of Calif., assignors to The Dow Chemical Company, Midland, Mich.

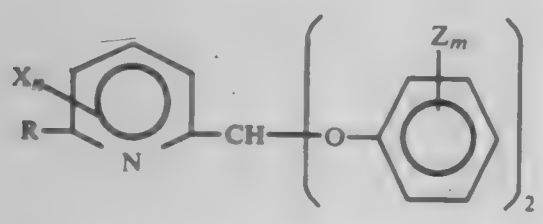
Continuation of Ser. No. 452,584, Dec. 23, 1982, abandoned. This application Oct. 2, 1984, Ser. No. 656,834
Int. Cl.[4] C07D *213/30, 213/46;* A01N *43/40*
U.S. Cl. 71—94 42 Claims

1. A compound corresponding to the formula



wherein R represents hydrogen, alkyl of 1 to 4 carbon atoms, hydroxyalkoxy of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, alkenyloxy of 2 to 4 carbon atoms, alkylthio of 1 to 4 carbon atoms; alkoxyalkoxy wherein each alkoxy group independently contains from 1 to 4 carbon atoms, chloro or fluoroalkoxy of 1 to 4 carbon atoms; X represents bromo, chloro or fluoro; n represents an integer of 0 or 1 with the proviso that when R is hydrogen, n is 0; Z represents bromo, chloro, fluoro, alkylthio of 1 to 4 carbon atoms or alkoxy of 1 to 4 carbon atoms and m represents an integer of 0 or 1.

29. A method for controlling the growth of undesirable plants which comprises applying to plants, plant parts or their habitat a composition which comprises an inert carrier in admixture with a herbicidally effective amount of a compound corresponding to the formula



wherein R represents hydrogen, alkyl of 1 to 4 carbon atoms, hydroxyalkoxy of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, alkenyloxy of 2 to 4 carbon atoms, alkylthio of 1 to 4 carbon atoms; alkoxyalkoxy wherein each alkoxy group independently contains from 1 to 4 carbon atoms, chloro or fluoroalkoxy of 1 to 4 carbon atoms; X represents bromo, chloro or fluoro; n represents an integer of 0 or 1 with the proviso that when R is hydrogen, n is 0, Z represents bromo, chloro, fluoro, alkylthio of 1 to 4 carbon atoms or alkoxy of 1 to 4 carbon atoms and m represents an integer of 0 or 1.

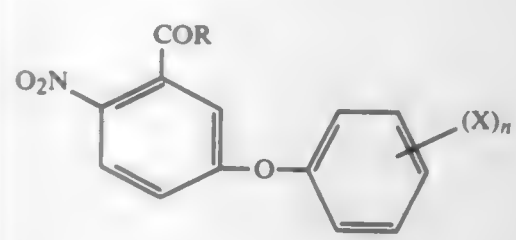
4,606,758

SUBSTITUTED PHENOXYBENZOIC ACIDS AND DERIVATIVE THEREOF AS HERBICIDES

Robert J. Theissen, Mason City, Iowa, assignor to Rhone-Poulenc Agrochimie, Lyons, France

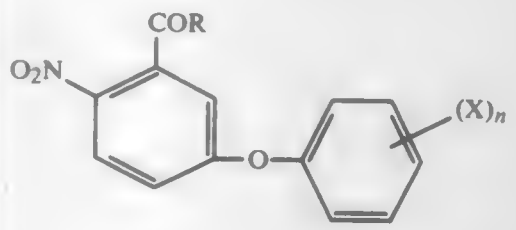
Continuation-in-part of Ser. No. 617,569, Sep. 29, 1975, Pat. No. 3,979,437, which is a continuation of Ser. No. 398,610, Sep. 19, 1973, Pat. No. 3,941,830, which is a continuation of Ser. No. 114,712, Feb. 11, 1971, Pat. No. 3,784,635, which is a continuation-in-part of Ser. No. 819,412, Apr. 25, 1969, Pat. No. 3,652,645, and a continuation-in-part of Ser. No. 545,232, Jan. 29, 1975, Pat. No. 4,002,662, which is a continuation-in-part of Ser. No. 398,610, Sep. 19, 1973, Pat. No. 3,941,830. This application Jul. 2, 1976, Ser. No. 702,367
The portion of the term of this patent subsequent to Mar. 28, 1989, has been disclaimed.
Int. Cl.[4] A01N *31/14;* C07C *153/01, 153/07*
U.S. Cl. 71—100 8 Claims

1. A compound having the formula:

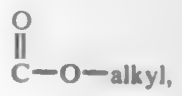


wherein X is halogen, n is an integer of 1 to 5, and R is SH or SR_1 wherein R_1 is C_1–C_4 alkyl.

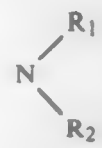
4. A compound having the formula:



wherein X is a member selected from the group consisting of halogen, nitro, trifluoromethyl, cyano, COOH,

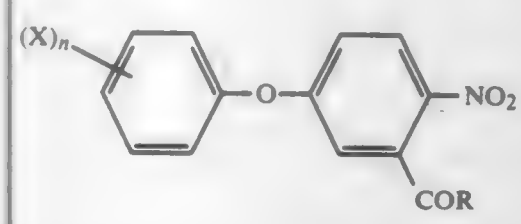


(alkyl of 1 to 4 carbon atoms),



SH, SR_1, SOR, SO_2R_1, SO_2NH_2 and combinations thereof, R_1 and R_2 are selected from the group consisting of alkyl of 1 to 4 carbon atoms, R is SR_1, n is an integer of 1 to 5.

5. The method of killing weeds, which comprises applying to said weeds an amount effective to injure said weeds of a compound of the formula:



wherein X is halogen, n is an integer of 1 to 5, and R is SR_1, wherein R_1 is alkyl of 1 to 4 carbon atoms.

4,606,759

HERBICIDAL 2-HALOACETANILIDES

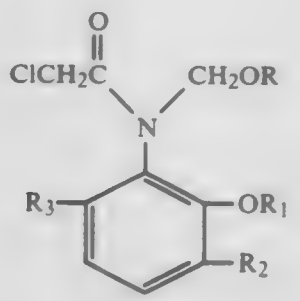
Gerhard H. Alt, University City, Mo., assignor to Monsanto Company, St. Louis, Mo.

Continuation-in-part of Ser. No. 134,034, Mar. 25, 1980, abandoned. This application Feb. 23, 1981, Ser. No. 237,193

Int. Cl.[4] A01N *37/22*; C07C *103/32*

U.S. Cl. 71—118 27 Claims

10. Herbicidal compositions comprising an adjuvant and a herbicidally effective amount of a compound having the formula



wherein

R is isopropyl, n-butyl, isobutyl, sec-butyl, allyl or 2-methylbutyl;

R_1 is methyl, isopropyl, n-butyl or allyl and

R_2 and R_3 are hydrogen or methyl; provided that;

R_1, R_2 and R_3 are each methyl when R is n-butyl, isobutyl or sec-butyl;

R_2 and R_3 are each hydrogen when R is isopropyl, isobutyl or sec-butyl and R_1 is isopropyl or n-butyl and

R_2 is hydrogen and R_3 is methyl when R is 2-methylbutyl or allyl and R_1 is allyl.

4,606,760

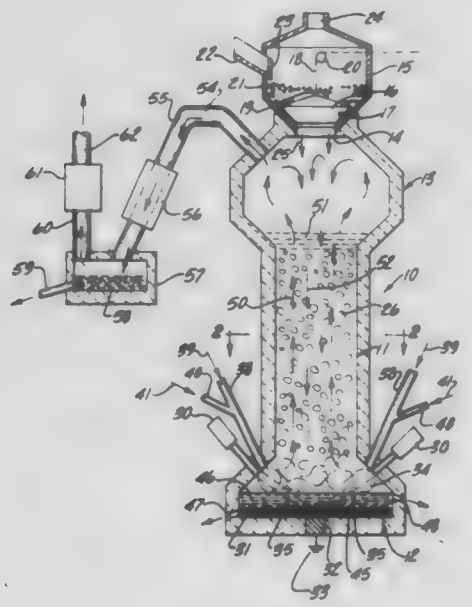
METHOD AND APPARATUS FOR SIMULTANEOUSLY SEPARATING VOLATILE AND NON-VOLATILE METALS

Leonard Fritz, Romulus; Richard R. Osterberg, Canton; Richard B. Wolanski, Dexter, and Joseph E. Arvay, Trenton, all of Mich., assignors to Huron Valley Steel Corp., Belleville and Fritz Enterprises, Inc., Taylor, both of, Mich.

Filed May 3, 1985, Ser. No. 729,994

Int. Cl.[4] C22B *4/00*

U.S. Cl. 75—10.19 7 Claims



1. A method for simultaneously separating non-volatile metals and volatile metals from metal compositions including zinc, lead and copper contained in waste by-products resulting from zinc, brass and steel manufacturing processes and from low grade zinc ore, comprising:

(a) providing a reactor formed of a vertical open-ended shaft which interconnects an enlarged, lower reaction chamber having a floor and an enlarged upper chamber;

(b) continuously feeding finely pulverized metallic materials including metallic or metallic oxide zinc, lead and copper bearing materials, and carbonaceous material, and oxygen containing gas into the lower reaction chamber;

(c) periodically feeding pieces of metallic material, including zinc bearing materials, characterized by having little, if any, oxide content, and carbonaceous material, through the upper chamber and into the upper open end of the shaft to load the shaft and to maintain the loading of the shaft therewith;

(d) applying sufficient, intense plasma and electrically produced heat energy along with reducing gases in the lower chamber to reduce and vaporize metallic oxides and to melt the non-volatile metals so that they gravity flow to and form a puddle upon the lower chamber floor, and to vaporize the volatile metals and to form a slag layer that accumulates over the puddle;

(e) flowing the volatile metal vapors upwardly through the shaft and its loading and into the upper chamber, to allow for the scrubbing of the rising vapors by the descending condensed lead and provide for entrapment in the filled shaft of any particulate being mechanically carried by the ascending gases and vapors;

(f) maintaining the temperature and pressure in the upper chamber within a range that will cause lead vapors to condense into metallic lead, but which are too high to condense zinc, and thereby condensing the lead and gravity flowing the molten lead downwardly through the shaft and shaft loading to the puddle on the lower chamber floor;

(g) continuously removing the zinc and zinc chloride vapor and any other non-condensed vapors from the upper chamber and condensing such vapors outside of the reactor to form separately a commercial grade metallic zinc and a zinc chloride product;

(h) periodically tapping the lower chamber to remove molten metal from the puddle therein, and removing slag from the lower chamber.

4,606,761

REDUCTION OF METAL COMPOUNDS

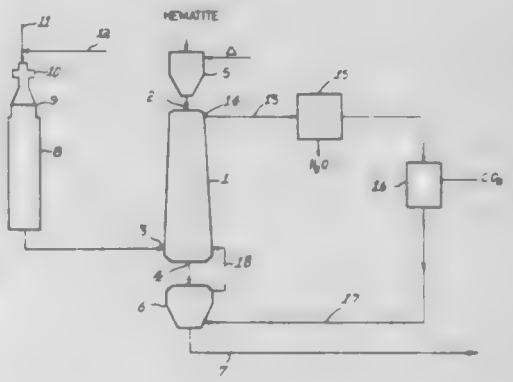
Jan C. de Waal, and Peter W. E. Blom, both of Vereeniging, South Africa, assignors to Union Steel Corp. (of So. Africa) Ltd., South Africa

Filed Nov. 28, 1984, Ser. No. 675,729

Claims priority, application South Africa, Nov. 29, 1983, 83/8881

Int. Cl.[4] C21C *5/52*; C22B *4/00*

U.S. Cl. 75—10.19 13 Claims



1. A method for the reduction of a metal compound including the step of reacting the metal compound with a reducing agent in gaseous form, said agent comprising a mixture of carbon monoxide and hydrogen which is obtained by heating at least one compound selected from the group consisting of liquid petroleum gas, Sasol gas, hydrocarbon, finely ground coal, a coal derived compound obtained form a coal liquefaction process, char and charcoal, together with at least one

material selected from the group consisting of steam and carbon dioxide in a plasma arc heater.

4,606,762

PROCESS FOR THE RECOVERY OF MERCURY

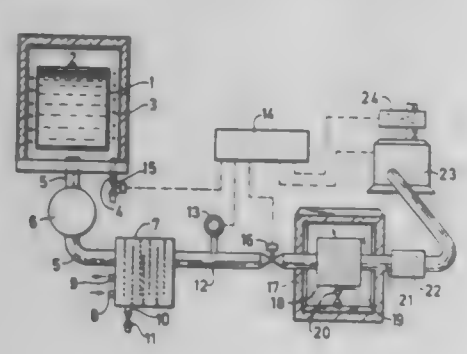
Ake Sikander; Ake Björkman, and Günther Jönsson, all of Karlskrona, Sweden, assignors to Lumalampan Aktiebolag, Karlskrona, Sweden

Division of Ser. No. 618,927, Jun. 11, 1984, which is a division of Ser. No. 442,767, Nov. 18, 1982, Pat. No. 4,468,011. This application Mar. 25, 1985, Ser. No. 715,874

Claims priority, application Sweden, Dec. 1, 1981, 8107177

Int. Cl.[4] C22B *43/00*

U.S. Cl. 75—81 15 Claims



1. A process for separating and recovering mercury from waste containing plastic material and mercury by distilling the mercury from the waste in a system comprising a treatment chamber, an afterburner chamber having a burner therein, said burner having a channel therein, the process comprising:

placing the mercury-containing waste in said treatment chamber;

supplying an inert gas into said treatment chamber;

heating the waste in said treatment chamber to about 200° C. in a slight vacuum and with a limited supply of said inert gas, whereby gases are emitted by the plastic material;

conducting the gases emitted by the plastic material from said treatment chamber to said afterburner chamber in which the emitted gases, after ignition of said burner in said afterburner chamber, are conducted through said channel in said burner where they intermingle with combustion gases, thereby attaining the same temperature and undergoing total combustion;

raising the temperature in said treatment chamber to about 415° C. and causing said raised temperature to remain substantially constant at about 415° C. while the plastic material in said treatment chamber is completely broken down; and then

raising the temperature in said treatment chamber to about 510° C. and raising the pressure of the supplied inert gas to induce said supplied inert gas to pulsate to force out mercury from the waste; and

recovering the mercury which is separated from the waste.

4,606,763

PROCESS FOR THE PRESSURE OXIDATION ACID LEACHING OF NON-FERROUS METAL AND IRON-CONTAINING SULPHIDIC MATERIAL

Donald R. Weir, Fort Saskatchewan, Canada, assignor to Sherritt Gordon Mines Limited, Toronto, Canada

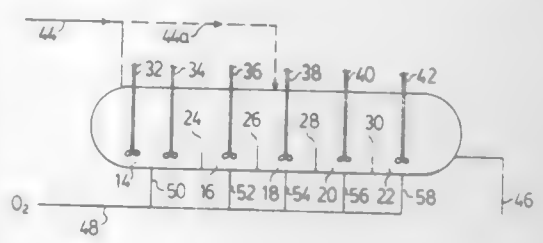
Filed Mar. 4, 1985, Ser. No. 707,920

Claims priority, application Canada, Sep. 19, 1984, 463634

Int. Cl.[4] C22B *3/00*

U.S. Cl. 75—101 R 17 Claims

1. A process for the pressure oxidation leaching of non-ferrous metal sulphidic material comprising providing an autoclave assembly having a series of successive compartments, with a first compartment having a size of from about 50 to about 200% larger than each of the remaining compartments, providing an oxygen partial pressure in the autoclave assembly in the range of from about 50 to about 2000 kPa, feeding an aqueous slurry of said material into the relatively large first compartment with resultant flow of the material through the successive smaller compartments to cause the temperature in the first and successive compartments to be sufficient to pro-



duce autogeneous oxidation of said sulphidic material, and discharging the oxidized slurry from the last compartment of the series.

4,606,764

METHOD OF RECOVERING METALS FROM ORES USING A FORMATE REDUCING AGENT

Wayne C. Hazen, Denver; Enzo L. Coltrinari, Arvada; John E. Litz, Lakewood, and David L. Thompson, Golden, all of Colo., assignors to Resource Technology Associates, Boulder, Colo.

Continuation-in-part of Ser. No. 524,025, Aug. 17, 1983. This application Jan. 11, 1985, Ser. No. 690,743

Int. Cl.[4] C22B *5/00*

U.S. Cl. 75—101 R 15 Claims

1. A process for producing metal values from a metal-containing ore comprising metal oxide ores or mixed metal oxide and metal sulfide ores in a vertical tube reactor having downcomer and riser sections comprising:

crushing and sizing said ore to a slurriable size;

forming a slurry with said crushed and sized ore;

adding an oxidizing agent to said slurry;

conveying said slurry to a first section of said reactor, having a first pressure of above about 50 p.s.i.g.; to produce a first mixture of dissolved metal and solid gangue material;

adding a reducing agent comprising formate species to said first mixture producing a second mixture;

conveying said second mixture to a second section of said reactor, having a second pressure of above about 50 p.s.i.g.;

maintaining said second mixture at above about p.s.i.g. for a time sufficient to reduce substantially all said dissolved metal values and produce a third mixture of solid elemental metal, solid gangue material and a metal-depleted liquid;

separating said metal-depleted liquid from said third mixture to produce a fourth mixture comprising said solid elemental metal and said gangue material; and

separating said solid elemental metal from said fourth mixture.

4,606,765

PROCESS FOR TREATING ZINC-LADEN DUST ISSUING FROM ELECTRIC STEEL PLANT FURNACES

Serge Ferlay, 19, Grande Rue, Champlast 89210 Brienon, France

Filed Oct. 31, 1983, Ser. No. 547,138

Claims priority, application France, Nov. 4, 1982, 82 18491

Int. Cl.[4] C22B *19/24*

U.S. Cl. 75—101 R 12 Claims

1. A two-step process for treating zinc-laden dust comprising zinc oxide and zinc ferrite, comprising the steps of:

(a) leaching the zinc oxide contained in the dust with a sodium hydroxide solution having a concentration greater than 100 g/l; and

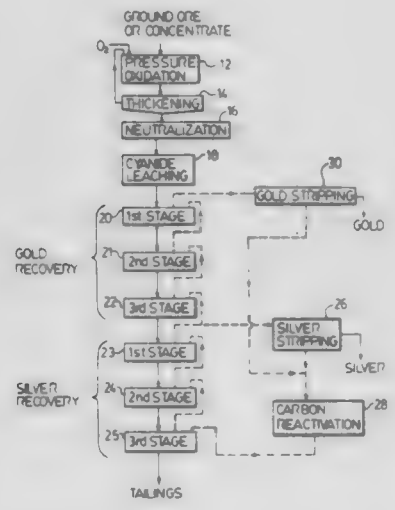
(b) leaching the zinc ferrite contained in the dust with a sodium hydroxide solution having a concentration greater than the sodium hydroxide solution of step (a).

4,606,766

PROCESS FOR SEPARATELY RECOVERING GOLD AND SILVER FROM SOLUTION BY CARBON ADSORPTION

Roman M. Genik-Sas-Berezowsky, Edmonton, and Donald R. Weir, Fort Saskatchewan, both of Canada, assignors to Sherritt Gordon Mines Limited, Toronto, Canada

Filed Mar. 4, 1985, Ser. No. 707,993
Claims priority, application Canada, Sep. 27, 1984, 464181
Int. Cl.[4] C22B *11/08*
U.S. Cl. 75—118 R 2 Claims



1. A process for separately recovering gold and silver from a solution containing dissolved gold and silver by carbon adsorption, comprising passing the solution sequentially through a series of carbon adsorption stages, passing carbon sequentially through the series countercurrent to the solution to cause gold and silver to be loaded onto the carbon, removing a portion of the loaded carbon partway along the series, recovering silver from the removed portion of loaded carbon, removing loaded carbon from the beginning of the series, recovering gold from the carbon removed from the beginning of the series, and returning carbon from which gold and silver have been removed to the end of the series for re-use.

4,606,767

DECORATIVE SILVER-COLORED SINTERED ALLOY

Yoshio Nagato, Kokubu, Japan, assignor to Kyocera Corporation, Kyoto, Japan

Filed Oct. 28, 1985, Ser. No. 791,940
Claims priority, application Japan, Oct. 30, 1984, 59-229894
Int. Cl.[4] C22C *29/02*
U.S. Cl. 75—242 5 Claims

1. A decorative silver-colored sintered alloy, which comprises titanium carbide, chromium carbide and nickel, wherein titanium carbide is present in the form of the dispersed phase of particles in an amount of 50 to 98% by weight based on the three components, and chromium carbide and nickel are present in the form of the binder phase of a solid solution in amounts of 1 to 20% by weight and 1 to 30% by weight, respectively, based on the three components.

4,606,768

HIGH IMPACT STRENGTH POWDER METAL PART AND METHOD FOR MAKING SAME

Mark Svilar, University Heights; Stephen Glancy, Akron, and Erhard Klar, Beachwood, all of Ohio, assignors to SCM Corporation, New York, N.Y.

Filed Jul. 15, 1985, Ser. No. 755,282
Int. Cl.[4] B22F *3/00*
U.S. Cl. 75—246 13 Claims

1. A copper infiltrated ferrous powder metal part infiltrated with copper or a copper alloy characterized as having after infiltration a residual uninfiltrated porosity of less than about 7 volume percent and a maximum pore size of the residual uninfiltrated porosity of less than about 125 micrometers, said porosity and pore size values being taken from a worst field of view in a functionally critical area of said metal part.

4,606,769

ERASABLE BLACK INK COMPOSITION FOR BALL-POINT PENS

Noriatsu Tanaka; Hiroshi Sato, both of Kanagawa; Nobuto Saitoh, Gunma; Katsumi Hirano, and Kazuhiko Honda, both of Aichi, all of Japan, assignors to Pilot Man-Nen-Hitsu Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 499,661, May 31, 1983, abandoned. This application Nov. 6, 1984, Ser. No. 668,775
Claims priority, application Japan, May 31, 1982, 57-91315
Int. Cl.[4] C09D *11/08*
U.S. Cl. 106—30 10 Claims

1. An erasable ink composition, comprising:
(a) rubber in an amount in the range of 18.9 to 20% by weight based on the total weight of the composition;
(b) a low boiling aliphatic or aromatic hydrocarbon rubber solvent having a boiling point of 180° C. or less present in an amount such that the weight ratio of the low boiling rubber solvent to the rubber is in the range of 1.56:1 to 1.64:1;
(c) a black pigment present in an amount such that the weight ratio of the black pigment to the rubber is in the range of 0.8:1 to 0.9:1; and
(d) a quality adjuster comprising an aliphatic or aromatic hydrocarbon or aliphatic or aromatic ester having a boiling point of not less than 300° C. present in an amount such that the weight ratio of the quality adjuster to the pigment is in the range of 1.7:1 to 1.8:1.

4,606,770

ADDITIVE FOR HYDRAULIC CEMENT MIXES

Arthur H. Gerber, Solon, Ohio, assignor to Sandoz Ltd., Basel, Switzerland

Filed Nov. 13, 1984, Ser. No. 670,772
Int. Cl.[4] C04B *7/35*
U.S. Cl. 106—90 26 Claims

1. A hydraulic cement mix comprising portland cement, aggregate, sufficient water to effect hydraulic setting of the cement and a set accelerating effective amount of an admixture comprising a poly(N-methylol) derivative of glycoluril.

4,606,771

ENTERIC COATING LIQUID

Hideaki Mukohyama; Ryoichi Hiraoka; Shohachi Ushijima, and Motoyasu Saito, all of Yatsushiro, Japan, assignors to Kohjin Co., Ltd., Minato, Japan

Filed Aug. 30, 1984, Ser. No. 645,728
Claims priority, application Japan, Aug. 31, 1983, 58-157936
Int. Cl.[4] A61K *9/36;* C08L *1/08*
U.S. Cl. 106—170 5 Claims

1. An enteric coating liquid comprising an alkali metal salt of an acid having an acid dissociation constant (pKa) of at least 3

at 25° C. and a water-insoluble oxycarboxylic acid type cellulose derivative dispersed in water or a mixture of water and at most 20% by weight of a lower alcohol having 1 to 3 carbon atoms, said water-insoluble oxycarboxylic acid type cellulose derivative being derived from cellulose or a hydroxyalkyl cellulose by replacing up to three hydroxyl groups per glucose unit skeleton with at least two kinds of substituents, at least one substituent being selected from the group consisting of a carboxyalkyl ether group of the formula: $—OC_nH_{2n}COOH$ and a half ester group based on a dicarboxylic acid, and at least one substituent being selected from the group consisting of an ether group of the formula: $—OC_nH_{2n+1}$ and an ester group of the formula: —OOCR, wherein the alkyl in the hydroxyalkyl cellulose is a C_1 to C_5 alkyl, n is an integer of 1 to 5 and R is a C_1 to C_5 alkyl or a higher fatty acid residue.

4,606,772

COMPOSITION FOR AND METHOD OF ALTERING THE PERMEABILITY OF A SUBTERRANEAN FORMATION

Stephen W. Almond, and David J. Hanlon, both of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.

Filed May 4, 1984, Ser. No. 607,363

Int. Cl.[4] C08L *5/14*; C08K *3/10*; C08J *3/24*; E21B *21/10*

U.S. Cl. 106—208 **13 Claims**

1. A crosslinking composition comprising:

(a) water;

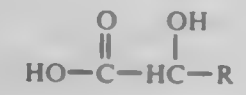
(b) a first ingredient containing aluminum cations having a valence of 3^+ and comprising aluminum acetate;

(c) a second ingredient containing zirconium cations having a valence of 4^+ and comprising:

a zirconium admixture comprising:

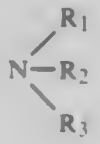
(A) a zirconium compound selected from the group consisting of zirconium oxychloride, zirconium acetate, zirconium tetrachloride, zirconium ortho-sulfate, zirconium carbonate, zirconium ammonium carbonate, and mixtures thereof;

(B) an alpha-hydroxy acid represented by the following formula:



wherein R is selected from the group consisting of hydrogen and an alkyl group having 1 to about 3 carbon atoms;

(C) an amine compound represented by the formula:



wherein:

R_1 is a hydroxyalkyl group having 1 to about 3 carbon atoms;

R_2 is selected from the group consisting of an alkyl group having 1 to about 3 carbon atoms and a hydroxyalkyl group having 1 to about 3 carbon atoms; and

R_3 is selected from the group consisting of hydrogen, an alkyl group having 1 to about 3 carbon atoms and a hydroxyalkyl group having 1 to about 3 carbon atoms;

wherein said zirconium cations and said aluminum cations are present in said crosslinking composition in an amount sufficient to produce a weight ratio of zirconium cations to aluminum cations of from about 1 to 1 to about 10 to 1 and said crosslinking composition has a pH of from about 3 to about 11.

4,606,773

EMULSIFICATION OF ALKENYL SUCCINIC ANHYDRIDE SIZING AGENTS

Robert W. Novak, Lisle, Ill., assignor to Nalco Chemical Company, Oak Brook, Ill.

Filed Dec. 10, 1984, Ser. No. 679,840

Int. Cl.[4] B01J *13/00*; C08J *3/02*

U.S. Cl. 106—213 **7 Claims**

1. In a method for emulsification of alkenyl succinic anhydride type paper sizing wherein a water-soluble polymer is used as an emulsification aid, the improvement comprising using as the water-soluble polymer a cationically modified polymer having a molecular weight ranging between 20,000–750,000 in conjunction with a water-soluble cationic starch, and wherein the cationic starch to polymer weight ratio is between 75:25 to 25:75.

4. An alkenyl succinic anhydride emulsion containing:

40–99.9 percent by weight water

0.01–40 percent by weight ASA

0.01–10 percent by weight of a water-soluble cationically modified polymer having a molecular weight ranging between 20,000–750,000, and

0.01–10 percent by weight of a cationic starch, and wherein the cationic starch to polymer weight ratio is between 75:25 to 25:75.

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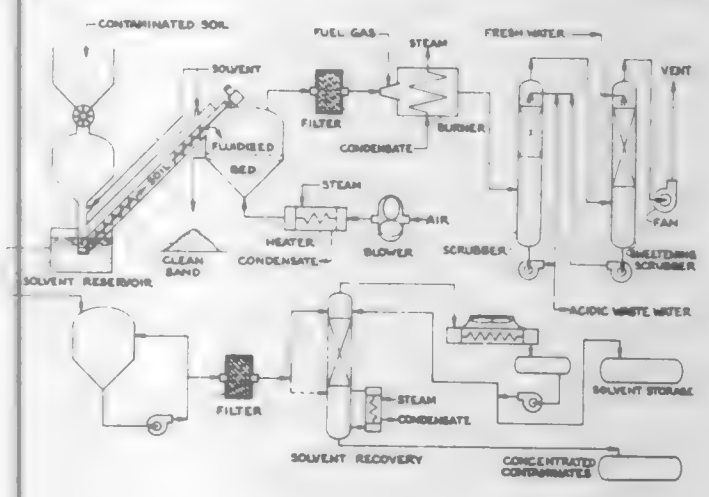
PROCESS FOR REMOVING CONTAMINANTS FROM SOILS

Thomas E. Morris, Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Filed Jul. 30, 1984, Ser. No. 635,865

Int. Cl.[4] B08B *3/10*

U.S. Cl. 134—10 **2 Claims**



1. A process for decontaminating soil which comprises

contacting the contaminated soil with a solvent for said contaminants in an intimate manner;

separating said soil from the bulk of said solvent;

treating said separated solvent and its concomitent solids by filtration; recovering the solids wet with solvent and the bulk of the solvent as a filtrate;

subjecting the filtrate to distillation to recover a substantially contaminant free solvent and reusing said so obtained solvent as at least a part of said solvent first contacting said contaminated soil;

freeing said solvent wet solids from solvent and combining said filtrate prior solvent with said feed to said solvent distillation step;

treating said solvent washed soil with an inert gas to strip the residual solvent from said soil and recovering decontaminated soil; and optionally

treating said inert gas strip and generated solvent vapors by filtration and burning said resulting filtrate thereby generating burned filtrate gases; and

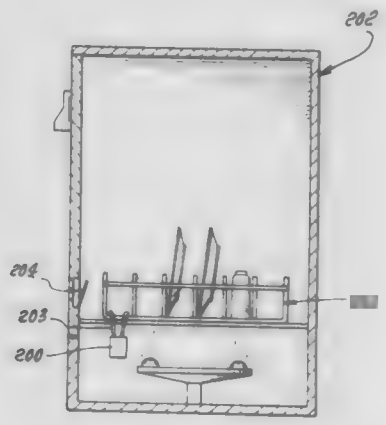
washing said burned filtrate gases to recover inorganic oxides and acids.

4,606,775

AUTOMATIC DISHWASHER IN A DUAL FUNCTIONING SYSTEM

Ronald A. Robinson, Garden Grove; William J. Boan, Westminster, and George D. Evans, Tustin, all of Calif., assignors to Purex Corporation, Lakewood, Calif.

Filed Apr. 5, 1984, Ser. No. 597,025
Int. Cl.[4] B08B 7/04
U.S. Cl. 134—18 8 Claims



1. In the method of washing articles in an automatic dishwasher, having a foodware supporting basket exposed to aqueous spray, the steps that include:

(a) providing a first volume of a first treating component for use in the dishwasher,

(b) providing a second volume of a second treating component in close transported association with the first volume, but isolated therefrom, for presentation at the time of use of said first component, for dishwashing,

(c) one of said first and second components consisting essentially of nonionic surfactant, and the other of said first and second components consisting essentially of chlorine release agent, and

(d) separating some of said second component from said close association with the first component and employing same in the dishwasher separately from said first component and exposing to said spray in proximity to said basket during dishwashing,

(e) said first volume of first treating component being provided in a relatively large container, provided with a neck,

(f) said second volume of second treating component being provided in a fitment substantially smaller than said relatively large container including a porous dispensing container,

(g) said (b) step including locating the fitment in the relatively large container, via said neck,

(h) gaining access to the fitment in the large container and via said neck so that said second treating component may be employed in the dishwasher, and at the time of also gaining access to the first treating component in the large container via said neck prior to said step (d) employment of the second component in the dishwasher (i) and adding said first and second components to the dishwasher, initiating automatic operation thereof to wash articles using said components, and exposing said porous dispensing container to said spray.

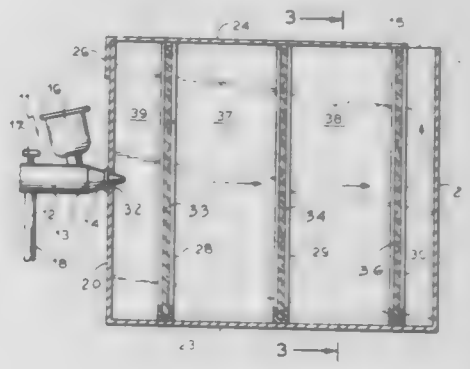
4,606,776

AIR BRUSH CLEANING UNIT

Lawrence R. Salis, Ft. Lauderdale, Fla., assignor to Salis International, Inc., Hollywood, Fla.

Filed Sep. 28, 1984, Ser. No. 655,589
Int. Cl.[4] B08B 3/00, 3/02
U.S. Cl. 134—36 5 Claims

1. In the method of cleaning of an airbrush in which a cleaning fluid is fed under pressure through the airbrush to a spray nozzle at the tip of the brush and projected under the influence of said pressure as a spray, the improvement comprising applying the airbrush tip into engagement with an inlet opening in the front of a chamber having a rear exhaust opening while retaining said airbrush substantially externally of said chamber, said chamber having a porous first filter between said openings and a diffusion compartment between the filter and exhaust opening and actuating the airbrush to feed the cleaning fluid through the airbrush to pick up residue along the passage of the



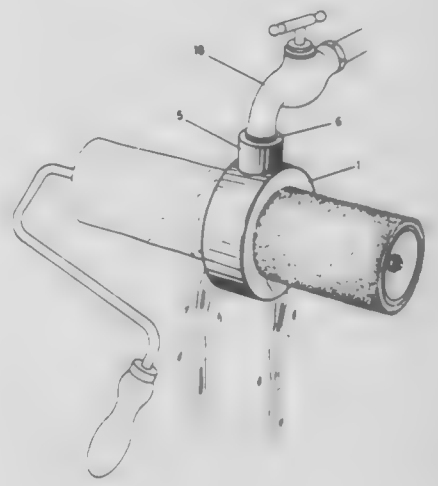
fluid through the airbrush to and through the nozzle and project the spray of the residue carrying cleaning fluid produced by the airbrush spray nozzle under the influence of said pressure onto the filter whereby the fluid traverses the filter and diffuses in the leading compartment to deposit residue on the walls of the compartment.

4,606,777

PAINT ROLLER CLEANER

Donald Brow, 12 Hewett Avenue, Hawthorndene, Australia (5051)

Filed Apr. 21, 1983, Ser. No. 487,276
Int. Cl.[4] B08B 3/02, 3/04, 7/00
U.S. Cl. 134—38 10 Claims



1. A one piece cleaning device for a roller applicator of the type which includes a cylindrical core carrying an external pad of porous material, said pad having an outer diameter, said cleaning device comprising a hollow annular sleeve within the sleeve between the inside and outside surfaces thereof having inner and outer surfaces and open at both ends, and having an inside surface the diameter of which is substantially equal to the outside diameter of the pad of the roller applicator to be cleaned so as to provide an interference fit between the pad and the inside surface of said sleeve, annular liquid passage means within the sleeve between the inner and outer surfaces thereof, liquid entry means to said liquid passage means and liquid outlet means communicating with the liquid passage means and disposed on the inner surface of the annular sleeve making contact with the pad of the paint roller applicator whereby liquid emerging from said liquid outlet means is forced to enter deep within the porous material of the pad when the roller applicator is slid in an axial direction through said sleeve.

10. A method of cleaning a roller applicator of the type including a cylindrical core carrying an external pad of porous

material, said method comprising passing the roller applicator axially through a hollow annular cleaning sleeve of substantially less axial length than said roller applicator, said cleaning sleeve having an inside and an outside surface, at least one liquid outlet opening in said inside surface and annular passage means of substantially less axial length than said roller applicator and for supplying liquid to said outlet opening, said pad contacting said inside surface and said outlet opening so that liquid emerging from said outlet opening is forced to enter deep within the porous material of the pad as said roller applicator is moved axially through said cleaning sleeve.

4,606,778

JOINING METHOD

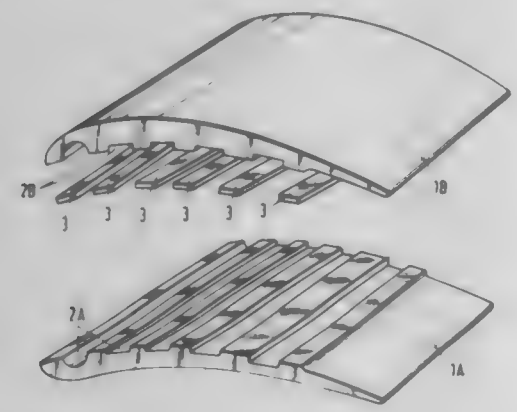
Bernd Jahnke, Neckargemuend, Fed. Rep. of Germany, assignor to BBC Aktiengesellschaft Brown, Boveri & Cie, Baden, Switzerland

Filed Oct. 26, 1984, Ser. No. 665,293

Claims priority, application Fed. Rep. of Germany, Nov. 3, 1983, 3339751

Int. Cl.[4] C21D *8/00*

U.S. Cl. 148—11.5 N 15 Claims



1. A joining method for producing a component from two or more constructional elements made of a metallic material, in particular of an oxide dispersion-hardened alloy based on nickel or iron, which comprises; heat-treating the constructional elements before being joined to produce a coarse-grained oriented structure, inserting a metallic interlayer between the constructional elements which were heat-treated to produce a coarse-grained oriented structure to form a joining zone of interlayer with surfaces of the two constructional elements, said metallic interlayer manufactured from the same oxide disperison-hardened alloy as the constructional elements and having during joining the same extrusion direction as the constructional elements, and further having a plastic fine-grained recrystallizable structure, joining the assembly of heat-treated constructional elements having a coarse-grained, oriented structure with the inserted interlayer having a plastic fine-grained recrystallizable structure by heating at a temperature between 800°–1100° C. and a pressure of 1 through 200 Pa to effect deformation with a fine-grained growth of the interlayer below 1 μm, and subjecting the resultant component formed from the constructional elements to a heat treatment to effect oriented recrystallization over the joining zone.

4,606,779

METHOD OF PRODUCING A MAGNETIC MATERIAL WIRE

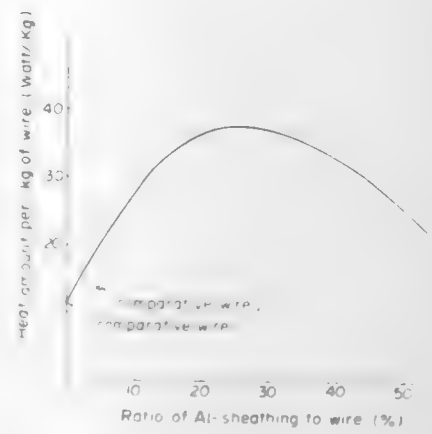
Takashi Saito, Yokohama; Kazumoto Suzuki, Tokyo, and Yoshihiro Naganuma, Funabashi, all of Japan, assignors to Fujikura Ltd., Tokyo, Japan

Division of Ser. No. 506,013, Jun. 20, 1983, Pat. No. 4,525,432. This application Apr. 12, 1985, Ser. No. 703,763

Claims priority, application Japan, Jun. 21, 1982, 57-105499; Jun. 21, 1982, 57-105500

Int. Cl.[4] H01F *1/04*

U.S. Cl. 148—120 2 Claims



1. A method of producing a magnetic material wire adapted to be wound around an electric conductor for generating heat which comprises the steps of:

(a) preparing an elongated core of a magnetic material having a Curie point of 70° to 250° C., said core containing apart from impurities 32 to 52% by weight of nickel, not less than 0.5 but less than 9% by weight of chromium, 0.2 to 2% by weight of silicon and balance iron;

(b) covering said core with a high conductive metal sheathing of a uniform thickness to form an intermediate product;

(c) reducing said intermediate product to a predetermined cross-section to form the wire, the ratio of the metal sheathing to the wire in cross-sectional area being in the range of 15 to 40%; and

(d) bending the wire to apply a reverse strain to the entire peripheral portion of said core in such a manner that the ratio of the radius of the core to the radius of the curvature of the bent wire is in the range of 2 to 9%, thereby reducing the residual strain of the wire so that the magnetic property of said core contributable to the heat generation of the wire is improved.

4,606,780

METHOD FOR THE MANUFACTURE OF A_3B_5 LIGHT-EMITTING DIODES

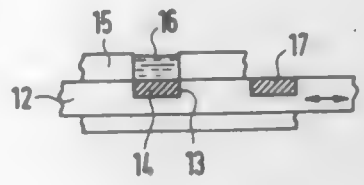
Siegfried Leibenzeder, Erlangen, and Christine Heindl, Mantel, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Oct. 24, 1984, Ser. No. 664,148

Claims priority, application Fed. Rep. of Germany, Oct. 28, 1983, 3339272

Int. Cl.[4] H01L *21/208*

U.S. Cl. 148—171 7 Claims



1. A method for manufacturing (Ga,Al)As light-emitting diodes, by precipitation of (Ga,Al)As from n- and p-doped Ga,Al,As melts via liquid-phase epitaxy, comprising epitaxially

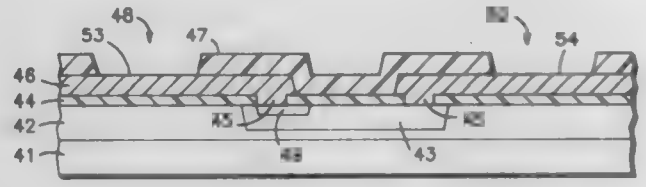
applying a first n-GaAlAs layer, on a GaAs substrate, a Ga,Al-,As melt n-doped with S, Se or Te, and after an interim precipitation without contact with the GaAs substrate, a GaAlAs layer epitaxially applying p-doped with Zn or Mg on the substrate epitaxially treated with the n-GaAlAs layer.

4,606,781

METHOD FOR RESISTOR TRIMMING BY METAL MIGRATION

Robert L. Vyne, Tempe, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Oct. 18, 1984, Ser. No. 662,109
Int. Cl.[4] H01L *21/24*
U.S. Cl. 148—183 **7 Claims**



1. A method for trimming the values of a passive device formed at the surface of a semiconductor substrate, comprising the steps of:

forming metal contact regions at least at each end of said device;

causing an electrical current to flow through said device in a single direction only, said current being sufficient to cause metal to migrate from at least one contact region toward another contact region; and

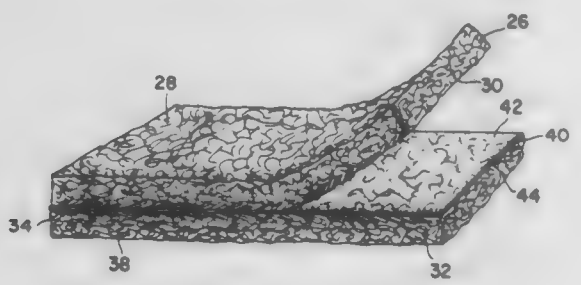
terminating said electrical current after a predetermined length of time.

4,606,782

METHOD OF MAKING FLOOR CLEANING PAD

Peter G. Demetriades, 2118 Coleman Pl., Henderson, N.C. 27536

Division of Ser. No. 680,826, Dec. 12, 1984, Pat. No. 4,536,911. This application Jun. 7, 1985, Ser. No. 742,705
Int. Cl.[4] B32B *5/12, 31/00*
U.S. Cl. 156—62.8 **6 Claims**



1. A method of forming a reversible floor cleaning pad comprising the following steps:

providing a first porous non-woven air-layered web having an upper, floor cleaning surface adapted to clean hard surface floors when placed on the floor and rotated about a vertical axis passing through the center of said first web at speeds of at least 1000 revolutions per minute, and having an opposite lower surface,

providing a second porous non-woven air-layered web having a lower, floor cleaning surface adapted to clean hard surface floors when placed on the floor and rotated about said vertical axis at speeds of at least 1000 revolutions per minute, and having an opposite upper surface,

providing a flexible wet-laid non woven strata layer having generally uniform directional strength and an upper layer surface and an opposite lower layer surface,

bonding said first web lower surface directly to said upper layer surface, and

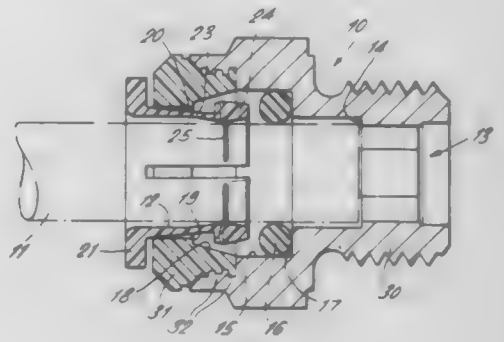
bonding said second web upper surface directly to said lower layer surface.

4,606,783

TUBE COUPLINGS

John D. Guest, "Iona", Cannon Hill Way, Bray, Maidenhead, Berkshire, United Kingdom

Filed Dec. 1, 1983, Ser. No. 557,079
Claims priority, application United Kingdom, Dec. 13, 1982, 8235474
Int. Cl.[4] F16L *17/02, 47/02*
U.S. Cl. 156—73.1 **8 Claims**



1. A method of making a tube coupling, wherein said method comprises

providing an outer part having a bore for receiving a tube, wherein the outer part comprises a first end through which the bore passes, a step in the bore facing and spaced from the first end, and axially spaced annular recesses encircling the bore between the step and the first end;

providing an annular molded plastics inner part having a head portion, and insert portion with an end face, and an opening through the inner part having an axially tapered inner annulus, wherein the molded plastics part has an outer surface tapering toward the end face between the head portion and the end face;

inserting the molded plastics inner part in the bore of the outer part so that the head portion of the inner part overlies and abuts the first end of the outer part, the end face of the inner part abuts the step in the bore of the outer part, and the tapered outer surface of the inner part overlies the recesses in the bore;

applying ultrasonic vibration to soften or melt the plastics material of the inner part to deform the outer tapered surface of the plastics part into the annular recesses in the bore of the outer part;

hardening the plastics material to form a locking engagement between the inner part and recesses of the outer part;

providing a collet having arms; and

inserting the arms of the collet into said tapered inner annulus of the plastics part, wherein the tapered portion is such that axially outward movement of the collet arms results in the collet arms engaging the inner tapered annulus thereby causing the collet arms to be pressed inwardly for gripping a tube in the bore.

4,606,784

METHOD AND AN ARRANGEMENT FOR THE FOLDING AND SEALING OF THE LONGITUDINAL EDGE OF A MATERIAL WEB

Jan-Erik Glans, Kävlinge, and Henry Corneliusson, Lund, both of Sweden, assignors to Tetra Pak International AB, Lund, Sweden

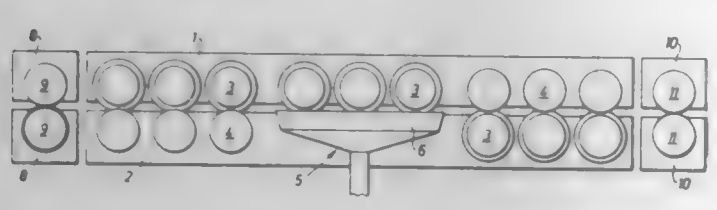
Filed Nov. 3, 1982, Ser. No. 438,648
Claims priority, application Sweden, Nov. 5, 1981, 8106548
Int. Cl.[4] B65B *7/20*
U.S. Cl. 156—200 **15 Claims**

1. A method of forming a folded edge in a packing web

having an exterior layer of thermoplastic material, so that an edge zone of the web is folded flat against a zone bordering said edge zone along a fold-line, comprising the steps of:

continuously feeding the material web;

progressively folding said edge zone by steps until said edge zone has been folded approximately 90° relative to said bordering zone with said thermoplastic layer disposed inside of the 90° fold;



supplying heat to the inside of the 90° fold along said edge zone and said bordering zone while maintaining said edge zone folded at approximately 90°;

further progressively folding said edge zone by steps until said edge zone has been folded approximately 180° relative to said bordering zone; and

pressing said edge zone against said bordering zone so as to thermally seal the edge zone to the bordering zone.

4,606,785

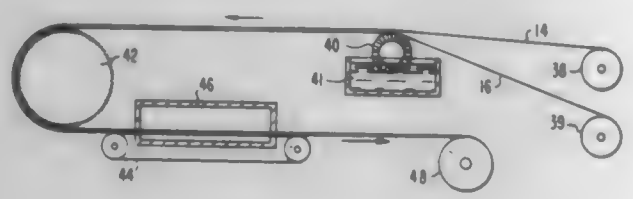
SIMPLIFIED METHOD OF MAKING HIGH STRENGTH RESIN BONDED MICA TAPE

Clarence L. Zeise, Penn Township, Westmoreland County, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Nov. 15, 1984, Ser. No. 671,830

Int. Cl.⁴ B32B *31/12, 19/06, 19/02;* **C08L** *67/02*

U.S. Cl. 156—305 **7 Claims**



1. A method of making a flexible, porous, resin bonded mica tape comprising the steps:

(1) providing a composite of a resin permeable mica sheet and a resin permeable open weave fabric backing material wherein the backing material has a higher resin permeability than the mica sheet;

(2) providing a solution of 100 parts by weight of an epoxy mica bonding resin consisting essentially of epoxy novolac and cycloaliphatic epoxy, which will permeate both the mica sheet and the backing material, and from about 100 parts by weight to about 150 parts by weight of a polyester adhesive resin consisting essentially of linear, saturated polyester exhibiting cohesive properties having a ball and ring softening point at from about 125° C. to about 180° C. and an elongation to about 20°%, and linear, saturated polyester exhibiting adhesive properties having a ball and ring softening point at from about 70° C. to about 115° C. and an elongation greater than about 800%, which will permeate the backing material but not the mica sheet;

(3) contacting the backing material of the composite with said solution so that the mica bonding resin permeates the mica sheet and the adhesive resin permeates only the backing sheet; and

(4) removing the resin solvent, thereby binding the mica in the mica sheet together and adhering the backing material to the mica sheet.

4,606,786

ARRANGEMENT FOR ULTRASONIC SEALING

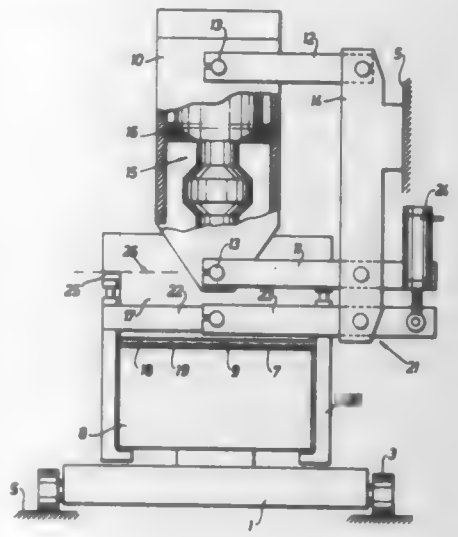
Pär Andersson, Lund, Sweden, assignor to Tetra Pak International AB, Lund, Sweden

Filed Dec. 14, 1984, Ser. No. 681,592

Claims priority, application Sweden, Jan. 2, 1984, 8400009

Int. Cl.⁴ B29C *65/08*

U.S. Cl. 156—580.1 **8 Claims**



1. An arrangement for ultrasonic sealing of laminates by means of a sealing jaw and a counterjaw with a working gap of predetermined dimension between the working surfaces of the jaws, comprising supporting means for supporting said sealing jaw and counterjaw for relative movement toward and away from each other, stop means for maintaining a predetermined minimum distance between working surfaces of the jaws, the stop means including stop members on the counterjaw arranged when in a working position of the sealing jaw to rest against a stop face formed in the nodal plane of the sealing jaw, whereby the working surfaces are maintained parallel to each other.

4,606,787

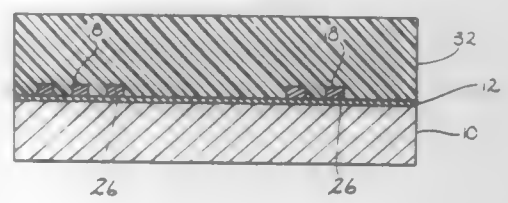
METHOD AND APPARATUS FOR MANUFACTURING MULTI LAYER PRINTED CIRCUIT BOARDS

Peter P. Pelligrino, Apple Valley, Minn., assignor to ETD Technology, Inc., Shoreview, Minn.

Continuation of Ser. No. 354,736, Mar. 4, 1982, abandoned. This application Jan. 13, 1984, Ser. No. 571,139

Int. Cl.⁴ C23F *1/00;* **B44C** *1/22;* **C03C** *15/00*

U.S. Cl. 156—632 **19 Claims**



1. A method for fabricating a printed circuit board comprising the steps of:

(a) electrolytically forming a uniform, relatively pin-hole free thin first layer of a conductive material on a polished, homogenous, rigid substrate having a conductive surface; wherein there is low contact pressure between the first layer and the substrate surface;

(b) depositing photosensitive resist onto said first layer of conductive material;

(c) masking the photosensitive resist with a photomask to define a conductive circuit pattern on the surface of the resist;

(d) exposing the masked photosensitive resist to light;

(e) dissolving those portions of the resist corresponding to the conductive circuit pattern, forming three-dimensional

cavities in the resist, to expose said first layer of conductive material according to said circuit pattern;

(f) electrolytically forming a second layer of conductive material, of the same material as that of said first conductive material, upon the exposed portions of said first layer of conductive material, wherein a raised conductive circuit pattern is formed above the general plane of said first conductive layer, conforming to the three-dimentional cavity definition of the photosensitive resist image; said first and second conductive layers being integrally bonded to one another;

(g) removing previously undissolved photosenitive resist from said first layer of conductive material, thereby exposing top and sidewall surface portions of said raised conductive circuit pattern configured to the shape of said three-dimensional cavity;

(h) treating at least the three-dimensional top and sidewall surface portions of said raised conductive circuit pattern so as to provide a chemical conversion coating on said surface portions, thereby enhancing the adhesion properties of said surface portions to laminate insulator materials;

(i) embedding said raised conductive circuit pattern on said first conductive lyaer within a uniform thickness of laminate insulator material, whereby the laminate material strongly adheres to said raised conductive circuit pattern across the entire three-dimensional said surface portions thereof;

(j) separating the first conductive layer with said attached laminate and said embedded conductive layer from the rigid substrate; and

(k) etching away said first conductive layer from said insulator material; whereby the conductive circuit pattern embedded in the laminate insulator material is exposed and lays flush and coplanar with the surface of the insulator material, with uniform cross-sectional thickness across the entire circuit board.

4,606,788

METHODS OF AND APPARATUS FOR FORMING CONDUCTIVE PATTERNS ON A SUBSTRATE

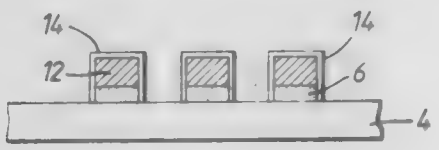
Peter L. Moran, 3 Falcon Hill, Lover's Walk, Montenotte, Cork, Ireland

Filed Apr. 3, 1985, Ser. No. 719,375

Claims priority, application United Kingdom, Apr. 12, 1984, 8409504

Int. Cl.⁴ C23F *1/02;* **B44C** *1/22;* **C03C** *15/00, 25/06*

U.S. Cl. 156—656 **20 Claims**



1. A method of forming a conductive pattern on a substrate comprising:

the steps of coating the substrate with a first electrically conductive material, to form a first layer;

forming a resist pattern on the first layer;

depositing a second electrically conductive material on the parts of the first layer not covered by the resist pattern;

removing the resist pattern, and

temporarily subjecting the now exposed parts of the first layer and the deposits of said second conductive material with a third electrically conductive material in its molten state, the third electrically conductive material being such that when in its molten state it acts simultaneously to dissolve the first conductive material and to provide a coating on said second electrically conductive material.

4,606,789

METHOD FOR MANUFACTURING CELLULOSE PULP USING PLURAL REFINING AND FIBER SEPARATION STEPS WITH REJECT RECYCLING

Rolf Reinhall, 834, 171st Pl. NE., Bellevue, Wash. 98008

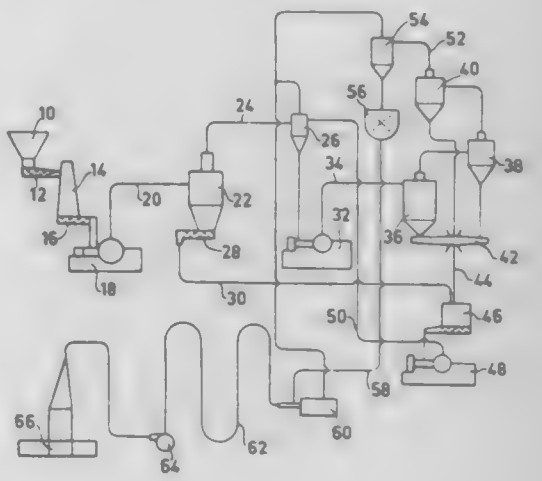
PCT No. PCT/SE83/00177, § 371 Date Dec. 23, 1983, § 102(e) Date Dec. 23, 1983, PCT Pub. No. WO83/03856, PCT Pub. Date Nov. 10, 1983

PCT Filed May 3, 1983, Ser. No. 574,153

Claims priority, application Sweden, May 4, 1982, 8202790

Int. Cl.⁴ D21B *1/12, 1/14;* **D21D** *1/30, 5/24*

U.S. Cl. 162—23 **2 Claims**



1. The method of producing pulp from moisture-containing cellulosic fiber material comprising:

(a) treating the material in a pressurized refining zone (**18**) in a liquid-gas phase at super atmospheric pressure and correspondingly elevated temperature until substantially all of said liquid-gas phase is converted into a pressurized gaseous phase;

(b) passing a suspension of refined material and gaseous phase under high velocity into an initial fiber-separating zone (**22**) by using the energy of said pressurized gaseous phase as the propellant high-velocity force;

(c) separating fiber material from said initial fiber-separating zone (**22**) by imparting to the suspension by cyclonic means a trajectory of motion calculated to fractionate said suspension into an accepted fraction and a reject fraction according to weight, size or surface area of the fibers;

(d) discharging the reject fraction from said initial fiber-separating zone (**22**) and successively passing the accepted fraction to a steam separator (**26**) at least one further refining zone (**32**) and to at least one further fiber-separating zone (**36**) for further fractionation;

(e) passing the accepted fraction from said further fiber-separating zone (**36**) to a collection station (**56**) and recycling the reject fraction from said further fiber-separation zone (**36**) is passed to a reject refining zone (**48**) and said steam separator (**26**) before being recycled to said further refining zone (**32**).

4,606,790

CONDUCTIVE PAPER AND METHOD

Roger W. Youngs, Hinsdale, Ill.; Robert W. Lewis, Saratoga, Calif.; Robert N. Kussman, Tacoma, and John R. Hurtt, Puyallup, both of Wash., assignors to Container Corporation of America, Chicago, Ill.

Filed Jul. 6, 1984, Ser. No. 628,513

Int. Cl.⁴ D21H *1/02*

U.S. Cl. 162—125 **13 Claims**

1. A continuous, in-line method of preparing an electrically conductive, multi-ply structure for intercepting and dissipating electrostatic charges and discharges, said structure having at least one electrically conductive ply, and a plurality of non-conductive plies, and having sufficient mechanical strength to enable it to be formed into a container, or to be used as a

component of a container, for packaging electrostatic sensitive articles to protect them against electrostatic charges and discharges, comprising: forming in a mixing vessel at least one aqueous slurry consisting essentially of a fibrous material, particles of an inorganic electrically conductive substance, said electrically conductive particles being present in an amount of at least about 5% based upon the weight of the fibrous material in said at least one aqueous slurry and an electroconductive polymer dispersant for the particles of the conductive substance said electroconductive polymer dispersant having a molecular weight of between about 500 and about 30,000, said electroconductive polymer being present in an amount of at least about 5% based upon the weight of said electroconductive particles; dispersing said particles in said mixing vessel in the presence of said fibrous material and the polymer dispersant to enable said particles to be substantially uniformly taken up by said fixedly supported on the fibers comprising the fibrous material; forming a plurality of separate aqueous slurries consisting essentially of a non-conductive fibrous material, transporting the slurry containing the particles of the conductive substance from said mixing vessel to a paper forming machine; adding a retention aid polymer to the slurry containing the particles of the conductive substance in an amount sufficient to agglomerate and compact said conductive particle supporting fibers; forming with the paper forming machine at least one ply in sheet form from said at least one slurry while said conductive particle supporting fibers are in an agglomerated and compacted condition to provide at least one conductive ply having as an integral part thereof a substantially continuous, uninterrupted, electrostatic charge intercepting barrier comprising fibers having particles of the electrically conductive substance fixedly supported thereon; forming separate, non-conductive plies in sheet form from said plurality of separate aqueous slurries consisting essentially of a non-conductive fibrous material; and combining said at least one conductive ply with said non-conductive plies to provide an integrated, multi-ply structure comprising a plurality of non-conductive plies, and at least one conductive ply, said at least one conductive ply being preselectively positioned with relation to the non-conductive plies of the structure to enable it to provide optimum protection against electrostatic charges and discharges, said structure having sufficient mechanical strength to enable it to be formed into a container, or to be used as a component of a container, for packaging electrostatic sensitive articles to be protected against electrostatic charges and discharges.

4,606,791

SIZING AGENTS FOR CELLULOSIC PRODUCTS

Ralph W. Emerson, Sr., Boston, Mass., assignor to Reichhold Chemicals, Inc., White Plains, N.Y.

Division of Ser. No. 377,398, May 12, 1982, Pat. No. 4,483,744, which is a continuation of Ser. No. 165,988, Jul. 7, 1980, abandoned, which is a continuation of Ser. No. 20,480, Mar. 14, 1979, abandoned. This application Nov. 2, 1984, Ser. No. 667,726

The portion of the term of this patent subsequent to Nov. 20, 2001, has been disclaimed.

Int. Cl.[4] D21H *3/34*

U.S. Cl. 162—180 **7 Claims**

1. A process for preparing a sizing composition having improved sizing characteristics, which process comprises combining

(A) a first component comprising a material which provides both ammonia and ammonium salt when combined with the other sizing composition components, said ammonia-ammonium salt-providing material being selected from the group consisting of ammonia or precursor thereof; ammonium salts or precursor thereof; the reaction product of urea and at least one Lewis acid selected from sulfuryl chloride, chlorosulfonic acid, thionyl chloride, benzenesulfonyl chloride, benzenesulfonic acid, ortho-toluenesulfonic acid, para-toluenesulfonic acid, ortho-toluenesulfonyl chloride, and para-toluenesulfonyl chloride; and mixtures of these materials; and

(B) a second component comprising a saponified, partly saponified or unsaponified rosin which is modified with an organic acidic material selected from α,β-unsaturated aliphatic carboxylic acids containing from about 3 to 10 carbon atoms, anhydrides thereof, and mixtures of said acids and anhydrides;

said combining of said first component and said second component being effected while said second component is in finely divided form and for a period of time up to about 60 seconds wherein each component is formed into particles having an average diameter of about 10 to about 1000 microns, to thereby provide a sizing composition or precursor thereof, which sizing composition or precursor thereof comprises sizing-effective amounts of said modified rosin, and sizing-enhancing amounts of said ammonia and ammonium salt, the amount of said modified rosin, ammonia and ammonium salt being sufficient to provide a sizing composition with a total acidity of at least about 1,000 parts per million.

4,606,792

ENDLESS SIEVE BAND OR COMPOSITE BAND FOR PAPER MACHINES

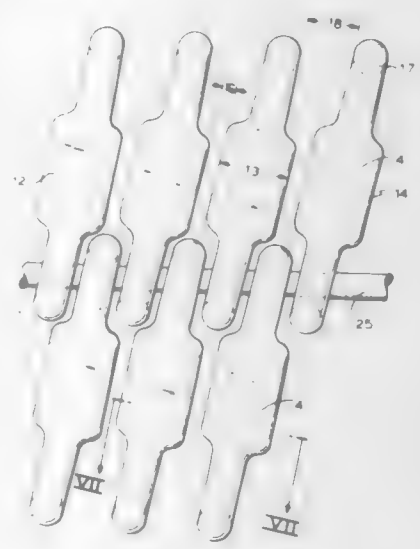
Wolfgang Bachmann, Dreieich-Sprendlingen, and Dieter Spahn, Hanau, both of Fed. Rep. of Germany, assignors to Roda Holding Anstalt, Vaduz, Liechtenstein

Filed Jul. 14, 1983, Ser. No. 513,986

Claims priority, application Fed. Rep. of Germany, Nov. 25, 1982, 3243512

Int. Cl.[4] D21F *1/10, 1/32*

U.S. Cl. 162—232 **29 Claims**



I. An endless sieve band or composite band for paper machines, comprising

a plurality of helixes composed of an elastic wire and each having opposite winding legs and also head curves, said head curves connecting said winding legs with one another and having a predetermined wire diameter, a wire width and an intermediate space between said head curves, said helixes being arranged so that when the head curves of one of two neighboring helixes are inserted into the intermediate spaces of another of the two neighboring helixes an overlapping region is formed, said winding legs of each of said helixes including supporting winding legs which have a flat supporting surface with a width exceeding the wire width of said head curves, said supporting surfaces of said supporting winding legs of each of said helixes being spaced from one another by a distance which is smaller than said intermediate space between said head curves; and

a plurality of insertion wires each inserted in said overlapping region of the neighboring helixes.

4,606,793
METHOD FOR THE OPERATION OF A CARBONIZATION PLANT

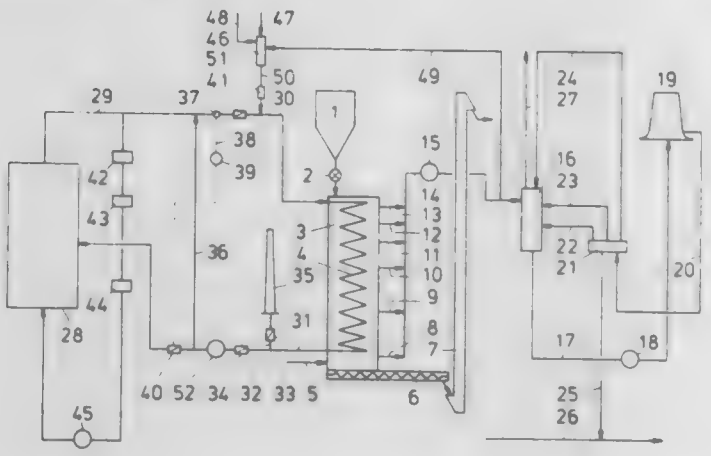
Vladan Petrovic, Adelgundenweg 65; Karl Schmid, Hohe Buchen 14, both of 4300 Essen 1, and Henner Schmidt-Traub, Byfanger Str. 8, 4300 Essen 15, all of Fed. Rep. of Germany

Continuation of Ser. No. 494,122, May 12, 1983, abandoned, which is a division of Ser. No. 376,827, May 10, 1982, Pat. No. 4,431,485. This application Feb. 22, 1985, Ser. No. 704,630

Claims priority, application Fed. Rep. of Germany, Jun. 11, 1981, 3123141

Int. Cl.⁴ C10B *57/00*

U.S. Cl. 201—39 **7 Claims**



1. Method for the operation of a carbonization plant, in which coking furnaces are periodically charged with pre-heated coal, and the obtained coke is subjected to a dry cooling by means of a gaseous cooling medium, heat discharged from the dry cooling of the coke being used for the pre-heating of the coal, comprising pre-heating the coal by indirect heat exchange in a traveling bed drier without fluidization of said coal, resistance during flowing of said coal being overcome by the particular weight thereof, said traveling bed drier having a heat exchange tube and passing gas or waste-heat vapor from the dry cooling of the coke through said tube, said drier being arranged and constructed to permit the coal to flow therethrough via gravity, said drier comprising said heat exchange tubes and frame means; said heat exchange tube displaying surface-increasing means on its coal side, said tube being accomodated in said frame means, said frame means having a side displaying vapor or hot gas entry connected to said tube, a conical tapering in the direction of the coal feed, as well as a plurality of drain connections at different levels on a side lying opposite said side displaying vapor or hot gas entry, and discharging exhaust gas-containing vapors released from the coal during pre-heating through said drain connections.

4,606,794
AUTOMATED SOLAR STILL

Robert L. Wyckoff, 136 Oran Ct., Napa, Calif. 94558

Continuation-in-part of Ser. No. 528,399, Sep. 1, 1983, abandoned, which is a division of Ser. No. 287,416, Jul. 27, 1981, abandoned. This application Jan. 17, 1985, Ser. No. 692,121

Int. Cl.⁴ C02F *1/14*

U.S. Cl. 202—173 **5 Claims**

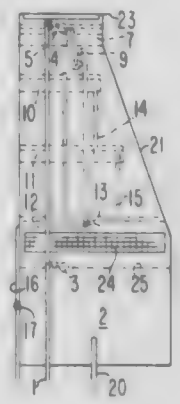
1. An automated solar still having a temperature sensitive valve incorporated within a deployed solar absorber panel, comprising:

a feedwater storage tank having an opening for supplying feedwater at nominal pressure;

an evaporation chamber containing a series of evaporation trays for receiving and evaporating said feedwater and a condensor plate for condensing water vapor, said series of evaporation trays being affixed within said evaporation chamber in spaced apart relationship at descending heights, the upper tray of said series of trays being connected by a pipe to said opening of said feedwater storage tank, said upper tray of said series of trays being positioned below said opening of said feedwater storage tank so that feedwater may flow by gravity through said pipe from said feedwater tank into said upper tray;

a series of solar absorber panels detachably attached to the exterior of said evaporation chamber, each of said solar absorber panels having a fluid-tight conduit for passage of said feedwater, each of said solar absorber panels being associated in one-to-one relationship with a particular tray in said series of trays;

a piping network for feeding feedwater from a particular tray to the associated solar absorber panel and for feeding feedwater from said associated solar absorber panel to the next lowest tray from said particular tray, said piping network including a series of inlet pipes connected between particular trays in said series of trays and the inlet of said fluid-tight conduit in said associated solar absorber panel, and further including a series of outlet pipes connected between the outlet of said fluid-tight conduit in said associated solar absorber panel and said next lowest tray; and



a temperature sensitive valve incorporated within said fluid-tight conduit in one of said panels in said series of solar absorber panels, said valve thereby being in thermal communication with said feedwater flowing through said fluid-tight conduit in said one of said panels, whereby said valve is open when the temperature of said feedwater is at or above the threshold temperature for evaporation within said series of trays in said evaporation chamber and wherein said valve is closed when the temperature of said feedwater is below the threshold temperature for evaporation within said series of trays in said evaporation chamber.

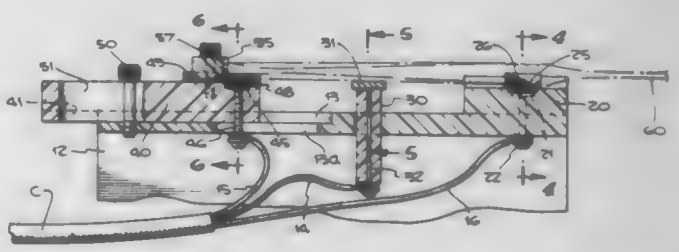
4,606,795
METHOD FOR SPOT PLATING FLATWARE

Raul Ruiz, Monterey Park, and Gary P. Stein, Beverly Hills, both of Calif., assignors to Specific Plating Co., Inc., City of Commerce, Calif.

Filed Aug. 23, 1985, Ser. No. 768,969

Int. Cl.⁴ C25D *5/02*

U.S. Cl. 204—15 **2 Claims**



1. The method of spot gold plating a metallic flatware article, comprising the steps of:

(a) selecting the flatware article to be plated;

(b) selecting a plating fixture having at least one upwardly facing metallic cathode and at least one upwardly facing metallic mesh anode for supporting the flatware article in a horizontal position, and guide means for aligning the

flatware article in a predetermined position relative to said cathode and anode;
(c) selecting an aqueous gold plating solution adapted for brush plating;
(d) filling the metallic mesh anode with the plating solution;
(e) applying a D.C. voltage between said anode and said cathode;
(f) then placing the article of flatware on the fixture for a predetermined period of time so as to spot gold plate its surface area that is in contact with the anode; and
(g) then removing the article from the fixture and washing off any excess plating solution.

4,606,796

COLORED, ANODIZED ALUMINUM-BASE ARTICLE AND METHOD OF PREPARING SAME

Yasuhiro Hanazima; Norihiro Ogawa, both of Shizuoka, and Masumi Sugioka, Shimada, all of Japan, assignors to Asahi Malleable Iron Co., Ltd., Japan

Continuation-in-part of Ser. No. 573,407, Jan. 24, 1984, abandoned. This application May 20, 1985, Ser. No. 736,418
Claims priority, application Japan, Jan. 24, 1983, 58-8971[U]
Int. Cl.⁴ C25D *5/00*
U.S. Cl. 204—42 **3 Claims**

1. A colored, anodized aluminum-base article comprising:
an aluminum-base substrate selected from the group consisting of aluminum and aluminum alloys;
a corrosion and weather-resistant inner aluminum oxide film formed on the surface of said substrate and having a thickness of between 30 and 150 microns and a Vicker's hardness number of at least about 330 Hv said inner film being uncolorable and having a metallic appearance; and
an outer transparent and porous aluminum oxide film provided over the surface of said inner film and having a thickness of between 5 and 25 microns, a Vicker's hardness number of not greater than 270 Hv and a pore size between about 200 and 300 A;
a coloring agent deposited in a substantial portion of said pores by immersion in a coloring solution, said coloring agent imparting color to said article without destroying the transparent quality of said outer film;
said outer film having been formed by anodizing said substrate in a first electrolyte bath said bath consisting of a sulfuric acid solution using graphite as a counter-electrode at a controlled temperature between 20 and 40° C. at a constant direct current density;
said inner film having been formed under the outer film by anodizing said substrate in a second electrolyte bath, said second bath consisting of a sulfuric acid solution using graphite as a counter electrode at a controlled temperature not higher than 10° C.; said article having a deep metallic color by the combined effect of the color of said transparent outer film and the metallic appearance of said inner film showing through the transparent outer film.

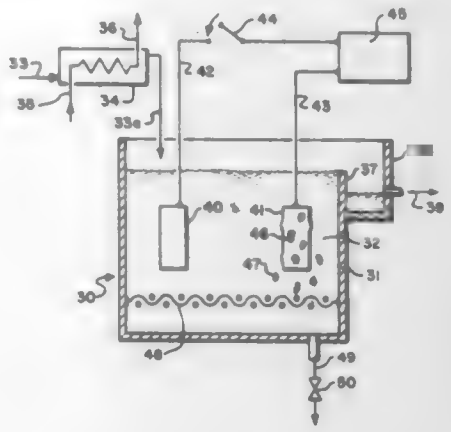
4,606,797

METHOD FOR RECOVERY OF HIGH GRADE GOLD ALLOY FROM KARAT GOLD-CLAD BASE METAL SUBSTRATES

Arthur D. Taylor, Foxboro, and Roger W. Ramsey, Norton, both of Mass., assignors to Engelhard Corporation, Menlo Park, N.J.

Filed Sep. 12, 1985, Ser. No. 775,070
Int. Cl.⁴ C25F *5/00*
U.S. Cl. 204—146 **20 Claims**

1. A method of recovering high grade gold alloy in an unoxidized condition from karat gold clad to a base metal substrate, without significant oxidation of said substrate, comprising the steps of:
(a) subjecting said karat gold-clad substrate to electrolysis as an anode in an electrolytic circuit including a cathode and an aqueous solution of from about 0.02 to about 2% by weight nitric acid, based on the total weight of said solution, the electrolysis being carried out at a temperature of from about 48° C. to about 94° C. for sufficient time to



delaminate karat gold from the substrate in unoxidized form and deposit same in said solution; and
(b) separating the delaminated karat gold from said solution.

4,606,798

MODIFIED CATALYSTS AND PROCESS FOR THE SOLAR REDUCTION OF WATER

Wolfgang H. F. Sasse, East Malvern; Oddvar Johansen, Murrumbeena; Albert W. Mau, Glen Waverley, and Jean D. Swift, Elsternwick, all of Australia, assignors to The Commonwealth of Australia Commonwealth Scientific and Industrial Research Organization, Australia

Continuation of Ser. No. 418,127, Sep. 15, 1982, abandoned. This application Apr. 23, 1985, Ser. No. 725,521
Int. Cl.⁴ B01J *19/12*
U.S. Cl. 204—157.52 **6 Claims**

5. A process for reduction of water using methylviologen or a related compound as an electron-transfer agent and a platinum electron transfer catalyst, wherein the catalyst is modified with a sulphur compound in which the sulphur is reducible to the divalent state, said sulphur compound being a sulphone, sulphoxide or other oxy-sulphur compound capable of being reduced by hydrogen on platinum to a compound selected from the group consisting of a thiocyanate salt; a thiosulphate salt; a thiosulphide salt; a cyclic or open chain thiol; a cyclic or open chain thiocarbonyl compound; a sulphur containing amino-acid or polypeptide; and a heterocyclic compound containing formally divalent sulphur in an amount sufficent to inhibit hydrogenation side-reactions during the solar reduction process but not sufficient to suppress the reduction of hydronium ion to the hydrogen by the electron-transfer agent, the amount of the sulphur compound used being from 0.5 to 100 moles per mole of the platinum catalyst.

4,606,799

METHOD, AND AN ARRANGEMENT, FOR PRODUCING SYNTHESIS GASES

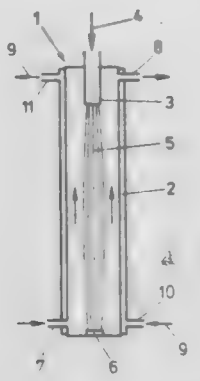
Wilfried Pirklbauer, Neuhofen, and Ferdinand Jarema, Linz, both of Austria, assignors to Voest-Alpine Aktiengesellschaft, Linz, Austria

Filed Mar. 25, 1985, Ser. No. 715,397
Claims priority, application Austria, Apr. 2, 1984, 1110/84
Int. Cl.⁴ C07C *3/24*
U.S. Cl. 204—170 **9 Claims**

1. A method for producing synthesis gases, in particular reduction gases, from starting products comprised of carbonaceous fuels including coal, coke, petroleum products, natural gas, coke oven gas and the like, and of oxygen-containing gases including water vapor and carbon dioxide capable of endothermally reacting with said fuels comprising the steps of
providing a reaction vessel having an interior elongated reaction chamber,
supplying a plasma-jet-forming plasma gas to said reaction chamber in a given direction at one end thereof,
establishing a plasma jet extending in said given direction

along substantially the entire longitudinal length of said reaction chamber to form a plasma reaction zone in said chamber,

supplying said starting products as a feed fluid to said reac-



tion chamber and into intensive contact with said plasma jet over a substantial portion of the length thereof to endothermally react said starting products to produce said synthesis gases, and

drawing off said synthesis gas from one end of said chamber.

4,606,800

COATING METHOD AND PRODUCT THEREOF

Robert G. Hart, Bethlehem, and Herbert E. Townsend, Center Valley, both of Pa., assignors to Bethlehem Steel Corporation, Bethlehem, Pa.

Filed Sep. 20, 1983, Ser. No. 534,011
Int. Cl.[4] C25D *13/20*
U.S. Cl. 204—181.1 **6 Claims**

1. A method of producing a coated ferrous substrate resistant to cratering when coated with a cathodic electrophoretic coating at voltages in excess of 300 V, comprising the steps of

(a) selecting a ferrous substrate whose surface has been suitably cleaned of grease and oxides,

(b) applying thereto a resinous outer coating having dispersed therein a particulate metallic aluminum-zinc alloy which is between 5 and 95% by weight aluminum and having a particle size of not more than 10 μm, which coating is applied to a depth of between about 0.6 to 1.0 mil,

(c) curing such coating through heating and quenching, and

(d) subjecting said ferrous substrate having said cured coating thereon to a cathodic electrophoretic coating at a voltage in excess of 300 V.

4,606,801

ELECTROSTATIC MIXER/SEPARATOR

Floyd L. Prestridge, Sapulpa, and Bruce C. Johnson, Broken Arrow, both of Okla., assignors to Combustion Engineering, Inc., Windsor, Conn.

Filed Jul. 16, 1985, Ser. No. 755,524
Int. Cl.[4] B01D *17/06*; C10G *33/02*
U.S. Cl. 204—186 **6 Claims**

1. The method of dispersing a relatively polar fluid immiscible within a relatively nonpolar fluid for the purpose of extracting a contaminant in one of the fluids, including,

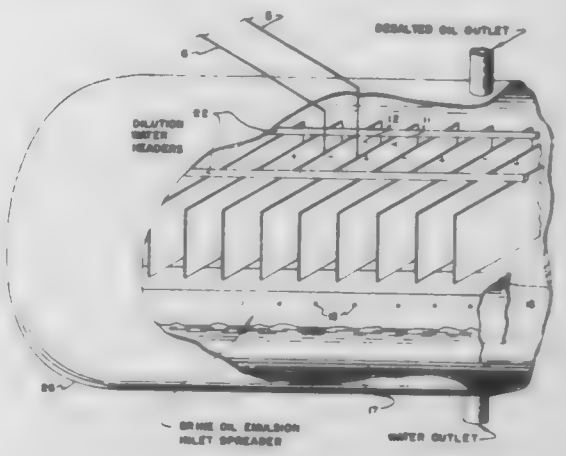
first flowing the relatively nonpolar fluid between at least a pair of electrodes,

secondly flowing the relatively polar fluid immiscible in the nonpolar fluid between the pair of electrodes,

applying a voltage to the electrodes to establish an electrostatic field having the strength to shear and disperse the relatively polar fluid into the nonpolarfluid,

maintaining a strength of the electrostatic field to accomplish mixing the polar fluid with the nonpolar fluid in order that the contaminant shifts from one fluid to the other,

reducing the voltage applied to the electrodes to coalesce the dispersed relatively polar fluid,



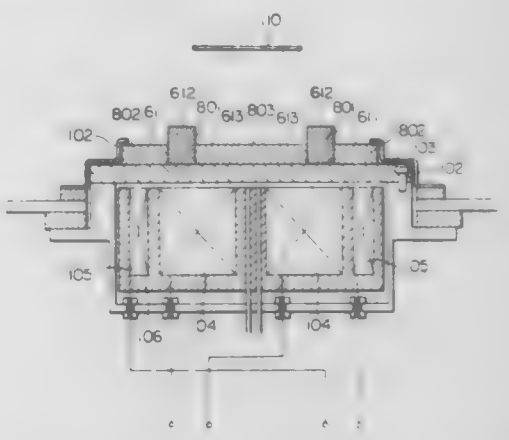
and maintaining a low voltage on the electrodes for a predetermined period to allow coalesced droplets of polar fluid to settle and separate from the nonpolar fluid.

4,606,802

PLANAR MAGNETRON SPUTTERING WITH MODIFIED FIELD CONFIGURATION

Shigeru Kobayashi, Tokyo; Katsuo Abe, Yokosuka; Masao Sakata, Yokohama; Osamu Kasahara, Kokubunji, and Hidetsugu Ogishi, Hachioji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 18, 1984, Ser. No. 682,998
Claims priority, application Japan, Dec. 21, 1983, 58-239884; Dec. 26, 1983, 58-243843; Dec. 26, 1983, 58-243844
Int. Cl.[4] C23C *15/00*
U.S. Cl. 204—192 R **33 Claims**



1. A method of planar magnetron sputtering comprising the step of sputtering a sputtering target comprising a plurality of target members from a principal surface, said plurality of target members arranged side by side on an electrode so as to provide a boundary region between each two of the plurality of target members arranged side by side, with an electric field and magnetic field being made substantially parallel in their direction at each of the boundary regions between each two of said plurality of target members, to thereby reduce the occurrence of sputtering at the boundary regions.

4,606,803

METHOD OF MANUFACTURING A MASK FOR THE PRODUCTION OF PATTERNS IN LACQUER LAYERS BY MEANS OF X-RAY LITHOGRAPHY

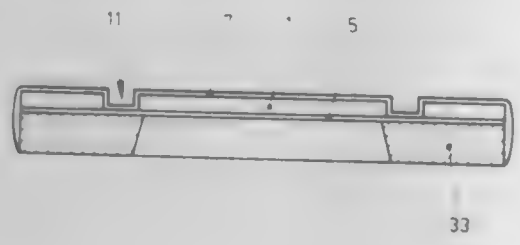
Holger K. Lüthje, Halstenbek; Angelika M. Brüns, Henstedt-Ulzburg; Margret Harms, Hamburg, and Bernd R. G. Matthiessen, Seevetal, all of Fed. Rep. of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 26, 1984, Ser. No. 665,278

Claims priority, application Fed. Rep. of Germany, Nov. 2, 1983, 3339624

Int. Cl.[4] C23C *15/00*

U.S. Cl. 204—192 P 9 Claims



1. A method of manufacturing a mask for producing patterns in lacquer layers by X-ray lithography comprising the steps of

stretching a diaphragm transparent to X-ray radiation on a frame for forming a self-supporting diaphragm,

providing a pattern for absorbing said X-ray radiation on one major surface of said diaphragm

wherein the improvement comprises the steps of

applying a thin layer of an inorganic material onto a substrate by cathode sputtering to form said diaphragm,

choosing parameters of said cathode sputtering to form a tensile stress in said diaphragm, and

removing a part of said substrate to form said frame of the self-supporting diaphragm.

4,606,804

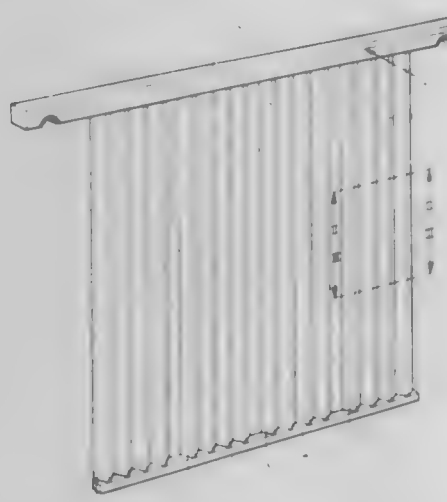
ELECTRODE

Dwight A. Schulke, Edmond, Okla., and Everette M. Spore, Henderson, Nev., assignors to Kerr-McGee Chemical Corporation, Oklahoma City, Okla.

Filed Dec. 12, 1984, Ser. No. 681,110

Int. Cl.[4] C25B *11/02, 11/10*

U.S. Cl. 204—286 8 Claims



1. An electrode assembly having improved dimensional stability consisting of:

a hanger bar member, said hanger bar member having a longitudinal dimension and oppositely opposed ends and comprised of a core of an electrically conductive metal and a coating on said core of a lesser electrically conductive valve metal, said hanger bar member having a pair of engaging means, each engaging means of said pair of engaging means being axially disposed to said longitudinal dimension of said hanger bar member and spacially arranged inwardly of said oppositely opposed ends thereof at least one of said engaging means of said pair of engaging means providing contact between said hanger bar member and an electric current-conducting bus bar;

at least one corrugated panel member having oppositely opposed upper and lower ends, said at least one corrugated panel member being formed from a single sheet of said lesser electrically conductive valve metal having a thickness of less than 4.0 mm and having corrugations characterized by a dimensional relationship of distance between peaks or midpoints of adjacent corrugations to the amplitude of the peaks or midpoints of said corrugations of about 2:1 said corrugated panel member being joined directly at its said upper end to the hanger bar member along the longitudinal dimension and between said engaging means thereof such that said at least one corrugated panel member extends perpendicular to said hanger bar member; and

a stiffening bar member having a longitudinal dimension and joined directly to said lower end of said at least one corrugated panel member along said longitudinal dimension, said stiffening bar member being comprised of said lesser electrically conductive valve metal.

4,606,805

ELECTROLYTE PERMEABLE DIAPHRAGM AND METHOD OF MAKING SAME

Charles K. Bon, Concord, Calif., assignor to The Dow Chemical Company, Midland, Mich.

Continuation of Ser. No. 414,709, Sep. 3, 1982, abandoned. This application Dec. 23, 1983, Ser. No. 564,991

Int. Cl.[4] C25B *13/00;* B28B *1/26*

U.S. Cl. 204—296 41 Claims

1. A process for forming an electrolyte permeable diaphragm on a foraminous structure for use in an electrolytic cell, which comprises producing an aqueous slurry containing as particulate materials from about 5 to about 20 percent of polyfluoroethylene fiber, from about 5 to about 30 percent polyfluoroethylene dispersion, and from about 50 to about 95 percent of a water-wettable, inert, inorganic, micron-size material, drawing the slurry through the foraminous structure to deposit the particulate materials thereon in the form of a diaphragm, drying the thus deposited diaphragm, and heating said diaphragm to sinter the polyfluoroethylene dispersion particles.

4,606,806

MAGNETRON SPUTTER DEVICE HAVING PLANAR AND CURVED TARGETS

John C. Helmer, Menlo Park, Calif., assignor to Varian Associates, Inc., Palo Alto, Calif.

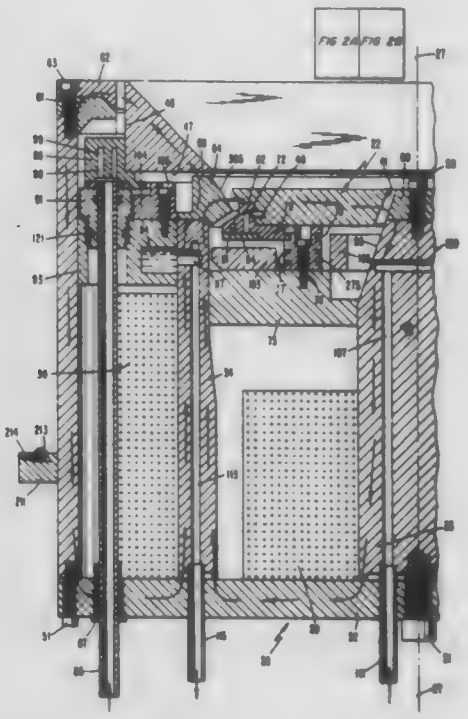
Continuation of Ser. No. 611,433, May 17, 1984, abandoned. This application Dec. 16, 1985, Ser. No. 811,306

Int. Cl.[4] C23C *15/00*

U.S. Cl. 204—298 57 Claims

1. A vacuum sputtering device for causing material from a target means to be sputtered onto a workpiece, the target means including a first target having a first material emitting surface and a second target positioned outside said first target having a second emitting surface, the second emitting surface being inclined at an angle to the first material emitting surface, the device comprising means for supplying an ionizable gas to a space adapted to be evacuated, the space being between the target and workpiece, means for establishing an ionizing electric field for the gas in the space, means for establishing a confining magnetic field for the gas ionized by the electric field

in the vicinity of the emitting surfaces of the first and second targets, and means for mounting the targets so that emitted



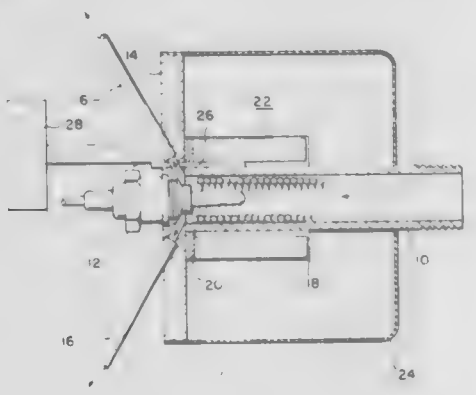
material is sputtered from the first and second emitting surfaces.

4,606,807

PROBE FOR MEASURING THE CARBON POTENTIAL OF ENDOTHERMIC GAS

Donald H. Mendenhall, 1422 SW. 143rd, Seattle, Wash. 98166

Continuation-in-part of Ser. No. 547,742, Nov. 11, 1983, abandoned. This application May 24, 1985, Ser. No. 738,166
Int. Cl.[4] G01N *27/46*
U.S. Cl. 204—433 10 Claims



1. An oxygen probe attachable to an auxiliary outlet of a heat treating furnace for measuring the carbon potential of endothermic heat treating gas within the furnace, comprising:

a replaceable oxygen sensor having an elongated, solid electrolyte element, the element being hollow at a base end and closed at the tip, the base of the element supported by a threaded portion on the sensor, the inner surface of the element being exposable to a reference gas and the outer surface of the element being exposable to the endothermic gas to be measured such that an electric potential is generated between the surfaces of the element in proportion to the carbon potential of the measured endothermic gas;

a base plate defining an aperture around the threaded portion of the sensor so that the sensor element protrudes through the aperture, the base plate having at least two substantially diametrically opposed exit ports extending through the base plate, and radially spaced from the center of the aperture for venting endothermic gas away from the base of the sensor element;

a gas flow tube connected by one of its ends to the base plate and substantially coaxially aligned with the sensor element, the inner wall of the gas flow tube enclosing the sensor element and the exit ports, the other end of the gas flow tube having means for joining the gas flow tube to the auxiliary outlet of the furnace, the gas flow tube and the exit ports causing an axial, substantially radially symmetrical gas flow path around the sensor element for substantially the entire length of the senor element, including means for catalyzing the endothermic gas within the gas flow tube to reduce soot deposits within the tube;

a controllable annular heater having an inner surface contacting the outer wall of the gas flow tube and having one end towards the base plate and the other end extending therefrom approximately twice the length of the sensor element so that the tip of the sensor element is positioned along the midsection of the heater;

means for measuring the temperature of the midsection of the heater to determine the temperature of the tip of the sensor element; and

means for maintaining the measured temperature of the tip of the sensor element greater than the temperature of the endothermic gas entering the gas flow tube.

4,606,808

METHOD FOR THE PREPARATION OF PITCHES FOR SPINNING CARBON FIBERS

Yasuhiro Yamada; Takeshi Imamura, both of Tosu; Masao Shibata, Ogoori; Seiji Arita, Tosu, and Hidemasa Honda, Tokyo, all of Japan, assignors to Director-General of the Agency of Industrial Science & Technology, Tokyo, Japan

Filed Apr. 23, 1984, Ser. No. 603,203
Claims priority, application Japan, Apr. 22, 1983, 58-71991
Int. Cl.[4] C10C *1/00*
U.S. Cl. 208—44 6 Claims

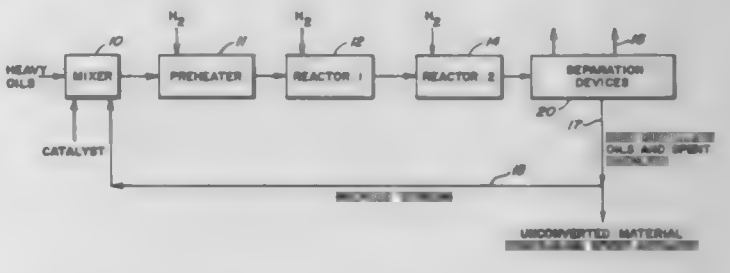
1. A method for the preparation of a pitch spinnable into a pitch filament which comprises as a first step heating a mixture of a coal tar or a coal tar pitch and an aromatic oil in the presence of a cracking catalyst at a temperature from 350 to 500° C. for from 10 to 60 minutes in a closed vessel under a spontaneously produced pressure, and as a second step removing insoluble materials from the mixture and heating the mixture at a temperature in the range from 430 to 600° C. under atmospheric pressure or under reduced pressure in an inert atmosphere.

4,606,809

HYDROCONVERSION OF HEAVY OILS

Diwakar Garg, Macungie, Pa., assignor to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Jul. 1, 1985, Ser. No. 750,623
Int. Cl.[4] C10G *65/10*
U.S. Cl. 208—59 21 Claims



1. The method for hydroconversion of feedstocks consisting essentially of at least one heavy hydrocarbon oil selected from the group consisting of residue of petroleum oil distillation and the residue of tar sand bitumen distillation to enhance the recovery of 350°–650° F. boiling product fraction, which method comprises treating such feed stock with hydrogen at superatmospheric pressure and in the presence of finely divided active hydrogenation catalyst in consecutive reaction stages, wherein an initial reaction stage is carried out at a temperature in the range of 780°–825° F. and a subsequent reaction stage is directly carried out after the initial reaction stage at a higher temperature in the range of 800°–860° F., the temperature of said subsequent reaction stage being at least 20° F. higher than that of said initial reaction stage.

4,606,810

FCC PROCESSING SCHEME WITH MULTIPLE RISERS

Frederick J. Krambeck, Cherry Hill, N.J., and Carmo J. Pereira, Columbia, Md., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Apr. 8, 1985, Ser. No. 721,338
Int. Cl.[4] C10G *51/02*
U.S. Cl. 208—74 4 Claims

1. A method for converting hydrocarbons to gasoline in a two riser system, comprising:

contacting fresh hydrocarbon feed of poor crackability in a first riser with spent catalyst from a second riser to form cracked products and a coked catalyst;

withdrawing said cracked products from said first riser to separate a gasoline and a distillate fraction from a higher boiling point material;

regenerating the coked catalyst from the first riser;

feeding the higher boiling point material to said second riser;

feeding the regenerated catalyst to said second riser to further convert the high boiling point material into gasoline; and

separating the spent catalyst from said second riser and feeding only said spent catalyst to said first riser.

4,606,811

COMBINATION PROCESS FOR UPGRADING REDUCED CRUDE

William P. Hettinger, Russell, Ky., assignor to Ashland Oil, Inc., Ashland, Ky.

Continuation of Ser. No. 403,241, Jul. 29, 1982, abandoned. This application Oct. 2, 1984, Ser. No. 656,832
The portion of the term of this patent subsequent to Jul. 15, 2003, has been disclaimed.
Int. Cl.[4] C10G *11/18*
U.S. Cl. 208—108 25 Claims

6. A process for the conversion of a feed containing high boiling hydrocarbons and having Conradson carbon producing materials, which process is carried out in a hydrocarbon conversion system comprising a riser conversion zone and a regeneration zone and which process comprises:

A. contacting said feed with a fluid hydrocarbon conversion catalyst in said riser conversion zone in the presence of water and a first CO-rich flue gas to form a gasiform effluent containing lower molecule weight hydrocarbons and coke on said catalyst, said coke containing minor amounts of hydrogen and said coke on catalyst providing a coked catalyst;

B. separating said gasiform effluent from said coked catalyst;

C. regenerating said coked catalyst in said regeneration zone consisting of a first regeneration stage and a second regeneration stage, wherein said coked catalyst enters said first regeneration stage and is contacted with steam and second-stage flue gas from said second regeneration stage containing less than stoichiometric amounts of oxygen to provide a partially regenerated catalyst and a second CO-rich flue gas, the temperature in said first regeneration stage is sufficient to support endothermic removal of coke, said partially regenerated catalyst subsequently enters said second regeneration stage and in said second regeneration stage is contacted with substantial quantities of oxygen to produce catalyst further reduced in residual coke for recycle to said riser conversion zone and to produce said second-stage flue gas;

D. sending said regenerated catalyst to said riser conversion zone;

E. separating said gasiform effluent from and riser conversion zone into a C_2-minus gaseous product, a C_3-plus hydrocarbon product and a water-containing condensation product and recovering separately therefrom hydrogen;

F. purifying said hydrogen to form purified hydrogen for use in producing a synthesis gas; and

G. recovering useful hydrocarbon products from said C_3-plus hydrocarbon product.

4,606,812

HYDROTREATING OF CARBONACEOUS MATERIALS

Rollan Swanson, Eureka, Nebr., assignor to Chemroll Enterprises, Inc., New York, N.Y.

Continuation of Ser. No. 140,604, Apr. 15, 1980, abandoned. This application Nov. 7, 1983, Ser. No. 549,565
Int. Cl.[4] C10G *23/00*
U.S. Cl. 208—108 30 Claims

1. A process for hydrogenating, hydrocracking, denitrogenating, and demetallizing carbonaceous material to produce principally normally liquid hydrocarbon products of increased hydrogen content as compared to the carbonaceous material, comprising contacting the carbonaceous material in a reaction vessel with steam and an empirical hydrate of a sulfur-containing compound selected from the group consisting of alkali metal hydrosulfides, alkali metal monosulfides, and alkali metal polysulfides and recovering the said hydrocarbon products, there being essentially no liquid water present during such contacting.

4,606,813

FLUID CATALYTIC CRACKING CATALYST FOR CRACKING SULFUR CONTAINING PETROLEUM FEEDSTOCKS AND A PROCESS FOR USING IT

John W. Byrne, Saddle Brook, and Barry K. Speronello, River Edge, both of N.J., assignors to Engelhard Corporation, Menlo Park, N.J.

Continuation of Ser. No. 522,654, Aug. 12, 1983, abandoned, which is a continuation-in-part of Ser. No. 469,765, Feb. 25, 1983, Pat. No. 4,493,902. This application May 3, 1985, Ser. No. 730,111
Int. Cl.[4] C10G *11/05;* B01J *29/08*
U.S. Cl. 208—120 39 Claims

1. A fluid catalytic cracking catalyst comprising a blend of a catalytically active first component and a second component for reducing the emissions of oxides of sulfur from the regenerator of a fluid catalytic cracking unit, said catalyst comprising:

(a) about 10–70% by weight of fluidizable particles comprising at least about 40% by weight Y-faujasite; and

(b) about 30–90% by weight of fluidizable particles comprising at least about 70% by weight alumina and having an equilibrium surface area in the range of about 40–100 m^2/g.

2. The fluid catalytic cracking catalyst of claim 1 wherein component (b) comprises at least about 90% by weight alumina.

12. The fluid catalytic cracking catalyst of claim 2 wherein component (b) comprises a compound of a metal selected from the group consisting of cerium, lanthanum, neodymium, praseodymium, samarium, dysprosium, platinum, ruthenium, rhodium, palladium, osmium, iridium and mixtures thereof.

28. A process for cracking a sulfur containing petroleum feedstock comprising cracking the feedstock in the presence of the fluid catalytic cracking catalyst of claim 1.

4,606,814

FCC PRODUCT WITHDRAWAL AND SEPARATION

James H. Haddad, Princeton Junction, and Hartley Owen, Belle Mead, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

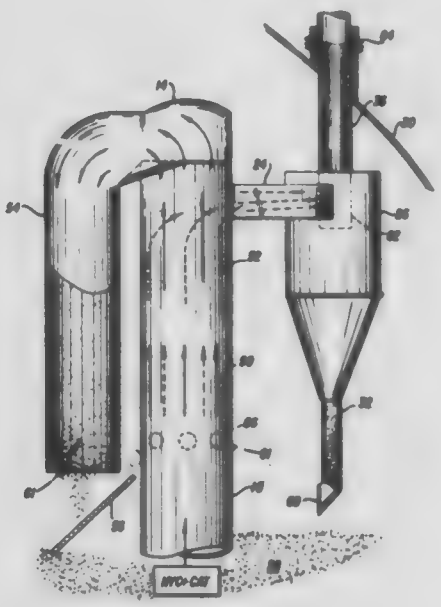
Filed Nov. 1, 1984, Ser. No. 667,519
Int. Cl.[4] C10G *11/18;* F27B *1/20*
U.S. Cl. 208—161 8 Claims

1. A method of fluid catalytic cracking of a hydrocarbon feed, comprising the steps of:

passing a mixture, as a suspension, of said hydrocarbon feed and a catalyst through a riser conversion zone contained within a reactor vessel and cracking said hydrocarbon feed in the riser conversion zone;

guiding the mixture in an upward direction adjacent at least one riser cyclone separator inlet located in direct fluid communication with said riser conversion zone towards an inlet of at least one elongated catalyst conduit, said separator inlet and said catalyst conduit inlet having inlet flow directions making angles with respect to said mixture direction;

removing at least a portion of catalyst remaining in said cracked hydrocarbon feed in said riser cyclone separator;



passing a gaseous effluent from said riser cyclone separator to a downstream fractionation apparatus;

passing a stripping gas into said elongated catalyst conduit counter-current to said catalyst; and

passing catalyst flowing through said catalyst conduit and catalyst separated in said riser cyclone separator to a catalyst separated in said riser cyclone separator to a catalyst storage area within the reactor vessel.

4,606,815

HYDROPROCESSING WITH SHAPED CATALYSTS

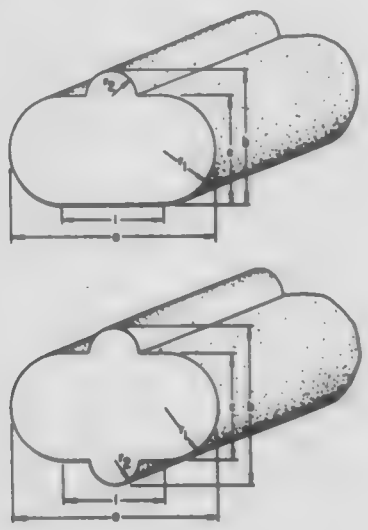
Kirk R. Gibson, El Cerrito, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Continuation of Ser. No. 510,106, Jun. 30, 1983, abandoned, which is a continuation-in-part of Ser. No. 291,588, Aug. 10, 1981, Pat. No. 4,391,740. This application Sep. 28, 1984, Ser. No. 655,987

The portion of the term of this patent subsequent to Jul. 5, 2000, has been disclaimed.

Int. Cl.⁴ C10G *45/08, 65/04*

U.S. Cl. 208—210 **13 Claims**



1. A hydrodemetalation process for hydrocarbonaceous feedstocks, comprising contacting the feedstock with hydrogen under hydrodemetalation conditions, with porous catalyst particles, said particles:

(a) comprising between 2 and 25 weight percent of a catalytic metal from Group VIB and between 0 and 15 weight percent of a catalytic metal from Group VIII, where said weight percent is based on the catalytic metals content, calculated as reduced metals, of the total particle weight, supported on a refractory inorganic oxide; and

(b) being elongated extrudates having a cross-section which is oval with at least one section extending from the flat surface of the oval, said section forming a ridge along the catalyst length, thereby limiting pressure drop compared to an oval catalyst without the ridge, said cross-section being capable of being circumscribed by a rectangle having a first dimension between about 0.060 and about 0.125 inch and a second dimension, perpendicular to said first dimension, between about 0.030 and about 0.100 inch, the ratio of said first dimension to said second dimension being between 1.3:1 and 3:1; and a surface area to volume ratio of less than 95 reciprocal inches.

4,606,816

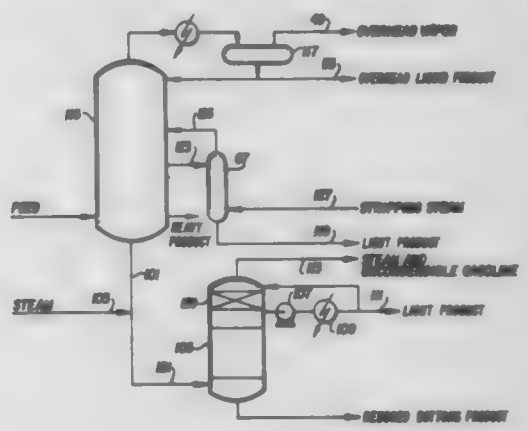
METHOD AND APPARATUS FOR MULTI-COMPONENT FRACTIONATION

Mohsen N. Harandi, Sewell, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Dec. 31, 1984, Ser. No. 687,790

Int. Cl.⁴ C10G *7/00*

U.S. Cl. 208—354 **40 Claims**



6. A fractionation method, comprising passing a feedstream to be fractionated to a first fractionator and

(a) withdrawing bottoms product from said first fractionator and introducing said withdrawn bottoms product into a second fractionator operating in a predetermined moderate pressure range sufficient to provide integration of said second fractionator with said first fractionator and to allow transfer of overhead product from said second fractionator into a stripper zone and thereafter into said first fractionator;

(b) separating said withdrawn bottoms product into relatively light ends and relatively heavy ends by introducing stripping vapor into said second fractionator;

(c) introducing a controlled stream of light product quench comprising bottoms product from said stripper zone at a predetermined low temperature and variable flow rate into said second fractionator to adjust an end point of overhead products exiting said second fractionator;

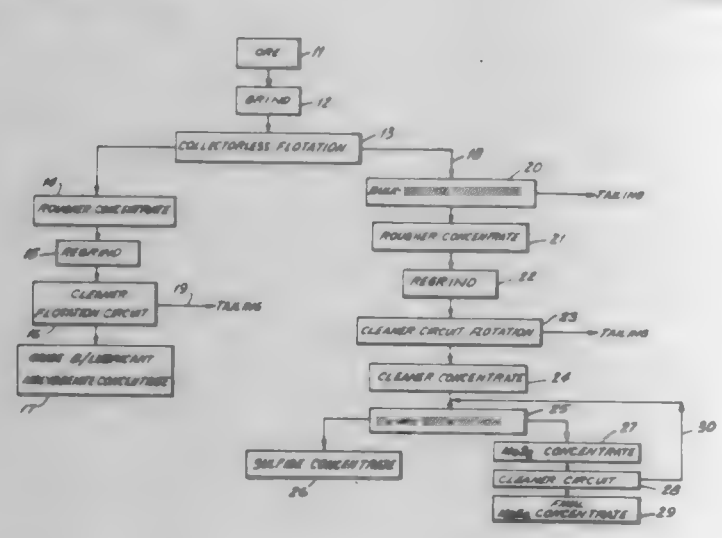
(d) passing said overhead products exiting said second fractionator into said stripper and introducing relatively lighter product components from said first fractionator into said stripper zone, said overhead products from said second fractionator stripping light ends from said relatively lighter product components; and

(e) separating overhead product from said stripper zone into relatively light ends and relatively heavy ends by introducing overhead product from said stripper zone into said first fractionator, such that said stripper overhead product is further fractionated in said first fractionator.

4,606,817
RECOVERY OF MOLYBDENITE

Deepak Malhotra; Robert M. Rowe, both of Arvada, and Anirudh K. Bhasin, Golden, all of Colo., assignors to Amax Inc., Greenwich, Conn.

Filed Jan. 31, 1985, Ser. No. 696,984
Int. Cl.[4] B03D *1/02*
U.S. Cl. 209—166 **7 Claims**



1. The process for recovering molybdenite from an ore containing the same along with at least one other metal sulfide which comprises wet grinding said ore to produce an ore pulp consisting essentially of ground ore, water and a small amount of frother, subjecting said pulp to froth flotation without a collector to produce a first concentrate containing a major amount of said molybdenite and a tailing containing a minor amount of said molybdenite together with a major amount of said other sulfides, subjecting said tailing to a bulk sulfide froth flotation step with a collector to produce a bulk sulfide concentrate and separating molybdenite from said bulk sulfide concentrate by froth flotation.

4,606,818
MODIFIED ALCOHOL FROTHERS FOR FROTH FLOTATION OF COAL

Robert O. Keys, Columbus, Ohio, assignor to Sherex Chemical Company, Inc., Dublin, Ohio

Filed Jan. 25, 1985, Ser. No. 694,933
Int. Cl.[4] B03D *1/02*
U.S. Cl. 209—166 **13 Claims**

1. In a froth flotation process wherein solid coal particles are selectively separated under coal froth flotation conditions as a froth phase from remaining solid feed particles as an aqueous phase in the presence of a coal particle collector and an alcohol frother, the improvement characterized by said alcohol frother comprising the reaction product of a C_5–C_{10} diol and a compound selected from the group consisting of:

(a) between about 2 and 10 moles of an alkylene oxide selected from the group consisting of ethylene oxide, propylene oxide, and mixtures thereof, and

(b) an acrylonitrile,

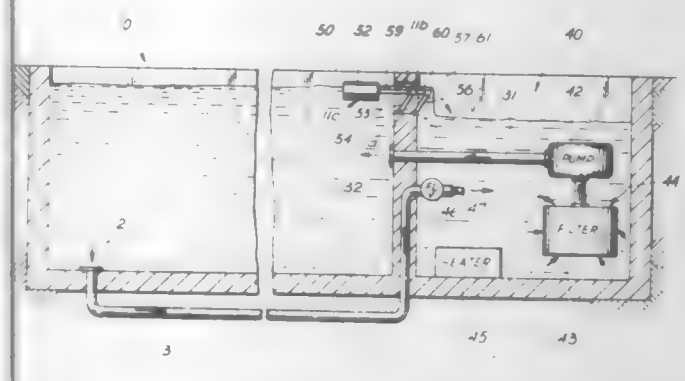
the resulting frothing agent having at least one hydroxyl group and providing greater coal recovery than use of said diol as the frothing agent.

4,606,819
SWIMMING POOL APPARATUS

Andrew E. Colson, 22 Way Dr., Summit, N.J. 07901

Continuation of Ser. No. 116,764, Jan. 30, 1980, Pat. No. 4,498,984. This application Aug. 8, 1984, Ser. No. 620,140
The portion of the term of this patent subsequent to Feb. 12, 2002, has been disclaimed.
Int. Cl.[4] C02F *1/00*
U.S. Cl. 210—122 **8 Claims**

1. In combination in swimming pool apparatus, a primary swimming pool chamber, a secondary water chamber, skimmer means for passing surface water from said primary swimming pool chamber to said secondary chamber, wherein said skimmer means includes means responsive to the water level in said primary swimming pool, and not responsive to the water level in said secondary water chamber, for selectively positioning said skimmer means, drain and conduit means about the

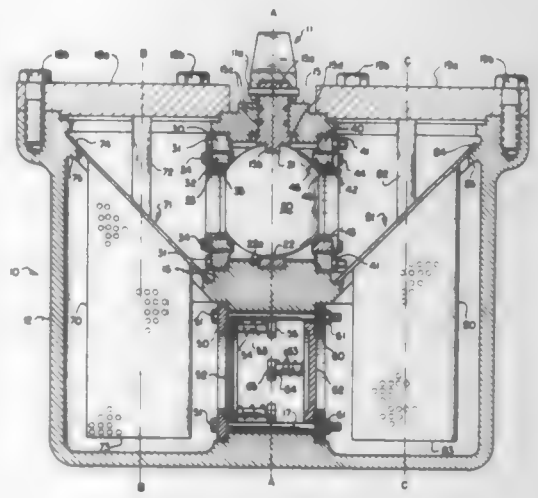


lower portion of said primary pool chamber for supplying water from said primary pool chamber to said secondary chamber, and cascaded filter means and pump means submerged in said secondary chamber for returning water passing through said filter means to said primary swimming pool chamber.

4,606,820
DUPLEX STRAINER

David B. Rea, and Alexander B. Mann, both of Erie, Pa., assignors to R-P & C Valve, Inc., Fairview, Pa.

Filed Oct. 29, 1984, Ser. No. 665,711
Int. Cl.[4] B01D *29/30, 35/12*
U.S. Cl. 210—130 **17 Claims**



1. A strainer for trapping particles entrained in a fluid flowing through the strainer comprising:

a housing having means defining a first chamber and a second chamber,

the housing having means defining an inlet and an outlet to provide fluid to, and to convey fluid from, the chambers,

the chambers being generally cylindrical and lying in spaced, side-by-side relationship along generally parallel chamber axes;

strainer means mounted in each of the chambers to strain fluid flowing through the chambers;

a user actuated ball valve mechanism positioned between the cylindrical chambers at one end thereof,

the ball valve mechanism including a multi-ported ball member rotatable on a ball axis parallel to the chamber axes,

the inlet being in fluid communication with the ball valve mechanism wherein fluid flow is directed, via the ports of the ball member, fron the inlet to one or the other or both of the chambers, depending upon the rotational position of the ball, wherein fluid flows through the strainer means,

outlet control valve means allowing fluid flow from said chambers into said outlet,

a pair of opposed, parallel, valve seat plates, each having a central circular aperture therein,

one of the valve seat plates having an outer side in fluid communication with the first strainer means containing chamber,

the other valve seat plate having an outer side in fluid communication with the second strainer means containing chamber,

the inner sides of the valve seat plates being separated by a distance less than the diameter of the ball member,

the ball member being received by the circular apertures in the valve plates and being located between and rotatably supported by the valve seat plates,

fluid flow from the inlet to the chambers occurring only through central apertures of the valve plates when fluid communication is established between ports of ball member and the central apertures of the valve plates.

4,606,821

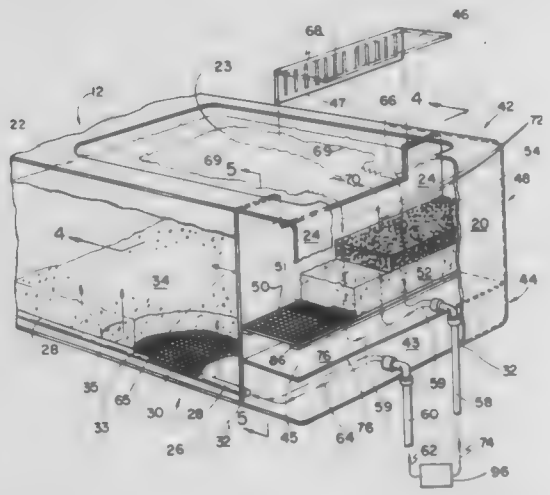
SECTIONALIZED INTEGRATED AQUARIUM

David D'Imperio, 934 SW. 21st Ct., Fort Lauderdale, Fla. 33315

Filed Apr. 25, 1984, Ser. No. 603,671

Int. Cl.[4] E04H *3/16, 3/20*

U.S. Cl. 210—169 **15 Claims**



1. A sectionalized integrated filtering aquarium comprising:

(a) a generally parallelpipedal, combined aquarium and housing, said combined aquarium and housing formed of two interlocking, bondable, U-shaped sections, said first U-shaped section forming two longitudinal walls and one end wall of said housing, said second U-shaped section forming a ceiling, an end wall, and an aquarium floor:

(b) a vertical panel bonded to said aquarium's ceiling and aquarium floor, said panel separating said aquarium into two compartments, said first a large aquarium compartment and a second smaller mechanical filtering chamber, said panel including internal plumbing members to release water to said aquarium compartment, and a slotted removable section proximate top of said panel, said slotted section creating a waterfall from said aquarium compartment into said mechanical filtering chamber;

(c) a bottom filter;

(d) a filtering assembly located in said mechanical filtering chamber;

(e) a segmented reservoir located in the lower area of said mechanical filtering chamber;

(f) at least two horizontal pipes extending from said reservoir through said aquarium compartment, said pipes disposed along said aquarium compartment floor; and,

(g) external pumping means connected to said sectional aquarium by tubing,

whereby, when water is pumped from said reservoir into said aquarium compartment through said panel and piping, a continuous process of filtering and aeration occurs in said aquarium and said mechanical filtering chamber.

4,606,822

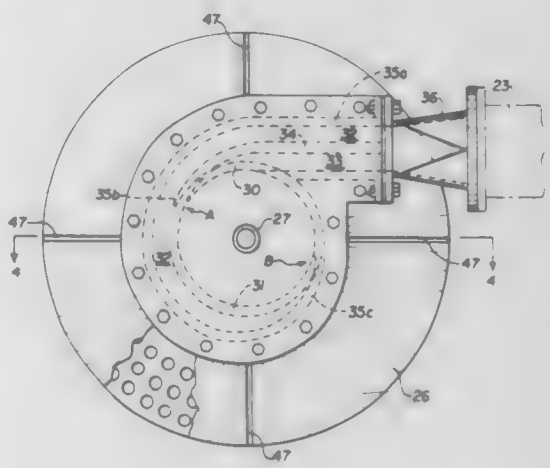
VORTEX CHAMBER AERATOR

Francis G. Miller, 3 Wild View Dr., Ligonier, Pa. 15658

Filed Nov. 1, 1984, Ser. No. 667,128

Int. Cl.[4] B01F *3/04*

U.S. Cl. 210—221.2 **1 Claim**



1. In a froth flotation tank having a vortex chamber for aerating and agitating an aqueous slurry and delivering a uniformly dispersed spray of gas bubbles in said aqueous slurry into said froth flotation tank, the combination of a generally cylindrical vortex chamber communicating at its base with a conical chamber, an outlet at the bottom apex end of said conical chamber, an inlet in the upper portion of said cylindrical chamber to receive gas, a single slurry feed conduit, splitter means within said feed conduit for dividing the cross-sectional area of said conduit into a first generally horizontal passageway and a second generally horizontal passageway, said passageways being side-by-side and directed toward the said cylindrical chamber, a single first side wall opening in said cylindrical chamber communicating tangentially with said first passageway, a single second side wall opening in the said cylindrical chamber remote from said first side wall opening, said second passageway extending arcuately outside said upper portion of said cylindrical chamber an communicating tangentially with said second side wall opening, whereby said aqueous slurry enters into said conical chamber without interruption.

4,606,823

WATER FILTERING APPARATUS

Charles E. Lucas, III, P.O. Box 1641, Lufkin, Tex. 75901

Filed Nov. 3, 1983, Ser. No. 548,452

Int. Cl.[4] B01D *23/14*

U.S. Cl. 210—282 **14 Claims**

1. Apparatus for filtering and conditioning drinking water, and reversible for backflushing, said apparatus comprising:

a container including a central bottom inlet for receiving the water to be filtered and a central top outlet for discharging the filtered and conditioned water,

a first water dispersion member positioned in the lower portion of said container having a central imperforate portion adjacent to said central bottom inlet and a plurality of holes positioned at different radial distances from the center, a larger number of said holes being positioned near the periphery of said member and a lesser number of said holes being positioned closer to the center to equalize the flow of fluid at different radial positions and prevent channeling of the filter material,

at least one lower filtering and conditioning member positioned in the lower portion of said container and above said first water dispersion member for diffusing the flowing water and removing suspended particulates therefrom,

a particulate filtering and conditioning media positioned in

the central portion of said container above said lower filtering and conditioning member for filtering the flowing water and removing odor and taste therefrom,

at least one upper filtering and conditioning member positioned in the upper portion of said container above said filtering and conditioning media for diffusing the flowing water and removing suspended particulates therefrom, and

a second water dispersion member positioned in the upper portion of said container having a central imperforate portion below said central top outlet and a plurality of holes positioned at different radial distances from the center, a larger number of said holes being positioned near the periphery of said member and a lesser number of said holes being positioned closer to the center to equalize the flow of fluid at different radial positions and prevent channeling of the filter material.

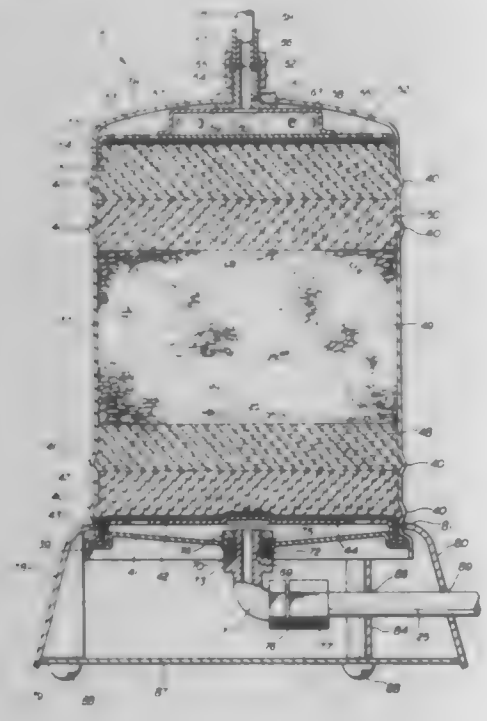
14. A system for filtering and conditioning waters comprising, in combination

a sink,

hot and cold water valves and a faucet on said sink,

hot and cold water lines connected to said hot and cold water valves,

a selector valve,



a water filtering apparatus comprising a container including an inlet for receiving the water to be filtered and an outlet for discharging the filtered and conditioned water,

a first water dispersion member positioned in the lower portion of said container provided with means for allowing uniform passage of water therethrough,

at least one lower filtering and conditioning member positioned in the lower portion of said container and above said first water dispersion member for diffusing and removing suspended particulates from the water,

a filtering and conditioning media positioned in the central portion of said container above said lower filtering and conditioning member for removing odor and taste from the water,

at least one upper filtering and conditioning member positioned in the upper portion of said container above said filtering and conditioning media for diffusing and removing suspended particulates from the water,

a second water dispersion member positioned in the upper portion of said container provided with means for allowing uniform passage of water therethrough,

a third water dispersion member positioned within said container and surrounding said outlet provided with means for allowing uniform passage of water therethrough,

a base for supporting said container independent of the source of the water,

said selector valve being connected to said hot and cold water lines, to said inlet and outlet of said container, and to said faucet,

said selector valve having one position directing flow of water from said cold water line to the inlet of said container, through said filtering apparatus, and from said container outlet to said faucet, and

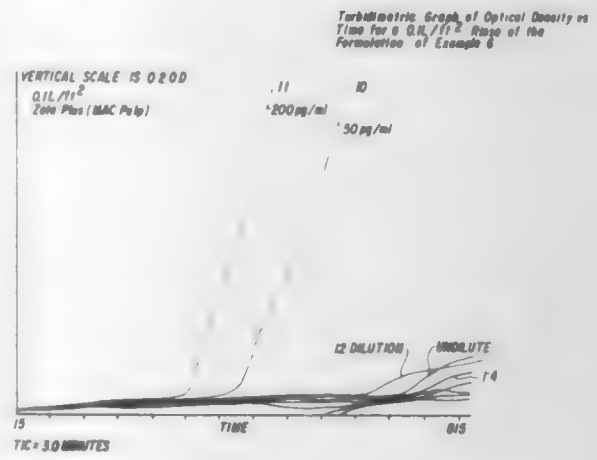
said selector valve having another position directing flow of water from said hot water line to the outlet of said container, through said filtering apparatus in the reverse direction, and out of the bottom inlet to said faucet, for backflushing said filtering apparatus.

4,606,824

MODIFIED CELLULOSE SEPARATION MATRIX

Chaokang Chu, 114 Manor Cir., Hartford, Conn. 06118, and Richard A. Babineau, 118 Elmwood Dr., Meriden, Conn. 06450

Filed Oct. 26, 1984, Ser. No. 665,402
Int. Cl.[4] B01D *15/08*
U.S. Cl. 210—635 **32 Claims**



1. A method of substantially eliminating false positive Limulus Amebocyte Lysate ("LAL") tests for pyrogen from an effluent obtained from passing a biological liquid through a cellulose containing separation media comprising substituting for said separation media a cellulose containing separation media wherein said cellulose contains at least about 90% alpha-cellulose and is essentially free of non-specific pyrogenic reactivity as measured by the LAL tests, whereby said false positive LAL tests are substantially eliminated.

4,606,825

PURIFICATION OF IMMUNOGLOBULIN G

Laura J. Crane, Long Valley, and David R. Nau, Lebanon, both of N.J., assignors to J. T. Baker Chemical Company, Phillipsburg, N.J.

Filed Apr. 22, 1985, Ser. No. 725,660
Int. Cl.[4] B01D *15/08*
U.S. Cl. 210—635 **12 Claims**

1. A method of obtaining substantially purified immunoglobulin G from a sample of biological fluid containing said immunoglobulin G which comprises separating and recovering said immunoglobulin G from said sample by employing liquid chromatography or solid phase extraction wherein the chromatographic packing or solid phase matrix, respectively, consists essentially of the carboxylated covalently bound, non-crosslinked polyethylenimine reaction product of particulate silica gel having an average particle diameter of from about 3 to about 70 microns and an average pore size of from about 50 to about 1000 Angstrom units, or particulate controlled pore glass having an average particle diameter of from about 37 to about 177 microns and an average pore size of from about 40 to about 1000 Angstrom units, with polyethyleniminopropyl

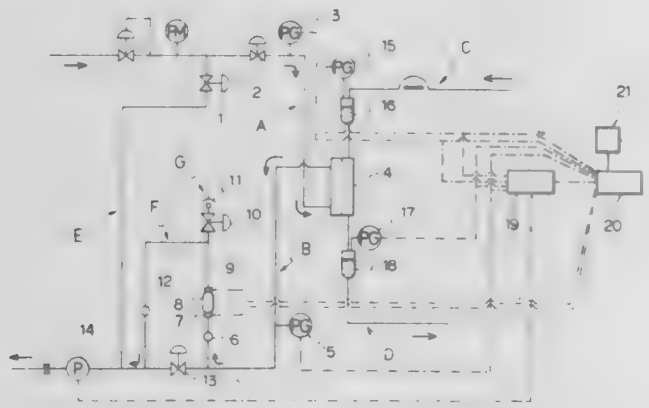
trimethoxy silane having an average molecular weight of from about 400 to about 1800.

4,606,826

APPARATUS FOR CONTROLLING ULTRAFILTRATION AND METHOD FOR THE SAME

Yoshihiko Sano, Suita, and Mitsutaka Ueda, Otsu, both of Japan, assignors to Nissho Corporation, Osaka, Japan

Filed Apr. 17, 1985, Ser. No. 724,228
Claims priority, application Japan, Nov. 14, 1984, 59-240312
Int. Cl.[4] B01D *13/00*
U.S. Cl. 210—646 8 Claims



1. An apparatus for controlling ultrafiltration in a dialysis system for artificial kidney including a dialyzer, a blood supply line for supplying a blood to the dialyzer, a blood discharge line for discharging the treated blood from the dialyzer, a liquid supply line for supplying a dialyzing liquid to the dialyzer, and a liquid discharge line for discharging the used dialyzing liquid from the dialyzer, and a negative pressure pump provided on the liquid discharge line, which comprises:

a bypass line for connecting said liquid supply line directly to said liquid discharge line and having a first control valve means;

a second control valve means disposed on said liquid discharge line in the upper stream of the junction of the liquid discharge line with the bypass line;

an ultafiltration measuring line connected at its both ends to said liquid discharge line interposing said second valve means therebetween and equipped with a measuring chamber;

an air lead-in line having a third control valve means and a check valve means, with one end of said air lead-in line being connected to said ultrafiltration measuring line and the other end exposed to the atmosphere; and

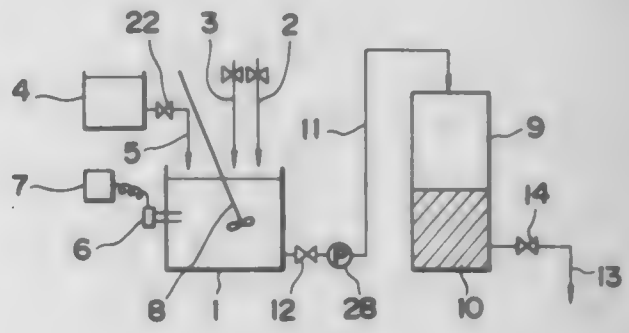
a liquid withdrawal control means comprising a pressure control circuit and a microcomputer, said control means electrically connecting to pressure gauges disposed at the blood inlet side and outlet side, respectively, of the dialyzer and pressure gauges disposed at the dialyzing liquid inlet side and outlet side, respectively, of the dialyzer, and level sensors adapted to detect liquid level in said measuring chamber and said negative pressure pump.

4,606,827

METHOD FOR SEPARATING AND RECOVERING COLOR DEVELOPING AGENT

Christer Ernstson, Linköping, Sweden, and Yousuke Sadahiro, Sagamihara, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Japan

Filed Jun. 1, 1984, Ser. No. 616,170
Claims priority, application Japan, Jun. 3, 1983, 58-99275; Jul. 30, 1983, 58-140425
Int. Cl.[4] B01D *15/04*
U.S. Cl. 210—670 2 Claims



1. A method of separating a p-phenylenediamine compound color developing agent from a solution at a pH of not higher than 8.0 by bringing said solution into contact with a cation exchange resin.

4,606,828

SCALE FORMATION PREVENTOR AND/OR REMOVER

Marvin E. Wells, 1813 Williamsburg, Denton, Tex. 76201

Filed Feb. 26, 1985, Ser. No. 705,886
Int. Cl.[4] C02F *5/00*
U.S. Cl. 210—696 14 Claims



1. Apparatus for treating water to remove hardening minerals, comprising an elongated core having a longitudinal passage of reduced cross-sectional area formed therein having closely-spaced parallel surfaces, said surfaces having formed therein a multiplicity of microscopic randomly-located channels forming complementary protuberances having highly polished, flat tops, said core being constructed to receive water into said passage on one end thereof, to accelerate the flow of water through the channels to a Reynolds Number exceeding 2000, and to discharge water from said passage on the other end thereof, said core being comprised of a nickel-silver alloy containing less than 10 percent zinc and greater than 15 percent nickel, said parallel surfaces in said core being prepared by polishing followed by etching to form a copper nickel grain structure that is parallel to said surfaces and capable of causing crystals of said hardening minerals to grow only perpendicular to said surfaces and said flow of water.

14. Method of removing hardening minerals from water comprising the steps of: (a) providing an elongated core having a longitudinal passage of reduced cross-sectional area formed therein having closely-spaced parallel surfaces, said surfaces having formed therein a multiplicity of microscopic randomly-located channels forming complementary protuberances having highly polished, flat tops, said core being constructed to receive water into said passage on one end thereof, to accelerate the flow of water through the channels to a Reynolds Number exceeding 2000, and to discharge water from said passage on the other end thereof, said core being comprised of a nickel-silver alloy containing less than 10 percent zinc and greater than 15 percent nickel, said parallel surfaces in said core being prepared by polishing followed by etching to form

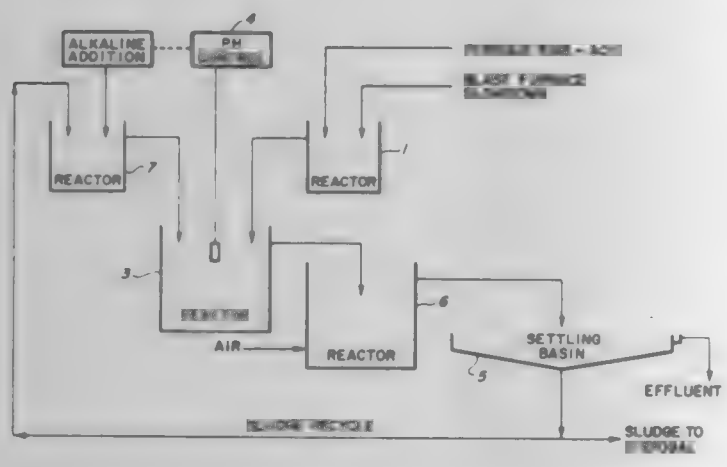
copper nickel grain structure that is parallel to said surfaces and capable of causing crystals of said hardening minerals to grow only perpendicular to said surfaces and said flow of water; (b) polishing the parallel surfaces to a mirrored finish; (c) etching said polished parallel surfaces with an acid chosen from the group comprising ferric acid and chromatic acid; and (d) passing water containing hardened minerals through said passage at a rate at which the Reynolds Number exceeds 2000 to remove said hardening minerals.

4,606,829

REMOVAL OF COMPLEXED ZINC-CYANIDE FROM WASTEWATER WITH IMPROVED SLUDGE STABILITY

Michael A. Rice, Bethlehem, and Stewart T. Herman, Hellertown, both of Pa., assignors to Bethlehem Steel Corporation, Bethlehem, Pa.

Continuation-in-part of Ser. No. 620,363, Jun. 13, 1984, Pat. No. 4,543,189. This application Jun. 25, 1985, Ser. No. 748,660
The portion of the term of this patent subsequent to Sep. 24, 2002, has been disclaimed.
Int. Cl.[4] C02F *1/52, 1/74*
U.S. Cl. 210—713 **6 Claims**



1. A method for removing soluble zinc and soluble cyanide from blast furnace blowdown wastewater comprising:

(a) processing to a first reactor a wastewater containing between 6 and 30 ppm of soluble cyanide and between 15 and 75 ppm soluble zinc, with the cyanide and zinc consisting essentially of a soluble zinc-cyanide complex compound;

(b) in the first reactor:

(i) adding soluble ferrous ion from the group consisting of ferrous sulfate, ferrous chlorides, or other soluble ferrous salt to bring the ferrous ion to between at least 250 to 400 ppm;

(ii) controlling the pH of the wastewater to below 7.0; and

(iii) stirring the wastewater to keep solids in suspension;

(c) processing the wastewater to a second reactor;

(d) in the second reactor:

(i) raising the pH of the wastewater to between 9.5 and 10.0 to form precipitates of prussian blue, zinc hydroxide and ferrous hydroxide; and

(ii) continuously stirring the wastewater to keep the precipitates in suspension;

(e) processing the wastewater to an aerator where the ferrous hydroxide is oxidized to ferric hydroxide; and

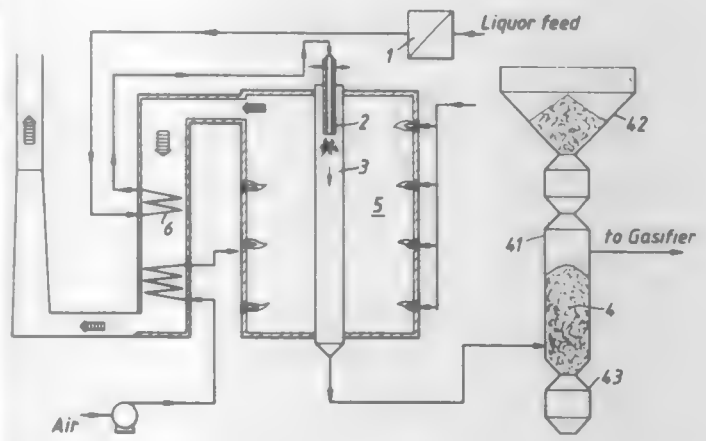
(f) processing the wastewater to a settling basin where precipitated zinc hydoxide, prussian blue and ferric hydroxide settle into a sludge, leaving a liquid having a soluble zinc content of less than 0.45 ppm and a total soluble cyanide content of less than 3 ppm.

4,606,830

TREATMENT OF EFFLUENT LIQUORS

Brian A. Cleaver, Clifton, and Alan F. Ivens, Enfield, both of England, assignors to British Gas Corporation, England

Filed Aug. 21, 1984, Ser. No. 642,847
Claims priority, application United Kingdom, Aug. 25, 1983, 8322900
Int. Cl.[4] C02F *1/58*
U.S. Cl. 210—750 **6 Claims**



1. A process for the treatment of halide-containing effluent liquors which comprises heating and vaporising said liquor to a temperature of from 400° C. to 500° C. and contacting said vapor with calcium carbonate maintained at a temperature of from 400° C. to 500° C., characterised in that said heating is effected at a rate of at least 50° C. sec^{-1} over the range 100° C. to 300° C.

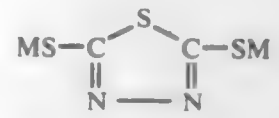
4,606,831

STABILIZED GALACTOMANNAN GUM COMPOSITIONS

Gary H. Kegeler, Rancho Cucamonga, and Howard L. Vandersall, Upland, both of Calif., assignors to Monsanto Company, St. Louis, Mo.

Filed Jun. 17, 1985, Ser. No. 745,742
Int. Cl.[4] A62C *1/00*; A62D *1/00*
U.S. Cl. 252—7 **25 Claims**

1. A method for stabilizing the viscosity of a galactomannan gum-thickened aqueous composition, comprising incorporating into said aqueous composition a viscosity stabilizing amount of a dimercaptothiadiazole of the formula:



where each M independently is hydrogen or a metal.

4,606,832

FIRE EXTINGUISHING COMPOSITION

Iwao Hisamoto, Osaka; Chiaki Maeda; Takasige Esaka, both of Kyoto, and Masaru Hirai, Osaka, all of Japan, assignors to Daikin Kogyo Company, Limited, Osaka, Japan

Filed Nov. 4, 1983, Ser. No. 548,697
Claims priority, application Japan, Nov. 10, 1982, 57-198139
Int. Cl.[4] A62D *1/00*
U.S. Cl. 252—8 **6 Claims**

1. A fire extinguishing composition which comprises at least 50% by weight of bromofluorohydrocarbon and/or bromochlorofluorohydrocarbon and 0.5 to 40% by weight of a fluorine-containing high molecular compound, wherein said fluorine-containing high molecular compound has an average molecular weight of not less than 5,000 said fluorine-containing high molecular compound is a compound having a perfluoroalkyl group, and said fluorine-containing high molecular

compound contains fluorine in an amount of at least 10% by weight.

4,606,833

MIXTURE OF DITHIODIGLYCOL AND POLYOXYALKYLENE GLYCOL DERIVATIVES AS A LUBRICATING ADDITIVE

Alexander Schuettenberg; Merlin R. Lindstrom, and Benedict R. Bonazza, all of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Oct. 25, 1984, Ser. No. 664,461
Int. Cl.[4] C10M *141/02, 141/08*
U.S. Cl. 252—49.3 **38 Claims**

1. A method for improving the lubricating properties of a water based fluid used in metalworking operations comprising the step of adding a mixture of di-(2-hydroxyethyl)disulfide and a derivative of polyoxyalkylene glycol selected from the group consisting of polyoxyalkylene glycol esters and polyoxyalkylene glycol ethers to said water-based fluid used in metalworking operations.

4,606,834

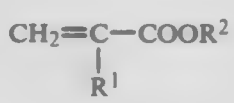
LUBRICATING OIL CONTAINING VII POUR DEPRESSANT

William P. Hart, Beacon, and Donald L. Mays, Hopewell Junction, both of N.Y., assignors to Texaco Inc., White Plains, N.Y.

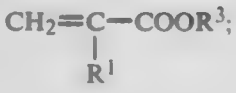
Filed Sep. 10, 1985, Ser. No. 774,519
Int. Cl.[4] C10M *107/42, 107/28*
U.S. Cl. 252—51.5 A **33 Claims**

1. A lubricating oil composition comprising (i) a major portion of a hydrocarbon lubricating oil and (ii) a minor, effective, viscosity index improving amount of a terpolymer of

(i) a first monomer

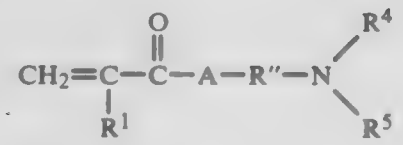


(ii) a second monomer



and

(iii) a third monomer



wherein A is —NH—, —O—, or —S—;

R^1 is hydrogen or a lower alkyl group;

R^2 is a C_{10}–C_{15} alkyl group;

R^3 is a C_{16}–C_{20} alkyl group;

R^4 and R^5 are hydrogen alkyl, alkaryl, aralkyl, cycloalkyl, or aryl groups; and

R'' is an alkylene, cycloalkylene, alkarylene, aralkylene, or arylene group.

4,606,835

SALT COMPOSITION HAVING SMALLER SIZED SODIUM METASILICATE

Alfred Lieber, Salt Lake City, and Jack L. Simper, Murray, both of Utah, assignors to Chemopharm Laboratory, Inc., Salt Lake City, Utah

Filed Dec. 21, 1984, Ser. No. 685,246
Int. Cl.[4] C08K *3/18*
U.S. Cl. 252—70 **5 Claims**

1. A dry and free-flowing composition useful for facilitating the melting and removal of snow and ice comprising:

(a) 100 parts by weight of salt;

(b) from about 0.5 to about 2.0 parts by weight per 100 parts by weight of salt of a member selected from the group consisting of C_2 to C_6 monohydric alcohols, polyhydric alcohols, and mixtures thereof;

(c) from about 0.5 to about 4.0 parts by weight per 100 parts by weight of salt of a member selected from the group consisting of diatomaceous earth, calcium silicate, fumed silica, powdered bentonite, talc, starch, and mixtures thereof; and

(d) from about 0.5 to about 2.0 parts by weight per 100 parts by weight of salt of sodium metasilicate characterized by a particle size smaller than about 80 mesh.

4,606,836

CONTINUOUS PROCESS FOR THE MANUFACTURE OF CALCIUM MAGNESIUM ACETATE DEICER

Alan B. Gancy, 265 Robineau Rd., Syracuse, N.Y. 13207

Filed Jan. 22, 1985, Ser. No. 693,664
Int. Cl.[4] C09K *3/18*
U.S. Cl. 252—70 **13 Claims**

1. A process for the manufacture of coarse-particle calcium magnesium acetate characterised in that aqueous acetic acid is combined with the stoichiometric requirement of lime in a suitable agitated reaction vessel, wherein the water content of the reaction mass is critically controlled such that the mol ratio of water to calcium acetate in said reaction mass does not exceed about 3.3, and the resulting damp product of reaction is dried to produce the final product, the improvement comprising:

(a) introducing finely divided lime at a constant rate to said agitated reaction vessel:

(b) simultaneously introducing concentrated aqueous acetic acid solution at a constant rate to said reaction vessel wherein the ratio of acid rate, anhydrous acid basis, to the lime rate, active lime basis, is equal to the stoichiometric chemical combining ratio;

(c) maintaining the mol ratio of water input regardless of source, to the acetic acid input, anhydrous acid basis, within the range 0.75–1.15;

(d) withdrawing the damp, coarse-particle product formed in said vessel at steady-state; and

(e) drying the product of Step d.

4,606,837

WATER-GLYCOL FLUIDS MADE FROM POLYOXYALKYLENE THICKENERS

Edward E. McEntire; Edward C. Y. Nieh, both of Austin; Robert A. Grigsby, Jr., Georgetown, and David R. McCoy, Austin, all of Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Jan. 30, 1985, Ser. No. 696,664
Int. Cl.[4] C10M *115/04, 173/02*
U.S. Cl. 252—73 **14 Claims**

7. A glycol-water based fluid comprising

a. a glycol component

b. water and

c. an effective amount of a water soluble thickeners prepared by the process consisting essentially of reacting

(1) propylene oxide with a dinonylphenyl hydrophobe, such that the mole ratio of propylene oxide to hydrophobe is in the range of 8:1 to 15:1, to give an intermediate and

(2) reacting ethylene oxide with the intermediate, such that the mole ratio of ethylene oxide to intermediate is in the range of 40:1 to 500:1.

4,606,838

BLEACHING COMPOSITIONS COMPRISING ALKOXY SUBSTITUTED AROMATIC PEROXYACIDS

Michael E. Burns, West Chester, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Division of Ser. No. 711,901, Mar. 14, 1985. This application Sep. 27, 1985, Ser. No. 781,387
Int. Cl.[4] C11D *7/54*
U.S. Cl. 252—94 24 Claims

1. A bleach activator of the general formula



wherein R^1 is an alkyl group containing from about 4 to abut 8 carbon atoms, and L is a leaving group the conjugate acid of which has a pK_a in the range of from about 4 to about 13.

4,606,839

SOLID SOAP AND A PROCESS FOR THE PRODUCTION THEREOF

John A. S. Harding, 893 Van Nijenrodeveg, Amsterdam, Buitenveldert, Netherlands

Filed Jan. 30, 1985, Ser. No. 696,496
Claims priority, application Italy, Feb. 6, 1984, 47652 A/84
Int. Cl.[4] C11D *9/04, 13/10, 17/00*
U.S. Cl. 252—132 12 Claims

1. A solid soap in the form of a hard, elastic gel, non-slough, non-irritant, high-foaming, consisting essentially of: water in the range 10 to 60%; starch in the range 8 to 28%; sodium and potassium salts of higher fatty acids in the range 24 to 54%; the potassium salts of higher fatty acids being in the range 0 to 70% of the total of sodium and potassium, being bonded together in a chemical complex which has the capacity of absorbing water during use without formation of slough.

4,606,840

AQUEOUS COMPOSITION FOR THE DISPERSION OF HYDROPHOBIC SUBSTANCES, PARTICULARLY APPLICABLE TO THE CLEANING OF OBJECTS SOILED BY PAINT OR THE LIKE

Jean-Claude Gautier, Billere, and Francois Lanore, La Varenne St.-Hilaire, both of France, assignors to Societe Nationale Elf Aquitaine, France

Filed Sep. 13, 1984, Ser. No. 650,365
Claims priority, application France, Sep. 13, 1983, 83 14529
Int. Cl.[4] C09D *9/04;* C11D *7/50;* B01J *13/00*
U.S. Cl. 252—171 15 Claims

13. An aqueous composition for cleaning objects soiled with hydrophobic substances, the composition being miscible with water in any proportion without separating into distinct phases, which comprises a microemulsion containing by weight 15% to 30% of at least one liquid hydrocarbon or chlorocarbon containing less than 13 carbon atoms, 4% to 15% of at least one C_3 to C_{12} ketone, 6% to 15% of at least one cosurfactant selected from the group consisting of C_1 to C_8 alcohols, glycol ethers and glycol esters, and 6% to 16% of a surfactant, the balance being water having a pH of 8 to 14, wherein the weight ratio of the surfactant to the cosurfactant is in the range from 0.5 to 2.6 and the ketone is present in an amount providing 0.2 to 1 carbonyl group per mole of hydrocarbon.

14. An aqueous composition according to claim 13, comprising by weight 17% to 25% of at least one C_1 to C_4 chlorinated hydrocarbon, 6% to 12.5% of ketone, 7% to 15% of at least one C_1 to C_4 alcohol and 8% to 16% of surfactant, the balance being water, wherein the weight ratio of the surfactant to the cosurfactant is in the range from 0.8 to 2.2.

4,606,841

AZEOTROPE-LIKE COMPOSITIONS OF TRICHLOROTRIFLUOROETHANE, ETHANOL, ACETONE, NITROMETHANE AND HEXANE

Rajat S. Basu, Williamsville; Earl A. E. Lund, West Seneca; Hang T. Pham, North Tonawanda, and David P. Wilson, Williamsville, all of N.Y., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Filed Nov. 28, 1984, Ser. No. 675,682
Int. Cl.[4] C11D *7/50;* C23G *5/036*
U.S. Cl. 252—171 16 Claims

1. Azeotrope-like compositions comprising trichlorotrifluoroethane, ethanol, nitromethane, acetone and hexane.

4,606,842

CLEANING COMPOSITION FOR GLASS AND SIMILAR HARD SURFACES

George B. Keyes; Lux P. Requejo, and Thomas B. Hilton, all of Cincinnati, Ohio, assignors to Drackett Company, Cincinnati, Ohio

Continuation of Ser. No. 633,681, Jul. 25, 1984, abandoned, which is a continuation of Ser. No. 355,218, Mar. 5, 1982, abandoned. This application Jul. 19, 1985, Ser. No. 756,578
Int. Cl.[4] C11D *3/37*
U.S. Cl. 252—174.23 29 Claims

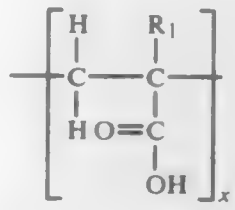
1. An aqueous composition for cleaning glass and similar hard surfaces comprising an aqueous solution of

(a) about 0.5–8% of at least one lower aliphatic monohydric alcohol having about 2–4 carbon atoms and a boiling point not in excess of about 100° C.;

(b) about 0.5–5% of at least one higher boiling polar organic solvent selected from the group consisting of glycols having from 2–6 carbon atoms and 1–4 carbon alkyl ethers of a glycol containing a total of about 3–8 carbon atoms and having a boiling point not in excess of about 250° C.;

(c) about 0.05–5% of at least one surface active agent compatible with components (a) and (b) and selected from the group consisting of water soluble anionic and non-ionic surface active agents; and

(d) about 0.005 to 2.0% of a low molecular weight polyacrylic resin comprising polyacrylic acids and the corresponding alkali metal, ammonium and amine salts thereof characterized by the formula



wherein R_1 is hydrogen or methyl, and x is a number of from about 10 to about 100, the weight average molecular weight being between about 500 to about 8000; all percentages being by weight, and water being the balance.

4,606,843

PROCESS FOR PRODUCING A DRIED, STABLE MIXTURE OF ALKALI METAL OR ALKALINE EARTH METAL FERRATE (VI) COMPOUNDS WITH HYDROXIDES AND CARBONATES

Jerry J. Kaczur, Cleveland, Tenn., assignor to Olin Corporation, Cheshire, Conn.

Filed Jan. 24, 1985, Ser. No. 694,580
Int. Cl.[4] C01B *13/36;* F26B *5/04*
U.S. Cl. 252—186.33 5 Claims

1. A process for preparing a dried, stable mixture of at least

one alkali metal or alkali earth metal ferrate (VI) compound with alkali metal or alkaline earth metal hydroxide and carbonate compounds comprising:

(a) vacuum drying a crude ferrate cake which comprises at least one solid alkali metal or alkaline earth metal ferrate (VI) in admixture with a liquid mother liquor comprising of at least one alkali metal or alkaline earth metal hydroxide and water wherein the amount of said hydroxide is from about 20% to about 50% by weight of the mother liquor; said vacuum drying being carried out at a temperature from about 60° C. to about 90° C. for a sufficient amount of time to remove a portion of said water from said mother liquor and thereby increase the hydroxide concentration in the mother liquor to a range from about 55% to about 70% by weight; and

(b) further drying said reduced water-content crude ferrate cake at a temperature from about 110° C. to about 160° C. with a heated gas stream for a sufficient amount of time to form a substantially water-free dried ferrate cake; said gas stream containing a sufficient amount of CO_2 to react with a portion of said hydroxide present in said mother liquor and thereby forming a dried, stable mixture of at least one alkali metal or alkaline earth metal ferrate (VI) compound with alkali metal or alkaline earth metal hydroxide and carbonate compounds.

4,606,844

FLUOROCHLOROHYDROCARBON/PHOSPHORIC ACID ESTER/CARBOXYLIC ACID DRYING COMPOSITIONS

Roland Aguiléra, Saint-Remy-les-Chevreuse, and Jean-Pierre Rémond, Massy-Villaine, both of France, assignors to Chloe Chimie, Puteaux, France

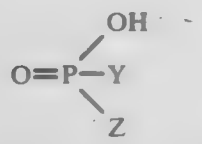
Continuation of Ser. No. 498,291, May 26, 1983, abandoned. This application Jan. 22, 1985, Ser. No. 693,164

Claims priority, application France, May 27, 1982, 82 09213

Int. Cl.⁴ C09K *3/00;* **C23G** *5/02;* **C07F** *9/09;* **C11D** *10/02*

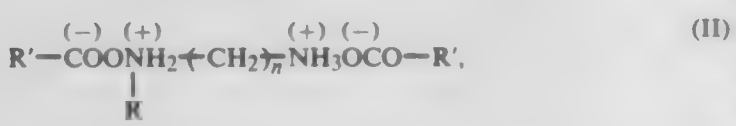
U.S. Cl. 252—194 **15 Claims**

1. A homogeneous composition of matter which comprises (1) up to 99.95% by weight of a solvent comprising at least 50% by weight of 1,1,2-trichloro-1,2,2-trifluoroethane and up to 50% by weight of one or more saturated aliphatic chlorohydrocarbons or chlorofluorohydrocarbons containing 1 or 2 carbon atoms and (2) a water-solubilizing additive therefor, said additive (2) comprising (i) at least one phosphoric acid ester of the general formula:



(I)

in which Y is a radical of the formula $—O—T—OC_mH_{2m-})_rOH$, wherein r is an integer ranging from 2 to 30, m is 2, 3 or 4, and T is a saturated or unsaturated, divalent aliphatic radical, a monocyclic aromatic radical, or an aliphatic-aromatic radical, with each such radical containing up to 40 carbon atoms, and Z is a radical Y or a hydroxyl group, with the proviso that T and r are such that the total number of carbon atoms in the radical Y is more than 20, (ii) at least one ester of the above formula (I), in which at least one amine salt of the general formula:



(II)

in which R is a saturated or unsaturated, monovalent aliphatic radical containing up to 25 carbon atoms, the symbols R', which can be identical or different, are each an aliphatic radical, an hydroxyl substituted aliphatic radical, or an acyl radical, with each radical containing from 10 to 30 carbon atoms and comprising at least one ethylenic carbon-carbon double bond, and n is an integer ranging from 1 to 9, and (iii) at least one carboxylic acid of the general formula:



(III)

in which R' is as defined above.

4,606,845

BICYCLOHEXYLETHANES

Michael Römer, Rodgau; Rudolf Eidenschink; Joachim Krause, both of Dieburg; Bernhard Scheuble, Alsbach-Hähnlein, and Georg Weber, Erzhausen, all of Fed. Rep. of Germany, assignors to Merck Patent Gesellschaft mit beschrankter Haftung, Darmstadt, Fed. Rep. of Germany

Filed May 14, 1984, Ser. No. 610,162

Claims priority, application Fed. Rep. of Germany, May 14, 1983, 3317597

Int. Cl.⁴ C09K *3/34;* **G02F** *1/13;* **C07C** *121/64, 13/28, 25/18, 43/21, 69/157, 69/76*

U.S. Cl. 252—299.63 **14 Claims**

1. A bicyclohexylethane of the formula



wherein R^1 is alkyl; R^2 is alkyl, alkyl in which one or two non-adjacent CH_2 groups are replaced by O atoms, or is —COOalkyl or —O—CO-alkyl; or one of R^1 or R^2 can also be H; A is Cy or 1,4-phenylene (Phe); Cy is 1,4-cyclohexylene; and n is 0 or 1; the alkyl groups in each case containing 1–10 C atoms.

4,606,846

MIXED RARE EARTH METAL, DIVALENT TRANSITION METAL, ALUMINUM OXIDE

Andrée Kahn, Paris; Anne-Marie Lejus, Montrouge; Jeanine Thery, Paris, and Daniel Vivien, Garches, all of France, assignors to Centre National de la Rechereche Scientifique, Paris, France

Continuation of Ser. No. 281,396, Jul. 8, 1981, abandoned. This application May 4, 1983, Ser. No. 491,410

Claims priority, application France, Jul. 8, 1980, 80 15171

Int. Cl.⁴ C09K *11/08*

U.S. Cl. 252—301.4 R **18 Claims**

1. A mixed aluminum oxide having the following formula:



wherein X^1 represents a metal selected from the group consisting of lanthanum, praseodymium, neodymium, samarium and gadolinium, and X^2 represents a metal selected from the group consisting of praseodymium, neodymium, samarium, X_1 and X_2 being the same or different; M^1 and M^2, which can be the same or different, represent a metal selected from the group consisting of magnesium and divalent transition metals; M^3 represents a trivalent transition metal; x_1 represents a number from 0.8 to 1; y_1 represents a number from 0.7 to 1; z_1 represents a number from 10 to 12; x_2 represents a number from 0 to x_1, x_2 being different from 0 when X_1 represents lanthanum or gadolinium; y_2 represents a number from 0 to y_1; and z_2 represents a number from 0 to 1; and wherein said mixed aluminum oxide has a single phase crystalline structure of the magnetoplumbite type.

4,606,847

PROCESS FOR THE PREPARATION OF A DISPERSABLE PRODUCT CONTAINING A CERIUM COMPOUND IN ASSOCIATION WITH A SELECTED METAL

James L. Woodhead, Didcot, England, assignor to United Kingdom Atomic Energy Authority, England

Continuation of Ser. No. 589,743, Mar. 15, 1984, abandoned, which is a continuation of Ser. No. 402,248, Jul. 27, 1982, abandoned. This application Oct. 24, 1985, Ser. No. 791,149
Claims priority, application United Kingdom, Aug. 7, 1981, 8124245

Int. Cl.[4] B01J *13/00*

U.S. Cl. 252—363.5 6 Claims

1. A process for the preparation of a dry dispersible product containing ceria and at least one metal oxide, dispersible in an aqueous media to give a mixed metal oxide colloidal dispersion of said ceria and at least 10 weight percent metal oxide comprising adding an aqueous solution of a metal salt selected from the group consisting of yttrium salt and rare earth metal nitrate, chloride or perchlorate to dry cerium IV oxide hydrate and heating the resulting mixture at a temperature of 200° C. to 450° C. for a time sufficient to effect deaggregation of aggregated crystallites in said cerium oxide hydrate and provide said dry dispersible product.

4,606,848

RADAR ATTENUATING PAINT

John W. Bond, Dana Point, Calif., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Aug. 14, 1984, Ser. No. 640,630
Int. Cl.[4] H01B *1/06*

U.S. Cl. 252—511 9 Claims

1. A radar attenuating paint composition for absorbing and scattering incident microwave radiation producing a significant decrease in retroflectance comprising a binder composition having uniformly dispersed therein a plurality of dipole segments made of electrically conductive fibers spatially arranged so as to effect coherent absorption and scattering of said radiation wherein said electrically conductive segments range in length from 0.001 to 3 cm and in diameter of from 1×10^{-6} to 3×10^{-3} cm, and wherein said dipole segments are present in an amount ranging from about 0.1 to 5.0% of said radar attenuating paint composition, by weight.

4,606,849

PERFUMERY COMPOSITIONS

Hifzur R. Ansari, Montvale, N.J., and Alfred A. Schleppnik, St. Louis, Mo., assignors to Bush Boake Allen Limited, London, England

Filed Jan. 29, 1985, Ser. No. 695,891
Claims priority, application United Kingdom, Feb. 1, 1984, 8402641

Int. Cl.[4] A61K *7/46*

U.S. Cl. 252—522 R 7 Claims

1. A perfumery composition comprising 3,3-dimethyl-1,5-dioxaspiro [5,5] undecane and a perfumery composition carrier.

4,606,850

HARD SURFACE CLEANING COMPOSITION AND CLEANING METHOD USING SAME

Arshad H. Malik, Decatur, Ill., assignor to A. E. Staley Manufacturing Company, Decatur, Ill.

Filed Feb. 28, 1985, Ser. No. 706,561
Int. Cl.[4] C11D *1/835, 3/075*

U.S. Cl. 252—528 20 Claims

1. A liquid detergent composition comprising, on a total weight basis:

(a) from about 0.05 to about 50 weight percent of a glycoside surfactant of the formula:

$$RO(R'O)_y(Z)_x \qquad I$$

wherein R is a monovalent organic radical containing from about 6 to about 30 carbon atoms; R′ is a divalent hydrocarbon radical containing from 2 to about 4 carbon atoms; y is a number having an average value of from 0 to about 12; Z is a moiety derived from a reducing saccharide containing 5 or 6 carbon atoms; and x is a number having an average value of from 1 to about 10;

(b) from about 0.025 to about 50 weight percent of an amine oxide surfactant, said amine oxide surfactant being employed in an amount corresponding to at least about 0.5 parts thereof by weight per part by weight of said glycoside surfactant;

(c) from about 0.005 to about 25 weight percent of a quaternary ammonium halide surfactant, said quaternary ammonium halide surfactant being employed in an amount corresponding to less than about 0.5 parts thereof by weight per part by weight of said glycoside surfactant;

(d) from about 0.1 to about 50 weight percent of a water soluble detergent builder; and

(e) from about 10 to about 99.8 weight percent water.

4,606,851

METHOD FOR IMPROVING WATER SOLUBILITY OF SURFACTANTS USING TERPENE SULFONATE HYDROTROPES

Eddie N. Gutierrez, Fort Lee, and Vincent Lamberti, Upper Saddle River, both of N.J., assignors to Lever Brothers Company, New York, N.Y.

Division of Ser. No. 584,184, Feb. 27, 1984, Pat. No. 4,528,144. This application Feb. 25, 1985, Ser. No. 705,260
Int. Cl.[4] C11D *3/34;* B01F *3/00*

U.S. Cl. 252—554 3 Claims

1. A method of increasing the solubility of an only partially water-soluble material, said material being present in an amount from 1% to 50% and selected from the group consisting of anionic, nonionic, cationic, zwitterionic, amphoteric surfactants and mixtures thereof, comprising combining with said material in water, in an effective amount to increase said solubility, a hydrotrope selected from the group consisting of the alkali metal, alkaline earth metal, ammonium and alkylolammonium salts of p-menth-6-ene-2-sulfonic acid, p-menth-1-ene-7-sulfonic acid and their saturated derivatives.

4,606,852

FLAME RETARDANT POLYMER COMPOSITIONS

Avraham Teuerstein, Omer; Michael Rumack, and Shaul Yanai, both of Beer-Sheva, all of Israel, assignors to Bromine Compounds Ltd., Beer-Sheva, Israel

Filed Jan. 9, 1985, Ser. No. 689,838
Claims priority, application Israel, Feb. 29, 1984, 71108
Int. Cl.[4] C09K *21/08;* C07C *137/00*

U.S. Cl. 252—609 15 Claims

1. A flame retarded composition comprising a normally flammable organic polymer and a flame retardant reagent having the formula:

$$(CH_2X)_3CCH_2OSOCH_2C(CH_2X)_3$$
$$\|$$
$$O$$

wherein each X is independently Br or Cl.

4,606,853

FIRE RETARDANT POLYAMIDE COMPOSITIONS

Ian G. Williams, Cleveland, England, assignor to Imperial Chemical Industries PLC, London, England

Filed Jul. 24, 1984, Ser. No. 633,892

Claims priority, application United Kingdom, Aug. 11, 1983, 8321643

Int. Cl.[4] C09D *5/18;* C08K *5/34*

U.S. Cl. 252—609 8 Claims

1. A fire retardant polyamide composition consisting of a polyamide having a molecular weight of at least 3000, at least 3.5% by weight of the condensation product of 2 moles perchlorocylopentadiene and 1 mole of 1,5-cyclooctadiene, at least 2% by weight of melamine, a salt of melamine or an organic derivative of melamine and at least 0.5% by weight of at least one oxide selected from iron oxide and tin oxide, wherein the weight ratio of chlorinated compound to oxide is between 1:1 and 10:1 preferably between 2:1 and 6:1 and the constituents of the composition total 100%.

4,606,854

METHOD OF PREPARING α-L-ASPARTYL-L-PHENYLALANINE METHYL ESTER AND ITS HYDROCHLORIDE

Yoichi Ozawa, Yokohama; Shinichi Kishimoto, Yokkaichi; Emiko Shinohara, Saga; Tadashi Takemoto, Kawasaki, and Chikahiko Eguchi, Yokohama, all of Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

Filed May 17, 1984, Ser. No. 611,531

Claims priority, application Japan, May 28, 1983, 58-94477

Int. Cl.[4] C07K *5/06*

U.S. Cl. 260—998.21 5 Claims

1. A method for preparing α-L-aspartyl-L-phenylalanine methyl ester hydrochloride which comprises:

dissolving α-L-aspartyl-L-phenylalanine dimethyl ester in a mixture of water, methanol and hydrochloric acid, said mixture containing from about 0 to 10% by volume of methanol, from about 8 to 55% by volume of concentrated hydrochloric acid and the remainder being water, the concentration of said dimethyl ester in said mixture being from about 0.01 mol/dl to 0.3 mol/dl, thereby yielding a solution;

holding said solution at one or more temperatures of from about 0° C. to 60° C., until α-L-aspartyl-L-phenylalanine methyl ester hydrochloride crystallizes from said solution; and

isolating said α-L-aspartyl-L-phenylalanine methyl ester hydrochloride.

4,606,855

MONOCLONAL ANTIBODY TO DIGOXIN

Alice Deutsch, New York; Harvey Brandwein, Port Washington; Herbert Platt, Great Neck; Dianne M. Hunter, New Rochelle; Andrew Dubitsky, Amityville, and Susan M. Durham, Westbury, all of N.Y., assignors to Mex Research Associates c/o Leon Reimer, White Plains, N.Y.

Continuation-in-part of Ser. No. 401,460, Jul. 26, 1982, Pat. No. 4,477,576. This application Jul. 22, 1983, Ser. No. 516,483

Int. Cl.[4] G01N *33/53, 33/531, 33/577*

U.S. Cl. 530—387 1 Claim

1. The digoxin monoclonal antibody produced by cell line HB 8319.

4,606,856

[DES-1-AMINO, 8-GLYCINE]CALCITONIN

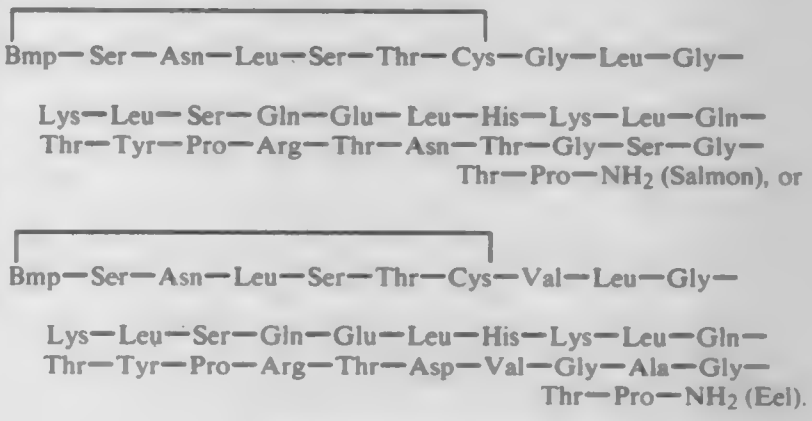
Jay K. Seyler, 581 W. Drummond Dr., Bourbonnais, Ill. 60919, and Ronald C. Orlowski, 140 Pueblo Ct., Frankfort, Ill. 60423

Filed Mar. 18, 1985, Ser. No. 712,951

Int. Cl.[4] C07K *7/36*

U.S. Cl. 530—307 4 Claims

1. A peptide having the structure:



4,606,857

MURAMYLDIPEPTIDE DERIVATIVES

Akira Hasegawa, Gifu; Ichiro Azuma, Hokkaido, and Yuichi Yamamura, Hyogo, all of Japan, assignors to Daiichi Seiyaku Co., Ltd., Tokyo, Japan

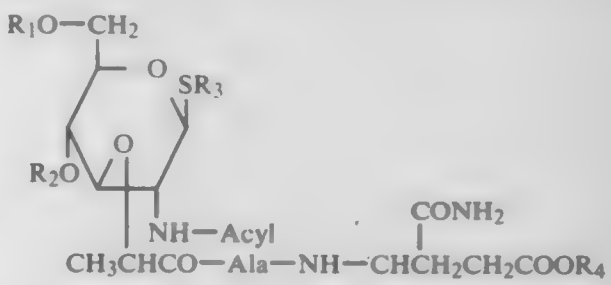
Filed Jul. 27, 1983, Ser. No. 517,551

Claims priority, application Japan, Jul. 27, 1982, 57-130705

Int. Cl.[4] C07K *9/00*

U.S. Cl. 260—998.2 9 Claims

1. A muramyldipeptide derivative represented by the formula:



wherein Ala represents alanine; Acyl represents an acyl group having 2 to 40 carbon atoms; R_1 and R_2 each represents a hydrogen atom or, when taken together, may form an alkylidene group having 1 to 6 carbon atoms; R_3 represents an acyl group having 2 to 40 carbon atoms; and R_4 represents a hydrogen atom or an alkyl group having 1 to 20 carbon atoms.

4,606,858

METHOD OF PURIFYING CAPROLACTAM

Enrico Bondi, Olmo, and Paolo Senni, Colleferro, both of Italy, assignors to Snia BPD S.p.A. and Chimica del Friuli S.p.A., both of, Italy

Filed Feb. 7, 1985, Ser. No. 699,520

Claims priority, application Italy, Feb. 8, 1984, 19497 A/84

Int. Cl.[4] C07D *201/16*

U.S. Cl. 540—540 10 Claims

1. A method of purifying crude caprolactam obtained by (i) nitrosation of cyclohexyl compounds followed by (ii) contacting the crude material with sulfuric acid and then with ammonia to raise the pH to a range of about 3.5 to about 4.5, said method comprising the steps:

(a) further contacting the crude caprolactam with ammonia to raise the pH to a range of about 8 to about 10, thereby yielding an aqueous composition containing caprolactam; and

(b) contacting the aqueous composition containing caprolactam from step (a) with toluene to extract the caprolactam, thereby yielding a toluene composition containing caprolactam.

4,606,859

INFRA-RED ABSORBER

Peter J. Duggan, Manchester, and Paul F. Gordon, Rochdale, both of England, assignors to Imperial Chemical Industries PLC, London, England

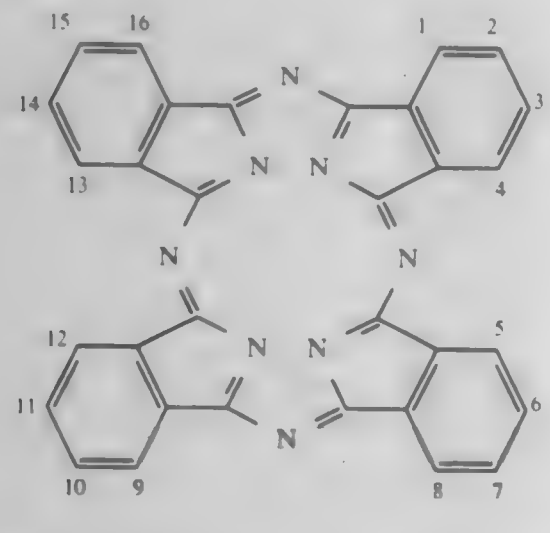
Filed Mar. 21, 1985, Ser. No. 714,673

Claims priority, application United Kingdom, Mar. 21, 1984, 8407303

Int. Cl.[4] C09B *47/04*

U.S. Cl. 540—122 8 Claims

1. A phthalocyanine compound in which each of five of the peripheral carbon atoms in the 1, 4, 5, 8, 9, 12, 13 and 16 positions of the phthalocyanine nucleus, as shown in the following formula:



I

is linked by a sulphur, selenium, tellurium or nitrogen atom to a carbon atom of an organic radical selected from alkyl, alkenyl, C_{4-8}-cycloalkyl, unsubstituted or substituted by a group selected from alkoxy, alkylthio, halogen, cyano and aryl; or selected from phenyl, phenylene, naphthyl, naphthylene and mono or bicyclic heteroaryl which are unsubstituted or substituted by a group selected from alkyl, alkoxy and alkylthio and halogen substituents thereof, phenyl, phenylthio, halogen, nitro, cyano, carboxyl, aralkyl, aryl- and alkyl-sulphonamido, aryl- and alkyl-sulphone, aryl and alkyl-sulphoxide, hydroxy and primary, secondary and tertiary amino, in which all alkyl groups contain up to 20 carbon atoms and all aryl groups are mono- or bi-homo- or hetero-cyclic.

4,606,860

RHODANINES USEFUL AS A THERAPEUTIC AGENT FOR DIABETIC COMPLICATIONS

Michiko Nagahara, Shiga; Yoshitaka Ohishi, Uji; Motoyuki Yajima, Otsu; Katsumi Nogimori, Otsu; Shigeki Kurokawa, Otsu, and Norio Kajikawa, Kyoto, all of Japan, assignors to Kaken Pharmaceutical Co., Ltd., Tokyo, Japan

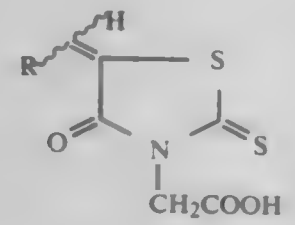
Filed Nov. 28, 1984, Ser. No. 675,580

Claims priority, application Japan, Aug. 24, 1984, 59-177210

Int. Cl.[4] C07D *421/04;* A61K *31/33*

U.S. Cl. 548—183 2 Claims

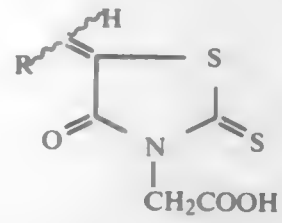
1. A rhodanine compound having the following formula (I):



(I)

wherein R is 2-biphenylylamino, 3-methoxyphenylamino, 2-methoxyphenylamino, 3chlorophenylamino, 4-bromophenylamino, or m-tolylamino; or a nontoxic salt thereof.

2. A pharmaceutical composition as a therapeutic agent for diabetic complications which comprises as an essential active ingredient an effective amount of a rhodanine compound having the following formula (I):



(I)

wherein R is 2-biphenylylamino, 3-methoxyphenylamino, 2-methoxyphenylamino, 3-chlorophenylamino, 4-bromophenylamino, or m-tolylamino; or a nontoxic salt thereof.

4,606,861

PROCESS FOR OBTAINING ANTHRAQUINODIMETHANE DERIVATIVES AND ANTHRONE DERIVATIVES

Beng S. Ong, Mississauga, and Barkev Keoshkerian, Willowdale, both of Canada, assignors to Xerox Corporation, Stamford, Conn.

Filed Mar. 8, 1985, Ser. No. 709,866

Int. Cl.[4] C07C *50/16*

U.S. Cl. 260—351 33 Claims

1. A process for the preparation of anthraquinodimethane derivatives and anthrone derivatives which comprises the condensation reaction of anthraquinones with active methylene compounds in the presence of an organic solvent, a Lewis acid, and a base.

4,606,862

AMIDES OF N-(3-(1-CHLORO-2-NITROETHENYLTHIO)PROPANE)

Martin Harris, Sittingbourne, United Kingdom, assignor to Shell Oil Company, Houston, Tex.

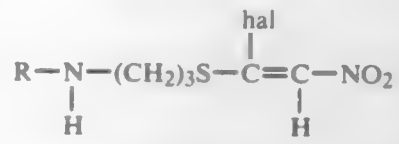
Division of Ser. No. 641,618, Aug. 17, 1984, Pat. No. 4,531,002. This application Mar. 21, 1985, Ser. No. 714,318

Claims priority, application Fed. Rep. of Germany, Aug. 26, 1983, 8323057; United Kingdom, Aug. 26, 1983, 8323059; Aug. 26, 1983, 8323060; Aug. 26, 1983, 8323061

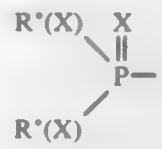
Int. Cl.[4] C08H *3/00;* C07C *153/00;* C07F *9/24*

U.S. Cl. 260—402.5 5 Claims

1. A compound of the formula



wherein hal represents a halogen atom and R containing up to twenty carbon atoms and being one of optionally substituted formyl, alkanoyl, alkenoyl, alkynoyl, benzoyl, carbamoyl, oxaloyl, alkoxycarbonyl, phenoxycarbonyl, phenalkoxycarbonyl, alkylthiocarbonyl, phenylthiocarbonyl, alkylthio-thiocarbonyl, phenylthio-thiocarbonyl, alkylsulfonyl, phenylsulfonyl, alkylaminosulfonyl, phenylaminosulfonyl, or phosphorus-containing acyl of the formula



wherein each of R° independently is an optionally substituted alkyl or phenyl moiety, and each X independently is an oxygen or sulfur atom.

4,606,863

PROCESS FOR PREPARING CARBOXYLIC ACID

Mikio Nakazawa; Kango Fujitani, both of Uji, and Hiroshi Manami, Joyo, all of Japan, assignors to New Japan Chemical Co., Ltd., Kyoto, Japan

Filed Jun. 1, 1984, Ser. No. 616,049

Claims priority, application Japan, Jun. 2, 1983, 58-98488; Dec. 13, 1983, 58-235552; Apr. 3, 1984, 59-66970

Int. Cl.[4] C11C *3/00;* C07C *51/23, 51/245*

U.S. Cl. 260—413 24 Claims

1. A process for preparing carboxylic acid, the process comprising subjecting an oxidation product produced by reacting a peroxide with (a) unsaturated aliphatic monocarboxylic acid having at least one unsaturated bond in the carbon chain and containing 6 to 24 carbon atoms or its ester or (b) cyclic and/or acyclic aliphatic olefin having at least one unsaturated bond in the carbon chain to oxidation by oxygen or oxygen-containing gas in the presence of a catalyst comprising (i) at least one heavy metal, complex or compound thereof and (ii) at least one member selected from the group consisting of bromine or compound thereof and chlorine or compound thereof.

4,606,864

THIOPHENYL THIOACRYLATE AND THIOMETHACRYLATE MONOMERS

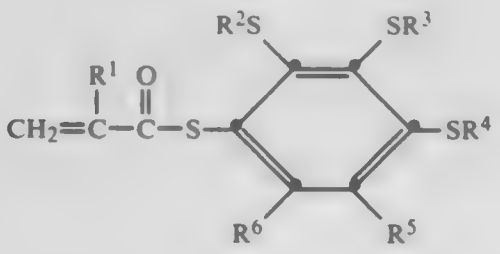
David P. Warren, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 1, 1985, Ser. No. 697,554

Int. Cl.[4] C07C *153/11*

U.S. Cl. 558—257 14 Claims

1. A monomer having the formula:



wherein:

R^1 is H or methyl;

R^2, R^3 and R^4 are alkyl; and

R^5 and R^6 are thioalkyl.

4,606,865

METHODS FOR THE PREPARATION OF α-BROMODIETHYLCARBONATE

Derek R. Palmer, Heswall, England, and Robert G. Tyson, Prestatyn, Wales, assignors to Astra Lakemedel Aktiebolag, Sodertalje, Sweden

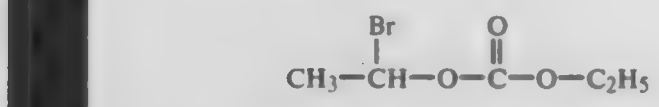
Filed Jun. 23, 1983, Ser. No. 507,716

Claims priority, application United Kingdom, Sep. 20, 1982, 8226751; Oct. 6, 1982, 8228622; Nov. 16, 1982, 8232629; Jan. 7, 1983, 8300331

Int. Cl.[4] C07C *68/02, 68/06*

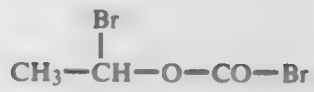
U.S. Cl. 558—283 5 Claims

1. A process for the preparation of the compound of the formula



II

wherein an aldehyde having the formula CH_3CHO is reacted with a molar excess of carbonyl bromide in a solvent selected from the group consisting of aromatic and halogenated hydrocarbons at a temperature of from about −40° to about 120° C. to form



V

followed by reacting compound V with C_2H_5OH to form a compound having formula II.

4,606,866

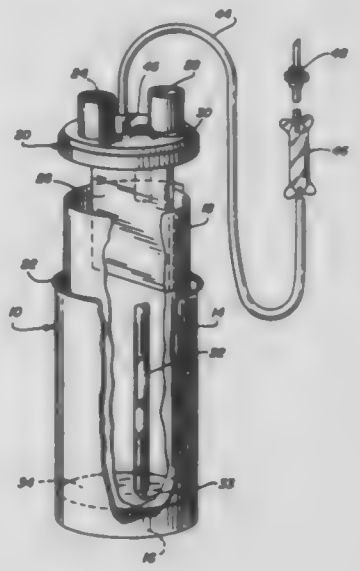
WETTABLE DEVICES OPERATIONAL WITH AQUEOUS LIQUID AND METHOD THEREFOR

Mark McGlothlin, Vernon Hills; Dennis Reisdorf, Crystal Lake, and Robert Virag, Cary, all of Ill., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Continuation of Ser. No. 510,002, Jul. 1, 1983, abandoned. This application Apr. 8, 1985, Ser. No. 721,485

Int. Cl.[4] B01F *3/04*

U.S. Cl. 261—74 43 Claims



1. The method of treating an exterior optical surface of an optical probe having light passing therein operational with aqueous liquids, comprising the step of selectively maintaining the surface tension of the optical surface greater than the surface tension of the aqueous liquid used therewith, with a surface active agent which is a physiologically compatible, easily metabolized, low toxic reaction means, thereby inhibiting the adherence of gas bubbles to submerged portions of the optical surface to allow said light passing therein not to be reflected and thereby further inhibiting the formation of liquid droplets to unsubmerged portions of the optical surface to allow said light passing therein to be reflected.

43. A cannister adapted for use in a humidifier for gases, the humidifier having a closure sealing the cannister, the closure defining a light access port, and transparent probe means communicating with the light access port and extending into the cannister, the transparent probe means defining an end surface with the cannister interior which includes angled surfaces positioned to permit light passing into said transparent probe means toward the ends surface to be reflected again up the probe away from the end surface when the end surface is out of contact with aqueous liquid, and the light to be transmitted through the end surface when the probe is in contact with the aqueous liquid, the improvement comprising:

said light probe having a surface tension maintained greater than the surface tension of the aqueous liquid by having been treated with a surface active agent whereby gas bubbles in the aqueous liquid are inhibited from adhering to submerged surfaces of the light probe to allow said light passing therein not to be reflected and whereby liquid droplets are inhibited from adhering to unsubmerged portions of the light probe to allow said light passing therein to be reflected and said surface tension being maintained with said surface active agent which is a physiologically compatibile, easily metabolized low toxic reac-

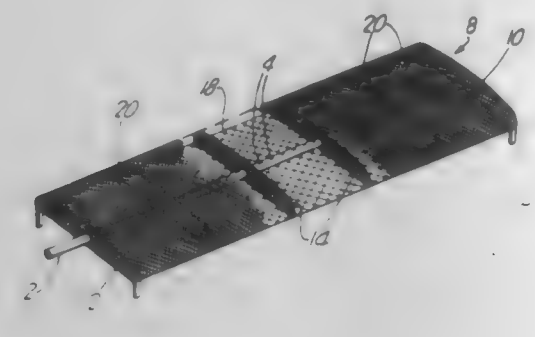
tion means to maintain sufficiently humidified oxygen or inhalation gas.

4,606,867

APPARATUS FOR LIFTING MASSES OF WATER BY UTILIZING AIR BUBBLES

Masayuki Eguchi, 36 Higashigota-cho, Iwakura, Sakyo-ku, Kyoto, Kyoto, Japan

Filed Jul. 24, 1985, Ser. No. 758,283
Claims priority, application Japan, Jul. 31, 1984, 59-162418
Int. Cl.[4] B01F *3/04*
U.S. Cl. 261—122 6 Claims



1. An apparatus for lifting masses of water by utilizing air bubbles, comprising:

an air pipe installed in the water and substantially horizontally extending, said air pipe having a plurality of longitudinally spaced air spout ports adapted to blow air so as to continuously form air bubbles of fixed size,

bubble catching means for catching bubbles from the spout ports of said air pipe, said catching means having a screen in the form of a net having such a mesh size as not to allow bubbles from said spout ports to pass therethrough, said screen being disposed above and substantially parallel to said air pipe to cover the latter and being curved to surround said air pipe,

said catching means having a pair of end walls disposed at opposite ends of said screen and a plurality of partition walls disposed between said end walls and spaced from each other longitudinally of said screen, said end walls and partition walls extending substantially vertically from said screen toward said pipe to cooperate with said screen to form a plurality of bubble chambers,

said screen having a plurality of bubble spout holes of low net strand density formed in the ridge of the curve, said spout holes being located each substantially intermediate between adjacent end and partition walls, the arrangement being such that bubbles are caught in each said bubble chamber and united to grow, the grown bubbles rising together with masses of water.

4,606,868

METHOD FOR CASTING THIN-WALLED WORK PIECES OF SYNTHETIC MATERIALS

Erich M. Christoph, Obertshausen, and Hermann A. Bartels, Muehlheim, both of Fed. Rep. of Germany, assignors to Ymos Aktiengesellschaft Industrieprodukte, Obertshausen, Fed. Rep. of Germany

Filed Jun. 18, 1984, Ser. No. 621,870
Claims priority, application Fed. Rep. of Germany, Jun. 25, 1983, 3322931
Int. Cl.[4] B29C *41/18*
U.S. Cl. 264—40.4 11 Claims

1. A method for casting thin-walled work pieces of synthetic material, comprising the following steps:

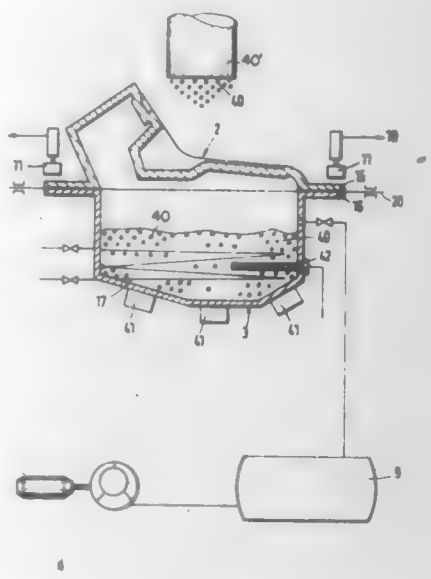
(a) preheating a casting mold (2),

(b) maintaining a quantity of flowable powder of synthetic material in a casting container (3) substantially to a predetermined filling level,

(c) closing the casting container (3) with the preheated casting mold (2) to form a liquid and pressure tight casting unit enclosing a casting cavity (13),

(d) beginning to vibrate the casting unit and evacuating the casting cavity to a reduced pressure while the casting unit is vibrating, said reduced pressure being just sufficient to remove air from said casting cavity but also insufficient to suck said flowable powder out of said casting cavity,

(e) rotating the casting unit in one direction through 180° from a mold-up starting position into a mold-down casting position, and providing a dwell time for permitting said flwoable powder of synthetic material to move into said preheated casting mold in the mold-down position, further rotating said casint unit in the same direction back to the starting mold-up position, providing a dwell time in said starting mold-up position, and then rotating the casting unit in the opposite direction again in two steps of 180°



each with a dwell time at the casting position and at the starting position for uniformly covering the casting mold surfaces with a powder layer of substantially uniform thickness throughout,

(f) said dwell times permitting the flowable powder of synthetic material to begin to form a jelled skin on the inner surface of said preheated casting mold,

(g) permitting any excess flowable powder of synthetic material to move back into said casting container when said casting unit is in the last mentioned mold-up position,

(h) removing the casting mold from the casting container and moving the casting mold into a heating station for curing the work piece which has formed as said jelled skin on the internal surfaces of the casting mold, and

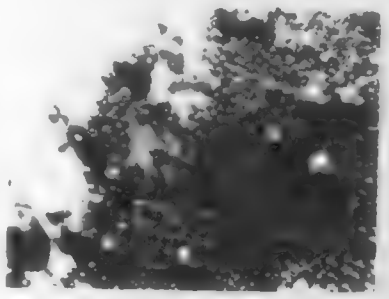
(i) after curing, cooling the casting mold and removing the work piece from the casting mold.

4,606,869

METHOD OF MAKING AIR ATOMIZED SPHERICAL ZINC POWDER

Walter Showak, Palmerton, Pa., assignor to The New Jersey Zinc Company, Palmerton, Pa.

Filed Aug. 27, 1984, Ser. No. 644,635
Int. Cl.[4] B29B *9/10*
U.S. Cl. 264—12 14 Claims



1. A method for the production of spherically shaped zinc

powders using an air-atomization process, comprising forming a molten zinc-lithium alloy and subsequently atomizing the molten zinc-lithium alloy.

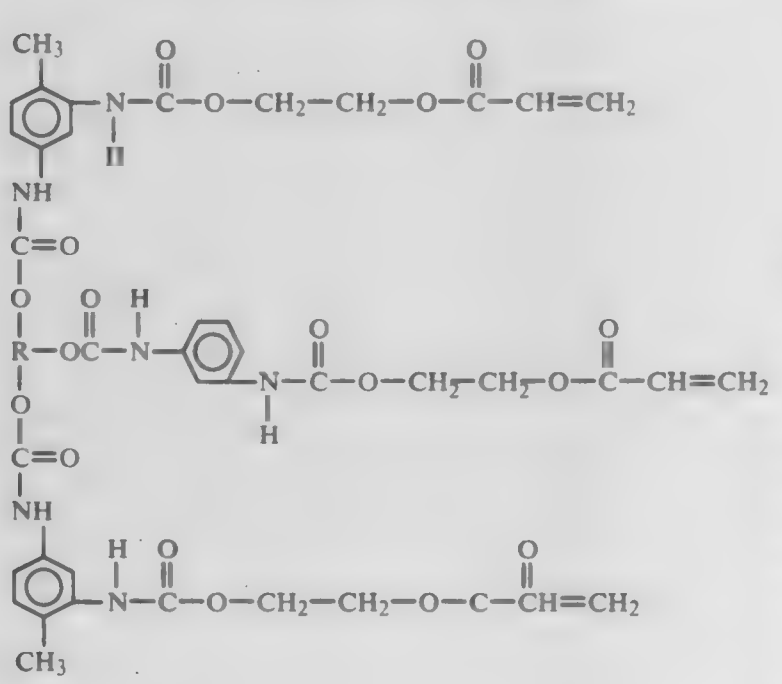
4,606,870

PREPARING MAGNET WIRE HAVING ELECTRON BEAM CURABLE WIRE ENAMELS

Charles W. McGregor, Fort Wayne, Ind., assignor to Essex Group, Inc., Fort Wayne, Ind.

Division of Ser. No. 634,341, Jul. 25, 1984. This application Aug. 12, 1985, Ser. No. 764,810
Int. Cl.[4] B29C *35/08*
U.S. Cl. 264—22 1 Claim

1. A method of coating a magnet wire substrate comprising applying to the magnet wire substrate through an extrusion die a 100% solids polymer composition comprising the reaction product of a polyester prepolymer having terminal functional groups reactive with an isocyanate, and a urethane-acrylate prepolymer formed by reacting a diisocyanate and a hydroxyalkylacrylate, the reaction product having the formula:



where R is a polyester backbone and curing the applied composition with electron beam radiation.

4,606,871

METHOD OF MAKING A FILM FROM PYROELECTRIC AND ISOTROPIC PIEZOELECTRIC POLYMER BLENDS

Dennis L. Krueger, Hudson, Wis.; Neil W. Loeding, Mounds View, and Claudia I. Poser, St. Paul, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 413,764, Sep. 1, 1982, abandoned, which is a division of Ser. No. 273,901, Jun. 19, 1981, abandoned, which is a continuation-in-part of Ser. No. 171,279, Jul. 23, 1980, abandoned. This application May 1, 1984, Ser. No. 605,917
Int. Cl.[4] B29C *35/10*
U.S. Cl. 264—22 6 Claims

1. A method for forming a pyrolectric and isotropic piezoelectric polymeric film comprising:

(a) forming a coating solution of a polymer blend in a suitable solvent, said polymer blend comprising polyvinylidene fluoride and at least one polymer which is miscible with said polyvinylidene fluoride at a temperature above the melting point thereof;

(b) solvent casting said solution to form a thin polymeric film;

(c) removing the solvent from said film and heating same to a sufficient temperature and for a sufficient time to render said film substantially amorphous;

(d) cooling said film at a rate and to a temperature sufficient to prevent crystallization of said film, and

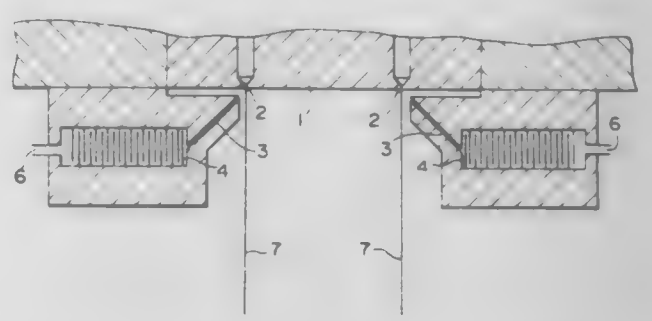
(e) polarizing said film to render same pyroelectric and isotropically piezoelectric.

4,606,872

METHOD FOR SPINNING CARBON FIBERS

Masami Watanabe, Tokyo, Japan, assignor to Kashima Oil Company, Tokyo, Japan

Continuation-in-part of Ser. No. 577,414, Dec. 16, 1983, abandoned. This application Dec. 6, 1984, Ser. No. 678,747
Claims priority, application Japan, Mar. 9, 1983, 58-37311
Int. Cl.[4] B29C *47/86*
U.S. Cl. 264—29.2 2 Claims



1. A method for spinning carbon fibers by subjecting petroleum-origin or coal-tar-origin pitch to heat-treatment to obtain a mesophase-containing pitch, separating a mesophase from the resulting pitch and subjecting the separated mesophase to the melt-spinning, which comprises injecting an inert gas or a non-oxidative gas of lower boiling point hydrocarbons, which is heated up to a predetermined temperature which is about 30°~60° C. lower than the spinning temperature, directly onto the surfaces of spinning nozzles steadily at a spinning temperature of molten pitch of 250° C. to 400° C. to maintain the temperature of the surfaces of spinning nozzles at a predetermined temperature while keeping an angle of injection of gas of 30°~80° relative to falling spun filaments and an injection speed of gas in the range of 5~70 cm/sec, thereby preventing the raw filament yarns extruded from the spinning nozzles from immediately turning to infusible thermosetting matter, and immediately driving gaseous components, which are vaporized from the spinning nozzles and raw filament yarns, off the surfaces of spinning nozzles to control the contamination of the surfaces of spinning nozzles.

4,606,873

PROCESS FOR THE PRODUCTION OF EXPANDABLE GRANULES OF THERMOPLASTIC POLYMERS AND RELATIVE APPARATUS

Gianfranco Biglione; Giuseppe Cigna, and Roberto Rinaldi, all of Mantova, Italy, assignors to Montedison S.p.A., Milan, Italy

Filed May 16, 1984, Ser. No. 610,823
Claims priority, application Italy, May 19, 1983, 21180 A/83
Int. Cl.[4] B29B *9/06;* C08J *9/16, 9/12*
U.S. Cl. 264—53 13 Claims

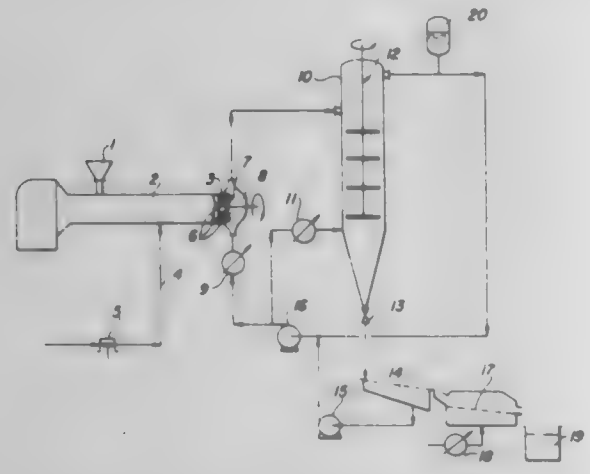
1. A process for the production by extrusion of expandable granules of thermoplastic polymers comprising, successively the following stages:

(a) extrusion through a die-head of the polymer in which an expanding agent is incorporated;

(b) immediate cutting of the polymer at the die-head outlet and cooling of the thus obtained granules in a bath of water or of a fluid kept at a temperature higher than the Tg of the expandable polymer;

(c) slow cooling of the thus obtained granules at a temperature ranging between at least +5° C. and at least −5° C.

of the Tg of the expandable polymer; wherein both the cutting of the polymer to granules and the cooling of same



are carried out under submersion in the cooling water or other fluid and at a pressure higher than 2 Bar.

4,606,874

PROCESS FOR THE PRODUCTION OF HIGH TEMPERATURE RESISTANT, HIGH DENSITY CERAMIC MOLDED ARTICLES

Milan Hrovat, Rodenbach; Hans Huschka, Hanau; Heinrich Porth, Hanau; Lothar Rachor, Hanau, and Thomas Schmidt-Hansberg, Frankfurt, all of Fed. Rep. of Germany, assignors to Nukem GmbH, Hanau, Fed. Rep. of Germany

Filed Jan. 2, 1985, Ser. No. 688,192

Claims priority, application Fed. Rep. of Germany, Jan. 28, 1984, 3402979

Int. Cl.[4] C04B *33/32*

U.S. Cl. 264—56 **7 Claims**

1. In a process for the production of a high temperature resistant, high density ceramic molded article from at least one component by the action of force on a blank at a temperature above 1300° C. and at high pressure in a cold mold, the improvement comprising heating the blank in a heating oven outside the mold to the necessary molding temperature and subsequently conveying the blank with a rapidly, movable pressing punch with a speed of 1 to 10 m/sec into the cold mold closed by a lower punch on the opposite side, compressing there and ejecting in the pressing direction, whereby the sum of the time of conveying the blank from the heating oven to the mold and the residence time in the mold is so regulated that the drop in temperature arising between the nucleus of the blank and the surface of the blank does not exceed 150° C. and the residence time in the mold is less than 3 msec.

4,606,875

PROCESS FOR PREPARING SHAPED ARTICLES OF RIGID ROD HETEROCYCLIC LIQUID CRYSTALLINE POLYMERS

Edward C. Chenevey, North Plainfield, N.J., and Thaddeus E. Helminiak, Dayton, Ohio, assignors to Celanese Corporation, New York, N.Y.

Filed Apr. 11, 1983, Ser. No. 483,798

The portion of the term of this patent subsequent to Dec. 11, 2001, has been disclaimed.

Int. Cl.[4] D01D *5/06;* **D01F** *6/74*

U.S. Cl. 264—85 **15 Claims**

1. A process for preparing shaped articles of a rigid rod heterocyclic liquid crystalline polymer comprising:

(a) forming a reaction mixture comprising reactants for the formation of a polymer selected from the group consisting of poly [benzo(1,2-d:4,5-d')bisthiazole-2,6-diyl]-1,4-phenylene, its cis isomer, poly(p-phenylene benzobisimidazole), poly(p-phenylene benzobisoxazole), its trans isomer and mixtures thereof and a reaction medium selected from the group consisting of polyphosphoric acid, dehydrating phosphate acids, and mixtures thereof;

(b) polymerizing the reactants in the reaction mixture whereby a solution of said polymer is formed; and

(c) forming shaped articles directly from the polymer solution.

4,606,876

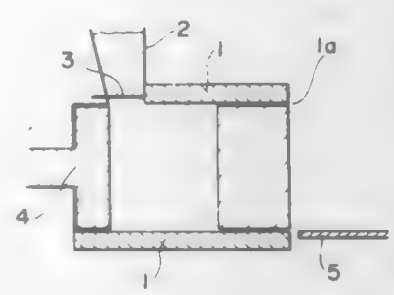
METHOD OF CONTINUOUSLY PRODUCING COMPRESSION MOLDED COAL

Hiroshi Yoshida; Noboru Ishihara, both of Chiba, and Shigeru Kuwashima, Narashino, all of Japan, assignors to Kawasaki Steel Corporation, Kobe, Japan

Continuation of Ser. No. 430,566, Sep. 30, 1982, abandoned. This application Oct. 16, 1984, Ser. No. 661,279

Int. Cl.[4] B29C *43/26*

U.S. Cl. 264—120 **2 Claims**



1. In a method of producing a continuous cake of compression molded coal for chamber type coke ovens comprising steps of charging raw material coking coal into a molding box, and pressurizing said raw material coking coal with a pressing plate to obtain compression molded coal and to push the compression molded coal out of the molding box through an outlet, the improvement wherein

the coking coal having a water content of more than 8.5% is charged into a chamber of the molding box at a side opposite the outlet,

said pressing plate in the chamber is so advanced in the molding box to compression mold the coking coal into the preceding compression molded coal at a pressure no more than about 100 Kg/cm^2 so that the molded coal has a bulk density of at least 1.0 wet ton/m^3, and to push the molded coal in the molding box toward the outlet,

the molded coal pressurized by the pressing plate partly remains in the molding box for supporting the coking coal freshly charged for the following cycle of the operation, and

said freshly charged coal is pressed by the pressing plate so that the subsequent molded coal is combined with the preceding compression molded coal and the preceding molded coal is pushed out of the molding box whereby by repeating said serial steps of the operation, continuous cake of compression molded coal is produced.

4,606,877

MONOMER-PLASTICIZED ELASTOMERS AND PROCESS FOR PRODUCING SAME

Parviz Hamed, Framingham, Mass., assignor to Stowe Woodward Company, Southborough, Mass.

Division of Ser. No. 626,711, Jul. 2, 1984, Pat. No. 4,530,944, which is a division of Ser. No. 422,278, Sep. 23, 1982, Pat. No. 4,485,198. This application Apr. 12, 1985, Ser. No. 722,374

Int. Cl.[4] B29B *13/00*

U.S. Cl. 264—271.1 **12 Claims**

1. A process to form a cover on a metal core comprising:

providing 100 parts by weight, solids basis, of a latex of an elastomeric polymer;

admixing 0.5–200 parts by weight of a polymerizable monomer with said latex;

coagulating the solids in said latex, said solids including said monomer and said elastomer polymer, said admixing and coagulating being effected with substantially no polymeri-

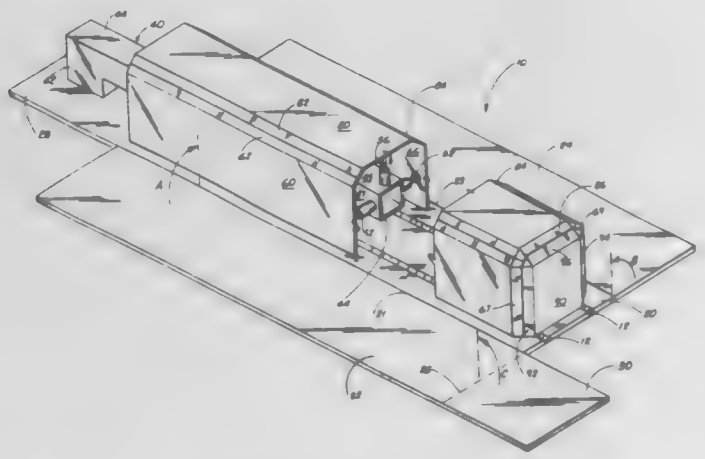
zation of said monomer and substantially no crosslinking of or grafting onto said elastomeric polymer;
separating said coagulated solids from the aqueous phase as a homogeneous non-crosslinked elastomeric composition;
compounding said non-crosslinked elastomeric composition with a vulcanizing agent for said elastomeric polymer and a polymerization initiator for said without polymerization and vulcanization monomer;
compounding with a filler;
shaping to form a cover on a metal core; and then the polymerization and vulcanization to cure the shaped product.

4,606,878

METHOD FOR CONSTRUCTING MODULAR PRE-CAST CONCRETE BUILDINGS

James D. Day, and James D. Day, II, both of 5001 S. Claiborne, both of New Orleans, La. 70125

Division of Ser. No. 499,650, May 31, 1983, Pat. No. 4,519,568. This application Feb. 4, 1985, Ser. No. 698,029
Int. Cl.[4] B28B *1/30, 13/06*
U.S. Cl. 264—308 **15 Claims**



1. The method of constructing a modular, pre-cast concrete building comprising:
(a) providing a mold for said building comprising an outer form and an inner form, said outer form being collapsible from its mold forming position and said inner form being retractable from its mold forming position;
(b) providing a first quantum of concrete to said mold so as to form a concrete base for said building;
(c) allowing said first quantum of concrete to cure;
(d) adding a second quantum of concrete to said mold to provide concrete side walls for said concrete building;
(e) allowing said second quantum of concrete providing said concrete side walls to cure;
(f) adding a third quantum of concrete to provide a concrete roof member to said concrete building;
(g) allowing said third quantum of concrete to cure;
(h) retracting said inner form to a position removed from said concrete walls of said building;
(i) collapsing said outer form;
(j) providing said building with support means for slidably supporting said building on said outer form;
(k) providing means attached to said building for slidably removing said building from said outer form; and
(l) slidably removing said building from said outer form by said means attached to said building while extruding said inner form from said building.

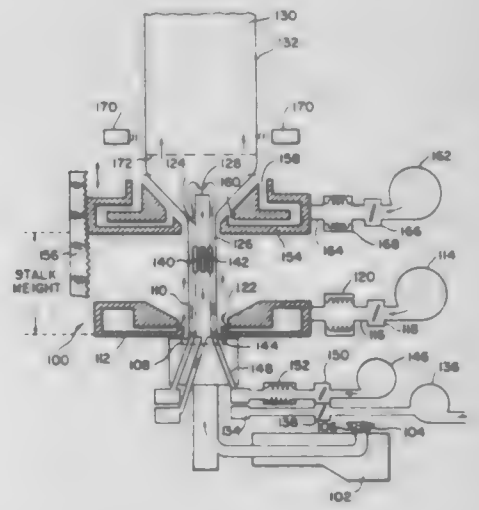
4,606,879

HIGH STALK BLOWN FILM EXTRUSION APPARATUS AND METHOD

Frank D. Cerisano, 23 Copley Ct., North Haledon, N.J. 07508

Filed Feb. 28, 1985, Ser. No. 706,517
Int. Cl.[4] B29C *47/88*
U.S. Cl. 264—565 **47 Claims**

1. An apparatus for forming a film of plastic material, said apparatus comprising supplying means for supplying plastic material in a flowable state, a die arranged in advance of said supplying means for forming a progressively advancing unexpanded tubular film having a substantially uniform first diameter along a longitudinal axis over a predetermined distance, a primary air ring arranged adjacent said die and exteriorly of said film, said primary air ring supplying a first gas stream over the exterior surface of said film, means for supplying a second gas stream over the interior surface of said film, a cylinder arranged interiorly of said film and extending from said die along said longitudinal axis over said predetermined distance, said cylinder and the interior surface of said film defining an annular region therebetween for receiving said second gas stream, controlling means for controlling said first and second gas streams over said unexpanded tubular film to stabilize said film over said predetermined distance by preventing the oscillation of said film about said cylinder, and a secondary air ring arranged spaced from said primary air ring and exteriorly of said film having said first diameter, the distance between said primary and said secondary air rings defining said predetermined distance over which said film is stabilized, said secondary air ring supplying a third gas stream over the exterior surface of said film for stabilizing and expanding said film from said first diameter to a second diameter thereat.



31. A method for forming a film of plastic material, said method comprising the steps of extruding a progressively advancing unexpanded tubular film having a substantially uniform first diameter about a cylinder arranged along a longitudinal axis over a predetermined distance, applying a first gas stream over the exterior surface of said film, applying a second gas stream over the interior surface of said film within an annular region formed between said cylinder and the interior surface of said film, controlling the velocity and volume flow rate of said first and second gas streams over said unexpanded tubular film over said predetermined distance for stabilizing said film, said stabilizing including applying said first gas stream at a sufficiently high velocity, low volume flow rate over the exterior surface of said film and said second gas stream at a sufficiently high velocity, low volume flow rate over the interior surface of said film to prevent the oscillation of said film about said cylinder, and applying a third gas stream over the exterior surface of said film having said first diameter adjacent the extent of said predetermined distance for stabilizing and expanding said film from said first diameter to a second diameter thereat.

4,606,880

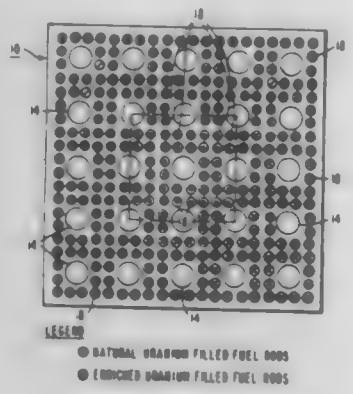
SYMMETRIC BLANKET NUCLEAR FUEL ASSEMBLY

John A. Penkrot, Baldwin Borough, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Oct. 22, 1984, Ser. No. 663,522
Int. Cl.[4] G21C *3/28*
U.S. Cl. 376—173 **7 Claims**

1. In a fuel assembly having a plurality of spaced-apart fuel rods, the combination comprising:

(a) a first group of said fuel rods containing natural uranium only; and
(b) a second group of said fuel rods constituting the remainder thereof containing enriched uranium only;
(c) said fuel rods of said first group being surrounded by said fuel rods of said second group in a predetermined symmetrical relationship;



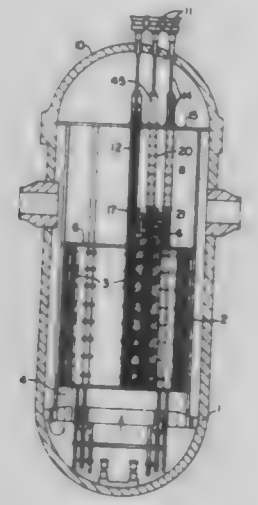
(d) said first group of said fuel rods forming an inner, centrally-located, generally squared pattern wherein the only fuel rods present in said inner squared pattern are said fuel rods of said first group;
(e) said second group of said fuel rods forming an outer, peripherally-located, generally squared annular pattern which surrounds said first group wherein the only fuel rods present in said outer squared pattern are said fuel rods of said second group.

4,606,881

UPPER INTERNAL EQUIPMENT OF A PRESSURIZED WATER NUCLEAR REACTOR

Jean-Paul Millot, Elancourt; Patrice Alibran, Paris; Guy Desfontaines, Puteaux, and Pol Dejeux, Nogent-sur-Marne, all of France, assignors to Framatome & Cie, Courbevoie, France

Filed Nov. 16, 1982, Ser. No. 442,213
Claims priority, application France, Dec. 4, 1981, 81 22753
Int. Cl.[4] G21C *7/00*
U.S. Cl. 376—353 **2 Claims**



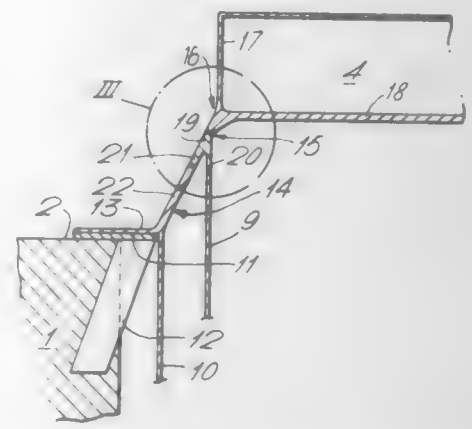
1. In a pressurized water reactor comprising
(a) a pressure vessel (1);
(b) a core (2) comprising a plurality of prismatic fuel assembles (3) arranged side by side and vertically;
(c) a horizontal upper core plate (6) located transverse relative to said vessel above said core;
(d) a plurality of control rods (12) each comprising a cluster of neutron absorbing rods associated with a drive mechanism (11) for moving said cluster vertically into and out of said core;
(e) a plurality of vertical guide tubes (8) resting on said upper core plate (6), attached at their upper ends to a support plate (15) joined to said upper core plate by spacers (16), each of said guide tubes being located vertically in alignment with one of said fuel assemblies (3);
(f) each of said guide tubes (8) having in an upper part thereof plates (20) located transversely at intervals and formed with perforations for discontinuous guiding of said neutron absorbing rods (12) and having in a lower part thereof sleeves having vertical channels aligned with said perforations for continuous guiding of said neutron absorbing rods;
the improvement consisting in the fact that each of said guide tubes (8) includes both
(g) a first set of said perforations and channels distributed for guiding said neutron absorbing rods (12), having a first predetermined distribution of a first type of said control rods; and
(h) a second set of said perforations and channels distributed for guiding the neutron absorbing rods (12) of a second type of said control rods, having a second predetermined distribution and diameter different from those of the control rods of the first type, said first set of perforations having a diameter different than said second set of perforations;
(i) where either of the two types of control rods may be selectively used in any one of said guide tubes of the reactor and respectively associated with each of two different types of said fuel assemblies having the same cross-section, only one of said types of control rods being in said guide tubes at any given time, one of said types of assemblies producing a thermal neutron spectrum in said core and the other of said types of assemblies producing an epithermal spectrum.

4,606,882

ROOF SUPPORT FOR LIQUID METAL COOLED FAST BREEDER NUCLEAR REACTOR

Garth J. Aspden, Bolton, and Graham Chesworth, Warrington, both of England, assignors to National Nuclear Corporation Limited, London, England

Filed Apr. 20, 1984, Ser. No. 602,450
Claims priority, application United Kingdom, Apr. 28, 1983, 8311673
Int. Cl.[4] G21C *1/01*
U.S. Cl. 376—463 **4 Claims**



1. In a liquid metal cooled fast breeder nuclear reactor having a double-walled steel tank comprising an inner vessel and an outer vessel,
a core disposed in a pool of liquid metal contained in the inner vessel, a vault in which said tank is supported, and a roof for said vault, the improvement comprising a conical support skirt supporting the roof, the lower edge of the conical support skirt being carried by a wall of the vault, a single roof member secured by a single annular weld to the upper extremity of the conical support skirt, the roof member incorporating a lower end wall and an outer cylindrical wall of the roof, a forked part included in an intermediate region of the conical support skirt and providing an inner annular skirt portion welded to the upper

end of the outer vessel wall, and an outer annular skirt portion welded to the upper end of the outer vessel wall.

4,606,883

METHOD OF MANUFACTURING A METALLIC COMPOSITE ARTICLE

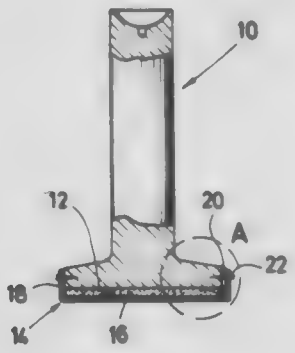
Kurt Wizemann; Hans Weisskopf, both of Stuttgart, and Peter Peppler, Weinstadt, all of Fed. Rep. of Germany, assignors to J. Wizemann GmbH & Co., Fed. Rep. of Germany

Filed Oct. 1, 1984, Ser. No. 656,493

Claims priority, application Fed. Rep. of Germany, Oct. 21, 1983, 3338298

Int. Cl.[4] B22F *7/00*

U.S. Cl. 419—8 **15 Claims**



1. A method of manufacturing a metallic composite article by coating a metallic surface area of a base member with a plating material forming a layer member, said method comprising:

arranging said plating material in a sheet-metal cap;

pressing said cap against said base member such that said plating material is held adjacent said metallic surface area to be coated in a cavity formed by the extension of said cap to areas of said base member surrounding said metallic surface area to be coated, said pressing substantially eliminating voids within the cavity;

welding the periphery of said cap to said surrounding areas of said base member, thereby closing said cavity on all sides so as to be gastight;

hot-isotatically pressing said base member, said plating material and said cap; and

removing said cap from said base member to expose said coated metallic surface area.

4,606,884

COMPOSITE BILLET FOR HOT TRANSFORMATION

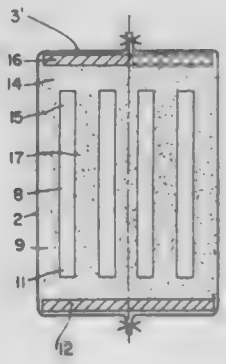
Jean Gavinet, Orsay, and Bruno Childeric, Grenoble, both of France, assignors to Microfusion, Gennevilliers and Commissariat a l'Energie Atomique, Paris, both of, France

Filed Jul. 3, 1984, Ser. No. 627,664

Claims priority, application France, Jul. 8, 1983, 83 11853

Int. Cl.[4] B22F *3/26*

U.S. Cl. 419—27 **21 Claims**



1. Process for making a composite billet for hot transformation, including at least one difficult to transform metal or alloy blank, arranged in a matrix of agglomerated metal powder, said matrix having a lower resistance to hot plastic deformation than that of said metal or alloy, comprising the following steps:

(a) packing down said metal powder around said blanks within a rigid cylindrical sheathing lined on its interior with a flexible sheathing which is longer than said rigid sheathing, to form a billet;

(b) closing said flexible sheathing around the ends of said billet under a vacuum, and removing said rigid cylindrical sheathing;

(c) compressing said closed, flexibly sheathed billet, causing at least partial agglomeration of said metal powder;

(d) removing said flexible sheathing from said at least partially agglomerated metal powder to obtain said billet for hot transformation.

4,606,885

HIGH PURITY COBALT ARTICLE

Michael J. Miller, and Martin B. MacInnis, both of Towanda, Pa., assignors to GTE Products Corporation, Stamford, Conn.

Filed Jun. 20, 1985, Ser. No. 746,702

Int. Cl.[4] B22F *1/00*

U.S. Cl. 419—39 **5 Claims**

1. In a process for recovery of cobalt from cobalt bearing material to obtain fine cobalt metal powder of high purity, the improvement comprising mechanically compacting said powder into a billet and sintering said billet in a hydrogen atmosphere at a sufficient temperature for a sufficient time to densify said billet and form a high purity cobalt article having an oxygen content of no greater than about 500 weight parts per million.

4,606,886

TITANIUM-BASE ALLOY

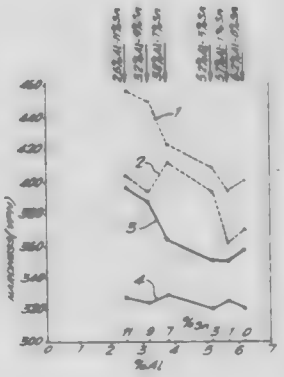
Donald F. Neal, Tamworth, England, assignor to IMI Titanium Limited, Birmingham, England

Filed Dec. 3, 1984, Ser. No. 677,481

Claims priority, application United Kingdom, Dec. 10, 1983, 8333043

Int. Cl.[4] C22C *14/00*

U.S. Cl. 420—419 **7 Claims**



1. A titanium alloy containing 5.35–5.65% aluminium, 3.0–3.75% tin, with a total aluminium equivalent, being the total percentage of aluminium in weight per cent plus one third of the total percentage of tin in weight per cent, in the range 6.1–6.8%, 4.5–7.5% zirconium, 1.5–3% molybdenum, 0.2–0.6% silicon, balance titanium apart from incidental impurities.

4,606,887

COBALT ALLOYS FOR THE PRODUCTION OF DENTAL PROTHESIS

Jürgen Hausselt, Langenselbold; Dieter Kaufmann, Birstein, and Udo Englisch, Rodenbach, all of Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed May 25, 1984, Ser. No. 614,140

Claims priority, application Fed. Rep. of Germany, May 28, 1983, 3319457

Int. Cl.[4] C22C *19/07*

U.S. Cl. 420—437 15 Claims

1. A cobalt alloy suitable for the production of fixed and removable dental constructions consisting essentially of 50 to 65 weight % cobalt, 15–22 weight % chromium, and 5–15 weight % tungsten, 3–7 weight % iron, 1–3 weight % aluminum, 0–5 weight % rhenium, and 0–2 weight % titanium, whereby the sum of the contents of chromium, tungsten, and rhenium is at least 27.5 weight % and at most 45 weight % and the sum of titanium and aluminum is at most 5 weight %.

4,606,888

INHIBITION OF GRAIN GROWTH IN NI_3AL BASE ALLOYS

Shyh-Chin Huang, Latham; Keh-Minn Chang, and Alan I. Taub, both of Schenectady, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Sep. 4, 1984, Ser. No. 646,879

The portion of the term of this patent subsequent to Oct. 23, 2001, has been disclaimed.

Int. Cl.[4] C22C *19/03*

U.S. Cl. 420—459 17 Claims

8. As a composition of matter, a fine grain alloy containing the following composition

$$(Ni_{0.76}Al_{0.24-a}X_a)_{89.75}Fe_{10}B_{0.25}$$

wherein X is selected from the group consisting of Re and Mo.

4,606,889

COPPER-TITANIUM-BERYLLIUM ALLOY

Sherwood Goldstein, Reading, and Paul J. Scherbner, deceased, late of Boyertown, both of Pa. (by Lillian Scherbner, executrix), assignors to Cabot Corporation, Boston, Mass.

Filed Nov. 7, 1985, Ser. No. 795,806

Int. Cl.[4] C22C *9/00*

U.S. Cl. 420—492 6 Claims

1. A moderate electrical conductivity alloy consisting essentially of, in weight percent, titanium 1.5 to 5.5, beryllium 0.1 to 0.7, aluminum up to 0.75, cobalt plus nickel up to 0.50, total iron, silicon, tin, calcium, lead, zirconium, magnesium and manganese up to 0.70, and the balance copper plus impurities, the ratio of titanium to beryllium being within 5 to 20:1.

4,606,890

PROCESS FOR CONDITIONING METAL SURFACES

Peter R. Fisk, Bradford, England, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Feb. 27, 1984, Ser. No. 584,055

Claims priority, application United Kingdom, Mar. 3, 1983, 8305932; Jun. 20, 1983, 8316670

Int. Cl.[4] C23F *11/16*

U.S. Cl. 422—15 16 Claims

1. A process for conditioning metal surfaces so as to inhibit corrosion thereon by treating said surfaces during contact with an aqueous system capable of corroding said metal surfaces, with a combination of an effective protective amount of (a) 2-hydroxy-phosphonoacetic acid or a water-soluble salt thereof; and (b) a metal ion which enhances, synergistically, the metal conditioning effected, individually, by 2-hydroxy-phosphonoacetic acid or water-soluble salt thereof and the metal ion, wherein said metal ion consists of at least one of ferrous, barium, calcium, zinc, chromium, strontium or cadmium ions.

4,606,891

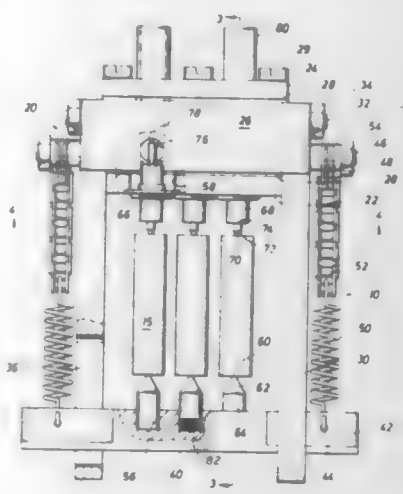
ELECTRODE HOLDER USEFUL IN A CORROSION TESTING DEVICE

Robert J. Murphy, Jr., Bellaire, and Dale E. Jamison, Humble, both of Tex., assignors to NL Industries, Inc., New York, N.Y.

Filed Jun. 28, 1984, Ser. No. 625,771

Int. Cl.[4] G01N *17/00;* B25B *1/20;* B01L *9/00;* C25D *17/08*

U.S. Cl. 422—53 5 Claims



1. A corrosion testing rack for testing a plurality of elongated, cylindrical electrodes of precisely known surface area constructed of a material whose corrosion characteristics are to be determined, comprising:

a first electrode mounting plate;

a plurality of first contact means, said first contact means disposed on said first mounting plate and including a conical portion for point contact with a first end of said cylindrical electrodes;

a second electrode mounting plate;

a plurality of insulating second contact means, said second contact means disposed on said second mounting plate in ■ configuration for cooperation with said first contact means and including a conical portion for point contact with a second end of said cylindrical electrodes;

two guides extending from opposite ends of said second mounting plate;

two spacing arms rigidly attached to said first mounting plate and including a slot for sliding cooperation with said guides;

two elongated, flexible chain members attached to opposite sides of said first mounting plate and extendable toward said second mounting plate, each of said chain members including a plurality of longitudinally spaced locations for attachment of a spring; and

two springs, one spring attached to each said guide and extending toward said first mounting plate for attachment at one of said locations on said chain members.

4,606,892

OZONE GENERATOR OF STACK-TYPE DESIGN, EMPLOYING ROUND PLATE-ELECTRODES

Bruno Bachhofer, Säntisstrasse 85, D-7981 Bavendorf, and Anton Locher, Bergstrasse 6, D-7981 Torkenweiler, both of Fed. Rep. of Germany

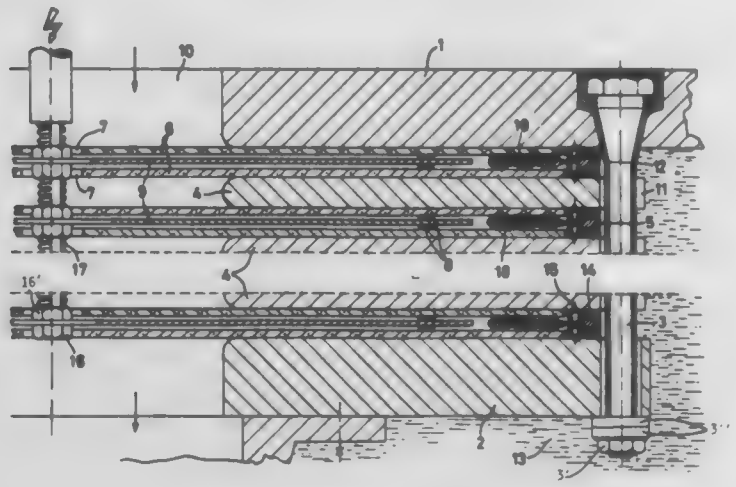
Filed Jun. 26, 1984, Ser. No. 624,705

Int. Cl.[4] B01J *19/08, 19/12*

U.S. Cl. 422—186.2 6 Claims

1. In an ozone generator composed of a plurality of circular, plate-shaped high-voltage electrodes arranged in a stack, the electrodes including at least two solid electrodes which are spaced from one another and a counter-electrode, the generator further being composed of two circular plates of insulating material disposed in the stack between the two solid elec-

trodes, with the counter-electrode being disposed between, and spaced from, the two plates to form therewith two discharge spaces, and with the outer diameter of the counter-electrode being less than that of the plates, and a ring clamped and squeezed between the plates in the vicinity of their peripheries, the improvement wherein said ring is of a gasket material



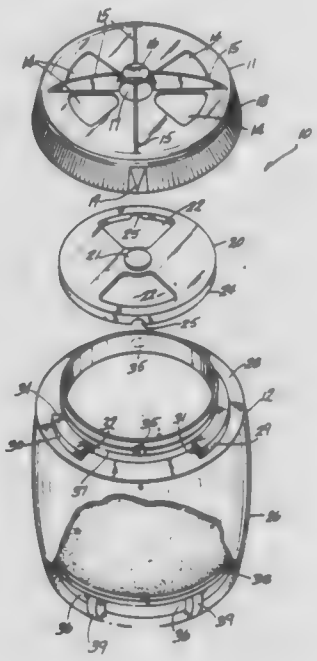
which is initially resilient and which is selected for increasing the dielectric strength, and inhibiting electrical break-down, in the radial direction of said circular plates between the periphery of said counter-electrode and said solid electrodes, and wherein said plates are rigidly supported against said two solid electrodes.

4,606,893

SWIMMING POOL CHEMICAL DISPENSER

Arlon G. Sangster, Sterling, Mass., assignor to Olin Corporation, Cheshire, Conn.

Filed Dec. 11, 1984, Ser. No. 680,625
Int. Cl.[4] B01D *11/00*
U.S. Cl. 422—265 **8 Claims**



1. A rotatably adjustable top, a ballast disk insertable into the top, and an open-topped container in a dispenser for dispensing a swimming pool chemical immersed in a body of water, comprising in combination:

(a) a generally circumferential neck portion on the container having a periphery;

(b) a deformable stop connected to the neck;

(c) a first rotation stop connected to the neck and extending about a portion of the periphery, the first rotation stop having a first rotation stop surface;

(d) a second rotation stop connected to the neck and extending about a portion of the periphery spaced apart from the first rotation stop, the second rotation stop having a first rotation stop surface and a second rotation stop surface;

(e) a first locking tab and a second generally diametrically opposed locking tab connected to the periphery, each locking tab being intermediate the first rotation stop and the second rotation stop;

(f) a locking lip fastened to the neck and extending about the periphery;

(g) a first disk locking recess and a second disk locking recess in the ballast disk cooperative with the first locking tab and the second locking tab to fix the ballast disk in position and prevent rotational movement between the open-topped container and the disk;

(h) at least one dispensing opening in the top to dispense dissolved pool chemical into the body of water;

(i) at least one dispensing opening in the ballast disk to dispense dissolved pool chemical into the body of water;

(j) a generally circumferential inner lip connected to the top surrounding the ballast disk;

(k) a retaining thread extending at least partially about the inner lip cooperative with the locking lip to permit the adjustable top to rotate about the neck and to prevent the rotatable top from being removed from the neck; and

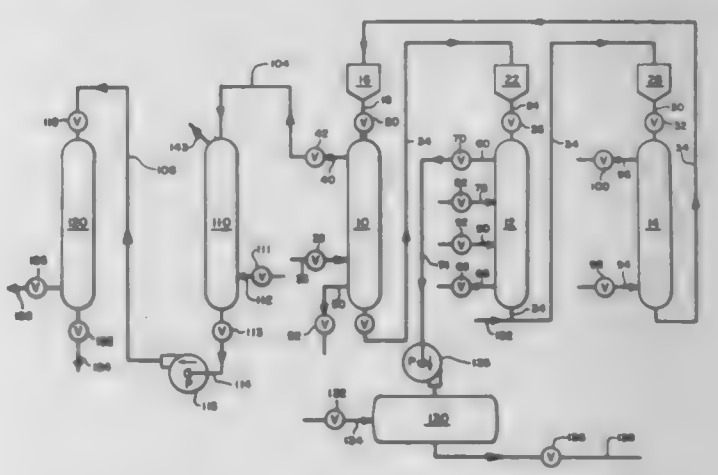
(l) a generally circumferential outer lip connected to the top spaced apart from the inner lip defining the exterior of the top having a straight detent and a spaced apart angled detent connected thereto, the straight detent and the angled detent positioned between the inner lip and the outer lip such that upon rotation the angled detent engages the deformable stop and upon application of a threshold amount of rotative force deforms the deformable stop to permit selective rotational movement in a first direction between the top and the ballast disk to uncover the at least one dispensing opening in the ballast disk with the at least one dispensing opening in the top until the straight detent engages the first rotation stop surface of the first rotation stop to thereby permit the dissolved pool chemical to be dispensed at a selectively controlled rate from the dispenser.

4,606,894

URANIUM RECOVERY FROM CARBONATE LEACH LIQUORS USING CARBOXYLIC ACID CATION EXCHANGE RESIN

Robert Kunin, Yardley, Pa., and Terrance LaTerra, Old Bridge, N.J., assignors to Ecodyne Corporation, Union, N.J.

Continuation of Ser. No. 190,992, Sep. 26, 1980, abandoned. This application Aug. 19, 1983, Ser. No. 524,223
Int. Cl.[4] C22B *60/02*
U.S. Cl. 423—7 **12 Claims**



1. A process for quantitatively recovering uranium from a carbonate solution including uranium ions, said carbonate solution having a pH in the range of from about 4.2 to about 9.8, the process comprising:

causing the carbonate solution including uranium ions to come in contact with a carboxylic acid cation exchange resin so that uranium cations are removed from solution and adsorbed by said resin; and

removing the uranium cations from the cation exchange resin.

4,606,895

ION EXCHANGE LOADING

James M. Paul, DeSoto, Tex., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Nov. 9, 1983, Ser. No. 549,932
Int. Cl.[4] C01G *43/00*
U.S. Cl. 423—7 17 Claims

1. A method for the recovery of uranium values from a pregnant uranium-containing carbonate lixiviant comprising the steps of:

(a) adding to said uranium-containing lixiviant from about 2 ppm to about 80 ppm by weight hydrogen peroxide which converts said uranium values from the $UO_2(CO_3)_3^{-4}$ species to $UO_2(CO_3)_2^{3-}$; and

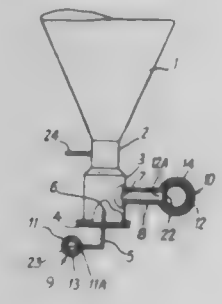
(b) passing said lixiviant from step (a) containing said converted species through an ion-exchange resin which conversion causes said resin to retain substantially increased amounts of uranium values therein.

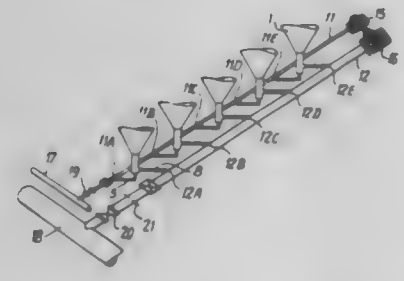
4,606,896

APPARATUS FOR SUPPLYING A CONTROLLED FLOW OF GAS TO A FLUIDIZED GRID

Jean C. Kita, Vermelles, and Roger M. Puff, Lens, both of France, assignors to Charbonnages de France, Paris, France

Filed Feb. 4, 1985, Ser. No. 697,940
Claims priority, application France, Feb. 7, 1984, 84 01861
Int. Cl.[4] F12B *15/10*
U.S. Cl. 432—58 3 Claims





1. Apparatus for supplying a gas to a gas circuit of the type having at least two spaced apart input orifices, the gas being supplied from a supply means, comprising:

an elongated hollow stator member having a predetermined length and connected at spaced points to said input orifices of said circuit,

an elongated hollow body disposed within said stator member and having a longitudinal axis, said body being movable in a circumferential direction about said axis relative to said stator member between a number of predetermined positions, said body having a surface having apertures therein arrayed so that, in at least one of said positions, no apertures register with any of said input orifices, in another of said positions, at least one of said apertures registers with one of said orifices and, in still another of said positions, each of said input orifices is in registry with one of said apertures, said body being in flow communication with said supply means;

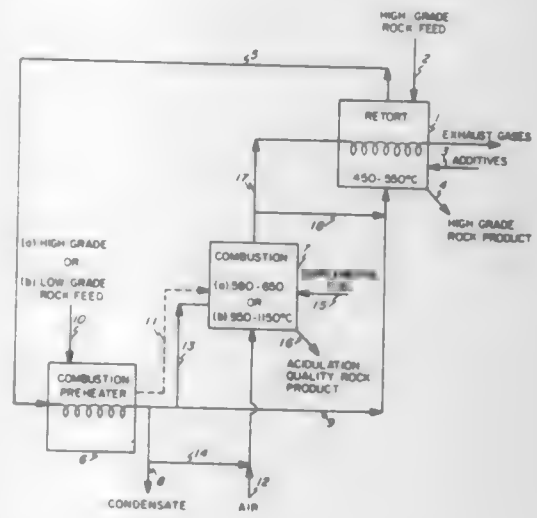
each input orifice being associated with another input orifice thereby forming a group comprising a pair, each said another input orifice being in flow communication with another elongated hollow stator member having a predetermined length and another elongated hollow body being disposed within said another stator member and having a longitudinal axis, said another body being movable in a circumferential direction about said axis relative to said another stator member between a number of predetermined positions, said another body having a surface having apertures therein arrayed so that, in at least one of said positions, no apertures register with any of said another input orifices and, in another of said positions, at least one of said apertures registers with at least one of said another input orifices, said another body being in flow communication with a separate supply means; said apparatus including a combustion grid means for fluidized granular material, said input orifices being for fluidizing gas and said another input orifices being for compressed gas.

4,606,897

METHOD TO IMPROVE ACIDULATION QUALITY OF IDAHO PHOSPHATE ROCK

Alexander D. Mair, Florence, Ala., assignor to Tennessee Valley Authority, Muscle Shoals, Ala.

Continuation of Ser. No. 710,772, Mar. 11, 1985, abandoned.
This application Apr. 29, 1985, Ser. No. 728,440
Int. Cl.[4] C01B *25/16*
U.S. Cl. 423—167 3 Claims



1. An improved process for effecting simultaneously the removal of substantially all of the congeneric organic matter and the formation of negligible sulfide in unaltered or partially altered phosphate ores of the type originating in the geological entity described as the Phosphoria Formation, as found, for example, in the southeastern portion of the State of Idaho and contiguous areas, thereby resulting in an intermediate phosphate ore product rendered eminently suitable for subsequent acidulation with sulfuric and/or phosphoric acids to produce improved wet-process phosphoric acids, which improved process comprises the steps of:

(a) introducing into a dynamic gaseous environment, said environment operating at a temperature ranging from about 450° C. to about 500° C. and under reducing conditions, a feed of said phosphate ores and maintaining said ores therein for a predetermined time sufficient to ensure that substantially all of the congeneric organic impurities therein are retorted therefrom,

(b) removing from said environment as a useful fuel by-product the resulting retorted organic impurities, and

(c) recovering from said environment the resulting thermally treated ores,

said improved process characterized by the fact that the congeneric organic impurity content of the resulting thermally treated intermediate phosphate ore product is reduced by at

least about one order of magnitude, and the sulfide content thereof is increased to less than about 0.05 percent by weight.

4,606,898

CONTROL OF SO_x EMISSION

Paul H. Lewis, Groves; Eugene P. Dai, Port Arthur, and Edward H. Holst, Nederland, all of Tex., assignors to Texaco Inc., White Plains, N.Y.

Continuation-in-part of Ser. No. 522,078, Aug. 11, 1983, abandoned. This application Jul. 8, 1985, Ser. No. 752,871

Int. Cl.[4] C01B *17/00;* **B01J** *8/00;* **C10G** *11/00, 11/02*

U.S. Cl. 423—244 **17 Claims**

1. A process for removing a gaseous sulfur component from a mixture of gases containing sulfur oxides which comprises

contacting said mixture of gases containing sulfur oxides at 800° F.–1500° F. with a composite containing a porous refractory support bearing as a first component (i) 0.5–10 w% of at least one of bismuth, or a rare earth metal and as a second component (ii) 0.4–10 w% of at least one alkali metal.

4,606,899

SYNTHESIS OF MAXIMUM ALUMINUM X ZEOLITES

Stephen A. Butter, and Steven M. Kuznicki, both of Allentown, Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Mar. 27, 1985, Ser. No. 716,426

Int. Cl.[4] C01B *33/28*

U.S. Cl. 423—328 **19 Claims**

1. A process for the synthesis of Maximum Aluminum X-type zeolite comprising the steps of:

(a) forming a mixture of from 2% to 50% calcined kaolin clays, said clays having a silicon to aluminum ratio of from 0.75:1 to 1.15:1, about 5% to 50% sodium and/or potassium hydroxide, and 40% to 90% water (all by weight);

(b) agitating said mixture at between about 45° C.–60° C. for about 1 to 24 hours; and

(c) recovering Maximum Aluminum X-type zeolite as a product.

19. An improved ion-exchange capacity zeolite, said zeolite having:

(a) A Silicon to Aluminum ratio of from 1.0 to 1.2;

(b) A unit cell constant (a_0) of about 25.0 Å;

(c) An X-ray powder diffraction pattern characterized by having at least the following five peaks

Order of XRD Peaks	hkl
1	111
2	751
3	642
4	533
5	331

4,606,900

METHOD OF PREPARING CRYSTALLINE ZEOLITIC ALUMINOSILICATES

Harmut Kacirek, Norderstedt, and Andreas Meyer, Hamburg, both of Fed. Rep. of Germany, assignors to Sud-Chemie Aktiengesellschaft, Munich, Fed. Rep. of Germany

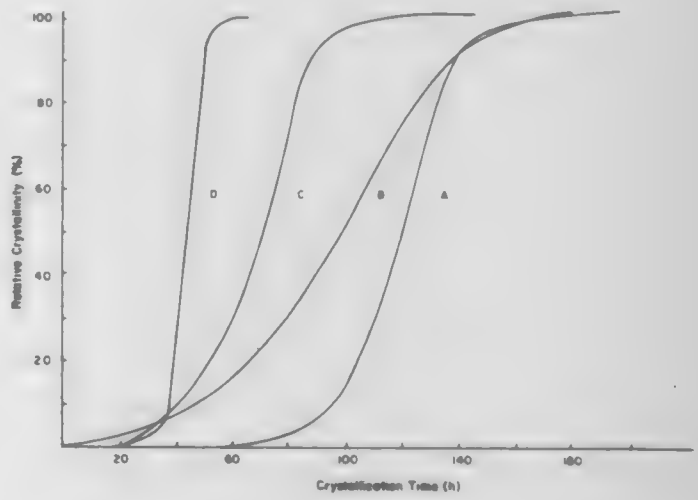
Filed Jan. 24, 1985, Ser. No. 694,536

Claims priority, application Fed. Rep. of Germany, Jan. 27, 1984, 3402842

Int. Cl.[4] C01B *33/28*

U.S. Cl. 423—329 **15 Claims**

1. In a method of preparing crystalline ZSM-5 or ZSM 11 zeolites with an atomic Si-to-Al ratio≧10 by hydrothermal crystallization from a reaction batch that contains SiO_2 and Al_2O_3 or their hydrated derivatives or alkali silicates and aluminates along with crystallization accelerators, in an aqueous and alkaline medium, the improvement wherein an aged but still X-ray amorphous aluminosilicate nucleating gel with



an atomic Si-to-Al ratio≧20 which has been aged at 15° to 100° C. from 2 to 100 days is added to the reaction batch as a crystallization accelerator.

4,606,901

DEAGGLOMERATION OF POROUS SILICEOUS CRYSTALLINE MATERIALS

Pochen Chu, West Deptford, N.J.; Albin Huss, Jr., Chadds Ford, and James C. Vartuli, West Chester, both of Pa., assignors to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 678,947, Dec. 6, 1984, abandoned, which is a division of Ser. No. 517,598, Jul. 27, 1983, Pat. No. 4,497,786. This application Dec. 5, 1985, Ser. No. 805,491

Int. Cl.[4] C01B *33/28*

U.S. Cl. 423—329 **12 Claims**

1. In a method for preparing a porous crystalline zeolite wherein a mixture containing sources of an alkali metal oxide, an oxide of silicon, an organic cation and water is maintained at a temperature until said zeolite is crystallized and said zeolite is subsequently separated from said mixture, the improvement comprising:

(a) after crystallization is complete, and prior to separating said zeolite, adding to said mixture an aqueous basic solution of a compound selected from the group consisting of alkali metal hydroxides, ammonium hydroxide and amines;

(b) contacting said zeolite with said added basic solution for a period of time sufficient to effect deagglomeration of said zeolite and

(c) recovering from said mixture a crystalline zeolite.

4,606,902

PROCESS FOR PREPARING REFRACTORY BORIDES AND CARBIDES

Joseph J. Ritter, Mt. Airy, Md., assignor to The United States of America as represented by the Secretary of Commerce, Washington, D.C.

Filed Oct. 3, 1985, Ser. No. 783,503

Int. Cl.[4] C01B *31/36, 35/04;* **C04B** *35/52, 35/58*

U.S. Cl. 423—345 **17 Claims**

1. A method for the preparation of a refractory boride or carbide which comprises contacting a metal chloride, said metal chloride undergoing reduction on reaction with an alkali metal, or silicon tetrachloride with boron trichloride or carbon tetrachloride in a solvent unreactive with said alkali metal and said chlorides in the presence of an alkali metal, said metal chloride or silicon tetrachloride and said boron trichloride or carbon tetrachloride being present in an amount about stoichiometrically equivalent to the boride or carbide to be prepared and said alkali metal being present in an amount about stoichiometrically equivalent to the amount of chloride in said

metal chloride or silicon tetrachloride and said boron trichloride or carbon tetrachloride, until the aforesaid chlorides present have reacted with the alkali metal to form alkali metal chloride, separating the solvent to leave a solid residue containing a metal boride, silicon carbide or metal carbide precursor together with the alkali metal chloride, and heating the residue at about 700°–900° C. while separating the alkali metal chloride until the said precursor is converted to the refractory boride or carbide.

4,606,903

MEMBRANE SEPARATION OF UNCOVERTED CARBON FIBER PRECURSORS FROM FLUX SOLVENT AND/OR ANTI-SOLVENT

Mahmoud M. Hafez, and Laura E. Black, both of Sarnia, Canada, assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Apr. 27, 1984, Ser. No. 603,029
Int. Cl.⁴ D01F *9/12*
U.S. Cl. 423—447.4 **13 Claims**

1. A method for separating flux solvent and/or pitch anti-solvent from a mixture comprising the flux solvent and/or anti-solvent and unconverted carbon fiber precursors dissolved in said flux solvent and/or anti-solvent which method comprises contacting said mixture with one side of an asymmetric membrane selected from asymmetric polyimide membranes under reverse osmosis conditions comprising a pressure at least sufficient to overcome the osmotic pressure of the flux solvent and/or anti-solvent and a temperature of about 0° to 100° C. so as to separate the mixture into a flux solvent and/or anti-solvent rich permeate stream and an unconverted carbon fiber precursor rich-flux solvent and/or anti-solvent lean retentate stream.

4,606,904

APPARATUS FOR THE MANUFACTURE OF CALCINED ALUMINUM FLUORIDE

Arankathu Skaria, Stäfa; Reiner Stark, Ebmatingen, and Hans P. Schenkel, Forch, all of Switzerland, assignors to Swiss Aluminium Ltd., Chippis, Canada

Division of Ser. No. 315,009, Oct. 26, 1981. This application Nov. 12, 1985, Ser. No. 796,925
Claims priority, application Switzerland, Nov. 6, 1980, 8233/80; Nov. 6, 1980, 8234/80
Int. Cl.⁴ C01B *9/08*
U.S. Cl. 423—489 **4 Claims**

1. An apparatus for use in the production of dust-free aluminum fluoride from aluminum fluoride hydrates comprising:
drying means for partially dehydrating the aluminum fluoride hydrate;
separating means for separating out the fines of the partially dehydrated aluminum fluoride hydrate from the partially dehydrated aluminum fluoride hydrate;
heating means for completely dehydrating and calcining said partially dehydrated aluminum fluoride hydrate; and
mixing means for mixing the fines of the partially dehydrated aluminum fluoride hydrate with a metastable aluminum fluoride solution so as to coarsen said fines.

4,606,905

CYCLIC PROCESS FOR HYDROGEN PEROXIDE PRODUCTION

Pierre Thirion, Sassenage, France, assignor to L'Air Liquide, Paris, France

Filed Jan. 7, 1981, Ser. No. 223,115
Claims priority, application France, Jan. 14, 1980, 80 00707
Int. Cl.⁴ C01B *15/02*
U.S. Cl. 423—588 **12 Claims**

1. In a process for manufacturing hydrogen peroxide in an aluminum apparatus which comprises reducing a quinone compound, oxidizing the resulting hydroquinone compound, separating the hydrogen peroxide formed, and introducing into the organic working solution an aqueous solution of a stabilizer agent to stabilize the resultant reaction products within the oxidizer, the improvement wherein said stabilizing agent consists essentially of diethylene triamino pentamethylene phosphonic acid.

4,606,906

PROCESS OF SYNTHESIZING MIXED BAO-TiO_2 BASED POWDERS FOR CERAMIC APPLICATIONS

Joseph J. Ritter, Mt. Airy; Robert S. Roth, Silver Spring, and Taki Negas, Frederick, all of Md., assignors to The United States of America as represented by the Secretary of Commerce, Washington, D.C.

Filed Nov. 15, 1984, Ser. No. 671,539
Int. Cl.⁴ C01G *23/04*; C04B *35/46*
U.S. Cl. 423—598 **18 Claims**

1. A process for synthesizing single phase crystalline $Ba_2Ti_9O_{20}$ powders comprising the steps of:
(a) dissolving barium oxide in a first lower alkyl alcohol in a dry atmosphere to form a barium alkoxide solution;
(b) dissolving a titanium alkoxide in a second lower alkyl alcohol in a dry atmosphere to form a titanium alkoxide solution;
(c) combining said barium alkoxide solution and said titanium alkoxide solution in a dry atmosphere to form a mixed barium-titanium alkoxide system wherein the molar ratio of barium to titanium in said mixed system is approximately 2:9;
(d) subjecting said mixed barium-titanium alkoxide system to hydrolysis at a reflux temperature of between 70° C. and 90° C. to form a precipitate;
(e) separating said precipitate and drying said precipitate; and
(f) heating said precipitate at a temperature of between 700° C. and 1100° C. for approximately between 15–20 hours to form a crystalline, single phase of $Ba_2Ti_9O_{20}$.

13. A process for synthesizing single phase crystalline $BaTi_5O_{11}$ powders comprising the steps of:
(a) dissolving barium oxide in a first lower alkyl alcohol to form a barium alkoxide solution;
(b) dissolving a titanium alkoxide in a second lower alkyl alcohol to form a titanium alkoxide solution;
(c) combining said barium alkoxide solution and said titanium alkoxide solution to form a mixed barium-titanium alkoxide system wherein the molar ratio of barium to titanium in said mixed system is approximately one to five;
(d) stirring said mixed barium-titanium alkoxide system to form a first precipitate;
(e) heating said mixed barium-titanium alkoxide system containing said first precipitate at a reflux temperature of between 70° C. and 90° C. for between 15–20 hours to dissolve said first precipitate and form a second precipitate;
(f) subjecting said mixed barium-titanium alkoxide system containing said second precipitate to hydrolysis to form a precursor;
(g) separating and drying said second precipitate; and
(h) calcining said precipitate at between 700° C. and 1100° C. for a period of between 15 and 20 hours to form a crystalline, single phase of $BaTi_5O_{11}$.

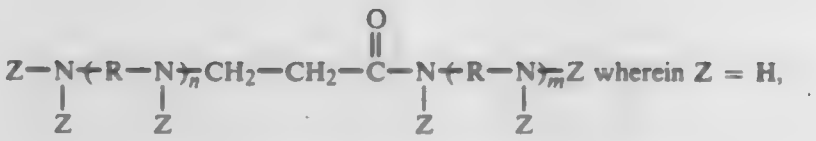
4,606,907

BONE SEEKING TC-99M COMPLEXES OF PHOSPHONATE DERIVATIVES OF POLYAMIDOAMINES

Jaime Simón, Angleton, Tex.; Wynn A. Volkert, Columbia, Mo., and David A. Wilson, Richwood, Tex., assignors to The Dow Chemical Company, Midland, Mich.

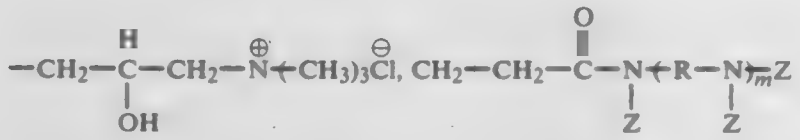
Filed Jul. 2, 1984, Ser. No. 626,816
Int. Cl.⁴ A61K *43/00, 49/00, 49/02*
U.S. Cl. 424—1.1 **19 Claims**

1. A bone seeking complex of a radioactive nuclide and a polymer having the structural formula



wherein Z = H,





and wherein the acid groups can be in the form of alkali, alkaline earth or ammonium salts, R and R′ are saturated hydrocarbon residues having from 1 to 6 and 1 to 4 carbon atoms, respectively, and m and n are 0 to 10 and wherein at least about ⅔ of Z's are $R'PO_3H_2$.

4,606,908

METHODS AND COMPOSITIONS FOR PLASMA AND ORGAN IMAGING

James B. Bassingthwaighte; Stephen E. Little, and Kenneth A. Krohn, all of Seattle, Wash., assignors to Washington Research Foundation, Seattle, Wash.

Filed Oct. 4, 1983, Ser. No. 538,852
Int. Cl.⁴ A61K *43/00, 49/00*
U.S. Cl. 424—1.1 **9 Claims**

1. A method for concentrating a radioactive label in a functioning mammalian organ, which comprises: introducing into the arterial flow of said organ a fluid containing a radioactive halogenated desmethylimipramine in an amount sufficient for said radioactive dibenzazepine to become bound to said organ.

4,606,909

PHARMACEUTICAL MULTIPLE-UNITS FORMULATION

Helle Bechgaard, Hellerup, and Peter Houmoller, Taastrup, both of Denmark, assignors to A/S Alfred Benzon, Copenhagen, Denmark

Continuation of Ser. No. 524,465, Aug. 18, 1983, abandoned, which is a continuation of Ser. No. 328,538, Dec. 8, 1981, abandoned. This application Jun. 20, 1984, Ser. No. 622,393
Claims priority, application Denmark, Nov. 20, 1981, 5164/81
Int. Cl.⁴ A61K *9/22, 9/24, 9/28*
U.S. Cl. 424—21 **18 Claims**

1. A pharmaceutical oral controlled release multiple-units formulation, comprising a multiplicity of individual units;

(a) each unit comprising a cross-sectionally substantially homogeneous core coated, in an amount of from 2–25% of the total weight of the core, with an enteric coating which is substantially insoluble at a pH below 7 but soluble in the small intestine, the enteric coating comprising a material selected from the group consisting of acrylic polymers, shellac, cellulose acetate esters, polyvinyl acetate esters, hydroxypropylmethyl cellulose esters, alkyleneglycolether esters, N-butylacrylate-maleic anhydride copolymers, isobutylacrylate-maleic anhydride copolymers and ethylacrylate-maleic anhydride copolymers; and

(b) each core being constituted of a multiplicity of particles having average sizes of about 1–10 μm, each of which particles contains:

(i) a sparingly soluble active substance selected from the group consisting of indomethacin, spironolactone, ibuprofen, furosemide, sulfadiazine, sulfamerazine, progesterone, reserpine, pyrvinium embonate, mofebutazone, hydrochlorothiazide, tetracycline, tolbutamide, acetaminophen, testosterone, valporic acid, estradiol, acetazolamide, erythromycin, iron salts, hydralazine, carbamazepine, quinidine, and cardiac glycosides, in an amount of from 10–90% by weight of the particle; and

(ii) a readily soluble, dispersion-enhancing substance, in an amount of up to 10% by weight of the active substance, for increasing exposure of the active substance to intestinal fluids, the dispersion-enhancing substance being an anionic surfactant selected from the group consisting of sodium salts of fatty alcohol sulfates, sulfosuccinates, partial fatty acid esters of sorbitans, and partial fatty acid esters of polyhydroxyethylene sorbitans and polyhydroxyethylene fatty alcohol ethers;

the active substance and the dispersion-enhancing substance being co-comminuted with one another to form said particles, and the particles being admixed with a disintegration-enhancing substance comprising (1) a material which is readily soluble in intestinal fluids and is selected from the group consisting of saccharose, glucose, mannitol, sorbitol and lactose, (2) an insoluble material selected from the group consisting of talc, aluminum silicate, zinc oxide, titanium dioxide, colloidal silica and magnesium trisilicate, and (3) mixtures thereof, in an amount of at least 20% by weight of the particles.

4,606,910

COMPOSITE HEMOSTATIC ARTICLE INCLUDING A HEMOSTATIC AGENT ONLAY AND METHODS FOR PREPARING THE SAME

Philip N. Sawyer. Brooklyn, N.Y., assignor to Interface Biomedical Laboratories, Brooklyn, N.Y.

Filed Jun. 28, 1984, Ser. No. 625,986
Int. Cl.⁴ A61L *15/00, 17/00*
U.S. Cl. 424—28 **18 Claims**

1. A method comprising incorporating a first hemostatic agent into a porous body to form a hemostatic material, preparing a second hemostatic agent with at least a portion thereof in liquid phase, affixing an onlay of said second hemostatic agent to said material by freezing the liquid portion of said second hemostatic agent to said material whereby to form an onlaid hemostatic article, and drying said article.

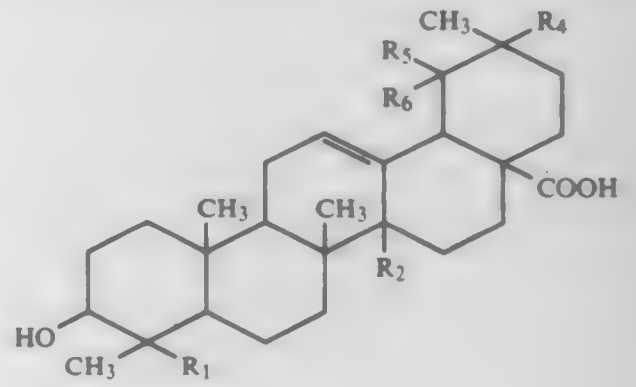
4,606,911

PHARMACEUTICAL COMPOSITION FOR THE PREVENTION OF DENTAL CARIES

Shin'ichi Hayashi, Osaka; Akiyoshi Yoshida, Nara; Shigeru Kametaka, and Tetsuo Koike, both of Osaka, all of Japan, assignors to Rohto Pharmaceutical Co. Ltd., Osaka, Japan

Filed Jul. 15, 1985, Ser. No. 754,300
Claims priority, application Japan, Jul. 27, 1984, 59-158164
Int. Cl.⁴ A61K *7/16, 31/215, 31/19*
U.S. Cl. 424—49 **8 Claims**

1. A pharmaceutical composition for the prevention of dental caries which comprises an anti-caries effective amount of one or more pentacyclic acid triterpene of the formula



wherein

R_1 is CH_3, CHO or CH_2OH,
R_2 is CH_3 or COOH,
R_4 is H, CH_3 or $COOCH_3$,
R_5 is H, CH_3 or OH, and

metal chloride or silicon tetrachloride and said boron trichloride or carbon tetrachloride, until the aforesaid chlorides present have reacted with the alkali metal to form alkali metal chloride, separating the solvent to leave a solid residue containing a metal boride, silicon carbide or metal carbide precursor together with the alkali metal chloride, and heating the residue at about 700°–900° C. while separating the alkali metal chloride until the said precursor is converted to the refractory boride or carbide.

4,606,903

MEMBRANE SEPARATION OF UNCOVERTED CARBON FIBER PRECURSORS FROM FLUX SOLVENT AND/OR ANTI-SOLVENT

Mahmoud M. Hafez, and Laura E. Black, both of Sarnia, Canada, assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Apr. 27, 1984, Ser. No. 603,029
Int. Cl.[4] D01F *9/12*
U.S. Cl. 423—447.4 **13 Claims**

1. A method for separating flux solvent and/or pitch anti-solvent from a mixture comprising the flux solvent and/or anti-solvent and unconverted carbon fiber precursors dissolved in said flux solvent and/or anti-solvent which method comprises contacting said mixture with one side of an asymmetric membrane selected from asymmetric polyimide membranes under reverse osmosis conditions comprising a pressure at least sufficient to overcome the osmotic pressure of the flux solvent and/or anti-solvent and a temperature of about 0° to 100° C. so as to separate the mixture into a flux solvent and/or anti-solvent rich permeate stream and an unconverted carbon fiber precursor rich-flux solvent and/or anti-solvent lean retentate stream.

4,606,904

APPARATUS FOR THE MANUFACTURE OF CALCINED ALUMINUM FLUORIDE

Arankathu Skaria, Stäfa; Reiner Stark, Ebmatingen, and Hans P. Schenkel, Forch, all of Switzerland, assignors to Swiss Aluminium Ltd., Chippis, Canada

Division of Ser. No. 315,009, Oct. 26, 1981. This application Nov. 12, 1985, Ser. No. 796,925
Claims priority, application Switzerland, Nov. 6, 1980, 8233/80; Nov. 6, 1980, 8234/80
Int. Cl.[4] C01B *9/08*
U.S. Cl. 423—489 **4 Claims**

1. An apparatus for use in the production of dust-free aluminum fluoride from aluminum fluoride hydrates comprising:
drying means for partially dehydrating the aluminum fluoride hydrate;
separating means for separating out the fines of the partially dehydrated aluminum fluoride hydrate from the partially dehydrated aluminum fluoride hydrate;
heating means for completely dehydrating and calcining said partially dehydrated aluminum fluoride hydrate; and
mixing means for mixing the fines of the partially dehydrated aluminum fluoride hydrate with a metastable aluminum fluoride solution so as to coarsen said fines.

4,606,905

CYCLIC PROCESS FOR HYDROGEN PEROXIDE PRODUCTION

Pierre Thirion, Sassenage, France, assignor to L'Air Liquide, Paris, France

Filed Jan. 7, 1981, Ser. No. 223,115
Claims priority, application France, Jan. 14, 1980, 80 00707
Int. Cl.[4] C01B *15/02*
U.S. Cl. 423—588 **12 Claims**

1. In a process for manufacturing hydrogen peroxide in an aluminum apparatus which comprises reducing a quinone compound, oxidizing the resulting hydroquinone compound, separating the hydrogen peroxide formed, and introducing into the organic working solution an aqueous solution of a stabilizer agent to stabilize the resultant reaction products within the oxidizer, the improvement wherein said stabilizing agent consists essentially of diethylene triamino pentamethylene phosphonic acid.

4,606,906

PROCESS OF SYNTHESIZING MIXED BAO-TIO_2 BASED POWDERS FOR CERAMIC APPLICATIONS

Joseph J. Ritter, Mt. Airy; Robert S. Roth, Silver Spring, and Taki Negas, Frederick, all of Md., assignors to The United States of America as represented by the Secretary of Commerce, Washington, D.C.

Filed Nov. 15, 1984, Ser. No. 671,539
Int. Cl.[4] C01G *23/04;* C04B *35/46*
U.S. Cl. 423—598 **18 Claims**

1. A process for synthesizing single phase crystalline $Ba_2Ti_9O_{20}$ powders comprising the steps of:
(a) dissolving barium oxide in a first lower alkyl alcohol in a dry atmosphere to form a barium alkoxide solution;
(b) dissolving a titanium alkoxide in a second lower alkyl alcohol in a dry atmosphere to form a titanium alkoxide solution;
(c) combining said barium alkoxide solution and said titanium alkoxide solution in a dry atmosphere to form a mixed barium-titanium alkoxide system wherein the molar ratio of barium to titanium in said mixed system is approximately 2:9;
(d) subjecting said mixed barium-titanium alkoxide system to hydrolysis at a reflux temperature of between 70° C. and 90° C. to form a precipitate;
(e) separating said precipitate and drying said precipitate; and
(f) heating said precipitate at a temperature of between 700° C. and 1100° C. for approximately between 15–20 hours to form a crystalline, single phase of $Ba_2Ti_9O_{20}$.

13. A process for synthesizing single phase crystalline $BaTi_5O_{11}$ powders comprising the steps of:
(a) dissolving barium oxide in a first lower alkyl alcohol to form a barium alkoxide solution;
(b) dissolving a titanium alkoxide in a second lower alkyl alcohol to form a titanium alkoxide solution;
(c) combining said barium alkoxide solution and said titanium alkoxide solution to form a mixed barium-titanium alkoxide system wherein the molar ratio of barium to titanium in said mixed system is approximately one to five;
(d) stirring said mixed barium-titanium alkoxide system to form a first precipitate;
(e) heating said mixed barium-titanium alkoxide system containing said first precipitate at a reflux temperature of between 70° C. and 90° C. for between 15–20 hours to dissolve said first precipitate and form a second precipitate;
(f) subjecting said mixed barium-titanium alkoxide system containing said second precipitate to hydrolysis to form a precursor;
(g) separating and drying said second precipitate; and
(h) calcining said precipitate at between 700° C. and 1100° C. for a period of between 15 and 20 hours to form a crystalline, single phase of $BaTi_5O_{11}$.

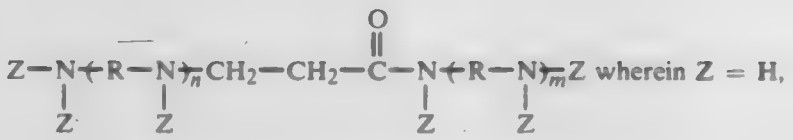
4,606,907

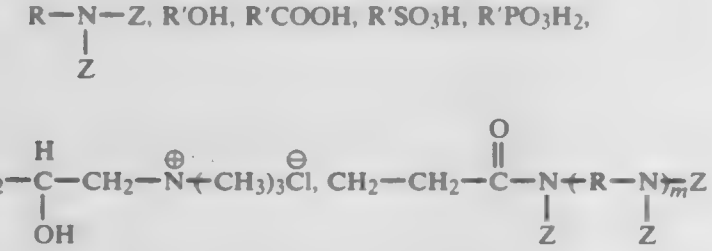
BONE SEEKING TC-99M COMPLEXES OF PHOSPHONATE DERIVATIVES OF POLYAMIDOAMINES

Jaime Simón, Angleton, Tex.; Wynn A. Volkert, Columbia, Mo., and David A. Wilson, Richwood, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Jul. 2, 1984, Ser. No. 626,816
Int. Cl.[4] A61K *43/00, 49/00, 49/02*
U.S. Cl. 424—1.1 **19 Claims**

1. A bone seeking complex of a radioactive nuclide and a polymer having the structural formula





and wherein the acid groups can be in the form of alkali, alkaline earth or ammonium salts, R and R′ are saturated hydrocarbon residues having from 1 to 6 and 1 to 4 carbon atoms, respectively, and m and n are 0 to 10 and wherein at least about ⅔ of Z's are $R'PO_3H_2$.

4,606,908

METHODS AND COMPOSITIONS FOR PLASMA AND ORGAN IMAGING

James B. Bassingthwaighte; Stephen E. Little, and Kenneth A. Krohn, all of Seattle, Wash., assignors to Washington Research Foundation, Seattle, Wash.

Filed Oct. 4, 1983, Ser. No. 538,852
Int. Cl.[4] A61K *43/00, 49/00*
U.S. Cl. 424—1.1 9 Claims

1. A method for concentrating a radioactive label in a functioning mammalian organ, which comprises: introducing into the arterial flow of said organ a fluid containing a radioactive halogenated desmethylimipramine in an amount sufficient for said radioactive dibenzazepine to become bound to said organ.

4,606,909

PHARMACEUTICAL MULTIPLE-UNITS FORMULATION

Helle Bechgaard, Hellerup, and Peter Houmoller, Taastrup, both of Denmark, assignors to A/S Alfred Benzon, Copenhagen, Denmark

Continuation of Ser. No. 524,465, Aug. 18, 1983, abandoned, which is a continuation of Ser. No. 328,538, Dec. 8, 1981, abandoned. This application Jun. 20, 1984, Ser. No. 622,393
Claims priority, application Denmark, Nov. 20, 1981, 5164/81
Int. Cl.[4] A61K *9/22, 9/24, 9/28*
U.S. Cl. 424—21 18 Claims

1. A pharmaceutical oral controlled release multiple-units formulation, comprising a multiplicity of individual units;

(a) each unit comprising a cross-sectionally substantially homogeneous core coated, in an amount of from 2–25% of the total weight of the core, with an enteric coating which is substantially insoluble at a pH below 7 but soluble in the small intestine, the enteric coating comprising a material selected from the group consisting of acrylic polymers, shellac, cellulose acetate esters, polyvinyl acetate esters, hydroxypropylmethyl cellulose esters, alkyleneglycolether esters, N-butylacrylate-maleic anhydride copolymers, isobutylacrylate-maleic anhydride copolymers and ethylacrylate-maleic anhydride copolymers; and

(b) each core being constituted of a multiplicity of particles having average sizes of about 1–10 μm, each of which particles contains:

(i) a sparingly soluble active substance selected from the group consisting of indomethacin, spironolactone, ibuprofen, furosemide, sulfadiazine, sulfamerazine, progesterone, reserpine, pyrvinium embonate, mofebutazone, hydrochlorothiazide, tetracycline, tolbutamide, acetaminophen, testosterone, valporic acid, estradiol, acetazolamide, erythromycin, iron salts, hydralazine, carbamazepine, quinidine, and cardiac glycosides, in an amount of from 10–90% by weight of the particle; and

(ii) a readily soluble, dispersion-enhancing substance, in an amount of up to 10% by weight of the active substance, for increasing exposure of the active substance to intestinal fluids, the dispersion-enhancing substance being an anionic surfactant selected from the group consisting of sodium salts of fatty alcohol sulfates, sulfosuccinates, partial fatty acid esters of sorbitans, and partial fatty acid esters of polyhydroxyethylene sorbitans and polyhydroxyethylene fatty alcohol ethers;

the active substance and the dispersion-enhancing substance being co-comminuted with one another to form said particles, and the particles being admixed with a disintegration-enhancing substance comprising (1) a material which is readily soluble in intestinal fluids and is selected from the group consisting of saccharose, glucose, mannitol, sorbitol and lactose, (2) an insoluble material selected from the group consisting of talc, aluminum silicate, zinc oxide, titanium dioxide, colloidal silica and magnesium trisilicate, and (3) mixtures thereof, in an amount of at least 20% by weight of the particles.

4,606,910

COMPOSITE HEMOSTATIC ARTICLE INCLUDING A HEMOSTATIC AGENT ONLAY AND METHODS FOR PREPARING THE SAME

Philip N. Sawyer, Brooklyn, N.Y., assignor to Interface Biomedical Laboratories, Brooklyn, N.Y.

Filed Jun. 28, 1984, Ser. No. 625,986
Int. Cl.[4] A61L *15/00, 17/00*
U.S. Cl. 424—28 18 Claims

1. A method comprising incorporating a first hemostatic agent into a porous body to form a hemostatic material, preparing a second hemostatic agent with at least a portion thereof in liquid phase, affixing an onlay of said second hemostatic agent to said material by freezing the liquid portion of said second hemostatic agent to said material whereby to form an onlaid hemostatic article, and drying said article.

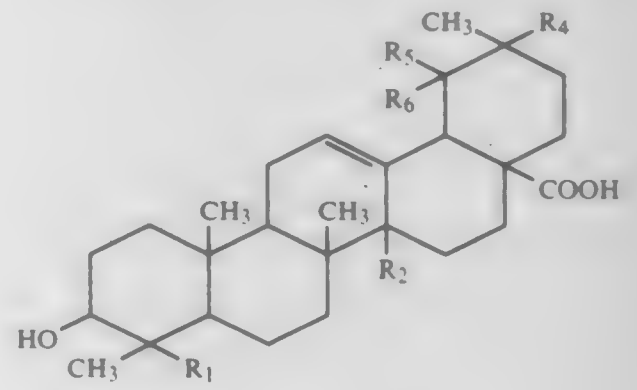
4,606,911

PHARMACEUTICAL COMPOSITION FOR THE PREVENTION OF DENTAL CARIES

Shin'ichi Hayashi, Osaka; Akiyoshi Yoshida, Nara; Shigeru Kametaka, and Tetsuo Koike, both of Osaka, all of Japan, assignors to Rohto Pharmaceutical Co. Ltd., Osaka, Japan

Filed Jul. 15, 1985, Ser. No. 754,300
Claims priority, application Japan, Jul. 27, 1984, 59-158164
Int. Cl.[4] A61K *7/16, 31/215, 31/19*
U.S. Cl. 424—49 8 Claims

1. A pharmaceutical composition for the prevention of dental caries which comprises an anti-caries effective amount of one or more pentacyclic acid triterpene of the formula



wherein

R_1 is CH_3, CHO or CH_2OH,
R_2 is CH_3 or COOH,
R_4 is H, CH_3 or $COOCH_3$,
R_5 is H, CH_3 or OH, and

R_6 is H, CH_3 or OH

and pharmaceutically acceptable salts thereof and a pharmaceutically acceptable carrier.

4,606,912

METHOD OF MAKING A CLEAR, STABLE AQUEOUS MOUTHWASH SOLUTION AND THE SOLUTION MADE BY THAT METHOD FOR THE ENHANCEMENT OF CELLS OF THE ORAL CAVITY AND THE REMINERALIZATION OF TEETH

Michael A. Rudy, Rochester, N.Y., and Vincent F. Lisanti, North Bergen, N.J., assignors to Caries Research Group of Rochester, Inc., Rochester, N.Y.

Continuation-in-part of Ser. No. 286,107, Jul. 22, 1981, abandoned. This application Sep. 8, 1982, Ser. No. 415,970

Int. Cl.[4] A61K *7/16, 7/18, 7/22, 33/16*

U.S. Cl. 424—52 **17 Claims**

1. A method of making a clear, stable, aqueous mouthwash solution capable of remineralizing caries lesions in teeth which comprises forming a stable, aqueous solution containing a source of calcium ions in an amount therapeutically effective to produce said remineralizing of caries lesions in teeth and a chelating agent for calcium ions, causing the chelation of at least 50% of the calcium ions by preparing a clear, aqueous solution of the chelating agent having an alkaline pH, then adding the source of calcium to said clear, aqueous solution of the chelating agent, and then adjusting the pH to an alkaline pH, and subsequently adding a source of phosphate ions to said aqueous solution.

4,606,913

HIGH INTERNAL PHASE EMULSIONS

Michael P. Aronson, Valley Cottage, and Michael F. Petko, Bronx, both of N.Y., assignors to Lever Brothers Company, New York, N.Y.

Continuation of Ser. No. 945,752, Sep. 25, 1978, abandoned. This application Dec. 14, 1979, Ser. No. 103,768

Int. Cl.[4] A61K *7/021, 7/32, 9/10*

U.S. Cl. 424—59 **43 Claims**

1. An improved high-internal-phase emulsion of the type comprising an aqueous phase, an oil phase and an emulsifier, the improvement comprising:

an amount sufficient to increase the stability of said emulsion of an electrolyte selected from the group consisting of potassium sulfate and magnesium sulfate contained in said aqueous phase

thereby providing for increased stability of said emulsion.

4,606,914

COSMETIC COMPOSITION

Ryota Miyoshi, Iwatsuki, Japan, assignor to Miyoshi Kasei Co., Ltd., Saitama, Japan

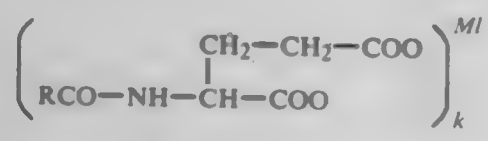
Filed Sep. 30, 1982, Ser. No. 428,811

Claims priority, application Japan, Oct. 26, 1981, 56-171110

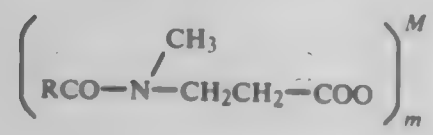
Int. Cl.[4] A61K *7/021*

U.S. Cl. 424—63 **7 Claims**

1. A cosmetic composition containing a pigment or an extender pigment the surfaces of which are coated with 0.5–10 weight %, based on the weight of said pigment or extender pigment, of metal salt of N-acylamino acid selected from the group consisting of (I), (II) and (III):

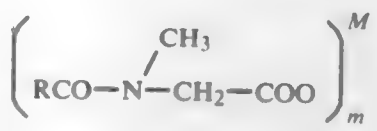


(I)



(II)

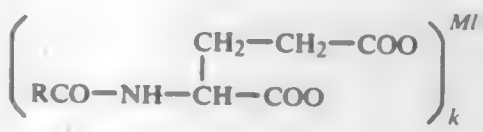
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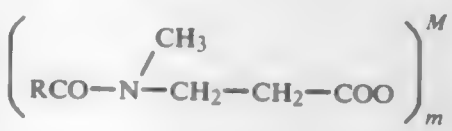
(III)

wherein RCO denotes a residue of capric acid, lauric acid, myristic acid, palmitic acid, stearic acid, or oleic acid; M denotes aluminum atom, magnesium atom, calcium atom, zinc atom, zirconium atom, or titanium atom; k is an integer of 1 to 3; l is an integer of 1 to 2; and m is an integer of 1 to 4; in combination with cosmetically acceptable ingredients.

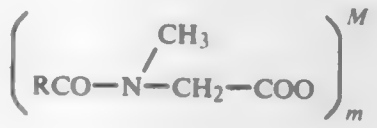
6. In a cosmetic composition wherein an amino acid is employed as an emulsifier or dispersing agent, the improvement comprising employing as the amino acid a water-insoluble metal salt of N-acylamino acid selected from the group consisting of (I), (II) and (III):



(I)



(II)



(III)

wherein RCO denotes a residue of capric acid, lauric acid, myristic acid, palmitic acid, stearic acid, or oleic acid; M denotes aluminum atom, magnesium atom, calcium atom, zinc atom, zirconium atom, or titanium atom; k is an integer of 1 to 3; l is an integer of 1 to 2; and m is an integer of 1 to 4.

4,606,915

ANTIPERSPIRANT COMBINATION CONTAINING AN ALUMINUM HALOHYDRATE AND A STANNIC HALIDE

Allan H. Rosenberg, Randolph, and Leonard Weintraub, Millburn, both of N.J., assignors to Bristol-Myers Company, New York, N.Y.

Filed Apr. 23, 1981, Ser. No. 256,649

Int. Cl.[4] A61K *7/34, 7/38*

U.S. Cl. 424—68 **16 Claims**

1. An antiperspirant combination corresponding to the empirical composition:

$$[Al_2(OH)_5X.nH_2O]_a.[SnY_4.n'H_2O]_b.[\text{Neutral Amino Acid}]_c$$

wherein:

(a) X and Y are halogen;

(b) n and n′ are numbers from 0 to 6;

(c) the ratio by weight of a/b is from about 0.3 to about 1.8; and

(d) the ratio by weight of c/b is from 0 to about 1.3.

4,606,916

QUATERNARY OXALKYLATED POLYESTERS, A PROCESS FOR THEIR PREPARATION AND THEIR USE

Manfred Hofinger, Burgkirchen; Alwin Reng, Kelkheim, and Jochen M. Quack, Eppstein, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

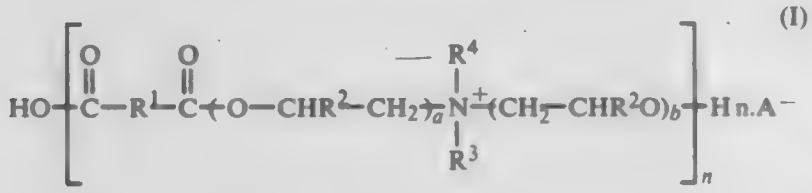
Filed Dec. 12, 1984, Ser. No. 680,982

Claims priority, application Fed. Rep. of Germany, Dec. 14, 1983, 3345156

Int. Cl.[4] A61K *7/06, 7/08;* C07C *67/08, 69/34*

U.S. Cl. 424—70 6 Claims

1. A quaternary oxalkylated polyester of the formula



(I)

in which

R^1 is an alkylene radical of the formula $-(CH_2)_m-$ in which m denotes an integer from 1 to 8, said alkylene radical being optionally substituted with 1 or 2 OH groups, or is a vinylene radical of a p-phenylene radical,

R^2 is H or CH_3,

R^3 denotes an alkyl radical or alkenyl radical having 8 to 23 carbon atoms,

R^4 denotes a methyl radical or an ethyl radical or a radical of the formula $-(CH_2CHR^2O)_c-H$ in which c is a whole or fractional number from 1 to 3 and R^2 has the above meaning,

A^- denotes the anion of a carboxylic acid having 2 to 6 carbon atoms, of a hydroxycarboxylic acid having 2 to 6 carbon atoms and 1 to 3 OH groups, or denotes the methosulfate, ethosulfate, chloride or hydrogen phosphate anion,

a and b are identical or different and are a whole or fractional number from 1 to 10, and

n is a whole or fractional number which can assume values from 5 to 60.

6. A method for conditioning human hair which comprises shampooing or rinsing the hair with an effective amount of a quaternary oxalkylated polyester of the formula I as claimed in claim 1.

4,606,917

SYNERGISTIC ANTIVIRAL COMPOSITION

Deborah A. Eppstein, Los Altos, Calif., assignor to Syntex (U.S.A) Inc., Palo Alto, Calif.

Filed Oct. 3, 1984, Ser. No. 656,221

Int. Cl.[4] A61K *45/02;* C12P *21/00*

U.S. Cl. 424—85 6 Claims

1. A composition comprising an effective amount of human β-interferon(ser 17) and 9-(1,3-dihydroxy-2-propoxymethyl)-guanine or a pharmaceutically acceptable salt thereof.

4,606,918

POLYOXYPROPYLENE-POLYOXYETHYLENE BLOCK POLYMER BASED ADJUVANTS

Anthony C. Allison, Belmont, and Noelene E. Byars, Sunnyvale, both of Calif., assignors to Syntex (U.S.A.) Inc., Palo Alto, Calif.

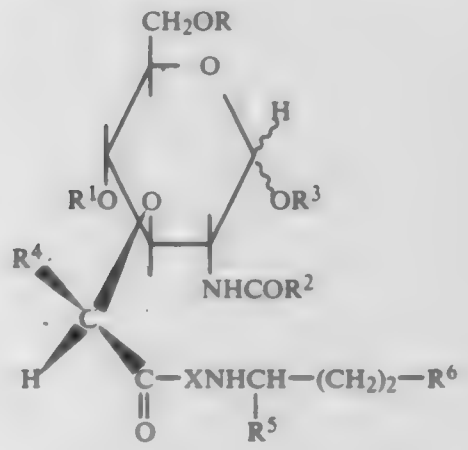
Filed Aug. 22, 1983, Ser. No. 525,190

Int. Cl.[4] A61K *39/39*

U.S. Cl. 424—88 15 Claims

1. A method for enhancing the immunogenicity of an antigen which method comprises forming a multi-phase system by mixing an antigen with an adjuvant composition comprising:

an immunopotentiating amount of an immunostimulating glycopeptide, wherein said glycopeptide is a compound of the formula



(I)

wherein R and R_1 are the same or different and are hydrogen or an acyl radical containing from 1 to 22 carbon atoms;

R_2 is an unsubstituted or substituted alkyl radical containing from 1 to 22 carbon atoms, or an unsubstituted or substituted aryl radical containing from 6 to 10 carbon atoms;

R_3 is hydrogen, alkyl, or aryl of 7 to 10 carbon atoms;

R_4 is hydrogen or alkyl of 1 to 6 carbon atoms;

X is an aminoacyl moiety selected from the group consisting of alanyl, valyl, leucyl, isoleucyl, α-aminobutyryl, threonyl, methionyl, cysteinyl, glutamyl, glutaminyl, aspartyl, phenylalanyl, tyrosyl, tryptophanyl, lysyl, ornithinyl, arginyl, histidyl, asparginyl, prolyl, hydroxylprolyl, seryl, or glycyl;

R_5 denotes a carboxyl group or a carboxyl group esterified with a lower alkanol, or the carbamoyl group, which, on the nitrogen atom, is unsubstituted or mono-substituted or di-substituted by alkyl, aryl, aralkyl, alkylidene, or carbamoylmethyl; and

R_6 denotes a carboxyl group or a carboxyl group esterified with a lower alkanol, or the carbamoyl group, which, on the nitrogen atom, is unsubstituted or mono-substituted or di-substituted by alkyl, aryl, aralkyl, alkylidene, or carbamoylmethyl; and

a multi-phase-forming amount of a non-toxic polyoxypropylenepolyoxyethylene block polymer which is liquid over a temperature range between about 15°–40° C., and which has a polyoxypropylene base with molecular weight between about 2250 and 4300, and which has polyoxyethylene in an amount between about 1 and 30%, in an amount of 0.2 to 49% by volume (v/v);

a multi-phase-stabilizing amount of a glycol ether-based surfactant in an amount between 0.05 to 2.5% by volume (v/v); and

buffered isoosmotic saline in a quantity sufficient to make volume; and

administering said multi-phase system to a bird or mammal.

4,606,919

VACCINE FOR THE TREATMENT OF URINARY TRACT INFECTIONS CONTAINING ALUMINUM PHOSPHATE

Ljubinko Stojkovic; Rodmila Pavic, both of Basel, and Vera Spasojevic, Augst, all of Switzerland, assignors to Solco Basel AG, Basel, Switzerland

Filed Aug. 30, 1985, Ser. No. 772,130

Claims priority, application Switzerland, Aug. 31, 1984, 4181/84

Int. Cl.[4] A61K *39/02*

U.S. Cl. 424—92 12 Claims

1. A vaccine for curative and prophylactic treatment of urinary tract infections in humans, which comprises (1) inactivated bacteria which originate from cultures of 8 to 14 uropathogenic bacteria strains isolated from the urine of a person suffering from an infection of the urinary tract, of the species: *Escherichia coli, Klebsiella pneumoniae, Proteus mirabilis, Proteus morganii* and *Streptococcus faecalis,* and are present in an

amount of about 50 million to 500 million germs of each strain per ml, one half to three quarters of the strains used belonging to the *Escherichia coli* species, and (2) aluminum phosphate in colloidal form in an amount of 1.5 to 10 mg of $AlPO_4$ per ml, suspended in a sterile isotonic solution.

4,606,920

PHARMACEUTICAL COMPOSITION SUITABLE FOR TREATMENT OF INFLAMMATORY CHANGES OF THE BRONCHIAL MUCOSA

Hans-Peter Walter, Ludwig-Thoma-Strasse 29a, 8022 Grünwald, Fed. Rep. of Germany

Filed Mar. 2, 1984, Ser. No. 585,514

Claims priority, application Fed. Rep. of Germany, Mar. 2, 1983, 3307382

Int. Cl.[4] A01K *31/52, 31/355, 31/07*

U.S. Cl. 424—154 **2 Claims**

1. A pharmaceutical composition in unit dosage form for the treatment of inflammatory changes and diseases of the bronchial mucosa comprising of between 100 and 200 mg of etofylline; vitamin A up to about 50,000 I.U. and between 50 and 70 mg of magnesium.

4,606,921

PROCESS FOR IMPROVING THE FLAVOR AND AROMA OF INSTANT COFFEE

Richard T. Liu, Worthington, Ohio, assignor to Nestec S. A., Vevey, Switzerland

Continuation of Ser. No. 156,166, Jun. 3, 1980, abandoned. This application Mar. 22, 1982, Ser. No. 360,422

Int. Cl.[4] A23F *5/28*

U.S. Cl. 426—386 **21 Claims**

1. A process for separating volatile aromatics from roasted and ground coffee beans which comprises:

(a) wetting and extracting the roasted and ground coffee beans with an aqueous extraction medium and withdrawing an extract at a temperature below 100° C. at essentially atmospheric pressure;

(b) passing aromatics-laden gases evolved by the wetting step and the extract through a separation chamber wherein the aromatics-laden gases evolved by the wetting step and aromatics-laden gases entrained within the extract are separated from the extract while maintaining the extract at a temperature below 100° C. and at essentially atmospheric pressure;

(c) passing the separated aromatics-laden gases through at least two condensers wherein the first condenser condenses and removes water from the aromatics-laden gases and the last condenser is maintained at a temperature of from about 0° C. to 5° C. to condense volatile aromatics entrained with the aromatics-laden gases; and then

(d) collecting the condensed volatile aromatics.

4,606,922

COOK-IN MEAT PACKAGING

Henry G. Schirmer, Spartanburg, S.C., assignor to W. R. Grace & Co., Cryovac Div., Duncan, S.C.

Filed Apr. 21, 1983, Ser. No. 485,323

Int. Cl.[4] B65B *29/08*

U.S. Cl. 426—412 **8 Claims**

1. A method for enhancing yield of a cook-in packaged meat product, comprising:

(a) providing an adhering cook-in container including a flexible thermoplastic envelope being substantially conformable to a contained meat product and having an inner meat contacting surface of an ionomer of a metal salt neutralized copolymer of an olefin and a carboxylic acid, said ionomer, while positioned as the inner surface of a flattened tube, having been treated with ionizing radiation to a dosage sufficient to cause bonding with a meat product positioned in contact therewith during cooking of said meat product;

(b) conforming said container about a selected meat product; and

(c) cooking the packaged product, whereupon said inner surface bonds to said meat product to substantially prevent cook-out of fluids therefrom.

4,606,923

METHOD FOR EMBOSSING DOUGH RESULTING IN THE CONTROL OF BLISTERING, TASTE, AND TEXTURE OF FRIED PIZZA CRUSTS

Roy R. Ricke, Salina, Kans., assignor to Schwan's Sales Enterprises, Inc., Marshall, Minn.

Continuation of Ser. No. 522,316, Aug. 12, 1983, abandoned, which is a continuation-in-part of Ser. No. 413,878, Sep. 1, 1982, abandoned. This application Sep. 16, 1985, Ser. No. 776,568

Int. Cl.[4] A21D *6/00*

U.S. Cl. 426—496 **20 Claims**

1. A method of embossing dough, to control delamination during frying to improve taste and blister regularity, which comprises forming in a dough sheet, a plurality of elongated compressed zones in a grid-like pattern, wherein about 6 to 12% of the surface area of the dough is formed into the elongated compressed zones and the depth of the elongated compressed zone comprises about 6 to 12% of the original depth, wherein at the point where the grid lines would intersect the dough remains uncompressed, and wherein the elongated compressed zones substantially define a plurality of adjacent, compressed zone-sharing, uncompressed blister-forming zones.

4,606,924

METHOD FOR PREPARING FOOD PRODUCT

Fausto C. Mendoza, Calzada San Esteban Num. 57, Naucalpan de Jaurez, Estado de Mexico, Mexico

Filed Dec. 12, 1984, Ser. No. 680,744

Claims priority, application Mexico, Dec. 16, 1983, 10944

Int. Cl.[4] A21D *10/00*

U.S. Cl. 426—549 **9 Claims**

1. A method of making a cooked food product comprising the steps of:

mixing fat and water to form an emulsion wherein the emulsion has the water as its continuous phase and the fat as its dispersed phase;

thoroughly mixing the emulsion with about an equal weight amount of flour until the emulsion and flour are thoroughly mixed to form a dough;

initially baking said dough at a first temperature for a first duration sufficient to evaporate the water in said dough whereby pores are formed in the dough; and

subsequently baking said initially baked dough at a second temperature lower than said first temperature for a second duration longer than said first duration to completely cook the food product.

4,606,925

FLAVORING WITH ALKYL-SUBSTITUTED CYCLOHEXYL AND CYCLOHEXENYL CARBOXYLIC ACIDS

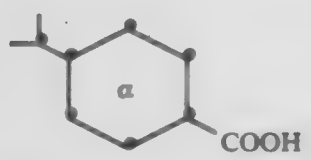
Martin Rohr, Glen Rock; N. Peter Vallone, Westwood, and Cormack Flynn, Ramsey, all of N.J., assignors to Givaudan Corporation, Clifton, N.J.

Filed Dec. 6, 1982, Ser. No. 446,933

Int. Cl.[4] A23L *1/226*

U.S. Cl. 426—538 **3 Claims**

1. A method for improving the flavor of a flavor composition or a foodstuff which comprises adding thereto an effective amount of a substantially pure compound of the formula



wherein the dotted line designated by α represents an optional bond, said effective amount being sufficient to impart a spicy flavor to said flavor composition or foodstuff.

4,606,926

PROCESS FOR PREPARING BUTTER-LIKE SPREAD

Robert Wiles, and Roger Lane, both of Shropshire, England, assignors to Milk Marketing Board, Surrey, England

Continuation of Ser. No. 540,858, Oct. 11, 1983, abandoned. This application Feb. 25, 1985, Ser. No. 705,405
Claims priority, application United Kingdom, Oct. 15, 1982, 8229484

Int. Cl.⁴ A23D *3/02*

U.S. Cl. 426—603 **8 Claims**

1. In a process for producing a butter-like spread by blending dairy cream with triglycerides of non-dairy origin the improvement wherein the blend is churned to form a butter-like spread which is separated from an aqueous phase, the proportions of said cream and triglycerides of non-dairy origin are such that the triglycerides of non-dairy origin represent at least 35% by weight of the total fat content of the spread and wherein the solid fat content of said triglycerides of non-dairy origin is such that the blend of cream and triglycerides of non-dairy origin is suitable for churning at 5° to 10° C. and the proportion of triglycerides of non-dairy origin and its solid fat content are matched with the composition of said cream to produce a spread having a spreadability corresponding with a penetrometer load of less than 800 g when tested at 5° C. by a constant speed penetrometer using a cone angle of 45°, a penetration depth of 7 mm and a rate of 1 mm/sec.

4,606,927

ARTICLE IDENTIFICATION

Ronald L. Jones, 3929 Twilight, #212, Topeka, Kans. 66614

Filed Aug. 10, 1983, Ser. No. 521,935
Int. Cl.⁴ B41M *3/14*

U.S. Cl. 427—7 **8 Claims**

1. The method of making identifiable an article with identifiers that are visually distinguishable under magnification comprising the steps of dispersing a multiplicity of identifiers that are uniquely visually distinguishable in a transparent liquid of adhesive character, applying a sufficiently large portion of the liquid dispersion to include at least one of the identifiers dispersed therein to a limited area of the surface of the article for adhesion thereto, and thereafter hardening the liquid portion to a solid, whereby the included identifier is bound to the article and encased by a transparent solid.

4,606,928

VORTEX EFFECT ELECTROSTATIC FLUIDIZED BED COATING METHOD AND APPARATUS

William J. Dunford, Watertown, and Bedrich Hajek, New Haven, both of Conn., assignors to Electrostatic Technology Incorporated, New Haven, Conn.

Filed Mar. 7, 1985, Ser. No. 708,989
Int. Cl.⁴ B05D *1/24*

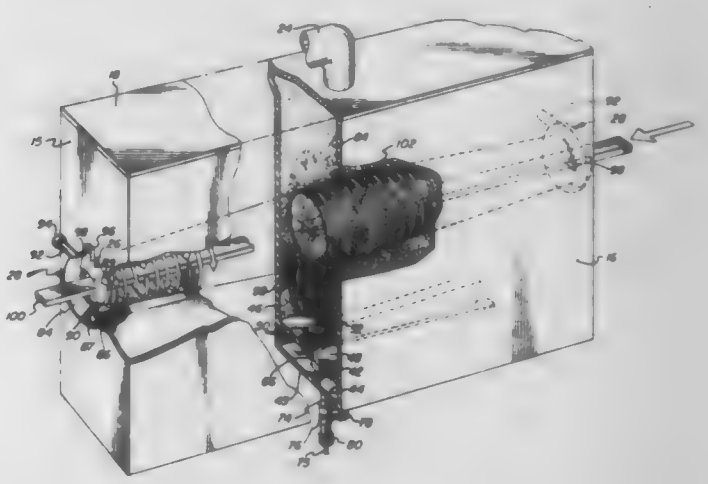
U.S. Cl. 427—32 **24 Claims**

12. In a method for producing a coating upon a workpiece, the steps comprising:

(a) producing a primary cloud of electrostatically charged particles in a coating chamber;

(b) causing a gas to flow along a generally helical path through said primary cloud to produce a secondary, generally tubular cloud of entrained charged particles therewithin; and

(c) conveying a workpiece, at an electrical potential effectively opposite to the charge on said particles, along a travel path through and aligned substantially axially with said secondary cloud, whereby said entrained particles will be attracted by an deposited upon said workpiece.



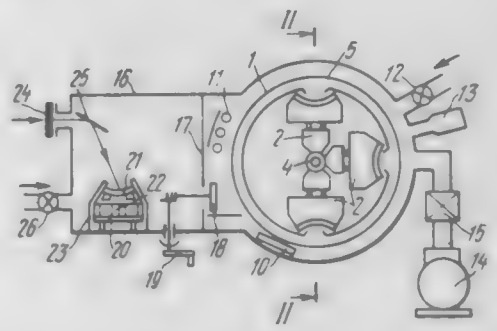
4,606,929

METHOD OF IONIZED-PLASMA SPRAYING AND APPARATUS FOR PERFORMING SAME

Vladimir P. Petrakov, ulitsa Sotsialisticheskaya, 27, kv. 2, Ufa; Gennady P. Minkin, ulitsa Trifonovskaya, 11, kv. 286, Moscow; Vladimir A. Shagun, ulitsa Musorgskogo, 19/1, kv. 52, Ufa; Pavel S. Balykin, ulitsa Entuziastov, 1, kv. 212, Ufa; David I. Barklon, ulitsa Kommunisticheskaya, 16, kv. 41, Ufa, and Vladimir A. Domrachev, ulitsa Sotsialisticheskaya, 47, kv. 64, Ufa, all of U.S.S.R.

Filed Aug. 27, 1985, Ser. No. 769,889
Claims priority, application U.S.S.R., Dec. 20, 1984, 3821669
Int. Cl.⁴ B05D *1/08*

U.S. Cl. 427—34 **4 Claims**



1. A method of ionized-plasma spraying, including the steps of loading an article into a vacuum chamber; pumping out active gases from said vacuum chamber to a pre-evacuation level; cutting off the pump having been operated for the pre-evacuation; leaking an inert gas into said vacuum chamber; pumping out active gases from said vacuum chamber to attain the working pressure; spraying a coating onto said article in the inert gas atmosphere, and after the application of the coating onto said article terminating the pumping out of active gases from said vacuum chamber and leaking air thereinto, the subsequent evacuation of air from said vacuum chamber being effected to a pressure of 6 to 66 Pa.

2. An apparatus for performing a method of ionized-plasma spraying, comprising a vacuum chamber; at least one source of ionized-plasma spraying, accommodated in said vacuum chamber; means for accommodating articles to be coated, received within said vacuum chamber; a pre-evacuation pump connected to said vacuum chamber through a cutoff valve; a high evacuation unit including a magnetron pump connected with said vacuum chamber through another cutoff valve; a leak for letting air into said vacuum chamber; an inert gas leak con-

nected to said magnetron pump, said magnetron pump being associated with means for monitoring the residual atmosphere.

4,606,930

METHOD FOR TREATING FIBERS

Katsuji Ueno, Hirakata; Hiroaki Sugimoto, Takatsuki, and Kazuo Hayatsu, Ibaraki, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Feb. 25, 1985, Ser. No. 704,760

Claims priority, application Japan, Mar. 2, 1984, 59-40834; Mar. 2, 1984, 59-40835

Int. Cl.⁴ B05D *3/06*

U.S. Cl. 427—40 **3 Claims**

1. A method for treating fibers which comprises modifying the surface of a fiber of a wholly aromatic polyester which shows anistropy in the molten state by subjecting the fiber to a low-temperature plasma irradiation.

4,606,931

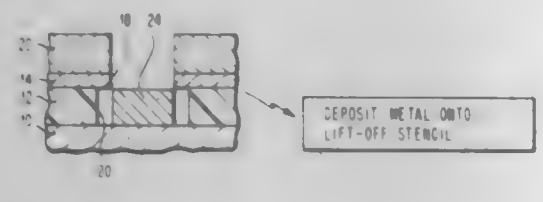
LIFT-OFF MASKING METHOD

Beverly L. Olsen, Brookfield, Conn., and Augustus C. Ouano, Santa Cruz, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 27, 1983, Ser. No. 508,210

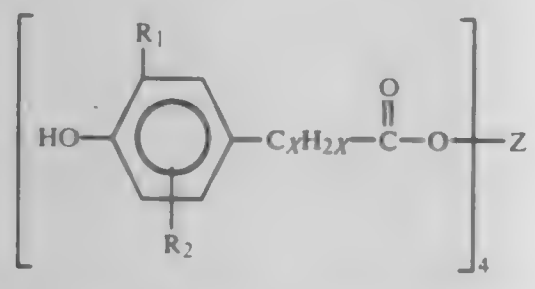
Int. Cl.⁴ B05D *3/06, 5/00*; C23C *14/04*

U.S. Cl. 427—42 **7 Claims**



1. An improved lift-off process that is tolerant of high intensity radiation for depositing a metallurgy layer on a substrate comprising

preparing a mixture of a polyaryl sulfone polymer, and a compound of the formula



where R_1 is methyl, ethyl or an α branched alkyl group of from 3 to 10 carbon atoms,

R_2 is hydrogen, methyl, ethyl or an α branched alkyl group of from 3 to 10 atoms, X has a value of from 1 to 6, and Z is the aliphatic hydrocarbon of the formula

C_5H_8

wherein said compound is present in the mixture in an amount in the range of from 0.5 to 3.5% by weight, of the mixture,

depositing a blanket sacrificial masking layer of said mixture on the surface of said substrate and heating to harden the layer,

selectively removing areas of said blanket sacrificial masking layer to expose surface areas of the substrate to produce openings that define the image of the desired metallurgy pattern,

depositing a blanket layer of metal over the surface of said hardened sacrificial masking layer and the exposed surface areas of said substrate,

the carrying out of said step of selectively removing areas of the sacrificial masking layer and/or the step of depositing a blanket layer of metal incorporating the use of high intensity radiation, and

exposing the resultant layered substrate to a solvent for the polyaryl sulfone polymer material of said sacrificial masking layer thereby removing said masking layer and the overlying metal layer areas but leaving intact the metal layer areas in said openings in contact with said substrate.

4,606,932

METHOD FOR DEPOSITING A MICRON-SIZE METALLIC FILM ON A TRANSPARENT SUBSTRATE UTILIZING A LASER

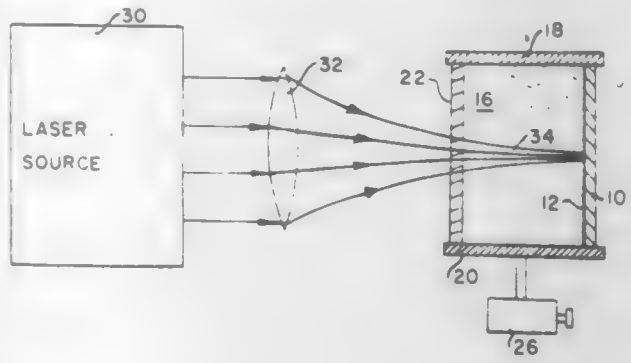
Modest M. Oprysko, Roselle, and Mark W. Beranek, Arlington Heights, both of Ill., assignors to Gould Inc., Rolling Meadows, Ill.

Continuation of Ser. No. 622,366, Jun. 20, 1984, Pat. No. 4,543,270. This application Jun. 25, 1985, Ser. No. 748,515

The portion of the term of this patent subsequent to Sep. 24, 2002, has been disclaimed.

Int. Cl.⁴ C23C *11/02*

U.S. Cl. 427—53.1 **8 Claims**



1. A method of reproducibly depositing a micron sized film of metal in a transparent surface in a closely controlled location and area comprising the steps of:

covering said surface with a metal bearing gaseous compound,

forming a nucleation layer of scattered parts of metal on said surface over the general area on which said film is to be deposited, and

focusing a laser beam on the point of the surface to have the film so as to heat that point beyond the temperature required to thermally decompose said compound and deposit a film on that point.

4,606,933

ACRYLATE-FUNCTIONAL ORGANOPOLYSILOXANES

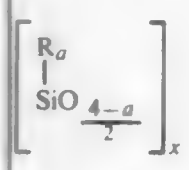
Roy M. Griswold, Hudson; Walter L. Magee, Adrian, both of Mich.; Paul A. Manis, Allentown, Pa., and Eugene R. Martin, Onsted, Mich., assignors to SWS Silicones Corporation, Adrian, Mich.

Filed Sep. 25, 1985, Ser. No. 780,105

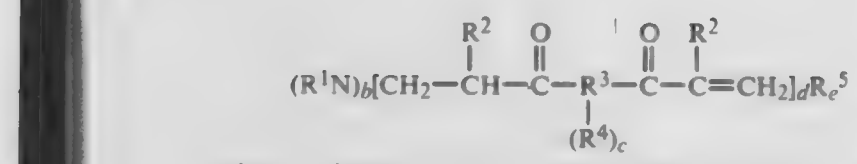
Int. Cl.⁴ B05D *3/06*

U.S. Cl. 427—54.1 **63 Claims**

1. A polymerizable acrylate-functional organopolysiloxane composition comprising an organopolysiloxane of the formula



where R is selected from the group consisting of a monovalent hydrocarbon radical, a substituted monovalent hydrocarbon radical having from 1 to 20 carbon atoms, a monovalent hydrocarbonoxy radical having from 1 to 20 carbon atoms and a radical of the formula



where at least one R is a radical having the above formula, R^1 is a divalent radical selected from the group consisting of a saturated divalent hydrocarbon radical having from 1 to 20 carbon atoms, a divalent hydrocarbonoxy radical in which the oxygen is in the form of an ether linkage and an unsaturated divalent hydrocarbon radical having from 2 to 20 carbon atoms; R^2 is selected from the group consisting of hydrogen, a methyl radical and mixtures thereof, R^3 is a radical having 2, 3, 4, 5 or 6 valences in which the radical is selected from the group consisting of a substituted hydrocarbon radical, a hydrocarbon ether radical, a thioether radical and the terminal atoms of the R^3 radical are selected from the group consisting of oxygen and nitrogen; R^4 is a radical linked to the terminal oxygen or nitrogen atcms of R^3 and is selected from the group consisting of a monovalent hydrocarbon radical having from 1 to 20 carbon atoms, an acryloyl radical and a substituted acryloyl radical and when the terminal atom of R^3 is oxygen, then R^4 may be hydrogen; R^5 is selected from the group consisting of a monovalent hydrocarbon radical having from 1 to 20 carbon atoms and a radical of the formula

$$-CH_2-CH_2-X;$$

X is selected from the group consisting of $-COOR^6$, $-CONR^6$, —CN and $-SO_2R^6$; R^6 is a monovalent hydrocarbon radical having from 1 to 20 carbon atoms, a is a number having an average value of 0.7 to 2.6, b is a number of from 1 to 3, c is a number of from 0 to 4, d is a number of from 1 to 4, e is a number of from 0 to 4, x is a number of from 2 to 20,000 with the proviso that $b+1=d+e$.

4,606,934

PROCESS FOR PREPARING OVERCOATED ELECTROPHOTOGRAPHIC IMAGING MEMBERS

Lieng-Huang Lee, Webster; Deborah J. Nichol-Landry, and Christine J. Tarnawskyj, both of Rochester, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Sep. 4, 1984, Ser. No. 647,087
Int. Cl.[4] B05D *5/12*
U.S. Cl. 427—76 **12 Claims**

1. A process for forming an overcoated electrophotographic imaging member comprising the steps of providing an electrophotographic imaging member, applying a final outer coating in liquid form comprising a cross-linkable siloxanol-colloidal silica hybrid material having at least one silicon bonded hydroxyl group per every three —SiO— units on said electrophotographic imaging member and a catalyst for said cross-linkable siloxanol-colloidal silica hybrid material, said coating in liquid form having an acid number less than about 1, and curing said cross-linkable siloxanol-colloidal silica hybrid material until said siloxanol-colloidal silica hybrid material forms a hard cross-linked solid organosiloxane-silica hybrid polymer layer substantially free of any detectable acid and having a thickness between about 0.3 and about 3 micrometers.

4,606,935

PROCESS AND APPARATUS FOR PRODUCING HIGH PURITY OXIDATION ON A SEMICONDUCTOR SUBSTRATE

Samuel E. Blum, White Plains, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

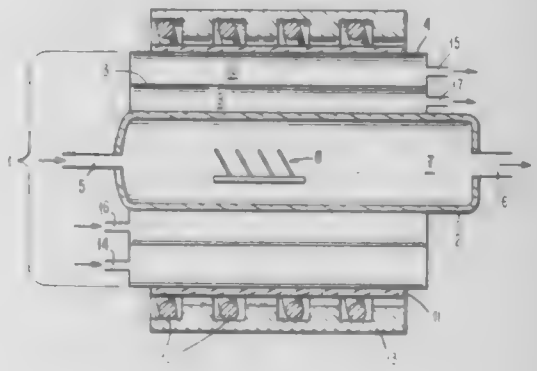
Filed Oct. 10, 1985, Ser. No. 786,194
Int. Cl.[4] H01L *21/316*
U.S. Cl. 427—82 **21 Claims**

1. A process for producing high-purity oxidation on a semiconductor substrate in a reaction chamber which comprises:

heating a semiconductor substrate in the presence of an oxidizing ambient in a multi-walled reaction chamber containing heating element;

wherein the semiconductor substrate is placed in the inner portion of the reaction chamber and an oxidizing ambient is caused to flow therein;

wherein a halogen-containing ambient is caused to flow in an outer portion of said reaction chamber intermediate between said inner portion and said heating element;



reacting said halogen-containing ambient with heating element contaminant coextensive with the surface of the reaction chamber; and

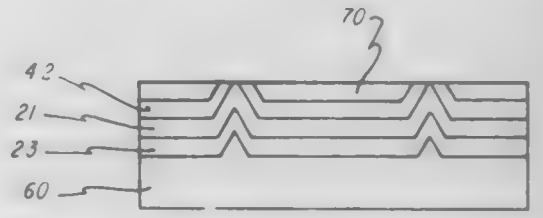
causing a gaseous ambient to flow through a portion of said chamber positioned intermediate said inner portion and said outer portion, wherein said gaseous ambient removes water by-product of the reacting with the halogen occurring in the outer portion.

4,606,936

STRESS FREE DIELECTRIC ISOLATION TECHNOLOGY

George Bajor, Melbourne, and Charles Messmer, Palm Bay, both of Fla., assignors to Harris Corporation, Melbourne, Fla.

Filed Apr. 12, 1985, Ser. No. 723,581
Int. Cl.[4] H01L *21/76*
U.S. Cl. 427—85 **24 Claims**



1. In the manufacture of polysilicon supported substrates containing dielectrically isolated islands a process for forming a stress free interface between a dielectrically passivated silicon substrate and a polysilicon layer formed by chemical vapor deposition comprising the steps of

selecting a silicon substrate,

forming a dielectric layer directly on the surface of said silicon substrate,

depositing a layer of doped silica glass directly on the surface of said dielectric layer,

depositing, by chemical vapor deposition directly on the surface of said layer of doped silica glass at a temperature above the softening temperature of said doped-silica glass, a thick polysilicon layer, thus forming a multilayer structure, and cooling the multilayer structure below the softening temperature of said doped-silica glass.

4,606,937

ELECTROEROSION RECORDING MEDIUM FABRICATION METHOD

Manfred Rössler, Stuttgart; Gerhard Winter, Remshalden, and Hermann Stiltz, Stuttgart, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

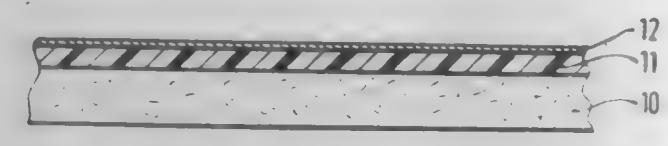
PCT No. PCT/DE84/00157, § 371 Date Jan. 30, 1985, § 102(e) Date Jan. 30, 1985, PCT Pub. No. WO85/01019, PCT Pub. Date Mar. 14, 1985

PCT Filed Jul. 24, 1984, Ser. No. 705,388

Claims priority, application Fed. Rep. of Germany, Aug. 19, 1983, 3329981

Int. Cl.[4] B05D *5/12;* B32B *5/16;* G03C *1/76;* G01D *15/34*

U.S. Cl. 427—121 8 Claims



1. A method of making a record carrier comprising the steps of:

mixing a fine particulate metal-soap lubricant with a liquid coating material including a polar solvent;

coating a paper substrate with the liquid material mixed with the lubricant and curing it thereon to form a contrast layer on the substrate; and

vapor depositing a metallic layer on the coating thin enough for the metal-soap lubricant to diffuse through.

4,606,938

CONCRETE TREATMENT METHODS

Thomas L. Reiling, 4264 SE. Fairway East, Stuart, Fla. 33494

Continuation of Ser. No. 348,366, Feb. 12, 1982, abandoned. This application May 24, 1984, Ser. No. 613,758

Int. Cl.[4] B05C *1/16*

U.S. Cl. 427—136 3 Claims

1. A method of treating a stained concrete surface whereby said surface is treated and cleaned by creation of a pigment and said pigment is bonded to said surface as a covering therefor in a single operation, said method comprising:

completely wetting said surface with an excess of a treating solution containing, by weight, about one part of a pigment binder, one part phosphoric acid, and from eight to thirty parts of water;

permitting said phosphoric acid to react with the staining material on said stained surface to create a substantially white-colored water-insoluble pigment; and

permitting said solution to dry in place while said binder becomes effective to bond the pigment created by reaction between said stain causing materials and said phosphoric acid.

4,606,939

SMALL PARTICLE FORMATION

Sylvan G. Frank, Columbus, Ohio; Arne F. Brodin, Sodertalje, Sweden; Chih-Ming J. Chen, East Syracuse, N.Y., and Ratneah Shrivastava, Columbus, Ohio, assignors to The Ohio State University Research Foundation, Columbus, Ohio

Continuation-in-part of Ser. No. 506,598, Jun. 22, 1983, abandoned. This application Jun. 15, 1984, Ser. No. 621,133

Int. Cl.[4] B01J *13/02*

U.S. Cl. 427—213.3 9 Claims

1. A process for forming small particles of a weakly acidic organic compound whose solubility in water is greater at a first pH than at a second pH which process comprises:

(a) dissolving said compound in water in the presence of sufficient base to raise the pH to said first pH and preferably about 2 pH units above the pKa of the compound, together with an anionic surfactant which maintains its ionic condition between the first and second pH and an amphoteric surfactant whose cationic nature increases from the first pH to said second pH; and

(b) stirring and titrating the solution, with a titrant effective to reduce the pH of said solution to said second pH to cause the concurrent formation of a coacervate of the anionic and amphoteric surfactants, and precipitation of the compound as small particles.

4,606,940

SMALL PARTICLE FORMATION AND ENCAPSULATION

Sylvan G. Frank, Columbus, Ohio; Arne F. Brodin, Sodertalje, Sweden, and Shulin Ding, Columbus, Ohio, assignors to The Ohio State University Research Foundation, Columbus, Ohio

Filed Dec. 21, 1984, Ser. No. 684,457

Int. Cl.[4] A61K *9/50;* B01J *13/02*

U.S. Cl. 427—213.32 10 Claims

1. A process for encapsulating an organic compound whose solubility is greater in a first solvent than in a second solvent which process comprises:

(a) dissolving said compound in a first solvent;

(b) preparing a solution of encapsulating material and an electrolyte in a second solvent which is miscible with the first solvent and in which the compound to be encapsulated is more or less insoluble, in an amount which is effective, but which electrolyte is present in an amount just insufficient to cause coacervation of the encapsulating material without interacting with it;

(c) mixing the solutions from step (a) and (b) while stirring to cause the concurrent precipitation of the compound as small particles and formation of a coacervate of the encapsulating material; and

(d) gelling the encapsulating material.

2. A process according to claim 1 wherein the encapsulated material is hardened.

4,606,941

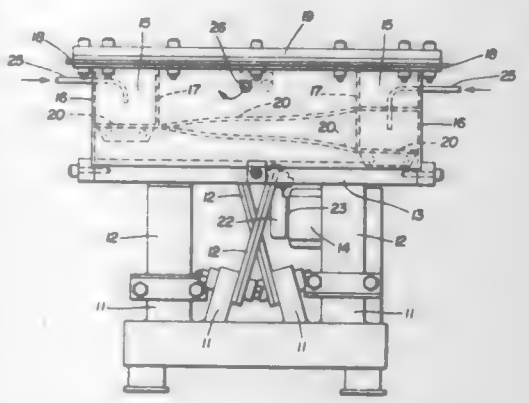
DEPOSITION METALIZING BULK MATERIAL BY CHEMICAL VAPOR

William C. Jenkin, 382 Dorchester Rd., Akron, Ohio 44320

Filed Jul. 21, 1983, Ser. No. 515,699

Int. Cl.[4] B05B *17/00;* B05C *5/00;* B05D *7/00;* C23C *16/00*

U.S. Cl. 427—217 8 Claims



6. A process for coating multiple small objects with a metal, which comprises:

(a) supporting said objects in an enclosed trough having a stepped bottom surface and upwardly extending side walls, said bottom comprising at least one gradually inclined surface joined by at least one essentially vertical drop;

(b) oscillating said trough so as to progressively move said small objects up the inclined surface and allow said objects to tumble over the top edge thereof;

(c) supplying a decomposable compound of said metal to said inclined surface from above;

(d) heating said inclined surface from beneath said surface without heating said side walls, thereby heating said small

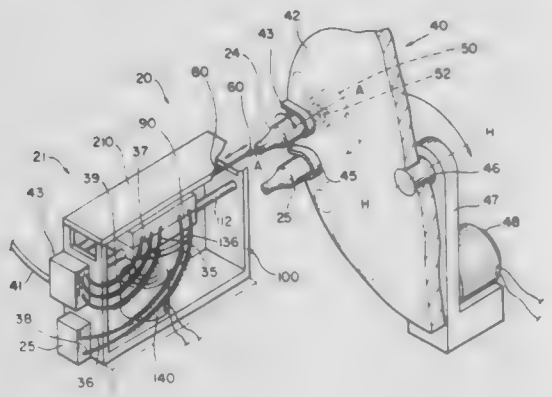
objects thereon to a temperature above the decomposition temperature of said decomposable compound, and
(e) removing gaseous decomposition products.

4,606,942

SPRAY COATING APPARATUS

Frank L. Shriver, Lakewood, and Roger A. Hahn, Arvada, both of Colo., assignors to Adolph Coors Company, Golden, Colo.

Filed Dec. 21, 1984, Ser. No. 685,022
Int. Cl.[4] B05B *13/06;* B05D *1/02*
U.S. Cl. 427—233 10 Claims



6. A method of applying a coating layer onto the interior surface of a bottle of the type having a central longitudinal axis and an interior cavity and an interior cavity opening positioned symmetrically relative the central longitudinal axis and having a bottom wall, a relatively large diameter lateral side wall, a shoulder wall and a relatively small diameter neck wall, comprising the steps of:
(a) positioning a small diameter nozzle body in coaxial relationship with the bottle central longitudinal axis longitudinally opposite the bottle opening;
(b) causing relative longitudinal reciprocal movement of the nozzle body along the bottle central longitudinal axis first from the position opposite the bottle opening to a forward position inside the bottle and proximate the bottle end wall and thence rearwardly to the original position opposite the bottle opening;
(c) during step (b) causing relative rotational movement of the bottle about its central longitudinal axis;
(d) during steps (b) and (c) spraying the interior of the bottle with a liquid coating material including:
(i) spraying the bottle shoulder wall with a nozzle side gun during forward movement of the nozzle body with respect to the bottle;
(ii) spraying the bottle side wall with said side gun during forward movement of the nozzle body with respect to the bottle;
(iii) spraying the bottle end wall with a nozzle tip gun during a latter portion of the forward movement of the nozzle body with respect to the bottle;
(iv) spraying the bottle side wall with said side gun during rearward movement of the nozzle body with repsect to the bottle;
(v) spraying the bottle shoulder wall with said side gun during rearward movement of the nozzle body with respect to the bottle; and
(vi) spraying the bottle neck wall with said tip gun during rearward movement of the nozzle body with respect to the bottle;
(e) during step (d) precisely controlling the rate at which spray is distributed as a function of the axial position of the nozzle body with repsect to the bottle so as to provide an even thickness coating to the interior surface of the bottle.

4,606,943

METHOD FOR PREPARATION OF SEMIPERMEABLE COMPOSITE MEMBRANE

Stanley F. Rak, Mundelein, and Kenneth Ward, Wheeling, both of Ill., assignors to Culligan International Company, Northbrook, Ill.

Continuation of Ser. No. 476,727, Mar. 18, 1983, abandoned. This application Nov. 26, 1984, Ser. No. 674,486
Int. Cl.[4] B05D *3/10, 5/00*
U.S. Cl. 427—244 14 Claims

1. The method for the preparation of a semipermeable composite membrane which comprises:
reacting solutions of (1) a molar excess of an aromatic di-primary amine with (2) a mixture of a major amount of trimellitic anhydride acid halide and a minor amount of trimesoylchloride to form a water soluble prepolymer; placing an aqueous solution of said prepolymer on a porous support to form a prepolymer film; reacting said prepolymer film with (3) a nonpolar solvent solution containing trimesoylchloride; and drying the membrane formed thereby.

4,606,944

DEWATERING PROCESS, PROCEDURE AND DEVICE

Alfred E. Lauchenauer, Horn, Switzerland, assignor to Adnovum AG, Switzerland

PCT No. PCT/EP83/00292, § 371 Date Jul. 9, 1984, § 102(e) Date Jul. 9, 1984, PCT Pub. No. WO84/01970, PCT Pub. Date May 24, 1984
PCT Filed Nov. 5, 1983, Ser. No. 629,725
Claims priority, application United Kingdom, Nov. 12, 1982, 8232393; Dec. 10, 1982, 8235346; Aug. 17, 1983, 8322168
Int. Cl.[4] B05D *3/12*
U.S. Cl. 427—296 33 Claims

1. A process for dewatering an air permeable sheet material containing water, which process comprises:
applying to one side of an air permeable sheet material foam containing an agent capable of lowering the surface tension of the foam liquid;
causing the foam to permeate the interstices of the sheet material by application of a pressure gradient across the sheet material; and
removing the foam material and water from the other side of the sheet material,
whereby the foam liquid causes water in the air permeable sheet material to be substantially removed from the interstices of the sheet material.

14. A process as claimed in claim 1 wherein a foam flow constraining substrate is in juxtaposition with the air permeable sheet material to support the same during the foam treatment.

23. A process as claimed in claim 14 wherein the foam is caused to permeate the interstices of the sheet material by means of a pressure gradient, said pressure gradient being generated by means of a vacuum applied on the side of the air permeable sheet material remote from the side on which the foam is applied, said vacuum being applied by passing the air permeable material across at least one vacuum slot, each vacuum slot being defined by an open tube pipe or duct connected to a vacuum producing pump.

4,606,945

RUST PREVENTING WAX TREATMENT METHOD

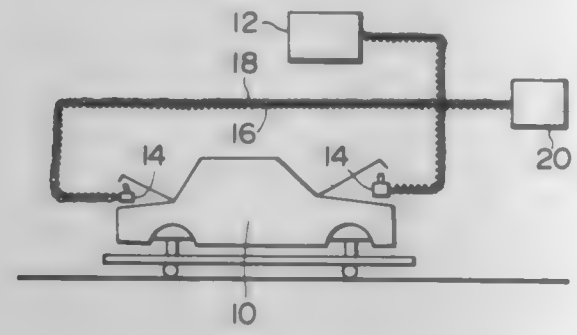
Haruhiro Itoh; Masashi Ohno; Tadahiko Morigaki, all of Hatano, and Kiminori Ishii, Ebina, all of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Sep. 30, 1985, Ser. No. 781,648
Claims priority, application Japan, Oct. 26, 1984, 59-224043
Int. Cl.[4] B05D *3/02;* C04B *9/02;* C09G *1/08*
U.S. Cl. 427—318 7 Claims

1. A method of giving a rust preventing wax treatment to an article, the method comprising the steps of:
(a) heating at least one of (i) a wax which possesses thixot-

ropy and such a temperature-sensitive property that the viscosity of the wax decreases when heated and increases again when cooled near to room temperature and (ii) an article to be treated with the wax;

(b) keeping said wax under action of a mechanical force and,



after step (a), applying said wax to desired surfaces of said article; and

(c) after step (b) cooling said article near to room temperature at least in said surfaces.

7. A method according to claim 1, wherein said article is an automobile body which is provided with a finish coat of paint.

4,606,946

METHOD OF APPLYING INTERLEAVING MATERIAL TO GLASS SHEETS

Paul F. Duffer, Creighton; Joseph D. Kelly, Cheswick, and Helmut Franz, Pittsburgh, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 229,220, Jan. 28, 1981, Pat. No. 4,529,648. This application Jul. 12, 1985, Ser. No. 754,510

The portion of the term of this patent subsequent to Jul. 16, 2002, has been disclaimed.

Int. Cl.[4] **B05D** *3/02;* **B32B** *15/00, 17/08, 23/00*

U.S. Cl. 427—384 **10 Claims**

1. A method for applying a powdered interleaving material to a glass surface comprising the steps of:

a. dispersing a powdered interleaving material in atomized water;

b. applying said aqueous composition of said powdered interleaving material to a glass surface; and

c. drying said aqueous composition to obtain a uniform adherent layer of interleaving material on said glass surface.

4,606,947

LACQUER FOR COATINGS PROTECTING AGAINST STONE CHIPPING, A PROCESS FOR ITS PREPARATION AND ITS USE

Siegfried Heinrich; Rudolf Heitzmann, and Ahmed Shafik, all of Wuppertal, Fed. Rep. of Germany, assignors to Herberts GmbH, Fed. Rep. of Germany

Filed Oct. 4, 1984, Ser. No. 657,757

Claims priority, application Fed. Rep. of Germany, Oct. 14, 1983, 3337394

Int. Cl.[4] **B05D** *3/02;* **B32B** *27/00;* **C08G** *18/80*

U.S. Cl. 427—388.1 **14 Claims**

1. A process of protecting car bodies or car-body parts of motor vehicles against stone chipping with a stone-chipping protective layer comprising coating a motor vehicle car body or car-body part to a dry film thickness of from 15 to 50 μm with a lacquer including pigments, fillers, and binders comprising a mixture of film forming, hydroxyl-containing polyesters and aliphatic and/or cycloaliphatic polyisocyanates which have an average functionality of at least 2.5 and are blocked with aceto-acetic acid alkyl esters in which the alkyl groups are methyl, ethyl, n-propyl, i-propyl, n-butyl, i-butyl or sec.-butyl groups, and organic solvents, said hydroxyl-containing polyesters including branched chain polyesters obtainable from benzene carboxylic acids and aliphatic and/or cycloaliphatic dicarboxylic acids, and aliphatic and/or cycloaliphatic polyols having 2 to 4 hydroxyl groups per molecule, the polyesters having an average hydroxyl functionality of from 2.5 to 6 and hydroxyl content of from 2 to 6% by weight and comprising from 15 to 50% by weight of aliphatic content, namely, the weight of aliphatic groups containing at least 4 to 20 carbon atoms in an unbranched chain plus any alkyl groups directly attached to said chain, the ratio by weight of the aliphatic content present in the polyester to the weight of the benzene rings in the polyester, calculated as sum of the weight of carbon atoms of the benzene rings and of the hydrogen atoms attached to these carbon atoms being in the range of from 1:1 to 2.5:1.

4,606,948

PROCESS FOR THE PRODUCTION OF NICKEL-CHROMIUM/CHROMIUM CARBIDE COATINGS ON SUBSTRATES

Karel Hajmrle, Fort Saskatchewan, and Vilnis Silins, Edmonton, both of Canada, assignors to Sherritt Gordon Mines Limited, Toronto, Canada

Filed May 20, 1985, Ser. No. 736,046

Claims priority, application United Kingdom, Jun. 4, 1984, 8414219

Int. Cl.[4] **B05D** *1/10*

U.S. Cl. 427—423 **14 Claims**

1. A process for producing a nickel-chromium/chromium carbide coating on a substrate comprising providing nickel/-chromium carbide composite powder comprising particles each having a core of chromium carbide at least partially coated with nickel without chromium being present in the nickel coating, and flame spraying said nickel/chromium carbide composite powder onto the substrate to cause burn-out of some of the carbon in the chromium carbide during spraying with the result that some of the chromium of the chromium carbide becomes alloyed with the nickel to produce a sprayed coating on the substrate comprising chromium carbide particles in a matrix of nickel-chromium alloy.

4,606,949

COATING METHOD

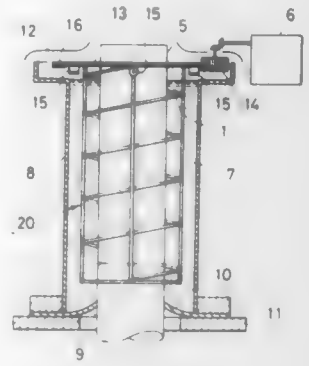
Toshiyuki Yoshihara, Mitaka; Yuichi Yashiki, Yokohama; Motomu Horii, Abiko, and Mutsuo Ohtaka, Ryugasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 11, 1984, Ser. No. 629,890

Claims priority, application Japan, Jul. 18, 1983, 58-130453

Int. Cl.[4] **B05D** *1/18*

U.S. Cl. 427—430.1 **7 Claims**



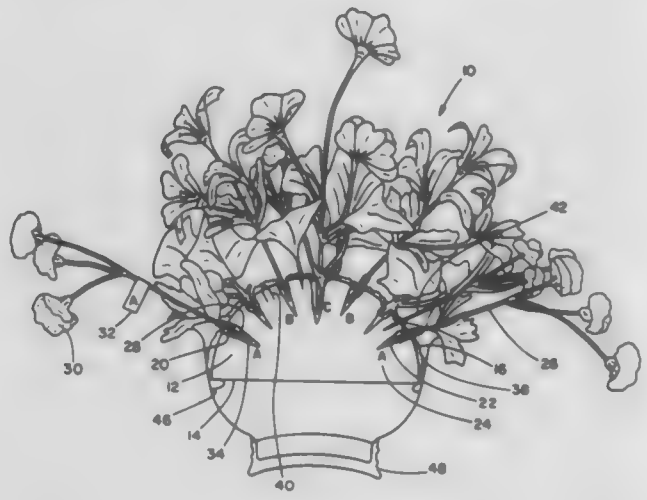
1. A coating method for forming a photosensitive layer on an object to be coated comprising the steps of disposing a helical agitator blade in a container holding a coating liquid, dipping the object down into the coating liquid so as to position the object in the region surrounded by the helical agitator blade, homogenizing the coating liquid by revolving the helical agitator blade while the object is being dipped in the coating liquid, and withdrawing the object upwardly out of the container.

4,606,950

METHOD FOR ASSEMBLING A FLORAL ARRANGEMENT

Ellen M. Corbet, 265 Lakewood Cir., Burr Ridge, Ill. 60521, assignor to Ellen M. Corbet and Charles J. Trost, both of Burr Ridge, Ill.

Filed Aug. 31, 1984, Ser. No. 645,868
Int. Cl.[4] A01G *5/04;* A47G *7/00*
U.S. Cl. 428—23 13 Claims



1. A predesigned arrangement of flowers, greens and other decorative stalks designed for easy assembly, said arrangement comprising:

a solid base having a plurality of holes, at least some of said holes having a retainer therein, each of said holes having a mark identifying the hole as belonging to one of several groups, each of said holes being located in a predetermined position, at a predetermined angle, and to a predetermined depth; and

a plurality of flowers, greens or other decorative stalks equal to the number of holes, each stalk having a mark corresponding to a mark of one of said base holes, each of said stalks having a base end secured within one of said base holes having a corresponding mark.

4,606,951

WATER-RESISTING AND OIL-RESISTING LAMINATED SHEET

Keizo Wakasugi; Yuji Fujita, and Ryoichi Kaneko, all of Toyama, Japan, assignors to Kohjin Co., Ltd., Tokyo, Japan

Filed Jan. 14, 1985, Ser. No. 691,013
Claims priority, application Japan, Jan. 17, 1984, 59-4766
Int. Cl.[4] B32B *27/10;* B65D *30/08*
U.S. Cl. 428—35 10 Claims

1. A water-resisting and oil-resisting laminated sheet having an excellent alcohol vapor permeability and an oil resistance which is not reduced by alcohol, said laminated sheet comprising:

a paper layer; and

an ethylene-vinyl acetate copolymer layer laminated to said paper layer, which copolymer layer has a vinyl acetate component of 10 to 30 mole %, a melt flow index of 2 to 20, and a thickness of 10 to 50μ;

wherein said paper layer is subjected to an oil-resisting treatment whereby the paper layer is coated or impregnated with a liquid, and then dried by heating; and

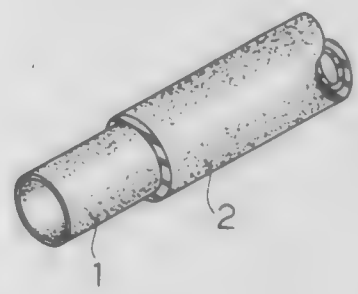
further wherein said liquid is in an amount of 0.5 to 5% by weight to the paper as solid component and is prepared by mixing an aqueous solution or an aqueous dispersion of at least one oil-resisting polymer selected from the group consisting of a polyvinyl alcohol, polyvinylidene chloride, polyurethane, polychloroprene, and a poly(meth)acrylic acid ester with a perfluoroalkyl acrylate copolymer at 3:7 to 7:3 by solid component weight ratio, adding to the said liquid 0.1 to 3.0% by weight of a penetrating agent selected from the group consisting of a polyethylene glycol having a molecular weight of 200 to 1,000, a polypropylene glycol having a molecular weight of 200 to 1,000, block polymers of such glycols, alkyl ethers of such glycols, and fatty acid esters of such glycols, and diluting with water.

4,606,952

RUBBER LAMINATE

Masatoshi Sugimoto, Nagoya; Masayoshi Ichikawa, Ichinomiya; Kiyomitsu Terashima, Nagoya; Hiroji Enyo, Suzuka; Shinichiro Iwanaga, Yokkaichi, and Eitaro Okuya, Komono, all of Japan, assignors to Toyoda Gosei Co., Ltd., Nishikasugai, Japan

Continuation of Ser. No. 542,487, Oct. 17, 1983, abandoned. This application Mar. 14, 1985, Ser. No. 712,330
Claims priority, application Japan, Oct. 15, 1982, 57-181575; Oct. 15, 1982, 57-181576; Oct. 15, 1982, 57-181577
Int. Cl.[4] F16L *11/04;* B32B *27/08, 27/38*
U.S. Cl. 428—36 14 Claims



1. An automotive fuel hose or fuel pump diaphragm made of a rubber laminate which comprises a fluororubber layer and a butadiene-acrylonitrile rubber (NBR) layer bonded together through vulcanization,

said fluororubber layer bieng made of a fluororubber compound selected from the group consisting of vinylidene fluoride-propylene hexafluoride copolymer, vinylidene fluoride-propylene hexafluoride-ethylene tetrafluoride terpolymer, and tetrafluoro ethylene-propylene copolymer, said fluororubber having incorporated therein a peroxide vulcanizing agent and an oxide or hydroxide of a metal selected from Groups II to IV of the periodic table in addition to the oridinary adjuvants, and

said butadiene-acrylo-nitrile rubber layer being made of an NBR rubber compound having at least one functional group selected from an epoxy group, a carboxyl group, and an amino group, the NBR rubber compound also containing a peroxide vulcanizing agent and a metal oxide in addition to the ordinary adjuvants.

4,606,953

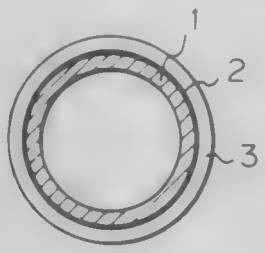
POLYPROPYLENE COATED STEEL PIPE

Kazuyuki Suzuki; Masami Ishida; Fuyuhiko Ohtsuki, all of Kimitsu; Yoshihiro Inuizawa; Saburo Hinenoya, both of Sakai; Mansei Tanaka, and Yoshio Shindou, both of Kimitsu, all of Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Jun. 15, 1984, Ser. No. 621,097
Claims priority, application Japan, Jun. 23, 1983, 58-111884; May 22, 1984, 59-101727
Int. Cl.[4] F16L *9/14*
U.S. Cl. 428—36 15 Claims

1. A polypropylene coated steel pipe comprising a steel pipe, an adhesive layer coated on the external surface of the steel pipe which has been subjected to a pretreatment, and a polypropylene layer coated on the adhesive layer, the outermost polypropylene layer comprising, as a main constituent, a crystalline ethylene-propylene block copolymer having a brittleness temperature of 15° C. or less and the adhesive layer com-

prising a mixture of an unsaturated carboxylic acid modified crystalline polypropylene, an unmodified crystalline polypropylene and a polyolefin rubber having a brittleness temperature of −20° C. or less.

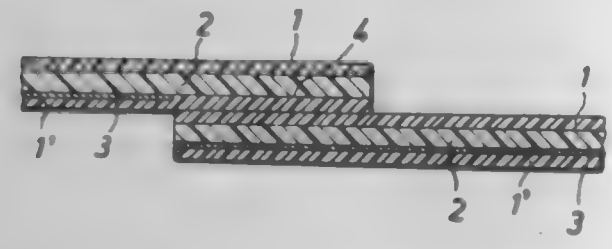


4,606,954

ARRANGEMENT FOR THE MANUFACTURE OF PACKING CONTAINERS

Anders R. Rausing, Lausanne, Switzerland, and Erling I. Nilsson, Åkarp, Sweden, assignors to Tetra Pak Developpement SA, Pully, Switzerland

Division of Ser. No. 541,321, Sep. 9, 1983, Pat. No. 4,557,888.
This application Sep. 20, 1985, Ser. No. 778,073
Claims priority, application Sweden, Jan. 20, 1982, 82002868
Int. Cl.⁴ B29C *1/12*
U.S. Cl. 428—36 5 Claims



1. A plastically deformable tube, comprising a sheet of laminated web defining a first edge zone and a second edge zone, said web including a layer of orientation-stretched polyester, a layer of metal foil and a first surface layer of glycol-modified polyester adjacent said layer of orientation-stretched polyester, a second surface layer of glycol-modified polyester adjacent said layer of metal foil, said layer of metal foil being receded from a first edge zone of said sheet, said sheet being folded to form a tubular element with said first edge zone and said second edge zone overlapping, said first surface layer of said second edge zone being bonded to said second surface layer of said first edge zone.

4,606,955

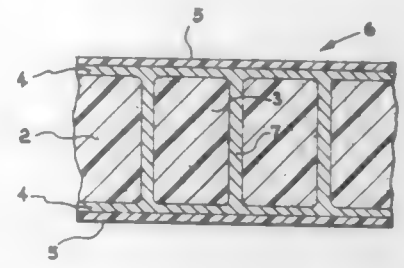
CONDUCTIVE PYROLYZED DIELECTRICS AND ARTICLES MADE THEREFROM

Paul F. Eastman, Stoutsville; Susan W. Enouen, Columbus; William E. Hawkins, Circleville, and Darrell J. Parish, Stoutsville, all of Ohio, assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jun. 18, 1985, Ser. No. 746,074
Int. Cl.⁴ B32B *3/12*
U.S. Cl. 428—36 13 Claims

1. A dielectric thermoplastic shaped article comprising: (a) a pyrolyzable thermoplastic matrix material having a volume electrical conductivity less than 10^{-12} mho/cm; and (b) a multitude of electrically conductive paths in the form of channels with walls of carbon from one matrix surface to the other matrix surface throughout the thermoplastic matrix, whereby the channels are 20–130 micrometers in diameter at the surface of the article and the apparent volume electrical conductivity through the article is more than 10^{-5} mho/cm.

10. An endless belt comprising a base loop having at least one layer of a film of thermoplastic comprising: (a) a pyrolyzable thermoplastic matrix material having a volume electrical conductivity less than 10^{-12} mho/cm; and (b) a multitude of electrically conductive paths randomly located throughout the matrix wherein the paths comprise channels with walls of carbon from one matrix surface to the other matrix surface and



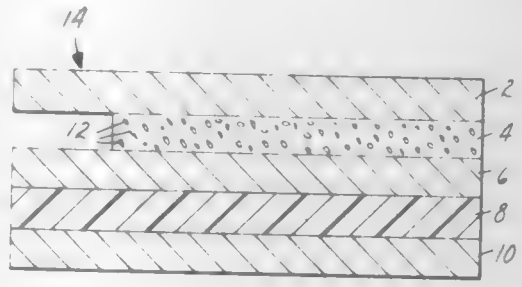
wherein the channels are 20–130 micrometers in diameter at the surface of the article and the apparent volume electrical conductivity through the base loop is more than 10^{-5} mho/cm; and an outer sleeve of dielectric thermoplastic film with a volume electrical conductivity less than 10^{-12} mho/cm.

4,606,956

ON PAGE FRAGRANCE SAMPLING DEVICE

Jack W. Charbonneau, Somerset, and Keith E. Relyea, St. Joseph, both of Wis., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 684,597, Dec. 21, 1984, abandoned.
This application Jun. 7, 1985, Ser. No. 742,144
Int. Cl.⁴ G09F *3/00*
U.S. Cl. 428—40 20 Claims



1. A label for application to a surface, said label comprising
(1) at least two sheets, a top sheet and a bottom sheet, bound by an adhesive composition layer,
(2) said adhesive composition layer containing microcapsules with a liquid within the shell of the microcapsules,
(3) said microcapsules having an average diameter between 4 and 80 micrometers, and
(4) said bottom sheet having a pressure-sensitive adhesive on an exterior surface
the cohesive strength of the adhesive composition layer being less than the strength of the bond between said adhesive composition and the faces of said sheets, the tensile rupture strength of said microcapsules being such that the cohesive failure of the adhesive results in breakage of the microcapsules, and the tensile rupture strength between said two sheets being at least 1.0g/cm and less than 90 g/cm at 20° C. and 50% relative humidity.

4,606,957

PIPE INSULATION WITH FLAP FOR EXTREME WEATHER APPLICATIONS

Lewis S. Cohen, Hingham, Mass., assignor to Venture Tape Corp., Rockland, Mass.

Filed Jan. 4, 1985, Ser. No. 688,870
Int. Cl.⁴ F16L *59/02;* B32B *3/06*
U.S. Cl. 428—40 8 Claims

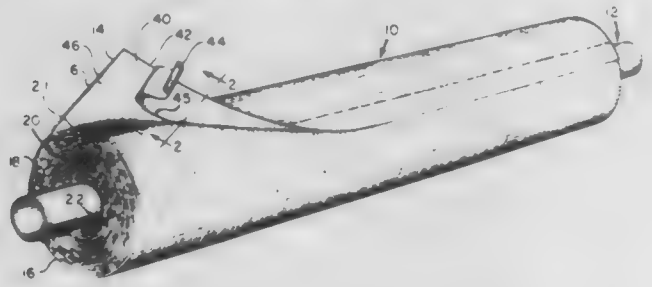
1. An insulation system for a pipe comprising:
an elongated segment of insulation for being wrapped about a pipe, said segment having a radial slit therein extending

along the entire length of said segment in the direction of elongation of said segment, said slit being adapted for insertion of a pipe therethrough; and

means for sealing said slit, said sealing means comprising:

a flap secured to said segment and extending across the width of said slit;

a strip of adhesive on an inside surface of said flap extending generally along the length of said flap in a direction generally parallel to be direction of elongation of said segment, one side of said adhesive strip extending generally to an edge of said flap transverse of the direction of elongation of said segment;



a non-adhesive strip disposed on said inside surface of said flap immediately adjacent said adhesive strip on the other transverse side thereof; and

a removable release liner secured to said adhesive strip, said release liner having a portion overlapping said non-adhesive strip in unsecured relation thereto and adapted to be grasped for removal thereof, said overlapping portion of said release liner being disposed in a normally protected location between said flap and said segment prior to removal of said release liner.

4,606,958

HIGHLY ABSORBENT SUBSTRATE ARTICLE

Zia Haq, and Richard S. Johnson, both of Merseyside, England, assignors to Lever Brothers Company, New York, N.Y.

PCT No. PCT/GB84/00225, § 371 Date Jan. 23, 1985, § 102(e) Date Jan. 23, 1985, PCT Pub. No. WO85/00111, PCT Pub. Date Jan. 17, 1985

PCT Filed Jun. 25, 1984, Ser. No. 695,788

Claims priority, application United Kingdom, Jun. 27, 1983, 8317428

Int. Cl.⁴ B32B *1/00, 3/00*

U.S. Cl. 428—68 **22 Claims**

1. An article suitable for absorbing hydrophilic liquids, the article comprising a substrate carrying a porous polymeric material capable of retaining a hydrophilic liquid to a total capacity of at least 3 g/g and releasing at least some of said liquid on the application of hand pressure, characterised in that the porous polymeric material is capable of spontaneously absorbing said hydrophilic liquid in the absence of said hand pressure, and further characterised in that the article has an effective drying capacity of at least 2.5 g/g, the effective drying capacity being defined as the maximum weight of water per gram of dry article that the article can hold yet still be capable of wiping a surface to dryness within 15 seconds.

16. An article as claimed in claim 1, characterised in that it has the form of a flexible sheet.

18. An article as claimed in claim 16, characterised in that the polymeric material is sandwiched between two liquid-permeable sheet substrates.

4,606,959

HONEYCOMB PANEL

Brad O. Hillinger, 216 - 36th Pl., Manhattan Beach, Calif. 90266

Filed Apr. 25, 1985, Ser. No. 727,289

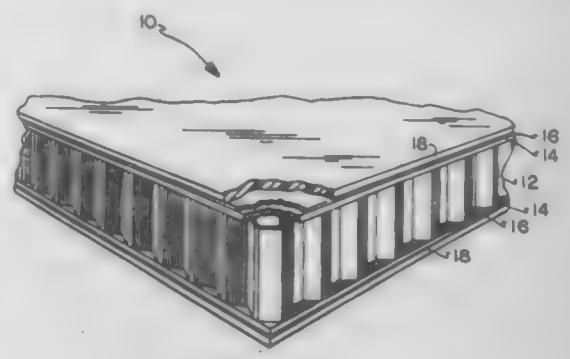
Int. Cl.⁴ B32B *3/12*

U.S. Cl. 428—116 **4 Claims**

1. A rigid lightweight composite structure comprising:

a multicellular core comprising a plurality of transversely extending open-ended cells;

thin imperforate facing sheets closing the open end of said cells;



a thin pressure sensitive adhesive layer on the outer surface of each of said facing sheets, said layer being pressure sensitive on both sides, and

a pair of rigid lightweight polyvinyl chloride sheets, each having a foamed center and a smooth thin skin on either side of said center.

4,606,960

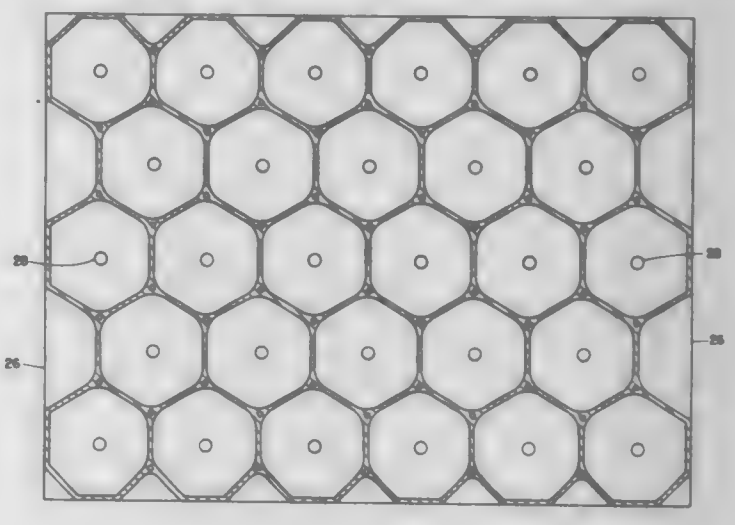
PROCESS FOR MAKING HONEYCOMB SANDWICH PANELS

James R. P. Angel, and Peter A. A. Wangsness, both of Tucson, Ariz., assignors to Research Corp., N.Y.

Filed Feb. 27, 1985, Ser. No. 706,080

Int. Cl.⁴ C03B *23/207*

U.S. Cl. 428—116 **23 Claims**



1. A method of producing a substantially monolithic honeycomb sandwich panel structure, comprising the steps of:

a. positioning a plurality of tubes adjacent to each other in positions to form a honeycomb array of tubes wherein the tubes are in direct contact or close proximity to adjacent tubes;

b. positioning first and second end plates adjacent first and second opposite ends of the tubes;

c. heating the tubes and end plates to an elevated temperature at which the materials in the tubes and end plates soften to form bonds therebetween, to seal each tube; and

d. subjecting each tube, while in a heated, softened and sealed condition, to a gas pressure differential thereacross to exert an outward gas pressure on each softened tube, to press each softened tube against adjacent softened tubes to form bonds betweens adjacent softened tubes along the areas of pressed contact in addition to the bonds formed between each softened tube and the first and second end plates, to form the substantially monolithic honeycomb sandwich panel structure.

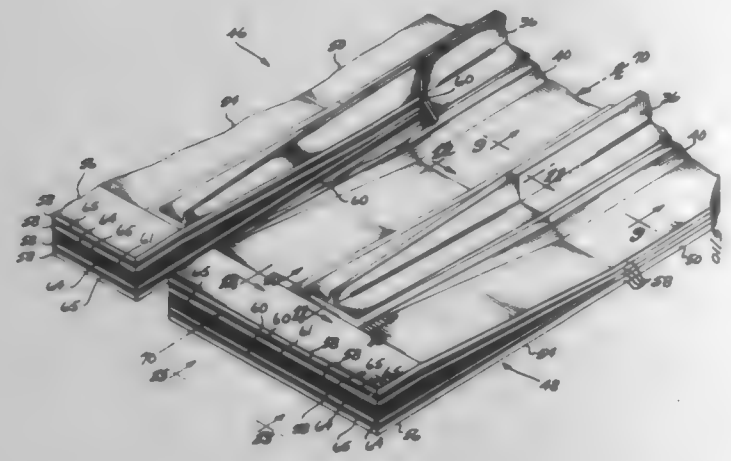
14. A substantially monolithic honeycomb sandwich panel structure formed by the method of claim 1.

4,606,961

DISCRETELY STIFFENED COMPOSITE PANEL

Victor A. Munsen, Seattle, and John P. Ruane, Auburn, both of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Oct. 9, 1984, Ser. No. 659,076
Int. Cl.[4] B32B 7/00
U.S. Cl. 428—119 7 Claims



1. A discretely stiffened composite panel comprising:

(a) a substantially planar part having a central portion and at least one edge, said edge having an inner region and an outer region, said planar part formed of base layers composed of multiple layers of fibrous material, said fibrous material formed of collimated fiber elements entrained within binder material, the longitudinal direction of said collimated fibers forming each layer having an orientation varying between perpendicular, parallel, and oblique with respect to said edge;

(b) stringer enhancement strips formed of at least one layer of fibrous material, said fibrous material formed of collimated fiber elements entrained within a binder material, the longitudinal axis of said collimated fiber elements lying parallel to the longitudinal axis of said stringer enhancement strips, said stringer enhancement strips interspersed within said base layers and extending through said planar part, said stringer enhancement strips lying parallel to one another and substantially perpendicular to said edge of said substantially planar part;

(c) filler layers composed of layers of fibrous material, said fibrous material formed of collimated fiber elements entrained within a binder material, said filler layers interspersed within said base layers proximal to said edge of said planar part, said filler layers located between said stringer enhancement strips, said filler layers distributed so that the thickness of said panel along said edge is substantially uniform; and

(d) a plurality of elongate stringers composed of layers of fibrous material, said fibrous material formed of collimated fiber elements entrained within a binder material, said stringers attached to one side of said planar part in alignment with said stringer enhancement strips.

4,606,962

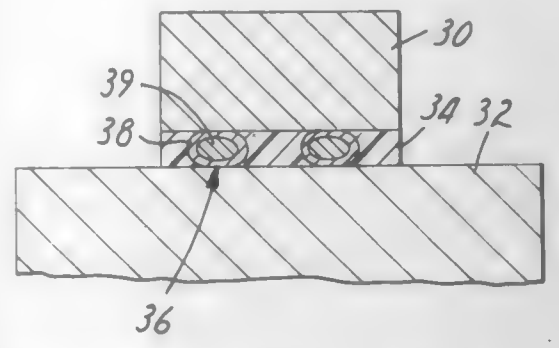
ELECTRICALLY AND THERMALLY CONDUCTIVE ADHESIVE TRANSFER TAPE

Robert S. Reylek, Shoreview, and Kenneth C. Thompson, Cottage Grove, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 503,578, Jun. 13, 1983, abandoned.
This application May 31, 1985, Ser. No. 739,508
Int. Cl.[4] B32B 5/00
U.S. Cl. 428—148 24 Claims

1. Adhesive transfer tape comprising a flexible, low-adhesion carrier web to which is lightly adhered a layer of adhesive containing electrically and thermally conductive particles which at the bonding temperature of the adhesive are at least as deformable as are substantially pure silver spherical particles at ordinary room temperatures, said conductive particles being of uniform thickness at least five percent greater than the thickness of the adhesive between particles, and being uniformly distributed throughout the layer or preselected segments of the layer, and when said particle-containing layer is removed from the carrier web and compressed between two flat rigid plates, the particles are flattened to the thickness of the adhesive between particles, thus providing small, flat conductive areas at both surfaces of the adhesive layer.

16. Method of attaching a die to a thermally and electrically conductive substrate comprising the steps of bonding to a semiconductor wafer the adhesive layer of the tape defined in claim 1, cutting the wafer and adhesive layer into individual adhesive-bearing dice and, at the bonding temperature of the adhesive, pressing the adhesive layer of a die against said



substrate under sufficient pressure to flatten the conductive particles of the tape to the thickness of the adhesive layer between particles.

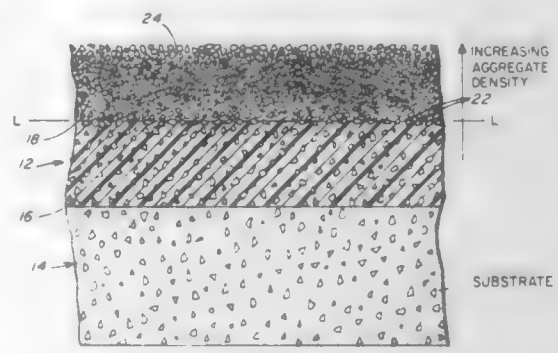
18. Adhesive tape useful as a die attach adhesive comprising a flexible, low-adhesion carrier web to which is lightly adhered a layer of adhesive containing electrically and thermally conductive elements providing protuberances at each surface of the layer that are closely spaced and uniformly distributed throughout the layer, which protuberances at the bonding temperature of the adhesive are at least as deformable as are substantially pure silver spherical particles at ordinary room temperatures, the average distance between apices of the protuberances at one surface to those at the other surface being from about 10 to about 100 percent greater than the thickness of said adhesive between protuberances.

4,606,963

SYNTHETIC CLAY TENNIS COURT AND METHOD OF MAKING THE SAME

Dominic L. Farrell, 297 Senneville, Senneville, Quebec J0P 1H0, Canada

Continuation of Ser. No. 288,967, Jul. 31, 1981, abandoned, which is a continuation of Ser. No. 34,592, Apr. 30, 1979, abandoned. This application Feb. 27, 1985, Ser. No. 705,860
Int. Cl.[4] B32B 5/16, 5/22
U.S. Cl. 428—150 8 Claims



1. A tennis court surface laminae which consists essentially of:

(a) a first lamina having an upper surface and a lower surface, the lower surface adhesively engaging a sub-surface, the lamina comprising:

a film forming vehicle selected from the group consisting of elastomers and bituminous materials and adapted for ambient temperature curing: aggregate disposed in the

vehicle, at least a portion of the aggregate extending beyond the upper surface to provide a roughened non-uniform gravel-like texture between 30 to 70% of the upper surface of the composition comprising coated aggregate extending beyond the upper level of the vehicle;

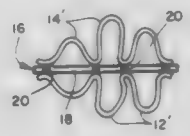
(b) a second lamina of free-flowing particles of aggregate having an upper and a lower surface the second lamina having a thickness of one to three times the thickness of the first lamina, the lower surface contacting the upper surface of the first lamina and the aggregate extending from the upper surface of the first lamina in sliding frictional engagement and the particle size of the aggregate used in both the first and second laminae being between 4 Tyler and to 35 Tyler mesh.

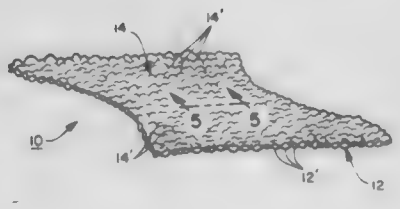
4,606,964

BULKED WEB COMPOSITE AND METHOD OF MAKING THE SAME

Ronald H. Wideman, Menasha, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.

Filed Nov. 22, 1985, Ser. No. 801,164
Int. Cl.[4] B32B *3/28, 5/04, 7/12, 7/14*
U.S. Cl. 428—152 **15 Claims**





1. A bulked composite material comprising a reticulated web of elastic material bonded while held under differential tensioning forces to at least one gatherable web, the composite material having gathers formed therein by contraction of differentially tensioned portions of said reticulated web upon release of the tension forces whereby the composite is more bulked in some areas than in others.

11. A method of making a bulked web composite, comprising:

forming a reticulated web of elastic material;

elongating at least portions of the web by differentially tensioning different portions of the reticulated web;

bonding the differentially tensioned web to at least one gatherable web to form a composite material; and

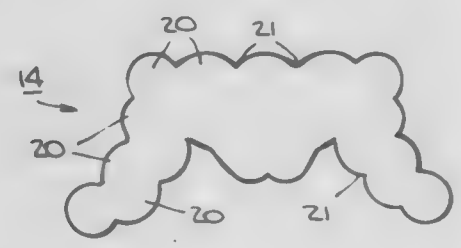
relaxing the composite to gather portions of the gatherable web.

4,606,965

LOOSE FILL PACKING ELEMENT

Harry Bussey, P.O. Box 115, Serpentine Rd., Navesink, N.J.

Filed Apr. 27, 1984, Ser. No. 604,947
Int. Cl.[4] B32B *3/00, 3/30*
U.S. Cl. 428—158 **12 Claims**



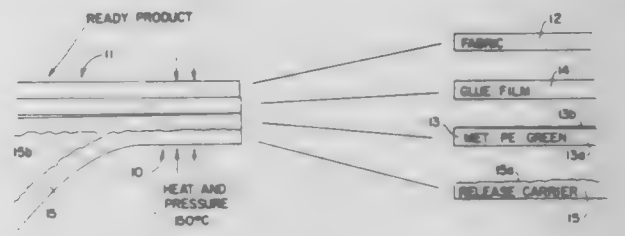
1. A loose fill packing element of resilient thermoplastic material, said element having a central longitudinal axis with a longitudinal length less than a transverse width thereof, a peripheral surface parallel to and about said axis, and a plurality of longitudinally extending grooves in said surface parallel to said central axis to define a plurality of parallel flutes with said flutes and said grooves defining a continuous peripheral surface having a tough skin.

4,606,966

CAMOUFLAGE CONTROLLING REFLECTION OF BOTH LONG AND SHORT RADAR WAVES

Lars G. Karlsson, Gamelby, Sweden, assignor to Diab-Barracuda AB, Laholm, Sweden

Continuation-in-part of Ser. No. 597,163, Apr. 5, 1984, Pat. No. 4,557,965. This application Aug. 30, 1985, Ser. No. 771,495
Claims priority, application Sweden, Apr. 7, 1983, 8301908
Int. Cl.[4] B32B *5/12*
U.S. Cl. 428—196 **13 Claims**



1. Camouflage material comprising a laminate including means for supporting portions of said camouflage material and embodying means for reflecting incident radar waves throughout the radar electromagnetic spectrum to a predetermined extent with respect to the wavelength ranges within said spectrum, said reflecting means comprising electrically conductive fibrils supported by said supporting means and arranged within said camouflage material and distributed throughout an area substantially coextensive with said camouflage material, said reflecting means further comprising a thin layer of crackled metal substantially coextensive with said camouflage material and supported by said supporting means, the density of said fibrils being such that in combination with said layer of crackled metal a predetermined degree of reflection of incident radar waves is attained throughout the radar electromagnetic spectrum.

4,606,967

SPHERICAL ALUMINUM PARTICLES IN COATINGS

Mark F. Mosser, Sellersville, Pa., assignor to Sermatech International Inc., Limerick, Pa.

Division of Ser. No. 543,281, Oct. 19, 1983, Pat. No. 4,537,632. This application Jun. 7, 1985, Ser. No. 742,284
Int. Cl.[4] B32B *5/16, 15/02;* **B05D** *7/14*
U.S. Cl. 428—220 **13 Claims**



1. A coated metal or ceramic part which has improved surface profile, corrosion resistance, and erosion resistance, which metal or ceramic part has a cured coating which comprises:

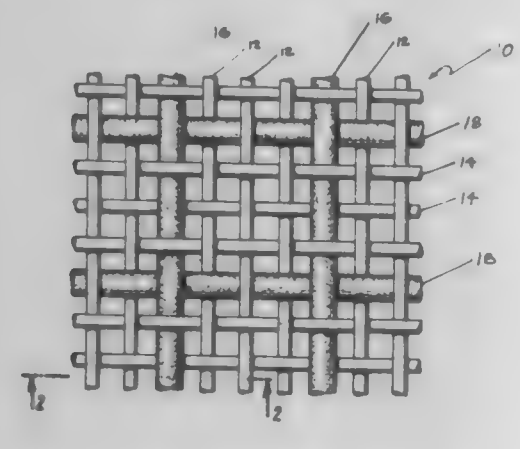
(a) a binder which comprises phosphate and an inorganic compound of the group consisting of chromate or molybate and the metal salts thereof, and distributed and bound firmly thereby atomized aluminum spheroids having an average particle size not larger than 4 microns.

4,606,968

ELECTROSTATIC DISSIPATING FABRIC

Peter B. Thornton, Bronxville; Stanley H. Cone, and George W. Booz, both of Hornell, all of N.Y., assignors to Stern and Stern Textiles, Inc., New York, N.Y.

Filed Jul. 25, 1983, Ser. No. 517,124
Int. Cl.[4] D03D *3/00*
U.S. Cl. 428—229 21 Claims



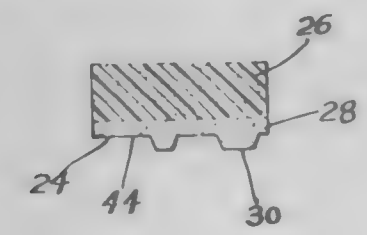
1. An improved static dissipating fabric comprising a base fabric woven primarily of non-conductive yarn, said base fabric having a front surface and a back surface, a first plurality of raised electroconductive yarns woven into said base fabric extending from said front surface to said back surface of said base fabric and extending beyond the planes of said front and back surfaces in a substantially mutually parallel orientation to each other thereby forming a raised substantially parallel grid on both said front and said back surfaces of said base fabric, a second plurality of raised electroconductive yarns woven into said base fabric in a direction substantially perpendicular to said first plurality of raised electroconductive yarns and extending from said front surface to said back surface of said base fabric and extending beyond the planes of said front and back surfaces forming a raised substantially rectangular grid with said first and second pluralities of raised electroconductive yarns on both said front and back surfaces of said base fabric, said first plurality and said second plurality of raised electroconductive yarns including a combination of carbon doped yarns plied with nonconductive yarns.

4,606,969

MICROPOROUS MARKING STRUCTURES AND METHOD

David L. Hedgecoth, Cookeville County, Tenn., assignor to Porelon, Inc., Cookeville, Tenn.

Filed Sep. 11, 1985, Ser. No. 775,456
Int. Cl.[4] B41K *1/38*
U.S. Cl. 428—280 24 Claims



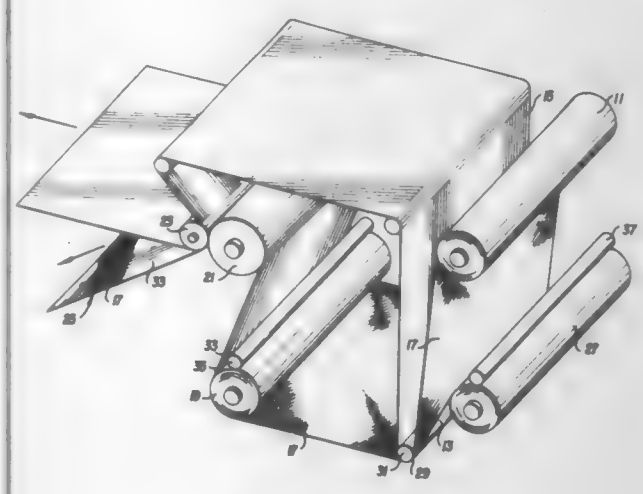
1. In a marking structure for applying a marking fluid comprising an outer layer having a microporous structure formed from interconnected aggregate particles of a thermoplastic resin, which particles form a unitary cohesive network of pores, said pores containing a marking fluid which is substantially incompatible with said resin, and a backing layer underlying said outer layer and interconnected with said outer layer at the interface of said layers, the improvement which comprises said backing layer being a felt impregnated with from about 4 to 12% of a sizing agent which is capable of absorbing said marking fluid and said resin.

4,606,970

LAMINATED PLASTIC/NON-WOVEN FILM AND ITS METHOD OF MANUFACTURE

Gordon V. Sharps, Jr., Fairport, N.Y., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Dec. 19, 1983, Ser. No. 562,902
Int. Cl.[4] B32B *7/00, 27/12*
U.S. Cl. 428—301 17 Claims



1. A composite laminated film comprising:

a first layer of non-woven fiber material having a quantity of fiber material in a range of 0.125 to 1.5 oz. per square yard, wherein said non-woven fiber is selected from the group consisting of polypropylene tow, polyethylene/polypropylene mixed tow material, and slit polyethylene film; and,

a second layer of a plastic film secured to a first surface of said first layer of non-woven material, said second layer of plastic film having a thickness in a range of 0.2 to 1.5 mils, wherein said second layer of plastic film is a layer selected from one of: a linear low density polyethylene, a low density polyethylene, a high density polyethylene, a high molecular weight high density polyethylene, and a polymer blend containing one or more of these materials.

4,606,971

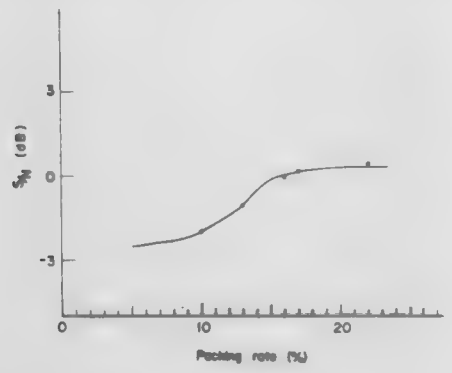
MAGNETIC RECORDING MEDIUM

Tadashi Ido, Ebina; Osamu Kubo, Yokohama; Masahiro Fukasawa, Tokyo; Tatsumi Maeda, Kawasaki, and Tutomu Nomura, Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Aug. 10, 1984, Ser. No. 639,317
Claims priority, application Japan, Aug. 19, 1983, 58-150157
Int. Cl.[4] G11B *5/70*
U.S. Cl. 428—328 8 Claims

1. A magnetic recording medium comprised of a substrate and a layer of magnetic powder coated on a surface of said substrate, wherein said magnetic powder comprises hexagonal

crystals having (a) single domain crystalline magnetic anisotropy, (b) particle sizes of 0.01 to 0.3 μm, and (c) particle size/-



thickness ratios of 2.3 to 15, the tapping packing rate of said magnetic powder being 15% or more.

4,606,972

POLYAMIDE YARN WITH ANTIOXIDANT FINISH

Robert M. Marshall, Chester, Va., assignor to Allied Corporation, Morris Township, Morris County, N.J.

Filed Sep. 9, 1985, Ser. No. 773,682

Int. Cl.[4] D02G *3/48*

U.S. Cl. 428—395 **11 Claims**

1. A finish composition for polyamide yarn to be processed into tire cord, said finish composition comprising a diarylamine-ketone condensation product and a compound selected from the group consisting of 1,3,5 tris(4t-butyl-3-hydroxy-2,6-dimethylbenzyl)-1,3,5 triazine-2,4,6(1H, 3H, 5H) trione and 1,3,5 tris(2 hydroxy ethyl)-s-triazine-2,4,6(1H, 3H, 5H) trione, said condensation product and said compound being present in amounts sufficient to provide enhanced aged adhesion retention of said tire cord to rubber.

4,606,973

SUBSTRATE WITH PERFLUOROCARBON POLYMERIC COATINGS HAVING LOW CRITICAL SURFACE TENSIONS

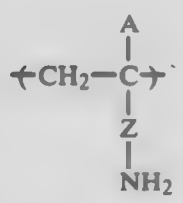
Donald L. Schmidt, and Demetrius Urchick, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed May 11, 1984, Ser. No. 609,180

Int. Cl.[4] B32B *27/28*

U.S. Cl. 428—421 **1 Claim**

1. A coated substrate wherein the coating for the substrate results from contacting the composition comprising a polyamine containing polymer, a nucleophilic fluoroalkyl-containing carboxylic acid and a suitable solvent with said substrate and curing to yield a polymer comprising pendant amine-functional portions, having repeating units of the general formula



wherein A is selected from the group consisting of the hydrogen, chloride and methyl radicals; and z is a bridging group containing at least one carbon atom and which can contain oxygen, nitrogen and/or sulfur atoms, linked to a perfluorocarbon moiety having a perfluoroalkyl group through a carboxy group.

4,606,974

LEVELLER-CONTAINING HIGH-SOLIDS POLYURETHANE REACTIVE COATING SYSTEMS AND THEIR USE FOR REACTIVE COATING

Wilhelm Thoma, Leverkusen; Karl H. Pisaric, Pulheim, and Heinrich Alberts, Odenthal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Division of Ser. No. 542,283, Oct. 14, 1983, Pat. No. 4,571,417. This application Nov. 18, 1985, Ser. No. 799,090

Claims priority, application Fed. Rep. of Germany, Oct. 28, 1982, 3239900

Int. Cl.[4] B32B *9/04*

U.S. Cl. 428—447 **20 Claims**

1. A coated substrate wherein the substrate comprises a member selected from the group consisting of textile substrates and surface-textured, sheet-form materials and wherein said coating comprises a high-solids polyurethane reactive coating system based on blocked NCO-prepolymers, polyamines and optionally, solvents, said coating system containing a leveller agent comprising:

(1) a combination of about 1 to 10% by weight of (A) vinyl polymers and copolymers based on (meth)acrylic acid esters and, optionally, other vinyl comonomers and from about 0.1 to 2.0% by weight of (B) polysiloxanes,

(2) from about 0.2 to 2.0% by weight of (C) poly(meth)acrylic acid (hydroxy)alkyl ester graft polymers on mixtures of dimethylpolysiloxanes containing vinyl residues and SiH-containing dimethylpolysiloxanes,

(3) mixtures of (A), (B) and (C) in the amounts specified,

(4) mixtures of (A) and (C) in the amounts specified or

(5) mixtures of (B) and (C) in the amounts specified.

4,606,975

PROCESS FOR THE TWO-STAGE ANODIC OXIDATION OF ALUMINUM BASES FOR OFFSET PRINTING PLATES AND PRODUCT THEREOF

Dieter Mohr, Schlangenbad, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Jul. 26, 1984, Ser. No. 634,550

Claims priority, application Fed. Rep. of Germany, Aug. 3, 1983, 3328048

Int. Cl.[4] C25D *11/12*; B41N *1/04*; B41C *1/10*

U.S. Cl. 428—469 **12 Claims**

1. A process for producing a base for an offset printing plate comprising the steps of:

subjecting a base material selected from aluminum and aluminum alloys to at least one roughening treatment selected from chemical roughening, mechanical roughening and electrochemical roughening to produce a roughened base material;

anodically oxidizing said roughened base material in a first stage in an aqueous H_3PO_4-free electrolyte in a concentration range from about 5 to 500 g/l comprising dissolved phosphoroxo-anions for a period from about 1 to about 60 seconds, at a voltage from about 10 to about 100 volts and at a temperature from about 10° to about 80° C., until a first stage oxide layer from about 0.4 to 1.4 g/m^2 is attained; and

thereafter further anodically oxidzing the first stage oxidized base material in a second stage in an aqueous electrolyte in a concentration from about 100 g/l to 250 g/l H_2SO_4 and at at least 5 g/l Al^{3+} ions at a temperature from about 20° to 60° C. until a total oxide layer which is thicker than said first stage oxide layer and has a layer weight of up to 3 g/m^2 is attained.

4,606,976

SUBSTANTIALLY SCRATCH-FREE POLYESTER MULTILAYER FILM

Hartmut Hensel, Schlangenbad, and Helmut Monzer, deceased, late of Wiesbaden, both of Fed. Rep. of Germany (by Jana Monzer, Daniel Monzer, legal representatives), assignors to American Hoechst Corporation, Somerville, N.J.

Filed Apr. 16, 1985, Ser. No. 723,684

Claims priority, application Fed. Rep. of Germany, Apr. 16, 1984, 3414309

Int. Cl.[4] B32B *27/06, 27/36*

U.S. Cl. 428—480 12 Claims

1. A substantially scratch-free, multilayer polyester film comprising

(i) a biaxially oriented polyester substrate

(ii) at least one polyester cover layer which is applied to at least one surface of said polyester substrate

with the following provisos

(a) that the melting point of said polyester cover layer is lower than the melting point of said polyester substrate

(b) that the surface of said polyester cover layer is substantially free of scratches having a length greater than 3.0 mm and a cross-section greater than 10 microns.

4,606,977

AMORPHOUS METAL HARDFACING COATINGS

James Dickson, Stirling; Louis F. Nienart, Bloomsbury, and David W. Roth, Convent Station, all of N.J., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Division of Ser. No. 464,180, Feb. 7, 1983, Pat. No. 4,503,085, and a continuation-in-part of Ser. No. 285,730, Jul. 22, 1981, abandoned. This application Oct. 22, 1984, Ser. No. 663,615

Int. Cl.[4] B22F *1/00;* B32B *15/00, 15/02, 15/04*

U.S. Cl. 428—553 2 Claims

1. A composite article comprising a metal substrate having a hardfacing coating that is prepared by flame-spraying or plasma-spraying platelet-shaped amorphous metal particles having a mesh size of −80 Tyler mesh, the coating being substantially amorphous and consisting essentially of the formulation:

$$(Fe,Ni,Co)_{bal}Cr_{0\text{-}20}(Mo,W,Mn)_{0\text{-}35}(B,Si,C)_{5\text{-}25}(Al,Ti)_{0\text{-}10}$$

where the subscripts are in atomic percent and with the provisos that the B content is between 4 and 15 atomic percent and that bal exceeds 50%.

4,606,978

DUCTILE BRAZING ALLOY FOIL CONTAINING REACTIVE METALS AND PRECIOUS METALS

Howard Mizuhara, Hillsborough, Calif., assignor to GTE Products Corporation, Stamford, Conn.

Continuation of Ser. No. 422,625, Sep. 24, 1982. This application Nov. 16, 1984, Ser. No. 672,058

Int. Cl.[4] C22C *5/02, 9/00, 30/02*

U.S. Cl. 428—606 6 Claims

1. An article consisting essentially of a ductile brazing alloy foil having a liquidus temperature of from about 890° C. to about 1400° C., said alloy having a composition consisting essentially of from about 0.25% to about 5% by weight of titanium, from about 25% by weight to about 85% by weight of a gold and from about 3% by weight to about 40% by weight of nickel and from about 5% to about 65% by weight of copper.

4,606,979

POROUS THIN FOIL AND METHOD FOR MANUFACTURING THE SAME

Tomokazu Takeuchi, 4-14-4, Ohgigaya, Kamakura-ski, Kanagawa, Japan

Filed Oct. 2, 1985, Ser. No. 782,909

Int. Cl.[4] B21B *1/38;* B23P *15/16*

U.S. Cl. 428—606 13 Claims



2. A method for manufacturing a porous thin foil comprising: a step of folding in half a first metallic plate having a large elongation percentage and inserting a second metallic plate having a small elongation percentage between the opposite folds of the folded first metallic plate; a step of cold-rolling the folded first metallic plate together with the second metallic plate inserted between the opposite folds of the folded first metallic plate; and a step of separating a porous thin foil formed from the second metallic plate from the folded first metallic plate after a plurality of cycles of cold-rolling.

4,606,980

DUCTILE ALUMINUM BASED BRAZING FOIL CONTAINING REACTIVE METALS AND COPPER

Howard Mizuhara, Hillsborough, Calif., assignor to GTE Products Corporation, Stamford, Conn.

Continuation of Ser. No. 420,074, Sep. 20, 1982, abandoned. This application Dec. 24, 1984, Ser. No. 691,347

Int. Cl.[4] C22C *21/12*

U.S. Cl. 428—606 2 Claims

1. An article consisting essentially of a ductile foil of a tertiary brazing alloy consisting essentially of from about 0.25% to about 5% weight of titanium, from about 1 to about 5% by weight of copper, balance aluminum.

4,606,981

DUCTILE BRAZING ALLOYS CONTAINING REACTIVE METALS

Howard Mizuhara, Hillsborough, Calif., assignor to GTE Products Corporation, Stamford, Conn.

Continuation of Ser. No. 446,285, Dec. 2, 1982, Pat. No. 4,448,605. This application Mar. 9, 1984, Ser. No. 570,566

Int. Cl.[4] C22C *5/02*

U.S. Cl. 428—606 3 Claims

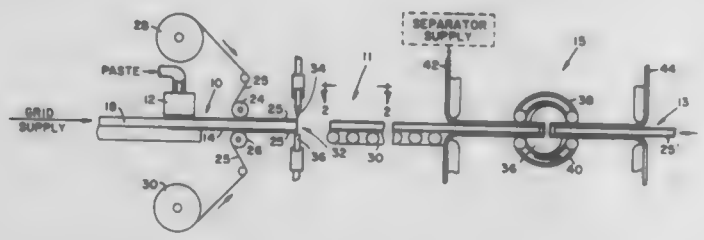
1. An article consisting essentially of a ductile brazing foil having a thickness of from about 2 to about 6 mils, said foil being made of a binary alloy of from about 0.1 to 4% by weight of titanium and the balance being gold.

4,606,982

SEALED LEAD-ACID CELL AND METHOD

Robert F. Nelson, London, England, and Tristan D. Juergens, Golden, Colo., assignors to Gates Energy Products, Inc., Denver, Colo.

Filed May 9, 1985, Ser. No. 732,522
Int. Cl.[4] H01M *2/14, 4/20*
U.S. Cl. 429—59 27 Claims



1. A normally sealed lead-acid cell of the oxygen recombination type comprising a cell housing, in which is disposed at least one porous pasted positive electrode plate made from a thixotropic paste, at least one porous pasted negative electrode plate made from a thixotropic paste, a multilayer absorbent porous separator interleaved between the opposite polarity plates and an electrolyte in a starved amount absorbed in the pores of the plates and separator, said separator including first and second layers, each comprised of a mat of microfine glass fibers, of which the average fiber diameter on a weight basis is less than about b 5 microns, one face of the first layer being integrated into the adjoining face of the positive plate by having a substantial quantity of its microfine glass fibers embedded in the positive paste material, and the other face of the first layer being free from contact with an electrode plate, and one face of the second layer being integrated into the adjoining face of the negative plate by having a substantial quantity of its microfine glass fibers embedded in the negative paste material, and the other face of the second layer being free from contact with an electrode plate.

4,606,983

ANCHORED TERMINAL CONDUCTOR

Maciej A. Milewski, DuLuth, and William P. Delmolino, Dunwoody, both of Ga., assignors to Duracell Inc., Bethel, Conn.

Filed Feb. 25, 1985, Ser. No. 705,152
Int. Cl.[4] H01M *2/06*
U.S. Cl. 429—164 14 Claims



1. An electrochemical cell comprising a cell container which is closed by a resilient insulative cell top and an electrode conductor inserted through said cell top and into an electrode of the cell, with said electrode conductor being physically and electrically accessible to the exterior of the cell whereby it functions as a terminal for the electrode, and wherein a portion of said electrode conductor is enclosed within said cell top, characterized in that said cell further comprises means for substantially restraining movement of said electrode conductor relative to said cell top, wherein said electrode conductor has a nail configuration comprising a head and a shank with the head of said nail providing said external physical and electrical accessibility, wherein said restraining means is integrated with the shank of said nail, wherein said restraining means is positioned on said shank, interior to said cell container and below the interior surface of said cell top and in close juxtaposition to said interior surface, and wherein said restraining means comprises a circumferential barb longitudinally disposed on said shank and having an upper portion which engages said interior surface to provide said substantial restraining of movement.

4,606,984

PROCESS FOR STABILIZING PRIMARY ELECTROCHEMICAL GENERATORS WITH REACTIVE ANODES MADE FROM ZINC, ALUMINIUM OR MAGNESIUM AND AN ANODE FOR SUCH A GENERATOR STABILIZED BY THIS PROCESS

René Vignaud, Aulnay-sous-Bois, France, assignor to Societe les Piles Wonder, France

Filed Jun. 27, 1985, Ser. No. 749,929
Claims priority, application France, Jul. 4, 1984, 84 10632
Int. Cl.[4] H01M *4/60*
U.S. Cl. 429—212 11 Claims

1. Process for stabilizing a primary electrochemical generator comprising at least one reactive anode made from a metal taken from the group consisting of zinc, aluminium and magnesium, characterized in that there is added to said electrode a percentage of 0.01% to 1% by weight with respect to the metal of at least one perfluorated organic compound of the ethoxylated fluoro-alcohol type.

4,606,985

LITHOGRAPHIC PRINTING PLATES

Yoshikazu Takaya; Yasuo Tsubai, and Hiroshi Nishinoiri, all of Nagaokakyo, Japan, assignors to Mitsubishi Paper Mills, Ltd., Tokyo, Japan

Filed Aug. 27, 1982, Ser. No. 412,207
Claims priority, application Japan, Sep. 2, 1981, 56-138249
Int. Cl.[4] G03C *5/54, 1/30, 1/04;* G03F *7/06*
U.S. Cl. 430—14 8 Claims

1. A lithographic printing plate which uses silver or silver halide image as ink receptive area and which has at least one hardened gelatin-containing layer on a support, wherein at least one of the gelatin-containing layers contains a composition including a gelatin resulting from mixing a photographic gelatin having an average molecular weight of about 70,000 to about 150,000 and a low molecular weight gelatin having an average molecular weight of about 3,000 to about 30,000, said low molecular weight gelatin being contained in an amount of about 3 to 30 parts by weight for 100 parts by weight of the photographic gelatin and said layer containing the photographic gelatin and the low molecular weight gelatin being hardened.

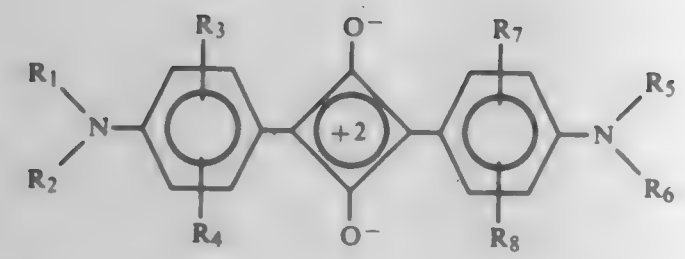
4,606,986

ELECTROPHOTOGRAPHIC ELEMENTS CONTAINING UNSYMMETRICAL SQUARAINES

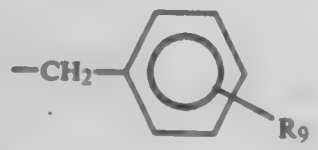
John F. Yanus, Webster, and William W. Limburg, Penfield, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Division of Ser. No. 557,795, Dec. 5, 1983, Pat. No. 4,521,621.
This application Apr. 5, 1985, Ser. No. 698,064
Int. Cl.[4] G03G *5/06, 5/14*
U.S. Cl. 430—59 13 Claims

2. An electrostatographic imaging member comprising a supporting substrate, a photoconductive layer comprising from about 5 percent and about 100 percent by volume of an unsymmetrical squaraine composition having the formula:



wherein R_1, R_2, R_5 and R_6 are independently selected from the group consisting of alkyl radicals having 1 to 4 carbon atoms, phenyl radicals, and radicals having the formula:



and R_3, R_4, R_7 and R_8 are independently selected from the group consisting of H, CH_3, CH_2CH_3, CF_3, F, Cl, Br, and COOH, wherein at least one of R_3 and R_4 are different than R_7 and R_8 if R_7 and R_8 are located on the same relative position on the aromatic ring as R_3 and R_4 and wherein R_9 is selected from the group consisting of H, alkyl radicals having from 1 to 4 carbon atoms, F, Cl, Br, COOH, CN and CF_3, and a charge transport layer.

4. An electrostatographic imaging member in accordance with claim 2 wherein said hole transport layer comprises a diamine hole transport material.

4,606,987

HYDRAZONE OR SEMICARBAZONE ELECTROPHOTOGRAPHIC PHOTOSENSITIVE MATERIAL

Kazuo Matsuura, Kusatsu; Hiroki Osedo, and Keisuke Ohshima, both of Ohtsu, all of Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Filed Jul. 9, 1985, Ser. No. 753,187

Claims priority, application Japan, Jul. 10, 1984, 59-142593; Jul. 10, 1984, 59-142594

Int. Cl.⁴ G03G *5/06, 5/14*

U.S. Cl. 430—59 **19 Claims**

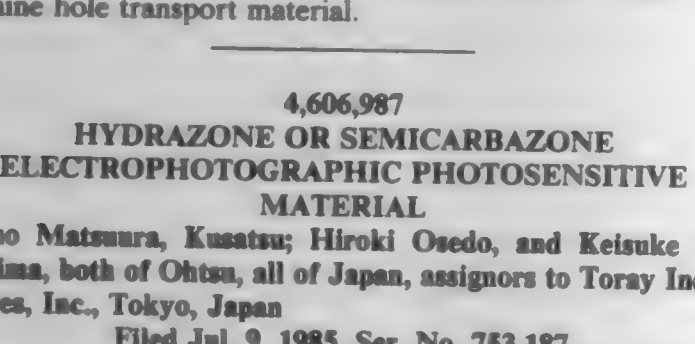
1. An electrophotograhic photosensitive material comprising a photosensitive layer formed on an electroconductive substrate, said photosensitive layer containing a polymeric binder and an organic photoconductor represented by the following Formula (I):

$$A—CH{=}CH)_nCH{=}NNHY \quad (I)$$

wherein A is selected from the group consisting of an alkyl group having 1 to 12 carbon atoms, an aralkyl group having 7 to 14 carbon atoms, an aryl group having 6 to 20 carbon atoms and a heterocyclic residue of a 3- to 30-membered ring,

wherein n is 1 or 2,

Y is selected from the group consisting of $—SO_2R'$,



(wherein R′ is selected from the group consisting of an alkyl group having 1 to 12 carbon atoms, an aralkyl group having 7 to 14 carbon atoms, an aryl group having 6 to 20 carbon atoms and a heterocyclic residue of a 3- to 30-membered ring, and R^2 and R^3, R^4 and R^5, either form a ring together with the nitrogen atom to which R^2 and R^3, R^4 and R^5 are bonded and in this case R^2 and R^3, R^4 and R^5 independently signify (1) a carbon atom, or (2) at least one atom selected from the group consisting of an oxygen atom, a nitrogen atom, and a sulfur atom which is included in the same ring, or R^2 and R^3, R^4 and R^5 are not included in the same ring and in this case R^2 and R^3, R^4 and R^5 independently signify a hydrogen atom, an alkyl group having 1 to 12 carbon atoms, an aralkyl group having 7 to 14 carbon atoms, an aryl group having 6 to 20 carbon atoms or a heterocyclic residue of a 3- to 30-membered ring,

B is selected from the group consisting of an alkyl group having 1 to 12 carbon atoms, an aralkyl group having 7 to 14 carbon atoms, an aryl group having 6 to 20 carbon atoms or a heterocyclic residue of a 3- to 30-membered ring,

x is an oxygen atom or a sulfur atom,

m is 1 or 2, and wherein R^1 through R^5, A and B may be either substituted or not substituted.

10. An electrophotographic photosensitive material as set forth in claim 1, wherein the photosensitive layer is a photoconductive layer or a charge transport layer.

13. An electrophotographic photosensitive material as set forth in claim 10, which has an electroconductive substrate/photoconductive layer structure, an electroconductive substrate/charge generating layer/charge transport layer structure or an electroconductive substrate/charge transport layer/charge generating layer structure.

4,606,988

STYRYL DERIVATIVES AND ELECTROPHOTOGRAPHIC PHOTOCONDUCTOR COMPRISING ONE STYRYL DERIVATIVE

Masaomi Sasaki, Susono, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

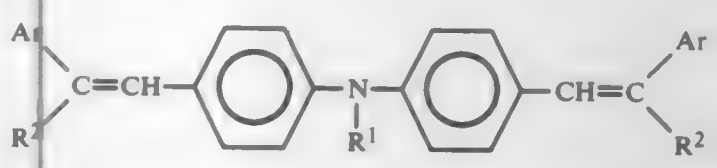
Filed Feb. 15, 1985, Ser. No. 702,072

Claims priority, application Japan, Feb. 21, 1984, 59-29606; Feb. 21, 1984, 59-29607

Int. Cl.⁴ G03G *5/06*

U.S. Cl. 430—59 **10 Claims**

1. An electrophotographic photoconductor comprising an electroconductive support material and a photosensitive layer comprising at least one styryl derivative of the formula



wherein R^1 is selected from the group consisting of an alkyl group, a substituted alkyl group, an aryl group and a substituted aryl group; R^2 is selected from the group consisting of hydrogen, an alkyl group, a substituted alkyl group, an aryl group and a substituted aryl group; and Ar represents an aryl group or a substituted aryl group.

4,606,989

LIQUID DEVELOPER FOR DEVELOPMENT OF ELECTROSTATIC IMAGES

Herman J. Uytterhoeven, Bonheiden; August M. Mariën, Oevel, and Walter F. De Winter, 's-Gravenwezel, all of Belgium, assignors to Agfa-Gevaert N.V., Mortsel, Belgium

Filed Sep. 18, 1985, Ser. No. 776,860

Claims priority, application European Pat. Off., Oct. 2, 1984, 84201397.1

Int. Cl.⁴ G03G *9/12*

U.S. Cl. 430—106 **8 Claims**

1. A liquid developer composition that is suitable for render-

ing visible electrostatically charged areas which composition contains in an electrically insulating non-polar carrier liquid having a volume resistivity of at least 10^9 ohm.cm and a dielectric constant less than 3, dispersed colouring matter acting as toner particles and at least one anionic polymer that includes recurring units incorporating an anionic group together with a non-polymeric counter cation, characterized in that said cation is a member selected from the group consisting of:

(1) a cationic group being a protonated tertiary amine group,

(2) a quaternary ammonium group, a phosphonium group or a sulphonium group, and

(3) a cationic group containing at least one carbon chain residue comprising at least 6 C-atoms,

whereby the said polymer is adsorbed with a net negative charge on the toner particles.

7. Liquid developer composition according to claim 1, wherein the colouring matter is carbon black.

4,606,990

METHOD FOR FORMING A THIN LAYER OF DEVELOPER

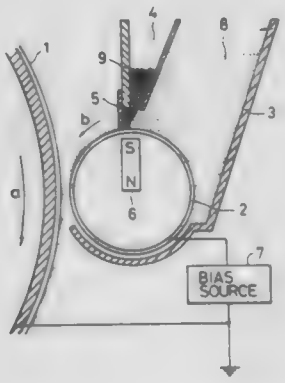
Masao Yoshikawa, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 466,574, Feb. 15, 1983, Pat. No. 4,548,489. This application Jan. 30, 1985, Ser. No. 696,326

Claims priority, application Japan, Feb. 19, 1982, 57-25676

Int. Cl.[4] G03G *13/09, 13/08*

U.S. Cl. 430—122 **8 Claims**



1. A method of forming a layer of non-magnetic developer particles on a surface of a developer carrying member comprising the steps of:

providing magnetic particles and non-magnetic developer particles onto a developer carrying member;

forming a stationary magnetic field between a magnetic blade disposed with a clearance to the developer carrying member and a magnet stationarily disposed across the developer carrying member from the magnetic blade to confine the magnetic particles; and

moving the developer carrying member to carry the non-magnetic developer particles thereon and pass them by the confined magnetic particles to form a thin layer of the non-magnetic developer particles on the developer carrying member.

4,606,991

COLOR PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL WITH 2-ACYLAMINO PHENOL DYE RELEASER

Ken Kawata; Kozo Sato, and Hideki Naito, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Aug. 16, 1985, Ser. No. 766,314

Claims priority, application Japan, Aug. 17, 1984, 59-171162

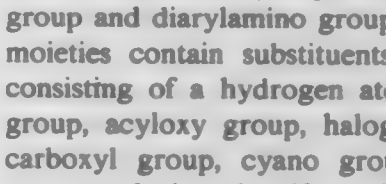
Int. Cl.[4] G03C *1/40, 5/54*

U.S. Cl. 430—203 **6 Claims**

5. A process for forming an image which comprises imagewise exposing a color photographic light-sensitive material as which comprises at least one 2-acylaminophenol derivative as later defined, heating the thus-exposed photographic light-sensitive material and then transferring a diffusible dye released from the dye-providing 2-acylaminophenol derivative as later defined to an image receiving sheet containing a mordanting agent or a dye receiving base, wherein said color photographic light-sensitive material comprises at least one silver halide emulsion layer and said at least one dye-providing 2-acylaminophenol derivative which is represented by formula (I)

$$A—L—D \qquad (I)$$

wherein A represents a reducing group represented by the formula (II)

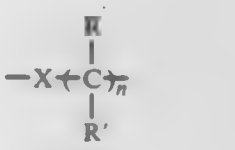


(II)

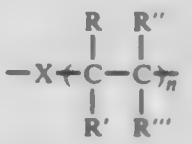
wherein R_1 represents a hydrogen atom or an acyl group, and R_2, R_3, R_4, and R_5 each represents a substituent selected from a hydrogen atom, alkyl group, cycloalkyl group, alkenyl group, aryl group, alkoxy group, aryloxy group, aralkyl group, acylamino group, alkylamino group, dialkylamino group, arylamino group, diarylamino group, halogen atom, acyloxy group, hydroxyl group, carboxyl group, cyano group, acyl group, carbamoyl group, substituted carbamoyl group, sulfamoyl group, substituted sulfamoyl group, sulfamoylamino group, substituted sulfamoylamino group, ureido group, substituted ureido group, alkylsulfonyl group, arylsulfonyl group, alkylsulfonylamino group, arylsulfonylamino group and nitro groups, wherein the alkyl or aryl moieties contain substituents selected from the group consisting of a hydrogen atom, alkoxy group, aryloxy group, acyloxy group, halogen atom, hydroxyl group, carboxyl group, cyano group, acyl group, sulfamoyl group, substituted sulfamoyl group, carbamoyl group, substituted carbamoyl group, acylamino group, ureido group, substituted ureido group, alkylsulfonyl group, arylsulfonyl group, alkylsulfonylamino group, and arylsulfonylamino group, and

T represents a substituent selected from alkoxy group, aryloxy group, alkylsulfonylamino group, arylsulfonylamino group, alkylamino group, dialkylamino group, arylamino group and diarylamino group, wherein the alkyl or aryl moieties contain substituents selected from the group consisting of a hydrogen atom, alkoxy group, aryloxy group, acyloxy group, halogen atom, hydroxyl group, carboxyl group, cyano group, acyl group, sulfamoyl group, substituted sulfamoyl group, carbamoyl group, substituted carbamoyl group, acylamino group, ureido group, substituted ureido group, alkylsulfonyl group, arylsulfonyl group, alkylsulfonylamino group, and arylsulfonylamino group;

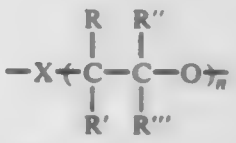
L represents a bonding group selected from the divalent group



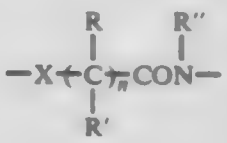
n = 0 to 3



n = 1 to 2

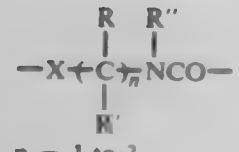


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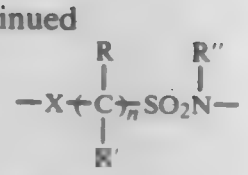


n = 1 to 3

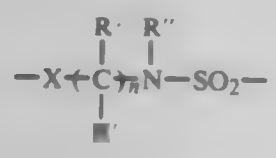
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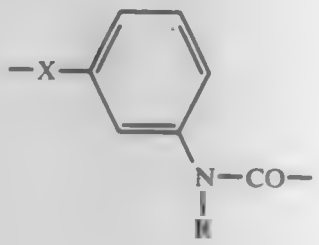
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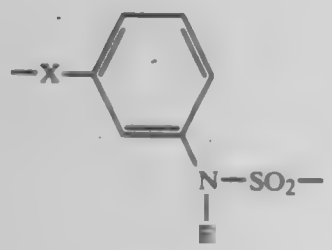


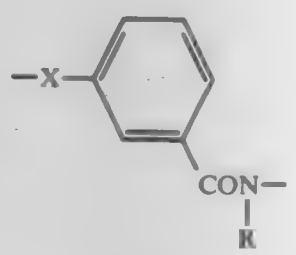
n = 0 to 3

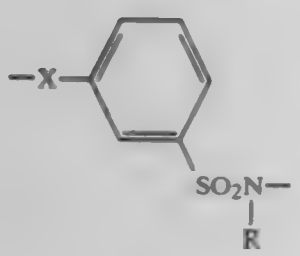


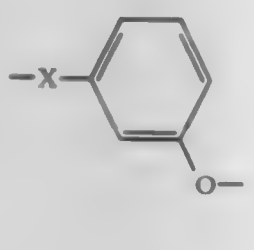
n = 1 to 3

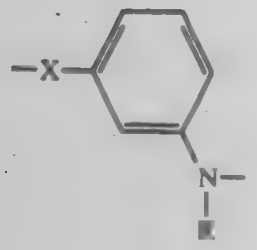


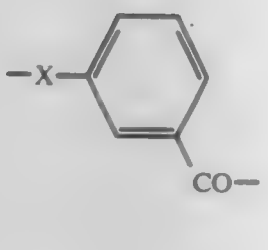


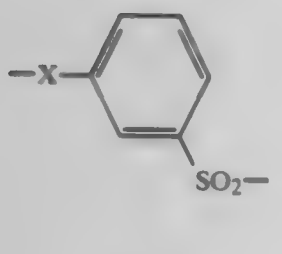


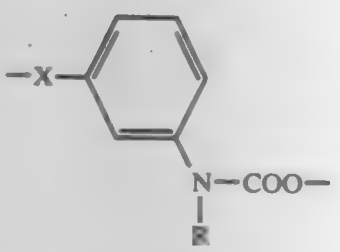


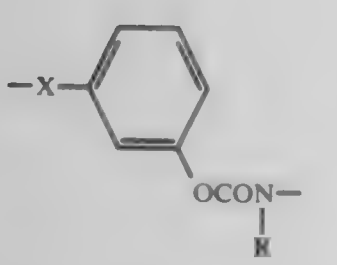


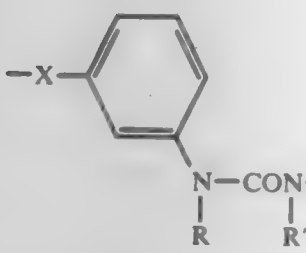






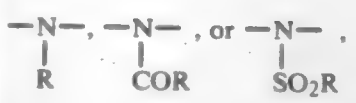






wherein R, R', R'', and R''' each represents a substituent selected from a hydrogen atom, methyl group, ethyl group, hydroxymethyl group, methoxymethyl group, carboxymethyl group, cyanomethyl group, hydroxyethyl group, methoxyethyl group, carboxyethyl group, and cyanoethyl group; and the benzene ring of the bonding groups containing a benzene ring contain substituents selected from the group containing of a hydrogen atom, alkyl group, alkoxy group, halogen group, and hydroxyl group, and

X represents —O—, —S—,



wherein R is the same as defined above, and

D represents a dye or dye precursor.

4,606,992

REFLECTING LAYER FOR IMAGE TRANSFER PRINTS

John F. Bishop, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 17, 1985, Ser. No. 788,292

Int. Cl.[4] G03C *1/40, 5/54*

U.S. Cl. 430—220 **20 Claims**

1. In a photographic assemblage comprising:

(a) a photosensitive element comprising a transparent support having thereon the following layers in sequence: a dye image-receiving layer; a stripping layer which enables said support and said dye image-receiving layer to be separated, after processing, from the rest of said assemblage; an alkaline solution-permeable, opaque layer; and at least one silver halide emulsion layer having a dye image-providing material associated therewith;

(b) a transparent cover sheet superposed over the layer outermost from the support of said photo-sensitive element; and

(c) a rupturable container containing an alkaline processing composition and an opacifying agent, said container being so positioned during processing of said assemblage that a compressive force applied to said container will effect a discharge of the container's contents between said transparent cover sheet and said photosensitive element;

the improvement wherein a reflecting layer is located between said transparent support and said dye image-receiving layer.

4,606,993

WATER DEVELOPABLE PHOTOSENSITIVE RESIN COMPOSITION

Junichi Fujikawa, Kyoto, and Shigetora Kashio, Shiga, both of Japan, assignors to Toray Industries Incorporated, Tokyo, Japan

Continuation of Ser. No. 622,836, Jul. 21, 1984, abandoned. This application Jan. 27, 1986, Ser. No. 822,947

Claims priority, application Japan, Jul. 1, 1983, 58-118135

Int. Cl.[4] G03C *1/68*

U.S. Cl. 430—281 **8 Claims**

1. A water-developable, photosensitive resin composition consisting essentially of:

(a) 100 parts by weight based upon said composition of a completely or partially saponified polyvinyl acetate having a degree of saponification of more than 50 mole % and an average degree of polymerization in the range of 500 to 3000;

(b) 20 to 300 parts by weight based upon said composition of a photopolymerizable monomer having at least one ethylenically unsaturated bond in the molecule, said unsaturated monomer being selected from the group consisting of an acrylate, methacrylate, acrylamide and methacrylamide;

(c) 1 to 50 parts by weight based upon said composition of a copolymer comprising a polymerizable unsaturated monomer selected from the group consisting of an acrylate, methacrylate, acrylamide and methacrylamide each having a dialkylaminoalkyl group in the molecule, and an unsaturated monomer selected from the group consisting of an acrylate and methacrylate each having a hydroxyl group; and

(d) a photosensitizer.

4,606,994

PROCESS FOR PRODUCING PHOTO-CURED PRINTING PLATES POSSESSING A DEFINED HARDNESS

Karl H. Illers, Otterstadt; Mong-Jon Jun, Speyer, and Gunnar Schornick, Neuleiningen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Continuation of Ser. No. 637,838, Aug. 6, 1984, abandoned. This application Apr. 23, 1985, Ser. No. 726,286

Claims priority, application Fed. Rep. of Germany, Aug. 5, 1983, 3328285

Int. Cl.[4] G03C *7/00*

U.S. Cl. 430—300 6 Claims

1. A process for producing a printing plate having a defined degree of hardness which comprises:

(a) heating a solid photocurable layer containing one or more partially crystalline polymeric binders at a temperature of from about 50° to about 130° C. for a sufficient period of time to partially or completely fuse the partially crystalline parts of the polymeric binder, said partially crystalline polymeric binder being a polyurethane, a polyurethane-polyurea, a urethane-containing nylon having olefinic double bonds in side groups, a nylon possessing olefinic double bonds capable of undergoing polymerization, or being a polyether-ester possessing olefinic bonds in side groups;

(b) exposing the heated layer imagewise to actinic light before the fused portions undergo complete recrystallization to photocure the exposed areas of the layer, and

(c) thereafter washing out the unexposed and uncured areas of the layer to develop the printing plate.

4,606,995

PROCESS FOR DEVELOPING LIGHT-SENSITIVE O-QUINONEDIAZIDE LITHOGRAPHIC PLATES WITH DEVELOPING SOLUTION HAVING COBALT OR NICKEL COMPOUND

Nobuyuki Kita; Hiroshi Matsumoto, and Hitoshi Hagiwara, all of Shizuoka, Japan, assignors to Fuji Photo Film Company, Limited, Kanagawa, Japan

Filed Dec. 28, 1983, Ser. No. 566,454

Claims priority, application Japan, Dec. 28, 1982, 57-229847

Int. Cl.[4] G03F *7/08*

U.S. Cl. 430—302 5 Claims

1. A method of developing an imagewise exposed light-sensitive printing plate having a light-sensitive layer comprising an o-quinonediazide compound, which comprises the steps of

(1) imagewise exposing the light-sensitive printing plate to light; and

(2) developing the plate with a developing solution comprising:

an aqueous solution wherein all ingredients are in a dissolved state containing alkali silicate and an alkali aqueous solution-soluble ligand forming complex of a metal selected from the group consiting of Co and Ni, said complex being formed by adding a ligand complex compound of a metal selected from the group consisting of Co and Ni and a polydentate ligand as separate ingredients to the aqueous solution,

whereby exposed areas of the light sensitive layer are removed to form a lithographic printing plate, and

wherein the alkali silicate molar ratio represented by SiO_2/M_2O (M is an alkali metal or ammonium) is in the range of 0.5 to 3.0; the alkali silicate is present in a concentration in the range of 1 to 10 wt %; and the alkali aqueous solution-soluble complex is present in the aqueous solution in an amount in the range of 0.005 to 0.2 wt % based on the total weight of the developing solution.

4,606,996

METHOD OF REDUCING TREATMENT OF SILVER HALIDE PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL FOR PHOTOCHEMICAL PROCESS

Taku Nakamura; Yasuo Kasama, and Yasuo Mukunoki, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

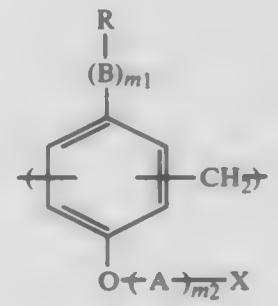
Continuation of Ser. No. 620,772, Jun. 14, 1984, abandoned. This application Dec. 3, 1985, Ser. No. 803,800

Claims priority, application Japan, Jun. 17, 1983, 58-108690

Int. Cl.[4] G03C *7/00*

U.S. Cl. 430—309 7 Claims

1. A method for reducing treatment of a silver halide photographic light-sensitive element for a photomechanical process wherein said photographic light-sensitive element comprises a support, at least one photosensitive silver halide emulsion layer thereon, and at least one light-insensitive upper layer on the emulsion layer, wherein said light-insensitive upper layer comprises a hydrophillic colloid and at least one of the light-insensitive upper layers contains a compound having an electric charge and is substantially insoluble in water but soluble in a water-miscible organic solvent, wherein said compound is employed in am amount sufficient for increasing adaptability to a reducing treatment and wherein said compound is a polymer containing at least 5 mol % of a unit represented by formula (I):



(I)

wherein R represents an aliphatic hydrocarbon group having from 4 to 22 carbon atoms; m_1 and m_2 represent each 0 or 1; B represents —O— or —NH—; A represents an aliphatic divalent group having from 1 to 50 carbon atoms; and X represents a functional group having an electric charge, said method comprising bringing a silver image, formed on the light-sensitive element by exposure and development, into contact with a reducer through said light-insensitive upper layer containing said compound.

4,606,997

EXPOSURE METHOD OF SEMICONDUCTOR WAFER BY MERCURY-VAPOR LAMP

Takehiro Kira, Kobe, Japan, assignor to Ushio Denki Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 26, 1985, Ser. No. 705,645

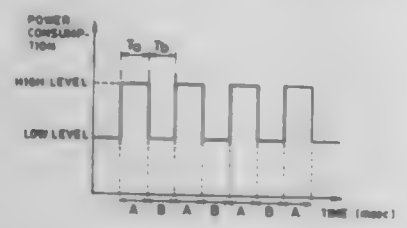
Claims priority, application Japan, Jul. 7, 1984, 59-139777

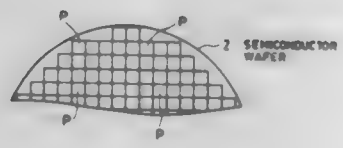
Int. Cl.[4] G03C *5/00;* G03B *27/54*

U.S. Cl. 430—311 3 Claims

1. In a method for exposing successively, through a pattern mask, small sections of a semiconductor wafer to light radiated from a mercury-vapor lamp by continuously lighting the mercury-vapor lamp and repeatedly alternating the power consumption of the mercury-vapor lamp between high power periods, during each of which the power consumption of the mercury-vapor lamp is at a high level, and low power periods during which the power consumption of the mercury-vapor lamp is at a low level, the improvement comprising using as the mercury-vapor lamp a mercury-vapor lamp in which mercury

is filled in such a large amount that when the lamp is lit in the low power periods, the mercury vapor pressure in the enve-





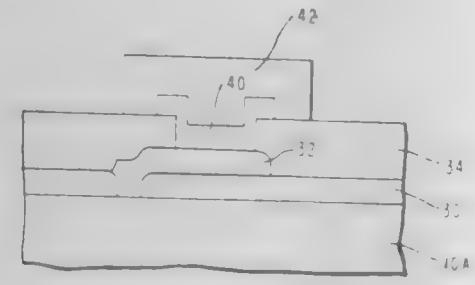
lope of the mercury-vapor lamp is no greater than 96% of the saturated mercury vapor pressure at that time.

4,606,998

BARRIERLESS HIGH-TEMPERATURE LIFT-OFF PROCESS

Donna J. Clodgo; Rosemary A. Previti-Kelly, both of Richmond, and Erick G. Walton, South Burlington, all of Vt., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 30, 1985, Ser. No. 728,072
Int. Cl.[4] H01L *21/28*
U.S. Cl. 430—312 **21 Claims**



1. A process for forming a patterned interconnection layer on a processed semiconductor substrate, comprising the steps of:

forming a first polyimide layer on the processed substrate;

forming a high-temperature polyimide layer on said first polyimide layer;

forming a photoresist layer on said high-temperature polyimide layer;

exposing said photoresist layer and developing said photoresist layer in a solvent which does not appreciably attack said high-temperature polyimide layer;

etching said high-temperature polyimide layer and said first polyimide layer through said developed photoresist layer to form vias in said first polyimide layer, said high-temperature polyimide layer and said first polyimide layer etching at substantially the same rate, said photoresist layer being substantially removed during said etching step;

forming a conductor layer on said substrate, said conductor layer at least partially filling said vias formed in said first polyimide layer, said conductor layer being formed under high temperature conditions; and

lifting off said high temperature polyimide layer from said first polyimide layer in order to remove undesired portions of said conductor layer.

21. A method of forming a pad metallurgy which provides a conductive intermixing barrier between the metallization levels of a processed semiconductor substrate and the wire bond or solder ball contacts coupled to at least one external signal source, comprising the steps of:

passivating a final one of the metallization levels of the processed semiconductor substrate by spin-coating a first polyimide layer thereon;

forming a high-temperature polyimide layer on said first polyimide layer, said high-temperature polyimide layer having a full imidization temperature within the range of 250°–280° C.;

forming a positive photoresist layer on said high-temperature polyimide layer;

exposing said positive photoresist and developing said exposed positive photoresist in an aqueous base which attacks said high-temperature polyimide layer and said first polyimide layer to form aperatures in said high-temperature polyimide layer and vias through said first polyimide layer to an elongated portion of said final metallization level, said high-temperature polyimide layer and said first polyimide layer etching at substantially the same rate;

heating the substrate so as to substantially imidize said first polyimide layer and insubstantially imidize said high-temperature polyimide layer;

etching said high-temperature polyimide through said positive photoresist in order to etch back the sidewalls of said aperatures in said high-temperature polyimide layer without appreciably attacking said first polyimide layer or said final metallization level;

depositing a first layer of conductive material on said high-temperature polyimide under high temperature conditions, said first layer of conductive material at least partially overflowing said vias in said first polyimide layer to form a pad metallurgy; and

lifting off the high-temperature polyimide layer from said first polyimide layer in order to remove undesired portions of said conductive material lying outside said vias.

4,606,999

DEVELOPMENT OF POSITIVE PHOTORESISTS USING CYCLIC QUATERNARY AMMONIUM HYDROXIDES

Susan B. Poulin, Woburn, and Ann B. Salamone, Marble Head, both of Mass., assignors to Thiokol Corporation, Chicago, Ill.

Division of Ser. No. 564,971, Dec. 21, 1983, Pat. No. 4,556,629. This application Nov. 12, 1985, Ser. No. 786,998
Int. Cl.[4] G03F *7/26*
U.S. Cl. 430—326 **9 Claims**

1. A method of developing a positive photoresist layer of the novalac type which has been image-wise-exposed to radiation comprising contacting the layer with an alkaline developing composition to remove exposed areas of the layer, the developing composition consisting essentially of a solution of a cyclic quaternary ammonium hydroxide developing agent in which a quaternary substituted nitrogen is a member of an aromatic or nonaromatic ring between 4 and 8 atoms, said developing agent being present in a concentration sufficient to act as a developing agent, the solution having a normality of the cyclic quaternary ammonium hydroxide between about 0.1N and about 6.0N.

4,607,000

AMIDO SUBSTITUTED DIVALENT CHALCOGENIDE FOG INHIBITING AGENTS FOR SILVER HALIDE PHOTOGRAPHY

Wolfgang H. H. Gunther, Webster, and Roger Lok, Hilton, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 4, 1985, Ser. No. 719,838
Int. Cl.[4] G03C *1/34*
U.S. Cl. 430—428 **15 Claims**

1. A photographic element containing a radiation sensitive silver halide emulsion and an effective amount of a fog inhibiting agent comprised of a divalent tellurium atom directly linked to a first carbocyclic aromatic nucleus and linked to a

second carbocyclic aromatic nucleus through at least one divalent middle chalcogen atom characterized in that said first aromatic nucleus includes an amido ring sustituent.

14. A process of producing a photographic image comprising processing a photographic element containing at least one imagewise exposed silver halide emulsion in the presence of a fog inhibiting agent comprised of a divalent tellurium atom directly linked to a first carbocyclic aromatic nucleus and linked to a second carbocyclic aromatic nucleus through at least one divalent middle chalcogen atom characterized in that said first aromatic nucleus includes an amido ring substituent.

4,607,001

DIVALENT CHALCOGENIDE FOG INHIBITING AGENTS FOR SILVER HALIDE PHOTOGRAPHY

Roger Lok, Hilton, and Wolfgang H. H. Gunther, Webster, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 4, 1985, Ser. No. 719,839
Int. Cl.[4] G03C *1/34*
U.S. Cl. 430—428 15 Claims

1. A photographic element containing a radiation sensitive silver halide emulsion and a nonsensitizing amount of a fog inhibiting agent comprised of at least two divalent middle chalcogen atoms linking two carbocyclic aromatic nuclei characterized in that at least one of said middle chalcogen atoms is a tellurium atom.

4,607,002

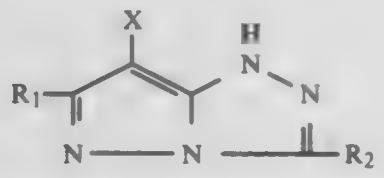
SILVER HALIDE COLOR PHOTO-SENSITIVE MATERIAL

Noritaka Nakayama; Satoshi Kawakatsu; Katsunori Katoh, all of Hachioji, and Kaoru Shinozaki, Tachikawa, all of Japan, assignors to Konishiroku Photo Industry Co., Ltd., Japan

Filed Nov. 14, 1985, Ser. No. 797,991
Claims priority, application Japan, Nov. 15, 1984, 59-243007
Int. Cl.[4] G03C *1/40, 1/46*
U.S. Cl. 430—505 6 Claims

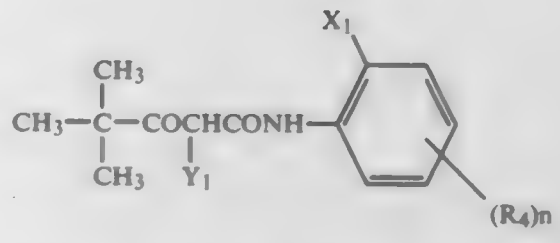
1. A silver halide color photographic light-sensitive material comprising a reflective support bearing thereon a green light-sensitive silver halide emulsion layer containing a magenta forming coupler represented by the following Formula (I); a blue light-sensitive silver halide emulsion layer containing a yellow-forming coupler represented by the following Formula (II); and a red light-sensitive silver halide emulsion layer containing a cyan-forming coupler represented by the following Formula (III) or (IV);

Formula (I)



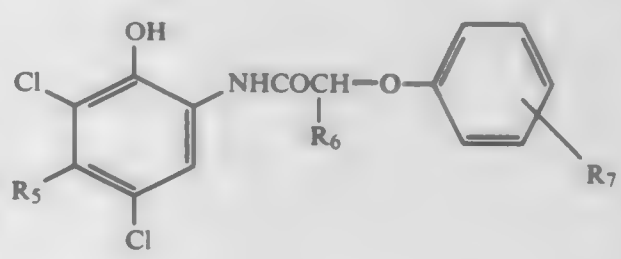
wherein R_1 represents a tertiary alkyl group; R_2 represents an alkyl group or an aryl group; and X represents a split-off group other than hydrogen, which is capable of splitting off through a reaction with the oxidation products of a color developing agent;

Formula (II)



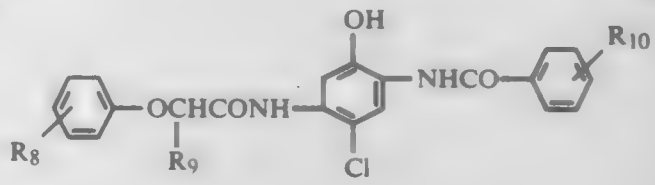
wherein X_1 represents a halogen, an alkoxy group or an alkyl group; Y_1 represents a group capable of splitting off when a dye is formed by coupling the group with the oxidation products of an aromatic primary amine color developing agent; R_4 represents a group substitutable to a benzene ring; and n is an integer of 1 or 2;

Formula (III)



wherein R_5 represents an alkyl group having 1 to 4 carbon atoms; R_6 represents hydrogen or an alkyl group having 1 to 15 carbon atoms; and R_7 represents a halogen, an alkyl group, a hydroxy group or an acyloxy group;

Formula (IV)



wherein R_8 represents an alkyl group, a halogen, a sulfonamido group, a sulfamoyl group, an arylsulfonyl group, or a hydroxy group; R_9 represents hydrogen or an alkyl group; and R_{10} represents hydrogen, a halogen, an alkyl group, a sulfamoyl group or a sulfonamido group.

4,607,003

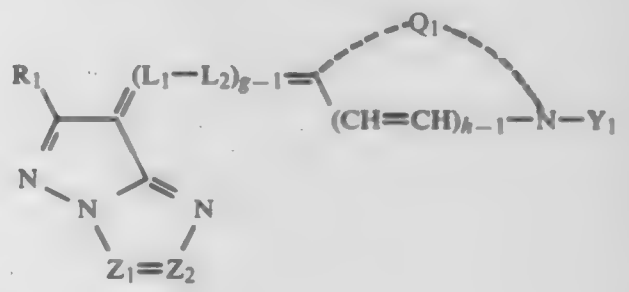
PHOTOGRAPHIC ELEMENT

Toshinao Ukai; Tadahisa Sato; Toshio Kawagishi, and Haruo Takei, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

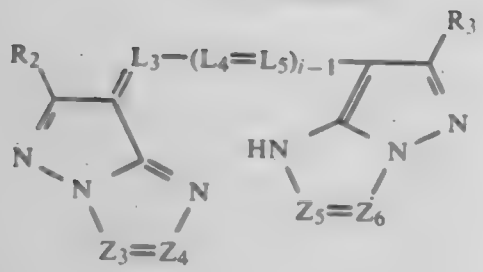
Filed Apr. 9, 1985, Ser. No. 721,519
Claims priority, application Japan, Apr. 9, 1984, 57-70513
Int. Cl.[4] G03C *1/84, 1/24, 1/14*
U.S. Cl. 430—519 13 Claims

1. A photographic element comprising a support, and at least one silver halide emulsion layer, said photographic element containing at least one layer containing at least one of the dyes represented by the following general formula (I), (II), (III), (IV), (V), (VI), (VII) or (VIII):

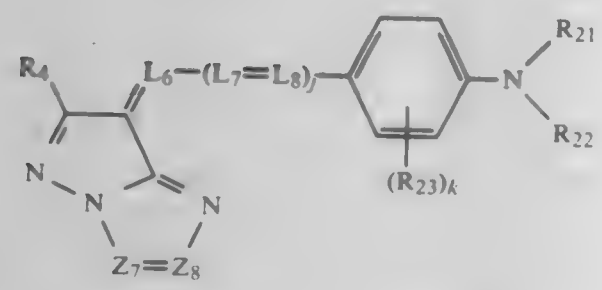
(I)



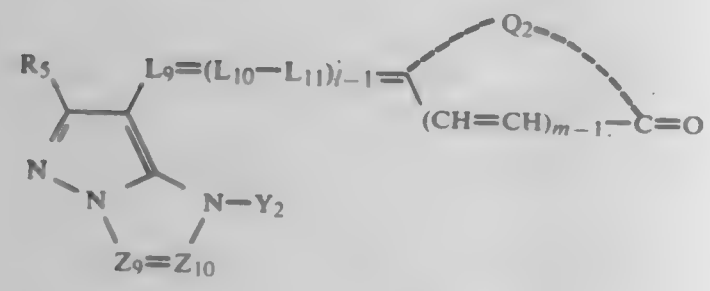
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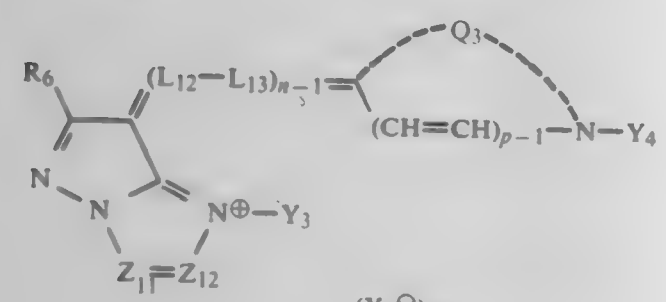
(II)



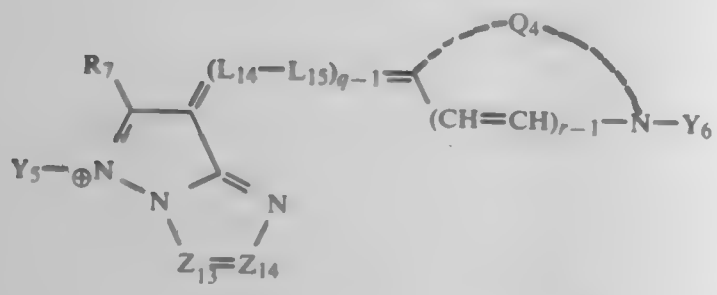
(III)



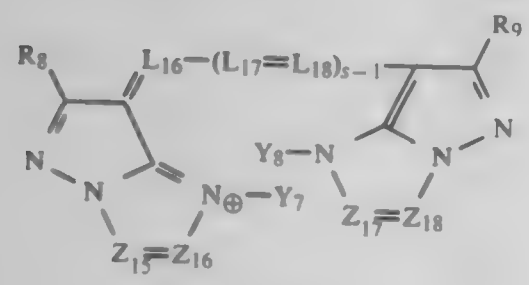
(IV)



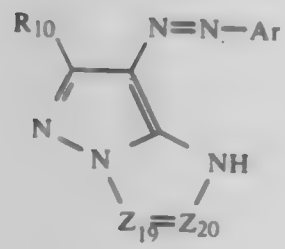
(V)



(VI)



(VII)



(VIII)

wherein

Z_1 to Z_{20} are identical or different and each represents a nitrogen atom or the group



Z_1 to Z_{20} each represents a nitrogen atom or the group $-CR_{24}=$, wherein when Z_1, Z_3, Z_6, Z_7, Z_9, Z_{11}, Z_{13}, Z_{15}, Z_{18} and Z_{19} represent the group $-CR_{24}=$, Z_2, Z_4, Z_5, Z_8, Z_{10}, Z_{12}, Z_{14}, Z_{16}, Z_{17} and Z_{28} represents $-CR_{24}=$, respectively,

R_1 to R_{10} and R_{24} are identical or different, and each represents a hydrogen atom, an alkyl group, an aryl group, a heterocyclic group, an amino group, an acylamino group, an alkoxy group, an alkoxycarbonyl group, a sulfonamide group, an aminocarbonyl group, a hydroxyl group or a carboxyl group, and the alkyl, aryl, heterocyclic, amino, sulfonamide, and aminocarboxyl groups may have one or more substituents,

L_1 to L_{18} each represent a methine group or a substituted methine group,

Y_1 and Y_3 to Y_8 each represent a substituted or unsubstituted alkyl group or a substituted or unsubstituted alkylene group,

Y_2 represents a hydrogen atom, an alkyl group or a substituted alkyl group,

R_{21} and R_{22} each represent a hydrogen atom, an alkyl group, a substituted alkyl group, an aryl group or a substituted aryl group,

R_{23} represents a hydrogen atom, a halogen atom, an alkyl group, a substituted alkyl group, an alkoxy group, an aryl group or a substituted aryl group,

Q_1 to Q_4 each represents a nonmetallic atomic grouping required to form a heterocyclic 5- or 6-membered ring to which an aromatic ring may be fused,

X_1 to X_3 each represents an acid residue,

Ar represents an aromatic ring or a heteroaromatic ring,

g, i, j, k, l, n, q and s each represents an integer of 1 to 4,

h, m, p and r each represents an integer of 1 or 2, and

t_1 to t_3 each represents an integer of 1 or 2, and when the dye forms an intramolecular salt, t_1 to t_3 represent 1.

4,607,004

SILVER HALIDE COLOR PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

Shinpei Ikenoue; Haruhiko Iwano; Hiroyuki Mifune, and Morio Yagihara, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

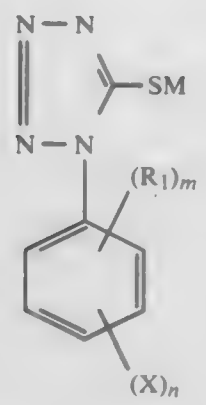
Filed Dec. 17, 1984, Ser. No. 682,452

Claims priority, application Japan, Dec. 26, 1983, 58-251821

Int. Cl.[4] G03C *1/34*

U.S. Cl. 430—523 **15 Claims**

1. A silver halide color photographic light-sensitive material comprising a support having provided thereon light-sensitive silver halide emulsion layers, wherein on the outside of the light-sensitive silver halide emulsion layer positioned farthest from the support, a protective emulsion layer containing silver halide fine grains of 0.2μ or less in average grain size which are not substantially developable by development processing of the silver halide color photographic light-sensitive material and which are less sensitive than the light sensitive silver halide grains in said light sensitive silver halide emulsion layers by 0.5 or more in terms of log units is provided, and in the silver halide color photographic light-sensitive material at least one compound represented by the following general formula (I) is present in an amount sufficient to depress fog of the silver halide color photographic material after preservation:



wherein M represents a hydrogen atom, an alkali metal or a quaternary ammonium group, X represents COOM′ or SO_3M', wherein M′ represents a hydrogen atom, an alkali metal or a quaternary ammonium group, n represents 1 or 2, R_1 represents a group capable of substituting on the phenyl group, and m represents 0, 1 or 2.

4,607,005

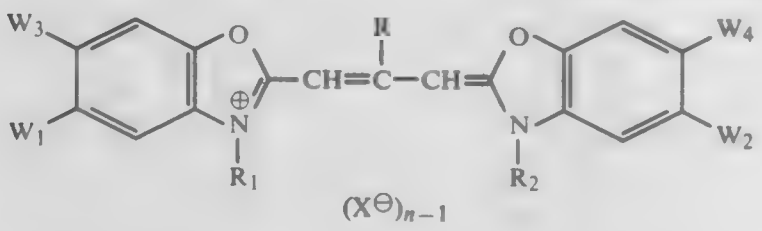
SILVER HALIDE PHOTOGRAPHIC EMULSIONS

Yukihide Urata, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Aug. 16, 1985, Ser. No. 766,313
Claims priority, application Japan, Aug. 18, 1984, 59-171735
Int. Cl.[4] G03C *1/28, 7/32*
U.S. Cl. 430—550 **15 Claims**

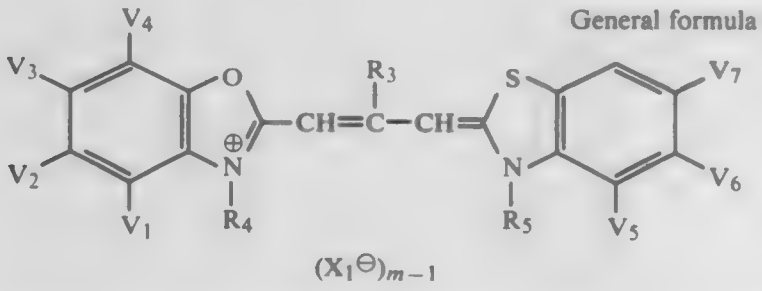
1. A light-sensitive silver halide photographic emulsion comprising light-sensitive silver halide, a binder, and at least one sensitizing dye represented by following general formula (I), at least one sensitizing dye represented by following general formula (II), and at least one sensitizing dye represented by following general formula (III):

General formula (I)



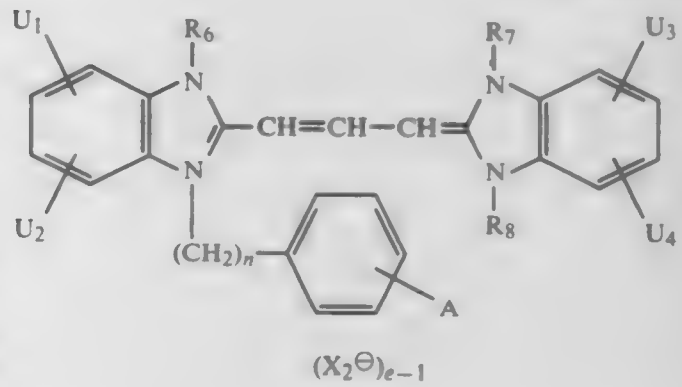
wherein R_1 and R_2 each represents a substituted or unsubstituted alkyl group, at least one of R_1 and R_2 being a sulfoalkyl group or a carboxyalkyl group; R represents an alkyl group or an aralkyl group; W_1, W_2, W_3, and W_4, which may be the same or different, each represents a hydrogen atom, a halogen atom, an aryl group, an alkyl group, a substituted alkyl group, an alkoxy group, an alkoxycarbonyl group, a carboxy group, or a hydroxy group, provided that W_1 and W_2 are not both a phenyl group; $X^{\ominus}$ represents an acid anion; n represents 1 or 2, n being 1 when the dye forms an intramolecular salt;

General formula (II)



wherein R_4 and R_5 each represents a substituted or unsubstituted alkyl group; at least one of R_4 and R_5 being a sulfoalkyl group or a carboxyalkyl group; R_3 represents an ethyl group, a propyl group, or an aralkyl group; V_1, V_2, V_3, V_4, V_5, V_6, and V_7, which may be the same or different, each represents a hydrogen atom, a halogen atom, an aryl group, an alkyl group, a substituted alkyl group, an alkoxy group, an alkoxycarbonyl group, a carboxy group, or a hydroxy group; provided that any of V_1 and V_2, V_2 and V_3, V_3 and V_4, V_5 and V_6, or V_6 and V_7 may combine to form a benzene ring; $X_1^{\ominus}$ represents an acid anion; m represents 1 or 2, m being 1 when the dye forms an intramolecular salt;

General formula (III)



wherein R_6, R_7, and R_8, which may be the same or different, each represents an aliphatic group; U_1, U_2, U_3, and U_4, which may be the same or different, each represents a hydrogen atom, a halogen atom, an aliphatic hydrocarbon group, an acyl group, an acyloxy group, an alkoxycarbonyl group, a carbamoyl group, sulfamoyl group, a cyano group, a trifluoromethyl group or a hydroxy group; A represents a sulfo group or a carboxy group; $X_2^{\ominus}$ represents an acid anion; h represents an integer of 1 to 6; and e represents 1 or 2.

4,607,006

SILVER HALIDE PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL CONTAINING NON-SPECTRAL SENSITIZING ELECTRON DONATIVE SILVER HALIDE ADSORPTIVE COMPOUND

Shigeo Hirano, Kanagawa; Yasuhisa Sano, Shizuoka; Haruo Takei, Kanagawa; Tsutomu Miyasaka, Kanagawa, and Shinsaku Fujita, Kanagawa, all of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Oct. 9, 1984, Ser. No. 658,955
Claims priority, application Japan, Oct. 6, 1983, 58-187404
Int. Cl.[4] G03C *1/02, 1/06, 1/08*
U.S. Cl. 430—572 **28 Claims**

1. A silver halide photographic light-sensitive material comprising a support having provided thereon at least one silver halide emulsion layer, said light-sensitive material containing at least one spectral sensitizing dye and at least one electron-donative, silver halide adsorptive compound represented by the following general formula (A) or (B) which is not a spectral sensitizing agent for silver halide or a nucleating agent:

$$D—L—X \quad (A)$$

$$D—X \quad (B)$$

wherein D represents an electron-donative atomic group comprising an aromatic ring or hetero ring which may be unsubstituted or substituted with at least one substituent; L represents a linkage group containing at least one of C, N, S or O; and X represents a silver halide-adsorptive group containing at least one of C, N, S, O, or Se.

4,607,007

DIFFERENTIATION OF NATURAL KILLER CELL SUBPOPULATIONS OF CELLS

Lewis Lanier, Menlo Park, and Noel L. Warner, Los Gatos, both of Calif., assignors to Becton, Dickinson and Company, Paramus, N.J.

Filed Apr. 7, 1983, Ser. No. 482,752

Int. Cl.[4] G01N *33/53, 33/554;* C12Q *1/02;* A61K *39/00*

U.S. Cl. 435—7 12 Claims

1. A method for monitoring natural killer cell subpopulations in human blood comprising

(a) providing a sample of cells containing a population of natural killer cells;

(b) labelling selected cells of said sample with anti-Leu-11 monoclonal antibody coupled with a first fluorochrome label;

(c) labelling selected cells of said sample with anti-Leu-7 monoclonal antibody coupled with a second fluorochrome label, said first fluorochrome label and said second fluorochrome label having a detectable emission difference;

(d) providing excitation energy to excite said first fluorochrome label and said second fluorochrome label;

(e) detecting the fluorescence emitted by the excited fluorochromes; and

(f) distinguishing subpopulations of cells relative to the detected fluorescence characteristics thereof, whereby the relative proportion of natural killer cells in said subpopulations can be monitored.

4,607,008

ENZYME/IMMUNOFLUORESCENT ASSAY FOR ANTI-EPSTEIN-BARR VIRUS ANTIBODIES

Stephen R. Coates, Lafayette, and Walter L. Binder, San Diego, both of Calif., assignors to American Hoechst Corporation, Somerville, N.J.

Filed Mar. 5, 1984, Ser. No. 586,477

The portion of the term of this patent subsequent to Dec. 11, 2001, has been disclaimed.

Int. Cl.[4] G01N *33/53;* C12Q *1/70, 1/28*

U.S. Cl. 435—7 16 Claims

1. A method for the determination of anti-Epstein-Barr Virus antibody in a test sample, comprising:

providing a substrate for the anti-Epstein-Barr Virus antibody; contacting with a test sample;

treating said contacted substrate with labeled antihuman immunoglobulin antibody, said labeled antihuman immunoglobulin antibody selected from the group consisting of:

(a) a mixture comprising enzyme labeled antihuman immunoglobulin antibody and fluorescent labeled antihuman immunoglobulin antibody;

(b) antihuman immunoglobulin antibody labeled with an enzyme and a fluorescent label;

(c) fluorescent labeled antihuman immunoglobulin antibody to which enzyme labeled antibody against the animal species from which the antibody used in the fluorescent labeled antibody was derived is subsequently added; and

(d) enzyme labeled antihuman immunoglobulin antibody to which fluorescent labeled antibody against the animal species from which the antibody used in the enzyme labeled antibody was derived is subsequently added;

analyzing the treated substrate to determine whether it has enzyme activity; and

determining the immunofluorescent pattern in a substrate exhibiting enzyme activity.

4,607,009

LEWIS BLOOD GROUP PHENOTYPE ASSAY

Zenon Steplewski, Strafford; Hilary Koprowski, and Meenhard Herlyn, both of Wynnewood, all of Pa., assignors to The Wistar Institute, Philadelphia, Pa.

Filed Sep. 16, 1983, Ser. No. 532,891

Int. Cl.[4] G01N *33/544, 33/541;* C12N *15/00, 5/00*

U.S. Cl. 435—7 22 Claims

1. A method of determining Lewis blood group comprising contacting a test sample selected from the group consisting of human tissue and human body fluid, with monoclonal antibodies, under conditions which permit the formation of antigen-antibody complexes and determining the presence or absence of said antigen-antibody complexes, said monoclonal antibodies binding to the same antigenic determinants as monoclonal antibodies produced by (a) fused cell hybrid ATCC HB 8324 and (b) a fused cell hybrid selected from the group consisting of ATCC HB 8325 and ATCC HB 8326.

4,607,010

ANALYTICAL PROCESS AND MEANS FOR MEASURING PROTEASE INHIBITOR CAPACITY OF SERUM

Iqbal Siddiqi, Geneva, Switzerland; Jean Brochot, Bellegarde, France, and Ranald M. Sutherland, Carouge, Switzerland, assignors to Battelle Memorial Institute, Geneva, Switzerland

Filed Jun. 13, 1984, Ser. No. 620,260

Int. Cl.[4] C12Q *1/38;* C12N *9/99*

U.S. Cl. 435—23 7 Claims

1. In an assay method for protease inhibitors in blood serum comprising reacting an analyte sample of said blood serum with a known excess of a 1:1 complex forming protease enzyme partner to the inhibitor of interest and thereafter back-titrating the excedent of said protease over that required to form said 1:1 complex by the reaction with diphenylcarbamyl fluoride and electrometrically determining the ionic fluoride quantitatively generated in this reaction, the improvement comprising carrying out the reaction between the protease inhibitors in the serum and the complex forming protease in the presence of a constant ionic strength buffer which maintains a constant ionic strength in the range of 0.1 to 1 and a constant pH in the range of 5 to 8 where the rate of reaction of said complex-forming protease with serum protease inhibitors or diphenylcarbamyl-fluoride is constant, and electrometrically determining the ionic fluoride generated by measuring the rate of generation of said fluoride and matching the slope of the rate curve thus obtained against standard slopes obtained identically from standard amounts of said protease.

4,607,011

ACCUMULATION AND ISOLATION OF N-ACYLPHOSPHATIDYLSERINE

Samuel Kaplan; Timothy J. Donohue, and Brian D. Cain, all of Champaign, Ill., assignors to Board of Trustees, University of Illinois, Urbana, Ill.

Continuation of Ser. No. 380,369, May 20, 1982, abandoned. This application Apr. 10, 1985, Ser. No. 721,504

Int. Cl.[4] C12P *9/00, 1/00*

U.S. Cl. 435—131 8 Claims

1. A process for the production of N-acylphosphatidylserine during the growth of selected bacterial cells, comprising the steps of:

(a) providing a culture comprising bacterial cells selected from the class consisting of *Rhodopseudomonas sphaeroides, Rhodopseudomonas capsulata,* and *Paracoccus denitrificans;*

(b) growing the bacterial cells in a neutral growth medium, said medium additionally comprising up to about 100 millimoles per liter of tris (hydroxymethyl) aminomethane;

(c) isolating the growth of bacterial cells from the neutral medium;

(d) separating a cellular phospholipid fraction from the isolated bacterial cells, said cellular phospholipid fraction comprising N-acylphosphatidylserine, by extraction therefrom with a polar organic solvent; and

(e) recovering N-acylphosphatidylserine from the cellular phospholipid fraction.

4,607,012

ANTIBIOTIC SB 22484

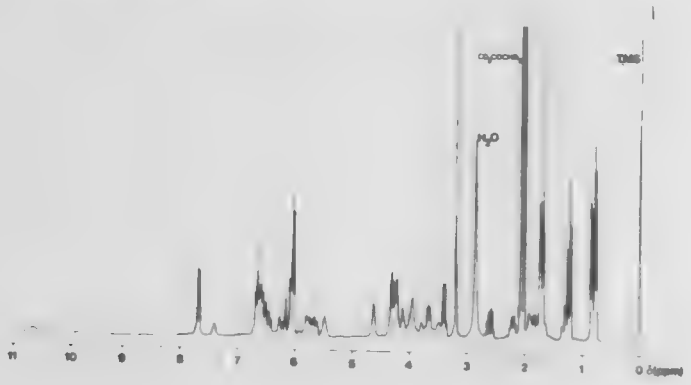
Enrico Selva, Gropello Cairoli; Grazia Beretta; Giorgio Tamoni, both of Milan; Vittorio Arioli, Fino Mornasco; Giovanni Cassani, Pavia, and Francesco Parenti, Milan, all of Italy, assignors to Gruppo Lepetit S.p.A., Italy

Filed Aug. 30, 1984, Ser. No. 646,178

Claims priority, application United Kingdom, Aug. 31, 1983, 8323382

Int. Cl.[4] C12P *7/40, 1/06;* C12N *1/20;* A61K *35/00*

U.S. Cl. 435—136 **10 Claims**



1. Antibiotic SB 22484 or a pharmaceutically acceptable salt thereof, having, in the form of the free acid, the following characteristics:

(A) An ultraviolet absorption spectrum, which exhibits the following absorption maxima:

$\lambda_{max(nm)}$	$E_{1cm}^{1\%}$
(a) in 0.1 NHCl	
230	663
283	192
332	343
(b) in phosphate buffer pH 7.38	
230	719
323	391
(c) in 0.1 N sodium hydroxide	
323	387
(d) in methanol	
229	715
320	365

(B) An infrared absorption spectrum which exhibits the following absorption maxima (cm^{-1}): 3700–3080, 2980–2840 (nujol); 1645; 1560; 1455 (nujol); 1375 (nujol); 1305; 1240; 1215; 1145; 1090; 1060; 1035; 990; 945; 910; 890; 850; 810; 720 (nujol);

(C) A NMR spectrum which as the following groups of signals (in ppm) in the 270 MHz ^{1}H-NMR recorded in hexadeuteroacetone using TMS as the internal reference (0.00 ppm) (δ=ppm): 0.77δ(3H); 0.83δ(3H); 1.21–1.24δ(3H); 1.2–2.7δ(5H); 1.67δ(s, 3H); 1.73δ(3H); 2.01δ(s, 3H); 3.20δ(s, 3H); 3.3–5.6δ(11H); 5.4–6.7δ(13H); 6.04δ(1H); 7.40δ(1H); 7.68δ(1H); 10.53δ(1H); (s=singlet);

(D) A mass spectrum obtained by direct liquid inlet LC-MS using a HP 5985 B apparatus, working in negative ion mode and conducting the LC under the following conditions:

Column: Brownlee Lab. RP 8 10 μm, 25 cm (an octylsilane functionalized silica gel)

Flow rate: 1 ml/min

eluent: acetonitrile:0.1M ammonium formate=60:40 which shows four main peaks having retention times 4.48, 5.03, 5.65 and 7.25 min, respectively. They are arbitrarily named antibiotic SB 22484 factors 1, 2, 3, and 4 respectively;

(E) The following main fragmentation peaks for the above identified antibiotic factors, namely antibiotic SB 22484 factors 1, 2, 3 and 4:

Factor 1: 752, 734, 716, 684, 538, 598, 566, 500

Factor 2: 766, 748, 730, 698, 652, 612, 580

Factor 3: 752, 734, 716, 684, 638, 598, 566, 500

Factor 4: 766, 748, 730, 698, 652, 612, 580, 500

(F) The following Rf values in various chromatographic systems using silanized silica gel 60 F_{254} Merck plates:

Elution system (v/v/v)	Rf value
(1) NaH_2PO_4/methanol 4/6	0.44
	0.50
	0.55
(2) NaH_2PO_4/methanol/acetonitrile 4/5/1	0.52
	0.57
	0.63
(3) 0.05M Tetrabutylammonium phosphate (pH 7.0): methanol 4/6	0.46
	0.50
	0.55

Visualization: UV light at 254 nm.

10. A biologically pure culture of Streptomyces sp. NRRL 15496 or a mutant or variant thereof which is capable of producing antibiotic SB 22484 when submitted to aerobic fermentation conditions in the presence of assimilable sources of carbon, nitrogen, and inorganic salts.

4,607,013

BIOCHEMICAL PROCESS FOR OPTICAL RESOLUTION OF CYCLOPENTENOLONE DERIVATIVES

Satoshi Mitsuda, and Hideo Hirohara, both of Osaka, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

PCT No. PCT/JP83/00086, § 371 Date Sep. 7, 1984, § 102(e) Date Sep. 7, 1984, PCT Pub. No. WO84/03714, PCT Pub. Date Sep. 27, 1984

PCT Filed Mar. 18, 1983, Ser. No. 646,809

Int. Cl.[4] C07P *41/00;* C12P *7/38*

U.S. Cl. 435—280 **5 Claims**

1. A biochemical process for optical resolution of (±)-4-hydroxy-3-methyl-2-2'-propynyl-2-cyclopentenone, characterized in that an organic carboxylic acid (saturated or unsaturated carboxylic acids having 1 to 18 carbon atoms) ester of (±)-4-hydroxy-3-methyl-2-2'-propynyl-2-cyclopentenone is reacted with an esterase derived from a microorganism or an animal pancreas, so as to asymmetrically hydrolyze said ester into optically active 4-hydroxy-3-methyl-2-2'-propynyl-2-cyclopentenone and esters of its antipode.

4,607,014

EXPLORATION METHOD USING ELECTRON SPIN RESONANCE SIGNALS FROM HYDROCARBON CRUDE

Stephen W. Nicksic, Brea, and George W. Starke, Calistoga, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Continuation of Ser. No. 202,226, Oct. 30, 1980, abandoned. This application Jun. 23, 1983, Ser. No. 507,827

The portion of the term of this patent subsequent to Nov. 15, 2000, has been disclaimed.

Int. Cl.[4] G01N *24/10, 33/24*

U.S. Cl. 436—29 **2 Claims**

1. An exploration method for mapping the subsurface course of crude petroleum accumulated in a producible subsurface reservoir by distinguishing crude petroleum based electron spin resonance signals from electron spin resonance signals

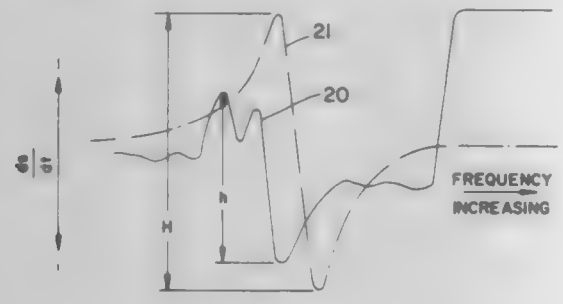
from other constituent materials in earth formation samples, comprising the steps of:

(a) collecting samples of subsurface earth formation materials from known positions within a formation from wells having known locations;

(b) subjecting said earth formation samples to suitable conditions for the establishment of electron spin resonance of electrons present in said samples, and detecting electron spin resonance signals from said samples;

(c) selecting those earth formation samples from which said electron spin resonance signals were detected and contacting said selected samples with a solution containing iodine;

(d) subjecting said selected and contacted samples to said



suitable conditions for establishment of electron spin resonance of electrons present in said samples, and detecting electron spin resonance signals from said selected samples;

(e) identifying from said first selected samples those earth formation samples from which enhanced electron spin resonance signals were detected attributable to said contacting with said solution containing iodine as samples containing electrons associated with crude petroleum;

(f) mapping the presence of said crude petroleum materials;

(g) producing a representation of potential migration paths of hydrocarbon crudes within said formation; and

(h) locating the origin of said identified samples demonstrating said enhanced electron spin resonance signals in distance, direction and depth with respect to said subsurface reservoir by using said mapped potential migration paths.

4,607,015

GLASS COMPOSITION, ITS METHOD OF FORMATION AND PRODUCTS MADE THEREFROM

Thomas J. Clough, Woodland Hills, and John D. Mackenzie, Los Angeles, both of Calif., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Continuation-in-part of Ser. No. 249,043, Mar. 30, 1981, abandoned. This application Mar. 22, 1982, Ser. No. 360,516

Int. Cl.⁴ C03C *6/02, 13/06, 11/00, 3/083*

U.S. Cl. 501—27 **11 Claims**

1. A glass-forming mixture which forms a glass having siliceous and aluminous oxide portions upon melting, said mixture prior to melting containing more than fifty percent by weight of a natural mineral zeolite component or a mixture of such zeolite components having a melting temperature in the range of from about 1000° C. to about 1500° C. and an additional component which forms an inorganic oxide common to glass compositions upon melting.

4,607,016

GLASS FOR USE AS TUNGSTEN-HALOGEN LAMP ENVELOPES

Paul S. Danielson, and Lloyd G. Young, both of Corning, N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed Jun. 7, 1985, Ser. No. 742,430

Int. Cl.⁴ C03C *3/087*

U.S. Cl. 501—70 **2 Claims**

1. A glass suitable as an envelope for a tungsten-halogen lamp and for sealing to molybdenum metal, said glass exhibiting a seed level no more than $10/in^3$, a strain point higher than 750° C., a coefficient of thermal expansion (0°–300° C.) between $42–44\times10^{-7}$/°C., a liquidus temperature below 1300° C., a viscosity at the liquidus of at least 40,000 poises, a viscosity of less than 1000 poises at temperatures no higher than 1520° C., and having a base composition consisting essentially, expressed in terms of weight percent on the oxide bases as calculated from the batch, of about 64–68% SiO_2, 11–14% CaO, 16.5–18.5% Al_2O_3, 2–6.5% BaO+SrO, consisting of 0–4% SrO and 0–5% BaO, an amount of sulfate at least equivalent to 5% $CaSO_4$, but not more than about 20% $CaSO_4$, and containing arsenic as analyzed in the glass in terms of As_2O_3 of about 0.17–0.3% As_2O_3.

4,607,017

SILICON NITRIDE BASED CUTTING TOOL

Robert W. Wolfe, Wysox, and Dale E. Wittmer, Towanda, both of Pa., assignors to GTE Products Corporation, Stamford, Conn.

Filed Jun. 20, 1985, Ser. No. 746,705

Int. Cl.⁴ C04B *35/58*

U.S. Cl. 501—98 **1 Claim**

1. A silicon nitride based cutting tool consisting essentially of in percent by weight about 5% aluminum oxide, about 6% yttrium oxide, from about 1.5% to about 5.5% silicon dioxide, and the balance silicon nitride, said cutting tool having a density of at least about 99% of the theoretical density.

4,607,018

NON-REDUCIBLE TEMPERATURE COMPENSATION DIELECTRIC CERAMIC COMPOSITION

Goro Nishioka, Yahata, and Yukio Sakabe, Kyoto, both of Japan, assignors to Murata Manufacturing Co., Ltd., Nagaokakyo, Japan

Filed Dec. 11, 1984, Ser. No. 680,462

Claims priority, application Japan, Dec. 19, 1983, 58-240642

Int. Cl.⁴ C04B *35/48, 35/49, 35/50*

U.S. Cl. 501—135 **2 Claims**

1. A non-reducible temperature compensation dielectric ceramic composition consisting essentially of $(CaRe)(ZrTi)O_3$ and MnO_2 and represented by the formula:

$$(Ca_{1-x}Re_x)_m(Zr_{1-y}Ti_y)O_3+zMnO_2$$

where

Re is at least one of Nd, La, Sm and Ce,

$0.01 \leqq x \leqq 0.25$;

$0 \leqq y \leqq 0.15$

$0.90 \leqq m \leqq 1.25$; and

$0.01 \leqq z \leqq 0.07$ (expressed as a weight ratio with the weight of $(Ca_{1-x}Re_x)_m(Zr_{1-y}Ti_y)O_3$ as 1.00).

4,607,019

POLYMERIZATION CATALYST, PRODUCTION AND USE

Steven A. Best, Houston, Tex., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Dec. 12, 1984, Ser. No. 680,872

The portion of the term of this patent subsequent to Apr. 1, 2003, has been disclaimed.

Int. Cl.⁴ C08F *4/68*

U.S. Cl. 502—119 **20 Claims**

1. A vanadium containing catalyst component obtained by treating an inert solid support material in an inert solvent with

(i) an organoaluminum compound represented by the formula R_mAlX_{3-m}, wherein R represents an alkyl group, cycloalkyl group or aryl group, X represents a halogen atom and m represents a number within the range of $1 \leqq m \leqq 3$,

(ii) a halogenating agent,

(iii) a vanadium compound.

4,607,020

COPPER PROMOTED IRON/COBALT SPINELS AND THEIR PREPARATION

Stuart L. Soled, Pittstown, and Rocco A. Fiato, Scotch Plains, both of N.J., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Continuation-in-part of Ser. No. 561,190, Dec. 14, 1983, Pat. No. 4,518,707. This application May 20, 1985, Ser. No. 735,833

Int. Cl.⁴ B01J *23/72, 23/74, 27/22*

U.S. Cl. 502—177 **19 Claims**

1. A composition of matter comprising a reduced and carbided, copper promoted iron-cobalt alloy, said composition being substantially isostructural with chi-Fe_5C_2, as determined by X-ray diffractometry and possessing a BET surface area of greater than 5 m^2g, said composition produced by contacting, with a carbiding atmosphere for a time sufficient to produce said composition, said copper-promoted ironcobalt alloy, being isostructural with metallic alpha iron as determined by powder X-ray diffractometry, possessing a BET surface area of greater than 5 m^2/g, wherein said alloy was produced by contacting, with a reducing atomosphere, an unsupported Group IA or IIA metal salt promoted iron-cobalt spinel, or mixture thereof, said spinel exhibiting a single phase powder x-ray diffraction pattern substantially isostructural with Fe_3O_4, and possessing a BET surface area greater than 5 m^2/g and an iron-cobalt atomic ratio of 4 to 1 or above.

4,607,021

ACTIVATION OF FLY ASH

David R. Corbin, New Castle, Del.; Louis J. Velenyi, Lyndhurst, Ohio; Marc A. Pepera, Northfield, Ohio, and Serge R. Dolhyj, Parma, Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

Filed Jan. 4, 1982, Ser. No. 336,546

Int. Cl.⁴ B01J *21/18, 21/12, 23/74;* **C10K** *3/04*

U.S. Cl. 502—185 **3 Claims**

1. A process for activating fly ash comprising:
(a) sizing the fly ash to produce a sized fraction and separating therefrom a magnetic fly ash fraction;
(b) hydrothermally treating the sized-magnetic fraction;
(c) reducing the fraction of step (b);
(d) oxiding the fraction of step (c); and
(e) reducing the fraction of step (d) to thereby form activated carbon monoxide disproportionation fly ash catalyst.

2. The process of claim 1 wherein the hydrothermal treatment is performed at temperatures from about 100° C. to about 300° C. and pressures from about 100 psig to about 500 psig.

3. Activated fly ash prepared by the process comprising:
(a) sizing the fly ash to produce a sized fraction and separating therefrom a magnetic fly ash fraction;
(b) hydrothermally treating the sized-magnetic fraction;
(c) reducing the fraction of step (b);
(d) oxidizing the fraction of step (c);
(e) reducing the fraction of step (d) and recovering activated carbon monoxide disproportionation fly ash catalyst.

4,607,022

OLEFIN CONVERSION CATALYST

Bruce M. Welch, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 580,591, Feb. 16, 1984, Pat. No. 4,547,617. This application May 14, 1985, Ser. No. 733,837

Int. Cl.⁴ B01J *21/06, 23/28*

U.S. Cl. 502—242 **11 Claims**

4. An activated catalyst suitable for the disproportionation and isomerization of olefins consisting essentially of silica, about 1 to about 20 weight percent molybdenum oxide, and about 0.1 to about 20 weight percent of a titanium component calculated as titanium dioxide, said amounts being based on the combined weights of molybdenum oxide and silica.

4,607,023

NATRIURETIC

Gaétan Thibault, Norwick; Raul Garcia, Montreal West; Marc Cantin, Oeutremont; Nabil Seidah, Ile des Soeurs; Claude Lazure, Dollard des Ormeaux, and Michel Charetien, Montreal, all of Canada, assignors to L'Institut de Recherches Cliniques de Montreal, Quebec, Canada

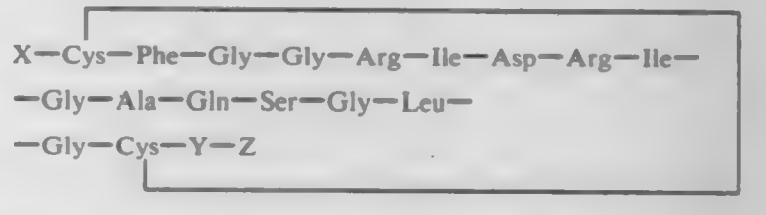
Filed Aug. 27, 1984, Ser. No. 644,672

Claims priority, application Canada, Aug. 29, 1983, 435537; Mar. 15, 1984, 449640

Int. Cl.⁴ A61K *37/24;* **C07K** *7/08, 7/10*

U.S. Cl. 514—11.5 **8 Claims**

1. A peptide in substantially pure form selected from the group of peptides having the amino acid sequence:



wherein Y is selected from the group consisting of -Asn, -Asn-Ser, Asn-Ser-Phe, Asn-Ser-Phe-Arg, and -Asn-Ser-Phe-Arg-Tyr; Z is OH or NH_2; and X is selected from the group consisting of H Ser-, Ser-Ser-, Arg-Ser-Ser-, Arg-Arg-Ser-Ser-, Leu-Arg-Arg-Ser-Ser, Ser-Leu-Arg-Arg-Ser-Ser-, Arg-Ser-Leu-Arg-Arg-Ser-Ser-, Pro-Arg-Ser-Leu-Arg-Arg-Ser-Ser-Gly-Pro-Arg-Ser-Leu-Arg-Arg-Ser-Ser-, Ala-Gly-Pro-Arg-Ser-Leu-Arg-Arg-Ser-Ser-, Leu-Ala-Gly-Pro-Arg-Ser-Leu-Arg-Arg-Ser-Ser-, and Glu-Val-Pro-Trp-Thr-Gly-Glu-Val-Asn-Pro-Ser-Gln-Arg-Asp-Gly-Gly-Ala-Leu-Gly-Arg-Gly-Pro-Trp-Asp-Pro-Ser-Asp-Arg-Ser-Ala-Leu-Lys-Ser-Lys-Leu-Arg-Ala-Leu-Leu-Ala-Gly-Pro-Arg-Ser-Leu-Arg-Arg-Ser-Ser-, with the proviso that when X is H, Ser- or Ser-Ser- Y is not -Ans, Ans-Ans, Ser-Ser-Phe-Arg or Asn-Ser-Phe-Arg-Tyr and with the further provise that when Y is Asn-Ser-Phe-Arg-Tyr X is not Ser-Leu-Arg-Arg-Ser-Ser.

4,607,024

EPOXYPROPYLPHOSPHONATE SALT OF JESAMYCIN AND PHARMACEUTICAL COMPOSITION CONTAINING SAME

Alberto Bertelli, Milan, Italy, assignor to Schering S.p.A., Milan, Italy

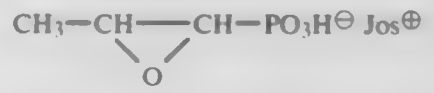
Filed Oct. 9, 1984, Ser. No. 658,493

Claims priority, application Italy, Oct. 7, 1983, 23185 A/83

Int. Cl.⁴ A61K *31/71;* **C07H** *17/08*

U.S. Cl. 514—28 **5 Claims**

1. (−)-cis-1,2-Epoxypropylphosphonate of Josamycin of formula (I)



(I)

wherein the symbol Jos stands for Josamycin.

2. A pharmaceutical composition with antibacterial activity containing, as the active ingredient, an effective amount of the compound defined in claim 1 and a pharmaceutically acceptable carrier.

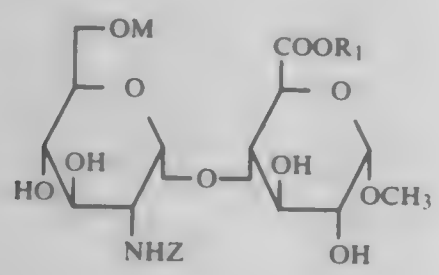
4,607,025

DISACCHARIDES HAVING A GLUCOSAMINE AND URONIC ACID STRUCTURE, AND BIOLOGICAL APPLICATIONS THEREOF

Maurice Petitou, Paris; Pierre Sinay, Orleans; Jean Choay, Paris, and Jean-Claude Lormeau, Maromme, all of France, assignors to Choay S.A., Paris, France

Filed Dec. 20, 1982, Ser. No. 451,615
Int. Cl.[4] A61K *31/70;* C07H *5/06*
U.S. Cl. 514—53
12 Claims

1. A disaccharide of the formula



wherein M is hydrogen, —SO_3Na or acetyl; Z is —SO_3Na or acetyl and R_1 is hydrogen, methyl or sodium.

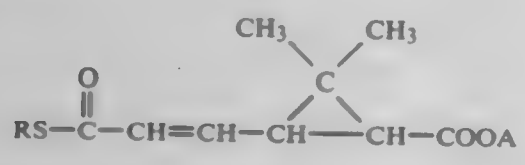
4,607,026

CYCLOPROPANE THIOCARBOXYLIC ESTERS AND INSECTICIDAL AND ACARICIDAL USE THEREOF

Jean Tessier, Vincennes, and André Teche, Paris, both of France, assignors to Roussel Uclaf, Paris, France

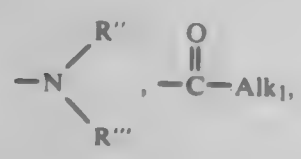
Filed Sep. 29, 1982, Ser. No. 427,887
Claims priority, application France, Oct. 16, 1981, 81 19481
The portion of the term of this patent subsequent to Dec. 18, 2001, has been disclaimed.
Int. Cl.[4] A01N *43/08, 43/36;* C07D *233/30;* C07C *153/023*
U.S. Cl. 514—80
29 Claims

1. A compound selected from the group consisting of stereoisomeric forms and mixtures thereof of compounds of the formula

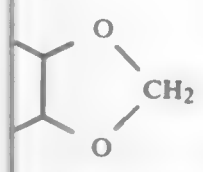


I

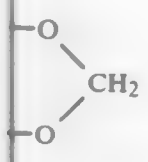
wherein R is selected from the group consisting of phenyl optionally substituted with at least one member of the group consisting of —OH, alkyl and alkoxy of 1 to 8 carbon atoms, —CF_3, —OCF_3, —SCF_3, —Cl, Br and F, optionally unsaturated cycloalkyl of 3 to 7 carbon atoms optionally substituted on the cycloalkyl with at least one member of the group consisting of halogen, alkyl of 1 to 6 carbon atoms, alkoxy of 1 to 6 carbon atoms and —NO_2, and alkyl of 1 to 18 carbon atoms and alkenyl and alkynyl of 2 to 18 carbon atoms optionally substituted with at least one member of the group consisting of halogen, —OH, —SH, —OR′ and —SR′ and R′ is selected from the group consisting of alkyl of 1 to 8 carbon atoms, —NO_2, —CN, —SO_3H, —PO_4H_2,



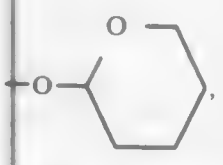
—SO_2Alk_2 and SO_2Alk_3, R″ and R‴ are individually selected from the group consisting of hydrogen and alkyl of 1 to 8 carbon atoms and Alk_1, Alk_2 and Alk_3 are alkyl of 1 to 18 carbon atoms or benzyl or phenethyl optionally substituted with at least one member of the group consisting of —OH, alkyl and alkoxy of 1 to 8 carbon atoms, halogens, —CF_3, —OCF_3, —SCF_3 and



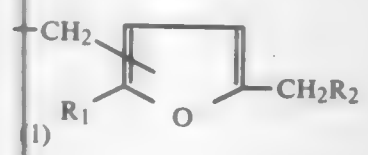
(G), or alkyl substituted on two adjacent carbon atoms with the group



(G_1) or substituted with

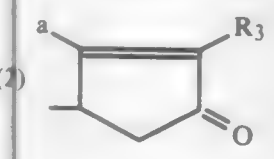


A is selected from the the group consisting of



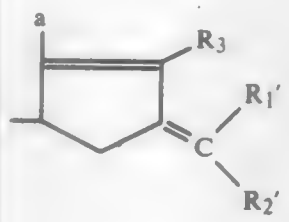
(1)

wherein R_1 is selected from the group consisting of hydrogen and methyl and R_2 is selected from the group consisting of —CH_2—C≡CH and phenyl,



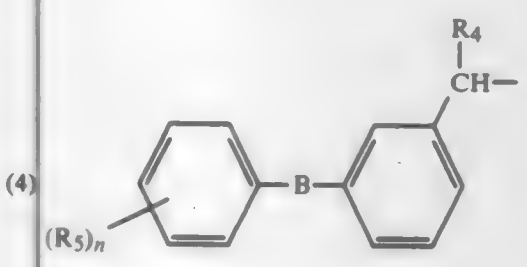
(2)

wherein a is selected from the group consisting of hydrogen and methyl and R_3 is an aliphatic group of 2 to 6 carbon atoms containing at least one carbon-carbon unsaturation,



(3)

wherein a is selected from the group consisting of hydrogen and methyl and R_3 has the above definition and R_1' and R_2' are individually selected from the group consisting of hydrogen, halogen, alkyl of 1 to 6 carbon atoms, phenyl, cyano and alkoxy-carbonyl of 2 to 5 carbon atoms,

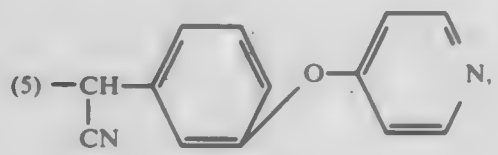


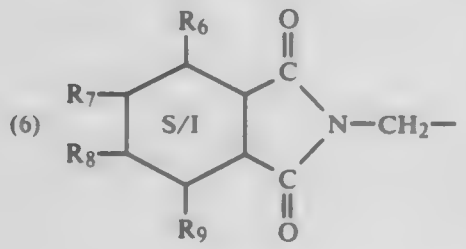
(4)

wherein B is selected from the group consisting of —CH_2—,

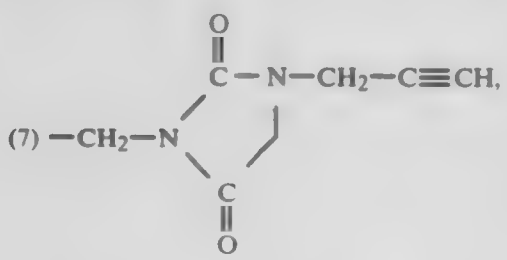


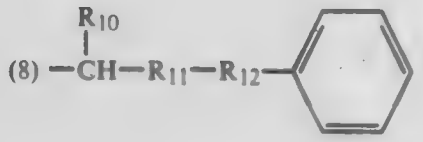
—O— and —S—, R_4 is selected from the group consisting of hydrogen, —CN, $—CH_3$, $—CONH_2$, $—CSNH_2$, and $—C{\equiv}CH$, R_5 is selected from the group consisting of halogen and $—CH_3$ and n is an integer from 0, 1 or 2



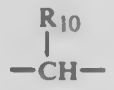


wherein R_6, R_7, R_8 and R_9 are selected from the group consisting of hydrogen, chlorine and methyl and S/I symbolizes an aromatic ring or dihydro or tetrahydro ring,

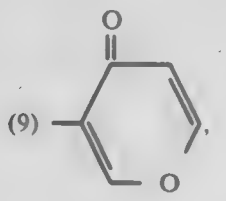


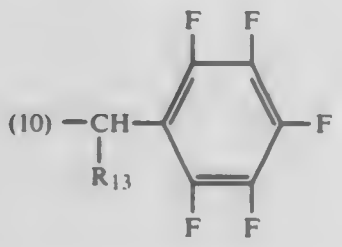


wherein R_{10} is selected from the group consisting of hydrogen and —CN, R_{12} is selected from the group consisting of $—CH_2—$ and —O— and R_{11} is selected from the group consisting of thiazolyl and thiadiazolyl with the bond to

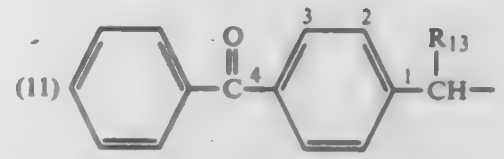


being in one of the positions so that there is a carbon atom wherein R_{11} and R_{12} are connected between a sulfur atom and a nitrogen atom,

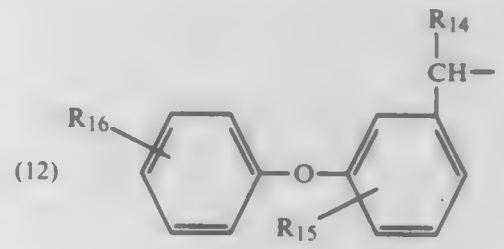




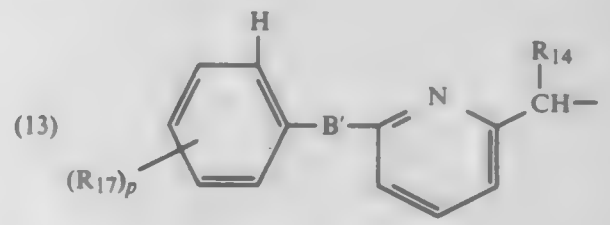
wherein R_{13} is selected from the group consisting of hydrogen and —CN



wherein R_{13} has the above definition and the benzoyl is in the 4-position,



wherein R_{14} is selected from the group consisting of hydrogen, methyl, ethynyl and —CN and R_{15} is selected from the group consisting of fluorine, chlorine and bromine and R_{16} is selected from the group consisting of hydrogen, bromine, chlorine and fluorine and



wherein R_{14} has the above definition, p is 0, 1 or 2, each R_{17} is selected from the group consisting of alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, alkylthio of 1 to 4 carbon atoms, alkylsulfonyl of 1 to 4 carbon atoms, $—CF_3$, 3,4-methylenedioxy, chlorine, and fluorine, B' is selected from the group consisting of —O—, and —S— and the double bond in the 1'-position of the 3-lateral side change has Z or E geometry.

17. A method of combatting insects comprising contacting insects with an insecticidally effective amount of at least one compound of claim **1**.

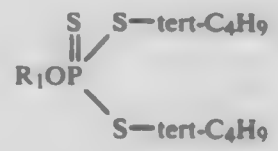
4,607,027

TRITHIOPHOSPHORIC ACID ESTER AS A SOIL PESTICIDE

Haruyasu Yamamoto, Takarazuka, and Takayuki Okabe, Nishinomiya, both of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Oct. 9, 1984, Ser. No. 658,629
Claims priority, application Japan, Oct. 12, 1983, 58-190544
Int. Cl.⁴ A01N *57/02*; C07F *9/165*
U.S. Cl. 514—144 **5 Claims**

1. A trithiophosphoric acid ester of the formula:



wherein R_1 is methyl or ethyl group.

4. A method for controlling soil pests which comprises applying a pesticidally effective amount of the trithiophosphoric acid ester according to claim **1** to the soil pests.

4,607,028

NOVEL CARBOXYLIC ACID ESTERS

Julius Schmidlin, Basel, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

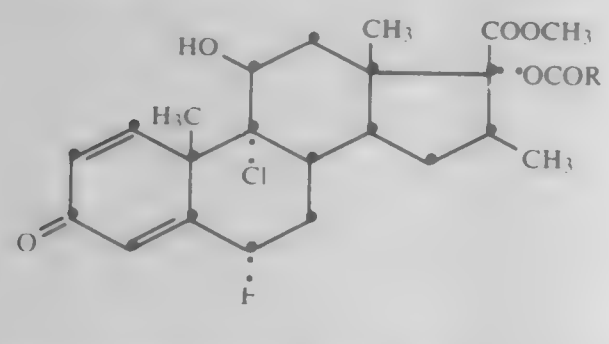
Filed Aug. 9, 1984, Ser. No. 639,033

Claims priority, application Switzerland, Aug. 18, 1983, 4512/83

Int. Cl.[4] A61K *31/56*

U.S. Cl. 514—180 7 Claims

1. Compounds of the formula



(A)

in which R represents alkyl having from 1 to 4 carbon atoms.

6. A pharmaceutical composition containing an effective anti-inflammatory amount of a compound according to claim 1 and a pharmaceutically acceptable carrier.

4,607,029

NOVEL SODIUM AMOXICILLIN PREPARATIONS

Hayo de Jonge, Heemstede; Jan W. Groenendaal, Haarlem; Gerrit J. Sijbrands, Zandvoort, and Annita Bagerman-Deetman, Oosterhout, all of Netherlands, assignors to Gist-Brocades N.V., Delft, Netherlands

Continuation of Ser. No. 481,338, Apr. 1, 1983, abandoned, which is a continuation of Ser. No. 80,051, Sep. 28, 1979, abandoned. This application Apr. 23, 1985, Ser. No. 726,027

Claims priority, application Netherlands, Oct. 3, 1978, 7809986; Jan. 3, 1979, 7900021

Int. Cl.[4] A61K *31/43*

U.S. Cl. 514—197 5 Claims

1. A process for the preparation of a dry composition consisting essentially of sodium amoxicillin and an amount of sodium hydroxide from 3 to 5% mole %, calculated on the sodium amoxicillin comprising gradually adding but as rapidly as possible an excess of 9 to 15 mole %, calculated on amoxicillin trihydrate, of sodium hydroxide to an aqueous suspension of amoxicillin trihydrate until the amoxicillin is completely dissolved, immediately neutralizing a portion of the excess sodium hydroxide with a hydrochloric acid solution at temperatures between 0° and 30° C. until the excess of sodium hydroxide is from 3 to 5 mole %, subjecting the solution to sterile filtration, freezing the solution and freeze drying the resulting solid in either bulk or in injection flasks.

4,607,030

2-AMINOMETHYL-6-SULFAMOYLPHENOL DERIVATIVES, A PROCESS FOR THEIR PREPARATION AND THEIR USE AND ALSO PHARMACEUTICAL FORMULATIONS BASED ON THESE COMPOUNDS

Heinrich C. Englert, Hofheim am Taunus; Dieter Mania, Kelkheim; Roman Muschaweck, Frankfurt am Main, and Max Hropot, Flörsheim am Main, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

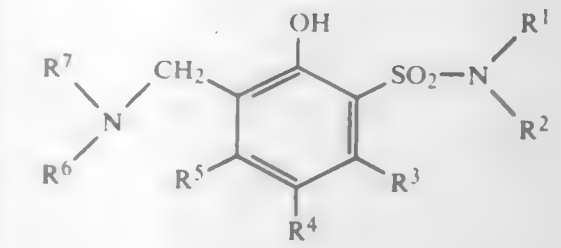
Continuation of Ser. No. 472,005, Mar. 4, 1983, abandoned. This application Jul. 3, 1985, Ser. No. 751,995

Claims priority, application Fed. Rep. of Germany, Mar. 6, 1983, 3208189

Int. Cl.[4] A61K *31/40, 31/18;* C07D *207/00;* C07C *143/80*

U.S. Cl. 514—210 13 Claims

1. A 2-aminomethylphenol of the formula I



in which R^1 and R^2 are identical or different and represent hydrogen, alkyl having 1 to 4 carbon atoms, alkenyl having 2 to 4 carbon atoms, alkynyl having 2 to 4 carbon atoms, or benzyl which is unsubstituted or substituted by methyl, methoxy, or halogen, R^3 and R^5 are identical or different and denote hydrogen, halogen, alkyl having 1 or 2 carbon atoms or alkoxy having 1 or 2 carbon atoms, R^4 denotes halogen, alkyl having 1 to 12 carbon atoms or cycloalkyl having 3 to 12 carbon atoms and up to 8 ring members, and R^6 and R^7 are identical or different and represent hydrogen or alkyl having 1 to 2 carbon atoms, it being possible for one or more of the pairs of radicals R^1 and R^2, R^6 and R^7, and either R^3 and R^4 or R^4 and R^5 to form a $—(CH_2)_m—$ chain in which m is 3 to 6 and which is unsubstituted or substituted by 1 or 2 methyl groups, and physiologically acceptable salts thereof.

7. A pharmaceutical formulation for treating edema diseases or hypertension in humans or animals comprising an effective amount of the compound of claim 1 in a pharmaceutically acceptable carrier.

4,607,031

NOVEL ETHYL BENZYLPHOSPHINATE DERIVATIVES, PROCESS FOR PRODUCTION THEREOF, AND THEIR USE AS CALCIUM ANTAGONIST

Koichiro Yoshino, Suita; Tominori Morita, Nishinomiya; Masaru Moriyama; Keizo Ito, both of Osaka, and Goro Tsukamoto, Toyonaka, all of Japan, assignors to Kanebo Ltd., Tokyo, Japan

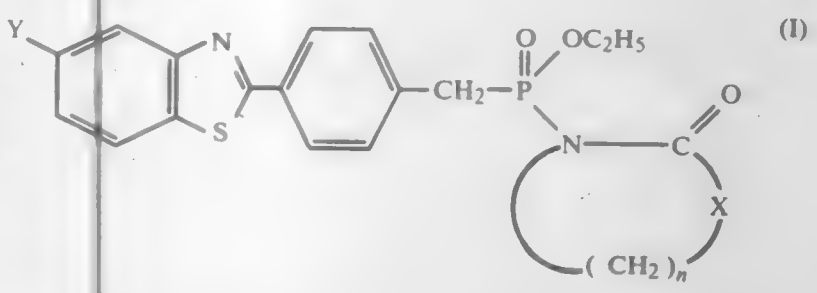
Filed May 22, 1985, Ser. No. 737,037

Claims priority, application Japan, Dec. 12, 1984, 59-263438; Apr. 13, 1985, 60-79093

Int. Cl.[4] A61K *31/675;* C07F *9/65*

U.S. Cl. 514—211 15 Claims

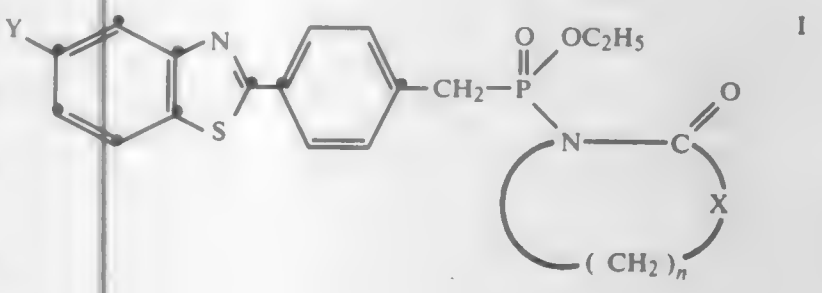
1. An ethyl benzylphosphinate, compound represented by the formula (I)



(I)

wherein Y represents a hydrogen or fluorine atom, X represents a methylene group or an oxygen atom, and n is 2, 3 or 4.

15. A calcium antagonist composition comprising a calcium antagonist effective amount of an ethyl benzylphosphinate compound represented by the following formula (I)



I

wherein Y represents a hydrogen or fluorine atom, X represents a methylene group or an oxygen atom, and n is 2, 3 or 4,

in admixture with a pharmaceutically acceptable carrier therefor.

4,607,032

QUINO-BENOXAZINE ANTIBACTERIAL COMPOUNDS

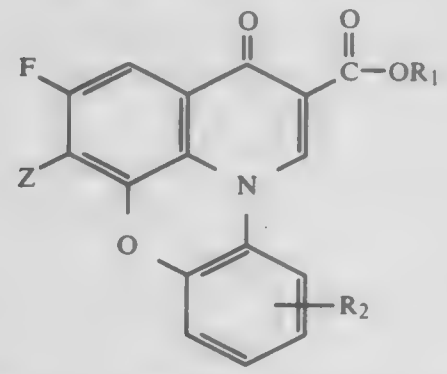
Daniel T. Chu, Vernon Hills, Ill., assignor to Abbott Laboratories, North Chicago, Ill.

Filed Apr. 26, 1984, Ser. No. 604,347

Int. Cl.[4] A61K *31/535;* C07D *498/06*

U.S. Cl. 514—212 17 Claims

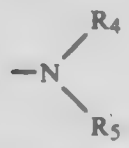
1. A compound having the formula:



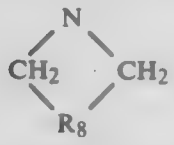
wherein R_1 is hydrogen or a carboxy protecting group; R_2 is one or more groups selected from the group consisting of hydrogen, halogen, nitro, carboxyl, methylenedioxy, cyano, C_1 to C_6 alkyl, halo-substituted C_1 to C_6 alkyl, hydroxy-substituted C_1 to C_6 alkyl, a group having the formula:

$$-Y-R_3$$

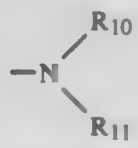
wherein —Y— is —O— or —S— and R_3 is hydrogen or C_1 to C_6 alkyl, and an amine group having the formula:



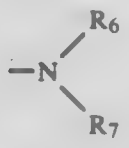
wherein R_4 and R_5 are independently hydrogen or C_1 to C_6 alkyl; and Z is selected from the group consisting of a saturated heterocyclic ring having the structure:



wherein R_8 is dimethylene, $—CH_2—CH_2—CH_2—$, $CH_2—CH_2—NH—CH_2—$, or a group of the formula $—CH_2—R_9—CH_2—$ wherein R_9 is selected from the group consisting of —S—, —O— and —NH—; substituted derivatives thereof having one or more substituents selected from the group consisting of C_1 to C_6 alkyl, C_1 to C_6 hydroxyalkyl, hydroxy, alkanoyl containing 1 to 6 carbon atoms, alkanoylamido containing 1 to 6 carbon atoms and an amine of the formula:



wherein R_{10} and R_{11} are each independently selected from the group consisting of hydrogen and C_1 to C_6 alkyl; and an amino group of the formula:



wherein R_6 is hydrogen or C_1 to C_{10} alkyl; and R_7 is selected from the group consisting of C_1 to C_{10} alkyl, hydroxy-substituted C_1 to C_{10} alkyl, an amino group, a mono-(C_1 to C_6) alkylamino group and a di-(C_1 to C_6) alkylamino group, and pharmaceutically acceptable salts thereof.

16. A method of treating a bacterial infection in a patient comprising administering to a patient in need of such treatment a therapeutically effective amount of a compound as defined in claim 1.

4,607,033

MORPHOLINE DERIVATIVES, COMPOSITIONS AND MEDICINAL USE

Barrie C. C. Cantello, Coulsdon, England, assignor to Beecham Group p.l.c., United Kingdom

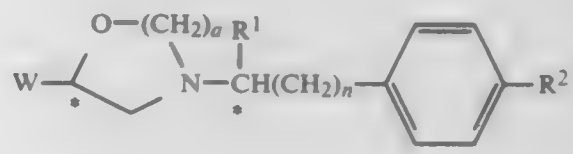
Filed Oct. 31, 1984, Ser. No. 666,818

Claims priority, application United Kingdom, Nov. 2, 1983, 8329247; Feb. 16, 1984, 8404047

Int. Cl.[4] A61K *31/535;* C07D *265/30*

U.S. Cl. 514—233 8 Claims

1. A compound of formula (I):



(I)

or a salt thereof, in which

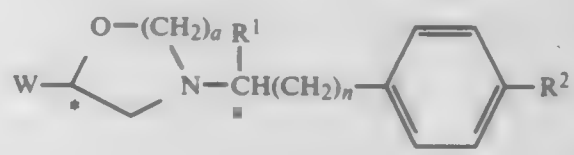
W is phenyl optionally substituted by halogen or trifluoromethyl, or a benzofuran-2-yl group,

R^1 is hydrogen or methyl,

R^2 is carboxyl or a group $O—Z—CO_2H$ or an ester or amide thereof;

Z is a C_{1-6} straight or branched alkylene chain, n is 1 or 2, and a is 2.

7. A method for treating hyperglycaemia in a human or non-human animal which method comprises administering an effective, non-toxic amount of a compound of formula (I):



(I)

in which

W is phenyl optionally substituted by halogen or trifluoromethyl, or a benzofuran-2-yl group,

R^1 is hydrogen or methyl,

R^2 is carboxyl or a group $O—Z—CO_2H$ or an ester or amide thereof,

Z is a C_{1-6} straight or branched alkylene chain,

n is 1 or 2, and

a is 2; or a pharmaceutically acceptable salt thereof to a hyperglycaemic human or non-human animal.

4,607,034

QUINAZOLINE DERIVATIVES AND PHARMACEUTICAL COMPOSITION THEREOF

Susumu Mizogami; Hidetoshi Hiranuma, both of Amimachi; Tetsuo Sekiya, Ibaraki, and Mitsuo Hanazuka, Amimachi, all of Japan, assignors to Mitsubishi Yuka Pharmaceutical Co., Ltd., Tokyo, Japan

Filed Oct. 21, 1980, Ser. No. 199,565

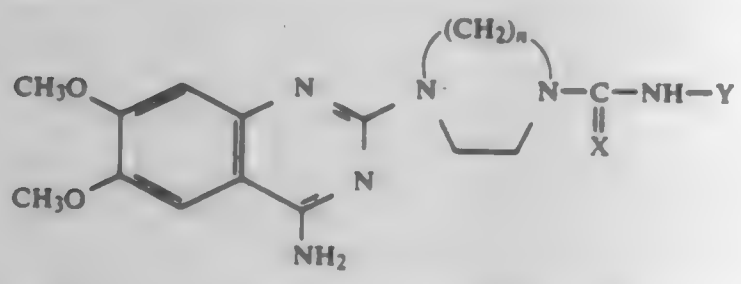
Claims priority, application Japan, Oct. 29, 1979, 54-138727; Nov. 28, 1979, 54-152910

Int. Cl.[4] A61K *31/505;* C07D *403/04*

U.S. Cl. 514—254 22 Claims

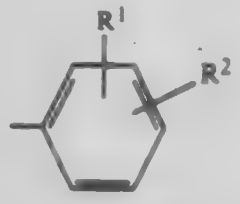
1. A quinazoline derivative represented by the following

formula [I] or a pharmaceutically acceptable acid addition salt thereof:



[I]

wherein Y represents a cycloalkyl group having 5 to 7 carbon atoms, a furyl group, a tetrahydropyranyl group or a group of the formula:



in which R^1 and R^2 are identical or different and each represent a hydrogen atom, a lower alkyl group having 1 to 5 carbon atoms, a lower alkoxy group having 1 to 5 carbon atoms, a halogen atom or a nitro group; X represents an oxygen atom or a sulfur atom; and n is of 2.

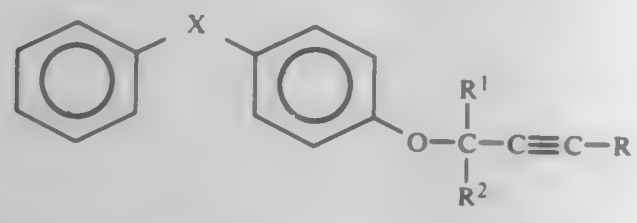
4,607,035

1-PHENOXY(PHENYLTHIO)-4-ARYLALKYNYLOXY-BENZENE DERIVATIVES ENDOWED WITH A JUVENILE HORMONIC AND AN ACARICIDE ACTIVITY

Franco Bettarini, Novara; Pietro Massardo, Milan; Paolo Piccardi, Milan; Franca Reggiori, Milan, and Angelo Longoni, Milan, all of Italy, assignors to Montedison S.p.A., Milan, Italy

Filed Jul. 22, 1983, Ser. No. 516,354
Claims priority, application Italy, Jul. 23, 1982, 22552 A/82
Int. Cl.[4] C07D *213/30*; A01N *43/40*
U.S. Cl. 514—277 **6 Claims**

1. A compound having the following structure



in which R is selected from the group consisting of pyridyl and pyridyl substituted by a substituent selected from the group consisting of the methyl group and chlorine, X is selected from the group consisting of oxygen and divalent sulphur, and R^1 and R^2, the same or different, are selected from the group consisting of hydrogen, methyl and ethyl.

4,607,036

PRESERVATIVE COMPOSITIONS EMPLOYING ANTI-MICROBIAL MORPHOLINE DERIVATIVES

Gayle E. Borovian, Dover, N.J., assignor to Lever Brothers Company, New York, N.Y.

Continuation of Ser. No. 561,845, Dec. 15, 1983, abandoned. This application Aug. 26, 1985, Ser. No. 768,938
Int. Cl.[4] A01N *43/40*
U.S. Cl. 514—277 **8 Claims**

1. A household or personal product composition comprising:

(i) from about 1 to 50% of surfactant to clean or condition a substrate;

(ii) from about 0.1 to about 120 ppm of an antimicrobial agent effective against yeasts, molds or bacteria, selected from the group consisting of 4-(2-nitrobutyl)morpholine, 4,4'-(2-ethyl-2-nitrotrimethylene)dimorpholine and mixtures thereof, wherein said mixtures are in a ratio of 1:20 to 20:1; and

(iii) from about 20 to 97% water;

the composition characterized by a pH ranging from 5.6 to 3.5 and containing less than 1% of hydrocarbon oils.

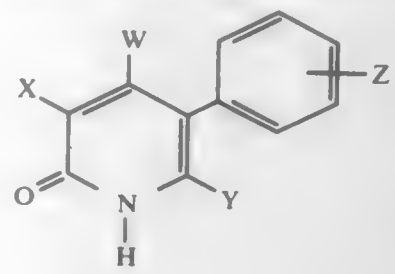
4,607,037

CARDIOTONIC 2(1H)-PYRIDINONES

James A. Bristol, and Ila Sircar, both of Ann Arbor, Mich., assignors to Warner-Lambert Company, Morris Plains, N.J.

Division of Ser. No. 515,799, Jul. 22, 1983, Pat. No. 4,503,061, which is a continuation-in-part of Ser. No. 410,803, Aug. 23, 1982, abandoned. This application Dec. 14, 1984, Ser. No. 681,737
Int. Cl.[4] A61K *31/445*
U.S. Cl. 514—278 **1 Claim**

1. A method of increasing cardiac contractility in a mammal comprising administering to a mammal in need of such treatment a pharmaceutical composition comprising an effective amount of a compound having the structural formula



wherein

(A) X is

(1) H, CH_2OH, F, Cl, Br, CN;

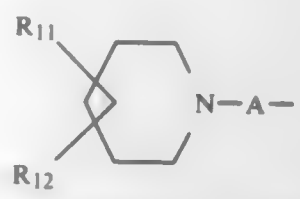
(2) CO_2R_1 where R_1 is hydrogen, alkyl of from one to six carbon atoms, or a pharmaceutically metal or amine cation;

(3) $CONR_2R_3$ where R_2 and R_3 are independently hydrogen or alkyl of from one to six carbon atoms; or

(4) NR_4R_5 where R_4 and R_5 are independently hydrogen or alkyl of from one to six carbon atoms;

(B) W and Y are independently hydrogen or alkyl of from one to six carbon atoms;

(C) Z is



wherein A is a direct bond to the phenyl ring, $(CH_2)_n$ or $O(CH_2)_{n+1}$ where n is an integer of from 1 to 4 and R_{11} and R_{12} are attached to the same carbon atom of the piperidine ring, which may be carbon number three or four, and wherein when R_{11} is hydrogen, R_{12} is

(a) phenyl;

(b) hydroxy; or

(c) alkoxy of from one to six carbon atoms, and

when R_{11} is not hydrogen, R_{11} and R_{12} taken together are ethylenedioxy;

or a pharmaceutically acceptable salt thereof.

4,607,038

OPHTHALMIC PRANOPROFEN COMPOSITIONS

Kazumi Ogata, Toyonaka; Yujiro Yamamoto, Suita, and Yoshie Ozaki, Kobe, all of Japan, assignors to Yoshitomi Pharmaceutical Industries, Ltd. and Senju Pharmaceutical Co., Ltd., both of Osaka, Japan

Filed Feb. 22, 1985, Ser. No. 704,585
Claims priority, application Japan, Mar. 1, 1984, 59-39763
Int. Cl.[4] A61K *31/44, 33/22*
U.S. Cl. 514—291 **5 Claims**

1. An anti-inflammatory ophthalmic solution comprising (a) a therapeutically effective amount of pranoprofen and (b) an irritant-reducing amount of boric acid.

4,607,039

QUINOLINE DERIVATIVES WHICH ARE 5-HYDROXYTRYPTAMINE ANTAGONISTS

David J. Le Count, Congleton, and Robert J. Pearce, Wilmslow, both of United Kingdom, assignors to Imperial Chemical Industries PLC, London, England

Filed Apr. 25, 1983, Ser. No. 488,607

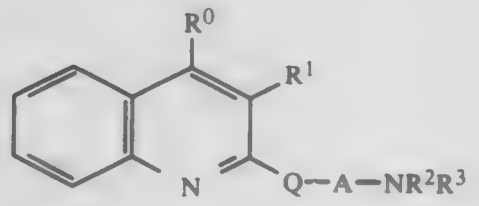
Claims priority, application United Kingdom, May 4, 1982, 8212787; Jan. 27, 1983, 8302236

The portion of the term of this patent subsequent to Mar. 6, 2001, has been disclaimed.

Int. Cl.[4] A61K *31/47;* C07D *215/36*

U.S. Cl. 514—312 7 Claims

1. A compound of the formula:



wherein:

A stands for $—(CH_2)_2—$, or $—(CH_2)_2—$which is substituted by not more than two (1-2C) alkyls;

Q stands for a sulphur atom;

R^0 stands for (1-4C)alkyl, (1-4C)alkoxy or cyclo-propyl;

R^1 stands for a radical selected from the group consisting of n-, iso- or s-(3-4C)alkyl, cyclo-propyl, phenyl, halogenophenyl, (1-2C)alkyl-phenyl, (1-2C)alkoxy-phenyl or (1-2C)perfluoroalkyl-phenyl, heteroaryl of 5 ring atoms having a single hetero-atom selected from oxygen, sulphur and nitrogen atoms and heteroaryl of 6 ring atoms having one nitrogen atom; and

R^2 and R^3 each stand for methyl;

or a pharmaceutically-acceptable acid-addition salt thereof.

5. A pharmaceutical composition for use as a 5-hydroxytryptamine antagonist, comprising an effective amount of a compound of the formula I, wherein A, Q, R^0, R^1, R^2 and R^3 have the meanings stated in claim 1, or a pharmaceutically-acceptable acid-addition salt thereof, and an inert pharmaceutically-acceptable diluent or carrier.

7. In a method of treatment which requires the use of a 5-hydroxytryptamine antagonist, the improvement which comprises using, as the antagonist, an effective amount of a compound according to claim 1.

4,607,040

QUINOLINE DERIVATIVES WHICH ARE 5-HYDROXYTRYPTAMINE ANTAGONISTS

Robert J. Pearce, Wilmslow, and Craig W. Thornber, Macclesfield, both of United Kingdom, assignors to Imperial Chemical Industries PLC, London, England

Filed Apr. 6, 1983, Ser. No. 482,713

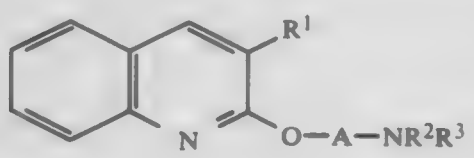
Claims priority, application United Kingdom, Apr. 7, 1982, 8210261

The portion of the term of this patent subsequent to Mar. 6, 2001, has been disclaimed.

Int. Cl.[4] A61K *31/47;* C07D *215/22*

U.S. Cl. 514—312 8 Claims

1. A quinoline derivative of the formula:



I

wherein:

A is a member selected from the group consisting of $—(CH_2)_2—$, $—(CH_2)_2—$ which is substituted by not more than two methyls, and $—(CH_2)_3—$;

R^1 is a member selected from the group consisting of n-, iso- and s-(3-4C)alkyl, cyclopropyl, phenyl, halogenophenyl and [(1-4C)alkoxy]phenyl; and

R^2 and R^3 are each methyl;

or a pharmaceutically-acceptable acid-addition salt thereof.

7. A pharmaceutical composition for use as a 5-hydroxytryptamine antagonist, comprising an effective amount of a quinoline derivative of the formula I, wherein A, R^1, R^2 and R^3 have the meanings stated in claim 1, or a pharmaceutically-acceptable acid-addition salt thereof, and an inert pharmaceutically-acceptable diluent or carrier.

8. In a method of treatment which requires the use of a 5-hydroxytryptamine antagonist, the improvement which comprises using, as the antagonist, an effective amount of a compound according to claim 1.

4,607,041

ANTIHYPERTENSIVE 2-PHENYL HANTZSCH DIHYDROPYRIDINES

Andrew J. G. Baxter, Keyworth; John Dixon, Belton; Thomas McInally, Kegworth, and Alan C. Tinker, Loughborough, all of England, assignors to Fisons plc, Ipswich, England

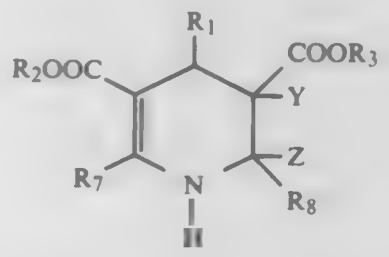
Filed Apr. 17, 1984, Ser. No. 601,389

Claims priority, application United Kingdom, Apr. 27, 1983, 8311520; Apr. 27, 1983, 8311521; Oct. 15, 1983, 8327660; Oct. 15, 1983, 8327661; Dec. 22, 1983, 8334286; Dec. 22, 1983, 8334287

Int. Cl.[4] A61K *31/445;* C07D *211/90, 413/04, 413/14*

U.S. Cl. 514—318 7 Claims

1. A compound of formula



in which R_1 represents benzofurazanyl or phenyl, the phenyl being substituted by one or more of the groups halogen, nitro, —CN, $—OR_9$, $—S(O)_pR_9$, or alkyl C_1 to C_6 optionally substituted by halogen,

p is 0, 1 or 2,

R2 and R_3, which may be the same or different, each represent hydrogen; alkyl C_1 to C_6 optionally substituted by one or more of the groups halogen, cyano, $—XR_4$, $—NR_5R_6$ or phenyl; cycloalkyl C_3 to C_8 optionally substituted by alkyl C_1 to C_6; an oxetanyl, azetidinyl, piperidinyl or tetrahydropyranyl ring which is optionally substituted by alkyl C_1 to C_6, the alkyl in turn optionally being substituted by one or more phenyl groups;

R_5 and R_6, which may be the same or different, each represent alkyl C_1 to C_6 optionally substituted by phenyl,

Y and Z together form a bond, one of R_7 and R_8 represents alkyl C_1 to C_6 and the other represents phenyl,

X is O or S,

R_4 is alkyl C_1 to C_6 or phenyl, and

R_9 is alkyl C_1 to C_6,

provided that when R_7 is alkyl C_1 to C_6, R_1 represents 3-nitrophenyl and R_2 and R_3 are both ethyl, then R_8 does not represent phenyl,

and pharmaceutically acceptable acid addition salts of those compounds containing a basic nitrogen atom.

6. A pharmaceutical formulation containing an amount of a compound according to claim 1 effective to treat renovascular, malignant or essential hypertension, pulmonary hypertension, vasospastic angina, chronic stable angina or congestive heart failure, in admixture with a pharmaceutically acceptable adjuvant, diluent or carrier.

4,607,042

METHOD FOR INCREASING PLASMA HIGH DENSITY LIPOPROTEIN (HDL)

Vanessa Pierce, Reading, England, assignor to John Wyeth & Brother Ltd., Maidenhead, England

Filed Feb. 25, 1985, Ser. No. 704,823

Claims priority, application United Kingdom, Mar. 8, 1984, 8406089

Int. Cl.[4] A61K *31/445*

U.S. Cl. 514—323 2 Claims

1. A method for increasing plasma high density lipoprotein (HDL) cholesterol concentration in a primate, including Man, having a plasma lipid cholesterol level associated with or predisposed towards the development of atherosclerosis or coronary heart disease, which comprises administering to said primate a therapeutically effective amount of the compound 3-[2-(4-benzamido-1-piperidyl)ethyl]indole or a pharmaceutically acceptable salt thereof.

4,607,043

TETRAHYDRO-3,5-DIOXO-1H-PYRROLIZINE-7A(5H)-CARBOXYLIC ACIDS AND DERIVATIVES AS COGNITION ACTIVATORS

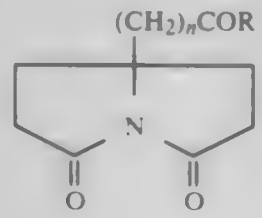
Donald E. Butler, Ann Arbor, Mich., assignor to Warner-Lambert Company, Morris Plains, N.J.

Division of Ser. No. 464,193, Feb. 9, 1983, Pat. No. 4,547,519, which is a continuation-in-part of Ser. No. 381,486, May 24, 1982, abandoned. This application Jun. 28, 1985, Ser. No. 749,686

Int. Cl.[4] C07D *401/06;* A61K *31/44*

U.S. Cl. 514—339 6 Claims

1. A compound having the structural formula



wherein n is zero to three, R is NR_1R_2 wherein R_1 is a 5- or 6-membered heterocyclic group selected from pyridinyl, tetrazol-5-yl, 1,2,3-triazol-5-yl, 1,2,4-triazol-5-yl, 1,2-diazol-3-yl, 1,3-diazol-4-yl; 1,3,4-thiadiazol-2-yl, and 1,3,4-oxadiazol-2-yl which may be substituted by amino, alkylamino, or dialkylamino of from one to four carbon atoms; and R_2 is hydrogen or alkyl of from one to six carbon atoms.

4,607,044

INSECTICIDAL USE OF UREAS AND THIOUREAS

Kobus Wellinga, and Rudolf Mulder, both of Weesp, Netherlands, assignors to Duphar International Research B.V., Weesp, Netherlands

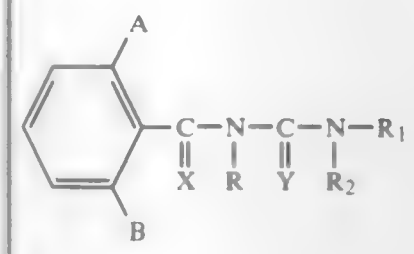
Continuation of Ser. No. 302,591, Sep. 15, 1981, abandoned, which is a continuation of Ser. No. 35,978, May 4, 1979, abandoned, which is a division of Ser. No. 717,633, Aug. 26, 1976, Pat. No. 4,166,124, which is a division of Ser. No. 522,058, Nov. 8, 1974, Pat. No. 3,989,842, which is a division of Ser. No. 354,393, Apr. 25, 1973, Pat. No. 3,933,908, which is a division of Ser. No. 143,668, May 14, 1971, Pat. No. 3,748,356. This application Oct. 30, 1984, Ser. No. 665,508

Claims priority, application Netherlands, May 15, 1970, 7007040

Int. Cl.[4] A01N *43/64, 47/28*

U.S. Cl. 514—383 7 Claims

1. A method of combatting insects in agriculture and horticulture comprising treating insect-infested areas with an insecticidal composition comprising an inert carrier and an insecticidally effective amount, as active ingredient, of a compound of the formula



wherein

A is a hydrogen atom, a halogen atom, a methyl group, or a methoxy group;

B also is a hydrogen atom, a halogen atom, a methyl group, or a methoxy group, with the proviso that A and B are not both a hydrogen atom;

R is a hydrogen atom, an alkyl group, a hydroxy group, an alkoxy group, an alkoxymethyl group, an acyl group, or an alkoxycarbonyl group;

X and Y each are an oxygen atom or a sulfur atom;

R_1 is a hydrogen atom, an alkyl group that may be substituted with halogen, with alkoxy, with alkylthio, or with cyano, a 1-cycloalkenyl group, a benzyl group that may be substituted with halogen, a hydroxy group, an alkoxy group, an acyl group, an alkoxycarbonyl group, an alkoxythiocarbonyl group, an alkylsulfonyl group, or a phenylsulfonyl group; and

R_2 is a substituted or non-substituted phenyl group of a pyridyl group that may be substituted with halogen, with nitro, with cyano, or with halogenated alkyl;

with the proviso that the active ingredient comprises a compound that is not included in either of the following paragraphs:

(1) A and B are each independently selected from the group consisting of chlorine, fluorine, and methyl, R_1 is selected from the group consisting of hydrogen and lower alkyl, R_2 is a phenyl group substituted at at least one position with a moiety selected from the group consisting of halogen, alkyl of 1–15 carbons, halogen derivatives of said alkyl, cycloalkyl, and halogenated cycloalkyl, nitro, and phenyl, X and Y are both oxygen atoms, and R is a hydrogen atom;

(2) N-(2,6-dichlorobenzoyl)-N'-(4-cyanophenyl) urea.

4,607,045

AZOLYLMETHYLCYCLOACETALS, THEIR PREPARATION AND THEIR USE AS DRUGS

Bernd Janssen, Ludwigshafen; Friedrich-Wilhelm Kohlmann, Moorrege; Walter Wesenberg, Bujendorf ueber Eutin, and Wolfgang Heberle, Stuttgart, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

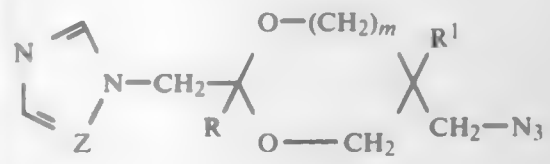
Filed Jan. 16, 1985, Ser. No. 691,851

Claims priority, application Fed. Rep. of Germany, Jan. 19, 1984, 3401694

Int. Cl.[4] A01N *43/50, 43/653;* C07D *405/06;* A61K *31/41*

U.S. Cl. 514—383 7 Claims

1. An azolylmethylcycloacetal of the formula I



(I)

where R is phenyl which can be substituted by halogen, or is C_1-C_6-alkyl, R^1 is hydrogen or C_1-C_3-alkyl, Z is CH or N, and m is 0 or 1, and its physiologically tolerated addition salts with acids.

7. The method of treating mycoses in a patient suffering therefrom, which comprises administering an effective amount of an azolylmethylcycloacetal of the formula I according to claim 1.

4,607,046

4-(1-IMIDAZOLYLMETHYL)CINNAMIC ACID HYDROCHLORIDE MONOHYDRATE AND PHARMACEUTICAL COMPOSITIONS

Kaname Morita; Shigeo Arikawa; Mitsuo Watanabe; Kinji Iizuka, and Kenji Akahane, all of Nagano, Japan, assignors to Kissei Pharmaceutical Co., Ltd. and Ono Pharmaceutical Co., Ltd., both of, Japan

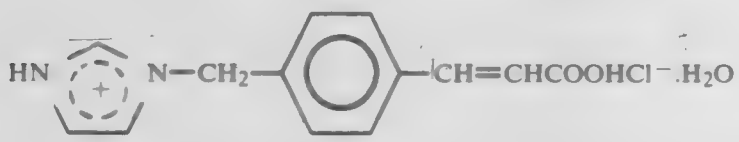
Filed Feb. 10, 1982, Ser. No. 347,616

Claims priority, application Japan, Feb. 10, 1981, 56-18488

Int. Cl.[4] A61K *31/415;* **C07D** *233/60*

U.S. Cl. 514—399 **3 Claims**

1. The compound of the formula:



2. A pharmaceutical composition for alleviating diseases caused by thromboxane A_2 in mammals for oral administration containing, as an active ingredient, the compound of claim 1 in an amount in the range of about 1 to about 1000 mg per day per body in combination with a pharmaceutically acceptable carrier or diluent.

4,607,047

N-(ALLYL-2-PYRROLIDINYLMETHYL) 2-METHOXY-4-AMINO-5-METHYLSULFAMOYL BENZAMIDE ANTI PLATELETS AGGREGATION AGENT

André Debay, Paris, France, assignor to Societe d'Etudes Scientifiques et Industrielles de l'Ile-De-France, Paris, France

Filed Aug. 7, 1984, Ser. No. 638,403

Claims priority, application France, Aug. 10, 1983, 83 13141

Int. Cl.[4] A61K *31/40;* **C07D** *207/09*

U.S. Cl. 514—428 **2 Claims**

1. A method of treating a subject suffering from platelet dysfunction in thrombo-embolic disorders which comprises administering to said subject in need thereof an amount sufficient to inhibit platelet aggregation of N-(1-allyl-2-pyrrolidinylmethyl)2-methoxy-4-amino-5-methylsulphamoyl benzamide and pharmacologically acceptable salts thereof.

4,607,048

7-OXABICYCLOHEPTANE SUBSTITUTED ARYL AMINO PROSTAGLANDIN ANALOGS AND THEIR USE IN INHIBITING PLATELET AGGREGATION AND BRONCHOCONSTRICTION

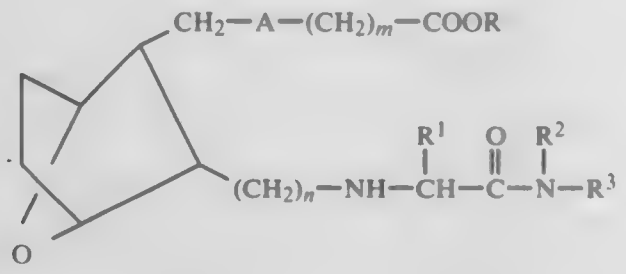
Masami Nakane, Hopewell, N.J., assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed May 16, 1985, Ser. No. 734,507

Int. Cl.[4] A61K *31/335, 31/557;* **C07D** *307/00*

U.S. Cl. 514—469 **12 Claims**

1. A compound having the structural formula



and including all stereoisomers thereof; wherein A is —CH=CH— or —$(CH_2)_2$—;

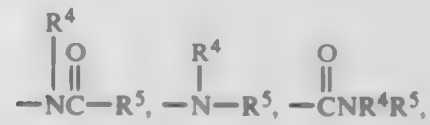
m is 1 to 8; n is 1 to 5;

R is hydrogen, lower lakyl, alkali metal or a polyhydroxylamine salt;

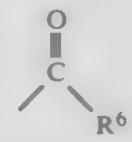
R^1 is hydrogen, lower alkyl, hydroxyalkyl or aryl;

R^2 is hydrogen, lower alkyl, aryl, or cycloalkyl; and

R^3 is substituted aryl or substituted arylalkyl wherein the aryl group is substituted with one or two of the following groups: hydroxy,



SR^4, —CN, —NO_2,



wherein R^6 is alkyl or aryl, wherein R^4 and R^5 may be the same or different and may be hydrogen or lower alkyl;

and wherein the term alkyl or lower alkyl by itself or as part of another group contains 1 to 12 carbons which may be unsubstituted or substituted with halo, CF_3, alkoxy, hydroxy, alkylamino, alkanoylamino, arylcarbonylamino, nitro, cyano, thiol, alkylthio, aryl, alkyl-aryl, haloaryl, cycloalkyl or alkylcycloalkyl; the term aryl by itself or as part of another group is phenyl or naphthyl and which ring unless otherwise indicated, may be unsubstituted or substituted with 1 or 2 halogens, 1 or 2 lower alkyl groups, 1 or 2 aryl groups, 1 or 2 lower alkoxy groups, 1 or 2 hydroxyls, 1 or 2 NR^4R^5 groups, 1 or 2



groups, 1 or 2 NR^4—CO—R^5 groups, 1 or 2 SR^4 groups, 1 or 2 nitro groups, 1 or 2 cyano groups and/or 1 or 2 alkanoyl groups; and the term cycloalkyl by itself or as part of another group contains 3 to 12 carbons and which may be unsubstituted or substituted with one or two halogens, one or two lower alkyl groups and/or one or two lower alkoxy groups; and $(CH_2)_m$ and $(CH_2)_n$ include straight or branched chain radicals having from 1 to 8 carbons in the normal chain in the case of $(CH_2)_m$, and 1 to 5 carbons in the normal chain in the case of $(CH_2)_n$ and may contain 1 or 2 lower alkyl or halo groups.

12. A method of inhibiting platelet aggregation, inhibiting bronochoconstriction associated with asthma or treating peripheral vascular diseases, which comprises administering to a mammalian host an effective amount of a compound as defined in claim 1 or a pharmaceutically acceptable salt thereof.

4,607,049

7-OXABICYCLOHEPTANE SUBSTITUTED THIO PROSTAGLANDIN ANALOGS USEFUL IN THE TREATMENT OF THROMBOLYTIC DISEASE

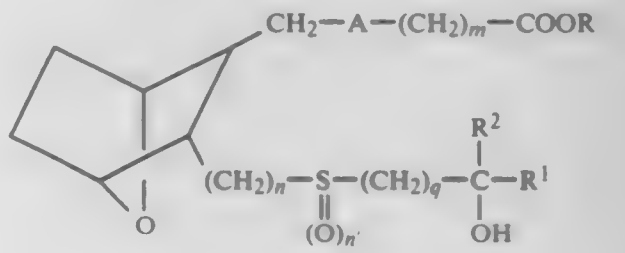
Steven E. Hall, Ewing Township, Mercer County, N.J., assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Apr. 22, 1985, Ser. No. 725,978

Int. Cl.[4] A61K *31/557, 31/34;* **C07D** *307/00*

U.S. Cl. 514—469 **12 Claims**

1. A compound having the structural formula



and including all stereoisomers thereof, wherein A is —CH=CH— or —$(CH_2)_2$—;

m is 0 to 8; n is 1 to 4; n′ is 0, 1 or 2; q is 1 to 10;

R is hydrogen, lower alkyl, alkali metal or a polyhydroxylamine salt; and R^1 is hydrogen, lower alkyl, aryl, aralkyl, cycloalkyl or cycloalkylalkyl, and R^2 is hydrogen or lower alkyl, wherein lower alkyl or alkyl alone or as part of another group contains 1 to 12 carbons and is unsubstituted or is substituted with halo, hydroxy, alkylamino, alkylthio, CF_3, alkoxy, aryl, alkyl-aryl, haloaryl, cycloalkyl or alkylcycloalkyl;

aryl alone or as part of another group contains 6 to 10 carbons in the ring portion and is unsubstituted or is substituted with 1 or 2 lower alkyl groups, 1 or 2 halogens, 1 or 2 hydroxy groups, 1 or 2 lower alkoxy groups, 1 or 2 alkylamino groups, and/or 1 or 2 alkylthio groups;

cycloalkyl alone or as part of another group contains 3 to 12 carbons and is unsubstituted or is substituted with 1 or 2 halogens, 1 or 2 lower alkyl groups, 1 or 2 lower alkoxy groups, 1 or 2 hydroxyl groups, 1 or 2 alkylamino groups, and/or 1 or 2 alkylthio groups; and

$(CH_2)_m$, $(CH_2)_n$ and $(CH_2)_q$ include straight or branched chain radicals which may contain 1 or 2 lower alkyl and-/or halo substituents.

10. A method of inhibiting platelet aggregation or inhibiting bronchoconstriction, which comprises administering to a mammalian host an effective amount of a compound as defined in claim **1** or a pharmaceutically acceptable salt thereof.

4,607,050

METHOD OF CONTROLLING INSECTS AND PARASITES WITH AN AQUEOUS LOCALIZED POUR-ON FORMULATION

Peter J. Kieran, Beecroft; Robert B. Townsend, Waitara; Ronald J. Hackney, Croydon Park; Stephen Gayst, Double Bay, and Michael J. Maguire, North Epping, all of Australia, assignors to Wellcome Australia Limited, Cabarita, Australia

Filed Sep. 30, 1982, Ser. No. 430,884

Claims priority, application Australia, Oct. 19, 1981, PF1217

Int. Cl.⁴ A61K *31/275, 31/215*

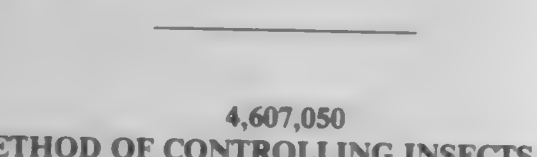
U.S. Cl. 514—520 **11 Claims**

1. A method of controlling insects or parasites which comprises making a localized external pour-on application of a small volume of an aqueous pour-on formulation to a minor portion of the outer surface of a mammal; said aqueous pour-on formulation comprising

(a) an aqueous carrier;

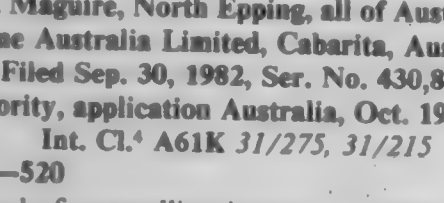
(b) an effective amount of a nondissolved water-insoluble insecticidal or antiparasitic agent suspended or dispersed in the aqueous carrier; and

(c) wherein said water insoluble agent is a pyrethrin or a pyrethroid of the formula

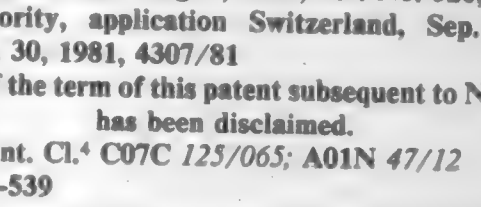


wherein

M is



-continued



wherein

X_1 to X_4 are independently selected from halo, C_1–C_4 alkyl, halogen-substituted C_1–C_4 alkyl, and halogen-substituted phenyl,

X_5 is H or halo,

R_1 is H or cyano, and

R_2 is halogen-substituted phenyl.

4,607,051

CARBAMIC ACID COMPOUND AND USE AS A PESTICIDE

René Zurflüh, Bülach, Switzerland, assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 301,612, Sep. 14, 1981, Pat. No. 4,413,010. This application Aug. 4, 1983, Ser. No. 520,393

Claims priority, application Switzerland, Sep. 23, 1980, 7120/80; Jun. 30, 1981, 4307/81

The portion of the term of this patent subsequent to Nov. 1, 2000, has been disclaimed.

Int. Cl.⁴ C07C *125/065;* **A01N** *47/12*

U.S. Cl. 514—539 **3 Claims**

1. Ethyl [2-[p-(3,5-dichlorophenoxy)phenoxy]ethyl]methylcarbamate.

2. A pesticidal composition which comprises an inert carrier material and, as the active ingredient, an amount which is effective as a pesticide of the compound of claim **1**.

4,607,052

TRIGLYCERIDES, DIETETIC AND THERAPEUTICAL APPLICATIONS AND COMPOSITIONS CONTAINING THEM

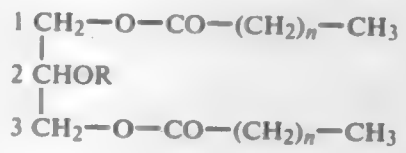
François Mendy, Boulogne, and Pierre Barthelemy, Barbery, both of France, assignors to Roussel-UCLAF, Paris, France

Filed Apr. 15, 1983, Ser. No. 485,405

Int. Cl.⁴ E11E *3/02;* **A61K** *31/20*

U.S. Cl. 514—547 **8 Claims**

1. Triglycerides of formula (I):



(I)

wherein R represents a nonoxidized acyl fragment of a polyunsaturated fatty acid containing 18 to 22 carbon atoms, and wherein the unsaturation is due to double bonds, and wherein n is an integer number varying from 2 to 16.

2. A method of treating a patient having trouble digesting lipids, metabolic diseases, or undernutrition which comprises administering to the patient an effective amount of the compound of claim **1**.

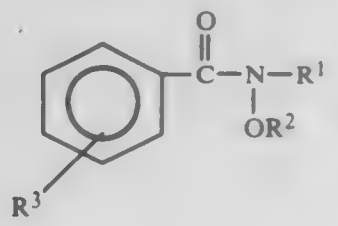
4,607,053

ARYLHYDROXAMATES USEFUL AS ANTIALLERGY AGENTS

Donald S. Karanewsky, East Windsor, and Martin F. Haslanger, Lambertville, both of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

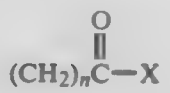
Continuation-in-part of Ser. No. 611,251, May 17, 1984, abandoned. This application Apr. 4, 1985, Ser. No. 719,935
Int. Cl.[4] C07C *83/10, 101/72;* A61K *31/19, 31/235*
U.S. Cl. 514—575 33 Claims

1. A compound having the structure



wherein

R^1 is lower alkyl, aryl, lower alkenyl aralkyl, or



wherein n is 2 to 4 and X is hydroxy, alkoxy, amino, C_1–C_4-alkylamino or C_1–C_4-dialkylamino;

R^2 is hydrogen or lower alkyl; and

R^3 is C_1–C_{20} alkyl, C_3–C_{20} alkenyl, aryl, aryl-alkyl, cycloalkyl, aryl-alkenyl, lower alkoxy, lower alkenyloxy, aryl-alkoxy, aryloxy or cycloalkyloxy, including pharmaceutically acceptable monobasic and dibasic salts whereof, and wherein the term alkyl by itself or as part of another group is unsubstituted or substituted with a substituent which is a halo, trifluoromethyl, alkoxy, aryl, alkyl-aryl, haloaryl, cycloalkyl, alkylcycloalkyl, hydroxy, alkylamino, alkanoylamino, arylcarbonylamino, nitro, cyano, thiol or an alkylthio substituent,

the term aryl by itself or as part of another group is unsubstituted or substituted with 1 or 2 halogens, 1 or 2 lower alkyl groups, 1 or 2 lower alkoxy groups, an aryl group, 1 or 2 hydroxyls, 1 or 2 alkylamino groups, 1 or 2 alkanoylamino groups, 1 or 2 arylcarbonylamino groups, 1 or 2 amino groups, 1 or 2 nitro groups, 1 or 2 cyano groups, 1 or 2 thiol groups and/or 1 or 2 alkythio groups; and

the term cycloalkyl by itself or as Part of another group is unsubstituted or substituted with 1 or 2 halogens 1 or 2 lower alkyl groups, 1 or 2 alkoxy groups, an aryl group, 1 or 2 hydroxyls, 1 or 2 alkylamino groups, 1 or 2 alkanoylamino, 1 or 2 arylcarbonylamino groups, 1 or 2 amino groups, 1 or 2 nitro groups, 1 or 2 cyano groups, 1 or 2 thiol groups and/or 1 or 2 alkylthio groups.

31. A method of inhibiting Δ^5-lipoxygenase which comprises administering to the circulatory system of a mammalian host an effective amount of a compound as defined in claim 1 or a pharmaceutically acceptable salt thereof.

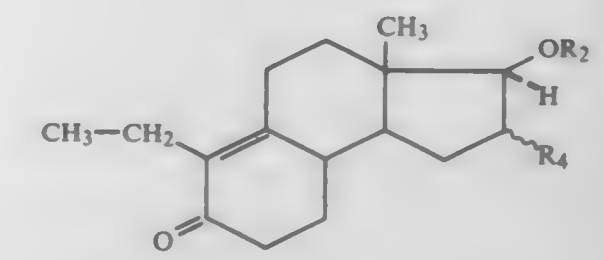
4,607,054

ANTIANDROGENIC COMPOSITIONS CONTAINING INDENE-7-ONES

Marie-Madeleine Bouton; Jean Jacques, both of Paris, and André Pierdet, Noisy-Le-Sec, all of France, assignors to Roussel Uclaf, Paris, France

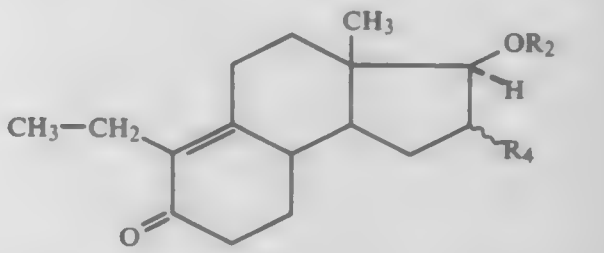
Continuation-in-part of Ser. No. 350,151, Feb. 19, 1982, Pat. No. 4,466,971. This application Oct. 19, 1983, Ser. No. 543,315
Claims priority, application France, Feb. 23, 1981, 81 03520
Int. Cl.[4] A61K *31/12;* C07C *49/75, 69/14*
U.S. Cl. 514—680 14 Claims

1. A compound of the formula



wherein R_2 is selected from the group consisting of hydrogen, formyl and acyl of an organic carboxylic acid of 2 to 18 carbon atoms, R_4 is selected from the group consisting of hydrogen and methyl and the wavy line indicates that R_4 may be in the α- or β-position.

10. A method of inducing antiandrogenic activity in warm-blooded animals comprising administering to warm-blooded animals an antiandrogenically effective amount of a compound of the formula



I

wherein R_2 is selected from the group consisting of hydrogen, formyl and acyl of an organic carboxylic acid of 2 to 18 carbon atoms, R_4 is selected from the group consisting of hydrogen and methyl and the wavy line indicates that R_4 may be in the α- or β-position.

4,607,055

ALIPHATIC ALCOHOL PRODUCTION

Michael V. Grazioso, Poughkeepsie, N.Y., and David A. Storm, Montvale, N.J., assignors to Texaco Inc., White Plains, N.Y.

Filed Jul. 3, 1985, Ser. No. 751,696
Int. Cl.[4] C07C *27/06*
U.S. Cl. 518—713 21 Claims

1. A method for preparing lower aliphatic alcohols characterized by producing a substantial proportion of aliphatic alcohols having from 2 to 6 carbon atoms which comprises reacting carbon monoxide and hydrogen in the presence of a catalyst at a temperature from about 240° to about 400° C., a pressure from about 500 to about 3000 psi and a gas hourly space velocity of at least 1000, said catalyst consisting essentially of from about 5 to about 50 weight percent of molybdenum calculated as MoO_3, from about 0.3 to about 15 weight percent of a metal selected from the group consisting of cobalt, iron and nickel, calculated as CoO, Fe_2O_3 or NiO, respectively, and from about 0.5 to 5 weight percent of silver, calculated as Ag, and the balance a support, said catalyst being modified by the addition of an alkali metal promoter from the class consisting of potassium, cesium and rubidium in an amount ranging from about 1.8 to 13.0 micromoles of said alkali metal per square meter of catalyst surface area.

4,607,056

MIXED ALIPHATIC ALCOHOL PRODUCTION

Michael V. Grazioso, Poughkeepsie, N.Y., and David A. Storm, Montvale, N.J., assignors to Texaco Inc., White Plains, N.Y.

Filed Jul. 3, 1985, Ser. No. 751,703
Int. Cl.[4] C07C *27/06*
U.S. Cl. 518—714 18 Claims

1. A method for preparing lower aliphatic alcohols characterized by producing a substantial proportion of aliphatic alcohols having from 2 to 6 carbon atoms which comprises reacting carbon monoxide and hydrogen in the presence of a catalyst at a temperature from about 240° to about 400° C., a pres-

sure from about 500 to about 3000 psi and a gas hourly space velocity of at least 1000, said catalyst consisting essentially of from about 5 to about 50 weight percent of molybdenum calculated as MoO_3, from about 0.3 to about 15 weight percent of a metal selected from the group consisting of cobalt, iron and nickel, calculated as CoO, Fe_2O_3 or NiO, respectively, and from about 0.5 to 3.5 weight percent of rhenium, calculated as Re, and the balance a support, said catalyst being modified by the addition of an alkali metal promoter from the class consisting of potassium, cesium and rubidium in an amount ranging from about 1.8 to 13.0 micromoles of said alkali metal per square meter of catalyst surface area.

4,607,057

PROCESS FOR THE PREPARATION OF BEADS OF COPOLYMERS BEARING REACTIVE GROUPS, BY POLYMERIZATION IN SUSPENSION IN A NON-AQUEOUS MEDIUM

Chantal Bonnans, Le Mans, and Guy Levesque, Saint Mars sous Ballon, both of France, assignors to Societe Nationale Elf Aquitaine, Courbevoie, France

Filed Jul. 13, 1984, Ser. No. 630,575
Claims priority, application France, Jul. 13, 1983, 83 11738
Int. Cl.[4] C08B *18/14*
U.S. Cl. 521—52 15 Claims

1. A process for the preparation of crosslinked copolymers in beads, said copolymers bearing reactive groups that are capable of subsequently coupling a chemical or biochemical product or a cell, which comprises submitting to polymerisation, in the presence of a free-radical initiating agent, a mixture of free-radical polymerisable monomers including one or more monomers bearing said reactive groups, the polymerisation being carried out in a medium comprises of two emulsified, immiscible organic liquids, one of them serving as a solvent for the monomers and the initiating agent, and the other assuring the dispersion of this solution to obtain the copolymer in beads.

4,607,058

PROCESS FOR PREPARING HIGH BULK DENSITY VINYL RESINS

Paul O. Hong, King of Prussia, Pa., assignor to The B. F. Goodrich Company, Akron, Ohio

Filed May 20, 1985, Ser. No. 736,161
Int. Cl.[4] C08J *9/20;* C08F *2/00*
U.S. Cl. 521—56 18 Claims

1. A process for polymerizing in an aqueous suspension medium vinyl chloride, alone, or in combination with one or more ethylenically unsaturated monomers having a terminal $CH_2=C<$ grouping consisting of conducting the polymerization in the presence of at least one hydroxypropyl methyl cellulose having a viscosity as measured as a 2% solution in water at 20° C. according to ASTM D 2363, of from about 4,000 cps to about 75,000 cps thereby producing a vinyl chloride resin having a DOP porosity greater than 0.06 cc/g.

4,607,059

GAS-RELEASING COMPOSITION FOR TAILORING GAS EVOLUTION OF SYSTEM IR 2811

Chester J. Kmiec, Amherst, and Michael F. Novits, Buffalo, both of N.Y., assignors to Pennwalt Corporation, Philadelphia, Pa.

Filed Sep. 25, 1985, Ser. No. 780,124
Int. Cl.[4] C08J *9/10*
U.S. Cl. 521—88 4 Claims

1. A method of foaming thermoplastic polymers or a thermoplastic polymer-elastomer blend selected from the group of styrene-maleic anhydride resin, polystyrene and high impact polystyrene resins, styrene-acrylonitrile resins, acrylonitrile-butadiene-styrene resins, polypropylene, low and high density polyethylene, polyphenylene oxide and modified polyphenylene oxide resins comprising adding to the polymeric resin the gas-generating composition consisting essentially of from a t-alkylhydrazinium salt and/or carbonylhydrazine and at least one compound selected from free radical forming sources, metal oxides, and sulfur and/or sulfur donor compounds wherein when sulfur and/or a sulfur donor compound is used, the composition will also contain one or more members selected from sulfur accelerators, metal oxides, and amino-alcohols as the foaming agent and heating until the foaming is completed under processing conditions such that the thermoplastic and/or elastomer properties of the original polymer are maintained.

4,607,060

FOAMING AND CROSSLINKING OF ELASTOMERIC AND/OR THERMOPLASTIC POLYMERS

Chester J. Kmiec, Amherst; Michael F. Novits, Buffalo, and Edward P. Hibbard, Cheektowaga, all of N.Y., assignors to Pennwalt Corporation, Philadelphia, Pa.

Filed Sep. 30, 1985, Ser. No. 782,250
Int. Cl.[4] C08J *9/10*
U.S. Cl. 521—89 8 Claims

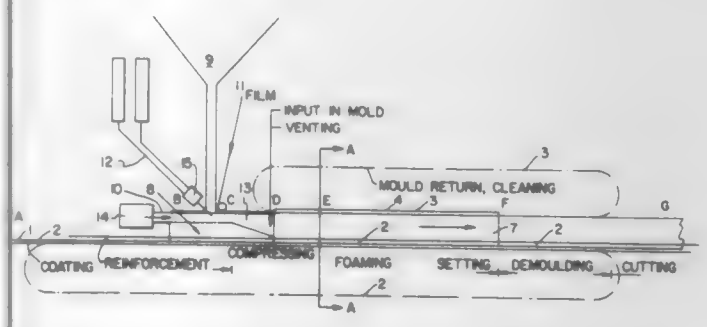
1. A foamable and crosslinkable composition consisting essentially of a crosslinkable thermoplastic and/or elastomeric polymer selected from the group of ethylene-propylene-diene rubber, silicone rubber, polyethylene resin, ethylene-vinyl acetate resin, ethylene-propylene copolymer, chlorinated polyethylene, fluoroelastomer, nitrile rubber, and blends thereof, at least one free radical initiator which is activated at temperatures from about 50° C. to about 350° C., a compound selected from a t-alkylhydrazinium salt or a carbonylhydrazine, and optionally an auxiliary blowing agent.

4,607,061

BUILDING MATERIAL FOR BUILDING ELEMENTS, AND A METHOD AND A SYSTEM FOR MANUFACTURING SAID ELEMENTS

John Schmidt, Ryttergården Mogenstrup, N stved 4700, Denmark

PCT No. PCT/DK83/00126, § 371 Date Aug. 21, 1984, § 102(e) Date Aug. 21, 1984, PCT Pub. No. WO84/02489, PCT Pub. Date Jul. 5, 1984
PCT Filed Dec. 21, 1983, Ser. No. 643,966
Claims priority, application Denmark, Dec. 22, 1982, 5685/82
Int. Cl.[4] C08G *18/14;* B29C *67/16, 67/22*
U.S. Cl. 521—122 11 Claims



1. A building element comprising a body of firmly compressed hard expanded burnt clay particles forming a coherent supporting skeleton of abutting particles bound together by a cured polyurethane foam in only an amount sufficient to fill the cavities between the compressed particles.

4,607,062
CATALYST COMPOSITIONS FOR POLYALIPHATIC ISOCYANATE-BASED POLYURETHANES AND PROCESS FOR THEIR USE

Ignazio S. Megna, Lebanon, N.J., assignor to American Cyanamid Company, Stamford, Conn.

Division of Ser. No. 568,159, Jan. 4, 1984, Pat. No. 4,548,919, which is a continuation-in-part of Ser. No. 450,626, Dec. 17, 1982, abandoned. This application Aug. 12, 1985, Ser. No. 764,470

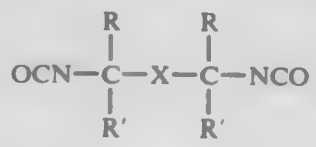
Int. Cl.[4] C08G *18/14, 18/24, 18/26;* B01J *31/04*

U.S. Cl. 521—124 **10 Claims**

1. A highly reactive, rapidly curable polyurethane composition, said composition comprising:

(a) a mixture or a prepolymer of:

(i) a poly aliphatic isocyanate compound of the formula:



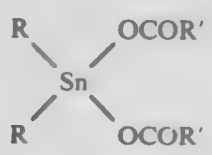
wherein R and R′ are each, independently, selected from hydrogen, alkyl or substituted alkyl and X is a bridging means selected from aliphatic, cycloaliphatic or aromatic groups, or a prepolymer adduct of said isocyanate compound possessing poly aliphatic isocyanate functionality; and

(ii) a monomeric or polymeric compound containing a plurality of hydroxyl groups, the molar ratio of the total amount of said isocyanate in (i) to the total amount of hydroxyl groups in (ii) being from about 1:0.8 to about 1:1.2, respectively; and

(b) a minor effective amount of a catalyst composition, said composition consisting essentially of

(i) from about 25 to about 75 parts by weight of lead naphthenate; and

(ii) from about 75 to about 25 parts by weight of at least one dialkyltin dicarboxylate compound of the formula:



wherein R is selected from C_1 to C_8 alkyl and R′ is selected from C_1 to C_{18} alkyl, based upon 100 parts by weight of the catalyst composition.

4,607,063
NOVEL PRIMARY HYDROXYL-CONTAINING PHOSPHONO-S-TRIAZINES AS REACTANTS IN THE PRODUCTION OF POLYURETHANES

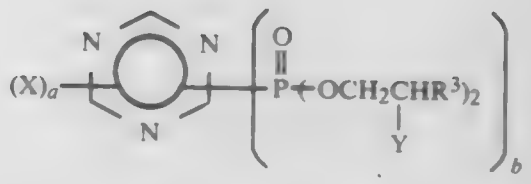
Chester E. Pawloski, Bay City, and Sally P. Ginter, Sanford, both of Mich., assignors to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 476,663, Mar. 18, 1983, Pat. No. 4,556,710. This application Aug. 9, 1985, Ser. No. 764,032

Int. Cl.[4] C08G *18/14*

U.S. Cl. 521—165 **13 Claims**

1. A polyurethane composition comprising an organic polyisocyanate and a phosphono-s-triazine corresponding to the formula



wherein a is an integer from 0 to 2 inclusive; b is an integer from 1 to 3 inclusive, with the proviso that the sum of a and b equals 3; X is separately in each occurrence chlorine, bromine, haloalkyl or alkyl; Y is separately in each occurrence hydrogen, chlorine or bromine; R^3 is separately in each occurrence hydrogen, hydrocarbyl, CH_2Y or CH_2OH, with the proviso that at least one R^3 is CH_2OH.

4,607,064
POLYURETHANE AND URETHANE-MODIFIED ISOCYANURATE FOAMS AND A POLYOL COMPOSITION USEFUL IN THEIR PREPARATION

Ernst Kuhn, Zurich; Jelle D. Boer, and Johan Theon, both of Wadenswil, all of Switzerland, assignors to The Dow Chemical Company, Midland, Mich.

Continuation of Ser. No. 495,217, May 16, 1983, abandoned. This application Aug. 9, 1984, Ser. No. 638,934

Int. Cl.[4] C08G *18/14, 18/48*

U.S. Cl. 521—174 **13 Claims**

1. A rigid foam comprising the reaction product of a foamable reaction mixture comprising a blowing agent, a polyisocyanate and at least two active hydrogen-containing compounds reactive with an isocyanate, one of said active hydrogen-containing compounds being an alkylene oxide polymer having a hydroxyl number of about 20–110 and being composed of at least about 10 weight percent, based on the total weight of the polymerized alkylene oxide in the polymer, of a polymerized ethylene oxide, and said other active hydrogen-containing compound containing from 2 to 8 active hydrogens and a hydroxyl number of at least 100, and wherein said alkylene oxide polymer is present in an amount from 5 to 95 weight percent of the active hydrogen containing compounds in the reaction mixture, and said other active hydrogen-containing compound is present in an amount from 95 to 5 weight percent of the active hydrogen containing compounds in the reaction mixture.

4,607,065
SEALANT COMPOSITIONS AND METHOD OF PRODUCING THE SAME

Takashi Kitamura, Higashimurayama; Yukio Fukuura, Kawagoe; Itsuo Tanuma, Sayama; Toshikazu Shinogaya, Kodaira, and Yuji Noda, Kokubunji, all of Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan

Continuation of Ser. No. 490,085, Apr. 29, 1983, Pat. No. 4,548,687. This application May 15, 1985, Ser. No. 734,310

Claims priority, application Japan, May 7, 1982, 57-75497

The portion of the term of this patent subsequent to Oct. 22, 2002, has been disclaimed.

Int. Cl.[4] C08K *3/36, 3/34, 3/40;* C08L *15/02*

U.S. Cl. 522—83 **3 Claims**

1. A crosslinking-reaction type sealant composition for a puncture-sealing tire comprising: (A) a halogenated butyl rubber, (B) a liquid polybutene as a tackifier, (C) an acryloyl or methacryloyl group-containing polymerizable unsaturated compound, (D) a filler and (E) a photopolymerization initiator, wherein 90 to 65 parts by weight of component (B) is mixed with 10 to 35 parts by weight of component (A) and then not more than 10 parts by weight of component (C), 5 to 30 parts by weight of component (D) and not more than 10 parts by weight of component (E) are added to 100 parts by weight of a total of components (A) and (B).

4,607,066

MINE STOPPING SEALANT

Leon F. Barry, and James A. Berry, both of St. Petersburg, Fla., assignors to The Celotex Corporation, Tampa, Fla.

Filed May 30, 1985, Ser. No. 739,257
Int. Cl.[4] E21B *33/138*
U.S. Cl. 523—130 16 Claims

1. A process for coating geological formations and mine stoppings consisting essentially of applying to said substrates an aqueous, non-cementitious sealant composition comprising 6 to 26% by weight of a water-dispersible polymeric binder, 25 to 45% by weight of filler material and 17 to 50% by weight of water, said sealant composition having a viscosity of at least 7500 centipoises measured at 24° C., and allowing said sealant composition to dry to form an air flow resistant coating on said substrates.

4,607,067

FOUNDRY SAND BINDER

Keiji Ohashi, Urayasu, and Kohichi Handa, Miura, both of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Apr. 19, 1985, Ser. No. 725,335
Claims priority, application Japan, Apr. 27, 1984, 59-83856
Int. Cl.[4] B22C *11/22*
U.S. Cl. 623—144 11 Claims

1. A binder composition for foundry sand, comprising:

a condensation-reactive first compound having at least one methylol group in a molecule and amounting to 100 parts by weight; and

a component including at least one of calcium hydroxide and barium hydroxide in particle form, and a second compound having a melting point not lower than 50° C. and a boiling point ranging from 250° to 400° C., said second compound being coated on a particle surface of said at least one of calcium hydroxide and barium hydroxide, said component ranging from 0.5 to 35 parts by weight.

6. A molding composition for forming a mold and a core for casting, said molding composition comprising foundry sand, a binder for binding said foundry sand, said binder including a condensation-reactive first compound having at least one methylol group in a molecule, and a component including at least one of calcium hydroxide and barium hydroxide in particle form, and a second compound having a melting point not lower than 50° C. and a boiling point ranging from 250° to 400° C., said second compound being coated on a particle surface of said at least one of calcium hydroxide and barium hydroxide, said second compound amounting to 0.5 to 35 parts by weight relative to 100 parts by weight of said condensation-reactive first compound.

4,607,068

RADIATION-CURABLE COATINGS ADAPTED FOR MAGNETIC RECORDING STRUCTURES

Robert E. Ansel, Hoffman Estates, Ill., assignor to DeSoto, Inc., Des Plaines, Ill.

Filed Jun. 3, 1985, Ser. No. 740,390
Int. Cl.[4] C08G *18/44*
U.S. Cl. 523—181 24 Claims

1. An electron beam-curable coating composition comprising a liquid medium comprising a polyethylenically unsaturated polyurethane oligomer which includes a polycarbonate diol, and from 5% to 50%, based on the total weight of unsaturated material, of a polyethylenically unsaturated isocyanurate.

4,607,069

CURABLE COMPOSITIONS BASED ON EPOXY RESINS

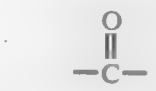
Helmut Tesch, Birkenheide; Manfred Heym, Weisenheim; Walter Doerflinger, Frankenthal; Herbert Stutz, Karlsruhe; Peter Neumann, Wiesloch; Dietmar Nissen, and Gerhard Schaefer, both of Heidelberg, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Jul. 3, 1985, Ser. No. 751,389
Claims priority, application Fed. Rep. of Germany, Jul. 5, 1984, 3424700
Int. Cl.[4] C08G *59/50*
U.S. Cl. 523—400 5 Claims

1. An essentially solvent-free curable composition which has a long shelf life and consists of

A 100 parts by weight of an epoxy resin and

B from 10 to 100 parts by weight of, as a curing agent for the epoxy resin, an aromatic diamine containing



groups, with or without

C from 0.01 to 5 parts by weight of an accelerator,

wherein the curing agent for the epoxy resin is finely dispersed in the latter.

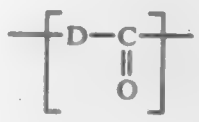
4,607,070

POLYETHER-COPOLYCARBONATES FOR DIALYSIS MEMBRANES

Manfred Schreckenberg; Rolf Dhein; Ralf Lange, all of Krefeld, and Werner Waldenrath, Cologne, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Bayerwerk, Fed. Rep. of Germany

Filed Sep. 26, 1984, Ser. No. 654,585
Claims priority, application Fed. Rep. of Germany, Sep. 30, 1983, 3335591; Mar. 10, 1984, 3408804
The portion of the term of this patent subsequent to Jan. 7, 2003, has been disclaimed.
Int. Cl.[4] C08L *69/00*
U.S. Cl. 524—100 18 Claims

1. A process for the preparation of a segmented, aliphatic-aromatic polyether-copolycarbonate having a weight average molecular weight of 50,000 to 350,000 and containing about 95 to about 65% by weight of aromatic carbonate structural units of the formula (I)



wherein

—D— is a diphenolate radical, and about 5 to about 35% by weight of polyether carbonate structural units of the general formula (II)



wherein

—O—Polyether—O— is an aliphatic polyether-diolate radical having a number average molecular weight of 600 to 20,000 by the reaction in the phase boundary process in a mixture of organic solvent and aqueous alkaline phase at a temperature from 0° C. to 35° C., of corresponding amounts of an aliphatic polyether diol having a number average molecular weight of 600 to 20,000, a mixture of

aromatic dihydroxy compounds and a carbonic acid halide wherein:

(a) the carbonic acid halide is used in a molar excess based on the total number of mols of said aromatic dihydroxy compounds and aliphatic polyether diol, said aromatic dihydroxy compounds comprising 50 to 99% by weight of bisphenol-A and 50 to 1% by weight of at least one other diphenol,

(b) the aqueous phase is maintained at a pH of at least 13, and

(c) the polycondensation reaction is carried out in a reactor and is catalyzed by an amine catalyst, the polyether-polycarbonate being isolated, purified and dried.

4,607,071

PROCESS FOR SPIN-DYEING OF ACID-MODIFIED POLYMERS OF COPOLYMERS OF ACRYLONITRILE USING RAPID-FIXING DI-QUATERNARY CATIONIC DYES

Manfred Hähnke, Kelkheim; Reinhard Mohr, Offenbach am Main, and Kurt Hohmann, Neu-Isenburg, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Continuation of Ser. No. 538,800, Oct. 4, 1983, Pat. No. 4,557,732, which is a continuation-in-part of Ser. No. 420,516, Sep. 20, 1982, abandoned, which is a continuation of Ser. No. 225,851, Jan. 16, 1981, abandoned, which is a continuation of Ser. No. 40,760, May 21, 1979, abandoned. This application May 15, 1985, Ser. No. 734,442

Int. Cl.[4] **C08K** *5/22;* **C08J** *3/20;* **D01F** *6/18*

U.S. Cl. 524—189 **16 Claims**

1. In a process for spin-dyeing an acid-modified polymer or copolymer of acrylonitrile with a cationic dyestuff according to the wet-spinning procedure, the improvement consisting essentially of employing, as the cationic dyestuff, a quaternary dyestuff which contains in the cation two or three cationic quaternary groups selected from ammonium, lower dialkyl hydrazonium and cyclammonium groups, and which has a migration factor M of 20 or less, a combination index K of less than 2.5 and a cation weight CW of more than 310.

4,607,072

POLYOLEFIN COMPOSITION AND METHOD OF PROCESSING SAME

Tien-Kuei Su, Pittsford, N.Y., assignor to Mobil Oil Corporation, New York, N.Y.

Filed May 2, 1985, Ser. No. 729,764

Int. Cl.[4] **C08K** *5/16*

U.S. Cl. 524—242 **8 Claims**

1. A resin compsition comprising a linear low density copolymer of ethylene with from 1–10 mole percent of a C_3–C_{10} alpha olefin containing a processability enhancing proportion of a compound of the formula $RCONCH_2CH_2CONHR'$, wherein R and R′ are derived from a C_8–C_{24} fatty acid.

4,607,073

MOLDING POLYAMIDE COMPOSITION

Takeshi Sakashita, Iwakuni; Hidehiko Hashimoto, and Takayuki Nakano, both of Otake, all of Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

Filed Feb. 7, 1985, Ser. No. 699,399

Int. Cl.[4] **C08L** *77/00;* **C08K** *3/36, 3/34, 3/10*

U.S. Cl. 524—404 **11 Claims**

1. A molding reinforced polyamide composition comprising [A] a polyamide selected from the group consisting of [A1] a polyamide composed of (a) aromatic dicarboxylic acid component units comprising 60 to 77 mole% of terephthalic acid component units and 23 to 40 mole% of aromatic dicarboxylic acid component units other than terephthalic acid component units and (b) 1,6-diaminohexane units and [A2] a polyamide composed of (a) aromatic dicarboxylic acid component units comprising 60 to 100 mole% of terephthalic acid component units and 0 to 40 mole% of aromatic dicarboxylic acid component units other than terephthalic acid component units and (b) units of a linear aliphatic alkylene-diamine component having 7 to 18 carbon atoms, and [B] a filler in an amount of 0.5 to 200 parts by weight per 100 parts by weight of said polyamide.

4,607,074

DYNAMICALLY CURED THERMOPLASTIC OLEFIN POLYMERS

Donald R. Hazelton, Chatham; Robert C. Puydak, Cranbury, both of N.J., and D. A. Booth, Overijse, Belgium, assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Jul. 11, 1984, Ser. No. 629,635

Int. Cl.[4] **C08L** *11/00, 15/02, 23/26*

U.S. Cl. 524—425 **49 Claims**

1. A thermoplastic composition comprising a polyolefin resin, a first rubber component selected from the group consisting of polyisobutylene, and ethylene propylene copolymer (EPM) and EPDM and a second rubber component selected from the group consisting of halogenated butyl rubber and polychloroprene, said second rubber component being cured utilizing a curative other than a peroxide, which is a vulcanizing agent for the second rubber but not for the first rubber, said second rubber being cured to a fully vulcanized state by dynamic vulcanization in the presence of the polyolefin resin and first rubber compound.

4,607,075

POLYESTER COMPOSTIONS

Gerald A. Baum, Paramus; Varkki P. Chacko, Summit, and Paul DeStio, Bound Brook, all of N.J., assignors to GAF Corporation, Wayne, N.J.

Filed Jan. 6, 1986, Ser. No. 816,536

Int. Cl.[4] **C08L** *67/02, 69/00*

U.S. Cl. 524—449 **14 Claims**

1. Polyester molding composition consisting essentially of:

(a) between about 10 wt. % and about 90 wt. % poly(C_2–C_4 alkylene terephthalate) with at least about 50 wt. % of such poly(C_2–C_4 alkylene terephthalate) being polybutylene terephthalate having an instrinsic viscosity between about 0.5 and about 2.0 dl/g;

(b) between about 8 wt. % and about 50 wt. % based on (a), (b) and (c) of linear aromatic polyester consisting essentially of bisphenol and dicarboxylic acid monomer components; and

(c) between about 10 wt. % and about 40 wt. % based on (a), (b) and (c) of impact modifier selected from the group consisting of:

(1) core-shell polymer comprising about 25 to about 95 wt. % of a first elastomeric phase polymerized from a monomer system comprising about 75 to 99.8% by weight C_1 to C_6 alkyl acrylate, 0.1 to 5% by weight crosslinking monomer, and 0.1 to 5% by weight graftlinking monomer, said crosslinking monomer being a polyethylenically unsaturated monomer having a plurality of addition polymerizable reactive groups all of which polymerize at substantially the same rate of reaction, and said graftlinking monomer being a polyethylenically unsaturated monomer having a plurality of addition polymerizable reactive groups, at least one of which polymerizes at a substantially different rate of polymerization from at least one other of said reactive groups; and about 75 to 5 wt. % of a final, rigid thermoplastic phase polymerized in the presence of said elastomeric phase; and

(2) butadiene based core-shell polymer formed between a butadiene polymer where butadiene units account for at least 50 mole % of the total polymer and at least one vinyl monomer.

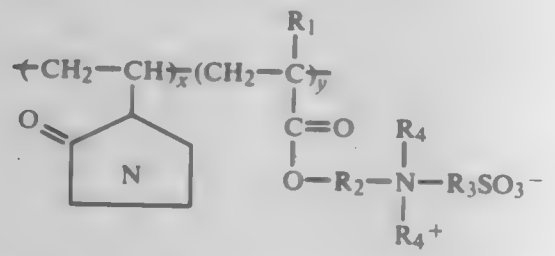
4,607,076

BETAINE COPOLYMERS-VISCOSIFIERS FOR WATER AND BRINE

Donald N. Schulz, Annandale, N.J., and Kissho Kitano, Ohi, Japan, assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Jan. 2, 1985, Ser. No. 688,236
Int. Cl.[4] C08K *3/16*
U.S. Cl. 524—548 **1 Claim**

1. A method for increasing the viscosity of a brine solution which comprises the step of dissolving in said brine solution a water soluble copolymer having the structure:



wherein x is about 10 to about 90 mole %, y is about 10 to about 90 mole %, R_1 is methyl or hydrogen, R_2 is an alkyl group of 1–5 carbon atoms, R_3 is an alkyl group of 3 to 4 carbon atoms and R_4 is an alkyl group of 1–5 carbon atoms.

4,607,077

PHOSPHAZENE FLAME RETARDANTS FOR REACTION INJECTION MOLDED POLY(DICYCLOPENTADIENE)

Paul A. Silver, and Alexander Lukacs, III, both of Wilmington, Del., assignors to Hercules Incorporated, Wilmington, Del.

Filed May 7, 1985, Ser. No. 731,435
Int. Cl.[4] C08K *5/16, 5/03*
U.S. Cl. 524—708 **21 Claims**

1. In a method of making a thermoset polymer that comprises the steps of:

(a) combining a plurality of reactant streams one of which contains the activator of a metathesis catalyst system and a moderator, a second which contains the catalyst of the catalyst system, and at least one of which contains dicyclopentadiene and from 0% to about 10% of another olefinic monomer to form a reaction mixture; and

(b) immediately injecting the reaction mixture into a mold where polymerization occurs,

the improvement wherein at least one of the reactant streams contains a solid flame retardant selected from the group consisting of (i) a bromophenoxy derivative of at least one cyclic phosphazene and (ii) a combination of an aryloxy derivative of at least one cyclic phosphazene with a brominated aromatic compound wherein the brominated aromatic compound is N, N'-ethylene-bis-(tetrabromophthalimide), brominated polystyrene, decabromodiphenyl oxide, tetrabromoxylene, brominated poly(phenylene oxide), or octabromodiphenyl oxide.

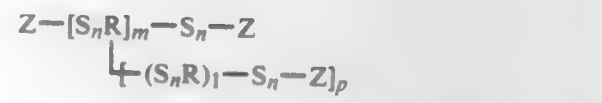
4,607,078

BLENDS OF ORGANIC POLYMERS AND ORGANIC TERMINATED POLYSULFIDE POLYMERS

Thomas E. Dergazarian, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 552,237, Nov. 16, 1983, abandoned. This application Dec. 13, 1984, Ser. No. 681,356
The portion of the term of this patent subsequent to Mar. 20, 2001, has been disclaimed.
Int. Cl.[4] C08L *9/00, 23/04, 23/16, 81/04*
U.S. Cl. 525—64 **34 Claims**

1. A polymer blend comprising a blend of a curable or noncurable organic-terminated polysulfide polymer and an organic polymer which is not an organic-terminated polysulfide, wherein said polysulfide polymer is as represented by the general structure



wherein n is a number from about 2 to about 8, l is zero or a positive integer, m is a positive integer, each R is independently an unsubstituted or inertly substituted organic polyradical with the radicals residing in carbon atoms, p is an integer which is the difference between the number of radicals on R and 2, and each Z is independently chosen from the class consisting of (vinylaryl)alkyl and other inertly substituted noncrosslinking monoradicals, and wherein said polysulfide polymer comprises from about 1 to about 99 percent by weight of the combined weight of the polysulfide polymer and the organic polymer and wherein the proportions of the polysulfide elastomer and the organic polymer are such that the blend is compatible as evidenced by a lack of phase separation in the blend.

4,607,079

BLEND OF POLYCARBONATE, ACRYLATE ELASTOMERIC COPOLYMER AND A PHENOXY RESIN

Harold F. Giles, Jr., Cheshire, Mass., and Ping Y. Liu, Naperville, Ill., assignors to General Electric Company, Mt. Vernon, Ind.

Filed Jun. 24, 1985, Ser. No. 747,784
Int. Cl.[4] C08L *63/00, 51/00*
U.S. Cl. 525—65 **13 Claims**

1. A composition comprising a major amount of an aromatic polycarbonate and quantities of both an acrylate elastomeric copolymer with a second order transition temperature, Tg, of less than −10° C. and a phenoxy resin effective to substantially maintain the impact strength and ductility at break after exposing a stressed part to brake fluid comprising alcohols and ethers.

4,607,080

THERMOPLASTIC RESIN COMPOSITION

Haruhiko Yusa; Masanori Oota, and Kazuo Takahashi, all of Iwaki, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 764,058, Aug. 9, 1985, abandoned, which is a continuation of Ser. No. 710,090, Mar. 11, 1985, abandoned. This application Jan. 27, 1986, Ser. No. 821,878
Claims priority, application Japan, Mar. 15, 1984, 59-48061
Int. Cl.[4] C08L *33/08, 51/04*
U.S. Cl. 525—82 **2 Claims**

1. An impact-resistant thermoplastic resin composition having excellent transparency and appearance properties which comprises (A) 1 to 50 parts by weight of a butadiene-styrene-methyl methacrylate-alkyl acrylate graft copolymer obtained by postpolymerization of styrene, methyl methacrylate and an alkyl acrylate to a latex comprising 40 to 80 parts by weight of a butadiene homopolymer rubber or a butadiene-styrene copolymer rubber comprising mainly butadiene and having an average particle diameter of 0.1 to 0.5μ, the amount of the postpolymerization monomers being such as to provide 100 parts by weight total in complementary relationship with the rubber content in the latex, the mutual proportion of the postpolymerization monomers being 20 to 65% by weight of styrene, 20 to 70% by weight of methyl methacrylate and 1 to 35% by weight of alkyl acrylate, the postpolymerization monomers further comprising 0.1 to 5 parts by weight, based on 100 parts by weight of the total amount of the rubber and the postpolymerization monomers, of a cross-linking monomer copolymerizable with the postpolymerization monomers, and (B) 50 to 99 parts by weight of a methyl methacrylate-styrene copolymer having a composition of 40 to 80% by weight of methyl methacrylate and 20 to 60% by weight of styrene, wherein the total amount of the composition is 100 parts by weight.

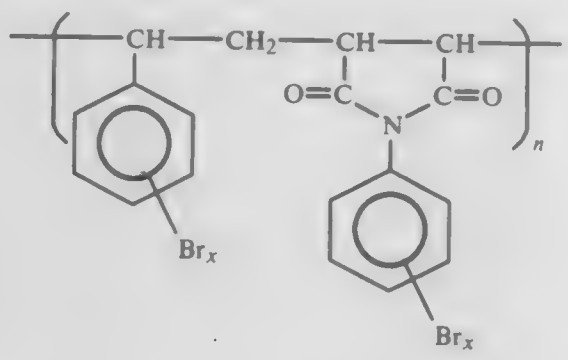
4,607,081

COMPOSITION COMPRISING A MATRIX RESIN AND AN ALTERNATING COPOLYMER OF BROMINATED STYRENE AND N-BROMINATED PHENYL MALEIMIDE FLAME RETARDING ADDITIVE

Usama E. Younes, Newtown Square, Pa., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Division of Ser. No. 489,688, Apr. 28, 1983, Pat. No. 4,508,883.
This application Nov. 5, 1984, Ser. No. 668,458
Int. Cl.[4] C08F *214/16;* C08L *39/04*
U.S. Cl. 525—186 5 Claims

1. A moldable composition comprising a matrix resin and an alternating copolymer having the following general formula:



wherein each x separately represents an integer of from 1 to 5 and n represents an integer of from 10 to 2000, the alternating copolymer being present in an amount sufficient to improve the flame retarding characteristics of the matrix resin.

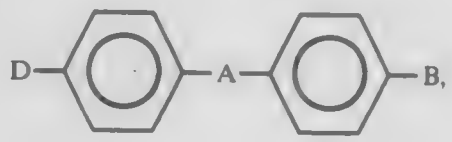
4,607,082

CATALYST SYSTEMS AND ADHESION PROMOTER FOR TWO-PACK ACRYLIC ADHESIVE FORMULATIONS

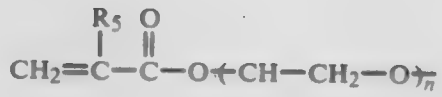
Vincent D. McGinniss, Delaware, Ohio, assignor to Three Bond Co., Ltd., Tokyo, Japan

Division of Ser. No. 416,270, Sep. 9, 1982, Pat. No. 4,446,246.
This application Jul. 2, 1984, Ser. No. 603,597
Int. Cl.[4] C08L *33/04, 51/00;* C08K *5/10, 5/41*
U.S. Cl. 525—286 4 Claims

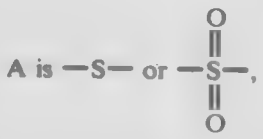
1. An adhesion promoter which improves adhesion of an acrylic adhesive formulation comprising:



where
D is



where
R_5, R_6 are —H or —CH_3,
n is 1–6;



B is an organic group containing no curable ethylenic unsaturation.

3. An improved adhesive formulation of an acrylic adhesive resin and catalysts therefor, the improvement for increasing the adhesion of said formulation comprising said formulation additionally containing the adhesion promoter of claim 1.

4,607,083

LONG-TERM STABILITY OF THE ELECTRICAL CONDUCTIVITY OF PYRROL POLYMERS

Helmut Muenstedt, Wachenheim, and Herbert Naarmann, Wattenheim, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Dec. 20, 1984, Ser. No. 684,033
Claims priority, application Fed. Rep. of Germany, Dec. 24, 1984, 3346934
Int. Cl.[4] C08F *283/00*
U.S. Cl. 525—417 6 Claims

1. A process for improving long-term stability of the electrical conductivity of a pyrrole polymer containing a complexing agent which comprises: contacting said pyrrole polymer containing a complexing agent with an aqueous alkali metal hydroxide solution.

4,607,084

RADIATION CURABLE ACRYLATED POLYURETHANE OLIGOMER COMPOSITIONS

William J. Morris, deceased, late of Louisville, Ky. (by Carla L. Morris, executrix), assignor to Celanese Specialty Resins, Inc., Louisville, Ky.

Continuation-in-part of Ser. No. 619,100, Jun. 11, 1984, abandoned. This application Dec. 16, 1985, Ser. No. 809,450
Int. Cl.[4] C08L *75/04*
U.S. Cl. 525—454 22 Claims

1. A radiation curable composition which comprises acrylated polyurethane oligomers which are the reaction product of
(a) an organic diisocyanate,
(b) a polyether diol, and
(c) a hydroxyalkyl acrylate or methacrylate blended with the reaction product of
(d) an organic diisocyanate,
(e) a polyether triol, and
(f) a hydroxyalkyl acrylate or methacrylate
wherein the organic diisocyanate, (a) and (d), is an aliphatic or cycloaliphatic diisocyanate; wherein the polyether diol, (b), is a dihydroxy terminated polyalkylene oxide which contains 2 to 4 carbon atoms in each alkylene group and which has a molecular weight of about 800 to about 2000; wherein the polyether triol, (e), is a trihydroxy terminated polyalkylene oxide which contains 2 to 3 carbon atoms in each alkylene group and which has a molecular weight of about 300 to about 750; wherein the alkyl group of the hydroxyalkyl acrylate or methacrylate contains 2 or 3 carbon atoms; wherein (b) and (e) are in such molar ratios that the resultant composition has an average acrylate or methacrylate functionality of about 2.4 to about 2.6; wherein 1 mole of diisocyanate is reacted per hydroxyl group of the polyether diol and triol; and wherein 1 mole of hydroxyalkyl acrylate or methacrylate is reacted per mole of diisocyanate.

4,607,085

PROCESS FOR THE PRODUCTION OF POLYPHENYLENE-OXIDE

Irena Penczek; Jan Bialy, and Zbingniew Dobkowski, all of Warsaw, Poland, assignors to Enichimica S.p.A., Milan, Italy

Filed Dec. 3, 1984, Ser. No. 677,167
Claims priority, application Italy, Dec. 5, 1983, 24026 A/83
Int. Cl.[4] C08G *65/44*
U.S. Cl. 526—59 6 Claims

1. Process for the production of polyphenyleneoxide which comprises:
(a) feeding oxygen, or a gas containing molecular oxygen, a catalyst which comprises a cupric salt complexed with an organic base and 2,6-xylenol, into a liquid reaction medium, which is a solvent for said 2,6-xylenol and said catalyst but is not a solvent or substantially not a solvent for polyphenyleneoxide;
(b) withdrawing samples during the reaction and treating said samples with a liquid solvent capable of dissolving said polyphenyleneoxide and of terminating polymerization:

(c) measuring the passage time of the so obtained solution through a capillary tube viscometer and determining the viscosity or the molecular weight of polyphenyleneoxide by means of the comparison with standard values; and

(d) terminating the oxidative polymerization reaction of 2,6-xylenol on the basis of the so determined value of the viscosity or of the molecular weight of polyphenyleneoxide.

4,607,086

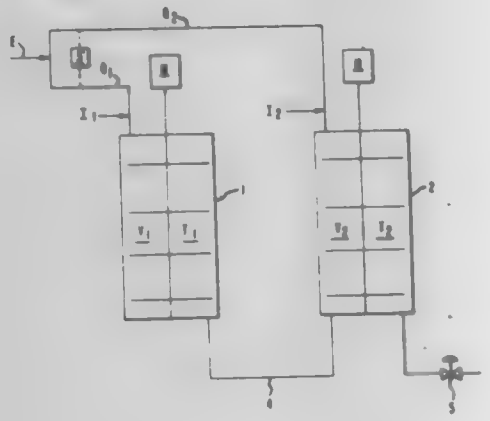
CONTINUOUS PROCESS FOR THE MANUFACTURE OF LOW-DENSITY POLYETHYLENE IN STIRRED AUTOCLAVES

Hubert Sutter, Leverkusen, Fed. Rep. of Germany; Karl-Uwe Haas, and Winston P. Ledet, both of Victoria, Tex., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 27,456, Apr. 5, 1979, abandoned. This application Nov. 17, 1980, Ser. No. 207,562

Int. Cl.[4] C08F *2/02, 10/02*

U.S. Cl. 526—65 1 Claim



1. An improved continuous process for the manufacture of polymers of ethylene in autoclave reactors, each with a constant environment, under pressure of from about 800 to about 2500 bars in the presence of a free radical-generating initiator, the improvement comprising

(a) two autoclaves being connected in series such that all the reaction product from the first reactor is fed to the second reactor there being no means of positive heat removal from the reaction product between said two autoclaves, and both autoclaves being operated at about the same pressure,

(b) each autoclave having a length/diameter (L/D) ratio of from about 1:1 to about 3:1,

(c) the initiator for the first reactor being identical with or different from the initiator for the second reactor and the amount of initiator fed into each reactor being greater than 0, wherein both reactors are operated at the same conditions and the ratio of the total monomer(s) feed stream to the first and second reactors is equal to the ratio of the reaction volumes of the first and second reactors.

4,607,087

METHOD FOR PRODUCING A PLASTIC LENS

Yasuo Moriya, Chita; Kyosuke Fukushi, Kuwana, and Masaharu Nakayama, Nagoya, all of Japan, assignors to Nippon Oil and Fats Company Ltd., Japan

Filed Mar. 23, 1983, Ser. No. 478,023

Claims priority, application Japan, Mar. 29, 1982, 57-50700

Int. Cl.[4] C08F *4/28, 118/24, 218/24*

U.S. Cl. 526—227 14 Claims

1. A method for producing plastic lenses, which comprises:

(A) mixing

(a) diethylene glycol bis(allyl carbonate) with

(b) at least one of organic peroxides having a decomposition temperature at selected half-life value for ten hours of not higher than 80° C., and

(c) at least one of organic peroxides having a decomposition temperature at selected half-life value for ten hours of 90°–110° C., which have no copolymerizability to the diethylene glycol bis(allyl carbonate) (a), as a polymerization initiator,

(B) casting the resulting mixture in a desired lens-forming mold while raising the temperature to about 90° C. to substantially completely decompose the organic peroxides (b) and form a shaped lens, and

(C) then annealing said shaped lens at a temperature of about 100°–130° C. to substantially completely decompose the organic peroxides (c).

4,607,088

SHAPED BODY FOR GAS SEPARATION

Hirokazu Nomura, Kanagawa; Susumu Ueno, Ibaraki, and Hajime Kitamura, Chiba, all of Japan, assignors to Shin-Etso Chemical Co., Ltd., Tokyo, Japan

Filed May 3, 1985, Ser. No. 732,377

Claims priority, application Japan, May 4, 1984, 59-89843

Int. Cl.[4] C08F *38/00*

U.S. Cl. 526—279 7 Claims

1. A shaped body for gas separation which comprises a base body shaped of a polymeric material comprising a polymer of a silyl acetylene compound represented by the general formula

$$R^1—C{\equiv}C—SiR^2{}_3,$$

in which R^1 is a hydrogen atom or a substituted or unsubstituted monovalent hydrocarbon group having from 1 to 8 carbon atoms and R^2 is, each R^2 being independent from the others, selected from the class consisting of a hydrogen atom, halogen atoms, substituted or unsubstituted monovalent hydrocarbon groups having from 1 to 8 carbon atoms and alkoxy groups having from 1 to 8 carbon atoms, the surface of the base body having been exposed to an atmosphere of low temperature plasma of an inorganic gas.

4,607,089

GRAFTED SOY PROTEIN LATEX

Richard R. Riley, Hartville, Ohio, and Charles E. Coco, St. Louis, Mo., assignors to GenCorp Inc., Akron, Ohio

Continuation-in-part of Ser. No. 644,517, Sep. 20, 1984, abandoned. This application Aug. 29, 1985, Ser. No. 770,453

Int. Cl.[4] C08H *1/00*

U.S. Cl. 527—201 14 Claims

1. The method which comprises free radical aqueous alkaline graft or over copolymerization of at least one copolymerizable conjugated diene monomer having from 4 to 6 carbon atoms and at least one copolymerizable vinyl aryl monomer having from 8 to 12 carbon atoms in the presence of a solubilized or finely divided anionic fully caustic treated soy protein in the presence of minor effective amounts by weight of at least one chelating agent, at least one chain transfer agent and at least one oil soluble free radical azo initiator to form a latex, where

(a) said diene monomer is used in an amount of from about 25 to 50 parts by weight,

(b) said vinyl aryl monomer is used in an amount of from 30 to 60 parts by weight and

(c) said soy protein is used in an amount of from 10 to 30 parts by weight, the sum of (a), (b) and (c) being 100 parts by weight.

4,607,090

REACTION INJECTION MOLDED ELASTOMERS

Richard J. G. Dominguez, Austin, Tex., assignor to Texaco Inc., White Plains, N.Y.

Continuation-in-part of Ser. No. 645,600, Aug. 30, 1984, abandoned. This application Aug. 8, 1985, Ser. No. 763,502

Int. Cl.[4] C08G *18/38, 18/50;* B28B *1/24*

U.S. Cl. 528—48 25 Claims

1. A reaction injection molded elastomer made by reacting

in a closed mold amine terminated polyethers of greater than 1,500 average molecular weight having greater than 50% of their active hydrogen in the form of amine hydrogens, a chain extender, an epoxy silane coupling agent, untreated filler material, and an aromatic polyisocyanate.

2. An elastomer as in claim 1 wherein the filler material is glass based.

3. An elastomer as in claim 1 wherein the chain extender is diethyltoluene diamine.

4,607,091

POLYMERIC RESINS DERIVED FROM 1-OXA-3-AZA TETRALINE GROUP-CONTAINING COMPOUNDS AND CYCLOALIPHATIC EPOXIDES

Herbert Schreiber, Wollerau, Switzerland, assignor to Gurit-Essex AG, Freienbach, Switzerland

Filed Sep. 10, 1985, Ser. No. 774,433

Claims priority, application Fed. Rep. of Germany, Sep. 14, 1984, 3433851

Int. Cl.[4] C08G *59/24, 59/50*

U.S. Cl. 528—96 18 Claims

1. A composition comprising a polymeric resin derived from

(A) at least one compound containing an average of more than one 1-oxa-3-aza-tetraline group per molecule with

(B) at least one cycloaliphatic epoxide containing at least two epoxide groups, at least one of said epoxide groups being part of said ring, the mole ratio of (B) to (A) being in the range of about 0.2 to about 2.

4,607,092

ORGANOPHOSPHORUS ENAMINES USEFUL AS EPOXY CURAIVES AND ADHESION PROMOTERS

Milton D. Johnson, and Mohinder S. Chattha, both of Livonia, Mich., assignors to Ford Motor Company, Dearborn, Mich.

Division of Ser. No. 685,377, Dec. 24, 1984, Pat. No. 4,550,201. This application Jun. 17, 1985, Ser. No. 745,117

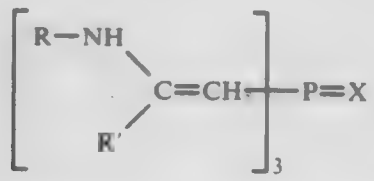
Int. Cl.[4] C08G *59/40, 59/50*

U.S. Cl. 528—108 3 Claims

1. A composition comprising:

(A) epoxy resins, and

(B) organophosphorus enamine compounds comprising compounds having the general chemical formula:



wherein X is oxygen or sulfur, R' is an alkyl or aryl group and R is the same or different alkyl group.

4,607,093

SYDNONE BASED POLYIMIDE

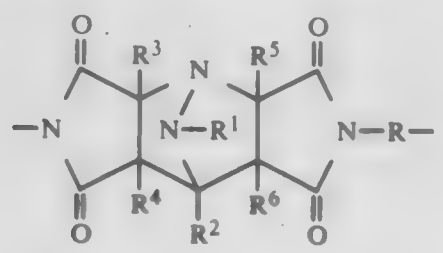
Kwok K. Sun, North Haven, Conn., assignor to The Dow Chemical Company, Midland, Mich.

Filed Apr. 8, 1985, Ser. No. 720,778

Int. Cl.[4] C08G *73/10*

U.S. Cl. 528—322 20 Claims

1. A polyimide having the recurring unit



wherein R represents a divalent radical selected from the group consisting of alkylene, arylene containing radical, and cycloalkylene; R^1 is hydrocarbyl; R^2 is selected from the group consisting of hydrogen and hydrocarbyl; and R^3, R^4, R^5, and R^6 are independently selected from the group consisting of hydrogen, and lower alkyl of C_1 to C_4.

4,607,094

THERMOSETTING RESIN COMPOSITION FROM AROMATIC CYANAMIDE

Katuo Sugawara, Hitachi; Akio Takahashi, Hitachiohta; Masahiro Ono, Hitachi; Ritsuro Tada, Mito; Motoyo Wajima, Hitachi; Toshikaza Narahara, Toukai, and Akira Nagai, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 1, 1985, Ser. No. 697,530

Claims priority, application Japan, Feb. 3, 1984, 59-17037

Int. Cl.[4] C08G *69/14*

U.S. Cl. 528—323 8 Claims

1. A thermosetting resin composition prepared by mixing an aromatic cyanamide compound with at least one cyclic compound selected from the group consisting of a cyclic ester compound and a cyclic amide compound.

4,607,095

NONLINEAR OPTICAL ORGANIC SUBSTRATE

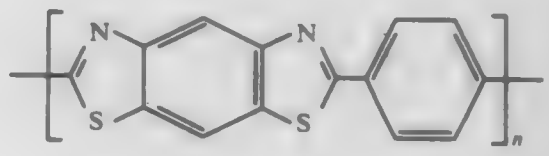
James E. Kuder, Fanwood, N.J., assignor to Celanese Corporation, New York, N.Y.

Filed Mar. 5, 1985, Ser. No. 708,604

Int. Cl.[4] C08G *75/72*

U.S. Cl. 528—337 3 Claims

1. A nonlinear optical medium comprising a noncentrosymmetric configuration of aligned poly[[benzo(1,2-d:5,4-d')bisthiazole-2,6-diyl]-1,4-phenylene] polymer molecules corresponding to the formula:



where n is an integer with an average value between about 4–100; wherein the noncentrosymmetric alignment of polymer molecules is induced with an external field, and the nonlinear optical medium exhibits a Miller's delta of at least about one square meter/coulomb.

4,607,096

AZO PIGMENTS OBTAINED BY DIAZOTIZING IN A DIPOLAR APROTIC ORGANIC SOLVENT

Josef Landler, Hofheim; Klaus Hunger, Kolkheim, and Erhard Wörfel, Hattersheim, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Continuation of Ser. No. 27,721, Apr. 6, 1979, abandoned, which is a division of Ser. No. 761,071, Jan. 21, 1977, Pat. No. 4,182,708, which is a continuation-in-part of Ser. No. 619,460, Oct. 3, 1975, abandoned, which is a continuation of Ser. No. 325,549, Jan. 22, 1973, abandoned. This application Nov. 4, 1982, Ser. No. 439,270

Claims priority, application Fed. Rep. of Germany, Jan. 21, 1972, 2202773

Int. Cl.[4] C09B *46/00, 67/00, 67/20*

U.S. Cl. 534—575 7 Claims

1. An azo pigment obtained by a process wherein a diazotizable aromatic amine containing non-solubilizing substituents is diazotized in an anhydrous dipolar aprotic solvent with from stoichiometric to 20% in excess of stoichiometric amounts of nitrosyl sulfuric acid or nitrosyl chloride at a temperature of from −20° to 40° C.; the diazonium compound thus obtained is coupled with a coupling component selected from the group

consisting of 2-hydroxy-3-naphthoylaminoarylides, acetoacetylaminoaryles, pyrazolones, hydroxy-quinolines, 2-hydroxy-3-naphthoylamino benzimidazolones and acetoacetylaminobenzimidazolones, to form an azo pigment; the acid is neutralized; and the pigment formed is thermally aftertreated without intermediate isolation.

4,607,097

DICHROMATIC COLORING MATTER FOR A COLORED LIQUID CRYSTAL DISPLAY ELEMENT

Mitsuru Kano; Yoshinori Kato; Yoshimi Kamijo, all of Furukawa; Yoshio Takeda, Himeji; Yoshinari Sakikubo, Hyogo, and Naoki Yagi, Himeji, all of Japan, assignors to Alps Electric Co., Ltd. and Sanyo Color Works Ltd., both of, Japan

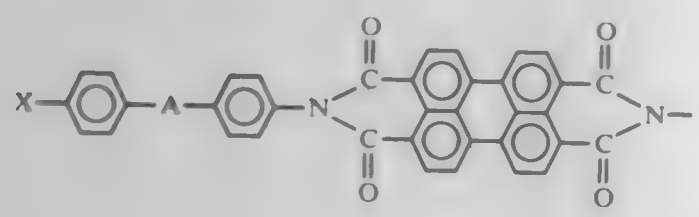
Filed Jun. 4, 1984, Ser. No. 616,722

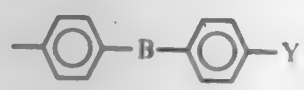
Claims priority, application Japan, Jun. 3, 1983, 58-98057; Jul. 19, 1983, 58-130364; Jul. 19, 1983, 58-130365; Jul. 22, 1983, 58-132910; Jul. 23, 1983, 58-133581

Int. Cl.[4] C09K *3/34;* G02F *1/13*

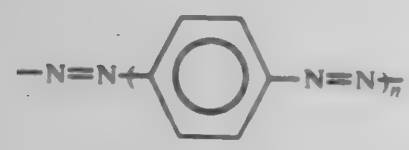
U.S. Cl. 534—577 3 Claims

1. A dichromatic coloring matter for a colored liquid crystal display element comprising a compound of the general formula:

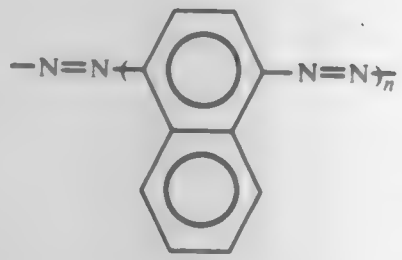




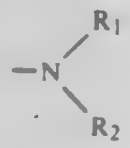
where A and B each stand for



or



where n is 0, 1, 2, 3 or 4, and X and Y each stand for



where R_1 and R_2 stand for an alkyl group or hydrogen, —R (alkyl group) or —OR (alkoxy group).

4,607,098

BICYCLIC COPPER COMPLEX FORMAZAN COMPOUNDS HAVING A FIBER-REACTIVE GROUP OF THE VINYL SULFONE SERIES, CONTAINING A FIBER-REACTIVE GROUP SUITABLE AS DYESTUFFS

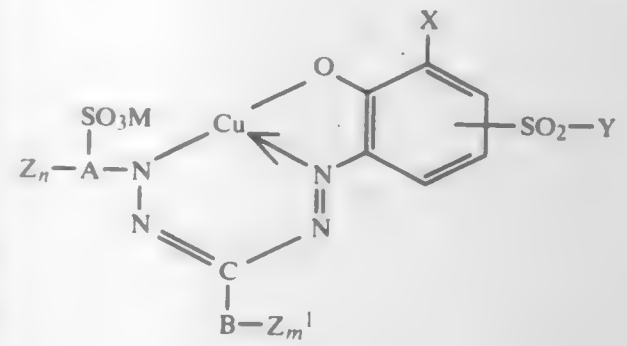
Günther Schwaiger, Meckenbeuren, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Continuation of Ser. No. 632,436, Jul. 19, 1984, abandoned. This application Jul. 24, 1985, Ser. No. 758,155

Int. Cl.[4] C09B *50/00, 62/503, 62/515;* D06P *1/384*

U.S. Cl. 534—618 20 Claims

1. A copper complex formazan compound of the formula



in which:

A is the benzene or naphthalene ring, both of which are necessarily substituted by the indicated sulfo group —SO_3M (where M has the meaning given below) in the ortho-position relative to the N-atom of the hydrazone component, and both of which are, a part from the indicated groups —SO_3M and Z, unsubstituted or substituted by one to three substituents selected from the group consisting of halogen, nitro, alkyl of 1 to 5 C-atoms, lower alkylaminoalkyl, alkoxy of 1 to 4 C-atoms, hydroxy, alkylsulfonyl of 1 to 4 C-atoms, phenylsulfonyl, sulfamoyl, N-mono-alkylsulfamoyl with an alkyl of 1 to 4 C-atoms, N,N-dialkylsulfamoyl with alkyls of 1 to 4 C-atoms, lower alkanoylamino, aroylamino, N-monoalkylamino with an alkyl of 1 to 4 C-atoms, N,N-dialkylamino with alkyls of 1 to 4 C-atoms, phenyl and phenylsulfamoyl;

B is phenyl or a naphthyl, each of which is unsubstituted or substituted by substituents selected from the group consisting of hydroxy, nitro, halogen, alkyl of 1 to 5 C-atoms, alkoxy of 1 to 4 C-atoms, carbalkoxy of 2 to 5 C-atoms, amino, N-mono-alkylamino with an alkyl of 1 to 4 C-atoms, N,N-di-alkylamino with alkyls of 1 to 4 C-atoms and phenylsulfamoyl, or

B is the monovalent radical of the furan, thiophene, pyrrole, imidazole, pyrazole, pyridine, quinoline or benzimidazole,unsubstituted or substituted by substituents selected from the group consisting of lower alkyl, lower alkoxy, chlorine, benzyl,phenethyl and phenyl, or

B is hydrogen, carboxy, cyano or nitro or a straightchain or branched alkyl group of 1 to 8 C-atoms or a straight-chain or branched alkenyl of 2 to 8 C-atoms, these alkyl and alkenyl are unsubstituted or substituted by phenyl or phenyl substituted by substituents selected from the group consisting of methyl, ethyl, methoxy, ethoxy, fluorine, chlorine, bromine and sulfamoyl;

M is hydrogen or the equivalent of an alkali or alkaline earth metal;

X is hydrogen or sulfo;

m is 1 or 2;

n is 1 or 2;

Z is hydrogen or a group which confers water-solubility, one or both of which—besides the sulfo group necessarily required in the ortho-position relative to the N-atom of the hydrazone component A—are bonded to A on an aliphatic or aromatic carbon atom of A, preferably on an aromatic nucleus;

Z^1 is hydrogen or a group which confers water-solubility, one or both of which are bonded to B on an aliphatic or aromatic carbon atom of B, preferably on an aromatic nucleus;

Z and Z^1 together denoting not more than three sulfo groups, if X is a sulfo group;

Y is vinyl or a group of the formula $—CH_2—CH_2—E$, in which E is a substituent which can be eliminated under alkaline conditions.

4,607,099

STABILIZATION OF XANTHAN GUM IN AQUEOUS SOLUTION

Shoichi Kanda; Jun Hosoda, and Zengiro Kawamura, all of Kanagawa, Japan, assignors to Nitto Chemical Industry Co., Ltd., Tokyo, Japan

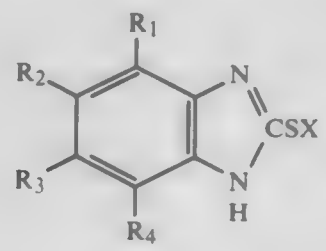
Filed Dec. 3, 1984, Ser. No. 677,280

Claims priority, application Japan, Dec. 1, 1983, 58-225404

Int. Cl.[4] C08B *37/00*; C09K *3/00, 15/26*

U.S. Cl. 536—114 **6 Claims**

1. A method of stabilizing a aqueous solution of xanthan gum comprising incorporating at least one stabilizing agent selected from the group consisting of 2-mercaptobenzimidazole and derivatives thereof represented by the formula (I)



(I)

wherein R^1, R^2, R^3, and R^4 each represents hydrogen, methyl, or ethyl, and X represents hydrogen, alkali metal, or ammonium in an aqueous solution of xanthan gum.

4,607,100

PROCESS FOR THE PREPARATION OF 6-METHYL-3,4-DIHYDRO-1,2,3-OXATHIAZIN-4-ONE 2,2-DIOXIDE AND ITS NON-TOXIC SALTS

Karl Clauss, Kelkheim; Adolf Linkies, Frankfurt am Main, and Dieter Reuschling, Butzbach, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Mar. 20, 1985, Ser. No. 714,177

Claims priority, application Fed. Rep. of Germany, Mar. 22, 1984, 3410439

Int. Cl.[4] C07D *291/06*

U.S. Cl. 544—2 **14 Claims**

1. A process for the preparation of 6-methyl-3,4-dihydro-1,2,3-oxathiazin-4-one-2,2-dioxide and its non-toxic salts which comprises:

(a) reacting a sulfamic acid salt with at least an approximately equimolar amount of an acetoacetylating agent in an inert organic solvent, the sulfamic acid salt being at least partially soluble in the inert organic solvent, which reaction may be carried out in the presence of an amine or phosphine catalyst, to form an acetoacetamide-N-sulphonic acid salt, and

(b) reacting the acetoacetamide-N-sulphonic acid salt with at least an approximately equimolar amount of SO_3, which reaction may be carried out in an inert inorganic or organic solvent, to form the ring of 6-methyl-3,4-dihydro-1,2,3-oxathiazin-4-on-2,2-dioxide.

4,607,101

METHOD OF TREATING ACNE VULGARIS WITH A COMPOSITION CONTAINING CARBAMIDE PEROXIDE

Joel E. Bernstein, Deerfield, Ill., assignor to Jaye-Boern Laboratories, Inc., Northbrook, Ill.

Continuation of Ser. No. 296,920, Aug. 27, 1981, abandoned. This application Mar. 27, 1984, Ser. No. 594,405

Int. Cl.[4] A61K *31/17, 31/70*

U.S. Cl. 514—24 **11 Claims**

1. A method of decreasing open and closed comedones of acne vulgaris in human patients having such comedones comprising topically administering a therapeutically effective amount of carbamide peroxide to a patient having such open and closed comedones.

4,607,102

DIOXAZINE FIBER REACTIVE COMPOUND

Masao Nishikuri, Hirakata; Takashi Omura, Ashiya, and Akira Takeshita, Toyonaka, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

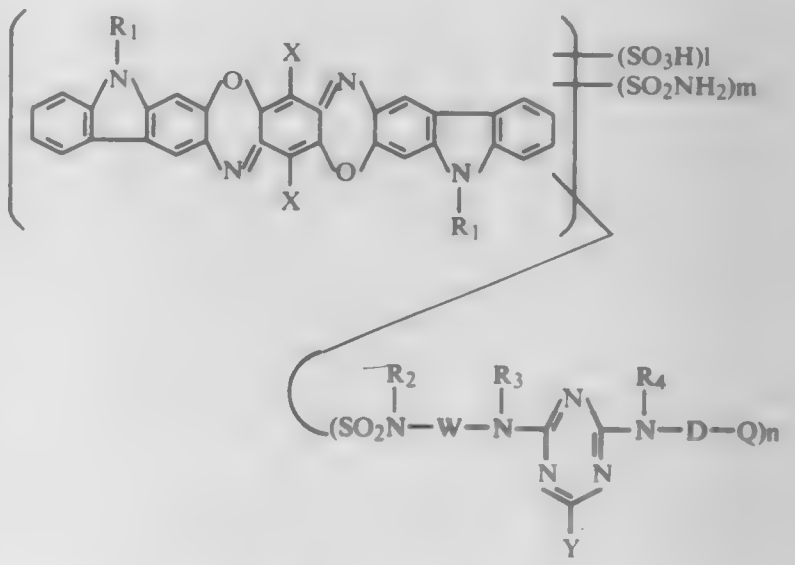
Filed Jan. 24, 1984, Ser. No. 573,317

Claims priority, application Japan, Feb. 4, 1983, 58-17978

Int. Cl.[4] C07D *521/00, 498/22*

U.S. Cl. 544—74 **4 Claims**

1. A compound represented by a free acid of the following formula,



wherein X is a hydrogen or halogen atom or a lower alkyl or cyano group, R_1, R_2 and R_3 are independently a hydrogen atom or a lower alkyl group unsubstituted or substituted with a substituent selected from the group consisting of hydroxyl, carboxyl, sulfo, carbamoyl, cyano or methoxycarbonyl, R_4 is a lower alkyl group unsubstituted or substituted with a substituent selected from the group consisting of hydroxyl, carboxyl, sulfo, carbamoyl, cyano or methoxycarbonyl, W is an alkylene, cycloalkylene or arylene group, the alkylene being a C_2 to C_6 alkylene which is unsubstituted or substituted with a hydroxyl, sulfo or sulfate group, and which is not or is interrupted by an oxygen or sulfur atom, the cycloalkylene is a C_3 to C_6 cycloalkylene, and the arylene is a 1,2-, 1,3- or 1,4-phenylene which is unsubstituted or substituted with a halogen atom or a lower alkyl, lower alkoxy, sulfo or carboxyl group, Y is a halogen atom, Q is a group of $—SO_2CH=CH_2$ or $—SO_2CH_2CH_2L$ in which L is a group capable of being split by the action of alkali, D is an unsubstituted or substituted benzene or naphthalene ring, l and m are independently a number of not less than 0 but not more than 3, and n is a number of more than 0 but not more than 3, provided that l, m and n satisfy $0<l+m+n+\leqq 4$.

4,607,103

METHODS FOR MAKING BLOCKED ISOCYANURATES

Otto S. Zamek, and Richard J. Stein, both of Schenectady, N.Y., assignors to General Electric Company, Silicone Products Division, Waterford, N.Y.

Filed Aug. 13, 1985, Ser. No. 765,305

Int. Cl.[4] C07D *251/34*

U.S. Cl. 544—193 **22 Claims**

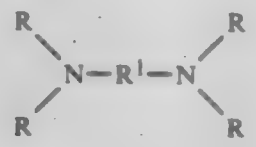
1. A method for making blocked isocyanate trimers, comprising:

(A) blocking

(1) one of the functional groups of an organic diisocyanate with

(2) at least one blocking compound and thereafter

(B) heating the reaction product of (A) in the presence of (3) a catalyst having the general formula



where each R is independently selected from hydrogen and lower alkyl radicals and R^1 is an alkylene radical having up to about six carbon atoms; for an amount of time effective for forming blocked isocyanate trimers.

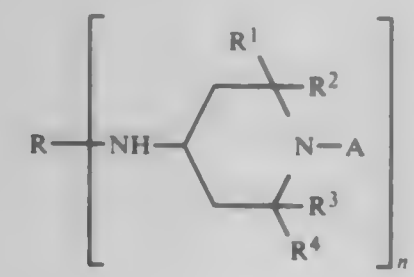
4,607,104

PROCESS FOR THE PRODUCTION OF 2,2,6,6-TETRAALKYL-4-PIPERIDYLAMINES

Russell E. Malz, Jr., Naugatuck, and Harold Greenfield, Watertown, both of Conn., assignors to Uniroyal Chemical Company, Inc., Middlebury, Conn.

Filed Jul. 11, 1985, Ser. No. 754,378
Int. Cl.[4] C07D *401/12, 401/14*
U.S. Cl. 546—186 16 Claims

1. A process for producing compounds of the formula:



(I)

wherein:

R is C_1–C_{18} alkyl, C_5–C_6 cycloalkyl or C_7–C_9 aralkyl;

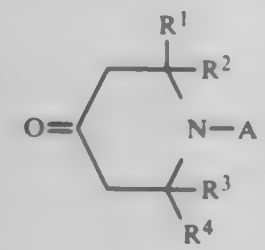
R^1, R^2, R^3 and R^4 are the same or different and are C_1–C_8 alkyl;

A is hydrogen, hydroxy, C_1–C_8 alkoxy, C_1–C_8 alkyl, C_2–C_{10} alkylcarbonyl or arylcarbonyl; and

n is 1, 2, 3 or 4;

with the proviso that when n is 2, 3 or 4, the R^1, R^2, R^3, R^4 and A substituents of the piperidine rings may each independently be different members within the scope of their definitions;

which process comprises reacting an amine of the formula $R(NH_2)_n$, wherein R and n are as defined above, with at least one 2,2,6,6-tetraalkyl-4-piperidone of the formula:



(II)

wherein A, R^1, R^2, R^3 and R^4 are as defined above;

in the presence of a catalyst selected from the group consisting of platinum, nickel and cobalt employing a reaction medium comprising (a) between about 10 and 100 weight percent water and (b) between 0 and about 90 weight percent of at least one polar organic compound selected from the group consisting of C_1–C_{10} aliphatic alcohols and C_2–C_6 aliphatic glycols.

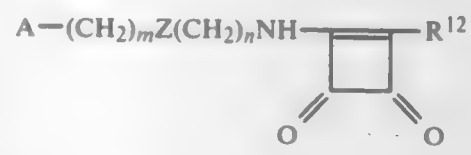
4,607,105

3-CYCLOBUTENE-1,2DIONE INTERMEDIATES

Aldo A. Algieri, Fayetteville, and Ronnie R. Crenshaw, Dewitt, both of N.Y., assignors to Bristol-Myers Company, New York, N.Y.

Division of Ser. No. 503,946, Jun. 13, 1983, abandoned, which is a division of Ser. No. 386,566, Jun. 9, 1982, Pat. No. 4,526,973, which is a division of Ser. No. 369,971, Apr. 21, 1982, Pat. No. 4,522,949, which is a continuation-in-part of Ser. No. 264,533, May 18, 1981, Pat. No. 4,390,701. This application Oct. 1, 1984, Ser. No. 656,794
Int. Cl.[4] C07D *409/12*
U.S. Cl. 546—213 5 Claims

1. A compound of the formula



III

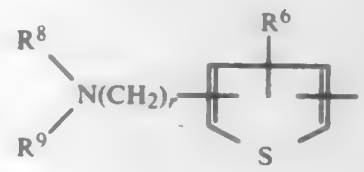
wherein

R^{12} is a conventional leaving group selected from halogen, phenoxy, substituted phenoxy and alkoxy;

m is an integer of from 0 to 2 inclusive;

n is an integer of from 2 to 5 inclusive;

Z is sulfur, oxygen or methylene; and



in which

R^6 is hydrogen, (lower) alkyl, (lower) alkoxy or halogen;

r is an integer of from 1 to 4 inclusive; and

R^8 and R^9 each are independently hydrogen, (lower) alkyl, allyl, propargyl, (lower)alkoxy(lower) alkyl in which the (lower)alkoxy moiety is at least two carbon atoms removed from the nitrogen atom, cyclo(lower)alkyl, or phenyl(lower)alkyl, provided that R^8 and R^9 may not both be cyclo(lower)alkyl, or R^8 and R^9, taken together with the nitrogen atom to which they are attached, may be pyrrolidino, methylpyrrolidino, dimethylpyrrolidino, morpholino, thiomorpholino, piperidino, methylpiperidino, dimethylpiperidino, hydroxypiperidino, N-methylpiperazino, 1,2,3,6-tetrahydropyridyl, 3-pyrrolino, homopiperidino, heptamethyleneimino, octamethyleneimino or 3-azabicyclo[3.2.2]nonane.

4. The compound of claim 1 which is 1-methoxy-2-}2-[(5-piperidinomethyl-3-thienyl)methylthio]ethylamino}cyclobutene-3,4-dione.

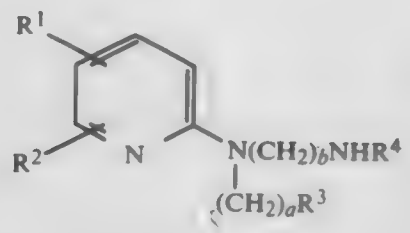
4,607,106

3-(2-PYRIDYLAMINOALKYLAMINO)THIAZOLES USEFUL AS HISTAMINE H_1-ANTAGONISTS

Robert J. Ife, Stevenage, England, assignor to Smith Kline & French Laboratories Limited, Welwyn Garden City, England

Division of Ser. No. 563,496, Dec. 20, 1983, Pat. No. 4,532,246. This application May 17, 1985, Ser. No. 735,036
Claims priority, application United Kingdom, Dec. 23, 1982, 8236637; Aug. 19, 1983, 8322349
Int. Cl.[4] C07D *401/00;* A61K *31/44*
U.S. Cl. 546—255 11 Claims

1. A compound of formula (1):



or a pharmaceutically acceptable salt thereof, where

R^1 and R^2 are the same or different and are hydrogen, C_{1-6} alkyl, C_{1-6} alkoxy or halogen;

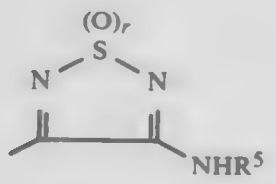
R^3 is optionally substituted phenyl or optionally substituted pyridyl, wherein the optional substituent is one C_{1-6} alkyl, C_{1-6} alkoxy, or hydroxy group or halogen atom;

or optionally substituted thiazolyl, optionally substituted furanyl or optionally substituted thienyl where the optional substituent is one C_{1-6} alkyl or C_{1-6} alkoxy group or halogen atom;

a is from 1 to 6

b is from 2 to 4

and R^4 is a group of formula (5):



(5)

where R^5 is hydrogen, C_{1-6} alkyl, or $(CH_2)_dR^6$ where d is 1–6 and R^6 is optionally substituted phenyl, optionally substituted pyridyl, where the optional substituent is one C_{1-6} alkyl, C_{1-6} alkoxy or hydroxy group or halogen atom; optionally substituted thiazolyl, optionally substituted furanyl or optionally substituted thienyl, where the optional substituent is one C_{1-6} alkyl or C_{1-6} alkoxy group or halogen atom; and r is 0 to 2.

11. A method of blocking histamine H_1-receptors which comprises administering to a subject an effective amount to block said receptors of a compound according to claim **1**.

4,607,107

(4-AMINOALKYL-2-PYRIDYL ALKYL)GUANIDINES

David G. Cooper, Letchworth, and George S. Sach, Welwyn, both of England, assignors to Smith Kline & French Laboratories Ltd., Welwyn Garden City, England

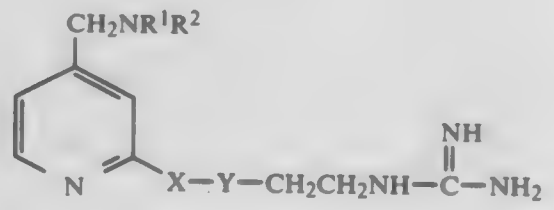
Division of Ser. No. 467,065, Feb. 16, 1983, Pat. No. 4,439,609, which is a division of Ser. No. 302,941, Sep. 16, 1981, Pat. No. 4,385,058. This application Feb. 17, 1984, Ser. No. 569,433

The portion of the term of this patent subsequent to Mar. 4, 2003, has been disclaimed.

Int. Cl.⁴ C07D *211/70*

U.S. Cl. 546—332 **2 Claims**

1. A compound of the formula:



in which

R^1 and R^2 are C_1–C_4 alkyl or together with the nitrogen atom to which they are attached form a pyrrolidino or piperidino group;

Y is methylene or sulphur; and

X is methylene or oxygen provided that X is methylene when Y is sulphur.

4,607,108

PROCESS FOR THE PREPARATION OF 3-ISOMERS OF 1-CYCLOHEXYL-2-(1,2,4-TRIAZOL-1-YL)-1-PENTEN-3-ONE DERIVATIVES

Peter Feyen, Mettmann, Fed. Rep. of Germany; Gebhard Rauleder, Belford Roxo, Brazil, and Wolf Reiser, Wuppertal, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

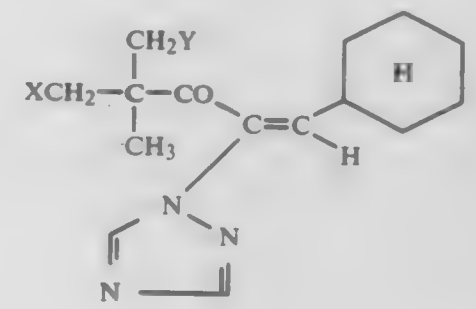
Filed Jun. 22, 1984, Ser. No. 623,800

Claims priority, application Fed. Rep. of Germany, Jun. 24, 1983, 3322818

Int. Cl.⁴ C07D *249/08*

U.S. Cl. 548—262 **4 Claims**

1. A process for preparing E-isomers of 1-cyclohexyl-2-(1,2,4-triazol-1-yl)-1-penten-3-one derivatives of the formula

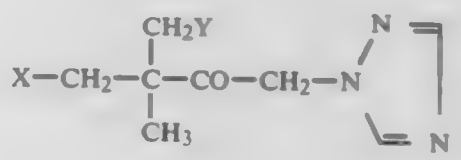


(I)

in which

X represents hydrogen and Y represents hydrogen fluorine or chlorine,

characterised in that triazolyl-ketones of the formula



(II)

in which

X and Y have the abovementioned meaning, are reacted with an excess of cyclohexanecarbaldehyde of the formula

(III)

in the presence of a non-polar organic diluent selected from xylene, toluene, cyclohexane, ligroin, isooctane, dodecane or isododecane and in the presence of a catalyst mixture of an organic acid selected from acetic acid, propionic acid, pivalic acid, 2-ethylhexanoic acid, cyclohexanecarboxylic acid or benzoic acid and a secondary amine selected from dimethylamine, diethylamine, diisopropylamine, diisobutylamine, pyrrolidine, morpholine, hexahydro-1-H-azepine, piperidine, 2-methylpiperidine or 2,6-dimethylpiperidine in a molar ratio of 1:0.5 to 1:1 at temperatures between 40° and 100° C. by continuously removing the water formed and then either

(a) an aqueous base is added to the reaction mixture, which, if appropriate after the aqueous phase has been separated off, is stirred at temperatures between −20° C. and +30° C., and the product precipitating in the form of crystals is separated off, or

(b) the reaction mixture is treated in any order first of all with an aqueous mineral acid and an aqueous base and then washed with water, the organic phase is then concentrated by distilling out excess cyclohexanecarbaldehyde and solvent, the remaining residue, if appropriate after prior distillation, is reacted at temperatures between −20° C. and +30° C. with secondary amines, if appropriate in

the presence of water and/or in the presence of a water-non-miscible solvent, and the product precipitating in the form of crystals in the course of the reaction is separated off.

4,607,109

NITROGEN CONTAINING COMPOUNDS, THEIR PREPARATION AND USE OF SAME FOR THE PREPARATION OF DECALIN KETON DERIVATIVES

Roger L. Snowden, Grand-Lancy, Switzerland, assignor to Firmenich SA, Genvea, Switzerland

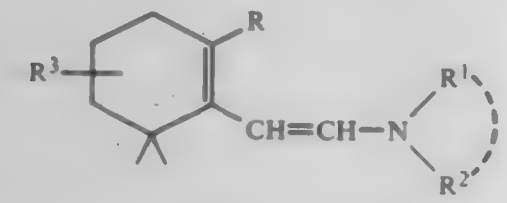
Filed Sep. 10, 1985, Ser. No. 774,409

Claims priority, application Switzerland, Sep. 12, 1984, 4354/84

Int. Cl.[4] C07D *295/00*

U.S. Cl. 548—400 4 Claims

1. Nitrogen containing compounds of general formula



(I)

wherein symbol R designates a C_1-C_3 alkyl group, each of R^1 and R^2 represents, when taken separately, a C_1-C_6 alkyl radical or, when taken together, a polymethylene and R^3 represents a C_1-C_3 alkyl group, preferably a methyl radical, or a hydrogen atom.

4,607,110

NOVEL POLYACRYLIC ESTERS BEARING PENDANT MACROCYCLIC ETHERS AND ELECTRICALLY CONDUCTING COMPOSITIONS COMPRISED THEREOF

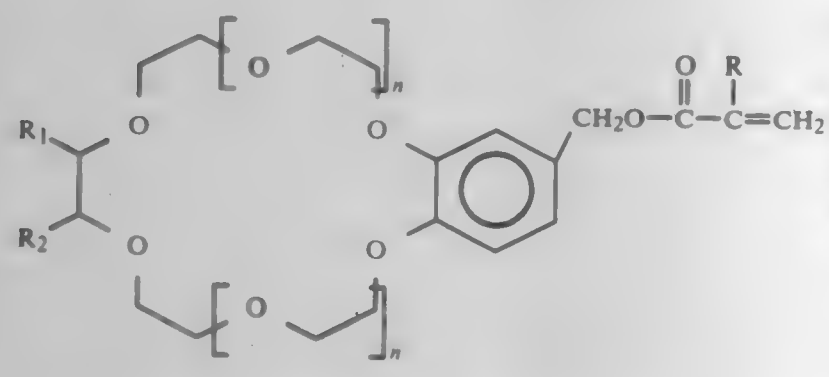
John E. Herweh, East Hempfield Township, Lancaster County, Pa., assignor to Armstrong World Industries, Inc., Lancaster, Pa.

Filed Mar. 11, 1985, Ser. No. 710,448

Int. Cl.[4] C07D *493/00*; C08F *22/20*

U.S. Cl. 549—351 7 Claims

1. A polymerizable monomer having the formula:



wherein the acrylic ester bearing phenyl ring denoted in the formula is unsubstituted or alkyl substituted, said alkyl substituents containing from 1 to 4 carbon atoms; and, wherein n = 1–3, R is hydrogen or methyl and R_1 and R_2 are independently hydrogen or R_1 and R_2 together are: (1) an unsubstituted phenyl ring formed by R_1 and R_2 in combination with the macrocyclic ether ring or (2) an alkyl substituted phenyl ring wherein the alkyl substituents contain from 1 to 4 carbon atoms, said alkyl substituted phenyl ring formed by R_1 and R_2 in combination with the macrocyclic ether ring.

4,607,111

PROCESS FOR SEPARATION OF TOCOPHEROL HOMOLOGUES (II)

Charles H. Foster, Kingsport, Tenn., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed May 22, 1985, Ser. No. 736,904

Int. Cl.[4] C07D *311/72*

U.S. Cl. 549—413 15 Claims

1. A process for separating tocopherol homologues which comprises reacting a mixed α-, β-, γ, and δ-tocopheryl ester mixture with at least one alcohol of the group consisting of methanol, ethanol and n-propanol in the presence of a base catalyst comprising potassium carbonate, potassium hydroxide or sodium hydroxide at a temperature of about 40° C. to about 80° C. to deacylate tocopheryl esters other than the α-tocopheryl esters and separating the α-tocopherol ester from the deacylated homologues.

4,607,112

Cp_2TiCH_2-CONTAINING CATALYST FOR POLYMERIZATION OF DIFUNCTIONAL RING COMPOUNDS

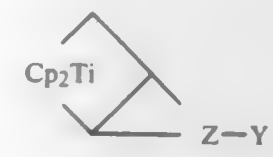
Robert H. Grubbs; Laura R. Gilliom, both of Pasadena, Calif., and Alain Siove, Paris, France, assignors to California Institute of Technology, Pasadena, Calif.

Filed Mar. 28, 1984, Ser. No. 594,355

Int. Cl.[4] C07F *7/28*

U.S. Cl. 556—52 5 Claims

1. A polymerization catalyst of the formula:



where Z is a hydrocarbon or heterocarbon linkage containing 2 to 6 atoms within a strained ring and Y contains a group polymerizable by a Lewis acid or a transition metal salt catalyst.

4,607,113

PRODUCTION OF MOLYBDENUM DIOXO DIALKYLENEGLYCOLATE COMPOSITIONS FOR EPOXIDATION OF OLEFINS

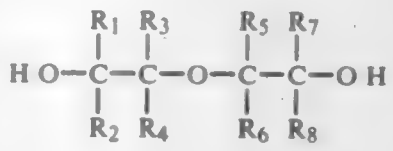
Wilfred P. Shum, Swarthmore, and Charles F. Cooper, Paoli, both of Pa., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Filed Nov. 5, 1984, Ser. No. 668,057

Int. Cl.[4] C07F *11/00*

U.S. Cl. 556—57 14 Claims

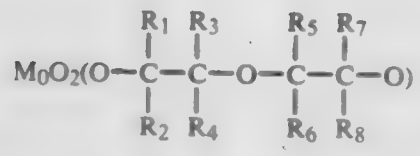
I. The method of producing an organic soluble molybdenum-containing compound, useful as a catalyst for the epoxidation of an olefinic compound with an organic hydroperoxide, which comprises reacting molybdenum trioxide with a dialkylene glycol corresponding to the formula



(II)

wherein at least one member of R_1 through R_4 and at least one member of R_5 through R_8 is an alkyl radical of 1 to 4 carbon atoms and the remaining members of R_1 through R_4 and R_5 through R_8 are each independently selected from the group consisting of hydrogen or an alkyl radical of 1 to 4 carbon atoms, at a temperature from about 100° C. to about 150° C., while removing water.

10. A molybdenum dioxo dialkyleneglycolate compound of the formula:



(I)

wherein at least one member of R_1 through R_4 and at least one member of R_5 through R_8 is an alkyl radical of 1 to 4 carbon atoms and the remaining members of R_1 through R_4 and R_5 through R_8 are each independently selected from a group consisting of hydrogen or an alkyl radical of 1 to 4 carbon atoms.

4,607,114

NOVEL PLATINUM COMPLEXES

Yuya Nakayama, Omiya; Kenji Iwata, Kuki, and Katsutoshi Takahashi, Tokyo, all of Japan, assignors to Nippon Kayaku Kabushiki Kaisha, Japan

Filed Oct. 16, 1984, Ser. No. 661,433
Claims priority, application Japan, Oct. 19, 1983, 58-194358
Int. Cl.[4] C07F *15/00*
U.S. Cl. 556—137 **13 Claims**

1. cis-Dichloro-1,2-diamino-2-methylpropane platinum.

4,607,115

METHOD FOR INCREASING THE MOLECULAR WEIGHT OF DIORGANOPOLYSILOXANES

Manfred Riederer; Hartmut Menzel, both of Burghausen, and Martin Piehler, Mehring, all of Fed. Rep. of Germany, assignors to Wacker-Chemie GmbH, Munich, Fed. Rep. of Germany

Filed Nov. 18, 1985, Ser. No. 799,067
Claims priority, application Fed. Rep. of Germany, Feb. 7, 1985, 3504185
Int. Cl.[4] C07F *7/08*
U.S. Cl. 556—462 **7 Claims**

1. A method for increasing the molecular weight of organosilicon compounds which comprises heating a mixture containing a diorganopolysiloxane and a quaternary phosphonium hydroxide in which one of the substituents on the phosphorus atom of the phosphonium cation is a monovalent radical containing carbon, hydrogen and silicon atoms, and the other three substituents on the phosphorus atom are hydrocarbon radicals which are free of aliphatic carbon-carbon multiple bonds.

4,607,116

PROCESS FOR PREPARING DIARYLS

Yasuo Yamazaki, Machida; Takehiko Suzuki, and Masaharu Uchiyama, both of Tokyo, all of Japan, assignors to Nippon Petrochemicals Company Limited, Tokyo, Japan

Filed Mar. 8, 1984, Ser. No. 587,376
Claims priority, application Japan, Mar. 9, 1983, 58-37313
Int. Cl.[4] C07C *67/30, 51/347, 41/24, 76/02, 102/00, 17/24, 1/26*
U.S. Cl. 560—21 **6 Claims**

1. A process for preparing a diaryl or a mixture of diaryls represented by at least one of the following formulae (II), (III) and (IV), characterized in that a diaryliodonium salt represented by the following formula (I) is reacted in a solvent in the presence of a transition metal catalyst and a reducing metal at a temperature in the range of room temperature to 100° C.:

$$[Ar_1\text{-}I^{\oplus}\text{-}Ar_2]X^{\ominus} \quad \text{(I)}$$

$$Ar_1\text{-}Ar_1 \quad \text{(II)}$$

$$Ar_1\text{-}Ar_2 \quad \text{(III)}$$

$$Ar_2\text{-}Ar_2 \quad \text{(IV)}$$

wherein Ar_1 and Ar_2, which may be alike or different, are each an aryl group which may be unsubstituted or substituted with at least one group which is C_1–C_{12} alkyl, cycloalkyl groups, aryl groups, halogenoalkyl groups, halogen, carboxyl, alkoxy groups, alkoxylcarbonyl groups, alkoxycarbonylalkyl groups, nitro, and N-acylamino groups; and $X^{\ominus}$ is a counter ion which is inert to said reaction.

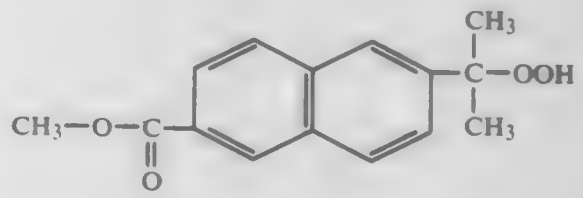
4,607,117

METHYL 2-(2-HYDROPEROXY-2-PROPYL)NAPHTHALENE-6-CARBOXYLATE AND PROCESS FOR PRODUCING THE SAME

Akira Iizuka; Yutaka Konai; Takashi Yamauchi, and Shoichiro Hayashi, all of Iwaki, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed May 6, 1985, Ser. No. 731,055
Claims priority, application Japan, May 17, 1984, 59-99383
Int. Cl.[4] C07C *69/76*
U.S. Cl. 560—56 **6 Claims**

1. Methyl 2-(2-hydroperoxy-2-propyl)naphthalene-6-carboxylate represented by the formula(I):



(I)

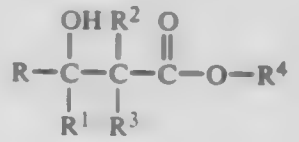
4,607,118

FLAVOR-RELEASE β-HYDROXY-ESTER COMPOSITIONS

Harvey J. Grubbs, Mechanicsville, and Yoram Houminer, Richmond, both of Va., assignors to Philip Morris Incorporated, New York, N.Y.

Division of Ser. No. 259,264, Apr. 30, 1981, Pat. No. 4,473,085. This application Apr. 23, 1984, Ser. No. 603,254
Int. Cl.[4] C07C *69/66, 69/675*
U.S. Cl. 560—60 **7 Claims**

1. A composition corresponding to the formula:



wherein one of R and R^1 is aryl and the other is alkyl, R^2 is hydrogen, R^3 is alkyl, and R^4 is alkyl, and wherein the R, R^1, R^3 and R^4 substituents respectively contain between about 1–12 carbon atoms.

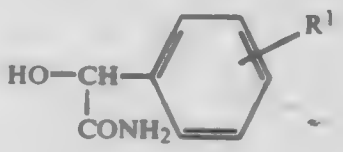
4,607,119

PREPARATION OF CYANOESTERS

Thomas Leigh, Alderley Edge, England, assignor to Imperial Chemical Industries PLC, London, England

Continuation of Ser. No. 973,949, Dec. 28, 1978, abandoned, which is a division of Ser. No. 803,236, Jun. 3, 1977, Pat. No. 4,146,554. This application Dec. 26, 1984, Ser. No. 686,615
Claims priority, application United Kingdom, Jun. 16, 1976, 24929/76; Jun. 16, 1976, 24930/76
Int. Cl.[4] C07C *69/76*
U.S. Cl. 560—60 **5 Claims**

1. A compound of formula:



wherein R^1 is a phenoxy or 2,2-dichlorovinyloxy group.

4,607,120

PROCESS FOR THE PRODUCTION OF SUBSTITUTED BENZOIC ACID ESTERS

Gérard Pelerin, Cabris, France, assignor to Societe Anonyme Roure Bertrand Dupont, Argenteuil, France

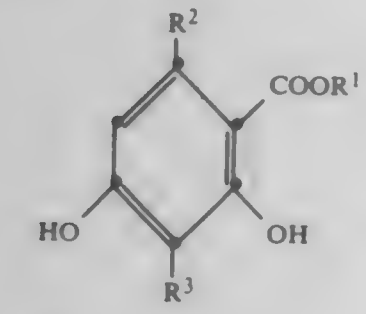
Filed Jul. 27, 1984, Ser. No. 635,228

Claims priority, application Switzerland, Aug. 4, 1983, 4231/83

Int. Cl.[4] C07C *69/88*

U.S. Cl. 560—070 13 Claims

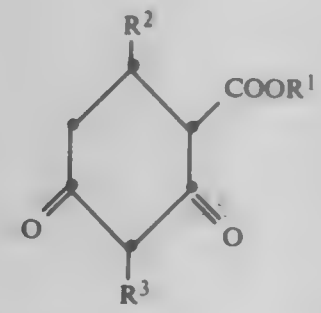
1. A process for the production of esters of the general formula



I

in which R^1 signifies methyl or ethyl and R^2 and R^3, independently from one another, signify hydrogen or C_{1-4}-alkyl,

characterized in treating a diketo ester of the general formula



II

in which R^1 to R^3 have the above significances, with the combination of

CuX_2 and MeX_n III

in which Me signifies an alkali metal or alkaline earth metal ion, X signifies halogen and n corresponds to the valency of the metal ion.

4,607,121

PROCESS FOR PREPARING ALKALINE METAL SALTS OF POLYETHOXYCARBOXYLIC ACIDS

Lucio Faggian, S. Donato Milanese; Renato de Simone, Como, and Edoardo Platone, S. Donato Milanese, all of Italy, assignors to AGIP, S.p.A., Rome, Italy

Filed Dec. 18, 1984, Ser. No. 682,907

Claims priority, application Italy, Dec. 28, 1983, 24409 A/83

Int. Cl.[4] C07C *51/235*

U.S. Cl. 562—537 8 Claims

1. In a process for preparing a surfactant agent consisting of an alkaline metal salt of a polyethoxycarboxylic acid having the formula $R'(OR)_m(OCH_2CH_2)_{n-1}(OCH_2)COOM$, in which R' represents a linear or branched alkyl group having from 1 to 20 carbon atoms; R represents an alkylene group, linear or branched, having from 3 to 5 carbon atoms; m is zero or a number up to 30; n is a number from 2 to 30; and M represents an alkaline metal, said process comprising the catalytic oxidation with oxygen or a molecular oxygen-containing gas of a polyethoxylic alcohol having the formula $R'(OR)_m(OCH_2CH_2)_nOH$, in which R', R, m and n are the same as defined above, in the presence of a platinum or palladium catalyst, at a temperature in the range from 40° to 80° C. but lower than the cloud point of said alcohol, in an aqueous reaction mixture characterized by a pH within the range from 7.7 to 8.7, said pH being regulated with use of an alkaline metal hydroxide (MOH), wherein said alcohol is substantially stoichiometrically converted to said alkaline metal salt of the corresponding polyethoxycarboxylic acid;

the improvement wherein the catalyst is substantially completely removed from said reaction mixture, to a level of platinum or palladium of 1 to 4 parts per million relative to said alkaline metal salt, and recovered with a catalytic activity equal to that of fresh catalyst by first contacting the spent catalyst in the reaction mixture with gaseous hydrogen to reactivate it, thus forming an insoluble reactivated catalyst fraction suspended in the reaction mixture and a soluble reactivated catalyst fraction dissolved in the reaction mixture; and thereafter

separating the suspended catalyst fraction from the reaction mixture, adding 1 to 10 parts, per each part of mixture, of a liquid aliphatic ketone which is a least partially soluble in the reaction mixture to cause the soluble reactivated catalyst fraction to precipitate from the mixture, and separating the precipitated reactivated catalyst fraction from the reaction mixture.

4,607,122

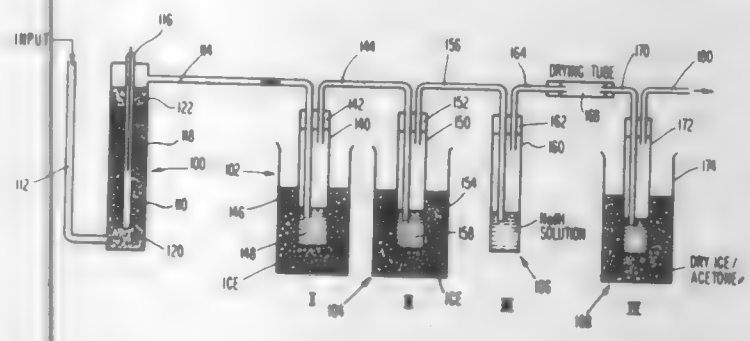
HIGH SELECTIVITY PROCESS FOR VAPOR PHASE OXYDEHYDROGENATION OF ALKANOIC ACIDS, SUCH AS ISOBUTYRIC ACID, USING DAWSON STRUCTURE PHOSPHOMOLYBDIC ACID

Wilfred P. Shum, East Windsor; John F. White, Princeton, both of N.J., and Eva M. Beals, Washington Crossing, Pa., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Filed Apr. 27, 1981, Ser. No. 258,101

Int. Cl.[4] C07C *51/14, 57/02*

U.S. Cl. 562—599 7 Claims



1. A method for producing an alpha-beta unsaturated acid, comprising the steps of:

(a) providing an alkanoic acid having at least one hydrogen atom attached to each of the alpha and beta carbons thereof;

(b) providing a catalyst comprising a Dawson cluster phosphomolybdic acid;

(c) contacting said catalyst at a temperature between 260° C. and the temperature at which substantial decomposition of said catalyst occurs with a reaction gas comprising said alkanoic acid, water and oxygen to convert at least a portion of said alkanoic acid into a reaction product comprising its corresponding alpha-beta unsaturated alkanoic acid.

4,607,123

WATER SOLUBLE 3,5-DIACETAMIDO-2,4,6-TRIIODOBENZOIC ACID DERIVATIVES

Dan-Karl Schuster, Mannheim, and Franz J. Köhler, Alsbach-Hähnlein, both of Fed. Rep. of Germany, assignors to Dr. Franz Köhler Chemie GmbH, Alsbach-Hahnlein, Fed. Rep. of Germany

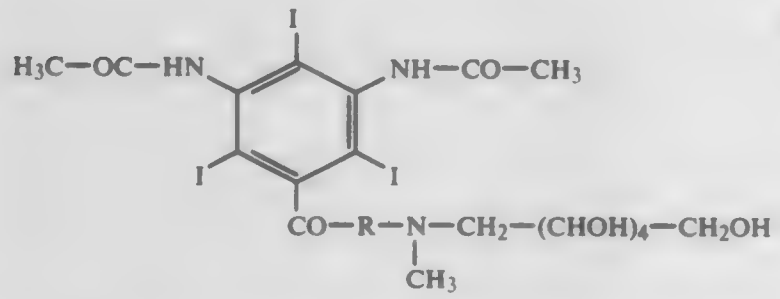
Filed Feb. 12, 1985, Ser. No. 700,631

Claims priority, application Fed. Rep. of Germany, Feb. 29, 1984, 3407473

Int. Cl.[4] C07C *103/50;* A61K *49/04*

U.S. Cl. 564—153 10 Claims

1. N,N-[(3,5-diacetamido-2,4,6-triiodbenzoyl)-aminoacyl]-N-methylglucamide of the formula:



(I)

where R denotes an amino acid residue, wherein the amino acid is selected from the group consisting of alanine, β-alanine, sarcosine, amino butyric acid, leucine, serine, aspartic acid and glutamic acid.

4,607,124

PROCESSES FOR THE PREPARATION OF MIXED SQUARAINE COMPOSITIONS

Peter M. Kazmaier; Giuseppa Baranyi; Cheng-Kuo Hsiao, and Richard A. Burt, all of Mississauga, Canada, assignors to Xerox Corporation, Stamford, Conn.

Division of Ser. No. 650,380, Sep. 13, 1984. This application Oct. 30, 1985, Ser. No. 793,008

Int. Cl.[4] C07C *85/00, 85/02, 85/06, 87/50*

U.S. Cl. 564—307 18 Claims

1. An improved process for the preparation of squaraine compositions which comprises reacting squaric acid, an aromatic amine, and a fluoroaniline, in the presence of an aliphatic alcohol, and an optional azeotropic substance.

4,607,125

PROCESS FOR PRODUCING HYDROXY AROMATIC KETONES

Graham N. Mott, Corpus Christi, Tex., assignor to Celanese Corporation, New York, N.Y.

Filed Apr. 8, 1985, Ser. No. 721,007

Int. Cl.[4] C07C *45/46*

U.S. Cl. 568—319 9 Claims

1. A process comprising acylating phenol with about 0.4 to 0.8 moles of a carboxylic acid anhydride as acylating agent per mole of phenol in the presence of a Friedel-Crafts catalyst consisting of hydrogen fluoride to produce a hydroxy aromatic ketone.

4,607,126

PROCESS FOR THE PREPARATION OF GLYOXAL, ALKYLGLYOXALS AND ACETALS THEREOF

Alexander Sajtos, Linz, Austria, assignor to Chemie Linz Aktiengesellschaft, Linz, Austria

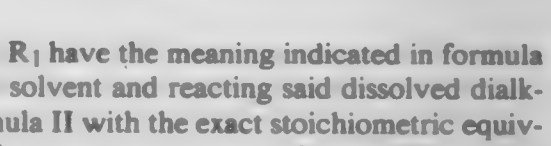
Filed Dec. 17, 1984, Ser. No. 682,019

Claims priority, application Fed. Rep. of Germany, Dec. 21, 1983, 3346266

Int. Cl.[4] C07C *45/53*

U.S. Cl. 568—385 11 Claims

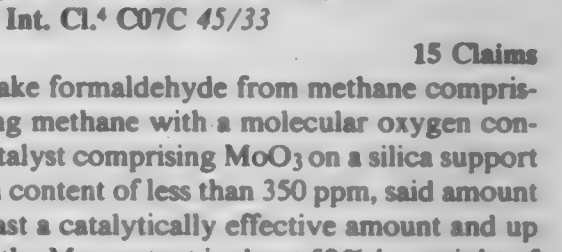
1. Process for preparing acetals of the formula



(I)

wherein R represents hydrogen or a linear or branched C_1 to C_6 alkyl radical and R_1 represents a linear or branched C_1 to C_6 alkyl radical, consisting of

(a) dissolving a dialkylacetal of acrolein or of an alpha-alkylacrolein of the formula



II

in which R and R_1 have the meaning indicated in formula I, in an organic solvent and reacting said dissolved dialkylacetal of formula II with the exact stoichiometric equivalent amount of ozone at temperatures from −80° to 0° C.;

(b) hydrogenating the peroxide-containing solution thus obtained at a pH-value of 2 to 7 and at temperatures from 15° to 45° C., said peroxide containing-solution being fed continuously into a suspension of a noble metal catalyst in an organic solvent used in a stage (a) at such a rate that a peroxide content of not more than 0.1 mole/liter is set up and maintained in the suspension during the entire course of hydrogenation while hydrogen is passed in under a pressure of 1 to 3 bar, and then separating the acetals of formula I so formed.

4,607,127

PROCESS AND CATALYST FOR THE PRODUCTION OF FORMALDEHYDE FROM METHANE

Nicholas D. Spencer, Washington, D.C., assignor to W. R. Grace & Co., New York, N.Y.

Filed Apr. 16, 1985, Ser. No. 723,680

Int. Cl.[4] C07C *45/33*

U.S. Cl. 568—482 15 Claims

1. A process to make formaldehyde from methane comprising partially oxidizing methane with a molecular oxygen containing gas over a catalyst comprising MoO_3 on a silica support having a low sodium content of less than 350 ppm, said amount of MoO_3 being at least a catalytically effective amount and up to an amount where the Mo content is about 50% by weight of the catalyst.

4,607,128

NOVEL SUBSTITUTED PHENYL ETHERS, PROCESS FOR THEIR PREPARATION, AND THEIR USE IN THE PREPARATION OF SUBSTITUTED PHENOLS

Paul H. Briner, Faversham, and Ronald F. Mason, Ashford, both of England, assignors to Shell Oil Company, Houston, Tex.

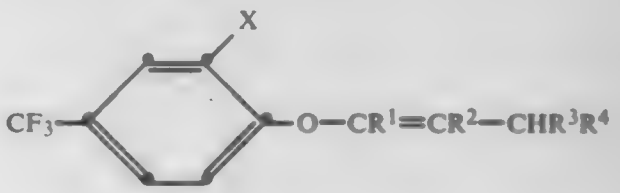
Filed Jan. 8, 1986, Ser. No. 817,191

Claims priority, application United Kingdom, Jan. 9, 1985, 8500482

Int. Cl.[4] C07C *41/16, 29/09, 43/205*

U.S. Cl. 568—655 7 Claims

1. A compound of the formula



(I)

in which X is hydrogen or chlorine, and each of R^1, R^2, R^3 and R^4 independently is hydrogen, methyl or ethyl.

4,607,129

CATALYTIC DEHYDROCYCLIZATION AND DEHYDROGENATION OF HYDROCARBONS

Fu M. Lee, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jun. 10, 1985, Ser. No. 742,678
Int. Cl.[4] C07C *5/42*
U.S. Cl. 585—415 17 Claims

1. A process comprising the step of contacting a hydrocarbon containing feed stream consisting essentially of at least one hydrocarbon selected from the group consisting of alkanes containing from 2 to 20 carbon atoms per molecule and cycloalkanes containing from 5 to 20 carbon atoms per molecule with a catalyst composition consisting essentially of (a) divanadium pentoxide and (b) silica, under such reaction conditions as to convert at least a portion of said hydrocarbon feed to a reaction product comprising hydrogen gas and at least one hydrocarbon selected from the group consisting of alkenes containing from 2 to 20 carbon atoms, alkadiene containing from 4 to 20 carbon atoms, cycloalkenes containing from 5 to 20 carbon atoms, cycloalkadienes containing from 5 to 20 carbon atoms and aromatic hydrocarbons containing from 6 to 20 carbon atoms per molecule.

4,607,130

ACID-CATALYZED ORGANIC COMPOUND CONVERSION

Clarence D. Chang, Princeton, and Joseph N. Miale, Lawrenceville, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 726,194, Apr. 22, 1985, abandoned, which is a continuation-in-part of Ser. No. 555,118, Nov. 25, 1983, Pat. No. 4,550,092, which is a division of Ser. No. 317,037, Nov. 21, 1981, Pat. No. 4,435,516. This application Oct. 15, 1985, Ser. No. 787,181
Int. Cl.[4] C07C *2/00*
U.S. Cl. 585—415 18 Claims

1. A process for conducting acid-catalyzed conversion of feedstock comprising C_2+ olefins, C_2–C_7 paraffins or a mixture thereof to product comprising C_5+ hydrocarbon compounds which comprises contacting said feedstock at conditions sufficient to convert said feedstock to said C_5+ product hydrocarbons with a catalyst comprising a zeolite composition prepared by a method comprising treating a crystalline zeolite having an initial silica-to-alumina mole ratio of at least 500 with an ammoniacal solution of an alkali metal aluminate for a period of time ranging from about 20 minutes to about 30 days at a temperature of from about 20° C. to about 50° C. and at a pH of at least 10.

4,607,131

ISOLATION OF 3-METHYL-1-BUTENE FROM A HYDROCARBON STREAM

Charles A. Drake, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jan. 31, 1985, Ser. No. 696,362
Int. Cl.[4] C07C *7/17*
U.S. Cl. 585—858 8 Claims

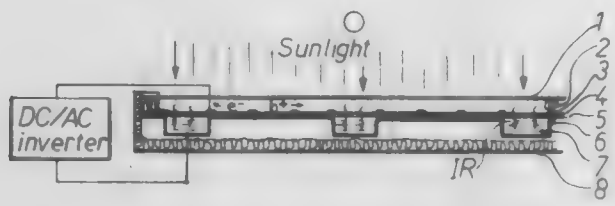
1. A process for recovering 3-methyl-1-butene from a hydrocarbon stream containing 3-methyl-1-butene and 2-butyne which forms an azeotrope with 3-methyl-1-butene said process comprising contacting said stream with sulfuric acid having a concentration ranging from 70 to 85 weight percent to form a soluble fraction containing said 2-butyne and said sulfuric acid and an insoluble fraction which contains said 3-methyl-1-butene and recovering said 3-methyl-1-butene through conventional separation techniques.

4,607,132

INTEGRATED PV-THERMAL PANEL AND PROCESS FOR PRODUCTION

William S. Jarnagin, P.O. Box 127, Concord, Mass. 01742

Filed Aug. 13, 1985, Ser. No. 765,069
Int. Cl.[4] H01L *31/06, 31/18*
U.S. Cl. 136—248 2 Claims



1. An integrated photovoltaic-thermal panel comprising a layer of crystalline silicon made in part by reduction of silicic acid by hot carbon atoms and having a p-n junction therein, on a substrate of oxidized copper.

2. A process for production of integrated photovoltaic-thermal panels, the preferred process including the following chemical vapor depositions, in air, and the following work stations:

(a) copper oxide station, whereby sheet copper, Cu, is cleaned and a layer of copper oxide, CuO, is formed thereon by heating said copper in air or steam,

(b) silica station, whereby silicic acid, $Si(OH)_4$, and steam, H_2O, are sprayed on said hot oxidized sheets of copper, and $Si(OH)_4$ is reduced by hot carbon atoms to carbon monoxide, CO, which is vented and burned off, and silica, SiO_2, a layer of which is deposited onto and bonded thermally to said copper oxide layer,

(c) silicon station, whereby said silicic acid is further reduced by increased numbers of hot carbon atoms to silicon, Si, a layer of which is deposited on and bonded to said SiO_2 layer,

(d) p-n junction station, whereby boron atoms, then phosphorus atoms, are diffused into said silicon layer, under temperature, timing and number density controls, to establish what is called a p-n junction,

(e) crystallization station, whereby heat is applied to the surface of said doped silicon layer, to sinter same and to let silicon atoms form bonds with one another in an orderly and crystalline manner and dominate over unordered, amorphous, bonds of oxide layers below, the results being a crystalline photovoltaic, PV, surface layer bonded to a silica layer and that to CuO and that to Cu,

(f) electrode grid station, whereby electrical leadwires are affixed in series and in parallel to said PV surfaces,

(g) thermal exchanger station, whereby flat tubes are soldered to the underside of said copper substrate, to carry a heat exchange fluid to and away from said PV layer, to cool said PV layer and to extract thermal heat as well as electrical energy from said integrated PV-thermal panel.

4,607,133

LIQUID-COOLED ELECTRIC CABLE

Michel Alloin, Saint Bernard, and Charles Flamand, Francheville, both of France, assignors to Les Cables de Lyon, France

Filed Mar. 22, 1985, Ser. No. 714,764
Claims priority, application France, Mar. 23, 1984, 84 04564
Int. Cl.[4] H01B *7/34*
U.S. Cl. 174—15 WF 10 Claims

1. A liquid-cooled electric cable for transporting very high currents at low voltages, said cable comprising:

a liquid pervious tube surrounding an axial liquid flow cavity,

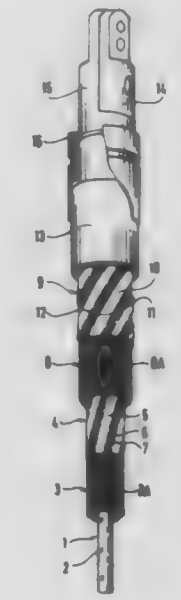
an electrically conductive core surrounding the tube,

a first, unitary separation envelope made of an electrically non-conductive material,

an electrically outer conductive layer which is coaxial with the conductive core, and

an outer sealed sheath,

and wherein the first separation envelope is in contact with the conductive core and the outer conductive layer on opposite surfaces thereof, and wherein said first separation envelope has openings for allowing cooling liquid to flow



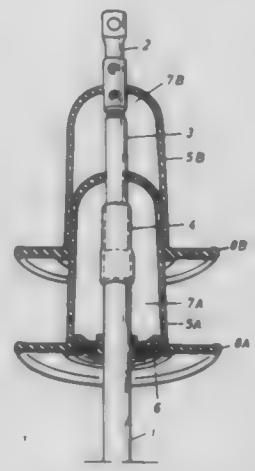
therethrough and between the core and the outer conductive layer such that said cable is evenly cooled, even when bent to a significant degree.

4,607,134

CABLE TERMINATION WITH INTERFITTING INSULATING CAPS ENCLOSING GAS-FILLED SPACES

Kjell M. Wikmar, Alingsås, Sweden, assignor to Kabeldon Aktiebolag, Alingsås, Sweden

PCT No. PCT/SE84/00300, § 371 Date May 14, 1985, § 102(e) Date May 14, 1985, PCT Pub. No. WO85/01618, PCT Pub. Date Apr. 11, 1985
PCT Filed Sep. 14, 1984, Ser. No. 734,966
Claims priority, application Sweden, Sep. 30, 1983, 8305363
Int. Cl.[4] H02G *15/02*
U.S. Cl. 174—19 8 Claims



1. A termination for a cable insulated with solid polymer material for high-tension AC, comprising at least two beaker-shaped caps of surface-leakage-resistant insulation material fitted over an end of a cable whose outer sheath and conducting screening layer have been removed, said caps having closed bottoms with holes through which the cable passes in gas-tight relation and open ends remote from said closed bottoms, the bottom of the first fitted cap being engaged in the opening of the second cap and so on, each cap enclosing a separate gas-tight space therein around the cable between the bottom of the next cap, each separate gas-tight space containing an electrically insulating gas therein.

4,607,135

CABLE DISTRIBUTION HEAD WITH LSA-PLUS TERMINATION TECHNIQUE

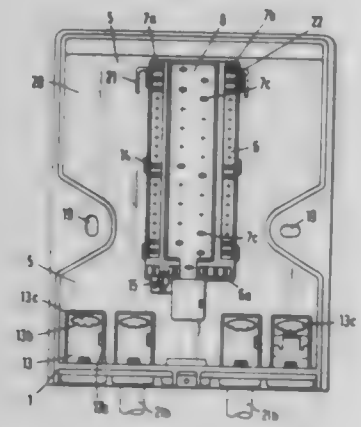
Christa Taybl; Dieter Gerke, both of Berlin; Fritz E. Koch, Schalksmühle, and Gerhard Schwenda, Grosshabersdorf, all of Fed. Rep. of Germany, assignors to Krone GmbH, Berlin, Fed. Rep. of Germany

Filed Feb. 6, 1984, Ser. No. 577,285

Claims priority, application Fed. Rep. of Germany, Feb. 23, 1983, 3306263

Int. Cl.[4] H02G *15/06*

U.S. Cl. 174—60 18 Claims



1. A cable distribution head comprising:

a housing (1) having a rear wall (5) and formed with a switch space (20);

a terminal block (6) mounted in said housing, said terminal block having a plurality of solderless, non-screwed and non-stripped, polytropic air gap LSA-PLUS terminals (*7a, 7b*) arranged in spaced rows, said terminals being adapted to provide termination for a plurality of incoming and outgoing communication cables (21, 22), said terminal block comprising:

a plurality of conductive bars (7), each interconnecting two of said terminals;

an open-topped chamber (8) extending into said terminal block, said chamber being adapted to receive an over-voltage arrester magazine; and

clamping means (15) disposed on one end face (*6a*) of said terminal block, said clamping means being adapted to terminate an earth wire in a solderless and non-screwed manner;

a self-supporting shield contact member formed as a U-shaped metal clip (10) formed with contacting teeth (11) and having a clip spring (12) adapted to be clamped to said metal clip; and

self-supporting strain relief means comprising a clamping spring (13) adapted to be latched into said housing and formed with a resilient lug (*13a*).

4,607,136

CHILDPROOF ELECTRICAL WALL OUTLET PROTECTIVE DEVICE

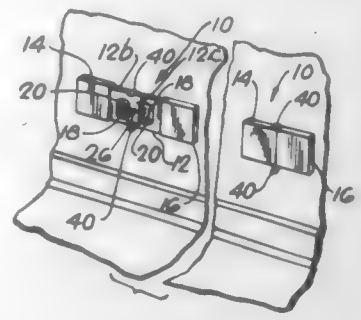
Richard D. Thomas, Chicago, Ill., assignor to C.R.S. Products Co. Inc., Chicago, Ill.

Filed Mar. 27, 1985, Ser. No. 716,626

Int. Cl.[4] H05K *5/03*

U.S. Cl. 174—67 18 Claims

16. A childproof protective device for electrical wall outlets, comprising a body portion adapted to be secured on an electrical wall outlet, said body portion having openings therethrough which are in register with the plug receptacles of the outlet when the body portion is in position on the outlet; a pair of panels slidably engaged on the body portion for preventing access to the plug receptacles of the outlet when the panels are in a closed position; releasable locking means positioned in opposed relation on the body portion between said panels; opposed locking means provided on the panels adapted to be releasably interengaged with the locking means on the body portion when the panels are in a closed position; and actuating means for the opposed locking means on the body portion, said actuating means serving to enable a user of the protective device, by means of finger pressure, to simultangeously disengage the opposed locking means on the body portion from the



opposed locking means on the panels thereby permitting either one or both of the panels to be moved to a position on the body portion which will render the plug receptacles of the electrical wall outlet accessible.

4,607,137

METHOD OF DISTRIBUTING AND UTILIZING ENCIPHERING KEYS

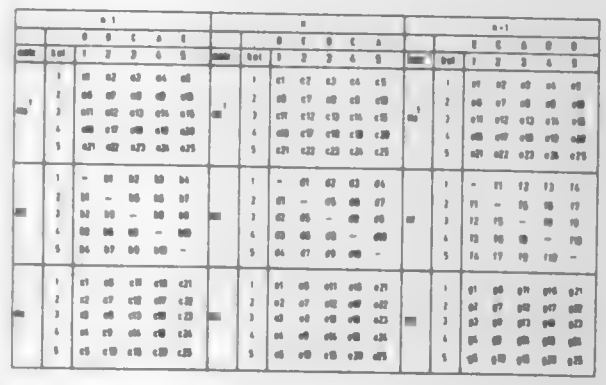
Cornelis J. A. Jansen; Andries J. M. van de Pas, both of Eindhoven; Pieter van der Vlist, Nootdorp, and Frederik Hafkamp, The Hague, all of Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 13, 1984, Ser. No. 600,050

Claims priority, application Netherlands, Apr. 26, 1983, 8301458

Int. Cl.[4] H04L *9/00*

U.S. Cl. 178—22.14 5 Claims



1. A method of distributing and utilizing enciphering keys in a system comprising a number of (N,N>2) transceivers, these transceivers being interconnectable for transmitting enciphered messages, characterized in that each transceiver has an initial set of keys enciphering of which in all cases a unique key is reserved for communication with each one of the other transceivers, that each key of such set is an element of a column of a first N×N key matrix and the number of the column is associated with the identity of the transceiver, and that prior to the start of communication between two transceivers their column numbers are exchanged and the two transceivers are automatically adjusted to their unique key.

4,607,138

METHOD OF CONTROLLING A PRINTING APPARATUS

Masamitu Suzuki, and Yoshito Hagiwara, both of Hadano, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 27, 1984, Ser. No. 686,658

Claims priority, application Japan, Dec. 28, 1983, 58-245491

Int. Cl.[4] G09G *1/18;* G06F *3/14*

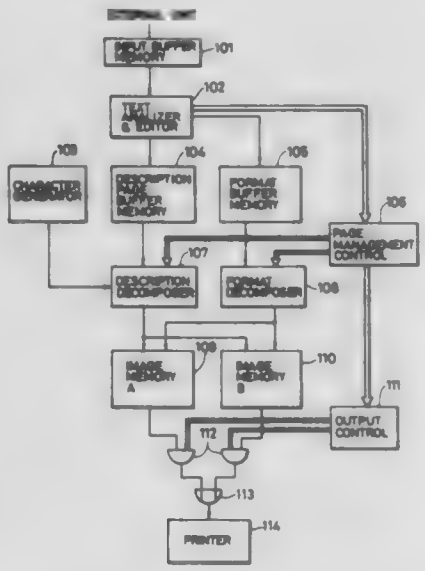
U.S. Cl. 178—30 3 Claims

1. A method of controlling a printing apparatus equipped with means for decomposing into dots separately a first image

portion of image information for a page unaltered over pages and a second image portion alterable from page to page as well as a plurality of memories each capable of storing dot patterns for a complete page to be printed out, comprising the steps of:

comparing the time required for decomposing said first image portion into dots with the printout time for a page; and

selecting, according as the time required for decomposing said first image portion is longer than the printout time for



a page or not, a first operating mode in which the dot pattern of said first image portion is fixedly kept in one of said plurality of memories while said second image portion is decomposed in another one of said plurality of memories and the outputs from the two memories are superimposed for printout, or a second operating mode in which both said first and second image portions are decomposed in the same one of said plurality of memories while said plurality of memories are by turns brought to cyclic store operation followed by printout operation.

4,607,139

INTERFACE MODULE FOR TELEPHONE LINES

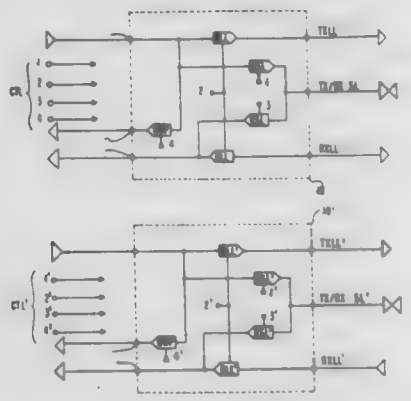
Jean-Claude Froment, Villeneuve-Loubet; Jean-Pierre Pantani, Saint Jeannet, and Michel Verhaeghe, Vence, all of France, assignors to International Business Machines Corp., Armonk, N.Y.

Filed Jun. 6, 1984, Ser. No. 618,010

Claims priority, application European Pat. Off., Jun. 30, 1983, 83430020

Int. Cl.⁴ H04M *11/00*

U.S. Cl. 179—2 C **8 Claims**



1. A first interface module (**10**), integrated in a silicon substrate provided with isolation walls, disposed between on the one hand a modem having both transmitting and receiving portions and on the other hand a plurality of telephone lines, said interface and said modem being respectively connected to power supplies characterized in that it includes:

line amplifier means (DLL, DSL) of the type controlled by a logic control input, disposed between a first terminal (TX DATA) connected to said transmitting portion of the modem and a first pair of said telephone lines (TXLL, TXSL); said line amplifier means exhibit a high output impedance regardless of whether said power supplies are on or off so as not to perturb the telephone lines;

line receiver means (RLL, RSL) of the type controlled by a logic control input, disposed between a second terminal (RX DATA) connected to said receiving portion of the modem and a second pair of said telephone lines (RXLL, RXSL); said line receiver means exhibiting a very high input impedance and serving to isolate the input from the output of said line receiver means regardless of whether said power supplies are on or off; and

wrap receiver means (WRP) of the type controlled by a logic control input, disposed between said first terminal (TX DATA) and a third terminal (WRP OUT) for testing the modem to the exclusion of the telephone lines and for the stacking of identical modules.

4,607,140

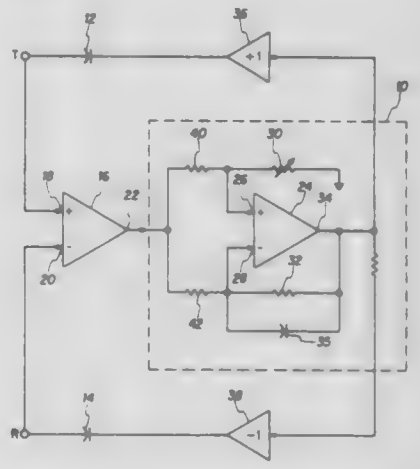
BUILD OUT CAPACITOR CIRCUIT

Ian A. Schorr, Chicago, Ill., assignor to Rockwell International Corp., El Segundo, Calif.

Filed Mar. 5, 1984, Ser. No. 586,532

Int. Cl.⁴ H04B *1/76*

U.S. Cl. 179—16 F **6 Claims**



1. A build out capacitor circuit for use with tip and ring terminals, said circuit comprising:

means for providing an impedance between the tip terminal and ground and between the ring terminal and ground, said means having a first input connected to the tip terminal and a second input connected to the ring terminal and also having first and second outputs, and

said means for providing an impedance having means for amplifying having a gain of K and wherein said impedance is equal to $1/SC(1-K)$ with an equivalent capacitance equal to $C(1-K)$ wherein C is the value of a first or second fixed capacitor; said first fixed capacitor connected between said first output and the tip terminal and said fixed second capacitor connected between said second output and the ring terminal.

4,607,141

ACTIVE NETWORK TERMINATION CIRCUIT

Ian A. Schorr, Chicago, Ill., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Mar. 5, 1984, Ser. No. 586,531

Int. Cl.⁴ H04B *1/76*

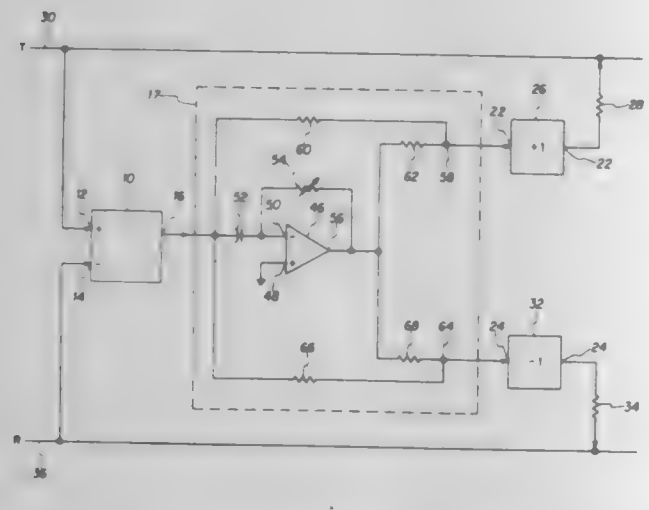
U.S. Cl. 179—16 F **3 Claims**

1. An active network for providing a virtual impedance to tip and ring terminals, said network comprising:

first means for comparing having a noninverting input operatively connected to the tip terminal and an inverting input operatively connected to the ring terminal and having an output;

second means for comparing having a noninverting input operatively connected to ground and an inverting input operatively connected by a fixed capacitor to said output of said first means for comparing, said second means having an adjustable resistance operatively connected between said inverting input of said second means and an output of said second means for comparing;

first and second resistive networks having a tip output and a ring output, respectively, said first resistive network operatively connected between said output of said first means,



said output of said second means and said tip output and said second resistive network operatively connected between said output of said first means, said output of said second means and said ring output, respectively;

amplifier means operatively connected in series with a first resistor between said tip output of said second means and the tip terminal; and

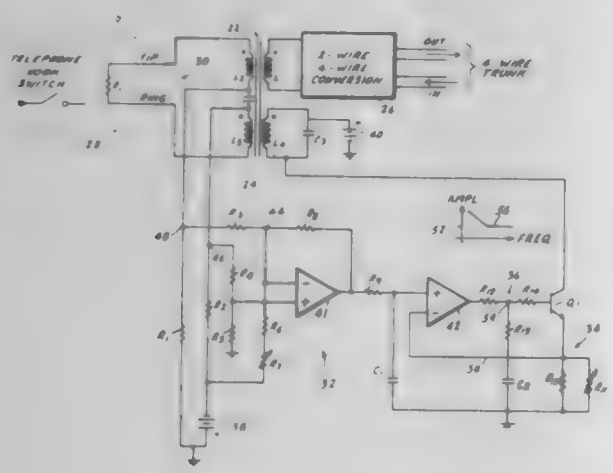
inverter means operatively connected in series with a second resistor between said ring output of said second means and the ring terminal.

4,607,142

TRANSFORMER FLUX COMPENSATION CIRCUIT

Philip T. Martin, Raleigh, N.C., assignor to ITT Corporation, New York, N.Y.

Filed Jul. 27, 1984, Ser. No. 635,035
Int. Cl.⁴ H01F *27/38*
U.S. Cl. 179—16 AA **5 Claims**



1. In a transformer-coupled interface circuit for intereonnecting two-wire and four-wire telephone communication channels, a transformer flux compensation circuit comprising:

a transformer having plural windings magnetically coupled by a common core, a first and a second of said windings being connected to a two-wire telephone channel having tip and ring wires, said first winding being connected between one terminal of a direct current (DC) source of electric power and said tip wire, said second winding being connected between a second terminal of said power source and said ring wire, a third of said windings being a bucking winding, and a fourth of said windings being coupled to said four-wire telephone communication channels, said power source inducing a primary current flow via said first and said second windings into said two-wire channel;

means coupled between said first winding, said second winding, and said power source for sensing a flow of said primary current in said two-wire channel;

means driven by said sending means for applying current to said bucking winding, the amount of current supplied by said applying means being sufficient to induce a flux in said core by said bucking winding which cancels a flux induced in said core by the flow of said primary current in said first and said second windings, thereby permitting a reduction in the size of said core;

a lag-lead stabilization network connected within said applying means for stabilizing the operation of said applying means; and wherein

said applying means comprises a driver amplifier and a transistor driven by said amplifier; and wherein

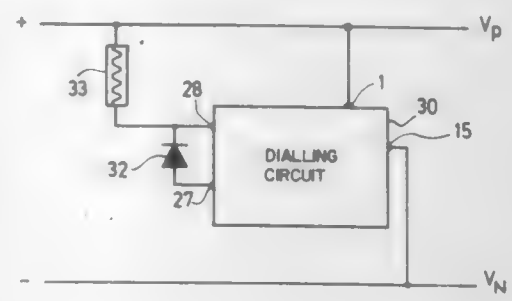
said stabilization network comprises two resistors serially connected along a signal path between said driver amplifier and said transistor, and a capacitive branch grounding a junction of said two resistors.

4,607,143

APPARATUS FOR EFFECTING A REDIALLING INTERRUPTION OF ANY OPTIONAL DURATION

Jean-Claude Prelaz, Paris, and Paul Queudot, Suresnes, both of France, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 8, 1983, Ser. No. 559,514
Claims priority, application France, Dec. 8, 1982, 82 20553
Int. Cl.⁴ H04M *1/27*
U.S. Cl. 179—90 BD **6 Claims**



1. A circuit for interrupting the redialling operation of an automatic redialling circuit for an interval of any optional duration, such redialling circuit being adapted to automatically redial at finite intervals of a duration (t_s),

such redialling circuit comprising: a first supply terminal (**1**) connected to a first direct potential (V_p) exceeding a predetermined threshold direct voltage (V_D); a second supply terminal (**15**) connected to a second direct potential (V_N) which is negative relative to the first potential (V_p); an output terminal (**27**) at which during said finite intervals (t_s) a direct interrupt voltage (V_S) is produced which exceeds said threshold voltage (V_D); and an input terminal (**28**) at which, when the direct voltage applied thereto exceeds said threshold voltage (V_D) the redialling operation of the redialling circuit is interrupted; the current-voltage characteristic of said redialling circuit at said input terminal (**28**) being such that the current increases continuously up to a level corresponding to said threshold voltage (V_D) as the voltage thereat increases from zero to said predetermined threshold voltage (V_d) and then drops substantially to zero for higher voltages;

such interrupting circuit comprising: a uni-directionally conducting element (**32**) connected in the conductive direction between said output terminal and said input terminal; and circuit means connected to said input terminal for maintaining the voltage thereat above said thresh-

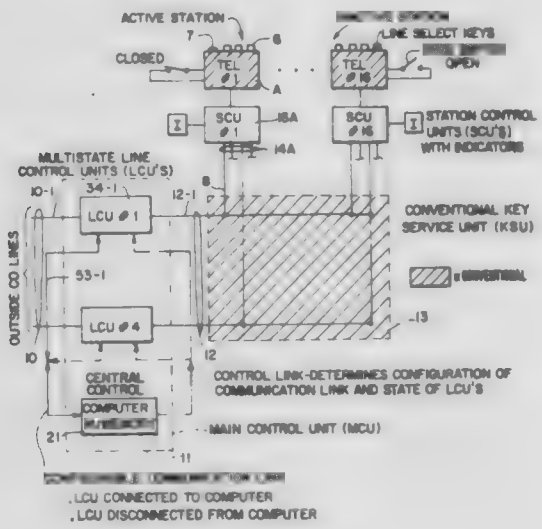
old voltage (V_d) when said interrupt voltage (V_S) is not produced at said output terminal.

4,607,144

APPARATUS FOR ENHANCING THE USE OF ELECTROMECHANICAL KEY TELEPHONE SYSTEMS

Amiram Carmon, and Arie Sonesh, both of Jerusalem, Israel, assignors to Telecomputer Corporation, Ltd., Jerusalem, Israel

Filed Jan. 20, 1984, Ser. No. 572,514
Int. Cl.[4] H04M *1/27*
U.S. Cl. 179—99 H 48 Claims



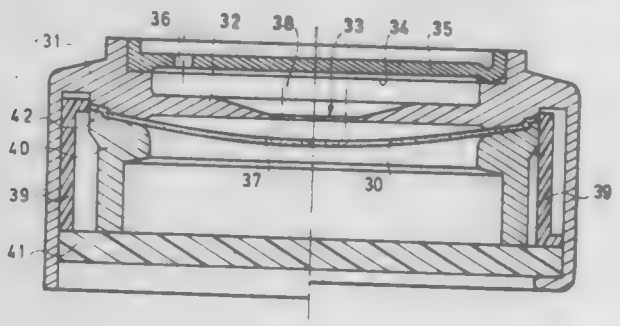
1. Apparatus for enhancing an electromechanical key telephone system having a plurality of stations connected to a plurality of central office (CO) lines through a key service unit (KSU), comprising: a main control unit (MCU), means establishing a direct communication link between said MCU and each telephone station for effecting its addressing by said MCU which is constructed and arranged to intercept incoming calls on the CO lines before such calls reach the KSU for exercising detection and control of said incoming calls, and a station control unit (SCU) operatively associated with each station and positioned between the telephone station and the KSU, the SCU's being constructed and arranged to address said MCU and to be addressed by said MCU.

4,607,145

ELECTROACOUSTIC TRANSDUCER WITH A PIEZOELECTRIC DIAPHRAGM

Pierre Ravinet, Bourg La Reine; Christian Claudepierre, Athis-Mons; Denis Guillou, Colombes, and Francois Micheron, Gif Sur Yvette, all of France, assignors to Thomson-CSF, Paris, France

Filed Mar. 5, 1984, Ser. No. 586,449
Claims priority, application France, Mar. 7, 1983, 83 03697
Int. Cl.[4] H04R *17/00*
U.S. Cl. 179—110 A 11 Claims



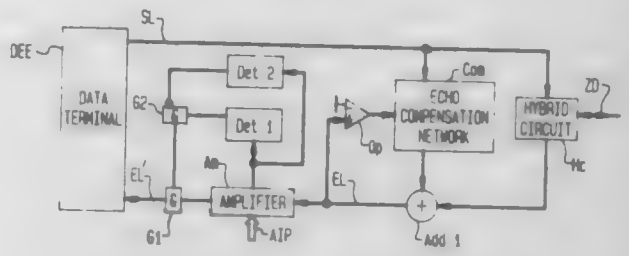
1. An electroacoustic transducer comprising:
a piezoelectric diaphragm having two faces;
electrode means formed on each of said face of said piezoelectric diaphragm for forming a capacitor;
a printed circuit board having an electric circuit means positioned on one side and connecting means on the other side;
an electrically conductive spacer means having a wall;
a conductive crimping body having an orificed wall for encasing and housing said piezoelectric diaphragm, said electrically conductive spacer means such that the wall of said electrically conductive spacer is positioned substantially parallel to said orifice wall of said crimping body, with said piezoelectric diaphragm positioned therebetween, thereby defining the space between said spacer and said piezoelectric diaphragm as a first acoustic area and further defining a second acoustic area as being the space between said crimping body and said piezoelectric diaphragm and wherein said second acoustic space operates as a low-pass acoustic filter; and
embedding means coupled with said piezoelectric diaphragm, said electrically conductive spacer and said printed circuit board for electrically connecting the electrode means, formed on said piezoelectric diaphragm, to said electric circuit means.

4,607,146

CIRCUIT ARRANGEMENT FOR CONTROLLING THE TRANSMISSION CAPACITY OF THE RECEIVING BRANCH OF A TRANSMISSION SYSTEM

Adolf Haass, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Sep. 21, 1984, Ser. No. 653,670
Claims priority, application Fed. Rep. of Germany, Sep. 29, 1983, 3335391; Feb. 22, 1984, 3406407
Int. Cl.[4] H04B *3/20*
U.S. Cl. 179—170.8 5 Claims



5. A transmission system having separate transmitting and receiving branches connected to a two-wire transmission line via a 2-to-4 wire hybrid circuit; having an echo compensation network coupled between said transmitting and receiving branches; and having an amplifier arranged for amplifying a signal in said receiving branch; characterized in that the amplifier includes means for controlling its amplification in digital steps by means of a digital signal and further characterized by a circuit means for controlling the transmission capacity of said receiving branch comprising means for monitoring the digital control signal for the presence of prescribed bit pattern differences in successive amplifier adjustment time periods.

4,607,147

MEMBRANE SWITCH

Yasuichi Ono; Yoshitada Amagishi, and Moritoshi Nakamura, all of Miyagi, Japan, assignors to Alps Electric Co., Ltd., Japan

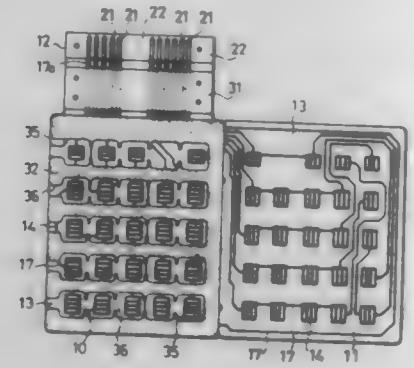
Filed Dec. 6, 1984, Ser. No. 678,985
Claims priority, application Japan, Dec. 10, 1983, 58-189859[U]
Int. Cl.[4] H01H *13/70*
U.S. Cl. 200—159 B 5 Claims

1. A membrane switch, adapted to be electrically and physically connected to a separate printed circuit board having conductive leads formed thereon, comprising:
(a) an insulating substrate layer having first and second electrode sections, a fold-up section connecting said electrode sections, and a connecting lug section extending

from one of said electrode sections, all of said sections being formed integrally with said insulating substrate layer,

(b) said first and second electrode sections having upper and lower electrodes formed thereon, respectively, and said insulating substrate layer being folded along said fold-up section with an insulating spacer interposed between said electrode sections such that said upper and lower electrodes are opposed to each other separated by a space therebetween; and

(c) thin-film conductive layers formed on said insulating substrate layer and extending from said upper and lower electrodes to terminal end portions formed on said connecting lug section,



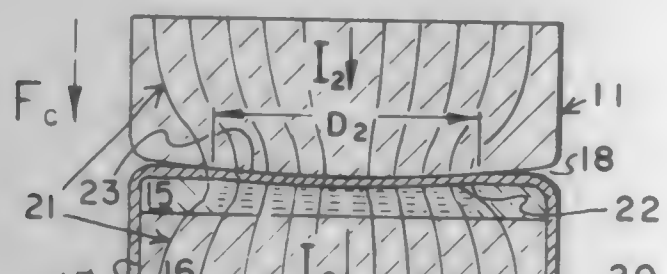
(d) said connecting lug section including said terminal end portions composed of said thin-film conductive layers having respective hot-melt type conductive bonding layers formed thereon, and a hot-melt type insulative bonding layer formed between and around said terminal end portions on said insulating substrate layer, whereby said membrane switch can be electrically and physically connected to said printed circuit board by hot-melt bonding of said conductive bonding layers between said thin-film conductive layers of said membrane switch and said conductive leads of said printed circuit board, and of said insulative bonding layer between said insulating substrate layer and said printed circuit board.

4,607,148

CHANGE OF STATE CONTACT MATERIAL FOR ELECTRIC CIRCUIT INTERRUPTERS

Edward K. Howell, Simsbury, and Ira B. Goldman, Naugatuck, both of Conn., assignors to General Electric Company, New York, N.Y.

Filed Aug. 8, 1985, Ser. No. 763,581
Int. Cl.[4] H01H *1/02*
U.S. Cl. 200—269 **4 Claims**



1. A change of state contact interruption devices comprising:

a base layer of a first metal selected from the group consisting of copper and silver for connection with an electric circuit;

an intermediate layer of a second metal selected from the group consisting of indium, bismuth, tin and lead arranged over said base layer; and

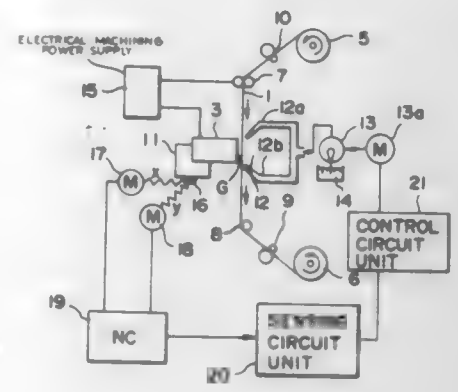
an outer layer of a third metal selected from the group consisting of copper, silver, nickel, molybdenum and tungsten arranged at least partially over said intermediate layer for confining said intermediate layer when said intermediate layer becomes distorted upon transport of said circuit current through said base, intermediate and outer layers.

4,607,149

FLUID DELIVERY RATE CONTROL TW ELECTRICAL MACHINING METHOD AND APPARATUS

Kiyoshi Inoue, Tokyo, Japan, assignor to Inoue-Japax Research Incorporated, Kanagawaken, Japan

Continuation of Ser. No. 403,708, Jul. 30, 1982, abandoned. This application Aug. 14, 1984, Ser. No. 640,682
Int. Cl.[4] B23P *1/08*
U.S. Cl. 219—69 W **5 Claims**



1. A method of electrical-machining an electrically conductive workpiece, comprising the steps of:

(a) axially transporting a continuous wire-electrode from a supply side to a takeup side to cause the wire-electrode to continuously travel through the workpiece while defining a machining gap therewith and supplying to said gap a machining fluid from a source thereof;

(b) passing an electrical machining current through said fluid supplied machining gap between the traveling wire-electrode and the workpiece to electroerosively remove material from the latter while relatively displacing the workpiece and the traveling wire-electrode transversely to the axis of the wire-electrode to continuously advance material removal along a programmed cutting path, said path having a predetermined shape corresponding to a desired contour to be formed in the workpiece;

(c) determining the shape of said path; and

(d) varying the rate of supply of said machining fluid from said source toward said machining gap in step a) in accordance with the shape of said programmed cutting path as determined in step (c).

4,607,150

LASER SPOT WELDER

Robert D. Bannister, Loveland, Ohio, assignor to Cincinnati Milacron Inc., Cincinnati, Ohio

Filed May 3, 1984, Ser. No. 606,791
Int. Cl.[4] B23K *26/00*
U.S. Cl. 219—121 LC **10 Claims**

1. In combination with an industrial robot, having a wrist end effector movable through multivector spatial orientations, an improved material treating apparatus, wherein the improvement comprises:

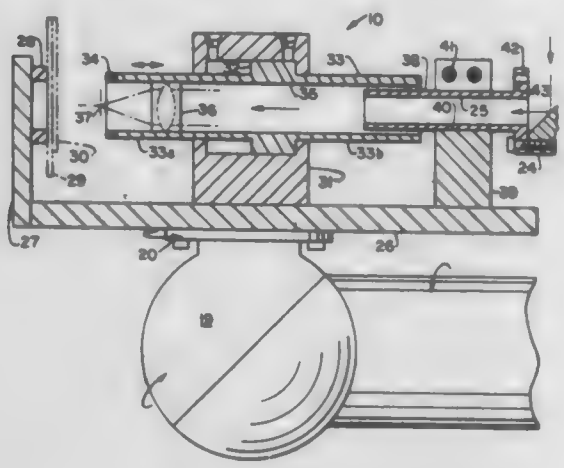
(a) a base frame;

(b) means for mounting said frame to said movable end effector;

(c) a piston, linearly movable in a cylinder affixed to said base frame;

(d) a hollow piston rod member affixed to said piston, having a laser beam conductor bore aligned for focusing a laser beam at a target;

(e) a compression member carried by said piston rod member, to positions proximal and distal to said target;
(f) a laser aperture coaxially aligned with said laser beam conductor bore; and



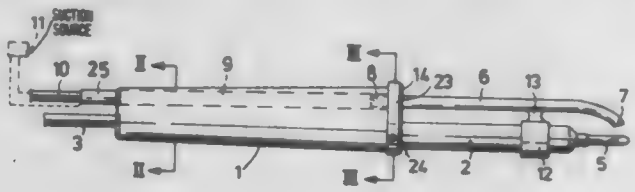
(g) laser beam source means for directing a laser beam into said laser aperture, through said conductor bore, to said target.

4,607,151

SOLDERING IRON WITH FUME SUCTION TUBE

Christer Kihlstrom, Skara, Sweden, assignor to Lectrostatic Marknads AB, Skara, Sweden

Filed Mar. 15, 1985, Ser. No. 711,684
Claims priority, application Sweden, Apr. 5, 1984, 8401915
Int. Cl.[4] H05B *1/00;* B23K *3/00;* B08B *15/04*
U.S. Cl. 219—230
7 Claims



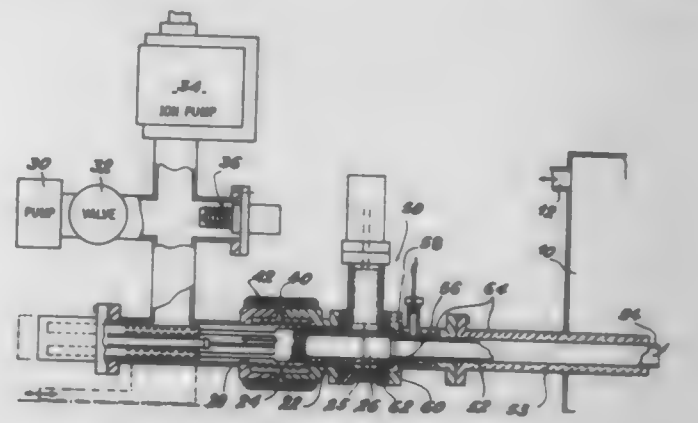
1. A soldering iron, comprising:
(a) an elongate handle (1),
(b) an electrical heating element (2) mounted to one end of the handle and extending outwardly therefrom,
(c) an outer metal casing surrounding the heating element,
(d) a soldering tip (5) mounted to an outer end of the heating element,
(e) a through channel (9) defined within and extending through the handle,
(f) a flexible plastic hose (10) removably disposed in the channel,
(g) a metal suction tube (6) having an outer, nozzle end (7) disposed proximate the soldering tip and an inner end (8) removably coupled to one end of the hose proximate said one end of the handle,
(h) a suction source (11) coupled to another end of the hose remote from said one end of the handle, and
(i) metallic heat transfer means (12, 13) disposed between and in intimate contact with the heating element metal casing and the metal suction tube for heating the suction tube to prevent the precipitation of resinous soldering fumes therein, such fumes instead precipitating in the flexible plastic hose which may be easily removed and cleaned.

4,607,152

VACUUM EVAPORATION DEVICE

Michel Allovon, 6 rue A.J. Caron, 94110 Arcueil, and Leon Goldstein, 32 rue de La Monesse, 92310 Sevres, both of France

Filed Jul. 26, 1984, Ser. No. 634,434
Claims priority, application France, Jul. 26, 1983, 83 12329
Int. Cl.[4] C23C *14/26;* H01L *21/203;* H05B *3/06*
U.S. Cl. 219—390
6 Claims



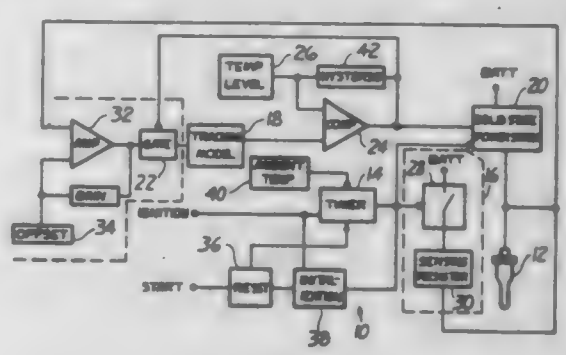
1. A vacuum evaporation device incorporating a main treatment enclosure connected to an auxiliary chamber containing a material evaporation cell, said cell being fixed to a tight bellows displacement member able to displace the cell between a first advanced position towards a main enclosure and a second retracted position, a sealing valve provided with a slide being provided for insulation, in said second position, of the main enclosure from the auxiliary chamber, whereby the material of the evaporation cell can thus be changed without placing the main enclosure under atmosphere again, wherein the device further comprises a fixed heating tube connecting the main elcosure to the auxiliary chamber, said tube having a first end engaged in the main enclosure and a second end issuing into the auxiliary chamber, said second end being provided with an end piece, made from a thermally insulating material ensuring mechanical continuity and thermal insulation with the support part and able to bearingly receive the evaporation cell when the latter is in the advanced position, the slide of the sealing valve being inserted between the said end piece and the evaporation cell when the latter is in the retracted position, travel of the cell between these end positions and consequently travel of the bellows being limited to the space necessary for closing the valve.

4,607,153

ADAPTIVE GLOW PLUG CONTROLLER

Leoncio T. Ang, and Robert E. Weber, both of Newport News, Va., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Filed Feb. 15, 1985, Ser. No. 701,908
Int. Cl.[4] H05B *1/02*
U.S. Cl. 219—497
4 Claims



1. A glow plug controller for controlling the operating temperature of positive temperature coefficient glow plugs having fast thermal time constant characteristics, said controller comprising:

means for generating a predetermined voltage level wherein said level represents the operating temperature of the glow plugs;

sensing means operatively coupled to the glow plugs and responsive to the temperature of the glow plugs for generating an electrical signal having an amplitude directly proportional to said temperature;

tracking model means having a resistor and capacitor electrically connected to a source of power for alternately charging said capacitor to a voltage level equal to said predetermined voltage level and then discharging said capacitor to a voltage level equal to the amplitude of said sensing means, said tracking means having a charging time constant equal to or faster than the thermal time constant characteristic of the glow plugs;

comparator means responsive to said capacitor charging to said predetermined voltage level for generating a first level signal and responsive to said capacitor voltage level equal to said predetermined voltage level for generating a second level signal;

gate means responsive to said second level signal for discharging said capacitor to said amplitude of said sensing means; and

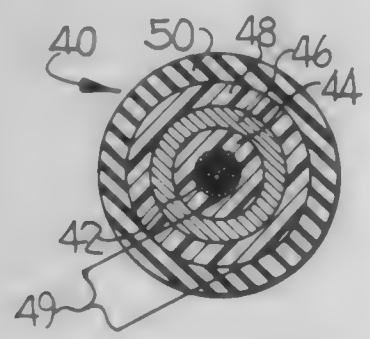
power driver means electrically connected to a source of power and operable to supply the glow plugs with electrical power in response to said first level signal and to remove said electrical power in response to said second level signal.

4,607,154

ELECTRICAL HEATING APPARATUS PROTECTED AGAINST AN OVERHEATING CONDITION AND A TEMPERATURE SENSITIVE ELECTRICAL SENSOR FOR USE THEREWITH

Edwin R. Mills, Wake County, N.C., assignor to Fieldcrest Mills, Inc., Eden, N.C.

Filed Sep. 26, 1983, Ser. No. 535,981
Int. Cl.[4] H05B *1/02*
U.S. Cl. 219—505 **29 Claims**



1. An electrical heating apparatus protected against an overheating condition and comprising

an electrical heating means for generating heat in proportion to the amount of electrical current flowing therethrough, said heating means providing essentially all of the heat for the apparatus;

an electrical sensor in a thermally responsive relationship with respect to said electrical heating means for monitoring the heat generated by said electrical heating means and for providing a signal in response to an overheating condition, said electrical sensor comprising a coextruded pair of spaced parallel flexible elongate conductors of electricity, said flexible conductors comprised of electrically conductive plastic, and a flexible elongate temperature sensitive electrical impedance material having predetermined temperature coefficient impedance characteristics along its entire length, said temperature sensitive material being coextruded parallel and coextensive with and in electrical contact with said flexible conductors along the length of said flexible conductors for monitoring the temperature at any point along the length of said temperature sensitive material by controlling the flow of electricity between said flexible conductors; and

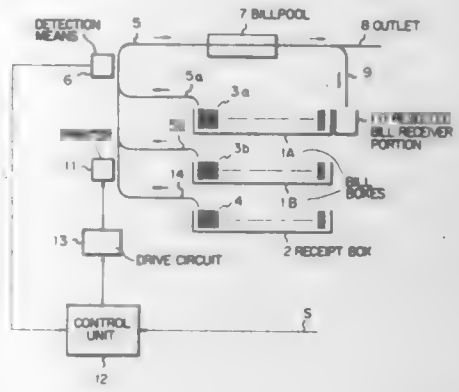
control means associated with said electrical heating means and said electrical sensor for controlling the electrical current flowing through said electrical heating means in response to a predetermined signal from said electrical sensor.

4,607,155

APPARATUS FOR HANDLING BILLS

Manabu Nao, Ebina; Shinichi Shimojo, Kokubunji, and Kazushi Watari, Yokohama, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Jun. 27, 1984, Ser. No. 625,202
Claims priority, application Japan, Jun. 27, 1983, 58-114181
Int. Cl.[4] G06F *15/30*
U.S. Cl. 235—379 **25 Claims**



1. An apparatus for dealing with bills comprising:

a plurality of bill boxes, each of which contains a different denomination of bills, disposed vertically one above the other;

means for withdrawing bills one by one from each of said bill boxes;

a bill pool, operatively connected to said plurality of bill boxes, for temporarily storing the bills fed from said bill boxes;

means for discharging the bills stored in said bill pool through a discharge portion;

means for reading a memory medium introduced into the apparatus by a user;

means for inputting a desired amount to be withdrawn;

means for preventing discharge of the bills in the bill pool to be discharged and for guiding the bills to a rejected bill receiving portion within the apparatus;

means for issuing a receipt, disposed vertically below a lowermost bill box; and

a common conveyor route provided in the path of said plurality of bill boxes, for conveying bills from each of said plurality of bill boxes to said bill pool, an end portion of an uppermost bill box used as a rejected bill receiving portion, said receipt issuing means connected to said common conveyor route so that the receipt is transported to said bill pool through said common conveyor route and discharged from said discharge portion together with the bills.

4,607,156

SHOCK-RESISTANT SUPPORT STRUCTURE FOR USE IN PORTABLE LASER SCANNING HEADS

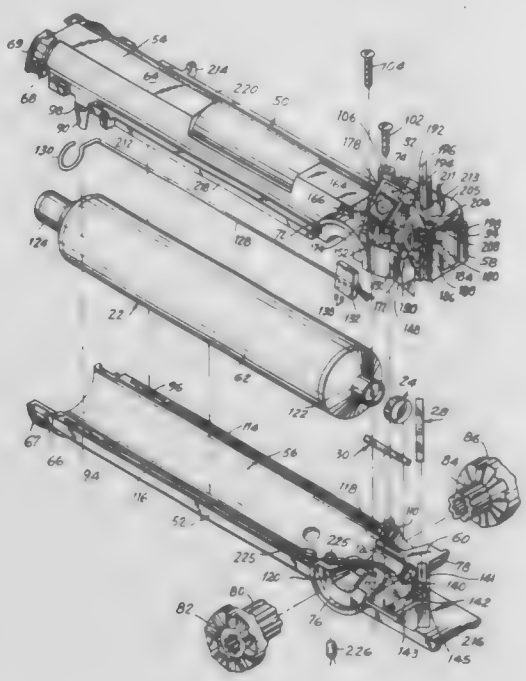
Alexander L. E. Koppenaal, Voorburg, and Kees R. Kooijmans, Zoetermeer, both of Netherlands, assignors to Symbol Technologies, Inc., Bohemia, N.Y.

Filed Mar. 26, 1984, Ser. No. 593,552
Int. Cl.[4] G06K *7/10*
U.S. Cl. 235—472 **25 Claims**

1. In a laser scanning system for reading bar code symbols, a shock-resistant optical support structure for use in a laser scanning head of the type having a laser component for gener-

ating a laser light beam, an optical component for optically modifying and directing the laser light beam along a light path toward a reference plane located exteriorly of the head, and a scanning component for scanning the laser light beam over a field of view across a bar code symbol located in the vicinity of the reference plane, said support structure comprising:

(a) support means including a pair of support elements for readily removably mounting the laser component, the optical component and the scanning component at optically-precise locations relative to one another thereon in an



operative optically-aligned assembly, said support elements having means for positioning and supportably maintaining the components at said optically-precise locations to facilitate rapid assembly, and for re-positioning the components at said optically-precise locations to facilitate field maintenance; and

(b) connecting means for readily detachably connecting the support elements to each other, whereby the readily removable mounting of the components and the readily detachable connection of the support elements facilitate the assembly and field maintenance.

4,607,157

AUTOMATIC FOCUS OFFSET CORRECTION SYSTEM

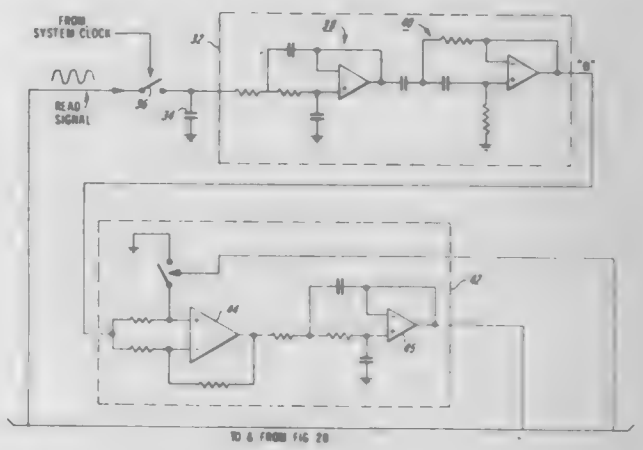
Ronald A. Millar, Sunnyvale, and Charles B. Abate, San Jose, both of Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Feb. 9, 1984, Ser. No. 578,399
Int. Cl.⁴ G01J *1/20*
U.S. Cl. 250—201 **2 Claims**

1. In an optical system including a first moveable member and a second moveable member, a closed loop arrangement for effecting movement of said first member relative to said second member in accordance with any positional error between said first and second members, said closed loop servo arrangement including first means for producing a control signal indicative of the relative positions of said first and second members, and second means for moving said first member relative to said second member in accordance with said control signal,

the improvement comprising:

third means for producing a low frequency signal, fourth means for injecting said low frequency signal into said closed loop servo arrangement, fifth means coupled to said closed loop servo arrangement for producing a dc correction signal proportional to the positional error be-



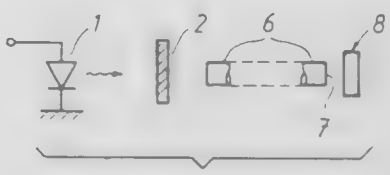
tween said first and second members, and sixth means for injecting said dc correction signal into said closed loop.

4,607,158

TEMPERATURE COMPENSATED LIGHT-GENERATING DEVICE

Christer Ovren, Västerås, Sweden, assignor to ASEA Aktiebolag, Västerås, Sweden

Filed Dec. 27, 1983, Ser. No. 565,339
Claims priority, application Sweden, Dec. 30, 1982, 8207510
Int. Cl.⁴ G01D *5/26;* G02B *5/20;* H01J *3/00*
U.S. Cl. 250—216 **9 Claims**



1. A light-generating device comprising a temperature-dependent light emitting element in combination with an optical filter, wherein

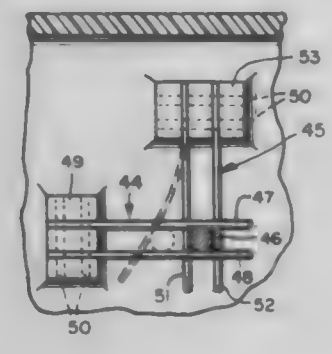
the optical filter has such a transmission curve, as a function of wavelength, that a substantially temperature-independent output signal is obtained for the emitted signal from the device after light from the element has passed through the filter.

4,607,159

OPTICAL JOYSTICK CONTROLLER WITH INTERSECTING SPRING MEANS

Larry E. Goodson, Blaine, and Charles E. Dellinger, Knoxville, both of Tenn., assignors to North American Philips Consumer Electronics Corp., New York, N.Y.

Filed Dec. 27, 1983, Ser. No. 566,098
Int. Cl.[4] G01V *9/04*
U.S. Cl. 250—221 1 Claim



1. A joystick controlled apparatus for producing an electrical control signal in response to user activation of said joystick, said apparatus having light emitting means emitting light along a predetermined path and light detecting means positioned along said predetermined path for furnishing said electrical control signal varying in accordance with light falling thereon, the improvement comprising:

a housing;

mounting means in said housing for pivotably mounting a cooperating member received therein;

retaining means permitting simultaneous motion in a first and second mutually perpendicular direction of a member inserted therein; and

a joystick having a first end adapted for user activation, a pivoting member connected to said first end for cooperating with said mounting means under control of said user activation, an elongated member connected to said pivoting member and extending therefrom into said path of said light for blocking light from said light detecting means in correspondence to said user activation, said second elongated member further having a retained end portion extending into said retaining means; and

wherein said retaining means comprises a first and second pair of intersecting springs arranged at right angles to one another thereby forming an intersection for receiving said retained end of said second elongated member and returning said retained end and therefore said joystick to a predetermined starting position in the absence of said user activation.

4,607,160

NON-CONTACT SWITCHING DEVICE

Takahiro Sakakino, Nagaokakyo, Japan, assignor to Omron Tateisi Electronics Co., Kyoto, Japan

Filed Sep. 20, 1983, Ser. No. 534,099
Claims priority, application Japan, Sep. 21, 1982, 57-143672[U]; Sep. 21, 1982, 57-143673[U]; Sep. 21, 1982, 57-165298
Int. Cl.[4] G02B *5/14*
U.S. Cl. 250—227 4 Claims

1. A non-contact switching device comprising a housing,

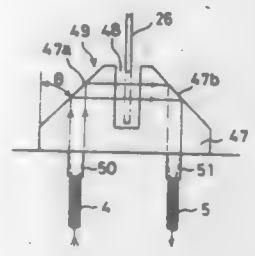
light path switching means within the housing,

actuator means disposed in the housing for transferring an external mechanical force to said light path switching means,

light entrance means disposed on the housing connectable to a first optical fiber for guiding light transferred from an external light source through the first optical fiber to said light path switching means, and

light exit means disposed on the housing connectable to a second optical fiber for guiding light from said light path switching means to the second optical fiber,

said light path switching means being associated with said actuator means so as to switch a light path from said light entrance means to said light exit means through the light path switching means,



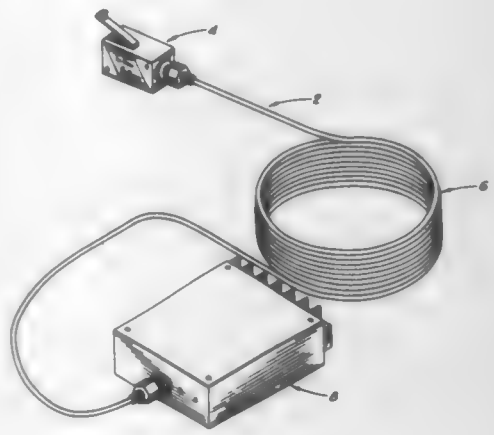
said light path switching means having a single stationary piece prism member for guiding light from said light entrance means to said light exit means and having an opaque shutter member coupled to said actuator means for a vertical movement, said prism member having a spacing for insertion into the light path of said shutter member in response to an external force applied to the actuator means.

4,607,161

FIBEROPTIC SWITCH SYSTEM

John C. Anderson, Houston; Ralf Eberlein, Missouri City, and Morris J. Davies, Stafford, all of Tex., assignors to Fiberdynamics, Inc., Houston, Tex.

Filed Oct. 11, 1983, Ser. No. 540,926
Int. Cl.[4] H01J *5/16*
U.S. Cl. 250—227 18 Claims



1. A fiberoptic switch system comprising:

a light source means;

switch means responsive to external stimulus;

fiberoptic means for transmitting light from said light source means to said switch means, said switch means for reflecting said light from said fiberoptic means, said switch means comprising:

a housing;

a receptacle mounted to said housing for receiving said fiberoptic means;

a reflective surface within said housing; and

leaf spring means connected to said reflective surface for changing the relative prosition of said reflective surface with respect to said fiberoptic means, said leaf spring means responsive to said external stimulus, said leaf spring means for imparting snap action movement to said reflective surface;

detector means arranged so as to receive light from said fiberoptic means, said detector means being responsive to said light from said fiberoptic means; and

output means electrically connected to said detector means

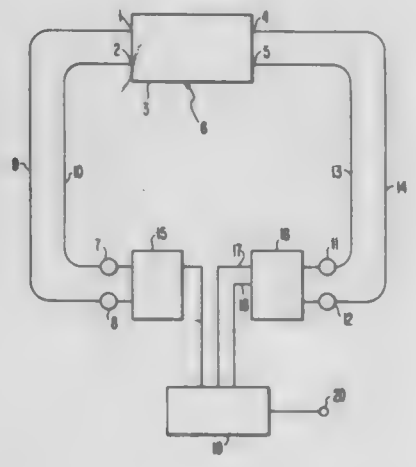
for producing a signal relative to said light as received by said detector means.

4,607,162

SENSING APPARATUS FOR MEASURING A PHYSICAL QUANTITY

Yukio Sai, Fuchu, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Sep. 12, 1983, Ser. No. 531,086
Claims priority, application Japan, Sep. 30, 1982, 57-171710
Int. Cl.⁴ H01J *5/16, 3/14, 40/14*
U.S. Cl. 250—227 **6 Claims**



1. A sensing apparatus for measuring a physical quantity with a detecting area comprising:

means for producing a first input light signal and a second input light signal, each of said signals having the same wavelength;

a first transmitting means and a second transmitting means for separately transmitting said first input light signal and said second input light signal, respectively to a detector means for detecting the physical quantity with said detecting area;

said detector means having converting means for converting said first input light signal to a first output light signal and a second output light signal and for converting said second input light signal to a third output light signal and a fourth output light signal, each output light signal having a transmission path through said detecting area where said output light signals are affected by the physical quantity;

measuring means coupled to said detector means for receiving each of said output light signals and measuring said physical quantity;

third transmitting means for transmitting said first output light signal and said fourth output light to said measuring means; and

fourth transmitting means for transmitting said second output light signal and third output light signal to said measuring means;

said measuring means measuring said physical quantity as a function of the ratio of said first output light signal to said second output light signal and the ratio of said third output light signal to said fourth output light signal.

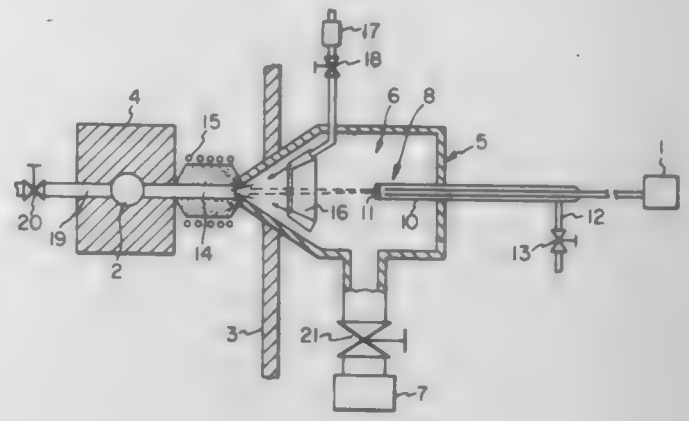
4,607,163

DEVICE FOR COUPLING A LIQUID CHROMATOGRAPH AND A MASS SPECTROMETER

Tokuo Mizuno, Tokyo, Japan, assignor to JEOL Ltd., Tokyo, Japan

Filed Dec. 14, 1984, Ser. No. 681,603
Claims priority, application Japan, Dec. 19, 1983, 58-239459
Int. Cl.⁴ B01D *59/44*
U.S. Cl. 250—281 **8 Claims**

1. A device for coupling a liquid chromatograph and a mass spectrometer comprising a low-pressure chamber in communication with means for evacuating the chamber, an exit nozzle opening into said chamber for ejecting the effluent from the chromatograph as a jet, a connecting passage opening into said chamber for conveying the jet of the effluent emitted from the nozzle into the ionization chamber of the mass spectrometer, and a means for producing a flow of gas which moves along



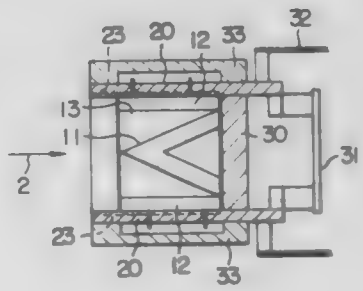
the inner walls of the low-pressure chamber in the vicinity of the connecting passage and along the walls of the connecting passage in such a way that the jet of the effluent is enveloped in the gas flow and the effluent does not contact the walls.

4,607,164

RADIATION DETECTING APPARATUS

Shigeo Kubota, Kokubunji; Minoru Yoshida, Tokyo; Toshio Takahashi, Hachioji; Hideki Kohno, Tokyo; Takayuki Hayakawa, Hachioji; Sadao Matuoka, Kanagawa; Shigeo Kato, Mitaka, and Takaji Suzuki, Kashiwa, all of Japan, assignors to Hitachi, Ltd. and Hitachi Medical Corporation, both of Tokyo, Japan

Filed Jul. 26, 1983, Ser. No. 517,402
Claims priority, application Japan, Jul. 28, 1982, 57-130340; Oct. 22, 1982, 57-184483
Int. Cl.⁴ G01T *1/20*
U.S. Cl. 250—363 S **12 Claims**



1. A radiation detecting apparatus comprising:

a pair of substrates disposed face to face, a plurality of photoetched grooves provided in each of said substrates at a predetermined interval;

radiation shielding plates each inserted into a corresponding one of said grooves;

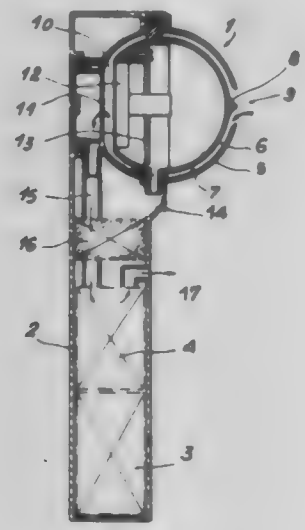
scintillators each mounted on a corresponding one of said radiation shielding plates;

photodetectors each provided on at least one of said substrates between adjacent ones of said grooves; and a wiring pattern provided on at least one of said substrates for taking out electric signals from said photodetectors.

4,607,165
PROCESS AND APPARATUS FOR DETECTING ATMOSPHERIC CONTAMINATION BY ALPHA PARTICLE AEROSOLS

Patrick Burghoffer, Lognes; Jean Charuau, Orsay; Marc Merelli, Gif sur Yvette, and Raymond Prigent, Marcoussis, all of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Jun. 8, 1984, Ser. No. 618,580
Claims priority, application France, Jun. 10, 1983, 83 09685
Int. Cl.[4] G01T *1/16*
U.S. Cl. 250—435 **2 Claims**



1. A process for the detection of atmospheric contamination by alpha particle aerosols by eliminating the background noise due to radon daughter nuclei, consisting of the steps of collecting, by circulation of the atmospheric air, the alpha particles to be detected on a filter placed in front of a detection and counting system, wherein there is discrimination in said collecting between the alpha particles of a first grain size present in the atmosphere coming from a polluting source and which it is wished to detect and count, and the alpha particles of a second and third grain size constituting the background noise and which are normally present in the atmosphere, on the basis of their different grain sizes, wherein the discrimination is carried out in two stages, namely:

a first elimination of the free fraction of the radon daughter nucleus alpha particles of said second grain size by passing the atmospheric air to be monitored into a space defined by two parallel walls before it reaches the filter;

a second elimination of the fraction of the radon daughter nucleus alpha particles fixed to fine neutral particles of said third grain size, by passing the atmospheric air through a filter having capillary pores, which permits the passage of particles of said third grain size with a grain size below 1 micron and up to approximately 5.10^{-2} micrometer.

4,607,166
MEANS FOR LOCATING AN ULTRA-PRECISION POSITIONING OF A TABLE

Akira Tamaki, Maebashi, Japan, assignor to Nippon Seiko Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 682,055, Dec. 14, 1984. This application Dec. 3, 1985, Ser. No. 804,065
Claims priority, application Japan, Jan. 18, 1984, 59-4184
Int. Cl.[4] G21K *5/10*
U.S. Cl. 250—442.1 **3 Claims**

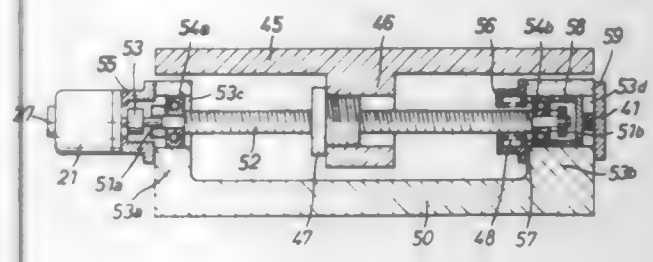
1. Means for locating an ultra-precision positioning of a table, comprising:

a case body;

a movable table disposed upon a top of said case body;

a screw shaft means rotatable by a motor and supported by bearing means slidably supported on said case body, said screw shaft means being disposed in parallel with a moving direction of said table;

a nut means engaged with said screw shaft means and supported by said table for axially roughly moving said table upon rotation of said screw shaft means; and

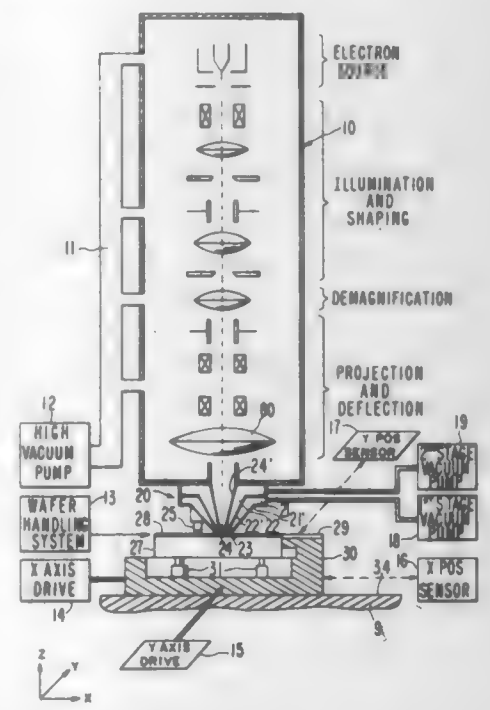


a piezoelectric element on said case body between said bearing means and case body biased by a spring means which is extensible minutely in an axial direction relative to said table to impart fine movement to said table through axial movement or said nut means enabling an ultra-precision positioning of said table.

4,607,167
CHARGED PARTICLE BEAM LITHOGRAPHY MACHINE INCORPORATING LOCALIZED VACUUM ENVELOPE

Paul F. Petric, Swampscott, Mass., assignor to Varian Associates, Inc., Palo Alto, Calif.

Continuation of Ser. No. 435,178, Oct. 19, 1982. This application Feb. 12, 1985, Ser. No. 701,439
The portion of the term of this patent subsequent to Jul. 9, 2002, has been disclaimed.
Int. Cl.[4] H01J *37/18, 33/02*
U.S. Cl. 250—492.2 **13 Claims**



1. Charged particle beam lithography apparatus for treating a semiconductor wafer or a mask workpiece surface comprising a vacuum envelope having an aperture, a charge particle beam source located in the vacuum envelope for deriving a charged particle beam that is directed through the aperture as a treating beam for the workpiece surface, means for deflecting the charged particle beam while it is in the envelope, means for maintaining only a portion of the workpiece surface in approximate registration with the aperture in a vacuum such that the beam can propagate from the source to the workpiece surface portion exclusively in a vacuum, said maintaining means including: (a) means for holding the workpiece so that all of the workpiece except said workpiece surface portion is in an ambient environment not subject to the vacuum; (b) means for preventing contact between the envelope and the workpiece so that a gap is formed between the workpiece surface and the

envelope whereby the workpiece surface can move generally transversely of the beam propagation direction to enable portions of the workpiece surface to be treated in vacuo by the beam at differing times, and (c) vacuum pump means foring a graded vacuum seal in the gap generally transversely of the beam propagation direction for minimizing degradation of the vacuum through the gap; means for controlling the length of the gap to a predetermined range without contacting the workpiece; and means for providing a curtain of clean gas at approximately atmospheric pressure completely surrounding the vacuum in the gap for substantially preventing atmospheric air and contaminants therein from entering the vacuum in the gap and envelope, the envelope including a tip having a central passage defining the aperture and a concentric passage connected to the vacuum pump means for forming the graded vacuum seal, the tip terminating in a plane forming one side of the gap, the passages terminating at said plane, at least one of the passages having a cross-sectional area that increases as the distance of said one passage increases from said plane.

4,607,168

PHOTOSENSOR ARRAY DEVICES

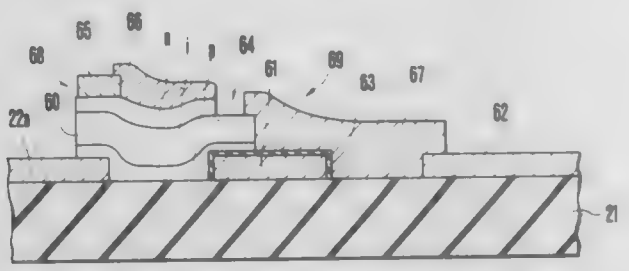
Ryoji Oritsuki, Mobara; Susumu Saito, Chousei, and Hiromi Kanai, Chiba, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 6, 1983, Ser. No. 511,333

Claims priority, application Japan, Jul. 9, 1982, 57-118584; Jul. 9, 1982, 57-118587

Int. Cl.⁴ H01J *40/14*

U.S. Cl. 250—578 **4 Claims**



1. A photosensor array device comprising:

an insulating substrate;

a plurality of photo-diodes formed on said substrates; and

a plurality of insulated-gate thin film field-effect transistors formed on said insulating substrate, and each coupled to a respective one of said photo-diodes so that the conduction path between the source and drain path of each of said transistors is coupled in series with its respective photo-diodes;

said photo-diode and said transistors including a plurality of amorphous silicon islands each island being common to a coupled photo-diode transistor pair.

4,607,169

ARTESIAN WELL GENERATED POWER SYSTEM

Joseph R. Donnelly, Jr., 22 Mariner Cir., West Islip, N.Y. 11795

Filed Jan. 3, 1985, Ser. No. 688,523

Int. Cl.⁴ F03B *13/00, 13/105*

U.S. Cl. 290—54 **3 Claims**

1. An energy supply system for a building having an outside source of AC electricity comprising:

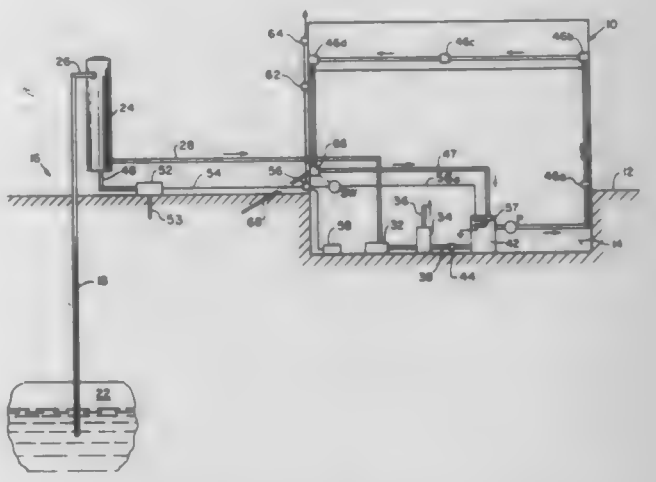
a. an artesian well for supplying water under pressure;

b. a storage tank above ground level for receiving water from said well continuously;

c. first means for drawing water from said tank for supplying both the normal domestic needs of said building and a closed hot water circulating system, the latter comprising a boiler, electric heating element, a series of convectors, and piping means for supplying said convectors with hot water from said boiler and returning said water to said boiler;

d. second means for drawing water from said tank for generating electricity from the head of said water in said tank;

e. battery means being charged by electricity from said generating means for providing emergency electric power in said building;



f. means for utilizing generated electricity to energize said heating element in said boiler when required and returning any excess electricity to said outside source; and

g. means to bypass said boiler with the return water from said convectors when cooling is required in said building so that water at substantially well water temperature is flowing continuously through said convectors for cooling the building.

4,607,170

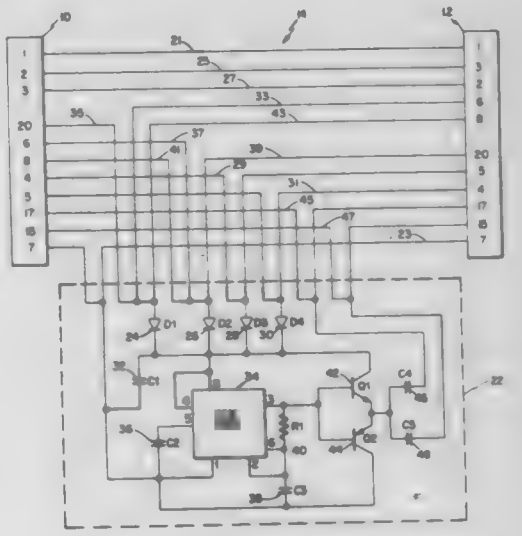
DATA COMMUNICATION INTERCONNECT DEVICE

Miles X. Wickman, Edgewater, Md., assignor to Digitel, Inc., Edgewater, Md.

Filed Mar. 1, 1985, Ser. No. 707,456

Int. Cl.⁴ H01B *7/30;* **H04B** *3/00;* **H01R** *13/46*

U.S. Cl. 307—147 **7 Claims**



1. A unitary interconnection device for interconnecting digital data handling equipment comprising a pair of connectors each having multiple terminal connection means, a multiple conductor cable connecting said connectors, and an active signal circuit connected to said terminal connection means, said active signal circuit including means for generating a timer or clock signals for timing or clocking the flow of data signals through said interconnection device and a diode-capacitor network for providing power to said timing or clock signal generating means.

4,607,171

ELECTRONIC SWITCHING APPARATUS

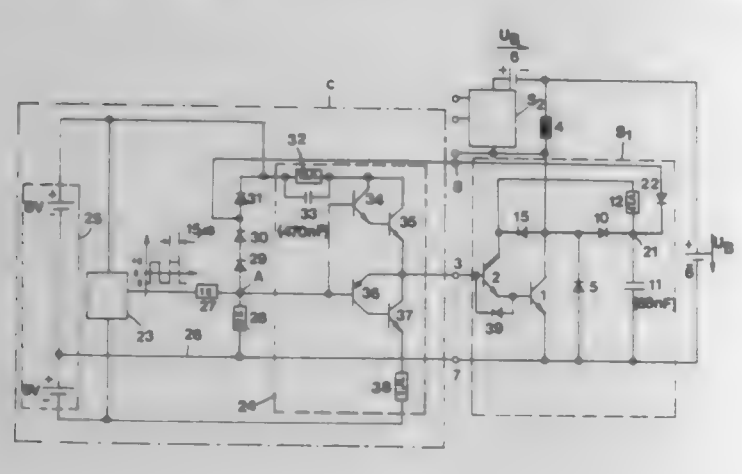
Kjeld Hellegaard, Bjerringbro, Denmark, assignor to Danfoss A/S, Nordborg, Denmark

Filed Aug. 30, 1984, Ser. No. 645,782

Claims priority, application Fed. Rep. of Germany, Sep. 17, 1983, 3333653

Int. Cl.[4] H03K *7/26, 3/33*

U.S. Cl. 307—270 5 Claims



1. Electronic switching apparatus, comprising, a power transistor operable as a switching device, said transistor having collector and base elements and an emitter, first diode means and capacitor means in series with the annode of said first diode means being connected to said transistor collector element and said capacitor being connected to said transistor emitter, resistor means having one end thereof connected to the junction of said first diode means and said capacitor means and the other end thereof connected to one of said transistor elements, said capacitor means being chargeable through said diode means during the off period of said transistor, signal generating means for producing a control signal at the output thereof, control signal transmission means beteen said control signal output and said power transistor base element, and anti-saturation circuit means including second diode means between said control signal output and said junction of said first diode means and said capacitor poled in the direction of said junction, said anti-saturation means being operable upon said transistor being turned on to reduce the potential difference between said transistor collector and base elements to limit the extent to which said transistor goes into saturation.

4,607,172

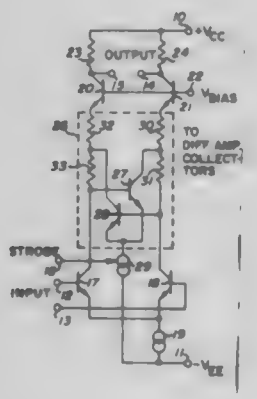
BIPOLAR STROBED TRANSISTOR LATCH FOR A HIGH GAIN COMPARATOR

Thomas M. Frederiksen, San Jose, and Daniel D. Culmer, Santa Clara, both of Calif., assignors to National Semiconductor Corporation, Santa Clara, Calif.

Filed Feb. 13, 1984, Ser. No. 579,636

Int. Cl.[4] H03K *3/35, 3/356*

U.S. Cl. 307—291 7 Claims



1. A differential amplifier and latch combination comprising:

first and second power supply terminals connectable to a source of operating power;

first and second transistors having their emitters coupled together and returned through a first constant current device to said second power supply terminal, their bases coupled to a source of input signal, and their collectors coupled via a cascode load to said first power supply terminal;

third and fourth transistors, each having an emitter, a base, and a pair of collector contacts having appreciable resistance therebetween;

means coupling the pair of collectors in said third transistor in series between said collector of said first transistor and said cascode load;

means coupling the pair of collectors in said fourth transistor in series between said collector of said second transistor and said cascode load;

means coupling the emitters of said third and fourth transistors together and to a second constant current device which couples said emitters to said second power supply terminal;

means for cross coupling said bases of said third and fourth transistors to the opposing collectors, thereby creating a latch; and

means for switching said second constant current device on and off in response to a strobe signal input whereby said third and fourth transistors can be turned on to activate said latch and off to disable said latch.

4,607,173

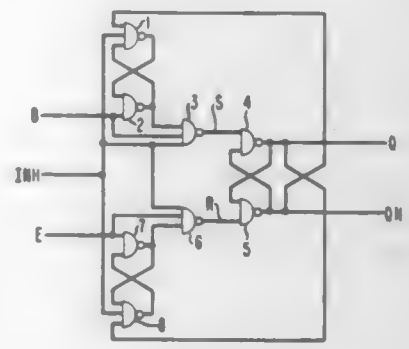
DUAL-CLOCK EDGE TRIGGERED FLIP-FLOP CIRCUITS

George Knoedl, Jr., Mt. Pleasant, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Mar. 14, 1984, Ser. No. 589,991

Int. Cl.[4] H03K *3/037*

U.S. Cl. 307—291 10 Claims



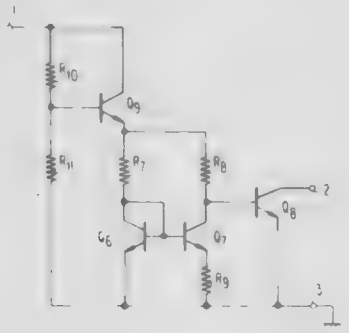
1. In a circuit wherein one set of outputs responds to two independent inputs without giving rise to indeterminate states, the combination comprising an output flip-flop having set and reset terminals and a pair of output terminals, a first pair of gates cross-coupled to form a first trigger flip-flop, said first trigger flip-flop having first and second inputs and an output; a second pair of gates cross-coupled to form a second trigger flip-flop, said second trigger flip-flop having first and second inputs and an output; a first gate having an input, said first gate being coupled from the output of the first trigger flip-flop to the set terminal of the output flipflop, the first input of the first trigger flip-flop also being coupled to the input of said first gate; a second gate having an input, said second gate being coupled from the output of the second trigger flip-flop to the reset terminal of the output flip-flop, the first input of the second trigger flip-flop also being coupled to the input of said second gate; and feedback means cross-coupling each output terminal to the second input of a respective one of said trigger flip-flops to disarm the same after the output flip-flop has changed state.

4,607,174

VOLTAGE DETECTION CIRCUIT USING THRESHOLD AS REFERENCE VOLTAGE FOR DETECTING INPUT VOLTAGE

Masashi Shoji, and Haruo Niki, both of Tokyo, Japan, assignors to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Jan. 24, 1983, Ser. No. 460,712
Claims priority, application Japan, Jan. 22, 1982, 57-8657
Int. Cl.[4] H03K *5/153*
U.S. Cl. 307—363 5 Claims



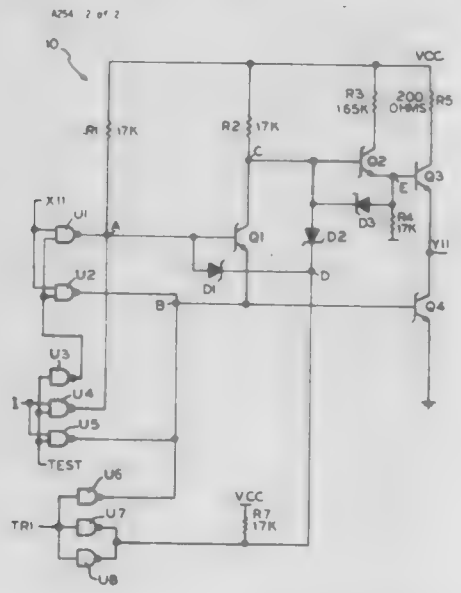
1. A circuit comprising a first transistor of an emitter follower type supplied with an input voltage to be detected, a reference potential terminal, first and second current paths connected between an output end of said first transistor and said reference potential terminal and coupled in parallel to each other, said first current path having a second transistor, said second current path having a third transistor, said second and third transistors having bases coupled in common and operating at differential current densities, a fourth transistor coupled to said third transistor to receive a collector output of said third transistor, and output means coupled to said fourth transistor for deriving a detection output signal.

4,607,175

NON-INVERTING HIGH SPEED LOW LEVEL GATE TO SCHOTTKY TRANSISTOR-TRANSISTOR LOGIC TRANSLATOR

Gil S. Lee, San Jose, and Ashok Kumar, Saratoga, both of Calif., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Aug. 27, 1984, Ser. No. 644,833
Int. Cl.[4] H03K *19/088, 19/092, 19/003;* G01R *31/28*
U.S. Cl. 307—443 19 Claims



1. A non-inverting high speed low level gate to Schottky transistor-transistor logic translator circuit comprising:

a first NAND logic gate having two inputs and an output, the output of said first NAND gate being connected to a first node;

a second NAND logic gate having two inputs and an output, one input of said second NAND gate being connected to one input of said first NAND gate and to a first input circuit terminal, the output of said second NAND gate being connected to a second node;

a first Schotty transistor having its base connected to the first node and to a voltage supply potential via a first resistor, its emitter connected to the second node and its collector connected to a third node and to the supply potential via a second resistor;

a third NAND logic gate having one input and an output, the output of the third NAND gate being connected to the second input of the first and second NAND gates;

a fourth NAND logic gate having two inputs and an output;

a fifth NAND logic gate having two inputs and an output, one input of said fifth NAND gate being connected to the input of said third NAND gate, to one input of said fourth NAND gate and to a second input circuit terminal, the output of said fifth NAND gate being connected to the second node and the output of said fourth NAND gate being connected to the first node, the second input of the fourth and fifth NAND gates being connected to a third input circuit terminal;

a second Schottky transistor having its base coupled to the third node, its collector connected to the supply potential via a third resistor, and its emitter connected to a fourth node;

an upper output transistor having its base connected to the fourth node and to a ground potential via a fourth resistor, its collector connected to the supply potential via a fifth resistor and its emitter connected to an output circuit terminal; and

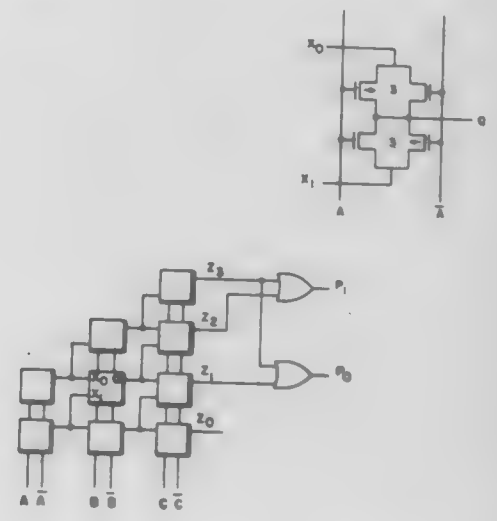
a lower output transistor having its base connected to the second node, its collector connected to the output circuit terminal and its emitter coupled to the ground potential.

4,607,176

TALLY CELL CIRCUIT

James L. Burrows, Merrimack, N.H., and Stephen B. Butler, Cumberland, R.I., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Aug. 22, 1984, Ser. No. 643,203
Int. Cl.[4] H03K *19/096, 19/20*
U.S. Cl. 307—449 1 Claim



1. A tally circuit comprising in combination:

a first and second switching means having respectively a first and second state, said first and second switching means each having an input, a control terminal and an output, said output of each of said first and second switching means being connected to form a single output, said first and second switching means respectively connected to a two rail selector bus, said first and second switching means connected to each other in a mutually exclusive manner wherein when said first switching means is in the on state said second switching means is in the off state, said two rail selector bus connected to said control terminal to provide control signals to said first and second switching means to maintain the mutually exclusive operation thereof, said first and second switching means receiv-

ing a logical signal comprising logical ones and zero at their respective inputs and providing a ones signal output in response to the number of logical ones in the input logical signal, said first and second switching means forming a tally cell, a plurality of said tally cells being arranged in a descending order parallel-series tally cell circuit for counting the number of logical ones in an input signal, said tally cells respectively having a pair of inputs, said plurality of parallel inputs, said descending order occurring from the input of said tally cell circuit to the output thereof, the number of input ones in said plurality of parallel inputs are expressed as a binary code at the output of said tally cell circuit, said first and second switching means respectively comprising in combination:

a first and second field effect transistor having their respective sources and drains connected in parallel with each other,

a third and fourth field effect transistor having their respective sources and drains connected in parallel with each other, said drains of said first, second, third and fourth field effect transistors are respectively connected to each other to form the signal output, said first and third field effect transistors having their respective gates connected to one rail of said two rail selector bus, said second and fourth field effect transistors having their respective gates connected to the other rail of said two rail selector bus, said logical signal being applied respectively to the common source of said first and second field transistors and, said third and fourth field effect transistor, said first, second, third and fourth field effect transistors each comprise a CMOS transistor which is formed on a silicon-on-sapphire substrate.

4,607,177

CIRCUIT ARRANGEMENT FOR CONVERSION TTL LOGIC SIGNALS TO ECL LOGIC SIGNALS

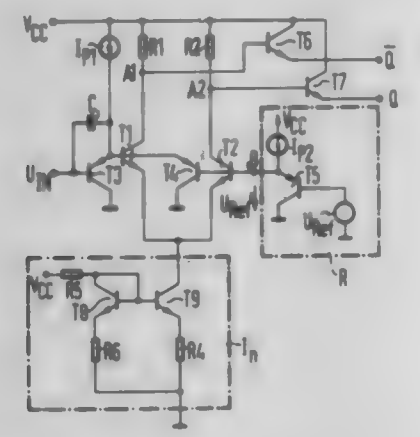
Alexander Lechner, Faak, Austria, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed May 5, 1983, Ser. No. 491,985

Claims priority, application Fed. Rep. of Germany, May 7, 1982, 3217237

Int. Cl.[4] **H03K** *19/092, 19/086, 19/003*

U.S. Cl. 307—475 **7 Claims**



1. Circuit arrangement for level conversion of TTL-logic levels to ECL-logic levels including at least one emitter-coupled current switch having an input addressable by TTL-logic levels and an output from which ECL-logic levels can be taken off, comprising a first current switch formed of first and second emitter coupled npn-transistors having their emitters commonly connected to ground reference potential via a current source and their collectors connected to supply potential via respective collector resistors, and a second current switch formed of first and second emitter-coupled pnp-transistors having their emitters connected to supply potential via a current source and having their collectors connected to ground reference potential, the first transistor of said second current switch being controlled by the input signal to the circuit arrangement and serves as input stage for the first transistor of said first current switch, said second transistors of the first and second current switch being connected at their control inputs to a reference potential and said second current switch having a switching threshold higher than that of said first current switch.

4,607,178

RESET SIGNAL GENERATING CIRCUIT

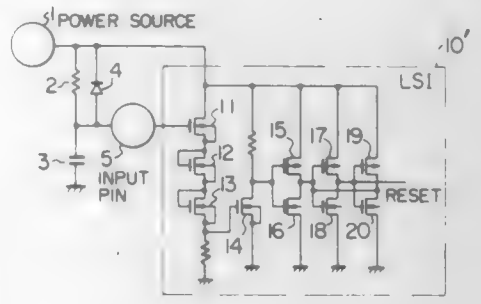
Mamoru Sugie; Takashi Toyooka, both of Sayama; Hirokazu Aoki, Hachioji; Kazutoshi Yoshida, and Shinsaku Chiba, both of Mobara, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 3, 1983, Ser. No. 520,012

Claims priority, application Japan, Aug. 13, 1982, 57-141512

Int. Cl.[4] **H03K** *17/284*

U.S. Cl. 307—594 **2 Claims**



1. A reset signal generating circuit for use in a semiconductor integrated circuit powered by a power source, comprising:

delay means to be connected to said power source for producing a delayed voltage changing with a delay as the supply voltage of said power source changes, said delay means including a resistor, a capacitor connected to said power source through said resistor and a diode connected in parallel with said resistor, said delayed voltage being produced across said capacitor;

a terminal connected to said capacitor for receiving said delayed voltage;

level shift means, connected to said terminal, for shifting said delayed voltage by a predetermined voltage level including a first n-MOS transistor having a gate connected to said terminal and a drain to be connected to said power source, a first diode-connected n-MOS transistor having a drain connected to a source of said first n-MOS transistor, a second diode-connected n-MOS transistor having a drain connected to a source of said first diode-connected n-MOS transistor, and a first resistor connected between a source of said second diode-connected n-MOS transistor and ground, said shifted delayed voltage appearing at a first connection point connecting said first resistor and said source of said second diode-connected n-MOS transistor; and

detecting means, connected to said level shift means, for detecting the level of said shifted delayed voltage to generate a reset signal when said shifted voltage is below a predetermined level, said reset signal being used to reset at least said integrated circuit, wherein said detecting means comprises:

an inverter including a second n-MOS transistor having a gate connected to said first connection point and a source connected to ground and a second resistor of high resistance having one end connected to a drain of said second n-MOS transistor and the other end to be connected to said power source; and

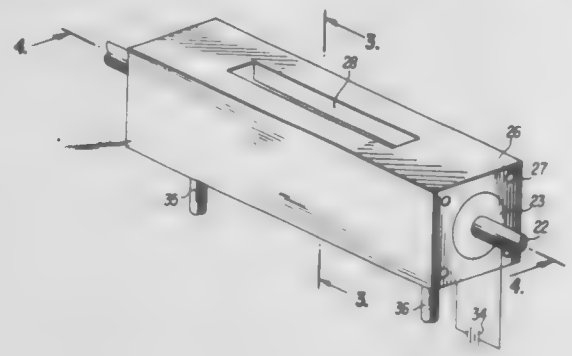
a Schmitt-trigger circuit having an input connected to a second connection point connecting said one end of said second resistor and said drain of said second n-MOS transistor and an output outputting said reset signal.

4,607,179

GASEOUS ELECTRODE FOR MHD GENERATOR

Milton T. Dooley; Nelson A. Bradley; Robert S. Hiers, Jr., and Gary E. Staats, all of Florence, Ala., assignors to Reynolds Metals Company, Richmond, Va.

Continuation of Ser. No. 643,946, Dec. 24, 1975, abandoned.
This application Apr. 10, 1978, Ser. No. 894,882
Int. Cl.[4] H02K *44/00*
U.S. Cl. 310—11 11 Claims



1. An improvement in an MHD system of the type having duct means for passing a plasma therethrough, means for producing a magnetic field across said duct means, and an electrode assembly comprising:

a first elongated electrode element located adjacent said plasma stream;

a second elongated electrode element spaced from said first electrode element;

means for passing a first gas through the space between said first and second electrode elements;

exit means for permitting said first gas to exit from between said first and second electrode elements into said duct; and,

voltage means for striking an arc between said first and second electrode elements for ionizing said first gas and electrically connecting said electrode assembly to said plasma stream:

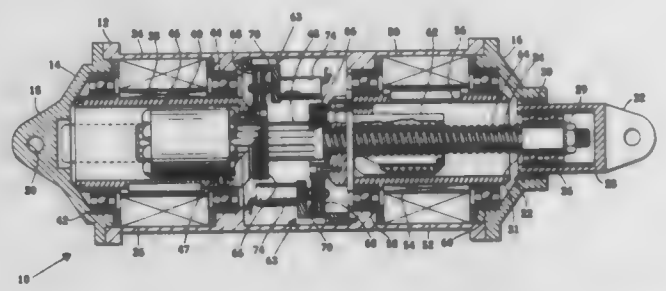
said electrode assembly being positioned such that the longitudinal axis of at least one of said elongated electrode elements is at an angle to said magnetic field produced across said duct means, thereby causing said arc to move from place to place along the surface of said elongated electrode in both circumferential and longitudinal directions with respect to said elongated electrode.

4,607,180

FAILURE TOLERANT LINEAR DRIVE MECHANISM INTENDED FOR CELESTIAL SPACE APPLICATIONS

William R. Stoody, San Diego, Calif., assignor to General Dynamics Corporation/Convair Div., San Diego, Calif.

Filed Nov. 14, 1983, Ser. No. 551,630
Int. Cl.[4] H02K *7/06*
U.S. Cl. 310—80 13 Claims



1. A failure tolerant linear actuator particularly adapted for celestial space applications comprising:

a housing;

an output shaft positioned within said housing and being rotatably supported at least at one end;

a first reversible motor means disposed within said housing circumferentially surrounding a portion of the shaft and being coupled to the shaft by means to impart rotational movement therewith and permit longitudinal movement therebetween;

a second reversible motor means also disposed within said housing circumferentially surrounding a portion of the shaft and being coupled to the shaft by means to affect longitudinal movement of the shaft within said second motor without rotation of the shaft and to permit rotation of the shaft within said second motor so as to impart longitudinal movement of the shaft; and

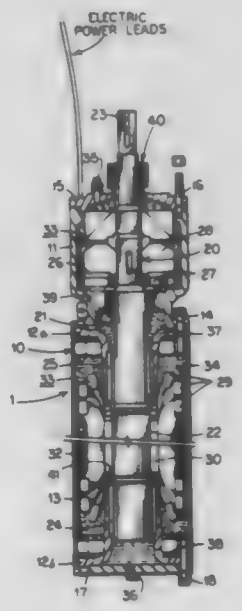
lock means adapted to selectively inhibit the rotational movement of the electric motors for regulated longitudinal movement of the shaft even if one of the motors should fail to operate.

4,607,181

HIGH TEMPERATURE SUBMERSIBLE ELECTRIC MOTOR

Martin K. Smith, Wilton, Conn., assignor to Hayward Tyler Inc., Norwalk, Conn.

Filed Dec. 6, 1984, Ser. No. 678,644
Int. Cl.[4] H02K *5/10*
U.S. Cl. 310—87 7 Claims



1. A submersible electrical dynamo operative at high temperatures comprising a casing, a stator in said casing transmission, a rotor including a rotor pack operatively associated with said stator, said rotor pack including rotor laminations, bearing means rotatably supporting said rotor in said casing, said casing forming a space therein around said rotor assembly, said stator being in said space, and a metal alloy filling said space, said alloy being liquid at the operating temperatures of said dynamo, to provide lubrication of said bearing means, and to provide heat transfer and pressure transmission said alloy containing bismuth in an amount such that the alloy has substantially no volume change upon solidification.

4,607,182

MOTOR SPINDLE WITH INTEGRATED BEARING RACES

Heribert Ballhaus, Nuremberg, Fed. Rep. of Germany, assignor to Georg Muller Nurnberg GmbH, Fed. Rep. of Germany

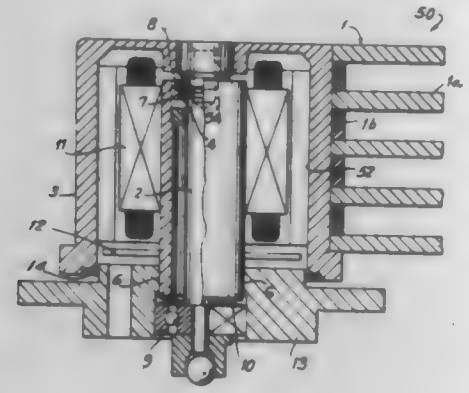
Filed Jan. 14, 1985, Ser. No. 691,440
Claims priority, application Fed. Rep. of Germany, May 26, 1984, 3419814
Int. Cl.[4] G11B *5/012;* H02K *5/173*
U.S. Cl. 310—90 7 Claims

1. A motor spindle including a brushless D.C. current motor, comprising:

an outer rotor;

an inner shaft located within said outer rotor defining an interior space therebetween, said inner shaft being connected to said outer rotor for rotation therewith;

a stator including a stator bushing located in said space between said inner shaft and said outer rotor, said stator bushing having an inner surface, a region of said inner surface of said stator bushing surrounding a region of said inner shaft in opposed relationship thereto; and



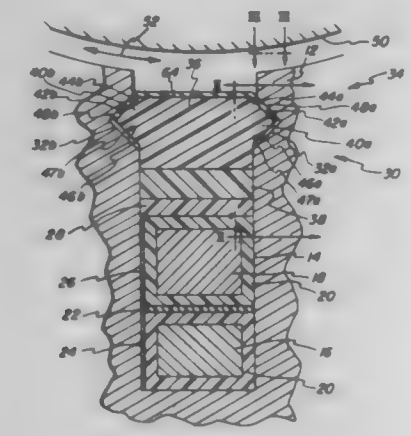
means for rotatably mounting said inner shaft in said space, said mounting means including an integrated bearing including rolling elements running in inner and outer races, said outer race being formed by said stator bushing in and by said inner surface region thereof and said inner race being formed in and by said opposed region of said inner shaft.

4,607,183

DYNAMOELECTRIC MACHINE SLOT WEDGES WITH ABRASION RESISTANT LAYER

John C. Rieber, Louisville, Ky.; Jeffrey D. Sheaffer, Scotia, and Russell E. Walthers, Saratoga, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Nov. 14, 1984, Ser. No. 671,531
Int. Cl.[4] H02R *3/48*
U.S. Cl. 310—214 30 Claims



1. A dovetail wedge for use in a slot in a dynamoelectric machine, said slot being formed by aligned stacking of a plurality of laminations each having a corresponding slot therein, said slot including at least one dovetail slot therein, said at least one dovetail slot including first and second angled abutment surfaces:

a wedge;

said wedge including first and second angled lips loosely fittable within said first and second dovetail slots respectively;

said first and second angled lips including first and second angled bearing surfaces respectively disposed at angles corresponding to angles of said first and second angled abutment surfaces;

said wedge being made of a glass fiber in a cured resin matrix;

a first embedding layer on said first angled bearing surface;

a second embedding layer on said second angled bearing surface;

said first and second embedding layers being effective to separate said first and second angled bearing surfaces from said first and second angled abutment surfaces respectively;

each of said first and second embedding layers including a fiber in a resin matrix;

said fiber being a non-abrasive fiber; and

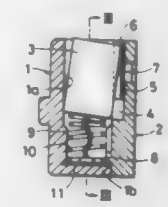
said first and second embedding layers having a thickness of from about 0.005 to about 0.1 inch whereby said laminations may be embedded within said thickness without penetrating through said embedding layer to said glass fiber wherein said non-abrasive fiber is a cotton fiber.

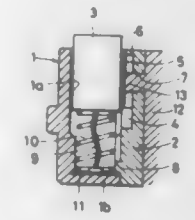
4,607,184

BRUSH HOLDER WITH AUTOMATICALLY RELEASED RETAINER

Kazuyuki Takahashi; Yasuhiro Oe, and Etushi Yamamoto, all of Hiroshima, Japan, assignors to Ryobi Ltd., Hiroshima, Japan

Filed Dec. 5, 1984, Ser. No. 678,427
Claims priority, application Japan, Dec. 21, 1983, 58-242784
Int. Cl.[4] H01R *39/38*
U.S. Cl. 310—247 5 Claims





1. A brush holder comprising:

a generally U-shaped holder box having an opening extending from a top end thereof along one side thereof; and

a holder plate covering said opening of said holder box, said holder box having a brush stop at an inner surface of a top end thereof for holding a brush in said holder box, said holder plate having a through-hole therein for receiving a protruding member for releasing said brush from said brush stop to permit said brush to protrude from said holder.

4,607,185

ULTRASONIC HORN ASSEMBLY

Lawrence E. Elbert, Huntington Beach, and Charles S. Irwin, Santa Ana, both of Calif., assignors to American Hospital Supply Corporation, Evanston, Ill.

Filed Feb. 1, 1985, Ser. No. 697,277
Int. Cl.[4] H01L *41/08*
U.S. Cl. 310—323 16 Claims

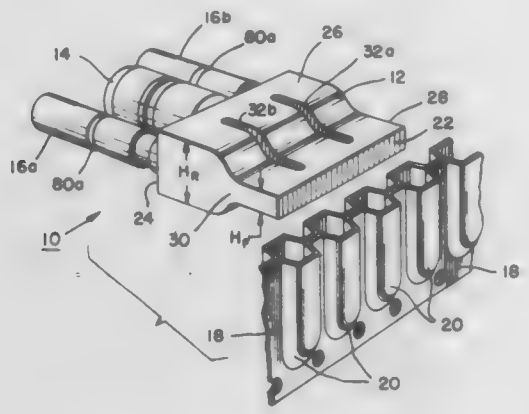
1. An ultrasonic horn assembly, comprising:

a generally rectangular horn body having a front end face and a rear end face opposite to said front end face, for transmitting acoustic waves substantially normally from said front end face to interact with an object moved in the vicinity of said front end face, in response to vibrations applied to said rear end face;

converter means fixed to said rear end face of said horn body at a position substantially medial of the length of said rear end face for applying said vibrations to said horn body in response to electrical energy supplied to said converter means; and

a pair of elongate resonating members, each fixed at one end to a different side end region of said rear end face and extending normally from said rear end face, for causing said acous-

tic waves to propagate from said front end face at substantially uniform amplitude along the length of said front end face;



wherein objects moving along the direction of said front end face at a certain distance therefrom are continuously subjected to substantially uniform acoustic waves.

4,607,186

ULTRASONIC TRANSDUCER WITH A PIEZOELECTRIC ELEMENT

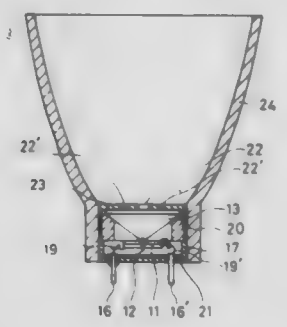
Ryoichi Takayama, Suita; Akira Tokushima, Kyoto; Nozomu Ueshiba, Neyagawa, and Yukihiko Ise, Toyonaka, all of Japan, assignors to Matsushita Electric Industrial Co. Ltd., Kadoma, Japan

Filed Nov. 5, 1982, Ser. No. 439,549

Claims priority, application Japan, Nov. 17, 1981, 56-184600; Nov. 20, 1981, 56-187557; Jun. 3, 1982, 57-95428

Int. Cl.[4] H01L *41/08*

U.S. Cl. 310—324 **21 Claims**



1. An ultrasonic transducer comprising:

transducer element means for converting between electrical energy and ultrasonic acoustical energy;

diaphragm means, connected at the substantial center thereof to said transducer element means, for coupling acoustical energy to and from said transducer element means;

horn means, including means defining a chamber wherein said transducer element means and diaphragm means are disposed and further including means defining a circular aperture opening into said chamber, said horn means for coupling acoustical energy between said diaphragm means and the air outside said horn means, said horn means having a predetermined directivity pattern; and

disc means, covering said aperture defined by said horn means and including means defining plural apertures therethrough, for altering the directivity pattern of said horn means.

4,607,187

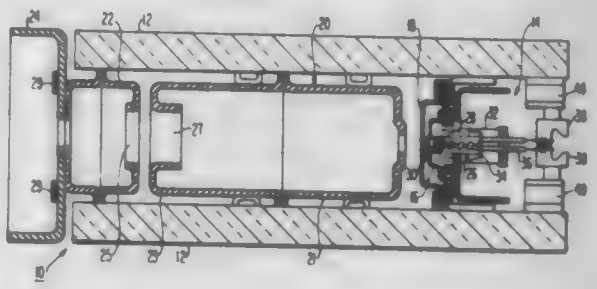
STRUCTURE FOR AND METHOD OF ALIGNING BEAM-DEFINING APERTURES BY MEANS OF ALIGNMENT APERTURES

Sigmund T. Villanyi, Lancaster Township, Lancaster County, Pa., assignor to RCA Corporation, Princeton, N.J.

Filed Aug. 22, 1984, Ser. No. 643,314

Int. Cl.[4] H01J *29/46, 29/50*

U.S. Cl. 313—414 **5 Claims**



1. In a multibeam electron gun comprising at least two spaced successive electrodes, one of said electrodes comprising a metal first plate having at least three precisely spaced beam-defining first apertures therein, the other of said electrodes comprising a metal second plate having at least three precisely spaced beam-defining second apertures, said first plate and said second plate each having two alignment apertures therein, wherein the improvement comprises

said two alignment apertures in said first plate and in said second plate being dissimilarly shaped, one of said alignment apertures being substantially oblong-shaped and the other being substantially triangularly-shaped, said first and second plates having two oppositely disposed elongated sides bordering said oblong-shaped apertures which are mutually aligned with one another, said first and second plates also having three sides bordering said substantially triangularly-shaped apertures which are mutually aligned with one another, whereby said beam-defining first apertures in said first plate and said beam-defining second apertures in said second plate are aligned along common axes.

4,607,188

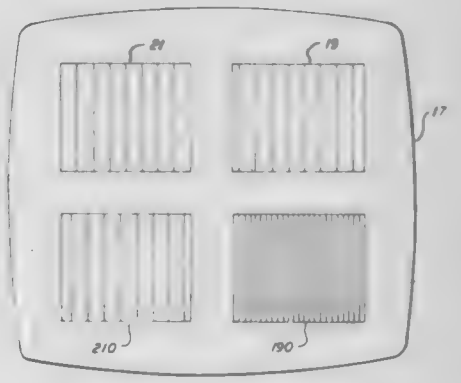
MONOCHROME CATHODE RAY TUBE FOR USE AS A COLOR REFERENCE

Matthew S. Brennesholtz, Waterloo, N.Y., assignor to North American Philips Consumer Electronics Corp., New York, N.Y.

Filed Apr. 3, 1985, Ser. No. 719,616

Int. Cl.[4] H01J *29/32, 31/20*

U.S. Cl. 313—461 **8 Claims**



1. A monochrome cathode ray tube for use as a color reference, the tube comprising an evacuated glass envelope having integrated face panel, funnel and neck portions, a phosphor screen disposed on the interior surface of the face panel, and an electron gun located in the neck, the gun having a plurality of electrodes including a terminal anode, for forming and directing one or more electron beams onto the screen to excite the phosphor, a conductive coating on the interior surface of the

screen, and a conductive coating on the interior surface of the envelope for interconnecting the screen coating and the anode, characterized in that the screen is comprised of at least one field of repetitive patterned array of discrete phosphor elements of at least two alternating colors, the sizes of the elements being constant for each color, and the relative sizes of the different color elements being predetermined to result in a standard color when the array is scanned by an electron beam from the electron gun of predetermined beam current and anode voltage.

4,607,189

CATHODE RAY TUBE WITH GLASS-TO-METAL SEAL USING SILVER CHLORIDE CEMENT

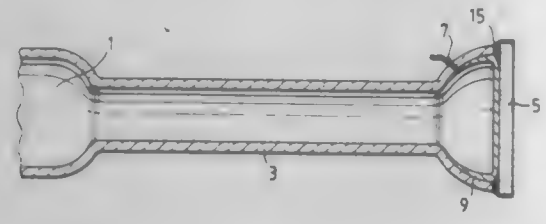
Peter J. Born, Ledbury, England, assignor to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

Filed Feb. 22, 1984, Ser. No. 582,602

Claims priority, application United Kingdom, Feb. 25, 1983, 8305366

Int. Cl.[4] H01J *29/86;* **B23K** *31/00;* **C03B** *23/20;* **C03C** *27/04*

U.S. Cl. 313—477 R **12 Claims**



1. A cathode ray tube, comprising a body of glass material, an electron gun disposed at one end of said body, a faceplate of solid phosphor material disposed at the other end of said body, and a seal of malleable halide material disposed between said glass body and said faceplate.

4,607,190

TELEVISION CAMERA TUBE WITH CONDUCTIVE WALL COATING AND TRANSVERSELY WALL SUPPORTED ELECTRODE

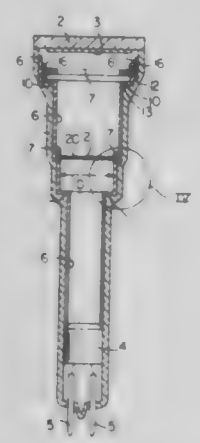
Erich E. Himmelbauer, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 31, 1984, Ser. No. 666,810

Claims priority, application Netherlands, May 7, 1984, 8401445

Int. Cl.[4] H01J *29/02, 29/88*

U.S. Cl. 313—479 **1 Claim**



1. A television camera tube comprising:

a tubular glass envelope drawn on a mandril, said envelope having a longitudinal axis, said envelope having an internal wall having internal dimensions transverse to the longitudinal axis and first and second stepped changes in said internal dimensions, said first and second steps extending transverse to the longitudinal axis;

an apertured diaphragm supported in the envelope by the first step; and

a conductive coating provided on the internal wall of the envelope, said coating being interrupted on the second step;

characterized in that:

the diaphragm is a flat plate;

the envelope has a diameter, D, between the first and second steps; and

the first and second steps are separated by a distance, d, equal to between 0.4 D and D.

4,607,191

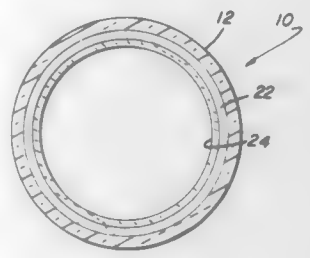
PROTECTION FILM FOR IMPROVED PHOSPHOR MAINTENANCE AND INCREASED TIME-INTEGRATED LIGHT OUTPUT

John M. Flaherty, Danvers, Mass., assignor to GTE Products Corporation, Stamford, Conn.

Filed Nov. 13, 1984, Ser. No. 671,131

Int. Cl.[4] H01J *61/35*

U.S. Cl. 313—489 **5 Claims**



1. A fluorescent lamp having improved maintenance and integrated light output comprising:

a tubular, hermetically sealed, glass envelope;

electrodes sealed in the ends of said envelope;

an arc generating and sustaining medium including mercury within said envelope for producing a plasma discharge when a predetermined voltage is applied across said electrodes;

a phosphor coating adhering to the interior surface of said envelope; and

a non-particulate film overlying said phosphor wherein said film comprises yttrium oxide and at least one U.V. absorber, said absorber being effective in the absorption of a greater amount of 185 nm radiation than 254 nm radiation from said plasma discharge.

4,607,192

PRE-FOCUSSED INCANDESCENT LAMPS AND METHOD OF ASSEMBLING BASE THEREOF

Alfred G. Billing, Loughborough, and Norman Burgess, Melton Mowbray, both of England, assignors to Thorn EMI plc, London, England

Filed Nov. 22, 1983, Ser. No. 554,232

Claims priority, application United Kingdom, Nov. 23, 1982, 8233369

Int. Cl.[4] H01J *9/34*

U.S. Cl. 313—579 **18 Claims**

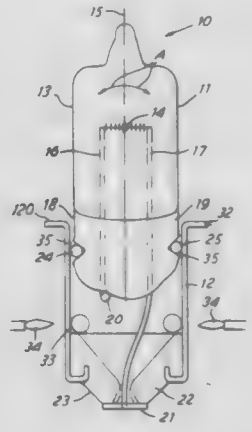
1. A pre-focussed incandescent lamp including a lamp cap, a lamp envelope, one or more filaments in the lamp envelope, lead wires attached to respective filaments extending out of the envelope and sealed within a pinch seal formed as part of the lamp envelope, the pinch seal being grooved to receive a ring-like member of resilient material, said ring like member being clamped substantially around the pinch seal thereby preventing relative movement between the pinch seal and the ring like member and arranged to have substantially only line contact with the interior of the lamp cap, the lamp including means fixing the ring-like member to the lamp cap.

14. A method of manufacturing a pre-focussed incandescent lamp including the steps of:

providing a lamp envelope with one or more filaments connected to respective lead wires sealed within and extending out of a pinch seal formed on the lamp envelope;

providing a lamp cap relative to which said one or more filaments are to be positioned;

providing a ring-like member having at least a partly radiused surface, adapted, when situated on said pinch seal to have only line contact with the interior surface of the lamp cap;



springing said ring-like member around the pinch seal thereby to clamp the ring-like member substantially around the pinch seal to substantially prevent relative movement between the pinch seal and the ring-like member;

moving the lamp envelope complete with said ring-like member clamped around the pinch seal relative to the interior of the lamp cap to a pre-determined depth;

and positioning the lamp envelope substantially about the line contact so that said one or more filaments are correctly positioned relative to the lamp cap; and

fixing the lamp cap and the ring to each other.

4,607,193

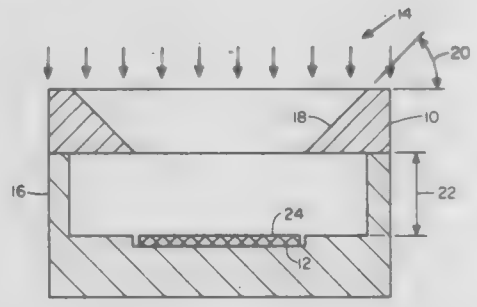
TEXTURED CARBON SURFACES ON COPPER BY SPUTTERING

Arthur N. Curren, North Ridgeville; Kenneth A. Jensen, Bay Village, and Robert F. Roman, Brookpark, all of Ohio, assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Oct. 10, 1984, Ser. No. 659,475

Int. Cl.[4] H01J *23/02;* C23C *15/00*

U.S. Cl. 315—5.38 **16 Claims**



1. A method of producing a textured carbon surface on a copper substrate comprising the steps of

mounting said substrate and a carbon target in a vacuum environment of about 2×10^{-5} torr,

simultaneously bombarding both said substrate and said target with a beam of ions having energies between about 1000 eV and about 1500 eV and an ion beam current density between about 4.0 mA/cm^2 and about 10 mA/cm^2, and

maintaining said substrate and said carbon target at the same electrical potential relative to said ion beam during said bombardment.

4,607,194

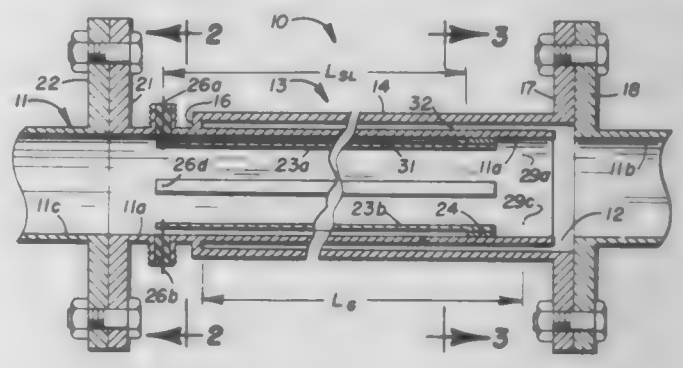
GAP AND STRIPLINE COMBINED MONITOR

Yan Yin, Palo Alto, Calif., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Feb. 16, 1984, Ser. No. 580,981

Int. Cl.[4] H01J *7/46, 19/80*

U.S. Cl. 315—39 **9 Claims**



1. A monitor device comprising:

an electrically-conductive beam pipe having first and second aligned coaxial portions separated by an axial gap,

an outer electrically-conductive pipe coaxial with said beam pipe,

means for electrically connecting said outer pipe to said first portion of said beam pipe at a location spaced from said gap and to said second portion of said beam pipe at said gap,

a plurality of elongated electrically-conductive strips within said first portion of said beam pipe and parallel to the axis thereof, said strips being spaced inwardly from said beam pipe and being spaced from each other,

means for electrically connecting one end of each of said striplines to said first portion of said beam pipe at a location closely adjacent to said gap,

a first output terminal means connected to said first portion of said beam pipe adjacent said gap,

a second output terminal means having terminals connected individually to each of said strips at the ends thereof away from said gap.

4,607,195

PICTURE DISPLAY DEVICE COMPRISING A POWER SUPPLY CIRCUIT AND A LINE DEFLECTION CIRCUIT

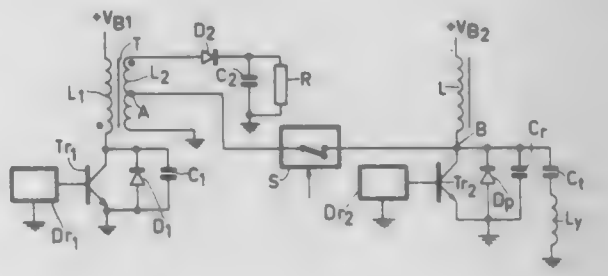
Leonardus A. A. Valkestijn; Fransiscus M. J. Nooijen, and Christianus H. J. Bergmans, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 27, 1983, Ser. No. 565,955

Claims priority, application Netherlands, Mar. 21, 1983, 8300998

Int. Cl.[4] H01J *29/74*

U.S. Cl. 315—410 **9 Claims**



1. A power supply and scanning line deflection circuit for a picture display device,

said power supply circuit comprising the series arrangement

of a first switch (T_{r1}) switchable at the scanning line frequency and a first inductance (L_1) connected between the terminals of a first voltage source, said first inductance forming part of a first resonant network during the cutoff period of said first switch;

said deflection circuit comprising a line deflection coil (L_y) and, connected across the terminals of a second voltage source, the series arrangement of a second switch (T_{r2}) switchable at the scanning line frequency and a second inductance (L), the line deflection coil and the second inductance forming part of the second resonant network during the cutoff period of said second switch, the cutoff period of said second switch substantially coinciding with the scanning line retrace period;

a transformer winding coupled to one of said inductances;

a rectifying circuit including a rectifier connected to said transformer winding for rectifying pulses produced across such winding during the cutoff period of the one of said switches which is in series with the one of said inductances which is coupled to said transformer winding, such rectifying circuit generating from such rectified pulses a supply voltage for a load which may be connected thereto;

and means for connecting said transformer winding to the other of said inductances, said connecting means being substantially non-conducting during the scanning line trace period but conducting during at least a portion of the scanning line retrace period to then supply a current to said other inductance which stabilizes the supply voltage produced by said rectifying circuit against variations in a load connected thereto.

4,607,196

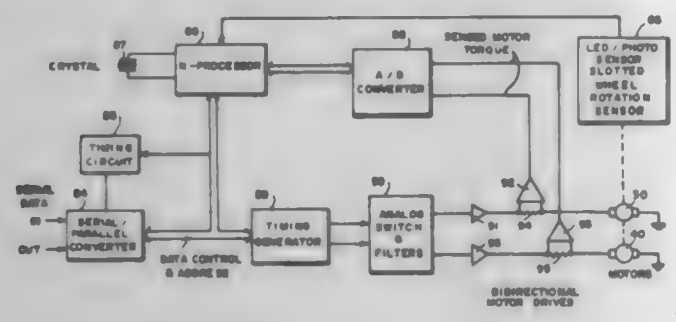
LAB BOTTLE CAPPER

Louis Abrahams, Worcester, and Steven P. Carll, Franklin, both of Mass., assignors to Zymark Corporation, Hopkinton, Mass.

Continuation of Ser. No. 646,445, Aug. 31, 1984, abandoned. This application Sep. 23, 1985, Ser. No. 779,211

Int. Cl.[4] H02P *1/54*

U.S. Cl. 318—51 6 Claims



1. Unwinding apparatus for grasping and holding an object and rotating said object, said apparatus having

a gripper assembly mounted for rotation on a turntable and comprising gripper means and an actuating means to open and close said gripper means;

first motor means for rotating said turntable either clockwise or counterclockwise; a second motor means for moving said gripper means, acting through said gripper actuating means, between a closed position and an open position;

a counter assembly forming means to count the number of revolutions made by each said motor means; and

electrical motor control circuitry associated with at least one motor to form means to control said one motor in response to the amount of torque or pressure exerted on said object by said gripper actuating means on said turntable.

4,607,197

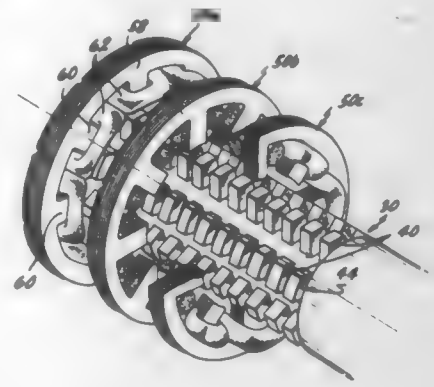
LINEAR AND ROTARY ACTUATOR

Coleman W. Conrad, Whittier, Calif., assignor to IMC Magnetics Corporation, Cerritos, Calif.

Continuation of Ser. No. 896,827, Apr. 17, 1978. This application Feb. 11, 1980, Ser. No. 120,320

Int. Cl.[4] H02K *41/00*

U.S. Cl. 318—115 6 Claims



1. A linear and rotary stepping device including in combination, a first member having an axis and which is mounted to be movable angularly about its axis and to be movable axially thereof, said member having means formed on its surface which provide individual aligned angularly spaced teeth having end faces, said last means being constructed so that aligned individual axially spaced teeth having end faces are provided as well as angularly spaced teeth on the surface of the said member, stator means having groups of circumferentially spaced individual poles having end faces and including windings and having a circular central opening in which the movable member is disposed so that the teeth of the movable member can move adjacent to the poles of the stator means, the stator means including at least three of said groups of poles and windings which are spaced axially, the said stator means being constructed whereby energizing certain axially spaced stator windings, the movable member can be caused to move axially and by energizing selected stator windings that are angularly displaced from each other the said movable member is caused to rotate about its axis, the end faces of the said poles being adjacent the end faces of the teeth on the said movable member, all of said faces forming smooth uninterrupted surfaces.

4,607,198

WIPER DRIVING APPARATUS

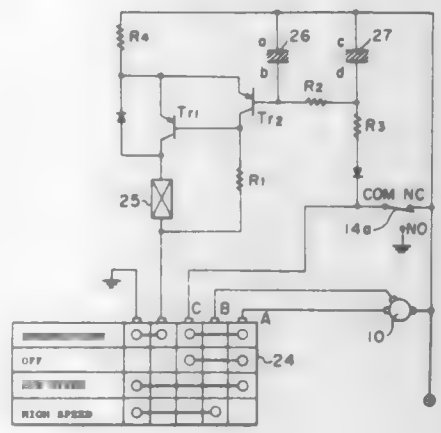
Akira Tsunoda, Kosai, Japan, assignor to Asmo Co., Ltd., Japan

Filed Dec. 21, 1984, Ser. No. 684,618

Claims priority, application Japan, Dec. 29, 1983, 58-201546[U]

Int. Cl.[4] H02P *3/00*

U.S. Cl. 318—443 4 Claims



1. A wiper driving apparatus comprising:

a motor having a drive shaft rotating about an axis;

a speed reduction gear train mounted for following rotational motion to said drive shaft for driving a wiper blade

in a reciprocal and pivotal manner across a vehicle windshield;

a cam means affixed for following rotational motion to said gear train, said cam means having a camming surface;

a pin member having a longitudinal axis and one end operatively engaged with said camming surface, said camming surface causing movement of said pin along its longitudinal axis from an operative position to an inoperative position;

a relay switch driven by a relay coil and including a movable contact and fixed first and second contacts disposed on opposite sides of said movable contact;

an elongated operating lever member being positioned for contact at a first end with said pin member when said pin member is in said operative position;

an opposite end of said lever member thereby biasing said movable contact into electrical connection with said first contact when said pin member is in said operative position;

said movable contact being out of contact with said second contact and in contact with said second contact when said pin member is in said inoperative position and said relay switch is not being driven by said relay coil; and

a control circuit including said relay switch and said operating lever member for controlling the driving, intermittent, and automatic stop operations of the wiper blade.

4,607,199

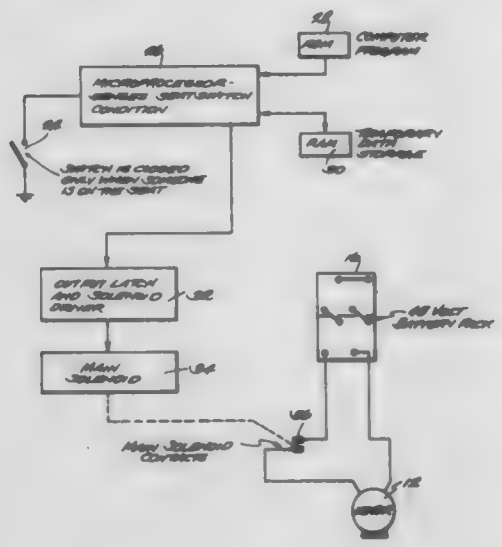
COMPUTER CONTROLLED SAFETY SEAT SWITCH

William R. Krueger, West Allis, Wis.; Gerald N. McAuliffe, Lincoln, Nebr., and George A. Schlageter, Mequon, Wis., assignors to Outboard Marine Corporation, Waukegan, Ill.

Filed Sep. 7, 1984, Ser. No. 648,146

Int. Cl.[4] B60K *28/04*

U.S. Cl. 318—484 10 Claims



4. In combination with a motor driven vehicle having a seat for the operator, control means preventing operation of the motor unless the operator is on said seat position, said control means including, a circuit enabling motor operation when closed and terminating motor operation when open, a switch actuated to a first position in response to the driver being on said seat, a microprocessor sensing the status of said switch and operative to cause said circuit to be opened if the operator is off said seat for a given period of time and having for such purpose a time delay register which is decremented when the operator off said seat, means for periodically determining whether the operator is off said seat during said time delay and for whether said time delay has been reduced to 0, and means operative to increase said time delay register to its original value if the operator returns to said seat before said time delay has been used up.

4,607,200

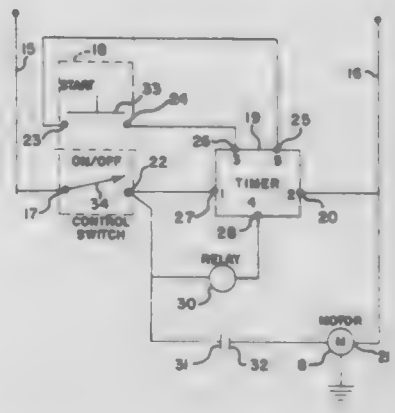
COFFEE GRINDER

John D. Zimmerman, Springfield, Ill., assignor to Bunn-O-Matic Corporation, Springfield, Ill.

Filed Jul. 8, 1985, Ser. No. 752,572

Int. Cl.[4] H02P *1/10;* B02C *19/12*

U.S. Cl. 318—484 7 Claims



1. In a coffee grinder having an electric grinder motor, a three-mode control circuit for energizing and deenergizing said motor, comprising, in combination, a three-condition control switch, a relay having at least one pair of openable and closable contacts, and conductors electrically interconnecting said motor, control switch and relay with a source of electric power, said control switch having (1) an "Off" condition in which it will reside until positively manipulated to another condition and in which said control circuit is completely deenergized, (2) an "On" condition in which it will reside until positively manipulated to another condition, and (3) a "On plus Start" condition wherein it actuates said relay and which it will occupy only so-long as manually retained therein and which upon release automatically resumes said "On" condition.

4,607,201

APPARATUS FOR IMPROVING THE LONGITUDINAL OR PITCHING STABILITY OF AIRCRAFT

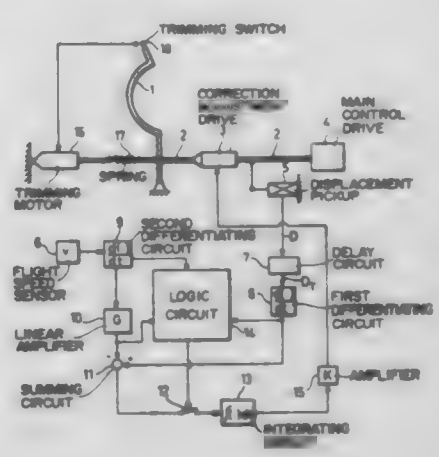
Herbert Koenig, Munich, Fed. Rep. of Germany, assignor to Messerschmitt-Boelkow-Blohm Gesellschaft mit beschraenkter Haftung, Munich, Fed. Rep. of Germany

Filed Aug. 27, 1985, Ser. No. 769,875

Claims priority, application Fed. Rep. of Germany, Aug. 28, 1984, 3431597

Int. Cl.[4] B64C *13/18*

U.S. Cl. 318—584 4 Claims



1. In an apparatus for improving the control of the longitudinal or pitching stability of an aircraft, especially of helicopters, wherein a control linkage is operatively connected at one end to a main control drive (4) for the adjustment of elevator means or of rotor blades, and at the other end to a control stick for said main control drive; wherein a correction adjustment drive is interposed in the control linkage for lengthening the control linkage in a controlled manner; the improvement comprising:

displacement pickup means (5) for sensing a control displacement between said correction adjustment drive (3) and said main control drive (4) to provide a displacement representing first signal, flight speed pickup means (6) for sensing the flight speed to provide a speed representing second signal, signal delay means (7) for said first signal from said displacement pickup means (5), first signal differentiating means (8) connected serially to said signal delay means (7) for differentiating the delayed first signal, second differentiating circuit means (9) serially connected to said flight speed pickup means (6) for differentiating said second signal, a linear amplifier (10) serially connected to said second differentiating circuit means (9), first summing circuit means (11) connected for subtracting the output signal of said linear amplifier (10) from the signal provided by said first differentiating circuit means (8), signal integrator circuit means (13), switch means (12) connecting said signal integrator circuit means serially to said first summing circuit means (11), means operatively connecting said correction adjustment drive (3) to said signal integrator circuit means (13), and switch controlling logic circuit means (14) operatively arranged for closing said switch means (12) as soon as a gradient of a function $D_T(v)$, where D_T=the delayed control displacement first signal at the output of said delay means, and wherein v =flight speed, falls below a specifiable limiting value which is identical to an amplification factor G of said linear amplifier (10).

4,607,202

APPARATUS FOR AUTOMATICALLY ELIMINATING CONTROL FORCE ERRORS IN AIRCRAFT, ESPECIALLY HELICOPTERS

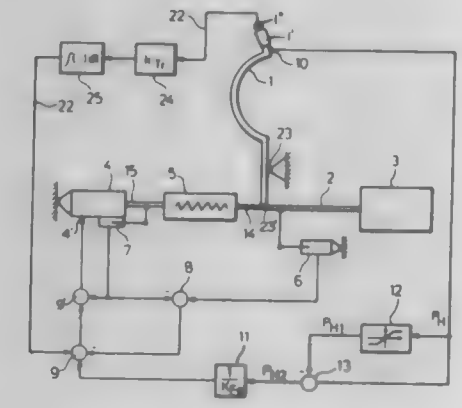
Herbert Koenig, Munich, Fed. Rep. of Germany, assignor to Messerschmitt-Boelkow-Blohm Gesellschaft mit beschraenkter Haftung, Munich, Fed. Rep. of Germany

Filed Aug. 27, 1985, Ser. No. 769,874

Claims priority, application Fed. Rep. of Germany, Aug. 28, 1984, 3431583

Int. Cl.[4] G05B *11/01*

U.S. Cl. 318—628 8 Claims



1. In an apparatus for automatically eliminating control-force errors arising in an aircraft, especially a helicopter, due to disturbing forces acting upon a control stick for adjusting elevator means or rotor blades, wherein a control linkage is articulated to said control stick for connecting the control stick to a main control drive, wherein a control rod is operatively connected with one end to said control stick approximately opposite said control linkage, the other end of said control rod being operatively arranged for cooperation with a spring box enclosing a pre-tensioned spring, and wherein a trimming motor is also operatively arranged for cooperation with said spring box through a trimming member, the improvement comprising displacement difference pickup means for measuring a difference between the control displacement of said control linkage (2) and the displacement of said trimming member (15) to provide a respective difference signal, control force pickup means (10) for measuring the pilot's hand force applied to the control stick (1) to provide a respective hand force output signal (P_H); signal limiter circuit means (12) connected to receive said output signal from said control force pickup means (10) to provide a respective output signal (P_{H1}), signal summing means (13) connected for subtracting said output signal (P_{H1}) of said signal limiter circuit means (12) from said output signal of said control force pickup means (10) to provide a further difference signal (P_{H2}), amplifier means (11) connected to receive said further difference signal from said signal summing means (13), to provide an amplified signal, further summing circuit means (9) connected to receive said first mentioned difference signal and said amplified signal to provide a trimming motor control signal, and means connecting said further summing circuit means to said trimming motor for controlling said trimming motor in response to said trimming motor control signal.

4,607,203

METHOD AND APPARATUS FOR DETERMINING THE POLE POSITION IN A SYNCHRONOUS LINEAR STATOR MOTOR

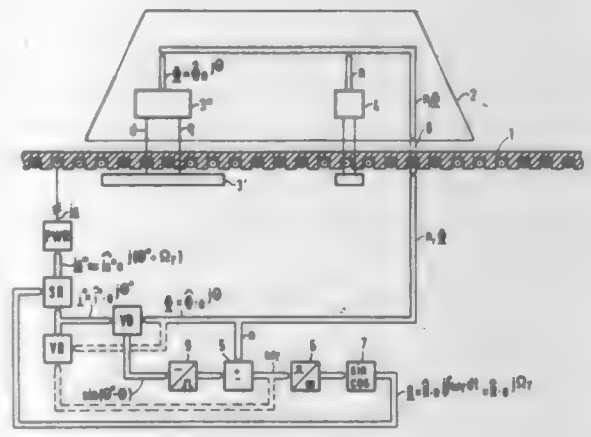
Edgar Böhm, Hemhofen, and Erhard Achenbach, Laasphe, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Aug. 1, 1985, Ser. No. 761,363

Claims priority, application Fed. Rep. of Germany, Sep. 10, 1984, 3433149

Int. Cl.[4] G05B *11/00*

U.S. Cl. 318—687 8 Claims



7. Apparatus for determining the pole position of a synchronous linear motor (1,2) comprising:

(a) stator current control means (SR, PWR) which impresses the stator current with an angle distribution which is determined in accordance with a preset position (θ^*) relative to a position of the rotor preset by a pole position signal (R);

(b) stator stray flux measuring means (3', 3'') coupled to the rotor, at which an angle signal (θ) indicating the angle distribution (ϕ) of the stator current density is taken off;

(c) speed measuring means coupled to the rotor comprising a counting-pulse generator (4) which delivers a counting pulse (n) when passing a mark provided on the stator;

(d) integrator means for the measured speed comprising a counter (6) for the counting pulses (n), at the output of which the rotor position signal (R) is provided;

(e) means (8) for providing a signal exchange between the stator and the rotor;

(f) means (VD) for forming an angle difference signal (sin $(\theta^*-\theta)$) which indicates the angle difference $(\theta^*-\theta)$ between the angle distribution indicated by the angle signal (θ) and the angle distribution (θ^*) impressed on the stator; and

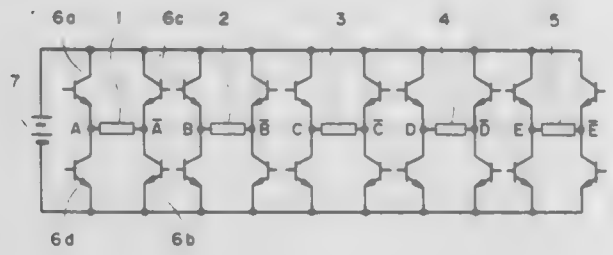
(g) adding means (5) coupled to the integrator (6) and fed by the angle difference signal and the output signal of the integrator means or the measured speed (n).

4,607,204

FIVE-PHASE STEPPING MOTOR

Noboru Setoya, Kuzuhanakamachi, Japan, assignor to Mycom Kabushiki Kaisha, Kyoto, Japan

Filed Jul. 25, 1985, Ser. No. 758,993
Claims priority, application Japan, Sep. 19, 1984, 59-197387
Int. Cl.[4] H02P *8/00*
U.S. Cl. 318—696 1 Claim



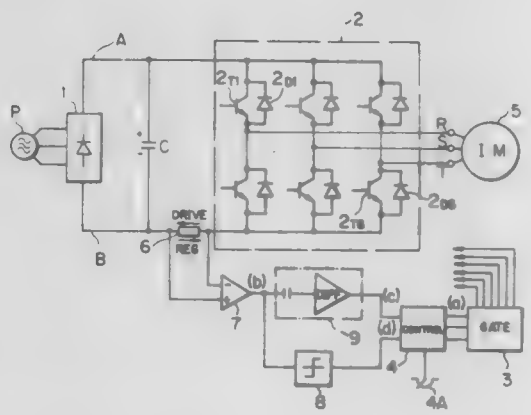
1. A five (5)-phase stepping motor, which includes a rotor rotated by an electromagnetic field produced in a stator having coils, said coils being first to fifth inclusive, and wound thereon and excited by driving signals in five phases while individually responding to each of these signals, characterized by a structure that coils, the 1st to the 5th, are wound on the stator so that a group of the 1st, 3rd, and 5th coils and the other group of the 2nd and 4th coils are opposite to each other in phase and all the coils are connected to each other at one end, with the other ends each serving as an input terminal.

4,607,205

METHOD AND SYSTEM FOR RECONNECTING INVERTER TO ROTATING MOTORS

Yasutami Kito, Haruhi, and Kuniake Yasukawa, Gifu, both of Japan, assignors to Kabushiki Kaisha Meidensha, Tokyo, Japan

Filed Oct. 16, 1984, Ser. No. 661,309
Claims priority, application Japan, Oct. 18, 1983, 58-194661
Int. Cl.[4] H02P *1/26*
U.S. Cl. 318—778 15 Claims



1. A method of reconnecting an inverter to a motor rotating due to an inertia force of a motor rotor after the inverter for steadily controlling motor speed has been disconnected from the motor, which comprises the following steps of:

(a) starting the inverter at a frequency higher than a rotational speed of the motor rotated by the inertia force of the rotor and at an output voltage lower than a rated value of the motor;

(b) decreasing the inverter frequency gradually while keeping the inverter output voltage constant;

(c) detecting polarity and change rate of inverter current supplied to or from the motor;

(d) increasing the inverter frequency gradually when the detected polarity of the inverter current reaches a neutral point;

(e) raising the inverter voltage abruptly to a predetermined value when the detected change rate of inverter current reaches zero and then increasing the inverter voltage gradually; and

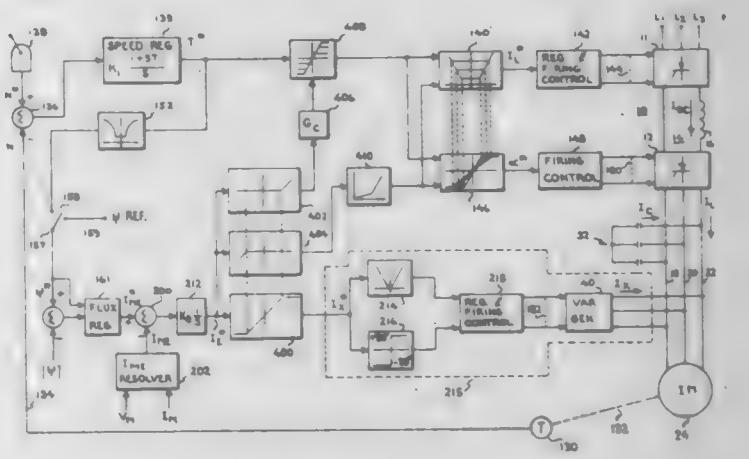
(f) controlling the motor speed steadily when ratio of inverter frequency to inverter voltage reaches a constant value.

4,607,206

FLUX CONTROL FOR INDUCTION MOTOR DRIVE USING LOAD COMMUTATED INVERTER CIRCUIT

James W. Sember, Roanoke; Loren H. Walker, and Herbert W. Weiss, both of Salem, all of Va., assignors to General Electric Company, Salem, Va.

Filed Feb. 26, 1985, Ser. No. 705,964
Int. Cl.[4] H02P *5/40;* H02J *3/18*
U.S. Cl. 318—798 87 Claims
MICROFICHE APPENDIX INCLUDED
(11 Microfiche, 651 Pages)



1. A system for controlling the operation of an alternating current induction motor having windings furnished with electrical excitation from a polyphase alternating current power source comprising:

(a) a controllable load commutated inverter circuit connected between the power source and said induction motor, said load commutated inverter circuit having an output furnishing electrical power and exciting current in a demagnetizing polarity to said motor;

(b) a capacitor circuit connected to the motor windings and to the output of said load commutated inverter circuit for furnishing leading exciting current to said motor and said load commutated inverter circuit;

(c) means to generate a motor operation command signal;

(d) means to develop an exciting current correction signal representing a change in motor exciting current required for a desired level of motor operation;

(e) control means responsive to at least one of said motor operation command signal and said exciting current correction signal for controlling the output of said load commutated inverter circuit in a first mode of operation in the absence of a spillover signal and in a different mode in the presence of said spillover signal; and

(f) means responsive to said exciting current correction signal to generate said spillover signal when said exciting current correction signal exceeds a predetermined boundry.

4,607,207

BATTERY POWERING

Louis O. Brunean, 44 Drabbington Way, Weston, Mass. 02193

Filed Oct. 1, 1984, Ser. No. 656,269
Int. Cl.[4] H01M *2/10, 10/48*
U.S. Cl. 320—2 4 Claims

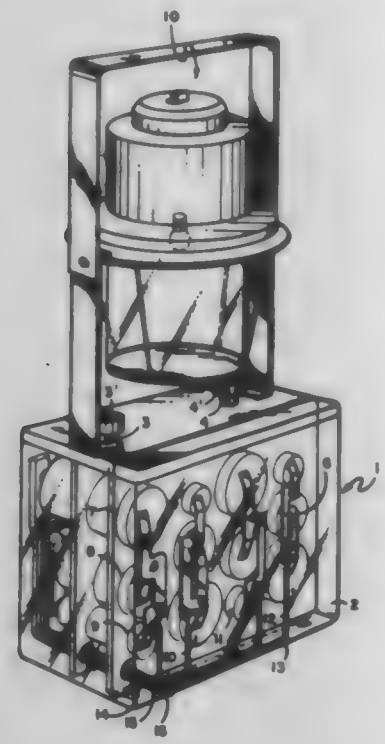
1. Battery powering apparatus comprising,

first and second terminals,

a plurality of generally parallel contact strips defining a plurality of cascaded battery cell chambers,

a contiguous pair of said contact strips including a plurality

of resilient contacts each opposite a fixed contact for accommodating a battery cell therebetween,
the space between at least one of these pairs of fixed and



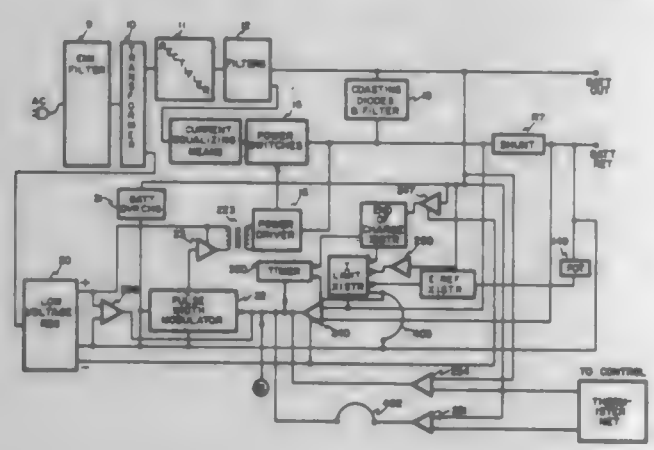
resilient contacts being different from that between the others for accommodating battery cells of different size, and means for connecting said pairs of contact strips in series between said first and second terminals.

4,607,208

BATTERY CHARGER

Stewart W. Vreeland, San Diego, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jul. 30, 1984, Ser. No. 636,038
Int. Cl.⁴ H02J *7/10*
U.S. Cl. 320—21 **20 Claims**



1. An apparatus for charging batteries comprising, in combination:

a main power section including a transformer-input EMI filter section, a rectifier filter section, and a power switching section, and having a battery output line and a battery return line;

a control section including a low voltage regulator providing low voltage power to the control section from said main power section, a pulse width modulator and output driver section providing driver signals to said power switching section, a constant current control circuit for maintaining a constant current output of said apparatus operably connected to said pulse width modulator, a constant voltage control section operably connected to sense a portion of the output voltage and to supply a control signal to said pulse width modulator, and a battery over-temperature control operably connected to sense battery temperature and to provide a control signal to said pulse width modulator; and

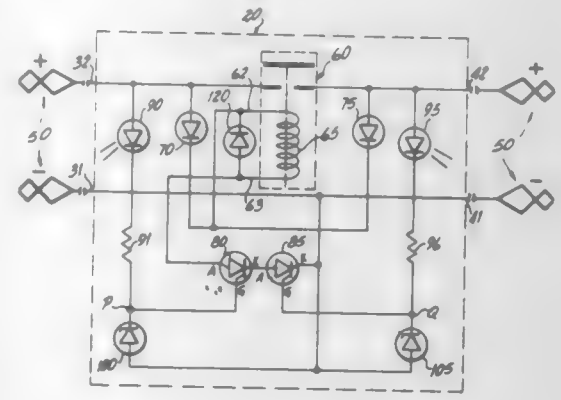
timer section operably connected to provide temporal control over said apparatus, subject to the charging current used, the output voltage, and the battery temperature as monitored by said control section, and providing to said control section an end of charge indication.

4,607,209

SAFETY BOOSTER CABLE

Raul Guim, Coral Gables, and José L. Lara, Miami, both of Fla., assignors to Guim Industries, Inc., Coral Gables, Fla.

Filed May 10, 1984, Ser. No. 609,030
Int. Cl.⁴ H02J *7/00*
U.S. Cl. 320—25 **5 Claims**



1. A safety booster cable assembly for transmitting electric current from a D.C. source, having two electrodes, to a battery, having two electrodes, comprising:

A. first conductor means for connecting one of the electrodes of said D.C. source to an electrode in said battery;

B. second conductor means connecting the other electrodes of said source and battery;

C. relay means, adapted to interrupt the connection between said electrodes if the polarity of said source and battery electrodes do not correspond and said relay means includes two inputs and further includes two diodes, each diode having a negative and a positive electrode, and said negative electrodes being connected to each other and to one of said relay means inputs and said positive diode electrodes being connected to said other electrodes of said source and battery so that said other electrodes remain insulated from each other;

D. AND gating means having one input connected to said other electrode of said source and the other input connected to said other electrode of said battery so that a suitable output for activating said relay means is produced only when the polarity of said electrodes is the same thereby signifying the same logic level and said other relay means input being connected to the output of said AND gating means so that said relay means is activated when said output is at one of its two logic states.

4,607,210

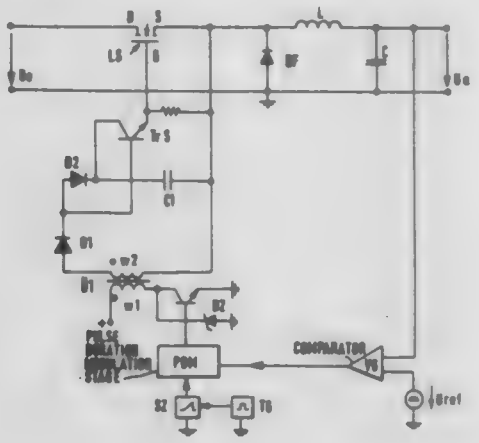
POTENTIAL FREE ACTUATION CIRCUIT FOR A PULSE DURATION CONTROLLED ELECTRONIC POWER SWITCH

Franz Ohms, Stuttgart, and Günter Urbanski, Ansorwald, both of Fed. Rep. of Germany, assignors to ANT Nachrichtentechnik GmbH, Backnang, Fed. Rep. of Germany

Filed Aug. 25, 1983, Ser. No. 526,536
Claims priority, application Fed. Rep. of Germany, Aug. 26, 1982, 3231788
Int. Cl.⁴ G05F *1/56*
U.S. Cl. 323—290 **9 Claims**

1. In a potential free actuation circuit for a pulse duration controlled electronic power switch having two major electrodes, said circuit comprising: a driver stage having a control input and first and second major electrodes; a first pulse trans-

former having a primary winding and a secondary winding, said secondary winding having first and second terminals; a pulse duration modulation stage having an output connected to said primary winding; a first rectifier element connected between said first terminal of said secondary winding and said control input of said driver stage; a second rectifier element connected between said first element and said first major electrode of said driver stage, with said first and second rectifier elements being poled in the same direction with respect to current flow through said first element; and a first charging



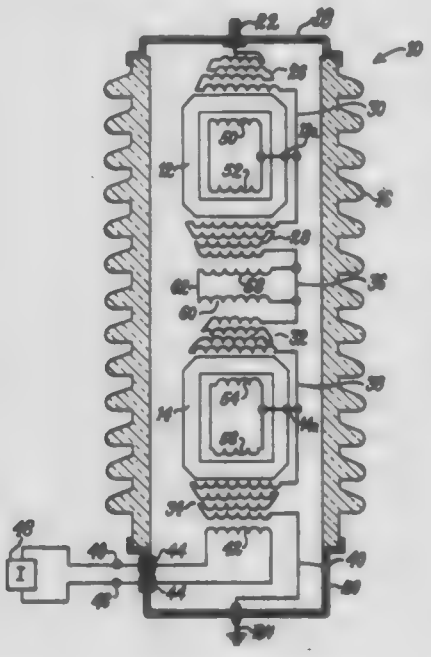
capacitor connected between the side of said second rectifier element facing away from said first rectifier element and a major electrode of the power switch, the improvement wherein: the side of said second rectifier element which is remote from said first major electrode of said driver stage is conductively connected to a circuit point at which said first element is conductively connected to said control input of said driver stage; and said cirucit further comprises: a resistor connected between said control input of said driver stage and said second major electrode of said driver stage.

4,607,211

METHOD OF CORRECTING INACCURATE INSTRUMENTAL POTENTIAL TRANSFORMER RATIO

Kurt W. Eissmann, Dalton, Mass., assignor to General Electric Company, King of Prussia, Pa.

Filed Dec. 7, 1984, Ser. No. 679,335
Int. Cl.⁴ H01F *40/14*
U.S. Cl. 323—356 **9 Claims**



1. In an instrument potential transformer of the cascaded type having a plurality of magnetic cores mounted in vertically spaced relation, a primary winding circuit connected in series between high and low voltage transformer terminals and including separate primary windings wound on each said core, an outer coupling winding associated with each adjacent pair of said cores and including a pair of coils connected in a loop circuit with one of said coils wound on one of said cores and the other of said coils wound on the other core of said adjacent core pair, and a secondary winding wound on one of said cores, the method of correcting for inaccuracies in the transformer voltage ratio comprising the steps of:

(a) determining whether the voltage across said secondary winding is higher or lower than a reference value equal to a predetermined voltage applied across said primary winding circuit divided by the desired ratio of said instrument potential transformer,

(b) electrically connecting said primary winding circuit into said outer coupling winding loop circuit such as to add the turns of one of said coils to the turns of said primary winding circuit if the voltage developed across said secondary winding is higher than said reference value when said primary winding circuit is energized by said predetermined voltage, and

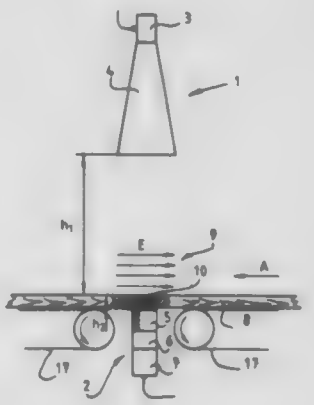
(c) electrically connecting said primary winding circuit into said outer coupling winding loop circuit such as to subtract the turns of one of said coils from the turns of said primary winding circuit if the voltage developed across said secondary winding is lower than said reference value when said primary winding circuit is energized by said predetermined voltage.

4,607,212

METHOD AND APPARATUS FOR DETECTION OF KNOTS OR THE LIKE IN SAWN LUMBER

Pekka Jakkula, Helsinki, Finland, assignor to A.Ahlstrom Osakeyhtio, Noormarkku, Finland

Filed Sep. 6, 1983, Ser. No. 529,619
Claims priority, application Finland, Sep. 10, 1982, 823151
Int. Cl.⁴ G01R *27/04*
U.S. Cl. 324—58.5 R **9 Claims**



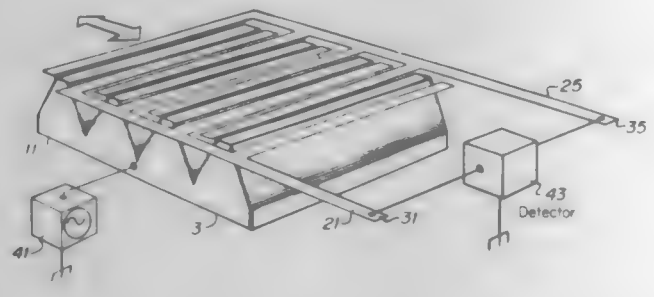
5. An apparatus for detecting knots in lumber, sawn goods and the like by means of electromagnetic radiation in the microwave range which comprises at least one transmitter (**1**: **12**, **13**) and a transmitter antenna (**4**: **18**, **19**) and at least one receiver (**2**: **2'**: **14**) formed of a receiver antenna (**5**: **5'**: **20**) and a detector (**6**: **14'**), means for conveying said piece of lumber perpendicularly to said electromagnetic radiation, said transmitter antenna being a horn antenna dimensioned for the TEM wave mode and disposed at a considerable distance (H1) from the surface of the piece of lumber, whereby the radiation field on the surface of said piece of lumber consists of TEM wave mode alone and the receiver antenna is a round wave guide (**5**: **5'**:**20**) dimensioned for the TM wave mode, the detector (**6**: **14**) is adjusted for the TM wave mode.

4,607,213

SHIELDED CAPACITIVE MASK ALIGNER

Armand P. Neukermans, and Steven G. Eaton, both of Palo Alto, Calif., assignors to Varian Associates, Inc., Palo Alto, Calif.

Filed Oct. 12, 1983, Ser. No. 541,386
Int. Cl.[4] G01R *27/26*
U.S. Cl. 324—61 R 10 Claims



1. An aligner for aligning a primary element with a secondary element across a gap, the aligner comprising:

an array of substantially parallel ridges located on the primary element;

a first hand located on the secondary element, said first hand comprising a plurality of substantially parallel conductive fingers capacitively coupled to the array;

a second hand located on the secondary element, said second hand comprising a plurality of substantially parallel conductive fingers interdigitated with the fingers of the first hand and capacitively coupled to the array;

a first side line located on the secondary element and interconnecting the fingers of the first hand;

a second side line located on the secondary element and interconnecting the fingers of the second hand;

first and second insulating layers covering the first and second side lines;

first and second conductive shields covering the first and second insulating layers;

an oscillator, connected across the array, for driving the array with an electrical signal; and

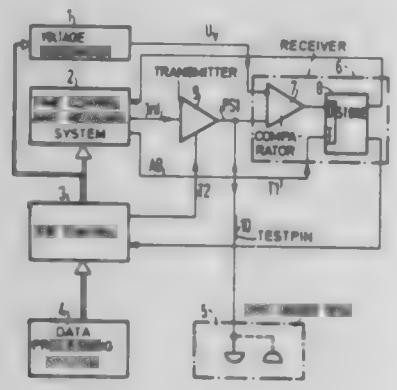
a detector, connected to the first and second hands, the detector being operative for measuring a first component of the signal at the first hand and for measuring a second component of the signal at the second hand.

4,607,214

ADAPTOR CIRCUIT FOR ADAPTING A TEST FACILITY TO A UNIT UNDER TEST HAVING A FAST SIGNAL RESPONSE

Klaus Welzhofer, Graefelfing, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Apr. 21, 1983, Ser. No. 487,062
Claims priority, application Fed. Rep. of Germany, Apr. 22, 1982, 3215074
Int. Cl.[4] G01R *15/12*
U.S. Cl. 324—73 AT 7 Claims



1. A system for adapting a test facility to a unit test comprising:

adapter means for providing a chronological offset of test signals relative to a given time point supplied to the unit under test which is smaller than a chronological offset of the test signals relative to a given time point actually generated by the test facility without the adapter means; said adapter means including:

a plurality of first test pins connecting to respective input-/output pins of the test facility and a plurality of second test pins connecting to respective input/output pins of the unit under test;

a transmitter and receiver connected in anti-parallel relationship to one another and between each of the first test pins and one of the respective second test pins;

a first clock signal to which a time-delay means is connected for generating second and third clock signals at variable time intervals relative to the first clock signals, means for applying the second clock signal to all of the transmitters so that when it appears, it connects through a respective test signal at an input of the transmitter to an output thereof so as to form an output test signal, means for applying the third clock signal to all of the receivers, each of said receivers including means for comparing a response signal at a respective second input/output test pin created by the unit under test to a reference voltage in creating a result signal given a favorable comparison; and

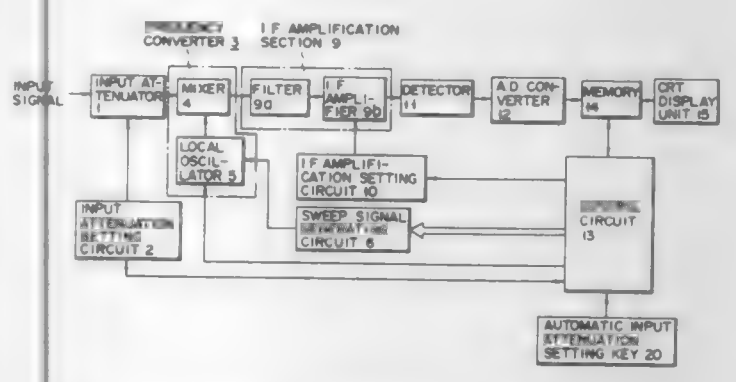
said means for applying a third clock signal causing said respective receiver to connect through the result signal to the test facility.

4,607,215

SPECTRUM ANALYZER

Mitsuyoshi Takano, Tokyo, and Mamoru Ando, Hiratsuka, both of Japan, assignors to Anritsu Electric Co., Ltd., Tokyo, Japan

Filed Feb. 23, 1984, Ser. No. 582,938
Claims priority, application Japan, Feb. 27, 1983, 58-31155
Int. Cl.[4] G01R *23/16;* H04B *1/26*
U.S. Cl. 324—77 B 2 Claims



1. A spectrum analyzer, comprising:

input attenuator means coupled to receive an input signal;

input attenuation setting circuit means for controlling in accordance with a data value held therein the degree of attenuation provided by said input attenuator means;

frequency converter circuit means comprising a local oscillator and a mixer, said mixer being coupled to receive an output signal from said local oscillator circuit and said input signal after attenuation thereof by said attenuator means, for converting said input signal to an intermediate frequency signal;

sweep signal generating means coupled to said local oscillator circuit to control the frequency thereof;

intermediate frequency amplifier means coupled to receive said intermediate frequency signal from said mixer;

intermediate frequency amplification setting means for controlling in accordance with a data value held therein the degree of amplification provided by said intermediate frequency amplifier means;

detector circuit means coupled to receive said intermediate frequency signal from said intermediate frequency ampli-

fier means, for producing a detection signal representing the amplitude of said intermediate frequency signal;

analog-digital converter circuit means for converting said detection signal to digital data values;

first memory circuit means for storing said digital data values from said analog-digital converter circuit means;

display means for displaying the contents of said first memory circuit means; and

control circuit means for storing values representing a predetermined frequency span, predetermined center frequency, a predetermined input attenuation, and a predetermined intermediate frequency amplification value, and operable to first generate control signals for storing the current values of frequency span, the center frequency thereof, and a current reference level which is determined by the current values of input attenuation and intermediate frequency amplification, then to set said predetermined value of input attenuation into said input attenuation setting circuit and to set said predetermined value of intermediate frequency amplification into said intermediate frequency amplification setting circuit, and to set said predetermined values of frequency span and center frequency into said sweep signal generating circuit, then to initiate a peak detection frequency sweep by activating said sweep signal generating means to generate a sweep signal whereby said local oscillator circuit output signal is first swept over a frequency range corresponding to said predetermined frequency span which is centered on said predetermined center frequency and whereby said input attenuator means apply said predetermined value of attenuation to said input signal and said intermediate frequency amplifier performs amplification of said intermediate frequency signal in accordance with said predetermined amplification value, with said intermediate frequency signal generated during said peak detection frequency sweep being converted into digital data values and successively stored in addresses of said first memory circuit means, said control circuit means further acting to determine from said digital data values of said peak detection frequency sweep the peak level of the frequency spectrum of said input signal and to compute therefrom in conjunction with said memorized reference level and to set into said input attenuation setting means and said intermediate frequency amplification setting means respectively a value of input attenuation which is optimized with regard to generation of spurious signal components within said frequency analyzer and a corresponding value of intermediate frequency amplification such as to re-establish said stored reference level, and to set said memorized values of frequency span and center frequency into said sweep signal generating circuit means and thereafter activate said sweep signal generating circuit means to initiate a frequency sweep utilizing said frequency span and center frequency values.

4,607,216

APPARATUS FOR MEASUREMENT BY DIGITAL SPECTRUM ANALYZER

Takahiro Yamaguchi; Masayuki Ogawa, both of Gyoda, and Toshiharu Kasahara, Okegawa, all of Japan, assignors to Takeda Riken Kogyo Kubushikikaisha, Tokyo, Japan

Filed Sep. 25, 1984, Ser. No. 654,132

Claims priority, application Japan, Sep. 28, 1983, 58-181641

Int. Cl.⁴ G01R *23/16*

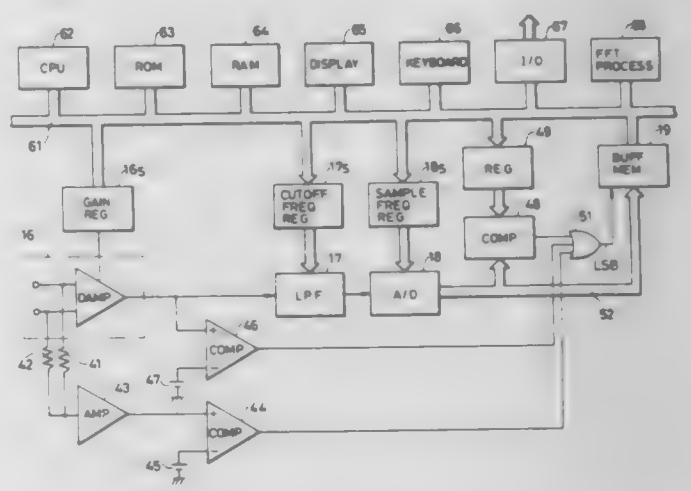
U.S. Cl. 324—77 B **13 Claims**

1. An apparatus for determining the transfer function of a device under test, based on the output of the device in response to a test signal input thereto, said apparatus comprising

generating means for generating test signals over a frequency range for said test and for supplying same to said device under test, and

transform means for performing Fourier transformation of said output of said device, including an analog-to-digital converter having a dynamic range which receives the signal to be Fourier transformed,

wherein said generating means and transform means include means for dividing said frequency range for said test into a plurality of frequency regions, for generating at respective successive times respective ones of said test signals for



respective ones of said frequency regions, for adjusting a respective gain level for the test signal supplied to said analog-to-digital converter for each said frequency region in correspondence to said dynamic range, and for successively performing said Fourier transformation of the respective outputs of said device for said test signals of the respective frequency regions.

4,607,217

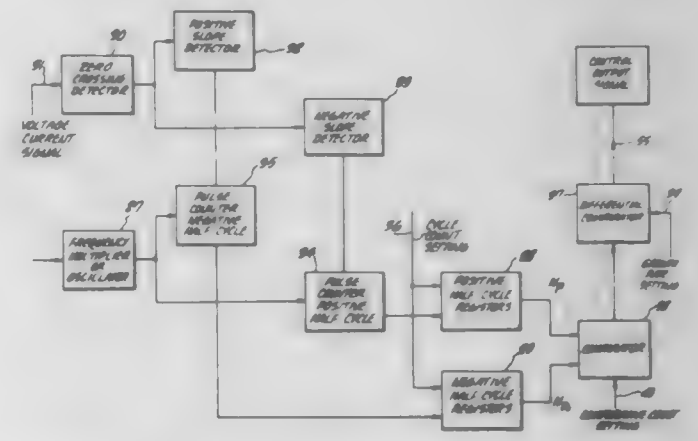
SUBSYNCHRONOUS RESONANCE DETECTION

Bharat Bhargava, Walnut, Calif., assignor to Southern California Edison Company, Inc., Rosemead, Calif.

Filed Sep. 28, 1983, Ser. No. 536,665

Int. Cl.⁴ G01R *23/02*

U.S. Cl. 324—78 R **16 Claims**



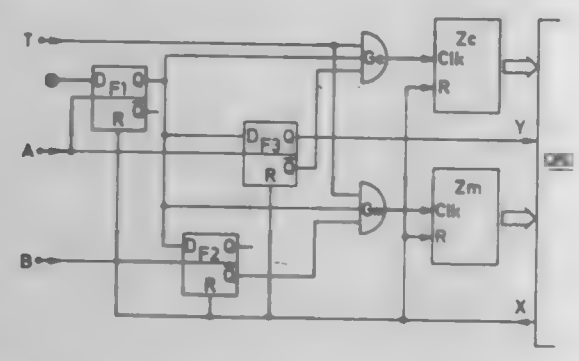
1. A method of detecting subsychronous resonance in an electrical a.c. power supply system comprising determining differences in a wave parameter of substantially successive positive half cycles of said a.c. power supply and substantially successive negative half cycles of said a.c. power supply, comparing the differences in the parameter of several positive half cycles and changes in the parameter of several negative half cycles, and applying such differences in a relationship to indicate the existence or otherwise of said subsynchronous resonance, wherein the parameter is the wave parameter and including respectively averaging the period of several positive half cycles and the period of several negative half cycles.

4,607,218

DIGITAL PHASE MEASUREMENT METHOD

Hans R. Stöcel, Rebstein, Switzerland, assignor to Wild Heerbrugg AG, Heerbrugg, Switzerland

Filed Feb. 29, 1984, Ser. No. 584,770
Claims priority, application Switzerland, Mar. 3, 1983, 1168/83
Int. Cl.[4] G01R *25/00*
U.S. Cl. 324—83 D 5 Claims



1. A method for digital measurement of the phase difference (F) between two cyclic and periodic signals (U,V) having the same frequency comprising the steps of;

providing a timing signal (T) having a frequency much higher than the frequency of either of said signals (U,V);

counting the cycles of said timing signal (T) in an internal corresponding to said phase difference (F) by starting to count said timing signal cycles at a zero passage (T1) of one (U) of said two signals (U,V) in a predetermined direction and ending said counting upon the next succeeding zero passage (T2) of the other of said two signals (V) in the same said predetermined direction;

using the number of said counted cycles in said phase difference interval to produce a first signal (Mi);

counting the cycles of said timing signal (T) in an interval corresponding to the period (P) if one of said signals (U) by starting to count said timing signal cycles at a zero passage (T1) of one (U) of said two signals in a predetermined direction and ending said counting upon the next succeeding zero passage (T3) of said same one (U) of said two signals (U,V) in said same predetermined direction;

producing a calibration signal (Ci) using the number of said counted cycles in said period interval;

averaging a number (n) of said first signals (Mi); and

determining said phase difference (F) using said number (n) of said first signals (Mi) and said calibration signal (Ci).

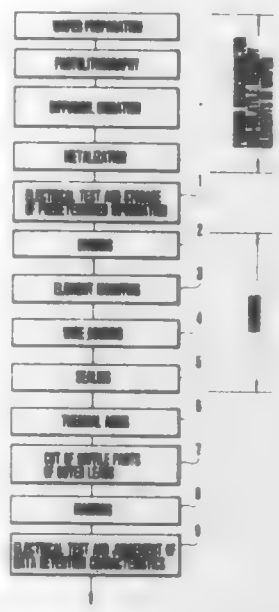
4,607,219

METHOD OF INSPECTING SEMICONDUCTOR NON-VOLATILE MEMORY DEVICES

Shigekazu Isosaka, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Sep. 9, 1983, Ser. No. 530,667
Claims priority, application Japan, Sep. 13, 1982, 57-159232
Int. Cl.[4] G01R *31/26*
U.S. Cl. 324—158 R 4 Claims

1. A method of inspecting semiconductor non-volatile memory devices comprising the steps of: preparing a plurality of semiconductor non-volatile memory elements into the form of a semiconductor wafer, writing predetermined information indicative of data retention capability into said semiconductor non-volatile memory elements in said semiconductor wafer, dividing said semiconductor wafer into a plurality of separate semiconductor non-volatile memory elements, housing said semiconductor non-volatile elements in individual packages to complete said semiconductor non-volatile memory devices, then reading information out of the completed semiconductor non-volatile memory devices respectively, checking with respect to the respective non-volatile memory devices whether



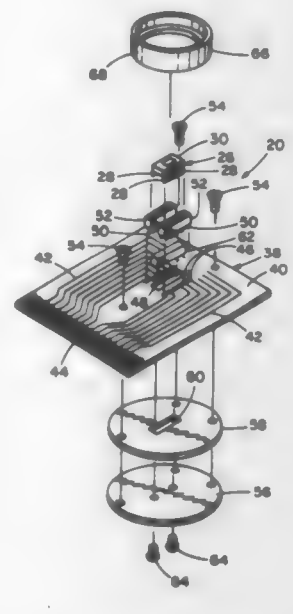
said written information indicative of data retention capability coincides with said read out information.

4,607,220

METHOD AND APPARATUS FOR LOW TEMPERATURE TESTING OF ELECTRONIC COMPONENTS

Kenneth F. Hollman, Carson City, Nev., assignor to The Micromanipulator Co., Inc., Carson City, Nev.

Filed May 7, 1984, Ser. No. 607,693
Int. Cl.[4] G01R *31/26*
U.S. Cl. 324—158 F 1 Claim



1. An attachment for being mounted on a hot/cold stage at an electronic component test station for use in testing an integrated circuit chip of the dual in-line package type having two rows of dependent conductive legs extending from a chip body, said stage being adapted to firmly mount an attachment placed thereon by pulling a vacuum, said attachment comprising:

a printed circuit board having a plurality of conductive strips and two rows of spaced apertures, said strips and apertures corresponding in number with one strip terminating at each aperture;

a pair of spaced, substantially parallel in-line connector sockets each having a series of terminal elements including dependent pin portions with each pin portion electrically connected to a corresponding conductive strip by means of being soldered in the aperture corresponding to that strip, each of said sockets releasably receiving one of the rows of said legs of said circuit chip so that the chip body

is elevated with respect to said printed circuit board and bridges said sockets;

an open top reservoir disposed and held on said printed circuit board surrounding and containing said chip and extending thereabove for holding sufficient liquid to cover said chip;

a base plate made of a material having good heat transfer characteristics and having a substantially closed base surface for application of said vacuum to mount said attachment on said stage;

a thermally and electrically insulative intermediate plate disposed between said base plate and said printed circuit board, said board having a window disposed between but extending short of said two rows of apertures, said intermediate plate having an opening aligned with said window;

a metallic block disposed in its entirety between said base plate and said chip body and concurrently engaging said base plate and said chip body, said block extending through said intermediate plate opening and said printed circuit board window; and

attachment means holding said printed circuit board and said base plate so that said attachment is removable as a unit from said stage.

4,607,221

NUCLEAR MAGNETIC RESONANCE METHOD AND APPARATUS

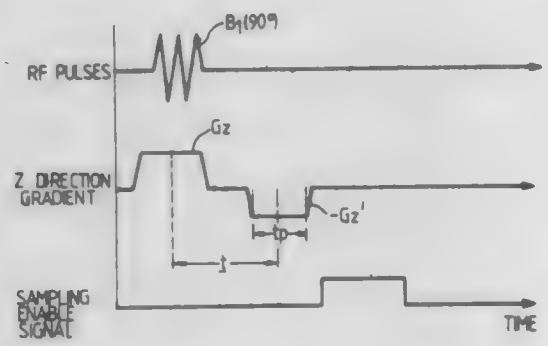
Ian R. Young, Sunbury-on-Thames, England, assignor to Picker International Limited, Wembley, England

Filed Sep. 16, 1983, Ser. No. 533,381

Claims priority, application United Kingdom, Sep. 17, 1982, 8226539

Int. Cl.⁴ G01R *33/20*

U.S. Cl. 324—306 **8 Claims**



1. A method of determining the rate of flow along a predetermined direction of a liquid containing a selected nuclei in a selected region of a body comprising: exciting nuclear magnetic resonance for said nuclei preferentially in a slice of said body which includes said region; subsequently applying a magnetic field having a gradient along said predetermined direction which is effective to cause a phase difference between the resonance for the liquid which is flowing, or has flowed in said predetermined direction, in said region and the resonance for the rest of said slice; measuring the free induction decay signal so as to obtain a measurement representative of said phase difference; and relating said phase difference to the rate of flow along said predetermined direction of said liquid through said region.

4,607,222

IMAGING REGION-OF-INTEREST IN MEDICAL NMR OBSERVATION

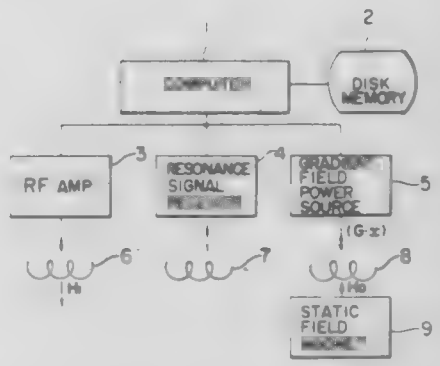
Tetsuo Yokoyama, Tokyo; Koichi Morishita, Kawasaki; Koichi Sano, Yokohama; Shimbu Yamagata, Kawasaki, and Akira Ogushi, Matsudo, all of Japan, assignors to Hitachi, Ltd. and Hitachi Medical Corporation, both of Tokyo, Japan

Filed Feb. 10, 1984, Ser. No. 578,790

Claims priority, application Japan, Feb. 10, 1983, 58-19815

Int. Cl.⁴ G01R *33/20*

U.S. Cl. 324—309 **6 Claims**



1. An imaging method of a region of interest for a medical nuclear magnetic resonance (NMR) imaging apparatus by a projection reconstruction method, said imaging method comprising the steps of:

measuring in a desired direction nuclear magnetic resonance projection data by changing a spin resonance frequency of a rotational magnetic field for causing nuclear magnetic resonance at a first frequency changing interval for a first region on a cross-section of an object to be examined, thereby obtaining first projection data at a first spatial sampling interval corresponding to said first frequency changing interval;

measuring in said direction nuclear magnetic resonance projection data by changing said spin resonance frequency of the rotational magnetic field for causing nuclear magnetic resonance at a second frequency changing interval which is larger than said first frequency changing interval for at least one second region on said cross-section of the object to be examined outside of said first region, thereby obtaining second projection data at a second spatial sampling interval which is larger than said first spatial sampling interval; and

performing interpolating calculation for said second projection data to provide interpolated data for said second region corresponding to said first spatial sampling interval.

4,607,223

NUCLEAR MAGNETIC RESONANCE IMAGING METHOD

John R. Mallard; Glyn Johnson; Linda M. Eastwood; Thomas W. T. Redpath, all of Aberdeen, and James M. S. Hutchison, Westhill, all of Scotland, assignors to National Research Development Corporation, London, England

Filed Aug. 4, 1983, Ser. No. 520,231

Claims priority, application United Kingdom, Aug. 13, 1982, 8223504

Int. Cl.⁴ G01N *24/08*

U.S. Cl. 324—309 **10 Claims**

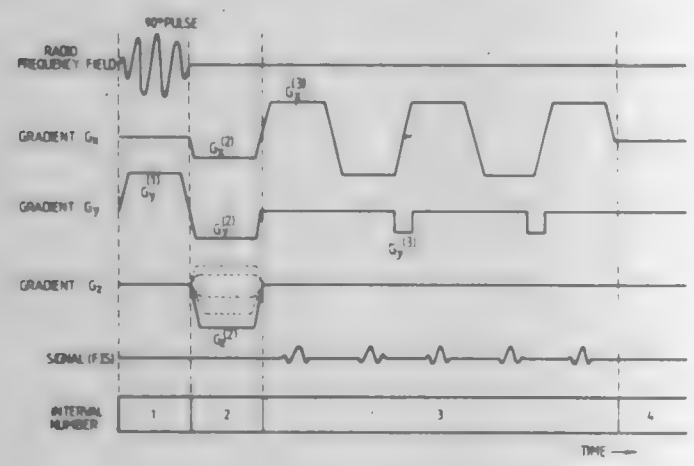
1. A method of deriving three dimensional image information from a selected volume defined by an object using nuclear magnetic resonance signals, the method comprising subjecting the object to a continuous, static magnetic field and carrying out a set of sequential steps which comprise:

(a) exciting nuclear spins in said selected volume by applying an rf pulse in the presence of a selection gradient;

(b) applying non-aligned first, second, and third gradients of

said magnetic field, said second gradient being aligned with said selection gradient;

(c) with said third gradient zero, periodically reversing said first gradient to cause said spins to rephase periodically, whereby a free induction signal (FIS) is generated, as said spins rephase; and phase encoding said spins in the direction of said second gradient prior to every read-out of the FIS from said object;



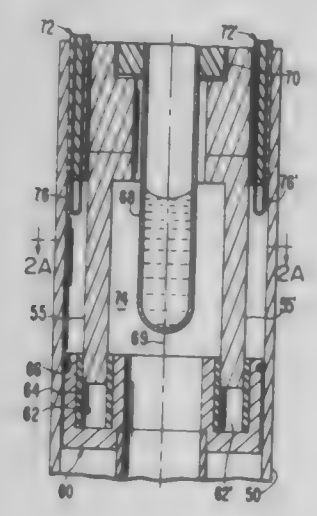
and then successively repeating said above set of steps with different values of gradient of said third gradient in step b, there being a recovery interval between the repetition of successive sets of said steps.

4,607,224

DOUBLE POST REENTRANT CAVITY FOR NMR PROBES

Robert S. Codrington, Los Altos Hills, Calif., assignor to Varian Associates, Inc., Palo Alto, Calif.

Filed Jun. 22, 1984, Ser. No. 623,746
Int. Cl.⁴ G01R *33/20*
U.S. Cl. 324—318 **6 Claims**



[redacted]ear magnetic resonance apparatus for analysis of a sample, comprising:

excitation means to provide RF excitation energy for exciting resonance of sample nuclei;

receiver means for response to RF signals eminating from said excited sample nuclei; and

probe means for providing a sample space and irradiating said sample in said sample space with said excitation energy and to intercept the radio frequency radiation eminating from said sample, comprising:

(a) cavity means for sustaining a selected resonant radio frequency, comprising a cavity body and cavity piston for adjusting the cavity length along an axis thereof,

(b) inductive means within said cavity body comprising a plurality of elongate members disposed in proximity to said sample space, said elongate members in common electrical contact at one end thereof and said piston adapted to receive each said inductive elongate member in a corresponding recess formed in the end of said piston without direct electrical contact between said member and said piston whereby a capacitive coupling is formed between each said inductive member and respective said piston,

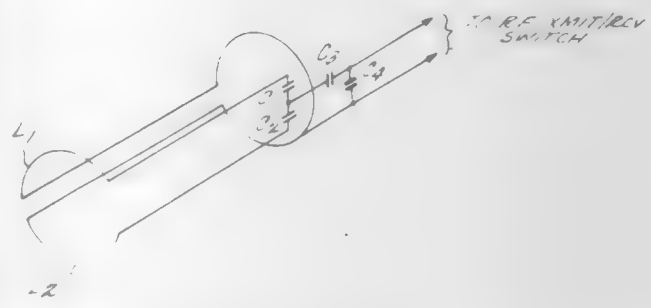
(c) excitation coupling means comprising a plurality of coaxial conductors, each further comprising a loop between the central and other conductor of said coaxial conductor, each said loop disposed in proximity to one said elongate member and adapted for translation along the axial extension of said elongate member, each said coupling loop communicating with said excitation means to provide selective phase of excitation energy to said proximate elongate member.

4,607,225

APPARATUS AND METHOD FOR REDUCING SPURIOUS CURRENTS IN NMR IMAGING APPARATUS INDUCED BY PULSED GRADIENT FIELDS

Lawrence E. Crooks, Richmond, Calif., assignor to Regents of the University of California, Berkeley, Calif.

Filed Jul. 19, 1983, Ser. No. 515,116
Int. Cl.⁴ G01R *33/20*
U.S. Cl. 324—318 **9 Claims**



1. NMR imaging apparatus comprising:

at least one pulsed magnetic field gradient coil for controllably generating audio frequency pulsed magnetic gradient fields;

a radio frequency signal coil structure having plural parallel-connected coils magnetically linked to said gradient coil and therefore subject to induced audio frequency currents caused by said pulsed gradient fields which induced currents, if permitted to flow, generate magnetic fields opposing the pulsed gradient fields thus limiting the rapidity with which such gradient fields may be pulsed, and

a capacitor connected in series with each of said parallel-connected coils for causing said parallel-connected coils to have increased electrical impedance with respect to said induced currents, each said capacitor being of equal capacitance so as to maintain a balanced r.f. feed for said radio frequency signal coil while simultaneously substantially impeding passage of said induced audio frequency currents and substantially passing radio frequency signals.

4,607,226

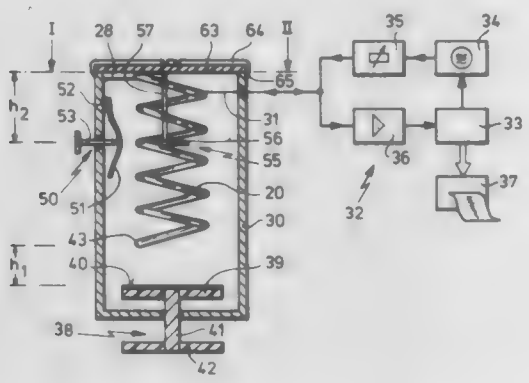
MEASURING HEAD AND A METHOD FOR RECORDING HIGH-RESOLUTION NUCLEAR RESONANCE SIGNALS

Heinz Zeiger, Karlsruhe, Fed. Rep. of Germany, assignor to Bruker Medizentechnik GmbH, Forchheim, Fed. Rep. of Germany

Filed Nov. 13, 1984, Ser. No. 670,642
Claims priority, application Fed. Rep. of Germany, Nov. 19, 1983, 3341802; Dec. 2, 1983, 3343625
Int. Cl.⁴ G01R *33/20*
U.S. Cl. 324—318 **14 Claims**

1. A measuring head for high-resolution nuclear resonance measurements in defined areas of organic tissue of human or animal bodies (11) which are exposed to a homogenous magnetic field, comprising an RF transmitter and receiver unit suitable for being applied upon the body (11), characterized in

that the device takes the form of a helical line (20) with a coaxial shielding (23), that the shielding (23) is open on at least one end (25) and the other end of the helical line (20) is free of any connections, and that finally the uppermost winding (21)



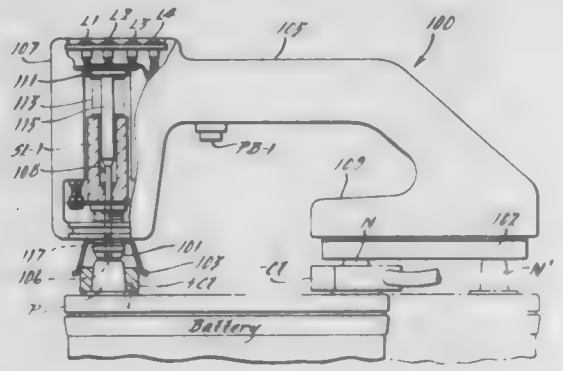
of the helical line (20) which is connected with the shielding (23) via a connection (28) is located substantially in the plane of the upper open end (25) where it forms the application plane (27).

4,607,227

OPEN CIRCUIT VOLTAGE TEST DEVICE

John S. Heitert, Northville, and John R. Van Wiemeersch, Harper Woods, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Jan. 20, 1984, Ser. No. 572,718
Int. Cl.[4] G01N *27/46*
U.S. Cl. 324—437 11 Claims



1. An open circuit battery voltage checking device comprising:

a first electrical terminal intended for placement in contact with a positive terminal post on a storage battery;

a second electrical terminal intended for placement in contact with a negative terminal post on a storage battery;

means adjacent one of said first and second terminals for marking the correspondingly contacted terminal post with a distinguishing feature;

a solenoid for actuating said marking means whereby the marking means is brought into contact with the said contacted terminal post;

circuit means connected to said first and second terminals for enabling said solenoid when the open circuit voltage between said first and second terminals is within a predetermined range of values; and

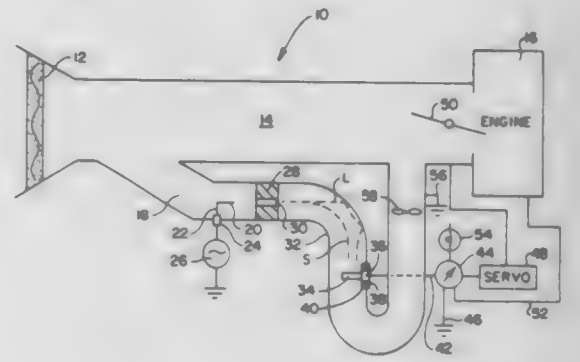
manually actuatable means for energizing said solenoid when manually actuated and when said solenoid is enabled by said enabling circuit means.

4,607,228

APPARATUS AND METHOD FOR MEASURING THE CONCENTRATION OF SOLID PARTICLES IN A FLUID STREAM

Robert B. Reif, Grove City, Ohio, assignor to Battelle Development Corporation, Columbus, Ohio

Filed Jan. 13, 1984, Ser. No. 570,300
Int. Cl.[4] G01N *27/60*
U.S. Cl. 324—454 22 Claims



1. Apparatus for measuring the concentration of solid particles in a fluid stream, said apparatus comprising:

means for producing a sub-stream of fluid, means for producing a substantially constant velocity in said sub-stream which is independent of the velocity of said fluid stream;

a triboelectric charging surface disposed such that particles in said sub-stream can impact upon said surface, thereby effecting triboelectric charging of said particles impacting upon said surface; and

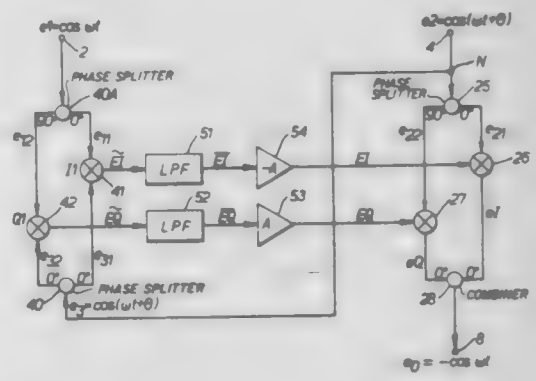
charge measuring means for measuring the charge produced on said particles by said impacts.

4,607,229

PHASE SHIFTER

Seiji Isobe, Kanagawa, and Seiji Okubo, Yokohama, both of Japan, assignors to Kabushiki Kaisha Toshiba, Tokyo, Japan

Filed Nov. 8, 1984, Ser. No. 669,328
Claims priority, application Japan, Dec. 21, 1983, 58-241384
Int. Cl.[4] H03K *5/13, 5/22*
U.S. Cl. 328—155 3 Claims



1. A phase shifter comprising:

first and second terminals for receiving first and second signals having a phase difference from each other;

first mixing means for mixing said first signal with said second signal;

means for displacing the phase of said first signal by 90 degrees to produce a first phase-displaced signal;

second mixing means for mixing said first phase-displaced signal with said second signal;

third mixing means for mixing said second signal with an output signal provided from said first mixing means;

means for displacing the phase of said second signal by 90 degrees to produce a second phase-displaced signal;

fourth mixing means for mixing said second phase-displaced

signal with an output signal provided from said second mixing means; and

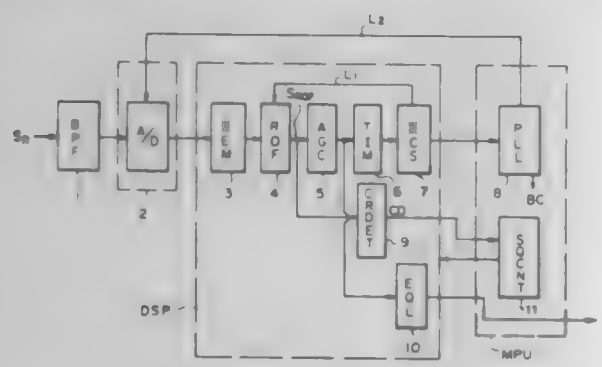
combining means for combining an output signal of said third mixing means with an output signal provided from said fourth mixing means to generate a signal which has a phase opposite to that of said first signal.

4,607,230

RECEIVER UNIT HAVING SYNCHRONOUS PULL-IN CIRCUIT

Takashi Kaku, Tama, and Chihiro Endo, Yokohama, both of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Aug. 28, 1985, Ser. No. 770,175
Claims priority, application Japan, Aug. 29, 1984, 59-179565
Int. Cl.[4] H03D *3/00*
U.S. Cl. 329—50 26 Claims



1. A receiver unit having a synchronous pull-in circuit, comprising: a demodulator for demodulating a received signal with a carrier; a transversal filter having a roll-off characteristic, i.e., a roll-off filter, for transforming the demodulated signal in the form of an impulse response therefor by adjusting its tap coefficients; a timing discriminator for extracting a timing signal contained in the output from the roll-off filter; and a decision part for detecting a phase deviation between the thus extracted timing signal and an internal clock by which the receiver unit itself is synchronized, characterized in that

the synchronous pull-in circuit is formed with both the decision part and the roll-off filter, which roll-off filter is operative to apply a phase shift to the received signal given from the demodulator by adjusting its tap coefficients in accordance with the phase deviation determined by the decision part, whereby the timing signal of the received signal is synchronously pulled-in to the internal clock.

4,607,231

VARIABLE SWITCHED-CAPACITOR FILTER CAPABLE OF CHANGING THE FILTER CHARACTERISTIC THEREOF

Kenji Nakayama, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jun. 6, 1985, Ser. No. 742,156
Claims priority, application Japan, Jun. 7, 1984, 59-116929
Int. Cl.[4] H03F *3/68;* H03H *7/10*
U.S. Cl. 330—51 7 Claims

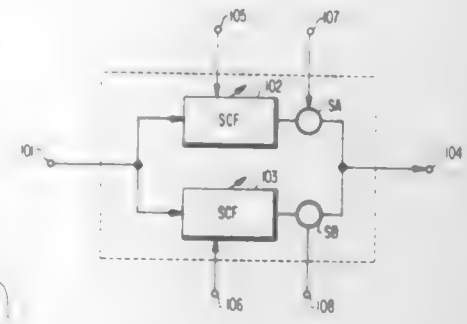
1. A switched-capacitor filter responsive to control signals for changing its filter characteristics comprising:

first and second variable switched-capacitor filter means, each such means having a plurality of capacitors at least one of which is selected in response to a control signal, each such means adapted to change its filter characteristic based on the selected capacitor or capacitors and each such means being adapted to receive the same input signal;

first switching means and second switching means connected at a common output point;

said first switching means also being connected to said first filter means and being adapted, during a first state, to pass a first output signal from said first variable switched-capacitor filter means to said output point and, during a second state, to prevent the first output signal from reaching said output terminal; and

said second switching means also being connected to said second filter and being adapted, during said second state, to pass a second output signal from said second variable switched-capacitor filter means to said output point and, during said first state, to prevent the second output signal from reaching said output terminal;



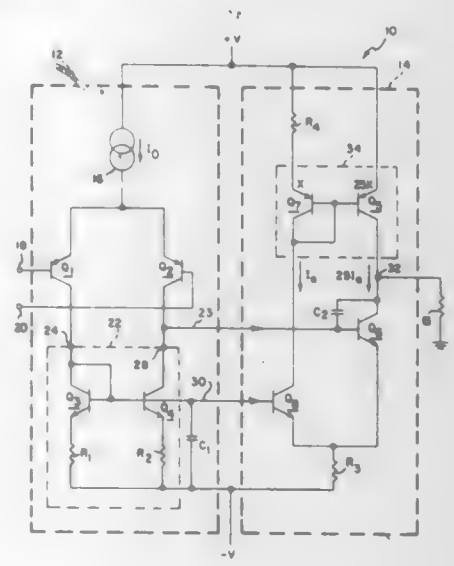
said selection of at least one capacitor in said first variable switched-capacitor filter means in response to said control signals being performed during said second state, said selection of at least one capacitor in said second variable switched-capacitor filter means in response to said control signals being performed during said first state.

4,607,232

LOW VOLTAGE AMPLIFIER CIRCUIT

Harry A. Gill, Jr., Cupertino, Calif., assignor to Raytheon Company, Lexington, Mass.

Filed Apr. 1, 1985, Ser. No. 718,617
Int. Cl.[4] H03F *3/45, 3/26*
U.S. Cl. 330—255 12 Claims



1. An electrical circuit comprising:

(a) a pair of transistors having collector electrodes connected together at an output terminal and emitter electrodes coupled to a voltage supply;

(b) a current source; and,

(c) means, responsive to current produced by the current source, for establishing bias currents to base electrodes of the pair of transistors in accordance with an input signal, such bias currents being dependent on the current produced by the current source and being substantially independent, over a nominal operating voltage range of the circuit, of variations in the voltage supply, said bias current establishing means comprising:

(i) a third transistor having an emitter electrode coupled to the emitter electrode of a first one of the pair of transistors and a collector electrode coupled to the base electrode of a second one of the pair of transistors; and

(ii) means, comprising a current mirror, for dividing current produced by the current source between the base electrode of the third transistor and the base electrode

of the first one of the pair of transistors selectively in accordance with the input signal.

4,607,233

PUSH-PULL AMPLIFIER CIRCUIT WITH STABLE CLASS AB OPERATION

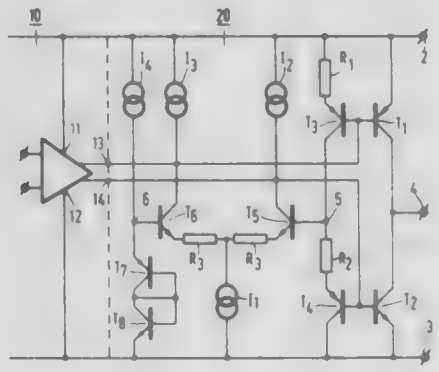
Adrianus J. M. Van Tuijl, Nijmegen, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 27, 1985, Ser. No. 706,375

Claims priority, application Netherlands, Feb. 29, 1984, 8400634

Int. Cl.[4] H03F *3/26*

U.S. Cl. 330—267 5 Claims



1. In a push-pull amplifier means having an output terminal, a first and second input terminal, a first and second power supply terminal, a first and a second transistor of opposite conductivity type, said first and second transistors having respective collector-emitter circuits connected in series and connected to said first and second power supply terminals, said first and second transistors further having respectively, a first and a second collector coupled to said output terminal, and respectively, a first and a second base coupled to said first and second input terminals, said push-pull amplifier means further having means for maintaining the sum of the base-emitter voltages of said first and second transistors substantially constant, said means comprising voltage-to-current converter means having a third transistor for converting said base emitter voltage of said first transistor into a first current, and current-to-voltage converter means connected to said voltage-to-current converter means for converting said first current to a first voltage equal to said base-emitter voltage of said third transistor, said current-to-voltage converter means comprising a fourth transistor substantially indentical to said third transistor, said fourth transistor having a base connected to said base of said second transistor, the improvement comprising

a differential amplifier having a fifth transistor having a fifth emitter, a fifth collector, and a fifth base and a sixth transistor having a sixth emitter, a sixth collector, and a sixth base, said push-pull amplifier means further comprising a constant current source connected to said first power supply terminal, unidirectional conducting means connected between said constant current source and said second power supply terminal, a common emitter line connected to said fifth and sixth emitters, a first current source arranged in said common emitter line, a second and a third substantially identical current source furnishing a sum current substantially equal to said first current connected to respective ones of said fifth and sixth collectors, means coupling said fifth base to said current-voltage converter, means connecting said sixth base to said unidirectional conducting means, the voltage across said unidirectional conducting means constituting a reference voltage for said sixth base, and means connecting said fifth and sixth collectors to respective ones of said first and second bases.

4,607,234

GAIN-CONTROLLED AMPLIFIER ARRANGEMENT

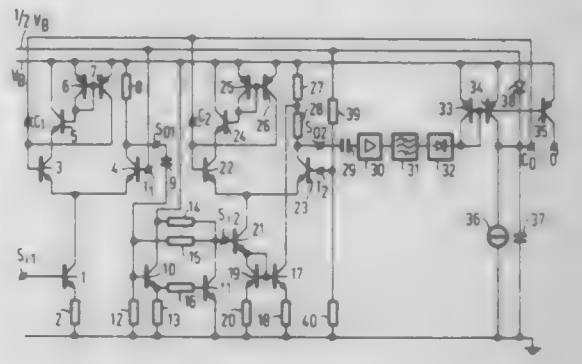
Ernst H. Nordholt, Berkel en Rodenrijs, and Hendrikus C. Nauta, Nootdorp, both of Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 11, 1985, Ser. No. 700,232

Claims priority, application Netherlands, Feb. 16, 1984, 8400493

Int. Cl.[4] H03G *3/20*

U.S. Cl. 330—278 5 Claims



1. In gain-controlled amplifier apparatus having a first gain-controlled amplifier stage having a first control input, a first signal input and a first signal output, a second gain-controlled amplifier stage connected in cascade to said first gain-controlled amplifier stage, said second gain-controlled amplifier stage having a second control input, a second signal input and a second signal output, the improvement comprising:

AM detector means connected to said second gain-controlled amplifier stage for detecting the AM component of a signal applied thereto and producing an output current varying in dependence thereon;

integrator means connected to said AM detector means for receiving and integrating said output current and generating a control voltage varying in dependence on the so-integrated current;

means applying said control voltage to said first and second control input so that said second gain controlled amplifier stage is blocked for increasing values of said output current prior to control of said first gain controlled amplifier stage in response to said control signal applied to said first control input; and

signal shunting means interconnected between said first output and said AM detector means for shunting signals from said first output to said AM detector means when said second gain-controlled amplifier stage is blocked.

4,607,235

AMPLIFIER ARRANGEMENT COMPRISING A PROTECTION CIRCUIT

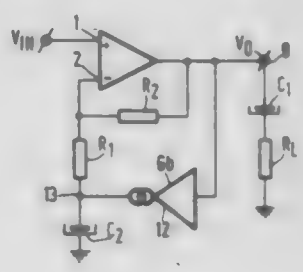
Evert Seevinck, Enschede, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 14, 1985, Ser. No. 711,782

Claims priority, application Netherlands, Mar. 15, 1984, 8400822

Int. Cl.[4] H03F *3/04*

U.S. Cl. 330—298 8 Claims



1. In an amplifier arrangement comprising means for furnish-

ing a reference potential, a first amplifier stage having a first amplifier input, a second input, and a first amplifier output, a second amplifier stage connected in cascade with said first amplifier stage, said second amplifier stage having at least a first output transistor and a second amplifier output coupled to said transistor, a negative-feedback network comprising a first resistor arranged between said second amplifier stage and said first amplifier input and a series circuit arranged between said first input and said reference potential and comprising a second resistor and a capacitor connected to said second resistor at a junction point, and a protection circuit for protecting said first output transistor, said protection circuit having an output, the improvement comprising:

means for connecting said output of said protection circuit to said junction point of said second resistor and said capacitor.

4,607,236

LINEARIZED PHASE COMPARATOR AND PHASE-LOCKED LOOP COMPRISING SUCH A PHASE COMPARATOR

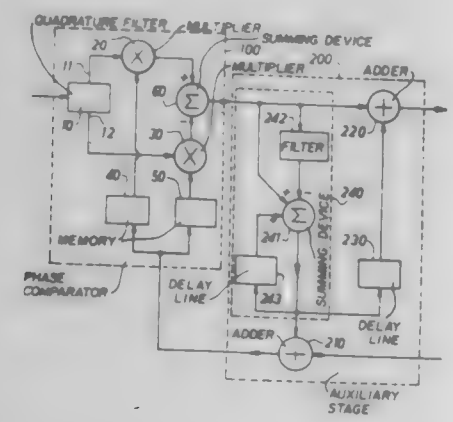
Marcel LeQueáu, Ozoir-La-Ferriere, France, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 25, 1985, Ser. No. 715,423

Claims priority, application France, Mar. 30, 1984, 84 05024

Int. Cl.[4] H03D *13/00*; H03L *7/10*

U.S. Cl. 331—17 **8 Claims**



1. In a phase comparator system having first and second inputs for receiving first and second input signals to be compared, and a first output, the system comprising a phase comparator with third and fourth inputs and a second output, means coupling said third and fourth inputs to said first and second inputs respectively and means coupling said second output to said first output; the improvement comprising a dynamic reduction stage comprised of means coupled between said second and fourth inputs for reducing the phase difference between said signals applied to said third and fourth inputs by a determined value, and delay means coupled between said first and second outputs for increasing the output signal at said second output by an amount dependent upon said determined value.

4,607,237

TEMPERATURE-COMPENSATED CRYSTAL OSCILLATOR CIRCUIT

Toshio Aota, Soma, Japan, assignor to Alps Electric Co., Ltd., Japan

Filed Nov. 20, 1985, Ser. No. 800,055

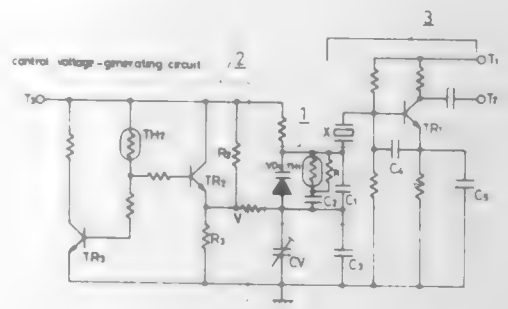
Claims priority, application Japan, Nov. 21, 1984, 59-246846

Int. Cl.[4] H03B *5/36*; H03L *1/04*

U.S. Cl. 331—116 R **4 Claims**

1. A temperature-compensated crystal oscillator circuit using a crystal oscillator whose oscillation frequency is maintained constant against temperature changes, the temperature-compensated crystal oscillator circuit comprising:

a reactance compensation circuit for providing temperature compensation for the crystal oscillator at low temperatures, the compensation circuit including at least the parallel combination of a temperature transducer and a variable-capacitance device, the parallel combination being connected in series with the crystal oscillator; and



a control voltage-generating circuit that applies a control voltage corresponding to the ambient temperature of the crystal oscillator to the variable-capacitance device for providing temperature compensation for the crystal oscillator at high temperatures.

4,607,238

MONOLITHIC INTEGRATED RC-OSCILLATOR

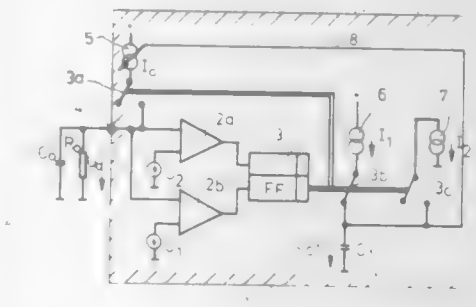
Cord H. Kohsiek, Ellerau, Fed. Rep. of Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 13, 1984, Ser. No. 681,472

Claims priority, application Fed. Rep. of Germany, Dec. 19, 1983, 3345852

Int. Cl.[4] H03K *3/02*

U.S. Cl. 331—143 **5 Claims**



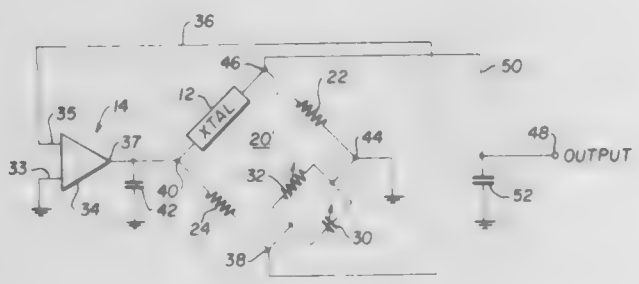
1. A monolithic integrated RC-oscillator, comprising a single external network which comprises a first capacitor and a discharge circuit and which is arranged between a terminal of the integrated circuit and a point of reference potential, a threshold circuit having two switching thresholds, a charging circuit, which can be switched on and off periodically, connected to said network and said terminal being connected to said threshold circuit which has an upper and a lower switching threshold and which causes the charging circuit to be switched on and switched off during operation when the voltage across the first capacitor of the network reaches the lower and the upper switching threshold, respectively, a second internal capacitor coupled to said charging circuit, the charging current of the charging circuit being controlled by the voltage across said second capacitor, which has its charge altered in a first sense with a first current when the first capacitance is discharged and which has its charge altered in a second, opposite sense with a second current when said first capacitance is charged.

4,607,239

ADJUSTMENT OF THE FREQUENCY-TEMPERATURE CHARACTERISTICS OF CRYSTAL OSCILLATORS

Arthur Ballato, Long Branch, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Feb. 28, 1985, Ser. No. 707,107
Int. Cl.[4] H03L *1/00;* H03B *5/32*
U.S. Cl. 331—176 8 Claims



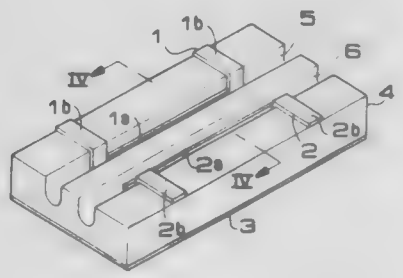
1. A temperature compensated oscillator comprising:
a crystal resonator;
a bridge circuit including a first pair of opposing arms each comprised solely of resistive impedance means; a second pair of opposing arms respectively comprised of said crystal resonator and a parallel circuit including variable resistive impedance means and a variable capacitive reactance means; a first bridge terminal common to one said resistive impedance means of said first pair of opposing arms and said crystal resonator of said second pair of opposing arms, a second bridge terminal common to the other said resistive impedance means of said first pair of arms and said crystal resonator, a third bridge terminal common to said other resistive impedance means and said parallel circuit of said second pair of arms, and a fourth bridge terminal common to said one resistive impedance means and said parallel circuit.

4,607,240

DIRECTIONAL COUPLER

Yoji Isota; Osami Ishida, and Fumio Takeda, all of Kanagawa, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 20, 1984, Ser. No. 684,037
Claims priority, application Japan, Dec. 21, 1983, 58-196622[U]
Int. Cl.[4] H01P *5/18*
U.S. Cl. 333—116 5 Claims



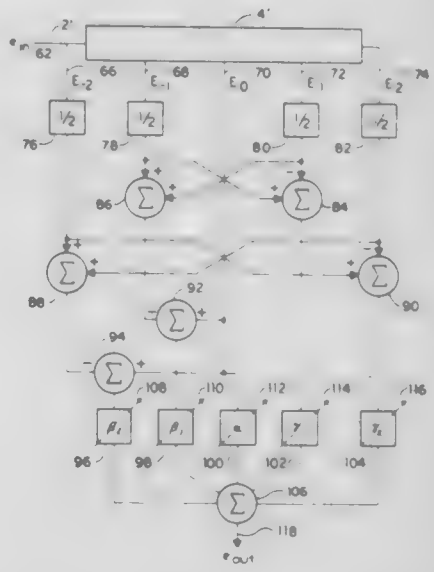
1. A directional coupler comprising a dielectric plate, first and second closely adjacent grooves formed in one surface of said plate and a ground member formed on the opposite surface of said plate, said grooves in cross section being smoothly curved at the bottoms thereof, a main line and an auxiliary line comprising a coupling junction, said main line being formed of a conductive strip positioned in said first groove, said auxiliary line being formed of a conductive strip positioned in said second groove, and arms connected to opposite ends of said main line and said auxiliary line and disposed on said one surface of said dielectric plate.

4,607,241

TRANSVERSAL FILTER EQUALIZER WITH MINIMALLY INTERACTIVE ADJUSTMENTS

Harvey M. Horowitz, Laguna Hills, and Dominique H. Veillard, San Diego, both of Calif., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed May 15, 1985, Ser. No. 734,306
Int. Cl.[4] H03H *15/00, 7/03*
U.S. Cl. 333—166 10 Claims



1. Apparatus for providing amplitude and/or phase equalization of a channel adapted to process a signal, such apparatus comprising:
a. means for accepting said signal, and providing therefrom, first, second, and third relatively delayed signals, wherein the delay times of said delayed signals are essentially integer multiples of a unit delay, and said second delayed signal constitutes a reference signal,
b. first and second means for algebraically combining the first and third of said delayed signals to produce first and second resultant signals,
c. means for combining the first of said resultant signals with said reference signal to produce a substantially d.c. free component signal,
d. means for receiving and modifying the amplitude and sign of said component signal to provide a first partial signal to effect amplitude equalization of said channel,
e. means for receiving and modifying the amplitude and sign of said second resultant signal to provide a second partial signal to effect phase equalization of said channel,
f. means for receiving and modifying the amplitude and sign of said reference signal to provide a third partial signal to effect the absolute level of equalization of said channel, and
g. means for combining said first, second and third partial signals to effect overall equalization of said channel.

4,607,242

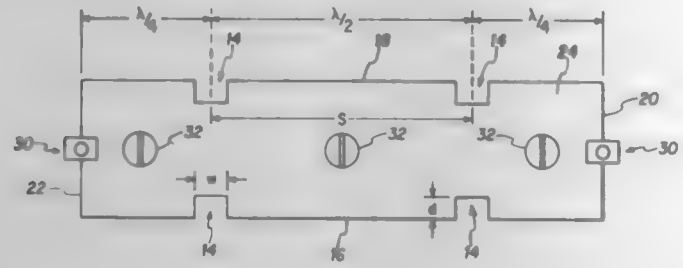
MICROWAVE FILTER

James C. Cozzie, Solon, Iowa, assignor to Rockwell International Corporation, El Segundo, Calif.

Filed May 2, 1983, Ser. No. 490,282
Int. Cl.[4] H01P *1/207, 11/00*
U.S. Cl. 333—209 5 Claims

1. An electrical filter comprising:
input means for receiving electrical energy having a frequency within a microwave range of 1–5 GHZ;
a filter body constructed and arranged to form a waveguide at said microwave frequencies and coupled to said input means for transmitting a selected band of frequencies within said received electrical energy frequency range, said filter body including a main body having a cylindrical configuration extending along a longitudinal axis and a plurality of circular U-shaped channels formed in said main body and spaced along said longitudinal axis to fix

the frequency and bandwidth of said band, said filter body having an electrically conductive coating covering a portion of said main body and at least one of the said channels; and



output means for providing an output of said transmitted electrical energy.

4,607,243

COMPLEX CAPACITIVE IMPEDANCE WITH A VOLTAGE FOLLOWER CIRCUIT

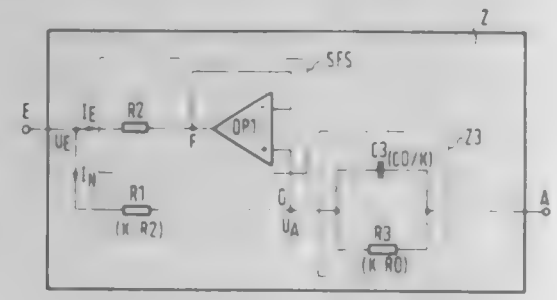
Benno Dreier, Korntal, Fed. Rep. of Germany, assignor to International Standard Electric Corporation, New York, N.Y.

Filed Sep. 21, 1984, Ser. No. 653,373

Claims priority, application Fed. Rep. of Germany, Sep. 22, 1983, 3334243

Int. Cl.[4] H03H *11/48*

U.S. Cl. 333—214 2 Claims



1. A complex capacitive impedance comprising:

a first node (e);

a first resistor (R1) having one end connected to said node;

a capacitive impedance (Z3) connected in a series between the other end of said first resistor (R1) and a second node (A) such that said capacitive impedance (Z3) and said first resistor (R1) form a voltage divider;

a voltage follower circuit (SFS) connected to said first node and in parallel with said first resistor (R1), said voltage follower circuit comprising an operational amplifier (OPI), the noninverting input of said operational amplifier being connected to a second node (G) located between the other end of said first resistor (RI) and said capacitive impedance and the inverting input of said operational amplifier being connected by a shunt wire to the output of said operational amplifier, and a second resistor (R2, R5) connected at one end to said first node and at the other end to the output of said operational amplifier, wherein said capacitive impedance (Z3) comprises a combination of a third resistor (R4) in a series with a combination of a fourth resistor (R3) and a capacitor (C3), wherein said fourth resistor (R3) is made having a large enough value that said capacitor (C3) has a value considerably lower than that total capacitance of said complex capacitive impedance as said complex capacitive impedance appears to said first node (E).

4,607,244

Patent Not Issued For This Number

4,607,245

GAS INSULATED ELECTROMAGNETIC INDUCTION APPLIANCE

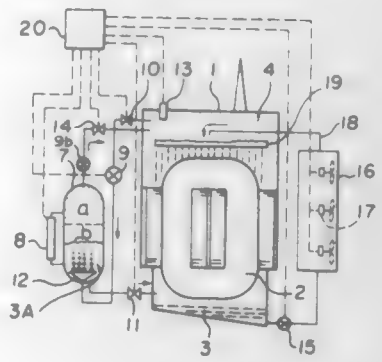
Yutaka Kuroda, F-204, 3-17, Sakuragaokaa 1-chome; Yoshio Yoshida, No. 8, Sakuragaoka 3-chome, both of Mino-shi, Osaka; Yuichi Kabayama, 18-5, Fujigao 6-chome, Katano-shi, Osaka, all of Japan; Tsugio Watanabe, Ako, Japan; Tetsuro Hakata, Ako, Japan, and Takahiro Matsumoto, Ako, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo; Yutaka Kuroda, Osaka; Yoshio Yoshida, Osaka and Yuichi Kabayama, Osaka, all of, Japan

Filed Feb. 7, 1985, Ser. No. 699,127

Claims priority, application Japan, Feb. 9, 1984, 59-22649

Int. Cl.[4] H01F *27/08*

U.S. Cl. 336—57 4 Claims



1. A gas insulated electromagnetic induction appliance which carries out insulation and cooling, within an operating temperature, comprising a main body principally composed of a winding and an iron core housed in a container vessel, in which a non-condensing insulating gas and a condensing insulating coolant are confined,

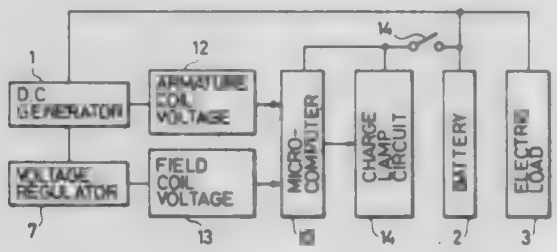
(a) a pressure detector for detecting a pressure within said container vessel;
(b) a gas reservoir connected to said container vessel through a gas discharging passgeway including a first pipe line, a first gas valve, a first compressor, and a gas diffuser in said reservoir; a gas feeding passageway between said vessel and said reservoir including a second pipe line and a second gas valve; and a liquid feeding passageway between said vessel and said reservoir including a third pipe line and a liquid valve;
(c) a definite quantity of insulating coolant confined in said gas reservoir;
(d) a liquid surface detector for detecting a quantity of said insulating coolant in said gas reservoir; and
(e) control means which controls said gas values said liquid valve, and said first compressor to thereby regulate a pressure in said container vessel and a quantity of the liquid in said gas reservoir.

4,607,246

MALFUNCTION INDICATING METHOD FOR VEHICLE-MOUNTED DC GENERATOR

Hifumi Wada, and Shinji Nishimura, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 3, 1984, Ser. No. 657,114
Int. Cl.[4] B60Q *1/00*; H02P *9/00*
U.S. Cl. 340—52 F 4 Claims



4. A malfunction detection and indication system, for a DC generator, comprising; a malfunction indicator capable of operating in both continuous and intermittent modes, control means for distinguishing plural types of generator malfunctions, said control means including at least two detection inputs, an armature terminal coupled to a first one of said detection inputs, said armature terminal being directly connected to one winding of an armature of said DC generator, a field winding terminal connected to another of said detection inputs, said field winding terminal being directly connected to one end of a field winding of said DC generator, said field winding terminal being electrically isolated from said armature terminal, said control means controlling actuation of said indicator in one of said continuous and intermittent modes in response to a determination of the type of generator malfunction.

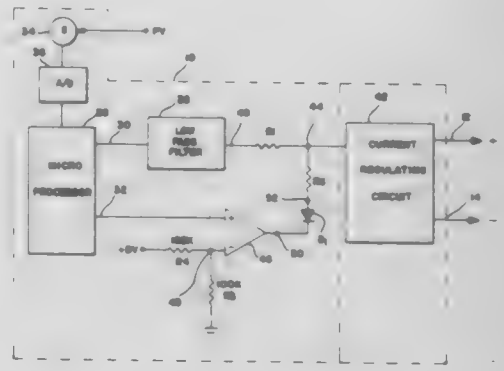
4,607,247

ON-LINE SERIAL COMMUNICATION INTERFACE FROM A TRANSMITTER TO A CURRENT LOOP

Edward L. Sterling, Jr., Cleveland, and Edward Bastijanic, Concord, both of Ohio, assignors to The Babcock & Wilcox Company, New Orleans, La.

Filed Aug. 12, 1985, Ser. No. 764,917
Claims priority, application Japan, Oct. 3, 1983 58-186431
Int. Cl.[4] H04M *11/04*
U.S. Cl. 340—310 A 4 Claims

1. In a current loop arrangement having a power supply for supplying a current at various levels, a current loop connected to the power supply for carrying the current levels, a current regulating circuit connected to the current loop for drawing the current levels from the power supply according to a voltage applied to an input of the current regulating circuit, and a transmitter having microprocessor means with one port connected to the input of the current regulating circuit for applying a continuous voltage level to the current regulating circuit which is proportional to a process variable measured by the transmitter, the microprocessor means having a second port for supplying serial communication voltage pulses, an on-line serial communication interface, for establishing communication between the microprocessor and the current loop, comprising a comparator having an output connected to the input



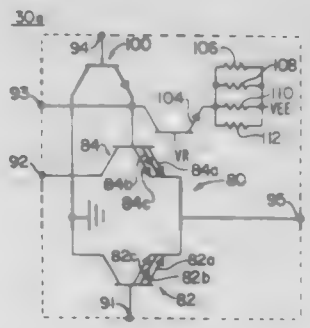
of the current regulating circuit, a first input connected to the second port of the microprocessor means for receiving the serial communication voltage pulses, and a second input adapted for connection to a source of fixed voltage at a selected level, whereby the current level drawn by the current regulating circuit is modulated.

4,607,248

DIGITAL TO ANALOG CONVERTER HAVING INTEGRATED DIGITAL AND ANALOG CIRCUITRY

Alexander T. Botka, Underhill, Vt., and Evan Colton, Lynnfield, Mass., assignors to Analogic Corporation, Wakefield, Mass.

Filed Jul. 25, 1983, Ser. No. 516,765
Int. Cl.[4] H03K *13/02*
U.S. Cl. 340—347 DA 9 Claims



1. A D/A converter for converting a digital signal having a number of bits to an analog signal comprising:
an integrated circuit digital array disposed on a single monolithic element and including:
a register for storing said number of bits;
a buffer circuit for receiving said number of bits from said register;
an analog current switching network including a said number of first current switching circuits, each of which provides the proper current output in response to the delivery of an associated bit from said buffer circuit; each said first current switching circuit including an emitter coupled switch circuit including two pluralities of parallel connected transistor cells, with the base of each one of the cells of one of the pluralities of transistor cells connected with said buffer circuit and the base of each one of the cells of the other of the pluralities of transistor cells connected with a second current switching circuit, said second current switching circuit including a first transistor cell with its emitter connected to the base of each one of the cells of said other of the pluralities of transistor cells in said emitter coupled switch circuit whereby the switched currents are nominally equal and the glitch is minimized

by virtually equalizing the turn-on and turn-off times of said first current switching circuits; and

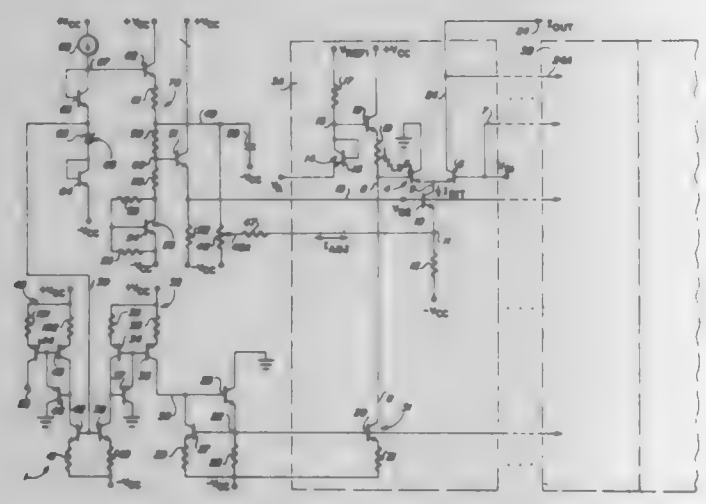
a voltage divider network responsive to the current output from said analog current switching network for providing voltages representative of the bit presented by the associated buffer circuit.

4,607,249

INPUT LEVEL SHIFTING CIRCUIT FOR LOW VOLTAGE DIGITAL-TO-ANALOG CONVERTER

Jimmy R. Naylor, Tucson, Ariz., assignor to BBRR-Brown Corporation, Tucson, Ariz.

Filed May 8, 1985, Ser. No. 732,162
Int. Cl.[4] H03M *1/00*
U.S. Cl. 340—347 DA 7 Claims



1. In a digital-to-analog converter including

i. a plurality of bit circuits, each including a resistor determinative of a bit current for that bit circuit flowing through a current source transistor having an emitter connected to the resistor and a collector connected to a bit current switch circuit responsive to a digital input signal to switch that bit current into a summing conductor, the bit current switch circuit including first and second transistors with their emitters coupled to the collector of the current source transistor, and

ii. a bias circuit producing a bias voltage and applying it to the base of the second transistor of each of the bit current switch circuits,

the improvement in each bit circuit comprising the combination of:

(a) an input diode having its cathode responsive to the digital input signal and its anode coupled to a pullup resistor and the base of a third transistor;

(b) a level shifting resistor having one terminal coupled to the emitter of the third transistor and a second terminal coupled to the base of the first transistor of the bit current switch circuit; and

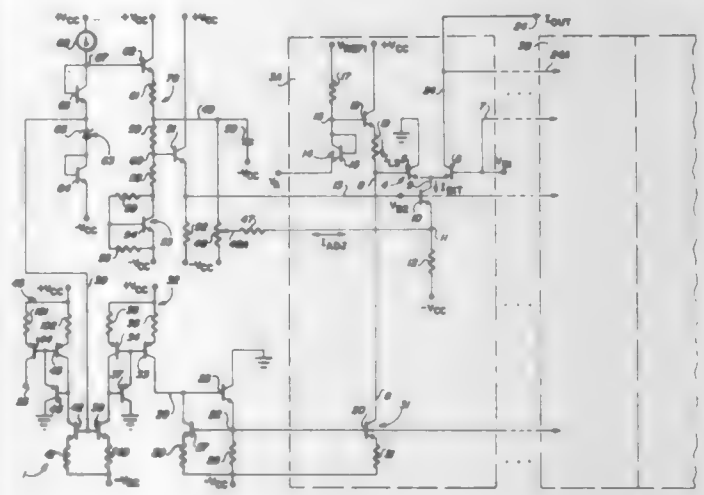
(c) compensating current source means coupled to the second terminal of the level shifting resistor for causing a level shifting current to flow through the level shifting resistor and varying the level shifting current to cause it to produce an essentially constant voltage drop across the level shifting resistor despite variations in the resistance of the level shifting resistor due to variations in temperature and manufacturing parameters.

4,607,250

BIT ADJUSTMENT AND FILTER CIRCUIT FOR DIGITAL-TO-ANALOG CONVERTER

Jimmy R. Naylor, and Frederick J. Highton, both of Tucson, Ariz., assignors to Burr-Brown Corporation, Tucson, Ariz.

Filed May 8, 1985, Ser. No. 732,229
Int. Cl.[4] H03M *1/00*
U.S. Cl. 340—347 DA 8 Claims



1. In a digital to analog converter including

i. a plurality of bit circuits, each including a resistor determinative of a bit current for that bit circuit flowing through a current source transistor having an emitter connected to the resistor and a collector connected to a bit current switch circuit responsive to a digital input signal to switch that bit current into a summing conductor, and

ii. a reference voltage circuit generating a voltage on a first conductor conducted to the base of a first emitter follower transistor, the voltage and the voltage of the emitter of the first emitter follower transistor having a noise signal;

the improvement comprising the combination of:

(a) a first resistor coupled between the emitter of the first emitter follower transistor and a first conductor;

(b) a second resistor coupled between the first conductor and a second conductor;

(c) an external filter capacitor connected to the first conductor, and

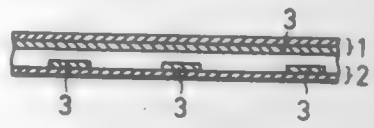
(d) an external potentiometer connected between the first conductor and the supply voltage conductor and having a variable resistance terminal coupled to the junction between the emitter of the current source transistor and the resistor of a first one of the bit circuits to effectuate adjustment of the bit current of that bit circuit.

4,607,251

MATRIX SWITCH APPARATUS INCLUDING PULL-UP RESISTORS FOR SENSE LINES

Toshio Takekoshi, Isehara, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed May 24, 1984, Ser. No. 613,630
Claims priority, application Japan, May 24, 1983, 58-90981
Int. Cl.[4] H04L *1/00*
U.S. Cl. 340—365 S 7 Claims



1. A matrix switch apparatus comprising:

one or more sense lines each connected to a first potential through a corresponding resistance means;

one or more driving lines;

means for connecting said driving lines to a second potential in accordance with a predetermined order so that each of said driving lines is connected to said second potential

during a predetermined time interval different from time intervals during which other driving lines are connected to said second potential;

a plurality of contact switches each connected to one of said sense lines and one of said driving lines so that said contact switches, said sense lines and said driving lines form a matrix switch array;

sensing means connected to said sense lines for detecting whether any of said sense lines has reached a predetermined threshold potential during said predetermined time interval for each of said sense lines;

one or more switching elements each connected respectively to a corresponding one of said resistance means in parallel; and

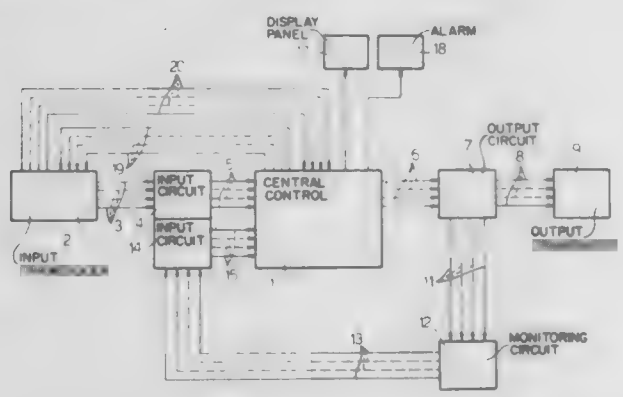
means for simultaneously turning on said switching elements at a predetermined time subsequent to a time when said sensing means detects whether any of said sense lines has reached said predetermined threshold potential during said predetermined time interval for each of said sense lines for bypassing the resistance means to restore a sense line which has reached said predetermined threshold potential to a predetermined voltage different from said predetermined threshold potential.

4,607,252

MONITORING SYSTEM FOR PRODUCTION LINES

Armando Neri, Bologna, Italy, assignor to G.D. Societa per Azioni, Bologna, Italy

Filed Dec. 28, 1983, Ser. No. 566,369
Claims priority, application Italy, Feb. 15, 1983, 3337 A/83
Int. Cl.⁴ G08B *29/00;* G05B *23/02*
U.S. Cl. 340—515 **12 Claims**



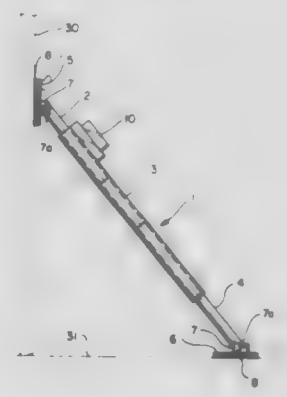
1. A system for monitoring the operation of input transducers employed in a central control and monitoring unit for machines used in production and product packaging lines, comprising: first circuit means for detecting operating defects of said transducers, and second circuit means operable to provide a signal of a two-level logic type from said transducers to said central unit in dependence upon plural operating conditions of said transducers, said first circuit means including production means operable to produce a change in the operating conditions of said transducers with respect to an immediately preceding operating condition and to produce a corresponding change in the level of said logic type signal, and detection means operable to detect said change in the level of said logic type signal and operable to control an alarm means, said central control and monitoring unit providing a monitoring signal of the two-level logic type for controlling the activation of said production means, and blocking means operable in response to said monitoring signal to block modifications of said logic type signal when said monitoring signal is sent to said production means.

4,607,253

DOOR GUARD WITH ALARM DEVICE

Richard Wooten, 4251 Warwick, Anchorage, Ak. 99508; Larry Wooten, deceased, late of Anchorage, Ak., and by Carol J. Wooten, legal representative, 4251 Warwick, Anchorage, Ak. 99508

Filed Dec. 3, 1984, Ser. No. 677,369
Int. Cl.⁴ G08B *13/08*
U.S. Cl. 340—546 **10 Claims**



1. A door securing and alarm device for portable use and ready installation comprising:

A. An adjustable length shaft portion, having an upper end and a lower end;

B. A first non-skid pad, said pad having a generally rectangular shape and having a relativly flat surface contact area which is large relative to the diameter of the shaft, said pad being pivotably mounted on the upper end of said shaft portion;

C. A second non-skid pad, also having a generally rectangular shape and having a relativly flat surface contact area which is large relative to the diameter of the shaft, said second pad being pivotably mounted on the lower end of said shaft portion;

D. An alarm device fixedly mounted to said shaft portion;

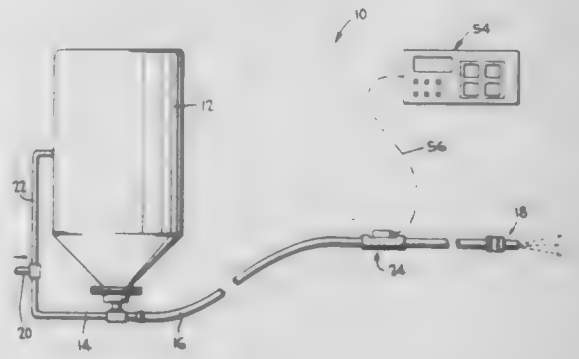
E. Actuating means, mounted on said shaft portion, providing means for actuating the alarm, said actuating means being responsive to a limited movement of the door inwardly.

4,607,254

FLOW DETECTOR

Adolph C. Carlson, Hagerstown, Md., assignor to Kennecott Corporation, Cleveland, Ohio

Filed May 11, 1981, Ser. No. 262,762
Int. Cl.⁴ G08B *21/00*
U.S. Cl. 340—606 **7 Claims**



1. A flow detector for detecting and monitoring the dynamic characteristics of particulate matter as it is conveyed pneumatically within a conduit, said flow detector comprising a conduit segment formed of a hard material and having a wall subject to vibration in response to particles striking said wall as the particles flow through the conduit segment, said conduit segment having an internal cross section corresponding to that of a conduit of which said conduit segment is a part, a vibrational

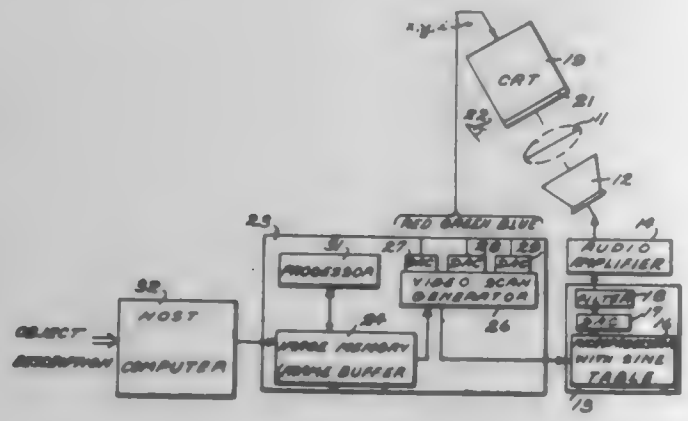
excitable piezoelectric transducer which generates an output voltage having an amplitude at a preselected transducer resonant frequency on the order of 3.1 KHz being of at least one order of magnitude greater than its voltage output at all other frequencies, the resonant frequency of said transducer excited by the vibration amplitude of said wall regardless of the vibratory frequency of said wall or the impact of particles thereon for a selected desired particle mass flow rate per unit of time, and means mounting said transducer in operative engagement with said wall, said transducer being of a cantilevered beam type with said beam effective length being adjusted to resonate at said preselected frequency, with the mass of said beam and the mechanical mounting of said beam being selected to cause said piezoelectric transducer to generate little or no voltage at frequencies other than said preselected resonant frequency, and said beam being shaped to vibrate in a plane at a right angle to a longitudinal axis of said flow segment and the length of said beam being parallel to said axis to reduce excitation of said beam by forces acting on said conduit segment wall other than those induced by particles flowing through said conduit segment.

4,607,255

THREE DIMENSIONAL DISPLAY USING A VARIFOCAL MIRROR

Henry Fuchs, Pittsboro, and Stephen M. Pizer, Chapel Hill, both of N.C., assignors to University of North Carolina at Chapel Hill, Chapel Hill, N.C.

Filed Aug. 19, 1983, Ser. No. 524,664
Int. Cl.⁴ G09G *1/00, 3/00*
U.S. Cl. 340—755 **17 Claims**



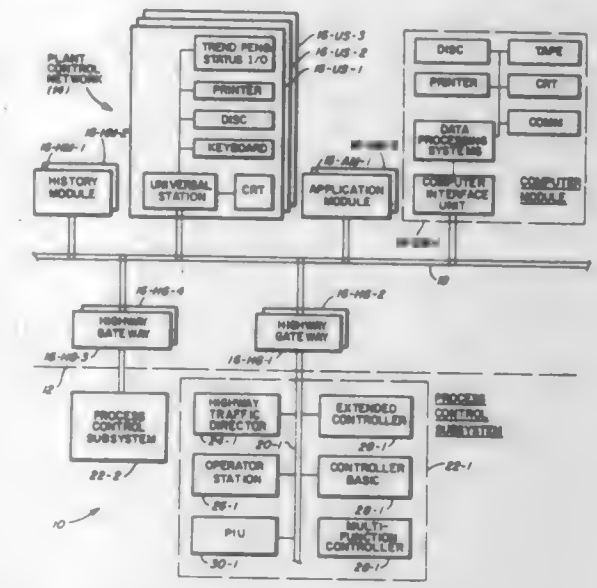
1. Three dimensional display apparatus comprising: a video storage source of the type having three outputs normally interpreted as red, green and blue outputs for creating a color display and also having a frame synchronization output; a storage medium of said video storage source storing video frames for each normally red, green and blue data instead x position, y position and i intensity corresponding to image points in a three dimensional object to be displayed, the z depth position coordinate for each said image point being implicitly encoded in the storage medium by the location at which the x position, y position and i intensity are stored within each particular video frame stored in said storage medium; a point position display device having x position, y position and intensity inputs; means coupling said three outputs of said video storage source to said three inputs of said CRT; a varifocal vibrating mirror positioned so as to reflect a screen of said display device; and means for vibrating said mirror at a rate synchronized with the frame synchronization of said video storage source, whereby a virtual image observed by a viewer looking at the vibrating mirror is a three dimensional image.

4,607,256

PLANT MANAGEMENT SYSTEM

Russell A. Henzel, Scottsdale, Ariz., assignor to Honeywell, Inc., Phoenix, Ariz.

Filed Oct. 7, 1983, Ser. No. 540,061
Int. Cl.⁴ H04Q *9/00*; G06F *15/46*
U.S. Cl. 340;825.52 **18 Claims**



1. A plant management system, comprising:

a digital process control and data acquisition subsystem including process controller and process interface units and a data highway, said units communicting with one another by means of the data highway; and

a token-passing plant control network, said network including:

communication bus means;

a plurality of module means of differing types communicating with one another by transmitting and receiving binary signals over the bus means;

one type of said module means providing communication between modules of the control network and units of said subsystem utilizing the data highway of said subsystem; and

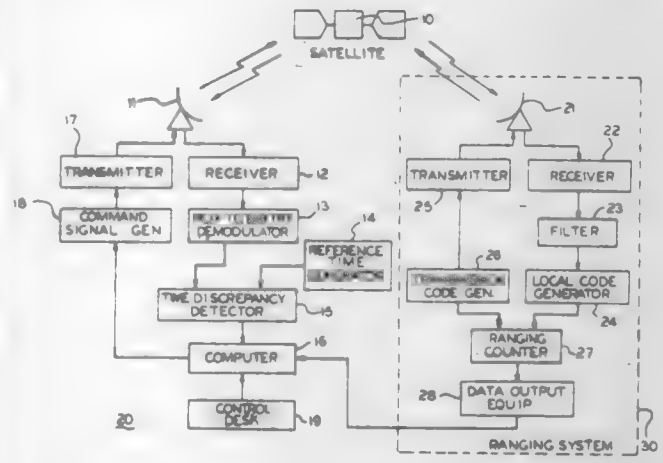
a second type of said module means providing a plant-wide operator control station.

4,607,257

REMOTE CALIBRATING SYSTEM FOR SATELLITE TIME

Kazuhide Noguchi, Tokyo, Japan, assignor to Nippon Electric Co. Ltd., Tokyo, Japan

Filed Dec. 27, 1982, Ser. No. 453,786
Claims priority, application Japan, Dec. 25, 1981, 56-210316
Int. Cl.⁴ H04Q *9/00*; H04J *3/06*; H04L *7/00*
U.S. Cl. 340—825.69 **8 Claims**



1. A remote time calibrating system comprising a calibrating station having a reference time and a remote station having a local time, wherein said remote station comprises time adjust-

ing means responsive to a time calibrating command for adjusting said local time, and wherein said calibrating station comprises:

first means for receiving telemetry signals sent from said remote station, each of said telemetry signals including data indicating the local time of said remote station at which the telemetry signal is transmitted;

second means responsive to the output of said first means for detecting a first time difference between the receive reference time at which said telemetry signal is received and the transmitted local time derived from the received telemetry signal;

third means for calculating the propagation delay of said telemetry signal between said remote station and said calibrating station;

fourth means responsive to the outputs of said second and third means for detecting a second time difference between said reference time and said local time; and

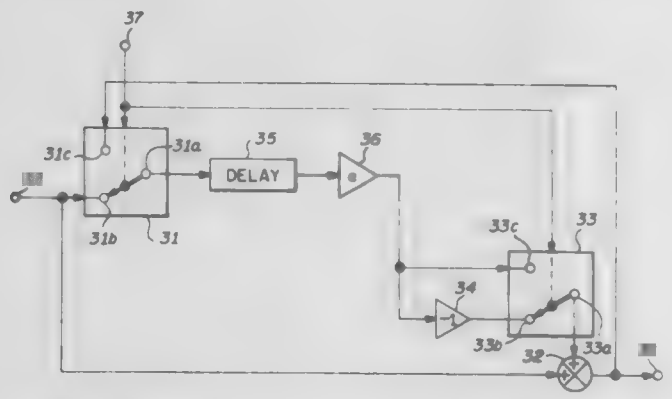
fifth means responsive to said second time difference for transmitting a time calibrating command to said remote station.

4,607,258

RADAR VIDEO DEHANCER

Robert D. Short, III, Littleton, Mass., assignor to Sperry Corporation, New York, N.Y.

Filed Mar. 10, 1983, Ser. No. 474,076
Int. Cl.⁴ G01S *7/28, 13/00*
U.S. Cl. 343—17.1 R **4 Claims**



1. A radar video dehancer for partially and fully decorrelating signals at the output terminals of a video enhancer included in a pulse radar system to provide signals partially and fully equal to the signals coupled to the input terminals of the video enhancer comprising:

signal input means coupled to receive enhanced video signals from said video enhancer;

difference signal means having first input means coupled to said signal input means for receiving said enhanced video signals, second input means, and output means whereat difference signals are provided that are representative of differences between signals coupled to said difference signal first input means and signals coupled to said difference signal second input means;

signal output means coupled to said difference signal output means;

means coupled between said signal input means and said difference signal second input means for providing a time delay of one radar interpulse period; and

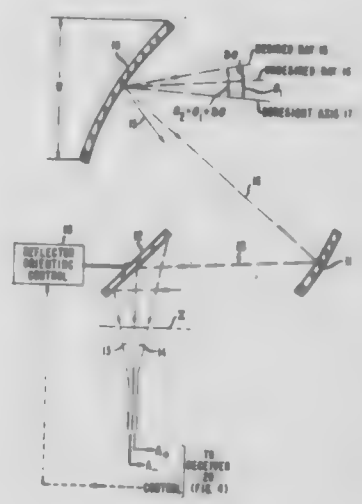
means serially coupled to said time delay means, said signal input means, and said difference signal second input means for providing selectable weighting factors to signals coupled thereto, said selectable weighting factors arranged to provide a matching weighting factor that causes signals at said output means to be equal to signals at said input terminals of said video enhancer, whereby signals at said output means are video signals with reduced enhancement and thereby dehanced video signals.

4,607,259

ADAPTIVE ANTENNA FOR REDUCING MULTIPATH FADES

Corrado Dragone, Little Silver, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Oct. 25, 1984, Ser. No. 664,523
Int. Cl.⁴ H10Q *3/02*; G01S *5/02*
U.S. Cl. 343—758 **4 Claims**



1. An antenna arrangement comprising:

a main curved focusing reflector including a focal point and a predetermined aperture for converting a planar wavefront at the aperture into a spherical wavefront focused at the focal point;

a subreflector comprising a first focal point disposed confocally with the focal point of the main reflector for transforming a spherical wavefront from the first focal point into a separate wavefront focused at a second focal point of the subreflector; and

a feed arrangement comprising:

a plurality of N feed horns, each feed horn including an aperture disposed at an image of the main reflector and covering a different 1/N portion of said image, and

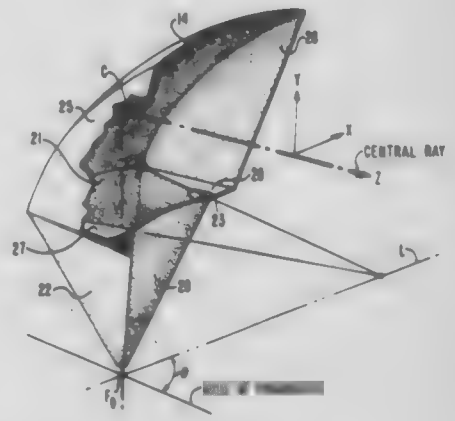
a selectively movable flat reflector disposed between the subreflector and the feed horns along a feed axis of the antenna arrangement and capable of directing one of a plurality of beams arriving from different directions at the aperture of the main reflector such that a central ray of said one of the plurality of beams is oriented substantially orthogonal to the apertures of the plurality of N feed horns.

4,607,260

ASYMMETRICALLY CONFIGURED HORN ANTENNA

Corrado Dragone, Little Silver, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Jun. 29, 1984, Ser. No. 626,521
Int. Cl.⁴ H01Q *19/13*
U.S. Cl. 343—786 **6 Claims**



1. An antenna arrangement comprising:

a curved offset main reflector for bidirectionally directing a

wavefront between the far field of the antenna and a predetermined focal point of the reflector, the reflector including a reflecting surface comprising an axis of revolution on which the predetermined focal point is located; and

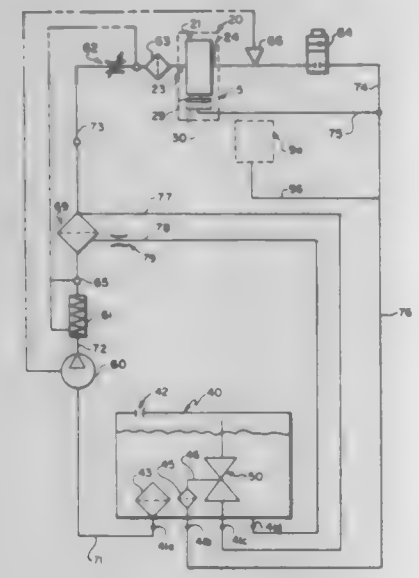
a horn including (1) a first pair of opposing concentric conic wall sections associated with a common axis of symmetry and (2) a second pair of opposing planar wall sections radially aligned with said common axis of symmetry of the conic wall sections, the first and second pair of wall sections being tapered from the main reflector to intersect a common apex corresponding to the predetermined focal point of the reflector, and the common axis of symmetry of the conic wall sections is disposed at a predetermined acute angle θ to the axis of revolution of the reflecting surface of the main reflector to minimize cross-polarization in the far field of the antenna.

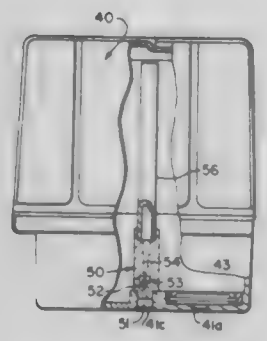
4,607,261

INK SUPPLY CARTRIDGE AND COOPERATIVE INK CIRCULATION SYSTEM OF CONTINUOUS INK JET PRINTER

James D. McCann, Waynesville; Michael J. Piatt, Enon, and Theodore F. Williams, Beavercreek, all of Ohio, assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 12, 1985, Ser. No. 722,548
Int. Cl.[4] G01D *15/18*
U.S. Cl. 346—75 16 Claims





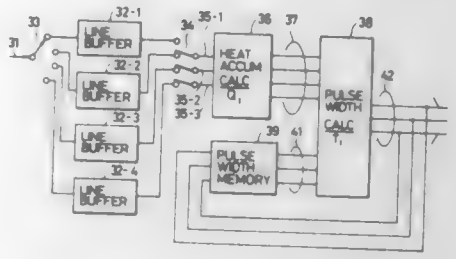
8. An ink cartridge adapted for insertion into a continuous ink jet printer, said cartridge comprising wall means defining an ink reservoir, means for venting said reservoir to the atmosphere, outlet means for coupling said reservoir to an ink supply line of such printer, venturi means having an inlet for coupling to a positive pressure ink line of such printer and an outlet to said ink reservoir, an ink return inlet for coupling to an ink return line of such a printer and means defining a ink induction passage from the restriction region of said venturi means to said cartridge ink return inlet.

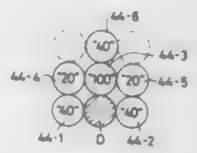
4,607,262

THERMAL HEAD DRIVE CIRCUIT

Haruhiko Moriguchi; Toshiharu Inui, and Masami Kurata, all of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Jan. 10, 1984, Ser. No. 569,705
Claims priority, application Japan, Jan. 11, 1983, 58-1656
The portion of the term of this patent subsequent to Jun. 18, 2002, has been disclaimed.
Int. Cl.[4] G01D *15/10;* H05B *3/00*
U.S. Cl. 346—76 PH 4 Claims





1. In a recording device in which a thermal head is driven to thermally record data, a thermal head drive circuit, comprising:

a heat accumulation arithmetic unit (36) for calculating heat accumulations in heat generating elements forming said thermal head for recording data, wherein said calculation is performed as a function of whether areas adjacent to an area on which data is to be recorded have data recorded thereon, each of said adjacent areas being represented by a respective weighted value representative of the proximity of said adjacent area to said area to be recorded; and

a thermal energy arithmetic unit (38) for calculating amounts of thermal energy to be applied to said heat generating elements from the voltage pulse widths which were applied to said heat generating elements during the preceding data recording operation and from said heat accumulations which are calculated by said heat accumulation arithmetic unit, said amounts of thermal energy calculated by said thermal energy arithmetic unit being applied respectively to said heat generating elements of said thermal head.

4,607,263

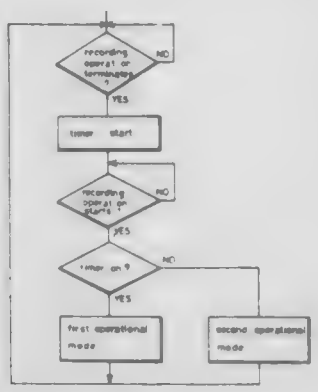
PEN TYPE PLOTTING APPARATUS HAVING AUTOMATIC REWRITING CONTROL

Kyuichi Fujisawa, Tonan, and Nobuko Fujiwara, Morioka, both of Japan, assignors to Alps Electric Co., Ltd., Japan

Filed Nov. 1, 1984, Ser. No. 667,212
Claims priority, application Japan, Nov. 2, 1983, 58-206559
Int. Cl.[4] G01D *15/16;* B41G *3/00*
U.S. Cl. 346—139 R 2 Claims

1. A pen type recording apparatus comprising a pen type X-Y recording mechanism for driving a carriage supporting a pen, a recording paper, and the pen to their operative positions, and a recording control portion for controlling the pen type X-Y recording mechanism, said recording control portion comprising recording control means which provides a first operation mode for carrying out an ordinary recording opera-

tion, and a second operational mode for rewriting over a pattern for a predetermined number of times, and means for selecting said second operational mode when a recording operation is initiated upon activating a power source for the apparatus.

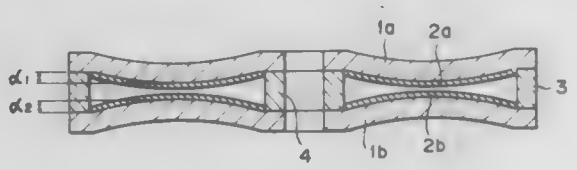


4,607,264

RECORDING MEDIUM OF DEFORMABLE AIR-SANDWICH STRUCTURE

Yoshio Tani, Fujinomiya, and Kyoichi Naruo, Hatano, both of Japan, assignors to Fuji Photo Film Co., Ltd., Japan

Filed Aug. 19, 1985, Ser. No. 766,947
Claims priority, application Japan, Aug. 17, 1984, 59-171323
Int. Cl.[4] G01D *15/32;* G11B *7/26*
U.S. Cl. 346—137 17 Claims



1. A recording medium having an air-sandwich structure comprising two disc-shaped substrates opposed to each other at a given distance by interposing therebetween a ring-shaped inner spacer and a ring-shaped outer spacer and a recording layer for writing and/or reading information with laser beam which is provided on the inner surface of at least one substrate, characterized in that the distance between said two substrates satisfies the following expression (I):

$$h > \frac{0.66 \times 10^{-4}}{E_1}\left(\frac{l^4}{t_1^3}\right) + \frac{0.66 \times 10^{-4}}{E_2}\left(\frac{l^4}{t_2^3}\right) \quad (I)$$

wherein h is the distance in mm between two substrates, E_1 and E_2 are each a Young's modulus in kg/mm^2 of each substrate, l is the distance in mm between the inner spacer and the outer spacer, and t_1 and t_2 are each the thickness in mm of each substrate.

4,607,265

PEN-RECORDING APPARATUS

Hiroshi Onoda, and Kenji Mizuno, both of Nagoya, Japan, assignors to Brother Kogyo Kabushiki Kaisha, Aichi, Japan

Filed Oct. 18, 1984, Ser. No. 663,330
Claims priority, application Japan, Oct. 28, 1983, 58-203198
Int. Cl.[4] G01D *15/16*
U.S. Cl. 346—139 R 13 Claims

1. A pen-recording apparatus which records not only regular letters, but also special letters constituting regular letters slightly shifted relative to each other, comprising:

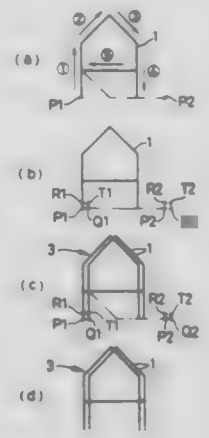
a platen supported on a frame to hold a printing sheet of paper;

a pen movable in an axial direction of said platen;

driving means for feeding said sheet of paper;

pen moving means for moving said pen in said axial direction;

primary control means for controlling said platen driving means and said pen moving means to cause movements of said pen and said sheet of paper relative to each other for writing on said sheet of paper a first element which is the regular letter represented by said letter data; and



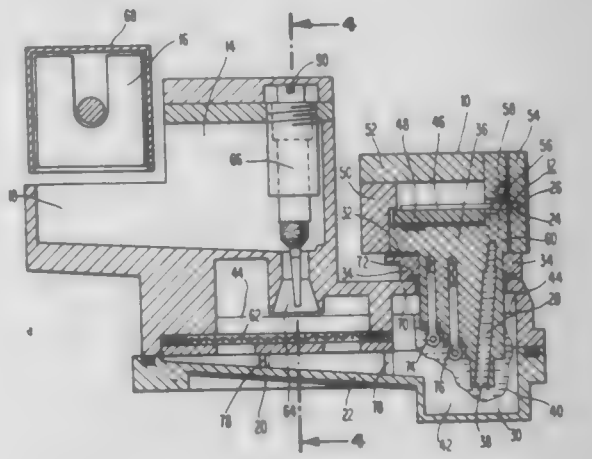
secondary control means for controlling said platen driving means and said pen moving means, after completion of writing said first element, to bring said pen to a starting position for writing a second element which is the same regular letter as said first element, said starting position of the second element being shifted by a predetermined distance from that of said first element, said secondary control means operating said platen driving means and said pen moving means to write said second element.

4,607,266

PHASE CHANGE INK JET WITH INDEPENDENT HEATING OF JET AND RESERVOIR

William J. DeBonte, 271 Marrett Rd., Lexington, Mass. 02173

Filed Oct. 15, 1984, Ser. No. 661,029
Int. Cl.[4] G01D *15/16*
U.S. Cl. 346—140 PR 21 Claims



1. Ink jet apparatus comprising:

imaging means comprising at least one ink jet including a chamber, an orifice for ejecting droplets from a chamber and an inlet to the chamber;

ink reservoir means for storing hot melt ink, said ink characterized by a solid state below a predetermined temperature and a liquid state above said temperature;

means for substantially independently heating said imaging means and said reservoir means so as to permit said ink to be maintained in the liquid state in said imaging means while permitting said ink to change from the liquid state to the solid state and vice versa in said reservoir means; and

means for controlling said means for substantially independently heating so as to continuously maintain the ink in the liquid state in the imaging means while alternately cooling

the ink in the reservoir to the solid state or heating ink to the liquid state.

4,607,267

OPTICAL INK JET HEAD FOR INK JET PRINTER

Tetsu Yamamuro, Tokyo, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

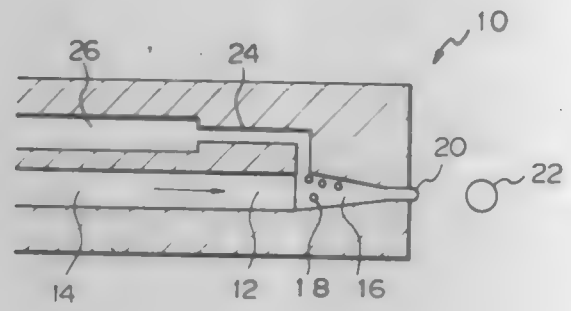
Filed Dec. 13, 1984, Ser. No. 681,199

Claims priority, application Japan, Dec. 19, 1983, 58-239476; Dec. 19, 1983, 58-239477

Int. Cl.[4] G01D *15/18*

U.S. Cl. 346—140 R

15 Claims



1. An optical ink jet head for ejecting ink in response to an active electromagnetic wave, comprising:

ink ejection nozzle means for ejecting ink;

chemical reaction means communicating with said ink ejection nozzle means and storing a photochemical reactive substance for causing the photochemical reactive substance to undergo a chemical reaction; and

active electromagnetic wave supply means for routing the active electromagnetic wave to said chemical reaction means, irradiating the photochemical reactive substance by the active electromagnetic wave to cause a photochemical chemical reaction which generates gas, and causing the ink to be ejected from the ink ejection nozzle means by a pressure of the gas.

4,607,268

MULTIPLE NEEDLE RECORDING ELECTRODE

Martin Pointner, Kirchseon, and Ruediger Sommer, Raisdorf, both of Fed. Rep. of Germany, assignors to Dr.-Ing. Rudolf Hell GmbH, Fed. Rep. of Germany

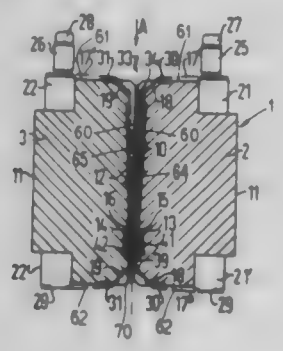
Division of Ser. No. 488,380, Apr. 25, 1983, Pat. No. 4,540,151. This application May 3, 1985, Ser. No. 730,175

Claims priority, application Fed. Rep. of Germany, May 7, 1982, 3217290

Int. Cl.[4] G01D *15/06, 15/16*

U.S. Cl. 346—155

2 Claims



1. An electrode comb having two rows of needle-shaped electrodes extending to a recording edge, said comb comprising a one-piece molded body of resin having a rib along one side of the body with said recording edge along one edge of the rib, said body containing two circuit boards, each circuit board having a length, width and conductor paths on one surface, said circuit boards being positioned in the body with the one surface having the conductor paths facing each other, two rows of needle-shaped recording electrodes extending from said recording edge and across the width of the two circuit boards with the electrodes of one row being connected to the conductor paths of one circuit board and the electrodes of the other row being connected to the conductor paths of the other circuit board, the electrodes of each row being evenly spaced apart and said two rows of needle-shaped electrodes extending to an outer surface of said recording edge with the electrodes of one row being offset from the electrodes of the other row by an amount equal to one-half the spacing between the electrodes of each row, at least one reinforcing strip having a length of at least the length of the circuit board being embedded in said rib adjacent to said rows of needle-shaped recording electrodes, and each of the circuit boards being provided with a temperature-proof insulation on each of the conductor paths except at the point of connection of each path to its respective electrode.

4,607,269

ELECTROSTATIC PRINT HEAD

Patrice Playe, Houilles, France, assignor to Compagnie Industrielle des Telecommunications Cit-Alcatel, Paris, France

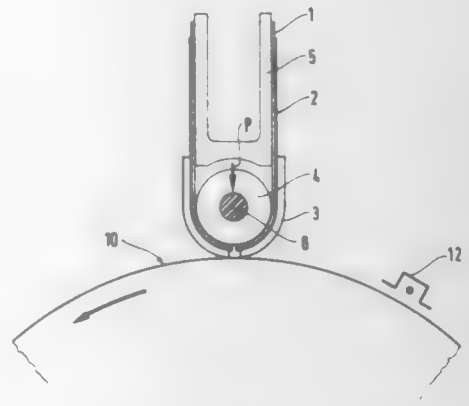
Continuation-in-part of Ser. No. 482,083, Apr. 4, 1983, abandoned. This application Jul. 25, 1985, Ser. No. 758,584

Claims priority, application France, Apr. 2, 1982, 82 05725

Int. Cl.[4] G01D *15/06, 15/16*

U.S. Cl. 346—155

7 Claims



1. An electrostatic print head for electrostatic printing on a recording medium having a substantially smooth surface, the improvement wherein said head comprises:

a printed circuit including a flexible substrate having opposite front and back surfaces,

two sets of parallel rows of printed circuit conductive tracks on said front surface of said flexible substrate including terminal parts and defining terminal part ends facing each other and spaced from each other, forming air gaps therebetween and defining a plurality of electrodes separated by said gaps,

a convex support structure,

said flexible substrate being mounted, at least in the vicinity of said electrodes and adjacent portions of said tracks, with its back surface pressed against said convex support structure, and

an insulating film covering the front of said flexible substrate and portions of said two sets of parallel rows of said conductive tracks except for said terminal parts, said film including a gap aligned with the gaps of said printed circuit conductive tracks,

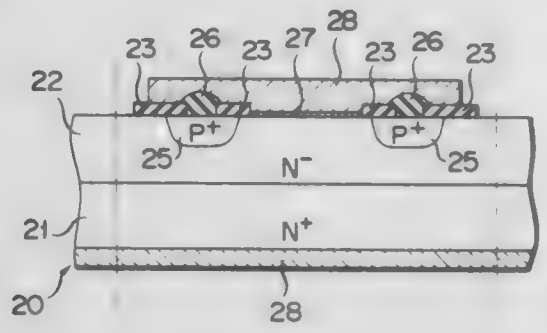
and wherein said insulating film is of suitable thickness to ensure that when the film adjacent to the electrodes in the vicinity of said gaps is pressed against the recording medium, the thickness of the film keeps said electrodes at a desired distance from the recording medium to define a linear arrangement of electrodes compatible with very high print performance.

4,607,270

SCHOTTKY BARRIER DIODE WITH GUARD RING

Susumu Iesaka, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Japan

Filed Jun. 8, 1984, Ser. No. 618,952
Claims priority, application Japan, Jun. 16, 1983, 58-108126
Int. Cl.[4] H01L *29/48*
U.S. Cl. 357—15 6 Claims



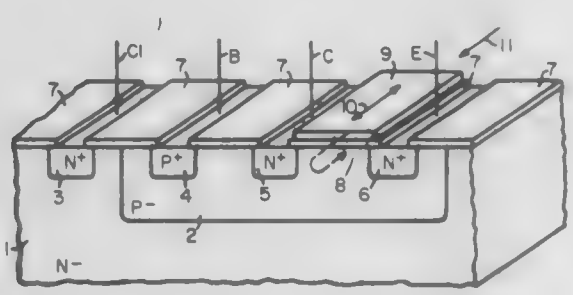
5. A Schottky barrier diode, comprising:
a Schottky barrier layer, formed on a semiconductor substrate, of a first conductivity type;
a guard ring of a second conductivity type formed in the surface region of said semiconductor substrate isolated from and surrounding the periphery of said Schottky barrier layer;
an insulating film provided on said guard ring and the substrate region between the edge of said Schottky barrier layer and said guard ring, and an opening formed in said insulating film over part of said guard ring;
a high-resistance layer provided in said opening in contact with said guard ring; and
a metal electrode which connects said high-resistance layer and said Schottky barrier layer.

4,607,271

MAGNETIC FIELD SENSOR

Radivoje Popovic, Steinhausen; Jean-Luc Berchier, Menzingen; Gernot Schneider, Baar; Heinz Lienhard, Zug, all of Switzerland; Heinrich P. Baltes, Edmonton, Canada; Katalin Solt, and Tomislav Zajc, both of Zug, Switzerland, assignors to IGZ Landis & Gyr Zug AG, Zug, Switzerland

Filed Nov. 14, 1983, Ser. No. 551,717
Claims priority, application Switzerland, Nov. 22, 1982, 6790/82
Int. Cl.[4] H01L *27/22*
U.S. Cl. 357—27 10 Claims



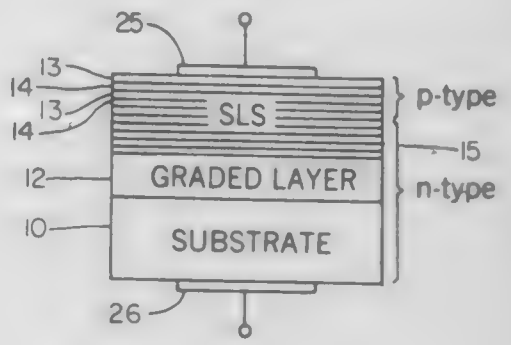
1. A sensor for detecting field reversals in a magnetic field comprising:
a magnetic field sensitive semiconductor device,
a thin film comprising nife or nico which functions as a magnet formed on a surface of said magnetic field sensitive semiconductive device, said film having a direction of magnetization which is capable of reversal in response to said field reversals of said magnetic field, said film being free of any electrical contacts thereto so that substantially no electrical current flows in said film,
said magnetic field sensitive semiconductor device being adapted to produce an electrical signal in response to reversals in the direction of magnetization of said film.

4,607,272

ELECTRO-OPTICAL SLS DEVICES FOR OPERATING AT NEW WAVELENGTH RANGES

Gordon C. Osbourn, Albuquerque, N. Mex., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Oct. 6, 1983, Ser. No. 539,367
Int. Cl.[4] H01L *27/14, 31/00*
U.S. Cl. 357—30 12 Claims



1. An intrinsic semiconductor electro-optical device comprising a pair of spaced electrodes operably connected to a p-n junction intrinsically responsive, when cooled, to electromagnetic radiation in the wavelength range of 8–12 μm and which consists of semiconductor materials of the III–V family,
wherein said radiation responsive p-n junction comprises a strained-layer superlattice (SLS) of alternating layers of two different III–V semiconductors,
said two semiconductors when in bulk form having mismatched lattice constants, whereby a total strain is imposed on each pair of alternating semiconductor layers in said SLS structure, the proportion of the total strain which acts on each layer of said pair being inversely proportional to the ratio of the layer thicknesses of each layer in the pair,
a first of said alternating III–V semiconductor layers being $InAs_{1-x}Sb_x$ wherein x is about 0.5–0.7, and the second of said alternating layers comprising a III–V semiconductor having a lattice constant larger that the lattice constant of said first layers,
the strain resulting from the mismatch of lattice constants and said ratio of layer thicknesses being effective to narrow the bandgaps of said first of III–V layers, thereby changing the intrinsic radiation absorportion characteristics of said layers when cooled to include wavelengths in the 8–12 μm region which are larger than those to which said individual layers would be responsive, when cooled and in bulk form.

4,607,273

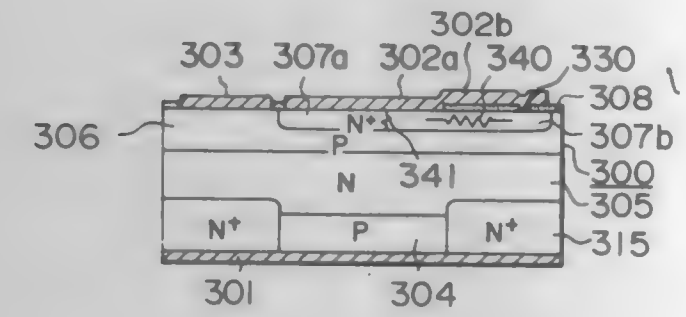
POWER SEMICONDUCTOR DEVICE

Shuroku Sakurada, Hitachi; Hitoshi Matsuzaki, Mito; Yasuhiko Ikeda, and Takehiro Ohta, both of Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 336,324, Dec. 31, 1981. This application Jan. 8, 1985, Ser. No. 689,039
Claims priority, application Japan, Jan. 14, 1981, 56-3164
Int. Cl.[4] H01L *29/74*
U.S. Cl. 357—38 18 Claims

1. A semiconductor pellet having first and second major surfaces and at least three successive semiconductor layers including a first outermost layer having a first side which is exposed to said first major surface and having a first conductivity type, a first intermediate layer having a second conductivity type opposite to said first conductivity type, said first intermediate layer having a first side which is formed adjacent to a second side of said first outermost layer and including a portion

which is exposed to said first major surface, and a third layer having said first conductivity type and having a first side which is formed adjacent to a second side of said first intermediate layer, wherein said first outermost layer includes a common portion exposed to said first major surface and at least two fingershaped split areas exposed to said first major surface and extending from said common portion wherein said common portion electrically connects said split areas to one another;



an insulating film formed on said common portion at said first major surface; and

a first electrode connected with said first outermost layer and including areas which directly make low ohmic contact with said split areas and an area which overlies the common portion only through said insulating film so that said first electrode is insulated from said common portion by said insulating film.

4,607,274

COMPLEMENTARY MOS FIELD EFFECT TRANSISTOR INTEGRATED CIRCUIT WITH PROTECTION FUNCTION

Kazuki Yoshitake, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

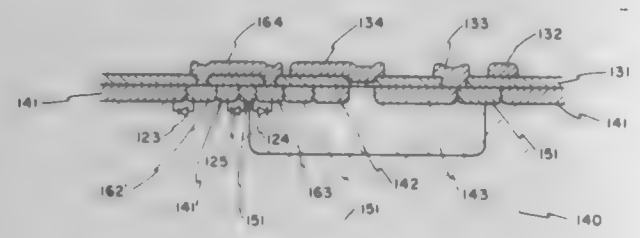
Filed Oct. 17, 1983, Ser. No. 542,369

Claims priority, application Japan, Oct. 15, 1982, 57-181111; Dec. 17, 1982, 57-221215

Int. Cl.[4] H01L *27/02, 29/90*

U.S. Cl. 357—42

1 Claim



1. A complementary field effect transistor comprising a semiconductor substrate of one conductivity type, a first region of another conductivity type formed in said semiconductor substrate, a first type field effect transistor formed on said semiconductor substrate, a second type field effect transistor formed on said first region, each of said first and second types of field effect transistors having a source region, a drain region and a channel region located therebetween, gate electrodes formed on said channel regions of said first and second type field effect transistors through an insulating film, a second region of said one conductivity type having a high impurity concentration, said second region being formed in the surface area of said semiconductor substrate, said second region having a side which comes into contact with said drain region of said first type field effect transistor to form a first diode therebetween, a third region of said other conductivity type having a high impurity concentration, said third region being formed in the surface area of said first region to come in contact with said drain region of said second type field effect transistor to form a second diode therebetween, said second region and said third region being in contact with each other to form a third diode therebetween an output wiring layer connecting the drain regions of said first type and second type field effect transistors, an output electrode pad connected to said output wiring layer, a first power terminal connected to the surface area of said semiconductor substrate at a location that is on one side of said first region which is opposite the side of said first region where said first diode is formed, a second power terminal connected to the surface area of said first region, said first and second diodes being connected in series between said first and second power terminals, said third diode being connected between said first and second power terminals in parallel with the series connection of said first and second diodes, a fourth region of said other conductivity type having an elongated shape to provide a resistor region formed on the surface of said semiconductor substrate to come into contact with said second region to form a fourth diode therebetween, a fifth region of said one conductivity type formed on the surface of said first region to come into contact with said third region to form a fifth diode therebetween, said fourth and fifth diodes being connected in series between said first and second power terminals, an input wiring layer connecting one end of said fourth region and said fifth region, an input electrode pad connected to said input wiring layer, and an additional wiring layer connected to the other end of said fourth region and further connected in common to said gate electrodes of said first and second type field effect transistors.

4,607,275

SEMICONDUCTOR ELEMENT WITH DISK-SHAPED HOUSING

Herbert Vogt; Werner Egerbacher, both of Munich; Dieter Wunderlich, Olching-Geiselbullach, and Werner Mitzkus, Munich, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

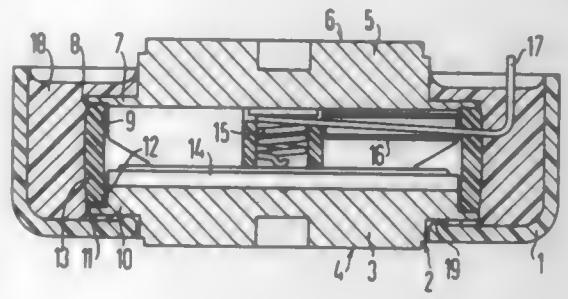
Filed Mar. 6, 1984, Ser. No. 586,589

Claims priority, application Fed. Rep. of Germany, Mar. 11, 1983, 3308720

Int. Cl.[4] H02G *13/08;* H01L *23/32*

U.S. Cl. 357—79

19 Claims

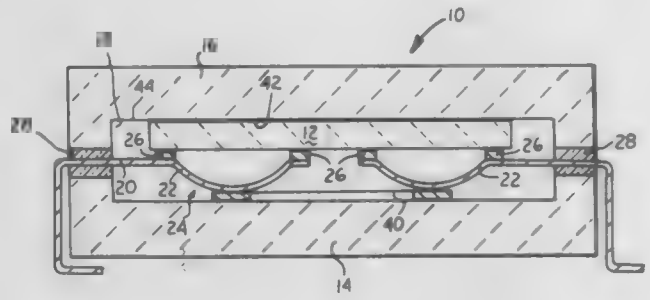


1. In a semiconductor element having two disk-shaped connecting bodies each including an outer contact surface a semiconductor body is placed loosely between the two connecting bodies, and a cup made of insulating material filled at least in part with casting compound containing the two connecting bodies located therein, said cup having an aperture in its bottom region wherein a portion of one of said connecting bodies extends through to provide the outer contact surface of the one connecting body, said casting compound surrounding the region of said semiconductor body and contacting said connecting bodies while leaving the outer contact surface of the other connecting body exposed, said connecting bodies including on their sides facing each other radially projecting shoulders defining concentric seal surfaces at the edge of said connecting bodies, said element also comprising at least one elastic ring fitted between said seal surfaces, said elastic ring being applied against said seal surfaces under pressure at least on the planar end face of said elastic ring serving to prevent penetration of the casting compound into the interior of the elastic ring while embedding a portion of the shoulder external to the elastic ring with the casting compound.

4,607,276
TAPE PACKAGES

Sheldon H. Butt, Godfrey, Ill., assignor to Olin Corporation, New Haven, Conn.

Filed Mar. 8, 1984, Ser. No. 587,411
Int. Cl.[4] H01R *9/00;* H01L *23/40, 23/48*
U.S. Cl. 357—79 20 Claims



1. A tape package adapted to house an electronic component, comprising:

a base component;

a cover component disposed on said base component forming an enclosure to house said electronic component;

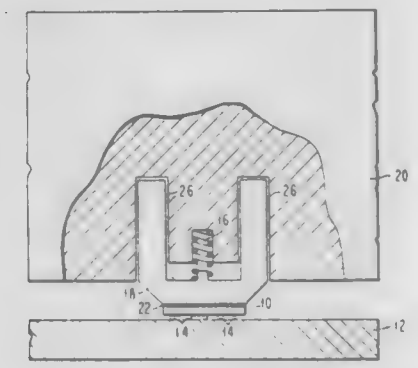
a tape lead frame disposed between said base component and said cover component, said lead frame extending outward from said package and having a plurality of lead fingers extending into said enclosure, said lead fingers being adapted for electrical connection to said electronic component;

spring means within said enclosure being adapted for pressing said electronic component into contact with said cover component, said spring means comprising at least a first of said lead fingers, said first of said lead fingers having a portion formed into an arch-like shape for pressing against said base component.

4,607,277
SEMICONDUCTOR ASSEMBLY EMPLOYING NONEUTECTIC ALLOY FOR HEAT DISSIPATION

Javanthu K. Hassan, Hopewell Junction; Sevgin Oktay, Poughkeepsie; John A. Paivanas, Hyde Park, and Clarence J. Spector, Hopewell Junction, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 364,722, Mar. 16, 1982, Continuation of Ser. No. 364,722, Mar. 15, 1982. This application Sep. 20, 1984, Ser. No. 637,653
Int. Cl.[4] H01L *23/26, 21/447, 23/10*
U.S. Cl. 357—81 12 Claims



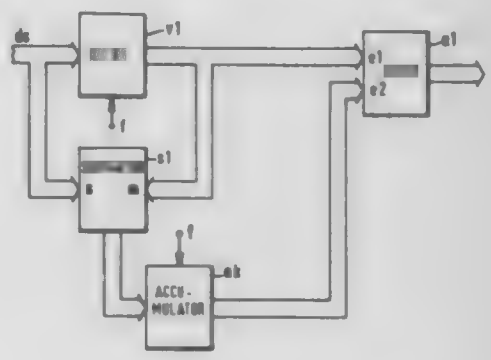
1. A semiconductor assembly comprising,

a substrate, a semiconductor chip having first and second surfaces, said chip having solder terminals on said first surface bonded to said substrate, a heat transfer element disposed closely adjacent to said second surface of said chip, a means to urge said transfer element into contact with said second surface, and a thin layer of heat conductive, non-eutectic metal alloy having a solidus temperature that is only slightly above the operating temperature range of said chip disposed between said heat transfer element and said chip, said material providing a highly thermally conductive heat transfer path between said chip and said heat transfer element, and having the ability to re-establish a low thermal resistance heat conductive path in the event that intimate contact between said material and said chip and/or said heat transfer element is disrupted by the reforming of the material when increased thermal resistance causes the chip temperature to exceed the solidus temperature of the material, and having the ability to remain in position between said chip and said heat transfer element.

4,607,278
DIGITAL CIRCUIT FOR SUPPRESSING CHANGES IN A DIGITAL SIGNAL

Peter M. Flamm, Freiburg, Fed. Rep. of Germany, assignor to ITT Industries, Inc., New York, N.Y.

Filed Sep. 27, 1983, Ser. No. 536,291
Claims priority, application European Pat. Off., Oct. 9, 1982, 82710049.6
Int. Cl.[4] H04N *9/64*
U.S. Cl. 358—36 8 Claims



1. A digital circuit for the clocked suppression of changes in a multidigit, positive or negative digital signal which have signs opposite to those of signal changes at previous instants of a clock signal, said digital circuit providing parallel signal processing and comprising:

a first means for receiving said digital signal and for providing said digital signal at an output delayed in time by an amount equal to the period of said clock signal;

a first subtracter having a subtrahend input coupled to said first means output, a minuend input for receiving said digital signal and having an output;

a symmetrically limiting accumulator having an input coupled to said first subtracter output, said accumulator being clocked by said clock signal, and having a range of accumulation equal to the range of values of changes to be suppressed, and having an output;

a first adder having a first input coupled to said delay means, second inputs and an output;

said accumulator output being coupled to said first adder second inputs.

4,607,279
BIAS LIGHT SUPPLY DEVICE FOR COLOR TV IMAGING DEVICE USING COLOR SEPARATION STRIPE FILTER

Itsuo Takanashi, Yokohama; Shintaro Nakagaki, Fujisawa; Kenichi Miyazaki, Yokohama, and Takashi Kuriyama, Tokyo, all of Japan, assignors to Victor Company of Japan, Limited, Kanagawa, Japan

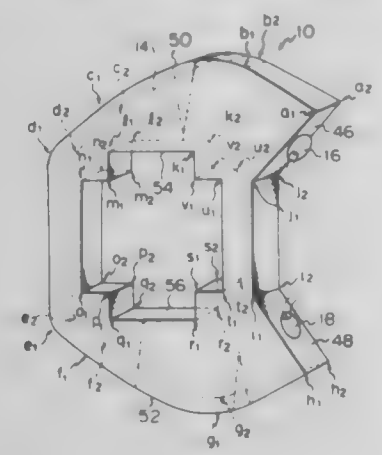
Filed Nov. 28, 1983, Ser. No. 555,865
Claims priority, application Japan, Nov. 30, 1982, 57-181415[U]
Int. Cl.[4] H04N *9/077, 9/07, 9/09, 5/228*
U.S. Cl. 358—44 12 Claims

1. A bias light supply device for use with a color television imaging device which generates a multiplex color television

video output signal and includes a photoelectric transducer section and a color separation stripe filter, said bias light supply device comprising:

a bias light source for emitting bias light; and

a flat light conducting member positioned parallel to a surface of the photoelectric transducer section of the imaging



device and including a light inlet portion on which the bias light from said bias light source is incident, a reflective portion having a parabolic section in order to reflect light incident on the light inlet portion, and a light outlet portion for discharging light reflected by the reflective portion whereby the reflected and discharged light proceeds toward a face of the color television imaging device.

4,607,280

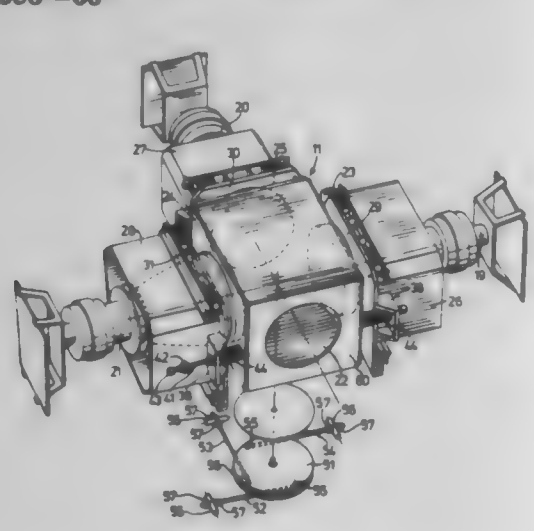
VIDEO PROJECTOR WITH MOUNTING ASSEMBLY ENABLING LONGITUDINAL AXES OF THREE CRT'S TO BE TILTED SIMULTANEOUSLY WHILE MAINTAINING OPTICAL ALIGNMENT

Maarjus Kurg, Cambridge, Canada, assignor to Electrohome Limited, Kitchener, Canada

Filed Sep. 6, 1984, Ser. No. 647,845

Int. Cl.[4] H04N *9/31*

U.S. Cl. 358—60 5 Claims



1. In combination with a video projector employing a dichroic mirror assembly including a final aperture through which light to be projected passes and red, green and blue cathode ray tubes operatively arranged with respect to said dichroic mirror assembly to project red, green and blue light respectively into said dichroic mirror assembly for passage through or reflection by said dichroic mirror assembly followed by passage through said final aperture, a separate mounting bracket for each of said cathode ray tubes, means pivotably mounting each of said mounting brackets to permit the inclination of the longitudinal axis of each of said cathode ray tubes to be varied, and means for simultaneously varying the inclination of the longitudinal axis of each cathode ray tube by the same amount to vary the top-to-bottom focussing of an image projected by said video projector while maintaining convergence, said varying means comprising a rotatable member, three rigid connecting arms pivotably connected to said rotatable member and means pivotably connecting said connecting arms to individual and different ones of said mounting brackets, whereby upon rotation of said rotatable member each of said mounting brackets is pivoted to the same extent as the others by movement of said connecting arms.

4,607,281

METHOD AND CIRCUIT ARRANGEMENT FOR THE IMPROVEMENT OF THE PICTURE QUALITY BY ACTIVITY-CONTROLLED DPCM CODING

Alexander Starck, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Sep. 17, 1984, Ser. No. 651,626

Claims priority, application Fed. Rep. of Germany, Sep. 15, 1983, 3333404

Int. Cl.[4] H04N *7/137*

U.S. Cl. 358—136 10 Claims

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- K L M - -
- B C D - -
- H I J - -
- A X - - -
- E F G - -
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1. In a method for improving picture quality of television signals with activity-controlled DPCM coding, in which an estimated value (x) is calculated from the surrounding video signal values (A,B,C,D) of a current sample (x) and from the video signal values (E,F,G . . .) of the preceding television field which surround the sample (x) in which the activity criterion (AK) is determined from the video signal values (A,B,C,D) of the same television field which surround the current sample (x) and the video signal values (E,F,G . . .) of the preceding television field which surround the current sample (x) by calculating the amplitude differences, in which the activity criterion (AK) is employed given transgression thereof below a first threshold (S_1), the improvement therein comprising the steps of:

applying an estimated value ($x=x_1$)for calculating the DPCM signal when the activity criterion transgresses a second threshold (S_2);

calculating the estimated value from the surrounding video signal values (A,B,C,D; E,F,G . . .) of the current and preceding television frames when the activity criterion is between the first and second thresholds ($S_1<AK<S_2$); and

multiplying the video signal values (A,B,C,D; E,F,G . . .) by predetermined factors ($\alpha,\beta,\gamma, \ldots$; e,f,g . . .) ($\frac{1}{4}^n$) where n=1, 2,3,4 . . . to calculate the activity criterion.

4,607,282

TELEVISION CIRCUIT FOR THE REDUCTION OF FLICKER ON A DISPLAY

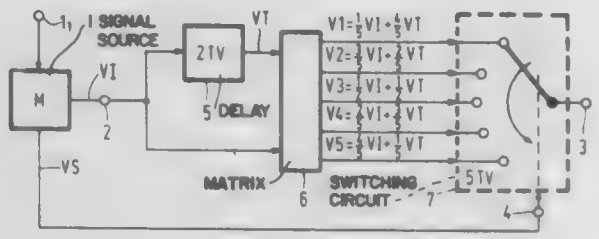
Leendert J. van de Polder, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed May 31, 1984, Ser. No. 615,964

Claims priority, application Netherlands, Jun. 1, 1983, 8301937

Int. Cl.[4] H04N 7/01

U.S. Cl. 358—140 5 Claims



1. A television circuit for reducing display flicker induced from a picture signal which is periodic over a plurality of video field periods comprising:

(a) an input terminal;

(b) an output terminal;

(c) a delay device connected to receive a signal from said input terminal and delaying said signal for at least two video field periods;

(d) a signal combining circuit for combining a signal from said delay device and a signal from said input terminal, said signal combining circuit having multiple outputs, each providing a different signal for supplying different combinations of a delayed signal VT and an undelayed signal VI, the number of combinations being equal to the number of video field periods in said periodic picture signal; and

(e) switching means for sequentially selecting a signal from each of said multiple outputs in synchronism with said video field periods, and applying said selected signal to said output terminal during each field period.

4,607,283

VERTICAL PICTURE CENTERING CIRCUIT

Gopal K. Srivastava, Buffalo Grove, Ill., and Julian E. Warrick, Utica, N.Y., assignors to Zenith Electronics Corporation, Glenview, Ill.

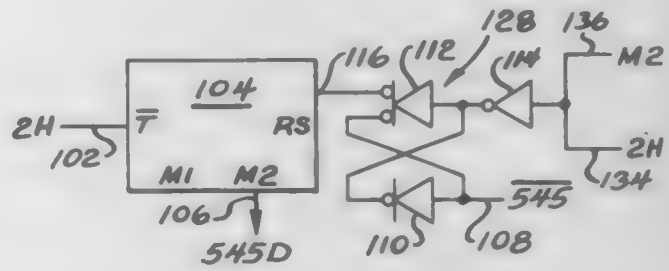
Filed Mar. 26, 1984, Ser. No. 593,341

Int. Cl.[4] H04N 5/04

U.S. Cl. 358—148 7 Claims

1. In a television receiving system for displaying received television picture signals having digital vertical synchronization means including vertical countdown means for counting from an original preset count to a predetermined higher count and generating a field determining pulse at said predetermined higher count, said system having mode recognition means for detecting whether said system is receiving a standard or a nonstandard signal and generating a representative output, and said system having frequency and phase detection means for comparing the generated field determining pulse with a received vertical sync derived field determining pulse, a method for statically adjusting the vertical centering of the displayed television picture including:

detecting a transition in said representative output indicative of a nonstandard to standard signal transition; and in response thereto



advancing the preset count of said vertical countdown means by a predetermined count.

2. The method of claim 1 further including:

returning said vertical countdown means preset to said original preset count after said countdown means has reached said predetermined count.

4,607,284

MOVEMENT-ADAPTIVE TRANSVERSAL-RECURSIVE NOISE SUPPRESSION CIRCUIT FOR A TELEVISION SIGNAL

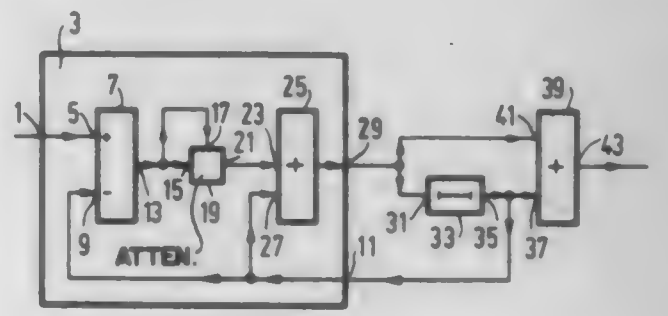
Johannes G. Raven, and Marcellinus J. J. C. Annegarn, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed May 9, 1984, Ser. No. 608,673

Claims priority, application Netherlands, May 11, 1983, 8301680

Int. Cl.[4] H04N 5/213

U.S. Cl. 358—167 6 Claims



1. A movement-adaptive transversal-recursive noise suppression circuit for a television signal, comprising:

a first combining circuit having a first input, constituting an input of the noise suppression circuit, a second input, and an output,

a delay circuit having an input coupled to the output of said first combining circuit, and an output coupled to the second input of said first combining circuit; and

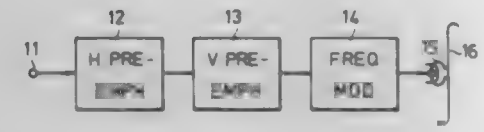
a second combining circuit having a first input also coupled to the output of said delay circuit, and a second input coupled to the output of said first combining circuit, an output of said second combining circuit constituting an output of said noise suppression circuit; whereby a signal path from the output of said first combining circuit to the output of said second combining circuit via the second input thereof has a movement information-independent transfer factor.

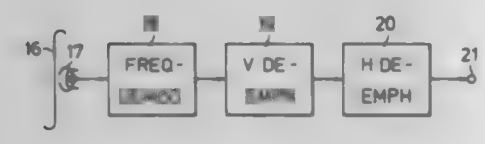
4,607,285

NOISE REDUCING SYSTEM FOR VIDEO SIGNAL

Akira Hirota, Chigasaki; Shinji Hirano, Tokyo; Hiroyuki Kitamura, Hiratsuka, and Takuya Tsushima, Ayase, all of Japan, assignors to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Feb. 2, 1984, Ser. No. 576,155
Claims priority, application Japan, Feb. 7, 1983, 58-18567
Int. Cl.[4] H04N *5/213*
U.S. Cl. 358—167 9 Claims





1. A noise reducing system for a video signal, said noise reducing system comprising:

vertical pre-emphasis means supplied with an input video signal which is to be transmitted, for supplying an output signal to a transmission system, said vertical pre-emphasis means having a characteristic for relatively emphasizing the level of high-frequency components of the input video signal having spatial frequencies, the emphasizing being in a vertical direction of a picture compared to low-frequency components of the input video signal, said vertical pre-emphasis means comprising a first loop circuit supplied with said input video signal for repeatedly circulating the input video signal, the input video signal being subject to a predetermined delay time and to a first loop gain per one cycle, and subtracting means for subtracting substantially a video signal derived from the first loop circuit and multiplied by a first coefficient from said input video signal to get the output signal of the vertical pre-emphasis means; and

vertical de-emphasis means supplied with the video signal which has been pre-emphasized in said vertical pre-emphasis means and which has been transmitted through the transmission system, said vertical de-emphasis means having a characteristic for relatively attenuating the level of the high-frequency components of the pre-emphasized video signal having spatial frequencies in the vertical direction of the picture as compared to the low-frequency components of the pre-emphasized video signal, said vertical de-emphasis means comprising a second loop circuit supplied with the video signal obtained through the transmission system for repeatedly circulating the obtained video signal, the obtained video signal being subject to the same predetermined delay time of said first loop circuit and to a second loop gain per one cycle, and adding means for adding a video signal derived from the second loop circuit and multiplied by a second coefficient to the obtained video signal to get the output signal of the vertical de-emphasis means,

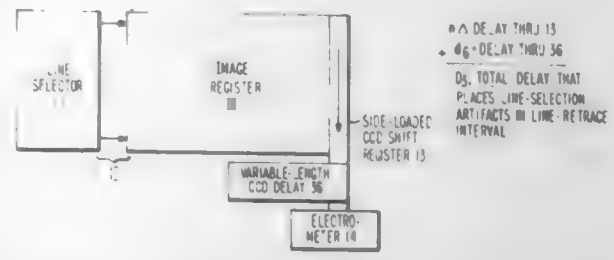
the characteristics of said vertical pre-emphasis means and said vertical de-emphasis means cooperating so as to reduce noise having high spatial frequencies in the vertical direction of the picture.

4,607,286

REMOVAL OF LINE SELECTION ARTIFACTS FROM TRACE PORTIONS OF LINE TRANSFER CCD IMAGER VIDEO OUTPUT SIGNALS

Paul K. Weimer, Mercer County, N.J., assignor to RCA Corporation, Princeton, N.J.

Filed Jan. 4, 1985, Ser. No. 688,982
Int. Cl.[4] H04N *3/14*
U.S. Cl. 358—213 9 Claims



1. A method for suppressing, in the line scan portion of video signal based on the video samples supplied from the output charge sensing stage of a CCD imager of line transfer type, the artifacts attributable to line selection in the image register electrostatically coupling to the output charge sensing stage of the CCD imager via shared capacitance to the CCD imager substrate, said method comprising the steps of:

selecting lines of video samples to be supplied from said image register;

transferring said selected lines of video samples from said image register in a path towards said output charge sensing stage in a manner such that the line selection artifacts occur in recurrent portions of the lines scan intervals, which recurrent portions define in the time domain a spatial band normal to the direction of line scan no wider than that spatial band as would be associated with the line retrace interval; and

providing a delay to said lines of video samples in the transfer path towards said output charge sensing stage by an amount so as to place said spatial band in which line selection artifacts occur in a portion of the corresponding time domain that is within that portion of the time domain defined by the line retrace intervals in the video samples supplied from the output charge sensing state of said CCD imager.

4,607,287

WOBBLING-SWING DRIVEN IMAGE SENSOR

Yukio Endo, Yokohama; Yoshitaka Egawa, Tokyo; Nozomu Harada, and Okio Yoshida, both of Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jan. 22, 1985, Ser. No. 693,152
Claims priority, application Japan, Jan. 31, 1984, 59-14292
Int. Cl.[4] H04N *3/14*
U.S. Cl. 358—213 9 Claims

1. An apparatus for picking up incoming image light, said apparatus comprising:

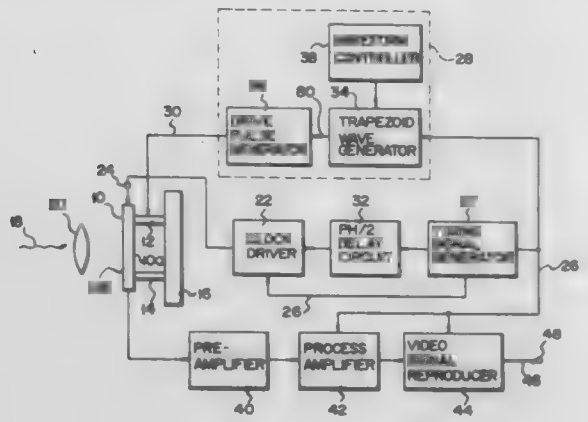
(a) a solid-state image sensor means for picking up the image light in accordance with an interlaced scanning technique to generate signal charges representing one frame image consisting of filed images, said image sensor means comprising,

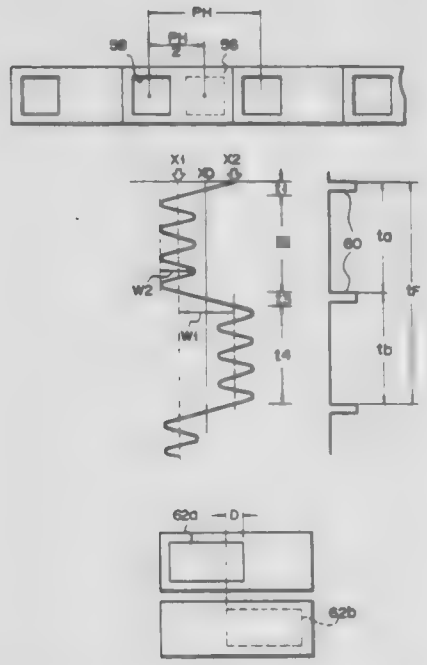
a sensing section provided with at least one linear cell array having cells with a specified photosensitive area to receive the image light and generate and store charges corresponding to the image light, and

at least one transferring section arranged parallel to at least one linear cell array and extending along said cell array to read out and transfer the charges stored in said sensing section; and

(b) swing driver means, coupled to said image sensor means, for applying a first vibration to said image sensor means such that each pixel cell is displaced to mutually different sampling positions in a plurality of field periods included

in one frame period so that each pixel cell is positioned at one sampling position in each field period, for picking up light, said swing driver means simultaneously applying a second vibration to said image sensor means such that





each pixel cell vibrates at one sampling position while picking up light in each field period, whereby the photosensitive area of each cell is substantially expanded to reduce a moire generated in each field.

4,607,288

TELEVISION RECEIVER WITH AN AUTOMATIC DIGITAL ALIGNMENT SYSTEM

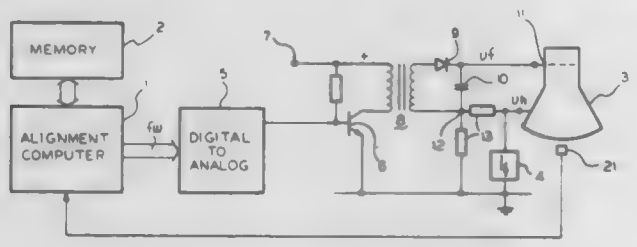
Laurin C. Freyberger, Bahlingen, Fed. Rep. of Germany, assignor to ITT Industries, Inc., New York, N.Y.

Filed Mar. 8, 1984, Ser. No. 587,403

Claims priority, application European Pat. Off., Mar. 15, 1983, 83102514.3

Int. Cl.⁴ H04N *5/68*

U.S. Cl. 358—242 **5 Claims**



5. In a television receiver having a cathode ray tube having a focusing electrode and a high voltage electrode, an automatic digital alignment system comprising:

means coupled to said cathode ray tube for supplying focusing information;

a computer responsive to said focusing information for providing digital focusing words;

a converter converting said digital focusing words into pulse-duration modulated signals; and

a focusing voltage circuit for providing a focusing voltage to said focusing electrode, said focusing voltage being varied in accordance with said pulse-duration modulated signals.

4,607,289

FACSIMILE TRANSCEIVER CAPABLE OF STORING AND RELAYING DATA

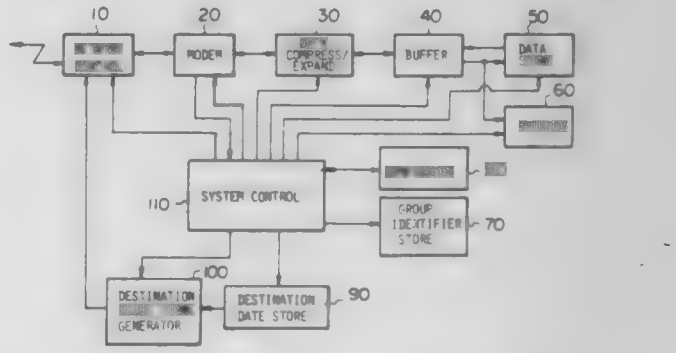
Shunji Kurokawa, Ebina, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Feb. 16, 1983, Ser. No. 467,403

Claims priority, application Japan, Feb. 26, 1982, 57-30297

Int. Cl.⁴ H04N *1/32*

U.S. Cl. 358—257 **4 Claims**



1. A facsimile transceiver having an on-demand type function of temporarily storing facsimile data transmitted thereto from one remote facismile station and relaying the stored data to another remote facsimile station which is designated by said one station comprising:

a system control means for controlling the entire transceiver;

a data storage means for storing the received facsimile data;

a first storage means for registering therein identification data which accepts a request for relaying facsimile data;

a comparator means for comparing with the identification data registered in the first storage means, identification data included in a control signal which is transmitted to the transceiver before the facsimile data from said one remote station, said identification data in the control signal being recognized by the system control means;

a second storage means for storing destination data which represents said another remote station and is included in the control signal and recognized by the system control means; and

a destination select signal generator means for generating a destination select signal to call said another remote station in response to the destination data which is read out of the second storage means;

the system control means causing the facsimile data to be relayed to said another station only if the identification data included in the control signal corresponds to the identification data registered in the first storage means.

4,607,290

IMAGE INFORMATION FILING APPARATUS

Hiroyasu Murakami, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jun. 7, 1984, Ser. No. 618,350

Claims priority, application Japan, Jun. 10, 1983, 58-103663

Int. Cl.⁴ H04N *1/00*

U.S. Cl. 358—260 **9 Claims**

1. An image information filing apparatus comprising:

document information scanning means for scanning a document to produce an image information corresponding to the document pattern;

redundancy processing means for processing the image information every one scanning line to decrease the re-

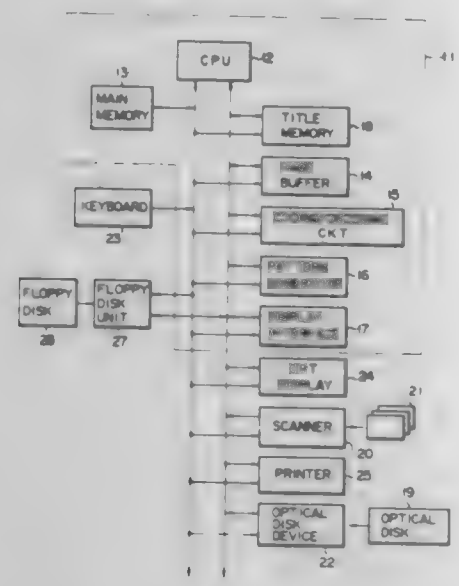
dundancy of the image information and produce line image information of different lengths;

first code generating means for generating a first special code;

code adding means for adding the first special code to the end of each line image information from the information redundancy processing circuit to produce a line data;

page buffer means for storing line data corresponding to one page;

second code generating means for generating a second special code having components repeated in constant and specific components;



circuit means for reading out sequentially the line data from the page buffer and adding the second special code to each line data;

means for modulating the line data added with the second special code, said modulating means comprising a MFM modulator for modified-frequency-modulating the line data and having a function for removing at least one pulse from modulated pulses corresponding to the second special code of said second code generating means; and

optical disk means for recording sequentially the modulated line data on the track of an optical disk.

4,607,291

IMAGE FORMING APPARATUS

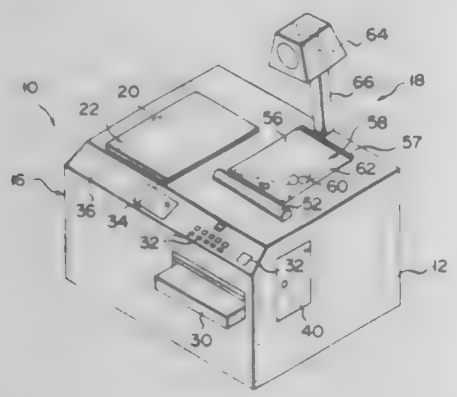
Ken'ichi Oono, Kawasaki, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Aug. 17, 1984, Ser. No. 641,774

Claims priority, application Japan, Aug. 25, 1983, 58-155516; Feb. 6, 1984, 59-19785

Int. Cl.⁴ H04N *1/04*

U.S. Cl. 358—286 **20 Claims**



1. An image forming apparatus for forming an image on a sheet according to an image information and projecting the image formed on the sheet, comprising:

image forming means for forming the image on the sheet according to an image information;

projecting means, arranged adjacent to said image forming means, for projecting the image formed on the sheet; and

conveying means for conveying the sheet having the image formed by said image forming means thereon to said projecting means, wherein said conveying means comprises a detachable discharge tray disposed on the path along which sheets are conveyed to the projecting means, for receiving sheets having the image thereon when said overhead projector is not used.

4,607,292

AUTOMATIC PHASE CONTROL COLOR SIGNAL CIRCUIT FOR VIDEO TAPE RECORDERS OPERATING IN THE NTSC OR PAL SYSTEMS

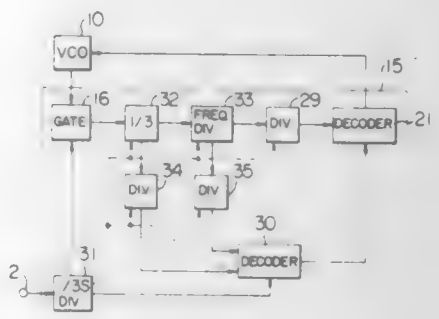
Noboru Kojima, Yokohama; Tomomitsu Kuroyanagi, Katsuta; Akira Shibata, Katsuta, and Isao Nakagawa, Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 31, 1983, Ser. No. 480,790

Claims priority, application Japan, Apr. 2, 1982, 57-53821; Jul. 26, 1982, 57-128914; Jan. 28, 1983, 58-11560; Jan. 28, 1983, 58-11557

Int. Cl.⁴ H04N *5/782*

U.S. Cl. 358—310 **9 Claims**



1. A color signal processing circuit in a video tape recorder for reproducing a color signal from a low frequency converted color signal in the NTSC system or the PAL system, comprising:

a voltage controlled oscillator for generating a carrier having a frequency equal to 3N times the horizontal synchronizing frequency of a video signal and eight times that of a low-frequency sub-carrier frequency, where N is an integer;

detection means for detecting variation of the oscillation frequency of said voltage controlled oscillator in a reproduction mode;

suppression means for suppressing the change of the oscillation frequency of said voltage controlled oscillator by an output signal from said detection means to a suppression range for the NTSC system which is equal to or wider than that for the PAL system; and

frequency switching means for selectively changing the center oscillation frequency of said voltage controlled oscillator between one value for the NTSC system and another value for the PAL system.

4,607,293

MAGNETIC RECORDING AND REPRODUCTION SYSTEM

Yoshinori Okada, Katsuta; Kuniaki Miura, Ibaraki, and Isao Fukushima, Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 29, 1983, Ser. No. 556,047

Claims priority, application Japan, Nov. 29, 1982, 57-207603

Int. Cl.⁴ A04N *5/782*

U.S. Cl. 358—328 **3 Claims**

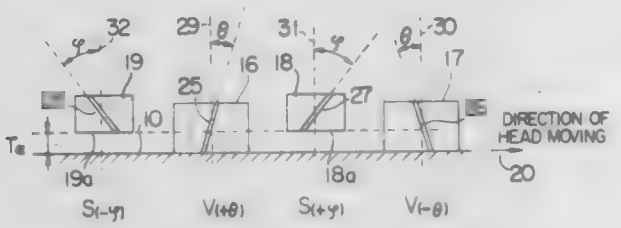
1. A magnetic recording and reproduction system in which a frequency-modulated luminance signal, a chrominance signal placed in a frequency band below a frequency band of said luminance signal, and a frequency-modulated audio signal placed in the frequency band of said luminance signal are

recorded on a video track of a magnetic tape with a low speed such that adjacent video tracks contact each other and, thereafter, the recorded signals are reproduced from said tape, said system comprising:

first and second video heads for recording and reproducing said luminance signal and said chrominance signal, said heads having gaps with azimuth angles in opposite inclination directions;

first and second audio heads for recording and reproducing said audio signal, said heads having gaps with azimuth angles in opposite inclination directions, and in different values of azimuth angle from those of said video heads;

a rotary member which mounts said video heads and said audio heads, and causes said video and audio heads to trace said video track of said magnetic tape;



means for operating on said first audio head and said first video head to trace a first video track;

means for operating on said second audio head and said second video head to trace a second video track;

the gap of said first audio head and said first video head having azimuth angles in a same inclination direction and the gaps of said second audio head and said second video head having azimuth angles in a same inclination direction so that the audio signal and the luminance signal are recorded on each of said video tracks with azimuth angles in a same inclination direction and the recorded signals recorded by said first and second video heads have azimuth angles in opposite inclination directions, said first and second audio heads being adapted to trace said video track in advance of said first and second video heads, respectively.

4,607,294

MAGNETIC VIDEO RECORDING APPARATUS FOR INTERMITTENT RECORDING

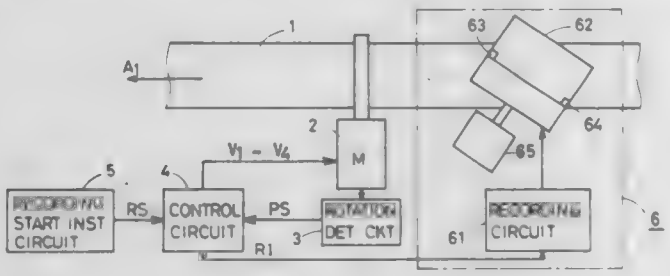
Yoshihisa Nishitani, Suita, and Yukio Osafune, Nagaokakyo, both of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 20, 1983, Ser. No. 563,520

Claims priority, application Japan, Dec. 29, 1982, 57-229791

Int. Cl.⁴ H04N *5/782*; G11B *15/467*

U.S. Cl. 360—35.1 **3 Claims**



1. A magnetic video recording apparatus for making a magnetic tape intermittently travel by one frame so as to record video signals therein, comprising:

a voltage driven capstan motor for enabling said magnetic tape to travel,

rotation detecting means mechanically coupled to said capstan motor for providing pulse signals according to the rotation of said capstan motor,

recording start instructing means for providing intermittently a recording start signal for instructing the start of recording, and

control means comprising:

power supply means for providing a driving voltage (V_1) of a first polarity in response to said recording start signal, a driving voltage (V_2) of a second polarity in response to a first control signal applied thereto, a driving voltage in the form of pulses (V_3) of said first polarity in response to a second control signal applied thereto and a driving voltage in the form of pulses (V_4) of said second polarity in response to a third control signal applied thereto,

timer means for starting measurement of a unit time interval required for recording of said one frame in response to said recording start signal, providing said first control signal when a time interval half as long as said unit time interval has passed,

counter means for starting count-up in response to said recording start signal or said second control signal and starting count-down in response to said third control signal, and

comparing means for comparing a count number K in said counter means with a predetermined value PV at a lapse of said unit time interval so as to stop application of said first control signal if $K=PV$, to provide said second control signal if $K<PV$ until the condition $K=PV$ is satisfied and to provide said third control signal if $K<PV$ until the condition $K=PV$ is satisfied, said predetermined value PV being a value corresponding to a travelling distance of said magnetic tape for said one frame.

4,607,295

WRITE DATA COMPENSATING CIRCUIT IN MAGNETIC RECORDER

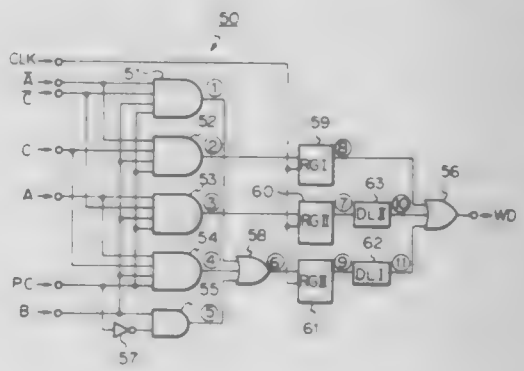
Hiroshi Uno, Yokohama, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Nov. 7, 1983, Ser. No. 549,431

Claims priority, application Japan, Nov. 10, 1982, 57-197192

Int. Cl.⁴ G11B *5/09*

U.S. Cl. 360—45 **9 Claims**



1. A write data compensating circuit in a magnetic recorder which records data on a recording medium, said write data compensating circuit receiving a clock signal and binary data having patterns, said write data compensating circuit comprising:

a shift circuit for shifting the binary data serially in time in synchronization with the clock signal and for producing a front signal, a present signal and a rear signal in dependence upon the binary data; and

a combination logic circuit, operatively connected to said shift circuit to receive the front, present and rear signals, for effecting a preshift of the present signal which is output as write data representing the binary data, said combination logic circuit comprising:

logic gates, operatively connected to receive the front, present and rear signals from said shift circuit, for detecting all occurrences of minimum pulse width between two adjacent inversions of magnetization to be

created on the recording medium, by which the binary data are recorded in the form of the write data, the front and rear signals being referenced by said logic gates for all indications of logic "1" by the present signal; and

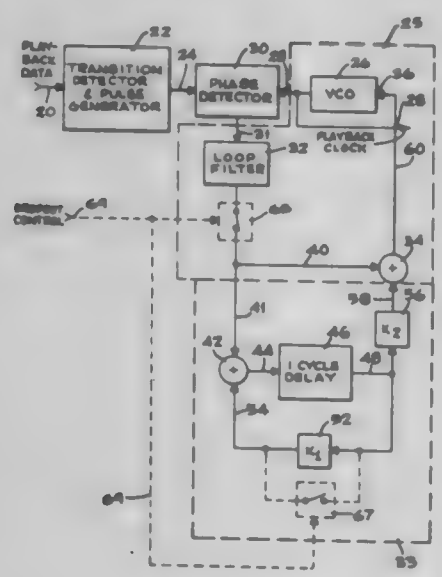
delay means, each of said delay means separately connected to said logic gates, for adjusting the pulse width of the write data, said delay means providing different amounts of the preshift to the present signal, one of said delay means being selected by said logic gates in dependence upon the patterns of the binary data.

4,607,296

CLOCK RECOVERY SYSTEM IN DIGITAL ROTARY SCAN MAGNETIC PLAYBACK DEVICES

Peter Smidth, Mountain View, Calif., assignor to Ampex Corporation, Redwood City, Calif.

Filed Jul. 17, 1985, Ser. No. 756,411
Int. Cl.[4] G11B *5/09*; H03D *3/24*
U.S. Cl. 360—51 **17 Claims**



1. A clock recovery system in a digital magnetic playback device wherein a phase error signal is provided which has a periodic signal component due to time base variations of a playback signal and a random signal component due to noise, comprising:

a phase locked loop having a controlled signal generator means for providing a playback clock signal, a phase detector means having a first input coupled to receive said playback clock signal and a second input coupled to receive an input signal indicating logic level transitions of said playback signal, said phase detector means having an output coupled to provide said phase error signal;

a delay means coupled to receive said phase error signal and to repeatedly delay said received signal by one recurrent interval of said periodic signal component; and

means coupled to sum said phase error signal and said repeatedly delayed signal and to apply said summed signals to a control input of said controlled signal generator means.

4,607,297

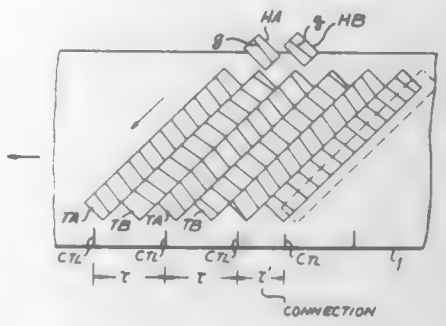
APPARATUS FOR DETECTING CLOGGING OF HEAD GAP

Masakazu Sonoda, Kanagawa; Koichi Nakayama, Aichi, and Toshiyuki Sado, Kanagawa, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Apr. 5, 1984, Ser. No. 596,948
Claims priority, application Japan, Apr. 8, 1983, 58-62704
Int. Cl.[4] G11B *5/41, 5/00*
U.S. Cl. 360—55 **15 Claims**

1. In an apparatus having a record mode for recording information signals in successive parallel information tracks on a record tape by means of a plurality of rotary heads repeatedly scanning across said tape and having respective gaps with different azimuth angles, and in which the apparatus is changeable to a playback mode for causing each of said heads to provide a respective output when it is scanning one of said information tracks in which information signals have been previously recorded by a head with a gap having the same azimuth angle, a device for detecting clogging of said gaps comprising:

switching means operative in said playback mode for switching from one to another of the outputs of said heads;



switch operating means causing said switching means to effect said switching of the head outputs during the period required for said scanning of the tape by each of said heads;

level detecting means for detecting the levels of said head outputs obtained from said switching means and providing corresponding detected outputs; and

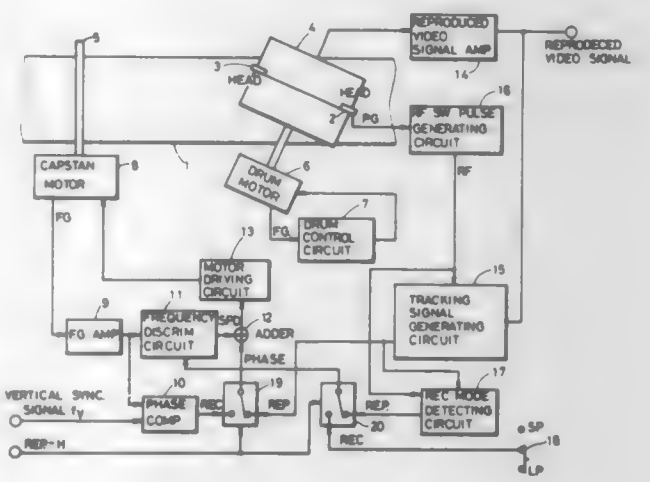
means responsive to said detected outputs and said switch operating means for indicating clogging of at least one of said head gaps.

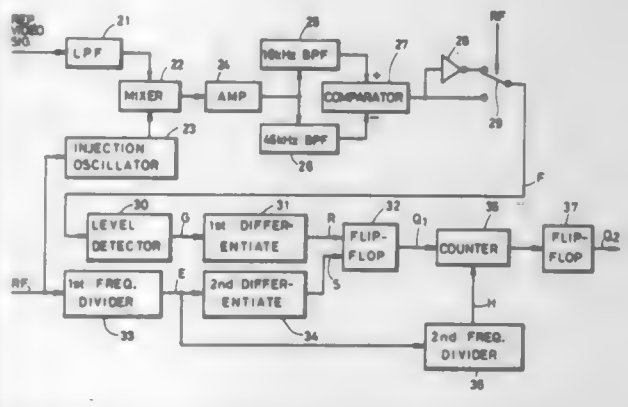
4,607,298

APPARATUS FOR REPRODUCING MAGNETICALLY RECORDED VIDEO SIGNAL

Sachio Yamashita, Yamatokoriyama, Japan, assignor to Sanyo Electric Co., Ltd., Moriguchi, Japan

Filed Feb. 8, 1985, Ser. No. 699,628
Int. Cl.[4] G11B *5/008*
U.S. Cl. 360—73 **5 Claims**





1. An apparatus for reproducing a video signal using a rotat-

able head for reproducing including at least two heads which can be alternately changed over by means of a head changeover signal, from a magnetic recording medium in which four kinds of pilot signals are each sequentially recorded in each track in superposition on a video signal sequentially recorded in each recording track disposed adjacent to each other by a helical scan method, sequentially in each field either at relatively fast standard playing speed or at relatively slow long playing speed, comprising;

transferring means for transferring said magnetic recording medium,

transfer speed changing means coupled to said transferring means for changing a transfer speed of said magnetic recording medium to either the standard playing speed or the long playing speed so as to adapt the reproducing speed to the speed at which the video signal was recorded,

reproduced pilot signal generating means coupled to said rotatable head for reproducing for extracting said pilot signals from the signal reproduced by said rotatable head for providing reproduced pilot signals,

reference signal generating means for sequentially providing four types of reference signals having different frequencies in response to said head changeover signal of at least two heads, said four types of reference signal being selected in the frequencies equal to those of said four types of pilot signals,

comparing signal generating means coupled to said reproduced pilot signal generating means and said reference signal generating means for mixing said reproduced pilot signal and said reference signal for providing a comparing signal for detecting the level of said beat signal,

tracking signal generating means coupled to said comparing signal generating means for generating the tracking signal responsive to the comparing output of said comparing signal generating means,

fundamental cycle detecting means coupled to said tracking signal generating means for detecting a fundamental cycle of a comparing signal provided by said generating means,

counting means coupled to said fundamental cycle detecting means for counting said detected output,

time measuring means coupled to said counting means for measuring a prescribed period of time after said counting means starts counting, and

recording speed detecting means coupled to said counting means, said time measuring means and said transferring speed changing means for determining a recording speed of said recording medium based on an output of said time measuring means when said time measuring means measures said prescribed period of time, whereby a selection signal is supplied to said transferring speed selecting means.

4,607,299

MAGNETIC TAPE CASSETTE INCLUDING ERASURE PREVENTION MEANS, AND CASSETTE OPERATING DEVICE FOR SAME

Kengo Oishi, and Osamu Suzuki, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Nov. 21, 1983, Ser. No. 553,918

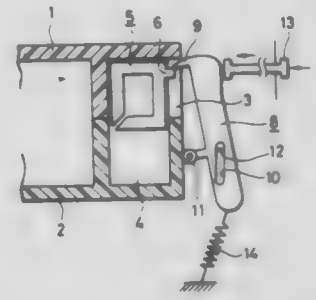
Claims priority, application Japan, Nov. 22, 1982, 57-203736

Int. Cl.⁴ G11B *15/04, 19/04, 23/02*

U.S. Cl. 360—60 **5 Claims**

1. A magnetic tape cassette system including a cassette and a cassette machine, in which signals recorded on a magnetic tape cassette are prevented from being erased by mistake, said cassette system comprising:

a space internal of said cassette and having an opening provided in a peripheral wall of said cassette, and an opening and closing member fitted into said space, wherein said opening is opened when said opening and closing member is in a first position and erasing of said cassette is prevented when said opening and closing member is in said first position, and said opening is closed when said opening and closing member is in a second position and erasing of said cassette is allowed when said opening and closing member is in said second position; and



a magnetic tape cassette operating device which is operable upon ejection of said cassette from said machine for engaging said opening and closing member to move said member from said second position to said first position.

4,607,300

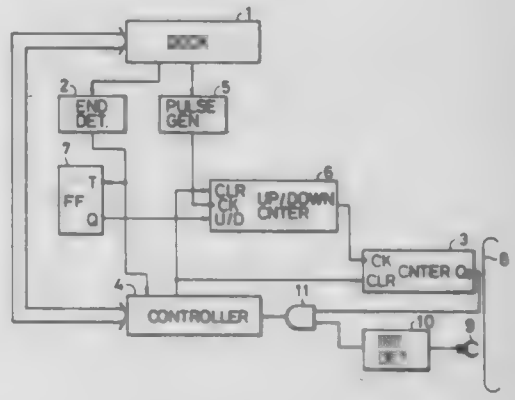
AUTOMATICALLY REVERSIBLE TAPE DECK

Yoshio Aoyagi; Yukihiro Kaneko; Masanori Kurosaki; Minoru Motohashi; Manabu Sawaki; Yoshiharu Ueki, and Shosaburo Sakaguchi, all of Saitama, Japan, assignors to Pioneer Electronic Corporation, Saitama, Japan

Filed May 25, 1983, Ser. No. 497,972

Int. Cl.⁴ G11B *15/48, 27/10*

U.S. Cl. 360—74.1 **18 Claims**



1. An automatic reverse tape deck of the type for commencing a reproduction operation at a first position of a tape while said tape travels in a first direction, reversing the direction of tape travel when said tape reaches a second position and continuing said reproduction operation while said tape travels in a second direction opposite said first direction and past said first position, and reversing the direction of tape travel when said tape reaches a third position and continuing said reproduction operation while said tape again travels in said first direction, said tape deck including position detecting means for detecting the position of said tape and control means for interrupting said reproduction operation after said position detecting means detects the arrival of said tape at said first position while said tape is traveling in said first direction after direction reversals at said second and third positions.

4,607,301

DOOR MECHANISM OF A CASSETTE INSERTION OPENING IN AN AUDIO DEVICE

Yukio Iizuka, Tokyo, Japan, assignor to Clarion Co., Ltd., Tokyo, Japan

Filed Oct. 11, 1983, Ser. No. 540,362

Claims priority, application Japan, Oct. 14, 1982, 57-154500[U]

Int. Cl.⁴ G11B *1/00, 23/02*

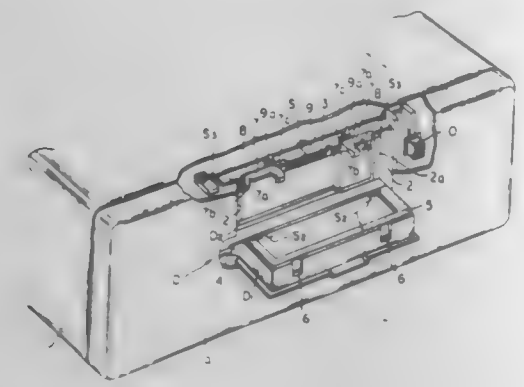
U.S. Cl. 360—93 **6 Claims**

1. In a tape cassette player having a housing including a door

mechanism for a cassette insertion opening, said mechanism comprising:

an outer door pivotally supported outside said cassette insertion opening so as to open outwardly and close and seal against outwardly facing surfaces about said opening;

an inner door parallel to said first door and pivotally supported inside over said cassette insertion opening, said



inner door being pivotable inward into an open position which uncovers said opening upon insertion of a cassette through said opening;

door lock means for locking said outer door when said outer door closes said cassette insertion opening; and

door unlocking means for releasing said lock means to open said outer door.

4,607,302

MODE SWITCH ACTUATOR FOR TAPE RECORDERS

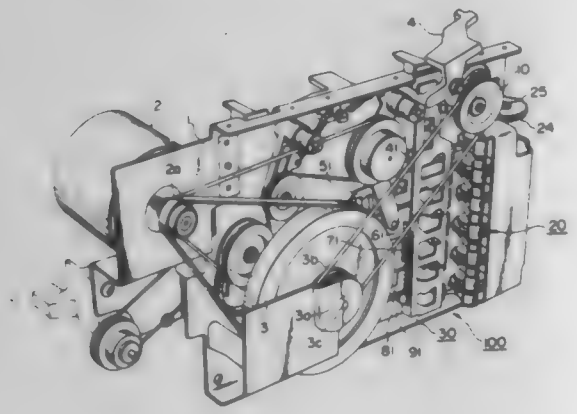
Masanori Sugihara, Saitama, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed Sep. 1, 1982, Ser. No. 413,841

Claims priority, application Japan, Sep. 2, 1981, 56-130472; Sep. 2, 1981, 56-130481; Sep. 2, 1981, 56-130482

Int. Cl.⁴ G11B *5/008, 15/00*

U.S. Cl. 360—96.1 **9 Claims**



1. A mode switching apparatus for a tape recorder of the type operable in a plurality of modes, comprising; a plurality of plungers for initiating mode switching operations, a plurality of mode operation rods, one being provided for each of the modes, for effecting a mode switching operation, a locking arm provided for each said plunger and rotatable through an angle upon linear movement of said plunger; clutch gears being provided for each plunger and normally locked by said locking arms, rotatably mounted operation arms located adjacent each said clutch gear, cam means mounted on each said clutch gear for rotating said operation arms, said mode operation rods being respectively urged in an operational direction by said operation arms; a drive gear for driving said clutch gears, said clutch gears having non-toothed portions providing a non-engaging state with said drive gear and being locked by said locking arms.

2. A mode operating apparatus for a tape recorder of the type capable of operation in a plurality of selectable modes, comprising; a motor, a drive gear driven by said motor and arranged proximate a plurality operation rods, one operation rod being provided for each of said modes; transfer gears selectively engagable with said drive gear and being provided for each of said operation rods; means for selectively engaging said drive gear with a selected transfer gear, comprising arm means provided for rotationally locking each said gear; and a plurality of plungers for respectively driving each said arm means to unlock the associated transfer gear to permit the associated transfer gear to be engaged with and rotated by said drive gear; said operation rods being independently operated in response to the rotation of a respective associated transfer gear.

4,607,303

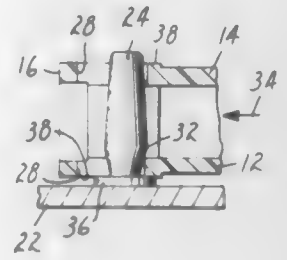
TRIPOD CASSETTE POSITIONING

Claude E. Cybulski, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Dec. 27, 1983, Ser. No. 565,229

Int. Cl.⁴ G11B *15/00*

U.S. Cl. 360—96.5 **9 Claims**



1. Cassette recorder for a cassette containing recording tape which travels along its front edgewall, the broad top and bottom walls of the cassette being formed with vertically aligned openings near each end of its front edgewall, and its rear edgewall being formed with a central depression, said recorder comprising (a) a base plate from which project two locating pins that are received by said openings, (b) a spring member that seats into said depression and biases the cassette against said locating pins, and (c) means connected to said spring member for enabling recording only when the spring member is fully seated into the depression, wherein the edges of the locating pins closest to the spring member define an inclined plane which intersects the base plate to form an acute angle in the direction of the spring member so that due to the inclined plane the cassette is forced against the base plate at the locating pins under the bias of the spring member, thereby positively positioning the cassette in place.

4,607,304

SEGMENTED SPACER MEANS FOR FLOPPY DISK PACKS

Dean DeMoss, Camarillo, and Harvey J. Richardson, Sunnyvale, both of Calif., assignors to Burroughs Corporation, Detroit, Mich.

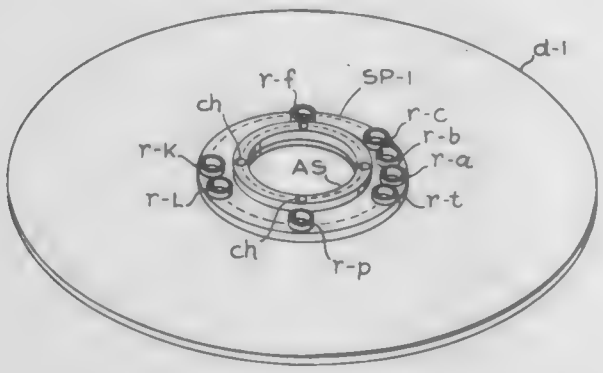
Continuation-in-part of Ser. No. 156,197, Jun. 3, 1980, Pat. No. 4,352,135. This application Jul. 22, 1982, Ser. No. 400,757

Int. Cl.⁴ G11B *23/02, 5/016*

U.S. Cl. 360—99 **21 Claims**

1. A novel "self-spacing" floppy disk with at least one array

of separate spacer segments disposed concentric with the disk center, each array being disposed on a respective disk face and



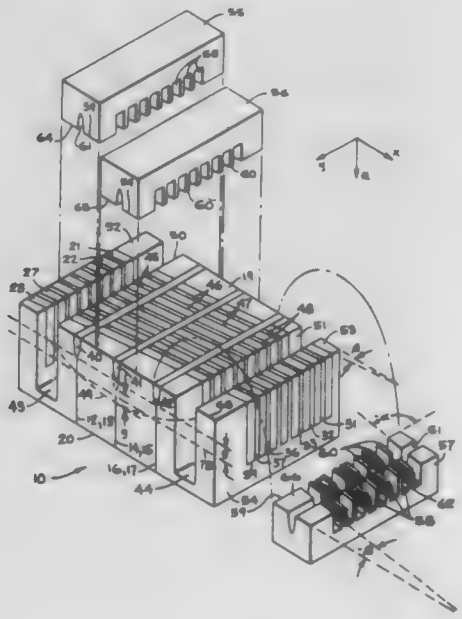
being formed from a single segment-blank attached on the disk and centrally stamped in the forming of a center-hole.

4,607,305

MONOLITHIC MULTICHANNEL MULTISTACK MAGNETIC TRANSDUCER ASSEMBLY AND METHOD OF MANUFACTURING THEREOF

Richard K. Milo, Poway, Calif., assignor to Ampex Corporation, Redwood City, Calif.

Filed Feb. 8, 1983, Ser. No. 464,831
Int. Cl.[4] G11B *5/265, 5/29*
U.S. Cl. 360—121 **41 Claims**



—

18. A method of making a multichannel multistack magnetic transducer assembly having interlaced transducing channels of the respective stacks with respect to an associated recording medium relatively moving thereto, comprising the steps of;

forming at least three corresponding blocks of magnetic material and providing corresponding optically flat opposite parallel planar surfaces on each block;

forming a monolithic block by intergrally joining together said magnetic blocks side-by-side with said opposite parallel planar surfaces abutting and with a layer of nonmagnetic transducing gap forming material therebetween to obtain at least two parallel transducing gap planes, each pertaining to one stack of the multichannel multistack assembly, said medium relatively moving with respect to said gap planes in a first direction;

providing a plurality of first elongated parallel slots extending partially into said monolithic block at a selected depth and extending with their elongated dimensions across said transducing gap planes in a second direction, different from said first direction, to obtain a plurality of parallel partitions separated by said first parallel slots, to form respective transducing channels, each channel having a pair of confronting magnetic pole pieces defining a transducing gap therebetween pertaining to a respective transducing channel of one said stack;

preparing a magnetic back core assembly having transducing windings provided thereon and joining said back core assembly to said monolithic block in mated secured engagement to complete a plurality of magnetic transducing circuits provided by said respective pairs of pole pieces of said multichannel multistack transducer assembly; and

contouring said monolithic block at a transducer-to-recording medium surface to separate from each other said interlaced transducing channels formed by said partitions.

40. A multichannel multistack magnetic transducer assembly having interlaced transducing channels of the respective stacks with respect to an associated recording medium relatively moving thereto, comprising:

a monolithic block having at least three blocks of magnetic material integrally joined together at optically flat corresponding opposite parallel planar surfaces with a layer of nonmagnetic transducing gap forming material therebetween, said joined surfaces forming respective parallel transducing gap planes, each gap plane pertaining to one stack of the multichannel multistack assembly;

a plurality of parallel transducing channel forming partitions separated from each other by first elongated parallel slots and extending with their elongated dimensions across said transducing gap planes at an acute angle; and

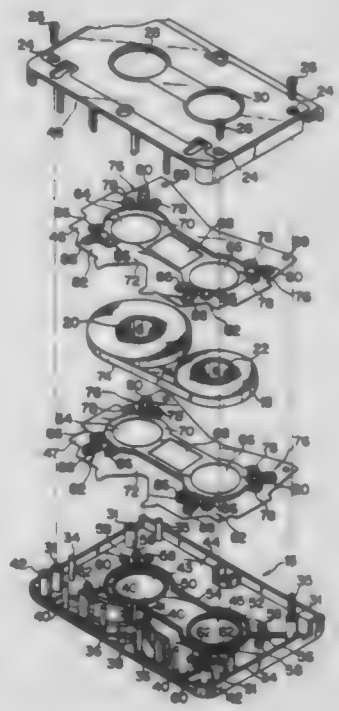
a magnetic back core assembly with transducing windings provided thereon joined with said monolithic block in mated secured engagement to complete a plurality of magnetic transducing circuits provided by said transducing channel forming partitions of said multichannel multistack transducer assembly.

4,607,306

TAPE CASSETTE WITH LINER SHEET INSERT

Hideo Shirako, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Mar. 14, 1984, Ser. No. 589,459
Int. Cl.[4] G11B *23/02, 15/32*
U.S. Cl. 360—132 **6 Claims**



1. A tape cassette comprising:

a magnetic tape having a wound portion and a travelling portion;

a pair of hubs which carry the wound portion of said magnetic tape;

a liner sheet set close to the edge of the magnetic tape to guide its travel and having holes allowing for the insertion of the paired hubs, a first projection means along the periphery of said insertion holes and protruding from the sheet so as to elastically contact the hubs and the wound

portion of the magnetic tape, and a second projection means provided at that point at which the travelling portion of said magnetic tape contacts the wound portion of the magnetic tape, said second projection means extending along the direction in which said contact point moves as the amount of the tape in said wound portion changes, said second projection means elastically contacting the wound portion of the magnetic tape;

a pair of cassette halves holding the magnetic tape and paired hubs by means of said liner sheet, each cassette half being provided with holes allowing for the insertion of the paired hubs, a first rib corresponding to said first projection means and elastically pressing an area at said first projection means to one of the hubs, and a second rib facing said second projection means elastically pressing said second projection means to the edges of the wound portion of the magnetic tape.

4,607,307

REEL BRAKING DEVICE FOR A MAGNETIC-TAPE CASSETTE

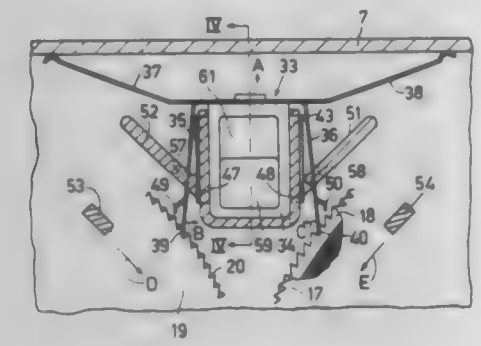
Joannes H. F. C. Sieben, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 460,419, Jan. 24, 1983, abandoned. This application Dec. 5, 1983, Ser. No. 558,065

Claims priority, application Netherlands, Dec. 10, 1982, 8204784

Int. Cl.[4] G11B *23/02*

U.S. Cl. 360—132 11 Claims



3. A magnetic-tape cassette comprising:

a housing having two parallel substantially rectangular major walls, two side walls, a rear wall, and a front wall having at least one aperture formed therein,

two spool hubs arranged adjacent each other between the major walls, and each rotatable about a respective axis of rotation which extends perpendicularly to said major walls, each of said spool hubs having a respective upper and lower flange disposed near a respective upper and lower axial end of the spool hub, the upper and the lower flanges respectively being disposed in an upper and a lower plane, an upper flange on one spool hub and a lower flange on the other spool hub having a multiplicity of ratchet teeth,

a length of magnetic tape connected to and at least partly wound on the spool hubs in the space between the respective flanges, and having a portion extending along said at least one front aperture,

a braking device comprising a mount and two brake arms arranged on the mount, each brake arm having a respective free end disposed respectively near said first and second major walls for respective cooperation with the toothed flange of the first and second spool hub,

means for mounting said braking device between said major walls for actuation by an actuating means arranged externally of the cassette housing on a tape recorder, said means for mounting including means for guiding the mount inside the housing in a space bounded by the spools and the rear wall so as to be slidable in a direction perpendicular to said rear wall between a disengaged position and an engaged position; in said disengaged position the free end of each brake arm being disengaged from the respective flange; in the engaged position the mount being disposed at a greater distance from the rear wall than in the disengaged position, and the free end of each brake arm being in engagement with a respective tooth of said ratchet teeth to inhibit rotation of the spools, and

spring means for moving said mount from the disengaged to the engaged position, thereby causing engagement of the brake arm free ends with respective teeth to cause the spools to rotate in opposite winding directions, whereby the magnetic tape is tensioned,

characterized in that said flanges at each axial end of each spool hub have the same diameter and have ratchet teeth, the teeth on one flange being oriented opposite to those on the other flange of the same spool hub, and

each of the flanges which is disposed in a same plane has similarly oriented ratchet teeth,

whereby the cassette can be assembled from interchangeable first and second spool hubs, with either flange of a spool hub being oriented as the upper flange.

4,607,308

MAGNETIC TAPE CASSETTE WITH DUAL GUARD PANEL STRUCTURE

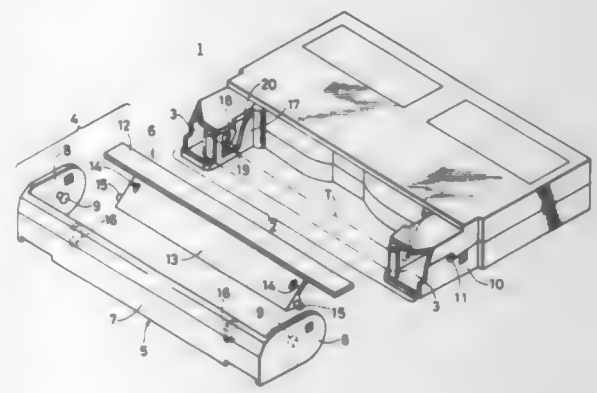
Masao Tsuruta; Kengo Oishi, and Osamu Suzuki, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Mar. 5, 1984, Ser. No. 586,389

Claims priority, application Japan, Mar. 4, 1983, 58-30414[U]

Int. Cl.[4] G11B *23/02, 15/32*

U.S. Cl. 360—132 5 Claims



1. In a magnetic tape cassette in which a magnetic tape is wound on a pair of hubs and an opening formed in the front part of a cassette body is covered by a guard panel which is swingably supported, in which the improvement comprises: said guard panel is of a dual-cover structure comprising an outer cover for closing said opening and an inner cover having guide protrusions slidably engaged with guide grooves formed in inner side walls of tape withdrawal holes provided at both ends of said opening and being pivotally supported on said outer cover to move in association with said outer cover, said inner side walls each including elastic cantilever means for urging the respective guide protrusion against a groove wall, to assist in the movement of and improve positioning of the inner dust cover.

4,607,309

APPARATUS FOR DETECTING ARCING FAULTS ON LOW-VOLTAGE SPOT NETWORKS

Martin T. Bishop, Wilkins Twp., Allegheny County, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed May 15, 1984, Ser. No. 610,540

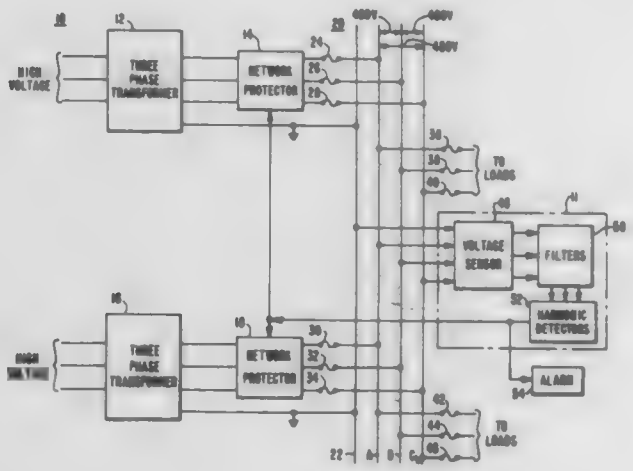
Int. Cl.[4] H02H *7/00*

U.S. Cl. 361—62 12 Claims

1. A protective relay for detecting power arc faults in an AC three-phase spot network including a bus having phase A, B, and C conductors, and a neutral conductor for distributing power to at least one load, a plurality of power sources for

supplying power to said bus, and means for interrupting power to said bus from said plurality of power sources, said protective relay comprising:

means coupled to the phase A, B, and C conductors for generating a first voltage signal representative of the voltage between the phase A conductor and the neutral conductor, for generating a second voltage signal representative of the voltage between the phase B conductor and the neutral conductor, and for generating a third voltage signal representative of the voltages between the phase C conductor and the neutral conductor, each voltage signal representing its corresponding phase voltage fundamental frequency and all phase voltage harmonics thereof which are present on the corresponding phase conductor;



filter means for filtering said first, second, and third voltage signals to produce respectively first, second and third filtered signals, the content of each including only harmonic frequency components of its corresponding voltage signal;

and sensing means responsive to said first, second and third filtered signals for determining the total harmonic distortion of each based on a ratio of said harmonic frequency components of said corresponding filtered signal and the fundamental frequency component of said corresponding voltage signal, said sensing means further operative to indicate a fault when the total harmonic distortion of any one of said first, second, and third filtered signals reaches a predetermined value.

4,607,310

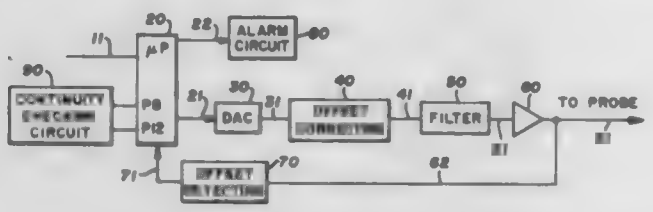
ADJUSTABLE DEGAUSSER

William D. Channel, and Charlie E. Gunter, III, both of Oklahoma City, Okla., assignors to Magnetic Peripherals Inc., Minneapolis, Minn.

Filed May 13, 1985, Ser. No. 733,565

Int. Cl.[4] H01F *13/00*

U.S. Cl. 361—149 **11 Claims**



1. A degausser for use in cancelling the magnetic bias of a magnetizable workpiece by applying a decaying sinewave signal current of voltage appropriate to said workpiece, wherein said degausser comprises:

a start switch means for initiating said degaussing signal;

a microcontroller circuit, in electrical connection to said start switch means, containing memory registers capable of retaining instructions and data in the form of programs and subroutines, capable of multiplying binary values in its internal circuitry, having some number of output means for generating output signals and some number of input means (at least one of which is an offset indicating input means) for receiving input signals, and capable of generating on some of said output means a series of binary values the linear plot of which is a sinewave, and capable of centering said series of binary values about an offset value, responsive to a signal received by said microcontroller circuit on said offset indicating input means and wherein said microcontroller circuit may begin operation upon receiving a signal from said start switch means as an input signal on one of said input means;

a digital to analog conversion circuit having digital input means in electrical connection to some number of said microcontroller circuit output means, having analog output means and being capable of translating a digital signal input to said digital to analog conversion circuit on at least one of said digital input means to a predetermined voltage level output current which is output on said analog output means;

a current amplification circuit for increasing the absolute value of said analog output with its signal input being in electrical connection to said digital to analog output means, and having a signal output means for output of said amplified signal;

a system ground;

an offset detecting circuit having one input in electrical connection with said system ground, having a second input in electrical connection with said amplification circuit signal output means, and having an output in electrical connection with said microcontroller circuit (via said offset indicating input means), for generating an offset indicating signal upon detection by said offset detecting circuit of a potential difference between said system ground and said amplified output signal.

4,607,311

POWER CIRCUIT FOR ELECTROMAGNETIC ACTUATOR

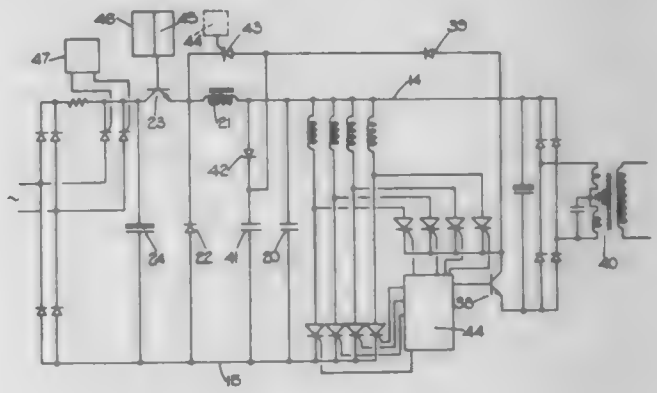
Robert H. Brown, Kingston-on-Thames, and Peter V. Comrie, Greenford, both of England, assignors to Lucas Industries public limited company, Birmingham, England

Filed Jun. 8, 1983, Ser. No. 502,168

Claims priority, application United Kingdom, Jul. 10, 1982, 8220121

Int. Cl.[4] F02D *41/30;* **H01H** *47/32*

U.S. Cl. 361—155 **4 Claims**



1. A power circuit for an electromagnetic actuator comprising a first capacitor, a second capacitor, means for charging said second capacitor from a source of electric supply, a charging circuit through which said first capacitor can be charged from the second capacitor, said charging circuit comprising a chopper circuit including an inductor, a transistor having its collector emitter path connected in series with the inductor and a first diode connected in a series circuit including said inductor and said first capacitor, a first unidirectional switch means which when closed connects the actuator in circuit with said first capacitor thereby to cause a high initial current flow in the winding of the actuator, a low voltage source of supply,

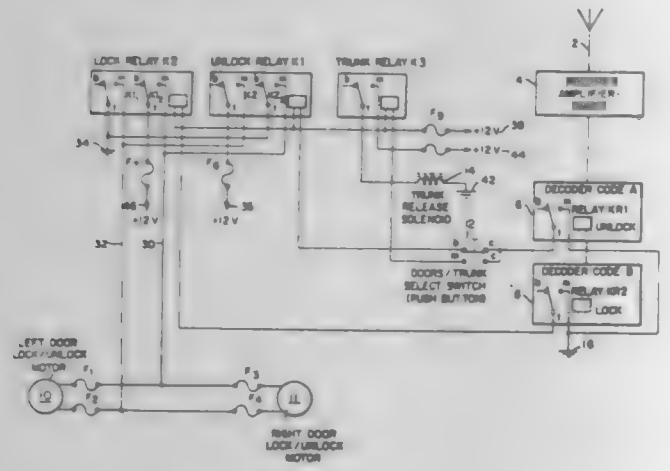
a second unidirectional switch means operable to connect said low voltage source of supply in circuit with said winding. said second unidirectional switch means being operable to deliver a holding current into the winding when said first capacitor has discharged to approximately the voltage of said low voltage source, means responsive to the voltage across the first capacitor for controlling the conduction of said transistor, a third capacitor, a second diode connected in series with said third capacitor, said third capacitor and second diode being connected in parallel with said first capacitor and a third diode connected to said third capacitor and through which energy stored in the winding of the actuator can be transferred to the third capacitor when said second unidirectional means is opened to de-energize the actutor.

4,607,312

RADIO CONTROL SECURITY SYSTEM FOR AUTOMOBILE DOORS, TRUNK AND HOOD LOCKS AND ENGINE POWER

William Barreto-Mercado, 9 H-6 Vista Bella, Bayamon, P.R. 00620

Continuation-in-part of Ser. No. 410,914, Aug. 24, 1982, abandoned. This application Feb. 4, 1985, Ser. No. 698,230
Int. Cl.⁴ H01H *47/22*
U.S. Cl. 361—172 **7 Claims**



1. A system for actuating an automobile door locking mechanism to locked or unlocked condition and for actuating an automobile trunk locking mechanism to unlocked condition, comprising:

(a) an automobile having a lock for each automobile door and a lock for the automobile trunk,

(b) means for operating each door lock and means including a trunk transfer switch for operating the trunk lock,

(c) a source of very high frequency radiation located external to the automobile modulated by two different characteristic code signals,

(d) means carried by the automobile for receiving the transmitted radiation and identifying the code signal with which it is modulated,

(e) means operable in respone to the reception and identification of one of said code signals to operate the door locking mechanism to locked condition, and

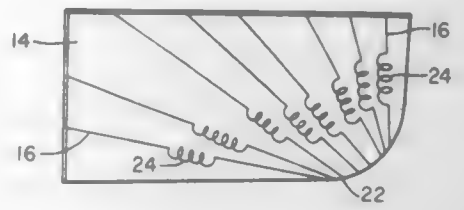
(f) means operable in response to the reception and identification of the other of said code signals to operate the door locking mechanism to unlocked condition but not the trunk locking mechanism and in closed condition of the trunk transfer switch to operate the trunk locking mechanism to unlocked condition but not the door locking mechanism.

4,607,313

STATIC DISCHARGER

James R. Shaw, and John W. Velsor, both of Wainscott, N.Y., assignors to Shaw Aero Devices, Inc., Wainscott, N.Y.

Filed Jul. 15, 1983, Ser. No. 514,316
Int. Cl.⁴ E05F *3/00*
U.S. Cl. 361—218 **17 Claims**



1. An apparatus for discharging static charge accumulation from a moving body, comprising:

a. base member being dimensioned and configured so as to be capable of being secured to at least a portion of the moving body and so as to conform generally to the shape of the body portion; and

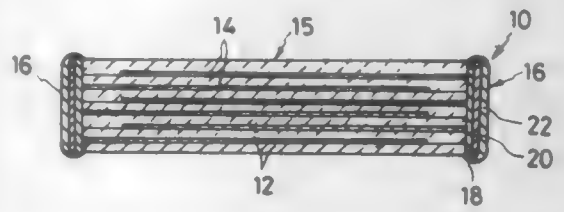
b. plurality of discharging strands secured to said base member, said strands being positioned in a generally spaced apart arrangement so that static charges may flow from the moving body onto said strands and be discharged therefrom, and said strands being twisted a predetermined number of turns so as to selectively control the frequency at which the discharging occurs.

4,607,314

LOW TEMPERATURE SINTERED CERAMIC CAPACITOR WITH HIGH DC BREAKDOWN VOLTAGE, AND METHOD OF MANUFACTURE

Takeshi Wada, Harunamachi; Hiroshi Kishi, Fujioka; Shunji Murai, and Masami Fukui, both of Harunamachi, all of Japan, assignors to Taiyo Yuden Co., Ltd., Tokyo, Japan

Filed Dec. 4, 1985, Ser. No. 805,096
Claims priority, application Japan, Dec. 18, 1984, 59-267004
Int. Cl.⁴ H01G *1/005, 4/06;* **C04B** *35/46*
U.S. Cl. 361—321 **10 Claims**



1. A solid dielectric capacitor comprising a dielectric ceramic body and at least two electrodes in contact therewith, the dielectric ceramic body consisting essentially of:

100 parts by weight of a major ingredient expressed by the formula,

$$\{(Ba_{1-x-y}Ca_xSr_y)O\}_k(Ti_{1-z}Zr_z)O_2,$$

where

x is a numeral in the range of 0.02 to 0.27;

y is a numeral greater than zero and not more than 0.37;

z is a numeral greater than zero and not more than 0.26;

k is a numeral in the range of 1.00 to 1.04; and

$(1-x-y)$ has a value not less than 0.60 and less than 0.98; and

from 0.2 to 10.0 parts by weight of an additive mixture of B_2O_3, SiO_2 and MO, where MO is at least one metal oxide selected from the group consisting of BaO, SrO and CaO, the relative proportions of B_2O_3, SiO_2 and MO being in that

region of the ternary diagram of the accompanying drawing which is bounded by lines sequentially connecting:

the point A where the additive mixture consists of 15 mole percent B_2O_3, 25 mole percent SiO_2, and 60 mole percent MO;

the point B where the additive mixture consists of 30 mole percent B_2O_3, one mole percent SiO_2, and 69 mole percent MO;

the point C where the additive mixture consists of 90 mole percent B_2O_3, one mole percent SiO_2, and nine mole percent MO;

the point D where the additive mixture consists of 89 mole percent B_2O_3, 10 mole percent SiO_2, and one mole percent MO; and

the point E where the additive mixture consists of 24 mole percent B_2O_3, 75 mole percent SiO_2, and one mole percent MO.

4,607,315

LOW TEMPERATURE SINTERED CERAMIC CAPACITOR WITH HIGH DC BREAKDOWN VOLTAGE, AND METHOD OF MANUFACTURE

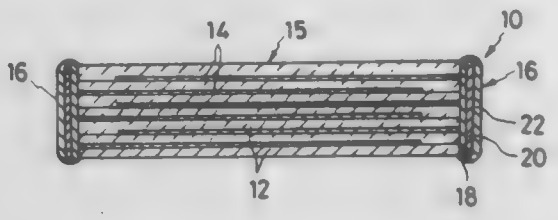
Takeshi Wada, Harunamachi; Hiroshi Kishi, Fujioka; Shunji Murai, and Masami Fukui, both of Harunamachi, all of Japan, assignors to Taiyo Yuden Co., Ltd., Tokyo, Japan

Filed Dec. 4, 1985, Ser. No. 805,095

Claims priority, application Japan, Dec. 18, 1984, 59-267003

Int. Cl.[4] H01G *1/005, 4/06;* **C04B** *35/46*

U.S. Cl. 361—321 **10 Claims**



1. A solid dielectric capacitor comprising a dielectric ceramic body and at least two electrodes in contact therewith, the dielectric ceramic body consisting essentially of:

100 parts by weight of a major ingredient expressed by the formula,

$$\{(Ba_{1-x-y}Ca_xSr_y)O\}_k(Ti_{1-z}Zr_z)O_2,$$

where

x is a numeral in the range of 0.02 to 0.27;

y is a numeral greater than zero and not more than 0.37;

z is a numeral greater than zero and not more than 0.26;

k is a numeral in the range of 1.00 to 1.04; and

$(1-x-y)$ has a value not less than 0.60 and less than 0.98; and

from 0.2 to 10.0 parts by weight of an additive mixture of from 25 to 90 mole percent boric oxide and from 10 to 75 mole percent silicon dioxide.

4,607,316

LOW TEMPERATURE SINTERED CERAMIC CAPACITOR WITH HIGH DC BREAKDOWN VOLTAGE, AND METHOD OF MANUFACTURE

Takeshi Wada, Harunamachi; Hiroshi Kishi, Fujioka; Shunji Murai, and Masami Fukui, both of Harunamachi, all of Japan, assignors to Taiyo Yuden Co., Ltd., Tokyo, Japan

Filed Dec. 4, 1985, Ser. No. 805,094

Claims priority, application Japan, Dec. 18, 1984, 59-267002

Int. Cl.[4] H01G *1/005, 4/06;* **C04B** *35/46*

U.S. Cl. 361—321 **10 Claims**

1. A solid dielectric capacitor comprising a dielectric ceramic body and at least two electrodes in contact therewith, the dielectric ceramic body consisting essentially of:

100 parts by weight of a major ingredient expressed by the formula,

$$\{(Ba_{1-x-y}Ca_xSr_y)O\}_k(Ti_{1-z}Zr_z)O_2,$$

where

x is a numeral in the range of 0.02 to 0.27;

y is a numeral greater than zero and not more than 0.37;

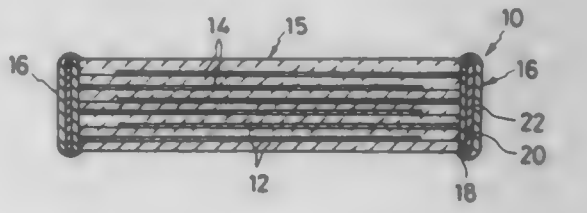
z is a numeral greater than zero and not more than 0.26;

k is a numeral in the range of 1.00 to 1.04; and

(1-x-y) has a value not less than 0.60 and less than 0.98; and

from 0.2 to 10.0 parts by weight of an additive mixture of boric oxide, silicon dioxide and lithium oxide, the relative proportions of boric oxide, silicon dioxide and lithium oxide being in the range of that region of the ternary diagram of FIG. 3 attached hereto which is bounded by the lines sequentially connecting:

the point A where the additive mixture consists of 10 mole percent boric oxide, 50 mole percent silicon dioxide, and 40 mole percent lithium oxide;



the point B where the additive mixture consists of 50 mole percent boric oxide, one mole percent silicon dioxide, and 49 mole percent lithium oxide;

the point C where the additive mixture consists of 80 mole percent boric oxide, one mole percent silicon dioxide, and 19 mole percent lithium oxide;

the point D where the additive mixture consists of 89 mole percent boric oxide, 10 mole percent silicon dioxide, and one mole percent lithium oxide;

the point E where the additive mixture consists of 24 mole percent boric oxide, 75 mole percent silicon dioxide, and one mole percent lithium oxide; and

the point F where the additive mixture consists of five mole percent boric oxide, 75 mole percent silicon dioxide, and 20 mole percent lithium oxide.

4,607,317

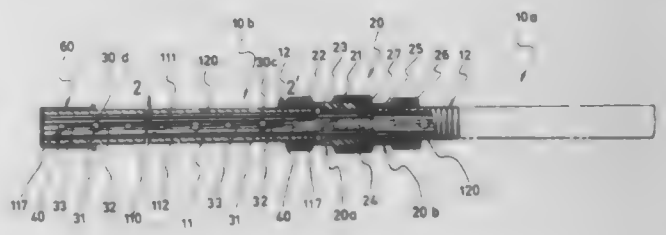
NON-NEON LIGHT

Ta-Yeh Lin, 2/F, 16 Central S. Rd., Sec. 2, Peitou, Taipei, Taiwan

Filed Aug. 14, 1984, Ser. No. 640,586

Int. Cl.[4] F21V *29/00*

U.S. Cl. 362—249 **6 Claims**



1. A flexible light strip comprising an elongate body member of flexible plastic, spaced electric wires extending longitudinally along opposite sides of the body member, at least one elongate surface groove extending the length of the body member between the wires, a series of spaced transverse holes formed in the body member from the base of the groove, light bulbs in alternate ones of said holes, the light bulbs each having a base portion with a pair of wires extending therefrom, conductive plugs in the remaining ones of said holes between the successive bulbs for electrically connecting the wires from adjacent bulbs, the wires from selected bulbs further being connectible to the longitudinally extending wires for connecting the bulbs to the longitudinally extending wires selectively

in series or in parallel bulb groups, connector means for at least one end of the body member for connecting the body member mechanically and electrically endwise to another like strip or to a source of electric power, and an elongate tubular sheath of flexible plastic for encasing the body member light bulbs and plugs.

4,607,318

HEADLAMP, PARTICULARLY ANTIDAZZLE HEADLAMP FOR MOTOR VEHICLES

Gerhard Lindae, Leonberg; Peter Perthus, Stuttgart, and Heinz Rein, Reutlingen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

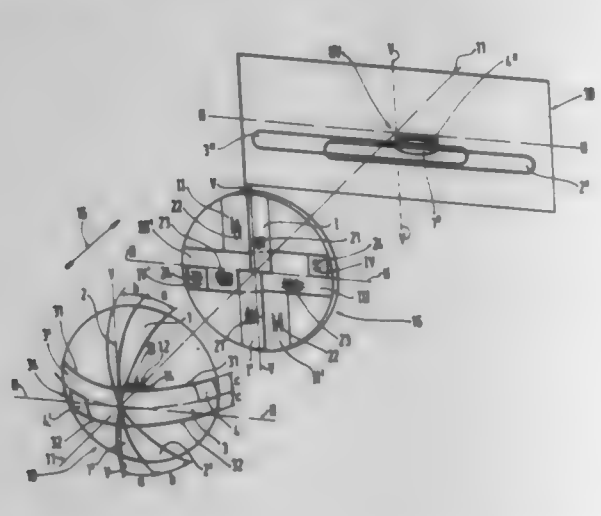
Filed Dec. 12, 1984, Ser. No. 681,211

Claims priority, application Fed. Rep. of Germany, May 9, 1984, 3417034

Int. Cl.[4] F21M *3/30*

U.S. Cl. 362—307

5 Claims



1. A headlamp, particularly an antidazzle headlamp for motor vehicles, having a reflector in the form of a rotational paraboloid defining a center axis and a focal point on the center axis; a coiled up incandescent filament defining a longitudinal axis extending in horizontal direction at right angles to the center axis of the reflector and having a center point situated off said focal point; a transparent disc arranged in the path of a light beam reflected from the reflector; optical means provided in the range of the transparent disc to transform the emitted light beam into an antidazzle light beam extending along an axis of propagation; said optical means including a set of diametrically opposed refracting portions I through III and I′ through III′ arranged with respect to a vertical coordinate V and to a horizontal coordinate H intersecting each other and said center axis of the reflector at right angles, and viewed in direction of propagation of the light beam, as follows:

the portion I of the optical means is substantially to the right of V and above of H, the portion I′ being substantially to the left of V and below H, the portions I and I′ of the optical means being designed such as to refract a partial light beam without any sharp contrast at the envelope; of the partial light beam;

the portion III is to the right of the portions I and I′, the portion III′ is to the left of the portions I and I′, both portions III, III′ extending at both sides of the corresponding part of H and refracting the light rays in vertical and horizontal direction; and

the portion II is to the left of the portion I and above the portion III′, the portion II′ is to the right of the portion I′ and below the portion III, and portions II, II′ of the optical means refracting the light rays in vertical and horizontal directions.

4,607,319

FLYBACK DC/DC CONVERTER WITH LOW RIPPLE IN THE OUTPUT CAPACITOR

Bengt H. Assow, Norsborg; Curt E. Jansson, Farsta, and Kjell O. Rolleberg, Norsborg, all of Sweden, assignors to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden

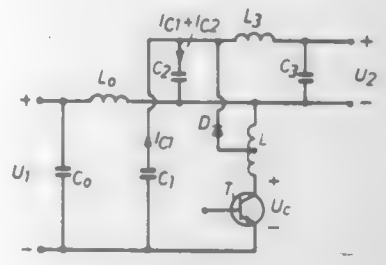
Continuation of Ser. No. 471,013, Mar. 1, 1983. This application Aug. 20, 1985, Ser. No. 767,728

Claims priority, application Sweden, Mar. 25, 1982, 8201916

Int. Cl.[4] H02M *3/335*

U.S. Cl. 363—20

3 Claims



1. A fly-back type DC/DC converter for converting an incoming DC voltage comprising:

a first and a second input terminal to receive said incoming DC voltage;

a first and a second output terminal to transmit an outgoing DC voltage converted within said converter;

an input filter having at least an input capacitor including first and second terminals;

an inductance means;

controllable switch means connected in series with said inductance means to constitute a series-connected means for controlling switching in said converter, said switch means being controllable to alternatively conducting and non-conducting states, and the series connected switch means and inductance means being connected between the second input and output terminals;

an inductor coupling the series connected inductance means and switch means to said first input terminal;

a capacitor means coupling said first and second input terminals;

an output filter including an output capacitor including first and second terminals, the first terminal of said output capacitor being coupled to said first input terminal of said converter and to said second output terminal of said converter;

a junction through which the second terminals of said input and output capacitors are interconnected, the junction of said second terminals of said input and output capacitors being connected to said first output terminal, said input and output capacitors being series connected between said second input terminal and said second output terminal so that, during operation of said switch means, ripple current from the input capacitor compensates ripple current through the output capacitor, and

a unilateral conducting means being coupled in series with said switch means through no more than part of said inductance means to form a series connection of the unilateral conducting means and switch means between said junction and said second input terminal;

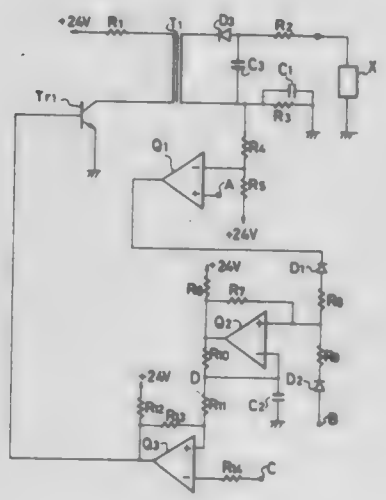
the first terminal of said output capacitor being coupled between said first input terminal and said second output terminal, the first terminal of said input capacitor being coupled to said second input terminal and said switch means, the input and output capacitors being connected in series between said second input terminal and said series connected inductance means and switch means.

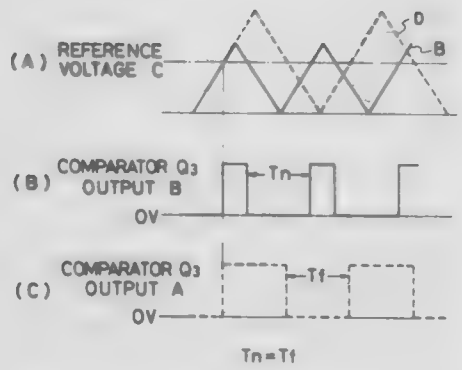
4,607,320

POWER SUPPLY DEVICE HAVING A SWITCHED PRIMARY POWER SUPPLY AND CONTROL MEANS FOR MAINTAINING A CONSTANT OFF PERIOD AND A VARIABLE ON PERIOD

Toshiro Matui, Kawasaki; Koji Suzuki; Jyoji Nagahira, both of Yokohama; Kunio Yoshihara, Tokyo; Kazuyoshi Takahashi, Kawasaki, and Tadashi Ishikawa, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 16, 1984, Ser. No. 570,836
Claims priority, application Japan, Jan. 26, 1983, 58-9920
Int. Cl.[4] H02M *3/335*
U.S. Cl. 363—21 5 Claims





1. A power supply device comprising:

a transformer for obtaining a desired power from a primary supply power;

switching means for switching the power supplied to a primary side of said transformer;

detecting means for detecting a current passing through a load connected to a secondary side of said transformer;

means for amplifying the difference between a voltage signal corresponding to the current passing through said load and a reference voltage and generating an output signal corresponding to the difference;

signal generating means for generating a signal with a sawtooth wave form in accordance with the output signal; and

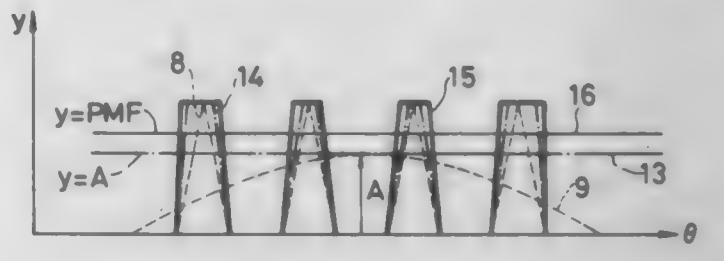
control means for comparing a level of the sawtooth signal from said signal generating means with a reference level and controlling said switching means in accordance with the comparison result, said control means being operable to maintain constant a turned-off period of said switching means and vary a turned-on period of said switching means.

4,607,321

INVERTER

Hideo Obi, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 484,674, Apr. 13, 1983, abandoned.
This application Oct. 17, 1985, Ser. No. 787,716
Claims priority, application Japan, Apr. 13, 1982, 57-63027
Int. Cl.[4] H02M *1/12*
U.S. Cl. 363—41 1 Claim



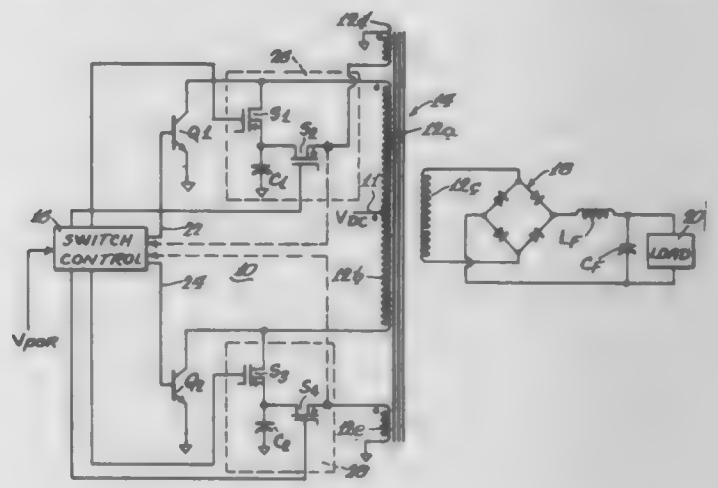
1. A high frequency pulse width modulation inverter for generating an inverter output AC waveform having high frequency pulses, characterized in that a first carrier wave (14) for determining the frequency of said high frequency pulses is divided by a fundamental wave content factor of an output voltage to obtain a second carrier wave (15), said factor being unequivocally determined by the number of pulses occurring in a half cycle of said output of said inverter and the modulation rate of the output voltage, and said second carrier wave is compared with a modulation wave of a constant DC voltage corresponding to the modulation rate to generate a gate signal for an output voltage control element.

4,607,322

ENERGY RECOVERY SNUBBER

Eric A. Henderson, Rockford, Ill., assignor to Sundstrand Corporation, Rockford, Ill.

Filed Sep. 17, 1984, Ser. No. 651,623
Int. Cl.[4] H02H *7/122;* H02M *3/337*
U.S. Cl. 363—56 16 Claims



1. A snubber circuit for a power converter having at least one power switch which is turned on and off to modulate the flow of power through an inductive element, comprising:

a capacitor;

a first switch operable to connect the capacitor to the power switch;

a load;

a second switch operable to couple the capacitor to the load; and

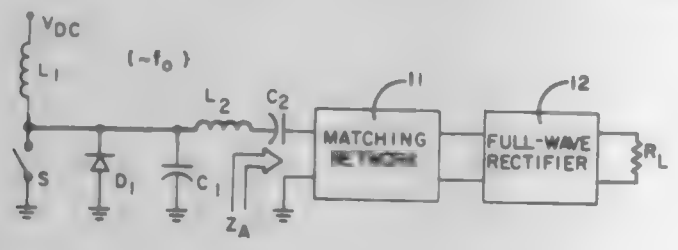
a switch control coupled to the first and second switches including means for operating the first switch while the power switch is on to transfer transient energy from the inductive element to the capacitor and means for operating the second switch after the power switch is turned off to transfer the transient energy to the load.

4,607,323

CLASS E HIGH-FREQUENCY HIGH-EFFICIENCY DC/DC POWER CONVERTER

Nathan O. Sokal, 809 Massachusetts Ave., Lexington, Mass. 02173-3992; Richard Redl, and Bela Molnar, both of P.O. Box 91, Budapest H-1502, Hungary

Filed Apr. 17, 1984, Ser. No. 601,381
Int. Cl.[4] H02M *7/19;* H03F *1/14*
U.S. Cl. 363—97 12 Claims



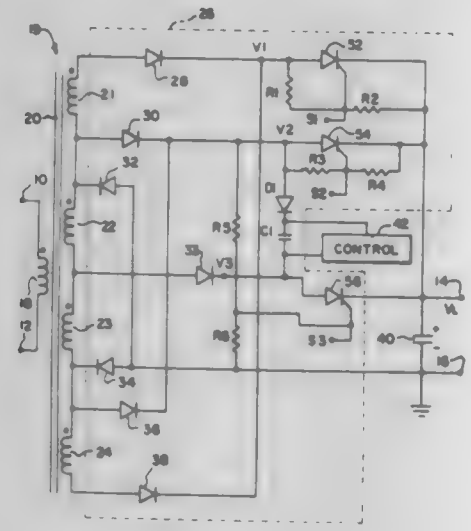
1. A swithing mode dc/dc power converter comprising:
means for receiving input dc power,
a Class E dc/ac power inverter having a switch operated at a switching frequency, coupled to said means for receiving input dc power and having an output with said inverter characterized by a switch voltage that is substantially zero at the time said switch is to be turned on, when the load impedance at said output is within a predetermined range of zero to slightly higher than a nominal load impedance value;
a rectifier circuit coupled to the output of said power inverter so as to rectify the ac output of said power inverter;
a matching network intercoupling said rectifier circuit and said output of said power inverter; and means for providing dc output power from said rectifier circuit;
wherein said matching network comprises means for transforming the input impedance of said rectifier circuit to present a load impedance within said predetermined range to said output of said power inverter.

4,607,324

REDUCED HARMONIC CURRENT RECTIFIER INCLUDING SEQUENTIALLY SWITCHED SECONDARY WINDINGS

William P. Gibbons, 6520 Larcomb Dr., Huber Heights, Ohio 45424

Filed Feb. 17, 1984, Ser. No. 581,400
Int. Cl.[4] H02M *7/525*
U.S. Cl. 363—128 10 Claims



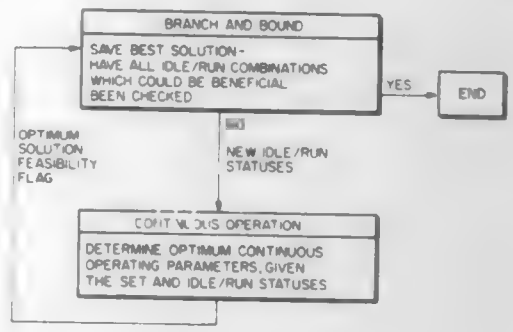
1. A rectifier circuit for receiving a substantially sinusoidal electrical power signal at a pair of circuit input terminals and for providing a rectified, D.C. electrical power signal at a pair of circuit output terminals, comprising:
a primary transformer winding connected to receive said A.C. electrical power signal,
a plurality of secondary transformer windings,
switch means for connecting a single secondary transformer winding or the series combination of two or more of said secondary transformer windings across said output terminals, said switch means including rectifier means to insure a unipolar, D.C. electrical power signal across said output terminals,
storage capacitor means connected across said output terminals, and
control means for sequentially actuating said switch means such that a single secondary transformer winding and series combinations of said plurality of secondary transformer windings are sequentially connected across said output terminals during each successive half cycle of said A.C. electrical power signal, whereby the duration of the charging current supplied to said capacitor means during a half cycle of said A.C. electrical power signal is lengthened while limiting the amplitude of the charging current, and the A.C. electrical power signal is not substantially distorted from its sinusoidal waveshape.

4,607,325

DISCONTINUOUS OPTIMIZATION PROCEDURE MODELLING THE RUN-IDLE STATUS OF PLURAL PROCESS COMPONENTS

Brian C. Horn, Phoenix, Ariz., assignor to Honeywell Inc., Phoenix, Ariz.

Continuation-in-part of Ser. No. 313,429, Oct. 21, 1981, abandoned. This application Mar. 30, 1984, Ser. No. 595,117
Int. Cl.[4] G05B *13/04*
U.S. Cl. 364—151 17 Claims



1. A method of operating a process with the aid of a digital computer to minimize the cost of producing desired outputs of the processor, said process having a plurality of process components with each component having a mathematical model, at least some of said mathematical models being discontinuous, said process components being capable of being placed in a run or idle status, said process being capable of having applied to it one or more inputs and capable of producing one or more outputs, comprising the steps of:
constantly providing said computer with data concerning the status of operation of each component, each output and each input of the process;
providing the computer with a mathematical model of the process which includes mathematical models of each component;
providing the computer with a real time discontinuous optimization procedure for producing an optimum state of operation of the process, said discontinuous optimization procedure determining the run or idle status of each component to minimize cost of the process;
providing the computer with a procedure to update the model;
providing the computer with a scheduling procedure; said scheduling procedure substantially continuously monitoring the state of operation of the process, comparing the current state of operation of the process with the last optimum state produced by the optimization procedure; said scheduling procedure initiating the operation of the optimization procedure to produce an updated optimum state if the current state of the process and the most re-

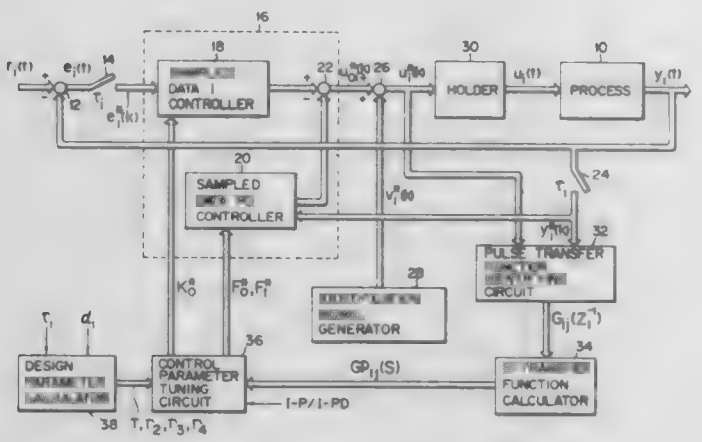
cently calculated optimum state differ significantly or after the passage of a predetermined period of time; and said scheduling procedure changing the status of process components from run to idle or idle to run to be in accord with the updated optimum state of the process, as well as optimizing the operation of each process component to produce the desired outputs at minimum cost.

4,607,326

SAMPLED-DATA I-PD CONTROL APPARATUS

Yasuchika Mori, Urawa, and Takashi Shigemasa, Yokohama, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Feb. 23, 1984, Ser. No. 582,713
Claims priority, application Japan, Mar. 14, 1983, 58-40742
Int. Cl.[4] G05B *13/04*
U.S. Cl. 364—162 **10 Claims**



1. A sampled-data I-PD control apparatus for an interference N-(positive integer not less than 2), input/N-output process comprising:

control error calculating means for calculating respective differences between N outputs of the process and corresponding N set-point values to generate N control errors;

sampled-data I-PD controller means for calculating the N outputs of the process and the N control errors in accordance with sampled-data I-PD control parameters to obtain N control variables, and for supplying the N control variables to N inputs of the process;

identification signal generating means for respectively supplying N persistently exciting identification signals to the N inputs of the process;

identifying means for identifying a pulse transfer function of the process in accordance with the N inputs and the N outputs of the process while the N persistently exciting identification signals are supplied to the N inputs;

S-transfer function calculating means for transforming an identified transfer function to an S-transfer function; and

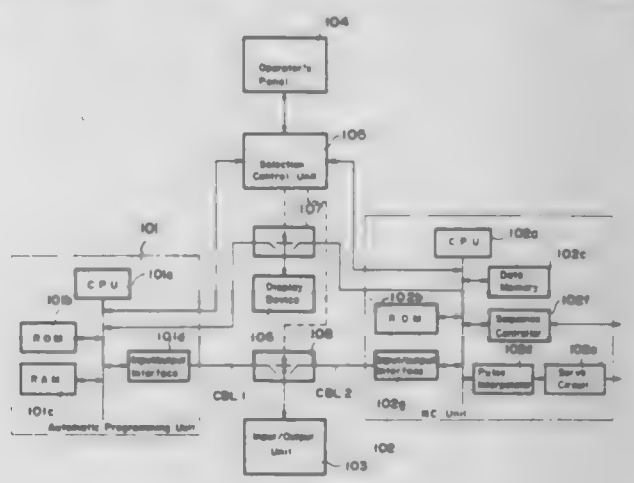
tuning means for calculating an S-transfer function from the set-point values to the process outputs in accordance with a transformed S-transfer function, matching the calculated S-transfer function with an S-transfer function from the set-point values to the process outputs of a noninterference N-input/N-output process model, and tuning the sampled-data I-PD control parameters in accordance with a matching result.

4,607,327

MODULAR NUMERICAL CONTROL SYSTEM WITH AUTOMATIC PROGRAMMING FUNCTION

Hajimu Kishi; Mitsuo Kurakake, both of Hino; Masaki Seki, Takaidonishi; Kunio Tanaka, Akishima, and Teruyuki Matsumura, Hachioji, all of Japan, assignors to Fanuc Ltd., Minamitsuru, Japan

Filed Sep. 29, 1983, Ser. No. 536,879
Claims priority, application Japan, Sep. 29, 1982, 57-170673
Int. Cl.[4] G06F *15/46*; G05B *19/18*
U.S. Cl. 364—191 **14 Claims**



1. A numerical control system having an automatic programming unit for executing automatic programming, and a numerical control unit for executing numerical control, comprising:

an operator's panel, for the automatic programming unit and the numerical control unit, for inputting selection information indicating one of an automatic programming mode and a numerical control mode and for inputting input/output selection information;

an input/output unit for the automatic programming unit and the numerical control unit, for inputting and outputting a numerical control program; and

a selection control unit, operatively connected to said operator's panel, said input/output unit, the automatic programming unit and the numerical control unit, for selectively connecting said operator's panel to one of the automatic programming unit and the numerical control unit in dependence upon the selection information indicating the one of the automatic programming mode and the numerical control mode, and for selectively connecting said input/output unit to one of the automatic programming unit and the numerical control unit based on the input-/output selection information indicating the one of the automatic programming and the numerical control units with which said input/output unit is to be operatively connected.

4,607,328

DATA TRANSFER APPARATUS FOR A MICROCOMPUTER SYSTEM

Shunsuke Furukawa, Tokyo, and Kenji Yamamoto, Kashiwa, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Aug. 24, 1982, Ser. No. 410,911
Claims priority, application Japan, Aug. 24, 1981, 56-132487
Int. Cl.[4] G06F *13/00*
U.S. Cl. 364—200 **10 Claims**

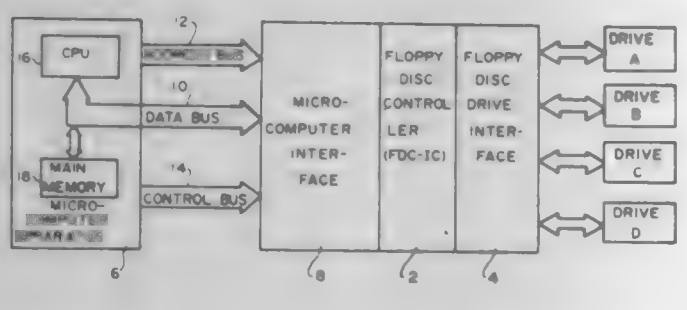
1. Apparatus for transferring a predetermined number of bits of data in parallel between external memory means including at least one floppy disc drive means and main memory and central processing means of microcomputer means, said apparatus comprising:

external memory control means including floppy disc controller means for interfacing said microcomputer means and said at least one floppy disc drive means, said external

memory control means generating at least one status signal;

data bus means extending between said floppy disc controller means of the external memory control means and said main memory and central processing means of the microcomputer means and having a number of data lines equal to said predetermined number of data bits and through which said bits of data may be transmitted in parallel in either direction;

gate means for gating said bits of data in both directions between said microcomputer means and said external memory control means through said data lines of said data



bus and for gating the at least one status signal in the direction to said microcomputer means through at least some of the same data lines, said central processing means of the microcomputer means generating at least one command signal in response to the at least one status signal; and

gate control means responsive to said at least one command signal for enabling said gate means alternately to gate said at least one status signal through said at least some data lines to said microcomputer means and to gate said bits of data between said microcomputer means and said floppy disc controller means of the external memory control means through all of said data lines.

4,607,329

CIRCUIT ARRANGEMENT FOR THE TEMPORARY STORAGE OF INSTRUCTION WORDS

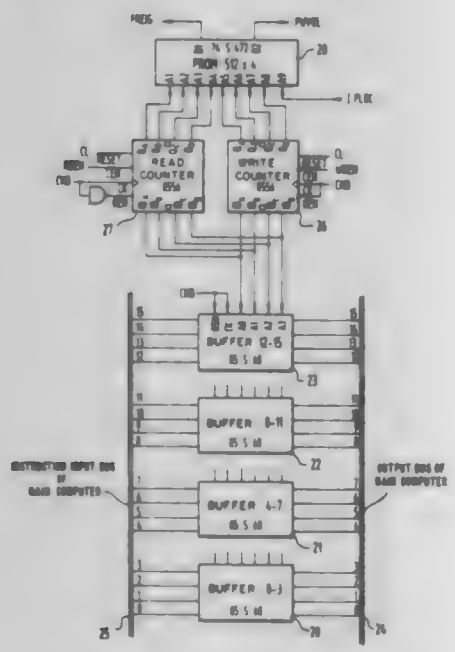
Peter Staehle, Paderborn-Dahl, Fed. Rep. of Germany, assignor to Nixdorf Computer AG, Fed. Rep. of Germany

Filed Feb. 17, 1984, Ser. No. 581,273

Claims priority, application Fed. Rep. of Germany, Feb. 18, 1983, 3305693

Int. Cl.⁴ G06F *9/06*

U.S. Cl. 364—200 **5 Claims**



1. Circuit arrangement for the temporary storage of instruction words which are read out of the instruction memory of a data processing unit and are then processed within the course of execution of an instruction, with a temporary memory arrangment which permits the reading out of instruction words at the same time as the execution of instruction words read out previously, characterized in that the temporary memory arrangement provided is one or a plurality of buffer memories (20 to 23) which for writing in and for reading out are addressed by a cyclically operating write counter (26) and a cyclically operating read counter (27), and in that the write counter (26) and the read counter (27) respectively deliver output signals to a monitoring circuit (28) which prevents the read counter (27) from being overtaken by the write counter (26).

4,607,330

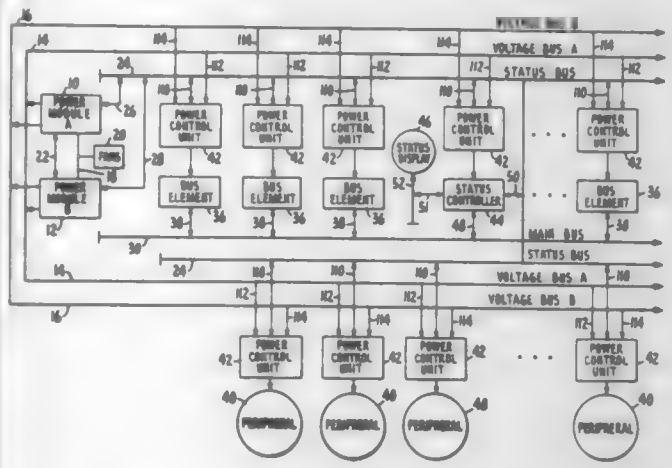
FAULT-TOLERANT POWER SUPPLY SYSTEM

Richard D. McMurray, Santa Cruz, and Alan H. Nelson, Los Gatos, both of Calif., assignors to Parallel Computers, Inc., Santa Cruz, Calif.

Filed Nov. 29, 1983, Ser. No. 555,942

Int. Cl.⁴ G06F *1/00*

U.S. Cl. 364—200 **17 Claims**



1. A power supply system for providing power to an electronic assembly, wherein the assembly includes a plurality of bus elements which are interconnected by a main bus which provides two-way communications between the bus elements and at least one non-bus element which is not interconnected with the main bus, and where at least one of the bus elements is capable of transmitting commands onto and receiving status information from the main bus, said power supply system comprising:

primary power means for providing a source of electrical power;

voltage bus means coupled to said primary power means for distributing electrical power;

status bus means for providing a two-way communications path independent of the main bus of the electronic assembly;

a status controller which includes status bus interface means for providing a communications path between the main bus and said status bus means;

a separate power control unit associated with at least two of the main bus elements and at least one of the non-bus elements, each of said power control units including

(i) command/status interface means coupled to said status bus means for receiving commands on said status bus means and for transmitting status information onto said status bus means, and

(ii) voltage regulator means coupled to said voltage bus means for providing regulated voltage to the associated element in response to commands received from said command/status interface;

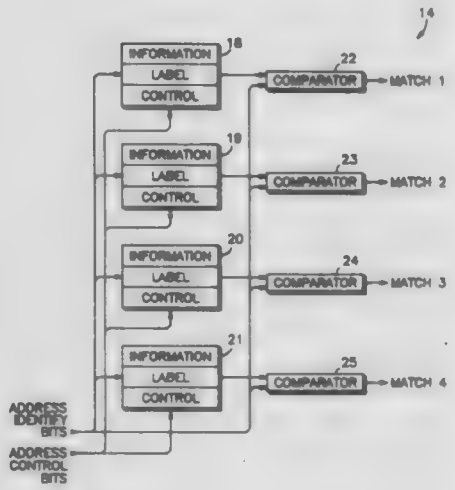
whereby a main bus element may control regulated voltage to one of said associated main bus and non-bus elements by transmitting a command over the main bus and onto said status bus by way of said status controller for receipt by said command/-status interface means for receipt by said voltage regulator means, and a main bus element may receive status information on said main bus from said command/status interface means by way of said status bus means and said status controller.

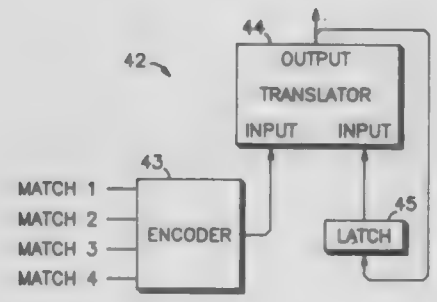
4,607,331

METHOD AND APPARATUS FOR IMPLEMENTING AN ALGORITHM ASSOCIATED WITH STORED INFORMATION

Edgar R. Goodrich, Jr., Lubbock, and Douglas R. Kraft, Austin, both of Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed May 13, 1983, Ser. No. 494,157
Int. Cl.[4] G06F *12/02, 12/08, 12/12*
U.S. Cl. 364—200 11 Claims





1. A circuit for implementing a replacement algorithm by providing a status of frequency of use of n sets of stored information in a cache thereby indicating which one of n sets of stored information can be replaced with new information in accordance with the replacement algorithm, said status of use being provided in response to a set address signal indicating which one of the n sets is presently being addressed for storing data, where n is an integer, comprising:

a plurality of comparators for providing the set address signal, said set address signal being provided in response to a comparison of both a plurality of input address indentify bits which address a predetermined storage location in one of the n sets in the cache, and address bits associated with label fields of the n sets which identify address locations of data of the n sets;

storage means having an input and an output, for storing a number having a bit length large enough to represent n! permutations of a grouping of the n sets, said stored number representing a present status of use of the n sets; and

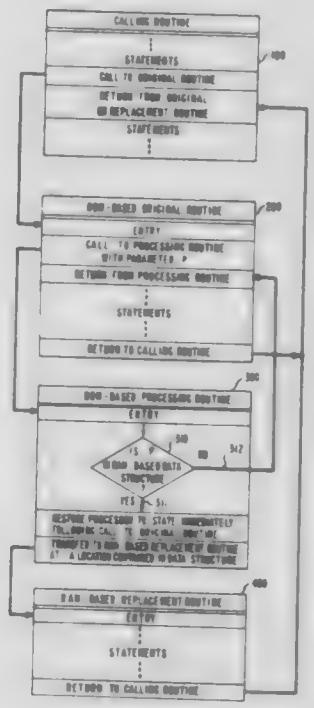
encoded translation means having a first input coupled to the output of said storage means, a second input for receiving the set address signal, and an output coupled to the input of said storage means, and having a predetermined number of address locations in which are stored precalculated permutations of the grouping of the n sets, said permutations being arranged in groups which implement the replacement algorithm by providing an output signal in response to both the stored number and the set address signal, said output signal providing an updated status of use of the n sets of stored information.

4,607,332

DYNAMIC ALTERATION OF FIRMWARE PROGRAMS IN READ-ONLY MEMORY BASED SYSTEMS

Edward S. Goldberg, North Woodmere, N.Y., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Jan. 14, 1983, Ser. No. 457,974
Int. Cl.[4] G06F *13/00*
U.S. Cl. 364—300 7 Claims



1. A method for selecting between an original routine and a replacement routing and for executing the selected routine in a processor having a calling routine and a processing routine, said method comprising the steps of

(1) after each call to said original routine by said calling routine, branching to said processing routine,

(2) comparing a predetermined address associated with said original routine to an address list accessible by said processing routine,

(3) if said predetermined address appears in said list, proceeding to step (4); otherwise, returning to said original routine,

(4) restoring said processor to its state immediately following each call to said original routine, and

(5) branching to said replacement routine from said processing routine.

4,607,333

ELECTRON BEAM EXPOSURE APPARATUS

Nobuyuki Yasutake, and Hiroshi Yasuda, both of Yokohama, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Dec. 28, 1983, Ser. No. 566,322
Claims priority, application Japan, Dec. 29, 1982, 57-233763
Int. Cl.[4] G06F *15/46;* H01J *37/304*
U.S. Cl. 364—400 6 Claims

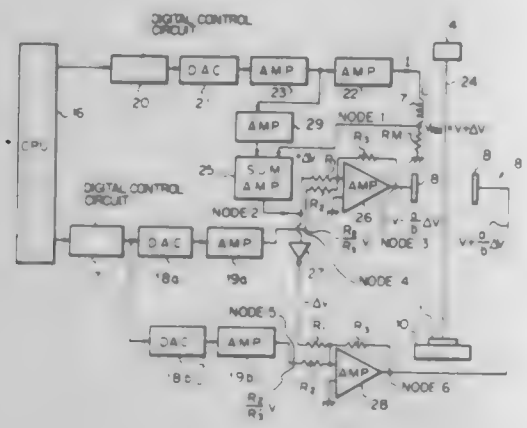
1. An electron beam exposure apparatus for exposing a workpiece with an electron beam, comprising:

a first deflection means for deflecting the electron beam in response to a deflection signal, said deflection signal corresponding to an exposure region of the workpiece;

a second deflection means for deflecting the electron beam by a desired reflection amount in said exposure region of the workpiece; and

compensating means for obtaining an error signal corresponding to an error component of the value of the volt-

age of the deflection signal in said first deflection means, and for compensating the deflection amount of the elec-



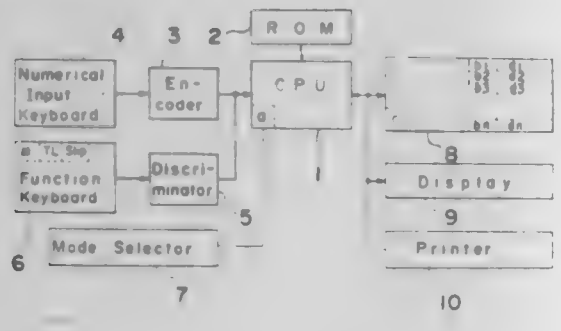
tron beam in said second deflection means in accordance with the error signal.

4,607,334

ELECTRONIC CASH REGISTER HAVING A CHECK AND ADJUSTMENT MODE WHERE REGISTRATION INPUT OPERATIONS ARE INDICATED IN A MACHINE-LOCK CONDITION

Fusahiro Shiono, Habikino, and Kensaku Komai, Yamatokoriyama, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jul. 20, 1983, Ser. No. 515,505
Claims priority, application Japan, Jul. 30, 1982, 57-133933
Int. Cl.⁴ G06F *15/20*
U.S. Cl. 364—405 **1 Claim**



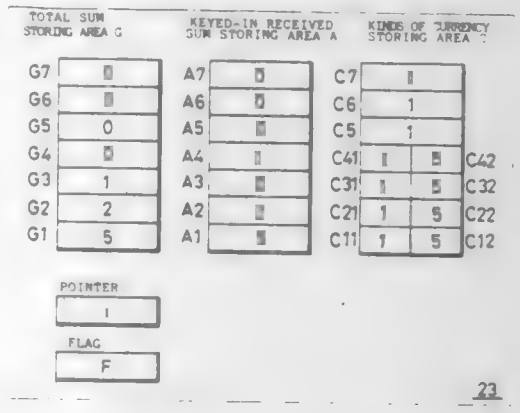
1. An electronic cash register comprising:
mode selection means for selecting between at least a registration mode and a check and adjustment mode;
means, operative during said registration mode selected by said mode selection means, for registering transactions, a record of said transactions being stored in a cash register memory;
adjustment means, responsive to the selection of said check and adjustment mode, for executing an adjustment operation by adjusting the record of said transactions stored in said cash register memory while retaining the record of said transactions prior to said adjustment operation, said adjustment operation selected from a group consisting of the adjustment of monthly sales for all items, the adjustment of the sales of all cashiers, the adjustment for all clerks, the adjustment of the sales for each time interval, the sales adjustment of the price look up function, the adjustment of monthly sales for all clerks and the adjustment of monthly sales for all departments;
machine-locking means, responsive to the adjustment operation performed by said adjustment means, for establishing a machine-locked condition to thereby inhibit introduction of transaction information ito said cash register during said check and adjustment mode; and
means, operative subsequent to the operation of said adjustment means, for clearing the record of said transaction prior to said adjustment operation, stored in said cash register memory, as retained by said adjustment means, said means for clearing disabling said machine-locking means.

4,607,335

APPARATUS FOR PERFORMING TRANSACTIONS WITH VERIFICATION OF REMITTANCE THROUGH COMPARISON WITH LOGICAL PAYMENT PATTERNS

Shinichiro Mizuno, Ibaraki, Japan, assignor to Omron Tateisi Electronics Co., Kyoto, Japan

Filed Dec. 13, 1983, Ser. No. 560,820
Claims priority, application Japan, Dec. 14, 1982, 57-219943
Int. Cl.⁴ G07G *1/00*; G06F *15/21*
U.S. Cl. 364—405 **17 Claims**



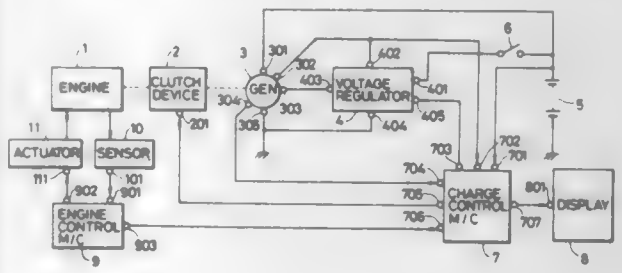
1. An apparatus for performing transactions comprising:
means for generating a total sum,
means responsive to the generation of the total sum for storing the generated total sum,
means for generating a received sum,
means responsive to the generation of the received sum for storing the generated received sum,
means for previously storing data relating to the kinds of money currently in circulation,
means responsive to the storing of the total sum and the received sum for comparing the stored received sum with a pattern of acceptability of the received sum relative to the stored total sum, the acceptability pattern being determined based on data relating to the kinds of money and the stored total sum, and
means in accordance with the result of the comparison performed by said comparing means for informing that the stored received sum is not included in the acceptability pattern.

4,607,336

CHANGE CONTROL MICROCOMPUTER DEVICE FOR VEHICLE

Mitsuharu Morishita, and Shinichi Kouge, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed May 19, 1983, Ser. No. 496,035
Claims priority, application Japan, May 19, 1982, 57-86065; May 19, 1982, 57-86066
Int. Cl.⁴ H02J *7/14*; G06F *15/56*
U.S. Cl. 364—424 **6 Claims**



1. A charge control microcomputer device for a vehicle, comprising:

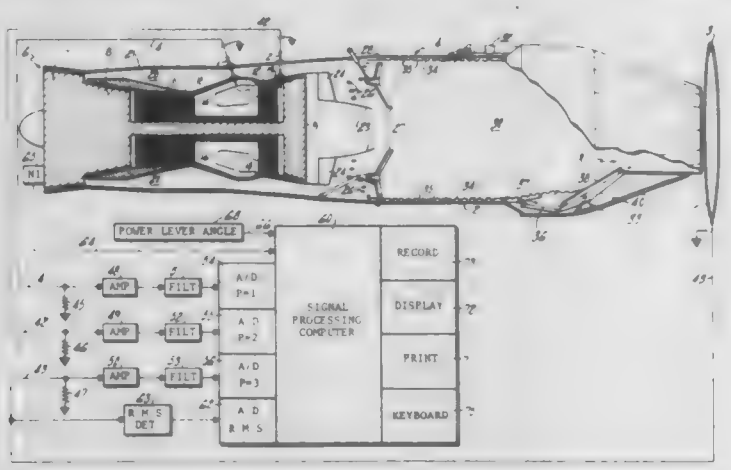
a clutch device for transmitting the rotary output of an engine;
a charging generator driven by said clutch device;
a battery charged by an output of said charging generator;
a voltage regulator for controlling an output voltage of said charging generator to a predetermined value;
an engine controlling microcomputer for receiving engine data, to control said engine; and
a charge control microcomputer for processing said engine data from said engine controlling microcomputer and charge system data including terminal voltage data from said battery and generated voltage data from said charging generator, to determine a reference voltage for said voltage regulator in accordance with said engine data and said charge system data, and for processing an engine rotation signal to generate and apply an operating instruction to said clutch device in accordance with said engine data and said charge system data, such that said charging generator is driven within a predetermined range of revolutions per minute at all times.

4,607,337

INTERPROBE ELECTROSTATIC ENGINE DIAGNOSTICS CORRELATION

David M. Rosenbush, Granby; Philip E. Zwicke, South Glastonbury, both of Conn., and Robert P. Couch, Palm Beach Gardens, Fla., assignors to United Technologies Corporation, Hartford, Conn.

Filed Dec. 28, 1982, Ser. No. 453,964
Int. Cl.[4] G01M *15/00*
U.S. Cl. 364—431.02 **3 Claims**



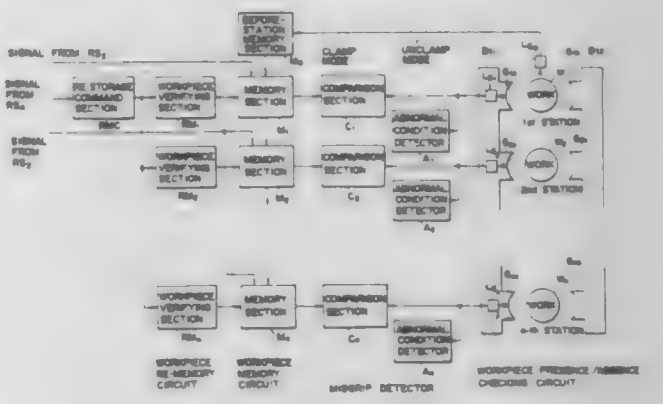
1. Electrostatic diagnostic apparatus for distinctly recognizing different events occuring in an operating gas turbine engine, comprising:
a plurality of electrostatic signal means, each including a probe to be disposed in the gas stream of an engine, for providing, when said probe is disposed in the gas stream of an operating engine, a probe signal having amplitude variations indicative of the magnitude and polarity of electrostatic charge flowing in the gas stream in the vicinity of said probe, said probes being spaced apart from one another along the gas stream of said engine, whereby the gas stream of the engine flows past said probes sequentially;
signal processing means connected for response to each of said electrostatic signal means, for selectively providing a particular engine event identifying signal selected from among a plurality thereof in response to said amplitude variations of more than one of said probe signals having characteristics correlated to an engine event corresponding to said selected identifying signal.

4,607,338

MISGRIP DETECTION CONTROL SYSTEM FOR USE IN A TRANSFER PRESS

Shinichi Kitagawa, Mikawa, Japan, assignor to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Continuation of Ser. No. 427,923, Sep. 29, 1982, abandoned. This application Oct. 28, 1985, Ser. No. 793,455
Claims priority, application Japan, Nov. 10, 1980, 55-157817
Int. Cl.[4] G06F *15/46*
U.S. Cl. 364—478 **18 Claims**



1. A misgrip detection control system for use in a transfer press having a transfer bar, comprising:
a workpiece memory circuit, having a plurality of sequentially arranged memory sections corresponding respectively to a loading position for workpieces and to a plurality of work stations, for storing data, representing the presence or absence of a workpiece, into said memory section corresponding to said loading position and for sequentially shifting said stored data along said sequentially arranged memory sections for every one transfer cycle of said transfer bar;
a plurality of sensors disposed on portions of said transfer bar corresponding to said work stations;
a workpiece presence/absence checking circuit for detecting the presence or absence of said workpieces on the basis of outputs from all of said plurality of sensors;
a misgrip detecting circuit for detecting each station as being abnormal when said stored workpiece presence or absence data of the memory section correpsonding to that station in said workpiece memory circuit is different from the presence or absence of a workpiece detected at the corresponding station by said workpiece presence/absence checking circuit during a clamp operation of said transfer bar;
said checking circuit and said detecting circuit performing their operations at each clamp operation of said transfer bar; and
means for interrupting the operation of said transfer press in response to detection of any station as being abnormal, so that said transfer press will only continue to transfer workpieces so long as there is agreement at all stations between the presence or absence of a workpiece thereat and the data at all of the corresponding memory stations.

4,607,339

DIFFERENTIAL CASCODE CURRENT SWITCH (DCCS) MASTER SLICE FOR HIGH EFFICIENCY/CUSTOM DENSITY PHYSICAL DESIGN

James W. Davis, Boca Raton, Fla., assignor to International Business Machines Corporation, Armonk, N.Y.

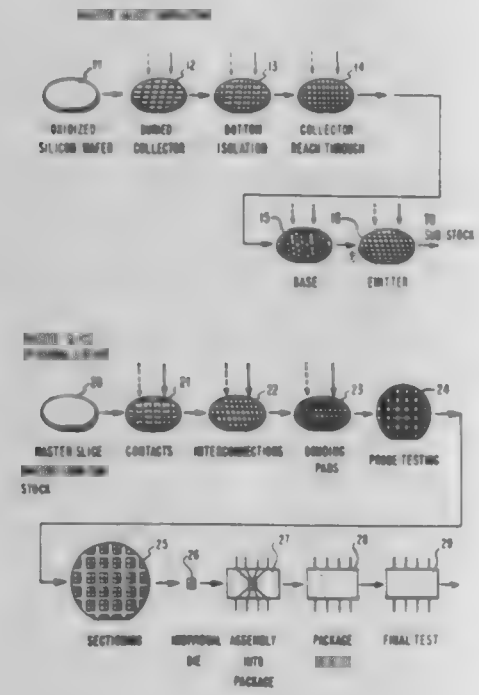
Filed Jun. 27, 1983, Ser. No. 508,440
The portion of the term of this patent subsequent to Aug. 26, 2003, has been disclaimed.
Int. Cl.[4] H03K *19/094, 19/173*
U.S. Cl. 364—491 **2 Claims**

1. A method of fabricating a master slice wafer for stockpiling in a substock awaiting further steps in defining a completed

functional product incorporating Bipolar Transistor Differential Cascode Current Switch (DCCS) circuits, comprising:

(1) locating a silicon wafer; and

(2) processing said wafer to establish an isolation region, a source/drain diffusion region, and a polysilicon gate region thereon, whereby the vertical structures of all the active components on the wafer is complete, the processing steps being controlled to produce a completed masterslice comprised of two general areas of microblocks including an input/output cell perimeter and a DCCS logic array of bipolar transistors and passive current source devices arranged into device rails including associated power rails, the microblocks being cascoded for developing logic signals and setting current levels.



4,607,340

LINE SMOOTHING CIRCUIT FOR GRAPHIC DISPLAY UNITS

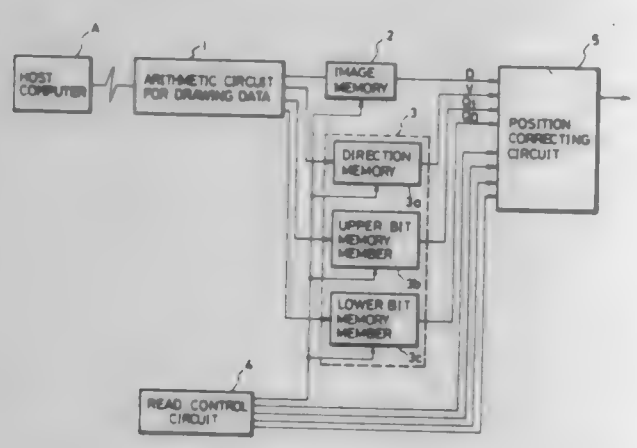
Toshihisa Nagai, Tokyo, Japan, assignor to Seiko Instruments & Electronics Ltd., Tokyo, Japan

Filed Nov. 23, 1984, Ser. No. 674,074

Claims priority, application Japan, Nov. 25, 1983, 58-221594

Int. Cl.[4] G06F *3/14*

U.S. Cl. 364—521 18 Claims



1. A line smoothing circuit for a raster scanning type display unit in which a raster of scan lines define a display picture frame and the dot display within the respective scan lines is controlled by display signals, the line smoothing circuit comprising: computing means receptive of starting point and terminal point coordinate data during use of the line smoothing circuit for computing therefrom display data representative of a line image to be displayed and line-smoothing correction data representative of corrections to be made to the display data to smoothen the line image; memory means for storing the display data and line-smoothing correction data at addresses corresponding to respective addresses of a display picture frame; and circuit means for reading out the stored display data and line-smoothing correction data from the respective addresses of the memory means and effecting the correction of the display data in accordance with the line-smoothing correction data to produce display signals effective to display a smooth line image.

4,607,341

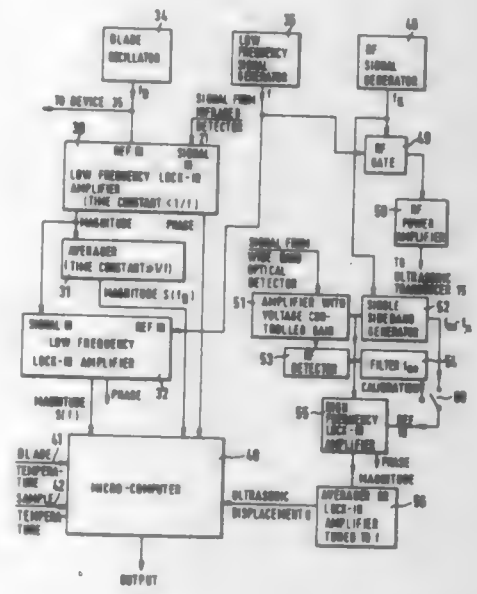
DEVICE FOR DETERMINING PROPERTIES OF MATERIALS FROM A MEASUREMENT OF ULTRASONIC ABSORPTION

Jean-Pierre Monchalin, Montreal, Canada, assignor to Canadian Patents and Development Limited, Ottawa, Canada

Filed Mar. 5, 1984, Ser. No. 586,323

Int. Cl.[4] G01N *29/00;* G06F *15/20*

U.S. Cl. 364—557 45 Claims



33. A device for determining at least one property of a material by measuring ultrasonic absorption in said material, said ultrasonic absorption being representative of said at least one property, said device comprising:

means for generating an ultrasonic wave having an intensity varying in time, and for subjecting the material to said ultrasonic wave;

means for subjecting said material to an external cause, said external cause changing the ultrasonic absorption of the material;

means for measuring a relative variation of a temperature modulation at a surface area of said material, said surface area corresponding to a region of said material subjected to the ultrasonic wave, said temperature modulation being generated by absorption of the ultrasonic wave in the material, and said relative variation of the temperature modulation being due to said external cause and being representative of a relative variation of ultrasonic absorption in said material;

means for measuring a variation of attenuation of the ultrasonic wave in said material due to said external cause; and

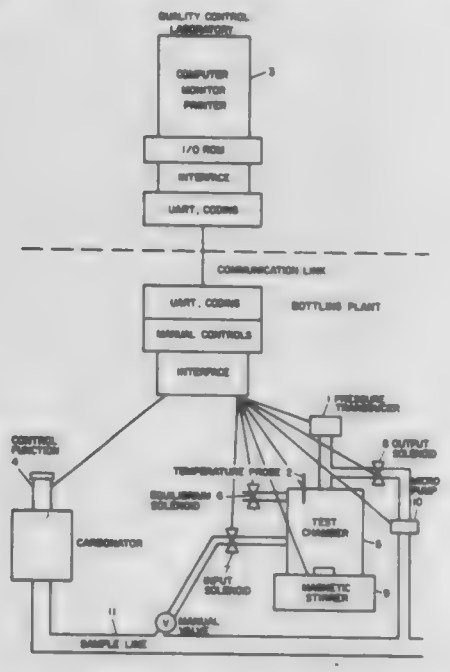
means for calculating said ultrasonic absorption in the material from said measured relative variation of the temperature modulation and from said measured attenuation variation for the purpose of determining said at least one property.

4,607,342

APPARATUS FOR REMOTELY MEASURING AND CONTROLLING THE CARBON DIOXIDE IN A BEVERAGE LIQUID: ON-LINE

Louis W. Seiden, Rockville; Dennis R. Stone, Burtonsville, and Kenneth G. Neimiller, Odenton, all of Md., assignors to Water Quality Sciences, Inc., Rockville, Md.

Filed Mar. 4, 1983, Ser. No. 463,526
Int. Cl.[4] G01N *7/00, 33/497*
U.S. Cl. 364—558 1 Claim



1. A system for remotely measuring and controlling the CO2 content of a beverage line liquid in a periodic fashion such that there are three computer controlled solenoid valves—the first valve for sample input, the second valve for sample output, and the third valve (equilibrium valve or timing valve) for automatically zeroing a pressure transducer and relieving an overpressure in the line; wherein the third solenoid valve automatically zeros the pressure transducer for offset, atmospheric changes, and drift prior to CO2 measurement; and during said measurement, automatically bleeds the overpressure in the line for a predetermined period of time based upon the type of beverage being measured.

4,607,343

APPARATUS AND METHOD FOR PERFORMING DIVISION WITH AN EXTENDED RANGE OF VARIABLES

Pierre Chevillat, Adliswil, and Dietrich Maiwald, Wadenswil, both of Switzerland, assignors to International Business Machines Corp., Armonk, N.Y.

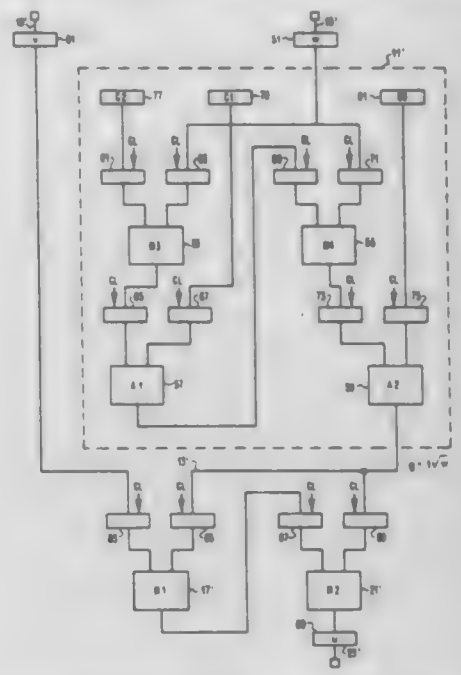
Filed Nov. 25, 1983, Ser. No. 555,245
Claims priority, application European Pat. Off., Dec. 23, 1982, 82111929.4
Int. Cl.[4] G06F *7/52;* G06G *7/164*
U.S. Cl. 364—765 3 Claims

2. Arithmetic apparatus for furnishing the quotient (u) of a dividend (v) and a divisor (w), including first and second storage means (**91**, **51**) for storing said dividend and divisor, respectively, said apparatus comprising:

generating means (**11'**) connected to receive the output of said second storage means (**51**), for generating at its output the reciprocal value of the square root of said divisor (w) as an auxiliary value (g), said generating means comprising circuitry (**25 . . . 35**; **61 . . . 75**) for accumulating said auxiliary value as $g=\{(C_n \cdot w^{n-2} \ldots +C_2)w+C_1\}w+C_0$, by alternating multiplication and addition, and comprising third storage means (**37 . . . 44**; **77 . . . 81**) for predetermined appropriate constant values C_0, C_1, C_2, . . . C_n;

first multiplying means (**17'**) connected to receive the outputs of said first storage means (**91**) and of said generating means (**11**), for multiplying said dividend (v) by said auxiliary value (g) to obtain an intermediate product, and

second multiplying means (**21'**) connected to receive the outputs of said first multiplying means (**17'**) and said generating means (**11'**), for multiplying said intermediate produce by said auxiliary value (g), thus producing at its



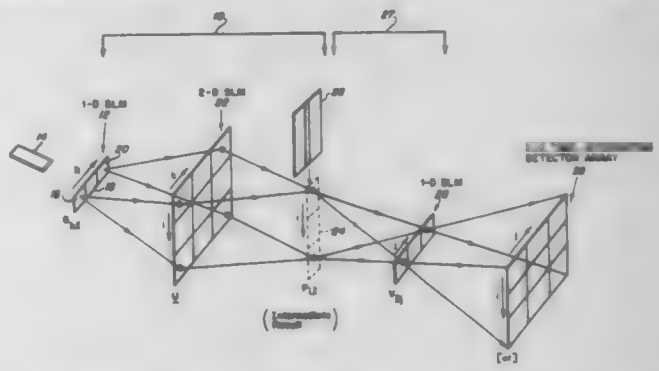
output (**13'**) a representation of the quotient (u) of said dividend and said divisor.

4,607,344

TRIPLE MATRIX PRODUCT OPTICAL PROCESSORS USING COMBINED TIME-AND-SPACE INTEGRATION

Ravindra A. Athale, Annandale, Va., and John N. Lee, Silver Spring, Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sep. 27, 1984, Ser. No. 654,926
Int. Cl.[4] G06G *7/16*
U.S. Cl. 364—841 22 Claims



1. A triple matrix product processor for optically multiplying three matrices U, G, and V, comprising:

a matrix-vector processor for sequentially multiplying each column of a M×N matrix G by at least a portion of P×M matrix U, wherein at a given instant the lth column of G is multiplied by the at least a portion of matrix U producing at least the il^{th} element of an intermediate result;

an outer product processor for multiplying said at least the il^{th} element of said intermediate result with the lth row of an N×Q matrix V producing at least a portion of a P×Q outer product matrix in a first plane; and

a time-integrating optical detector array for summing the light impinging on said first plane from said outer product processor to produce all or a desired portion of a P×Q triple matrix product after all of the N columns of said matrix G and all of the N rows of said matrix V have been cycled through said processors.

4,607,345

SERIAL DATA WORD TRANSMISSION RATE CONVERTER

Bakulesh A. Mehta, Bolingbrook, Ill., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Jan. 7, 1982, Ser. No. 337,642
Int. Cl.[4] G06F *5/06*
U.S. Cl. 364—900 21 Claims

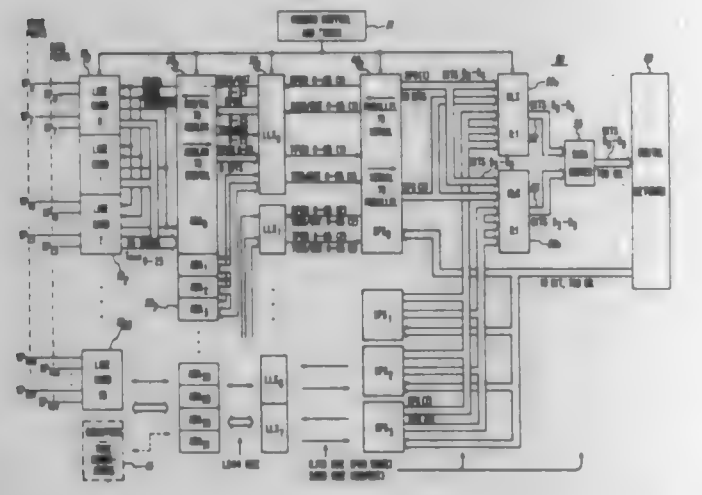
1. A digital interface circuit, for interfacing a communication switching network with at least one serial channel bus, for

converting a serial stream of digital bits from the serial channel bus having a first transmission rate into another serial stream of digital bits for use by the switching network having a second transmission rate, comprising:

receiving means for successively receiving groups of serial digital bits and assembling each said group into an intermediate parallel digital word,

first clock means controlling said receiving means for receiving said digital bits at said first transmission rate,

transmitting means for serially transmitting a group of digital bits to said network said digital bits representative of each said intermediate parallel word,



second clock means, synchronized to said switching network, for controlling said transmitting means and for transmitting said digital bits at said second transmission rate,

buffer means interposed between said receiving and transmitting means for temporarily storing said intermediate digital words and

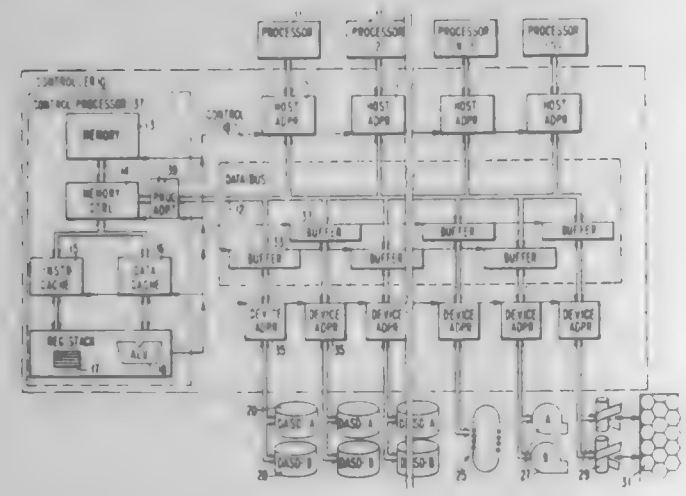
status indication means, responsive to said receiving and transmitting means, for controlling said buffer means to synchronously accept new words from said means for subsequent transfer to said transmitting means.

4,607,346

APPARATUS AND METHOD FOR PLACING DATA ON A PARTITIONED DIRECT ACCESS STORAGE DEVICE

Reed A. Hill, San Jose, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 28, 1983, Ser. No. 479,384
Int. Cl.[4] G06F *12/00*
U.S. Cl. 364—900 **11 Claims**



1. A method for operating a computing apparatus to automatically allocate data sets among storage devices in such a manner that system degradation will be minimized by reducing device bottlenecks and the cost of storage will be minimized by the effective ultization of storage device space and access capability, comprising the steps of:

calculating the access density of a data set to be allocated as equal to the number of accesses per unit time to that data set divided by the data set volume;

calculating the access density of each of a plurality of storage devices attached to the system as equal to the number of accesses that a device can sustain per unit time divided by the data storage capacity of the device;

allocating the data set to a storage device that has sufficient available space and a device access density most nearly matching and exceeding the access density of the data set being allocated; and

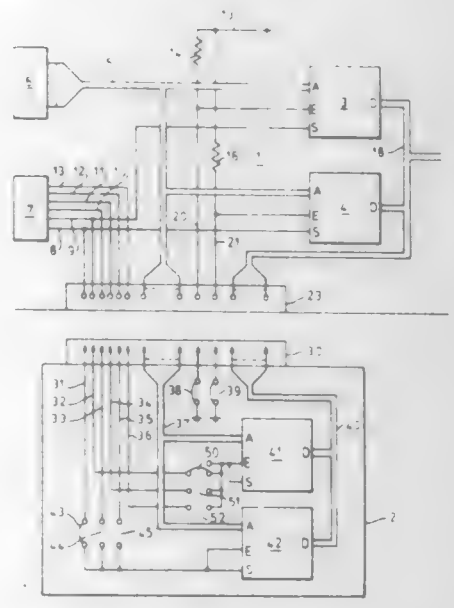
continuously monitoring and recalculating the data set access density and reallocating the data set as required to maintain the data set on a device having the most nearly matching access density.

4,607,347

MICROCOMPUTER SYSTEM EMPLOYING PROGRAM CARTRIDGES

David A. Kummer, Boca Raton, and Gary E. Webb, Lake Worth, both of Fla., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 10, 1983, Ser. No. 522,062
Int. Cl.[4] G06F *12/00*
U.S. Cl. 364—900 **4 Claims**



1. A microcomputer system comprising, in combination, a microcomputer and a program cartridge removably mounted into the microcomputer, said microcomputer comprising internal read-only memory means having an address input, a select input and an enable input, address means for driving an address bus coupled to said address input, select means for selectively driving a plurality of select lines, including a first select line coupled to said select input, enable means for energizing an enable line coupled to said enable input, and socket means connected to said address bus, said select lines and said enable line, said program cartridge including plug means for mounting into said socket means, external read-only memory means having an address input and a select input, an external address bus for connecting the address input of the external memory means to the address bus of the microcomputer through the plug and socket means, a plurality of external select lines, each including a selectively connectable link, for selectively connecting the select input of the external memory means to said select lines, including said first select line, in the microcomputer through the plug and socket means, and a disable line including a selectively connectable link, for selectively coupling disabling means in the cartridge to said enable line through the plug and socket means, whereby, upon insertion of the plug into the socket, the external memory means supplements or replaces the internal memory means in accordance with selective connection of said links.

4,607,348

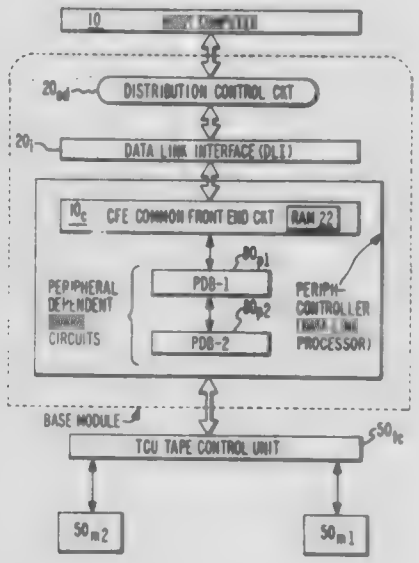
TRANSFER RATE CONTROL SYSTEM FROM TAPE PERIPHERAL TO BUFFER MEMORY OF PERIPHERAL CONTROLLER

Jayesh V. Sheth, El Toro, Calif., assignor to Burroughs Corporation, Detroit, Mich.

Continuation-in-part of Ser. No. 470,377, Feb. 28, 1983, abandoned. This application Apr. 26, 1985, Ser. No. 727,603

Int. Cl.[4] G06F *13/12*

U.S. Cl. 364—900 15 Claims



1. In a system for regulating the transfer of data words from a tape peripheral unit to a buffer memory means of a peripheral controller connected to a host computer, the combination comprising:

(a) a peripheral controller having a first channel means to said host computer and a second channel means to said tape peripheral unit, said peripheral controller including:

(a1) buffer memory means for temporarily storing data words from said peripheral tape unit, said means connected to receive data words on said second channel means;

(a2) processor means for controlling data transfer operations between said host computer and said tape peripheral unit, and including:

(a2a) means to generate activation signals to activate an auto read logic means for automatic transfer of data words from said tape peripheral unit to said buffer memory means;

(a2b) addressing means for addressing selected memory areas of said buffer memory means, including:

(i) means for counting data words transferred into and out of said buffer memory means;

(a3) first basic clock signal means for clocking said peripheral controller;

(a4) said second channel means including:

(a4a) latching register means, connecting said tape peripheral unit to said buffer memory means, for providing a time-delay buffer to said data words, said latching register means for shifting data words to said buffer memory means under control of said auto read logic means;

(a5) said auto read logic means for transferring data words continuously to said buffer memory means without interruption to said peripheral controller, said auto read logic means receiving second clock signals from a synchronization logic means, and receiving said activation signals from said processor means, and including:

p(a5a) means to signal said addressing means to increment or decrement said means for counting data words;

(a6) said synchronization logic means for combining asynchronous second clock signals from said tape peripheral unit with said first basic clock signal means to generate said second clock signals to said auto read logic means;

(b) said tape peripheral unit connected to said second channel means and including:

(b1) clock-strobe generation means for generating said asynchronous second clock signals which are representative of the output rate of data words generated according to the current tape speed.

4,607,349

MAGNETIC BUBBLE MEMORY DEVICE

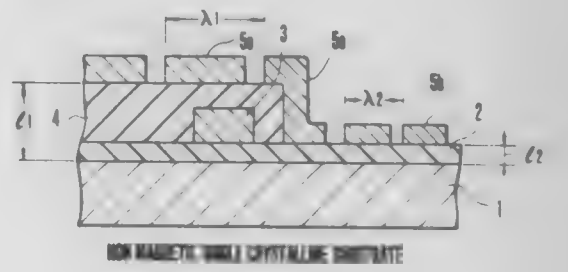
Ryo Suzuki, Kodaira; Masatoshi Takeshita, Hachiouji; Teruaki Takeuchi, Kokubunji; Naoki Kodama, Hachiouji, and Yutaka Sugita, Tokyo, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 18, 1983, Ser. No. 514,668

Claims priority, application Japan, Jul. 19, 1982, 57-124451

Int. Cl.[4] G11C *19/08*

U.S. Cl. 365—39 6 Claims



1. A magnetic bubble memory device comprising:

a magnetic film for holding magnetic bubbles;

a first insulating layer formed on said magnetic film;

a conductive layer selectively formed on said first insulating layer;

a second insulating layer formed on said conductive layer and part of said first insulating layer, for surrounding said conductive layer; and

a bubble propagation path layer which is patterned on said second insulating layer and said first insulating layer to provide propagation path patterns of different pattern periods;

wherein the distance between said magnetic film and said bubble propagation path layer is made smaller at a propagation pattern of shorter period than at a propagation pattern of longer period.

4,607,350

STATIC MEMORY CELL

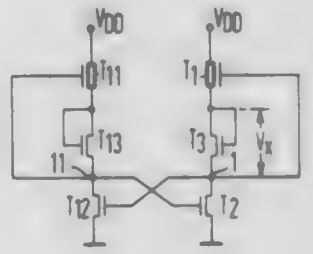
Cosimo Scianna, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Dec. 2, 1982, Ser. No. 446,253

Claims priority, application Fed. Rep. of Germany, Dec. 3, 1981, 3147951

Int. Cl.[4] G11C *11/40*

U.S. Cl. 365—154 5 Claims



1. Static memory cell, comprising a bistable multivibrator including two cross-coupled fed-back inverters each including a switching transistor having drain, source and gate electrodes, a load element in the form of a depletion transistor having drain, source and gate electrodes, a supply potential source connected to the drain electrode of said depletion transistor, an

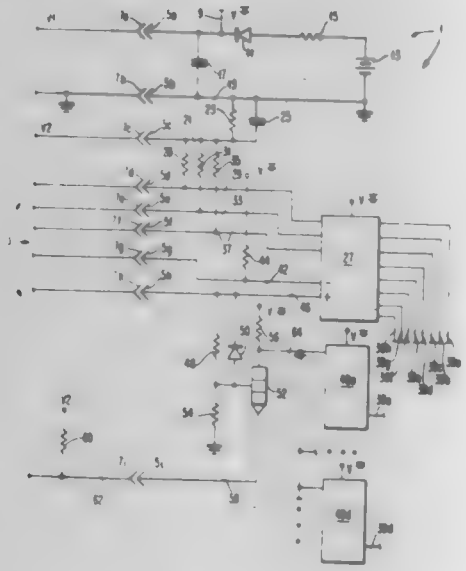
output node connected to the drain electrode of the switching transistor and the gate electrode of the depletion transistor, and an additional circuit element providing a voltage drop connected between said output node and the source electrode of said depletion transistor.

4,607,351

CARTRIDGE MEMORY PROTECTION

Jeri L. Gerber; Jorge L. Nazario, and Victor M. Simi, all of Lexington, Ky., assignors to International Business Machine Corp., Armonk, N.Y.

Filed Jan. 14, 1985, Ser. No. 691,022
Int. Cl.[4] G11C *5/00*
U.S. Cl. 365—228 **6 Claims**



1. A memory unit having a battery and at least one memory element connected to be powered by said battery, said memory element having one control line activating said memory element for reading at a first voltage level and for writing at a second voltage level, a bipolar transistor in said memory unit connected with said battery in the collector-to-emitter circuit of said transistor, a first terminal for connection to a host machine connected to the base of said transistor and a second terminal for connection to said host machine connected to the emitter of said transistor, and means connecting the collector of said bipolar transistor to said one control line to provide said first voltage level when no current flows between said first terminal and said second terminal.

4,607,352

METHOD AND APPARATUS FOR OBTAINING A DISPLAY OF A CHARACTERISTIC OF THE PERIPHERY OF A WELL

Bronislaw Seeman, Missouri City, Tex., and Francois J. Cortet, Paris, France, assignors to Schlumberger Technology Corporation, New York, N.Y.

Filed Aug. 15, 1983, Ser. No. 523,821
Claims priority, application France, Aug. 19, 1982, 82 14348
Int. Cl.[4] G01V *1/40*
U.S. Cl. 367—35 **20 Claims**

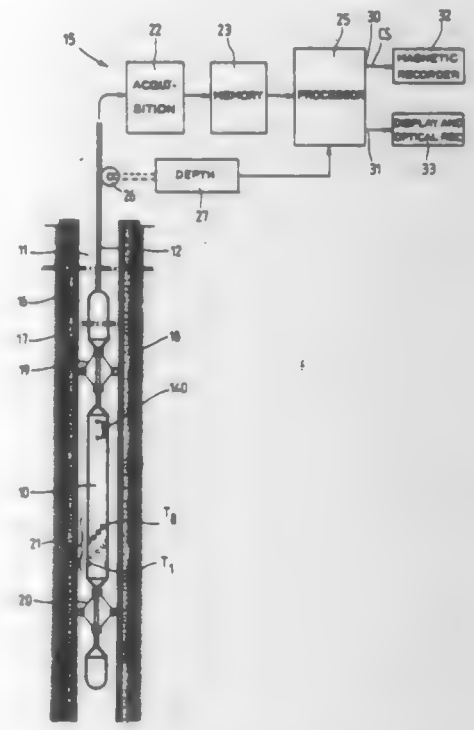
1. A method for producing a visual presentation of a physical characteristic of a well measured at a plurality of locations in the well, a scan line of the visual presentation having respective sets of points corresponding to said locations, comprising the steps of:

obtaining a random number lying within a range determined in accordance with a minimum and maximum value of the characteristic;

identify a point of said scan line;

evaluating a parameter in accordance with: (a) a spatial relationship of a subset including said identified point, to sets of points adjacent the set including said inclusive subset, and (b) a value of the characteristic measured at the one of said locations corresponding to said inclusive set;

comparing said randomly selected number and said parameter;



marking said identified point if the result of said comparison step satisfies a preselected relationship; and

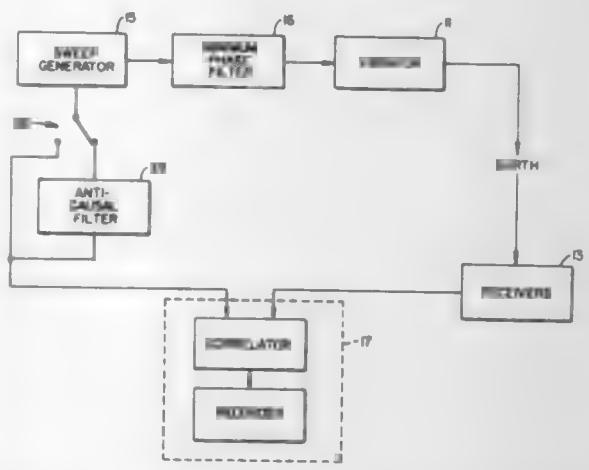
repeating said obtaining, identfying, evaluating, comparing and marking steps for the other points in said scan line.

4,607,353

SEISMIC EXPLORATION USING NON-IMPULSIVE VIBRATORY SOURCES ACTIVATED BY STATIONARY, GAUSSIAN CODES TO SIMULATE AN IMPULSIVE, CAUSAL GENERATING, RECORDING AND PRE-PROCESSING SYSTEM AND PROCESSING THE RESULTS INTO DISTORTION-FREE FINAL RECORDS

Francis Muir, Laguna Niguel, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Aug. 23, 1983, Ser. No. 525,761
The portion of the term of this patent subsequent to Aug. 24, 1999, has been disclaimed.
Int. Cl.[4] G01V *1/00;* G01S *9/68*
U.S. Cl. 367—39 **8 Claims**



1. A method of seismic surveying using non-impulsive vibratory sources that recovers all the essential information of full-waveform recording in a distortion-free manner whereby operations in accordance with an impulsive, causal exploration system are simulated, which comprises:

A. injecting non-impulsive, seismic vibrations into the earth by activating at least one vibratory source with a driving code of minimum phase, Gaussian, zero-mean, stationary characteristics;

B. recording the seismic vibrations that have propagated through the earth from said at least one vibratory source to at least one receiver within said wellbore; and

C. cross-correlating a full-waveform preserved representation of a precursor Gaussian, zero-mean, stationary code, unfiltered, with said received seismic vibrations; the result of said cross-correlation being a seismic survey record that is essentially distortion-free and single-sided with time simulating results obtainable in accordance with said impulsive causal exploration system.

4,607,354

AUTOMATIC DISC LOADING AND EXCHANGING APPARATUS

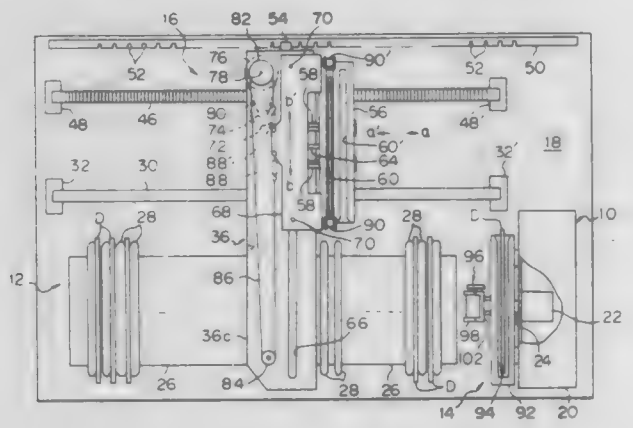
Masaya Ishibashi, and Masaaki Kiyomiya, both of Tokorozawa, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Aug. 10, 1984, Ser. No. 639,470

Claims priority, application Japan, Aug. 12, 1983, 58-147829

Int. Cl.[4] G11B *17/00, 5/48*

U.S. Cl. 369—39 **8 Claims**



1. An automatic disc loading and exchanging apparatus of a disc reproducing system including disc drive means associated with disc information pickup means, comprising:

disc storage means for storing a plurality of discs in conjunction with said disc drive means, the disc storage means being adapted to have discs arranged in an array having the individual discs positioned in parallel with each other and aligned with one another in a predetermined direction,

disc retaining means adapted to retain a disc in a position to be driven for rotation by said disc drive means, and

disc transport means movable in a direction parallel with said predetermined direction independently of said disc retaining means and including a disc carrier adapted to carry at least two discs and movable in opposite directions in parallel with said predetermined direction, and first and second pressing rollers which are movable in opposite directions perpendicular to said predetermined direction and which are spaced apart from each other in a direction perpendicular to said opposite directions of movement of said disc carrier, said first pressing roller being engageable with one edge portion of each of the discs for causing the disc to transfer to the carrier when the first pressing roller is moved on one of said opposite directions thereof and the second pressing roller being engagable with another edge portion of each of the discs for causing the disc to withdraw from the carrier when the second pressing roller is moved in the other of said opposite directions thereof, the disc transport means and the disc carrier thereof being movable between a first position operative to have a disc transferred between said array of the discs and said disc carrier and a second position operative to have a disc transferred between the disc carrier and said disc retaining means, the first position being variable depending upon the disc to be transferred between said array of the discs and said disc carrier, and said second position being fixed with respect to said disc retaining means,

said disc transport means further including a carriage movable in a direction parallel with said predetermined direction, and a slider movable with respect to the carriage in opposite directions substantially perpendicularly to the direction of movement of the carriage, said first and second pressing rollers being mounted on said slider, and said disc carrier being movable with said carriage in parallel with said predetermined direction and having at least two parallel open spaces separate from each other and each adapted to have a disc received therein,

said disc retaining means comprising a disc retainer positioned in association with said disc drive means and formed with at least one open space adapted to have a disc received therein in a position ready to be engaged by the disc drive means,

said open spaces in said disc carrier being open toward said array of the discs when said disc transport means is in said first position, one of said open spaces in said disc carrier being open toward and substantially aligned with said open space in said disc retainer when said disc transport means is in said second position, and

said disc carrier being movable between at least two different positions with respect to said carriage in a direction parallel with the direction of movement of said carriage, each of said two different positions being a position in which said pressing rollers are aligned with a respective one of said open spaces in said disc carrier, one of the open spaces in the carrier being substantially aligned with said open space in said disc retainer when said disc transport means is in said second position and said disc carrier is in one of said two different positions, and the other of the open spaces in the disc carrier being substantially aligned with the open space in the disc retainer when said disc transport means is in said second position and said disc carrier is in the other of said two different positions.

4,607,355

DRIVE SYSTEM

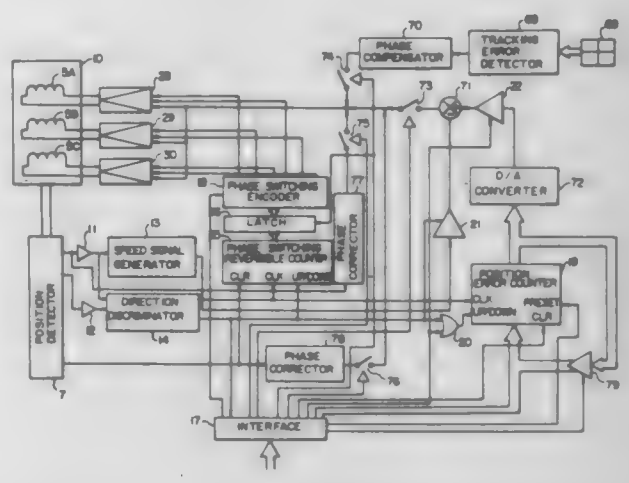
Hiroshi Koide, Kanagawa, Japan, assignor to Ricoh Company, Ltd., Japan

Filed Oct. 28, 1983, Ser. No. 546,499

Claims priority, application Japan, Oct. 28, 1982, 57-189438

Int. Cl.[4] G11B *7/00*

U.S. Cl. 369—44 **5 Claims**



1. A drive system for use in an optical disk file device having a read/write head for reading and writing information from and onto a track of an optical disk, comprising:

(a) a multipolar motor having a plurality of coils each selectively energizable by a current signal of a selected phase direction, the phase directions of the current signals for said coils being switched in order to drive said read/write head to a target track location during a positioning mode, the phase switching of said coils being prevented when said read/write head is to be maintained at the target track location during a tracking mode;

(b) phase switching means for providing a phase switching

signal for energizing said coils during said positioning mode;

(c) position error detecting means for detecting a difference in the position of said read/write head relative to the target track location and for providing an output when said read/write head has arrived at the target track location;

(d) tracking control means for providing tracking control signals without phase switching to said coils for maintaining said read/write head in the target track location during said tracking mode; and

(e) switching means for switching the energizing of said coils from said phase switching means to said tracking control means in response to said output of said position error detecting means.

4,607,356

OPTICAL HEAD IN A DEVICE FOR RECORDING AND READING A DATA CARRIER

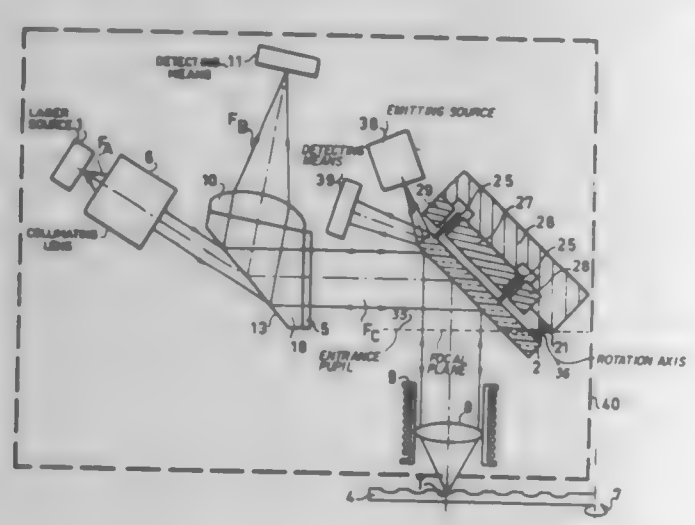
Claude Bricot; Michel Chaboche; Patrick Volleau; Dominique Leterme, and Jean-Pierre Le Merer, all of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Mar. 7, 1983, Ser. No. 473,013

Claims priority, application France, Mar. 9, 1982, 82 03938

Int. Cl.[4] G11B *7/095*

U.S. Cl. 369—44 8 Claims



1. An optical head for a data recording and reading device, said device including a data carrier having at least one data track and a laser source emitting a beam, said optical head comprising:

a reflecting mirror mounted for rotation about a rotation axis for reflecting said beam;

a lens having an entrance pupil lying in a plane and having a first and second focal plane, said data carrier lying in said first focal plane, said lens receiving said beam from said reflecting mirror through said entrance pupil to project an illumination spot on said data carrier and for collecting radiation from said data carrier; and

photodetector means for receiving said radiation from said lens;

said rotation axis lying in said entrance pupil plane and in said second focal plane.

4,607,357

OPTICAL PICKUP APPARATUS FOR RECORDED INFORMATION WITH TILT INDICATION

Takashi Okano, Tokorozawa, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

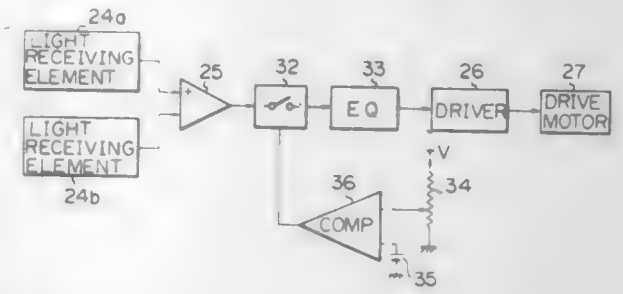
Filed Jun. 22, 1984, Ser. No. 623,396

Claims priority, application Japan, Jun. 24, 1983, 58-097476[U]

Int. Cl.[4] G11B *7/08*

U.S. Cl. 369—44 5 Claims

1. An optical pickup apparatus for optically reading information recorded on recording tracks of a recording medium, having a movably disposed optical pickup unit and a tilt servo control system adapted to actuate a tilt drive mechanism connected to the optical pickup unit according to a deviation of an angle between an axis of a reading light projected from the optical pickup unit and a recording surface of the recording medium from a right angle, which is detected by a deviation detection means, said deviation detection means comprises a light emitting means for projecting a light beam to the recording surface of the recording medium, a light receiving means for receiving a reflection light of the light beam projected by



the light emitting means and reflected by the surface of the recording medium and producing a pair of output signals, and a tilt drive signal generating means for generating a tilt drive signal from the output signals of the light receiving means and applying the tilt drive signal to the tilt drive mechanism, characterized by a means for opening a tilt servo loop when the light beam projected from the light emitting means has approached a portion of the recording medium in which no recording tracks are provided, as the movement of the optical pickup unit.

4,607,358

OPTICAL MEMORY APPARATUS

Takeshi Maeda; Motoo Uno, both of Kokubunji; Kouji Maraoka, Hachioji; Masahiro Takasago, Odawara; Yasumitsu Mizoguchi, Odawara, and Tokuya Kaneko, Odawara, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

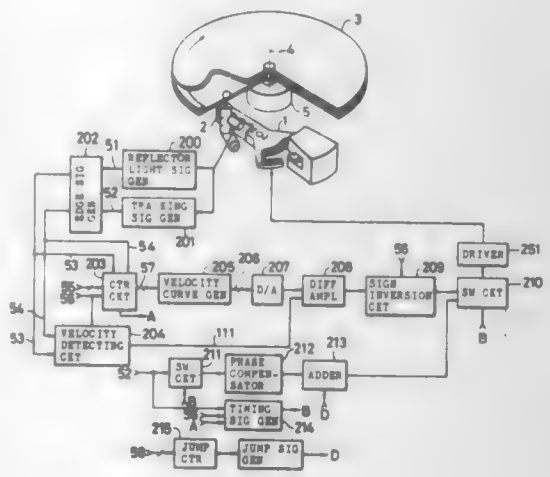
Continuation of Ser. No. 443,399, Nov. 22, 1982, abandoned.

This application May 20, 1985, Ser. No. 736,125

Claims priority, application Japan, Nov. 25, 1981, 56-187869; Mar. 30, 1982, 57-50035

Int. Cl.[4] G11B *7/00*

U.S. Cl. 369—44 23 Claims



1. An optical memory apparatus comprising:

a recording medium on which predetermined information is optically recorded along guide grooves previously formed in the recording medium and from which it is played back;

projecting means for projecting a laser light beam on the recording medium;

light receiving means for receiving reflected light from the recording medium and providing an output indicative thereof;

means for generating a tracking error signal in response to the output from the light receiving means;

first means for detecting an information signal in the output from the light receiving means and for providing an output;

second means for generating a signal indicative of the direction of passage of the light beam each time the light beam passes through a guide groove in response to the output from said first means and the tracking error signal;

third means for detecting a difference in position between a guide groove where the light beam exists and a target guide groove in response to the signal from said second means and for generating a first control signal for controlling the position of the light beam in accordance with the detected difference; and

light beam position-control means for moving the light beam near to the target guide in response to the first control signal.

4,607,359

OPTICAL RECORDING/REPRODUCING APPARATUS

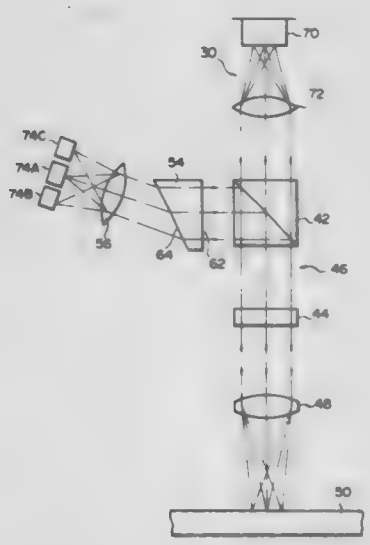
Nobuhide Matsubayashi; Kiichi Kato, and Masaharu Sakamoto, all of Tokyo, Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Jan. 30, 1984, Ser. No. 575,045

Claims priority, application Japan, Feb. 10, 1983, 58-21307

Int. Cl.⁴ G11B *7/08*

U.S. Cl. 369—46 **9 Claims**



1. An optical recording/reproducing apparatus for recording informaton on a recording medium and reproducing the recorded information, comprising:

an optical system including:

beam emitting means for emitting at least two light beams in directions at a minute angle to each other;

a condensing member for condensing the light beams onto slightly separated two points on the recording medium;

directing means for directing the light beams reflected by the recording medium in predetermined directions;

a converging member for converging the light beams from the directing means;

detecting means for detecting the light beams converged by the converging member; and

a refractive member disposed between the directing means and the converging member for refracting the light beams from the directing means, thereby increasing the relative angle between the light beams, the refractive member having an incidence surface on which the light beams from the directing means are projected and an emitting surface facing the incidence surface at a given angle thereto, so that the light beams transmitted through the refractive member are projected on the emitting surface at an angle of incidence a little narrower than the critical angle.

4,607,360

TIME-AXIS CORRECTING CIRCUIT FOR RECORDED DATA REPRODUCING DEVICE

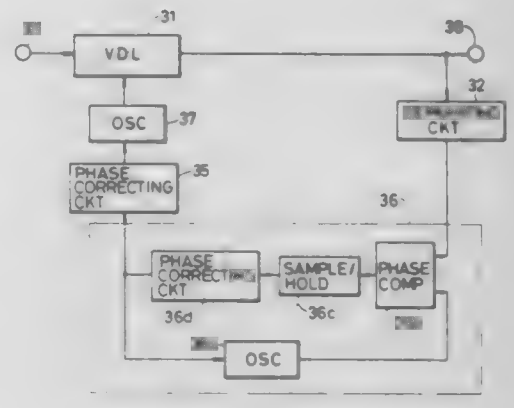
Tsutomu Fukui, Tokyo, Japan, assignor to Asah Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 12, 1983, Ser. No. 560,093

Claims priority, application Japan, Dec. 10, 1982, 57-215606

Int. Cl.⁴ H04N *5/95;* **G11B** *20/22*

U.S. Cl. 369—48 **5 Claims**



1. A time-axis correcting circuit for a recorded data reproducing device comprising:

a variable delay circuit receiving as an input a reproduced signal including a timing data component, said variable delay circuit delaying said reproduced signal by a time period determined by a control signal applied to said variable delay circuit;

a separating circuit for separating said timing data component from the delayed reproduced signal outputted by said variable delay circuit;

a flywheel oscillator, having a control input coupled to an output of said separating circuit for producing a reference signal, said flywheel oscillator comprising a closed-loop control system having an oscillation frequency at least approximately equal to a frequency of a dominant time-axis error component in said reproduced signal; and

a voltage-controlled oscillator receiving as an input said reference signal produced by said flywheel oscillator and producing in response thereto said control signal applied to said variable delay circuit.

4,607,361

RECORD PLAYER HAVING A LOADING MECHANISM FOR LOADING A DISK

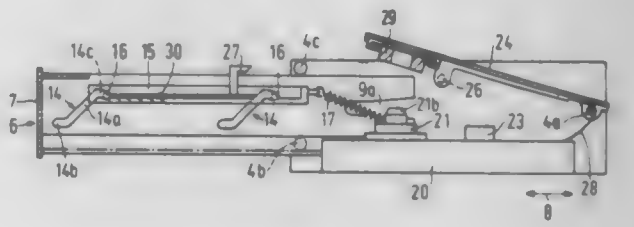
Pieter D. Schuitmaker, and Wilhelmus P. C. Rietbergen, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 544,045, Oct. 24, 1983, abandoned. This application Aug. 15, 1985, Ser. No. 766,666

Claims priority, application Netherlands, Jun. 15, 1983, 8302131

Int. Cl.⁴ G11B *17/04, 17/26*

U.S. Cl. 369—75.2 **10 Claims**



1. A record player having a loading mechanism for loading a disc, comprising:

a housing,

a frame fixed within said housing,

a turntable having an upper side and being rotatably journalled within said frame about a vertical axis, and

a loading mechanism comprising a drawer having opposed side walls, a platform carried on said drawer for carrying a disc to the turntable, and a pressure lever having a disc loader for pressing a disc against the turntable, said drawer being rectilinearly moveable in a horizontal direction inwardly from an opened position to a closed position and outwardly from said closed position to said opened position, said drawer's inward movement having successive first and second stages,

characterized in that each of said drawer side walls has a groove sloping obliquely upwardly in the direction of the drawer's inward movement,

said platform includes means engaging said grooves for guiding the platform in reversible movement between an upper position and a lower position, in said lower position said platform being positioned below the turntable's upper side, and

said pressure lever is pivoted about a horizontal axis perpendicular to the direction of movement of the drawer,

said mechanism further comprises (a) at least one positioning member arranged for holding said platform in said upper position during said first stage of the drawer's inward movement,

(b) an abutment stop formed as a projection on said pressure lever arranged to engage said platform during said second stage of said inward movement so as to block further inward movement of the platform and cause the platform to move, with respect to said grooves, to said lower position, and

(c) hook means on said platform for engaging said abutment stop and pivoting said pressure lever in a generally downward direction during the downward movement of the platform with respect to said grooves.

4,607,362

METHOD OF AND CIRCUIT ARRANGEMENT FOR ESTABLISHING CONFERENCE CONNECTIONS IN A SWITCHING SYSTEM

Peter Vary, Herzogenaurach; Rudolf Hofmann, Forchheim, and Karl Hellwig, Wonfurt, all of Fed. Rep. of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

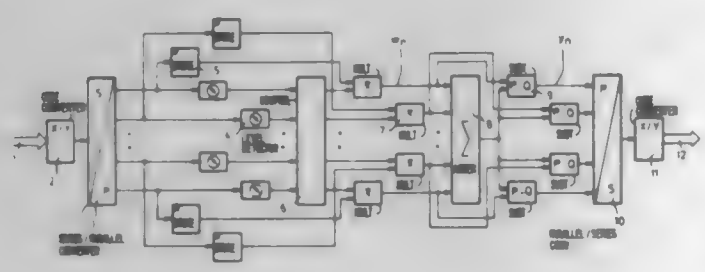
Filed Aug. 20, 1984, Ser. No. 642,621

Claims priority, application Fed. Rep. of Germany, Aug. 18, 1983, 3329779

Int. Cl.⁴ H04Q *11/04*

U.S. Cl. 370—62

21 Claims



1. A circuit arrangement for establishing conference connections in a PCM telephone switching system in which a data stream of delinearized code words representing speech samples of all of the conference participants during cyclically recurring pulse frames is transmitted to such participants, the delinearized code words for any pulse frame being formed by linearizing and summing the delinearized code words of the participants during the preceding pulse frame and delinearizing the sum-code word thus formed, such code words having a numerical range ZB; said circuit arrangement comprising:

a plurality of speech level detectors to which the linearized code words of the participants are applied and which measure the speech intensities of such code words;

a control circuit connected to the speech level detectors and responsive to the measured speech intensities of the linearized code words to produce weighting factors corresponding thereto;

a plurality of multiplier circuits having first inputs to which the linearized code words are applied and second inputs to which said control circuit applies the corresponding weighting factors, such multiplier circuits being adapted to produce weighted participant code words (w_n) by multiplying the linearized code words by the corresponding weighting factors;

and circuit means connected to the multiplier circuits for combining the weighted participant code words so as to form the respective partial sums (y_n) thereof, such partial sums respectively representing the sum of all weighted participant code words other than those of respective ones of the conference participants;

the weighting factors produced by said control circuit and the combinations of weighted participant code words produced by said combining circuit means being such that the partial sums of the weighted participant code words all fall within a said numerical range ZB.

4,607,363

BUFFER DEVICE FOR A VOICE TRANSMISSION NETWORK

Guy Platel, Villeneuve Loubet; Pierre Secondo, Saint Jeannet, and Sylvain Wiest, Villeneuve Loubet, all of France, assignors to International Business Machines Corp., Armonk, N.Y.

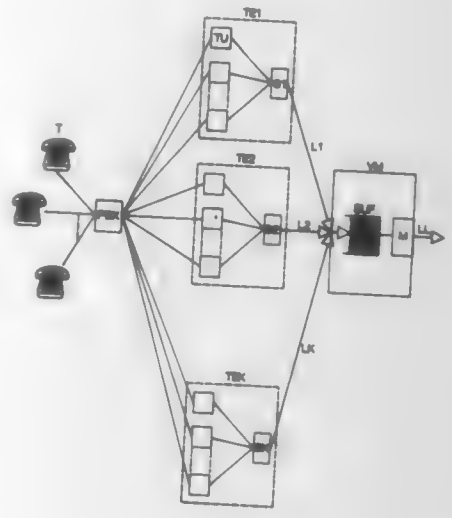
Filed May 20, 1985, Ser. No. 735,512

Claims priority, application European Pat. Off., May 23, 1984, 84430016.0

Int. Cl.⁴ H04J *3/24*; H04Q *11/04*

U.S. Cl. 370—94

11 Claims



1. A buffer device used in a digital transmission network wherein packets of bits from asynchronous terminal equipments are multiplexed by a concentrator in order to be sent over a transmission channel, said buffer device being characterized in that it includes:

a buffer storage for sequentially storing packets of bits from the terminal equipments;

input means connecting the input of the buffer storage to said asynchronous terminal equipments;

first counting means connected to said input means for counting the number $n_{(t)}$ of packets of bits supplied by said terminal equipments during a given time interval;

second counting means connected to the buffer storage for counting the number of packets contained in said buffer storage; and,

purging means including:

a logic device connected to said first counting means and providing for each value of said number $n_{(t)}$ digital values $L_{(t)}$ and $x_{(t)}$ respectively defining the optimal length of the buffer storage and the number of packets to be eliminated therefrom to perform the so-called purging operation;

comparison means connected to said second counting means and supplying a logic indication denoting the equality of $L_{(t)}$ and the contents of said buffer storage; and

a purging device responsive to said logic indication to eliminate from the buffer storage $x_{(t)}$ consecutive packets of bits contained therein.

4,607,364

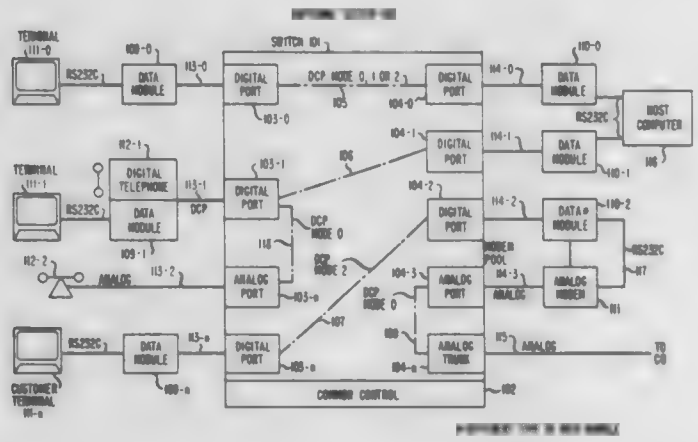
MULTIMODE DATA COMMUNICATION SYSTEM

Jeffrey Neumann, 27 Ralph St., Highlands, N.J. 07732; David W. Petr, 32 William St., Redbank, N.J. 07701; George W. Schramm, 273 Michael Ave., Oakhurst, N.J. 07755, and John B. Sharp, 2345 Ash St., Denver, Colo. 80207

Filed Nov. 8, 1983, Ser. No. 549,739

Int. Cl.[4] H04J *3/00*

U.S. Cl. 370—99 47 Claims



1. A method of operating a data communication interface connected by data leads and control leads to a data device at a first location, said method comprising the steps of:

(1) receiving data signals from said data device over said data leads and control signals over said control leads,

(2) forming a multifield data message from said received data signals,

(3) forming a multifield control message from said received control signals,

(4) generating cyclically reoccurring time multiplexed frames each having a plurality of fields including an I (Information) field,

(5) dividing each of said messages into a plurality of bytes and inserting each byte of a message into the I field of one of said time multiplexed frames, and

(6) transmitting said time multiplexed frames containing said inserted message bytes over a communication path from said interface to another data device.

4,607,365

FAULT-TOLERANT COMMUNICATIONS CONTROLLER SYSTEM

David A. Greig, Menlo Park; David L. Hinders, Cupertino, and William R. Goodman, Palo Alto, all of Calif., assignors to Tandem Computers Incorporated, Cupertino, Calif.

Filed Nov. 14, 1983, Ser. No. 551,283

Int. Cl.[4] G06F *11/20*

U.S. Cl. 371—8 4 Claims

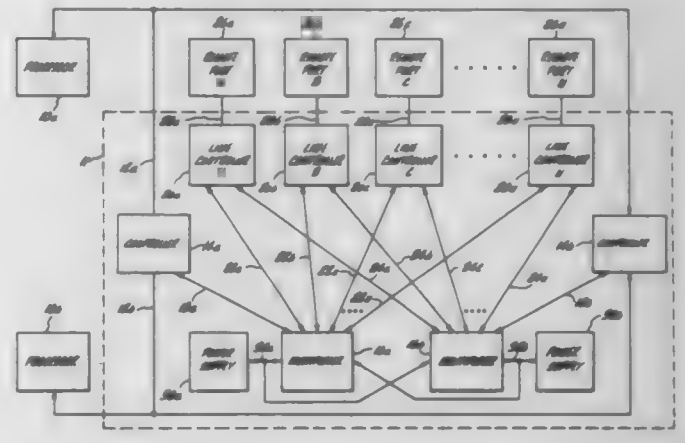
1. A single fault tolerant communications controller system for communicating data between at least two processors and a plurality of remote ports, including,

at least two communications controllers, each connected to said processors by communication busses,

a plurality of line controllers, each connected to one of said remote ports,

at least two multiplexer/demultiplexers, each connected at its demultiplexing end to one of said communications controllers and having each of its multiplexing connections connected to each one of said line controllers,

said multiplexer/demultiplexers responsive to said communications controllers to provide a communications path



between one of said processors and a selected one of said remote ports.

4,607,366

APPARATUS FOR TESTING A HIGHLY-INTEGRATED, MICROPROGRAM-CONTROLLED ELECTRONIC COMPONENT

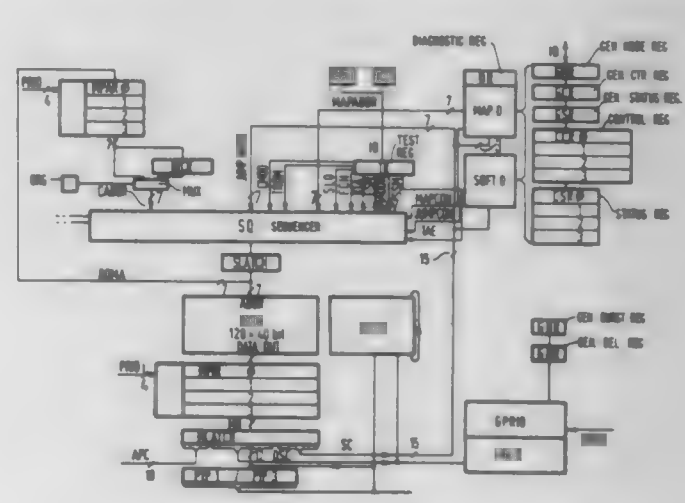
Hans Stadlmeier, and Franz Schönberger, both of Munich, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Nov. 7, 1983, Ser. No. 549,577

Claims priority, application Fed. Rep. of Germany, Nov. 9, 1982, 3241412

Int. Cl.[4] G06F *11/00;* G01R *31/28*

U.S. Cl. 371—16 11 Claims



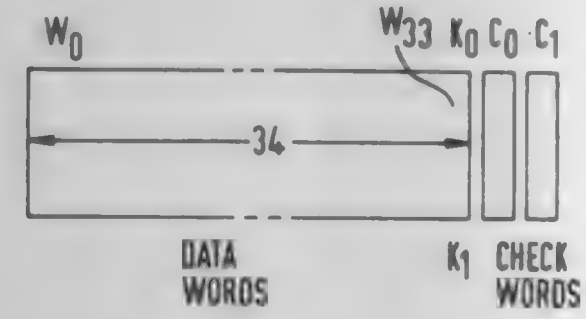
1. Apparatus for testing a highly-integrated microprogram-controlled electronic component in combination with the component, comprising a sequencer disposed in the component for forming micro-program sequence links, and a test register having a plurality of storage locations; a central processing unit connected to the component and an in-circuit emulator (ICE) external to the component, both being capable of addressingly engaging the test register; the ICE, in case of a fault condition, operatively engaging the test register for executing test-control microcommands by the test register; the test register disposed in the component and having a plurality of output channels connected to said sequencer for controlling the test.

4,607,367

CORRECTING ERRORS IN BINARY DATA

John G. S. Ive, and James H. Wilkinson, both of Basingstoke, United Kingdom, assignors to Sony Corporation, Tokyo, Japan

Filed Jun. 15, 1984, Ser. No. 621,226
Claims priority, application United Kingdom, Jul. 19, 1983, 8319404
Int. Cl.[4] G06F *11/10*
U.S. Cl. 371—37 11 Claims



1. A method of correcting errors in binary data, the method comprising:

forming a first plurality of data words;

deriving each of a second plurality of check words in dependence on all of said data words and on each of the other check words of said plurality of check words;

assembling said data words and check words into a data block;

repeating the previous step to form a plurality of data blocks, each said data block comprising a first plurality of data words and a second plurality of check words, each said check word being derived in dependence on all said data words in said data block and each other said check word in said data block; and

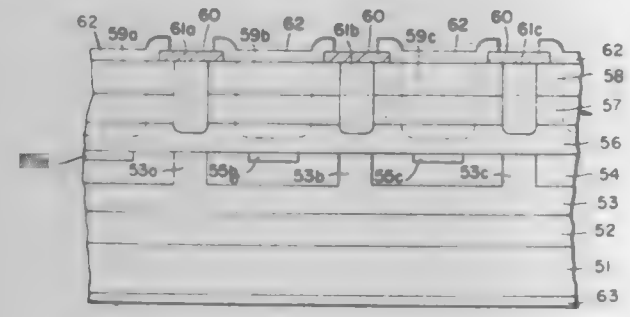
further assembling said data blocks into an array consisting of a plurality of said data blocks and deriving first and second check blocks for each said array.

4,607,368

OPTICAL SEMICONDUCTOR DEVICE

Ken-ichi Hori, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Nov. 29, 1982, Ser. No. 445,045
Claims priority, application Japan, Nov. 30, 1981, 56-192578
Int. Cl.[4] H01S *3/19*
U.S. Cl. 372—45 3 Claims



1. An optical semiconductor device comprising:

a semiconductor substrate having first and second sides;

an electrode formed adjacent to the first side of said semiconductor substrate;

a buffer layer formed adjacent to the second side of said semiconductor substrate;

an active layer formed on said buffer layer;

a clad layer formed on said active layer;

a light absorbing layer formed on said clad layer;

a semi-insulating layer formed on said light absorbing layer;

active regions formed on said semi-insulating layer;

a p-type region formed in a portion of said clad layer, light absorbing layer, semi-insulating layer and one of said active regions, for forming a laser element; and

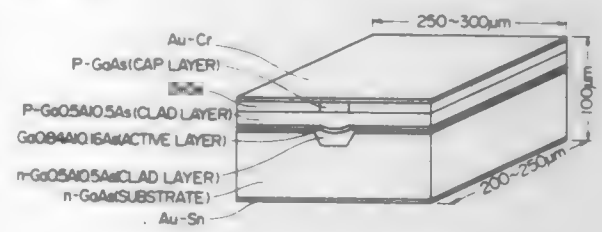
electrical circuit elements formed on said remaining active regions.

4,607,369

SEMICONDUCTOR LASER HAVING A BURYING LAYER OF A II-VI COMPOUND

Tatsuhiko Niina, and Keiichi Yodoshi, both of Osaka, Japan, assignors to Sanyo Electric Co., Ltd., Japan

Filed Mar. 30, 1983, Ser. No. 480,460
Claims priority, application Japan, Apr. 9, 1982, 57-60152
Int. Cl.[4] H01S *3/19*
U.S. Cl. 372—46 25 Claims



1. A semiconductor laser comprising:

a semiconductor substrate having a first surface,

first electrode means coupled to said semiconductor substrate for supplying electric current thereto,

an oscillation layer for generating a laser beam including an active layer in which stimulated emission occurs and including first and second layers between which said active layer is interposed, light and carriers being substantially confined in said active layer,

said first layer being disposed over said substrate, said active layer being disposed over said first layer and said second layer being disposed over said active layer,

a buried cap layer having a stripe geometry for providing a narrow current path width, said cap layer being disposed over said second layer,

a burying layer comprised of a II-VI compound, said burying layer being disposed over said second layer such that said cap layer is buried, and

second electrode means coupled to said buried cap layer for coupling electric current thereto.

4,607,370

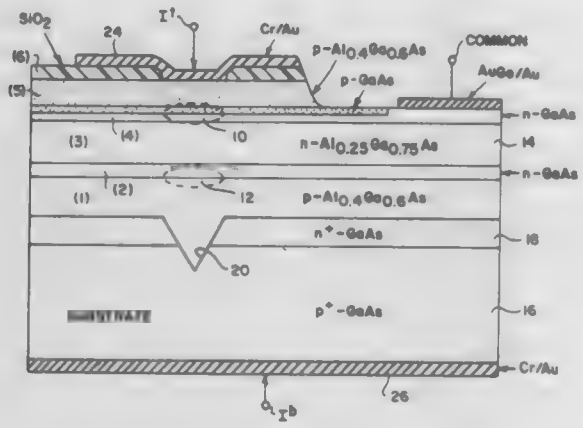
PAIRED, SEPARATELY CONTROLLED, AND COUPLED OR UNCOUPLED STRIPE GEOMETRY SEMICONDUCTOR LASERS

Seiji Mukai; Eli Kapon; Joseph Katz, all of Pasadena; Shlomo Margalit, South Pasadena, and Amnon Yariv, San Marino, all of Calif., assignors to California Institute of Technology, Pasadena, Calif.

Filed Feb. 29, 1984, Ser. No. 584,822
Int. Cl.[4] H01S *3/19*
U.S. Cl. 372—50 14 Claims

1. A semiconductor stripe laser structure comprised of two stripe laser cavities in different active layers separated by an inactive layer, said laser cavities being disposed to emit their beams in an area less than about five microns, and separate contacts for the coupled stripe lasers, one contact for current to one stripe laser, and the other contact for controls current to the other stripe laser, said cavities being arranged so that there is optical coupling between them, and means for controlling

the output wavelength spectrum of one of said coupled cavities through variations of the gain and re-fractive index of the other



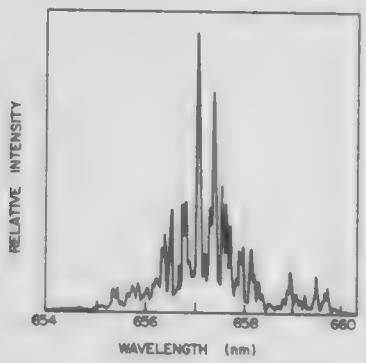
of the coupled cavities by control of current injection thereto below threshold.

4,607,371

MULTI-WAVELENGTH METAL HALIDE LASERS

James G. Eden; Andrew W. McCown, both of Champaign; Marwood N. Ediger, Urbana, and Dennis P. Greene, Champaign, all of Ill., assignors to Board of Trustees, University of Illinois, Urbana, Ill.

Filed Dec. 16, 1983, Ser. No. 562,379
Int. Cl.[4] H01S *3/22, 3/223*
U.S. Cl. 372—56 20 Claims



1. A pulsed laser, emitting energy at a plurality of selected, characteristic wavelengths within the visible and near infra-red regions of the spectrum, by dissociation of a plurality of selected metal dihalides, comprising:

(a) enclosure means;

(b) at least two metal halides from group II-B of the Periodic Table, present within said enclosure means;

(c) an inert buffer gas, present within said enclosure means;

(d) a heat source, for vaporization of said metal halides, capable of maintaining said enclosure means at a temperature of at least about 370° C.;

(e) a source of pulsed dissociative energy, located in proximity to said enclosure means and in communication therewith, for effecting dissociation of said vaporized metal halides;

(f) pre-ionization means, located in proximity to said enclosure means and in communication therewith, for effecting ionization of the vaporized metal halides in concert with and during said pulsed dissociation; and

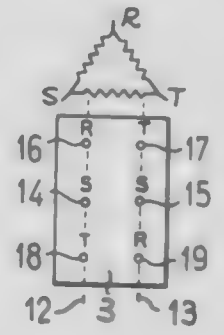
(g) an optical cavity disposed about said enclosure means, comprising a reflective surface and a partially reflective surface, each aligned to permit pulsed emission of a portion of said laser energy.

4,607,372

TECHNOLOGY OF ELECTRIC FUSION OF GLASS

Bernard Martin, Levallois Perret, and Gerard Dossier, Lesigny, both of France, assignors to Saint-Gobain Recherche, Aubervilliers, France

Filed Sep. 20, 1984, Ser. No. 652,574
Claims priority, application France, Sep. 20, 1983, 83 14903
Int. Cl.[4] C05B *5/02*
U.S. Cl. 373—41 10 Claims



1. An electric fusion furnace for a vitrifiable charge wherein the fusion energy of the furnace is dissipated by the Joule effect in the molten mass, comprising:

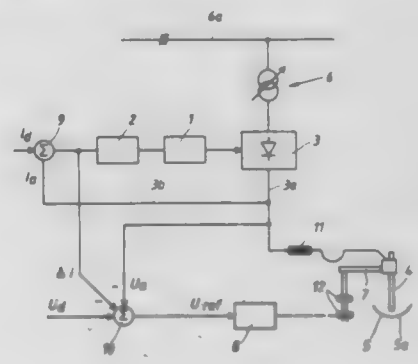
a furnace having electrodes vertically disposed therein which are attached to the bottom of the hearth of said furnace and which are distributed regularly over the entire surface of said hearth in at least one ordered grouping of two rows with each row comprised of three equidistant electrodes powered in three respective phases designated as R, S, and T, wherewith the order of the phases in the two rows is inverted (R, S, T, and T, S, R), such that the two middle electrodes are in phase and the pairs of electrodes on the respective ends are in different phases, and wherewith the interelectrode distance in a given row is approximately equal to the distance between the two rows.

4,607,373

CONTROL SYSTEM FOR A DC ARC FURNACE

Kjell Bergman, Västerås, Sweden, assignor to Asea AB, Västerås, Sweden

Continuation-in-part of Ser. No. 663,179, Oct. 22, 1984. This application Nov. 19, 1984, Ser. No. 673,037
Claims priority, application Sweden, Oct. 31, 1983, 8305966
Int. Cl.[4] H05B *7/148*
U.S. Cl. 373—104 3 Claims



1. A control system for a DC arc furnace having a hearth adapted to contain a scrap or metal charge, an arcing electrode, a thyristor convertor having a connection with the electrode and charge to form a circuit, current comparing means for comparing current in the circuit with a set-point current of fixed value and controlling the thyristor in response to the comparison so as to cause the current in the circuit to substantially equal the set-point current value, electrode positioning means for moving the electrode up and down relative to a charge in the hearth, and voltage comparison means for

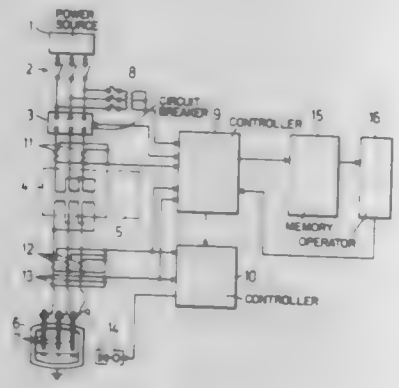
comparing the voltage in the circuit with a set-point voltage of fixed value and controlling the electrode positioning means in response to the voltage comparison so as to keep the voltage in the circuit substantially equal to the set-point voltage.

4,607,374

METHOD FOR CONTROLLING ARC FURNACE

Etsuo Inagaki, Nagoya, and Kikuma Izumi, Aichi, both of Japan, assignors to Daidotokushuko Kabushikikaisha, Japan

Filed Jul. 26, 1984, Ser. No. 634,832
Claims priority, application Japan, Dec. 23, 1983, 58-251811
Int. Cl.[4] H05B 7/148
U.S. Cl. 373—104 1 Claim



1. A method for controlling an arc furnace including the steps of:

charging a raw material to be melted into the arc furnace below an arc electrode disposed in the furnace;

determining an optimum arc current value to be supplied to said arc electrode; and

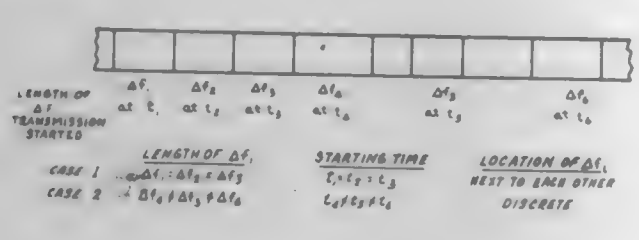
melting the raw material charged in said arc furnace by means of an arc generated between said charged raw material and said arc electrode by supplying said determined value of arc current to said arc electrode, said step of determining the optimum arc current value being characterized by the step of selecting an arc current value pre-obtained with respect to a raw material of the same bulk density as that of the raw material charged into the arc furnace, from a plurality of arc current values which are individually pre-obtained with respet to a plurality kinds of raw materials to be melted having respectively different bulk densities, said individual arc current values being current values at which each of the raw materials of various bulk densities is able to be melted in the state wherein the specific electric energy consumption is minimal.

4,607,375

COVERT COMMUNICATION SYSTEM

William C. Lee, Denville, N.J., assignor to ITT Corporation, New York, N.Y.

Filed Oct. 17, 1984, Ser. No. 661,745
Int. Cl.[4] H04L 9/00
U.S. Cl. 375—2.2 29 Claims



1. A covert communication system comprising:

first means coupled to a binary information signal having at least a given bit rate to translate binary one bits into different portions of a predetermined PN (pseudonoise) code sequence and binary zero bits into a complement of said different portions of said PN sequence, said PN sequence being selected to spread said binary signal over as large a bandwidth as possible;

second means coupled to said first means to transmit said portions of said PN sequence and said complements of said portions of said PN sequence at a power level below environmental noise of a propagation medium;

third means coupled to said second means through said propagation medium to receive said portions of said PN sequence and said complements of said portions of said PN sequence embedded in said environmental noise; and

fourth means coupled to said third means to recover said binary signal from said received portions of said PN sequence and said received complements of said portions of said PN sequence, wherein said fourth means includes

cross correlator means coupled to said third means to detect said received portions of said PN sequences and said received complements of said portions of said PN sequence, and

decision means coupled to said cross correlator means to provide a binary one output when said portions of said PN sequences are detected and a binary zero output when said complements of said portions of said PN sequence are detected, and wherein said cross correlator means includes

a PN code generator providing said PN sequence and said complement of said PN sequence,

a pair of shift registers coupled to said third means to store said received portions of said PN sequence and said received complement of said portions of said PN sequences,

a third shift register coupled to said PN generator to store portions of said PN sequence therein,

a fourth shift register coupled to said PN generator to store portions of said complement of said PN sequence therein,

first coincident gate means coupled to each stage of one of said pair of shift registers and each stage of said third shift register, to detect coincident bits in associated stages of said one of said pair of shift registers and said third shift register, first adding means coupled to said first coincident gate means to add output signals of said first coincident gate means,

second coincident gate means coupled to each stage of the other of said pair of shift registers and each stage of said fourth shift register to detect coincident bits in associated stages of said other of said pair of shift registers and said fourth shift register; and

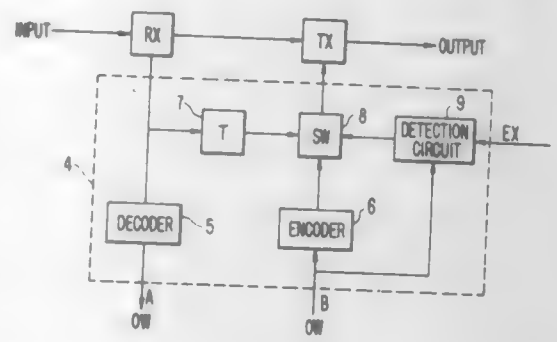
second adding means coupled to said second coincident gate means to add output signals of said second coincident gate means.

4,607,376

DIGITAL RADIO RELAY SYSTEM

Susumu Sasaki, Fujisawa, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Nov. 15, 1984, Ser. No. 671,776
Claims priority, application Japan, Nov. 16, 1983, 58-215618
Int. Cl.[4] H04B 3/36
U.S. Cl. 375—3 16 Claims



1. A digital radio repeating system operatively connected to receive a local auxiliary signal, comprising:

a digital radio unit, comprising:

receiving means for receiving time-division multiplexed

digital main and first auxiliary signals sent from a precedent station and for separating the first auxiliary signal; and

transmitting means for transmitting the digital main signal and one of the first auxiliary signal and a second auxiliary signal to a subsequent station, said transmitting means including multiplexing means for multiplexing the digital main signal and one of the first and second auxiliary signals under a time-division multiplex mode; and

an auxiliary unit, operatively connected to said multiplexing and receiving means and to receive the local auxiliary signal, for generating the second auxiliary signal based on the local auxiliary signal and the first auxiliary signal which is sent from the precedent station and is separated in said digital radio unit, said auxiliary unit including detection means for detecting a failure of said auxiliary unit, said auxiliary unit ordinarily sending the second auxiliary signal to said multiplexing means for multiplexing with the digital main signal and said auxiliary unit sending the first auxiliary signal from the precedent station to said multiplexing means for multiplexing with the digital main signal for transmission to the subsequent station when said detection means detects the failure of said auxiliary unit.

4,607,377

TRANSVERSAL TYPE EQUALIZER APPARATUS

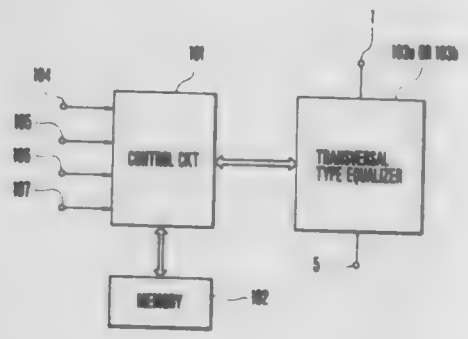
Masaaki Atobe, and Susumu Otani, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Apr. 25, 1984, Ser. No. 603,818

Claims priority, application Japan, Apr. 26, 1983, 58-73284; Apr. 26, 1983, 58-73285

Int. Cl.[4] H04B *3/04*

U.S. Cl. 375—14 1 Claim



1. A transversal type equalizer apparatus comprising:

a transversal type equalizer including signal input and output terminals, delay circuit series means connected to said signal input terminal and having a plurality of delay circuits of a predetermined delay time, and first coefficient relating and combining means for relating coefficients corresponding to desired equalizing characteristics to non-delayed and delayed input signals, combining the result of said coefficient and input signal relating and providing said combined result to said signal output terminal, said first coefficient relating and combining means comprising a signal combiner in the form of an adder and multipliers, said multipliers being connected between the signal combiner and input and output terminals of the respective delay circuits and being supplied with said coefficients;

memory means for storing the coefficients corresponding to the equalizing characteristics; and

control circuit means for reading said coefficients corresponding to said desired equalizing characteristics from said memory means and applying read-out coefficients to said first coefficient relating and combining means of said transversal type equalizer;

said control circuit means directly using the coefficient read out of said memory means for determining the coefficient corresponding to a single transmission characteristic and performing a convolution operation of a plurality of transmission characteristics in order to determine the coefficient corresponding to the plurality of transmission characteristics.

4,607,378

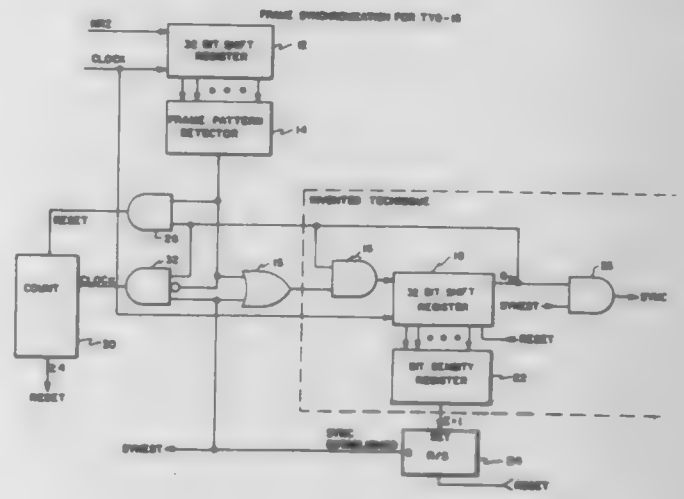
DETECTOR FOR DETECTING SYNC BITS IN A STREAM OF DATA BITS

Gary M. Catlin, Brick, N.J., and Michael P. Healy, Fairfax, Va., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Oct. 22, 1984, Ser. No. 663,513

Int. Cl.[4] H04L *7/00*

U.S. Cl. 375—116 2 Claims



1. A detector for detecting a valid sychronizing pattern in a data frame in which a sychronizing bit pattern is multiplexed and thereby establishing synchronization; comprising in combination:

a first register receiving data and synchronization bits of said data frame;

a pattern detector coupled to said first register for detecting said synchronizing bit pattern in said first register;

a second register;

a source of clock pulses coupled to both said first and second registers;

means for setting all elements of said second register to a first binary state;

a density detector coupled to said second register;

said clock source changing the states of successive elements of said second register from said first binary state to a second binary state as said data and synchronization bits are moved through said first register;

means for inserting in said second register a signal of said first binary state upon the simultaneous detection of said synchronizing bit pattern and the conversion of a last element of said second register from a second binary state first to said first binary state; and

means responsive to said density detector detecting a predetermined number of elements of said second register in said first binary state to establish synchronization.

4,607,379

CIRCUIT FOR CONNECTING TOGETHER MULTIPLE SERIAL DATA LINES

Trevor J. Marshall, Jr., Westport, and Jacob F. Moskowitz, New Canaan, both of Conn., assignors to CBS Inc., New York, N.Y.

Filed Nov. 5, 1984, Ser. No. 668,055

Int. Cl.[4] H04L *23/00*

U.S. Cl. 375—121 12 Claims

1. Apparatus operable without need for an external source of power for the interconnection of data communications equipment (DCE), such as a modem, with multiple data terminal equipments (DTE), such as terminals and printers, which each have an interface conforming to a predetermined serial data communication standard, for allowing access in parallel to the

DCE with a minimum of adverse electrical interaction of any interconnected DTEs,

said apparatus comprising:

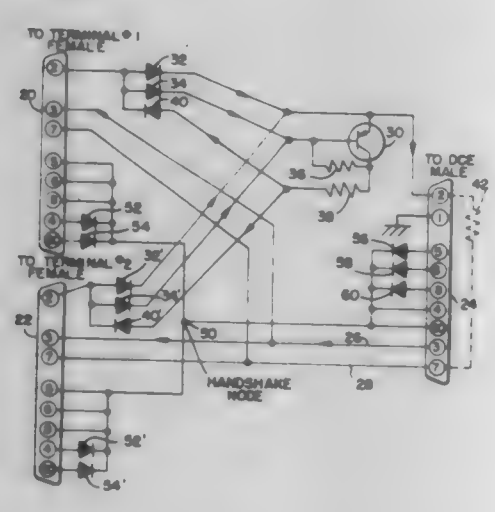
a chassis on which are supported a multiplicity of pluggable cable connectors each conforming to said standard and having at least transmitted data, received data and signal ground leads, one of which connectors being adapted for plug-in-connection to a DCE and the others each being adapted for plug-in connection to a respective DTE, and

a circuit enclosed within said chassis and including

first connecting means for connecting the received data leads of all of said connectors together,

second connecting means for connecting the signal ground leads of all of said connectors together, and

third connecting means for connecting the transmitted data lead of said other connectors in parallel to the transmitted data lead of said one connector, said third



connecting means including a normally active semiconductor device having three electrodes and a plurality of diodes for separately coupling the electrodes of said semiconductor device to the transmitted data lead of said other connectors, said diodes being poled to cause said semiconductor device to be powered by data signals applied to the transmitted data lead of one or more of said other connectors and to be switched off responsively to application to the transmitted data leads of two or more of said other connectors of data signals having predetermined conditions of relative polarity and amplitude and causing said third connecting means to function as a logical "OR" gate and to be effectively disconnected from said third connecting means responsively to application to the transmitted data leads of two or more of said other connectors of data signals which lack said predetermined relative polarity and amplitude conditions.

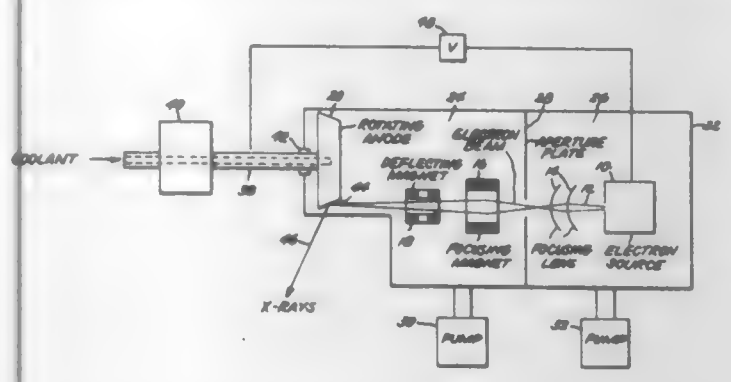
4,607,380

HIGH INTENSITY MICROFOCUS X-RAY SOURCE FOR INDUSTRIAL COMPUTERIZED TOMOGRAPHY AND DIGITAL FLUOROSCOPY

David W. Oliver, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Jun. 25, 1984, Ser. No. 623,903
Int. Cl.[4] H01J *35/14, 35/26*
U.S. Cl. 378—138 15 Claims

7. A high intensity x-ray source for inspecting an object to detect a microflaw therein comprising a source for producing an electron beam, a rotating anode, means for focusing the electron beam onto the rotating anode with a spot size of the order of or less than the size of the microflaw, means for operating the anode and the electron beam source at potential



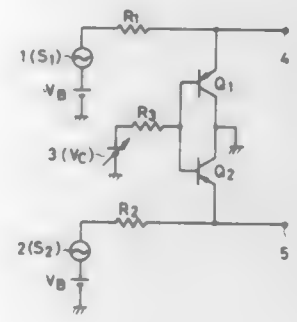
difference of the order of 400–500 kV, and means for applying a coolant to the anode to remove heat therefrom.

4,607,381

SIGNAL MIXING CIRCUIT

Yoshio Shimizu, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Oct. 5, 1984, Ser. No. 657,815
Int. Cl.[4] H04H *5/00*
U.S. Cl. 381—10 18 Claims



1. A signal mixing circuit receiving two input signals and producing two blended output signals therefrom, comprising:

control means for producing a variable level control signal;

a first resistance element connected to one of said two input signals;

a first current amplifying device having a connection to relative ground potential and being connected between said control means and said first resistance element and being operably responsive to said variable level control signal;

a second resistance element connected to the other of said two input signals;

a second current amplifying device having a connection to relative ground potential and being connected between said control means and said second resistance element and being operably responsive to said variable level control signal; and

whereby a first blended output signal formed of said two input signals is produced at the connection between said first resistance element and said first current amplifying device and a second blended output signal formed of said two input signals is produced at the connection between said second resistance element and said second current amplifying device.

4,607,382

ELECTROACOUSTIC TRANSDUCER UNIT WITH REDUCED RESONANT FREQUENCY AND MECHANICAL SPRING WITH NEGATIVE SPRING STIFFNESS, PREFERABLY USED IN SUCH A TRANSDUCER UNIT

Kees Dijkstra; Bernard P. Videc, and Jan Huizinga, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

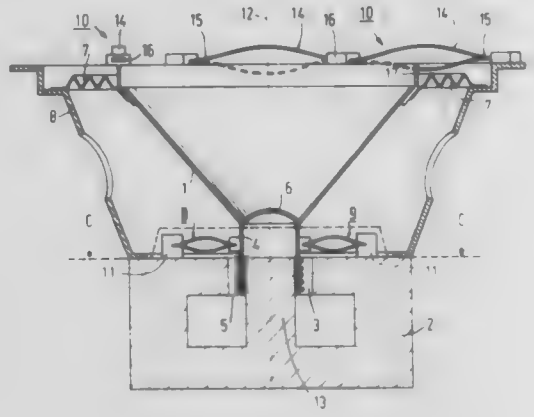
Filed Apr. 10, 1984, Ser. No. 598,637

Claims priority, application Netherlands, Apr. 26, 1983, 8301460

Int. Cl.[4] H04R *29/00*

U.S. Cl. 381—59

17 Claims



1. An electroacoustic transducer unit comprising:
an electroacoustic transducer with a diaphragm, and
means for reducing the resonant frequency of the electroacoustic transducer, said reducing means comprising a mechanical spring with negative spring stiffness coupled between a movable part of the transducer and a stationary part of the transducer unit, the mechanical spring including two blade springs of which both ends are coupled to each other and which, under the influence of a compressive force which acts on both ends of the mechanical spring in a direction along an imaginary line through said both ends, are each bent in one of two opposite directions.

4,607,383

THROAT MICROPHONE

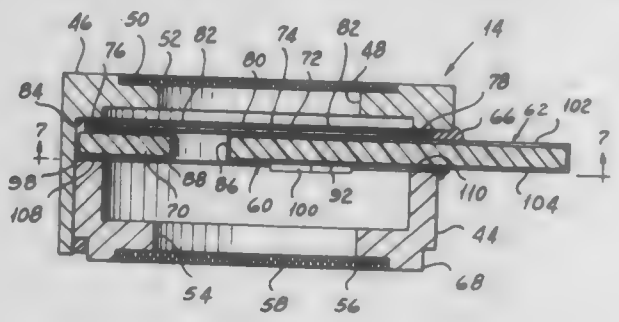
Robert Ingalls, Epping, N.H., assignor to Gentex Corporation, Carbondale, Pa.

Filed Aug. 18, 1983, Ser. No. 524,377

Int. Cl.[4] H04R *1/02, 3/06, 19/00, 19/01*

U.S. Cl. 381—88

4 Claims



1. A contact microphone including in combination an outer diaphragm adapted to contact a vibrating body portion, said diaphragm having a resonance at about 3 kilohertz, an electret transducer element having an electret diaphragm, means cooperating with said outer diaphragm and said electret diaphragm to form a first chamber on one side of said electret diaphragm, said chamber acoustically coupling said outer diaphragm to said electret diaphragm, and means cooperating with said electret diaphragm to form a second chamber on the other side of said electret diaphragm from said first chamber, said electret diaphragm being perforated to provide pressure relief between said first and second chambers, said pressure relief being such as to give said transducer element a rising response characteristic over a frequency range extending up to said resonance.

4,607,384

FINGERPRINT CLASSIFICATION ARRANGEMENT

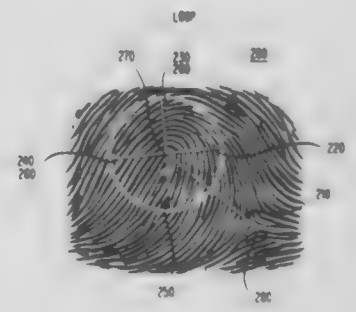
James A. Brooks, Hillsborough, N.J., assignor to AT&T - Technologies, Inc., Berkeley Heights, N.J.

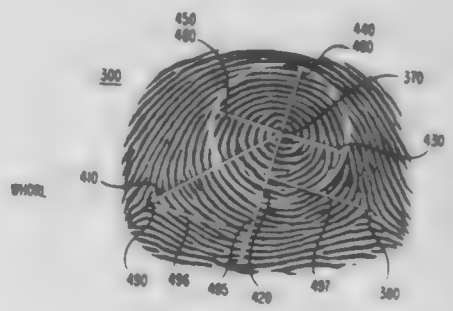
Filed May 1, 1984, Ser. No. 605,826

Int. Cl.[4] G06K *9/00*

U.S. Cl. 382—4

20 Claims





1. A method of generating a classification code for a fingerprint having a pattern of ridges, the ridges including a plurality of reference features, comprising
overlaying the intersection of a pair of cross-hairs at a first reference feature,
overlaying a line between a second reference feature and the first reference feature,
rotating the cross-hairs so that the line bisects a quadrant of the cross-hairs,
counting the number of ridges crossed by predetermined portions of the cross-hairs, and
generating the classification code responsive to said ridge counting step.

4,607,385

CHARACTER RECOGNITION APPARATUS

Ken-ichi Maeda, Kamakura, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

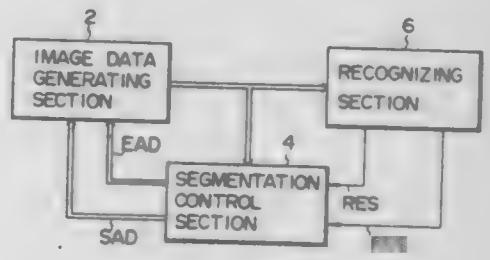
Filed May 22, 1984, Ser. No. 613,069

Claims priority, application Japan, May 25, 1983, 58-91808

Int. Cl.[4] G06K *9/34*

U.S. Cl. 382—9

19 Claims



1. A character recognition apparatus comprising:
scan line data generating means for detecting at least one character on a medium, storing image data corresponding

to a detected character, and generating a series of scan line data constituting the image data;

segmentation control means for generating starting and end scan line position data which respectively represent starting and end scan line positions for defining a segment of each character data in accordance with the series of scan line data;

character selecting means for generating from said scan line data generating means the character data specified in accordance with the starting and end scan line position data generated from said segmentation control means; and

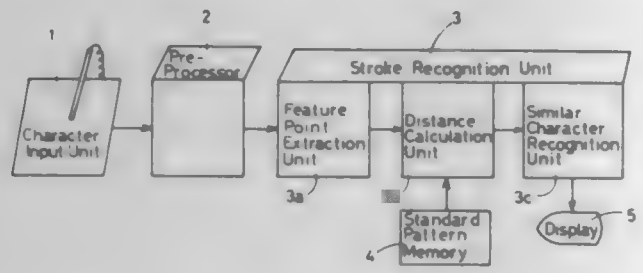
recognizing means for recognizing characters by comparing the character data of the segment defined by the starting and end scan line position data generated from said segmentation control means with a plurality of prestored reference character data, and for supplying a control signal to said segmentation control means to update at least one of the starting and end scan line position data when the character data from said scan line data generating means does not coincide with any of the reference character data.

4,607,386

HANDWRITTEN CHARACTER RECOGNITION DEVICE

Toshiaki Morita; Masahiro Horii; Shigeru Tasaka, all of Nara, and Hitoshi Hirose, Yamatokoriyama, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Oct. 3, 1984, Ser. No. 657,196
Claims priority, application Japan, Oct. 6, 1983, 58-187243
Int. Cl.[4] G06K *9/46*
U.S. Cl. 382—13 **2 Claims**



1. A handwritten character recognition device comprising:

input means for inputting information of a character by handwriting strokes of the character;

extracting means responsive to said input means for extracting a starting point, an intermediate point, and an end point of each of said strokes as feature points;

memory means for storing a plurality of standard patterns of characters together with stroke connection information,

wherein said memory means further comprises co-ordinate memory means for storing co-ordinate information for said feature points, and

signal memory means responsive to said co-ordinate memory means for storing information representative of whether a plurality of strokes of a given character are continuously connected;

comparison means responsive to said extracting means for comparing the inputted feature points with the standard patterns; detection means for detecting the lengths of the respective strokes and selecting the three feature points by using the stroke connection information in said memory means, said detection means including means for comparing the lengths of the respective strokes and detecting a longer stroke between two adjacent strokes, and feature point modification means for selecting an intermediate point of the longer stroke as the intermediate of the feature point to be compared thereby combining a plurality of continuously connected strokes; and

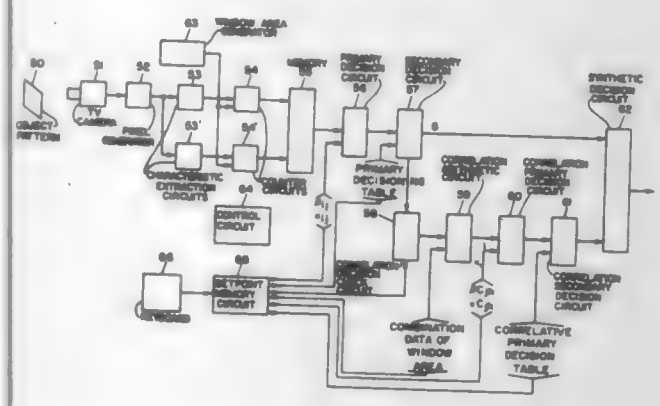
identifying means responsive to said comparison means and said detection means for identifying the inputted character.

4,607,387

PATTERN CHECK DEVICE

Michiaki Miyagawa, 702-1, Naganuma, Hachiooji-shi, Tokyo, Japan (192)

Filed Feb. 1, 1983, Ser. No. 462,879
Claims priority, application Japan, Feb. 5, 1982, 57-14633
Int. Cl.[4] G06K *9/18*
U.S. Cl. 382—33 **6 Claims**



1. In a pattern checking device which receives scanning data obtained by scanning an object within defined window regions adjustable in size, shape and position with a photoelectric converter of the two-dimensional scanning type, and having means for converting the scanned data into pixel binary data representing characteristics of the object scanned, and having means for evaluating the binary data and for producing an output signal indicative of said evaluation, the improvement wherein the means for evaluating comprises:

primary decision means for comparing the data from each window region from a group of window regions with upper and lower threshold limits, and for outputting a primary decision result signal when said data falls within the range of said upper and lower limits;

secondary decision means for comparing primary decision result signals obtained from the data from the group of window regions with previously stored decision data for said group, and for outputting a pattern check signal indicating whether the pattern appearing in said group of window regions constitutes a good pattern in accordance with said stored decision data; and

correlation operation-decision means comprising primary correlation decision means for comparing the data from predefined combinations of window regions with upper and lower threshold limits and for outputting a primary correlation decision result signal when said combined data is within the range of said upper and lower limits, and secondary correlation decision means for comparing the primary correlation decision result signals from predefined window region data and for outputting a correlation pattern check signal indicating whether a pattern appearing in said group of window regions constitutes a good pattern in accordance with previously stored correlation primary decision data.

4,607,388

FLEXIBLE CONTAINER FOR TRANSPORTING AND STORING BULK GOODS

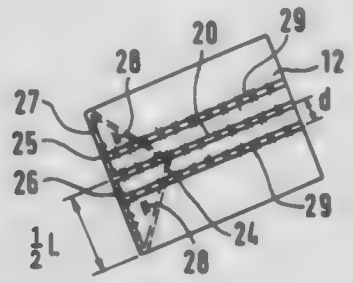
Veikko Koiyumäki; Hannu Tamminen; Pekka Peltonen, all of Pori, and Veikko Koski, Luvia, all of Finland, assignors to Oy Rosenlew AB, Finland

Filed Mar. 13, 1985, Ser. No. 711,386
Claims priority, application Finland, Mar. 15, 1984, 841059
Int. Cl.[4] B65D *33/16, 88/16*
U.S. Cl. 383—121 **3 Claims**

1. A flexible container for transporting and storing bulk goods, said container being constructed from a tubular blank having a free lower margin and formed so as to include a shell, a bottom and a filling aperture, said container being liftable by its upper end,

said free lower margin of the tubular blank being closed by a bottom seam located substantially in the central region of said container bottom, and

pleats being formed in said shell, each pleat having a lower part folded in a manner so as to be coplanar with said container bottom and including an upper plane and a lower plane, said upper plane of each pleat being folded down into the plane of said container bottom and affixed to said lower plane of said pleat by a connecting seam,



at least one supporting seam provided on either side of said bottom seam,

said supporting seams being substantially parallel to said bottom seam, and

each supporting seam being disposed at a distance from said bottom seam less than about one half the half-length of said connecting seam.

4,607,389

COMMUNICATION SYSTEM FOR TRANSMITTING AN ELECTRICAL SIGNAL

Edwin A. Halgrimson, Naperville, Ill., assignor to Amoco Corporation, Chicago, Ill.

Filed Feb. 3, 1984, Ser. No. 576,584
Int. Cl.[4] H04B *7/15, 1/36*
U.S. Cl. 455—11 6 Claims



1. A communication system for transmitting an electrical signal, comprising:

an operational device;

a remote terminal unit connected to said operational device for sending an electrical signal;

an elongated, substantially upright, transmission tower having a base providing a bottom in proximity to the ground and an upper portion providing a top spaced substantially above said base;

a stationary first transceiver fixedly secured and mounted near said base of said transmission tower for receiving said electrical signal from said remote terminal unit;

a first antenna connected to said first transceiver;

said first transceiver having a ground based stationary transmitter for radiating said electrical signal through said first antenna;

a second transceiver having a receiver;

a second antenna connected to and extending below said receiver of said second transceiver for receiving said electrical signal from said first antenna of said first transceiver and for passing said electrical signal to said receiver of said second transceiver in the absence of a coaxial cable connecting said first transceiver to said second transceiver;

a third transceiver cross-coupled to and positioned above said second transceiver, said third transceiver having an aboveground transmitter for transmitting said electrical signal from the receiver of said second transceiver to another remote terminal unit;

a third antenna connected to and positioned above said third transceiver for radiating said electrical signal from said aboveground transmitter of said third transceiver to said remote terminal unit;

a moveable enclosure substantially enclosing said second transceiver including said receiver and said third transceiver including said aboveground transmitter; and

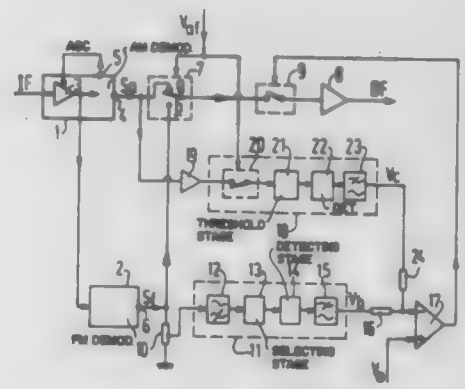
conveying means for conveying said moveable enclosure containing said second and third transceivers, from said base of said tower to said top of said tower.

4,607,390

SQUELCH ARRANGEMENT FOR AM/FM RADIO RECEIVER

Gabriel Faugeron, Nazareth Par Meyzac, France, assignor to U.S. Philips Corporation, New York, N.Y.

Filed May 31, 1984, Ser. No. 615,963
Claims priority, application France, Jun. 1, 1983, 83 09073
Int. Cl.[4] H04B *1/10*
U.S. Cl. 455—143 3 Claims



1. In a radio receiver having IF amplifier means, AM demodulator means and FM demodulator means connected to said IF amplifier means, a receiver output stage selectively connectable to said AM demodulator means or said FM demodulator means, and muting circuit means coupled to said FM demodulation means and responsive to noise signals received therefrom for disconnecting said receiver output stage from said AM or said FM demodulator means when said noise signals exceed a predetermined threshold level, the improvement comprising

correction circuit means connected to said AM demodulator means for generating a correction signal in response to AM demodulator output signals indicative of AM modulation exceeding a predetermined modulation degree; and

means for applying said correction signal to said muting circuit means to prevent said disconnection of said receiver output stage, whereby said muting circuit means is inactivated when said noise level at said output of said FM demodulator means is created by high degrees of modulation of a received AM signal.

4,607,391

VHF/UHF BAND SWITCHING TUNER INCLUDING A SECOND DIODE IN BAND SWITCH LOOP

Shigetoshi Matsuda, Soma, Japan, assignor to Alps Electric Co., Ltd., Japan

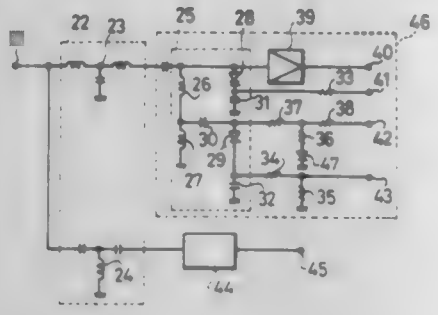
Filed Sep. 30, 1982, Ser. No. 431,680

Claims priority, application Japan, Dec. 25, 1981, 56-197325[U]

Int. Cl.[4] H04B *1/16;* H03J *5/24*

U.S. Cl. 455—188

3 Claims



1. A band switching circuit incorporated in an input circuit for a tuner for receiving VHF signals and UHF signals on a plurality of bands, comprising:

(a) means forming a part of said band switching circuit including a VHF tuning circuit for receiving the VHF signals and including a switching diode having an anode and a cathode for switching between a band containing a higher VHF signal and a band containing a lower VHF signal;

(b) means including a plurality of resistors connected respectively to said anode and cathode of said switching diode to thereby form a series-connected circuit capable of sustaining current flow, said circuit having a control terminal to which band switching voltages can be applied; and

(c) a second diode connected between the anode side of said switching diode and ground in said series-connected circuit in a direction opposite to said switching diode for blocking any current flowing in said circuit and through said switching diode when said terminal is rendered in a condition to turn off said switching diode.

4,607,392

CIRCUIT FOR IMPROVING THE TUNING BEHAVIOR OF A RECEIVER FREQUENCY CONTROL LOOP

Wolfgang Nolde, Hamburg, Fed. Rep. of Germany, and Wolfdietrich G. Kasperkovitz, Waalre, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

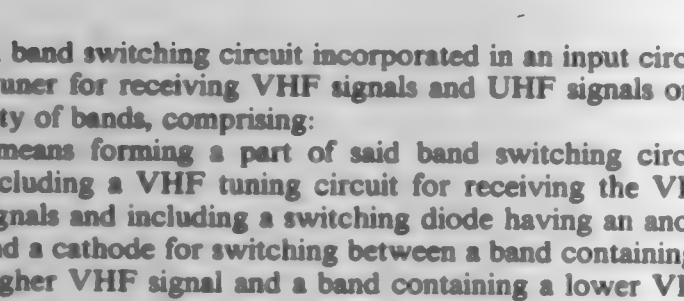
Filed Aug. 2, 1984, Ser. No. 637,178

Claims priority, application Fed. Rep. of Germany, Aug. 8, 1983, 3328555

Int. Cl.[4] H04B *1/26, 1/10*

U.S. Cl. 455—192

6 Claims



1. In a receiver circuit comprising a local oscillator which is included in a frequency control loop, said loop further including a mixer for receiving an aerial signal and said local oscillator signal to produce an intermediate frequency signal, a frequency-to-voltage converter for receiving said intermediate frequency signal and connected to provide a control voltage to said local oscillator proportional to the deviation of the frequency of said intermediate frequency signal from a target mean value f_{20}, a circuit for improving the tuning characteristics of said receiver comprising:

a controlled attenuator for reducing the gain of said frequency control loop; and

a control circuit for continuously varying the attenuation level of said attenuator in response to the difference of said intermediate frequency and said target mean value, said control circuit increasing said attenuation level as said frequency difference exceeds a predetermined value to a value less than the maximum loop gain, said control circuit comprising a correlator correlating said intermediate frequency signal with itself for a correlation period corresponding to half a period of said target mean value.

4,607,393

RECEIVER CIRCUIT COMPRISING TWO PHASE CONTROL LOOPS

Wolfgang Nolde, Hamburg, and Winfried Jansen, Ellerbek, both of Fed. Rep. of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

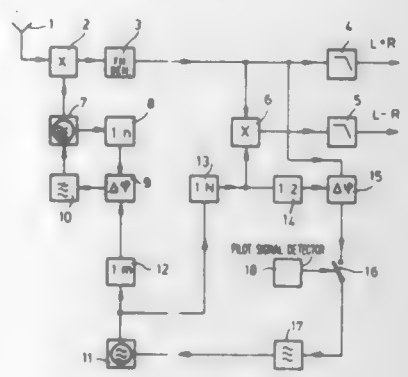
Filed Sep. 28, 1984, Ser. No. 655,963

Claims priority, application Fed. Rep. of Germany, Sep. 28, 1983, 3335024

Int. Cl.[4] H04B *1/26;* H04H *5/00*

U.S. Cl. 455—208

7 Claims



1. In an FM receiver for demodulating an RF carrier signal containing a pilot frequency signal, said receiver having a local oscillator phase locked to a reference signal, mixer means for converting said RF signal into an intermediate frequency signal with said local oscillator signal, and a demodulator for removing said pilot signal from said intermediate frequency signal, a circuit for phase synchronizing said reference signal to the phase of said pilot signal comprising:

a phase discriminator connected to receive said demodulated pilot signal;

a reference signal oscillator for generating said reference signal, said reference oscillator having a frequency which is a multiple N of said pilot signal frequency, where N is a constant, said reference signal generator having a phase synchronizing input for receiving a phase control signal from said phase discriminator; and

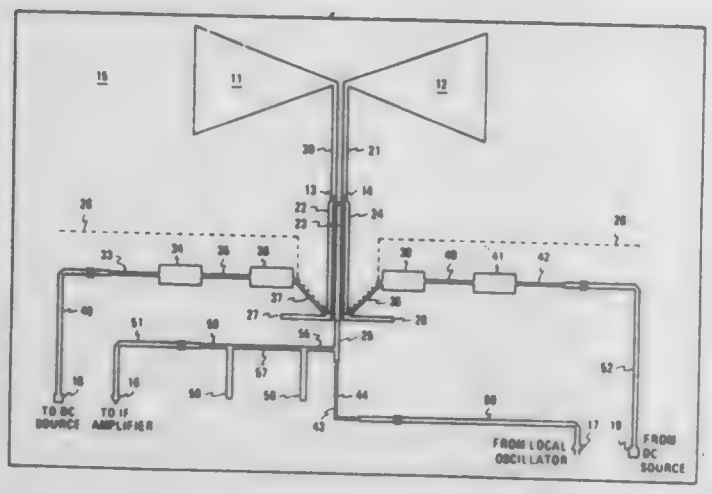
a divider circuit for frequency dividing a signal by N, connecting said reference signal genertor output signal to said phase discriminator, whereby said discriminator produces a control voltage proportional to the difference in phase of signals applied to said discriminator from the demodulator and the divider circuit for phase locking said reference signal to said pilot signal.

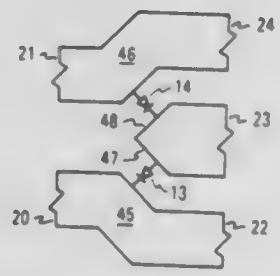
4,607,394

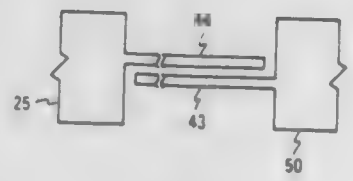
SINGLE BALANCED PLANAR MIXER

Stephen J. Nightingale, Liverpool, N.Y., assignor to General Electric Company, Syracuse, N.Y.

Filed Mar. 4, 1985, Ser. No. 708,002
Int. Cl.[4] H04B *1/26*
U.S. Cl. 455—327 12 Claims







1. A single balanced planar mixer comprising

A. an insulating substrate having an upper and lower surface suitable for supporting patterned conductors and electronic components;

B. a first balanced transmission line of a coplanar strip design for propagating waves at input signal frequency, comprising first and second conductors supported on said upper surface;

C. a second unbalanced coplanar transmission line for propagating waves at local oscillator and intermediate frequencies, transitioning to said first line, and comprising:

a third conductor supported on said upper surface and positioned along the axis of said first line but spaced from the conductors of said first line at said transition; and fourth and fifth conductors supported on said upper surface to each side of said third conductor and transitioning in an electrically continuous path to said first and second conductors respectively;

said fourth and fifth conductors representing finite ground planes of said second transmission line;

D. a pair of diodes disposed at the transition between said first and second lines, one diode being coupled between said third conductor and the transition between the first and fourth conductor and the other diode being connected between said third conductor and the transition between the second and fifth conductor, said diodes converting said input waves to an intermediate frequency when local oscillator waves are coupled to said second line;

said transition between said first, balanced transmission line and said second, unbalanced transmission line blocking transmission of the input signal to said second line and the intermediate frequency and local oscillator signals to said first line;

E. a third unbalanced transmission line of a microstrip design for propagating waves at local oscillator and intermediate frequencies, transitioning to said second transmission line, said third transmission line comprising

a sixth conductor of finite width supported on said upper surface, electrically continuous with said third conductor, and a seventh conductor supported on said lower surface to form a ground plane under said sixth conductor; and

F. a pair of resonant lines of microstrip design having an electrical length of one quarter wave length at the local oscillator frequency, positioned at the transition between said second and third lines to create low impedance connections at the local oscillator frequency between said finite ground plane conductors of said second transmission line with the ground plane of said third transmission line at the local oscillator frequency, and

G. means providing capacitance between said finite ground plane conductors and said ground plane to provide low impedance connections at said intermediate frequency, and

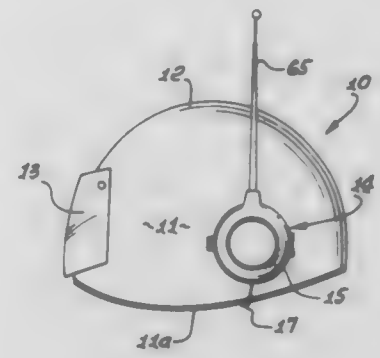
H. means for coupling said third line to an input port for connection to a local oscillator and to an output port for connection to an intermediate frequency amplifier.

4,607,395

HELMET RADIO CONTROL PACKAGE

James G. Sundahl, Irvine, Calif., assignor to Bell Helmets Inc., Norwalk, Calif.

Filed Feb. 6, 1984, Ser. No. 577,588
Int. Cl.[4] H04B *1/08, 1/38;* H01C *10/32;* F16H *35/18*
U.S. Cl. 455—351 9 Claims



1. In a radio attachable to a cyclist's helmet, the combination comprising

(a) a receptacle having a generally annular side wall and a bottom wall, the receptacle attachable to a helmet surface with said bottom wall facing said surface,

(b) radio circuitry within the receptacle, and

(c) a large radio control knob fitted to the receptacle and rotatable thereon, to control said circuitry whereby the cyclist may manually reach to the vicinity of his helmet to turn said knob,

(d) said radio circuitry comprising FM circuitry having an adjustable component for controlling the power level of FM transmission, said knob operatively connected with said component to adjust same as the knob is rotated,

(e) the knob having two track sections, which are circularly spaced about an axis of rotation defined by the knob, one section controllably adjusting said component when the knob is rotated clockwise, and the other section controllably adjusting said component when the knob is rotated counterclockwise.

DESIGN PATENTS

GRANTED AUG. 19, 1986

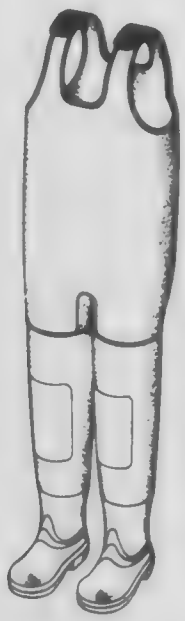
ERRATA

For CLASS	See PATENT NO.
D22–122	285,179

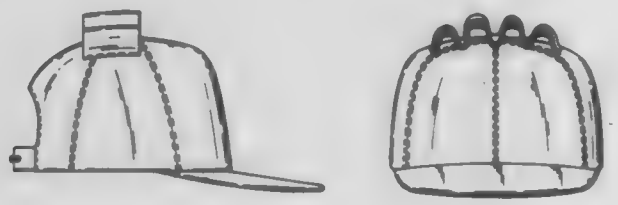
DESIGNS

AUGUST 19, 1986

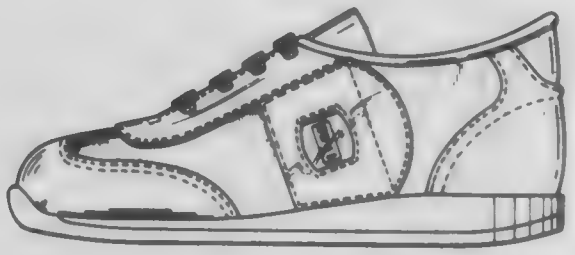
285,140
FISHING AND HUNTING CHEST WADER
Jack Ellenberger, 1744 Foster Ct., Santa Cruz, Calif. 95062
Filed Jun. 6, 1984, Ser. No. 617,753
Term of patent 14 years
U.S. Cl. D2—29



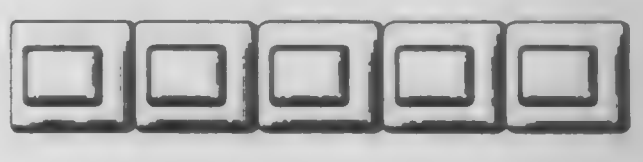
285,141
COMBINED CAP AND BALL GLOVE
Kenneth W. Whisman, 4584 McCormick La., Fairfield, Ohio 45014
Filed Apr. 16, 1984, Ser. No. 600,547
Term of patent 14 years
U.S. Cl. D2—246



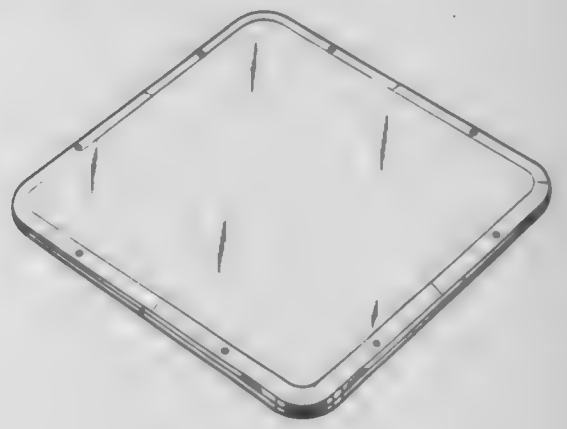
285,142
COMBINED ATHLETIC LOOK SHOE AND WATCH
Paul W. McArthur, Gainesville, Fla., assignor to Lektro, Inc., Gainesville, Fla.
Filed Feb. 22, 1983, Ser. No. 468,454
Term of patent 14 years
U.S. Cl. D2—309

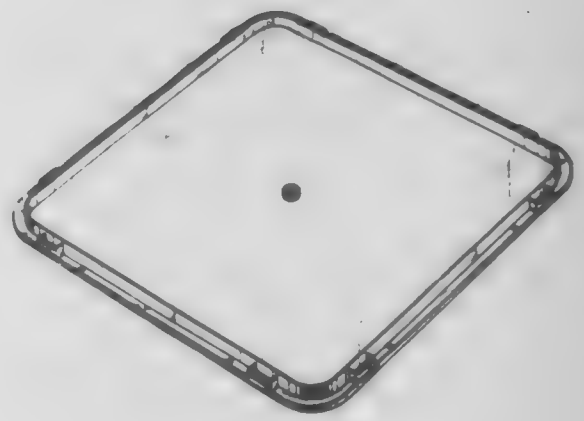


285,143
BELT BUCKLE
Alexis V. Kirk, New York, N.Y., assignor to Somersett Moon Ltd., New York, N.Y.
Filed Nov. 27, 1984, Ser. No. 675,347
Term of patent 14 years
U.S. Cl. D2—422

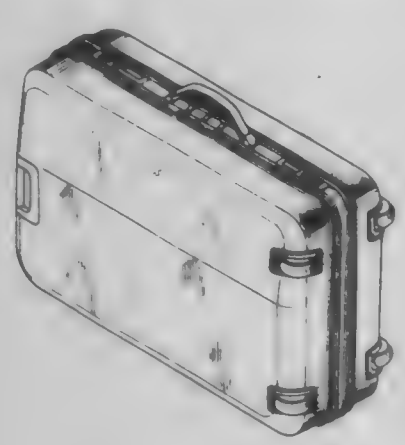


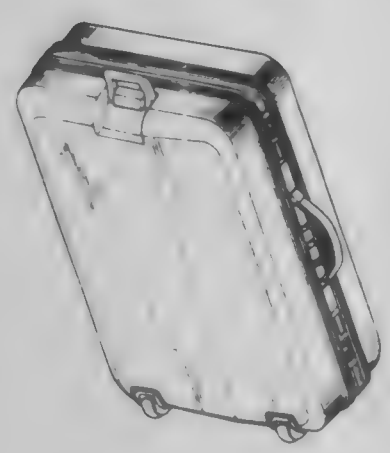
285,144
DISK MAILER
Carl-Eric Roskvist, Bjärred, Sweden, assignor to ABA System AG, Ermatingen, Switzerland
Filed Feb. 27, 1984, Ser. No. 583,841
Claims priority, application Sweden, Sep. 5, 1983, 83-2263
Term of patent 14 years
U.S. Cl. D3—35





285,145
SUITCASE OR SIMILAR ARTICLE
Dick M. Hsieh, No. 12, Lane 777, Chung Shan Rd., Nan Pao Tsun, Kwei Jen, Hsiang, Tainan Hsien, Taiwan
Filed Feb. 13, 1984, Ser. No. 579,677
Term of patent 14 years
U.S. Cl. D3—76

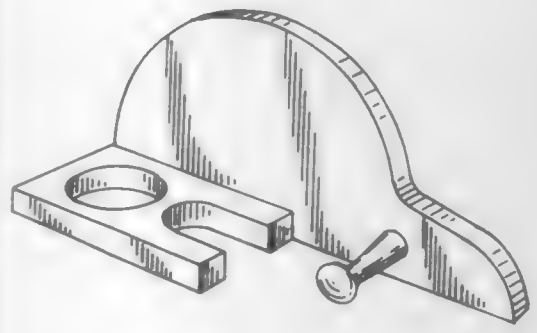




285,146
PAINT ROLLER COVER OR SIMILAR ARTICLE
David Abellira, 1448 Hookuu St., Pearl City, Hi. 96782
Filed Jun. 8, 1984, Ser. No. 618,734
Term of patent 14 years
U.S. Cl. D4—122



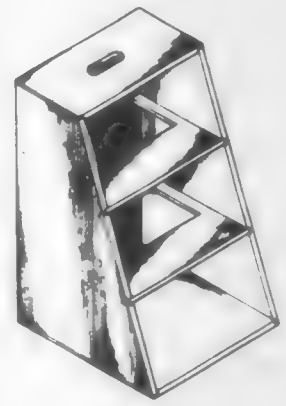
285,147
RACK FOR A BASEBALL, BAT, GLOVE AND HAT
Melvin D. LeCocq, Jr., 296 S. Jefferson Ave., Bradley, Ill. 60915
Filed Mar. 12, 1984, Ser. No. 588,674
Term of patent 14 years
U.S. Cl. D6—316



285,148
HANGER FOR TOWELS OR SIMILAR ARTICLES
Melvin E. Kester, Concord, N.C., assignor to Cannon Mills Company, Kannapolis, N.C.
Filed Sep. 4, 1984, Ser. No. 647,105
Term of patent 14 years
U.S. Cl. D6—317



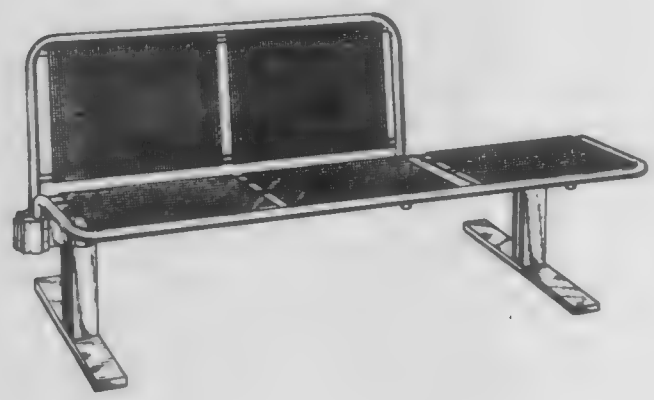
285,149
STEP STOOL
William S. Matity, Box 441, Leader, Saskatchewan, Canada S0N 1H0
Filed Dec. 5, 1983, Ser. No. 557,919
Claims priority, application Canada, Jun. 14, 1983, 1406831
Term of patent 14 years
U.S. Cl. D6—350



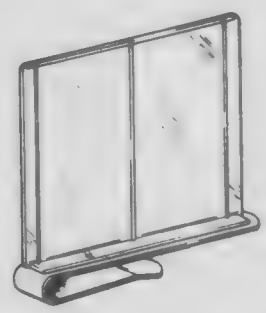
285,150
CHAIR
Toshiro Ikegami, E-2,17-go, 1-ban, 7-chome, Minoo, Minoo-shi, Osaka-fu, Japan
Filed Feb. 9, 1984, Ser. No. 578,707
Term of patent 14 years
U.S. Cl. D6—364



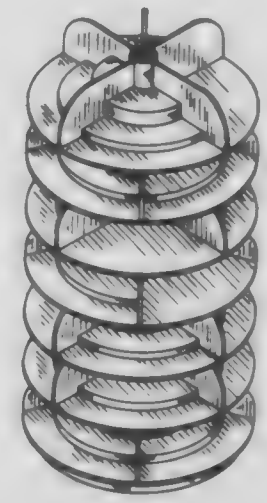
285,151
SEATING UNIT
Pierluigi Molinari, Milan, Italy, assignor to Ambiente International S.R.L., Bari, Italy
Filed Nov. 3, 1983, Ser. No. 548,535
Claims priority, application Italy, May 5, 1983, 21747 B/83
Term of patent 14 years
U.S. Cl. D6—381



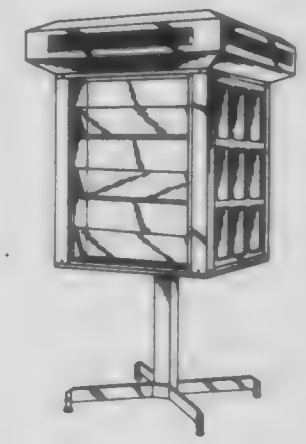
285,152
SHELF DIVIDER
Brenner E. Smith, Greenfield, Mass., assignor to J. H. Smith Co., Inc., Greenfield, Mass.
Filed Mar. 29, 1984, Ser. No. 594,925
Term of patent 14 years
U.S. Cl. D6—449



285,153
ROTATING STORAGE RACK
George W. Davis, 7816 Maple Dr., Urbandale, Iowa 52405
Filed Feb. 22, 1984, Ser. No. 582,296
Term of patent 14 years
U.S. Cl. D6—460



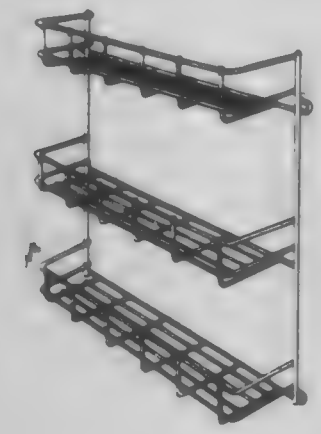
285,154
LITERATURE AND INFORMATION DISPLAY RACK
Eleanor V. Kingsley, 439 Willamette La., Claremont, Calif. 91711
Filed Jun. 29, 1983, Ser. No. 508,950
Term of patent 14 years
U.S. Cl. D6—476



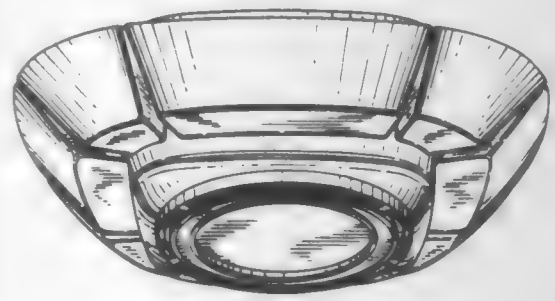
285,155
PORTABLE SUN SHIELD
Travis Allen, 16 Rhode Island Ave., N.E., Washington, D.C. 20002
Filed Nov. 10, 1983, Ser. No. 550,685
Term of patent 14 years
U.S. Cl. D6—500

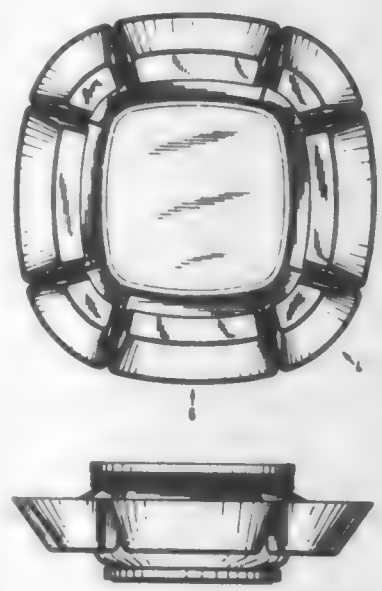


285,156
WALL MOUNTED RACK
John P. Chap, Lemont, Ill., assignor to Selfix, Inc., Chicago, Ill.
Filed May 22, 1984, Ser. No. 611,593
Term of patent 14 years
U.S. Cl. D6—566

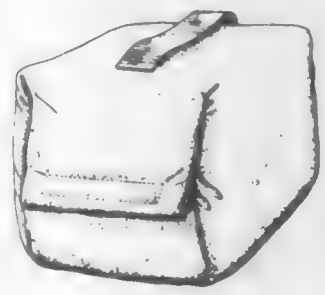


285,157
FOOD SERVER OR SIMILAR ARTICLE
Yiu-Kwong Wan, Kowloon, Hong Kong, assignor to Chit Hing Metal & Plastic Mfg. Fty., Kowloon, Hong Kong
Filed Jul. 18, 1983, Ser. No. 514,482
Claims priority, application United Kingdom, Feb. 18, 1983, 1011509
Term of patent 14 years
U.S. Cl. D7—2

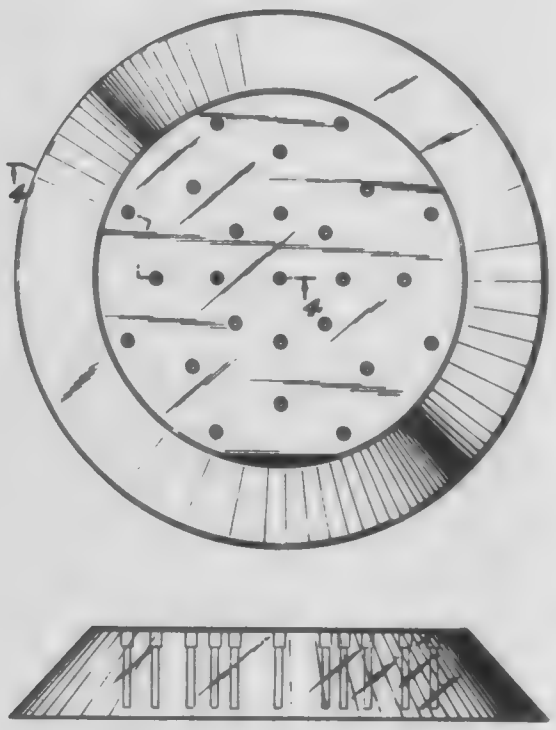




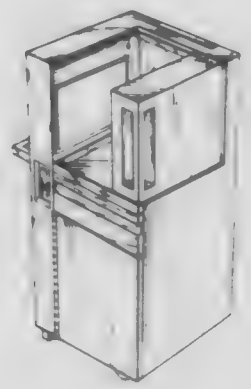
285,158
INSULATED SIX-PACK BEVERAGE CARRIER AND LUNCH BAG
Hanon Combs, Naples, and Linda M. Tilson, Sarasota, both of Fla., assignors to Kool Pak, Inc., Naples, Fla.
Continuation-in-part of Ser. No. 455,337, Jan. 3, 1983, abandoned. This application Feb. 21, 1984, Ser. No. 582,031
Term of patent 14 years
U.S. Cl. D7—77



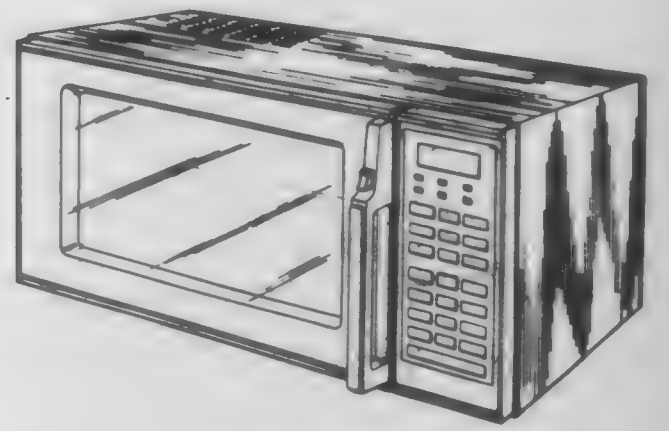
285,159
COMBINED PROTECTIVE CAKE COVER AND CANDLE HOLDER
Ethel Wexler, 95 Key Pl., Tappan, N.Y. 10983
Filed Oct. 21, 1983, Ser. No. 544,202
Term of patent 14 years
U.S. Cl. D7—83



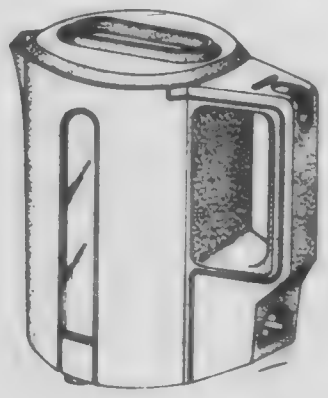
285,161
BARBECUE GRILL
Gordon Cairns, 23639 Country Villa Rd., Ramona, Calif. 92065
Filed Jul. 11, 1984, Ser. No. 629,957
Term of patent 14 years
U.S. Cl. D7—334



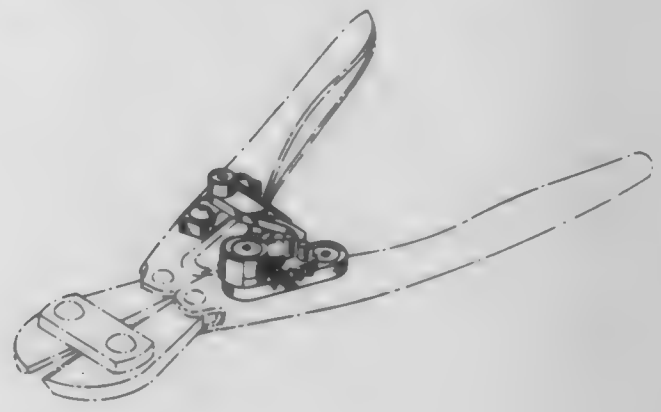
285,162
MICROWAVE OVEN
Jong S. Choi, Seoul, Rep. of Korea, assignor to Gold Star Co., Ltd., Seoul, Rep. of Korea
Filed Mar. 18, 1983, Ser. No. 476,462
Claims priority, application Rep. of Korea, Oct. 7, 1982, 8820-82
Term of patent 14 years
U.S. Cl. D7—351



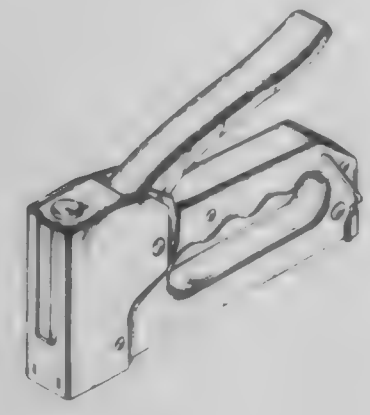
285,160
KETTLE
Robert Osit, Exton, Pa., assignor to Proctor-Silex, Inc., Chillicothe, Ohio
Filed Apr. 29, 1983, Ser. No. 489,787
Term of patent 14 years
U.S. Cl. D7—317



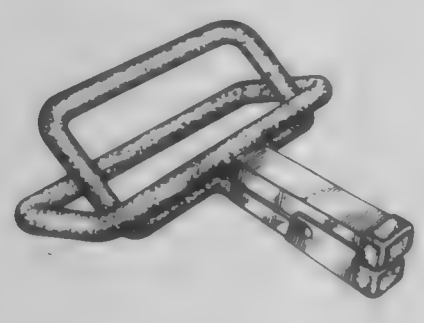
285,163
WIRE BENDING ACCESSORY FOR CUTTER
Frank P. Nesci, West Covina, Calif., assignor to E.T.M. Corporation, Monrovia, Calif.
Filed Sep. 19, 1983, Ser. No. 533,109
Term of patent 14 years
U.S. Cl. D8—32



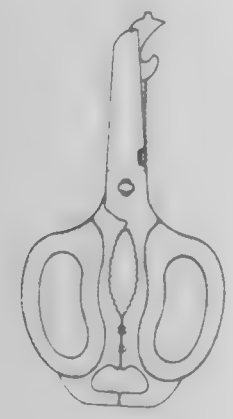
285,164
STAPLE GUN OR SIMILAR ARTICLE
Richard Jacoff, Mineola, N.Y., assignor to Great Neck Saw Manufacturers, Inc., Mineola, N.Y.
Filed Jan. 9, 1984, Ser. No. 569,228
Term of patent 14 years
U.S. Cl. D8—49



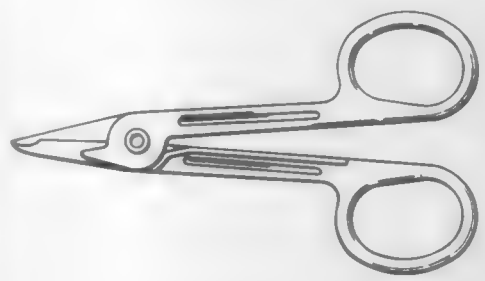
285,165
NIPPING TOOL FOR PLATE-LIKE MEMBERS OR THE LIKE
Toshinobu Nakamura, Tokyo, Japan, assignor to Shinagawa Shoko Co., Ltd., Tokyo, Japan
Filed Jul. 29, 1983, Ser. No. 518,654
Claims priority, application Japan, Feb. 3, 1983, 58-4076
Term of patent 14 years
U.S. Cl. D8—52



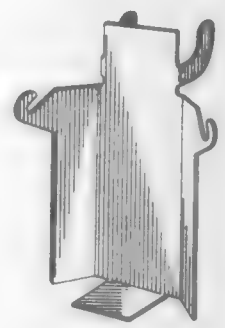
285,166
MULTI-PURPOSE DETACHABLE SCISSORS-TYPE OF TOOL
Wan-Shi Lee, No. 13, Lane 319, Tai Ho Road, Chang Hwa, Taiwan
Filed Jul. 25, 1984, Ser. No. 634,480
Term of patent 14 years
U.S. Cl. D8—57



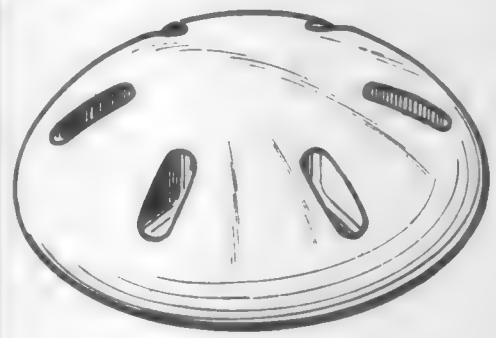
285,167
SCISSORS
Amir Porat, and Michael Porat, both of 4 Hirschenberg Street, Tel-Aviv, Israel
Filed Feb. 21, 1984, Ser. No. 581,537
Claims priority, application Israel, Aug. 22, 1983, 9605
Term of patent 14 years
U.S. Cl. D8—57



285,168
OBJECT HOLDER FOR PEGBOARD MOUNTING
Fred C. Van Arsdell, 680 Miami St., Bldg. 1-B, Akron, Ohio 44311
Filed Mar. 26, 1984, Ser. No. 593,086
Term of patent 14 years
U.S. Cl. D8—373



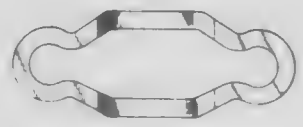
285,169
SCREWABLE CAP FOR A NON-PENETRATING FASTENER ASSEMBLY
Stevan A. Resan, Carlisle, Pa., assignor to Carlisle Corporation, Cincinnati, Ohio
Filed Jul. 30, 1984, Ser. No. 635,544
Term of patent 14 years
U.S. Cl. D8—382



285,170
CLAMP FOR AN INTERNAL COMBUSTION ENGINE FUEL INJECTOR

Michael Knight, and Ronald G. Moore, both of Peterborough, England, assignors to Massey-Ferguson-Perkins Limited, London, England

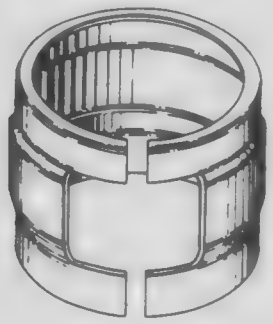
Filed May 27, 1983, Ser. No. 499,098
Claims priority, application United Kingdom, Nov. 27, 1982, 8231009974
Term of patent 14 years
U.S. Cl. D8—394



285,171
CLAMP SLEEVE

Leslie W. Russell, La Mesa, Calif., assignor to Western Filament, Inc., Glendale, Calif.

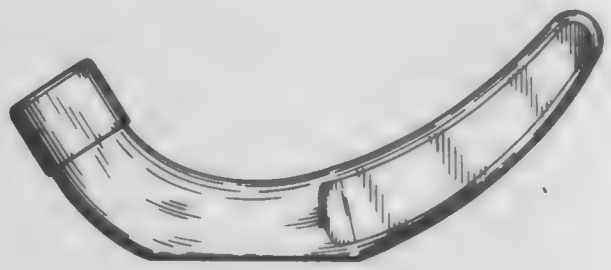
Filed Jul. 26, 1984, Ser. No. 634,736
Term of patent 14 years
U.S. Cl. D8—396



285,172
COMBINED CONTAINER AND APPLICATOR FOR SUN LOTION OR THE LIKE

Richard Scuderi, 21 S. Benson, Margate, N.J. 08402

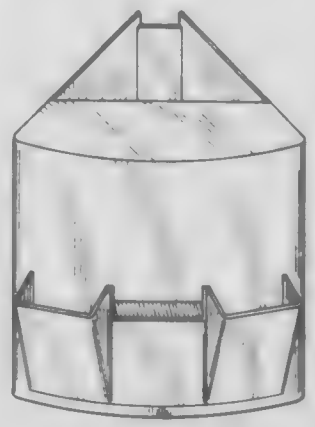
Filed Jan. 9, 1984, Ser. No. 569,287
Term of patent 14 years
U.S. Cl. D9—338



285,173
MODULAR CONTAINER FOR DISPOSING CAPS AND VIALS

George W. Davis, 7816 Maple Dr., Urbandale, Iowa 50322

Filed Feb. 13, 1984, Ser. No. 579,417
Term of patent 14 years
U.S. Cl. D9—341



285,174
COMBINED JAR AND CAP

Alfred Teschner, Seevetal, Fed. Rep. of Germany, assignor to Deutsche Extrakt Kaffee GmbH, Hamburg, Fed. Rep. of Germany

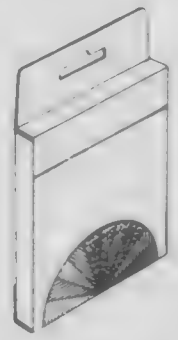
Filed Apr. 10, 1984, Ser. No. 598,689
Claims priority, application Fed. Rep. of Germany, Oct. 12, 1983, 66 MR 11724
Term of patent 14 years
U.S. Cl. D9—370



285,175
BOX FOR FILM PACKAGING

Edwin Ewry, Mill Valley, Calif., assignor to Konishiroku Photo Ind. Co., Ltd., Tokyo, Japan

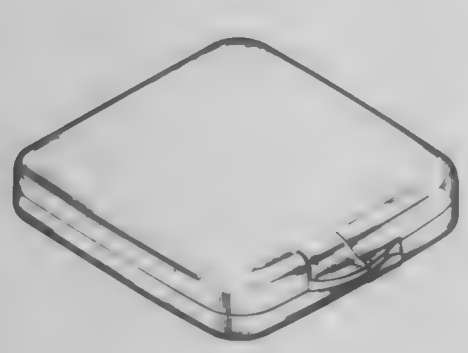
Filed Jan. 16, 1984, Ser. No. 570,901
Term of patent 14 years
U.S. Cl. D9—415



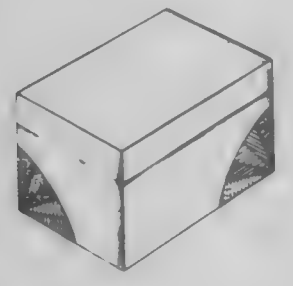
285,176
BLISTER PACKAGE FOR A REEL
George E. Kodousek, Milwaukee, and Lawrence S. Greco, Mequon, both of Wis., assignors to North American Philips Corporation, New York, N.Y.
Filed Nov. 3, 1983, Ser. No. 548,395
Term of patent 14 years
U.S. Cl. D9—419



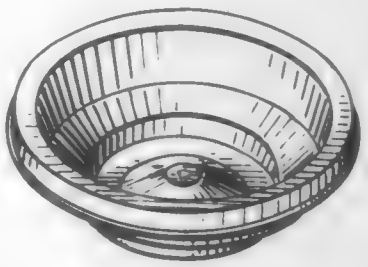
285,177
PACKAGING CONTAINER
Elmer Goetz, Philadelphia, Pa., assignor to Scott Paper Company, Philadelphia, Pa.
Filed Jun. 6, 1984, Ser. No. 617,639
Term of patent 14 years
U.S. Cl. D9—420



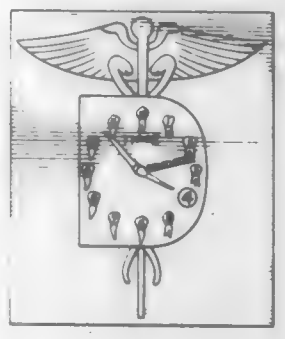
285,178
BOX FOR FILM PACKAGING
Edwin Ewry, Mill Valley, Calif., assignor to Konishiroku Photo Ind. Co., Ltd., Tokyo, Japan
Filed Jan. 16, 1984, Ser. No. 570,902
Term of patent 14 years
U.S. Cl. D9—432



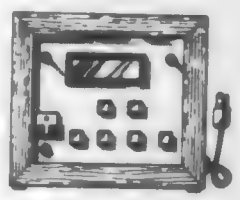
285,179
SEALING COVER FOR A FLY TRAP
Lloyd E. Browne, Easton, Pa., assignor to Richardson-Vicks, Inc., Westport, Conn.
Filed Jan. 23, 1984, Ser. No. 572,905
Term of patent 14 years
U.S. Cl. D22—122



285,180
CLOCK
Lucille Faciane, P.O. Box 3703, Inglewood, Calif. 90304
Filed May 29, 1984, Ser. No. 615,152
Term of patent 14 years
U.S. Cl. D10—6



285,181
IMAGE TIMER
Harlan Jacobson, Kasson, Minn., assignor to Image Electronics, Inc., Kasson, Minn.
Filed May 10, 1984, Ser. No. 608,767
Term of patent 14 years
U.S. Cl. D10—40





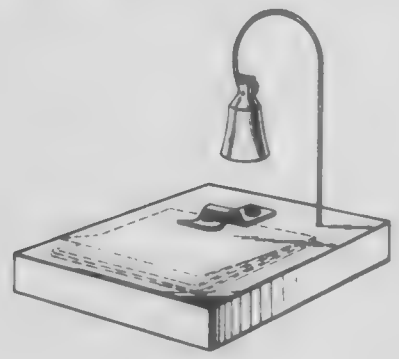
285,182
CASE FOR ELECTRONIC CLINICAL THERMOMETER
Masaru Wada; Shinzo Honda, both of Tokyo, and Tetsuya Arioka, Yokohama, all of Japan, assignors to Terumo Corporation, Tokyo, Japan
Filed Feb. 21, 1984, Ser. No. 581,986
Claims priority, application Japan, Dec. 26, 1983, 58-55672
Term of patent 14 years
U.S. Cl. D10—60



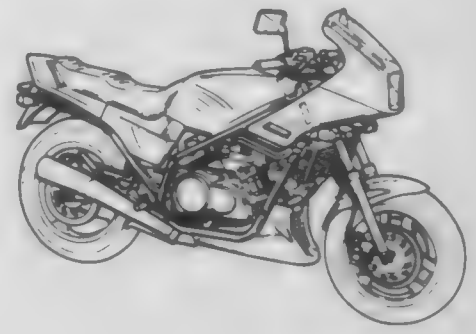
285,183
AWARD MEDAL
William V. Lester, Jr., 5003 Kanawha Ave., South Charleston, W. Va. 25309
Filed Sep. 19, 1983, Ser. No. 533,572
Term of patent 14 years
U.S. Cl. D11—99



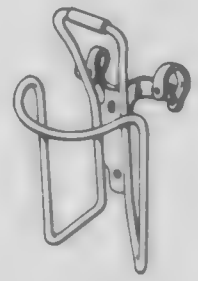
285,184
NOVELTY STATUETTE
William F. Caldwell, 969 Clark Ave., Apt. H, Mountain View, Calif. 94040
Filed Jul. 11, 1984, Ser. No. 629,773
Term of patent 14 years
U.S. Cl. D11—157



285,185
MOTORCYCLE
Minoru Morioka, and Hisato Saitoh, both of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Jan. 31, 1983, Ser. No. 462,225
Claims priority, application Japan, Jan. 30, 1982, 57-34990
Term of patent 14 years
U.S. Cl. D12—110



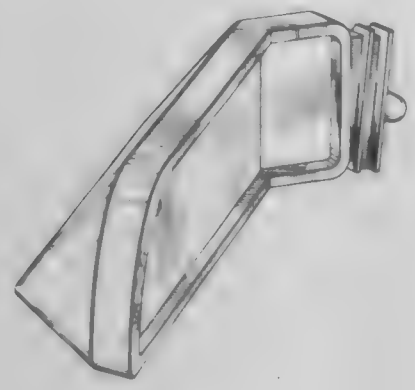
285,186
COMBINED WATER BOTTLE CAGE, MOUNTING BRACKET AND CLAMPING STRAPS FOR HANDLEBAR MOUNTING
Michael W. Sinyard, 1344 Iris Ct., San Jose, Calif. 95125
Filed Jul. 18, 1983, Ser. No. 514,837
Term of patent 14 years
U.S. Cl. D12—114



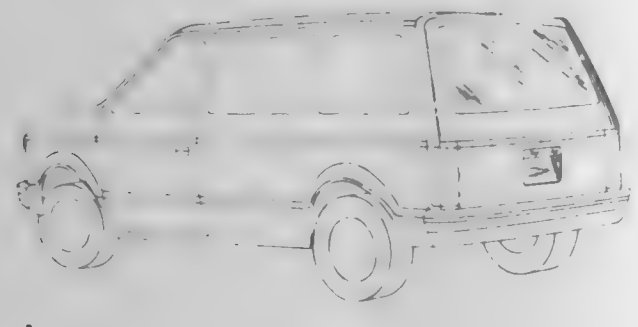
285,187
POWERED WHEELCHAIR
Indulis Piziks, Saginaw; Melvin E. Shepard, Bridgeport; Ronald D. Elson, Merrill, and Wilbur W. Wentworth, II, Bridgeport, all of Mich., assignors to Amigo Sales, Inc., Bridgeport, Mich.
Filed Aug. 29, 1983, Ser. No. 527,399
Term of patent 14 years
U.S. Cl. D12—131



285,188
DUAL ANGLE REARVIEW MIRROR
Joseph Recht, 6250 Pembroke, San Diego, Calif. 92115
Filed Jun. 21, 1984, Ser. No. 623,237
Term of patent 14 years
U.S. Cl. D12—187



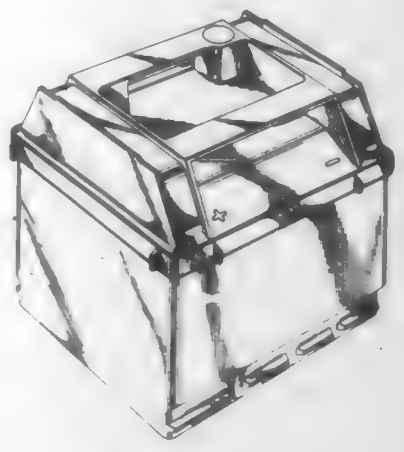
285,189
AUTOMOBILE REAR DOOR PANEL EXTERIOR SURFACE
William A. Dayton, Northville; John E. Crain, Birmingham, and Robert N. Hubbach, Clarkston, all of Mich., assignors to Chrysler Corporation, Highland Park, Mich.
Division of Ser. No. 562,809, Dec. 19, 1983. This application Aug. 27, 1984, Ser. No. 644,606
Term of patent 14 years
U.S. Cl. D12—196



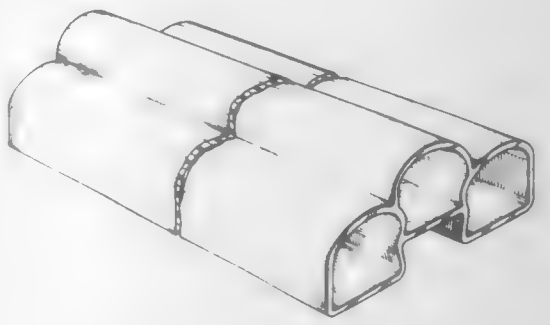
285,190
BOAT HULL
Howard W. Pipkorn, 1622 Lake Johanna Blvd., Arden Hills, Minn. 55112
Filed Nov. 28, 1984, Ser. No. 675,534
Term of patent 14 years
U.S. Cl. D12—314



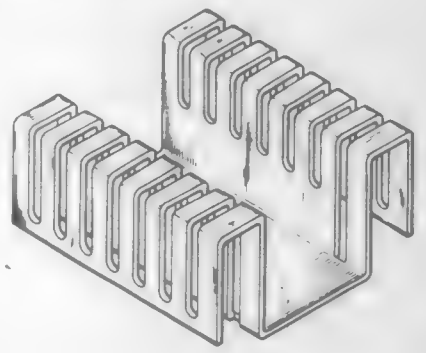
285,191
ELECTRIC STORAGE BATTERY
John K. Humphreys, Whitefield, and Joseph Valentine, Egerton, both of England, assignors to Chloride Group Public Limited Company, London, England
Filed Nov. 18, 1983, Ser. No. 553,055
Claims priority, application United Kingdom, Oct. 5, 1983, 1015510
Term of patent 14 years
U.S. Cl. D13—8



285,192
UNDERGROUND CONDUIT
Charles E. Hubbard, Harper Woods, and Donald E. Berkemeier, Bloomfield Hills, both of Mich., assignors to LOF Plastics Inc., Troy, Mich.
Filed Dec. 5, 1983, Ser. No. 558,102
Term of patent 14 years
U.S. Cl. D13—13



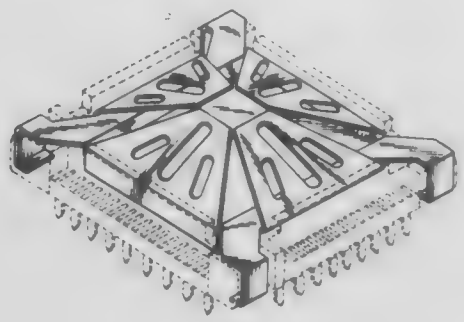
285,193
HEAT SINK OR SIMILAR ARTICLE
Marvin F. Moore, Carrollton, Tex., assignor to Thermalloy Incorporated, Dallas, Tex.
Filed Apr. 2, 1984, Ser. No. 595,910
Term of patent 14 years
U.S. Cl. D13—23



285,194
HEAT SINK FOR INTEGRATED-CIRCUIT CHIP CARRIER

Alfred F. McCarthy, Belmount, N.H., assignor to Aavid Engineering, Inc., Laconia, N.H.

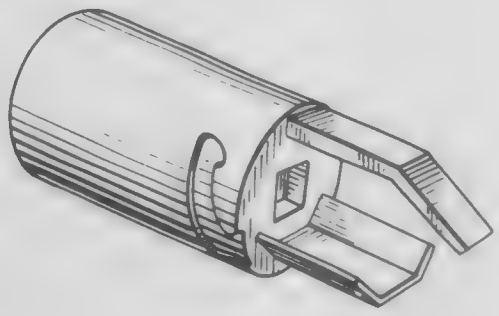
Filed Oct. 24, 1984, Ser. No. 664,258
Term of patent 14 years
U.S. Cl. D13—23



285,195
CIGARETTE LIGHTER RECEPTACLE BODY

Kenneth L. Rubel, 2141 N. Lakewood Ave., #1NF, Chicago, Ill. 60614

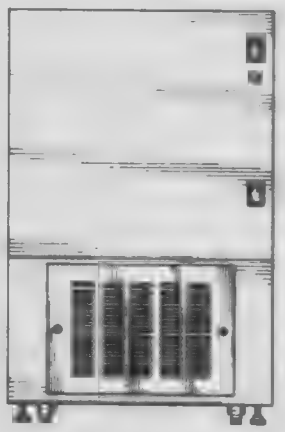
Filed Dec. 12, 1983, Ser. No. 560,432
Term of patent 14 years
U.S. Cl. D13—24



285,196
AIR CONDITIONED CABINET FOR ELECTRICAL EQUIPMENT

Donald B. Combs, and James S. Snider, both of North Wilkesboro, N.C., assignors to DCS Electronics, Inc., North Wilkesboro, N.C.

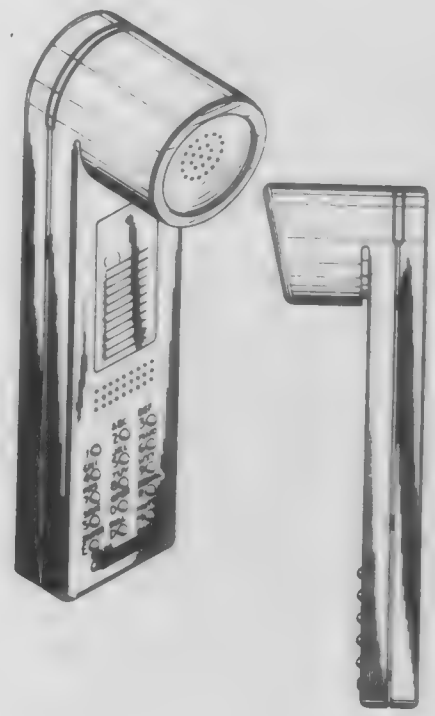
Filed Dec. 16, 1983, Ser. No. 562,249
Term of patent 14 years
U.S. Cl. D13—40



285,197
HANDSET TELEPHONE UNIT

Peter Bressler, 114 Naudain St., Philadelphia, Pa. 19147; Peter Byar, 15 Mandolin La., Willingboro, N.J. 08046, and Edward A. Spector, 33 Shell Stream Blvd., New Port Richey, Fla. 33552

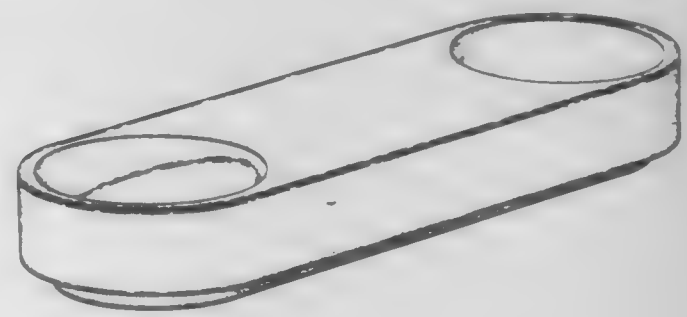
Filed Sep. 23, 1983, Ser. No. 535,242
Term of patent 14 years
U.S. Cl. D14—53



285,198
TELEPHONE BASE

David C. Danielson, New Cannan, Conn.; Donald M. Genaro, Haworth, N.J., and John N. McGarvey, Drexel Hill, Pa., assignors to AT&T Technologies, Inc., Berkeley Heights, N.J.

Filed Apr. 9, 1984, Ser. No. 598,387
Term of patent 14 years
U.S. Cl. D14—60





285,199

TELEPHONE HANDSET

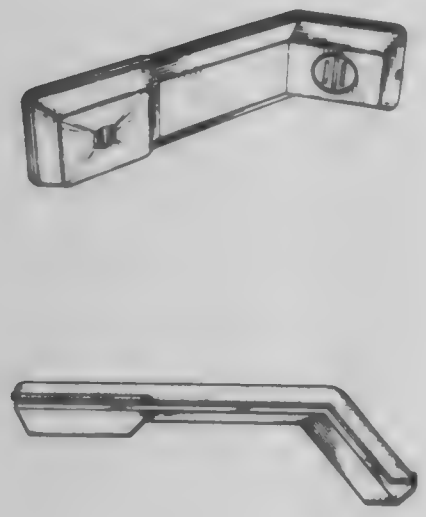
Leslie B. Hocking, Harlow, and Robert D. Cross, London, both of England, assignors to Standard Telephone & Cables, London, England

Filed Mar. 30, 1984, Ser. No. 595,498

Claims priority, application United Kingdom, Oct. 1, 1983, 1015458

Term of patent 14 years

U.S. Cl. D14—63



285,200

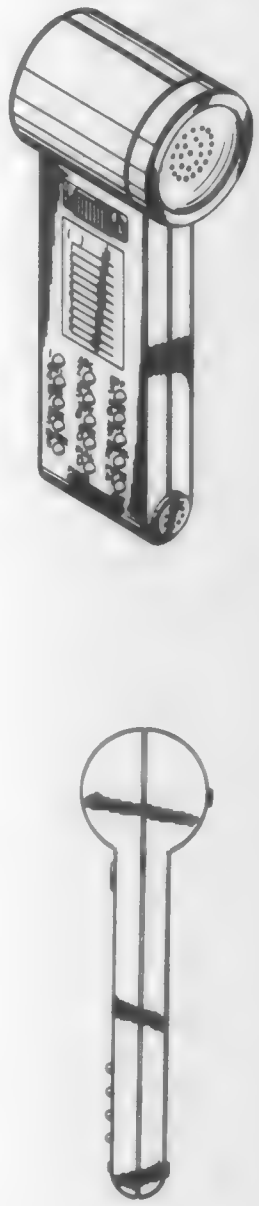
HANDSET TELEPHONE UNIT

Peter Bressler, 114 Naudain St., Philadelphia, Pa. 19147; Peter Byrr, 15 Mandolin La., Willingboro, N.J. 08046, and Edward A. Spector, 33 Shell Stream Blvd., New Port Richey, Fla. 33552

Filed Sep. 23, 1983, Ser. No. 535,228

Term of patent 14 years

U.S. Cl. D14—53



285,201

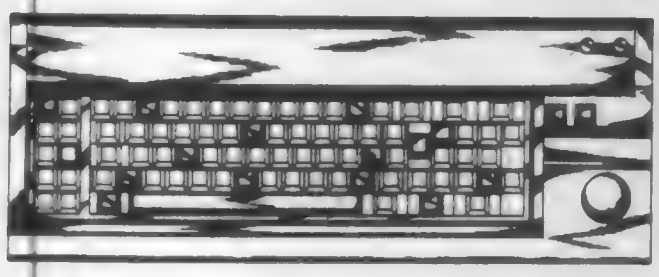
KEYBOARD INCLUDING TRACKBALL

Syng N. Kim, Hoffman Estates, Ill., assignor to Wico Corporation, Niles, Ill.

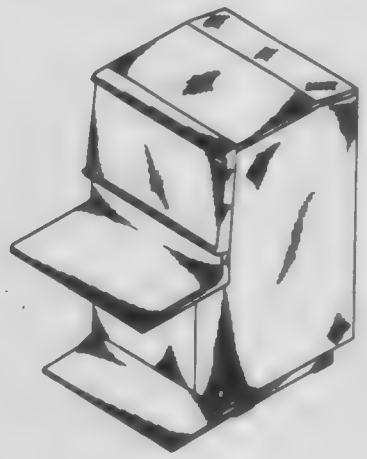
Filed Mar. 5, 1984, Ser. No. 586,553

Term of patent 14 years

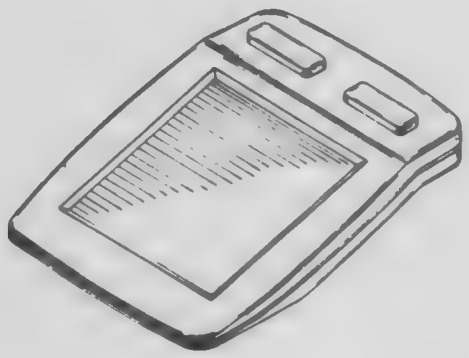
U.S. Cl. D14—100



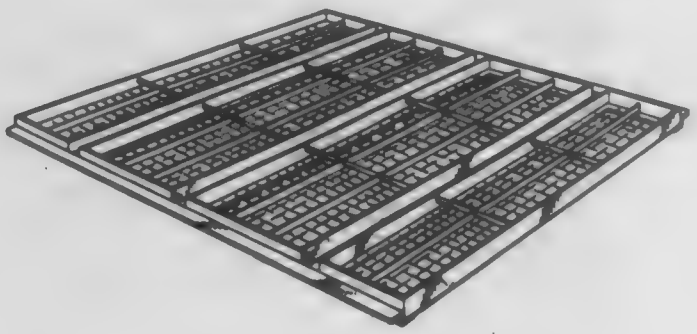
285,202
AUXILIARY EQUIPMENT CONSOLE FOR DATA PROCESSING CONSOLE GROUPING
Raymond Golden, Willowick, and George S. Whaley, Eastlake, both of Ohio, assignors to The Babcock & Wilcox Company, New Orleans, La.
Filed Sep. 19, 1983, Ser. No. 533,086
Term of patent 14 years
U.S. Cl. D14—103



285,203
TOUCH TABLE CONTROLLER FOR COMPUTERS
James C. Milroy, Stanford; William R. Burnett, and Thomas A. Howell, both of Palo Alto, all of Calif., assignors to Koala Technologies Corporation, San Jose, Calif.
Filed Jan. 10, 1984, Ser. No. 569,635
Term of patent 14 years
U.S. Cl. D14—114



285,204
RACK TO ASSIST IN THE CLEANING OF SEED SORTING SCREENS
Robert M. Glancy, Scio, Oreg., assignor to Pacific Sheet & Wire, Salem, Oreg.
Filed Aug. 27, 1984, Ser. No. 644,393
Term of patent 14 years
U.S. Cl. D15—28



285,205
AGRICULTURAL IMPLEMENT
William M. Johnson, Winchelsea, Australia, assignor to Ralph McKay Limited, Maidstone, Australia
Filed Dec. 27, 1984, Ser. No. 686,697
Claims priority, application Australia, Jun. 29, 1984, 8005/84
Term of patent 14 years
U.S. Cl. D15—29







285,206

AGRICULTURAL IMPLEMENT

William M. Johnson, Winchlesea, Australia, assignor to Ralph McKay Limited, Maidstone, Australia

Filed Dec. 27, 1984, Ser. No. 686,699
Claims priority, application Australia, Jun. 29, 1984, 8006/84
Term of patent 14 years
U.S. Cl. D15—29





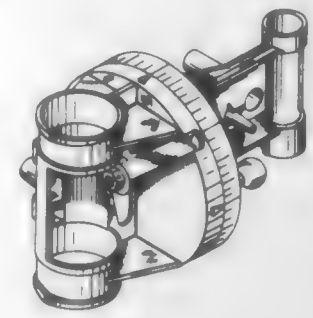


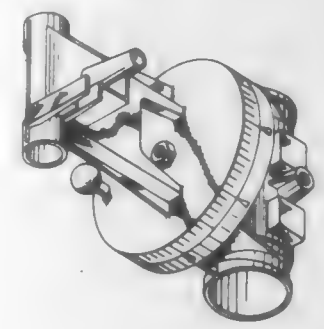
285,207

DRILL PRESS PIVOT MOUNT

David S. Morris, Columbia; Donald L. Clark, Jefferson City, both of Mo., and William C. Waltz, II, Dayton, Ohio, assignors to Aspen Manufacturing Co., Dayton, Ohio

Filed Mar. 28, 1983, Ser. No. 479,531
Term of patent 14 years
U.S. Cl. D15—132



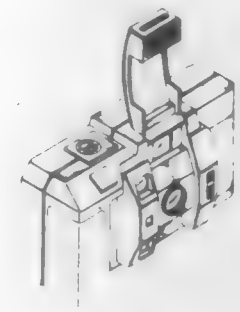


285,208

35 MM CAMERA

Yasuhiko Nakayama, Suwa, Japan, assignor to Chinon Kabushiki Kaisha, Nagano, Japan

Filed Aug. 6, 1984, Ser. No. 637,957
Claims priority, application Japan, Feb. 13, 1984, 59-5011
Term of patent 14 years
U.S. Cl. D16—6

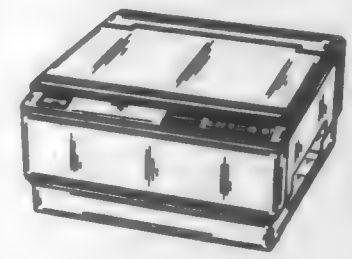


285,209

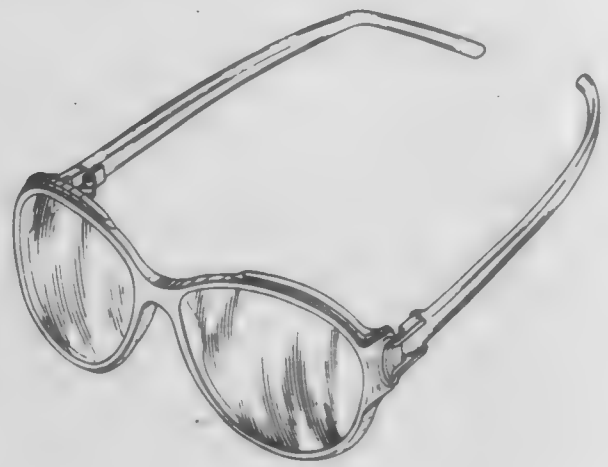
ELECTRONIC COPYING MACHINE

Mikio Kusako, and Hiroshi Nishibori, both of Osaka, Japan, assignors to Sharp Corporation, Osaka, Japan

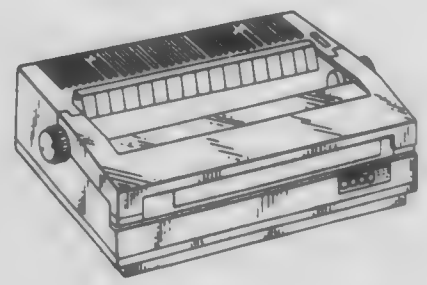
Filed May 14, 1984, Ser. No. 609,730
Claims priority, application Japan, Nov. 14, 1983, 58-49561
Term of patent 14 years
U.S. Cl. D16—31



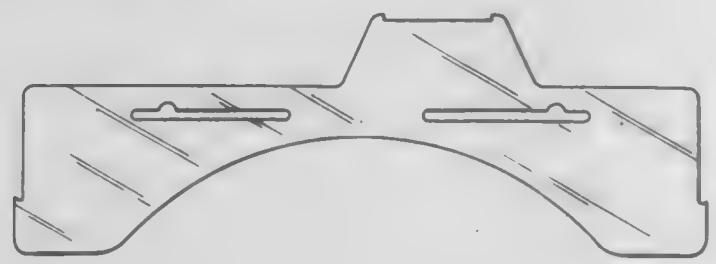
285,210
PAIR OF SPECTACLES
Vitalino Marchi, deceased, late of Concord, Mass., and Daniel Rocha, Lowell, Mass. (by Rena A. Marchi, administrator), assignors to Foster Grant Corporation, Leominster, Mass.
Filed May 18, 1984, Ser. No. 611,064
Term of patent 14 years
U.S. Cl. D16—102



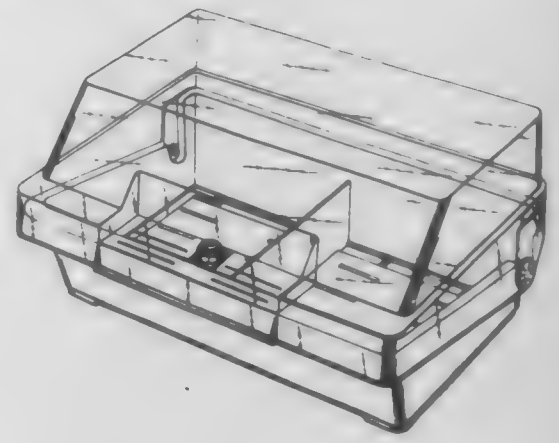
285,211
PRINTER FOR ELECTRONIC CALCULATOR
Richard Nibley, Tokyo, and Takehiko Kiyohara, Zama, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Nov. 16, 1984, Ser. No. 671,979
Claims priority, application Japan, May 18, 1984, 59-20418
Term of patent 14 years
U.S. Cl. D18—12



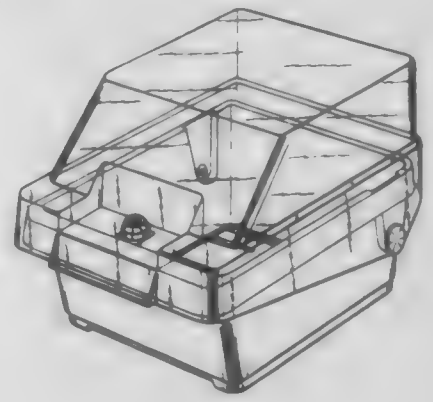
285,212
TAB FOR LASER DISK CASSETTES
Hugh M. Lee, 1417 Old Piedmont Rd., San Jose, Calif. 95132
Filed Jan. 31, 1984, Ser. No. 575,509
Term of patent 14 years
U.S. Cl. D19—32



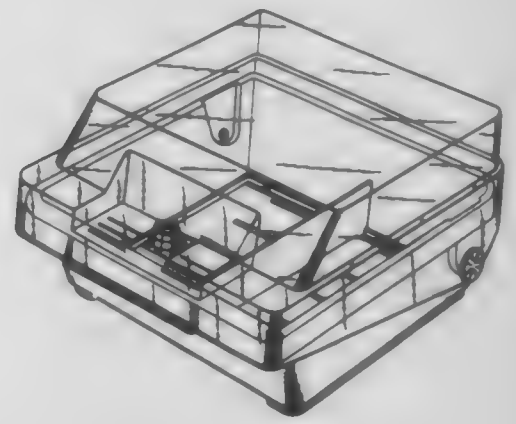
285,213
COMBINED CARD TRAY AND COVER
Carl-Eric Roskvist, Bjarred, Sweden, assignor to ABA Systems AG, Ermatingen, Switzerland
Filed Mar. 6, 1985, Ser. No. 708,686
Claims priority, application Sweden, Sep. 21, 1984, 842510
Term of patent 14 years
U.S. Cl. D19—76



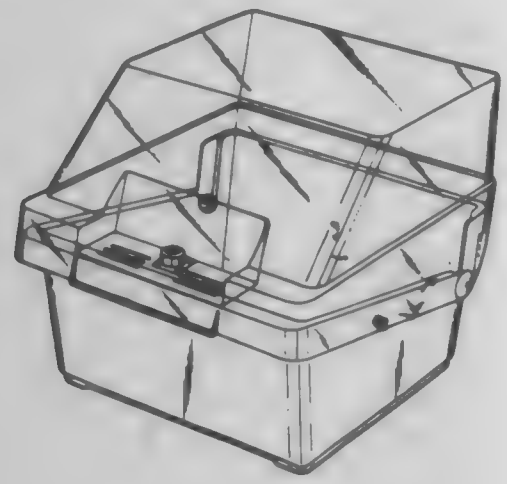
285,214
COMBINED CARD TRAY AND COVER
Carl-Eric Roskvist, Bjärred, Sweden, assignor to ABA System AG, Ermatingen, Switzerland
Filed Jan. 24, 1984, Ser. No. 573,383
Term of patent 14 years
U.S. Cl. D19—76



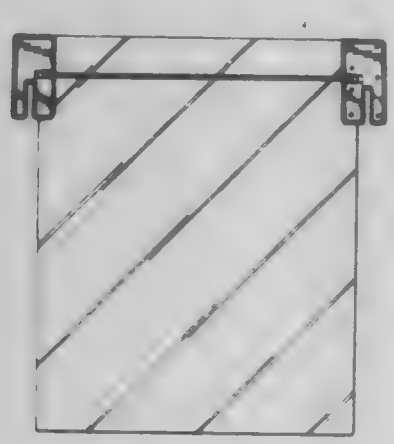
285,215
COMBINED CARD TRAY AND COVER
Carl-Eric Roskvist, Bjärred, Sweden, assignor to ABA System AG, Ermatingen, Switzerland
Filed Mar. 6, 1985, Ser. No. 708,703
Claims priority, application Fed. Rep. of Germany, Sep. 21, 1984, 842509
Term of patent 14 years
U.S. Cl. D19—76



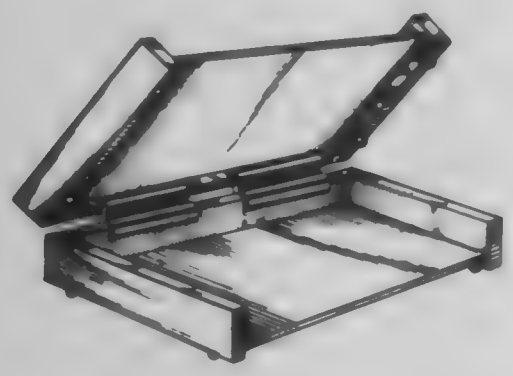
285,216
COMBINED CARD TRAY AND COVER
Carl-Eric Roskvist, Bjärred, Sweden, assignor to ABA System AG, Ermatingen, Switzerland
Filed Mar. 6, 1985, Ser. No. 708,718
Claims priority, application Sweden, Dec. 3, 1984, 843227
Term of patent 14 years
U.S. Cl. D19—76



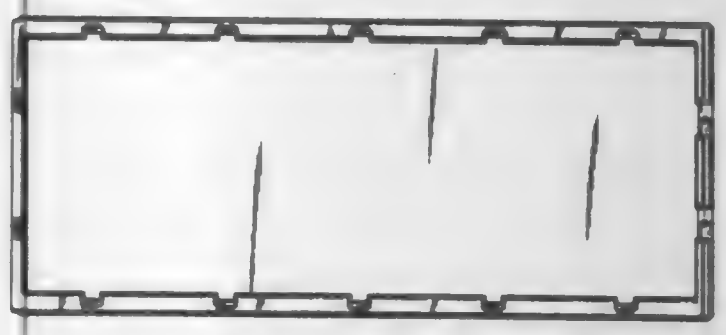
285,217
SUSPENDABLE BAG
Ronald B. Smernoff, Belmont, Calif., assignor to Analytical Products, Inc., Belmont, Calif.
Filed Aug. 1, 1983, Ser. No. 519,376
Term of patent 14 years
U.S. Cl. D19—90



285,218
SET OF STACKED TRAYS
Steve I. Mayo, New York, N.Y., assignor to Artistic Desk Pad & Novelty Co., Inc., Bronx, N.Y.
Filed Sep. 26, 1983, Ser. No. 536,124
Term of patent 14 years
U.S. Cl. D19—92



285,219
DOCUMENT BOX
Eric D. Stein, Cincinnati, Ohio, assignor to Buckhorn Material Handling Group Inc., Milford, Ohio
Filed Sep. 19, 1983, Ser. No. 533,587
Term of patent 14 years
U.S. Cl. D19—92

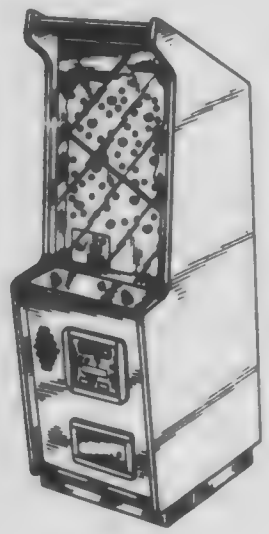




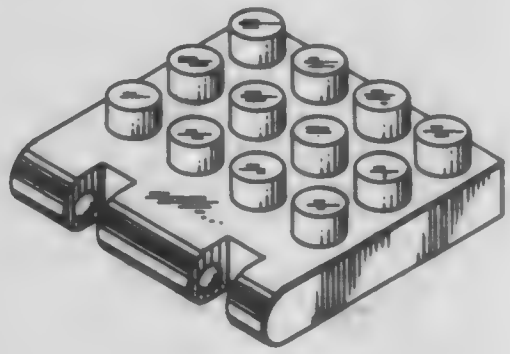
285,220
DISPLAY SIGN SUPPORT HAVING DETACHABLE COMPONENT PARTS AND SLIDEABLE GROUND ANCHORS
John R. Cooper, 5935 S. Newberry, and Richard G. Sawyer, 5930 S.Bonarden, both of Tempe, Ariz. 85283
Filed May 18, 1984, Ser. No. 611,633
Term of patent 14 years
U.S. Cl. D20—42



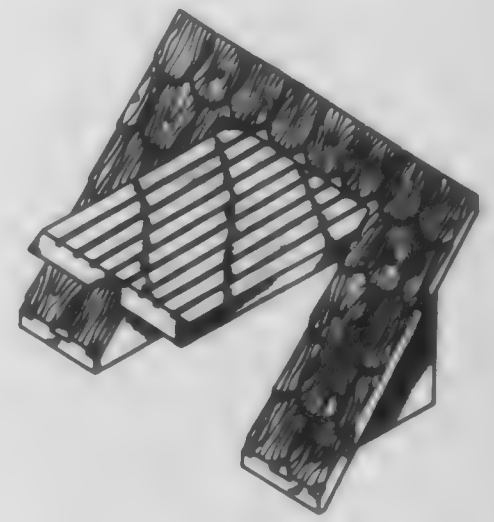
285,221
ELECTROMECHANICAL AMUSEMENT HOUSING
Keith J. Egging, Itasca, Ill., and Chester F. Roberds, Jr., Brookfield, Wis., assignors to Taito America Corporation, Elk Grove Village, Ill.
Filed Feb. 29, 1984, Ser. No. 584,606
Term of patent 14 years
U.S. Cl. D21—13



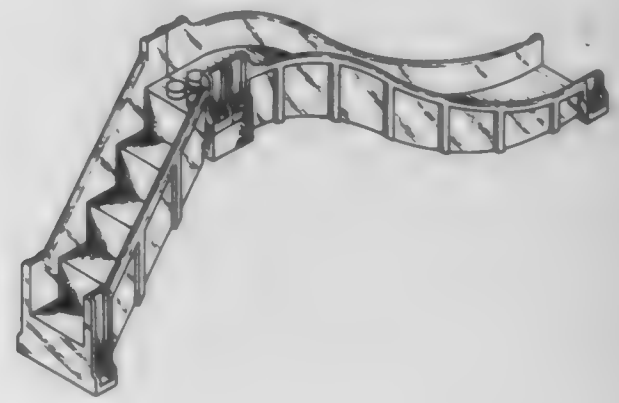
285,222
TOY INTERCONNECTING HINGE BLOCK OR THE LIKE
Kiyohide Nakata, Tokyo, Japan, assignor to Kawada Co., Ltd., Tokyo, Japan
Filed Sep. 10, 1984, Ser. No. 648,530
Claims priority, application Japan, May 30, 1984, 59-21778
Term of patent 14 years
U.S. Cl. D21—108



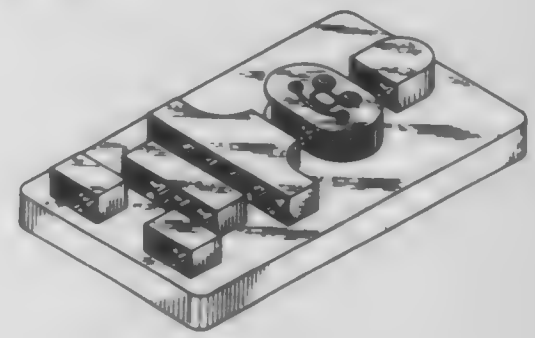
285,223
TOY CONSTRUCTION PIECE SIMULATING ROOF SHINGLES
Sven C. B. Thomsen, Naestved, Denmark, assignor to Interlego A.G., Baar, Switzerland
Filed Nov. 30, 1984, Ser. No. 676,535
Term of patent 14 years
U.S. Cl. D21—108



285,224
TOY CONSTRUCTION PIECE SIMULATING A SLIDE
Gert P. Olsen, Lyngby, Denmark, assignor to Interlego A.G., Baar, Switzerland
Filed Nov. 30, 1984, Ser. No. 676,627
Term of patent 14 years
U.S. Cl. D21—108



285,225
TOY CONTRUCTION PIECE SET
Erik P. Tapdrup, Virum, Denmark, assignor to Interlego A.G., Baar, Switzerland
Filed Nov. 30, 1984, Ser. No. 676,671
Term of patent 14 years
U.S. Cl. D21—108



285,226

CONSTRUCTION TOY

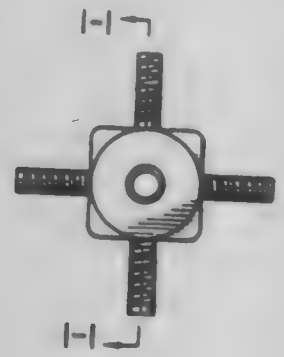
Kenzou Kasai, Higashishimizu, Japan, assignor to Kasai Kabushiki Kaisha, Osaka, Japan

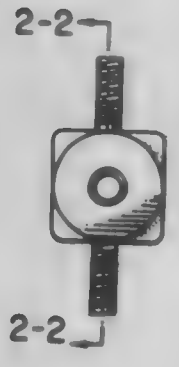
Division of Ser. No. 508,514, Jun. 28, 1983. This application Sep. 30, 1985, Ser. No. 781,926

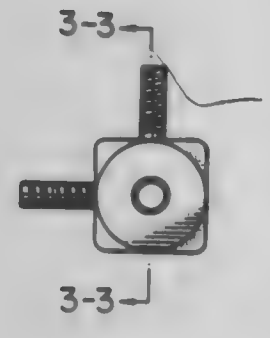
Claims priority, application Japan, Dec. 29, 1982, 57-58161

Term of patent 14 years

U.S. Cl. D21—108







285,227

TOY BEAR

Patrick J. Coyne, Cleveland Heights, Ohio, assignor to Meritus Industries, Inc., Florham Park, N.J.

Filed Jun. 2, 1983, Ser. No. 500,543

Term of patent 14 years

U.S. Cl. D21—159



285,228

TOY FIGURE

Barbara E. Bieser, Canoga Park, Calif., assignor to CPG Products Corp., Minneapolis, Minn.

Filed Feb. 10, 1984, Ser. No. 578,943

Term of patent 14 years

U.S. Cl. D21—177



285,229

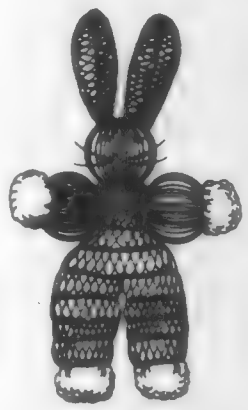
TOY RABBIT FIGURE

Mae J. Lumley, Rte. 1, Box 617, Alva, Fla. 33920

Filed Apr. 21, 1983, Ser. No. 487,246

Term of patent 14 years

U.S. Cl. D21—187



285,230

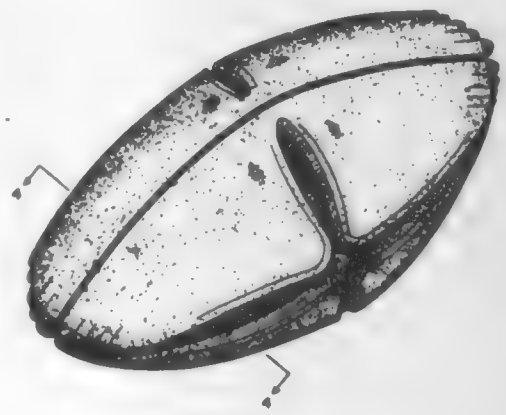
TOSS TOY

F. Lemarr Adams, Rt. 1, Box 79, Somerville, Ala. 35670

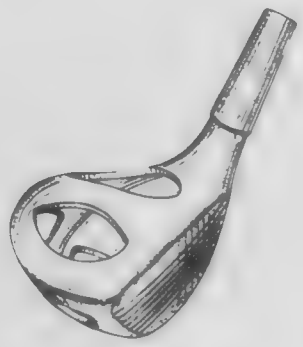
Filed Sep. 1, 1983, Ser. No. 529,841

Term of patent 14 years

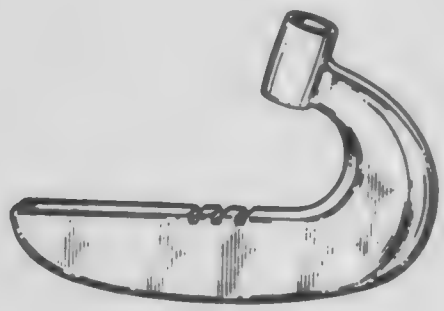
U.S. Cl. D21—204



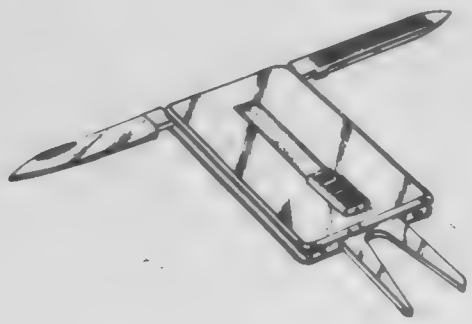
285,231
GOLF CLUB HEAD
Paul Solomon, 288 Glencoe Rd., Glencoe, Ill. 60022
Filed Feb. 22, 1984, Ser. No. 582,283
Term of patent 14 years
U.S. Cl. D21—214



285,232
GOLF PUTTER HEAD
Charles Collins, 21710 Forest Glade, Humble, Tex. 77338
Filed Jun. 27, 1984, Ser. No. 625,093
Term of patent 14 years
U.S. Cl. D21—219



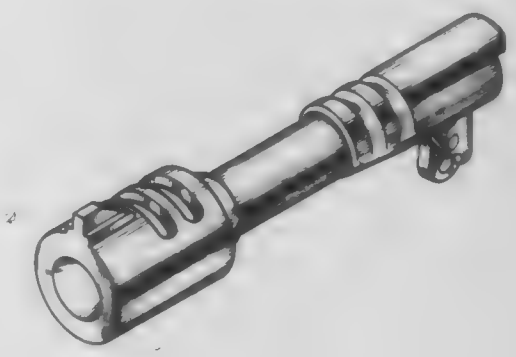
285,233
GOLFER'S TOOL
Stanley Owen, Chattanooga, Tenn., assignor to Consolidated Marketing, Inc., Ooltewah, Tenn.
Filed Mar. 5, 1984, Ser. No. 586,333
Term of patent 14 years
U.S. Cl. D21—234



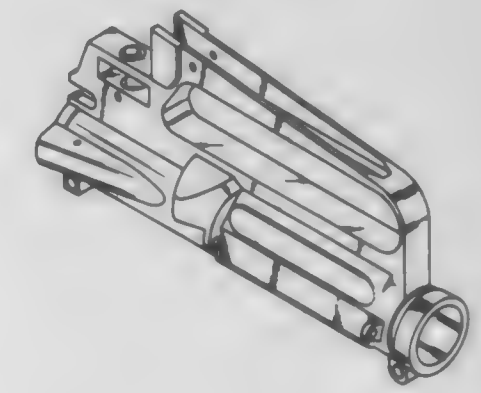
285,234
FIREARM
Thomas F. Swearengen, Burton, S.C., and Walter J. Makaustas, Prospect, Conn., assignors to O. F. Mossberg & Sons, Inc., North Haven, Conn.
Filed Jan. 10, 1984, Ser. No. 569,751
Term of patent 14 years
U.S. Cl. D22—100



285,235
PISTOL BARREL AND RECOIL REDUCER
Vito Cellini, 3115 Old Ranch Rd., San Antonio, Tex. 78217
Filed May 30, 1984, Ser. No. 615,224
Term of patent 14 years
U.S. Cl. D22—108



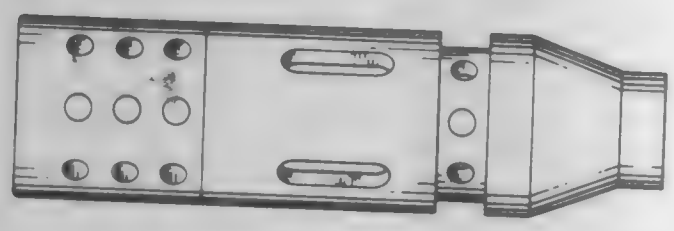
285,236
RIFLE RECEIVER
Loren F. Brunton, 363-34th Ave., East Moline, Ill. 61244
Filed Jun. 20, 1983, Ser. No. 505,621
Term of patent 14 years
U.S. Cl. D22—108



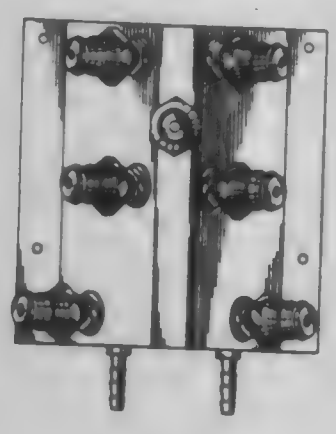
285,237
REVOLVER BARREL
Vito Cellini, 3115 Old Ranch Rd., San Antonio, Tex. 78217
Filed Aug. 20, 1984, Ser. No. 642,644
Term of patent 14 years
U.S. Cl. D22—108



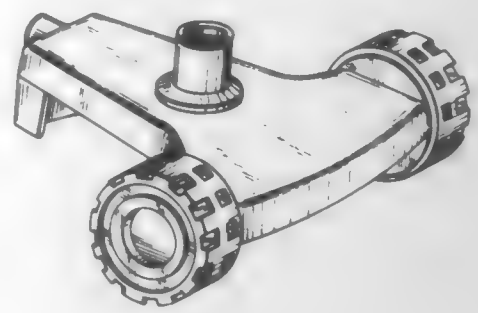
285,238
COMBINED STABILIZER, FLASH HIDER, AND RECOIL REDUCER FOR FIREARMS
Vito Cellini, 3115 Old Ranch Rd., San Antonio, Tex. 78217
Filed Mar. 15, 1984, Ser. No. 589,678
Term of patent 14 years
U.S. Cl. D22—108



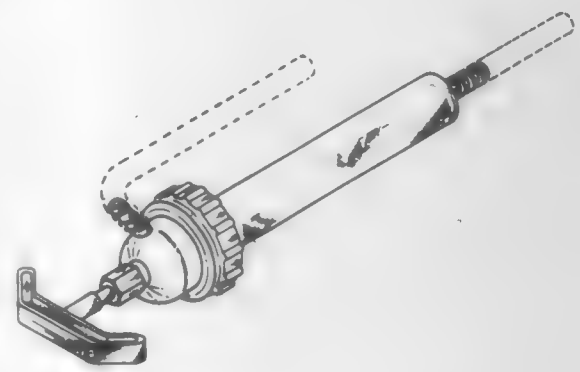
285,239
MANIFOLD DEVICE
Gerald Doak, Box 34, Group 105, R.R. #1C, Winnipeg, Manitoba, Canada R3C 2E4
Filed Jul. 12, 1984, Ser. No. 630,317
Claims priority, application Canada, Jan. 13, 1984, 13-01-84-9
Term of patent 14 years
U.S. Cl. D23—3



285,240
BASE FOR ROTARY SPRINKLER
Ho Chow, Cliffside Park, N.J., and Gordon R. Perry, New York, N.Y., assignors to Jet Stream, Inc., Wilmington, Del.
Filed Dec. 13, 1984, Ser. No. 681,364
Term of patent 14 years
U.S. Cl. D23—7



285,241
DETACHABLE HAND PUMP
Marion E. Reece, Mulvane, Kans., assignor to Thomas - Reece, Inc., Mulvane, Kans.
Filed Jan. 30, 1984, Ser. No. 575,016
Term of patent 14 years
U.S. Cl. D23—15



285,242
TRIGGER SPRAYER
Robert W. Hengesbach, 7886 Mentor Rd., Mentor, Ohio 44060
Continuation-in-part of Ser. No. 461,874, Jan. 28, 1983. This application Apr. 30, 1984, Ser. No. 605,650
Term of patent 14 years
U.S. Cl. D23—17



285,243

ADMIXING APPARATUS FOR FERTILIZER

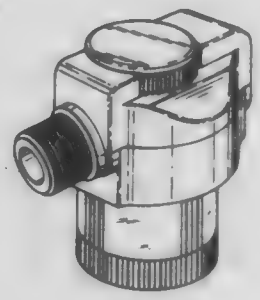
Franco Clivio, Zurich, Switzerland, and Dieter Raffler, Neu-Ulm, Fed. Rep. of Germany, assignors to Gardena Kress & Kastner GmbH, Fed. Rep. of Germany

Filed Jan. 13, 1984, Ser. No. 570,593

Claims priority, application Fed. Rep. of Germany, Jul. 18, 1983, 111 1207

Term of patent 14 years

U.S. Cl. D23—18



285,244

COMBINED SPRAYER ROD AND DUAL ADMIXING APPARATUS FOR FERTILIZER

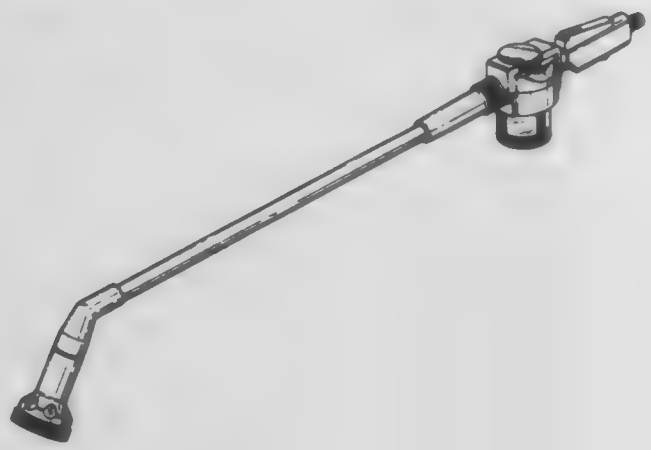
Franco Clivio, Zurich, Switzerland, and Dieter Raffler, Neu-Ulm, Fed. Rep. of Germany, assignors to Gardena Kress & Kastner GmbH, Fed. Rep. of Germany

Filed Jan. 13, 1984, Ser. No. 570,594

Claims priority, application Fed. Rep. of Germany, Jul. 18, 1983, 111 1207

Term of patent 14 years

U.S. Cl. D23—18



285,245

COMBINED ESCUTCHEON AND MIXING VALVE FOR SHOWERS OR THE LIKE

Kenneth A. Ogilvie, Naunton, England, assignor to Walker Crosweller & Company Limited, England

Filed Oct. 17, 1983, Ser. No. 542,542

Claims priority, application United Kingdom, Jul. 2, 1983, 1 013 895

Term of patent 14 years

U.S. Cl. D23—19



285,246

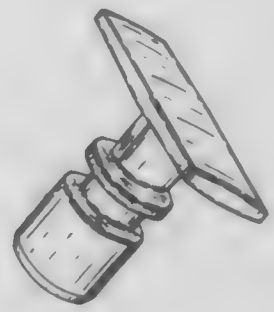
HANDLE FOR A VALVE

Harold D. Fetty, Birmingham, Mich., assignor to Ross Operating Valve Company, Troy, Mich.

Filed Jun. 13, 1983, Ser. No. 503,780

Term of patent 14 years

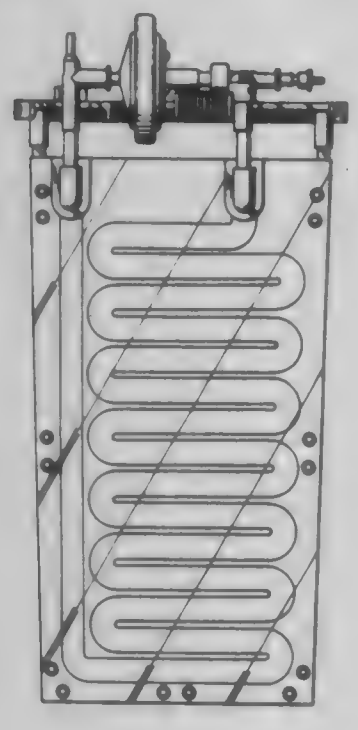
U.S. Cl. D23—28



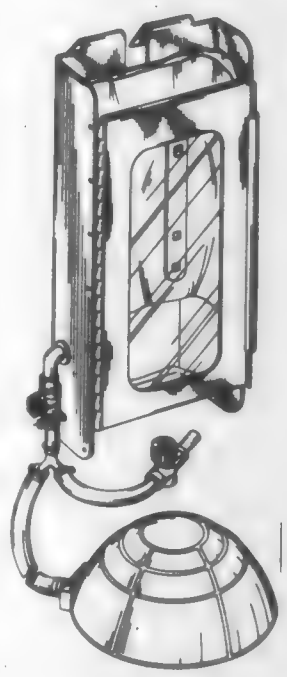
285,247
SEALING RING
Lennart Jörnhagen, Värnamo, Sweden, assignor to Forsheda AB, Forsheda, Sweden
Filed Sep. 20, 1983, Ser. No. 534,059
Claims priority, application Fed. Rep. of Germany, Mar. 21, 1983, URA 332/83
Term of patent 14 years
U.S. Cl. D23—47



285,248
HEAT EXCHANGER HOUSING ASSEMBLY
William G. Bloom, 10429 Reseda Blvd., Northridge, Calif. 91326, and James K. Bullock, 1223 N. Brighton, Burbank, Calif. 91506
Filed Jun. 1, 1983, Ser. No. 499,936
Term of patent 14 years
U.S. Cl. D23—136



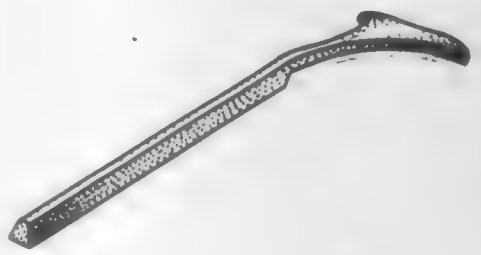
285,249
BLOOD INFUSION BOX
Gordon M. Greenblatt, 5533 N. 3rd St., Phoenix, Ariz. 85012
Filed Sep. 12, 1983, Ser. No. 531,046
Term of patent 14 years
U.S. Cl. D24—21



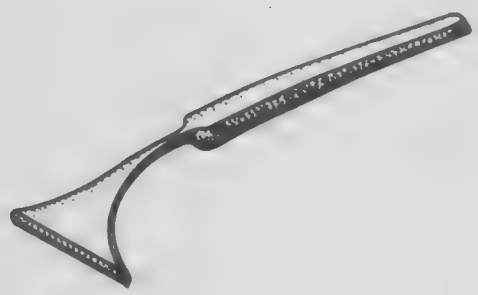
285,250
TONGUE CLEANER
Clifford J. Audette, 74 Highland St., Worcester, Mass. 01609
Filed Nov. 29, 1984, Ser. No. 647,160
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U.S. Cl. D24—23



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TONGUE CLEANER
Clifford J. Audette, 74 Highland St., Worcester, Mass. 01609
Filed Nov. 29, 1984, Ser. No. 647,221
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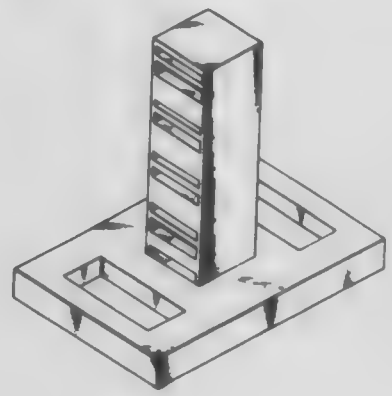
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Filed Nov. 29, 1984, Ser. No. 647,223
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U.S. Cl. D24—23



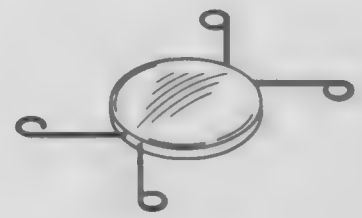
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TONGUE CLEANER
Clifford J. Audette, 74 Highland St., Worcester, Mass. 01609
Filed Nov. 29, 1984, Ser. No. 647,225
Term of patent 14 years
U.S. Cl. D24—23



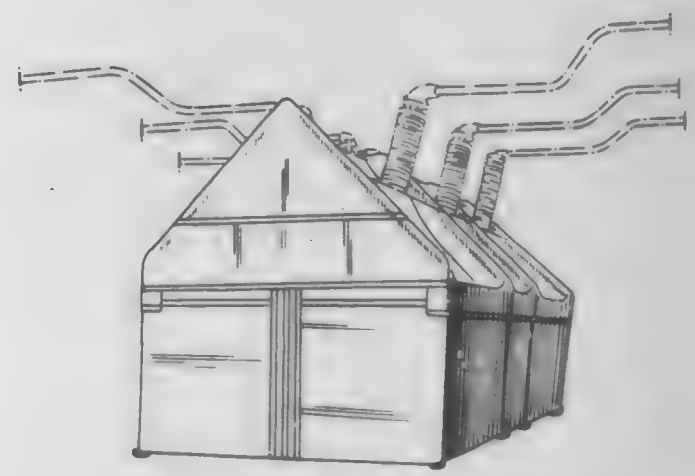
285,254
DENTAL TRAY RACK
James B. Zimmerman, 11 Lakeshore Plz., Kirkland, Wash. 98033
Filed May 23, 1983, Ser. No. 496,928
Term of patent 14 years
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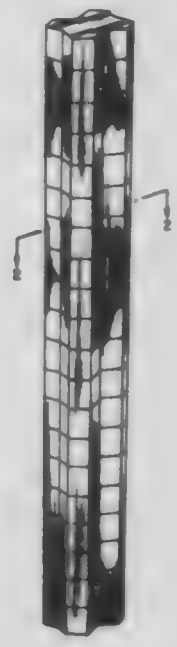
285,255
INTRAOCULAR LENS WITH SPIRAL RESILIENT SUPPORT MEANS
Dennis D. Shepard, 1414 E. Main St., Santa Maria, Calif. 93454
Filed Apr. 12, 1982, Ser. No. 367,294
Term of patent 14 years
U.S. Cl. D24—33



285,256
FRAME AND CLOTH SHELTER
Thomas J. Connolly, Montvale, N.J., assignor to Janos Industrial Insulation Corp., Moonachie, N.J.
Filed Sep. 22, 1982, Ser. No. 421,523
Term of patent 14 years
U.S. Cl. D25—1



285,257
SMOKESTACK
Alfons O. Krautz, 10 Old Field-Woods Rd., Old Field, N.Y. 11733
Filed Apr. 21, 1983, Ser. No. 487,442
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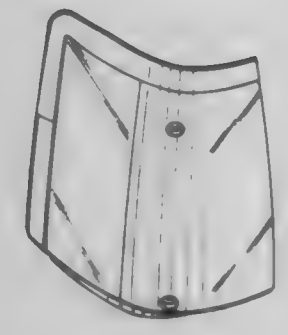
CLEARANCE LAMP FOR AN AUTOMOBILE

Yoshihiro Hamasaki, Toyota, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Aichi, Japan

Filed May 3, 1984, Ser. No. 606,595

Term of patent 14 years

U.S. Cl. D26—28



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PHARMACEUTICAL TABLET

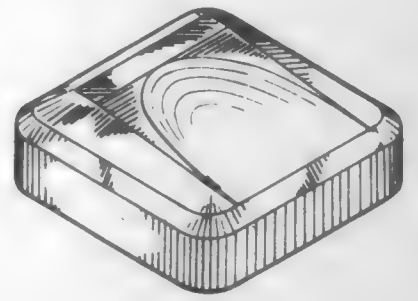
Geoffrey D. Tovey, Harpenden, England, assignor to Smith Kline & French Laboratories Limited, Welwyn Garden City, England

Filed Dec. 21, 1984, Ser. No. 684,830

Claims priority, application United Kingdom, Jun. 22, 1984, 1020470

Term of patent 14 years

U.S. Cl. D28—2



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Knoedl, George, Jr., 4,607,173, Cl. 307-291.000.
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Brooks, James A., 4,607,384, Cl. 382-4.000.
Athale, Ravindra A.; and Lee, John N., to United States of America, Navy. Triple matrix product optical processors using combined time-and-space integration. 4,607,344, Cl. 364-841.000.
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Clough, Thomas J.; and Mackenzie, John D., 4,607,015, Cl. 501-27.000.
Shum, Wilfred P.; and Cooper, Charles F., 4,607,113, Cl. 556-57.000.
Shum, Wilfred P.; White, John F.; and Beals, Eva M., 4,607,122, Cl. 562-599.000.
Younes, Usama E., 4,607,081, Cl. 525-186.000.
Atobe, Masaaki; and Otani, Susumu, to NEC Corporation. Transversal type equalizer apparatus. 4,607,377, Cl. 375-14.000.
Atsumi, Shinya: *See—*
Tobinaga, Motoi; Okumura, Shigeo; Handa, Kenichi; and Atsumi, Shinya, 4,606,315, Cl. 123-417.000.
Attinger, Karl: *See—*
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Aubermann, Tibor: *See—*
Cicin-Sain, Ivo; and Aubermann, Tibor, 4,606,274, Cl. 104-6.000.
Automated Quality Technologies, Inc.: *See—*
Thompson, Vern C., 4,606,587, Cl. 384-12.000.

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Ball, Robert J.; and Symonds, Denzil J. W., 4,606,450, Cl. 192-106.200.
Avon Industrial Polymers Limited: *See—*
Angell, Cyril N. E., 4,606,670, Cl. 403-291.000.
Azuma, Ichiro: *See—*
Hasegawa, Akira; Azuma, Ichiro; and Yamamura, Yuichi, 4,606,857, Cl. 260-998.200.
B. F. Goodrich Company, The: *See—*
Heimovics, John F., Jr., 4,606,497, Cl. 236-92.00R.
Hong, Paul O., 4,607,058, Cl. 521-56.000.
Babcock & Wilcox Company, The: *See—*
Sterling, Edward L., Jr.; and Bastijanic, Edward, 4,607,247, Cl. 340-310.00A.
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Chu, Chaokang; and Babineau, Richard A., 4,606,824, Cl. 210-635.000.
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Bachmann, Wolfgang; and Spahn, Dieter, to Roda Holding Anstalt. Endless sieve band or composite band for paper machines. 4,606,792, Cl. 162-232.000.
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Bailey, Edward J., to Cincinnati Milacron Inc. Controlled deceleration stopping device for robot base. 4,606,667, Cl. 403-117.000.
Baines, Joga S., to United Kingdom Atomic Energy Authority. Fluidic pumping systems with control means responsive to liquid level. 4,606,703, Cl. 417-86.000.
Bajor, George; and Messmer, Charles, to Harris Corporation. Stress free dielectric isolation technology. 4,606,936, Cl. 427-85.000.
Baker, Don R., to Stauffer Chemical Co. Benzodioxane herbicides. 4,606,752, Cl. 71-88.000.
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Peterson, Elmer R.; and Stout, Gregg W., 4,606,409, Cl. 166-297.000.
Ball, Robert J.; and Symonds, Denzil J. W., to Automotive Products plc. Friction clutch driven plate. 4,606,450, Cl. 192-106.200.
Ballato, Arthur, to United States of America, Army. Adjustment of the frequency-temperature characteristics of crystal oscillators. 4,607,239, Cl. 331-176.000.
Ballhaus, Heribert, to Georg Muller Nurnberg GmbH. Motor spindle with integrated bearing races. 4,607,182, Cl. 310-90.000.
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Balykin, Pavel S.: *See—*
Petrakov, Vladimir P.; Minkin, Gennady P.; Shagun, Vladimir A.; Balykin, Pavel S.; Barklon, David I.; and Domrachev, Vladimir A., 4,606,929, Cl. 427-34.000.
Ban, Keisuke; Daimaru, Akimasa; Muraoka, Yasuo; and Miyake, Noriaki, to Art Kinzoku Honda Giken Kogyo Kabushiki Kaisha; and Kogyo Kabushiki Kaisha. Method of producing fiber-reinforced composite material. 4,606,395, Cl. 164-98.000.
Bannister, Brian C., to Marler Haley Exposystems Ltd. Barrier systems and the like. 4,606,394, Cl. 160-351.000.
Bannister, Robert D., to Cincinnati Milacron Inc. Laser spot welder. 4,607,150, Cl. 219-121.0LC.
Baranyi, Giuseppa: *See—*
Kazmaier, Peter M.; Baranyi, Giuseppa; Hsiao, Cheng-Kuo; and Burt, Richard A., 4,607,124, Cl. 564-307.000.
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Barlics, John J., to Superpac Vending (Curacao) N.V. Spin fusion method and container made therefrom. 4,606,470, Cl. 215-232.000.
Barnhart Industries, Inc.: *See—*
DeWoskin, Irvin S., 4,606,079, Cl. 2-338.000.
Barreto-Mercado, William. Radio control security system for automobile doors, trunk and hood locks and engine power. 4,607,312, Cl. 361-172.000.
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Barry, Leon F.; and Berry, James A., to Celotex Corporation, The. Mine stopping sealant. 4,607,066, Cl. 523-130.000.
Bartels, Hermann A.: *See—*
Christoph, Erich M.; and Bartels, Hermann A., 4,606,868, Cl. 264-40.400.
Barthelemy, Pierre: *See—*
Mendy, Francois; and Barthelemy, Pierre, 4,607,052, Cl. 514-547.000.
BASF Aktiengesellschaft: *See—*
Illers, Karl H.; Jun, Mong-Jon; and Schornick, Gunnar, 4,606,994, Cl. 430-300.000.
Janssen, Bernd; Kohlmann, Friedrich-Wilhelm; Wesenberg, Walter; and Heberle, Wolfgang, 4,607,045, Cl. 514-383.000.
Muenstedt, Helmut; and Naarmann, Herbert, 4,607,083, Cl. 525-417.000.
Tesch, Helmut; Heym, Manfred; Doerflinger, Walter; Stutz, Herbert; Neumann, Peter; Nissen, Dietmar; and Schaefer, Gerhard, 4,607,069, Cl. 523-400.000.
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Sterling, Edward L., Jr.; and Bastijanic, Edward, 4,607,247, Cl. 340-310.00A.
Basu, Rajat S.; Lund, Earl A. E.; Pham, Hang T.; and Wilson, David P., to Allied Corporation. Azeotrope-like compositions of trichlorotrifluoroethane, ethanol, acetone, nitromethane and hexane. 4,606,841, Cl. 252-171.000.
Bate, Anthony J.; and Smith, Rowland C., to DeVilbiss Company Limited, The. Miniature spray guns. 4,606,501, Cl. 239-346.000.
Battelle Development Corporation: *See—*
Reif, Robert B., 4,607,228, Cl. 324-454.000.
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Siddiqi, Iqbal; Brochot, Jean; and Sutherland, Ranald M., 4,607,010, Cl. 435-23.000.
Baum, Gerald A.; Chacko, Varkki P.; and DeStio, Paul, to GAF Corporation. Polyester compostions. 4,607,075, Cl. 524-449.000.
Baus, Heinz G. Partition wall structure. 4,606,081, Cl. 4-557.000.
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Baxter, Andrew J. G.; Dixon, John; McInally, Thomas; and Tinker, Alan C., to Fisons plc. Antihypertensive 2-phenyl Hantzsch dihydropyridines. 4,607,041, Cl. 514-318.000.
Baxter Travenol Laboratories, Inc.: *See—*
McGlothlin, Mark; Reisdorf, Dennis; and Virag, Robert, 4,606,866, Cl. 261-74.000.
Bayer Aktiengesellschaft: *See—*
Feyen, Peter; Rauleder, Gebhard; and Reiser, Wolf, 4,607,108, Cl. 548-262.000.
Schreckenberg, Manfred; Dhein, Rolf; Lange, Ralf; and Waldenrath, Werner, 4,607,070, Cl. 524-100.000.
Thoma, Wilhelm; Pisaric, Karl H.; and Alberts, Heinrich, 4,606,974, Cl. 428-447.000.
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Huemer, Gerhart; and Michassouridis, Athanasios, 4,606,302, Cl. 123-41.100.
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Jahnke, Bernd, 4,606,778, Cl. 148-11.50N.
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Le Mong, Son, 4,606,491, Cl. 228-119.000.
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Naylor, Jimmy R., 4,607,249, Cl. 340-347.0DA.
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Beard, Robert J., to Woodford Manufacturing Company. Auxiliary loading dock ramp. 4,606,090, Cl. 14-72.500.
Bechgaard, Helle; and Houmoller, Peter, to A/S Alfred Benzon. Pharmaceutical multiple-units formulation. 4,606,909, Cl. 424-21.000.
Becker, Billy G.; and Swafford, Charles V., to BST Lift Systems, Inc. Subsurface safety system. 4,606,410, Cl. 166-313.000.
Becton, Dickinson and Company: *See—*
Lanier, Lewis; and Warner, Noel L., 4,607,007, Cl. 435-7.000.
Bedford, James: *See—*
Lappage, James; and Bedford, James, 4,606,181, Cl. 57-58.380.
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Cantello, Barrie C. C., 4,607,033, Cl. 514-233.000.
Beer, Wilhelm, to General Motors Corporation. Motor vehicle engine mounting arrangement. 4,606,427, Cl. 180-300.000.
Beling, Thomas E., to Sigma Instruments, Inc. Strain gauge measuring system. 4,606,231, Cl. 73-862.630.
Bell Helmets Inc.: *See—*
Sundahl, James G., 4,607,395, Cl. 455-351.000.
Belt, Ned W. Adjustable ladder leg. 4,606,432, Cl. 182-204.000.
Benedix, Manfred: *See—*
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Beranek, Mark W.: *See—*
Oprysko, Modest M.; and Beranek, Mark W., 4,606,932, Cl. 427-53.100.
Berchier, Jean-Luc: *See—*
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Selva, Enrico; Beretta, Grazia; Tamoni, Giorgio; Arioli, Vittorio; Cassani, Giovanni; and Parenti, Francesco, 4,607,012, Cl. 435-136.000.
Berfield, Robert C.; and Crevling, Robert L., to Shop-Vac Corporation. Conduit fixture for tank wall. 4,606,563, Cl. 285-189.000.
Berg, Olle; and Lejdeborn, Lars. Intranasal device. 4,606,346, Cl. 128-342.000.
Berg, Rune, to Tetra Pak International AB. Method and an arrangement for the manufacture of packing containers. 4,606,174, Cl. 53-451.000.
Bergman, Kjell, to Asea AB. Control system for a DC arc furnace. 4,607,373, Cl. 373-104.000.
Bergmans, Christianus H. J.: *See—*
Valkestijn, Leonardus A. A.; Nooijen, Fransiscus M. J.; and Bergmans, Christianus H. J., 4,607,195, Cl. 315-410.000.
Bernard, Jerald D.; Koltookian, Sarkis A.; and Mealhow, Kenneth S., to Deere & Company. Accumulator with integral high pressure reservoir and recharge valve. 4,606,376, Cl. 138-30.000.
Bernardi, Dario. Gridiron for grilling food items by reflected heat. 4,606,261, Cl. 99-445.000.

Bernstein, Joel E., to Jaye-Boern Laboratories, Inc. Method of treating acne vulgaris with a composition containing carbamide peroxide. 4,607,101, Cl. 514-24.000.

Berry, James A.: *See*—
Barry, Leon F.; and Berry, James A., 4,607,066, Cl. 523-130.000.

Bertelli, Alberto, to Schering S.p.A. Epoxypropylphosphonate salt of jesamycin and pharmaceutical composition containing same. 4,607,024, Cl. 514-28.000.

Bertsch, Peter K.: *See*—
Pirtle, F. William; Nicoll, Harry G.; and Bertsch, Peter K., 4,606,194, Cl. 62-6.000.

Best, Steven A., to Exxon Research & Engineering Co. Polymerization catalyst, production and use. 4,607,019, Cl. 502-119.000.

Bethlehem Steel Corporation: *See*—
Hart, Robert G.; and Townsend, Herbert E., 4,606,800, Cl. 204-181.100.
Rice, Michael A.; and Herman, Stewart T., 4,606,829, Cl. 210-713.000.

Bettarini, Franco; Massardo, Pietro; Piccardi, Paolo; Reggiori, Franca; and Longoni, Angelo, to Montedison S.p.A. 1-phenoxy(phenylthio)-4-arylalkynyloxy-benzene derivatives endowed with a juvenile hormonic and an acaricide activity. 4,607,035, Cl. 514-277.000.

Beutel, Kurt: *See*—
Ullmann, Roland; Beutel, Kurt; and Heintke, Hans-Eberhard, 4,606,122, Cl. 30-43.920.

Bhargava, Bharat, to Southern California Edison Company, Inc. Subsynchronous resonance detection. 4,607,217, Cl. 324-78.00R.

Bhasin, Anirudh K.: *See*—
Malhotra, Deepak; Rowe, Robert M.; and Bhasin, Anirudh K., 4,606,817, Cl. 209-166.000.

Bialy, Jan: *See*—
Penczek, Irena; Bialy, Jan; and Dobkowski, Zbingniew, 4,607,085, Cl. 526-59.000.

Bielefeld, Gerhard. Electrical connector. 4,606,597, Cl. 339-113.00L.

Bieringer, Robert J., to Owens-Illinois, Inc. System for detecting selective refractive defects in transparent articles. 4,606,634, Cl. 356-240.000.

Biglione, Gianfranco; Cigna, Giuseppe; and Rinaldi, Roberto, to Montedison S.p.A. Process for the production of expandable granules of thermoplastic polymers and relative apparatus. 4,606,873, Cl. 264-53.000.

Biller, Victor; and Faessler, Adelmar, to Figgie International Inc. Nozzle assembly for a filling apparatus. 4,606,382, Cl. 141-1.000.

Billing, Alfred G.; and Burgess, Norman, to Thorn EMI plc. Prefocussed incandescent lamps and method of assembling base thereof. 4,607,192, Cl. 313-579.000.

Bind-O-Matic AB: *See*—
Wiholm, Sture H., 4,606,689, Cl. 412-3.000.

Binder, Walter L.: *See*—
Coates, Stephen R.; and Binder, Walter L., 4,607,008, Cl. 435-7.000.

Bishop, John F., to Eastman Kodak Company. Reflecting layer for image transfer prints. 4,606,992, Cl. 430-220.000.

Bishop, Martin T., to Westinghouse Electric Corp. Apparatus for detecting arcing faults on low-voltage spot networks. 4,607,309, Cl. 361-62.000.

Bjorkman, Ake: *See*—
Sikander, Ake; Bjorkman, Ake; and Jonsson, Gunther, 4,606,762, Cl. 75-81.000.

Black, Laura E.: *See*—
Hafez, Mahmoud M.; and Black, Laura E., 4,606,903, Cl. 423-447.400.

Blake, Rodger D.; and Meek, Thomas T., to United States of America, Energy. Method for producing ceramic-glass-ceramic seals by microwave heating. 4,606,748, Cl. 65-36.000.

Bleeck, Joerg A., to Columbia River Carbonates. Process for wet grinding of natural and synthetic carbonates. 4,606,503, Cl. 241-16.000.

Bloch, Kenneth A., to Burroughs Corporation. Lock/ejector system for printed wiring board. 4,606,591, Cl. 339-45.00M.

Bloch, Peter; and Wydler, Robert, to MAAG Gear-Wheel & Machine Company Limited. Method for controlling a grinding stroke in a gear tooth flank grinding machine operating on the indexing generating principle. 4,606,153, Cl. 51-287.000.

Blohm & Voss AG: *See*—
Koenig, Dieter; Klante, Hansjorg; Niemann, Manfred; Jenny, Wilhelm; and Engelskirchen, Jurgen, 4,606,727, Cl. 441-5.000.

Blom, Peter W. E.: *See*—
de Waal, Jan C.; and Blom, Peter W. E., 4,606,761, Cl. 75-10.190.

Blond, Marcel: *See*—
Martinez-Corral, Cecilio; and Blond, Marcel, 4,606,451, Cl. 192-106.200.

Bloor, Trevor J.; and Walton, Lawrence J. Solar water heating apparatus. 4,606,327, Cl. 126-417.000.

Blum, Samuel E., to International Business Machines Corporation. Process and apparatus for producing high purity oxidation on a semiconductor substrate. 4,606,935, Cl. 427-82.000.

Boan, William J.: *See*—
Robinson, Ronald A.; Boan, William J.; and Evans, George D., 4,606,775, Cl. 134-18.000.

Board of Trustees, University of Illinois: *See*—
Eden, James G.; McCown, Andrew W.; Ediger, Marwood N.; and Greene, Dennis P., 4,607,371, Cl. 372-56.000.
Kaplan, Samuel; Donohue, Timothy J.; and Cain, Brian D., 4,607,011, Cl. 435-131.000.

Boeing Company, The: *See*—
Munsen, Victor A.; and Ruane, John P., 4,606,961, Cl. 428-119.000.

Boer, Jelle D.: *See*—
Kuhn, Ernst; Boer, Jelle D.; and Theon, Johan, 4,607,064, Cl. 521-174.000.

Bogren, Ingemar S. B. Tubular container having a tear opening means. 4,606,462, Cl. 206-606.000.

Bohm, Edgar; and Achenbach, Erhard, to Siemens Aktiengesellschaft. Method and apparatus for determining the pole position in a synchronous linear stator motor. 4,607,203, Cl. 318-687.000.

Boileau, Sidney N., to CAE Machinery Ltd. Adjustable sawdust shear for bandmills. 4,606,251, Cl. 83-168.000.

Bolton, Stanley S., Sr., to Ace Paper Products Co. Collapsible container. 4,606,461, Cl. 206-600.000.

Bon, Charles K., to Dow Chemical Company, The. Electrolyte permeable diaphragm and method of making same. 4,606,805, Cl. 204-296.000.

Bonatrade International Inc.: *See*—
Maguire, Paul R., 4,606,572, Cl. 296-95.00R.

Bonazza, Benedict R.: *See*—
Schoettenberg, Alexander; Lindstrom, Merlin R.; and Bonazza, Benedict R., 4,606,833, Cl. 252-49.300.

Bond, John W., to United States of America, Army. Radar attenuating paint. 4,606,848, Cl. 252-511.000.

Bondi, Enrico; and Senni, Paolo, to Snia BPD S.p.A.; and Chimica del Friuli S.p.A. Method of purifying caprolactam. 4,606,858, Cl. 540-540.000.

Bonnans, Chantal; and Levesque, Guy, to Societe Nationale Elf Aquitaine. Process for the preparation of beads of copolymers bearing reactive groups, by polymerization in suspension in a non-aqueous medium. 4,607,057, Cl. 521-52.000.

Bonnet, Ludwig, to Richard Wolf GmbH. Device for disintegrating stones in bodily cavities or ducts. 4,606,330, Cl. 128-7.000.

Bonville, Leonard J., Jr.: *See*—
Stewart, Robert C., Jr.; Johnson, Carl K.; and Bonville, Leonard J., Jr., 4,606,495, Cl. 228-183.000.

Booth, D. A.: *See*—
Hazelton, Donald R.; Puydak, Robert C.; and Booth, D. A., 4,607,074, Cl. 524-425.000.

Booth, James R.: *See*—
Aldrich, Charles S.; Booth, James R.; Schuller, William M.; and Young, Lloyd P., 4,606,661, Cl. 400-213.000.

Booz, George W.: *See*—
Thornton, Peter B.; Cone, Stanley H.; and Booz, George W., 4,606,968, Cl. 428-229.000.

Bork, Carl R., Jr.: *See*—
Kolenc, Terrence J.; Bork, Carl R., Jr.; Steiss, William C.; Shufflebarger, Earl D.; and Tobbe, William P., 4,606,374, Cl. 137-556.300.

Born, Peter J., to United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the. Cathode ray tube with glass-to-metal seal using silver chloride cement. 4,607,189, Cl. 313-477.00R.

Boroviak, Gayle E., to Lever Brothers Company. Preservative compositions employing anti-microbial morpholine derivatives. 4,607,036, Cl. 514-277.000.

Botka, Alexander T.; and Colton, Evan, to Analogic Corporation. Digital to analog converter having integrated digital and analog circuitry. 4,607,248, Cl. 340-347.0DA.

Bott, Ned. Bar type lock. 4,606,566, Cl. 292-57.000.

Bout, Bernardus J.; van Eeden, Ernest P.; and van der Walt, Nicolaas T., to Crucible S.A. Gas detectors. 4,606,219, Cl. 73-23.000.

Bouton, Marie-Madeleine; Jacques, Jean; and Pierdet, Andre , to Roussel Uclaf. Antiandrogenic compositions containing indene-7-ones. 4,607,054, Cl. 514-680.000.

Bradley, Nelson A.: *See*—
Dodley, Milton T.; Bradley, Nelson A.; Hiers, Robert S., Jr.; and Staats, Gary E., 4,607,179, Cl. 310-11.000.

Bradshaw, Robert S.; Lazzarotti, S. James; Tartar, Paul E.; and Hermes, Richard D., to System Development Corporation. Printer kit for letter sorting machines. 4,606,660, Cl. 400-62.000.

Brady, Eugene E.: *See*—
Platt, William J.; Ziegler, Daniel C.; and Brady, Eugene E., 4,606,166, Cl. 52-664.000.

Brandi, Roberto: *See*—
Di Tella, Vincenzo; Brandi, Roberto; and Carraro, Roberto, 4,606,294, Cl. 114-230.000.

Brandwein, Harvey: *See*—
Deutsch, Alice; Brandwein, Harvey; Platt, Herbert; Hunter, Dianne M.; Dubitsky, Andrew; and Durham, Susan M., 4,606,855, Cl. 530-387.000.

Brannstrom, Roine, to ASEA Stal AB. Method of increasing the separating efficiency of a cyclone separator and a cyclone for carrying out the method. 4,606,739, Cl. 55-1.000.

Braun Aktiengesellschaft: *See*—
Ullmann, Roland; Beutel, Kurt; and Heintke, Hans-Eberhard, 4,606,122, Cl. 30-43.920.

Brennesholtz, Matthew S., to North American Philips Consumer Electronics Corp. Monochrome cathode ray tube for use as a color reference. 4,607,188, Cl. 313-461.000.

Bricot, Claude; Chaboche, Michel; Volleau, Patrick; Leterme, Dominique; and Le Merer, Jean-Pierre, to Thomson-CSF. Optical head in a device for recording and reading a data carrier. 4,607,356, Cl. 369-44.000.

Bridge, Ian N., to Silverthorne-Gillot Limited. Combination bird feeder and shelter. 4,606,298, Cl. 119-51.00R.

Bridgestone Tire Company Limited: *See*—
Kitamura, Takashi; Fukuura, Yukio; Tanuma, Itsuo; Shinogaya, Toshikazu; and Noda, Yuji, 4,607,065, Cl. 522-83.000.

Briner, Paul H.; and Mason, Ronald F., to Shell Oil Company. Novel substituted phenyl ethers, process for their preparation, and their use in the preparation of substituted phenols. 4,607,128, Cl. 568-655.000.

Briney, Michael S.; Heidel, Jeffrey C.; and Swartz, Harold L., to Sperry Corporation. Digital electronic inclination gauge. 4,606,132, Cl. 33-366.000.

Bristol, James A.; and Sircar, Ila, to Warner-Lambert Company. Cardiotonic 2(1H)-pyridinones. 4,607,037, Cl. 514-278.000.

Bristol-Myers Company: *See*—
Algieri, Aldo A.; and Crenshaw, Ronnie R., 4,607,105, Cl. 546-213.000.
Rosenberg, Allan H.; and Weintraub, Leonard, 4,606,915, Cl. 424-68.000.

British Aerospace Public Limited Company: *See*—
Geen, John A., 4,606,637, Cl. 356-350.000.

British Gas Corporation: *See*—
Cleaver, Brian A.; and Ivens, Alan F., 4,606,830, Cl. 210-750.000.

Britt, Franklin J. Apparatus and method for relieving pressure within a high pressure tank. 4,606,367, Cl. 137-15.000.

Brochot, Jean: *See*—
Siddiqi, Iqbal; Brochot, Jean; and Sutherland, Ranald M., 4,607,010, Cl. 435-23.000.

Broderna Holmbergs Fabriks AB: *See*—
Hultqvist, Lars, 4,606,552, Cl. 280-801.000.

Brodin, Arne F.: *See*—
Frank, Sylvan G.; Brodin, Arne F.; Chen, Chih-Ming J.; and Shrivastava, Ratnesh, 4,606,939, Cl. 427-213.300.
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Bromine Compounds Ltd.: *See*—
Teuerstein, Avraham; Rumack, Michael; and Yanai, Shaul, 4,606,852, Cl. 252-609.000.

Brooks, James A., to AT&T - Technologies, Inc. Fingerprint classification arrangement. 4,607,384, Cl. 382-4.000.

Brother Kogyo Kabushiki Kaisha: *See*—
Onoda, Hiroshi; and Mizuno, Kenji, 4,607,265, Cl. 346-139.00R.

Brow, Donald. Paint roller cleaner. 4,606,777, Cl. 134-38.000.

Brown, Robert H.; and Comrie, Peter V., to Lucas Industries public limited company. Power circuit for electromagnetic actuator. 4,607,311, Cl. 361-155.000.

Brown, William G., II. Solar power generation. 4,606,192, Cl. 60-649.000.

Brudny-Chelyadinov, Sergei J.; Budyansky, Vigdor S.; Sorokoumov, Viktor K.; and Filimonov, Viktor A., to Vsesojuzny Naucho-Issledovatelsky Institut Burovoi Tekhniki. Turbodrill multistage turbine. 4,606,700, Cl. 415-199.500.

Bruneau, Louis O. Battery powering. 4,607,207, Cl. 320-2.000.

Brunker Medizentechnik GmbH: *See*—
Zeiger, Heinz, 4,607,226, Cl. 324-318.000.

Brunner, Gerhard; Sigel, Arnold; and Scharschinger, Margrit, to Erhardt & Leimer GmbH. Tilt-box control system. 4,606,486, Cl. 226-19.000.

Bruns, Angelika M.: *See*—
Luthje, Holger K.; Bruns, Angelika M.; Harms, Margret; and Matthiessen, Bernd R. G., 4,606,803, Cl. 204-192.00P.

Brunson, Welton K.: *See*—
Hubbard, Vance M.; and Brunson, Welton K., 4,606,341, Cl. 128-206.190.

BST Lift Systems, Inc.: *See*—
Becker, Billy G.; and Swafford, Charles V., 4,606,410, Cl. 166-313.000.

Buan, Danilo P., to Pitney Bowes Inc. Inking apparatus for a value printing device. 4,606,270, Cl. 101-359.000.

Buchanan, Harry C., Jr.; Fannin, Wayne V.; and Watson, Byron L., to General Motors Corporation. Vehicle damping apparatus with simultaneous bleed orifice and blowoff control. 4,606,440, Cl. 188-319.000.

Bucker, Heinrich, to Westfalia Separator AG. Rinser for pail milking systems. 4,606,297, Cl. 119-14.050.

Budyansky, Vigdor S.: *See*—
Brudny-Chelyadinov, Sergei J.; Budyansky, Vigdor S.; Sorokoumov, Viktor K.; and Filimonov, Viktor A., 4,606,700, Cl. 415-199.500.

Bukoschek, Romuald L.: *See*—
Diefenbach, Gerhard; Schemmann, Hugo; and Bukoschek, Romuald L., 4,606,121, Cl. 30-43.920.

Bukovitz, Ronald F.; and Anthony, J. David, to Ingersoll-Rand Company. Angle drilling apparatus. 4,606,155, Cl. 52-116.000.

Bunn-O-Matic Corporation: *See*—
Zimmerman, John D., 4,607,200, Cl. 318-484.000.

Burgess, Norman: *See*—
Billing, Alfred G.; and Burgess, Norman, 4,607,192, Cl. 313-579.000.

Burghoffer, Patrick; Charuau, Jean; Merelli, Marc; and Prigent, Raymond, to Commissariat a l'Energie Atomique. Process and apparatus for detecting atmospheric contamination by alpha particle aerosols. 4,607,165, Cl. 250-435.000.

Burney, Curtis M., to Nova University. Bag sampler. 4,606,233, Cl. 73-864.630.

Burns, Catherine T. Eyeglasses visor and case. 4,606,433, Cl. 206-5.000.

Burns, Michael E., to Procter & Gamble Company, The. Bleaching compositions comprising alkoxy substituted aromatic peroxyacids. 4,606,838, Cl. 252-94.000.

Burr-Brown Corporation: *See*—
Naylor, Jimmy R.; and Highton, Frederick J., 4,607,250, Cl. 340-347.0DA.

Burroughs Corporation: *See*—
Bloch, Kenneth A., 4,606,591, Cl. 339-45.00M.
DeMoss, Dean; and Richardson, Harvey J., 4,607,304, Cl. 360-99.000.
Sheth, Jayesh V., 4,607,348, Cl. 364-900.000.

Burrows, James L.; and Butler, Stephen B., to United States of America, Air Force. Tally cell circuit. 4,607,176, Cl. 307-449.000.

Burt, Richard A.: *See*—
Kazmaier, Peter M.; Baranyi, Giuseppa; Hsiao, Cheng-Kuo; and Burt, Richard A., 4,607,124, Cl. 564-307.000.

Buser, Franz: *See*—
Schluep, Rene ; and Buser, Franz, 4,606,099, Cl. 29-24.500.

Bush Boake Allen Limited: *See*—
Ansari, Hifzur R.; and Schleppnik, Alfred A., 4,606,849, Cl. 252-522.00R.

Busovne, Bernard J., Jr.: *See*—
Vasilow, Theodore R.; Busovne, Bernard J., Jr.; and Johnson, Gregory J., 4,606,434, Cl. 188-1.110.

Bussey, Harry. Loose fill packing element. 4,606,965, Cl. 428-158.000.

Butler, Donald E., to Warner-Lambert Company. Tetrahydro-3,5-dioxo-1H-pyrrolizine-7a(5H)-carboxylic acids and derivatives as cognition activators. 4,607,043, Cl. 514-339.000.

Butler, Reginald J.: *See*—
Collins, Brian J.; and Butler, Reginald J., 4,606,191, Cl. 60-39.281.

Butler, Stephen B.: *See*—
Burrows, James L.; and Butler, Stephen B., 4,607,176, Cl. 307-449.000.

Butt, Sheldon H., to Olin Corporation. Tape packages. 4,607,276, Cl. 357-79.000.

Butter, Stephen A.; and Kuznicki, Steven M., to Air Products and Chemicals, Inc. Synthesis of maximum aluminum X zeolites. 4,606,899, Cl. 423-328.000.

Byars, Noelene E.: *See*—
Allison, Anthony C.; and Byars, Noelene E., 4,606,918, Cl. 424-88.000.

Byrne, John W.; and Speronello, Barry K., to Engelhard Corporation. Fluid catalytic cracking catalyst for cracking sulfur containing petroleum feedstocks and a process for using it. 4,606,813, Cl. 208-120.000.

Byzio, Edward R.; and Stewart-Hay, Peter, to Canada Wire and Cable Limited. Method and apparatus for forming a smooth tube from a flat tape. 4,606,119, Cl. 29-828.000.

C.R.S. Products Co. Inc.: *See*—
Thomas, Richard D., 4,607,136, Cl. 174-67.000.

C-Tec, Inc.: *See*—
Sweers, Kenneth M.; Cooper, G. Jack; and Munsey, R. Jack, 4,606,156, Cl. 52-126.600.

Cabot Corporation: *See*—
Goldstein, Sherwood; and Scherbner, Paul J., deceased, 4,606,889, Cl. 420-492.000.

CAE Machinery Ltd.: *See*—
Boileau, Sidney N., 4,606,251, Cl. 83-168.000.

Cain, Brian D.: *See*—
Kaplan, Samuel; Donohue, Timothy J.; and Cain, Brian D., 4,607,011, Cl. 435-131.000.

Cairns, James L., to Lockheed Corporation. Underwater connector including integral bladder and seal with a set of constricting means. 4,606,603, Cl. 350-96.210.

Cairo, Anthony C.: *See*—
Levine, Michael R.; Russo, James T.; Cairo, Anthony C.; and Rigotti, Victor H., 4,606,401, Cl. 165-12.000.

Caldwell Manufacturing Company: *See*—
DeWitt, Vern T.; and Haltof, Garry P., 4,606,147, Cl. 49-434.000.

California Institute of Technology: *See*—
Grubbs, Robert H.; Gilliom, Laura R.; and Siove, Alain, 4,607,112, Cl. 556-52.000.
Mukai, Seiji; Kapon, Eli; Katz, Joseph; Margalit, Shlomo; and Yariv, Amnon, 4,607,370, Cl. 372-50.000.

Campbell Soup Company: *See*—
Robinson, Albert H., Jr.; and Egee, Walter W., deceased, 4,606,262, Cl. 99-470.000.

Campen, Kenneth W., to Tecumseh Products Company. External magnet flywheel mounting. 4,606,305, Cl. 123-149.00D.

Canada, Her Majesty the Queen in right of, as represented by the Minister of Energy, Mines and Resources: *See*—
Mikhail, Shaheer A., 4,606,649, Cl. 374-10.000.

Canada Wire and Cable Limited: *See*—
Byzio, Edward R.; and Stewart-Hay, Peter, 4,606,119, Cl. 29-828.000.

Canadian Patents and Development Limited: *See*—
Monchalin, Jean-Pierre, 4,607,341, Cl. 364-557.000.

Cannella, Vincent D.: *See*—
Yaniv, Zvi; Cannella, Vincent D.; Yu, Terry T.; and Fulton, Christopher, 4,606,610, Cl. 350-331.00R.

Cannon Equipment Company: *See*—
Fredrickson, Howard J., 4,606,466, Cl. 211-59.100.

Cannon, Norbert H.; and Graf, James E., to Medtronic, Inc. Method of making a drug dispensing body. 4,606,118, Cl. 29-825.000.

Canon Kabushiki Kaisha: *See*—
Iizuka, Kiyoshi, 4,606,612, Cl. 350-336.000.
Matui, Toshiro; Suzuki, Koji; Nagahira, Jyoji; Yoshihara, Kunio; Takahashi, Kazuyoshi; and Ishikawa, Tadashi, 4,607,320, Cl. 363-21.000.

Yoshihara, Toshiyuki; Yashiki, Yuichi; Horii, Motomu; and Ohtaka, Mutsuo, 4,606,949, Cl. 427-430.100.
Yoshikawa, Masao, 4,606,990, Cl. 430-122.000.

Cantello, Barrie C. C., to Beecham Group p.l.c. Morpholine derivatives, compositions and medicinal use. 4,607,033, Cl. 514-233.000.

Cantin, Marc: *See*—
Thibault, Gaetan; Garcia, Raul; Cantin, Marc; Seidah, Nabil; Lazure, Claude; and Chretien, Michel, 4,607,023, Cl. 514-11.500.

Capron, Mark E. Structural wheel element. 4,606,674, Cl. 405-224.000.

Caries Research Group of Rochester, Inc.: *See*—
Rudy, Michael A.; and Lisanti, Vincent F., 4,606,912, Cl. 424-52.000.

Carl Ruckle Maschinenbau GmbH: *See*—
Weislogel, Horst D.; and Oelte, Burkhard, 4,606,387, Cl. 144-356.000.

Carl-Zeiss-Stiftung: *See*—
Heynacher, Erich, 4,606,151, Cl. 51-62.000.
Muchel, Franz, 4,606,617, Cl. 350-527.000.

Carl-Zeiss-Stiftung, Heidenheim/Brenz: *See*—
Fuerter, Gerhard; and Lahres, Hans, 4,606,622, Cl. 351-169.000.

Carll, Steven P.: *See*—
Abrahams, Louis; and Carll, Steven P., 4,607,196, Cl. 318-51.000.

Carlson, Adolph C., to Kennecott Corporation. Flow detector. 4,607,254, Cl. 340-606.000.

Carmon, Amiram; and Sonesh, Arie, to Telecomputer Corporation, Ltd. Apparatus for enhancing the use of electromechanical key telephone systems. 4,607,144, Cl. 179-99.00H.

Caron, LaVerne A.; and Handley, Edward F., to Navistar International Corporation. Glow plug control circuit. 4,606,306, Cl. 123-179.00H.

Carpenter, Brian M., to Coal Industry (Patents) Limited. Underfeed stokers. 4,606,284, Cl. 110-318.000.

Carraro, Roberto: *See*—
Di Tella, Vincenzo; Brandi, Roberto; and Carraro, Roberto, 4,606,294, Cl. 114-230.000.

Cassani, Giovanni: *See*—
Selva, Enrico; Beretta, Grazia; Tamoni, Giorgio; Arioli, Vittorio; Cassani, Giovanni; and Parenti, Francesco, 4,607,012, Cl. 435-136.000.

Catani, Mario J., to Dur-O-Wal, Inc. Apertured channel veneer anchor. 4,606,163, Cl. 52-434.000.

Caterpillar Industrial Inc.: *See*—
Meisel, Thomas C., Jr.; and York, Lyle E., 4,606,694, Cl. 414-732.000.

Catlin, Gary M.; and Healy, Michael P., to Honeywell Inc. Detector for detecting sync bits in a stream of data bits. 4,607,378, Cl. 375-116.000.

CBS Inc.: *See*—
Marshall, Trevor J., Jr.; and Moskowitz, Jacob F., 4,607,379, Cl. 375-121.000.

Celanese Corporation: *See*—
Chenevey, Edward C.; and Helminiak, Thaddeus E., 4,606,875, Cl. 264-85.000.
Kuder, James E., 4,607,095, Cl. 528-337.000.
Mott, Graham N., 4,607,125, Cl. 568-319.000.

Celanese Specialty Resins, Inc.: *See*—
Morris, William J., deceased, 4,607,084, Cl. 525-454.000.

Celotex Corporation, The: *See*—
Barry, Leon F.; and Berry, James A., 4,607,066, Cl. 523-130.000.

Centre National de la Recherche Scientifique: *See*—
Le Goff, Pierre Y. J., 4,606,404, Cl. 165-104.120.

Centre National de la Rechereche Scientifique: *See*—
Kahn, Andree; Lejus, Anne-Marie; Thery, Jeanine; and Vivien, Daniel, 4,606,846, Cl. 252-301.40R.

Cerisano, Frank D. High stalk blown film extrusion apparatus and method. 4,606,879, Cl. 264-565.000.

Chaboche, Michel: *See*—
Bricot, Claude; Chaboche, Michel; Volleau, Patrick; Leterme, Dominique; and Le Merer, Jean-Pierre, 4,607,356, Cl. 369-44.000.

Chacko, Varkki P.: *See*—
Baum, Gerald A.; Chacko, Varkki P.; and DeStio, Paul, 4,607,075, Cl. 524-449.000.

Chan, Lo Kwan; and Frima, Heico J., to ASM Assembly Automation Limited. Apparatus and method for automatic evaluation of a bond created by an ultrasonic transducer. 4,606,490, Cl. 228-103.000.

Chandley, George D.; and Sharkey, Richard L., to Hitchiner Manufacturing Co., Inc. Sand mold and apparatus for reduced pressure casting. 4,606,396, Cl. 164-255.000.

Chanforan, Henri; and Pelletier, Alain, to Thomson CSF. Simulator for firing small-bore guns at simulated targets. 4,606,724, Cl. 434-20.000.

Chang, Clarence D.; and Miale, Joseph N., to Mobil Oil Corporation. Acid-catalyzed organic compound conversion. 4,607,130, Cl. 585-415.000.

Chang, Keh-Minn: *See*—
Huang, Shyh-Chin; Chang, Keh-Minn; and Taub, Alan I., 4,606,888, Cl. 420-459.000.

Channel, William D.; and Gunter, Charlie E., III, to Magnetic Peripherals Inc. Adjustable degausser. 4,607,310, Cl. 361-149.000.

Charbonnages de France: *See*—
Kita, Jean C.; and Puff, Roger M., 4,606,896, Cl. 432-58.000.

Charbonneau, Jack W.; and Relyea, Keith E., to Minnesota Mining and Manufacturing Company. On page fragrance sampling device. 4,606,956, Cl. 428-40.000.

Charrier, Michael G., to General Electric Company. Fuel control. 4,606,189, Cl. 60-39.030.

Charuau, Jean: *See*—
Burghoffer, Patrick; Charuau, Jean; Merelli, Marc; and Prigent, Raymond, 4,607,165, Cl. 250-435.000.

Chasen, Lee R.: *See*—
Dunn, James R.; and Chasen, Lee R., 4,606,569, Cl. 294-118.000.

Chattha, Mohinder S.: *See*—
Johnson, Milton D.; and Chattha, Mohinder S., 4,607,092, Cl. 528-108.000.

Chatzipetros, Johann: *See*—
Wyrwich, Helmut; Graschew, Georgi; Chatzipetros, Johann; and Feinendegen, Ludwig E., 4,606,128, Cl. 33-143.00C.

Chemie Linz Aktiengesellschaft: *See*—
Sajtos, Alexander, 4,607,126, Cl. 568-385.000.

Chemopharm Laboratory, Inc.: *See*—
Lieber, Alfred; and Simper, Jack L., 4,606,835, Cl. 252-70.000.

Chemroll Enterprises, Inc.: *See*—
Swanson, Rollan, 4,606,812, Cl. 208-108.000.

Chen, Chih-Ming J.: *See*—
Frank, Sylvan G.; Brodin, Arne F.; Chen, Chih-Ming J.; and Shrivastava, Ratnesh, 4,606,939, Cl. 427-213.300.

Chenevey, Edward C.; and Helminiak, Thaddeus E., to Celanese Corporation. Process for preparing shaped articles of rigid rod heterocyclic liquid crystalline polymers. 4,606,875, Cl. 264-85.000.

Chepurnoi, Nikolai P.: *See*—
Klimashko, Vladimir V.; Chepurnoi, Nikolai P.; Makeev, Vladimir D.; Naboko, Vladimir P.; Filonov, Alexandr D.; and Svita, Petr N., 4,606,414, Cl. 173-128.000.

Chesebrough-Pond's Inc.: *See*—
Eagle, Elbert, 4,606,286, Cl. 112-121.120.

Chesworth, Graham: *See*—
Aspden, Garth J.; and Chesworth, Graham, 4,606,882, Cl. 376-463.000.

Chevillat, Pierre; and Maiwald, Dietrich, to International Business Machines Corp. Apparatus and method for performing division with an extended range of variables. 4,607,343, Cl. 364-765.000.

Chevron Research Company: *See*—
Gibson, Kirk R., 4,606,815, Cl. 208-210.000.
Muir, Francis, 4,607,353, Cl. 367-39.000.
Nicksic, Stephen W.; and Starke, George W., 4,607,014, Cl. 436-29.000.
Ward, Carl E., 4,606,756, Cl. 71-94.000.

Chiba, Shinsaku: *See*—
Sugie, Mamoru; Toyooka, Takashi; Aoki, Hirokazu; Yoshida, Kazutoshi; and Chiba, Shinsaku, 4,607,178, Cl. 307-594.000.

Childeric, Bruno: *See*—
Gavinet, Jean; and Childeric, Bruno, 4,606,884, Cl. 419-27.000.

Chimica del Friuli S.p.A.: *See*—
Bondi, Enrico; and Senni, Paolo, 4,606,858, Cl. 540-540.000.

Chin-Sen, Chiu. Single column gym set. 4,606,540, Cl. 272-118.000.

Chio, Chuy-Nan. Logic training board assembly. 4,606,725, Cl. 434-224.000.

Chisman, William E., III, to Daniel Industries, Inc. Compact bidirectional meter prover mechanism. 4,606,218, Cl. 73-3.000.

Chisolm, James P., to Special Projects Mfg. Co. Liquid pump with sequential operating fluid pistons. 4,606,709, Cl. 417-347.000.

Chloe Chimie: *See*—
Aguilera, Roland; and Remond, Jean-Pierre, 4,606,844, Cl. 252-194.000.

Choay, Jean: *See*—
Petitou, Maurice; Sinay, Pierre; Choay, Jean; and Lormeau, Jean-Claude, 4,607,025, Cl. 514-53.000.

Choay S.A.: *See*—
Petitou, Maurice; Sinay, Pierre; Choay, Jean; and Lormeau, Jean-Claude, 4,607,025, Cl. 514-53.000.

Chretien, Michel: *See*—
Thibault, Gaetan; Garcia, Raul; Cantin, Marc; Seidah, Nabil; Lazure, Claude; and Chretien, Michel, 4,607,023, Cl. 514-11.500.

Christoph, Erich M.; and Bartels, Hermann A., to Ymos Aktiengesellschaft Industrieprodukte. Method for casting thin-walled work pieces of synthetic materials. 4,606,868, Cl. 264-40.400.

Christoph, Gunter; and Stickel, Heinz, to Siemens Aktiengesellschaft. Switchable paper transport device for single sheets and continuous paper in printers. 4,606,663, Cl. 400-605.000.

Christoph, Heinz; Gamalski, Jurgen; Lenz, Eduard; Neumann, Ulrich; and von der Schmidt, Reinhard, to Siemens Aktiengesellschaft. Method and apparatus for soldering plate-shaped circuit carriers inside an inert gas soldering means. 4,606,493, Cl. 228-180.100.

Chrysler Corporation: *See*—
Kowal, Raymond J.; Sabat, Arthur G.; and Salva, Patrick, 4,606,584, Cl. 303-22.00R.

Chu, Chaokang; and Babineau, Richard A. Modified cellulose separation matrix. 4,606,824, Cl. 210-635.000.

Chu, Daniel T., to Abbott Laboratories. Quino-benoxazine antibacterial compounds. 4,607,032, Cl. 514-212.000.

Chu, Pochen; Huss, Albin, Jr.; and Vartuli, James C., to Mobil Oil Corporation. Deagglomeration of porous siliceous crystalline materials. 4,606,901, Cl. 423-329.000.

Ciba-Geigy Corporation: *See*—
Fisk, Peter R., 4,606,890, Cl. 422-15.000.
Schmidlin, Julius, 4,607,028, Cl. 514-180.000.

Cicin-Sain, Ivo; and Aubermann, Tibor, to Matisa Materiel Industriel S.A. Travelling railroad tie removal machine. 4,606,274, Cl. 104-6.000.

Cigna, Giuseppe: *See*—
Biglione, Gianfranco; Cigna, Giuseppe; and Rinaldi, Roberto, 4,606,873, Cl. 264-53.000.

Cincinnati Milacron Inc.: *See*—
Bailey, Edward J., 4,606,667, Cl. 403-117.000.
Bannister, Robert D., 4,607,150, Cl. 219-121.0LC.

Claas OHG: *See—*
Dammann, Johannes, 4,606,355, Cl. 130-27.00T.
Clama S.R.L.: *See—*
Gandini, Marcello, 4,606,148, Cl. 49-502.000.
Clarion Co., Ltd.: *See—*
Iizuka, Yukio, 4,607,301, Cl. 360-93.000.
Clark, Garry E. Internal combustion driven pumping system and variable torque transmission. 4,606,708, Cl. 417-380.000.
Classen, Alvin T. Self-propelled lawn aeration machine. 4,606,411, Cl. 172-22.000.
Classen, Alvin T. Tine support and drive mechanism for a compact self-propelled lawn aeration machine having means for varying both forward travel speed and depth of tine penetration. 4,606,412, Cl. 172-22.000.
Claudepierre, Christian: *See—*
Ravinet, Pierre; Claudepierre, Christian; Guillou, Denis; and Micheron, Francois, 4,607,145, Cl. 179-110.00A.
Claudius Peters Aktiengesellschaft: *See—*
Krauss, Werner, 4,606,158, Cl. 52-192.000.
Clausen, Earl W.; and Hubbard, Lloyd C., to MICI Limited Partnership IV. Centrifugal blood pump with tapered shaft seal. 4,606,698, Cl. 415-170.00A.
Clauss, Karl; Linkies, Adolf; and Reuschling, Dieter, to Hoechst Aktiengesellschaft. Process for the preparation of 6-methyl-3,4-dihydro-1,2,3-oxathiazin-4-one 2,2-dioxide and its non-toxic salts. 4,607,100, Cl. 544-2.000.
Cleaver, Brian A.; and Ivens, Alan F., to British Gas Corporation. Treatment of effluent liquors. 4,606,830, Cl. 210-750.000.
Clementino, Edwin A. Portable toilet. 4,606,080, Cl. 4-460.000.
Clodgo, Donna J.; Previti-Kelly, Rosemary A.; and Walton, Erick G., to International Business Machines Corporation. Barrierless high-temperature lift-off process. 4,606,998, Cl. 430-312.000.
Clough, Thomas J.; and Mackenzie, John D., to Atlantic Richfield Company. Glass composition, its method of formation and products made therefrom. 4,607,015, Cl. 501-27.000.
Coal Industry (Patents) Limited: *See—*
Carpenter, Brian M., 4,606,284, Cl. 110-318.000.
Coates, Stephen R.; and Binder, Walter L., to American Hoechst Corporation. Enzyme/immunofluorescent assay for anti-Epstein-Barr Virus antibodies. 4,607,008, Cl. 435-7.000.
Coats & Clark, Inc.: *See—*
Dunn, James R.; and Chasen, Lee R., 4,606,569, Cl. 294-118.000.
Coco, Charles E.: *See—*
Riley, Richard R.; and Coco, Charles E., 4,607,089, Cl. 527-201.000.
Codrington, Robert S., to Varian Associates, Inc. Double post reentrant cavity for NMR probes. 4,607,224, Cl. 324-318.000.
Coffey, William M., to FMC Corporation. Subsea wellhead connector. 4,606,557, Cl. 285-18.000.
Cohen, Lewis S., to Venture Tape Corp. Pipe insulation with flap for extreme weather applications. 4,606,957, Cl. 428-40.000.
Collet, Jean. Protective shelter, such as an umbrella with offset support. 4,606,366, Cl. 135-20.00A.
Collins, Bobby W. Tud rethreading and cleaning device. 4,606,681, Cl. 408-215.000.
Collins, Brian J.; and Butler, Reginald J., to Rolls-Royce Limited. Control systems for gas turbine aeroengines. 4,606,191, Cl. 60-39.281.
Colson, Andrew E. Swimming pool apparatus. 4,606,819, Cl. 210-122.000.
Colton, Evan: *See—*
Botka, Alexander T.; and Colton, Evan, 4,607,248, Cl. 340-347.0DA.
Coltrinari, Enzo L.: *See—*
Hazen, Wayne C.; Coltrinari, Enzo L.; Litz, John E.; and Thompson, David L., 4,606,764, Cl. 75-101.00R.
Columbia River Carbonates: *See—*
Bleeck, Joerg A., 4,606,503, Cl. 241-16.000.
Combustion Engineering, Inc.: *See—*
Prestridge, Floyd L.; and Johnson, Bruce C., 4,606,801, Cl. 204-186.000.
Commissariat a l'Energie Atomique: *See—*
Anitoff, Oleg, 4,606,651, Cl. 374-32.000.
Burghoffer, Patrick; Charuau, Jean; Merelli, Marc; and Prigent, Raymond, 4,607,165, Cl. 250-435.000.
Gailliard, Jean P.; Million, Alain; and Piaquet, Jean, 4,606,296, Cl. 118-726.000.
Gavinet, Jean; and Childeric, Bruno, 4,606,884, Cl. 419-27.000.
Commonwealth of Australia Commonwealth Scientific and Industrial Research Organization, The: *See—*
Sasse, Wolfgang H. F.; Johansen, Oddvar; Mau, Albert W.; and Swift, Jean D., 4,606,798, Cl. 204-157.520.
Compagnie Francaise des Petroles: *See—*
Moreau, Claude J.; Larue, Joseph Y.; and Rojey, Alexandre, 4,606,741, Cl. 55-16.000.
Compagnie Industrielle des Telecommunications Cit-Alcatel: *See—*
Playe, Patrice, 4,607,269, Cl. 346-155.000.
Tallon, Jacques; and Morel, Jacques, 4,606,221, Cl. 73-40.700.
Completion Tool Company: *See—*
Wood, Edward T., 4,606,406, Cl. 166-187.000.
Comrie, Peter V.: *See—*
Brown, Robert H.; and Comrie, Peter V., 4,607,311, Cl. 361-155.000.
Cone, Richard E., to Spalding & Evenflo Companies, Inc. Collapsible stroller. 4,606,550, Cl. 280-642.000.
Cone, Stanley H.: *See—*
Thornton, Peter B.; Cone, Stanley H.; and Booz, George W., 4,606,968, Cl. 428-229.000.
Conee, Paul T. Camera support cushion. 4,606,524, Cl. 248-346.000.
Conoco Inc.: *See—*
Thomason, William H.; and Ivie, Randall G., 4,606,225, Cl. 73-150.00A.
Conrad, Coleman W., to IMC Magnetics Corporation. Linear and rotary actuator. 4,607,197, Cl. 318-115.000.
Conta, Robert L.; and Wallach, Harvey N., to United States Surgical Corporation. Self-powered surgical fastening instrument. 4,606,343, Cl. 128-305.000.
Container Corporation of America: *See—*
Youngs, Roger W.; Lewis, Robert W.; Kussman, Robert N.; and Hurtt, John R., 4,606,790, Cl. 162-125.000.
Conti, Rino; and Trivision, Jody A., to Dart Industries. Dispensing closure for spouted container. 4,606,481, Cl. 222-562.000.
Continental Can Company, Inc.: *See—*
Segredo, Anthony F.; Prendergast, Richard E.; Martin, Ralph E.; Pluister, Jack W.; and Techico, Manuel T., 4,606,205, Cl. 72-19.000.
Cook, Norman E. Automatic starting system. 4,606,307, Cl. 123-179.00B.
Cooke, Robert G., Jr. System and apparatus for opening cylinder locks. 4,606,204, Cl. 70-394.000.
Cooper, Charles F.: *See—*
Shum, Wilfred P.; and Cooper, Charles F., 4,607,113, Cl. 556-57.000.
Cooper, David G.; and Sach, George S., to Smith Kline & French Laboratories Ltd. (4-aminoalkyl-2-pyridyl alkyl)guanidines. 4,607,107, Cl. 546-332.000.
Cooper, G. Jack: *See—*
Sweers, Kenneth M.; Cooper, G. Jack; and Munsey, R. Jack, 4,606,156, Cl. 52-126.600.
Corbet, Ellen M., to Corbet, Ellen M.; and Trost, Charles J. Method for assembling a floral arrangement. 4,606,950, Cl. 428-23.000.
Corbin, David R.; Velenyi, Louis J.; Pepera, Marc A.; and Dolhyj, Serge R., to Standard Oil Company, The. Activation of fly ash. 4,607,021, Cl. 502-185.000.
Cordis Corporation: *See—*
Livingston, John H.; and Yomtov, Barry M., 4,606,349, Cl. 128-419.0PG.
Corghi Electromeccanica S.p.A.: *See—*
Cuccolini, Maria, 4,606,393, Cl. 157-1.240.
Corneliusson, Henry: *See—*
Glans, Jan-Erik; and Corneliusson, Henry, 4,606,784, Cl. 156-200.000.
Corning Glass Works: *See—*
Danielson, Paul S.; and Young, Lloyd G., 4,607,016, Cl. 501-70.000.
Cortet, Francois J.: *See—*
Seeman, Bronislaw; and Cortet, Francois J., 4,607,352, Cl. 367-35.000.
Couch, Robert P.: *See—*
Rosenbush, David M.; Zwicke, Philip E.; and Couch, Robert P., 4,607,337, Cl. 364-431.020.
Coupling Systems, Inc.: *See—*
Royston, James M., 4,606,565, Cl. 285-337.000.
Cox, Donald G. Moveable welding station. 4,606,260, Cl. 98-115.300.
Coyle, Chandler K.; and Salzman, Ronald N., to General Signal Corporation. Clustered mixing system. 4,606,648, Cl. 366-300.000.
Cozzie, James C., to Rockwell International Corporation. Microwave filter. 4,607,242, Cl. 333-209.000.
Crack, David J., to Teleflex Morse Limited. Control device. 4,606,237, Cl. 74-471.0XY.
Crane, Laura J.; and Nau, David R., to J. T. Baker Chemical Company. Purification of immunoglobulin G. 4,606,825, Cl. 210-635.000.
Crenshaw, Ronnie R.: *See—*
Algieri, Aldo A.; and Crenshaw, Ronnie R., 4,607,105, Cl. 546-213.000.
Crevling, Robert L.: *See—*
Berfield, Robert C.; and Crevling, Robert L., 4,606,563, Cl. 285-189.000.
Crissy, Charles F.: *See—*
Wood, Sherman L.; and Crissy, Charles F., 4,606,096, Cl. 24-68.0CT.
Crooks, Lawrence E., to University of California, Regents of the. Apparatus and method for reducing spurious currents in NMR imaging apparatus induced by pulsed gradient fields. 4,607,225, Cl. 324-318.000.
Crucible S.A.: *See—*
Bout, Bernardus J.; van Eeden, Ernest P.; and van der Walt, Nicolaas T., 4,606,219, Cl. 73-23.000.
Cuccolini, Maria, to Corghi Electromeccanica S.p.A. Tire removal machine with a simultaneously movable tool carrying head and automatic centering unit. 4,606,393, Cl. 157-1.240.
Culligan International Company: *See—*
Rak, Stanley F.; and Ward, Kenneth, 4,606,943, Cl. 427-244.000.
Culmer, Daniel D.: *See—*
Frederiksen, Thomas M.; and Culmer, Daniel D., 4,607,172, Cl. 307-291.000.
Cundall, David J. Bale-sheathing device. 4,606,176, Cl. 53-567.000.
Curren, Arthur N.; Jensen, Kenneth A.; and Roman, Robert F., to United States of America, National Aeronautics and Space Administration. Textured carbon surfaces on copper by sputtering. 4,607,193, Cl. 315-5.380.

Cybulski, Claude E., to Minnesota Mining and Manufacturing Company. Tripod cassette positioning. 4,607,303, Cl. 360-96.500.
Dacomed Corporation: *See*—
Timm, Gerald W., 4,606,353, Cl. 128-774.000.
Dai, Eugene P.: *See*—
Lewis, Paul H.; Dai, Eugene P.; and Holst, Edward H., 4,606,898, Cl. 423-244.000.
Daidotokushuko Kabushikikaisha: *See*—
Inagaki, Etsuo; and Izumi, Kikuma, 4,607,374, Cl. 373-104.000.
Daiichi Seiyaku Co., Ltd.: *See*—
Hasegawa, Akira; Azuma, Ichiro; and Yamamura, Yuichi, 4,606,857, Cl. 260-998.200.
Daikin Kogyo Company, Limited: *See*—
Hisamoto, Iwao; Maeda, Chiaki; Esaka, Takasige; and Hirai, Masaru, 4,606,832, Cl. 252-8.000.
Daikoku, Takahiro: *See*—
Nakayama, Wataru; Nakajima, Tadakatsu; Kuwahara, Heikichi; Yasukawa, Akira; Daikoku, Takahiro; and Yoshida, Hiromichi, 4,606,405, Cl. 165-133.000.
Daimaru, Akimasa: *See*—
Ban, Keisuke; Daimaru, Akimasa; Muraoka, Yasuo; and Miyake, Noriaki, 4,606,395, Cl. 164-98.000.
Dammann, Johannes, to Claas OHG. Harvester thresher. 4,606,355, Cl. 130-27.00T.
Danfoss A/S: *See*—
Hellegaard, Kjeld, 4,607,171, Cl. 307-270.000.
Rasmussen, Ivar, 4,606,671, Cl. 403-359.000.
Daniel Industries, Inc.: *See*—
Chisman, William E., III, 4,606,218, Cl. 73-3.000.
Daniell, Alan F., to Fluor Corporation. Spar buoy construction having production and oil storage facilities and method of operation. 4,606,673, Cl. 405-210.000.
Danielson, Paul S.; and Young, Lloyd G., to Corning Glass Works. Glass for use as tungsten-halogen lamp envelopes. 4,607,016, Cl. 501-70.000.
Dart Industries: *See*—
Conti, Rino; and Trivision, Jody A., 4,606,481, Cl. 222-562.000.
Daudi, Anwar R., to Motor Wheel Corporation. Method and apparatus for edge preparation of spinning blanks. 4,606,206, Cl. 72-68.000.
Davidson, John H. C. Plastic pipe fitting. 4,606,558, Cl. 285-21.000.
Davies, Joseph R. Hand washing device. 4,606,085, Cl. 4-623.000.
Davies, Morris J.: *See*—
Anderson, John C.; Eberlein, Ralf; and Davies, Morris J., 4,607,161, Cl. 250-227.000.
Davis, J. Stanley: *See*—
Knighton, Kelly; Davis, J. Stanley; and Radford, Steven R., 4,606,416, Cl. 175-58.000.
Davis, James W., to International Business Machines Corporation. Differential cascode current switch (DCCS) master slice for high efficiency/custom density physical design. 4,607,339, Cl. 364-491.000.
Davis, Kenneth, to Perry, W. Wesley. Drill bit method and apparatus. 4,606,108, Cl. 29-402.030.
Davis, Nina. Dough cutter. 4,606,126, Cl. 30-307.000.
Davy McKee Equipment Corporation: *See*—
Tooch, Charles A., 4,606,529, Cl. 266-80.000.
Day, James D.; and Day, James D., II. Method for constructing modular pre-cast concrete buildings. 4,606,878, Cl. 264-308.000.
Day, James D., II: *See*—
Day, James D.; and Day, James D., II, 4,606,878, Cl. 264-308.000.
Dayen, Leonid; and Raines, Charles D., to Horton Manufacturing Co., Inc. Coupling clutch and a self-contained, non-removable guard. 4,606,447, Cl. 192-85.00C.
De Dietrich (USA), Inc.: *See*—
Koehl, Richard; and Lerman, Michael J., 4,606,103, Cl. 29-156.80R.
de la Orden Azuaga, Manuel. Anti-theft device. 4,606,426, Cl. 180-287.000.
De'Ath, Mervyn C., to Marconi Company Limited, The. Sight system for a stabilized gun. 4,606,256, Cl. 89-41.090.
Debay, Andre , to Societe d'Etudes Scientifiques et Industrielles de l'Ile-De-France. N-(allyl-2-pyrrolidinylmethyl) 2-methoxy-4-amino-5-methylsulfamoyl benzamide anti platelets aggregation agent. 4,607,047, Cl. 514-428.000.
DeBliquy, Michael C., to Dymet Dymensions (Proprietary) Limited. Connector. 4,606,669, Cl. 403-170.000.
DeBoate, William J. Phase change ink jet with independent heating of jet and reservoir. 4,607,266, Cl. 346-140.0PR.
De Crane, Charles E. Bag closing and sealing machine. 4,606,175, Cl. 53-479.000.
Deere & Company: *See*—
Bernard, Jerald D.; Koltookian, Sarkis A.; and Mealhow, Kenneth S., 4,606,376, Cl. 138-30.000.
Jewett, James W., 4,606,422, Cl. 180-68.100.
Schlueter, Francis E., 4,606,177, Cl. 56-30.000.
Degen, Jost: *See*—
Kauffmann, Urs; and Degen, Jost, 4,606,590, Cl. 339-32.00M.
Degussa Aktiengesellschaft: *See*—
Hausselt, Jurgen; Kaufmann, Dieter; and Englisch, Udo, 4,606,887, Cl. 420-437.000.
Dejeux, Pol: *See*—
Millot, Jean-Paul; Alibran, Patrice; Desfontaines, Guy; and Dejeux, Pol, 4,606,881, Cl. 376-353.000.
de Jonge, Hayo; Groenendaal, Jan W.; Sijbrands, Gerrit J.; and Bagerman-Deetman, Annita, to Gist-Brocades N.V. Novel sodium amoxicillin preparations. 4,607,029, Cl. 514-197.000.
Del Monte Corporation: *See*—
Ross, Edward E.; and Strasser, Jurgen H., 4,606,263, Cl. 99-542.000.
Del Bene, Piero; and Negri, Ettore, to Officine Savio S.p.A. Feeder-stripper device for circular knitting machines. 4,606,202, Cl. 66-134.000.
Dellinger, Charles E.: *See*—
Goodson, Larry E.; and Dellinger, Charles E., 4,607,159, Cl. 250-221.000.
Delmolino, William P.: *See*—
Milewski, Maciej A.; and Delmolino, William P., 4,606,983, Cl. 429-164.000.
DelPrete, Stephen D.: *See*—
Grant, John L.; Torti, Emanuel D.; O'Malley, Austin S.; Galligan, Thomas W.; and DelPrete, Stephen D., 4,606,599, Cl. 339-258.00R.
Demetriades, Peter G. Method of making floor cleaning pad. 4,606,782, Cl. 156-62.800.
DeMoss, Dean; and Richardson, Harvey J., to Burroughs Corporation. Segmented spacer means for floppy disk packs. 4,607,304, Cl. 360-99.000.
Dennison, Robert R. Bimodal fishing reel assembly. 4,606,512, Cl. 242-84.20C.
Dergazarian, Thomas E., to Dow Chemical Company, The. Blends of organic polymers and organic terminated polysulfide polymers. 4,607,078, Cl. 525-64.000.
Derrington, Carl E.: *See*—
Kervin, Douglas J.; and Derrington, Carl E., 4,606,115, Cl. 29-572.000.
Desfontaines, Guy: *See*—
Millot, Jean-Paul; Alibran, Patrice; Desfontaines, Guy; and Dejeux, Pol, 4,606,881, Cl. 376-353.000.
de Simone, Renato: *See*—
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DesOrmeaux, Farrell P.; DesOrmeaux, Thomas F.; and DesOrmeaux, Mark R. System for extracting contaminants and hydrocarbons from cuttings waste in oil well drilling. 4,606,283, Cl. 110-250.000.
DesOrmeaux, Mark R.: *See*—
DesOrmeaux, Farrell P.; DesOrmeaux, Thomas F.; and DesOrmeaux, Mark R., 4,606,283, Cl. 110-250.000.
DesOrmeaux, Thomas F.: *See*—
DesOrmeaux, Farrell P.; DesOrmeaux, Thomas F.; and DesOrmeaux, Mark R., 4,606,283, Cl. 110-250.000.
DeSoto, Inc.: *See*—
Ansel, Robert E., 4,607,068, Cl. 523-181.000.
DeStio, Paul: *See*—
Baum, Gerald A.; Chacko, Varkki P.; and DeStio, Paul, 4,607,075, Cl. 524-449.000.
Deutsch, Alice; Brandwein, Harvey; Platt, Herbert; Hunter, Dianne M.; Dubitsky, Andrew; and Durham, Susan M., to Mex Research Associates c/o Leon Reimer. Monoclonal antibody to digoxin. 4,606,855, Cl. 530-387.000.
Deutsch, Hermann: *See*—
Kruger, Hermann; and Deutsch, Hermann, 4,606,304, Cl. 123-90.270.
DeVilbiss Company Limited, The: *See*—
Bate, Anthony J.; and Smith, Rowland C., 4,606,501, Cl. 239-346.000.
de Waal, Jan C.; and Blom, Peter W. E., to Union Steel Corp. (of So. Africa) Ltd. Reduction of metal compounds. 4,606,761, Cl. 75-10.190.
De Winter, Walter F.: *See*—
Uyttenhoeven, Herman J.; Marien, August M.; and De Winter, Walter F., 4,606,989, Cl. 430-106.000.
DeWitt, Vern T.; and Haltof, Garry P., to Caldwell Manufacturing Company. Sealing jamb liner for double-hung window sash. 4,606,147, Cl. 49-434.000.
DeWoskin, Irvin S., to Barnhart Industries, Inc. Fasteners for apparel and methods of manufacturing them. 4,606,079, Cl. 2-338.000.
Dhein, Rolf: *See*—
Schreckenberg, Manfred; Dhein, Rolf; Lange, Ralf; and Waldenrath, Werner, 4,607,070, Cl. 524-100.000.
Diab-Barracuda AB: *See*—
Karlsson, Lars G., 4,606,966, Cl. 428-196.000.
Dickson, James; Nienart, Louis F.; and Roth, David W., to Allied Corporation. Amorphous metal hardfacing coatings. 4,606,977, Cl. 428-553.000.
Diefenbach, Gerhard; Schemmann, Hugo; and Bukoschek, Romuald L., to U.S. Philips Corporation. Drive mechaniam for a vibration-type dry shaver. 4,606,121, Cl. 30-43.920.
Diehl GmbH & Co.: *See*—
Sundermeyer, Peter, 4,606,514, Cl. 244-3.150.
Diesel Kiki Co., Ltd.: *See*—
Takahashi, Tadahiro; and Sutoh, Shinji, 4,606,197, Cl. 62-133.000.
Di Giovanni, John, to Ethicon, Inc. Surgical instrument for applying fasteners having improved gap indicating means (Case V). 4,606,344, Cl. 128-334.00R.
Digitel, Inc.: *See*—
Wickman, Miles X., 4,607,170, Cl. 307-147.000.
Dijkstra, Kees; Videc, Bernard P.; and Huizinga, Jan, to U.S. Philips Corporation. Electroacoustic transducer unit with reduced resonant frequency and mechanical spring with negative spring stiffness, preferably used in such a transducer unit. 4,607,382, Cl. 381-59.000.
D'Imperio, David. Sectionalized integrated aquarium. 4,606,821, Cl. 210-169.000.

Ding, Shulin: *See—*
Frank, Sylvan G.; Brodin, Arne F.; and Ding, Shulin, 4,606,940, Cl. 427-213.320.
Dinger, Nelson E., to Huber Reversible Fan, Inc. Reversible fan with cylindrical resilient rubber spring. 4,606,702, Cl. 416-206.000.
Dini, Norbert: *See—*
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Director-General of the Agency of Industrial Science & Technology: *See—*
Yamada, Yasuhiro; Imamura, Takeshi; Shibata, Masao; Arita, Seiji; and Honda, Hidemasa, 4,606,808, Cl. 208-44.000.
Dismon, Peter: *See—*
Weidenhaupt, Wolfgang; Wepner, Gunther; and Dismon, Peter, 4,606,392, Cl. 152-451.000.
Di Tella, Vincenzo; Brandi, Roberto; and Carraro, Roberto, to Tecnomare S.p.A. Fixed structure mooring system for tanker ships. 4,606,294, Cl. 114-230.000.
Dixon, John: *See—*
Baxter, Andrew J. G.; Dixon, John; McInally, Thomas; and Tinker, Alan C., 4,607,041, Cl. 514-318.000.
Dobkowski, Zbingniew: *See—*
Penczek, Irena; Bialy, Jan; and Dobkowski, Zbingniew, 4,607,085, Cl. 526-59.000.
Dr. Franz Kohler Chemie GmbH: *See—*
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Dr. Ing. h.c.F. Porsche AG: *See—*
Mezger, Hans; and Wurster, Walter, 4,606,303, Cl. 123-51.0BD.
Dr.-Ing. Rudolf Hell GmbH: *See—*
Pointner, Martin; and Sommer, Ruediger, 4,607,268, Cl. 346-155.000.
Dr. Johannes Heidenhain GmbH: *See—*
Nelle, Guenther, 4,606,642, Cl. 356-374.000.
Doerflinger, Walter: *See—*
Tesch, Helmut; Heym, Manfred; Doerflinger, Walter; Stutz, Herbert; Neumann, Peter; Nissen, Dietmar; and Schaefer, Gerhard, 4,607,069, Cl. 523-400.000.
Dola, Frank P., to AMP Incorporated. Premise wiring system and components therefor. 4,606,595, Cl. 339-99.00R.
Dolhyj, Serge R.: *See—*
Corbin, David R.; Velenyi, Louis J.; Pepera, Marc A.; and Dolhyj, Serge R., 4,607,021, Cl. 502-185.000.
Domian, Robert E., to Kingston Tool Co. Inc. Interchangeable gun sight. 4,606,131, Cl. 33-257.000.
Dominguez, Richard J. G., to Texaco Inc. Reaction injection molded elastomers. 4,607,090, Cl. 528-48.000.
Domrachev, Vladimir A.: *See—*
Petrakov, Vladimir P.; Minkin, Gennady P.; Shagun, Vladimir A.; Balykin, Pavel S.; Barklon, David I.; and Domrachev, Vladimir A., 4,606,929, Cl. 427-34.000.
Domtar Inc.: *See—*
Harris, Robert G., 4,606,650, Cl. 374-14.000.
Donnelly, Joseph R., Jr. Artesian well generated power system. 4,607,169, Cl. 290-54.000.
Donohue, Timothy J.: *See—*
Kaplan, Samuel; Donohue, Timothy J.; and Cain, Brian D., 4,607,011, Cl. 435-131.000.
Dooley, Milton T.; Bradley, Nelson A.; Hiers, Robert S., Jr.; and Staats, Gary E., to Reynolds Metals Company. Gaseous electrode for MHD generator. 4,607,179, Cl. 310-11.000.
Dorband, Glen C.; Failla, Stephen J.; and Kula, John, to Ethicon, Inc. Surgical instrument for applying two-piece fasteners comprising U-shaped staples and frictionally held receivers (Case II). 4,606,345, Cl. 128-334.00R.
Dossier, Gerard: *See—*
Martin, Bernard; and Dossier, Gerard, 4,607,372, Cl. 373-41.000.
Douglass, John, to Smith & Davis Manufacturing Company. Removable arm for wheelchairs. 4,606,579, Cl. 297-416.000.
Douri, Hisashi, to Nippon Notion Kogyo Co., Ltd. Apparatus for attaching fasteners to web-like materials. 4,606,487, Cl. 227-8.000.
Dow Chemical Company, The: *See—*
Bon, Charles K., 4,606,805, Cl. 204-296.000.
Dergazarian, Thomas E., 4,607,078, Cl. 525-64.000.
Kuhn, Ernst; Boer, Jelle D.; and Theon, Johan, 4,607,064, Cl. 521-174.000.
Malhotra, Sudarshan K.; and Evoy, Ingrid L., 4,606,757, Cl. 71-94.000.
Morris, Thomas E., 4,606,774, Cl. 134-10.000.
Pawloski, Chester E.; and Ginter, Sally P., 4,607,063, Cl. 521-165.000.
Schmidt, Donald L.; and Urchick, Demetrius, 4,606,973, Cl. 428-421.000.
Scott, Richard L.; Kirksey, William A.; and Rieke, James K., 4,606,230, Cl. 73-856.000.
Simon, Jaime; Volkert, Wynn A.; and Wilson, David A., 4,606,907, Cl. 424-1.100.
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Dowty Hydraulic Units Limited: *See—*
Lipscombe, Brian R., 4,606,713, Cl. 418-131.000.
Drackett Company: *See—*
Keyes, George B.; Requejo, Lux P.; and Hilton, Thomas B., 4,606,842, Cl. 252-174.230.
Dragerwerk AG: *See—*
Walther, Hans-Joachim, 4,606,339, Cl. 128-204.190.
Dragone, Corrado, to AT&T Bell Laboratories. Adaptive antenna for reducing multipath fades. 4,607,259, Cl. 343-758.000.
Dragone, Corrado, to AT&T Bell Laboratories. Asymmetrically configured horn antenna. 4,607,260, Cl. 343-786.000.
Drake, Charles A., to Phillips Petroleum Company. Isolation of 3-methyl-1-butene from a hydrocarbon stream. 4,607,131, Cl. 585-858.000.
Dreier, Benno, to International Standard Electric Corporation. Complex capacitive impedance with a voltage follower circuit. 4,607,243, Cl. 333-214.000.
Drzymkowski, Francis A.; and Turnbaugh, Kenneth B., to ITT Corporation. Grounding plate connector. 4,606,598, Cl. 339-147.00R.
Dubitsky, Andrew: *See—*
Deutsch, Alice; Brandwein, Harvey; Platt, Herbert; Hunter, Dianne M.; Dubitsky, Andrew; and Durham, Susan M., 4,606,855, Cl. 530-387.000.
Dudzik, Henryk, to Mardon Illingworth Limited. Container with plug-fitting lid. 4,606,474, Cl. 220-307.000.
Duffer, Paul F.; Kelly, Joseph D.; and Franz, Helmut, to PPG Industries, Inc. Method of applying interleaving material to glass sheets. 4,606,946, Cl. 427-384.000.
Duggan, Peter J.; and Gordon, Paul F., to Imperial Chemical Industries PLC. Infra-red absorber. 4,606,859, Cl. 540-122.000.
Dummer, Gerhard; Schmidhammer, Ludwig; Hirschmann, Peter; and Stettner, Gerhard, to Wacker-Chemie GmbH. Novel heat recovery process. 4,606,742, Cl. 55-27.000.
Dunford, William J.; and Hajek, Bedrich, to Electrostatic Technology Incorporated. Vortex effect electrostatic fluidized bed coating method and apparatus. 4,606,928, Cl. 427-32.000.
Dunn, James R.; and Chasen, Lee R., to Coats & Clark, Inc. Tongs for grasping food. 4,606,569, Cl. 294-118.000.
Duo-Fast Corporation: *See—*
Grikis, Raimonds; and Obergfell, Allen R., 4,606,455, Cl. 206-347.000.
Duphar International Research B.V.: *See—*
Wellinga, Kobus; and Mulder, Rudolf, 4,607,044, Cl. 514-383.000.
Du Pont de Nemours, E. I., and Company: *See—*
Eastman, Paul F.; Enouen, Susan W.; Hawkins, William E.; and Parish, Darrell J., 4,606,955, Cl. 428-36.000.
Rorer, Morris P., 4,606,755, Cl. 71-93.000.
Shapiro, Rafael, 4,606,754, Cl. 71-92.000.
Sutter, Hubert; Haas, Karl-Uwe; and Ledet, Winston P., 4,607,086, Cl. 526-65.000.
Whiting, David E.; and Schell, Mark S., 4,606,596, Cl. 339-107.000.
Dupre, Herman K. Solar ice melter for roof eaves. 4,606,402, Cl. 165-47.000.
Dur-O-Wal, Inc.: *See—*
Catani, Mario J., 4,606,163, Cl. 52-434.000.
Duracell Inc.: *See—*
Milewski, Maciej A.; and Delmolino, William P., 4,606,983, Cl. 429-164.000.
Durham, Susan M.: *See—*
Deutsch, Alice; Brandwein, Harvey; Platt, Herbert; Hunter, Dianne M.; Dubitsky, Andrew; and Durham, Susan M., 4,606,855, Cl. 530-387.000.
Dusek, Russell L.; and Posten, Robert J. Tobacco composition. 4,606,357, Cl. 131-359.000.
du Temple de Rougemont, Christian, to S.A.R.L. Isomat. Apparatus for reefing sails on a boat and specially-designed boom including such an apparatus. 4,606,292, Cl. 114-104.000.
Dutton, Ernest H. Seal installation tool. 4,606,106, Cl. 29-235.000.
Dymet Dymensions (Proprietary) Limited: *See—*
DeBliquy, Michael C., 4,606,669, Cl. 403-170.000.
E. R. Squibb & Sons, Inc.: *See—*
Hall, Steven E., 4,607,049, Cl. 514-469.000.
Karanewsky, Donald S.; and Haslanger, Martin F., 4,607,053, Cl. 514-575.000.
Nakane, Masami, 4,607,048, Cl. 514-469.000.
Eastman Kodak Company: *See—*
Bishop, John F., 4,606,992, Cl. 430-220.000.
Foster, Charles H., 4,607,111, Cl. 549-413.000.
Gunther, Wolfgang H. H.; and Lok, Roger, 4,607,000, Cl. 430-428.000.
Guslits, Vladimir S., 4,606,492, Cl. 228-179.000.
Horowitz, Harvey M.; and Veillard, Dominique H., 4,607,241, Cl. 333-166.000.
Kindt, Robert J., 4,606,235, Cl. 74-113.000.
Lok, Roger; and Gunther, Wolfgang H. H., 4,607,001, Cl. 430-428.000.
McCann, James D.; Piatt, Michael J.; and Williams, Theodore F., 4,607,261, Cl. 346-75.000.
Warren, David P., 4,606,864, Cl. 558-257.000.
Eastman, Paul F.; Enouen, Susan W.; Hawkins, William E.; and Parish, Darrell J., to Du Pont de Nemours, E. I., and Company. Conductive pyrolyzed dielectrics and articles made therefrom. 4,606,955, Cl. 428-36.000.
Eastwood, Linda M.: *See—*
Mallard, John R.; Johnson, Glyn; Eastwood, Linda M.; Redpath, Thomas W. T.; and Hutchison, James M. S., 4,607,223, Cl. 324-309.000.
Eaton Corporation: *See—*
Giere, David W., 4,606,428, Cl. 180-307.000.
Moran, Thomas M.; and Oehlke, Donald N., 4,606,688, Cl. 411-175.000.
Rockey, Carl E., 4,606,445, Cl. 192-58.00B.
Eaton, Steven G.: *See—*
Neukermans, Armand P.; and Eaton, Steven G., 4,607,213, Cl. 324-61.00R.

Ebara Corporation: *See—*
Fujimoto, Masakazu; and Inoue, Naoyuki, 4,606,403, Cl. 165-95.000.
Eberlein, Ralf: *See—*
Anderson, John C.; Eberlein, Ralf; and Davies, Morris J., 4,607,161, Cl. 250-227.000.
Ebner, Heinz: *See—*
Wessel, Gerhard; and Ebner, Heinz, 4,606,267, Cl. 101-93.040.
Eckert, Konrad; Maurer, Franz; Muller, Egbert; and Stumpe, Werner, to Robert Bosch GmbH. Brake force regulating system. 4,606,586, Cl. 303-93.000.
Ecodyne Corporation: *See—*
Kunin, Robert; and LaTerra, Terrance, 4,606,894, Cl. 423-7.000.
Eden, James G.; McCown, Andrew W.; Ediger, Marwood N.; and Greene, Dennis P., to Board of Trustees, University of Illinois. Multi-wavelength metal halide lasers. 4,607,371, Cl. 372-56.000.
Ederer, Ulf G.: *See—*
Ehrentraut, Otto; and Ederer, Ulf G., 4,606,653, Cl. 384-283.000.
Ediger, Marwood N.: *See—*
Eden, James G.; McCown, Andrew W.; Ediger, Marwood N.; and Greene, Dennis P., 4,607,371, Cl. 372-56.000.
Edwards, Robert A.: *See—*
Tedeschi, Rinaldo R.; and Edwards, Robert A., 4,606,224, Cl. 73-117.300.
Egawa, Yoshitaka: *See—*
Endo, Yukio; Egawa, Yoshitaka; Harada, Nozomu; and Yoshida, Okio, 4,607,287, Cl. 358-213.000.
Egee, Elizabeth J., executrix: *See—*
Robinson, Albert H., Jr.; and Egee, Walter W., deceased, 4,606,262, Cl. 99-470.000.
Egee, Walter W., deceased: *See—*
Robinson, Albert H., Jr.; and Egee, Walter W., deceased, 4,606,262, Cl. 99-470.000.
Egerbacher, Werner: *See—*
Vogt, Herbert; Egerbacher, Werner; Wunderlich, Dieter; and Mitzkus, Werner, 4,607,275, Cl. 357-79.000.
Egerer, Josef, to Staedtler & Uhl. Saw-toothed stamped metal part as outfit for a comb segment of a porcupine. 4,606,095, Cl. 19-97.000.
Eguchi, Chikahiko: *See—*
Ozawa, Yoichi; Kishimoto, Shinichi; Shinohara, Emiko; Takemoto, Tadashi; and Eguchi, Chikahiko, 4,606,854, Cl. 260-998.210.
Eguchi, Masayuki. Apparatus for lifting masses of water by utilizing air bubbles. 4,606,867, Cl. 261-122.000.
Ehrentraut, Otto; and Ederer, Ulf G., to Miba Gleitlager Aktiengesellschaft. High-duty sliding surface bearing. 4,606,653, Cl. 384-283.000.
Eidenschink, Rudolf: *See—*
Romer, Michael; Eidenschink, Rudolf; Krause, Joachim; Scheuble, Bernhard; and Weber, Georg, 4,606,845, Cl. 252-299.630.
Eisinger, Frantisek L., to Foster Wheeler Energy Corporation. Disc roller mechanism for forming helical shapes. 4,606,209, Cl. 72-135.000.
Eisemann, Kurt W., to General Electric Company. Method of correcting inaccurate instrumental potential transformer ratio. 4,607,211, Cl. 323-356.000.
Elbert, Lawrence E.; and Irwin, Charles S., to American Hospital Supply Corporation. Ultrasonic horn assembly. 4,607,185, Cl. 310-323.000.
Electrohome Limited: *See—*
Kurg, Maarjus, 4,607,280, Cl. 358-60.000.
Electrostatic Technology Incorporated: *See—*
Dunford, William J.; and Hajek, Bedrich, 4,606,928, Cl. 427-32.000.
Elf France: *See—*
Fayard, Jean-Claude, 4,606,309, Cl. 123-190.0DL.
Elsbree, Charles N., Jr.; Regner, Hector A.; Rodriguez, Claude; and Ravlich, Anthony, to H & V Services. Compliant pin. 4,606,589, Cl. 339-17.00C.
Eltech Systems Corporation: *See—*
Miller, Thomas M.; and Schraff, Raymond J., 4,606,473, Cl. 220-215.000.
Emerson Electric Co.: *See—*
Hayes, Robert J.; and Redman, James C., 4,606,249, Cl. 82-36.00R.
LaRou, Albert M., 4,606,656, Cl. 384-475.000.
Emerson, Ralph W., Sr., to Reichhold Chemicals, Inc. Sizing agents for cellulosic products. 4,606,791, Cl. 162-180.000.
Emhart Industries, Inc.: *See—*
Keller, Rene , 4,606,746, Cl. 65-29.000.
Endo, Chihiro: *See—*
Kaku, Takashi; and Endo, Chihiro, 4,607,230, Cl. 329-50.000.
Endo, Yukio; Egawa, Yoshitaka; Harada, Nozomu; and Yoshida, Okio, to Kabushiki Kaisha Toshiba. Wobbling-swing driven image sensor. 4,607,287, Cl. 358-213.000.
Endoh, Hiroyuki: *See—*
Sasaki, Tohru; Kidoh, Kunizoh; and Endoh, Hiroyuki, 4,606,144, Cl. 43-44.980.
Energy Conversion Devices, Inc.: *See—*
Yaniv, Zvi; Cannella, Vincent D.; Yu, Terry T.; and Fulton, Christopher, 4,606,610, Cl. 350-331.00R.
Engelhard Corporation: *See—*
Byrne, John W.; and Speronello, Barry K., 4,606,813, Cl. 208-120.000.
Taylor, Arthur D.; and Ramsey, Roger W., 4,606,797, Cl. 204-146.000.
Engelskirchen, Jurgen: *See—*
Koenig, Dieter; Klante, Hansjorg; Niemann, Manfred; Jenny, Wilhelm; and Engelskirchen, Jurgen, 4,606,727, Cl. 441-5.000.
Engle, Elbert, to Chesebrough-Pond's Inc. Placket lining machine. 4,606,286, Cl. 112-121.120.
Englert, Heinrich C.; Mania, Dieter; Muschaweck, Roman; and Hropot, Max, to Hoechst Aktiengesellschaft. 2-aminomethyl-6-sulfamoylphenol derivatives, a process for their preparation and their use and also pharmaceutical formulations based on these compounds. 4,607,030, Cl. 514-210.000.
Englisch, Udo: *See—*
Hausselt, Jurgen; Kaufmann, Dieter; and Englisch, Udo, 4,606,887, Cl. 420-437.000.
Enichimica S.p.A.: *See—*
Penczek, Irena; Bialy, Jan; and Dobkowski, Zbingniew, 4,607,085, Cl. 526-59.000.
Enouen, Susan W.: *See—*
Eastman, Paul F.; Enouen, Susan W.; Hawkins, William E.; and Parish, Darrell J., 4,606,955, Cl. 428-36.000.
Enyo, Hiroji: *See—*
Sugimoto, Masatoshi; Ichikawa, Masayoshi; Terashima, Kiyomitsu; Enyo, Hiroji; Iwanaga, Shinichiro; and Okuya, Eitaro, 4,606,952, Cl. 428-36.000.
Eotec Corporation: *See—*
Krohn, David A., 4,606,226, Cl. 73-293.000.
Eppstein, Deborah A., to Syntex (U.S.A) Inc. Synergistic antiviral composition. 4,606,917, Cl. 424-85.000.
Epton Industries Inc.: *See—*
Grant, Owen G.; and Williams, Frank, 4,606,498, Cl. 238-8.000.
Erhardt & Leimer GmbH: *See—*
Brunner, Gerhard; Sigel, Arnold; and Scharschinger, Margrit, 4,606,486, Cl. 226-19.000.
Ernst Flitsch GmbH & Co.: *See—*
Gotzenberger, Rudibert, 4,606,199, Cl. 62-225.000.
Ernstson, Christer; and Sadahiro, Yousuke, to Konishiroku Photo Industry Co., Ltd. Method for separating and recovering color developing agent. 4,606,827, Cl. 210-670.000.
Esaka, Takasige: *See—*
Hisamoto, Iwao; Maeda, Chiaki; Esaka, Takasige; and Hirai, Masaru, 4,606,832, Cl. 252-8.000.
Esposito, Christopher, to Four Seasons Solar Products Corp. Shade arrangement for solar green-houses and the like. 4,606,157, Cl. 52-173.00R.
Esser, Hans, to Ogden Industries Pty. Ltd. Latch and deadbolt lock set. 4,606,203, Cl. 70-107.000.
Essex Group, Inc.: *See—*
McGregor, Charles W., 4,606,870, Cl. 264-22.000.
Etat Francais: *See—*
Kerdraon, Alain L., 4,606,272, Cl. 102-308.000.
ETD Technology, Inc.: *See—*
Pelligrino, Peter P., 4,606,787, Cl. 156-632.000.
Ethicon, Inc.: *See—*
Di Giovanni, John, 4,606,344, Cl. 128-334.00R.
Dorband, Glen C.; Failla, Stephen J.; and Kula, John, 4,606,345, Cl. 128-334.00R.
Eumuco Aktiengesellschaft fur Maschinenbau: *See—*
Krosbacher, Peter; and Wetzinger, Johann, 4,606,250, Cl. 83-161.000.
Schiller, Werner; Benedix, Manfred; and Szakacsi, Janos, 4,606,217, Cl. 72-454.000.
Evans, George D.: *See—*
Robinson, Ronald A.; Boan, William J.; and Evans, George D., 4,606,775, Cl. 134-18.000.
Everett, Lynn E., to Tusco Manufacturing Co. Display stand structure. 4,606,467, Cl. 211-60.100.
Evich, Vincent J. Automatic surface dressing machine. 4,606,094, Cl. 17-50.000.
Evoy, Ingrid L.: *See—*
Malhotra, Sudarshan K.; and Evoy, Ingrid L., 4,606,757, Cl. 71-94.000.
Exxon Research & Engineering Co.: *See—*
Best, Steven A., 4,607,019, Cl. 502-119.000.
Hafez, Mahmoud M.; and Black, Laura E., 4,606,903, Cl. 423-447.400.
Hazelton, Donald R.; Puydak, Robert C.; and Booth, D. A., 4,607,074, Cl. 524-425.000.
Schulz, Donald N.; and Kitano, Kiasho, 4,607,076, Cl. 524-548.000.
Soled, Stuart L.; and Fiato, Rocco A., 4,607,020, Cl. 502-177.000.
EZ Paintr Corporation: *See—*
Kaminski, Darryl L., 4,606,456, Cl. 206-362.400.
Facet Enterprises, Inc.: *See—*
Sekella, Thomas C., 4,606,444, Cl. 192-48.200.
Faessler, Adelmar: *See—*
Biller, Victor; and Faessler, Adelmar, 4,606,382, Cl. 141-1.000.
FAG Kugelfischer Georg Schafer (KGaA): *See—*
Hofmann, Heinrich, 4,606,655, Cl. 384-458.000.
Hofmann, Heinrich; and Markfelder, Gunter, 4,606,658, Cl. 384-510.000.
Faggian, Lucio; de Simone, Renato; and Platone, Edoardo, to AGIP, S.p.A. Process for preparing alkaline metal salts of polyethoxycarboxylic acids. 4,607,121, Cl. 562-537.000.
Failla, Stephen J.: *See—*
Dorband, Glen C.; Failla, Stephen J.; and Kula, John, 4,606,345, Cl. 128-334.00R.
Fallgren, Rolf: *See—*
Osnes, Hans M.; and Fallgren, Rolf, 4,606,188, Cl. 59-85.000.
Fannin, Wayne V.: *See—*
Buchanan, Harry C., Jr.; Fannin, Wayne V.; and Watson, Byron L., 4,606,440, Cl. 188-319.000.

Fanuc Ltd.: *See*—
Kishi, Hajimu; Kurakake, Mitsuo; Seki, Masaki; Tanaka, Kunio; and Matsumura, Teruyuki, 4,607,327, Cl. 364-191.000.
Farnham, Richard D. Physical therapy device. 4,606,539, Cl. 272-93.000.
Farr, Glyn P. R.; Mortimer, Ivan; and Harrison, Anthony W., to Lucas Industries Public Limited Company. Anti-skid hydraulic braking systems for vehicles. 4,606,585, Cl. 303-92.000.
Farrell, Dominic L. Synthetic clay tennis court and method of making the same. 4,606,963, Cl. 428-150.000.
Faugeron, Gabriel, to U.S. Philips Corporation. Squelch arrangement for AM/FM radio receiver. 4,607,390, Cl. 455-143.000.
Faure, Bernard: *See*—
Monin, Jean; Faure, Bernard; Soldat, Georges; and Healy, Jean-Claude, 4,606,636, Cl. 356-338.000.
Favot, Peter. Process for densifying low density woods. 4,606,388, Cl. 144-361.000.
Fayard, Jean-Claude, to Elf France. Device for controlling the combustion chambers exhaust and/or intake for internal combustion engines. 4,606,309, Cl. 123-190.0DL.
Fearnot, Neal E.: *See*—
Geddes, Leslie A.; and Fearnot, Neal E., 4,606,352, Cl. 128-702.000.
Feinendegen, Ludwig E.: *See*—
Wyrwich, Helmut; Graschew, Georgi; Chatzipetros, Johann; and Feinendegen, Ludwig E., 4,606,128, Cl. 33-143.00C.
Ferag AG: *See*—
Meier, Jacques, 4,606,173, Cl. 53-430.000.
Fergason, James L., to Manchester R & D Partnership. Enhanced scattering in voltage sensitive encapsulated liquid crystal. 4,606,611, Cl. 350-334.000.
Ferlay, Serge. Process for treating zinc-laden dust issuing from electric steel plant furnaces. 4,606,765, Cl. 75-101.00R.
Fertis, Demeter G.; and Smith, Larry L. Airfoil. 4,606,519, Cl. 244-200.000.
Feyen, Peter; Rauleder, Gebhard; and Reiser, Wolf, to Bayer Aktiengesellschaft. Process for the preparation of 3-isomers of 1-cyclohexyl-2-(1,2,4-triazol-1-yl)-1-penten-3-one derivatives. 4,607,108, Cl. 548-262.000.
Fiato, Rocco A.: *See*—
Soled, Stuart L.; and Fiato, Rocco A., 4,607,020, Cl. 502-177.000.
Fiberdynamics, Inc.: *See*—
Anderson, John C.; Eberlein, Ralf; and Davies, Morris J., 4,607,161, Cl. 250-227.000.
Fieldcrest Mills, Inc.: *See*—
Mills, Edwin R., 4,607,154, Cl. 219-505.000.
Figgie International Inc.: *See*—
Ansite, William K., 4,606,340, Cl. 128-205.240.
Biller, Victor; and Faessler, Adelmar, 4,606,382, Cl. 141-1.000.
Figueroa, LeRoy R. Method of and apparatus for cutting a carpet. 4,606,124, Cl. 30-293.000.
Filimonov, Viktor A.: *See*—
Brudny-Chelyadinov, Sergei J.; Budyansky, Vigdor S.; Sorokoumov, Viktor K.; and Filimonov, Viktor A., 4,606,700, Cl. 415-199.500.
Filonov, Alexandr D.: *See*—
Klimashko, Vladimir V.; Chepurnoi, Nikolai P.; Makeev, Vladimir D.; Naboko, Vladimir P.; Filonov, Alexandr D.; and Svita, Petr N., 4,606,414, Cl. 173-128.000.
Finn, James C., III: *See*—
Fogarty, Thomas J.; Finn, James C., III; and Kinney, Thomas B., 4,606,347, Cl. 128-344.000.
Firmenich SA: *See*—
Snowden, Roger L., 4,607,109, Cl. 548-400.000.
Fisk, Peter R., to Ciba-Geigy Corporation. Process for conditioning metal surfaces. 4,606,890, Cl. 422-15.000.
Fisons plc: *See*—
Baxter, Andrew J. G.; Dixon, John; McInally, Thomas; and Tinker, Alan C., 4,607,041, Cl. 514-318.000.
Flaherty, John M., to GTE Products Corporation. Protection film for improved phosphor maintenance and increased time-integrated light output. 4,607,191, Cl. 313-489.000.
Flakt Aktiebolag: *See*—
Nystrom, Karl G., 4,606,259, Cl. 98-36.000.
Flamand, Charles: *See*—
Alloin, Michel; and Flamand, Charles, 4,607,133, Cl. 174-15.0WF.
Flamm, Peter M., to ITT Industries, Inc. Digital circuit for suppressing changes in a digital signal. 4,607,278, Cl. 358-36.000.
Flick, Robert A. Disposable striking line dispenser. 4,606,134, Cl. 33-414.000.
Fluor Corporation: *See*—
Daniell, Alan F., 4,606,673, Cl. 405-210.000.
Flynn, Cormack: *See*—
Rohr, Martin; Vallone, N. Peter; and Flynn, Cormack, 4,606,925, Cl. 426-538.000.
FMC Corporation: *See*—
Coffey, William M., 4,606,557, Cl. 285-18.000.
Fogarty, Thomas J.; Finn, James C., III; and Kinney, Thomas B., to Fogarty, Thomas J. Inverted balloon catheter having sealed through lumen. 4,606,347, Cl. 128-344.000.
Fonio, Carlo, to Rockwell-Rimoldi S.p.A.; and Officina Mecannica Mario Fonio. Machine for converting rolled cloth into sheets. 4,606,533, Cl. 270-31.000.
Ford Motor Company: *See*—
Heitert, John S.; and Van Wiemeersch, John R., 4,607,227, Cl. 324-437.000.
Johnson, Milton D.; and Chattha, Mohinder S., 4,607,092, Cl. 528-108.000.
Forsac Valves Limited: *See*—
McCafferty, John J., 4,606,368, Cl. 137-15.000.
Foster, Charles H., to Eastman Kodak Company. Process for separation of tocopherol homologues (II). 4,607,111, Cl. 549-413.000.
Foster, Martin C.: *See*—
Mottier, Francois M.; and Foster, Martin C., 4,606,639, Cl. 356-358.000.
Foster-Miller, Inc.: *See*—
Harvey, Andrew C., 4,606,720, Cl. 431-115.000.
Foster Wheeler Energy Corporation: *See*—
Eisinger, Frantisek L., 4,606,209, Cl. 72-135.000.
Four Seasons Solar Products Corp.: *See*—
Esposito, Christopher, 4,606,157, Cl. 52-173.00R.
Framatome & Cie: *See*—
Millot, Jean-Paul; Alibran, Patrice; Desfontaines, Guy; and Dejeux, Pol, 4,606,881, Cl. 376-353.000.
Morin, Jean-Xavier, 4,606,135, Cl. 34-57.00B.
Frank, Sylvan G.; Brodin, Arne F.; Chen, Chih-Ming J.; and Shrivastava, Ratnesh, to Ohio State University Research Foundation, The. Small particle formation. 4,606,939, Cl. 427-213.300.
Frank, Sylvan G.; Brodin, Arne F.; and Ding, Shulin, to Ohio State University Research Foundation, The. Small particle formation and encapsulation. 4,606,940, Cl. 427-213.320.
Frans Swarttour B. V.: *See*—
Van Deijk, Jan D. A., 4,606,469, Cl. 212-256.000.
Fränz, Helmut: *See*—
Duffer, Paul F.; Kelly, Joseph D.; and Franz, Helmut, 4,606,946, Cl. 427-384.000.
Franz Plasser Bahnbaumaschinen-Industriegesellschaft m.b.H.: *See*—
Theurer, Josef; and Oellerer, Friedrich, 4,606,273, Cl. 104-1.00R.
Frederiksen, Thomas M.; and Culmer, Daniel D., to National Semiconductor Corporation. Bipolar strobed transistor latch for a high gain comparator. 4,607,172, Cl. 307-291.000.
Fredrickson, Howard J., to Cannon Equipment Company. Pegbar display device having a carrier for graphic identification. 4,606,466, Cl. 211-59.100.
Fredriksson, Verner. Adjustable crank assembly. 4,606,241, Cl. 74-594.100.
Freeman, Charles F., to United States of America, Army. Method and apparatus for correcting distortion and curvature of field in a display system. 4,606,606, Cl. 350-145.000.
Freyberger, Laurin C., to ITT Industries, Inc. Television receiver with an automatic digital alignment system. 4,607,288, Cl. 358-242.000.
Freyssinet International Stup: *See*—
Jartoux, Pierre, 4,606,380, Cl. 138-122.000.
Friedrich Grohe Armaturenfabrik GmbH & Co.: *See*—
Geipel, Werner; Heimann, Bruno; and Grendel, Vinzenz, 4,606,370, Cl. 137-119.000.
Friedrich, Karl: *See*—
Ashikawa, Noboru; Friedrich, Karl; and Leinfellner, Herwig, 4,606,243, Cl. 74-700.000.
Frima, Heico J.: *See*—
Chan, Lo Kwan; and Frima, Heico J., 4,606,490, Cl. 228-103.000.
Fritz Enterprises, Inc.: *See*—
Fritz, Leonard; Osterberg, Richard R.; Wolanski, Richard B.; and Arvay, Joseph E., 4,606,760, Cl. 75-10.190.
Fritz Gegauf Aktiengesellschaft Bernina-Nahmaschinenfabrik: *See*—
Lerch, Hans-Ulrich; and Oberholzer, Willi, 4,606,507, Cl. 242-22.000.
Fritz, Leonard; Osterberg, Richard R.; Wolanski, Richard B.; and Arvay, Joseph E., to Huron Valley Steel Corp.; and Fritz Enterprises, Inc. Method and apparatus for simultaneously separating volatile and non-volatile metals. 4,606,760, Cl. 75-10.190.
Froment, Jean-Claude; Pantani, Jean-Pierre; and Verhaeghe, Michel, to International Business Machines Corp. Interface module for telephone lines. 4,607,139, Cl. 179-2.00C.
Fronk, Ted L.: *See*—
Parker, Tracy A.; and Fronk, Ted L., 4,606,468, Cl. 211-184.000.
Frost, John G., to Telectronics N.V. Pacemaker battery impedance test circuit and method of operation. 4,606,350, Cl. 128-419.0PG.
Frye, James A. Pin mixer. 4,606,647, Cl. 366-150.000.
Fuchs, Henry; and Pizer, Stephen M., to University of North Carolina at Chapel Hill. Three dimensional display using a varifocal mirror. 4,607,255, Cl. 340-755.000.
Fuda, Masaaki: *See*—
Yunoki, Akio; Osaki, Tatsuo; and Fuda, Masaaki, 4,606,100, Cl. 29-33.200.
Fuerter, Gerhard; and Lahres, Hans, to Carl-Zeiss-Stiftung, Heidenheim/Brenz. Multi-focal spectacle lens with a dioptric power varying progressively between different zones of vision. 4,606,622, Cl. 351-169.000.
Fuhrer, John P. R. Suspended insulated building exterior cladding. 4,606,168, Cl. 52-741.000.
Fuji Electric Company, Ltd.: *See*—
Haruki, Hiromu; Yokoyama, Shotaro; and Nishibe, Takashi, 4,606,630, Cl. 356-1.000.
Fuji Electric Corporate Research and Development Co., Ltd.: *See*—
Haruki, Hiromu; Yokoyama, Shotaro; and Nishibe, Takashi, 4,606,630, Cl. 356-1.000.
Fuji Jukogyo Kabushiki Kaisha: *See*—
Kobayashi, Toshio; and Mura, Shinichirou, 4,606,236, Cl. 74-339.000.

Fuji Photo Film Co., Ltd.: *See*—
Hirano, Shigeo; Sano, Yasuhisa; Takei, Haruo; Miyasaka, Tsutomu; and Fujita, Shinsaku, 4,607,006, Cl. 430-572.000.
Ikenoue, Shinpei; Iwano, Haruhiko; Mifune, Hiroyuki; and Yagihara, Morio, 4,607,004, Cl. 430-523.000.
Kawata, Ken; Sato, Kozo; and Naito, Hideki, 4,606,991, Cl. 430-203.000.
Kita, Nobuyuki; Matsumoto, Hiroshi; and Hagiwara, Hitoshi, 4,606,995, Cl. 430-302.000.
Machida, Kazutoshi, 4,606,511, Cl. 242-71.800.
Nakamura, Taku; Kasama, Yasuo; and Mukunoki, Yasuo, 4,606,996, Cl. 430-309.000.
Oishi, Kengo; and Suzuki, Osamu, 4,607,299, Cl. 360-60.000.
Tani, Yoshio; and Naruo, Kyoichi, 4,607,264, Cl. 346-137.000.
Tsuruta, Masao; Oishi, Kengo; and Suzuki, Osamu, 4,607,308, Cl. 360-132.000.
Ukai, Toshinao; Sato, Tadahisa; Kawagishi, Toshio; and Takei, Haruo, 4,607,003, Cl. 430-519.000.
Urata, Yukihide, 4,607,005, Cl. 430-550.000.

Fuji Xerox Co., Ltd.: *See*—
Moriguchi, Haruhiko; Inui, Toshiharu; and Kurata, Masami, 4,607,262, Cl. 346-76.0PH.

Fujii, Tatsuo: *See*—
Nakano, Hideaki; Ozu, Tadahiro; and Fujii, Tatsuo, 4,606,312, Cl. 123-198.0DB.

Fujikawa, Junichi; and Kashio, Shigetora, to Toray Industries Incorporated. Water developable photosensitive resin composition. 4,606,993, Cl. 430-281.000.

Fujikura Ltd.: *See*—
Saito, Takashi; Suzuki, Kazumoto; and Naganuma, Yoshihiro, 4,606,779, Cl. 148-120.000.

Fujimoto, Masakazu; and Inoue, Naoyuki, to Ebara Corporation. Apparatus and method for cleaning condenser tubes of a refrigerator. 4,606,403, Cl. 165-95.000.

Fujisawa, Kyuichi; and Fujiwara, Nobuko, to Alps Electric Co., Ltd. Pen type plotting apparatus having automatic rewriting control. 4,607,263, Cl. 346-139.00R.

Fujita, Haruyasu, to Honda Giken Kogyo Kabushiki Kaisha. Adjustable front windshield structure of open-top vehicle. 4,606,571, Cl. 296-89.000.

Fujita, Ikuo, to Nippon Sanso Kabushiki Kaisha. Condenser-evaporator for large air separation plant. 4,606,745, Cl. 62-42.000.

Fujita, Shinsaku: *See*—
Hirano, Shigeo; Sano, Yasuhisa; Takei, Haruo; Miyasaka, Tsutomu; and Fujita, Shinsaku, 4,607,006, Cl. 430-572.000.

Fujita, Yuji: *See*—
Wakasugi, Keizo; Fujita, Yuji; and Kaneko, Ryoichi, 4,606,951, Cl. 428-35.000.

Fujitani, Kango: *See*—
Nakazawa, Mikio; Fujitani, Kango; and Manami, Hiroshi, 4,606,863, Cl. 260-413.000.

Fujitsu Limited: *See*—
Hori, Ken-ichi, 4,607,368, Cl. 372-45.000.
Kaku, Takashi; and Endo, Chihiro, 4,607,230, Cl. 329-50.000.
Nao, Manabu; Shimojo, Shinichi; and Watari, Kazushi, 4,607,155, Cl. 235-379.000.
Sasaki, Susumu, 4,607,376, Cl. 375-3.000.
Uno, Hiroshi, 4,607,295, Cl. 360-45.000.
Yasutake, Nobuyuki; and Yasuda, Hiroshi, 4,607,333, Cl. 364-400.000.

Fujitsu Ten Limited: *See*—
Hayashi, Kazuhiko; and Masuda, Jiro, 4,606,425, Cl. 180-177.000.

Fujiwara, Hidetoshi; and Kawamura, Tetsushi, to Toyota Jidosha Kabushiki Kaisha; and Toyoda Koki Kabushiki Kaisha. Control apparatus for power-assisted steering system. 4,606,423, Cl. 180-79.100.

Fujiwara, Nobuko: *See*—
Fujisawa, Kyuichi; and Fujiwara, Nobuko, 4,607,263, Cl. 346-139.00R.

Fukasawa, Masahiro: *See*—
Ido, Tadashi; Kubo, Osamu; Fukasawa, Masahiro; Maeda, Tatsumi; and Nomura, Tutomu, 4,606,971, Cl. 428-328.000.

Fukuchi, Hiroyuki: *See*—
Miyazawa, Takashi; Fukuchi, Hiroyuki; and Tateishi, Sosuke, 4,606,635, Cl. 356-240.000.

Fukui, Masami: *See*—
Wada, Takeshi; Kishi, Hiroshi; Murai, Shunji; and Fukui, Masami, 4,607,314, Cl. 361-321.000.
Wada, Takeshi; Kishi, Hiroshi; Murai, Shunji; and Fukui, Masami, 4,607,315, Cl. 361-321.000.
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Fukui, Tsutomu, to Asah Kogaku Kogyo Kabushiki Kaisha. Time-axis correcting circuit for recorded data reproducing device. 4,607,360, Cl. 369-48.000.

Fukushi, Kyosuke: *See*—
Moriya, Yasuo; Fukushi, Kyosuke; and Nakayama, Masaharu, 4,607,087, Cl. 526-227.000.

Fukushima, Isao: *See*—
Okada, Yoshinori; Miura, Kuniaki; and Fukushima, Isao, 4,607,293, Cl. 358-328.000.

Fukuura, Yukio: *See*—
Kitamura, Takashi; Fukuura, Yukio; Tanuma, Itsuo; Shinogaya, Toshikazu; and Noda, Yuji, 4,607,065, Cl. 522-83.000.

Fuller Company: *See*—
Metzger, Robert E., 4,606,556, Cl. 285-16.000.

Fulton, Christopher: *See*—
Yaniv, Zvi; Cannella, Vincent D.; Yu, Terry T.; and Fulton, Christopher, 4,606,610, Cl. 350-331.00R.

Furlong, C. Gregory, to General Motors Corporation. Engine cylinder intake port. 4,606,308, Cl. 123-188.00M.

Furukawa, Shunsuke; and Yamamoto, Kenji, to Sony Corporation. Data transfer apparatus for a microcomputer system. 4,607,328, Cl. 364-200.000.

G.D. Societa per Azioni: *See*—
Neri, Armando, 4,607,252, Cl. 340-515.000.

GAF Corporation: *See*—
Baum, Gerald A.; Chacko, Varkki P.; and DeStio, Paul, 4,607,075, Cl. 524-449.000.

Gailliard, Jean P.; Million, Alain; and Piaquet, Jean, to Commissariat a l'Energie Atomique. Evaporation cell for a liquid compound suitable for epitaxy by molecular jets. 4,606,296, Cl. 118-726.000.

Gaiser, Robert F., to Allied Corporation. Brake system. 4,606,583, Cl. 303-6.00C.

Gallegos del Bosque, Hector H. Crankcase positive ventilation valve. 4,606,321, Cl. 123-574.000.

Galligan, Thomas W.: *See*—
Grant, John L.; Torti, Emanuel D.; O'Malley, Austin S.; Galligan, Thomas W.; and DelPrete, Stephen D., 4,606,599, Cl. 339-258.00R.

Gamalski, Jurgen: *See*—
Christoph, Heinz; Gamalski, Jurgen; Lenz, Eduard; Neumann, Ulrich; and von der Schmidt, Reinhard, 4,606,493, Cl. 228-180.100.

Gancy, Alan B. Continuous process for the manufacture of calcium magnesium acetate deicer. 4,606,836, Cl. 252-70.000.

Gandini, Marcello, to Clama S.R.L. Door for vehicles having a box structure, and a process for the manufacture thereof. 4,606,148, Cl. 49-502.000.

Garcia, Raul: *See*—
Thibault, Gaetan; Garcia, Raul; Cantin, Marc; Seidah, Nabil; Lazure, Claude; and Chretien, Michel, 4,607,023, Cl. 514-11.500.

Garfinkle, Benjamin L.: *See*—
Poulton, Brent; and Garfinkle, Benjamin L., 4,606,280, Cl. 108-97.000.

Garg, Diwakar, to Air Products and Chemicals, Inc. Hydroconversion of heavy oils. 4,606,809, Cl. 208-59.000.

Gartner, Gunter, to Rieter Machine Works, Ltd. Bobbin inserting device. 4,606,508, Cl. 242-35.50R.

Gates Energy Products, Inc.: *See*—
Nelson, Robert F.; and Juergens, Tristan D., 4,606,982, Cl. 429-59.000.

Gautier, Jean-Claude; and Lanore, Francois, to Societe Nationale Elf Aquitaine. Aqueous composition for the dispersion of hydrophobic substances, particularly applicable to the cleaning of objects soiled by paint or the like. 4,606,840, Cl. 252-171.000.

Gavinet, Jean; and Childeric, Bruno, to Microfusion; and Commissariat a l'Energie Atomique. Composite billet for hot transformation. 4,606,884, Cl. 419-27.000.

Gayst, Stephen: *See*—
Kieran, Peter J.; Townsend, Robert B.; Hackney, Ronald J.; Gayst, Stephen; and Maguire, Michael J., 4,607,050, Cl. 514-520.000.

Geddes, Leslie A.; and Fearnot, Neal E., to Purdue Research Foundation. Personal electrocardiogram monitor. 4,606,352, Cl. 128-702.000.

Geen, John A., to British Aerospace Public Limited Company. Dithered ring laser gyroscope with residual lock-in error compensation. 4,606,637, Cl. 356-350.000.

Geipel, Werner; Heimann, Bruno; and Grendel, Vinzenz, to Friedrich Grohe Armaturenfabrik GmbH & Co. Flow-switching water-mixing faucet assembly. 4,606,370, Cl. 137-119.000.

Gelardi, Anthony L.; Gelardi, Paul J.; and MacLeod, Robert B., Jr., to Shape Inc. Tape cassette pressure flap assembly. 4,606,513, Cl. 242-199.000.

Gelardi, Paul J.: *See*—
Gelardi, Anthony L.; Gelardi, Paul J.; and MacLeod, Robert B., Jr., 4,606,513, Cl. 242-199.000.

Geller, Steven E., to ARCO Industries. Optical device which is convertible to a toy robot. 4,606,618, Cl. 350-556.000.

GenCorp Inc.: *See*—
Riley, Richard R.; and Coco, Charles E., 4,607,089, Cl. 527-201.000.

General Dynamics Corporation/Convair Div.: *See*—
Stoody, William R., 4,607,180, Cl. 310-80.000.

General Electric Company: *See*—
Charrier, Michael G., 4,606,189, Cl. 60-39.030.
Eissmann, Kurt W., 4,607,211, Cl. 323-356.000.
Giles, Harold F., Jr.; and Liu, Ping Y., 4,607,079, Cl. 525-65.000.
Hayden, Stephen C., 4,606,738, Cl. 51-295.000.
Hemsworth, Martin C., 4,606,699, Cl. 415-170.00R.
Howell, Edward K.; and Goldman, Ira B., 4,607,148, Cl. 200-269.000.
Huang, Shyh-Chin; Chang, Keh-Minn; and Taub, Alan I., 4,606,888, Cl. 420-459.000.
Jenkins, Thomas E.; and Sisler, Robert R., 4,606,112, Cl. 29-464.000.
McAndrew, James A., 4,606,120, Cl. 29-837.000.
Nightingale, Stephen J., 4,607,394, Cl. 455-327.000.
Oliver, David W., 4,607,380, Cl. 378-138.000.
Rieber, John C.; Sheaffer, Jeffrey D.; and Walthers, Russell E., 4,607,183, Cl. 310-214.000.
Sember, James W.; Walker, Loren H.; and Weiss, Herbert W., 4,607,206, Cl. 318-798.000.

General Electric Company, Silicone Products Division: *See*—
Zamek, Otto S.; and Stein, Richard J., 4,607,103, Cl. 544-193.000.
General Indicator Corporation: *See*—
Murray, Ledell L., 4,606,141, Cl. 40-518.000.
General Motors Corporation: *See*—
Barrowman, Thomas; and Noblett, Michael J., 4,606,129, Cl. 33-143.00L.
Beer, Wilhelm, 4,606,427, Cl. 180-300.000.
Buchanan, Harry C., Jr.; Fannin, Wayne V.; and Watson, Byron L., 4,606,440, Cl. 188-319.000.
Furlong, C. Gregory, 4,606,308, Cl. 123-188.00M.
Hogan, Martin J., 4,606,659, Cl. 384-518.000.
Johnson, Gregory J., 4,606,435, Cl. 188-1.110.
Jozefozak, Thadius F., 4,606,146, Cl. 49-216.000.
Klomp, Edward D., 4,606,234, Cl. 74-192.000.
Lederman, Frederick E., 4,606,449, Cl. 192-91.00A.
Mantela, Ralph F.; and Savich, Thomas L., 4,606,687, Cl. 410-23.000.
Parekh, Dinesh V., 4,606,705, Cl. 417-222.000.
Vasilow, Theodore R.; Busovne, Bernard J., Jr.; and Johnson, Gregory J., 4,606,434, Cl. 188-1.110.
General Signal Corporation: *See*—
Coyle, Chandler K.; and Salzman, Ronald N., 4,606,648, Cl. 366-300.000.
Whitmore, Raymond A., 4,606,228, Cl. 73-718.000.
Genik-Sas-Berezowsky, Roman M.; and Weir, Donald R., to Sherritt Gordon Mines Limited. Process for separately recovering gold and silver from solution by carbon adsorption. 4,606,766, Cl. 75-118.00R.
Gentex Corporation: *See*—
Ingalls, Robert, 4,607,383, Cl. 381-88.000.
Gentry, Cecil C., to Phillips Petroleum Company. Apparatus for gas treatment of a bed of particles. 4,606,138, Cl. 34-182.000.
Georg Muller Nurnberg GmbH: *See*—
Ballhaus, Heribert, 4,607,182, Cl. 310-90.000.
Gerber, Arthur H., to Sandoz Ltd. Additive for hydraulic cement mixes. 4,606,770, Cl. 106-90.000.
Gerber, Jeri L.; Nazario, Jorge L.; and Simi, Victor M., to International Business Machine Corp. Cartridge memory protection. 4,607,351, Cl. 365-228.000.
Gerke, Dieter: *See*—
Taybl, Christa; Gerke, Dieter; Koch, Fritz E.; and Schwenda, Gerhard, 4,607,135, Cl. 174-60.000.
Geshwind, David M. Method for colorizing black and white footage. 4,606,625, Cl. 352-38.000.
Gibbons, William P. Reduced harmonic current rectifier including sequentially switched secondary windings. 4,607,324, Cl. 363-128.000.
Gibson, Howard W. Back treatment apparatus. 4,606,332, Cl. 128-71.000.
Gibson, Kirk R., to Chevron Research Company. Hydroprocessing with shaped catalysts. 4,606,815, Cl. 208-210.000.
Giere, David W., to Eaton Corporation. Transaxle differential. 4,606,428, Cl. 180-307.000.
Giles, Harold F., Jr.; and Liu, Ping Y., to General Electric Company. Blend of polycarbonate, acrylate elastomeric copolymer and a phenoxy resin. 4,607,079, Cl. 525-65.000.
Gill, Harry A., Jr., to Raytheon Company. Low voltage amplifier circuit. 4,607,232, Cl. 330-255.000.
Gilliom, Laura R.: *See*—
Grubbs, Robert H.; Gilliom, Laura R.; and Siove, Alain, 4,607,112, Cl. 556-52.000.
Ginter, Sally P.: *See*—
Pawloski, Chester E.; and Ginter, Sally P., 4,607,063, Cl. 521-165.000.
Giordano, Paul J., Jr.; and Smierciak, Richard C., to Standard Oil Company, The. Ionically polymer-bound transition metal complex for photochemical conversion of light energy. 4,606,326, Cl. 126-400.000.
Gist-Brocades N.V.: *See*—
de Jonge, Hayo; Groenendaal, Jan W.; Sijbrands, Gerrit J.; and Bagerman-Deetman, Annita, 4,607,029, Cl. 514-197.000.
Givaudan Corporation: *See*—
Rohr, Martin; Vallone, N. Peter; and Flynn, Cormack, 4,606,925, Cl. 426-538.000.
Glancy, Stephen: *See*—
Svilar, Mark; Glancy, Stephen; and Klar, Erhard, 4,606,768, Cl. 75-246.000.
Glans, Jan-Erik; and Corneliusson, Henry, to Tetra Pak International AB. Method and an arrangement for the folding and sealing of the longitudinal edge of a material web. 4,606,784, Cl. 156-200.000.
Glasscock, Michael R.: *See*—
Hines, Robin H.; Glasscock, Michael R.; Johnson, D. Bruce; and Plummer, Paul L., 4,606,629, Cl. 356-1.000.
GMI Engineering & Management Institute: *See*—
Salmon, Michael E., 4,606,334, Cl. 128-80.00A.
Godsey, Alvin F., Jr.: *See*—
Mussler, Karl J.; and Godsey, Alvin F., Jr., 4,606,500, Cl. 239-242.000.
Golay, Jean-Pierre; and Jaunin, Denis, to Mefina S.A. Fuse with a piercing head for a projectile. 4,606,271, Cl. 102-210.000.
Goldberg, Edward S., to AT&T Bell Laboratories. Dynamic alteration of firmware programs in Read-Only Memory based systems. 4,607,332, Cl. 364-300.000.
Goldman, Ira B.: *See*—
Howell, Edward K.; and Goldman, Ira B., 4,607,148, Cl. 200-269.000.
Goldstein, Leon: *See*—
Allovon, Michel; and Goldstein, Leon, 4,607,152, Cl. 219-390.000.
Goldstein, Sherwood; and Scherbner, Paul J., deceased (by Scherbner, Lillian, executrix), to Cabot Corporation. Copper-titanium-beryllium alloy. 4,606,889, Cl. 420-492.000.
Goldstone, Frederick A. Manufacture of articles. 4,606,676, Cl. 405-303.000.
Gombault, Jacobus F., to Hadewe B.V. Combined separating, bursting and sorting apparatus for a continuous web of multi-forms. 4,606,534, Cl. 270-52.500.
Goodman, William R.: *See*—
Greig, David A.; Hinders, David L.; and Goodman, William R., 4,607,365, Cl. 371-8.000.
Goodrich, Edgar R., Jr.; and Kraft, Douglas R., to Motorola, Inc. Method and apparatus for implementing an algorithm associated with stored information. 4,607,331, Cl. 364-200.000.
Goodrich, Ronald W.: *See*—
Prouty, Robert E.; and Goodrich, Ronald W., 4,607,244, Cl. 335-281.000.
Goodson, Larry E.; and Dellinger, Charles E., to North American Philips Consumer Electronics Corp. Optical joystick controller with intersecting spring means. 4,607,159, Cl. 250-221.000.
Goodyear Tire & Rubber Company, The: *See*—
Nixon, Bryan E.; Stoila, George M.; and Williams, Stephen L., 4,606,714, Cl. 425-28.00R.
Shute, Anthony, 4,606,390, Cl. 152-381.400.
Gordon, Daniel A., to Measurex Corporation. Gas measuring apparatus with means to reduce thermal radiation effects. 4,606,644, Cl. 356-438.000.
Gordon, Paul F.: *See*—
Duggan, Peter J.; and Gordon, Paul F., 4,606,859, Cl. 540-122.000.
Gorisch, Armin, to Klein, Schanzlin & Becker Aktiengesellschaft. Composite machine housing and seals therefor. 4,606,547, Cl. 277-12.000.
Goserud, J. Thomas, to Armstrong World Industries, Inc. Tool and method for positioning ceiling runners. 4,606,110, Cl. 29-432.000.
Gotzenberger, Rudibert, to Ernst Flitsch GmbH & Co. Expansion valve. 4,606,199, Cl. 62-225.000.
Gould Inc.: *See*—
Oprysko, Modest M.; and Beranek, Mark W., 4,606,932, Cl. 427-53.100.
Grabbe, Dimitry G.; and Korsunsky, Iosif, to AMP Incorporated. ZIF connector with wipe. 4,606,594, Cl. 339-74.00R.
Graf, James E.: *See*—
Cannon, Norbert H.; and Graf, James E., 4,606,118, Cl. 29-825.000.
Graham, Charles H., to Professional Business Management Associates. Versatile chained tool set. 4,606,247, Cl. 81-177.600.
Graham, Erwin W. Portable cervical spine traction device. 4,606,333, Cl. 128-75.000.
Grans, Denny R.: *See*—
Marx, Ronald P.; Wnek, Patrick H.; and Grans, Denny R., 4,606,496, Cl. 229-2.50R.
Grant, John L.; Torti, Emanuel D.; O'Malley, Austin S.; Galligan, Thomas W.; and DelPrete, Stephen D., to Texas Instruments Incorporated. Low insertion force connector. 4,606,599, Cl. 339-258.00R.
Grant, Michael R. Tamping tools. 4,606,275, Cl. 104-10.000.
Grant, Owen G.; and Williams, Frank, to Epton Industries Inc. Rail seal. 4,606,498, Cl. 238-8.000.
Graschew, Georgi: *See*—
Wyrwich, Helmut; Graschew, Georgi; Chatzipetros, Johann; and Feinendegen, Ludwig E., 4,606,128, Cl. 33-143.00C.
Gray, Charles L., Jr.; Rundell, Herbert A.; and Williams, Thomas M., to Texaco Inc. Method and system for detecting and identifying abnormal drilling conditions. 4,606,415, Cl. 175-24.000.
Grazioso, Michael V.; and Storm, David A., to Texaco Inc. Aliphatic alcohol production. 4,607,055, Cl. 518-713.000.
Grazioso, Michael V.; and Storm, David A., to Texaco Inc. Mixed aliphatic alcohol production. 4,607,056, Cl. 518-714.000.
Greene, Dennis P.: *See*—
Eden, James G.; McCown, Andrew W.; Ediger, Marwood N.; and Greene, Dennis P., 4,607,371, Cl. 372-56.000.
Greene, Walter; and Liebke, William R., to United Technologies Corporation. Variable area inlet guide vanes. 4,606,190, Cl. 60-39.230.
Greenfield, Harold: *See*—
Malz, Russell E., Jr.; and Greenfield, Harold, 4,607,104, Cl. 546-186.000.
Greenway, J. Michael; Schoots, Peter J.; and Patience, Donald, to Kendall Company, The. Slip resistant bandage. 4,606,338, Cl. 128-156.000.
Greig, David A.; Hinders, David L.; and Goodman, William R., to Tandem Computers Incorporated. Fault-tolerant communications controller system. 4,607,365, Cl. 371-8.000.
Grendel, Vinzenz: *See*—
Geipel, Werner; Heimann, Bruno; and Grendel, Vinzenz, 4,606,370, Cl. 137-119.000.
Griesser AG: *See*—
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Grigsby, Robert A., Jr.: *See*—
McEntire, Edward E.; Nieh, Edward C. Y.; Grigsby, Robert A., Jr.; and McCoy, David R., 4,606,837, Cl. 252-73.000.
Grikis, Raimonds; and Obergfell, Allen R., to Duo-Fast Corporation. Collated fastener strip. 4,606,455, Cl. 206-347.000.
Grimm, Hans, to Maschinenfabrik Gehring Gesellschaft mit beschrankter Haftung & Co. Kommanditgesellschaft. Grinding machine. 4,606,150, Cl. 51-34.00C.

Griswold, Roy M.; Magee, Walter L.; Manis, Paul A.; and Martin, Eugene R., to SWS Silicones Corporation. Acrylate-functional organopolysiloxanes. 4,606,933, Cl. 427-54.100.

Groenendaal, Jan W.: *See*—
de Jonge, Hayo; Groenendaal, Jan W.; Sijbrands, Gerrit J.; and Bagerman-Deetman, Annita, 4,607,029, Cl. 514-197.000.

Grosser, Helmut: *See*—
Ziller, Alexander; and Grosser, Helmut, 4,606,527, Cl. 254-336.000.

Grubbs, Harvey J.; and Houminer, Yoram, to Philip Morris Incorporated. Flavor-release β-hydroxy-ester compositions. 4,607,118, Cl. 560-60.000.

Grubbs, Robert H.; Gilliom, Laura R.; and Siove, Alain, to California Institute of Technology. Cp_2TiCH_2-containing catalyst for polymerization of difunctional ring compounds. 4,607,112, Cl. 556-52.000.

Grumbach, Emil. Incubator apparatus. 4,606,299, Cl. 119-35.000.

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Selva, Enrico; Beretta, Grazia; Tamoni, Giorgio; Arioli, Vittorio; Cassani, Giovanni; and Parenti, Francesco, 4,607,012, Cl. 435-136.000.

GTE Products Corporation: *See*—
Flaherty, John M., 4,607,191, Cl. 313-489.000.
Miller, Michael J.; and MacInnis, Martin B., 4,606,885, Cl. 419-39.000.
Mizuhara, Howard, 4,606,978, Cl. 428-606.000.
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Wolfe, Robert W.; and Wittmer, Dale E., 4,607,017, Cl. 501-98.000.

GTE Valeron Corporation: *See*—
Jeremias, Robert W., 4,606,679, Cl. 407-114.000.
Zweekly, Raymond, 4,606,678, Cl. 407-114.000.

Guerin, Jacques C., to Societe d'Etudes et de Realisations Electroniques. Locking and unlocking device for a gyroscopic rotor. 4,606,239, Cl. 74-5.120.

Guest, John D. Tube couplings. 4,606,783, Cl. 156-73.100.

Guillou, Denis: *See*—
Ravinet, Pierre; Claudepierre, Christian; Guillou, Denis; and Micheron, Francois, 4,607,145, Cl. 179-110.00A.

Guim Industries, Inc.: *See*—
Guim, Raul; and Lara, Jose L., 4,607,209, Cl. 320-25.000.

Guim, Raul; and Lara, Jose L., to Guim Industries, Inc. Safety booster cable. 4,607,209, Cl. 320-25.000.

Gunter, Charlie E., III: *See*—
Channel, William D.; and Gunter, Charlie E., III, 4,607,310, Cl. 361-149.000.

Gunther, John R. Socket wrench coupler. 4,606,246, Cl. 81-58.300.

Gunther, Wolfgang H. H.; and Lok, Roger, to Eastman Kodak Company. Amido substituted divalent chalcogenide fog inhibiting agents for silver halide photography. 4,607,000, Cl. 430-428.000.

Gunther, Wolfgang H. H.: *See*—
Lok, Roger; and Gunther, Wolfgang H. H., 4,607,001, Cl. 430-428.000.

Gurit-Essex AG: *See*—
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Guslits, Vladimir S., to Eastman Kodak Company. Method and apparatus for soldering. 4,606,492, Cl. 228-179.000.

Gutierrez, Eddie N.; and Lamberti, Vincent, to Lever Brothers Company. Method for improving water solubility of surfactants using terpene sulfonate hydrotropes. 4,606,851, Cl. 252-554.000.

H & V Services: *See*—
Elsbree, Charles N., Jr.; Regner, Hector A.; Rodriguez, Claude; and Ravlich, Anthony, 4,606,589, Cl. 339-17.00C.

Haas, Johann, to Metzeler Kautschuk GmbH. Front wheel tire tread for a motorcycle. 4,606,389, Cl. 152-209.00R.

Haas, Karl-Uwe: *See*—
Sutter, Hubert; Haas, Karl-Uwe; and Ledet, Winston P., 4,607,086, Cl. 526-65.000.

Haase, Adolf, to Siemens Aktiengesellschaft. Circuit arrangement for controlling the transmission capacity of the receiving branch of a transmission system. 4,607,146, Cl. 179-170.800.

Hack, Richard J.; Hair, Jakie A.; Hall, John N.; Alexander, John L.; and Samluk, Stanley D., to NOR-AM Chemical Company. Device for controlling ectoparasites. 4,606,478, Cl. 222-187.000.

Hackney, Ronald J.: *See*—
Kieran, Peter J.; Townsend, Robert B.; Hackney, Ronald J.; Gayst, Stephen; and Maguire, Michael J., 4,607,050, Cl. 514-520.000.

Haddad, James H.; and Owen, Hartley, to Mobil Oil Corporation. FCC product withdrawal and separation. 4,606,814, Cl. 208-161.000.

Hadewe B.V.: *See*—
Gombault, Jacobus F., 4,606,534, Cl. 270-52.500.

Hafele KG: *See*—
Koch, Gerhard, 4,606,588, Cl. 312-339.000.

Hafez, Mahmoud M.; and Black, Laura E., to Exxon Research and Engineering Co. Membrane separation of uncoverted carbon fiber precursors from flux solvent and/or anti-solvent. 4,606,903, Cl. 423-447.400.

Hafkamp, Frederik: *See*—
Jansen, Cornelis J. A.; van de Pas, Andries J. M.; van der Vlist, Pieter; and Hafkamp, Frederik, 4,607,137, Cl. 178-22.140.

Hagiwara, Hitoshi: *See*—
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Hagiwara, Tatsuo: *See*—
Okada, Gensuke; and Hagiwara, Tatsuo, 4,606,506, Cl. 241-109.000.

Hagiwara, Yoshito: *See*—
Suzuki, Masamitu; and Hagiwara, Yoshito, 4,607,138, Cl. 178-30.000.

Hahn, Roger A.: *See*—
Shriver, Frank L.; and Hahn, Roger A., 4,606,942, Cl. 427-233.000.

Hahnke, Manfred; Mohr, Reinhard; and Hohmann, Kurt, to Hoechst Aktiengesellschaft. Process for spin-dyeing of acid-modified polymers of copolymers of acrylonitrile using rapid-fixing di-quaternary cationic dyes. 4,607,071, Cl. 524-189.000.

Hair, Jakie A.: *See*—
Hack, Richard J.; Hair, Jakie A.; Hall, John N.; Alexander, John L.; and Samluk, Stanley D., 4,606,478, Cl. 222-187.000.

Hajek, Bedrich: *See*—
Dunford, William J.; and Hajek, Bedrich, 4,606,928, Cl. 427-32.000.

Hajmrle, Karel; and Silins, Vilnis, to Sherritt Gordon Mines Limited. Process for the production of nickel-chromium/chromium carbide coatings on substrates. 4,606,948, Cl. 427-423.000.

Hakata, Tetsuro: *See*—
Kuroda, Yutaka; Yoshida, Yoshio; Kabayama, Yuichi; Watanabe, Tsugio; Hakata, Tetsuro; and Matsumoto, Takahiro, 4,607,245, Cl. 336-57.000.

Hake, Kenneth A., to Kent Manufacturing Co., Inc. Hydraulic leveler arrangement. 4,606,413, Cl. 172-328.000.

Halgrimson, Edwin A., to Amoco Corporation. Communication system for transmitting an electrical signal. 4,607,389, Cl. 455-11.000.

Hall, John N.: *See*—
Hack, Richard J.; Hair, Jakie A.; Hall, John N.; Alexander, John L.; and Samluk, Stanley D., 4,606,478, Cl. 222-187.000.

Hall, Steven E., to E. R. Squibb & Sons, Inc. 7-oxabicycloheptane substituted thio prostaglandin analogs useful in the treatment of thrombolytic disease. 4,607,049, Cl. 514-469.000.

Halliburton Company: *See*—
Almond, Stephen W.; and Hanlon, David J., 4,606,772, Cl. 106-208.000.
Zunkel, Gary D.; Stepp, Lee W.; and Szarka, David D., 4,606,408, Cl. 166-278.000.

Haltof, Garry P.: *See*—
DeWitt, Vern T.; and Haltof, Garry P., 4,606,147, Cl. 49-434.000.

Hamada, Eiichi; and Watanabe, Hiroyuki, to Toyota Jidosha Kabushiki Kaisha. Door construction in motor vehicle. 4,606,149, Cl. 49-502.000.

Hambleton, Thomas P.; Tighe, Harold F., Jr.; and Michels, John J. Protective packaging system for a plurality of containers. 4,606,454, Cl. 206-150.000.

Hamed, Parviz, to Stowe Woodward Company. Monomer-plasticized elastomers and process for producing same. 4,606,877, Cl. 264-271.100.

Hamilton Industries: *See*—
Kodet, Reuben P., 4,606,575, Cl. 297-124.000.

Hanazima, Yasuhiro; Ogawa, Norihiro; and Sugioka, Masumi, to Asahi Malleable Iron Co., Ltd. Colored, anodized aluminum-base article and method of preparing same. 4,606,796, Cl. 204-42.000.

Hanazuka, Mitsuo: *See*—
Mizogami, Susumu; Hiranuma, Hidetoshi; Sekiya, Tetsuo; and Hanazuka, Mitsuo, 4,607,034, Cl. 514-254.000.

Handa, Kenichi: *See*—
Tobinaga, Motoi; Okumura, Shigeo; Handa, Kenichi; and Atsumi, Shinya, 4,606,315, Cl. 123-417.000.

Handa, Kohichi: *See*—
Ohashi, Keiji; and Handa, Kohichi, 4,607,067, Cl. 623-144.000.

Handley, Edward F.: *See*—
Caron, LaVerne A.; and Handley, Edward F., 4,606,306, Cl. 123-179.00H.

Hanlon, David J.: *See*—
Almond, Stephen W.; and Hanlon, David J., 4,606,772, Cl. 106-208.000.

Hansel, Gernot: *See*—
Maier, Peter; Attinger, Karl; Sigel, Albert; Hansel, Gernot; Kutscher, Erwin; and Walter, Hartmut, 4,606,685, Cl. 409-137.000.

Haq, Zia; and Johnson, Richard S., to Lever Brothers Company. Highly absorbent substrate article. 4,606,958, Cl. 428-68.000.

Hara, Kazumasa; Sato, Masashi; Koike, Mikio; and Kaneko, Kenji, to Janome Sewing Machine Co., Ltd. Sewing thread cutting device. 4,606,289, Cl. 112-295.000.

Harada Industry Co., Ltd.: *See*—
Kimura, Misao, 4,606,443, Cl. 192-20.000.

Harada, Nozomu: *See*—
Endo, Yukio; Egawa, Yoshitaka; Harada, Nozomu; and Yoshida, Okio, 4,607,287, Cl. 358-213.000.

Harandi, Mohsen N., to Mobil Oil Corporation. Method and apparatus for multi-component fractionation. 4,606,816, Cl. 208-354.000.

Harding, John A. S. Solid soap and a process for the production thereof. 4,606,839, Cl. 252-132.000.

Harms, Margret: *See*—
Luthje, Holger K.; Bruns, Angelika M.; Harms, Margret; and Matthiessen, Bernd R. G., 4,606,803, Cl. 204-192.00P.

Harris Corporation: *See*—
Bajor, George; and Messmer, Charles, 4,606,936, Cl. 427-85.000.

Harris, Martin, to Shell Oil Company. Amides of N-(3-(1-chloro-2-nitroethenylthio)propane). 4,606,862, Cl. 260-402.500.

Harris, Robert G., to Domtar Inc. Microwave, a closed vessel and methods of determining volatile material content. 4,606,650, Cl. 374-14.000.

Harrison, Anthony W.: *See*—
Farr, Glyn P. R.; Mortimer, Ivan; and Harrison, Anthony W., 4,606,585, Cl. 303-92.000.

Hart, Robert G.; and Townsend, Herbert E., to Bethlehem Steel Corporation. Coating method and product thereof. 4,606,800, Cl. 204-181.100.

Hart, William P.; and Mays, Donald L., to Texaco Inc. Lubricating oil containing VII pour depressant. 4,606,834, Cl. 252-51.50A.

Hartland, Albert C. Practice tennis court. 4,606,543, Cl. 273-29.00A.

Haruki, Hiromu; Yokoyama, Shotaro; and Nishibe, Takashi, to Fuji Electric Corporate Research and Development Co., Ltd.; and Fuji Electric Company, Ltd. Rangefinder. 4,606,630, Cl. 356-1.000.

Harvey, Andrew C., to Foster-Miller, Inc. Pre-vaporizing liquid fuel burner. 4,606,720, Cl. 431-115.000.

Hasegawa, Akira, to Toyota Jidosha Kabushiki Kaisha. Power steering apparatus. 4,606,424, Cl. 180-143.000.

Hasegawa, Akira; Azuma, Ichiro; and Yamamura, Yuichi, to Daiichi Seiyaku Co., Ltd. Muramyldipeptide derivatives. 4,606,857, Cl. 260-998.200.

Hasegawa, Hiromi; Iwase, Yoshinobu; Taga, Yutaka; Minemoto, Isamu; and Sakai, Takahiro, to Aisin Seiki Kabushiki Kaisha; and Toyota Jidosha Kabushiki Kaisha. Parking device. 4,606,242, Cl. 74-606.00R.

Hashimoto, Hidehiko: *See—*
Sakashita, Takeshi; Hashimoto, Hidehiko; and Nakano, Takayuki, 4,607,073, Cl. 524-404.000.

Haslanger, Martin F.: *See—*
Karanewsky, Donald S.; and Haslanger, Martin F., 4,607,053, Cl. 514-575.000.

Hassan, Javanthu K.; Oktay, Sevgin; Paivanas, John A.; and Spector, Clarence J., to International Business Machines Corporation. Semiconductor assembly employing noneutectic alloy for heat dissipation. 4,607,277, Cl. 357-81.000.

Hattori, Masamitu, to Minolta Camera Kabushiki Kaisha. Light shutter mechanism for planetarium. 4,606,627, Cl. 353-88.000.

Hausselt, Jurgen; Kaufmann, Dieter; and Englisch, Udo, to Degussa Aktiengesellschaft. Cobalt alloys for the production of dental prothesis. 4,606,887, Cl. 420-437.000.

Hawkins, William E.: *See—*
Eastman, Paul F.; Enouen, Susan W.; Hawkins, William E.; and Parish, Darrell J., 4,606,955, Cl. 428-36.000.

Hayakawa, Takayuki: *See—*
Kubota, Shigeo; Yoshida, Minoru; Takahashi, Toshio; Kohno, Hideki; Hayakawa, Takayuki; Matuoka, Sadao; Kato, Shigeo; and Suzuki, Takaji, 4,607,164, Cl. 250-363.00S.

Hayashi, Kazuhiko; and Masuda, Jiro, to Toyota Jidosha Kogyo Kabushiki Kaisha; and Fujitsu Ten Limited. Vehicle speed control apparatus. 4,606,425, Cl. 180-177.000.

Hayashi, Shin'ichi; Yoshida, Akiyoshi; Kametaka, Shigeru; and Koike, Tetsuo, to Rohto Pharmaceutical Co. Ltd. Pharmaceutical composition for the prevention of dental caries. 4,606,911, Cl. 424-49.000.

Hayashi, Shoichiro: *See—*
Iizuka, Akira; Konai, Yutaka; Yamauchi, Takashi; and Hayashi, Shoichiro, 4,607,117, Cl. 560-56.000.

Hayashi, Yoshiaki; and Matsui, Akira, to Roland Corporation. Guitar for guitar synthesizer. 4,606,255, Cl. 84-1.160.

Hayatsu, Kazuo: *See—*
Ueno, Katsuji; Sugimoto, Hiroaki; and Hayatsu, Kazuo, 4,606,930, Cl. 427-40.000.

Hayden, Stephen C., to General Electric Company. Randomly-oriented polycrystalline silicon carbide coatings for abrasive grains. 4,606,738, Cl. 51-295.000.

Hayes, Robert J.; and Redman, James C., to Emerson Electric Co. Reaming tool for threading machines. 4,606,249, Cl. 82-36.00R.

Hayman, Dennis J., to United States Brass Corporation. Faucet valve bonnet locking means. 4,606,372, Cl. 137-315.000.

Hayward Tyler Inc.: *See—*
Smith, Martin K., 4,607,181, Cl. 310-87.000.

Hazelton, Donald R.; Puydak, Robert C.; and Booth, D. A., to Exxon Research & Engineering Co. Dynamically cured thermoplastic olefin polymers. 4,607,074, Cl. 524-425.000.

Hazen, Wayne C.; Coltrinari, Enzo L.; Litz, John E.; and Thompson, David L., to Resource Technology Associates. Method of recovering metals from ores using a formate reducing agent. 4,606,764, Cl. 75-101.00R.

Healy, Jean-Claude: *See—*
Monin, Jean; Faure, Bernard; Soldat, Georges; and Healy, Jean-Claude, 4,606,636, Cl. 356-338.000.

Healy, Michael P.: *See—*
Catlin, Gary M.; and Healy, Michael P., 4,607,378, Cl. 375-116.000.

Heat Extractor, Inc.: *See—*
Zacuto, Philip, 4,606,399, Cl. 165-4.000.

Heberle, Wolfgang: *See—*
Janssen, Bernd; Kohlmann, Friedrich-Wilhelm; Wesenberg, Walter; and Heberle, Wolfgang, 4,607,045, Cl. 514-383.000.

Hedgecoth, David L., to Porelon, Inc. Microporous marking structures and method. 4,606,969, Cl. 428-280.000.

Heeks, John S.; and Jackson, John D., to International Standard Electric Corporation. Acousto-optic isolator. 4,606,614, Cl. 350-358.000.

Heidel, Jeffrey C.: *See—*
Briney, Michael S.; Heidel, Jeffrey C.; and Swartz, Harold L., 4,606,132, Cl. 33-366.000.

Heidelberger Druckmaschinen AG: *See—*
Jeschke, Willi; and Rodi, Anton, 4,606,269, Cl. 101-248.000.
Jeschke, Willi; and Loffler, Gerhard, 4,606,633, Cl. 356-237.000.

Heifetz, Milton D. Position adjustable instrument holder. 4,606,522, Cl. 248-276.000.

Heimann, Bruno: *See—*
Geipel, Werner; Heimann, Bruno; and Grendel, Vinzenz, 4,606,370, Cl. 137-119.000.

Heimovics, John F., Jr., to B. F. Goodrich Company, The. Temperature compensator for pressure regulator. 4,606,497, Cl. 236-92.00R.

Heindl, Christine: *See—*
Leibenzeder, Siegfried; and Heindl, Christine, 4,606,780, Cl. 148-171.000.

Heinrich, Siegfried; Heitzmann, Rudolf; and Shafik, Ahmed, to Herberts GmbH. Lacquer for coatings protecting against stone chipping, a process for its preparation and its use. 4,606,947, Cl. 427-388.100.

Heintke, Hans-Eberhard: *See—*
Ullmann, Roland; Beutel, Kurt; and Heintke, Hans-Eberhard, 4,606,122, Cl. 30-43.920.

Heitert, John S.; and Van Wiemeersch, John R., to Ford Motor Company. Open circuit voltage test device. 4,607,227, Cl. 324-437.000.

Heitzmann, Rudolf: *See—*
Heinrich, Siegfried; Heitzmann, Rudolf; and Shafik, Ahmed, 4,606,947, Cl. 427-388.100.

Helix Technology Corporation: *See—*
Pirtle, F. William; Nicoll, Harry G.; and Bertsch, Peter K., 4,606,194, Cl. 62-6.000.

Hellegaard, Kjeld, to Danfoss A/S. Electronic switching apparatus. 4,607,171, Cl. 307-270.000.

Hellwig, Karl: *See—*
Vary, Peter; Hofmann, Rudolf; and Hellwig, Karl, 4,607,362, Cl. 370-62.000.

Helmer, John C., to Varian Associates, Inc. Magnetron sputter device having planar and curved targets. 4,606,806, Cl. 204-298.000.

Helminiak, Thaddeus E.: *See—*
Chenevey, Edward C.; and Helminiak, Thaddeus E., 4,606,875, Cl. 264-85.000.

Hemsworth, Martin C., to General Electric Company. Compressor casing recess. 4,606,699, Cl. 415-170.00R.

Henderson, Eric A., to Sundstrand Corporation. Energy recovery snubber. 4,607,322, Cl. 363-56.000.

Henning, John J. Liquid-vacuum washer for baseboard corner. 4,606,092, Cl. 15-322.000.

Hennings, Detlev; Schnell, Axel; and Schreinemacher, Herbert, to U.S. Philips Corporation. Non-linear resistor and method of manufacturing the same. 4,606,116, Cl. 29-610.00R.

Hensel, Hartmut; and Monzer, Helmut, deceased (by Monzer, Jana, Daniel Monzer, legal representatives), to American Hoechst Corporation. Substantially scratch-free polyester multilayer film. 4,606,976, Cl. 428-480.000.

Henzel, Russell A., to Honeywell, Inc. Plant management system. 4,607,256, Cl. 340-825.520.

Herberts GmbH: *See—*
Heinrich, Siegfried; Heitzmann, Rudolf; and Shafik, Ahmed, 4,606,947, Cl. 427-388.100.

Herbsleb, Peer: *See—*
Michaelsen, Jan; and Herbsleb, Peer, 4,606,088, Cl. 5-434.000.

Hercules Incorporated: *See—*
Silver, Paul A.; and Lukacs, Alexander, III, 4,607,077, Cl. 524-708.000.

Herlyn, Meenhard: *See—*
Steplewski, Zenon; Koprowski, Hilary; and Herlyn, Meenhard, 4,607,009, Cl. 435-7.000.

Herman, Stewart T.: *See—*
Rice, Michael A.; and Herman, Stewart T., 4,606,829, Cl. 210-713.000.

Hermes, Richard D.: *See—*
Bradshaw, Robert S.; Lazzarotti, S. James; Tartar, Paul E.; and Hermes, Richard D., 4,606,660, Cl. 400-62.000.

Herrmann, Lotte; Ackermann, Jakob; and Steiner, Armin, to SIA Schweizer Schmirgel- und Schleif-Industrie AG. Flexible and extensible coated abrasive material. 4,606,154, Cl. 51-401.000.

Herweh, John E., to Armstrong World Industries, Inc. Novel polyacrylic esters bearing pendant macrocyclic ethers and electrically conducting compositions comprised thereof. 4,607,110, Cl. 549-351.000.

Hettinger, William P., to Ashland Oil, Inc. Combination process for upgrading reduced crude. 4,606,811, Cl. 208-108.000.

Hew & Milan Development S.A.: *See—*
Weigel, Henri, 4,606,253, Cl. 83-830.000.

Heym, Manfred: *See—*
Tesch, Helmut; Heym, Manfred; Doerflinger, Walter; Stutz, Herbert; Neumann, Peter; Nissen, Dietmar; and Schaefer, Gerhard, 4,607,069, Cl. 523-400.000.

Heynacher, Erich, to Carl-Zeiss-Stiftung. Method and apparatus for lapping and polishing optical surfaces. 4,606,151, Cl. 51-62.000.

Hibbard, Edward P.: *See—*
Kmiec, Chester J.; Novits, Michael F.; and Hibbard, Edward P., 4,607,060, Cl. 521-89.000.

Hickey, John J. Hybrid annular airship. 4,606,515, Cl. 244-29.000.

Hiers, Robert S., Jr.: *See—*
Dooley, Milton T.; Bradley, Nelson A.; Hiers, Robert S., Jr.; and Staats, Gary E., 4,607,179, Cl. 310-11.000.

Higgins, Brian J. Collar. 4,606,358, Cl. 132-9.000.

Highland Orthopedic Center: *See—*
Wedeen, Robert S., 4,606,335, Cl. 128-92.00E.

Highton, Frederick J.: *See—*
Naylor, Jimmy R.; and Highton, Frederick J., 4,607,250, Cl. 340-347.0DA.

Hill, Reed A., to International Business Machines Corporation. Apparatus and method for placing data on a partitioned direct access storage device. 4,607,346, Cl. 364-900.000.

Hillerich, Bernd, to Philips Kommunikations Industrie AG. Method of measuring impulse durations, error locations and attenuation (or

absorption) on cables and lightwave conductors. 4,606,632, Cl. 356-73.100.
Hillinger, Brad O. Honeycomb panel. 4,606,959, Cl. 428-116.000.
Hilton, Thomas B.: *See*—
Keyes, George B.; Requejo, Lux P.; and Hilton, Thomas B., 4,606,842, Cl. 252-174.230.
Himmelbauer, Erich E., to U.S. Philips Corporation. Television camera tube with conductive wall coating and transversely wall supported electrode. 4,607,190, Cl. 313-479.000.
Hinders, David L.: *See*—
Greig, David A.; Hinders, David L.; and Goodman, William R., 4,607,365, Cl. 371-8.000.
Hinenoya, Saburo: *See*—
Suzuki, Kazuyuki; Ishida, Masami; Ohtsuki, Fuyuhiko; Inuizawa, Yoshihiro; Hinenoya, Saburo; Tanaka, Mansei; and Shindou, Yoshio, 4,606,953, Cl. 428-36.000.
Hines, Robin H.; Glasscock; Michael R.; Johnson, D. Bruce; and Plummer, Paul L., to Quantime, Inc. Laser archery distance device. 4,606,629, Cl. 356-1.000.
Hirai, Masaru: *See*—
Hisamoto, Iwao; Maeda, Chiaki; Esaka, Takasige; and Hirai, Masaru, 4,606,832, Cl. 252-8.000.
Hirama, Yasuo; and Umetsu, Yoshihiro, to Nissan Motor Company, Ltd.; and Nissan Shatai Company, Ltd. Automotive folding seat. 4,606,577, Cl. 297-331.000.
Hirano, Katsumi: *See*—
Tanaka, Noriatsu; Sato, Hiroshi; Saitoh, Nobuto; Hirano, Katsumi; and Honda, Kazuhiko, 4,606,769, Cl. 106-30.000.
Hirano, Shigeo; Sano, Yasuhisa; Takei, Haruo; Miyasaka, Tsutomu; and Fujita, Shinsaku, to Fuji Photo Film Co., Ltd. Silver halide photographic light-sensitive material containing non-spectral sensitizing electron donative silver halide adsorptive compound. 4,607,006, Cl. 430-572.000.
Hirano, Shinji: *See*—
Hirota, Akira; Hirano, Shinji; Kitamura, Hiroyuki; and Tsushima, Takuya, 4,607,285, Cl. 358-167.000.
Hiranuma, Hidetoshi: *See*—
Mizogami, Susumu; Hiranuma, Hidetoshi; Sekiya, Tetsuo; and Hanazuka, Mitsuo, 4,607,034, Cl. 514-254.000.
Hiraoka, Ryoichi: *See*—
Mukohyama, Hideaki; Hiraoka, Ryoichi; Ushijima, Shohachi; and Saito, Motoyasu, 4,606,771, Cl. 106-170.000.
Hiroaki, Sanno, to Murao Boki Kabushiki Kaisha. Apparatus for finding the picking end of yarn. 4,606,509, Cl. 242-35.60R.
Hirohara, Hideo: *See*—
Mitsuda, Satoshi; and Hirohara, Hideo, 4,607,013, Cl. 435-280.000.
Hirose, Hitoshi: *See*—
Morita, Toshiaki; Horii, Masahiro; Tasaka, Shigeru; and Hirose, Hitoshi, 4,607,386, Cl. 382-13.000.
Hirota, Akira; Hirano, Shinji; Kitamura, Hiroyuki; and Tsushima, Takuya, to Victor Company of Japan, Ltd. Noise reducing system for video signal. 4,607,285, Cl. 358-167.000.
Hirschmann, Peter: *See*—
Dummer, Gerhard; Schmidhammer, Ludwig; Hirschmann, Peter; and Stettner, Gerhard, 4,606,742, Cl. 55-27.000.
Hirst, George E., to Perkin-Elmer Corporation, The. Method and apparatus for optically testing cylindrical surfaces. 4,606,640, Cl. 356-360.000.
Hisamoto, Iwao; Maeda, Chiaki; Esaka, Takasige; and Hirai, Masaru, to Daikin Kogyo Company, Limited. Fire extinguishing composition. 4,606,832, Cl. 252-8.000.
Hitachi Cable, Ltd.: *See*—
Nakayama, Wataru; Nakajima, Tadakatsu; Kuwahara, Heikichi; Yasukawa, Akira; Daikoku, Takahiro; and Yoshida, Hiromichi, 4,606,405, Cl. 165-133.000.
Hitachi Construction Machinery Co., Ltd.: *See*—
Izumi, Eiki; Watanabe, Hiroshi; Aoyagi, Yukio; Honma, Kazuo; and Nakajima, Kichio, 4,606,313, Cl. 123-386.000.
Hitachi, Ltd.: *See*—
Kobayashi, Shigeru; Abe, Katsuo; Sakata, Masao; Kasahara, Osamu; and Ogishi, Hidetsugu, 4,606,802, Cl. 204-192.00R.
Kojiam, Noboru; Kuroyanagi, Tomomitsu; Shibata, Akira; and Nakagawa, Isao, 4,607,292, Cl. 358-310.000.
Kubota, Shigeo; Yoshida, Minoru; Takahashi, Toshio; Kohno, Hideki; Hayakawa, Takayuki; Matuoka, Sadao; Kato, Shigeo; and Suzuki, Takaji, 4,607,164, Cl. 250-363.00S.
Maeda, Takeshi; Uno, Motoo; Muraoka, Kouji; Takasago, Masahiro; Mizoguchi, Yasumitsu; and Kaneko, Tokuya, 4,607,358, Cl. 369-44.000.
Nakayama, Wataru; Nakajima, Tadakatsu; Kuwahara, Heikichi; Yasukawa, Akira; Daikoku, Takahiro; and Yoshida, Hiromichi, 4,606,405, Cl. 165-133.000.
Okada, Yoshinori; Miura, Kuniaki; and Fukushima, Isao, 4,607,293, Cl. 358-328.000.
Oritsuki, Ryoji; Saito, Susumu; and Kanai, Hiromi, 4,607,168, Cl. 250-578.000.
Sakurada, Shuroku; Matsuzaki, Hitoshi; Ikeda, Yasuhiko; and Ohta, Takehiro, 4,607,273, Cl. 357-38.000.
Sugawara, Katuo; Takahashi, Akio; Ono, Masahiro; Tada, Ritsuro; Wajima, Motoyo; Narahara, Toshikazu; and Nagai, Akira, 4,607,094, Cl. 528-323.000.
Sugie, Mamoru; Toyooka, Takashi; Aoki, Hirokazu; Yoshida, Kazutoshi; and Chiba, Shinsaku, 4,607,178, Cl. 307-594.000.
Suzuki, Masamitu; and Hagiwara, Yoshito, 4,607,138, Cl. 178-30.000.
Suzuki, Ryo; Takeshita, Masatoshi; Takeuchi, Teruaki; Kodama, Naoki; and Sugita, Yutaka, 4,607,349, Cl. 365-39.000.
Takekoshi, Toshio, 4,607,251, Cl. 340-365.00S.
Yokoyama, Tetsuo; Morishita, Koichi; Sano, Koichi; Yamagata, Shimbu; and Ogushi, Akira, 4,607,222, Cl. 324-309.000.
Hitachi Medical Corporation: *See*—
Kubota, Shigeo; Yoshida, Minoru; Takahashi, Toshio; Kohno, Hideki; Hayakawa, Takayuki; Matuoka, Sadao; Kato, Shigeo; and Suzuki, Takaji, 4,607,164, Cl. 250-363.00S.
Yokoyama, Tetsuo; Morishita, Koichi; Sano, Koichi; Yamagata, Shimbu; and Ogushi, Akira, 4,607,222, Cl. 324-309.000.
Hitchiner Manufacturing Co., Inc.: *See*—
Chaadley, George D.; and Sharkey, Richard L., 4,606,396, Cl. 164-255.000.
Hobart Corporation: *See*—
Schroeder, Karl S., 4,606,421, Cl. 177-211.000.
Hockaday, Bruce D., to United Technologies Corporation. Fluidic device, 4,606,375, Cl. 137-828.000.
Hodel, Ulf: *See*—
Wagner, Alfred; Ames, Adolf; and Hodel, Ulf, 4,606,210, Cl. 72-261.000.
Hoechst Aktiengesellschaft: *See*—
Claues, Karl; Linkies, Adolf; and Reuschling, Dieter, 4,607,100, Cl. 544-2.000.
Englert, Heinrich C.; Mania, Dieter; Muschaweck, Roman; and Hroppot, Max, 4,607,030, Cl. 514-210.000.
Hahnke, Manfred; Mohr, Reinhard; and Hohmann, Kurt, 4,607,071, Cl. 524-189.000.
Hofinger, Manfred; Reng, Alwin; and Quack, Jochen M., 4,606,916, Cl. 424-70.000.
Landler, Josef; Hunger, Klaus; and Worfel, Erhard, 4,607,096, Cl. 534-575.000.
Mohr, Dieter, 4,606,975, Cl. 428-469.000.
Schwaiger, Gunther, 4,607,098, Cl. 534-618.000.
Hoffmann-La Roche Inc.: *See*—
Zurfluh, Rene , 4,607,051, Cl. 514-539.000.
Hofinger, Manfred; Reng, Alwin; and Quack, Jochen M., to Hoechst Aktiengesellschaft. Quaternary oxalkylated polyesters, a process for their preparation and their use. 4,606,916, Cl. 424-70.000.
Hofmann, Heinrich, to FAG Kugelfischer Georg Schafer (KGaA). Roller bearing. 4,606,655, Cl. 384-458.000.
Hofmann, Heinrich; and Markfelder, Gunter, to FAG Kugelfischer Georg Schafer (KGaA). Cage for two-row angular-contact ball bearing. 4,606,658, Cl. 384-510.000.
Hofmann, Rudolf: *See*—
Vary, Peter; Hofmann, Rudolf; and Hellwig, Karl, 4,607,362, Cl. 370-62.000.
Hogan, Martin J., to General Motors Corporation. Bearing and stub shaft assembly. 4,606,659, Cl. 384-518.000.
Hohmann, Kurt: *See*—
Hahnke, Manfred; Mohr, Reinhard; and Hohmann, Kurt, 4,607,071, Cl. 524-189.000.
Hollman, Kenneth F., to Micromanipulator Co., Inc., The. Method and apparatus for low temperature testing of electronic components. 4,607,220, Cl. 324-158.00F.
Holst, Edward H.: *See*—
Lewis, Paul H.; Dai, Eugene P.; and Holst, Edward H., 4,606,898, Cl. 423-244.000.
Honda Giken Kogyo Kabushiki Kaisha: *See*—
Ashikawa, Noboru; Friedrich, Karl; and Leinfellner, Herwig, 4,606,243, Cl. 74-700.000.
Fujita, Haruyasu, 4,606,571, Cl. 296-89.000.
Kumata, Hirotaka, 4,606,707, Cl. 417-354.000.
Kurata, Noboru, 4,606,429, Cl. 180-312.000.
Yanagisawa, Takashi, 4,606,488, Cl. 228-45.000.
Honda, Hidemasa: *See*—
Yamada, Yasuhiro; Imamura, Takeshi; Shibata, Masao; Arita, Seiji; and Honda, Hidemasa, 4,606,808, Cl. 208-44.000.
Honda, Kazuhiko: *See*—
Tanaka, Noriatsu; Sato, Hiroshi; Saitoh, Nobuto; Hirano, Katsumi; and Honda, Kazuhiko, 4,606,769, Cl. 106-30.000.
Honeywell Inc.: *See*—
Catlin, Gary M.; and Healy, Michael P., 4,607,378, Cl. 375-116.000.
Henzel, Russell A., 4,607,256, Cl. 340-825.520.
Horn, Brian C., 4,607,325, Cl. 364-151.000.
Levine, Michael R.; Russo, James T.; Cairo, Anthony C.; and Rigotti, Victor H., 4,606,401, Cl. 165-12.000.
Hong, Paul O., to B. F. Goodrich Company, The. Process for preparing high bulk density vinyl resins. 4,607,058, Cl. 521-56.000.
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Kuroda, Yutaka; Yoshida, Yoshio; Kabayama, Yuichi; Watanabe, Tsugio; Hakata, Tetsuro; and Matsumoto, Takahiro, 4,607,245, Cl. 336-57.000.
Kabeldon Aktiebolag: *See—*
Wikmar, Kjell M., 4,607,134, Cl. 174-19.000.
Kabushiki Kaisha Chubu Bearing Seisakusho: *See—*
Tanaka, Kouichi, 4,606,657, Cl. 384-492.000.
Kabushiki Kaisha Daikin Seisakusho: *See—*
Kamio, Takenori, 4,606,448, Cl. 192-85.00R.
Kabushiki Kaisha Kobe Seiko Sho: *See—*
Mitani, Takeshi; and Aiko, Hideo, 4,606,675, Cl. 405-263.000.
Noyori, Tatsuhiko; and Ueda, Masakazu, 4,606,211, Cl. 72-270.000.
Kabushiki Kaisha Komatsu Seisakusho: *See—*
Kitagawa, Shinichi, 4,607,338, Cl. 364-478.000.
Kabushiki Kaisha Meidensha: *See—*
Kito, Yasutami; and Yasukawa, Kuniake, 4,607,205, Cl. 318-778.000.
Kabushiki Kaisha Nipponcoinco: *See—*
Kobayashi, Osamu; and Yukimoto, Kouji, 4,606,362, Cl. 133-5.00R.
Kabushiki Kaisha Toshiba: *See—*
Anno, Gousuke; and Suzuki, Yoshinori, 4,606,631, Cl. 356-39.000.
Endo, Yukio; Egawa, Yoshitaka; Harada, Nozomu; and Yoshida, Okio, 4,607,287, Cl. 358-213.000.
Ido, Tadashi; Kubo, Osamu; Fukasawa, Masahiro; Maeda, Tatsumi; and Nomura, Tutomu, 4,606,971, Cl. 428-328.000.
Iesaka, Susumu, 4,607,270, Cl. 357-15.000.
Isobe, Seiji; and Okubo, Seiji, 4,607,229, Cl. 328-155.000.
Maeda, Ken-ichi, 4,607,385, Cl. 382-9.000.
Murakami, Hiroyasu, 4,607,290, Cl. 358-260.000.
Oono, Ken'ichi, 4,607,291, Cl. 358-286.000.
Kabushiki Kaisha Toyoda Jidoshokki Seisakusho: *See—*
Anahara, Meiji; and Muramatsu, Shigeru, 4,606,185, Cl. 57-401.000.
Kacirek, Harmut; and Meyer, Andreas, to Sud-Chemie Aktiengesellschaft. Method of preparing crystalline zeolitic aluminosilicates. 4,606,900, Cl. 423-329.000.
Kaczur, Jerry J., to Olin Corporation. Process for producing a dried, stable mixture of alkali metal or alkaline earth metal ferrate (VI) compounds with hydroxides and carbonates. 4,606,843, Cl. 252-186.330.
Kahn, Andree; Lejus, Anne-Marie; Thery, Jeanine; and Vivien, Daniel, to Centre National de la Rechereche Scientifique. Mixed rare earth metal, divalent transition metal, aluminum oxide. 4,606,846, Cl. 252-301.40R.
Kaiser Steel Corporation: *See—*
Williamson, Calvin C., 4,606,208, Cl. 72-133.000.
Kajikawa, Norio: *See—*
Nagahara, Michiko; Ohishi, Yoshitaka; Yajima, Motoyuki; Nogimori, Katsumi; Kurokawa, Shigeki; and Kajikawa, Norio, 4,606,860, Cl. 548-183.000.
Kaken Pharmaceutical Co., Ltd.: *See—*
Nagahara, Michiko; Ohishi, Yoshitaka; Yajima, Motoyuki; Nogimori, Katsumi; Kurokawa, Shigeki; and Kajikawa, Norio, 4,606,860, Cl. 548-183.000.
Kaku, Takashi; and Endo, Chihiro, to Fujitsu Limited. Receiver unit having synchronous pull-in circuit. 4,607,230, Cl. 329-50.000.
Kalmar LMV: *See—*
Karlsson, Jan, 4,606,568, Cl. 294-81.400.
Kama, William N.: *See—*
Task, Harry L.; Tutin, Michael B.; and Kama, William N., 4,606,127, Cl. 33-1.00G.
Kametaka, Shigeru: *See—*
Hayashi, Shin'ichi; Yoshida, Akiyoshi; Kametaka, Shigeru; and Koike, Tetsuo, 4,606,911, Cl. 424-49.000.
Kamijo, Yoshimi: *See—*
Kano, Mitsuru; Kato, Yoshinori; Kamijo, Yoshimi; Takeda, Yoshio; Sakikubo, Yoshinari; and Yagi, Naoki, 4,607,097, Cl. 534-577.000.
Kaminski, Darryl L., to EZ Paintr Corporation. Multi-use package. 4,606,456, Cl. 206-362.400.
Kamio, Takenori, to Kabushiki Kaisha Daikin Seisakusho. Supply pressure control device for air clutch. 4,606,448, Cl. 192-85.00R.
Kanai, Hiromi: *See—*
Oritsuki, Ryoji; Saito, Susumu; and Kanai, Hiromi, 4,607,168, Cl. 250-578.000.
Kanda, Shoichi; Hosoda, Jun; and Kawamura, Zengiro, to Nitto Chemical Industry Co., Ltd. Stabilization of xanthan gum in aqueous solution. 4,607,099, Cl. 536-114.000.
Kanebo Ltd.: *See—*
Yoshino, Koichiro; Morita, Tominori; Moriyama, Masaru; Ito, Keizo; and Tsukamoto, Goro, 4,607,031, Cl. 514-211.000.
Kaneko, Kenji: *See—*
Hara, Kazumasa; Sato, Masashi; Koike, Mikio; and Kaneko, Kenji, 4,606,289, Cl. 112-295.000.
Kaneko, Ryoichi: *See—*
Wakasugi, Keizo; Fujita, Yuji; and Kaneko, Ryoichi, 4,606,951, Cl. 428-35.000.
Kaneko, Tokuya: *See—*
Maeda, Takeshi; Uno, Motoo; Muraoka, Kouji; Takasago, Masahiro; Mizoguchi, Yasumitsu; and Kaneko, Tokuya, 4,607,358, Cl. 369-44.000.
Kaneko, Yukihiro: *See—*
Aoyagi, Yoshio; Kaneko, Yukihiro; Kurosaki, Masanori; Motohashi, Minoru; Sawaki, Manabu; Ueki, Yoshiharu; and Sakaguchi, Shosaburo, 4,607,300, Cl. 360-74.100.
Kano, Mitsuru; Kato, Yoshinori; Kamijo, Yoshimi; Takeda, Yoshio; Sakikubo, Yoshinari; and Yagi, Naoki, to Alps Electric Co., Ltd.; and Sanyo Color Works Ltd. Dichromatic coloring matter for a colored liquid crystal display element. 4,607,097, Cl. 534-577.000.
Kaper II, Inc.: *See—*
Warren, Perry A., 4,606,582, Cl. 301-37.00S.
Kaplan, Samuel; Donohue, Timothy J.; and Cain, Brian D., to Board of Trustees, University of Illinois. Accumulation and isolation of N-acylphosphatidylserine. 4,607,011, Cl. 435-131.000.
Kapon, Eli: *See—*
Mukai, Seiji; Kapon, Eli; Katz, Joseph; Margalit, Shlomo; and Yariv, Amnon, 4,607,370, Cl. 372-50.000.
Karanewsky, Donald S.; and Haslanger, Martin F., to E. R. Squibb & Sons, Inc. Arylhydroxamates useful as antiallergy agents. 4,607,053, Cl. 514-575.000.
Karlsson, Jan, to Kalmar LMV. Side lifting apparatus. 4,606,568, Cl. 294-81.400.
Karlsson, Lars G., to Diab-Barracuda AB. Camouflage controlling reflection of both long and short radar waves. 4,606,966, Cl. 428-196.000.
Kasahara, Osamu: *See—*
Kobayashi, Shigeru; Abe, Katsuo; Sakata, Masao; Kasahara, Osamu; and Ogishi, Hidetsugu, 4,606,802, Cl. 204-192.00R.
Kasahara, Toshiharu: *See—*
Yamaguchi, Takahiro; Ogawa, Masayuki; and Kasahara, Toshiharu, 4,607,216, Cl. 324-77.00B.
Kasama, Yasuo: *See—*
Nakamura, Taku; Kasama, Yasuo; and Mukunoki, Yasuo, 4,606,996, Cl. 430-309.000.
Kashima Oil Company: *See—*
Watanabe, Masami, 4,606,872, Cl. 264-29.200.
Kashio, Shigetora: *See—*
Fujikawa, Junichi; and Kashio, Shigetora, 4,606,993, Cl. 430-281.000.
Kasperkovitz, Wolfdietrich G.: *See—*
Nolde, Wolfgang; and Kasperkovitz, Wolfdietrich G., 4,607,392, Cl. 455-192.000.
Katayama, Nobuaki: *See—*
Ikemoto, Kazuhito; Katayama, Nobuaki; Terakura, Yukio; and Sasaki, Kan, 4,606,238, Cl. 74-473.00R.
Kato, Kiichi: *See—*
Matsubayashi, Nobuhide; Kato, Kiichi; and Sakamoto, Masaharu, 4,607,359, Cl. 369-46.000.
Kato, Shigeo: *See—*
Kubota, Shigeo; Yoshida, Minoru; Takahashi, Toshio; Kohno, Hideki; Hayakawa, Takayuki; Matuoka, Sadao; Kato, Shigeo; and Suzuki, Takaji, 4,607,164, Cl. 250-363.00S.
Kato, Yoshinori: *See—*
Kano, Mitsuru; Kato, Yoshinori; Kamijo, Yoshimi; Takeda, Yoshio; Sakikubo, Yoshinari; and Yagi, Naoki, 4,607,097, Cl. 534-577.000.
Kato, Yuichi; and Okamoto, Ichiro, to Nissan Motor Co., Ltd.; and Ohi Seisakusho Co., Ltd. Door latch operating device. 4,606,567, Cl. 292-336.300.
Katoh, Katsunori: *See—*
Nakayama, Noritaka; Kawakatsu, Satoshi; Katoh, Katsunori; and Shinozaki, Kaoru, 4,607,002, Cl. 430-505.000.
Katona, Joseph W., to Mills Products, Inc. Oven door. 4,606,324, Cl. 126-198.000.
Katz, Joseph: *See—*
Mukai, Seiji; Kapon, Eli; Katz, Joseph; Margalit, Shlomo; and Yariv, Amnon, 4,607,370, Cl. 372-50.000.

Kauffmann, Urs; and Degen, Jost, to Schurter AG. Fuse holder clip and clip-type fuse holder for selectively holding different electrical fuses. 4,606,590, Cl. 339-32.00M.

Kaufmann, Dieter: *See*—
Hausselt, Jurgen; Kaufmann, Dieter; and Englisch, Udo, 4,606,887, Cl. 420-437.000.

Kauss, Wolfgang, to Manneshann Rexroth GmbH. Self-pressurizing hydraulic control system. 4,606,258, Cl. 91-433.000.

Kawagishi, Toshio: *See*—
Ukai, Toshinao; Sato, Tadahisa; Kawagishi, Toshio; and Takei, Haruo, 4,607,003, Cl. 430-519.000.

Kawakatsu, Satoshi: *See*—
Nakayama, Noritaka; Kawakatsu, Satoshi; Katoh, Katsunori; and Shinozaki, Kaoru, 4,607,002, Cl. 430-505.000.

Kawamura, Tetsushi: *See*—
Fujiwara, Hidetoshi; and Kawamura, Tetsushi, 4,606,423, Cl. 180-79.100.

Kawamura, Zengiro: *See*—
Kanda, Shoichi; Hosoda, Jun; and Kawamura, Zengiro, 4,607,099, Cl. 536-114.000.

Kawasaki Jukogyo Kabushiki Kaisha: *See*—
Nakano, Hideaki; Ozu, Tadahiro; and Fujii, Tatsuo, 4,606,312, Cl. 123-198.0DB.
Okada, Gensuke; and Hagiwara, Tatsuo, 4,606,506, Cl. 241-109.000.

Kawasaki Steel Corporation: *See*—
Yoshida, Hiroshi; Ishihara, Noboru; and Kuwashima, Shigeru, 4,606,876, Cl. 264-120.000.

Kawata, Ken; Sato, Kozo; and Naito, Hideki, to Fuji Photo Film Co., Ltd. Color photographic light-sensitive material with 2-acylamino phenol dye releaser. 4,606,991, Cl. 430-203.000.

Kazaoka, Kenichi; and Okazaki, Hiroshi, to Aisin Seiki Kabushiki Kaisha. Seat for vehicles. 4,606,532, Cl. 267-102.000.

Kazmaier, Peter M.; Baranyi, Giuseppa; Hsiao, Cheng-Kuo; and Burt, Richard A., to Xerox Corporation. Processes for the preparation of mixed squaraine compositions. 4,607,124, Cl. 564-307.000.

Kegeler, Gary H.; and Vandersall, Howard L., to Monsanto Company. Stabilized galactomannan gum compositions. 4,606,831, Cl. 252-7.000.

Keller, Rene , to Emhart Industries, Inc. Method of monitoring the position of two movable side portions of a mould of a glassware forming machine. 4,606,746, Cl. 65-29.000.

Kelly, Joseph D.: *See*—
Duffer, Paul F.; Kelly, Joseph D.; and Franz, Helmut, 4,606,946, Cl. 427-384.000.

Kendall Company, The: *See*—
Greenway, J. Michael; Schoots, Peter J.; and Patience, Donald, 4,606,338, Cl. 128-156.000.
Silver, Brian H., 4,606,420, Cl. 177-160.000.

Kendall-Tobias, Michael W., to Perkin-Elmer Corporation, The. Method and apparatus for shutting down the burner of a flame atomic absorption. 4,606,718, Cl. 431-6.000.

Kennecott Corporation: *See*—
Carlson, Adolph C., 4,607,254, Cl. 340-606.000.

Kent Manufacturing Co., Inc.: *See*—
Hake, Kenneth A., 4,606,413, Cl. 172-328.000.

Keonig, Herbert, to Messerschmitt-Boelkow-Blohm Gesellschaft mit beschraenkter Haftung. Apparatus for automatically eliminating control force errors in aircraft, especially helicopters. 4,607,202, Cl. 318-628.000.

Keoshkerian, Barkev: *See*—
Ong, Beng S.; and Keoshkerian, Barkev, 4,606,861, Cl. 260-351.000.

Kerdraon, Alain L., to Etat Francais. Initiation delay system for warheads with tandem mounted shaped charges. 4,606,272, Cl. 102-308.000.

Kernforschungsanlage Julich: *See*—
Stockmeyer, Rolf, 4,606,222, Cl. 73-73.000.

Kerr-McGee Chemical Corporation: *See*—
Schulke, Dwight A.; and Spore, Everette M., 4,606,804, Cl. 204-286.000.

Kervin, Douglas J.; and Derrington, Carl E., to Motorola, Inc. Method of manufacturing optically sensitive semiconductor devices including anti-reflective coatings. 4,606,115, Cl. 29-572.000.

Ketcham & McDougall, Inc.: *See*—
Moustakas, Matthew A., 4,606,465, Cl. 211-43.000.

Keyes, George B.; Requejo, Lux P.; and Hilton, Thomas B., to Drackett Company. Cleaning composition for glass and similar hard surfaces. 4,606,842, Cl. 252-174.230.

Keys, Robert O., to Sherex Chemical Company, Inc. Modified alcohol frothers for froth flotation of coal. 4,606,818, Cl. 209-166.000.

KFA - Kernforschungsanlage Julich GmbH: *See*—
Wyrwich, Helmut; Graschew, Georgi; Chatzipetros, Johann; and Feinendegen, Ludwig E., 4,606,128, Cl. 33-143.00C.

Kiddie Products, Inc.: *See*—
Panicci, Richard L., 4,606,348, Cl. 128-359.000.

Kido, Yoshinobu: *See*—
Tsuchida, Tsuyoshi; and Kido, Yoshinobu, 4,606,318, Cl. 123-488.000.

Kidoh, Kunizoh: *See*—
Sasaki, Tohru; Kidoh, Kunizoh; and Endoh, Hiroyuki, 4,606,144, Cl. 43-44.980.

Kieran, Peter J.; Townsend, Robert B.; Hackney, Ronald J.; Gayst, Stephen; and Maguire, Michael J., to Wellcome Australia Limited. Method of controlling insects and parasites with an aqueous localized pour-on formulation. 4,607,050, Cl. 514-520.000.

Kihlstrom, Christer, to Lectrostatic Marknads AB. Soldering iron with fume suction tube. 4,607,151, Cl. 219-230.000.

Kiji Reed Manufacturing Co., Ltd.: *See*—
Michihara, Shinji; and Shimizu, Akiyoshi, 4,606,152, Cl. 51-241.00S.

Kimberly-Clark Corporation: *See*—
Wideman, Ronald H., 4,606,964, Cl. 428-152.000.

Kimura, Misao, to Harada Industry Co., Ltd. Planetary drive with overload clutch release means for an antenna. 4,606,443, Cl. 192-20.000.

Kin, Nelson I.; and Sprau, William W., to National Machinery Company, The. Bimetal electrodes for spark plugs or the like and method of making same. 4,606,730, Cl. 445-7.000.

Kindt, Robert J., to Eastman Kodak Company. Geneva drive. 4,606,235, Cl. 74-113.000.

King, Garry L. Ground working implement assembly. 4,606,089, Cl. 7-114.000.

Kingston, James E., to Sliger, Marlys A. Tub cover. 4,606,083, Cl. 4-580.000.

Kingston Tool Co. Inc.: *See*—
Domian, Robert E., 4,606,131, Cl. 33-257.000.

Kinney, Thomas B.: *See*—
Fogarty, Thomas J.; Finn, James C., III; and Kinney, Thomas B., 4,606,347, Cl. 128-344.000.

Kira, Takehiro, to Ushio Denki Kabushiki Kaisha. Exposure method of semiconductor wafer by mercury-vapor lamp. 4,606,997, Cl. 430-311.000.

Kirin Beer Kabushiki Kaisha: *See*—
Miyazawa, Takashi; Fukuchi, Hiroyuki; and Tateishi, Sosuke, 4,606,635, Cl. 356-240.000.

Kirkland, James L., to United States of America, Navy. Explosively actuated mine cable marker device. 4,606,293, Cl. 114-221.00A.

Kirkpatrick, Thomas L. Door mounted exercising device. 4,606,541, Cl. 272-136.000.

Kirksey, William A.: *See*—
Scott, Richard L.; Kirksey, William A.; and Rieke, James K., 4,606,230, Cl. 73-856.000.

Kishi, Hajimu; Kurakake, Mitsuo; Seki, Masaki; Tanaka, Kunio; and Matsumura, Teruyuki, to Fanuc Ltd. Modular numerical control system with automatic programming function. 4,607,327, Cl. 364-191.000.

Kishi, Hiroshi: *See*—
Wada, Takeshi; Kishi, Hiroshi; Murai, Shunji; and Fukui, Masami, 4,607,314, Cl. 361-321.000.
Wada, Takeshi; Kishi, Hiroshi; Murai, Shunji; and Fukui, Masami, 4,607,315, Cl. 361-321.000.
Wada, Takeshi; Kishi, Hiroshi; Murai, Shunji; and Fukui, Masami, 4,607,316, Cl. 361-321.000.

Kishimoto, Shinichi: *See*—
Ozawa, Yoichi; Kishimoto, Shinichi; Shinohara, Emiko; Takemoto, Tadashi; and Eguchi, Chikahiko, 4,606,854, Cl. 260-998.210.

Kissei Pharmaceutical Co., Ltd.: *See*—
Morita, Kaname; Arikawa, Shigeo; Watanabe, Mitsuo; Iizuka, Kanji; and Akahane, Kenji, 4,607,046, Cl. 514-399.000.

Kita, Jean C.; and Puff, Roger M., to Charbonnages de France. Apparatus for supplying a controlled flow of gas to a fluidized grid. 4,606,896, Cl. 432-58.000.

Kita, Nobuyuki; Matsumoto, Hiroshi; and Hagiwara, Hitoshi, to Fuji Photo Film Company, Limited. Process for developing light-sensitive o-quinonediazide lithographic plates with developing solution having cobalt or nickel compound. 4,606,995, Cl. 430-302.000.

Kitagawa, Shinichi, to Kabushiki Kaisha Komatsu Seisakusho. Misgrip detection control system for use in a transfer press. 4,607,338, Cl. 364-478.000.

Kitamura, Hajime: *See*—
Nomura, Hirokazu; Ueno, Susumu; and Kitamura, Hajime, 4,607,088, Cl. 526-279.000.

Kitamura, Hiroyuki: *See*—
Hirota, Akira; Hirano, Shinji; Kitamura, Hiroyuki; and Tsushima, Takuya, 4,607,285, Cl. 358-167.000.

Kitamura, Takashi; Fukuura, Yukio; Tanuma, Itsuo; Shinogaya, Toshikazu; and Noda, Yuji, to Bridgestone Tire Company Limited. Sealant compositions and method of producing the same. 4,607,065, Cl. 522-83.000.

Kitamura, Youji: *See*—
Mitsui, Takao; Tatsunaka, Toshiharu; Sasaya, Hideaki; and Kitamura, Youji, 4,606,711, Cl. 418-59.000.

Kitano, Kissho: *See*—
Schulz, Donald N.; and Kitano, Kissho, 4,607,076, Cl. 524-548.000.

Kito, Yasutami; and Yasukawa, Kuniake, to Kabushiki Kaisha Meidensha. Method and system for reconnecting inverter to rotating motors. 4,607,205, Cl. 318-778.000.

Kiyomiya, Masaaki: *See*—
Ishibashi, Masaya; and Kiyomiya, Masaaki, 4,607,354, Cl. 369-39.000.

Klante, Hansjorg: *See*—
Koenig, Dieter; Klante, Hansjorg; Niemann, Manfred; Jenny, Wilhelm; and Engelskirchen, Jurgen, 4,606,727, Cl. 441-5.000.

Klar, Erhard: *See*—
Svilar, Mark; Glancy, Stephen; and Klar, Erhard, 4,606,768, Cl. 75-246.000.

Klein, Schanzlin & Becker Aktiengesellschaft: *See*—
Gorisch, Armin, 4,606,547, Cl. 277-12.000.

Klemmer, Paul J.: *See*—
Agronin, Ronald D.; and Klemmer, Paul J., 4,606,264, Cl. 100-38.000.

Klimashko, Vladimir V.; Chepurnoi, Nikolai P.; Makeev, Vladimir D.; Naboko, Vladimir P.; Filonov, Alexandr D.; and Svita, Petr N., to

Institut Gornogo Dela Sibirskogo Otdelenia Akademii Nauk SSSR. Percussive air tool. 4,606,414, Cl. 173-128.000.

Klomp, Edward D., to General Motors Corporation. Ratio control mechanism for a friction drive transmission. 4,606,234, Cl. 74-192.000.

Kmiec, Chester J.; and Novits, Michael F., to Pennwalt Corporation. Gas-releasing composition for tailoring gas evolution of system IR 2811. 4,607,059, Cl. 521-88.000.

Kmiec, Chester J.; Novits, Michael F.; and Hibbard, Edward P., to Pennwalt Corporation. Foaming and crosslinking of elastomeric and/or thermoplastic polymers. 4,607,060, Cl. 521-89.000.

Knighton, Kelly; Davis, J. Stanley; and Radford, Steven R., to Norton Christensen, Inc. Self activating, positively driven concealed core catcher. 4,606,416, Cl. 175-58.000.

Knoedl, George, Jr., to AT&T Bell Laboratories. Dual-clock edge triggered flip-flop circuits. 4,607,173, Cl. 307-291.000.

Kobayashi, Osamu; and Yukimoto, Kouji, to Kabushiki Kaisha Nippon-coinco. Change delivery device in coin sorting controller. 4,606,362, Cl. 133-5.00R.

Kobayashi, Shigeru; Abe, Katsuo; Sakata, Masao; Kasahara, Osamu; and Ogishi, Hidetsugu, to Hitachi, Ltd. Planar magnetron sputtering with modified field configuration. 4,606,802, Cl. 204-192.00R.

Kobayashi, Toshio; and Mura, Shinichirou, to Fuji Jukogyo Kabushiki Kaisha. Synchronizer in a transmission for a motor vehicle. 4,606,236, Cl. 74-339.000.

Koch, Fritz E.: *See*—
Taybl, Christa; Gerke, Dieter; Koch, Fritz E.; and Schwenda, Gerhard, 4,607,135, Cl. 174-60.000.

Koch, Gerhard, to Hafele KG. Guide structure for a drawable furniture part. 4,606,588, Cl. 312-339.000.

Kockums Industri AB: *See*—
Osnes, Hans M.; and Fallgren, Rolf, 4,606,188, Cl. 59-85.000.

Kodama, Naoki: *See*—
Suzuki, Ryo; Takeshita, Masatoshi; Takeuchi, Teruaki; Kodama, Naoki; and Sugita, Yutaka, 4,607,349, Cl. 365-39.000.

Kodet, Reuben P., to Hamilton Industries. Lock release for folding table. 4,606,575, Cl. 297-124.000.

Koehl, Richard; and Lerman, Michael J., to De Dietrich (USA), Inc. Method for fabricating an impeller assembly and shaft having interference fit. 4,606,103, Cl. 29-156.80R.

Koenig, Dieter; Klante, Hansjorg; Niemann, Manfred; Jenny, Wilhelm; and Engelskirchen, Jurgen, to Blohm & Voss AG. Anchoring arrangement for a tanker, including a fluid transfer system. 4,606,727, Cl. 441-5.000.

Koenig, Herbert, to Messerschmitt-Boelkow-Blohm Gesellschaft mit beschraenkter Haftung. Apparatus for improving the longitudinal or pitching stability of aircraft. 4,607,201, Cl. 318-584.000.

Kogyo Kabushiki Kaisha: *See*—
Ban, Keisuke; Daimaru, Akimasa; Muraoka, Yasuo; and Miyake, Noriaki, 4,606,395, Cl. 164-98.000.

Kohjin Co., Ltd.: *See*—
Mukohyama, Hideaki; Hiraoka, Ryoichi; Ushijima, Shohachi; and Saito, Motoyasu, 4,606,771, Cl. 106-170.000.
Wakasugi, Keizo; Fujita, Yuji; and Kaneko, Ryoichi, 4,606,951, Cl. 428-35.000.

Kohler, Franz J.: *See*—
Schuster, Dan-Karl; and Kohler, Franz J., 4,607,123, Cl. 564-153.000.

Kohlmann, Friedrich-Wilhelm: *See*—
Janssen, Bernd; Kohlmann, Friedrich-Wilhelm; Wesenberg, Walter; and Heberle, Wolfgang, 4,607,045, Cl. 514-383.000.

Kohno, Hideki: *See*—
Kubota, Shigeo; Yoshida, Minoru; Takahashi, Toshio; Kohno, Hideki; Hayakawa, Takayuki; Matuoka, Sadao; Kato, Shigeo; and Suzuki, Takaji, 4,607,164, Cl. 250-363.00S.

Kohsiek, Cord H., to U.S. Philips Corporation. Monolithic integrated RC-oscillator. 4,607,238, Cl. 331-143.000.

Koide, Hiroshi, to Ricoh Company, Ltd. Drive system. 4,607,355, Cl. 369-44.000.

Koike, Mikio: *See*—
Hara, Kazumasa; Sato, Masashi; Koike, Mikio; and Kaneko, Kenji, 4,606,289, Cl. 112-295.000.

Koike, Tetsuo: *See*—
Hayashi, Shin'ichi; Yoshida, Akiyoshi; Kametaka, Shigeru; and Koike, Tetsuo, 4,606,911, Cl. 424-49.000.

Koiyumaki, Veikko; Tamminen, Hannu; Peltonen, Pekka; and Koski, Veikko, to Oy Rosenlew AB. Flexible container for transporting and storing bulk goods. 4,607,388, Cl. 383-121.000.

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Kolenc, Terrence J.; Bork, Carl R., Jr.; Steiss, William C.; Shufflebarger, Earl D.; and Tobbe, William P., to Nupro Company. Valve. 4,606,374, Cl. 137-556.300.

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Bernard, Jerald D.; Koltookian, Sarkis A.; and Mealhow, Kenneth S., 4,606,376, Cl. 138-30.000.

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Shiono, Fusahiro; and Komai, Kensaku, 4,607,334, Cl. 364-405.000.

Komplin, Steven R., to International Business Machines Corporation. Single stepping motor ribbon and correction feed and lift system. 4,606,662, Cl. 400-214.000.

Komurasaki, Satoshi, to Mitsubishi Denki Kabushiki Kaisha. Ignition timing control system for internal combustion engine. 4,606,316, Cl. 123-425.000.

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Iizuka, Akira; Konai, Yutaka; Yamauchi, Takashi; and Hayashi, Shoichiro, 4,607,117, Cl. 560-56.000.

Konishiroku Photo Industry Co., Ltd.: *See*—
Ernstson, Christer; and Sadahiro, Yousuke, 4,606,827, Cl. 210-670.000.
Nakayama, Noritaka; Kawakatsu, Satoshi; Katoh, Katsunori; and Shinozaki, Kaoru, 4,607,002, Cl. 430-505.000.

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Koroki, Takeo; and Takeuchi, Koji, to Nippon Piston Ring Co., Ltd. Method of manufacturing a radially corrugated expander-spacer for a piston oil ring assembly. 4,606,101, Cl. 29-156.50R.

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Grabbe, Dimitry G.; and Korsunsky, Iosif, 4,606,594, Cl. 339-74.00R.

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Morishita, Mitsuharu; and Kouge, Shinichi, 4,607,336, Cl. 364-424.000.

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Goodrich, Edgar R., Jr.; and Kraft, Douglas R., 4,607,331, Cl. 364-200.000.

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Romer, Michael; Eidenschink, Rudolf; Krause, Joachim; Scheuble, Bernhard; and Weber, Georg, 4,606,845, Cl. 252-299.630.

Krauss-Maffei AG: *See*—
Polak, Gerhard; and Dini, Norbert, 4,606,717, Cl. 425-541.000.

Krauss, Werner, to Claudius Peters Aktiengesellschaft. Double silo. 4,606,158, Cl. 52-192.000.

Krehm, Herman S.; Leidner, Jacob; and Rode, Malcolm E., to Krehm, Herman S. Method of making fur bearing strands. 4,606,182, Cl. 57-200.000.

Kroell, Franz. Method of welding discs to a split hub assembly. 4,606,494, Cl. 228-182.000.

Krohn, David A., to Eotec Corporation. Liquid level sensor. 4,606,226, Cl. 73-293.000.

Krohn, Kenneth A.: *See*—
Bassingthwaighte, James B.; Little, Stephen E.; and Krohn, Kenneth A., 4,606,908, Cl. 424-1.100.

Krone GmbH: *See*—
Taybl, Christa; Gerke, Dieter; Koch, Fritz E.; and Schwenda, Gerhard, 4,607,135, Cl. 174-60.000.

Krosbacher, Peter; and Wetzinger, Johann, to Eumuco Aktiengesellschaft fur Maschinenbau. Apparatus for producing blanks from a web. 4,606,250, Cl. 83-161.000.

Krueger, Dennis L.; Loeding, Neil W.; and Poser, Claudia I., to Minnesota Mining and Manufacturing Company. Method of making a film from pyroelectric and isotropic piezoelectric polymer blends. 4,606,871, Cl. 264-22.000.

Krueger, William R.; McAuliffe, Gerald N.; and Schlageter, George A., to Outboard Marine Corporation. Computer controlled safety seat switch. 4,607,199, Cl. 318-484.000.

Kruger, Hermann; and Deutsch, Hermann, to Volkswagenwerk AG. One-piece engine block. 4,606,304, Cl. 123-90.270.

Kubbutat, Albert, to Stotmeister GmbH. Plaster backing panel for ventilated curtain wall system. 4,606,160, Cl. 52-235.000.

Kubo, Osamu: *See*—
Ido, Tadashi; Kubo, Osamu; Fukasawa, Masahiro; Maeda, Tatsumi; and Nomura, Tutomu, 4,606,971, Cl. 428-328.000.

Kubota, Ltd.: *See*—
Odahara, Tetsuichi, 4,606,356, Cl. 130-27.00R.

Kubota, Shigeo; Yoshida, Minoru; Takahashi, Toshio; Kohno, Hideki; Hayakawa, Takayuki; Matuoka, Sadao; Kato, Shigeo; and Suzuki, Takaji, to Hitachi, Ltd.; and Hitachi Medical Corporation. Radiation detecting apparatus. 4,607,164, Cl. 250-363.00S.

Kuder, James E., to Celanese Corporation. Nonlinear optical organic substrate. 4,607,095, Cl. 528-337.000.

Kuhlman, Harvey G. Chair lift apparatus. 4,606,082, Cl. 4-561.000.

Kuhn, Ernst; Boer, Jelle D.; and Theon, Johan, to Dow Chemical Company, The. Polyurethane and urethane-modified isocyanurate foams and a polyol composition useful in their preparation. 4,607,064, Cl. 521-174.000.

Kuiper, Albert J., to U.S. Philips Corporation. Method of manufacturing a deflection unit for color television display tubes which is pre-adjusted for color purity. 4,606,729, Cl. 445-3.000.

Kuka Schweissanlagen & Roboter GmbH: *See—*
Steinhart, Wilhelm; and Mitschele, Rudolf, 4,606,489, Cl. 228-102.000.
Kula, John: *See—*
Dorband, Glen C.; Failla, Stephen J.; and Kula, John, 4,606,345, Cl. 128-334.00R.
Kulprathipanja, Santi, to UOP Inc. Separation of polar gases from nonpolar gases. 4,606,740, Cl. 55-16.000.
Kumar, Ashok: *See—*
Lee, Gil S.; and Kumar, Ashok, 4,607,175, Cl. 307-443.000.
Kumata, Hirotaka, to Honda Giken Kogyo Kabushiki Kaisha. Pump apparatus having two drive motors. 4,606,707, Cl. 417-354.000.
Kummer, David A.; and Webb, Gary E., to International Business Machines Corporation. Microcomputer system employing program cartridges. 4,607,347, Cl. 364-900.000.
Kundig, Andres, to Sulzer Brothers Limited. Method and apparatus for liquefying a low-boiling gas. 4,606,744, Cl. 62-22.000.
Kunert, Heinz, to Vegla Vereinigte Glaswerke GmbH. Glass auto window for, and method of, quick installation. 4,606,159, Cl. 52-208.000.
Kunin, Robert; and LaTerra, Terrance, to Ecodyne Corporation. Uranium recovery from carbonate leach liquors using carboxylic acid cation exchange resin. 4,606,894, Cl. 423-7.000.
Kuo Chao, Chen: *See—*
Palumbo, Albert J.; and Kuo Chao, Chen, 4,606,359, Cl. 132-53.000.
Kurachi, Hisaharu. Device for coupling hose or the like. 4,606,564, Cl. 285-248.000.
Kurakake, Mitsuo: *See—*
Kishi, Hajimu; Kurakake, Mitsuo; Seki, Masaki; Tanaka, Kunio; and Matsumura, Teruyuki, 4,607,327, Cl. 364-191.000.
Kurata, Masami: *See—*
Moriguchi, Haruhiko; Inui, Toshiharu; and Kurata, Masami, 4,607,262, Cl. 346-76.0PH.
Kurata, Noboru, to Honda Giken Kogyo Kabushiki Kaisha. Vehicle drive system. 4,606,429, Cl. 180-312.000.
Kureha Kagaku Kogyo Kabushiki Kaisha: *See—*
Iizuka, Akira; Konai, Yutaka; Yamauchi, Takashi; and Hayashi, Shoichiro, 4,607,117, Cl. 560-56.000.
Sasaki, Tohru; Kidoh, Kunizoh; and Endoh, Hiroyuki, 4,606,144, Cl. 43-44.980.
Yusa, Haruhiko; Oota, Masanori; and Takahashi, Kazuo, 4,607,080, Cl. 525-82.000.
Kurg, Maarjus, to Electrohome Limited. Video projector with mounting assembly enabling longitudinal axes of three CRT's to be tilted simultaneously while maintaining optical alignment. 4,607,280, Cl. 358-60.000.
Kurihara, Takashi, to Olympus Optical Co., Ltd. Photographic lens system with a short overall length. 4,606,607, Cl. 350-432.000.
Kuriyama, Takashi: *See—*
Takanashi, Itsuo; Nakagaki, Shintaro; Miyazaki, Kenichi; and Kuriyama, Takashi, 4,607,279, Cl. 358-44.000.
Kuroda, Yutaka; Yoshida, Yoshio; Kabayama, Yuichi; Watanabe, Tsugio; Hakata, Tetsuro; and Matsumoto, Takahiro, to Mitsubishi Denki Kabushiki Kaisha; Kuroda, Yutaka; Yoshida, Yoshio; and Kabayama, Yuichi. Gas insulated electromagnetic induction appliance. 4,607,245, Cl. 336-57.000.
Kurokawa, Shigeki: *See—*
Nagahara, Michiko; Ohishi, Yoshitaka; Yajima, Motoyuki; Nogimori, Katsumi; Kurokawa, Shigeki; and Kajikawa, Norio, 4,606,860, Cl. 548-183.000.
Kurokawa, Shunji, to Ricoh Company, Ltd. Facsimile transceiver capable of storing and relaying data. 4,607,289, Cl. 358-257.000.
Kurosaki, Masanori: *See—*
Aoyagi, Yoshio; Kaneko, Yukihiro; Kurosaki, Masanori; Motohashi, Minoru; Sawaki, Manabu; Ueki, Yoshiharu; and Sakaguchi, Shosaburo, 4,607,300, Cl. 360-74.100.
Kuroyanagi, Tomomitsu: *See—*
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Kurt Manufacturing Company, Inc.: *See—*
Lenz, John O., 4,606,695, Cl. 414-735.000.
Kussman, Robert N.: *See—*
Youngs, Roger W.; Lewis, Robert W.; Kussman, Robert N.; and Hurtt, John R., 4,606,790, Cl. 162-125.000.
Kutscher, Erwin: *See—*
Maier, Peter; Attinger, Karl; Sigel, Albert; Hansel, Gernot; Kutscher, Erwin; and Walter, Hartmut, 4,606,685, Cl. 409-137.000.
Kuwabara, Shoichi: *See—*
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Kuwahara, Heikichi: *See—*
Nakayama, Wataru; Nakajima, Tadakatsu; Kuwahara, Heikichi; Yasukawa, Akira; Daikoku, Takahiro; and Yoshida, Hiromichi, 4,606,405, Cl. 165-133.000.
Kuwashima, Shigeru: *See—*
Yoshida, Hiroshi; Ishihara, Noboru; and Kuwashima, Shigeru, 4,606,876, Cl. 264-120.000.
Kuznicki, Steven M.: *See—*
Butter,. Stephen A.; and Kuznicki, Steven M., 4,606,899, Cl. 423-328.000.
Kwan, Gerald A., to LeVan Specialty Co., Inc. Sun shade for vehicle sunroofs. 4,606,574, Cl. 296-218.000.
Kyocera Corporation: *See—*
Nagato, Yoshio, 4,606,767, Cl. 75-242.000.
LaBate, Lisa V. Jewelry holding device. 4,606,458, Cl. 206-566.000.
Lahres, Hans: *See—*
Foerter, Gerhard; and Lahres, Hans, 4,606,622, Cl. 351-169.000.
Lahti, Terry. Chain saw wood cutting apparatus. 4,606,252, Cl. 83-574.000.
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Thirion, Pierre, 4,606,905, Cl. 423-588.000.
Lam, Kam Hoong: *See—*
Lam, Kam Yau; Lam, Kam Kheong; and Lam, Kam Hoong, 4,606,097, Cl. 24-108.000.
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Lam, Kam Yau; Lam, Kam Kheong; and Lam, Kam Hoong. Snap-fit-button. 4,606,097, Cl. 24-108.000.
Lamberti, Vincent: *See—*
Gutierrez, Eddie N.; and Lamberti, Vincent, 4,606,851, Cl. 252-554.000.
Landler, Josef; Hunger, Klaus; and Worfel, Erhard, to Hoechst Aktiengesellschaft. Azo pigments obtained by diazotizing in a dipolar aprotic organic solvent. 4,607,096, Cl. 534-575.000.
Lane, Roger: *See—*
Wiles, Robert; and Lane, Roger, 4,606,926, Cl. 426-603.000.
Lang, Ernst: *See—*
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Lange, Ralf: *See—*
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Langenfeld, Joseph W.; and Westendorf, Neal W., to Westendorf Mfg. Co., Inc. Quick-mount loader for articulated tractors. 4,606,692, Cl. 414-686.000.
Langley, David T., Jr. Variable throat nozzle. 4,606,499, Cl. 239-11.000.
Lanier, Lewis; and Warner, Noel L., to Becton, Dickinson and Company. Differentiation of natural killer cell subpopulations of cells. 4,607,007, Cl. 435-7.000.
Lanore, Francois: *See—*
Gautier, Jean-Claude; and Lanore, Francois, 4,606,840, Cl. 252-171.000.
Lappage, James; and Bedford, James, to Wool Research Organisation of New Zealand (Inc.). Method and apparatus for producing spun yarns of various constructions. 4,606,181, Cl. 57-58.380.
Lara, Jose L.: *See—*
Guim, Raul; and Lara, Jose L., 4,607,209, Cl. 320-25.000.
Larkin, Mark E.; and Quin, Ralph M., to Abbott Laboratories. Container mixing system with externally mounted drug container. 4,606,734, Cl. 604-84.000.
LaRou, Albert M., to Emerson Electric Co. Outer race lock pin for bearings. 4,606,656, Cl. 384-475.000.
Larson, Bradley W., to Mead Corporation, The. Sheet feeding device. 4,606,535, Cl. 271-10.000.
Larson, Roger E. Apparatus for making building panels in a continuous operation. 4,606,715, Cl. 425-110.000.
Larue, Joseph Y.: *See—*
Moreau, Claude J.; Larue, Joseph Y.; and Rojey, Alexandre, 4,606,741, Cl. 55-16.000.
LaTerra, Terrance: *See—*
Kunin, Robert; and LaTerra, Terrance, 4,606,894, Cl. 423-7.000.
Latshaw, Daniel L.; and Sillato, Stephen C., to Liebert Corporation. Parallel expansion valve system for energy efficient air conditioning system. 4,606,198, Cl. 62-205.000.
Lauchenauer, Alfred E., to Adnovum AG. Dewatering process, procedure and device. 4,606,944, Cl. 427-296.000.
La Voie, Louis T. Thief-trapping apparatus. 4,606,281, Cl. 109-3.000.
Lazcano-Navarro, Arturo; and Alcantara, Miguel A., to Instituto Mexicano de Investigaciones Siderurgicas. Rotary joint apparatus for introducing and transporting several independent fluids and solid fines into a metallurgical converter. 4,606,531, Cl. 266-216.000.
Lazure, Claude: *See—*
Thibault, Gaetan; Garcia, Raul; Cantin, Marc; Seidah, Nabil; Lazure, Claude; and Chretien, Michel, 4,607,023, Cl. 514-11.500.
Lazzarotti, S. James: *See—*
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Lechner, Alexander, to Siemens Aktiengesellschaft. Circuit arrangement for conversion TTL logic signals to ECL logic signals. 4,607,177, Cl. 307-475.000.
Le Count, David J.; and Pearce, Robert J., to Imperial Chemical Industries PLC. Quinoline derivatives which are 5-hydroxytryptamine antagonists. 4,607,039, Cl. 514-312.000.
Lecrone, Dale S. Conveyor and work station for turning bakery products. 4,606,452, Cl. 198-411.000.
Lectrostatic Marknads AB: *See—*
Kihlstrom, Christer, 4,607,151, Cl. 219-230.000.
Lederman, Elsie J. Topsy-turvy book. 4,606,554, Cl. 281-15.00R.
Lederman, Frederick E., to General Motors Corporation. Hydraulic clutch release mechanism. 4,606,449, Cl. 192-91.00A.
Ledet, Winston P.: *See—*
Sutter, Hubert; Haas, Karl-Uwe; and Ledet, Winston P., 4,607,086, Cl. 526-65.000.
Lee, Fu M., to Phillips Petroleum Company. Catalytic dehydrocyclization and dehydrogenation of hydrocarbons. 4,607,129, Cl. 585-415.000.
Lee, Gil S.; and Kumar, Ashok, to Advanced Micro Devices, Inc. Non-inverting high speed low level gate to Schottky transistor-transistor logic translator. 4,607,175, Cl. 307-443.000.

Lee, John N.: *See—*
Athale, Ravindra A.; and Lee, John N., 4,607,344, Cl. 364-841.000.
Lee, Lieng-Huang; Nichol-Landry, Deborah J.; and Tarnawskyj, Christine J., to Xerox Corporation. Process for preparing overcoated electrophotographic imaging members. 4,606,934, Cl. 427-76.000.
Lee, William C., to ITT Corporation. Covert communication system. 4,607,375, Cl. 375-2.200.
Legille, Edouard; Ulveling, Leon; and Mailliet, Pierre, to Paul Wurth S.A. Device for introducing dosed quantities of pulverized solid materials into a carrier gas stream. 4,606,677, Cl. 406-129.000.
Le Goff, Pierre Y. J., to Centre National de la Recherche Scientifique. Method and apparatus for recycling thermal energy. 4,606,404, Cl. 165-104.120.
Leibenzeder, Siegfried; and Heindl, Christine, to Siemens Aktiengesellschaft. Method for the manufacture of A_3B_5 light-emitting diodes. 4,606,780, Cl. 148-171.000.
Leidner, Jacob: *See—*
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Leigh, Thomas, to Imperial Chemical Industries PLC. Preparation of cyanoesters. 4,607,119, Cl. 560-60.000.
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Lejdeborn, Lars: *See—*
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Lejus, Anne-Marie: *See—*
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LeMarbe, Edward S., to Miner Enterprises, Inc. Motion retarder. 4,606,276, Cl. 105-250.000.
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Bricot, Claude; Chaboche, Michel; Volleau, Patrick; Leterme, Dominique; and Le Merer, Jean-Pierre, 4,607,356, Cl. 369-44.000.
Lemforder Metallwaren AG.: *See—*
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Le Mong, Son, to BBC Brown, Boveri & Company, Limited. Process for sealing a leak in a rolled tube/tubeplate joint. 4,606,491, Cl. 228-119.000.
Lenz, Eduard: *See—*
Christoph, Heinz; Gamalski, Jurgen; Lenz, Eduard; Neumann, Ulrich; and von der Schmidt, Reinhard, 4,606,493, Cl. 228-180.100.
Lenz, John O., to Kurt Manufacturing Company, Inc. Multiple axis robot arm. 4,606,695, Cl. 414-735.000.
LeQueau, Marcel, to U.S. Philips Corporation. Linearized phase comparator and phase-locked loop comprising such a phase comparator. 4,607,236, Cl. 331-17.000.
Lerch, Hans-Ulrich; and Oberholzer, Willi, to Fritz Gegauf Aktiengesellschaft Bernina-Nahmaschinenfabrik. Spooling device for sewing machines. 4,606,507, Cl. 242-22.000.
Lerman, Michael J.: *See—*
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Les Cables de Lyon: *See—*
Alloin, Michel; and Flamand, Charles, 4,607,133, Cl. 174-15.0WF.
LeSire, James R. Constant upstream level gate. 4,606,672, Cl. 405-87.000.
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Bricot, Claude; Chaboche, Michel; Volleau, Patrick; Leterme, Dominique; and Le Merer, Jean-Pierre, 4,607,356, Cl. 369-44.000.
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LeVan Specialty Co., Inc.: *See—*
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Lever Brothers Company: *See—*
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Borovian, Gayle E., 4,607,036, Cl. 514-277.000.
Gutierrez, Eddie N.; and Lamberti, Vincent, 4,606,851, Cl. 252-554.000.
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Levesque, Guy: *See—*
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Levine, Michael R.; Russo, James T.; Cairo, Anthony C.; and Rigotti, Victor H., to Honeywell, Inc. Programmable thermostat. 4,606,401, Cl. 165-12.000.
Lewis, Paul H.; Dai, Eugene P.; and Holst, Edward H., to Texaco Inc. Control of SO_x emission. 4,606,898, Cl. 423-244.000.
Lewis, Robert W.: *See—*
Youngs, Roger W.; Lewis, Robert W.; Kussman, Robert N.; and Hurtt, John R., 4,606,790, Cl. 162-125.000.
Lieber, Alfred; and Simper, Jack L., to Chemopharm Laboratory, Inc. Salt composition having smaller sized sodium metasilicate. 4,606,835, Cl. 252-70.000.
Liebert Corporation: *See—*
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Lienhard, Heinz: *See—*
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Limburg, William W.: *See—*
Yanus, John F.; and Limburg, William W., 4,606,986, Cl. 430-59.000.
Lin, Ta-Yeh. Non-neon light. 4,607,317, Cl. 362-249.000.
Lindae, Gerhard; Perthus, Peter; and Rein, Heinz, to Robert Bosch GmbH. Headlamp, particularly antidazzle headlamp for motor vehicles. 4,607,318, Cl. 362-307.000.
Lindstrom, Merlin R.: *See—*
Schuettenberg, Alexander; Lindstrom, Merlin R.; and Bonazza, Benedict R., 4,606,833, Cl. 252-49.300.
Link, Helmut F.; and Trautmann, Gunther, to Index-Werke Komm. -Ges. Hahn & Tessky. Method and device for producing thread. 4,606,683, Cl. 409-66.000.
Linkies, Adolf: *See—*
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L'Institut de Recherches Cliniques de Montreal: *See—*
Thibault, Gaetan; Garcia, Raul; Cantin, Marc; Seidah, Nabil; Lazure, Claude; and Chretien, Michel, 4,607,023, Cl. 514-11.500.
Lipscombe, Brian R., to Dowty Hydraulic Units Limited. Rotary positive-displacement fluid-pressure machines. 4,606,713, Cl. 418-131.000.
Lisanti, Vincent F.: *See—*
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Litchinko, Catherine: *See—*
Litchinko, Victor; Litchinko, Igor; and Litchinko, Catherine, 4,606,530, Cl. 266-158.000.
Litchinko, Igor: *See—*
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Litchinko, Victor; Litchinko, Igor; and Litchinko, Catherine. Installation and process for continuously charging a reactor with solid material and heating said material with the gases emitted from said reactor. 4,606,530, Cl. 266-158.000.
Little, Stephen E.: *See—*
Bassingthwaighte, James B.; Little, Stephen E.; and Krohn, Kenneth A., 4,606,908, Cl. 424-1.100.
Little, Stevin G. Ski scooter. 4,606,548, Cl. 280-12.00H.
Litz, John E.: *See—*
Hazen, Wayne C.; Coltrinari, Enzo L.; Litz, John E.; and Thompson, David L., 4,606,764, Cl. 75-101.00R.
Liu, Ping Y.: *See—*
Giles, Harold F., Jr.; and Liu, Ping Y., 4,607,079, Cl. 525-65.000.
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Livingston, Arnold M., to Tifa Limited. Combustion chamber noise suppressor. 4,606,721, Cl. 431-116.000.
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Cairns, James L., 4,606,603, Cl. 350-96.210.
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Lombardi, Don. Height adjustment of music stand. 4,606,525, Cl. 248-460.000.
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Longsworth, Ralph C., to Air Products and Chemicals, Inc. Dual thermal coupling. 4,606,201, Cl. 62-514.0JT.
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Pocock, Richard L.; and Looney, Kevin M., 4,606,476, Cl. 222-148.000.
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Petitou, Maurice; Sinay, Pierre; Choay, Jean; and Lormeau, Jean-Claude, 4,607,025, Cl. 514-53.000.
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Lucas, Charles E., III. Water filtering apparatus. 4,606,823, Cl. 210-282.000.
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Farr, Glyn P. R.; Mortimer, Ivan; and Harrison, Anthony W., 4,606,585, Cl. 303-92.000.
Mathias, Christopher N., 4,606,438, Cl. 188-73.320.
Lujan, Albert G., Jr. Multi-controlled water conservation system for hot water lines with low pressure utilization disable. 4,606,325, Cl. 126-362.000.

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Silver, Paul A.; and Lukacs, Alexander, III, 4,607,077, Cl. 524-708.000.
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Sikander, Ake; Bjorkman, Ake; and Jonsson, Gunther, 4,606,762, Cl. 75-81.000.
Lund, Earl A. E.: *See*—
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Lyman, Ronald. Interlocking toy building blocks with interconnecting, releasable hinges. 4,606,732, Cl. 446-120.000.
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Bloch, Peter; and Wydler, Robert, 4,606,153, Cl. 51-287.000.
Machida, Kazutoshi, to Fuji Photo Film Co., Ltd. Tape reel. 4,606,511, Cl. 242-71.800.
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Maeda, Ken-ichi, to Kabushiki Kaisha Toshiba. Character recognition apparatus. 4,607,385, Cl. 382-9.000.
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Ido, Tadashi; Kubo, Osamu; Fukasawa, Masahiro; Maeda, Tatsumi; and Nomura, Tutomu, 4,606,971, Cl. 428-328.000.
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Channel, William D.; and Gunter, Charlie E., III, 4,607,310, Cl. 361-149.000.
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Maguire, Paul R., to Bonatrade International Inc. Automobile sun shade and method of making same. 4,606,572, Cl. 296-95.00R.
Maguire, Stephen B. Peristaltic pump. 4,606,710, Cl. 417-477.000.
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Mailliet, Pierre: *See*—
Legille, Edouard; Ulveling, Leon; and Mailliet, Pierre, 4,606,677, Cl. 406-129.000.
Mair, Alexander D., to Tennessee Valley Authority. Method to improve acidulation quality of Idaho phosphate rock. 4,606,897, Cl. 423-167.000.
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Makeev, Vladimir D.: *See*—
Klimashko, Vladimir V.; Chepurnoi, Nikolai P.; Makeev, Vladimir D.; Naboko, Vladimir P.; Filonov, Alexandr D.; and Svita, Petr N., 4,606,414, Cl. 173-128.000.
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Malhotra, Sudarshan K.; and Evoy, Ingrid L., to Dow Chemical Company, The. Diphenoxymethylpyridines having herbicidal properties. 4,606,757, Cl. 71-94.000.
Malik, Arshad H., to A. E. Staley Manufacturing Company. Hard surface cleaning composition and cleaning method using same. 4,606,850, Cl. 252-528.000.
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Malz, Russell E., Jr.; and Greenfield, Harold, to Uniroyal Chemical Company, Inc. Process for the production of 2,2,6,6-tetraalkyl-4-piperidylamines. 4,607,104, Cl. 546-186.000.
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Nakazawa, Mikio; Fujitani, Kango; and Manami, Hiroshi, 4,606,863, Cl. 260-413.000.
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Mann, Alexander B.: *See*—
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Mantela, Ralph F.; and Savich, Thomas L., to General Motors Corporation. Resilient tie-down device. 4,606,687, Cl. 410-23.000.
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De Ath, Mervyn C., 4,606,256, Cl. 89-41.090.
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Dudzik, Henryk, 4,606,474, Cl. 220-307.000.
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Mukai, Seiji; Kapon, Eli; Katz, Joseph; Margalit, Shlomo; and Yariv, Amnon, 4,607,370, Cl. 372-50.000.
Marien, August M.: *See*—
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Marinoni, Franco: *See*—
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Markfelder, Gunter: *See*—
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Markov, Vladimir A., to Vsesojuzny Nauchno-Issledovatelsky Institut Textilno-Galantereinoi Promyshlennosti. Device for damping impact load. 4,606,441, Cl. 188-371.000.
Marler Haley Exposystems Ltd.: *See*—
Bannister, Brian C., 4,606,394, Cl. 160-351.000.
Marshall, Robert M., to Allied Corporation. Polyamide yarn with antioxidant finish. 4,606,972, Cl. 428-395.000.
Marshall, Trevor J., Jr.; and Moskowitz, Jacob F., to CBS Inc. Circuit for connecting together multiple serial data lines. 4,607,379, Cl. 375-121.000.
Martin, Bernard; and Dossier, Gerard, to Saint-Gobain Recherche. Technology of electric fusion of glass. 4,607,372, Cl. 373-41.000.
Martin, Eugene R.: *See*—
Griswold, Roy M.; Magee, Walter L.; Manis, Paul A.; and Martin, Eugene R., 4,606,933, Cl. 427-54.100.
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Martin, Philip T., to ITT Corporation. Transformer flux compensation circuit. 4,607,142, Cl. 179-16.0AA.
Martin, Ralph E.: *See*—
Segredo, Anthony F.; Prendergast, Richard E.; Martin, Ralph E.; Pluister, Jack W.; and Techico, Manuel T., 4,606,205, Cl. 72-19.000.
Martinez-Corral, Cecilio; and Blond, Marcel, to Valeo. Clutch plate with two stage damping means. 4,606,451, Cl. 192-106.200.
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Grimm, Hans, 4,606,150, Cl. 51-34.00C.
Mason, Ronald F.: *See*—
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Masuda, Jiro: *See*—
Hayashi, Kazuhiko; and Masuda, Jiro, 4,606,425, Cl. 180-177.000.
Mathias, Christopher N., to Lucas Industries Public Limited Company. Sliding caliper disk brake. 4,606,438, Cl. 188-73.320.
Matisa Materiel Industriel S.A.: *See*—
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Matsuda, Shigetoshi, to Alps Electric Co., Ltd. VHF/UHF band switching tuner including a second diode in band switch loop. 4,607,391, Cl. 455-188.000.
Matsui, Akira: *See*—
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Matsumoto, Takahiro: *See*—
Kuroda, Yutaka; Yoshida, Yoshio; Kabayama, Yuichi; Watanabe, Tsugio; Hakata, Tetsuro; and Matsumoto, Takahiro, 4,607,245, Cl. 336-57.000.
Matsumura, Teruyuki: *See*—
Kishi, Hajimu; Kurakake, Mitsuo; Seki, Masaki; Tanaka, Kunio; and Matsumura, Teruyuki, 4,607,327, Cl. 364-191.000.

Matsunaga, Hiroshi; Shimojima, Yoji; Tokunaga, Ichiro; Obata, Kosei; and Yasuhara, Yukihiko, to Alps Electric Co., Ltd. Device for detecting rotating speed of thin shape motor. 4,606,223, Cl. 73-116.000.

Matsushita Electric Industrial Co., Ltd.: *See*—
Mori, Keiichi; Yamamoto, Katsuhiko; Imajima, Mitsuhiro; and Uchida, Kuniaki, 4,606,719, Cl. 431-63.000.
Takayama, Ryoichi; Tokushima, Akira; Ueshiba, Nozomu; and Ise, Yukihiko, 4,607,186, Cl. 310-324.000.
Torii, Hideo; Aoki, Masaki; Okinaka, Hideyuki; Yuhaku, Satoru; and Nakamura, Shoji, 4,606,750, Cl. 65-374.130.

Matsuura, Kazuo; Osedo, Hiroki; and Ohshima, Keisuke, to Toray Industries, Inc. Hydrazone or semicarbazone electrophotographic photosensitive material. 4,606,987, Cl. 430-59.000.

Matsuzaki, Hitoshi: *See*—
Sakurada, Shuroku; Matsuzaki, Hitoshi; Ikeda, Yasuhiko; and Ohta, Takehiro, 4,607,273, Cl. 357-38.000.

Matthews, Peter C.; and Soest, Jon F., to Weyerhaeuser Company. Method for determining localized fiber angle in a three dimensional fibrous material. 4,606,645, Cl. 356-446.000.

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Luthje, Holger K.; Bruns, Angelika M.; Harms, Margret; and Matthiessen, Bernd R. G., 4,606,803, Cl. 204-192.00P.

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Sasse, Wolfgang H. F.; Johansen, Oddvar; Mau, Albert W.; and Swift, Jean D., 4,606,798, Cl. 204-157.520.

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Maytag Company, The: *See*—
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Tsuchida, Tsuyoshi; and Kido, Yoshinobu, 4,606,318, Cl. 123-488.000.

McAndrew, James A., to General Electric Company. Process for mounting components on a printed circuit board. 4,606,120, Cl. 29-837.000.

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Krueger, William R.; McAuliffe, Gerald N.; and Schlageter, George A., 4,607,199, Cl. 318-484.000.

McCafferty, John J., to Forsac Valves Limited. Ball valve for pipeline. 4,606,368, Cl. 137-15.000.

McCaffrey, Charles N. Mold and biscuit cutter. 4,606,716, Cl. 425-289.000.

McCann, James D.; Piatt, Michael J.; and Williams, Theodore F., to Eastman Kodak Company. Ink supply cartridge and cooperative ink circulation system of continuous ink jet printer. 4,607,261, Cl. 346-75.000.

McClay, Augustine C.; Allen, James M.; and North, William E., to Westinghouse Electric Corp. Tip structure for a cooled turbine rotor blade. 4,606,701, Cl. 416-92.000.

McCown, Andrew W.: *See*—
Eden, James G.; McCown, Andrew W.; Ediger, Marwood N.; and Greene, Dennis P., 4,607,371, Cl. 372-56.000.

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McCracken, Donald G., to Aeroquip Corporation. Thrust bearing rotary joint. 4,606,560, Cl. 285-93.000.

McEntire, Edward E.; Nieh, Edward C. Y.; Grigsby, Robert A., Jr.; and McCoy, David R., to Texaco Inc. Water-glycol fluids made from polyoxyalkylene thickeners. 4,606,837, Cl. 252-73.000.

McEntire, W. L. Paper towel holder support. 4,606,510, Cl. 242-55.300.

McGee, Keith F. Fuel preheating unit. 4,606,320, Cl. 123-557.000.

McGinniss, Vincent D., to Three Bond Co., Ltd. Catalyst systems and adhesion promoter for two-pack acrylic adhesive formulations. 4,607,082, Cl. 525-286.000.

McGlothlin, Mark; Reisdorf, Dennis; and Virag, Robert, to Baxter Travenol Laboratories, Inc. Wettable devices operational with aqueous liquid and method therefor. 4,606,866, Cl. 261-74.000.

McGregor, Charles W., to Essex Group, Inc. Preparing magnet wire having electron beam curable wire enamels. 4,606,870, Cl. 264-22.000.

McHugh, Dolores B. Non-slip garment hanger. 4,606,482, Cl. 223-88.000.

McInally, Thomas: *See*—
Baxter, Andrew J. G.; Dixon, John; McInally, Thomas; and Tinker, Alan C., 4,607,041, Cl. 514-318.000.

McKay, Albert A., to WABCO Ltd. Manually-operable fluid pressure regulating valve device. 4,606,369, Cl. 137-116.500.

McKenzie, Thomas J. Electric wire connector. 4,606,593, Cl. 339-61.00R.

McMillin, Danny L., to PAC International, Inc. Apparatus and method for stripping workpieces. 4,606,215, Cl. 72-344.000.

McMurray, Richard D.; and Nelson, Alan H., to Parallel Computers, Inc. Fault-tolerant power supply system. 4,607,330, Cl. 364-200.000.

Mead Corporation, The: *See*—
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Bernard, Jerald D.; Koltookian, Sarkis A.; and Mealhow, Kenneth S., 4,606,376, Cl. 138-30.000.

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Cannon, Norbert H.; and Graf, James E., 4,606,118, Cl. 29-825.000.

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Blake, Rodger D.; and Meek, Thomas T., 4,606,748, Cl. 65-36.000.

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Golay, Jean-Pierre; and Jaunin, Denis, 4,606,271, Cl. 102-210.000.

Megna, Ignazio S., to American Cyanamid Company. Catalyst compositions for polyaliphatic isocyanate-based polyurethanes and process for their use. 4,607,062, Cl. 521-124.000.

Mehta, Bakulesh A., to Rockwell International Corporation. Serial data word transmission rate converter. 4,607,345, Cl. 364-900.000.

Mehta, Pradip S.; Valsamis, Lefteris N.; and Tadmor, Zehev, to USM Corporation. Rotary processors for devolatilizing materials. 4,606,646, Cl. 366-75.000.

Meier, Herman C. Apparatus for crushing cans. 4,606,265, Cl. 100-53.000.

Meier, Jacques, to Ferag AG. Method and apparatus for the intermediate storage of printed products arriving in an imbricated product formation. 4,606,173, Cl. 53-430.000.

Meisel, Thomas C., Jr.; and York, Lyle E., to Caterpillar Industrial Inc. Load skidding vehicle. 4,606,694, Cl. 414-732.000.

Mendenhall, Donald H. Probe for measuring the carbon potential of endothermic gas. 4,606,807, Cl. 204-433.000.

Mendenhall, Walter M. Shelf edging strip. 4,606,170, Cl. 52-823.000.

Mendez, Fernando. Roof tile. 4,606,164, Cl. 52-536.000.

Mendoza, Fausto C. Method for preparing food product. 4,606,924, Cl. 426-549.000.

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Merck Patent Gesellschaft mit beschrankter Haftung: *See*—
Romer, Michael; Eidenschink, Rudolf; Krause, Joachim; Scheuble, Bernhard; and Weber, Georg, 4,606,845, Cl. 252-299.630.

Merelli, Marc: *See*—
Burghoffer, Patrick; Charuau, Jean; Merelli, Marc; and Prigent, Raymond, 4,607,165, Cl. 250-435.000.

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Keonig, Herbert, 4,607,202, Cl. 318-628.000.
Koenig, Herbert, 4,607,201, Cl. 318-584.000.

Messmer, Charles: *See*—
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Taube, William L.; and Roberts, David A., 4,606,472, Cl. 220-66.000.

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Slade, Mark N., 4,606,207, Cl. 72-96.000.

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Haas, Johann, 4,606,389, Cl. 152-209.00R.

Metzger, Robert E., to Fuller Company. Wear resistant elbow. 4,606,556, Cl. 285-16.000.

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Meyer, Andreas: *See*—
Kacirek, Harmut; and Meyer, Andreas, 4,606,900, Cl. 423-329.000.

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Mery, Jean-Claude; and Meynier, Guy, 4,606,436, Cl. 188-18.00A.

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Chang, Clarence D.; and Miale, Joseph N., 4,607,130, Cl. 585-415.000.

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Ehrentraut, Otto; and Ederer, Ulf G., 4,606,653, Cl. 384-283.000.

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Huemer, Gerhart; and Michassouridis, Athanasios, 4,606,302, Cl. 123-41.100.

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MICI Limited Partnership IV: *See*—
Clausen, Earl W.; and Hubbard, Lloyd C., 4,606,698, Cl. 415-170.00A.
Microfusion: *See*—
Gavinet, Jean; and Childeric, Bruno, 4,606,884, Cl. 419-27.000.
Micromanipulator Co., Inc., The: *See*—
Hollman, Kenneth F., 4,607,220, Cl. 324-158.00F.
Mifune, Hiroyuki: *See*—
Ikenoue, Shinpei; Iwano, Haruhiko; Mifune, Hiroyuki; and Yagihara, Morio, 4,607,004, Cl. 430-523.000.
Mikhail, Shaheer A., to Canada, Her Majesty the Queen in right of, as represented by the Minister of Energy, Mines and Resources. Assembly for concurrent thermogravimetry and differential thermal analysis. 4,606,649, Cl. 374-10.000.
Mikina, Stanley J. Disc brake. 4,606,437, Cl. 188-72.400.
Milewski, Maciej A.; and Delmolino, William P., to Duracell Inc. Anchored terminal conductor. 4,606,983, Cl. 429-164.000.
Milk Marketing Board: *See*—
Wiles, Robert; and Lane, Roger, 4,606,926, Cl. 426-603.000.
Millar, Ronald A.; and Abate, Charles B., to Xerox Corporation. Automatic focus offset correction system. 4,607,157, Cl. 250-201.000.
Miller, Bob L. Device for and method of wrapping a bale of ruminant animal feedstuff and injecting it with a chemical treatment. 4,606,172, Cl. 53-399.000.
Miller, Francis G. Vortex chamber aerator. 4,606,822, Cl. 210-221.200.
Miller, John R. Gear shaping machine. 4,606,682, Cl. 409-34.000.
Miller, Michael J.; and MacInnis, Martin B., to GTE Products Corporation. High purity cobalt article. 4,606,885, Cl. 419-39.000.
Miller Special Tools, Div. of Triangle Corp.: *See*—
Reyes, Angelito; and Abbott, Fred, 4,606,311, Cl. 123-198.00A.
Miller, Thomas M.; and Schraff, Raymond J., to Eltech Systems Corporation. Readily repairable and lightweight insulating cover for a heated metal container. 4,606,473, Cl. 220-215.000.
Million, Alain: *See*—
Gailliard, Jean P.; Million, Alain; and Piaquet, Jean, 4,606,296, Cl. 118-726.000.
Millot, Jean-Paul; Alibran, Patrice; Desfontaines, Guy; and Dejeux, Pol, to Framatome & Cie. Upper internal equipment of a pressurized water nuclear reactor. 4,606,881, Cl. 376-353.000.
Mills, Edwin R., to Fieldcrest Mills, Inc. Electrical heating apparatus protected against an overheating condition and a temperature sensitive electrical sensor for use therewith. 4,607,154, Cl. 219-505.000.
Mills, Floyd J. High resolution digital inclinometer. 4,606,133, Cl. 33-366.000.
Mills, Pearson O. Counting and wrapping of coins. 4,606,360, Cl. 133-1.00A.
Mills Products, Inc.: *See*—
Katona, Joseph W., 4,606,324, Cl. 126-198.000.
Milo, Richard K., to Ampex Corporation. Monolithic multichannel multistack magnetic transducer assembly and method of manufacturing thereof. 4,607,305, Cl. 360-121.000.
Minemoto, Isamu: *See*—
Hasegawa, Hiromi; Iwase, Yoshinobu; Taga, Yutaka; Minemoto, Isamu; and Sakai, Takahiro, 4,606,242, Cl. 74-606.00R.
Miner Enterprises, Inc.: *See*—
LeMarbe, Edward S., 4,606,276, Cl. 105-250.000.
Minkin, Gennady P.: *See*—
Petrakov, Vladimir P.; Minkin, Gennady P.; Shagun, Vladimir A.; Balykin, Pavel S.; Barklon, David I.; and Domrachev, Vladimir A., 4,606,929, Cl. 427-34.000.
Minnesota Mining and Manufacturing Company: *See*—
Charbonneau, Jack W.; and Relyea, Keith E., 4,606,956, Cl. 428-40.000.
Cybulski, Claude E., 4,607,303, Cl. 360-96.500.
Krueger, Dennis L.; Loeding, Neil W.; and Poser, Claudia I., 4,606,871, Cl. 264-22.000.
Reylek, Robert S.; and Thompson, Kenneth C., 4,606,962, Cl. 428-148.000.
Stern, Richard M., 4,606,737, Cl. 8-115.600.
Minolta Camera Kabushiki Kaisha: *See*—
Hattori, Masamitu, 4,606,627, Cl. 353-88.000.
Mitani, Takeshi; and Aiko, Hideo, to Kabushiki Kaisha Kobe Seiko Sho. Method of and apparatus for soil stabilization. 4,606,675, Cl. 405-263.000.
Mitchell, Sheila R.; and Urbach, Phyllis A. Painting protection visor. 4,606,140, Cl. 40-157.000.
Mitschele, Rudolf: *See*—
Steinhart, Wilhelm; and Mitschele, Rudolf, 4,606,489, Cl. 228-102.000.
Mitsubishi Denki Kabushiki Kaisha: *See*—
Isota, Yoji; Ishida, Osami; and Takeda, Fumio, 4,607,240, Cl. 333-116.000.
Komurasaki, Satoshi, 4,606,316, Cl. 123-425.000.
Kuroda, Yutaka; Yoshida, Yoshio; Kabayama, Yuichi; Watanabe, Tsugio; Hakata, Tetsuro; and Matsumoto, Takahiro, 4,607,245, Cl. 336-57.000.
Maekawa, Noboru, 4,606,371, Cl. 137-270.000.
Morishita, Mitsuharu; and Kouge, Shinichi, 4,607,336, Cl. 364-424.000.
Nishitani, Yoshihisa; and Osafune, Yukio, 4,607,294, Cl. 360-35.100.
Obi, Hideo, 4,607,321, Cl. 363-41.000.
Wada, Hifumi; and Nishimura, Shinji, 4,607,246, Cl. 340-52.00F.
Mitsubishi Jokogyo Kabushiki Kaisha: *See*—
Okazaki, Yoichiro; and Akazawa, Shigeaki, 4,606,111, Cl. 29-463.000.
Mitsubishi Paper Mills, Ltd.: *See*—
Takaya, Yoshikazu; Tsubai, Yasuo; and Nishinoiri, Hiroshi, 4,606,985, Cl. 430-14.000.
Mitsubishi Yuka Pharmaceutical Co., Ltd.: *See*—
Mizogami, Susumu; Hiranuma, Hidetoshi; Sekiya, Tetsuo; and Hanazuka, Mitsuo, 4,607,034, Cl. 514-254.000.
Mitsuda, Satoshi; and Hirohara, Hideo, to Sumitomo Chemical Company, Limited. Biochemical process for optical resolution of cyclopentenolone derivatives. 4,607,013, Cl. 435-280.000.
Mitsui Petrochemical Industries, Ltd.: *See*—
Sakashita, Takeshi; Hashimoto, Hidehiko; and Nakano, Takayuki, 4,607,073, Cl. 524-404.000.
Mitsui, Takao; Tatsunaka, Toshiharu; Sasaya, Hideaki; and Kitamura, Youji, to Nippon Soken, Inc.; and Nippondenso Co., Ltd. Fluid pump with eccentrically driven C-shaped pumping member. 4,606,711, Cl. 418-59.000.
Mitzkus, Werner: *See*—
Vogt, Herbert; Egerbacher, Werner; Wunderlich, Dieter; and Mitzkus, Werner, 4,607,275, Cl. 357-79.000.
Miura, Kuniaki: *See*—
Okada, Yoshinori; Miura, Kuniaki; and Fukushima, Isao, 4,607,293, Cl. 358-328.000.
Miyagawa, Michiaki. Pattern check device. 4,607,387, Cl. 382-33.000.
Miyake, Noriaki: *See*—
Ban, Keisuke; Daimaru, Akimasa; Muraoka, Yasuo; and Miyake, Noriaki, 4,606,395, Cl. 164-98.000.
Miyasaka, Tsutomu: *See*—
Hirano, Shigeo; Sano, Yasuhisa; Takei, Haruo; Miyasaka, Tsutomu; and Fujita, Shinsaku, 4,607,006, Cl. 430-572.000.
Miyazaki, Kenichi: *See*—
Takanashi, Itsuo; Nakagaki, Shintaro; Miyazaki, Kenichi; and Kuriyama, Takashi, 4,607,279, Cl. 358-44.000.
Miyazaki, Takeshi, to Toyoda Gosei Co., Ltd. Metal forming apparatus. 4,606,214, Cl. 72-318.000.
Miyazawa, Takashi; Fukuchi, Hiroyuki; and Tateishi, Sosuke, to Kirin Beer Kabushiki Kaisha. Defect detecting method and system. 4,606,635, Cl. 356-240.000.
Miyoshi Kasei Co., Ltd.: *See*—
Miyoshi, Ryota, 4,606,914, Cl. 424-63.000.
Miyoshi, Ryota, to Miyoshi Kasei Co., Ltd. Cosmetic composition. 4,606,914, Cl. 424-63.000.
Mizogami, Susumu; Hiranuma, Hidetoshi; Sekiya, Tetsuo; and Hanazaka, Mitsuo, to Mitsubishi Yuka Pharmaceutical Co., Ltd. Quinazoline derivatives and pharmaceutical composition thereof. 4,607,034, Cl. 514-254.000.
Mizoguchi, Yasumitsu: *See*—
Maeda, Takeshi; Uno, Motoo; Muraoka, Kouji; Takasago, Masahiro; Mizoguchi, Yasumitsu; and Kaneko, Tokuya, 4,607,358, Cl. 369-44.000.
Mizuhara, Howard, to GTE Products Corporation. Ductile brazing alloy foil containing reactive metals and precious metals. 4,606,978, Cl. 428-606.000.
Mizuhara, Howard, to GTE Products Corporation. Ductile aluminum based brazing foil containing reactive metals and copper. 4,606,980, Cl. 428-606.000.
Mizuhara, Howard, to GTE Products Corporation. Ductile brazing alloys containing reactive metals. 4,606,981, Cl. 428-606.000.
Mizuno, Kenji: *See*—
Onoda, Hiroshi; and Mizuno, Kenji, 4,607,265, Cl. 346-139.00R.
Mizuno, Shinichiro, to Omron Tateisi Electronics Co. Apparatus for performing transactions with verification of remittance through comparison with logical payment patterns. 4,607,335, Cl. 364-405.000.
Mizuno, Tokuo, to JEOL Ltd. Device for coupling a liquid chromatograph and a mass spectrometer. 4,607,163, Cl. 250-281.000.
Mobil Oil Corporation: *See*—
Chang, Clarence D.; and Miale, Joseph N., 4,607,130, Cl. 585-415.000.
Chu, Pochen; Huss, Albin, Jr.; and Vartuli, James C., 4,606,901, Cl. 423-329.000.
Haddad, James H.; and Owen, Hartley, 4,606,814, Cl. 208-161.000.
Harandi, Mohsen N., 4,606,816, Cl. 208-354.000.
Krambeck, Frederick J.; and Pereira, Carmo J., 4,606,810, Cl. 208-74.000.
Paul, James M., 4,606,895, Cl. 423-7.000.
Sharpe, Gordon V., Jr., 4,606,970, Cl. 428-301.000.
Shu, Paul, 4,606,407, Cl. 166-270.000.
Su, Tien-Kuei, 4,607,072, Cl. 524-242.000.
Mogilevskoe Otdelenie Fiziko-Teknicheskogo Instituta: *See*—
Shaturov, Gennady F.; Malyavko, Sergei S.; and Nadvikov, Alexei M., 4,606,684, Cl. 409-132.000.
Mohr, Dieter, to Hoechst Aktiengesellschaft. Process for the two-stage anodic oxidation of aluminum bases for offset printing plates and product thereof. 4,606,975, Cl. 428-469.000.
Mohr, Reinhard: *See*—
Hahnke, Manfred; Mohr, Reinhard; and Hohmann, Kurt, 4,607,071, Cl. 524-189.000.
Molina, Antonio F. Freewheel flywheel transmission system. 4,606,193, Cl. 60-698.000.
Molloy, Robert E., to Ortner Freight Car Company. Actuating and locking apparatus for longitudinal hopper doors of a railroad hopper car. 4,606,277, Cl. 105-290.000.

Molnar, Bela: *See*—
Sokal, Nathan O.; Redl, Richard; and Molnar, Bela, 4,607,323, Cl. 363-97.000.
Monchalin, Jean-Pierre, to Canadian Patents and Development Limited. Device for determining properties of materials from a measurement of ultrasonic absorption. 4,607,341, Cl. 364-557.000.
Monghan Medical Corporation: *See*—
Shene, William R., 4,606,331, Cl. 128-24.100.
Monin, Jean; Faure, Bernard; Soldat, Georges; and Healy, Jean-Claude, to Universite de Saint-Etienne. Optical apparatus for identifying the individual multiparametric properties of particles or bodies in a continuous flow. 4,606,636, Cl. 356-338.000.
Monsanto Company: *See*—
Alt, Gerhard H., 4,606,759, Cl. 71-118.000.
Kegeler, Gary H.; and Vandersall, Howard L., 4,606,831, Cl. 252-7.000.
Montedison S.p.A.: *See*—
Bettarini, Franco; Massardo, Pietro; Piccardi, Paolo; Reggiori, Franca; and Longoni, Angelo, 4,607,035, Cl. 514-277.000.
Biglione, Gianfranco; Cigna, Giuseppe; and Rinaldi, Roberto, 4,606,873, Cl. 264-53.000.
Montgomery, Ronald S., to Muenster Clamp, Inc. Pipe repair clamp. 4,606,377, Cl. 138-99.000.
Monturas Y Fornituras, S.A.: *See*—
Rodriguez Gazulla, Francisco, 4,606,480, Cl. 222-341.000.
Monzer, Helmut, deceased: *See*—
Hensel, Hartmut; and Monzer, Helmut, deceased, 4,606,976, Cl. 428-480.000.
Monzer, Jana, Daniel Monzer, legal representatives: *See*—
Hensel, Hartmut; and Monzer, Helmut, deceased, 4,606,976, Cl. 428-480.000.
Moran, Peter L. Methods of and apparatus for forming conductive patterns on a substrate. 4,606,788, Cl. 156-656.000.
Moran, Thomas M.; and Oehlke, Donald N., to Eaton Corporation. Removable fastening assembly. 4,606,688, Cl. 411-175.000.
Moreau, Claude J.; Larue, Joseph Y.; and Rojey, Alexandre, to Compagnie Francaise des Petroles; and Institut Francais du Petrole. Process for purifying natural gas. 4,606,741, Cl. 55-16.000.
Morel, Jacques: *See*—
Tallon, Jacques; and Morel, Jacques, 4,606,221, Cl. 73-40.700.
Mori, Keiichi; Yamamoto, Katsuhiko; Imajima, Mitsuhiro; and Uchida, Kuniaki, to Matsushita Electric Industrial Co., Ltd. Combustion apparatus. 4,606,719, Cl. 431-63.000.
Mori, Yasuchika; and Shigemasa, Takashi, to Tokyo Shibaura Denki Kabushiki Kaisha. Sampled-data I-PD control apparatus. 4,607,326, Cl. 364-162.000.
Morigaki, Tadahiko: *See*—
Itoh, Haruhiro; Ohno, Masashi; Morigaki, Tadahiko; and Ishii, Kiminori, 4,606,945, Cl. 427-318.000.
Moriguchi, Haruhiko; Inui, Toshiharu; and Kurata, Masami, to Fuji Xerox Co., Ltd. Thermal head drive circuit. 4,607,262, Cl. 346-76.0PH.
Morin, Jean-Xavier, to Framatome & Cie. Device for producing a fluidization. 4,606,135, Cl. 34-57.00B.
Morishita, Koichi: *See*—
Yokoyama, Tetsuo; Morishita, Koichi; Sano, Koichi; Yamagata, Shimbu; and Ogushi, Akira, 4,607,222, Cl. 324-309.000.
Morishita, Mitsuharu; and Kouge, Shinichi, to Mitsubishi Denki Kabushiki Kaisha. Change control microcomputer device for vehicle. 4,607,336, Cl. 364-424.000.
Morita, Kaname; Arikawa, Shigeo; Watanabe, Mitsuo; Iizuka, Kinji; and Akahane, Kenji, to Kissei Pharmaceutical Co., Ltd.; and Ono Pharmaceutical Co., Ltd. 4-(1-imidazolylmethyl)cinnamic acid hydrochloride monohydrate and pharmaceutical compositions. 4,607,046, Cl. 514-399.000.
Morita, Tominori: *See*—
Yoshino, Koichiro; Morita, Tominori; Moriyama, Masaru; Ito, Keizo; and Tsukamoto, Goro, 4,607,031, Cl. 514-211.000.
Morita, Toshiaki; Horii, Masahiro; Tasaka, Shigeru; and Hirose, Hitoshi, to Sharp Kabushiki Kaisha. Handwritten character recognition device. 4,607,386, Cl. 382-13.000.
Moriya, Yasuo; Fukushi, Kyosuke; and Nakayama, Masaharu, to Nippon Oil and Fats Company Ltd. Method for producing a plastic lens. 4,607,087, Cl. 526-227.000.
Moriyama, Masaru: *See*—
Yoshino, Koichiro; Morita, Tominori; Moriyama, Masaru; Ito, Keizo; and Tsukamoto, Goro, 4,607,031, Cl. 514-211.000.
Morris, Carla L., executrix: *See*—
Morris, William J., deceased, 4,607,084, Cl. 525-454.000.
Morris, Thomas E., to Dow Chemical Company, The. Process for removing contaminants from soils. 4,606,774, Cl. 134-10.000.
Morris, William J., deceased (by Morris, Carla L., executrix), to Celanese Specialty Resins, Inc. Radiation curable acrylated polyurethane oligomer compositions. 4,607,084, Cl. 525-454.000.
Mortimer, Ivan: *See*—
Farr, Glyn P. R.; Mortimer, Ivan; and Harrison, Anthony W., 4,606,585, Cl. 303-92.000.
Moskowitz, Jacob F.: *See*—
Marshall, Trevor J., Jr.; and Moskowitz, Jacob F., 4,607,379, Cl. 375-121.000.
Mosser, Mark F., to Sermatech International Inc. Spherical aluminum particles in coatings. 4,606,967, Cl. 428-220.000.
Motohashi, Minoru: *See*—
Aoyagi, Yoshio; Kaneko, Yukihiro; Kurosaki, Masanori; Motohashi, Minoru; Sawaki, Manabu; Ueki, Yoshiharu; and Sakaguchi, Shosaburo, 4,607,300, Cl. 360-74.100.
Motor Wheel Corporation: *See*—
Daudi, Anwar R., 4,606,206, Cl. 72-68.000.
Motorola, Inc.: *See*—
Goodrich, Edgar R., Jr.; and Kraft, Douglas R., 4,607,331, Cl. 364-200.000.
Kervin, Douglas J.; and Derrington, Carl E., 4,606,115, Cl. 29-572.000.
Vyne, Robert L., 4,606,781, Cl. 148-183.000.
Mott, Graham N., to Celanese Corporation. Process for producing hydroxy aromatic ketones. 4,607,125, Cl. 568-319.000.
Mottate, Tatsuo: *See*—
Yatsu, Takashi; and Mottate, Tatsuo, 4,606,654, Cl. 384-447.000.
Mottier, Francois M.; and Foster, Martin C., to United Technologies Corporation. Broad bandwidth interferometric gauging system. 4,606,639, Cl. 356-358.000.
Moustakas, Matthew A., to Ketcham & McDougall, Inc. Expansible spring-loaded retention clamp for books or other objects. 4,606,465, Cl. 211-43.000.
MSI Mechanische Systeme Industrienahautomaten Gesellschaft mit beschranker Haftung: *See*—
Papajewski, Reinhold; and Rogner, Gerd, 4,606,287, Cl. 112-121.270.
Muchel, Franz, to Carl-Zeiss-Stiftung. Adapter for illumination or laser radiation for surgical microscopes. 4,606,617, Cl. 350-527.000.
Muenstedt, Helmut; and Naarmann, Herbert, to BASF Aktiengesellschaft. Long-term stability of the electrical conductivity of pyrrol polymers. 4,607,083, Cl. 525-417.000.
Muenster Clamp, Inc.: *See*—
Montgomery, Ronald S., 4,606,377, Cl. 138-99.000.
Muir, Francis, to Chevron Research Company. Seismic exploration using non-impulsive vibratory sources activated by stationary, Gaussian codes to simulate an impulsive, causal generating, recording and pre-processing system and processing the results into distortion-free final records. 4,607,353, Cl. 367-39.000.
Mukai, Seiji; Kapon, Eli; Katz, Joseph; Margalit, Shlomo; and Yariv, Amnon, to California Institute of Technology. Paired, separately controlled, and coupled or uncoupled stripe geometry semiconductor lasers. 4,607,370, Cl. 372-50.000.
Mukohyama, Hideaki; Hiraoka, Ryoichi; Ushijima, Shohachi; and Saito, Motoyasu, to Kohjin Co., Ltd. Enteric coating liquid. 4,606,771, Cl. 106-170.000.
Mukunoki, Yasuo: *See*—
Nakamura, Taku; Kasama, Yasuo; and Mukunoki, Yasuo, 4,606,996, Cl. 430-309.000.
Mulder, Rudolf: *See*—
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Muller, Egbert: *See*—
Eckert, Konrad; Maurer, Franz; Muller, Egbert; and Stumpe, Werner, 4,606,586, Cl. 303-93.000.
Munsen, Victor A.; and Ruane, John P., to Boeing Company, The. Discretely stiffened composite panel. 4,606,961, Cl. 428-119.000.
Munsey, R. Jack: *See*—
Sweers, Kenneth M.; Cooper, G. Jack; and Munsey, R. Jack, 4,606,156, Cl. 52-126.600.
Mura, Shinichirou: *See*—
Kobayashi, Toshio; and Mura, Shinichirou, 4,606,236, Cl. 74-339.000.
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Murakami, Hiroyasu, to Kabushiki Kaisha Toshiba. Image information filing apparatus. 4,607,290, Cl. 358-260.000.
Murakami Kaimeido Co., Ltd.: *See*—
Yamana, Tohru, 4,606,619, Cl. 350-604.000.
Muramatsu, Shigeru: *See*—
Anahara, Meiji; and Muramatsu, Shigeru, 4,606,185, Cl. 57-401.000.
Murao Boki Kabushiki Kaisha: *See*—
Hiroaki, Sanno, 4,606,509, Cl. 242-35.60R.
Muraoka, Kouji: *See*—
Maeda, Takeshi; Uno, Motoo; Muraoka, Kouji; Takasago, Masahiro; Mizoguchi, Yasumitsu; and Kaneko, Tokuya, 4,607,358, Cl. 369-44.000.
Muraoka, Yasuo: *See*—
Ban, Keisuke; Daimaru, Akimasa; Muraoka, Yasuo; and Miyake, Noriaki, 4,606,395, Cl. 164-98.000.
Murata Manufacturing Co., Ltd.: *See*—
Nishioka, Goro; and Sakabe, Yukio, 4,607,018, Cl. 501-135.000.
Murphy, Gerald M., Jr. Bait bucket. 4,606,143, Cl. 43-56.000.
Murphy, Robert J., Jr.; and Jamison, Dale E., to NL Industries, Inc. Electrode holder useful in a corrosion testing device. 4,606,891, Cl. 422-53.000.
Murray, Don R.: *See*—
Pash, James E.; Patton, James V.; Patton, Denise A.; and Murray, Don R., 4,606,726, Cl. 434-321.000.
Murray, Ledell L., to General Indicator Corporation. Indicia display module. 4,606,141, Cl. 40-518.000.
Muschaweck, Roman: *See*—
Englert, Heinrich C.; Mania, Dieter; Muschaweck, Roman; and Hropot, Max, 4,607,030, Cl. 514-210.000.
Mussler, Karl J.; and Godsey, Alvin F., Jr., to Rain Bird Consumer Products Mfg. Corp. Releasable coupling assembly for oscillating wave lawn sprinkler. 4,606,500, Cl. 239-242.000.

Mycom Kabushiki Kaisha: *See—*
Setoya, Noboru, 4,607,204, Cl. 318-696.000.

Naarmann, Herbert: *See—*
Muenstedt, Helmut; and Naarmann, Herbert, 4,607,083, Cl. 525-417.000.

Nabisco Brands, Inc.: *See—*
Svendsen, Lloyd R., 4,606,690, Cl. 414-343.000.

Naboko, Vladimir P.: *See—*
Klimashko, Vladimir V.; Chepurnoi, Nikolai P.; Makeev, Vladimir D.; Naboko, Vladimir P.; Filonov, Alexandr D.; and Svita, Petr N., 4,606,414, Cl. 173-128.000.

Nadvikov, Alexei M.: *See—*
Shaturov, Gennady F.; Malyavko, Sergei S.; and Nadvikov, Alexei M., 4,606,684, Cl. 409-132.000.

Nagahara, Michiko; Ohishi, Yoshitaka; Yajima, Motoyuki; Nogimori, Katsumi; Kurokawa, Shigeki; and Kajikawa, Norio, to Kaken Pharmaceutical Co., Ltd. Rhodanines useful as a therapeutic agent for diabetic complications. 4,606,860, Cl. 548-183.000.

Nagahira, Jyoji: *See—*
Matui, Toshiro; Suzuki, Koji; Nagahira, Jyoji; Yoshihara, Kunio; Takahashi, Kazuyoshi; and Ishikawa, Tadashi, 4,607,320, Cl. 363-21.000.

Nagai, Akira: *See—*
Sugawara, Katuo; Takahashi, Akio; Ono, Masahiro; Tada, Ritsuro; Wajima, Motoyo; Narahara, Toshikazu; and Nagai, Akira, 4,607,094, Cl. 528-323.000.

Nagai, Toshihisa, to Seiko Instruments & Electronics Ltd. Line smoothing circuit for graphic display units. 4,607,340, Cl. 364-521.000.

Nagano, Yasuaki, to Shibuya Kogyo Co., Ltd. Device for cooling reflecting mirror. 4,606,620, Cl. 350-610.000.

Naganuma, Yoshihiro: *See—*
Saito, Takashi; Suzuki, Kazumoto; and Naganuma, Yoshihiro, 4,606,779, Cl. 148-120.000.

Nagato, Yoshio, to Kyocera Corporation. Decorative silver-colored sintered alloy. 4,606,767, Cl. 75-242.000.

Naito, Hideki: *See—*
Kawata, Ken; Sato, Kozo; and Naito, Hideki, 4,606,991, Cl. 430-203.000.

Nakagaki, Shintaro: *See—*
Takanashi, Itsuo; Nakagaki, Shintaro; Miyazaki, Kenichi; and Kuriyama, Takashi, 4,607,279, Cl. 358-44.000.

Nakagawa, Isao: *See—*
Kojiam, Noboru; Kuroyanagi, Tomomitsu; Shibata, Akira; and Nakagawa, Isao, 4,607,292, Cl. 358-310.000.

Nakajima, Kichio: *See—*
Izumi, Eiki; Watanabe, Hiroshi; Aoyagi, Yukio; Honma, Kazuo; and Nakajima, Kichio, 4,606,313, Cl. 123-386.000.

Nakajima, Tadakatsu: *See—*
Nakayama, Wataru; Nakajima, Tadakatsu; Kuwahara, Heikichi; Yasukawa, Akira; Daikoku, Takahiro; and Yoshida, Hiromichi, 4,606,405, Cl. 165-133.000.

Nakamura, Moritoshi: *See—*
Ono, Yasuichi; Amagishi, Yoshitada; and Nakamura, Moritoshi, 4,607,147, Cl. 200-159.00B.

Nakamura, Shoji: *See—*
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Sonoda, Masakazu; Nakayama, Koichi; and Sado, Toshiyuki, 4,607,297, Cl. 360-55.000.

Nakayama, Masaharu: *See—*
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Nakayama, Wataru; Nakajima, Tadakatsu; Kuwahara, Heikichi; Yasukawa, Akira; Daikoku, Takahiro; and Yoshida, Hiromichi, to Hitachi, Ltd.; and Hitachi Cable, Ltd. Heat transfer wall. 4,606,405, Cl. 165-133.000.

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Novak, Robert W., 4,606,773, Cl. 106-213.000.

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Nash, Donald R., to Allied Corporation. Magneto for ignition system. 4,606,323, Cl. 123-602.000.

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Kin, Nelson I.; and Sprau, William W., 4,606,730, Cl. 445-7.000.

National Nuclear Corporation Limited: *See—*
Aspden, Garth J.; and Chesworth, Graham, 4,606,882, Cl. 376-463.000.

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Zamba, Eugene; and Zamba, Lynan, 4,606,342, Cl. 128-303.170.

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Mallard, John R.; Johnson, Glyn; Eastwood, Linda M.; Redpath, Thomas W. T.; and Hutchison, James M. S., 4,607,223, Cl. 324-309.000.

National Rolling Mills Inc.: *See—*
Platt, William J.; Ziegler, Daniel C.; and Brady, Eugene E., 4,606,166, Cl. 52-664.000.

National Semiconductor Corporation: *See—*
Frederiksen, Thomas M.; and Culmer, Daniel D., 4,607,172, Cl. 307-291.000.

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Crane, Laura J.; and Nau, David R., 4,606,825, Cl. 210-635.000.

Nausedas, Joseph A., to Union Carbide Corporation. Article for controlling casing depletion. 4,606,379, Cl. 138-118.100.

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Nordholt, Ernst H.; and Nauta, Hendrikus C., 4,607,234, Cl. 330-278.000.

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Caron, LaVerne A.; and Handley, Edward F., 4,606,306, Cl. 123-179.00H.

Naylor, Jimmy R., to BBRR-Brown Corporation. Input level shifting circuit for low voltage digital-to-analog converter. 4,607,249, Cl. 340-347.0DA.

Naylor, Jimmy R.; and Highton, Frederick J., to Burr-Brown Corporation. Bit adjustment and filter circuit for digital-to-analog converter. 4,607,250, Cl. 340-347.0DA.

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Gerber, Jeri L.; Nazario, Jorge L.; and Simi, Victor M., 4,607,351, Cl. 365-228.000.

Neal, Donald F., to IMI Titanium Limited. Titanium-base alloy. 4,606,886, Cl. 420-419.000.

NEC Corporation: *See—*
Atobe, Masaaki; and Otani, Susumu, 4,607,377, Cl. 375-14.000.
Ishaka, Shigekazu, 4,607,219, Cl. 324-158.00R.
Nakayama, Kenji, 4,607,231, Cl. 330-51.000.
Yoshitake, Kazuki, 4,607,274, Cl. 357-42.000.

Neff, Ralph D., to Vernitron Corporation. Electrical connector assembly with integral plug and socket modules. 4,606,592, Cl. 339-59.00M.

Negas, Taki: *See—*
Ritter, Joseph J.; Roth, Robert S.; and Negas, Taki, 4,606,906, Cl. 423-598.000.

Negri, Ettore: *See—*
Del Bene, Piero; and Negri, Ettore, 4,606,202, Cl. 66-134.000.

Neimiller, Kenneth G.: *See—*
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Nelle, Guenther, to Dr. Johannes Heidenhain GmbH. Measuring arrangement for the clear scanning of at least one reference mark allocated to a graduation. 4,606,642, Cl. 356-374.000.

Nelson, Alan H.: *See—*
McMurray, Richard D.; and Nelson, Alan H., 4,607,330, Cl. 364-200.000.

Nelson, Robert F.; and Juergens, Tristan D., to Gates Energy Products, Inc. Sealed lead-acid cell and method. 4,606,982, Cl. 429-59.000.

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Toti, Gabriele; Marinoni, Franco; Amato, Pasquale; and Nenna, Claudio, 4,606,551, Cl. 280-772.000.

Neri, Armando, to G.D. Societa per Azioni. Monitoring system for production lines. 4,607,252, Cl. 340-515.000.

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Liu, Richard T., 4,606,921, Cl. 426-386.000.

Neukermans, Armand P.; and Eaton, Steven G., to Varian Associates, Inc. Shielded capacitive mask aligner. 4,607,213, Cl. 324-61.00R.

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Neumann, Dietmar J. Flexible bulk container. 4,606,570, Cl. 296-10.000.

Neumann, Jeffrey; Petr, David W.; Schramm, George W.; and Sharp, John B. Multimode data communication system. 4,607,364, Cl. 370-99.000.

Neumann, Peter: *See—*
Tesch, Helmut; Heym, Manfred; Doerflinger, Walter; Stutz, Herbert; Neumann, Peter; Nissen, Dietmar; and Schaefer, Gerhard, 4,607,069, Cl. 523-400.000.

Neumann, Ulrich: *See*—
Christoph, Heinz; Gamalski, Jurgen; Lenz, Eduard; Neumann, Ulrich; and von der Schmidt, Reinhard, 4,606,493, Cl. 228-180.100.
New Japan Chemical Co., Ltd.: *See*—
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New Jersey Zinc Company, The: *See*—
Showak, Walter, 4,606,869, Cl. 264-12.000.
Nichol-Landry, Deborah J.: *See*—
Lee, Lieng-Huang; Nichol-Landry, Deborah J.; and Tarnawskyj, Christine J., 4,606,934, Cl. 427-76.000.
Nicholson, Richard E.: *See*—
Ziller, Alexander; and Grosser, Helmut, 4,606,527, Cl. 254-336.000.
Nickerson, Roy, to Royall Communications Incorporated. Map construction. 4,606,553, Cl. 281-5.000.
Nicksic, Stephen W.; and Starke, George W., to Chevron Research Company. Exploration method using electron spin resonance signals from hydrocarbon crude. 4,607,014, Cl. 436-29.000.
Nicoll, Harry G.: *See*—
Pirtle, F. William; Nicoll, Harry G.; and Bertsch, Peter K., 4,606,194, Cl. 62-6.000.
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McEntire, Edward E.; Nieh, Edward C. Y.; Grigsby, Robert A., Jr.; and McCoy, David R., 4,606,837, Cl. 252-73.000.
Nielsen, Steven L. Modular custard freezing machine. 4,606,200, Cl. 62-302.000.
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Nienart, Louis F.: *See*—
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Niina, Tatsuhiko; and Yodoshi, Keiichi, to Sanyo Electric Co., Ltd. Semiconductor laser having a burying layer of a II–VI compound. 4,607,369, Cl. 372-46.000.
Niki, Haruo: *See*—
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Nilsson, Erling I.: *See*—
Rausing, Anders R.; and Nilsson, Erling I., 4,606,954, Cl. 428-36.000.
Nippon Electric Co. Ltd.: *See*—
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Nippon Kayaku Kabushiki Kaisha: *See*—
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Nippon Kokan Kabushiki Kaisha: *See*—
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Nippon Notion Kogyo Co., Ltd.: *See*—
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Nippon Oil and Fats Company Ltd.: *See*—
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Nippon Petrochemicals Company Limited: *See*—
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Nippon Piston Ring Co., Ltd.: *See*—
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Nippon Sanso Kabushiki Kaisha: *See*—
Fujita, Ikuo, 4,606,745, Cl. 62-42.000.
Nippon Seiko Kabushiki Kaisha: *See*—
Tamaki, Akira, 4,607,166, Cl. 250-442.100.
Nippon Sheet Glass Co., Ltd.: *See*—
Nushi, Masaaki; and Iida, Naohiro, 4,606,749, Cl. 65-106.000.
Nippon Soken, Inc.: *See*—
Mitsui, Takao; Tatsunaka, Toshiharu; Sasaya, Hideaki; and Kitamura, Youji, 4,606,711, Cl. 418-59.000.
Nippon Steel Corporation: *See*—
Suzuki, Kazuyuki; Ishida, Masami; Ohtsuki, Fuyuhiko; Inuizawa, Yoshihiro; Hinenoya, Saburo; Tanaka, Mansei; and Shindou, Yoshio, 4,606,953, Cl. 428-36.000.
Nippon Thompson Co., Ltd.: *See*—
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Nishikuri, Masao; Omura, Takashi; and Takeshita, Akira, to Sumitomo Chemical Company, Limited. Dioxazine fiber reactive compound. 4,607,102, Cl. 544-74.000.
Nishimura, Shinji: *See*—
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Nishinoiri, Hiroshi: *See*—
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Nishioka, Goro; and Sakabe, Yukio, to Murata Manufacturing Co., Ltd. Non-reducible temperature compensation dielectric ceramic composition. 4,607,018, Cl. 501-135.000.
Nishitani, Yoshihisa; and Osafune, Yukio, to Mitsubishi Denki Kabushiki Kaisha. Magnetic video recording apparatus for intermittent recording. 4,607,294, Cl. 360-35.100.
Nissan Motor Company, Ltd.: *See*—
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Itoh, Haruhiro; Ohno, Masashi; Morigaki, Tadahiko; and Ishii, Kiminori, 4,606,945, Cl. 427-318.000.
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Nitto Chemical Industry Co., Ltd.: *See*—
Kanda, Shoichi; Hosoda, Jun; and Kawamura, Zengiro, 4,607,099, Cl. 536-114.000.
Nixdorf Computer AG: *See*—
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Nixon, Bryan E.; Stoila, George M.; and Williams, Stephen L., to Goodyear Tire & Rubber Company, The. Tire press mechanism. 4,606,714, Cl. 425-28.00R.
NL Industries, Inc.: *See*—
Murphy, Robert J., Jr.; and Jamison, Dale E., 4,606,891, Cl. 422-53.000.
Noblett, Michael J.: *See*—
Barrowman, Thomas; and Noblett, Michael J., 4,606,129, Cl. 33-143.00L.
Noda, Yuji: *See*—
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Nogimori, Katsumi: *See*—
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Noguchi, Kazuhide, to Nippon Electric Co. Ltd. Remote calibrating system for satellite time. 4,607,257, Cl. 340-825.690.
Noland, Wayne B. Float valve control assembly. 4,606,373, Cl. 137-426.000.
Nolde, Wolfgang; and Kasperkovitz, Wolfdietrich G., to U.S. Philips Corporation. Circuit for improving the tuning behavior of a receiver frequency control loop. 4,607,392, Cl. 455-192.000.
Nolde, Wolfgang; and Jansen, Winfried, to U.S. Philips Corporation. Receiver circuit comprising two phase control loops. 4,607,393, Cl. 455-208.000.
Nomura, Hirokazu; Ueno, Susumu; and Kitamura, Hajime, to Shin-Etso Chemical Co., Ltd. Shaped body for gas separation. 4,607,088, Cl. 526-279.000.
Nomura, Tutomu: *See*—
Ido, Tadashi; Kubo, Osamu; Fukasawa, Masahiro; Maeda, Tatsumi; and Nomura, Tutomu, 4,606,971, Cl. 428-328.000.
Nooijen, Fransiscus M. J.: *See*—
Valkestijn, Leonardus A. A.; Nooijen, Fransiscus M. J.; and Bergmans, Christianus H. J., 4,607,195, Cl. 315-410.000.
Noon, Peter T.; and Pennor, Ronald. Wall construction. 4,606,169, Cl. 52-747.000.
NOR-AM Chemical Company: *See*—
Hack, Richard J.; Hair, Jakie A.; Hall, John N.; Alexander, John L.; and Samluk, Stanley D., 4,606,478, Cl. 222-187.000.
Nordholt, Ernst H.; and Nauta, Hendrikus C., to U.S. Philips Corporation. Gain-controlled amplifier arrangement. 4,607,234, Cl. 330-278.000.
North American Philips Consumer Electronics Corp.: *See*—
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Nottingham, John R.; and Spirk, John W., Jr. Coin sorting bank. 4,606,361, Cl. 133-3.00R.
Nova University: *See*—
Burney, Curtis M., 4,606,233, Cl. 73-864.630.
Novak, Robert W., to Nalco Chemical Company. Emulsification of alkenyl succinic anhydride sizing agents. 4,606,773, Cl. 106-213.000.
Novits, Michael F.: *See*—
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Nukem GmbH: *See*—
Hrovat, Milan; Huschka, Hans; Porth, Heinrich; Rachor, Lothar; and Schmidt-Hansberg, Thomas, 4,606,874, Cl. 264-56.000.

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Nystrom, Karl G., to Flakt Aktiebolag. Air curtain. 4,606,259, Cl. 98-36.000.

Obata, Kosei: *See*—
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Obi, Hideo, to Mitsubishi Denki Kabushiki Kaisha. Inverter. 4,607,321, Cl. 363-41.000.

Odahara, Tetsuichi, to Kubota, Ltd. Combine harvester. 4,606,356, Cl. 130-27.00R.

Oe, Yasuhiro: *See*—
Takahashi, Kazuyuki; Oe, Yasuhiro; and Yamamoto, Etushi, 4,607,184, Cl. 310-247.000.

Oehlke, Donald N.: *See*—
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Oelte, Burkhard: *See*—
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Officina Mecannica Mario Fonio: *See*—
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Ogata, Kazumi; Yamamoto, Yujiro; and Ozaki, Yoshie, to Yoshitomi Pharmaceutical Industries, Ltd.; and Senju Pharmaceutical Co., Ltd. Ophthalmic pranoprofen compositions. 4,607,038, Cl. 514-291.000.

Ogawa, Masayuki: *See*—
Yamaguchi, Takahiro; Ogawa, Masayuki; and Kasahara, Toshiharu, 4,607,216, Cl. 324-77.00B.

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Ogishi, Hidetsugu: *See*—
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Ogushi, Akira: *See*—
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Ohara, Koji, to Ricoh Electronics, Inc. Stopper plate apparatus for automatic document feeder. 4,606,536, Cl. 271-118.000.

Ohashi, Keiji; and Handa, Kohichi, to Nissan Motor Company, Limited. Foundry sand binder. 4,607,067, Cl. 623-144.000.

Ohi Seisakusho Co., Ltd.: *See*—
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Ohio State University Research Foundation, The: *See*—
Frank, Sylvan G.; Brodin, Arne F.; Chen, Chih-Ming J.; and Shrivastava, Ratnesh, 4,606,939, Cl. 427-213.300.
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Ohms, Franz; and Urbanski, Gunter, to ANT Nachrichtentechnik GmbH. Potential free actuation circuit for a pulse duration controlled electronic power switch. 4,607,210, Cl. 323-290.000.

Ohno, Masashi: *See*—
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Yoshihara, Toshiyuki; Yashiki, Yuichi; Horii, Motomu; and Ohtaka, Mutsuo, 4,606,949, Cl. 427-430.100.

Ohtsuki, Fuyuhiko: *See*—
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Oishi, Kengo; and Suzuki, Osamu, to Fuji Photo Film Co., Ltd. Magnetic tape cassette including erasure prevention means, and cassette operating device for same. 4,607,299, Cl. 360-60.000.

Oishi, Kengo: *See*—
Tsuruta, Masao; Oishi, Kengo; and Suzuki, Osamu, 4,607,308, Cl. 360-132.000.

Okabe, Takayuki: *See*—
Yamamoto, Haruyasu; and Okabe, Takayuki, 4,607,027, Cl. 514-144.000.

Okada, Gensuke; and Hagiwara, Tatsuo, to Kawasaki Jukogyo Kabushiki Kaisha. Vertical type roller mill. 4,606,506, Cl. 241-109.000.

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Morita, Kaname; Arikawa, Shigeo; Watanabe, Mitsuo; Iizuka, Kinji; and Akahane, Kenji, 4,607,046, Cl. 514-399.000.

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Panicci, Richard L., to Kiddie Products, Inc. Closure bead. 4,606,348, Cl. 128-359.000.
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Greenway, J. Michael; Schoots, Peter J.; and Patience, Donald, 4,606,338, Cl. 128-156.000.
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Patton, David D. Paper binder. 4,606,666, Cl. 402-62.000.
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Pflug, Dieter, to V.I.B.-Apparatebau GmbH. Siphon for use in paper or cardboard machine dryers. 4,606,136, Cl. 34-125.000.

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Fuchs, Henry; and Pizer, Stephen M., 4,607,255, Cl. 340-755.000.

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Popovic, Radivoje; Berchier, Jean-Luc; Schneider, Gernot; Lienhard, Heinz; Baltes, Heinrich P.; Solt, Katalin; and Zajc, Tomislav, to IGZ Landis & Gyr Zug AG. Magnetic field sensor. 4,607,271, Cl. 357-27.000.

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Prodl, Vittorio. Device for separating airborne particles in dependence on grain size. 4,606,232, Cl. 73-863.230.

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Graham, Charles H., 4,606,247, Cl. 81-177.600.

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Hofinger, Manfred; Reng, Alwin; and Quack, Jochen M., 4,606,916, Cl. 424-70.000.

Quantime, Inc.: *See—*
Hines, Robin H.; Glasscock, Michael R.; Johnson, D. Bruce; and Plummer, Paul L., 4,606,629, Cl. 356-1.000.

Quercetti, Alessandro. Cage box of plastics with an integral cover. 4,606,471, Cl. 220-22.000.

Queudot, Paul: *See—*
Prelaz, Jean-Claude; and Queudot, Paul, 4,607,143, Cl. 179-90.0BD.

Quin, Ralph M.: *See—*
Larkin, Mark E.; and Quin, Ralph M., 4,606,734, Cl. 604-84.000.

R. H. Burton Company: *See—*
Wood, David E., 4,606,624, Cl. 351-234.000.

R-P & C Valve, Inc.: *See—*
Rea, David B.; and Mann, Alexander B., 4,606,820, Cl. 210-130.000.

Rabinowitz, Fred. Frame hanger. 4,606,526, Cl. 248-489.000.

Rachor, Lothar: *See—*
Hrovat, Milan; Huschka, Hans; Porth, Heinrich; Rachor, Lothar; and Schmidt-Hansberg, Thomas, 4,606,874, Cl. 264-56.000.

Radford, Steven R.: *See—*
Knighton, Kelly; Davis, J. Stanley; and Radford, Steven R., 4,606,416, Cl. 175-58.000.

Rain Bird Consumer Products Mfg. Corp.: *See—*
Mussler, Karl J.; and Godsey, Alvin F., Jr., 4,606,500, Cl. 239-242.000.

Raines, Charles D.: *See—*
Dayen, Leonid; and Raines, Charles D., 4,606,447, Cl. 192-85.00C.

Rainey, Jonathon B.: *See—*
Reid, Harvey M.; Poletti, Neil R.; Rainey, Jonathon B.; and Jones, George L., 4,606,322, Cl. 123-575.000.

Rak, Stanley F.; and Ward, Kenneth, to Culligan International Company. Method for preparation of semipermeable composite membrane. 4,606,943, Cl. 427-244.000.

Rammelsberg, Jurgen, to Thyssen Industrie AG. Axially secure sleeve connection for socket tubes. 4,606,559, Cl. 285-39.000.

Ramsey, Roger W.: *See—*
Taylor, Arthur D.; and Ramsey, Roger W., 4,606,797, Cl. 204-146.000.

Ramsey, William C.: *See—*
Spengler, William E.; and Ramsey, William C., 4,606,477, Cl. 222-153.000.

Rankin, Freddy D. Surveyor's ribbon dispenser. 4,606,485, Cl. 225-78.000.

Rasmussen, Ivar, to Danfoss A/S. Coupling for connecting a hub and shaft. 4,606,671, Cl. 403-359.000.

Rauleder, Gebhard: *See—*
Feyen, Peter; Rauleder, Gebhard; and Reiser, Wolf, 4,607,108, Cl. 548-262.000.

Rausing, Anders R.; and Nilsson, Erling I., to Tetra Pak Developpement SA. Arrangement for the manufacture of packing containers. 4,606,954, Cl. 428-36.000.

Raven, Johannes G.; and Annegarn, Marcellinus J. J. C., to U.S. Philips Corporation. Movement-adaptive transversal-recursive noise suppression circuit for a television signal. 4,607,284, Cl. 358-167.000.

Ravinet, Pierre; Claudepierre, Christian; Guillou, Denis; and Micheron, Francois, to Thomson-CSF. Electroacoustic transducer with a piezoelectric diaphragm. 4,607,145, Cl. 179-110.00A.

Ravlich, Anthony: *See—*
Elsbree, Charles N., Jr.; Regner, Hector A.; Rodriguez, Claude; and Ravlich, Anthony, 4,606,589, Cl. 339-17.00C.

Raytheon Company: *See—*
Gill, Harry A., Jr., 4,607,232, Cl. 330-255.000.

RCA Corporation: *See—*
Villanyi, Sigmund T., 4,607,187, Cl. 313-414.000.
Weimer, Paul K., 4,607,286, Cl. 358-213.000.

Rea, David B.; and Mann, Alexander B., to R-P & C Valve, Inc. Duplex strainer. 4,606,820, Cl. 210-130.000.

REB Manufacturing, Inc.: *See—*
Smalley, Raymond L.; Risner, Melvin G.; and Sherman, William D., 4,606,433, Cl. 187-9.00R.

Redl, Richard: *See—*
Sokal, Nathan O.; Redl, Richard; and Molnar, Bela, 4,607,323, Cl. 363-97.000.

Redman, James C.: *See—*
Hayes, Robert J.; and Redman, James C., 4,606,249, Cl. 82-36.00R.

Redpath, Thomas W. T.: *See—*
Mallard, John R.; Johnson, Glyn; Eastwood, Linda M.; Redpath, Thomas W. T.; and Hutchison, James M. S., 4,607,223, Cl. 324-309.000.

Reed Tool Company: *See—*
Thompson, Charles M., 4,606,418, Cl. 175-329.000.

Reggiori, Franca: *See—*
Bettarini, Franco; Massardo, Pietro; Piccardi, Paolo; Reggiori, Franca; and Longoni, Angelo, 4,607,035, Cl. 514-277.000.

Regner, Hector A.: *See—*
Elsbree, Charles N., Jr.; Regner, Hector A.; Rodriguez, Claude; and Ravlich, Anthony, 4,606,589, Cl. 339-17.00C.

Reichhold Chemicals, Inc.: *See—*
Emerson, Ralph W., Sr., 4,606,791, Cl. 162-180.000.

Reick, Franklin G.: *See—*
Wilder, Joseph R.; and Reick, Franklin G., 4,606,735, Cl. 604-180.000.

Reid, Harvey M.; Poletti, Neil R.; Rainey, Jonathon B.; and Jones, George L., to Reid, Harvey Marshall. Dual fuel control and supply system for internal combustion engines. 4,606,322, Cl. 123-575.000.

Reid, Harvey Marshall: *See—*
Reid, Harvey M.; Poletti, Neil R.; Rainey, Jonathon B.; and Jones, George L., 4,606,322, Cl. 123-575.000.

Reif, Robert B., to Battelle Development Corporation. Apparatus and method for measuring the concentration of solid particles in a fluid stream. 4,607,228, Cl. 324-454.000.

Reiling, Thomas L. Concrete treatment methods. 4,606,938, Cl. 427-136.000.

Rein, Heinz: *See—*
Lindae, Gerhard; Perthus, Peter; and Rein, Heinz, 4,607,318, Cl. 362-307.000.

Reinhall, Rolf. Method for manufacturing cellulose pulp using plural refining and fiber separation steps with reject recycling. 4,606,789, Cl. 162-23.000.

Reisdorf, Dennis: *See—*
McGlothlin, Mark; Reisdorf, Dennis; and Virag, Robert, 4,606,866, Cl. 261-74.000.

Reiser, Wolf: *See—*
Feyen, Peter; Rauleder, Gebhard; and Reiser, Wolf, 4,607,108, Cl. 548-262.000.

Relyea, Keith E.: *See—*
Charbonneau, Jack W.; and Relyea, Keith E., 4,606,956, Cl. 428-40.000.

Remond, Jean-Pierre: *See—*
Aguilera, Roland; and Remond, Jean-Pierre, 4,606,844, Cl. 252-194.000.

Reneau, Charles F. Elevated game blind. 4,606,142, Cl. 43-1.000.

Reng, Alwin: *See—*
Hofinger, Manfred; Reng, Alwin; and Quack, Jochen M., 4,606,916, Cl. 424-70.000.

Requejo, Lux P.: *See—*
Keyes, George B.; Requejo, Lux P.; and Hilton, Thomas B., 4,606,842, Cl. 252-174.230.

Research Corp.: *See—*
Angel, James R. P.; and Wangsness, Peter A. A., 4,606,960, Cl. 428-116.000.

Resource Technology Associates: *See—*
Hazen, Wayne C.; Coltrinari, Enzo L.; Litz, John E.; and Thompson, David L., 4,606,764, Cl. 75-101.00R.

Reuschling, Dieter: *See—*
Clauss, Karl; Linkies, Adolf; and Reuschling, Dieter, 4,607,100, Cl. 544-2.000.

Reyes, Angelito; and Abbott, Fred, to Miller Special Tools, Div. of Triangle Corp. Fuel injection cleaning system and apparatus. 4,606,311, Cl. 123-198.00A.

Reylek, Robert S.; and Thompson, Kenneth C., to Minnesota Mining and Manufacturing Company. Electrically and thermally conductive adhesive transfer tape. 4,606,962, Cl. 428-148.000.

Reynolds Metals Company: *See—*
Dooley, Milton T.; Bradley, Nelson A.; Hiers, Robert S., Jr.; and Staats, Gary E., 4,607,179, Cl. 310-11.000.

Rhodes, Robin B., to Air Preheater Company, Inc., The. Element basket for heat exchanger. 4,606,400, Cl. 165-10.000.

Rhone-Poulenc Agrochimie: *See—*
Theissen, Robert J., 4,606,758, Cl. 71-100.000.

Rhythm Watch Co., Ltd.: *See—*
Akahane, Masahiro, 4,606,098, Cl. 24-326.000.

Rice, Michael A.; and Herman, Stewart T., to Bethlehem Steel Corporation. Removal of complexed zinc-cyanide from wastewater with improved sludge stability. 4,606,829, Cl. 210-713.000.

Richard Wolf GmbH: *See—*
Bonnet, Ludwig, 4,606,330, Cl. 128-7.000.

Richardson, Harvey J.: *See—*
DeMoss, Dean; and Richardson, Harvey J., 4,607,304, Cl. 360-99.000.

Ricke, Roy R., to Schwan's Sales Enterprises, Inc. Method for embossing dough resulting in the control of blistering, taste, and texture of fried pizza crusts. 4,606,923, Cl. 426-496.000.

Ricoh Company, Ltd.: *See—*
Koide, Hiroshi, 4,607,355, Cl. 369-44.000.
Kurokawa, Shunji, 4,607,289, Cl. 358-257.000.
Sasaki, Masaomi, 4,606,988, Cl. 430-59.000.
Yamamuro, Tetsu, 4,607,267, Cl. 346-140.00R.

Ricoh Electronics, Inc.: *See—*
Ohara, Koji, 4,606,536, Cl. 271-118.000.

Rieber, John C.; Sheaffer, Jeffrey D.; and Walthers, Russell E., to General Electric Company. Dynamoelectric machine slot wedges with abrasion resistant layer. 4,607,183, Cl. 310-214.000.

Riederer, Manfred; Menzel, Hartmut; and Piehler, Martin, to Wacker-Chemie GmbH. Method for increasing the molecular weight of diorganopolysiloxanes. 4,607,115, Cl. 556-462.000.

Rieke, James K.: *See—*
Scott, Richard L.; Kirksey, William A.; and Rieke, James K., 4,606,230, Cl. 73-856.000.

Rietbergen, Wilhelmus P. C.: *See—*
Schuitmaker, Pieter D.; and Rietbergen, Wilhelmus P. C., 4,607,361, Cl. 369-75.200.

Rieter Machine Works, Ltd.: *See—*
Gartner, Gunter, 4,606,508, Cl. 242-35.50R.

Riethmuller, Jean R. L., to S.N.E.C.M.A. Process for repairing labyrinth seal flanges. 4,606,102, Cl. 29-156.80R.

Riggs, Peter P., to AMSTED Industries Incorporated. Lubricated and thermoplastic impregnated wire rope. 4,606,183, Cl. 57-221.000.

Rigotti, Victor H.: *See—*
Levine, Michael R.; Russo, James T.; Cairo, Anthony C.; and Rigotti, Victor H., 4,606,401, Cl. 165-12.000.

Riley, Richard R.; and Coco, Charles E., to GenCorp Inc. Grafted soy protein latex. 4,607,089, Cl. 527-201.000.

Rinaldi, Roberto: *See—*
Biglione, Gianfranco; Cigna, Giuseppe; and Rinaldi, Roberto, 4,606,873, Cl. 264-53.000.

Riniker, Walter J. Soap holder. 4,606,520, Cl. 248-121.000.

Risdon Corporation: *See—*
Van Brocklin, Owen F., 4,606,479, Cl. 222-321.000.

Risner, Melvin G.: *See—*
Smalley, Raymond L.; Risner, Melvin G.; and Sherman, William D., 4,606,433, Cl. 187-9.00R.

Rita, William J., to Summer Afternoon, Inc. Educational game. 4,606,546, Cl. 273-269.000.

Ritchie, Steven S., to Williams Electronics, Inc. Bi-level pinball machine providing interlevel ball travel. 4,606,545, Cl. 273-121.00A.

Ritter, Joseph J., to United States of America, Commerce. Process for preparing refractory borides and carbides. 4,606,902, Cl. 423-345.000.

Ritter, Joseph J.; Roth, Robert S.; and Negas, Taki, to United States of America, Commerce. Process of synthesizing mixed BaO-TiO_2 based powders for ceramic applications. 4,606,906, Cl. 423-598.000.

Riutta, Raine R., to American Wedge Clamp Ltd. Vehicle clamping and support apparatus. 4,606,216, Cl. 72-422.000.

Robert Bosch GmbH: *See—*
Eckert, Konrad; Maurer, Franz; Muller, Egbert; and Stumpe, Werner, 4,606,586, Cl. 303-93.000.
Jauch, Gerhard; Lang, Ernst; Leu, Ulrich; and Strohl, Willi, 4,606,317, Cl. 123-452.000.
Lindae, Gerhard; Perthus, Peter; and Rein, Heinz, 4,607,318, Cl. 362-307.000.
Rossler, Manfred; Winter, Gerhard; and Stiltz, Hermann, 4,606,937, Cl. 427-121.000.

Roberts, David A.: *See—*
Taube, William L.; and Roberts, David A., 4,606,472, Cl. 220-66.000.

Robinson, Albert H., Jr.; and Egee, Walter W., deceased (by Egee, Elizabeth J., executrix), to Campbell Soup Company. Apparatus for heat treating food. 4,606,262, Cl. 99-470.000.

Robinson, Ronald A.; Boan, William J.; and Evans, George D., to Purex Corporation. Automatic dishwasher in a dual functioning system. 4,606,775, Cl. 134-18.000.

Roby, William R.; and Russell, Charles M., to Southern Railway Company. Rail mounted safety restraint device. 4,606,430, Cl. 182-3.000.

Rockey, Carl E., to Eaton Corporation. Fluid coupling device with improved fluid cooling capability. 4,606,445, Cl. 192-58.00B.

Rockwell International Corporation: *See—*
Cozzie, James C., 4,607,242, Cl. 333-209.000.
Mehta, Bakulesh A., 4,607,345, Cl. 364-900.000.
Schorr, Ian A., 4,607,140, Cl. 179-16.00F.
Schorr, Ian A., 4,607,141, Cl. 179-16.00F.

Rockwell-Rimoldi S.p.A.: *See—*
Fonio, Carlo, 4,606,533, Cl. 270-31.000.

Roda Holding Anstalt: *See—*
Bachmann, Wolfgang; and Spahn, Dieter, 4,606,792, Cl. 162-232.000.

Rode, Ajit G., to TriQuint Semiconductor, Inc. Method of manufacturing metal-semiconductor field effect transistors using orientation dependent etched recesses of different depths. 4,606,113; Cl. 29-571.000.

Rode, Malcolm E.: *See—*
Krehm, Herman S.; Leidner, Jacob; and Rode, Malcolm E., 4,606,182, Cl. 57-200.000.

Rodi, Anton: *See—*
Jeschke, Willi; and Rodi, Anton, 4,606,269, Cl. 101-248.000.

Rodriguez, Claude: *See—*
Elsbree, Charles N., Jr.; Regner, Hector A.; Rodriguez, Claude; and Ravlich, Anthony, 4,606,589, Cl. 339-17.00C.

Rodriguez Gazulla, Francisco, to Monturas Y Fornituras, S.A. Liquid sprayer. 4,606,480, Cl. 222-341.000.

Rogner, Gerd: *See—*
Papajewski, Reinhold; and Rogner, Gerd, 4,606,287, Cl. 112-121.270.

Rohr, Martin; Vallone, N. Peter; and Flynn, Cormack, to Givaudan Corporation. Flavoring with alkyl-substituted cyclohexyl and cyclohexenyl carboxylic acids. 4,606,925, Cl. 426-538.000.

Rohto Pharmaceutical Co. Ltd.: *See—*
Hayashi, Shin'ichi; Yoshida, Akiyoshi; Kametaka, Shigeru; and Koike, Tetsuo, 4,606,911, Cl. 424-49.000.

Rojey, Alexandre: *See—*
Moreau, Claude J.; Larue, Joseph Y.; and Rojey, Alexandre, 4,606,741, Cl. 55-16.000.

Roland Corporation: *See—*
Hayashi, Yoshiaki; and Matsui, Akira, 4,606,255, Cl. 84-1.160.

Rolleberg. Kjell O.: *See—*
Assow, Bengt H.; Jansson, Curt E.; and Rolleberg, Kjell O., 4,607,319, Cl. 363-20.000.

Rolls-Royce Limited: *See—*
Collins, Brian J.; and Butler, Reginald J., 4,606,191, Cl. 60-39.281.

Roman, Robert F.: *See—*
Curren, Arthur N.; Jensen, Kenneth A.; and Roman, Robert F., 4,607,193, Cl. 315-5.380.

Romer, Michael; Eidenschink, Rudolf; Krause, Joachim; Scheuble, Bernhard; and Weber, Georg, to Merck Patent Gesellschaft mit beschrankter Haftung. Bicyclohexylethanes. 4,606,845, Cl. 252-299.630.

Ron Allan Industries (Australia) Pty. Ltd.: *See—*
Allan, Ronald F., 4,606,165, Cl. 52-583.000.

Rorer, Morris P., to Du Pont de Nemours, E. I., and Company. Herbicidal sulfonamides. 4,606,755, Cl. 71-93.000.

Rosenberg, Allan H.; and Weintraub, Leonard, to Bristol-Myers Company. Antiperspirant combination containing an aluminum halohydrate and a stannic halide. 4,606,915, Cl. 424-68.000.

Rosenbush, David M.; Zwicke, Philip E.; and Couch, Robert P., to United Technologies Corporation. Interprobe electrostatic engine diagnostics correlation. 4,607,337, Cl. 364-431.020.

Ross, Edward E.; and Strasser, Jurgen H., to Del Monte Corporation. Apparatus for peeling pineapples. 4,606,263, Cl. 99-542.000.

Rossler, Manfred; Winter, Gerhard; and Stiltz, Hermann, to Robert Bosch GmbH. Electroerosion recording medium fabrication method. 4,606,937, Cl. 427-121.000.

Roth, David W.: *See—*
Dickson, James; Nienart, Louis F.; and Roth, David W., 4,606,977, Cl. 428-553.000.

Roth, Robert S.: *See—*
Ritter, Joseph J.; Roth, Robert S.; and Negas, Taki, 4,606,906, Cl. 423-598.000.

Rotoflow, Corporation: *See—*
Swearingen, Judson S., 4,606,652, Cl. 384-130.000.

Roussel Uclaf: *See—*
Bouton, Marie-Madeleine; Jacques, Jean; and Pierdet, Andre , 4,607,054, Cl. 514-680.000.
Mendy, Francois; and Barthelemy, Pierre, 4,607,052, Cl. 514-547.000.
Tessier, Jean; and Teche, Andre , 4,607,026, Cl. 514-80.000.

Rowe, Robert M.: *See—*
Malhotra, Deepak; Rowe, Robert M.; and Bhasin, Anirudh K., 4,606,817, Cl. 209-166.000.

Rowland, David B. Lounge chair for reading. 4,606,086, Cl. 5-111.000.

Royall Communications Incorporated: *See—*
Nickerson, Roy, 4,606,553, Cl. 281-5.000.

Royston, James M., to Coupling Systems, Inc. Pipe couplings. 4,606,565, Cl. 285-337.000.

Ruane, John P.: *See—*
Munsen, Victor A.; and Ruane, John P., 4,606,961, Cl. 428-119.000.

Ruder, Fred A., Sr. Evacuation slides for multi-story buildings. 4,606,431, Cl. 182-49.000.

Rudiger, Emil. Apparatus for locating leaks in a heat exchanger. 4,606,220, Cl. 73-40.50R.

Rudy, Michael A.; and Lisanti, Vincent F., to Caries Research Group of Rochester, Inc. Method of making a clear, stable aqueous mouthwash solution and the solution made by that method for the enhancement of cells of the oral cavity and the remineralization of teeth. 4,606,912, Cl. 424-52.000.

Ruiz, Raul; and Stein, Gary P., to Specific Plating Co., Inc. Method for spot plating flatware. 4,606,795, Cl. 204-15.000.

Rumack, Michael: *See—*
Teuerstein, Avraham; Rumack, Michael; and Yanai, Shaul, 4,606,852, Cl. 252-609.000.

Rundell, Herbert A.: *See—*
Gray, Charles L., Jr.; Rundell, Herbert A.; and Williams, Thomas M., 4,606,415, Cl. 175-24.000.

Russell, Charles M.: *See—*
Roby, William R.; and Russell, Charles M., 4,606,430, Cl. 182-3.000.

Russo, James T.: *See—*
Levine, Michael R.; Russo, James T.; Cairo, Anthony C.; and Rigotti, Victor H., 4,606,401, Cl. 165-12.000.

Ryobi Ltd.: *See—*
Takahashi, Kazuyuki; Oe, Yasuhiro; and Yamamoto, Etushi, 4,607,184, Cl. 310-247.000.

S.A.R.L. Isomat: *See—*
du Temple de Rougemont, Christian, 4,606,292, Cl. 114-104.000.

S.N.E.C.M.A.: *See—*
Riethmuller, Jean R. L., 4,606,102, Cl. 29-156.80R.

Sabat, Arthur G.: *See—*
Kowal, Raymond J.; Sabat, Arthur G.; and Salva, Patrick, 4,606,584, Cl. 303-22.00R.

Sacea S.a.s. di Tirinnanzi Giampietro & C.: *See—*
Hosoe, Isao, 4,606,161, Cl. 52-239.000.

Sach, George S.: *See—*
Cooper, David G.; and Sach, George S., 4,607,107, Cl. 546-332.000.

Sadahiro, Yousuke: *See—*
Ernstson, Christer; and Sadahiro, Yousuke, 4,606,827, Cl. 210-670.000.

Sado, Toshiyuki: *See—*
Sonoda, Masakazu; Nakayama, Koichi; and Sado, Toshiyuki, 4,607,297, Cl. 360-55.000.

Sai, Yukio, to Tokyo Shibaura Denki Kabushiki Kaisha. Sensing apparatus for measuring a physical quantity. 4,607,162, Cl. 250-227.000.

Saiia, Anthony J., to Textron Inc. Lawnmower reel-to-bedknife adjustment system. 4,606,178, Cl. 56-249.000.

Saint-Gobain Recherche: *See—*
Martin, Bernard; and Dossier, Gerard, 4,607,372, Cl. 373-41.000.

Saito, Motoyasu: *See—*
Mukohyama, Hideaki; Hiraoka, Ryoichi; Ushijima, Shohachi; and Saito, Motoyasu, 4,606,771, Cl. 106-170.000.

Saito, Susumu: *See—*
Oritsuki, Ryoji; Saito, Susumu; and Kanai, Hiromi, 4,607,168, Cl. 250-378.000.

Saito, Takashi; Suzuki, Kazumoto; and Naganuma, Yoshihiro, to Fujikura Ltd. Method of producing a magnetic material wire. 4,606,779, Cl. 148-120.000.

Saitoh, Nobuto: *See—*
Tanaka, Noriatsu; Sato, Hiroshi; Saitoh, Nobuto; Hirano, Katsumi; and Honda, Kazuhiko, 4,606,769, Cl. 106-30.000.

Sajtos, Alexander, to Chemie Linz Aktiengesellschaft. Process for the preparation of glyoxal, alkylglyoxals and acetals thereof. 4,607,126, Cl. 568-385.000.

Sakabe, Yukio: *See—*
Nishioka, Goro; and Sakabe, Yukio, 4,607,018, Cl. 501-135.000.

Sakaguchi, Shosaburo: *See—*
Aoyagi, Yoshio; Kaneko, Yukihiro; Kurosaki, Masanori; Motohashi, Minoru; Sawaki, Manabu; Ueki, Yoshiharu; and Sakaguchi, Shosaburo, 4,607,300, Cl. 360-74.100.

Sakai, Takahiro: *See—*
Hasegawa, Hiromi; Iwase, Yoshinobu; Taga, Yutaka; Minemoto, Isamu; and Sakai, Takahiro, 4,606,242, Cl. 74-606.00R.

Sakakino, Takahiro, to Omron Tateisi Electronics Co. Non-contact switching device. 4,607,160, Cl. 250-227.000.

Sakamoto, Masaharu: *See—*
Matsubayashi, Nobuhide; Kato, Kiichi; and Sakamoto, Masaharu, 4,607,359, Cl. 369-46.000.

Sakane, Katsunobu, to Toyoda Gosei Co., Ltd. Steering wheel. 4,606,240, Cl. 74-552.000.

Sakashita, Takeshi; Hashimoto, Hidehiko; and Nakano, Takayuki, to Mitsui Petrochemical Industries, Ltd. Molding polyamide composition. 4,607,073, Cl. 524-404.000.

Sakata, Masao: *See*—
Kobayashi, Shigeru; Abe, Katsuo; Sakata, Masao; Kasahara, Osamu; and Ogishi, Hidetsugu, 4,606,802, Cl. 204-192.00R.

Sakikubo, Yoshinari: *See*—
Kano, Mitsuru; Kato, Yoshinori; Kamijo, Yoshimi; Takeda, Yoshio; Sakikubo, Yoshinari; and Yagi, Naoki, 4,607,097, Cl. 534-577.000.

Sakurada, Shuroku; Matsuzaki, Hitoshi; Ikeda, Yasuhiko; and Ohta, Takehiro, to Hitachi, Ltd. Power semiconductor device. 4,607,273, Cl. 357-38.000.

Sakurai, Toshio: *See*—
Sunaga, Yutaka; and Sakurai, Toshio, 4,606,212, Cl. 72-283.000.

Salamone, Ann B.: *See*—
Poulin, Susan B.; and Salamone, Ann B., 4,606,999, Cl. 430-326.000.

Salis International, Inc.: *See*—
Salis, Lawrence R., 4,606,776, Cl. 134-36.000.

Salis, Lawrence R., to Salis International, Inc. Air brush cleaning unit. 4,606,776, Cl. 134-36.000.

Salmon, Michael E., to GMI Engineering & Management Institute. Orthopedic foot splint and method for using same. 4,606,334, Cl. 128-80.00A.

Salva, Patrick: *See*—
Kowal, Raymond J.; Sabat, Arthur G.; and Salva, Patrick, 4,606,584, Cl. 303-22.00R.

Salzman, Ronald N.: *See*—
Coyle, Chandler K.; and Salzman, Ronald N., 4,606,648, Cl. 366-300.000.

Samluk, Stanley D.: *See*—
Hack, Richard J.; Hair, Jakie A.; Hall, John N.; Alexander, John L.; and Samluk, Stanley D., 4,606,478, Cl. 222-187.000.

Sandoz Ltd.: *See*—
Gerber, Arthur H., 4,606,770, Cl. 106-90.000.

Sangster, Arlon G., to Olin Corporation. Swimming pool chemical dispenser. 4,606,893, Cl. 422-265.000.

Sano, Koichi: *See*—
Yokoyama, Tetsuo; Morishita, Koichi; Sano, Koichi; Yamagata, Shimbu; and Ogushi, Akira, 4,607,222, Cl. 324-309.000.

Sano, Yasuhisa: *See*—
Hirano, Shigeo; Sano, Yasuhisa; Takei, Haruo; Miyasaka, Tsutomu; and Fujita, Shinsaku, 4,607,006, Cl. 430-572.000.

Sano, Yoshihiko; and Ueda, Mitsutaka, to Nissho Corporation. Apparatus for controlling ultrafiltration and method for the same. 4,606,826, Cl. 210-646.000.

Sanshin Kogyo Kabushiki Kaisha: *See*—
Tobinaga, Motoi; Okumura, Shigeo; Handa, Kenichi; and Atsumi, Shinya, 4,606,315, Cl. 123-417.000.
Yamazaki, Toshiyuki, 4,606,314, Cl. 123-413.000.

Sanwa Kokan Co., Ltd.: *See*—
Sunaga, Yutaka; and Sakurai, Toshio, 4,606,212, Cl. 72-283.000.

Sanyo Color Works Ltd.: *See*—
Kano, Mitsuru; Kato, Yoshinori; Kamijo, Yoshimi; Takeda, Yoshio; Sakikubo, Yoshinari; and Yagi, Naoki, 4,607,097, Cl. 534-577.000.

Sanyo Electric Co., Ltd.: *See*—
Niina, Tatsuhiko; and Yodoshi, Keiichi, 4,607,369, Cl. 372-46.000.
Yamashita, Sachio, 4,607,298, Cl. 360-73.000.

Saraceno, Anthony, to Pristine Manufacturing Corp. Junction box connector. 4,606,562, Cl. 285-159.000.

Sartori, Francesco. Method for the embodiment of brooms, brushes and similar articles, and a broom or brush obtained therewith. 4,606,091, Cl. 15-195.000.

Sasaki, Kan: *See*—
Ikemoto, Kazuhito; Katayama, Nobuaki; Terakura, Yukio; and Sasaki, Kan, 4,606,238, Cl. 74-473.00R.

Sasaki, Masaomi, to Ricoh Company, Ltd. Styryl derivatives and electrophotographic photoconductor comprising one styryl derivative. 4,606,988, Cl. 430-59.000.

Sasaki, Susumu, to Fujitsu Limited. Digital radio relay system. 4,607,376, Cl. 375-3.000.

Sasaki, Tohru; Kidoh, Kunizoh; and Endoh, Hiroyuki, to Kureha Kagaku Kogyo Kabushiki Kaisha. Monofilament of improved vinylidene fluoride-based resin. 4,606,144, Cl. 43-44.980.

Sasaya, Hideaki: *See*—
Mitsui, Takao; Tatsunaka, Toshiharu; Sasaya, Hideaki; and Kitamura, Youji, 4,606,711, Cl. 418-59.000.

Sasse, Wolfgang H. F.; Johansen, Oddvar; Mau, Albert W.; and Swift, Jean D., to Commonwealth of Australia Commonwealth Scientific and Industrial Research Organization, The. Modified catalysts and process for the solar reduction of water. 4,606,798, Cl. 204-157.520.

Sato, Hiroshi: *See*—
Tanaka, Noriatsu; Sato, Hiroshi; Saitoh, Nobuto; Hirano, Katsumi; and Honda, Kazuhiko, 4,606,769, Cl. 106-30.000.

Sato, Kozo: *See*—
Kawata, Ken; Sato, Kozo; and Naito, Hideki, 4,606,991, Cl. 430-203.000.

Sato, Masashi: *See*—
Hara, Kazumasa; Sato, Masashi; Koike, Mikio; and Kaneko, Kenji, 4,606,289, Cl. 112-295.000.

Sato, Tadahisa: *See*—
Ukai, Toshinao; Sato, Tadahisa; Kawagishi, Toshio; and Takei, Haruo, 4,607,003, Cl. 430-519.000.

Sauvee, Jean-Paul: *See*—
Meynier, Guy; and Sauvee, Jean-Paul, 4,606,439, Cl. 188-73.320.

Savich, Thomas L.: *See*—
Mantela, Ralph F.; and Savich, Thomas L., 4,606,687, Cl. 410-23.000.

Sawaki, Manabu: *See*—
Aoyagi, Yoshio; Kaneko, Yukihiro; Kurosaki, Masanori; Motohashi, Minoru; Sawaki, Manabu; Ueki, Yoshiharu; and Sakaguchi, Shosaburo, 4,607,300, Cl. 360-74.100.

Sawyer, Philip N., to Interface Biomedical Laboratories. Composite hemostatic article including a hemostatic agent onlay and methods for preparing the same. 4,606,910, Cl. 424-28.000.

Scales, Frank J. Automotive air conditioning system flushing apparatus. 4,606,363, Cl. 134-111.000.

Scarlata, Salvatore. Bootgripper. 4,606,483, Cl. 223-119.000.

Schachar, Ronald A. Method for measuring intraoperative and immediate postoperative effects of radial keratotomy. 4,606,623, Cl. 351-212.000.

Schaefer, Gerhard: *See*—
Tesch, Helmut; Heym, Manfred; Doerflinger, Walter; Stutz, Herbert; Neumann, Peter; Nissen, Dietmar; and Schaefer, Gerhard, 4,607,069, Cl. 523-400.000.

Scharschinger, Margrit: *See*—
Brunner, Gerhard; Sigel, Arnold; and Scharschinger, Margrit, 4,606,486, Cl. 226-19.000.

Schaudt Maschinenbau GmbH: *See*—
Vetter, Ulrich, 4,606,130, Cl. 33-178.00E.

Schell, Mark S.: *See*—
Whiting, David E.; and Schell, Mark S., 4,606,596, Cl. 339-107.000.

Schell, Paul F.: *See*—
Jordan, Lawrence J.; and Schell, Paul F., 4,606,464, Cl. 211-41.000.

Schemmann, Hugo: *See*—
Diefenbach, Gerhard; Schemmann, Hugo; and Bukoschek, Romuald L., 4,606,121, Cl. 30-43.920.

Schenkel, Hans P.: *See*—
Skaria, Arankathu; Stark, Reiner; and Schenkel, Hans P., 4,606,904, Cl. 423-489.000.

Scherbner, Lillian, executrix: *See*—
Goldstein, Sherwood; and Scherbner, Paul J., deceased, 4,606,889, Cl. 420-492.000.

Scherbner, Paul J., deceased: *See*—
Goldstein, Sherwood; and Scherbner, Paul J., deceased, 4,606,889, Cl. 420-492.000.

Schering S.p.A.: *See*—
Bertelli, Alberto, 4,607,024, Cl. 514-28.000.

Scheuble, Bernhard: *See*—
Romer, Michael; Eidenschink, Rudolf; Krause, Joachim; Scheuble, Bernhard; and Weber, Georg, 4,606,845, Cl. 252-299.630.

Schiller, Werner; Benedix, Manfred; and Szakacsi, Janos, to Eumuco Aktiengesellschaft fur Maschinenbau. Screw press having a shifting coupling and a continuously rotating flywheel. 4,606,217, Cl. 72-454.000.

Schirmer, Henry G., to W. R. Grace & Co., Cryovac Div. Cook-in meat packaging. 4,606,922, Cl. 426-412.000.

Schlageter, George A.: *See*—
Krueger, William R.; McAuliffe, Gerald N.; and Schlageter, George A., 4,607,199, Cl. 318-484.000.

Schleif, Ludwig; and Lobstadt, Kurt. Ball-point pen with integral stamping equipment. 4,606,665, Cl. 401-195.000.

Schleppnik, Alfred A.: *See*—
Ansari, Hifzur R.; and Schleppnik, Alfred A., 4,606,849, Cl. 252-522.00R.

Schluep, Rene ; and Buser, Franz, to Griesser AG. Method and apparatus for manufacturing an armor shutter. 4,606,099, Cl. 29-24.500.

Schlueter, Francis E., to Deere & Company. Cotton cleaning structure for a cotton harvester. 4,606,177, Cl. 56-30.000.

Schlumberger Technology Corporation: *See*—
Seeman, Bronislaw; and Cortet, Francois J., 4,607,352, Cl. 367-35.000.

Schmalz, Gerhardt, to Wezel GmbH & Co. KG. Arrangement for manufacturing curved wall portions of heat insulating walls. 4,606,254, Cl. 83-871.000.

Schmid, Karl: *See*—
Petrovic, Vladan; Schmid, Karl; and Schmidt-Traub, Henner, 4,606,793, Cl. 201-39.000.

Schmidhammer, Ludwig: *See*—
Dummer, Gerhard; Schmidhammer, Ludwig; Hirschmann, Peter; and Stettner, Gerhard, 4,606,742, Cl. 55-27.000.

Schmidlin, Julius, to Ciba-Geigy Corporation. Novel carboxylic acid esters. 4,607,028, Cl. 514-180.000.

Schmidt, Andreas, to Lemforder Metallwaren AG. Axial ball joint for articulated linkages in motor vehicles and method of fabricating same. 4,606,668, Cl. 403-140.000.

Schmidt, Bernd, to Inovatronic elektronische Systeme GmbH. Passive infrared movement detector. 4,606,600, Cl. 350-1.100.

Schmidt, Donald L.; and Urchick, Demetrius, to Dow Chemical Company, The. Substrate with perfluorocarbon polymeric coatings having low critical surface tensions. 4,606,973, Cl. 428-421.000.

Schmidt-Hansberg, Thomas: *See*—
Hrovat, Milan; Huschka, Hans; Porth, Heinrich; Rachor, Lothar; and Schmidt-Hansberg, Thomas, 4,606,874, Cl. 264-56.000.

Schmidt, John. Building material for building elements, and a method and a system for manufacturing said elements. 4,607,061, Cl. 521-122.000.

Schmidt-Traub, Henner: *See—*
Petrovic, Vladan; Schmid, Karl; and Schmidt-Traub, Henner, 4,606,793, Cl. 201-39.000.
Schneemann, Anthony K. Indexing turntable assembly. 4,606,244, Cl. 74-816.000.
Schneider, Bernd. Convertible roof conversion kit. 4,606,573, Cl. 296-210.000.
Schneider, Gernot: *See—*
Popovic, Radivoje; Berchier, Jean-Luc; Schneider, Gernot; Lienhard, Heinz; Baltes, Heinrich P.; Solt, Katalin; and Zajc, Tomislav, 4,607,271, Cl. 357-27.000.
Schnell, Axel: *See—*
Hennings, Detlev; Schnell, Axel; and Schreinemacher, Herbert, 4,606,116, Cl. 29-610.00R.
Schonberger, Franz: *See—*
Stadlmeier, Hans; and Schonberger, Franz, 4,607,366, Cl. 371-16.000.
Schoots, Peter J.: *See—*
Greenway, J. Michael; Schoots, Peter J.; and Patience, Donald, 4,606,338, Cl. 128-156.000.
Schornick, Gunnar: *See—*
Illers, Karl H.; Jun, Mong-Jon; and Schornick, Gunnar, 4,606,994, Cl. 430-300.000.
Schorr, Ian A., to Rockwell International Corp. Build out capacitor circuit. 4,607,140, Cl. 179-16.00F.
Schorr, Ian A., to Rockwell International Corporation. Active network termination circuit. 4,607,141, Cl. 179-16.00F.
Schott-Zwiesel-Glaswerke AG: *See—*
Steinhoff, Hans-Joachim, 4,606,747, Cl. 65-31.000.
Schraff, Raymond J.: *See—*
Miller, Thomas M.; and Schraff, Raymond J., 4,606,473, Cl. 220-215.000.
Schramm, George W.: *See—*
Neumann, Jeffrey; Petr, David W.; Schramm, George W.; and Sharp, John B., 4,607,364, Cl. 370-99.000.
Schreckenberg, Manfred; Dhein, Rolf; Lange, Ralf; and Waldenrath, Werner, to Bayer Aktiengesellschaft. Polyether-copolycarbonates for dialysis membranes. 4,607,070, Cl. 524-100.000.
Schreiber, Herbert, to Gurit-Essex AG. Polymeric resins derived from 1-oxa-3-aza tetraline group-containing compounds and cycloaliphatic epoxides. 4,607,091, Cl. 528-96.000.
Schreinemacher, Herbert: *See—*
Hennings, Detlev; Schnell, Axel; and Schreinemacher, Herbert, 4,606,116, Cl. 29-610.00R.
Schroeder, Karl S., to Hobart Corporation. Shift-error adjustment for load cell support. 4,606,421, Cl. 177-211.000.
Schuettenberg, Alexander; Lindstrom, Merlin R.; and Bonazza, Benedict R., to Phillips Petroleum Company. Mixture of dithiodiglycol and polyoxyalkylene glycol derivatives as a lubricating additive. 4,606,833, Cl. 252-49.300.
Schuitmaker, Pieter D.; and Rietbergen, Wilhelmus P. C., to U.S. Philips Corporation. Record player having a loading mechanism for loading a disk. 4,607,361, Cl. 369-75.200.
Schulke, Dwight A.; and Spore, Everette M., to Kerr-McGee Chemical Corporation. Electrode. 4,606,804, Cl. 204-286.000.
Schuller, William M.: *See—*
Aldrich, Charles S.; Booth, James R.; Schuller, William M.; and Young, Lloyd P., 4,606,661, Cl. 400-213.000.
Schulz, Donald N.; and Kitano, Kissho, to Exxon Research and Engineering Co. Betaine copolymers-viscosifiers for water and brine. 4,607,076, Cl. 524-548.000.
Schurter AG: *See—*
Kauffmann, Urs; and Degen, Jost, 4,606,590, Cl. 339-32.00M.
Schuster, Dan-Karl; and Kohler, Franz J., to Dr. Franz Kohler Chemie GmbH. Water soluble 3,5-diacetamido-2,4,6-triiodobenzoic acid derivatives. 4,607,123, Cl. 564-153.000.
Schwaiger, Gunther, to Hoechst Aktiengesellschaft. Bicyclic copper complex formazan compounds having a fiber-reactive group of the vinyl sulfone series, containing a fiber-reactive group suitable as dyestuffs. 4,607,098, Cl. 534-618.000.
Schwan's Sales Enterprises, Inc.: *See—*
Ricke, Roy R., 4,606,923, Cl. 426-496.000.
Schwenda, Gerhard: *See—*
Taybl, Christa; Gerke, Dieter; Koch, Fritz E.; and Schwenda, Gerhard, 4,607,135, Cl. 174-60.000.
Scianna, Cosimo, to Siemens Aktiengesellschaft. Static memory cell. 4,607,350, Cl. 365-154.000.
SCM Corporation: *See—*
Svilar, Mark; Glancy, Stephen; and Klar, Erhard, 4,606,768, Cl. 75-246.000.
Scott, Richard L.; Kirksey, William A.; and Rieke, James K., to Dow Chemical Company, The. Tensile test apparatus embodying novel specimen bar magazine. 4,606,230, Cl. 73-856.000.
Secondo, Pierre: *See—*
Platel, Guy; Secondo, Pierre; and Wiest, Sylvain, 4,607,363, Cl. 370-94.000.
Seeman, Bronislaw; and Cortet, Francois J., to Schlumberger Technology Corporation. Method and apparatus for obtaining a display of a characteristic of the periphery of a well. 4,607,352, Cl. 367-35.000.
Seevinck, Evert, to U.S. Philips Corporation. Amplifier arrangement comprising a protection circuit. 4,607,235, Cl. 330-298.000.
Segal, David. Limb muscle exercising. 4,606,542, Cl. 272-137.000.
Segredo, Anthony F.; Prendergast, Richard E.; Martin, Ralph E.; Pluister, Jack W.; and Techico, Manuel T., to Continental Can Company, Inc. Applied force monitor for apparatus for forming products from sheet material. 4,606,205, Cl. 72-19.000.
Seidah, Nabil: *See—*
Thibault, Gaetan; Garcia, Raul; Cantin, Marc; Seidah, Nabil; Lazure, Claude; and Chretien, Michel, 4,607,023, Cl. 514-11.500.
Seiden, Louis W.; Stone, Dennis R.; and Neimiller, Kenneth G., to Water Quality Sciences, Inc. Apparatus for remotely measuring and controlling the carbon dioxide in a beverage liquid: on-line. 4,607,342, Cl. 364-558.000.
Seiko Epson Corporation: *See—*
Shinohara, Toshihide, 4,606,626, Cl. 351-169.000.
Seiko Instruments & Electronics Ltd.: *See—*
Nagai, Toshihisa, 4,607,340, Cl. 364-521.000.
Sekella, Thomas C., to Facet Enterprises, Inc. Spring operated clutch. 4,606,444, Cl. 192-48.200.
Seki, Masaki: *See—*
Kishi, Hajimu; Kurakake, Mitsuo; Seki, Masaki; Tanaka, Kunio; and Matsumura, Teruyuki, 4,607,327, Cl. 364-191.000.
Sekiya, Tetsuo: *See—*
Mizogami, Susumu; Hiranuma, Hidetoshi; Sekiya, Tetsuo; and Hanazuka, Mitsuo, 4,607,034, Cl. 514-254.000.
Selva, Enrico; Beretta, Grazia; Tamoni, Giorgio; Arioli, Vittorio; Cassani, Giovanni; and Parenti, Francesco, to Gruppo Lepetit S.p.A. Antibiotic SB 22484. 4,607,012, Cl. 435-136.000.
Sember, James W.; Walker, Loren H.; and Weiss, Herbert W., to General Electric Company. Flux control for induction motor drive using load commutated inverter circuit. 4,607,206, Cl. 318-798.000.
Senju Pharmaceutical Co., Ltd.: *See—*
Ogata, Kazumi; Yamamoto, Yujiro; and Ozaki, Yoshie, 4,607,038, Cl. 514-291.000.
Senni, Paolo: *See—*
Bondi, Enrico; and Senni, Paolo, 4,606,858, Cl. 540-540.000.
Serapharm GmbH & Co. KG: *See—*
Zimmermann, Eberhard; and Stroetmann, Michael, 4,606,337, Cl. 128-156.000.
Sermatech International Inc.: *See—*
Mosser, Mark F., 4,606,967, Cl. 428-220.000.
Setoya, Noboru, to Mycom Kabushiki Kaisha. Five-phase stepping motor. 4,607,204, Cl. 318-696.000.
Seyler, Jay K.; and Orlowski, Ronald C. [Des-1-amino, 8-glycine]calcitonin. 4,606,856, Cl. 530-307.000.
Shafik, Ahmed: *See—*
Heinrich, Siegfried; Heitzmann, Rudolf; and Shafik, Ahmed, 4,606,947, Cl. 427-388.100.
Shagun, Vladimir A.: *See—*
Petrakov, Vladimir P.; Minkin, Gennady P.; Shagun, Vladimir A.; Barykin, Pavel S.; Barklon, David I.; and Domrachev, Vladimir A., 4,606,929, Cl. 427-34.000.
Shape Inc.: *See—*
Gelardi, Anthony L.; Gelardi, Paul J.; and MacLeod, Robert B., Jr., 4,606,513, Cl. 242-199.000.
Shapiro, Rafael, to Du Pont de Nemours, E. I., and Company. Herbicidal ortho-(azinyl)-benzenesulfonamides. 4,606,754, Cl. 71-92.000.
Sharkey, Richard L.: *See—*
Chandley, George D.; and Sharkey, Richard L., 4,606,396, Cl. 164-255.000.
Sharp, John B.: *See—*
Neumann, Jeffrey; Petr, David W.; Schramm, George W.; and Sharp, John B., 4,607,364, Cl. 370-99.000.
Sharp Kabushiki Kaisha: *See—*
Morita, Toshiaki; Horii, Masahiro; Tasaka, Shigeru; and Hirose, Hiroshi, 4,607,386, Cl. 382-13.000.
Shiono, Fusahiro; and Komai, Kensaku, 4,607,334, Cl. 364-405.000.
Sharps, Gordon V., Jr., to Mobil Oil Corporation. Laminated plastic/non-woven film and its method of manufacture. 4,606,970, Cl. 428-301.000.
Shaturov, Gennady F.; Malyavko, Sergei S.; and Nadvikov, Alexei M., to Mogilevskoe Otdelenie Fiziko-Teknicheskogo Instituta. Method for machining bodies of revolution with use of rotary tool. 4,606,684, Cl. 409-132.000.
Shaw Aero Devices, Inc.: *See—*
Shaw, James R.; and Velsor, John W., 4,607,313, Cl. 361-218.000.
Shaw, James R.; and Velsor, John W., to Shaw Aero Devices, Inc. Static discharger. 4,607,313, Cl. 361-218.000.
Sheaffer, Jeffrey D.: *See—*
Rieber, John C.; Sheaffer, Jeffrey D.; and Walthers, Russell E., 4,607,183, Cl. 310-214.000.
Shell Oil Company: *See—*
Briner, Paul H.; and Mason, Ronald F., 4,607,128, Cl. 568-655.000.
Harris, Martin, 4,606,862, Cl. 260-402.500.
Powell, James E., 4,606,753, Cl. 71-88.000.
Shene, William R., to Monghan Medical Corporation. Electrode for fiber optic scopes. 4,606,331, Cl. 128-24.100.
Sherex Chemical Company, Inc.: *See—*
Keys, Robert O., 4,606,818, Cl. 209-166.000.
Sherman, William D.: *See—*
Smalley, Raymond L.; Risner, Melvin G.; and Sherman, William D., 4,606,433, Cl. 187-9.00R.
Sherritt Gordon Mines Limited: *See—*
Genik-Sas-Berezowsky, Roman M.; and Weir, Donald R., 4,606,766, Cl. 75-118.00R.
Hajmrle, Karel; and Silins, Vilnis, 4,606,948, Cl. 427-423.000.
Weir, Donald R., 4,606,763, Cl. 75-101.00R.
Sheth, Jayesh V., to Burroughs Corporation. Transfer rate control system from tape peripheral to buffer memory of peripheral controller. 4,607,348, Cl. 364-900.000.

Shibata, Akira: *See*—
Kojiam, Noboru; Kuroyanagi, Tomomitsu; Shibata, Akira; and Nakagawa, Isao, 4,607,292, Cl. 358-310.000.
Shibata, Masao: *See*—
Yamada, Yasuhiro; Imamura, Takeshi; Shibata, Masao; Arita, Seiji; and Honda, Hidemasa, 4,606,808, Cl. 208-44.000.
Shibuya Kogyo Co., Ltd.: *See*—
Nagano, Yasuaki, 4,606,620, Cl. 350-610.000.
Shigemasa, Takashi: *See*—
Mori, Yasuchika; and Shigemasa, Takashi, 4,607,326, Cl. 364-162.000.
Shikata, Hiroshi, to Tokyo Shibaura Denki Kabushiki Kaisha. Cutting tool. 4,606,248, Cl. 82-1.00C.
Shimizu, Akiyoshi: *See*—
Michihara, Shinji; and Shimizu, Akiyoshi, 4,606,152, Cl. 51-241.00S.
Shimizu, Yoshio, to Sony Corporation. Signal mixing circuit. 4,607,381, Cl. 381-10.000.
Shimojima, Yoji: *See*—
Matsunaga, Hiroshi; Shimojima, Yoji; Tokunaga, Ichiro; Obata, Kosei; and Yasuhara, Yukihiko, 4,606,223, Cl. 73-116.000.
Shimojo, Shinichi: *See*—
Nao, Manabu; Shimojo, Shinichi; and Watari, Kazushi, 4,607,155, Cl. 235-379.000.
Shin-Etso Chemical Co., Ltd.: *See*—
Nomura, Hirokazu; Ueno, Susumu; and Kitamura, Hajime, 4,607,088, Cl. 526-279.000.
Shindou, Yoshio: *See*—
Suzuki, Kazuyuki; Ishida, Masami; Ohtsuki, Fuyuhiko; Inuizawa, Yoshihiro; Hinenoya, Saburo; Tanaka, Mansei; and Shindou, Yoshio, 4,606,953, Cl. 428-36.000.
Shinogaya, Toshikazu: *See*—
Kitamura, Takashi; Fukuura, Yukio; Tanuma, Itsuo; Shinogaya, Toshikazu; and Noda, Yuji, 4,607,065, Cl. 522-83.000.
Shinohara, Emiko: *See*—
Ozawa, Yoichi; Kishimoto, Shinichi; Shinohara, Emiko; Takemoto, Tadashi; and Eguchi, Chikahiko, 4,606,854, Cl. 260-998.210.
Shinohara, Toshihide, to Seiko Epson Corporation. Progressive multifocal ophthalmic lenses with prism for correcting chromatic aberration. 4,606,626, Cl. 351-169.000.
Shinozaki, Kaoru: *See*—
Nakayama, Noritaka; Kawakatsu, Satoshi; Katoh, Katsunori; and Shinozaki, Kaoru, 4,607,002, Cl. 430-505.000.
Shiono, Fusahiro; and Komai, Kensaku, to Sharp Kabushiki Kaisha. Electronic cash register having a check and adjustment mode where registration input operations are indicated in a machine-lock condition. 4,607,334, Cl. 364-405.000.
Shirako, Hideo, to Olympus Optical Co., Ltd. Tape cassette with liner sheet insert. 4,607,306, Cl. 360-132.000.
Shoji, Masashi; and Niki, Haruo, to Nippon Electric Co., Ltd. Voltage detection circuit using threshold as reference voltage for detecting input voltage. 4,607,174, Cl. 307-363.000.
Shop-Vac Corporation: *See*—
Berfield, Robert C.; and Crevling, Robert L., 4,606,563, Cl. 285-189.000.
Short, Robert D., III, to Sperry Gorporation. Radar video dehancer. 4,607,258, Cl. 343-17.10R.
Showak, Walter, to New Jersey Zinc Company, The. Method of making air atomized spherical zinc powder. 4,606,869, Cl. 264-12.000.
Shrivastava, Ratnesh: *See*—
Frank, Sylvan G.; Brodin, Arne F.; Chen, Chih-Ming J.; and Shrivastava, Ratnesh, 4,606,939, Cl. 427-213.300.
Shriver, Frank L.; and Hahn, Roger A., to Adolph Coors Company. Spray coating apparatus. 4,606,942, Cl. 427-233.000.
Shu, Paul, to Mobil Oil Corporation. Programmed gelation of polymers for oil reservoir permeability control. 4,606,407, Cl. 166-270.000.
Shuert, Lyle H. Twin sheet pallet. 4,606,278, Cl. 108-51.100.
Shufflebarger, Earl D.: *See*—
Kolenc, Terrence J.; Bork, Carl R., Jr.; Steiss, William C.; Shufflebarger, Earl D.; and Tobbe, William P., 4,606,374, Cl. 137-556.300.
Shum, Wilfred P.; and Cooper, Charles F., to Atlantic Richfield Company. Production of molybdenum dioxo dialkyleneglycolate compositions for epoxidation of olefins. 4,607,113, Cl. 556-57.000.
Shum, Wilfred P.; White, John F.; and Beals, Eva M., to Atlantic Richfield Company. High selectivity process for vapor phase oxydehydrogenation of alkanoic acids, such as isobutyric acid, using Dawson structure phosphomolybdic acid. 4,607,122, Cl. 562-599.000.
Shuman, Curtis F. Two stage engine air breather filter. 4,606,743, Cl. 55-323.000.
Shute, Anthony, to Goodyear Tire & Rubber Company, The. Vehicle rim with tire bead retaining humps. 4,606,390, Cl. 152-381.400.
SIA Schweizer Schmirgel- und Schleif-Industrie AG: *See*—
Herrmann, Lotte; Ackermann, Jakob; and Steiner, Armin, 4,606,154, Cl. 51-401.000.
Siddiqi, Iqbal; Brochot, Jean; and Sutherland, Ranald M., to Battelle Memorial Institute. Analytical process and means for measuring protease inhibitor capacity of serum. 4,607,010, Cl. 435-23.000.
Sidel: *See*—
Pasternicki, Michel, 4,606,723, Cl. 432-124.000.
Sieben, Joannes H. F. C., to U.S. Philips Corporation. Reel braking device for a magnetic-tape cassette. 4,607,307, Cl. 360-132.000.
Siemens Aktiengesellschaft: *See*—
Bohm, Edgar; and Achenbach, Erhard, 4,607,203, Cl. 318-687.000.
Christoph, Gunter; and Stickel, Heinz, 4,606,663, Cl. 400-605.000.
Christoph, Heinz; Gamalski, Jurgen; Lenz, Eduard; Neumann, Ulrich; and von der Schmidt, Reinhard, 4,606,493, Cl. 228-180.100.
Haass, Adolf, 4,607,146, Cl. 179-170.800.
Lechner, Alexander, 4,607,177, Cl. 307-475.000.
Leibenzeder, Siegfried; and Heindl, Christine, 4,606,780, Cl. 148-171.000.
Scianna, Cosimo, 4,607,350, Cl. 365-154.000.
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Starck, Alexander, 4,607,281, Cl. 358-136.000.
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Silva, Robert E. System and method of vaporizing liquid fuel for delivery to an internal combustion engine. 4,606,319, Cl. 123-525.000.
Silver, Brian H., to Kendall Company, The. Apparatus with force isolation for measuring weight of collected fluid and method. 4,606,420, Cl. 177-160.000.
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Smidth, Peter, to Ampex Corporation. Clock recovery system in digital rotary scan magnetic playback devices. 4,607,296, Cl. 360-51.000.
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Ive, John G. S.; and Wilkinson, James H., 4,607,367, Cl. 371-37.000.
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Span, Samuel. Bubble pipe. 4,606,731, Cl. 446-19.000.
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Spence, Scott L., to Johnson Service Company. Differential pressure transmitter. 4,606,229, Cl. 73-722.000.
Spencer, Nicholas D., to W. R. Grace & Co. Process and catalyst for the production of formaldehyde from methane. 4,607,127, Cl. 568-482.000.
Spengler, William E.; and Ramsey, William C., to Tolco Corporation. Portable pressure sprayer. 4,606,477, Cl. 222-153.000.
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Stahlecker, Fritz; and Stahlecker, Hans, to Stahlecker, Hans; and Stahlecker, Fritz. Arrangement for stopping and starting an open-end friction spinning unit. 4,606,184, Cl. 57-263.000.
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Starkweather, Gary K., to Xerox Corporation. Single facet wobble free scanner. 4,606,601, Cl. 350-6.400.
Statz, Robert E.; and Treichel, Wayne A. Cup holder. 4,606,523, Cl. 248-311.200.
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Steindal, Karl. Self feeding wood burning stove. 4,606,282, Cl. 110-116.000.
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Steinhoff, Hans-Joachim, to Schott-Zwiesel-Glaswerke AG. Process for the contact-less removal of material from the surface of a glass object. 4,606,747, Cl. 65-31.000.
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Sterner, Mikael. Fish feed discharging apparatus. 4,606,300, Cl. 119-51.00R.
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Stiller, Johannes G., to Stiko Holding B.V. Method of making a gas pressure thermometer. 4,606,104, Cl. 29-157.00R.
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Sugawara, Katuo; Takahashi, Akio; Ono, Masahiro; Tada, Ritsuro; Wajima, Motoyo; Narahara, Toshikazu; and Nagai, Akira, to Hitachi, Ltd. Thermosetting resin composition from aromatic cyanamide. 4,607,094, Cl. 528-323.000.
Sugie, Mamoru; Toyooka, Takashi; Aoki, Hirokazu; Yoshida, Kazutoshi; and Chiba, Shinsaku, to Hitachi, Ltd. Reset signal generating circuit. 4,607,178, Cl. 307-594.000.
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Sundermeyer, Peter, to Martin-Marietta Corporation; and Diehl GmbH & Co. Method for homing a projectile onto a target and for determining the ballistic trajectory thereof as well as arrangements for implementing the method. 4,606,514, Cl. 244-3.150.
Sundstrand Corporation: *See—*
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Sutter, Hubert; Haas, Karl-Uwe; and Ledet, Winston P., to Du Pont de Nemours, E. I., and Company. Continuous process for the manufacture of low-density polyethylene in stirred autoclaves. 4,607,086, Cl. 526-65.000.
Suwa, Mitsuru; and Kuwabara, Shoichi, to Tsudakoma Kogyo Kabushiki Kaisha. Method and apparatus for automatically exchanging cloth rollers in a loom. 4,606,381, Cl. 139-1.00R.
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Yamazaki, Yasuo; Suzuki, Takehiko; and Uchiyama, Masaharu, 4,607,116, Cl. 560-21.000.
Suzuki, Yoshinori: *See—*
Anno, Gousuke; and Suzuki, Yoshinori, 4,606,631, Cl. 356-39.000.
Svendsen, Lloyd R., to Nabisco Brands, Inc. Method and apparatus for load transfer. 4,606,690, Cl. 414-343.000.
Svilar, Mark; Glancy, Stephen; and Klar, Erhard, to SCM Corporation. High impact strength powder metal part and method for making same. 4,606,768, Cl. 75-246.000.
Svita, Petr N.: *See—*
Klimashko, Vladimir V.; Chepurnoi, Nikolai P.; Makeev, Vladimir D.; Naboko, Vladimir P.; Filonov, Alexandr D.; and Svita, Petr N., 4,606,414, Cl. 173-128.000.
Swafford, Charles V.: *See—*
Becker, Billy G.; and Swafford, Charles V., 4,606,410, Cl. 166-313.000.
Swanson, Rollan, to Chemroll Enterprises, Inc. Hydrotreating of carbonaceous materials. 4,606,812, Cl. 208-108.000.

Swartz, Harold L.: *See—*
Briney, Michael S.; Heidel, Jeffrey C.; and Swartz, Harold L., 4,606,132, Cl. 33-366.000.
Swearingen, Judson S., to Rotoflow, Corporation. Shaft seal for turbomachinery. 4,606,652, Cl. 384-130.000.
Sweers, Kenneth M.; Cooper, G. Jack; and Munsey, R. Jack, to C-Tec, Inc. Access flooring panel. 4,606,156, Cl. 52-126.600.
Swift, Jean D.: *See—*
Sasse, Wolfgang H. F.; Johansen, Oddvar; Mau, Albert W.; and Swift, Jean D., 4,606,798, Cl. 204-157.520.
Swiss Aluminium Ltd.: *See—*
Pfister, Hans, 4,606,257, Cl. 91-27.000.
Skaria, Arankathu; Stark, Reiner; and Schenkel, Hans P., 4,606,904, Cl. 423-489.000.
Swiss Aluminum Ltd.: *See—*
Wagner, Alfred; Ames, Adolf; and Hodel, Ulf, 4,606,210, Cl. 72-261.000
SWS Silicones Corporation: *See—*
Griswold, Roy M.; Magee, Walter L.; Manis, Paul A.; and Martin, Eugene R., 4,606,933, Cl. 427-54.100.
Symbol Technologies, Inc.: *See—*
Koppenaal, Alexander L. E.; and Kooijmans, Kees R., 4,607,156, Cl. 235-472.000.
Symonds, Denzil J. W.: *See—*
Ball, Robert J.; and Symonds, Denzil J. W., 4,606,450, Cl. 192-106.200.
Syntex (U.S.A.) Inc.: *See—*
Allison, Anthony C.; and Byars, Noelene E., 4,606,918, Cl. 424-88.000
Eppstein, Deborah A., 4,606,917, Cl. 424-85.000.
System Development Corporation: *See—*
Bradshaw, Robert S.; Lazzarotti, S. James; Tartar, Paul E.; and Hermes, Richard D., 4,606,660, Cl. 400-62.000.
Szakacsi, Janos: *See—*
Schiller, Werner; Benedix, Manfred; and Szakacsi, Janos, 4,606,217, Cl. 72-454.000
Szarka, David D.: *See—*
Zunkel, Gary D.; Stepp, Lee W.; and Szarka, David D., 4,606,408, Cl. 166-278.000.
Tachikawa Spring Co., Ltd.: *See—*
Yasui, Takashi, 4,606,578, Cl. 297-408.000.
Yoshizawa, Toshio, 4,606,580, Cl. 297-458.000.
Tada, Ritsuro: *See—*
Sugawara, Katuo; Takahashi, Akio; Ono, Masahiro; Tada, Ritsuro; Wajima, Motoyo; Narahara, Toshikazu; and Nagai, Akira, 4,607,094, Cl. 528-323.000.
Tadmor, Zehev: *See—*
Mehta, Pradip S.; Valsamis, Lefteris N.; and Tadmor, Zehev, 4,606,646, Cl. 366-75.000.
Taga, Yutaka: *See—*
Hasegawa, Hiromi; Iwase, Yoshinobu; Taga, Yutaka; Minemoto, Isamu; and Sakai, Takahiro, 4,606,242, Cl. 74-606.00R.
Taguchi, Yoshinobu: *See—*
Takahashi, Tetsuo; Taguchi, Yoshinobu; and Umeya, Tatsuo, 4,606,117, Cl. 29-740.000.
Taiyo Yuden Co., Ltd.: *See—*
Wada, Takeshi; Kishi, Hiroshi; Murai, Shunji; and Fukui, Masami, 4,607,314, Cl. 361-321.000.
Wada, Takeshi; Kishi, Hiroshi; Murai, Shunji; and Fukui, Masami, 4,607,315, Cl. 361-321.000.
Wada, Takeshi; Kishi, Hiroshi; Murai, Shunji; and Fukui, Masami, 4,607,316, Cl. 361-321.000.
Tajima, Ikuo, to Tokai Kogyo Mishin Kabushiki Kaisha. Looper driving system in an embroidery machine. 4,606,285, Cl. 112-98.000.
Takahashi, Akio: *See—*
Sugawara, Katuo; Takahashi, Akio; Ono, Masahiro; Tada, Ritsuro; Wajima, Motoyo; Narahara, Toshikazu; and Nagai, Akira, 4,607,094, Cl. 528-323.000.
Takahashi, Katsutoshi: *See—*
Nakayama, Yuya; Iwata, Kenji; and Takahashi, Katsutoshi, 4,607,114, Cl. 556-137.000.
Takahashi, Kazuo: *See—*
Yusa, Haruhiko; Oota, Masanori; and Takahashi, Kazuo, 4,607,080, Cl. 525-82.000.
Takahashi, Kazuyoshi: *See—*
Matui, Toshiro; Suzuki, Koji; Nagahira, Jyoji; Yoshihara, Kunio; Takahashi, Kazuyoshi; and Ishikawa, Tadashi, 4,607,320, Cl. 363-21.000.
Takahashi, Kazuyuki; Oe, Yasuhiro; and Yamamoto, Etushi, to Ryobi Ltd. Brush holder with automatically released retainer. 4,607,184, Cl. 310-247.000.
Takahashi, Tadahiro; and Sutoh, Shinji, to Diesel Kiki Co., Ltd. Compressor control unit for automobile air conditioner. 4,606,197, Cl. 62-133.000.
Takahashi, Tetsuo; Taguchi, Yoshinobu; and Umeya, Tatsuo, to TDK Corporation. Apparatus for automatically mounting chip type circuit elements on printed circuit boards. 4,606,117, Cl. 29-740.000.
Takahashi, Toshio: *See—*
Kubota, Shigeo; Yoshida, Minoru; Takahashi, Toshio; Kohno, Hideki; Hayakawa, Takayuki; Matuoka, Sadao; Kato, Shigeo; and Suzuki, Takaji, 4,607,164, Cl. 250-363.00S.
Takanashi, Itsuo; Nakagaki, Shintaro; Miyazaki, Kenichi; and Kuriyama, Takashi, to Victor Company of Japan, Limited. Bias light supply device for color TV imaging device using color separation stripe filter. 4,607,279, Cl. 358-44.000.
Takano, Mitsuyoshi; and Ando, Mamoru, to Anritsu Electric Co., Ltd. Spectrum analyzer. 4,607,215, Cl. 324-77.00B.
Takasago, Masahiro: *See—*
Maeda, Takeshi; Uno, Motoo; Muraoka, Kouji; Takasago, Masahiro; Mizoguchi, Yasumitsu; and Kaneko, Tokuya, 4,607,358, Cl. 369-44.000.
Takasaka, Kousaku: *See—*
Yamada, Takeo; and Takasaka, Kousaku, 4,606,641, Cl. 356/369.000.
Takaya, Yoshikazu; Tsubai, Yasuo; and Nishinoiri, Hiroshi, to Mitsubishi Paper Mills, Ltd. Lithographic printing plates. 4,606,985, Cl. 430-14.000.
Takayama, Ryoichi; Tokushima, Akira; Ueshiba, Nozomu; and Ise, Yukihiko, to Matsushita Electric Industrial Co. Ltd. Ultrasonic transducer with a piezoelectric element. 4,607,186, Cl. 310-324.000.
Takeda, Fumio: *See—*
Isota, Yoji; Ishida, Osami; and Takeda, Fumio, 4,607,240, Cl. 333/116.000.
Takeda Riken Kogyo Kubushikikaisha: *See—*
Yamaguchi, Takahiro; Ogawa, Masayuki; and Kasahara, Toshiharu, 4,607,216, Cl. 324-77.00B.
Takeda, Yoshio: *See—*
Kano, Mitsuru; Kato, Yoshinori; Kamijo, Yoshimi; Takeda, Yoshio; Sakikubo, Yoshinari; and Yagi, Naoki, 4,607,097, Cl. 534/577.000.
Takei, Haruo: *See—*
Hirano, Shigeo; Sano, Yasuhisa; Takei, Haruo; Miyasaka, Tsutomu; and Fujita, Shinsaku, 4,607,006, Cl. 430-572.000.
Ukai, Toshinao; Sato, Tadahisa; Kawagishi, Toshio; and Takei, Haruo, 4,607,003, Cl. 430-519.000.
Takekoshi, Toshio, to Hitachi, Ltd. Matrix switch apparatus including pull-up resistors for sense lines. 4,607,251, Cl. 340-365.00S.
Takemoto, Tadashi: *See—*
Ozawa, Yoichi; Kishimoto, Shinichi; Shinohara, Emiko; Takemoto, Tadashi; and Eguchi, Chikahiko, 4,606,854, Cl. 260-998.210.
Takeshita, Akira: *See—*
Nishiguri, Masao; Omura, Takashi; and Takeshita, Akira, 4,607,102, Cl. 544-74.000.
Takeshita, Masatoshi: *See—*
Suzuki, Ryo; Takeshita, Masatoshi; Takeuchi, Teruaki; Kodama, Naoki; and Sugita, Yutaka, 4,607,349, Cl. 365-39.000.
Takeuchi, Koji: *See—*
Koroki, Takeo; and Takeuchi, Koji, 4,606,101, Cl. 29-156:50R.
Takeuchi, Teruaki: *See—*
Suzuki, Ryo; Takeshita, Masatoshi; Takeuchi, Teruaki; Kodama, Naoki; and Sugita, Yutaka, 4,607,349, Cl. 365-39.000.
Takeuchi, Tomokazu. Porous thin foil and method for manufacturing the same. 4,606,979, Cl. 428-606.000.
Tallon, Jacques; and Morel, Jacques, to Compagnie Industrielle des Telecommunications Cit-Alcatel. Method of depolluting a helium leak detector and apparatus implementing the method. 4,606,221, Cl. 73-40.700.
Tam, Wai-Ming, to Perkin-Elmer Corporation, The. Fine alignment system. 4,606,643, Cl. 356-401.000.
Tamaki, Akira, to Nippon Seiko Kabushiki Kaisha. Means for locating an ultra-precision positioning of a table. 4,607,166, Cl. 250-442.100.
Tamminen, Hannu: *See—*
Koiyumaki, Veikko; Tamminen, Hannu; Peltonen, Pekka; and Kotki, Veikko, 4,607,388, Cl. 383-121.000.
Tamoni, Giorgio: *See—*
Selva, Enrico; Beretta, Grazia; Tamoni, Giorgio; Arioli, Vittorio; Cassani, Giovanni; and Parenti, Francesco, 4,607,012, Cl. 435-136.000.
Tanaka, Kouichi, to Kabushiki Kaisha Chubu Bearing Seisakusho. Synthetic resin ball bearing. 4,606,657, Cl. 384-492.000.
Tanaka, Kunio: *See—*
Kishi, Hajimu; Kurakake, Mitsuo; Seki, Masaki; Tanaka, Kunio; and Matsumura, Teruyuki, 4,607,327, Cl. 364-191.000.
Tanaka, Mansei: *See—*
Suzuki, Kazuyuki; Ishida, Masami; Ohtsuki, Fuyuhiko; Inuizawa, Yoshihiro; Hinenoya, Saburo; Tanaka, Mansei; and Shindou, Yoshio, 4,606,953, Cl. 428-36.000.
Tanaka, Noriatsu; Sato, Hiroshi; Saitoh, Nobuto; Hirano, Katsumi; and Honda, Kazuhiko, to Pilot Man-Nen-Hitsu Kabushiki Kaisha. Erasable black ink composition for ball-point pens. 4,606,769, Cl. 106-30.000.
Tandem Computers Incorporated: *See—*
Greig, David A.; Hinders, David L.; and Goodman, William R., 4,607,365, Cl. 371-8.000.
Tang, Kam Y. Mechanical door chime powered by motion of the door. 4,606,295, Cl. 116-100.000.
Tani, Yoshio; and Naruo, Kyoichi, to Fuji Photo Film Co., Ltd. Recording medium of deformable air-sandwich structure. 4,607,264, Cl. 346-137.000.
Tanuma, Itsuo: *See—*
Kitamura, Takashi; Fukuura, Yukio; Tanuma, Itsuo; Shinogaya, Toshikazu; and Noda, Yuji, 4,607,065, Cl. 522-83.000.
Tarnawskyj, Christine J.: *See—*
Lee, Lieng-Huang; Nichol-Landry, Deborah J.; and Tarnawskyj, Christine J., 4,606,934, Cl. 427-76.000.
Tartar, Paul E.: *See—*
Bradshaw, Robert S.; Lazzarotti, S. James; Tartar, Paul E.; and Hermes, Richard D., 4,606,660, Cl. 400-62.000.
Tasaka, Shigeru: *See—*
Morita, Toshiaki; Horii, Masahiro; Tasaka, Shigeru; and Hirose, Hitoshi, 4,607,386, Cl. 382-13.000.

Tash, George. Flushing device adapter. 4,606,364, Cl. 134-167.00C.
Task, Harry L.; Tutin, Michael B.; and Kama, William N., to United States of America, Air Force. Large pattern transposing. 4,606,127, Cl. 33-1.00G.
Tateishi, Sosuke: *See*—
Miyazawa, Takashi; Fukuchi, Hiroyuki; and Tateishi, Sosuke, 4,606,635, Cl. 356-240.000.
Tatsunaka, Toshiharu: *See*—
Mitsui, Takao; Tatsunaka, Toshiharu; Sasaya, Hideaki; and Kitamura, Youji, 4,606,711, Cl. 418-59.000.
Taub, Alan I.: *See*—
Huang, Shyh-Chin; Chang, Keh-Minn; and Taub, Alan I., 4,606,888, Cl. 420-459.000.
Taube, William L.; and Roberts, David A., to Metal Box, p.l.c. Reinforced can end. 4,606,472, Cl. 220-66.000.
Taybl, Christa; Gerke, Dieter; Koch, Fritz E.; and Schwenda, Gerhard, to Krone GmbH. Cable distribution head with LSA-PLUS termination technique. 4,607,135, Cl. 174-60.000.
Taylor, Arthur D.; and Ramsey, Roger W., to Engelhard Corporation. Method for recovery of high grade gold alloy from karat gold-clad base metal substrates. 4,606,797, Cl. 204-146.000.
TDK Corporation: *See*—
Takahashi, Tetsuo; Taguchi, Yoshinobu; and Umeya, Tatsuo, 4,606,117, Cl. 29-740.000.
Teche, Andre : *See*—
Tessier, Jean; and Teche, Andre , 4,607,026, Cl. 514-80.000.
Techico, Manuel T.: *See*—
Segredo, Anthony F.; Prendergast, Richard E.; Martin, Ralph E.; Pluister, Jack W.; and Techico, Manuel T., 4,606,205, Cl. 72-19.000.
Tecnol, Inc.: *See*—
Hubbard, Vance M.; and Brunson, Welton K., 4,606,341, Cl. 128-206.190.
Tecnomare S.p.A.: *See*—
Di Tella, Vincenzo; Brandi, Roberto; and Carraro, Roberto, 4,606,294, Cl. 114-230.000.
Tecumseh Products Company: *See*—
Campen, Kenneth W., 4,606,305, Cl. 123-149.00D.
Tedeschi, Rinaldo R.; and Edwards, Robert A., to United Technologies Corporation. Deceleration based compression test. 4,606,224, Cl. 73-117.300.
Telecomputer Corporation, Ltd.: *See*—
Carmon, Amiram; and Sonesh, Arie, 4,607,144, Cl. 179-99.00H.
Telectronics N.V.: *See*—
Frost, John G., 4,606,350, Cl. 128-419.0PG.
Teleflex Morse Limited: *See*—
Crack, David J., 4,606,237, Cl. 74-471.0XY.
Telefonaktiebolaget LM Ericsson: *See*—
Assow, Bengt H.; Jansson, Curt E.; and Rolleberg, Kjell O., 4,607,319, Cl. 363-20.000.
Tennessee Valley Authority: *See*—
Mair, Alexander D., 4,606,897, Cl. 423-167.000.
Terakura, Yukio: *See*—
Ikemoto, Kazuhito; Katayama, Nobuaki; Terakura, Yukio; and Sasaki, Kan, 4,606,238, Cl. 74-473.00R.
Terashima, Kiyomitsu: *See*—
Sugimoto, Masatoshi; Ichikawa, Masayoshi; Terashima, Kiyomitsu; Enyo, Hiroji; Iwanaga, Shinichiro; and Okuya, Eitaro, 4,606,952, Cl. 428-36.000.
Tesch, Helmut; Heym, Manfred; Doerflinger, Walter; Stutz, Herbert; Neumann, Peter; Nissen, Dietmar; and Schaefer, Gerhard, to BASF Aktiengesellschaft. Curable compositions based on epoxy resins. 4,607,069, Cl. 523-400.000.
Tessier, Jean; and Teche, Andre , to Roussel Uclaf. Cyclopropane thiocarboxylic esters and insecticidal and acaricidal use thereof. 4,607,026, Cl. 514-80.000.
Tetra Pak Developpement SA: *See*—
Rausing, Anders R.; and Nilsson, Erling I., 4,606,954, Cl. 428-36.000.
Tetra Pak International AB: *See*—
Andersson, Par, 4,606,786, Cl. 156-580.100.
Berg, Rune, 4,606,174, Cl. 53-451.000.
Glans, Jan-Erik; and Corneliusson, Henry, 4,606,784, Cl. 156-200.000.
Teuerstein, Avraham; Rumack, Michael; and Yanai, Shaul, to Bromine Compounds Ltd. Flame retardant polymer compositions. 4,606,852, Cl. 252-609.000.
Texaco Inc.: *See*—
Dominguez, Richard J. G., 4,607,090, Cl. 528-48.000.
Gray, Charles L., Jr.; Rundell, Herbert A.; and Williams, Thomas M., 4,606,415, Cl. 175-24.000.
Grazioso, Michael V.; and Storm, David A., 4,607,055, Cl. 518-713.000.
Grazioso, Michael V.; and Storm, David A., 4,607,056, Cl. 518-714.000.
Hart, William P.; and Mays, Donald L., 4,606,834, Cl. 252-51.50A.
Lewis, Paul H.; Dai, Eugene P.; and Holst, Edward H., 4,606,898, Cl. 423-244.000.
McEntire, Edward E.; Nieh, Edward C. Y.; Grigsby, Robert A., Jr.; and McCoy, David R., 4,606,837, Cl. 252-73.000.
Texas Instruments Incorporated: *See*—
Grant, John L.; Torti, Emanuel D.; O'Malley, Austin S.; Galligan, Thomas W.; and DelPrete, Stephen D., 4,606,599, Cl. 339-258.00R.
Kraus, Karl H., 4,606,114, Cl. 29-571.000.
Textron Inc.: *See*—
Saiia, Anthony J., 4,606,178, Cl. 56-249.000.
Theissen, Robert J., to Rhone-Poulenc Agrochimie. Substituted phenoxybenzoic acids and derivative thereof as herbicides. 4,606,758, Cl. 71-100.000.
Theofanous, Theos E. Automobile cylinder head removal tool. 4,606,107, Cl. 29-256.000.
Theon, Johan: *See*—
Kuhn, Ernst; Boer, Jelle D.; and Theon, Johan, 4,607,064, Cl. 521-174.000.
Thermo Electron Web Systems, Inc.: *See*—
Whipple, Rodger E., 4,606,137, Cl. 34-156.000.
Thery, Jeanine: *See*—
Kahn, Andree; Lejus, Anne-Marie; Thery, Jeanine; and Vivien, Daniel, 4,606,846, Cl. 252-301.40R.
Theurer, Josef; and Oellerer, Friedrich, to Franz Plasser Bahnbaumaschinen-Industriegesellschaft m.b.H. Railway carriage with set-off apparatus. 4,606,273, Cl. 104-1.00R.
Thibault, Gaetan; Garcia, Raul; Cantin, Marc; Seidah, Nabil; Lazure, Claude; and Chretien, Michel, to L'Institut de Recherches Cliniques de Montreal. Natriuretic. 4,607,023, Cl. 514-11.500.
Thiokol Corporation: *See*—
Poulin, Susan B.; and Salamone, Ann B., 4,606,999, Cl. 430-326.000.
Thirion, Pierre, to L'Air Liquide. Cyclic process for hydrogen peroxide production. 4,606,905, Cl. 423-588.000.
Thoma, Wilhelm; Pisaric, Karl H.; and Alberts, Heinrich, to Bayer Aktiengesellschaft. Leveller-containing high-solids polyurethane reactive coating systems and their use for reactive coating. 4,606,974, Cl. 428-447.000.
Thoman, Evelyn B. Method and apparatus for treating breathing irregularities. 4,606,328, Cl. 128-1.00C.
Thomas, Richard D., to C.R.S. Products Co. Inc. Childproof electrical wall outlet protective device. 4,607,136, Cl. 174-67.000.
Thomason, William H.; and Ivie, Randall G., to Conoco Inc. Method for nondestructive testing of coating adhesion. 4,606,225, Cl. 73-150.00A.
Thompson, Charles M., to Reed Tool Company. Cutting means for drag drill bits. 4,606,418, Cl. 175-329.000.
Thompson, David L.: *See*—
Hazen, Wayne C.; Coltrinari, Enzo L.; Litz, John E.; and Thompson, David L., 4,606,764, Cl. 75-101.00R.
Thompson, Kenneth C.: *See*—
Reylek, Robert S.; and Thompson, Kenneth C., 4,606,962, Cl. 428-148.000.
Thompson, Vern C., to Automated Quality Technologies, Inc. Precision air slide. 4,606,587, Cl. 384-12.000.
Thomson-CSF: *See*—
Bricot, Claude; Chaboche, Michel; Volleau, Patrick; Leterme, Dominique; and Le Merer, Jean-Pierre, 4,607,356, Cl. 369-44.000.
Chanforan, Henri; and Pelletier, Alain, 4,606,724, Cl. 434-20.000.
Ravinet, Pierre; Claudepierre, Christian; Guillou, Denis; and Micheron, Francois, 4,607,145, Cl. 179-110.00A.
Thorn EMI plc: *See*—
Billing, Alfred G.; and Burgess, Norman, 4,607,192, Cl. 313-579.000.
Thornber, Craig W.: *See*—
Pearce, Robert J.; and Thornber, Craig W., 4,607,040, Cl. 514-312.000.
Thorne, Parker. Fabricated round interior column and method of construction. 4,606,167, Cl. 52-727.000.
Thornton, Peter B.; Cone, Stanley H.; and Booz, George W., to Stern and Stern Textiles, Inc. Electrostatic dissipating fabric. 4,606,968, Cl. 428-229.000.
Three Bond Co., Ltd.: *See*—
McGinniss, Vincent D., 4,607,082, Cl. 525-286.000.
Thyssen Industrie AG: *See*—
Rammelsberg, Jurgen, 4,606,559, Cl. 285-39.000.
Tifa Limited: *See*—
Livingston, Arnold M., 4,606,721, Cl. 431-116.000.
Tighe, Harold F., Jr.: *See*—
Hambleton, Thomas P.; Tighe, Harold F., Jr.; and Michels, John J., 4,606,454, Cl. 206-150.000.
Timm, Gerald W., to Dacomed Corporation. Nocturnal penile tumescence and rigidity monitor and method. 4,606,353, Cl. 128-774.000.
Tinker, Alan C.: *See*—
Baxter, Andrew J. G.; Dixon, John; McInally, Thomas; and Tinker, Alan C., 4,607,041, Cl. 514-318.000.
Tkacsik, Mary C. L. Maternity coat and baby carrier. 4,606,078, Cl. 2-84.000.
Tobbe, William P.: *See*—
Kolenc, Terrence J.; Bork, Carl R., Jr.; Steiss, William C.; Shufflebarger, Earl D.; and Tobbe, William P., 4,606,374, Cl. 137-556.300.
Tobinaga, Motoi; Okumura, Shigeo; Handa, Kenichi; and Atsumi, Shinya, to Sanshin Kogyo Kabushiki Kaisha. Ignition control system for an internal combustion engine. 4,606,315, Cl. 123-417.000.
Tokai Kogyo Mishin Kabushiki Kaisha: *See*—
Tajima, Ikuo, 4,606,285, Cl. 112-98.000.
Tokunaga, Ichiro: *See*—
Matsunaga, Hiroshi; Shimojima, Yoji; Tokunaga, Ichiro; Obata, Kosei; and Yasuhara, Yukihiko, 4,606,223, Cl. 73-116.000.
Tokushima, Akira: *See*—
Takayama, Ryoichi; Tokushima, Akira; Ueshiba, Nozomu; and Ise, Yukihiko, 4,607,186, Cl. 310-324.000.

Tokyo Shibaura Denki Kabushiki Kaisha: *See—*
Mori, Yasuchika; and Shigemasa, Takashi, 4,607,326, Cl. 364-162.000.
Sai, Yukio, 4,607,162, Cl. 250-227.000.
Shikata, Hiroshi, 4,606,248, Cl. 82-1.00C.
Tolco Corporation: *See—*
Spengler, William E.; and Ramsey, William C., 4,606,477, Cl. 222-153.000.
Tooch, Charles A., to Davy McKee Equipment Corporation. Furnace controls. 4,606,529, Cl. 266-80.000.
Toray Industries Incorporated: *See—*
Fujikawa, Junichi; and Kashio, Shigetora, 4,606,993, Cl. 430-281.000.
Matsuura, Kazuo; Osedo, Hiroki; and Ohshima, Keisuke, 4,606,987, Cl. 430-59.000.
Torii, Hideo; Aoki, Masaki; Okinaka, Hideyuki; Yuhaku, Satoru; and Nakamura, Shoji, to Matsushita Electric Industrial Co., Ltd. Mold for direct press molding of optical glass element. 4,606,750, Cl. 65-374.130.
Torti, Emanuel D.: *See—*
Grant, John L.; Torti, Emanuel D.; O'Malley, Austin S.; Galligan, Thomas W.; and DelPrete, Stephen D., 4,606,599, Cl. 339-258.00R.
Toti, Gabriele; Marinoni, Franco; Amato, Pasquale; and Nenna, Claudio, to Alfa Romeo Auto S.p.A. Oscillation-damping device for a motor vehicle. 4,606,551, Cl. 280-772.000.
Townsend Engineering Company: *See—*
Townsend, Ray T., 4,606,093, Cl. 17-21.000.
Townsend, Herbert E.: *See—*
Hart, Robert G.; and Townsend, Herbert E., 4,606,800, Cl. 204-181.100.
Townsend, Ray T., to Townsend Engineering Company. Skinning blade for meat skinning machines. 4,606,093, Cl. 17-21.000.
Townsend, Robert B.: *See—*
Kieran, Peter J.; Townsend, Robert B.; Hackney, Ronald J.; Gayst, Stephen; and Maguire, Michael J., 4,607,050, Cl. 514-520.000.
Toyoda Gosei Co., Ltd.: *See—*
Miyazaki, Takeshi, 4,606,214, Cl. 72-318.000.
Sakane, Katsunobu, 4,606,240, Cl. 74-552.000.
Sugimoto, Masatoshi; Ichikawa, Masayoshi; Terashima, Kiyomitsu; Enyo, Hiroji; Iwanaga, Shinichiro; and Okuya, Eitaro, 4,606,952, Cl. 428-36.000.
Toyoda Koki Kabushiki Kaisha: *See—*
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Toyooka, Takashi: *See—*
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Hasegawa, Hiromi; Iwase, Yoshinobu; Taga, Yutaka; Minemoto, Isamu; and Sakai, Takahiro, 4,606,242, Cl. 74-606.00R.
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Toyota Jidosha Kogyo Kabushiki Kaisha: *See—*
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TriQuint Semiconductor, Inc.: *See—*
Rode, Ajit G., 4,606,113, Cl. 29-571.000.
Trivision, Jody A.: *See—*
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Trombettas, David T. Shutter-type window panel. 4,606,145, Cl. 49-57.000.
Trost, Charles J.: *See—*
Corbet, Ellen M., 4,606,950, Cl. 428-23.000.
Tsarenko, Pavel I.: *See—*
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Tsubai, Yasuo: *See—*
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Tsuchida, Tsuyoshi; and Kido, Yoshinobu, to Mazda Motor Corporation. Fuel injection control system for internal combustion engine. 4,606,318, Cl. 123-488.000.
Tsudakoma Kogyo Kabushiki Kaisha: *See—*
Suwa, Mitsuru; and Kuwabara, Shoichi, 4,606,381, Cl. 139-1.00R.
Tsukamoto, Goro: *See—*
Yoshino, Koichiro; Morita, Tominori; Moriyama, Masaru; Ito, Keizo; and Tsukamoto, Goro, 4,607,031, Cl. 514-211.000.
Tsunoda, Akira, to Asmo Co., Ltd. Wiper driving apparatus. 4,607,198, Cl. 318-443.000.
Tsuruta, Masao; Oishi, Kengo; and Suzuki, Osamu, to Fuji Photo Film Co., Ltd. Magnetic tape cassette with dual guard panel structure. 4,607,308, Cl. 360-132.000.
Tsushima, Takuya: *See—*
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Tucker, Herbert J.; and Tucker, Frederick A., to Tucker Industries, Inc. Table leaf slide support. 4,606,279, Cl. 108-78.000.
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Pash, James E.; Patton, James V.; Patton, Denise A.; and Murray, Don R., 4,606,726, Cl. 434-321.000.
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Tusco Manufacturing Co.: *See—*
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Tutin, Michael B.: *See—*
Task, Harry L.; Tutin, Michael B.; and Kama, William N., 4,606,127, Cl. 33-1.00G.
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Ueda, Masakazu: *See—*
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Ueno, Katsuji; Sugimoto, Hiroaki; and Hayatsu, Kazuo, to Sumitomo Chemical Company, Limited. Method for treating fibers. 4,606,930, Cl. 427-40.000.
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Ueshiba, Nozomu: *See—*
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Ukai, Toshinao; Sato, Tadahisa; Kawagishi, Toshio; and Takei, Haruo, to Fuji Photo Film Co., Ltd. Photographic element. 4,607,003, Cl. 430-519.000.
Ullmann, Roland; Beutel, Kurt; and Heintke, Hans-Eberhard, to Braun Aktiengesellschaft. Shaving head frame with up and down ramps. 4,606,122, Cl. 30-43.920.
Ulveling, Leon: *See—*
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Unger, Hans-Georg; and Jacob, Jorn, to Ant Nachrichtentechnik. Selectively dispersive optical waveguide films. 4,606,602, Cl. 350-96.120.
Union Carbide Corporation: *See—*
Acharya, Arun; Patterson, Michael F.; and Nowobilski, Jeffert J., 4,606,196, Cl. 62-45.000.
Nausedas, Joseph A., 4,606,379, Cl. 138-118.100.
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Jurgens, Erwin F., 4,606,288, Cl. 112-227.000.
Union Steel Corp. (of So. Africa) Ltd.: *See—*
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United Kingdom Atomic Energy Authority: *See—*
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Born, Peter J., 4,607,189, Cl. 313-477.00R.
United States Brass Corporation: *See—*
Hayman, Dennis J., 4,606,372, Cl. 137-315.000.
United States Gypsum Company: *See—*
Wendt, Alan C., 4,606,162, Cl. 52-282.000.
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Task, Harry L.; Tutin, Michael B.; and Kama, William N., 4,606,127, Cl. 33-1.00G.
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Bond, John W., 4,606,848, Cl. 252-511.000.
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Ritter, Joseph J.; Roth, Robert S.; and Negas, Taki, 4,606,906, Cl. 423-598.000.
Energy: *See—*
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Osbourn, Gordon C., 4,607,272, Cl. 357-30.000.
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U.S. Philips Corporation: *See—*
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Kuiper, Albert J., 4,606,729, Cl. 445-3.000.
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Nordholt, Ernst H.; and Nauta, Hendrikus C., 4,607,234, Cl. 330-278.000.
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Seevinck, Evert, 4,607,235, Cl. 330-298.000.
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Valkestijn, Leonardus A. A.; Nooijen, Fransiscus M. J.; and Bergmans, Christianus H. J., 4,607,195, Cl. 315-410.000.
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United Technologies Corporation: *See—*
Greene, Walter; and Liebke, William R., 4,606,190, Cl. 60-39.230.
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Uno, Hiroshi, to Fujitsu Limited. Write data compensating circuit in magnetic recorder. 4,607,295, Cl. 360-45.000.
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UOP Inc.: *See—*
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Urabe, Tetsuo, to Sony Corporation. Liquid crystal display device containing laser-absorbing dye. 4,606,613, Cl. 350-349.000.
Urata, Yukihide, to Fuji Photo Film Co., Ltd. Silver halide photographic emulsions. 4,607,005, Cl. 430-550.000.
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Usagawa, Mitsugu. Combination measuring apparatus. 4,606,475, Cl. 222-58.000.
Ushijima, Shohachi: *See—*
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USM Corporation: *See—*
Mehta, Pradip S.; Valsamis, Lefteris N.; and Tadmor, Zehev, 4,606,646, Cl. 366-75.000.
Utter, Robert E., to American Standard Inc. Internal compliant seal for compressor. 4,606,706, Cl. 417-313.000.
Uytterhoeven, Herman J.; Marien, August M.; and De Winter, Walter F., to Agfa-Gevaert N.V. Liquid developer for development of electrostatic images. 4,606,989, Cl. 430-106.000.
V.I.B.-Apparatebau GmbH: *See—*
Pflug, Dieter, 4,606,136, Cl. 34-125.000.
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Valkestijn, Leonardus A. A.; Nooijen, Fransiscus M. J.; and Bergmans, Christianus H. J., to U.S. Philips Corporation. Picture display device comprising a power supply circuit and a line deflection circuit. 4,607,195, Cl. 315-410.000.
Vallone, N. Peter: *See—*
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Valsamis, Lefteris N.: *See—*
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Van Brocklin, Owen F., to Risdon Corporation. Pump for dispensing liquid from a container. 4,606,479, Cl. 222-321.000.
Vance, Dennis W., to Vivid Systems Incorporated. Video projector lens angulation mechanism. 4,606,628, Cl. 353-101.000.
Van Deijk, Jan D. A., to Frans Swarttour B. V. Double link level luffing crane. 4,606,469, Cl. 212-256.000.
van de Pas, Andries J. M.: *See—*
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van de Polder, Leendert J., to U.S. Philips Corporation. Television circuit for the reduction of flicker on a display. 4,607,282, Cl. 358-140.000.
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Van De Weghe, Mary R., to Van De Weghe Associates, Inc. Cover assembly for closed bodily fluid drainage unit. 4,606,736, Cl. 604-322.000.
Van Dyke, Cecil G.; and Winder, Richard S., to North Carolina State University. Biological method of controlling johnson grass and similar weeds in agricultural crops. 4,606,751, Cl. 71-79.000.
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Van Tuijl, Adrianus J. M., to U.S. Philips Corporation. Push-pull amplifier circuit with stable class AB operation. 4,607,233, Cl. 330-267.000.
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Vary, Peter; Hofmann, Rudolf; and Hellwig, Karl, to U.S. Philips Corporation. Method of and circuit arrangement for establishing conference connections in a switching system. 4,607,362, Cl. 370-62.000.
Vasilow, Theodore R.; Busovne, Bernard J., Jr.; and Johnson, Gregory J., to General Motors Corporation. Resistive ceramic bushings for brake lining wear sensor. 4,606,434, Cl. 188-1.110.

Vegla Vereinigte Glaswerke GmbH: *See—*
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Verhaeghe, Michel: *See—*
Froment, Jean-Claude; Pantani, Jean-Pierre; and Verhaeghe, Michel, 4,607,139, Cl. 179-2.00C.
Vernitron Corporation: *See—*
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Vetter, Ulrich, to Schaudt Maschinenbau GmbH. Apparatus for monitoring the diameters and axial positions of workpieces in machine tools. 4,606,130, Cl. 33-178.00E.
Veverka, Joseph F.; and Williams, Jerold L. Opening mechanism for bottles having closure elements. 4,606,245, Cl. 81-3.360.
Victor Company of Japan, Ltd.: *See—*
Hirota, Akira; Hirano, Shinji; Kitamura, Hiroyuki; and Tsushima, Takuya, 4,607,285, Cl. 358-167.000.
Takanashi, Itsuo; Nakagaki, Shintaro; Miyazaki, Kenichi; and Kuriyama, Takashi, 4,607,279, Cl. 358-44.000.
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Vignaud, Rene , to Societe les Piles Wonder. Process for stabilizing primary electrochemical generators with reactive anodes made from zinc, aluminium or magnesium and an anode for such a generator stabilized by this process. 4,606,984, Cl. 429-212.000.
Villanyi, Sigmund T., to RCA Corporation. Structure for and method of aligning beam-defining apertures by means of alignment apertures. 4,607,187, Cl. 313-414.000.
Virag, Robert: *See—*
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Vogt, Herbert; Egerbacher, Werner; Wunderlich, Dieter; and Mitzkus, Werner, to Siemens Aktiengesellschaft. Semiconductor element with disk-shaped housing. 4,607,275, Cl. 357-79.000.
Volkert, Wynn A.: *See—*
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Vondra, Lubomir, to Abex Corporation. Self-pumping pump shaft seal. 4,606,712, Cl. 418-88.000.
Vreeland, Stewart W., to United States of America, Navy. Battery charger. 4,607,208, Cl. 320-21.000.
Vsesojuzny Nauchno-Issledovatelsky Institut Textilno-Galantereinoi Promyshlennosti: *See—*
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Brudny-Chelyadinov, Sergei J.; Budyansky, Vigdor S.; Sorokoumov, Viktor K.; and Filimonov, Viktor A., 4,606,700, Cl. 415-199.500.
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Spencer, Nicholas D., 4,607,127, Cl. 568-482.000.
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Wada, Hifumi; and Nishimura, Shinji, to Mitsubishi Denki Kabushiki Kaisha. Malfunction indicating method for vehicle-mounted DC generator. 4,607,246, Cl. 340-52.00F.
Wada, Takeshi; Kishi, Hiroshi; Murai, Shunji; and Fukui, Masami, to Taiyo Yuden Co., Ltd. Low temperature sintered ceramic capacitor with high DC breakdown voltage, and method of manufacture. 4,607,314, Cl. 361-321.000.
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Wagner, Alfred; Ames, Adolf; and Hodel, Ulf, to Swiss Aluminum Ltd. Extrusion press for manufacturing extruded sections from metal billets. 4,606,210, Cl. 72-261.000.
Wajima, Motoyo: *See—*
Sugawara, Katuo; Takahashi, Akio; Ono, Masahiro; Tada, Ritsuro; Wajima, Motoyo; Narahara, Toshikazu; and Nagai, Akira, 4,607,094, Cl. 528-323.000.
Wakamiya, Koichi, to Nippon Kogaku K.K. Behind stop lens. 4,606,615, Cl. 350-476.000.
Wakasugi, Keizo; Fujita, Yuji; and Kaneko, Ryoichi, to Kohjin Co., Ltd. Water-resisting and oil-resisting laminated sheet. 4,606,951, Cl. 428-35.000.
Waldenrath, Werner: *See—*
Schreckenberg, Manfred; Dhein, Rolf; Lange, Ralf; and Waldenrath, Werner, 4,607,070, Cl. 524-100.000.
Walker, Carl R. Universal profiling machine. 4,606,386, Cl. 144-134.00B.
Walker, Loren H.: *See—*
Sember, James W.; Walker, Loren H.; and Weiss, Herbert W., 4,607,206, Cl. 318-798.000.
Wallach, Harvey N.: *See—*
Conta, Robert L.; and Wallach, Harvey N., 4,606,343, Cl. 128-305.000.
Walter, Hans-Peter. Pharmaceutical composition suitable for treatment of inflammatory changes of the bronchial mucosa. 4,606,920, Cl. 424-154.000.
Walter, Hartmut: *See—*
Maier, Peter; Attinger, Karl; Sigel, Albert; Hansel, Gernot; Kutscher, Erwin; and Walter, Hartmut, 4,606,685, Cl. 409-137.000.
Walters, John P., to Phillips Petroleum Company. Apparatus and method for simulating diagenesis. 4,606,227, Cl. 73-432.0SD.
Walther, Hans-Joachim, to Dragerwerk AG. Control valve for a breathing mask. 4,606,339, Cl. 128-204.190.
Walthers, Russell E.: *See—*
Rieber, John C.; Sheaffer, Jeffrey D.; and Walthers, Russell E., 4,607,183, Cl. 310-214.000.
Walton, Erick G.: *See—*
Clodgo, Donna J.; Previti-Kelly, Rosemary A.; and Walton, Erick G., 4,606,998, Cl. 430-312.000.
Walton, Lawrence J.: *See—*
Bloor, Trevor J.; and Walton, Lawrence J., 4,606,327, Cl. 126-417.000.
Wang, Kuo L. Physical exercise device. 4,606,538, Cl. 272-72.000.
Wangsness, Peter A. A.: *See—*
Angel, James R. P.; and Wangsness, Peter A. A., 4,606,960, Cl. 428-116.000.
Ward, Carl E., to Chevron Research Company. Herbicidal 2-(nitrogen heterocycle)5-amino-3-oxo-4-(substituted-phenyl)-2,3-dihydrofurans. 4,606,756, Cl. 71-94.000.
Ward, Kenneth: *See—*
Rai, Stanley F.; and Ward, Kenneth, 4,606,943, Cl. 427-244.000.
Warner-Lambert Company: *See—*
Bristol, James A.; and Sircar, Ila, 4,607,037, Cl. 514-278.000.
Butler, Donald E., 4,607,043, Cl. 514-339.000.
Warner, Noel L.: *See—*
Lanier, Lewis; and Warner, Noel L., 4,607,007, Cl. 435-7.000.
Warren, David P., to Eastman Kodak Company. Thiophenyl thioacrylate and thiomethacrylate monomers. 4,606,864, Cl. 558-257.000.
Warren, Perry A., to Kaper II, Inc. Decorative wheel covering. 4,606,582, Cl. 301-37.00S.
Warrick, Julian E.: *See—*
Srivastava, Gopal K.; and Warrick, Julian E., 4,607,283, Cl. 358-148.000.
Wartsila-Appleton, Incorporated: *See—*
Agronin, Ronald D.; and Klemmer, Paul J., 4,606,264, Cl. 100-38.000.
Washington Research Foundation: *See—*
Basingthwaighte, James B.; Little, Stephen E.; and Krohn, Kenneth A., 4,606,908, Cl. 424-1.100.
Watanabe, Hiroshi: *See—*
Izumi, Eiki; Watanabe, Hiroshi; Aoyagi, Yukio; Honma, Kazuo; and Nakajima, Kichio, 4,606,313, Cl. 123-386.000.
Watanabe, Hiroyuki: *See—*
Hamada, Eiichi; and Watanabe, Hiroyuki, 4,606,149, Cl. 49-502.000.
Watanabe, Masami, to Kashima Oil Company. Method for spinning carbon fibers. 4,606,872, Cl. 264-29.200.
Watanabe, Mitsuo: *See—*
Morita, Kaname; Arikawa, Shigeo; Watanabe, Mitsuo; Iizuka, Kinji; and Akahane, Kenji, 4,607,046, Cl. 514-399.000.
Watanabe, Tomoyuki, to Toyota Jidosha Kabushiki Kaisha. Apparatus for controlling a magnetic particle clutch for use in a vehicle. 4,606,446, Cl. 192-0.076.

Watanabe, Tsugio: *See*—
Kuroda, Yutaka; Yoshida, Yoshio; Kabayama, Yuichi; Watanabe, Tsugio; Hakata, Tetsuro; and Matsumoto, Takahiro, 4,607,245, Cl. 336-57.000.

Watari, Kazushi: *See*—
Nao, Manabu; Shimojo, Shinichi; and Watari, Kazushi, 4,607,155, Cl. 235-379.000.

Water Quality Sciences, Inc.: *See*—
Seiden, Louis W.; Stone, Dennis R.; and Neimiller, Kenneth G., 4,607,342, Cl. 364-558.000.

Watson, Byron L.: *See*—
Buchanan, Harry C., Jr.; Fannin, Wayne V.; and Watson, Byron L., 4,606,440, Cl. 188-319.000.

Weaver, Allen J. Tool indexing device. 4,606,686, Cl. 409-221.000.

Webb, Derrel D.; and Anderson, Edwin A. Pressure equalized stabilizer apparatus for drill string. 4,606,417, Cl. 175-76.000.

Webb, Gary E.: *See*—
Kummer, David A.; and Webb, Gary E., 4,607,347, Cl. 364-900.000.

Weber, Georg: *See*—
Romer, Michael; Eidenschink, Rudolf; Krause, Joachim; Scheuble, Bernhard; and Weber, Georg, 4,606,845, Cl. 252-299.630.

Weber, Robert E.: *See*—
Ang, Leoncio T.; and Weber, Robert E., 4,607,153, Cl. 219-497.000.

Wedeen, Robert S., to Highland Orthopedic Center. Cerclage wire passer. 4,606,335, Cl. 128-92.00E.

Weidenhaupt, Wolfgang; Wepner, Gunther; and Dismon, Peter, to Akzo NV. Reinforcing cord for elastomeric product. 4,606,392, Cl. 152-451.000.

Weigel, Henri, to Hew & Milan Development S.A. Cutting link for a chain cutter. 4,606,253, Cl. 83-830.000.

Weimer, Paul K., to RCA Corporation. Removal of line selection artifacts from trace portions of line transfer CCD imager video output signals. 4,607,286, Cl. 358-213.000.

Weintraub, Leonard: *See*—
Rosenberg, Allan H.; and Weintraub, Leonard, 4,606,915, Cl. 424-68.000.

Weir, Donald R., to Sherritt Gordon Mines Limited. Process for the pressure oxidation acid leaching of non-ferrous metal and iron-containing sulphidic material. 4,606,763, Cl. 75-101.00R.

Weir, Donald R.: *See*—
Genik-Sas-Berezowsky, Roman M.; and Weir, Donald R., 4,606,766, Cl. 75-118.00R.

Weislogel, Horst D.; and Oelte, Burkhard, to Carl Ruckle Maschinenbau GmbH. Machine and method for trimming a stack of veneers. 4,606,387, Cl. 144-356.000.

Weiss, Albert, to Westinghouse Electric Corp. Element immersed in coolant of nuclear reactor. 4,606,109, Cl. 29-421.00R.

Weiss, Albert: *See*—
Winter, Sybil B. A.; and Weiss, Albert, 4,606,484, Cl. 224-218.000.

Weiss, Herbert W.: *See*—
Sember, James W.; Walker, Loren H.; and Weiss, Herbert W., 4,607,206, Cl. 318-798.000.

Weisskopf, Hans: *See*—
Wizemann, Kurt; Weisskopf, Hans; and Peppler, Peter, 4,606,883, Cl. 419-8.000.

Welch, Bruce M., to Phillips Petroleum Company. Olefin conversion catalyst. 4,607,022, Cl. 502-242.000.

Wellcome Australia Limited: *See*—
Kieran, Peter J.; Townsend, Robert B.; Hackney, Ronald J.; Gayst, Stephen; and Maguire, Michael J., 4,607,050, Cl. 514-520.000.

Wellinga, Kobus; and Mulder, Rudolf, to Duphar International Research B.V. Insecticidal use of ureas and thioureas. 4,607,044, Cl. 514-383.000.

Wells, Marvin E. Scale formation preventor and/or remover. 4,606,828, Cl. 210-696.000.

Welzhofer, Klaus, to Siemens Aktiengesellschaft. Adaptor circuit for adapting a test facility to a unit under test having a fast signal response. 4,607,214, Cl. 324-73.0AT.

Wendt, Alan C., to United States Gypsum Company. Adjustable glazed partition system. 4,606,162, Cl. 52-282.000.

Wepner, Gunther: *See*—
Weidenhaupt, Wolfgang; Wepner, Gunther; and Dismon, Peter, 4,606,392, Cl. 152-451.000.

Wesenberg, Walter: *See*—
Janssen, Bernd; Kohlmann, Friedrich-Wilhelm; Wesenberg, Walter; and Heberle, Wolfgang, 4,607,045, Cl. 514-383.000.

Wessel, Gerhard; and Ebner, Heinz, to International Standard Electric Corporation. Electrothermal page printer. 4,606,267, Cl. 101-93.040.

West Coast Hair Products, Inc.: *See*—
Palumbo, Albert J.; and Kuo Chao, Chen, 4,606,359, Cl. 132-53.000.

Westendorf Mfg. Co., Inc.: *See*—
Langenfeld, Joseph W.; and Westendorf, Neal W., 4,606,692, Cl. 414-686.000.

Westendorf, Neal W.: *See*—
Langenfeld, Joseph W.; and Westendorf, Neal W., 4,606,692, Cl. 414-686.000.

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Bucker, Heinrich, 4,606,297, Cl. 119-14.050.

Westinghouse Electric Corp.: *See*—
Bishop, Martin T., 4,607,309, Cl. 361-62.000.
McClay, Augustine C.; Allen, James M.; and North, William E., 4,606,701, Cl. 416-92.000.
Penkrot, John A., 4,606,880, Cl. 376-173.000.
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Zeise, Clarence L., 4,606,785, Cl. 156-305.000.

Wetzinger, Johann: *See*—
Krosbacher, Peter; and Wetzinger, Johann, 4,606,250, Cl. 83-161.000.

Weyerhaeuser Company: *See*—
Matthews, Peter C.; and Soest, Jon F., 4,606,645, Cl. 356-446.000.

Wezel GmbH & Co. KG: *See*—
Schmalz, Gerhardt, 4,606,254, Cl. 83-871.000.

Whipple, Rodger E., to Thermo Electron Web Systems, Inc. Web dryer with control of air infiltration. 4,606,137, Cl. 34-156.000.

White, John F.: *See*—
Shum, Wilfred P.; White, John F.; and Beals, Eva M., 4,607,122, Cl. 562-599.000.

Whiting, David E.; and Schell, Mark S., to Du Pont de Nemours, E. I., and Company. Stress relief apparatus for electrical connectors. 4,606,596, Cl. 339-107.000.

Whitmore, Raymond A., to General Signal Corporation. Diaphragm for transducer measuring low pressure differentials. 4,606,228, Cl. 73-718.000.

Wickman, Miles X., to Digitel, Inc. Data communication interconnect device. 4,607,170, Cl. 307-147.000.

Wideman, Ronald H., to Kimberly-Clark Corporation. Bulked web composite and method of making the same. 4,606,964, Cl. 428-152.000.

Wiest, Sylvain: *See*—
Platel, Guy; Secondo, Pierre; and Wiest, Sylvain, 4,607,363, Cl. 370-94.000.

Wiholm, Sture H., to Bind-O-Matic AB. Method and apparatus for producing book covers, folders, booklets and the like. 4,606,689, Cl. 412-3.000.

Wikmar, Kjell M., to Kabeldon Aktiebolag. Cable termination with interfitting insulating caps enclosing gas-filled spaces. 4,607,134, Cl. 174-19.000.

Wild Heerbrugg AG: *See*—
Stoseel, Hans R., 4,607,218, Cl. 324-83.00D.

Wilder, Joseph R.; and Reick, Franklin G. Medical tubing holder. 4,606,735, Cl. 604-180.000.

Wildey, Allan J., to AMCA International Limited. Pressure-assisted centrifugal grinding. 4,606,504, Cl. 241-28.000.

Wiles, Robert; and Lane, Roger, to Milk Marketing Board. Process for preparing butter-like spread. 4,606,926, Cl. 426-603.000.

Wilkinson, James H.: *See*—
Ive, John G. S.; and Wilkinson, James H., 4,607,367, Cl. 371-37.000.

Williams Electronics, Inc.: *See*—
Ritchie, Steven S., 4,606,545, Cl. 273-121.00A.

Williams, Frank: *See*—
Grant, Owen G.; and Williams, Frank, 4,606,498, Cl. 238-8.000.

Williams, Gary R. Cylinder holder. 4,606,521, Cl. 248-214.000.

Williams, Ian G., to Imperial Chemical Industries PLC. Fire retardant polyamide compositions. 4,606,853, Cl. 252-609.000.

Williams, Jerold L.: *See*—
Veverka, Joseph F.; and Williams, Jerold L., 4,606,245, Cl. 81-3.360.

Williams, Stephen L.: *See*—
Nixon, Bryan E.; Stoila, George M.; and Williams, Stephen L., 4,606,714, Cl. 425-28.00R.

Williams, Theodore F.: *See*—
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Williams, Thomas M.: *See*—
Gray, Charles L., Jr.; Rundell, Herbert A.; and Williams, Thomas M., 4,606,415, Cl. 175-24.000.

Williams, Thomas M., Jr. Automatic trailer hitch. 4,606,549, Cl. 280-478.00B.

Williamson, Calvin C., to Kaiser Steel Corporation. Pipe forming apparatus. 4,606,208, Cl. 72-133.000.

Williamson, Gunnar. Tree limb removing apparatus. 4,606,385, Cl. 144-2.00Z.

Willis, Alvin D. Slate box turkey call. 4,606,733, Cl. 446-397.000.

Willison, George R. Aircraft protective device. 4,606,516, Cl. 244-121.000.

Wilson, David A.: *See*—
Simon, Jaime; Volkert, Wynn A.; and Wilson, David A., 4,606,907, Cl. 424-1.100.

Wilson, David P.: *See*—
Basu, Rajat S.; Lund, Earl A. E.; Pham, Hang T.; and Wilson, David P., 4,606,841, Cl. 252-171.000.

Winder, Richard S.: *See*—
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Windmoller & Holscher: *See*—
Achelpohl, Fritz, 4,606,537, Cl. 271-196.000.

Winkler, Richard C. Hyperbaric container. 4,606,195, Cl. 62-45.000.

Winter, Gerhard: *See*—
Rossler, Manfred; Winter, Gerhard; and Stiltz, Hermann, 4,606,937, Cl. 427-121.000.

Winter, Sybil B. A.; and Weiss, Albert, to Winter, Sybil B. A. Tool holding appliance for persons with limited use of hands. 4,606,484, Cl. 224-218.000.

Wirtz Manufacturing Company, Inc.: *See*—
Yanik, David, 4,606,383, Cl. 141-32.000.

Wistar Institute, The: *See*—
Steplewski, Zenon; Koprowski, Hilary; and Herlyn, Meenhard, 4,607,009, Cl. 435-7.000.

Wittmer, Dale E.: *See*—
Wolfe, Robert W.; and Wittmer, Dale E., 4,607,017, Cl. 501-98.000.

Wizemann, Kurt; Weisskopf, Hans; and Peppler, Peter, to J. Wizemann GmbH & Co. Method of manufacturing a metallic composite article. 4,606,883, Cl. 419-8.000.

Wnek, Patrick H.: *See—*
Marx, Ronald P.; Wnek, Patrick H.; and Grans, Denny R., 4,606,496, Cl. 229-2.50R.

Wolanski, Richard B.: *See—*
Fritz, Leonard; Osterberg, Richard R.; Wolanski, Richard B.; and Arvay, Joseph E., 4,606,760, Cl. 75-10.190.

Wolfe, Robert W.; and Wittmer, Dale E., to GTE Products Corporation. Silicon nitride based cutting tool. 4,607,017, Cl. 501-98.000.

Wood, David E., to R. H. Burton Company. Refractor having simplified cylinder lens assembly. 4,606,624, Cl. 351-234.000.

Wood, Edward T., to Completion Tool Company. Inflatable packer compatible with CBL. 4,606,406, Cl. 166-187.000.

Wood, Sherman L.; and Crissy, Charles F., to Aeroquip Corporation. Chain tensioner. 4,606,096, Cl. 24-68.0CT.

Woodford Manufacturing Company: *See—*
Beard, Robert J., 4,606,090, Cl. 14-72.500.

Woodhead, James L., to United Kingdom Atomic Energy Authority. Process for the preparation of a dispersable product containing a cerium compound in association with a selected metal. 4,606,847, Cl. 252-363.500.

Wool Research Organisation of New Zealand (Inc.): *See—*
Lappage, James; and Bedford, James, 4,606,181, Cl. 57-58.380.

Wooten, Carol J., legal representative: *See—*
Wooten, Richard; Wooten, Larry, deceased; and Wooten, Carol J., legal representative, 4,607,253, Cl. 340-546.000.

Wooten, Larry, deceased: *See—*
Wooten, Richard; Wooten, Larry, deceased; and Wooten, Carol J., legal representative, 4,607,253, Cl. 340-546.000.

Wooten, Richard; Wooten, Larry, deceased; and by Wooten, Carol J., legal representative. Door guard with alarm device. 4,607,253, Cl. 340-546.000.

Worfel, Erhard: *See—*
Landler, Josef; Hunger, Klaus; and Worfel, Erhard, 4,607,096, Cl. 534-575.000.

Wraven Products Inc.: *See—*
Wrench, Robert A., 4,606,123, Cl. 30-153.000.

Wrench, Robert A., to Wraven Products Inc. Cutlery apparatus with interchangeable cutting tool. 4,606,123, Cl. 30-153.000.

Wunderlich, Dieter: *See—*
Vogt, Herbert; Egerbacher, Werner; Wunderlich, Dieter; and Mitzkus, Werner, 4,607,275, Cl. 357-79.000.

Wurster, Walter: *See—*
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Wyckoff, Robert L. Automated solar still. 4,606,794, Cl. 202-173.000.

Wydler, Robert: *See—*
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Wyrwich, Helmut; Graschew, Georgi; Chatzipetros, Johann; and Feinendegen, Ludwig E., to KFA - Kernforschungsanlage Julich GmbH. Caliper for measuring deformable objects. 4,606,128, Cl. 33-143.00C.

Wysocki, Joseph A., to Hughes Aircraft Company. Process and apparatus for preparing glass fibers coated with amorphous metallic alloy, and fibers coated thereby. 4,606,608, Cl. 350-96.330.

Xerox Corporation: *See—*
Kazmaier, Peter M.; Baranyi, Giuseppa; Hsiao, Cheng-Kuo; and Burt, Richard A., 4,607,124, Cl. 564-307.000.
Lee, Lieng-Huang; Nichol-Landry, Deborah J.; and Tarnawskyj, Christine J., 4,606,934, Cl. 427-76.000.
Millar, Ronald A.; and Abate, Charles B., 4,607,157, Cl. 250-201.000.
Ong, Beng S.; and Keoshkerian, Barkev, 4,606,861, Cl. 260-351.000.
Starkweather, Gary K., 4,606,601, Cl. 350-6.400.
Yanus, John F.; and Limburg, William W., 4,606,986, Cl. 430-59.000.

Xomed, Inc.: *See—*
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Yagi, Naoki: *See—*
Kano, Mitsuru; Kato, Yoshinori; Kamijo, Yoshimi; Takeda, Yoshio; Sakikubo, Yoshinari; and Yagi, Naoki, 4,607,097, Cl. 534-577.000.

Yagihara, Morio: *See—*
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Yajima, Motoyuki: *See—*
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Yamada, Takeo; and Takasaka, Kousaku, to Nippon Kokan Kabushiki Kaisha. Apparatus for measuring film thickness. 4,606,641, Cl. 356-369.000.

Yamada, Yasuhiro; Imamura, Takeshi; Shibata, Masao; Arita, Seiji; and Honda, Hidemasa, to Director-General of the Agency of Industrial Science & Technology. Method for the preparation of pitches for spinning carbon fibers. 4,606,808, Cl. 208-44.000.

Yamagata, Shimbu: *See—*
Yokoyama, Tetsuo; Morishita, Koichi; Sano, Koichi; Yamagata, Shimbu; and Ogushi, Akira, 4,607,222, Cl. 324-309.000.

Yamaguchi, Takahiro; Ogawa, Masayuki; and Kasahara, Toshiharu, to Takeda Riken Kogyo Kubushikikaisha. Apparatus for measurement by digital spectrum analyzer. 4,607,216, Cl. 324-77.00B.

Yamaha Hatsudoki Kabushiki Kaisha: *See—*
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Yamamoto, Etushi: *See—*
Takahashi, Kazuyuki; Oe, Yasuhiro; and Yamamoto, Etushi, 4,607,184, Cl. 310-247.000.

Yamamoto, Haruyasu; and Okabe, Takayuki, to Sumitomo Chemical Company, Limited. Trithiophosphoric acid ester as a soil pesticide. 4,607,027, Cl. 514-144.000.

Yamamoto, Katsuhiko: *See—*
Mori, Keiichi; Yamamoto, Katsuhiko; Imajima, Mitsuhiro; and Uchida, Kuniaki, 4,606,719, Cl. 431-63.000.

Yamamoto, Kenji: *See—*
Furukawa, Shunsuke; and Yamamoto, Kenji, 4,607,328, Cl. 364-200.000.

Yamamoto, Yujiro: *See—*
Ogata, Kazumi; Yamamoto, Yujiro; and Ozaki, Yoshie, 4,607,038, Cl. 514-291.000.

Yamamura, Yuichi: *See—*
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Yamamuro, Tetsu, to Ricoh Company, Ltd. Optical ink jet head for ink jet printer. 4,607,267, Cl. 346-140.00R.

Yamana, Tohru, to Murakami Kaimeido Co., Ltd. Rear-view mirror for vehicles. 4,606,619, Cl. 350-604.000.

Yamashita, Sachio, to Sanyo Electric Co., Ltd. Apparatus for reproducing magnetically recorded video signal. 4,607,298, Cl. 360-73.000.

Yamauchi, Takashi: *See—*
Iizuka, Akira; Konai, Yutaka; Yamauchi, Takashi; and Hayashi, Shoichiro, 4,607,117, Cl. 560-56.000.

Yamazaki, Toshiyuki, to Sanshin Kogyo Kabushiki Kaisha. Ignition angle advancer for internal combustion engine. 4,606,314, Cl. 123-413.000.

Yamazaki, Yasuo; Suzuki, Takehiko; and Uchiyama, Masaharu, to Nippon Petrochemicals Company Limited. Process for preparing diaryls. 4,607,116, Cl. 560-21.000.

Yanagisawa, Takashi, to Honda Giken Kogyo Kabushiki Kaisha. Welding apparatus for a motorcar body. 4,606,488, Cl. 228-45.000.

Yanai, Shaul: *See—*
Teuerstein, Avraham; Rumack, Michael; and Yanai, Shaul, 4,606,852, Cl. 252-609.000.

Yanik, David, to Wirtz Manufacturing Company, Inc. Battery grid pasting machine. 4,606,383, Cl. 141-32.000.

Yaniv, Zvi; Cannella, Vincent D.; Yu, Terry T.; and Fulton, Christopher, to Energy Conversion Devices, Inc. Imaging system using tellurium-based energy sensitive sheet and variable image displaying means. 4,606,610, Cl. 350-331.00R.

Yanus, John F.; and Limburg, William W., to Xerox Corporation. Electrophotographic elements containing unsymmetrical squaraines. 4,606,986, Cl. 430-59.000.

Yariv, Amnon: *See—*
Mukai, Seiji; Kapon, Eli; Katz, Joseph; Margalit, Shlomo; and Yariv, Amnon, 4,607,370, Cl. 372-50.000.

Yarwood, John C.; Ungarean, Gary L.; and Tyler, Derek E., to Olin Corporation. Apparatus and process for electro-magnetically forming a material into a desired thin strip shape. 4,606,397, Cl. 164-467.000.

Yashiki, Yuichi: *See—*
Yoshihara, Toshiyuki; Yashiki, Yuichi; Horii, Motomu; and Ohtaka, Mutsuo, 4,606,949, Cl. 427-430.100.

Yasuda, Hiroshi: *See—*
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Yasuhara, Yukihiko: *See—*
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Yasui, Takashi, to Tachikawa Spring Co., Ltd. Head-rest. 4,606,578, Cl. 297-408.000.

Yasukawa, Akira: *See—*
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Yasukawa, Kuniake: *See—*
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LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 19TH DAY OF AUGUST, 1986

NOTE —Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Dutcher, Robert G., to Medtronic, Inc. "J" Stylet wire. Re. 32,227, Cl. 128-785.000.

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Stork Screens B.V.: *See*—
van der Velden, Hendricus J., Re. 32,228, Cl. 156-215.000.

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LIST OF REEXAMINATION PATENTEES

TO WHOM

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Grossman, James M.; and January, Daniel B., to Hunter Engineering Company. Apparatus and method for guiding vehicle wheel alignment adjustments to known alignment requirements. B1 4,381,548, 8-19-86, Cl. 364-551.000.

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Metz, Ulrich; and Michaud, Horst, to SKW Trostberg Aktiengesellschaft. Hyperacidic solid metal lactates and process for producing same. B1 4,282,385, 8-19-86, Cl. 562-589.000.

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Abellira, David. Paint roller cover or similar article. 285,146, 8-19-86, Cl. D4-122.000.

Adams, F. Lemarr. Toss toy. 285,230, 8-19-86, Cl. D21-204.000.

Allen, Travis. Portable sun shield. 285,155, 8-19-86, Cl. D6-500.000.

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Molinari, Pierluigi, 285,151, Cl. D6-381.000.

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Piziks, Indulis; Shepard, Melvin E.; Elson, Ronald D.; and Wentworth, Wilbur W., II, 285,187, Cl. D12-131.000.

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Smernoff, Ronald B., 285,217, Cl. D19-90.000.

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Morris, David S.; Clark, Donald L.; and Waltz, William C., II, 285,207, Cl. D15-132.000.

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Owen, Stanley, 285,233, Cl. D21-234.000.
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Greenblatt, Gordon M. Blood infusion box. 285,249, 8-19-86, Cl. D24-21.000.
Hamasaki, Yoshihiro, to Toyota Jidosha Kabushiki Kaisha. Clearance lamp for an automobile. 285,258, 8-19-86, Cl. D26-28.000.
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Hubbard, Charles E.; and Berkemeier, Donald E., to LOF Plastics Inc. Underground conduit. 285,192, 8-19-86, Cl. D13-13.000.
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Kester, Melvin E., to Cannon Mills Company. Hanger for towels or similar articles. 285,148, 8-19-86, Cl. D6-317.000.
Kim, Syng N., to Wico Corporation. Keyboard including trackball. 285,201, 8-19-86, Cl. D14-100.000.
Kingsley, Eleanor V. Literature and information display rack. 285,154, 8-19-86, Cl. D6-476.000.
Kirk, Alexis V., to Somersett Moon Ltd. Belt buckle. 285,143, 8-19-86, Cl. D2-422.000.
Kiyohara, Takehiko: *See*—
Nibley, Richard; and Kiyohara, Takehiko, 285,211, Cl. D18-12.000.
Knight, Michael; and Moore, Ronald G., to Massey-Ferguson-Perkins Limited. Clamp for an internal combustion engine fuel injector. 285,170, 8-19-86, Cl. D8-394.000.
Koala Technologies Corporation: *See*—
Milroy, James C.; Burnett, William R.; and Howell, Thomas A., 285,203, Cl. D14-114.000.
Kodousek, George E.; and Greco, Lawrence S., to North American Philips Corporation. Blister package for a reel. 285,176, 8-19-86, Cl. D9-419.000.
Konishiroku Photo Ind. Co., Ltd.: *See*—
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Kool Pak, Inc.: *See*—
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Krautz, Alfons O. Smokestack. 285,257, 8-19-86, Cl. D25-35.000.
Kusako, Mikio; and Nishibori, Hiroshi, to Sharp Corporation. Electronic copying machine. 285,209, 8-19-86, Cl. D16-31.000.
LeCocq, Melvin D., Jr. Rack for a baseball, bat, glove and hat. 285,147, 8-19-86, Cl. D6-316.000.

Lee, Hugh M. Tab for laser disk cassettes. 285,212, 8-19-86, Cl. D19-32.000.
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Lester, William V., Jr. Award medal. 285,183, 8-19-86, Cl. D11-99.000.
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Lumley, Mae J. Toy rabbit figure. 285,229, 8-19-86, Cl. D21-187.000.
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Matity, William S. Step stool. 285,149, 8-19-86, Cl. D6-350.000.
Mayo, Steve I., to Artistic Desk Pad & Novelty Co., Inc. Set of stacked trays. 285,218, 8-19-86, Cl. D19-92.000.
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McGarvey, John N.: *See—*
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Molinari, Pierluigi, to Ambiente International S.R.L. Seating unit. 285,151, 8-19-86, Cl. D6-381.000.
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Morioka, Minoru; and Saitoh, Hisato, to Honda Giken Kogyo Kabushiki Kaisha. Motorcycle. 285,185, 8-19-86, Cl. D12-110.000.
Morris, David S.; Clark, Donald L.; and Waltz, William C., II, to Aspen Manufacturing Co. Drill press pivot mount. 285,207, 8-19-86, Cl. D15-132.000.
Nakamura, Toshinobu, to Shinagawa Shoko Co., Ltd. Nipping tool for plate-like members or the like. 285,165, 8-19-86, Cl. D8-52.000.
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Nakayama, Yasuhiko, to Chinon Kabushiki Kaisha. 35 mm Camera. 285,208, 8-19-86, Cl. D16-6.000.
Nesci, Frank P., to E.T.M. Corporation. Wire bending accessory for cutter. 285,163, 8-19-86, Cl. D8-32.000.
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Porat, Amir; and Porat, Michael. Scissors. 285,167, 8-19-86, Cl. D8-57.000.
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Recht, Joseph. Dual angle rearview mirror. 285,188, 8-19-86, Cl. D12-187.000.
Reece, Marion E., to Thomas - Reece, Inc. Detachable hand pump. 285,241, 8-19-86, Cl. D23-15.000.
Resan, Stevan A., to Carlisle Corporation. Screwable cap for a non-penetrating fastener assembly. 285,169, 8-19-86, Cl. D8-382.000.
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Robards, Chester F., Jr.: *See—*
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Roskvist, Carl-Eric, to ABA System AG. Combined card tray and cover. 285,214, 8-19-86, Cl. D19-76.000.
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Rubel, Kenneth L. Cigarette lighter receptacle body. 285,195, 8-19-86, Cl. D13-24.000.
Russell, Leslie W., to Western Filament, Inc. Clamp sleeve. 285,171, 8-19-86, Cl. D8-396.000.
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Sawyer, Richard G.: *See—*
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Selfix, Inc.: *See—*
Chap, John P., 285,156, Cl. D6-566.000.
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Shepard, Dennis D. Intraocular lens with spiral resilient support means. 285,255, 8-19-86, Cl. D24-33.000.
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Sinyard, Michael W. Combined water bottle cage, mounting bracket and clamping straps for handlebar mounting. 285,186, 8-19-86, Cl. D12-114.000.
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Tovey, Geoffrey D., 285,259, Cl. D28-2.000.
Snider, James S.: *See—*
Combs, Donald B.; and Snider, James S., 285,196, Cl. D13-40.000.
Solomon, Paul. Golf club head. 285,231, 8-19-86, Cl. D21-214.000.
Somerset Moon Ltd.: *See—*
Kirk, Alexis V., 285,143, Cl. D2-422.000.
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Bressler, Peter; Byar, Peter; and Spector, Edward A., 285,200, Cl. D14-53.000.
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Stein, Eric D., to Buckhorn Material Handling Group Inc. Document box. 285,219, 8-19-86, Cl. D19-92.000.
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Egging, Keith J.; and Robards, Chester F., Jr., 285,221, Cl. D21-13.000.
Tapdrup, Erik P., to Interlego A.G. Toy contruction piece set. 285,225, 8-19-86, Cl. D21-108.000.
Terumo Corporation: *See—*
Wada, Masaru; Honda, Shinzo; and Arioka, Tetsuya, 285,182, Cl. D10-60.000.
Teschner, Alfred, to Deutsche Extrakt Kaffee GmbH. Combined jar and cap. 285,174, 8-19-86, Cl. D9-370.000.
Thermalloy Incorporated: *See—*
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Thomsen, Sven C. B., to Interlego A.G. Toy construction piece simulating roof shingles. 285,223, 8-19-86, Cl. D21-108.000.
Tilson, Linda M.: *See—*
Combs, Hanon; and Tilson, Linda M., 285,158, Cl. D7-77.000.
Tovey, Geoffrey D., to Smith Kline & French Laboratories Limited. Pharmaceutical tablet. 285,259, 8-19-86, Cl. D28-2.000.
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Hamasaki, Yoshihiro, 285,258, Cl. D26-28.000.
Valentine, Joseph: *See—*
Humphreys, John K.; and Valentine, Joseph, 285,191, Cl. D13-[illegible].000.

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Walker Crosweller & Company Limited: *See*—
Ogilvie, Kenneth A., 285,245, Cl. D23-19.000.

Waltz, William C., II: *See*—
Morris, David S.; Clark, Donald L.; and Waltz, William C., II, 285,207, Cl. D15-132.000.

Wan, Yiu-Kwong, to Chit Hing Metal & Plastic Mfg. Fty. Food server or similar article. 285,157, 8-19-86, Cl. D7-2.000.

Wentworth, Wilbur W., II: *See*—
Piziks, Indulis; Shepard, Melvin E.; Elson, Ronald D.; and Wentworth, Wilbur W., II, 285,187, Cl. D12-131.000.

Western Filament, Inc.: *See*—
Russell, Leslie W., 285,171, Cl. D8-396.000.

Wexler, Ethel. Combined protective cake cover and candle holder. 285,159, 8-19-86, Cl. D7-83.000.

Whaley, George S.: *See*—
Golden, Raymond; and Whaley, George S., 285,202, Cl. D14-103.000.

Whisman, Kenneth W. Combined cap and ball glove. 285,141, 8-19-86, Cl. D2-246.000.

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Ducloux, Yves: *See*—
Barberet, Nicole; and Ducloux, Yves, 5,784, Cl. 70.000.

Duffett, William E., to Yoder Brothers, Inc. Chrysanthemum plant named Gold Champ. 5,786, 8-19-86, Cl. 78.000.

Hellberg, Herman. Chrysanthemum plant named Dark Yellow Garland. 5,785, 8-19-86, Cl. 74.000.

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Mikkelsen, James C., 5,783, Cl. 68.000.

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Stichting Tuinbouw Proef-en Selectiebedrijf: *See*—
Somers, Johannes A., 5,782, Cl. 48.000.

Yoder Brothers, Inc.: *See*—
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CLASSIFICATION OF PATENTS

ISSUED AUGUST 19, 1986

NOTE.—First number, class; second number, subclass; third number, patent number

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CLASS 128

1 C	4,606,328
1 R	4,606,329
7	4,606,330
24.1	4,606,331
71	4,606,332
75	4,606,333
80 A	4,606,334
92 E	4,606,335
130	4,606,336
156	4,606,337
	4,606,338
204.19	4,606,339
205.24	4,606,340
206.19	4,606,341
303.17	4,606,342
305	4,606,343
334 R	4,606,344
	4,606,345
342	4,606,346
344	4,606,347
359	4,606,348
419 PG	4,606,349
	4,606,350
633	4,606,351
702	4,606,352
774	4,606,353
784	4,606,354
785	Re.32,227

CLASS 130

27 R	4,606,356
27 T	4,606,355

CLASS 131

359	4,606,357

CLASS 132

9	4,606,358
53	4,606,359

CLASS 133

1 A	4,606,360
3 R	4,606,361
5 R	4,606,362

CLASS 134

10	4,606,774
18	4,606,775
36	4,606,776
38	4,606,777
111	4,606,363
167 C	4,606,364

CLASS 135

20 A	4,606,366

CLASS 136

248	4,607,132

CLASS 137

15	4,606,367
	4,606,368
116.5	4,606,369
119	4,606,370
270	4,606,371
315	4,606,372
426	4,606,373
433	4,606,365
556.3	4,606,374
828	4,606,375

CLASS 138

30	4,606,376
[illegible]	4,606,377
103	4,606,378
118.1	4,606,379
122	4,606,380

CLASS 139

1 R	4,606,381

CLASS 141

1	4,606,382
32	4,606,383
329	4,606,384

CLASS 144

2 Z	4,606,385
134 B	4,606,386
356	4,606,387
361	4,606,388

CLASS 148

11.5 N	4,606,778
120	4,606,779
171	4,606,780
183	4,606,781

CLASS 152

209 R	4,606,389
381.4	4,606,390
431	4,606,391
451	4,606,392

CLASS 156

62.8	4,606,782
73.1	4,606,783
200	4,606,784
215	Re.32,228
305	4,606,785
580.1	4,606,786
632	4,606,787
656	4,606,788

CLASS 157

1.24	4,606,393

CLASS 160

351	4,606,394

CLASS 162

23	4,606,789
125	4,606,790
180	4,606,791
232	4,606,792

CLASS 164

98	4,606,395
255	4,606,396
467	4,606,397
510	4,606,398

CLASS 165

4	4,606,399
10	4,606,400
12	4,606,401
47	4,606,402
95	4,606,403
104.12	4,606,404
133	4,606,405

CLASS 166

187	4,606,406
270	4,606,407
278	4,606,408
297	4,606,409
313	4,606,410

CLASS 172

22	4,606,411
	4,606,412
328	4,606,413

CLASS 173

128	4,606,414

CLASS 174

15 WF	4,607,133
19	4,607,134
60	4,607,135

67 4,607,136

CLASS 175

24 4,606,415
58 4,606,416
76 4,606,417
329 4,606,418

CLASS 177

138 4,606,419
160 4,606,420
211 4,606,421

CLASS 178

22.14 4,607,137
30 4,607,138

CLASS 179

2 C 4,607,139
16 AA 4,607,142
16 F 4,607,140
4,607,141
90 BD 4,607,143
99 H 4,607,144
110 A 4,607,145
170.8 4,607,146

CLASS 180

68.1 4,606,422
79.1 4,606,423
143 4,606,424
177 4,606,425
287 4,606,426
[illegible] 4,606,427
307 4,606,428
312 4,606,429

CLASS 182

3 4,606,430
49 4,606,431
204 4,606,432

CLASS 187

9 R 4,606,433

CLASS 188

1.11 4,606,434
4,606,435
18 A 4,606,436
72.4 4,606,437
73.32 4,606,438
4,606,439
319 4,606,440
371 4,606,441
381 4,606,442

CLASS 192

0.076 4,606,446
20 4,606,443
48.2 4,606,444
58 B 4,606,445
85 C 4,606,447
85 R 4,606,448
91 A 4,606,449
106.2 4,606,450
4,606,451

CLASS 198

411 4,606,452

CLASS 200

159 B 4,607,147
269 4,607,148

CLASS 201

39 4,606,793

CLASS 202

173 4,606,794

CLASS 204

15 4,606,795
42 4,606,796
146 4,606,797
157.52 4,606,798
170 4,606,799
181.1 4,606,800
186 4,606,801
192 P 4,606,803
192 R 4,606,802
286 4,606,804
296 4,606,805
298 4,606,806
433 4,606,807

CLASS 206

[illegible] 4,606,453
150 4,606,454
347 4,606,455
362.4 4,606,456
426 4,606,457
566 4,606,458
583 4,606,459
4,606,460
600 4,606,461
[illegible] 4,606,462

CLASS 208

44 4,606,808
59 4,606,809
74 4,606,810
108 4,606,811
4,606,812
120 4,606,813
161 4,606,814
210 4,606,815
354 4,606,816

CLASS 209

166 4,606,817
4,606,818

CLASS 210

122 4,606,819
130 4,606,820
169 4,606,821
221.2 4,606,822
282 4,606,823
635 4,606,824
4,606,825
646 4,606,826
670 4,606,827
696 4,606,828
713 4,606,829
750 4,606,830
787 B1 3,348,683

CLASS 211

13 4,606,463
41 4,606,464
43 4,606,465
59.1 4,606,466
60.1 4,606,467
184 4,606,468

CLASS 212

256 4,606,469

CLASS 215

232 4,606,470

CLASS 219

69 W 4,607,149
121 LC 4,607,150
4,607,151
230 4,607,152
390 4,607,153
497 4,607,154
505

CLASS 220

22 4,606,471
[illegible] 4,606,472
215 4,606,473
307 4,606,474

CLASS 222

[illegible] 4,606,475
[illegible] 4,606,476
153 4,606,477
187 4,606,478
321 4,606,479
341 4,606,480
562 4,606,481

CLASS 223

88 4,606,482
119 4,606,483

CLASS 224

218 4,606,484

CLASS 225

78 4,606,485

CLASS 226

19 4,606,486

CLASS 227

8 4,606,487

CLASS 228

45 4,606,488
102 4,606,489
103 4,606,490
119 4,606,491
179 4,606,492
180.1 4,606,493
[illegible] 4,606,494
183 4,606,495

CLASS 229

2.5 R 4,606,496

CLASS 235

379 4,607,155
472 4,607,156

CLASS 236

92 R 4,606,497

CLASS 238

8 4,606,498

CLASS 239

11 4,606,499
242 4,606,500
346 4,606,501
585 4,606,502

CLASS 241

16 4,606,503
28 4,606,504
82.5 4,606,505
109 4,606,506

CLASS 242

22 4,606,507
35.5 R 4,606,508
35.6 R 4,606,509
55.3 4,606,510
71.8 4,606,511
84.2 C 4,606,512
199 4,606,513

CLASS 244

3.15 4,606,514
29 4,606,515
121 4,606,516
137 A 4,606,517
153 A 4,606,518
200 4,606,519

CLASS 248

121 4,606,520
214 4,606,521
276 4,606,522
311.2 4,606,523
346 4,606,524
460 4,606,525
489 4,606,526

CLASS 250

201 4,607,157
216 4,607,158
221 4,607,159
227 4,607,160
4,607,161
4,607,162
281 4,607,163
363 S 4,607,164
435 4,607,165
442.1 4,607,166
492.2 4,607,167
578 4,607,168

CLASS 252

7 4,606,831
8 4,606,832
49.3 4,606,833
51.5 A 4,606,834
70 4,606,835
4,606,836
73 4,606,837
94 4,606,838
132 4,606,839
171 4,606,840
4,606,841
174.23 4,606,842
186.33 4,606,843
194 4,606,844
299.63 4,606,845
301.4 R 4,606,846
363.5 4,606,847
511 4,606,848
522 R 4,606,849
528 4,606,850
554 4,606,851
[illegible] 4,606,852
4,606,853

CLASS 254

336 4,606,527

CLASS 260

351 4,606,861
402.5 4,606,862
413 4,606,863
998.2 4,606,857
998.21 4,606,854

CLASS 261

74 4,606,866
122 4,606,867

CLASS 264

12 4,606,869
22 4,606,870
4,606,871
29.2 4,606,872
40.4 4,606,868
53 4,606,873
56 4,606,874
[illegible] 4,606,875
120 4,606,876
271.1 4,606,877
308 4,606,878
565 4,606,879

CLASS 266

[illegible] 4,606,528
[illegible] 4,606,529
158 4,606,530
216 4,606,531
102 [illegible]

CLASS 267

4,606,532

CLASS 270

4,606,533
4,606,534

CLASS 271

4,606,535
4,606,536
4,606,537

CLASS 272

4,606,538
4,606,539
4,606,540
4,606,541
4,606,542

CLASS 273

4,606,543
4,606,544
4,606,545
4,606,546

CLASS 277

4,606,547

CLASS 280

4,606,548
4,606,549
4,606,550
4,606,551
4,606,552

CLASS 281

4,606,553
4,606,554

CLASS 283

4,606,555

CLASS 285

4,606,556
4,606,557
4,606,558
4,606,559
4,606,560
4,606,561
4,606,562
4,606,563
4,606,564
4,606,565

CLASS 290

4,607,169

CLASS 292

4,606,566
4,606,567

CLASS 294

4,606,568
4,606,569

CLASS 296

4,606,570
4,606,571
4,606,572
4,606,573
4,606,574

CLASS 297

4,606,575
4,606,576
4,606,577
4,606,578
4,606,579
4,606,580

CLASS 301

4,606,581
4,606,582

CLASS 303

4,606,583
4,606,584
4,606,585
4,606,586

CLASS 307

4,607,170
4,607,171
4,607,172
4,607,173
4,607,174
4,607,175
4,607,176
4,607,177
4,607,178

CLASS 310

4,607,179
4,607,180
4,607,181
4,607,182
4,607,183
4,607,184
4,607,185
324 4,607,186

CLASS 312

339 4,606,588

CLASS 313

414 4,607,187
461 4,607,188
477 R 4,607,189
479 4,607,190
489 4,607,191
579 4,607,192

CLASS 315

5.38 4,607,193
39 4,607,194
410 4,607,195

CLASS 318

51 4,607,196
115 4,607,197
443 4,607,198
484 4,607,199
4,607,200
584 4,607,201
628 4,607,202
687 4,607,203
696 4,607,204
778 4,607,205
798 4,607,206

CLASS 320

2 4,607,207
21 4,607,208
25 4,607,209

CLASS 323

290 4,607,210
356 4,607,211

CLASS 324

58.5 R 4,607,212
61 R 4,607,213
73 AT 4,607,214
77 B 4,607,215
4,607,216
78 R 4,607,217
83 D 4,607,218
158 F 4,607,220
158 R 4,607,219
306 4,607,221
309 4,607,222
4,607,223
318 4,607,224
4,607,225
4,607,226
437 4,607,227
454 4,607,228

CLASS 328

155 4,607,229

CLASS 329

50 4,607,230

CLASS 330

51 4,607,231
255 4,607,232
267 4,607,233
278 4,607,234
298 4,607,235

CLASS 331

17 4,607,236
116 R 4,607,237
143 4,607,238
176 4,607,239

CLASS 333

116 4,607,240
166 4,607,241
209 4,607,242
214 4,607,243

CLASS 335

281 4,607,244

CLASS 336

57 4,607,245

CLASS 339

17 C 4,606,589
32 M 4,606,590
45 M 4,606,591
59 M 4,606,592
61 R 4,606,593
74 R 4,606,594
[illegible] R 4,606,595
107 4,606,596
113 L 4,606,597
147 R 4,606,598
258 R 4,606,599

CLASS 340

52 F 4,607,246
310 A 4,607,247
347 DA 4,607,248
4,607,249
4,607,250
365 S 4,607,251
515 4,607,252
546 4,607,253
606 4,607,254
755 4,607,255
825.52 4,607,256
825.69 4,607,257

CLASS 343

17.1 R 4,607,258
758 4,607,259
786 4,607,260

CLASS 346

75 4,607,261
76 PH 4,607,262
137 4,607,264
139 R 4,607,263
4,607,265
140 PR 4,607,266
140 R 4,607,267
155 4,607,268
4,607,269

CLASS 350

1.1 4,606,600
6.4 4,606,601
96.12 4,606,602
96.21 4,606,603
96.23 4,606,604
96.31 4,606,605
96.33 4,606,608
128 4,606,609
145 4,606,606
331 R 4,606,610
334 4,606,611
336 4,606,612
349 4,606,613
358 4,606,614
432 4,606,607
476 4,606,615
521 4,606,616
527 4,606,617
556 4,606,618
[illegible] 4,606,619
610 4,606,620

CLASS 351

115 4,606,621
169 4,606,622
4,606,626
212 4,606,623
234 4,606,624

CLASS 352

38 4,606,625

CLASS 353

88 4,606,627
101 4,606,628

CLASS 356

1 4,606,629
4,606,630
39 4,606,631
73.1 4,606,632
237 4,606,633
240 4,606,634
4,606,635
338 4,606,636
350 4,606,637
351 4,606,638
358 4,606,639
360 4,606,640
369 4,606,641
374 4,606,642
401 4,606,643
438 4,606,644
446 4,606,645

CLASS 357

15 4,607,270
27 4,607,271
30 4,607,272
38 4,607,273
42 4,607,274
79 4,607,275
4,607,276
[illegible] 4,607,277

CLASS 358

36 4,607,278
44 4,607,279
60 4,607,280
136 4,607,281
140 4,607,282
148 4,607,283
167 4,607,284
4,607,285
213 4,607,286
4,607,287
242 4,607,288
257 4,607,289
260 4,607,290
286 4,607,291
310 4,607,292

328 4,607,293

CLASS 360

35.1 4,607,294
45 4,607,295
51 4,607,296
55 4,607,297
[illegible] 4,607,299
73 4,607,298
74.1 4,607,300
93 4,607,301
96.1 4,607,302
96.5 4,607,303
[illegible] 4,607,304
121 4,607,305
132 4,607,306
4,607,307
4,607,308

CLASS 361

62 4,607,309
149 4,607,310
155 4,607,311
172 4,607,312
218 4,607,313
321 4,607,314
4,607,315
4,607,316

CLASS 362

249 4,607,317
307 4,607,318

CLASS 363

20 4,607,319
21 4,607,320
41 4,607,321
56 4,607,322
97 4,607,323
128 4,607,324

CLASS 364

151 4,607,325
162 4,607,326
191 4,607,327
200 4,607,328
4,607,329
4,607,330
4,607,331
300 4,607,332
400 4,607,333
405 4,607,334
4,607,335
424 4,607,336
431.02 4,607,337
464 B1 4,133,034
478 4,607,338
491 4,607,339
521 4,607,340
551 B1 4,381,548
557 4,607,341
558 4,607,342
765 4,607,343
841 4,607,344
900 4,607,345
4,607,346
4,607,347
4,607,348

CLASS 365

39 4,607,349
154 4,607,350
228 4,607,351

CLASS 366

75 4,606,646
150 4,606,647
300 4,606,648

CLASS 367

35 4,607,352
39 4,607,353

CLASS 369

4,607,354
44 4,607,355
4,607,356
4,607,357
4,607,358
46 4,607,359
48— 4,607,360
75.2 4,607,361

CLASS 370

62 4,607,362
94 4,607,363
99 4,607,364

CLASS 371

8 4,607,365
16 4,607,366
37 4,607,367

CLASS 372

45 4,607,368
46 4,607,369
[illegible] 4,607,370
56 4,607,371

CLASS 373

41 4,607,372
104 4,607,373
4,607,374

CLASS 374

10 4,606,649
14 4,606,650
32 4,606,651

CLASS 375

2.2 4,607,375
3 4,607,376
14 4,607,377
116 4,607,378
121 4,607,379

CLASS 376

173 4,606,880
353 4,606,881
463 4,606,882

CLASS 378

138 4,607,380

CLASS 381

10 4,607,381
59 4,607,382
88 4,607,383

CLASS 382

[illegible] 4,607,384
9 4,607,385
13 4,607,386
33 4,607,387

CLASS 383

121 4,607,388

CLASS 384

12 4,606,587
130 4,606,652
283 4,606,653
447 4,606,654
458 4,606,655
475 4,606,656
492 4,606,657
510 4,606,658
518 4,606,659

CLASS 400

62 4,606,660
213 4,606,661
214 4,606,662
605 4,606,663
904 4,606,664

CLASS 401

195 4,606,665

CLASS 402

62 4,606,666

CLASS 403

117 4,606,667
140 4,606,668
170 4,606,669
291 4,606,670
359 4,606,671

CLASS 405

87 4,606,672
210 4,606,673
224 4,606,674
263 4,606,675
303 4,606,676

CLASS 406

129 4,606,677

CLASS 407

114 4,606,678
4,606,679

CLASS 408

156 4,606,680
215 4,606,681

CLASS 409

34 4,606,682
66 4,606,683
132 4,606,684
137 4,606,685
221 4,606,686

CLASS 410

23 4,606,687

CLASS 411

175 4,606,688

CLASS 412

3 4,606,689

CLASS 414

343 4,606,690
680 4,606,691
[illegible] 4,606,692
[illegible] 4,606,693
732 4,606,694
735 4,606,695
744 R 4,606,696

CLASS 415

2 R 4,606,697
170 A 4,606,698
170 R 4,606,699
199.5 4,606,700

CLASS 416

92 4,606,701
206 4,606,702

CLASS 417

86 4,606,703
199 A 4,606,704
222 4,606,705
313 4,606,706
347 4,606,709
354 4,606,707
380 4,606,708
477 4,606,710

CLASS 418

59 4,606,711
[illegible] 4,606,712
131 4,606,713

CLASS 419

[illegible] 4,606,883
27 4,606,884
39 4,606,885

CLASS 420

419 4,606,886
437 4,606,887
459 4,606,888
492 4,606,889

CLASS 422

15 4,606,890
53 4,606,891
186.2 4,606,892
265 4,606,893

CLASS 423

7 4,606,894
4,606,895
167 4,606,897
244 4,606,898
328 4,606,899
329 4,606,900
4,606,901
345 4,606,902
447.4 4,606,903
489 4,606,904
588 4,606,905
598 4,606,906

CLASS 424

1.1 4,606,907
4,606,908
21 4,606,909
28 4,606,910
49 4,606,911
52 4,606,912
59 4,606,913
63 4,606,914
68 4,606,915
70 4,606,916
85 4,606,917
88 4,606,918
92 4,606,919
154 4,606,920

CLASS 425

28 R 4,606,714
110 4,606,715
289 4,606,716
541 4,606,717

CLASS 426

386 4,606,921
412 4,606,922
496 4,606,923
538 4,606,925
549 4,606,924
603 4,606,926

CLASS 427

7 4,606,927
32 4,606,928
34 4,606,929
40 4,606,930
42 4,606,931
53.1 4,606,932
54.1 4,606,933
76 4,606,934
[illegible] 4,606,935
[illegible] 4,606,936
121 4,606,937
136 4,606,938
213.3 4,606,939
213.32 4,606,940
217 4,606,941
233 4,606,942
244 4,606,943
296 4,606,944
318 4,606,945
384 4,606,946
388.1 4,606,947
423 4,606,948
430.1 4,606,949

CLASS 428

23 4,606,950
35 4,606,951
36 4,606,952
4,606,953
4,606,954
4,606,955
[illegible] 4,606,956
4,606,957
68 4,606,958
116 4,606,959
4,606,960
119 4,606,961
148 4,606,962
150 4,606,963
152 4,606,964
158 4,606,965
196 4,606,966
220 4,606,967
229 4,606,968
280 4,606,969
301 4,606,970
328 4,606,971
395 4,606,972
421 4,606,973
447 4,606,974
469 4,606,975
[illegible] 4,606,976
553 4,606,977
606 4,606,978
4,606,979
4,606,980
4,606,981

CLASS 429

59 4,606,982
164 4,606,983
212 4,606,984

CLASS 430

14 4,606,985
59 4,606,986
4,606,987
4,606,988
106 4,606,989
122 4,606,990
203 4,606,991
220 4,606,992
281 4,606,993
300 4,606,994
302 4,606,995
309 4,606,996
311 4,606,997
312 4,606,998
326 4,606,999
428 4,607,000
4,607,001
505 4,607,002
519 4,607,003
523 4,607,004
550 4,607,005
572 4,607,006

CLASS 431

6 4,606,718
63 4,606,719
115 4,606,720
116 4,606,721

CLASS 432

14 4,606,722
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CLASS [illegible]

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	246	285,141		334	285,161		60	285,182		103	285,202		108	285,222		15	285,241
	309	285,142		351	285,162	D11—	99	285,183		114	285,203			285,223		17	285,242
	422	285,143	D8—	32	285,163		157	285,184	D15—	28	285,204			285,224		18	285,243
D3—	35	285,144		49	285,164	D12—	110	285,185		29	285,205			285,225			285,244
	76	285,145		52	285,165		114	285,186			285,206			285,226		19	285,245
D4—	122	285,146		57	285,166		131	285,187		132	285,207		159	285,227		28	285,246
D6—	316	285,147			285,167		187	285,188	D16—	6	285,208		177	285,228		47	285,247
	317	285,148		373	285,168		196	285,189		31	285,209		187	285,229		136	285,248
	350	285,149		382	285,169		314	285,190		102	285,210		204	285,230	D24—	21	285,249
	364	285,150		394	285,170	D13—	8	285,191	D18—	12	285,211		214	285,231		23	285,250
	381	285,151		396	285,171		13	285,192	D19—	32	285,212		219	285,232			285,251
	449	285,152	D9—	338	285,172		23	285,193		76	285,213		234	285,233			285,252
	460	285,153		341	285,173			285,194			285,214	D22—	100	285,234			285,253
	476	285,154		370	285,174		24	285,195			285,215		108	285,235		31	285,254
	500	285,155		415	285,175		40	285,196			285,216			285,236		33	285,255
	566	285,156		419	285,176	D14—	53	285,197		90	285,217			285,237	D25—	1	285,256
D7—	2	285,157		420	285,177			285,200		92	285,218			285,238		35	285,257
	77	285,158		432	285,178		[redacted]	285,198			285,219		122	285,179	D26—	28	285,258
	83	285,159	D10—	6	285,180		63	285,199	D20—	42	285,220	D23—	3	285,239	D28—	2	285,259

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37 : 285,148
285,196
39 : 285,141
285,168
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41 : 285,204
42 : 285,160
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285,179
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45 : 285,234
47 : 285,233
[illegible] : 285,193
285,232
285,235
285,237
285,238
53 : 285,254
54 : 285,183
55 : 285,176

PLANT PATENTS

[illegible] 5,786
39 : 5,783
42 : 5,785

U.S. GOVERNMENT PRINTING OFFICE : O—1986

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Vol. 1069 Number 4

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OFFICIAL GAZETTE of the UNITED STATES PATENT AND TRADEMARK OFFICE

August 26, 1986 Volume 1069 Number 4

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The following are mailed under direction of the Superintendent of Documents, Government Printing Office, Washington, D.C., 20402, to whom all subscriptions should be made payable and all communications addressed:

THE OFFICIAL GAZETTE (PATENT SECTION), issued weekly.
THE OFFICIAL GAZETTE (TRADEMARK SECTION), issued weekly.
GENERAL INFORMATION concerning PATENTS.
GENERAL INFORMATION concerning TRADEMARKS.

COPIES OF PATENTS are furnished by the Patent and Trademark Office at $1.50 each; PLANT PATENTS in color, $6.00 each; copies of TRADEMARKS at $1.00 each. Address orders to the Commissioner of Patents and Trademarks, Washington, D.C., 20231.

Printing authorized by Section 11(a)3 of Title 35, U.S. Code P.T.O.

PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty (PCT) Information

For information concerning the PCT member countries see the notice appearing in the *Official Gazette* at 1052 O.G. 52 on Mar. 26, 1985.

For use of the European Patent Office as Searching Authority for PCT applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52 on Sept. 28, 1982.

Certain domestic PCT fees for international applications have been changed effective Oct. 5, 1985 in the rule change notice titled "Revision of Patent Fees" published at 1057 O.G. 24 on Aug. 20, 1985.

The Search fee of the European Patent Office has been changed as of Feb. 9, 1986 and is announced in the *Official Gazette* at 1061 O.G. 30 on Dec. 31, 1985.

International PCT fees have been changed effective Jan. 1, 1986 and were announced in the *Official Gazette* at 1061 O.G. 30 on Dec. 31, 1985.

Note that the amount of the international search fee for the European Patent Office and the amounts of the International PCT fees will change effective June 1, 1986. For information on these fee changes see the notice appearing in the *Official Gazette* at 1065 O.G. 41 on Apr. 29, 1986.

The current schedule of PCT fees is as follows:

Transmittal fee:	170.00
Search Fee	
U.S. Patent and Trademark Office as Searching Authority	
—No corresponding prior U.S. national application filed	420.00
—Corresponding prior U.S. national application filed	250.00
European Patent Office as Searching Authority	
if paid before June 1, 1986	830.00
if paid on or after June 1, 1986	930.00
International fees	
Basic fee (first 30 pages):	
if paid before June 1, 1986	325.00
if paid on or after June 1, 1986	375.00
Basic Supplemental fee (for each page over 30):	
if paid before June 1, 1986	6.00
if paid on or after June 1, 1986	7.00
Designation fee for the first 10 national or regional offices:	
if paid before June 1, 1986	80.00
if paid on or after June 1, 1986	90.00
Designation fee for 11th and subsequent designations	No charge

DONALD J. QUIGG,
Assistant Secretary and Commissioner of Patents and Trademarks.

Mar. 31, 1986.

Notice of Maintenance Fees Payable

Title 37, Code of Federal Regulations, Section 1.362(d), effective Nov. 1, 1984, provides that maintenance fees may be paid without surcharge for a six-month period beginning 3, 7, and 11 years after the date of issue of patents based on applications filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(k) or (l), as amended effective Oct. 5, 1985. If the maintenance fee is not paid in a patent requiring such payment the patent will expire on the 4th, 8th or 12th anniversary of the grant.

Attention is drawn to the patents which were issued on Aug. 23, 1983, for which maintenance fees due at 3 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,399,567 through 4,400,828
Reissue Patents based on the above identified patents.

No maintenance fees are required for design or plant patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

The current amounts of the maintenance fees due at 3 years and six months are set forth in 37 CFR 1.20(e) and (h), as amended effective Oct. 5, 1985, which are reproduced below:

37 CFR §1.20 Post-issuance fees

"(e) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant . . . $ 225.00"

"(h) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Aug. 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant:
By a small entity (§1.9(f)) . . . . . $ 225.00
By other than a small entity . . . . . $ 450.00"

The amounts of the surcharges as amended effective Oct. 5, 1985, are set forth in 37 CFR 1.20 (k) and (l) which are reproduced below:

"(k) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982 . . . . . $ 110.00"

"(l) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Aug. 27, 1982:
By a small entity (§1.9(f)) . . . . . $ 55.00
By other than a small entity . . . . . $ 110.00"

Section 1.20 paragraph (m) as amended as a result of enactment of Public Law 98–622 effective Nov. 8, 1984, is reproduced below:

"(m) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee where the delay in payment is shown to the satisfaction of the Commissioner to have been unavoidable . . . . . $ 500.00"

Notice of Expiration of Patents Due to Failure to Pay Maintenance Fees

35 U.S.C. 41 and 37 CFR 1.362(g) provide that if the required maintenance fee and any applicable surcharge are not paid in a patent requiring such payment, the patent will expire at the end of the 4th, 8th, or 12th anniversary of the grant of the patent depending on the first maintenance fee which was not paid.

According to the records of the Office, the patents listed below have expired due to failure to pay the required maintenance fee and any applicable surcharge.

PATENTS WHICH EXPIRED JUNE 8, 1986, DUE TO FAILURE TO PAY MAINTENANCE FEES

Patent Number	Serial Number	Issue Date
4,333,207	06/219,363	6/08/82
4,333,235	06/233,787	6/08/82
4,333,241	06/247,222	6/08/82
4,333,252	06/266,568	6/08/82
4,333,254	06/251,477	6/08/82
4,333,260	06/253,101	6/08/82
4,333,271	06/243,470	6/08/82
4,333,302	06/243,551	6/08/82
4,333,305	06/237,879	6/08/82
4,333,411	06/283,403	6/08/82
4,333,449	06/272,596	6/08/82
4,333,456	06/232,630	6/08/82
4,333,457	06/232,633	6/08/82
4,333,458	06/232,634	6/08/82
4,333,459	06/240,259	6/08/82
4,333,481	06/287,896	6/08/82
4,333,562	06/230,315	6/08/82
4,333,592	06/221,377	6/08/82
4,333,604	06/253,692	6/08/82
4,333,676	06/237,064	6/08/82
4,333,737	06/258,984	6/08/82
4,333,756	06/241,491	6/08/82
4,333,779	06/236,967	6/08/82
4,333,802	06/227,306	6/08/82
4,333,825	06/229,297	6/08/82
4,333,831	06/219,036	6/08/82
4,333,863	06/233,738	6/08/82
4,333,929	06/226,180	6/08/82
4,333,935	06/248,113	6/08/82
4,333,943	06/216,516	6/08/82
4,333,944	06/233,294	6/08/82
4,333,967	06/224,626	6/08/82
4,334,018	06/216,696	6/08/82
4,334,035	06/245,436	6/08/82
4,334,048	06/267,111	6/08/82
4,334,228	06/249,440	6/08/82

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.19(a)).

3,805,532, Re. S.N. 855,001, Filed Apr. 22, 1986, Cl. 405/264, CONSOLIDATION OF AGGREGATE MATERIAL, John F. Kistner, Owner of Record: *Minnesota Mining and Manufacturing Co., St. Paul, Minn.,* Attorney or Agent: Donald M. Sell, Ex. Gp.: 351

4,235,789, Re. S.N. 820,899, Filed Jan. 21, 1986, Cl. 129/260, PROCESS FOR THE PREPARATION OF 1-AMINO-2-BROMO-4-HYDROXYANTHRAQUINONE, James R. Stout, Owner of Record: *Mobay Chemical Corp., Pittsburgh, Pa.,* Attorney or Agent: Gene Harsh, Joseph C. Gil, et al., Ex. Gp.: 129

4,245,417, Re. S.N. 876,749, Filed June 6, 1986, Cl. 40/513, PICTURE VIEWER, Peter Ackeret, Owner of Record: *Licinvest AG, Chur, Switzerland,* Attorney or Agent: Ralph H. Chilton, Ex. Gp.: 333

4,301,466, Re. S.N. 811,670, Filed Dec. 20, 1985, Cl. 358/13, FAST ACTING PHASE APPARATUS FOR USE IN DIGITAL SAMPLING SYSTEMS, Maurice G. Lemoine, et al., Owner of Record: *Ampex Corp., Redwood City, Calif.,* Attorney or Agent: William A. Marvin, Ex. Gp.: 262

4,346,972, Re. S.N. 820,894, Filed Jan. 17, 1986, Cl. 211/354, CAMERA EQUIPPED WITH AN AUTOMATICALLY CONTROLLING DEVICE FOR FOCUSSING AND SHUTTER OPERATION, Tamotsu Takahashi, Owner of Record: *Inventor,* Attorney or Agent: Cushman, Darby, et al., Ex. Gp.: 211

4,371,495, Re. S.N. 827,172, Filed Feb. 5, 1986, Cl. 221/376, SELF RUPTURING GAS MODERATOR ROD FOR A NUCLEAR REACTOR, George R. Marlatt, Owner of Record: *Inventor,* Attorney or Agent: W. D. Palmer, Ex. Gp.: 221

4,423,882, Re. S.N. 773,561, Filed Sept. 9, 1985, Cl. 280/33.99, SHOPPING CART WITH BABY SEAT, Don A. Stover, et al., Owner of Record: *UNR Industries, Inc., Chicago, Ill.,* Attorney or Agent: James W. Clement, et al., Ex. Gp.: 316

4,439,934, Re. S.N. 849,383, Filed Apr. 3, 1986, Cl. 36/44, ORTHOTIC INSERT, Dennis N. Brown, Owner of Record: *Northwest Podiatric Laboratories, Inc., Blaine, Wash.,* Attorney or Agent: Robert B. Hughes, et al., Ex. Gp.: 247

4,445,761, Re. S.N. 858,211, Filed Apr. 30, 1986, Cl. 354/402, AUTOMATIC FOCUSING DEVICE FOR USE IN A CAMERA, Norio Ishikawa, et al., Owner of Record: *Minolta Camera, Osaka, Japan,* Attorney or Agent: Joseph W. Price, et al., Ex. Gp.: 211

4,449,023, Re. S.N. 863,644, Filed May 15, 1986, Cl. 200/159B, TRANSPARENT SWITCH HAVING FINE LINE CONDUCTORS, Jacques J. Hilhorst, et al., Owner of Record: *AMP, Inc., Harrisburg, Pa.,* Attorney or Agent: Jay L. Seitchik, et al., Ex. Gp.: 243

REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19(a)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

No Publications This Issue.

Errata

"All reference to Patent No. 4,473,224 to Charles A. Prano of Tex. for 'ATHLETIC TRAINING APPARATUS' appearing in the Official Gazette of Sept. 25, 1984 should be deleted since no patent was granted."

"All reference to Patent No. 4,603,049 to Richard A. Houghten of Calif. for 'SYNTHETIC HEAT-STABLE ENTEROTOXIN POLYPEPTIDE OF ESCHERICHIA COLI AND MULTIMERS THEREOF'

appearing in the Official Gazette of July 29, 1986 should be deleted since no patent was granted."

Using Certificate of Correction to Perfect Claim for Priority Under 35 USC 119

Under 35 USC 119, an applicant may assert a right of priority and claim the benefit of an earlier filing date in a foreign country. In this regard, 35 USC 119 states:

> No application for patent shall be entitled to this right of priority unless a claim therefor and a certified copy of the original foreign application, specification and drawings upon which it is based are filed in the Patent and Trademark office before the patent is granted. . . .

The failure to perfect a claim to foreign priority benefits prior to issuance of the patent may be cured by filing a reissue application; *Brenner* v. *State of Israel*, 158 USPQ 584 (CA DC 1968).

However, under certain conditions, this failure may also be cured by filing a Certificate of Correction request under 35 USC 255 and 37 CFR 1.323. For example, in the case of *In re Van Esdonk*, 187 USPQ 671 (Comr. 1975), the Commissioner granted a request to issue a Certificate of Correction in order to perfect a claim to foreign priority benefits. In that case, a claim to foreign priority benefits had not been filed in the application prior to issuance of the patent. However, the application was a continuation of an earlier application in which the requirements of 35 USC 119 had been satisfied. Accordingly, the Commissioner held that the "applicants' perfection of a priority claim under 35 USC 119 in the parent application will satisfy the statute with respect to their continuation application."

Although *In re Van Esdonk* involved the patent of a continuation application filed under 37 CFR 1.60, it is proper to apply the holding of that case in similar factual circumstances to any patented application having benefits under 35 USC 120. This is primarily because a claim to foreign priority benefits in a continuing application, where the claim has been perfected in the parent application, constitutes in essence a mere affirmation of the applicant's previously expressed desire to receive benefits under 35 USC 119 for subject matter common to the foreign, parent, and continuing applications.

In summary, a Certificate of Correction under 35 USC 255 and 37 CFR 1.323 may be requested and issued in order to perfect a claim to foreign priority benefits in a patented continuing application if the requirements of 35 USC 119 had been satisfied in the parent application prior to issuance of the patent and the requirements of 37 CFR 1.55(a) are met.

However, a claim to foreign priority benefits cannot be perfected via a Certificate of Correction if the requirements of 35 USC 119 had not been satisfied in the patented application, or its parent, prior to issuance and the requirements 37 CFR 155(a) are not met. In this latter circumstance, the claim to foreign priority benefits can be perfected only by way of a reissue application in accordance with the rationale set forth in *Brenner* v. *State of Israel, supra*.

RENE D. TEGTMEYER,
Assistant Commissioner for Patents.

July 25, 1986.

Availability of Foreign Patents

The full collection of foreign patents maintained by the Patent and Trademark Office is now available. This includes the many foreign patents which have been unavailable for some time due to a shelving collapse at the Patent and Trademark Office's Newington, Va. storage facility. That portion of the collection has been restored to operation.

All requests for foreign patents can be presented in person to:

Foreign Patent Document Retrieval
and Copy Branch
Crystal Plaza Bldg. 3–4, 2nd Fl.,
Scientific Library
2021 Jefferson Davis Hwy.
Arlington, Va.

or can be mailed to:

Patent and Trademark Office
Scientific Library
Foreign Patent Division
Washington, D.C. 20231

Each document copy requested is $10.

WILLIAM S. LAWSON,
Administrator for Documentation.

Registration to Practice

The following list contains the names of persons applying for registration to practice before the United States Patent and Trademark Office. These persons have been given provisional recognition pursuant to 37 CFR 10.9(a) to prepare and prosecute patent applications before the Office. Final approval for registration is subject to establishing to the satisfaction of the Director of the Office of Enrollment and Discipline that the person seeking registration is of good moral character and repute. [37 CFR 10.7(a)]. Accordingly, any information tending to affect the eligibility of any of the following applicants on moral, ethical, or other grounds should be furnished the Director, Office of Enrollment and Discipline on or before Sept. 30, 1986:

Bailey, John P., 240 Old "Y" Rd., Golden, Colo. 80401
Boggs, Bruce J., Jr., 2809F S. Woodrow St., Arlington, Va. 22206
Botulynsky, George A., National Defence Headquarters, 101 Colonel By Dr., Ottawa, Ontario, Canada K1A 0K2
Dondfrio, John, 3719–B Madison La., Falls Church, Va. 22041
Gilden, Leon, 5210 S. Cree Dr., Spokane, Wash. 99207
Hofbauer, Patrick J., Hirons, Rogers & Scott, Suite 201, 222 Lakeshore Rd. East, Oakville, Ontario, Canada LJ6 6J3
Miller, Guy M., 25 Ashmont Ct., Silver Spring, Md. 20906
Muncy, Joe M., Jr., 3052 S. Buchanan St., C–1, Arlington, Va. 22206
Williamson, Dennis J., 8318 S. Tripp St., Chicago, Ill. 60652

CAMERON WEIFFENBACH,
Director, Office of Enrollment and Discipline.

July 30, 1986.

Public Advisory Committee for Trademark Affairs Notice of Open Meeting

In accordance with Section 10(a)(2) of the Federal Advisory Committee Act (Public Law 92–463), announcement is made of the following Committee meeting:

The Public Advisory Committee for Trademark Affairs will meet from 9:30 a.m. until 5:00 p.m. on Sept. 4, 1986, at the U.S. Patent and Trademark Office in Rm. 11C24 of Bldg. 3, Crystal Plz., located at 2021 Jefferson Davis Hwy., Arlington, Va.

The agenda for the meeting is as follows:

(1) Status of Trademark Examining Operation Activities
(2) Operations of the Trademark Trial and Appeal Board
(3) Post-Registration Activities
(4) Quality of the Registration Process
(5) Financial Reports
(6) Automation Activities

The meeting will be open to public observation; approximately twelve (12) seats will be available for the public on a first-come first-served basis.

If time permits, oral comments by the public of three (3) minutes on each topic within the above agenda will be allowed. Written comments and suggestions will be accepted before or after the meeting on any of the matters discussed.

Copies of the minutes will be available upon request.

For further information, contact Ellen J. Seeherman, Office of the Assistant Commissioner for Trademarks, Rm. CP3-11C17, Patent and Trademark Office, Washington, D.C. 20231. Telephone: 703-557-7464.

Aug. 4, 1986.

DONALD J. QUIGG,
Assistant Secretary and
Commissioner of Patents
and Trademarks.

Status of PTO Services

The following is an update of the status of PTO services for July 1986:

Service Item	FY 1985 Goal (Calendar Days)*	FY 1986 Goal (Calendar Days)*	Monthly Average (Calendar Days)*
Filing Receipts:			
Patents	22	22	29**
Trademarks	30	30	40***
Patent/Trademark Copies:			
Special Window Coupons	1	1	4 hours
Window Coupons	5	5	2.1
Mail Coupons	15	12	4
Letter Orders	24	16	10
Date of oldest unfilled order			July 23, 1986
Current Mail Date being processed			July 29, 1986
Certified Copies:			
Trademark Registrations	30	21	15
Applications-As-Filed	20	10	9
File-Wrapper/Contents	N/A	N/A	5
Walk-up Certification	1	1	1.5
Trademark Search Library:			
Filing Pending Marks	21	21	38
Filing Reg. Certificates	3	Issue Date	4 days Late
Assignments:			
Patents	25	20	19
Trademarks	25	20	19
Avg. Days from Issue Fee Payment to Issue Date	90–100	90–100	101****
Issue Fee Receipts Mailed	4 weeks prior to Issue Date	4 weeks prior to Issue Date	On schedule
Patent Copies Available	Issue Date	Issue Date	99% on Issue Date
Trademark Copies Available	Issue Date	Issue Date	99% on Issue Date

*Unless otherwise noted.
**Monthly average reduced by 3 days.
***Tapes received late from contractor.
****Interval from fee payment to issuance is increasing because of the decision to print 4,000 fewer patents than originally planned in FY 86.

IMPROVEMENTS TO SERVICES

- *File History Retrieval* —All the shelving has been installed at the recently established PTO Supplemental File Repository in Newington, Va. All abandoned patent applications formerly stored at the Federal Records Center in Suitland, Md. have been retrieved and are now stored at Newington. U.S. Patent numbers 3,600,000 through 3,999,999 are in the process of being retrieved from the Records Center for storage at Newington. Estimated completion of this transfer is early Aug. 1986.

HELPFUL HINTS FROM THE PTO

- *NEW APPLICATIONS—Payment of Processing and Retention Fees*—An application, which has become abandoned pursuant to 37 CFR 1.53(d) for failure to pay the filing fee, will be disposed of unless the processing and retention fee set forth in §1.21(l) is paid within the 1-year period referred to in §1.53(d). Moreover, the processing and retention fee must be timely paid in order to obtain certified copies of the application (e.g., for convention priority purposes) or to establish in a later filed application the filing date benefit of an earlier copending application under 35 USC 120 and 37 CFR 1.78(a)(3). Therefore, an application which has become abandoned for the reasons set forth above should be immediately reviewed in order to timely determine the advisability of submitting a processing and retention fee payment.
Direct any questions regarding this helpful hint to:

Al Lawrence Smith
Director, Group 350
(703) 557-3414

Aug. 1, 1986.

THERESA A. BRELSFORD,
Assistant Commissioner
for Administration.

PATENT NOTICES

Certificates of Correction for the Week of Aug. 26, 1986

Re. 32,022	4,546,090	4,574,896	4,587,778
D. 283,449	4,547,927	4,574,903	4,587,953
4,340,437	4,548,015	4,575,446	4,587,984
4,343,210	4,549,802	4,575,629	4,588,124
4,397,730	4,550,192	4,575,660	4,588,231
4,398,653	4,550,710	4,575,776	4,588,312
4,406,692	4,551,735	4,575,945	4,588,372
4,444,391	4,551,818	4,576,357	4,588,460
4,448,499	4,551,986	4,577,201	4,588,540
4,469,833	4,552,442	4,577,318	4,588,709
4,472,110	4,554,369	4,577,454	4,588,979
4,477,305	4,554,805	4,577,706	4,589,476
4,479,740	4,555,241	4,577,762	4,589,679
4,488,179	4,555,560	4,578,120	4,589,958
4,491,618	4,555,568	4,578,828	4,590,010
4,493,797	4,556,264	4,578,974	4,590,054
4,498,076	4,557,877	4,579,117	4,590,075
4,499,165	4,557,915	4,581,036	4,590,550
4,499,183	4,558,134	4,581,058	4,590,551
4,499,385	4,560,749	4,581,264	4,590,558
4,508,435	4,561,024	4,581,308	4,590,666
4,514,867	4,561,397	4,581,533	4,590,796
4,515,351	4,561,461	4,581,666	4,590,938
4,518,613	4,561,765	4,582,216	4,591,426
4,518,670	4,563,421	4,583,707	4,591,443
4,521,585	4,563,431	4,584,503	4,591,503
4,522,198	4,563,820	4,584,742	4,591,523
4,522,863	4,565,421	4,584,867	4,591,575
4,522,970	4,565,575	4,584,970	4,591,624
4,527,559	4,565,931	4,584,982	4,591,960
4,527,777	4,566,231	4,585,034	4,592,590
4,528,131	4,566,273	4,585,142	4,592,595
4,530,063	4,566,483	4,585,156	4,592,709
4,531,703	4,566,670	4,585,256	4,592,917
4,532,060	4,567,141	4,585,284	4,592,988
4,533,231	4,567,527	4,585,404	4,593,175
4,535,215	4,567,648	4,585,443	4,593,314
4,537,045	4,567,818	4,585,562	4,593,460
4,537,258	4,569,382	4,585,641	4,593,951
4,538,690	4,569,683	4,586,060	4,594,194
4,539,712	4,569,985	4,586,157	4,594,262
4,539,882	4,571,759	4,586,163	4,594,605
4,542,137	4,572,268	4,586,388	4,594,620
4,542,384	4,572,341	4,586,544	4,594,682
4,542,391	4,572,637	4,586,565	4,595,518
4,542,496	4,572,957	4,587,114	4,596,014
4,543,300	4,573,115	4,587,132	4,596,075
4,543,588	4,573,142	4,587,219	
4,544,931	4,573,343	4,587,570	
4,544,982	4,573,350	4,587,607	

Disclaimers

Des. 251,088. —*Logan W. Johnson,* Minnetonka, Minn.; *John W. Henline,* Lisbon, N. Dak.; *Joseph M. Mather,* Lisbon, N. Dak.; *James J. Bauer,* Lisbon, N. Dak. SKID STEER LOADER VEHICLE BODY. Patent dated Feb. 13, 1979. Disclaimer filed June 20, 1986, by the assignee, *Clark Equipment Co.*

The term of this patent subsequent to May 2, 1992 has been disclaimed.

Des. 264,939.—*Hugh J. Stock,* Saratoga, Calif. BOTTLE OR THE LIKE. Patent dated June 15, 1982. Disclaimer filed June 16, 1986, by the assignee, *Pacer Technology & Resources, Inc.*

The term of this patent subsequent to June 15, 1982, has been disclaimed.

4,074,990.—*Stanley F. Brzozowski,* Coraopolis; *Joseph E. Cooper,* Brackenridge, both of Pa. METHOD OF PREPARING COLEMANITE-CONTAINING GLASS BATCH. Patent dated Feb. 21, 1978. Disclaimer filed June 19, 1986, by the assignee, *PPG Industries, Inc.*

Hereby enters this disclaimer to claims 1, 2, 3, 4 and 5 of said patent.

4,161,012.—*Francis V. Cunningham,* Western Springs, Ill. HIGH VOLTAGE PROTECTION APPARATUS. Patent dated July 10, 1979. Disclaimer filed Mar. 3, 1986, by the assignee, *Joslyn Corp.*

Hereby enters this disclaimer to claims 46 and 48 of said patent.

4,474,768.—*Gene M. Bright,* Groton, Conn. N-METHYL 11-AZA-10-DEOXO-10-DIHYDROERYTHROMYCIN A, INTERMEDIATES THEREFOR. Patent dated Oct. 2, 1984. Disclaimer filed June 19, 1986, by the assignee, *Pfizer, Inc.*

Hereby enters this disclaimer to claims 1, 2, 7 and 8 of said patent.

4,592,583.—*William L. Dresen,* Baraboo; *William F. Price,* Portage; *Phillip L. Emery,* Portage; *Harlan W. Breezer,* Portage, all of Wis. TRUCK CARGO BED LINER. Patent dated June 3, 1986. Disclaimer filed June 3, 1986, by the assignee, *Penda Corp.*

Hereby enters this disclaimer to claim 18 of said patent.

NOTICE

Following is a corrected version of the Final Rule for the Revision of Trademark Fees that was published in the Federal Register on August 4, 1986 at page 28052. The notice to correct the effective date to October 4, 1986 and make other typographical corrections was published in the Federal Register on August 8, 1986.

DEPARTMENT OF COMMERCE

Patent and Trademark Office
37 CFR Parts 1 and 2

[Docket No. 60457-6119]

Revision of Trademark Fees

AGENCY: Patent and Trademark Office, Commerce

ACTION: Final rule

SUMMARY: The Patent and Trademark Office is amending the rules of practice in patent and trademark cases, Parts 1 and 2 of title 37, Code of Federal Regulations, to adjust trademark fee amounts. This action is necessary at this time because trademark operating costs have increased over the past three and one-half years. The Commissioner is authorized by section 31 of the Trademark (Lanham) Act of 1946, as amended (15 U.S.C. 1113), to establish fees for the filing and processing of an application for the registration of a trademark or other mark and for all other services and materials related to trademarks and other marks.

EFFECTIVE DATE: October 4, 1986.

FOR FURTHER INFORMATION CONTACT: Margaret M. Laurence, Assistant Commissioner for Trademarks by telephone at (703) 557-3061 or by mail marked to her attention and addressed to the Commissioner of Patents and Trademarks, Washington, D.C. 20231.

SUPPLEMENTARY INFORMATION: This rule change is designed primarily to adjust trademark fees because costs have increased and the Commissioner is authorized to adjust fees for the filing and processing of an application for the registration of a trademark or other mark and for all other processing, services or materials related to trademarks which have been established by the Commissioner in accordance with section 31 of the Trademark (Lanham) Act of 1946, as amended (15 U.S.C. 1113).

Adjustments to fees for filing and processing a patent application and for other processing, services or materials related to patents were made by rules published in the Federal Register on August 6, 1985, at 50 FR 31818, effective October 5, 1985.

Adjustments to fees for filing and processing a trademark application and for other processing, services or materials related to trademarks were not proposed at that time, pending review of automation cost requirements. The Patent and Trademark Office's proposal for an integrated Automated Trademark System was included in the President's FY 1987 Budget and the Office's revised Automation Master Plan that were submitted to the Congress in February 1986.

BACKGROUND INFORMATION: Trademark fees are authorized by section 31 of the Trademark (Lanham) Act of 1946, as amended (15 U.S.C. 1113). Section 31 grants the Commissioner the authority to establish trademark fees and the discretion to establish the level of Office costs to be recovered from trademark fees. The House Committee on the Judiciary, in House Report 97-542 accompanying H.R. 6260 that was enacted as Public Law 97-247, recommended a trademark fee schedule that was adopted by rule published in the Federal Register on July 30, 1982 at 47 FR 33086, effective October 1, 1982.

In House Report 97-542, the Committee stated that:

> "...[it] is aware of the concerns of users of the Trademark registration system, however, and intends to exercise vigorous oversight with respect to the Commissioner to ensure that fees remain at a reasonable level and that trademark registrations are processed in an efficient and cost effective manner. As part of this oversight, the Committee recommends the following fee structure to the Commissioner for Fiscal Year 1983.

Type of Fee:	Proposed fee
Application filing fee per class	$175
Renewal fee	300
Late renewal	100
Section 12(c) claim	100
New certificate	100
Certificate of correction	100
Disclaimer to registration	100
Amendment to registration	100
Per class combines section 8 and 15 affidavit	200
Per class section 8 affidavit alone	100
Per class section 15 affidavit alone	100
All petitions to Commissioner	100
Cancellation opposition per class	200
TTAB appeal	100
Certified copies	10
Copies of trademarks	1
Assignments	1/

> 1/ $100 plus for each mark in addition to 1."

The Patent and Trademark Office (PTO) believes it is reasonable to use fluctuations in the Consumer Price Index (CPI) during the previous three years to define the maximum aggregate revenue level that may be recovered from trademark fees for the three-year period 1986-1988. Fees would then be set to recover, in the aggregate, projected costs for the fee cycle, but under no circumstances would total revenues exceed the maximum revenue level that would be recovered if fees were adjusted by the CPI. This is consistent with the method mandated by Public Law 97-247 for adjusting patent fees.

The first step in the trademark fee adjustment process was to determine the maximum level of recovery for the three-year fee cycle. This was done by (1) multiplying present fees by projected workload for fiscal years 1986-1988, (2) totalling the results, and (3) applying the rate of fluctuation in the Consumer Price Index as determined by the Secretary of Labor.

The second step in the trademark fee adjustment process was to establish the total cost to be recovered from trademark fees for the three year period 1986-1988. The total costs for the filing and processing of an application for the registration of a trademark or other mark and for all other processing, services or materials related to trademarks were determined. The Office followed (1) the general guidelines set forth in OMB Circular A-25 entitled "User Charges", that establishes general policies for developing an equitable and uniform system of charges for certain Government services and property, and (2) the guidelines for accounting and reimbursement for sharing of information technology facilities as set forth in Appendix II to OMB Circular No. A-130 entitled "Management of Federal Information Resources."

The Office used cost-finding techniques for determining the costs of all processing, services and/or materials associated with each trademark fee. Costs were determined from the best available records and included both direct and indirect costs. Costs were adjusted to reflect projected increases or decreases contained in the President's FY 1987 Budget. These cost figures were documented by the Director, Office of Finance and reviewed by each responsible Assistant Commissioner.

The total projected costs for the three-year period 1986-1988 are lower than the maximum level of recovery which would be allowed if fees were adjusted strictly according to changes in the CPI during the past three years. In its adjustment of Trademark fees, PTO is expected to recover the total projected costs in fiscal years 1987 and 1988 plus a contingency of two percent of the estimated fee income for fiscal years 1987-1988.

This rule continues to follow the suggested fee schedule contained in House Report 97-542, with the exception of increases to the fee for filing an application for registration and the fee for a printed copy of a registered mark. As a result of continuing to follow this suggested fee schedule, over the two-year period, some trademark fees would recover more than their actual estimated cost and some would recover less than their actual estimated cost. Using the 1986-1988 workload projections, the total fee revenues generated by the adjusted fees for the three-year period, in the aggregate, would not exceed the total projected costs for trademarks for the same period, apart from the contingency.

It is intended that the amount of any fee due and payable on or after October 4, 1986 is the amount set in this rulemaking. For purposes of determining the amount of the fee to be paid, the date of mailing indicated on a proper Certificate of Mailing, where authorized under section 1.8 of title 37, Code of Federal Regulations, will be considered to be the date of receipt in the Office. A "Certificate of Mailing under section 1.8" is not "proper" for items which are specifically excluded from the provisions of section 1.8. Section 1.8 of title 37, Code of Federal Regulations, should be consulted for those items for which a Certificate of Mailing is not "proper." The provisions of section 1.10, relating to filing of papers and fees by "Express Mail" with certificate, however do apply to any paper or fee to be filed in the Office. If an application or fee is filed by "Express Mail" with a certificate of mailing dated October 4, 1986, the amount of the fee to be paid is the fee established herein if a change is being made in the fee.

To ensure clarity in the implementation of the fee proposals, a discussion of specific sections is set forth below:

DISCUSSION OF SPECIFIC CHANGES

Section 1.24 Coupons

Section 1.24 is amended to adjust the fee for the purchase of coupons for trademarks to make it comparable to the proposed fee required for the purchase of a printed copy of a registered mark.

Section 2.6 Trademark fees

Section 2.6 is amended to adjust trademark fees established pursuant to the Trademark (Lanham) Act of 1946, as amended (15 U.S.C. 1113) and set forth in paragraphs (a) and (n) of this section to more closely reflect the cost to the Office of such processing.

Section 2.6, paragraph (o) is amended to provide a $25 fee for the expedited handling of a request for a certified copy of a trademark record. Currently there is no procedure for such expedited handling, and the Office has received many requests that this service be provided.

Section 2.6, paragraph (q), is amended to clarify that the fee for recording documents applies to every paper which relates to the property in a registration or application. This is in accord with past and current Office policy.

Response to Comments on the Rules

Special comments were received on the proposed rule changes. Three letters submitting written comments were received. Oral testimony was presented by two people at the public hearing conducted on June 16, 1986. All of the written and oral comments were considered in adopting the changes set forth herein. The comments submitted appear below along with responses thereto.

Comment: The trademark fee increases of 1982 were accompanied by a commitment that the Trademark Operation would be shielded from government-wide cuts aimed at reducing the deficit. The applicability of the fiscal year 1986 Gramm-Rudman-Hollings sequestration of trademark funds represents a failure of the Federal Government to live up to its side of the bargain. Until these funds are restored to the Trademark Operation and the Administration states that it will not again undermine this provision of law, any effort to increase trademark fees must be deferred.

Reply: Public Law 97-247, enacted August 27, 1982, did not provide that the Trademark Operations are exempt from government-wide cuts in expenditures aimed at reducing the federal deficit. The only restriction, imposed by section 3(g), is that the fees collected from trademark activities "shall be used exclusively for the processing of trademark registrations and for other services and materials related to trademarks." The PTO has fully complied with this requirement. Moreover, the Supreme Court has recently decided the constitutionality of Gramm-Rudman-Hollings (The Balanced Budget and Emergency Deficit Control Act of 1985, Public Law 99-177, enacted December 12, 1985), holding that the reductions to the federal deficit must be

accomplished via the enactment of a joint resolution of the Congress. See Bowsher v. Synar, Nos. 85-1377, 85-1378, and 85-1379 slip op. at 20 (July 7, 1986). Consequently, any budget reductions made by the PTO that are mandated by such a joint resolution will be pursuant to law. Therefore, the PTO is not required to defer increases in trademark fees since the provisions of Public Law 97-247 do not shield the Trademark Operations from such budget cuts and any such cuts are made pursuant to subsequent law.

Comment: The House of Representatives and the Senate have passed differing versions of H.R. 2434. Both versions prohibit the use of user fees for the search rooms and the House version prohibits user fees for automation. The PTO should withdraw the current proposal, and publish a new proposal for public comment, if needed, after Congress passes the authorization bill.

Reply: The PTO already is in compliance with the provision of the Senate and House authorization bills that prohibits use of fees to fund the search room. In fiscal year 1986, unobligated appropriated funds carried forward from fiscal year 1985 are being used to fund the paper Trademark Search Room. Appropriated funds for the Search Room were requested in the pending FY 1987 President's Budget.

Although the House version of H.R. 2434 prohibits the use of fee income for automation expenditures, it does not provide appropriated funds. The Senate version of H.R. 2434 does not prohibit the use of fee income for automation expenditures. Since there are significant differences between the House and Senate versions on this and other provisions, the PTO must wait for final action by both the Congress and the President.

In the meantime, the PTO will continue to operate in accordance with the 1986 Appropriations Act and the pending FY 1987 President's Budget, which fund Automation through user fees. If legislation is ultimately passed by the Congress and signed by the President that is contradictory to this plan, appropriate adjustments will be made. The suggestion to withdraw the current proposal, and to publish a new proposal for public comment, if needed, after Congress passes the authorization bill has not been adopted.

Comment: It is important for the PTO to make available detailed information concerning activities that are not supported by appropriations since government operations which are supported by user fee income receive far less scrutiny from government authorities (cabinet level department officials, Office of Management and Budget, and appropriation committees in Congress) than operations which are supported by appropriations.

Reply: The assertion that government operations supported by user fee income receive far less scrutiny from government authorities is not correct. Fee supported activities receive the same amount of oversight as activities supported by appropriations. In Senate Report 99-305 accompanying bill H.R. 2434, the Committee on the Judiciary said that:

"...Congress never envisioned that activities financed by user fees would be any more beyond the scrutiny of Congressional oversight than those activities that are paid for by appropriations. On the contrary, it is clear that the Office's

authority to collect and spend user fee money does not remove these activities from Congressional oversight and control.

...Both the authority to raise general revenue and the authority to allow the Office to set fees rests with Congress. If Congress is to carry out the responsibilities attending both of these exercises of its power, it must carefully review the effectiveness and efficiency of all agency activities no matter how they are funded. While it may be proper to restrict the funding of certain activities to appropriations, such restrictions cannot be justified solely by reference to the need to increase oversight. That reasoning implies that Congress has less concern over how the agency spends user fee money. In the case of the Patent and Trademark Office, this would imply that most of the agency's activities are not subject to effective congressional review, which, as pointed out above, is simply not true."

Specific examples of oversight include: (1) The budget process requires program levels to be fully justified regardless of funding sources; (2) the budget request is thoroughly analyzed and evaluated, without regard to revenue source, by the Department of Commerce, Office of Management and Budget (OMB) and the Appropriations Committees in the Congress; (3) fee revenues are appropriated annually by the Congress; (4) the use of fee money by the PTO is subject to the same OMB apportionment process as the use of appropriations; (5) Department of Treasury reports do not distinguish between funding sources; and (6) reprogramming (or redirection) of funds that vary from the enacted budget require Department and OMB approvals and Congressional notification, regardless of funding source.

In addition, since 1983 the PTO has routinely provided the Public Advisory Committee for Trademark Affairs with detailed reports which fully disclose the source and use of all trademark-related resources.

Comment: It is contrary to existing law (Public Laws 96-517 and 97-247) to spend user fee income for the search rooms and automation.

Comment: Despite representations that major capital expenses would be underwritten by General Fund revenues, not user fees, the PTO continues to rely on user fee income to finance its trademark automation project and the public search room.

Reply: User fee income is not being spent on the paper Trademark Search Room in fiscal year 1986. The paper Trademark Search Room is being funded from unobligated appropriated funds carried forward from fiscal year 1985. For fiscal year 1987, the PTO has requested $322,000 in appropriated funds to maintain the paper Trademark Search Room. Reference page 41 of the PTO's 1987 Budget Submission to the Congress.

Public Law 96-517, although enacted into law, was never fully implemented because the Congress passed H.R. 6260 which was enacted as Public Law 97-247 on August 22, 1982. The restrictions on the use of income from fee revenues, which were included in House Report 96-1307 accompanying Public Law 96-517, were based upon a 50 percent recovery of patent and trademark costs from user fees. Then-Commissioner Mossinghoff testified before the Subcommittee on Courts, Civil Liberties, and Administration of Justice, when Congress was considering H.R. 6260, that

the Administration's PTO user fee program was proposed to improve the quality of service at the PTO by reducing patent pendency, trademark pendency and automating patent and trademark operations. The Commissioner went on to say that: "The major increases in the three program areas will be paid for by the sharp increase in user fees that we are recommending." The Congressional debate on this proposal indicates that the Subcommittee approved these innovative fee provisions in order to improve the level of patent and trademark services provided to users of the office. Expenditure of funds since 1983 is believed to have met this goal.

Comment: There is no reason why any fee increases have to be in effect by October 1, 1986.

Reply: While there is no legal compulsion for an October 1, 1986 effective date for the fee increase, there are financial reasons for adjusting fees at that time. For every one-month of delay beyond October 1, 1986, the Trademark Operation will receive about $135,000 less in fee revenues which will mean that the program contemplated for fiscal year 1987 will be affected. The PTO's budget is prepared annually for the period October 1 through September 30 and it is important that planned expenditures equal planned income.

Comment: The Notice of Proposed Rulemaking justifies the proposed fee increase on the ground that the amount of the increase is less than the increase that has occurred in the Consumer Price Index.

Reply: The proposed fee increase is justified on the basis that costs have increased since October 1982 when the present fee schedule was established, and the Commissioner is authorized by section 31 of the Trademark (Lanham) Act of 1946, as amended (15 U.S.C. 1113) to adjust fees.

On page 18290 of the Notice of Proposed Rulemaking under Summary it is stated that: "This action [to adjust trademark fees] is necessary at this time because trademark operation costs have increased over the past three and one-half years." On the same page, third column, the methodology used to determine the costs associated with each trademark fee was described. The Notice of Proposed Rulemaking then goes on to say that: "The total projected costs for the three-year period 1986-1988 are lower than the maximum level of recovery which would be allowed if fees were adjusted strictly according to changes in the CPI during the past three years." In other words, Trademark Operation costs for 1987-1988 are projected to be less than changes in the CPI during the past three years.

Comment: PTO has failed to justify why the trademark fee increases are necessary. The PTO should make calculations and other relevant information pertaining to the proposed increases available to the public and the Congress.

Reply: Because of the volume, it was not feasible for the PTO to publish the calculations and other relevant information upon which the proposed fee increases were based. As stated in the third column of page 18290 of the Notice of Proposed Rulemaking, the Office followed OMB guidelines and the cost figures were documented by the Director, Office of Finance [a Certified Public Accountant] and reviewed by each responsible Assistant

Commissioner. All of the backup documentation is available for review, upon request.

Comment: If costs are reduced as they were through the forced reductions in the PTO's budget authority under the Deficit Reduction Act, the entire concept on which the PTO calculates its trademark fees must be reconsidered before further fee increases can be reasonably considered.

Reply: The 1987 Federal budget submitted by the President to the Congress meets the 1987 deficit reduction goal established by the Balanced Budget and Emergency Deficit Control Act of 1985. Therefore, there is no basis for the PTO to assume alternative funding levels in 1987. The suggestion that the trademark unit cost calculations be reconsidered before further fee increases has not been adopted.

Comment: In the Notice of Proposed Rulemaking, the PTO requested comments on the methodology it employed in calculating the need for a fee increase. It is impossible to comment on the process itself in the absence of more detailed information.

Reply: The PTO did not request comments on the methodology it employed in calculating the need for a fee increase. On page 18291 of the Notice of Proposed Rulemaking, first column, it states that: "In its adjustment of Trademark fees, PTO seeks to recover total projected costs in FY 1987 and FY 1988 and to provide for a contingency of two percent of the estimated fee income for fiscal years 1987-1988. PTO seeks comments on this approach." No comments were received on the planned contingency. This fact notwithstanding, the PTO has adopted this approach as part of its excess fee policy.

Comment: The Notice of Proposed Rulemaking does not explain what expenses of the Office will be paid with trademark fees. In particular, the notice does not explain what items are included in "indirect costs."

Reply: The Commissioner has the authority to establish trademark fees and the discretion to establish the level of Office costs to be recovered from trademark fees. Since fiscal year 1983, the PTO has recovered 100 percent of the costs related to trademark processing, both direct and indirect. Direct costs are those represented by the Trademark budget activity (page 29 of the PTO's 1987 Budget Submission to the Congress): Trademark examination (including contractual costs for T-Search), the Trial and Appeal Board, and Trademark printing. Indirect costs are costs incurred by other offices in the PTO which carry out trademark activities: Customer Services (providing trademark copies to examining attorneys, processing certificates of correction and assignments, etc.), Publications (administration of the contract to print the Trademark Official Gazette), Management Planning (collecting and processing trademark fees), Administrative Services (mail processing, files repository, etc.) and Automation (TRAM operations, ATS implementation and operations, etc.) No trademark fees are used to fund the Office of the Commissioner, the Office of Legislation and International Affairs, the Office of the Solicitor, staff in the immediate Office of the Automation Administrator, or any other PTO function that is not directly related to trademark processing.

Comment: The Notice of Proposed Rulemaking does not explain how the Office's revised automation plans have affected the need for fee increases.

Reply: The Notice of Proposed Rulemaking, second column, page 18290 states that: "The Patent and Trademark Office's proposal for an integrated Automated Trademark System was included in the President's FY 1987 Budget and the Office's revised Automation Master Plan that were submitted to the Congress in February 1986." The PTO's 1987 Budget Submission to the Congress, page 32 states that: "The PTO requests a net increase of $901,000 to fund an automation initiative providing further improvements in the capabilities, performance, availability, and efficiency of the existing systems through enhancements for an integrated ATS (Automated Trademark System).... The full cost of the increase has been partially offset by a decrease of $624,000 for the T-Search contract. ATS will provide automated support to all Trademark operations currently supported by TRAM and T-Search."

In addition to Automation, other increases, such as four new positions for the Trademark Trial and Appeal Board, have caused costs to increase thereby necessitating the fee increase.

Comment: The Notice of Proposed Rulemaking contains no discussion of the policy of the House Judiciary Committee in 1982 of keeping the filing fee relatively low and recovering more than the actual cost for other trademark services or materials. Was this consideration taken into account in establishing the proposed fees?

Reply: The suggestion of the House Committee on the Judiciary that the filing fee be kept as low as possible to foster use of the Federal registration system was the basis for the proposed fee adjustments. The Notice of Proposed Rulemaking, first column, page 18290, quoted the text of House Report 97-542 which suggested that the Commissioner ensure that fees remain at a reasonable level. Included in the quote was the House Committee's recommended fee schedule that was adopted by rule published in the Federal Register on July 30, 1982.

Further, on page 18291, first column, it is stated that: "This proposed rulemaking would continue to follow the suggested fee schedule contained in House Report 97-542, with the exception of proposed increases to the fee for filing an application for registration and the fee for a printed copy of a registered mark. As a result of continuing to follow this suggested fee schedule, over the two-year period, some trademark fees would recover more than their actual estimated cost and some would recover less than their actual estimated cost."

Comment: The proposed increase of $25.00 for filing an application is against the concept of keeping the filing fee relatively low and recovering more than actual cost for other trademark services or materials.

Reply: The projected cost for filing an application for fiscal years 1987-1988 is $242.84 per application, per class. The Office has set the application fee at $200.00 or 21.4 percent below cost. At that reduced level, the Trademark Operation will lose almost $6 million over the two-year period which must be made up from other Trademark fees. The Trademark Operation is also losing revenues on other fees directly related to the

Federal registration of a trademark, i.e., fees for filing oppositions, appeals, and petitions. Combined with the application fee shortfall, the total loss over the two-year period will be almost $10 million. On the other hand, fees from renewals, Section 8 and 15 affidavits, and assignments are expected to generate excess revenues of about $9 million. This excess, plus another $1 million generated from some other trademark fees will equal the shortfall caused by the reduced fees for processing applications, oppositions, appeals and petitions.

Comment: The PTO should explain why it charges $100 for a trademark assignment and only $7.00 for a patent assignment. The cost to the government of recording a trademark assignment could not even come close to the $100 fee being charged.

Reply: The PTO charges more than the actual cost to record trademark assignments in order to subsidize other areas of the Trademark Operation, specifically the processing of applications. This is in accordance with the fee structure suggested by the House Committee on the Judiciary in House Report 97-542 which accompanied the bill which was enacted as Public Law 97-247. This policy was also recommended by various bar groups, including the Public Advisory Committee for Trademark Affairs.

Comment: Trademark fees are becoming increasingly onerous, particularly on small businesses which must often select less than the total number of classes to which they are entitled to file, for economic reasons. The filing fee for a trademark application already exceeds that for a small entity filing a patent application.

Reply: As reported on page 18291 of the Notice of Proposed Rulemaking, the General Counsel of the Department of Commerce certified to the Small Business Administration that the proposed rule change will not have a significant adverse economic impact on a substantial number of small entities because the increase is modest in comparison with the 400 percent increase in the application fee in October 1982, and the increase then had no noticeable impact. While the Office has no way of ascertaining which applications are filed by small businesses, a review of the number of applications filed by individuals and partnerships during the years 1980-1982 prior to the 400 percent increase and the years 1983-1985 after the fee increase showed an increase, rather than a decrease, in the number of filings by individuals. This is confirmed by the total figures on filing which indicate that fees have not deterred applicants. The annual number of application classes filed for prior to the fee increase was 50,672, 52,149 and 55,152 in fiscal years 1979, 1980 and 1981, respectively. There was a dump of cases in September 1982 to avoid the October 1, 1982 fee increase, which distorts the filing data for fiscal years 1982 and 1983. However, filings have continued to increase at over five percent a year in 1984 and 1985 (61,480 and 64,677, respectively). Latest projections for 1986 indicate we will be receiving almost 68,800 applications, or 6.3 percent more than 1985.

Comment: Trademark fee income has been diverted to non-trademark activities.

Reply: No trademark fee income is used for any purpose other than trademark-related activities.

Comment: The PTO has vastly underestimated and understated the number of requests it receives for trademark copies and, as a consequence, Trademarks is not receiving appropriate credit for the income this service generates.

Reply: It is beyond the control of the PTO if a user buys a coupon for a patent copy and then uses it to pay for a trademark copy. To comply with the provisions of Public Law 97-247 that trademark fee income be used only for trademark-related activities, the Office of Finance has been crediting the Trademark account with revenues that equate to the number of trademark copies actually sold each month by the copy fulfillment contractor. The same accounting adjustment is being used for copies made on the vendor-operated copy machines.

Comment: The notice does not explain the 50 percent increase in the cost of printed copies of registered marks.

Reply: The cost of providing one trademark copy is $1.95 based on projected costs for fiscal years 1987 and 1988. These costs include $43,100 for personnel compensation and benefits, $53,200 for contractor costs, $25,300 for services, supplies and depreciation of capital equipment, and $24,500 for general and administrative expenses. Assuming 74,900 trademark copies will be sold over the two-year period, the unit cost is $1.95. The PTO proposed to increase the fee for a trademark copy by $.50 to $1.50 to more closely reflect the cost of providing a trademark copy, and to make it comparable to the fee for a patent copy for ease of administration.

Comment: How is the $25.00 fee for expedited handling of certification requests justified?

Reply: The Office followed OMB Circular A-25 Guidelines on "User Charges" to determine the projected direct and indirect costs for expedited handling of certification requests. Circular A-25 provides that a reasonable charge should be imposed to recover the full cost to the Government of rendering a service to an identifiable recipient.

The Assistant Commissioner for Trademarks has estimated that about 1,000 requests for expedited certification would be received each year. This estimate is based on the number of public inquiries presently received for special handling for certifications.

Assuming about 2,000 requests for expedited certification will be received during the two year period 1987-1988, it is estimated that the costs would be $49,248, or $25.00 per unit rounded to the nearest dollar. The costs include $40,982 for personnel compensation and benefits for 2.1 staff years of effort, and $8,266 for general and administrative expenses (20.17 percent of direct costs).

The PTO intends to issue guidelines regarding the expedited service procedures prior to October 1, 1986. Requests delivered to the Trademark Services Division before noon will be available for pick-up or mailing no more than three working days thereafter.

Comment: The Senate version of H.R. 2434 would require the PTO to report annually several items of statistical information

concerning the Office's fee collections and expenses; i.e., a list of patent and trademark fee collections, and lists of the activities of the Office supported by patent fees, trademark fees and appropriations. This type of information should be made available to the public before any fees are increased.

Reply: The PTO is already providing lists of patent and trademark fee collections in Table 4 of the Commissioner's Annual Report. The report is sent to the Congress and is available for public dissemination. Since 1983, the PTO has periodically provided detailed information to the Public Advisory Committee on Trademark Operations which includes a list of PTO activities supported by trademark fees. Upon enactment of an authorization bill, the PTO will comply with the requirements of both the legislation and the accompanying report.

Comment: The PTO should expand the information contained in the Congressional budget under Fee Functions to show the amount of trademark and patent fee income dollars and the amount of appropriated dollars that are being used to support each item in its budget.

Reply: The Congressional Budget is prepared in the format requested by the House and Senate Appropriations Subcommittees. As indicated above, the PTO will comply with any additional reporting requirements that may be included in enacted authorizing legislation.

With regard to trademark user fees, since 1983 the PTO has routinely provided the Public Advisory Committee for Trademark Affairs with detailed reports which fully disclose the source and use of all Trademark-related resources. The reports include resources (e.g., unobligated resources, balances carried forward from prior years, excess fees from prior years, and current-year's fees); expenditures for direct trademark activities (examination, T-Search, Trial and Appeal Board, and printing), and indirect trademark activities (Customer Services, Publications, Management Planning, Administrative Services, and Automation); and backup documentation as requested. The PTO has regularly modified its reporting formats to accommodate the needs of the user community and is presently working with the Advisory Committee to develop a "business-type" financial report.

Comment: The PTO should adopt a policy of giving the public a minimum of 60 days to comment after every rule change proposal is published in the Federal Register.

Reply: The Administrative Procedure Act (5 U.S.C. 551 et. seq.) requires that the public be given the right to participate in the rulemaking process by commenting on proposed rules. The PTO makes every attempt to provide between 45 and 60 days but no less than 30 days for public comment. The public comment period is dependent on internal and external review requirements and effective date constraints.

OTHER CONSIDERATIONS: The rule change is in conformity with the requirements of the Regulatory Flexibility Act (Public Law 96-354), Executive Order 12291, and the Paperwork Reduction Act of 1980, 44 U.S.C. 3501 et seq. There are no information collection requirements relating to trademark fee rules.

The General Counsel of the Department of Commerce certified to the Small Business Administration that the rule change will not have a significant adverse economic impact on a substantial number of small entities (Regulatory Flexibility Act, Public Law 96-354). Although these rules increase the trademark fees, the cost of Federal registration of a trademark is a small part of the cost of doing business. Furthermore, the incremental change is modest in comparison with the increase in the application fee in October 1982, and the increase then had no noticeable impact. Office records show no decline in the number of applications filed by individuals and partnerships after the October 1982 fee increases, and the rules maintain the present fee schedule for the most part, and limit the increase in the filing fee to the minimum amount possible.

The Patent and Trademark Office has determined that this rule change is not a major rule under Executive Order 12291. The annual effect on the economy will be less than $100 million. There will be no major increase in costs or prices for consumers, individual industries, federal, state, or local government agencies, or geographic regions. There will be no significant adverse effects on competition, employment, investment, productivity, innovation, or on the ability of United States-based enterprises to compete with foreign-based enterprises in domestic or export markets.

List of Subjects in 37 CFR Parts 1 and 2

Administrative practice and procedure, Authority delegations (government agencies), Conflict of interest, Courts, Inventions and patents, Lawyers, Trademarks.

Notice is hereby given that pursuant to the authority granted to the Commissioner of Patents and Trademarks by 35 U.S.C. 6, 15 U.S.C. 1113 and 1123, and Public Law 97-247, the Patent and Trademark Office is amending title 37 of the Code of Federal Regulations as set forth.

PART 1 - RULES OF PRACTICE IN PATENT CASES

1. The authority citation for 37 CFR Part 1 would continue to read as follows:

Authority: 35 U.S.C. 6, unless otherwise noted.

2. Section 1.24 is proposed to be revised to read as follows:

§1.24 Coupons

Coupons in denominations of one dollar and fifty cents for the purchase of patents, designs, defensive publications, statutory invention registrations, and trademark registrations are sold by the Patent and Trademark Office for the convenience of the general public; these coupons may not be used for any other purpose. The one dollar and fifty cent coupons are sold individually and in books of 50 with stubs for record for $75. These coupons are good until used; they may be transferred but cannot be redeemed.

PART 2 - RULES OF PRACTICE IN TRADEMARK CASES

1. The authority citation for 37 CFR Part 2 would be revised to read as follows:

Authority: 15 U.S.C. 1123; 35 U.S.C. 6, 25, unless otherwise noted.

2. Section 2.6 is amended by republishing the introductory text and revising paragraphs (a), (n), (o) and (q) to read as follows.

§2.6 Trademark fees.

The following fees and charges are established by the Patent and Trademark Office for trademark cases:

(a) For filing an application, per class.....$200.00

* * * * *

(n) For printed copy of registered mark
Copy only.....$ 1.50

* * * * *

(o) For certifying trademark records, per certificate.....$ 3.50

For expedited handling of such certification, per record requested.....$ 25.00

* * * * *

(q) For recording trademark assignments and agreements or other papers relating to the property in a registration or application, per document.....$100.00

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Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The following libraries, designated as Patent Depository Libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent years to all or most of the patents issued since 1790.

These patent collections are open to public use and each of the Patent Depository Libraries, in addition, offers the publications of the U.S. Patent Classification System (e.g. The Manual of Classification, Index to the U.S. Patent Classification, Classification Definitions, etc.) and provides technical staff assistance in their use to aid the public in gaining effective access to information contained in patents. With one exception, as noted in the table following, the collections are organized in patent number sequence.

Facilities for making paper copies from either microfilm in reader-printers or from the bound volumes in paper-to-paper copies are generally provided for a fee.

Owing to variations in the scope of patent collections among the Patent Depository Libraries and in their hours of service to the public, anyone contemplating use of the patents at a particular library is advised to contact that library, in advance, about its collection and hours, so as to avert possible inconvenience.

State	*Name of Library*	*Telephone Contact*
Alabama	Auburn University Libraries	(205) 826-4500 Ext.21
	Birmingham Public Library	(205) 226-3680
Alaska	Anchorage Municipal Libraries	(907) 264-4481
Arizona	Tempe: Noble Library, Arizona State University	(602) 965-7609
Arkansas	Little Rock: Arkansas State Library	(501) 371-2090
California	Los Angeles Public Library	(213) 612-3273
	Sacramento: California State Library	(916) 322-4572
	San Diego Public Library	(619) 236-5813
	Sunnyvale: Patent Information Clearinghouse*	(408) 730-7290
Colorado	Denver Public Library	(303) 571-2122
Delaware	Newark: University of Delaware Library	(302) 451-2965
Florida	Fort Lauderdale: Broward County Main Library	(305) 357-7444
	Miami–Dade Public Library	(305) 375-2665
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4508
Idaho	Moscow: University of Idaho Library	(208) 885-6235
Illinois	Chicago Public Library	(312) 269-2865
	Springfield: Illinois State Library	(217) 782-5430
Indiana	Indianapolis–Marion County Public Library	(317) 269-1741
Louisiana	Baton Rouge: Troy H. Middleton Library, Louisiana State University	(504) 388-2570
Maryland	College Park: Engineering and Physical Sciences Library, University of Maryland	(301) 454-3037
Massachusetts	Amherst: Physical Sciences Library, University of Massachusetts	(413) 545-1370
	Boston Public Library	(617) 536-5400 Ext. 265
Michigan	Ann Arbor: Engineering Transportation Library, University of Michigan	(313) 764-7494
	Detroit Public Library	(313) 833-1450
Minnesota	Minneapolis Public Library & Information Center	(612) 372-6570
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 390
Montana	Butte: Montana College of Mineral Science and Technology Library	(406) 496-4284
Nebraska	Lincoln: University of Nebraska-Lincoln, Engineering Library	(402) 472-3411
Nevada	Reno: University of Nevada Library	(702) 784-6579
New Hampshire	Durham: University of New Hampshire Library	(603) 862-1777
New Jersey	Newark Public Library	(201) 733-7815
New Mexico	Albuquerque: University of New Mexico Library	(505) 277-5441
New York	Albany: New York State Library	(518) 474-7040
	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 714-8529
North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
Ohio	Cincinnati & Hamilton County, Public Library of	(513) 369-6936
	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 255-7055 Ext. 212
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Oregon	Salem: Oregon State Library	(503) 378-4239
Pennsylvania	Cambridge Springs: Alliance College Library	(814) 398-2098
	Philadelphia: Franklin Institute Library	(215) 448-1227
	The Free Library	(215) 686-5330
	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
Rhode Island	Providence Public Library	(401) 521-8726
South Carolina	Charleston: Medical University of South Carolina Library	(803) 792-2371
Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 725-8876
	Nashville: Vanderbilt University Library	(615) 322-2775
Texas	Austin: McKinney Engineering Library, University of Texas.	(512) 471-1610
	College Station: Sterling C. Evans Library, Texas A & M University	(409) 845-2551
	Dallas Public Library	(214) 749-4176
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
Utah	Salt Lake City: Marriott Library, University of Utah	(801) 581-8394
Virginia	Richmond: Virginia Commonwealth University Library	(804) 257-1104
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3247

All of the above-listed libraries offer CASSIS (Classification And Search Support Information System), which provides direct, on-line access to Patent and Trademark Office data.

*Collection organized by subject matter.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

JAMES E. DENNY, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF July 19, 1986

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, AND ENGINEERING, GROUP 110—D. E. TALBERT, Director	4-01-85
ORGANIC CHEMISTRY AND BIOTECHNOLOGY, GROUP 120—C. E. VAN HORN, Director	2-24-84
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 130—R. F. WHITE, Director	4-01-85
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY, STOCK MATERIALS AND COMPOSITIONS, GROUP 150—J. O. THOMAS, Director	2-28-85
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—G. GOLDBERG, Director	7-16-84
SPECIAL LAWS ADMINISTRATION, GROUP 220—K. L. CAGE, Director	4-11-84
INFORMATION PROCESSING, STORAGE, AND RETRIEVAL, GROUP 230—E. LEVY, Director	11-21-83
PACKAGES, CLEANING, TEXTILES, AND GEOMETRICAL INSTRUMENTS, GROUP 240—E. E. KUBASIEWICZ, Director	3-20-85
ELECTRONIC AND OPTICAL SYSTEMS AND DEVICES, GROUP 250—S. S. MATTHEWS, Director	3-30-83
COMMUNICATIONS, MEASURING, TESTING AND LAMP/DISCHARGE GROUP, GROUP 260—S. G. KUNIN, Director	9-26-83
DESIGN, GROUP 290—K. L. CAGE, Director	2-06-84
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director	2-19-85
MATERIAL SHAPING, ARTICLE MANUFACTURING AND TOOLS, GROUP 320—S. N. ZAHARNA, Director	12-24-84
MECHANICAL TECHNOLOGIES AND HUSBANDRY PERSONAL TREATMENT INFORMATION, GROUP 330—R. E. AEGERTER, Director	5-21-84
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 340—D. J. STOCKING, Director	7-31-84
GENERAL CONSTRUCTIONS, PETROLEUM AND MINING ENGINEERING, GROUP 350—A. L. SMITH, Director	7-01-85

Expiration of patents: The patents within the range of numbers indicated below expire during July 1986, except those which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents ..... Numbers 3,452,362 to 3,458,862, inclusive

Plant Patents ..... Numbers 2,897 to 2,913 inclusive

REISSUES

AUGUST 26, 1986

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 32,229

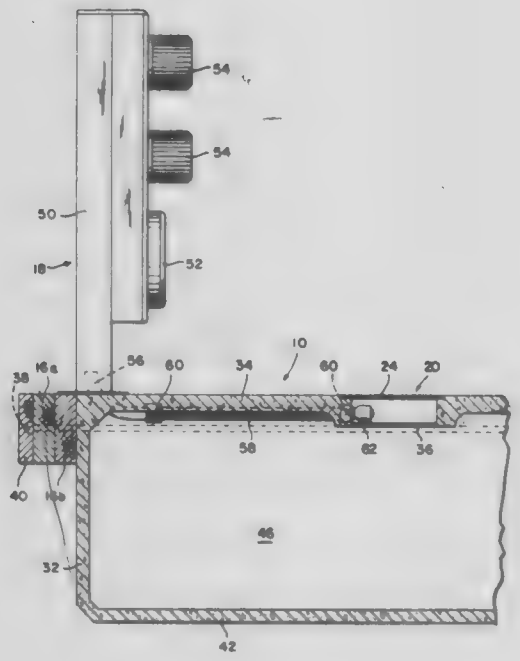
UTILITY DISTRIBUTION SYSTEM FOR MARINE FLOATS

Wesley W. Sluys, Bellingham, Wash., assignor to Builders Concrete, Inc., Bellingham, Wash.

Original No. 4,353,320, dated Oct. 12, 1982, Ser. No. 137,594, Apr. 7, 1980. Application for reissue May 23, 1983, Ser. No. 497,059

Int. Cl.⁴ B63B *35/38*

U.S. Cl. 114—267 **13 Claims**



4. [The marine float of claim 3, wherein] *A marine float, comprising a concrete casing surrounding a buoyant core, said casing having a bottom, two opposed end walls, two opposed side walls connecting opposite edges of said end walls and a generally planar deck extending between the upper edges of said end and side walls, said deck having formed therein a longitudinal utility trench having a bottom connecting the lower edges of two trench walls, said trench extending from one end wall to the other of said end walls to facilitate the routing of utility conduits along said float, said float also having formed therein a transverse utility passage extending from said longitudinal utility trench to the exterior of said casing to facilitate the routing of utility conduits to utility outlets mounted adjacent the side walls of the casing, said casing further including a plurality of spaced-apart, generally parallel tie rods extending between said side walls beneath the bottom of said trench, and respective fasteners secured to the ends of said tie rods to tension said tie rods, thereby forcing the side walls of said casing toward each other to compressively load said casing;*

said casing further including a plurality of parallel, spaced-apart ribs projecting downwardly from said deck and integrally formed therewith between the side walls of said casing; and said tie rods [are] *being* embedded in respective [of said] ribs such that said ribs are compressively loaded by said tie rods.

Re. 32,230

RUBBER HOSE FOR AUTOMOTIVE FUEL LINE

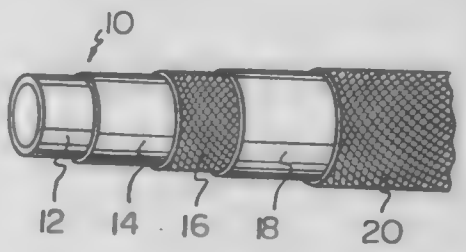
Seikoh Satoh, Yokohama, and Tadashi Suzuki, Gojo, both of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Original No. 4,330,017, dated May 18, 1982, Ser. No. 71,291, Aug. 30, 1979. Continuation-in-part of Ser. No. 896,084, Apr. 13, 1978, abandoned. Application for reissue May 7, 1984, Ser. No. 607,584

Claims priority, application Japan, Apr. 22, 1977, 52-52133

Int. Cl.⁴ F16L *11/04*

U.S. Cl. 138—126 **10 Claims**



9. A hose for automotive fuel lines, comprising:

a two-ply rubber tube constituted of an inner layer of a copolymer of hexafluoropropylene with vinylidene fluoride which is resistant to hydrocarbon fuels including sour gasoline, formed by extrusion to serve as an innermost layer of the hose and an outer layer of a synthetic rubber selected from the group consisting of ethylene-acrylic rubber and epichlorohydrin rubber, which is less resistant to said fuels but has a better cold resistance than said fluorine rubber, formed by extrusion so as to bond to said inner layer, said inner layer having a thickness in the range from about 0.2 mm to about 0.7 mm, said outer layer having a thickness not smaller than the thickness of said inner layer:

a tubular reinforcing layer of a heat-resistant fibrous material intimately covering said outer layer; and

a tubular protective layer of a synthetic rubber intimately covering said reinforcing layer.

Re. 32,231

CONTAINER FOR METERED DISPENSING OF LIQUID

Alexander Kückens, Hamburg, and Horst Köhl, Reinfeld, both of Fed. Rep. of Germany, assignors to DAGMA Deutsche Automaten-und Getrakemaschinen-Gesellschaft mit beschrankter Haftung & Co., Reinfeld, Fed. Rep. of Germany

Original No. 4,109,829, dated Aug. 29, 1978, Ser. No. 726,455, Sep. 24, 1976. Continuation of Ser. No. 392,050, Jun. 25, 1982, abandoned, which is a continuation of Ser. No. 182,783, Aug. 29, 1980, abandoned. Application for reissue Jan. 23, 1984, Ser. No. 574,691

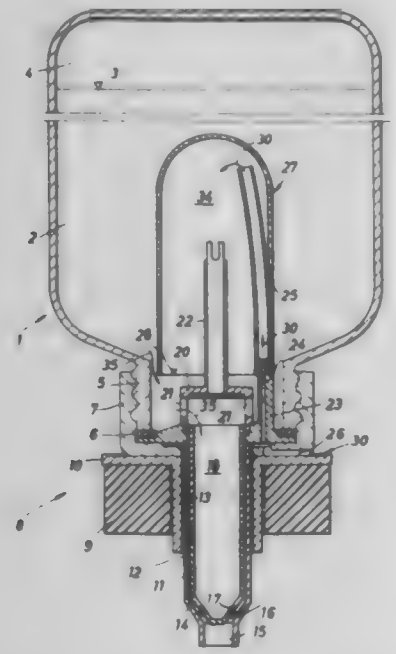
Claims priority, application Fed. Rep. of Germany, Oct. 6, 1975, 2544671

Int. Cl.⁴ B67B *7/24*

U.S. Cl. 222—81 **7 Claims**

8. A container for metered dispensing of liquids, in particular for freezable or self-preserving liquids, including a withdrawal and venting opening which in operation is directed downwards in a dispensing position, an inverted cup-shaped pressure compensating vessel which has its rim situated close to the withdrawal and venting aperture and is open [only] towards this aperture incorporated within the container, the vessel simultaneously forming the closure of the container and having its rim sealingly connected to the rim of the withdrawal and venting aperture of the container, the interior of the pressure compensating vessel being in constant unobstructed communication with an atmosphere external of the container as well as

being in communication with the material inside of the container, said pressure compensating vessel having at least one wall portion which is deformable under differential pressure, a withdrawal valve including a metering chamber connected to the inside of the container and to the pressure compensating vessel via an upwardly extending passage, [which] *said* withdrawal valve [is] *being* electromagnetically actuated and equipped with a movable valve element constructed as an



armature, *and a sleeve in which said valve element is movably mounted,* characterized in that the valve element conjointly with [a] *said* sleeve guiding it delimits the metering chamber and that the guiding sleeve is constructed with individual *entry* openings for the liquid which is to be metered opening into the inside of the container at its upper extremity, and that the valve [sleeve] *element* is constructed as a valve slider for [alternating] *alternatingly* uncovering or covering the entry openings.

Re. 32,232

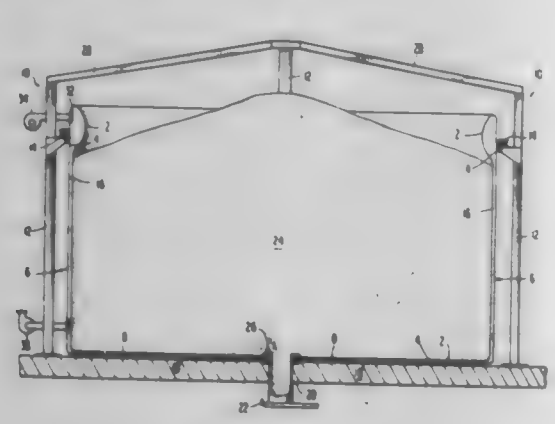
BIN FOR FREE FLOWING MATERIAL

Timothy C. Bonerb, and Vincent C. Bonerb, both of P.O. Box 2100, Buffalo, N.Y. 14219

Original No. 4,421,250, dated Dec. 20, 1983, Ser. No. 257,604, Apr. 27, 1981. Application for reissue Jun. 18, 1984, Ser. No. 621,868

Int. Cl.[4] B65D *88/62*

U.S. Cl. 222—95 6 Claims



1. A bin for free flowing granular material having a bottom resting on a support member and sides extending upwardly from said bottom, the bin comprising:

(a) a generally cup-shaped, open top, double walled, flexible *inflatable* bag having an inner membrane and an outer membrane, *both with side walls and* both of impervious material, forming the double wall;

(b) framework means for suspending the bag in an open position without providing any lateral support for the outer membrane of the bag, the top of the bag forming the top of the bin;

(c) clamp means carried by the framework means for clamping the bag adjacent the top edge thereof to thereby support and hang the side walls of the [membrane] *membranes* vertically so as to provide side walls without lateral support;

(d) a closable discharge port in the bottom of said bin extending through said inner membrane and said outer membrane and engaging said inner membrane and said outer membrane to form a substantially air tight space between said inner membrane and said outer [membrane] *membranes*, said closable discharge port allowing the free flowing granular material to drain from the bin for emptying the same down to the angle of repose of the free flowing granular material when the closable discharge [part] *port* is opened, thereby *causing the material to form an inner face having a generally inverted conical shape* creating a void of inverted conical shape within the original mass of the granular free flowing material with the apex of the inverted conical shape at the closable discharge port; and

(e) air inlet and outlet [passages] *passage means* through which air is forced or withdrawn between the inner membrane and the outer membrane;

(f) means to inflate the [closed] *inflatable* bag with fluid under controlled pressure so that the *inner membrane of the* bag will expand against the top edge *of* the granular free flowing material remaining after creating the void of inverted conical shape [void] to force this material into the void and hence down the closable discharge opening, so that the bag will continue to expand downwardly and inwardly until *substantially* all of the granular free flowing material is gradually forced into the inverted conical [shaped] *shape* void and out of the closable discharge port.

Re. 32,233

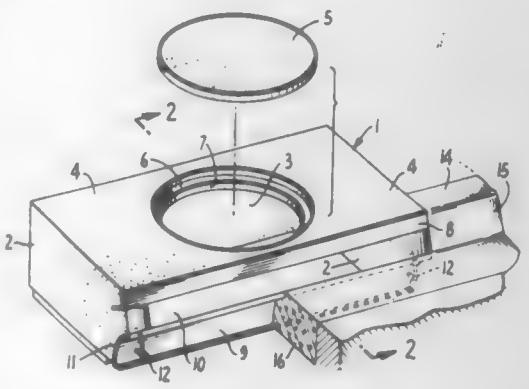
PRECAST CONCRETE CATCH BASIN WITH FORM FOR GUTTER INLET

Harold Peletz, Santa Rosa, Calif., assignor to Santa Rosa Cast Products Co., Santa Rosa, Calif.

Original No. 4,192,625, dated Mar. 11, 1980, Ser. No. 942,998, Sep. 18, 1978. Application for reissue Jun. 13, 1985, Ser. No. 744,429

Int. Cl.[4] E01C *11/22*

U.S. Cl. 404—5 5 Claims



1. In a catch basin assembly for collecting surface drainage from a street gutter wherein said catch basin has a pair of vertical substantially parallel side walls, a rear wall connecting the side walls and a top slab also connecting said side walls, the improvement comprising:

an integral transverse form [attach] *attached* to and extending across the front of said side walls and spaced from said top slab to define therewith an inlet opening to accommodate the passage of water into said catch basin, said transverse form being adapted to form, and remain in place as a water conducting surface for, a cast concrete gutter.

Re. 32,234

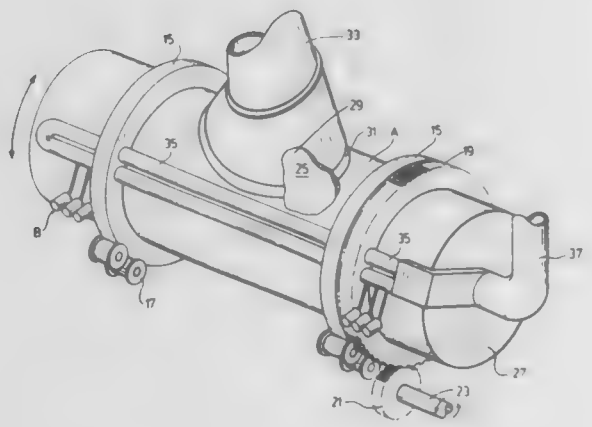
NON-FERROUS METAL TREATMENT

J. Keith Brimacombe, Vancouver, and Enrique O. Hoefele, Regina, both of Canada, assignors to Canadian Liquid Air Ltd., Montreal, Canada

Original No. 4,238,228, dated Dec. 9, 1980, Ser. No. 24,243, Mar. 27, 1979. Application for reissue Dec. 8, 1982, Ser. No. 447,805

Int. Cl.⁴ C22B *15/06*

U.S. Cl. 75—76 19 Claims



1. A method of converting a bath of a nonferrous molten metal matte *and reducing the wear on the refractory and keeping the tuyeres free of blockage* in a converter vessel having an elongated sealed chamber formed by a cylindrical metallic sidewall and circular endwalls having refractory lining, the sidewall being provided with a charging port and an off-gas stack, a plurality of metallic tuyeres extending into the chamber through the sidewalls to refractory-surrounded exposed tips, means outside the vessel to supply oxidizing gas under pressure to the tuyeres, and means supporting the vessel on its horizontal axis for rotation between a charging position and a blowing position in which the tuyere tips are submerged in the bath, the process including a *batch* treatment cycle in which the vessel is initially charged with molten matte and a plurality of sequential blows carried out with the vessel being rotated back and forth between said charging and blowing positions and the gas introduced through the tuyeres or turned off accordingly for coordinated blowing, charging flux, removal of slag, *and* replenishing the charge, *over a time effective to convert the matte to the metal or the sulfide thereof,* and recovering converted metal from the vessel, comprising,

carrying out the blows, *with the vessel stationary in blowing position,* by injecting into the bath *through the tuyeres in steady unshielded streams* a total flow of [oxidizing gas] *air or air enriched with up to about 40% oxygen* effective to maintain autogenous converting temperatures within the range from about 1100° C. to about 1300° C. through [a plurality of] *from 3 to 6 submerged* spacedapart tuyeres limited in cross-sectional area and in number *at an injection pressure from about 50 to about 150 psig* effective to cause the gas *air* to enter the bath [at a pressure effective to provide discrete underexpanded steady jets] *in underexpanded condition from each tuyere as a discrete unshielded jet* which [continue] *continues* to a position remote from the tuyere [tips] *tip,* whereby wear of the refractory lining is reduced substantially to a minimum.

Re. 32,235

MAGNESIUM-CONTAINING COMPLEXES, METHOD FOR THEIR PREPARATION, AND COMPOSITIONS CONTAINING THE SAME

John H. Forsberg, Mentor-on-the-Lake, Ohio, assignor to The Lubrizol Corporation, Wickliffe, Ohio

Original No. 4,094,801, dated Jun. 13, 1978, Ser. No. 760,315, Jan. 18, 1977. Continuation of Ser. No. 291,149, Aug. 7, 1981, abandoned, which is a continuation of Ser. No. 16,652, Mar. 1, 1979, abandoned, which is a continuation-in-part of Ser. No. 681,627, Apr. 29, 1976, abandoned. Application for reissue Apr. 18, 1983, Ser. No. 484,007

Int. Cl.⁴ C10M *1/44, 1/48, 1/40, 1/24*

U.S. Cl. 252—33 35 Claims

54. A non-carbonated magnesium-containing complex in the form of a solid, grease or gel, prepared by heating, at a temperature above about 30° C. and up to about 150° C. a mixture consisting essentially of

(A) at least one of magnesium hydroxide, magnesium oxide, hydrated magnesium oxide, or magnesium alkoxide;

(B) at least one oleophilic organic reagent consisting essentially of sulfonic acid, a pentavalent phosphorus acid, or an ester or alkali metal or alkaline earth metal salt of any of these;

(C) water; and

(D) at least one organic solubilizing agent for component B: the ratio of equivalents of magnesium to component B, calculated as the free sulfonic acid or as the phosphoric acid ester, being at least about 5:1; the amount of water present being at least sufficient to hydrate a substantial proportion of component A calculated as magnesium oxide and the weight ratio of solubilizing agent D to component D to component A being at least 0.5:1.

Re 32,236

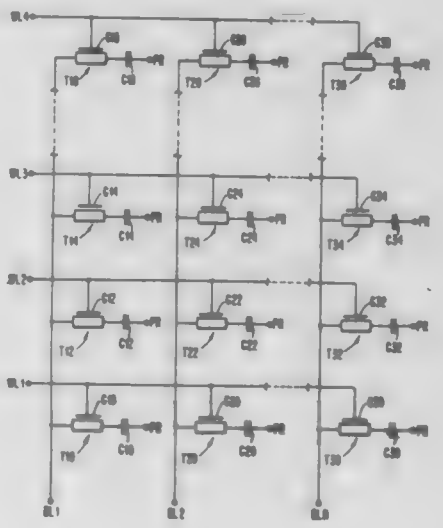
ONE DEVICE FIELD EFFECT TRANSISTOR (FET) AC STABLE RANDOM ACCESS MEMORY (RAM) ARRAY

Roy E. Scheuerlein, Sunnyvale, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Original No. 4,319,342, dated Mar. 9, 1982, Ser. No. 106,641, Dec. 26, 1979. Application for reissue Aug. 7, 1985, Ser. No. 763,171

Int. Cl. G11C *11/24, 11/40, 5/10*

U.S. Cl. 365—149 29 Claims



1. An integrated circuit electronic memory array having a plurality of memory cells, each memory cell of said array

having a gate region for controlling the transfer of binary information in and out of a corresponding storage region, and a bit line contact region, said array comprising:

a plurality of word lines arranged in rows each of said word lines alternately passing over the storage region of a first one of said memory cells and being electrically integral with the gate region of a second one of said memory cells; and

a plurality of bit lines arranged in columns substantially orthogonal to said word lines, memory cells being arranged along first and second parallel lines in each one of said columns;

each of said plurality of bit lines having portions extending to electrically contact memory cells arranged along said first and second parallel lines, respectively[.], *wherein each said bit line contact region is a common bit line contact region for a pair of adjacent memory cells along said plurality of bit lines.*

PLANT PATENTS

GRANTED AUGUST 26, 1986

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

5,787

CARNATION NAMED LONSEVA

Nicole Barberet, and Yves Ducloux, both of Antibes, France, assignors to Laboratoire de Physiologie Vegetale de la Londe, La Londe, France

Filed May 24, 1984, Ser. No. 613,713
Int. Cl.[4] A01H *5/00*
U.S. Cl. Plt.—71 1 Claim

1. A new and distinct carnation cultivar, substantially as herein shown and described, characterized in particular by its light pink, medium sized blooms of full shape carried on rather long, stiff stems.

5,788

CARNATION NAMED LONDRINO

Nicole Barberet, and Yves Ducloux, both of Antibes, France, assignors to Laboratoire de Physiologie Vegetale de la Londe, La Londe, France

Filed May 24, 1984, Ser. No. 613,714
Int. Cl.[4] A01H *5/00*
U.S. Cl. Plt.—71 1 Claim

1. The new and distinct variety of spray carnation, substantially as herein shown and described, characterized in particular by its small, well shaped flowers of dark pink coloration.

5,789

CARNATION NAMED LONDAISON

Nicole Barberet, and Yves Ducloux, both of Antibes, France, assignors to Laboratoire de Physiologie Vegetale de la Londe, La Londe, France

Filed May 24, 1984, Ser. No. 613,715
Int. Cl.[4] A01H *5/00*
U.S. Cl. Plt.—71 1 Claim

1. The new and distinct spray carnation cultivar, substantially as herein shown and described, characterized in particular by its well formed but small blooms of a medium pink color which are produced profusely on intermittently blooming plants having a vigorous and tall growth habit.

5,790

ASPARAGUS FERN-SNOWFLAKE

John Filippi, Jr., 936 Cybus Way, Southampton, Pa. 18966, and H. Bruce Hellerick, P.O. Box 86 Seitz Rd., Columbia, Pa. 17512

Filed Oct. 5, 1984, Ser. No. 658,155
Int. Cl.[4] A01H *5/00*
U.S. Cl. Plt.—88 1 Claim

1. A new and distinct variety of *Asparagus sprengeri,* substantially as illustrated and described, characterized by its general similarity to the common *Asparagus sprengeri,* but being distinct therefrom by (1) a marked propensity to be variegated at an early age.

PATENTS

GRANTED AUG. 26, 1986

ERRATA

For CLASS	See PATENT NO.
130–027	4,607,480
174–042	4,607,704
384–045	4,607,893
530–414	4,608,199
530–387	4,608,200
540–529	4,608,201
530–387	4,608,203
558–179	4,608,207
369–032	4,608,676

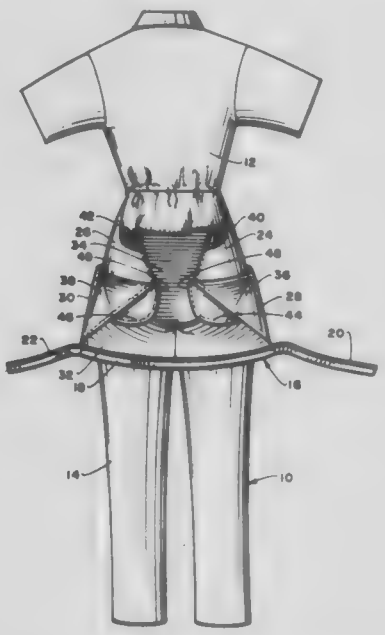
PATENTS

GRANTED AUGUST 26, 1986

GENERAL AND MECHANICAL

4,607,396
COVERALL GARMENT WITH CONCEALED SEAT PANEL
Bonnie Craig, 2141 N. Cahuenga, Apt. #8, Los Angeles, Calif. 90068

Filed Jul. 17, 1984, Ser. No. 631,608
Int. Cl.[4] A41D *1/06, 27/20*
U.S. Cl. 2—79 **4 Claims**



1. A one-piece coverall garment having integrally formed shirt portion, pants portion and a pair of side pockets comprising;

a seat panel in said pants portion covering an opening at the rear of said pants portion;

a waistband on an upper portion of said panel for concealing said panel when said garment is being worn;

said pair of side pockets each being constructed of a front flap of material and a rear flap of material, said front flap being joined to a front portion of said pants portion, said rear flap being joined along an edge of said seat panel to form a seam; and said front and rear flaps being sewn together along a portion of one edge whereby said front and rear flaps fold together to form a pocket when said seat panel is secured with said waistband and said front and rear flaps unfold when said seat panel is released thereby providing a large comfortable opening to use while substantially completely allowing said seat panel to be concealed.

4,607,397
PORTABLE HARD HAT
Darryl E. Laxo, Novato, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Sep. 27, 1984, Ser. No. 655,392
Int. Cl.[4] A42B *1/06*
U.S. Cl. 2—410 **13 Claims**

1. A portable and collapsible hard hat for protecting the wearer against impacts, which comprises:

a base ring member having a front, back, two sides, and a curvilinear aperture located therein;

a plurality of substantially semi-circular curved segments attached to said base ring member having a first segment and a common axis for all segments;

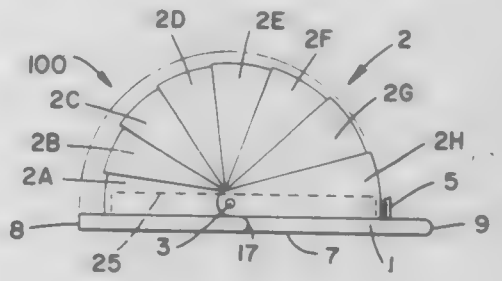
a common pivot so that each segment can rotate about said common axis, said pivot being located on each side of said base ring member;

means for interlocking each segment; and

means for locking the segments to the base ring member, comprising,

a hitch located on said first segment having a front facing protrusion;

a clasp located away from said curvilinear aperture on said base ring member in an upwardly extending manner, said clasp being a cantilevered leaf spring which

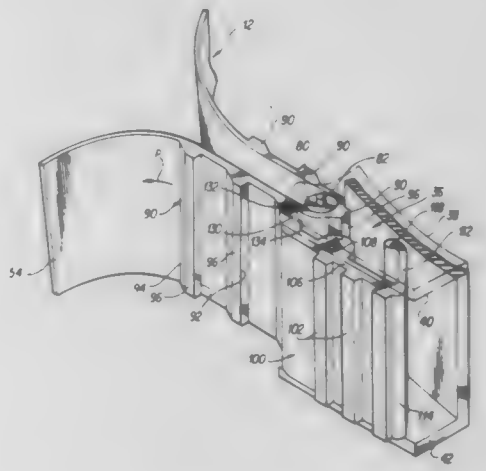


has a rear-facing extension at its outer end which matches the protrusion on said hitch;

so that when the first curved segment is pivoted about said axis, the other segments will likewise follow until contact and connection with the base ring member is made.

4,607,398
STRAP AND RETAINER FOR A DIVERS MASK
Mark Faulconer, Costa Mesa, Calif., assignor to U.S.D. Corp, Santa Ana, Calif.

Filed Jul. 24, 1984, Ser. No. 633,791
Int. Cl.[4] A61F *9/02*
U.S. Cl. 2—452 **25 Claims**



1. A strap and retainer for use in securing an object to a user's body comprising:

a body portion of an object that is to be secured to a person's body;

support means extending from said body portion having a space therebetween;

a lever member pivotally connected within the space of said support means;

spring means at one end of said lever member for engaging a portion of an interior surface of the space between said support means;

tooth means distally disposed from said spring means wherein said tooth means have a first upright surface and a sloping surface extending therefrom;

means extending between said support means around which said strap can be looped;

ribs on said strap having an upright portion and a sloping portion on either side of said ribs, such that said sloping portion can engage said sloping portion of said tooth means and the upright portion can engage the upright portion of the tooth means of said lever arm under the spring pressure of said spring means; and,

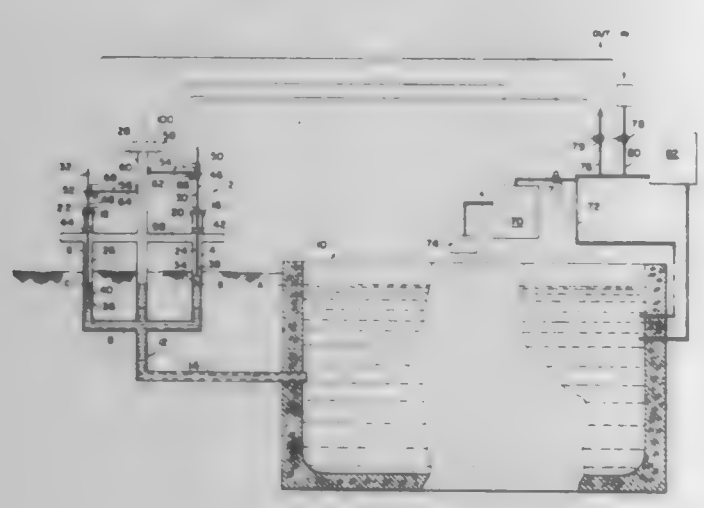
wherein said ribs and said tooth means can be mutually caused to pass each other by movement of said respective sloping surfaces of said strap and ribs passing against each other, and said tooth means of said lever arm disengaging the upright portion of said rib by movement against the force of said spring means.

4,607,399

AUTOMATIC POOL WATER REGULATOR APPARATUS

Trayan Yovanofski, 607 Johnson Dr., Ormond Beach, Fla. 32074

Filed Sep. 13, 1984, Ser. No. 650,090
Int. Cl.[4] E04H *3/18*
U.S. Cl. 4—508 8 Claims



1. A pool water level regulating apparatus installed adjacent a pool, the apparatus comprising:

a first vertical pipe, a second vertical pipe, a third vertical pipe positioned between the first and second vertical pipes, the first, second and third vertical pipes being interconnected with each other and the pool so that the water level of the pool corresponds to a water level in each of the first, second and third vertical pipes, a first float member axially movable inside the first vertical pipe, a second float member axially movable inside the second vertical pipe, a first bracket mounted on a side of the third vertical pipe and facing the first vertical pipe, a second bracket mounted on the opposite side of the third vertical pipe and facing the second vertical pipe and being vertically spaced above the first bracket, a first switch fixedly mounted near a distal end of the first float member, a second switch fixedly mounted near a distal end of the second float member, the first switch being electrically connected to means for increasing the water level of the pool, the second switch being electrically connected to means for decreasing the water level in the pool, the first bracket moving the first switch to an ON position when the pool level falls to a lower limit and moving the first switch to an OFF position when the pool level falls below the upper limit, wherein the first, second and third vertical pipes are assembled together from segments of plastic pipe, and the assembly is disposed in spaced relation to the pool.

4,607,400

ASSEMBLY FOR UTILIZING BILGE PUMP AS POWER WATER JET

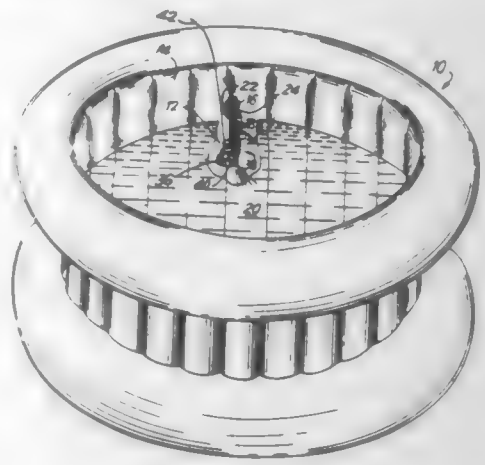
Steven Goodman, 85 Oak St., Norwood, N.J. 07648

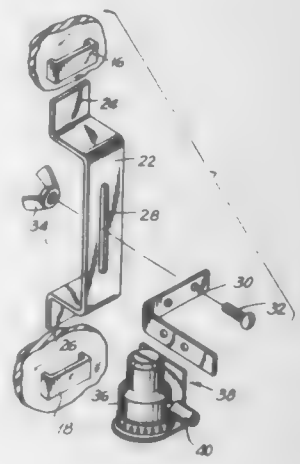
Continuation-in-part of Ser. No. 764,487, Aug. 12, 1985, Pat. No. 4,599,753. This application Feb. 21, 1986, Ser. No. 832,050
Int. Cl.[4] A61H *33/02;* E04H *3/18*
U.S. Cl. 4—541 6 Claims

1. In combination, mounting means for attaching a submersible bilge pump and a tub of water, said bilge pump functioning as a water jet, said mounting means comprising carrier means for carrying said bilge pump,

said bilge pump having a spout end being attached to said carrier means,

said carrier means being attached to the tub, wherein said carrier means comprises a flexible U-shaped bracket terminating in upper and lower flanges, said tub comprising spaced apart retainers connected against the inner wall of said tub, said flexible U-shaped bracket being arched to draw said flanges toward each other to be attached in said





retainers, said U-shaped bracket further comprising a vertical slot in a center portion thereof to which said bilge pump is vertically adjustably connected,

said bilge pump being attached to said carrier permitting said vertical positioning of said bilge pump at a desired level in the water,

further comprising a reducer attached to the spout of said bilge pump to enhance the jet force of the water pumped out of said bilge pump.

4,607,401

MIRRORED BED CANOPY

Terrell W. Sisson, 2425 Eliot St., Denver, Colo. 80211

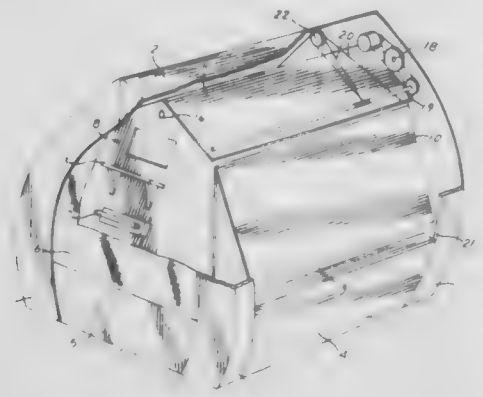
Filed Sep. 29, 1982, Ser. No. 427,496
Int. Cl.[4] A47C *29/00*
U.S. Cl. 5—414 4 Claims

1. Canopy apparatus adapted to surround and enclose a bed, comprising:

a plurality of mirrored panels positioned above and around the bed, at least one of said panels being angularly adjustable relative to each other and to the bed;

track means positioned a spaced distance upwardly from said bed for moveably supporting one of said panels in such a manner that said track supported mirror is move-

able laterally in relation to said bed and to said other panels; and



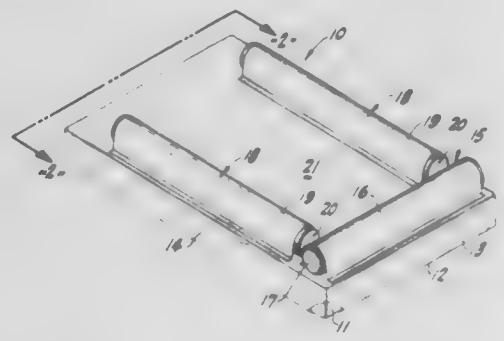
at least one mirrored panel having a cut-out portion adapted to have positioned adjacent thereto a visual image producing device visible and observable from the bed.

4,607,402

RETAINER SHEET

Dianne J. Pollard, 105 Bishop Ct., Novato, Calif. 94947

Filed Apr. 15, 1985, Ser. No. 723,109
Int. Cl.[4] A47C *21/08*
U.S. Cl. 5—425 **5 Claims**



1. A retainer sheet for covering the top surface of a base such as a mattress and for preventing a person or object resting on the mattress from falling off, the retainer sheet comprising:

a sheet of flexible material;

a plurality of elongated retainers attached to the peripheral area of the sheet in the region thereof corresponding to the top surface of the base and defining a generally U-shaped restraint about a rest area of the sheet, a first one of the retainers forming the base of the U-shaped restraint for providing a foot or head restraint and the second and third ones of the retainers forming the sides of the U-shaped restraint for providing restraints along the length of the sheet and mattress;

each retainer comprising a relatively narrow elongated strip of flexible material which is attached to the base sheet along the length of the strip to thereby define a pocket, and a relatively rigid cylinder of plastic resin material sized for removable insertion into the associated pocket; and

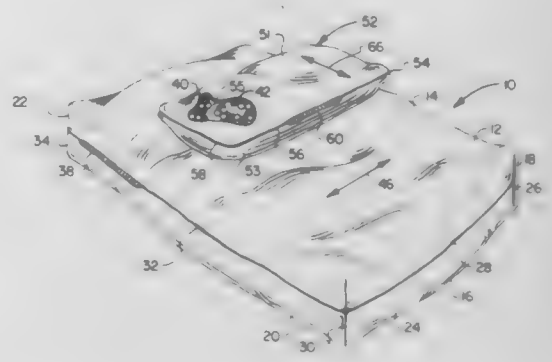
the combination of the sheet material, the resin material and the relative cross-sectional area of the cylinder and of the pockets providing friction between the cylinder and the pocket material which permits insertion and removal of the cylinder into the pocket yet retains the cylinder when in the pocket.

4,607,403

INFANT SUPPORT PADS

Margaret A. Alivizatos, 11056 Shady Trail, Suite 113, Dallas, Tex. 75229

Filed Sep. 14, 1984, Ser. No. 650,800
Int. Cl.[4] A47C *27/14*; A47D *7/00*; A61G *7/04*
U.S. Cl. 5—449 **12 Claims**



1. An infant support pad for supporting infants which lack voluntary muscle tone, comprising:

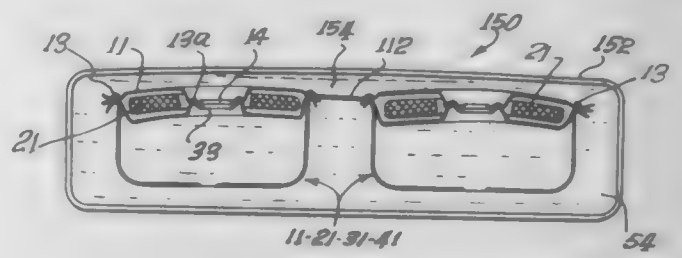
a single infant sized three dimensional rectangular flexible fabric cover comprising top, bottom, side and end panels, forming a closed interior chamber, said chamber being partially filled from about 50% to about 70% of its maximum volume with generally spherical resilient plastic beads formed from expanded cellular plastic expanded to a diameter in the range of about 0.062 inches to 0.188 inches, to form substantially liquid impermeable fill for said pad and to provide a firm yet yieldable support surface which conforms to the contour of the infants body to distribute support forces uniformly thereover.

4,607,404

WATERBED FLOAT WITH ANTIWAVE HANGING BAFFLE AND COLLAPSE-RETARDING FIBER INSERT

Richard Fraige, 11005 Highway 50 East, Carson City, Nev. 89701

Continuation-in-part of Ser. No. 535,619, Sep. 26, 1983, Pat. No. 4,523,343, which is a continuation-in-part of Ser. No. 337,122, Jan. 5, 1982, Pat. No. 4,481,248. This application Jul. 13, 1984, Ser. No. 630,886
Int. Cl.[4] A47C *27/08*
U.S. Cl. 5—450 **8 Claims**



1. In a noninsulating combination, for use within a waterbed mattress or the like to reduce wave motion of water therein while maintaining heat flow from the bottom to the top thereof:

a fibrous product comprising a large multiplicity of interbonded fibers;

a first sheeting structure that forms a baffle for reducing such wave motion by partially impeding movement of such water within the mattress;

the baffle being shaped to define an extended bottom panel of an enclosure for occupancy by some of such water;

the baffle being further shaped to define side panels of the enclosure, said side panels being substantially continuous with the extended bottom panel;

a horizontal dimension of the baffle being at least twice the height of the baffle;

the baffle having first hole means formed therein for passage

of such water into and out from said enclosure so that such water occupying the enclosure is not completely confined within said enclosure but can circulate into and out from said enclosure;

the first hole means constituting in area substantially less than ten percent of the area of the horizontal portion of the baffle, but nevertheless being amply sized to facilitate sufficient water circulation by convection through the baffle to prevent the baffle from thermally insulating the top of the mattress from the bottom;

the baffle further having apertures defined in diagonally opposite lower corners thereof;

a second sheeting structure that entirely encloses the fibrous product and that forms a sealed gas space, the fibrous product being inside the gas space and tending to prevent the sealed gas space from collapsing; and

means for constraining the second sheeting structure in close proximity to the baffle, so that the second sheeting structure with its sealed gas space can by its buoyancy support the baffle and can form the top of said enclosures for occupancy by such water;

the second sheeting structure defining sealed second hole means for communication of space above the second sheeting structure with space below the second sheeting structure, the second hole means being disposed generally within a central expanse of the second sheeting structure and being amply sized to facilitate sufficient water circulation by convection through the second sheeting structure to prevent the second sheeting structure from thermally insulating the top of the mattress from the bottom;

whereby such water within such mattress of the like, when it fills the space in and around the sheeting structures and the constraining means, can circulate through the hole means and through the baffle and thereby promote temperature equalization of such water above and below the baffle by convection;

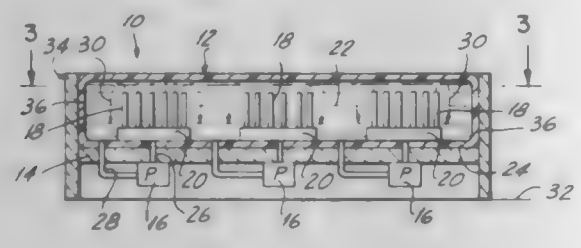
a part of the second sheeting structure being laterally extended as a bridging member to at least one other like combination as defined in all the foregoing paragraphs of this claim.

4,607,405

JET STREAM WATER BED

Linda N. Ellis, and George Spector, both of 233 Broadway, Rm 3615, New York, N.Y. 10007

Filed Aug. 19, 1985, Ser. No. 766,985
Int. Cl.[4] A61G *7/04*
U.S. Cl. 5—451 **4 Claims**



1. A jet stream water bed comprising:

(a) a mattress being a fluid-filled sealed container;

(b) a rigid support member positioned in contact with bottom of said mattress;

(c) a water pump having an inlet pipe and an outlet pipe, said pump positioned in contact with bottom of said support member so that said inlet pipe and said outlet pipe will extend through said support member and through said bottom of said mattress; and

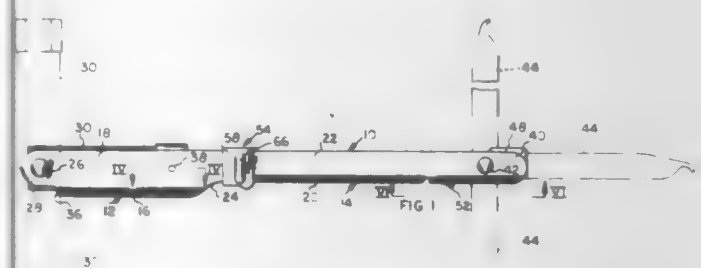
(d) a plurality of flexible water tubes in a circular ring, said ring of water tubes positioned within said mattress to fluidly connect to said inlet pipe of said pump so that when said pump is activated a person on said mattress can be massaged by jet streams of water coming from said ring of water tubes.

4,607,406

COMBINATION AUTOMOBILE FOLDING TOOL

Robert D. Davis, Jr., Jackson, Mich., assignor to Ryerson & Haynes, Inc., Jackson, Mich.

Filed Jul. 29, 1985, Ser. No. 760,047
Int. Cl.[4] B25F *1/00*
U.S. Cl. 7—100 **11 Claims**



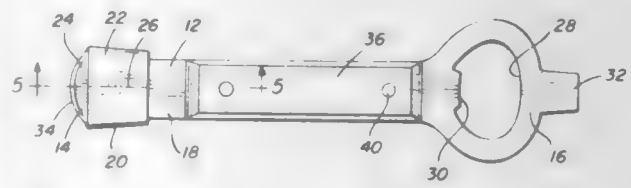
1. A combination automobile tool comprising, in combination, an elongated body of U transverse cross section defined by a base and spaced parallel legs depending from said base, said body including an elongated first end region terminating in a first end and an elongated second end region terminating in a second end, a first pivot pin mounted upon said first end extending between said legs, an elongated handle pivotally mounted upon said first pivot pin movable between a storage position wherein said handle is stored between the legs of said first end region, an extension position wherein said handle is in alignment with the length of said body and a crank position wherein said handle is transversely disposed to the length of said body, a second pivot pin mounted upon said second end extending between said legs, an elongated tubular socket having an inner end pivotally mounted upon said second pivot pin and an outer end, nut engaging flats defined upon said socket outer end, said socket being pivotal between a storage position wherein said socket is stored between the legs of said second end region and a use position wherein said socket outer end is accessible for attachment to a nut, and a lock slide movably mounted on said body first end region for movement toward and away from said first end engagable with said handle when said handle is in said extension position locking said handle in said extension position.

4,607,407

CAN TAB OPENER

Josef J. Bergmeister, P.O. Box 421713, San Francisco, Calif. 94142

Filed Jun. 17, 1985, Ser. No. 745,089
Int. Cl.[4] B67B *7/44*
U.S. Cl. 7—156 **7 Claims**



1. A lift-top can opener including an elongated lever member defining first and second ends, said lever member comprising a flat stock member and said ends each being of greater width than the intermediate length portion of said flat stock member extending between and connecting said ends, said ends each including opposite side portions projecting outwardly beyond the corresponding opposite side portions of said intermediate length portion, the opposite side portions of one of said greater width ends being reversely bent back over one face surface of the corresponding end of said flat stock member in closely laterally spaced relation relative thereto and with the free ends of said reversely beat portions secured

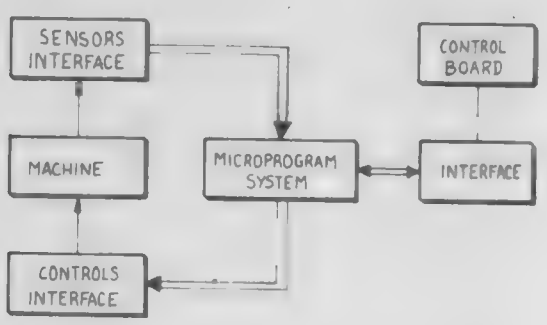
together to form an open ended sleeve on the side of said one end opposed by said reversely bent portions, said one greater width end including a bevelled arcuate edge equipped extension projecting slightly outwardly beyond said opposite side portions, said sleeve tapering in width, measured transversely of said one face toward the other end of said lever member.

4,607,408

METHOD FOR DETERMINING A MOMENT OF INERTIA OF CLOTHES IN A WASHING AND/OR DRYING MACHINE

Laurent Didier, La Roche sur Yon, and Jean C. Geay, St. Florent des Bois, both of France, assignors to Es swein S.A., Courheaoie, France

Filed Oct. 22, 1984, Ser. No. 663,695
Claims priority, application France, Oct. 25, 1983, 83 16997
Int. Cl.[4] D06F *33/02*
U.S. Cl. 8—159 7 Claims



1. A process for determining the load of clothes in a rotating drum of one of: (a) a clothes washing and (b) a clothes drying machine, comprising the steps of:

rotating said drum; and

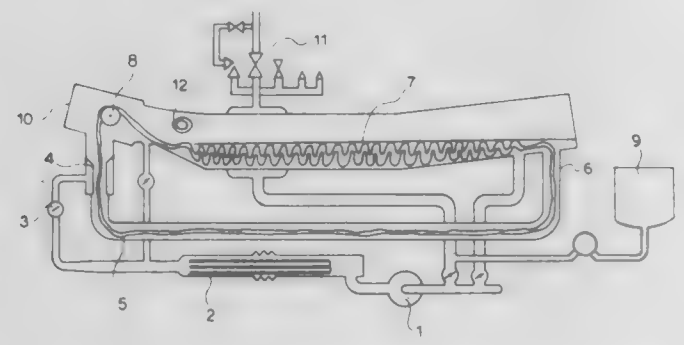
determining the moment of inertia of said clothes in said rotating drum thereby obtaining loading data on said load of clothes.

4,607,409

METHOD AND APPARATUS FOR PROCESSING TEXTILES

Sumio Hishimuma, Shiga, and Katsuo Kanno, Otsu, both of Japan, assignors to Toray Industries, Inc., Japan

Continuation of Ser. No. 523,275, Aug. 15, 1983, abandoned.
This application Mar. 28, 1985, Ser. No. 716,925
Claims priority, application Japan, Aug. 16, 1982, 57-141023; Mar. 11, 1983, 58-42663; Mar. 18, 1983, 58-44466
Int. Cl.[4] D06B *3/28, 23/00*
U.S. Cl. 8—152 14 Claims



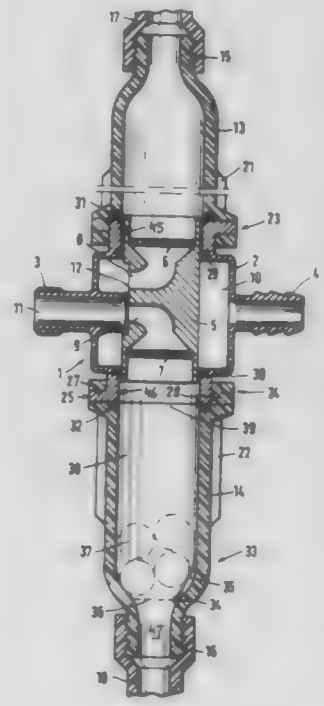
1. A method for processing textiles comprising passing said textile through a cylindrical tube, the inner wall of which comprises abrasive particles thereby forming an abrasive surface, with a flowing liquid under conditions such that said textile is brought into contact with said abrasive surface while moving through said tube to thereby raise or shear said textile by said abrasive surface.

4,607,410

APPARATUS FOR CLEANING PIPELINES FOR BEVERAGES AND THE LIKE

Friedrich Bersch, Industriestrasse 18, D-5401 Halsenbach, Fed. Rep. of Germany

Filed Dec. 21, 1984, Ser. No. 684,452
Claims priority, application Fed. Rep. of Germany, Dec. 24, 1983, 3347004
Int. Cl.[4] B08B *9/02*
U.S. Cl. 15—3.51 17 Claims



1. Apparatus for cleaning by means of a liquid cleaning agent and discrete cleaning elements in the form of sponges or the like a pipeline of the type having two ends with a predetermined inner diamter, comprising a four-way reversing valve including a body having an inlet for fresh cleaning agent, an outlet for spent cleaning agent and two ports arranged to communicate with the ends of the pipeline, and a piston reciprocable in said body between a first position in which said inlet and said outlet respectively communicate with one and the other of said ports and a second position in which said inlet and said outlet respectively communicate with said other and said one port; a housing including a first end portion with an inner diameter larger than, and a second end portion with an inner diameter closer to, said predetermined diameter, said first end portion of said housing being disposed at a level above said second end portion; a shutoff valve for selectively sealing and opening said second end portion so that supply of cleaning elements which are confined in said housing can be submerged in a liquid medium, particularly a sterilizing liquid, by admitting such medium through the first end portion while the shutoff valve seals the second end portion of said housing; and manually operated quick-release measn for releasably coupling the first end portion of said housing directly to said body so that the interior of the housing communicates with one of said ports in engaged condition of said coupling means and that said piston is accessible, in one of said first and second positions thereof, is disengaged condition of said coupling means, said second end portion being connectable with one end of the pipeline.

4,607,411

MOLDED BRUSH BLOCK WITH INTEGRAL SQUEEGEE

John C. Lewis, Jr., Forest Dale, Vt., assignor to Tucel Industries, Inc., Forest Dale, Vt.

Filed Feb. 28, 1985, Ser. No. 706,957
Int. Cl.[4] A47L *13/11, 13/12*
U.S. Cl. 15—117 8 Claims

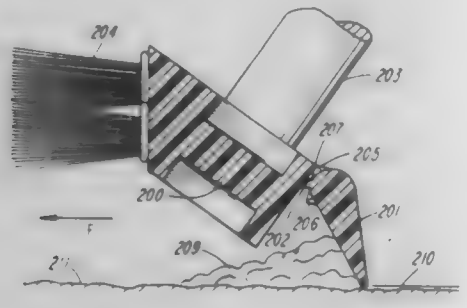
1. An integrally molded block and squeegee blade for use as a push broom and coater combination comprising:

a thermoplastic molded base block having a face thereon

adapted to mount brush tufts to form a tufted surface on said face;

a blade member having a predetermined cross-section disposed along the length of said brush block;

integral hinge connector means connecting said blade member and said block along the length of said block for permitting pivotal movement of said blade member relative to said block;



stop means mounted on said blade member for engaging said block so that when said blade member pivots relative to said block it will pivot through a predetermined arc until said stop means engages said block against further pivotal novement; and

means for mounting a handle on said block.

4,607,412

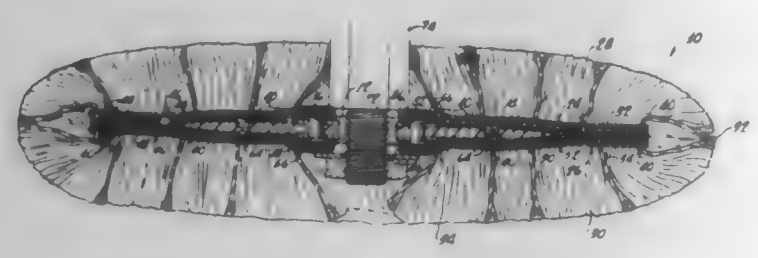
REVERSIBLE BUFFING PAD AND METHOD OF MANUFACTURE

Lewis A. Ashworth, 2633 N. Canal, Orange, Calif. 92665

Filed Mar. 25, 1985, Ser. No. 715,337

Int. Cl.⁴ B24D *13/14, 13/20*

U.S. Cl. 15—230.18 **18 Claims**



1. A buffing pad comprising:

a hub having means for releasably attaching said hub to a drive shaft, said means enabling attachment to said drive shaft from either of two sides of said hub;

a heat processable center disk;

means for mounting said hub coaxially with said heat processable center disk;

a pair of buffing disks each having a plurality of yarn tufts protruding from a first side thereof and a plurality of yarn stitches exposed on a second side thereof, said plurality of yarn tufts being of sufficient number and density to provide a buffing nap on the first side of each buffing disk; and,

means for securing said stitches in said buffing disks, coaxially securing said center disk between the second sides of the buffing disks, and securing the second sides of the buffing disk together to form a buffing pad with the two tufted first sides of the buffing disks facing outwardly from one another, said last mentioned means including fusible material means for combining with said heat processable center disk.

4,607,413

WORK STATION WITH SUCTIONING DEVICE

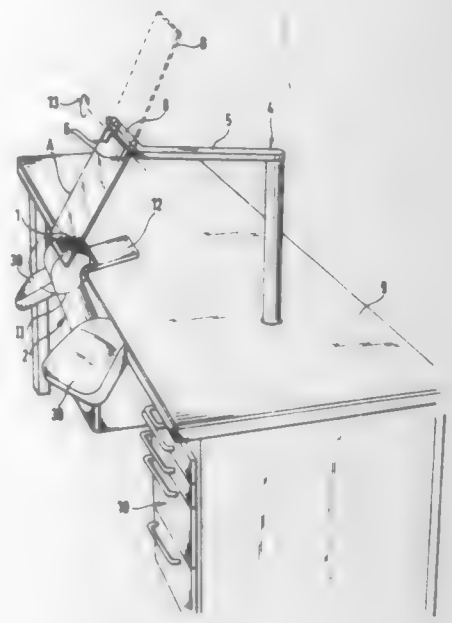
Helmut Schmidt; Anton Bodenmiller, both of Leutkirch, and Alfred Straka, Isny, all of Fed. Rep. of Germany, assignors to Kaltenbach & Voight GmbH & Co., Biberach an der Riss, Fed. Rep. of Germany

Filed Nov. 1, 1984, Ser. No. 667,261

Claims priority, application Fed. Rep. of Germany, Nov. 2, 1983, 3339658

Int. Cl.⁴ A47L *5/38*

U.S. Cl. 15—301 **59 Claims**



1. In a work station including a suctioning device with a suction opening for the aspiration of suctionable material produced during the processing of workpieces, and a protective plate for guiding the suctionable material into the suction opening, the improvement comprising:

mounting and support means, separate from the suctioning device, supporting and protective plate independent of the suctioning device for movement between a first position for guiding the suctionable material into the suction opening, and a second position spaced from the suctioning device.

4,607,414

DEVICE FOR TYING AN ELONGATE OBJECT, FOR EXAMPLE A CABLE TRUNK

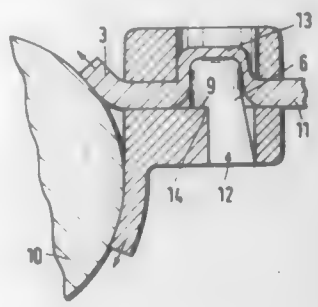
Jörg Six, Norderstedt, Fed. Rep. of Germany, assignor to Paul Hellermann GmbH, Fed. Rep. of Germany

Filed Sep. 14, 1984, Ser. No. 650,434

Claims priority, application Fed. Rep. of Germany, Sep. 21, 1983, 8327158[U]

Int. Cl.⁴ B65D *63/00*

U.S. Cl. 24—16 PB **14 Claims**



6. In combination,

an elongated object to be tied, and

a tying device comprising

a band having opposite ends and wrapped around said object so as to be under tension, and

a lock assembly connecting the band ends comprising

a lock body positioned adjacent said object having a band-

receiving passageway, a borehole with upper and lower portions extending transversely through said passageway so that said upper portion is above said passageway and said lower portion is below said passageway, and a first step surface adjacent said lower portion of said borehole and disposed toward said object, said first step surface facing upwardly toward said upper portion of said borehole, one of said band ends extending through said passageway, and

a driving pin having upper and lower ends mounted within the upper and lower portions respectively of said borehole with said upper end engaging said one band end to form a deep-drawn pot-shaped configuration of said one band end about said upper end of said pin, with the tension of said one band end exerting a force on said pin downwardly and toward said object,

said pin having a second step surface disposed toward said object and facing downwardly, said second step surface directly engaging said first step surface of said lock body to retain said pin in said borehole,

said force on said pin from said one band end urging said pin toward said object so as to tend to increase the amount of mutual engagement between said first and second step surfaces and to press said second step surface directly against said first step surface.

4,607,415

BUTTON FOR GARMENT

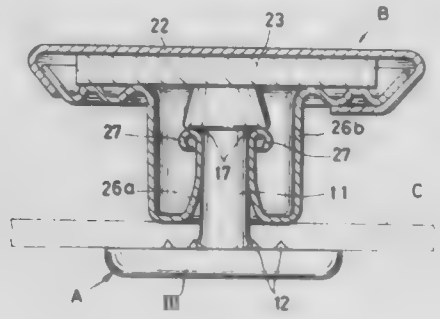
Takeo Fukuroi, Uozu, Japan, assignor to Nippon Notion Kogyo Co., Ltd., Tokyo, Japan

Filed Nov. 15, 1984, Ser. No. 671,938

Claims priority, application Japan, Nov. 16, 1983, 58-176967[U]

Int. Cl.⁴ A44B *1/42*

U.S. Cl. 24—94 **24 Claims**



1. A button for attachment to a garment fabric, comprising:

(a) a capped button body including a hollow hub having a flanged free end;

(b) a tack member having a head and a shank projecting perpendicularly and centrally from said head for being forced through the garment fabric into said hollow hub of said button body to thereby join said tack member with said button body, said shank including

(1) a cylindrical stem contiguous to said head,

(2) an end portion extending coaxially from said stem, and

(3) a cold-pressed recessed portion disposed circumferentially in said stem adjacent to said end portion and having a stiffness greater than the other portion of said shank, said recessed portion being disposed in such a position that the same is disposed adjacent to said flanged free end of said hollow hub when said shank is fully inserted through said hollow hub with the garment fabric sandwiched between said hollow hub and said head of said tack member, said end portion being plastically deformable about said recessed portion into an axially compressed and radially uniformly swelled configuration when said shank is forced into said button body.

4,607,416

FLUID-TIGHT SLIDE FASTENER

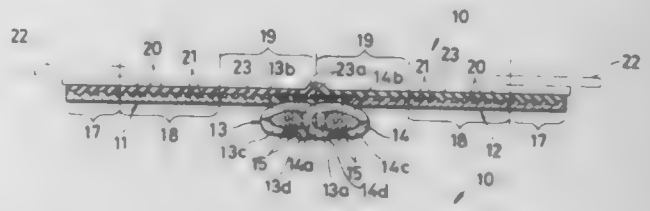
Koichi Tanikawa, Toyama, and Toshiaki Takizawa, Kurobe, both of Japan, assignors to Yoshida Kogyo K.K., Tokyo, Japan

Filed May 1, 1985, Ser. No. 729,403

Claims priority, application Japan, May 10, 1984, 59-68414[U]

Int. Cl.⁴ A44B *19/02, 19/32*

U.S. Cl. 24—389 **9 Claims**



1. A fluid-tight slide fastener comprising:

(a) a pair of stringer tapes each having an inner edge region, an intermediate region and an outer edge region, said tape incorporating stretchable threads in said intermediate region to render this region stretchable transversely of said tape, and said inner and outer edge regions both being non-stretchable;

(b) a pair of rows of coupling elements secured to the inner edge regions of the respective tapes;

(c) a slider for taking said rows of coupling elements into an out of engagement with each other; and

(d) a pair of elastically deformable sealing strips secured respectively onto one side of each of said tapes remotely from said coupling elements, said sealing strip having a width substantially coextensive with the width of said tape, but having an inner edge projecting in its free state slightly beyond the inner longitudinal edge of said inner edge region of said tape.

4,607,417

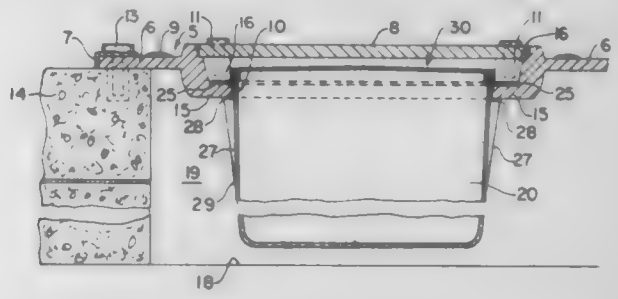
STORAGE SYSTEM FOR CREMATED REMAINS

John P. Hancovsky, McMurray, Pa., assignor to Matthews International Corporation, Pittsburgh, Pa.

Filed Nov. 21, 1983, Ser. No. 553,747

Int. Cl.⁴ A61G *17/08*; E04H *13/00*

U.S. Cl. 27—1 **8 Claims**



1. A storage system for cremated remains comprising a generally flat niche plate having a plurality of openings therein and a plurality of scroll plates for individually covering each of said openings, the storage system including sidewalls for supporting the niche plate along its outer periphery and means for securing the niche plate to said sidewalls in spaced relationship from an inner surface extending between the sidewalls, said niche plate, sidewalls and inner surface defining an interment repository therewithin, said niche plate including a recessed flanged portion within each of the niche openings and a recessed ledge spaced above each of said flanged portions to receive one of said scroll plates thereon; the storage system further comprising an urn-like canister having resilient sidewalls, a closed bottom end and a continuous, open top edge, having a transverse cross-sectional shape substantially the same as each of said niche plate openings, said canister including lid means for closing-off said top edge, said canister further

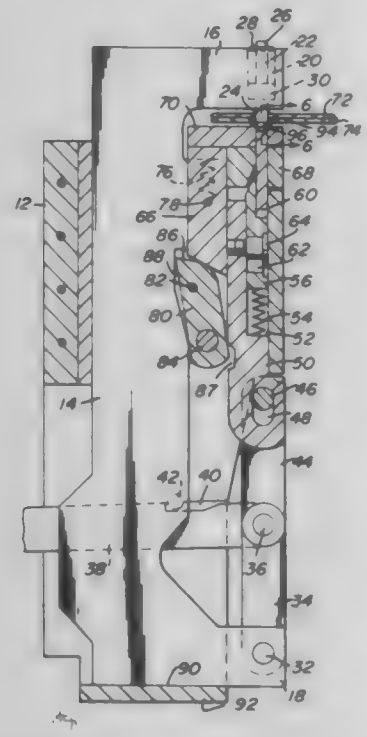
including outwardly projecting flange means formed around the periphery thereof in spaced relationship to the top edge thereof and further including a plurality of locking tab means formed on the sidewalls of the canister, each having a shoulder portion in spaced relationship from the canister flange means, said spacing being approximately equal to the thickness of the niche plate flange, whereby, when said canister is inserted into a niche plate opening to a predetermined depth within the interment repository, the canister flange means and the shoulders of the locking tab means bear against opposing surfaces of the niche plate flange to lockably secure said canister within the niche plate.

4,607,418

MEANS FOR INTERLOCKING OVERLAPPING SHEET MATERIAL

Otto P. Hafner, 1321 Paddock Way, Cherry Hill, N.J. 08034

Filed Nov. 18, 1983, Ser. No. 553,140
Int. Cl.[4] B23P *17/00*
U.S. Cl. 29—21.1 **17 Claims**



1. Apparatus for forming interlocking joints between superimposed sheets of deformable material comprising

a movable punch holder having a shearing and deforming punch extending therefrom,

a die in opposed relation to said punch, said die being adapted to support said superimposed sheets of deformable material and having an aperture therein in aligned relation to said punch,

a movable anvil within said aperture,

means for moving said punch holder in one direction for moving said punch against said superimposed sheets while supported by said die, said punch being constructed and arranged to exert pressure against corresponding portions of said sheets to shear and deform said portions into said aperture upon movement of said punch holder in said one direction,

means for moving said anvil towards and within said aperture in a "direction opposite" from said one direction of punch movement;

means operatively connected to said die to move said die away from said punch in response to anvil movement in said opposite direction past a predetermined point,

whereby one of the displaced portions becomes positioned above said aperture while the other of said portions remains within said aperture, said anvil moving means then moving said anvil against said displaced sheared and deformed portions whereby opposed pressure of said punch and anvil causes the displaced portion above said aperture to expand against the corresponding surface of the adjacent sheet.

8. Apparatus for forming interlocking joints between superimposed sheets of deformable material by affecting relative movement between a punch and said superimposed sheets while said sheets facingly contact an apertured die aligned with said punch to shear and deform by punch-displacing superimposed sheet portions into said die aperture, with relative movement between said die and said displaced sheet portions exposing part of said displaced sheet portions outwardly of said aperture, with compression of said displaced sheet portions between an anvil and said punch laterally spreading said exposed part of said displaced sheet portions over a surface of the superimposed sheets adjacent said die, comprising:

(a) a movable punch holder having a shearing and deforming punch extending therefrom,

(b) a die in opposed relation to said punch,

(c) said die being adapted to support said superimposed sheets of deformable materials and having an aperture in aligned relation to said punch, an anvil movable within said aperture,

(d) means for pressing together said punch and said superimposed sheets facingly contacting said die, thereby shear and deform by punch-displacing portions of said sheets into said die aperture,

(e) means for moving said anvil toward said punch and into said aperture to sandwich said displaced sheet portions in said aperture between said anvil and said punch;

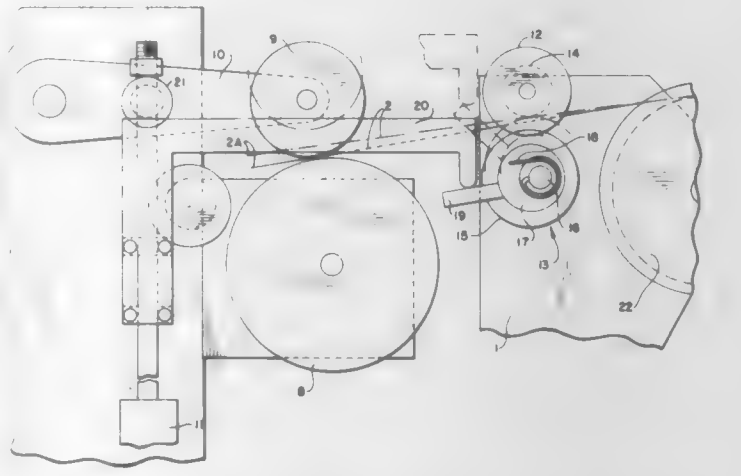
(f) means, responsive to anvil movement, for moving said die with respect to said sandwiched displaced sheet portions and exposing at least some of said sandwiched displaced sheet portions out of said aperture for spreading thereof over a surface of said superimposed sheets in response to force exerted between said punch and said anvil on said sandwiched displaced sheet portions.

4,607,419

ALTERNATOR APPARATUS

Gustav Köhler, Blomvägen 3; Mikael Köhler, Skräddaregatan 39, and Ulf Köhler, Industrigatan 4, all of S-430 10 Tvååker, Sweden

Filed Jan. 2, 1985, Ser. No. 688,392
Claims priority, application Sweden, Jan. 10, 1984, 8400094
Int. Cl.[4] B23P *19/04*
U.S. Cl. 29—24.5 **13 Claims**



1. An alternator apparatus for selectively feeding a slat belt to the infeed section of a machine for manufacturing venetian blinds having a plurality of slat belts, said alternator apparatus comprising

a magazine disposed at the infeed section of said machine,

a plurality of slat belt rolls supported by said magazine for supplying a slat belt to said infeed section from each of said rolls,

means for selecting one of said slat belt rolls for supplying a slat belt to said infeed section,

and means for reciprocally moving said magazine transversely of said infeed section to supply said slat belt from said selected slat belt roll to said infeed section of said machine.

4,607,420

ROLLER FOR A MACHINE FOR MANUFACTURING ENDLESS TAPE MATERIAL

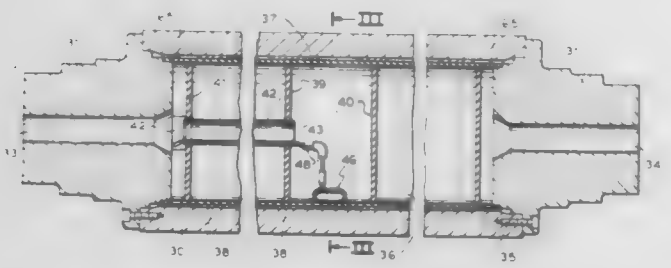
Erich Vomhoff, Königsbronn, Fed. Rep. of Germany, assignor to Schwäbische Hüttenwerke GmbH, Aalen-Wasseralfingen, Fed. Rep. of Germany

Filed Feb. 6, 1984, Ser. No. 577,123

Claims priority, application Fed. Rep. of Germany, Feb. 7, 1983, 3304076

Int. Cl.[4] B21B *31/32;* B60B *9/00*

U.S. Cl. 29—113 R 11 Claims



1. An elongated heatable roller for a machine for manufacturing endless tape material, such as paper machine, foil-pulling calender or the like, comprising an outer cylindrical sleeve having a finished outer surface and a finished inner surface; an inner cylindrical displacement member having an inner surface and an outer surface and being centrally positioned in said sleeve so that a clearance is formed between said outer sleeve and the outer surface of said displacement member for passing through said clearance a heat-conducting fluid; two trunnions rigidly connected to said sleeve and each having a through passage communicating with said clearance, the through passage of one of said trunnions being an inlet passage for the heat-conducting fluid and the through passage of another of said trunnions being an outlet passage for the heat-conducting fluid, said sleeve having two ends at which the sleeve is dynamically balanced; and additional imbalance-compensating masses for compensating for imbalanace occurring on said sleeve at a distance from said ends and for various heat expansions of said sleeve, causing deflection of said sleeve, said imbalance-compensating means being rigidly attached to the inner surface of said displacement member in the middle area thereof.

4,607,421

METHOD AND APPARATUS FOR DETERMINING SPRING PRELOADING IN A FLUID HANDLING DEVICE

Thomas G. Zemek, Mansfield; Antonio B. Caruolo, Vernon, both of Conn.; Stephanie A. Roberts; James K. Dunn, both of Columbia, S.C., and John Spearen, Irmo, S.C., assignors to United Technologies Corporation, Hartford, Conn.

Filed Jul. 2, 1985, Ser. No. 751,712

Int. Cl.[4] B21D *53/00;* B23Q *15/00;* B23P *21/00;* G01L *25/00*

U.S. Cl. 29—157.1 R 9 Claims

1. In a method for assembling a fluid handling apparatus including a valve comprising a movable valve element and a seat mating therewith, said valve element being openable from engagement with said seat against the closing force of a spring at a select critical valve opening fluid pressure applied to said valve element for the passage of said fluid through said valve, a method for determining the preloading of said spring required to maintain said valve in a closed condition at fluid pressures less than said critical opening pressure, said method being characterized by the steps of:

assembling said spring with said valve element such that said spring maintains said valve element closed against opening forces applied thereto by a fluid;

establishing said opening pressure in said fluid;

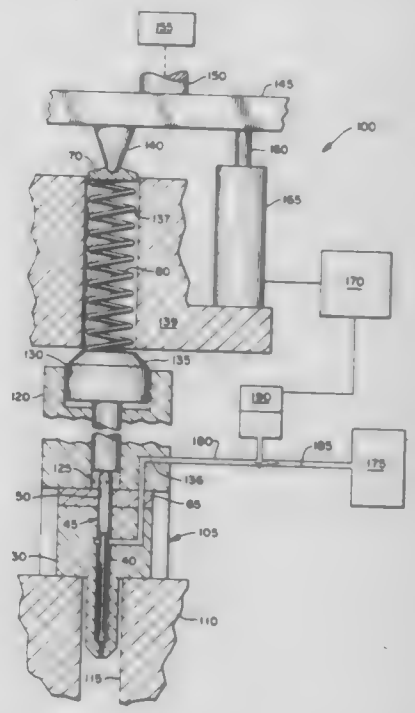
biasing said spring in a valve closing direction with a force of a magnitude in excess of that corresponding to said opening pressure;

gradually relieving said bias from said spring until said opening pressure causes said valve to open;

measuring the change in dimension of said spring resulting from said bias relief thereon prior to said valve opening; and

computing the change in dimension of said spring required to effect a closing of said valve at fluid pressures less than said critical opening pressure from the dimensions of said spring in unbiased and fully biased conditions and the change in dimension of said spring resulting from said relief of said bias prior to said valve opening.

5. In the automated assembly of a fluid handling apparatus including a valve comprising a movable valve element and a seat mating therewith, said valve element being openable from engagement with said seat against the closing force of a spring at a select valve critical opening fluid pressure applied to said valve element for the passage of said fluid through said valve,



apparatus for establishing the length of said spring required to maintain said valve in a closed condition at fluid pressures less than said opening pressure, said apparatus being characterized by:

means for operatively connecting said spring with said valve element such that said spring maintains said valve element closed against opening forces applied thereto by a fluid;

means for biasing said spring in a valve closing direction with a force of a magnitude in excess of that corresponding to said opening pressure and gradually relieving said bias from said spring as said spring pressure is maintained on said valve element;

means for detecting an opening of said valve by said fluid when said bias has been sufficiently relieved; and

means for determining the change in dimension of said spring as said bias is relieved therefrom prior to said opening of said valve,

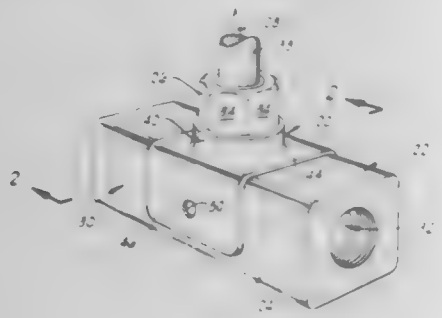
whereby the change in dimension of said spring required to effect a closing of said valve in said fluid handling apparatus at operating pressures less than said critical opening pressure is readily computable from the dimension of said spring in unbiased and fully biased conditions and said change in spring dimension due to said relief of said bias prior to said valve opening.

4,607,422

METHOD FOR LOCKING A BONNET TO A VALVE BODY

John P. Scaramucci, 10724 Woodridden, Oklahoma City, Okla. 73170

Division of Ser. No. 334,425, Dec. 24, 1981, Pat. No. 4,452,428.
This application Feb. 3, 1984, Ser. No. 576,948
Int. Cl.[4] B21D *53/00, 39/03;* F16B *39/00, 39/10*
U.S. Cl. 29—157.1 R 13 Claims



1. A method for fixing a bonnet to a valve body into which the bonnet screws between opposed sides of the valve body, said bonnet having a plurality of angularly related facets formed thereon parallel to the screw axis of the bonnet into the valve body, comprising the steps of:

engaging one portion of a sheet metal structure with the sides of the valve body so as to fix the position of the sheet metal structure with respect to the valve body; and then

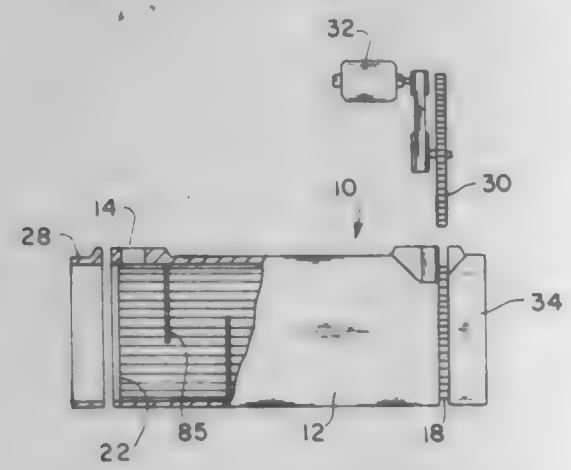
deforming one other portion of the sheet metal structure to engage the facets on the bonnet whereby the sheet metal structure prevents relative movement of the bonnet about the screw axis of the bonnet into the valve body after said deformation.

4,607,423

METHOD FOR MANUFACTURING A DISASSEMBLEABLE CORE HEAT EXCHANGER

Robert E. Sleep, Jr., 4304 Autumn Leaves Dr., Tampa, Fla. 33624

Continuation-in-part of Ser. No. 503,619, Jun. 13, 1983. This application Nov. 21, 1984, Ser. No. 673,680
Int. Cl.[4] B21D *53/02;* B23P *6/00*
U.S. Cl. 29—157.3 R 16 Claims



1. A method of manufacturing a disassembleable core heat exchanger which is interposed between a first and second fluid coupling and of the type including an elongated housing having a first and second flow port and having core tubes positioned within a bore of the housing and a first and second tube retaining plate sealed at opposite ends of the core tubes to enable a first fluid path and a second fluid path within the housing comprising the steps of:

cutting both ends of the elongated housing in the vicinity of the tube retaining plates;

circumferentially cutting the first and second tube retaining plates to enable the core tubes to be removable from the housing;

removing the core tubes from the housing;

securing in a fluid tight manner a first flange having a central aperture corresponding to the diameter of the cut first tube retaining plate to the first tube retaining plate;

securing in a fluid tight manner a ring around the periphery of the second tube retaining plate such that the ring protrudes relative the elongate housing to provide a sealing surface;

slipping a first gasket over the core tubes;

sliding the second tube retaining plate and ring back into the housing to enable the housing to engage the gasket and first flange and with the ring protruding relative the housing;

passing an O-ring seal over the protruding end of the ring so that the O-ring seal encircles the ring;

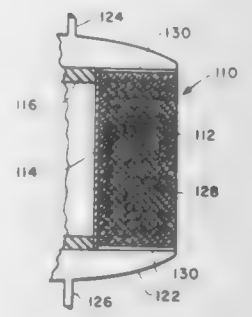
positioning a locating plate adjacent to the O-ring seal to enable the housing to sealingly engage the first and second coupling to enable a first flow path between the first and second housing ports for the first fluid independent of a second flow path between the first and second coupling for the second fluid upon sealingly affixing the disassembleable core heat exchanger to the first and second coupling.

4,607,424

THERMAL REGENERATOR

Alfred L. Johnson, Manhattan Beach, Calif., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Mar. 12, 1985, Ser. No. 710,840
Int. Cl.[4] B23P *15/26, 17/00*
U.S. Cl. 29—157.3 R 5 Claims



1. A process for fabricating a thermal regenerator which comprises the steps of:

(a) providing a first composite woven structure consisting of a plurality of parallel, longitudinally oriented, spaced apart thermal members for storage and transfer of heat, a plurality of parallel, transversely oriented, spaced apart heat-resisting cords woven through said thermal members, and means for maintaining said thermal members in said parallel relation;

(b) winding said composite structure spirally around a cylindrical mandrel, thereby providing a wound structure;

(c) disposing the resulting wound structure in a regenerator housing, said housing comprising an outer wall, a central cylindrical core having closed ends, a first end closure means, a second end closure means, a first fluid transfer means in operable communication with said first end closure means, and a second fluid transfer means in operable communication with said second end closure means, whereby a fluid may be transferred from one of said fluid transfer means through said wound structure disposed in said housing to the other of said fluid transfer means;

and,

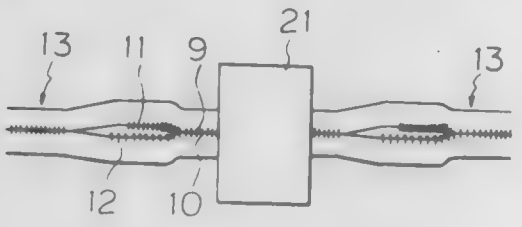
(d) removing said maintaining means.

4,607,425

CURVED SLIDE FASTENER CHAIN AND METHOD FOR PRODUCING CURVED SLIDE FASTENER

Akinobu Terasawa, Toyama, Japan, assignor to Yoshida Kogyo K. K., Tokyo, Japan

Filed Nov. 29, 1983, Ser. No. 556,094
Claims priority, application Japan, Dec. 3, 1982, 57-213020; Dec. 16, 1982, 57-190807[U]
Int. Cl.[4] B21D *53/50*
U.S. Cl. 29—408 1 Claim



1. A method for producing a curved slide fastener including a pair of element rows each having straight and curved inter-engagement portions comprising the steps of:

forming fastener stringers by planting a plurality of element rows of a predetermined length on each of the fastener tapes of the fastener stringers in series and spaced relation;

inter-engaging a pair of fastener stringers to form a fastener chain;

washing and dewatering said fastener chain and drying the same while applying tension thereto;

finishing said fastener chain to form slide fasteners by cutting said slide fastener chain into a unit length after applying parts, such as sliders, to said fastener chain;

characterized in that:

(a) in the step of forming fastener stringers, a pair of fastener stringers are so formed simultaneously that the fastener elements constituting straight and curved inter-engagement portions are planted on each of the inner side edges of said fastener tapes with the element pitch in the curved inter-engagement portion of one of the pair of fastener stringers being larger than the element pitch in the curved inter-engagement portion of the other of the pair of fastener stringers;

(b) in the step of inter-engaging the pair of fastener stringers, the pair of fastener stringers are inter-engaged to form a fastener chain in which at least most of said curved inter-engagement portions are dis-inter-engaged; and

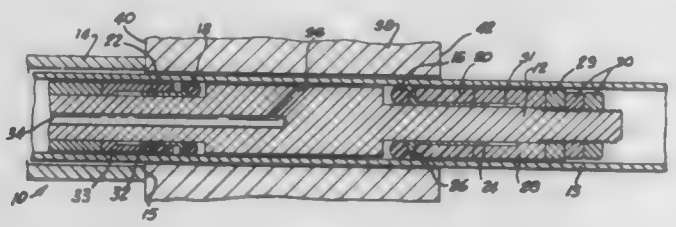
(c) in the step of washing, dewatering and drying the fastener chain, said fastener chain is processed with the curved inter-engagement portions being at least party not inter-engaged.

4,607,426

SWAGING METHOD AND APPARATUS FOR AXIALLY EXTENDED EXPANSION OF TUBES

John W. Kelly, Burbank, Calif., assignor to Haskel, Inc., Burbank, Calif.

Filed Aug. 5, 1985, Ser. No. 762,258
Int. Cl.[4] B23D *17/00, 15/26;* B21D *39/08*
U.S. Cl. 29—421 R 17 Claims



1. A method for expanding and anchoring a tube within a surrounding structure to form a joint, said method comprising the steps of:

inserting said tube in a bore in said surrounding structure so that an external portion of said tube extends from said surrounding structure;

inserting a swaging mandrel in said tube, said mandrel defining a hydraulic pressure zone axially bounded by first and second seal members and an elastomeric member disposed adjacent to said first seal member;

positioning said mandrel axially within said tube so that said hydraulic pressure zone is disposed within said surrounding structure and said elastomeric member is at least partially disposed within said external portion;

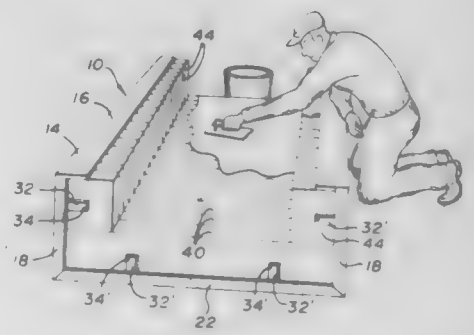
introducing a pressurized fluid into said hydraulic pressure zone between said mandrel and said tube, and thus (1) causing said tube to expand radially within said hydraulic pressure zone, (2) applying an axial compressive force to said elastomeric member and thereby causing said elastomeric member to exert a radial expansive force on said tube, and (3) causing said tube to permanently deform outwardly beyond the diameter of said bore, thereby interlocking said tube with said surrounding structure and insuring a tight visually verifiable leak proof joint extending to the surface of said surrounding structure.

4,607,427

RUNNER COVERS

Hartzell D. Scofield, Highland, Ind., assignor to Crisman Sand Company, Inc., Portage, Ind.

Continuation of Ser. No. 579,818, Feb. 13, 1984, abandoned.
This application Jun. 13, 1985, Ser. No. 733,106
Int. Cl.[4] B23P *11/00*
U.S. Cl. 29—432 2 Claims



1. The process of making a selfsupporting portable unitary runner cover comprising the steps of, in sequence:

forming a rectilinear exoskeleton framework of linear steel members said framework providing rigidity and support to the cover;

providing walls of expanded metal sized to span between the steel members;

welding the expanded metal walls to the members about the wall peripheries;

affixing L-shaped hangars to the frame or walls and impaling ceramic batting thereon so as to form a thickness interior of such insulation over the entire interior of the runner cover; and

applying a sealing coat of ceramic insulation to the interior and allowing it to dry.

4,607,428

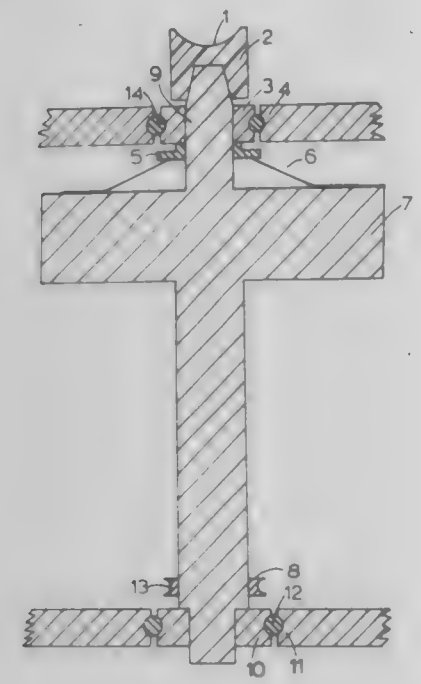
METHOD FOR PRELOADING BEARINGS FOR A SPIN CASTING APPARATUS

Charles W. Neefe, Box 361 811 Scurry St., and Don R. Proctor, P.O. Box 429, both of, Big Spring, Tex. 79720

Continuation-in-part of Ser. No. 642,114, Aug. 17, 1984, Pat. No. 4,534,915, which is a continuation-in-part of Ser. No. 506,873, Jul. 5, 1983, abandoned, which is a continuation-in-part of Ser. No. 417,641, Sep. 9, 1982, Pat. No. 4,416,837. This application Jun. 10, 1985, Ser. No. 742,949

Int. Cl.[4] B23P *11/00*

U.S. Cl. 29—436 3 Claims



1. A method of preloading the ball bearing of a lens spin casting machine by the steps of positioning a bearing preloading collar against the inner race of the ball bearing, preloading the ball bearing by moving the preload collar toward the bearing by providing a spring force and thereby forcing both the inner ball bearing race and the ball bearings against the outer ball bearing race.

4,607,429

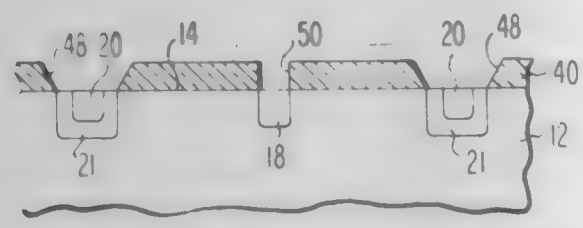
METHOD OF MAKING A CHARGE-COUPLED DEVICE IMAGE SENSOR

Walter F. Kosonocky, Montgomery Township, Somerset County, N.J., assignor to RCA Corporation, Princeton, N.J.

Filed Mar. 29, 1985, Ser. No. 717,725

Int. Cl.[4] H01L *21/265, 21/26*

U.S. Cl. 29—572 11 Claims



1. In a method of making a charge-coupled device image sensor which includes in a substrate of semiconductor material of one conductivity type having a major surface, a plurality of parallel channel regions of the opposite conductivity type in said substrate and extending along said surface, channel stop regions in said substrate and extending along said surface between said alternate pairs of adjacent channel regions, a blooming drain region in said substrate and extending along said surface between the other alternate pairs of channel regions and a blooming drain barrier region in said substrate around each of the blooming drains, the steps of

defining the area of the substrate surface for the channel stop regions simultaneously with defining either the blooming drain barrier regions or the blooming drain regions,

forming all of the channel stop regions and the blooming drain barrier regions at the same time, and

forming the blooming drain regions separately from the channel stop regions and the blooming drain barrier regions.

4,607,430

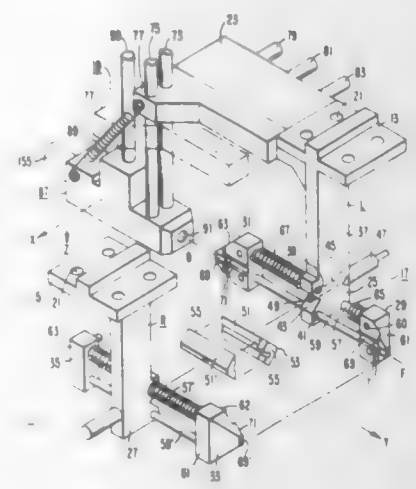
METHOD AND APPARATUS FOR HIGH DENSITY WIRE HARNESS MANUFACTURE

Steven J. Young, Pittsburgh, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Nov. 13, 1984, Ser. No. 670,526

Int. Cl.[4] H01R *43/00;* B65G *51/02;* B25J *15/02*

U.S. Cl. 29—868 32 Claims



1. An end effector for the insertion of a terminated wire into a connector comprising:

first and second bracket means adapted to be mounted onto an industrial manipulator, said bracket means including a strut portion, said bracket means being adapted for selected movement toward and away from each other;

first and second substantially symmetrical outer jaw means, each of which jaw means is slidably mounted in said strut portion for movement substantially perpendicular to the movement of said bracket means; whereby the selected movement of the bracket positions said outer jaw means in an open wire receiving position or a closed wire guiding and pin insertion position, said outer jaw means defining therein a wire guiding channel when closed; and

inner clamp means disposed within said outer jaw means for selective actuation between a first open position and a second closed, wire engaging position.

15. A system for the acquisition and insertion of a terminated wire into an assembly point mounted on a formboard comprising:

an end effector comprising first and second bracket means adapted to be mounted onto an industrial manipulator, said bracket means including a strut portion, said bracket means being adapted for selected movement toward and away from each other;

first and second substantially symmetrical outer jaw means, each of which is slidably mounted in said strut portion for movement substantially perpendicular to the movement of said bracket means; whereby the selected movement of the bracket means positions said outer jaw means in an open wire receiving position and a closed wire guide and pin insertion position, said outer jaw means defining therein a wire guiding channel when closed;

inner means disposed within said outer jaw means for selective actuation between a first open position and a second closed wire engaging position;

wire tensioning and centering means having a wire passage bore therethrough operationally associated with one of the first and second bracket means and adapted for eleva-

tional displacement with respect to the wire passage channel of the outer jaw means, such that in a first extended position the wire passage bore of the tensioning and centering tool is aligned with the wire passage channel of the outer jaws and in a second retracted position, the wire tensioning and centering tool is elevationally cleared from the outer jaws, and wherein the wire tensioning and centering tool is laterally movable between a first and second position to maintain an on axis alignment with the outer jaws when said jaws are in the open wire receiving position;

a wire feed system for conveying a wire from a point remote from the end effector to a selected location for acquisition by the end effector, said wire feed system comprising tube means operatively associated with the wire passage bore of the wire tensioning and centering tool, and means operatively associated with said tube means for generating a back air pressure in said tube means to blow the wire from the remote location to the selected location;

stationary clamp means comprising a generally rectangular member which is mounted onto the formboard, said stationary clamp means including a bore therein for receiving a terminated wire therein from said tensioning and centering device and including clamp means in said rectangular member for selectively engaging and releasing said terminated wire within said bore; and

at least one alignment fixture adapted to be mounted onto the formboard and defining alignment bore means therein for receiving the terminated wire portion and outer gripper jaws for the alignment of said terminated wire portion with said jaws.

25. A process for the automated manufacture of a cable harness comprising the steps of:

(1) presenting a terminated wire to a selected end effector;

(2) loading the terminated wire into the selected end effector;

(3) positioning the end effector for the insertion of a first end of the terminated wire into a desired first assembly point;

(4) inserting the first end of the terminated wire into the first assembly point;

(5) routing the terminated wire along a predetermined cable harness layout;

(6) loading a second end of the terminated wire into the selected end effector;

(7) positioning the end effector for insertion of the second end of the terminated wire into a desired second assembly point; and

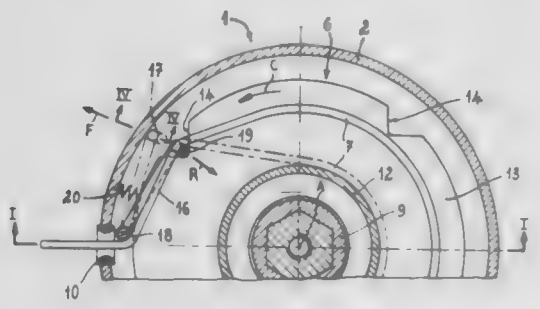
(8) inserting the second end of the terminated wire into the desired second assembly point.

4,607,431

LINE-TYPE FOLIAGE TRIMMER WITH AUTOMATIC FEED

Pierre Gay, Rue de la Petite Gallée, Millery (Rhone), France

Filed Aug. 24, 1984, Ser. No. 644,208
Claims priority, application France, Aug. 24, 1983, 83 13816
Int. Cl.[4] A01D *50/00*
U.S. Cl. 30—276 **11 Claims**



2. A foliage trimmer comprising:

a housing centered on an axis and rotatable thereabout in a direcrion, the housing being formed with a radially open eye;

a spool rotatable in the housing about the housing axis and carrying a supply of a cutting line having a free end extending from the housing through the eye thereof, the line supply being rotationally linked to the spool, the spool having an outer periphery formed with at least one radially outwardly open notch having relative to the direction a downstream flank facing at least partially radially inward;

a latching pawl having one end pivoted in the housing about a pawl axis parallel to the housing axis and an opposite end radially engageable in the notch and angularly offset from the pivoted end relative to the housing rotation direction, the pawl being displaceable between an inner position with the opposite end in the notch to inhibit rotation of the spool and an outer position with the opposite end clear of the notch and the spool being rotatable, the notch flank being inclined such that in the inner position of the opposite pawl end it bears at least generally radially inward on the opposite pawl end, the line being wound around the supply opposite to the direction, whereby when the housing and spool rotate in the direction with the end of the line projecting from the eye the line is centripetally tensioned to urge the spool to rotate opposite to the direction and to cam the opposite end of the pawl inward with the notch flank toward the inner position with a force generally proportional to the tension in the line; and

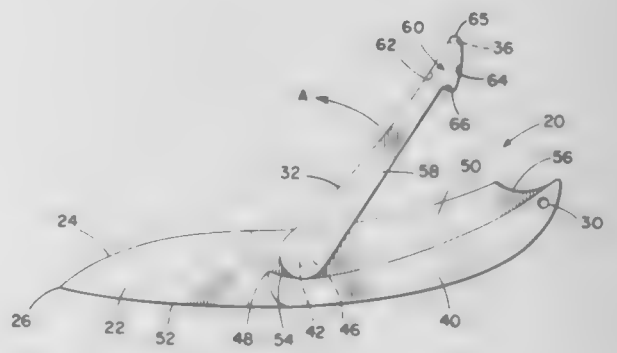
motor means for rotating the housing in the direction about the housing axis to extend the free line end radially from the eye and centripetally tension the line, for urging the opposite end of the pawl centrifugally outward by direct action of centrifugal force on the opposite end, and for urging the opposite end radially inward by camming action of the notch flank against the opposite end.

4,607,432

HUNTING KNIFE FOR FIELD DRESSING AN ANIMAL

Calvin W. Montgomery, P.O. Box 207, Inverness, Miss. 38753

Filed Jan. 24, 1985, Ser. No. 694,329
Int. Cl.[4] B26B *29/00*
U.S. Cl. 30—294 **14 Claims**



1. A hunting knife for field dressing an animal, said hunting knife comprising:

a knife handle,

a hunting knife blade extending from one end of said knife handle, said hunting knife blade including a point located at the end of the hunting knife blade opposite to said knife handle and a cutting edge extending between said knife handle and said point,

a gut hook pivotably mounted at one end on said handle for moving between a retracted position and an extended position and said gut hook, when in said extended position, protects said point from contacting the entrails and the skin of the animal during longitudinal cutting of the skin of the animal,

said gut hook includes two side portions spaced from one another and located on opposite sides of said hunting knife blade when said gut hook is in the extended position, and

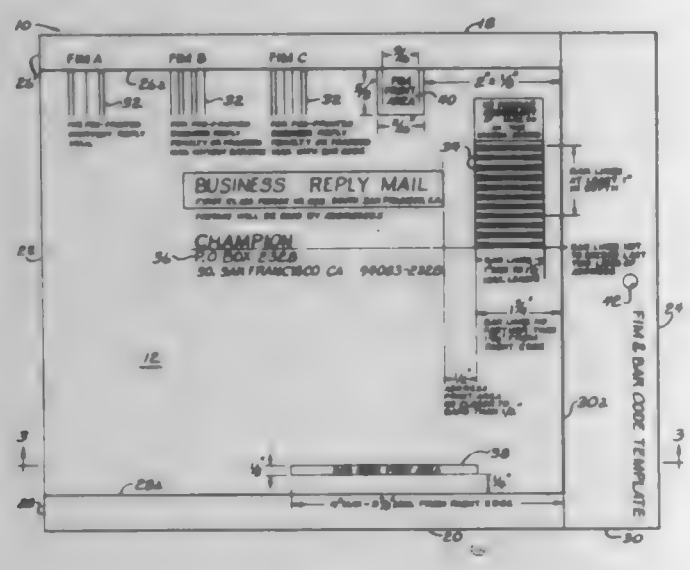
said knife handle defines two recesses for receiving said two side portions in said retracted position.

4,607,433

MARK LOCATOR

David M. Meeker, Saratoga, Calif., assignor to American Envelope Company, Chicago, Ill.

Filed Apr. 15, 1985, Ser. No. 723,336
Int. Cl.[4] G01B *5/14*
U.S. Cl. 33—1 BB **5 Claims**



1. A mark locator having indicia thereon for verifying conformity of markings of a mail article as being within the dimensional limits of postal specifications, said markings including a plurality of alternative series of parallel lines of predetermined width, length and spacing, comprising:

a rectangular transparent plate having opposed top and bottom edges and opposed side edges and having a front and a back surface, said front and back surfaces being parallel and planar;

first, second and third, perpendicularly oriented edge members comprising members of rectangular cross-section fixed to the back surface of said plate adjacent and parallel to three edges of said rectangular plate and lying in first, second and third inner planes, respectively, substantially perpendicular to a plane containing said back surface; and

indicia provided on said plate at predetermined locations defining a plurality of specified areas relative to said first, second and third planes, said plate including a plurality of alternative series of parallel lines of predetermined width, length and spacing for alternative use in one of said specified areas.

4,607,434

SAW GUIDE WITH CUT LOCATION INDICATOR

John G. R. Francis, P.O. Box 329, Manning, S.C. 29102

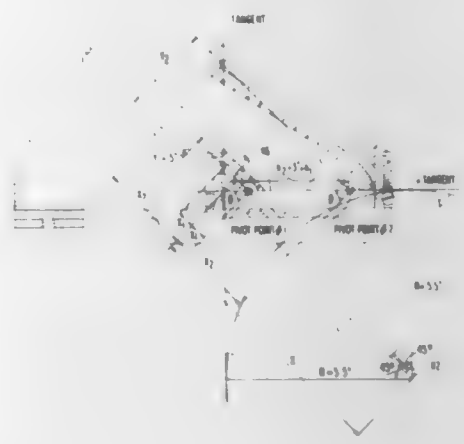
Filed Jan. 27, 1984, Ser. No. 574,425
Int. Cl.[4] B43I *13/02*
U.S. Cl. 33—42 **16 Claims**

1. A saw guide for use in cutting a work piece with a power saw, said work piece including first and second adjacent surfaces and said power saw including a blade and a saw plate for sliding along said first surface of said work piece as said blade extends beyond said saw plate and into said work piece for cutting, said saw guide comprising:

a first means to be disposed in a predetermined position relative to said work piece;

a second means having at least one guide edge for cooperating with said saw plate to define a cutting path along which said saw blade will pass when cutting said work piece; and

coupling means for coupling said first and second means for relative movement with respect to one another whereby said second means can define at least three cutting paths, each of said plurality of cutting paths including a common point along an edge of said work piece through which said saw blade will pass when cutting said work piece, the distance from said first means to said common point along said edge of said work piece being the same for each of



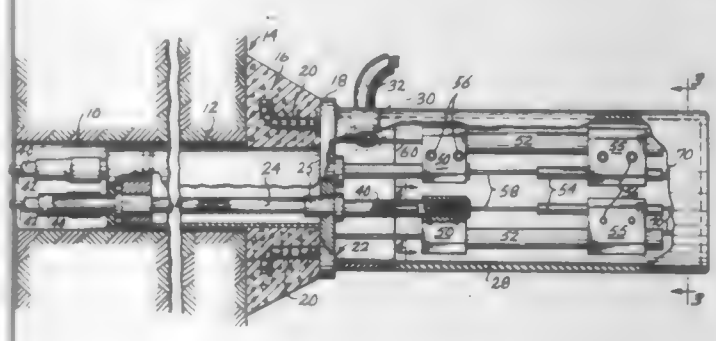
said three cutting paths, and the distance from said guide edge of said second means to said common point along a line perpendicular to said guide edge being the same for each of said three cutting paths.

4,607,435

TEMPERATURE COMPENSATED EXTENSOMETER

Bradford P. Boisen, Millcreek, Wash., assignor to The Slope Indicator Company, Seattle, Wash.

Filed Feb. 15, 1985, Ser. No. 701,995
Int. Cl.[4] G01B *7/26*
U.S. Cl. 33—125 B **15 Claims**



1. A temperature-compensated borehole extensometer, comprising;

an elongated heat-responsive element formed of a tube having a rod coaxially disposed therein and distally secured thereto;

the tube and rod components of said element being formed of materials having disparate linear coefficients of expansion;

means to fixedly and remotely anchor the distal portion of said element in a borehole in the earth, the components of said element having freedom of movement relative each other and of the borehole over the length of said element between the anchored distal portion and the entrance to said borehole;

means forming a reference surface adjacent the outer end of said element and near the entrance of such borehole;

a first transducer fixed to said tube in parallel disposition and including a probe associated with said reference surface;

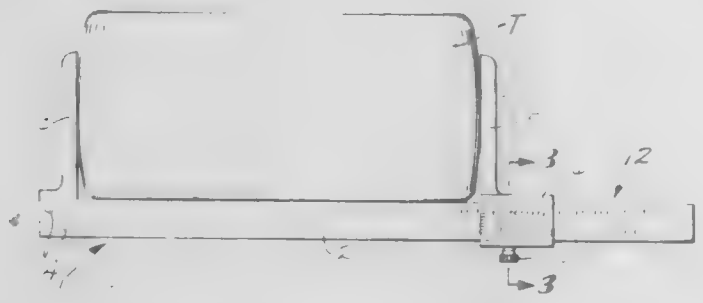
a second transducer fixedly associated with said first transducer and having a probe associated with the outer extremity of said rod; and

means for comparing the responses of the first and second transducers to the presence or absence of heat affecting said elements.

4,607,436
AUTOMOBILE TIRE-SPANNING BEAM OUTSIDE CALIPERS

Truman R. Clay, 7631 Coal Creek Pkwy. Southeast, Renton, Wash. 98056

Filed Feb. 2, 1984, Ser. No. 576,185
Int. Cl.[4] G01B 5/08
U.S. Cl. 33—143 D 5 Claims

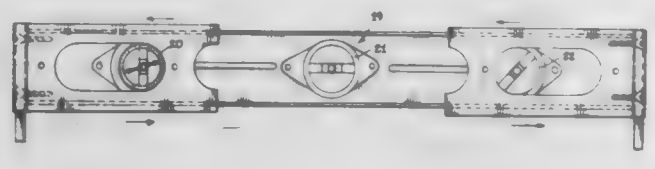


1. Automotive vehicle tire-spanning outside calipers comprising opposed tire-contacting members for engagement with diametrically opposite portions of a tire, joining means connecting said tire-contacting members and guiding said tire-contacting members for relative movement toward and away from each other, and scale means and index means movable relative to each other in synchronism with movement of said tire-contacting members relative to each other, said scale means including a scale line elongated transversely of but inclined relative to the direction of relative movement of said scale means and said index means, and said index means including a line extending transversely of the direction of relative movement of said scale means and said index means and disposed for crossing said inclined scale line a predetermined spacing of said tire-contacting members.

4,607,437
ADJUSTABLE LEVEL

Harry J. McSorley, Sr., 1717 S. Washington, Wichita, Kans. 67211, and Sophokles Anthimides, 219 E. Douglas, Wichita, Kans. 67202

Filed Jan. 31, 1985, Ser. No. 696,970
Int. Cl.[4] G01C 9/00
U.S. Cl. 33—374 1 Claim

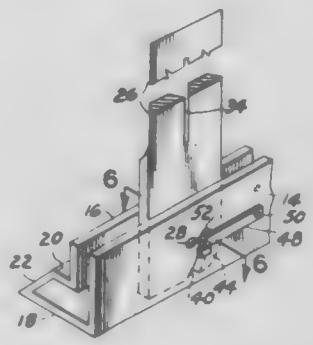


1. An adjustable level apparatus consisting of:
an elongated core level unit provided with a plurality of spirit levels, and having an elongated aperture disposed proximate to, but spaced from, each end of said core level element; wherein said core level unit comprises a generally H-shaped core level element having two vertical wall members and an intermediate horizontal wall member; and said plurality of spirit levels comprises three distinct spirt levels, one of which is disposed at the mid-point of the horizontal wall member, and the remaining two of which are disposed proximate to, but spaced from, the ends of said horizontal wall member;
a pair of extension arm units disposed on the ends of the core level unit, and mounted for reciprocation along the elongated axis, thereof; wherein said extension arm units comprise: an upper housing element; a lower housing element; and, at least one elongated securing rod that extends through one of said elongated apertures in the said core level unit, and connects the upper and lower housing elements to one another; wherein, both of the upper and lower housing elements are identical in construction and each housing element is further provided with a semi-circular aperture on its inboard end, and an enlarged generally eliptical aperture disposed proximate its mid-point, wherein the enlarged generally eliptical apertures are dimensioned to receive and allow limited relative motion between the assembled housing elements by virtue of the ends of the enlarged generally eliptical apertures coming into stop limiting contact with the said two spirit levels which are disposed proximate to, but spaced from the ends of said horizontal wall member on said elongated core level unit; and,
an extension leg unit secured to each extension arm unit, and having an extension leg element that is reciprocal with respect to each extension arm unit in a direction perpendicular to the elongated axis of the core level unit.

4,607,438
WALL AND RAFTER LAYOUT TOOL

Eugene R. DeFrange, 995 W. Jackson, Box B, Krebs, Okla. 74554

Filed Feb. 26, 1985, Ser. No. 705,945
Int. Cl.[4] G01C 9/00
U.S. Cl. 33—451 5 Claims



1. A carpenter's stud framing layout tool, comprising:
an elongated channel-like rail having a planar bight portion and parallel front and back walls and having a top wall spaced from and parallel with the bight portion and joined to the front wall in laterally projecting normal relation for forming a workpiece abutment when the layout tool is disposed on a length of dimension lumber;
a plurality of strap-like tongues each pivotally secured by one end portion between said front and back walls in normally parallel equally spaced relation corresponding to the desired distance between wall framing studs to be erected for pivoting movement of the other end portion of the said tongues about the axis of the pivotal connection from an erected normally right angular position with respect to said front and back walls toward and away from a nested position between said front and back walls; and,
means on the pivotally connected end portion of each said tongue for maintaining said tongues normal to the longitudinal axis of the rail or nested between said front and back walls.

4,607,439
LAMINATED SHEET AND A METHOD FOR PRODUCING THE SAME

Kunihiko Harada, Ashikaga, Japan, assignor to Achilles Corporation, Tokyo, Japan

Filed Apr. 26, 1983, Ser. No. 488,738
Claims priority, application Japan, Mar. 4, 1983, 58-35464
Int. Cl.[4] A43B 23/00; B32B 7/00
U.S. Cl. 36—45 19 Claims

1. a laminated sheet comprising a first woven fabric in which at least a part of the warp consist of spun yarn having whisker fibers, said spun yarn having previously been treated with a water and oil repellent, a rubber composition layer having a plurality of fine air passages therein formed on said first fabric and a second fabric laminated on said rubber composition layer said rubber composition layer having as its main ingredient the

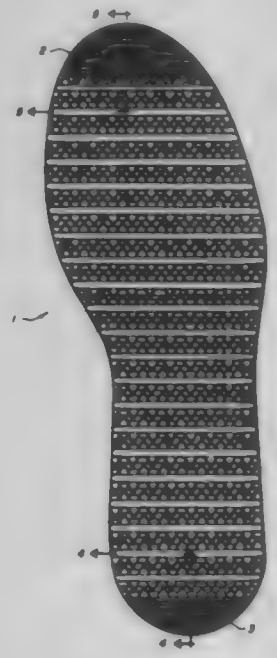
reaction product of a liquid diene-polymer having at least two active hydrogen groups in the molecule and a polyisocyanate.

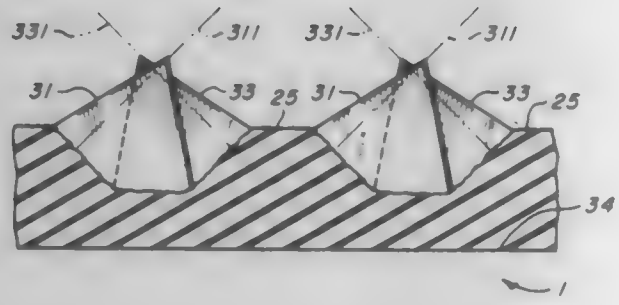
9. A laminated sheet comprising a first woven fabric in which at least a part of a weft consist of spun yarn having whisker fibers, said spun yarn having previously been treated with a water and oil repellent, a rubber composition layer having a plurality of fine air passages therein formed on said first fabric and, a second fabric laminated on said rubber composition layer, said rubber composition layer having, as its main ingredient the reaction product of a liquid diene-polymer having at lesat two active hydrogen groups in the molecule and a polyisocyanate.

4,607,440
OUTSOLE FOR ATHLETIC SHOE

Leslie E. Roberts, Haverhill, and Sumner F. Davis, Methuen, both of Mass., assignors to Converse Inc., Wilmington, Mass.

Filed Jan. 12, 1984, Ser. No. 570,172
Int. Cl.[4] A43B *5/00, 13/00*
U.S. Cl. 36—114 5 Claims





1. An outsole for an athletic shoe, comprising:

(a) a base surface in a first plane for contacting the ground and having a longitudinal axis;

(b) a plurality of parallel, V-shaped grooves located in the base surface and transverse to the longitudinal axis, each groove having a pair of opposing walls oblique to the base surface; and

(c) a plurality of traction elements, closely spaced without making contact one with another at any point, and each having a tip, such traction elements located on the walls and projecting outward therefrom,

wherein the traction elements are alternately arranged on the opposing walls so as to form a tightly woven, continuous zig-zag channel therebetween, each traction element projecting out beyond the first plane at an oblique angle thereto, the tips of such elements forming a resilient matrix in a second plane so disposed as to make contact with the ground before contact therewith of the base surface when such outsole is in use.

4,607,441
STONE DIGGING ATTACHMENT FOR FRONT END LOADER ATTACHMENT OF A TRACTOR

R. Scott Norton, Box 23, Rocanville, Saskatchewan, Canada (S0A 3L0)

Filed Apr. 30, 1985, Ser. No. 729,033
Int. Cl.[4] A01B *43/00*
U.S. Cl. 37—2 R 18 Claims

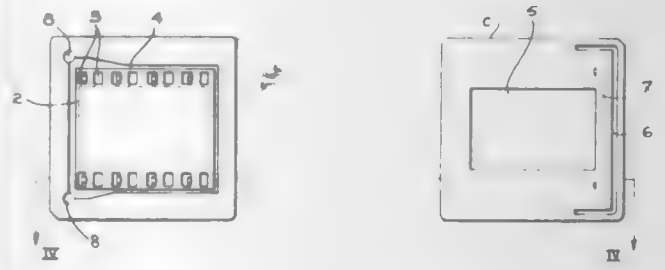


1. A stone digging attachment for the front and loader mechanism of a tractor of the type comprising, with the bucket removed, a pair of horizontally spaced lift arms and a pair of horizontally spaced hydraulic cylinders mounted above the lift arms, the attachment comprising a frame having a first pair of brackets for attachment to said lift arms and a second pair of brackets for attachment to said cylinders, and a pair of parallel spaced downwardly extending stone engaging tines mounted on said frame whereby the tines can be engaged into the ground against the stone by operation of said lift arms and cylinders for withdrawal of the stone from the ground, each tine having a pointed tooth at the bottom end thereof arranged at an angle to the length of the tine and directed such that, when the attachment is mounted on the tractor, the tooth is pointed toward the tractor, said frame comprising a pair of parallel spaced I-beams with the tines welded to each at right angles thereto such that each tine passes through and is welded to slots formed in half of the top and bottom flanges of the I to one side of the web of the I.

4,607,442
SLIDE MOUNT

Gérard Desmarais, Mont-Royal, and Claude Desmarais, Ville Mont Royal, both of Canada, assignors to Desmarais & Frere Ltd, Longueuil, Canada

Filed Aug. 14, 1985, Ser. No. 765,441
Claims priority, application Canada, Aug. 17, 1984, 461261
Int. Cl.[4] A47G *1/06;* G09F *1/12*
U.S. Cl. 40—152 8 Claims



1. In a slide mount of the type comprising a flat rectangular pocket forming a slideway for receiving a standard slide film provided with two lateral rows of driving notches, a central window formed in said pocket and a deformable slot in communication with the slideway to allow introduction of the slide film into said slideway with the rows of notches of the film

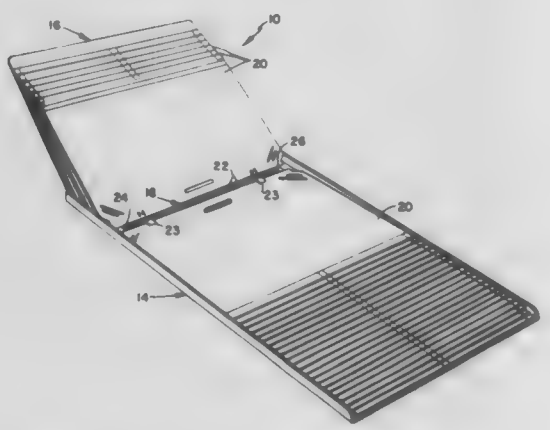
perpendicular to the slot, the improvement wherein at least one sprocket is provided for inside the slideway to engage one of the notches of the film to lock the same inside the slideway after introduction, said sprocket being smaller in size than the notch to let the film free to expand to a certain extent when subjected to the heat of a lamp.

4,607,443

VISIBLE INDEX POCKET CONSTRUCTIONS

Alexander P. Janssen, 28 Old Farm Rd., Charlottesville, Va. 22901

Filed Jan. 13, 1984, Ser. No. 570,383
Int. Cl.[4] B42F *5/00*
U.S. Cl. 40—405 6 Claims



1. A visible index pocket consisting essentially of:

a rectangular flexible planar sheet type member having first and seond pairs of substantially parallel opposed edges and having opposed faces for supporting data cards thereon,

attaching means disposed at one of the first pair of said edges of said sheet type member for attaching said member to a supporting unit for substantially pivotal motion with respect to said unit, and

a separate pocket tip attached and supported by the opposite edge of said first pair of edges of said sheet type member and extending substantially the length thereof, said second pair of edges being free of any attachment, said pocket tip comprising;

an elongated element having a central substantially planar stem and a pair of sides spaced from said stem on opposite sides thereof, said stem and said sides being attached together by a bottom extending outwardly in opposed directions from said stem to said sides, said stem and said sides extending in substantially the same direction from said bottom, said stem being attached to said second of said edges of said sheet type member to attach said pocket tip to said member, said sides and stem defining elongated substantially parallel recesses on opposite sides of said stem for receiving one edge of said data cards to thereby support said data cards on said opposed faces of said sheet type member with said data cards extending outwardly beyond said pocket tip across extended portions of said opposed faces of said sheet type member for support thereby and pivotal movement therewith.

4,607,444

PORTABLE ILLUMINATION DISPLAY SIGN

C. Tom Foster, P.O. Box 490068, Miami, Fla. 33149-0068

Filed Dec. 14, 1984, Ser. No. 681,812
Int. Cl.[4] G09F *13/28*
U.S. Cl. 40—550 12 Claims

1. A portable illuminated sign assembly of the type primarily designed to be hand-carried when not in use, said assembly comprising:

(a) a base formed from a substantially flexible material and including a display face, said base structured to be folded upon itself and selectively positionable between an open and a closed position,

(b) said base comprising a substantially hollow interior portion defined at least in part by oppositely disposed and spaced apart side panels,

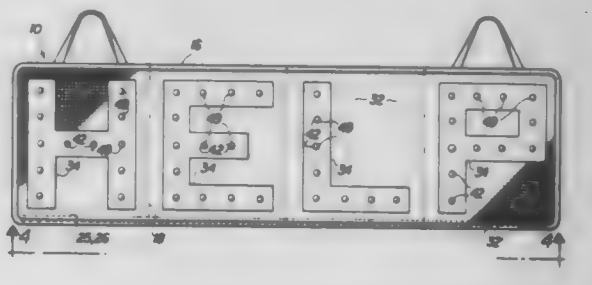
(c) indicia means mounted on said display face for representation of a display thereon, and structured for visual distinction from a remainder of said display face,

(d) illumination means mounted on said base and disposed and configured to accentuate said indicia means relative to and distinguished from said display face and enhance visual observation of said indicia means,

(e) said indicia means comprising a plurality of indicia segments disposed in substantially spaced relation to one another on said display face, said illumination means comprising a plurality of illumination segments each correspondingly configured in conformance with a respective indicia segment and disposed to illuminate said respective indicia segments,

(f) circuit means removably disposed in part within said interior portion and structured for electrical interconnection of said illumination segments with one another and a power source,

(g) said illumination segments comprising a plurality of light bulbs electrically connected to said circuit means and disposed in spaced relation to one another to define a plurality of electrically interconnected and independently



configured arrays, each array correspondingly configured to one of said indicia segments, whereby said indicia means is effectively outlined in illumination,

(h) said base further comprising an aperture means integrally formed in said display face for visual observation of said illumination means, said aperture means comprising a plurality of apertures correpondingly configured to said indicia segments and disposed in aligned relation therewith; each of said plurality of light bulbs disposed in registry with one of said plurality of apertures and extending therethrough for visual observation of said display face,

(i) said illumination means further comprising a mounting means structured for connection and orientation of said plurality of light bulbs into respective ones of said arrays, said mounting means formed from at least partially rigid material and configured to substantially correspond to each of said indicia segments,

(j) said mounting means being formed from electrically conductive material and being disposed and structured to electrically interconnect said plurality of light bulbs of each array with said circuit means, and

(k) connecting means structured for support of said base in said open position for visual observation of said display face.

4,607,445

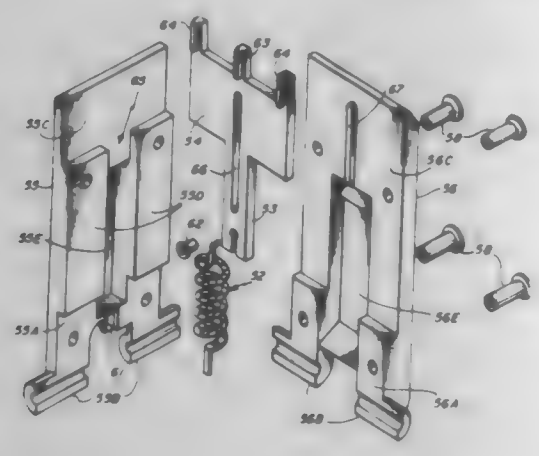
TEMPERATURE COMPENSATING FRONT SIGHT

Paul V. Choate, Milton, Mass., assignor to N I Industries, Los Angeles, Calif.

Filed Jun. 4, 1984, Ser. No. 617,377
Int. Cl.[4] F41G *1/00*
U.S. Cl. 42—100 6 Claims

6. A thermally responsive front sight for a launcher of a projectile the efficiency of the propellant of which varies with the temperature thereof, the launcher of a type thermally insulating the projectile and having a port opening into a ther-

mally insulated housing adjacent the muzzle and provided with a removable closure, said sight including a sighting member provided with a central sighting post, said sighting member and post integral, thin and flat surfaced, and a sight housing having a central chamber the width of which is substantially less than the width of the sighting member, said sight housing having a transverse slot in commmunication with said chamber and shaped and dimensioned to receive and slidably confine said sighting member, said sighting member within said slot with a central portion thereof exposed in said chamber and with said sighting post exposed above said sight housing, a



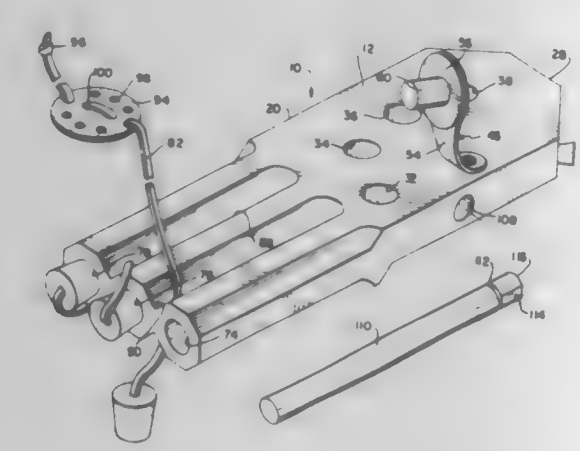
thermally responsive element within said chamber with one end anchored in the bottom thereof and the other end thereof attached to said exposed portion of the sighting member, said element of the type expanding lengthwise as the temperature rises and contracting as said temperature falls, and said sighting member and said sight housing including interengaged portions within said housing and within the confines of the sighting member establishing a slidable connection operable to maintain said sighting member against lateral movement while permitting vertical movements of said sighting member by said element.

4,607,446

MUZZLE LOADER

Melvin W. Scheuring, 18053 Bennett Rd., North Royalton, Ohio 44133

Filed Mar. 18, 1985, Ser. No. 713,154
Int. Cl.[4] F41C *27/00*
U.S. Cl. 42—90 **20 Claims**



1. A muzzle loader, comprising:

(a) an elongated block having a top face and a bottom face and side faces therebetween providing a vertical dimension;

(b) a plurality of shot-receiving apertures through said top and bottom faces and said apertures being angularly spaced apart on a generatrix of constant radius;

(c) a flexible punch pad pivotally connected proximate one end thereof to said block at said generatrix; and

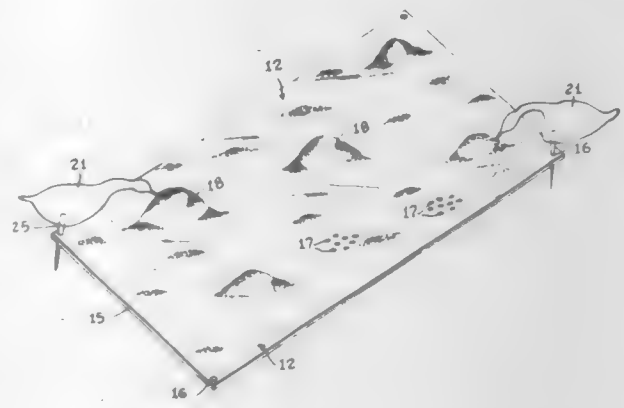
(d) a punch block secured proximate a second end of said punch pad and being alignable with said apertures by pivoting of said punch pad so that said punch block is positionable in said apertures and said punch block being of sufficient length to force shot from said apertures when inserted fully therein.

4,607,447

FOOD DECOY MAT FOR WATERFOWL

William H. Wright, 919 S. 17th St., Arlington, Va. 22202

Filed Feb. 13, 1985, Ser. No. 701,155
Int. Cl.[4] A01M *31/06*
U.S. Cl. 43—3 **19 Claims**



1. A food decoy apparatus equally effective on dry land and an underwater environment to attract waterfowl to fields and to shallow water areas, wherein the decoy apparatus comprises:

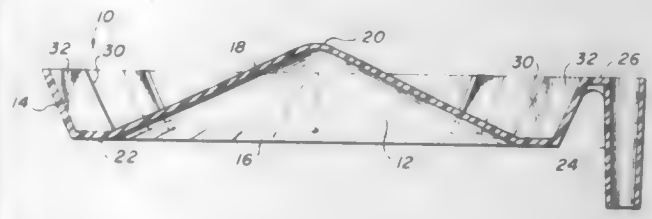
an enlarged flexible member having transparent portions and opaque portions, wherein at least some of the opaque portions are generally mound shaped protrusions rising from the otherwise flat surface of said flexible member, and self supportive in use, said opaque portions being representative, with respect to both size and coloration, of kernels of grain.

4,607,448

APPARATUS FOR CASTING A NET

John D. Brief, Rte. 11, Box 215, Tyler, Tex. 75709

Filed Aug. 1, 1985, Ser. No. 761,161
Int. Cl.[4] A01K *73/04*
U.S. Cl. 43—8 **7 Claims**



1. A device for throwing a casting net comprising receptacle means for holding a net having a continuous sidewall and a bottom, and open at the top thereof, said bottom having a central portion comprising substantially upwardly conical means for supporting the net to help keep the net from becoming entangled, and means comprising a plurality of ribs extending radially inwardly from and secured to said sidewall for preventing net weights from sliding around said receptacle, and handle means on the outside of said receptacle.

4,607,449

FISHING JUG

Howard Brachear, 12 Sunset Acres, Farmersville, Ill. 62533

Filed May 28, 1985, Ser. No. 737,710
Int. Cl.[4] A01K *97/12*
U.S. Cl. 43—43.11 **3 Claims**

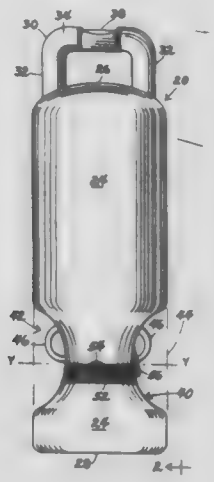
1. A fishing jug comprising: a floatable hollow housing having a generally cylindrical side wall;

top and bottom end walls at opposite ends of said housing;

a handle connected to the top end wall;

said side wall having a reduced diameter neck portion in the lower portion of the side wall providing a downwardly enlarged, flared lower ballast compartment between the neck portion and the bottom wall; and

hook engageable loop means extending outwardly from the neck portion of the side wall and being entirely recessed within a cylindrical projection of the side wall;



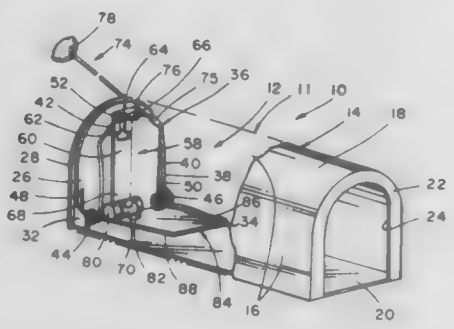
whereby a plurality of the fishing jugs may be piled or stacked with lines having baited hooks wrapped around the neck portion and the hooks may be temporarily held by the respective hook-engageable loop means within the neck portion without snagging or tangling the lines or hooks.

4,607,450

ENCLOSED MOUSETRAP HAVING IMPROVED TRAP MECHANISM

Dennis G. Kaiser, and Robert D. Kaiser, both of Walled Lake, Mich., assignors to AmCan, Inc., Warren, Mich.

Filed Nov. 20, 1984, Ser. No. 673,494
Int. Cl.[4] A01M *23/30*
U.S. Cl. 43—83
6 Claims



1. A mousetrap comprising:

a housing defining a passageway and having a front end including an access opening through which a rodent enters the housing, and said housing having a back end including a back wall that closes the passageway;

a trap mechanism mounted on the back wall of the housing, said trap mechanism including a bail wire mounted on the back wall for movement between a generally vertical cocked position and a generally horizontal tripped position, said bail wire having a generally U shape including a straight portion defining the closed end of its U shape, spring means for biasing the bail wire toward the tripped position, a catching member having an upper end movably mounted on the back wall and also having a lower end including a bait holder, the upper end of the catching member including a bail wire detent having a horizontal portion that projects forwardly from the back wall and also having a detent projection that projects downwardly from the horizontal portion, said detent projection being stamped from sheet metal and having a generally V shape in a sideways direction with respect to the passageway, said detent projection having a lower surface that is engaged by the straight portion of the bail wire in a line contact during operation of the trap mechanism, said detent projection including a front ramp portion that is engaged by the straight portion of the bail wire in a line contact as the bail wire is moved from the tripped position to the cocked position and such engagement moving the detent projection upwardly to permit the straight portion of the bail wire to move to the rear thereof, the detent projection having a rear detent portion that engages the straight portion of the bail wire in a line contact in the cocked position to hold the bail wire until movement of the lower bait holder moves the detent projection to release the bail wire for spring biased movement toward the tripped position as the straight portion of the bail wire slides along the lower surface of the detent projection in a line contact relationship, and the detent projection having a constantly decreasing width in a downward direction along the rear detent portion and in an upward direction along the front ramp portion; and

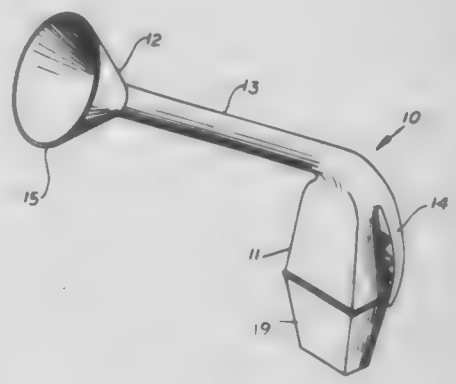
a pull having a first end connected to the bail wire and a second end extending outwardly from the housing to permit manually actuated movement of the bail wire from the tripped position to the cocked position.

4,607,451

INSECT TRAP

Frank E. Jarecki, 5650 Culpepper Dr., Erie, Pa. 16506

Filed Aug. 2, 1985, Ser. No. 761,899
Int. Cl.[4] A01M *1/06*
U.S. Cl. 43—139
2 Claims



1. A portable vacuum operated insect trap instrument comprising a source of vacuum,

an elongated wand connected to said source of vacuum and a hollow frustoconical shaped applicator connected to said wand and the wand attached to the vacuum device at an obtuse angle,

said source of vacuum comprises an electric driven blower,

a tank having bag means therein to receive insects drawn through said applicator and said wand into said tank,

said source of vacuum has a first end and a second end,

said tank being removably supported on said second end having said bag means therein to receive insects,

said wand being attached to said vacuum means at the end opposite said tank,

said wand extending from said vacuum device a substantial distance whereby the operator can reach insects on a ceiling of an ordinary room with said frustoconical applicator,

said bag has a closure with a central opening having a drawstring supporting it on a flange in said tank,

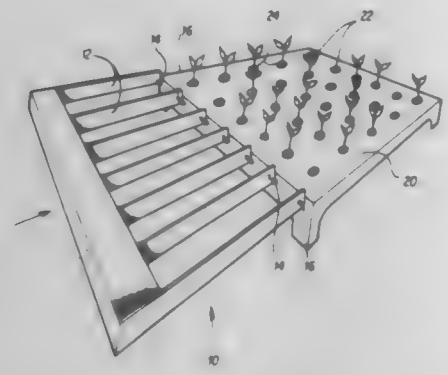
said drawstring being adapted to close the mouth of said bag when said bag is removed from said tank.

4,607,452

SEEDLING DETECTOR AND FERRET

Bryan W. Maw, and Harold L. Brewer, both of Tifton, Ga., assignors to The University of Georgia Research Foundation, Inc., Athens, Ga.

Filed Jun. 22, 1984, Ser. No. 623,399
Int. Cl.[4] A01C *1/00*
U.S. Cl. 47—1 R 5 Claims



1. A detector device, for detecting seedlings suitable for transplantation in a tray having a two-dimensional grid of cells, with a container in each cell, said containers containing a growth medium and a plant seed, some of said plant seeds having grown into seedling plants and others of said plant seeds not having emerged, said detector device comprising:

a comb having a plurality of teeth with the spacing between teeth being equal to the spacing between rows of cells, each tooth being long and thin so that said teeth pass midway between rows of said cells without touching any of said plants;

a plurality of energy sources equal in number to the number of rows of cells, at least one of said sources mounted on a first side of each of said plurality of teeth;

a plurality of energy detectors equal in number to the number of rows of cells, at least one of said detectors mounted on a second side of each of said plurality of teeth so that each of said sources is aligned with a corresponding one of said detectors to provide an energy beam thereto;

said sources and detectors being mounted near the ends of said teeth;

a plurality of threshold devices having an associated adjustable threshold signal value, each of said threshold devices receiving said output from a corresponding one of said detectors and holding high or low values of said output signal from said detector;

a shift register for receiving said signal values from said threshold devices and temporarily holding said values; and

a memory for storing said signal values;

said energy detectors also determining the height of said seedlings;

said tray and said comb being relatively movable so that each seedling plant passes between one of said sources and a corresponding one of said detectors to interrupt said energy beam, causing an output signal from said detector, whereby the presence of a seedling is detected so that cells without seedlings may be detected for removal and replacement.

4,607,453

HYBRID CORN PLANTS WITH IMPROVED STANDABILITY

A. Forrest Troyer, DeKalb, Ill., assignor to DeKalb-Pfizer Genetics, DeKalb, Ill.

Filed Feb. 21, 1985, Ser. No. 703,587
Int. Cl.[4] A01H *1/02*
U.S. Cl. 47—58 5 Claims

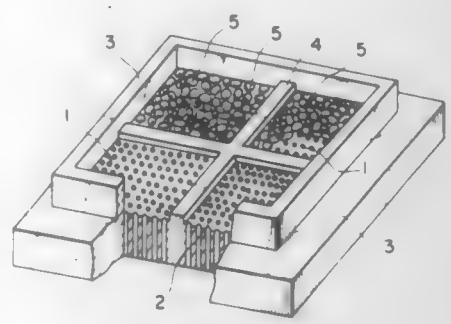
1. Novel F1 generation hybrid corn plants DK 672.

4,607,454

METHOD OF HYDROPONICALLY GROWING PLANT SPROUTS AND APPARATUS THEREFOR

Yujiro Koike, 115, Tenma-cho, Hamamatsu-shi, Shizuoka-ken, Japan (430)

Filed May 24, 1983, Ser. No. 497,650
Claims priority, application Japan, May 24, 1982, 57-87537; Aug. 12, 1982, 57-123614[U]
Int. Cl.[4] A01G *31/00*
U.S. Cl. 47—63 15 Claims



1. A bed for floating on water for use in hydroponically growing plant sprouts, comprising:

a substantially hydrophobic pad having a top surface and a bottom surface;

said pad having a plurality of substantially straight through holes each extending vertically through said pad from said top surface to said bottom surface to define a plurality of closely spaced root growth passages therein, said pad having on the order of 500 to 1000 holes per 100 square centimeters,

each root growth passage having a diameter in the range of 0.5 to 3 mm so as to provide substantial capillary attraction, and

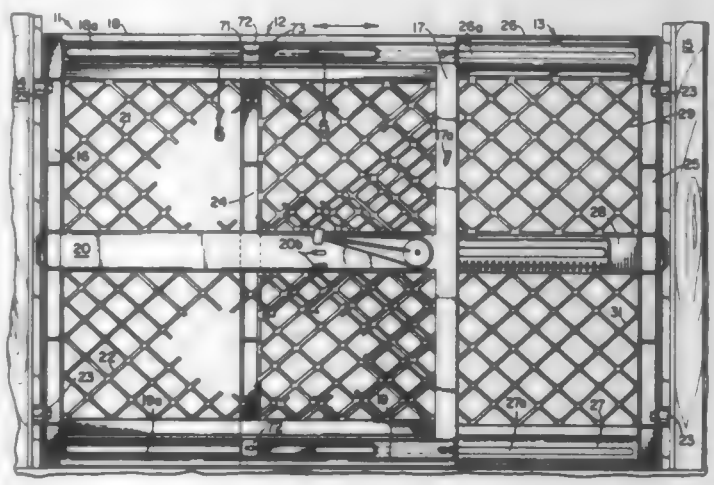
wherein an end of each said through hole is in contact with said water so that each passage can continually retain water therein when said bed is floating on said water.

4,607,455

ADJUSTABLE GATE FOR DOORWAYS

Gary R. Bluem, Wayzata, Minn.; John W. Goodin, Long Beach, and Larry G. Hickey, Laguna Hills, both of Calif., assignors to North States Industries, Inc., Minneapolis, Minn.

Filed Oct. 1, 1984, Ser. No. 656,235
Int. Cl.[4] E06B *3/68*
U.S. Cl. 49—55 22 Claims



1. A portable, variable width gate for doorways and the like, comprising:

first and second gate sections of predetermined height and width, each comprising

a rectangular external frame defined by top and bottom substantially horizontal cross members and substantially vertical side members;

a substantially horizontal middle cross member disposed between the top and bottom members and interconnecting the side members;

a mesh section interconnecting the respective frame members;

means for connecting the gate sections for free relative sliding movement between a first position of minimum gate width and a second position of maximum gate width;

and operator means for fixing the relative positions of the first and second gate sections at a predetermined width comprising:

handle drive means carried by the middle cross member of one of said gate sections for movement through first and second ranges of positions;

drivable means carried by the middle cross member of the other of said gate sections;

the handle drive means comprising a first operative portion engageable with the drivable means and cooperable therewith to effective relative movement between the first and second gate sections when the handle drive means is moved through the first position range, and a second operative portion incapable of engaging the drivable means when the handle drive means is moved through said second position range;

and means for selectively fixing the handle drive means in a plurality of discrete positions within said first position range.

4,607,456

DOOR WINDOW REGULATOR

Daiichi Shiraishi; Eiji Iwasaki, and Ryoichi Fukumoto, all of Aichi, Japan, assignors to Toyota Jidosha Kabushiki Kaisha and Aisin Seiki Co., Ltd., both of, Japan

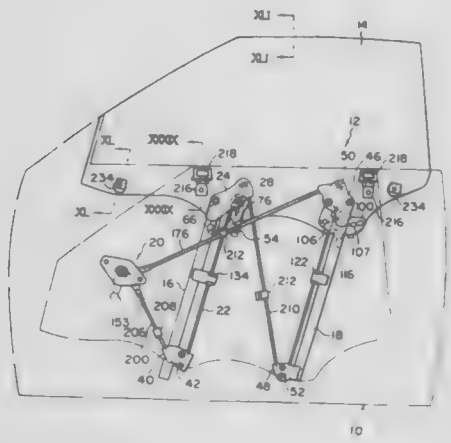
Filed Jun. 5, 1985, Ser. No. 741,618

Claims priority, application Japan, Jun. 6, 1984, 59-83808; Jun. 6, 1984, 59-83809

Int. Cl.⁴ E05F *11/48*

U.S. Cl. 49—352

20 Claims



1. A door window regulator for vertically moving a door window glass of a vehicle, comprising:

(a) upper and lower pulleys respectively disposed at the upper and lower portions of a door;

(b) a wire having a portion thereof stretched between said upper and lower pulleys and connected to the lower portion of said door window glass at a portion of said wire between said upper and lower pulleys such that said wire forms a closed loop;

(c) a driving unit adapted to actuate a portion of said closed loop wire, thereby applying actuating force to said door window glass by means of which it is raised and lowered; and

(d) the axis of either one of said pulleys, said axis extending in the direction substantially orthogonal to the plane which includes the portion of said wire which extends from said pulley to said driving unit and is directed toward the inside of the compartment of said vehicle, whereby it is possible for said wire to be smoothly passed over said pulley, and the friction occurring between said wire and the side surface of the pulley groove is thereby reduced.

4,607,457

DOOR AND DOOR JAMB ARRANGEMENT

James G. Shewchuk, 1988 Pacific Avenue, Winnipeg, Manitoba, Canada (R2R 0G4)

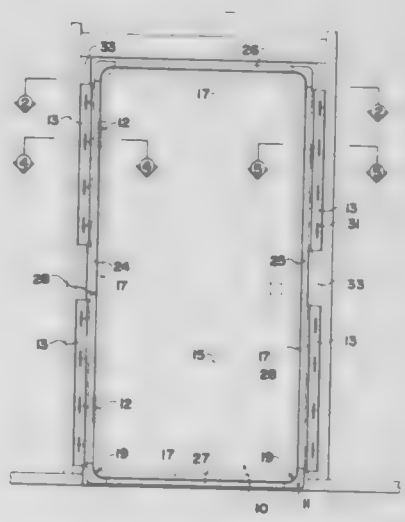
Filed Mar. 8, 1985, Ser. No. 709,771

Claims priority, application Canada, Apr. 12, 1984, 451885

Int. Cl.⁴ E05D *7/00*

U.S. Cl. 49—400

5 Claims

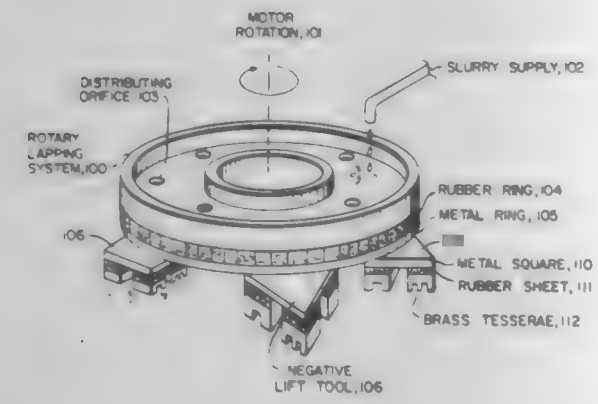


1. A door and door jamb arrangement for a doorway of a building comprising a door having a front surface, a rear surface each having edges defining a top edge, a bottom edge and two side edges of the door spaced to allow the passage through the doorway of an erect adult human and a peripheral edge surface surrounding and interconnecting the front and rear surfaces including a top portion, a bottom portion and two side portions, a door jamb which is a rigid integral unit for fully surrounding the door and which has a plain inner surface free from resilient sealing means for surrounding the periphral edge surface of the door and for cooperating therewith to form a seal surrounding the door, said top portion, bottom portion and side portions of the peripheral edge of the door and of the inner surface of the door jamb being arranged to form substantially a rectangle with the corners thereof radiused and being shaped such that the only contact between the door and the jamb occurs between the peripheral surface of the door and the inner surface of the jamb, hinge means for mounting the door on the door jamb for pivotal movement about one side edge of the door, means for mounting the rigid door jamb on a building frame so as to accommodate movement of the frame relative to the jamb, and elongate sealing means supported by, extending along and projecting outwardly from the peripheral edge surface for engaging the plain inner surface to form a seal therewith, at least the top and bottom portions and the other side portion of both said inner surface and said peripheral edge surface being tapered in a direction so as to incline relative to a plane which is at right angles to the front surface and which includes a portion of the edge of the front surface adjacent to said portions and so that in the closed position of the door the inner surface and peripheral edge surface lie in close parallel relationship whereby said sealing means is compressed by sliding movement against said tapered portions caused by a closing movement of the door into the door jamb.

4,607,458
VERY HIGH SPEED LAP WITH NEGATIVE LIFT EFFECT

Roger K. Lee, Watertown, Mass., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Apr. 8, 1985, Ser. No. 720,936
Int. Cl.[4] B24B *7/00*
U.S. Cl. 51—119 **6 Claims**



1. A rotary lapping system capable of grinding and polishing a workpiece using an abrasive slurry liquid, said rotary lapping system generating strong cutting pressures without a need for strong downward pressures on the workpiece by generating a negative lift and suction between it and the workpiece through hydrodynamic action which generates the negative lift in the abrasive slurry liquid, said rotary lapping system comprising:

a supply of the abrasive slurry liquid, which is applied to the workpiece;

a rotary means;

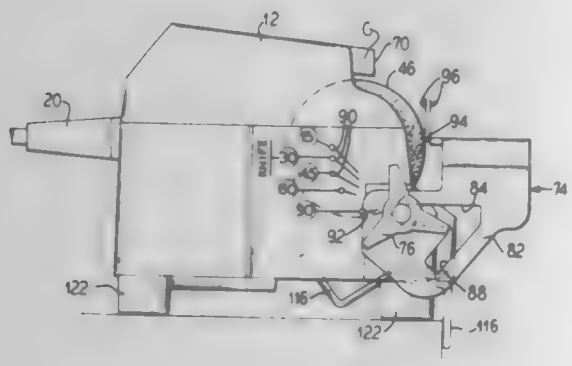
a dish member being rotated by said rotary means; and

a plurality of negative lift tools, each fixed beneath an outer edge of said disk member and producing said negative lift by presenting a surface with a negative angle of attack in said abrasive slurry liquid, each of said plurality of negative lift tools presenting a grinding surface to said workpiece which, when rotated in said abrasive slurry liquid from said supply, is used to grind said workpiece.

4,607,459
COMBINED HOLLOW GRINDER, SHARPENER AND HONER

Spencer C. Rees, Sugar Grove, Ill., assignor to Wen Products, Inc., Chicago, Ill.

Filed Aug. 10, 1984, Ser. No. 640,158
Int. Cl.[4] B24B *3/00, 27/02*
U.S. Cl. 51—102 **22 Claims**



1. An electric grinder comprising:

a housing;

a horizontally mounted cylindrically shaped grinding wheel rotatably mounted in said housing; motor means for drivingly rotating said wheel; and

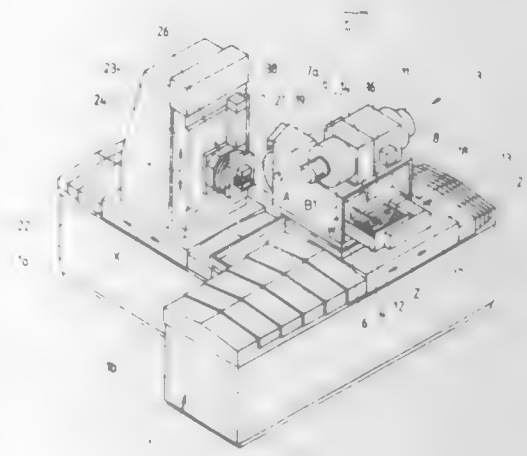
a tool rest member having a tool support surface pivotally and laterally movable relative to said wheel and mounting means for mounting the member on the housing forming a phantom pivot point for the member;

said mounting means comprising a V-shaped slot in said member capturing a fixed pivot pin means on said housing; whereby, the member is pivotable about said fixed pivot pin means and is laterally movable by sliding said slot relative to said fixed pivot pin means.

4,607,460
GRINDING MACHINE WITH A RECIPROCABLE COLUMN FOR WORK SUPPORTING DEVICES

Heinrich Mushardt, Wechelde, Fed. Rep. of Germany, assignor to Hauni-Werke Körber & Co. KG, Hamburg, Fed. Rep. of Germany

Filed Aug. 20, 1985, Ser. No. 767,411
Claims priority, application Fed. Rep. of Germany, Apr. 18, 1985, 3513970
Int. Cl.[4] B24B *51/00*
U.S. Cl. 51—165 TP **20 Claims**



1. A machine tool, particularly a numerically controlled profile grinding machine, comprising a bed; a grinding spindle carrying device on said bed; means for reciprocating said device with reference to said bed along a substantially horizontal first path; means for indexing said device about a substantially vertical first axis; a supporting device on said bed; a head on said supporting device; means for reciprocating said head relative to said supporting device along a substantially vertical second path; means for indexing said head relative to said supporting device about a second axis; a work holder mounted on said head and indexible about a third axis which is at least substantially normal to said second axis; and means for reciprocating at least one of said devices along a substantially horizontal third path which is normal to said first path.

4,607,461
ACCURATE POSITIONING APPARATUS

Charles Adams, 9735 N. Sumac, Des Plaines, Ill. 60016

Filed Dec. 10, 1984, Ser. No. 679,748
Int. Cl.[4] B24B *49/00*
U.S. Cl. 51—165.8 **19 Claims**

1. An apparatus for controlling accurate positioning of a movable member comprising:

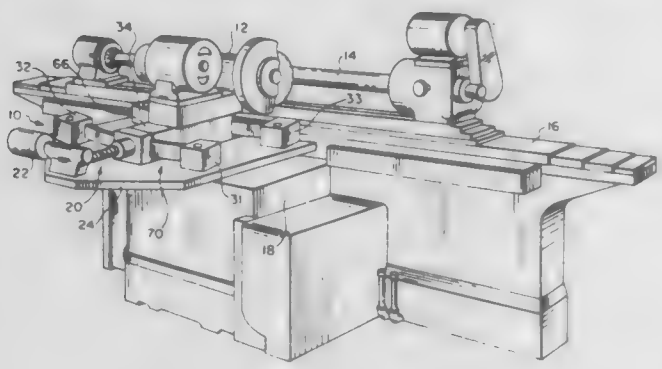
a rigid base;

member mounting means spaced from said base for mounting a movable member, said member mounting means having an axis along which said member mounting means can be reciprocally moved, a distal end, and a proximal end which is capable of being moved by a drive force applied thereto for moving said distal end forwardly and rearwardly along said axis;

elongate flexure means extending transversely of said member mounting means, said flexure means being fixed to said member mounting means for maintaining a force on said member mounting means in a direction along the axis of said member mounting means;

and flexure means mounting means at each end of said flex-

ure means for mounting each end of said flexure means to said base in a manner permitting limited movement of said ends of said flexure means whereby a member mounted to said member mounting means can be accurately posi-



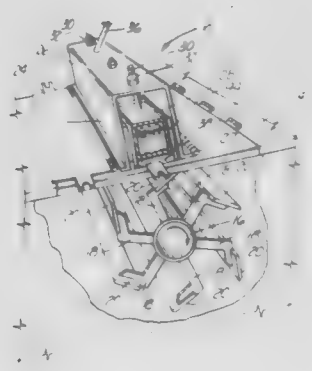
tioned by a drive force applied against said proximal end of said member mounting means and against said force of said flexure means, such as to an accuracy of 10 millionths of an inch.

4,607,462

COOLING AND LUBRICATING DEVICE FOR SHARPENING FEED CHOPPING KNIVES

Charles J. Murphy, Rte. #4, Abilene, Kans. 67410

Filed Jan. 3, 1985, Ser. No. 688,531
Int. Cl.[4] B24B *55/02;* B24D *5/10*
U.S. Cl. 51—213 2 Claims



1. A cooling and lubricating device for sharpening feed chopping knives, the knives mounted on a rotating cutter head disposed inside a chopper box, the device comprising:

a sharpener housing hinged on the top of the chopper box and disposed above an opening in the box;

an elongated fluid reservoir mounted in the housing for holding fluids therein, the reservoir having a plurality of openings along one side of the reservoir bottom, the openings in the bottom of the reservoir are above the fluid level when the hinged housing and reservoir are rotated 90 degrees in a raised position;

an elongated sharpening stone attached to the bottom of the reservoir by stone holders disposed on opposite sides of the reservoir, the stone porous for receiving fluid from the openings along the length thereof, the bottom of the stone disposed adjacent the rotating knives, the fluid permeating through the stone for cooling and lubricating the knives and the stone as the stone sharpens the knives;

means for raising and lowering the fluid reservoir and sharpening stone in the housing; and

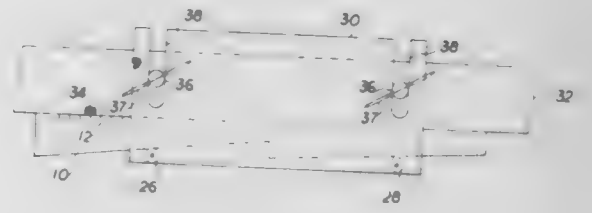
a fluid fill line attached to the top of the reservoir for supplying fluid thereto.

4,607,463

ADJUSTMENT MEANS FOR A DRILL BIT SHARPENING DEVICE

Albert Slinsky, 909 Aberdeen Ave., New Port Richey, Fla. 33552

Filed Jul. 29, 1985, Ser. No. 759,746
Int. Cl.[4] B24B *3/26*
U.S. Cl. 51—219 R 3 Claims



1. An improved apparatus for sharpening a drill bit on a grinding means, of the type in which a cradle means holds the drill bit to be sharpened and in which a cradle means holder holds said cradle means and hence said drill bit in a predetermined angular orientation relating to the point angle of said drill bit, in which a support means for supporting said cradle means holder is moveable in a linear direction away from or toward said grinding means, said grinding means being positioned for rotation in a plane normal to said support means, wherein the improvement comprises:

a travel limiting means that determines the optimal forwardmost position of said support means relative to said grinding means and hence of said drill bit to be sharpened for a given drill bit point angle,

said travel limiting means comprising a slideably mounted, elongate spacer member having a plurality of laterally spaced visually detectable markings formed thereon, each of said markings corresponding to a different setting of said travel limiting means,

said travel limiting means further comprising a flat plate member having a leading edge positioned parallel to the plane of said grinding means;

said travel limiting means further comprising a pair of laterally spaced pin members fixedly secured to said leading edge of said plate member;

said spacer member further including a leading edge with two inclined portions, the angle of each of said inclined portions corresponding to the angle of the other inclined portion and corresponding to a predetermined distance of each setting of said travel limiting means, wherein said predetermined distance relates to the distance between said support means and said grinding means,

a flat base member having a leading edge which slideably abuts a trailing edge of said spacer member;

the position of the leading edge of said plate member being determined by the engagement of said pin members and their associated inclined surfaces which position is indicated by said markings;

and means for releasably securing said plate member into a plurality of functional positions of adjustment.

4,607,464

COATED ABRASIVE BACK UP PAD

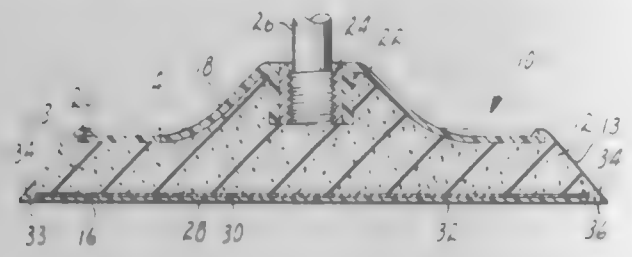
Thomas W. Schwartz, Troy Township, St. Croix County, Wis., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Nov. 13, 1984, Ser. No. 670,292
Int. Cl.[4] B24D *9/08*
U.S. Cl. 51—362 10 Claims

1. In a coated abrasive back up pad comprising a layer of resiliently compressible foam having first and second spaced surfaces a generally rigid backing plate fixed to said first surface of said backing plate, means attached to said backing plate adapted for coupling said back up pad to a drive motor, and a flexible magnetized layer comprising magnetized particles within a polymeric matrix fixed to the second surface of said layer of foam, having a generally planar support surface oppo-

site said layer of foam and having an edge surface adjoining and disposed generally normal to the support surface, the improvement wherein:

said foam layer includes a lip extending around the edge surface of said magnetized layer, said lip having a peripheral surface generally coplanar with said support surface;



both said support surface and said peripheral surface are adapted to provide support for a sheet of abrasive material positioned on the back up pad; and

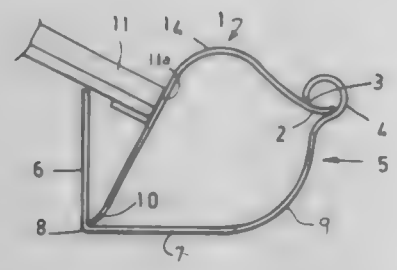
said edge surface of said magnetized layer is beveled inwardly from the second surface of the layer of foam toward said support surface to help hold the magnetized layer in the layer of foam.

4,607,465

LEAF EXCLUDER FOR RAIN WATER GUTTERING

Graham K. Hopkins, 1a Cobran Road, Cheltenham, New South Wales 2119, Australia

Filed Jan. 8, 1985, Ser. No. 690,322
Int. Cl.⁴ E04D *13/00*
U.S. Cl. 52—12 **5 Claims**



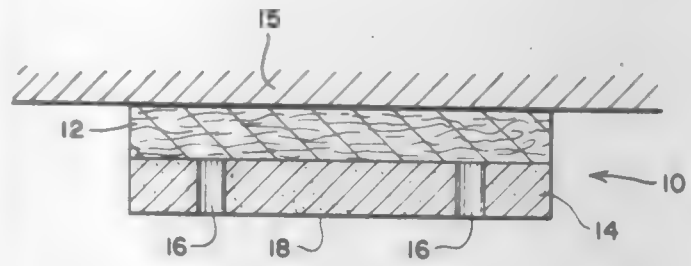
1. A leaf excluder for a rain water guttering of channel for having a rear wall with a lower edge joined to a guttering bottom to provide a rear corner of the guttering and a front wall joined to the guttering bottom and having a free edge terminating in a curled bead and which when in use will have the ends of tiles or like roof cladding overlapping the guttering rear wall so as to deposit rain water over and forward of said guttering rear wall; and leaf excluder comprising a strip of flexible resilient sheet-like material with a plurality of bead engaging fingers along and projecting from a one edge and a plurality of water passing slots in the strip at an angle to the length dimension of the strip; the width of said strip as defined between the said one edge and an opposite edge of said strip exceeding the distance between said guttering rear corner and that portion of the bead proximal thereto by an amount such that when the leaf excluder is located in a gutting with said bead engaging fingers engaging said bead and said opposite edge engaged in said rear corner of said guttering there will be an upwardly bent barrier portion of said strip extending at least as high as the top of said roof cladding ends and presenting a face incorporating said slots, said face being disposed substantially at right angles to and in abutting relationship with said ends of the roof cladding over the length of said guttering.

4,607,466

METHOD AND APPARATUS FOR CONTROLLING REVERBERATION OF SOUND IN ENCLOSED ENVIRONMENTS

John C. Allred, 798 47th St., Los Alamos, N. Mex. 87544

Filed May 29, 1984, Ser. No. 614,653
Int. Cl.⁴ B24B *5/00*; B32B *3/26*; E04B *1/82*
U.S. Cl. 52—144 **21 Claims**



1. An acoustic panel for the absorption of low frequency sounds within an enclosed environment comprising:

a porous layer of fibrous material; and

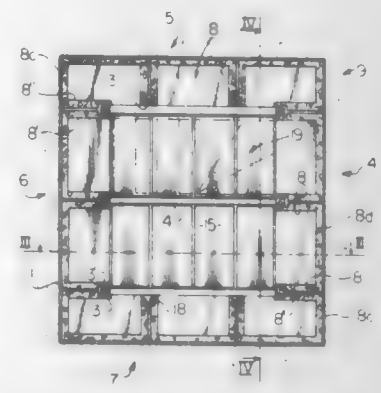
a generally rigid layer of cement material affixed to said porous layer of fibrous material, said generally rigid layer including at least one passageway opening on one side of said rigid layer, said passageway extending through said rigid layer, said passageway opening about the other side of said rigid layer adjacent to said porous layer of fibrous material.

4,607,467

UNDERGROUND ROOM SUCH AS NOTABLY A CELLAR

Paul M. M. Roux, 30, rue de Damiette, 91190 Gif-sur-Yvette, France

Filed Jan. 17, 1983, Ser. No. 458,329
Claims priority, application France, Apr. 27, 1982, 82 07292
Int. Cl.⁴ E02D *17/04*; E04H *9/12*
U.S. Cl. 52—169.6 **13 Claims**



1. An underground room, having a form which is generally prismatic, cubic or rectangular parallelepipedic, and including a floor, a ceiling, and lateral walls formed by stacked box-sections prefabricated from concrete and serving as storage bins each having at least two vertical lateral walls, the entire assembly being accommodated in an excavation sunk under a floor slab of a structure, said excavation being lined with a fluid-tight enclosure and provided with a bed of sand,

wherein said room comprises vertical posts or columns, extending from said floor to the level of the ceiling and being fixed and maintained in place therebetween, said vertical columns being substantially T-shaped in cross-section and constituting means for withstanding earth pressure, and wherein

said vertical lateral walls of said spaced-box sections forming storage bins having vertical edges bearing against said columns, with said box-sections forming supporting walls to withstand the earth pressure, said vertical edges of two adjacent box-sections of the same level forming a slot in

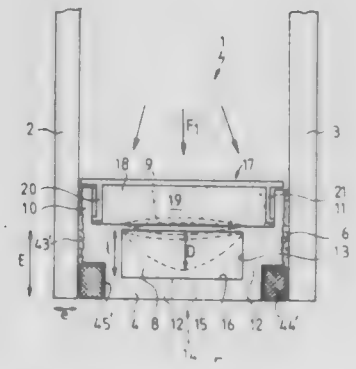
which is accommodated a portion forming a tenon of one T-shaped column.

4,607,468

ELEMENT FOR DOOR OR WINDOW OR OUTSIDE-WALL PANEL FORMED IN PARTICULAR OF TWO FLAT PANELS SEPARATED BY A GAS WITH COMPENSATED VARIATION OF VOLUME

Claude Paquet, Laval, France, assignor to Vitrages Isolants de l'Ouest, France

Filed Sep. 17, 1984, Ser. No. 651,254
Claims priority, application France, Sep. 15, 1983, 83 14724
Int. Cl.⁴ E06B *7/12*
U.S. Cl. 52—172 **10 Claims**



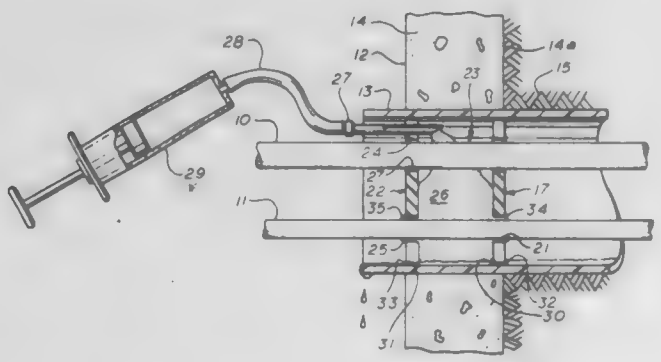
1. An element for doors, windows or outside-wall panels which is flat and formed of at least panels (**2, 3**) which are spaced apart from each other and connected together by a peripheral spacer (**4**) and forms an inner free chamber therebetween, the inner free chamber (**5**) being filled with gas, comprising integrated means (**7**) which make it possible to take up variations in volume of the gas, consisting of an automatically variable volume placed within the inner free chamber, the automatically variable volume being formed, on the one hand, by the peripheral spacer and, on the other hand, by a deformable flexible membrane (**9**) wherein the membrane forms an integral part of the spacer.

4,607,469

SEAL FOR WATER PROOFING A UTILITY LINE CONDUIT AND A METHOD OF FORMING THE SEAL

George W. Harrison, Houston, Tex., assignor to Team, Inc., Alvin, Tex.

Continuation-in-part of Ser. No. 567,651, Jan. 3, 1984, abandoned. This application Apr. 16, 1984, Ser. No. 600,526
Int. Cl.⁴ B02D *29/10*; B04F *17/08*; B32B *31/06*
U.S. Cl. 52—220 **10 Claims**



1. A seal against flow of ambient water through a designated confined cell space within a conduit having at least one electrical cable extending through the conduit, comprising in combination:

(a) a sealant body confined within said cell space as

(1) partially a paste-consistency liquid disposed within said body wherein no reactant has reached said sealant, and

(2) partially a cured flexible solid in the semblance of a rind on the exterior surface of said body or in leakage protrusions from said sealant body into leakage spaces wherein said sealant has been in contact with a water reactant;

(b) solid rubber disc damming means loosely fitted within said conduit and around said electrical cable and respectively spaced apart to define the ends of said confined cell space wherein said sealant has formed a rind of sealant protruding into spaces between said conduit and said damming means and also between said electrical cable and said damming means; and

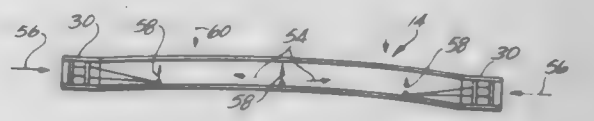
(c) said sealant body being adapted, in the event that relative movement occurs between any of said conduit, said damming means and said electrical cable sufficient to disrupt a portion of the seal effected by said rind, to leak a measure of the liquid portion of said sealant body into the disrupted portion of said rind sufficient to fill any portion subject to leakage with said measure contacting said reactant and subsequently curing into a flexible solid.

4,607,470

PRE-STRESSED CONSTRUCTION ELEMENT

Fred L. Ecker, Sierra Madre, Calif., assignor to Concrete Systems, Inc., Azusa, Calif.

Filed Jan. 28, 1985, Ser. No. 695,393
Int. Cl.⁴ E04C *3/10*
U.S. Cl. 52—226 **4 Claims**



1. A pre-stressed construction element comprising:

a ridged member having a constant, I-shaped cross-section defined by a web spanning an upper and a lower flange, said member having a horizontal midplane disposed equidistant between said flanges;

a box disposed at each end of the member, each box having a pair of spaced plates extending between the flanges and projecting outwardly from the web;

a plurality of tensioned tendons disposed on each side of the web and connected between said boxes to place the member in compression, said tendons arranged in a spaced pattern at said plates at least one of said tendons disposed between the midplane and upper flange; and

at least one support disposed intermediate of and at each side element, the support including a tube disposed to project outwardly from the web at a location near the lower flange and a strengthening strut interconnected between said tube and web, said tendons deflected by and imposing an upward force upon said support tube and strut and member.

4,607,471

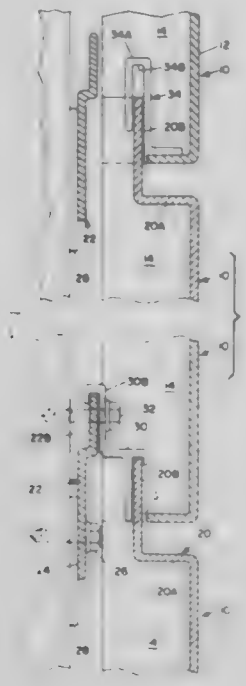
PANEL WALL SYSTEM

Robert W. Olsen, New Providence, N.J., assignor to Construction Specialties, Inc., Cranford, N.Y.

Filed Nov. 8, 1984, Ser. No. 669,582
Int. Cl.⁴ E04B *1/38*
U.S. Cl. 52—509 **9 Claims**

1. A building panel wall assembly comprising a multiplicity of pan-like rectangular panels arranged side by side and end to end in closely spaced-apart relation, each panel having a principal wall constituting a portion of the exterior building wall, a side flange along each side edge of the principal wall extending toward the building structure, a bottom flange along the bottom edge of the principal wall extending toward the building structure, and a generally L-shaped top flange along the upper edge of the principal wall and including a first leg por-

tion extending from the principal wall toward the building structure and a second leg portion extending upwardly from the first leg portion, affixation means at the horizontal juncture between each pair of vertically adjacent panels for affixing either the top flange of the lower panel of the pair or the bottom flange of the upper panel of the pair to the building structure, slip joint means for joining the bottom flange of each panel to the top flange of the adjacent panel below it for relative movement of said top and bottom flanges in the plane of



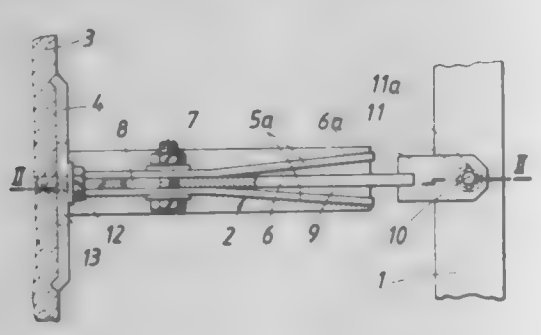
the second leg portion, the second leg portion of the top flange of each panel extending upwardly behind and a substantial distance above the bottom flange of the adjacent panel above it to form a barrier against intrusion of water at the horizontal junctures between panels, and a drainage gutter mounted to the building and extending along the vertical juncture between each pair of laterally adjacent panels and closely underlying the edges of the spaced-apart flanges of a pair of horizontally adjacent panels.

4,607,472

ANCHOR FOR SECURING STONE PLATES TO A WALL

Ferdinand Pointner, Tagwerkerstrasse 34, 4810 Gmunden, Austria

Filed Jun. 7, 1985, Ser. No. 742,283
Claims priority, application Austria, Jun. 8, 1984, 1886/84
Int. Cl.⁴ E04N *1/00*; E04B *1/38*
U.S. Cl. 52—698 **8 Claims**



1. In an anchor for securing stone plates to a wall, comprising

a holder,

fixing means for fixing said holder to a wall disposed on one side of said holder,

a carrier, which is adjustably supported by said holder and extends from said holder on the opposite side thereof and has a free end portion remote from said holder, and

a mandrel carried by said carrier at said free end portion and adapted to be inserted into bores formed in adjacent edge faces of said stone plates,

the improvement residing in that

said holder comprises a base plate provided with said fixing means and two transversely spaced apart fixing legs protruding from said base plate on said opposite side and having free end portions which are remote from said base plate and diverge toward their free ends, said legs also having parallel portions extending between said free end portions and said base plate and formed with coaxial holes, and a crosspiece plate connecting said free end portions

said carrier comprises a tongue plate, which is sandwiched between said parallel portions and clear of both said free end portions and has two mutually opposite side edges, one of which is in sliding contact with said crosspiece plate, said tongue being formed with a slot extending parallel to said parallel portions and transversely aligned with said coaxial holes, and

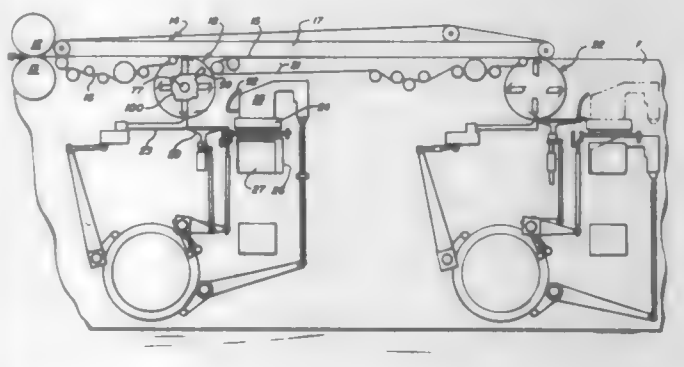
a clamp screw extending through said coaxial holes and said slot and adapted to fix said tongue to said fixing legs.

4,607,473

APPARATUS FOR HANDLING FLAT, FLEXIBLE WEB PRODUCTS

Dennis W. Ehlus, Green Bay, and Patrick J. Williams, Hobart, both of Wis., assignors to Paper Converting Machine Company, Green Bay, Wis.

Filed Nov. 1, 1984, Ser. No. 667,090
Int. Cl.⁴ B65B *57/00*
U.S. Cl. 53—54 **6 Claims**



6. Apparatus for alternately developing stacks of plastic bags for folding and cartoning one stack while the other is being developed comprising a frame, upper and lower belt systems movably mounted on said frame defining a path for advancing bags sequentially therealong, said lower belt system being interrupted at one location in said path, a first bag gripping means rotatably mounted in said frame and arranged to intersect said path at said location, a plurality of grippers on said gripping means each having a closeable jaw for positively clamping bags in sequence, cam means on said frame for positioning said jaws in open position as each jaw passes said path location and promptly thereafter closing said jaws to positively grip a predetermined number of bags in sequence, and control means on said frame for adjusting said cam means for closing said jaws prior to reaching said path location so that bags are conveyed ungripped through said location by said upper belt system to a second gripping location in said path, said second gripping location having grippers to grip said previously ungripped bags and bag folding and cartoning means on said frame adjacent said first bag gripping means.

4,607,474

SORTING ARTICLES FROM BULK

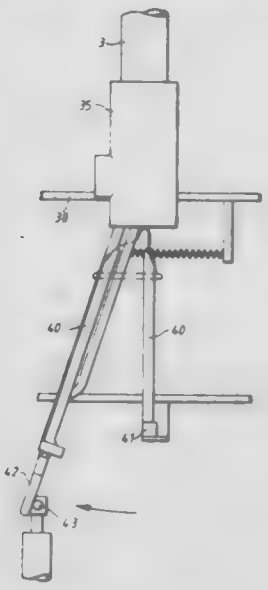
Sidney H. Jarvis, London, England, assignor to LRC Products Limited, London, England

Filed Sep. 18, 1985, Ser. No. 777,258

Claims priority, application United Kingdom, Sep. 21, 1984, 8423940

Int. Cl.[4] B65B *63/04*

U.S. Cl. 53—117 12 Claims



1. An apparatus for sorting and preparing condoms for packaging, comprising a device for separating individual condoms from a bulk supply of condoms, a roll-up device for receiving a separated condom and rolling-up the condom ready for packaging, and pneumatic conveying means for transferring a separated condom from the separating device to the roll-up device, the pneumatic conveying means delivering the condom directly to the roll-up device ready to be rolled-up thereby;

wherein the conveying means has an outlet through which the condom is delivered closed end first, and the rolling-up device is aligned with said outlet at a loading station, the conveying means being arranged to deliver the condom onto the roll-up device at a sufficient speed for the condom to become turned inside out over the roll-up device;

wherein the roll-up device comprises a plurality of elongated elements coupled for relative movement between a first position in which said elements are substantially parallel for receiving a condom delivered over one end thereof, and an expanded position in which the elements are spread apart and converge towards said one end, whereby movement of the elements from the first position to the second position causes a condom received thereon to become rolled-up towards said end.

4,607,475

DEVICE FOR FORMING GROUPS OF CIGARETTES IN PACKAGING MACHINES

Renato Manservisi, Bologna, and Bruno Bagnaresi, Imola, both of Italy, assignors to SASIB S.p.A., Bologna, Italy

Filed Dec. 4, 1984, Ser. No. 678,213

Claims priority, application Italy, Dec. 20, 1983, 12701 A/83

Int. Cl.[4] B65B *19/04*

U.S. Cl. 53—150 9 Claims

1. A device for use with a cigarette packaging machine to form orderly groups of cigarettes, each group having a plurality of "n" layers, comprising:

a plurality of collecting containers;

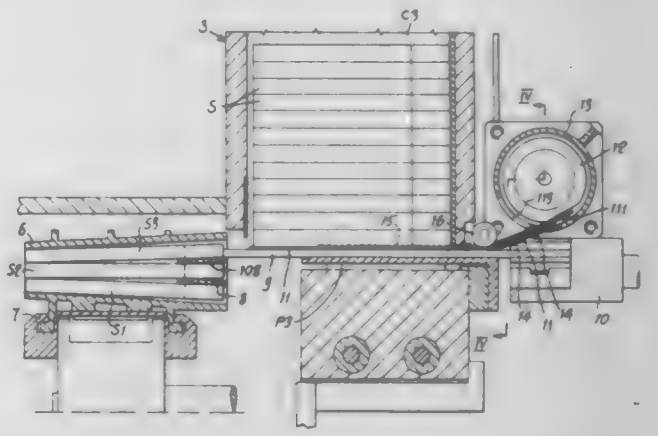
means for moving the containers along a path in an advance direction, the movement of the containers being intermittent so that there are dwell periods in the advance thereof;

a series of "n" feeding station means adjacent the path for forming cigarette layers, each feeding station means including

means defining a plurality of cigarette-feeding channels having bottom outlets for forming a cigarette layer below the bottom outlets, the feeding channels being mutually adjacent and substantially vertical, with cigarettes descending in single columns through respective channels,

means for ejecting a layer of cigarettes beneath the bottom outlets to transfer the ejected layer into a container dwelling adjacent the respective feeding station means, the layer of cigarettes being ejected in the axial direction of the cigarettes,

an interceptor that is movable between an active position in which the interceptor prevents cigarettes from exiting the bottom outlets of the feeding channels, and a rest position in which the interceptor permits cigarettes to flow from the bottom outlets of the feeding channels, and



moving means for moving the interceptor between its active and rest positions, and

control means for actuating the moving means of successive feeding station means sequentially during start-up of the cigarette packaging machine and during a scheduled shut-down thereof to avoid partially filled containers, for moving interceptors one after the other from their active positions to their rest positions during start-up as a predetermined initial container advances from one feeding station means to the next, and for moving the interceptors one after the other from their rest positions to their active positions during a scheduled shut-down as a predetermined final container advances from one feeding station means to the next.

4,607,476

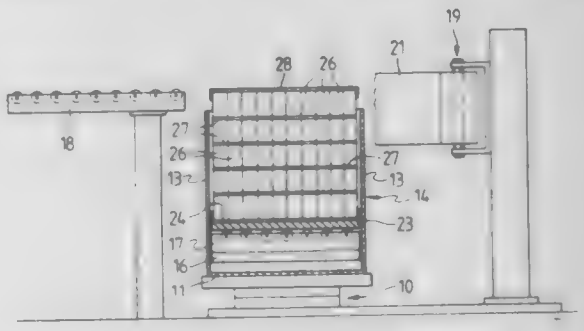
METHOD AND APPARATUS FOR STRETCH WRAPPING UNSTABLE LOADS

Cyrus B. Fulton, Jr., 5035 Wagon Trace, Birmingham, Ala. 35243

Filed Jul. 12, 1985, Ser. No. 754,211

Int. Cl.[4] B65B *13/02*

U.S. Cl. 53—399 11 Claims



7. A method of spiral stretch wrapping an unstable load without side supports utilizing a vertically aligned film dispenser, a turntable for rotating said load spaced from said dispenser, an upwardly opening container for housing said load preparatory to wrapping said load and an elevator for urging said load upwardly out of said container comprising the steps of:

(a) palletizing said load within said container;

(b) rotating said container and load about a vertical axis;

(c) dispensing said film in partial engagement with the exterior surface of the upper periphery of said container; and

(d) urging said load upwardly out of said rotating container whereby said load engages said film and is wrapped by said upward movement of said load causing said film to transfer from said container to said load.

4,607,477

CIGARETTE PACKING MACHINES

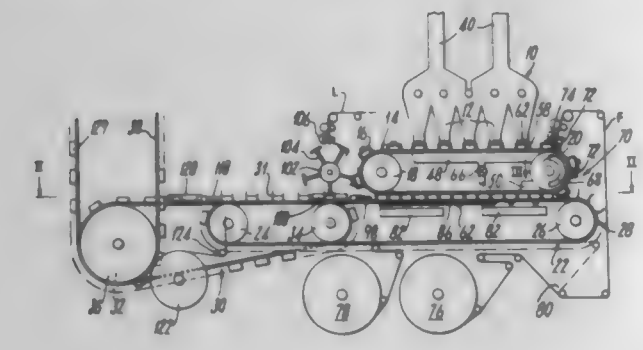
Dennis Hinchcliffe, London, England; Francis A. M. Labbe, Neuilly-sur-Seine, France, and Desmond W. Molins, London, England, assignors to Molins PLC, London, England

Filed Apr. 11, 1984, Ser. No. 599,114

Claims priority, application United Kingdom, Apr. 15, 1983, 8310304; Apr. 15, 1983, 8310305; Apr. 15, 1983, 8310306

Int. Cl.[4] B65B *19/04*

U.S. Cl. 53—444 13 Claims



1. Apparatus for packing batches of cigarettes in wrappers, said batches being of rectangular shape and having a pair of large faces, said apparatus comprising:

(a) a wrapper conveyor arranged to travel along a first path and having a plurality of regularly spaced U-shaped compartments each having a base corresponding to said large faces of said batches, the longitudinal axis of said base being transverse to the direction of movement of said wrapper conveyor, and having a pair of side walls which lie transverse to the direction of movement of said wrapper conveyor;

(b) wrapper feed means for feeding a wrapper in a U-shape into each of said compartments with opposite sides of said U-shaped wrapper extending along said side walls respectively;

(c) a batch conveyor arranged to travel along a second path, a portion of said second path being adjacent a portion of said first path, and having a plurality of pockets spaced from each other by a distance corresponding to the distance between adjacent of said compartments on said wrapper conveyor, each pocket being adapted for carrying a batch of cigarettes and having a base corresponding to said large faces of said batches, the longitudinal axis of said base being transverse to the direction of movement of said batch conveyor, said batch conveyor being movable such that at least one pocket thereon may be maintained in alignment with a respective compartment on said wrapper conveyor along said portions of said respective first and second paths;

(d) transfer means operable to transfer a batch of said cigarettes from each pocket into a wrapper in a respective compartment while said pocket and respective compartment are aligned along said portions of said respective first and second paths;

(e) said wrapper and batch conveyors including means to locate the planes of said base of each compartment and said base of each respective pocket while said compartments and pockets are aligned along said portions of said respective first and second paths, at an obtuse angle at least at the commencement of operation of said transfer means transferring a cigarette batch therebetween such that the edge of the portion of a wrapper adjacent the base of each compartment will clear the edges of said cigarette batch; and

(f) means associated with each compartment for folding the two sides of each wrapper over the respective batch during said transfer but after said transfer has commenced.

13. Apparatus for packing groups of cigarettes, each group as packed containing a predetermined number of cigarettes, said apparatus comprising a conveyor for conveying groups of cigarettes in succession along a path, each group comprising closely spaced cigarettes moving transversely to their axes along said path, inspection and rejection means for rejecting faulty cigarettes from said conveyor to form voids in the groups from which faulty cigarettes have been rejected, detection means for detecting said voids in said groups, supply means for supplying one cigarette at a time for filling a void, transfer means connected to and actuated by the detection means in timed response with a void in a group for transferring a cigarette from the supply means to the conveyor to fill the void in the group, said transfer means including a first rotor having a single cigarette support on its periphery for receiving a cigarette from the supply means and a stepper motor to accelerate the rotor up to the speed of the conveyor, a refeed conveyor for periodically feeding a group of cigarettes from said conveyor means to said supply means, sensing means for sensing when the cigarettes in said supply means fall below a predetermined level, and means connected to and actuated by the combination of said detection and sensing means to select and divert from said conveyor downstream of said rejection means to said refeed conveyor a group containing a void which would otherwise be packed as a group containing less than said predetermined number of cigarettes.

4,607,478

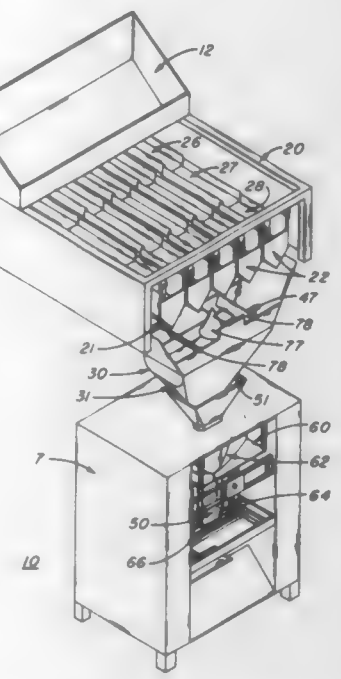
APPARATUS FOR PACKAGING BULK MATERIALS COMPOSED OF ELONGATED PIECES

Steven C. Maglecic, 4041 S. Mitchell, Boise, Id. 83709

Filed Feb. 15, 1985, Ser. No. 702,352

Int. Cl.[4] B65B *1/32*

U.S. Cl. 53—502 13 Claims



1. A packaging device for bulk materials comprised of a multiplicity of elongated pieces, said packaging device comprising:

means for quantitatively measuring selected amounts of said materials;

a transition chute for receiving said materials and guiding said materials to a fill tube, said chute including at least one stream-out member to substantially separate material pieces from one another and to cause free-fall of the pieces for substantial alignment thereof;

a fill tube for receiving the substantially aligned pieces; and

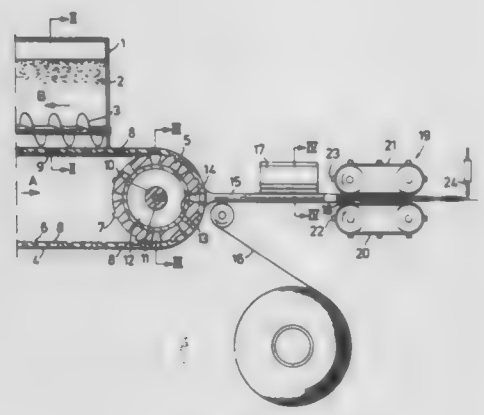
packaging means for enveloping the substantially aligned material received from said fill tube in bagging material.

4,607,479

APPARATUS FOR PACKAGING GIVEN QUANTITIES OF SNUFF

Günther Linden, Huddinge, Sweden, assignor to Svenska Tobaks AB, Stockhoom, Sweden

Filed Nov. 23, 1984, Ser. No. 674,507
Claims priority, application Sweden, Dec. 14, 1983, 8306913
Int. Cl.[4] B65B *9/08, 9/20*
U.S. Cl. 53—530 6 Claims



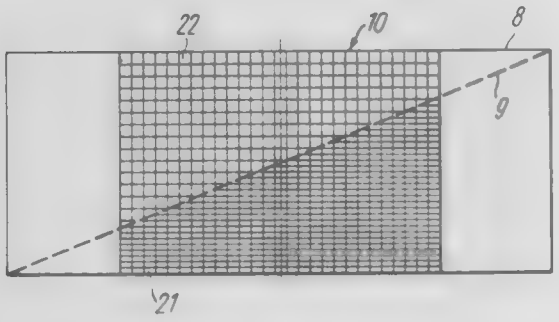
1. Apparatus for packaging snuff portions, comprising a snuff store (2), portioning means (3,9; 3,26) for transferring snuff from said store to a portion conveyor (4; 25) having portion pockets (9; 26) in the form of through-passing openings in the portion conveyor, arranged to transfer the portion pockets to a discharge station for sequentially transferring measured snuff portions by means of pneumatic means (11,14) to a movable packaging band (16), in which each individual snuff portion is enclosed by means of sealing means (17, 20,21), characterized in that the portioning means (3,9; 3,25) are arranged to compress the snuff portion in a respective portion pocket (9; 25); and in that the pneumatic means (11,14) are arranged to exert on the end part of the compressed snuff portion at the discharge station a drive force for blowing the portion to an intended position on the packaging band.

4,607,480

AXIAL-FLOW COMBINE

Jury N. Yarmashev; Vladimir A. Zapandi, and Valentin N. Tkachev, all of Taganrog, U.S.S.R., assignors to Glavnoe Spetsializirovannoe Konstruktorskoe Bjuro po Mashinam Uborki Zernovykh Kultur i Samokhodnykh Shassi, Taganrog, U.S.S.R.

Filed Apr. 16, 1985, Ser. No. 723,870
Int. Cl.[4] A01F *12/26*
U.S. Cl. 130—27 T 3 Claims



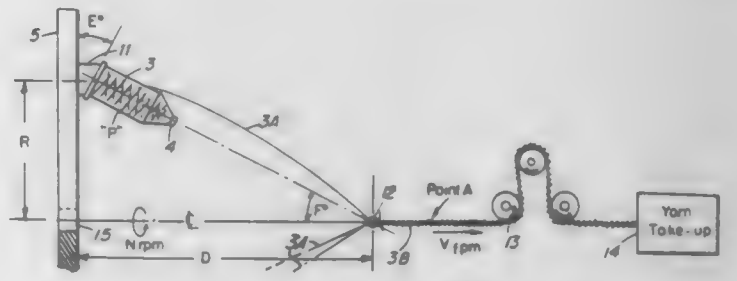
1. An axial flow combine comprising:
a rotating rotor having an axis arranged along the direction of combine movement;
a stationary cylindrical casing embracing said rotor;
helical guide fins mounted in the upper part of said casing;
a grate-type concave mounted in a threshing zone in the lower part of said casing;
said concave made with openings of different open area;
a portion of said concave having openings of smaller size, which concave is defined, with respect to the direction to combine movement, by a front edge of said concave and an imaginary extension of a helical line extending inwardly from said guide fins onto said concave, said portion of said concave increasing in transverse extent in the direction of rotation of said rotor, the remainder of said concave having openings of larger size;
a conveyor mounted under said concave to transport threshed product separated through said concave; and
a cleaning mechanism installed adjacent to the conveyor.

4,607,481

PROCESS FOR SPIRAL WRAPPING REINFORCEMENT FILAMENTS

Gilbert C. Bell, and Harry W. Stanhope, both of Charlotte, N.C., assignors to Celanese Corporation, New York, N.Y.

Division of Ser. No. 415,100, Sep. 7, 1982, Pat. No. 4,516,394.
This application Nov. 29, 1984, Ser. No. 676,442
Int. Cl.[4] D07B *3/06;* B65H *81/06*
U.S. Cl. 57—3 3 Claims



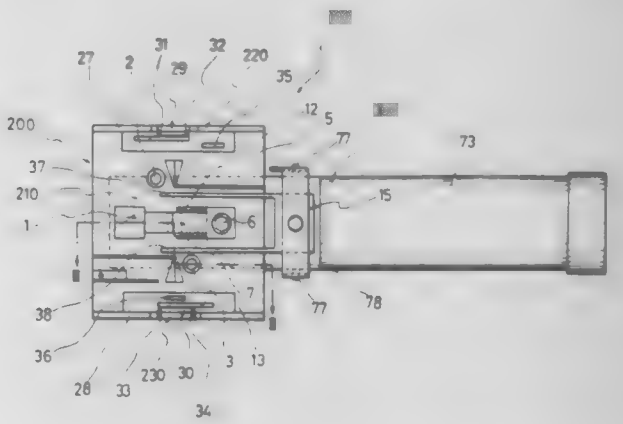
1. An improved process for forming a spiral wind of filamentary reinforcing material by end-unwinding at least one package of yarn eccentrically mounted on a centrally supported rotatable disc of a spiraling machine, and rotating the disc wherein the improvement comprises:
unwinding a package comprising a rotatable support and filamentary yarn wound around the support, the filamentary yarn having a twist of less than 5 tpi and the rotatable support comprising a king spool, and rotating said package about the disc's center line at least 600 rpm.

4,607,482

FLUID YARN SPLICING DEVICE

Hiroo Otoshima, Shiga, Japan, assignor to Murata Kikai Kabushiki Kaisha, Japan

Filed Feb. 12, 1985, Ser. No. 700,687
Claims priority, application Japan, Feb. 16, 1984, 59-27877
Int. Cl.[4] D01H *15/00;* B65H *69/06*
U.S. Cl. 57—22 10 Claims



1. A fluid yarn splicing device comprising:
a fluid treatment unit including a yarn splicing member secured on a block having a yarn splicing hole therein, a fluid exit opening into said yarn splicing hole, and a first fluid supply passage communicating with said fluid exit,
a yarn end control unit adjacent said fluid treatment unit and having a yarn cutting device, a yarn handling lever disposed adjacent said yarn splicing member, two swingable

hands capable of being positioned between said yarn cutting device and said yarn splicing hole and operating members for driving said yarn cutting device and said yarn handling lever, and

a driving section for supplying compressed fluid to said fluid treatment unit and for driving said operating members of said yarn end control unit,

wherein said fluid treatment unit further includes a second fluid supply passage, untwisting nozzles for untwisting the ends of yarns to be spliced, said untwisting nozzles being disposed on opposite sides of said yarn splicing member, said untwisting nozzles being formed in said block and communicating with said second fluid supply passage, whereby compressed fluid may be directed thereinto.

9. A device for splicing yarn ends comprising:

fluid treatment means for subjecting said yarn ends to the action of compressed fluid,

control means for positioning said yarn ends with respect to said fluid treatment means,

a control element in mechanical communication with said control means and having at least one fluid passage therein through which fluid may be directed to said fluid treatment means;

drive means for moving said control element at a regulated rate with respect to said control means and said fluid treatment means;

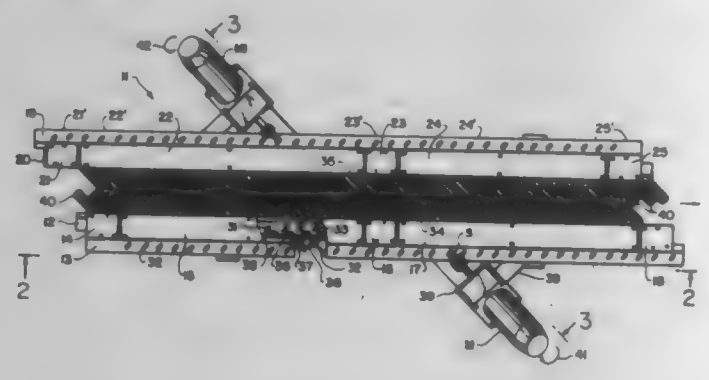
whereby said regulated movement of said control element governs operation of the said fluid treatment means and said control means.

4,607,483

METHOD AND APPARATUS FOR TWISTING AND ADVANCING STRAND MATERIAL

Albert E. Siecke, Westfield, N.J., and Edward Janos, New York, N.Y., assignors to Warner-Lambert Company, Morris Plains, N.J.

Filed Apr. 1, 1985, Ser. No. 718,586
Int. Cl.[4] D02G *1/08;* D07B *3/00*
U.S. Cl. 57—334 20 Claims



1. A method of advancing and twisting a plurality of generally parallel, endless strands into a rope configuration comprising the steps of providing a conveyor means having at least two side walls, one side wall defining a series of side-by-side rollers, skewing a rotational axis of each roller to a predetermined angular position relative to horizontal and vertical planes, rotating the rollers in unison about their axes in a predetermined direction, feeding said strands into said conveyor means and into frictional contact with said rollers whereby the rollers by virtue of their skewed disposition and direction of rotation are effective to develop two force components, one component operating to twist the strands into a rope while the other component operates to advance the twisted strands through the conveyor means.

12. A conveyor means for simultaneously advancing and twisting a plurality of strands into a rope, comprising

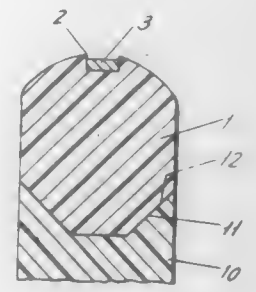
an elongated trough having at least two walls joined to define a linear path, a first wall including a plurality of aligned rollers having axes of rotation bearing a predetermined angular relationship relative to horizontal and vertical planes, power means for driving said rollers in unison in a predetermined direction, and means for feeding said strands into said trough and into frictional contact with said rollers, said rollers being effective, by virtue of their angular position and direction of rotation, to advance the strands while twisting the strands into a rope.

4,607,484

FRICTION ROTOR FOR THE FALSE-TWISTING OF SYNTHETIC THREADS

Friedrich Schuster, Hammelburg, Fed. Rep. of Germany, assignor to FAG Kugelfischer Georg Schafer (KGaA), Fed. Rep. of Germany

Filed Nov. 8, 1985, Ser. No. 796,547
Claims priority, application Fed. Rep. of Germany, Dec. 22, 1984, 3447146
Int. Cl.[4] D02G *1/08, 1/04*
U.S. Cl. 57—337 20 Claims



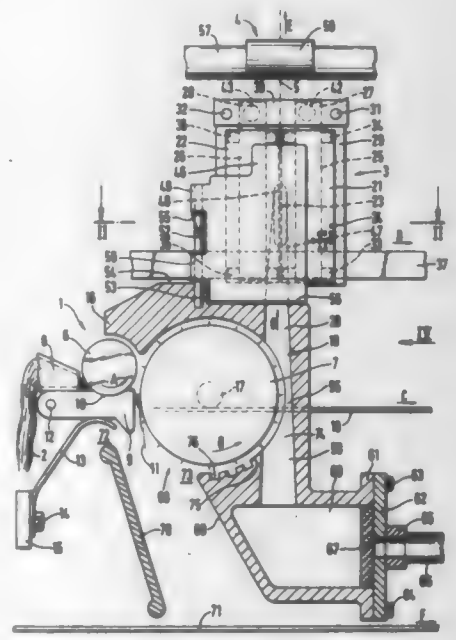
1. A friction rotor for friction false-twisting of synthetic threads, or the like, the rotor including an elastic material friction ring on and defining the circumference of the rotor; at least one annular element disposed on and around the friction ring for restraining the friction ring from lifting off the rotor upon high speeds of rotor rotation.

4,607,485

FEED ARRANGEMENT FOR AN OPEN-END FRICTION SPINNING MACHINE

Fritz Stahlecker, Joseph-Neidhart-Strasse 18, 7347 Bad Überkingen, Fed. Rep. of Germany, assignor to Fritz Stahlecker and Hans Stahlecker, both of, Fed. Rep. of Germany

Filed Jan. 25, 1985, Ser. No. 694,853
Claims priority, application Fed. Rep. of Germany, Jan. 26, 1984, 3402566
Int. Cl.[4] D01H *7/888, 7/898*
U.S. Cl. 57—401 22 Claims



1. An open-end friction spinning unit arrangement comprising:

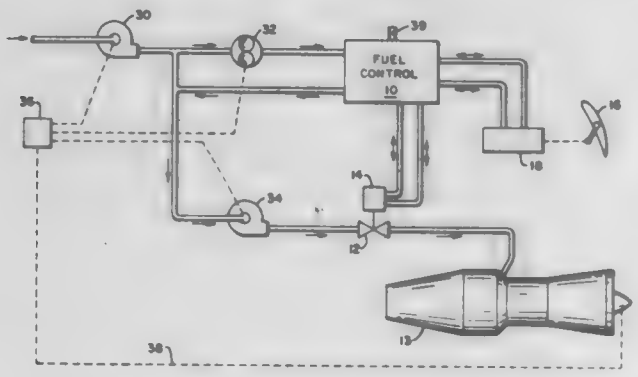
drivable friction surface means defining a yarn formation zone,
fiber feeding and opening means including opening roller means surrounded by an opening roller housing means with discharge opening means for impurities and fiber feeding duct means extending from adjacent the opening roller means toward the yarn formation zone,
suction device for applying suction forces for holding the fibers and forming yarn in the yarn formation zone,
and compressed air duct means connected to the fiber feeding duct means in the area of the circumference of the opening roller means, said comperssed air duct means being aimed into the fiber feeding duct means,
wherein the discharge opening means is arranged at a distance in front of the compressed air duct means with respect to the transport direction of the fibers.

4,607,486

CENTRIFUGAL MAIN FUEL PUMP

Edward F. Cole, Glastonbury, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Dec. 2, 1983, Ser. No. 557,557
Int. Cl.[4] F02C *7/236*
U.S. Cl. 60—734 **2 Claims**



1. For a gas turbine power plant having a fuel supply and a fuel metering valve and variable geometry for the power plant including servo actuating mechanisms for said fuel metering valve and variable geometry, a fuel pumping system to supply pressurized fuel for the servo actuating mechanisms and for the engine working fluid medium, said pumping system including a centrifugal pump solely supplying the fuel to said fuel metering valve to be delivered to the power plant for its working fluid medium, a positive displacement pump in parallel with said centrifugal pump and solely to supply pressurized fuel to said servo actuating mechanisms for the fuel metering valve and for the variable geometry, and a boost pump means disposed in serial relationship with said positive displacement pump and said centrifugal pump for augmenting the pressure supplied by the positive displacement pump and the centrifugal pump during predetermined operating conditions of said power plant whereby the combined boost pump and centrifugal pump capability is sufficient to satisfy the vapor to liquid ratio requirements of said power plant during its entire operating envelope.

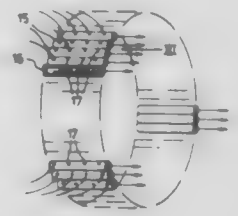
4,607,487

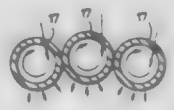
COMBUSTION CHAMBER WALL COOLING

John R. Tilston, Farnham, England, assignor to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

Continuation-in-part of Ser. No. 447,804, Dec. 8, 1982, abandoned. This application Dec. 26, 1984, Ser. No. 686,384
Claims priority, application United Kingdom, Dec. 31, 1981, 8139167
Int. Cl.[4] F02C *1/00*; F02G *3/00*; F23M *9/00*
U.S. Cl. 60—752 **5 Claims**

1. A gas turbine combustion chamber including a combustion chamber wall wherein at least part of the wall is formed by a plurality of generally cylindrical touching tubes forming cooling passages which extend around, and are generally parallel to, the chamber axis, each of said passages having a series of air inlets disposed along the passage and tangentially directed thereinto, and means for directing cooling air into the series of air inlets in each said passage to set up a forced vortex therein, the passages having open ends which exhaust directly into the combustion chamber.



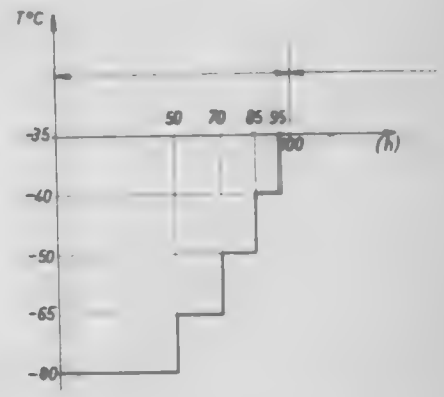


4,607,488

GROUND CONGELATION PROCESS AND INSTALLATION

Pierre Karinthi, Jouy-en-Josas; Maurice Gardent, Herbeys; Colette Régnier, Echirolles, and Jean Tuccella, Grenoble, all of France, assignors to L'Air Liquide, Societe Anonyme Pour l'Etude et l'Exploitation des Procedes Georges Claude, Paris, France

Filed May 28, 1985, Ser. No. 738,384
Claims priority, application France, Jun. 1, 1984, 84 08646
Int. Cl.[4] F17C *1/00*
U.S. Cl. 62—45 **14 Claims**



8. A process for the congelation of ground, comprising cooling a refrigerant liquid by indirect heat exchange with a cryogenic fluid, then circulating said liquid in a plurality of probes driven into the ground and varying the temperature of the liquid circulating in each said probe relative to the temperature of the liquid circulating in the other said probes such that said temperature varies directly as the rate of congelation of the ground adjacent each said probe.

4,607,489

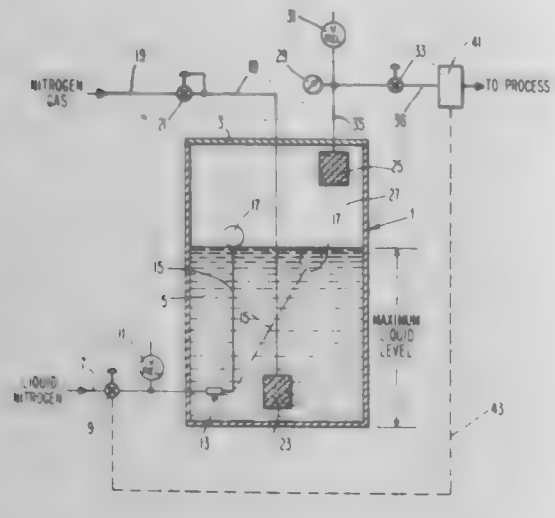
METHOD AND APPARATUS FOR PRODUCING COLD GAS AT A DESIRED TEMPERATURE

Martin A. Krongold, Aston, Pa., assignor to MG Industries, Valley Forge, Pa.

Filed May 21, 1985, Ser. No. 736,387
Int. Cl.[4] F17C *13/02*
U.S. Cl. 62—49 **22 Claims**

1. A method of producing a cold gas at a desired temperature, comprising the steps of:

(a) directing a gas to be cooled through a bath of a cryogenic liquid,



(b) maintaining the depth of the bath at a predetermined level, wherein the temperature of the gas is controlled by controlling the level of the bath, and

(c) withdrawing cooled gas from the region above the bath.

4,607,490

HELIUM II PHASE SEPARATOR

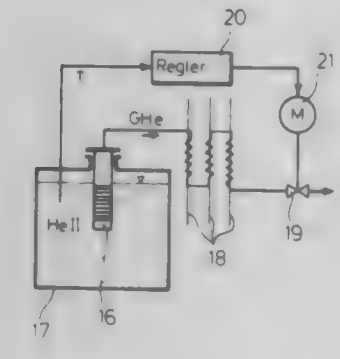
Albert Seidel, Siegertsbrunn; Hartmut Neuking, and Ernst Blenninger, both of Munich, all of Fed. Rep. of Germany, assignors to Messerschmitt-Bölkow-Blohm GmbH, Fed. Rep. of Germany

Filed May 6, 1985, Ser. No. 731,108

Claims priority, application Fed. Rep. of Germany, May 9, 1984, 3417055

Int. Cl.⁴ F17C *7/02*

U.S. Cl. 62—51 **15 Claims**



1. Helium II phase separator for use with a bath of liquid helium, comprising a member insertable into the bath, said member having a portion with spaced-apart plate members defining a plurality of substantially equal flow area passageways, and a gas take-off line connected to said member for the taking off of of gaseous helium being connected to said equal flow area passageways.

4,607,491

COOLING TRAP FOR VACUUM

Hajime Ishimaru, 128-102, Namiki 2-chome, Sasage 1352, Sakura-mura, Niihari-gun, Ibaraki-ken; Masao Miyamoto, and Shojiro Komaki, both of 31-1, Kameido 6-chome, Koto-ku, Tokyo, all of Japan

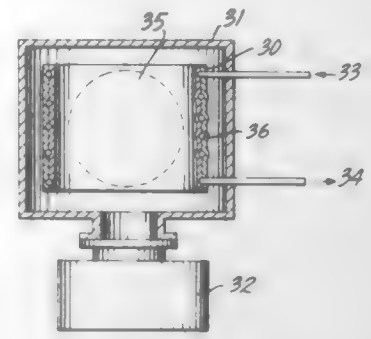
Filed Jan. 24, 1985, Ser. No. 694,412

Claims priority, application Japan, Jan. 27, 1984, 59-13999

Int. Cl.⁴ B01D *8/00*

U.S. Cl. 62—55.5 **20 Claims**

1. A vacuum cooling trap for use in a vacuum chamber comprising: a laminated structure comprised of a pair of plates bonded together in face-to-face contacting relation, the plates being composed of metal of high thermal conductivity, and the plates having aligned confronting conduit portions which jointly define a conduit within the laminated structure for



circulating a cooling medium through the laminated structure during use of the vacuum cooling trap.

4,607,492

LINEAR ADJUSTING DEVICE

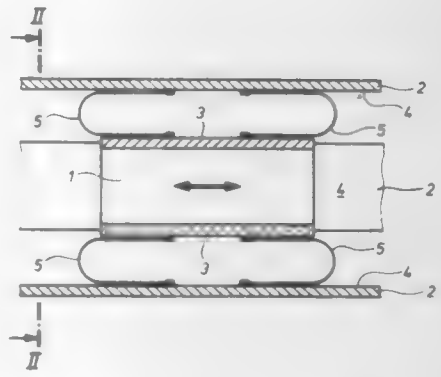
Wolfgang Demus, Langenbach, and Reinhard Katterloher, Munich, both of Fed. Rep. of Germany, assignors to Max-Planck-Gesellschaft, Munich, Fed. Rep. of Germany

Filed Nov. 19, 1984, Ser. No. 673,044

Claims priority, application Fed. Rep. of Germany, Nov. 30, 1983, 3343340

Int. Cl.⁴ B01D *8/00*

U.S. Cl. 62—55.5 **9 Claims**



1. A linear adjusting device, especially for cryogenic temperatures and vacuum conditions comprising:

a carrier body defining a linear adjusting path;

an adjusting body being adjustable on said carrier body along said linear adjusting path;

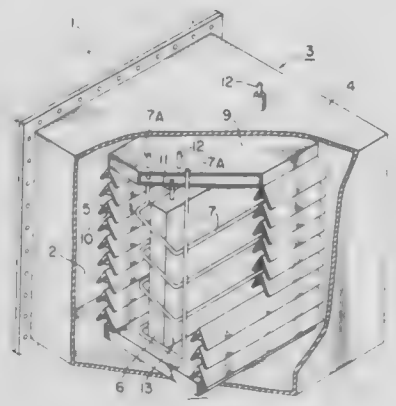
a plurality of strip-like bending springs each being bent at least approximately into a U-like shape and placed between said carrier body and adjusting body, wherein the U-legs of each of the U-shaped bending springs extend longitudinally along the adjusting path, and at their free ends, one of the legs of each being spring is fixed to said carrier body and the other leg to said adjusting body, respectively, said bending springs being arranged in at least two groups of bending springs spaced apart by a given distance along said adjusting path, the bending springs of at least one of said groups of bending springs being arranged in such a way that the vertex lines of the U-bends thereof are directed—when seen in a cross section perpendicular to said adjusting path—at oblique angles to the vertex lines of the bending springs of another group of bending springs.

4,607,493

CRYOSORPTION PUMP

Satoru Sukenobu, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Sep. 17, 1984, Ser. No. 650,860
Claims priority, application Japan, Sep. 20, 1983, 58-172182
Int. Cl.[4] B01D *8/00*
U.S. Cl. 62—55.5 6 Claims



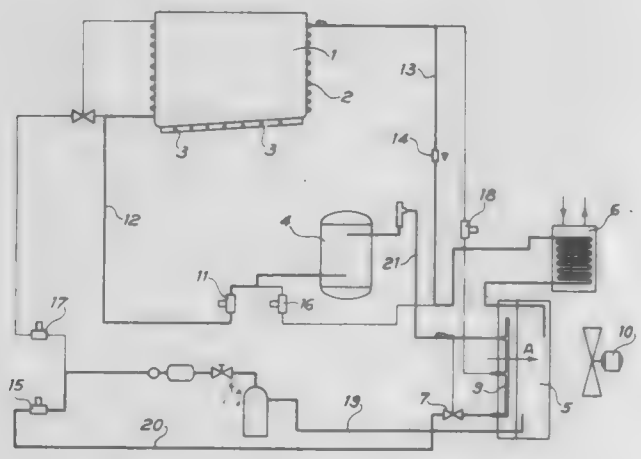
1. A cryosorption pump for high vacuum condition to be evacuated comprising:
a container defining therein a cryopumping space connected to an opening of a chamber to be evacuated;
a cryosorption member which is located in said container and on which an adsorbent is applied;
a cryocondensation member located in said container so as to surround said cryosorption member;
means for creating a magnetic field outside of said cryosorption member;
means for supplying cooling medium to said cryosorption and cryocondensation members; and
means connected to said container for exhausting outwardly gases in said container.

4,607,494

APPARATUS FOR THE PASTEURIZATION OF ALIMENTARY MIXTURES

Alberto Cipelletti, Guardamiglio, Italy, assignor to Ditta Alberto Cipelletti, Italy

Filed May 20, 1985, Ser. No. 735,875
Claims priority, application Italy, May 18, 1984, 21845/84[U]; May 18, 1984, 21846/84[U]
Int. Cl.[4] F25D *25/00*
U.S. Cl. 62—62 8 Claims



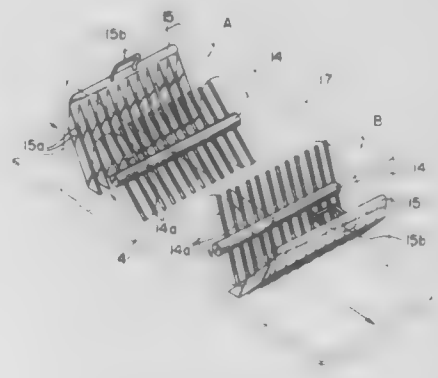
1. A process for pasteurizing an alimentary mixture in an apparatus comprising a refrigerating circuit including a compressor, a condenser, an expansion valve and an evaporator and further comprising a first vessel containing the mixture to be pasteurized and a first heat exchange coil arranged for thermal exchange with the mixture in said first vessel, said process comprising the steps of:
a. heating the mixture contained in said first vessel by circulating refrigerant from said compressor through said heat exchange coil, then through said condenser, then through said expansion valve, then through said evaporator and then back to said compressor; and
b. cooling the mixture contained in said first vessel by circulating refrigerant from said compressor through said condenser, then through said expansion valve, then through said first heat exchange coil, then through said evaporator, and then back to said compressor.

4,607,495

METHOD OF AND APPARATUS FOR DISINTEGRATING LUMPS OF BOILED RICE WHILE COOLING AND FREEZING

Kiyokatsu Fujimoto, Oomiya; Kazunobu Shibuya, Tokyo, and Tetsukazu Urata, Iruma, all of Japan, assignors to Toyo Sanso Co., Ltd., Tokyo, Japan

Filed Apr. 10, 1985, Ser. No. 721,813
Claims priority, application Japan, Apr. 26, 1984, 59-84631
Int. Cl.[4] F25D *13/06*
U.S. Cl. 62—63 1 Claim



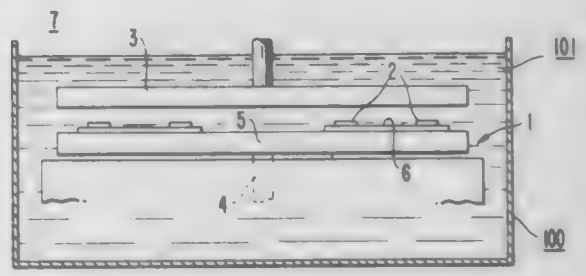
1. A method of disintegrating lumps of boiled rice which comprises (a) cooling and freezing boiled rice to a temperature between 10° C. to −30° C. while carrying the boiled rice as a layer on a belt conveyor, (b) colliding the lumps of boiled rice on the belt conveyor against a stationary comb and thereby separating them while cooling and freezing, and (c) beating the lumps of boiled rice with a rotary comb rotating at a circumferential velocity of from 1 to 10 m/sec, the beating step occurring at a time chosen from at least one of before, during and after the separating step by the stationary comb.

4,607,496

METHOD OF HOLDING AND POLISHING A WORKPIECE

Yoshiaki Nagaura, No. 391-2, Tonoharu, Oaza Chikushino-shi, Fukuoka-ken, 818, Japan

Continuation-in-part of Ser. No. 518,105, Jul. 28, 1983, abandoned. This application Jul. 23, 1984, Ser. No. 632,693
Claims priority, application Japan, Jul. 29, 1982, 57-134495; Aug. 12, 1982, 57-141369; Aug. 26, 1982, 57-149600; Sep. 2, 1982, 57-154450
Int. Cl.[4] F25D *17/02*
U.S. Cl. 62—64 3 Claims



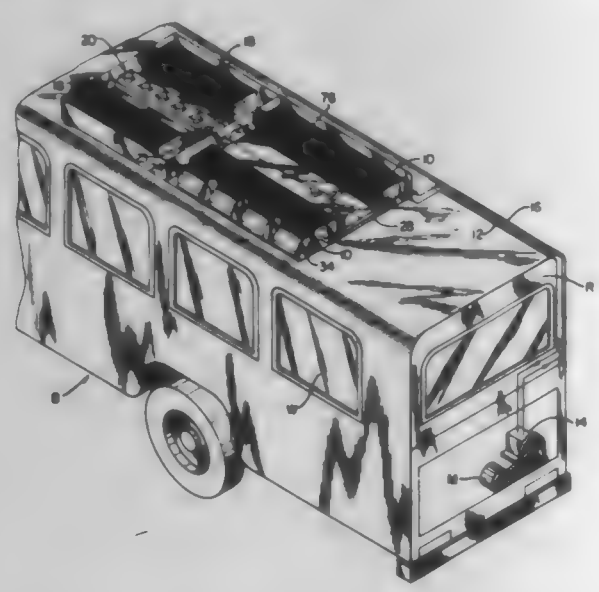
1. A method of holding and working a workpiece comprising the steps of:

providing a freezable liquid impregnated material between a workholder and the workpiece;
freezing the liquid impregnated in the material to secure the workpiece to the workholder; and
working the workpiece.

4,607,497
ROOF-MOUNTED AIR CONDITIONER SYSTEM HAVING MODULAR EVAPORATOR AND CONDENSOR UNITS

Houshang Ferdows, Boulder, Colo.; Martin Krug, Möglingen, and Paul R. Bihl, Ditzingen, both of Fed. Rep. of Germany, assignors to Suetrak U.S.A., Denver, Colo.

Filed Dec. 20, 1983, Ser. No. 565,026
Int. Cl.[4] F25D *17/00, 23/12*
U.S. Cl. 62—179 **7 Claims**



1. In an air conditioner system mounted on the roof of a bus, in which the bus is characterized by having an upper relatively flat roof, a ceiling spaced beneath said roof with a return air inlet disposed in said roof intermediately between air circulating ducts, said ducts extending between said roof and ceiling for directing conditioned air into the interior of said bus, there being compressor means to draw refrigerant from evaporator coils and to discharge said refrigerant under pressure, and a condensor unit including condensor coils to receive refrigerant under pressure from said compressor means, and air circulating means for directing air across said condensor coils, the improvement comprising:

a modular evaporator unit having an outer shallow, generally rectangular housing including mutually opposed sidewalls and front and rear end walls and a base panel conforming to the contour of said roof including means for attaching said base panel to said roof whereby said return air inlet and said air circulating ducts are in communication with the interior of said evaporator housing, said evaporator coils mounted on opposite sides of said return air inlet, and heater coils extending horizontally in side-by-side relation to each of said evaporator coils on opposite sides of said return air inlet, a fresh air inlet in said rear wall of said evaporator housing, and evaporator air blower means in said evaporator housing for inducing air through said return air inlet and said fresh air inlet across said evaporator coils and heater coils for discharge through said air circulating ducts into the interior of said bus;

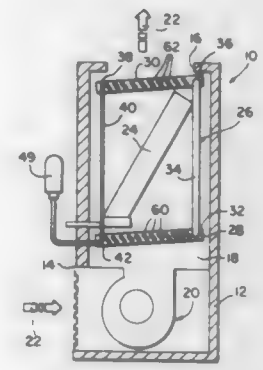
refrigerant lines extending between said condensor unit and said evaporator unit; and

said evaporator unit including damper means to regulate the ratio of return air and fresh air induced to flow through said respective return air and fresh air outlets, said damper means including inside temperature sensing means adjacent said return air inlet and outside temperature sensing means adjacent said fresh air inlet, said damper means responsive to the temperatures sensed at said return air inlet and said fresh air inlet to regulate the ratio of return air to fresh air drawn into said evaporator housing.

4,607,498
HIGH EFFICIENCY AIR-CONDITIONER/DEHUMIDIFIER

Khanh Dinh, Gainesville, Fla., assignor to Dinh Company, Inc., Alachua, Fla.

Filed May 25, 1984, Ser. No. 614,025
Int. Cl.[4] F25D *17/02;* F28D *15/00*
U.S. Cl. 62—185 **5 Claims**



1. A system for controlling air temperature and humidity, comprising:

an air temperature controlling unit comprising a heat pump having a heat mode and a cooling mode, said heat pump having a housing with an air inlet and an air outlet, an air passage extending from said inlet to said air outlet, a refrigerant coil disposed in said air passage, and a blower for forcing air through said refrigerant coil from said inlet to said outlet;

a phase-change heat exchanger comprising heat pipes and including an evaporator section disposed on an inlet side of said passage, a condenser section disposed on an outlet side of said air passage, said evaporator section having a liquid refrigerant inlet and a vapor outlet, said condenser section having a vapor inlet and a liquid refrigerant outlet, said vapor inlet being at a higher level than said liquid refrigerant outlet, said liquid refrigerant inlet being connected to said liquid refrigerant outlet, and said vapor inlet being connected to said vapor outlet, and a refrigerant disposed in said heat exchanger in such quantity that said refrigerant vaporizes in said evaporator section to draw heat from air moving through said inlet side of said air passage when said heat pump is in said cooling mode, vaporized refrigerant flows to said condenser section and condenses in said condenser section to transfer heat to air passing through said outlet side of said air passage, and liquid refrigerant flows to said evaporator from said condenser, and whereby when said heat pump is in said heat mode said phase change heat exchanger acts as a thermal diode and is rendered inoperative; and

a liquid refrigerant reservoir located outside of the air stream and which has sufficient capacity to contain the liquid refrigerant and limit the pressure within the heat exchanger when the heat exchanger is subjected to high temperatures from the heating apparatus.

4,607,499
METHOD AND APPARATUS FOR ASSEMBLY OF A ROOM AIR CONDITIONER HOUSING

Theodore S. Bolton, Liverpool, and Robert J. Whitwell, Nedrow, both of N.Y. (99), assignors to Carrier Corporation, Syracuse, N.Y.

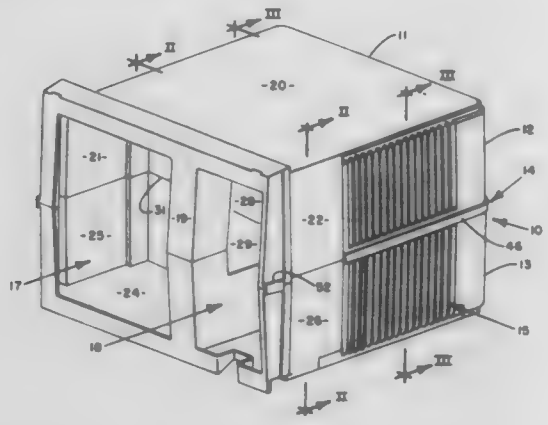
Filed Sep. 20, 1985, Ser. No. 778,113
Int. Cl.[4] F25D *23/12*
U.S. Cl. 62—262 **8 Claims**

1. A housing for an air conditioning unit of the type having an outdoor section and an indoor section comprising:

an upper portion having a top wall and downwardly extending side walls that define an upper rim at their lower

edges, with at least two oppositely disposed of said side walls having a flange extending outwardly and upwardly from said upper rim;

a lower portion having a bottom wall and upwardly extending side walls that define a lower rim at their upper edges, with at least two oppositely disposed of said side walls having a flange extending outwardly and downwardly from said lower rim;



said upper and lower rims being of generally the same size such that when said rims are mated together in vertical juxtaposition, said lower rim flange and said upper rim flange form a dovetail; and

channel means slideably engageable over said dovetails for securing the upper and lower portions.

4,607,500

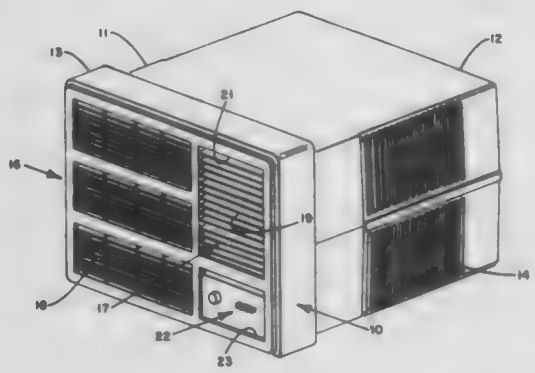
GRILLE MOUNTING FOR A ROOM AIR CONDITIONER

Theodore S. Bolton, Liverpool, and Brad G. Leech, Fayetteville, both of N.Y., assignors to Carrier Corporation, Syracuse, N.Y.

Filed Sep. 20, 1985, Ser. No. 778,114

Int. Cl.⁴ F25D *23/12*

U.S. Cl. 62—262 **14 Claims**



1. In an air conditioning system of the type having indoor and outdoor sections extending longitudinally inwardly and outwardly, respectively, from a wall opening, with each section having air intake and air discharge openings, an improved grille attachment structure for covering the air intake and discharge openings of the indoor section comprising:

a planar element having vents formed therein for conducting the flow of air to the air intake opening and from the air discharge opening:

a skirt element attached to and extending rearwardly from the edges of said planar element, on at least two opposite sides thereof, to wrap around at least two sides of the indoor section, each of said at least two skirt element sides being flexibly movable in the transversely outward direction and having at least one transversely extending notch formed therein, and

at least one transversely extending flange formed on each of said at least two sides of the indoor section, and longitudinal positions corresponding to those of said notches when the grille structure is in place, said flanges being engageable in said notches when said skirt element sides are flexed transversely outwardly and then released transversely inwardly to thereby maintain the skirt element and attached planar element in their installed positions.

4,607,501

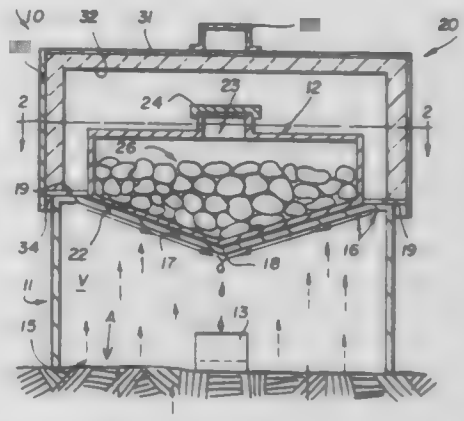
CONDENSING AND COLLECTING VAPORS EMANATING FROM A LAND SURFACE

Kenneth E. Vanlier, 2195 Greenskeeper Ct., Reston, Va. 22091

Filed Oct. 19, 1984, Ser. No. 662,552

Int. Cl.⁴ F25D *21/14*

U.S. Cl. 62—288 **12 Claims**



1. Apparatus for condensing and collecting vapors emanating from a land surface, comprising:

means for enclosing a volume of air above an area of a land surface, said means including a top member;

means for positively cooling said top member so that vapors emanating from the area of land surface enclosed will condense on said top member; and

means for collecting condensate which is formed on said top member;

wherein said enclosing means top member has an inverted conical shape, and a downwardmost point comprising the apex of said inverted cone; and wherein said positive cooling means has a bottom member having a conical shape corresponding to, and interfitting with, said enclosing means top member inverted conical shape; and wherein said collecting means is in operative association with said apex.

4,607,502

DEVICE FOR COOLING CONTAINERS, FOR INSTANCE BEVERAGE BOTTLES OR BEVERAGE CANS, ARRANGED IN A WRAPPING

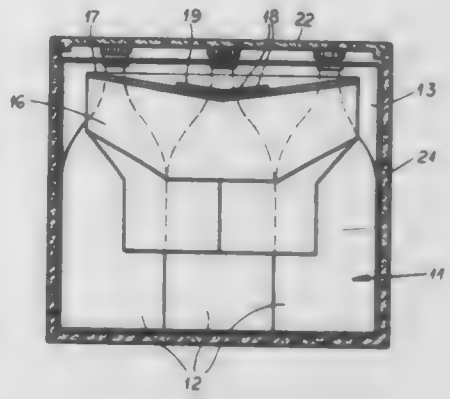
Zeljko Tomac, Moritzstr. 3, 6200 Wiesbaden, Fed. Rep. of Germany

Filed Jun. 1, 1984, Ser. No. 616,558

Claims priority, application Fed. Rep. of Germany, Jun. 3, 1983, 3320243

Int. Cl.⁴ F25D *3/10*

U.S. Cl. 62—294 **11 Claims**



1. A self-cooling package assembly for a multiplicity of beverage containers, comprising:

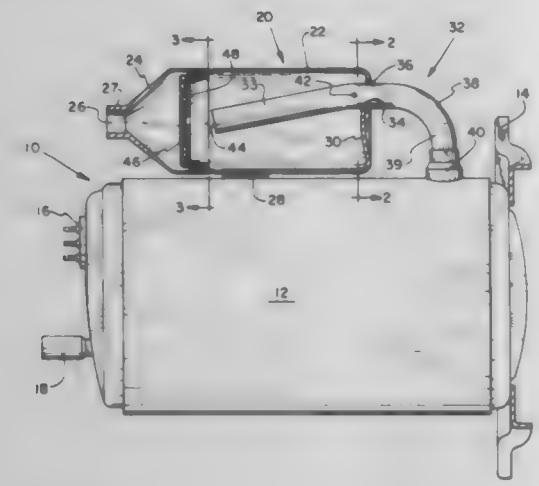
a multiplicity of beverage containers arranged in an array;
a wrapping at least partly enclosing said containers and extending around said array to retain said containers together in said array; and
a tightly closable cooling medium receptacle received in said wrapping, said receptacle including:
thermally conductive walls defining an interior compartment of said receptacle and in contact with said containers for cooling same upon the generation of a refrigerating reaction in said compartment,
means forming an inlet communicating with said compartment for adding a reactive component thereto adapted to react to form a refrigerating mixture in said compartment,
a durable storage-stable reactive component retained in said compartment under noncooling conditions and adapted to react with said reactive component added through said inlet to generate a cooling mixture abstracting heat from said containers through said walls, and
means for closing said inlet to retain said mixture in said compartment.

4,607,503

COMPRESSOR MOUNTED SUCTION ACCUMULATOR

Emanuel D. Fry, Tecumseh, Mich., assignor to Tecumseh Products Company, Tecumseh, Mich.

Filed Sep. 27, 1985, Ser. No. 781,103
Int. Cl.⁴ F25B *43/00*
U.S. Cl. 62—503 **13 Claims**



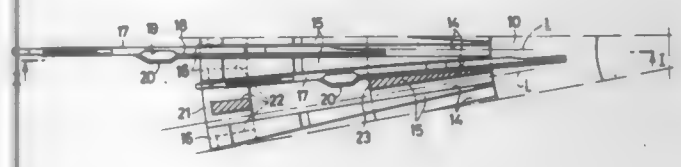
1. In combination, a hermetic compressor having a housing, an accumulator mounted on said housing in closely spaced relationship thereto, said accumulator having a cylindrical casing, a first end wall including an inlet aperture, and a second end wall including an outlet aperture, a screen disposed inside said accumulator casing, said second end wall having a greater wall thickness than said accumulator casing, said outlet aperture being located eccentrically with respect to the center of said second end wall and spaced outwardly of said center with respect to said housing, a suction tube having one end portion extending through said outlet aperture into said accumulator casing and disposed at substantially right angles to said second end wall, the open end of said one end portion disposed substantially coaxially with said accumulator casing, a second end portion of said tube disposed at substantially 90° with respect to said first end portion and extending into said compressor housing, said tube having a diameter in the range of ¼ inches to ⅜ inches and said accumulator casing having a diameter in the range of 2 inches to 2¼ inches.

4,607,504

NEEDLE DIAL FOR A SINGLE-CYLINDER CIRCULAR HOSIERY KNITTING MACHINE FOR PRODUCING RIBBED KNITTING

Armando Vincoli, Brescia, Italy, assignor to Santoni & C. S.p.A., Brescia, Italy

Filed May 17, 1984, Ser. No. 611,092
Claims priority, application Italy, May 31, 1983, 22001/83[U]
Int. Cl.⁴ D04B *9/22, 15/18*
U.S. Cl. 66—24 **8 Claims**



1. A needle dial for single-cylinder circular hosiery knitting machines for producing ribbed knitting comprising a disc having a plurality of radially extending angularly equidistantly spaced dividing walls, each adjacent pair of dividing walls setting-off therebetween a radially extending groove, each groove being defined by a top wall of said disc and one wall each of adjacent pairs of said dividing walls, said one walls having upper wall portions in generally spaced parallel relationship to each other and to a longitudinal axis of the groove defined therebetween, a lower radially outermost wall portion of one of said one walls being circumferentially offset from a radially innermost wall portion thereof and from its associated longitudinal axis thereby forming a recess adapted to receive therein a distal arch of an associated composite needle, an annular downwardly opening cavity in each dividing wall medially of radially opposite ends thereof, each recess being in radial communication with said annular cavity, a lower element removably secured to said disc, said lower element having an annular band bridging each cavity, and said annular band having an upper surface generally coplanar with said grooves bottom walls.

4,607,505

HAND NEEDLE FOR KNITTING OR CROCHET

Friedrich W. Dünker, Altena, and Walter Ossenberg-Engels, Iserlohn, both of Fed. Rep. of Germany, assignors to Joh. Moritz Rump, Altena, Fed. Rep. of Germany

Filed Nov. 1, 1985, Ser. No. 794,239
Claims priority, application Fed. Rep. of Germany, Nov. 13, 1984, 3441400
Int. Cl.⁴ D04B *35/02*
U.S. Cl. 66—117 **7 Claims**

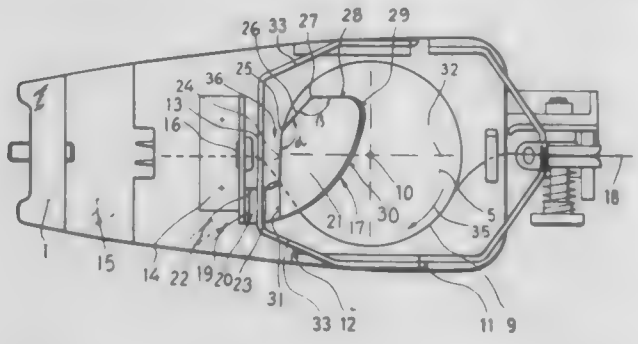


1. A hand needle for knitting or crochet, comprising a bending-resistant needle tip; a flexible loop-receiving rod connected to said needle tip; and a loop brake displaceably positioned on said rod and securable thereon against slipping off a free end of said rod, said loop brake having a through opening for receiving said rod therethrough, said through opening being a radial opening, said loop brake further including at least one recess radially extended therein for receiving the end of said rod.

4,607,506
YARN FEEDING DEVICE

Kurt A. G. Jacobsson, Ulricehamn, Sweden, assignor to Aktiebolaget IRO, Ulricehamn, Sweden

Filed Sep. 26, 1984, Ser. No. 655,203
Claims priority, application Sweden, Sep. 27, 1983, 8305194; Fed. Rep. of Germany, Jun. 13, 1984, 3421941
Int. Cl.[4] D04B *15/48*
U.S. Cl. 66—125 R 8 Claims



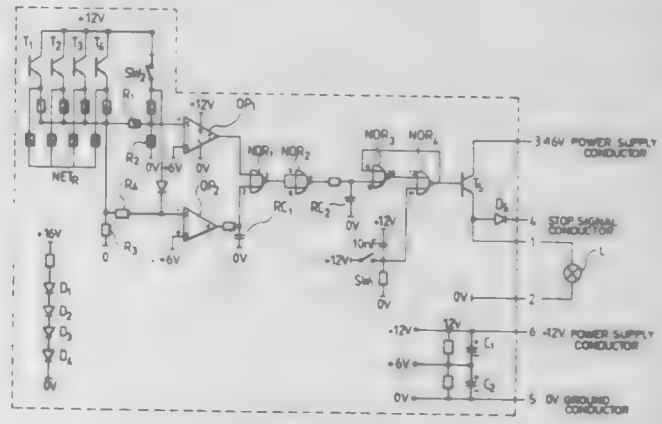
1. A yarn feeding device, particularly for the positive feeding of a yarn to a knitting machine, comprising a rotatably drivable storage drum adapted to have a yarn supply wound onto its periphery and to have the yarn withdrawn therefrom over a rim of said storage drum at a withdrawal speed corresponding to the winding speed, a stationary yarn guide element located below the plane of said rim and outwards of the periphery of said rim in a center plane extending substantially through the axis of rotation of said storage drum, a yarn guiding element having a yarn guiding edge located in the path followed by the yarn during a correct positive yarn feeding operation between said rim and said yarn guide element, and a stoppage sensing element having a transverse portion supported on said yarn and extending across the yarn's path substantially parallel to a tangent of said rim between said yarn guiding edge and said yarn guide element, said stoppage sensing element being pivotally mounted and biased by a biasing force in a direction biasing said yarn into engagement with said yarn guiding edge, the improvement wherein said yarn guiding edge extends substantially rectilinear and parallel to said transverse portion, said yarn passing above said yarn guiding edge and under said transverse portion so that the biasing force acting on said stoppage sensing element holds the yarn in engagement with the yarn guiding edge, one end of said yarn guiding edge extending beyond said center plane and being adjoined to a yarn support edge which is located rearwards of said center plane as seen in the direction of rotation of said storage drum and which gradually recedes—as seen from said yarn guide element—so as to extend in a direction away from said transverse portion.

4,607,507
YARN-FEEDING APPARATUS FOR A CIRCULAR KNITTING MACHINE

Kurt A. G. Jacobsson, Ulricehamn, Sweden, assignor to Aktiebolaget IRO, Ulricehamn, Sweden

PCT No. PCT/EP83/00131, § 371 Date Jan. 25, 1984, § 102(e) Date Jan. 25, 1984, PCT Pub. No. WO83/04273, PCT Pub. Date Dec. 8, 1983
Continuation of Ser. No. 584,436, Jan. 25, 1984, abandoned. This PCT application May 24, 1983, Ser. No. 815,300
Claims priority, application Sweden, May 25, 1982, 8203216; Aug. 13, 1982, 8204685; Oct. 4, 1982, 8205657
Int. Cl.[4] D04B *15/43, 35/16*
U.S. Cl. 66—132 T 14 Claims

1. In a yarn-feeding apparatus for positive feeding of plural yarns to a circular mechanism of a circular knitting machine, in particular a multi-system circular knitting machine, including fingers which are arranged movable in the circular mechanism for selectively and successively receiving and guiding the yarn into a knitting position or for taking the yarn out of a knitting position, a plurality of yarn delivery devices which in number correspond with the number of yarns, each said yarn delivery device having a yarn-transporting element and a yarn-guiding element which can be moved back and forth in response to yarn tension between a feeding position in which the yarn is in driving engagement with the yarn-transporting element and a nonfeeding position in which the yarn is free of driving engagement with the yarn-transporting element, and an electric position sensor means associated with each yarn-guiding element for producing a signal in dependence on the position of the yarn-guiding element, comprising the improvement wherein each said position sensor means provides a first signal when the yarn-guiding element is in the feeding position and provides a second signal when the yarn-guiding element is in the nonfeeding position, the first and second signals being different from one another, and an electric logic switching

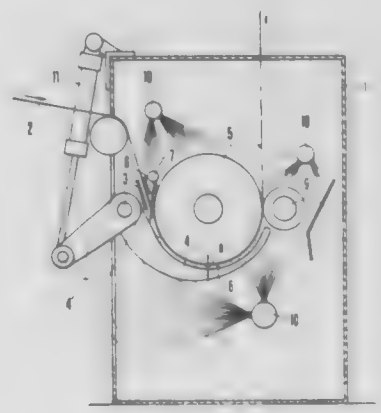


circuit for turning off the knitting machine, said switching circuit being connected for receiving the signals from all of the position sensor means, said switching circuit including a fault condition sensing means for receiving and evaluating the combination of signals as received from all of said position sensor means for sensing a first fault condition caused by a yarn breakage or misfeed and a second fault condition caused by a yarn changing fault such that two yarns are being fed simultaneously, said fault condition sensing means including means for receiving and evaluating first and second said combinations of signals which are distinctively different from one another and respectively indicate said first and second fault conditions, and said switching circuit having switch means for shutting off the knitting machine upon sensing any one of said faults.

4,607,508
APPARATUS FOR APPLYING TREATING SOLUTION TO A CLOTH IN CONTINUOUS TREATMENT OF THE CLOTH

Yoshikazu Sando, and Hiroshi Ishidoshiro, both of Wakayama, Japan, assignors to Sando Iron Works, Ltd., Japan

Filed Oct. 12, 1984, Ser. No. 660,842
Claims priority, application Japan, Oct. 18, 1983, 58-194758; Nov. 14, 1983, 58-213696
Int. Cl.[4] B05C *3/132*
U.S. Cl. 68—22 R 6 Claims



1. An apparatus for applying a treating solution to a cloth in the continuous treatment thereof, comprising:

(a) a cloth guide drum for transporting and guiding a cloth to be treated;

(b) a movable treating solution tank provided in close proximity to the circumference of the lower half of the cloth guide drum thus forming a cloth passage of a narrow width therebetween;

(c) a cylinder for raising and lowering of the movable treating solution tank;

(d) a treating solution supply pipe for supplying a treating solution continuously to the cloth passage;

(e) a cloth guide roller provided in the cloth passage of a narrow-width, said guide roller located for partially releasing the contact between the cloth and the guide drum; and

(f) wash-water jet nozzles for propelling wash water to at least the inner surface of said movable treating solution tank, the surface of said cloth guide drum, and the surface of said cloth guide roller.

4,607,509

COUNTERFLOW CYCLING WASHING MACHINE

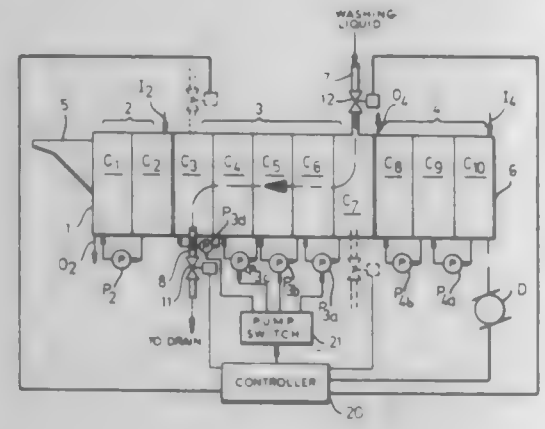
Karl-Heinz Stoll, Wiesbaden, Fed. Rep. of Germany, assignor to Senkingwerk GmbH, Hildesheim, Fed. Rep. of Germany

Filed Nov. 16, 1984, Ser. No. 672,582

Claims priority, application Fed. Rep. of Germany, Nov. 17, 1983, 3341504

Int. Cl.⁴ D06F *31/00*

U.S. Cl. 68—27 **1 Claim**



1. A counterflow cycling washing machine, comprising:

a washing trommel axially divided into a plurality of washing zones, each divided into a plurality of washing chambers traversed in one direction by batches of wash in succession;

respective wash fluid pumps connecting a downstream one of said chambers to an upstream one of said chambers with respect to said direction for each of said zones for effecting counterflow of wash liquid in a direction opposite said one direction;

an inlet communicating with an upstream end of one of said zones with respect to said one direction;

a first outlet communicating with a downstream end of said one of said zones with respect to said one direction;

a second outlet communicating with said upstream end of said one of said zones;

respective valves connected to said inlet and to said outlets so that said second outlet is effective during counterflow and the valves of said inlet and said first outlet are open during a concurrent flow of said fluid in said one direction; and

pump control means for switching off said counterflow pumps of said one of said zones when concurrent flow begins.

4,607,510

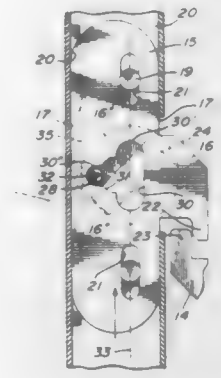
LOCK MECHANISM FOR CLOSURE MEMBERS

Gad Shanaan; Jack Jospé; Joe Jospé, all of Montreal, and Carlo Caputo, La Salle, all of Canada, assignors to Ideal Security Inc., Quebec, Canada

Filed Oct. 3, 1984, Ser. No. 657,257

Int. Cl.⁴ E05B *65/08*

U.S. Cl. 70—95 **13 Claims**



1. A lock mechanism for a closure member, said mechanism comprising a housing for securement to one side of said closure member, a locking slide member slidingly guided in said housing, said slide member having a locking element to engage and disengage with a keeper member secured to a further member adjacent said closure member, a slide activating rotating knob rotatably retained in said housing for limited rotating displacement therein, a slide displacing pin secured to said rotating knob and offset from a central axis thereof, said slide member having a pin receiving slot coacting with said pin whereby limited rotation of said knob causes displacement of said pin to frictionally engage said slide in said slot to cause limited sliding displacement of said slide between a locked and unlocked position, and arresting means to prevent movement of said slide by applying a force thereto when the slide is in its locked position, said arresting means being constituted by an abutment wall formed in an edge of said slot and an abutment face formed in said pin, said abutment wall and said abutment face being in flush contact with one another when said slide is located in said locked position with the central transverse long axis of said abutment face of said pin being aligned with said central axis of said rotating knob.

4,607,511

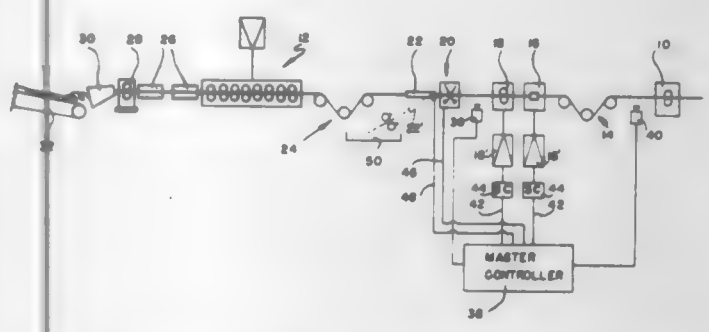
TENSION PREFINISHING WITH SIZING STANDS

Terence M. Shore, Northwich, England, assignor to Morgan Construction Company, Worcester, Mass.

Filed Apr. 26, 1985, Ser. No. 727,676

Int. Cl.⁴ B21B *37/02*

U.S. Cl. 72—16 **7 Claims**



1. A method of controlling the gauge of a product, such as for example a rod or bar, as the product is passing from an upstream roll stand to a finishing block, said method comprising: rolling the product under tension between successive first and second sizing stands arranged between said upstream roll stand and said finishing block; introducing variable loops in the product between said upstream roll stand and said first sizing stand, and between said second sizing stand and said finishing block; taking cross sectional dimensional measurements of the

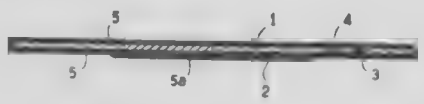
product emerging from said second sizing stand; and when said measurements indicate an off gauge condition in the product emerging from said second sizing stand, adjusting the rolling speeds of at least one of said sizing stands in order to correct the off gauge condition by varying the tension in the product passing therebetween.

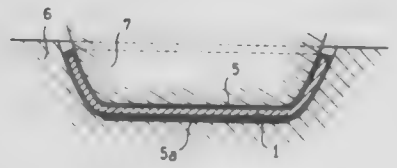
4,607,512

PROCESS FOR MANUFACTURING A COOKERY VESSEL

Jean-Pierre Deville, Poisy, France, assignor to SEB S.A., Selongey, France

Filed Jul. 16, 1985, Ser. No. 755,716
Claims priority, application France, Jul. 20, 1984, 84 11516
Int. Cl.[4] B21D *22/00, 53/00*
U.S. Cl. 72—46 3 Claims





1. Process for manufacturing a cookery vessel comprising a flat bottom and a side wall, the interior of the vessel and an outer face (8) of the side wall being coated with a fluorinated polymer (5), the flat bottom being coated with an enamel coating (2), comprising the following stages:

(a) applying a coating of enamel (2) to a central part of a metal disc (1), corresponding to an outer face of a bottom section of the vessel to be formed;

(b) baking said enamel coating (2);

(c) applying a continuous coating of fluorinated polymer to first and second faces (3, 4) of the disc (1) so that the enamel-coated part (2) is also covered by said coating of fluorinated polymer;

(e) baking said coating of fluorinated polymer;

(e) deep-drawing the disc (1) to the shape desired for the vessel and

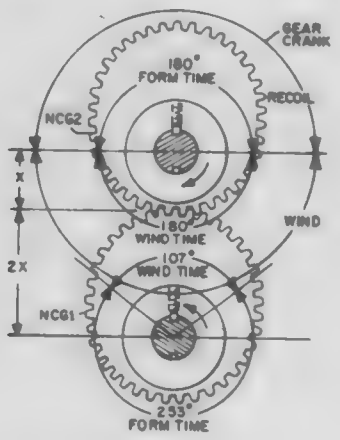
(f) removing the coating of fluorinated polymer from the enamel-coated part (2).

4,607,513

WIRE WORKING MACHINE

Frank S. Russell, Northboro, Mass., assignor to Sleeper & Hartley Corp., Worcester, Mass.

Filed Nov. 1, 1984, Ser. No. 667,219
Int. Cl.[4] B21F *35/02*
U.S. Cl. 72—137 27 Claims



1. A wire working machine comprising:

a machine frame,

feed means supported from the frame and for selectively feeding wire to a work station of the machine,

cam shaft means supported from the frame,

a drive source for driving said cam shaft means,

wire forming means including means operable at said work station in response to said cam shaft means and over a predetermined forming period,

wire winding means including means operable at said work station in response to said cam shaft means and over a predetermined winding period,

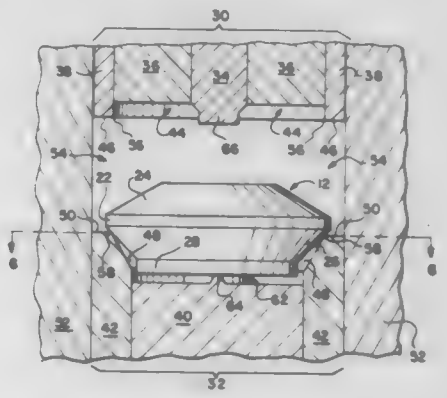
and non-circular gear means intercoupling the cam shaft means and wire winding means configured to provide, during a full cam shaft means rotation, different intervals of the predetermined forming and winding periods, respectively.

4,607,514

METHOD OF FORMING A METAL PART HAVING AN ANNULAR FLANGE

Russell A. Nippert, Columbus, Ohio, assignor to The Nippert Company, Delaware, Ohio

Filed May 7, 1984, Ser. No. 607,856
Int. Cl.[4] B21D *22/00*
U.S. Cl. 72—354 4 Claims



1. A method of forming a metal part having an annular flange, comprising the steps of:

providing a metal billet having an upper, frusto-conical portion, increasing in diameter downward, and a lower, frusto-conical portion directly beneath said upper frusto-conical portion, increasing in diameter upward,

providing upper and lower die elements for relative movement axially toward and away from one another, said upper die element defining a first cavity and a first outer shoulder extending circumferentially therearound, said first outer shoulder having an inner diameter less than the maximum diameter and greater than the minimum diameter of said frusto-conical portions of said upper and lower portions of said billet and having an outer diameter greater than the maximum diameter of said upper and lower portions of said billet, said lower die element defining a second cavity and a second outer shoulder extending circumferentially therearound, said second outer shoulder having inner and outer diameters substantially equal to the inner and outer diameters, respectively, of said first outer shoulder,

providing a sleeve for receiving said upper and lower die elements, said sleeve having an inner diameter substantially equal to said outer diameter of said first and second outer shoulders, said upper and lower die elements being positioned in said sleeve with said first and second outer shoulders in direct opposition whereby said first and second outer shoulders and said sleeve define an annular space,

placing said billet in said sleeve between said upper and lower die elements such that the parts of said upper and lower portions of greatest diameter extend into said annular space, the edge between said first outer shoulder and said first cavity contacting said upper frusto-conical portion along a line extending circumferentially therearound,

and the edge between said second outer shoulder and said second cavity contacting said lower frusto-conical portion along a line extending circumferentially therearound, and

causing relative movement of said upper and lower die elements toward each other, whereby the part of said metal billet extending into said annular space is extruded radially outward to form said flange.

4,607,515

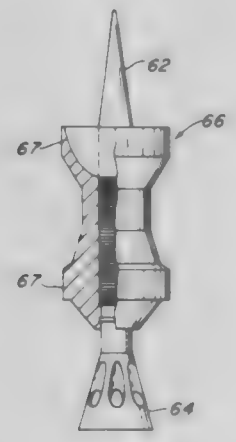
KINETIC ENERGY PENETRATOR

Glenn B. Goodfellow, Franklin Lake, N.J., assignor to UTI Corporation, Collegeville, Pa.

Continuation-in-part of Ser. No. 451,136, Dec. 20, 1982, Pat. No. 4,462,238. This application Dec. 16, 1983, Ser. No. 562,305

Int. Cl.[4] B21D *22/00*

U.S. Cl. 72—358 **12 Claims**



1. A kinetic energy penetrator comprising a body having a length at least five times as large as its diameter, said penetrator being cold worked so as to have a strength along its length in a predetermined manner attained by the following method:

(a) producing a metal specimen with a pre-shape and dimension determined on the basis of the desired strength and mechanical properties,

(b) introducing said preshaped specimen into a confined chamber which defines the desired peripheral final shape, spacing at least a portion of the periphery of said preshaped specimen from at least a portion of the walls defining said chamber with the relative dimensions of the spacing being governed by the amount of cold work needed to achieve desired strength or mechanical properties in that portion of the specimen,

(c) engaging one face of said specimen with at least one moveable wall of said chamber and applying a continuous compressive force by said wall with a sufficient magnitude to force the preshaped specimen to deform and fill the chamber at the end of the compressive stroke, and

(d) applying said compressive force by moving said moveable wall of the chamber so that the yield strength of the specimen progressively increases, and progressively increasing the magnitude of said force as the yield strength increases until the entire circumference of the specimen contacts the walls.

4,607,516

TRANSFER FEED PRESS WITH IMPROVED TRANSFER FEED SYSTEM

Thomas B. Schafer, Riverside, Ill.; William Sindelar, deceased, late of Darien, Ill. (by Dorothy Sindelar, legal representative), and Joseph R. Cummens, Elmhurst, Ill., assignors to Danly Machine Corporation, Chicago, Ill.

Filed Sep. 3, 1982, Ser. No. 414,674

Int. Cl.[4] B21J *13/08*

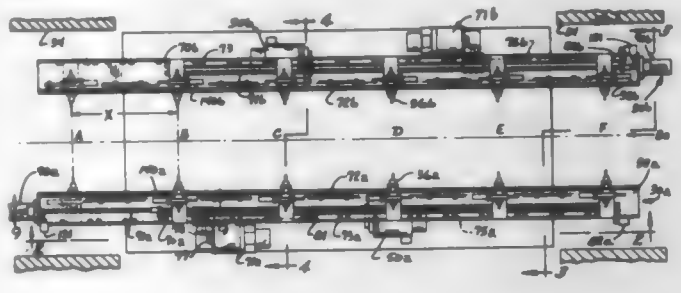
U.S. Cl. 72—405 **5 Claims**

1. In a transfer feed press for performing a series of press operations on a workpiece at a series of work stations, a transfer feed system comprising the combination of

a plurality of finger units spaced along said work stations for gripping said workpieces and moving the same between successive work stations in the press,

means mounting said finger units for independently controllable movement along a plurality of axes including a vertical axis defining the direction of vertical movement of said finger units for raising and lowering the workpieces at the various work stations of the press, a substantial portion of said transfer feed system being raised and lowered along with said finger units,

a separate electric servomotor for controlling movement of



said finger units along each of said axes, each of said servomotors being independently controllable by electrical control signals, and

fluid operable counterbalancing means for applying an upward force to said transfer feed system, said counterbalancing means operating independently of said means for moving said finger units along said vertical axis, said upward force being substantially equal to the weight of said feed system so that said servomotor for controlling movement of said finger units slong said vertical axis is not required to overcome the weight of said feed system.

4,607,517

STAMPING AND BENDING TOOL ASSEMBLY

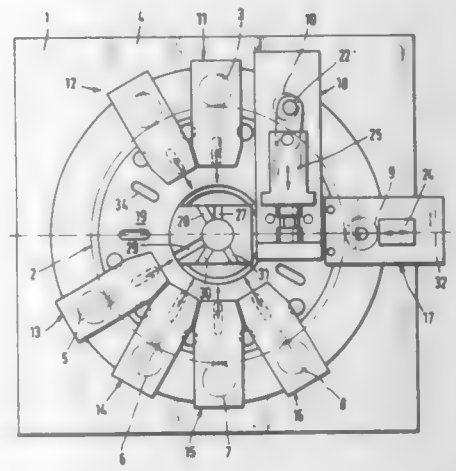
Heinz Finzer, and Wolfgang Kessler, both of Bad Säckingen, Fed. Rep. of Germany, assignors to Heinz Finzer KG, Bad Säckingen, Fed. Rep. of Germany

Filed Mar. 16, 1984, Ser. No. 590,335

Claims priority, application Fed. Rep. of Germany, Apr. 8, 1983, 3312671

Int. Cl.[4] B21J *9/18*

U.S. Cl. 72—449 **46 Claims**



1. A stamping and bending tool assembly for automatically manufacturing bent parts comprising:

a housing frame supporting a plurality of carriage means, the carriage means being disposed around a circular tool carrier table means having a central work station and a bending tool, each carriage means controlled by respective cam means engaging respective pinion means, the respective pinion means engaging a common central drive gear means;

the table means comprising a quick replacement plate having centering and securing means for establishing a fixed mutual angular relationship of the respective pinion means

and against movement when the replacement plate is removed to selectively change the bending tool.

4,607,518

FORGING PRESS OF UNDERFLOOR DESIGN

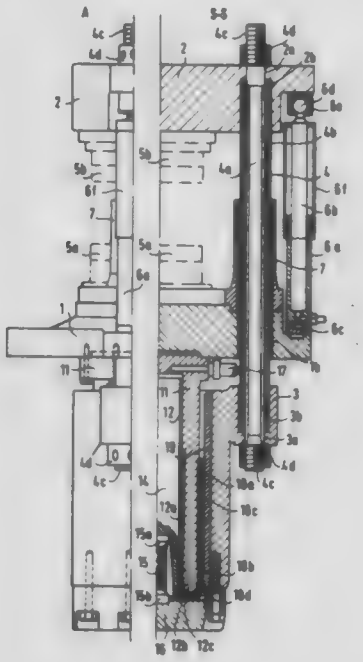
Hans A. Schubert, Düsseldorf, and Klaus Schulze, Monchen-Gladbach, both of Fed. Rep. of Germany, assignors to SMS HasenClever Maschinenfabrik GmbH, Dusseldorf, Fed. Rep. of Germany

Filed Jun. 19, 1985, Ser. No. 746,323

Claims priority, application Fed. Rep. of Germany, Jun. 19, 1984, 3422644

Int. Cl.[4] B21J *9/12*

U.S. Cl. 72—453.12 **11 Claims**



1. A forging press of underfloor design comprising a static platen, a travelling frame formed by an upper travelling crosshead, a lower travelling crosshead and columns inter-connecting the said travelling crossheads, a guide shaft connected to the platen and acting as a guide for the lower travelling crosshead, at least one working piston-cylinder unit acting between the platten and the lower travelling crosshead for exerting forging pressure, and retraction piston-cylinder units acting between the platten and the upper travelling crosshead for retracting the travelling frame, characterised in that the guide shaft is made hollow and serves as the cylinder for the working piston of the said working piston-cylinder unit, the lower travelling crosshead is guided on the said hollow guide shaft, and the working piston is guided in the cylinder cavity of the said hollow guide shaft and is supported on the lower travelling crosshead by means of a thrust rod interposed between ball-and-socket joints.

4,607,519

VEHICLE WHEEL ALIGNMENT DEVICE

Stephen R. Kinion, 404 Burlington Dr., Colorado Springs, Colo. 80906

Filed May 29, 1984, Ser. No. 614,525

Int. Cl.[4] B21D *1/12*

U.S. Cl. 72—457 **7 Claims**

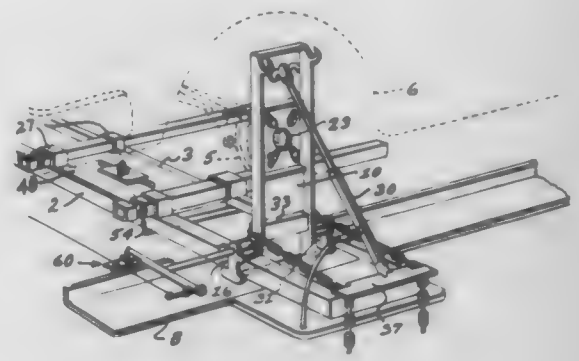
1. A vehicle wheel alignment device comprising in combination:

a rigid frame having a pair of mutually parallel track forming members which frame is arranged to be disposed parallel to the axle of a vehicle wheel;

an upstanding wheel plate having apertures for receiving the lug nuts of a wheel and having bi-laterally projecting spindles attached to the lower portion thereof;

journal means carried by each of said tracks and movable therealong, rotatably mounting the respective spindle projections of the wheel plate; and

power means bearing against the wheel plate to interchangeably pivot the plate about the axis formed by the project-



ing spindles and about the vertical longitudinal axis of the plate.

4,607,520

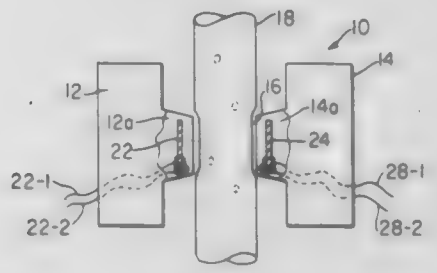
METHOD AND APPARATUS FOR DETECTING DISCONTINUITIES IN A FLUID STREAM

Naim Dam, Oakland Gardens, N.Y., assignor to Introtek Corporation, Deer Park, N.Y.

Filed Jan. 9, 1984, Ser. No. 569,389

Int. Cl.[4] G01N *29/02*

U.S. Cl. 73—19 **15 Claims**



1. Apparatus for detecting a discontinuity in a stream of a first fluid flowing in a tube comprising

a sensing means having spaced apart transmitting and receiving transducers, the space accommodating the tube,

means for supplying successive bursts of pulses of electrical energy to said transmitting transducer to cause it to vibrate to produce corresponding bursts of pulses of sonic energy which are transmitted through said tube to said receiving transducer, there being a predetermined time of no pulse production between successive burst of pulses, said receiving transducer converting the bursts of pulses of received sonic energy into corresponding electrical signals during said predetermined time between said successive bursts,

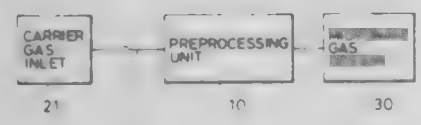
and circuit means responsive to said electrical signals produced by said receiving transducer during said predetermined time for producing first signals corresponding to the pulses of the transmitted pulses of a burst in response to the presence of said first fluid and a second signal in response to the presence of a discontinuity in said first fluid,

and means responsive to receipt of a respective predetermined number of said first or said second signals to produce an output corresponding to the presence of liquid or a discontinuity in said tube.

4,607,521
METHOD OF IMPROVING RESPONSE CHARACTERISTICS OF GAS SENSOR USING MICROWAVE SPECTROMETER

Tomoo Saito; Mitsutoshi Tanimoto; Masayoshi Yasuda, all of Kanagawa; Yasuharu Ijuin, Tokyo; Akio Hikita, Kanagawa; Naotake Morikawa, Tokyo; Hiromichi Uehara, Saitama, and Masaru Fukuyama, Tokyo, all of Japan, assignors to Sagami Chemical Research Center, Tokyo, Japan

Filed Nov. 20, 1984, Ser. No. 673,456
Int. Cl.[4] G01N *22/00*
U.S. Cl. 73—23 4 Claims

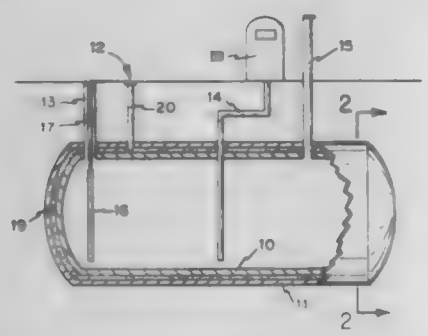


1. A method of sensing concentrations of a gas sample with a gas sensor using a microwave spectrometer, wherein the improvement comprises continuously supplying to a gas flowing through said gas sensor as a sample to be sensed a first compound having an identical or similar chemical form to that of the sample at a rate at least larger than that at which an adsorption equilibrium condition is established in the gas sensor so that a sample concentration in the gas sensor is maintained at least at a level at which adsorption is saturated.

4,607,522
STORAGE TANKS HAVING SECONDARY CONTAINMENT MEANS

Bruce R. Sharp, 4090 Rose Hill Ave., Cincinnati, Ohio 45229

Continuation-in-part of Ser. No. 544,013, Oct. 21, 1983, Pat. No. 4,523,454, and a continuation-in-part of Ser. No. 580,800, Feb. 16, 1984, Pat. No. 4,524,609, which is a continuation-in-part of Ser. No. 544,012, Oct. 21, 1983, abandoned. This application Jun. 3, 1985, Ser. No. 740,869
The portion of the term of this patent subsequent to Jun. 18, 2002, has been disclaimed.
Int. Cl.[4] G01M *3/32*
U.S. Cl. 73—49.2 11 Claims



1. A storage tank system for liquids having secondary containment capability and leakage detection capability, comprising:

(a) a rigid inner tank for storing the liquid, having fill pipe and dispensing line;

(b) a flexible jacket encasing the inner tank so as to form a closed space between the tank and the jacket;

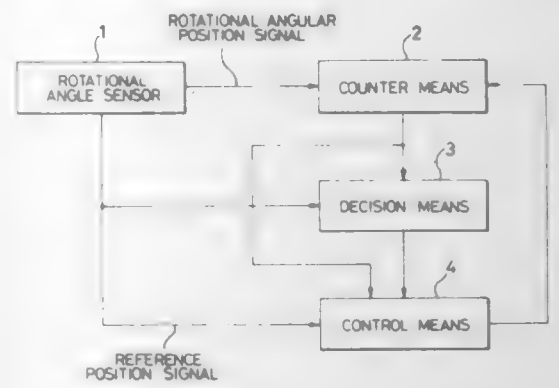
(c) a gas pervious material positioned between the rigid inner tank and the flexible jacket, said material capable of allowing any leaked liquid from the storage tank or water outside the flexible jacket to pass through it; and

(d) detecting means associated with the closed space occupied by the gas pervious material for detecting leakage into or from either of said tank and jacket.

4,607,523
CRANK ANGLE DETECTING APPARATUS FOR AN INTERNAL COMBUSTION ENGINE

Minoru Takahashi; Teruo Fukuda, both of Kobe; Toshiaki Isobe, Nagoya, and Mamoru Kobashi, Aichi, all of Japan, assignors to Fujitsu Ten Limited, Kobe and Toyota Jidosha Kabushiki Kaisha, Toyota, both of, Japan

Filed Sep. 17, 1985, Ser. No. 776,864
Claims priority, application Japan, Sep. 20, 1984, 59-197289; Dec. 29, 1984, 59-279922
Int. Cl.[4] G01M *15/00*
U.S. Cl. 73—116 3 Claims



1. A crank angle detecting apparatus for an internal combustion engine, comprising:

a crank angle sensor for generating a reference position signal at a reference position in each rotation of the internal combustion engine and a crank angle signal upon each rotation of the internal combustion engine through a fixed angle;

counter means for counting the crank angle signals generated by said crank angle sensor and, when its count value has reached a first set value, going to a second set value upon application of the next crank angle signal;

decision means for deciding whether the count value of said counter means changed from the first to the second set value prior to the generation of the reference position signal; and

control means for controlling said counter means so that when it is decided by said decision means that the count value of said counter means did not change from the first set value to the second set value prior to the generation of the reference position signal, said counter means is made to have the second set value under the conditions that said counter means is at the first set value and the reference position signal has been generated, said control means controlling said counter means so that when it is decided by said decision means that the count value of said counter means has changed from the first to the second set value prior to the generation of the reference position signal, said counter means is made to have the second set value at the time of generation of the reference position signal.

4,607,524
METHOD FOR OBTAINING A DIMENSIONLESS REPRESENTATION OF WELL PRESSURE DATA WITHOUT THE USE OF TYPE-CURVES

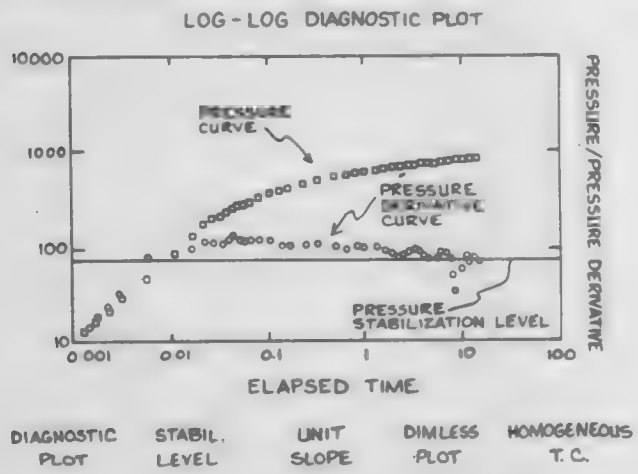
Alain C. Gringarten, Englewood, Colo., assignor to Scientific Software-Intercomp, Inc., Denver, Colo.

Filed Apr. 9, 1985, Ser. No. 721,197
Int. Cl.[4] E21B *49/00*
U.S. Cl. 73—152 14 Claims

1. In a process for finding underground formation characteristics, a method for determing pressure match and time match without the use of type-curves, comprising:

displaying a first graph that relates pressure and time;

displaying a second graph relating to the drivative of a pressure function;
selecting a pressure stabilization level using said second graph;
using the pressure stabilization level and a corresponding magnitude of a dimensionless function of pressure to determine pressure match;



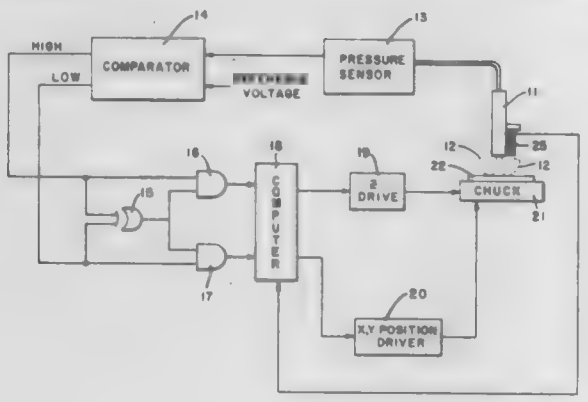
obtaining a time magnitude depending upon the pressure stabilization level and a slope associated with a portion of at least one of said first and second graphs; and
using said time magnitude and a corresponding magnitude of a dimensionless function of time to determine time match.

4,607,525

HEIGHT MEASURING SYSTEM

Michael D. Turner, San Jose, and Jacques Roch, Mountain View, both of Calif., assignors to General Signal Corporation, Stamford, Conn.

Filed Oct. 9, 1984, Ser. No. 659,210
Int. Cl.[4] G01B *13/16*; G01R *31/02*
U.S. Cl. 73—37.5 **11 Claims**



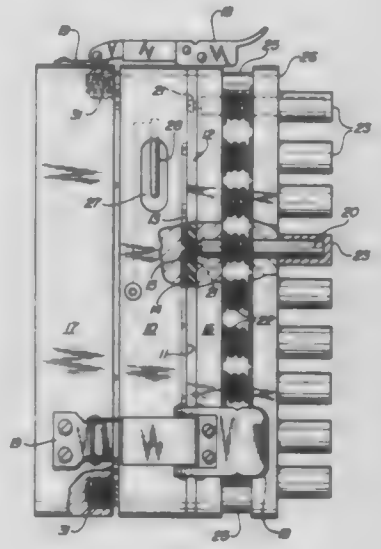
1. A system for determining the height of specific points on a wafer, and the approximate location of a plurality of dies, that comprise said wafer said system comprising:
(a) a chuck for holding a wafer containing a plurality of dies of various positions;
(b) a probe that senses differences in air pressure between specific points on the wafer and said probe;
(c) a comparator coupled to the output of said probe for comparing the height sensed by said probe to a reference level stored in said comparing means and determining whether or not said probe is at, above, or below said reference level;
(d) a computer coupled to the output of said comparator for determining the relative orientation of said probe and location of said dies; and
(e) means whose input is coupled to the output of said computer and whose output is coupled to the input of said chuck for moving said chuck to specified X, Y, Z locations so that said probe may sense different points on said wafer, and said computer will determine a mathematical approximation of the surface configuration of said wafer wherein the location of incomplete dies and/or one or more edges of said wafer may be determined by over driving said probe as said wafer is moved relative to said probe so that the edges of said wafer will be determined the moment said comparator indicates that said probe is below the reference level and said computer determines if there is a complete or incomplete die at that edge location.

4,607,526

PARTICLE ANALYSIS SYSTEM

Bernard O. Bachenheimer, Fairfield; Frank J. Antoci, Milford; Edward L. Carver, Jr., Naugatuck; Ernest N. Pellegrino, Bridgeport, and Richard C. Seltenreich, Shelton, all of Conn., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Filed Dec. 21, 1984, Ser. No. 684,833
Int. Cl.[4] G01N *15/10, 15/12*
U.S. Cl. 73—432 PS **7 Claims**



1. A system for particle analysis comprising:
(a) a face plate member that has a substantially rigid surface,
(b) a flexible sheet member that has a surface at least a part of which is adapted for mating engagement with a corresponding part of the face plate surface,
(c) a plurality of passages in at least one of the members,
(d) a plurality of valve lands, each of which separates at least two adjacent passages in a member, the lands having surfaces adapted for releasably mating with corresponding parts of the surface of the other member,
(e) a plurality of valve actuators, each associated with a valve land and adapted to flex the sheet member between a first position, in which the valve land of one member sealingly mates with the corresponding part of the surface of the other member, and a second position, in which the sheet member is spaced away from the first position to allow flow across the land associated therewith and between the adjacent passages that are separated therby when said sheet member is in said first position,
(f) in the face plate member, at least one analysis chamber in fluid communication with at least one passage,
(g) analysis means connected in sensing relation to each analysis chamber and adapted for analyzing particles in a fluid,
(h) pump means for pumping fluid through the system, and
(i) means for controlling the sequential operation of the valve actuators and pump means.

4,607,527

METHOD AND APPARATUS FOR SENSING ROTATION OF A DIAL ARM OF A UTILITY METER

Lawrence M. Sears, 3263 Glencairn Rd., Shaker Heights, Ohio 44122

Filed Dec. 19, 1983, Ser. No. 562,423
Int. Cl.[4] G01F *15/14*
U.S. Cl. 73—432 A **15 Claims**

1. Apparatus for detecting revolutions of a dial arm of a

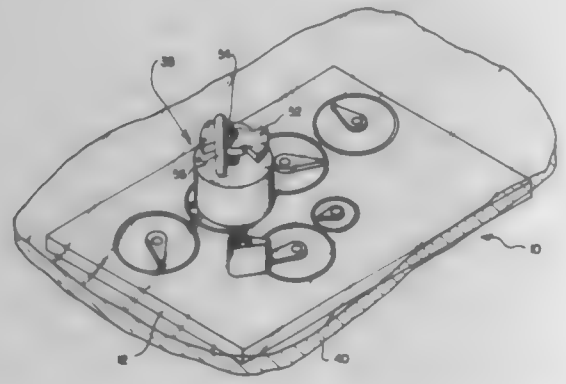
utility meter, said dial arm being located on a dial face of said meter and covered by a transparent face plate, said apparatus comprising:

a base affixable over a hole in said transparent face plate at a location close to but offset transversely from said dial arm,

a rotatable shaft having an axis of rotation and extending through said base, for rotation about said axis, and said hole in a direction substantially normal to said face plate,

a shoe joined to, and rotatable with, the portion of said shaft which extends beyond said base towards said dial face, said shoe being radially elongated,

resilient means for rotationally biasing said shaft in a first direction about said axis towards a first angular position relative to said base wherein said shoe projects into the path of rotation of said dial arm, whereby, as said dial arm rotates, it abuts said shoe, forces it to rotate in a second direction opposite to said first direction about said axis to a second angular position relative to said base, and then releases it, enabling the shoe to then return to said first



angular position under the resilient urging of said resilient means,

first switch means joined to, and rotatable with, the portion of said shaft which extends beyond said base and away from said dial face, said first switch means being rotated in said second direction from a third to a fourth angular position, respectively corresponding to said first and second angular positions, relative to said base by said shaft as said shoe is rotated from said first to said second angular position, and

second switch means attached to said base adjacent said first switch means such that as said first switch means rotates between said third and fourth angular positions it also moves relative to said second switch means,

one of said first and second switch means is a magnet and the other is a reed switch, said reed switch having switch open and switch closed states and changing between said open and closed states as said first switch means moves relative to said second switch means, due to changing proximity with said magnet.

4,607,528

METHOD OF DETERMINING A CLEAN PROPELLER PRESSURE SIGNAL FROM A PROPELLER/ENGINE EXHAUST COMBINED SIGNAL MEASURED IN FLIGHT WITH A MICROPHONE ARRANGED ON A PROPELLER-DRIVEN AIRCRAFT

Michael Kallergis, Braunschweig, Fed. Rep. of Germany, assignor to Deutsche Forschungs- und Versuchsanstalt fur Luft- und Raumfahrt e.V., Fed. Rep. of Germany

Filed Mar. 11, 1985, Ser. No. 710,055

Claims priority, application Fed. Rep. of Germany, Mar. 15, 1984, 3409487

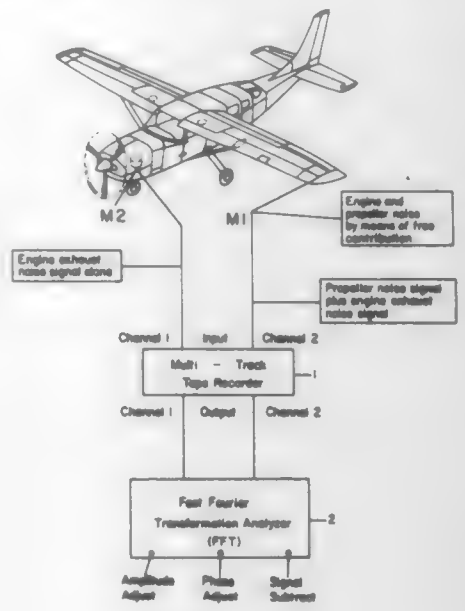
Int. Cl.⁴ G01N *29/00*

U.S. Cl. 73—602 **7 Claims**

1. A method of determining the propeller pressure signal of a propeller-driven aircraft powered by a four-stroke internal combustion engine comprising:

a. recording a combined propeller and exhaust signal from said aircraft during the flight of said aircraft, said combined signal consisting of a series of successive propeller signals and a series of successive combustion signals from individual cylinders of said engine;

b. simultaneously recording an exhaust signal from said aircraft, said exhaust signal consisting of a series of successive combustion signals from individual cylinders of said engine and being measured adjacent the exhaust pipe of said engine;



c. adjusting the amplitude of at least one of said combined signal and said exhaust signal so that the amplitude of said exhaust signal is substantially the same as the amplitude of the exhaust signal portion of said combined signal;

d. adjusting the phase of at least one of said combined signal and said exhaust signal so that said combined and exhaust signals are in phase with each other; and

e. thereafter subtracting said exhaust signal from said combined signal to determine said propeller pressure signal.

4,607,529

VIBRATION ANALYSIS

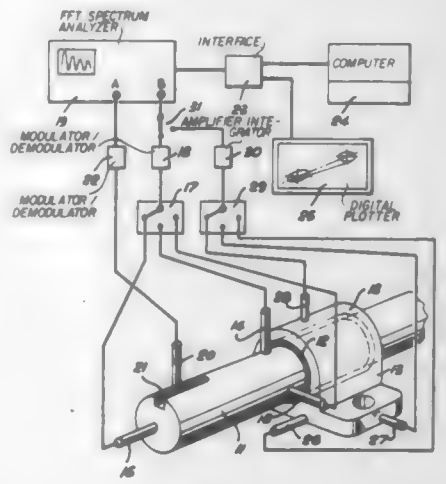
John Morey, 3 Pigeon Bank Lane, Warrandyte, Victoria 3134, Australia

Filed Mar. 18, 1985, Ser. No. 712,445

Claims priority, application Australia, Mar. 21, 1984, PG4171

Int. Cl.⁴ G01N *29/00*

U.S. Cl. 73—660 **16 Claims**



1. A method for measuring vibration in a machine including a member under periodic motion, said method comprising the steps of:

(a) selecting specific vibration harmonic components to be measured;

(b) generating by first sensor means a first signal that repeats every period of said motion to provide a reference to a known position on the member, a frequency domain transform of said first signal having known harmonic compo-

nent phase angles relative to said known position for all said selected harmonic components;

(c) generating by second sensor means a second signal which varies in the time domain with respect to a vibration characteristic of the machine;

(d) transforming the second signal into a frequency domain to derive a plurality of third (reconstruction magnitude) signals each indicative of the magnitude of one of the selected harmonic components of the transformed second signal, and synchronously transforming the first signal into the frequency domain to derive a fourth signal for each selected harmonic, each fourth signal being indicative of the phase angle difference between corresponding harmonic components of the transformed second signal and the transformed first signal; and

(e) storing said third signals and said fourth signals.

4,607,530

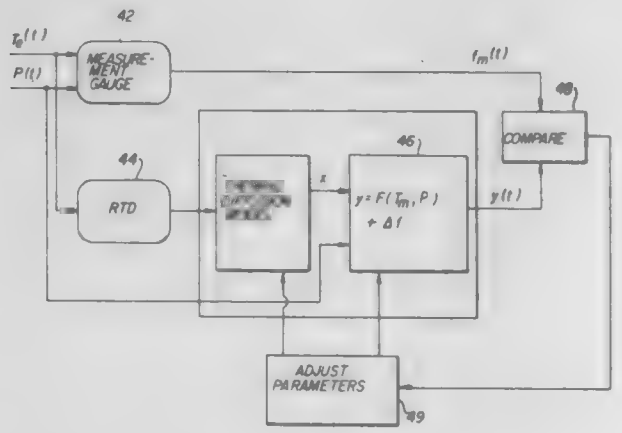
TEMPERATURE COMPENSATION FOR PRESSURE GAUGES

Edward Y. Chow, Danbury, Conn., assignor to Schlumberger Technology Corporation, New York, N.Y.

Filed Nov. 1, 1984, Ser. No. 667,249

Int. Cl.[4] G01L *19/04*

U.S. Cl. 73—708 **33 Claims**



1. A method for thermal compensation of the pressure determination of a pressure gauge, comprising:

(a) measuring the pressure of the surroundings of which a pressure determination is desired with said pressure gauge;

(b) measuring the temperature of the immediate environment of a resonator of said pressure gauge;

(c) inputting said temperature measurement and said pressure measurement into a dynamic system, wherein said dynamic system comprises a dynamic model of said resonator; and

(d) from said dynamic system, providing a thermally compensated pressure determination.

4,607,531

TORSIONAL-AXIAL EXTENSOMETER WITH ADDITIONAL RESTRAINT TO LIMIT UNNECESSARY MOVEMENTS

Harry R. Meline, Minnetonka, and Richard A. Meyer, Carver, both of Minn., assignors to MTS Systems Corporation, Eden Prairie, Minn.

Filed Jun. 8, 1984, Ser. No. 618,470

Int. Cl.[4] G01B *5/30*

U.S. Cl. 73—794 **13 Claims**

1. A support assembly for a pair of extensometer sections which measure torsional and axial strains on a specimen having a loading axis, comprising a rigid cross beam of length to span such a specimen;

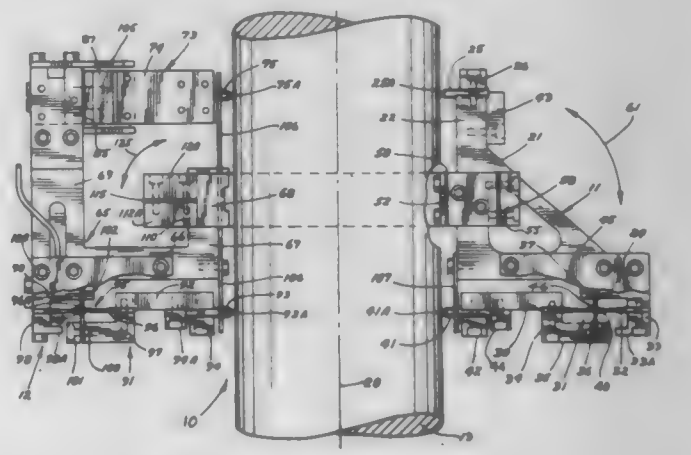
a first flexure assembly at a first end of said cross beam coupled to said cross beam and coupled to a first of said extensometer sections at a position adjacent the end of the first extensometer section closest to such specimen to be tested;

a second flexure assembly coupled to a second end of said cross beam and to a second of said extensometer sections at position adjacent the end of the second extensometer section closest to such specimen to be tested;

said flexure assemblies supporting the two extensometer sections substantially diametrically opposed when installed on such specimen, said extensometer sections each having individual specimen engaging points axially spaced from each other for movement with the surface portions of such specimen in a direction perpendicular to the loading axis;

said first and second flexure assemblies each including a separate pair of flexure beams spaced from each other and the beams of each flexure assembly being substantially coextensive and having their ends coupled to the respective ends of the rigid cross beam and to the first and second extensometer sections, respectively, to rigidly resist pivotal movement of the extensometer sections about a straight line between the points of contact of the respective extensometer section and such specimen;

said first flexure assembly comprising one flexure beam of its



pair having a width dimension substantially perpendicular to the one flexure beam longitudinal axis, said width dimension being substantially parallel to the specimen axis, and the one beam longitudinal axis being substantially perpendicular to the specimen axis, and said first flexure assembly further including another flexure beam of its pair having a width dimension generally perpendicular to its longitudinal length and such width dimension of the other flexure beam being substantially parallel to the specimen axis and spaced from the one beam of the pair, said beams of the first flexure assembly extending from the cross beam laterally to the specimen beyond the location where the first extensometer section contacts the specimen and being coupled to portions of the first extensometer section on an opposite side of said location from the rigid cross beam; and

the flexure beams of said second flexure assembly having width dimensions perpendicular to their respective longitudinal axes, the width dimensions of the flexure beams of said second flexure assembly being substantially perpendicular to each other.

4,607,532

APPARATUS FOR DETERMINING THE BEHAVIOR OF POWDERED MATERIAL UNDER STRESS

Jonathan R. F. Arthur, Sevenoaks, and Trebilcock Dunstan, Rickmansworth, both of England, assignors to University College London, London, England

Filed Apr. 25, 1985, Ser. No. 726,814

Claims priority, application United Kingdom, Apr. 27, 1984, 8410790

Int. Cl.[4] G01N *3/10*

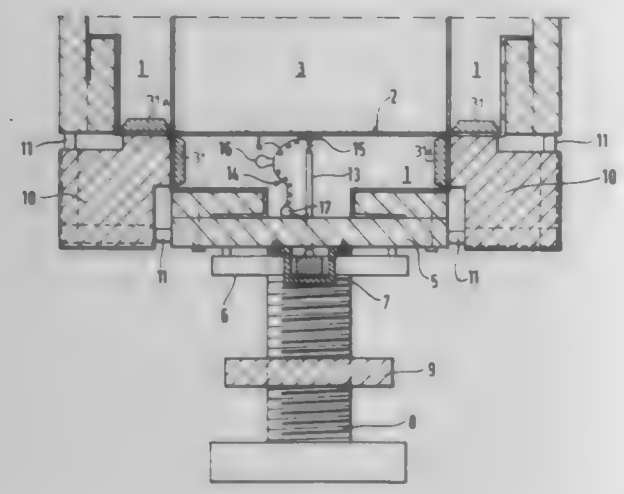
U.S. Cl. 73—819 **6 Claims**

1. An apparatus for determining the behaviour of powder or granular material under stress, comprising:

four flexible boundaries arranged to abut four faces of a cuboid sample of the powder or granular material;

means to apply stress to the sample through the flexible boundaries in two perpendicular directions;

adjusting members arranged at the lateral edges of the said faces and each operatively connected with two adjacent flexible boundaries; and



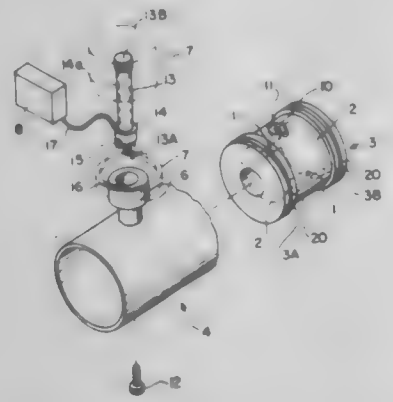
control means to adjust the said adjusting members whereby adjustment of each said member adjusts the two said adjacent flexible boundaries to allow them to strain as the sample strains under the applied stress.

4,607,533

ELECTROMAGNETIC FLOWMETER

Masato Kuroda; Yoshiro Tanaka, and Norikazu Wada, all of Kanagawa, Japan, assignors to Yamatake-Honeywell, Tokyo, Japan

Filed Apr. 17, 1985, Ser. No. 724,371
Int. Cl.⁴ G01F *1/58*
U.S. Cl. 73—861.12 **8 Claims**



1. An electromagnetic flowmeter comprising

electrical connector means having a first portion and a second portion separable from said first portion and arranged to mate with said first portion to provide separate electrically conductive paths through said connector means,

a cylindrical inner tube including an electrode, an excitation coil and said first portion of said connector means, said first portion being located on an outer circumferential surface of said tube and electrically connected to said electrode and said coil,

an outer tube housing said inner tube along its axis, and having an access opening extending transversely through said outer tube housing, and

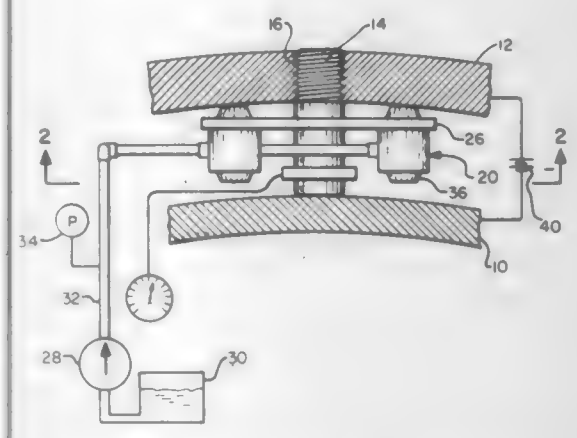
an electrical connector support means externally inserted through said access opening in said outer tube for supporting said second portion of connector means to selectively mate with said first portion of said connector means.

4,607,534

COMPRESSION PIN LOAD TESTER

Adam C. Cerbone, Windsor, Conn., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed May 28, 1985, Ser. No. 737,839
Int. Cl.⁴ G01L *1/02, 5/00*
U.S. Cl. 73—862.01 **2 Claims**



1. A method of determining the compressive loading on a compression support pin, secured to a base and compressively loading a load member, comprising;

placing a hydraulic jack between said base and said load, in parallel and adjacent to said support pin;

passing an electric current from said load to said base through said support pin;

detecting flow of electric current through said support pin;

introducing hydraulic fluid into said hydraulic jack at increasing pressure;

sensing the pressure of fluid present within said hydraulic jack; and

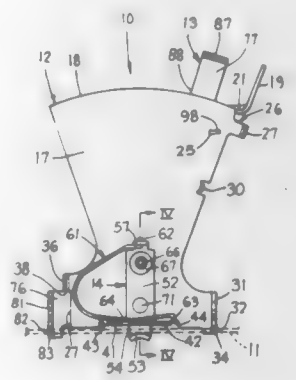
determining the pressure of the hydraulic fluid when the current flow ceases through said support pin, whereby the force required to release load from said pin may be determined.

4,607,535

GAUGE FOR MEASURING THE TENSION IN AN ELONGATE ELEMENT

James A. Okamuro, Kalamazoo, Mich., assignor to Borroughs Tool & Equipment Corporation, Kalamazoo, Mich.

Filed Apr. 25, 1985, Ser. No. 726,857
Int. Cl.⁴ G01L *5/06*
U.S. Cl. 73—862.47 **17 Claims**



1. A gauge for measuring the tension on an elongate flexible element, comprising:

frame having means defining spaced first and second element engaging surfaces which are stationarily supported on said frame, face in a first direction, are approximately coplanar, and are each adapted to engage one side of the element;

a tensioning member reciprocally movably supported on said frame and having thereon a third element engaging surface which is spaced from said second element engaging surface on a side thereof remote from said first element

engaging surface, faces in said first direction, and is adapted to engage the same side of the elongate element as said first and second element engaging surfaces, movement of said tensioning member relative to said frame causing said third element engaging surface to move in directions approximately parallel to said first direction between first and second positions, said third element engaging surface being approximately coplanar with said first and second element engaging surfaces in said second position, and said third element engaging surface moving from its second position to its first position in said first direction;

holding means for releasably and firmly holding the elongate element against said second element engaging surface;

first resilient means yieldably urging movement of said tensioning member in a direction corresponding to movement of said third element engaging surface from its second position to its first position; and

indicator means responsive to said movement of said tensioning member for indicating the distance between said third element engaging surface and said second position thereof, such distance being proportional to the tension in the element.

4,607,536

APPARATUS FOR SAMPLING SIMILAR LAMINAR ARTICLES

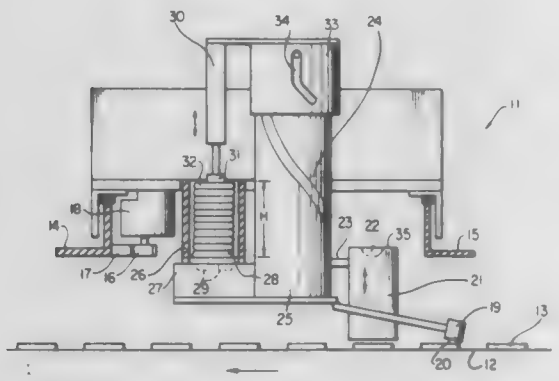
Robert Lawson, Little Chalfont; Malcolm J. Mason, and Peter I. Maris, both of St. Albans, all of United Kingdom, assignors to Baker Perkins Holdings PLC, England

Filed Feb. 7, 1984, Ser. No. 577,793

Claims priority, application United Kingdom, Feb. 11, 1983, 8303770

Int. Cl.⁴ B65G *60/00*; G01N *1/04*

U.S. Cl. 73—863.91 **9 Claims**



1. Apparatus for sampling similar laminar articles being transported on a moving conveyor, comprising:

detection means for detecting the locations of a series of said articles being transported on said conveyor past said detection means and generating corresponding detection signals thereby;

article transferring means, cooperating with said detection means, for pick up of said detected articles one at a time at a predetermined rate from said conveyor, for subsequent transfer thereof to a predetermined location;

a collection means at said location, cooperating with said article transferring means, for collecting a predetermined number of said picked up articles transferred thereto by said article transferring means:

collection controlling means, cooperating with said collection means, for periodically returning to said conveyor one of said articles previously transferred thereto in response to the subsequent transfer of each additional article, to control to said predetermined number the articles present at said collection means;

a property measuring means for periodically determining the magnitude of a property of said predetermined number of said articles collected at said collection means and generating a corresponding property measurement signal thereby; and

signal processing means for processing said detection signals and said property measurement signals, respectively, and thereby providing a data output signal representing the magnitude of said property of a predetermined number of said articles.

4,607,537

PUSHBUTTON TUNER

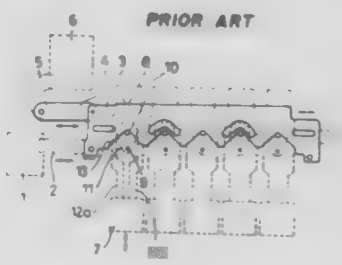
Takao Chaki, Tokyo, Japan, assignor to Clarion Co., Ltd., Tokyo, Japan

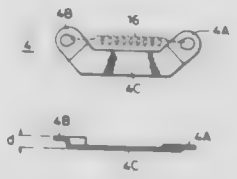
Filed Jan. 9, 1984, Ser. No. 569,506

Claims priority, application Japan, Jan. 12, 1983, 58-2295[U]; Jan. 12, 1983, 58-2297[U]

Int. Cl.⁴ H03J *5/12*

U.S. Cl. 74—10.33 **3 Claims**





1. A pushbutton tuner which comprises:

a memory slide plate mounted for transverse displacement in response to a tuning operation;

a change lever responsive to said memory slide plate to actuate a tuning circuit element;

first and second pivoting means affixed to said memory slide plate and said change lever respectively; and

a generally planar connector member having a strap-shaped central portion and generally planar first and second ends thereof configured to pivotally engage said first and second pivoting means respectively, said ends of said connector member being disposed to diverge away from the axis of said central portion to engage said pivoting means on a common side of said axis, the planes of said end portions being disposed displaced from the plane of said central portion, parallel thereto, and offset on a common side therefrom.

4,607,538

ANGULAR TORQUE TRANSMISSION MECHANISM

Hubert Geisthoff, Lohmar, Fed. Rep. of Germany, assignor to Jean Walterscheid GmbH, Lohmar/Rhld., Fed. Rep. of Germany

Filed Aug. 8, 1984, Ser. No. 638,744

Claims priority, application Fed. Rep. of Germany, Aug. 23, 1983, 3330311

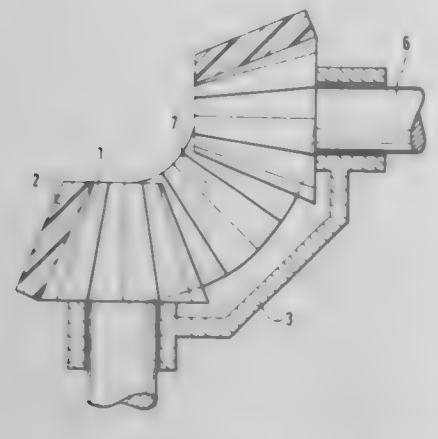
Int. Cl.⁴ F16H *1/14, 1/20, 55/17, 7/00*

U.S. Cl. 74—417 **6 Claims**

1. An angular transmission mechanism for transmitting torque between two axles arranged at an angle relative to each other, particularly for use in agricultural applications and consisting of two bevel gears provided with teeth, comprising:

an elastic toothed belt embracing said bevel gears, said

toothed belt having a surface area which, in an untensioned condition of said belt, is shaped in the form of a



truncated cone, said belt having teeth which corresponds to the teeth of said bevel gears.

4,607,539

STEERING WHEEL ASSEMBLY WITH NON-ROTATABLE CENTER HUB

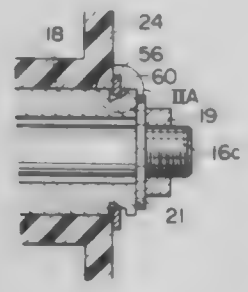
Sumitsugu Arima, Yokosuka; Hiroshi Tsuda, and Hideyuki Nagashima, both of Yokohama, all of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Aug. 13, 1984, Ser. No. 640,138

Claims priority, application Japan, Aug. 17, 1983, 58-126937[U]

Int. Cl.⁴ B62D *1/04, 1/16*

U.S. Cl. 74—492 7 Claims



1. A steering wheel assembly with a non-rotatable center hub, comprising:

a steering shaft to which a steering wheel is connected to rotate therewith;

a tubular holder coaxially disposed on said steering shaft and secured thereto to rotate therewith;

an annular member concentrically disposed about said tubular holder and rotatable relative thereto, said annular member carrying thereon said non-rotatable center hub;

first means for restricting the axial movement of said annular member in one direction relative to said tubular holder;

second means for restricting the axial movement of said annular member in the other direction relative to said tubular holder; and

third means for holding said annular member stationary relative to said tubular holder even when said steering shaft and thus said tubular holder are rotated,

wherein one of said first and second means comprises an annular groove formed about said tubular holder, the rounded bottom surface of said annular groove being tapered toward the other of said first and second means, and a snap ring coaxially disposed in said annular groove with its inner wall contacting with the tapered bottom surface of said annular groove and its inboard side surface slidably contacting with an axial end surface of said annular member.

4,607,540

ADJUSTABLE AUTOMOTIVE STEERING COLUMN WITH ADJUSTABLE TILT AND TOP-POSITION LOCK

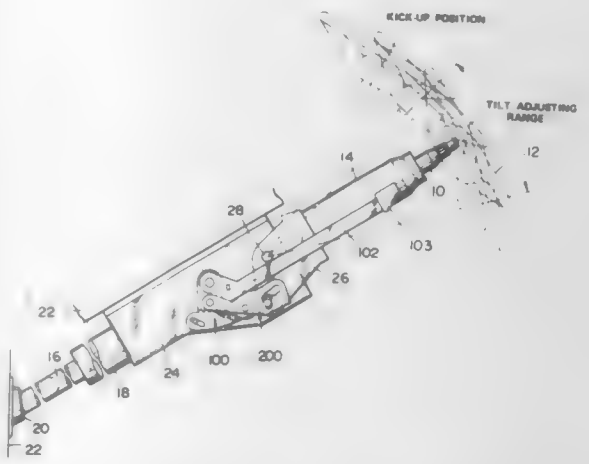
Satoshi Kinoshita, and Yoshimi Yamamoto, both of Shizuoka, Japan, assignors to Fuji Kiko Company, Limited, Tokyo, Japan

Filed Oct. 11, 1984, Ser. No. 659,765

Claims priority, application Japan, Oct. 19, 1983, 58-195848

Int. Cl.⁴ B62D *1/18*

U.S. Cl. 74—493 10 Claims



1. An adjustable tilt steering column comprising:

a steering column receiving a steering shaft with a steering wheel attached to its free end, said steering column including a first stationary component and a second movable component which is pivotable with said steering shaft for allowing tilt adjustment of the steering shaft relative to said first component;

a first locking means associated with said steering column for locking said second component of said steering column at a selected angular position, said angular position being variable between a first upper and a second lower extremes;

second means allowing said second component to move upwardly beyond said first extreme to a third uppermost position;

a third locking means associated with said second means and responsive to operation of the latter to lock said second component at said third uppermost position;

a fourth means for recording said selected angular position during operation of said second and third means; and

a manually operable device for selectably disabling said first means to allow adjustment of said angular position to set a driving position within an adjusting range defined by said first and second extremes, for selectably activating said second means to move said second component to said uppermost position and locking the second component at said uppermost position by means of said third means, and for selectably disabling said third locking means to allow downward movement of said second component within said adjusting range to said set driving position.

4,607,541

AUTOMATIC TRANSMISSION

Masakatsu Miura, Kariya, and Takeshi Inuzuka, Anjo, both of Japan, assignors to Aisin-Warner Kabushiki Kaisha, Anjo, Japan

Continuation of Ser. No. 380,958, May 21, 1982, abandoned. This application Mar. 21, 1985, Ser. No. 714,699

Claims priority, application Japan, May 29, 1981, 56-83087

Int. Cl.⁴ F16H *57/10*

U.S. Cl. 74—758 11 Claims

1. An automatic transmission with four forward speeds and one reverse position, comprising:

an input shaft (7);

an output member (91);

first and second planetary gear sets (23), (24) each having a sun gear, a ring gear and a carrier supporting a pinion in mesh with the sun gear and ring gear;

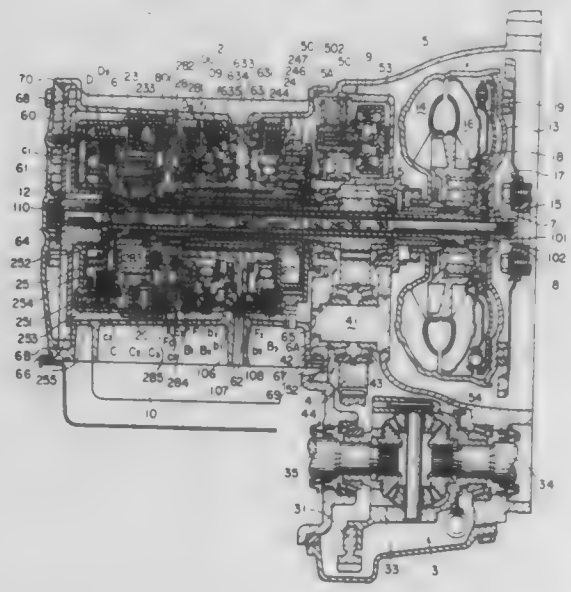
the carrier (232) of said first gear set (23), the ring gear (242) of said second gear set (24) and said output member (91) all being connected;

the ring gear (233) of said first gear set (23) connected to the carrier (241) of said second gear set (24);

a first clutch means (C1) for selectively connecting said input shaft to the sun gear of said first gear set (23), including friction elements, a piston (254) selectively engaging said friction elements and a fluid servo in which hydraulic fluid is selectively supplied to said piston;

a second clutch means (C3) for selectively connecting said input shaft (7) to the sun gear of said second gear set (24),

a third clutch means (C2) for selectively connecting said



input shaft (7) to the carrier (241) of said second gear set (24), including friction elements, a piston (255) selectively engaging said friction elements and a fluid servo in which hydraulic fluid is selectively supplied to said piston;

a first drive-establishing means for selectively preventing rotation of the ring gear of said first gear set and the carrier of said second gear set in only one direction and, alternatively, in any direction;

a second drive-establishing means for selectively preventing rotation of the sun gear of said second gear set; and

a drum (D1), (D2) being open to said first planetary gear set, with a cylindrical intermediate wall (251), an inner peripheral wall (252) and outer peripheral wall (253), and forming the hydraulic servos of said first and third clutch means (C1), (C2) between said intermediate wall and said inner peripheral wall and between said intermediate wall and said outer peripheral wall respectively.

4,607,542

HYDRAULIC CONTROL SYSTEM FOR AUTOMATIC TRANSMISSION WITH SHOCKLESS 4-3 AND 4-2 SHIFTINGS

Kazuhiko Sugano, Zama, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Feb. 17, 1984, Ser. No. 581,509

Claims priority, application Japan, Feb. 25, 1983, 58-29386

Int. Cl.⁴ B60K *41/08*; F16H *57/10*

U.S. Cl. 74—869 **4 Claims**

1. A hydraulic control system for an automatic transmission which is shiftable into an nth speed ratio, an n+1st speed ratio and an n+2nd speed ratio, the automatic transmission including a first friction unit and a second friction unit, the first friction unit being engaged and the second friction unit being released during operation with the nth speed ratio, the first and second friction units being engaged during operation with the n+1st speed ratio, the first friction unit being released and the second friction unit being engaged during operation with the n+2nd speed ratio,

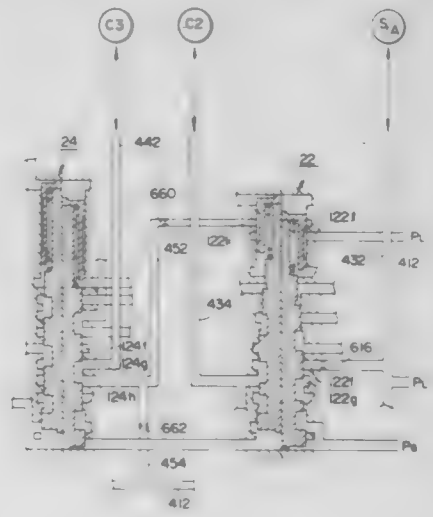
the hydraulic control system comprising:

means for generating an actuating fluid pressure;

a first shift valve having a valve element movable between a downshift position thereof and an upshift position thereof, said valve element of said first shift valve assuming the downshift position thereof during operation with the nth speed ratio, said valve element of said first shift valve assuming the upshift position thereof during operation with the n+1st speed ratio and the n+2nd speed ratio;

a second shift valve having a downshift position thereof and an upshift position thereof, said second shift valve assuming the downshift position thereof during operation of the nth speed ratio and the n+1st speed ratio, said second shift valve assuming the upshift position thereof during operation of the n+2nd speed ratio;

said second shift valve having a first port and a second port, said first port being allowed to communicate with said second port when said second shift valve assumes the



downshift position thereof, said first port communicating with the first friction unit;

means for defining a first fluid supply passage having one end communicating with said second port and an opposite end communicating with said actuating fluid pressure generating means;

a first orifice device fluidly disposed in said first fluid supply passage;

means responsive to movement of said valve element of said first shift valve for establishing a second fluid supply passage having one end communicating with said second port and an opposite end communicating with said actuating fluid pressure generating means when said valve element of said first shift valve assumes the upshift position thereof, and blocking said second fluid supply passage when said valve element of said first shift valve assumes the downshift position thereof; and

a second orifice device fluidly disposed in said second fluid supply passage.

4,607,543

DIGITAL BOTTLE OPENER

Frederick Mah, 78 LaRonde Ave., Sault Ste. Marie, Ontario, Canada

Filed Apr. 1, 1985, Ser. No. 718,449

Int. Cl.⁴ B67B *7/44*, *7/16*

U.S. Cl. 81—3.09 **14 Claims**

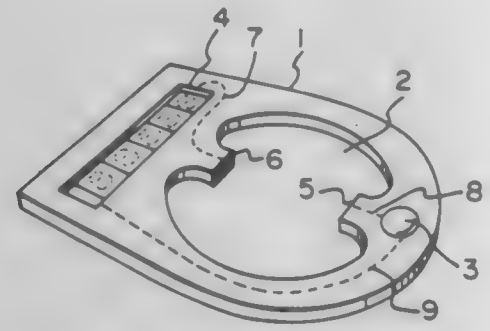
1. A bottle opener with counter comprising:

a body adapted to be hand-held by a user;

bottle-cap engaging means integral with said body adjacent one end thereof and adapted to remove the cap from a bottle when appropriate leverage is applied to said body;

counter means in said body; and

counter actuating means operatively associated with said bottle-cap engaging means and operable to increase the



count recorded by said counter means each time leverage is applied to said body in removing a cap from a bottle.

4,607,544

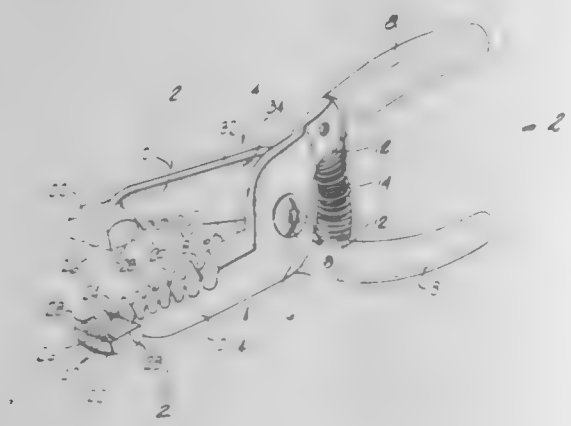
TOOL FOR CUTTING, STRIPPING AND CONNECTING ELECTRIC WIRE

Robert M. Jewell, Jr., 3221 S. Fillmore, Denver, Colo. 80210

Filed May 6, 1985, Ser. No. 730,548

Int. Cl.[4] H02G *1/12*

U.S. Cl. 81—9.4 **4 Claims**



1. A tool capable of use in the cutting, stripping and twisting of electric wire having an electrically conducting core surrounded by electrical insulating material comprising:

at least two members;

pivot means for pivotally joining said at least two members together so as to form two handles on one side of said pivot means and two extensions on the other side of said pivot means so that said at least two members can be moved to an opened or a closed relationship;

each of said extensions terminating in a jaw;

each of said jaws having a gripping surface facing each other;

an elongated portion on each of said extensions located between each of said jaws and said pivot means;

each of said elongated portions having a length, a width and a thickness wherein said length is greater than said width and said with is greater than said thickness;

each of said elongated portions having a planar surface extending in a widthwise direction so that said planar surfaces are in parallel relationship;

a linear cutting edge on each of said planar surfaces;

a plurality of semicircular cutting edges of different diameters spaced apart in a lengthwise direction in each of said planar surfaces so as to form a plurality of circular cutting edges of different diameters when said at least two members are moved toward a closed relationship;

each of said jaws having a length, a width and a thickness in directions corresponding to said length, said width and said thickness of each of said elongated portions; and

said thickness of each of said jaws being substantially greater than said thickness of each of said elongated portions so that the ends of at least two stripped electric wires may be readily grasped and twisted with the longitudinal axis of the tool parallel to the longitudinal axes of said at least two stripped electric wires.

4,607,545

ARRANGEMENT FOR STRIPPING SOLID AND STRANDED WIRES

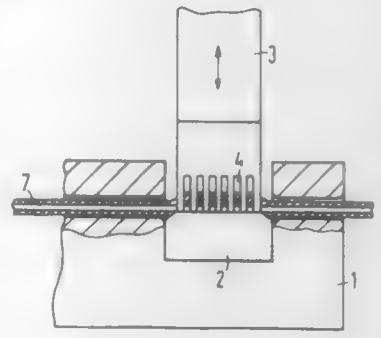
Karl Eidling, Egling, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Oct. 4, 1985, Ser. No. 784,026

Claims priority, application Fed. Rep. of Germany, Nov. 2, 1984, 3440170

Int. Cl.[4] H02G *1/12*

U.S. Cl. 81—9.51 **3 Claims**



1. An arrangement for the stripping of thermoplastic insulated solid and stranded wires partially as well as at the ends, the arrangement comprising a comb-like melting arbor and a heated platen, the comb-like melting arbor adapted to be moveable toward the wire and equipped with a transverse groove of a size equal to the wire diameter is positioned above a uniformly heated platen having low heat conductivity, the heated platen serving as part of a wire guide, and mechanical means for pressing the arbor upon the wire with a predetermined force while it is briefly heated.

4,607,546

POWER WRENCH

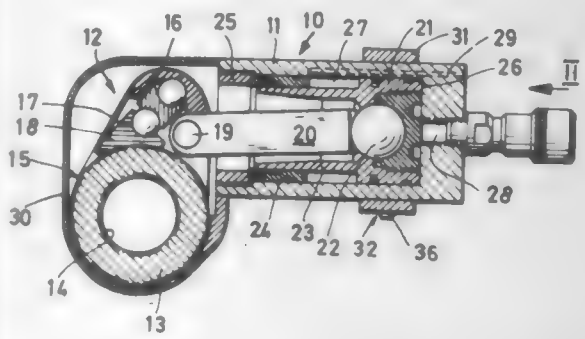
Paul-Heinz Wagner, Haus Nr. 70, D-5203 Much-Birrenbachshöhe, Fed. Rep. of Germany

Filed Jul. 9, 1984, Ser. No. 629,235

Claims priority, application Fed. Rep. of Germany, Jul. 8, 1983, 8319734[U]

Int. Cl.[4] B25B *13/46*

U.S. Cl. 81—57.39 **21 Claims**



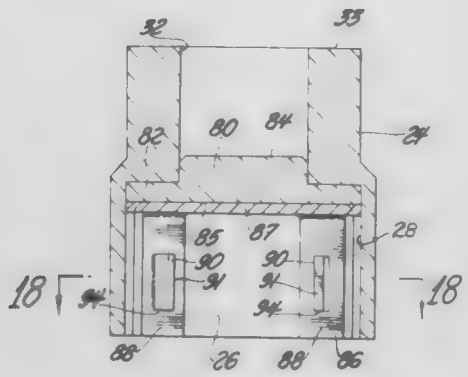
1. A power wrench comprising driving unit means for driving a wrench head, a hollow casing for internally housing said driving unit means, a support foot carried non-rotatably by said casing for offsetting reaction forces created by said driving unit means, a pressure member, and means for defining a spherical ball and socket connection between said pressure member and said support foot whereby said pressure member automatically assumes a position in total contact with a support surface to avoid local peak stresses during the operation of said power wrench, said casing includes a polygonal peripheral profile, and said support foot includes means having a profile for slidable nonrotatable locking engagement with and removal from said casing peripheral profile.

4,607,547

STRIPPED HEX HEAD DRIVE SOCKET

Donald G. Martus, 38235 Hazel Rd., Mt. Clemens, Mich. 48045

Filed Feb. 6, 1985, Ser. No. 698,970
Int. Cl.[4] B25B *13/50*; B25F *1/00*
U.S. Cl. 81—53.2 3 Claims



1. In association with a gripper mechanism for the head of a bolt, wherein the bolt head has an end face, and a series of external flat side faces and interconnecting side corners, and said gripper mechanism comprises socket wall means that forms a socket sized to fit on the bolt head; said socket wall means comprising internal flat surfaces and interconnecting internal corners; said internal flat surfaces being equidistantly spaced from the socket axis, and said internal flat surfaces being sized to closely parallel the flat side faces on the bolt head to thereby exert turning forces thereon:

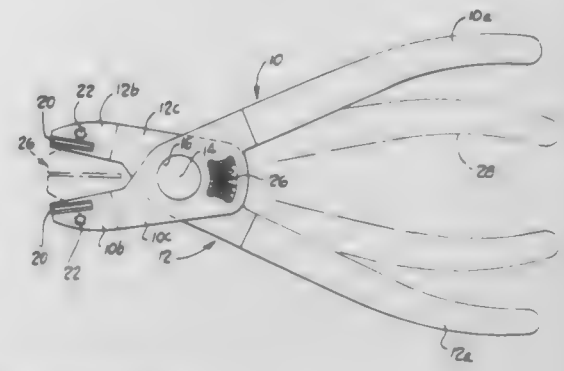
the improvement comprising means forming at least two cutter ribs projecting inwardly from the socket wall means toward the socket axis; the spacing between the innermost edges of the cutter ribs and the socket axis being less than the corresponding spacing between the external surfaces of the bolt head and the bolt axis whereby when the gripper mechanism is positioned on the bolt head, the ribs will overlie the end face of the bolt head; said ribs being spaced and oriented so that a hammering force on the gripper mechanism causes the ribs to penetrate into the bolt head and form grooves therein; the inter-engagements between the ribs and groove surfaces being such that the gripper mechanism is enabled to exert a turning force on the bolt head even though the aforementioned corners had previously worn away; each cutter rib having an axial length that is almost as great as the axial dimension of the bolt head, whereby the ribs have extensive area contact with the head matter; said rib-forming means being comprised of an insert member formed separately from the socket wall means, said insert member being snugly fittable into the socket, said insert member being removable from the gripper mechanism, whereby the gripper mechanism can be utilized without the insert member; said insert member including an end plate and a plural member of rib walls extending at right angles to said plate, said plate having the same configuration as the outline configuration of the socket whereby when the insert member is inserted into the socket, the plate prevents said insert member from rotating in the gripper mechanism; said insert member having an axial length dimension slightly less than the corresponding dimension of the associated socket so that the ends of the cutter ribs are slightly recessed from an external end surface of the socket wall means, whereby the socket wall means can be centered on the bolt head prior to application of a hammering force on the gripper mechanism.

4,607,548

PLIERS

J. Edward C. Anderson, Moreland Hills, Ohio, assignor to Milbar Corporation, Chagrin Falls, Ohio

Filed May 2, 1985, Ser. No. 729,990
Int. Cl.[4] B25B *7/02*
U.S. Cl. 81—427 13 Claims



1. Pliers comprising:

(a) a pair of pivotally connected members;

(b) each member defining a handle portion, a jaw portion and a web portion joining said jaw portion to said handle portion;

(c) structure defining a pivot in the web portions of each member;

(d) said web portions defining associated slots, mutually alignable when the members are in a predetermined relative position;

(e) each slot defining a spring seat including a tongue extending towards an intermediate region of said slot;

(f) said slot further including a spring abutment defined by an edge spaced from said tongue, said spring abutment located in spaced confronting relation with said spring seat;

(g) said slots being in an inverted relationship with respect to each other when said members are pivotally connected such that said spring seats move towards or away from each other, in spaced, but substantially parallel, rotational planes when said handle portions are moved relative to each other;

(h) a compression spring captured in said slots, one end of said spring engaging the tongue of one member, another end of said spring concurrently engaging the tongue of the other member and the spring abutment of the one member, when the members are in a predetermined position.

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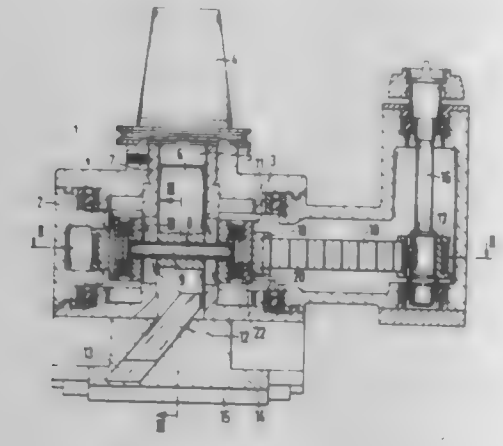
EXCHANGEABLE TURNING HEAD, PARTICULARLY A FACE TURNING HEAD

Fritz Krempel, Epfendorf, Fed. Rep. of Germany, assignor to Mauser-Werke Oberndorf GmbH, Fed. Rep. of Germany

Filed May 2, 1984, Ser. No. 606,371
Claims priority, application Fed. Rep. of Germany, May 7, 1983, 3316867
Int. Cl.[4] B23B *29/034*
U.S. Cl. 82—2 E 6 Claims

1. A turning head, particularly a face turning head for a spindle of a machine tool, comprising a housing, a rotating part having an axis and rotatably mounted to said housing, said rotating part including a setting rod receiving bore and being axially fixed to said housing, a setting rod movable in said bore in axial directions, a tool slide movably mounted to one axial end of said rotating part, said rotating part having a slideway extending transversely to the axis of said rotating part, said tool slide being movable in said slideway and having a keyway extending at an angle to the axis of said rotating part, said setting rod having a jib key part extending into said keyway and moving said slide upon axial motion of said setting rod, a conical intermediate piece fixed to and extending from an opposite axial end of said rotating part, said intermediate piece

being axially aligned with the axis of said rotating part, a drive shaft extending substantially parallel to and being radially spaced from the axis of said rotating part, said drive shaft being mounted for rotation to said housing, an inner bearing shell fixed to said setting rod for axial and rotational motion therewith, said inner bearing shell being rotatably fixed to said rotating part for co-rotation with said rotating part and being axially movable with respect to said rotating part, an outer bearing shell rotatably mounted and axially fixed to said inner bearing shell, said outer bearing shell being rotatable with respect to said setting rod, means engaged between said outer bearing shell and said housing for rotationally fixing said outer



bearing shell to said housing while permitting axial motion of said outer bearing shell with respect to said housing, transmission means connected between said drive shaft and said outer bearing shell for moving said outer bearing shell axially and independently of said rotating part and for transmitting rotation of said driving shaft into axial motion of said outer bearing shell and thus of said setting rod, a block mass movably connected to said rotating part near said one axial end thereof, and means connected to said block mass and said tool slide to shift said block mass in respect of opposite directions to said slide for counterbalancing centrifugal forces during rotation of said rotating part.

4,607,550

TURNING MACHINE FOR MACHINING CRANKSHAFTS

Hermann Berbalk, Göppingen, Fed. Rep. of Germany, assignor to Oerlikon-Boehringer GmbH, Göppingen, Fed. Rep. of Germany

PCT No. PCT/EP83/00010, § 371 Date Sep. 16, 1983, § 102(e) Date Sep. 16, 1983, PCT Pub. No. WO83/02411, PCT Pub. Date Jul. 21, 1983

PCT Filed Jan. 18, 1983, Ser. No. 537,409

Claims priority, application Fed. Rep. of Germany, Jan. 18, 1982, 3201320

Int. Cl.⁴ B23C *3/06, 5/18*

U.S. Cl. 82—9 **10 Claims**

1. A milling head drive for a crankshaft milling machine comprising:

(A) a housing;

(B) an external cam rotatably mounted in said housing;

(C) an internal cam rotatably mounted in said housing and located within said external cam;

(D) an eccentric wheel carried in said internal cam for milling a crankshaft;

(E) motor means mounted on said housing;

(F) coupling means connected to said motor means for coupling said motor means to said cams, said coupling means including

(1) an external shaft rotatably mounted in said housing and connected to said internal cam,

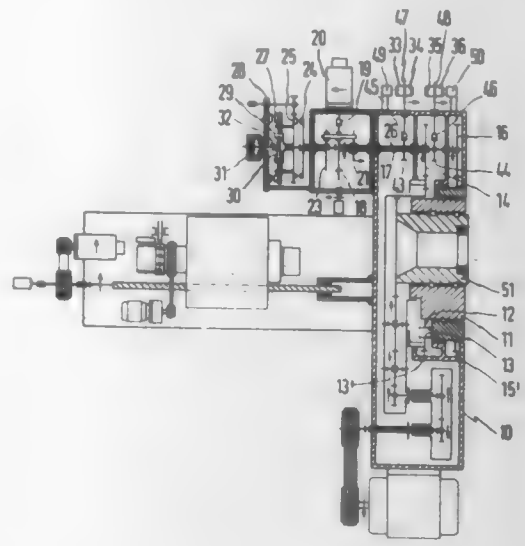
(2) a coupling gear fixedly mounted on said external shaft and connected to said motor means for rotating said external shaft,

(3) a clutch sleeve mounted on said external shaft to be movable axially of said external shaft and having a bolt fixed thereto and extending through said coupling gear for transmitting rotation of said motor means,

(4) moving means mounted on said housing for moving said clutch sleeve axially of said external shaft,

(5) an internal shaft rotatably mounted in said housing and connected to said external cam,

(6) a driver means mounted on said internal shaft and having a face surface facing said bolt to be contacted by said bolt when said clutch sleeve is moved axially of said external shaft toward said driver means, said face surface having an opening defined therein at a prese-



lected location and a ramp means associated with said opening for connecting said face surface with said opening, said driver means including an abutment wall defining one wall of said opening, and

(7) said moving means moving said bolt into contact with said face surface to engage said abutment wall when said preselected location is adjacent to said bolt for coupling said internal and external cams together via said external shaft, said clutch sleeve, said bolt, said driver means abutment wall and said internal shaft and coupling said cams to said motor means via said coupling gear and said bolt.

4,607,551

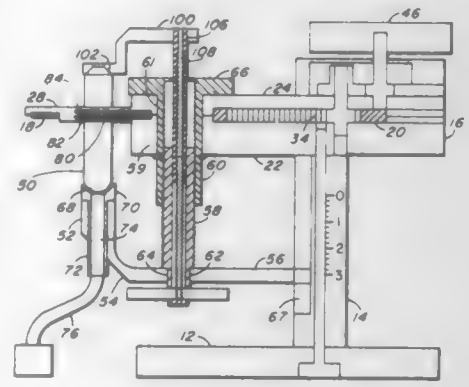
CENTRIFUGE TUBE-CUTTING APPARATUS AND METHOD

Herschel E. Wright, Santa Clara; Robert C. Wedemeyer, San Francisco, and Robert H. Giebeler, Jr., Sunnyvale, all of Calif., assignors to Beckman Instruments, Inc., Fullerton, Calif.

Filed Aug. 30, 1984, Ser. No. 646,280

Int. Cl.⁴ B26D *3/16*

U.S. Cl. 83—54 **12 Claims**



8. A method of sectioning a tube, which contains layered materials after centrifugation, comprising:

holding the tube between spaced tube-holding members which exert an axial compressive force on the tube;

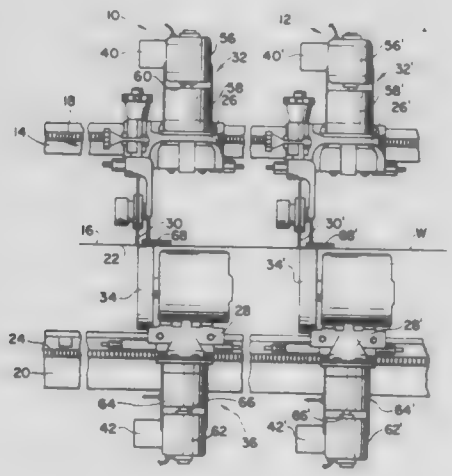
causing a blade to engage the tube in a direction intersecting the tube axis;
supporting the tube and blade on the same supporting structure;
adjusting the relative positions of the tube and blade to select the desired level of separation of materials; and
causing relative movement of the blade and tube in order to cut through the tube at the selected level;
using the axial compressive force on the tube to seal the separated tube sections to the upper and lower surfaces of the blade.

4,607,552

APPARATUS FOR AUTOMATICALLY CONTROLLING THE POSITION OF A PLURALITY OF SLITTERS

Steven J. Siler, Beloit, Wis., assignor to Beloit Corporation, Beloit, Wis.

Continuation-in-part of Ser. No. 593,688, Mar. 26, 1984, abandoned, which is a continuation of Ser. No. 443,573, Nov. 22, 1982, abandoned, which is a continuation of Ser. No. 208,520, Nov. 20, 1980, abandoned. This application Aug. 8, 1985, Ser. No. 763,850
Int. Cl.⁴ B26D *5/00*
U.S. Cl. 83—71 **9 Claims**



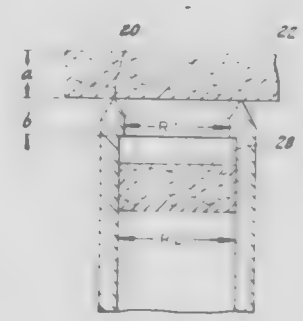
1. An apparatus for automatically controlling the position of a plurality of slitters for slitting a moving web, said apparatus comprising in combination:
a first rail disposed adjacent to a first face of the web, said first rail defining a first indexing rack;
a second rail disposed adjacent to a second face of the web such that said first and second rails are disposed on opposite sides of the web, said second rail defining a second indexing rack;
a first housing member movably connected to said first rail such that said first housing member moves transversely relative to the web along said first indexing rack;
a second housing member movably connected to said second rail such that said second housing member moves transversely relative to the web along said second indexing rack;
a slitter blade rotatably secured to said first housing member for slitting the moving web during movement of the web between said slitter blade and said second housing member;
a first driving means secured to said first housing member for driving said first housing member and said slitter blade transversely relative to the web;
a slitter band secured to said second housing member for cooperating with said slitter blade for slitting the web between said slitter blade and said band;
second driving means secured to said second housing member for driving said second housing member and said band transversely relative to the web;
electronic control means electrically connected to said first and second driving means for selectively positioning said slitter blade and band adjacent to each other such that the web moving between said slitter blade and band is sheared by the interaction of said slitter blade with said band;
said control means further including:
a first control module secured to said first driving means;
a second control module secured to said second driving means;
a digital control computer connected to said modules for selectively controlling movement of said modules by sending said modules to a designated location using a predetermined number of driving means increments;
a monitor connected to said control computer for displaying the positions of said slitter blade and said band;
a communication bus means for electrically connecting said control computer and said modules for sequentially conducting control signals from said computer to said modules and for sequentially conducting command signals from said modules to said computer for positioning said slitter blade and said band adjacent to each other; and
wear detection switch means disposed adjacent to said slitter blade for detecting slitter blade wear, said detection switch means being electrically connected to said first control module such that when said slitter blade wears, a wear detection signal is generated and conducted from said first module to said computer for compensating for such slitter blade wear.

4,607,553

SELF-CLEARING PUNCH WITH REMOVABLE BLADE

John C. Hartzell, Trenton, Mich., assignor to Hanger Hole Punches, Inc., South Lyon, Mich.

Continuation-in-part of Ser. No. 496,614, May 20, 1983, Pat. No. 4,494,426. This application Jul. 30, 1984, Ser. No. 635,510
The portion of the term of this patent subsequent to Jan. 22, 2002, has been disclaimed.
Int. Cl.⁴ B26F *1/14*
U.S. Cl. 83—164 **8 Claims**

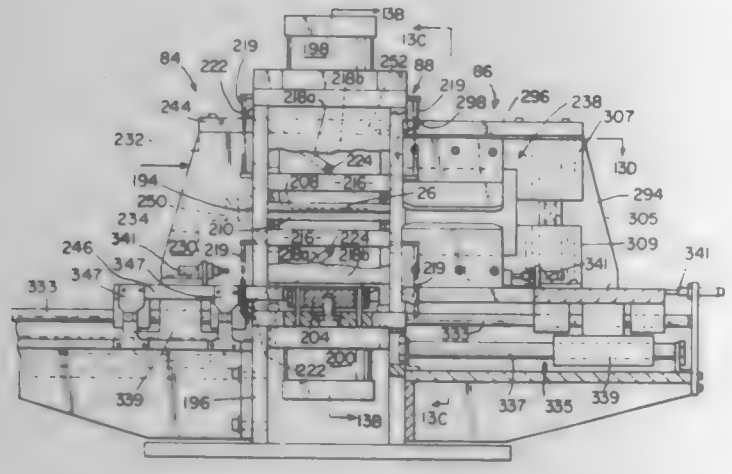


1. A self-clearing punch for cutting a slug from a sheet of material, comprising:
a punch body having an opening;
a blade having a tubular wall having a beveled cutting edge with a cutting tip having a first diameter for cutting a slug of a first thickness such that the slug has a diameter generally corresponding to said first diameter;
the blade cutting edge being beveled from the tip of the edge such that the internal diameter of the blade adjacent the cutting edge is reduced to a second diameter, lesser than said first diameter;
the blade being internally relieved to a third diameter, greater than the second diameter,
whereby as the slug is cut from the sheet material, the slug is diametrically compressed as it is received in the portion of the blade having the second diameter, the slug being suited to pass through the blade as the slug advances to the portion of the blade having the third diameter.

4,607,554
CABLE SEVERING STATION

Daniel T. Adlon, Swatara; Edward A. Bianchi, Hummelstown; Neil F. College, Elizabethtown, and George D. Reuss, Harrisburg, all of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Feb. 25, 1985, Ser. No. 704,797
Int. Cl.[4] B26D *5/20*
U.S. Cl. 83—277 12 Claims



1. A cable severing station for severing a flat cable at a position adjacent to an electrical connector to which the cable has been terminated, the station comprising;

a cable gripping first unit having first cable gripping means movable between an open position in which the cable with the connector thereon can be fed into the first unit, and a closed cable gripping position;

a cable severing second unit having second cable gripping means, connector gripping means, and cable severing means, and being receivable within the fist unit;

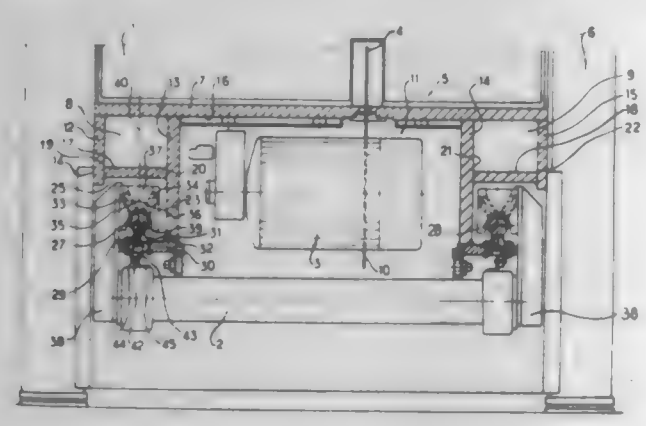
means for moving the second unit between a first position in which it is withdrawn from the first unit and a second position in which it is received within the first unit;

means provided on the first unit for actuating, when the second unit is in its second position, the second cable gripping means to grip the cable on the other side of the connector, the connector gripping means to grip the connector, and the cable severing means to sever the cable adjacent to the other side of the connector.

4,607,555
GUIDING SYSTEM FOR THE CARRIAGE OF A CIRCULAR SAWING MACHINE

Raymond Erhard, Willer-sur-Thur, France, assignor to SMID S.A., Lutterbach, France

Filed Feb. 11, 1985, Ser. No. 700,544
Claims priority, application France, Feb. 20, 1984, 84 02718
Int. Cl.[4] B27B *5/29, 29/00*
U.S. Cl. 83—471.2 6 Claims



1. A circular sawing machine for sawing long plates or boards comprising:

a table for supporting the boards to be sawed, said table having a longitudinally extending slot for a circular saw blade,

longitudinally extending beams underlying said table at opposite sides thereof, said beamshaving on their laterally inner sides downwardly extending partition walls defining opposite sides of a sawing channel,

longitudinally extending guide rails mounted below said beams on laterally outer sides of said partition walls,

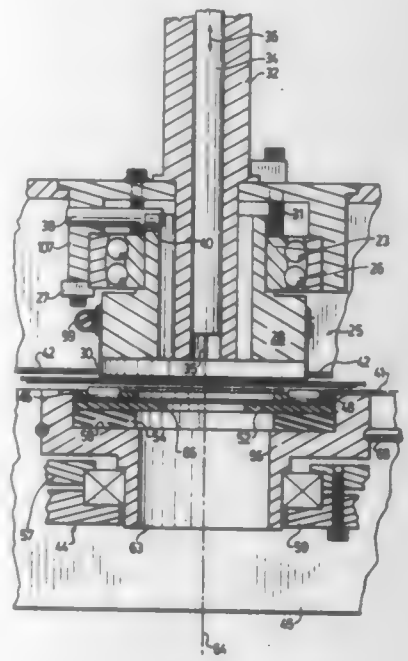
a carriage comprising a cross member disposed below said beams and rails, support brackets at opposite sides of said cross member extending upwardly laterally outside said guide rails, and rollers rotatably mounted on laterally inner faces of said support brackets and rolling on said guide rails to support said carriage on said guide rails, and

a motor and saw mounted on said cross member of said carriage.

4,607,556
COUPON CUTTING MACHINE

David C. Piggott, Burlington, Canada, assignor to PCL Packaging Ltd., Oakville, Canada

Filed Feb. 19, 1985, Ser. No. 702,741
Claims priority, application Canada, Nov. 13, 1984, 467688
Int. Cl.[4] B23D *19/08*
U.S. Cl. 83—511 3 Claims



1. Apparatus for cutting coupons from a plastic web, said apparatus comprising;

a peripherally continuous cutting blade surrounding an axis,

means for supporting the cutting blade,

a cutting surface spaced apart from the cutting blade to permit passage of a plastic web to be cut therebetween,

a bearing cage containing cylindrical bearings surrounding said axis and extending radially relative thereto to form said cutting surface, said cylindrical bearings being rotatable relative to said case about radial axes along which said cylindrical bearings extend,

a bearing cap containing said bearing cage and permitting the bearing cage to rotate about said axes relative to said bearing cap,

resilient means between said bearing cage and said bearing cap operable to resiliently yield when the cylindrical bearings engage the cutting blade,

means for effecting relative movement along said axis between said cutting blade and said cutting surface to cause the cylindrical bearings to resiliently engage the cutting blade, and

means for rotating the bearing cap about said axis to cause rotation of the cylindrical bearings about said axis to cut a coupon from plastic web between the cutting surface and cutting blade with the bearing cage rotating relative to the

bearing cap to enable the rotational speed of the bearing cage to be less than that of the bearing cap.

4,607,557

PUNCH

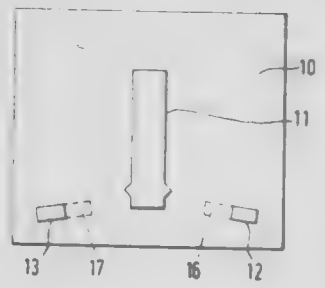
Ewald Bergmann, Rechberghausen; Otto Kurz, Hattenhofen, and Hans-Martin Dommer, Göppingen, all of Fed. Rep. of Germany, assignors to L. Schuler GmbH, Fed. Rep. of Germany

Continuation of Ser. No. 502,350, Jun. 13, 1983, abandoned, which is a continuation of Ser. No. 49,042, Jun. 15, 1979, abandoned. This application Aug. 22, 1984, Ser. No. 643,105

Claims priority, application Fed. Rep. of Germany, Jun. 15, 1978, 2826129; Apr. 21, 1979, 2916174

Int. Cl.⁴ B21D *28/14*

U.S. Cl. 83—687 **5 Claims**



1. Disposed upon a punch, a punching tool with respect to which a workpiece sheet is to be indexed, at each effective working stroke, to steps along an arc to punch said sheet to be separated into rotor and stator blanks for the manufacture of slotted laminations for electrical machines, comprising

notching tool means for punching at each effective working stroke at least one stator winding slot disposed along an arc of a circle and

separating punch means for punching at each effective working stroke slots to comprise a circular air gap to separate a rotor blank and a stator blank,

the separating punch means comprising two punch means disposed on said punch along an arc defining the circular air gap to be punched and spaced from each other by a distance to generate partially punched rotor and stator blanks joined at plural locations for substantially positionally stabilizing the rotor and stator blanks during successive effective working strokes.

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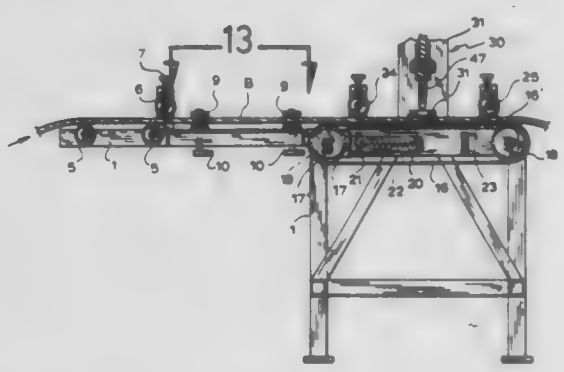
RUBBER BAND SLITTING MACHINE

Gilles Giroux, 1490 rue de l'Eglise, Pontbriand, Quebec, Canada (G0W 1K0)

Filed Apr. 8, 1985, Ser. No. 720,630

Int. Cl.⁴ B26D *3/08*

U.S. Cl. 83—879 **11 Claims**



1. An elastomeric band slitting machine comprising a support frame, conveyor means carried by said support frame and having an upper generally horizontal conveyor run for supporting and moving an elastomeric band from an inlet end to an outlet end of said conveyor means, a reaction plate underlying said conveyor upper run and fixed to said support frame intermediate said inlet and outlet ends, an upstanding framework carried by said support frame, overlying said conveyor upper run, a blade holder located above and across said conveyor upper run, movably carried by said framework for up and down guided movement opposite said reaction plate, a blade carried by said blade holder and having a straight cutting edge to make slits in the portion of said band lying over said reaction plate, power means, linkage means interconnecting said power means and said blade holder for reciprocating said blade holder up and down between an upper and a lower limit position, power actuated means to advance said conveyor upper run step-by-step from said inlet end to said outlet end, and synchronizing means for synchronizing movement of said blade holder with said power actuated means to stop said conveyor upper run and said band when said blade engages and slits said band and to advance said conveyor upper run and said band when said blade is spaced above said band, wherein said power actuated means and said synchronizing means include a driving roller for said conveyor means, a ratchet wheel fixed to said driving roller, a pawl for rotating said ratchet wheel and driving roller in a step-by-step manner, a transverse lever pivoted to said blade holder intermediate its ends and to said framework at one end and a reciprocating link pivotally connecting the other end of said transverse lever and said pawl, the latter having an operative stroke rotating said ratchet wheel through a predetermined step and thus advancing said conveyor upper run one step during upward movement of said blade holder and having a return stroke during downward movement of said blade holder.

4,607,559

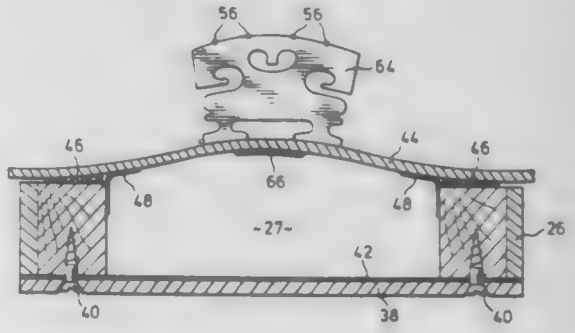
STRINGED MUSICAL INSTRUMENT

Richard Armin, 109 Vaughan Rd., Toronto, Ontario, Canada (M6C 2L9)

Filed Jan. 23, 1984, Ser. No. 572,813

Int. Cl.⁴ G10D *1/02*

U.S. Cl. 84—275 **8 Claims**



1. A bowed stringed musical instrument comprising a back, a side wall and a sound board on the upper side of the side wall, each of said back, side wall and sound board being imperforate, the side wall and sound board having sealing means connected therebetween, and defining together a body without a cavity open to the surroundings, a bridge mounted on the upper side of the sound board over which the strings are stretched, and the lower edge of the sound board being connected to the upper side of the side wall through spacers which are substantially non-transmissive of audio frequency vibrations, whereby the instrument is substantially free of transmission of audio frequency vibrations between the sound board and the remainder of the body.

4,607,560

APPARATUS FOR DYNAMICALLY SUPPORTING A HIGH STRESS STRUCTURE

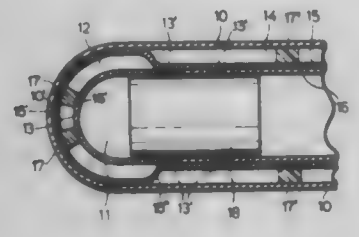
Horst Schneider, Arget, and Joachim Hermann, Duernhaar, both of Fed. Rep. of Germany, assignors to Messerschmitt-Boelkow-Blohm Gesellschaft mit beschraenkter Haftung, Munich, Fed. Rep. of Germany

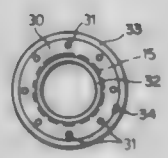
Filed Jul. 2, 1984, Ser. No. 627,346

Claims priority, application Fed. Rep. of Germany, Aug. 17, 1983, 3329672

Int. Cl.[4] F41F *17/08*

U.S. Cl. 89—16 6 Claims





1. An apparatus for dynamically supporting a high stress structure, comprising a first tubular member forming said high stress structure, second tubular means operatively surrounding said first tubular member for enclosing a space around said first tubular member, first means in said first tubular member for generating an operating stress inside said first tubular member, and second means for simultaneously providing a protective dynamic, supporting stress inside said space for at least partially counteracting said operating stress, wherein said second tubular means comprise a second tubular member arranged coaxially around said first tubular member, wherein said first means for generating comprise an explosive charge in said first tubular member, wherein said second means for providing said protective dynamic supporting stress comprise a first bottom at one end of said first tubular member, a second bottom at a respective end of said second tubular member for forming said space also between said first and second bottoms, and aperture means (13) in said first tubular member for passing an explosive force from said explosive charge into said space to thereby provide said protective dynamic stress inside said space simultaneously with an operating stress caused by said explosive charge in said first tubular member, said high stress structure further comprising a plastically deformable sleeve (15) inside said space, said aperture means (13) comprising at least one aperture in said first bottom and further apertures in said first tubular member along the length of said first tubular member, said plastically deformable sleeve being arranged between said first and second tubular members so as to enclose a volume adjacent said at least one aperture for receiving said explosive force in said volume, said plastically deformable sleeve normally hugging said first tubular member outside said first bottom so that a bulging ring portion (15″) of said plastically deformable sleeve (15) is progressively pushed away from said first tubular member against an inner wall of said second tubular member by an explosive force passing through said further apertures, whereby said bulging ring portion travels along the length of said first tubular member around the outside thereof to provide said protective dynamic supporting stress.

4,607,561

FIREARM REST

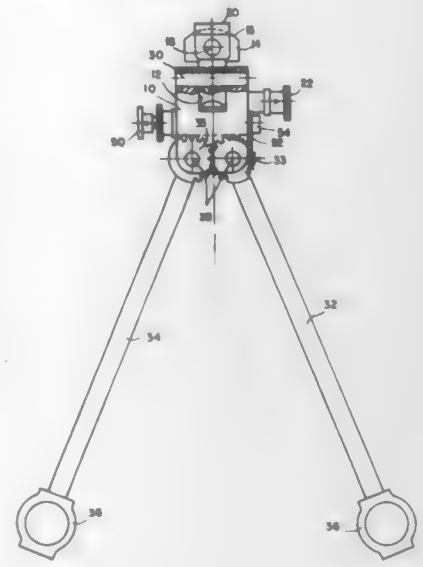
Itzchak Frimer, 75 Hayarkon St., Bnei Brak, Israel

Filed Jul. 18, 1984, Ser. No. 631,912

Claims priority, application Israel, Aug. 24, 1983, 69567

Int. Cl.[4] F41C *29/00*

U.S. Cl. 89—37.04 3 Claims



1. A firearm rest comprising:

a housing;

two legs coupled to said housing and being arranged for complementary reciprocal motion, said legs defining interlocking toothed portions at one end thereof, such that the position of one leg determines the position of the other;

means for selectably locking the legs in at least one selectable orientation and including ratchet means for selectably engaging one of said toothed portions, thereby determining the position of both legs and the height of the housing; and

firearm mounting means rotatably mounted on said housing.

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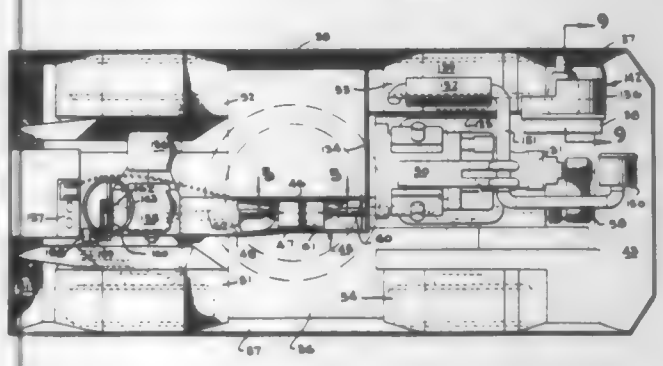
ARMORED VEHICLE DRIVE TRAIN

James C. LeBlanc, 38261 Long St., Mt. Clemens, Mich. 48043

Continuation of Ser. No. 456,402, Jan. 7, 1983, abandoned, which is a continuation of Ser. No. 188,922, Sep. 19, 1980, abandoned, which is a continuation of Ser. No. 927,600, Jul. 21, 1978, abandoned. This application Aug. 28, 1984, Ser. No. 644,945

Int. Cl.[4] F41H *7/02*

U.S. Cl. 89—40.03 45 Claims



1. An armored vehicle comprising:

a body of monocoque construction having a longitudinal centerline,

front and rear axle assemblies operatively connected to said body, each of said axle assemblies being provided with wheels and tires,

a suspension system operatively connecting said axle assemblies to said body and supporting said body on said axle assemblies,

a driver's station disposed at a forward location in said body,
an engine mounted in said body between said axle assemblies and on one side of said centerline, said engine having a rearwardly disposed engine output means;
a transmission mounted in said body rearwardly of said engine and operatively connected to said engine output means, said transmission having a rearwardly disposed transmission output means,
a first transmitting means for transmitting drive from said transmission output means downwardly and laterally,
a second transmitting means for transmitting drive from a lower end of said first transmitting means forwardly to said rear axle assembly,
a steering system mounted on said body and operatively connected to said front axle assembly, said steering system including a steering gear assembly mounted on said body and disposed laterally of said driver's station away from said centerline and on the side of said centerline opposite said engine,
a mounting means for mounting said steering gear assembly adjacent said front axle assembly and including a means passing through said body at a location lateral of said driver's station and operatively connecting said steering gear assembly to said front axle assembly,
a cooling system for said engine mounted in said body, and
a control means mounted in said body and operatively connected to said engine and to said transmission.

4,607,563

FIRING MECHANISM FOR AN AUTOMATIC FIRING WEAPON

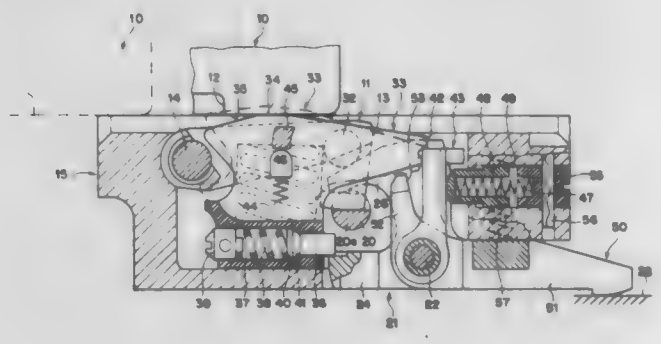
Albert Meyer, Widen; Hans Hofmann, Zürich, and Hans Häferli, Endingen, all of Switzerland, assignors to Werkzeugmaschinenfabrik Oerlikon-Bührle AG, Zürich, Switzerland

Filed Apr. 23, 1984, Ser. No. 603,184

Claims priority, application Switzerland, Apr. 29, 1983, 2306/83

Int. Cl.⁴ F41D *11/02*

U.S. Cl. 89—132 **7 Claims**



1. A firing mechanism for an automatic firing weapon, comprising:
a breechblock having a catch surface and an underside structured as a control surface for controlling the firing mechanism;
said breechblock moving along a predetermined path of travel;
a firing mechanism housing;
a spring-loaded catch pawl;
means for pivotably mounting said spring-loaded catch pawl in said firing mechanism housing;
said catch pawl being moveable between a breechblock catch position and a breechblock release position;
said catch pawl, when in its breechblock catch position, protruding into said predetermined path of travel of the breechblock;
a firing table;
a firing lever actuatable by said firing table for pivoting said catch pawl out of its breechblock catch position into said breechblock release position;
a feeler lever pivotable out of a locking position into a release position;
a stop lever cooperating with said feeler lever;
means for pivotably mounting said stop lever in said firing mechanism housing for movement out of a release position into a locking position for retaining the feeler lever in a position into which it can be pivoted and within which position it can not be pivoted by the underside of the breechblock defining said control surface and in which the feeler lever retains the catch pawl in its breechblock release position by means of said firing lever;
a release lever cooperating with said stop lever;
means for pivotably mounting said release lever in said firing mechanism housing; and
said release lever together with said firing lever bearing upon said firing table and serving for delatching said stop lever.

4,607,564

BLOWER HOUSING ARRANGEMENT

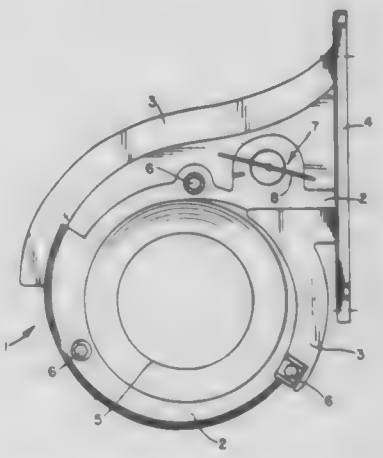
Werner Stähle, Sindelfingen; Karl-Heinz Weller, Gerlingen, and Albert Stolz, Tübingen, all of Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Fed. Rep. of Germany

Filed Oct. 19, 1984, Ser. No. 662,556

Claims priority, application Fed. Rep. of Germany, Oct. 26, 1983, 3338775

Int. Cl.⁴ B60H *1/24*

U.S. Cl. 98—2 **3 Claims**



1. Blower housing arrangement for housing a blower fan and forming a connection with a duct system in a motorized vehicle, comprising:
noise reducing open-pore foam material means forming a substantial part of the wall portions surrounding the blower fan, said substantial part of the wall portions comprised of open-pore foam material defining a space through which air is guided from said blower fan to the duct system leading into the passenger space of a vehicle,
and skeleton supporting means, substantially surrounded in part by said foam material means, for aiding in supporting the foam material wall portions, said skeleton supporting means being dimensionally rigid and supportive during normal driving operations with said blower housing arrangement in the motorized vehicle, said skeleton supporting means including accommodation means for accommodating components, operating parts, installation mounting elements and the like,
wherein at least the skeleton supporting means oriented predominately in the vehicle longitudinal direction exhibits a predetermined buckling resistance which is exceeded during a vehicle accident collision, wherein, upon buckling of the skeleton supporting means the foam material wall portions facilitate energy absorption,
wherein said foam material wall portions serve as gasket means for adjustable air flap means.

4,607,565

FLOW DEFLECTING ASSEMBLY

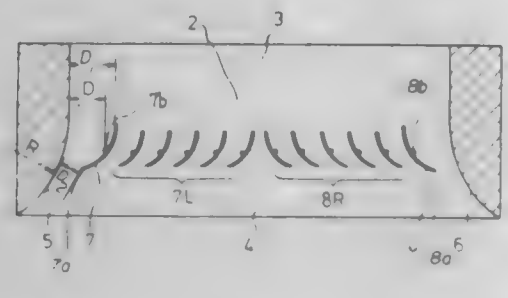
Norio Sagawara, Shiki, and Motoyuki Nawa, Nara, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed May 7, 1985, Ser. No. 731,520

Claims priority, application Japan, May 10, 1984, 59-93415; Jul. 19, 1984, 59-150007

Int. Cl.[4] F24F *7/00, 13/00*

U.S. Cl. 98—40.24 6 Claims



1. A flow deflecting assembly comprising:

a fluid passage generally rectangular in cross section defined by a pair of parallel opposed broad walls disposed with a short distance therebetween and a pair of opposed narrower walls disposed with a longer distance therebetween, and having an inlet and an outlet, said narrower walls have opposed faces that curve outward in the vicinity of said outlet to form guide walls,

a pair of flow deflecting blades of curved profile extend between said broad walls and are mounted to rotatable center shafts, said blades being respectively disposed in the vicinities of but spaced from said curved faces of said guide walls, the gaps between said shafts and said curved faces of guide walls being smaller than the radius of curvature of said curved surfaces of said guide walls, the downstream edge of said blades being disposed upstream of said passage outlet and downstream of the starting point of said curved surfaces of said guide walls so that said blades can be adjusted to induce attachment of the flow to said curved faces, and

a row of deflecting blades of curved profile, which extend between said broad walls and are held in an angle-adjustable manner, are disposed between said pair of deflecting blades with predetermined pitches therebetween.

4,607,566

VENTILATOR FOR USE IN A ROOF STRUCTURE

David Bottomore, Huddersfield, and Colin F. Gibson, Long Eaton, both of United Kingdom, assignors to Glidevale Building & Products Limited, Pinxton, United Kingdom

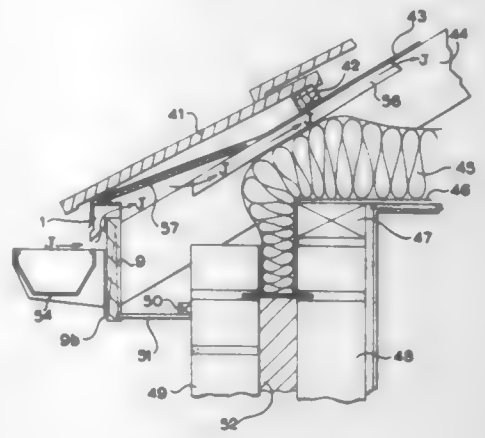
Filed Jan. 10, 1985, Ser. No. 690,663

Claims priority, application United Kingdom, Jan. 12, 1984, 8400758; Aug. 25, 1984, 8421657

Int. Cl.[4] E04B *7/18*

U.S. Cl. 98—37 15 Claims

14. A ventilator for use in a roof structure of the type having a fascia and cover material at least partially overlying the fascia, said ventilator comprising a panel member, spacing means engageable with a face of the fascia for spacing the panel member from the face of the fascia to define a first ventilation path between the fascia and the panel member, the spacing means being engageable with an upper edge of the fascia to define a second ventilation path between the cover material and the fascia, said first ventilation path communicating with said second ventilation path, and said spacing means further comprises a plurality of spacing members provided on the panel member wherein each spacing member includes a first portion engageable with the face of the fascia and a second portion engageable with the upper edge of the fascia.



4,607,567

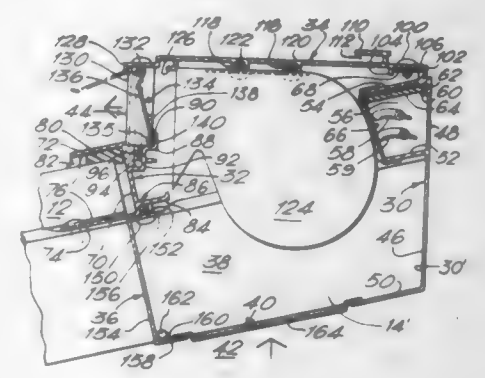
GREENHOUSE CONSTRUCTION PROVIDED WITH SPECIAL RIDGE FOR VENTILATION

Christopher Esposito, West Bay Shore, N.Y., assignor to Four Seasons Solar Products Corporation, Farmingdale, N.Y.

Continuation of Ser. No. 280,992, Jul. 6, 1981, Pat. No. 4,438,680, which is a continuation-in-part of Ser. No. 77,786, Sep. 21, 1979, Pat. No. 4,316,405. This application Dec. 27, 1983, Ser. No. 565,989

Int. Cl.[4] A01G *9/24*; F24F *7/00*

U.S. Cl. 98—42.12 9 Claims



1. A method for the installation of a greenhouse against a supporting structure comprising forming two sloped pockets, mounting at least one of the pockets against said supporting structure, supporting the other of the pockets in fixed and spaced relation with respect to said one pocket and supporting structure, inserting an end of at least one glazing bar into said one pocket, and inserting glazing into said other pocket and superposing said glazing on said glazing bar.

4,607,568

EXTENSIBLE LINE BRATTICE

George R. Hill, Pleasant Grove, and Larry C. Jordan, Vance, both of Ala., assignors to Jim Walter Resources, Inc., Birmingham, Ala.

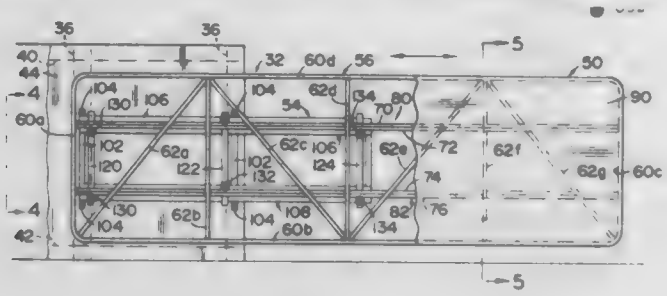
Filed Aug. 7, 1985, Ser. No. 763,115

Int. Cl.[4] E21F *1/00*

U.S. Cl. 98—50 5 Claims

1. In a mine, an extensible line brattice comprising a fixed line brattice having at least one free end; said fixed line brattice comprising spaced vertical support members and a brattice cloth attached to said spaced vertical support members to form an airtight curtain in said mine, a track system affixed to said free end of said fixed line brattice, said track system being

affixed to at least two of said vertical support members and an extensible line brattice frame with an attached brattice cloth



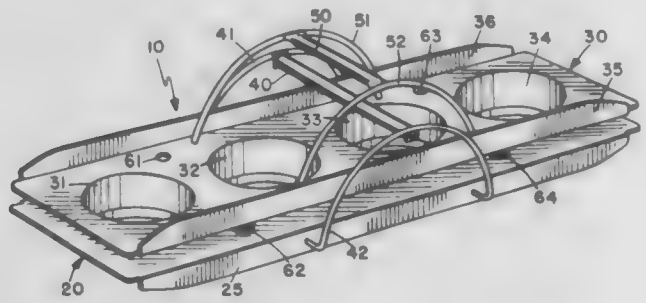
cover connected to said track system for horizontal movement of said extensible line brattice to elongate said fixed line brattice.

4,607,569

EGG-FRYING UTENSIL

Glenn M. Murphy, 1378 Los Coches Ct., Chula Vista, Calif. 92010

Filed Dec. 26, 1984, Ser. No. 685,915
Int. Cl.[4] A47J *37/00*
U.S. Cl. 99—426 6 Claims



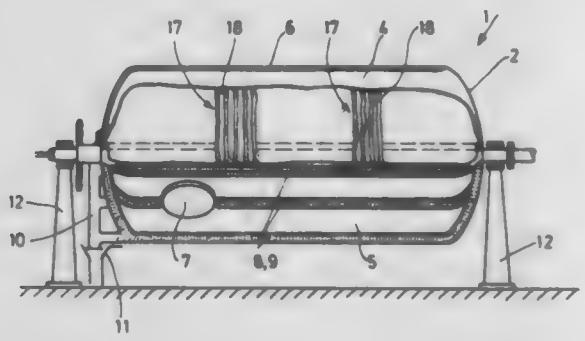
1. A utensil for use in frying eggs, which comprises:
a lower frame member defining a set of outer rings in which to fry eggs on a grill;
an upper frame member defining a corresponding set of inner rings, each one of the set of inner rings being slightly smaller than a corresponding one of the set of outer rings;
means for movably mounting the upper frame member on the lower frame member to enable each one of the inner rings to be slid down the interior of the corresponding one of the outer rings to dislodge fried eggs as the upper frame member and the lower frame member are lifted from a grill.

4,607,570

COMPRESSION EXTRACTOR

Hans-Ulrich Hauser, Niederweningen, Switzerland, assignor to Bucher-Guyer AG Maschinenfabrik, Niederweningen, Switzerland

Filed Aug. 9, 1984, Ser. No. 639,378
Claims priority, application Switzerland, Aug. 26, 1983, 4657/83
Int. Cl.[4] B30B *5/02*
U.S. Cl. 100—116 8 Claims



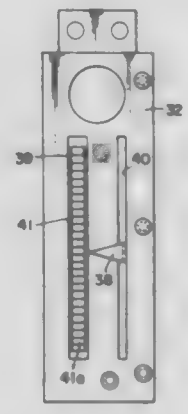
1. A compression extractor for use in extracting liquid from a liquid containing material, said compression extractor comprising:
(a) a tank,
(b) membrane means mounted in said tank for dividing said tank into a pressure chamber and a mash chamber said membrane means having a surface facing said mash chamber,
(d) means for introducing a pressure medium into said pressure chamber so as to cause said membrane means to press against said liquid containing material in said mash chamber thereby extracting said liquid therefrom,
(e) liquid collection means coupled to said mash chamber for collecting said extracted liquid; and
(f) draining path defining means incorporated on at least a portion of said surface of said membrane means facing said mash chamber for conveying said extracted liquid toward said liquid collection means.

4,607,571

METHOD FOR ADJUSTING AN INK FOUNTAIN IN A PRINTING PRESS AND INK FOUNTAINS

Hideo Takeuchi, Chiba; Michiaki Kobayashi, Kitamoto, and Makoto Shibasaki, Tokyo, all of Japan, assignors to Dai Nippon Insatsu Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 16, 1983, Ser. No. 561,993
Claims priority, application Japan, Dec. 21, 1982, 57-224620; Aug. 31, 1983, 58-160134; Aug. 31, 1983, 58-160135; Aug. 31, 1983, 58-134845[U]
Int. Cl.[4] B41F *31/04, 33/00, 33/16;* B41L *27/06*
U.S. Cl. 101—365 5 Claims



1. An ink fountain for feeding ink toward an inking mechanism through a gap between a ductor blade and an ink fountain roller, wherein the ductor is divided into a plurality of regions, each region of said ductor blade being movable at its distal end toward and away from a surface of the ink fountain roller to adjust said gap by a corresponding adjusting member, said ink fountain comprising:
(a) a display box adjacent the ductor blade; and
(b) a plurality of adjusting units detachably disposed in the display box, each adjusting unit corresponding to a respective said region of the ductor blade, each adjusting unit having a position display means for displaying a preset position, which is preset before printing, of each region of the ductor blade, the preset position being determined based on a rate of pattern area detected from a pattern bearing material, an adjusting member for adjusting a position of the ductor blade, and a position indicating means responsive to the adjusting member for indicating the actual position of each region of said ductor blade, said position display means, said adjusting member and said position indicating means being integrated with one another to form each detachable adjusting unit, wherein each adjusting unit comprises a said position display means which has a plurality of display elements disposed in a row, said position indicating means having a pulley fixed to the adjusting member, a belt moved by the pulley and an indicator fixed to a linear span of the belt, the

indicator being movable along the position display means when the adjusting member is rotated.

4,607,572

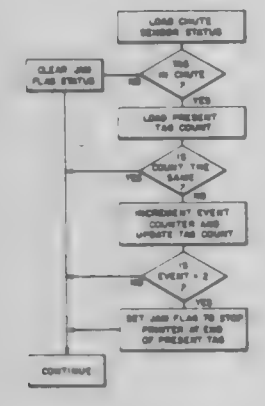
PRINTER AND METHOD USING AUTOMATIC STACKER WITH PAPER CONDUIT JAM DETECTOR

Frederick M. Pou, Dayton, and Richard L. Straub, Miamisburg, both of Ohio, assignors to Monarch Marking Systems, Inc., Dayton, Ohio

Continuation of Ser. No. 575,947, Mar. 26, 1984, abandoned, which is a division of Ser. No. 393,674, Mar. 30, 1982, abandoned. This application Aug. 12, 1985, Ser. No. 765,163

Int. Cl.[4] B41F *1/02*

U.S. Cl. 101—426 11 Claims



1. In a printer for printing information onto tags, said printer having a conduit having a first end to which printed tags are delivered and a second end from which the printed tags are expelled, the improvement comprising mean for indicating a jam condition in the conduit and terminating the printing of additional tags whenever the number of tags present in the conduit exceeds a predetermined number, said jam condition indicating means comprising:

counting means that is incremented each time a tag is produced;

means for sensing the presence of a tag in the conduit;

means responsive to said sensing means and to said counting means for providing a signal representative of the number of tags delivered to the conduit while the presence of the tag in the conduit is being sensed; and

means responsive to said number of tags delivered representative signal for terminating the printing of additional tags after said number representative signal reaches a predetermined value.

4,607,573

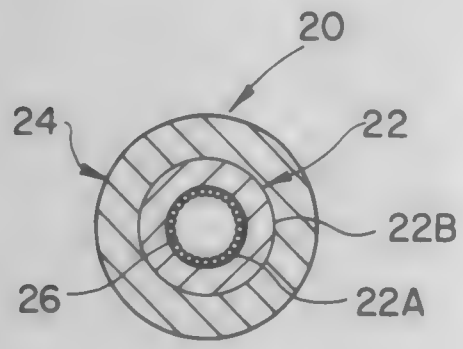
LAMINATED FUSE AND MANUFACTURING PROCESS THEREFOR

Gary R. Thureson, Avon, and Ernest L. Gladden, Granby, both of Conn., assignors to Ensign-Bickford Industries, Inc., Simsbury, Conn.

Filed Apr. 3, 1984, Ser. No. 596,449

Int. Cl.[4] C06C *5/04;* F42B *3/10*

U.S. Cl. 102—275.8 14 Claims



1. A method of producing a fuse comprising the steps of:

(a) forming a first tube having an inner surface and an outer surface;

(b) placing a reactive material in a core load per unit length within said first tube;

(c) elongating said first tube whereby the wall thickness of said first tube and core load per unit length of said reactive material are reduced; and

(d) applying an outer coating onto said outer surface of said first tube, said coating arranged coextensively to said elongating first tube.

4,607,574

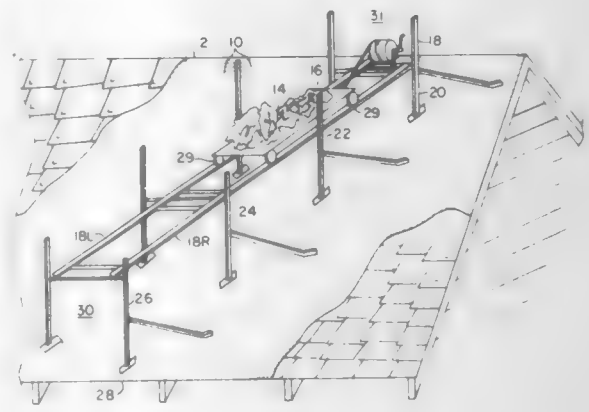
CONVEYING SYSTEM FOR ROOFTOPS

Gerard B. Richards, 1618 Shreen Ct., San Jose, Calif. 95124

Filed Jul. 2, 1985, Ser. No. 751,295

Int. Cl.[4] E01B *23/00*

U.S. Cl. 104—126 3 Claims



1. A conveyor for carrying a load that may be assembled on a sloping surfaces that comprises:

a cart having a platform with a top side for supporting said load and a plurality of wheels attached to said platform;

a straight continuous track on which said wheels may roll, which has a loading end and a destination end, and which further comprises a left track member spaced parallel to a right track member by a plurality of connecting bars, each end of each bar being rigidly secured to one of said track members and each bar having at least two boltholes;

a plurality of horizontal center bars, each having two bar ends and positioned under said left and right track members so as to support said track;

a plurality of U-bolts, each enveloping one of said center bars and secured in said boltholes of an adjacent connecting bar so that said track is rigidly secured to said center bars;

a vertical support sleeve secured on each said end of said center bars;

a vertical leg positioned by sliding within each support sleeve and having a row of positioning holes in its side into one of which a supporting pin may be inserted in order that an end of said support sleeve may rest on said pin and thereby determine the location of said support sleeve so as to maintain said center bar horizontal even though said conveying system is mounted on said sloping surface and wherein each said vertical leg has a hinging hole near its lower end;

a bracing sleeve positioned by sliding on each said leg and secured by a pin in said positioning hole at each end of said bracing sleeve so that said bracing sleeve can be oriented independent of said leg to any angular position about its axis by rotation about said leg;

a threaded stud attached to each said bracing sleeve and perpendicular to said bracing sleeve;

a U shaped strap having two ends such that each end has a hole concentric with said hole in said other end of said strap and, further, said U strap has a hole in its center through which said threaded stud is inserted so that said strap may be bolted to said bracing sleeve yet may be positioned by rotation about said stud;

a brace having a first end hinged to each U strap by a pin through a first hole near said first end and said hole in each

end of said strap and wherein said brace has a second hole near a second end of said brace;

a shoe for each said brace and each said vertical leg comprising a plate with a securing hole and two ears, each having an earhole and each ear being attached to an edge of said plate so that said shoe may be attached to said second end of each brace and said lower end of each vertical leg by a pin through said earholes and said second hole of said brace and said hinging hole of said vertical leg;

so that each said leg, U shaped strap, shoe, brace and bracing sleeve may be positioned by rotation independent of one another in order that each said shoe will lie flat on said sloping surface regardless of the direction of slope and each said shoe may be secured to said sloping surface by a nail through each said securing hole.

4,607,575

VARIABLE-PATH SURFACE TRANSPORT SYSTEM UTILIZING AN ANGLE COMPARATOR WITH A CONTROL GUIDEWAY OR EXTERNALLY SUPPLIED DATA FOR LATERAL OFFSET, AND METHOD

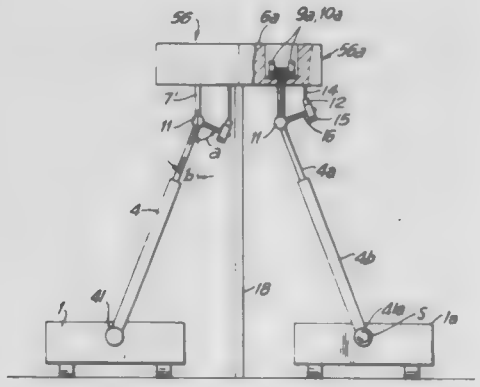
Roland Bryda, Kapellenstrasse 64, D-7500 Karlsruhe 1, Fed. Rep. of Germany

Filed Aug. 27, 1984, Ser. No. 644,547

Claims priority, application Fed. Rep. of Germany, Aug. 27, 1983, 3330993

Int. Cl.⁴ B61B *10/00, 11/00*

U.S. Cl. 104—304 **20 Claims**



1. A variable-path, directionally controlled surface transport system having

an electrically driven vehicle (**1**) for operation on a surface, and having a steering system (**17**, **17***a*);

an overhead system (**56**, **56'**) including current supply conductors (**5**) and direction control rails (**6**, **6***a*);

a connecting element (**4**, **4***a*) connecting the vehicle to the current supply conductors to receive drive energy, and to the direction control rails (**6**, **6***a*) to receive direction information data therefrom to guide the path of the vehicle,

and comprising, in accordance with the invention,

a further control guideway (**12**) located adjacent the overhead system;

feeler means (**15**, **16**) sensing the relative position of the further control guideway with respect to the overhead system (**56**);

and a comparator (**11**, **11***a*, **101**) coupled to the feeler means and to the connecting element for generating path deviation control signals (Δa), said path deviation control signals being applied to the steering system (**17**, **17***a*) of the vehicle (**1**, **1***a*) to steer the vehicle along a path which may be, at any selected point, laterally offset a selected distance with respect to said overhead conductors (**5**) and rails (**6**, **6***a*), as a function of the relative position of the guideway (**12**) with respect to the connecting element (**4**, **4***a*).

17. A method of controlling the path of a surface vehicle in which an overhead system (**56**) including current supply conductors (**5**) and direction control guide rails (**6**) is coupled to a car or vehicle (**1**) by a connecting element (**4**) connecting the vehicle to the current supply conductors, and further providing direction control information to steer the vehicle in a path which is, at each point along said path, a preselected distance laterally from a position directly beneath the overhead system, as a function of the orientation of the connecting element (**4**, **4***a*) with respect to the guide rails (**6**),

comprising the steps of

generating direction control signals which correspond to said preselected distances and are arbitrary with respect to the instantaneous orientation of the connecting element (**4**, **4***a*) with respect to the guide rails (**6**); and

controlling the direction of movement of said vehicle in accordance with said control signals.

4,607,576

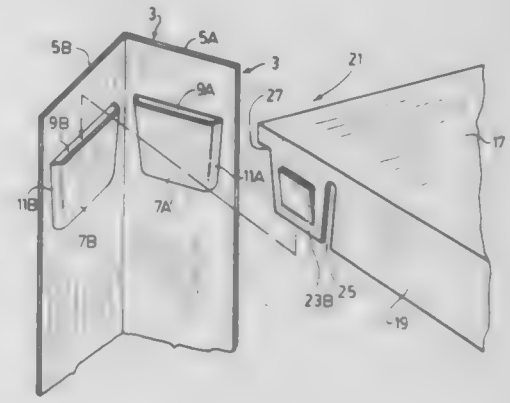
PANEL MOUNTING ARRANGEMENT

Stan Kranjec, 355 Signet Drive, Weston, Ontario, Canada (M9L 1V3)

Continuation-in-part of Ser. No. 670,942, Nov. 13, 1984, abandoned. This application Dec. 26, 1985, Ser. No. 813,349

Int. Cl.⁴ A47B *57/20*

U.S. Cl. 108—110 **5 Claims**



1. A shelving arrangement in which at least one shelf panel is mounted in a generaly horizontal position from a plurality of up right support members, each of said support members having a pair of mounting surfaces at generally right angles to one another and each mounting surface being provided with an inwardly facing upwardly opening pocket press formed from its respective mounting surface whereby each pocket is top and bottom opening and is side edge secured to the mounting surface from which it is formed, said shelf panel having a down turned flange including corner regions for interlocking at said upright support members, each corner region including first and second tongue portions at right angles to one another on said down turned flange which is open to either side of each tongue portion with said first and second tongue portions of said corner regions sliding downwardly into said first and second pockets of said upright support members during assembly of said shelving arrangement, each said mounting surface having an inwardly directed region extending at least into the plane of the pocket below the bottom opening thereof and each tongue after penetrating through the pocket wedging on said inwardly directed region and the side edges of the pocket converging downwardly inwardly for outer edge wedging with the tongue for a double wedge tightened fitting of the tongue and pocket.

4,607,577

OVERBED TABLE

Stephen V. Leonardo, 1128 Blanchard St., Downers Grove, Ill. 60515

Filed Aug. 2, 1985, Ser. No. 761,775

Int. Cl.⁴ A47B *9/00*

U.S. Cl. 108—144 **11 Claims**

1. In an overbed table having a base, a table top generally overlying said base, and an adjustable support assembly having its lower end secured to the base and its upper end to the table

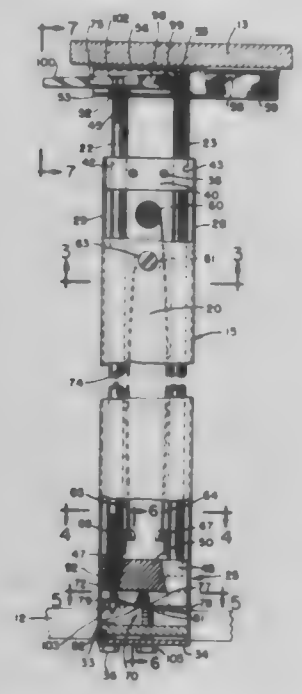
top and allowing the table top to be moved to any desired vertical position and locked, said support assembly comprising:

a hollow support housing vertically mounted to said base having a bearing block with guide apertures;

support members axially slidable within said guide apertures and carrying a second bearing block slidable within said housing;

first spring means connected between said housing and said support members for urging said support members and table top upwardly and counterbalancing the weight thereof;

a latch mounted to said second bearing block for pivotal movement about a horizontal axis and having a free end extending outwardly from said second bearing block;



second spring means disposed between said second bearing block and the other end of said latch for urging said other end away from said second bearing block in one angular direction and said free end towards a locking position in wedged engagement with the wall of said housing to lock said support members relative to said housing;

a trigger mounted to said table top; and,

a cable extending between said trigger and said other end of said latch, whereby actuation of said trigger pulls said cable upwardly to pivot said latch in an angular direction opposite the action of said second spring means out of engagement with said wall to unlock said support members thereby permitting vertical movement of said support members within said support housing for adjusting the height of the table top relative to the base.

4,607,578

POSITIONING MECHANISM

Hirochika Inoue, Tokyo; Ken-ich Yoshida, Osaka; Yasushi Kida, Osaka, and Akira Takemoto, Osaka, all of Japan, assignors to Sumitomo Electric Industries Ltd., Osaka, Japan

Filed Jun. 1, 1984, Ser. No. 616,085

Claims priority, application Japan, Jun. 2, 1983, 58-99203; Jun. 13, 1983, 58-106301

Int. Cl.⁴ A47B *9/00*

U.S. Cl. 108—145 5 Claims

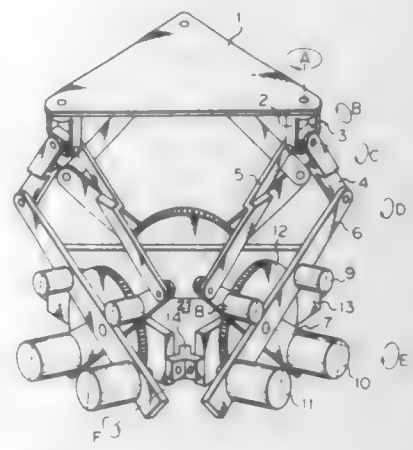
1. A positioning apparatus comprising a table, a base, and three pantagraph means for supporting said table at three connection points in spaced relation to said base, each said pantagraph means including:

a pair of upper links,

a pair of lower links,

means for pivotally connecting a lower end portion of each said upper link to an upper end portion of a respective one of said lower links;

upper support means for operatively connecting an upper end portion of each said upper link to a respective one of said table connection points, said upper support means including (a) an upper coupling member having a pair of mutually orthogonal axles respectively defining first and second upper pivot axes which are, in turn, mutually orthogonal to one another and which are parallel to a plane of said table, said upper end portion of each said upper link being connected to a first one of said axles for pivotal movements about said upper first axis, (b) a coupling retainer connected to a second one of said axles for pivotal movements about said second upper axis, and (c) means for connecting said coupling retainer to said table at said respective one of said table connection points for pivotal movements of said coupling retainer, and thus said pairs of upper and lower links, about an axis orthogonal to said table plane; and



lower support means for operatively connecting a lower end portion of each said lower link to said base, said lower support means including (i) first shaft means defining a first lower pivot axis, parallel to said first upper pivot axis, for connecting said lower end portions of each said lower link to said base for pivotal movements about said first lower axis, and (iv) second shaft means defining a second lower pivot axis, orthogonal to said first lower axis but parallel to said second upper axis, for connecting said lower end portions of each said lower link to said base for pivotal movements also about said second lower axis, wherein

said upper and lower pairs of links form a quadrilateral structure such that said three pantagraph means permit said table to be positionable within six degrees of freedom by selective regulation of inclination angles of said pairs of lower links relative to said base.

4,607,579

APPARATUS FOR DISPERSING A DYE OVER SECURITIES IN A CLOSED SPACE AT ATTEMPTS AT BURGLARY

Eddie L. Stenild, 2, Fugleb kvej, Kastrup, 2770, Denmark

PCT No. PCT/DK83/00015, § 371 Date Oct. 18, 1983, § 102(e) Date Oct. 18, 1983, PCT Pub. No. WO83/02975, PCT Pub. Date Sep. 1, 1983

PCT Filed Feb. 16, 1983, Ser. No. 545,391

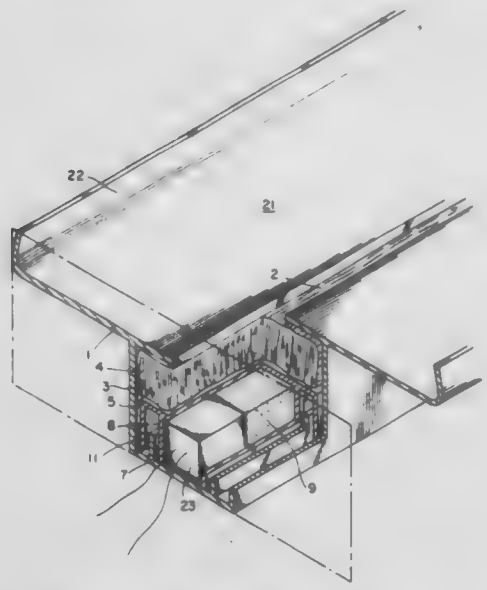
Claims priority, application Denmark, Feb. 18, 1982, 715/82

Int. Cl.⁴ E05G *3/00*

U.S. Cl. 109—25 8 Claims

1. An apparatus for dispersing a dye over securities kept in a closed space, at attempts to break open such a space, e.g., a trunk or a safe-deposit box, and of the kind where a pipe system including a pipe and containing the dye is adapted, at unwarranted attempts at opening, to be activated by a release mechanism to release pressure energy for dispersing the dye over the securities, characterized in that said pipe comprises a longitudinal pressure rail constituting a portion of the wall of an oblong chamber, said chamber containing a tubular bag with a dye, the wall of said chamber situated opposite to the pressure rail being perforated by one or more longitudinal slots, said pressure rail

being displaceable toward said opposite wall at release of pressure energy to compress said bag and force said dye out through said slot, said pipe system comprising a box-shaped profiled housing wherein the dye bag and the pressure rail are arranged in a common space, said pressure rail being T-shaped



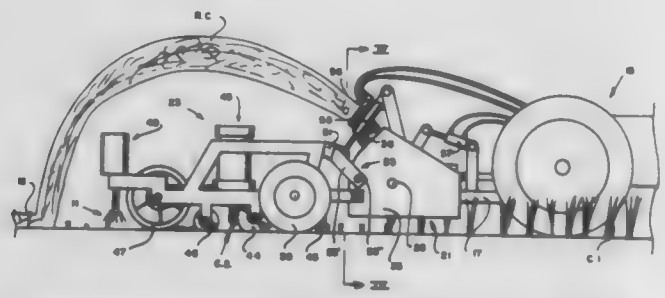
with a body, the top wall of the housing being interrupted by the longitudinal slot, and the bottom wall comprising two upright supporting walls surrounding the body of the pressure rail, said body forming a chamber with an explosive charge which is ignited by an electronic ignition system and having below a bottom formed with rupture indications.

4,607,580

CROP PLANTING MEANS

Charles Monty, Jr., Clarksdale, Miss., assignor to Monty Planting Company, Inc., Clarksdale, Miss.

Filed Feb. 19, 1985, Ser. No. 702,956
Int. Cl.[4] A01B *49/04*
U.S. Cl. 111—1 **1 Claim**



1. A planter for planting a second crop in a field having a first crop thereon, said planter comprising:

(a) cutting means for cutting and removing the majority of the first crop from the field; and

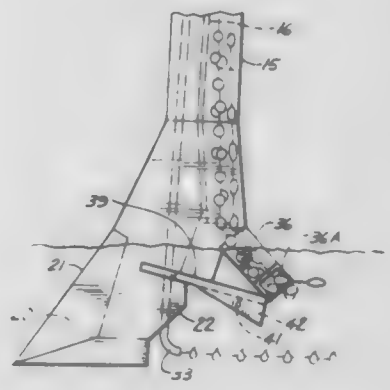
(b) planting means located behind said cutting means for planting the second crop after said cutting means cuts and removes the majority of the first crop from the field; said cutting means including discharge means for directing the cut portion of the first crop upward and over said planting means and for allowing the second crop to be planted with the majority of the first crop removed from the field and to subsequently allow the cut portion of the first crop to fall onto the field over the planted second crop to act as a mulch; said cutting means including an elongated shaft member arranged substantially transversely of the direction of travel of said planter over the field, drive means for rotatably driving said shaft member, a plurality of cutting blade members attached to said shaft member and for cutting the majority of the first crop as said planter is moved thereover, and a hood member for covering said shaft member and said cutting blade members, said hood member having an elongated discharge opening therethrough extending substantially the entire length of said shaft member and located generally at the upper rear of said hood member, said hood member having an inner face surface for coacting with said cutting blade members to cut the majority of the first crop as said planter is moved thereover and to cause the cut portion of the first crop to be discharged from said hood member through said discharge opening, said discharge opening and said inner face surface coacting to define said discharge means; said planting means including a plurality of planter units arranged apart from one another substantially transversely of the direction of travel of said planter over the field for planting a plurality of rows of the second crop as said planter is moved over the field; each of said planter units including a disc for cutting a slit into the field, double disc opener means for opening the slit cut by said disc, a seed dispensing means for dispensing seeds for the second crop into the slit cut into the field by said disc, slit closing means for closing the slit after the seeds have been dispsed thereinto, ground firming roller means for closing the slit after the seeds have been dispensed thereinto, and a chemical dispensing means for dispensing chemical after the seeds have been dispensed.

4,607,581

FURROW OPENER FOR SEEDER

Ivyl D. Kopecky, Ypsilanti, N. Dak., assignor to Haybuster Manufacturing, Inc., Jamestown, N. Dak.

Filed Jul. 18, 1984, Ser. No. 632,056
Int. Cl.[4] A01C *5/00*
U.S. Cl. 111—73 **9 Claims**



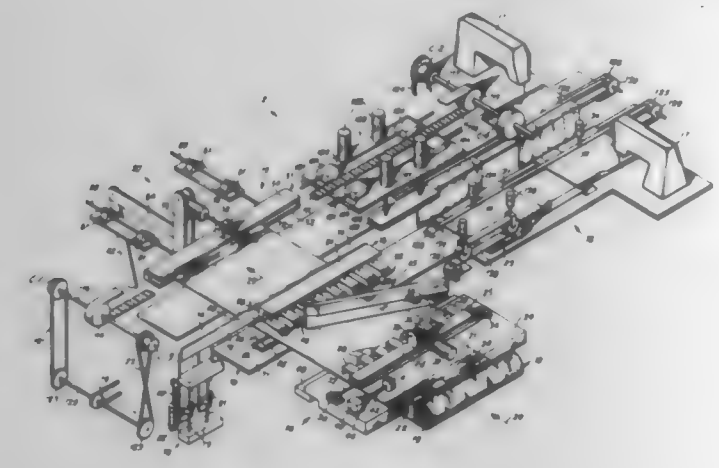
1. A shank for a seeder having furrow opening means at the lower end thereof for penetrating the ground to a desired level to form a main furrow, a sealer plate mounted on said shank above the bottom of the main furrow and trailing the leading portion of the furrow opening means, said sealer plate being below ground level with the shank at working depth and having wedge shaped side portions along opposite sides thereof with each side portion having surfaces that converge downwardly and which define edges that are to the exterior of the furrow opened by the shank, the edges also tapering downwardly in rearward direction, the side portions having facing surfaces on each of the opposite wedge shaped portions that taper toward each other in rearward direction, the side portions forming small auxiliary furrows laterally of the shank below the ground by packing the earth to provide a firm seed bed, said means defining spaced seed outlets on the shank for depositing seed in each of the auxiliary furrows.

4,607,582

AUTOMATIC TOWEL ALIGNING, CUTTING AND HEMMING SYSTEM

Charles E. Brocklehurst, Fountain Inn, S.C., assignor to Opelika Manufacturing Corporation, Chicago, Ill.

Filed Jun. 18, 1984, Ser. No. 621,935
Int. Cl.[4] D05B *27/12, 25/00;* B26D *5/00;* B65H *23/16*
U.S. Cl. 112—121.12 14 Claims



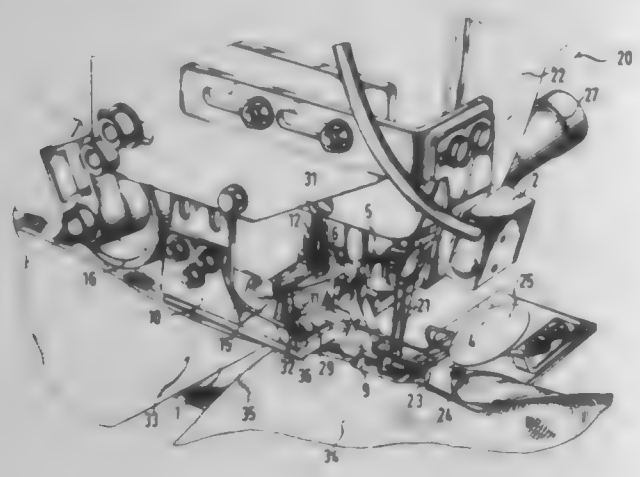
1. Apparatus for straightening the laterally extending bands of a supply of terry cloth toweling as the toweling moves along its length through a predetermined path comprising feed means extending across the path, biasing means for urging the toweling toward frictional engagement with said feed means at intervals across the toweling whereby the toweling engages the feed means and the feed means pulls the toweling along the path, detecting means positioned up the path from the feed means for detecting the movement of a laterally extending band of the toweling at intervals across the toweling as the band approaches the feed means, and relief means responsive to the detection of a band by the detecting means for relieving the force of the biasing means at the interval across the toweling which corresponds to the interval where the detection of the band is made.

4,607,583

CUTTING DEVICE IN A SEWING MACHINE FOR CUTTING AT LEAST ONE THREAD CHAIN OR A SEWN-ON TAPE

Kurt Biermann; Gerhard Steppat, and Bodo Wehmeyer, all of Bielefeld, Fed. Rep. of Germany, assignors to Durkoppwerke GmbH, Bielefeld, Fed. Rep. of Germany

Filed Jan. 8, 1985, Ser. No. 689,701
Claims priority, application Fed. Rep. of Germany, Jan. 11, 1984, 3400697
Int. Cl.[4] D05B *37/04, 65/00*
U.S. Cl. 112—130 12 Claims



1. A cutting device for a sewing machine for cutting a thread chain, which said thread chain connects two successive sewn parts which are moving along a path through the sewing machine; the sewing machine including a sewing needle and including means for moving the needle to sew said parts, and the needle operates at a sewing place in the sewing machine;

the cutting device comprising cutting means supported on the sewing machine, and the cutting means being movable generally in a direction transversely across the path of the sewn parts; the cutting means being shaped and the motion thereof being oriented to cut the thread chain close to the adjacent edges of successive sewn parts;

the cutting device further comprising a sensor upstream in the path from the sewing place for scanning the parts to be sewn which are moving past the sensor for detecting an edge of one of said parts moving past the sensor;

a needle stitch counter connected with the sensor for being started in operation upon the sensor signaling that it has scanned an edge of a sewn part; the stitch counter being connected with the sewing machine for halting further sewing needle operation following a preset number of stitches by the sewing needle;

downstream of the sewing place, a sewn part holder being disposed at the path of sewn parts and being adapted for holding the sewn parts; the holder being shaped to include a cutout opening which extends transversely across the path of the sewn parts, and the cutout being defined by a downstream wall of the cutout in the holder which trails the opening along the path of travel of the sewn parts and by an upstream wall of the opening of the holder which leads the opening along that path; the cutting means being disposed for movement across the path of the sewn parts and along the cutout in the holder;

a thread engaging hook; means for supporting and for moving said hook up and down and across the path of the sewn parts, and the hook being movable through the cutout; the hook having an engaging part for engaging the thread chain, which is then at the cutout upon upward motion of the hook through and then above the cutout;

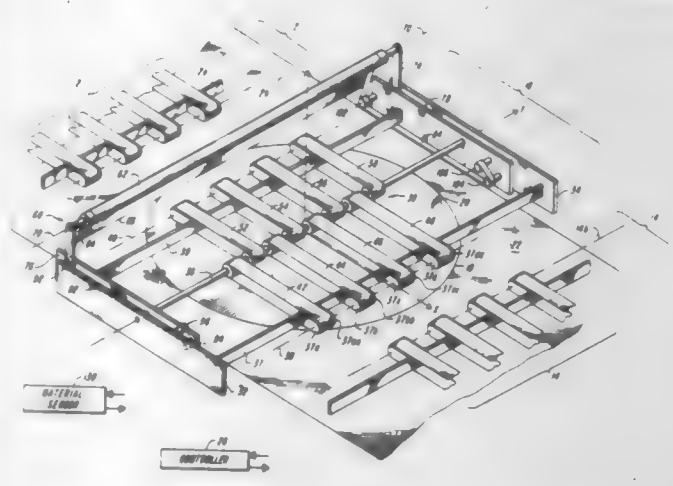
sewn material transport means downstream in the path of the sewn parts from the cutout for engaging a sewn part, and the transport means including an intermittent drive for imparting intermittent drive motion along the path of travel upon the sewn parts traveling past the transport means.

4,607,584

SYSTEM FOR FOLDING LIMP MATERIAL SEGMENTS

Philip N. Bowditch, Cohasset, Mass., assignor to The Charles Stark Draper Laboratory, Inc., Cambridge, Mass.

Filed Oct. 9, 1984, Ser. No. 658,511
Int. Cl.[4] D05B *35/00, 19/00*
U.S. Cl. 112—147 12 Claims



1. A system for folding a limp material segment, said segment having a maximum linear dimension D, comprising

A. means for supporting said segment including a substantially planar support surface for said segment, said support surface having linear dimensions equal to or greater than D,

B. selectively operable belt assembly including a matrix of elongated, substantially parallel endless belts overlying

said support surface, each of said belts including a lower planar surface opposite and substantially parallel to said support surface, said belts being selectively movable in the direction of elongation of said belts,

C. selectively operable means for rotating said support surface with respect to said belt matrix about a reference axis perpendicular to said support surface,

D. a fold-locus-defining assembly including a sheet member and associated sheet means for positioning said sheet member, said sheet member having a substantially rigid, straight leading edge, and said positioning means including selectively operable means for retractably positioning said leading edge and adjacent portions of said sheet member between said support surface and said lower surfaces of said belts and in a plane parallel to said support surface, whereby said leading edge is substantially perpendicular to the direction of elongation of said belts,

E. sensing means for generating position signals representative of the position of a segment on said support surface,

F. selectively operable belt positioning means for positioning said belt assembly with respect to said support surface in the direction of said reference axis,

G. controller including means responsive to said position signals and to applied signals representative of a desired fold locus on said segment for controlling said belt assembly, said rotating means, said fold-locus-defining assembly and said belt positioning means to fold said material segment about a linear fold locus.

4,607,585

SEWING MACHINE HAVING A PROGRAM CARRIER

Günter Meier, Karlsruhe-Durlach, Fed. Rep. of Germany, assignor to Dorina Nähmaschinen GmbH, Fed. Rep. of Germany

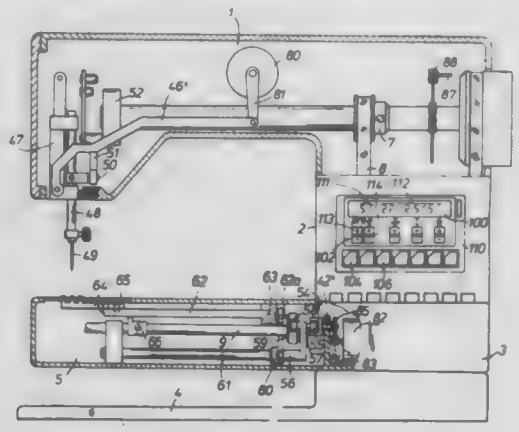
Filed Sep. 16, 1983, Ser. No. 532,829

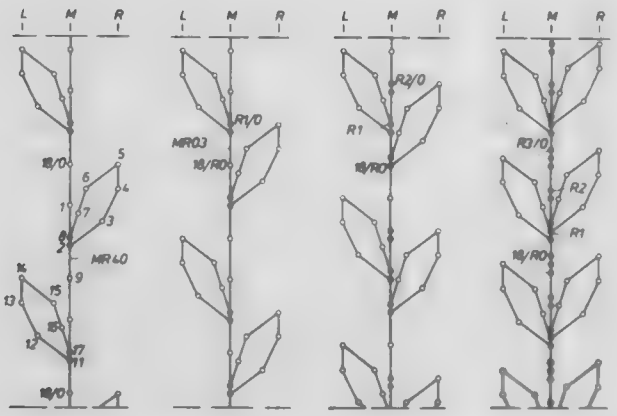
Claims priority, application Fed. Rep. of Germany, Sep. 22, 1982, 3235078

Int. Cl.[4] D05B *3/02*

U.S. Cl. 112—454

5 Claims





1. In a sewing machine including a rotatable drive shaft driving a needle for vertical upward and downward movement in a swing arm which is connected to the shaft for selected pivotal swing movement through a selected needle bight distance during its vertical reciprocation, a feed dog which is movable selectively upwardly and downwardly and back and forth in a feed direction for engaging and moving a workpiece material in selected directions, a needle swing control for controlling the swing movement of said needle mounted on the sewing machine, and a workpiece feed control for controlling feed of the workpiece mounted on the sewing machine, the improvement comprising a bight program storage for storing information on needle swing to form a plurality of different predetermined multistitch patterns, a workpiece program storage for storing information on workpiece feed for forming the plurality of different predetermined multistitch patterns in conjunction with said bight program storage, selector means connected to said bight and workpiece program storages and to said needle swing and workpiece feed controls for selecting and sewing a sequence of said plurality of different patterns to be sewn in a forward direction, and backstitch generating means operatively connected to said workpiece feed control for selectively inserting at least one backstitch which is formed in a direction opposite to said forward direction between individual patterns of said sequence of patterns formed by said selector means whereby the sequence of patterns formed with said at least one backstitch between patterns appears different from a sequence of said patterns without at least one backstitch between patterns.

4,607,586

PRELOADED COMPRESSION ABSORBER CELL FOR BOAT BUMPERS

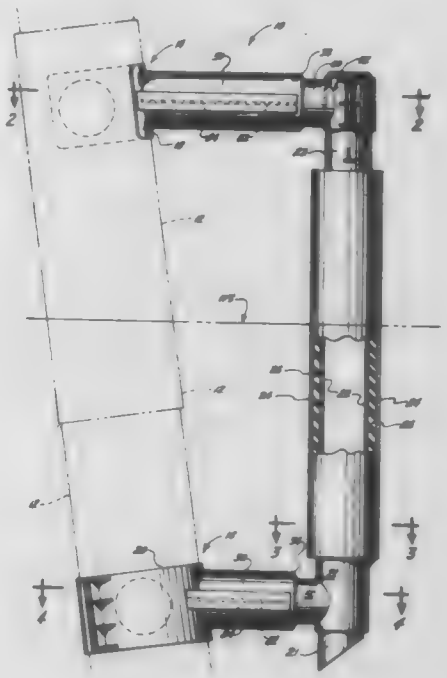
Weldon P. Taquino, 202 N. Locksley Dr., Lafayette, La. 70503

Filed Mar. 25, 1985, Ser. No. 715,649

Int. Cl.[4] B63B *59/02*

U.S. Cl. 114—219

10 Claims



1. A marine compression absorber for supporting bumpers on offshore platforms that can sustain impact from a moving marine vessel comprising:

a. a tubular base structural section having one end portion that is normally attached to an offshore oil platform and a central hollow bore;

b. a moving structural section that slides upon the base section in a telescoping fashion between inner retracted and outer projected positions;

c. first and second transverse load transfer surface means in the form of parallel plates carried respectively by the base and moving structural sections for transferring a compressive load between the base and structural sections;

d. a compressible rubber mass positioned between the first and second load transfer surfaces and surrounded by at least one of the structural sections, and an airspace which allows the rubber to laterally deform for biasing the moving section into the projected position;

e. tensioning means in the form of a tension rod forming a

connection between the first and second load transfer surfaces in the projected rest positon to put the rubber mass in compression by holding the first and second load transfer surface means in a position that squeezes the compressible rubber mass therebetween, for defining the projected rest position as a normal resting position prior to impact by a marine vessel so that the rubber mass can apply a compressive load to the load transfer surfaces prior to marine vessel impact; and

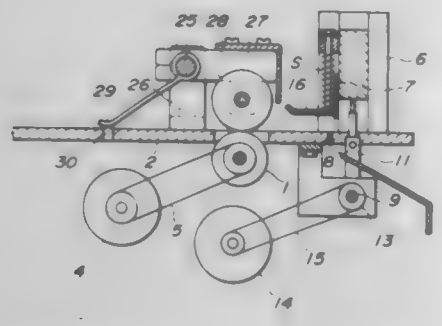
f. the tensioning means disconnecting from at least one of the load transfer surfaces when movement occurs to the retracted position.

4,607,587

TAPE MARKING AND CUTTING APPARATUS

Yoshiaki Hoama, Tokyo, Japan, assignor to Tokyo Juki Industrial Co., Ltd., Tokyo, Japan

Filed Nov. 5, 1984, Ser. No. 678,453
Int. Cl.[4] B05C *11/00*
U.S. Cl. 118—37 4 Claims



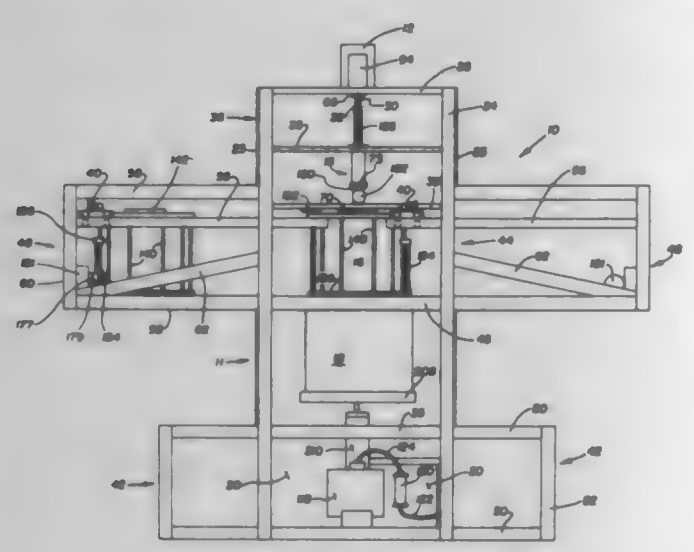
1. A tape marking and cutting apparatus comprising feed means for feeding tape, cutter means for cutting the tape, and marker means for marking on an upper side surface of the tape with a marker element, said marker means including marker actuator means for moving the marker element into abutting engagement with the upper side surface of the tape and for moving the marker element on the upper side surface of tape while maintaining the marker element in abutting engagement with the upper side surface of the tape to thereby form a mark on the upper side surface of the tape.

4,607,588

PARTS COATING APPARATUS AND METHOD

Richard O. Stants, 1508 Pontiac Dr., and Kerry J. Olds, 2719 N. Rockford Ct., both of Kokomo, Ind. 46902

Filed Apr. 4, 1984, Ser. No. 596,679
Int. Cl.[4] B05C *13/02*
U.S. Cl. 118—52 37 Claims



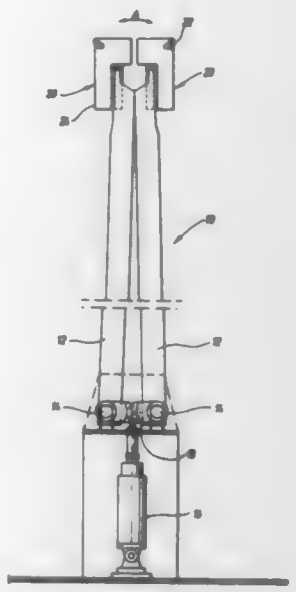
1. A parts coating apparatus comprising: a housing, a motor supported by said housing, a head driven by said motor, said head being rotatably mounted to said housing, at least one basket to contain parts to be coated, said basket being perforate to the coating material to be applied to said parts, each said basket being detachably coupleable to and rotatable with said head, a coating compartment, said coating compartment being capable of separably enclosing said basket when said basket is coupled to said head, said coating compartment being generally imperforate to said coating material, a spray tube communicating with said coating compartment to spray parts within said coating compartment with said coating material, said spray tube restraining said basket from radial movement of said basket during rotational movement thereof, a coating material supply system providing said coating material to said spray tube, a control system selectively actuating said motor and said coating material supply system.

4,607,589

FLUID DISPENSING APPARATUS

James D. M. Gibson, Ilkley, England, assignor to Wool Development International Ltd., Ilkley, England

Filed Aug. 29, 1984, Ser. No. 645,440
Claims priority, application United Kingdom, Sep. 1, 1983, 8323484; Oct. 10, 1983, 8327055
Int. Cl.[4] B05C *1/00*
U.S. Cl. 118—201 9 Claims



1. An apparatus for the application of crease setting compositions which comprise two movable arms movable towards and away from one another and capable of insertion into a leg of a pair of trousers to be creased, at least one of the arms carrying at, or near, one end thereof an applicator head comprising a nozzle for the application of crease setting composition, and guide means for locating the nozzle within the crease to be treated, there being means for urging crease setting composition through the nozzle into the crease to be set in timed relationship with the relative movement between the applicator heads and the trousers, said arms being movable towards one another to facilitate insertion into and removal from said trouser leg and being movable away from one another while inserted in the trouser leg so as to cause one of each arm to contact opposite creases of said trouser leg during the application of the crease setting composition.

4,607,590

APPARATUS FOR DIRECTING FLUID STREAM AGAINST SUBSTRATE SHEET

Don P. Pender, 1121 E. Wesleyan Dr., Tempe, Ariz. 85252

Continuation of Ser. No. 415,135, Sep. 7, 1982, abandoned. This application Sep. 17, 1984, Ser. No. 651,442
Int. Cl.[4] B05C *5/02*
U.S. Cl. 118—314 1 Claim

1. Apparatus for directing a stream of fluid against a pliant substrate sheet traveling through said apparatus, said sheet having first and second opposed generally parallel planar

surfaces co-terminating at the edge defining the periphery of said sheet, said apparatus including:

(a) a conveyor table for transporting said pliant substrate sheet, said conveyor table including

(i) a plurality of generally horizontally disposed parallel axles carrying a first set of circular rollers contacting and supporting said first planar surface of said pliant substrate sheet in a generally horizontal orientation as said sheet moves over said rollers, and

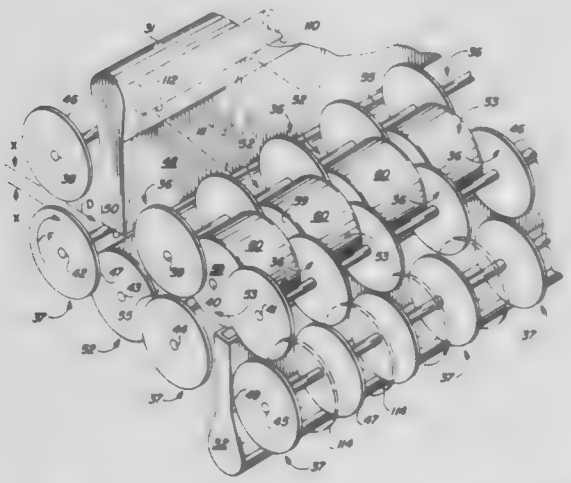
(ii) a plurality of generally parallel axles carrying a second set of rotating circular rollers generally opposed to said first set of rollers and contacting said second planar surface of said pliant substrate sheet as said sheet moves along said conveyor table, said axles carrying said second set of rollers being generally parallel to said axles carrying said first set of rollers,

said circular rollers carried on said axles being shaped and dimensioned such that said circular rollers carried on one of said axles overlap and are interproximated with rollers on another of said axles;

(b) a fluid force compensating roller rotatably carried in said apparatus and having a substantially continuous elongate cylindrical surface area positioned

(i) transverse said direction of travel of said sheet over said conveyor table; and

(ii) such that a portion thereof is adjacent said pliant substrate sheet as said sheet is transported by said conveyor table and moves over said fluid force compensating roller,



said fluid force compensating roller being shaped and dimensioned such that said circular rollers carried on at least one of said axles overlap and are interproximated with said fluid force compensating roller;

(c) drive means for turning

(i) said axles to rotate said circular rollers carried thereon to cause said sheet to move along said conveyor table in a direction of travel generally perpendicular to the longitudinal axes of said axles, and

(ii) said fluid force compensating roller; and

(d) fluid distribution means positioned to generally direct a stream of fluid

(i) toward said fluid force compensating roller, and p2 (ii) against said pliant substrate sheet to press one of said first and second planar surfaces thereof against a portion of said elongate cylindrical surface area,

said fluid stream generally initially contacting only portions of said pliant substrate sheet contacted and supported by said elongate cylindrical surface area of said fluid force compensating roller; and

the force generated by said fluid stream against said pliant substrate generally being counteracted by said portion of said elongate surface area of said fluid force compensatory roller,

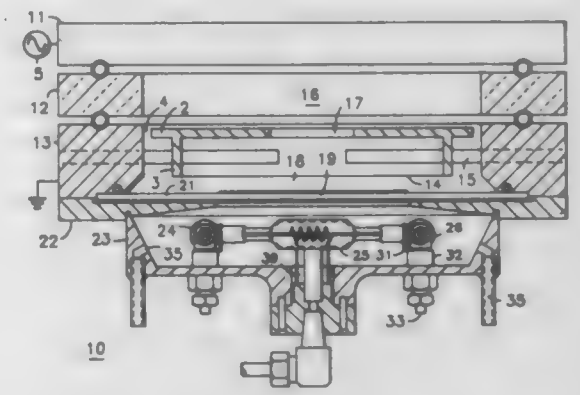
said apparatus minimizing both the puddling of said fluid on said sheet and the tendency of said sheet to flutter during said directing of said fluid stream against said pliant sheet.

4,607,591

CVD HEATER CONTROL CIRCUIT

Robert W. Stitz, Mesa, Ariz., assignor to Spectrum CVD, Inc., Phoenix, Ariz.

Filed Aug. 6, 1985, Ser. No. 762,757
Int. Cl.[4] B05C *11/00*
U.S. Cl. 118—666 5 Claims



1. Apparatus for chemical vapor deposition comprising:

an evacuable chamber having a thermally translucent window;

heater means positioned outside said chamber and adjacent said window, said heater means comprising at least one incandescent lamp;

temperature sensing means, located in said heater means, for producing an electrical signal indicative of temperature;

transducer means for converting the signal from said sensing means into a digital signal;

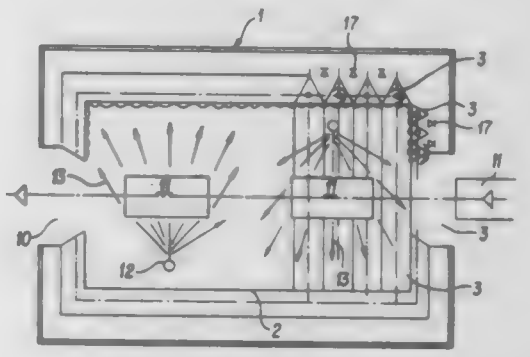
control means connected to said transducer means and to said at least one lamp for initially applying full power to said lamp and then a lower, temperature sustaining power to said lamp during a chemical vapor deposition process in said chamber.

4,607,592

PROCESS FOR THE RECYCLING OF PAINT MATERIAL FROM THE OVERSPRAY OCCURING DURING SPRAY PAINTING AND A DEVICE TO CARRY OUT THE PROCESS

Wolfgang Richter, Augsburger Str. 23, D-8946 Memmingerberg, Fed. Rep. of Germany

Filed Sep. 10, 1984, Ser. No. 649,014
Claims priority, application Fed. Rep. of Germany, Sep. 8, 1983, 3332457
Int. Cl.[4] B05B *15/06*
U.S. Cl. 118—689 13 Claims



1. A device to carry out a process to recycle paint from the overspray occuring in spray painting, comprising a collector device for collecting overspray which is flooded with water-circulating in a closed system, means for concentrating the water overspray mixture in a collection tank, a filtration chamber connected to the collection tank for separating the mixture

into water and raw paint, means for feeding the reclaimed water back into circulation, a measuring section (50) for measuring the physical characteristics of the reclaimed paint and comparing it to the physical characteristics of fresh paint, means for feeding the reclaimed paint to the measuring section, a reprocessing unit for adjusting the consistence of the raw paint according to the data determined in the measuring section, and means for mixing the thus reprocessed paint into the fresh paint to be sprayed, wherein the collector device (1) consists of wall surfaces which are made up of rotating segments, whereby the segments are completely flooded with circulating water.

4,607,593

APPARATUS FOR PROCESSING ARTICLES IN A CONTROLLED ENVIRONMENT

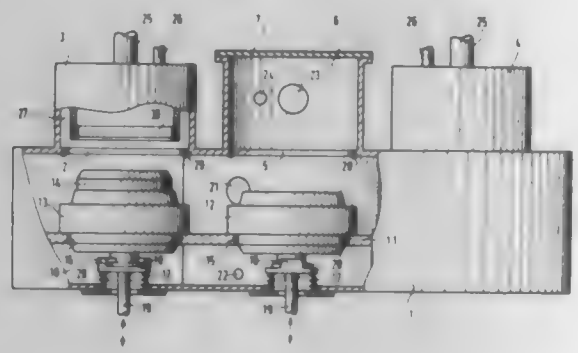
Gilbert O. E. Van Hemel, Weert, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 7, 1984, Ser. No. 679,330

Claims priority, application Netherlands, Dec. 23, 1983, 8304421

Int. Cl.[4] C23C *13/08*

U.S. Cl. 118—719 9 Claims



1. Apparatus for processing articles in controlled environments comprising

a tunnel whose wall is provided with an opening which gives access to a chamber which is connected to the tunnel in a vacuum-tight manner and in which a processing step can be carried out,

a conveyor present in the tunnel for transporting the articles through the tunnel, which conveyor has seats for receiving holders that can support the articles,

transport means by which the articles supported by a holder which is carried by the conveyor into a position opposite to the opening in the wall of the tunnel, can be introduced into the chamber and recovered from the chamber into the tunnel and

means by which a controlled environment can be created in the chamber,

characterized in that the tunnel is endless and the conveyor follows a closed path, the tunnel has in its wall several openings each giving access to a respective processing chamber which is connected to the tunnel in a vacuum-tight manner, and an opening giving access to a lock chamber which is connected to the tunnel in a vacuum-tight manner and in which articles can be locked through;

in that the apparatus can be sealed from its surroundings in a vacuum-tight manner by means of a panel in the outside wall of the lock chamber;

in that the chambers can be sealed from the tunnel in a vacuum-tight manner; and

in that the lock chamber, processing chambers and the tunnel each have means by which a controlled environment can be created therein.

4,607,594

ANIMAL LITTER

Craig E. Thacker, McConnelsville, Ohio, assignor to Raetec Industries, Inc., McConnelsville, Ohio

Filed Jan. 11, 1985, Ser. No. 690,723

Int. Cl.[4] A01K *1/015*

U.S. Cl. 119—1 15 Claims

10. A granular absorbent composition comprising a mixture of:

(a) absorbent particles selected from the group consisting of cellulosic material, a clay, a diatomaceous earth, and mixtures thereof; and

(b) inert adsorptive granules of volcanic rock, only said absorptive granules having been treated with a neutralizing agent capable of reacting with urine and selected from the group consisting of a carbonate, bicarbonate, hydrogen phosphate, and mixtures thereof.

4,607,595

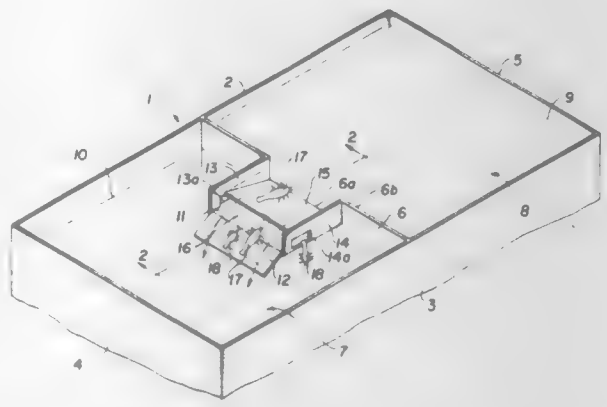
RHEOTACTIC SHRIMP HARVESTER

J. Carlos Busot, Land-o-Lakes, Fla., and Peter W. Hill, Wilmington, N.C., assignors to The University of South Florida, Tampa, Fla.

Filed Mar. 25, 1985, Ser. No. 716,227

Int. Cl.[4] A01K *61/00*

U.S. Cl. 119—2 16 Claims



1. A rheotactic shrimp harvester comprising, a first tank adjacent a second tank, ramp means extending between said tanks, slot means provided in said ramp means, water contained in said tanks, means supplying water to said second tank to maintain the water level in said second tank higher than the water level in said first tank, whereby the water flows from the second tank into said ramp means and into said first tank, and shrimp to be harvested being contained in said first tank, whereby the shrimp reacting to the current of water flowing down the ramp means migrate upstream on the ramp means, the smaller shrimp passing through the slot means and returning to said first tank while the larger shrimp go over the slot means and into said second tank.

4,607,596

MILKING METHODS AND APPARATUS

Walter G. Whittlestone, Riverlea Road; Douglas L. Wenham, 90 Braid Road, and James D. M. Foreman, 475 River Road, all of Hamilton, New Zealand

Filed May 11, 1984, Ser. No. 609,577

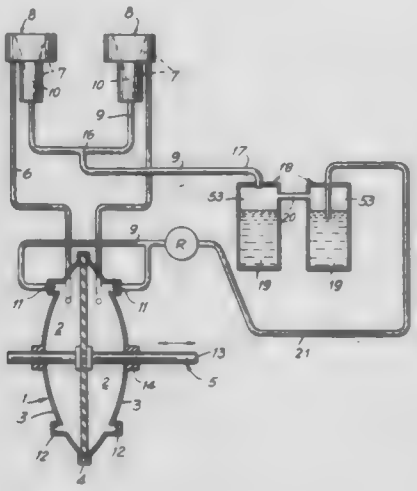
Claims priority, application New Zealand, May 11, 1983, 204193

Int. Cl.[4] A01J *5/04, 5/10*

U.S. Cl. 119—14.02 7 Claims

1. A method of milking using a pair of milking cups each having an outer pulsation chamber and an inner milk chamher, said method comprising the steps of causing the pulsation chambers of each of the milking cups to be directly communicable with separate chambers of a pump having at least two pumping chambers separated by a reciprocable member common to both and causing the milk chambers of the milking cups

to be communicable each with the two pumping chambers of the pump via a valving means operable to isolate the milk chambers of the milking cups when positive pressure exists in said pump chambers, and reciprocating the reciprocable mem-



ber so that the vacuum created in the inner milk chambers of each milking cup is directly proportional to high pressure within the pulsation chambers of at least one of the milking cups.

4,607,597

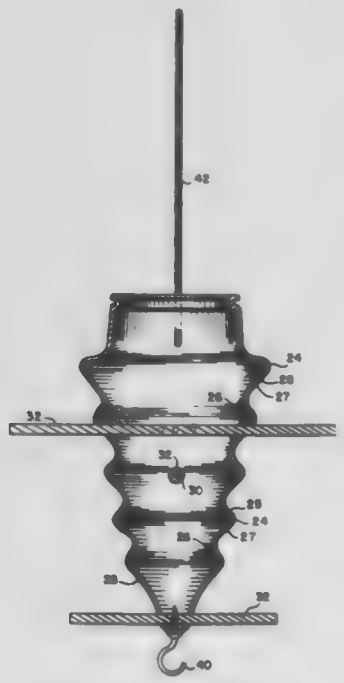
BIRD FEEDER

Charles P. Sevigny, 16 Barque Hill Dr., Norwell, Mass. 02061

Filed Apr. 24, 1985, Ser. No. 726,673

Int. Cl.[4] A01K *39/01*

U.S. Cl. 119—51 R **16 Claims**



1. A bird feeder comprising:

(a) a bird feed container formed of a transparent material in the shape of an inverted cone and provided with a wide top opening and restricted bottom apex, and a plurality of progressively narrower undulations between said top opening and said bottom apex, each of said plurality of undulations defining a pair of reentrant annular sections: an upper section and a lower section disposed on opposed sides of a central ridge line, the inclination of said lower section being gentler than that of said upper section;

(b) at least one perch disposed diametrically across said container and extending on each side thereof;

(c) a plurality of feed apertures formed in one of said undulations located upwardly and adjacent said at least one perch and formed in said lower section thereof: and

(d) a removable cap designed for covering said wide top opening.

4,607,598

SUCTION DEVICE FOR TWO-CYLINDER INTERNAL COMBUSTION ENGINE

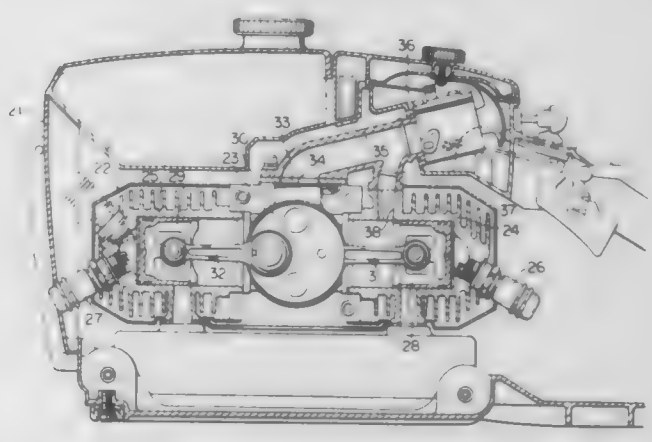
Yoshikiyo Kamata, Hachioji, Japan, assignor to Kioritz Corporation, Tokyo, Japan

Filed Dec. 12, 1984, Ser. No. 680,916

Claims priority, application Japan, Dec. 15, 1983, 58-192197[U]

Int. Cl.[4] F02B *75/24*

U.S. Cl. 123—56 BC **2 Claims**



1. In a two-cylinder internal combustion engine comprising a pair of cylinders, a pair of pistons each mounted in one of said pair of cylinders for reciprocatory movement, a crankcase having a crankshaft connected to the two pistons, a variable volume crank chamber defined by the crankcase and an area formed beneath each of said pistons so as to perform precompression of air-fuel mixture, and a first conduit connected to a first suction port formed in the crankcase to maintain the crank chamber in communication with a carburetor via a check valve; a suction device comprising:

a second suction port in direct communication with the crank chamber formed at a wall of at least one of sid pair of cylinders and being open and closed by said piston; and a second conduit allowing the second suction port to communicate with the carburetor therethrough.

4,607,599

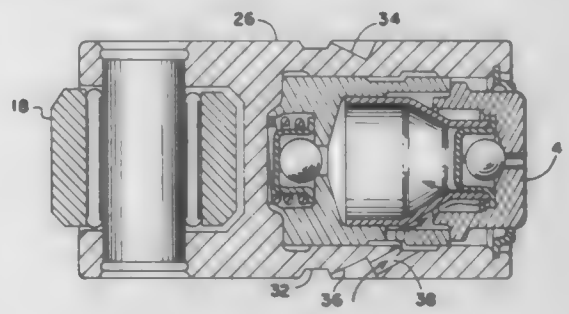
ROLLER FOLLOWER HYDRAULIC TAPPET

Stephen M. Buente, and David P. Clark, both of Battle Creek, Mich., assignors to Eaton Corporation, Cleveland, Ohio

Filed May 15, 1985, Ser. No. 734,634

Int. Cl.[4] F01L *1/24*

U.S. Cl. 123—90.5 **10 Claims**



1. A hydraulic lash adjusting tappet for use in the valve gear of an internal combustion engine comprising:

(a) body means having the outer periphery thereof adapted for sliding movement in a bore provided in the engine, said bore of the type supplied by an oil passage communicating therewith;

(b) roller follower means rotatably received on one end of said body means, said roller follower means adapted for rolling contact with an engine camshaft;

(c) registration surface means adapted for moveable registration thereagainst comprising at least one especially config-

ured surface formed on said body means remote from said follower means and adapted for registration thereagainst for orienting said body means in said bore for ensuring proper alignment of said roller means with the engine camshaft;

(d) plunger means, including hydraulic lash adjusting means, said plunger means moveably received in a cavity formed in said body means, said plunger formed to interfit said cavity so as to form a hydraulic pressure chamber and define precision leakdown surfaces therebetween;

(e) said body means defining a fluid inlet port disposed on the periphery thereof for communicating with said engine bore oil passage when said body means is oriented in said bore by said registration means, said body means further defining a pair of localized collector surface means diametrically opposite thereon, said collector surface means disposed axially coincident with and circumferentially spaced from said registration surface means to provide a circumferentially staggered and on the periphery of said body means for leakage control between said body means and said engine oil bore one of said surface means disposed to communicate with said fluid inlet port, said collector surface means further including passage means operable to maintain communication of said engine bore oil passage with said fluid inlet port during movement of said body means in said engine bore caused by contact of said roller means with said engine camshaft.

4,607,600

VALVE ACTUATING APPARATUS IN INTERNAL COMBUSTION ENGINE

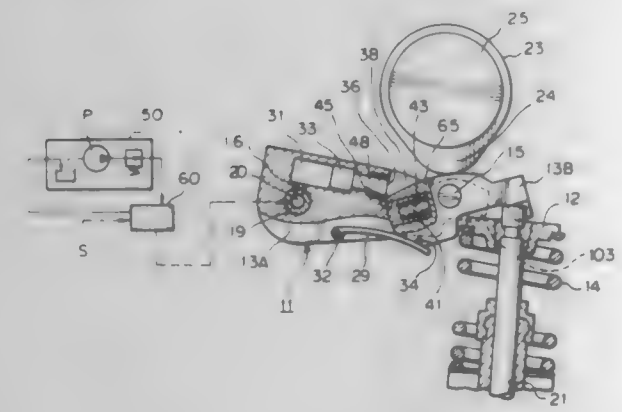
Kouji Yoshizaki, Susono, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Aichi, Japan

Filed Sep. 24, 1985, Ser. No. 779,678

Claims priority, application Japan, Dec. 25, 1984, 59-195438[U]; Jan. 11, 1985, 60-1480[U]; Jan. 24, 1985, 60-7303[U]

Int. Cl.⁴ F02D *13/06*

U.S. Cl. 123—90.16 **4 Claims**



1. A valve actuating apparatus for intake and exhaust valves in an internal combustion engine having a swing rocker arm which is rotatably connected at its one end to a rocker arm shaft supporting the rocker arm and at its opposite end bears against a valve stem of an associated intake or exhaust valve, and a rotatable cam which is supported on a cam shaft and which bears against the rocker arm to swing the same about the rocker arm shaft, wherein said rocker arm is composed of two arms which are interconnected to each other by means of a connecting shaft extending in parallel to the rocker arm shaft for relative rotation about the connecting shaft, one of which arms bears against the valve stem, so that the two arms can selectively occupy an operative position in which the two arms are integral with each other and extend substantially straight so as to form a single rocker arm, and an inoperative position in which a relative rotation between the two arms takes place to absorb the rotation of the cam, and wherein said apparatus comprises means for causing the cam to bear only against said one arm bearing against the valve stem.

4,607,601

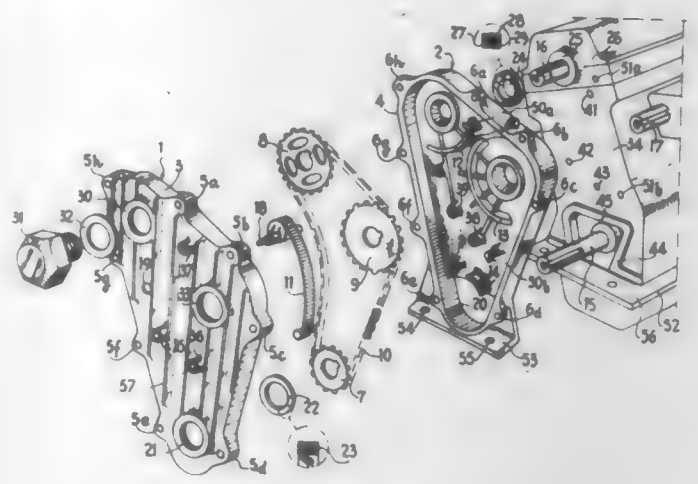
DETACHABLE TIMING GEAR CASSETTE UNIT FOR AN EXPLOSION OR INTERNAL COMBUSTION ENGINE

Bernard Kohler, La Celle St-Cloud, France, assignor to Compagnie des Transmissions Mechaniques Sedis, France

Continuation-in-part of Ser. No. 582,739, Feb. 23, 1984, abandoned. This application Feb. 22, 1985, Ser. No. 704,194

Int. Cl.⁴ F01L *1/02*

U.S. Cl. 123—90.31 **14 Claims**



1. A detachable timing gear cassette unit for attaching to a crankshaft and a camshaft of a cylinder block of an engine, said timing gear cassette unit comprising:

a housing formed by at least two sealingly interconnected side walls, said housing, including said at least two interconnected side walls, being attachable and detachable as a unit from said cylinder block; and

synchronization means disposed within said housing, said synchronization means comprising:

first means for producing an input movement for connection to said crankshaft;

at least one second means for producing an output movement for connection to said camshaft;

third means interconnecting said first and at least one second means, said first, at least one second, and third means being prepositioned and communicating such that said third means drivingly connects said first means to said at least one second means whereby said output movement is driven in synchronism with said input movement; and

positioning means located adjacent said first and at least one second means for maintaining said first means and said at least one second means in position during attachment of said timing gear cassette unit to said cylinder block.

4,607,602

IGNITION TIMING CONTROL APPARATUS FOR INTERNAL COMBUSTION ENGINE

Satoshi Komurasaki, Himeji, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 6, 1984, Ser. No. 647,652

Claims priority, application Japan, Sep. 16, 1983, 58-171469; Oct. 26, 1983, 58-202084; Oct. 31, 1983, 58-206468

Int. Cl.⁴ F02P *5/155*

U.S. Cl. 123—425 **20 Claims**

1. An ignition timing control apparatus for an internal combustion engine including a supercharger having an operating characteristic such that the supercharging pressure rises with increasing engine spped to a supercharged pressure limit and thereafter remains generally constant with increasing engine speed, said ignition timing control apparatus comprising:

an acceleration sensor for detecting the vibrating acceleration of the internal combustion engine;

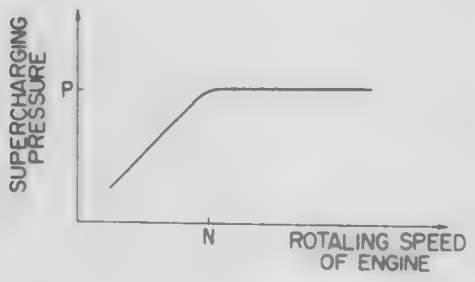
discriminating means for removing a noise signal component

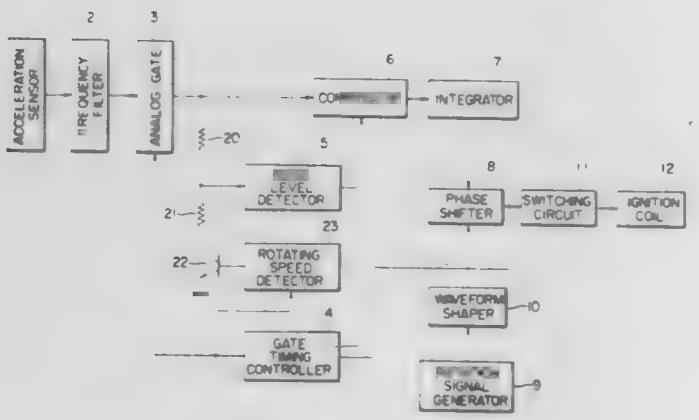
from the output of said acceleration sensor to discriminate a knocking signal component;

generation means for generating reference ignition timing signals;

phase shift means for phase-shifting the phase of said reference ignition timing signals in response to the output of said discriminating means;

switch means for switching the energization of an ignition coil in response to the output of said phase shift means;

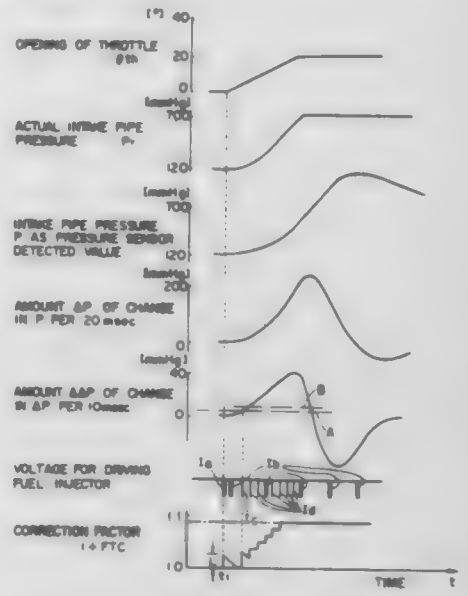




detector means coupled to the engine for monitoring a load condition indicative of the operating characteristic of the supercharger and generating a first signal in the rising portion of the supercharger operating characteristic and a second signal in the constant portion of the supercharger operating characteristic; and

control means for controlling the phase shift variable of said reference ignition timing signals in response to the signals generated by said detector means.

means for detecting a second differential d^2X/dt^2 of X with respect to time; and



means for increasing synchronous fuel injection in relation to said second differential.

4,607,604

OIL SEPARATOR FOR INTERNAL COMBUSTION ENGINE

Junichi Kanoh, Nagoya, and Kongoh Aoki, Kariya, both of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kiraya, Japan

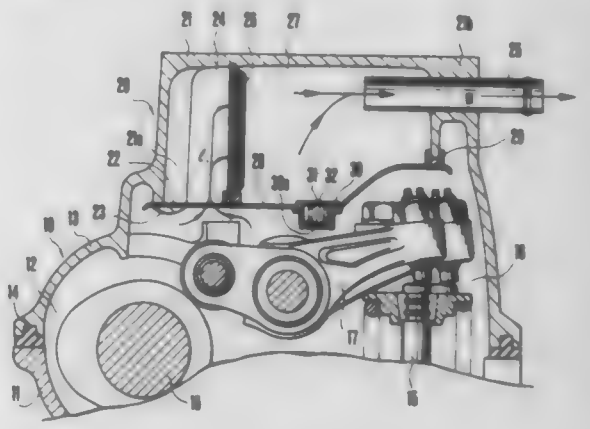
Filed Feb. 27, 1985, Ser. No. 706,446

Claims priority, application Japan, Mar. 5, 1984, 59-031908[U]

Int. Cl.[4] F02M *25/06*

U.S. Cl. 123—572

3 Claims



1. In an internal combustion engine including a crankcase ventilation system, an oil separator casing formed integrally with the cylinder-head over, a partition defining the lower end of the oil separator, a baffle member for intercepting oil drops contained in blow-by gas flowing into the oil separator from the upper chamber of the cylinder, and an outlet port formed in the wall of said oil separator casing to exhaust gas from the oil separator, wherein the improvement comprises:

said baffle member being arranged at the open lower end of the oil separator,

a filter member made of foam metal and arranged so as to divide the inside of the oil separator into a gas-liquid separating chamber in the upperstream side where said baffle member is arranged and a downstream side chamber where said partition is arranged, said filter member functioning so as to absorb oil constituents contained in blow-by gas passing through said baffle member,

a relief valve being arranged in said partition so as to be opened when the internal pressure of said upper chamber of the cylinder increases to a predetermined degree, to introduce the blow-by gas into said downstream-side

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4,607,603

FUEL INJECTION SYSTEM EMPLOYING THE SECOND TIME DIFFERENTIAL OF PRESSURE OR AIR FLOW RATE

Nobuyuki Kobayashi; Toshimitsu Ito, and Kazuhiko Norota, all of Toyota, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Continuation of Ser. No. 464,111, Feb. 4, 1983, abandoned. This application Nov. 8, 1984, Ser. No. 669,723

Claims priority, application Japan, Mar. 31, 1982, 57-149937

Int. Cl.[4] F02B *3/00*

U.S. Cl. 123—492

6 Claims

1. An electronically controlled fuel injection system to inject fuel from a fuel injector to an intake system having an intake pipe pressure and an air flow rate comprising:

means for detecting a quantity X equal to one of said intake pipe pressure and an air flow rate with respect to time;

means for determining a basic fuel injection amount as a function of X;

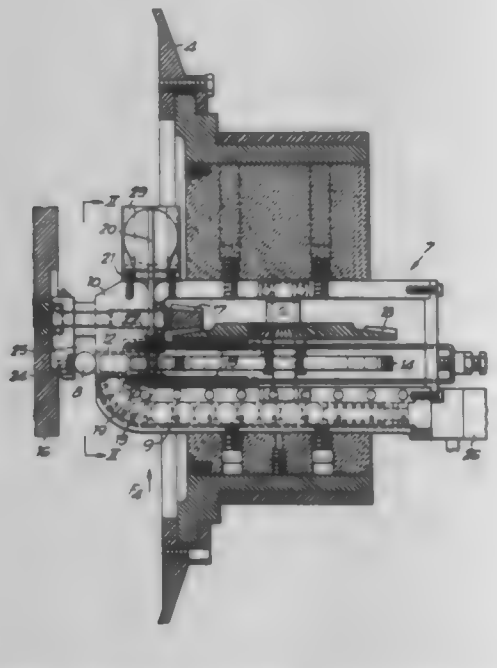
chamber directly from said upper chamber of the cylinder.

4,607,605

PROJECTILE DISTRIBUTOR FOR CENTRIFUGAL LAUNCHER

Léon L. Rutten, 20 Rue Duvivier, 4000 Liege, Belgium

Filed Jan. 14, 1983, Ser. No. 457,963
Claims priority, application Belgium, Jan. 22, 1982, 2/59552
Int. Cl.[4] F41B *3/04*
U.S. Cl. 124—6 10 Claims



1. A distributor for feeding oblong projectiles to the path of a projectile engaging vane carried by a cylindrical gun in a centrifugal launcher of the type including a rotor having an open central zone, and wherein the rotor axis of rotation and longitudinal axis of the gun define two skewed lines, the distributor comprising:

(a) a support provided with a transfer zone and a passage for storing a plurality of oblong projectiles to be fed into the transfer zone;

(b) a slide disposed in the transfer zone for successively engaging the oblong projectiles;

(c) an anvil carried by the support and positioned opposite the slide in an open central zone of a rotor;

(d) means for periodically advancing the slide to a first position in synchronization with rotation of the rotor to engage and bring each oblong projectile against the anvil and in the path of a projectile engaging vane, wherein the slide blocks the passage while in the first position;

(e) means for retracting the slide to a second position wherein the slide unblocks the passage;

(f) means for maintaining the slide in the first position in opposition to the retraction means, including a movable knife biased towards a locking position in engagement with the slide and electromagnet means for moving the knife into an unlocking position out of engagement with the slide; and

(g) means for feeding the oblong projectiles through the passage to the transfer zone.

4,607,606

BOW MOUNTED QUIVER

John Schaar, Tempe, Ariz., assignor to Grand Slam Archery, Phoenix, Ariz.

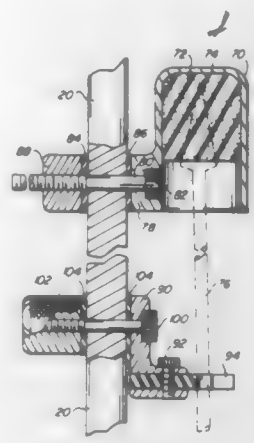
Filed Aug. 26, 1983, Ser. No. 526,661
Int. Cl.[4] F41B *5/00*
U.S. Cl. 124—89 18 Claims

1. A quiver mountable on a bow, comprising:

storage means capable of releasably housing at least one arrow;

coupling means adopted to attach for attaching said storage means to a first side of said bow; and

counterweight means mounted on said coupling means and



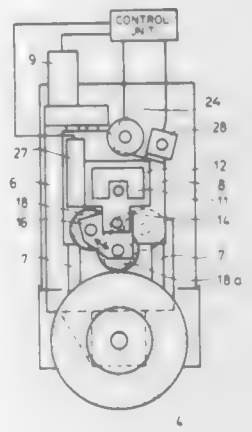
adapted to extend extending from a second side of said bow to produce a compensating torque which substantially offsets the torque produced by the weight of said storage means and said at least one arrow.

4,607,607

APPARATUS FOR DRESSING GRINDING WHEELS

Reinhard Janutta, Geesthacht; Uwe Uhlig, Buchholz, and Werner Redeker, Börnsen, all of Fed. Rep. of Germany, assignors to Hauni-Werke Körber & Co. KG, Hamburg, Fed. Rep. of Germany

Filed Sep. 14, 1984, Ser. No. 651,070
Claims priority, application Fed. Rep. of Germany, Sep. 24, 1983, 3334663
Int. Cl.[4] B24B *53/00*
U.S. Cl. 125—11 CD 15 Claims

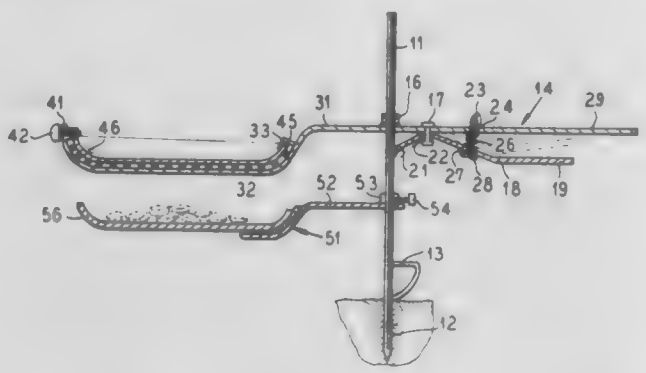


1. In a grinding machine, the combination of a housing; a holder reciprocably mounted in said housing; a grinding wheel having a working surface and being rotatably mounted on said holder; and a numerically controlled dressing apparatus comprising a carrier movably mounted on said support, a plurality of rotary spindles of said carrier, at least one dressing tool on each of said spindles, at least one of said tools having a circumferentially complete marginal portion resembling a cutting edge and said carrier being pivotable about an axis which is at least substantially parallel to the axis of at least one of said dressing tools between a plurality of different angular positions in each of which a different tool is ready for engagement with said working surface, drive means for rotating said tools relative to said carrier, and means for effecting a movement between said carrier and said grinding wheel in the axial and radial directions of the grinding wheel.

4,607,608
CAMPFIRE COOKING GRILL

Von D. Allred, and Mark Allred, both of P.O. Box 24, Afton, Wyo. 83110

Filed May 31, 1985, Ser. No. 739,850
Int. Cl.[4] F24B 3/00
U.S. Cl. 126—30 3 Claims

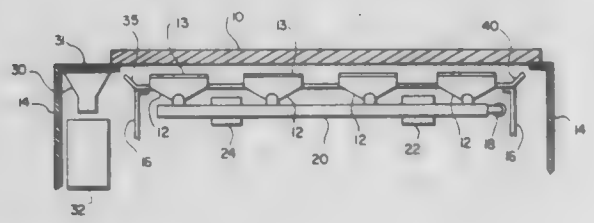


1. An outdoor cooking grill comprising a stake with a foot pad adapted to be inserted into the ground with the foot pad, a combination griddle and grill member including a support member formed with an opening receivable over said stake and with a first end which forms a handle, a grill attached to the other end of said support member, a transverse angle member attached to said support member adjacent said grill, a griddle attachable to said support with said angle, a handle locking lever pivotally attached to said support member and engageable with said stake and spring biased to a locked position and moveable to allow said support member to be moved vertically on said stake and wherein said grill is curved and said griddle has a similar curve so that it can be mounted on said grill and locking means to lock said grill to said griddle.

4,607,609
INFRARED BURNER ASSEMBLY FOR A GRIDDLE

Richard Keating, 330 Sutton Rd., Barrington Hills, Ill. 60010

Filed Oct. 2, 1985, Ser. No. 783,169
Int. Cl.[4] F24C 3/00
U.S. Cl. 126—39 J 4 Claims



1. A griddle comprising:

A metal slab having a generally rectangular shaped surface adapted for cooking foods thereon;

support cabinet means for said slab;

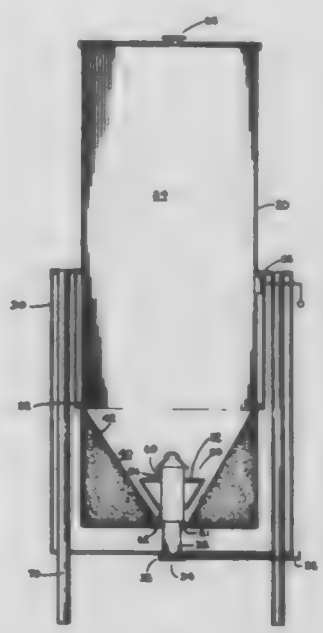
infrared burner means located below said slab in close proximity thereto for heating said surface to a uniform cooking temperature, said infrared burner means forming a radiant array having a surface area substantially equal to the area of said rectangular shaped surface and having exterior sides that are inwardly disposed from the edges of said slab; and

deflector means mounted adjacent to said inwardly disposed sides of said infrared burner means and extending outwardly substantially to the edges of said slab.

4,607,610
DOWNDRAFT STOVE WITH TUBULAR GRATING

Hans G. Zimmermann, 1844 Southmount, St. Bruno de Montarville, Quebec, Canada (J3V 4N3)

Filed Sep. 30, 1985, Ser. No. 781,463
Int. Cl.[4] F24B 5/04
U.S. Cl. 126—76 11 Claims



1. In a downdraft stove, a tubular grating assembly for positioning in a reaction chamber, comprising:

a substantially vertically oriented central tube open at its upper end and connected at its lower end to an air inlet opening;

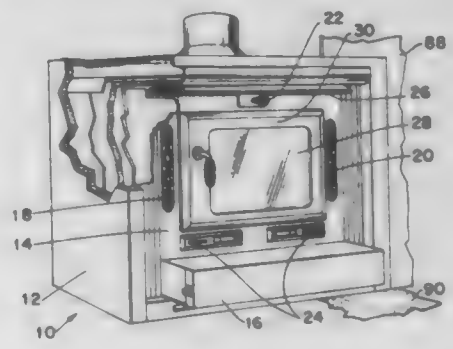
a cap supported above said open upper end for protecting said open upper end from entry of matter, the space between said cap and said upper end constituting a primary air inlet nozzle;

a plurality of grating tubes radially distributed around and taking off substantially horizontally from and communicating with said central tube, thereby defining a grating, and thence turning downwardly and being open at their downward ends to thereby constitute secondary air inlets.

4,607,611
SOLID FUEL HEATING DEVICE

James S. Rice, Marshall; Barry Eavenson; Garry Eavenson, both of Asheville, and Thomas A. Bryson, Horseshoe, all of N.C., assignors to Appalachian Stove and Fabricators, Inc., Asheville, N.C.

Filed Aug. 9, 1984, Ser. No. 639,236
Int. Cl.[4] F24B 7/00
U.S. Cl. 126—121 28 Claims



1. A heating device comprising:

a forced air stove adapted to burn solid fuel; said stove being at least partially made of a double-wall construction forming an air space so that air may be forced along the hot portions of said stove;

a metal box defining a partial parallelepiped shaped enclosure, the front of said box being open for receiving said stove, with the front of said stove substantially filling the

front open space of said box; the top of said box having a hole therein for venting smoke and gases from said stove;

a layer of thermal insulation attached to and covering substantially the entire inside surface of said box;

said stove being removably positioned within said box so as to leave a second air space at least between the thermal insulation on the respective side, top and rear walls of said box, and the outer side, top and rear walls of the stove, there being no substantial heat conducting connecting elements between said insulation and said walls of the stove.

4,607,612

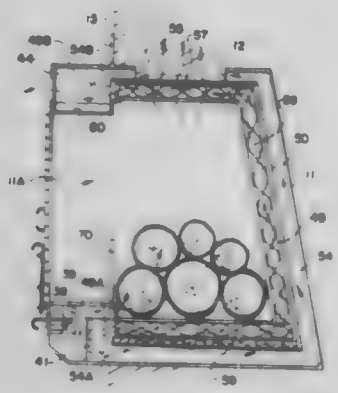
FIREPLACE FURNACE

Joseph DeRisi, Box 87D, Rte. 1, Casar, N.C. 28020

Filed May 23, 1985, Ser. No. 737,274

Int. Cl.[4] F24B *7/00*

U.S. Cl. 126—121 10 Claims



1. A furnace insert for an enclosed fireplace having an open front and a chimney, said furnace insert comprising:

a. a generally box-shaped sheet metal outer housing positioned within the fireplace and extending outwardly from within the fireplace and lapping the surrounding fireplace walls, said housing having bottom, top, rear and opposing side walls;

b. a generally box-shaped sheet metal inner housing defining a firebox, said inner housing positioned within said outer housing and having bottom, top, rear and opposing side walls in spaced-apart relation to the corresponding walls of said outer housing to define a heat exchange chamber therebetween;

c. a heat exchange chamber air inlet between the bottom wall of the outer housing and the bottom wall of the inner housing for admitting air to said heat exchange chamber for heating;

d. a heat exchanger air outlet between the top wall of the outer housing and the top wall of the inner housing for permitting air which has entered said heat exchanger chamber through said inlet and has been heated within said heat exchange chamber to exit said heat exchange chamber into the area to be heated;

e. a flue formed in the top of said furnace insert through the top walls of said first and second housing walls and sealed against air flow communication with said heat exchange chamber to permit combustion gases to exit said furnace insert through the fireplace chimney; and

f. an array of generally U-shaped tubular ducts positioned in spaced-apart relation within said inner housing and said firebox to absorb heat, each of said tubular ducts defining a lower air inlet and an upper air outlet for permitting air to enter the ducts, absorb heat and exit the ducts into the area to be heated, at least some of said ducts being positioned directly under said flue to absorb heat which would otherwise exit the furnace through said flue;

g. a conduit positioned with one end inside said firebox and the other end outside said firebox in combustion air flow relation to said firebox;

h. an elongate control rod extending through said conduit from one end to the other end and having a handle on the end of the control rod on the outside end of said conduit for manual manipulation;

i. a plate secured to the inside end of said control rod for selective movement between a range of positions wherein at one extreme position with the control rod pushed inwardly towards the firebox, said plate is positioned in spaced-apart relation from the end of the conduit to permit combustion air to flow into the firebox and, wherein, at the other extreme position said plate is positioned in mating contact with the inside end of the conduit to restrict the flow of combustion air into the firebox; and

j. a damper cover positioned within said firebox on top of and in front of said conduit in spaced-apart relation thereto to direct the flow of combustion air to the sides of said conduit and to opposite sides of said firebox for even distribution of combustion air to the fuel and, to prevent the accumulation of ashes within close proximity of said conduit in order to prevent restriction of the flow of combustion air therethrough;

whereby the efficiency of the furnace is increased by increasing the maximum possible air flow, the fireplace walls are protected against excessive heat by an insulating effect created by said heat exchange chamber and heat is distributed evenly around the walls of the furnace for passage into the area to be heated.

4,607,613

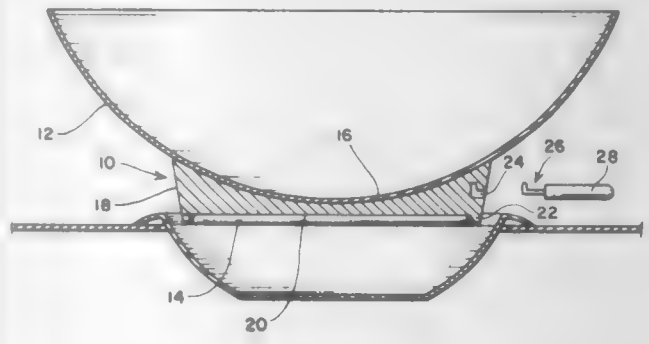
WOK ADAPTER

George Toldi, 2775 Glorietta Cir., Santa Clara, Calif. 95051

Filed Jul. 19, 1984, Ser. No. 632,296

Int. Cl.[4] A47J *36/34;* B65D *25/28;* F24C *15/26, 15/34*

U.S. Cl. 126—215 4 Claims



1. A wok interface adapter for supporting a wok cooking vessel of the type comprising a curvilinear metallic shell, and further for conductively transferring thermal energy from a range top cooking element to the wok while providing a thermal energy reservoir therefor, comprising:

an adapter solid formed in the general shape of the frustum of a cone, including an upper wok receiving surface adapted to have a shape complementary to the lower central exterior surface of the wok, such that the wok rests thereon in a stable manner, a planar lower surface adapted to rest in a stable manner upon the range top cooking element, an inclined circumferential conical side surface having an increasing diameter from the lower surface to the top surface and having a handle attachment detent formed therein at a location intermediate the upper surface and the lower surface, and a solid body portion enclosed by the upper surface, the lower surface and the circumferential surface, the body portion being thermally conductive in nature so as to facilitate thermal energy transfer from the range top cooking element to the wok while having the property of partially retaining thermal energy therein when the wok is removed from the upper surface; and

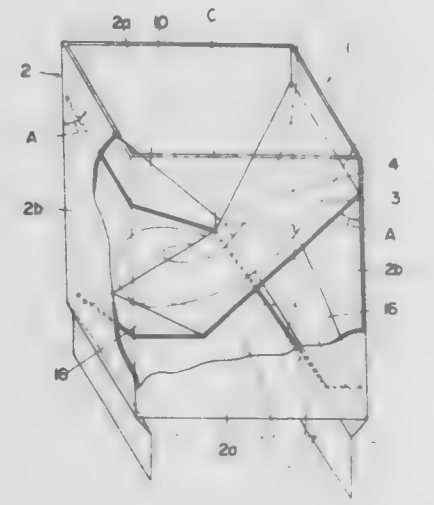
a handle element adapted to detachably mate with said handle attachment detent such that the adapter solid may be transported thereby.

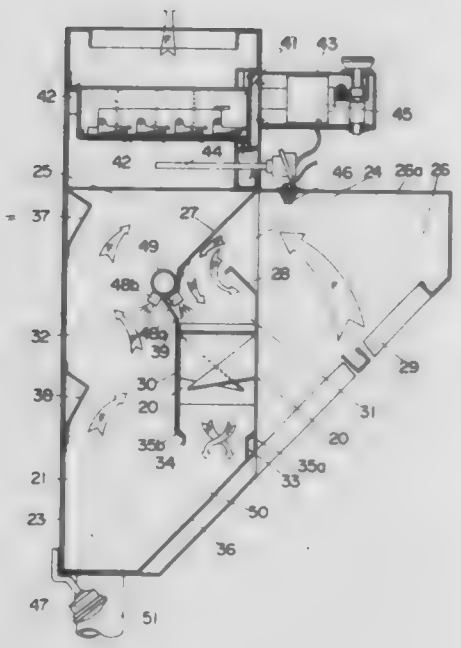
4,607,614

GREASE EXTRACTOR

Toshihiro Higashino; Hirofumi Mitsunaga; Takahiro Nakanishi, all of Osaka, and Yoshihiro Taya, Sakai, all of Japan, assignors to Kuraco Limited, Osaka, Japan

Filed Jul. 31, 1984, Ser. No. 636,476
Claims priority, application Japan, Aug. 4, 1983, 58-143522
Int. Cl.[4] F24C *15/20*
U.S. Cl. 126—299 E 7 Claims





1. A grease extractor for use in a forced air ventilating system which comprises:

a barrel having a longitudinal axis;

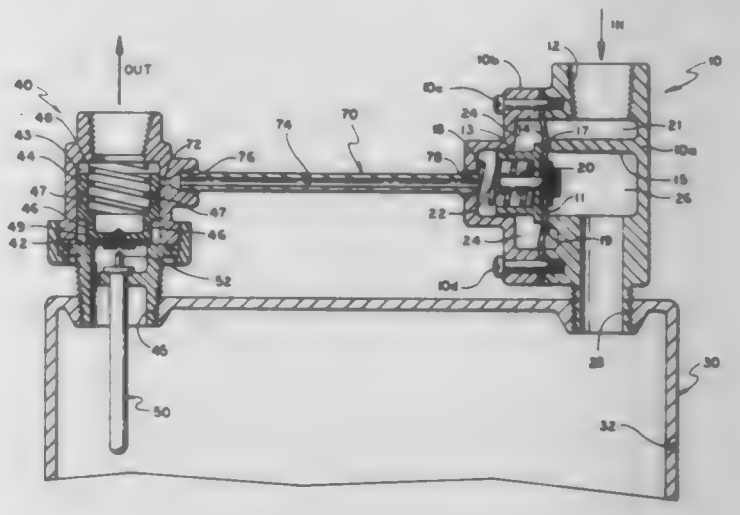
a pair of oblique baffles disposed within the barrel said baffles comprising opposed side and opposed end walls and having square cross section, each oblique baffle being a substantially flat plate with upper and lower straight edges, a straight side edge and a notched side edge, the upper and lower edges of each oblique baffle being in intimate engagement with the inner surfaces of the respective opposed end walls, the straight side edge of each oblique baffle being in intimate engagement with the inner surface of each of the opposed side walls, and the apex of the notched side edge of one oblique baffle being crossed with that of the other oblique baffle at the longitudinal axis in such a manner that the baffles are angularly displaced with one another and that the upper half of one oblique baffle overlies but is spaced from the lower half of the other oblique baffle whereby to provide within the confines of the barrel a pair of congruent flow paths extending downwardly and spirally about the longitudinal axis, said flow paths having respective inlets at the upper end of the barrel which are angularly spaced about the longitudinal axis and having respective outlets at the lower end of the barrel which are angularly spaced about the longitudinal axis, said inlets being formed respectively between the upper notched edge of one baffle and the upper surface of the other baffle, and said outlet being formed respectively between the lower notched edge of one baffle and the lower surface of the other baffle.

4,607,615

AUTOMATIC CONTROL SYSTEM FOR WATER HEATERS

Wayne S. Boals, P.O. Box 1289, Blue Jay, Calif. 92317

Filed Mar. 28, 1985, Ser. No. 717,366
Int. Cl.[4] F24H *1/00*
U.S. Cl. 126—362 16 Claims



1. A fluid system coupled to a source of fluid under pressure and a storage tank, comprising:

a delivery system which said storage tank provides fluid to;

control valve means connected between said fluid source and said storage tank for allowing the passage of fluid from said fluid source system to said storage tank when in an open position and preventing the passage of fluid from said fluid source to said storage tank when in a closed position; and

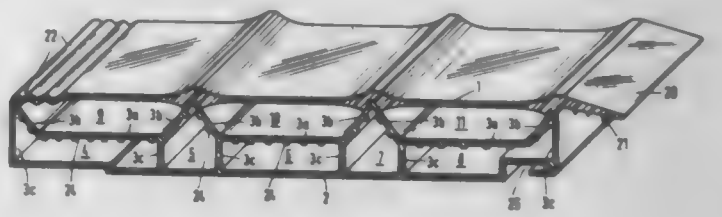
said control valve means including means for sensing the pressure differential between the pressure at said fluid souce and the pressure at said delivery system, the sensing means moving said control valve means from said closed position to said open position when the fluid source pressure is greater than the delivery system pressure.

4,607,616

ROOF CLADDING OR SIMILAR BUILDING ELEMENT ALLOWING HEAT EXCHANGE WITH THE ENVIRONMENT AND USABLE PARTICULARLY AS A SOLAR ENERGY COLLECTOR

Klaus Lehmann, Königstrasse 42, Duisburg, Fed. Rep. of Germany

PCT No. PCT/DE83/00011, § 371 Date Oct. 14, 1983, § 102(e) Date Oct. 14, 1983, PCT Pub. No. WO83/02819, PCT Pub. Date Aug. 18, 1983
PCT Filed Jan. 26, 1983, Ser. No. 548,853
Claims priority, application Spain, Feb. 16, 1982, 509 637
Int. Cl.[4] F24J *2/24*
U.S. Cl. 126—445 9 Claims



1. A roof covering heat exchange constructional element in

which a first tier of hollow chambers form a cover layer with wall ridges that connect to the lower side of the cover layer and are alternately slanted and converge at the cover layer, a second tier of hollow chambers which are selectively interpersed with selected chambers of the first tier and the junctions of the interpersed chambers form wall ridges which have approximately the cross section of back-to-back concave lenses, characterized as follows:

between the converging wall ridges and the associated wall ridges of the next tier, further channel-like hollow chambers are formed which extend over both tiers.

4,607,617

APPARATUS AND METHOD FOR IMPROVING EYESIGHT

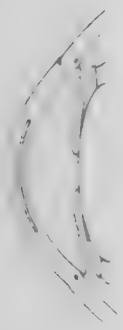
David P. Choyce, 9 Drake Road, Westcliff on Sea, England

Continuation-in-part of Ser. No. 287,628, Jul. 28, 1981, abandoned. This application Sep. 20, 1982, Ser. No. 419,902

Claims priority, application United Kingdom, Aug. 5, 1980, 8025426; May 11, 1981, 8114325

Int. Cl.[4] A61B *19/00*; A61F *17/32, 2/14*

U.S. Cl. 128—1 R **7 Claims**



1. A corneal inlay lens for implant between layers of a cornea of an eye comprising of a polysulfone material of a high refractive index and permeable to body fluids and of a thickness in the range of 0.1 mm to 0.4 mm for insertion between layers of the cornea to correct defects in eyesight.

2. A method of treatment for correcting eyesight defects, which comprises:

a. forming an incision in the outer layer of the cornea;

b. separating layers of the cornea to form a pocket;

c. inserting into the pocket a lens inlay of polysulfone material; and,

d. resealing the incision.

4,607,618

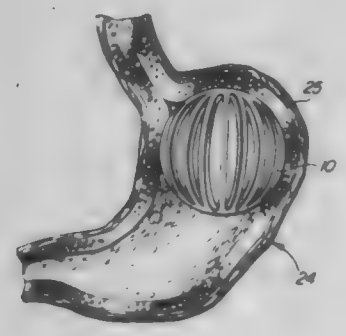
METHOD FOR TREATMENT OF MORBID OBESITY

Jean P. Angelchik, 1728 W. Glendale Ave., Phoenix, Ariz. 85021

Division of Ser. No. 469,095, Feb. 23, 1983, abandoned. This application Jan. 11, 1985, Ser. No. 690,852

Int. Cl.[4] A61B *17/00*

U.S. Cl. 128—1 R **1 Claim**



1. In a method for treating morbid obesity, including the step of implacing a shaped device in the stomach, the improvement comprising:

(a) providing a collapsible, hollow, shaped device, said device

(i) being normally shaped and dimensioned to be received and retained within the fundus without deforming the stomach walls beyond its normal shape and dimensions,

(ii) being formed of a semi-rigid skeleton which is collapsible by the application of external force to deform said device to a shape and cross-sectional dimension which is insertable into the stomach through the esophagus and the cardiac opening,

(iii) being capable of autogenously reassuming and retaining said normal shape when such collapsing external force is removed;

(b) collapsing said semi-rigid skeleton device by applying such external force to said shape and cross-sectional dimensions for insertion through the esophagus and cardiac opening;

(c) per-orally inserting said collapsed structure into the fundus of the stomach through the esophagus and cardiac opening;

(d) releasing said collapsing force to cause said collapsed skeleton structure to autogenously reassume and retain its normal shape; and

(e) maintaining said device within the stomach for a length of time sufficient to cause a substantial weight loss by the patient.

4,607,619

LOCKING MECHANISM FOR AN ENDOSCOPE

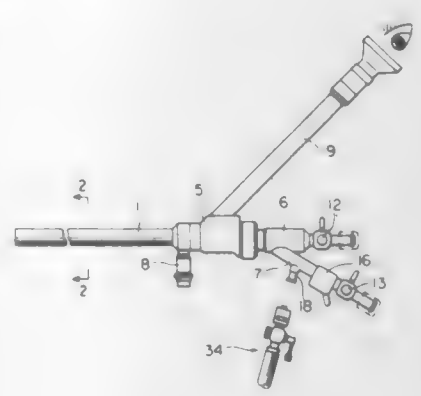
Noboru Seike; Masatoshi Teranishi, and Minoru Sakai, all of Hokkaido, Japan, assignors to Snow Brand Milk Products, Co., Ltd., Sapporo, Japan

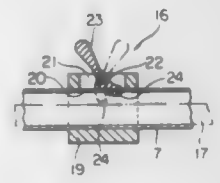
Filed Feb. 26, 1985, Ser. No. 705,761

Claims priority, application Japan, Feb. 28, 1984, 59-36848

Int. Cl.[4] A61B *1/00*

U.S. Cl. 128—4 **2 Claims**





1. In an endoscope comprising an endoscopic pipe having a manipulating terminal thereon, said manipulating terminal having mounted thereon an eyepiece member, a light-guide mounting member, an instrument insertion member and a handling forceps insertion member, the improvement which comprises:

said handling forceps insertion member has a gas injection member and a locking mechanism mounted thereon, said locking mechanism being adapted for locking a handling forceps in position, said locking mechanism comprising a casing through which extends said handling forceps insertion member, said casing and said handling forceps insertion member having slits in corresponding portions thereof which slits communicate with each other, a lever and pivot means mounting the middle portion of said lever

on said casing between the sidewalls of the slit thereof, so that said lever can be pivoted into said handling forceps insertion member, said lever having a front end portion which is adapted to lock in position a handling forceps which has been inserted in said handling forceps insertion member.

4,607,620

MEDICAL GRIPPING INSTRUMENT

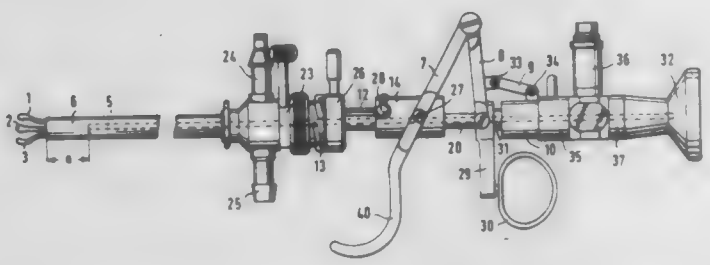
Karl Storz, Auf Den Schildrain 39, Tuttlingen, Fed. Rep. of Germany

Filed Nov. 28, 1983, Ser. No. 555,372

Claims priority, application Fed. Rep. of Germany, Feb. 8, 1983, 6803342[U]

Int. Cl.[4] A61B *17/28*

U.S. Cl. 128—4 2 Claims



1. A medical gripping instrument for gripping objects at the distal end of an endoscopy shaft, said shaft having an axis and also having a fixed outer sleeve with a passage opening at said distal end, said instrument comprising:

a periscope disposed on said axis, and axially movable in said shaft;

at least three springy gripping arms axially movable in said shaft and having distal ends thereby coaxially arranged around said axis, and adapted to extend beyond the distal end of the shaft and extend laterally beyond it, whereby to open to receive an object, and to be closed on the object and when drawn into the shaft by contact with the distal end thereby to hold and draw the object toward said shaft, said gripping arms being arranged concentrically around said axis, and leaving a clear path between them along which the periscope can see, said periscope and arms being interlinked so that both move in the same axial direction simultaneously, whereby the region within the arms is in the view of the periscope, and an object brought into the shaft by the arms will not harmfully contact the periscope.

4,607,621

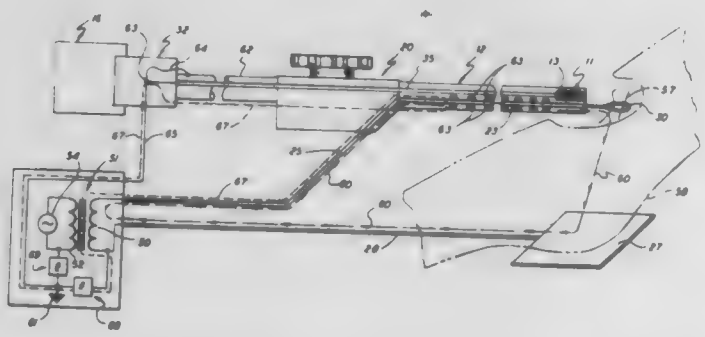
ENDOSCOPIC APPARATUS

Robert C. Wheeler, Skaneateles, N.Y., assignor to Welch Allyn Inc., Skaneateles Falls, N.Y.

Filed Oct. 7, 1983, Ser. No. 539,947

Int. Cl.[4] A61B *1/06*

U.S. Cl. 128—6 7 Claims



1. A video-equipped endoscope for performing diathermic treatment in the viewing region of the instrument, said endoscope having an image sensor mounted in the distal end of an insertion tube that is connected to a remote video processor by video lead means passing through the insertion tube, and a diathermic lead also passing through the insertion tube that is connected to a high frequency R.F. electro-surgical generator, the improvement comprising

video ground means for placing video related components at a video ground reference potential,

R.F. ground means for placig the electro-surgical generator at an R.F. ground reference potential,

a conductive shield mounted inside the insertion tube for enclosing the video image sensor and the video lead means,

first means for connecting the shield to the video ground means, and

second means for connecting the shiled to the R.F. ground means whereby electrical energy coupled to the shield is returned to the appropriate ground reference.

4,607,622

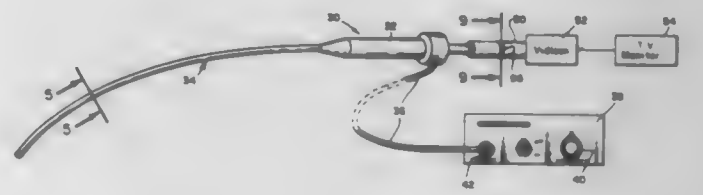
FIBER OPTIC OCULAR ENDOSCOPE

Charles D. Fritch, Rte. 11, Box 239B, Bakersfield, Calif. 93308, and John B. McAdams, Santa Monica, Calif., assignors to Charles D. Fritch, Bakersfield, Calif.

Filed Apr. 11, 1985, Ser. No. 722,839

Int. Cl.[4] A61B *1/06*

U.S. Cl. 128—6 15 Claims



1. An ocular endoscope comprising:

a first bundle of fiber optics adapted to be connected to a light source at one end for conducting and projecting light to selected areas at the other end,

a second bundle of fiber optics coaxial with said first bundle and adapted to be connected to a display device at one end and a lens at the other end for viewing said areas illuminated by said first bundle, and

a semi-rigid malleable flexible sheath encompassing said first bundle and said second bundle, said sheath, said first bundle and said second bundle of fiber optics having a cross-section approximating that of an ellipse whereby insertion of the probe is facilitated by conforming to the shape of the incision and risk of infection is minimized.

4,607,623

UNITARY INSERT SUPPORT FRAME FOR THE HANDLE OF AN EXAMINING DEVICE

Jack Bauman, 1677 San Onofre Dr., Pacific Palisades, Calif. 90272

Filed Nov. 8, 1984, Ser. No. 669,473

Int. Cl.[4] A61B *1/26*

U.S. Cl. 128—11 12 Claims

1. A light generation device to facilitate observation of a field of view comprising:

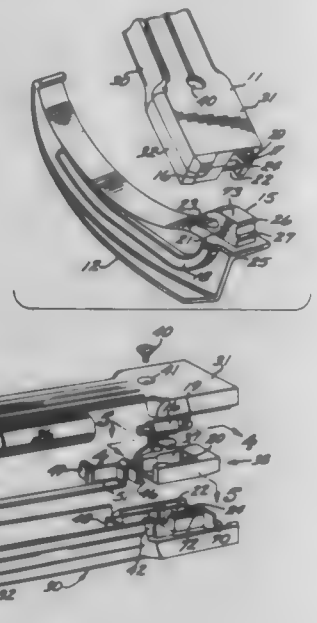
a. an elongated, hollow housing having an interior chamber with a first opening for discharging light and a second opening to accomodate a projecting element which activates a light switch;

b. a unitary support frame having a battery section adapted to hold one or more batteries, a light section having a reflector, a light bulb disposed within the reflector and in optical communication with the first opening, and a light switch which is activated by means of an activating element projecting through the second opening, and means to secure the unitary support frame within the interior of the housing; and

c. electrical conducting means integral with the unitary support frame and in electrical contact with the one or

more batteries held in the battery section, the light bulb and the light switch to pass electrical current therebetween when the light switch is activated.

7. An examining device comprising a handle which incorporates the light generation device of claim 1, a blade, means to detachably secure the blade to the handle in a generally L-



shaped configuration, the light bulb in the handle optically coupled to a light conductor associated with the blade to direct light from the light bulb through the light conductor to a field of view and

the reflector formed integral with the support frame to reflect light from the light bulb to the light conductor associated with the blade.

4,607,624

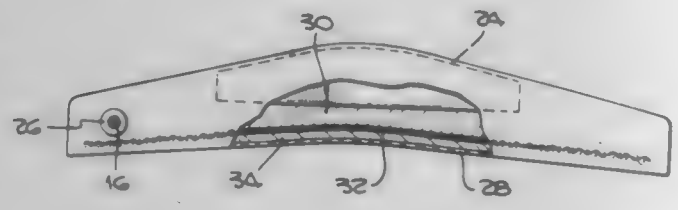
HEATING PAD AND MASSAGER

Valerie Jefferson, 6639 Brampton Ave., Rialto, Calif. 92376

Filed Aug. 7, 1985, Ser. No. 763,202

Int. Cl.[4] A61H *21/00*

U.S. Cl. 128—24.2 **4 Claims**



1. In a heating pad and massager, the combination which comprises:

an adjustable electrically activated vibrating massage unit;

means for adjusting said vibrating massage unit;

an adjustable electrically activated heating element;

means for adjusting said heating element;

an electric source power cable for furnishing electric power to said vibrating massage unit and to said heating element;

an electric junction box for connecting said electric source power cable to said vibrating massage unit and to said heating element;

a pliant, outer covering envelope that encloses said vibrating massage unit and said heating element and provides support for said junction box;

a protective electrical insulating envelope situated within said pliant, outer covering envelope and enclosing said vibrating massage unit and said heating element; and

a layer of thermal insulating material situated between said vibrating massage unit and said heating element.

4,607,625

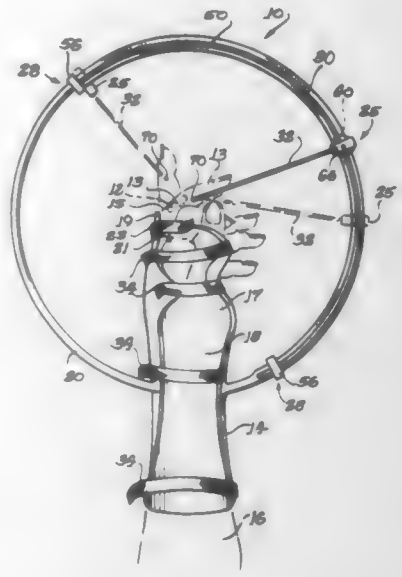
DYNAMIC TRACTION DEVICE

Robert R. Schenck, 1100 N. Lake Shore Dr., Chicago, Ill. 60611

Filed Jan. 10, 1985, Ser. No. 690,461

Int. Cl.[4] A61H *1/02*

U.S. Cl. 128—26 **18 Claims**



1. A portable hand mounted device for exercising a finger under traction comprising:

a support means attachable to the hand of the patient and adapted to be carried about by the patient,

means for attachment to the finger and for exerting a traction force on the finger, and

drive means including a drive motor on said support means and connecting means operatively associated with and connected to said means for attachment to move the latter and the attached finger first in one direction to flex and extend the finger as it heals under traction and then in the other direction to bend and close the finger to pressure joint tissue during healing.

4,607,626

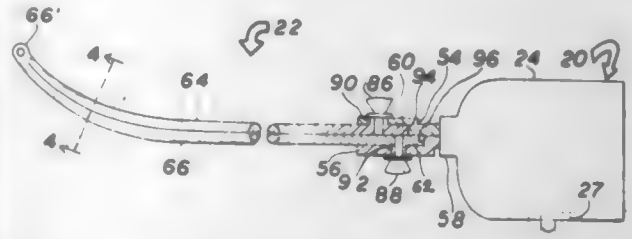
EXPANDABLE URETHRAL BOUGIE COMPRISING BENDABLE RODS WITH RECIPROCATING DRIVER

German Borodulin, 2518 Clement St. #4, San Francisco, Calif. 94121; Maxim Persidsky, 35 Temescal St., San Francisco, Calif. 94118, and Alexander Shkolnik, 4434 Fulton St. #2, San Francisco, Calif. 94121

Continuation-in-part of Ser. No. 621,842, Jun. 18, 1984, abandoned. This application Sep. 23, 1985, Ser. No. 778,760

Int. Cl.[4] A61H *1/00*

U.S. Cl. 128—43 **12 Claims**



1. A mechanically-expandable bougie comprising:

a driving means,

elongated radially-expandable probe means comprising a pair of adjacent, elongated members attached to said driving means,

said driving means having two output elements and being arranged to cause said output elements to reciprocate in mutually-opposite directions,

said probe means being arranged to convert the reciprocating motions of said output elements of said driving means into expansions and contractions of said pair of elongated members, said elongated members comprising a pair of

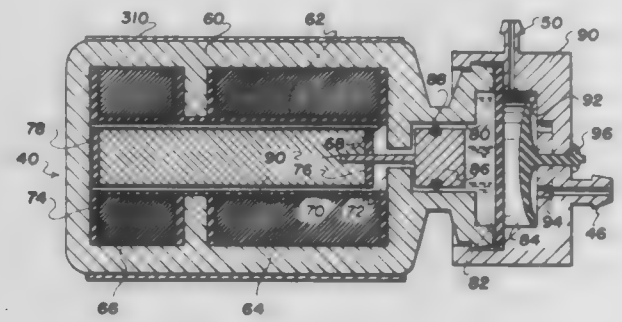
rods connected to each other at one end thereof and having semicircular cross sections so that when one rod is placed adjacent the other, they will form a complete circle in cross section, the ends of said rods opposite to said one end thereof being provided with means for attachment to said respective output elements of said driving means.

4,607,627

SOLENOID-ACTUATED HYGIENIC APPLIANCE

Leland C. Leber, and David Swigert, both of Ft. Collins, Colo., assignors to Teledyne Industries, Inc., Fort Collins, Colo.

Filed Sep. 10, 1984, Ser. No. 648,766
Int. Cl.[4] A61H *13/00*; F04B *43/04*
U.S. Cl. 128—66 20 Claims



1. A hygienic appliance combination comprising:
a housing;
a source of liquid associated with said housing;
delivery means coupled to said housing for launching pulses of said liquid to a point of impact;
and a pump located within said housing and coupled to accept said liquid and provide pulses of said liquid into said delivery means, said pump including:
enveloping means defining an elongated central bore of predetermined length;
at least one solenoid winding positioned to deliver magnetic flux into the interior of said bore;
a plunger of magnetic material sized to slide within said bore and of a length less than said predetermined length;
a chamber defined in said pump;
means for inletting liquid from said source into said chamber;
means for outletting liquid from said chamber into said delivery means;
check valve means effectively disposed in the path of flow of said liquid for permitting flow of said liquid at least primarily in the direction from said source, through said chamber and out of said delivery means;
reciprocating means coupled into said chamber for alternately effecting the drawing of said liquid into said chamber and propelling said liquid from said chamber through said outletting means into said delivery means;
means disposed within said housing and adjacent to said chamber for indirectly slaving movement of said reciprocating means to movement of said plunger;
means for cyclically energizing said one winding to move said plunger and said reciprocating means each in a given direction;
and means for urging said plunger and said reciprocating means each in a return direction opposite said given direction.

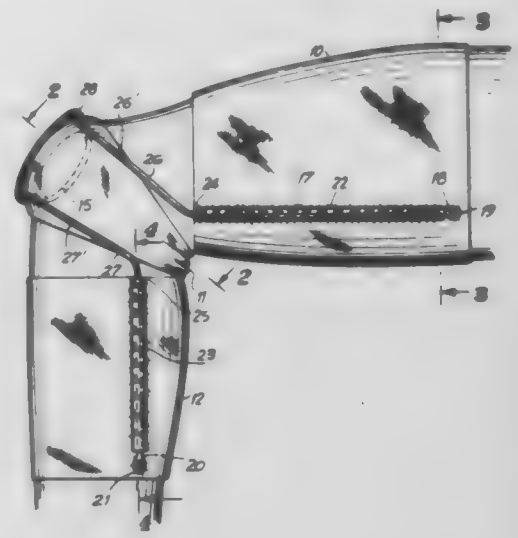
4,607,628

PATELLA SUPPORT BRACE

Joseph H. Dashefsky, 700 Old Country Rd., Plainview, N.Y. 11803

Filed May 23, 1985, Ser. No. 737,249
Int. Cl.[4] A61F *3/00*
U.S. Cl. 128—80 C 7 Claims

1. A knee brace adapted to support the patella of a wearer comprising a patella pad, means for maintaining said pad laterally adjacent the patella of a wearer, and laterally shiftable force developing means operatively connected to said pad for urging said pad laterally in a medial direction thereby to exert progressively increasing, medially directed forces upon said



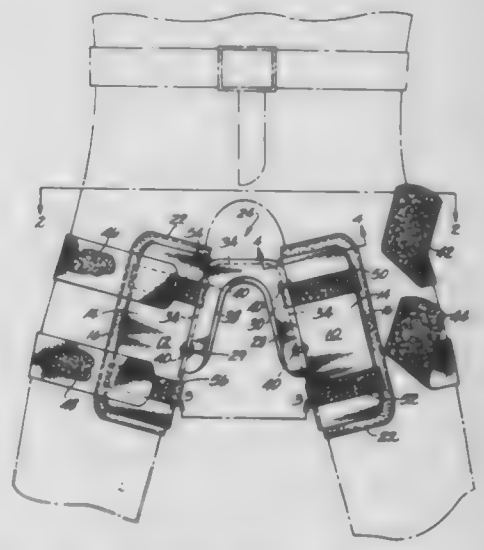
pad responsive to articulating movements of the leg from a flexed to an extended condition.

4,607,629

DYNAMIC POST-OPERATIVE HIP ABDUCTION BRACE

Max Lerman, 1950 Carla Ridge, Beverly Hills, Calif. 90210

Filed Mar. 21, 1985, Ser. No. 715,061
Int. Cl.[4] A61F *5/00*
U.S. Cl. 128—80 A 8 Claims



1. A dynamic hip abduction brace comprising:
a pair of laterally spaced apart U-shaped cuffs adapted for attachment to the inside regions of legs above the knees;
a generally inverted U-shaped supporting bridge secured between the leg-supporting cuffs and comprising a unitary piece having a cross-member extending between the leg-supporting cuffs, and a pair of spaced apart outwardly diverging leg portions formed integrally with and extending away from the cross-member of the supporting bridge; and
means rigidly affixing the leg portions of the bridge to the leg-supporting cuffs so that each leg member is substantially immovable relative to its corresponding cuff for holding the legs at a fixed abduction angle; the unitary bridge member being made from a semi-rigid material such that the cross-member of the bridge is substantially rigid longitudinally to maintain the cuffs in a rigidly fixed spaced apart position for maintaining a fixed spacing between the legs of a patient, while each leg portion of the bridge is bendable in a direction generally perpendicular to the plane of the bridge member so that each leg member and its corresponding cuff can be rotated forward or backward at the end of the bridge cross-member to permit a normal walking gait.

4,607,630

INTRAVAGINAL CONTRACEPTIVE DEVICE

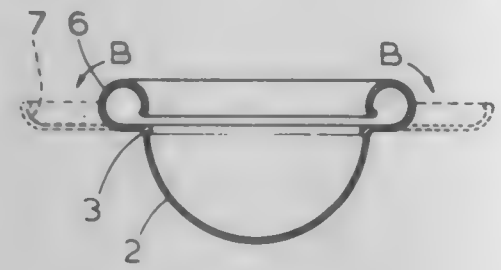
Marc Spits, Achel, Belgium, assignor to Fundatech S.A., Geneva, Switzerland

Filed Jun. 6, 1984, Ser. No. 617,975

Claims priority, application Netherlands, Jun. 13, 1983, 8302103

Int. Cl.[4] A61F *5/46*

U.S. Cl. 128—127 10 Claims



1. Intravaginal contraceptive device such as a diaphragm or pessary, characterized by said device comprising a central, flexible cap-like body portion engaged by the inside of a rigid inner ring with almost fixed diameter, and by an outer part lying in the plane of and around the inner ring and being connected thereto, said outer part consisting of a membrane bent along the outer circumference spirally out of the plane of the inner ring, said membrane being made of a material having the ability of expanding under the influence of the local circumstances after being inserted into the vagina, thus unrolling the spiral peripheral structure and increasing the outer diameter of the outer part.

4,607,631

ARRANGEMENT IN SURGICAL SHEETS

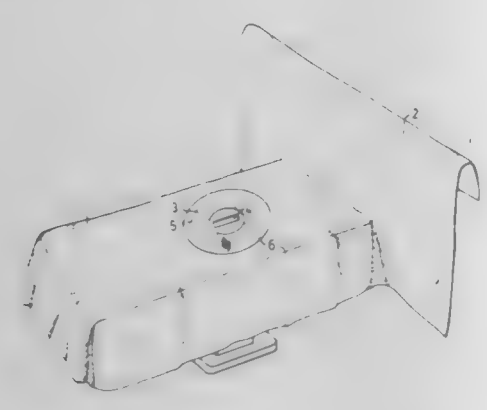
Carl-Otto Hanssen, Kullavik, Sweden, assignor to Molnlycke AB, Gothenburg, Sweden

Filed Oct. 16, 1984, Ser. No. 663,041

Claims priority, application Sweden, Oct. 28, 1983, 8305944

Int. Cl.[4] A61F *13/00*

U.S. Cl. 128—132 D 6 Claims



1. A surgical sheet having a relatively large circular hole therethrough adapted to be placed over an area of a patient where an operation is to be performed, a circular disk larger than said hole and having an elongated opening therethrough, the disk having at least two layers at least one of which comprises a liquid impermeable material, said layers being joined to each other about a circle of a diameter no greater than the diameter of said circular hole, the margins of said circular hole being received between said layers radially outwardly of said circle.

4,607,632

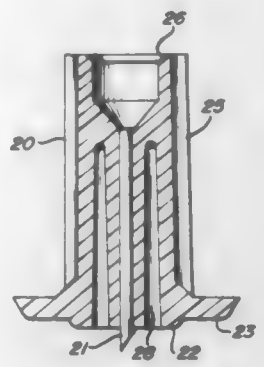
SKIN TESTING DEVICE WITH FUNNEL LOADING

Cynthia B. Brennan, and Louis G. Brennan, both of Stockton, Calif., assignors to Aller-Screen, Inc., Stockton, Calif.

Filed Apr. 30, 1984, Ser. No. 605,249

Int. Cl.[4] A61B *10/00*

U.S. Cl. 128—743 7 Claims



1. A skin test kit for invivo intracutaneous use including a base member having base well means for receiving a cannula point and holding liquid test substance, said base member having at least one depression for receiving and holding a corresponding injection unit in cooperation with kit lid means, said injection unit comprising a plate portion received by said base member; an open-top handle portion attached to the plate portion on one side thereof; a hollow cannula element mounted on said plate and extending outwardly from said plate opposite said handle portion a pre-determined length for intracutaneous injection, said cannula having a sharp skin-piercing point at its lower extremity; said handle portion having an integral interior funnel top provided with a downwardly sloping interior surface terminating inwardly at an upper end of said hollow cannula and communicating with said cannula element for applying liquid test substance through said funnel means; and said kit lid means fitting over said base member to enclose said injection unit and having a gas-tight slidable peripheral seal whereby closure of said kit lid means can force liquid from the funnel top into the base well means.

4,607,633

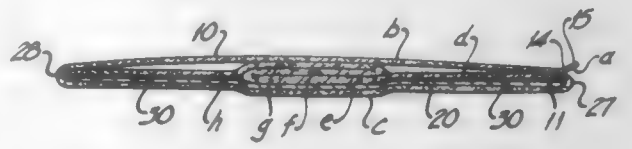
UNITARY ADHESIVE BANDAGE AND PACKAGE

Neis J. Lauritzen, Piscataway, N.J., assignor to Johnson & Johnson Products, Inc., New Brunswick, N.J.

Division of Ser. No. 479,599, Mar. 28, 1983, Pat. No. 4,545,372. This application Jun. 10, 1985, Ser. No. 743,260

Int. Cl.[4] A61L *15/00*

U.S. Cl. 128—156 14 Claims



1. A method for the continuous production of a plurality of adhesive bandage strips enclosed in an integral wrapper from a continuous length of a bulky, nonwoven fabric comprising the steps of

(a) forming a continuous length of a bulky, nonwoven fabric comprising a bandage portion and adjacent wrapper portion,

(b) lapping the central area of said bandage portion in a Z-fold to form a triple thickness pad area extending down the length of said bandage portion with single thickness wing areas extending outward therefrom,

(c) securing the folded central pad area of the bandage portion to prevent the unfolding thereof,

(d) compacting said wrapper portion and said single thick-

ness wing areas of said bandage portion to a dense, sheet-like structure,

(e) applying an adhesive coating to one surface of said compacted wing areas of said bandage portion,

(f) folding said wrapper portion around said bandage portion to cover both surfaces thereof, said wrapper portion having adhesive release properties over at least that area of the surface thereof in contact with adhesive-coated surfaces of said bandage portion,

(g) sealing the edge of said wrapper portion to the underlying edge of said bandage portion to enclose the bandage portion within the wrapper, and

(h) cutting said folded wrapper and enclosed bandage portion into narrow strips transversely to the machine direction thereof and sealing the cut edges of said wrapper to the underlying bandage whereby to obtain an adhesive strip bandage fully enclosed within said wrapper.

4,607,634

ANAESTHETIC VAPORIZER

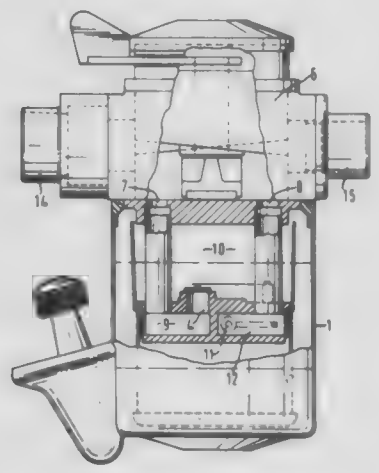
Thomas R. Clapham, Skipton, England, assignor to The BOC Group plc, Windlesham, England

Filed Sep. 6, 1984, Ser. No. 647,950

Claims priority, application United Kingdom, Sep. 12, 1983, 8324313

Int. Cl.[4] A61M *15/00*

U.S. Cl. 128—203.25 **3 Claims**



1. An anaesthetic vaporizer comprising a body part, said body part including a valve chamber and a vaporizing chamber for volatile liquid anaesthetic, a valve arrangement mounted within said valve chamber and dividing said valve chamber into an inlet portion and an outlet portion, a body part inlet communicating with said inlet portion for receiving carrier gas and a body part outlet communicating with said outlet portion for the passage therefrom of carrier gas together with entrained anaesthetic vapor, a vaporizing chamber inlet communicating between said inlet portion and said vaporizing chamber for receiving a first stream of carrier gas from said body part inlet and a vaporizing chamber outlet communicating between said vaporizing chamber and said outlet portion for delivering said carrier gas with entrained anaesthetic vapor to said body part outlet, said valve arrangement comprising a housing and a valve body rotatable within said housing, said housing having at least two spaced inlet openings communicating with said inlet portion and an outlet opening communicating with said outlet portion for passage therethrough of a second stream of carrier gas, said valve body rotatable to selectively cover and uncover one or more of said inlet openings to vary the resistance to flow of said second stream of carrier gas from said body part inlet to said body part outlet, each of said inlet openings including a removable jet having a bore of predetermined diameter, wherein said valve arrangement permits selective mixing of said second stream of carrier gas and said first stream of carrier gas and entrained anaesthetic vapor to control the mixture thereof from said body part outlet.

4,607,635

APPARATUS FOR INTUBATION

Eugene L. Heyden, S. 627 Bernard #8, Spokane, Wash. 99204

Filed Sep. 27, 1984, Ser. No. 655,089

Int. Cl.[4] A61M *16/00*

U.S. Cl. 128—207.15 **9 Claims**



1. An apparatus for intubation of a body pathway, comprising:

an elongated tubular member having a wall with an inner wall surface and an outer wall surface, and also having a central axis, said tubular member having a distal end residing within the body pathway during intubation, and a proximal end extending from the body pathway during intubation;

a primary lumen defined by the wall of said tubular member and extending from said distal end to said proximal end thereof;

an expandable cuff carried by said tubular member adjacent said distal end for providing, when expanded, a seal with walls of the body pathway;

an elongated guide means adapted for slidably receiving a suction catheter therein and having a region therein for accommodating said suction catheter, said guide means integral with and defined within the wall of said tubular member, having a portion thereof included in the vicinity of the proximal end of said tubular member, and extending in length therein sufficiently to provide travel by said suction catheter away from a proximal end thereof along a substantial length of said tubular member toward an opposing distal end thereof located in the vicinity of said end toward cuff while preventing said suction catheter from contacting a wall of said body pathway;

said guide means including fluid communication means integral to the wall of said tubular member and residing between the proximal end thereof and said cuff, said fluid communication means for providing fluid communication and fluid transport over a substantial length of said guide means between the region within said guide means and the body pathway whereby said suction catheter can be moved within said guide means to remove secretions over any of several locations along a substantial length of said tubular member; and

means to prevent the extention of said suction catheter from within said guide means to beyond the distal end thereof, preventing said suction catheter from advancing from said region to beyond said guide means.

4,607,636

SURGICAL INSTRUMENT FOR APPLYING FASTENERS HAVING TISSUE LOCKING MEANS FOR MAINTAINING THE TISSUE IN THE INSTRUMENT WHILE APPLYING THE FASTENERS (CASE I)

John Kula, Budd Lake, and Anthony S. Miksza, Jr., Jersey City, both of N.J., assignors to Ethicon, Inc., Somerville, N.J.

Filed Jul. 16, 1984, Ser. No. 631,121
Int. Cl.[4] A61B *17/00, 17/12*
U.S. Cl. 128—334 R 6 Claims



1. A surgical instrument for stitching tissue by means of staples, said instrument comprising: a support body, a pair of jaws mounted at one end of said support body, a staple housing mounted in one of said jaws, means mounted on said support body for moving said jaw containing said staple housing towards the other jaw to close the gap and clamp tissue placed therebetween, drive means mounted on said support body for driving the staples from the jaw on which the staple housing is mounted towards the opposite jaw, actuating means mounted at the end of said support body opposite said end on which the jaws are mounted for actuating said staple drive means, and means cooperating with the open end of said jaws to hold tissue placed therebetween while said staples are being driven, said means providing rigidity between said jaws.

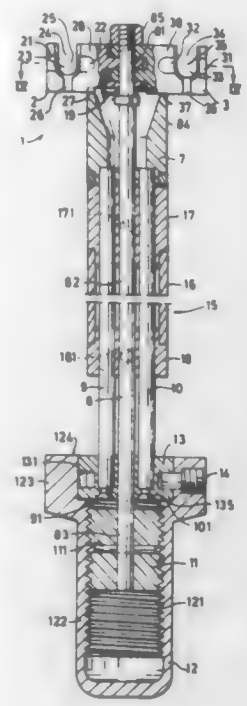
4,607,637

SURGICAL INSTRUMENT FOR PERFORMING ANASTOMOSIS WITH THE AID OF RING-LIKE FASTENING ELEMENTS AND THE FASTENING ELEMENTS FOR PERFORMING ANASTOMOSIS

Anders Berggren, Bergdalsgatan 6, 582 45 Linköping; Hakan Rohman, Vitsippestigen 4, 590 20 Mantorp, and Leif Östrup, Onkel Adamsgatan 10, 582 35 Linköping, all of Sweden

Filed Jul. 22, 1983, Ser. No. 516,462
Int. Cl.[4] A61B *17/11*
U.S. Cl. 128—334 C 4 Claims

1. A surgical instrument for joining blood vessel ends or ends of other tubular organs and establishing liquid connection between them, i.e., anastomosis, by means of fastening means comprising connectable rings, said instrument comprising at least two clamping means with stop means for each fastening means, said clamping means being rotatably connected to the instrument and being actuatable by a mechanism for being turned towards each other, said mechanism further comprising a guide bushing which is longitudinally movable along the instrument, said guide bushing being provided with guide surfaces arranged at an angle which is sharp with respect to the longitudinal axis of the instrument, said guide surfaces of the guide bushing cooperating with guide surfaces on corresponding ones of said clamping means so that said clamping means are turned towards each other when the guide bushing is moved towards said clamping means, said guide bushing further comprising a pushing-out element which, upon continued displacement of the guide bushing, actuates the fastening means through grooves in the clamping means so that they are pushed out of the instrument together with the connected the



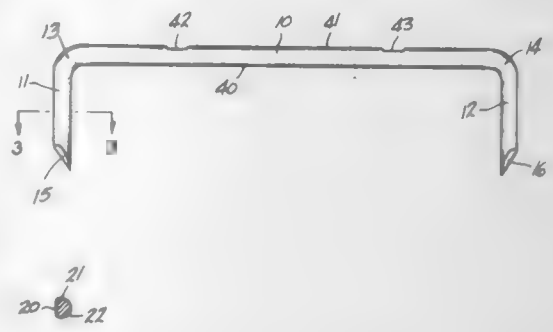
vessels after the guide bushing has turned the clamping means so that the fastening mens are connected to each other.

4,607,638

SURGICAL STAPLES

Lawrence Crainich, Stratford, Conn., assignor to Design Standards Corporation, Bridgeport, Conn.

Filed Apr. 20, 1984, Ser. No. 602,406
Int. Cl.[4] A61B *17/04*
U.S. Cl. 128—335 12 Claims



4. A surgical staple having a U-shaped configuration and an elongated base portion and two legs substantially perpendicular to said base portion connected thereto at one end by a transition portion and terminating at the other end in a sharpened point, said staple being deformed in use into an open-sided substantially O-shaped configuration bended at two points along said elongated base portion, wherein said base portion has an inner side facing said legs and outer side opposed thereto and wherein said elongated base portion has flattened notched portions on the outside at the locus of the elongated base portion bends extending over the entire locus of the elongated base portion bends and spaced from each other and spaced from said transition portions.

6. A surgical staple having a U-shaped configuration and a substantially round cross-section and an elongated base portion and two legs substantially perpendicular to said base portion connected thereto at one end by a transition portion and terminating at the other end in a sharpened portion, said staple being deformed in use into an open-sided substantially O-shaped configuration bended at two points along said elongated base portion, wherein said base portion has an inner side facing said legs and an outer side opposed to said legs and wherein said staple has at least one flattened, work hardened area from 0.005" to 0.010" deep along the surface of said staple.

10. A surgical staple having a U-shaped configuration and an elongated base portion and two legs substantially perpendicu-

lar to said base portion connected thereto at one end by a transition portion and terminating at the other end in a sharpened portion, wherein said elongated base portion is indented in an amount from 0.020" to 0.050" deep to form two upstanding ears adjacent said transition portion separated by a lower ledge.

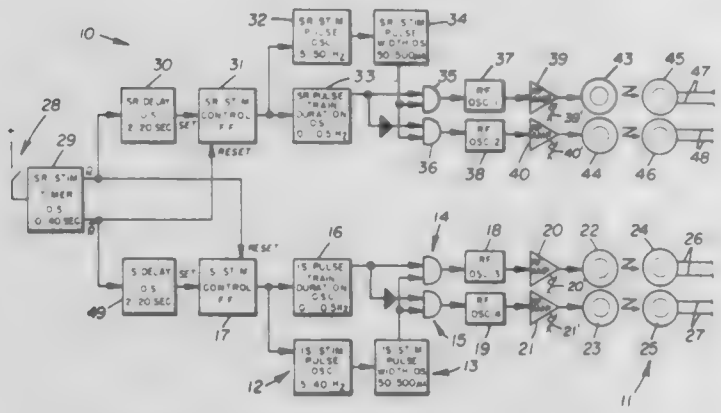
12. A surgical staple having a U-shaped configuration and an elongated base portion and two legs substantially perpendicular to said base portion connected thereto at one end by a transition portion and terminating at the other end in a sharpened point, wherein said sharpened point is characterized by having greater than one facet and has a rounded or semi-circular configuration with a radial nose.

4,607,639

METHOD AND SYSTEM FOR CONTROLLING BLADDER EVACUATION

Emil A. Tanagho, San Rafael; Richard A. Schmidt, San Francisco; Curtis A. Gleason, Palo Alto, and Tom F. Lue, Millbrae, all of Calif., assignors to Regents of the University of California, Berkeley, Calif.

Filed May 18, 1984, Ser. No. 611,836
Int. Cl.[4] A61N *1/36*
U.S. Cl. 128—419 E 33 Claims



1. A method for simultaneously controlling the coordinated and synchronized functions of a bladder and associated external sphincter in an anatomical system of a selected human, said system including S2, S3 and S4 sacral segments of a spinal cord and a sacral nerve originating at each of said sacral segments and each of said sacral nerves including a dorsal root and a ventral root in a sacral canal, said sacral nerves forming a pelvic nerve when they leave the sacral canal connected to said bladder to control contractions of a detrusor muscle thereof, a superior somatic nerve and an inferior somatic nerve connected to muscles controlling the external sphincter of said bladder, said method comprising the steps of

identifying the anatomical location and functional characteristics of those nerve fibers controlling the separate functions of said bladder and external sphincter,

separating motor, sensory and autonomic and somatic nerve fibres controlling the separate functions of the bladder and associated external sphincter from other nerve fibers,

positioning electrode means on selected ones of said nerve fibers for electrically stimulating such fibers while simultaneously isolating adjacent nerve fibers therefrom, and

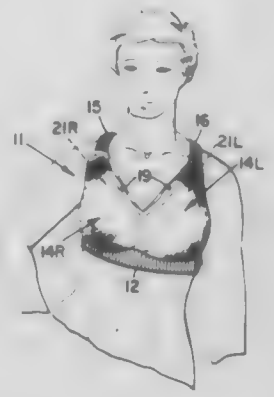
applying coordinated and synchronized pulse trains sequentially or simultaneously to said electrode means to simultaneously and/or separately control the functions of said bladder and external sphincter.

4,607,640

ATHLETIC/INDUSTRIAL BRASSIERE WITH PROTECTIVE INSERTS

LeRoy H. McCusker, R.R. 4, Box 162, Cannon Falls, Minn. 55009

Filed Nov. 18, 1985, Ser. No. 799,091
Int. Cl.[4] A41C *3/00*
U.S. Cl. 128—425 24 Claims



1. A protective brassiere, comprising:

a fabric portion flexibly constructed to be worn by and conform to the thoracic cage of the user, the fabric portion comprising two generally concave members constructed and disposed to overlie the breasts of the user;

each of said concave members comprising two layers of fabric defining a thin pocket therebetween;

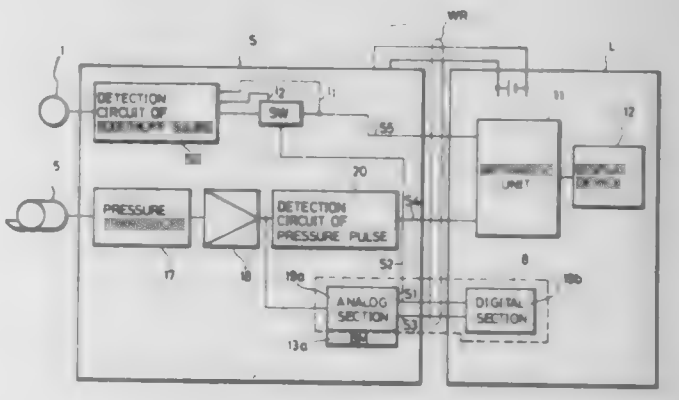
and a protective insert disposed in each of said thin pockets, each of said inserts being generally concave in shape and comprising a substantially rigid central concave portion to protect the breast from direct impact, and a peripheral portion that is flexible at least in part to conform the thoracic cage of the user and to transmit thereto forces imparted to said central concave portion.

4,607,641

ELECTRONIC SPHYGMOMANOMETER

Toshitaka Fukushima, Tokyo, Japan, assignor to Seiko Instruments & Electronics Ltd., Tokyo, Japan

Filed Oct. 29, 1984, Ser. No. 665,775
Claims priority, application Japan, Nov. 4, 1983, 58-207077; Nov. 4, 1983, 58-207078; Nov. 4, 1983, 58-207083; Nov. 4, 1983, 58-207084; Nov. 9, 1983, 58-210306; Nov. 10, 1983, 58-211654; Apr. 20, 1984, 59-80973
Int. Cl.[4] A61B *5/02*
U.S. Cl. 128—680 5 Claims



1. In an electronic sphygmonanometer for measuring a person's blood pressure and having detection circuit means for detecting Korotkoff sounds received from a microphone, a pressure transducer for converting a person's blood pressure to an analog electric signal, an amplifier for amplifying the analog electric signal, a detection circuit for detecting a pressure pulse signal based on the amplified analog electric signal and producing a reference pulse signal in synchronism with said pressure pulse signal, a double integral type analog-to-digital converter

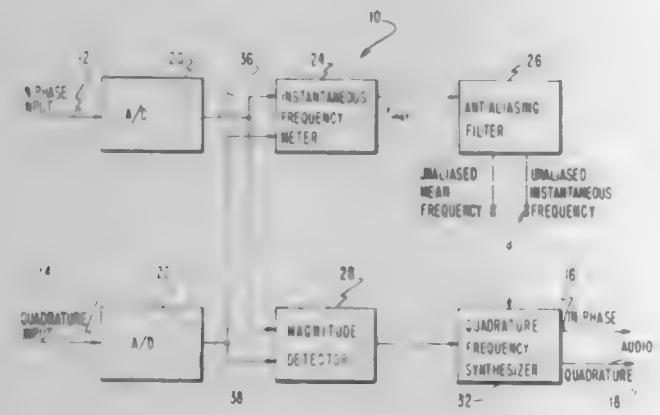
for converting said analog electric signal to a digital signal, an arithmetic unit for receiving the output signals of said detection circuit means, said detection circuit and said double integral type analog-to-digital converter, and a display device for digitally indicating the person's systolic pressure and diastolic pressure, the improvement comprising: a detection section including said detection circuit means, said pressure transducer, said amplifier, said detection circuit and an analog section of said double integral type analog-to-digital converter; a logic section formed on one MOS IC chip and including a digital section of said double integral type analog-to-digital converter, said arithmetic unit and said digital display device; and a plurality of signal lines connected between said detection section and said logic section and including a first signal line for transmitting said output signal of said detection circuit means to said arithmetic unit, a second signal line for transmitting said reference pulse signal serving as an output of said detection circuit to said arithmetic unit, and a third signal line for transmitting an output of said analog section to said digital section of said double integral type analog-to-digital converter.

4,607,642

UNALIASED QUADRATURE AUDIO SYNTHESIZER

Jeffry E. Powers, Bainbridge Island, Wash., assignor to Advanced Technology Laboratories, Bothell, Wash.

Filed Apr. 19, 1984, Ser. No. 601,816
Int. Cl.[4] A61B *10/00*
U.S. Cl. 128—663 **4 Claims**



1. An unaliased quadrature audio synthesizer which preserves full spectral content of an original ultrasound Doppler signal derived from blood flow in a sample volume, which Doppler signal may include aliased frequencies, comprising:

(a) means adapted to receive said Doppler signal and in the presence of said aliased frequencies for generating a digitized signal corresponding to the instantaneous, unaliased Doppler shift frequency resulting from blood flow in the sample volume

(b) means for generating quadrature audio signals corresponding to said digitized signal.

4,607,643

ENDOTRACHEAL TUBE/STETHOSCOPE COMBINATION

Floyd R. Bell, 1530 Summa Meadow Rd., Lexington, Ky. 40502, and Thomas H. McKay, Meadowoods Apts., No. 28, 1701 Clay St., Flatwoods, Ky. 41139

Filed Nov. 9, 1984, Ser. No. 670,371
Int. Cl.[4] A61B *5/02*
U.S. Cl. 128—715 **12 Claims**

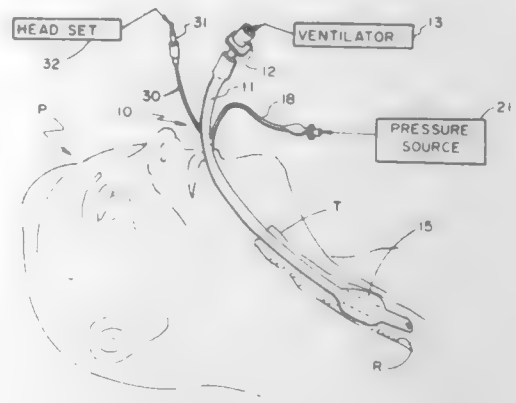
1. An assembly for providing endotracheal ventiliation and vital sounds monitoring by stethoscope in a patient comprising

a tracheal tube;

an inflation cuff surrounding the tube adjacent the distal end;

means for pressurizing said cuff for peripherally sealing the assembly against the trachea wall; and

an audio cuff extending at least partially coextensive with said inflation cuff along the tube and having sufficient



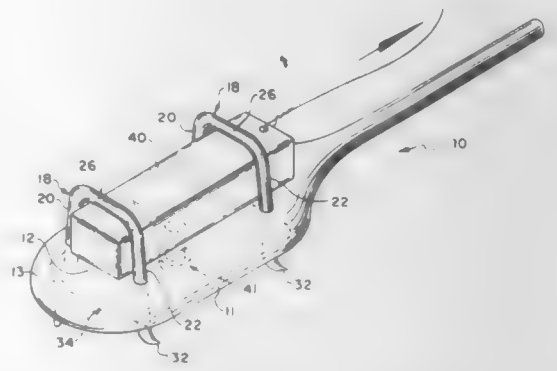
resiliency to vibrate in response to patient vital sounds to permit monitoring during patient ventilation.

4,607,644

SELF-SUTURING POROUS EPICARDIAL ELECTRODE ASSEMBLY

Peter J. Pohndorf, Miami Shores, Fla., assignor to Cordis Corporation, Miami, Fla.

Filed Apr. 1, 1985, Ser. No. 718,463
Int. Cl.[4] A61N *1/04*; A61B *5/04*
U.S. Cl. 128—785 **10 Claims**



1. A self-suturing epicardial electrode assembly comprising:

a generally planar body made of a flexible rubber-like material, said body having upper and lower substantially parallel surfaces and at least two pairs of holes through said body, extending substantially perpendicular to said upper and lower surfaces;

an electrode embedded in said said body, said electrode having a downward facing electrode contact face which is exposed below said lower surface of said body for engagement with the myocardial wall of a heart;

an insulated electrode wire conductor embedded at its distal end in said body and conductively attached to said electrode, said wire conductor extending from said body into a pacing lead;

at least two spring anchor members, each spring anchor member having a pair of downwardly projecting, outwardly tensioned legs mutually attached at their upper ends to a bight, each leg at its lower end terminating in an outwardly and downwardly projecting, sharply pointed, curved prong, each of said pairs of legs being received in one of said pairs of holes, each of said spring anchor members having an upper armed position and a lower activated position, said prongs in said armed position being adjacent said lower surface of said body and in said activated position being capable of penetrating the myocardial wall of a heart and operating to secure said body to said myocardial wall;

means for retaining said spring anchor members in said armed position; and

means for removing said means for retaining said spring anchor members in said armed position.

4,607,645

SHREDDED TOBACCO SUPPLYING DEVICE FOR CIGARETTE MAKING MACHINE

Yutaka Okumoto; Hideki Kobayashi; Kanjo Shiote, and Toyomi Arakawa, all of Tokyo, Japan, assignors to Japan Tobacco Inc., Tokyo, Japan

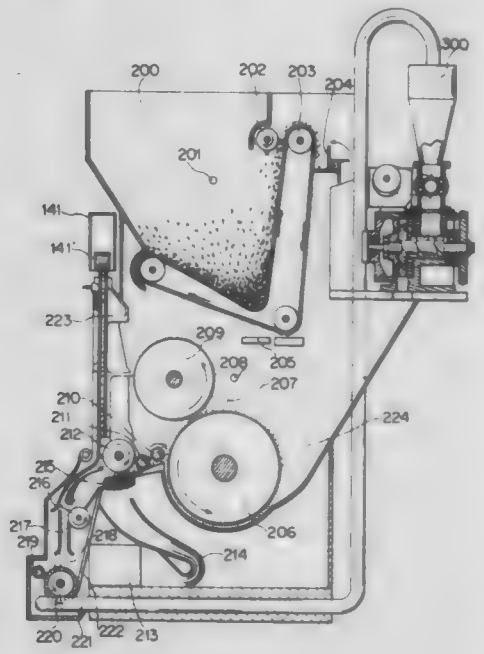
Filed Dec. 6, 1983, Ser. No. 558,667

Claims priority, application Japan, Dec. 7, 1982, 57-213304

Int. Cl.[4] A24C *5/14, 5/18*

U.S. Cl. 131—109.1

4 Claims



1. A shredded tobacco supplying device for a cigarette making machine comprising:

feeding means for feeding shredded tobacco including heavy and light tobacco pieces in a regulated manner;

a high speed impellor arranged to receive shredded tobacco from said feeding means and scatter said tobacco in a predetermined direction;

a chimney structure vertically arranged substantially above the path of said scattered shredded tobacco and connected to a negative pressure source at an upper portion thereof, whereby light pieces of said tobacco are drawn through said chimney structure for a subsequent cigarette rolling operation;

a channel vertically arranged substantially below said scattered shredded tobacco to receive pieces included in said scattered shredded tobacco that dropped downward;

means for collecting said dropped pieces;

means for crushing said dropped pieces into smaller pieces of reduced weight;

means for supplying said crushed pieces back to said feeding means.

4,607,646

PROCESS FOR MODIFYING THE SMOKE FLAVOR CHARACTERISTICS OF TOBACCO

A. Clifton Lilly, Jr.; Henry B. Merritt, and Cassandra D. Owens, all of Richmond, Va., assignors to Philip Morris Incorporated, New York, N.Y.

Filed Feb. 6, 1984, Ser. No. 577,458

Int. Cl.[4] A24B *15/00*

U.S. Cl. 131—309

10 Claims

1. A method for modifying the smoke flavor characteristics or non-burley tobacco to impart thereto burley-like smoke flavor characteristics, comprising the steps of:

a. contacting the non-burley tobacco with ammonia in a pressure-controlled system to provide sufficient pressure to maintan the continuing presence of ammonia; and

b. reacting said ammonia with natural sugars in said tobacco by heating said tobacco and ammonia to a temperature of between about 80° C. to about 150° C. to impart burley-like smoke flavor characteristics to said tobacco and retain therein substantially all volatile tobacco components.

4,607,647

SMOKING ARTICLES

Frederick J. Dashley, New Milton, and David J. Dittrich, Southampton, both of England, assignors to British-American Tobacco Company Limited, London, England

Filed Jun. 11, 1984, Ser. No. 619,058

Claims priority, application United Kingdom, Jun. 15, 1983, 8316266

Int. Cl.[4] A24B *15/28*

U.S. Cl. 131—365

13 Claims

1. A smoking article wrapping paper which effects at least thirty percent reduction of side stream TPM as compared with a conventional wrapper paper, the paper having an air permeability of !ess than 10 CORESTA units and including a stain resist substance substantially uniformly distributed substantially throughout the paper.

4,607,648

COIN BANK WITH FLIPPING ACTION AND SORTING

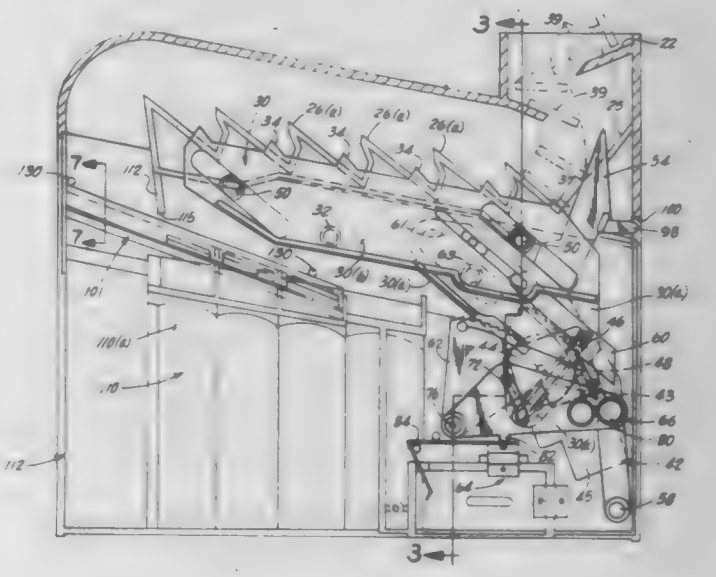
Wilfred H. Hough, Cleveland, Ohio, assignor to Nottingham-Spirk Design Inc., Cleveland, Ohio

Filed May 17, 1985, Ser. No. 735,318

Int. Cl.[4] G07D *3/00*

U.S. Cl. 133—3 D

19 Claims



1. A coin bank comprising a housing having an inlet for receiving a group of coins of different diameters; a coin storage means for receiving coins of different diameters; means actuated by introduction of coins into said inlet for separating individual coins from a group deposited into said inlet and for advancing the separated coins in a moving file; and means for receiving coins from said moving file and for directing the coins to the coin storage means; said housing having a transparent wall disposed so as to allow coins in said moving file to be viewed therethrough.

4,607,649

COIN SORTER

Dale L. Taipale, Delafield, and John H. Winkelman, Hartland, both of Wis., assignors to Brandt, Inc., Watertown, Wis.

Filed Dec. 21, 1983, Ser. No. 563,804

Int. Cl.[4] G07D *3/00*

U.S. Cl. 133—3 C

16 Claims

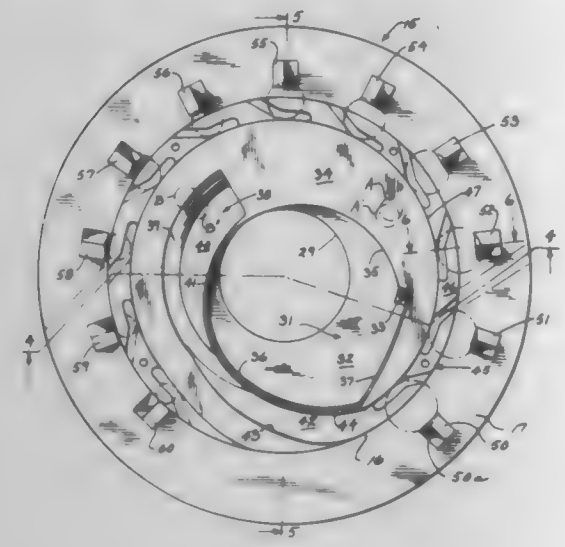
14. A coin handling mechanism for forming a plurality of coins into a single layr and a single file, comprising:

a rotatable disc having a resilient surface;

means for rotating said disc; and

a stationary plate having non-resilient surfaces confronting

the resilient surface of said disc, said plate including a central opening so that coins may be placed against said disc, said non-resilient surfaces including a series of guide surfaces spaced from the disc a distance that is less than the thickness of the coins and at least one arcuate shoulder



that faces outwardly towards the perimeter of said plate, said guide surfaces adapted to pinch coins between the plate and said disc to urge a single layer of coins to form in a single file with their inner edges against the shoulder as said disc rotates.

4,607,650

COIN DISPENSING APPARATUS

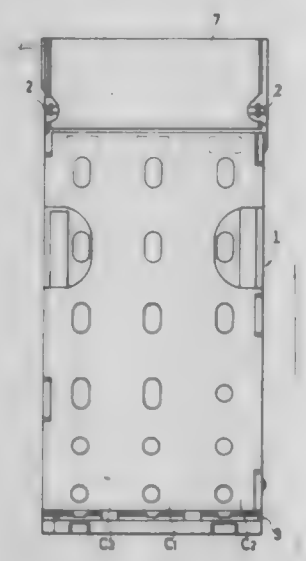
Osamu Kobayashi; Koji Yukimoto, and Mitsugu Mikami, all of Saitama, Japan, assignors to Kabushiki Kaisha Nipponcoinco, Tokyo, Japan

Filed Sep. 5, 1984, Ser. No. 647,616

Claims priority, application Japan, Sep. 6, 1983, 58-162541; Sep. 14, 1983, 58-141545[U]; Sep. 28, 1983, 58-178251

Int. Cl.⁴ G07D *1/02*

U.S. Cl. 133—5 R **10 Claims**



1. A coin dispensing apparatus, comprising:

a coin tube cassette detachably mounted in said coin dispensing apparatus, said cassette having a plurality of coin tubes for storing coins in a direction of thickness of said coins;

code setting means for setting a code indicative of a combination of denomination of coins stored in said plurality of coin tubes; and

controlling means for controlling coin dispensing on said code set by said code setting means so as to selectively dispense at least one coin consisting of at least one denomination.

4,607,651

AUTOMATIC SET-UP SYSTEM

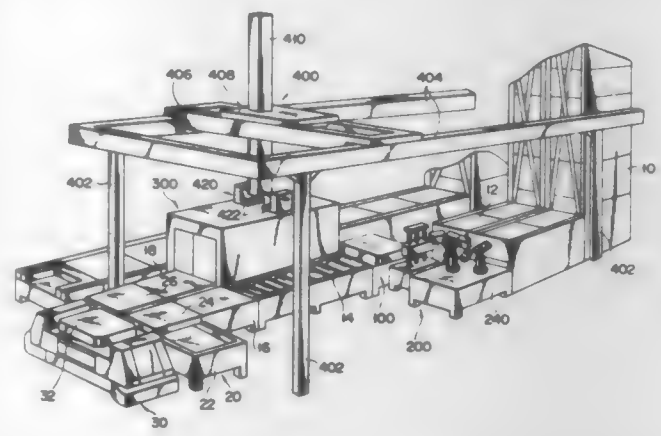
Akihiko Noh, Chigasaki; Yoshiaki Saijo, Yokohama; Shinichi Sato, Kawasaki, and Ichiro Tanaka, Sagamihara, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Division of Ser. No. 581,417, Feb. 17, 1984, Pat. No. 4,543,970. This application Jun. 14, 1985, Ser. No. 744,699

Claims priority, application Japan, Feb. 21, 1983, 58-26236; Oct. 18, 1983, 58-195073; Oct. 18, 1983, 58-195076

Int. Cl.⁴ B08B *3/00*

U.S. Cl. 134—62 **6 Claims**



1. An automatic set-up system for setting up a work to be processed by a flexible manufacturing system automatic machine tool, comprising:

a pallet on which said work is mounted;

a setting table on which said pallet having said work thereon is placed;

a convey unit having grip means for sequentially gripping and conveying said pallet and the work onto said setting table;

a clamp mounted on said pallet to clamp and fix the work on said pallet;

a cleaner for cleaning the work and said pallet which are fixed together by said clamp;

feeding means for delivering the work and said pallet which are fixed together by said clamp to the automatic machine tool and for feeding a processed work and said pallet to said cleaner;

a setting robot and a jig table on which said clamp is placed, said setting robot having a lift arm, a turning arm supported by said lift arm and arranged to turn along the horizontal direction with respect to said lift arm;

lifting means for vertically moving said lift arm;

turning means for turning said turning arm; and

a gripper for gripping said clamp supported at a distal end of said turning arm, said lift arm being moved upward by said lifting means and said turning arm being turned by said turning means after said gripper grips said clamp on said jig table, and thereafter said lift arm being moved downward by said lifting means to set said clamp at a predetermined position of said pallet placed on said setting table.

4,607,652

CONTACT LENS CLEANING APPARATUS

Simon K. C. Yung, 5, Purves Road, Jardines Lookout, Hong Kong

Filed Nov. 29, 1984, Ser. No. 676,004

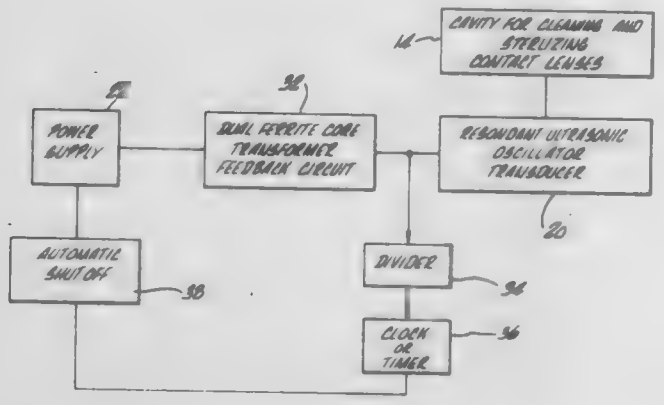
Claims priority, application United Kingdom, Aug. 29, 1984, 8421836

Int. Cl.⁴ B08B *3/12*

U.S. Cl. 134—184 **10 Claims**

1. Contact lens cleansing apparatus comprising at least one cavity for containing at least one contact lens and cleansing liquid, an ultrasonic transducer for applying ultrasonic frequency mechanical vibrations to the liquid and contact lens contained in said cavity, DC powered oscillating means for

driving the ultrasonic transducer at a substantially stable resonant frequency in the range 20 to 40 kHz, said oscillating means including a dual ferrite core transformer feedback circuit, and a timer for energization of the oscillatiing means for a predetermined period of time, said timer being controlled by the resonant frequency of the oscillating means.

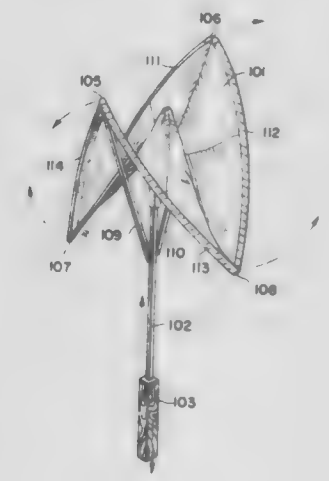


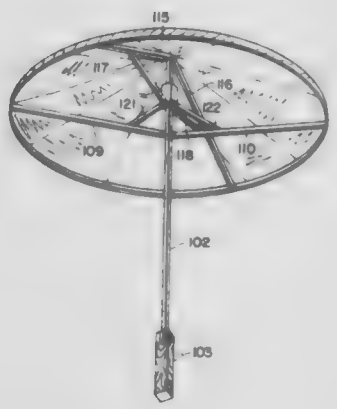
4,607,653

COLLAPSIBLE UMBRELLA WITH CIRCULAR RIM

Terry Hermanson, c/o 41 Madison Ave., New York, N.Y. 10010

Filed Mar. 8, 1985, Ser. No. 709,683
Int. Cl.[4] A45B *19/10, 19/00, 11/00, 21/00*
U.S. Cl. 135—20 M
11 Claims





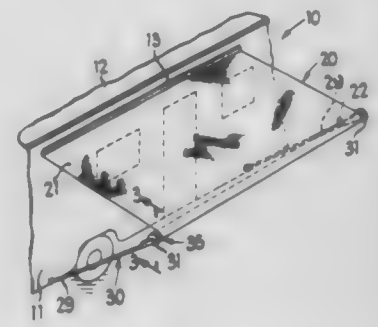
1. An umbrella comprising
a domed shaped canopy including fabric attached to a hoop;
said hoop comprised of rim members prestressed in a convex shape havng a substantially less convex straight shape with the umbrella in a closed position and having a convex shape with the umbrella in an open position;
means to connect said rim members to each other;
and means to move said canopy between said open and closed positions including
a center shaft means extending through said hoop of said rim members and surrounded by said rim members when the umbrella is closed.

4,607,654

AWNING LATCH ASSEMBLY

Henry J. Duda, Mount Prospect, Ill., assignor to Randall Equipment Company, Mt. Prospect, Ill.

Filed Feb. 1, 1985, Ser. No. 697,477
Int. Cl.[4] E04H *15/08;* E04F *10/06;* G05G *5/06;* B65H *75/48*
U.S. Cl. 135—89
12 Claims



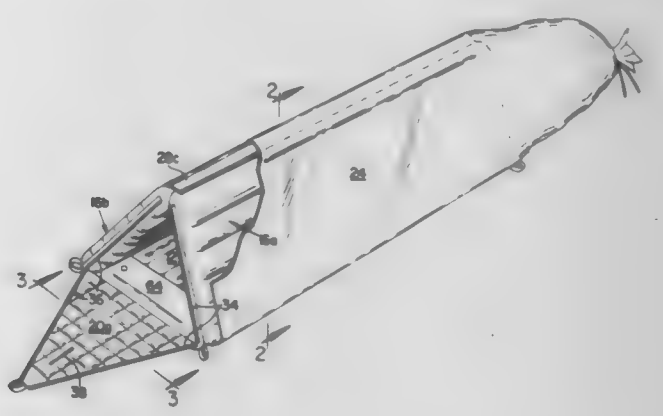
1. In an awning for a travel trailer or mobile home including a flexible awning covering wound on a roller which is rotatable on a fixed shaft carried by a supporting frame, the improvement comprising: a first member fixedly secured to the shaft, a second member carried by the roller for rotation therewith adjacent to said first member and having a cylindrical wall portion coaxial with said shaft, said first member and said cylindrical wall portion cooperating in use to define an annular cavity therebetween, said cylindrical wall portion having a plurality of keeper recesses therein formed between inwardly extending detents, said recesses communicating with said annular cavity, and a latch member carried by said first member and projecting into said cavity parallel to said axis for movement between a latching position disposed in the path of said keeper recesses and an unlatching position out of the path of said keeper recesses, said latch member in the latching position thereof being engageable in a selected one of said keeper recesses for inhibiting rotation of said second member and the roller said latch member further comprising a grasping means extending outside said annular cavity.

4,607,655

SURVIVAL SHELTER

David L. R. Wagner, 6410 NE. Willow, Portland, Oreg. 97266, and Donald E. Bixler, 205 3rd Ave., Oregon City, Oreg. 97045

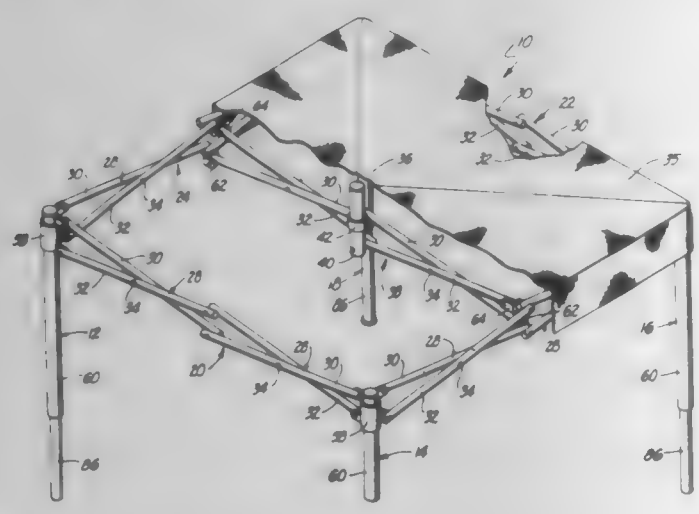
Filed Apr. 9, 1984, Ser. No. 598,484
Int. Cl.[4] E04H *15/44, 15/30;* E02B *1/34;* A61G *1/00*
U.S. Cl. 135—95
13 Claims



1. A self-supporting, inflatable survival shelter comprising:
an inflatable floor portion of air impermeable material;
a pair of inflatable side portions of air impermeable material, said floor and side portions having a substantially triangular configuration when inflated;

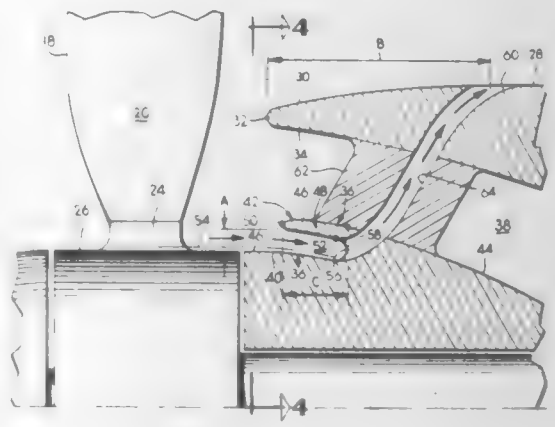
a pair of opposed, quilted end portions of non-inflatable insulation material;
fastening means cooperable with one of said end portions and said side portions to permit opening and closing of said one end portion;
said floor and side portions each including:
an outer wall;
an inner wall; and
a plurality of parallel, substantially I-shaped strips connected to said inner and outer walls, and extending substantially the entire length or width of said inner and outer walls, such that said inner and outer walls, when inflated, are spaced from one another and divided into a plurality of air-filled cells;
the shelter further including longitudinally extending strips connecting adjacent abutting cells of said floor and side portions, each said strip and associated cells cooperating to form a longitudinal insulating air pocket adjacent an interface between said abutting cells when inflated.

4,607,656
QUICK ERECTION COLLAPSIBLE SHELTER
Mark C. Carter, 210 Pason, San Dimas, Calif. 91773
Filed Sep. 26, 1983, Ser. No. 535,426
Int. Cl.[4] E04B *7/16*; A45F *1/16*
U.S. Cl. 135—110 **21 Claims**



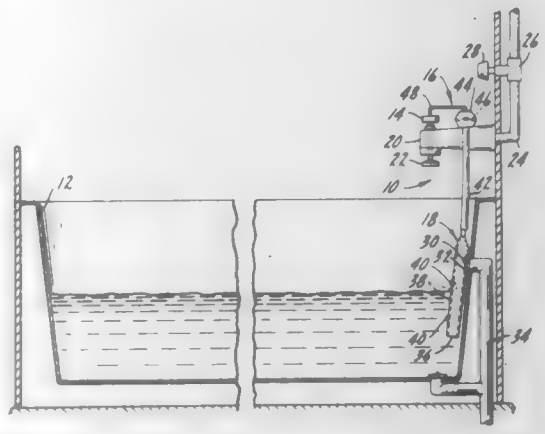
8. A collapsible shelter which can be quickly erected including:
at least four telescoping legs, each telescoping leg having:
an upper portion;
a slider member connected to said upper portion for sliding contact therewith;
a lower portion for engagement with the ground, said lower portion being slideably mounted to said upper portion; and
first releasable locking means for maintaining said upper and lower portions in an extended condition;
at least four pairs of X configured truss structures, each X configured truss structure of each pair of X configured truss structures having:
a first link having:
an outer end pivotally connected to a leg upper portion;
a center portion; and
an inner end pivotally connected to an inner end of said first link inner end of another X configured truss structure of the pair; and
a second link having:
an outer end pivotally connected to a slider member;
a center portion pivotally connected to said center portion of said first link of said X configured truss structure; and
an inner end pivotally connected to an inner end of a second link of the other X configured truss structure of the pair;
means for releasably fixing at least one of said slider members in a position to maintain said shelter in an erected condition including:
second releasable locking means for maintaining said upper portion of at least one telescoping leg and the slider member connected thereto in a shelter erecting position; and
a canopy supported by said legs and leg connected truss structures.

4,607,657
AIRCRAFT ENGINE INLET
Robert Hirschkron, Marblehead, Mass., assignor to General Electric Company, Lynn, Mass.
Filed Oct. 28, 1985, Ser. No. 791,830
Int. Cl.[4] F02C *7/04*
U.S. Cl. 137—15.1 **10 Claims**



1. An air inlet for an aircraft engine comprising:
a nacelle for containing the engine having a leading edge, and including an outlet aperture in an outer surface thereof for being in flow communication with ambient air;
a fairing spaced radially inwardly from said nacelle for defining an inlet duct therebetween for channeling air to the engine, said fairing including a plurality of circumferentially spaced inlet apertures in an inner surface thereof for being in flow communication with ambient air;
a plurality of circumferentially spaced struts extending between forward ends of said fairing and said nacelle; and
a plurality of flow channels, each extending in flow communication with a respective one of said inlet apertures, through said struts and nacelle and to said outlet aperture.

4,607,658
WATER LEVEL CONTROL DEVICE
Gerald M. Fraser, 7460 Shaw Ave., Sardis, B.C., Canada (V2R 1A5), and Marcel J. Champigny, No. 27 46689 1 Ave., Chilliwack, B.C., Canada (V2P 1XY)
Filed Nov. 1, 1985, Ser. No. 793,903
Int. Cl.[4] F16R *21/18*
U.S. Cl. 137—393 **10 Claims**



1. A device dependent upon the water level in a basin for

automatically controlling the flow of water into the basin, comprising

(a) a water inlet into the basin,

(b) a valve in said inlet having two orientations, a first orientation permitting flow of water from said inlet into said basin and a second orientation preventing flow of water from said inlet into said basin,

(c) a valve operator associated with said valve, said valve operator including a regulator having a flexible diaphragm, and including a linkage extending from said diaphragm and connected to said valve for operating said valve,

(e) an elongated air pressure tube located in the basin and disposed vertically, said tube having an open bottom and including at least one pressure relief opening in the length thereof for permitting selection of different water levels in the basin,

(f) means extending between said tube and said regulator for communicating air pressure from said tube to said regulator.

4,607,659

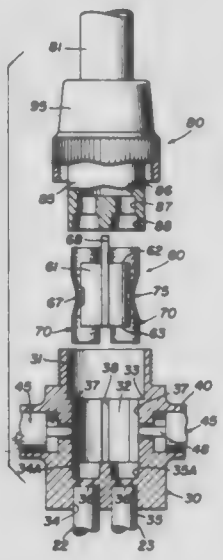
VALVE WITH RESILIENT TUBES HAVING CONSTRICTED PORTIONS

George S. Cole, 17 Mile Dr., Pebble Beach, Calif. 93953

Filed Aug. 12, 1985, Ser. No. 764,541

Int. Cl.[4] F16K *43/00, 11/18, 31/524*

U.S. Cl. 137—454.2 20 Claims



1. A valve for controlling flow from a pair of pressurized fluid supply conduits, said valve comprising: a support, a pair of spaced resilient tubes carried by said support and respectively communicating with the supply conduits, each of said tubes having two end portions and a neck portion and two tapered transition portions respectively connecting said end portions to said neck portion, the inner surfaces of said end portions and said neck portion, the being circularly cylindrical and the inner surfaces of said transition portions being substantially frusto conical such that when the tube is relaxed the internal diameter of said neck portion is substantially less than that of either of said end portions each of said tubes having a circular internal cross-sectional flow area along the entire length thereof to promote laminar flow and to minimize noise, the cross-sectional flow area of said neck portion being substantially less than that through either of said end portions in use, and control means on said support engageable with said neck portions of said tubes and movable between a fully open position wherein said tubes are relaxed and closed positions cooperating with said support to pinch said neck portions for varying the internal cross-sectional areas thereof.

4,607,660

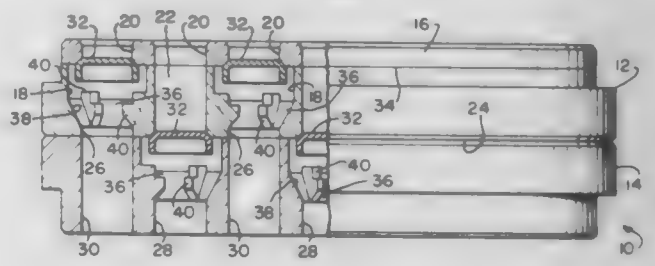
UNI-DIRECTIONAL-FLOW, FLUID VALVE ASSEMBLY

Robert A. Bennitt, Painted Post, N.Y., assignor to Ingersoll-Rand Company, Woodcliff Lake, N.J.

Filed May 13, 1985, Ser. No. 733,081

Int. Cl.[4] F16K *15/02*

U.S. Cl. 137—512.1 14 Claims



1. A substantially circular, uni-directional flow, fluid valve assembly, having a given diameter, comprising:

means defining pluralities of rows of separate, circular and walled valving chambers; wherein

each chamber of said rows thereof has a first port opening thereinto for admitting fluid therein, and a second port opening thereinto for discharging fluid therefrom;

each chamber further has, therewithin, a valving element movable to and from one of said ports, for occluding and exposing, respectively, said one port;

a cross-section taken fully along said given diameter of said assembly is of a given dimension, and bisects one of said rows of said valving chambers across the diameters of each of said chambers in said one row; and

the sum of the dimensions of said diameters of said chambers in said one row is greater than said given dimension.

4,607,661

CHECK VALUE

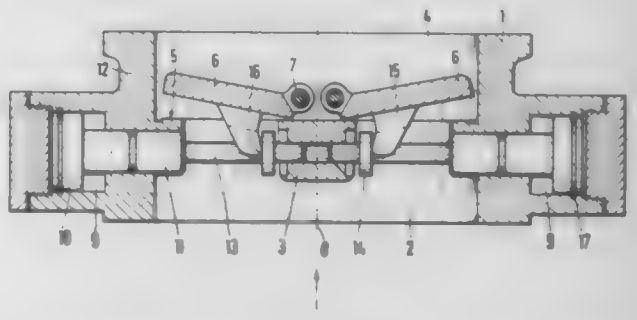
Lür Wessels, Stuhr, and Johannes Tetzner, Bremen, both of Fed. Rep. of Germany, assignors to GESTRA Aktiengesellschaft, Bremen, Fed. Rep. of Germany

Filed Apr. 22, 1985, Ser. No. 725,373

Claims priority, application Fed. Rep. of Germany, May 12, 1984, 3417770; Feb. 13, 1985, 3504827

, Int. Cl.[4] F16K *15/03, 47/00*

U.S. Cl. 137—512.1 9 Claims



5. In a check valve having a valve casing with an inlet duct and an outlet duct, two sealing valves in the outlet duct pivotably supported therein at their adjacent edges, a casing bridge disposed upstream of said adjacent valve edges on the inlet side, at least two control means arranged on the bridge of said valve casing each being capable of a lifting movement and being responsive to inlet pressure within said inlet duct for acting on said valves, and two operating rods each operatively connected with one of said control means, said operating rods projecting into the interior of said valve casing and cooperating with the sealing valves at least over part of the path of the pivoting movement thereof, the improvement comprising said operating rods extending into the inlet duct of said valve casing substantially transversely to the longitudinal axis of said valve casing, and coupling means for translating motion arranged between each operating rod and associated sealing valve, one

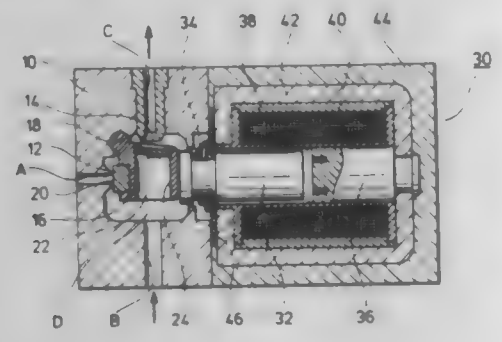
element thereof being adapted for an arcuate motion and another element thereof being adapted for a lifting motion.

4,607,662

THREE-WAY CHANGE-OVER VALVE

Tomio Hama, and Kiyoyasu Yamazaki, both of Okaya, Japan, assignors to Nihon Pisuko Kabushiki Kaisha, Nagano, Japan

Continuation of Ser. No. 492,046, May 6, 1983, abandoned. This application Apr. 26, 1985, Ser. No. 727,915
Claims priority, application Japan, May 10, 1982, 57-78720
Int. Cl.[4] F16K *11/04*
U.S. Cl. 137—625.65 1 Claim



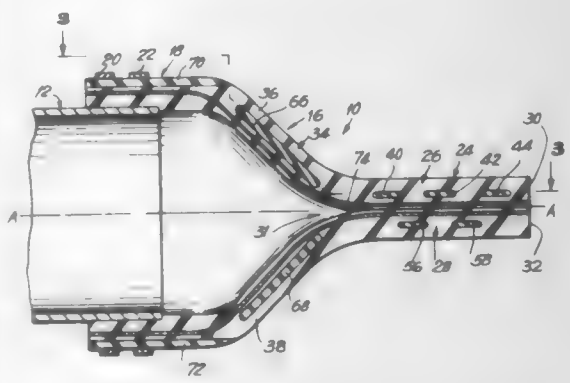
1. A three-way change-over valve comprising:
a valve box;
a fluid chamber being disposed within said valve box, said fluid chamber including at least a first, second, third and fourth wall, said first and second walls being substantially perpendicular with respect to each other, said third wall of said fluid chamber is positioned at approximately ninety agrees from said first wall;
an input port communication through said first wall of said fluid chamber;
an exhaust port communicating through said second wall of said fluid chamber;
an output portion communicating through said third wall of said fluid chamber;
said fourth wall including an aperture disposed therein;
a valve body operatively positioned within said fluid chamber for sequentially opening and closing said input port and said exhaust port;
a pivot axis affixed to said valve body and being positioned adjacent to said first and second walls;
an electromagnetic controlling mechanism for imparting movement to and for releasing said valve body for sequentially opening and closing said input port and said exhaust port, said electromagenetic controlling mechanism being affixed to said fourth wall;
said electromagnetic controlling mechanism includes a movable core operatively positioned for selectively entering through said aperture in said fourth wall and into said fluid chamber towards said first wall and for retracting from said fluid chamber; and
a biasing means operatively connected to said movable core for normally biasing said movable core into said fluid chamber, said biasing means is a spring;
said electromagnetic controlling mechanism being adapted to be energized for retracting said movable core from said fluid chamber;
said valve body being formed in the shape of approximately a cube and includes a hollow control portion in which an exhaust controlling valve is positioned;
said exhaust controlling valve is said valve body is positioned to cooperate with said exhaust port in said second wall of said fluid chamber; and
an input-controlling valve is fixed to said valve body and is positioned to cooperate with said input port communicating through said first wall of said fluid chamber;
wherein when said electromagnetic controlling mechanism is deenergized, said biasing means biases said movable core directly against said valve body and against said input port for closing said input port against the flow of fluid from the input port, and when said electromagnetic controlling mechanism is energized, said movable core is retracted from said fluid chamber against said biasing means to release said valve body from said input port and for enabling said input pressure to move said valve body for closing said exhaust port.

4,607,663

INVERSION-RESISTANT, READILY-OPENABLE TIDE GATE VALVE

Spiros G. Raftis, Pittsburgh, Pa., and George W. Merritt, Akron, Ohio, assignors to Red Valve Co., Inc., Carnegie, Pa.

Filed Jul. 12, 1985, Ser. No. 754,820
Int. Cl.[4] F16K *15/16*
U.S. Cl. 137—846 5 Claims

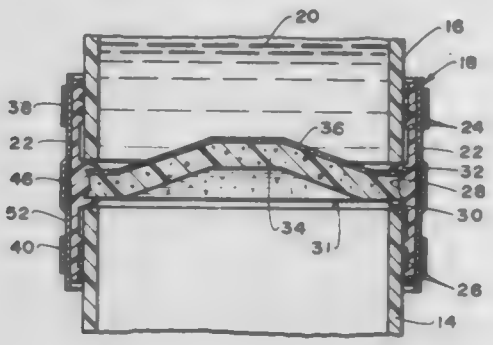


1. An inversion-resistant tide gate valve for sewage conduits, particular for large-sized storm sewer pipes, comprising:
(a) a sleeve bounding a longitudinally-extending flow-through passage for sewage fluids,
(b) said sleeve having an upstream fluid inlet end region mountable on a discharge end of a sewage conduit which is elongated along an axis of symmetry,
(c) said sleeve having a downstream fluid outlet end region which has an upper lip and a lower lip opposed to each other and symmetrically arranged relative to the axis, said lips being movable from a closed position in which the lips sealingly engage each other, to an open position in which the lips are located apart from each other in response to a pressure head within the passage and exerted in a direction downstream of the passage,
(d) said sleeve having a tapered intermediate region which has an upper wall and a lower wall symmetrically arranged relative to the axis, said upper and lower walls respectively merging, and being jointly movable, with the upper and lower lips,
(e) said sleeve being constituted, at least in part, of a flexible material,
(f) a plurality of pads arranged along the upper and lower walls and lips of the sleeve, said pads being constituted of a material less flexible than the flexible material of the sleeve for imparting strength to the sleeve to prevent the sleeve from sagging and to prevent the lips from inverting in response to a back pressure exerted in a direction upstream of the passage, said pads being spaced apart from each other to bound therebetween flexible hinge regions at which the upper and lower walls and lips are bendable for imparting flexibility to the sleeve to enable the lips to readily move from the closed to the open position in response to the pressure head, first ones of the pads on the upper lip being staggered relative to second ones of the pads on the lower lip, third ones of the pads on the upper wall being symmetrically arranged relative to the axis with respect to fourth ones of the pads on the lower wall, said first, second, third and fourth ones of the pads being embedded in the flexible material of the sleeve, and an additional longitudinally-extending annular pad on the upstream fluid inlet end region for imparting additional strength to the sleeve to resist sagging of the same.

4,607,664
PLUMBING TEST PLUG APPARATUS

Joseph H. Carney, 13495 Meyer Rd., Whittier, Calif. 90605, and Rudy Lozano, 1537 Leanne Ter., Walnut, Calif. 91789

Filed Oct. 15, 1985, Ser. No. 787,152
Int. Cl.[4] F16K *17/36*
U.S. Cl. 138—89 10 Claims



1. A plug apparatus for temporarily blocking the discharge fluid flow path of a pipe system comprising:

a first pipe and a second pipe located in an in-line manner through which a fluid is to be conducted, both said first pipe and said second pipe having an open end, said open ends being located directly adjacent but spaced therefrom forming a gap;

a flexible walled sleeve exteriorly mounted on both said first and second pipes and extending across said gap, said sleeve having an exterior wall surface and an interior wall surface, means formed on said interior wall surface for securing a plug;

said plug locatable within said sleeve, said plug completely blocking said flow path between said first and second pipes said plug being destructable, said plug being held in position by said hiatus means;

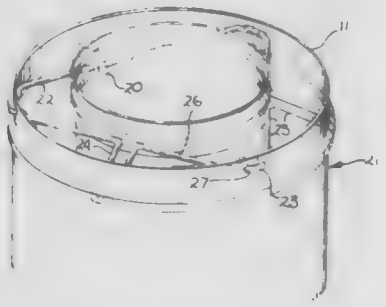
a first clamping means mounted on said exterior surface of said sleeve for securing said sleeve onto said first pipe and said second pipe in a fluid-tight manner; and

a second clamping means mounted on said exterior surface of said sleeve for applying a force to said plug.

4,607,665
PIPE SPACER

Samuel B. Williams, Culver City, Calif., assignor to Marco Manufacturing, Inc., Lynwood, Calif.

Filed May 20, 1985, Ser. No. 735,681
Int. Cl.[4] F16L *9/02*
U.S. Cl. 138—148 18 Claims



8. A conduit for conveying and isolating a fluid flow, comprising:

a first outer cylinder;

a second inner cylinder for containing said fluid flow, said second pipe being disposed within said first outer cylinder;

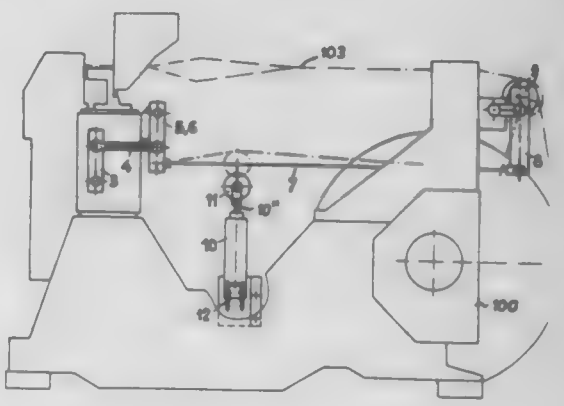
a spacer formed from a rod having a plurality of predetermined bends, said rod forming a closed perimeter around said second cylinder and contacting the inner wall of said first cylinder, such that said second cylinder is rigidly held at said predetermined location within said first cylinder, said rod having a shape including a plurality of apices, wherein said apices are for coupling said spacer to said first cylinder and portions of said rod between said apices for coupling said spacer to said second cylinder, such that said spacer clamps said second cylinder at a predetermined position within said first cylinder;

said second cylinder including a plurality of ridges on an exterior surface, such that portion portions of said rod between said apices couples to said second cylinder between said ridges.

4,607,666
APPARATUS FOR CONTROLLING THE WARP THREAD TENSION BY POSITIONAL DISPLACEMENT OF A BACK REST ON A LOOM

Rudolf Zwiener, Arbon, Switzerland; Ernst Mathis, Hohenems, Austria; Theo Thalmann, St. Gallen, Switzerland, and Siegfried Röhrich, Götzis, Austria, assignors to Aktiengesellschaft Adolph Saurer, Arbon, Switzerland

Filed Oct. 10, 1985, Ser. No. 786,107
Claims priority, application Switzerland, Oct. 16, 1984, 4945/84
Int. Cl.[4] D03D *49/12*
U.S. Cl. 139—115 16 Claims



1. An apparatus for controlling the warp thread tension in a weaving machine containing a back rest, said apparatus comprising:

at least one cam disc operatively connected with said weaving machine;

at least one swivelling lever mechanism controlled by said at least one cam disc;

said back rest containing a shaft;

said at least one swivelling lever mechanism encompassing at least one rocking lever carrying said shaft of said back rest;

said at least one swivelling lever mechanism and said at least one cam disc cooperating in order to positionally displace said back rest for warp thread tensioning during normal operation of said weaving machine;

means for causing an additional positional displacement of said back rest in order to generate an additional warp thread tensioning during the start-up operation of said weaving machine;

said means for generating said additional positional displacement of said back rest including at least one actuating means;

said at least one swivelling lever mechanism further encompassing a connecting element which serves for adjusting a relative distance between said at least one cam disc and said at least one rocking lever which carries said shaft of said back rest;

said at least one connecting element having a variable relative length determining said relative distance between said at least one cam disc and said at least one rocking lever which carries said shaft of said back rest; and

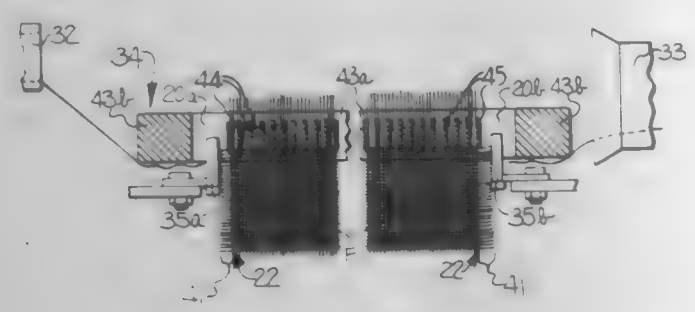
said at least one actuating means being temporarily operable in order to vary said relative length of said at least one connecting element.

4,607,667

APPARATUS FOR SEVERING INSERTED FILLING YARNS

Carroll A. Gibson, Rocky Mount, N.C., assignor to Texfi Industries, Inc., Rocky Mount, N.C.

Filed Sep. 4, 1984, Ser. No. 646,856
Int. Cl.[4] D03D *47/34*
U.S. Cl. 139—429 7 Claims



1. In a loom of the type wherein the filling yarn is inserted into the warp shed in the form of cut lengths and wherein a reed serves for beating-up the inserted filling yarn into the fabric at the fell of the cloth, the combination therewith of improved means for severing the terminal ends of filling yarns projecting outwardly from at least one of the selvages of the fabric being woven;

said means comprising a cutter positioned adjacent at least one end of the reed, said reed having a relatively wide widthwise extending opening therein adjacent the end where said cutter is positioned, said opening being of a width substantially greater than the dent spacing of the reed; and

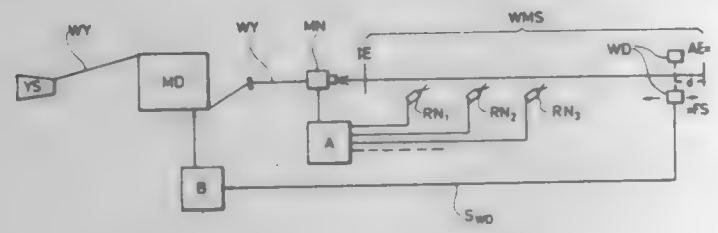
means mounting said cutter relative to said opening so that upon the reed being reciprocated in beating-up the filling yarn into the fabric, said cutter has yarn severing portions that are positioned in said opening in the reed during the effecting of severing of the terminal ends of the filling yarns so that the terminal ends of the filling yarn are severed within about 1/32" of the selvage of the fabric being woven.

4,607,668

WEFT YARN STORING, FEEDING AND MEASURING DEVICE FOR JET WEAVING MACHINES

Lars H. G. Tholander, Huskvarna, Sweden, assignor to Aktiebolaget IRO, Ulricehamn, Sweden

PCT No. PCT/SE83/00448, § 371 Date Aug. 8, 1984, § 102(e) Date Aug. 8, 1984, PCT Pub. No. WO84/02362, PCT Pub. Date Jun. 21, 1984
PCT Filed Dec. 12, 1983, Ser. No. 641,898
Claims priority, application Sweden, Dec. 10, 1982, 8207096
Int. Cl.[4] D03D *47/36*; B65H *51/00*
U.S. Cl. 139—452 3 Claims



2. A yarn storing, feeding and measuring device for jet weaving machines, including a storage drum onto which an intermediate weft yarn store can be wound by a winding-on member and from which the weft yarn can be withdrawn spiralling around the withdrawal end of the storage drum, at least one yarn stopping device and a control unit for transmitting an actuating signal to said stopping device when a weft yarn length corresponding to the length of a shed of the woven fabric in the machine has been withdrawn from the storage drum, comprising:

said control unit being electrically connected to a yarn sensing detector positioned adjacent the arrival end of the shed for the weft yarn at a predetermined distance from said arrival end; and

said control unit transmitting the actuation signal to said yarn stopping device when it receives a signal from the yarn sensing detector representing the detection of the weft yarn;

wherein said yarn sensing detector is displaceable in the length direction of the shed for adjusting the point of time when the control unit receives said signal from the yarn sensing detector.

4,607,669

REPAIR TOOL FOR DEFECTIVE WRAPPED WIRE ELECTRICAL CONNECTIONS

Nicholas Bozine, Philadelphia, Pa., assignor to Burroughs Corporation, Detroit, Mich.

Filed Jul. 26, 1984, Ser. No. 634,701
Int. Cl.[4] B21F *15/04*
U.S. Cl. 140—124 4 Claims



1. A repair tool for correcting a pigtail formed in the last of a plurality of turns of wire wrapped upon a wiring post of rectangular cross section comprising:

an elongated tubular body having a bore of predetermined diameter for accommodating the maximum cross sectional dimension of said wiring post but not including the turns of wire wrapped thereon, a longitudinal slot formed in said body adjacent the forward extremity thereof, said slot extending from the outer surface of said body to said bore,

a cylindrical member immovably affixed within said slot and providing a finger-like projection extending beyond said forward extremity, a portion of the surface of said cylindrical member being disposed on the periphery of said bore,

whereby the disposition of said body over said wiring post causes said forward extremity to rest upon said plurality of turns of wire and said finger-like projection to contact the outer surface of said pigtail, the respective longitudinal center lines of said body and said wiring post being parallel but spaced apart from each other, whereupon

the rotation of said body about its longitudinal axis causes the periphery of said bore to pivot on successive corners of said wiring post, thereby effecting the wiping down of said pigtail toward said wiring post by said finger-like projection.

4,607,670

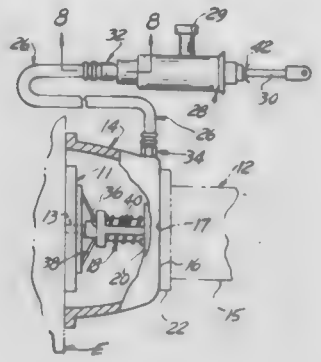
MODULAR PREFILLED HYDRAULIC CONTROL APPARATUS

David J. Compton, Troy; Richard A. Nix, Utica, and Keith V. Leigh-Monstevens, Troy, all of Mich., assignors to Automotive Products plc, Warwickshire, England

Continuation-in-part of Ser. No. 555,667, Nov. 28, 1983. This application Apr. 30, 1984, Ser. No. 607,020

Int. Cl.[4] B65B *3/04*

U.S. Cl. 141—1 19 Claims



1. A method of prefilling a hydraulic apparatus prior to shipment of said hydraulic apparatus to a user, said hydraulic apparatus comprising a master cylinder, a remote slave cylinder and a conduit connecting said master cylinder to said slave cylinder, said master cylinder, said slave cylinder and said conduit being supplied in the form of at least two separate modular units each capable of being coupled to the other by a leakproof connector having two interengageable complementary members having each a port providing fluid communication between said members when coupled together and means closing said ports when uncoupled, said method comprising separately filling with hydraulic fluid each modular unit of said hydraulic apparatus provided with one of said complementary members, and providing said connector complementary members with one-way interlocking means preventing disconnect of said members after said members have been coupled by the user.

4,607,671

RECONSTITUTION DEVICE

William R. Aalto, Spring Grove, and James L. Sertic, Lindenhurst, both of Ill., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Aug. 21, 1984, Ser. No. 642,908

Int. Cl.[4] B65B *3/04*

U.S. Cl. 141—329 14 Claims

1. A device for reconstituting a drug in a drug vial, the vial having a mouth with a malleable band thereabout, said device comprising:

A. a sheath including:

(i) a substantially circular base,

(ii) a semi-flexible skirt depending from said base, said skirt including a free end, a substantially cylindrical inner surface and an outer surface and

(iii) a plurality of inwardly projecting bumps intermittently spaced about said inner surface, said bumps all being disposed a substantially equal distance from said base, said distance being substantially equal to the width of the malleable band,

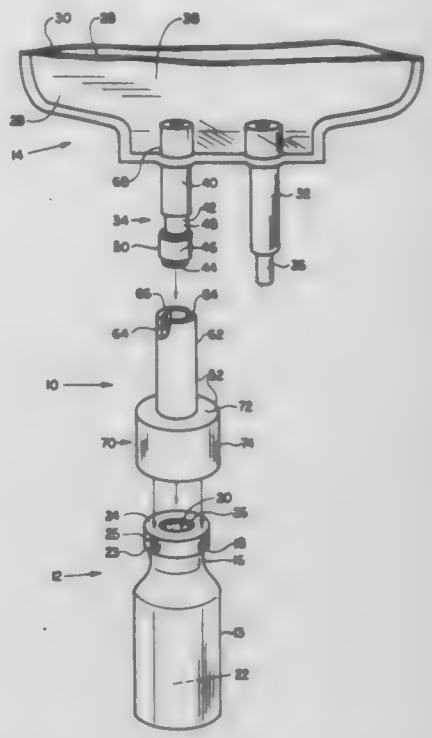
(iv) wherein each of said bumps includes a sloped side facing said free end;

B. means for entering the drug vial, mounted to said base and disposed within the cylindrical volume defined by said skirt;

C. means for entering the interior of a second container, connected to said base; and

D. flow path means for placing the interiors of the drug vial and the second container in open communication;

E. whereby upon installation of said sheath about the mouth of the drug vial, said bumps deform the sidewall of the malleable band and create a stop against the underside of



the malleable band, making difficult the inadvertent disconnection of said device and the vial.

4,607,672

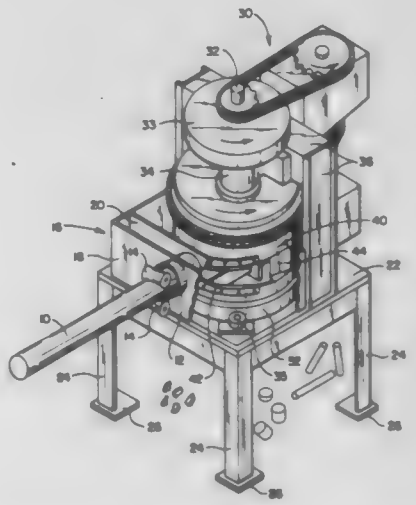
MULTI-PRODUCT WOOD PROCESSOR

Vernon W. Kangas, Calumet; Roy J. Kangas, Dodgeville, and Edsel D. Matson, Hancock, all of Mich., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Jan. 30, 1985, Ser. No. 696,566

Int. Cl.[4] B27C *9/00, 1/00*

U.S. Cl. 144—2 R 12 Claims



1. An apparatus for reducing the size of wood pieces comprising:

a hollow drum defined by a wall;

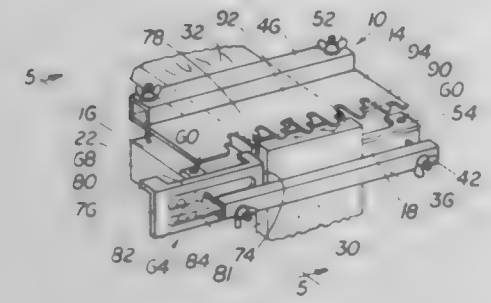
means to rotate said drum;

means on said drum defining an aperture in said wall, wherein a first segment of said aperture defines an area large enough to permit a wood piece to extend therethrough into the interior of said drum, and wherein a second segment of said aperture includes a blade to cut into said wood piece as said drum rotates.

4,607,673
DOVETAIL FIXTURE

Wilfred M. McCord, Jr., Louisville, Ky., assignor to Vermont American Corporation, Louisville, Ky.

Filed Feb. 1, 1985, Ser. No. 697,254
Int. Cl.[4] B27F *1/08*
U.S. Cl. 144—144.5 R 19 Claims



5. A dovetail fixture for use with a router having a tool bit comprising:

(a) base having a generally horizontal, planar top surface, and a generally vertical, planar front surface substantially perpendicular to said top surface;

(b) means adjacent to said front surface for clamping a first workpiece to the base front surface;

(c) means adjacent to said top surface for clamping a second workpiece to the bases top surface; and

(d) a generally flat template above said base having at least one of its edges formed with a plurality of spaced apart cutting guide fingers, with the space between adjacent ones of said fingers defining blind-ended cutting tool guide slot and each said slot having a step formed at its blind end, wherein said step defines an offset area deeper than the non-offset area of each said slot and said offset area is located off center of each said slot toward one side of said slot;

(e) said template being adapted to be located over the second workpiece with the distal ends of said fingers located over the first workpiece and the stepped blind end of each said slot located over the second workpiece.

4,607,674
COVER SYSTEM

Peggy Noble, 3604 Forest Hill Rd., Baltimore, Md. 21207

Filed Dec. 3, 1984, Ser. No. 677,395
Int. Cl.[4] B65D *11/00*
U.S. Cl. 150—52 R 18 Claims



1. A cover system adapted to contain a toilet roll comprising:

(a) a body member defining an internal chamber having a volumetric contour adapted for insert of said toilet roll;

(b) at least one appendage member having an extended length and fixedly secured to said body member, said appendage member including an outer appendage layer member forming an enclosed appendage chamber and a resilient material composition inserted within said enclosed appendage chamber;

(c) a head member releasably secured to said body member; and,

(d) means for varying and maintaining a positional contour of said appendage member substantially throughout said extended length of said appendage member, said means for varying and maintaining said positional contour passing through at least a portion of said resilient material composition.

4,607,675
LUBRICANT FOR RUN-FLAT TIRE APPLICATION AND RUN-FLAT TIRE THEREWITH

George P. Patitsas, Kent, and Herbert N. Kagarise, Uniontown, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

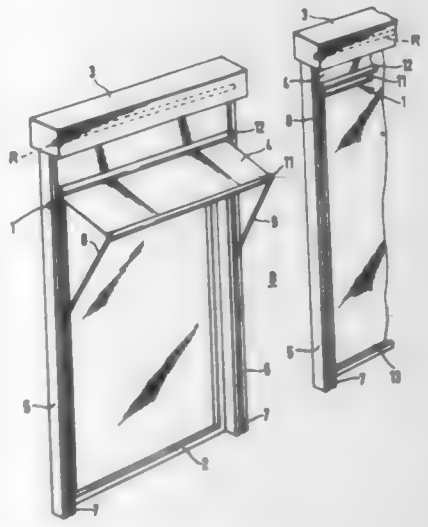
Filed May 6, 1985, Ser. No. 730,611
Int. Cl.[4] C10M *3/18, 5/02, 7/08;* B60C *5/00*
U.S. Cl. 152—521 11 Claims

1. A lubricant composition which comprises a composite mixture of (A) about 2 to about 60 parts of a fatty acid having from 12 to 24 carbon atoms, (B) about 2 to about 20 parts by weight of a polytetrafluoroethylene fluorocarbon resin powder, (C) about 10 to about 20 parts pyrogenic amorphous silica powder and (D) about 40 to about 100 parts of a carrier selected from at least one of water, polypropylene ether glycol and/or triol having a molecular weight in the range of about 400 to about 3500, polyethylene ether polyol and/or triol having a molecular weight in the range of about 400 to about 3800, and polyols containing 2 to 4 hydroxyl groups with a molecular weight of less than 400.

4,607,676
ROLL-UP AWNING CONSTRUCTION

Ulrich Clauss, Bissingen, Fed. Rep. of Germany, assignor to Claus Markisen, Bissingen-Ochsenwang, Fed. Rep. of Germany

Filed Sep. 24, 1984, Ser. No. 653,323
Claims priority, application Fed. Rep. of Germany, Dec. 8, 1983, 3344359
Int. Cl.[4] E04F *10/06*
U.S. Cl. 160—74 17 Claims



1. Awning construction having a wind-up roller (R);

an awning web (4) secured to the roller at one end of the web;
a cross rail (11) secured to the awning web (4) at the other end of the awning web;
a pair of parallel guide rails (5, 6) secured to a wall of a building (B) adjacent an opening to be shaded by the awning;
two arms (8, 9) having one end, each, slidable longitudinally on the guide rails (5, 6) and further pivotably connected thereto for pivoting movement from an upper, or rest position to a pivoted position, the other end of each of the two arms being connected to the cross rail (11);
first engagement element means (38) located in horizontal alignment with respect to the guide rails;
second engagement element means (42) located on the arms adjacent said one end of the arms, engageable with the first engagement element means;
wherein the first engagement element means (38) comprises at least one first projecting element (41*a*, 41*b*) positioned in the path of movement of the second engagement element means (42);
the second engagement element means comprises at least two second spaced projecting elements (43*a*, 43*b*), the spacing of the second projecting elements permitting said first projecting element (41*a*, 41*b*) of the first engagement elements means (38) to fit between the spaced two second projecting elements (43*a*, 43*b*);
a cam land (44) is provided, disposed below the first engagement element means (38); and
wherein a cam track (45) is provided, disposed on the underside of the associated arm (8, 9) which cooperates with the cam land in such a manner that as the substantially vertically downwardly folded arm (8, 9) slides upwardly, it is pivoted in the direction of the rest position upon engaging the cam land on the first engagement element means (38).

4,607,677

MOUNTING FOR BLIND

Paul E. Comeau, Warwick, R.I., assignor to Kenney Manufacturing Company, Warwick, R.I.

Filed Aug. 23, 1984, Ser. No. 643,821
Int. Cl.[4] E06B *9/388;* A47H *1/144*
U.S. Cl. 160—84 R **10 Claims**



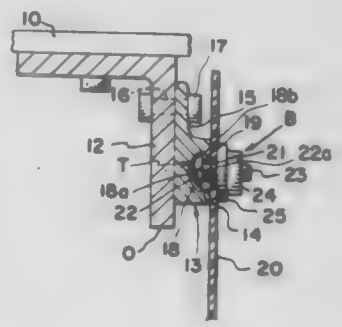
9. A retractable pleated blind, comprising:
a sheet of horizontally pleated blind material having an upper margin;
a headrail for supporting the sheet of horizontally pleated material comprising a bottom wall;
means for securing the upper margin of the sheet of horizontally pleated material to the headrail such that the sheet of horizontally pleated material is suspended from a center portion of the bottom wall
end brackets for supporting ends of said headrail, each bracket comprising a rear wall adapted for securement to a support, a front wall for holding the headrail in the bracket, a bottom flange extending forwardly from the rear wall, and a bottom flange extending rearwardly from the front wall, said flanges arranged so as to support the headrail such that the sheet of horizontally pleated material extends between the two flanges.

4,607,678

FLEXIBLE STRIP DOOR ASSEMBLIES

Ronald C. Pomaville, and Jack Landane, both of Bay City, Mich., assignors to Easy Handling Co., Inc., Burton, Mich.

Filed Oct. 15, 1984, Ser. No. 660,693
Int. Cl.[4] A47H *13/01, 23/05*
U.S. Cl. 160—332 **3 Claims**



1. In a flexible strip closure assembly for covering a door or like opening including, a longitudinally extending header adapted to be secured across the upper end of the door opening and a plurality of relatively elongate flexible strips of heavy gauge plastic or like material of relatively narrow width compared to their length hung from the header in vertical edge overlapped relationship such as to form a penetrable closure for the opening, the improvement wherein:
a. the header comprises an extrusion having a longitudinally continuous fixed flat front wall bearing surface and a longitudinally extending, longitudinally continuous, open-ended T-slot, defined by an inset enlarged slot portion spaced rearwardly from the front bearing surface and a reduced size slot portion opening through said bearing surface and extending rearwardly therefrom to said enlarged slot portion, the enlarged portion of the T-slot having a flat fixed, longitudinally continuous marginal wall bearing surface parallel to the front wall bearing surface;
b. the individual strips at their upper ends have a generally central opening therethrough opposite the reduced size slot portion;
c. an individual clamp for each strip, independent from said header and movable with respect thereto when unclamped, extends through the opening in the strip, and has an individual enlarged head received in the enlarged slot portion rearward of the said marginal wall bearing surface, with a shank extending out said reduced slot portion to pass through the opening in each strip, the said head having a flat front wall surface mated to the flat marginal wall bearing surface to clamp thereto;
d. a releasable securing means is on each shank, forwardly of each strip and bearing on the strip, to secure the individual strip in vertical position with its upper end pressed against said front wall bearing surface on the header and
e. means spaced from said T-slot for securing the header in fixed position across the opening.

4,607,679

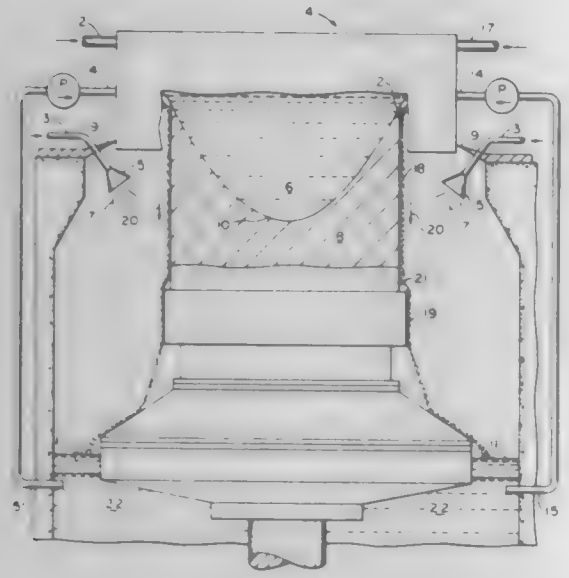
PROVIDING OLIGOMER MOISTURE BARRIER IN DIRECT CHILL CASTING OF ALUMINUM-LITHIUM ALLOY

Mei-Yuan Tsai; John E. Jacoby, and Joseph T. Laemmle, all of Murrysville, Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed Dec. 6, 1984, Ser. No. 679,135

Int. Cl.[4] B22D *11/04, 11/07*

U.S. Cl. 164—5 **5 Claims**



1. A process for continuously casting an aluminum alloy containing more than about 1.5% by weight lithium into a solidified ingot having a smallest transverse dimension greater than about 6 inches, comprising:

initiating solidification of aluminum-lithium alloy into an ingot in a continuous casting mold;

direct chill cooling said ingot with a coolant comprising an organic coolant and a moisture content less than an amount predetermined to avoid explosions, said coolant being applied to the surface of said ingot and separating therefrom:

collecting said coolant separating from said ingot in a collection pool:

providing a moisture barrier liquid containing alpha-olefin oligomer to reduce moisture absorption in the coolant; and

recirculating said coolant from the collection pool for further direct chill cooling.

4,607,680

METHOD AND MOULD FOR CASTING METAL ARTICLES

David Mills; Alan D. Kington, and Rodney J. Close, all of Bristol, England, assignors to Rolls-Royce Limited, London, England

Division of Ser. No. 365,047, Apr. 2, 1982, Pat. No. 4,516,621. This application Feb. 28, 1985, Ser. No. 706,599

Claims priority, application United Kingdom, Apr. 13, 1981, 8111519

The portion of the term of this patent subsequent to May 14, 2002, has been disclaimed.

Int. Cl.[4] B22C *9/08;* B22D *23/00*

U.S. Cl. 164—134 **6 Claims**

1. A method of casting comprising the steps of:

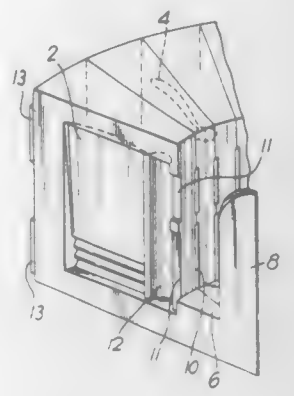
making a mould having a mould cavity therein and including at least one elongated slit integrally formed in said mould, wherein the width of said at least one slit lies in the range 1.25 mm to 0.25 mm and said at least one slit communicates between the mould cavity and the exterior of the mould,

providing a runner passage connected to the mould and communicating with the at least one slit, and

providing a supplu of liquid metal into the runner passage whereby the liquid metal enters the mould cavity only through said at least on slit.

5. A moulding apparatus comprising:

a mould having a mould cavity therein and further having at least one elongated slit integrally formed therein the width of which lies in the range 1.25 mm to 0.25 mm, said at least



one elongated slit communicating between said mould cavity and an exterior of said mould;

a runner passage connected to the mould and communicating with said at least one slit for providing a supply of liquid metal to the mould cavity through said at least one slit.

4,607,681

PROCESS AND APPARATUS FOR CONTROLLING A CONTINUOUS CASTING PLANT

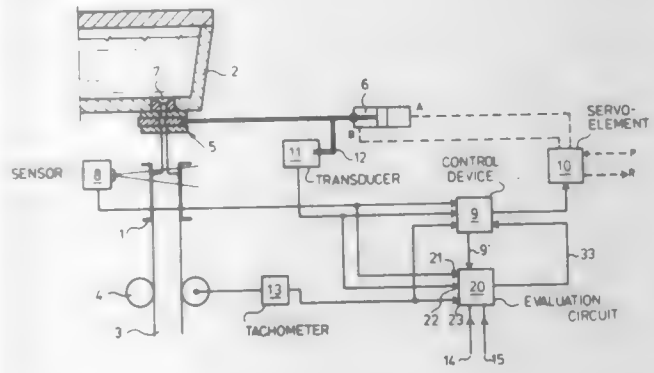
Bernhard Tinnes, Zollikerberg, Switzerland, and Heinz Kreuzberg, Bernau, Fed. Rep. of Germany, assignors to Metacon AG, Zurich, Switzerland

Filed Mar. 27, 1984, Ser. No. 593,945

Claims priority, application Switzerland, Mar. 29, 1983, 1724/83

Int. Cl.[4] B22D *11/18, 11/20*

U.S. Cl. 164—453 **22 Claims**



1. A process for detecting break-out in a continuous casting plant having a mold wherein the quantity of molten material being supplied to said mold is controlled to a predetermined level, comprising the steps of:

monitoring the change in the flow rate of molten material being supplied, said monitoring being carried out prior to the molten metal reaching the mold;

determining the time behavior of flow rate increases detected in said monitoring step; and

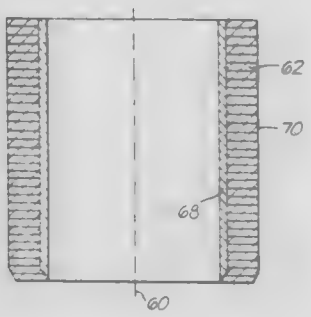
producing a break-out signal when the flow rate of said molten material increases at more than a predetermined rate.

4,607,682

MOLD FOR USE IN METAL OR METAL ALLOY CASTING SYSTEMS

Jonathan A. Dantzig, Hamden, and Derek E. Tyler, Cheshire, both of Conn., assignors to Alumax, Inc., San Mateo, Calif.

Division of Ser. No. 289,572, Aug. 3, 1981, Pat. No. 4,457,354.
This application Mar. 2, 1984, Ser. No. 585,416
Int. Cl.[4] B22D *11/00*
U.S. Cl. 164—418 10 Claims



3. A mold for containing molten metal or metal alloy in a casting system, said mold being adapted to have electrical currents induced therein in a first direction as the result of electrically mixing said molten metal, said mold comprising:

a plurality of stacked laminations formed from a metal or metal alloy material;

a plurality of means comprising electrical insulating material for electrically insulating said laminations from each other, said insulating material being oriented so that its smaller dimension is substantially transverse to said first direction for minimizing the path lengths of at least some of said induced currents, whereby magnetic induction losses caused by said mold are substantially reduced; and

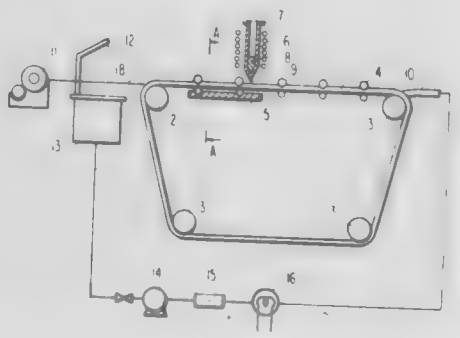
core sleeve means for thermally contacting said molten metal or metal alloy affixed to said stack of laminations.

4,607,683

METHOD OF MANUFACTURING THIN METAL WIRE

Tatsuo Hamashima, Osaka; Hisayasu Tsubata, and Michiaki Hagiwara, both of Kyoto, all of Japan, assignors to Unitika Ltd., Hyogo, Japan

Filed Mar. 3, 1983, Ser. No. 471,600
Claims priority, application Japan, Mar. 3, 1982, 57-34490
Int. Cl.[4] B22D *11/06*
U.S. Cl. 164—463 20 Claims



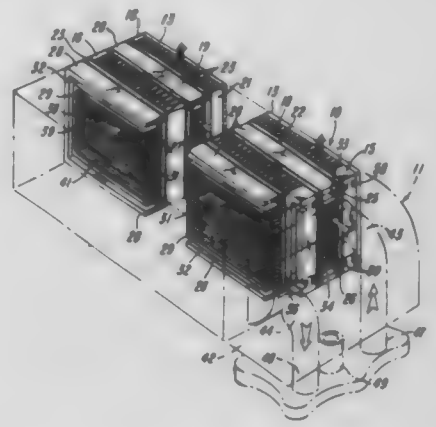
1. A method for the manufacture of a thin metal wire having a circular cross section, comprising the steps of spouting molten metal through a spinning nozzle and bringing the resultant flow of molten metal into contact with a layer of liquid cooling medium forming a liquid coolant run within an exterior groove on an upper surface portion of a moving endless conveyor belt thereby quenching and solidifying said flow of molten metal.

4,607,684

LEAK PROTECTED HEAT EXCHANGER

Maxwell R. Wiard, Vandalia, and Kenneth L. Michael, Dayton, both of Ohio, assignors to United Aircraft Products, Inc., Dayton, Ohio

Filed Jan. 18, 1985, Ser. No. 692,762
Int. Cl.[4] F28F *11/00*
U.S. Cl. 165—70 11 Claims



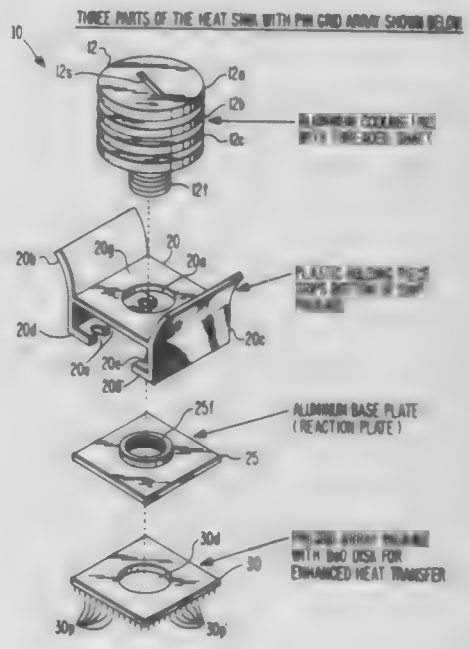
10. A leak protected heat exchanger, including an assembly of stacked plates and spacer elements defining layered flow passes for first and second fluids to pass in heat transfer relation to one another, and defining between adjacent first and second fluid flow passes collection chambers for fluids leaked from said fluid flow passes through plate elements separating adjacent fluid flow passes from a collection chamber, the heat exchanger having an exterior face through which a first flowing fluid has access to first fluid flow passes, and means for venting said collection chambers through said exterior face, the access to said first fluid flow passes and said venting means being separated so that manifolding means applied to said face may provide for separate communication with said first fluid flow passes and with said venting means.

4,607,685

HEAT SINK FOR INTEGRATED CIRCUIT PACKAGE

John W. Mitchell, Jr., Pasadena, Calif., assignor to Burroughs Corporation, Detroit, Mich.

Filed Jul. 6, 1984, Ser. No. 628,225
Int. Cl.[4] H01L *23/40*
U.S. Cl. 165—80.3 1 Claim



1. A heat exchange device for an IC pin chip package comprising:

(a) gripping means for attachment to said chip package and having a central aperture, wherein said gripping means includes:

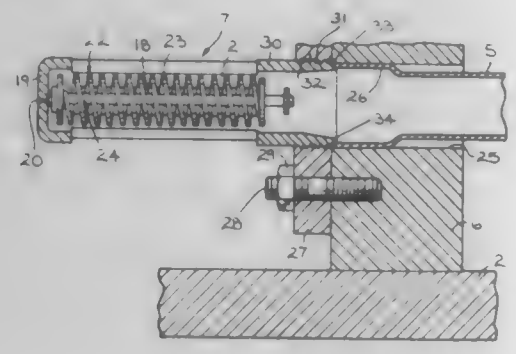
(a1) a flexible planar area around said central aperture;
(a2) first and second legs extending at right angles to said planar area, said legs acting to grip said chip package;
(b) cover unit means including:
(b1) a beryllium oxide disk connected to the top of said chip package;
(b2) a metallic base plate for covering the top of said chip package, and having a threaded central aperture;
(c) metallic fin means having a threaded extension cylinder for insertion through said gripping means and said metallic base plate for contact with said beryllium oxide disk.

4,607,686

BASKET RETAINER FOR HEAT EXCHANGER TUBE CLEANING ELEMENT

Walter J. Baron, Milwaukee, and Laird C. Cleaver, Mequon, both of Wis., assignors to Water Services of America, Inc., Milwaukee, Wis.

Continuation-in-part of Ser. No. 505,077, Jun. 16, 1983, Pat. No. 4,552,207, which is a continuation of Ser. No. 350,286, Feb. 18, 1982, Pat. No. 4,398,592. This application Jun. 26, 1984, Ser. No. 624,620
Int. Cl.⁴ F28G *1/12, 15/02.*
U.S. Cl. 165—95 **13 Claims**



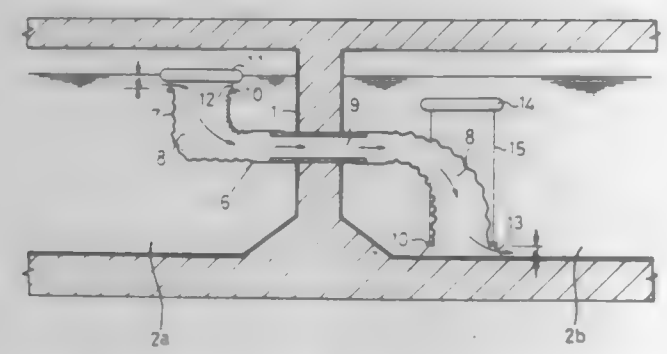
1. In combination in a heat exchanger having a housing, and having a plurality of longitudinally extending fluid flow tubes disposed within said housing, and having tube sheets disposed within said housing and with said tube sheets having openings in communication with the ends of said tubes, and further having longitudinally extending baskets for receiving shuttling tube cleaning elements mounted in engagement with the ends of said tubes:
(a) a retaining plate fixedly disposed adjacent to the outer face of a said tube sheet,
(b) and means, including said retaining plate, mounting a said basket in fixed relationship to said tube sheet and to an end of a said tube.

4,607,687

HEAT STORAGE DEVICE

Shumpei Ohara; Noriyasu Sagara; Hiroo Izumiyama, and Yoshinobu Arai, all of Tokyo, Japan, assignors to Kajima Kenectus Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 1, 1984, Ser. No. 656,511
Claims priority, application Japan, Oct. 4, 1983, 58-185510
Int. Cl.⁴ F28D *21/00;* **F24J** *3/02*
U.S. Cl. 165—104.19 **1 Claim**



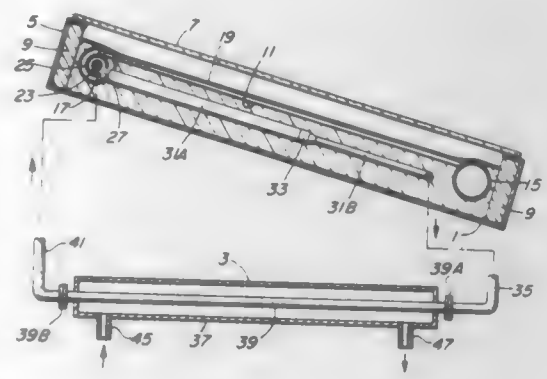
1. In a liquid-filled heat storage device which is divided by partition walls into a plurality of sub-tanks connected to each other in series, the improvement comprising:
adjacent pairs of said sub-tanks being communicated with each other by a communication passage penetrating the partition wall defining said adjacent sub-tanks, said communication passage having one end open to an upper part of the space in one of said adjacent sub-tanks and the other end open to a lower part of the space in the other sub-tank at a predetermined depth position;
a buoy floating on the surface of said liquid in said one sub-tank;
a portion of said communication passage including a flexible member with an open end suspended from said buoy positioned a predetermined constant distance beneath the surface of said liquid; and
a portion of the communication passage including a flexible member with an open end anchored to the bottom of said other sub-tank and positioned a predetermined constant distance above said bottom.

4,607,688

AUTOGENOUS SOLAR WATER HEATER

Wilfred B. Sorensen, 2, Cataraqui St., Kingston, Ontario, Canada (K7K 1Z7)

Filed Oct. 11, 1985, Ser. No. 786,535
Int. Cl.⁴ F28D *15/02*
U.S. Cl. 165—104.22 **3 Claims**



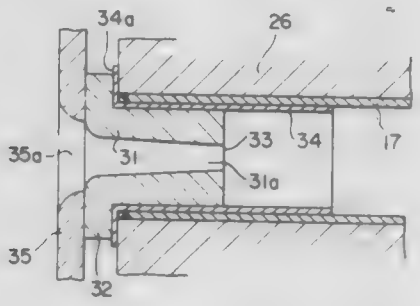
1. A bubble-pump system comprising a heated tubular conduit disposed at a first higher elevation and extending upwardly from a lower input end to an upper output end, a vapour/liquid separator connected to said upper end, condensing means arranged to utilize a cooling medium to cool by indirect contact only vapour separated in the separator, an indirect heat transfer heat exchanger disposed at a second lower elevation, first pipe means arranged to supply both separated liquid and condensate from the vapour to the heat exchanger, second pipe means arranged to supply that separated liquid and condensate, after cooling in the heat exchanger, to the condensing means as said cooling medium, and third pipe means arranged to convey said cooling medium from the condensing means to said lower input end of the tubular conduit; wherein the vapour/liquid separator is in the form of a horizontally extending cylinder, the heated tubular conduit is arranged to discharge a mixture of liquid and vapour substantially tangentially into the cylinder at or near its upper level, the condensing means extending axially of the separator, and a splash guard is interposed between the condensing means and the cylinder and is so shaped and positioned as to prevent liquid discharged by the heated tubular conduit from contacting the condensing means.

4,607,689

REHEATING DEVICE OF STEAM POWER PLANT

Yoshio Mochida, Ebina; Toshiaki Ozeki, Yokohama; Kenji Satoh, Yokohama, and Yoshitaka Yuasa, Yokohama, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Dec. 23, 1983, Ser. No. 564,678
Claims priority, application Japan, Dec. 27, 1982, 57-232337
Int. Cl.[4] F28B *1/00*
U.S. Cl. 165—110 1 Claim



1. In a steam reheating device for a steam power plant of the type comprising a number of heat-exchanger tubes bent into U shape through which heating steam is passed to reheat steam flowing outside of said heat-exchanger tubes, a tube plate having holes for tightly receiving upstream and downstream ends of the U-shaped heat-exchanger tubes, and a header portion separated into a high-temperature chamber and a low-temperature chamber connected to the upstream ends and the downsteam ends of the heat-exchanger tubes, respectively, the improvement comprising:

corrosion preventing insert pipes each having an integrally formed flange portion and inserted detachably into an upstream end portion of each of said heat-exchanger tubes so that said flange portion abuts against said tube plate;

nozzle members each having a length shorter than that of said insert pipe and also having a flange portion, said nozzle member being inserted into said insert pipe until said flange poriton of said nozzle member abuts against said flange portion of said insert pipe, the configuration of said nozzle member being differentiated depending on in which of said heat-exchanger tubes the nozzle member is received; and

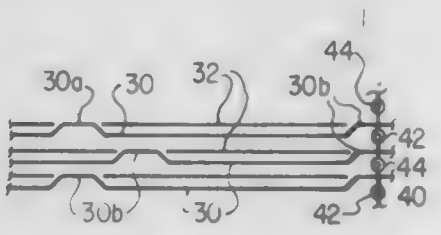
a bellmouth plate provided with a number of bellmouth-shaped holes and secured detachably to said tube plate such that said bellmouth-shaped holes are aligned with upstream end openings of said nozzle members in a streamlined manner and such that said flange portions of said insert pipes and said nozzle members are both firmly seized between said bellmouth plate and said tube plate.

4,607,690

TUBE AND SUPPORT SYSTEM FOR A HEAT EXCHANGER

Venkatraman Seshamani, Gillete, N.J., assignor to Foster Wheeler Energy Corporation, Livingston, N.J.

Filed Nov. 29, 1985, Ser. No. 802,913
Int. Cl.[4] F22B *37/20;* F28D *7/08;* F28F *9/26*
U.S. Cl. 165—145 3 Claims



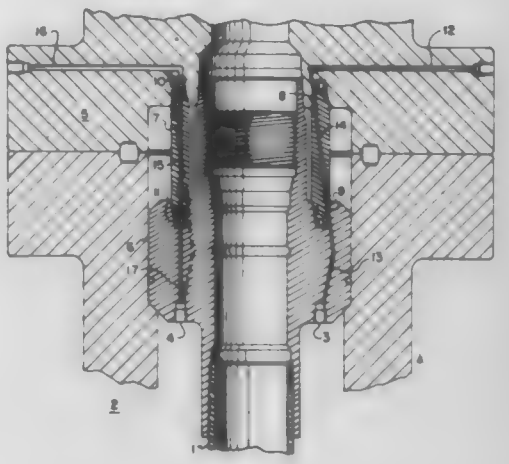
1. A tube and support system for a heat exchanger comprising a header, a first series of spaced tubes extending from one side of the header, a second series of spaced tubes extending from the other side of the header, each of the tubes extending in a serpentine pattern with the tubes of said first series being offset from the tubes of said second series, each tube in one of said series being bent in a manner to extend in a same plane as said other series of tubes, and a support member extending between said bent portions of said one series of tubes and corresponding portions of said other series of tubes.

4,607,691

NON-ORIENTING, MULTIPLE PORTED, CYLINDRICAL PRESSURE TRANSFER DEVICE

Charles D. Bridges, Houston, Tex., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Jul. 6, 1984, Ser. No. 628,671
Int. Cl.[4] E21B *33/03*
U.S. Cl. 166—88 4 Claims



1. A system for conducting a fluid pressure through bonnet and hanger supports for a tubing in well bore, including,

a tubing bonnet at the top of the well,

a hanger arranged to support the well tubing,

at least one conduit formed through the bonnet and the hanger,

a source of fluid pressure connected to the upper end of the conduit through the tubing bonnet,

a cylindrical sleeve captured coaxially between the production passageways of the tubing bonnet and hanger,

a first circular groove formed in the upper end of the sleeve to communicate with the lower end of the conduit formed through the bonnet,

a second circular groove formed in the lower end of the sleeve to communicate with the upper end of the conduit formed through the tubing hanger,

a drilled hole formed in the wall of the sleeve communicating the upper and lower circular grooves,

and tubing extended from the hanger conduit to operate downhole structure with the fluid pressure.

4,607,692

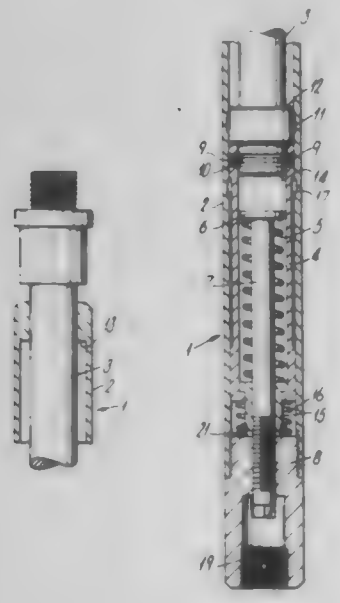
WIRELINE JAR

Klaas Zwart, Unit 4, Harlaw Centre, Howe Moss Crescent, Kirkhill Industrial Estate, Dyce, Aberdeen, Scotland

Filed Dec. 20, 1984, Ser. No. 683,810
Claims priority, application United Kingdom, Dec. 21, 1983, 8333957
Int. Cl.[4] E21B *4/06, 31/107*
U.S. Cl. 166—178 13 Claims

1. In an upstroke mechanically operated wireline jar for downhole operations in oil wells and similar installations comprising a hollow casing having an internal downwardly facing shoulder defining anvil means, a first rod which is slidable axially in said casing the upper end of said rod projecting from the casing and having means for connecting the jar to a wireline, said rod bearing hammer means, in said casing, which is adapted to strike the said anvil means on an upward stoke of the rod, first resilient biasing means within said casing acting

between said rod and said casing so as to resist initial upward displacement of said rod from a rest position defined by the said first resilient biasing means, said displacement being caused as a consequence of tension in the wireline, and an intermediate coupling member within said casing connecting said first rod and said biasing means and including tripping means for abruptly disconnecting said biasing means from said rod upon a predetermined upward displacement of the rod, whereby upon said disconnection the force on said rod caused by the tension in the wireline accelerates its upward movement causing the hammer means to impact the anvil means, resetting of the jar being carried out by means of a downward face applied by the rod on said intermediate coupling member against an upwardly biasing means, the improvement comprising a sleeve which is slidingly supported in said casing, said sleeve being adapted to receive the end of the said first rod in its upper end, said sleeve further defining through-wall apertures in its upper end and an internal shoulder at its lower end and said jar comprising a second upstanding coaxially disposed rod within said casing, said second rod having an upper first end within said sleeve defining a shoulder below and adjacent to said first rod and a second lower end fixedly mounted on said casing, said first resilient biasing means being supported



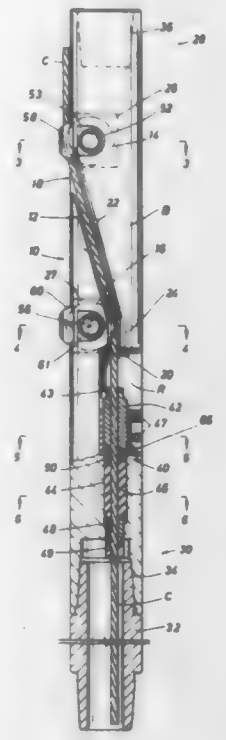
coaxially on said second rod between the internal shoulder of the sleeve and the shoulder on said second rod, said through-wall apertures containing coupling means, said coupling means simultaneously physically engaging the internal walls of the casing and a respective bevelled circumferential groove in the first rod, the internal wall of said casing furthermore defining at least two axially spaced apart circumferential bevelled slots disposed along the path of displacement of the sleeve, so that on upward displacement of the first rod in the preset condition of the jar through said predetermined displacement, the sleeve is likewise displaced until the coupling means enters the uppermost slot in the casing and releases the first rod from the said sleeve, the latter being then returned by said first resilient biasing means to its initial location, corresponding to the unstressed condition of the wireline, and when the first rod is displaced downwards, after tripping, by means of a downward movement of the wireline, the first rod enters the sleeve, engages the coupling means, and drives the sleeve downwards until said coupling means enters the lower said slot in the internal wall of the casing, so as to temporarily secure the sleeve to the casing whilst further downward movement of the first rod occurs, thereby permitting re-entry of the coupling means in the groove of the first rod and re-engagement of the latter with the said sleeve.

4,607,693

SIDE-ENTRY SUB

Neil W. Richardson, Lafayette, La., assignor to Schlumberger Technology Corporation, Houston, Tex.

Filed Feb. 11, 1985, Ser. No. 700,207
Int. Cl.[4] E21B *17/00*
U.S. Cl. 166—242 **14 Claims**



1. In a side entry sub having a body connectable in a pipe string, said sub having a longitudinal fluid passage through said body for drilling fluid communication between upper and lower pipe strings when connected to said sub and having a stripping element disposed in a stripping passage in said sub body, said stripping passage communicating between the lower end of said body for movement of a logging cable between the interior of a connected pipe string and a recess in the exterior wall of said sub body, apparatus for faciltating entry and exit of a logging cable between the exterior and interior of said pipe string when connected to said sub comprising,

a cable slot formed in the said body and running diagonally from a side entry opening in the body to a recess opening intersecting said recess,

a lower sheave wheel removably longitudinally mounted to said body and disposed at said recess opening, a portion of the outer edge of said lower sheave wheel rotatably occupying a portion of said cable slot, and

an upper sheave wheel removably longitudinally mounted to said body at said entry opening, a portion of the outer edge of said upper sheave wheel rotatably extending beyond the edge of said body, whereby

said logging cable may extend from the outside of said body, about said upper sheave wheel, along said slot, about said lower sheave wheel, and into the interior of a connected pipe string via said stripping element.

4,607,694

WELL PLUG QUALITY TESTING

Ramesh Sah, 1027 Edgemont Rd., N.W. Calgary, Alberta, Canada (T3A 2J5)

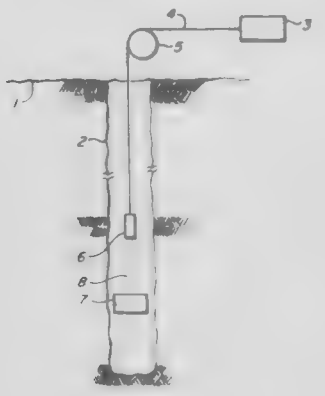
Filed Jan. 16, 1985, Ser. No. 691,872
Int. Cl.[4] E21B *47/00*
U.S. Cl. 166—250 **2 Claims**

1. A method of determining the presence of a contaminant in a fluid cement slurry located at a predetermined position within a borehole, wherein said slurry when pure has a specific density and which slurry has been exposed, before being placed in position in said borehole, to a potential contaminating substance having a density that differs from the density of the cement slurry to a measurable degree and which will, when mixed with the cement slurry produce a mixture having a

composite density that differs from that of a pure cement slurry by a measurable degree, comprising:

(1) measuring, when said slurry is in a relatively pure, uncontaminated condition, the density of the fluid cement;

(2) measuring the density of said slurry after it has been inserted down a borehole to a predetermined position, and after said slurry may have been exposed to a potentially contaminated substance, by progressively lowering a measuring device down a borehole into and through a portion of the zone of the cement slurry when in situ; and



(3) comparing the density of the cement slurry as measured when in situ within the borehole, and the relative values of the measured density as said measuring device passes into and through various stages of said zone portion, with the density of said slurry when said slurry is in a relatively pure, uncontaminated condition,

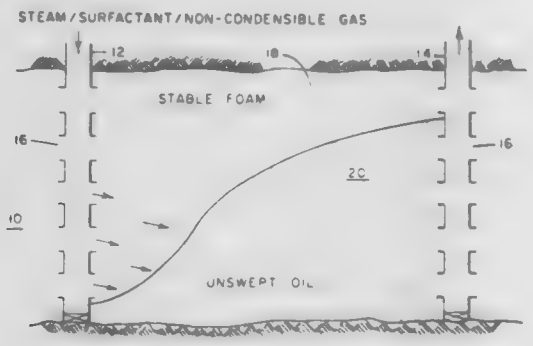
and thereby determining the presence of a contaminating substance within the slurry.

4,607,695

HIGH SWEEP EFFICIENCY STEAM DRIVE OIL RECOVERY METHOD

Stevan L. Weber, Allen, Tex., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Feb. 16, 1984, Ser. No. 580,926
Int. Cl.[4] E21B *43/24*
U.S. Cl. 166—272 15 Claims



1. A method for recovering oil from a subterranean, viscous oil-containing formation having a natural brine salinity concentration within the range of 10 to 20% by weight and penetrated by at least one injection well and at least one spaced-apart production well, said wells being in fluid communication with a substantial portion of the formation, comprising:

(a) injecting steam into the formation and producing fluids including oil from the formation via the production well for a predetermined period of time, thereby forming a steam-swept zone in the formation;

(b) thereafter injecting a mixture of steam, a noncondensible gas, and a surfactant consisting of a C_{12} alpha olefin sulfonate into the formation via the injection well, said surfactant capable of forming a stable foam with residual oil in the steam-swept zone at formation conditions of temperature and salinity thereby significantly decreasing the permeability of that zone and diverting the steam, noncondensible gas, into other portions of the formation; and

(c) continuing to inject said mixture of steam and surfactant and recovering fluids including oil from the formation via the production well.

8. A method for recovering oil from a subterranean, viscous oil-containing formation having no natural brine salinity, said formation penetrated by at least one injection well and at least one spaced-apart production well, said wells being in fluid communication with a substantial portion of the formation, comprising:

(a) injecting steam into the formation and producing fluids including oil from the formation via the production well for a predetermined period of time, thereby forming a steam-swept zone in the formation;

(b) thereafter injecting a mixture of steam, a noncondensible gas, a salt, and a surfactant consisting of a C_{12} alpha olefin sulfonate into the formation via the injection well, said salt added in an amount sufficient to provide a salinity of about 10 percent by weight based upon the mixture and said surfactant capable of forming a stable foam with residual oil in the steam-swept zone at formation conditions of temperature and salinity thereby significantly decreasing the permeability of that zone and diverting the steam into other portions of the formation; and

(c) continuing to inject said mixture of steam, noncondensible gas, salt, and surfactant having a salt salinity of about 10 percent by weight into the formation via the injection well and recovering fluids including oil from the formation via the production well.

4,607,696

TOPICAL VISCOSITY CONTROL FOR LIGHT HYDROCARBON DISPLACING FLUIDS IN PETROLEUM RECOVERY AND IN FRACTURING FLUIDS FOR WELL STIMULATION

John P. Heller, and Dileep K. Dandge, both of Socorro, N. Mex., assignors to New Mexico Tech. Research Foundation, Socorro, N. Mex.

Filed Aug. 30, 1985, Ser. No. 771,504
Int. Cl.[4] E21B *43/22*
U.S. Cl. 166—275 12 Claims

1. Method of removing crude oil from an underground oil-bearing formation comprising injecting into an injection well in the formation a solution of a compound of the formula R_3SnF where each R is independently an alkyl, aryl or alkylaryl group having from 3 to about 12 carbon atoms, in a solvent hydrocarbon having from two to six carbon atoms, moving said solution in the direction of the oil to be removed under conditions whereby the organotin compound increases the viscosity thereof, displacing at least a portion of said oil with said solution, and removing the displaced oil through a producing well.

4,607,697

PROPPING AGENT BASED ON ZIRCONIA AND SILICA FOR DEEP GEOLOGICAL FRACTURES

Daniel Urffer, Morieres-les-Avignon, France, assignor to Societe Europeenne des Produits Refractaires, Neuilly-Sur-Seine, France

Division of Ser. No. 312,749, Oct. 19, 1981. This application Aug. 6, 1985, Ser. No. 762,779
Claims priority, application France, Nov. 13, 1980, 80 24128
Int. Cl.[4] E21B *43/267*
U.S. Cl. 166—280 3 Claims

1. In a method of stimulating oil wells by fracturing of geological strata by injecting a fluid at high pressure at the level of the strata to be fractured, then by injecting a solid granular propping agent in order to prevent the fractures from closing up, the improvement consisting in using a granular propping agent which is resistant to stresses of up to 100 MPa, has a density of between 3150 and 3250 kg/m^3 and has a breakage rate, in a multilayer bed test, of no more than 2.9% at 100 MPa, said granular propping agent consisting of balls formed by melting, granulating and solidifying an initial composition

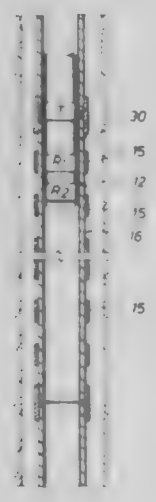
which consists essentially, by weight on the oxide basis, of 47.1 to 48.7 parts of ZrO_2, 52.9 to 51.3 parts of SiO_2, the total of ZrO_2 and SiO_2 amounting to 100 parts, 8.2 to 16.9 parts of Al_2O_3 and 4.1 to 8.5 parts of at least one oxide selected from the group consisting of MgO, CaO, FeO and TiO_2.

4,607,698

PIPE CONFIGURATION COMPATIBLE WITH CBL

Edward T. Wood, Kingwood, Tex., assignor to Completion Tool Company, Houston, Tex.

Filed Jan. 25, 1985, Ser. No. 694,848
Int. Cl.[4] E21B *33/14, 49/00*
U.S. Cl. 166—285 4 Claims



1. A tubular pipe for use in a well bore including

a tubular steel mandrel pipe having end means for attachment in a string of pipe;

said pipe having an outer surface between the ends of said pipe having intermittent coatings of grit-like materials bonded to the outer surface for bonding to cement in a borehole, said intermittent coatings providing uncoated intermittent portions on said pipe where the spacing between two intermittent coatings and an intermediate uncoated portion on the pipe is functionally related to the spacing between a transmitter and first receiver of a cement bond logging tool for providing uncoated section of pipe relative to a transmitter/receiver spacing on a cement bond logging tool and for removing the effects of the coatings from the responses of the cement bond logging tool.

4. A method for completing a well comprising the steps of:

positioning a string of pipe in a well bore;

injecting a cement slurry into the annulus between the string of pipe and the bore and permitting the cement to cure, where the string of pipe has an outer surface having intermittent coatings of grit-like materials bonded to its outer surface for bonding to cement, said intermittent coatings providing uncoated intermittent portions on said pipe;

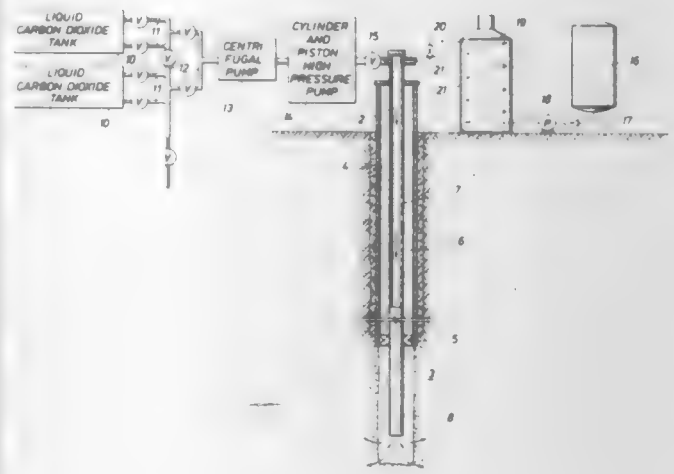
moving a cement bond logging tool through said string of pipe where the spacing between the transmitter and receiver of the cement bond logging tool is functionally related to the spacing between two intermittent coatings and an intermediate uncoated portion on the pipe to provide uncoated section of pipe relative to the transmitter and receiver of the cement bond logging tool and for obtaining a cement bond log of the cemented string of pipe in which the effects of the coatings are removed from the cement bond logging tool.

4,607,699

METHOD FOR TREATING A TAR SAND RESERVOIR TO ENHANCE PETROLEUM PRODUCTION BY CYCLIC STEAM STIMULATION

David J. Stephens, Southwell, England, assignor to Exxon Production Research Co., Houston, Tex.

Filed Jun. 3, 1985, Ser. No. 740,613
Int. Cl.[4] E21B *43/24, 43/26*
U.S. Cl. 166—303 8 Claims



1. A method for recovering hydrocarbons from a virgin drainage area of a subterranean tar sand formation that is penetrated by a well, comprising the steps of:

(a) injecting liquid carbon dioxide through said well into said formation at a rate and pressure that is sufficient to fracture said virgin drainage area;

(b) discontinuing the injection of said liquid carbon dioxide after said virgin drainage area has been fractured and, thereafter, while carbon dioxide is still in place within said formation;

(c) injecting steam through said well at a rate and pressure that is sufficient to place said steam into said formation through the fractures in said virgin drainage area;

(d) retaining said steam within said formation for a period of time sufficient to permit said hydrocarbons within said virgin drainage area to absorb the heat from said steam; and, thereafter,

(e) opening said well to produce effluents from said virgin drainage area.

4,607,700

ALPHA-OLEFIN SULFONATE DIMER SURFACTANT CYCLIC STEAM STIMULATION PROCESS FOR RECOVERING HYDROCARBONS FROM A SUBTERRANEAN FORMATION

John H. Duerksen, Fullerton; Robert G. Wall, Pinole, and Jack D. Knight, Berkeley, all of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Filed Aug. 10, 1984, Ser. No. 639,973
The portion of the term of this patent subsequent to Dec. 3, 2002, has been disclaimed.
Int. Cl.[4] E21B *43/24*
U.S. Cl. 166—303 31 Claims

1. A cyclic steam-foam process of recovering hydrocarbons from a subterranean formation penetrated by a well comprising:

injecting a steam and alpha-olefin sulfonate dimer foam at said well;

displacing said steam and alpha-olefin sulfonate dimer foam out into the formation;

terminating the injection of said steam and alpha-olefin sulfonate dimer foam; and

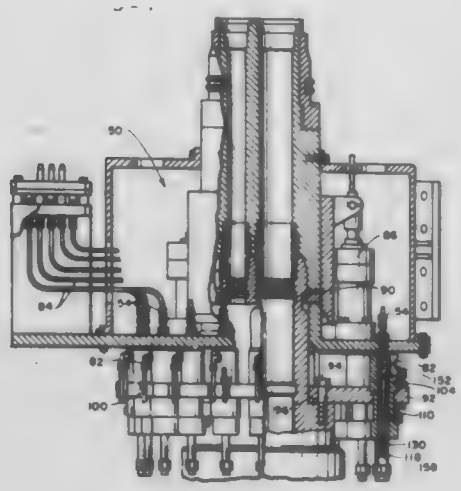
recovering hydrocarbons from said well.

4,607,701

TREE CONTROL MANIFOLD

Dag H. Z. Gundersen, Ventura, Calif., assignor to Vetco Offshoe Industries, Inc., Ventura, Calif.

Filed Nov. 1, 1984, Ser. No. 667,317
Int. Cl.[4] E21B *33/038, 34/04*
U.S. Cl. 166—368 13 Claims



1. In a subsea completion tree for the injection, use or production of oil or gas from a subsea well having valve operators actuated by hydraulic fluid and other devices actuated by hydraulic fluid to control the flow of oil or gas from the well, to connect the tree to the well and flowlines, etc., from a remote source of fluid under pressure directed to said tree in two paths, the improvement comprising;

a control manifold as part of said tree for controlling and directing the flow of said hydraulic fluid from either path to the valve operators and to the other hydraulically actuated devices, said control manifold including,

supporting means,

a plurality of shuttle type valve cartridges each having a body member with an axial bore and a moveable piston therein,

each body member being removably affixed to said supporting means,

said supporting means being such that the number and type of cartridges may be selected and/or replaced as desired,

an outlet in each body member and an inlet in some body members,

each piston in one position connected the inlet of those body members having an inlet to the outlet of the same body member for directing said hydraulic fluid from one path to said valve operators,

each piston being spring biased to said one position,

said pistons being positioned so as to be subject to means for moving each of said pistons against said spring bias to a second position thereby disconnecting said inlets from said outlets, and thereby connecting each outlet in each body member with said moving means for directing hydraulic fluid from a second path to said valve operators and to the other hydraulically actuated devices.

11. A shuttle type valve cartridge for use in a subsea type completion tree comprising,

a body member having an axial bore with a moveable piston therein,

said body member adapted to be removably affixed to a supporting means on said tree,

said body member being open at one end thereby forming one inlet to said body member, but which is closed by said piston in one position protecting said bore from the ambient sea, said piston being spring biased to said one position,

an outlet in said body member,

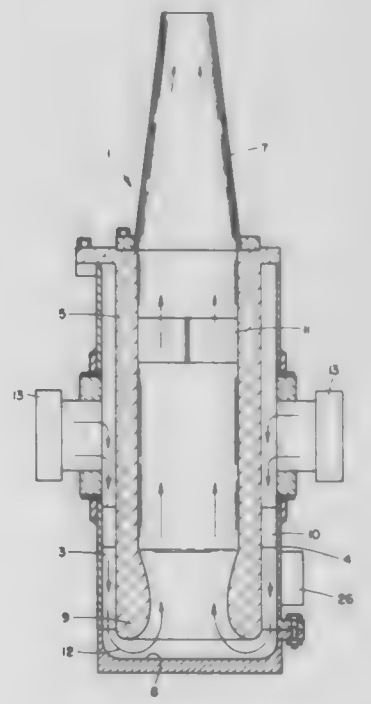
said piston being positioned in said bore so as to be subject to means for moving said piston against said spring bias to a second position thereby connecting said outlet with said moving means for directing hydraulic fluid from one path to valve operators and other hydraulically operated devices in said tree.

4,607,702

FIRE MONITORS

Donald S. Miller, Bedford, England, assignor to The British Hydromechanics Research Association, Cranfield, England

PCT No. PCT/GB83/00122, § 371 Date Dec. 29, 1983, § 102(e) Date Dec. 29, 1983, PCT Pub. No. WO83/03768, PCT Pub. Date Nov. 10, 1983
PCT Filed Apr. 26, 1983, Ser. No. 579,901
Claims priority, application United Kingdom, May 4, 1982, 8212775
Int. Cl.[4] A62C *27/00*
U.S. Cl. 169—25 3 Claims



1. A fire monitor for projecting water comprising:

an outer tube having an upstream end communicating with water inlet means and a downstream and closed by a baffle plate;

an inner tube located radially within and coaxial with the outer tube, said inner tube having an open end located adjacent to and spaced from said baffle plate;

an outlet nozzle connected to a downstream end of said inner tube and extending coaxially therefrom;

said inner tube having an outer surface which is substantially constant in diameter, and said outer tube having an inner surface which is substantially constant in diameter and is spaced from said outer surface of said inner tube thereby defining a channel therebetween, whereby water flows from said inlet means through said channel, strikes said baffle plate and is deflected into said open end of said inner tube to flow towards said outlet nozzle;

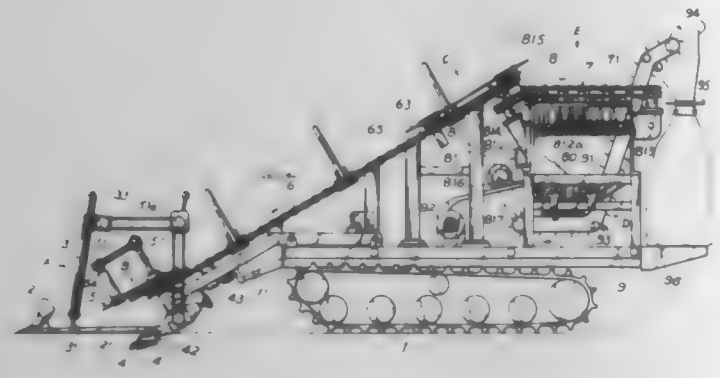
said inner tube having an inner surface and said open end of said inner tube is rounded to provide a continuous surface between said inner and outer surfaces of said inner tube;

said inner surface of said inner tube having a continuous surface defined by a gradual increase in the cross-section of said inner tube from said rounded open end over a portion of said predetermined length and a gradual decrease in cross-section for the remainder of said predetermined length;

said baffle plate having a surface which faces said open end of said inner tube, said facing surfaces having a curved periphery corresponding to the rounded open end of said inner tube and a continuous flat surface extending over the entire remaining area of said facing surface, whereby a semi-toroidal bend is provided at said downstream end of said outer tube and said open end of said inner tube to minimize turbulence in the water flow from said channel into said inner tube;

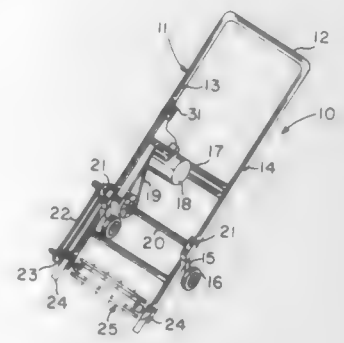
and said outer tube has an outer surface which has a substantially constant diameter to permit said outlet nozzle to be deflected through a wide range of angles without obstruction.

4,607,703
PEANUTS HARVESTER AND ITS HARVESTING METHOD
Kuo-Ming Wang, P.O. Box 10160, Taipei, Taiwan
Filed Sep. 9, 1985, Ser. No. 774,007
Int. Cl.[4] A01D *29/00, 33/02*
U.S. Cl. 171—1 **5 Claims**



1. A peanuts harvester comprising:
a truck body;
at least three plant row dividers, each formed as a tapered front portion and a rear portion with divergent arcuated shape and fixed on the front end of said truck body;
at least two pairs of stalk straighteners, each including a plurality of straightening blades pivotedly mounted on a loop chain and each having a base extension to allow said blade to be horizontally backed against the chain so that two corresponding blades facing each other may straighten the stalk of peanut plant, said stalk straightener being driven by a driving unit coupled to the shaft of a peanut digger; at least two peanut diggers, each including a digger head operatively digging peanuts under the earth adapted for feeding peanuts into a feeder;
a soil remover provided with soft brush coupled to the shaft of said digger to primarily remove the soil on the roots of peanut plant;
a plant feeder including a vertical first spindle coupled to a driving motor, a right-side conveying loop having plurality of blades thereon and rotatably pushing the peanut stalks inwards in cooperation with a right-side follower spindle having plurality of blades thereon, a second spindle coupled to said first spindle and driving the right-side follower spindle, a left-side conveying loop having plurality of blades and rotatably pushing the peanut stalks inwards in cooperation with a left-side follower spindle having plurality of blades thereon, two feeding wheels rotatably engaged with each other and driven by said first spindle, and a convergent guide guiding the two-row stalks into the recess portions defined by said two feeding wheels each formed with plurality of recess portions along its perimeter;
a tilted conveyer driven by said motor, including plurality of connecting links each having triangle-shaped side plate and every two neighboring side plates forming a recess portion, and clamping bar resiliently clamping the stalks between said bar and said recess portions between said side plates, and a stalk holder having plurality or holding blades on a conveying loop driven by said motor to quickly push the stalks forwards to be picked up by a horizontal conveyer;
a horizontal conveyer, driven by said driving motor and adjacent to and cooperating with the upper end of said tilted conveyer, including plurality of triangle-shaped side plates on the connecting links of a chain and plurality of resilient clamps clamping the upper stalks to allow the lower peanuts to be pendant downwards;
a peanut stripper including a casing, a driving motor, a pair of primary rakes, plural pairs of transversely-stripping rakes, and plural pairs of longitudinally-stripping rakes, all rakes resiliently held on the hubs disposed around two shafts driven by said driving motor and capable of combing and stripping the peanuts off the peanut plants when holding the upper stalks on said horizontal conveyer; and
a peanut collector including a shaking screen positioned under said casing of said peanut stripper, a blower blowing air to remove the dust of peanuts when passing said screen, a collecting conveyer driven by said motor and lifting the peanuts to a collecting hopper to be finally collected in a bag.

4,607,704
POWER RAKE
Josef Kepes, 7630 N. Oketo, Niles, Ill. 60648
Filed May 31, 1984, Ser. No. 615,746
Int. Cl.[4] A01B *33/14, 45/02*
U.S. Cl. 172—42 **14 Claims**



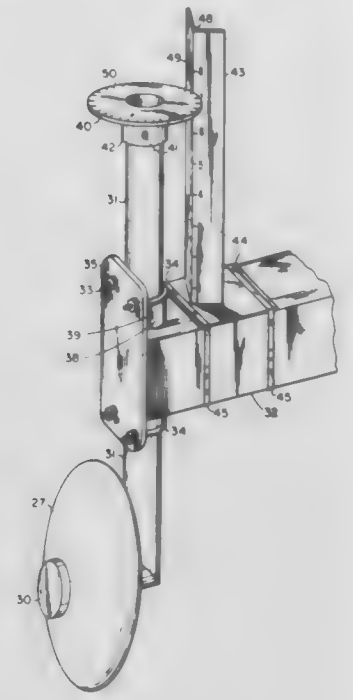
1. A manually propelled power rake comprising,
(a) a generally U-shaped wheeled frame providing a handle and a pair of spaced parallel legs,
(b) a power source mounted on said frame,
(c) a rake wheel journalled between the free ends of said legs of said frame,
(d) said rake wheel including a driven shaft having a plurality of radially extending prongs with said prongs arranged in aligned sets disposed at right angles with respect to each other,
(e) plate means carried by said rake wheel and extending along each set of prongs for regulating the depth of penetration of said prongs of each set into the terrain to be worked,
(f) means for radially adjusting said regulating means relative to the radial length of said prongs of each set of prongs mounted on said rake wheel, and
(g) means connecting said rake wheel to said power source for rotation thereby about a horizontal axis.

4,607,705
ROW CROP CULTIVATOR INCLUDING DISK AND SETTING INDICATOR THEREFOR
John A. Tebben, E. Hwy. 23, Clara City, Minn. 56222
Filed Dec. 27, 1983, Ser. No. 566,040
Int. Cl.[4] A01B *21/08, 71/02*
U.S. Cl. 172—430 **2 Claims**

1. A row crop cultivator suitably styled to be drawn by a tractor or similar vehicle and which includes a frame structure and linkage means suitable to receive various implement attachments, wherein the improvement comprises:
disk support means attached to said frame structure, said disk support means including a plurality of support shafts;
a plurality of weeding disks, each disk being rotatably mounted to a corresponding one of said support shafts;
separate adjustment means associated with each support

shaft for enabling each corresponding weeding disk to be altered as to its depth and angular orientation; and

separate indicator means associated with each adjustment means for indicating the depth and angular setting of the corresponding weeding disk, said indicator means being cooperatively arranged with said adjustment means such that the duplication of a setting for a first one of said weeding disks onto another one of said weeding disks results in a duplication of the positional orientation placement of the first disk by said another disk, said separate indicator means including a degree plate coaxially disposed about the uppermost end of its corresponding support shaft and a depth gauge disposed substantially parallel to the support shaft and positioned adjacent to the degree plate wherein the degree plate and the depth gauge each include a series of spaced graduations and each serves as the alignment marker for the other, said depth gauge being arranged in angular form thus providing a vertex edge, and the top surface of the degree plate being arranged as a level alignment indicator for selecting the appropriate graduation from the depth gauge and the vertex edge of the depth gauge serves as a pointer for determining the angular orientation from the degree plate.

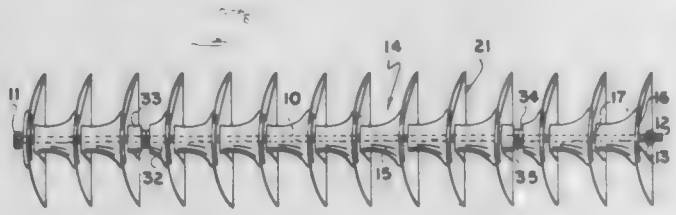


4,607,706

SECTIONAL DISC ASSEMBLY FOR GROUND-WORKING IMPLEMENTS

Ian Raynor, Bay 5, 1249 Clarence Avenue, Winnipeg, Manitoba, Canada (R3T 1T4)

Filed Jun. 22, 1984, Ser. No. 623,346
Int. Cl.[4] A01B *23/06*
U.S. Cl. 172—599 **26 Claims**



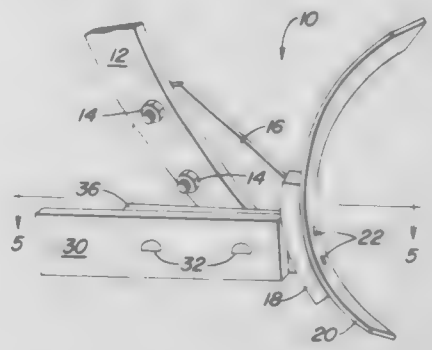
1. A disc assembly for ground-working implements comprising in combination, a main mounting shaft and a plurality of sectional disc holding spools mounted on said shaft in end-to-end relationship, each spool including a disc segment holding end and an adjacent spool mating end, said disc segment holding end including an integral annular flange extending radially outwardly from said disc segment holding end towards the outer perimeter of said spool thereby defining an annular stabilizing recess concentrically located solely upon said disc segment holding end and spaced inwardly from the outer edge thereof, at least two disc segments engagable by the inner ends thereof into said stabilizing recess and means outboard of said recess to clamp said segments to said disc segment holding end.

4,607,707

CHISEL PLOW LANDSIDE

Wayne L. Shellhouse, Rock Island, and James M. VanAuwelaer, Coal Valley, both of Ill., assignors to Deere & Company, Moline, Ill.

Filed Jun. 28, 1984, Ser. No. 625,810
Int. Cl.[4] A01B *15/00*
U.S. Cl. 172—764 **2 Claims**



1. In a chisel plow including a frame, a downwardly depending standard attached to the frame, and a chisel shovel attached to the standard and having lateral edges disposed to form a fore-and-aft furrow as the chisel shovel is moved forwardly through the soil, the improvement comprising:

a landside attached to said standard rearward of said shovel and disposed to extend generally fore-and-aft and disposed laterally outward to one of the lateral edges of said chisel shovel;

a beam plate including a frog attached to its forward end to receive said chisel shovel, said beam plate being attached to said standard and disposed to interconnect said standard and said chisel shovel; wherein said beam plate extends rearwardly from said standard, wherein said landside is attached to a rearward portion of said beam plate, and wherein said standard is disposed intermediate said beam plate and said landside;

a spacer attached to and disposed intermediate the rearward portion of said beam plate and said landside; and

a wedge plate having a narrow end attached to and disposed intermediate said standard and said landside, and a wide end attached to and disposed intermediate said spacer and said landside.

4,607,708

FOLDABLE FRAME FLEXING HINGE

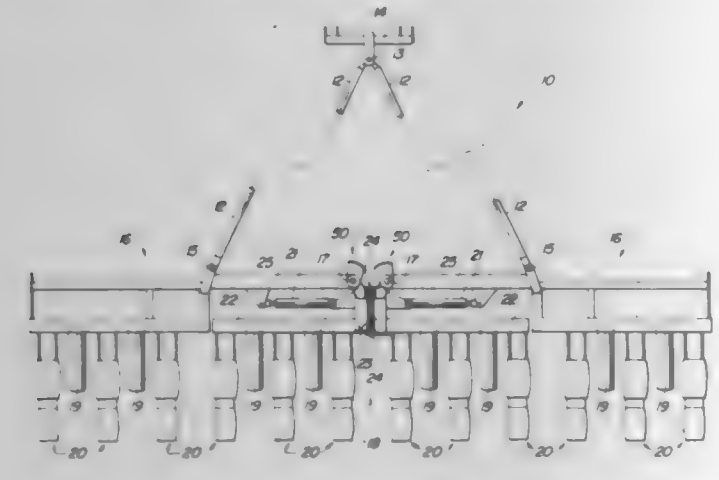
Donald K. Landphair, Bettendorf, Iowa, and Gordon L. Salley, Moline, Ill., assignors to Deere & Company, Moline, Ill.

Filed Mar. 23, 1984, Ser. No. 592,523
Int. Cl.[4] A01B *73/00, 63/22;* **B62D** *53/00*
U.S. Cl. 172—776 **7 Claims**

1. In a forwardly foldable implement frame having a pair of foldable wing sections attached to the hitch of a draft vehicle and being pivotally movable toward and away from each other between a folded transport position and an unfolded operational postion by selective activation of a power means; and a horizontal fore-and-aft pivot flex hinge interconnecting said wing sections to enable vertical flexing of the wing sections to follow the contour of the ground when the wing sections are disposed in the unfolded operational position, the improvement comprising:

a first bumper rigidly attached to one of said wing sections and directed to extend toward and contact the other of

said wing sections at a point vertically spaced from and adjacent to said flex hinge when said wing sections move



toward said folded transport position, wherein said contact restricts said flex hinge from pivotal movement.

4,607,709

MOTOR DRIVEN HAND-HELD MACHINE WITH TWO PART TOOL ASSEMBLY

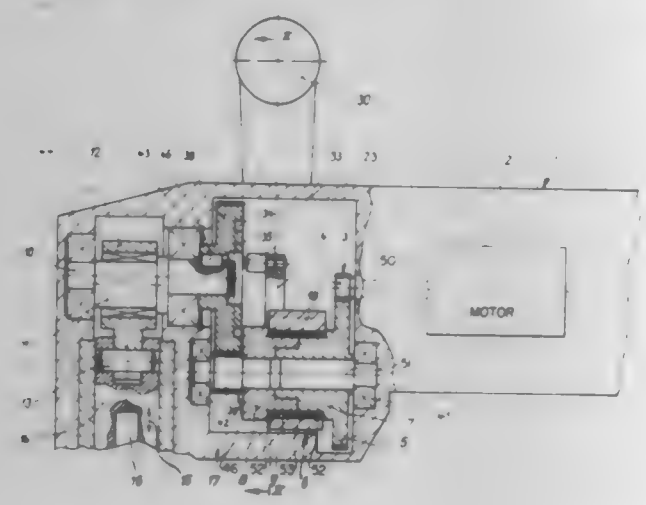
Hans-Heinrich Walser, Gruesch, Switzerland, assignor to Trumpf GmbH & Co., Ditzingen, Fed. Rep. of Germany

Filed Aug. 29, 1984, Ser. No. 645,604

Claims priority, application Fed. Rep. of Germany, Sep. 7, 1983, 3332258

Int. Cl.⁴ B23B *45/00*

U.S. Cl. 173—170 **8 Claims**



1. In a motor-driven portable machine tool, the combination comprising:

(a) a housing;

(b) a drive motor in said housing including a rotatable output shaft;

(c) a tool driving member mounted for reciprocation in said housing at a point spaced from said output shaft and having means for mounting a tool for reciprocation thereby;

(d) a tool drive assembly operatively connected to said tool driving member to effect its reciprocation;

(d) a first gear mechanism including a gear driven by said output shaft;

(f) a second gear mechanism drivingly engaged with said tool drive assembly;

(g) coupling means between said first and second gear mechanisms to effect transfer of rotation from said output shaft to rotate of said second gear mechanism and thereby said tool drive assembly, said coupling means including:

(i) axially adjacent first and second coupling halves supported for rotation in said housing about a common axis, said coupling halves being relatively rotatable;

(ii) a coil spring disposed about axially adjacent circumferential surfaces on said coupling halves, said first gear mechanism including a second gear operatively connected to the adjacent first coupling half to effect its rotation, said second gear mechanism including a driven gear operatively connected to the adjacent second coupling half to be rotated thereby and transmit the rotation to said tool drive assembly, said spring being engaged at one end with said second coupling half;

(iii) a clutch member having the other end of said spring engaged therewith and rotatable about said axial surface of first coupling half; and

(iv) a releasable latch member engageable with said clutch member to prevent its rotation, release thereof from such engagement causing said spring to coil tightly about said adjacent surfaces of both coupling halves and thereby effecting driving engagement therebetween, said latch member upon reengagement with said clutch member producing an enlargement of the diameter of said coil spring about said surfaces to disengage said coupling halves; and

(h) a stop mechanism operatively connected to said latch member for moving said latch member into engagement with said clutch member to stop said tool driving member in one extreme position of reciprocation.

4,607,710

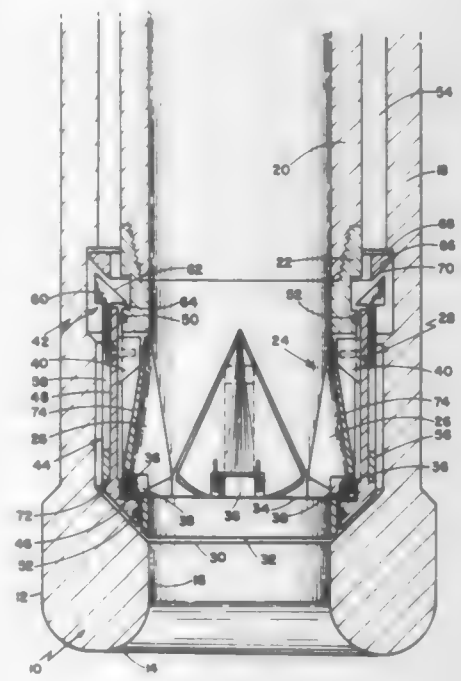
CAMMED AND SHROUDED CORE CATCHER

Steven R. Radford, West Jordan, Utah, assignor to Norton Christensen, Inc., Salt Lake City, Utah

Filed Aug. 31, 1984, Ser. No. 646,578

Int. Cl.⁴ E21B *25/00, 49/02*

U.S. Cl. 175—249 **14 Claims**



1. A full closure core catcher disposed within a coring tool, said tool having an inner barrel for cutting a core comprising:

a plurality of closeable valves smoothly forming a portion of said inner barrel and displaceable within said inner barrel to fully close said inner barrel wherein each of said plurality of valves is rotatively coupled to said inner barrel and disposable through a window defined in said inner barrel, and further comprising means for biasing each valve in a withdrawn and open configuration; and

means for positively displacing each of said plurality of valves into said inner barrel in opposition to said means for biasing each valve in a withdrawn and open configuration, whereby full closure of said inner barrel is provided without dependency upon descent of said core within said inner barrel.

4,607,711

ROTARY DRILL BIT WITH CUTTING ELEMENTS HAVING A THIN ABRASIVE FRONT LAYER

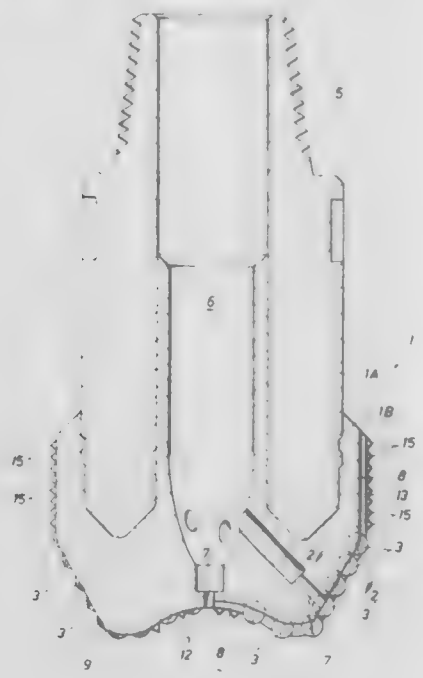
Djurre H. Zijsling, Gd Rijswijk, Netherlands, assignor to Shell Oil Company, Houston, Tex.

Filed Feb. 28, 1985, Ser. No. 706,987

Claims priority, application United Kingdom, Feb. 29, 1984, 8405267

Int. Cl.[4] E21B *10/46*

U.S. Cl. 175—329 2 Claims



1. Rotary drill bit for deephole drilling in subsurface earth formations, the bit comprising a bit body suitable to be coupled to the lower end of a drill string, the bit body carrying a plurality of cutting elements, said cutting elements facing forwardly in the direction of rotation and extending downwardly from the bit body during normal drilling operations with the cutting face of each cutting element sloping at an angle of within 15 degrees to the vertical, at least part of each of said elements comprising a front layer of interbonded abrasive particles having a thickness of between 0.2 and 0.4 mm., said abrasive particles comprising a polycrystalline mass of abrasive diamond particles said mass being bonded to a tungsten carbide substratum.

4,607,712

ROCK DRILL BIT

Lars E. Larsson, Sandviken, Sweden, assignor to Santrade Limited, Lucerne, Switzerland

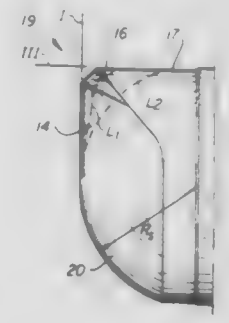
Filed Dec. 19, 1984, Ser. No. 683,565

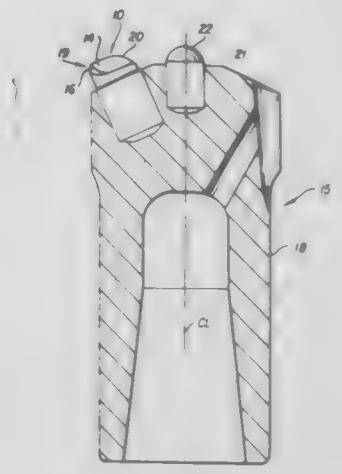
Claims priority, application Sweden, Dec. 19, 1983, 8307010

Int. Cl.[4] E21B *10/16, 10/52*

U.S. Cl. 175—410 9 Claims

1. Rock drill bit of the impact type comprising a substantially cylindrical body and a front surface provided with a plurality of fixed peripherally spaced inserts, each said insert having a body with a generally cylindrical jacket surface defining a longitudinal axis and a head section protruding outwardly from said front surface in a direction oriented at an acute angle relative to a longitudinal axis of said bit body, said head section being substantially circular as viewed along said longitudinal axis of said insert and provided with first and second working surfaces, said first working surface being arched in at least one direction, said second working surface being spherical and configured as substantially one-quarter of a sphere, a part of a junction between said first working surface and said jacket surface comprising a beveled transition surface such that said head section is configured asymmetrically about an imaginary plane which contains said longitudinal axis of said insert and which imaginary plane is oriented such that said transition surface and said second working surface lie on opposite sides of said plane, said transition surface being turned to face away





from said longitudinal axis of said bit body and arranged to generally determine the diameter of a bore cut by said bit.

4,607,713

DISTRIBUTING TABLE CONSTRUCTION FOR USE IN COMBINATIONAL WEIGHING APPARATUS

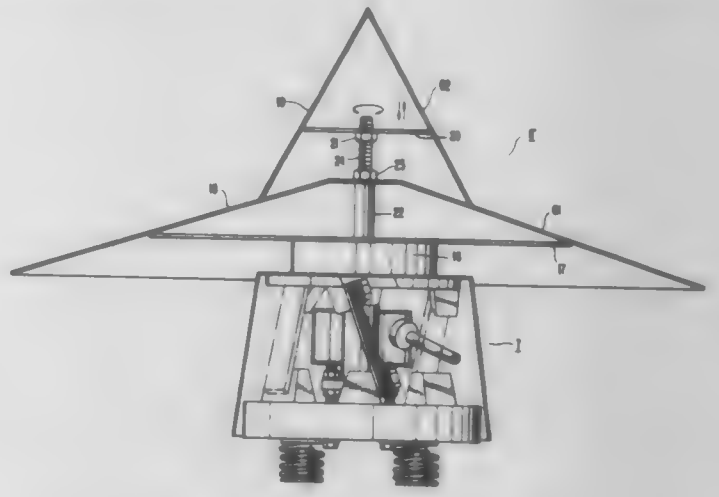
Hitoshi Nishi, Ohtsu; Asahiro Izumi, Kusatsu, and Sadanobu Nishiyama, Shiga, all of Japan, assignors to Ishida Scales Mfg. Co., Ltd., Kyoto, Japan

Filed Jun. 14, 1985, Ser. No. 744,745

Claims priority, application Japan, Jun. 15, 1984, 59-88075[U]

Int. Cl.[4] G01G *19/22, 21/28*

U.S. Cl. 177—25 7 Claims



1. A distributing table construction for use in a combinatorial weighing apparatus having a plurality of weighing mechanisms, a supply mechanism for supplying articles to be weighed into the weighing mechanisms, and means for combining the weights of the articles as measured by the weighing mechanisms, said distributing table construction comprising:

(a) a vibrator disposed as a portion of said supply mechanism;

(b) a conical main table operatively connected to said vibrator and having a surface slanted at a relatively small angle radially outwardly; and

(c) a conical subtable mounted on said conical main table and

having a lower end of an outside diameter smaller than the outside diameter of said conical main table, said conical subtable having a surface slanted at an angle larger than said relatively small angle of the surface of said conical main table.

4,607,714

RADIATOR-FAN SYSTEM, PARTICULARLY FOR BUSES HAVING REAR-MOUNTED ENGINES

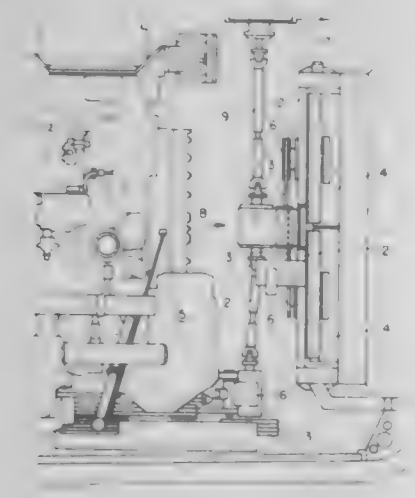
Josef Uttenthaler, Hettenshausen, Fed. Rep. of Germany, assignor to M.A.N. Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft, Fed. Rep. of Germany

Filed Aug. 5, 1983, Ser. No. 520,827

Claims priority, application Fed. Rep. of Germany, Oct. 5, 1982, 3236794

Int. Cl.⁴ B60K *11/04*

U.S. Cl. 180—68.1 **6 Claims**



1. A resistor-fan system for vehicles, such as buses having rear-mounted engines, comprising a first belt drive including V-belts for driving the fan of said system, a vehicle engine associated with said V-belt drive, and a bevel gear drive having an output coupling the V-belt drive on the fan with said engine, a first cardan shaft, a jackshaft, and a second V-belt drive at the engine for connecting the jackshaft to the output of said engine, said first cardan shaft being interconnected between said jackshaft and a power input end of said bevel gear drive, and a second cardan shaft coupled to the bevel gear drive at an end opposite the input end thereof, said system being arranged in a side panel of the vehicle proximate the rear end of the vehicle oriented substantially along the direction of vehicle travel, means for mounting the gear drive on the frame of the vehicle including a self-adjusting vertical linear guide and a self-adjusting horizontal linear guide for facilitating the sliding adjustment of the bevel gear drive and the first belt drive, including spring means for imparting spring tension to said vertical linear guide for effecting the self-adjusting thereof, said first and second cardan shafts being longitudinally adjustable, whereby said cardan shafts facilitate the adjustment of said bevel gear drive and belt drive relative to the frame of the vehicle.

4,607,715

PROPORTIONAL PNEUMATIC CONTROL SYSTEM FOR AIRCUSHIONS

Hartwig Michels, and Knud Klingler, both of Nuremberg, Fed. Rep. of Germany, assignors to Delu-Luftkissentransportgeratetechnik GmbH, Fed. Rep. of Germany

Filed Dec. 10, 1984, Ser. No. 679,629

Claims priority, application Fed. Rep. of Germany, Jan. 3, 1984, 3400101

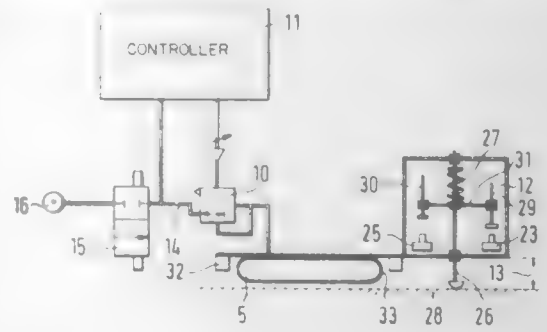
Int. Cl.⁴ B60V *1/11*

U.S. Cl. 180—118 **11 Claims**

1. A control system for an aircushion carrier having a plurality of air cushions for supporting a carrier above a gliding surface, the air cushions to be controllably connected to a source of compressed air, the control system comprising:

a pressure regulator for controllably supplying air to the air cushions at an operating pressure determined by a control level applied to the pressure regulator;

a transmitter for sensing the distance between the carrier and the gliding surface, thereby sensing changes in load;



a controller connected to the transmitter and operative to adjust the control level applied to said pressure regulator in response to said changes in load on said carrier, the control level being increased and decreased by the controller in response to the transmitter; and,

adjustable damping means for the controller, the damping means controlling a rate of at least one of said increase and decrease in the control level.

4,607,716

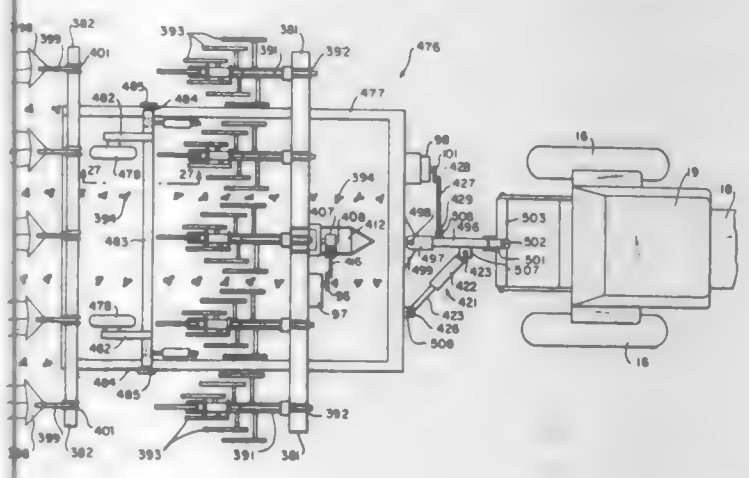
AGRICULTURAL APPARATUS WITH AN AUTOMATIC POSITIONING MECHANISM AND METHOD

Charles L. Beck, 238 Naples St., Chula Visa, Calif. 92011

Filed Oct. 14, 1983, Ser. No. 542,116

Int. Cl.⁴ B62D *5/06*

U.S. Cl. 180—131 **19 Claims**



1. In an agricultural apparatus having an automatic positioning mechanism, a framework supported in a position above the ground for movement over the ground, an arm connected to the framework at a predetermined angle, a ground-engaging member carried by the arm for following a predetermined path as the apparatus is moved over the ground, said arm being mounted to permit limited movement of the arm angularly relative to said framework in a direction lateral to said path to change said angle, actuator means for causing movement of the framework responsive to said limited movement, electrical circuit means responsive to the movement of said arm from said predetermined angle and connected to said actuator means for causing operation of the actuator means to automatically position the framework so that the framework travels along a path which is parallel to said predetermined path, the ground-engaging member being mounted to trail the mounting for the arm so as to minimize the load produced by said ground-engaging member; said apparatus including a self-propelled vehicle, and the framework being mounted on the vehicle extending forwardly from the front of the vehicle, the mounting for said arm being near the forward portion of the framework with the

ground-engaging member extending rearwardly towards the forward end of the vehicle; the electrical circuit means including a tracking unit which is responsive to the angular movement of said arm, and including means for transmitting electrical signals to cause the actuator to move the framework in a manner to return the arm to its predetermined angle.

4,607,717

STEERING APPARATUS

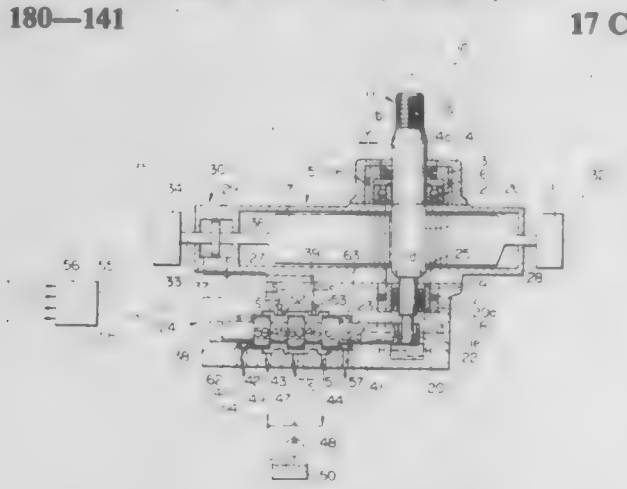
Masafumi Nakayama, Yamato, Japan, assignor to Nissan Motor Company, Limited, Japan

Filed Jan. 25, 1985, Ser. No. 694,975

Claims priority, application Japan, Jan. 27, 1984, 59-13885

Int. Cl.[4] B62D *3/12, 5/10;* **F15B** *9/10*

U.S. Cl. 180—141 **17 Claims**



1. A steering apparatus, comprising:

a pinion shaft having a pinion of a steering gear and operably connected with a steering wheel;

a rack of the steering gear operably connected to steerable road wheels and being in mesh with the pinion;

a power cylinder, having first and second hydraulic chambers opposing each other, for hydraulically actuating said rack;

a valve means for selectively connecting the first and second hydraulic chambers with a hydraulic pressure source and an oil reservoir, said valve means comprising a valve body which has an elongate slot in a direction of a movement of the valve body;

means, responsive to electric signals representative of steering conditions, for controlling a position of the valve body;

means, in response to a steering reactive force, for mechanically restraining the movement of the valve body, said restraining means comprising a rod in engagement with the elongate slot with a clearance along the direction of the movement of the valve body, the clearance allowing the controlling operation by said controlling means.

4,607,718

MOTORCYCLE

Motoi Nagataki, and Takashi Inagaki, both of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 27, 1984, Ser. No. 644,916

Claims priority, application Japan, Sep. 1, 1983, 58-160982; Sep. 1, 1983, 58-160981

Int. Cl.[4] B62M *7/02, 17/00*

U.S. Cl. 180—226 **5 Claims**

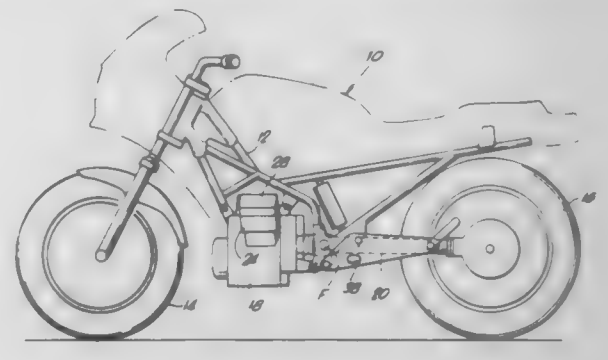
1. A motorcycle comprising

a frame having a substantially symmetrical center plane;

an engine mounted on said frame;

a rear wheel operatively mounted to said frame; and

a drive train from said engine to said rear wheel and including a drive shaft diverging from said center plane of said frame rearwardly of said engine, said engine including two cylinder branks extending laterally on opposite sides of said center plane with one of said cylinder banks being located forwardly of the other of said cylinder banks of said frame, cylinder heads for said cylinder banks and a



crankshaft, said crankshaft extending at an angle to said center plane such that a line between the centers of said cylinder banks is normal to said center plane.

4,607,719

ALCOHOL DETECTION DEVICE

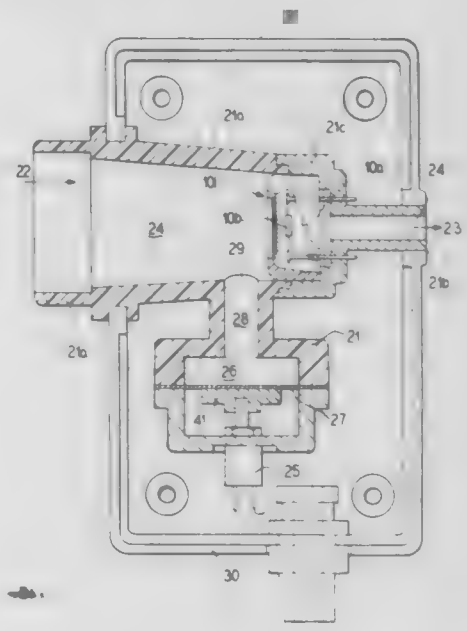
John W. Rugis, and Graham J. Drummond, both of Auckland, New Zealand, assignors to Drummond and Relph Limited, Auckland, New Zealand

Filed Dec. 19, 1984, Ser. No. 683,670

Claims priority, application New Zealand, Dec. 21, 1983, 206266

Int. Cl.[4] B60K *28/02*

U.S. Cl. 180—272 **5 Claims**



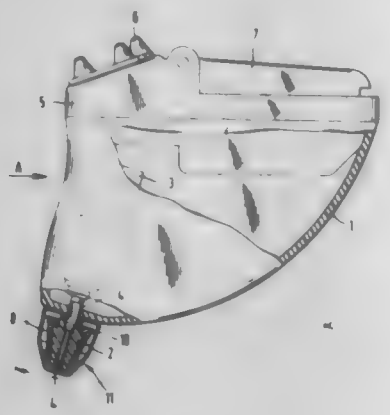
1. A breath sample alcohol detection device comprising a body having openings at each of two opposite ends thereof and forming an interior chamber disposed between and terminating with the end openings, the portion of said body associated with a first of the end openings forming a mouthpiece and that opening conjoining directly with an inlet section of the interior chamber, the inlet section having a cross-sectional area substantially larger than the cross-sectional area of an output section of the interior chamber with the output section directly joining with the second end opening whereby an exhalation breath applied to the mouthpiece can create an increase in the fluid pressure within the inlet section of the interior chamber, a fluid pressure operative electrical switch mounted in an ante-chamber of the inlet section of the interior chamber and being sealiningly separated therefrom by a diaphragm, the pressure operative switch being set to actuate at a fluid pressure predetermined to be a pressure creatable by exhalation into the mouthpiece and an alcohol sensor having an electrically compatible output and being mounted in the inlet section of the interior chamber with the mounting suspending the sensor clear of the surrounding body.

4,607,720

HEARING AID

Heinz Hardt, Vienna, Austria, assignor to Viennatone Gesellschaft m.b.H., Vienna, Austria

Filed Jul. 29, 1985, Ser. No. 760,154
Claims priority, application Austria, Aug. 6, 1984, 2547/84
Int. Cl.[4] A61B *7/02*
U.S. Cl. 181—135 10 Claims



1. A hearing aid having a sound emission opening and adapted to be substantially fully inserted into the external passage of an ear, which comprises

(a) a housing containing a sound receiver,

(b) a coupling element connected to the housing in communication with the sound emission opening, and

(c) a sealing plug detachably connected to the coupling element and having one end adjacent the housing and another end remote from the housing, the sealing plug being comprised of

(1) a cylindrical inner part mounted on the coupling element and

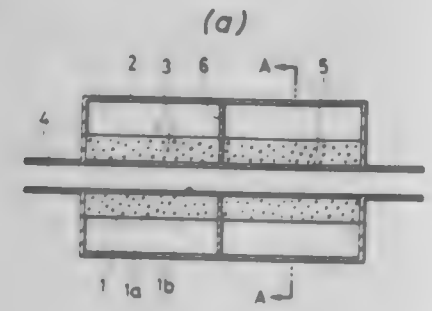
(2) a substantially cylindrical outer part surrounding the inner part and turned back from the inner part at the remote end and extending to the one end of the sealing plug, the inner and outer parts defining an annular gap therebetween extending to the one end of the sealing plug adjacent the housing.

4,607,721

MUFFLER FOR EXHAUST GAS FROM AN INTERNAL COMBUSTION ENGINE

Hideharu Tanaka; Matsuo Sekiya, both of Hyogo, and Fusaoki Uchikawa, Kanagawa, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 531,894, Jul. 5, 1983, Pat. No. 4,523,662. This application Apr. 8, 1985, Ser. No. 720,926
Claims priority, application Japan, Nov. 5, 1981, 56-178570; Nov. 5, 1981, 56-178571; Nov. 5, 1981, 56-178572; Nov. 5, 1981, 56-178573; Jan. 29, 1982, 57-12863[U]; May 28, 1982, 56-91625
The portion of the term of this patent subsequent to Jun. 18, 2002, has been disclaimed.
Int. Cl.[4] F01N *1/10*
U.S. Cl. 181—249 13 Claims



1. A muffler for the exhaust gas of an internal combustion engine, comprising:

a casing,

a perforated sleeve disposed in said casing, said perforated sleeve having an interior through which the exhaust gas flows and a wall having a plurality of openings,

a cylindrical porous sound absorbing body arranged coaxially with said perforated sleeve on an outer periphery of said perforated sleeve,

a cylindrical thin film made of metal, said cylindrical thin film being intimately interposed between said perforated sleeve and said cylindrical porous sound-absorbing body,

a space defined between an inner periphery of said casing and an outer periphery of said cylindrical porous sound-absorbing body, and

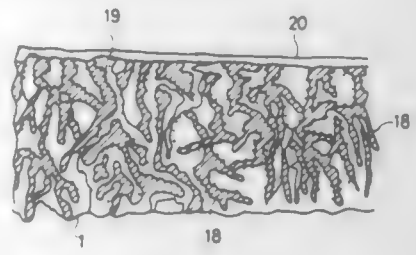
at least one communication passage means for providing a pressure balancing communication between the interior of said perforated sleeve and said space.

4,607,722

MUFFLER FOR EXHAUST GAS FROM AN INTERNAL COMBUSTION ENGINE

Hideharu Tanaka; Matsuo Sekiya, both of Hyogo, and Fusoaki Uchikawa, Kanagawa, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 531,894, Jul. 5, 1983, Pat. No. 4,523,662. This application Mar. 1, 1985, Ser. No. 707,326
Claims priority, application Japan, Nov. 5, 1981, 56-178570; Nov. 5, 1981, 56-178571; Nov. 5, 1981, 56-178572; Nov. 5, 1981, 56-178573; Jan. 29, 1982, 57-12863[U]; May 28, 1982, 57-91625
The portion of the term of this patent subsequent to Jun. 18, 2002, has been disclaimed.
Int. Cl.[4] F01N *1/10*
U.S. Cl. 181—252 8 Claims



1. A muffler for the exhaust gas of an internal combustion engine, said muffler having an inlet and an outlet for exhaust gas and further comprising a casing and a cylindrical sound-absorbing body comprising a fibrous material and extending through said casing and having an inner cylindrical surface, and a heat resistant paint formed on said inner cylindrical surface, said heat resistant paint having a thickness not in excess of 250 micrometers.

4,607,723

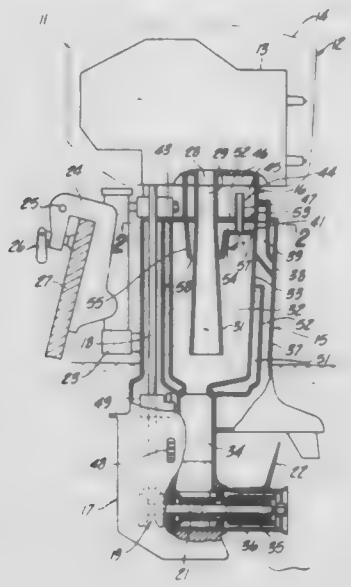
EXHAUST SYSTEM FOR OUTBOARD MOTORS

Masaki Okazaki, Shizuoka, Japan, assignor to Sanshin Kogyo Kabushiki Kaisha, Japan

Filed Sep. 28, 1984, Ser. No. 655,934
Claims priority, application Japan, Sep. 29, 1983, 58-179295
Int. Cl.[4] F01N *1/08*
U.S. Cl. 181—272 20 Claims

1. In a silencing system for an outboard motor having a power head containing an internal combustion engine, a drive shaft housing depending from said power head, and a lower unit beneath said drive shaft housing, the improvement comprising exhaust discharge means for delivering exhaust gases from said power head engine into said drive shaft housing, an exhaust outlet for discharging exhaust gases from said drive

shaft housing, a resonance chamber defined above said drive shaft housing and tuning tube means extending from said drive



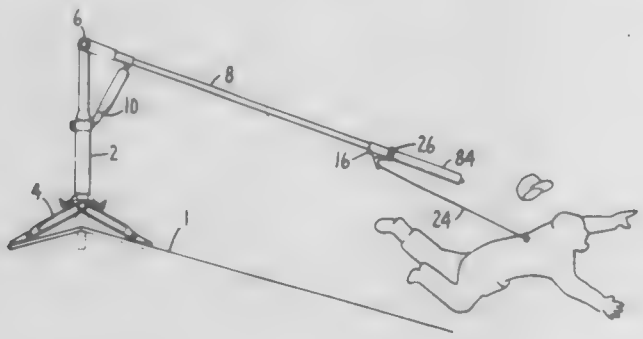
shaft housing into said resonance chamber for silencing exhaust gases prior to their discharge to the atmosphere.

4,607,724

SAFETY APPARATUS FOR ROOFERS

Julian T. Hillberg, P.O. Box 1643, Weaverville, Calif. 96093

Filed Oct. 9, 1985, Ser. No. 785,677
Int. Cl.[4] A62B *35/00*
U.S. Cl. 182—3 22 Claims



1. A safety device for preventing workers from falling off of a peaked roof, comprising:

(a) a saddle adapted to be mounted on the peak of said roof;

(b) a stanchion mounted on said saddle, said stanchion having at least a top portion rotatable relative to said stanchion;

(c) a boom pivotally connected to a top portion of said stanchion, said boom being pivotable in the vertical direction with respect to said stanchion;

(d) damping means for resiliently biasing said boom above a worker and for damping vertical pivoting of said boom relative to said stanchion;

(e) tether means slidably connected at one end with said boom and connectable at the other end to a safety belt or harness at a worker's back, said rotatable stanchion and slidable tether allowing the worker a high degree of work mobility on the roof without interference by said tether means; and,

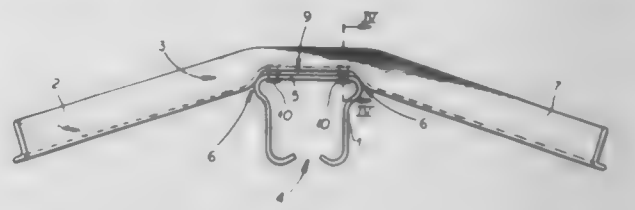
(f) means responsive to rapid movement of said tether means relative to said boom in the event of a worker's loss of footing or falling, to arrest said tether means so that said tether means and said boom means absorb the force of such rapid movement when said tether means catches the worker.

4,607,725

SAFETY LADDER

Arnfried Brinkmann, and Ernst Lehners, both of Essen, Fed. Rep. of Germany, assignors to Fahrleitungsbau GmbH, Essen, Fed. Rep. of Germany

Filed Oct. 24, 1985, Ser. No. 790,963
Claims priority, application Fed. Rep. of Germany, Nov. 7, 1984, 3440549
Int. Cl.[4] E06C *7/08*
U.S. Cl. 182—189 7 Claims



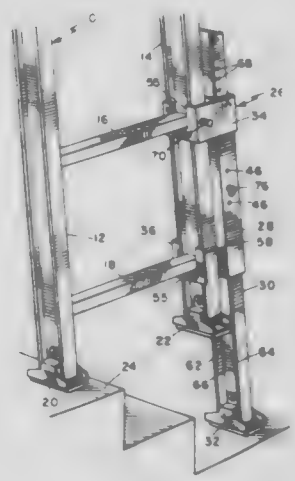
1. In a safety ladder comprising a vertical central ladder stringer and a plurality of horizontal rungs, wherein said central ladder stringer has a substantially C-shaped cross section with a front longitudinal slot, a rear transverse piece lying opposite to said front longitudinal slot, and said rear transverse piece having rounded longitudinal edges, and each of said rungs is applied to said central ladder stringer in the vicinity of said rear transverse piece from the outside and is attached thereto, and has an outer member bent forwardly, the improvement wherein each of said rungs is provided with an equal sided trapezoidally shaped recess for said rear transverse piece, by which each of said rungs straddles said central ladder stringer contacting only in the vicinity of said longitudinal edges on said central ladder stringer, and each of said rungs is attached to said central ladder stringer by a fastening means for interconnecting the rung at the rear transverse piece without obstructing the interior of said stringer.

4,607,726

LADDER EXTENSION

Richard J. Davis, and Vince J. Skandunas, both of 6314 Caminito Basilio, San Diego, Calif. 92111

Continuation-in-part of Ser. No. 486,710, Apr. 20, 1983, abandoned. This application Nov. 26, 1984, Ser. No. 674,650
Int. Cl.[4] E06C *7/44*
U.S. Cl. 182—204 16 Claims



1. A leveling device for removable attachment to a ladder comprising:

a hollow sleeve member of substantially rectangular cross-section having a pair of side walls joined by a pair of end walls each having a plurality of orifices therein such that each orifice on one end wall is paired with an axially aligned orifice on the other end wall;

a pair of substantially L-shaped brackets each affixed to opposite ones of said end walls at opposite ends of said sleeve member, each one of said L-shaped brackets having an arm member extending from a different one of said end

walls and an ear member extending substantially perpendicular from said arm member, said ear members being inwardly opposed and spaced apart from said sleeve member by said arm members so as to receive a ladder rail therebetween and each of said ear members having a U-shaped notch for receiving a ladder rung therein;

spacing means secured to said sleeve member for engaging and holding a ladder rail apart from said sleeve member when received within the regions defined by said L-shaped brackets and said sleeve member;

an extension member of I-shaped cross-section slidably mounted within said sleeve member, said extension member having a pair of sides interconnected by a cross-web, each one of said sides having a plurality of orifices therein such that each orifice on one side is paired with an axially aligned orifice on the other side;

a retaining pin, extending through a pair of end wall orifices and a pair of side orifices when axially aligned therebetween for selectively retaining said extension member within said sleeve member;

a foot member pivotally connected to a lower portion of said extension member; and

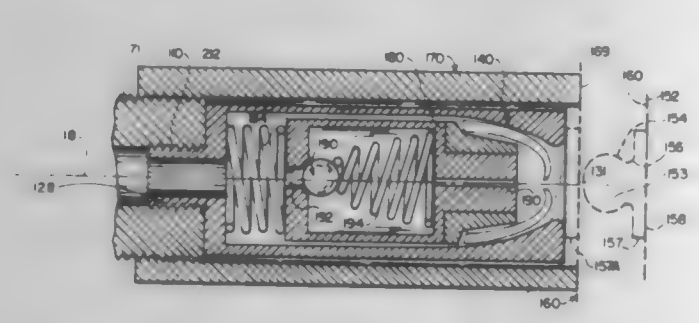
wherein said plurality of orifices located in said end walls are equally spaced apart by a first distance and said plurality of orifices in said sides are equally spaced apart by a second distance, said first and second distances being unequal.

4,607,727

GREASE ZERK RAM

Vincent F. Jochum, c/o Gary Jochum, 641 S. 84th St., Lincoln, Nebr. 68510

Filed Mar. 18, 1985, Ser. No. 712,626
Int. Cl.[4] F01M *11/00*
U.S. Cl. 184—38.1 **5 Claims**



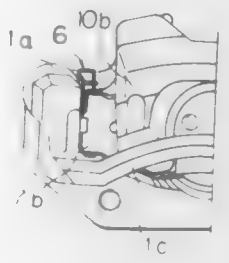
1. A grease ram comprising: a body, said body being elongated along an axis and having a hole extending therethrough along said axis, said hole having a first portion having a cylidrical wall, a force-receiving means at one end of said body, a plunger fixed to said force-receiving means and slidably extending into said body along said axis said plunger having a recess in its periphery, said recess being elongated along said axis, motion limiting means mounted on said body and protruding into said recess to limit outward movement of said plunger, piston means on said plunger inwardly of said recess and making close sliding fit with said cylindrical wall of said body, a grease insert port at one side of and extending through said body, a grease insert valve fitting in said port and normally closing said port and adapted to receive pressurized grease therethrough for the filling of said body with grease under pressure prior to ramming, the other end of said body being its forward end, a target grease fitting receiving unit attached to said forward end of said body and having an open forward end which receives therein a target grease fitting at times when said target fitting is to be greased, said unit having an open rearward end in communication with said hole, said body and said unit defining a body and unit assembly, a grease fitting protector, means attaching said protector to said body and unit assembly for holding to said assembly in a position such that the forward end of said protector is disposed forwardly of the forward end of said unit for engaging a surface of a device from which said target grease fitting protrudes whereby forward motion of said unit does not damage said target fitting.

4,607,728

PAD SPRING FOR DISC BRAKE AND HAVING RESTRICTING PORTION

Kinzo Kobayashi, Kanagawa, Japan, assignor to Tokico Ltd., Kawasaki, Japan

Continuation of Ser. No. 560,995, Dec. 13, 1983, abandoned. This application Aug. 26, 1985, Ser. No. 768,932
Claims priority, application Japan, Dec. 20, 1982, 57-192671[U]
Int. Cl.[4] F16D *55/224*
U.S. Cl. 188—73.38 **4 Claims**



1. A pad spring for use in a disc brake of the type having a stationary member adapted to be secured to a non-rotatable part of a vehicle on one side of a rotatable disc and having two leg portions spaced in the direction of the circumference of the disc, at least one friction pad location between and supported on the leg portions of the stationary member and slidable in a direction parallel to the axis of the disc, a caliper mounted on the stationary member and slidable in a direction parallel to the axis of the disc, and a pair of pad springs provided between the friction pad and the stationary member, each pad spring comprising:

a base portion contacting with and extending along a circumferentially facing side surface of each leg portion of the stationary member;

a retaining portion extending from the base portion and engaging with the leg portion for retaining the spring in position on the leg portion;

a pad pressing means consisting of a single pressing portion extending in a direction parallel to the axis of the disc and rigid against bending radially of the friction pad and slidingly engaging a radially outward surface of the friction pad, and a resilient connecting portion extending radially outwardly from said pressing portion and in the circumferential direction and connecting said pressing portion with said base portion for resiliently biasing said pressing portion as a whole in the radially inward direction; and

a pair of restricting portions separate from and spaced in the axial direction from said resilient connecting portion on opposite sides thereof and extending circumferentially from said base portion to a position spaced radially outwardly of said pressing portion in the path of radial outward movement of said pressing portion when a friction pad moves radially outwardly, said restricting portion being normally spaced radially outwards from said pressing portion by a predetermined distance for permitting radial outward movement of said pressing portion but less than a distance which would excessively distort said connecting portion, whereby when the displacement of said pressing portion exceeds said predetermined distance, the combined spring force of said resilient connecting portion and said restricting portion acts on said pressing portion.

4,607,729

BRAKE UNIT FOR RAIL VEHICLES

Josef Staltmeir, and Bernd Wosegien, both of Munich, Fed. Rep. of Germany, assignors to Knorr-Bremse AG, Munich, Fed. Rep. of Germany

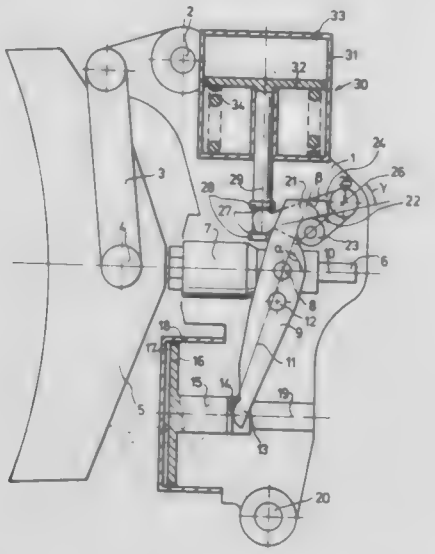
Filed Dec. 10, 1984, Ser. No. 679,683

Claims priority, application Fed. Rep. of Germany, Dec. 9, 1983, 3344616

Int. Cl.[4] B60T *11/10*

U.S. Cl. 188—153 R

5 Claims



1. In a block brake unit for rail vehicles, a block brake member actuating rod, a fluid pressure brake piston having a piston rod, means including a transmission lever for operatively connecting said piston rod to said actuating rod, means for defining a mechanical parking brake device having a parking brake lever, and means for defining a wedge impact coupling between said parking brake lever and said transmission lever, said wedge impact coupling comprises a roller on one of said parking brake lever and said transmission lever and a wedge surface on the other of said parking brake lever and said transmission lever, said transmission lever comprising a first lever arm connected to said brake piston rod and a second lever arm engageable by said impact coupling, there being a pivotable mount for said transmission lever and a pivotable connection between said transmission lever and said brake piston rod, said pivotable mount and said pivotable connection being spaced from each other in the central portion of said transmission lever.

4,607,730

BRAKE MECHANISM

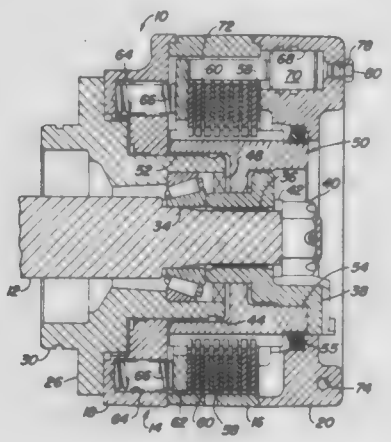
Daniel J. Paisley, Dubuque, Iowa, assignor to Deere & Company, Moline, Ill.

Filed Dec. 9, 1983, Ser. No. 559,662

Int. Cl.[4] F16D *65/24*

U.S. Cl. 188—170

1 Claim



1. A park brake mechanism arranged for selectively applying a braking force to a drive shaft, comprising: a fixed housing assembly disposed annularly about an end of said drive shaft; one end of said housing assembly having four cylindrical bores arranged in a generally rectangular configuration and opening axially toward an opposite end of the housing assembly; a fluid passage interconnecting the bores; a piston received in each bore; a threaded port leading axially into a diagonally disposed pair of the bores; screw means for selected threaded reception in each of said ports for stroking an associated piston; a disc pack located in the housing assembly and including first disc members fixed to the housing assembly and second disc members interleaved with the first disc members and fixed for rotation with the shaft; a pressure plate axially, shiftably mounted in the housing assembly adjacent a first end of the disc pack which is remote from the pistons; connecting pins respectively mounted with opposite ends engaging said pistons and the pressure plate; a plurality of coil compression springs mounted between said opposite end of said housing assembly and said pressure plate for effecting engagement of the brake in the absence of fluid pressure acting on the pistons; said housing assembly including a disc pack housing sandwiched between and separable from a spring housing and a piston housing, with the spring and piston housings defining said one and opposite ends of said housing assembly; releasable securing means including a first set of fasteners for securing only the disc pack and piston housings together in a subassembly and a second set of fasteners for fixing the spring and piston housings to the disc pack housing in full assembly; and said first set of fasteners including said screw means whereby said screw means is always readily available for stroking said pistons.

4,607,731

HYDRAULIC CONTROL SYSTEM FOR AUTOMATIC TRANSMISSION HAVING TORQUE CONVERTER WITH LOCK-UP MECHANISM

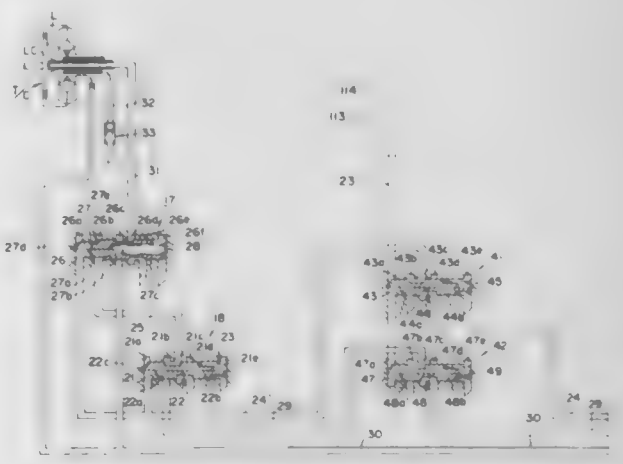
Kazuhiko Sugano, Zama, Japan, assignor to Nissan Motor Co., Ltd., Yokohama City, Japan

Filed Oct. 3, 1983, Ser. No. 538,278

Int. Cl.[4] F16H *45/02, 5/64*

U.S. Cl. 192—3.29

4 Claims



1. In a hydraulic control system for an automatic transmission for a vehicle having a torque converter with a lock-up clutch, the automatic transmission having a plurality of forward speed ratios including a m th speed ratio and a m+1 th speed ratio, where m is an integer, the hydraulic control system having a first portion wherein a fluid pressure is present during operation in one of the m th speed ratio and the m+1 th speed ratio and absent during operation in the other speed ratio, and a second portion wherein a fluid pressure is present during operation in each of the m th speed ratio and the m+1 th speed ratio;

a lock-up valve including a bore having a first signal pressure port and a second signal pressure port, and a spool movable within said bore between a clutch engagement position wherein the lock-up clutch is engaged and a clutch release position wherein the engagement of the lock-up clutch is released, and a spring biasing said spool toward the clutch release position, said first signal pres-

sure port being connected to the first portion of the hydraulic control system;

said spool of said lock-up valve having a first pressure acting area which communicates with said first signal pressure port so as to be exposed to the fluid pressure in the first portion of the hydraulic control system and being urged against said spring toward the clutch engagement position, said spool having a second pressure acting area which communicates with said second signal pressure port; and

auxiliary means responsive to the fluid pressure at said first signal pressure port of said bore of said lock-up valve for normally connecting said second signal pressure port to the second portion of the hydraulic control system, but draining said second signal pressure port when the fluid pressure at said first signal pressure port of said bore of said lock-up valve is higher than a first predetermined value;

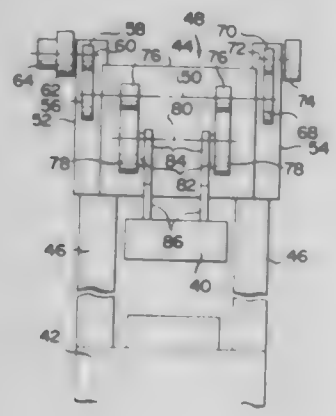
said spring of said lock-up valve being set such that said spool of said lock-up valve assumes the clutch engagement position when the fluid pressure at said first signal pressure port of said lock-up valve is higher than a second predetermined value that is higher than said first predetermined value.

4,607,732

DRIVE MECHANISM FOR A MECHANICAL PRESS

Naoaki Ikeoka, and Akihiko Nakano, both of Komatsu, Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Filed Feb. 4, 1983, Ser. No. 463,969
Claims priority, application Japan, Feb. 5, 1982, 57-14046[U]
Int. Cl.⁴ B30B *1/00*; F16D *67/00*
U.S. Cl. 192—12 R **1 Claim**



1. A drive mechanism for imparting up-and-down motion to a ram in a mechanical press wherein the ram is moved up and down relative to a bed, comprising:

(a) a drive housing immovably supported over the ram;

(b) a main shaft rotatably supported within said drive housing;

(c) a drive gear fixedly mounted on one end of said main shaft;

(d) a drive shaft rotatably supported in parallel relation to the main shaft;

(e) a drive pinion fixedly mounted on said drive shaft and meshing directly with said drive gear;

(f) a flywheel having a clutch and fixedly mounted on said drive shaft for imparting rotation to said main shaft via the intermeshing drive pinion and drive gear, the flywheel and clutch being disposed on one side of said drive housing;

(g) braking means disposed on the other side of said drive housing and acting on the other end of said main shaft, said braking means comprising a brake shaft rotatably mounted to said drive housing in parallel relation to said main shaft, gear means connecting said main shaft to said brake shaft, and a brake on said brake shaft;

(h) at least one pair of main pinions fixedly mounted on said main shaft intermediate its ends;

(i) at least one pair of main gears rotatable about a fixed axis within said drive housing and meshing with said pair of main pinions; and

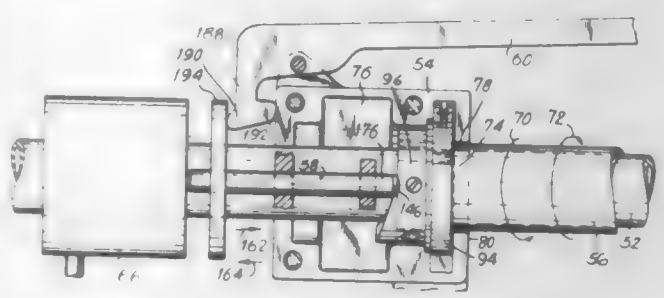
(j) means for translating the rotation of said main gears into said up-and-down motion of said ram, said translating means comprising eccentric means on said main gears, and means for operatively connecting said eccentric means to said ram.

4,607,733

THROTTLE AND BRAKE CONTROL APPARATUS

Peter W. Dodge, 334 E. 9th St., New York, N.Y. 10003

Filed Apr. 4, 1984, Ser. No. 596,739
Int. Cl.⁴ B60K *41/20*
U.S. Cl. 192—3 S **20 Claims**



1. A throttle and brake control apparatus for a vehicle having a handlebar, a brake system and a throttle system comprising housing means mounted on said handlebar; control grip means rotationally mounted on said handlebar, with said control grip means capable of a first direction of rotation and a second direction of rotation; brake system actuation means mounted on said control grip means and disposed to actuate said brake system responsive to rotation of said control grip means in said first direction of rotation; throttle system actuation means rotatably mounted on said control grip means, for operation of said throttle system responsive to rotation of said throttle system actuation means in said second direction of rotation; and driving connection means mounted on said brake system actuation means for driving said throttle system actuation means in said second direction of rotation when said control grip means is rotated in said second direction of rotation and allowing said throttle system actuation means to rotate freely on said control grip means when said control grip means is rotated in said first direction of rotation thereby enabling said control grip means to selectively control both said brake system actuation means and said throttle system actuation means responsive to the direction of rotation of said control grip means with said brake system actuation means comprising circular face cam means.

4,607,734

POWER TRANSMITTING DEVICE IN A COPYING MACHINE

Masahiro Watashi, Nara; Hiroshi Kimura, Osaka; Kiyoshi Shibata, Osaka; Masahiko Hisajima, Osaka, and Kiyonori Yamamoto, Osaka, all of Japan, assignors to Mita Industrial Co., Ltd., Osaka, Japan

Filed Jan. 24, 1984, Ser. No. 573,337
Claims priority, application Japan, Jan. 25, 1983, 58-9666[U]
Int. Cl.⁴ F16D *11/10*
U.S. Cl. 192—67 R **3 Claims**

1. A power transmitting device comprising:

a rotatable drive shaft having a first and second end;

a rotatable driven shaft coaxially aligned with said driving shaft and having a first end proximate said first end of said driving shaft;

a first coupling member connected to said first end of said driving shaft;

a second coupling member connected to said first end of said

driven shaft, said driving shaft and said driven shaft being axially displaceable between a first position wherein said first coupling member and said second coupling member are engaged to transmit power and a second position wherein said first coupling member is disengaged from said second coupling member;

first locking pieces formed on said second locking member to extend radially from the axis of said driven shaft;

second locking pieces formed on said first locking member to extend radially from the periphery thereof toward the axis of said driving shaft, adjacent second locking pieces being separated from each other by a first predetermined angle such that when said driving shaft and said driven shaft are in said first position, said driving shaft and said second coupling member rotate through an angle up to said first predetermined angle before respective first and second locking pieces engage to transmit power from said driving shaft to said driven shaft;

a driving sprocket rotatably mounted on said driving shaft; and

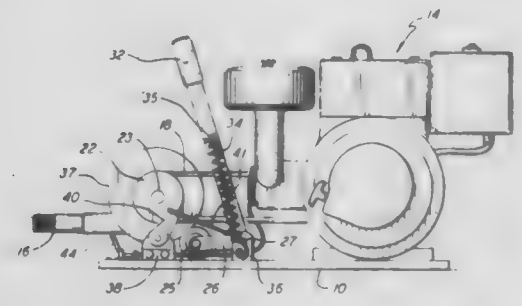
a spring connected at one end to said driving sprocket and at the other end to said driving shaft, for rotating said driving shaft through a second predetermined angle, said spring being compressed responsive to said driving shaft and said driven shaft being axially displaced to said first position.

4,607,735

POWER UNIT FOR SELF-UNLOADING WAGON

Timothy W. Coon, Middle Lake Rd., DeRuyter, N.Y. 13052

Filed May 9, 1984, Ser. No. 608,569
Int. Cl.[4] F16D *67/00*
U.S. Cl. 192—11 9 Claims



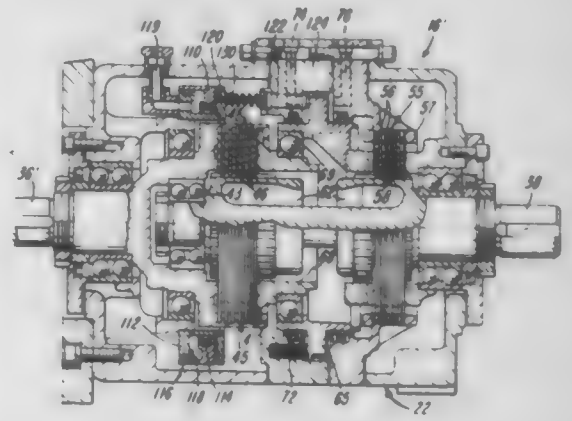
1. In an auxiliary power device to be used in place of a standard vehicle power take-off, and particularly for use with a self-unloading wagon, a power source having a drive shaft, a gear reduction unit having a driven shaft and an output drive shaft, the reduction unit output drive shaft having a fitting removably connectable to a driven input member of the self-unloading wagon, a first pulley fixed on the power source drive shaft, a second pulley fixed on the driven shaft of the gear reduction unit, a drive belt normally loosely connecting said first and second pulleys, a clutch mechanism movable between engaged and disengaged positions, the mechanism being operable in engaged position to tighten the belt so that the power source drives the gear reduction unit when the power source is operating, brake means for the reduction unit pulley, means operable when the clutch mechanism is in disengaged position to actuate the brake means whereby rotation of the reduction unit pulley is prevented, and actuator means having first and second stable positions, in said first stable position positively holding said clutch mechanism in said engaged position and in said second stable position positively holding said clutch mechanism in said disengaged position and positively actuating said brake means, so that an operator can maintain said power take-off device in an engaged or braked condition without need to remain in attendance at the device.

4,607,736

MULTIPLE SPEED DRIVE SYSTEM

Reginald D. Kelley, Troy, Mich., assignor to Force Control Industries, Inc., Fairfield, Ohio

Continuation-in-part of Ser. No. 284,479, Jul. 17, 1981, Pat. No. 4,463,841. This application Oct. 17, 1983, Ser. No. 542,269
The portion of the term of this patent subsequent to Aug. 7, 2001, has been disclaimed.
Int. Cl.[4] F16D *67/02*
U.S. Cl. 192—18 A 14 Claims



1. An oil shear clutch-brake unit including a housing adapted to contain a supply of oil, an input drive member and an output drive member supported for rotation within said housing on a common axis, means including a series of interfitting clutch plates and discs within said housing and arranged for selectively coupling said input drive member to said output drive member, means including a series of interfitting brake plates and discs within said housing and arranged for selectively braking said output drive member relatively to said housing, actuating means including a first non-rotating piston supported within said housing and movable axially between a clutch engaging position clamping said clutch plates and discs together and a brake engaging position clamping said brake plates and discs together and through a neutral position, said actuating means further including a plurality of circumferentially spaced and axially extending compression springs urging said first piston axially toward said brake engaging position, a second non-rotating piston disposed within said housing axially of said first piston, means responsive to movement of said second piston and forming a stop for positioning said first piston in said neutral position, and means for circulating oil within said housing outwardly between said clutch plates and discs and said brake plates and discs.

4,607,737

HYDRAULICALLY OPERATING RELEASE ARRANGEMENT, ESPECIALLY FOR A VEHICLE CLUTCH

Rüdiger Hans, Niederwerrn, and Werner Kotzab, Schweinfurt, both of Fed. Rep. of Germany, assignors to SKF Kugellagerfabriken GmbH, Schweinfurt, Fed. Rep. of Germany

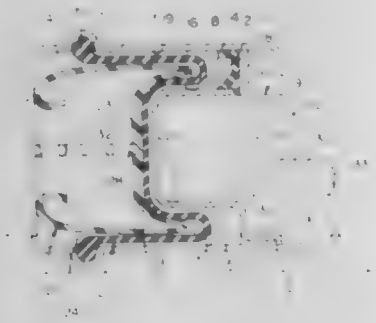
Filed Jul. 28, 1983, Ser. No. 518,076

Claims priority, application Fed. Rep. of Germany, Jul. 28, 1982, 8221436[U]

Int. Cl.[4] F16D *25/08*

U.S. Cl. 192—88 A

5 Claims



1. In an hydraulically operating release arrangement comprised of a housing having a pressure chamber sealed by a roll membrane having an inner surface facing inwardly of said chamber and defining an axis, a biasing means for applying an axial biasing force to said membrane, and a clutch bearing arranged to be axially displaceable in the housing; the improvement wherein a support body is provided in the pressure chamber, the support body abutting said inner surface of the roll membrane with said biasing force applied by said biasing means and said body including means for resiliently engaging a bottom surface of the pressure chamber facing said and inner surface in the axial direction.

4,607,738

FRICTION CLUTCH COVER ASSEMBLIES

Patrick Muller, Sevran, France, assignor to Automotive Products plc, Leamington Spa, England

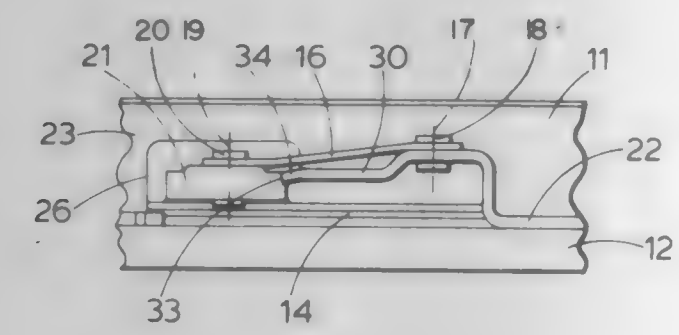
Filed Nov. 13, 1984, Ser. No. 670,608

Claims priority, application France, Nov. 10, 1983, 83 17971

Int. Cl.[4] F16D *13/69*

U.S. Cl. 192—109 R

10 Claims



1. A friction clutch cover assembly comprising:
a cover having inner and outer surfaces;
first positions of attachment on the cover;
a pressure plate;
second positions of attachment on the pressure plate;
flexible straps, each of which extends substantially tangentially from a respective one of said first positions of attachment to a respective one of said second positions of attachment, said straps allowing a limited axial movement of the pressure plate relative to the cover and providing for the transfer of torque between the cover and the pressure plate;
a diaphragm spring acting against the pressure plate to bias it away from the cover;
and abutment surfaces on the cover, each being adjacent to a respective flexible strap and disposed intermediate the first and second positions of attachment of said strap, and said abutment surfaces being so positioned that in the event of excessive pressure plate movement away from the cover each strap will intermediate its respective first and second positions of attachment abut its respective abutment surface to limit said movement.

4,607,739

COIN ACTIVATED TIMER MECHANISM

Bernhard Kaiser, Villingen-Schwenningen, Fed. Rep. of Germany, assignor to Kienzle Apparate GmbH, Villingen, Fed. Rep. of Germany

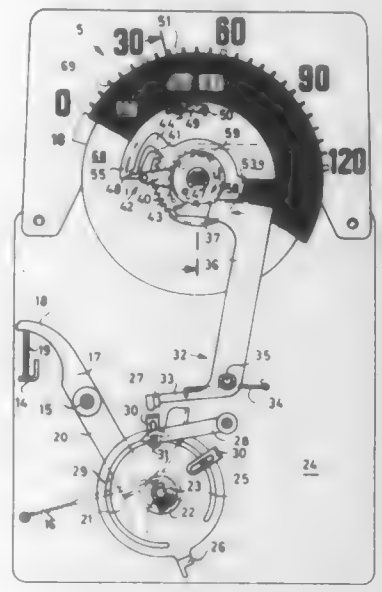
Filed Apr. 16, 1984, Ser. No. 601,056

Claims priority, application Fed. Rep. of Germany, Apr. 19, 1983, 3314077

Int. Cl.[4] G07F *17/24*

U.S. Cl. 194—227

9 Claims



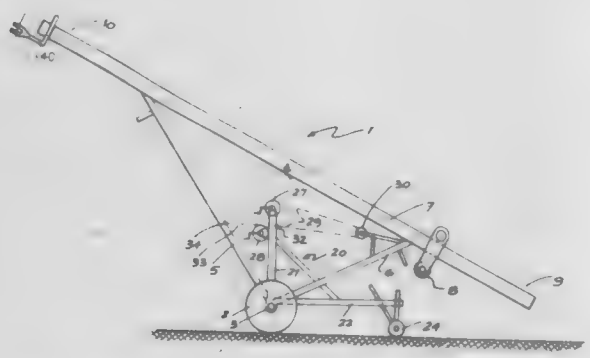
5. A coin activated timer mechanism particularly for use as a parking meter comprising:
a coin receiving device for receiving coins for actuating said mechanism;
sensing means for sensing the value of said coins received by said coin receiving device;
time indicator means including a timer disc rotatable in individual angular steps for providing an indication of a time period dependent upon the value of coins received by said coin receiving device;
clockwork means for returning said time indicator means to a position indicating expiration of said time period;
a function lever for effecting actuation of said timer disc through said individual angular steps; and
a transmission lever interposed between said sensing means and said function lever for actuating said function lever in response to said sensing means;
said function lever being driven by said transmission lever to a position at which said time indicator means is released with said timer disc being at the same time guided to a position indicating a determined time allotment;
said function lever being supported upon a hub and being adjustable in the circumferential direction in variable angular positions;
said mechanism further comprising detachable connecting means for fixing said function lever;
said hub of said function lever having a coaxially extending cutout portion into which a carrier cam of said time indicator means projects.

4,607,740

MOBILE GRAIN AUGER

John E. Jelbart, "Rainbow", Pleasant Hills, New South Wales 2658, Australia

Filed Sep. 19, 1984, Ser. No. 652,090
Claims priority, application Australia, Sep. 19, 1984, PG1468
Int. Cl.[4] B65G *41/00*
U.S. Cl. 198—320 5 Claims



1. A mobile grain auger comprising an elongated cylindrical casing having an intake end and a discharge end, a helicoidal auger flight extending through the casing, a motor to rotate the flight to convey grain from the intake end to the discharge end of the casing, two legs defining a calliper frame and having their divergent ends extending upwardly and supporting the casing at spaced positions along its length, a pair of coaxial ground wheels supporting a horizontal pivotal axis about which the frame is tiltable in a vertical plane, first adjustment means formed by a first winch and cable operable to change the calliper angle, a lever including vertically and horizontally extending limbs fulcrummed to said horizontal pivotal axis and a reaction member on said horizontally extending limb positioned to engage the ground between the common axis of the wheels and the intake end of the casing, said vertically extending limb being disposed between said legs of said calliper frame, and tilt adjustment means formed by a second winch and cable connected between the calliper frame and the lever and operable to vary the slope of the casing in a a controlled manner.

4,607,741

ADJUSTABLE ALIGNMENT MECHANISM FOR A POWER REINFORCING MACHINE

Richard M. Elliott; Larry L. Holland, both of Beverly; Thomas J. Gilligan, III, Danvers; John F. Martin, Essex, and Lawrence P. Ciccia, Medford, all of Mass., assignors to USM Corporation, Farmington, Conn.

Continuation of Ser. No. 557,453, Dec. 2, 1983, abandoned. This application Nov. 27, 1985, Ser. No. 802,617
Int. Cl.[4] B65G *21/20*
U.S. Cl. 198—345 15 Claims

1. An adjustable guide arrangement for aligning a substrate on a movable base on a rotatable transport mechanism of a deposition machine comprising:

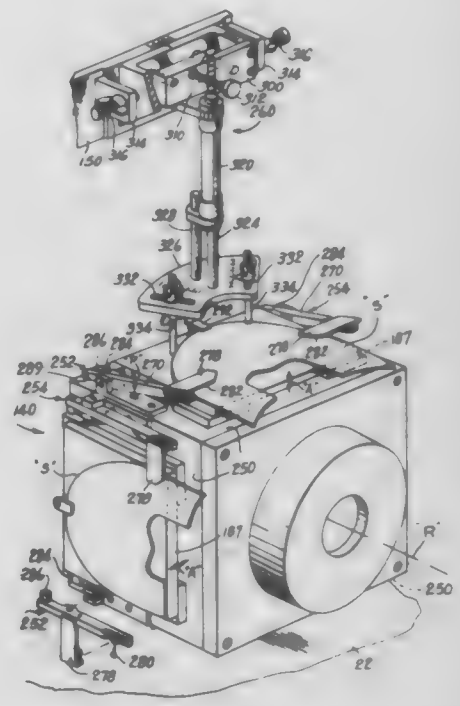
a housing arranged on a frame member of the machine,

a rotatable transport mechanism which supports and transports a substrate,

guide pin support means for aligning a substrate on the movable base of the transport mechanism, including a plurality of vertically extending guide pins, means having horizontally elongated apertures for receiving said guide pins at a variety of horizontal locations,

means for securing said guide pin means at a selected horizontally location within said elongated aperture means and for varying the lowermost location of said vertically extending guide pins relative to said apertured means and said rotatable transport mechanism,

means for moving said guide pin support means from and towards the rotatable transport mechanism, said reciprocably actuated means being movable towards and away from the frame member of the machine by actuation of adjustment means in said housing, said adjustment means, comprising a threaded shaft adapted to move said reciprocably actuatable means with respect to said housing, when said threaded shaft is rotated therebetween.

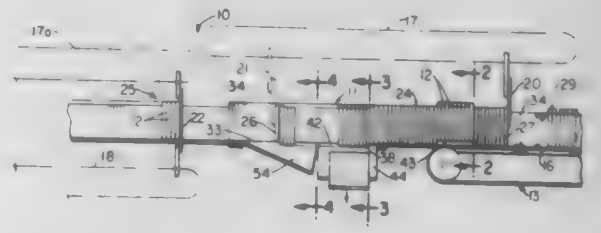


4,607,742

CONVEYING APPARATUS FOR CRACKERS AND RELATED OBJECTS

Edward Curley, Toms River, N.J., assignor to Sunshine Biscuits, Inc., New York, N.Y.

Filed Apr. 24, 1985, Ser. No. 726,550
Int. Cl.[4] B65G *47/24*
U.S. Cl. 198—398 4 Claims



1. In a substantially horizontal conveying trough for slidably supporting a plurality of polygonal objects with some such objects vertically oriented while others are horizontally oriented, which the trough has a trough bottom, first and second vertical sides extending from the bottom and an aperture in the trough bottom through which objects can exit, the improvement comprising

(a) an aperture having edges along the trough and edges across the trough, one of said edges positioned with respect to the first vertical side to provide no area of support for an object in the portion of the trough bottom between said first vertical side and said first mentioned edge and the other edge spaced from the second vertical side to provide a support surface for the object;

(b) the first side wall extending a sufficient distance above the trough bottom such that objects in the vertical position are supported by the side wall and the support surface in such a way that the objects rotate to an extent that only a portion of the object moves to a position below the aperture and further such that horizontally oriented objects are supported only on the support surface causing them to exit completely through the aperture; and

(c) ramp means positioned extending from the downstream end of the aperture downwardly from the bottom to a position sufficiently below the aperture such that the portion of the object which moves below the trough bottom as the object is translated over the aperture, en-

gages the ramp means to cause said moving object to be lifted upwardly

whereby vertically oriented objects as moved along the trough drop downwardly partially into the aperture as they first move over the aperture and, as they further move, engage the ramp means to bring the objects up and onto the trough bottom while horizontally positioned objects drop through the aperture as they progress over it.

4,607,743

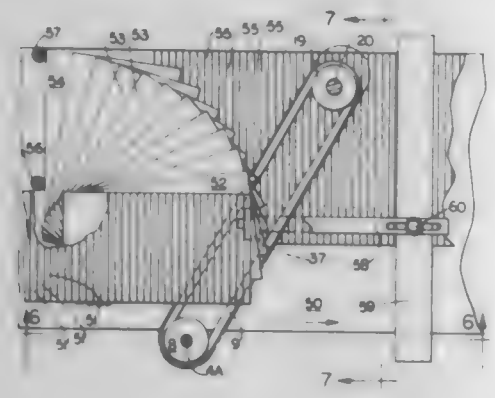
METHOD AND APPARATUS TO ROTATE MOVING OVERLAPPING STACKED BOXES

Ormand K. Elam, 8414 Linn Rd., Middletown, Ohio 45042

Filed May 14, 1984, Ser. No. 610,027

Int. Cl.[4] B65G *47/24*

U.S. Cl. 198—415 **10 Claims**



1. A method of rotating the paper of a stream of moving overlapping stacked paper from one position to another on a conveyor belt comprising:

positioning a rotator having a continuous article contacting surface substantially over said conveyor belt at an obtuse angle with respect to the direction of travel of said conveyor belt;

driving said conveyor belt and said rotator;

initially placing a portion of said stream of overlapping stacked paper on top of said continuous, article contacting surface; and

advancing said stream of overlapping stacked paper on said conveyor belt so that the paper of said stream is progressively rotated by said continuous, article contacting surface from its original position to a second rotated position which is out of contact with the rotator causing the paper to fall back onto the conveyor belt.

4,607,744

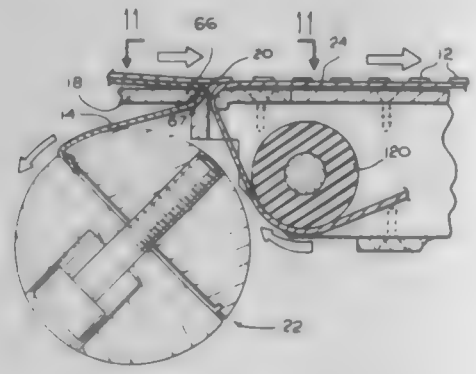
METHOD AND APPARATUS FOR REMOVING INTEGRATED CIRCUIT CHIPS FROM A FLEXIBLE CARRIER

Chong-Il Pak, 3610 Bassett St., #5, Santa Clara, Calif. 95050

Filed Sep. 10, 1984, Ser. No. 649,080

Int. Cl.[4] B65G *47/31*

U.S. Cl. 198—461 **6 Claims**



1. An apparatus for removing integrated circuit chips adhering to an upper surface of a flat, flexible carrier, said apparatus comprising:

base means;

a flat support surface coupled to said base means, said support surface having a first end and a second end;

continuous conveyor means coupled to said base means, said conveyor means having a flat transport surface which is substantially coplanar with said support surface, said transport surface being adapted to move in a direction from a first end of said conveyor means to a second end of said conveyor means;

a separation member coupled to said base means proximate said second end of said support surface, said separation member having a separation edge at an upper surface thereof which is substantially coplanar with said support surface and said transport surface, wherein said separation edge and said first end of said conveyor means are separated by a narrow gap;

take-up means coupled to said base means below said support surface, said take-up means being adapted to grip said carrier and exert a first force on said carrier to pull it through said narrow gap such that a lower surface of said carrier engages said separation edge; and

tensioning means engaged with said support surface, said tensioning means being adapted to exert a second force on said carrier which opposes said first force exerted by said take-up means;

whereby pulling said carrier past said separation edge by said take-up means peels said carrier away from said integrated circuit chips to separate said integrated circuit chips from said carrier, said separated integrated circuit chips being deposited by their forward motion on said transport surface of said conveyor means across said narrow gap.

4,607,745

PENDULUM-MOUNTED BUCKET WITH CONTROL CAM FOR A BUCKET CONVEYOR

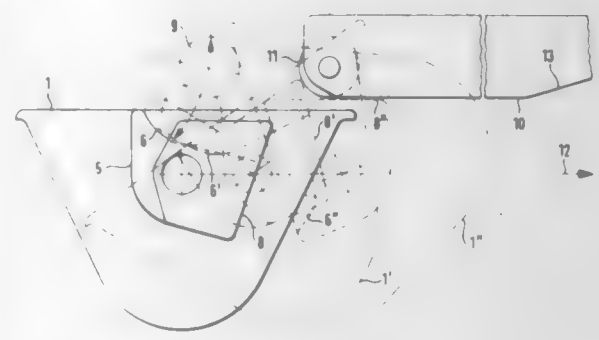
Hans-Holger Wiese, Burgwedel, Fed. Rep. of Germany, assignor to Hans-Holger Wiese GmbH & Co., Burgwedel, Fed. Rep. of Germany

Filed Mar. 26, 1984, Ser. No. 593,625

Claims priority, application Fed. Rep. of Germany, Mar. 30, 1983, 3311544

Int. Cl.[4] B65G *47/40*

U.S. Cl. 198—706 **7 Claims**



1. In a bucket conveyor with two lateral traction elements, a bucket which is pendulum-mounted between the traction elements for translatory movement in a conveying direction and for pivotal movement about an axis extending transversely of said conveying direction, said bucket having a first cam face which extends counter to said conveying direction and slopes upwardly and rearwardly from a point ahead of said axis, as considered in said conveying direction; a cam provided on said bucket and having a substantially straight second cam face; a control member adjacent to the path of movement of the bucket and movable downwardly into engagement with said first cam face to thereby tilt the bucket as a result of movement of said first cam face relative to said control member; and a stationary retaining member adjacent to the path of movement

of said bucket downstream of said control member to be engaged by said second cam face upon at least partial tilting of the bucket by said control member, said retaining member including a roller at the upstream end of said second cam face.

4,607,746

PACKAGING TUBE

Russell A. Stinnette, Plantation, Fla., assignor to Cordis Corporation, Miami, Fla.

Filed Sep. 25, 1985, Ser. No. 779,957
Int. Cl.[4] B65H *75/28*
U.S. Cl. 206—53 10 Claims



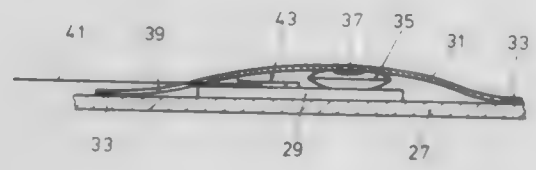
1. A tube for packaging elongated, flexible members, which tube comprises: a flexible tube body capable of being coiled; a projecting member extending outwardly from said tube body and longitudinally along at least a substantial portion of the length of said tube body; and a concave member extending along at least a substantial portion of said tube body in a diametrically opposed position from said projecting member, said concave member being positioned and proportioned to receive said projecting member of another portion of said tube in retentive relation when said tube is coiled.

4,607,747

PACKAGING FOR A PRODUCT AS WELL AS USE OF THE SAME

Andi Steiner, Johannesgasse 3, 8005 Zurich, Switzerland

Filed Feb. 4, 1985, Ser. No. 698,372
Claims priority, application Switzerland, Sep. 12, 1984, 4363/84
Int. Cl.[4] B65D *81/00*
U.S. Cl. 206—232 26 Claims



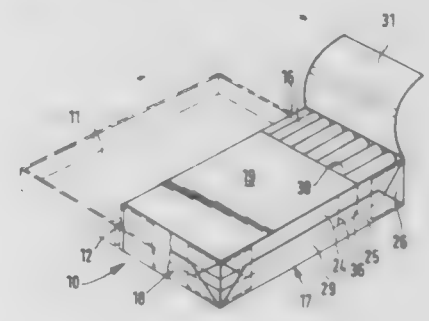
1. A package for a product comprising:
a container having a space therein for receiving said product and comprising interconnected wall portions and including a cover wall portion movable between closed and open positions and a mounting wall portion at least in part formed of resiliently yieldable material;
a substantially flat device having opposite sides and including a battery powered signal generator means for generating at least one of an accoustical signal or an optical signal and switch means for actuating said signal generator means;
means for connecting said cover wall portion and said switch means so that said signal generator means generates a signal when said cover wall portion is moved to said open position;
and means for mounting said device on said mounting wall portion and comprising two parts of said mounting wall portion which are interconnected with each other and which are resiliently and elastically biased toward each other and engage at least portions of said opposite sides of said device.

4,607,748

SHOULDER BOX FOR CIGARETTES OR THE LIKE

Heinz Focke, Verden, Fed. Rep. of Germany, assignor to Focke & Co., Verden, Fed. Rep. of Germany

Filed Aug. 15, 1984, Ser. No. 640,918
Claims priority, application Fed. Rep. of Germany, Aug. 16, 1983, 3329454
Int. Cl.[4] B65D *5/72*
U.S. Cl. 206—254 4 Claims



1. A cigarette pack comprising:
a shoulder box having a box portion (10) for cigarettes said box portion having a shoulder part (13), and a lid (11) pivotably attached to said box portion said lid surrounding said shoulder part when in the closed position; and
an inner wrapping for encasing the cigarettes to be stored in said box portion, said inner wrapping being shaped to fit within said box portion and having longitudinally extending first and second side walls (29, 29), transversely extending first (28) and second (20) end walls, a lower wall (21) extending in the lengthwise direction from said first end wall to said second end wall and in the widthwise direction from said first side wall to the second side wall, and an upper wall (19) extending in the widthwise direction from said first side wall to said second side wall and in the lengthwise direction from said first end wall a distance less than the length of said lower wall to form a cigarette removal opening (30), said opening extending longitudinally from the transverse edge of said upper wall furthest from said first end wall to said second end wall and transversely from said first side wall to said second side wall, and a closing flap (31) extending longitudinally from said second end wall a distance greater than the longitudinal dimension of said opening to form an edge strip (32) which at least partially overlaps said upper wall;
wherein each of said side walls (29) is comprised of first (24) and second (25) overlapping side tab portions said first side tab portion being an extension of said upper wall, said second side tab portion being an extension of said lower wall and wherein said first tab portion is provided with a Z-shaped fold in its longitudinal direction, said fold having a longitudinal dimension equal to that of said edge strip.

4. A cigarette pack comprising:
a shoulder box having a box portion (10) for cigarettes said box portion having a shoulder part (13), and a lid (11) pivotably attached to said box portion said lid surrounding said shoulder part when in the closed position; and
an inner wrapping for encasing the cigarettes to be stored in said box portion, said inner wrapping being shaped to fit within said box portion and having longitudinally extending first and second side walls (29, 29), transversely extending first (28) and second (20) end walls, a lower wall (21) extending in the lengthwise direction from said first end wall to said second end wall and in the widthwise direction from said first side wall to the second side wall, an an upper wall (19) extending in the widthwise direction from said first side wall to said second side wall and in the

lengthwise direction from said first end wall a distance less than the length of said lower wall to form a cigarette removal opening (30), said opening extending longitudinally from the transverse edge of said upper wall furthest from said first end wall to said second end wall and transversely from said first side wall to said second side wall, and a closing flap (31) extending longitudinally from said second end wall a distance greater than the longitudinal dimension of said opening to form an edge strip (32) which at least partially overlaps said upper wall;

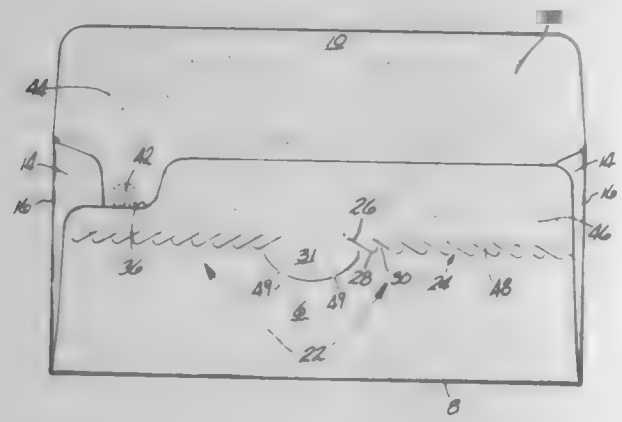
wherein said first end wall (28) is comprised of partially overlapping first (22) and second (23) end tab portions said first end tab portion being an extension of said upper wall, said second end tab portion being an extension of said lower wall and said second end wall is an extension of said lower wall.

4,607,749

EASY OPEN ENVELOPE

Lewis E. Jacob, Topeka, Kans., assignor to American Envelope Co., Chicago, Ill.

Filed Apr. 1, 1985, Ser. No. 718,113
Int. Cl.[4] B65D *27/16, 27/34*
U.S. Cl. 206—610 **5 Claims**



1. An easy open envelope comprising:

(a) a front wall;

(b) a back wall connected to said front wall along a bottom fold line;

(c) side panels connected to said front wall along side fold lines, said side panels being adhesively secured to said back wall;

(d) a closure flap connected to said front wall along a top fold line, said closure flap having a bottom free edge which is substantially parallel to said bottom fold line;

(e) an array of cut scores formed in said back wall, said array extending in a line which is substantially parallel to said bottom fold line, said cut scores being separated from each other by rupturable webs;

(f) adhesive means operable to secure said closure flap to said back wall in a closed position, said adhesive means having a lower edge which is spaced upwardly from said webs; and

(g) said closure flap overlying said array of cut scores completely when said closure flap is in said closed position.

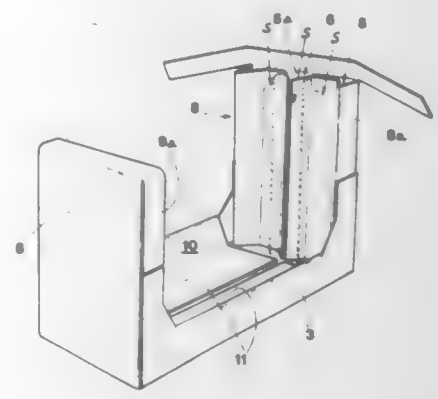
4,607,750

CONTAINER FOR RECEIVING VARIOUS ARTICLES, IN PARTICULAR CYLINDRICAL ARTICLES

Dante Valenti, Imola, Italy, assignor to IN-PAK s.r.l., Imola, Italy

Filed Feb. 27, 1985, Ser. No. 706,172
Claims priority, application Italy, Mar. 6, 1984, 4803/84[U]
Int. Cl.[4] B65D *85/20*
U.S. Cl. 206—443 **5 Claims**

1. Improved container for receiving various articles, in particular cylindrical articles, formed from a single flat blank having longitudinal and transverse dimensions with slits crosswise of the longitudinal dimension and longitudinal and transverse lines of articulation, said longitudinal and transverse lines folded to define a bottom, vertical sides and vertical ends of the container, each vertical edge of said ends having a vertical line of articulation folded to form a limb, of a height corresponding to that of said ends, said limb being folded towards an inside face of each end to define a first strengthening edge, a central area glued to said inside face of said end and a terminal zone, with said first strengthening edge comprising a vertical strip positioned parallel to and inside the corresponding side; an upper transverse edge of each end articulating a corresponding



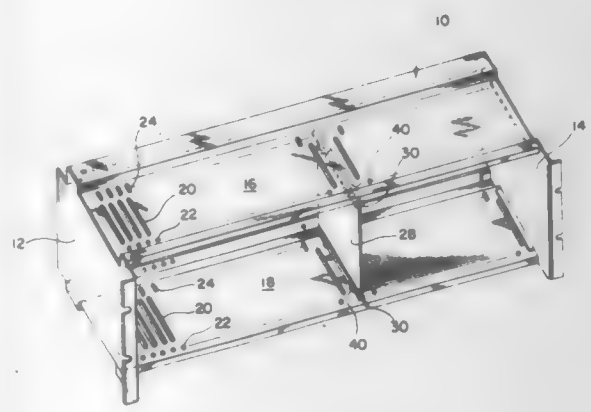
element, constituted by a central section, resting on upper extremities of the pair of limbs attached to said end, and two extremity sections, each turned downwardly in glued contact with the corresponding vertical strip of said strengthening edge; each side being provided with two end pieces placed in glued contact with the corresponding vertical strip of said strengthening edges; each side being centrally folded in the region of the upper edge to form an area constituted by a first part, placed in contact with the inside face of said side and a second part, articulated longitudinally to the first part, glued to said bottom.

4,607,751

ANTIVIBRATION GUIDES FOR SECURING PRINTED CIRCUIT CARDS

William J. Straccia, Sr., Allentown, Pa., and Dale L. Smous, Coral Springs, Fla., assignors to Electro-Space Fabricators, Inc., Topton, Pa.

Filed Apr. 8, 1985, Ser. No. 721,860
Int. Cl.[4] A47G *19/08*
U.S. Cl. 211—41 **8 Claims**



1. A card guide for securing P.C. cards in a card rack comprising, an elongated guide composed of plastic material having an elongated base portion and a pair of vertical side walls defining a U-shaped channel, said U-shaped channel being of uniform width and extending substantially the full length of said guide, said side walls having diverging wall portions forming at least two antivibration buffers with enlarged spaces formed between said diverging wall portions, the outer widths of said diverging wall portions being substantially wider than the outer width of the portions of the side walls forming said U-shaped channel, and the width of each of said enlarged spaces being substantially greater than the uniform width of

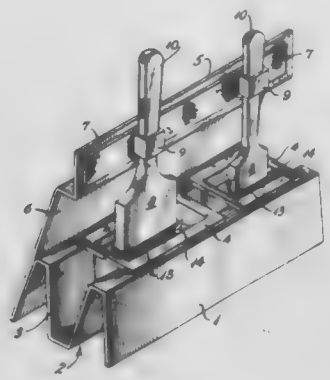
said U-shaped channel, a pair of vibration dampeners within each of said enlarged spaces, each of said dampeners having card-engaging surfaces spaced apart by a distance less than the uniform width of the U-shaped channel.

4,607,752

PAINT BRUSH CLEANING RACK

Lionel Sherrow, 737 Dale Rd., Huntingdon Valley, Pa. 19006

Filed Aug. 3, 1983, Ser. No. 519,961
Int. Cl.⁴ A47F *7/00*
U.S. Cl. 211—65 **5 Claims**



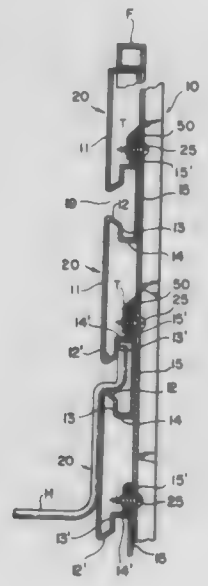
1. A rack for cleaning paint brushes comprising:
(a) a horizontally elongated, free standing base, said base including cup retaining means for retaining at least one horizontally elongated cup;
(b) at least one horizontally elongated cup removably supported in said cup retaining means;
(c) paint brush holding means mounted on said base extending upwardly thereof, an offset portion of said paint brush holding means located directly above said cup retaining means when said holding means is mounted on said base, said offset portion provided with paint brush mounting means for holding a paint brush in a vertical position;
whereby at least one paint brush may be suspended from said paint brush mounting means to a desired depth in said cup.

4,607,753

SLOTTED WALL MERCHANDISE DISPLAY PANEL

John R. Radek, Hinsdale, Ill., assignor to Ready Metal Manufacturing Company, Chicago, Ill.

Continuation-in-part of Ser. No. 508,571, Jun. 28, 1983, abandoned. This application Jun. 29, 1984, Ser. No. 626,532
Int. Cl.⁴ A47F *5/08*
U.S. Cl. 211—87 **11 Claims**



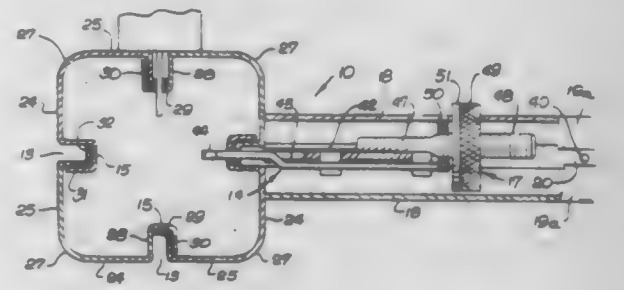
1. A slotted panel for display of merchandise disposed on cantilever hangers of all types detachably mounted on the front of said panel, and said panel detachably connected to supporting means therefor at the rear thereof, comprising
(a) a plurality of superposed horizontally extending substantially parallel slats of rigid sheet material, each formed of trapezoidal section at the front thereof, so that the bases of the trapezoidally contoured slats lie in a common vertical plane with the opposite edges of each of the bases bent at acute angles rearwardly therefrom to form divergent portions between adjacent slats and corresponding rearwardly flaring slots therebetween,
(b) short lengths of said rigid sheet material extending from said divergent portions in vertical planes parallel to said bases,
(c) extensions from said short lengths defining cavities of substantially rectangular section between adjacent slats and said extentions terminating in vertical leaf portions with the extremities of adjacent slat vertical leaf portions in juxtaposition, and
(d) detachable fastening means for interconnecting the juxtaposed extremities of adjacent slats, and
(e) said panel adapted to receive a cantilever merchandise hanger having a terminal member adapted to be seated within any one of said slots at any point of the length thereof.

4,607,754

MERCHANDISING DISPLAY SYSTEM AND METHOD

Morris A. Wolf, 7048 Macapa Dr., Los Angeles, Calif. 90068

Filed May 19, 1983, Ser. No. 496,260
Int. Cl.⁴ A47F *5/00*
U.S. Cl. 211—183 **14 Claims**



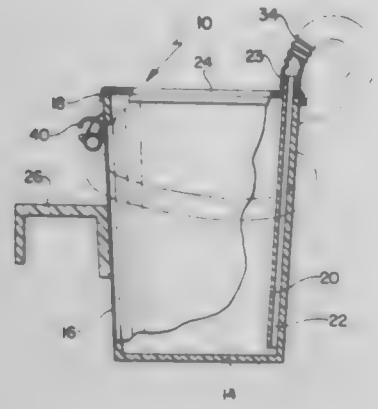
1. In a decorative post for a display system, said post being substantially square in cross-section and having a longitudinal groove in each of its sidewalls the improved construction comprising:
four substantially identical elongated pieces of strip material forming four corner sections of said post and each composed of a metal strip, a decorative outer surface on said metal strip, and an outer protective strip overlying and covering said outer surface, said outer protective strip being removably joined to said decorative outer surface;
each of said elongated sections having a central portion constituting two longitudinal side surfaces joined together by a ninety-degree bend, a U-shaped, outwardly opening channel extending along one side of said central portion and having a bottom wall that is offset inwardly from and substantially parallel to the adjacent side surface, and an L-shaped bend extending along the other side of said central portion and having a free edge portion that is offset inwardly from and substantially parallel to the adjacent side surface;
said L-shaped bend on each corner section projecting into the U-shaped channel of the adjacent corner section on one side, and also receiving in its own U-shaped channel the L-shaped bend of the corner section on the other side;
fastening means joining said L-shaped bends to said U-shaped channels to hold said corner sections together;
and means defining a series of slots in said channels each extending through both said free edge portion and said bottom wall for attaching said post to other structural members, said protective strips being removable from said central portions to expose said decorative outer surfaces.

4,607,755

CHILDREN'S DRINKING VESSEL

William F. Andreozzi, P.O. Box 479, Greenville, R.I. 02828

Filed Nov. 15, 1984, Ser. No. 672,088
Int. Cl.[4] A47G *19/22*; B65D *23/00*
U.S. Cl. 215—1 A
5 Claims



1. A children's drinking vessel for mounting on a fixed member in a moving vehicle, comprising a container in which a liquid to be consumed by a child user of the vessel is received, said container including a bottom wall, a cylindrical body portion joined to said bottom wall and an upper rim joined to the uppermost end of said body portion, a flexible straw disconnectably mounted on said container and having an inner end that communicates with the liquid located within said container, said straw being constructed and arranged such that the outer end thereof is free and is extendable substantially beyond said container for being received in the mouth of a child user in a position of use, said straw being movable from the extendable position in the position of use to an encircling position around the outer surface of the side wall of said container to a position of non-use, clip means fixed to the outer surface of the side wall of said container normally on the side thereof opposite to the location of the straw when it is in the position of use, said clip means receiving an end portion of the outer end of said straw in a fixed position for locating said straw in the non-use position thereof on said container, and a bracket secured to the side wall of said container for locating said container in an upright fixed position on said fixed member in said vehicle, wherein said container is prevented from tipping in said moving vehicle while said child user drinks the liquid in said container through the straw as extended in the position of use, said bracket being located on said container side wall and spaced from the upper rim of the container to enable the straw to encircle said container and be held in the non-use position by location of the end portion of the straw in said clip means.

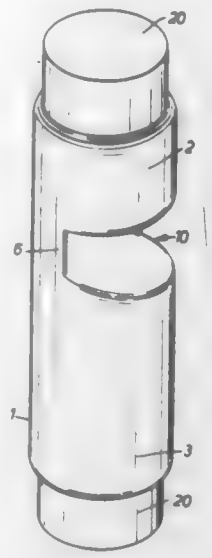
4,607,756

CONTAINER

Murray G. Courtman, Auckland, New Zealand, assignor to Brent William Gibson, Auckland, New Zealand

Filed Dec. 3, 1984, Ser. No. 677,734
Claims priority, application New Zealand, Dec. 5, 1983, 206480
Int. Cl.[4] B65D *1/04*
U.S. Cl. 215—6
7 Claims

1. A container comprising: at least two integrally formed but separate chambers; at least one chamber being above another to produce upper and lower chambers; a separate opening for each chamber; said chambers being separated one from the other by a mouth portion defining an at least partial spacing between said chambers; said mouth portion defining an open face between adjacent ends of said chambers and a rear joining wall of said container and having upper and lower faces defining, respectively, lower and upper ends of said upper and lower chambers.

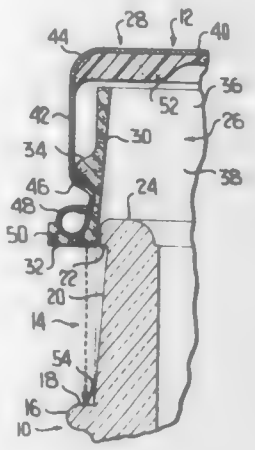


4,607,757

ANTI-SPIN INTERFERENCE FIT OF PRESS-SEAL INSERT AND METHOD OF ASSEMBLY

Frank H. Lecinski, Harwood Heights, Ill., assignor to Continental White Cap, Inc., Northbrook, Ill.

Filed Apr. 2, 1985, Ser. No. 719,159
Int. Cl.[4] B65D *41/08*
U.S. Cl. 215—246
9 Claims



6. A closed container assembly comprising a container having a neck finish including a circular cross sectional surface disposed in recessed relation between and defined by opposed axially spaced shoulders, and a preassembled insert and closure assembly closing said container, said insert and closure assembly comprising a formed plastic material insert telescoped over said surface between said shoulders, said insert having a shrink fit on said surface with said shrink fit being one effected by a thermal reaction within said plastic material sufficient to reduce the size of said insert to be less than its as formed size, and a closure telescoped over said insert and having a seal with said neck finish, said closure having a rotational interlock with said insert.

4,607,758

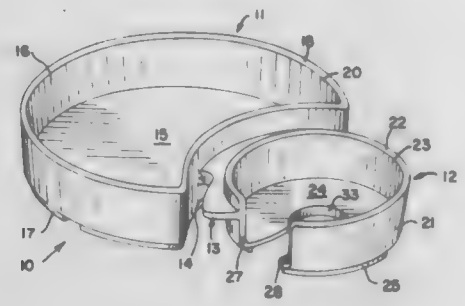
SERVING TRAY

Kenneth V. Stevens, Brooklyn, N.Y., assignor to Grainware Company, Chicago, Ill.

Filed Feb. 7, 1985, Ser. No. 699,081
Int. Cl.[4] A47G *19/03, 19/06*
U.S. Cl. 220—23.83
4 Claims

1. In a stackable serving tray having a food retaining portion, a liquid container retaining portion, and being adapted for stable positioning on a flat surface of in a user's grasp when

both food and a liquid container are positioned thereon, said food retaining portion and said liquid container retaining portion both including substantially horizontal bottom walls and foot means on said bottom walls for providing both a planer bottom mounting surface for said tray and a nesting surface for retaining said tray in stackable relation above any like tray aligned subjacently thereto, said horizontal bottom wall of said



liquid container portion including a first sidewall extending generally upwardly from a substantial portion of the periphery thereof for retaining a standard cup or flat bottom glass thereon, and slot means on said horizontal bottom wall of said liquid container retaining portion extending from the center thereof outwardly to define an opening in said sidewall for receiving and retaining a stemware glass when same is positioned thereon.

4,607,759

SEALING CAP HAVING FRANGIBLE MEANS

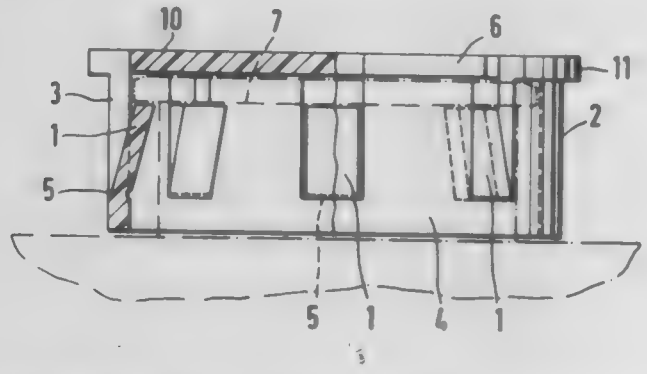
Klaus Boetzkes, Heiss-Str. 6, 8940 Memmingen, Fed. Rep. of Germany

Filed May 8, 1985, Ser. No. 731,718

Claims priority, application Fed. Rep. of Germany, May 14, 1984, 3417812

Int. Cl.[4] B65D *39/06, 47/02, 49/00*

U.S. Cl. 220—266 **13 Claims**



1. A sealing cap made from plastic material for use on valves in keg-barrels wherein a disc is provided for mounting a valve on a barrel, comprising:

a cover plate;

a cylindrical guideway depending from said cover plate;

a plurality of locking elements on said cylindrical guideway biased inwardly of said guideway for gripping engagement under said disc; and

a thin fracture zone adjacent an underneath part of said cylindrical guideway connecting each locking element to said cylindrical guideway.

4,607,760

CLOSURE FOR A PRESSURIZED CHAMBER

John N. Roche, 37 Manorview Dr., Greenville, Pa. 16125

Filed Jul. 25, 1985, Ser. No. 759,028

Int. Cl.[4] B65D *45/28*

U.S. Cl. 220—314 **10 Claims**

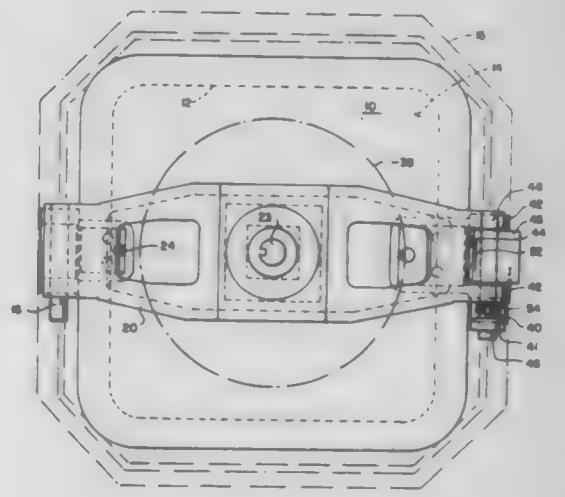
1. Apparatus for closing and sealing the opening of a chamber of a housing within which a desired level of pressure can be maintained comprising:

a. a door pivotally supported on said housing adjacent to said chamber opening, said door being provided with an inner door plate movable relative to said door and supported by said door in facing relation to said opening, said door plate having a chamber opening sealing surface and being movable between a confronting position in which said door plate confronts the chamber opening but in which the chamber opening is not sealed, a sealing position in which the chamber opening is sealed from fluid flow and an open position in which said door plate is neither in said confronting nor said sealing positions;

b. a hinge means affixed to one edge of said door for pivotally supporting said door adjacent said chamber opening so as to allow said door plate to be movable between said open and said confronting positions;

c. a cam finger affixed to said door plate on the opposite edge thereof from the edge adjacent said hinge means;

d. a latch hook means affixed to said door adjacent to said cam finger;



e. a swing latch pivotally mounted on said housing adjacent to said chamber opening on the opposite side thereof from said hinge means and in facing relation to said latch hook means, said swing latch being provided with a latching bar capable of retaining said latch hook means and a cam surface in facing relation to said cam finger such that said swing latch is displaceable between a first position in which said door plate is in its confronting or open positions and said latching bar does not retainingly engage said latch hook and, by the engagement of said cam finger with said cam surface and the movement of said door plate between said confronting and sealed positions, a latched position in which said latch hook is retained by said latching bar;

f. means for displacing said door plate between said confronting and said sealing positions; and,

g. sealing means disposed between said door plate and said chamber opening so as to provide a pressure-resistant seal when said door plate is in said sealing position.

4,607,761

APPARATUS FOR DISPENSING SOLID COMPONENTS FROM A FLEXIBLE SUBSTRATE ASSEMBLY

Steven F. Wright, Glen Ellyn, and Joseph E. McGurk, Stickney, both of Ill., assignors to Molex Incorporated, Lisle, Ill.

Continuation-in-part of Ser. No. 597,637, Apr. 6, 1984. This application Feb. 20, 1985, Ser. No. 703,250

Int. Cl.[4] G07F *11/66*

U.S. Cl. 221—25 **3 Claims**

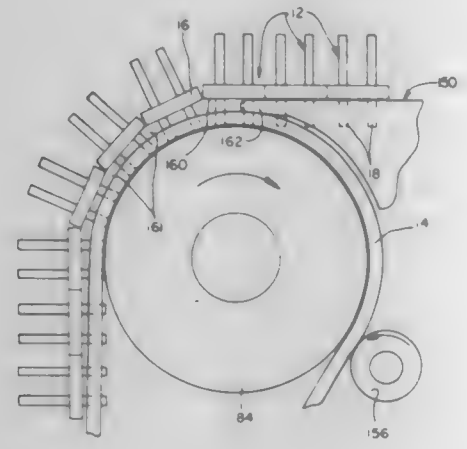
1. In an apparatus for sequentially disposing a plurality of solid members, one at a time, at a predetermined disposition relative to a work station comprising a substrate assembly, including a plurality of solid members removeably retained in a flexible sheet material, said solid members having extending rigid projections inserted into said flexible sheet material;

a sheet material supporting means positioned adjacent said

substrate assembly, said supporting means having a first solid portion disposed at said work station; and

said substrate assembly disposed to overlie the sheet material supporting means to dispose a first solid member at a predetermined position on the support means; the improvement comprising:

said sheet material supporting means comprising a support roller having a solid surface for supporting said sheet substrate assembly;



means for at least partially separating said solid member from said flexible substrate to create a gap therebetween; and

at least one wedge-like lifting member disposed adjacent said support roller surface and extending in the direction to said sheet material, said lifting member positioned ot lie adjacent said rigid projections, and having a free end for insertion in the gap between said sheet material and said solid members.

4,607,762

BOTTLE WITH DOSING DEVICE

Karlheinz Zulauf, Höchst-Hassenroth, and Franz Steigerwald, Griesheim, both of Fed. Rep. of Germany, assignors to Wella AG, Darmstadt, Fed. Rep. of Germany

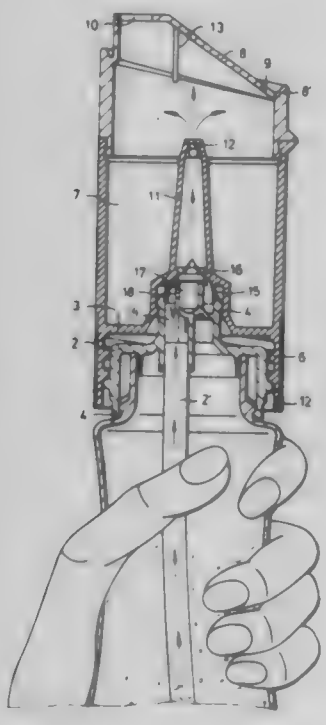
Filed Jan. 31, 1983, Ser. No. 462,933

Claims priority, application Fed. Rep. of Germany, Feb. 6, 1982, 3204118

Int. Cl.[4] B65D *37/00*

U.S. Cl. 222—48

23 Claims



1. A dosing and dispensing device for fluids formed as a closure for a flexible container, comprising:

a base fixable on said container, said base having on its inside inwardly protruding ribs which coact with cams on a neck of said container to prevent turning of said base relative to said container;

an outer portion rotatably mounted on said base and including a calibrated dosage cup having an end and a plurality of calibrations;

a dosage tube positioned in said dosage cup and having a dispensing orifice for feeding liquid into said calibrated dosage cup, said orifice being located higher than the highest of said calibrations of said dosage cup;

a conduit for feeding the fluid to be dispensed from inside of the container to said dosage cup;

a valve positioned between said conduit and said dosage tube and including a valve element and a valve seat, one of said valve element and said valve seat being connected to said cup so that by turning said cup, said one of said valve element and said valve seat is moved in an axial direction to said outer portion to open or close said valve to pass or block the liquid into said dosage tube; and

a lid covering said end of said dosage cup and having a spout at an end facing away from the container and one diametrically opposed opening, said base having a sealing socket, said tube being connected with said outer portion and having an inwardly protruding sealing shoulder at an end facing said valve which in the closed position of said valve sealingly engages said sealing socket and helically moves with respect to said sealing socket when opening said valve, said tube having a tube socket connected with said base, said valve seat at its side facing the container being provided with a sealing lip which engages with said tube socket concentrically with respect to said sealing socket and has a length dimensioned so that it also engages on said tube socket at said valve in a completely opened position.

4,607,763

DISPENSER FOR A COLLAPSIBLE TUBE

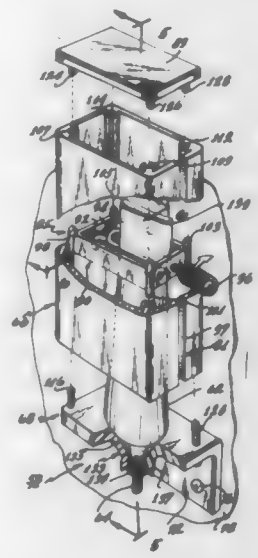
Carl A. Wright, 408 E. Marquette Rd., Chicago, Ill. 60637

Filed May 17, 1984, Ser. No. 611,476

Int. Cl.[4] B65D *35/28, 35/56*

U.S. Cl. 222—102

6 Claims



1. A dispenser for metering a substance from a collapsible tube having a discharge nozzle, comprising:

housing means for confining the tube in an inverted position, said housing having a base for supporting the tube from below;

said base having means defining an opening therein for receiving the tube nozzle to help support the tube in an inverted upright manner to enable the tube to be readily inserted or removed from the dispenser in a convenient manner;

roller means movably mounted within said housing for helping support the upper portion of the tube and for squeezing the tube as said roller means moves relative to said tube;

first attaching means for attaching removably said housing to said base to permit access to the dispenser for loading or unloading purposes;

wherein said means defining an opening includes a conical portion and a cylindrical portion to help support the tube;

wherein said housing includes a tubular body portion, a top cover plate, and second attaching means for attaching removably said cover plate to the top end of said body portion;

wherein said roller means generally comprises a support frame having a plurality of spaced apart rollers thereon for receiving and squeezing the tube therebetween;

wherein said roller means is generally rectangular in shape, and has a set of integral slide members at the corners thereof, said body portion has a set of means defining open grooves therein for receiving slidably respective ones of said slide members; and

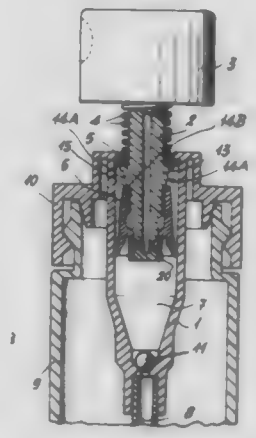
wherein the first attaching means and the second attaching means includes a plurality of connecting devices fixed to the base and to the cover plate, and said means defining grooves receive releasably said devices at the opposite ends thereof to facilitate the assembly and disassembly of said housing.

4,607,765

MANUALLY OPERATED PUMP FOR THE DELIVERY UNDER PRESSURE OF LIQUID SUBSTANCES

Tommaso Ruscitti, Milan, Italy, assignor to S.A.R. S.p.A., Chieti, Italy

Filed Feb. 19, 1985, Ser. No. 702,663
Claims priority, application Italy, Apr. 19, 1984, 21596/84[U]
Int. Cl.[4] B65D *88/54;* B67D *5/40;* F04B *7/04*
U.S. Cl. 222—321 4 Claims



1. A manually operable pump for the delivery under pressure in micronized form of a liquid stored within a container on which the pump is mounted, comprising:

an elongated hollow body having a metering chamber formed therein, said metering chamber being bounded in part by an inner wall of said hollow body;

a tube for carrying said liquid to be dispensed into said metering chamber;

a one-way valve operably disposed between said tube and said metering chamber;

an elongated stem coaxially disposed in said hollow body and axially movable with respect thereto, an upper end of said stem projecting outside said hollow body and supporting a nebulizing cap, said stem having an axial passage therein, a channel extending between said axial passage and an outer surface of said stem communicating said metering chamber and said axial passage, and a stop rib disposed below said channel;

spring means reacting between said hollow body and said stem for biasing said stem away from the bottom of said metering chamber;

a resilient annular seal member slidingly disposed on said outer surface of said stem within said hollow body, said metering chamber being bounded in part by said seal member, said seal member and said stem being relatively axially displaceable between a first position wherein said seal member abuts said stop rib and blocks said channel and a second position wherein said seal member does not block said channel,

said seal member comprising a radially outer lip resiliently sealingly engaging said inner wall of said hollow body in said first and second positions and an inner lip resiliently sealingly engaging said outer surface of said stem in said first and second positions,

said outer surface of said stem comprising frusto-conic surface means coaxial with said stem for radially displacing said inner lip of said seal member when said seal member is moved from said first position toward said second position; and

means for biasing said seal member toward said first position

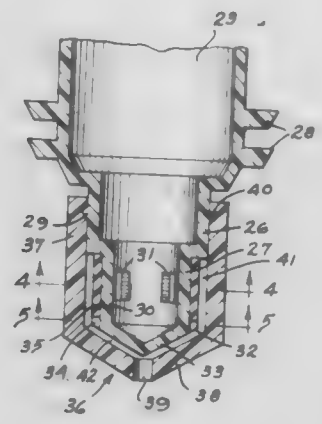
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4,607,764

FLUENT PRODUCT EXTRACTION SYSTEM

William C. Christine, Catasauqua, Pa., assignor to Trinity Foundation, Nazareth, Pa.

Filed Oct. 31, 1984, Ser. No. 666,756
Int. Cl.[4] B65D *25/42, 37/00*
U.S. Cl. 222—207 3 Claims



1. A fluent material dispensing apparatus for use with a container having fluent material therein, and means for selectively applying pressure to the fluent material, comprising an elongated tubular body, means for connecting one end of said body to the container in a manner to receive fluent material therefrom, an intermediate portion and a tip portion integrally connected to the other end of said body, said tip portion having a side wall with at least one opening therethrough, an elastomeric band of predetermined thickness encircling said side wall of said tip portion and normally closing said opening, and a cap having side walls and a discharge opening mounted on said intermediate portion and in spaced relationship with said tip portion, whereby pressure applied to the fluent material causes the elastomeric band to expand and permit fluent material to flow from said tip portion and said cap, and wherein the space between the outer surface of said elastomeric band and the inner surface of said cap side walls is less than the thickness of said band.

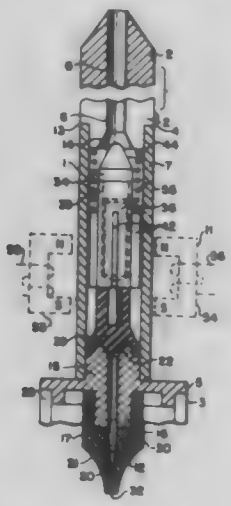
comprising said frusto-conic surface means and said inner lip of said seal member.

4,607,766

ESCAPEMENT DEVICE

J. Paul Jones, Glenmoore, Pa., assignor to Med-Tech Associates, Broomall, Pa.

Filed Apr. 15, 1985, Ser. No. 723,563
Int. Cl.[4] B67D *3/00*
U.S. Cl. 222—386.5 **5 Claims**



1. In an intervenous infusion system:
a drip chamber including a cap on the top thereof;
a connection spike;
escapement means connected between the drip chamber and spike for extracting fluid from the spike and intermittently transferring identical amounts of said fluid to said drip chamber, the escapement means comprising:
an elongated, hollow escapement cylinder, the bottom end of which is connected to the cap of said drip chamber and the top end of which is connected to said spike to extend vertically upwardly when said drip chamber is mounted for use;
elongated shuttle means inside of said escapement cylinder;
guide means on said shuttle engaging the inside wall of said escapement cylinder mounting the shuttle for reciprocating motion along the axis of the escapement cylinder;
conically shaped fluid intake plug means connected to and disposed at the top end of said shuttle;
fluid control mechanism made of flexible material and connected to and disposed at the bottom end of said shuttle and formed with conically shaped fluid discharge plug means;
first means on said cap formed with a conically shaped fluid discharge valve seat means coaxial with the axis of said escapement cylinder to be engaged and disengaged by said discharge plug means and also formed with a drip passageway to pass fluid to said drip chamber;
second means on said spike formed with conically shaped fluid intake valve seat means coaxial with the axis of said escapement cylinder to be engaged and disengaged by said intake plug means;
said shuttle means being dimensioned to permit passage of fluid through said escapement cylinder as between said fluid intake valve seat means and said fluid discharge valve seat means;
said fluid control mechanism also formed with conically shaped skirt surrounding said discharge plug means, the outer perimeter of the skirt having an annular lip closely adjacent to the inside wall of said escapement cylinder to provide an annular space between the wall and the lip;
drive means for moving said shuttle from a first position to a second position, the first position being below said second position:
(a) in the first position said fluid intake plug means being spaced away from said fluid intake valve seat means and said fluid discharge valve plug means engaging said fluid discharge valve seat means;
(b) in the second position said fluid intake plug means engaging said fluid intake valve seat means and said fluid discharge plug means being spaced away from said fluid discharge valve seat means, the fluid discharge valve seat means, the fluid discharge plug means, the skirt and lip, and the inside wall of the escapement cylinder forming a volumetric fluid measuring chamber;
when said shuttle is moving from said first position up to said second position:
(a) said conical shape of said skirt, said flexibility of said skirt, and said space between said lip and the inside wall of said escapement cylinder functioning to permit fluid to pass through the space and flow into said volumetric measuring chamber until said fluid intake plug means engages said fluid intake valve seat means;
when said shuttle is moving from said second position down to said first position:
(a) said conical shape of said skirt and said flexibility of said skirt and fluid in said volumetric measuring chamber causing the said lip to slidingly seal against the inside wall of said escapement cylinder so that fluid in said volumetric measuring chamber is pushed out of the volumetric measuring chamber until said discharge plug means engages said discharge seat means; and
(b) the movement of said fluid intake plug means away from said fluid intake valve means permitting new fluid to flow into said escapement cylinder; and
check valve means connected to said cap and having an exit passage in series with said drip passage way, the check valve means functioning when the shuttle is moving from said second position down to said first position to permit fluid in the drip passageway to flow through the exit passage into said drip chamber and functioning when said shuttle is moving from said first position up to said second position to stop any backflow of fluid in the exit passage.

4,607,767

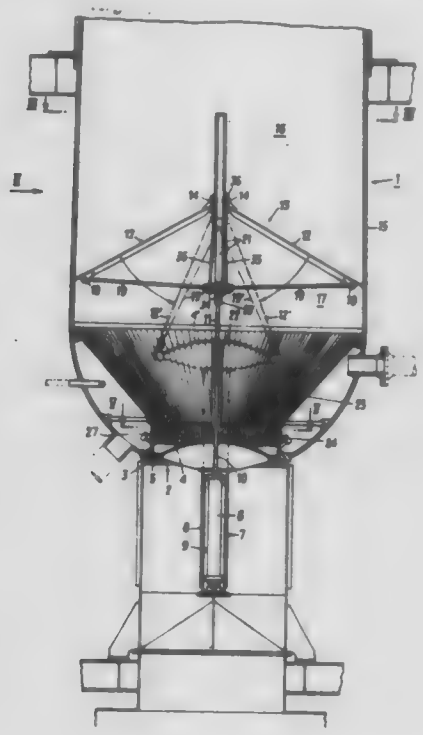
CLOSURE DEVICE FOR THE DISCHARGE OPENING OF AN AUTOCLAVE

Johann Stadler, Hellmonsödt, and Hildegard Schwarz, St. Georgen, both of Austria, assignors to Voest-Alpine Aktiengesellschaft, Vienna, Austria

Filed Mar. 15, 1984, Ser. No. 590,060
Claims priority, application Austria, Mar. 18, 1983, 967/83
Int. Cl.[4] B67D *3/00*
U.S. Cl. 222—504 **11 Claims**

1. A closure device for a discharge opening of an autoclave including a reciprocable cover member capable of sealing the discharge opening, the cover being arranged such that the cover is raised vertically into the autoclave during an opening phase, the closure device comprising a pair of plate members hingedly connected together and capable of closing the autoclave when extended outwardly and upwardly to a closing position and capable of opening the autoclave when swung downwardly and inwardly. to an opening position, said hinged connection being disposed transverse to the autoclave, the closure member further including a pair of strutting bars each pivotally connected to one plate member and a bushing, a rod attached to the cover and extending through said bushing, the rod having a first stop positioned between the bushing and the cover and a second stop spaced from the first stop opposite the bushing such that an upward opening movement of the cover brings the first stop into engagement with the bushing to move

said plate members to their opening position and such that a downward movement of the cover u causes engagement of the



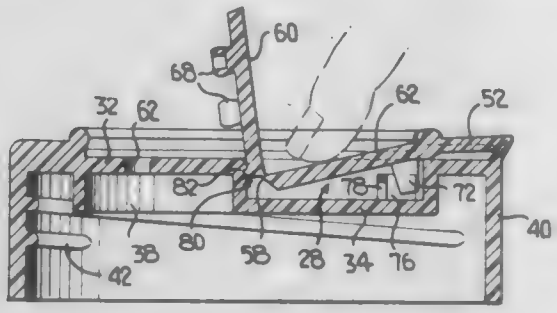
second stop with the bushing to move said plate members to their closing position.

4,607,768

DISPENSING CLOSURE WITH LATCH MECHANISM

James M. Taber, and Stephen J. Kras, both of Chicago, Ill., assignors to Continental White Cap, Inc., Northbrook, Ill.

Filed Jul. 23, 1984, Ser. No. 633,320
Int. Cl.[4] B65D *47/00*
U.S. Cl. 222—556
20 Claims



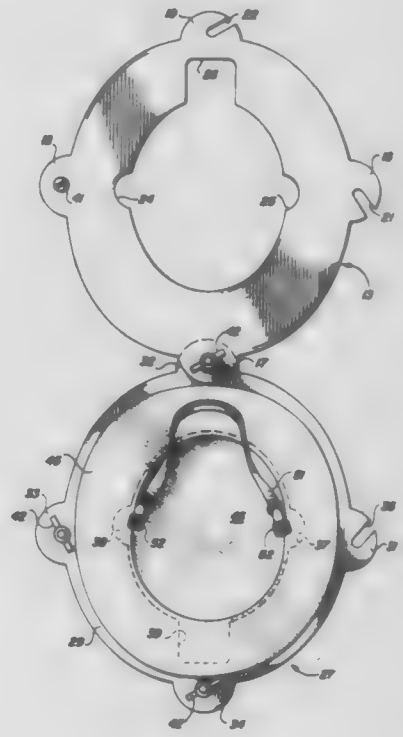
1. A dispensing closure comprising a tubular body having means for attachment to a container, an end wall assembly including a peripheral upper wall member surrounding a well having a stepped bottom, said stepped bottom including an upper panel having at least one dispensing opening therethrough, a lower panel, and an upright wall extending between adjacent edges of said upper and lower panels, a notch in an upper surface of said peripheral upper wall member, and a cover member including a hinge strap hingedly connected to said upper panel at an outer end of said notch, said hinge strap normally extending inwardly through said notch and terminating in a cover panel of an outline corresponding generally to that of said well, said cover panel having on an underside thereof a hinge forming weakened line aligned with said upright wall and dividing said cover panel into a cover element and an opener, said upright wall forming a pivot for said cover panel wherein when said opener is depressed said cover panel will pivot to an upright position uncovering said upper panel to permit dispensing therethrough, and latch means for normally preventing movement of said opener out of said well, and for retaining said cover panel in an open and upright position when said opener is depressed into said well.

4,607,769

HAT BRIM PRESS

David S. DeLisle, P.O. Box 1732, and James P. Marino, 79 West St., both of Lunenburg, Mass. 01462

Filed Aug. 26, 1985, Ser. No. 769,495
Int. Cl.[4] A42C *1/06*
U.S. Cl. 223—12
17 Claims



1. A hat brim press comprising:

a base plate including a planar top surface portion for supporting the bottom of a hat brim;

a cover plate including an annular, planar bottom surface for engaging the top of the hat brim; said cover plate defining a central opening encircled by said bottom surface and adapted to accommodate a crown attached to the hat brim and a notch in said bottom surface and intersecting said central opening, said notch adapted to accommodate an adornment supported by the brim; and

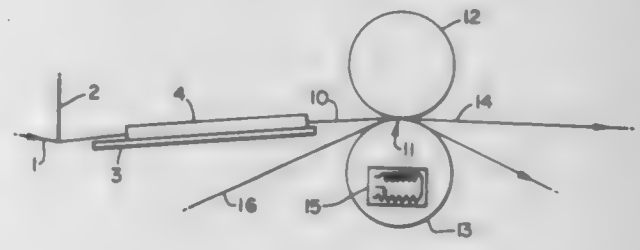
fastening means connecting said base plate and said cover plate and manually adjustable to produce between said top surface portion and said bottom surface forces directed orthogonally thereto, said forces pressing the hat brim between said top surface portion and said bottom surface so as to retain the hat brim in a planar form.

4,607,770

HEAT TREATMENT OF FABRICS AND OTHER SHEET MATERIAL

Edward Chodosh, London, United Kingdom, assignor to Wayne Chodosh, London, United Kingdom

Filed Jun. 12, 1985, Ser. No. 743,937
Claims priority, application United Kingdom, Apr. 18, 1985, 8509980
Int. Cl.[4] A41H *43/00*
U.S. Cl. 223—28
14 Claims



1. Apparatus for heat-treating a laminar material, which apparatus having a pair of co-operating rollers defining between them a nip through which the material to be treated can be passed in a direction of travel; first means for heating the material and second means for holding the rollers together

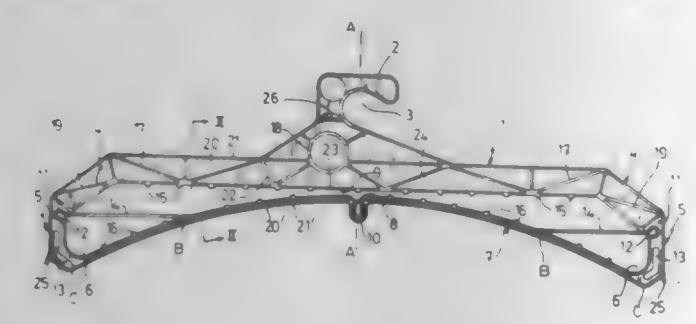
under pressure such that, in use, material passing through said nip is simultaneously heated and compressed; and a feeding arrangement for feeding the material to said nip comprising a pair of co-operating formers between which the material is passed in said direction, each of the formers comprising a series of ribs spaced apart from one another, the average gap between adjacent ribs being less at an edge of each of the formers adjacent to said nip than at an edge of each of the formers remote from said nip, the ribs of one of said formers disposed to lie within gaps defined between opposing ribs of the other of said formers and lateral movement means for effecting movement of at least one of said formers in a direction lateral to said direction of travel during operation of said apparatus.

4,607,771

PRESENTATION DEVICE FOR TEXTILE PRODUCTS AND THE LIKE

Philippe A. J. Massion, Brussels, Belgium, assignor to S.P.R.L. LAMA P.V.B.A., Brussels, Belgium

Filed Sep. 17, 1985, Ser. No. 777,065
Claims priority, application Belgium, Oct. 24, 1984, 0/213.879
Int. Cl.[4] A41D *27/22*
U.S. Cl. 223—91 12 Claims



1. A device for the presentation of textile products and the like, comprising:

(a) an upper bar (1);

(b) means (2) for suspension on said upper bar;

(c) a lower bar (7) for holding an item to be presented and whose ends are connected to the respective ends of said upper bar; and

(d) a passage defined between said upper and lower bars,

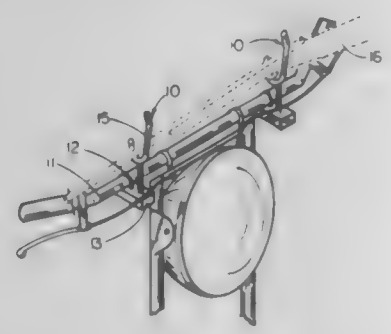
the lower bar comprising an elastic arc with an upper side (8) suitable for holding said item and convex towards a lower side (9) of said upper bar, said lower bar tending to push against a center of said lower side of said upper bar to lock said item between the two bars, wherein said lower bar is connected at its ends to the ends of said upper bar by substantially vertical uprights (5), said uprights having button hole shaped cutouts (12) open towards said passage at points of attachment of said uprights to said upper bar.

4,607,772

RIFLE CARRIER FOR MOTORCYCLE

Dennis Hancock, 491 S. Main, Cedar City, Utah 84720, assignor to George Gates and Dennis Hancock, both of S. Jordan, Utah

Filed Jul. 23, 1984, Ser. No. 633,463
Int. Cl.[4] B62J *7/06*
U.S. Cl. 224—30 A 12 Claims



1. A utility holding device for attachment to handlebars of a mototcycle for carrying elongated objects, said device comprising:

(a) Clamp means adapted for rigid attachment to the handlebars;

(b) A support base attached to the clamp means and having a threaded opening therein;

(c) A mounting stem having a longitudinal axis and a threaded lower section adapted in size and configuration for a tight, adjustable fit within the threaded opening of the support base, said mounting stem providing elevational adjustment with respect to the base;

(d) A holding member having an upper half and a lower half, said lower half being formed with a U-shape comprising two upright arms and an intermediate base which define a containment area, said lower half being attached at its base to an upper portion of the stem with the stem and arms generally in common upright orientation such that the lower half can be rotated with the stem in the support base about the longitudinal axis to engage and lock the carried object between the upright arms of the lower half of the holding member;

(e) the upper half including an extension of at least one arm of the lower U-shape which is configured as an elbow which bends toward the containment area and provides an upper cocked end to the holding member for engaging an upper part of the contained object and for applying a counter, downward force toward the base of the U-shape to grip and restrain the contained object in a locked position within the holding member;

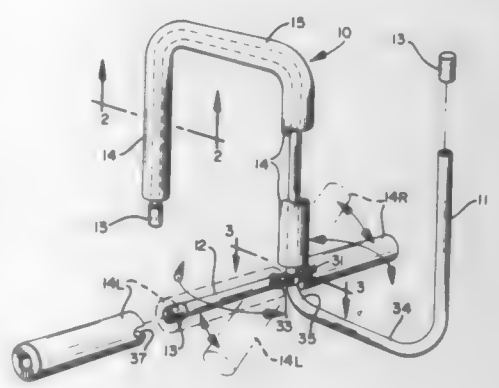
(f) said upper half further including an open section between opposing ends of the holding member to enable insertion of the elongated object therethrough to the containment area.

4,607,773

VEHICLE MOUNTED LONG ARTICLE CARRYING UTILITY BRACKET WITH ADJUSTABLE CROSS BAR

Thomas A. Mason, 3022 Castle Rock, Garland, Tex. 75042

Continuation-in-part of Ser. No. 613,431, May 24, 1984, abandoned. This application Nov. 27, 1985, Ser. No. 802,718
Int. Cl.[4] B60R *9/02*
U.S. Cl. 224—42.45 R 14 Claims



1. A utility bracket with an adjustable cross bar useable in pairs on a vehicle for carrying long article loads comprising: a stiff material elongate member formed to an "S" shape having a rounded outer surface, said elongate member formed to an "S" shape having two opposite facing open "U" shaped loops that share a common joining side arm, a bottom portion in each "U" loop, an inner side arm and an outer side arm in each "U" loop substantially the same length as said common joining side arm; and a resilient tubular pad extending through most of the length of one of the "U" shaped loops of the bracket with the padded loops thereof extendable, respectively, through two windows of a four door car, through a window and over a side edge of a trunk, or a side window and the side edge of the bed of a truck; wherein said "U" shaped loops of the "S" shaped bracket are generally coplanar; said elongate member is a

round metal extension formed to the bracket "S" shape; said adjustable cross bar mountable on extension of said common joining side arm below the end of said resilient tubular pad on said common joining side arm; and adjustable position mounting means mounting said cross bar on said extension of the common joining side arm.

4,607,774

WRAPPING TABLE ASSEMBLY

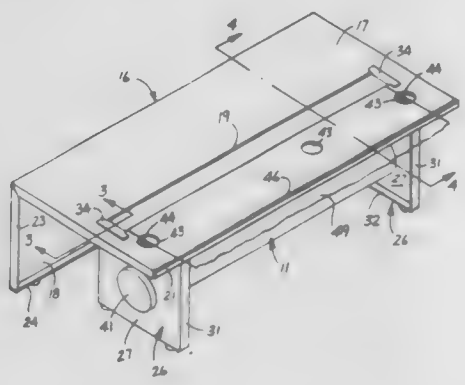
Ernest J. Garr, 3587 Powell Dr., Lafayette, Calif. 94549

Continuation-in-part of Ser. No. 597,520, Apr. 6, 1984, abandoned, which is a continuation-in-part of Ser. No. 466,873, Feb. 16, 1983, abandoned, which is a continuation-in-part of Ser. No. 416,669, Sep. 10, 1982, abandoned. This application Feb. 25, 1985, Ser. No. 705,232

Int. Cl.[4] B26F *3/02*

U.S. Cl. 225—47

21 Claims



1. A wrapping table assembly for use with a roll of wrapping material, comprising a table member having a generally planar top with a slotted opening formed therein and a depending flange extending along one edge of the top, a pair of legs depending from the table top and cooperating with the depending flange to support the table top in a predetermined position above a supporting surface, means carried by the legs for rotatively supporting the roll of material beneath the table top with the free end of the material extending to the upper side of the table top, and mounting tabs which project from the legs through the slotted opening and interfit with the table top in a manner holding the legs and the table top together and permitting the legs to be moved longitudinally of the slotted opening to accommodate rolls of different widths.

4,607,775

DEVICE FOR CUTTING GLASS FIBERS

Dieter Krause, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

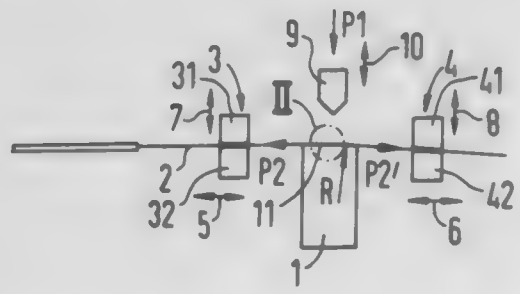
Filed May 24, 1983, Ser. No. 497,417

Claims priority, application Fed. Rep. of Germany, Jun. 3, 1982, 3221010

Int. Cl.[4] B26F *3/00*

U.S. Cl. 225—96.5

2 Claims



1. In a device for cutting glass fibers having a diameter, said device having an anvil positioned between a pair of common clamps, said clamps holding the waveguides parallel to one another on an upper surface of the anvil, at least one of said clamps being movable, means for moving the movable clamp to provide an axially directed tensile force on each of the fibers, means positioned above the anvil and having a notching tool movable in a direction extending perpendicular to the axis of the fibers for notching each of the fibers to obtain a subsequent separation of the fibers at the notches, the improvement comprising a slot in the upper surface of the anvil at least at a seating surface of each glass fiber thereon, said slot being symmetrical relative to the notching plane of the notching tool and being of a selected width for generating an approximately symmetrical tension distribution in the cross-section of each of the glass fibers across said slot at the notch location during the notching operation, said slot width and the fiber diameter having a diameter/width ratio in a range of 0.125 to 0.25.

4,607,776

APPARATUS FOR TRANSLATING CRYSTAL FIBERS

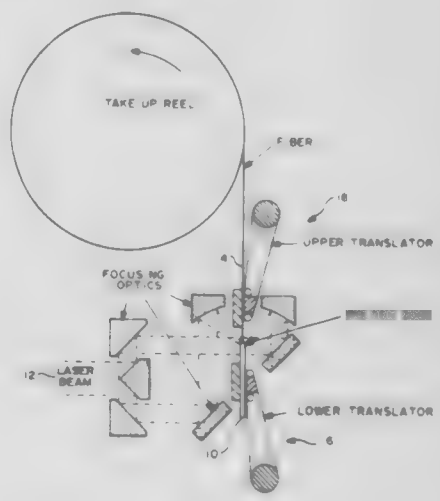
John L. Nightingale, Woodside; Martin M. Fejer, Atherton, and Robert L. Byer, Stanford, all of Calif., assignors to The Board of Trustees of The Leland Stanford, Junior University, Stanford, Calif.

Filed Aug. 31, 1984, Ser. No. 645,839

Int. Cl.[4] B65H *20/00*

U.S. Cl. 226—171

4 Claims



1. A fiber translation apparatus comprising:

a resilient belt, said belt including a loop and a floating block within said loop,

a support member positioned adjacent said belt for receiving and supporting a crystal fiber against said resilient belt, said support member including a grooved surface for receiving said crystal fiber,

said floating block having a width which is greater than the spacing of said loop whereby said block is offset in said loop when said support member and fiber are brought into engagement with said belt, and

drive means for translating said resilient belt.

4,607,777

STAPLER

Yoshiyuki Ebihara, Tokyo, Japan, assignor to Etona Company, Limited, Tokyo, Japan

Filed Sep. 5, 1985, Ser. No. 772,741

Claims priority, application Japan, Sep. 18, 1984, 59-140418[U]

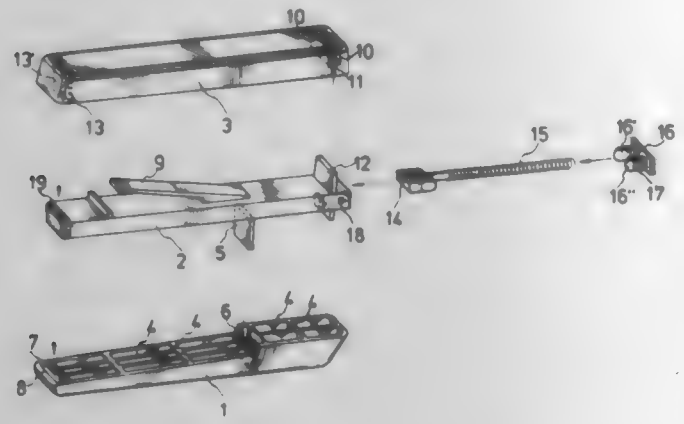
Int. Cl.[4] B25C *5/02*

U.S. Cl. 227—120

9 Claims

1. A stapler comprising a base with an anvil at the forward end, a hollow frame comprising a magazine for containing a clip of staples, and a handle having an integrally formed staple driver, all of which are molded from a synthetic resin material; the hollow frame including a primary fulcrum element extending downwardly from the frame's underside at a point intermediate the opposite frame ends, and an auxiliary fulcrum element extending upwardly from the frame's top face at a point adja-

cent the frame's rearward end; said base including a primary recess formed in it for receiving the frame's primary fulcrum



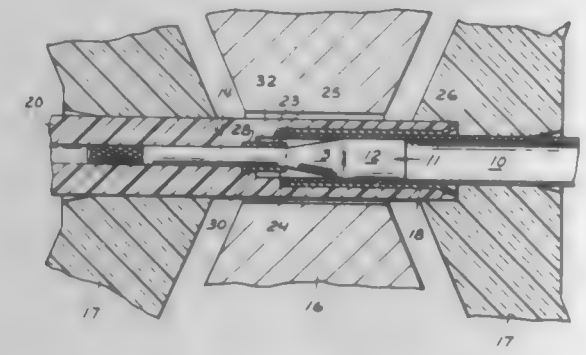
element; and said handle including an auxiliary recess formed in it for receiving the frame's auxiliary fulcrum element.

4,607,778

WELDING FIXTURE FOR NUCLEAR FUEL PIN CLADDING ASSEMBLIES

David J. Oakley, Richland, and Sam H. Feld, West Richland, both of Wash., assignors to United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Feb. 22, 1984, Ser. No. 582,419
Int. Cl.⁴ B23K *20/08*
U.S. Cl. 228—2.5 **7 Claims**



1. A non-metallic welding fixture for holding a driver sleeve, a nuclear fuel pin end cap with stem and the open end of a length of nuclear fuel pin cladding in precise positions relative to one another for closure welding with the driver sleeve coaxially fitted about the end cap and cladding, comprising:

a rod-shaped holder having a longitudinal cavity extending inwardly from one axial end of the holder;

means within said cavity of the rod-shaped holder for coaxially locating the end cap, the driver sleeve and the fuel pin cladding in required longitudinal positions relative to one another; and

contamination trap means within said cavity of the rod-shaped holder adapted to be located about the end cap stem for retaining contaminant particles ejected axially from the cladding during closure about the end cap.

4,607,779

NON-IMPACT THERMOCOMPRESSION GANG BONDING METHOD

Carmen D. Burns, San Jose, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed Aug. 11, 1983, Ser. No. 522,146
Int. Cl.⁴ B23K *19/00*
U.S. Cl. 228—106 **3 Claims**

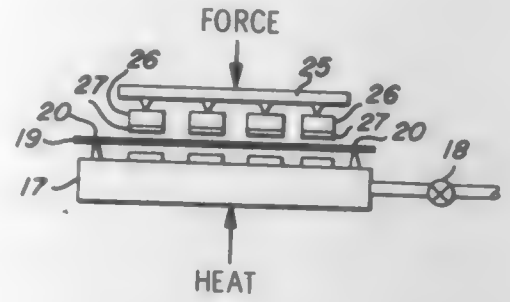
1. A non-impact thermocompression gang bonding process comprising the steps:

locating a plurality of semiconductor device chips in predetermined positions and orientations on a substantially rigid flat surface, said chips having upwardly facing bonding pads;

laying a copper lead pattern array on top of said chips, said array comprising a plurality of copper fingers each one of which has a bonding bump at its end extending in the plane of said array, said copper fingers being formed and arrayed so that their bumps form patterns that mate with the bonding pad patterns on said chips;

locating said array so that said bumps on said metal fingers register with said bonding pads;

applying a resilient pressure distributing sheet on top of said array;



clamping a flat plate onto said pressure distributing sheet, whereby each finger in said array is pressed against its associated bonding pad with a pressure of about 20 to 100 grams; and

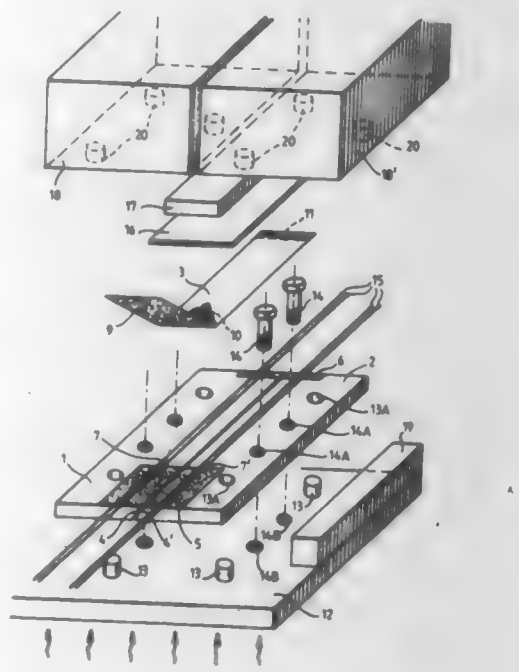
heating said chips in contact with said fingers at about 325° C. for about 15 minutes to bond said fingers to said chips with said temperature being substantially below any metal eutectic temperature in the system.

4,607,780

METHOD OF TEMPORARY SOLDER ASSEMBLING OF RELEASABLE PLATES FOR MECHANICAL RELEASE DEVICE

Jean-Pierre Philipoussi, Mandelieu, France, assignor to Societe Nationale Industrielle Aerospatiale, Paris, France

Filed Nov. 8, 1984, Ser. No. 669,521
Claims priority, application France, Nov. 9, 1983, 83 17800
Int. Cl.⁴ B23K *1/20*
U.S. Cl. 228—118 **9 Claims**



1. A method of temporarily assembling by soldering releasable plates with soldering material and a flexible junction element, said plates belonging to a mechanical release device for releasing two parts temporarily fixed edgewise to one another, said plates being adapted to be respectively brought edge by edge onto adjacent edges of said parts, the soldering material being disposed on the plates and the flexible junction element being applied onto said soldering material, there being provided a means for causing under the action of a mechanism

automatic progressive lifting of said flexible element, the arrangement of said means being such that, on actuation of the mechanism, the flexible element peels off the soldering material, thereby provoking complete release of the temporarily fixed parts as the flexible element is totally removed therefrom, said assembling method comprising the steps consisting of:

providing on the plates and the flexible junction element reserved areas without any adherence to the soldering material for delimiting connection areas between such plates and such flexible element,

providing in the plates recess means adapted to collect any excess of soldering material and

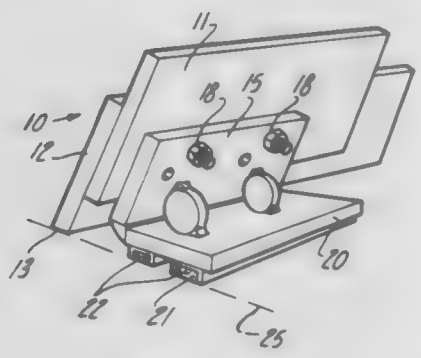
interposing and then melting the soldering material between the plates and the flexible junction element, and then putting the melted soldering material under load so as to distribute said soldering material between the plates and the flexible junction element, but outside of the reserved areas, with the recess means collecting any excess of soldering material.

4,607,781

METHOD OF MANUFACTURING AN ADJUSTABLE MOUNTING SNOW PLOW SKID SHOES

Warren M. Shwayder, 2335 E. Lincoln, Birmingham, Mich. 48008

Filed Jan. 24, 1985, Ser. No. 694,601
Int. Cl.⁴ B23K *31/00*
U.S. Cl. 228—175 **4 Claims**



1. A method for adjustably mounting a skid shoe upon a plow moldboard in horizontal alignment with the ground engaging edge of the plow blade which is fastened to and extends beneath the moldboard forward face, comprising:

bolting a mounting plate, which has a lower horizontal edge, upon the rear face of the moldboard;

supporting a lower, skid plate, which has a bottom, ground engaging surface, upon the ground while the plow blade ground engaging edge is supported upon the ground, with the skid plate forming an acute angle with the mounting plate and being closely adjacent the mounting plate;

adjusting the skid plate for aligning its ground engaging surface with the plow blade edge;

moving a generally cylindrically shaped loose, fixing spacing member, which is initially unattached to either plate, within the acute angle space between the plates towards the adjacent edges of the plates until the cylindrical surface of the member forms line contacts with the adjacent surfaces of each of the plates and bridges the space between the plates;

welding the member to both of the plates adjacent the locations of the line contacts between the member and the plates;

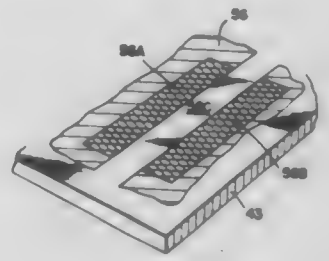
removing the plates from the moldboard and moving the plates to an accessible place so as to make their adjacent edges accessible for complete welding, and then welding the adjacent plates edges together, while the plates are fixed together by the member, for producing a permanently adjusted skid shoe for sliding upon the ground in horizontal alignment with the blade edge.

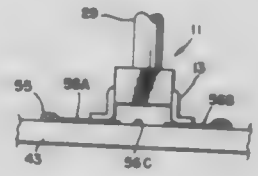
4,607,782

METHOD AND APPARATUS FOR SOLDERING ELECTRICAL COMPONENTS TO CIRCUIT BOARDS

Bruce L. Mims, Greens Farms, Conn., assignor to Contact Systems, Inc., Danbury, Conn.

Filed May 24, 1985, Ser. No. 737,538
Int. Cl.⁴ B23K *1/12, 1/02*
U.S. Cl. 228—180.2 **16 Claims**





1. A method for surface mounting electronic components having depending leads to a printed circuit board having terminal pads comprising the steps of:

providing a layer of solder paste of predetermined thickness;

pressing the outermost portion of the leads into said layer of solder paste;

separating the component leads from the layer of solder paste; and

placing the component on the printed circuit board in its placement position with the outermost portions of the leads with solder thereon in contact with the component's terminal pads.

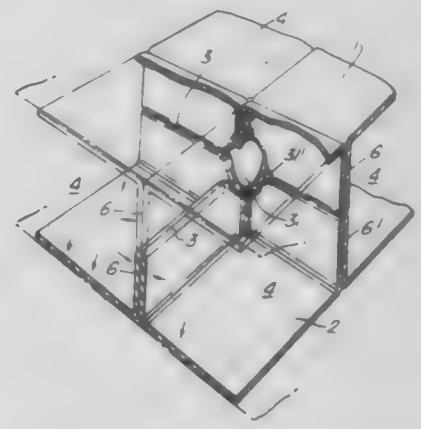
4,607,783

STIFFENED PANEL WITH APERTURES

Martin H. Mansbridge, and John Norton, both of Bristol, England, assignors to British Aerospace PLC, London, England

Filed Nov. 9, 1983, Ser. No. 550,139
Claims priority, application United Kingdom, Nov. 9, 1982, 8231914

Int. Cl.⁴ B23K *31/02*
U.S. Cl. 228—265 **4 Claims**



1. A method of making a stiffened panel including subjecting two metal sheets, at least one capable of superplastic deformation and diffusion bonding, which are positioned face to face, to a bonding and deforming process during which the sheets are joined to one another at a series of spaced joint lines across their faces, the joint lines being interrupted by non-joined regions of substantial length along their lengths but being otherwise substantially continuous, and during which parts of at least said one sheet between the joint lines and the non-joined regions thereof are superplastically deformed in a

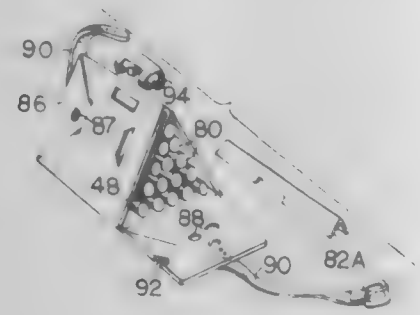
mould to form a series of cavities between the two sheets, portions of at least said one sheet on respective sides of each of the joint lines and the non-joined regions thereof being moved to form sidewalls of two neighbouring cavities, these sidewalls being urged to lie adjacent one another over substantial parts of their areas so that they become diffusion bonded, one to another, to form a common sidewall of neighbouring cavities, the non-joined regions of the joint lines each forming a generally circular or part-circular aperture in each sidewall of a diameter similar to the length of the non-joined region and such diameter being a relatively large proportion of the depth of the sidewall, the material of each sidewall being redistributed by reason of the apertures.

4,607,784

FOLDABLE COMBINATION SEAT AND PORTABLE CONTAINER

Thomas A. Calabrese, 149 Western Ave., Cambridge, Mass. 02139

Filed Aug. 16, 1985, Ser. No. 766,350
Int. Cl.[4] B65D *5/48, 5/46;* A47C *7/62*
U.S. Cl. 229—27 **14 Claims**



1. A foldable combination seat and portable container, easily folded flat and assembled, constructed from a cross-shaped flat sheet of rigid material formed into an elongated rectangular portion and, foldably extending therefrom along a foldline extending from approximately a quarter to one half the length of the sheet, two small rectangular end-forming sections, wherein the elongated rectangular portion is provided with three transverse creases along its length, dividing the elongated rectangular portion into four rectangles comprising three interconnected wall-forming rectangles and an interior-support-forming rectangle at one end, each of which rectangles may be bent relative to the others and interconnected by tabs and slots to form a rigid three-dimensional box structure of triangular cross-section having the interior support forming rectangle connected between an apex of the triangle to a center of a wall opposite the apex, and the two small rectangular end-forming sections are each creased from a center of an outer edge to each of two side edges at a point where each side edge connects with the elongated rectangular portion thereby forming a triangle equal to the triangular cross-section and two foldover triangular tabs, wherein each rectangular end-forming section folds over onto the triangular box structure to form each of two opposing closed ends for the triangular box structure with each triangular tab inserted in a mating slot in a all of the triangular box structure.

4,607,785

FIBERBOARD FLAT WITH JOINED STRENGTHENED CORNERS FOR SETTING UP INTO AN ANGULAR TRAY AND THE SET-UP TRAY

Thomas E. Croley, Worthington, Ohio, assignor to Willamette Industries, Delaware, Ohio

Filed Apr. 19, 1985, Ser. No. 724,868
Int. Cl.[4] B65D *5/36*
U.S. Cl. 229—41 B **6 Claims**

1. A flat for use in setting up a tray-like article which has a substantially flat-wall with side walls at its periphery that are angularly disposed relative to each other and connected at the angular joints therebetween, said flat comprising:

a substantially flat-wall portion of angular peripheral outline having scored hinge fold lines adjacent all its edges;

side-wall producing flaps attached to said flat wall portion around its periphery at the respective scored hinge fold lines and having opposed ends with their respective ends adjacent each and their respective outer edges free;

said flaps comprising first and second flaps around the periphery of said flat-wall portion with the first flaps extending outwardly from their respective scored hinge fold lines in a substantially common plane with said flat-wall portion and with the second flaps turned inwardly about their respective scored hinge fold lines into overlapping relationship with said flat-wall portion;

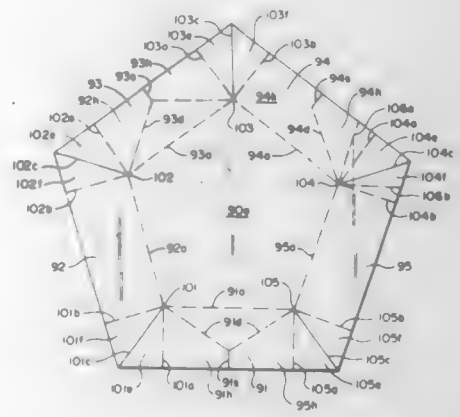
structures at each joint for connecting together said adjacent ends of said first and second flaps and comprising:

an outwardly-extending corner tab on the said end of the second flap;

an inwardly-folded connecting flap section on the said end of the first flap carrying an inwardly-extending corner tab which is in superimposed relationship and in flat contact with said second flap and is secured thereto;

said outwardly-extending corner tab extending outwardly in superimposed relationship and in flat contact with inwardly-folded connecting flap section and being secured thereto;

said outwardly-extending corner tab being connected to said second flap at a scored corner joint fold line and said



inwardly-extending tab being connected to said connecting section at a scored corner joint fold line, the two scored corner joint fold lines being superimposed to provide a common joint fold line;

said common corner joint fold line being in alignment with the scored hinge fold line of said first flap;

said inwardly-folded flap connecting section on the first flap being folded inwardly about an angular scored fold line at an angle relative to said common joint corner fold line to provide said connecting flap section;

said angular scored fold line extending from the flap scored hinge line of the first flap at an angle relative to it and to said common corner joint fold line but terminating at a point within the flap; and

a flap separation extending from the termination point to the edge of said first flap producing relatively foldable sections within the flap;

said tray-like article having an unequal number of the side walls and comprising the flat wall portion with an unequal number of flaps around its periphery;

said unequal number of flaps alternating in the first and second flaps around its periphery and having an odd flap which is originally flat and is divided into independently foldable sections by a single angular fold line which extends from an adjacent common corner joint fold line to a termination point within the odd flap; and

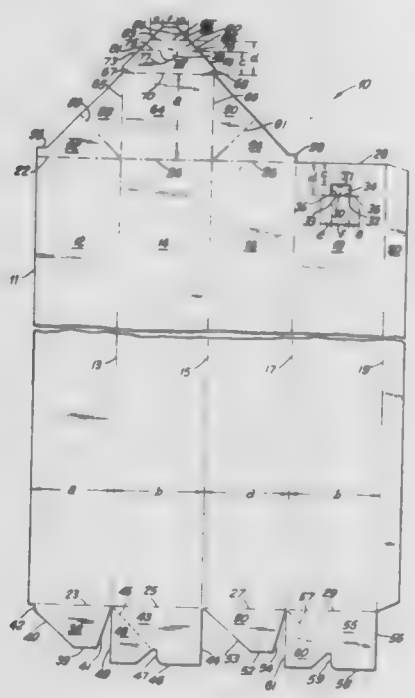
said separation extending from the termination point to the edge of said odd flap producing relatively foldable sections within that flap.

4,607,786

DOUBLE INSERT LOCK CARTON AND BLANK THEREFOR

Sherry M. Weaver, Chicago, Ill., assignor to Waldorf Corporation, St. Paul, Minn.

Filed Mar. 18, 1985, Ser. No. 712,714
Int. Cl.[4] B65D *5/08*
U.S. Cl. 229—45 R 15 Claims



1. A paperboard blank for forming a double lock carton, said blank comprising:

rectangular first side panel, rectangular rear panel, rectangular second side panel and rectangular front panel consecutively articulated to one another along parallel fold lines, said front panel including a top edge extending generally perpendicular to the fold line between said second side panel and said front panel, at least one locking cut line extending through said front panel and an aperture disposed in said front panel intermediate said cut line and said top edge;

bottom flaps articulated respectively to said first side panel, rear panel, second side panel and front panel along fold lines;

rectangular top panel being articulated to said rear panel along a fold line extending substantially parallel to the foldable connection between said rear panel and its respective bottom flap;

front flap articulated to said top panel along a fold line extending substantially parallel to the foldable connection of said top and rear panels;

a locking flap connected to said front flap, said locking flap including at least one locking edge spaced from said top panel a distance substantially equal to the distance between the top edge and the locking cut line in said front panel, said front flap including a locking tab defined by at least one cut line extending convexly toward said top panel, and being disposed such that the distance between said locking tab and said top panel is less than the distance between the top edge of said front panel and the aperture therein;

first and second pairs of generally triangular corner connecting panels foldably connected to said top panel and said first and second side panels respectively, the triangular corner connecting panels in each said pair being articulated to one another along fold lines which intersect the foldable connections of said rear panel to said top panel and each including a locking protrusion extending from the portion of said first and second corner connecting panels adjacent the first and second side panels respectively; and

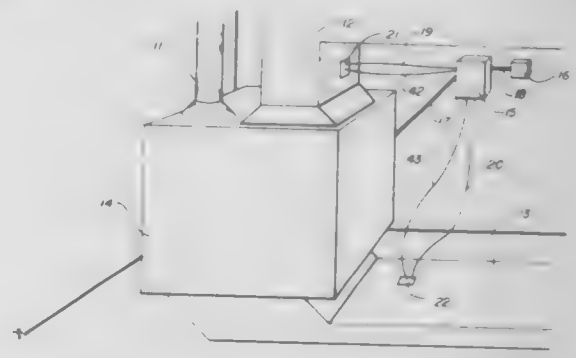
a pair of locking cut lines extending toward one another from the opposed ends of the foldable connection between said top panel and said front flap.

4,607,787

ELECTRONIC CONTROL AND METHOD FOR INCREASING EFFICIENCY OF HEATING

Charles F. Rogers, III, 10 Moraga Dr., Chico, Calif. 95927

Filed Apr. 12, 1985, Ser. No. 722,516
Int. Cl.[4] F25B *19/00*
U.S. Cl. 236—11 5 Claims



1. A method of increasing efficiency of a heating system having a burner, a control to turn said burner on and off and an inlet whereby cool air enters said heating system and an outlet whereby warm air exits said heating system, comprising:

positioning a first temperature sensing means in said inlet;

positioning a second temperature sensing means in said outlet;

measuring temperature rise between said inlet and said outlet occurring during normal operation of said heating system in heating a room from a first temperature to a second temperature;

cycling said burner on when said room reaches said first temperature until the temperature differential between said outlet and said inlet reaches a first percentage of said temperature rise which occurred during normal operation of said heating systen and off until the temperature differential between said outlet and said inlet reaches a second percentage of said temperature rise which occurred during normal operation and continuing said cycling until said room reaches said second temperature reached during normal operation.

4,607,788

MIXING VALVE

Brian Bendall, Nr. Newport, and Stephan W. Flannery, Wolverhampton, both of England, assignors to Meynell Valves Limited, Wolverhampton, England

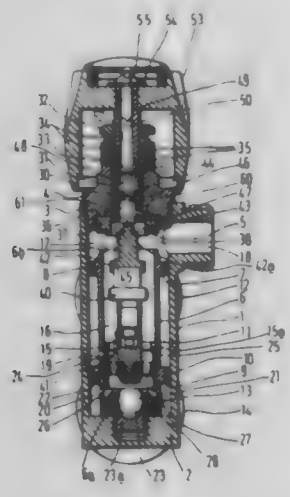
Continuation of Ser. No. 489,100, Apr. 27, 1983, abandoned, which is a continuation-in-part of Ser. No. 422,948, Sep. 24, 1982, Pat. No. 4,509,677. This application Sep. 28, 1984, Ser. No. 655,543
Claims priority, application United Kingdom, May 26, 1982, 8215409; Mar. 3, 1983, 8305916
Int. Cl.[4] G05D *23/13*
U.S. Cl. 236—12.2 20 Claims

1. A valve for controlling the mixing of hot and cold liquids comprising:

a hollow body having one end closed by a tap-head, inlets for hot and cold liquids communicating via fluid passageways with a mixing chamber in which the aforesaid liquids mix, an outlet for the mixed liquids communicating with said mixing chamber, and including a valve means positioned adjacent the said mixing chamber for controlling the rate of flow of liquids from the respective hot and cold inlets via passageways into the mixing chamber, a temperature responsive device located in the said mixing chamber and arranged to regulate the position of the said valve means to maintain the liquids on the mixing chamber at a substantially stable temperature, and control means operative through said tap head to open and close a shut off valve between said mixing chamber and said mixed liquid outlet and to select the temperature of said mixed liquids up to a predetermined maximum temperature;

wherein said valve means comprises a piston movable be-

tween a first position in which it seats against a first valve seat to restrict the flow of liquid from the cold inlet from entering the said mixing chamber whilst permitting liquid from the hot liquid inlet to enter the said mixing chamber and a second position in which it seats against a second valve seat whereby it prevents liquid from the hot liquid



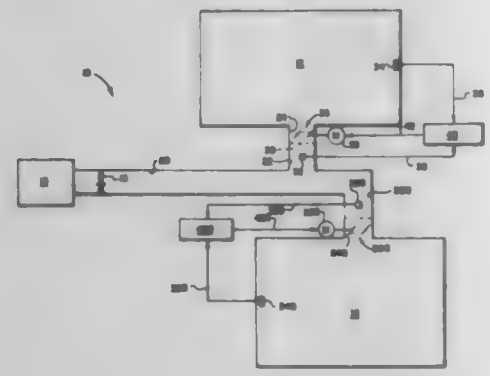
inlet from entering the said mixing chamber whilst permitting liquid from the cold liquid inlet to enter the said mixing chamber, said movement not exceeding about 0.4 to 0.6 mm., and said first and second valve seats being permanently fixed against axial movement with respect to the said body.

4,607,789

PROPORTIONAL MOTOR DRIVE CONTROL

William W. Bowman, Dallas, Tex., assignor to Hoffman Controls Corporation, Dallas, Tex.

Division of Ser. No. 266,461, May 22, 1981, Pat. No. 4,422,571.
This application Jun. 9, 1983, Ser. No. 502,555
The portion of the term of this patent subsequent to Dec. 27, 2000, has been disclaimed.
Int. Cl.[4] F24F *7/00*
U.S. Cl. 236—49 5 Claims



1. In an air conditioning system having an air distribution duct and a temperature controlled zone communicating with said duct, the improvement comprising:

an air flow damper disposed within said duct;

first electronic sensor means disposed within said duct for directly sensing the actual velocity of air flow within said system;

second electronic sensor means disposed within said zone for directly sensing the actual temperature of air within said zone; and

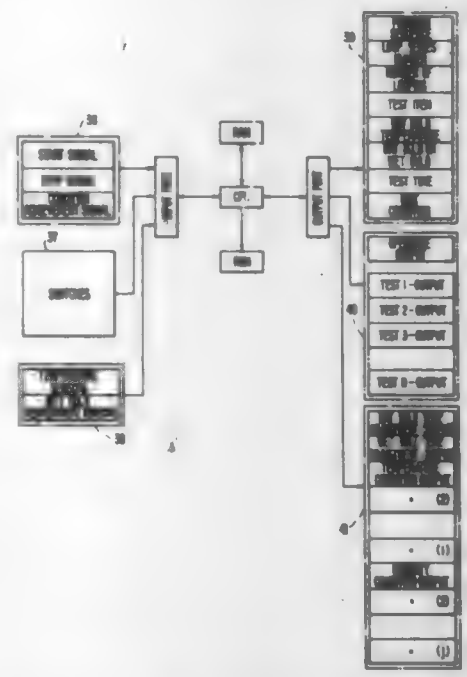
means responsive to the relative outputs of said first and second electronic sensor means for controlling the amount of opening of said damper within said duct for regulating the air flow velocity through said duct.

4,607,790

CYCLE SEQUENCE TIME/TEMPERATURE CONTROLLER

Hiroshi Matsuki, and Takao Sumiyoshi, both of Tokyo, Japan, assignors to Suga Test Instruments Co., Ltd., Tokyo, Japan

Filed Feb. 27, 1985, Ser. No. 706,299
Claims priority, application Japan, Jul. 20, 1984, 59-149705
Int. Cl.[4] G05D *23/00*
U.S. Cl. 236—94 1 Claim



1. A cycle sequence time/temperature controller for a combination corrosion tester, comprising:

a means for setting a loop number and a number of repetitions thereof;

a means for setting a sequence of test items within a loop, a test temperature, a test humidity and an operating time;

a means for outputting a tester operation control signal;

a means for enabling the start of an operation of said tester according to an external start signal;

a means for providing an output corresponding to each test item for said set operating time only; and

a means for providing an adjustment output signal for a dry bulb temperature and an adjustment output signal for a wet bulb temperature, each signal providing corresponding adjustments of said tester at said set test temperature and said set test humidity;

wherein said controller has a display for displaying said loop number and said number of repetitions which are currently being effected, during its operation, and for further displaying: a test item number, the dry bulb temperature, one of either the wet bulb temperature or humidity, and the time elapsed, during its operation.

4,607,791

HYDRONIC ROOM HEATING DEVICE

Phillip E. Gantner, 173 Lake Shore Dr., Box 573, Hammonton, N.J. 08037

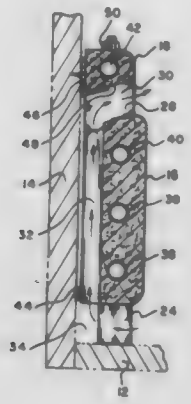
Filed Dec. 5, 1984, Ser. No. 678,293
Int. Cl.[4] F24H *3/00*; F24C *1/00*
U.S. Cl. 237—71 14 Claims

1. A hydronic room heating device for a room having a floor and walls;

(a) a heat radiating panel constructed of a cementous compound,

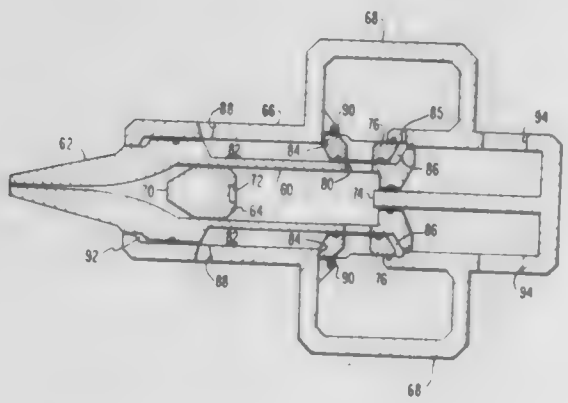
(b) air radiating means constructed of the cementous compound comprising fins in unitary construction with and in heat conduction relationship with the heat radiating panel the fins being in vertical alignment with troughs between the fins opening downwardly below the panel and upwardly above the panel with the fins facing a wall and

positioned to receive air flowing past the air radiating means and heat the air flowing into the room,
(c) holding means to hold the panel above the floor, and



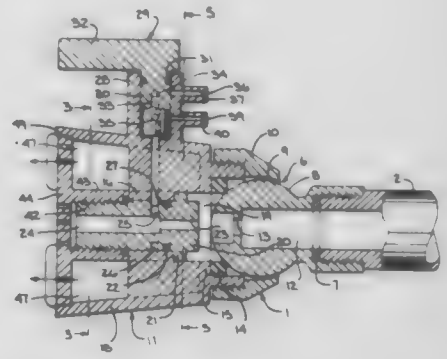
(d) transport piping means embedded in the panel to carry heated liquid in conduits through the panel and conduct heat to the panel.

4,607,792
OSCILLATING PULSED JET GENERATOR
Chapman Young, III, P.O. Box 1173, Steamboat Springs, Colo. 80477
Filed Dec. 28, 1983, Ser. No. 566,350
Int. Cl.[4] E21B 7/18
U.S. Cl. 239—101
10 Claims



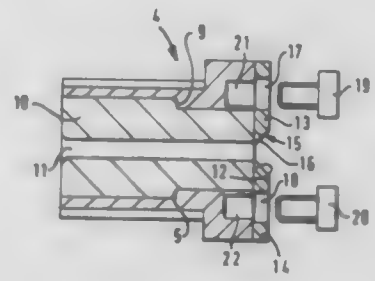
1. A device for generating high-energy pulsed water jets by means of an unsteady acceleration process:
an accelerating means;
a launch tube;
a cumulative-type nozzle carried by and movable with said launch tube with respect to said accelerating means;
a piston wholly contained by and slidable within said launch tube;
means for initiating a liquid package within said launch tube in front of said piston, and establishing a transient hydrodynamic seal of the nozzle tip and a temporary (transient) partial vacuum within said launch tube between said piston and nozzle to ingest a predetermined amount of liquid within said launch tube and substantially empty said nozzle;
means for rapidly accelerating said launch tube and nozzle in a forward direction while said piston and said package, by reason of their inertia, remain substantially fixed in space and become located in a position to be subsequently driven by a high-pressure gas forwardly toward said nozzle;
and means for driving said piston and liquid package toward said nozzle upon reaching said position.

4,607,793
SHOWER HEAD WHICH UNIFORMLY DISPENSES LIQUID ADDITIVES
Robert A. Eberle, 414 W. Burnett St., Beaver Dam, Wis. 53916
Filed Apr. 9, 1984, Ser. No. 598,362
Int. Cl.[4] B05B 7/30
U.S. Cl. 239—318
3 Claims



1. A shower head dispenser, comprising a body having a water inlet in one end connected to a source of water under pressure and having an outlet in the opposite end, said body including a central annular section and an outer wall spaced radially outward of said annular section, said body also including at least one radially extending leg connecting said annular section with said outer wall, said annular section defining a longitudinally extending first passage communicating between said inlet and said outlet and the space between said annular section and said outer wall defining a second passage communicating between said inlet and said outlet, said leg having a third radial passage communicating between said first passage and the exterior of said body, a plurality of containers, each containing a liquid additive, a supply line connected to each container, aspirating conduit means interconnecting said third passage and each supply line, and manually operated valve means interconnecting said supply lines and said aspirating conduit means whereby the additives can be selectively dispensed, flow of water through said first passage creating an aspirating action to draw liquid additive from one of said containers through said third passage to said first passage and mixing said additive with the water.

4,607,794
CONTROL OF JETS OF LIQUID
Norman Horwood, 11, Melville Hall, Holly Road, Edgbaston, Birmingham, England
Filed Mar. 2, 1984, Ser. No. 585,775
Claims priority, application United Kingdom, Mar. 4, 1983, 8306082
Int. Cl.[4] B05B 1/26
U.S. Cl. 239—455
11 Claims



1. Apparatus for deflecting a high pressure jet of liquid, comprising:
(a) a nozzle;
(b) an orifice in said nozzle through which liquid may pass to form said jet;
(c) said orifice having an inlet end for liquid and an outlet end;
(d) a pair of deflecting members, each of said deflecting

members having an inlet-end facing surface and an outlet-end facing surface, said outlet-end facing surface being configured to form a chisel shaped end region of said deflecting member, which region terminates in a sharp edge;

(e) mounting means enabling mounting of said deflecting members relative to said outlet end of said nozzle;

(f) the deflecting members being positioned in a jet deflecting position by said mounting means so they are diametrically opposed to each other and so that a portion of each said chisel shaped end region projects into the path of said jet, each said outlet-end facing surface being inclined away from said sharp edge to prevent said jet, as it passes through a restrictive aperture formed by the opposed sharp edges, from adhering, by capillary action, to said deflecting member; and

(g) securing means for firmly securing each deflecting member relative to said nozzle in said jet deflecting position.

4,607,795

SPRAY HEAD ASSEMBLY

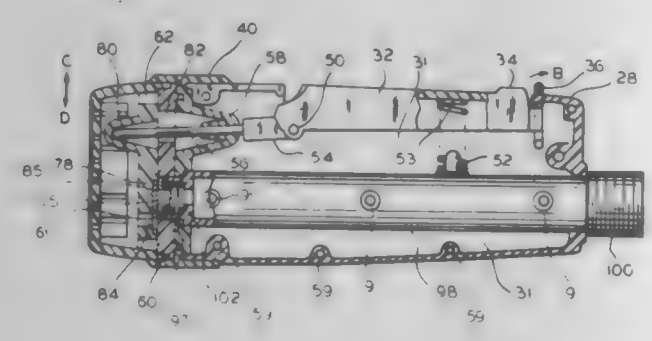
Ralph Ettlinger, Glencoe, and John A. Biela, Niles, both of Ill., assignors to Amco Corporation, Chicago, Ill.

Continuation-in-part of Ser. No. 533,606, Sep. 19, 1983, Pat. No. 4,527,743. This application Oct. 15, 1984, Ser. No. 661,180

The portion of the term of this patent subsequent to Jul. 9, 2002, has been disclaimed.

Int. Cl.[4] B05B *9/00*

U.S. Cl. 239—530 **14 Claims**



7. A spray head assembly comprising an elongated housing, a plate at one end of said housing having spray holes formed therein for giving a generally rectangular spray pattern, movable actuator arm means at the other end of said elongated housing for controlling the flow of water through said spray holes, spring means for normally biasing said movable actuator arm means to a position which shuts off the flow of water, pipe means having a sealing member at one end thereof for conveying water through said housing means to said spray holes, a low friction bushing on the end of said pipe, a sliding valve means positioned in front of said sealing member for sliding over said bushing and opening and closing said pipe means responsive to movement of said actuator arm means, and a blukhead for sealing said housing to said plate containing said pattern of spray holes, said bulkhead including at least a conical flexible section in said bulkhead for transmitting actuator arm movement to said sliding valve means.

4,607,796

METHOD OF MAKING POWDER FROM RUBBER AND VULCANIZATION PRODUCTS

Nikolai S. Enikolopov; Anatoly I. Nepomnyaschy; Lidia A. Filmakova, all of Moscow; Valentin P. Krasnokutsky, Zagorsk; Leonid I. Kurakin, Moscow; Elena L. Akopian, Moscow; Khristofor A. Markarian, Moscow; Saibdzhan S. Negmatov, Tashkent; Suleiman K. Matkarimov, Osh; Yury A. Polivanov, Moscow; Pavel P. Sherstnev, Moscow, and Viliatary B. Pavlov, Moscow, all of U.S.S.R., assignors to Nauchno-Proizvodstvennoe Obiedinenie "Norplast" , Moscow, U.S.S.R.

Filed Nov. 30, 1984, Ser. No. 676,550

Int. Cl.[4] B02C *19/12*

U.S. Cl. 241—3 **8 Claims**

1. A method of making a powder from a source material comprising rubber, rubber vulcanizates and mixtures thereof which comprises compressing the material at a pressure of 0.2 to 0.7 MPa, subjecting the compressed material to a shearing force of from 0.03 to 5 N/mm^2 at a pressure of from 0.2 to 50 MPa at a first temperature of from 80° to 250° C. to form a hot-sheared material and subjecting the hot-sheared material to a shearing force of from 0.03 to 5 N/mm^2 at a pressure of from 0.2 to 50 MPa at a second temperature of from about 15° to 60° C. to form a cooled powder material.

4,607,797

METHOD AND APPARATUS FOR PULVERIZING POLYMERS

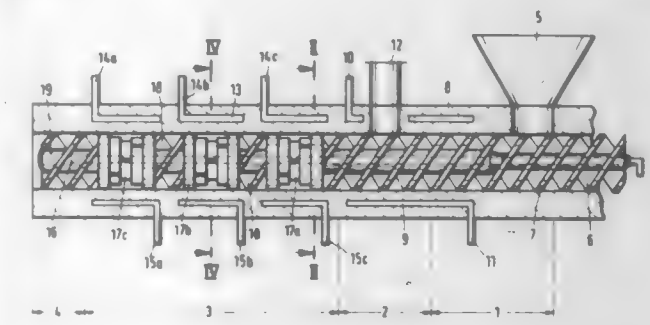
Nikolai S. Enikolopow; Stanislaw A. Wolfson; Anatolie I. Nepomnjaschtschie; Wadim G. Nikolskie; Wiktor A. Teleschow; Lidia A. Filmakowa, all of Moscow, U.S.S.R.; Heinz Brinkmann, Bennigsen, Fed. Rep. of Germany; Eckart Pantzer, Isernhagen, Fed. Rep. of Germany, and Eberhard Uhland, Burgdorf, Fed. Rep. of Germany, assignors to NPO Norplast, U.S.S.R. and Hermann Berstorff Maschinenbau GmbH, Fed. Rep. of Germany

Filed Sep. 7, 1984, Ser. No. 648,286

Claims priority, application Fed. Rep. of Germany, Sep. 9, 1983, 3332629

Int. Cl.[4] B02C *19/12*

U.S. Cl. 241—23 **6 Claims**



1. A method of producing a powder from polymeric material in an extrusion device, said extrusion device comprising a barrel having an internal surface defining a hollow cavity extending longitudinally within said barrel, screw means rotatable in and extending longitudinally with respect to said hollow cavity, said barrel having opposed first and second end regions, polymeric material feed means disposed in said first end region and communicating with said hollow cavity, powder discharge means disposed in said second end region and also communicating with said hollow cavity, said hollow cavity, intermediate said first and second end regions, being divided into at least first and second zones, heating means in thermal communication with at least said first zone and cooling means in thermal communication with at least said second zone, comprising the steps of:

(a) feedng said material into said first end region and said first zone;

(b) heating said material in said first zone to above the fusion temperature of said material;

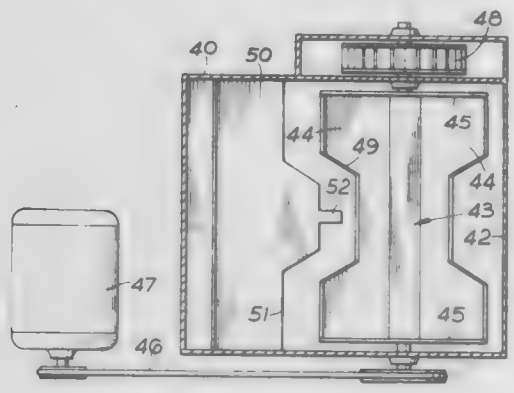
(c) conveying said fused material into said second zone;
(d) cooling said material in said zone to a temperature below the solidification temperature of said material;
(e) simultaneously pre-crushing and pulverising said solidified material in said second zone to form a powder; and
(f) discharging said powdered material from said second end region,
said fusion, cooling, pre-crushing and pulverisation being effected in a continuous operation in said extrusion device.

4,607,798

LAMP CRUSHING MACHINE

Kenneth F. Odlin, Wynfleet, Skegness Road, Hogsthorpe, Lincolnshire, England

Continuation-in-part of Ser. No. 312,841, Oct. 19, 1981, abandoned. This application Mar. 26, 1984, Ser. No. 593,689
Claims priority, application United Kingdom, Oct. 29, 1980, 8034719
Int. Cl.⁴ B02C *19/14*
U.S. Cl. 241—99 **3 Claims**



1. A lamp crushing machine comprising:
a casing dividable into a central zone and a lower zone,
an inclined chute having an open upper end and an open lower end communicating with the central zone of the casing for receiving lamps introduced thereinto,
a rotor housing disposed within the central zone of the casing,
a rotor consisting of a drum of triangular cross-section having a trio of equidistant radial vanes and circumferential end plates at its opposite ends and being mounted transversely of and substantially the width of the rotor housing,
electrical drive means for driving the rotor,
each radial vane having a central outwardly-facing recess,
a downwardly-inclined plate fixed to the inclined chute and projecting into the rotor housing and having a central outwardly-facing projection and a central finger extending from and outboard of the projection toward and complementing the recesses of the successive vanes rotatable therepast for the crushing of lamps fed between the plate and rotor,
a hopper located in the lower zone of the casing beneath the drum for receiving crushed pieces of the lamps falling from the drum.

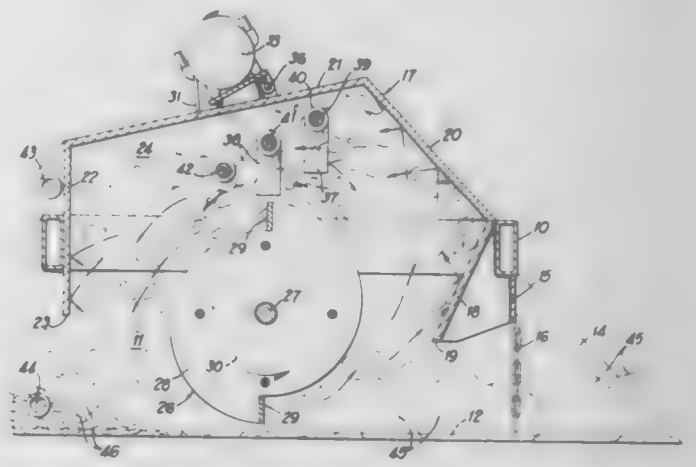
4,607,799

MOBILE STONE CRUSHER

Bobby R. Currie, Rte. 1, Box 181, Kennard, Tex. 75847

Filed May 30, 1985, Ser. No. 739,322
Int. Cl.⁴ B02C *13/282*
U.S. Cl. 241—101.7 **2 Claims**

1. A mobile stone crusher comprising a track loader, a stone crusher mounted on said track loader including
a hood having multiple angled stone deflector walls at its front, top and rear and being open at its bottom,
spaced side walls connected with the hood and extending below the bottom of the hood and having skids along their bottom edges and defining between them a through passage adapted to receive windrowed stones during movement of the stone crusher along the windrow,
a transverse horizontal axis impact rotor extending between and journaled on said side walls within the through passage near the longitudinal center of the through passage and the open bottom of the hood,
power drive means for the impact rotor on the stone crusher driving it in rotation counter to the direction of movement of the stone crusher along a windrow of stones, and



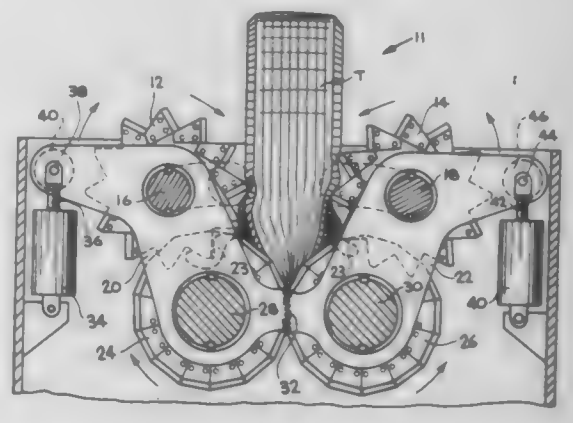
pendulum stone breaker hammer means held within the hood above the impact rotor whereby stones fractured by the rotor are deflected by said deflector walls of the hood into the pendulum hammer means and through such means, the stones which are then reduced in size falling in a windrow through the open bottom of the hood behind the impact rotor.

4,607,800

SOLID WASTE COMMINUTION MACHINE

Randel L. Barclay, 5616 Carpenter Rd., Stockton, Calif. 95205

Continuation of Ser. No. 545,071, Oct. 24, 1983, abandoned. This application Jun. 10, 1985, Ser. No. 742,650
Int. Cl.⁴ B02C *7/04*
U.S. Cl. 241—159 **12 Claims**



1. A solid waste comminution machine of the type having two sets of interleaving wheels, including a lower set and an upper set of wheel members, each set including a pair of shafts on which the wheel members are mounted, said pairs of shafts mounted on upright, mutually facing, movable arms, the improvement comprising,
the upper set of wheel members having ripping and shearing tools attached to the circumferential periphery of the wheel members, the pair of shafts associated with the upper set of wheel members mounted on the movable arms, the lower set of wheel members mounted on a pair of fixed, parallel shafts, said shafts supported at one end of the arms with the lower set of wheel members interleaving in a material shearing relation, the shafts forming a fixed pivot axis for said arms, said arms having fixed lengths with inward and outward ends, the outward ends

extending beyond the shafts associated with the upper set of wheels thereby forming leverage regions, and

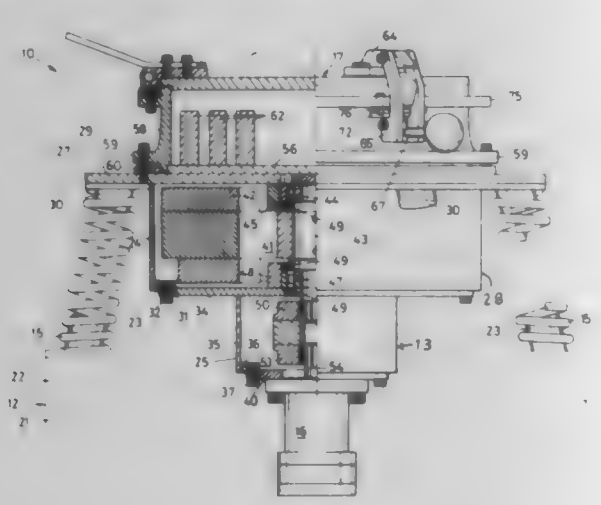
hydraulic piston means having fixed ends and free ends, the free ends connected to said leverage regions for bringing the arms toward each other to a point at which said upper set of wheels mesh with sufficient force to enable ripping of material between said upper set of wheels.

4,607,801

PULVERIZING MILL

Phillip R. Harvey, 305 South Rd., Mile End South, Australia

Filed Jun. 26, 1984, Ser. No. 624,616
Claims priority, application Australia, Jun. 27, 1983, PG0007
Int. Cl.[4] B02C *17/14*
U.S. Cl. 241—199.1 **11 Claims**



1. A pulverising mill comprising;

a fixed base frame,

a vibrating frame comprising an upper cylindrical housing defining an eccentric weight housing chamber,

support coil springs interocnnecting said base frame and said vibrating frame for resiliently supporting the frame,

a pair of vertically spaced aligned bearing means carried in the vibrating frame,

a vertical, driven shaft having its upper end and an intermediate portion thereof respectively journalled in said bearing means, said shaft extending centrally through said vibrating frame,

an eccentric weight housed within said weight housing chamber and carried by said shaft for rotation therewith, said weight being secured to the shaft between said pair of spaced bearing means,

a pulveriser bowl centrally supported on said upper cylindrical housing of said vibratory frame for vibratory movement therewith and in proximity to said eccentric weight so that, during use of the mill, tilting of said pulveriser bowl is substantially eliminated, said pulveriser bowl having a removable base wear plate, and

an hydraulic motor attached to said vibrating frame and having its drive shaft coupled by flexible coupling means to the lower end of said driven shaft.

4,607,802

TURBINES FOR FIBER SEPARATION

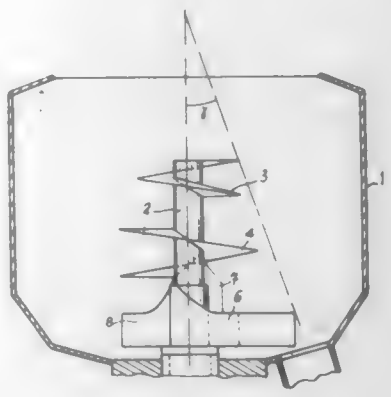
Jean-Pierre J. Lamort, Saint Lunier en Champagne, France, assignor to E et M Lamort, France

Filed Apr. 11, 1984, Ser. No. 599,091
Claims priority, application France, Apr. 22, 1983, 83 06636
Int. Cl.[4] B02C *23/36*
U.S. Cl. 241—46 B **10 Claims**

1. Pulping apparatus for the processing of recovered waste paper comprising:

a primary pulper open housing; and

a pulper turbine mounted inside and in the bottom of said open housing, said turbine having the general shape of a helix, said turbine including a vertical shaft carrying successively at least two separate helical disks coaxial to the shaft, said disks having a small pitch and extending angularly around said shaft over at most 360° approximately, separated along the shaft by a distance at least equal to 1.5 times the helical pitch of one disk, the base of the turbine shaft carrying a set of radially-extending fins curved into a spiral shape starting from the shaft, a generating line of said fins being substantially parallel to the vertical shaft axis;



wherein the largest diameter of any one of said disks is substantially smaller than the inside diameter of said primary pulper housing,

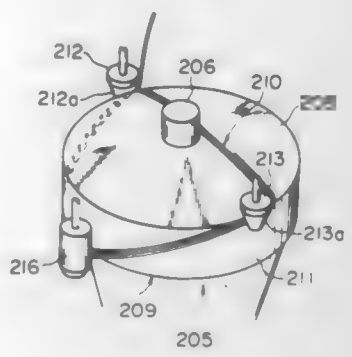
whereby said recovered waste paper being pulped is imparted first a downward motion in said housing, toward said fins, and then an outward motion from said turbine shaft, toward the inner wall of said housing upon rotation of said turbine in a predetermined direction.

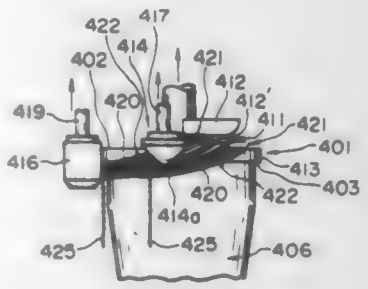
4,607,803

ROTOR/STATOR WINDING AND METHOD AND APPARATUS FOR PRODUCING SAME

Yoshikuni Nozawa, Nagano, Japan, assignor to Entac Company, Limited, Japan

Division of Ser. No. 511,687, Jul. 7, 1983, Pat. No. 4,538,083.
This application Mar. 26, 1984, Ser. No. 592,779
Claims priority, application Japan, Jul. 7, 1982, 57-118015; Aug. 26, 1982, 57-147989; Aug. 26, 1982, 57-146990; Nov. 25, 1982, 57-206412; Nov. 25, 1982, 57-206413; Nov. 25, 1982, 57-206414; Nov. 29, 1982, 57-208995
Int. Cl.[4] B65H *81/06*
U.S. Cl. 242—1.1 R **17 Claims**





1. A method for producing a winding for an electric motor, said method comprising the steps of:

pushing a pair of rollers against a first shoulder portion at an end of a winding core, said winding core being rotatable about a first axis;

pushing a further roller against the periphery of said core at a location remote from said shoulder portion;

winding a wire around said core to form a band of wire surrounding said first axis and passing over said shoulder portion; and

utilizing said pair of rollers for holding said band of wire in said shoulder portion away from said first axis while utilizing said further roller for holding a respective portion of said band of wire away from said shoulder portion.

4,607,804

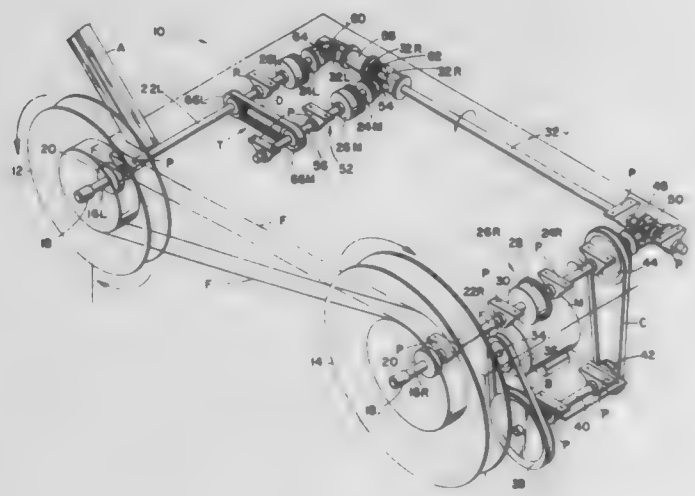
FILM WINDING AND REWINDING APPARATUS

Randall G. Urlik, Englewood, Colo., assignor to Goldberg Brothers, Inc., Denver, Colo.

Continuation-in-part of Ser. No. 666,187, Oct. 29, 1984. This application Feb. 15, 1985, Ser. No. 701,932

Int. Cl.[4] B65H *18/10;* G03B *1/04*

U.S. Cl. 242—67.4 5 Claims



1. In an apparatus for winding film which includes first and second film reel mounting spindles mounted for rotation in spaced substantially parallel relation; first and second film reels selectively mountable upon one of said first and second spindles for rotation therewith in side-by-side spaced relation, said reels being aligned to transfer a length of film wound upon one to the other; an electric motor; first and second input shafts journalled for rotation in coaxial relation to said first and second spindles; a first electrically-actuated electromagnetic combination clutch/brake unit operatively interconnecting said first input shaft to said first spindle; a second electrically-actuated electromagnetic combination clutch/brake unit operatively interconnecting said second input shaft to said second spindle; a first power transfer means operatively interconnecting said motor and said first and second input shafts for simultaneous synchronous rotation; said first clutch/brake unit having a first actuated position effective to frictionally link said first input shaft and first spindle together for conjoint rotation, said second clutch/brake unit having a deactuated position disconnecting said second input shaft from said second spindle and a first actuated position effective to frictionally inhibit relative rotational movement between said second input shaft and said second spindle in opposite directions; and control means electrically connected to said first and second clutch/-brake units operative in a first position to actuate both of said first and second clutch/brake units into their first actuated positions whereby the film reel mounted on said first spindle becomes a driven take-up reel onto which the film is wound and the film reel mounted on said second spindle becomes a frictionally-braked supply reel effective to tension any film wound thereon as it passes to said take-up reel, the improvement which comprises: a third input shaft operatively connected to the first power transfer means for rotation in the opposite direction to said second input shaft; a fourth shaft journalled for rotation in coaxial relation to said third input shaft; a third clutch/brake unit having a deactuated position disconnecting said third and fourth shafts and a first actuated position effective to frictionally inhibit relative rotational movement between said coaxially aligned third and fourth shafts; and second power transfer means operatively interconnecting said fourth shaft and second spindle together for rotation in the same direction; said control means being electrically connected to said third clutch/brake unit and operative in a second actuated position to deactuate said second clutch/brake unit and actuate said third clutch/brake unit into its first actuated position so as to frictionally inhibit rotation of the supply reel on said second spindle in the same direction in which the take-up reel is turning.

4,607,805

SAFETY BELT EMERGENCY LOCKING RETRACTOR

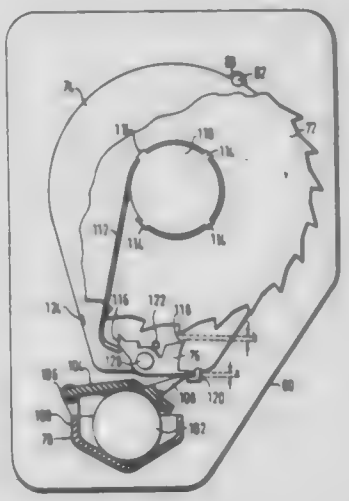
Wilfried Burghardt, Altomuenster; Hans-Hellmut Ernst, Sulfeld, and Josef Mayer, Weichs, all of Fed. Rep. of Germany, assignors to Britax-Kolb GmbH & Co., Dachau, Fed. Rep. of Germany

Filed Mar. 11, 1985, Ser. No. 710,006

Claims priority, application United Kingdom, Mar. 13, 1984, 8406493

Int. Cl.[4] B60R *22/40*

U.S. Cl. 242—107.4 A 6 Claims



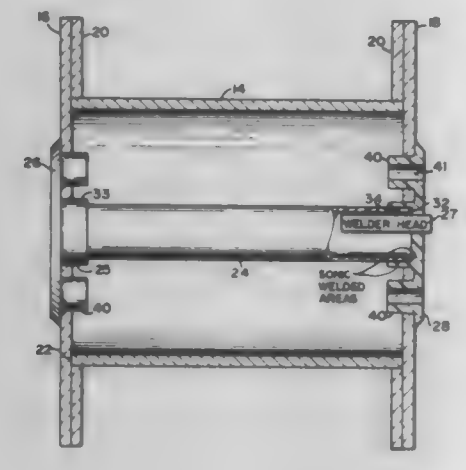
1. An emergency locking retractor for a vehicle safety belt comprising a pair of mutually parallal frame members, a spool, for receiving the belt, mounted for rotation relative to the frame members, primary locking means arranged to block rotation of the spool relative to the frame members and secondary locking means for actuating the primary locking means, the secondary locking means including a ratchet wheel coupled to the spool, an inertia sensor having an output member, a carrier movable relative to the frame members, a stop member mounted on the carrier, a pawl having a pawl tip, a pivotal mounting securing the pawl on the carrier so that the pawl is movable by the output member of the inertia sensor into simultaneous engagement with the stop member and the ratchet wheel whereby subsequent rotation of the spool in the belt protraction direction causes movement of the carrier which in turn actuates the primary locking means, the stop member for the pawl being so positioned relative to the pivotal mounting thereof that the pawl comes into abutment with the stop member before its pawl tip abuts against the periphery of the ratchet wheel between adjacent teeth thereof.

4,607,806

CABLE REEL WITH REINFORCING FLANGES

Carl F. Yealy, New Oxford, Pa., assignor to Merline Industries, Inc., Hanover, Pa.

Filed Dec. 20, 1985, Ser. No. 811,369
Int. Cl.[4] B65H *75/14*
U.S. Cl. 242—117 1 Claim



1. A reel for storage of rope or cable, comprising:

a hollow central cylindrical core having an axial opening therethrough;

a plate at each end of said core secure secured generally perpendicular to the axis of the core, each end plate having a center opening, and means on each end plate to maintain its center in axial alignment with the axis of the core;

reinforcing means holding the end plates securely to the core, comprising:

a cylindrical axial member of plastics material extending through the center opening of both said end plates and through the axial opening of said core, a flange of plastics material secured to each end of the axial member, at least one of said flanges being secured to an end of the axial member by sonic-welding so that both said flange are held in tight contact against the outer surfaces of said end plates and thus reinforce the structural integrity of the reel,

wherein said hollow central cylindrical core (**14**) is fabricated of paperboard material,

wherein said plate (**16, 18**) at each end of said core (**14**) is fabricated of corrugated paperboard material and has at least one off-center opening means for receipt of a lug element (**40**),

wherein said means (**20**) on each end plate (**16, 18**) to maintain its center in axial alignment with the axis of the core (**14**) is fabricated of corrugated paperboard material and is adhesively secured to each of said end plates (**16, 18**),

wherein each of said flange elements (**26, 28**) has a central aperture means formed therein by way of a boss (**33**) having an inner opening means (**34**) sized so as to receive a free end means (**32**) of said cylindrical axial member (**24**) such that said free end means (**32**) is retained internally of each of said flange elements (**26, 28**) upon assembly, and means wherein a sonic welder head (**27**) may be placed in said central aperture means of said flange elements (**26, 28**) to sonically weld said free end (**32**) to said opening means (**34**) of said boss (**33**) while retaining said free end (**32**) within the confines of said flange elements (**26, 28**),

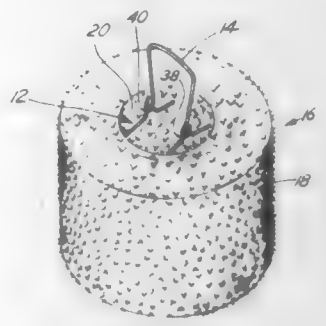
wherein each of said flange elements (**26, 28**) has at least one lug element (**40**) formed thereon and located off-center from said flange central aperture means, said lug element (**40**) being sized so as to be retainably received in the off-center opening means formed in said corrugated paperboard plates (**16, 18**) at each end of said paperboard core (**14**).

4,607,807

CARRYING DEVICE FOR COILED WIRE

Richard D. Reysen, Eureka, Ill., assignor to Keystone Steel & Wire Company, Peoria, Ill.

Filed Jul. 15, 1985, Ser. No. 755,415
Int. Cl.[4] B65H *49/00*
U.S. Cl. 242—129 11 Claims



1. A carrying device for a coil of barbed wire having a substantially hollow core, comprising, in combination:

a chordal support having two end sections and a central section therebetween, whereby each of said end sections may extend into said coil and said central section may extend through said substantially hollow core; and

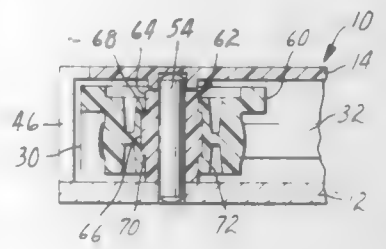
a handle having two end sections and a central section therebetween, each of said end sections including hooking means for interconnecting said handle to said central section of said chordal support, whereby said carrying device and coil of wire may be raised by lifting said central section of said handle.

4,607,808

WEAR-RESISTANT CAPSTAN FOR BELT DRIVEN CARTRIDGE

Leslie M. Collins, White Bear Lake, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jan. 16, 1985, Ser. No. 692,351
Int. Cl.[4] G03B *1/04;* G11B *15/32;* B65H *20/00*
U.S. Cl. 242—192 3 Claims



1. A capstan assembly rotatably supported by a mounting pin between spaced, parallel walls of a tape cartridge and having a cylindrical outer surface engaging a drive belt, comprising:

a conductive, carbon-filled acetal resin capstan providing said cylindrical outer surface; and

a wear-resistant, acetal resin sleeve interposed between said pin and said capstan, which sleeve engages said capstan and is rotatably supported by said pin.

4,607,809

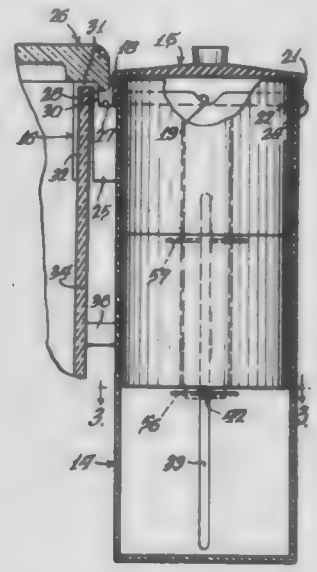
TOILET PAPER HOLDER AND DISPENSER

Charles F. Sineni, and Debra A. Sineni, both of 214 N. Elmhurst Rd., both of Prospect Heights, Ill. 60070

Filed Jan. 16, 1984, Ser. No. 570,815
Int. Cl.[3] B65H *19/04*
U.S. Cl. 242—55.3 10 Claims

8. A toilet paper dispenser for holding and dispensing rolls of paper, comprising: an elongated tubular body member having a length at least as great as the axial length of two rolls of toilet

paper, said tubular body member having a closed end and an open end, said tubular body member being adapted to slidably receive at least two rolls of toilet paper, a removable cover for the open end of the tubular body member so that the rolls of paper are concealed when the cover is in place, a bracket extending from the tubular body member adapted to fit over



the tank of a conventional residential toilet tank and under the tank cover therefor, and a selectively axially movable member extending through the tubular body member under the roll adjacent the closed end of the tubular body member for moving the paper rolls toward the open end of the tubular body member.

4,607,810

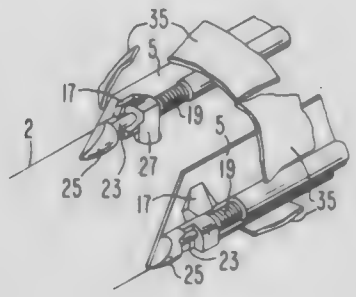
PASSIVE CONSTRAINT FOR AERODYNAMIC SURFACES

Alson C. Frazer, Santa Ana, Calif., assignor to Ford Aerospace & Communications Corporation, Detroit, Mich.

Division of Ser. No. 472,891, Mar. 7, 1983, Pat. No. 4,523,728. This application Jan. 7, 1985, Ser. No. 689,351

Int. Cl.⁴ F42B *13/32*

U.S. Cl. 244—329 **1 Claim**



1. Passive constraint apparatus for holding aerodynamic surfaces of an airframe in a retracted position with respect to a generally tubular outer surface of the airframe during an initial, relatively low velocity, phase of the airframe's flight, while permitting deployment of the aerodynamic surfaces into a position generally orthogonal to the airframe's outer surface during a subsequent, relatively high velocity, phase of the airframe's flight, said passive constraint apparatus comprising:

less than totally cured shrink tubing which holds the aerodynamic surfaces retracted during said initial phase, wherein the diameter of the shrink tubing, when totally cured, is significantly less than the cross-sectional diameter of said airframe outer surface; whereby

during said subsequent phase the shrink tubing attempts to shrink to its totally cured diameter but is prevented from doing so by said airframe outer surface, causing tensile failure in the shrink tubing and thereby permitting deployment of the aerodynamic surfaces.

4,607,811

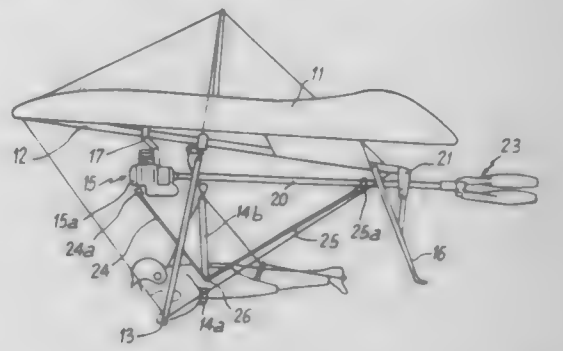
PROPULSION UNIT FOR HANG GLIDER TYPE AIRCRAFT, AND AIRCRAFT FITTED WITH THE PROPULSION UNIT

Yves J. Rousseau, La Gironie, 493300 Etriche, France

Filed Sep. 26, 1984, Ser. No. 655,204

Int. Cl.⁴ B64C *17/00*

U.S. Cl. 244—13 **7 Claims**



1. A propulsion unit for an aircraft of the hang glider type including a wing with a keel in its plane of symmetry serving as a fastening point for a trapeze and a harness by which the pilot is suspended below the wing, the trapeze and the harness being disposed in conventional manner for suspending a pilot in the prone position, wherein the motor propeller unit is mounted in such a manner as to be movable at least in the longitudinal direction along the keel axis under pilot control thereby enabling the pilot to displace separately both the center of gravity of the motor propeller unit and his own center of gravity between an extreme forward position ahead of the center of lift of the wing and an extreme rearward position behind the center of lift.

4,607,812

HINGE MECHANISM FOR AN AIRCRAFT DOOR

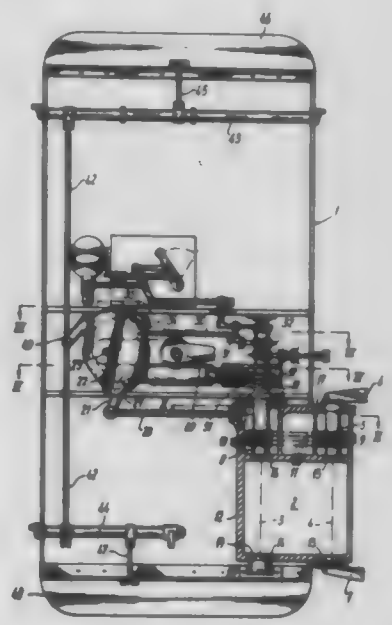
Frans W. De Haan, Mijdrecht, and John Blackburn, Uithoorn, both of Netherlands, assignors to Fokker B.V., Netherlands

Filed Oct. 12, 1983, Ser. No. 541,105

Claims priority, application Netherlands, Oct. 13, 1982, 8203956

Int. Cl.⁴ B64C *1/14*

U.S. Cl. 244—129.5 **7 Claims**



1. An aircraft door of the type which during flight is pressed all around against a door case under the influence of cabin pressure, which door during opening and closing thereof moves by means of a hinge mechanism with two mutually parallel rotational axes and an intermediate hinge part, one of said rotational axes being connected to the door and the other being connected to the door case, such that when the door is opened during a first motion phase the intermediate hinge part carries out a rotational movement around the rotational aixs

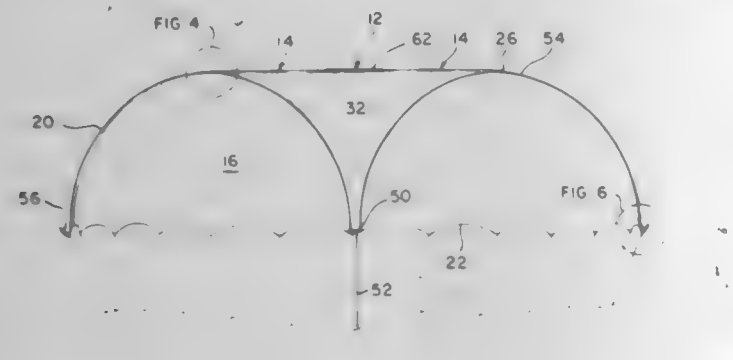
connected to the door case, whereby simultaneously the angle between the door and said intermediate hinge part is decreased, and thereafter in a second motion phase said intermediate hinge part carries out a rotational movement in the opposite direction around the rotational axis connected to the door case, and when the door is closed said movements are carried out with reversed rotational directions and in reverse order wherein a hydraulic or mechanical transmission mechanism is present in the hinge structure coupled with the two rotational axes for coordinating the rotation around both rotational axes in the first motion phase and wherein hydraulic means is coupled to both rotational axes of the hinge mechanism, which hydraulic means are hydraulically coupled mutually such that the movement of the door relative to the hinge mechanism and the movement of the hinge mechanism relative to the door case is defined at least during the first motion phase and wherein the movement of the door during the second motion phase is damped by means of a piston/cylinder combination mounted within the door, with one side coupled to the intermediate hinge part.

4,607,813

PARACHUTE ASSEMBLY

William W. Jeswine, Issaquah, Wash., assignor to William W. Jeswine, Seattle, Wash.

Filed Mar. 10, 1983, Ser. No. 474,243
Int. Cl.⁴ B64D *17/08, 17/16*
U.S. Cl. 244—145 **9 Claims**



7. A parachute assembly comprising:
(a) a canopy having an outer periphery; and
(b) a plurality of collapsible bands of flexible material secured to the outside periphery of the canopy in the form of loops which project outward to speed the opening of the chute and which are fastened to the main canopy along one side and are of a sufficient length so as not to reduce the circumference of the canopy.

4,607,814

BALLISTIC RECOVERY SYSTEM

Boris Popov, 14155 44th St. South, Afton, Minn. 55001

Filed Oct. 13, 1983, Ser. No. 541,787
Int. Cl.⁴ B64D *17/72*
U.S. Cl. 244—147 **3 Claims**



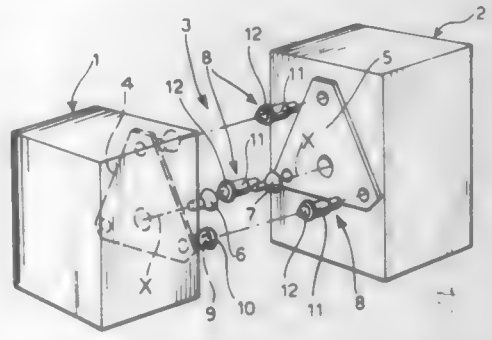
1. A ballistically deployed parachute recovery apparatus adapted to be attached to an air vehicle such as a glider, hang glider or ultralight, comprising
a. a parachute container;
b. a parachute normally folded within said parachute container and adapted to be secured to an air vehicle;
c. a projectile housing and an explosively activated projectile contained within said housing, said projectile being attached to said parachute for pulling said parachute from the parachute container when ballistically discharged at approximately 300 feet per second;
d. a mechanically activated first explosive cartridge within said projectile housing, adapted to explode upon mechanical activation and drive said projectile from said housing at approximately 300 feet per second;
e. means for manually exploding said first cartridge and driving said projectile from said housing to deploy said parachute;
f. an electrically activated explosive second cartridge effectively within said projectile housing, adapted to explode upon receiving an electrical charge having an amperage greater than a predetermined firing amount and adapted not to explode if said charge is less than said predetermined amount as when the electrical circuitry is being tested by an operator, upon said second cartridge exploding, said projectile is then driven from the projectile housing at approximately 300 feet per second;
g. a battery;
h. an electrical switch electrically connected between said second cartridge and said battery to permit the operator of the vehicle to selectively activate and explode said second cartridge and thus deploy said parachute; and
i. a test circuit connected to said battery and said second cartridge to allow an operator to selectively pass an electrical charge, less than said predetermined firing amount, through said second cartridge to check the electrical connections and operative status of said recovery apparatus without exploding said second cartridge.

4,607,815

DOCKING SYSTEM FOR SPACE MODULES

Edmondo Turci, and Guido Fubini, both of Turin, Italy, assignors to Aeritalia Societa Aerospaziale Italiana p.A., Turin, Italy

Filed Apr. 19, 1984, Ser. No. 601,820
Claims priority, application Italy, Apr. 19, 1983, 67426 A/83
Int. Cl.⁴ B64G *1/64*
U.S. Cl. 244—161 **13 Claims**



1. A docking system for space modules comprising a docking device having male and female coupling members carried by the two space modules respectively, said coupling members having complementary conical surfaces for contacting each other in the coupled condition, complementary locking means adapted to secure said coupling members against axial separation while permitting relative rotation therebetween, said locking means comprising resilient retaining means carried by one of said coupling members and arranged to snap engage a corresponding seat member rotatably mounted in the other coupling member, reference means on said conical coupling surfaces for providing the correct alignment for said modules, and a plurality of connecting devices arranged to lock the two space modules in a precise aligned position wherein each connecting

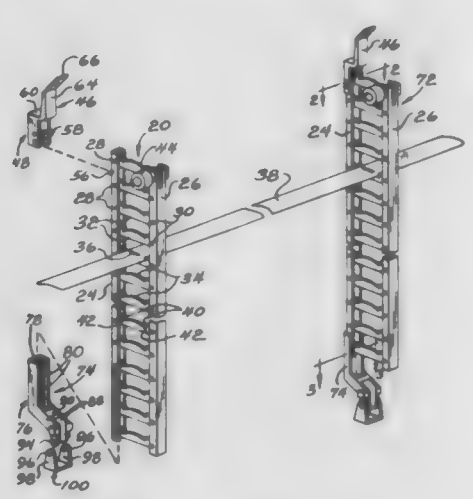
device comprises a coupling seat located in one of said modules and a coupling shank carried by the other module and axially moveable between a withdrawn inoperative position and an extended coupling position, the coupling shank having a head which is expandable within said coupling seat to form the connection between the two modules.

4,607,816

WINDOW BLIND FITTINGS

Richard K. Haines, Elkhart, Ind., assignor to Elkhart Door Corporation, Elkhart, Ind.

Filed May 7, 1984, Ser. No. 607,433
Int. Cl.[4] E06B *7/28*
U.S. Cl. 248—208 **3 Claims**



1. Installation structure for mounting a window blind structure in a window frame of a vehicle such as a van, which window blind structure includes an upright post having upper and lower ends, said installation structure comprising a first bracket of molded plastic material mounted on the upper end of said post, said first bracket being channel-shaped and having a pair of spaced flanges and an interconnecting web and substantially embracing said upper end of said post, said first bracket and said upper end of said post having cooperating means securing said first bracket on said upper end of said post, there being a top wall spanning and integral with said web and said flanges and extending forwardly of said flanges, said top wall forwardly of said flanges having an integral leg extending upwardly therefrom and angularly disposed foot means thereon for mountign aganist a window frame surface, a second bracket of molded plastic material mounted on the lower end of said post, said second bracket being channel-shaped and having a pair of spaced flanges and an interconnecting web and substantially embracing said lower end of said post, said second bracket and said lower end of said post having cooperating means securing said second bracket on said lower end of said post, and a member pivotally secured to said second bracket for mounting against another window frame surface.

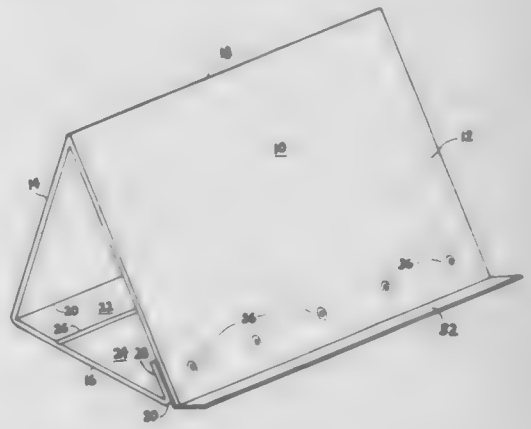
4,607,817

COLLAPSIBLE PODIUM

Salvatore A. Aquino, 337 Trevor La., Bala Cynwyd, Pa. 19004

Filed May 6, 1985, Ser. No. 731,070
Int. Cl.[4] A47B *97/04*
U.S. Cl. 248—459 **4 Claims**

1. A collapsible podium comprising a front panel, a back panel in hinged relationship along its top edge with the top edge of the front panel, and a flat floor panel in hinged relationship essentially along its rear edge with essentially the bottom edge of the back panel and having in hinged relationship thereto a front extension disposed to have a front surface thereof adjacent the bottom backside of the front panel with said extension attached to the front panel, with said floor panel having a rear portion and a front portion in hinged relationship to each other, and further with said front panel having disposed along essentially its lower edge a lip projecting for-



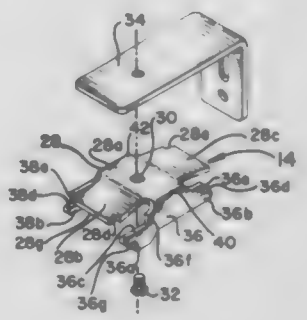
wardly at essentially a right angle with the front panel and at an upward angle from a horizontal plane.

4,607,818

INSTALLATION BRACKET FOR VENETIAN BLIND HEAD RAIL

George Georgopoulos, Pine Brook, N.J., assignor to Levolor Lorentzen, Inc., Lyndhurst, N.J.

Filed Aug. 30, 1983, Ser. No. 527,754
Int. Cl.[4] F16M *13/02*
U.S. Cl. 248—544 **4 Claims**



1. For use in combination with a head rail of a venetian blind, said head rail being of essentially U-shaped cross section and having a bottom, two parallel spaced apart substantially vertically extending side walls with flanges extending inwardly from upper ends of said side walls to form flange edges: a bracket for mounting said head rail to a support, said bracket comprising:

a relatively flat top portion with means for fastening said top portion to said support and having opposite ends adapted to respectively at least partially cover said flanges outwardly of said flange edges;

and first and second spaced apart essentially parallel side portions depending from said top portion; each side portion having first and second opposite ends with outer edges spaced apart a distance smaller than the distance between said side walls but greater than the distance between said flange edges, the first and second ends of said first side portion being respectively turned by 180° with respect to the first and second ends of said second side portion, each first end having a first substantially horizontally extending edge forming a supporting shelf for one of said flanges and a second edge substantially perpendicular to said first edge thereof for guiding said one flange horizontally, each second end having a first edge essentially aligned with said first edge of said first end for forming a supporting shelf for the other flange and a second edge substantially perpendicular to said first edge thereof, said second edges of said second ends being spaced further from their respective outer edge than the second edges of said first ends are from their respective outer edge so as to leave a gap between said second edges and the respective adjacent flange edge;

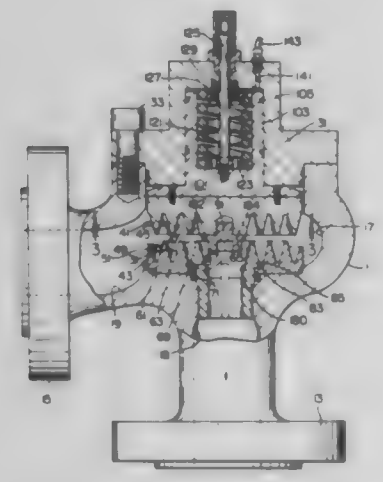
whereby said top portion can first be fastened to said support; one of said flanges can be suspended below one end of said top portion on said first end of one side portion and said second end of the other side portion; and said head rail can then be swung about said flange edge of said one flange; and said other flange can then be forced over said second end of said one side portion and said first end of the other side portion and placed below the other end of said top portion on said second end of said one side portion and said first end of said other side portion.

4,607,819

HIGH PRESSURE RADIAL FLOW VALVE

Richard W. Spila, 2225 Spenard Rd., Anchorage, Ak. 99503

Filed May 7, 1985, Ser. No. 732,171
Int. Cl.[4] F16K *47/04, 47/08*
U.S. Cl. 251—121 **11 Claims**



1. A valve having a valve body,

said body being formed with a cavity and also being formed with an inlet to said cavity and an outlet from said cavity, both being in direct communication with said cavity,

means within said cavity providing for pressure reduction by multiple stages,

said means comprising a single pair of opposed plates one of which has a central port in direct communication with said inlet,

said plates having alternating annular teeth and grooves in interdigitated relationship providing a single generally sinuous radial flow path from said port to the peripheries of said plates and from said peripheries directly to said outlet,

said teeth and grooves being of truncated triangler shape in cross section,

the teeth of one plate mating with the grooves of the other plate so that said plates when closed reduce the depth of said flow path to substantially zero,

and means for adjusting the degree of interdigitation to vary the depth of the sinuous flow path and thus alter the degree of multiple stage pressure reduction,

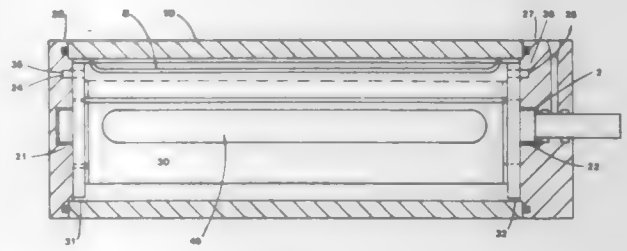
and means providing, during the slightly opened position of the valve, flow channels which are long relative to the length of the transition zones, but wherein the ratio decreases as the valve progressively opens, the just mentioned means including the feature that each set of the sides of the teeth of one plate are parallel to the associated sides of the other plate, and wherein the sides are steep by having a minor acute angle to the vertices of the teeth.

4,607,820

ROTATING GATE VALVE

Rudolf F. Nissen, 3639 Pescadero Rd., Pescadero, Calif. 94060

Filed May 20, 1985, Ser. No. 735,676
Int. Cl.[4] F16K *31/524*
U.S. Cl. 251—251 **10 Claims**



1. A pressure-tight valve for alternately sealing and opening pressure-tight chambers, comprising:

a housing having an elongated cylindrical cavity and having a first and second access port located on substantially opposite sides of the axis of rotation of the cavity, each port being substantially aligned with the other, the first of which ports is surrounded by a seat area;

a rotor, concentrically and rotatably mounted within the cylindrical cavity of the housing, and constructed such that there exists an open area corresponding in dimension and in location to the ports in the housing and so positioned that the openings of the housing and the open area of the rotor are substantially aligned during a portion of the rotor's rotation with respect to the housing, and having at each side of the open area two eccentrically-shaped cam lobes, the high points of which are generally orthogonal to the the plane of the effective area of the opening of the rotor;

a gate, having a cover element which is shaped substantially on a section of a cylinder the outside diameter of which cylinder is substantially the same as the diameter of the cylindrical cavity, and having an open position, in which the cover does not obstruct the passage formed between the first and second ports, and a closed position in which the cover entirely covers the first port and rests against the seat area of the first port, and having two end plates rigidly affixed to said cover, each end plate having a cam follower surface, adapted to engage the cam surfaces of the rotor, which cam follower surfaces are parallel to one another and are substantially perpendicular to the effective area of the opening of the port when the gate is in its closed position, which gate lags the rotation of the rotor with respect to the cylindrical cavity during the initial portion of rotation from the closed position of the gate and during the final rotation of the rotor toward the closed position, said gate being free to move away from the wall of the cylindrical cavity when the cam followers are disengaged from the cam surfaces.

4,607,821

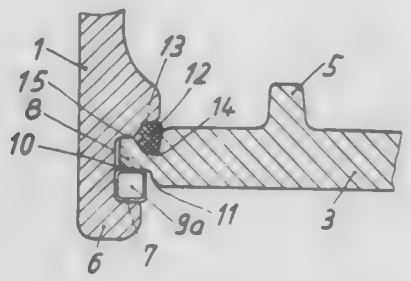
SHUTOFF VALVE

Walfried David, Maxdorf, Fed. Rep. of Germany, assignor to Bopp & Reuther GmbH, Mannheim, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 574,561, Jan. 27, 1984, abandoned. This application Mar. 11, 1985, Ser. No. 709,778
Int. Cl.[4] F16K *3/12, 27/12*
U.S. Cl. 251—329 **31 Claims**

1. A shutoff valve for a flow medium, comprising a spindle; a shutoff member displaceable by said spindle between open and closed positions; and a valve housing having an inlet and an outlet for a flow medium and a housing wall defining an inner chamber for displacing said shutoff body and having a closeable lateral mounting opening with a height and a width corresponding to those of said shutoff body; a cover arranged to close said lateral mounting opening and having an edge which forms a counter abutment; a plurality of holding projections formed on said housing in the region of said lateral

mounting opening and having free ends which are bent towards said cover and form an abutment for said edge of said cover; and a tensioning pin driveable between said abutment of



said holding projections and said edge of said cover which serve as said counter abutment, so as to sealingly mount said cover on said housing.

4,607,822

SHUTOFF VALVE WITH A CONICAL VALVE SEAT

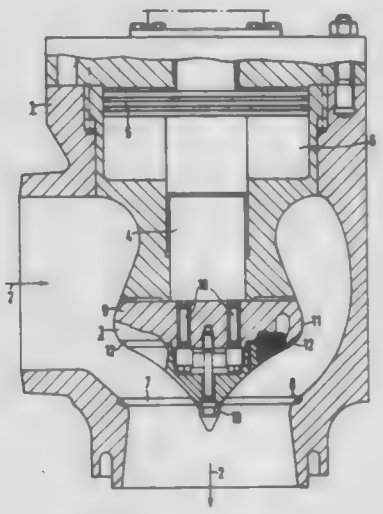
Hans-Peter Schabert, Erlangen; Max Heller, Uttenreuth; Erwin Laurer, Möhrendorf, and Hans Leinweber, Schwabach, all of Fed. Rep. of Germany, assignors to Kraftwerk Union Aktiengesellschaft, Mülheim, Fed. Rep. of Germany

Filed May 7, 1984, Ser. No. 607,687

Claims priority, application Fed. Rep. of Germany, May 9, 1983, 3316895

Int. Cl.[4] F16K *1/12, 1/46*

U.S. Cl. 251—334 3 Claims



1. Shutoff valve, comprising a conical valve seat, and a valve disc movable toward said valve seat in a given direction, said valve disc including a base body covering said valve seat, an annular projection projecting from said base body in said given direction, and a rim formed on the outside of said projection resting against said valve seat in a closed position of the valve, said projection having a region with a given wall thickness in vicinity of said base body, said projection having a free end and said free end of said projection being subdivided at least once in radial direction into rings having a larger cross section in the axial direction than in the radial direction, said rings being unsupported by said base body in radial direction, said rings reinforcing said free end of said projection to at least 1.5 times said given thickness in the radial direction and said rings having a deformation resistance against ovalizing being small enough to absorb substantially all radial forces acting on said valve seat.

4,607,823

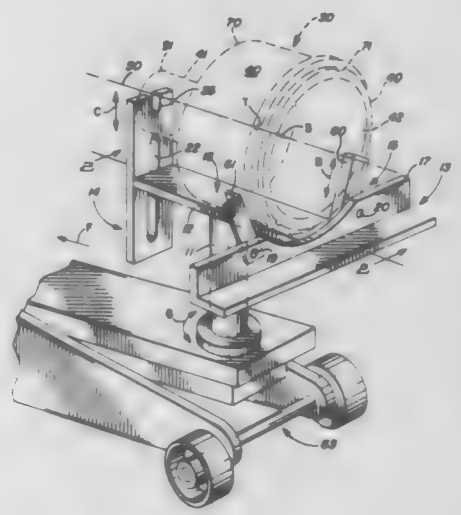
APPARATUS FOR REMOVING TRUCK BRAKE DRUM

Roy E. Thomas, 3523 W. Las Palmaritas, Phoenix, Ariz. 85021

Filed Feb. 27, 1984, Ser. No. 584,154

Int. Cl.[4] B66F *3/00*

U.S. Cl. 254—134 1 Claim



1. In combination with a brake drum carried on the spindle of a wheel axle assembly of a vehicle, the brake drum being secured to the spindle with fastening means and normally carrying a wheel rim, said rim being removed from said brake drum, said brake drum including

a generally cylindrical hollow member having

an outer surface,

an imaginary centerline passing therethrough and generally parallel to the ground,

a geometric centerpoint generally lying on said imaginary centerline, and

an acentric center of gravity located at an imaginary point spaced apart from the geometric centerpoint of said cylindrical body member,

a cylindrical aperture formed in said body member and having a centerline generally corresponding to said imaginary centerline of said cylindrical body member, said aperture being shaped and dimensioned to permit at least a portion of said spindle to pass therethrough,

a hub connected to said body member, and

at least one nut and bolt for attaching said wheel rim to said hub, said bolt being secured in and outwardly extending from said hub,

cradle apparatus positioned beneath and contacting said brake drum, said cradle apparatus including

(a) a stand having a plurality of ground engaging wheels,

(b) a base mounted on said stand for vertical displacement thereon,

(c) a first support member attached to said base and including a pair of spaced apart upstanding arms,

(d) a second upstanding support member attached to said base and adapted to receive and support said hub bolt

said first and second support members being shaped and dimensioned such that said brake drum is supported at only three points by said cradle apparatus,

(e) said hub bolt is supported by said second member, and

(f) said outer surface of said cylindrical body member only contacts and is supported by said cradle apparatus by bearing against each of said arms of said first support member,

and said body member and brake drum are maintained in position above and spaced apart from said base

said cradle apparatus permitting said brake drum to be moved free of said spindle without tilting said brake drum by removing said fastening means securing said brake drum to said spindle and displacing said cradle apparatus stand in a generally horizontal direction of travel away from said vehicle to remove said brake drum from said spindle.

4,607,824
GUARDRAIL END TERMINAL

William G. Krage, and Owen S. Deaman, both of Sacramento, Calif., assignors to Energy Absorption Systems, Inc., Chicago, Ill.

Filed Jan. 11, 1983, Ser. No. 457,126
Int. Cl.[4] A01K *3/00;* E01F *15/00*
U.S. Cl. 256—13.1 26 Claims



11. A highway barrier for preventing a vehicle which leaves a roadway and impacts the barrier head-on from impacting a hard point protected by the barrier, said barrier comprising:

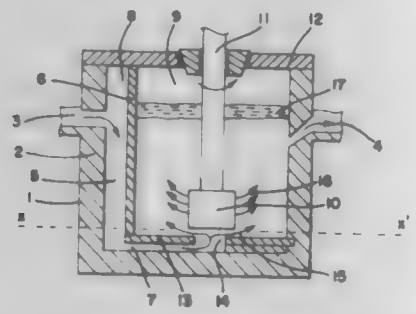
an axially elongated collapsible structure configured to collapse in response to axial impact forces of an impacting vehicle; and

redirecting means, included in the structure, for urging at least a forward portion of the structure in a selected lateral direction, away from the roadway, upon the application of said axial impact forces from the vehicle, in order to redirect the vehicle in said selected lateral direction, away from the hard point and away from the roadway.

4,607,825
LADLE FOR THE CHLORINATION OF ALUMINIUM ALLOYS, FOR REMOVING MAGNESIUM

Emile Briolle, Saint-Egreve; Jean-Marie Hicter, Voiron, and Adolfo Mateos, Grenoble, all of France, assignors to Aluminum Pechiney, France

Filed Jul. 8, 1985, Ser. No. 752,892
Claims priority, application France, Jul. 27, 1984, 84 12270
Int. Cl.[4] C22B *21/06;* F27D *7/02*
U.S. Cl. 266—215 7 Claims

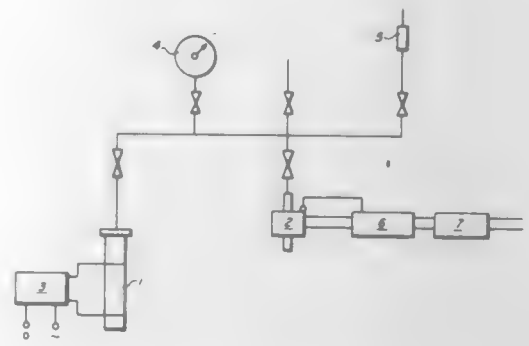


1. A ladle for the chlorination of molten aluminum alloys to remove magnesium, comprising a feed compartment having an intake spout, a treatment compartment having an outlet spout, a vertical partition separating said feed compartment from said treatment compartment, said vertical partition positioned at a distance above the bottom of the ladle to form a space for the flow of molten metal, a horizontal wall having an opening therethrough and extending at the level of the bottom of said vertical partition to close said treatment compartment at its base, and a rotor disposed within said treatment compartment for radial dispersion of chlorinated gas, the axis of said rotor coinciding with the axis of said opening, whereby molten aluminum passing through the opening flows in the same direction as the gas dispersed by the rotor.

4,607,826
APPARATUS FOR PREPARING IMPROVED POROUS METAL-HYDRIDE COMPACTS

Moshe Ron, Haifa, Israel, assignor to Technion Research and Development Foundation Ltd, Haifa, Israel

Division of Ser. No. 518,341, Jul. 29, 1983, Pat. No. 4,507,263.
This application Nov. 2, 1984, Ser. No. 667,759
Int. Cl.[4] B22F *3/00*
U.S. Cl. 266—251 4 Claims



1. A sintering apparatus for preparing improved porous metal hydride compacts consisting of a sintered metal-embedded porous metal hydride, the apparatus comprising:

(a) means for preparing an intimate mixture, in powder form, of a finely divided hydridable metal alloy hydride and a finely divided metal;

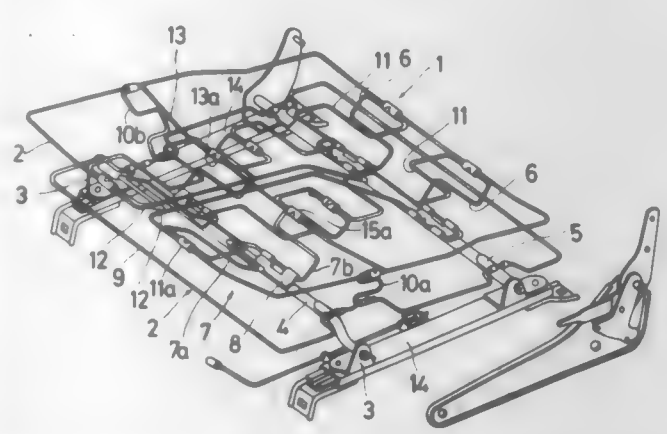
(b) means for hydriding said powder by charging it with hydrogen, and

(c) means for sintering the hydrided metal-embedded metal hydride comprising a furnace, means for supplying hydrogen to said furnace at a pressure above equilibrium pressure appropriate to the prevailing temperature, and means for simultaneously applying mechanical stress.

4,607,827
SEAT FOR VEHICLES

Kenichi Kazaoka, Nagoya, and Hiroshi Okazaki, Cheryu, both of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Japan

Filed Aug. 2, 1984, Ser. No. 637,068
Claims priority, application Japan, Aug. 3, 1983, 58-142034
Int. Cl.[4] F16F *3/02;* A47C *7/28*
U.S. Cl. 267—107 9 Claims



1. In a seat for mounting on forward and rearward pairs of brackets in a vehicle, the seat having a cushion for supporting a seated passenger, the improvement comprising:

spring frame means having an arrangement of seat spring means for supporting said seat cushion,

a pair of forward and rearward connecting members for interconnecting pairs of said forward and rearward brackets, said connecting members being spaced apart on a lower side of said seat,

said seat spring means including a pair of cushion springs extending along opposite sides of the upper portion of said

spring frame means and connecting the front and rear portions of said spring frame means,

said seat spring means also including a pair of forward springs for connecting the front portion of said spring frame means and a portion of each of said cushion springs rearwardly therefrom to said forward connecting member, said forward springs being pivotable on said forward connecting member,

said seat spring means also including a pair of rearward springs for connecting the rear portion of said spring frame and said rearward connecting member, and

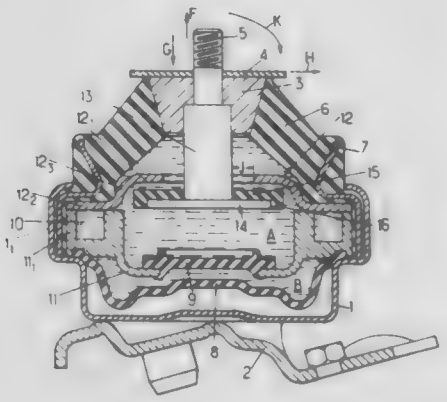
said pair of forward springs substantially defining a forward arrangement of seat springs and a rearward arrangement of seat springs, wherein the seated passenger is substantially supported along said rearward arrangement of said seat springs.

4,607,828

HYDRAULIC ANTIVIBRATION SUPPORT

Francois Bodin; Pierre Jouadé , and Daniel Le Guillant, all of Chateaudun, France, assignors to Hutchinson, Paris, France

Filed May 6, 1985, Ser. No. 731,010
Claims priority, application France, May 4, 1984, 84 06986
Int. Cl.[4] F16F *9/10*
U.S. Cl. 267—140.1 6 Claims



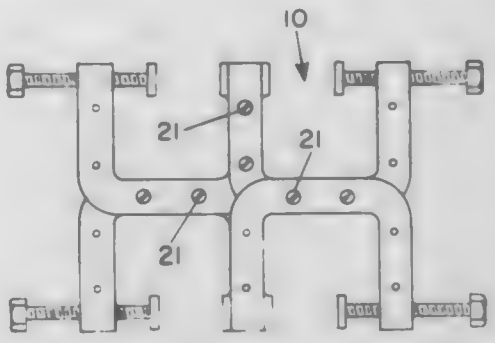
1. Antivibration device designed to be inserted for purposes of support and damping between two rigid elements, constituted by a fluid-tight box, interposed between the two rigid elements, said box comprising two rigid parts which can be made fast respectively with the two rigid elements, a first elastic wall connecting in fluid-tight manner one of the two rigid parts, to an annular armature, forming a portion of the other part, and ensuring the role of support between the two parts, a thin flexible wall borne in fluid-tight manner by the annular armature, a deformable partition also borne in fluid-tight manner by the annular armature, between the two said walls, and dividing the inside of the box into two chambers, namely an operating chamber comprised between the deformable partition and the first elastic wall and a compensating chamber comprised between the deformable partition and said thin flexible wall, said two chambers communicating with one another through a restricted passage, means for limiting to a small amplitude, that is to say less than 1 mm, the deformations of the partition in the axial direction perpendicular to its middle plane, and a liquid mass filling the two chambers, as well as the restricted passage, said device comprising a rigid ring borne by the annular armature, between the deformable partition and the first elastic wall, of which ring the inner edge dips into the operating chamber, and a foot extending from the first rigid part inwards of the operating chamber, said foot traversing with clearance, through a passage in the rigid ring and being terminated beyond said ring by an overlapping sole whose perpendicular cross-section relative to the foot is greater than the passage cross-section of the ring, thereby limiting deformation of the first elastic wall.

4,607,829

CLAMPING APPARATUS

Charles R. Suska, R.R. 1, Box 14, Roxbury, Conn. 06783

Filed Sep. 24, 1984, Ser. No. 653,922
Int. Cl.[4] B25B *1/20*
U.S. Cl. 269—88 5 Claims



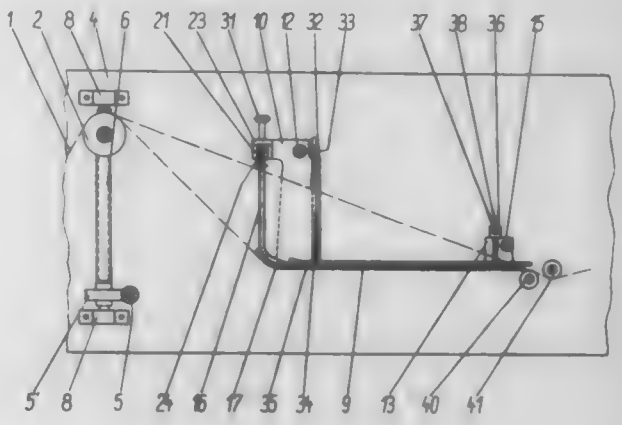
1. Clamping apparatus comprising at least two C-clamps, each of said C-clamps being formed by a frame of three sections and having at least one adjustable clamping surface, at least four holes formed in the frame of one of the C-clamps, two of the holes being located in at least two of the three sections of the frame, at least four holes formed in the frame of the second C-clamp to cooperate with the holes in the first C-clamp, the holes in the one C-clamp and the second C-clamp being spaced so that two holes in the one C-clamp register with two holes in the second C-clamp when the one and second C-clamp are juxtaposed in any one of many desired relationships, and two fasteners adapted to be inserted through the registered holes in the two C-clamps when the C-clamps are juxtaposed to hold the two C-clamps in a desired relationship.

4,607,830

LENGTHWISE FOLDING ARRANGEMENT WITH VERTICALLY ADJUSTABLE CONICAL TIP FOLDING MANDREL

Roland Schumann, Leipzig, German Democratic Rep., assignor to Veb Kombinat Polygraph "Werner Lamberz" Leipzig, Leipzig, German Democratic Rep.

Filed Jan. 22, 1985, Ser. No. 693,802
Claims priority, application German Democratic Rep., Jan. 20, 1984, 259504
Int. Cl.[4] B41L *43/04*
U.S. Cl. 270—41 9 Claims



1. A lengthwise folding arrangement for webs, comprising a rotatable vertically adjustable drawing-in roller; a horizontal guiding plate forming a folding edge; a rotatable withdrawing roller; a conically extending folding mandrel arranged adjustably under a plane of a web edge extending between said vertically adjustable drawing-in roller and said withdrawing roller, said folding mandrel having a conical tip which forms a harmonious transition to said folding edge of said guiding plate; and a guiding rod arranged over said guiding plate diagonally from said folding mandrel to a rear side of a line of intersection of the web edge and said withdrawing roller;

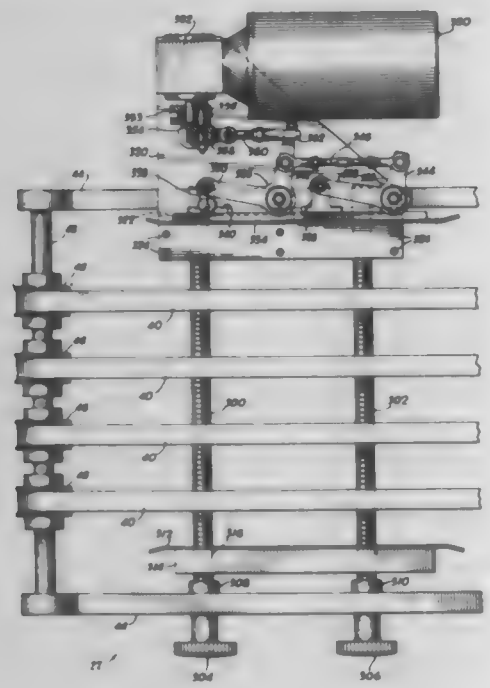
means for vertically adjusting said drawing-in roller; and means for vertically adjusting said conical tip of said folding mandrel.

4,607,831

OVERLAPPING SIGNATURE STREAM WITH ADJUSTABLE SIDE PLATE JOGGER

William B. Raybuck, Cocoa, Fla., assignor to Trimmer Machine Co., Inc., Dorset, Vt.

Division of Ser. No. 543,362, Oct. 19, 1983, Pat. No. 4,511,131.
This application Mar. 1, 1985, Ser. No. 706,973
Int. Cl.[4] B65H *39/02, 9/00*
U.S. Cl. 270—58 7 Claims



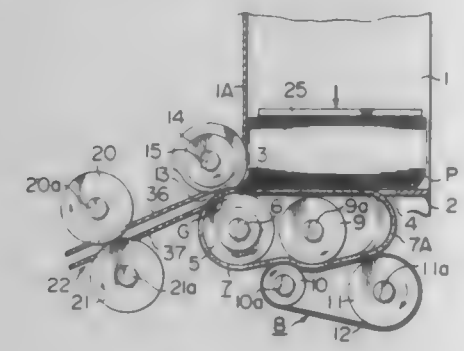
1. Jogging apparatus for aligning signatures while flowing in a moving stream in overlapping relationship, said apparatus comprising a first side plate adapted to be fixedly positioned relative to one edge of said stream of overlapping signatures for guiding the same, a second side plate positioned adjacent an opposite edge of said stream of overlapping signatures, means for bodily moving said second side plate back and forth in a direction perpendicular to said stream of signatures so that said stream is periodically struck by said second side plate and moved laterally against said first side plate, and adjustment means for selectively positioning said second side plate to be in or out of parallel with respect to said first side plate and said other edge of said moving stream of signatures.

4,607,832

ENDLESS BELT SEPARATOR HAVING AN UNSUPPORTED SEPARATING SURFACE

Masahiro Abe, Himeji, Japan, assignor to Glory Kogyo Kabushiki Kaisha, Himeji, Japan

Filed Mar. 12, 1985, Ser. No. 710,811
Claims priority, application Japan, Jan. 31, 1985, 50-12418[U]
Int. Cl.[4] B65H *3/04*
U.S. Cl. 271—10 6 Claims



1. A delivery device for pulling sheets of paper one at a time by the frictional contact with the foremost sheet of a stack of sheets of paper stored in registered relationship with each other and delivering the pulled out sheet to a successive device, comprising:

(a) an endless belt in contact with the surface of the foremost sheet of a stack of sheets of paper stored in registered relationship with each other;

(b) a rotary member which is disposed adjacent to the leading edge of the foremost sheet of said stack of sheets of paper and around which the front end portion of said endless belt extends;

(c) gate forming means disposed in opposed relationship with said rotary member to define a gate gap for permitting the passage of one sheet of paper between said gate forming means and the outer surface of said endless belt extending around said rotary member;

(d) means for maintaining said endless belt in a predetermined posture which forces the rear end portion of said endless belt extending around said rotary member toward the surface of the foremost sheet of paper in such a way that said rear end portion of said endless belt can be freely deformed and is brought into elastic contact with the surface of said foremost sheet of paper;

(e) driving means for driving said endless belt in the direction in which a sheet of paper is delivered; and

(f) transport means disposed downstream of said gate gap for clamping and transporting the sheet of paper delivered by said endless belt;

wherein said portion of said endless belt that can be freely deformed is brought into surface contact with the surface of said foremost sheet of paper;

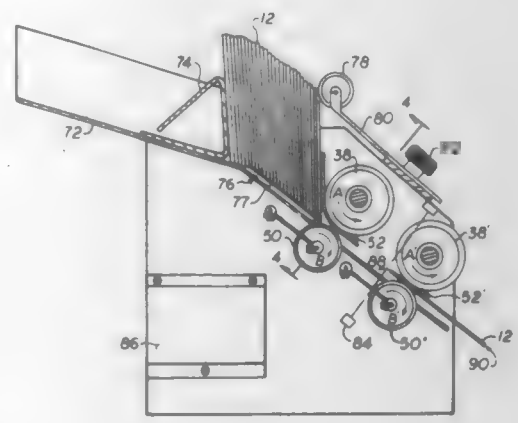
said transport means being driven at a velocity faster than the velocity of said endless belt so that when a sheet of paper is clamped and transported, the portion of the endless belt in the vicinity of the rotary member is driven at a faster velocity through the tail end of a sheet of paper, thereby causing the portion of said endless belt extending around said rotary member to be slacked; the slacked portion of said endless belt being displaced by said driving means and being then eliminated when the driving force imparted to said endless belt from the tail end of said sheet of paper being delivered is released; the portion of said endless belt in contact with said sheet of paper being maintained stationary when said slacked portion is being eliminated; the delivery of a sheet of paper being interrupted when said portion of said endless belt is maintained stationary, whereby the sheets of paper are intermittently delivered.

4,607,833

DEMAND DOCUMENT FEEDER

Eduard Svyatsky, Chicago; K. George Rabindran, Morton Grove, and Thomas J. Faber, Skokie, all of Ill., assignors to Bell & Howell Company, Chicago, Ill.

Filed Sep. 14, 1984, Ser. No. 650,926
Int. Cl.[4] B65H *5/06, 7/14*
U.S. Cl. 271—10 24 Claims



18. An envelope processing device comprising:

an inclined tray for holding a stack of envelopes, the inclined tray for holding a stack of envelopes, the inclined tray supporting one edge opposite the supporting envelope having a trailing edge opposite the supporting edge;

first friction feed means having a pair of rollers defining a nip and serving as means for separating the leading envelope of the stack from the rest of the stack and for feeding the supported edge of the envelope into its nip;

second friction feed means having a pair of rollers defining a nip and serving as means for separating the leading envelope of any pair of confronting envelopes fed by the first friction feed means from the other of the pair and for feeding the supported edge of the envelope into its nip;

means for mounting the second friction feeder means downstream from the first friction feeder means;

reversible drive means operatively connected to the first and second friction feed means for supplying rotational power in a forward envelope feed direction and a reverse encelope stopping direction;

sensing means for sensing the trailing edge of an envelope as it moves from the first friction feed means to the second friction feed means and for generating a stop control signal;

motor control means operated responsive to receiving the stop control signal for reversing and then stopping the reversible drive means when the sensing means detects the trailing edge of the envelope;

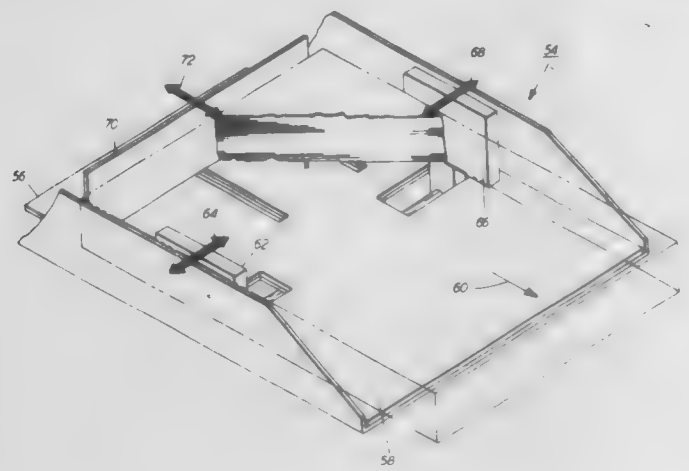
means for starting the reversible drive means in a forward direction when an operator has inputted information read from the envelope.

4,607,834

ADJUSTABLE SHEET GUIDE

Richard M. Dastin, Fairport, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Jun. 3, 1985, Ser. No. 740,675
Int. Cl.[4] B65H *1/04, 31/20*
U.S. Cl. 271—171 **5 Claims**



1. A tray for holding a stack of sheet material and being adjustable to accommodate stacks of sheet material of different widths and lengths, including:

a base plate for supporting the stack of sheet material thereon;

means, mounted movably on said base plate, for defining at least one side registration surface substantially normal to said base plate;

means, mounted movably on said base plate, for defining a rear registration surface substantially normal to said base plate with the plane defined by the rear registration surface being substantially normal to the plane defined by the side registration surface;

a drive motor;

a cam connected to said drive motor to rotate therewith, said cam having a first groove on one surface thereof and a second groove of a different profile than the first groove on the other surface thereof opposed therefrom;

a first cam follower mounted movably in the first groove of said cam and connected to said side registration means so that rotation of said cam by said drive motor moves said first cam follower to adjust the position of said side registration means to position the side registration surface in engagement with at least one side edge of the stack of sheet material on said base plate; and

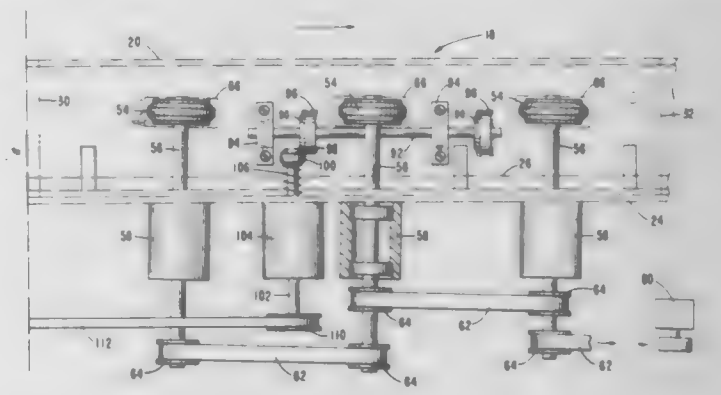
a second cam follower mounted movably in the second groove of said cam follower and connected to said rear registration means so that rotation of said cam by said drive motor moves said second cam follower to adjust the position of said rear registration means to position the rear registration surface in engagement with the rear edge of the stack of sheet material.

4,607,835

MULTIPLE DRIVE SHEET MOVING APPARATUS

Owen H. Wilson, Breslau, and Tadeusz Pecak, Kitchener, both of Canada, assignors to NCR Corporation, Dayton, Ohio

Filed Aug. 21, 1985, Ser. No. 768,083
Int. Cl.[4] B65H *7/02*
U.S. Cl. 271—227 **10 Claims**



1. A sheet moving apparatus comprising:

track means having first and second spaced side walls and a base extending therebetween;

a first plurality of drive rollers adjacent to one of the side walls for driving a sheet along the track means;

a second plurality of drive rollers positioned at an angle with respect to said first plurality of drive rollers and adjacent to said one of the side walls for driving a sheet towards said base;

a plurality of sensors to determine the position of a sheet within said track means;

a first plurality of back-up rollers, each positioned in alignment with one of said first plurality of drive rollers, and each positioned adjacent to the other of said side walls for cooperating with its corresponding drive roller to drive a sheet along the track means;

a second plurality of back-up rollers, each positioned in alignment with one of said second plurality of drive rollers, and each positioned adjacent to the other of said side walls for cooperating with its corresponding drive roller to drive a sheet toward said base;

first means for supporting said first plurality of back-up rollers for unitary movement into and out of operative engagement with said first plurality of drive rollers;

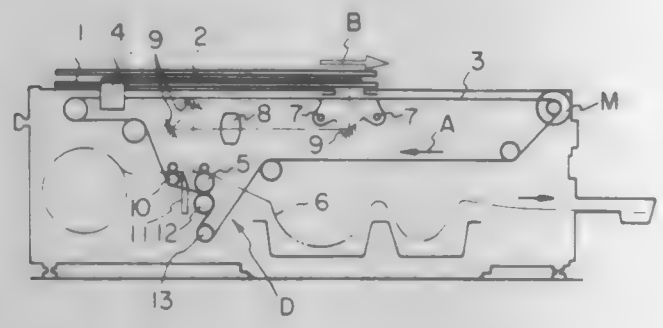
second means for supporting said second plurality of back-up rollers for unitary movement into and out of operative engagement with said second plurality of drive rollers;

actuating means responsive to said sensors for operating both of said first and second means to cause movement of one of said first and second plurality of back-up rollers into engagement with its corresponding plurality of drive rollers, and simultaneous movement of the other of said first and second plurality of back-up rollers out of engagement with its corresponding plurality of drive rollers.

4,607,836
COPYING MACHINE

Eiji Miyasaka, Hikoneshi, Japan, assignor to Dainippon Screen Mfg. Co., Ltd., Kyotoshi, Japan

Filed Sep. 13, 1985, Ser. No. 775,801
Claims priority, application Japan, Nov. 1, 1984, 59-167347[U]
Int. Cl.[4] B65H *5/06*
U.S. Cl. 271—272 2 Claims



1. A copying machine of reproducing the images in the original on a sheet, the copying machine comprising:

a motor for driving an endless belt running on a plurality of pulleys;

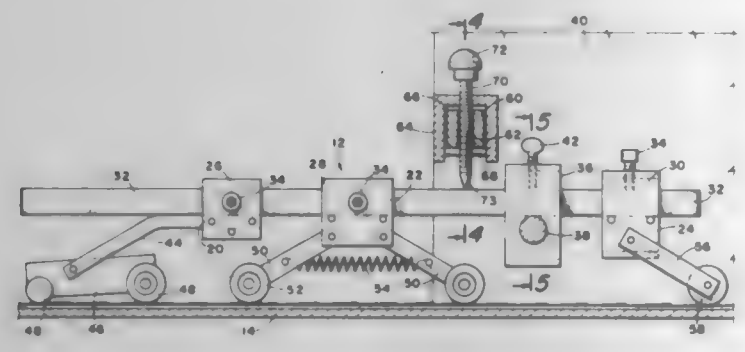
an original carrier secured to the endless belt so that the original carrier reciprocally moves in a fixed range in accordance with the movement of the endless belt; and

a sheet feeding device having a pair of feed rollers adapted to feed the sheet therebetween frictionally, and a driving roller kept in contact with one of the feed rollers so that friction drive is imparted thereto, the driving roller having an input pulley on which the endless belt runs, thereby ensuring that the amount of movement of the original carrier is transmitted to the feed rollers through the driving roller; and the driving roller and the input pulley being made to have the same diameter with a material having the same coefficient of expansion.

4,607,837
TENSION APPARATUS FOR FEEDER MACHINE

Bobby L. Pierce, Bixby, Okla., assignor to Sandco, Inc., Tulsa, Okla.

Filed Apr. 3, 1985, Ser. No. 719,887
Int. Cl.[4] B65H *5/36*
U.S. Cl. 271—273 3 Claims

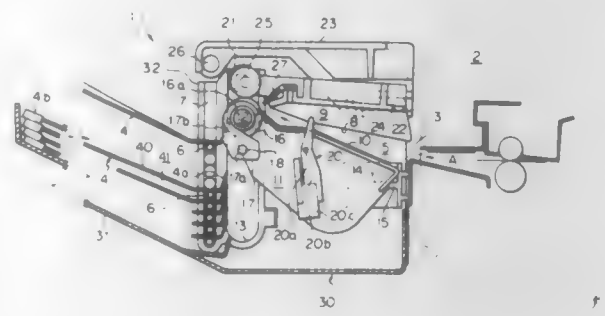


1. An improved pressure adjustment device for an intermediate conveyor system of a sheet feed machine, said conveyor system comprising a plurality of spaced roller assemblies slidably mounted on a beam, said beam being disposed parallel to and above a conveyor belt, said conveyor belt being mounted on a horizontally disposed table which comprises a portion of a delivery station of said sheet feed machine, a mounting bracket received on said beam and being pivotally mounted on a pivot rod, said pivot rod extending between the interior side walls of said sheet feed machine and being secured thereto; said adjustment device comprising a horizontally disposed tension bar extending between said interior side walls in parallel relation to said pivot rod, said tension bar being located forward of and closely adjacent said pivot rod, a centrally disposed elongated slot in said tension bar, an attachment means slidably mounted on said tension bar, and an adjustment means received in said attachment means whereby said adjustment means exerts a downward pressure on said beam about said pivot rod.

4,607,838
SHEET SORTER

Yoshihiro Matsuyama, and Takuma Ishikawa, both of Toyokawa, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Jun. 27, 1985, Ser. No. 749,418
Claims priority, application Japan, Jul. 6, 1984, 59-102912[U]
Int. Cl.[4] B65H *39/10*
U.S. Cl. 271—293 8 Claims



1. A sheet sorter comprising:

means for defining a sheet feed passage having an outlet for feeding sheets one by one in a predetermined direction;

a plurality of bin trays situated adjacent to said outlet and stacked in a pile with gaps between the adjacent bin trays for receiving sheets fed from said passage;

means for widening said gaps, successively, at least at an inlet side of the bin trays;

means for shifting up and down said passage defining means in synchronization with said widening means so as to align said outlet of the sheet feed passage with the widened gap;

a transverse shaft rotatably mounted on said passage defining means adjacent to said outlet of the sheet feed passage and extending perpendicular to the sheet feeding direction;

a plurality of feed rollers spaced from each other and fixedly mounted on said shaft for feeding the sheets into said widened gap; and

at least one swing member rotatably mounted on said shaft at at least one position between said feed rollers, said swing member comprising an upper portion for rotatably suspending said swing member from said shaft, a lower mass portion for maintaining a position of said swing member due to the force of gravity acting thereon, and a downstream portion, with respect to the sheet feeding direction, projecting over said feed rollers when viewed from the transverse direction.

4,607,839
SNOW SKI MACHINE

Mark M. Knudson, 2762 Blendon Woods Blvd., Columbus, Ohio 43229

Filed Mar. 4, 1983, Ser. No. 444,866
Int. Cl.[4] A63B *69/18*
U.S. Cl. 272—97 11 Claims

1. A snow ski machine which serves as an exercise device and a snow ski training device comprising:

(a) a main support frame having a central axis aligned generally from front to rear of the device;

(b) at least one track-like secondary support means mounted substantially perpendicular to the main support frame-/axis, the support means being tiltable from side to side about the main axis;

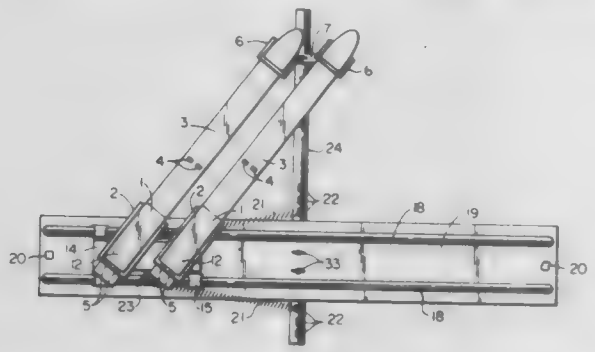
(c) a movable cart supported on the track-like support means

and movable thereon from one side of the main axis to the other;

(d) resilient means connected between the main support frame/axis and the movable cart to urge the cart to a central position over the main support frame/axis on the track-like support means;

(e) a pair of assimilated skis pivotally mounted in substantially side by side position on the said cart;

(f) a front ski guide means mounted on the main support frame/axis at a position removed from the secondary support means including guides to slidably maintain the



assimilated skis in parallel position relative to each other when the cart is moved upon the track-like support means; and

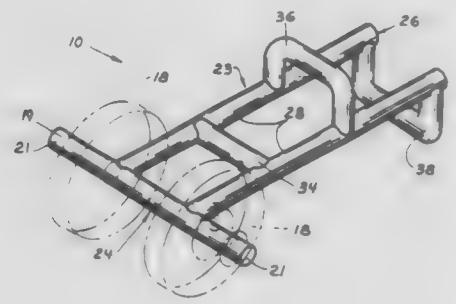
(g) surface means on each ski to receive a foot of a person using the device to support the weight of the person, the movable cart being movable from one side of the main support frame/axis to the other side of the main support frame/axis, responsively to shifts in the center of weight distribution of the person, while being progressively resisted by the resilient means at a greater distance from the main support frame/axis, in assimilation of down hill parallel snow skiing.

4,607,840

WEIGHT TRAINING DEVICE

James J. Harper, Rte. 1, Box 21-D, Newman Lake, Wash. 99025

Filed Dec. 27, 1983, Ser. No. 565,332
Int. Cl.[4] A63B *21/00*
U.S. Cl. 272—117 **19 Claims**



1. An exercise device for mounting weight training plates, comprising:

a plate mounting bar for receiving weight training plates;

an elongated open frame having a front end mounted to the plate mounting bar and extending from the plate mounting bar to a rearward end;

a handgrip on the frame spaced toward the rearward frame end from the plate mounting bar,

a first brace member on the frame spaced toward the rearward frame end from the handgrip;

a second brace member on the frame spaced rearwardly from the first brace member;

wherein the brace members are spaced apart relative to one another, so a user's forearm can be accommodated along the frame with the hand gripping the handgrip, and the first and second brace members located adjacent opposite surfaces of the forearm such that the second brace member is situated along the forearm adjacent the elbow and the first brace member adjacent the forearm between the hangrip and second brace member and

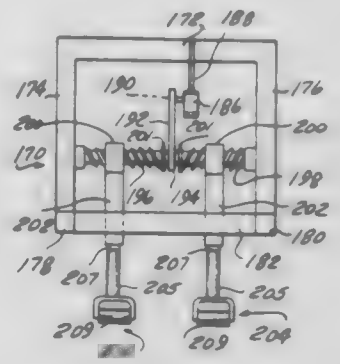
wherein the mounting bar and frame lie along a longitudinal plane that, when the device is mounted to a user's forearm, substantially passes lengthwise through the forearm.

4,607,841

ISOMETRIC EXERCISE APPARATUS

Jeffrey A. Gala, 6904 Valley Spring Dr., Birmingham, Mich. 48010

Filed Dec. 16, 1982, Ser. No. 450,269
Int. Cl.[4] A63B *21/00*
U.S. Cl. 272—125 **11 Claims**



1. An exercise apparatus comprising:

a stand, the stand having an upright support and a base;

first and second user engagable members mounted on the upright support for a user to exert a force thereagainst;

a trolley movably mounted on the upright support of the stand for vertical movement, the user engagable means being mounted on the trolley;

drive means mounted on the stand for bi-directionally driving the trolley, the drive means including:

first bi-directional motor means;

a rotatable screw mounted within the upright support of the stand and drivenly connected to the motor means;

means for threadingly connecting the trolley to the rotatable screw; and

control means for controlling the speed, direction and duration of rotation of the screw;

scale means mounted on the base of the stand for supporting a user and measuring the force exerted by the user against the user engagable means; and

display means, connected to the scale means, for displaying the force measured by the scale means;

moving means connected to the first and second user engagable members for moving the first and second user engagable members transversely with respect to the stand, the moving means including:

a second motor means;

a pair of second screw means driven by the second motor means; and

means for threadingly connecting each of the first and second user engagable members to the pair of second screw means, respectively, such that the first and second user engagable members move transversely with respect to the stand upon rotation of the pair of second screw means.

4,607,842

EXERCISING APPARATUS FOR USE BY HOCKEY PLAYERS TO PRACTICE THEIR SLAP AND WRIST-SHOTS

Real Daoust, 107 Chemin Beauce, Ste-Martine, Quebec, Canada

Filed Aug. 6, 1984, Ser. No. 638,241
Int. Cl.[4] A63B *69/00*
U.S. Cl. 273—1 B **10 Claims**

1. An exercising apparatus for use by hockey players to practice their shots, comprising:

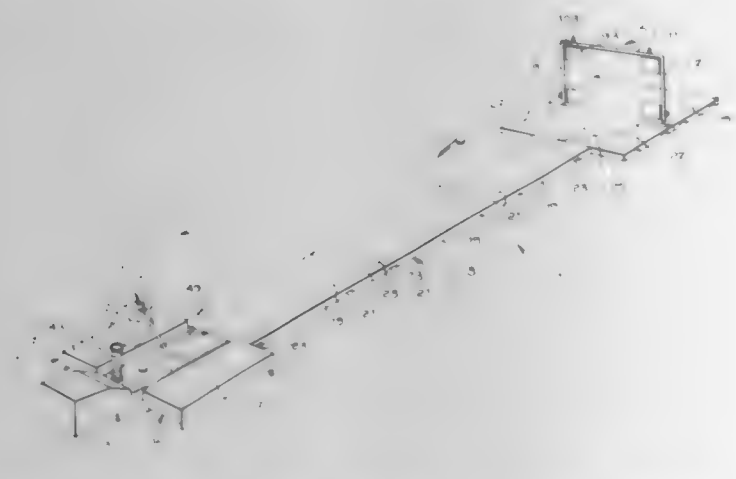
a lane structure made of a plurality of modular elements

provided with fixation means for connecting them end to end;

a goal structure mounted at one end of the lane, said goal structure comprising (a) two vertical posts and a horizontal bar of regular dimensions (b) four vertical targets respectively mounted in the internal corners of the goal structure, and (c) four visual means associated with said four targets, respectively;

a puck dispensing device located at the other end of the lane for dispensing a plurality of pucks one by one;

at least one platform positioned adjacent to the puck dispensing device for receiving a hockey player who wants to



practice his shots and allowing this hockey player to throw each dispensed puck toward the goal structure with a hockey stick, said platform having an upper surface positioned for simulating during the exercise, the height of the skates that the hockey player puts on when actually playing on a rink; and

an electronic control circuit for operating said visual means one after the other in any sequential order, even repetetively, at substantially the same speed as the one at which the pucks are distributed by the dispensing device, for visually indicating to the players which target amongst said four targets they must try to aim at.

4,607,843

AUTOMATIC BOWLING POSITION INDICATOR

Edward J. Signoretti, 22 Veronica Ct., Smithtown, N.Y. 11787

Filed May 14, 1984, Ser. No. 609,655

Int. Cl.⁴ A63D *5/04*

U.S. Cl. 273—54 C **7 Claims**

1. An automatic bowling position indicator for a bowling lane comprising:

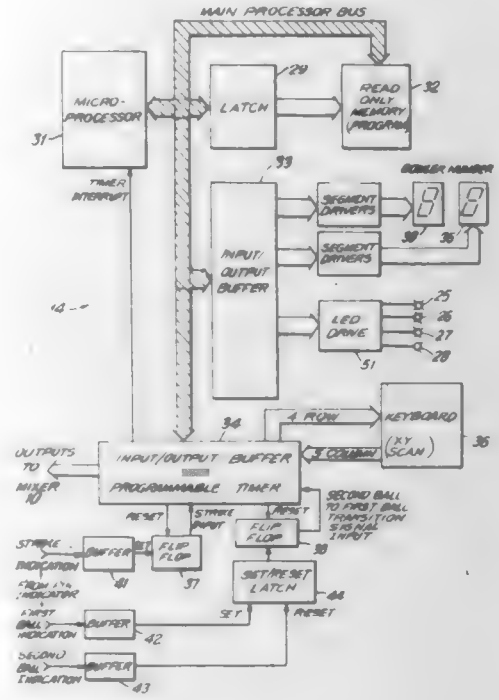
means for indicating the position of bowling pins on the lane;

means for entering bowling characteristics of at least one bowler, the bowling characteristics for each bowler including the throwing hand of the bowler and whether the bowler bowls a straight or hook ball;

processing means, responsive to said pin position indicating means and said characteristic entering means, for determining a foot position for an individual bowler and for determining a place on the lane over which a bowling ball should pass, in response to the bowling characteristics entered;

first lighting means positioned on the surface of said bowling lane for automatically indicating the foot position of the individual bowler, said first lighting means including two rows of lights disposed behind a foul line of said bowling lane; and

second lighting means positioned on the surface of said bowling lane for automatically indicating the place over which the bowling ball should pass, said second lighting



means including a plurality of lights disposed forward of said first lighting means.

4,607,844

POKER MACHINE WITH IMPROVED SECURITY AFTER POWER FAILURE

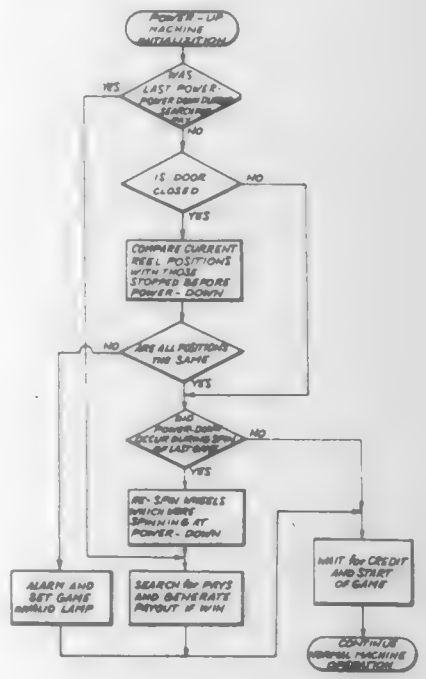
Graeme D. Fullerton, Beverly Hills, Australia, assignor to Ainsworth Nominees Pty. Ltd., Rosebery, Australia

Filed Dec. 3, 1985, Ser. No. 803,969

Claims priority, application Australia, Dec. 13, 1984, PG8554

Int. Cl.⁴ A63F *5/04*

U.S. Cl. 273—143 R **8 Claims**



1. An electrically operated poker machine comprising a plurality of rotatable reels each carrying a plurality of indicia about their periphery, means for spinning the reels, individually or together, in response to electrical signals initiated by control means, means for determining current status of said reels and alarm means responsive to said control means, said control means including non-volatile memory means for storing the current status of each of said reels, said control means including means to examine the current status of said reels upon resumption of power after a power loss and to compare the current status with a status stored in the non-volatile mem-

ory prior to the power loss to determine whether any reel which was stopped prior to the power loss has subsequently moved and if such movement has occurred to cause said alarm means to signal an alarm condition.

5. A method of controlling a poker machine having a plurality of rotatable reels each carrying a plurality of indicia about their periphery, means for spinning the reels, individually or together in response to electrical signals initiated by control means, means for determining current status of said reels and alarm means responsive to said control means, and said control means including non-volatile memory means for storing the current status of each of said reels, the method including the steps of

(a) during normal operation of the machine, periodically testing the current status of the reels and updating the contents of the non-volatile memory; and

(b) during initialization after power up:

(i) testing the current status of the reels;

(ii) comparing actual status of the reels with the status stored in the non-volatile memory; and

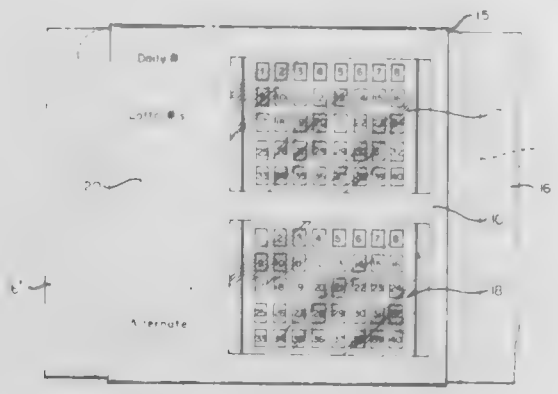
(iii) if the comparison indicates that a reel that was stationary when the current status was last stored in the non-volatile memory, has subsequently moved, initiating an alarm signal.

4,607,845

SLIDE NUMBER IDENTIFIERS

William Gallo, 619 Rose St., Apollo, Pa. 15613

Filed Oct. 22, 1984, Ser. No. 663,489
Int. Cl.[4] A63F *3/06*
U.S. Cl. 273—148 R 2 Claims



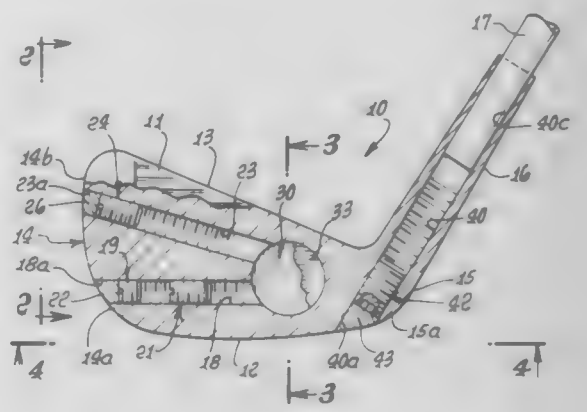
1. A slide number identifier for elongate multi-number set lottery cards having said sets extending transversely of the card in succession comprising a single blank of plastic having a first rectangular panel, a second rectangular panel of generally equal size extending from one side of said first panel and a third smaller panel extending from an opposite side of said first panel, said first panel having two spaced-apart translucent windows therein each window outlined by a colored coating and each having a set of lottery numbers printed thereon in the alignment of a single transverse set of numbers as used on a lottery card with which the slide number identifier is to be used, said first panel having a wide coated section adjacent said windows to provide an area on which winning lottery numbers may be removably written, said first and second panels being folded to side-by-side relation and said third panel being folded so as to overlap the end of said second panel so as to form a closed sleeve through which the lottery card may be passed longitudinally and two sets on the card may be aligned respectively with the number sets on the two spaced-apart windows whereby two separate and complete sets of numbers on the card are each independently outlined by the colored coating of the first panel.

4,607,846

GOLF CLUB HEADS WITH ADJUSTABLE WEIGHTING

Sonnie J. Perkins, 1214 169th Ave., NE., Bellevue, Wash. 98008

Filed May 3, 1986, Ser. No. 730,194
Int. Cl.[4] A63B *53/04, 53/08*
U.S. Cl. 273—171 20 Claims



1. A golf club head having a front face adapted to strike a golf ball, a bottom surface, a top surface, an aft surface, a toe, a heel and a hosel, comprising

(a) a first elongated opening extending directionally between the lower extents of the toe and heel, and located closer to said bottom surface than to said top surface, said first opening also angled forwardly and aftwardly, and a first weight adjustably located endwise in said opening,

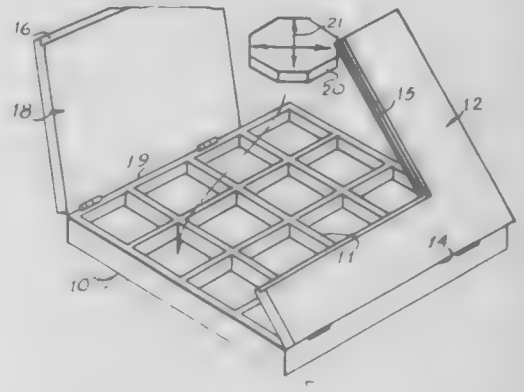
(b) and a second elongated opening extending directionally between the toe and heel, and located closer to said top surface than to said bottom surface, said second opening inclined upwardly relative to the first opening and toward the upper extent of the toe, and a second weight adjustably located endwise in said opening.

4,607,847

GAME AND APPARATUS THEREFOR

W. Reginald Chung, 1402 Murray Ave., Tifton, Ga. 31794

Filed Dec. 20, 1984, Ser. No. 683,855
Int. Cl.[4] A63F *3/00*
U.S. Cl. 273—264 5 Claims



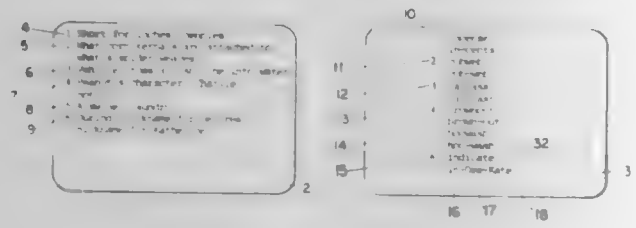
1. A game apparatus for playing a game such as tick-tack-toe, said game apparatus including a gameboard, a grid on said gameboard, said grid dividing said gameboard into a plurality of locations arranged in columns and rows, said grid being suitable for playing a game using fewer than all said locations, said game apparatus including a plurality of game pieces receivable within said grid, and cover means for selectively covering said grid, said cover means including a first cover means hinged to one side of said gameboard for selectively covering one column and one row of said grid, and a second cover means hinged to another side of said game board for selectively covering the remainder of said grid.

4,607,848

WORD GAME INVOLVING THE USE OF MOSAIC SCORE AND STRATEGY BOARDS

Hugh P. Maguire, and Helen A. Maguire, both of 2092 Persimmon Ct., Cincinnati, Ohio 45231

Filed Sep. 17, 1984, Ser. No. 651,586
Int. Cl.[4] A63F *3/00*
U.S. Cl. 273—269 2 Claims



1. A word game comprising:

a plurality of word cards, each card having on one side a plurality of clue sets each identified by a different unique number designation, each of said clue sets comprising at least one definitional interrogative clue, said card having on its opposite side a component answer for each of said clues and an ultimate word answer comprising the combination of said component answers combined in the same order as the associated clues to form the substantial phonetic equivalent of said ultimate answer word, each of said answers being identified by the same number designation as the associated clue set;

at least one die having a plurality of faces, each of said faces bearing one of said unique number designations; and

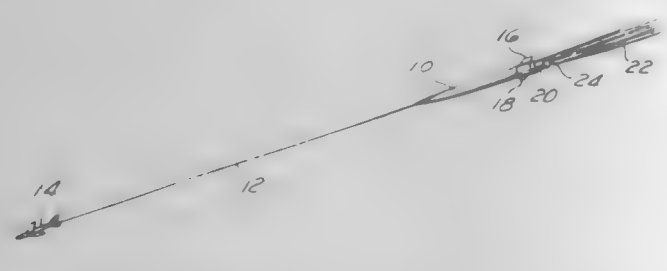
scoring means for keeping score of the number of successful formations of ultimate answer words comprising at least one window board divided into a plurality of regions forming a mosaic pattern, each of said regions being divided into a number of differently colored areas equal in number to one of said unique number designations, and a plurality of window board cover pieces, each of said cover pieces being dimensioned to cover an associated one of said regions and containing a number of areas equal in color, number, size and shape to the colored areas on the associated region of said window board.

4,607,849

JET EXHAUST SIMULATOR

David H. Smith, Fountain Valley, and Roger D. Brum, Irvine, both of Calif., assignors to Southwest Aerospace Corporation, Santa Ana, Calif.

Filed Mar. 7, 1985, Ser. No. 709,092
Int. Cl.[4] F41J *9/10*
U.S. Cl. 273—348.1 13 Claims



1. A jet exhaust simulator for producing an exhaust plume from a aerial target using fuel supplied from an internal fuel storge tank or host aircraft tank source, said exhaust simulator comprising:

an air collection scoop for collecting air

a pilot chamber head and a pilot flame chamber having a generally cylindrical shape, said pilot chamber head having the shape of a circular disk with an axis and having a central bore along said axis and with a funneled opening into said pilot flame chamber, said pilot chamber head also having an annular air chamber around said central bore and connected to receive air collected by said air collection scoop, said pilot chamber head further having a plurality of metering orifices between said annular air chamber and said funneled opening for directing air from said annular air chamber into said pilot flame chamber, said pilot chamber head further having a plurality of tangential air injection ports between said annular air chamber and said central bore for directing a swirling flow of air from said annular air chamber, through said central bore and into said pilot flame chamber;

a pilot nozzle connected to receive fuel from said fuel source, and mounted inside said central bore along the axis thereof to squirt fuel into said pilot flame chamber and inside the flow of air from said metering orifices and said tangential air injection ports, and to produce a stable pilot flame inside said pilot flame chamber;

an igniter mounted in said pilot chamber for igniting the fuel flowing from said pilot nozzle to light said pilot flame;

a burn tube having an axis aligned with said axis of said pilot chamber head, connected to receive gases flowing from said pilot flame chamber, said burn tube having a flame holder ring mounted inside thereof for defining a secondary flame chamber between said pilot flame chamber and said flame holder ring and a mixing area between said orifice plate and an exit end of said burn tube, said burn tube having a plurality of secondary air injection ports connected to transfer air from said air collection scoop into said secondary flame chamber near said entrncee end of said burn tube;

a plurality of secondary nozzles connected to receive fuel from said fuel source, and mounted to squirt fuel to mix with the flow of air from said secondary air injection ports, and to produce a secondary flame inside said secondary flame chamber and ignited by said pilot flame; and

a plurality of tertiary nozzles connected to receive fuel from said fuel source, and mounted to squirt fuel inside said mixing chamber intermediate the length thereof and to combine with gases from said secondary flame area and become ignited thereby to produce said exhaust plume at said exit end of said burn tube.

4,607,850

LIGHTED SPORT ARTICLE FOR HAND TOSSING

Henry M. O'Riley, 88 N. Country Club Dr., Phoenix, Ariz. 85014

Filed Sep. 25, 1985, Ser. No. 779,472
Int. Cl.[4] A63B *65/10*
U.S. Cl. 273—424 4 Claims



Fig. 7

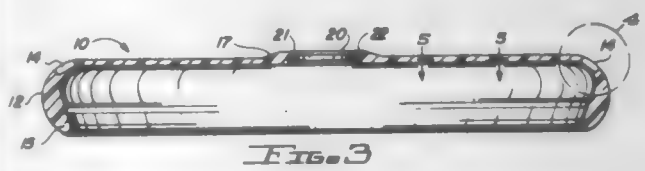


Fig. 3

1. A sport article for tossing about by hand, which comprises:

(a) a disc having a central region and a perimetric region therearound;

(b) flange means depending from said perimetric region, said flange means including inner-facing and outer-facing surfaces;

(c) receiving means located in said central region for remov-

ably receiving a power source therein, said receiving means having a base and an adjacent wall member;

(d) first and second contact means located in said receiving means, said first contact means being located at the base thereof and said second contact means being located in the adjacent wall member;

(e) retention means located on the outer surface of the central region of said disc for securing the power source in said receiving means, said retention means including a flexible flange formed as an integral portion of the central region of said disc, said flange overlying a portion of the receiving means;

(f) light emitting means positioned within said flange means proximate to the outer-facing surface thereof; and

(g) connection means contained within said disc and flange means for electrically connecting said light emitting means to said receiving means; the placement of a power source in said receiving means causing light to be emitted from the outer surface of said flange means.

4,607,851

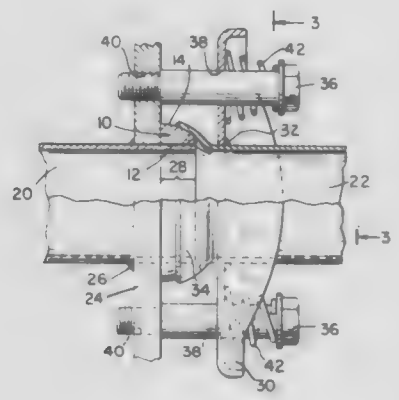
METHOD OF MAKING COMPOSITE WIRE MESH SEAL

Peter P. Usher, Union, N.J., assignor to Metex Corporation, Edison, N.J.

Filed Nov. 30, 1977, Ser. No. 856,174

Int. Cl.[4] F16J *15/12;* B32B *31/06*

U.S. Cl. 277—1 **9 Claims**



1. A method of producing a substantially coherent high temperature composite seal comprising the steps of constructing a preform comprising flexible refractory sheet material aligned against flexible knitted wire mesh by convoluting of strip of refractory material with one or more overlying pieces of knitted wire mesh to form a generally cylindrical preform, said wire mesh being formed of wire and having voids of given size between said wires, disposing said preform in a compression die, said die having a cavity size and shape which is substantially the same as the desired composite seal, and applying an axial load to said preform, said load being of sufficient force to collapse said preform to substantially the size and shape of said composite seal and to cause said refractory material to substantially fill the openings in said wire mesh and to become firmly interlocked with said mesh.

4,607,852

ACCORDIAN-FOLDED BOOT SHIELD FOR FLEXIBLE SWIVEL CONNECTION

Joseph C. Hoh, Naperville, Ill., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

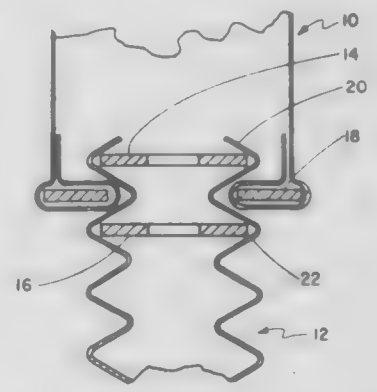
Filed Feb. 19, 1985, Ser. No. 702,540

Int. Cl.[4] F16J *15/52;* F16L *9/06*

U.S. Cl. 277—1 **10 Claims**

1. Apparatus for connecting a first boot section to a second boot section, said first and second boots having openings therethrough, said second boot having at least two adjacent accordian folds at the end having the opening, said second boot being positioned through the opening of said first boot such that a first of said accordian folds is within said first boot and a second of said accordian folds is outside of said first boot comprising:

first and second annular discs, said first disc being positioned within and across said first accordian fold, said second



disc being positioned within and across said second accordian fold such that said first boot is moveably and rigidly connected between said first and second accordian folds.

4,607,853

SEALING CAP FOR USE IN INTERNAL CLEANING OF CAN FILLERS

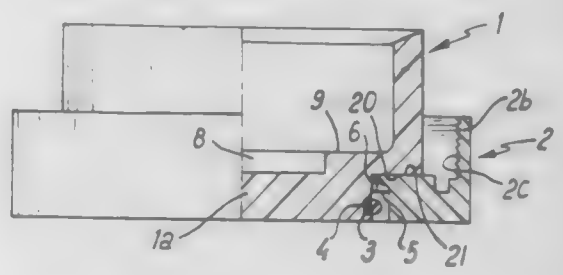
Stuart Nicol, Edinburgh, Scotland, assignor to Scottish & Newcastle Breweries PLC, Edinburgh, Scotland

Filed Sep. 18, 1984, Ser. No. 651,794

Claims priority, application United Kingdom, Sep. 20, 1983, 8325172

Int. Cl.[4] F16J *15/06*

U.S. Cl. 277—12 **6 Claims**



1. A sealing cap for use in the internal cleaning of a can filling apparatus and adapted to be fitted to the head of the can filling apparatus, the sealing cap comprising:

a sealing member and a threaded retaining ring, the sealing member being rotatably mounted within the threaded retaining ring which is adapted to be screwed onto a threaded outer surface of the can filling head;

the sealing member being provided with a cylindrical lower portion adapted to be received within a circular aperture formed in the retaining ring; and

the sealing member being rotatably held within the retaining ring by means of an O-ring located in a groove on said cylindrical lower portion.

4,607,854

OIL SEAL FOR LUBRICATED TRACK CHAIN JOINTS, PARTICULARLY FOR TRACK TYPE VEHICLES

Maurizio Bissi; Andrea Cocco, and Guerrino Baggio, all of Castelfranco Veneto, Italy, assignors to Simmel S.p.A., Castelfranco Veneto, Italy

Continuation of Ser. No. 598,887, Apr. 10, 1984, abandoned. This application Aug. 5, 1985, Ser. No. 763,304

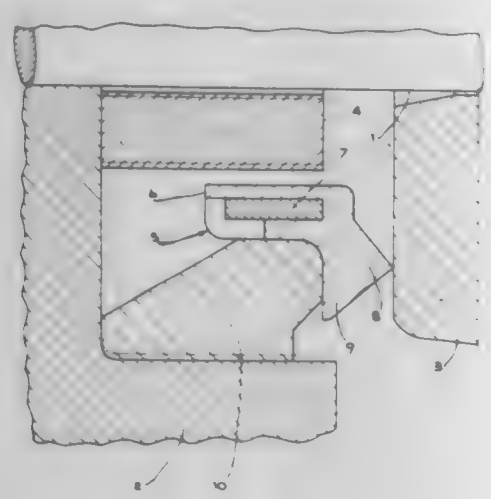
Claims priority, application Italy, Apr. 29, 1983, 21680/83[U]

Int. Cl.[4] F16J *15/32*

U.S. Cl. 277—152 **1 Claim**

1. An oil seal for a lubricated track chain joint, particularly for track-type vehicles, said joint including a bushing and a

link, comprising a primary ring of a flexible elastomeric material formed with an annular portion and a flanged portion which includes an axially projecting sealing lip in contact with said bushing, a secondary ring of a resilient material adapted to be in contact with said primary ring and said link, said primary and secondary rings adapted to form a seal between said link and said bushing, and said primary ring including a cylindri-



cally shaped metal stiffening ring embedded and located entirely within and coaxial with said annular portion such that said sealing lip and said flanged portion do not contact said metal stiffening ring, whereby said primary ring has an annular portion which is stiffened by said metal stiffening ring and a flexible flanged portion and sealing lip which are not stiffened by said metal stiffening ring.

4,607,855

HAMMER DRILL CHUCK

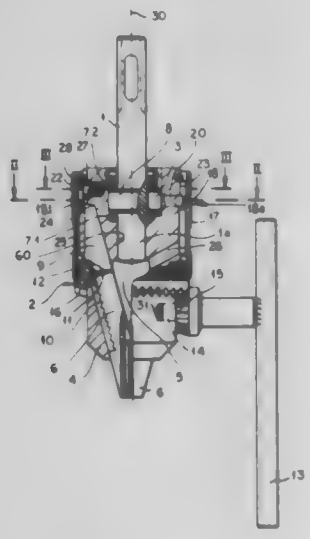
Günter H. Röhm, Heinrich-Röhm-Strasse 50, D-7927 Sontheim, Fed. Rep. of Germany

Filed Dec. 26, 1984, Ser. No. 686,243

Claims priority, application Fed. Rep. of Germany, Jan. 4, 1984, 3400149

Int. Cl.[4] B23B *31/12*

U.S. Cl. 279—62 **4 Claims**



1. A chuck, comprising:

a chuck body rotatable about an axis and provided with a through-passage in direction of said axis;

holding means provided in elongation of said through-passage in said body for retaining an implement, said chuck body being formed with at least one channel leading to said holding means adjacent to said through-passage; and

tightening means cooperating with said holding means for locking and loosening the implement retained within said holding means and having a plurality of discharge openings extending in the direction of said axis, said tightening means embracing said chuck body at a distance so as to define an annular space therebetween which is in communication with said discharge openings and said channel, whereby any detritus may be discharged through said at least one channel, annular space and openings to the exterior of the chuck, said tightening means including an actuating sleeve having an inner side provided with a toothed skirt defining gaps between adjacent teeth which gaps are open in the direction of said axis and form a part of said discharge openings, and a locking member engageable with said toothed skirt for preventing a relative motion between said chuck body and said actuating sleeve, and a loosening ring on said chuck body, said loosening ring being axially aligned with said actuating sleeve and having a periphery provided with indentations spaced along said periphery so that respective interstices are defined between said chuck body and said loosening ring, said interstices extending outwardly and being in alignment with said gaps and forming another part of said discharge openings.

4,607,856

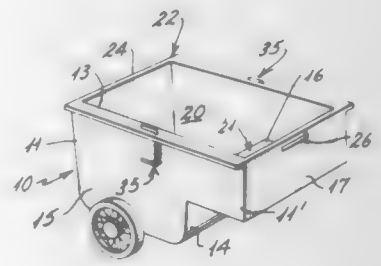
COMBINATION CART AND BOAT BOARDING STEPS

Wallace T. Saleeba, 33 Curtis St., East Providence, R.I. 02914

Filed Feb. 6, 1986, Ser. No. 826,631

Int. Cl.[4] B62B *1/20*

U.S. Cl. 280—47.18 **14 Claims**



1. The combination of a cart and steps for use with boats tied along docks comprising a housing having side wall portions, a lowermost wall portion having inner and outer surfaces and at least one intermediate lower wall portion having inner and outer surfaces, said intermediate lower wall portion being spaced in vertical relationship with respect to said lowermost wall portion and extending relatively outwardly therefrom and in general parallel relationship thereto, said housing having uppermost edge portions defining an opening therebetween, at least one ground engaging wheel carried by said housing for normally supporting said housing in movable contact with a supporting surface, said housing being invertible so that said upper edge portions thereof support said housing in substantially even contact with a supporting surface, said outer surface of said intermediate lower wall portion defining a first step which is vertically spaced below and adjacent to a second step formed by said outer surface of said lowermost wall portion when said housing is inverted so that said first and second steps may be utilized by an individual to ascend and descend from one supporting surface to another.

4,607,857

HOT FAT TRANSPORTING CONTAINER

Richard LeSage, Redwood Falls; Eugene N. Reshanov, Golden Valley, and Richard A. Schlemmer, Redwood Falls, all of Minn., assignors to International Safety Containers of Minnesota, Inc., Redwood Falls, Minn.

Filed Sep. 3, 1985, Ser. No. 771,707

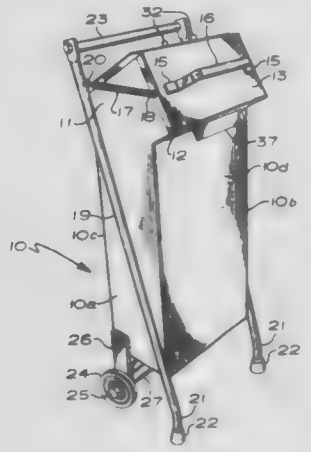
Int. Cl.[4] B62B *1/04*

U.S. Cl. 280—47.26 **18 Claims**

1. A hot fat transport vehicle, comprising:

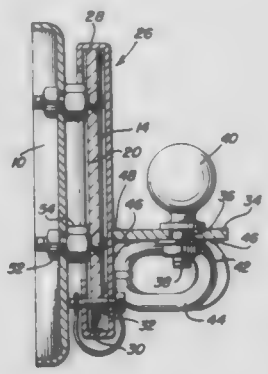
(a) an elongated normally upright closed container having a front side with a support surface associated therewith, a back side, and opposite lateral sides;

(b) a transverse axle mounted upon said container adjacent the lower portions of said front side;
(c) a pair of wheels rotatably mounted on said axle, one each adjacent each of said opposite sides of said container;
(d) handle means carried by said axle between said wheels;
(e) said container having an inlet throat at its upper end formed as an extension of said front and lateral sides and extending upwardly and outwardly at said back side at an angle to the longitudinal axis of the container, and having an inlet opening at its outer end, said inlet opening extending transversely with respect to the longitudinal axis of said inlet throat;



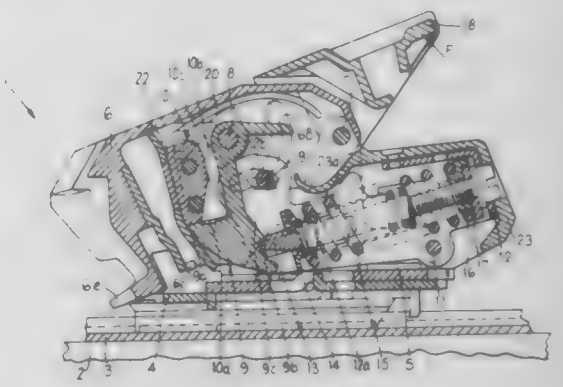
(f) a closure member carried by said container for closing said inlet opening and being movable between its closed position and its open position relative thereto;
(g) elongated foot structures extending downwardly from said container adjacent its said back side and constructed and arranged to support said container in its upright position in cooperation with said wheels; and
(h) second handle means connected to said container for facilitating movement of said container upon said wheels from one location to another wherein said vehicle may assume either a horizontal filling position with the container resting upon said support surface or an upright position with the container being supported by said wheels and said foot structures.

4,607,858
REMOVABLE HITCH
Howard W. Wagner, Grand Island, Nebr., assignor to Wood's Welding Inc., Grand Island, Nebr.
Filed Mar. 26, 1985, Ser. No. 716,443
Int. Cl.[4] B60D *1/06*
U.S. Cl. 280—491 E **7 Claims**



1. A removable bumper hitch including a mounting plate having first and second sides and including mounting means for mounting said plate from the outwardly facing surface of a vehicle bumper in slightly spaced relation relative thereto with said first side opposing said surface of said bumper, a hitch member support plate defining channel means for slidingly engaging at least two remote marginal portions of said mounting plate and with said support plate being slidingly engageable over said mounting plate to a position in closely juxtaposed registered position relative thereto and slightly spaced relative to and opposing said second side of said mounting plate, said plates including co-acting means releasably anchoring said plates in registered position against shifting of said support plate relative to said mounting plate, the side of said support plate remote from said mounting plate including outstand hitch means mounted therefrom, said space between the two opposing sides of said mounting and support plates being sufficient to receive a license plate therebetween, said mounting plate including means for supporting a license plate therefrom overlying said second side of said mounting plate and disposed between the latter and said support plate.

4,607,859
SAFETY SKI BINDING
Heinz Wittmann, Vienna; Friedrich Leichtfried, Traiskirchen; Emilie Szabo, Schwechat, and Tibor Szasz, Vienna, all of Austria, assignors to TMC Corporation, Baar, Switzerland
Filed Feb. 16, 1984, Ser. No. 580,996
Claims priority, application Austria, Feb. 16, 1983, 517/83; Nov. 11, 1983, 3989/83
Int. Cl.[4] A63C *9/08*
U.S. Cl. 280—632 **17 Claims**



1. In a heel holder of a safety ski binding having a sole holder and first support means pivotally supporting said sole holder for movement between opened and closed positions and about a transverse axle supported on a bearing block secured to a base plate, an opening spring for continually urging said sole holder into said opened position, a locking rocker arm pivotally supported on said sole holder for holding said sole holder in said closed position, said locking rocker arm having on one side thereof a locking projection which, in said closed position, grips under a control-cam member arranged on said bearing block and having, on the other side thereof, a locking notch into which is received a locking member, at least one spring for continually urging said locking element toward said locking rocker arm, said one spring being supported in a spring housing, a second support means pivotally supporting said spring housing on said bearing block for limited movement with respect to said bearing block, a release lever for facilitating a voluntary movement of said sole holder between said closed and opened positions, said release lever being movably supported on said sole holder and having a bolt which couples said release lever to said spring housing, the improvement comprising wherein a stop means is provided on at least one of said base plate and said bearing block of said heel holder, said stop means abutting against a support region on said spring housing only during a voluntary release whereat said locking member is disengaged from said locking notch on said locking rocker arm and said sole holder is in a position between said closed and opened positions thereof, wherein coupling means are provided for relatively movably coupling said spring housing and said sole holder, said support region defining a fulcrum for urging said spring housing toward said closed position thereof in response to a continuing urging of said sole holder to said openend position by said opening spring so that the foloowing phase of said voluntary release will cause a relative movement

between said sole holder and said spring housing and a return of said locking element into said locking notch.

4,607,860

FOLDING WHEELCHAIR

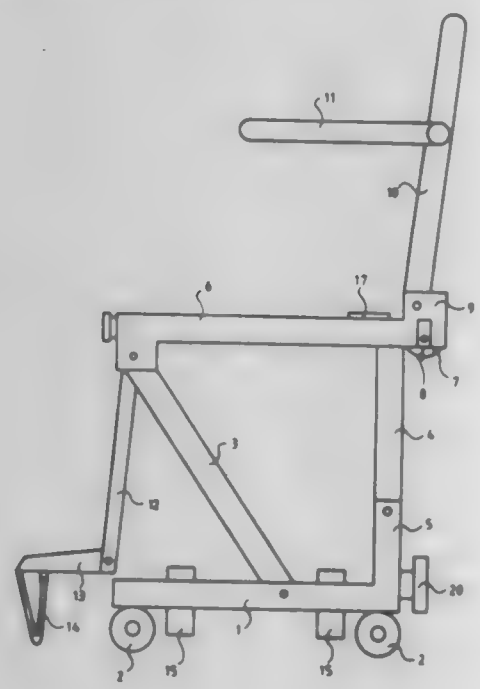
Ignaz Vogel, Kleinsteinbacher Str. 44, 7500 Karlsruhe 41-Stu, Fed. Rep. of Germany

Filed Oct. 15, 1984, Ser. No. 660,810

Claims priority, application Fed. Rep. of Germany, Oct. 13, 1983, 3337263

Int. Cl.[4] B62B *3/02*

U.S. Cl. 280—650 9 Claims



1. A folding wheelchair for disabled persons, comprising: a lower frame; a number of casters mounted on the lower frame; a seat with a backrest pivotally mounted thereon so as to permit folding thereof onto said seat, said seat being supported on said lower frame by a pair of front links and a pair of rear struts, said front links being pivotally connected to the front of said seat and being hinged to said lower frame at an intermediate location substantially along an axis extending laterally below the center of said seat, said pair of rear struts being shorter than said front links and pivotally connected to an upstanding column of said lower frame, said front links and said rear struts being pivotable forwardly to a lower position in which said seat is folded onto said lower frame and backwardly to an upward pivoted position for normal use of said seat, said pair of rear struts being upright in such normal seat use position so as to provide support for said seat, said seat carrying at its rear end a laterally extending roller adapted to roll on a support structure against which said wheelchair is backed so that said seat is movable between front and rear end positions by pivoting of said front links, said front and rear end positions being lower than any intermediate position so that said seat by its weight and the weight of any person thereon automatically moves into one of said end positions, said seat having a frame and a center portion which is pivotally supported at the front of said frame so as to be capable of being pivoted down out of said seat frame.

4,607,861

HYDRAULIC STABILIZING SYSTEM FOR VEHICLE SUSPENSION

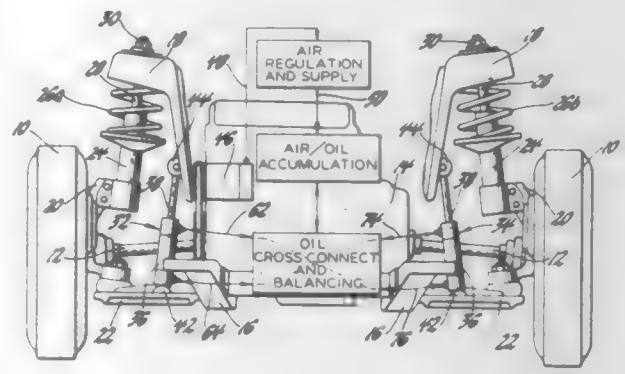
Sidney W. Eisenberg, Linden, and Gregory J. Johnson, Grand Blanc, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Dec. 17, 1984, Ser. No. 682,295

Int. Cl.[4] B60G *9/00*

U.S. Cl. 280—702 2 Claims

1. In spring suspension apparatus for a vehicle having an unsprung mass with a plurality of road wheels and a sprung mass, a hydraulic stabilizing system including a pair of like piston and cylinder units each applied between said vehicle masses adjacent a respective road wheel and comprising a piston rod attached to the same selected one of such masses and at its inner distal end carrying a piston head relatively moveable within its cylinder and partitioning such unit into opposite chambers of different cross-sectional area, and means cross-



connecting each chamber of one said unit in a fluid pressure circuit with said pressure supply means and with the opposite of the corresponding chamber of the other said unit and comprising expansible chamber means operative to compensate for said differential area of said chambers and prevent force in said units between said vehicle masses except in the presence of forces therebetween tending to move said pistons in opposite directions within their cylinders.

4,607,862

MOBILE MACHINE COMPRISING A STABILIZING DEVICE

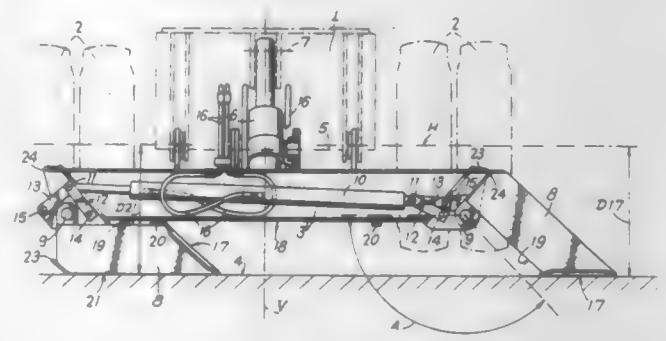
Georges E. Deram, Saint-Pathus, and Maurice A. Panczyk, Le Plessis Belleville, both of France, assignors to Poclain, Le Plessis Belleville, France

Filed Jan. 29, 1985, Ser. No. 696,333

Claims priority, application France, Feb. 13, 1984, 84 02163

Int. Cl.[4] B60S *9/12*

U.S. Cl. 280—765.1 11 Claims



1. In a mobile machine comprising a frame, a beam mounted on the frame, and a stabilizing device, the stabilizing device comprising at least two arms, means pivotally mounting each arm on the beam for pivotal movement about a pin and each arm being coupled to a first member for adjusting its pivoting with respect to said beam and supporting a sole plate for abutment on the ground, the pivot pins of the two arms with respect to the beam being parallel, means mounting the beam to pivot with respect to the frame about a pin which is at right angles to the pivot pins of the two arms, a second member for adjusting the pivoting of the beam with respect to the frame coupled between the beam and the frame, each arm being movable between two extreme positions of pivoting with respect to the beam, which are separated by an arc of pivoting substantially greater than 90°, wherein when the beam is placed in the configuration of use of the stabilizing device, in a first position, said arm is folded beneath the beam, substantially parallel to said beam and, in a second position, said arm extends obliquely with respect to the beam, its sole plate being spaced

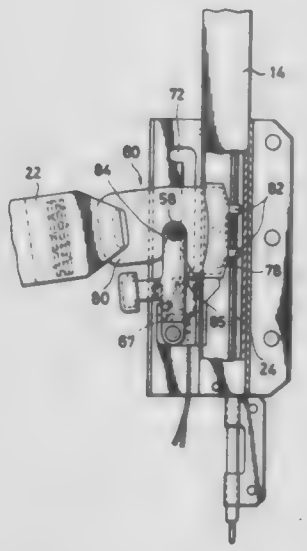
apart from the beam and substantially horizontal, and when the beam is placed in the configuration of use of the stabilizing device, on the one hand, in its first position, the arm has a first of its faces, opposite the beam, disposed substantially horizontal and capable of constituting a bearing surface for the arm on the ground distinct from the sole plate of said arm, and on the other hand, the distances separating said first face, in the first position of the arm, and said sole plate, in the second position of the arm with respect to a horizontal plane are substantially equal.

4,607,863

PASSIVE SEAT BELT SYSTEM

Yoshihiro Yokote, Yokohama, Japan, assignor to NSK-Warner K.K., Japan

Filed Mar. 8, 1985, Ser. No. 709,910
Claims priority, application Japan, Mar. 13, 1984, 59-34815[U]
Int. Cl.[4] B60R *22/06*
U.S. Cl. 280—804 11 Claims



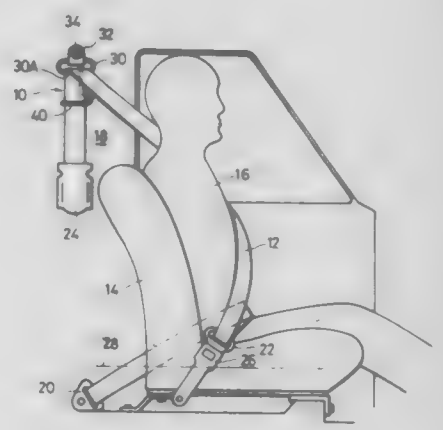
1. A passive seat belt system comprising:
a guide rail to be mounted on a vehicle body;
a movable anchor provided displaceably along the guide rail and connected with a webbing;
drive means for causing the movable anchor to travel between either one of a plurality of first positions, at which the webbing is brought into engagement with an occupant to restrain the occupant, and a second position at which the webbing is out of engagement with the occupant to release the occupant;
a base to be mounted on the vehicle body, said base being equipped with a plurality of interlocking portions which are arranged with an interval in the up-to-down direction of the vehicle body when mounted on the vehicle body; and
a support member displaceable between an engagement position, at which the support member is brought into engagement with either one of the interlocking portions of the base so as to determine the first position of the movable anchor, and a non-engagement position at which the support member is kept out of engagement with any of the interlocking portions of the movable anchor, said support member being composed of a single rod-like member which in the event of emergency, is brought into engagement with the movable anchor assuming the first position so as to transmit a load exerted on the movable anchor to the vehicle body by way of the base.

4,607,864

WEBBING SUPPORT DEVICE

Eiji Kouketsu, Niwa, and Masato Tsumagari, Ikeda, both of Japan, assignors to Kabushiki Kaisha Tokai-Rika-Denki-Seisakusho, Aichi and Daihatsu Motor Co., Osaka, both of, Japan

Filed Aug. 7, 1984, Ser. No. 638,661
Claims priority, application Japan, Aug. 8, 1983, 58-122994[U]
Int. Cl.[4] B60R *21/10*
U.S. Cl. 280—808 22 Claims



7. A webbing support device adapted for use in a seatbelt system for supporting an intermediate portion of an occupant restraining webbing positioned between a torso of the occupant and a webbing retractor retracting the webbing therein on a vehicle body, which comprises:
(a) a slip ring made of rod material and formed in an oval shape having two sides parallel to each other, one of the two sides supporting the intermediate portion of the webbing;
(b) a connecting plate secured to the other of the two sides of the slip ring and mounted on the side wall of the vehicle body through a mounting bolt rotatably thereabout;
(c) a spacer of a tubular shape penetrated by the mounting bolt and disposed between the connecting plate and the side wall of the vehicle body, whereby the connecting plate is kept in a rotatable situation; and
(d) a webbing supporting member made of rod material and suspended through one end portion thereof from the spacer, the other end portion of which is formed with a supporting portion capable of supporting a portion of the webbing positioned between the slip ring and the torso of the webbing, whereby an anchor point of the webbing for the torso of the occupant can be changed corresponding to a physical build of an occupant restrained by the webbing.

4,607,865

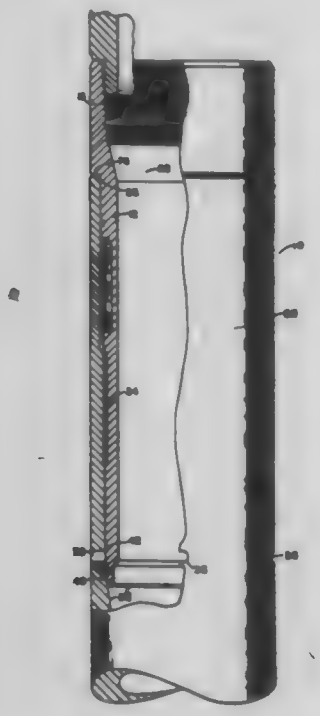
CONNECTOR, RATCHETING TYPE

David W. Hughes, Houston, Tex., assignor to Vetco Offshore Industries, Inc., Ventura, Calif.

Filed Oct. 16, 1984, Ser. No. 661,502
Int. Cl.[4] F16L *55/00*
U.S. Cl. 285—18 14 Claims

1. A tieback connector for connecting a tieback conductor between a platform and a well system where the latter includes a hollow tubular member with internal threads for threadably receiving said connector, said connector comprising,
a hollow tubular body member connected to one of said tieback conductors,
a split ring positioned circumferentially of said body member with its inner wall and top and bottom ends spaced from said body member for limited radial expansion and contraction of said split ring and for limited axial movement of said split ring relative to said body member,
means between said split ring and body member whereby rotation of said body member also rotates said split ring,
external threads on said split ring capable of mating with said

internal threads and also capable of ratcheting by expansion and contraction of said split ring over said internal threads when said connector is inserted into said well system,



said ratcheting occurring until said body member reaches a predetermined position within said well system whereupon said threads overlap, and

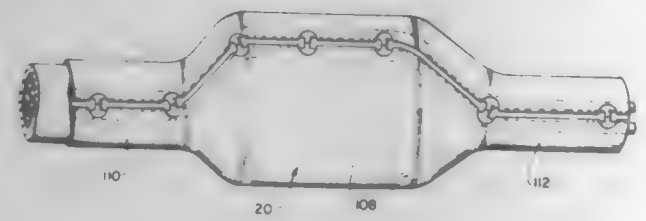
means to lock said connector in said well system by the combined action of rotational and axial movement of said split ring.

4,607,866

PROTECTIVE SLEEVE DEVICE

Max Erlichman, 461 Nelo St., Santa Clara, Calif. 95050

Filed Mar. 1, 1984, Ser. No. 585,236
Int. Cl.[4] F16L *11/12*
U.S. Cl. 285—45 **8 Claims**



1. A protective sleeve device adapted to be positioned in surrounding relationship around a juncture along a joined series of elongated pipes, cables, conduits or similar members, said sleeve device comprising:

a sheet of sleeve forming elastomeric material having first and second opposed side marginal areas which are juxtaposed to each other in confronting relationship when said sheet is wrapped in surrounding relationship around said juncture;

said first and second side edge marginal areas each including an end portion of said sheet folded back and attached to an adjacent portion of said sheet to form, respectively, first and second passageways;

first and second axially elongated rods having a spaced series of engagement means projecting therefrom transversely to the axis of elongation;

said first rod being disposed in said first passageway and said second rod being disposed in said second passageway;

said side marginal areas also having a spaced series of apertures formed therein in communication with said passageways;

said apertures along said first side marginal areas being aligned with those along said second side marginal areas when said marginal areas are in said juxtaposed position;

said engagement means projecting through said apertures to interlock said first rod and said second rod together and hence to retain said first and second side marginal areas in said juxtaposed position;

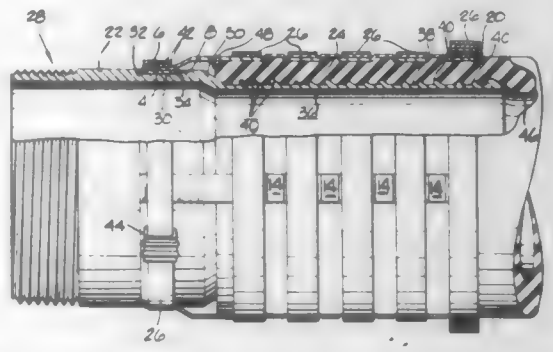
said engagement means being formed by alternating male and female connector members along each of said rods, with the male members projecting from said first rod being aligned opposite, and engaged with, the female members projecting from said second rod, and vice versa.

4,607,867

APPARATUS FOR SECURING A HOSE TO A FITTING

George A. Jansen, Denver, Colo., assignor to Houdaille Industries, Inc., Ft. Lauderdale, Fla.

Filed Nov. 9, 1984, Ser. No. 670,557
Int. Cl.[4] F16L *33/00*
U.S. Cl. 285—242 **10 Claims**



1. Apparatus for restraining relative longitudinal movement between a fitting and a flexible hose comprising:

a relatively rigid fitting;

means forming at least one shoulder on said fitting and extending in a circumferential direction;

said fitting having a longitudinally extending first outer surface extending from adjacent to said one shoulder to one end of said fitting;

a flexible hose around said first outer surface;

said fitting having a longitudinally extending second outer surface extending from adjacent to said one shoulder toward the other end of said fitting;

at least two separate and elongated strips of material, each of said strips positioned to extend in a direction parallel to the longitudinal axis of said fitting;

one end of each of said elongated strips comprising a longitudinal portion that is bent back so as to be adjacent to the next succeeding longitudinal portion to form a shoulder on each of said elongated strips;

said shoulders on said elongated strips being located in direct abutting relationship with separate and circumferentially offset portions of said one shoulder so that longitudinal movement in substantially the direction of said one end of said fitting between the shoulder on each of said elongated strips and said one shoulder towards each other is limited by contact between the shoulder on each of said elongated strips and the corresponding said separate and circumferentially offset portion of said one shoulder, and so that substantially all of a longitudinal force applied to said elongated strips in substantially the direction of said one end of said fitting will be directly communicated to said separate and circumferentially offset portions of said one shoulder;

said elongated strips being positioned free from contact with each other;

the other end of each of said elongated strips being located over a portion of said flexible hose;

a first band clamp, positioned over said bent back portion and said next succeeding portion of each of said elongated strips, for holding said bent back portion of each of said elongated strips adjacent to a portion of said second outer surface, and for retaining the shoulder on each of said

elongated strips in direct abutting relationship with said one shoulder; and

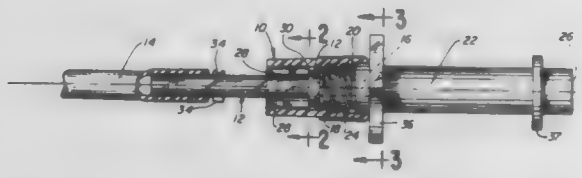
at least a second band clamp around portions of said flexible hose and portions of each of said elongated strips for effecting a seal between said flexible hose and said first outer surface of said fitting and for preventing relative longitudinal movement between each of said elongated strips and said flexible hose.

4,607,868

UNIVERSAL CONNECTOR

Roger W. Harvey, Vernon Hills, Ill.; Ralph Davis, Burlington, Wis.; Arthur Lueders, Mundelein, and William J. Schnell, Libertyville, both of Ill., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Nov. 30, 1983, Ser. No. 556,504
Int. Cl.[4] F16L *35/00*
U.S. Cl. 285—332 **6 Claims**



1. A universal connector for interconnecting a fluid flow conduit with either a threaded luer lock connector, a simple luer connector, or a spike connector, said universal connector comprising:

a tubular connector having an axis, said tubular connector being attachable at one end to the fluid flow conduit and having a luer taper tube portion at its axially opposite end;

a sleeve having internal threads and being carried by said tubular connector for movement along said axis between a first position, in which said sleeve encloses said luer taper tube portion, and a second position, in which said luer taper tube portion is exposed;

means operative, when said sleeve is in said first position, for permitting rotation of said sleeve about about enclosed luer taper tube portion to create, in response to the rotation of said sleeve, a removable threaded locking connection with the threaded luer lock connector, said means being alternately operative, when said sleeve is in said second position, for rotatably engaging said sleeve with said tubular connector to rotate said exposed luer taper tube portion along with said sleeve during the connection and disconnection of said exposed luer taper tube portion with the simple luer connector; and

a tubular member mating at one end with said enclosed luer taper tube portion and having at said one end external threads forming a removable threaded, locked connection with said internal threads of said sleeve in response to rotation of said sleeve, said tubular member having at its other end means for sealingly receiving the spike connector.

4,607,869

KNOT TYING APPARATUS

Joe C. Bersche, 222 Urbana Dr., Blackwell, Okla. 74631

Filed Feb. 11, 1985, Ser. No. 700,174
Int. Cl.[4] D03J *3/00*
U.S. Cl. 289—17 **5 Claims**

1. Apparatus for forming a loop in a string comprising,

(a) a plate means having first and second opposite pairs of edges;

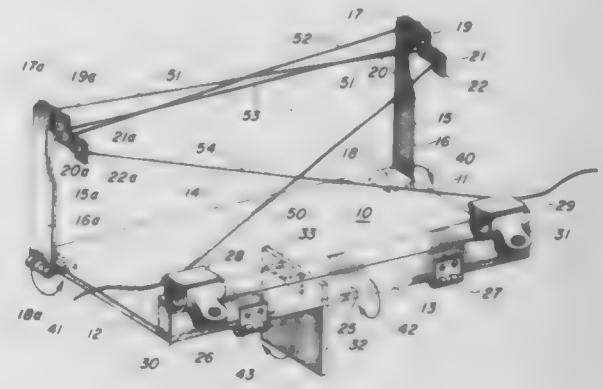
(b) first and second members;

(c) means for attaching said first and second members to said first pairs of opposite edges;

(d) Extension means attached to said first and second members for securing loops of said string to be formed;

(e) a third member attached to one of said remaining first and second pairs of opposite edges of said plate means; and,

(f) spaced clip means attached to said third member;



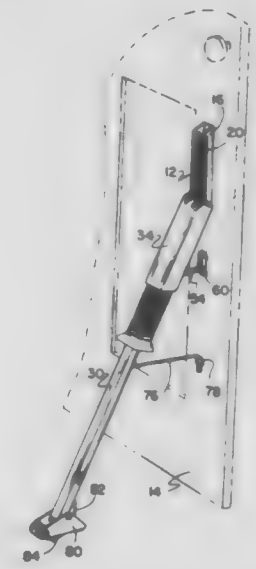
Whereby a string clipped in one of said clip means, and passed several times around said extension member and clipped to said remaining clip means is properly supported and positioned for tying.

4,607,870

DOOR SECURITY DEVICE

Edward T. Crisp, Jr., 241 Ronnie La., Temple, Ga. 30179, and Willard M. Davidson, Jr., 3733 Shady Grove, Carrollton, Ga. 30117

Filed Sep. 9, 1985, Ser. No. 774,158
Int. Cl.[4] E05C *17/44*
U.S. Cl. 292—338 **9 Claims**



1. A security device for mounting to the inside face of a door to engage the floor to prevent the door from being opened, comprising:

a shaft;

shaft mounting means mounted to the face of the door for slidably and pivotably mounting the upper end of said shaft such that the shaft can slide vertically within upper and lower limits and pivot relative to the door;

a control rod;

shaft slide means mounted to said shaft at an intermediate point for pivotably and slidably mounting a first end of said control rod such that said control rod can pivot and slide within upper and lower limits substantially parallel to the longitudinal axis of said shaft;

control rod mounting means for pivotably mounting a second end of said control rod to the door such that the first end of said control rod bears against the upper limit of said shaft slide means when the upper end of said shaft is substantially at the upper limit of said shaft mounting means;

means for urging the portion of said shaft below said shaft slide means downwardly and toward the face of the door;

whereby said security device is extendable to engage the floor by rotating said shaft about its upper end, said urging means

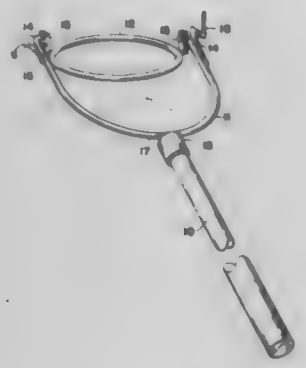
urging said shaft downwardly so that said upper end of said shaft slides downwardly within its mounting means, and said urging means initially urging the first end of said control rod against said upper limit of said shaft slide means to support said intermediate point of said shaft against downward motion, and subsequently urging the first end of said control rod toward said lower limit of said shaft slide means to permit said intermediate point of said shaft to move downwardly, thereby bringing the lower end of said shaft into contact with the floor.

4,607,871

TOOL FOR HANGING BASKETS

Chester M. Kirkman, 142 Wild Orchid La., Orange Park, Fla. 32073

Filed Feb. 6, 1985, Ser. No. 698,684
Int. Cl.[4] A47F *13/06*; A47G *7/00*
U.S. Cl. 294—19.1 **6 Claims**



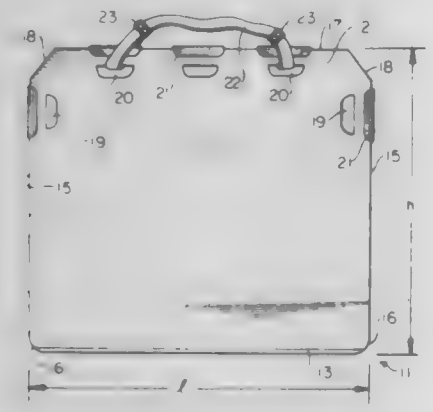
1. A tool for handling hanging baskets comprising an elongated handle with a bifurcated yoke at one end thereof opening upward away from the handle, a ring support freely pivotally fastened at diametrically opposite points to the ends of said yoke with said ring support adapted to pivot inside the yoke, a first hook member attached to the outside of one of said ends of the yoke with the opening of said first hook member facing downward toward the handle, and a second hook member attached to the other of said ends of the yoke with the opening of said second hook member facing upward away from said handle.

4,607,872

SNOW REMOVING DEVICE

Peter L. Herner, R.D. #1, 155 Stephen Park Rd., Hackettstown, N.J. 07040

Filed Jun. 24, 1985, Ser. No. 747,776
Int. Cl.[4] E01H *5/02*
U.S. Cl. 294—54.5 **3 Claims**



1. A device for hand plowing snow angularly to the path of clearing comprising a rigid but flexible sheet material having a smooth plowing surface and having a width greater than its length, a bottom edge, a top edge, and side edges, and having at least two top slots located in the top portion of said sheet material; at least one side slot located on each side of said sheet material, means to prevent chafing and pressure to the hand located adjacent each said top slots and said side slots, and rounded convex corners between said side edges and said bottom edge;

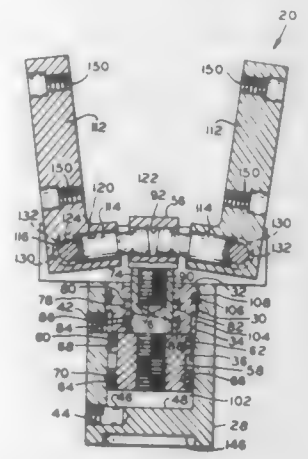
whereby said device is held angularly to said path of clearing with said bottom edge engaging said path through grasping with a top slot and a side slot and moving said device forwardly to said path.

4,607,873

GRIPPER APPARATUS

Kay T. Nusbaumer, Ft. Wayne, and Bruce D. McIntosh, Monroeville, both of Ind., assignors to PHD, Inc., Ft. Wayne, Ind.

Continuation of Ser. No. 517,329, Jul. 26, 1983, abandoned. This application Aug. 30, 1985, Ser. No. 771,297
Int. Cl.[4] B25J *15/00*
U.S. Cl. 294—88 **16 Claims**



1. Gripping apparatus, comprising:

a supporting body;

a pair of opposed spaced apart levers, each said lever having a mounting arm and a gripping arm angularly joined together at one of their respective ends, one of said levers being independently pivotally mounted, substantially at the joinder of its said mounting arm and said gripping arm, to said supporting body for pivotal movement of its gripping arm toward and away from the gripping arm of the other of said levers, said other lever being operably mounted to said supporting body;

a distal end of said mounting arm of said one of said levers being formed to have a substantially spherical shape truncated to have a substantially planar surface in direct facing relationship with the mounting arm of said other lever;

an actuating member reciprocably mounted in said supporting body so as to be generally disposed between respective distal ends of said mounting arms of said levers, said actuating member being reciprocable in a direction orthogonal to a line projecting between said respective distal ends, said actuating member including a substantially circularly cylindrical opening therein axially oriented orthogonally to the direction of reciprocation of said actuating member and generally along said line projecting between said respective distal ends, said cylindrical opening being operably coupled to said spherical end of said mounting arm of said one lever toward and away from said other lever upon reciprocable movement of said actuating member;

means for reciprocating said actuating member;

said other lever being independently pivotally mounted substantially at the joinder of its said mounting arm and said gripping arm, to said supporting body, said levers being pivotal toward and away from each other about spaced parallel pivot axes, said actuating member being generally between said pivot axes and likewise operably coupled to said mounting arm of said other lever to pivot said levers toward and away from each other in unison upon reciprocal movement of said actuating member

under actuation of said means for reciprocating said actuating member;

said means for reciprocating said actuating member is a piston-cylinder assembly within said supporting body, said piston being connected to said actuating member; and

said means including a bushing member for securing said piston in said cylinder, and wherein said apparatus further includes a pair of bushing blocks respectively disposed on opposite sides of and slidably abutting against said mounting arms of said levers, said bushing blocks abutting against said bushing member, said bushing blocks being secured to said supporting body to thereby secure said bushing member in said cylinder, each of said levers being pivotally supported between said pair of bushing blocks by a respective wrist pin received through a hole at the pivot axis thereof and in bearing openings in respective said bushing blocks, said bushing blocks abutting against and reciprocably supporting said actuating member therebetween.

4,607,874

AIR DEFLECTOR APPARATUS

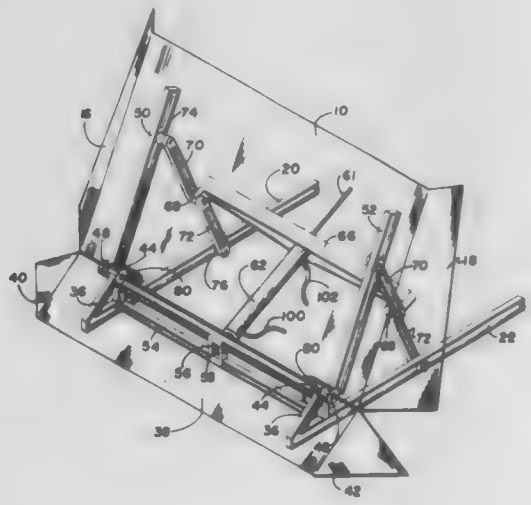
Charles E. Peairs, 130 E. Jersey St., Gladstone, Oreg. 97027

Continuation of Ser. No. 186,751, Sep. 12, 1980, abandoned. This application Aug. 23, 1982, Ser. No. 410,487

Int. Cl.[4] B60J *9/04*

U.S. Cl. 296—1 S

6 Claims



1. An air deflector apparatus for a vehicle, said apparatus comprising:

an upraisable deflector shield having a surface area adapting the same to deflect an oncoming airstream up and over said vehicle as the vehicle moves forwardly,

first means for pivoting a forward portion of said deflector shield relative to a top portion of said vehicle,

brace arm means mounted rearwardly of said first means and pivotally connected to said shield for bracing the same in an upraised position,

and controllable actuating means comprising a pneumatic cylinder for changing the relative positions of said shield and said brace arm means for moving said brace arm means between a first location wherein said shield is lowered toward the top of said vehicle and a second location defining a direct bracing position wherein the weight of said shield including the force of the airstream thereagainst is shifted from said actuating means to said brace arm means for bracing said weight directly against the top portion of said vehicle,

wherein said brace arm means comprise first and second struts respectively pivotally connected to said shield and the top of said vehicle as well as pivotally connected to each other, third and fourth struts respectively pivotally connected to said shield and the top of said vehicle as well as pivotally connected to each other, and cross means joining the pivotal connection between the first and second struts and the pivotal connection between the third and foruth struts,

said actuating means being disposed substantially between the pivoting axis of said first pivoting means and said cross means for moving the struts between a said first location wherein the first and second struts define an angle therebetween and the third and fourth struts define an angle therebetween of substantially less than 180°, and a said second location wherein said struts are more nearly aligned,

the pivotal connection between said struts in said first location being farther away from said first pivoting means than when in said second location such that said struts fold away from said first pivoting means in said first location providing access for said actuating means between said cross member and the pivoting axis of said first pivoting [illegible].

4,607,875

DETACHABLE SUNSCREEN FOR VEHICLE WINDOWS

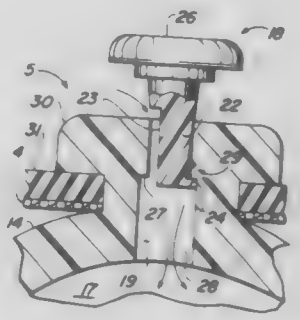
Kermit L. McGirr, 6243 S. 4th Ave., Phoenix, Ariz. 85041

Filed Dec. 10, 1984, Ser. No. 679,891

Int. Cl.[4] B60J *1/20*

U.S. Cl. 296—97 D

13 Claims



1. A readily detachable sunscreen for a windshield or other window of a vehicle comprising:

A. a sheet of sunscreen material dimensioned and configured to conform to the contour and shape of the window or window portion to be shielded; and

B. a plurality of suction cup assemblies fixed to and distributed about said sheet of sunscreen material for engaging and sticking to a surface of the window, thereby supporting said sheet of sunscreen material on the window in generally parallel relationship thereto;

C. each of said suction cup assemblies comprising:

1. a flexible bell portion having a concave inner surface and an opening bounded by circumferential lips adapted to conform to and sealingly engage said window surface and therewith define a cavity, said bell portion further having a neck portion extending axially away from the plane defined by said lips, said neck portion having a generally cylindrical axial aperture passing therethrough, said axial aperture comprising:

a. a resiliently deformable upper aperture region;

b. a lower aperture region coaxial with said upper aperture region;

i. said lower aperture region being of larger radius than said upper aperture region and opening into said cavity; and

c. a shoulder defined by the junction of said upper and lower aperture regions;

2. a stopper member disposed in said axial aperture and adapted for axial translation between first and second terminal positions;

a. said stopper member being dimensioned and downwardly tapered along an upper portion of its length to closely engage and slightly deform said upper aperture region when disposed in said first terminal position to thereby seal off said cavity such that a suction

may be maintained in said cavity when said lips sealingly engage said window surface;

b. said stopper member having a relieved region along a lower portion of its length providing clearance between said stopper member and said upper aperture region, said lower portion being disposed closer to said opening than said first portion and being dimensioned and configured such that, when said stopper member is in said second terminal position, a communications path is established through said axial aperture to place said cavity at atmospheric pressure, thereby releasing said suction cup assembly from said window surface; and

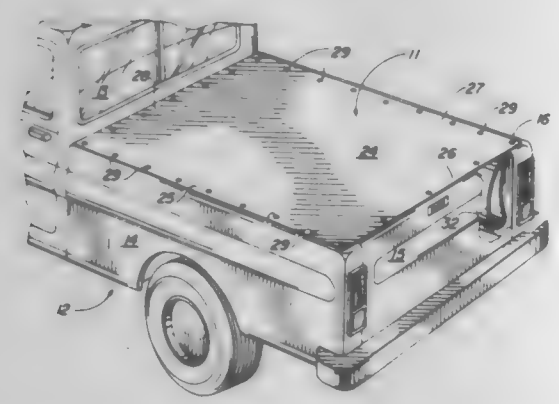
c. said stopper member including a finger projecting outwardly from said lower portion and adapted to engage said shoulder when said stopper member is in said second terminal position, thereby limiting the axial translation of said stopper member and retaining said stopper member in said axial aperture.

4,607,876

COVER FOR BED OF PICKUP TRUCK

David M. Reed, 1924 E. 5th Ave., Mesa, Ariz. 85204

Filed Jan. 29, 1985, Ser. No. 696,028
Int. Cl.[4] B60P *7/02*
U.S. Cl. 296—100 1 Claim



1. A cover adapted to be attached to the bed of a truck, the truck bed including

at least a pair of opposed upstanding side walls each having an upper generally horizontally oriented edge, and

a floor intermediate said walls,

said cover including

(a) an articulated support frame including a plurality of rigid, elongate elements adapted to be assembled to define a chamber and disassembled for compact storage;

(b) a first sheet of pliable material having at least a pair of opposed side edges adapted for detachable connection to said bed walls to tension said first sheet in generally horizontal orientation spanning said floor;

(c) a second sheet of pliable material attached to said first sheet and having

(i) an outer edge adapted for connection to one of said side walls of said truck bed, and

(ii) an inner edge attached to one of said side edges of said first sheet;

(d) a third sheet of pliable material attached to said first sheet and having

(i) an outer edge adapted for connection to the other side of said side walls of said truck bed, and

(ii) an inner edge attached to the other of said side edges of said first sheet;

said second and third sheets being folded inside said bed walls beneath said first sheet when said opposed side edges of said first sheet are detachably connected to said bed walls to tension said first sheet to span said floor and when said frame is disassembled; and,

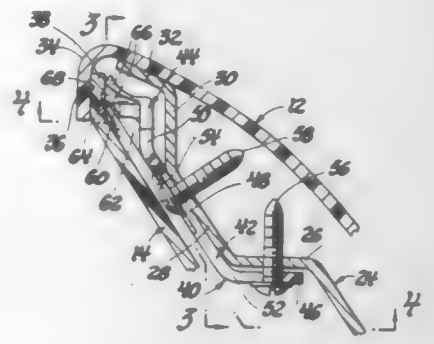
said first, second and third sheets fitting over said frame with said outer edges of said second and third sheets connected to said bed walls when said opposed side edges of said first sheet are disconnected from said bed walls and said frame is assembled in said bed beneath said first, second and third sheets.

4,607,877

VEHICLE BODY PANEL ARRANGEMENT

Alan J. Shelton, Rochester, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Sep. 30, 1985, Ser. No. 781,872
Int. Cl.[4] B62D *27/04*
U.S. Cl. 296—191 1 Claim



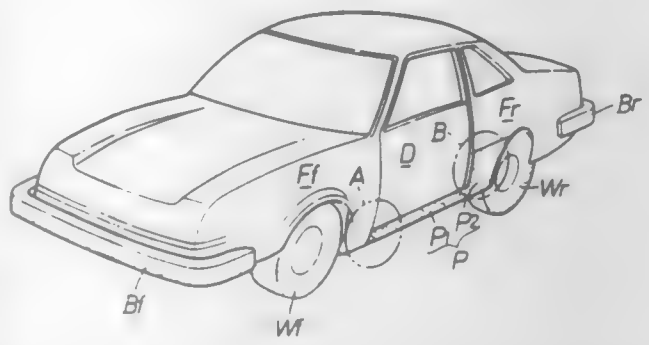
1. The combination comprising, a first vehicle body panel having a bight portion including a terminal flange, a second vehicle body panel having an edge portion thereof located within the bight portion of the first panel, and a clip for resiliently holding the outer surface of the edge portion of the second panel to the inner surface of the terminal flange of the first panel and including a body portion and a retaining portion, means mounting the body portion of the clip on a vehicle body structural member to locate the retaining portion of the clip within the bight portion of the first body panel, the retaining portion including rigid means spaced a predetermined distance from the inner surface of the terminal flange of the bight portion and defining therewith a throat permitting insertion of the edge portion of the second body panel therebetween with limited clearance, the retaining portion further including deflectable means overlying the throat and deflectable into resilient engagement with the inner surface of the edge portion of the second panel to hold the outer surface of such edge portion against the inner surface of the terminal flange of the first panel.

4,607,878

BODY STRUCTURE FOR AUTOMOBILES

Takanobu Itoh, Saitama, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 14, 1984, Ser. No. 620,495
Claims priority, application Japan, Jun. 17, 1983, 58-109073; Jun. 17, 1983, 58-109074; Jun. 20, 1983, 58-110692
Int. Cl.[4] B62D *25/00*
U.S. Cl. 296—199 10 Claims



1. An automobile body structure for a skeletal body having a front fender portion, a door sill portion and a rear fender portion, the improvement comprising an integral synthetic resin panel having a front portion covering the door sill portion and a rear portion covering the front lower portion of the rear fender portion of the skeletal body and wherein means are provided for mounting said panel on said skeletal body in a

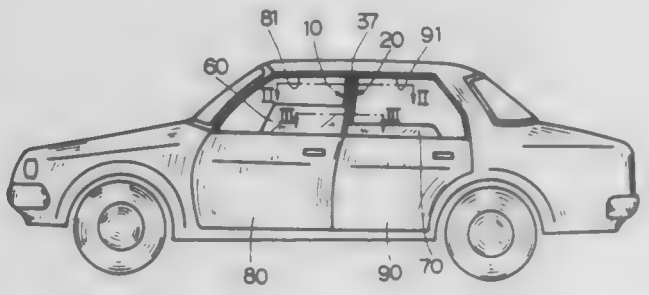
manner for allowing longitudinal expansion and contraction of said panel relative to said skeletal body and wherein said mounting means include an inwardly offset portion on the forwardmost edge of said panel which is slidably clamped between said front fender portion of the skeletal body and the front fender.

4,607,879

VEHICLE DOOR STRUCTURE

Katsunori Mori; Takuji Shimoda, both of Toyota, and Kiyokazu Seo, Aichi, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Japan

Filed Jul. 2, 1985, Ser. No. 751,222
Claims priority, application Japan, Jul. 5, 1984, 59-101724[U]
Int. Cl.[4] B60J *1/08;* E06B *7/22*
U.S. Cl. 296—201 18 Claims



1. A vehicle door structure comprising:

a door glass, which is displaceable within a door mounted on a vehicle;

means for sealing between the door glass and a body side member of the vehicle, said sealing means including a first portion and a second portion, the first portion of said sealing means comprising solid rubber, the second portion of said sealing means comprising sponge rubber, the first portion of said sealing means including a first recess, the second portion of said sealing means including a second recess and a contact portion, the contact portion positioned at an outside surface of the vehicle, said contact portion being defined between the body side member of the vehicle and the door glass, the contact portion adapted for contact with said door glass, the first recess of the first portion of said sealing means being located adjacent to the adjacency of the outside surface of the vehicle; and

means for fastening said sealing means to the body side member of the vehicle, said fastening means having a first hook and a second hook, the first hook of said fastening means adapted to be inserted into the first recess of the first portion of said sealing means, the second hook of said fastening means adapted to be inserted into the second recess of the second portion of said sealing means.

4,607,880

KNOCKDOWN PICNIC TABLE

Yves Gastebled, 443 St-Vincent, Montreal, Quebec, Canada (H4N 3A6)

Filed Mar. 19, 1984, Ser. No. 590,972
Claims priority, application Canada, Mar. 18, 1983, 423908
Int. Cl.[4] A47B *37/04*
U.S. Cl. 297—157 1 Claim

1. A knockdown table comprising:

a table-top having four corners and two long sides, said table-top being provided with a tubular receptor extending parallel to its long sides near each corner;

a pair of narrow, rectangular benches each positioned on one long side of, and below, the table-top, each of said benches being provided near each end with a tubular receptor extending perpendicularly to the table receptors; and

four supports for connecting the benches and the to together off the ground at a proper height, each of said supports comprising:

(a) a ground-engaging portion;

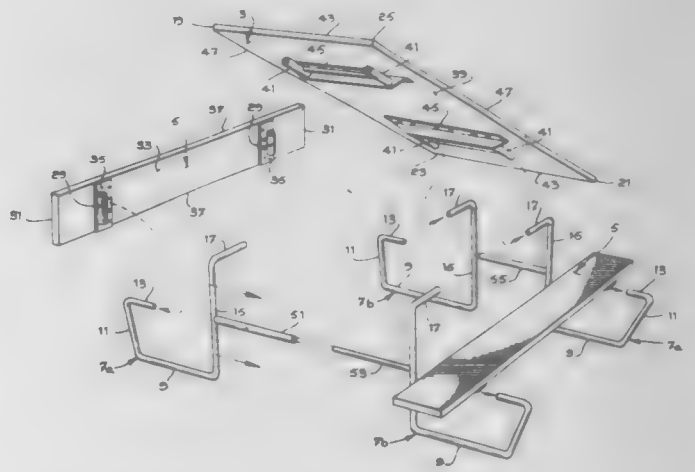
(b) a first leg extending up from said ground-engaging portion to support the table-top near one of its corners;

(c) a second leg extending up from said ground-engaging portion to support one end of one of said benches, said second leg being shorter than the first one;

(d) a first connecting pin extending horizontally at the upper end of the first leg in such a direction as to slidably engage the tubular receptor at the one corner of the table-top;

(e) a second connecting pin extending horizontally at the upper end of the second leg in a direction perpendicular to the direction of the first connecting pin so as to slidably engage the tubular receptor at the one end of the one bench,

(f) each support being formed from a single piece of tubing material bent to provide the ground-engaging portion, the first and second legs and the first and second connecting pins;



(g) the supports located at diagonally opposed corners of the table-top are identical in shape, the supports located at one set of diagonally opposed corners having their first connecting pins extending in a direction opposite to the first connecting pins of the supports located at the other set of diagonally opposed corners; and

(h) each support being provided with brace means cooperating with brace means provided on the support extending directly across from it at one end of the table-top to provide a cross-brace between the supports at said end of the table, said cooperating brace means comprising complementary telescopic, tubular members extending horizontally inwardly from about the mid-height of the first legs of the said respective supports;

whereby, by having the first and second connecting pins on each support at right angle to each other, the supports are locked in place when slidably connected to the benches and table-top, such a locking causing said benches and table-top to be securely held in place without tools, fasteners or separate connectors.

4,607,881

SEAT CADDY FOR SPECTATOR SEATING

Bruce C. Merrick, 3505 Locust Ct., Prospect, Ky. 40059

Filed Dec. 10, 1984, Ser. No. 680,159
Int. Cl.[4] A47C *9/14*
U.S. Cl. 297—192 5 Claims

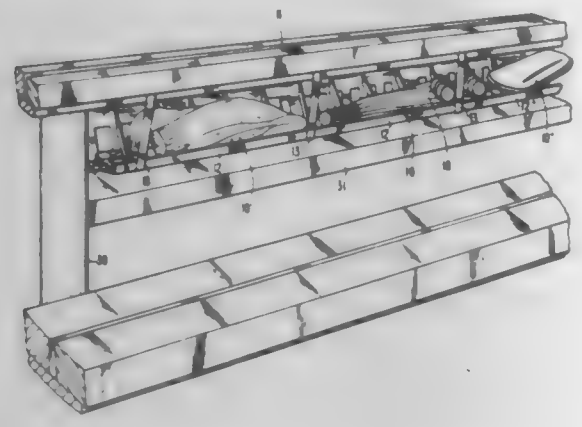
1. A seat for spectator seating, comprising:

a bleacher seat plank;

a rack sized and adapted to extend along the underside of said bleacher seat plank, said rack including an article supporting bottom and a back portion integrally formed with said bottom and including fastening means for depending said back portion from the rear underside of said bleacher seat plank, said bottom aligned vertically below said bleacher seat plank and said back portion having a

sufficiently closed construction to prevent passage of articles therethrough; and

a plurality of support members horizontally spaced apart and extending vertically between the bottom of said rack and said bleacher seat plank, said bleacher seat plank, bottom of said rack and adjacent ones of said support members



together defining an access opening therebetween for placing and removing articles to and from said rack,

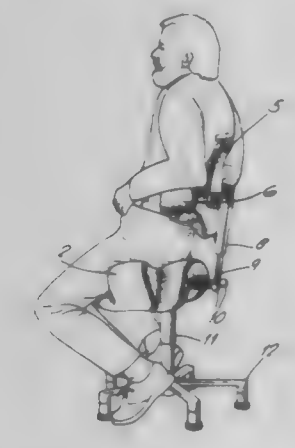
wherein said rack integrally includes means for interlocking said rack to another similarly formed rack fastened to said plank in order to form a continuous rack along substantially the full length of said bleacher seat plank.

4,607,882

CHAIR WITH SADDLE SHAPED SEAT AND MEMBERS EXTERNALLY TRANSVERSELY THEREFROM

Peter Opsvik, Hogtuavn. 12, N-1370 Asker, Norway

Filed Dec. 6, 1984, Ser. No. 678,710
Claims priority, application Norway, May 8, 1984, 841844
Int. Cl.[4] A47C *7/31*
U.S. Cl. 297—195 20 Claims



1. A chair having a seat wherein said seat has a longitudinal saddle shaped part, said saddle shaped part having an upper surface cross-section approximately in the shape of an inverted U, and further having saddle-like members projecting transversely out from a mid portion of each longitudinal side of said seat part to support the rear, upper thigh portion of a user of the chair.

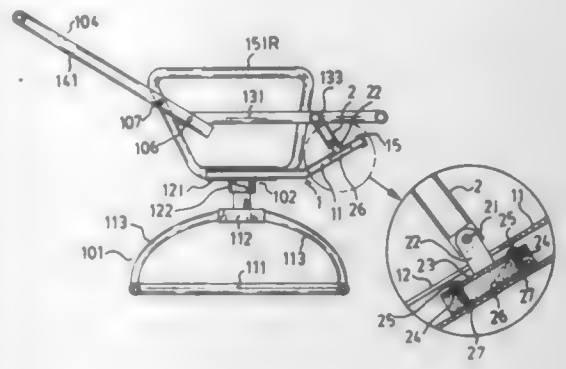
4,607,883

RECLINING MECHANISM FOR EASY CHAIR

Huang Y. Tzu-Chun, No. 36, Chien Kuo Rd., Kuei Shan Industrial Park, Tao Yuan, Taiwan

Filed Aug. 23, 1985, Ser. No. 768,758
Int. Cl.[4] A47C *1/02*
U.S. Cl. 297—317 1 Claim

1. A reclining mechanism for easy chair or swivel chair of the type including a leg base and a chair seat, said mechanism comprising a guide tube firmly secured above the leg base, a jack stay projected from beneath the chair seat; said guide tube being slightly tilted upward at the front portion thereof to form an obliquely extended tube, said extended tube having a guide slot formed on the upper side thereof, a guide bar pivotably connected with the lower end of said jack stay and adapted to pass through said guide slot, said guide bar being provided at the lower end thereof with a sliding member which is contained and slidably movable in said extended tube, a space



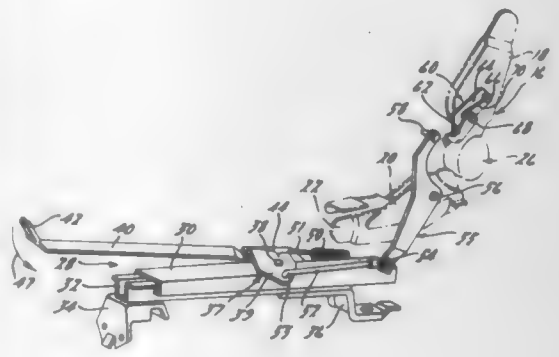
formed between said sliding member and an inner wall of one side of said obliquely extended tube, and an arc-shaped spring plate mounted on the inner side wall of said extended tube, said spring constantly pressing against said sliding member so as to exert a slow-down effect on the movement of said sliding member.

4,607,884

VEHICLE EASY ENTRY SEAT LATCHING MECHANISM

Dennis H. Heling, Canton, Mich., assignor to Chrysler Corporation, Highland Park, Mich.

Filed Aug. 6, 1984, Ser. No. 638,311
Int. Cl.[4] B60N *1/04*
U.S. Cl. 297—341 5 Claims



1. An easy entry seat latch mechanism adapted for a vehicle seat assembly including a seat cushion and a seat back, hinge means providing pivotal movement of said seat back relative to said seat cushion about a generally horizontal first axis between a generally upright normal position and a forwardly tilted position, track means mounting said seat cushion on said vehicle for horizontal movement to a plurality of fore and aft horizontal adjusted positions, a track latching assembly on said track means and resiliently biased in a latch direction by first spring means, said easy entry seat latching mechanism comprising,

a lever member rotatably supported on said hinge means for pivotal movement about a second axis substantially parallel to said first axis;

means connecting said lever member to said track latching assembly such that said first spring means biases said lever member for rotation in a first track locking direction;

a dual acting seat back latch mechanism mounted on said seat back, said latch mechanism including second spring means biasing said latch mechanism into its latched mode;

said seat back latch mechanism initially operative, when said seat back is first pivoted forwardly to contact said lever member causing said lever member to be rotated in a second direction whereby said track latching assembly is unlocked freeing said seat cushion for horizontal move-

ment on said track means to an easy entry forward position,

said seat back latch mechanism subsequently operative upon said seat back being further pivoted to a forward tilted position to lockingly engage said lever member; and

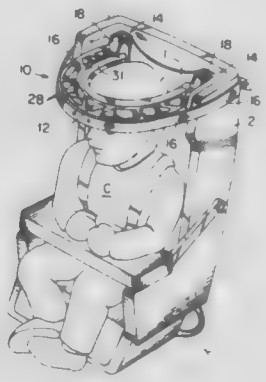
said seat cushion operative to be moved rearwardly from its easy entry position to a selected horizontal position, whereby upon subsequent pivoting of said seat back to its upright position by a force sufficient to overcome the resilient bias of said second spring means causes said seat back latch mechanism to unlock said lever member for rotation of said lever member in said first direction such that said first spring means returns said track latching assembly to a locked condition thereby maintaining said seat cushion in said selected horizontal position.

4,607,885

HEAD RESTRAINT FOR CHILD'S SEAT

Jose M. Q. del Fierro, 530 Mill Ave. S., Unit #1, Renton, Wash. 98055

Filed Jan. 22, 1985, Ser. No. 693,523
Int. Cl.[4] A47C *7/38*
U.S. Cl. 297—397 10 Claims



1. A head restraint device for preventing possibly injurious forward and lateral motion of the head of a child seated in a conventional child's seat, comprising:

a rigid U-shaped restraining member which surrounds the forward and lateral portions of the child's head when the restraining member is positioned with distal ends thereof adjacent a forward surface of a seat back of any selected one of various conventional child's seats of different forms, and is of a size not to be uncomfortable yet be engaged by the child's head and restrain such from any more than minimal forward and lateral motion;

support members, each attached to one end of the restraining member, which aid in maintaining the restraining member rigid with respect to the forward surface of the seat back and positioned in place around the child's head; and

flexible tether means fixedly attached to the restraining member, and firmly yet adjustably holding the ends of the restraining member against the forward surface of the seat back; wherein the head restraint is readily attachable to said child's seat by engagement of the tether means with the seat back.

4,607,886

TRUCK HEADREST

Mike S. Mazhar, 25472 Bunker Hill Blvd., Hayward, Calif. 94542

Filed Sep. 30, 1985, Ser. No. 781,468
Int. Cl.[4] A47C *7/36*
U.S. Cl. 297—410 9 Claims

1. A headrest including:

a cushion having

a cushion support plate intersecting

a cushion attachment surface at a first angle,

a neck support plate intersecting the cushion support plate at a second angle, and

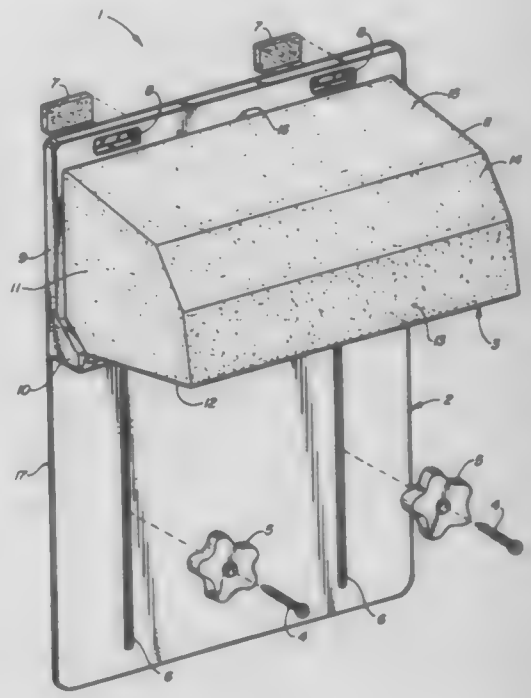
a first head support plate intersecting the neck support plate at a third angle;

a back plate attached to the attachment surface having

a plurality of linear adjustment channels,

at least one adjustment socket,

a protective flange surrounding the perimeter of the cushion attachment surface, and



a support flange extending outwardly from a bottom end of the protective flange adjacent to the cushion support plate;

adjustable attachment means slidably engagable in the plurality of adjustment channels; and

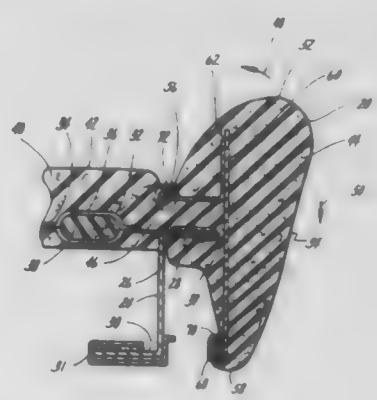
at least one resilient pad attached to a rear surface of the back plate.

4,607,887

ENCAPSULATED BOLSTER

Curtis F. Vail, Ann Arbor, Mich., assignor to Hoover Universal, Inc., Ann Arbor, Mich.

Filed Feb. 24, 1984, Ser. No. 583,528
Int. Cl.[4] B60N *1/06;* A47C *7/02*
U.S. Cl. 297—452 14 Claims



1. In a seat assembly having a base frame and a seat cushion providing an occupant seating surface and a lateral support bolster along a lateral side of said occupant seating surface to provide lateral support for a seated occupant, the improvement which comprises said seat cushion and said bolster comprising a continuous foam medium encapsulating a portion of said frame and forming a body portion of said bolster and a body portion of said seat cushion, said medium having a joining portion defining a line of pivoting between said two body portions so that said bolster can pivot via said joining portion relative to said seat cushion, said bolster including insert structure internal of said body portion of said bolster and separate from said frame, said bolster and its insert structure having a

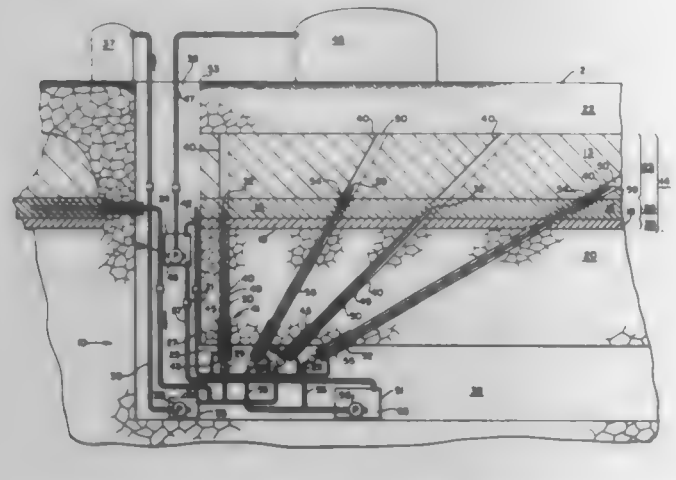
major dimension disposed generally transversely to the lateral extent of said seat cushion, said bolster having top, laterally outboard and bottom surface portions, said seat assembly further including a cover overlying said seat cushion and extending outwardly laterally thereof to also overlie said joining portion and said top, laterally outboard and bottom surface portions of said bolster, said insert structure having a bottom edge portion adjacent said bottom surface portion which is exterior of said bolster body portion, said cover having an edge terminating at said bottom edge portion of said insert structure, and securement means securing said cover edge to said bottom edge portion of said insert structure.

4,607,888

METHOD OF RECOVERING HYDROCARBON USING MINING ASSISTED METHODS

Robert H. Trent, Longmont, Colo., and W. Ray Oakley, Douglas, Wyo., assignors to New Tech Oil, Inc., Spokane, Wash.

Filed Dec. 19, 1983, Ser. No. 563,184
Int. Cl.[4] E21C *41/10;* E21B *43/40*
U.S. Cl. 299—2 11 Claims



1. A method for recovering a desired fluid hydrocarbon from an underground porous formation having a bottom impermeable to said fluid hydrocarbon and containing said hydrocarbon and at least one other fluid having a specific gravity different from said hydrocarbon, comprising the steps of:

a. forming an excavation having a portion thereof below said porous formation;

b. forming a plurality of openings extending from said portion of said excavation into said porous formation;

c. inserting collection means into said porous formation through said openings to separately collect said hydrocarbon and said at least one other fluid;

d. collecting a quantity of said at least one other fluid;

e. circulating said collected at least one other fluid from said porous formation to a point below said porous formation and at least one time back through said porous formation to wash said hydrocarbon therefrom and to form, in said porous formation, a pool of said hydrocarbon and a substantially separate layer of said at least one other fluid;

f. regulating the height of said hydrocarbon collection means and the volume of said collected at least one other fluid in said porous formation to maintain said hydrocarbon collection means in fluid communication with said pool of hydrocarbon;

g. collecting said hydrocarbon from said pool thereof; and

h. conveying said collected hydrocarbon to the surface.

5. A system for recovering fluid hydrocarbon from an underground porous formation containing said fluid hydrocarbon interspersed within porous interstices of said porous formation and containing at least one other fluid having a specific gravity different than that of said hydrocarbon, a portion of said at least one other fluid in a substantially separate layer horizontally through said porous formation adjacent a formation bottom impermeable to said fluid hydrocarbon and which underground porous formation has an excavation thereunder and at least one opening from said excavation up into said porous formation, comprising:

a. means inserted through said at least one opening for circulating a quantity of said at least one other fluid from said separate layer thereof to a point below said formation and then up and through said porous formation to wash said interspersed hydrocarbon therefrom and into a pool of said hydrocarbon substantially separate from said substantially separate layer of said at least one other fluid and to return said at least one other fluid to said substantially separate layer thereof;

b. means inserted through said at least one opening for collecting said hydrocarbon from said pool thereof from below;

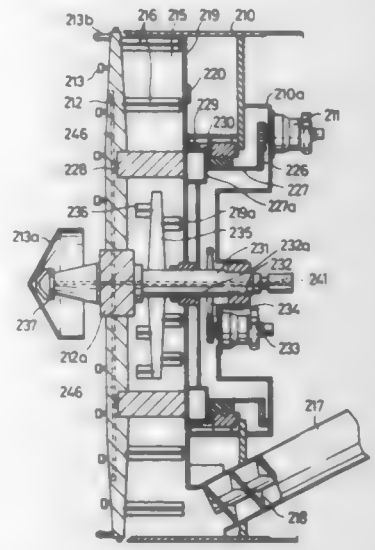
c. means in fluid communication with said means for collecting said hydrocarbon for conveying said collected hydrocarbon to above the ground.

4,607,889

SHIELD TUNNEL BORING MACHINE

Hakumi Hagimoto; Yutaka Kashima; Norio Kondo, and Masumi Inoue, all of Tokyo, Japan, assignors to Daiho Construction Co., Ltd., Tokyo, Japan

Filed Nov. 29, 1984, Ser. No. 676,063
Int. Cl.[4] F21D *9/08*
U.S. Cl. 299—33 4 Claims



1. A shield tunnel boring machine for boring a tunnel in the earth, comprising:

a cylindrical shield having a longitudinal axis;

a bulkhead in said shield for defining a forward open chamber at a forward end of said shield, said bulkhead comprising an outer peripheral bulkhead part fixed to said shield and a central bulkhead part rotatable about the longitudinal axis of said shield;

a main motor secured inside said shield for rotating said central bulkhead part;

a rotary cutter coupled through a rotary support to said central bulkhead part, said rotary cutter being in front of said forward open chamber to bear against a tunnel face for excavating earth therefrom;

a plurality of forward projecting cutter bits extending from a front face of said rotary cutter;

a plurality of kneading blades extending rearwardly from a rear face of said rotary cutter into said outer peripheral part of said forward open chamber parallel to the longitudinal axis of said shield;

a rotary shaft supported rotatably along the longitudinal axis of said shield independently of said rotary cutter;

a submotor secured inside said shield for rotating said rotary shaft;

a kneading wing fixedly mounted on said rotary shaft and extending radially from said rotary shaft in a central zone of said chamber, said kneading wing having a front face and a back face;

a plurality of auxiliary kneading blades extending from the

front and back faces of said kneading wing parallel to the longitudinal axis of said shield;

means disposed between the fixed outer peripheral bulkhead part and the rotatable central bulkhead part for forming a seal therebetween;

means for supplying a muddying material to a forward side of said chamber, said muddying material being mixed and kneaded by said kneading wing and blades with the excavated earth in said chamber to render excavated water-containing earth introduced into the chamber to be a mud having a viscosity that provides resistance to ground pressure and to underground water pressure at the tunnel face while being conveyable from said chamber; and

means contiguous to said chamber for discharging said mud out of said chamber.

4,607,890

GUIDES FOR MINERAL MINING MACHINES

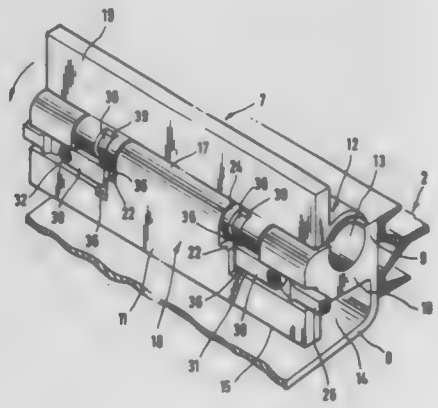
Gerhard Merten; Bernd Steinkuhl, both of Lunen, and Alois Hauschopp, Werne, all of Fed. Rep. of Germany, assignors to Gewerkschaft Eisenhutte Westfalia, Lunen, Fed. Rep. of Germany

Filed Aug. 21, 1984, Ser. No. 642,866

Claims priority, application Fed. Rep. of Germany, Aug. 27, 1983, 3330955

Int. Cl.⁴ E21C *35/20*

U.S. Cl. 299—43 **19 Claims**



1. In a guide for mineral mining composed of a plurality of individual sections (7) joined end-to-end with the aid of detachable coupling means (26,30), each section comprising means defining upper and lower passages (13, 14) along which a drive chain is circulated during use, said defining means including spacers (10) separating the passages, a generally upstanding fixed web plate component (11) with a planar outer face (18) disposed outwardly of the spacers relative to the passages, a cover (12) which serves to close off the upper passage, and hinge means (23, 24) between the web plate component and the cover for permitting the cover to be pivoted between closed and open positions; the improvements characterized by: the web plate component being extended upwardly to at least a level substantially corresponding to the center of the upper passage, and compartments (22) formed in the web plate component in which said hinge means are located, the compartments and the hinge means being located above the coupling means and in alignment with the upper passage to reduce the size of the cover and the distance outwardly from the web plate component to which the cover pivots to the open position.

4,607,891

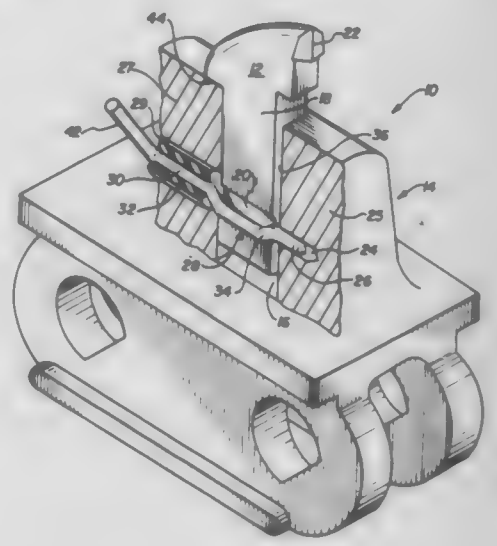
ROTARY RETAINER FOR MINING BITS

Eugene F. Pendolino; Wayne L. Edmondson, both of Franklin, and Michael L. O'Neill, Lacinda, all of Pa., assignors to Joy Manufacturing Company, Pittsburgh, Pa.

Filed May 31, 1985, Ser. No. 739,945

Int. Cl.⁴ E21B *10/00*

U.S. Cl. 299—92 **9 Claims**



5. A cutter bit holding assembly of a mining machine comprising:

a cutter bit having a shank portion;

a support member having a socket for receiving the shank portion of said cutter bit, and a transverse bore relative to the socket extending within said support member partially intersecting the socket thereof define a grooved bore portion immediately adjacent and opening into the socket;

a rotary locking means positioned within the transverse bore of said support member having turning means and an offset portion positioned within the grooved bore portion adjacent the support member socket for rotation from a first position wherein the offset portion is positioned outside of the socket to permit unencumbered insertion or removal of said bit to a second position wherein the offset portion intersects the socket and engages a locking surface from the shank portion of said cutter bit to securely hold said bit within the socket of said support member; and

retaining means for preventing rotation of said rotary locking means when positioned in its second position engaging the locking surface of said bit.

4,607,892

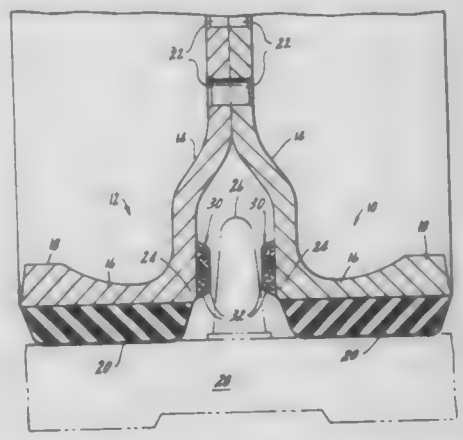
TRACKED VEHICLE ROAD WHEEL

Roger E. Payne, Okemos, and James B. Weeks, Eaton Rapids, both of Mich., assignors to Motor Wheel Corporation, Lansing, Mich.

Filed Apr. 12, 1984, Ser. No. 600,791

Int. Cl.⁴ B62D *55/12*

U.S. Cl. 305—56 **11 Claims**



1. A road wheel for track-laying vehicles which comprises a

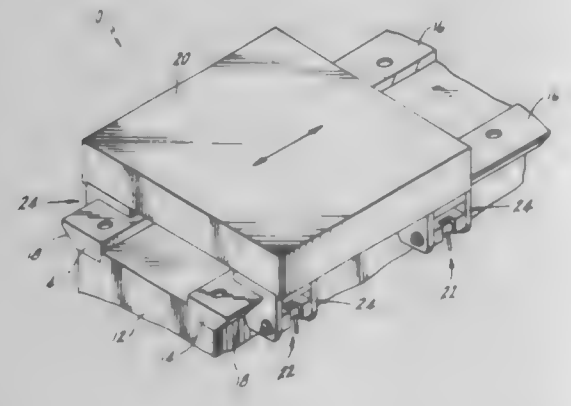
circular disc and an annular rim integrally axially projecting from the periphery of said disc forming a shoulder at the juncture of said rim and disc, said rim and disc being of one-piece mold-formed construction of composition selected from the group consisting of aluminum and fiber-reinforced resin, and an annular band of wear-resistant material integrally embedded in said mold-formed construction forming a self-replenishing axially facing wear surface at said shoulder, said band comprising a length of wear-resistant ribbon stock coiled on edge and molded into said shoulder with one edge at said surface and with the width of said ribbon stock extending into said shoulder.

4,607,893

MACHINE SLIDE BEARING ASSEMBLY

Frank M. Damico, Neenah, Wis., assignor to Detroit Edge Tool Company, Detroit, Mich.

Filed Jan. 11, 1985, Ser. No. 690,677
Int. Cl.[4] F16C *29/06*
U.S. Cl. 384—45 23 Claims



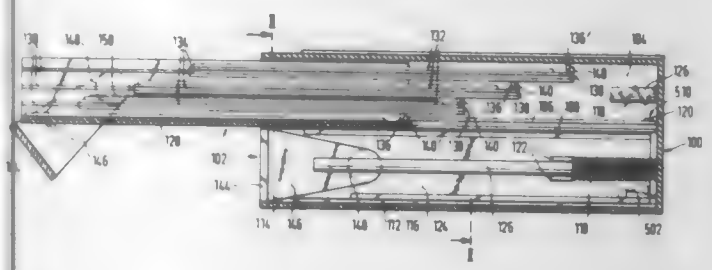
1. A bearing assembly for a machine slide mounted for rectilinear movement along ways on the machine, each way having at least one pair of flat guide surfaces, comprising a bracket having a base adapted to be fixedly mounted on the machine slide, a first anti-friction cartridge mounted on said base, means in said cartridge defining a flat bearing surface adapted for engagement with one of the guide surfaces on the ways, said base having a pair of legs depending from opposite ends thereof, said legs having a pair of axially aligned bores therein, the axis of which extends accurately parallel to and offset from the bearing surface of said cartridge, a shaft rotatably supported in said aligned bores, said shaft having a cylindrical portion rotatably fixed thereon between said legs and eccentric to said axis, an adjusting block rotatably supported on the eccentric portion of the shaft, a second anti-friction cartridge fixedly mounted on the adjusting block, means in said last-mentioned cartridge defining a flat bearing surface accurately parallel to said axis and adapted for engagement with the other guide surface on the ways, means for rotating said shaft in opposite directions to retract and extend said last-mentioned cartridge and the bearing surface thereon toward and away from said axis and means for locking said shaft in a rotatively adjusted position on said body, whereby, when the base is mounted on a slide and positioned on the ways with the bearing surface of the first-mentioned cartridge engaging one guide surface of the ways, said shaft is adapted to be rotated to displace the bearing surface of the second cartridge to an extended position in flat bearing engagement with the other guide surface on the ways and thereafter locked to retain the bearing surfaces in engagement with the guide surfaces of the ways.

4,607,894

DEVICE FOR STORING GRAMOPHONE AND VIDEO DISCS

Peter Ackeret, Kusnacht, Switzerland, assignor to IDN Inventions & Development of Novelties AG, Chur, Switzerland

Filed Aug. 28, 1984, Ser. No. 645,071
Claims priority, application European Pat. Off., Aug. 29, 1983, 83108479.3
Int. Cl.[4] A47B *88/04*
U.S. Cl. 312—15 20 Claims



1. Apparatus for use in the storage of disc-shaped record media comprising:

housing means, said housing means being open on only one side, said open side defining a generally planar housing front;

a plurality of holder means, said holder means receving and storing disc-shaped record media, said holder means each having a generally rectangular shape with side edges and being slidably mounted in said housing means in a stacked relationship;

transport slider means, said transport slider means being positioned in said housing means for reciprocal movement through said housing means open side between an inserted position and an ejected position, said reciprocal movement being in a direction which is generally transverse to said housing front, said transport slider means including:

a base defining member;

cover defining means movably coupled to said base defining member, said cover defining means comprising a front wall which extends transversely with respect to the direction of movement of said transport slider means when said transport slider means is in the inserted position to cover said housing means open side; and

means for supporting said cover defining means, said supporting means enabling simultaneous movement of said cover defining means with said base defining member and relative to said base defining member, said relative movement including at least a directional component which is at an angle with respect to the direction of movement of said base defining member, said relative movement of said cover defining means during movement of said transport slider means form the inserted to the ejected position providing simultaneous access to said plurality of said holder means when said slider means is in the ejected position;

means coupling said transport slider means to at least a first of said holder means whereby movement of said slider means will be imparted to said first holder means;

means establishing a driving connection between said first of said holder means and the remainder of said holder means, said driving connection establishing means including means mechanically interconnecting said holder means, said interconnecting means engaging each of said holder means at a point which is offset from a first side edge thereof by a different distance than the point of engagement with the other of said holder means;

fixed stop means on the interior of said housing means for defining the limit of travel in the ejection direction and thus the ejected position of at least one of said holder means whereby said driving connection establishing means will define different normal lengths of travel of each of said holder means;

means for resiliently biasing said transport slider means toward the ejected position; and

means for releasably locking said transport slider means in said inserted position in said housing means against the bias of said resilient biasing means.

4,607,895

SALES DISPLAY CASE

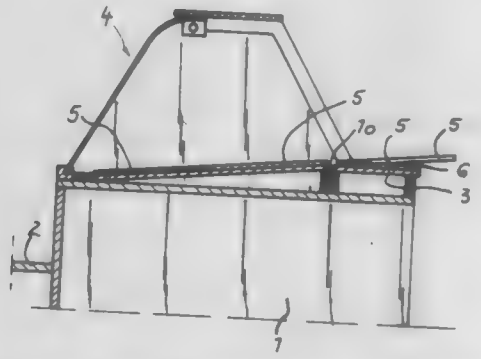
Detlef Hesterberg, Auf dem Rode 29, 5800 Hagen 7, and Dietrich Hesterberg, Lohestr. 9, 5800 Hagen 1, both of Fed. Rep. of Germany

Filed Nov. 20, 1984, Ser. No. 673,489

Claims priority, application Fed. Rep. of Germany, Feb. 8, 1984, 8403748[U]

Int. Cl.⁴ A47F *3/14*

U.S. Cl. 312—126 **5 Claims**



1. In a sales display case for goods including baked products and confectionaries comprising a base with a horizontal work table attached to a rear portion of said base and extending across the entire length of the case, a transparent rearwardly open display structure on said base, and a plurality of identical rectangular goods display members positioned on a floor of said display structure so as to be inclined toward the front thereof and each having a length and a width, the improvement wherein:

said table is substantially level and said goods display members positioned on said floor in said display structure have rearwardly directed ends;

said goods display members are detachable and independent;

an upwardly protruding lip is formed on a free rear longitudinal edge of said table;

a spacing is provided between the rearwardly directed ends of said goods display members placed in said display structure and said lip on said table and said spacing is at least equal to the widths and is smaller than the lengths of said goods display members;

said lip has a height at least equal to a thickness of said goods display members;

said lip is movable transversely to said longitudinal edge of said table to provide a limited transverse displacement thereof, whereby the maximum displacement of said lip equals at least a difference between the length and the width of said goods display plates;

said table with said lip is divided into a plurality of work plate segments positionable side-by-side with long sides of said segments parallel to each other; and

each of said work plate segments is rotatable about a pivot at a front end portion proximal to said display structure and has a rear end portion of said work plate segment liftable from the horizontal to a raised position.

4,607,896

LOCK FOR MOBILE STORAGE APPARATUS

Robert J. Peterman, Hartland, Wis., assignor to Spacesaver Corporation, Fort Atkinson, Wis.

Filed Jan. 30, 1984, Ser. No. 575,216

Int. Cl.⁴ A47B *53/02*

U.S. Cl. 312—201 **4 Claims**

1. In combination with a mobile storage system having at least one wheeled mobile storage unit with a face panel and being translatable along a set of tracks, apparatus for selectively locking and unlocking the mobile storage unit at a predetermined location along the tracks comprising:

(a) rack means fastened to a track at the predetermined location of the mobile storage unit;

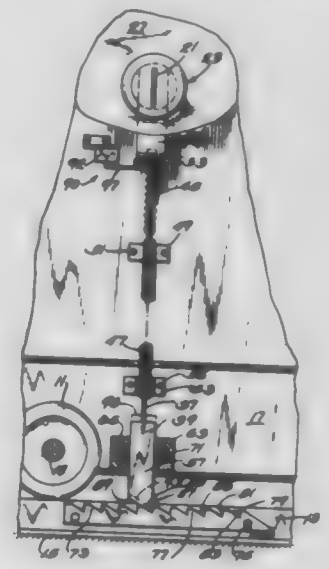
(b) lock actuating means mounted on the mobile storage unit face panel for selecting a locked or unlocked mode;

(c) a latch retained in the actuating means for reciprocable actuation thereby;

(d) guide block means attached to the mobile storage unit for defining a vertical passage;

(e) a lock bar mounted for vertical reciprocation within the guide block means and adapted to engage the rack means to prevent movement of the mobile storage unit;

(f) cable means for being pulled in a first direction by the latch to positively pull the lock bar out of engagement with the rack means and for being pushed in a second



direction to push the lock bar into engagement with the rack means an abutment on said cable means and secured to said cable means; and

(g) a compression spring arranged around the cable means and having one spring end engaged with said latch and the other spring end engaged with said abutment between the reciprocable latch and said abutment for resiliently pushing the cable means in the second direction to thereby push the lock bar into engagement with the rack means,

so that selective actuation of the lock actuating means to the locked mode reciprocates the latch and compresses the spring to resiliently bias the cable means and lock bar into engagement with the rack means and selecting the lock actuating means to the unlocked mode reciprocates the latch to positively pull the cable means and lock bar out of engagement with the rack means.

4,607,897

VIDEOENDOSCOPIC SUPPORT STAND

C. Bruce Schwartz, 6594 Mill Creek Rd., The Dalles, Oreg. 97058

Filed Jul. 8, 1985, Ser. No. 752,629

Int. Cl.⁴ A47B *81/00*

U.S. Cl. 312—209 **9 Claims**

1. A videoendoscopic support stand, comprising:

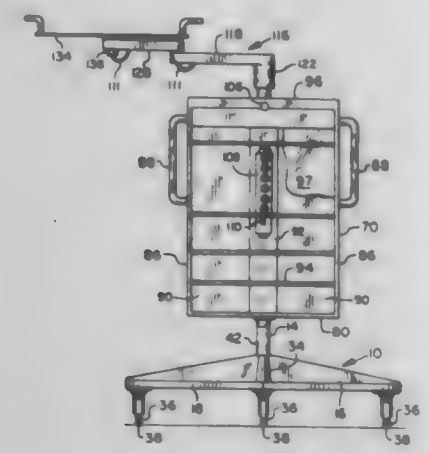
a base defining a support area;

a vertical support column mounted on the base within the support area;

horizontal cabinet support means rigidly secured to the support column;

a cabinet having a base, opposite sides, a front, a top and shelves extending between the sides for supporting equipment for use in performing videoendoscopic medical procedures, the cabinet being pivotally mounted on the cabinet support means, the cabinet being rotatable between a first cabinet position and a second cabinet position to facilitate access by a user to equipment supported in the cabinet; and

television monitor support means including a television monitor support arm pivotally mounted atop the support column for supporting a television monitor in position for viewing by a user performing videoendoscopic medical procedures, the television monitor support arm being rotatable between a first arm position and a second arm



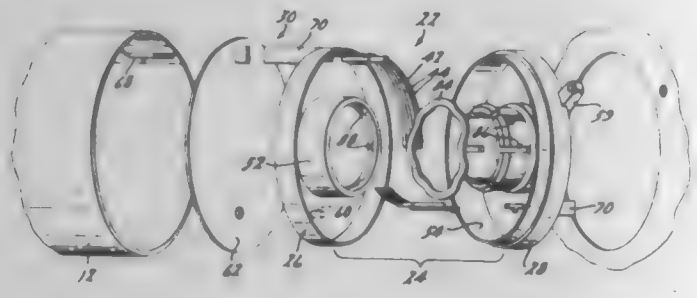
position, the first and second arm positions being on the opposite side of the support column from the first and second cabinet positions, the first and second arm positions and the first and second cabinet positions being selected so that the center of gravity of the stand, the television monitor and the equipment supported in the cabinet lies within the support area of the base.

4,607,898

SPIRAL FLEX-CIRCUIT SYSTEM FOR STEERING WHEELS

Robert P. Reighard, Toledo, Ohio; Samuel D. Kinner, Portland, Ind., and Mark Ciesielski, Maumee, Ohio, assignors to Sheller-Globe Corporation, Toledo, Ohio

Filed Nov. 13, 1984, Ser. No. 670,805
Int. Cl.⁴ H01R *35/00*
U.S. Cl. 339—3 S **14 Claims**



1. A conductor assembly for conveying electrical signals between a vehicle steering wheel member and steering column member, said wheel member being rotatable with respect to said column member a predetermined number of rotations between clockwise and counter clockwise limits, comprising:

means for defining an enclosure carried on one of said wheel and said column members, said enclosure defining an inner circumferential dimension;

a hub centrally disposed within said enclosure and rotatable with respect to said enclosure defining means and defining an outer circumferential dimension; and

an elongated and flexible ribbon-like cable having at least one conductive course and being disposed within said enclosure, one end of said cable being stationary relative to said enclosure defining means and the other end of said cable being stationary relative to said hub;

said cable having a length generally equal to one half said predetermined number of rotations times said outer circumferential dimension plus the radial spacing between the inner and outer circumferential dimensions;

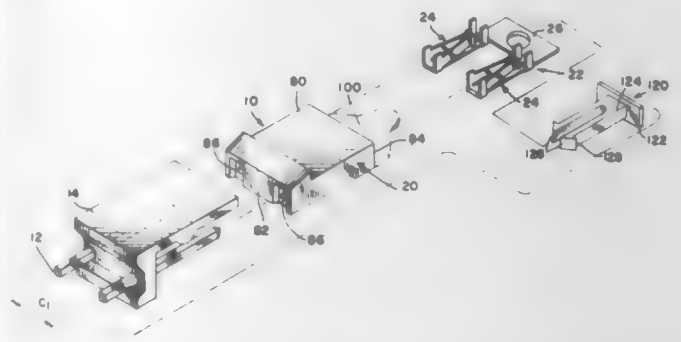
said cable being substantially wound about said hub with a first sense of rotation when said wheel member is rotated to said clockwise limit and said cable being substantially wound about said hub with a second sense of rotation when said wheel member is rotated to said counter clockwise limit.

4,607,899

SHUNT CONNECTOR AND METHOD OF FORMING

Edward L. Romine, Hoffman Estates, and Roger W. Byczek, Westchester, both of Ill., assignors to Bally Midway Mfg. Co., Franklin Park, Ill.

Filed May 30, 1984, Ser. No. 615,138
Int. Cl.⁴ H01R *31/08*
U.S. Cl. 339—19 **9 Claims**



7. A shunt connector for interconnecting spaced conductive pins on a circuit board comprising a nonconductive housing having a pair of spaced openings extending from one end and an elongated opening extending from an opposite end and interconnecting said pair of spaced openings, an electrical conductor in said elongated opening providing electrical contact between a pair of spaced conductive pins received into said pair of spaced openings, said electrical conductor including a connecting strip adjacent an inlet to said elongated opening, a pair of electrical contacts integral with said connecting strip extending into said pair of spaced openings and respectively aligned therewith, each of said electrical contacts including an elongated, generally flat base portion integral at one end with said connecting strip and having an opposite end, a pair of contact beams extending substantially perpendicular from lateral edges of said base portion, each of said contact beams having an integral connection with a lateral edge adjacent said opposite end and a remaining deflectable portion, each of said deflectable portions being deformed intermediate opposite ends to define confronting contact points above said base portions so that insertion of said conductive pins through said spaced openings will deflect said contact beams and make electrical contact with said contact points, legs extending perpendicularly from opposing edges of the base opposite the integral connection end, the legs and the integral connections cooperating to proide a rigid support between the contact terminals, and a cover having a deflectable bifurcated leg with locking edges to close the nonconductive housing to prevent unintentional insertion of conductors.

4,607,900

TELEPHONE JACK SECURITY DEVICES

Joe Andrews; Dolores Andrews, both of 7407 Hobart Blvd., Los Angeles, Calif. 90047, and Beverly Lockett, 1357 Geddes St., Los Angeles, Calif. 90044

Filed May 7, 1984, Ser. No. 607,434
Int. Cl.⁴ H01R *13/44*
U.S. Cl. 339—37 **3 Claims**

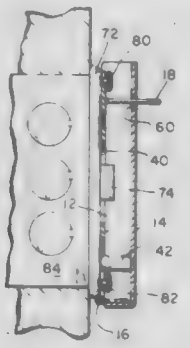
1. A telephone access jack security device for limiting the connection of a telephonic device to an access jack, wherein said access jack is mounted in a fixture having an electrical connector receptacle, a faceplate or the like having attachment studs extending outwardly therefrom and including means for attaching said faceplate to said fixture, said security device comprising:

(a) A baseplate adpated to mount on the front of said faceplate and including an opening therein so as to otherwise

expose said connector receptacle and having slots positioned so as to correspond to said attachment studs of said faceplate, and at least one hold associated with a corresponding one of said slots so as to permit the insertion of a corresponding one of said studs therethrough;

(b) A locking member attached to said baseplate and extending outwardly therefrom;

(c) A coverplate of substantially unitary construction and of suitable dimensions to substantially cover said baseplate when placed in a parallel, overlying relationship therewith, said coverplate having sides so as to permit the formation of a cavity between said baseplate and said coverplate when placed in a parallel, overlying relationship sufficiently sealed to prevent passage of a connector suitable for insertion into said connector receptacle, said coverplate having an opening therein sufficient to permit the close passage of said locking member therethrough when said coverplate and said baseplate are placed in the parallel, overlying relationship with one another; and



(d) Means for hingedly attaching said coverplate to said baseplate so as to permit said coverplate to be placed in a substantially parallel, overlying relationship with said baseplate, the connection points of said hinge means to said coverplate and said baseplate being such as to be substantially within the cavity formed between said coverplate and said baseplate so as to effectively preclude tampering therein.

4,607,901

MOLD FILL WALL FOR SNAP-IN TERMINAL RETENTION

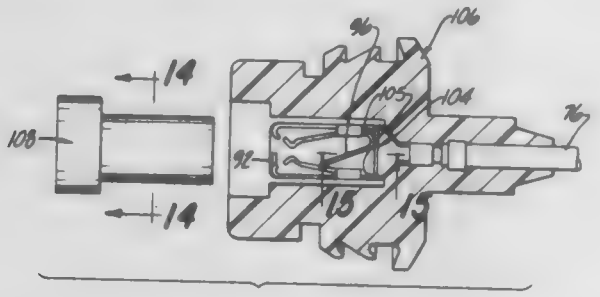
Remie P. Durand, Fraser, Mich., assignor to Chrysler Corporation, Highland Park, Mich.

Filed Jul. 3, 1985, Ser. No. 752,202

The portion of the term of this patent subsequent to Jun. 3, 2003, has been disclaimed.

Int. Cl.[4] H01R *11/00*

U.S. Cl. 339—59 L 16 Claims



1. A snap-in lamp terminal for use in a socket housing for receiving, locating and positioning a wedge-base bulb having a pair of filament extension wires positioned on sides of the wedge base, a pair of troughs extending transverse to the wedge base, the wedge base further having a centrally located cylindrical vent tube and a bulbular evacuated chamber both in the same longitudinal axis, the vent tube bounded by laterally extending side wings of the wedge base, the snap-in terminal comprising:

a lamp receiving portion and a conduit receiving portion;

the conduit receiving portion including wire retention means;

the lamp receiving portion of a generally channelized shape having a terminal base and terminal sides forming the channel;

cantilevered contact arms projecting into the interior of the generally channelized lamp receiving portion from the terminal side via folded tabs;

the contact arms including spring contact members for communication with the detent troughs of the bulb and filament wires of the bulb;

the terminal sides having curved bulb guides at the lamp receiving end to communicate with the wedge-base bulb;

a wire guide means projecting into the interior of the generally channelized lamp receiving portion from one of the terminal sides such that a wiping action will occur when the wedge-base bulb is inserted into the terminal whereby the wire guide means wipes along the vent tube of the bulb thereby straightening any skewed portion of the filament wires; and

the snap-in terminal further comprising a mold fill retention means to prevent unwanted flow of molded socket fill material into the generally channelized lamp receiving portion of the snap-in terminal.

4,607,902

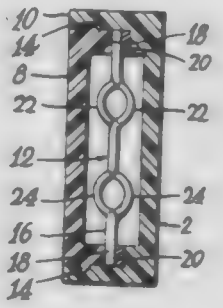
ELECTRIC WIRE CONNECTOR

Thomas J. McKenzie, 6230 N. Camino Pimeria alta, Tucson, Ariz. 86718

Filed Apr. 24, 1985, Ser. No. 726,908

Int. Cl.[4] H01R *4/48*

U.S. Cl. 339—61 R 10 Claims



1. An electrical wire connector comprising:

a plurality of similarly formed electrically conductive spring metal wires in a closely aligned arrangement one with another, each wire having portions thereof intemediate its ends designed to cooperate with adjoining similarly formed wires to form at least one elongate channel of substantially the same cross-sectional area throughout its length for receiving conductors to be interconnected;

means spaced from said channel forming portions of said wires and electrically interconnecting their ends and thereby interconnecting said similarly formed wires in permanent assembly; and

a dielectric housing enclosing said assembly and having openings in line with said channel permitting the insertion of said conductors into said channel and thereby be interconnected.

4,607,903
CONNECTOR ASSEMBLY

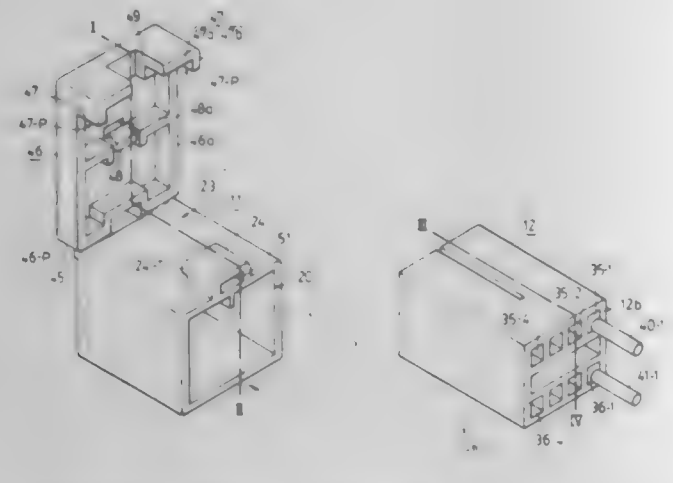
Teruaki Hoshino, Higashiyamato; Isao Iimori, Kunitachi, and Koichi Kamiji, Utsunomiya, all of Japan, assignors to Japan Aviation Electronics Industry Limited and Honda Giken Kogyo Kabushiki Kaisha, both of Tokyo, Japan

Filed Mar. 29, 1985, Ser. No. 717,789

Claims priority, application Japan, Mar. 30, 1984, 59-64245; Mar. 30, 1984, 59-64246; Mar. 30, 1984, 59-64247

Int. Cl.[4] H01R *13/44*

U.S. Cl. 339—63 R 12 Claims



1. A connector assembly comprising:

a first connector body of a parallelepiped shape formed of a molded synthetic resin, said first connector body having at least one rectangular hole formed therein and defining an open end face and a closed end face opposite to each other;

contact support means provided at the closed end face of said first connector body;

a plurality of pin contacts mounted on said contact support means to extend in parallel to an axis of said rectangular hole toward the open end face thereof;

a second connector body of a rectangular parallelepiped formed of a molded synthetic resin and dimensioned to be snugly insertable into said rectangular hole of said first connector body, said second connector body having formed therein a plurality of contact housing holes extending therethrough in parallel to the inserting direction of said second connector body to communicate between front and rear faces thereof;

a plurality of socket contacts mounted in said contact housing holes of said second connector body, for resilient engagement with said pin contacts to establish electrical connection therebetween when said second connector body is inserted into said rectangular hole of said first connector body;

a plate-like connector locking member having one end rotatably connected with one edge of said closed end face of said first connectory body via a hinge, said hinge being so positioned that said locking member is adapted to be rotated about said hinge and thereby folded over one of the side faces of said first connector body, a free end of said connector locking member remote from said hinge having an engaging projection formed integrally therewith to extend perpendicularly thereto on the side of an inner face thereof to be overlaid on said one side face of said first connector body for abutting against said rear end face of said second connector body thereby to lock said seocnd connector body to said first connector body and prevent said second connector body from coming out of said first connector body, the length of said connector locking member from said hinge to the nearest edge of said engaging projection defining a depth to which said second connector body is required to be inserted into said first connector body to assure good electrical contact between said pin contacts and said socket contacts; and

first and second engaging means formed on said one side face of said first connector body and said inner face of said connector locking member integrally therwith, respectively, so that when said connector locking member is folded over said one side face, said first and second engaging means are hidden between said connector locking member and a side wall of said first connector body and engage one another to prevent said connector locking member from pivotally departing from said one side face of said first connector body.

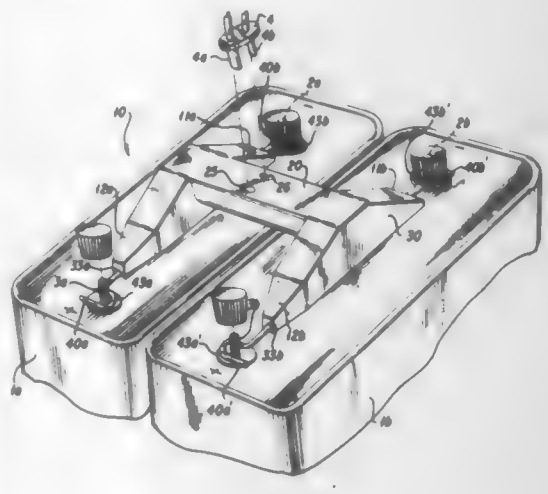
4,607,904
BATTERY TERMINAL CONNECTOR AND HANDLE

Robert D'Alessandro, Bedford Hills; Carlos Cardenas, Hartsdale, and Gordon E. Kaye, Garrison, all of N.Y., assignors to Duracell Inc., Bethel, Conn.

Filed Aug. 27, 1984, Ser. No. 644,406

Int. Cl.[4] H01R *3/00*

U.S. Cl. 339—108 R 6 Claims



1. A terminal connector for externally interconnecting the terminals of two batteries, said connector comprising at least two separated metallic terminal connecting elements contained within an insulative housing which is adapted to span across said batteries characterized in that said metallic terminal connecting elements are structurally self supportive and wherein each of said metallic terminal connecting elements comprises portions thereof which protrude from said insulative housing for electrical and mechanical connection with said terminals, said insulative housing having an elevated section thereof with said section being elevated from said batteries, when interconnected by said connector, in the area where said housing spans and is directly above said batteries, by a distance sufficient to permit finger insertion between said housing and said batteries whereby said housing may function as a carrying handle for said batteries and wherein said housing embodies means for permitting electrical contact between said metallic terminal connecting elements and an external electrical device.

4,607,905
MODULAR PLUG

James L. Vaden, Black Mountain, N.C., assignor to Brand-Rex Company, Willimantic, Conn.

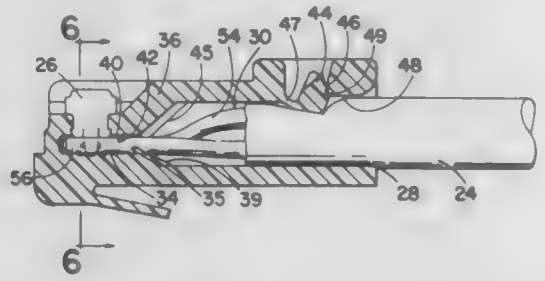
Filed Apr. 18, 1985, Ser. No. 724,513

Int. Cl.[4] H01R *13/50*

U.S. Cl. 339—176 M 4 Claims

1. A modular electrical connector comprising an elongated dielecting housing defining an elongated generally longitudinally extending first channel terminating at an opening in the rear end of said housing for receiving an electrical cable having a plurality of conductors, said channel having generally opposing floor and ceiling surfaces, the rear portions of said floor and ceiling surfaces being generally parallel to each other, the forward end portions of said floor and ceiling surfaces being inclined to the longitudinal axis of said housing and converging toward each other in the direction of the forward end of said housing, a plurality of generally longitudinally extending lands

projecting from the inclined forward end portions of said floor and ceiling surfaces and defining generally longitudinally extending grooves therebetween, a transversely spaced apart series of longitudinally extending conductor receiving passageways formed in said housing forward of said channel and equal in number to said grooves, each of said passageways being defined by longitudinally extending lands and aligned with and forming forward extensions of an opposing pair of said grooves defined by said inclined forward end portions of said floor and ceiling surfaces, and a transversely spaced apart series of contact receiving openings formed in a forward end portion of



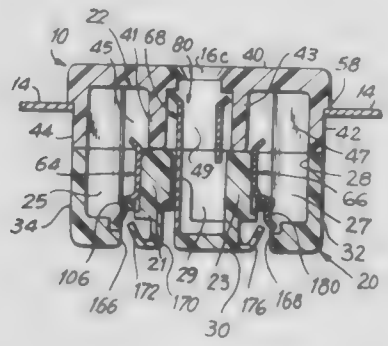
said housing equal in number to said passageways, each of said contact receiving openings communicating with an associated one of said passageway, said inclined forward end portions of said floor and ceiling surfaces comprising means for engaging the leading end portions of the conductors of an associated cable to align each of the leading end portions with an associated one of said conductor receiving passageways before the leading end portions reach said passageways and for guiding the leading end portions into said passageway as the cable is inserted into said housing through said opening in the rear end of said housing.

4,607,906

PANEL-MOUNTED DUPLEX ELECTRICAL RECEPTACLE AND POWER TERMINAL STRIP

Ronald G. Munroe, Staten Island, N.Y., assignor to Eagle Electric Mfg. Co., Inc., Long Island City, N.Y.

Filed Dec. 24, 1984, Ser. No. 685,392
Int. Cl.⁴ H01R *33/72*
U.S. Cl. 339—192 R **8 Claims**



1. A panel-mounted electrical receptacle, comprising:

(A) a housing elongated along a longitudinal direction and constituted of an electrically-insulating material, said housing having a support portion and a cover portion connected to the latter in an assembled condition,

(i) said support portion having a generally planar base wall region, and side and end wall regions extending along a transverse direction generally perpendicular to the plane of the base wall region away from the latter and bounding an interior space therewith, said base wall region having a plurality of channels extending from the interior space to the exterior of the support portion, each channel being elongated lengthwise along the entire length of the base wall region, and having a longitudinal opening which faces the exterior of the base wall region and enables insertion along the transverse direction of an elongated conductor into a respective channel,

(ii) said cover portion having a generally planar top wall region in a generally mutual parallelism with the base wall region in the assembled condition, and side and end wall regions extending along a transverse direction generally perpendicular to the plane of said top wall region, the side and end wall regions of said support portion and said cover portion abutting one another to form an enclosed chamber which includes said interior space, said top wall region having an electrical outlet extending from said enclosed chamber to the exterior of the cover portion;

(B) a hot power, a neutral power and a ground contact strip, each constituted of an electrically-conducting material and elongated along said longitudinal direction, said contact strips being mounted entirely in the support portion and spaced transversely apart from one another, each contact strip having a double wipe socket for electromechanically receiving a respective prong of an electrical plug inserted in the electrical outlet, each contact strip also having a transversely-extending terminal extending through a respective channel of the base wall region and past the latter, to the exterior of said receptacle, each of said terminals being adapted to be inserted into the socket of another electrical receptacle, each contact strip having a body portion, and a resilient tongue having a conductor-receiving groove within and in communication with a respective channel, each tongue being deflectable away from the body portion during insertion of a respective conductor into a respective channel and into a respective groove and being returnable, due to its inherent resilience, toward the body portion to press the respective conductor into electromechanical contact with the latter; and

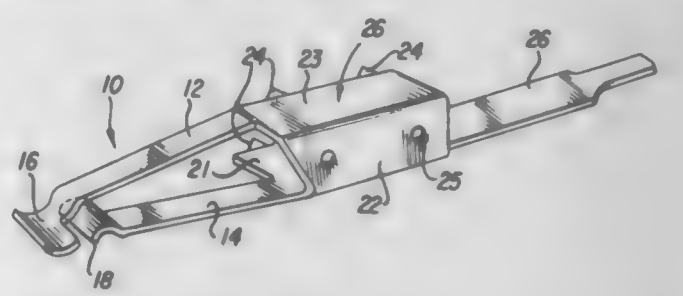
(C) means on the housing for mounting the latter with a snap action in a cutout formed in a panel, said mounting means having spaced-apart legs movable from an undeflected position to a deflected position in which the legs snappingly engage the panel about the cutout.

4,607,907

ELECTRICAL CONNECTOR REQUIRING LOW MATING FORCE

Robert Bogursky, Easton, Conn., assignor to Burndy Corporation, Norwalk, Conn.

Filed Aug. 24, 1984, Ser. No. 644,044
Int. Cl.⁴ H01R *13/11*
U.S. Cl. 339—258 P **19 Claims**



1. An electrical conductor contact for mating with a mating contact by accepting insertion of said mating contact, comprising:

an upper cantilever finger having a contact portion at its free end; and

a lower cantilever finger having a contact portion at its free end,

wherein said upper and lower cantilever fingers are in opposed relationship one to the other,

said upper and lower cantilever fingers being electrically connected on their rigid ends,

said contact portions being at least partially offset axially from each other in the longitudinal direction of insertion of said mating contact, at least partially offset axially from each other relative to the axis vertically perpendicular to the longitudinal direction of insertion of said mating contact, and partially offset axially from

each other relative to the axis horizontally perpendicular to the longitudinal direction of insertion of said mating contact, and

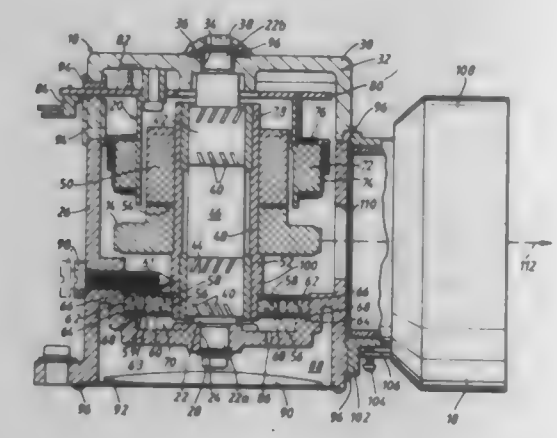
at least a portion of the surface of the contacting portion of said lower cantilever finger is located above a portion of the surface of the contacting portion of said upper cantilever finger relative to the plane of insertion of said mating contact.

4,607,908

OPTICAL DEFLECTOR

Takao Ishida, Kawasaki, and Yoshitsugu Nakatomi, Yokohama, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed May 20, 1985, Ser. No. 735,984
Claims priority, application Japan, May 21, 1984, 59-102030
Int. Cl.[4] G02B *26/10*
U.S. Cl. 350—6.8 10 Claims



9. An optical deflector with a polygonal mirror for deflecting a light beam comprising:

a housing;

a fixed shaft fixed to said housing and having two end portions;

a cylindrical shaft, rotatably and coaxially overlapped on said fixed shaft in said housing, for supporting and rotating the polygonal mirror so that a light beam reflected by the polygonal mirror is deflected within a certain spread angle;

a pair of bearings, fixed to both end portions of said fixed shaft, for rotatably supporting said cylindrical shaft;

a first magnet member with a first magnetic pole arrangement, fixed to said cylindrical shaft;

a second magnet member with a second magnetic pole arrangement different from said first magnetic pole arrangement, fixed to said housing and opposed to said first magnet member across a gap, for axially suspending said cylindrical shaft by means of magnetic attractive force produced between said first and second magnet members;

a first ferromagnetic member fixed on said first magnetic member; and

a second ferromagnetic member, fixed on said second magnetic member, for preventing magnetic lines of force produced between said first and second magnet members from diverging, cooperating with said first ferromagnetic member.

4,607,909

METHOD FOR MODULATING A CARRIER WAVE

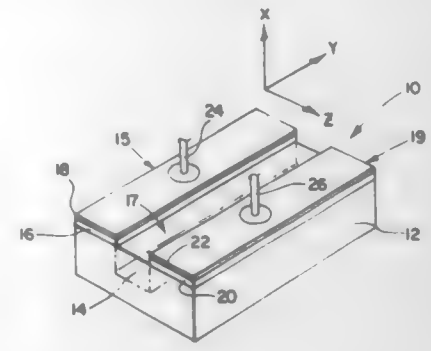
Norman A. Sanford, Arlington, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Jun. 14, 1984, Ser. No. 620,619
Int. Cl.[4] G02B *6/10*
U.S. Cl. 350—96.14 6 Claims

1. A method for modulating electromagnetic carrier waves in the optical region of the spectrum comprising the steps of:

propagating the carrier wave through a ferroelectric waveguide as a plurality of modes copolarized in one azimuth such that the optical power emerging from the waveguide in the near field is spatially distributed in a predetermined pattern containing spatially separated intensity peaks;

selectively changing said optical power distribution pattern in correspondence with an information signal by interfering and cross coupling energy between said modes; and



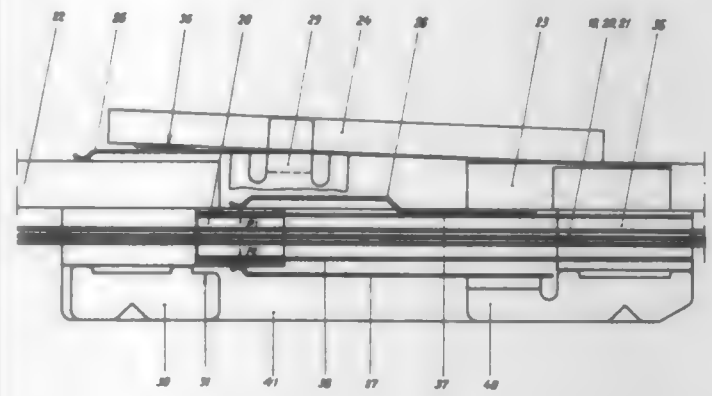
spatially filtering said near field optical distribution pattern so that only the optical power in a predetermined region of said pattern is transmitted beyond the point of spatial filtering to provide an optical carrier wave whose intensity is modulated in correspondence with the information signal.

4,607,910

OPTICAL FIBER SWITCH HAVING A MOVABLE FIBER SECURED TO A SLIDE WHICH IS INDIRECTLY MOVED BY A MAGNETIC ARMATURE

Ake G. H. Thurenius, Skärholmen, Sweden, assignor to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden

PCT No. PCT/SE84/00308, § 371 Date May 22, 1985, § 102(e) Date May 22, 1985, PCT Pub. No. WO85/01803, PCT Pub. Date Apr. 25, 1985
PCT Filed Sep. 25, 1984, Ser. No. 740,266
Claims priority, application Sweden, Oct. 14, 1983, 8305653
Int. Cl.[4] G02B *6/36*
U.S. Cl. 350—96.20 8 Claims



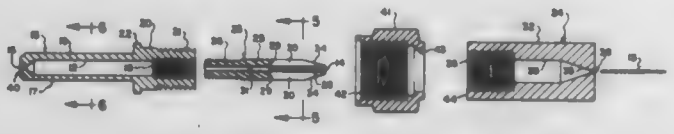
1. An optical fiber switch comprising a fixed holder, at least one fixedly mounted fiber on said holder, a slide, at least one movable fiber secured to said slide in facing relation to said fixedly mounted fiber, first and second abutments between which said slide is movable, and means including a magnetically activated armature for displacing said slide to selectively and controllably couple and uncouple said fibers optically, said means including a rigidly clamped first spring acting on said slide to displace the slide from said first abutment to said second abutment, a second spring action on said slide in opposition to said first spring, said second spring being stronger than said first spring, and means rigidly mounted on said armature for diminishing the action of said second spring on said slide, upon activation of said armature, so that said slide is displaced to said second abutment substantially only under the action of said first spring.

4,607,911

CONNECTOR FOR AN OPTICAL FIBER HAVING A STATIONARY CLAMP ENGAGED AND OPERATED BY A ROTATABLE MEMBER

Geoffrey M. Rhodes, Orchard Park, N.Y., assignor to Conax Buffalo Corporation, Buffalo, N.Y.

Filed Oct. 3, 1983, Ser. No. 538,191
Int. Cl.[4] G02B *6/36*
U.S. Cl. 350—96.20 5 Claims



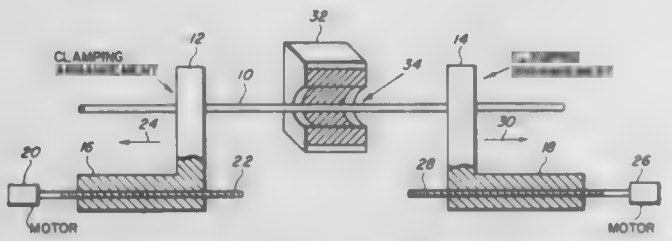
1. An optical fiber connector, comprising:
an elongated tubular body member having a passage extending longitudinally therethrough from end to end and in which an optical fiber can be arranged so as to be flush with the end face at one end of said body member,
a metallic clamp member fast to said body member at the other end thereof so as to be stationary with respect to said body member and defining a constrictive opening, and
a rigid clamp operating member rotatably engaging said clamp member and movable relative to said body member in a direction axially of said passage for causing said clamp member to constrict said opening, whereby an optical fiber which extends through said opening is mountable on said body member.

4,607,912

IN-LINE OPTICAL FIBER POLARIZER

William K. Burns, Alexandria, and Carl A. Villarruel, Burke, both of Va., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 7, 1983, Ser. No. 558,744
Int. Cl.[4] G02B *6/18, 6/00*
U.S. Cl. 350—96.30 15 Claims



1. An in-line integrated optical fiber polarizer comprising:
a length of polarization holding optical fiber; and
a first small portion on the order of 1 cm or less of said length of polarization-holding optical fiber having a thermally-tapered reduced core diameter for effecting polarization of light signals propagating within said length of optical fiber.

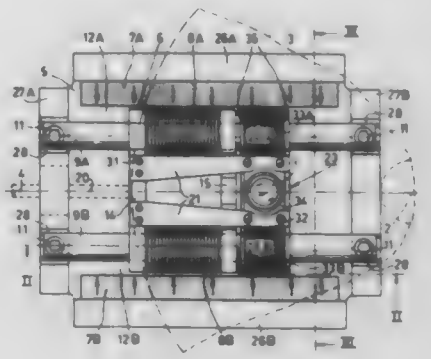
4,607,913

ELECTRODYNAMIC DEVICE FOR TRANSLATING A LENS SYSTEM

Gerardus L. M. Jansen, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 483,804, Apr. 11, 1983, Pat. No. 4,504,935. This application Feb. 7, 1984, Ser. No. 578,382
Claims priority, application Netherlands, Feb. 14, 1983, 8300540
The portion of the term of this patent subsequent to Mar. 12, 2002, has been disclaimed.
Int. Cl.[4] G02B *7/11*
U.S. Cl. 350—247 3 Claims

1. An apparatus for recording and/or reading information on an optically readable disc, (3), which apparatus comprises:
a frame, (5),
a carrier (6) which is movable relative to the frame along a first axis, (4),
first electrodynamic drive means (5, 7, 8, 9) for driving the carrier along the first axis,
a lens system (1) which is arranged on the carrier and which is movable relative thereto along a second axis (18) perpendicular to the first axis,



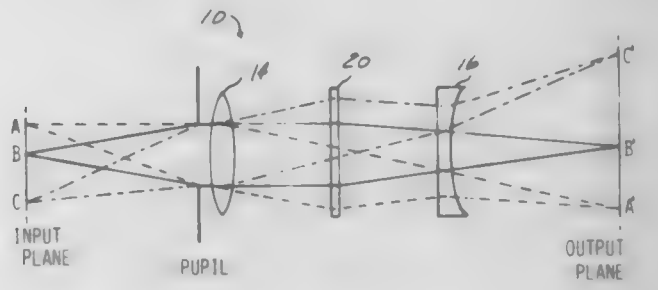
second electrodynamic drive means (5, 7, 9, 24) for driving the lens system along the second axis, and
a lens-system supporting arrangement comprising supporting means (21, 22, 31, 32) arranged between the carrier (6) and the lens system, characterized in that there are provided third drive means (33) for subjecting the lens system (1) directly, i.e. not via the supporting means (21, 22, 31, 32), to forces acting along the first axis (4) of the carrier (6).

4,607,914

OPTICAL SYSTEM DESIGN TECHNIQUES USING HOLOGRAPHIC OPTICAL ELEMENT

James R. Fienup, Ann Arbor, Mich., assignor to Environmental Research Institute of Michigan, Ann Arbor, Mich.

Filed Oct. 12, 1983, Ser. No. 541,267
Int. Cl.[4] G03H *1/08*
U.S. Cl. 350—320 2 Claims



1. A method of making an optical system, for which a weighted mean square or root mean squared merit function has been defined, said system having an output plane, said method comprising:
including at least one holographic optical element (HOE) in the system, said HOE being positioned in the system so that is it illuminated from a plurality of field angles and having optimum phase transfer characteristics defined by the steps of:
(a) determining the phase transfer function for a first idealized HOE for transforming a wavefront intersecting the HOE from a first field angle to a first desired wavefront in the output plane of the optical system;
(b) storing the phase transfer function for the first idealized HOE in a memory;
(c) determining the phase transfer function of a plurality of other idealized HOE's for transforming wavefronts from other field angles to other desired wavefronts in the output plane;
(d) storing the phase transfer functions for the other idealized HOE's in the memory;

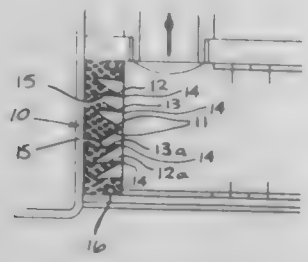
(e) taking the weighted average of the stored phase transfer functions of the idealized HOEs to generate an optimum phase function for the HOE that will minimize the merit function of the optical system;
(f) forming fringe patterns in a holographic recording material to produce the HOE having the optimum phase transfer function characteristics; and
(g) assembling the optical system including the HOE.

4,607,915

LIGHT ABSORBERS

Martin T. Cole, 29 Stafford St., Huntingdale, Victoria, Australia

Filed Aug. 13, 1984, Ser. No. 640,351
Claims priority, application Australia, Aug. 12, 1983, PG0821
Int. Cl.[4] G02B *00/00*
U.S. Cl. 350—321 **11 Claims**



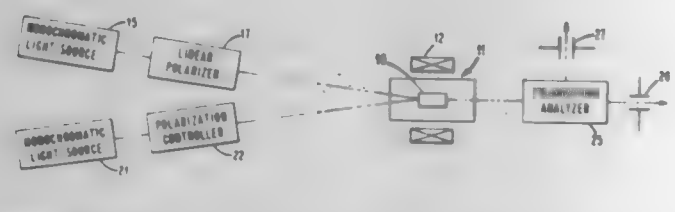
1. A light absorber comprising a body at one side of which is a face having a center encircled by an annular groove having a base and opposed, radially inner and outer walls, said walls of said groove being so inclined relatively to one another that the radially inner wall forms a conical surface extending from said center inwardly from said face.

4,607,916

APPARATUS FOR CONTROLLING THE ROTATION OF THE PLANE OF LINEAR POLARIZATION OF LINEARLY POLARIZED RADIANT ENERGY TRAVERSING AN ELEMENT OF CHROMIUM CHALCOGENIDE SPINEL MAGNETIC SEMICONDUCTOR WITH ELLIPTICALLY POLARIZED RADIANT ENERGY

Norman A. Sanford, Arlington; William J. Miniscalco, Sudbury, and Alexander Lempicki, Boston, all of Mass., assignors to GTE Laboratories Incorporated, Waltham, Mass.

Filed Mar. 19, 1984, Ser. No. 590,807
Int. Cl.[4] G02F *1/09*
U.S. Cl. 350—376 **13 Claims**



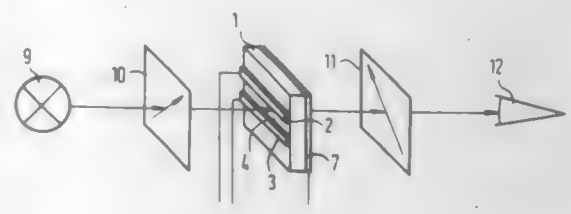
1. Optical control apparatus comprising
a first source for producing a primary beam of linearly polarized radiant energy;
a second source for producing a control beam of elliptically polarized radiant energy;
an element of chromium chalcogenide spinel magnetic semiconductor;
the primary beam of linearly polarized radiant energy and the control beam of elliptically polarized radiant energy being directed at the element of chromium chalcogenide spinel magnetic semiconductor to traverse the element generally along the same path;
cooling means for maintaining the temperature of said element of chromium chalcogenide spinel magnetic semiconductor below its Curie temperature;
magnetic means for producing a magnetic field parallel to said path and magnetically saturating said element of chromium chalcogenide spinel magnetic semiconductor in the ferromagnetic phase to ensure a single magnetic domain therein;
the control beam of elliptically polarized radiant energy interacting with the element thereby changing the effect of the element on the primary beam of linearly polarized radiant energy to rotate the plane of linear polarization of the primary beam in accordance with the state of elliptical polarization of the control beam; and
output means for receiving the primary beam of radiant energy from the element of chromium chalcogenide spinel magnetic semiconductor, said output means being operable to permit passage therethrough of the components of a linearly polarized beam of radiant energy lying in a plane parallel to a reference plane.

4,607,917

ELECTRO-OPTICAL DEVICE

Heinz Ebner, Ditzingen; Gabriele I. Koch, Stuttgart; Joachim Lauckner, Korntal; Felix Lutz, Stuttgart; Gerhard Seibold, Remseck, and Gerhard Wessel, Stuttgart, all of Fed. Rep. of Germany, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Apr. 19, 1983, Ser. No. 486,574
Claims priority, application Fed. Rep. of Germany, Apr. 20, 1982, 3214584
Int. Cl.[4] G02F *1/07*
U.S. Cl. 350—392 **5 Claims**



1. In an electro-optical device comprising an electrically controllable electro-optical substrate made from a transparent electro-optical material exhibiting an optical effect controllable by applying a voltage between first and second control electrodes arranged proximate to each other on a first side of said substrate to thereby define a plurality of areas of the substrate to be controlled:
an additional electrode lying on a second side of said substrate and adjacent to said plurality of areas, said additional electrode defining a window-like opening for each of said areas, with said areas and corresponding window-like openings arranged in two rows that are staggered with respect to each other and wherein the projection of one of said rows of openings on the other in overlapping relationship defines a continuous region;
said first electrode being strip shaped and disposed between said two rows, and said second electrode being one of a plurality of second electrodes spaced from one another along each of two rows that lie on opposite sides of said center electrode; and
a plurality of terminal contacts, each connected to one of said second electrode portions and extending outwardly in relation to said first side of said substrate, said terminal contacts being arranged in a stepwise fashion.

4,607,918

ZOOM LENS SYSTEM

Yasuzi Ogata, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Jan. 20, 1984, Ser. No. 572,452
Claims priority, application Japan, Feb. 2, 1983, 58-14602
Int. Cl.[4] G02B *15/177, 15/14*
U.S. Cl. 350—426 **8 Claims**



1. A large relative aperture zoom lens system comprising a front lens group having negative refractive power and a rear lens group having positive refractive power and so designed as to change magnification level by varying an airspace reserved between said front and rear lens groups, wherein said rear lens group comprises, in the sequence from the object side, at least two positive lens components, a negative lens component having a surface with a small radius of curvature on the image side, a positive lens component and a negative meniscus lens component arranged on the extreme image side therein and having a surface with a small radius of curvature on the object side, a stop being arranged before said negative lens component arranged on the object side and the object side surface of said negative lens component arranged on the extreme image side being designed as a spherical surface whose center of curvature is located in the vicinity of said stop, said larger relative aperture zoom lens system satisfying the following condition (1):

$$0.75 < |\phi_a| \cdot f_R < 1.0 \quad (1)$$

where the reference sumbol ϕ_a represents power of the image side surface of the negative lens component arranged on the object side in said rear lens group, and the reference symbol f_R denotes focal length of said rear lens group.

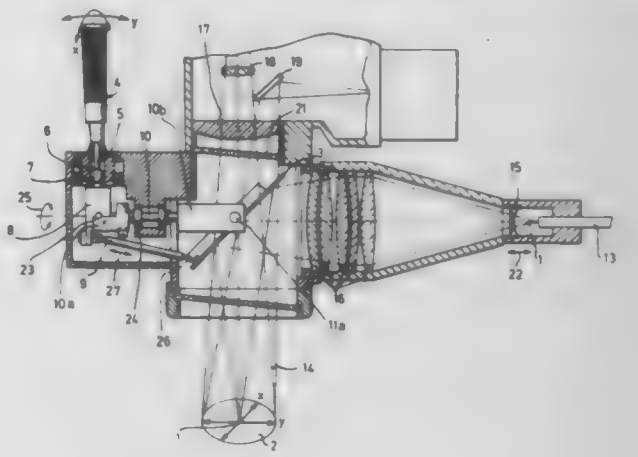
4,607,919

MANIPULATOR FOR USE WITH A SURGICAL MICROSCOPE

Hartmut Gartner, Oberkochen; Klaus Biber, Aalen, and Peter Greve, Essingen, all of Fed. Rep. of Germany, assignors to Carl-Zeiss-Stiftung, Heidenheim/Brenz, Oberkochen, Fed. Rep. of Germany

Filed Sep. 26, 1984, Ser. No. 654,861
Claims priority, application Fed. Rep. of Germany, Oct. 7, 1983, 3336519
Int. Cl.[4] G02B *21/00*
U.S. Cl. 350—507 **11 Claims**

1. An optical beam manipulator for selectively deflecting a light beam over an operating area, said manipulator comprising a mirror, mounting means for said mirror comprising an axially retained member that is rotatable about a first rotary axis, said mirror having pivotal connection to one end of said axially retained member on a first pivot axis transverse to said first rotary axis; an actuating lever including a spherical formation mounted universally for two degrees of angular freedom for said lever about a fixed center of manipulation, said fixed center being at offset from said first rotary axis and said spherical formation having a cylindrical guide bore on an axis through said fixed center, a motion pick-off lever of variable length fulcrum-connected to the other end of said axially retained member on a second pivot axis that is parallel to said first pivot axis, a link member connecting a part of said pick-off lever to a part of said mirror and completing a four-bar linkage which includes said mirror, said axially retained member, and



said motion pick-off lever; and a motion pick-off connection for said motion pick-off lever and including a spherical formation guided in said bore.

4,607,920

CANADA BALSAM WAFERS

John E. Clegg, 2320 Keystone Dr., Orlando, Fla. 32806

Filed Feb. 6, 1985, Ser. No. 698,662
Int. Cl.[4] G02B *21/34*
U.S. Cl. 350—536 **1 Claim**



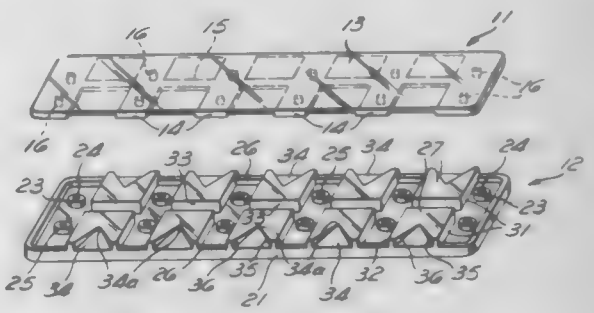
1. A Canada balsam wafer comprising a thin circular solid disk of Canade balsam, said disk having a prescribed diameter to permit insertion of said disk inside a recessed compartment of a microscopic slide, said disk being of a predetermined volume to cover a mineral specimen embedded therein while molten.

4,607,921

WET MOUNT MICROSCOPIC EXAMINATION SLIDE II

Irvin E. Miller, Homewood, Ill., assignor to V-Tech, Inc., Corona, Calif.

Continuation-in-part of Ser. No. 420,270, Sep. 20, 1982. This application Sep. 7, 1983, Ser. No. 529,142
Int. Cl.[4] G01N *21/01*; G02B *21/34*
U.S. Cl. 350—536 **20 Claims**



1. A dual member transparent laboratory slide consisting of:

a base member having a bottom wall with an upper surface, said base member being integrally formed with at least one plate surface spaced above said upper surface, a fluid receiving surface communicating with said plate surface, and a first interconnecting means;

a cover member formed with at least one cover slip having a lower surface adapted to be located in spaced confronting parallel relationship with respect to said plate surface,

said cover member being integrally formed with second interconnecting means complementary with said first interconnecting means, said first and second interconnecting means being adapted to removably attach said cover member to said base member; and

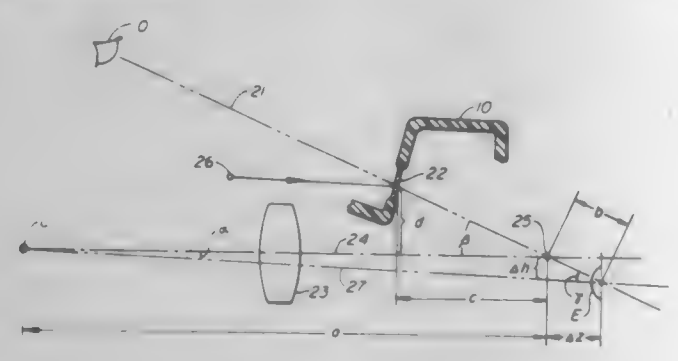
said first and second interconnecting means being adapted to be shaped and configured to selectively provide a predetermined spacing between said plate surface and said cover slip to thereby form a capillary chamber therebetween of selectably predetermined spacing, and also providing substantially rigid positioning of said cover slip and plate surface against lateral movement, said capillary chamber being open on all sides and wherein said cover slip covers only a portion of said fluid receiving surface where it communicates with said plate surface.

4,607,922

METHOD FOR ALIGNING AN EYE EXAMINATION INSTRUMENT WITH THE EYE UNDER EXAMINATION

William E. Humphrey, San Leandro, Calif., assignor to Humphrey Instruments Incorporated, San Leandro, Calif.

Filed Apr. 9, 1984, Ser. No. 598,143
Int. Cl.⁴ G03B *29/00*; A61B *3/14*
U.S. Cl. 351—208 **1 Claim**



1. A method of aligning an eye with an eye examination instrument, said instrument including an optical train for examining an eye, said optical train defining an instrument optical axis, a photosensor for indicating a lateral alignment of said eye with respect to said instrument optical axis, a first motor coupled to said optical train for effecting lateral movement with respect to a plane, said first motor responsive to output of said photosensor to effect lateral alignment of said eye with respect to said instrument optical axis, a second motor coupled to said optical train for effecting change of the optical path length thereof, and sight means for use by an operator for determining when the eye under examination is initially aligned with said instrument optical axis, said sight means intersecting said instrument optical axis within said plane so as to be common to both the line of sight of said sight means and the instrument optical axis, said method comprising the steps of:

sighting through said sight means at the eye under examination and bringing said line of sight into a position of initial lateral alignment with said eye;

activating said first motor so as to laterally align said eye with said instrument optical axis whereby said instrument undergoes a vertical displacement Δh at said eye; and

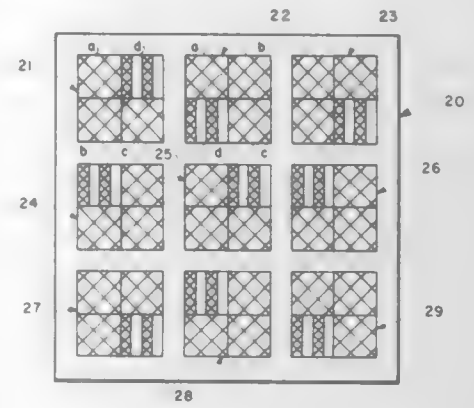
activating said second motor so as to effect a change in said optical path length by an amount Δz, where the amount Δz is substantially equal to $\Delta h \cot \beta$, in which β is the angle between the line of sight of said operator through said sight means and said instrument optical axis, whereby said eye is initially axially aligned by said instrument.

4,607,923

CONTRAST SENSITIVITY FUNCTION MEASUREMENT CHART AND METHOD

Harry L. Task, 275 Main St. Apt. 411 Whitney Towers, Watertown, Mass. 02172, and Louis V. Genco, 2010 Shadow Cliff, San Antonio, Tex. 78232

Filed Jan. 10, 1985, Ser. No. 690,214
Int. Cl.⁴ A61B *3/02*
U.S. Cl. 351—239 **12 Claims**



1. A device for measuring the contrast sensitivity function in the vision system of a subject, comprising:

a chart for viewing by said subject, said chart having a first plurality of visual test patches systematically organized thereover in a predetermined first array; and

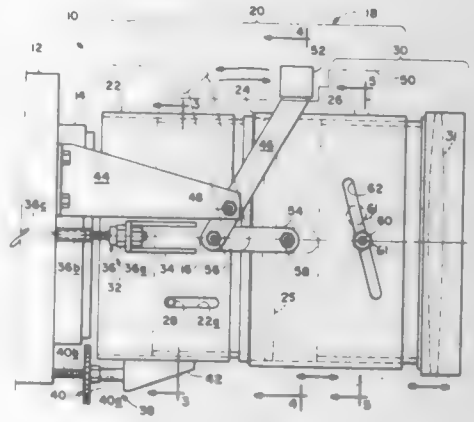
each said patch comprising a second plurality of adjacent patterned areas, at least one of which comprises a pattern of alternate light and dark regions of predetermined contrast, and the remaining patterned areas comprising solid gray patterns of a predetermined reflectance value, said pattern of light and dark regions being characterized by an average reflectance averaged thereover equal to said predetermined reflectance value of said gray patterned areas.

4,607,924

VIDEO PROJECTOR FOCUS ADJUSTMENT MECHANISM

Dennis W. Vance, Portola Valley, Calif., assignor to Vivid Systems Incorporated, Fremont, Calif.

Filed Dec. 4, 1984, Ser. No. 678,035
Int. Cl.⁴ G03B *3/00*
U.S. Cl. 353—101 **8 Claims**



1. A focus adjustment mechanism for use on a projector, the projector having a frame and projection lens, the projection lens having first and second focusing elements, wherein the mechanism comprises:

first focusing means for longitudinally and nonrotatably focusing the first focusing element;

second focusing means for rotatably focusing the second focusing element; and

retaining means for retaining said first focusing element nonrotatably on the frame, wherein said first focusing

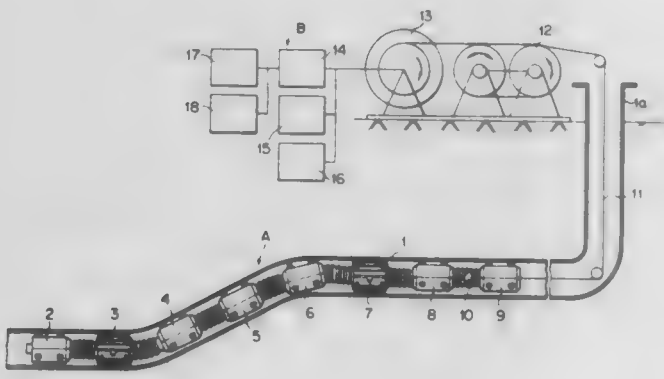
element includes a lens carrying portion slidably received on said retaining means, said first focusing means including a bracket affixed to the frame, and a lever pivotably mounted on said bracket and attached to said lens carrying portion, operable to longitudinally slide said lens carrying portion relative said retaining means.

4,607,925

IN-PIPE INSPECTION SYSTEM

Hideyuki Kamigaichi, Yokohama; Kazuto Kurachi, Chigasaki; Nobuyoshi Asano, and Tatsuo Hanada, both of Yokohama, all of Japan, assignors to Adek Corporation, Tokyo, Japan

Filed Dec. 28, 1984, Ser. No. 687,095
Claims priority, application Japan, Dec. 28, 1983, 58-248292
Int. Cl.[4] G03B *37/00;* H04N *7/18*
U.S. Cl. 354—63 **3 Claims**



1. An in-pipe inspection system comprising:

a train of cars including a camera car, a drive car, a solenoid valve car, a hydraulic pump car, an oil tank car and a slip ring car, said train being adapted to travel in a pipe laid on the ground, underground or under water, and having at least one open end;

said drive car including drive wheels driven by a hydraulic motor and push wheels pressed by a hydraulic cylinder against the internal wall of the pipe;

said solenoid valve car carrying solenoid valves for controlling said hydraulic motor and hydraulic cylinder;

said hydraulic pump car carrying a hydraulic pump for the hydraulic motor and hydraulic cylinder;

said slip ring car being located at the end of said train;

a cable connected to said slip ring car and composed of a centrally disposed tension member, and power lines and optical fiber means surrounding said tension member;

outside equipment installed outside the pipe including control means for controlling said train of cars, said outside equipment being coupled with said cable; and

means provided outside the pipe and between said train of cars and said outside equipment, for selectively feeding or retracting said cable through said pipe open end.

4,607,926

APPARATUS FOR PROCESSING AND/OR PROJECTING TRANSPARENCY FILM ASSEMBLAGES

Peter K. Fichter, Canton, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

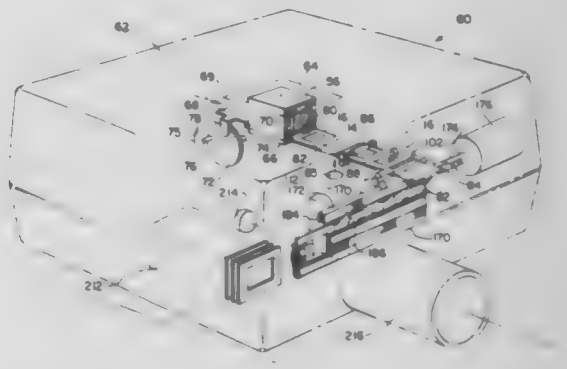
Filed Apr. 1, 1985, Ser. No. 718,642
Int. Cl.[4] G03B *17/52*
U.S. Cl. 354—78 **10 Claims**

1. Apparatus for processing a transparency film assemblage of the type comprising a film mount having first and second apertured sections through which light may be transmitted so as to project an image, an unexposed transparency film frame secured to the first section, a rupturable container of processing liquid, and a strip sheet located in superposed relation to the film frame so as to assist in the spreading of the processing liquid between the strip sheet and a major surface of the film frame and in the removal of the film frame's emulsion layer, said apparatus comprising:

means for supporting a transparency film assemblage in position for the photographic exposure of a film frame carried by the first apertured section of a film mount;

means for advancing the transparency film assemblage, subsequent to its exposure, from said supporting means to a rupturing means;

means for rupturing a container of processing liquid and spreading the processing liquid between the film frame and a strip sheet, subsequent to the exposure of the film frame, to initiate the formation of a visible image therein while simultaneously advancing the transparency film assemblage toward a stripping means;



means for stripping the strip sheet and the film frames' emulsion layer from the area of the film frame to be projected, subsequent to the formation of a visible image within the film frame; and

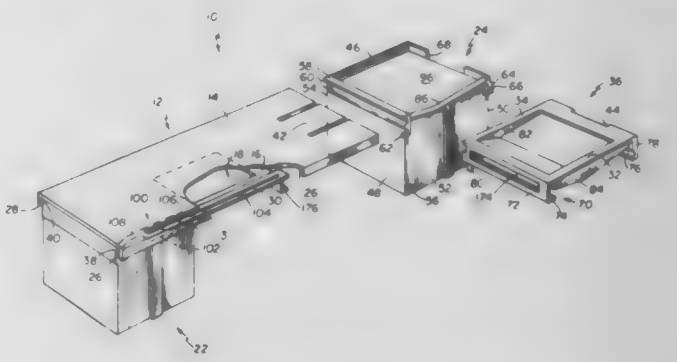
means for folding a second apertured section of the film mount into superposed relation with the first apertured section and securing it thereto such that the film frame is sandwiched therebetween with its image in alignment with the aperture in each section of the film mount.

4,607,927

PHOTOGRAPHIC FILM ASSEMBLAGE HAVING PREMOUNTED FILM FRAMES

John B. Morse, Boston, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Sep. 4, 1985, Ser. No. 772,555
Int. Cl.[4] G03B *17/26, 17/50*
U.S. Cl. 354—182 **10 Claims**



1. A photographic film assemblage for use with a photographic apparatus, said assemblage comprising:

means for supporting a film frame in position for exposure, said supporting means including first and second opposite ends;

means for defining a supply chamber at said first end of said supporting means;

means for defining a storage chamber at said second end of said supporting means;

a plurality of premounted film frames of the self-developing type mounted in a stack within said supply chamber;

means for urging said stack in a direction which locates one of said premounted film frames in position to be advanced from said supply chamber to said supporting means;

means for sequentially advancing said premounted film frames from said supply chamber to said supporting means

and, subsequent to their photographic exposure, from said supporting means to said storage chamber; and

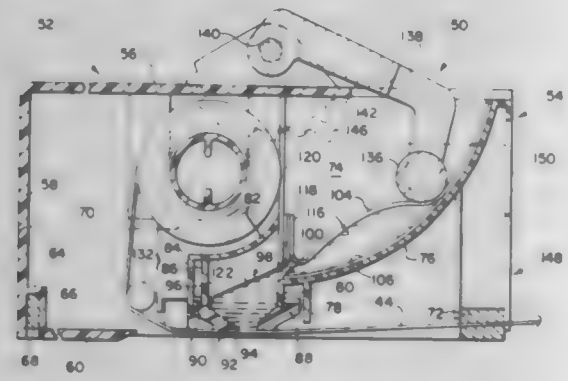
said supporting means and said storage chamber further include means for detachably coupling said storage chamber to said supporting means, whereby said storage chamber may be detached from said supporting means and placed within a film processor for the processing of any exposed premounted film frames located within said storage chamber.

4,607,928

PLIANT SHIELD FOR PROTECTING PHOTOGRAPHIC PROCESSING LIQUID FROM AMBIENT ATMOSPHERE

Robert J. Nangeroni, No. Easton, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Jun. 3, 1985, Ser. No. 740,587
Int. Cl.[4] G03D *5/02, 5/06*
U.S. Cl. 354—304 14 Claims



1. Apparatus for use in directing a flow of processing liquid to a coating nozzle during a photographic film processing operation, said apparatus comprising;

a housing;

means for defining a reservoir within said housing, said reservoir including an ingress and an egress having a coating nozzle therein;

a container of processing liquid having an end through which the processing liquid is adapted to be expelled;

means for supporting said container within said housing with said end of said container positioned to direct the processing liquid into said reservoir via said ingress; and

means for shielding the surface of the processing liquid from the ambient atmosphere as the processing liquid moves into and out of said reservoir, said shielding means being formed from a pliant material which substantially conforms to the surface of the processing liquid and follows the same as the level of the processing liquid within said reservoir changes.

4,607,929

SELF PURGING PROCESSING LIQUID APPLICATOR

John B. Morse, Boston, and Joseph H. Wright, Andover, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Nov. 28, 1984, Ser. No. 675,858
Int. Cl.[4] G03D *5/06*
U.S. Cl. 354—318 8 Claims

1. Apparatus for applying a layer of photographic processing liquid to a length of flexible sheet material, said apparatus comprising:

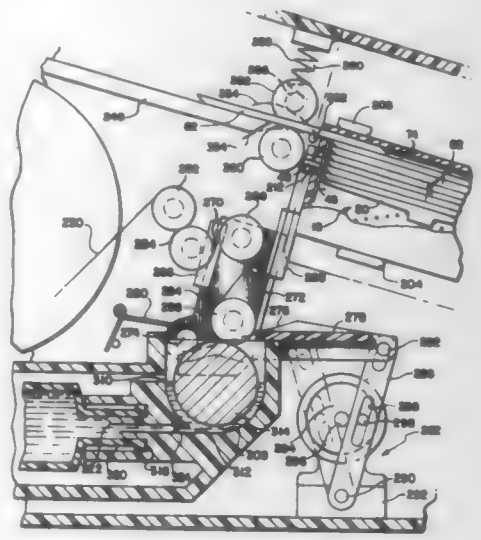
a housing including means for defining a reservoir for holding a quantity of photographic processing liquid, said reservoir including an egress for permanently draining from the surface of the processing liquid in said reservoir a portion thereof, and an ingress located at a lower level than said egress for directing fresh photographic processing liquid into said reservoir;

means for applying a layer of photographic processing liquid to the length of sheet material;

means within said housing defining a chamber for receiving a container of photographic processing liquid;

a container of photographic processing liquid;

means for interconnecting said container with said ingress in said reservoir to enable the flow of said photographic processing liquid into said reservoir; and



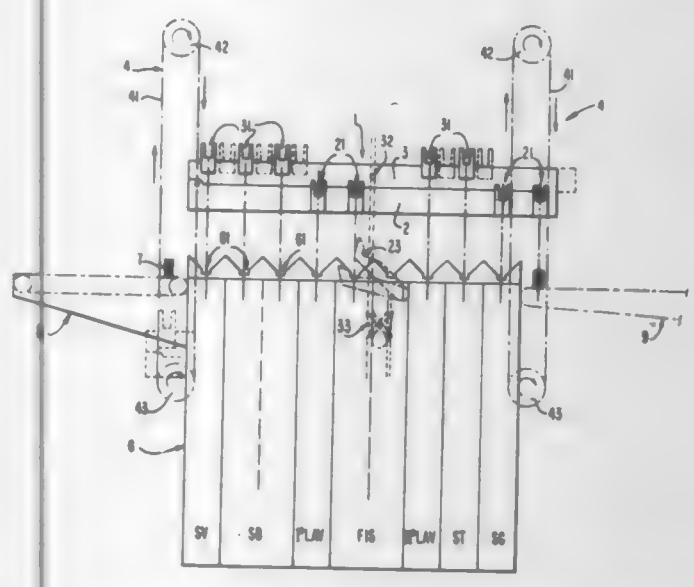
means for periodically moving portions of said photographic processing liquid from said container to said reservoir via said ingress until the level of said processing liquid in said reservoir exceeds the level of said egress, whereby photographic processing liquid located above said egress may permanently exit from said reservoir thus purging said photographic processing liquid located in said reservoir.

4,607,930

DEVICE FOR TRANSFERRING THE FILM HOLDERS IN A FILM DEVELOPER

Silvano Castellarin, Pordenone, Italy, assignor to Gretag San Marco S.p.A., Pordenone, Italy

Filed Jan. 3, 1985, Ser. No. 688,500
Claims priority, application Italy, Jan. 3, 1984, 45702 A/84
Int. Cl.[4] G03D *3/08*
U.S. Cl. 354—322 6 Claims



1. A device for transferring film holders in a film developer having a film holder transfer arm mounted between a pair of vertical endless conveyor chains, each of which is mounted for rotation on either side of a group of successive tanks containing various chemical baths for developing film hanging from the film holders, a feeder located adjacent the entrance end of the group of tanks and a conveyor located adjacent the exit end of the group of tanks, the transfer device comprising:

a transfer arm having a first rod extending in a longitudinal direction and adapted to be attached to the vertical endless chains of the film developer for movement therewith

and a second rod slidable in said longitudinal direction along said first rod;

fork means, disposed along said first and second rods, for engaging and transferring film holders from the feeder into recesses along the upper edges of successive tanks and finally onto the conveyor of the film developer;

means for moving said second rod to a first position at which all of said fork means are operable to engage and transfer a respective film holder to a successive position along the film developer and to a second position at which said fork means on said first rod remain operable to transfer respective film holders and said fork means on said second rod are inoperable to engage the transfer any film holders, whereby said fork means disposed on said first and second rods effect transfer of film hanging from film holders through the various stages of film development within time periods close to minimum required time periods at each stage of the development process.

4,607,931

EXPOSURE CONTROL CIRCUIT FOR A CAMERA HAVING A LOAD CIRCUIT

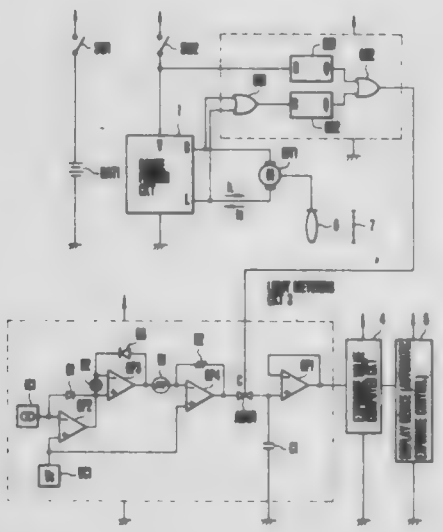
Yoshihiko Aihara, Kanagawa, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 30, 1984, Ser. No. 676,545

Claims priority, application Japan, Dec. 2, 1983, 58-228684; Dec. 2, 1983, 58-228685

Int. Cl.[4] G03B *7/08*

U.S. Cl. 354—400 **11 Claims**



1. A camera system having an electric motor for driving a load member, comprising:

(a) a light metering circuit;

(b) an exposure control circuit for controlling exposure in accordance with the output of said light metering circuit;

(c) an electrical power supply circuit for supplying electrical power to said light metering circuit and said motor from a common battery; and

(d) prohibiting means for stopping the transfer of the output of said light metering circuit to said exposure control circuit for a prescribed time when current is supplied to said motor.

4,607,932

BATTERY CHECKING DEVICE

Akira Egawa; Takanori Kodaira, both of Tokyo, and Akihiro Namai, Kanagawa, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 26, 1985, Ser. No. 727,581

Claims priority, application Japan, Apr. 28, 1984, 59-86891

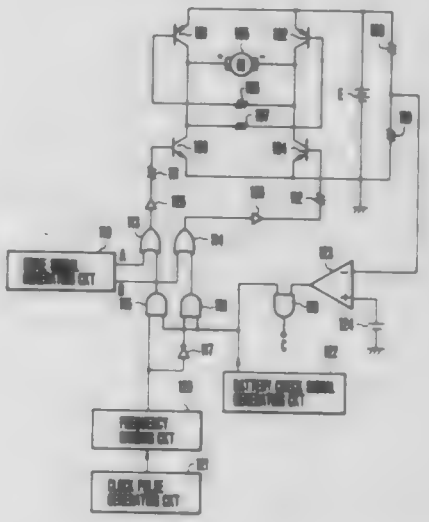
Int. Cl.[4] G03B *17/18*; G08B *21/00*

U.S. Cl. 354—468 **6 Claims**

1. A battery checking device comprising:

(a) a pulse generating circuit for producing pulses with such a frequency that a load does not operate in response thereto;

(b) a control circuit capable of supplying current to the load in both directions, said control circuit responsive to a positive pulse supplying current to the load in one direction, and responsive to negative pulse supplying current to the load in the opposite direction; and



(c) a checking circuit for detecting the voltage level of an electrical power source as applied across the load when the aforesaid pulse appears at the control circuit,

said checking circuit producing a warning signal when the voltage of the electrical power source falls below a prescribed level.

3. A device according to claim 1, wherein said load is a rotor of an electromagnetically operated shutter.

4,607,933

METHOD OF DEVELOPING IMAGES AND IMAGE RECORDING APPARATUS UTILIZING SUCH METHOD

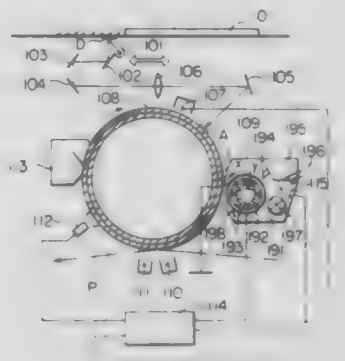
Satoshi Haneda, and Seiichi Hiratsuka, both of Hachioji, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Jul. 6, 1984, Ser. No. 628,329

Claims priority, application Japan, Jul. 14, 1983, 58-128895; May 8, 1984, 59-90284

Int. Cl.[4] G03G *15/08*

U.S. Cl. 355—3 DD **14 Claims**



1. An image forming apparatus for developing an electrostatic latent image on a photreceptor by flying toner particles held in a layer of developer through a space existing between the layer and the photoreceptor at a developing area comprising a conveying means for conveying the developer to the developing area, said conveying means comprising a magnetic means for generating magnetic force to support the developer on a surface of the conveying means, a detecting means for detecting a toner concentration, an adjusting means for adjusting at least one of the developing conditions in response to the detected toner concentration, a means for supplying the developer to the conveying means at a supplying position, whereby the developer supplied by said means is conveyed to the devel-

oping area through a removing area where the excessive toner particles are removed from the developer under the influence of gravity, and a regulating means for regulating the thickness of the layer, said regulating means being arranged at a regulating position between the developing position and the supplying position.

4,607,934

ELECTROPHOTOGRAPHY USING A PHOTOSENSITIVE DRUM WITH MULTI-PHOTOSENSITIVE LAYERS SENSITIVE TO DIFFERENT WAVE LENGTHS

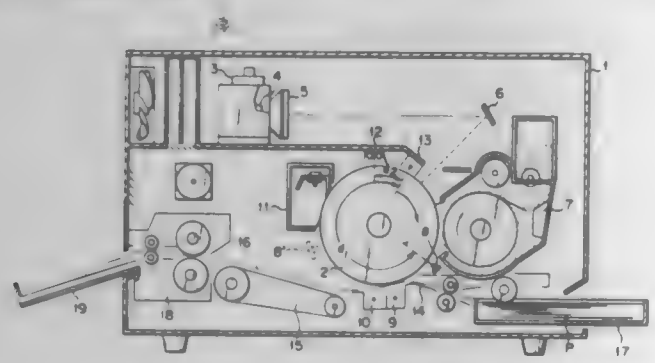
Mitsuaki Kohyama, Tokyo; Toshihiro Kasai, Yokohama, and Haruhiko Ishida, Tokyo, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jun. 28, 1984, Ser. No. 625,790

Claims priority, application Japan, Jul. 5, 1983, 58-121777

Int. Cl.[4] G03G *21/00*

U.S. Cl. 355—3 R **12 Claims**



1. An electrophotographic device comprising:

a photosensitive body movable in a path along a first direction and provided with plural photosensitive layers having different spectral sensitivities;

exposure means, arranged facing said photosensitive body, for exposing said photosensitive body as it moves, said exposure means including a plurality of exposure units having spectro-radiation characteristics which correspond to the spectral sensitivity of said photosensitive layers, respectively, said exposure units being located at different positions along said path and facing said photosensitive body, said exposure units including a first exposure means and a second exposure means, said second exposure means for producing an emission in a second range of wavelengths, said first exposure means for producing an emission having a first range of wavelengths generally longer than said second range of wavelengths produced by said second exposure means; and

charging means arranged facing said photosensitive body for charging said body, wherein:

said first exposure means is located at a position separated by a first predetermined distance from that portion of said photosensitive layers which the charging means is facing, in a direction opposite said first direction, and

said second exposure means is located at a position separated by a second predetermined distance, shorter than said first predetermined distance, from that portion of said photosensitive layers which said charging means is facing, in the direction opposite said first direction.

4,607,935

ROLLER TRANSFER APPARATUS

Robert J. Kindt, Rochester, and Robert M. Peffer, Penfield, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 18, 1984, Ser. No. 601,480

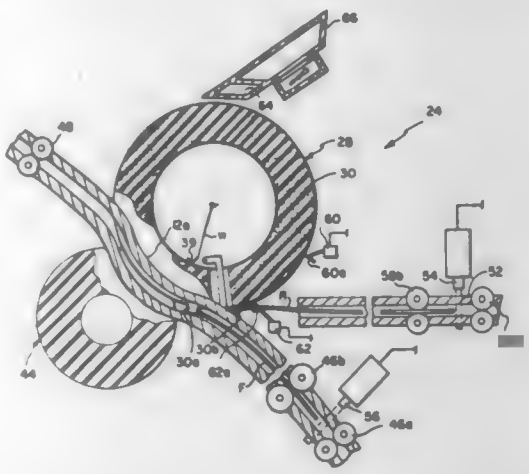
Int. Cl.[4] G03G *15/00*

U.S. Cl. 355—3 TR **10 Claims**

1. Apparatus for electrostatically transferring at least one transferable image of electroscopic marking particles from an image-carrying member to a registered receiver member, said apparatus comprising:

electrically conductive means, selectively coupled to a source of electrical image-transferring potential, for effecting transfer of an image from an image-carrying member to a receiver member, said electrically conductive means including means for attaching a receiver member thereto and means for registering an image-carrying member relative to an attached receiver member;

compliant means for engaging said conductive means over an extended contact area to establish an effective transfer



zone between said conductive means and said compliant means; and

guide means, located adjacent to such extended contact area, for directing an image-carrying member into engagement with said registration means of said conductive means and then through such contact area between said conductive means and said compliant means, whereby in such extended contact area a transferable image on such image-carrying member is transferred to such attached receiver member when image-transferring potential is coupled to said conductive means.

4,607,936

ELECTROPHOTOGRAPHIC APPARATUS COMPRISING PHOTOSENSITIVE LAYER OF AMORPHOUS SILICON TYPE PHOTOCONDUCTOR

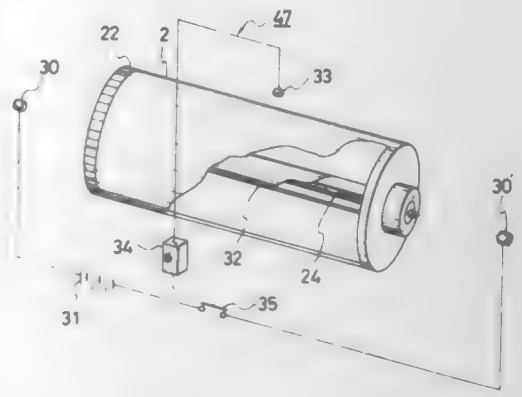
Nobuhiro Miyakawa, Abiko; Teruaki Higashiguchi, Tokyo; Koji Yano, Tokyo; Kazuo Yamamoto, Tokyo, and Yoshinobu Kawakami, Tokyo, all of Japan, assignors to Mita Industrial Co., Ltd., Osaka, Japan

Filed Sep. 28, 1984, Ser. No. 655,533

Claims priority, application Japan, Sep. 30, 1983, 58-180738; Oct. 31, 1983, 58-202825; Nov. 11, 1983, 58-173692[U]; Nov. 30, 1983, 58-183770[U]

Int. Cl.[4] G03G *15/12*

U.S. Cl. 355—3 DR **16 Claims**



1. An electrophotographic apparatus comprising a photosensitive drum comprising an amorphous silicon type photoconductor layer formed on an electroconductive substrate, a main charging mechanism for charging the surface of the drum with charges having a predetermined polarity, an imagewise exposure mechanism for forming an electrostatic image corresponding to an image of an original on the surface of the drum, a

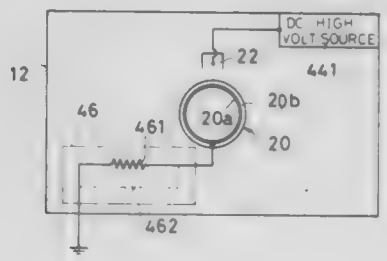
toner development mechanism for forming a toner image corresponding to the electrostatic image, a toner image transfer mechanism for transferring the toner image formed on the surface of the photosensitive drum to a predetermined paper sheet, a toner cleaning mechanism for removing the residual toner adhering to the surface of the photosensitive drum and a fixing mechanism for fixing the transferred toner image to said paper sheet, wherein a heating mechanism is arranged to heat the surface of the photosensitive drum and is connected to a temperature-adjusting mechanism for detecting the surface temperature of said drum and adjusting and maintaining said surface temperature at a temperature of 30° to 40° C.

4,607,937

ELECTROSTATIC RECORDING APPARATUS

Koji Minami, Osaka, Japan, assignor to Sanyo Electric Co., Ltd., Japan

Filed Nov. 16, 1984, Ser. No. 672,374
Int. Cl.[4] G03G *15/00*
U.S. Cl. 355—3 R 8 Claims



1. An electrostatic recording apparatus, comprising:
a photosensitive body having a photoconductive layer;
a charging means for accumulating charges of a certain polarity on said photoconductive layer of said photosensitive body; and
a resistance means for connecting said photoconductive layer of said photosensitive body to a reference potential, whereby a surface potential of said photoconductive layer is maintained by a voltage resulting from said charges and a voltage developed across said resistance means at a time when a current flows through said resistance means.

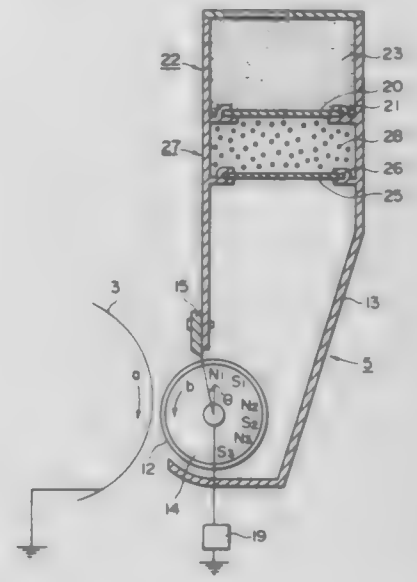
4,607,938

METHOD AND APPARATUS FOR FORMING A THIN LAYER OF DEVELOPER

Atsushi Hosoi, Tokyo; Kimio Nakahata, Kawasaki; Hatsuo Tajima, Matsudo; Hidemi Egami, Zama; Fumitaka Kan, Yokohama, and Shunji Nakamura, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 18, 1984, Ser. No. 601,715
Claims priority, application Japan, Apr. 26, 1983, 58-73231; May 10, 1983, 58-80099; May 10, 1983, 58-80100; May 10, 1983, 58-80102; Jun. 14, 1983, 58-104985
Int. Cl.[4] G03G *15/08, 15/09*
U.S. Cl. 355—3 DD 42 Claims

1. A developing apparatus for developing a latent image on an image bearing member, comprising:
a container having an opening adjacent a lower part thereof;
a developer carrying member movable along an endless path and between an inside of said container and an outside of said container;
magnetic field generating means, disposed in said developer carrying member, for generating a magnetic field;
a partition member in said container for separately supporting, before operating said developing apparatus, a first developer which is to form in operation a circulating base layer in said container and on a surface of said developer carrying member, and a second developer which is to be supplied into the base layer from a surface of said base layer, said first developer mainly including magnetic particles, and said second developer mainly including non-magnetic toner particles, wherein by retracting said partition member, the base layer of the first developer is formed on said developer carrying member, and then the second developer is formed on the surface of the base layer; and
a regulating member having an end portion cooperable with said magnetic field generating means to regulate an amount of the non-magnetic developer applied on said developer carrying member from said container, wherein



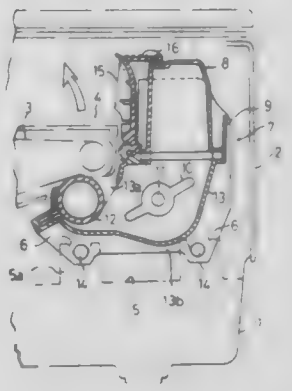
when said developer carrying member moves, a circulation is formed in said base layer, including upward flow mainly of the magnetic particles substantially along the surface of said developer carrying member and including downward flow by gravity above a portion of the upward flow and in the neighborhood of said regulating member, whereby the non-magnetic developer in the second developer is taken into the base layer, and the non-magnetic developer is charged and applied onto the surface of said developer carrying member.

4,607,939

REMOVABLE DEVELOPING UNIT FOR AN ELECTROSTATIC RECORDING APPARATUS

Takeshi Saito, Ichikawa, Japan, assignor to Ricoh Company, Ltd., Japan

Filed Sep. 24, 1984, Ser. No. 653,932
Claims priority, application Japan, Sep. 22, 1983, 58-175763; Sep. 22, 1983, 58-175764
Int. Cl.[4] G03G *15/08*
U.S. Cl. 355—3 DD 4 Claims



1. A removable developing unit for an electrostatic recording apparatus comprising a casing having an aperture on one side, and a developing sleeve exposed in said aperture to be positioned against a photoconductive member when the developing unit is mounted in the recording apparatus,
wherein the improvement comprises:

a cover pivotably mounted to said casing and movable to open and close said aperture; and

automatic closing means in said casing for automatically closing said cover when said developing unit is removed from said recording apparatus.

4,607,940

REVERSED DEVELOPMENT ELECTROPHOTOGRAPHIC PRODUCTION PROCESS AND APPARATUS

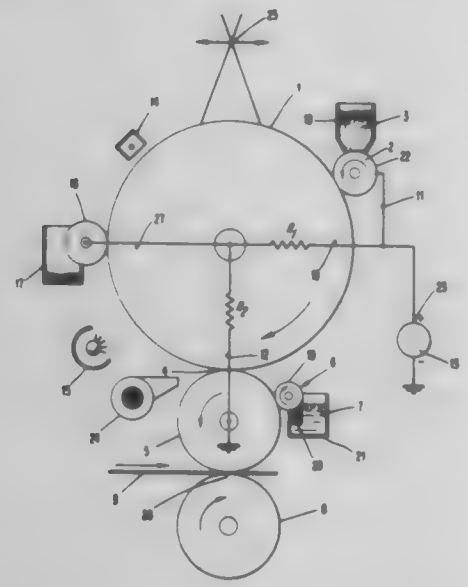
Pham K. Quang, Dieppe, France, assignor to Rhone-Poulenc Systemes, Nanterre, France

Filed Dec. 18, 1984, Ser. No. 683,169

Claims priority, application France, Dec. 22, 1983, 83 20799

Int. Cl.[4] G03G *15/00*

U.S. Cl. 355—3 R 15 Claims



1. In a reversed development electrophotographic reproduction process in which an electrostatic latent image on a photoconductor surface is developed by magnetic means, with a single component magnetic development powder, to form a reversed powder image corresponding to the latent image, and the powder image is transferred onto a conductive support wetted with a volatile dielectric liquid of volume resistivity greater than $10^3\Omega cm^2/cm$, the improvement which comprises connecting each of the photoconductor surface, the magnetic means and the conducting support to the terminal of at least one voltage generator, the terminal having the same polarity as that of the charge on the photoconductor surface.

4,607,941

PROCESS UNIT AND IMAGE FORMING APPARATUS USING SUCH UNIT

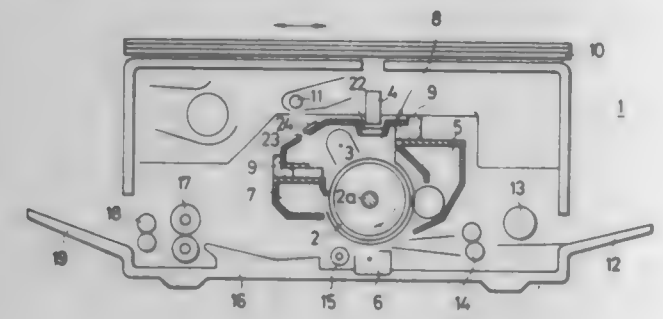
Haruhisa Honda, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 22, 1983, Ser. No. 487,884

Claims priority, application Japan, Apr. 30, 1982, 57-074153

Int. Cl.[4] G03G *15/00*

U.S. Cl. 355—3 R 12 Claims



1. An interchangeable process unit removably mountable with respect to the body of an image forming apparatus including operative components, said process unit having:

an endlessly movable photosensitive medium;

means to form a latent image on said photosensitive medium;

a housing for integrally supporting said photosensitive medium and said means to form a latent image; and

adjusting means provided on the exterior of said housing for adjusting the latent image formation conditions for said photosensitive medium without adjusting said operative components of said body.

4,607,942

ELECTROSTATIC COPYING APPARATUS

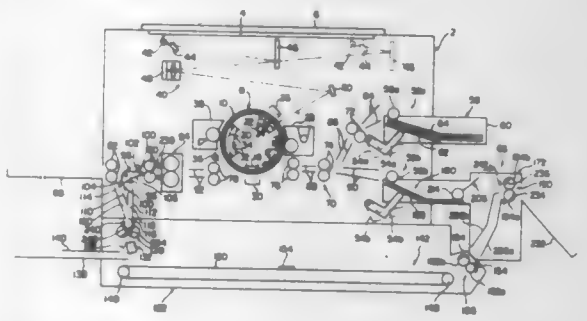
Haruo Koyama, Yawata, and Toshio Nishino, Sakai, both of Japan, assignors to Mita Industrial Co., Ltd., Japan

Filed Sep. 14, 1984, Ser. No. 650,605

Claims priority, application Japan, Sep. 19, 1983, 58-171384; Sep. 19, 1983, 58-171385; Oct. 24, 1983, 58-198472; Nov. 26, 1983, 58-221414; Nov. 26, 1983, 58-221416; Jan. 31, 1984, 59-14418; Jan. 31, 1984, 59-14419; Feb. 29, 1984, 59-36293

Int. Cl.[4] G03G *15/00;* B65H *5/22*

U.S. Cl. 355—3 SH 41 Claims



1. An electrostatic copying apparatus comprising:

a main housing;

an electrostatic photosensitive member disposed within the main housing and adapted to be moved through an endless path;

means defining a latent electrostatic image-forming zone, a developing zone and a transfer zone successively in the moving direction of the photosensitive member along the endless path;

means for forming a latent electrostatic image on the photosensitive member in the latent electrostatic image-forming zone;

developing means in the developing zone for developing the latent electrostatic image on the photosensitive member to a toner image;

copying paper feeding means;

copying paper receiving means;

means defining a copying paper conveying passage extending from the paper feeding means to the paper receiving means via the transfer zone;

copying paper conveying means for conveying a copying paper through the copying paper conveying passage;

transfer means for transferring the toner image on the photosensitive member to copying paper in the transfer zone;

fixing means for fixing the toner image on the copying paper, said fixing means being disposed at that position of the paper conveying passage which is downstream of the transfer zone;

copying paper swerving means disposed within the paper conveying passage and between the fixing means and the paper receiving means and adapted to be selectively held at a non-operating position at which the swerving means permits copying paper to be discharged into the paper receiving means through the paper conveying passage and an operating position at which the swerving means swerves the copying paper from the conveying passage;

paper re-feeding means for feeding the received copying paper into the paper conveying passage at a position upstream of the transfer zone;

copying paper returning means for returning swerved copying paper to the paper re-feeding means while the front and back surfaces of the paper are reversed, said swerved copying paper having been swerved from the paper conveying passage by the paper swerving means held at the operation position; and

a conveying direction controlling roller unit disposed between the paper swerving means and the paper returning means and adapted to be rotated selectively in a normal direction and a reverse direction, the copying paper, when swerved from the paper conveying passage by the copying paper swerving means being held at its operating position, is conveyed while being nipped by the conveying direction controlling roller unit, and when the conveying direction controlling roller unit continues to be rotated in a normal direction until the trailing end of the copying paper passes the conveying direction controlling roller unit, the copying paper is caused to make a returning movement by the action of the paper re-feeding means, and when the rotating of the conveying direction controlling roller unit is switched to a reverse direction from the normal direction, the copying paper with its front and back surfaces and its leading and trailing ends reversed is returned to the copying paper conveying passage at a position downstream of the paper swerving means and is discharged into the paper receiving means.

4,607,943

CONTROL CIRCUIT FOR AN ELECTROSTATIC COPYING APPARATUS

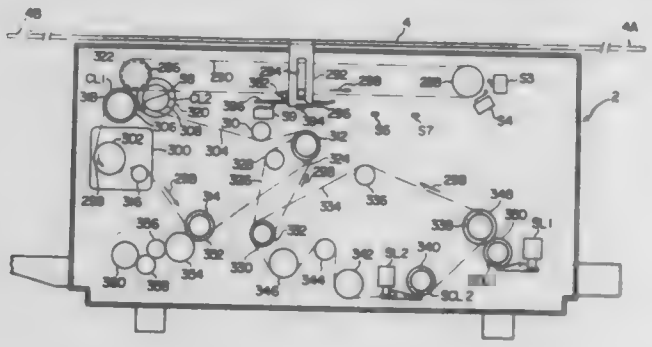
Masahiro Yoshioka, Matsubara; Masahiro Murakami, Shijonawate; Yoichiro Irie, Suita; Tsugio Nakanishi, Osaka; Eiji Tsutsui, Amagasaki; Noriyuki Iwao, Kobe; Junichi Hirobe, Osaka, and Takahiro Wakikaido, Yao, all of Japan, assignors to Mita Industrial Co., Ltd., Japan

Division of Ser. No. 424,943, Sep. 27, 1982. This application May 9, 1985, Ser. No. 732,329

Claims priority, application Japan, Nov. 30, 1981, 56-192395

Int. Cl.[4] G03G *15/00*

U.S. Cl. 355—14 R 5 Claims



1. An electrostatic copying apparatus adapted for copying at variable ratios comprising

an optical device including at least one optical element mounted so that it can freely move between at least two positions including an equal scale position for projecting the image of an original document on a substantially equal scale onto a photosensitive member and a predetermined ratio position for projecting the image of the document at a predetermined ratio onto the photosensitive member,

a drive source drivingly connected to said at least one optical element for moving it, and

a control circuit which comprises an equal scale position detecting switch for detecting said at least one optical element when it is positioned at said equal scale position or its vicinity and thereby producing a signal indicating the equal scale position, a predetermined ratio position detecting switch for detecting said at least one optical element when it is positioned in said predetermined ratio position or its vicinity and thereby producing a signal indicating the predetermined ratio position, and a change-over switch to be manually operated, and which when the change-over switch is operated during the production of said equal scale position signal, energizes the drive source to move said at least one optical element to said predetermined ratio position, and when the predetermined ratio position signal is thereby produced, deenergizes the drive source after the lapse of a predetermined delay time, and which when the change-over switch is operated during the production of the predetermined ratio position signal, energizes the drive source to return said at least one optical element to the equal scale position, and when the equal scale position signal is thereby produced, deenergizes the drive source after the lapse of a predetermined delay time; characterized in that said control circuit further comprises a power supply detector adapted to form a signal indicating the operation of a power supply when a power supply switch of the copying apparatus is closed, and when the signal indicating the operation of the power supply is produced, the control circuit energizes the drive source to return said at least one optical element to the equal scale position if the equal scale position signal is not produced, and energizes the drive source to move said at least one optical element to the predetermined ratio position and then return it if the equal scale position signal is produced.

4,607,944

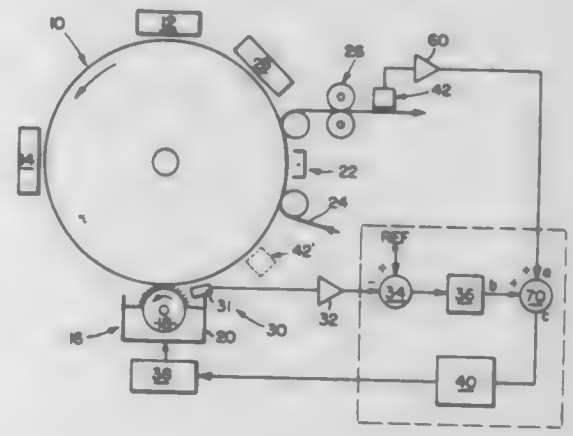
APPARATUS FOR CONTROLLING TONER REPLENISHMENT IN ELECTROGRAPHIC COPIER

Allen J. Rushing, Webster, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 7, 1985, Ser. No. 742,357

Int. Cl.[4] G03G *15/08*

U.S. Cl. 355—14 D 4 Claims



1. In an electrographic reproduction apparatus comprising means for contacting an electrostatic image-bearing surface with a mixture of toner and carrier particles, such contact being effective to apply toner particles to such surface to render such electrostatic image visible, and means for replenishing such mixture with additional toner to compensate for toner depletion resulting from rendering such electrostatic charge visible, an improved toner replenishment control apparatus comprising:

(a) means for producing a first signal proportional to the level of concentration of toner in said mixture;

(b) means for producing a second signal proportional to the rate at which toner is applied to said surface in rendering such image visible;

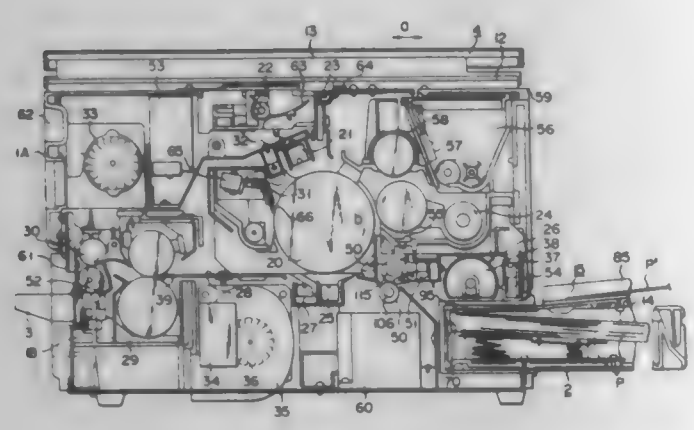
(c) means for summing said first and second signals to produce a control signal; and

(d) means responsive to said control signal for activating said replenishing means.

4,607,945
IMAGE FORMING APPARATUS

Fumito Ide, Zama; Toshiyuki Sogo, Ebina; Kouzou Matsuyama, Yokohama, and Shinichi Hashimoto, Fujisawa, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Aug. 27, 1984, Ser. No. 644,922
Claims priority, application Japan, Aug. 31, 1983, 58-159296
Int. Cl.[4] G03G *15/00, 21/00*
U.S. Cl. 355—14 R 6 Claims



1. An image forming apparatus comprising:

document placing means having a document table on which a document is placed;

table position detecting means for detecting a table home position, an exposure start position, a paper start position and a table limit position, said position detecting means including first switch means for detecting the table home position to produce a home position signal, second switch means for detecting the exposure start position to produce an exposure start signal, third switch means for detecting a paper start position to produce a paper start signal, and fourth switch means for detecting the table limit position to produce a limit position signal;

image forming means including a photoconductive member and exposure means operated in response to the exposure start signal for exposing said photoconductive member to form on said photoconductive member an image of said document placed on said document table;

moving means for moving said document table in a first direction for scanning the document and a second direction reversed to the first direction for returning the document table to the start position;

transfer means for transferring the image formed on said photoconductive member onto a paper sheet;

paper feeding means operated in response to the paper start signal to feed the paper sheet to said transfer means;

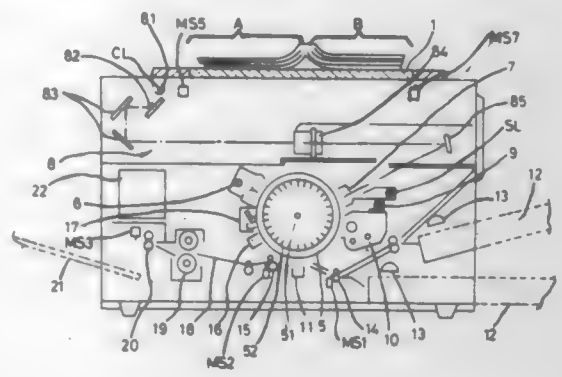
paper size measuring means for measuring a size of the paper sheet which is fed first, to obtain a size information, said measuring means including a switch means actuated by the leading edge of the paper and means for measuring the size of the paper from the leading edge of the paper to the trailing edge of the paper in response to the detection of the paper leading edge; and

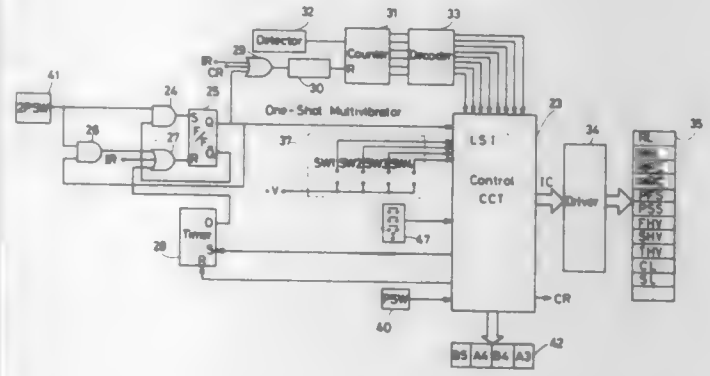
control means for controlling said moving means in response to the size information in order to move said document table, moved in the first direction, in the second direction from a position corresponding to the size of the paper sheet obtained from said paper measuring means.

4,607,946
AUTOMATIC DUAL ELECTROPHOTOGRAPHIC COPYING MACHINE

Hiroaki Uchiyama; Yoshiaki Ibuchi, both of Nara, and Katsuyoshi Fujiwara, Osaka, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jun. 11, 1984, Ser. No. 619,303
Claims priority, application Japan, Jun. 15, 1983, 58-108278
Int. Cl.[4] G03G *15/00, 21/00*
U.S. Cl. 355—14 R 4 Claims





1. A control system in an electrophotographic copying machine, comprising:

mode switch means for selecting a single or dual copying mode in said copying machine, wherein said dual copying mode copies at least two image areas of a single document on one or more copy papers;

selection means, responsive to said dual mode switch, for selecting a copy paper size corresponding to one of said at least two image areas of said single document to be copied;

detection means, responsive to said selection means, for generating an execute signal when the copy paper size selected is of a predetermined size less than the maximum size of said single document; and

control means, responsive to said execute signal, for controlling execution of a copying operation in said dual copying mode;

said execution including copying the first of said at least two image areas of said single document on a first copy paper and copying the second of said at least two parts of said single document on a second copy paper.

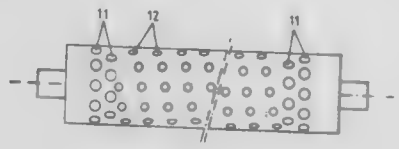
4,607,947
CONTACT FIXING AND CLEANING METHOD AND APPARATUS

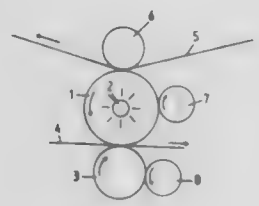
Hendrik Ensing, Velden, and Jacobus H. M. Peulen, Haelen, both of Netherlands, assignors to Océ-Nederland B.V., Venlo, Netherlands

Filed Nov. 16, 1984, Ser. No. 671,953
Claims priority, application Netherlands, Nov. 30, 1983, 8304099
Int. Cl.[4] G03G *21/00*
U.S. Cl. 355—15 18 Claims

1. In a contact fixing apparatus for fixing images of heat-sof-

tenable toner onto sheet material, including a circulating image contacting fixing member and a circulating second fixing member, said members having respective peripheral surfaces that press one against the other in and move together through a contact fixing zone to fix a heat-softened toner image being carried into said zone onto a sheet material being passed therethrough in the nip between said surfaces, means for removing residues of heat-softened toner and paper dust from said surface of a said fixing member, comprising in a contact cleaning zone of the path of the said fixing member surface a circulating cleaning member having a peripheral surface to which said





toner will adhere preferentially rather than to said fixing member surface, said cleaning member surface contacting said fixing member surface in and being movable with it through said cleaning zone to collect residues from it and press them into a toner layer carried on said cleaning member surface, and said cleaning member surface having a multiplicity of spaced-apart perforations therein which are so disposed that on repeated movements of said cleaning member surface with said fixing member surface through said cleaning zone said toner layer while being continually pressed thin has excess material present in it displaced from it into said perforations.

4,607,948

DUPLEX RECORDING METHOD AND APPARATUS FOR PRODUCING DUPLEX PRINTING FROM SIMPLEX ORIGINAL

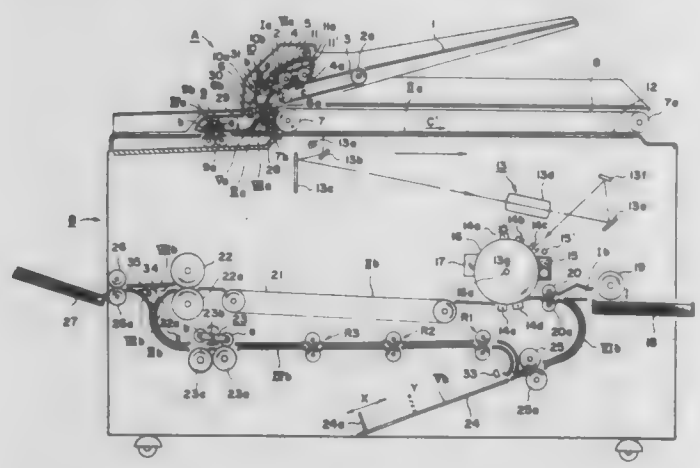
Masataka Naito, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed May 17, 1984, Ser. No. 611,123

Claims priority, application Japan, May 25, 1983, 58-91880; May 25, 1983, 58-91881

Int. Cl.⁴ G03B *27/32, 27/52*

U.S. Cl. 355—24 **27 Claims**



1. A method of producing duplex copies from simplex originals, comprising:

sequentially feeding one at a time simplex originals from a stack of simplex originals to a reading position;

performing, for every other fed original, a first copy operation to produce one sided copies from said every other original;

sequentially feeding again one at a time the same orignals; and

performing, for every other remaining fed original, a second copy operation to form images on such sides of the one sided copy as do not bear the images by the first copy operation step, to produce duplex copies from simplex originals;

wherein in the feeding step, the originals are fed, while being inverted, to the reading position from one side thereof, and then are fed back, while being inverted back, from said one side of the reading position to the stack.

4,607,949

PHOTOGRAPHIC PRINT MAKING METHOD

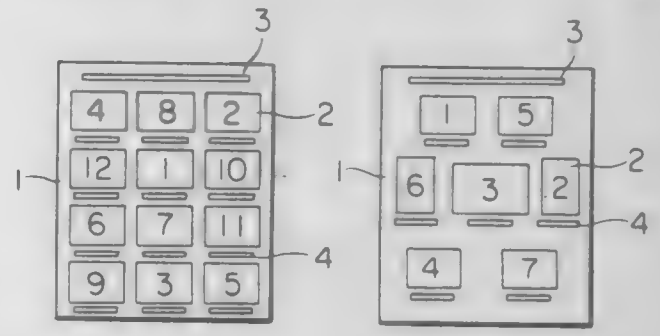
Haruo Hakamada; Tadashi Amano, and Hiromitu Kamiyama, all of Hino, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Jul. 31, 1984, Ser. No. 636,149

Claims priority, application Japan, Aug. 9, 1983, 58-144437; Oct. 14, 1983, 58-158131[U]

Int. Cl.⁴ G03B *27/52, 27/32*

U.S. Cl. 355—40 **8 Claims**



1. A photographic printing method comprising

a. entering information into a storage medium as to location of each of a plurality of image frames on a negative film to be printed;

b. entering data into said storage medium as to the desired print position of each of a selected number of said frames;

c. controlling a negative film transporting means and a printing paper moving means based on said information and said data to independently locate each of said selected number on said paper.

4,607,950

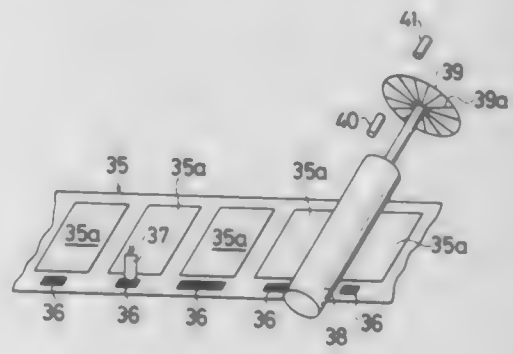
MARK DETECTION APPARATUS FOR A MICRO-ROLL FILM

Kenjiro Ishii; Masaharu Aragaki; Osami Kato, and Masato Higashi, all of Kanagawa, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Continuation-in-part of Ser. No. 654,353, Sep. 25, 1984, abandoned. This application Apr. 25, 1985, Ser. No. 726,874

Int. Cl.⁴ G03B *27/52*

U.S. Cl. 355—41 **4 Claims**



1. A mark detecting apparatus for measuring lengths of

indicator marks of different lengths provided on respective frames of an advancing micro-roll film comprising;

first means including a single photo responsive element sensing said indicator marks at a predetermined location for generating mark detecting signals of durations corresponding to the time of passage of respective marks past said location,

second means for generating successive pulses corresponding to equal increment advances of the film, and

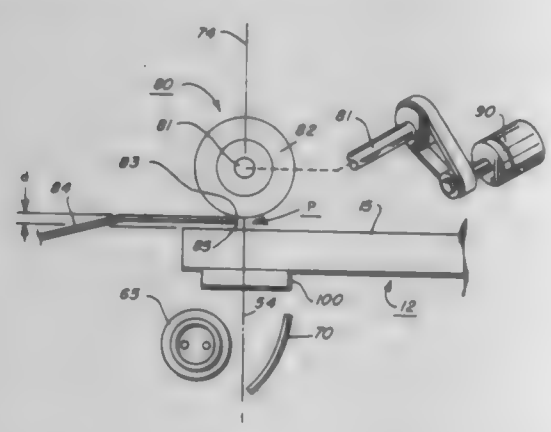
third means for counting said pulses during the duration of respective mark detecting signals as indications of the lengths of respective marks.

4,607,951

COMPENSATING PLATEN FOR DUAL MODE IMAGE INPUT TERMINALS

Ned J. Seachman, Penfield, and Joseph P. Taillie, Rochester, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed May 2, 1985, Ser. No. 729,516
Int. Cl.[4] G03B *27/48, 27/50, 27/70*
U.S. Cl. 355—51 5 Claims



1. A platen for a multi-mode document scanner which in one mode supports a document to be scanned face down on a preset first scanning area of said platen for scanning by a movable scanning means, and in a second mode provides a preset second scanning area adjacent one end to permit scanning of a moving document by said scanning means when stationary, comprising:

a generally rectangular plate-like member, said member being formed from a transparent rigid material to permit the document being scanned to be viewed through said member at said first and second scanning areas;

said member first scanning area having a substantially uniform thickness of predetermined dimension;

said member second scanning area having a substantially uniform thickness different from said member first scanning area to enable scanning of said moving document to occur in preset spaced relation from said member.

4,607,952

PHOTOGRAPHIC IMAGE PRECISION REPROPORTIONING SYSTEM

Thomas L. Byers, P.O. Box 26624, Oklahoma City, Okla. 73126

Filed Nov. 29, 1984, Ser. No. 676,336
Int. Cl.[4] G03B *27/10, 27/68*
U.S. Cl. 355—84 13 Claims

1. A photographic image reproportioning apparatus, comprising:

a base having a planar top;

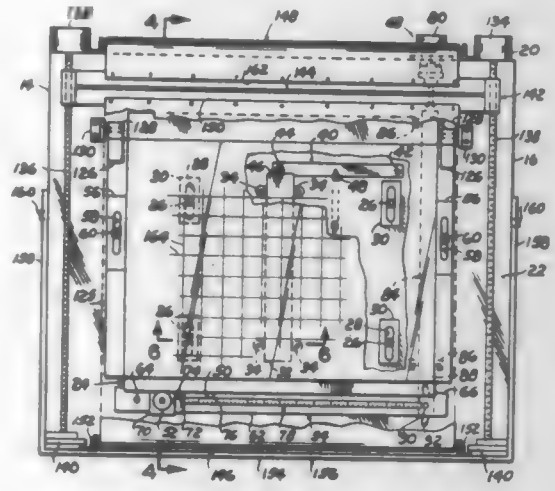
transparent carriage means overlying said top for supporting a photographic film having an image thereon;

platen means interposed between said top and said carriage means for supporting a photosensitive sheet in printing contact with the photographic film;

means mounting said platen means on said top for to and fro retilinear movement and normally biasing said platen means in one direction;

manually adjustable calibration bar means contacting and movable with said platen means for limiting movement thereof to a predetermined film image dimension;

light impervious mask means including an elongated sheet overlying said carriage means in the direction of platen movement and having a photo-light passing slit extending transversely of the direction of platen means travel for the passing of film exposure light therethrough;



roller means at respective end portions of said sheet for winding up and paying out respective end portions of said sheet in response to movement of the mask slit;

yoke means journalling one said roller means for vertical pivoting movement of one end portion of said sheet toward and away from said carriage means; and,

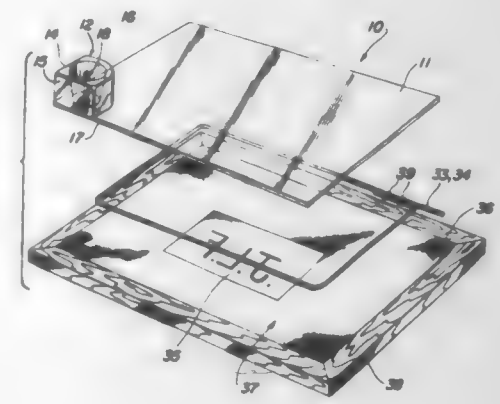
motor driven means for simultaneously moving said mask slit and said calibration bar means in the same or opposite direction along the platen means travel path.

4,607,953

VACUUM EXPOSURE REGISTRY APPARATUS

Jimmy L. Farris, 2394 N. Waterbury, Orange, Calif. 92665

Filed Aug. 6, 1985, Ser. No. 762,927
Int. Cl.[4] G03B *27/20*
U.S. Cl. 355—91 14 Claims



1. An apparatus for holding a thin, image-bearing sheet in intimate contact with a flat photo-sensitized surface for registering said image on said surface when both are exposed to light comprising:

(a) A rigid, transparent plate, having a flat lower surface and a generally parallel upper surface,

(b) an air conduit having an upper opening and a lower opening passing through said upper and lower surfaces of said plate, and

(c) a flexible elastomeric tube adjustably joinable at opposite ends of said tube to form a closed loop of desired size and shape, whereby placing said loop around said image-bearing sheet lying on said photo-sensitized surface, and placing said plate down upon the upper surface of saio loop with said lower conduit opening within the perimeter of

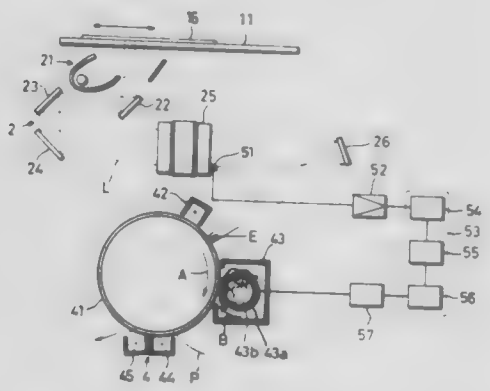
said loop forms an air-tight region lying within said perimeter boundary of said loop and between said lower surface of said plate and said upper surface of said photo-sensitized surface, thereby permitting said air-tight region to be evacuated by means of a vacuum source communicating with said upper conduit opening.

4,607,954

AUTOMATIC DEVELOPING BIAS CONTROL DEVICE

Haruya Osaka, Osaka; Hiroshi Kimura, Habikino; Masahiko Hisajima, Osaka; Yutaka Shigemura, Takarazuka; Seiji Kaminaga, Matsudo; Shinobu Satonaka, Toyonaka, and Mitsuya Ishito, Sakai, all of Japan, assignors to Mita Kogyo Kabushiki Kaisha, Japan

Filed Feb. 23, 1984, Ser. No. 582,683
Claims priority, application Japan, Feb. 26, 1983, 58-31235
Int. Cl.[4] G03G *15/09, 21/00*
U.S. Cl. 355—14 D
4 Claims



1. An automatic developing bias control device for an electrophotographic copying machine in which a document image is directed along a path through a lens onto a phtoreceptor to form an electrostatic latent image on the photoreceptor and the electrostatic latent image is developed into a toner image by a developing device which produces a developing bias that is changed in accordance with the density of the document image, said automatic developing bias control device comprising a photoelectric converting device within the image path and adjacent the lens for detecting the document image and generating an electric signal corresponding to the density thereof; delaying means comprising a first low pass filter, a bucket brigade device, and a second low pass filter, for delaying the electric signal from the photoelectric converting device for a time associated with the time taken for the electrostatic latent image to travel from the position at which said latent image is formed to the position at which said latent image is developed by the developing device; and control means responsive to the output from the delaying means for adjusting the developing bias of the developing device to control the density of the toner image.

4,607,955

STOCK CONSISTENCY TRANSMITTER

James O. Corbett, Eustis, Fla., assignor to The Electron Machine Corporation, Umatilla, Fla.

Filed Aug. 16, 1984, Ser. No. 641,555
Int. Cl.[4] G01N *21/53*
U.S. Cl. 356—342
8 Claims

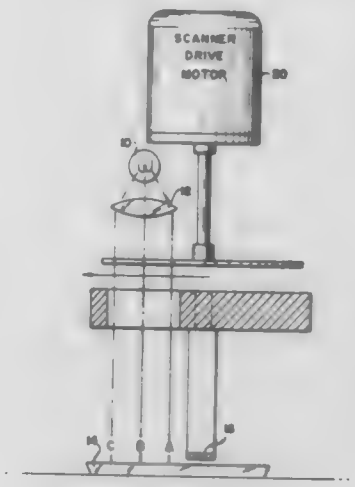
1. A method for electro-optically determining the consistency of a fibrous slurry, or other dispersed reflective suspension, the steps comprising:

a. projecting a beam of light into the slurry;

b. detecting with a photo-detector, light reflected from particles suspended in the slurry while causing cyclical repetitive relative movement between the detector and the light beam so that the electrical output of the detector is substantially a sawtooth AC voltage;

c. controlling the intensity of the light beam to hold the peak-to-peak value of said AC voltage constant;

d. converting said voltage to a square wave form, squaring at 50% of peak-to-peak value, and measuring the ratio of the time of positive to the time of negative portions of the square wave to derive a signal proportional to consistency



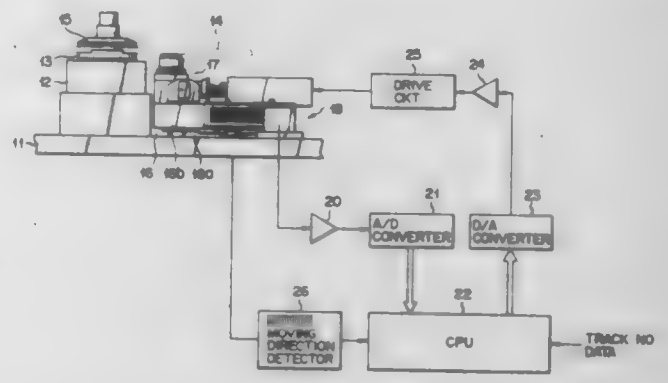
and substantially independent of brightness of, material being measured and light absorption by the liquid portion of the slurry.

4,607,956

POSITION DETECTING APPARATUS

Atsushi Ishihara, and Tomohisa Yoshimaru, both of Yokohama, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Feb. 15, 1984, Ser. No. 580,184
Claims priority, application Japan, Feb. 17, 1983, 58-22148[U]
Int. Cl.[4] G01B *11/14*
U.S. Cl. 356—375
3 Claims



1. A position detecting apparatus comprising:

an optical scale having a grid pattern, said optical scale being movable in conjunction with a moving member, said grid pattern being formed as a scale graduation and having grid segments disposed at a predetermined pitch;

scale detecting means including: a mask having an opening with a width which is substantially one-half the pitch of said grid segments and a photoelectric element being masked by said mask, said scale detecting means converting light which has passed through said optical scale and said opening of said mask to an analog signal which corresponds to the pitch of said grid segments said analog signal having a plurality of level signal components;

digitizing means for extracting selected signal components from said level signal components of said analog signal of said scale detecting means, which correspond to the pitch of said grid segments, said digitizing means converting said signal components to digital data; and

position information means for converting said digital data of said digitizing means to position information of said moving member.

4,607,957

PLANT FOR THE CONTINUOUS PREPARATION OF FLOATED FODDER

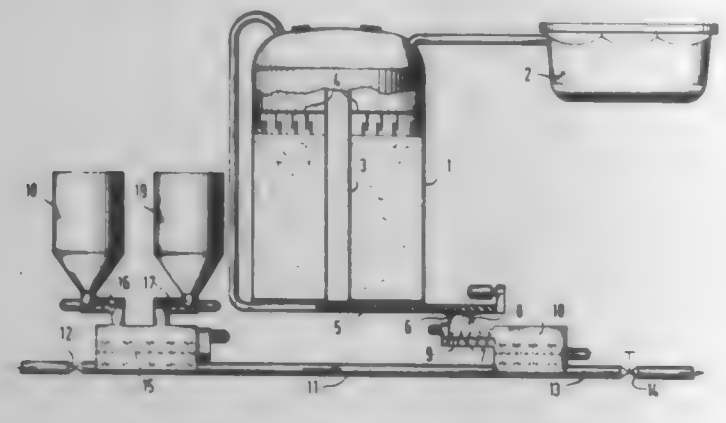
Hermann Johanning, Melle, Fed. Rep. of Germany, assignor to Engelbrecht & Lemmerbrock GmbH & Co., Melle, Fed. Rep. of Germany

Filed Jun. 20, 1983, Ser. No. 506,118

Claims priority, application Fed. Rep. of Germany, Jun. 22, 1982, 3223198

Int. Cl.[4] B01F *15/04*

U.S. Cl. 366—156 9 Claims



1. In a plant for the continuous production of fodder in aqueous suspension from humid grit and supplementary fodder components, using a gastight high-rise silo containing the humid grit and comprising a central gravity shaft having perforations to which the humid grit is fed from the top layer thereof, conveyor means for feeding the humid grit to said perforations, a transverse conveyor connected to the bottom end of said central gravity shaft for conveying outwardly the humid grit falling down to the bottom of said shaft, and a discharge pipe connected to said transverse conveyor and leading to feeding points, the improvement comprising a first metering device situated adjacent to the outlet of said transverse conveyor, a first gastight mixer, incorporating an agitating mechanism connected to said discharge pipe and coupled in gastight manner to the outlet of said transverse conveyor via said first metering device, a water supply pipe, provided with a regulator valve, connected to said first gastight mixer for supplying water thereto in controlled manner, a second mixer which is not gastight is installed in said water supply pipe for supplying supplementary fodder and nutritional components to said first gastight mixer, storage vessels for containing supplementary fodder and nutritional components to be received by the second mixer, and individual metering devices provided one for each of said storage vessels so that the second mixer receives the supplementary fodder and nutritional components from said storage vessels via the individual metering devices.

4,607,958

APPARATUS FOR STIRRING HYDROGEL PARTICLES OF WATER-SOLUBLE POLYMER

Iwao Ohshima; Takeshi Narita, both of Yokohama; Ryoji Handa, Yokosuka, and Jun Hosoda, Yokohama, all of Japan, assignors to Nitto Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

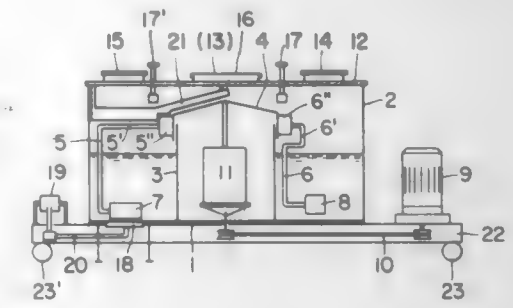
Filed Dec. 5, 1984, Ser. No. 678,451

Claims priority, application Japan, Dec. 16, 1983, 58-237697

Int. Cl.[4] B01F *15/02, 7/20*

U.S. Cl. 366—192 12 Claims

1. Apparatus for stirring hydrogen particles of a water-soluble polymer comprising a stirring tank configured as a drum having a top provided with an opening for introducing into the tank the water-soluble polymer the hydrogel particles of which are to be stirred, an inner drum in the stirring tank coaxial therewith and of a lesser diameter and of a shorter height so that it fits entirely within the stirring tank and defines an annular space between the inner wall surfaces of the stirring tank and outer wall surfaces of the inner drum, said space containing in use hydrogel particles of a water-soluble polymer introduced through said top opening to be stirred in said space, stirring means for stirring the hydrogel particles of the soluble-water polymer contents in said space comprising vertically disposed driven stirring arms each mounting a respective vane thereon for advancement by the corresponding stirring arm along a circular path in said space, one of the stirring arms being disposed vertically to travel along a circular path in the vicinity of inner wall surfaces of the tank, another of the stirring arms being disposed to travel along a circular path in the vicinity of outer wall surfaces of the inner drum, the distance between said one stirring arm and said inner wall surfaces of said tank being less than twice the diameter of said one stirring arm, the distance between said another stirring arm and said



outer wall surfaces of the inner drum being less than twice the diameter of said another stirring arm, each vane having a leading surface disposed substantially at an angle to a circular path at which it is advanced so that the hydrogel particles of the water-soluble polymer contents being stirred are urged in a direction inwardly of said space away from the inner wall surfaces of the tank by one vane and said hydrogel particles are urged in a direction inwardly of said space away from the outer wall surfaces of the inner drum by another vane, said tank having a bottom, and both vanes being disposed in the vicinity of said bottom so that said contents are urged away from said bottom during advancement of each of the vanes along a corresponding circular path.

4,607,959

VANED STIRRER FOR USE IN HIGH TEMPERATURE ATMOSPHERE

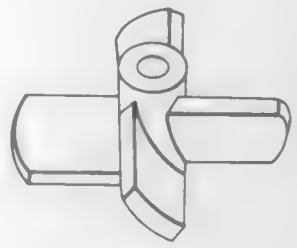
Kenji Miyazaki; Ichitaro Ogawa; Hisayoshi Yoshida; Kazuo Kobayashi; Tsuyoshi Hagio; Hidetoshi Ueno, and Shigeru Akiyama, all of Tosu, Japan, assignors to Agency of Industrial Science and Technology, Tokyo, Japan

Filed Nov. 30, 1984, Ser. No. 677,019

Claims priority, application Japan, Dec. 1, 1983, 58-228080

Int. Cl.[4] B01F *7/00*

U.S. Cl. 366—343 6 Claims



1. A heat-resistant vaned stirrer having a bending strength greater than 200 kg/cm^2 and formed from a carbon-ceramic, composite material prepared by a process comprising:

sintering carbon or graphite powder which is blended with 10–50% by volume of a ceramic powder which consists of boron carbide alone or boron carbide and at least one member selected from the group consisting of carbides, borides and oxides.

4,607,960

PERFORMING CONTACT-FREE MEASUREMENT ON A WORKPIECE

Gunther Wulff, Stein am Rhein, Switzerland, assignor to Swiss Aluminium Ltd., Chippis, Switzerland

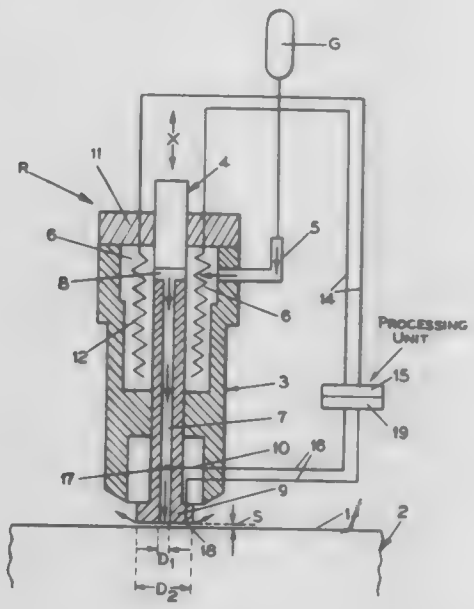
Filed Mar. 21, 1985, Ser. No. 714,640

Claims priority, application Switzerland, Mar. 26, 1984, 1504/84

Int. Cl.[4] G01K *3/02*

U.S. Cl. 374—7

6 Claims



1. A device for the contact-free measurement of the temperature of a workpiece comprising a housing having a chamber about a central axis; a measuring pin movably mounted within said chamber along the central axis thereof, said measuring pin having a base piece on one end thereof adjacent to and spaced from said workpiece and a central bore for communicating compressed gas from a source to an outlet opening provided on said base piece for impinging said compressed gas on said workpiece; and temperature sensing means located in said central bore and on said base piece for measuring the temperature at said central bore and said base piece and registering the sensed temperatures in a control facility and determining from said sensed temperatures the temperature of the workpiece.

4,607,961

HEAT FLUX METER

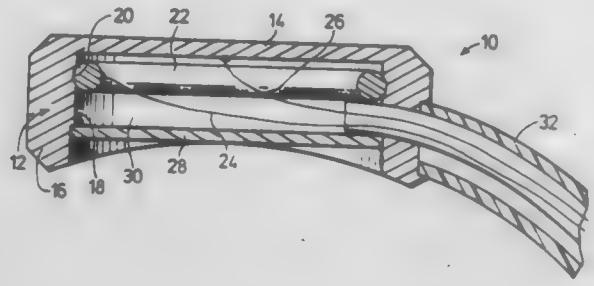
John R. Wynnyckyj, Kitchener, and Edward Rhodes, Waterloo, both of Canada, assignors to University of Waterloo, Waterloo, Canada

Filed Dec. 2, 1983, Ser. No. 557,327

Int. Cl.[4] G01K *13/00*

U.S. Cl. 374—30

15 Claims



1. A method of measuring heat flux in an atmosphere of combustion gases in an enclosed space, which comprises:

exposing a surface of a thermoconductive material to said heat flux and to said atmosphere of combustion gases within said enclosed space and permitting said heat flux to impinge on said surface to establish a temperature gradient between the middle of said surface and the periphery thereof,

positioning a thermoelectrically-dissimilar material adjacent the periphery of said surface to form a thermoelectric junction with said thermoconductive material, said junction being wholly out of direct exposure to said radiation heat flux and wholly out of communication with the atmosphere of combustion gases in said enclosed space to establish an e.m.f. between the middle of the surface and said thermoelectrically-dissimilar material, and

measuring said e.m.f. as a determination of said heat flux.

4,607,962

OBJECT TEMPERATURE CONTROL DEVICE

Toshiaki Nagao, Muko, and Yasuyuki Sukimoto, Yahata, both of Japan, assignors to Omron Tateisi Electronics, Co., Kyoto, Japan

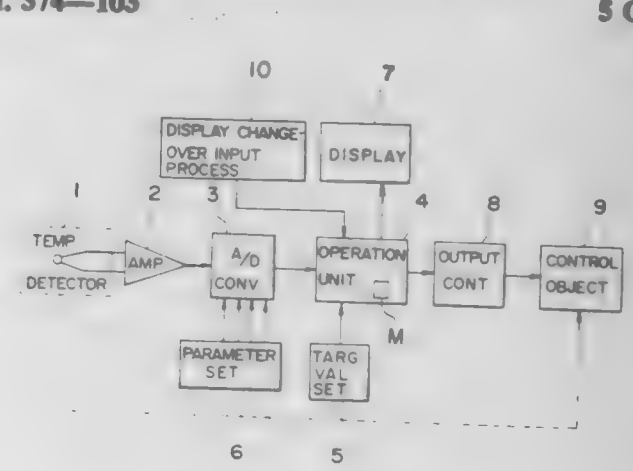
Continuation of Ser. No. 497,199, May 23, 1983, abandoned. This application Jul. 26, 1985, Ser. No. 758,852

Claims priority, application Japan, May 28, 1982, 57-91859

Int. Cl.[4] F23N *5/02;* G01K *7/00*

U.S. Cl. 374—103

5 Claims



1. In a temperature control device having means for detecting the temperature of an object whose temperature is to be controlled, a target temperature value setting means for setting a desired value of temperature for the object, an operation unit means for determining temperature sampling periods and for effecting a predetermined calculation of an on/off output ratio which is based upon the ratio of said detected object temperature to said target temperature value, and means for producing an output based upon said on/off output ratio, wherein said output is to control means to maintain the temperature of said object at substantially the set desired value, the improvement comprising:

means for generating comparative output ratio signals during each sampling period by said operative unit means, and

means for periodically comparing said on/off output ratio to said comparative output ratio signals by said operative unit means,

whereby said output for control of said temperature is turned on in the next subsequent sampling period when said output ratio is greater than said comparative output ratio.

4,607,963

MULTI-CHANNEL INFRARED THERMOMETER

Michael A. Ulrickson, East Windsor, N.J., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Mar. 8, 1983, Ser. No. 473,179

Int. Cl.[4] G01J *5/62;* G01N *21/00*

U.S. Cl. 374—131

3 Claims

1. A device for measuring the two-dimensional temperature profile of a surface comprising:

imaging optics for generating an image of light radiating from the surface, said image including an infrared radiation portion and a visible light portion;

a dichroic mirror positioned to receive said image, wherein

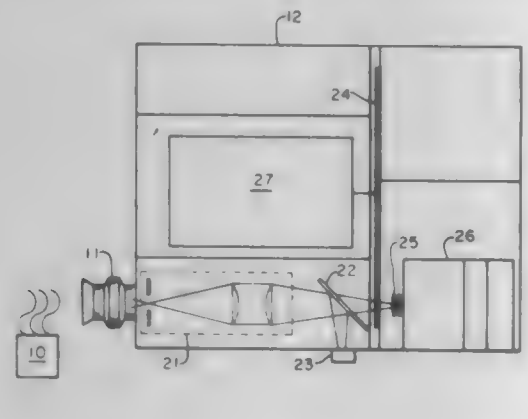
the dichroic mirror transmits the infrared radiation portion of said image and reflects the visible light portion of said image;

visible optics aiming means positioned to receive said reflected visible light portion of said image;

an optical chopper positioned to receive said transmitted infrared radiation portion of said image for modulating the intensity of said transmitted infrared image;

a selectable bandpass filter positioned to receive said modulated image;

a two dimensional infrared detector array having a plurality of detectors;



a light pipe array having one light pipe for each detector in said two dimensional detector array and positioned between said filter and said detector array wherein the light pipes of the light pipe array each simultaneously sample, transmit, and distribute a selected separate portion of said filtered image over the surface of its respective detector; and

multi-channel circuit means coupled to said two-dimensional detector array operative in response to signals generated by the detectors for providing electrical signals indicative of the two-dimensional temperature profile of the surface.

4,607,964

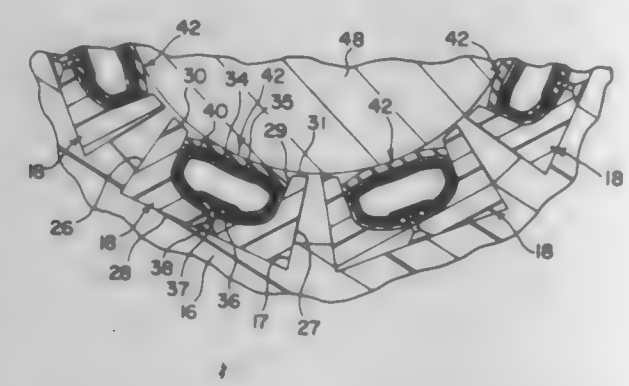
WATER LUBRICATED BEARING

James H. Kramer, Akron, and Roy L. Orndorff, Jr., Kent, both of Ohio, assignors to The B. F. Goodrich Company, Akron, Ohio

Continuation-in-part of Ser. No. 692,138, Jan. 17, 1985, abandoned. This application Dec. 2, 1985, Ser. No. 803,196

Int. Cl.⁴ F16C *17/14, 33/22*

U.S. Cl. 384—98 **15 Claims**



1. A journal bearing assembly having a rigid support sleeve with a longitudinally extending center line, a plurality of circumferentially spaced first set of bearing elements mounted in said support sleeve, said first set of bearing elements having generally flat support surfaces for supporting a shaft, at least two of said first set of bearing elements having a bearing element therein for movement radially to and from said center line to selectively support a shaft journaled thereon independently of said first set of bearing elements that contained said moveable bearing elements, said radially moveable bearing elements defining a second set of bearing elements, power means connected to said second set of bearing elements operative to selectively move said second set of bearing elements radially to and from said center line, and said first set of bearing elements having a coefficient of friction that is different from the coefficient of friction of said second set of bearing elements.

4,607,965

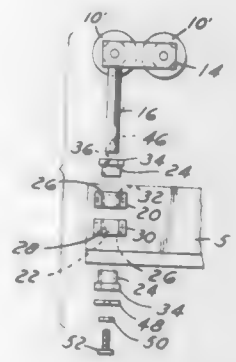
COMPOSITE BEARING WITH METAL HOUSING HAVING A BORE, WITH A TUBULAR PLASTIC INSERT THEREIN

James A. Belanger, Northville, Mich., assignor to Belanger, Inc., Northville, Mich.

Filed Mar. 8, 1985, Ser. No. 709,956

Int. Cl.⁴ F16C *33/20, 33/04*

U.S. Cl. 384—299 **14 Claims**



1. A door mounting assembly comprising:

a shaft having an upper end connected to a carriage means for supporting a door, said carriage means having at least one guide roller which is adapted to be received on a track, and a lower end having an internally threaded bore which is coaxial with said shaft;

a first metal housing having a top surface, a bottom surface, and at least one flat side surface, a first annular bore in said first metal housing extending from said top surface through said bottom surface, one end of said first bore opening into said top surface being provided with a first counterbore,

a first tubular plastic bearing insert having a flange at one end thereof, said insert being tightly received in said first bore, with said flange in said first counterbore, said tubular plastic bearing insert receiving said shaft;

a second metal housing spaced from said first metal housing and having a top surface, a bottom surface, and at least one flat side surface;

a second annular bore in said second metal housing coaxial with said first bore and extending from said top surface through said bottom surface, one end of said second bore opening into said bottom surface and being provided with a second counterbore,

a second tubular plastic bearing insert having a flange at one end thereof, said insert being tightly received in said second bore, with said flange in said second counterbore, said tubular plastic bearing insert receiving said shaft;

said lower end of said shaft extending below said second metal housing,

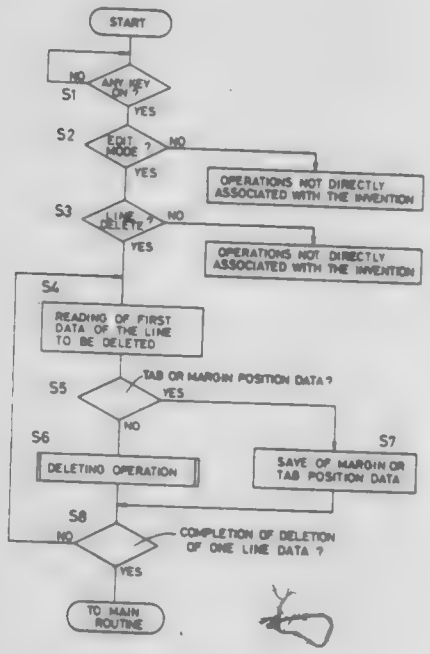
a thrust washer and a lock washer on said lower end of said shaft, with said thrust washer abutting the flange on said second plastic bearing insert, and

a threaded bolt extending through said washers into the threaded bore of said shaft.

4,607,966
ELECTRONIC TYPEWRITER EQUIPPED WITH TEXT MEMORY WHICH SAVES FORMAT DATA WHILE DELETING A LINE

Hideo Ueno; Hiroshi Kuno, and Yoshifumi Hamabe, all of Nagoya, Japan, assignors to Brother Kogyo Kabushiki Kaisha, Aichi, Japan

Filed Nov. 9, 1984, Ser. No. 670,031
Claims priority, application Japan, Nov. 18, 1983, 58-218407
Int. Cl.[4] B41J *5/30*
U.S. Cl. 400—63 6 Claims



1. An electronic typewriter comprising:

text memory means for storing printing data that are executed to print characters, said printing data comprising character data which correspond to said characters to be printed, and format data which are located between the character data to specify an arrangement of the characters to be printed, said character data and said format data being stored together in said text memory means;

line deleting means for deleting only the character data for a line stored in said text memory means;

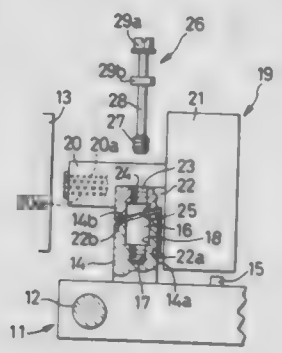
detecting means for detecting the format data in the printing data for the line to be deleted by said line deleting means; and

saving means for saving the detected format data in a predetermined position of said text memory means when the character data is deleted by said line deleting means.

4,607,967
PRINTING APPARATUS

Yoshikatsu Hirata, and Shigeo Ishikawa, both of Nagoya, Japan, assignors to Brother Kogyo Kabushiki Kaisha, Aichi, Japan

Filed Jan. 25, 1985, Ser. No. 694,815
Claims priority, application Japan, Jan. 31, 1984, 59-12922[U]
Int. Cl.[4] B41J *1/56, 1/60*
U.S. Cl. 400—175 8 Claims



1. A printing apparatus having a platen for supporting a sheet of paper, comprising:

a carriage movable along the length of said platen, and including an upward protrusion having a top surface which includes a first slant part inclined downwardly in a direction toward said platen, and a side surface on the side of said upward protrusion remote from said platen;

a print head including a mounting portion resting on said upward protrusion, said mounting portion having a bottom surface which includes a second slant part in abutting contact with said first slant part, said second slant part terminating in a downwardly extending projection at the end remote from said platen; and

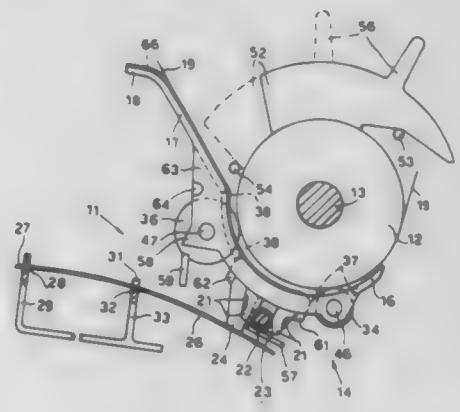
fixing means for clamping said mounting portion of said print head to said upward protrusion of said carriage substantially in the direction of height of said upward protrusion and with said slant parts engaged with each other,

the angle of inclination of said first and second slant parts when combined with clamping action of said fixing means producing a component of force sufficient to force said downwardly extending projection of said print head against said side surface of said protrusion.

4,607,968
PAPER PRESSING DEVICE FOR PRINTING MACHINES

Ugo Carena, Ivrea, Italy, assignor to Ing. C. Olivetti & C., S.p.A., Italy

Filed Feb. 23, 1984, Ser. No. 582,776
Claims priority, application Italy, Mar. 7, 1983, 67256 A/83
Int. Cl.[4] B41J *13/054*
U.S. Cl. 400—637.2 8 Claims



1. A paper pressing device for a printing machine of the type comprising:

a platen roller which defines a line of printing;

a control shaft which is disposed below, parallel and on the entire length of the platen roller and comprises a series of grooves;

loading elements;

a fixed abutment member; wherein the paper pressing device guides a sheet of paper towards the line of printing and comprises:

a modular plate member having: a lower guide portion of part cylindrical shape, a substantially planar portion which is inclined with respect to the horizontal plane and extends above the platen roller; two lateral ribs, each having two bushings; and two forks, wherein each fork is connected with a corresponding lateral rib, and is slidably guided by a corresponding groove in the control shaft and wherein the engagement of the forks with the series of grooves prevents axial movements of the modular plate member with respect to the platen roller; a frontal rotatable shaft and a rear rotatable shaft, both journaled on the bushings of the lateral ribs of said modular plate member parallel therebetween and parallel to the platen roller; and wherein said modular plate member further comprises a series of frontal pressing rollers, mounted on said frontal shaft, a series of tear pressing rollers, mounted on said rear shaft, a shoulder disposed adjacent to the rear rotatable shaft, an intermediate element disposed between the two forks and projecting from the lower guide portion, and

two longitudinal ribs connected with the two lateral ribs, the two lateral ribs, the two forks and the intermediate element;

spring means disposed below the modular plate member comprising a leaf spring having a free end and an intermediate portion, wherein the loading elements engage said intermediate portion to load the leaf spring in order to cause said free end to engage with said intermediate element to urge the modular plate member towards the platen roller parallel thereto with the frontal pressing rollers and the rear pressing rollers pressing against the outside surface of the platen roller; and

cam means mounted on the control shaft and arranged to cooperate with said free ends to disengage the free end from the intermediate element in order to cause the modular plate member to move radially away from the plate roller, and the frontal pressing rollers and the rear pressing rollers to disengage the platen roller, wherein the modular plate member moves downwardly under the force of gravity unit it is stopped by means of the shoulder against said fixed abutment member and with the bottom of the forks arrested against the outside surfaces of the grooves of the control shaft so that the modular plate member is positioned inclined with the planar portion away from the platen roller to make it easier to insert a sheet of paper.

4,607,969

PRINTER WITH SHEET FRONT LOADER

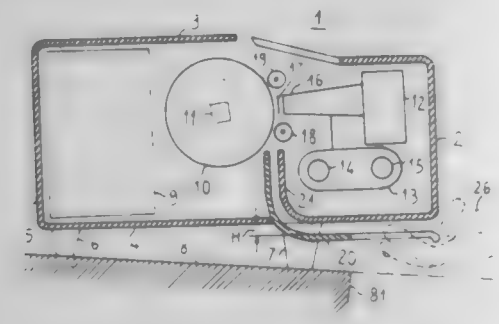
Giancarlo Collina, Cermenate, Italy, assignor to Honeywell Information Systems Italia, Milan, Italy

Filed Oct. 31, 1984, Ser. No. 666,705

Claims priority, application Italy, Nov. 23, 1983, 23834 A/83

Int. Cl.⁴ B41J *13/14*

U.S. Cl. 400—642 **3 Claims**



1. A printer with sheet front end loader, having a body with a bottom and a front end and feeding means in said body to advance a sheet on a platen, characterized in that said front end loader comprises a chute placed below the bottom of the printer body, said chute being formed by a bottom plate extending up to the body front end and having at least an opening or indentation elongated perpendicularly to the front end, said bottom of the printer body having a smooth shoe projecting from said bottom opposite to said opening or indentation in order to allow, through said opening or indentation, further manual advancement of a sheet towards a rear position of the chute, when said sheet is inserted in the chute, by exerting a pressure on said sheet, through said opening or indentation, against said shoe.

4,607,970

BINDER FOR PERFORATED SHEETS

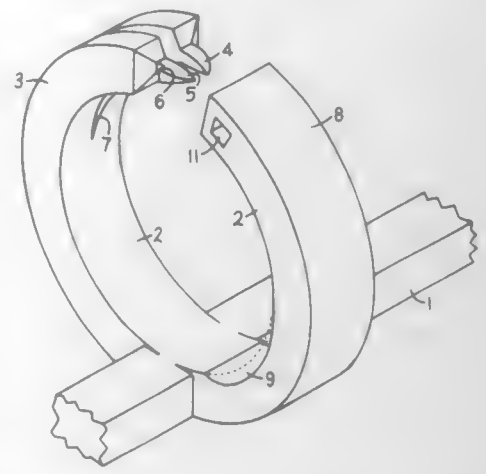
Paul Heusinkveld, 3800 N. Fairfax Dr., Apt. 1112, Arlington, Va. 22203, assignor to Ted Scudder and Paul Heusinkveld, both of Arlington, Va.

Filed Feb. 5, 1985, Ser. No. 698,445

Int. Cl.⁴ B42F *13/16, 13/02*

U.S. Cl. 402—20 **8 Claims**

1. An easily openable and closable one piece binder made of molded plastic material including a narrow elongated base member which allows bound sheets to flip over in a manner corresponding to the sheets in a spiral notebook and at least one pair of mounted plastic ring portions projecting laterally from opposite sides of said base member, said at least one pair in substantial alignment with each other, one of each said at least one pair of ring portions terminating in a pair of resilient projecting members having top, bottom and lateral sides, said projecting members being separated by an elongated slot, the other one of said at least one pair of ring portions terminating in a guide member having top, bottom and lateral sides, said guide member shaped to receive said pair of projecting members so that the outer surfaces of the rings join to form a surface which does not obstruct free movement of the sheets on the



rings, said guide member having a section extending to one side of said other ring portion and defining a laterally extending locking surface portion, one of said projecting members also having a laterally extending locking surface portion corresponding to the laterally extending surface portion in said other ring portion whereby when said two ring portions are moved toward each other, the projecting members of said one ring portion enter the guide memeber in the other ring portion and said two laterally extending surface portions are brought into releasable locking engagement, requiring squeezing the elongated slot separated members laterally in parallel to the base member for easily releasable disengagement.

4,607,971

SHAFT COUPLING

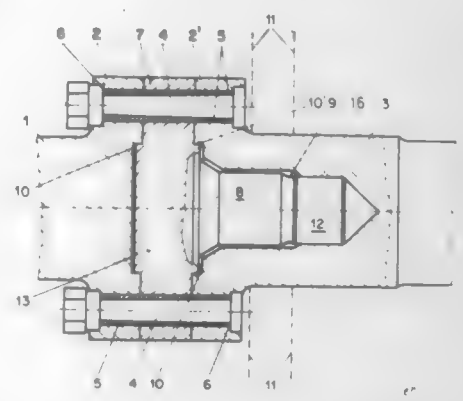
Max Hartmann, Baden, and Michel Rollier, Nussbaumen, both of Switzerland, assignors to BBC Brown, Boveri & Company, Limited, Baden, Switzerland

Filed Aug. 6, 1984, Ser. No. 637,816

Claims priority, application Switzerland, Oct. 24, 1983, 5748/83

Int. Cl.⁴ F16D *9/00*

U.S. Cl. 403—2 **14 Claims**



1. A shaft coupling arrangement comprising first and second rotatable machine shafts, a coupling flange having bolt receiving holes at an end of each shaft, coupling bolts for coupling said flanges together, said first shaft having an end portion that is structurally weakened to provide a predetermined breaking point spaced axially from said coupling flange, safety means for

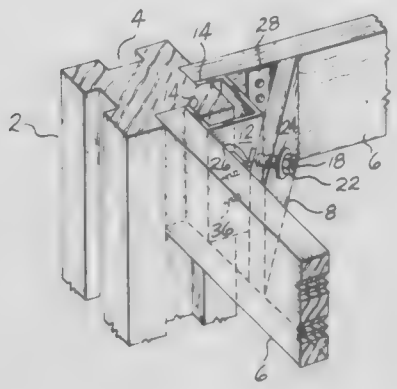
preventing deflection and fly away of the first shaft in the event said first shaft breaks at the predetermined breaking point, said safety means including a guiding element extending axially from said flange a distance greater than the predetermined breaking point.

4,607,972

DETACHABLE JOINT FOR MODULAR FURNITURE

Donald C. Hennick, 9547 Wallingford North, Seattle, Wash. 98103

Filed Mar. 19, 1984, Ser. No. 591,208
Int. Cl.[4] F16B *12/44*
U.S. Cl. 403—8 18 Claims



1. A joint for use in modular structures, such as furniture, grandstands and the like, having a generally horizontal portion, said joint comprising:

a generally vertical support member having generally vertical slot means dimensioned to receive a part of said horizontal portion;

a lock member having portions receivable into the slot means and positionable to be contiguous to said part of said horizontal portion when the joint is assembled;

a rod which extends through said horizontal portion, and which has a first end that engages the lock member and a second end that projects outwardly from a surface of said horizontal portion; and

releasable fastening means for engaging the second end of the rod to urge the lock member against interior wall portions of the slot means and pull the support member and said horizontal portion together to in turn secure the joint, said fastening means being adjustable for adjusting the tension in the rod and the tightness of the joint.

4,607,973

FASTENING ARRANGEMENT FOR RELEASABLY INTERCONNECTABLE MOUNTED AND MOUNTING MEMBERS, AND PROCESS FOR MAKING THE SAME

Rudolf Wilke, 4 Marsberger Strasse, 3548 Arolsen, Fed. Rep. of Germany

Filed Feb. 11, 1982, Ser. No. 347,881
Claims priority, application Fed. Rep. of Germany, Feb. 13, 1981, 3105217
Int. Cl.[4] B25G *3/00;* F16D *1/00*
U.S. Cl. 403—9 8 Claims

1. A fastening arrangement of releasably interconnectable mounted and mounting members, wherein

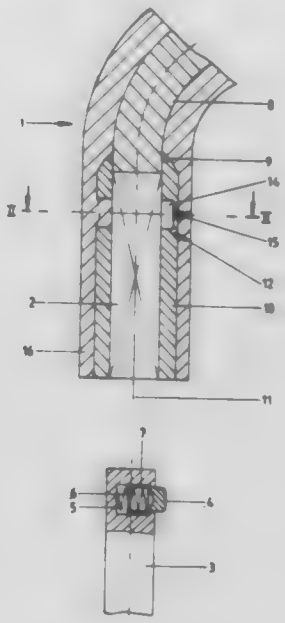
(a) said mounting and mounted members are components of a composite structure and have the form of, respectively, an underpart adapted to be affixed to a wall or like support and an upper part adapted to be secured to said underpart;

(b) said upper part having a peripheral side wall defining a receiving opening;

(c) said underpart being adapted to be accommodated substantially in its entirety within said receiving opening and carrying a plurality of transversely displaceable locking pins resiliently biased outwardly of the underpart into a projecting position;

(d) said upper part being provided within the confines of its receiving opening with a corresponding plurality of transverse bores which extend from the receiving opening to the exterior of the upper part and are located in a portion of said side wall corresponding to the location of said locking pins on said underpart for entry of the locking pins thereinto upon introduction of said underpart into said receiving opening;

(e) said transverse bores each having an inner section communicating at one end with the receiving opening, and an outer section communicating at one end with exterior of said upper part and at its other end with the other end of said inner section;



(f) said inner section of each transverse bore having a cross-section or diameter substantially corresponding to that of its respective locking pin; and

(g) said outer section of each transverse bore having a cross-section or diameter that is small relative to that of its respective inner section and provides a passage of limited noticeability for access of a thin tool into said transverse bore from the exterior of said upper part for forcing its respective locking pin from its respective inner section.

4,607,974

WAND AND WAND EXTENSION

Michael V. Brothers, and Bruce W. Schaeffer, both of Sturgis, Mich., assignors to Cooper Industries, Inc., Houston, Tex.

Filed Feb. 27, 1984, Ser. No. 583,671
Int. Cl.[4] F16D *1/00*
U.S. Cl. 403—24 7 Claims



1. A wand for adjusting window blinds, comprising:

a first wand section having means at one end for attachment to a window blind adjusting mechanism and a connection means at the other end; and

a second wand section having a connection means at one end for releasably and non-pivotably interconnecting with the connection means of the first wand section and for transmitting clockwise and counterclockwise rotation to said first wand section along the longitudinal axis thereof;

one of said connection means comprising a plurality of radial ribs, the other of said connection means comprising a plurality of fingers interengaging between said radial ribs;

said plurality of radial ribs comprises four longitudinally extending ribs connected together and projecting radially at right angles from a longitudinally extending central axis and said plurality of fingers comprises four fingers arranged at right angles and interengageable between said ribs.

4,607,975

FIXING DEVICE FOR A FISHING ROD

Kun N. Lo, No. 33, Hsiang Ho Road, Lie Lin Tzun, Tan Tzu Hsiang, Taichung Hsien, Taiwan

Filed Feb. 4, 1985, Ser. No. 697,634
Int. Cl.[4] A01K *87/02*
U.S. Cl. 403—24 **15 Claims**



1. A fixing device comprising:

a fixing piece adapted to be engaged onto an outer tube means in which an inner tube is slidably received;

a packing ring made of flexible material and fitted around said inner tube; and

a protecting ring disposed between said fixing piece and said packing ring, the protecting ring including a top wall and a side wall depending from an edge of the top wall, the top and side walls cooperating to define a chamber for receiving the packing ring, the packing ring being urged and deformed by the protecting ring in both axial and radial directions to grasp said inner tube when said fixing piece is engaged onto said outer tube means tightly so as to prevent the relative movement of said inner tube and said outer tube means.

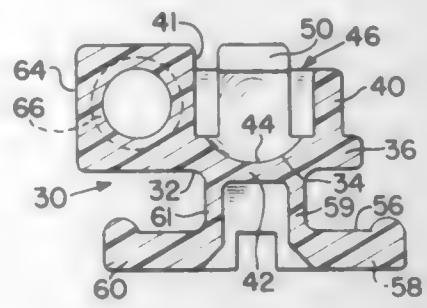
4,607,976

BALL SOCKET ASSEMBLY

Brian R. Peek, Steger, and Paul M. Satenbach, Chicago, both of Ill., assignors to Illinois Tool Works Inc., Chicago, Ill.

Filed Jun. 13, 1985, Ser. No. 744,361
Int. Cl.[4] F16C *11/00*; F16D *1/12*
U.S. Cl. 403—77 **7 Claims**

1. A ball socket assembly comprising a plastic molded housing, a ball socket integrally formed in said housing, said ball socket including a base member having spherical-shaped internal wall segment facing an opening in said housing, and a pair of resilient arm members integrally formed with said base segment and extending generally parallel to and equidstant from the axis through the center of said spherical shaped wall segment, each of said resilient arm members having a curved internal face surface which matches the curvature of said spherical-shaped wall segment and locking means for rigidly preventing outward flexing of said resilient arm members after a spherical ball has been installed into said ball socket a pedestal integrally formed downwardly from the bottom wall of said base member, said pedestal comprising a pair of oppositely extending elongate L-shaped feet for permitting said ball socket assembly to be slidingly mounted along a straight path, and an elongate rectangular block integrally formed with said plastic molded housing and having a threaded bore formed through said rectangular block in a parallel direction to said straight path.

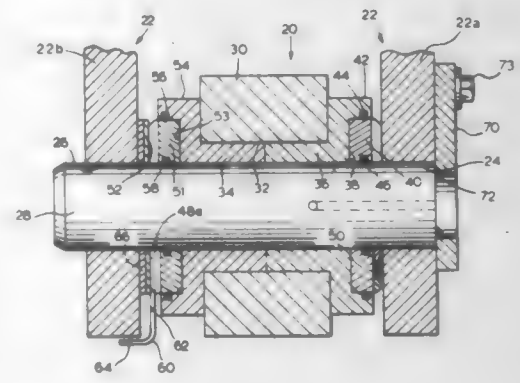


4,607,977

PIVOT JOINT

Edmund K. Varnelis, 1568 Trebor Rd., St. Joseph, Mich. 49085, and Robert L. Siewert, 1515 Moccasin Trail, Benton Harbor, Mich. 49022

Filed Aug. 5, 1985, Ser. No. 762,232
Int. Cl.[4] F16C *11/06*; F16D *1/12*
U.S. Cl. 403—154 **8 Claims**



1. A joint for connecting together two structural members of a vehicle for pivotal movement relative to each other, one of said structural members including a bifurcated portion having spaced apart parallel flanges, said flanges having coaxial openings therethrough, the other said structural member located in part between said parallel flanges and having a third opening therethrough coaxial with the other said openings, comprising,

a pin extending through all three of said openings,

a pair of bushings in said third opening and around said pin in dynamic contact with said pin,

each bushing having an axially extending shoulder portion projecting axially beyond the ends of said third opening respectively,

a pair of annular thrust plates housed within said shoulder portions respectively,

a pair of annular dynamic seals between said thrust plates and said shoulder portions respectively,

one of said thrust plates having a radially extending slot in the outer surface thereof, and

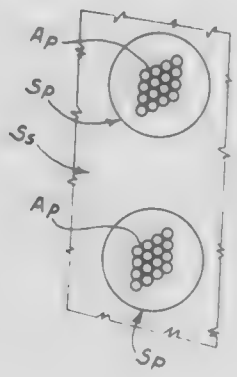
a weld bead on one flange of said first member located in said radially extending slot.

4,607,978

METHOD AND EQUIPMENT FOR IMPROVING HORIZONTAL MARKING STRIPS

Ludwig Eigenmann, P.O. Box 114, CH 6833 Vacallo, Italy

Filed Aug. 9, 1983, Ser. No. 521,731
Claims priority, application Italy, Aug. 23, 1982, 22934 A/82; Dec. 29, 1982, 25023 A/82; Jul. 6, 1983, 21961 A/83
Int. Cl.[4] E01C *23/16*
U.S. Cl. 404—73 9 Claims



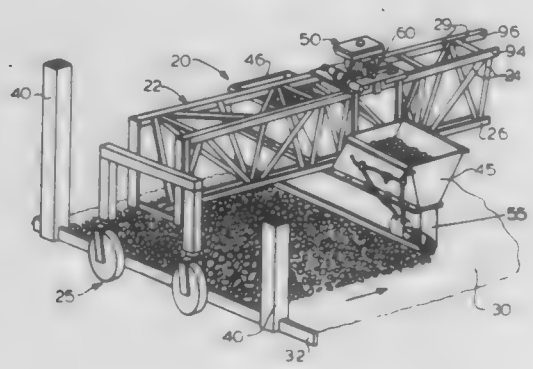
1. A method of improving horizontal road marking strips to ensure high capability of retroreflecting light and long optical service life of the horizontal road marking strips, comprising applying onto a road marking material retroreflective agglomerated platelets, each including individual retroreflective elements arranged in rows and interconnected at a distance less than the diameter of an individual element so that retro-reflective elements in a first row, exposed to the aggression of the incoming traffic, give a mechanical protection effect on the retroreflective elements in an interconnected second row, thereby insuring a longer optical life of said elements in a second row.

4,607,979

HYDRAULICALLY-POWERED ROCK SPREADER

Donald R. Morrison, 6228 Eagle Peak Dr., Charlotte, N.C. 28214

Filed Dec. 21, 1984, Ser. No. 685,244
Int. Cl.[4] E01C *19/20*
U.S. Cl. 404—110 3 Claims



1. A material spreader for spreading a uniform layer of relatively large size, hard, particulate material such as non-uniform pieces of rock over a lengthwise-extending, wet concrete or other defined surface, said spreader comprising:

(a) a bridge structure supported above and spanning the width of the concrete or other surface over which the rock is being spread and having supporting means adapting said bridge structure to be moved along the length of said surface, said bridge structure providing wheel tracking surfaces on opposite top side surfaces thereof;

(b) a support structure supported by wheels on said bridge structure and movable back and forth along an elevated path on said wheel tracking surfaces provided by said bridge structure;

(c) hopper means comprising a pair of hoppers mounted on opposite sides of said bridge structure and a dispenser box having a top portion integral with the bottoms of said hoppers and a bottom portion providing a dispensing slot, said hoppers being supported from and having open tops located below said support structure for storing material to be spread and dispensing such material through said slot as said hopper means and support structure move back and forth on said bridge structure;

(d) a gasoline engine mounted on said support structure and having a drive shaft powered by said engine;

(e) a hydraulic pump mounted on said support structure and coupled to said drive shaft;

(f) a plurality of hydraulic motors fluidly connected for being driven by pressurized fluid produced by said pump;

(g) a reservoir for storing hydraulic fluid utilized by said pump and motor;

(h) drive means on said support structure for driving said support structure on said bridge structure, said drive means including one or more of said hydraulic motors connected to drive one or more of said wheels;

(i) a dispensing cylinder extending for the length of and mounted below said slot, said dispensing cylinder having a drive connection to another of said motors for driving said dispensing cylinder to assist the flow of material through said slot during operation of said spreader, said dispensing cylinder being formed of metal and having raised spaced apart protuberances on the surface thereof providing an overall roughened surface thereon;

(j) a pair of vertically-disposed substantially flat plateformed gates extending for the length of said dispensing cylinder on opposite sides therof, said gates being mounted for pivoting outwardly and independently of each other about the upper edges thereof around horizontal axes located above said cylinder and on opposite sides of said slot;

(k) spring means attached to said gates and operative to allow each of said gates to independently pivot outwardly under spring tension when passing said material between said cylinder and a respective said gate in response to the size thereof;

(l) independently adjustable stop means supported on said dispenser box for each of said gates and adapted to limit inward pivoting of each of said gates; and

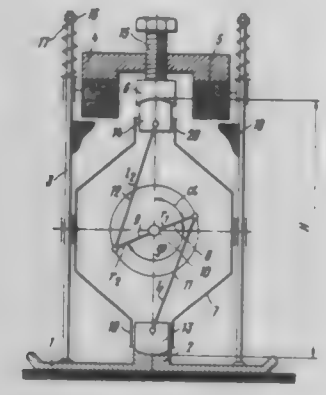
(m) control valve and conduit means including an operator-control member and conduit interconnecting said pump, motors, reservoir and valve means positioned by said control member to allow selective stopping and reversing of the direction of said motors dependent on the position of said control member whereby when said hopper means is driven in one direction on said bridge structure, said dispensing cylinder is driven in a corresponding direction and the gate on the side of said cylinder in the direction of travel of said hopper means is allowed to pivot in and out corresponding to the varying size of material being dispensed and wherein when said hopper means is moved in an opposite direction, said dispensing cylinder is driven in an opposite direction and said opposite gate is allowed to pivot in and out in correspondence with the size material being dispensed with said protuberances on said dispensing cylinder being effective to reduce the tendency of individual pieces of said material to jam between said cylinder and upper portions of said gates.

4,607,980

APPARATUS FOR COMPACTING SOIL, CONCRETE AND LIKE MATERIALS

Vladimir A. Shilkov; Andrei V. Shilkov; Petr D. Kuzmin, all of Leningrad; Vladimir S. Metrikin, Gorky; Vladimir A. Chumichev; Anatoly I. Borovtsev, both of Moscow, and Nikolai I. Dubenkov, Vladimir, all of U.S.S.R., assignors to Spetsialnoe Konstruktorskoe Bjuro "Stroimekhanizatsia", Osipenko, U.S.S.R.

Filed Dec. 6, 1984, Ser. No. 678,991
Int. Cl.[4] E01C *19/34*
U.S. Cl. 404—133 3 Claims



1. An apparatus for compacting soil, concrete, and other materials, said apparatus comprising:

a tamping shoe;

columns secured on said tamping shoe;

a reaction mass mounted on said columns and provided with hammers;

a casing mounted on said columns;

cranks fitted on a drive shaft and shifted in phase by a predetermined angle within said casing;

connecting rods coupled with said cranks;

hammer rams provided within said casing and facing upward and downward in opposite directions and moving within said casing in opposite directions under the force of said connecting rods;

at least one first anvil adapted to take up the impacts of at least one downward moving hammer ram and mounted on said tamping shoe;

second anvils adapted to take up the impacts of the hammers of the reaction mass and mounted on said columns; and

at least one third anvil adapted to take up the impacts of at least one upward moving hammer ram to move vertically and mounted on the reaction mass;

said hammer rams cooperating with said first anvil and said third anvil and being in a coaxial relationship with said first anvil and said third anvil.

4,607,981

METHOD FOR CONSTRUCTING A SCREEN THAT OBSTRUCTS THE FLOW OF SUBSOIL WATER

Peter G. van Klinken, Oudenbosch, Netherlands, assignor to Stevin Construction Inc., Dover, Del.

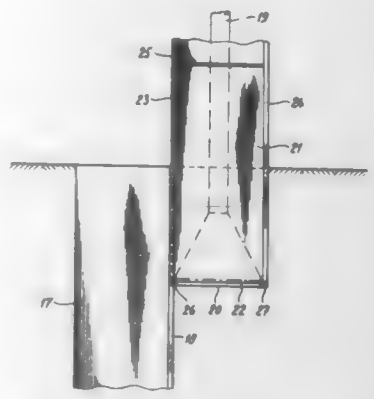
Filed Feb. 8, 1983, Ser. No. 464,960
Claims priority, application Netherlands, Feb. 8, 1982, 8200466
Int. Cl.[4] E02D *19/12*
U.S. Cl. 405—52 4 Claims

1. A method of constructing an in-soil water-retention screen comprising at least two webs of supple film material positioned with a longitudinal side edge of a first said web adjacent a longitudinal side edge of a second said web, and a first profile member positioned along said longitudinal side edge of said first web; said first profile member being designed to slide within and cooperate with a second profile member positioned along said longitudinal side edge of said second web, said cooperating profiles having cross sections which are interlocked to resist separation in the direction perpendicular to said profiles and in the plane of said webs, said profiles being sufficiently small to allow insertion of a said profile and a said web together using a flushing lance, said method comprising:

(1) providing a supply roll of web;

(2) unrolling a portion of web from said supply roll and releasably connecting said unrolled web portion to the lower end of a flushing lance comprising downwardly directed water jets and having a width substantially equal to the width of said web;

(3) connecting at least a portion of a first profile member along a longitudinal side edge of said unrolled web portion while simultaneously moving said web and said connected



profile with said flushing lance from a first level downwardly into said soil to a desired depth by flushing away soil with said water jets, thereby introducing said first web in the soil;

(4) disconnecting said first web from said lance after reaching the desired depth and raising said lance to said first level; and

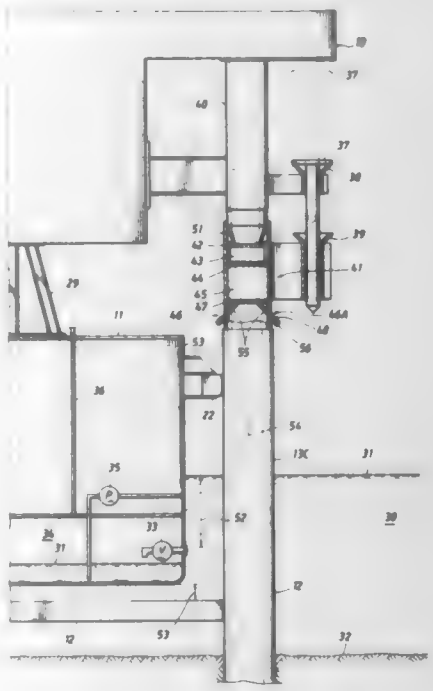
(5) repeating steps (1) to (4) with said second web to guide said second web with said second profile member attached thereto into the soil with the aid of the flushing lance, and, in so doing, guiding said second profile member into said already inserted first profile member.

4,607,982

METHOD AND APPARATUS FOR INSTALLATION OF AN OFFSHORE PLATFORM

Lee K. Brasted, Kingwood, and George L. Uppencamp, Spring, both of Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Jan. 31, 1985, Ser. No. 696,819
Int. Cl.[4] E02B *17/08;* E02D *21/00, 25/00*
U.S. Cl. 405—204 3 Claims



1. Apparatus for use in lowering and connecting the lower end of downwardly-depending legs of an offshore platform structure to the upper end of upwardly-directed leg supports of a substructure, said connection means apparatus comprising;

a leg-receiving receptacle having an open top and a chamber

defined downwardly therein formed at the upper end of a plurality of said substructure leg supports,

closure means formed at the lower end of each of said receptacle chambers,

a selected mass of a particulate material positioned in the lower portion of each receptacle chamber,

drain means connected in fluid communication with the lower portion of said receptacle chamber of a size and location to allow a selective amount of said particulate material to be drained evenly from said receptacle chamber,

valve means in said drain means to control the draining of said particulate material from said receptacle chamber, and

a selected mass of resilient material means positioned in the upper portion of each receptacle chamber and carried by said particulate material.

4,607,983

METHOD OF CONSTRUCTING AN OFFSHORE TOWER STRUCTURE

Jan Meek, Gouda; Maurice Uittenbogaard, AV Woerden, both of Netherlands, and Finn C. Michelsen, Kailua, Hi., assignors to Heerema Engineering Service BV, Leiden, Netherlands

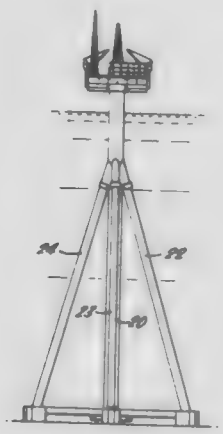
Division of Ser. No. 606,964, May 4, 1984, Pat. No. 4,557,629, which is a continuation of Ser. No. 354,710, Mar. 4, 1982, abandoned. This application Jun. 25, 1985, Ser. No. 748,593

Claims priority, application United Kingdom, Mar. 4, 1981, 8106753

Int. Cl.[4] **E02B** *17/00;* **E02D** *23/02, 25/00*

U.S. Cl. 405—204

7 Claims



1. A method of counstructing an offshore tower structure having a base structure, a central enclosed tubular column formed with a plurality of downwardly and outwardly extending projections and a plurality of legs corresponding in number to the plurality of said projections, with guide means being interposed between the column and the legs for locating the legs in position relative to said column, said method including:

positioning the base structure on the seabed;

floating the column over the base structure;

lowering the column vertically downwardly into engagement with the base structure where it is laterally restrained yet slidably connected thereto;

floating the legs over said base structure;

lowering the legs vertically downwardly onto said base structure;

connecting the lower ends of the legs to said base structure for pivotal movement relative thereto;

swinging the legs towards the column until the legs are located in position relative to said column by the guide means immediately below the column projections;

lowering the column further until the column projections abut the upper ends of the legs; and

securing the upper ends of the legs to the column projections.

4,607,984

APPARATUS AND METHOD FOR MINE APPLICATION

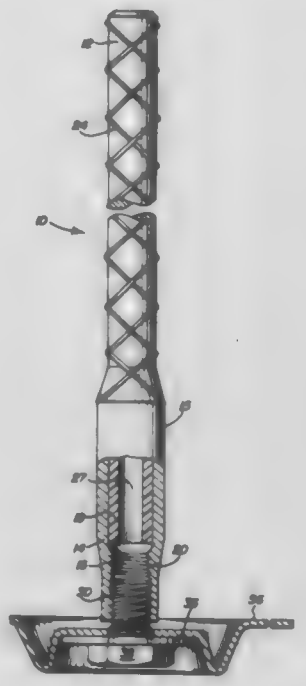
Bruce A. Cassidy, Richmond, Ohio, assignor to Republic Corporation, Century City, Calif.

Filed Sep. 25, 1984, Ser. No. 654,129

Int. Cl.[4] **E21D** *20/02, 21/00;* **F16B** *33/04*

U.S. Cl. 405—261

6 Claims



1. An apparatus for anchoring a bolt in a rock formation comprising:

an elongated reinforcing bar, having first and second ends, adapted for use in a bore hole in said rock formation;

said reinforcing bar second end defining an orifice having first and second portions, said second portion being threaded, said threads defining an inside diameter, and said first portion housing a threadable sleeve having a smooth inner surface and defining an inner aperture, said orifice and said aperture being coaxial;

an elongated bolt having first and second ends, said first end being externally threaded to engage said orifice second portion and said second end having a bolt head and a roof support plate adjacent thereto;

said bolt first end threaded into and extending through said orifice second portion and abutting said threadable sleeve thereby preventing axial movement of said bolt upon application of torque beyond a predetermined point in said orifice and causing said reinforcing bar and said bolt to rotate together; and

said threadable sleeve being tapped by said bolt threaded first end upon application to said bolt of a torque in excess of a predetermined torque, the threads of said bolt cutting away grooves in said sleeve inner surface, thereby allowing relative rotation between said bolt and said bar to permit said bolt to tap into said sleeve and said roof support plate to be drawn adjacent the rock formation, said bolt being placed under tension in said bore hole.

4,607,985

BLOCK CONSTRUCTION FOR PREVENTING OUTFLOW OF BALLASTS

Takenobu Matsushita, Tokyo, Japan, assignor to Taizo Nozawa, Tokyo and Katsumasa Machii, Hiroshima, both of, Japan, part interest to each

Continuation of Ser. No. 418,383, Sep. 15, 1982, abandoned. This application May 13, 1985, Ser. No. 733,412

Int. Cl.[4] **E02D** *29/02*

U.S. Cl. 405—284

4 Claims

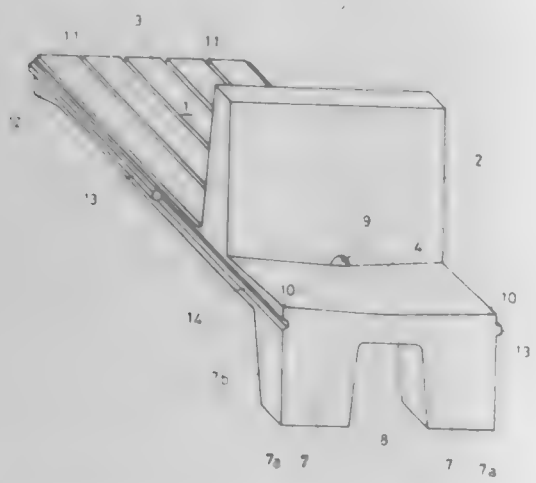
1. A block construction for preventing the outflow of ballast, comprising:

a generally horizontally extending slab body having a front

edge and a rear edge at respective laterally opposite ends thereof;

means, including a ballast-retaining wall extending longitudinally and vertically upward from said slab body at a location spaced from said front and rear edges, for retaining ballast on the laterally rearward side thereof; and

means, including a pair of spaced apart legs having horizontal flat bottom surfaces, extending downward from said rear edge of said slab for being buried in holes in a roadbed, for firmly fixing said slab relative to the ground, said ballast-retaining wall being laterally spaced from said legs



and being located closer to said rear edge than to said front edge;

said slab having a first upper surface forward of said ballast-retaining wall extending from said front edge to said ballast-retaining wall of sufficient lateral extend to provide a longitudinally extending walkway, and a second upper surface rearward of said ballast-retaining wall for supporting ballast thereon piled against said ballast-retaining wall forward of said legs;

the forwardly facing surfaces of said legs sloping rearwardly and downwardly in a single plane.

4,607,986

SHIELD SUPPORTS SUITABLE FOR USE IN MINES

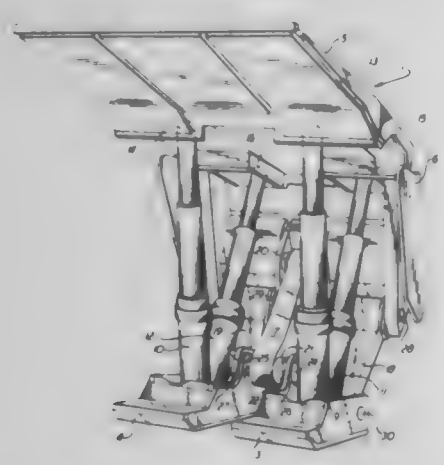
Stephen A. Brown, Cheltenham, England, assignor to Dowty Mining Equipment Limited, Tewkesbury, England

Filed Jul. 19, 1984, Ser. No. 632,542

Claims priority, application United Kingdom, Jul. 23, 1983, 8319887

Int. Cl.⁴ E21D *17/02, 19/00*

U.S. Cl. 405—296 **7 Claims**



1. A shield support, suitable for use in mines, which comprises a floor-engaging structure including two sledge elements which are disposed side-by-side and which are spaced apart one from the other, a roof-engageable canopy, a shield mounted for pivotal movement with respect to the canopy, extendable and contractible prop means carried by said sledge elements and operable to adjust the height of said canopy, and a pivotal guide linkage for supporting said shield from said sledge elements and for providing in conjunction with the shield a torsion-resistant connection between those otherwise independent said sledge elements, said linkage including three links, each of which is at one end pivotally-connected to said shield, one of said links being at its other end pivotally-connected to one of said sledge elements, another of said links being at its other end pivotally-connected to the other of said sledge elements, and the third of said links being of substantial cross-section and being at its other end directly pivotally-connected to both said sledge elements, the connection of said third of said links to both said sledge elements forming the only means directly joining those elements together.

4,607,987

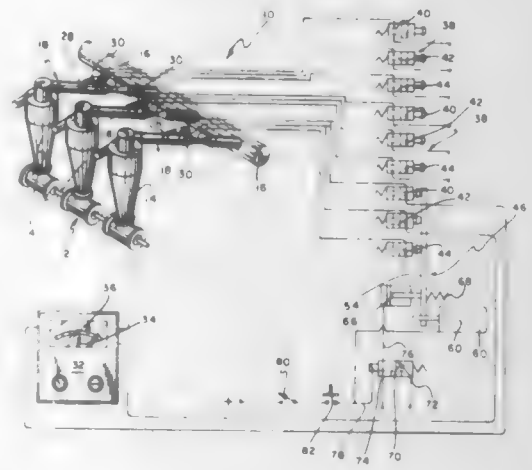
MULTIPLE LIFT PNEUMATIC CONVEYING AIR VELOCITY CONTROL APPARATUS AND METHOD FOR CONTROLLING THE PNEUMATIC VELOCITY IN A MULTIPLE LIFT PNEUMATIC CONVEYING AIR VELOCITY CONTROL APPARATUS

John E. Kice, Wichita, Kans., assignor to Kice Metal Products Co., Inc., Wichita, Kans.

Filed Nov. 26, 1984, Ser. No. 675,017

Int. Cl.⁴ B65G *53/66*

U.S. Cl. 406—14 **10 Claims**



3. A pneumatic conveying air velocity control apparatus comprising at least one pneumatic lift including at least one cyclone means, at least one manifold means, at least one pneumatic conduit intercommunicating the cyclone means with the manifold means and having a structure defining a venturi with a venturi inlet side and a venturi throat;

at least one damper means pivotally connected within said at least one pneumatic conduit on said venturi inlet side:

at least one pneumatic actuator means engaged to said damper means for opening and closing same:

a controller means:

at least one set of a first, a second and a third 2-way valve means for each of said at least one pneumatic lift;

said first 2-way valve pneumatically communicating with said pneumatic actuator, and with said controller means;

said second 2-way valve pneumatically communicating with said venturi inlet side and said controller means and said third 2-way valve pneumatically communicating with said venturi throat and said controller means, for detecting the pneumatic flow rate through said pneumatic conduit;

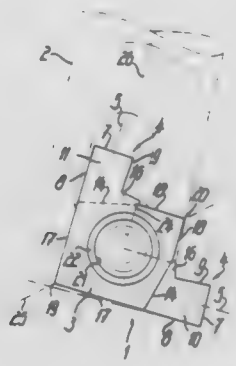
a sequencer means for mechanically engaging only one set of 2-way valve means at any given time and having a valve plate means with a structure defining an aperture, a shaft means rotatably positioned through said aperture, and a cam means bound to the end of said shaft means in order to rotate therewith.

4,607,988

REVERSIBLE CUTTING BIT

Franz Salm, Ettingen; Eduard Zängerle, Au, and Jean-Fracois Muriset, Kerzers, all of Switzerland, assignors to Herrli AG, Switzerland

Filed Dec. 5, 1984, Ser. No. 678,287
Claims priority, application Fed. Rep. of Germany, Dec. 7, 1983, 3344233
Int. Cl.[4] B23B *49/00*
U.S. Cl. 407—114 19 Claims



1. A reversible cutting bit for use in a cutting tool having a cutting bit holder with adjustment surfaces lying in three spatial planes and adapted for an identically oriented support of the cutting bit in reversed operation positions, said cutting bit comprising:

a plate-like body having parallel outer plate surfaces on opposite sides, two inside edge faces and two outside edge faces, said outside edge faces lying in planes at right angles to the outer plate surfaces and at an angle to each other,

said plate-like body having a plurality of projections protruding over said inside edge faces in the direction of said outside edge faces and positioned at an angle to each other,

each of said projections having an outside and an inside lateral surface, said outside lateral surface being an elongation of the corresponding outside edge face of said plate-like body and positioned in a plane at right angles to said outer plate surfaces of said plate-like body,

said projections having end faces, each forming a cutting edge on a corresponding side of the opposite sides of said plate-like body,

one of each of said outer plate surfaces of said outside edge faces and of said inside edge faces of said plate-like body forming bearing surfaces in the corresponding operation position of the bit.

4,607,989

MACHINE TOOL

Koichiro Kitamura, Takaoka, Japan, assignor to Kitamura Machinery Co., Ltd., Takaoka, Japan

Filed Jun. 18, 1985, Ser. No. 745,942
Claims priority, application Japan, Jun. 19, 1984, 59-90148[U]
Int. Cl.[4] B23B *31/04;* B23C *5/26*
U.S. Cl. 409—232 4 Claims

1. A machine tool comprising:

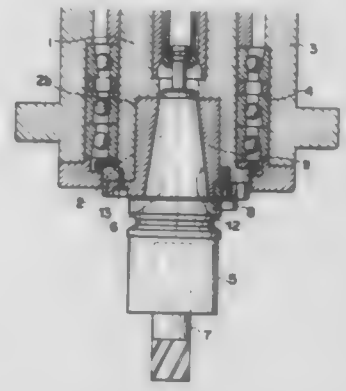
a machine tool body;

a spindle rotatably supported by the machine tool body, the spindle having at its lower end portion an opening-like supporting portion;

a ceramic sleeve detachably attached to the supporting portion of the spindle,

a tool holder having an inserting portion which is adapted to be attached into the ceramic sleeve;

a ceramic flange portion formed in one piece at a lower end of the ceramic sleeve, in such a manner that the ceramic flange portion extends radially from the ceramic sleeve along the lower portion of the spindle; and



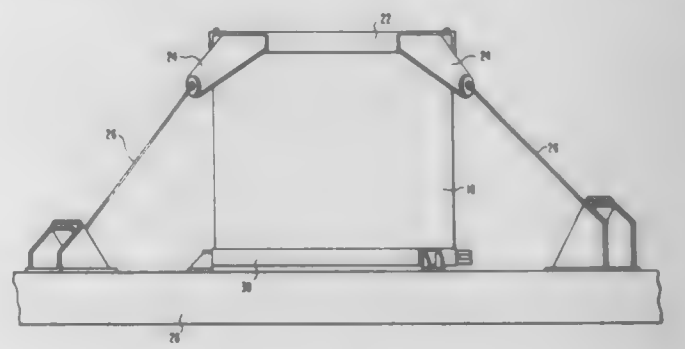
means for fixing the ceramic flange portion of the ceramic sleeve onto the lower end portion of the spindle.

4,607,990

UNIPAK TIE-DOWN SYSTEM

Alfred G. Eggers, North Strabane Township, Washington County, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Oct. 24, 1984, Ser. No. 664,449
Int. Cl.[4] B61D *3/16*
U.S. Cl. 410—2 3 Claims



1. An apparatus for holding waste material, suitable for handling, transporting, and disposal comprising:

an open cask for accepting the waste material;

a lid that mates with the open cask to close the cask;

studs fastened into the cask and passing through the lid;

means for securing the lid to the cask;

lifting lugs fastened onto the portion of the stud protruding through the lid; and

a hold-down ring with tie-down lugs for use in securing said cask during transport with said lifting lugs removed, said ring having cavities sized to accept protruding stud portions and lid securing means when placed over the lid but sized not to accept lifting lugs.

4,607,991

TIE-DOWN ANCHOR FOR TRUCK BED

David R. Porter, 827 E. Fountain, Mesa, Ariz. 85203

Filed Sep. 6, 1984, Ser. No. 647,688
Int. Cl.[4] B60R *9/00*
U.S. Cl. 410—110 3 Claims

1. A tie-down anchor for mounting in an opening in the top surface of a side wall of a truck bed comprising:

a mounting platform having a top surface,

a pair of elongated arms, one pivotally mounted at each end of said platform,

spring means mounted to extend between said arms to pivotally urge them away from each other,

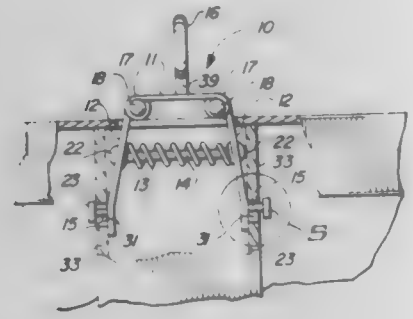
said spring means comprising a rod slidably extending between and through an opening in each of said arms, and a compression type coil spring mounted around said rod between said arms,

each end of said rod having a cap thereon for limiting the

movement of said arms away from each other under the bracing effect of said spring,

said arms being bent along their lengths so that end portions thereof extending substantially parallel to each other when the arms are in their extended positions under the influence of said spring means,

a pair of latching studs, one mounted on the end portion of each of said arms for extending through holes in the side walls of the truck bed to secure the anchor to the truck bed when the arms are extended under the influence of said spring means,



said pair of latching studs each comprising a stud extending outwardly of the outside surface of the associated arm a distance greater than the thickness of the side wall of the truck bed and having a head at the end thereof the under surface of which defines a plane surface which engages the outside surface of the side walls of the opening in the truck bed when in use, and

fastening means mounted on top surface of said platform to extend upwardly therefrom.

4,607,992

EXPANSION DOWEL ASSEMBLY WITH A SPHERICALLY SHAPED SPREADER

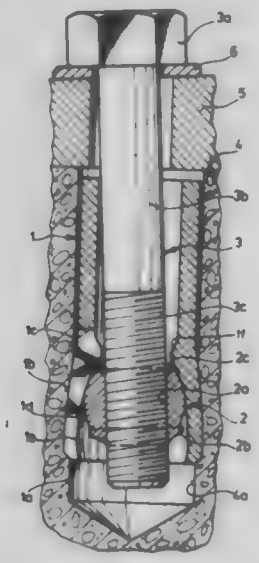
Bernd Mauritz, and Raimer Uhlig, both of Munich, Fed. Rep. of Germany, assignors to Hilti Aktiengesellschaft, Fürstentum, Liechtenstein

Filed Sep. 28, 1984, Ser. No. 656,168

Claims priority, application Fed. Rep. of Germany, Sep. 30, 1983, 3335628

Int. Cl.⁴ F16B *13/06*

U.S. Cl. 411—45 **6 Claims**



1. An expansion dowel assembly comprises an axially elongated expansion sleeve having leading end and a trailing end with the leading end inserted first into a borehole into which said dowel assembly is to to anchored, said sleeve has an expansion region extending from the leading end toward the trailing end for a part of the axial length thereof, a spreader with a tapped bore is located within said expansion sleeve in the expansion region, and a threaded bolt positionable within said expansion sleeve and threadably engageable within the tapped bore in said spreader so that by drawing said spreader through said expansion sleeve toward the trailing end of said sleeve, the expansion region can be radially expanded, wherein the improvement comprises that said spreader has an exterior surface in contact with the interior of said expansion sleeve and the exterior surface of said spreader in contact with said sleeve is spherically shaped, said spreader positioned within said sleeve has a circumferential annular bulge extending outwardly from the exterior surface of said spreader with said bulge located in a plane perpendicular to the axis of said tapped bore within said spreader, and in the position of said spreader within said sleeve the end of said spreader closer to the trailing end of said sleeve is provided with a countersunk surface around said tapped bore.

4,607,993

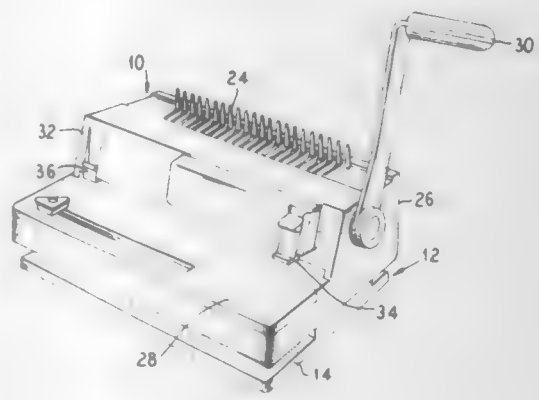
COMBINED PUNCH AND BINDING MACHINE WITH THICKNESS GAUGE AND BACK GAUGE PLATE ADJUSTMENT

Roger M. Scharer, Des Plaines, Ill., assignor to General Binding Corporation, Northbrook, Ill.

Filed Nov. 5, 1985, Ser. No. 795,077

Int. Cl.⁴ B42B *5/10;* **B26D** *5/08*

U.S. Cl. 412—40 **4 Claims**



1. A punch and binding machine which includes:

a frame;

means carried by said frame defining a plurality of punch receiving die openings;

a punch mechanism carried on said frame and including an adjustable back gauge plate for engaging an edge of material to be punched, said plate positioned rearwardly of said die openings, and said plate having a forwardly extending slide means for adjusting said plate relative to said die openings, and adjustment indicia carried on said slide;

cover means for covering said punch mechanism through which said adjustment slide extends and for alignment with said indicia on said slide; and

thickness gauge means carried on said cover for measuring the thickness of material to be punched and having indicia for indicating the measured thickness;

said thickness indicia on the gauge correlated to the adjustment indicia on the adjustment slide member so that the position of the back gauge plate is set relative to the measured thickness of material to be punched.

4,607,994

TRANSPORT ARRANGEMENT ESPECIALLY FOR LINING MATERIAL

Paul Jacobsson, Skärholmen, Sweden, assignor to Tellus Maskin AB, Vallentuna, Sweden

Filed May 9, 1983, Ser. No. 492,960

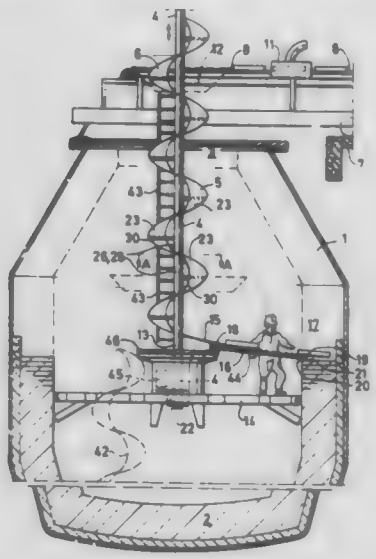
Claims priority, application Sweden, May 17, 1982, 8203095; Apr. 8, 1983, 8301965

Int. Cl.⁴ E04G *21/14;* **F27D** *1/16*

U.S. Cl. 414—10 **16 Claims**

1. An arrangement for the transport of lining materials, for example, shaped bricks and the like, for the lining of the inte-

rior walls of ladles, converters, blast furnaces or the like where the transport of the materials is intended to take place between a supply place, usually located outside the converter or corresponding apparatus, and a consumption place, for example, a bricklaying station adjacent an inner wall in the converter or corresponding apparatus, comprising: a vertically adjustable carrying device and a conveying device for substantially vertical transport of material transferred to the conveying device, and means for advancing to the consumption place material, which was transported down by said conveying device, and a work platform supported at least in part by said carrying device for vertical movement therewith, characterized in that said conveying device consists of a substantially helically shaped slither plate path (5) which is a chute, a slide or corresponding device, in itself substantially known per se, along which material supplied at an upper portion (6) of said path (5)



is intended to slide, said helical path (5) being vertically adjustable along and, rotatable about a substantially vertical axis, preferably about a vertically arranged lance (4) or corresponding means constituting said carrying device, so that a lower portion of the path (5) located at a suitable height above the work platform (14), from which portion material is intended to be transferred to the consumption place (17), can be caused to assume an optional position in the circumferential direction of the converter (1) or corresponding apparatus, said means for advancing material to the consumption place (17) consisting of an end portion (15) of the path (5) and a transfer way (16), for example a roller way (16), which is connected to said end portion (15) and attached to said path (5), preferably at said end portion, for vertical and rotational movement therewith, and which extends between said end portion (15) and the consumption place (17).

4,607,995

STACKING AND COLLECTING APPARATUS

William D. Hodges, London, England, assignor to Machines Chambon S.A., Orleans, France

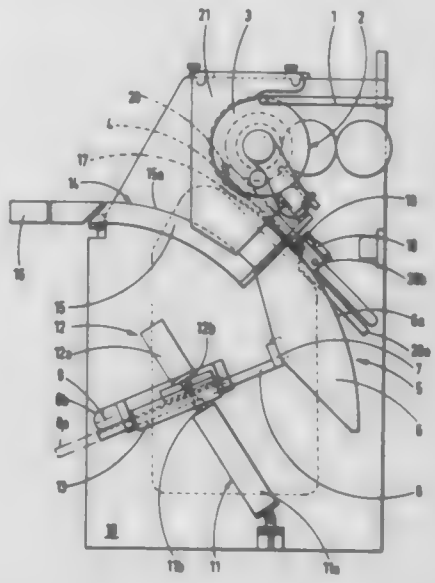
Filed Jun. 11, 1985, Ser. No. 743,725

Claims priority, application United Kingdom, Jun. 15, 1984, 8415359

Int. Cl.[4] B65H *31/30, 31/32*

U.S. Cl. 414—46 **25 Claims**

1. Apparatus for stacking and collecting labels, the apparatus comprising feed means for continuously feeding at least one stream of individual labels, a movable support assembly for supporting at least one stack of labels corresponding to said at least one stream fed thereto by the feed means, and a fixed support assembly for receiving said at least one stack of labels from the movable support assembly, the movable support assembly being movable relative to the fixed support assembly firstly to transfer said at least one stack of labels to the fixed support assembly, and secondly to push said at least one stack of labels off the fixed support assembly, wherein an intermediate support assembly is provided for supporting labels whilst



the movable support assembly pushes said at least one stack off the fixed support assembly.

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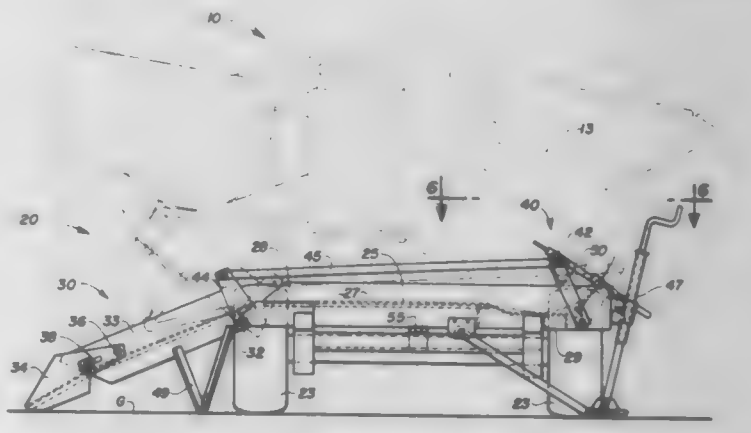
LATERAL TRANSPORT TRAILER

Earl E. Koch, Mohnton, Pa., assignor to New Holland Inc., New Holland, Pa.

Filed Dec. 24, 1984, Ser. No. 685,629

Int. Cl.[4] B65G *67/02*

U.S. Cl. 414—537 **4 Claims**



1. A trailer for transporting a wheeled harvester comprising:

a wheeled frame for mobile movement of said trailer over the ground along a direction of travel;

a platform supported by said frame at a position elevated above the ground;

ramp means pivotally connected to said platform and movable in a plane substantially perpendicular to said direction of travel between a ground engaging position and an elevated position, said ramp means permitting said wheeled harvester to be transported from the ground to said platform when in said ground engaging position, said ramp means including a pair of ramp members pivotally connected to said platform and movable in corresponding planes perpendicular to said direction of travel, each said ramp member supporting a corresponding wheel of said wheeled harvester; and

elevating means supported on said platform and connected with said ramp means to be engageable with said wheeled harvester to cause a movement of said ramp means from said ground engaging position to said elevated position when said wheeled harvester has been elevated onto said platform, said elevating means including an engaging member pivotally mounted on said platform and positioned to be engageable with the harvester to effect pivotal movement thereof, said elevating means further including a connecting link interconnecting said engaging

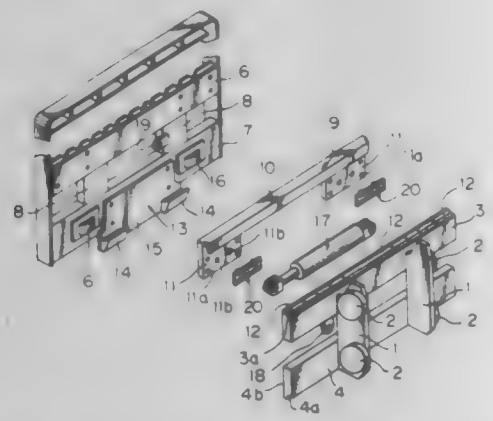
member and said ramp members to transfer pivotal movement from said engaging member to said ramp members to raise said ramp members from said ground engaging position to said elevated position.

4,607,997

SIDE SHIFTING ATTACHMENT FOR FORK LIFT TRUCKS

Masakazu Asano, Ohbu, Japan, assignor to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Aichi, Japan

Filed Aug. 29, 1984, Ser. No. 645,616
Claims priority, application Japan, Sep. 2, 1983, 58-137205[U]
Int. Cl.[4] B66F *9/14*
U.S. Cl. 414—667 **4 Claims**



1. In a fork lift truck having a lift bracket movable up and down on upright masts, and a pair of upper and lower finger bars extending transversely and attached to upper and lower spaced positions of the lift bracket, respectively, a side shifting attachment secured to the upper and lower finger bars for shiftably supporting thereon fork tines comprising: a transversely extending upper fork bar engageable with an upper end of said fork tines; a transversely extending lower fork bar vertically spaced from said upper fork bar and engageable with a lower end of said fork tines; upper shift bar means fixed to said upper fork bar and transversely slidably engaged with said upper finger bar via a transverse liner, said upper shift bar means including a plurality of mounting holes; a lower shift bar means fixed to said lower fork bar and transversely slidably engaged with said lower fork bar; a shift actuator arranged in front of said upper and lower finger bars for producing a transverse shift of said upper and lower fork bars along said upper and lower finger bars; slide guide means arranged between said lower fork bar and said lower finger bar for sliding said lower fork bar during the transverse shift of said upper and lower fork bars, and; slide pad means arranged between said upper fork bar and said upper finger bar for smoothly moving said upper fork bar during the transverse shift of said upper and lower fork bars, said slide pad means including a pair of transversely spaced slide plate members attached to said upper shift bar means and each having a plain face, respectively, in contact with a plain surface of said upper finger bar, and at least one mounting pin provided on a rear face of each slide plate member for removably securing said slide plate members in corresponding mounting holes of said upper shift bar means in a loose mounting arrangement.

4,607,998

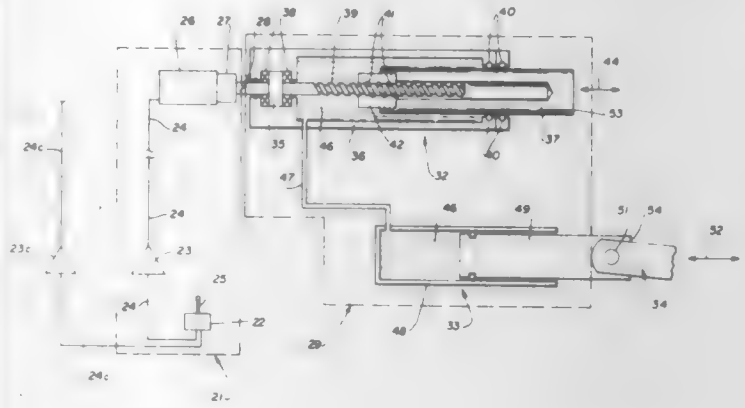
ELECTROMECHANICAL MANIPULATOR ASSEMBLY

Graham S. Hawkes, Oakland, Calif., assignor to Deep Ocean Engineering Incorporated, Oakland, Calif.

Filed Feb. 15, 1983, Ser. No. 466,606
Int. Cl.[4] B25J *13/00*
U.S. Cl. 414—735 **16 Claims**

1. An electromechanical manipulator assembly including electrically powered input means coupled by hydraulic circuit means to mechanical manipulator means, wherein the improvement in said manipulator assembly is comprised of:

said hydraulic circuit means including a master piston-cylinder assembly connected to said input means for receipt of input therefrom and directly hydraulically coupled by a fixed-volume, closed hydraulic circuit to a slave piston-cylinder assembly for direct and proportional displacement of said slave piston-cylinder assembly in response to displacement of said master piston-cylinder assembly, said slave piston-cylinder assembly includes an ambient pressure surface exposed to ambient fluid pressure of a fluid



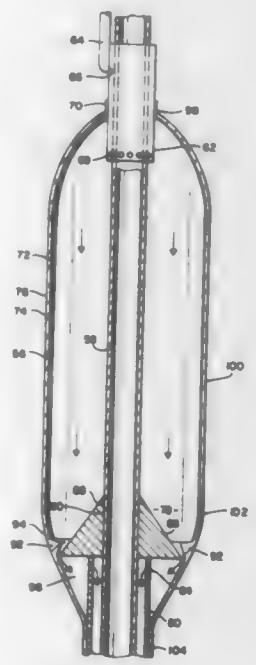
when said slave piston-cylinder assembly is submerged in the fluid to thereby pressurize hydraulic fluid in said closed hydraulic circuit in response to ambient fluid pressure against said surface to bias said slave piston-cylinder for slaved displacement in response to displacement of said master piston-cylinder assembly, and said slave piston-cylinder assembly being coupled to said manipulator means for displacement of a portion thereof.

4,607,999

DE-WATERING PUMP

William C. Lane, Star Route Box 750, Aberdeen, Wash. 98520

Filed Jun. 14, 1982, Ser. No. 387,769
Int. Cl.[4] F04F *1/06, 3/00*
U.S. Cl. 417—118 **2 Claims**



1. A pump for the driving of liquid from a hole comprising:

A line;

An expandable sack surrounding said line;

A means of introducing air pressure into said expandable sack;

A conical member with a bore therethrough, said bore being of the same diameter as the diameter of said line, and said conical member positioned at a point within the expandable sack;

A hollow cylinder affixed to the bottom of said cone and of slightly larger diameter than the line, said hollow cylinder

having ports therethrough and said hollow cylinder securely being affixed to the bottom of said expandable sack;

A means of preventing air pressure flow through the ports of the hollow cylinder until the expandable sack has expanded to meet the contour of the inner walls of the hole from which liquid is being pumped.

4,608,000

AIR PUMP

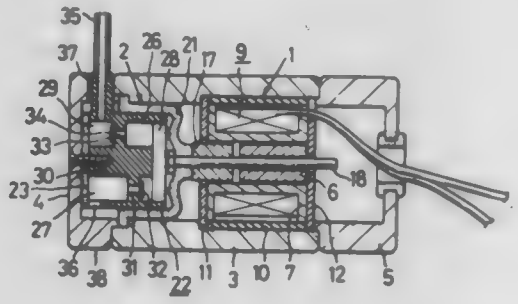
Kazutoshi Tominaga, Higashi Osakashi, Japan, assignor to Kabushiki Kaisha Tominaga Jyushikogyosho, Higashi Osakashi, Japan

Filed Dec. 7, 1984, Ser. No. 679,309

Claims priority, application Japan, Dec. 29, 1983, 58-248321

Int. Cl.⁴ F04B *17/04*

U.S. Cl. 417—413 **7 Claims**



1. An airpump for a household aquarium, said airpump comprising:

(a) an electromagnet including a stationary inner iron core having an axial bore therethrough, a coil surrounding said stationary inner iron core, an outer iron core surrounding said coil and a pair of end iron cores disposed in contacting relationship with and at opposite ends of said outer iron core, said end iron cores having centrally located apertures therein axially aligned with the bore of said inner iron core and said inner iron core being in contact with a first one of said end iron cores;

(b) a bellows unit including a diaphragm attached at its center to a permanent magnet, said permanent magnet having extending axially therefrom a rod which passes through the openings in said end iron cores and which is movably received in the axial bore of said stationary inner iron core so that said permanent magnet is positioned adjacent to the second one of said end iron cores;

(c) a pump unit having a suction check valve and a discharge check valve, said pump unit being operatively connected to said diaphragm in an axial arrangement therewith, said air pump being activated as said permanent magnet is vibrated in an axial direction without contacting said electromagnet, said vibration being effected by alternating magnetic polar changes occurring in said inner iron core and said second one of said end iron cores; and

(d) a casing for housing said electromagnet, said diaphragm and said pump unit.

4,608,001

SCROLL TYPE FLUID MACHINE WITH ANGULAR ADJUSTMENT MEANS

Tamio Sugimoto; Yoshimitsu Fukazawa, and Kunio Yamaguchi, all of Biwajima, Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Japan

Filed Mar. 18, 1985, Ser. No. 713,192

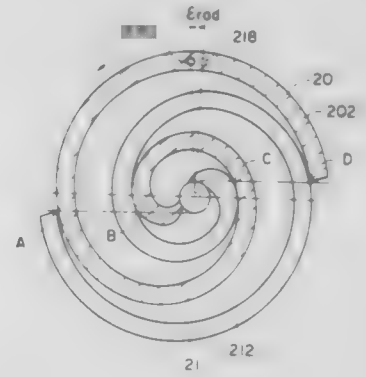
Claims priority, application Japan, Mar. 21, 1984, 59-52276; Aug. 28, 1984, 59-129322[U]

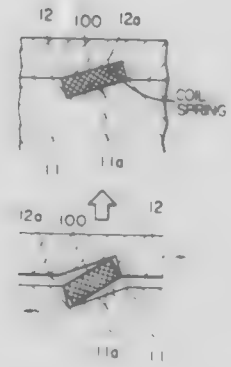
Int. Cl.⁴ F01C *1/04, 19/00, 21/00;* **B23P** *15/00*

U.S. Cl. 418—55 **6 Claims**

1. A scroll type fluid machine wherein there are engaged stator scroll means and rotary scroll means in intermeshing relationship with each other, each having a lateral plate surface, a scroll blade portion projecting in the axial direction from the lateral plate surface in such a manner that said rotary scroll means may move in solar revolving motion with respect to said stator scroll means, a cup-like member fixed to and covering said stator scroll means, a front end plate fixed to said cup-like member, a main shaft journalled on said front end plate and engaged with said rotary scroll means to move it in solar revolving motion, a rotation blocking mechanism for restricting the rotary motion of said rotary scroll means and incorporated between said rotary scroll means and said front end plate, so that fluid may operatively be sucked into and delivered out of the fluid machine with a differential pressure produced therein in continued variation, characterized in that, in order to shift the angular phase relationship between said rotary scroll means and said stator scroll means in the direction of rotation of said rotary scroll means by a selected angle from initial contact of the scroll blade portions to be determined by initial wear of said scroll blade portions of said rotary and stator scroll means, indexing holes shifted for said selected angle are provided in said stator and rotary scroll means, and alignment means for securing said front end plate and cup-like member together with alignment of said indexing holes.

3. A scroll type fluid machine wherein there are engaged stator scroll means and rotary scroll means in intermeshing



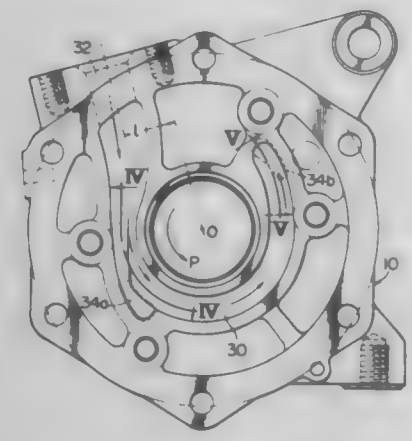


relationship with each other, each having a lateral plate surface, a scroll blade portion projecting in the axial direction from the lateral plate surface in such a manner that said rotary scroll means may move in solar revolving motion with respect to said stator scroll means, a cup-like member fixed to and covering said stator scroll means, a front end plate fixed to said cup-like member, a main shaft journalled on said front end plate and engaged with said rotary scroll means to move it in solar revolving motion, a rotation blocking mechanism for restricting the rotary motion of said rotary scroll means and incorporated between said rotary scroll means and said front end plate, so that fluid may operatively be sucked into and delivered out of the fluid machine with a differential pressure produced therein in continued variation, characterized in that opposed surfaces of said front end plate and said cup-like member of the scroll type fluid machine are formed with retaining groove means so that a space is defined therebetween when installed together, resilient means inserted in said space in position to allow said front end plate to adjustably shift in rotating motion relatively with said cup-like member during assembly thereof, and that said front end plate and said cup-like member are finally secured together after an adjustment for initial wear was made accordingly therebeween.

4,608,002
ROTARY VANE COMPRESSOR WITH HOOK-LIKE SUCTION PASSAGE

Isao Hayase, and Atsuo Kishi, both of Katsuta, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 8, 1983, Ser. No. 464,944
Claims priority, application Japan, Feb. 8, 1982, 57-17520
Int. Cl.⁴ F04C *18/00*
U.S. Cl. 418—86 **4 Claims**



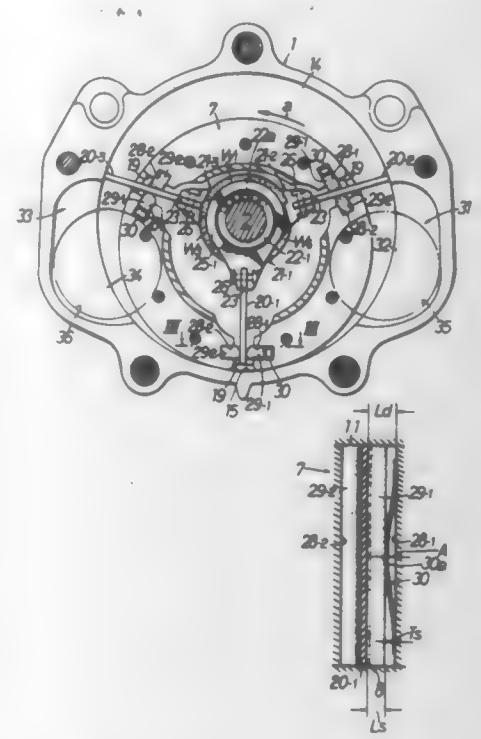
1. A movable vane type compressor comprising.
a cylindrical rotor adapted to be rotatably driven;
a cam cylinder accommodating said rotor and having an inner peripheral surface material contacting the outer peripheral surface of said rotor at a plurality of portons thereof;
a pair of side plates closing both open axial ends of said cam cylinder;
a plurality of compression chambers separated from adjacent ones by said portions of contact between the outer peripheral surface of said rotor and the inner peripheral surface of said cam cylinder and defined by said outer peripheral surface of said rotor, the inner peripheral surface of said cam cylinder and the pair of side plates;
a plurality of vanes radially movably mounted on said rotor and rotatable together with said rotor, with their outer ends held in sliding contact with said inner peripheral surface of said cam cylinder;
a side cover attached to one side of one of said side plates;
a suction passage formed in the surface of said side cover and adapted to introduce a refrigerant gas into said compression chambers; and
a plurality of suction ports each opened at one end thereof to said suction passage and opened at the other end thereof to a compression chamber;
wherein the improvement comprises that said suction passage extends in a hook-like form from one inlet end leading from the refrigerant suction hole of said compressor to the other end which is closed in a direction conforming with the direction of rotation of said rotor, and wherein the hook-like suction passage is formed to gradually decrease the cross-sectional area thereof from the inlet end towards the closed end thereof.

4,608,003
SEAL ARRANGEMENT FOR VANE TYPE AIR PUMPS

Isao Fujii, and Shin Narasaka, both of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 4, 1984, Ser. No. 657,684
Claims priority, application Japan, Oct. 12, 1983, 58-190474
Int. Cl.⁴ F04C *18/00, 27/00*
U.S. Cl. 418—137 **3 Claims**

1. A seal arrangement for a vane type pump wherein vanes extend through slots in a rotor with grooves on both inner sides of each slot and elongated sealing elements are positioned in each groove with a leaf spring in compression positioned behind one sealing element in a groove to bias that sealing element toward the vane and in turn the vane toward the other sealing element for sealing engagement by both sealing elements with the vane, the improvement comprising the pair of facing grooves at each slot having bottom surfaces spaced a distance such that the sum of the thickness of the two sealing elements, the vane and the leaf spring in the direction between said two groove bottom surfaces is less than said distance by an amount equal to or less than 0.6 mm, and wherein said leaf

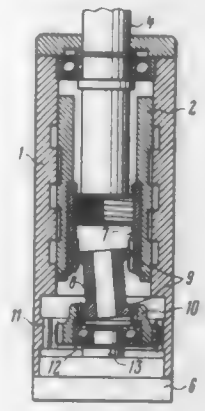


spring is of a width slightly less than said groove bottom surface to allow said leaf spring to be flattened against said groove bottom surface and is bowed in the middle to contact the sealing element with the ends flatly contacting the groove bottom surface.

4,608,004
POWER STEERING ASSEMBLY

Valery Y. Obidin; Olga A. Zueva, both of Moscow; Vladimir M. Inochkin, Volzhsk; Andrei V. Zhavoronkov; Leonid K. Voinich, both of Moscow; Jury V. Polushin, Volzhsk; Petr A. Zakhodyakin, Moskovskaya; Zinaida I. Rodionova, Moscow; Nikolai N. Judchits, Minsk; Vladimir V. Belyanin, Volzhsk; Andrei A. Yarkin; Vyacheslav N. Kalmykov, both of Moscow; Mikhail M. Ageechkin, Moskovskava, and Sergei M. Arakelyants, Moscow, all of U.S.S.R., assignors to Nauchno-Proizvodstvennoe Obiedinenie Stroitelnogo I Dorozhnogo Mashinostroenia, Moscow, U.S.S.R.

Continuation of Ser. No. 558,462, Dec. 6, 1983, abandoned. This application Nov. 6, 1985, Ser. No. 794,978
Int. Cl.⁴ F04C *2/00;* F16K *31/44;* F16D *31/02*
U.S. Cl. 418—206 **8 Claims**



1. A power steering assembly comprising: a housing of a fluid distributor having an inside bore portion; a control valve of said fluid distributor disposed inside said bore portion of said housing for axial movement therewithin without rotation, said control valve having a central bore; a steering shaft having a

threaded end provided thereon, said threaded end of said steering shaft positioned within said central bore of said control valve; a servohydraulic actuator including a satellite gear and a crown gear, said satellite gear engaged with said crown gear for planetary movement relative thereto, said satellite gear including a central bore having a bearing secured therein; a spline shaft having outer splines on the two ends thereof, one end of said spline shaft drivingly engaged with said satellite gear of said servohydraulic actuator; said steering shaft, servohydraulic actuator and control valve being kinematically interconnected for said control valve to be capable of axial displacement within said housing without rotation when said steering shaft is turned; said kinematic linkage including a sleeve having a thread engageable with said threaded end of said steering shaft, said sleeve being accommodated inside said central bore of said control valve for rotation relative thereto and being fixed relative thereto in the axial direction, one end of said sleeve being connected to said steering shaft by way of said thread and the other end of said sleeve being drivingly engaged with the other end of said spline shaft; and an eccentric shaft journalled in said bearing of said satellite gear and connected to said servohydraulic actuator.

4,608,005

CLAMPING DEVICE

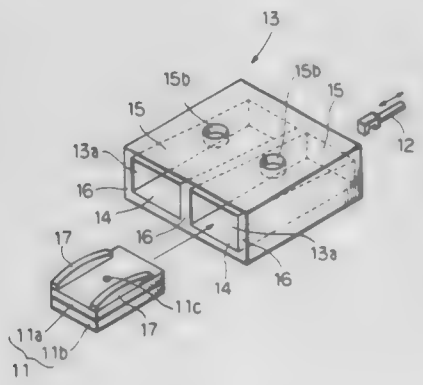
Keizo Hayashi, Nagoya, and Hitoshi Hasegawa, Ichinomiya, both of Japan, assignors to Toyoda Gosei Co., Ltd., Nishikasugaigun, Japan

Filed Oct. 25, 1984, Ser. No. 664,687

Claims priority, application Japan, Oct. 27, 1983, 58-201432

Int. Cl.⁴ B29C *45/64*

U.S. Cl. 425—192 R **3 Claims**



1. A clamping device for a mold, said mold including at least two sections which can be brought together to define a mold cavity which may be opened along a parting line defined where said sections adjoin when said sections are brought together, this parting line extending perimetrically of the mold, each of said at least two sections having an external, back surface located distally of said parting line, said back surfaces of said at least two sections being generally opposed to one another such that they face in generally axially opposite directions, with said parting line making a circuit of the mold intermediate such back surfaces,

said clamping device comprising:

base surface means arranged to have said mold supported thereon with one of said mold back surfaces in frictional engagement therewith for linear, reversible sliding movement therealong longitudinally along a path;

clamping surface means disposed in spaced but confronting relation with said base surface means, so that a clamping chamber is defined between said base surface means and said clamping surface means, said clamping chamber being aligned with and at least partially enclosing said path;

securing means for securing said clamping surface means in fixed relation to said base surface means so that in a forwards direction along said path the distance between said clamping surface means and said base surface means gradually diminishes, and in a rearwards direction along said path, gradually enlarges;

a spacer means constructed and arranged to be mounted to the other of said mold back surfaces, this spacer means including a convexly humped back surface oriented when said spacer means is in place on said mold, for frictional engagement with said clamping surface means as said mold is slid along said path on said base surface means;

said clamping surface means being held so spaced and oriented relative to said base surface means by said securing means, that:

(a) a clamping chamber entrance is formed at one end of said clamping surface means, at which entrance the distance between said clamping surface means and said base surface means is greater than the combined thickness of said mold and said spacer means, and

(b) at a site intermediate the longitudinal extent of said clamping surface means, the distance between said clamping surface means and said base surface means is at least slightly less than the combined thickness of said mold and said spacer means; and

means for urging said mold with said spacer means mounted thereto, through said clamping chamber entrance, into said clamping chamber, along said path in sliding engagement with said base surface means until said mold with said spacer means mounted thereto has reached said intermediate site, whereby said mold is held clamped-closed by said spacer means and said mold is wedged together between said base surface means and said clamping surface means, and thereafter for urging said mold with said spacer means mounted thereto along said path until said mold with said spacer means mounted thereto is no longer wedged between said base surface means and said clamping surface means.

4,608,006

TUNNEL CHEESE PRESS WITH REMOVABLE EXTERNAL PRESS CYLINDERS

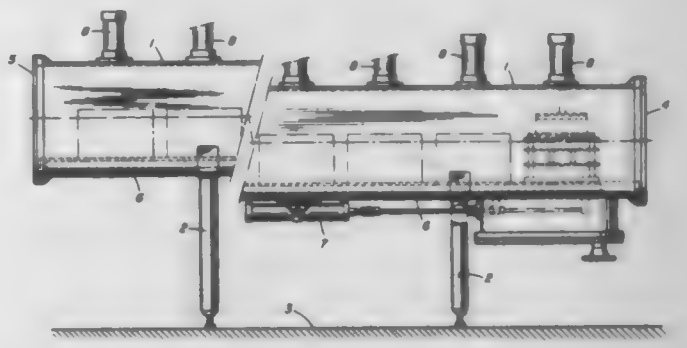
Jan Rijpkema, and Gustaaf A. Uittenbogaart, both of Sneek, Netherlands, assignors to Esmil Hubert B.V., Netherlands

Filed Apr. 12, 1984, Ser. No. 599,693

Claims priority, application Netherlands, Apr. 21, 1983, 8301401

Int. Cl.⁴ B28B *5/00*

U.S. Cl. 425—347 **2 Claims**



1. Cheese press for pressing cheese in a plurality of cheese moulds having movable covers through which pressure is applied to the cheese, the press comprising

(a) a tunnel having bounding walls providing roof, floor and sides of the tunnel defining a tunnel chamber, the bounding walls being smooth and having no internal or external reinforcing ribs, and the tunnel chamber having a mould support surface adapted to receive the cheese moulds spaced apart thereon,

(b) conveyor means for moving the cheese moulds, spaced apart from each other, intermittently over said support surface longitudinally along the tunnel chamber,

(c) a plurality of presses arranged spaced apart longitudinally along the tunnel, each press comprising an actuating

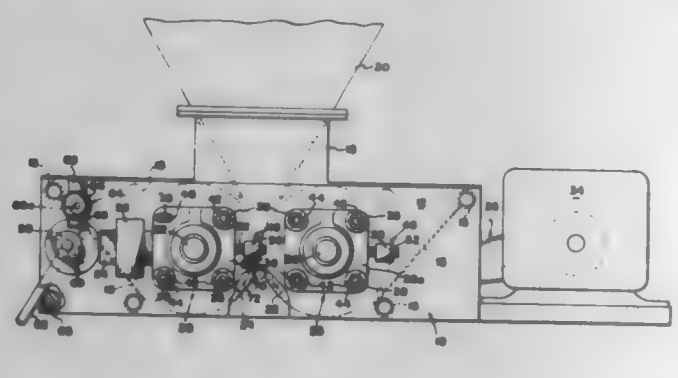
cylinder mounted on the roof of the tunnel outside the tunnel chamber and a pressing member arranged inside the tunnel chamber and actuated by said cylinder so as to engage and press down the cover of a said cheese mould located temporarily beneath the press, said actuating cylinder having a circumferentially threaded rod axially extending therefrom and an annular flange removably attached to said actuating cylinder and said roof and circumscribing said threaded rod, said pressing member having an axially extending shaft extending therefrom, said shaft having an internally threaded cavity into which said rod extending from said actuating cylinder is screwed, said shaft extending from said pressing member having a transverse hole therethrough between said pressing member and said internally threaded cavity, said hole being placed below the interior of the roof a distance greater than the thickness of the roof when the actuating cylinder and said pressing member are assembled.

4,608,007

OAT CRIMPER

Errol A. Wood, 3038 Lupine Dr., Bay City, Mich. 48706

Continuation of Ser. No. 494,352, May 13, 1983. This application Jul. 15, 1985, Ser. No. 754,657
Int. Cl.[4] A23P *1/00*
U.S. Cl. 425—363 3 Claims



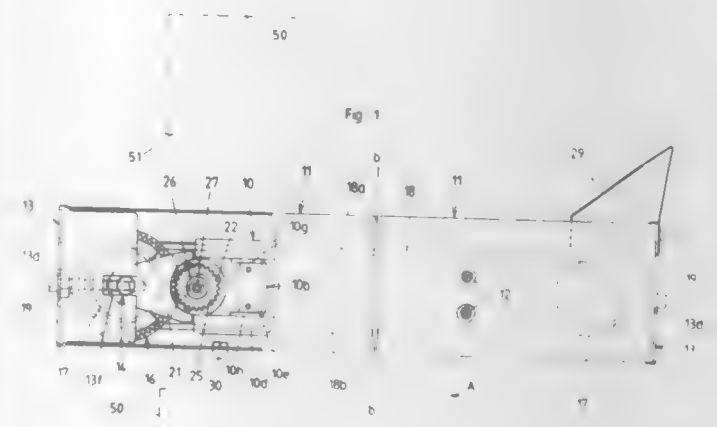
1. In a precision oat crimper for crimping oats without dehulling them, and for ancillarily cracking corn: a frame; a pair of cylindrical crimping rollers of equal diameter mounted for rotation about generally horizontally spaced parallel axes lying in a generally horizontal plane, the rollers defining a nip between said rollers, each of said rollers having a cylindrical peripheral surface that is broken by a plurality of first uniformly circumferentially spaced, axially extending linear grooves that substantially cover the peripheral surface, each groove having a uniform width of substantially 1/16th of an inch and a uniform depth of substantially 0.020 of an inch, and one of said rollers having an additional second axially extending linear groove in the peripheral surface of said one of said rollers, said second axially extending linear groove having a width of substantially $\frac{1}{8}$ of an inch and of a depth of substantially 0.015 inches; drive means for driving said rollers about their axes in counterrotation at equal peripheral speeds to feed oats or corn downwardly between said rollers; a hopper supported on said frame at a level to feed the oats or corn downwardly to the nip between the rollers; axially spaced apart pairs of bearings on said frame, said bearings rotatably supporting ends of each of said rollers, each of the bearings of one pair of bearings having a slide connection with said frame being supported for sliding movement on said frame in a direction parallel to the generally horizontal plane in which said axes lie; a rigid follower slide rigidly fixed to each side of each of the bearings of said each pair of bearings and projecting from said one side in an outboard direction away from said nip; a shaft means extending parallel to said axes and being journaled by said frame outboard of said follower slides; a pair of rigid eccentric cams on said shaft means, said cam each having an eccentric portion in direct surface to surface contact with said follower slides; and means connected with said shaft means for manually revolving said shaft means to cause the eccentric portion of each cam in contact with the follower slides to positively move said slides and positively move said one pair of bearings an increment that corresponds to each increment of movement of said eccentric portions, thereby moving one roller to a position of minimum spacing for oats from a second, more spaced, position for cracking of corn, wherein the follower slides and bearings are locked in said positions by said eccentric portions and are movable only with simultaneous rotation of said shaft means.

4,608,008

PARTS DISCHARGE CONVEYOR FOR INJECTION MOLDING MACHINE

Karl Hehl, Arthur-Hehl-Strasse 32, 7298 Lossburg 1, Fed. Rep. of Germany

Filed Mar. 8, 1985, Ser. No. 709,730
Claims priority, application Fed. Rep. of Germany, Mar. 8, 1984, 3408459; Aug. 16, 1984, 3430032
Int. Cl.[4] B29F *1/14*
U.S. Cl. 425—542 12 Claims



1. A conveyor assembly adapted for use as a parts discharge conveyor in the machine base of an injection molding machine, the conveyor assembly comprising in combination:

an elongated, generally horizontally oriented conveyor frame having a centrally located core portion formed of at least one longitudinal frame member extending in the direction of conveyance;

an endless conveyor belt looping around the core portion of the conveyor frame, the conveyor belt having an upper belt run moving above and being supported by said core portion and a lower belt run moving below said core portion;

a belt-reversing driven belt drum oriented transversely to the conveyor frame and supported by the conveyor frame in the vicinity of one of its longitudinal extremities;

a belt-reversing idling belt drum oriented parallel to the driven belt drum and supported by the conveyor frame in the vicinity of the other one of its longitudinal extremities;

a non-rotating drum shaft supporting the driven belt drum by means of bearings which are arranged in the vicinity of the axial extremities of the drum shaft, the drum shaft having its axial extremities vertically supported and horizontally guided in the conveyor frame in such a way that the drum shaft is displaceable relative to the conveyor frame in the longitudinal direction of said frame;

belt tensioning means supported by the conveyor frame and operable to forcibly displace the drum shaft in relation to the conveyor frame so as to change the longitudinal distance between the driven belt drum and the idling belt drum for belt tension adjustments;

a spur gear arranged on one extremity of the driven belt drum and rotationally connected thereto;

a drive motor having a housing and a drive shaft, the axis of the drive shaft being oriented parallel to the axis of the driven belt drum, the drive shaft carrying a drive pinion in meshing engagement with said spur gear on the driven belt drum, the drive motor being located longitudinally

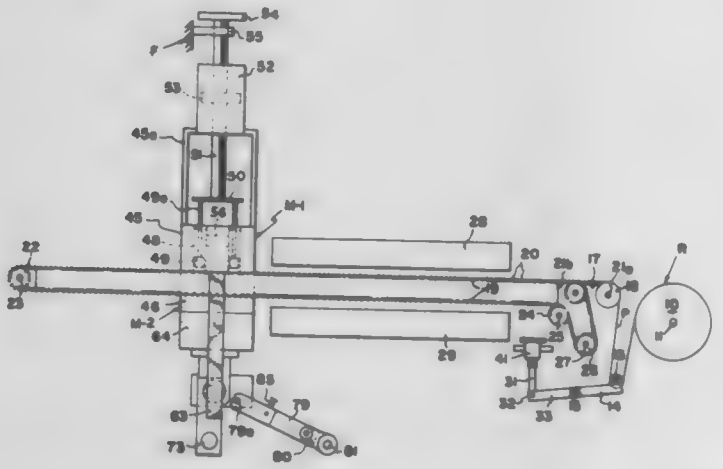
between the two belt-reversing drums and vertically between the upper and lower runs of the conveyor belt; and a supporting arm forming a bearing portion and a supporting flange on opposite ends of the arm, the bearing portion engaging the drum shaft between the spur-gear-carrying extremity of the driven belt drum and the associated extremity of the drum shaft, the supporting flange being attached to the housing of the drive motor, thereby securing the drive motor to the drum shaft.

4,608,009

THERMOFORMING EQUIPMENT FOR DIFFERENTIAL PRESSURE FORMING PRODUCTS IN THERMOPLASTIC MATERIAL

Robert C. Whiteside, Harrison, and Albert W. Arends, Gladwin, both of Mich., assignors to John Brown Inc., Beaverton, Mich.

Filed May 23, 1984, Ser. No. 613,864
Int. Cl.[4] B29C *51/36, 51/44*
U.S. Cl. 425—590 13 Claims



1. A differential pressure, thermoforming machine for molding articles in thermoplastic material comprising:
   a. a frame;
   b. a mold station incorporated in said frame, said mold station including a female mold mechanism with cavity forming means and an opposed mold mechanism;
   c. a longitudinally extending, web advancing mechanism for indexing a plastic web, in which products are to be formed, between said mold mechanisms;
   d. means for relatively moving said female and opposed mold mechanisms between mold open and mold closed positions on opposite sides of said plastic web;
   e. a roll stand upstream from said mold station for supporting a roll of the plastic web in a position aligned longitudinally with said mold station such that a supply of the web can be unwound from the roll and fed to the web advancing mechanism;
   f. heater elements disposed between the roll stand and mold station for heating the web to a moldable state;
   g. a dancer arm assembly movable in an oscillating path angularly to the longitudinal extent of said advancing mechanism and said web to pull a section of said web from the roll such as to form a loop of predetermined extent and then release it for movement in indexed increments to the mold station;
   h. means mounting said dancer arm assembly for swinging movement about a generally horizontal axis extending transversely to the web;
   i. a crank link having a first end connected to the dancer arm assembly for moving said dancer arm assembly in an oscillating path;
   j. a drive crank pivotally connected to said link oscillatable through substantially half an arc of revolution for moving said crank link through part of a revolution wherein said crank link drives said dancer arm assembly first at a gradually accelerating speed, then at increased speed, and finally at a gradually decelerating speed, when said dancer arm assembly is moved both in a direction to release the web to the advancing mechanism and then away from the web to pull a further increment of web from the roll; and
   k. drive means for moving said drive crank in correlation with said web advancing mechanism.

3. A differential pressure, thermoforming machine for molding articles in thermoplastic material comprising:
   a. a frame;
   b. a mold station incorporated in said frame, said mold station including a female mold mechanism with cavity forming means and an opposed mold mechanism;
   c. a longitudinally extending, web advancing mechanism for indexing a plastic web in which products are to be formed between said mold mmechanisms;
   d. means for relatively moving said female and said opposed mold mechanisms between open and closed positions on opposite sides of said plastic web;
   e. severing knife means around said cavity forming means cooperable with a final increment of said relative movement to dispose said mechanism in a closed position to sever the products formed from the web;
   f. said means for relatively moving said mold mechanisms including a drive gear for causing relative movement to dispose said mold mechanisms in a forming position, and a final most-closed position in which severing of the articles by said severing knife means is accomplished;
   g. a ejector pin mechanism operable after severing is accomplished and there has been relative movement of said mold mechanisms toward open position to eject the product from the cavity forming means; and
   h. pusher means connected to be operated by said relative movement of one of said mold mechanisms to push the ejected product in a direction to clear the mold station.

4. A thermoforming machine for molding articles in thermoplastic material comprising:
   a. a frame;
   b. a mold station incorporated in said frame, said mold station including a mold assembly comprising a female mold mechanism with cavity forming means, and an opposed mold mechanism;
   c. a web advancing mechanism for disposing a plastic web, in which products are to be formed, between said mold mechanisms;
   d. means for relatively moving said female and said opposed mold mechanisms between open and closed positions on opposite sides of said plastic web;
   e. said means for relatively moving said female and said opposed mold mechanisms including expandible and contractible toggle links connected between said frame and one of said mold mechanisms, and drive means incorporating a motion transfer mechanism for relatively expanding and contracting said toggle links operable to expand said toggle links and move said one mold mechanism toward the other mold mechanism to a first forming positioa, and then to expand said toggle links a final increment to move said one mold mechanism a final increment toward the other mold mechanism to a severing position;
   f. severing knife means carried by said mold assembly around said cavity forming means cooperable with said final increment of expansion to sever the products formed from the web;
   g. said motion transfer mechanism including relatively repositionable, toggle link expanding, coupled parts operative in one relative position to transfer the motion of said drive means to cause expansion of said toggle links to move said one mold mechanism to said first forming position and then to cause further expansion of said toggle links to move said one mold mechanism to said severing position; said repositionable toggle link expanding, coupled parts being operative in a second relative position to move said one mold mechanism to said first forming position and to disable the said further expansion of said toggle links necessary to reach severing position; and

h. position changing mechanism actuable for repositioning said parts between said first and second relative positions.

12. A thermoforming machine for molding articles in thermoplastic material comprising:

a. a frame;

b. a mold station incorporated in said frame, said mold station including a mold assembly comprising a female mold mechanism with cavity forming means, and an opposed mold mechanism;

c. a mechanism for disposing a plastic web, in which products are to be formed, between said mold mechanisms;

d. means for relatively moving said female and said opposed mold mechanisms between open and closed positions on opposite sides of said plastic web;

e. said means for relatively moving said female and said opposed mold mechanisms including expandible and contractible, pivotally coupled toggle links connected between said frame and one of said mold mechanisms, and drive means incorporating a motion transfer mechanism for relatively expanding and contracting said toggle links operable to expand said toggle links and move said one mold mechanism toward the other mold mechanism to a first forming position, and then to expand said toggle links a final increment to move said one mold mechanism a final increment toward the other mold mechanism to severing position;

f. severing knife means carried by said mold assembly around said cavity forming means cooperable with said final increment of expansion to sever the products formed from the web;

g. said motion transfer mechanism including a revolvable pin connecting said toggle links which includes an eccentric portion rotatably received by one of said coupled toggle links such that revolving movement of said eccentric portion in one direction causes further expansion of said toggle links, coupled with a connecting rod connected with said drive means to transfer the motion of said drive means to first cause expansion of said toggle links to move said one mold mechanism to said first forming position and then to cause further expansion of said toggle links to move said one mold mechanism to said severing position via rotation of said pin.

4,608,010

DEVICE FOR ADJUSTING THE VERTICAL POSITION OF WICK FOR OIL BURNER

Kazuharu Nakamura, Nagoya, and Yutaka Nakanishi, Kounan, both of Japan, assignors to Toyotomi Kogyo Co., Ltd., Aichi, Japan

Filed Nov. 27, 1984, Ser. No. 675,365

Claims priority, application Japan, Nov. 28, 1983, 58-183199[U]

Int. Cl.⁴ F23N *5/24*

U.S. Cl. 431—88 **8 Claims**

1. A device for adjusting the vertical position of a wick for an oil burner comprising:

a wick operating shaft rotated to vertically move said wick;

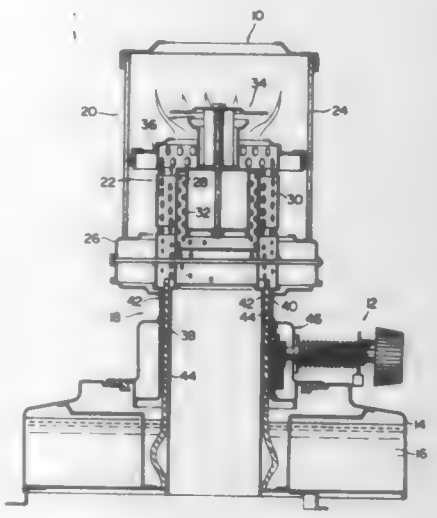
a shaft actuating means for actuating said wick operating shaft, said shaft actuating means including a knob mounted on one end of said wick operating shaft so as to be slidable on said wick operating shaft in the axial direction thereof;

a gear means loosely fitted on said wick operating shaft, said gear means having an extension means extending therefrom toward said shaft actuating means;

a return spring means interposed between said gear means and a burner body to act on said gear means, said return spring means being wound up at an ordinary state;

a stopper means adapted to be stationary at an ordinary state so that it is engaged with said gear means by force of another spring means to keep said return spring means at the wound-up state and prevent said gear means from being rotated by the force of said wound-up return spring means, and also adapted, when it is actuated, to be released from the engagement with said gear means so that said wound-up return spring means is released to rotate said wick operating shaft to lower said wick to the fire-extinguishing position;

an engagement means provided on said wick operating shaft which is adapted to pressingly engage with said extension means of said gear means to wind up said return spring means when said wick operating shaft is rotated through said shaft actuating means at the state that said return spring means is not wound up;



a forcing means for constantly forcing said shaft actuating means toward said gear means; and

a regulating means mounted on said knob to be moved together with said knob, said regulating means being adapted to be engaged with said extension means of said gear means at the minimum combustion position of said wick to stop the rotation of said shaft actuating means in the fire-extinguishing direction and released from the engagement with said extension means to allow said shaft actuating means to be rotated in the fire-extinguishing direction when it is pulled against said forcing means.

4,608,011

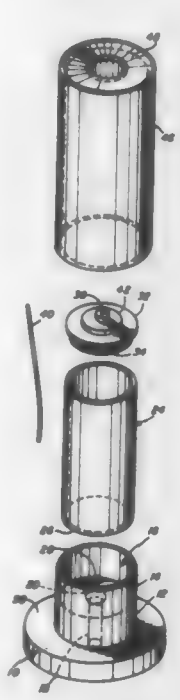
CANDLE APPARATUS

Todd M. Comstock, P.O. Box 1671, Cotuit, Mass. 02635

Filed Apr. 27, 1984, Ser. No. 604,896

Int. Cl.⁴ F23D *3/18*

U.S. Cl. 431—324 **7 Claims**



1. A candle apparatus comprising;

a base having means defining a base opening formed at least in part by a peripheral wall,

a canister for containing a liquid that is to be burned,
said canister having cap means with a passage therethrough for receiving a wick which is adapted to extend into the liquid and also extend at least partially out of the canister,
said canister having a base adapted to be received in said base opening,
and a shell which is adapted to extend over said canister and base peripheral wall and having an opening defined in the top thereof so as to leave said cap means and wick exposed,
said base including a base member and integral platform extending upwardly from said base member, said platform being of a smaller diameter than said base member,
said peripheral wall being an annular wall that extends upwardly from said platform to define said base opening,
said base having, outwardly of the platform, a substantially flat and continuously annular shell resting surface,
said shell, about its bottom annular edge, resting upon the base flat surface, extending below the lowermost part of the canister and covering the platform, annular wall and canister.

4,608,012

GAS BURNER

Charles F. Cooper, Malvern, England, assignor to Morgan Thermic Limited, Worcestershire, England

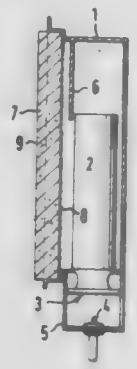
PCT No. PCT/GB83/00282, § 371 Date Jul. 3, 1984, § 102(e) Date Jul. 3, 1984, PCT Pub. No. WO84/01992, PCT Pub. Date May 24, 1984

PCT Filed Nov. 8, 1983, Ser. No. 629,727

Claims priority, application United Kingdom, Nov. 11, 1982, 8232281

Int. Cl.⁴ F23D *14/12*

U.S. Cl. 431—328 **4 Claims**



1. A self-aerating radiant gas burner assembly comprising a box base mixing chamber having an air inlet into which is directed a gas injector jet to induce flow of air through the inlet, the chamber being surmounted by a radiant burner element of ceramic foam material, the bore diameter of the gas injector jet being between 0.5 and 2.0 mm inclusive, the nominal porosity of the ceramic foam material being between 15 and 40 pores per linear 25 mm inclusive, the thickness of the burner foam material being between 8 and 30 mm inclusive and the dimensions within these ranges being selected for a specified gas and pressure range with the relationship that the lower the gas pressure the larger the jet size.

4,608,013

ULTRASONIC ATOMIZING BURNER

Gerhard Gaysert, Esslingen, and Dieter Gotz, Kirchheim, both of Fed. Rep. of Germany, assignors to Die Firma J. Eberspächer, Fed. Rep. of Germany

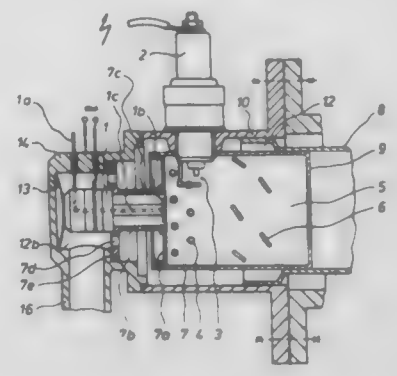
Filed Nov. 28, 1984, Ser. No. 675,940

Claims priority, application Fed. Rep. of Germany, Dec. 2, 1983, 3343617

Int. Cl.⁴ F23C *11/04*

U.S. Cl. 431—1 **16 Claims**

1. An ultrasonic atomizing burner for smaller heating apparatus particularly in mobile spaces, such as motor vehicles, comprising an atomizer having fuel inlet being equipped with an atomizer discharge plate, means skirting said plate defining a combustion air flow space for 1% at most of the combustion air amount, said skirting means including a cylindrical combustion chamber having forward discharge end with a flame baffle, a heating gas outlet tube connected to said discharge



end for axial flow, said combustion chamber having an ignition zone which is provided with wall bores for admitting primary air, a radially extending high voltage spark plug in said combustion chamber, said combustion chamber having a burnout zone which is provided with wall slots for admitting secondary air downstream of said primary air.

4,608,014

COILER-FURNACE UNIT

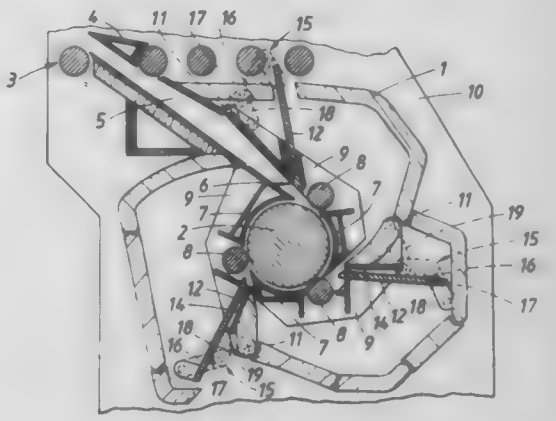
Rudolf Buchegger, St. Florian, and Franz Hirschmanner, Leonding, both of Austria, assignors to Voest-Alpine Aktiengesellschaft, Linz, Austria

Filed Jun. 6, 1985, Ser. No. 742,034

Claims priority, application Austria, Jun. 18, 1984, 1970/84

Int. Cl.⁴ F27B *9/28;* C21D *9/52;* F27D *7/00, 23/00*

U.S. Cl. 432—59 **10 Claims**

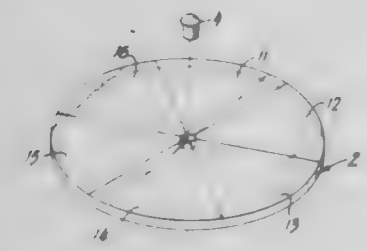


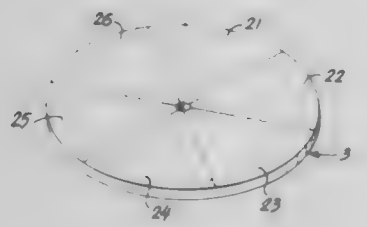
1. In a coiler-furnace unit comprising
a heat insulating housing,
a heatable coiler mandrel extending in said housing, and
strip guiding means disposed in said housing around said mandrel and adapted to guide a strip to be coiled on, and heated by said mandrel, said strip guiding means comprising a plurality of pressure applying rollers for urging said strip against said mandrel and cylindrical guide shoes angularly spaced apart around said mandrel, said rollers and shoes being engageable with said strip coiled around said mandrel and retractable from said mandrel to define an annular clearance with said coiled strip,
wherein the improvement comprises heat insulating shielding means adapted to be moved into and out of said annular clearance.

4,608,015
METHOD FOR SELECTING THE COLORATION OF A BONDING COMPOSITE FOR A DISCOLORED TOOTH

Irwin E. Smigel, 635 Madison Ave., New York, N.Y. 10022

Filed Jul. 16, 1984, Ser. No. 630,964
Int. Cl.[4] A61C *19/10*
U.S. Cl. 433—26 3 Claims



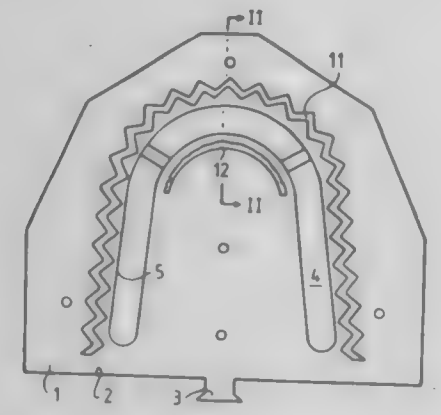


1. A method for selecting the coloration of a bonding composite adapted for being applied to a discolored tooth to neutralize the discoloration of the tooth, said method comprising selecting one of a plurality of different colorations which most closely matches the discoloration of a tooth to be bonded, superimposing on the selected coloration a plurality of transparent regions each of a coloration corresponding to composite material adapted for being bonded onto a tooth, and selecting one of said transparent regions which when superposed on said selected coloration corresponding to the discolored tooth most closely neutralizes said selected coloration.

4,608,016
DENTAL MODEL IN CONJUNCTION WITH A BASE PLATE FOR MAKING A DENTAL MODEL

Manfred Zeiser, 7141 Schwieberdingen, Fed. Rep. of Germany

Filed Jan. 17, 1984, Ser. No. 571,516
Claims priority, application Fed. Rep. of Germany, Jan. 19, 1983, 3301615; May 27, 1983, 3319263; Jun. 3, 1983, 3320050
Int. Cl.[4] A61C *19/00*
U.S. Cl. 433—74 45 Claims

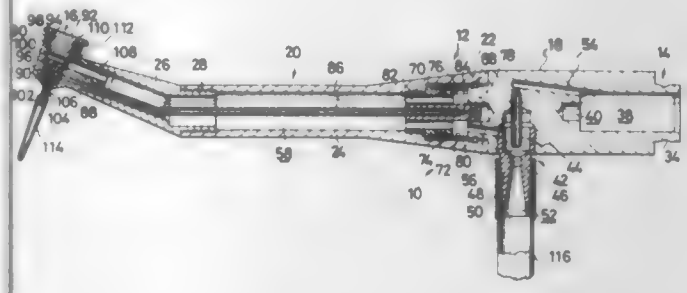


1. A dental device for making teeth prothesis portions such as cast fillings, crowns, bridges, dental protheses or the like, comprising in combination a prefabricated base plate; a dental positive tooth impression having tooth stumps and made of a hardenable model material; said tooth stumps being releasably securable on said base plate; and guide means for guiding at least one tooth stump on said base plate, said guide means including at least one guiding wall portion formed on said base plate integrally therewith, said wall portion producing a plurality of respective guiding surfaces immediately on said tooth stump during the hardening of the material of said tooth stumps when the base plate is set on the tooth impression, said base plate being formed with a perforation having side walls, the side walls of said perforation constituting said guiding wall portion and producing said guiding surfaces on said tooth stump, said base plate having a base surface and being formed with a ridge extended outwardly from said base surface and being integral with said base plate, said ridge following an arched path of a dental arch orientation and being inserted into said impression approximately centrally of a tooth stump, said ridge forming a further wall portion also producing said guide surfaces, said perforation at least partially also following an arched path of a dental arch orientation and being radially spaced from said ridge so that the side walls of said perforation and said further wall portion form extensive guide surfaces along the dental arch, said base plate further including at least one lateral projection outwardly extended therefrom and at a distance from said ridge, said projection having an inner face perpendicular to said base plate and being integral with the base plate, said projection also producing said guiding surfaces on said tooth stump during hardening of the model material.

4,608,017
ENDODONTIC IRRIGATING INSTRUMENT

Tsuyoshi Sadohara, Yokohama, Japan, assignor to Micron Co., Ltd., Tokyo, Japan

Filed May 16, 1984, Ser. No. 610,687
Claims priority, application Japan, May 20, 1983, 58-88951; Aug. 1, 1983, 58-140932
Int. Cl.[4] A61C *5/02*
U.S. Cl. 433—81 12 Claims



1. An endodontic irrigating instrument for irrigating a root canal of a tooth, which comprises:

a handpiece having a proximal end and a distal end, said proximal end having an inlet for a compressed air and an inlet for an irrigating liquid under pressure and being so formed as to be coupled with a multiple-channel hose extending from a dental unit;

a suction pump of the airjet type incorporated with said handpiece at the region adjacent said proximal end thereof, said suction pump having an air nozzle and and exhaust port;

air passage means for supplying a flow of compressed air from said air inlet to said nozzle to create a zone of partial vacuum in said pump;

a hollow aspiration needle mounted at an end thereof to said distal end of the handpiece, the other end thereof having an outer diameter substantially smaller than the inner diameter of the root canal to be irrigated;

suction passage means for connecting said zone of partial vacuum with said aspiration needle to suck the irrigating liquid therein and to discharge it toward said exhaust port;

a liquid ejection nozzle provided at said distal end of the handpiece adjacent said aspiration needle for supplying the irrigating liquid along said aspiration needle;

liquid passage means for supplying the irrigating liquid under pressure from said liquid inlet to said ejection nozzle; and

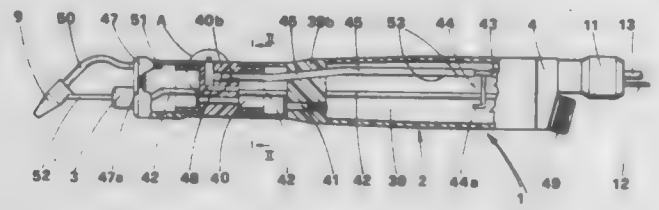
valve means for directing the compressed air to flow in the reverse direction through said suction passage toward said aspiration needle to permit backwashing of the aspiration needle.

4,608,018

APPARATUS FOR CLEANING IN PARTICULAR TEETH

Luigi Ghedini, Via Iussi, 43, 40068 S.Lazzaro Di Savena (BO); Rubbini Claudio, Via Galeazza, 9, 40132 Bologna, and Grillini Mauro, Via Piave, 7, 40068 S.Lazzaro Di Savena (BO), all of Italy

Filed Feb. 21, 1985, Ser. No. 703,729
Claims priority, application Italy, Apr. 30, 1984, 3445 A/84; Oct. 12, 1984, 3602 A/84
Int. Cl.[4] A61C *5/04*
U.S. Cl. 433—88 9 Claims



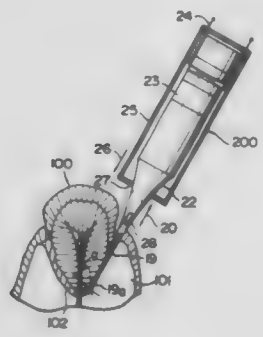
1. An apparatus for cleaning teeth with water, air and a dental cleaning powder comprising a handgrip, a multiple nozzle, a water supply means connected at one end to said nozzle and at said other end adapted to be connected to a source of pressurized water, said handgrip defining a powder chamber and at least one mixing chamber, means to supply pressurized air to said powder chamber, means to supply pressurized air and powder to said mixing chamber, and means to connect said mixing chamber to said multiple nozzle.

4,608,019

TOOL FOR EXODONTIA

Junichiro Kumabe, Tokyo, and Masaru Kumabe, 1-1, Ise 4-Chome, Kofu-shi, Yamanashi 400, both of Japan, assignors to Masaru Kumabe, Yamanashi, Japan

PCT No. PCT/JP83/00161, § 371 Date Jan. 16, 1984, § 102(e) Date Jan. 16, 1984, PCT Pub. No. WO83/04175, PCT Pub. Date Dec. 8, 1983
PCT Filed May 26, 1983, Ser. No. 573,911
Claims priority, application Japan, May 27, 1982, 57-88917
Int. Cl.[4] A61C *1/07, 3/08*
U.S. Cl. 433—118 6 Claims



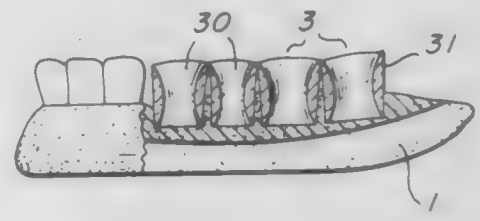
1. A dental tool for extracting a tooth which is secured to an alveolar bone through a pericementum, comprising a cylindrical housing, an acoustic transducer disposed within the housing and opertive to be driven from a source of a high frequency power which is arranged externally of the housing for producing vibrational energy of a predetermined frequency and a predetermined amplitude, a vibrating member having one end thereof connected to the acoustic transducer, and a blade attached to the other end of the vibrating member in a replaceable manner, the blade having an edge which is disposed externally of the housing and having a thickness which is substantially less than the thickness of the pericementum, the acoustic transducer having an oscillating frequency higher than the natural frequency of the tooth, the acoustic transducer exciting the blade through the vibrating member so that an amplitude of oscillation as measured at the edge of the blade is equal to or less than 15 micrometers.

4,608,020

METHOD OF MAKING REMOVABLE DENTURES

Kalman Laszlo, 18/2 Marseille Street, Kiriat Spriazak, Haifa, Israel

Filed May 18, 1984, Ser. No. 611,989
Int. Cl.[4] A61C *11/00*
U.S. Cl. 433—213 5 Claims



1. A method of manufacturing an artificial denture by implanting lateral tubular teeth in the upper or the lower denture, the method comprising producing a baseplate for the upper and/or lower denture to serve as patterns for casting of the dentures; fastening by means of wax or an equivalent a full set of artificial teeth to the baseplate of one of said dentures; fastening by means of wax or an equivalent to the baseplate of the other of said dentures a predetermined number of artificial frontal teeth and a predetermined number of lateral teeth, said lateral teeth having an outer surface which is anatomically correct and being hollow; placing the baseplates into respective upper and lower jaws of an articulator and adjusting the position of the lateral teeth in the base plates so that they correspond with the lateral teeth of the opposite denture and so that each tooth forms at least one solid contact point with the teeth of the opposite denture; adjusting said articulator so as to leave a space between the cuspids and allowing the wax to harden; after hardening of the wax filling the hollow spaces of said lateral teeth with wax to overflow; moving said articulator so as to imitate mastication, whereby the wax protruding out of the lateral teeth is removed until the upper wax surface is smoothed; removing said dentures from said articulator and placing said dentures into the mouth of the intended user, allowing the intended user to make masticating motions for removing superfluous wax until the respective contact points come into actual contact; roughening the smoothed upper surfaces of the wax fillings in said lateral teeth into the form of fissures corresponding to natural teeth; removing the wax by melting, and filling the thus created cavity with a plastic material in liquid state; and curing the plastic material.

4,608,021

METHOD AND APPARATUS FOR DENTAL RESTORATION USING LIGHT CURABLE RESTORATIVES

Ronald A. Barrett, 4616 S. Green Acres Ct., Metairie, La. 70003

Filed Aug. 19, 1985, Ser. No. 766,939
Int. Cl.[4] A61C *5/04*
U.S. Cl. 433—229 8 Claims

1. A device for expanding a matrix band outwardly from a vertical opening of a tooth cavitation during filling of the cavitation with light curable plastic restorative compositions, said device comprising:

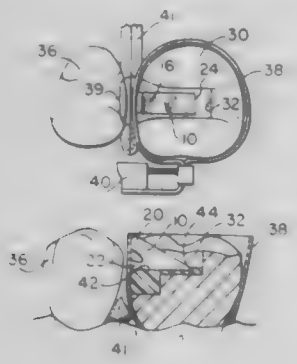
means including opposed surfaces intersecting each other at an acute angle for defining first and second arms converging at a pointed edge providing a common end for both said arms;

means for defining an abutment surfaoe at the end of said first arm opposite from said pointed edge; and

means for defining a camming surface at the end of said second arm opposite from said pointed edge, the length of said second arm between said pointed edge and said camming surface being greater by a predetermined increment

of length than the length of said first arm between said pointed edge and said abutment surface;

whereby placement of said first arm in the tooth cavitation with said abutment surface against the matrix band positions said pointed edge at the location of a pivot step from which said second arm, when positioned in the cavitation with said camming surface against the matrix band, may operate as a camming strut to force the matrix band outwardly.

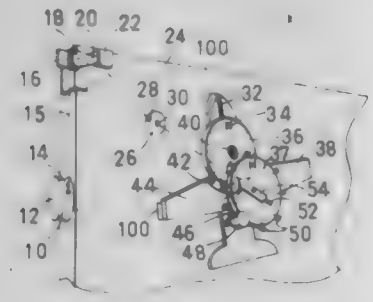


4,608,022

AIR AND SEA NAVIGATIONAL INSTRUMENT SIMULATION AND INSTRUCTIONAL AID

Richard C. Bellofatto, 19 Springdale Ave., Saugus, Mass. 01906, assignor to Richard C. Bellofatto, Saugus, Mass.

Filed May 23, 1984, Ser. No. 613,294
Int. Cl.[4] G09B *9/02*
U.S. Cl. 434—243 **18 Claims**



1. A classroom training aid for air and sea navigational instrument simulation and instruction comprising:

a hand-held model simulating an air or sea vessel movable by hand and mountable primarily by a magnetic means on a vertical surface, over the entire area of which vertical surface the model may be moved and secured in any direction and orientation to simulate actual routes of travel of the vessel;

at least one simulated navigational instrument mounted on the model appearing and acting correspondingly to the appearance and action of the actual navigational instrument on an air or sea vessel, which instrument comprises a compass rose oriented to indicate the position of the model and the indicator means found in the actual instrument wherein the model rotates around the compass rose as in the actual vessel;

an automatic gravitational means for controlling the simulated instrument of the model, which gravitational means in no way interferes with the movement and orientation of the model over the vertical surface;

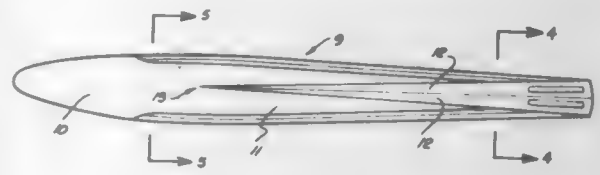
wherein the automatic gravitational means for controlling the simulated instrument function of the model is a simulated Automatic Direction Finder (ADF) or Radio Direction Finder (RDF) comprising a spindle protruding from an outer surface of the model, rotatably mounted on the spindle a compass rose disc; an opening through the central axis of the spindle and through the body of the model, through which opening an indicator shaft is rotatably secured; at an outer end of which indicator shaft a pointer means is secured to rotate with the shaft; at an inner end of which indicator shaft a rigid orthogonal extension of the shaft protrudes in the direction of the pointer; and attached to the shaft extension a transparent line leading to a simulated Non Directional Beacon (NDB) or Radio Beacon (RB) secured to the vertical surface by a magnetic means, wherein the NDB/RB has a low-friction means of looping the line through the NDB/RB; an edge-mounted low-friction looping means of diverting the line from the NDB/RB to an edge of the vertical surface; and a weight secured to the end of the line which maintains the line in a taut condition so that the pointer always points to the NDB/RB regardless of the orientation and position of the model, and the weight is held clear of the vertical surface by the diverting means.

4,608,023

WATER SKI

Frederick W. Williams, Gateshead, Australia, assignor to Ski-Ace Pty. Limited, Sydney, Australia

Filed Jun. 7, 1984, Ser. No. 617,956
Claims priority, application Australia, Jul. 27, 1983, PG0506
Int. Cl.[4] A63C *15/00*
U.S. Cl. 441—68 **9 Claims**



8. A water ski characterised in that:

(a) the underface of the ski has a pair of similar grooves or "tunnels" formed in it and extending from the trailing end of said underface to a single point in that underface ahead of the mid-point of its length but short of its leading end;

(b) said tunnels are arcuate concavities whereof the breadth and depth progressively increase in the direction towards said trailing end;

(c) two blade-like fins fixed relatively to said underface extend substantially longitudinally thereof and respectively from the trailing end portions of said tunnels; and

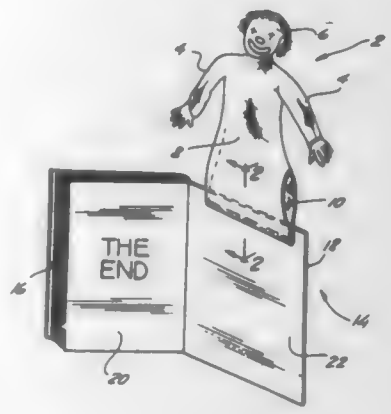
(d) said tunnels each extending substantially half of the way across said trailing end of the water ski, and the outer edges of both of said tunnels converging substantially to said single point.

4,608,024

BOOK WITH PUPPET

Joel B. Skolnick, 600 5th St., Brooklyn, N.Y. 11215

Division of Ser. No. 310,983, Oct. 13, 1981, Pat. No. 4,508,515.
This application Feb. 11, 1985, Ser. No. 688,869
Int. Cl.[4] A63H *33/38*
U.S. Cl. 446—148 **8 Claims**



1. A book comprising:

first and second covers, each having at least an upper edge and inside surface;

at least one page disposed between said inside surfaces of said first and second covers, said at least one page having a continuous surface without any breaks therein;

a flexible, hollow puppet having a hollow interior; and

means for securing said puppet to one of said inside surfaces near said upper edge;

wherein said puppet includes an opening through which a user can introduce their entire hand while said puppet is secured to near said upper edge, said puppet being extendable above said one of said inside surfaces upper edge, and foldable onto said inside surface of one of said covers so that it is concealable when said book is closed.

4,608,025

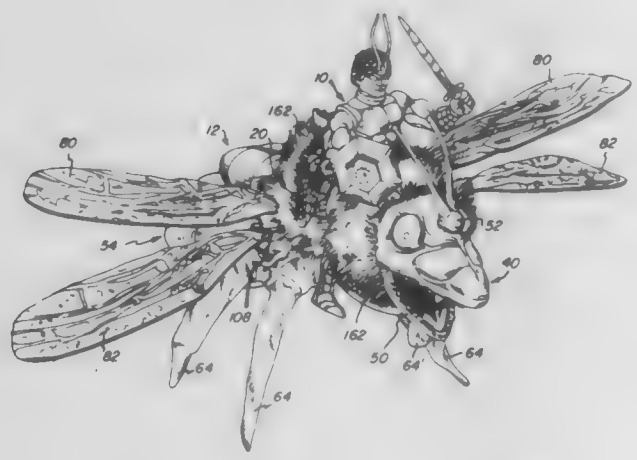
GLOVE PUPPET FIGURE ASSEMBLY WITH ARTICULATED HEAD COMPONENTS

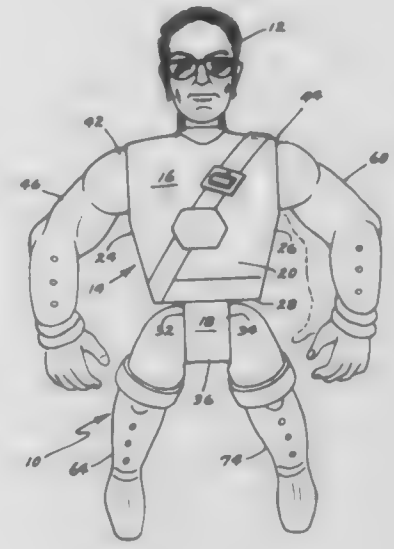
Francis R. Amici, Northford; Hans S. Berger, Plainville; Domenic G. Mercurio, Elmwood; John P. McNett, Farmington, and Pietro Piazza, Prospect, all of Conn., assignors to Coleco Industries, Inc., West Hartford, Conn.

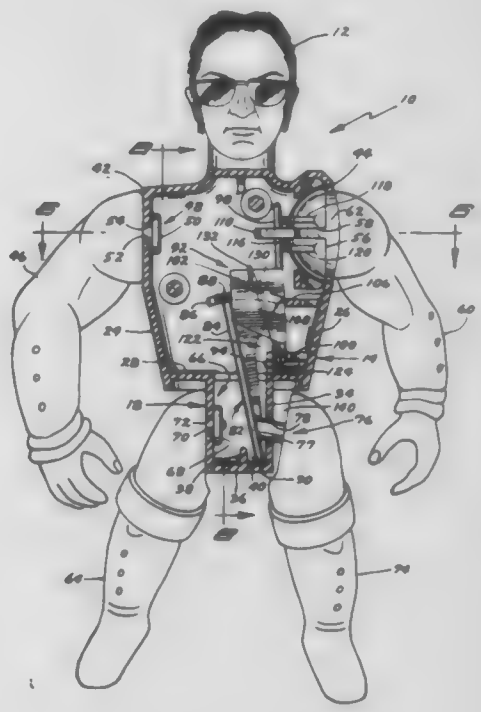
Filed Feb. 11, 1985, Ser. No. 700,502

Int. Cl.[4] A63H *3/28, 3/14*

U.S. Cl. 446—298 **16 Claims**







1. A glove puppet figure assembly comprised of:

a puppet figure including a body portion and a head portion, said head portion comprising at least one component that is movable relative to said body portion;

a glove member separate from said figure and adapted to receive the hand of the operator, said glove member having a portion attached to said body portion of said puppet figure, and having at least one finger portion defined therein movable independently of the remainder of said glove member and operatively connected to said one component of said head portion; and

rigid holding means on said body portion, separate from said glove member, for preveing substantial movement relative to the hand of the operator, whereyb said one component can be articulated by finger-actuated movement of said finger portion of said glove member, while said body portion is maintained by said holding means substantially stationary on the operator's hand.

4,608,026

FIGURE WHEREIN MANIPULATION OF ONE LIMB CAUSES MOTION OF ANOTHER

Jean M. Newton, Park Hills, Ky., and William N. Smith, Batavia, Ohio, assignors to CPG Products Corp., Minneapolis, Minn.

Filed Feb. 8, 1985, Ser. No. 699,621

Int. Cl.[4] A63H *3/20*

U.S. Cl. 446—330 **10 Claims**

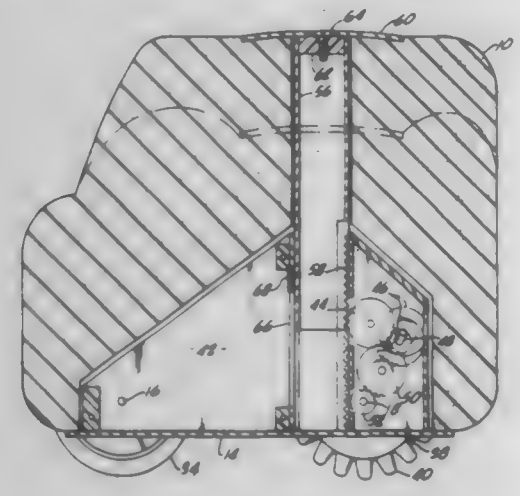
1. A toy action figure comprising hollow upper and lower torsos, first and second legs, first means mounting said first leg to said lower torso, second means mounting said second leg to said lower torso for rocking movement toward and away from said first leg, first and second arms, third means mounting said first arm to said upper torso, fourth means mounting said second arm to said upper torso for swinging movement relative thereto about a generally vertical axis, said second leg and said second arm being on the same side of said figure and a motion-converting mechanism connected to said second mounting means and to said fourth mounting means for converting the rocking movement of said second leg to the swinging movement of said second arm, said motion-converting mechanism including an actuating lever connected to said second leg adjacent one end and having an angled cam edge adjacent its other end, a transmission lever movably mounted in said figure having one end disposed for rocking movement, a pin adjacent its other end and an intermediate cam follower edge acted upon by said angled cam edge, and a lever arm on said second arm having a slot therein, said pin extending into said slot to cause said second arm to swing about the said generally vertical axis upon the carrying out of said rocking movement by said second leg.

4,608,027

SOFT PROPELLABLE TOY

Reuben B. Klamer, 969 Hilgard Ave., Los Angeles, Calif. 90024, and Donald Greenwood, 3117 Lakeshore Dr., Longmowt, Colo. 80501

Filed Jun. 6, 1983, Ser. No. 501,536
Int. Cl.[4] A63H *29/00*
U.S. Cl. 446—457 13 Claims



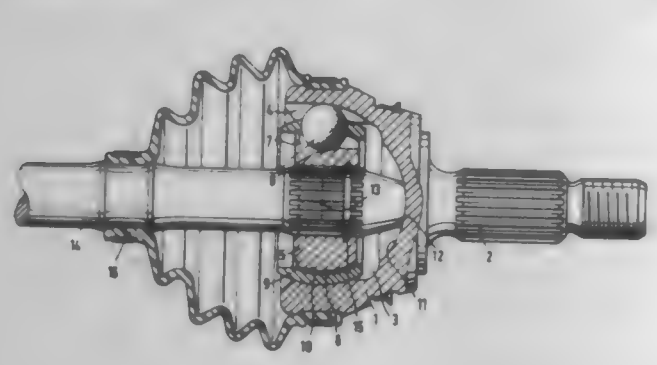
1. A soft, easily propellable toy, comprising:
(a) a body having an exterior of soft, compressible, resilient material;
(b) transportation means attached to said body for moving the toy; and
(c) conversion means attached to said body for converting the expansion of said compressible body material when said body is compressed and then released into rotational motion and communicating said rotational motion to said transportation means of the toy.

4,608,028

ROTARY CONSTANT VELOCITY UNIVERSAL JOINT

Hans-Heinrich Weischof, Rodenbach, and Edgar Dries, Rodgau, both of Fed. Rep. of Germany, assignors to Lohr & Bromkamp GmbH, Fed. Rep. of Germany

Continuation of Ser. No. 639,602, Aug. 9, 1984, abandoned, which is a continuation of Ser. No. 538,976, Oct. 4, 1983, abandoned, which is a continuation of Ser. No. 359,435, Mar. 18, 1982, abandoned. This application Nov. 4, 1985, Ser. No. 794,954
Claims priority, application Fed. Rep. of Germany, Apr. 9, 1981, 3114290
Int. Cl.[4] F16D *3/23*
U.S. Cl. 464—145 5 Claims



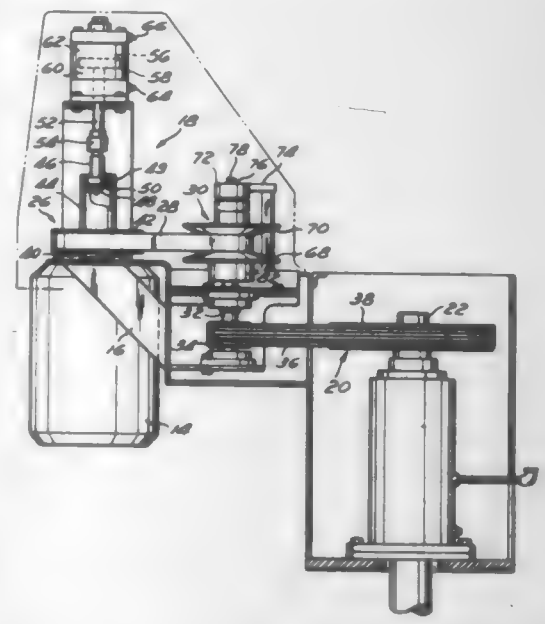
1. A rotary constant velocity fixed universal joint assembly comprising:
an outer joint member defining a spherical hollow space therein;
an inner joint member arranged within said hollow space;
a drive shaft nonrotatively connected with said inner joint member;
torque transmission means operatively interposed between said inner and outer joint members;
grooves formed respectively within each of said members having said torque transmission means engaged therein;
cage means arranged radially between said inner and said outer joint members, said cage means being arranged to receive in supporting engagement therein said torque transmission means;
said cage means including inner wall means defining a hollow space therein within which said inner joint member is received and a spherical outer face held within said spherical hollow space defined within said outer joint member;
said inner wall means of said cage means and said inner joint member being arranged in spaced relationship relative to each other;
a stop face defined in said spherical hollow space formed within said outer joint member; and
a supporting face formed with at least one of said inner joint member and said drive shaft located on the side thereof facing said stop face and arranged for cooperating engagement therewith;
said stop face and said supporting face abutting against each other to limit relative movement therebetween in one direction, with said grooves, said torque transmission means, said cage means and said outer joint member being formed to interact with each other so as to limit relative movement between said stop face and said supporting face in the opposite direction thereby to prevent relative axial movement between said inner joint member and said outer joint member.

4,608,029

CONTROL FOR SLURRY PROCESSING SYSTEM

John J. Corrigan, Garden Grove, Calif., assignor to Morehouse Industries, Inc., Fullerton, Calif.

Continuation-in-part of Ser. No. 427,162, Sep. 29, 1982, abandoned. This application Nov. 1, 1982, Ser. No. 438,416
Int. Cl.[4] F16H *11/06*
U.S. Cl. 474—11 27 Claims



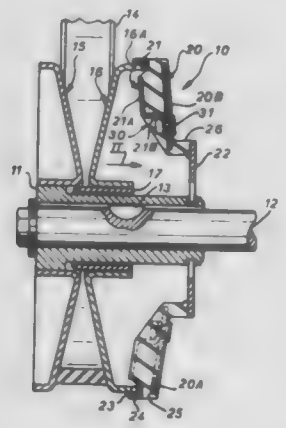
1. A method of controlling the speed of a dispersing or milling rotor in an industrial milling or dispersing operation comprising:
providing a chamber for holding material to be milled or dispersed and a milling or dispersing rotor located therein;
providing a motor;
transmitting torque from the motor to the rotor by means of an adjustable pulley combination;
controlling the speed of the rotor by controlling the position of the adjustable pulley combination by means of fluid pressure;
applying said fluid pressure in a manner to obtain a desired rotor speed; and
automatically moving said adjustable pulley combination to its slow speed position when said motor is shut off.

4,608,030

CENTRIFUGALLY OPERATED VARIABLE SPEED DRIVE PULLEY

Jacques Thirion deBriel, Levallois-Perret, France, assignor to Valeo, Paris, France

Filed Dec. 26, 1984, Ser. No. 686,485
Claims priority, application France, Dec. 28, 1983, 83 20939
Int. Cl.[4] F16H *55/56, 11/06*
U.S. Cl. 474—13 16 Claims



1. Centrifugally operated variable speed drive pulley comprising:

a hub aligned with a rotation axis,

two annular flanges around said hub in face-to-face relationship and adapted to receive a transmission belt, at least one of said flanges being a mobile flange adapted to slide along said hub,

a transverse bearing member mounted on said hub,

a diaphragm spring disposed between said mobile flange and said transverse bearing member in the axial sense, adapted to flex in such a way as to control sliding movement of said mobile flange along said hub,

a plurality of flyweights carried by said diaphragm spring, and

a mass of molded material applied to said diaphragm spring in which said flyweights are at least partially embedded.

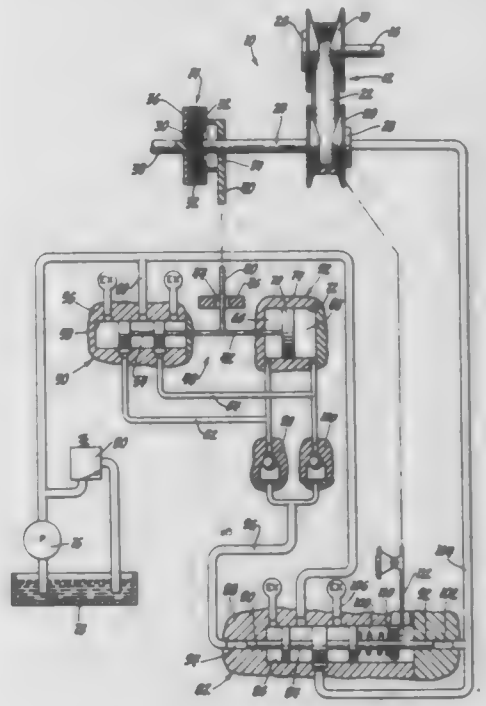
4,608,031

CONTROL SYSTEM FOR A CONTINUOUSLY VARIABLE TRANSMISSION

Hamid Vahabzadeh, Rochester Hills, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed May 23, 1985, Ser. No. 737,288
Int. Cl.[4] F16H *11/06*
U.S. Cl. 474—17 3 Claims

1. A hydraulic control for a continuously variable transmission having hydraulically adjustable axially movable pulley members and a gearing arrangement for the transmitting of torque between an input shaft and an output shaft, said control comprising; a source of fluid pressure; first valve means connected with said source and being operable to supply control fluid to one of said adjustable pulley members, said control fluid operating on said first valve means to impose a force thereon; feedback means for imposing a force proportional to the axial position of said one adjustable pulley member on said first valve means in addition to said control fluid imposed force; torque sensing means operatively connected with said gearing arrangement for transmitting a force proportional to the torque transmitted by said gearing arrangement; servo motor means operatively connected with said torque sensing means; second valve means connected with said torque sensing means and being operable on a change of torque transmission to distribute a pressure signal from said source to said servo motor means and said servo motor means being responsive to said pressure fluid to balance the force on said torque to balance the force on said torque sensing means and discontinue



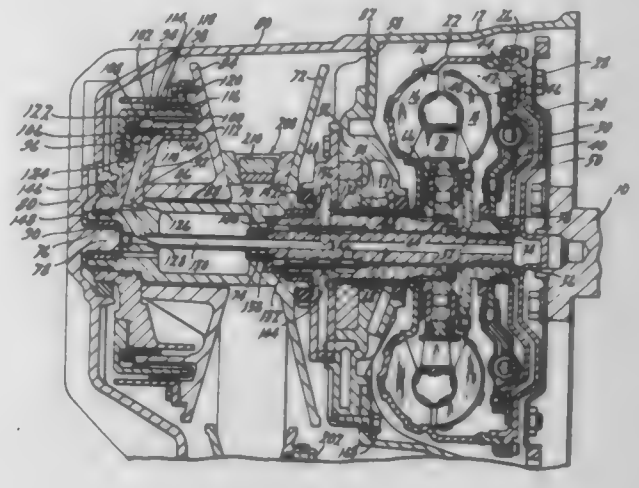
fluid distribution thereto; and means for directing the pressure signal from said second valve means to said first valve means.

4,608,032

INFINITELY VARIABLE BELT DRIVE WITH LOW FRICTION SEALS FOR THE PRIMARY AND SECONDARY SHEAVES

Thomas R. Stockton, Ann Arbor, and Frederick J. Morris, Milford, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Nov. 2, 1984, Ser. No. 667,657
Int. Cl.[4] F16H *11/04*
U.S. Cl. 474—28 2 Claims



1. An infinitely variable belt drive comprising:

a torque input sheave assembly, a torque output sheave assembly and a belt driveably connecting said sheave assemblies;

said driving sheave assembly comprising an axially fixed driving sheave portion and an axially adjustable driving sheave portion with said belt positioned between said driving sheave portions and frictionally engageable therewith, the pitch radius of said belt and driving sheave assembly increasing as said adjustable driving sheave portion is moved axially relative to said fixed driving sheave portion;

a fluid pressure actuator for said driving sheave assembly comprising an actuator member located adjacent said axially adjustable driving sheave portion and connected to said fixed driving sheave portion, said actuator member

having an axial extension, a fist axial extension carried by said adjustable driving sheave portion located adjacent the axial extension of said actuator member and a second axial extension carried by said fixed driving sheave portion;

a first flexible diaphragm seal connected at its outer margin to said adjustable driving sheave portion and at its inner margin to said second axial extension;

a second flexible diaphragm seal secured at its inner margin to said fixed actuator member and at its outer margin to said first axial extension;

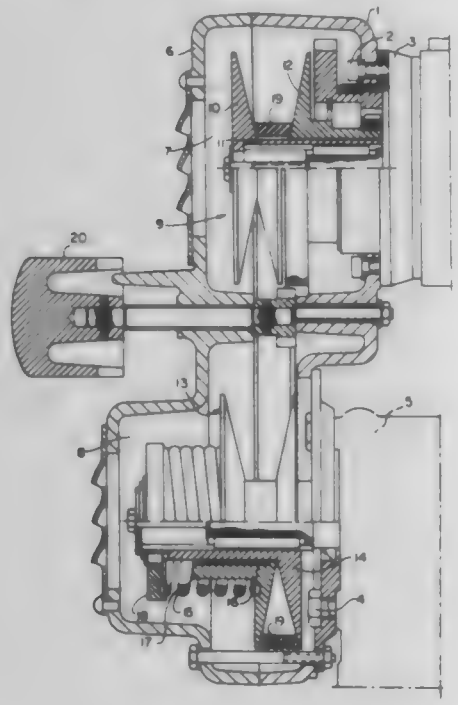
said actuator member and said diaphragm seals defining a pressure chamber which, when pressurized, causes said adjustable driving sheave portion to move axially relative to said fixed driving sheave portion, the adjustable driving sheave portion and the fixed driving sheave portion being formed with engaging sliding spline teeth, said sliding spline teeth being located within the pressure chamber for said driving sheave assembly.

4,608,033

BELT SPEED VARIATOR

Georges Stevens, Billere, France, assignor to Girard Transmissions, France

Filed Oct. 4, 1984, Ser. No. 657,692
Claims priority, application France, Oct. 6, 1983, 83 15894
Int. Cl.[4] F16H *55/52, 55/56*
U.S. Cl. 474—39 3 Claims



1. A belt speed variator which comprises:

(a) a drive pulley,

(b) a driven pulley,

(c) a transmission belt passing over said drive pulley and driven pulley,

(d) said drive pulley and driven pulley each having an axially fixed flange and a mobile flange moving axially with respect to this fixed flange, the spacing between the flanges of these two pulleys varying in a conjugate way in operation,

(e) a fixed bearing ring supported by a casing of the variator,

(f) a bearing which bears on said fixed ring, said bearing supporting radially and axially the outer face of the mobile flange of said drive pulley, and

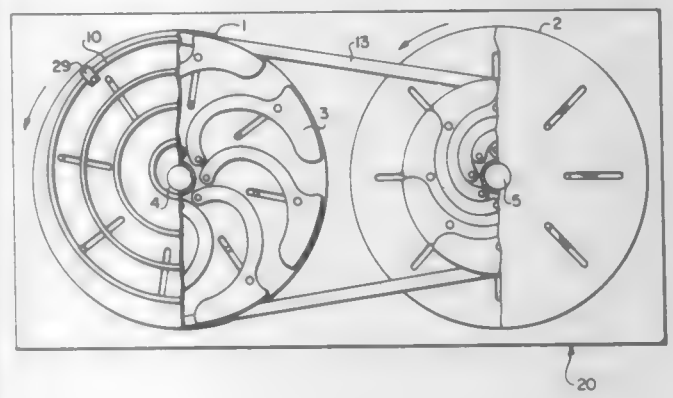
(g) a clearance provided between said mobile flange and said axially fixed flange of the drive pulley along the whole length thereof so that no contact point is provided between said mobile flange and said axially fixed flange.

4,608,034

VARIABLE SPEED RATIO DRIVE

James B. Reswick, 1003 Dean Run Dr., McLean, Va. 22101

Filed Mar. 27, 1984, Ser. No. 593,928
Int. Cl.[4] F16H *9/02*
U.S. Cl. 474—49 40 Claims



1. A pulley having an automatically varying diameter suitable for being mounted for rotation on a shaft having an axis of rotation, comprising:

segment means for transmitting torque from the shaft to an endless flexible transmission belt passed over said pulley, said segment means including a plurality of arms of unitary construction, each of said arms having first and second ends, a radially extending arcuate portion interconnecting said ends, and a drive surface portion at said second end suitable for accommodating the belt;

hub means connected to the shaft;

means for pivotally connecting each of said arms near said first end to said hub means at equal angularly spaced positions along the periphery of said hub means;

said pulley having a contracted position wherein said arms contact one another along their adjacent peripheries and further wherein each said drive surface portion of each of said arms is abutting an adjacent said drive surface portion of the adjacent one of said arms in an end-to-end manner to form an annular drive surface having a minimum pulley diameter;

said pulley further including a plurality of expanded positions wherein said arms pivot outwardly from said contracted position to form a segmented annular drive surface having a pulley diameter greater than said minimum diameter;

means for guiding the pivoting of said arms inwardly and outwardly between said contracted position and said expanded positions; and

means for applying a bias torque equally between each of said of said arms and said hub means whereby said pulley is expanded to one of said expanded positions by the force of said bias torque such that said arms are caused to pivot inwardly toward said contracted position from said one of said expanded positions against said bias torque when the torque of a load applied to the pulley through the belt exceeds said bias torque.

4,608,035

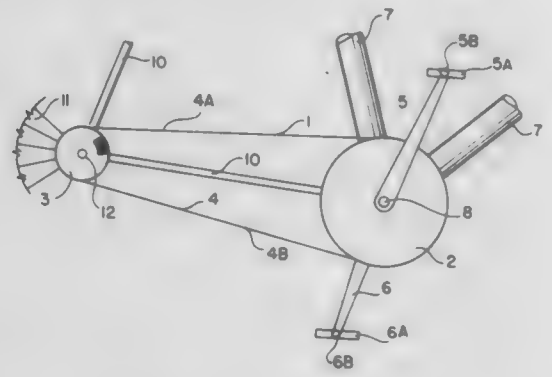
DRIVE ARRANGEMENT

Gordon K. Reader, 49 Hayes Chase, West Wickham, Kent, BR4 0HX, United Kingdom

Filed Dec. 2, 1983, Ser. No. 557,462
Int. Cl.[4] F16H *7/00*
U.S. Cl. 474—148 2 Claims

1. An arrangement for augmenting the operating force developed in a bicycle chain drive system incorporating a pedal crank drive wheel rotatable about a first axis with respect to the frame of the cycle and having pedal supporting drive cranks mounted to the crank wheel as to be oppositely directed to each other and rotatable with the cranks, a driven chain wheel rotatable about a second axis parallel to the first axis and

having a two to one gearing ratio relative to the drive wheel, an unbalanced weight mounted for rotation with the driven chain wheel and having an axis which is parallel with the second axis whereby the unbalanced weight has a rotational rate twice that of the drive wheel for imparting a succession of



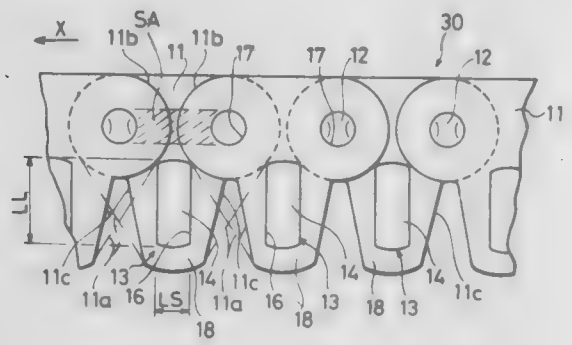
force impulses to the chain drive which act in such manner as to so augment the operating forces developed in the chain as a result of said forces being applied to the cranks, in such manner that the augmenting force transmitted to the crank wheel is the same for each pedal.

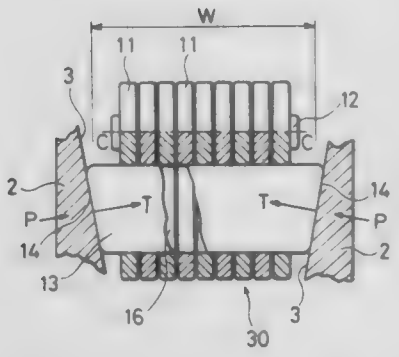
4,608,036

CHAIN V-BELT

Junichi Dono, Ishikawa, Japan, assignor to Daido Kogyo Co., Ltd., Kaga, Japan

Filed Jun. 21, 1984, Ser. No. 623,218
Claims priority, application Japan, Jun. 24, 1983, 58-98334[U]
Int. Cl.⁴ F16G *5/18, 1/24*
U.S. Cl. 474—201 **6 Claims**





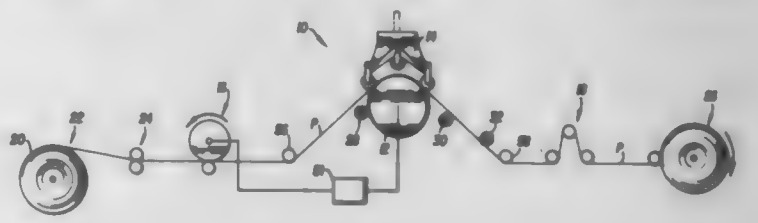
1. In a chain V-belt working on a pair of two-split pulley blocks and having a plurality of links coupled endlessly therefor and having a block installed on each of said links, for transmitting power by the frictional force arising between said link blocks and said pulley blocks in such a manner that both ends of each of said link blocks are brought in contact with said pulley blocks, the improvement characterized in that a projection is formed on the inside of each of said links when said belt is coupled endlessly, the link blocks are installed on said projections and each of said link blocks has a substantially rectangular section which is longer in the direction perpendicular to that in which the belt runs than in the direction in which the belt runs.

4,608,037

METHOD OF AND APPARATUS FOR ABRADING MECHANICALLY PERFORATED CIGARETTE FILTER TIPPING PAPER

William F. Fleming, III, Winston-Salem, N.C., assignor to RJR Archer, Inc., Winston-Salem, N.C.

Filed Apr. 23, 1984, Ser. No. 603,262
Int. Cl.⁴ B31F *7/00;* **B24B** *5/38, 9/02*
U.S. Cl. 493—22 **10 Claims**



1. Apparatus for removing perforation flaps from a perforated web, comprising:

drum means surfaced with abrasive material for abrading the flaps from the web;

means connected to said drum means for rotating said drum means in one direction at a predetermined peripheral speed of the drum means;

means arranged adjacent the drum means for passing said web into contact with an arcuate portion of the drum means periphery in said one direction at a speed less than the peripheral speed of the drum means, the flaps of said web being interposed between the web and the drum means;

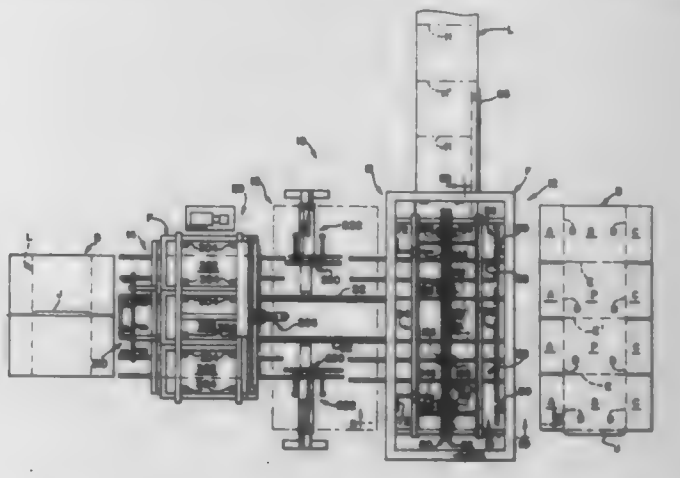
means arranged in confronting relation with the arcuate portion of said drum means for applying pressure against the outwardly facing surface of the web, said pressure applying means comprising a yoke, three idler pulleys mounted on said yoke in a triangular array and an endless band arranged about said pulleys, means connected to one of said pulleys for resiliently biasing said one pulley in a direction to apply tension to the band.

4,608,038

APPARATUS AND METHOD FOR LINING, FOLDING AND GLUING CONTAINER BLANKS

Arthur W. Virta, Mt. Prospect, and Fred E. Ullman, Glencoe, both of Ill., assignors to A. W. Virta & Associates, Inc., Wheeling, Ill.

Filed Oct. 30, 1984, Ser. No. 666,500
Int. Cl.⁴ B31B *7/02, 7/26, 1/62*
U.S. Cl. 493—29 **21 Claims**



1. An apparatus for folding and gluing container body blanks, comprising

frame means having a blank loading end and a blank discharge end;

blank conveyor means mounted on said frame means for advancing a body blank along a work path relative to said frame means from said blank loading end to said blank discharge end;

liner conveyor means mounted on said frame means for

advancing a liner transversely of said blank conveyor means into a postion above said work path;

support means for supporting said liner above said work path and for confining laterally opposite edge portions of said liner during advancement of said liner by said liner conveyor means;

means positioned in operative association with said liner conveyor means for lowering said liner into superposed relation onto a body blank being advanced along said path by said blank conveyor means to form a laminated body blank, and means for adhering said liner to said body blank comprising means for applying adhesive to one of said liner and said body blank prior to lowering of said liner into said superposed relation to form said laminated body blank;

means positioned in operative association with said support means for releasing said opposite edge portions of said liner from said support means prior to lowering of said liner by said liner lowering means;

means positioned along said work path downstream of said liner lowering means for folding said laminated body blank and for adhering said laminated body blank in a folded condition, said folding and adhering means being upstream of said blank discharge end of said frame means, whereby said blank conveyor means advances said folded and laminated body blank to said blank discharge end of said frame means.

16. A method of folding and gluing a container body blank, comprising the steps:

providing frame means having blank conveyor means mounted thereon for intermittently advancing a body blank along a straight-line horizontal work path from a blank loading end to a blank discharge end of said frame means;

providing liner conveyor means on said frame means for advancing a liner transversely of and to a stopped position above said work path;

providing support means for supporting and confining opposite edge portions of said liner during advancement thereof by said liner conveyor means;

advancing a liner with said liner conveyor means to said stopped position, while supporting and confining opposite edge portions of said liner with said support means;

advancing a body blank from said blank loading end to a position beneath said liner conveyor means and stopping advancement of said body blank;

applying adhesive to the upper surface of said body blank during said body blank advancing step for forming a laminated body blank including said body blank and said liner superposed thereon;

lowering said liner from said stopped position into superposition onto said body blank to further form said laminated body blank, including releasing the edge portions from said support means prior to lowering of said liner;

applying adhesive to a flap portion of said laminated body blank;

advancing said laminated body blank to a folding station;

folding said laminated body blank at said folding station about a pair of parallel score lines of said body blank to bring said flap portion into juxtaposition with a side panel portion of said body blank to form an adhesive joint with the adhesive applied to said flap portion to thereby form a folded and laminated body blank;

applying pressure to said folded and laminated body blank upstream of said blank discharge end; and

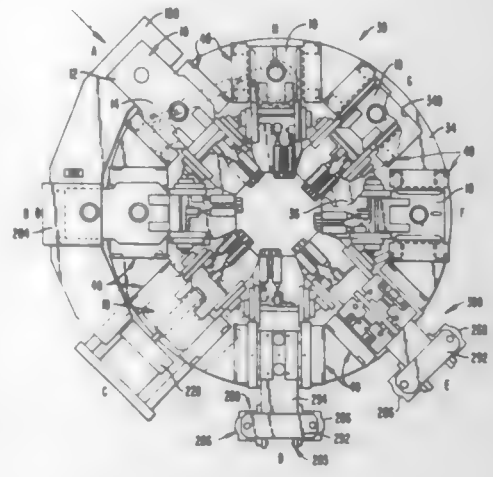
advancing said folded and laminated body blank from said discharge end of said frame means.

4,608,039

ENVELOPE FOLDING SYSTEM

Edward T. Ferri, Jr., Morgan Hill, and Paul E. Seaborn, Los Gatos, both of Calif., assignors to Seaborn Development, Inc., Campbell, Calif.

Filed Apr. 13, 1984, Ser. No. 599,855
Int. Cl.[4] B31B *1/28*
U.S. Cl. 493—164 10 Claims



1. An apparatus for folding and sealing envelope blanks having two faces and pair of flaps for closing the faces; said apparatus comprising:

a support frame;

a circular table rotatably mounted on the support frame;

means for incrementally rotating the table through a preselected angle;

a plurality of platform assemblies mounted along the periphery of the circular table at intervals equal to the preselected angle, each of said platform assemblies including means for receiving and clamping envelope blanks in place and means for folding the flaps of the envelope blank inward, wherein said means for folding the flaps inward includes a pair of flap clamps, a pair of levers pivotally mounted at one end on the platform assembly with each lever having a cam surface formed therein, and a rotatable coupling member having a pair of rollers which engage the cam surfaces on the levers, whereby rotation of the coupling member in one direction causes the flap clamps to move upward and inward to fold the side flaps and rotation in the other direction causes the flap clamps to disengage the side flaps; and

a multiplicity of stationary assemblies mounted on the support frame adjacent the periphery of the circular table at intervals equal to the preselected angle, said stationary assemblies including:

(a) a transverse folding assembly for folding the faces of the envelope blanks together;

(b) a flap folding assembly for actuating the flap folding means on the platform assemblies to simultaneously fold the envelope flaps to close the faces together, said flap folding assembly including a first actuator for closing the flap clamps on the side flaps of the envelope, said first actuator comprising a double-acting cylinder having a spool which engages the coupling member on the flap folding means when the cylinder is extended and means for rotating the spool in the one direction when it is engaged to the coupling member;

(c) a sealing assembly for sealing the flaps to the evelopes; and

(d) a discharge station including a second actuator for opening the flap clamps from the side flaps of the envelope, said second actuator having a spool which engages the coupling member on the flap folding means when the cylinder is extended and means for rotating the spool in the other direction when it is engaged to the coupling member.

4,608,040

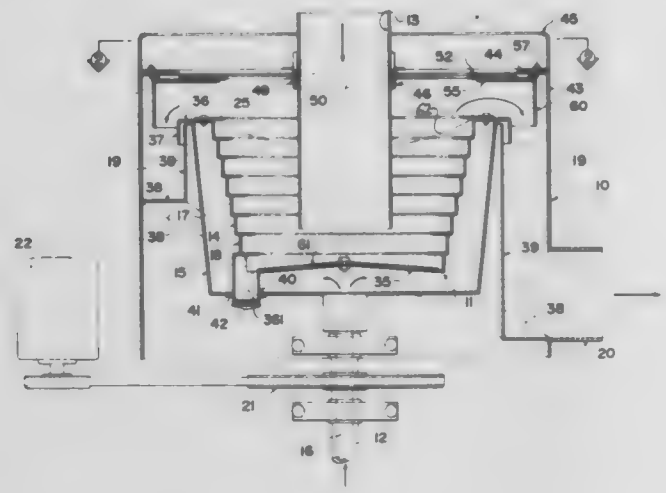
CENTRIFUGAL SEPARATOR

Benjamin V. Knelson, 2707 Mountview Place, Burnaby, British Columbia, Canada (V3J 1E5)

Continuation-in-part of Ser. No. 510,509, Aug. 18, 1983, abandoned, which is a continuation-in-part of Ser. No. 479,677, Mar. 28, 1983, abandoned. This application Apr. 2, 1984, Ser. No. 595,814

Int. Cl.[4] B04B *11/00*

U.S. Cl. 494—27 19 Claims



1. Apparatus for centrifugally separating intermixed materials of different specific gravities comprising a centrifuge bowl having a base and a peripheral wall surrounding an axis passing through the base and generally upstanding from the base to an open mouth, a plurality of axially spaced, inwardly projecting, peripherally extending projections mounted on an inner surface of the peripheral wall and a plurality of openings extending through the peripheral wall from an outer surface to the inner surface thereof, the openings being arranged between each projection and the next adjacent projection and in angularly spaced relation around the peripheral wall, means mounting the bowl for rotation about the axis, means for feeding the materials into the bowl such that during rotation of the bowl they flow over the peripheral wall for discharge from the open mouth, and means for applying fluid to the outer surface of the bowl so as to pass through the openings and fluidize the materials between the projections, the openings passing through the peripheral wall in a direction inclined to an axial plane passing therethrough so as to tend to direct the fluid around the peripheral wall.

4,608,041

DEVICE FOR TREATMENT OF WOUNDS IN BODY TISSUE OF PATIENTS BY EXPOSURE TO JETS OF GAS

Frese Nielsen, Rosenlundsvägen 42, S-440 80 Ellös, Sweden

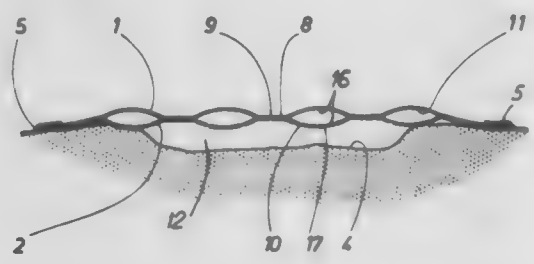
PCT No. PCT/SE82/00325, § 371 Date Jun. 13, 1983, § 102(e) Date Jun. 13, 1983, PCT Pub. No. WO83/01388, PCT Pub. Date Apr. 28, 1983

PCT Filed Oct. 11, 1982, Ser. No. 504,689

Claims priority, application Sweden, Oct. 14, 1981, 8106069

Int. Cl.[4] A61F *2/36*

U.S. Cl. 604—23 5 Claims



1. A device for treating a wound in body tissue of a patient, comprising: a nozzle unit to be placed over the wound so as to cover the wound and to separate the wound from surrounding space, an inlet for gas under pressure to the unit, said unit including a first and second layer of plastic foil, both having first surfaces where the layers are sealingly joined to each other including surfaces extending along a major part of the circumference of the unit, said first and second layers defining an inner space, said inlet communicating with said inner space so as to be sustained at least partly by gas pressure separating the first and second layers from each other at second surfaces, said first layer having a plurality of inlet openings leading from said inner space to the wound, said inlet openings being positioned in said second surfaces of said first layer, there being two rows of inlet openings with each row being displaced relative to a centerline between the two rows so that when the nozzle unit adjacent to each inlet opening assumes a curved configuration each inlet opening will be slanted with respect to the wound and a jet of gas exiting from each inlet opening will be directed obliquely at the wound, said first and second layers having a plurality of outlet openings positioned in at least part of said first surfaces, said outlet openings leading from the area of the wound directly to the surrounding space, so that the inlet openings may direct a plurality of gas jets from the inner space to the wound, and the outlet openings may let out gas directly to the surrounding space from the wound.

4,608,042

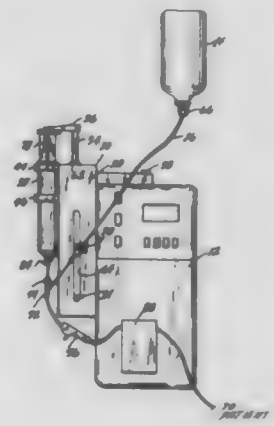
APPARATUS FOR SEQUENTIAL INFUSION OF MEDICAL SOLUTIONS

Timothy W. Vanderveen, Poway, and Gus Taeo, San Diego, both of Calif., assignors to Warner-Lambert Company, Morris Plains, N.J.

Filed Sep. 25, 1985, Ser. No. 779,897

Int. Cl.[4] A61M *5/00*

U.S. Cl. 604—81 9 Claims



1. An apparatus for the sequential infusion of I.V. fluids to a patient comprising:

a fluid source;

a fluid flow device;

an I.V. tubing set connecting said fluid source in fluid communication with said fluid flow device, said tubing set comprising in sequence, downstream from said fluid source, a one-way check valve and a fluid access port;

means on said fluid flow device to control the rate of fluid flow therethrough;

a pre-filled syringe, having a fluid chamber and a Plunger slidably positioned therein, connectable in fluid communication with said access port; and

an activation means comprising: a case; a shuttle slidably mounted on said case for movement between a first position and a second position; a drive shaft having a depressor affixed thereto; a normally relaxed spring connecting said drive shaft to said shuttle; clips attached to said case for mounting said syringe on said case to position said depressor against said plunger and establish said shuttle in the first position; and a handle fixedly mounted on said shuttle for moving said shuttle from the first position into the second position to extend said spring for urging said depressor against said plunger to dispense fluid from said chamber of said syringe and sufficiently raise the hydrostatic pressure downstream from said one-way check

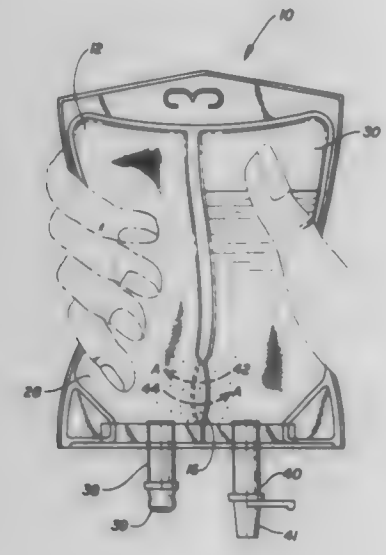
valve to prevent fluid flow therethrough when said syringe is engaged with said access port for the infusion of fluid from said syringe by said fluid flow device to the patient.

4,608,043

I.V. FLUID STORAGE AND MIXING SYSTEM

Mark E. Larkin, Lindenhurst, Ill., assignor to Abbott Laboratories, North Chicago, Ill.

Filed Jun. 22, 1984, Ser. No. 623,066
Int. Cl.[4] A61M *5/00*
U.S. Cl. 604—87 5 Claims



1. A device for separately storing and subsequently mixing a liquid and a medicament comprising:

a container formed of flexible thermoplastic material and having at least one port;

a partition seal dividing said flexible container, said partition seal spanning the interior of said flexible container to define first and second chambers within said flexible container, the partition seal being formed by a sealing together of opposing walls of the flexible container, said partition seal having at least one weakened section, the weakened section being a section of the partition seal of sufficiently reduced width in comparison to the remainder of the partition seal that the seal in the weakened section will fail under the force of manually generated pressures in the fluid;

said first chamber containing the liquid in fluid communication with said port;

said second chamber containing the medicament; whereby compressing the walls of said first chamber of the flexible container causes said liquid to rupture the weakened portion of said partition seal and mix the liquid and the medicament.

4,608,044

COMPRESS FOR TREATMENT OF WOUNDS

Percy Nordqvist, Särö , and Erik Hylerstedt, Gothenburg, both of Sweden, assignors to Molnlycke AB, Gothenburg, Sweden

Continuation of Ser. No. 177,757, Dec. 3, 1979, abandoned. This application Feb. 26, 1982, Ser. No. 352,515
Claims priority, application Sweden, Apr. 3, 1978, 7803697
Int. Cl.[4] A61M *35/00*
U.S. Cl. 604—290 2 Claims

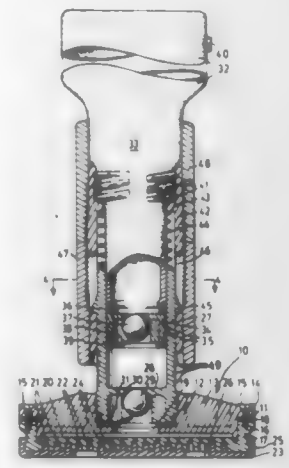
1. In a method for treating infected discharging wounds of the type wherein a sterile, therapeutically inert compress impregnated with an isotonic or hypertonic aqueous solution consisting essentially of sodium chloride is applied to the wound, the improvement comprising drying the impregnated compress prior to application thereof to the wound to evaporate substantially all the water present and pressing the dried impregnated compress against the wound and securing the compress with a bandage.

4,608,045

APPLICATOR FOR IMPRESSING BRANDS OR MEDICAMENTS ON ANIMALS

Donald W. Fretwell, 21 Looranah Street, Jindalee, Queensland, 4074, Australia

Filed Nov. 7, 1983, Ser. No. 549,491
Claims priority, application Australia, Nov. 10, 1982, PF6737; Dec. 21, 1982, PF7362
Int. Cl.[4] A61D *7/00*
U.S. Cl. 604—311 4 Claims



1. An applicator for impressing liquid brands or medicaments on animals including:

an applicator pad having a liquid permeable base free of any needles for surface application to an animal,

a chamber in the applicator pad communicating with the liquid-permeable base,

a cylinder leading by way of a first non-return valve to the chamber,

a replaceable liquid cartridge comprising a body serving as a handle for the applicator, and a neck slidable in the cylinder as a plunger, a second non-return valve normally closing a liquid outlet from the neck and adapted, when the plunger is retracted in the cylinder, to unseat allowing passage of fluid from the cartridge to the cylinder and, when the plunger is advanced in the cylinder, to close and force liquid from the cylinder, unseating the first non-return valve, and into the chamber in the applicator pad,

the liquid cartridge being screw threadedly engaged in a sleeve slidable but non-rotatable on the cylinder,

adjustable stop means being provided for said sleeve,

said adjustable stop means including a stop nut threadedly engaged on the sleeve which when the plunger is in its advanced position abuts the applicator pad,

the liquid-permeable base being liquid-permeable by virture of a plurality of holes therethrough; and

a multiplicity of removable plugs blocking the holes whereby when appropriate plugs are removed, a flow of liquid can occur in a desired outline.

4,608,046

FLAT FOLDED FEMALE URINARY AID

Keivan Towfigh, 51 Harvard Ave., Medford, Mass. 02155

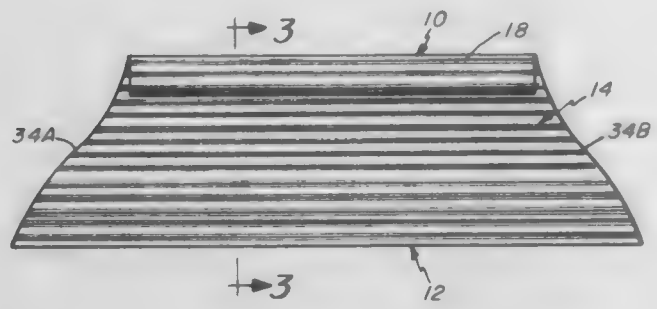
Continuation of Ser. No. 143,831, Apr. 25, 1980, abandoned, which is a continuation of Ser. No. 825,939, Aug. 19, 1977, abandoned. This application Jul. 3, 1985, Ser. No. 752,351
Int. Cl.[4] A61F *5/44*
U.S. Cl. 604—329 5 Claims

1. A urinary aid for feminine use comprising:

a flat-folded tubular member having a pair of flexible side panels defined by a pair of parallel fold lines which extend longitudinally of the tubular member, each end of the tubular member terminating in an openable end, said panels being expandable from a flat-folded configuration to an opening-defining configuration in response to compression of the fold lines toward each other, as least one of the openable ends of the tubular member being dimensioned so as to be insertable, in its flat-folded configuration, be-

tween the user's labia and being constructed and arranged so as to part the labia in response to said compression;

the ends of the side panels, at least at one end of said member, being of a configuration such that when said end is



expanded to its opening-defining configuration, said end will define an opening which extends generally along a plane which is disposed at an angle to the longitudinal dimension of the member;

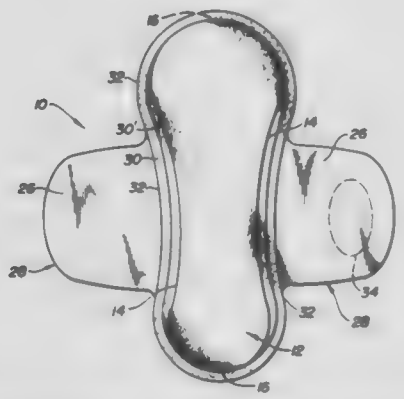
said ends of said panels being S-shaped.

4,608,047

SANITARY NAPKIN ATTACHMENT MEANS

William B. Mattingly, Somerset, N.J., assignor to Personal Products Company, Milltown, N.J.

Filed May 28, 1985, Ser. No. 737,755
Int. Cl.[4] A61F *13/16*
U.S. Cl. 604—387 18 Claims



1. In a sanitary napkin of the type for placement in the inner crotch portion of an undergarment, which napkin comprises an absorbent element having a body facing side, a garment facing side, longitudinally extending edges and transverse ends and further comprises flaps extending from each of said longitudinal edges;

the improvement wherein said flaps extend to a length sufficient to allow the flaps to overlie the outer crotch portion of the undergarment, said flaps being sufficiently drapable so as to allow each to fold about said crotch portion at any of the infinite number of lines lying essentially parallel to the junction line between the absorbent element and each flap and the extreme end of said flap, said sufficient drapability being that of a polyethylene film having a thickness of less than about 5 mils;

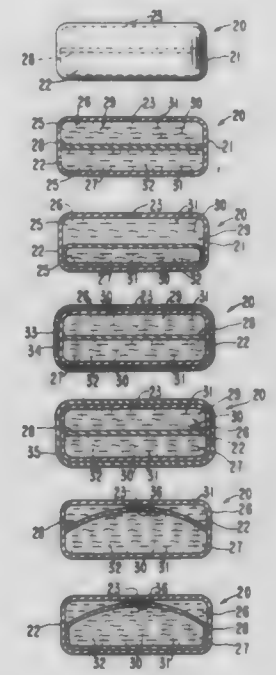
whereby said sanitary napkin may be applied to crotch portions of varying widths without causing said crotch portions to wrinkle and conform to the dimensions of the sanitary napkin.

4,608,048

DISPENSING DEVICE WITH DRUG DELIVERY PATTERNS

Richard Cortese, Los Gatos, and Felix Theeuwes, Los Altos, both of Calif., assignors to ALZA Corporation, Palo Alto, Calif.

Filed Dec. 6, 1984, Ser. No. 678,744
Int. Cl.[4] A61M *7/00*
U.S. Cl. 604—890 29 Claims



1. An osmotic device for the controlled delivery of a beneficial agent to an environment of use, comprising:

(a) a wall comprising in at least a part a semipermeable composition permeable to the passage of an exterior fluid present in the environment of use and substantially impermeable to the passage of a beneficial agent, the wall surrounding:

(b) a first compartment containing a beneficial drug;

(c) a second compartment containing a beneficial drug;

(d) at least one passageway in the wall initially communicating with the first compartment and the exterior of the device; and,

(e) means in the device for separating the first and second compartments for initially restricting the passage of beneficial drug from the second compartmentt, said means comprising the ability for forming at least one aperture in situ for releasing the drug from the second compartment and then through the passageway that initially communicated with said first compartment for delivering the drug from the device.

4,608,049

INTRAOCULAR LENS AND METHOD OF INSERTING AN INTRAOCULAR LENS INTO AN EYE

Charles D. Kelman, 269-70 Grand Central Pkwy., Floral Park, N.Y. 11005

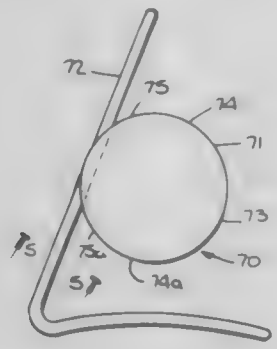
Filed Jun. 28, 1982, Ser. No. 393,057
Int. Cl.[4] A61F *2/16*
U.S. Cl. 623—6 4 Claims

1. An intraocular lens comprising:

position-fixation means having an elongated intermediate portion having seating portions at opposite axial ends thereof for seating the lens within an eye,

a deformable lens body of flexible material connected at a peripheral portion thereof to said position-fixation means, with the axis of said position-fixation means generally tangential to said peripheral portion, said lens body having light-focusing capability and adapted to be curled about said axis of said position-fixation means into a substantially cylindrical shape having a diameter substantially smaller than the maximum dimension of said lens body when uncurled, so that said lens can be inserted into the eye in

the direction of said axis, when said lens body is in curled condition, through a substantially smaller opening in the eye than the opening through which said lens body could be inserted when uncurled, said lens body being formed of



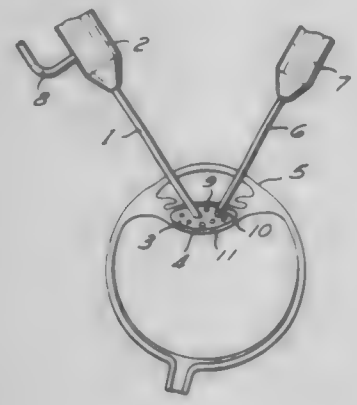
a material more flexible than the material of said intermediate portions of said position-fixation means and being capable of returning to substantially its uncurled configuration after insertion into the eye.

4,608,050

CORRECTION OF DEFECTS IN THE EYE AND COMPOSITIONS THEREFOR

George M. Wright, Mission Viejo, and Thomas D. Talcott, Irvine, both of Calif., assignors to Innovative Surgical Products, Inc., Santa Ana, Calif.

Filed Jul. 21, 1983, Ser. No. 515,790
Int. Cl.[4] A61F *1/16, 1/24*
U.S. Cl. 623—6 59 Claims



1. A method of replacing the lens in the eye of a human being or other animal in vivo which comprises:

introducing into the lens capsule, from which the natural lens has been removed, a curable liquid silicone polymer composition comprising crosslinkable silicone polymer and a crosslinker through a needle inserted into a hole in the lens capsule;

sealing the hole in the lens capsule by curing the polymer composition that is in the vicinity of the hole to an extent sufficient to prevent loss of said composition from the lens capsule prior to withdrawing the needle from the hole; and;

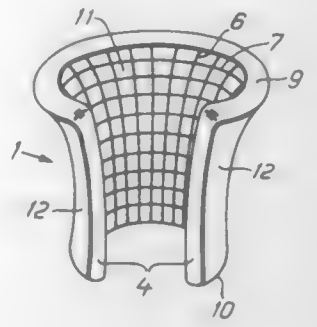
curing said composition to form in situ a clear, synthetic lens.

4,608,051

AUDITORY CANAL WALL PROSTHESIS AND PROCESS FOR PRODUCING SAME

Ralf Reck, Mainz-Bretzenheim; Heinz Broemer, Wetzlar-Hermannstein; Klaus Deutscher, Wetzlar, and Henning Franek, Braunfels-Tiefenbach, all of Fed. Rep. of Germany, assignors to Ernst Leitz Wetzlar GmbH, Wetzlar, Fed. Rep. of Germany

PCT No. PCT/DE82/00092, § 371 Date Dec. 29, 1982, § 102(e) Date Dec. 29, 1982, PCT Pub. No. WO82/03765, PCT Pub. Date Nov. 11, 1982
PCT Filed Apr. 29, 1982, Ser. No. 459,696
Claims priority, application Fed. Rep. of Germany, Apr. 29, 1981, 3117025; Mar. 26, 1982, 3211212
Int. Cl.[4] A61F *2/18*
U.S. Cl. 623—10 35 Claims



1. A prosthesis for the total or partial replacement of a rear auditory canal wall, comprising:

an open ended, hollow cylindrical sleeve having a longitudinal axis extending between a first and a second end, said sleeve including a wall defining an inner surface and an outer surface, wherein said inner surface is defined by a plurality of differential hyperboloid expansions having ellipsoidal cross sections perpendicular to said longitudinal axis, wherein at least one first expansion defines said first end and at least one second expansion defines said second end;

said sleeve further including a cut-out section defined by first and second axial edges extending from said first end to said second end; and

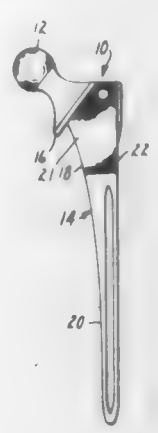
said sleeve including a bioactive material.

4,608,052

IMPLANT WITH ATTACHMENT SURFACE

Craig L. Van Kampen, Oakdale, and Eric N. Hockert, Cottage Grove, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Apr. 25, 1984, Ser. No. 603,777
Int. Cl.[4] A61F *2/32*
U.S. Cl. 623—22 22 Claims



1. An implant for use in a human body, said implant having an integral attachment surface adapted to permit ingrowth of living tissue, said attachment surface being defined (1) by a multiplicity of adjacent, generally part-spherical, concave surface parts within said implant having intersecting, generally

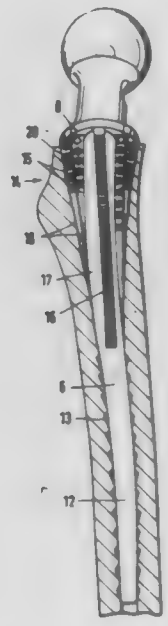
aligned rims defining an inner attachment surface portion within said implant and (2) by a multiplicity of spaced posts projecting from said inner attachment surface portion, said posts each having a plurality of side attachment surfaces, which side attachment surfaces (1) are generally cylindrically concave, (2) intersect to define post edges, and (3) are radiused at their intersections with said concave surface parts.

4,608,053

FEMORAL HIP PROSTHESIS

Arnold Keller, Kayhude, Fed. Rep. of Germany, assignor to Waldemar Link GmbH & Co., Hamburg, Fed. Rep. of Germany

Filed Apr. 29, 1983, Ser. No. 490,008
Claims priority, application Fed. Rep. of Germany, May 3, 1982, 3216539
Int. Cl.[4] A61F *2/32*
U.S. Cl. 623—23 22 Claims



1. A femoral hip joint prosthesis comprising:

a slender stem core (17) having a proximal end section for engaging a trochanteric region (14) of a femur (1) and having a distal section (12) for extending into a medullary cavity; and

a plurality of longitudinal ribs (15) projecting from said stem core and extending along said proximal end section on each of dorsal and ventral sides of said stem core, each of said ribs having a ridge surface (18) opposite said stem core to engage surrounding bony tissues, each of said ribs having a broad surface extending between said stem core and said ridge surface and facing a medial side of said femur;

each of said ribs defining a multiplicity of perforations (20) extending through said broad surface.

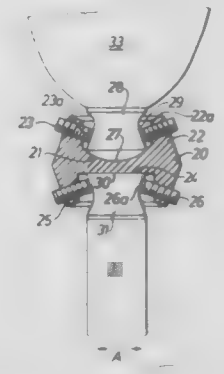
4,608,054

ADJUSTABLE CONNECTION FOR CONNECTING ADJOINING PARTS OF AN ARTIFICIAL LIMB

Mats Schröder, Stockholm, Sweden, assignor to Landstingens Inkopscentral LIC, Sweden

Filed Jun. 14, 1984, Ser. No. 620,431
Claims priority, application Sweden, Jun. 15, 1983, 8303415
Int. Cl.[4] A61F *2/64*
U.S. Cl. 623—39 22 Claims

6. An adjustable connection for connecting adjoining parts of an artificial limb, and comprising a first, second and a third coupling element, said first coupling element being disposed between said third and second coupling elements and having a first support surface which is across the axis of said artificial limb and a first annular flange encircling the area of said first support surface, said first coupling element having a second support surface directed oppositely to said first support surface and a second annular flange encircling the area of said second support surface, said third coupling element extending with clearance within said first annular flange and having a support surface abutting said first support surface, first setting elements extending inwardly from said first annular flange to engage said first coupling element, said second coupling element extending with clearance within said second annular flange and having a support surface abutting said second support surface, and second setting elements extending inwardly from said second annular flange to engage said second coupling element and locate the same in position in the first coupling element, each of said flanges having an annular edge and each said edge being unloaded.

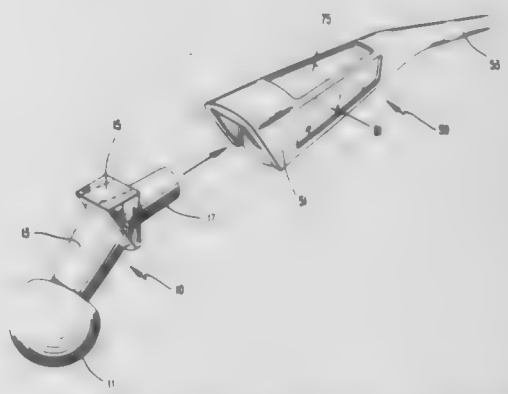


4,608,055

FEMORAL COMPONENT FOR HIP PROSTHESIS

Bernard F. Morrey, and Edmund Y. S. Chao, both of Rochester, Minn., assignors to Mayo Foundation. Rochester, Minn.

Filed Jan. 12, 1984, Ser. No. 570,094
Int. Cl.[4] A61F *1/04*
U.S. Cl. 623—23 1 Claim



1. In an improved femoral component including a stem component and a head and neck component connectable to said stem component to form said femoral component, said head and neck component comprising:

(a) a head portion;

(b) a neck member at a first end thereof protruding from a substantially flat face of said head portion;

(c) said neck member, at a second end thereof being connected to a first surface of a basalar neck portion;

(d) said basalar neck portion having a second surface from which protrudes a tapered portion, a third substantially rectangular surface substantially perpendicular to said second surface, and fourth and fifth surfaces substantially perpendicular to both said second surface and said third surface; and

(e) said neck member and said tapered portion forming an obtuse angle with one another and said first and second surfaces converging to form an acute angle therebetween.

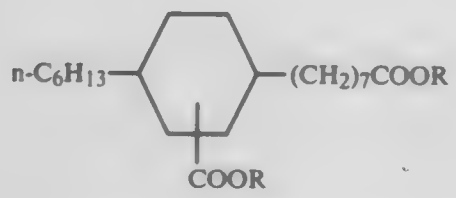
4,608,056

DYE COMPOSITION AND METHOD OF USE THEREOF FOR COLORING THERMOPLASTIC MATERIALS

Robert B. Wilson, P.O. Box 6786, Greenville, S.C. 29606

Continuation-in-part of Ser. No. 584,144, Feb. 27, 1984, abandoned. This application Feb. 15, 1985, Ser. No. 702,316
Int. Cl.[4] D06P *5/00*
U.S. Cl. 8—506 42 Claims

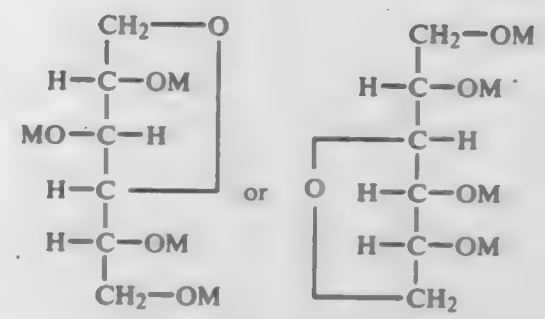
1. A waterless dip dye composition for apparel or other thermoplastic articles, comprising an aromatic polyester of the formula $C_6H_z(COOR_1)_{z'}$ wherein R_1 is substituted or unsubstituted alkyl of 6–22 carbon atoms or the residue of an alkylphenol ether of an alkoxyalkanol; z is 3, 4, 5, or 6 and z′ is 6-z; and a cycloaliphatic diester of the formula



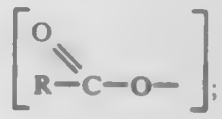
wherein R is substituted or unsubstituted straight or branched chain alkyl of 4–20 carbon atoms, polyoxyalkylene of the formula $R'(OC_xH_{2x})_n$ or phosphated polyoxyalkylene of the formula

$$(HO)_2P(=O)(OC_xH_{2x})_nOC_xH_{2x}—$$

or a salt thereof, wherein $(C_xH_{2x}O)_n$ is $(C_2H_4O)_n$—, $(C_3H_6O)_n$— or $(C_2H_4O)_p$— $(C_3H_6O)_q$—; R′ is H or ArCO; Ar is substituted or unsubstituted mono- or bicyclic aryl of up to 15 carbon atoms; x is 2 or 3; n is 2–22 and the sum of p+q is n; and an organic colorant.



wherein one M is



a second M is $H(OCH_2CH_2)_y$ and the remaining M's are H.

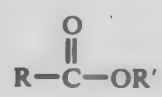
4,608,057

CLEAR STABLE MOTOR FUEL COMPOSITION

Marshall E. Davis, Poughkeepsie, and Rodney L. Sung, Fishkill, both of N.Y., assignors to Texaco Inc., White Plains, N.Y.

Filed Jun. 3, 1985, Ser. No. 740,159
Int. Cl.[4] C10L *1/32*
U.S. Cl. 44—51 22 Claims

1. A process for making a clear, stable gasoline blend from a hazy, water-saturated gasoline containing a mixture of hydrocarbons in the gasoline boiling range, from about 2.0 to about 12.0 volume percent of methanol, from about 2.0 to about 10.0 volume percent of a cosolvent (C_2–C_5) aliphatic alcohol and 0.1 to 0.5 volume percent of contaminating water, said process comprising adding to said water-saturated gasoline, from about 0.05 to about 3.0 weight percent of a nonionic surfactant of an alkanoic acid derivative



wherein R is a (C_9–C_{24}) alkyl or alkylene group, and R′ is polyethylene glycol

$$—(CH_2CH_2O)_xH$$

where x is a numeral of about 1 to about 10, or R′ is

$$H(OCH_2CH_2)_yR''—$$

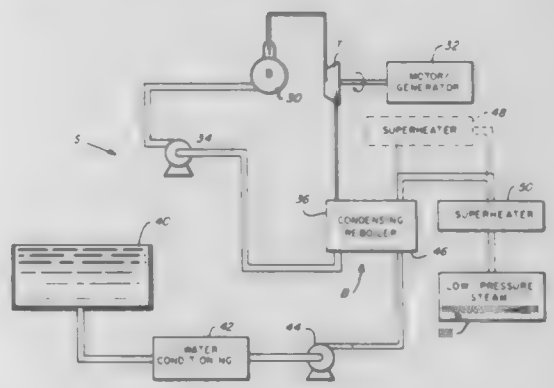
wherein y is a numeral of about 4 to about 20 and R″ is

4,608,058

STEAM SUPPLY SYSTEM FOR SUPERPOSED TURINE AND PROCESS CHAMBER, SUCH AS COAL GASIFICATION

William M. Menger, Houston, Tex., assignor to Houston Industries, Incorporated, Houston, Tex.

Filed Sep. 12, 1984, Ser. No. 649,596
Int. Cl.[4] F01K *25/00*; C10J *3/54*
U.S. Cl. 48—73 10 Claims



1. A steam supply system for a process chamber consuming superheated steam at a pressure of about 600 psi or below which is driven by a boiler operating at a pressure of about 2000 psi, a pressure range above that needed by said process chamber for also driving a superposed turbine, comprising:

(a) a high pressure boiler feed pump for supplying highly purified water to said boiler;

(b) a condensing reboiler connected to receive steam from said superposed turbine in a high pressure side;

(c) said condensing reboiler also having a low pressure side, essentially isolated from fluid contact with said high pressure side, for receiving water for use in the lower operating pressure steam processes;

(d) said condensing reboiler further comprising integral superheating means for heating the wster received in said low pressure side into superheated low pressure steam with the steam received in the high pressure side;

(e) means for conveying fluid from said high pressure side of said condensing reboiler to said boiler feed pump; and

(f) means for conveying the low pressure superheated steam from said condensing reboiler to said process chamber.

8. A process of supplying superheated steam for a process chamber consuming steam at a pressure of about 600 psi or below which is driven by a boiler operating at a pressure range above that needed by the process chamber for also driving a superposed turbine with steam at a pressure of 2000 psi or above, comprising the steps of:

(a) supplying highly purified water to the boiler;

(b) receiving steam from the superposed turbine in a high pressure side of a condensing reboiler;
(c) receiving water in a low pressure side of the condensing reboiler having an integral superheater in fluid isolation from the high pressure side;
(d) heating the water in the low pressure side, with the steam received from the superposed turbine, into low pressure superheated steam;
(e) conveying fluid from the high pressure side of the condensing reboiler for supply to the boiler; and
(f) conveying low pressure superheated steam to the process chamber for use therein.

4,608,059

METHOD OF OPERATING A REACTOR FOR GASIFYING SOLID FUELS

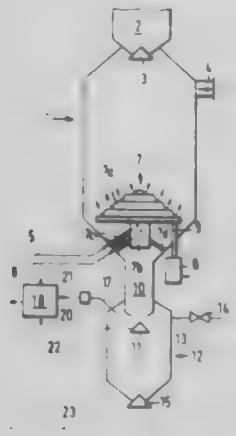
Hans Küpfer, and Carl Hafke, both of Frankfurt am Main, Fed. Rep. of Germany, assignors to Metallgesellschaft Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Sep. 20, 1984, Ser. No. 652,760

Claims priority, application Fed. Rep. of Germany, Sep. 20, 1983, 3333870

Int. Cl.[4] C10J *3/06, 3/14, 3/16*

U.S. Cl. 48—197 R **1 Claim**



1. A method of operating a reactor for gasifying a solid fuel at a pressure in the range of 10 to 150 bar, said reactor comprising a rotating grate, a lock chamber container below said grate and means for feeding oxygen and at least one gasifying agent selected from the group which consists of steam and carbon dioxide through said grate into the reactor, which method comprises the steps of:
(a) treating a bed of solid fuel above said grate with at least one gasifying agent to gasify said solid fuel and leave incombustible mineral matter in said bed;
(b) rotating said grate at a controlled speed to discharge said incombustible mineral matter as ash into said lock chamber container;
(c) periodically closing, pressure-relieving and emptying said lock chamber container and producing a corresponding first signal;
(d) measuring the temperature in the lock chamber container above the highest ash level in said lock chamber container and producing a corresponding second signal representing said temperature above the highest ash level in said lock chamber;
(e) in response to a deviation of said temperature as measured and a corresponding change in value of said second signal from a desired temperature range, varying the speed of the rotating grate in such a manner that the speed is lowered in case of an excessively high temperature and increased in case of an insufficiently high temperature, said temperature range varying with time;
(f) also monitoring an oxygen-feed rate of oxygen fed to said bed and producing a corresponding third signal, controlling the speed of the rotating grate with said third signal to increase the same in case of a higher oxygen supply rate;
(g) interrupting changes in the speed of the rotating grate for time intervals during which the lock chamber container is being emptied; and
(h) automatically controlling and varying said speed with a computer preprogrammed with said temperature range, said computer being supplied with said first, second and third signal.

4,608,060

SEPARATION OF POLAR GASES FROM NONPOLAR GASES

Santi Kulprathipanja, and Sudhir S. Kulkarni, both of Hoffman Estates, Ill., assignors to UOP Inc., Des Plaines, Ill.

Filed Apr. 15, 1985, Ser. No. 723,398

Int. Cl.[4] B01D *53/22*

U.S. Cl. 55—16. **10 Claims**

1. A process for the separation of a polar gas from a nonpolar gas in a feed mixture containing said gases which comprises contacting said mixture with the upstream face of a multicomponent membrane which comprises a mixture of a glycol plasticizer having a molecular weight of from about 200 to about 600 and an organic polymer cast on a porous support, said support having a ratio of total surface area to total pore cross-sectional area of from about 5:1 to about 900:1, at separation conditions, which said polar gas has a greater steady state permeability than said nonpolar gas, and recovering the permeate which emanates from the downstream face of said membrane, said permeate comprising a product mixture in which the proportion of polar gas to nonpolar gas is greater than the proportion of polar gas to nonpolar gas in said feed mixture.

4,608,061

NORMAL BUTANE/ISO-BUTANE SEPARATION

Warren K. Volles, Mt. Kisco, and Nelson A. Cusher, Carmel, both of N.Y., assignors to Union Carbide Corporation, Danbury, Conn.

Filed Jun. 28, 1985, Ser. No. 749,784

Int. Cl.[4] B01D *53/04*

U.S. Cl. 55—26 **21 Claims**

1. An improved pressure swing adsorption process for the separation of iso-butane from normal butane in an adsorption system having at least three adsorbent beds, each bed of which undergoes, on a cyclic basis, a processing sequence comprising:
(a) introducing a feed gas mixture of iso-butane and normal butane at an upper adsorption pressure to the feed end of the bed capable of selectively adsorbing normal butane as the more selectivity adsorbable component of the gas mixture, while iso-butane as the less readily adsorbable component passes through the bed and is discharged from the discharge end thereof, such feed gas introduction being continued as a normal butane adsorption front is formed in the bed and passes through the bed from the feed end thereof and breaks through at the discharge end of the bed, a portion of the iso-butane effluent stream thus discharged being diverted for passage as purge gas to another bed in the system;
(b) countercurrently depressurizing said bed with release of gas from the feed end thereof, thereby depressurizing said bed to an intermediate pressure, said released gas being passed to another bed initially at a lower pressure for pressure equalization at said intermediate pressure;
(c) further countercurrently depressurizing said bed with release of additional amounts of gas from the feed end thereof, thereby depressurizing said bed to a lower desorption pressure, the gas released being recovered as normal butane product gas;
(d) countercurrently purging said bed by the addition of iso-butane purge gas to the discharge end thereof, thereby purging residual normal butane present in the void spaces of the bed to enhance the recovery of normal butane product gas and the purity thereof;
(e) partially repressurizing said bed by the passage of counter-

current depressurization effluent gas from a bed in the system initially at a higher pressure for pressure equalization therebetween at said intermediate pressure level; and

(f) further repressurizing said bed from the intermediate pressure to said upper adsorption pressure by the addition of feed gas thereto,

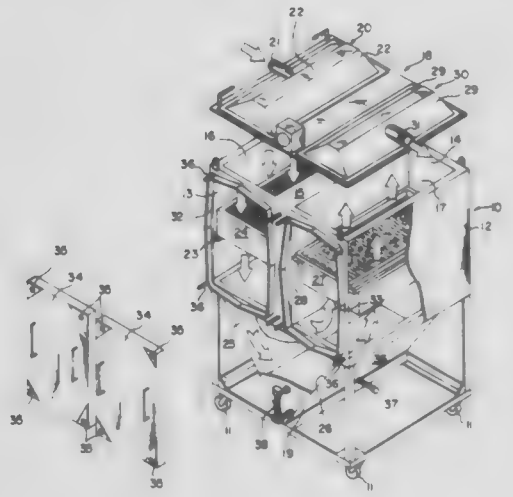
whereby enhanced bed utilization and productivity are achieved at advantageous adsorbent and captial equipment requirements, and advantageous operating expenses, for the desired gas separation operation.

4,608,062

CONTAMINATED AIR/WATER RECOVERY APPARATUS

Joel Hughes, Wilmington, N.C., assignor to Container Products Corporation, Wilmington, N.C.

Filed Mar. 13, 1985, Ser. No. 711,195
Int. Cl.[4] B01D *19/00, 46/12, 50/00*
U.S. Cl. 55—186 **8 Claims**



1. A mobile contaminated air/water recovery apparatus adapted to be used with a vacuum powered recovery system, comprising,

(a) a cabinet having an open top and a partially opened side wall,

(b) an interior divider forming compartments within said cabinet,

(c) a fluid collection tank closing the bottom of said cabinet with said compartments arranged in side by side relation and stacked upon said tank,

(d) a top closure for said cabinet divided into separate sections one for each of said compartments so as to provide access and egress from respective compartments,

(e) horizontally disposed filter means in each of said compartments, whereby contaminated air downwardly flows through one filter and upwardly flows through a filter downstream of said one filter,

(f) means removably supporting said filter means in each of said compartments whereby said filter means are accessible through said partially opened side wall of said cabinet, and

(g) means for closing said partially open side wall and each of said compartments.

4,608,063

EXHAUST SYSTEM FOR CHEMICAL VAPOR DEPOSITION APPARATUS

Takashi Kurokawa, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

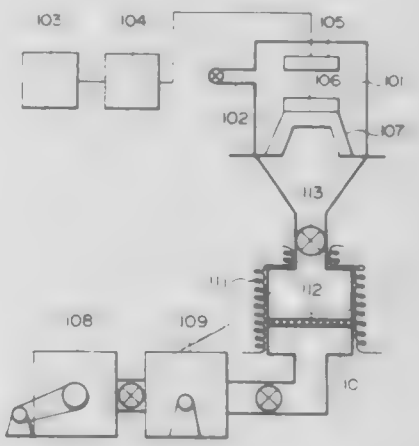
Filed Nov. 8, 1984, Ser. No. 669,527
Claims priority, application Japan, Nov. 25, 1983, 58-220779
Int. Cl.[4] B01D *35/18*
U.S. Cl. 55—208 **1 Claim**

1. A CVD apparatus comprising:

(1) a deposition chamber in which gas introduction means and gas discharge means are provided;

(2) a discharge electrode provided within said deposition chamber;

(3) supporting means for supporting a substrate on which deposition layer is formed and which is arranged opposite to said electrode provided within said deposition chamber; and



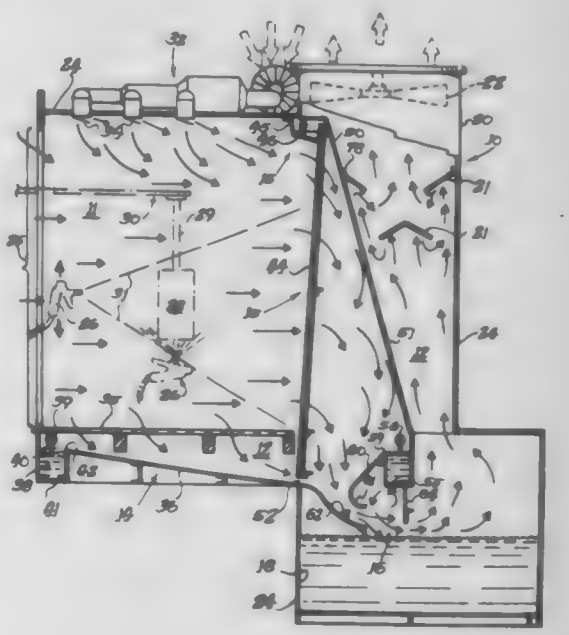
(4) a fine powder collecting chamber having a filter means for collecting a fine powder and a heater for heating said fine powder collecting chamber, mechanical booster pump means, and oil rotary pump means, said fine powder collecting chamber, said mechanical booster pump means and said oil rotary pump means being arranged in an exhaust path downstream of said gas discharge means in the order named.

4,608,064

MULTI-WASH SPRAY BOOTH AND METHOD OF CAPTURING AIR BORNE PARTICLES

Stanley C. Napadow, Elgin, Ill., assignor to Protectaire Systems Co., Elgin, Ill.

Filed Jan. 3, 1985, Ser. No. 688,572
Int. Cl.[4] B01D *47/10*
U.S. Cl. 55—238 **16 Claims**



1. In a spray booth for capturing air borne particles by wetting the same with a liquid, said spray booth comprising:

a housing having a forward spraying chamber in which will be present air borne spray particles,

a first verticle baffle wash means located rearwardly of the spraying chamber and having a plurality of staggered baffle plates through which a first air stream flows rearwardly in a generally horizontal path from the spray chamber,

water application means for flowing a cascade of water down the panels for trapping air borne spray particles being carried by the first air stream,

a floor in said spray chamber having air flow passages therethrough through which a second air stream flows in a

downward path through the floor passages at a location forwardly of said first vertical baffle wash means,

a second wash means for washing the second air stream for removing air borne spray particles from the second air stream,

means for directing the first air stream downwardly and means for directing the second air stream rearwardly for convergence with the first air stream to form combined air streams,

a common throat means for receiving the air flow of said combined air streams for raising the velocity of the combined air streams to cause liquid flowing through the throat to become air borne,

a turbulent liquid wash means for receiving the combined air streams and for mixing the same turbulently with liquid particles to form a turbulent water and an air wash for removing air borne particles,

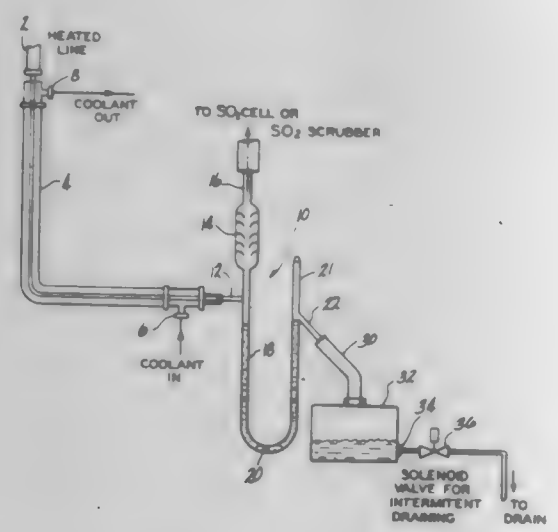
an eliminator passage in said housing for receiving the air from the turbulent wash means and for eliminating liquid particles carried by air flowing prior to discharge of the air from the booth.

4,608,065

MOISTURE REMOVAL FOR STACK GAS MONITOR

Michael M. Lai, Friendswood, Tex., assignor to Champion International Corporation, Stamford, Conn.

Filed Apr. 3, 1985, Ser. No. 719,518
Int. Cl.[4] B01D *45/08*
U.S. Cl. 55—269 4 Claims



1. A system for removing moisture from a gas, said system comprising:

(a) an inlet conduit or conducting moisture-bearing gas into said system, said inlet conduit opening into a vertically disposed drain conduit;

(b) a moisture condensing chamber disposed vertically above said drain conduit and said inlet conduit, said drain conduit opening into said moisture condensing chamber and being vertically aligned therewith so that gas entering said drain conduit through said inlet conduit will rise through said drain conduit into said condensing chamber, said condensing chamber including a plurality of inwardly extending projections which increase the internal surface area of said condensing chamber and on which drops of moisture will condense from the gas rising through said condensing chamber, said projections having downwardly directed ends operable drip moisture therefrom toward said drain conduit whereby the condensed moisture will flow into said drain conduit;

(c) a U-shaped trap disposed vertically below said drain conduit and communicating with said drain conduit, said trap being operable to receive condensate flowing into said drain conduit, and said trap, when filled with liquid, being operable to prevent incoming gas from moving through said drain conduit and said trap, whereby gas entering said drain conduit via said inlet conduit can only pass through said condensing chamber;

(d) an outlet conduit opening into a leg of said trap opposite said drain conduit, said outlet conduit being disposed at a level on said leg which is vertically below the level of said inlet conduit, said outlet conduit being operable to discharge liquid from said trap upon influx of condensate to said trap from said condensing chamber; and

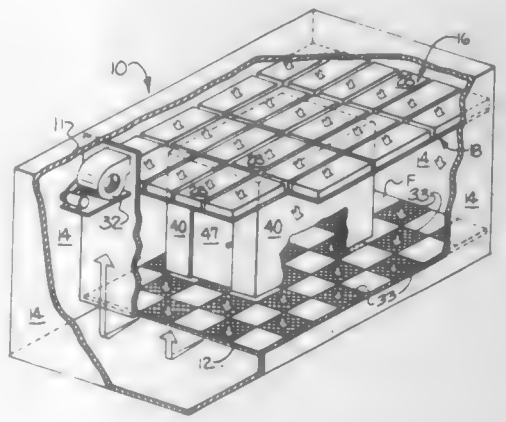
(e) a dry gas outlet disposed vertically above and opening into said condensing chamber.

4,608,066

CLEAN ROOM ADAPTED FOR VARIABLE WORK AREA CONFIGURATIONS

George H. Cadwell, Jr., Bounts Creek, N.C., assignor to Flanders Filters, Inc., Washington, N.C.

Filed Jul. 31, 1985, Ser. No. 760,501
Int. Cl.[4] B01D *25/22*
U.S. Cl. 55—385 A 12 Claims



1. A clean room having provision for supplying filtered air vertically therethrough under substantially laminar flow conditions and characterized by the ability to be divided into separated work areas of variable configurations, and comprising

a clean room enclosure including a top wall, a bottom wall, and bounding side walls,

a filter bank positioned parallel to and spaced below said top wall, said filter bank comprising a supporting latticework composed of interconnected lengthwise and crosswise members which define a plurality of rectangular open areas, a plurality of supporting tie rods connected between said top wall of the clean room and said latticework, and a plurality of high efficiency air filters positioned on said latticework with one of the filters covering each of said open areas,

a plurality of wall panels suspended downwardly from said latticework, with each wall panel being aligned below one of either said lengthwise or crosswise members of said latticework, and

attachment means releasably supporting each of said wall panels, with each attachment means being disposed coaxially with and operatively connected to one of said tie rods, and such that the weight of the suspended wall panels is borne directly by said tie rods and not by said latticework, and whereby said wall panels may be positioned within said clean room in a selected configuration to define separated work areas.

4,608,067

PERMANENT GAS REFRIGERATION METHOD

John Marshall, Ascot, England, assignor to The BOC Group, plc, Surrey, England

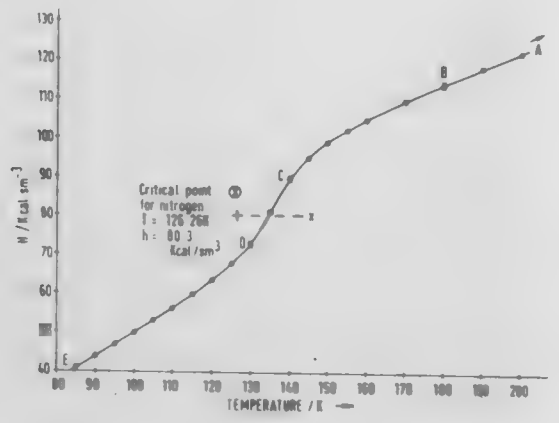
Filed Aug. 2, 1984, Ser. No. 636,954

Claims priority, application United Kingdom, Aug. 4, 1983, 8321073

Int. Cl.[4] F25J *1/00, 1/02*

U.S. Cl. 62—9

11 Claims



1. A method of refrigerating a permanent gas by heat exchanging a stream of said gas at a relatively high pressure with a main stream of work-expanded working fluid flowing counter to said high pressure stream, and thereby reducing the temperature of said high pressure stream to its critical temperature or a temperature therebelow, wherein the said main stream is supplemented by at least two work-expanded streams of working fluid introduced into heat exchange the permanent gas stream on the gaseous transitional section of relationship with the permanent gas stream at temperatures of the temperature-enthalpy curve of the permanent gas stream or within 5° K. beyond either end of such section, but with no work expanded stream of working fluid other than said main work expanded stream being used to refrigerate the permanent gas stream at its temperature more than 5° K. below the lower limit of the gaseous transitional section whereby the temperature of the working fluid as it is heated is more closely matched to that of the permanent gas stream as it is cooled along the said gaseous transitional section.

4,608,068

RECOVERY OF C_{3+} HYDROCARBONS

Heinz Bauer, Neuried, and Aldo Belloni, Puchheim, both of Fed. Rep. of Germany, assignors to Linde Aktiengesellschaft, Wiesbaden, Fed. Rep. of Germany

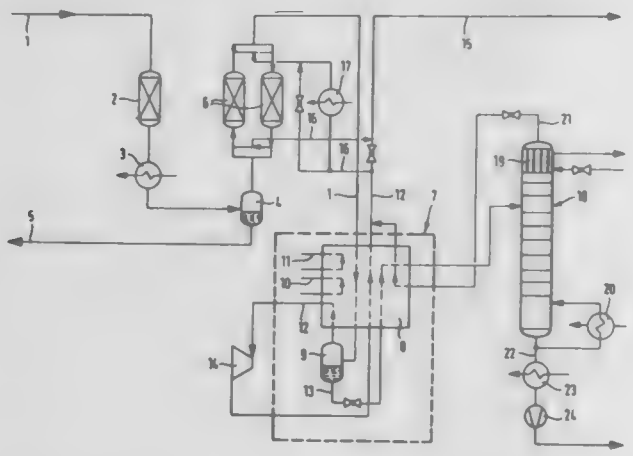
Filed Mar. 8, 1985, Ser. No. 709,742

Claims priority, application Fed. Rep. of Germany, Mar. 9, 1984, 3408760

Int. Cl.[4] A25J *3/02*

U.S. Cl. 62—18

23 Claims



1. In a process for the recovery of C_{3+} hydrocarbins from a feed stream containing hydrogen and C_1 to at least C_5 hydrocarbons, comprising cooling and partially condensing the feed stream; separating the partially condensed feed stream into a liquid fraction and a gaseous fraction; expanding the gaseous fraction to produce a colder fluid, and fractionating the liquid fraction in a rectification column to obtain a product stream consisting essentially of C_{3+} hydrocarbons and a residual gas stream product containing perdominantly C_{2-} hydrocarbons, the improvement comprising passing: (a) the gaseous fraction prior to expansion, (b) the liquid fraction, prior to rectification, and (c) the gaseous fraction after expansion, all in indirect heat exchange relationship with the feed stream to be cooled wherein said rectification is conducted at a temperature sufficiently high to enable an external-refrigeration cycle having a temperature above about −50° C. to be employed for partially condensing the overhead gas to provide reflux for the rectification column.

20. An apparatus suitable for separating a refinery waste gas, comprising a feed conduit for the feed stream integrated with prepurification means, a heat exchanger, and phase-seperating means, the liquid-collecting chamber of the latter being connected to a rectification column, and the gas-collecting chamber of the phase separating means being connected to expansion means, wherein the conduits connecting the phase-separating means (9) and the rectification column (18) or, the expansion means (14), are passed through the heat exchanger (8), the improvement which comprises a heat exchanger (36) being connected to the outlet of the expansion device (14) and being disposed in the gas space of the phase-separating means (9), said heat exchanger (36) being designated so as to permit said rectification to be conducted at a temperature sufficiently high to enable an external-refrigeration cycle having a temperature above about −50° C. to be employed for partially condensing the overhead gas to provide reflux for the rectification column.

4,608,069

SEPARATION OF HIGHER BOILING IMPURITIES FROM LIQUEFIED GASES

Hans Becker, Munich, and Herwig Landes, Ingolstadt, both of Fed. Rep. of Germany, assignors to Linde Aktiengesellschaft, Wiesbaden, Fed. Rep. of Germany

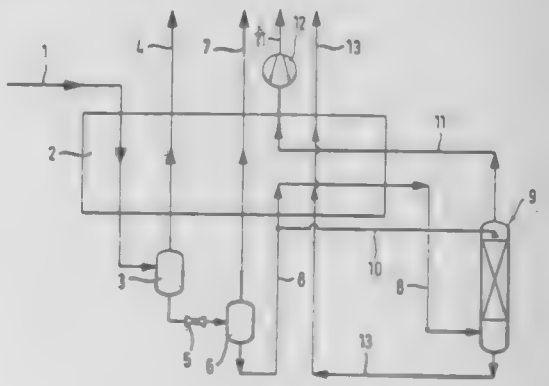
Filed Mar. 12, 1985, Ser. No. 710,808

Claims priority, application Fed. Rep. of Germany, Mar. 12, 1984, 3408997

Int. Cl.[4] F25J *3/02*

U.S. Cl. 62—26

22 Claims



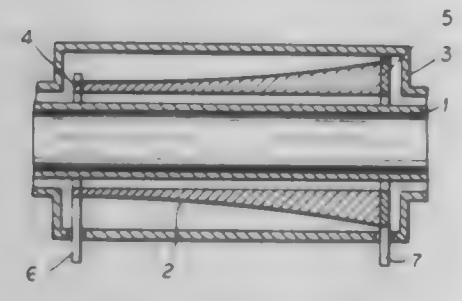
1. A process for a low temperature separation of a higher boiling component from a liquefied gas by rectification, comprising vaporizing a partial stream of the liquefied gas, providing a heat exchanger specifically designed to enable replacement of the sump heater or reboiler of the column by superheating the resultant vapor in said heat exchanger and introducing the resultant superheated vapor into the lower portion of a rectification column, passing the remainder of the liquefied gas in the liquid phase into the upper portion of the rectification column, and conducting rectification so as to withdraw said higher boiling component as bottoms and to recover vaporized liquefied gas depleted in said higher boiling component, as overhead gas product.

4,608,070

PROCESS FOR MANUFACTURING OPTICAL-FIBRE PREFORMS AT HIGH DEPOSITION RATE

Giacomo Roba, Beinasco-Torino, Italy, assignor to Cselt Centro Studi e Laboratori Telecomunicazioni S.p.A., Turin, Italy

Filed Sep. 12, 1984, Ser. No. 650,297
Claims priority, application Italy, Sep. 15, 1983, 67954 A/83
Int. Cl.[4] C03B *37/018, 37/027*
U.S. Cl. 65—3.12 2 Claims



1. A process for producing optical fibers which comprises the steps of:

forming a preform by:

producing glass particles by a reaction between vapor-phase reactants,

rotating a supporting glass tube having an internal surface around its axis,

initiating said reaction between the reactants in an input end of the tube in a region with constant temperature Ti,

simultaneously depositing said glass particles along an entire length L of the tube by heating the tube over its entire length L at once to a temperature T(r,x) which is a function of the distance from the input end given by the relationship:

$$T(r,x) = T_i \exp\left(- \frac{r^2 v_x}{2L\nu K} \cdot \frac{\frac{x}{L}}{1 - \frac{x}{L}} \right)$$

where:

exp represents the natural exponent base and the parenthetical expression the power thereof,

T(r,x) is the temperature of the tube at a distance r from the axis, where r is the internal tube radius, and at a distance x from the input end,

T_i is the temperature at the input end of the tube, v_x is the axial component of the speed of the glass particles entrained through said tube by a gas,

L represents the distance from the input end of tube at which all the particles have been deposited,

γ is the kinematic viscosity of vapor flow in the tube, X varies from X=O to X=L, and

K is a proportionality coefficient, so as to obtain a layer of deposited particles with constant thickness;

thermally collapsing said preform; and drawing said fibers from the collapsed tube.

4,608,071

METHOD FOR REDUCING DIAMETER OF A GLASS ROD OR TUBE BY DRAWING

Kiyoshi Yokokawa; Kazuo Koya, and Syouji Hosino, all of Gunma, Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Jan. 16, 1985, Ser. No. 691,984
Claims priority, application Japan, Jan. 17, 1984, 59-6120
Int. Cl.[4] C03B *37/027, 23/13*
U.S. Cl. 65—13 5 Claims



1. A method for reducing the diameter of a rod or tube of glass which comprises the steps of:

(a) holding the base rod or tube of glass in a substantially vertical disposition by gripping at the upper and lower ends thereof with an upper and a lower gripping means, respectively;

(b) heating a section of the glass rod or tube with an outer heating means so as to bring the glass material of the rod or tube in the section to a softened and plastically deformable state;

(c) moving the upper gripping means upwardly along the axial direction of the glass rod or tube while the lower gripping means is not moved upwardly along the axial direction of the glass rod or tube or is moved upwardly at a velocity smaller than the upward moving velocity of the upper gripping means so that the glass rod or tube in the heated section is drawn to be imparted with a reduced diameter;

(d) successively decreasing the distance between the outer heating means and the lower gripping means; and

(e) cooling the heated and softened glass rod or tube with plastic deformability in the section drawn and imparted with a reduced diameter to solidify.

4,608,072

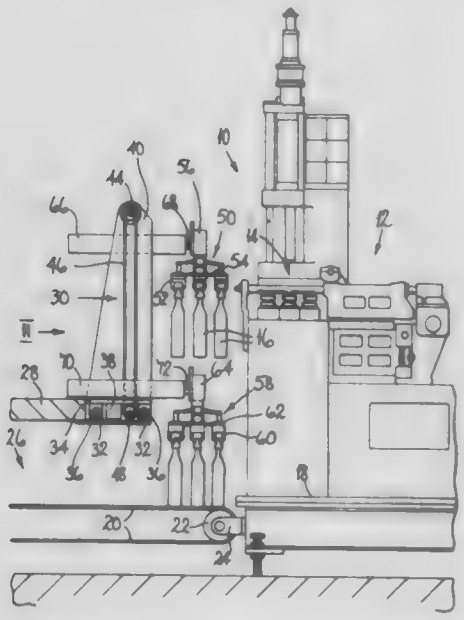
METHOD AND APPARATUS FOR TRANSFERRING ARTICLES OF GLASSWARE FROM A BLOW STATION TO CONVEYOR MEANS

Frank A. Fenton, Doncaster, England, assignor to Emhart Industries, Inc., Farmington, Conn.

Filed Jul. 15, 1985, Ser. No. 755,131
Claims priority, application United Kingdom, Aug. 3, 1984, 8419916
Int. Cl.[4] C03B *9/28*
U.S. Cl. 65—79 9 Claims

6. A method of transferring successively-formed articles of glassware from a blow station of a glassware forming machine to conveyor means using a first and a second gripping means by which alternately-formed articles or groups of articles are transferred, the method comprising moving the first gripping means transversely of the blow station to a first position in alignment with and at a higher lever than the blow station and simultaneously moving the second gripping means transversely of the blow station to a second position out of alignment with the blow station and above the conveyor means, moving the first gripping means from the first position to a third position above the blow station at which the first gripping means is caused to grip an article or a group of articles, moving the second gripping means downwardly from the second position to a fourth position at which the second grip-

ping means is caused to release an article or a group of articles on to the conveyor means, moving the first gripping means from the third position to the first position, moving the second gripping means from the fourth position to the second position, moving the first gripping transversely of the blow station to a fifth position out of alignment with the blow station and above the conveyor means and simultaneously moving the second gripping means transversely of the blow station from the second position to the first position, moving the first gripping means downwardly from the fifth position to a sixth position at



which the first gripping means is caused to release an article or a group of articles on to the conveyor means, moving the second gripping means from the first position to the third position at which the second gripping means is caused to grip an article or a group of articles, moving the first gripping means from the sixth position to the fifth position, moving the second gripping means from the third position to the first position, and repeating the above-mentioned movements in timed relationship to the operation of the machine so that all articles formed are transferred.

4,608,073

ROLLER CONVEYOR FOR A GLASS FURNACE

James Ford, Oradell, N.J., and Douglas M. Canfield, Suffern, N.Y., assignors to Casso Solar Corporation, Pomona, N.Y.

Continuation-in-part of Ser. No. 531,906, Sep. 12, 1983, Pat. No. 4,528,016. This application Jul. 3, 1985, Ser. No. 752,306

Int. Cl.⁴ C03B *27/00*

U.S. Cl. 65—163 **10 Claims**

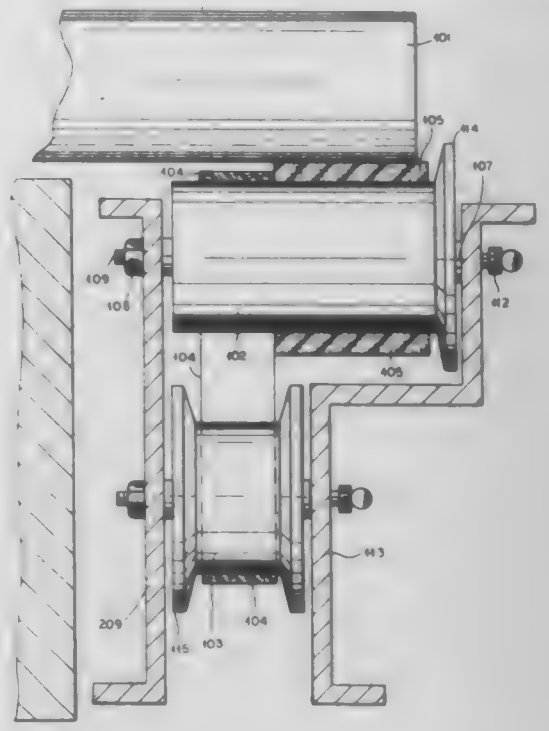
1. A furnace for the heat treatment of glass including annealing, heat strengthening, tempering and bending of glass which comprises:

a housing defining an elongated furnace chamber having an inlet and an outlet;

a roller conveyor between said inlet and said outlet and including respective rows of stub rollers disposed along each longitudinal side of said housing flanking a path between said inlet and said outlet, a lower row of deflecting rollers below one of said rows of stub rollers with the rollers of the lower row being positioned between the stub rollers of said one row, a drive belt being looped over each stub roller of said one row and under each roller of the lower row therebetween, said stub rollers each being provided with at least one band of a heat resistant elastomeric material coating at least a portion of the surface thereof;

fused silica support rollers spanning said conveyor with each support roller exclusively upon the respective bands of two stub rollers on each side of said housing, said bands being positioned relative to said belt so as to hold said fused silica support rollers out of engagement with the respective belt;

means for driving said belt to oscillate glass objects carried by said support rollers back and forth in said housing; and



an array of infrared heaters mounted in said housing at least above said conveyor.

4,608,074

GOB DISTRIBUTOR

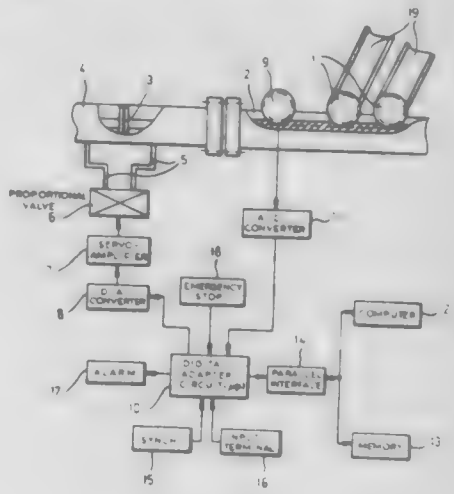
Werner-Dieter Knoth; Helmut Hüllen, both of Essen, and Klaus Kopatz, Bottrop, all of Fed. Rep. of Germany, assignors to VEBA-GLAS AG, Essen, Fed. Rep. of Germany

Filed Nov. 21, 1984, Ser. No. 673,776

Claims priority, application Fed. Rep. of Germany, Nov. 22, 1983, 3342062

Int. Cl.⁴ C03B *9/40*

U.S. Cl. 65—164 **8 Claims**



1. A gob distributor for an IS machine for manufacturing hollow glass articles, comprising:

a hydraulic drive operatively connected to a gob distributor member in such a way so as to move the gob distributor in angular oscillating movement;

valve means including a reversing valve operatively connected to said hydraulic drive for controlling the flow of hydraulic medium in said hydraulic drive;

computer means including a memory for actuating said valve means;

a digital adapter circuit for operating said valve means;

a digital-analog converter operatively connected between said valve means and said digital adapter circuit;

a position control device responsive to the position of said member in the form of an angle coder;

an analog-digital converter operatively connected between said digital adapter circuit and said angle coder; and

a parallel interface operatively connecting said digital adapter circuit to said computer means and to a synchronizer for said machine.

4,608,075

PLUNGER MECHANISM FOR USE IN A GLASSWARE FORMING MACHINE

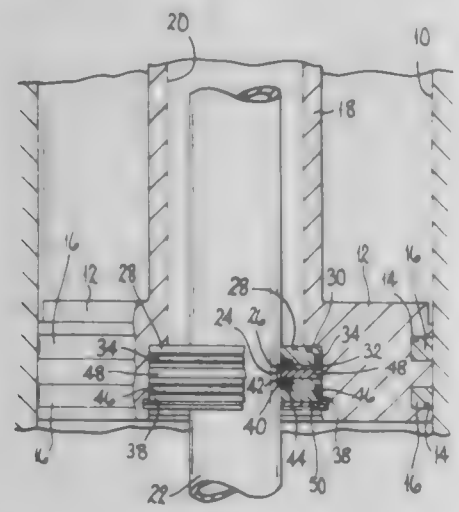
Albert J. Trahan, Vernon, Conn., and Vladimir Vajda, Nussbaumen, Switzerland, assignors to Emhart Industries, Inc., Farmington, Conn.

Filed Mar. 22, 1985, Ser. No. 714,780

Claims priority, application United Kingdom, Apr. 6, 1984, 8408995

Int. Cl.[4] C03B *11/06*

U.S. Cl. 65—362 **4 Claims**



1. A plunger mechanism for use in a glassware forming machine, the mechanism being for use in moving a plunger into and out of a mould cavity of a mould of the machine, the plunger mechanism comprising a cylinder, a piston movable in the cylinder towards or away from the mould cavity upon the introduction of fluid under pressure into the cylinder, a piston rod projecting from the piston towards the mould cavity, the piston rod being arranged to carry a plunger so that movement of the piston causes movement of the plunger towards or away from the mould cavity, a passage passing centrally through the piston and the piston rod, the passage being arranged to communicate either with a chamber within the plunger or with the mould cavity, a tube extending through the cylinder and entering the passage, the tube being fixed against movement with the piston and piston rod and being arranged to be connected to a source of air under pressure or to a vacuum source, and sealing means arranged to seal the gap between the exterior of the tube and the wall of the passage, wherein the sealing means comprises an inwardly contracting ring with an overlapping joint mounted in a recess in the piston or in a recess in a carrier member secured to the piston so that the ring makes sealing contact around the tube, and a ring of resilient material encircling the inwardly-contracting ring and sealing the gap between the inwardly-contracting ring and the wall of the recess.

4,608,076

AMINOOXYACETIC ACID (AOA) AS A PLANT GROWTH INHIBITOR

Richard J. Gladon, and David S. Koranski, both of Ames, Iowa, assignors to Iowa State University Research Foundation, Inc., Ames, Iowa

Filed Mar. 26, 1984, Ser. No. 593,272

Int. Cl.[4] A01N *37/02*

U.S. Cl. 71—76 **4 Claims**

1. A method of inhibiting bedding plant height growth without killing the plant, and without having any significant impact on flowering, said method comprising:

spraying on the plant leaves of bedding plants to the point of run-off at a point in time when the plant is beyond the seed leaf stage, and approximately from about the first true leaf stage to the third true lead stage, from about 1 millimolar concentration to about 24 millimolar concentration of a solution of aminooxyacetic acid.

4,608,077

PROCESS FOR PROMOTING AND REGULATING PLANT GROWTH WITH CAULERPIN

John G. Schwede, 875 56th Ave. South, St. Petersburg, Fla. 33705

Filed Apr. 5, 1985, Ser. No. 720,520

Int. Cl.[4] A01N *43/38*

U.S. Cl. 71—77 **10 Claims**

1. The method of promoting plant growth comprising the step of treating the plant seed intimately and continuously with an aqueous solution containing 0.001-1 milligrams of Caulerpin per liter of solution for a period of at least one day.

4,608,078

BREFELDIN A DERIVATIVES AND THEIR USE FOR CONTROLLING UNDESIRABLE PLANT GROWTH

Rolf-Dieter Acker, Leimen; Rudolf Karl, Limburgerhof, and Bruno Wuerzer, Otterstadt, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

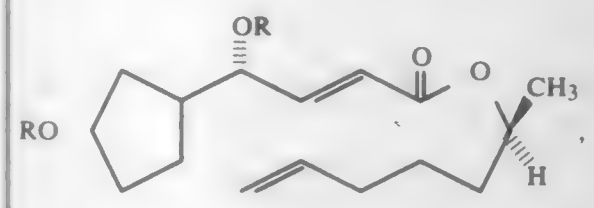
Filed Dec. 13, 1983, Ser. No. 560,965

Claims priority, application Fed. Rep. of Germany, Dec. 22, 1982, 3247379

Int. Cl.[4] C07D *313/00;* A01N *43/22*

U.S. Cl. 71—88 **7 Claims**

1. A brefeldin A derivative of the formula



(I)

where R is C_1–C_6-alkyl, C_7–C_9-aralkyl which is unsubstituted or substituted by halogen or C_1–C_4-alkyl, benzoyl which is unsubstituted or substituted by halogen or C_1–C_4-alkyl, a radical of the formula $(R^1O)_2P(O)$—, where R^1 is hydrogen or C_1–C_4-alkyl, or a radical $R^2R^3R^4Si$, where R^2, R^3 and R^4 are identical or different and are each C_1–C_6-alkyl.

4,608,079

IMIDAZOLIDINONES, AND IMIDAZOLIDIENTHIONES, PROCESS AND INTERMEDIATES FOR THE PREPARATION THEREOF, AND USE OF SAID COMPOUNDS AS HERBICIDAL AGENTS

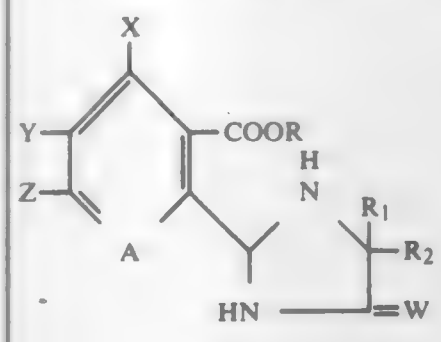
Marinus Los, Pennington, N.J., assignor to American Cyanamid Company, Stamford, Conn.

Continuation-in-part of Ser. No. 519,613, Aug. 2, 1983, abandoned. This application Jun. 4, 1984, Ser. No. 616,741

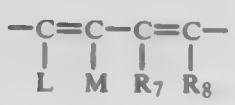
Int. Cl.[4] A01N *43/50;* C07D *401/04, 233/02*

U.S. Cl. 71—92 **31 Claims**

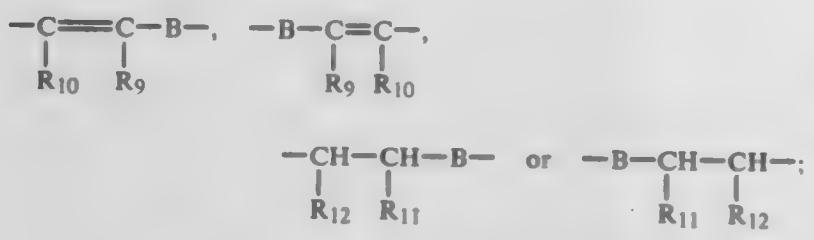
1. A compound having the structure:



wherein
R is hydrogen;
C_1–C_{12} alkyl optionally substituted with one of the following groups: C_1–C_4 alkoxy, halogen, hydroxyl, C_3–C_6 cycloalkyl, benzyloxy, furyl, phenyl, halophenyl, C_1–C_4 alkylphenyl, C_1–C_4 alkoxyphenyl, nitrophenyl, carboxyl, C_1–C_3 alkoxycarbonyl, cyano or tri(C_1–C_3)alkylammonium;
C_3–C_{12} alkenyl optionally substituted with one of the following groups: C_1–C_3 alkoxy, phenyl, halogen, or C_1–C_3 alkoxycarbonyl or with two C_1–C_4 alkoxy groups or two halogen atoms;
C_3–C_6 cycloalkyl optionally substituted with one or two C_1–C_3 alkyl groups;
C_3–C_{10} alkynyl or,
a cation of alkali metals or organic-ammonium;
R_1 and R_2 each represents C_1–C_3 alkyl or cyclopropyl, with the proviso that the sum of the number of carbon atoms in R_1 and R_2 is 2 to 5; and when R_1 and R_2 are taken together with the carbon to which they are attached, they may form a C_3–C_6 cycloalkyl ring optionally substituted with methyl;
A is nitrogen or —CR_3;
W is oxygen or sulfur;
X is hydrogen, halogen or methyl;
Y and Z are each hydrogen, halogen, C_1–C_6 alkyl, C_1–C_4 hydroxyalkyl, C_1–C_6 alkoxy, C_1–C_4 alkylthio, phenoxy, C_1–C_4 haloalkyl, OCF_2CHF_2, OCF_3, $OCHF_2$, nitro, cyano, NR_4R_5, C_3–C_8 straight or branched alkenyloxy optionally substituted with one to three halogens, C_3–C_8 straight or branched alkynyloxy optionally substituted with one to three halogens, or phenyl optionally substituted with one C_1–C_4 alkyl, C_1–C_4 alkoxy or halogen;
R_3 is hydrogen, halogen, C_1–C_4 alkyl, C_1–C_4 alkoxy, CF_3, NO_2, OCF_3, $OCHF_2$ or OCF_2CHF_2;
R_4 is hydrogen or C_1–C_4 alkyl;
R_5 is C_1–C_4 alkyl; and, when taken together, Y and Z may form a ring in which YZ is represented by
(1) the structure: —$(CH_2)_n$—, where n is an integer of 2, 3 and 4, provided that when A is —CR_3, then X is hydrogen; or
(2) by the structure:



where, when A is CR_3, L, M, R_7 and R_8 each represent hydrogen, halogen, C_1–C_4 alkyl or C_1–C_3 alkoxy, and X is hydrogen; and when A is nitrogen, L, M, R_7 and R_8 each represent hydrogen, halogen, C_1–C_4 alkyl, C_1–C_4 alkoxy, C_1–C_4 alkylthio, C_1–C_4 alkylsulfonyl, C_1–C_4 haloalkyl, NO_2, CN, phenyl, phenoxy, amino, C_1–C_4 alkylamino, dialkyl(C_1–C_4-)amino, OCF_3, $OCHF_2$, OCF_2CHF_2, chlorophenyl, methylphenyl, C_3–C_8 straight or branched alkenyloxy optionally substituted with one to three halogens, C_3–C_8 straight or branched alkynyloxy optionally substituted with one to three halogens, or phenoxy substituted with one Cl, CF_3, NO_2 or CH_3 group, with the proviso that only one of L, M, R_7 or R_8, may represent a substituent other than hydrogen, halogen, C_1–C_4 alkyl or C_1–C_4 alkoxy; or
(3) by the structures:



where B is oxygen or sulfur; R_9 and R_{10} each represent hydrogen, halogen, phenyl, or C_1–C_4 alkyl; R_{11} and R_{12} each represent hydrogen, C_1–C_4 alkyl and phenyl;
and when R_1 and R_2 are not the same, the optical or cis- or trans-isomer thereof or except when R is a salt-forming cation, the acid addition salts thereof.

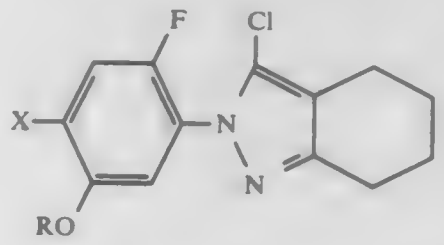
4,608,080

HERBICIDAL 2-PHENYL-4,5,6,7-TETRAHYDRO-2H-INDAZOLES

Toru Haga, Takarazuka; Eiki Nagano, Nishinomiya; Ryo Sato, Toyonaka, and Ryo Yoshida, Kawanishi, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed May 8, 1985, Ser. No. 731,784
Claims priority, application Japan, May 18, 1984, 59-101341
Int. Cl.[4] A01N *43/56;* C07D *231/56*
U.S. Cl. 71—92 7 Claims

1. A compound of the formula:



wherein R is a mono- or di-halo(C_3–C_4)alkenyl group or a mono-halo(C_3–C_4)alkynyl group and X is a chlorine atom or a bromine atom.

5. A method for controlling weeds which comprises applying a herbicidally effective amount of the compound according to claim 1 to the area where weeds grow or will grow.

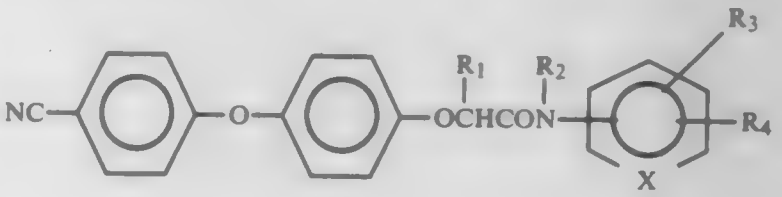
4,608,081

HERBICIDAL 2-[4-(4-CYANOPHENOXY)-PHENOXY]-ALKANOIC ACID AMIDES

Shinzo Someya, Tokorozawa; Rokuro Akahira, Kurume; Yuji Nonaka, Tokuyama; Akira Nakanishi, Shinnanyo, and Mikio Ito, Tokuyama, all of Japan, assignors to Kanesho Company Limited, Tokyo and Toyo Soda Manufacturing Company Limited, Shinnanyo, both of, Japan

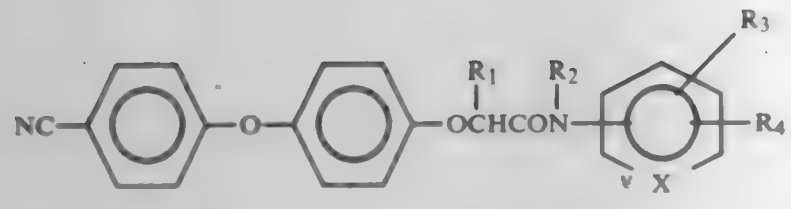
Filed Jun. 22, 1984, Ser. No. 623,519
Int. Cl.[4] A01N *43/40, 37/34;* C07D *213/74;* C07C *121/52*
U.S. Cl. 71—94 27 Claims

1. A 2-[4-(4-cyanophenoxy)-phenoxy]-alkanoic acid amide of the formula (I)



wherein
R_1 is hydrogen or methyl,
R_2 is selected from the group consisting of hydrogen and lower alkyl,
R_3 is selected from the group consisting hydrogen, halogen, lower alkyl, lower alkoxy, cyano, nitro, trifluoromethyl, lower alkylaminocarbonyl and lower alkanesulfonyloxy,
R_4 is selected from the group consisting of hydrogen, halogen and lower alkyl, and
X is selected from the group consisting of methine and nitrogen.

22. A herbicide comprising:
a herbicially-effective amount of a 2-[4-(4-cyanophenoxy)-phenoxy]-alkanoic acid amide of the formula (I)



wherein

R_1 is selected from the group consisting of hydrogen and methyl,

R_2 is selected from the group consisting of hydrogen and lower alkyl,

R_3 is selected from the group consisting of hydrogen, halogen, lower alkyl, lower alkoxy, cyano, nitro, trifluoromethyl, lower alkylaminocarbonyl and lower alkanesulfonyloxy,

R_4 is selected from the group consisting of hydrogen, halogen and lower alkyl, and

X is selected from the group consisting of methine and nitrogen; and

a diluent.

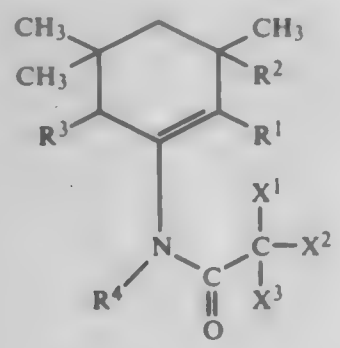
4,608,082

HERBICIDAL CYCLOALKENYL ACETAMIDES

Todd A. Craig, Raleigh, and John J. Jachetta, Pittsboro, both of N.C., assignors to Union Carbide Corporation, Danbury, Conn.

Filed Feb. 19, 1985, Ser. No. 702,652
Int. Cl.[4] A01N *37/18*; C07C *103/37*
U.S. Cl. 71—118 **27 Claims**

1. A compound of the formula



wherein

R^1 and R^3 are individually hydrogen; cyano; or alkyl, alkenyl, alkoxyalkyl, cyanoalkyl or haloalkyl of from 1 to 10 carbon atoms, linear, branched or cyclic;

R^2 is hydrogen; alkyl, alkoxyalkyl, alkenyl, alkynyl, haloalkyl, cyanoalkyl or haloalkenyl of from 1 to 10 carbon atoms, linear, branched or cyclic; NR^1, or $S(O)_mR^1$ wherein m is 0, 1, 2 or 3 and R^1 is as defined above;

R^1, R^2 and R^3 cannot all be hydrogen;

R^4 is hydrogen, alkyl, alkoxy, alkenyl, alkynyl, haloalkyl, cyanoalkyl or haloalkenyl of from 1 to 10 carbon atoms, linear, branched or cyclic;

$$\begin{matrix} O \\ \| \\ CR_2CR; \end{matrix}$$

or 2)$_n$OR^5, wherein R is hydrogen, or alkyl, alkoxy, alkenyl, alkynyl, haloalkyl, cyanoalkyl or haloalkenyl of from 1 to 10 carbon atoms, linear, branched or cyclic; n is greater than 1; and R^5 is hydrogen, cyano, or alkyl, alkenyl, alkoxyalkyl, cyanoalkyl or haloalkyl of from 1 to 10 carbon atoms, linear, branched or cyclic; and

X^1, X^2 and X^3 are individually hydrogen, methyl, chlorine, fluorine or bromine.

18. A method for selectively controlling undesirable vegetation in crops of cultivated plants which comprises applying to the locus of the crops an herbicidally effective amount of the compound of claim 1.

4,608,083

METHOD FOR RECOVERING THE VALUABLE METAL CONTENT OF CONTAMINATED COPPER RAW MATERIAL

Sven A. Holmström, Ursviken, and Leif Johansson, Skellefteåmn, both of Sweden, assignors to Boliden Aktiebolag, Stockholm, Sweden

Filed Sep. 12, 1985, Ser. No. 775,403
Claims priority, application Sweden, Sep. 28, 1984, 8404863
Int. Cl.[4] C22B *11/00*
U.S. Cl. 75—83 **14 Claims**

1. A method for recovering the valuable metal content from a mixture of copper raw materials of which at least one is sulphide bearing, said materials containing impurity from the group consisting of arsenic, antimony, bismuth, mercury, tin, halogens and mixtures thereof comprising:

(a) adjusting the halogen content of the mixture such that the amount of halogen is at least stoichiometric with respect to the remaining impurity in the mixture;

(b) heating the mixture in a furnace to a temperature of at least 500° C. and below the melting point of the mixture while maintaining the mixture in contact with gas produced therefrom by said heating whereby substantially all the impurity is expelled;

(c) heating the mixture to a temperature at which smelting occurs whereby a slag and a copper matte containing the valuable metal content is formed and wherein heating the mixture, expelling the impurity and smelting the mixture is conducted in the same furnace; and

(d) recovering the valuable metal content from the copper matte.

4,608,084

RECOVERY OF COBALT AND CHROMIUM

Richard A. Scheithauer; Michael J. Miller; Clarence D. Vanderpool, and Martin B. MacInnis, all of Towanda, Pa., assignors to GTE Products Corporation, Stamford, Conn.

Filed Apr. 1, 1985, Ser. No. 718,257
Int. Cl.[4] C22B *23/04, 34/32*
U.S. Cl. 75—101 R **6 Claims**

1. A process for recovering cobalt and chromium from a cobalt and chromium containing alloy, said process comprising:

(a) digesting said alloy in concentrated hydrochloric acid at a sufficient temperature for a sufficient time to form a first solution containing the major portion of said cobalt and said chromium and the major portion of any iron and nickel present in said alloy and a first solid;

(b) separating said first solution from said first solid;

(c) adding oxalic acid to said first solution in an amount sufficient to subsequently precipitate the major portion of the cobalt in said first solution and the major portion of any iron and nickel contained therein;

(d) adjusting the pH of the resulting oxalic acid treated first solution to from about 1 to about 2 with a base and maintaining the temperature of the resulting pH adjusted oxalic acid treated first solution below about 20° C. for a sufficient time to form a second solid containing the major portion of the cobalt and any iron and nickel which is present in said first solution and a second solution containing the major portion of the chromium which is present in said first solution;

(e) separating said second solid from said second solution;

(f) washing said second solid with sufficient water to remove any water soluble impurities;

(g) separating the resulting washed second solid from the resulting wash water;

(h) contacting said washed second solid with a calcium chloride solution of sufficient calcium chloride concentra-

tion, at a sufficient temperature, for a sufficient time to form a third solution containing the major portion of the cobalt which was present in said second solid and a third solid; and;

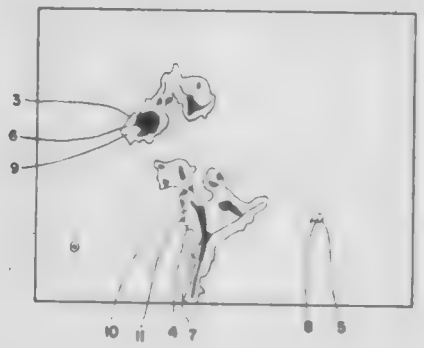
(i) separating said third solution from said third solid.

4,608,085

SELF-LUBRICATING SINTERED BEARING AND PROCESS FOR THE PRODUCTION THEREOF

Michel Eudier, Paris, and Hassan Youssef, Taverny, both of France, assignors to Alliages Frittes Metafram, Courbevoie, France

Filed Nov. 28, 1984, Ser. No. 675,694
Claims priority, application France, Nov. 29, 1983, 83 19433
Int. Cl.⁴ C22C *9/02*
U.S. Cl. 75—247 **2 Claims**



1. A self-lubricating sintered bearing of antimony bronze consisting essentially of Cu, 1.5 to 4% by weight Sb and 5 to 10% by weight Sn, the ratio of Sn/Sb being 1.3 to 3.5,

said bearing having a structure comprising a matrix having a plurality of dispersed phases therein, said dispersed phases being harder than said matrix, and each comprising a diffused region containing a ternary Cu-Sn-Sb intermetallic composition, and surrounding a microporosity.

4,608,086

MEMBRANE REMOVER/ETCHANT

Paul D. Dodge, Apple Valley, Minn., assignor to Tennant Company, Minneapolis, Minn.

Division of Ser. No. 459,238, Jan. 19, 1983, Pat. No. 4,469,525.
This application Aug. 27, 1984, Ser. No. 644,856
Int. Cl.⁴ C08K *3/00*; C11D *7/08*
U.S. Cl. 106—12 **22 Claims**

1. A precoating membrane remover/etchant composition for treating concrete covered with a thin moistureproof organic membrane, first to dissolve the membrane and, after dissolving the membrane, to etch the concrete provided an etching acid in said solution is activated for the concrete etching role, said composition comprising by weight (a) from 1 to 10 parts organic solvent, and 30 to 50 parts a co-solvent therefor, for dissolving the membrane, and said co-solvent also serving the role of a strong acid inhibitor; (b) 5 to 20 parts concentrated weak carboxylic organic acid and 20 to 30 parts concentrated strong mineral acid together with a water content which is insufficient in combination with said solvents to allow substantial ionization of the acid to the effective concrete etching state; said weak acid along with said co-solvent also serving the role of inhibitor for the strong acid; and said solution further comprising (c) a surfactant to induce uniform wetting of the solution when applied to the membrane; said solution being capable of dissolving an organic membrane on a concrete slab, whereafter by adding additional water to said solution the acids become activated effectively to etch the exposed concrete.

4,608,087

HEAT-RESISTANT INORGANIC COMPOSITION

Shigeo Yoshino; Tadashi Zenbutsu, and Hajime Asami, all of Bizen, Japan, assignors to Shinagawa Refractories Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 387,556, Jun. 11, 1982, abandoned.
This application Oct. 24, 1984, Ser. No. 664,100
Claims priority, application Japan, Jun. 19, 1981, 56-92383
Int. Cl.⁴ C09D *5/18*
U.S. Cl. 106—18.12 **2 Claims**

1. A heat-resistant inorganic composition which comprises a refractory powder of an inorganic oxide; a powder of an inorganic compound having cation-exchangeability, a layered structure, water swellability and no hydroxy groups; and a binder of sodium silicate; wherein the refractory powder of an inorganic oxide is composed substantially of particles having diameters not exceeding 44 μm; the powder of an inorganic compound having a layered structure is composed substantially of particles having diameters not exceeding 30 μm selected from the group consisting of synthesized mica and phlogopite, the largest particle diameter of which is smaller than the average particle diameter of the refractory powder of an inorganic oxide; the weight ratio of the refractory powder of an inorganic oxide to the inorganic compound having a layered structure is in the range from 10:90 to 90:10; and the amount of binder is in the range from 15 to 50% by weight as a solid based on the total amount of the refractory powder and the powder of an inorganic compound having a layered structure.

4,608,088

DENTURE ADHERENT POWDER

Oddvin Lokken, Rye, N.Y., assignor to Dento-Med Industries Incorporated, North Miami Beach, Fla.

Filed Mar. 22, 1984, Ser. No. 592,116
Int. Cl.⁴ C09K *3/00*
U.S. Cl. 106—35 **9 Claims**

1. A denture adherent preparation in powder form, which comprises an admixture of

(a) from about 40% to about 60% of a dental adhesive; and

(b) from about 60% to about 40% of a gel-forming mixture comprising from about 10 to about 20% of a water-soluble alginate, from about 5 to about 20% of a setting agent for the water-soluble alginate, from 0.5 to about 15% of a retarder and from about 5 to about 20% of a filler; all percentages being based on the total weight of the composition.

4,608,089

CEMENT MATRIX COMPOSITES AND METHOD OF MAKING SAME

David M. Gale, and Hyunkook Shin, both of Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jul. 19, 1985, Ser. No. 756,705
Int. Cl.⁴ B28B *1/26, 1/52*
U.S. Cl. 106—90 **7 Claims**

1. A method for preparing a cement matrix composite reinforced at least in part with polyethylene pulp which comprises, making an aqueous slurry of Portland cement and a pulp of oriented polyethylene fibrids having a birefringence of at least about 0.030 and prepared from a plexifilamentary structure, depositing the slurry on a porous surface, dewatering the slurry and curing the composite.

6. A cement matrix composite reinforced at least in part with a pulp of oriented polyethylene having a birefringence of at least about 0.030, said pulp constituting from 0.1 to 10% by weight of the composite.

4,608,090

PLASTIC DEFORMABLE COMPOSITION AND PROCESS FOR THE PREPARATION THEREOF

Mária Keresztessy née Badi; Eleonora Paka née Kas, both of Nyirbogdany; Lájos Gyongyossy, Budapest; Béla Farkas, Budapest, and Sándor Paku, Budapest, all of Hungary, assignors to Szegvari Haziipari Szovetkezet, Szegvar, Hungary

Filed Mar. 13, 1985, Ser. No. 712,857
Claims priority, application Hungary, Mar. 13, 1984, 1003/84
Int. Cl.[4] C08L *91/06*
U.S. Cl. 106—272 7 Claims

1. Plastic deformable composition comprising: mineral grist selected from the group consisting of dolomite, baryte, talc and calcium carbonate; and an adhesive, said adhesive comprising a mixture of 20–25% by weight of a first oil raffinate having a solidification point from −15° C. to −18° C., 20–25% by weight of a second oil raffinate having a solidification point from −14° C. to −16° C., 40–52% by weight of microcrystalline paraffin having molecular weight from 400–700, 1–4% of weight of macrocrystalline paraffin having molecular weight from 200–300, 0.1–1.0% by weight of stearine and 0.01–2.0% by weight of coloring agent.

4,608,091

PEROXIDE SELECTIVE STRIPPING COMPOSITIONS AND METHOD

Thomas E. Sullivan, Hamden, and Thomas W. Bleeks, New Haven, both of Conn., assignors to Enthone, Incorporated, West Haven, Conn.

Continuation of Ser. No. 338,805, Jan. 11, 1982, abandoned. This application Apr. 1, 1985, Ser. No. 717,608
Int. Cl.[4] C23G *1/06*
U.S. Cl. 134—3 6 Claims

1. A composition for the selective stripping of hard surface coatings from metal substrates consisting essentially of:

about 75–250 g/l of a peroxide agent;

about 50–200 g/l of HNO_3;

an effective amount of a selenium compound selected from the group consisting of selenium dioxide, selenous or selenic acids, their metal salts, and mixtures thereof, to accelerate said selective stripping of said hard surface coatings from said metal substrates;

and the remainder being water.

6. A method for the selective stripping of hard surface coatings and nickel-base brazes from metal substrates comprising:

(a) contacting the surface deposit with the composition of claims 1 or 2;

(b) immersing the surface deposit in the composition, which is kept at a temperature during operation of about 20°–55° C., until the deposit is substantially removed from the substrate;

(c) removing the substrate from the composition.

4,608,092

PROCESS FOR IMPROVING THE CORROSION RESISTANCE OF FERROUS METAL PARTS

Yves Tremoureux, Saint-Etienne, and Jean-Luc Reynaud, Andrezieux-Boutheon, both of France, assignors to Centre Stephanois de Recherches Mecaniques Hydromecanique et Frottement, Andrezieux-Boutheon, France

Filed Mar. 19, 1985, Ser. No. 713,633
Claims priority, application France, Mar. 20, 1984, 84 04262
Int. Cl.[4] C23C *22/00, 16/34, 16/44, 22/78*
U.S. Cl. 148—6.11 14 Claims

1. A process for improving the corrosion resistance of ferrous metal parts also subject to heat and chemical treatment including nitriding in association or not with carburizing and/or sulfurizing wherein said parts are immersed in a bath of molten salts containing a sufficient quantity of at least one halogenophosphate having one of the following formulas:

$$M_2/m(PO_3X)$$

in which X is fluorine and M is a metal of one of subgroups Ia, IIa and IIb of the periodic table of elements, having the valency m.

4,608,093

FERROMAGNETIC PARTICLES WITH STABLE MAGNETIC CHARACTERISTICS AND METHOD OF PREPARING SAME

Shizuo Umemura, and Tatsuji Kitamoto, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Division of Ser. No. 545,289, Oct. 25, 1983, Pat. No. 4,554,089. This application Aug. 30, 1985, Ser. No. 771,073
Claims priority, application Japan, Oct. 25, 1982, 57-186036
Int. Cl.[4] C23C *8/14*
U.S. Cl. 148—6.35 5 Claims

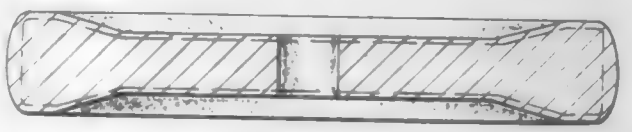
1. A process for producing cobalt-free ferromagnetic particles which comprises gradually oxidizing ferromagnetic metal particles containing no cobalt in oxygen-containing gas that results in a ferromagnetic metal inner core and an oxidized outer layer containing paramagnetic Fe^{3+}, wherein the particles have a saturation magnetization of 60–100 emu/g and a coerceive force of 500 Oe or more and wherein the outer layer stabilizes the magnetic characteristics of the particles at a temperature not higher than 80° C. in air.

4,608,094

METHOD OF PRODUCING TURBINE DISKS

John A. Miller, Jupiter, and Roy L. Athey, North Palm Beach, both of Fla., assignors to United Technologies Corporation, Hartford, Conn.

Filed Dec. 18, 1984, Ser. No. 682,968
Int. Cl.[4] C22F *1/10*
U.S. Cl. 148—11.5 N 6 Claims



1. A method of producing a nickel base superalloy article having properties which vary, in a controlled fashion, from one portion of the article to another portion of the article including the steps of:

a. hot working the entire article to a first geometry which approximates the desired final geometry except for portions of the article which are at least about 25% oversized compared to the desired final geometry;

b. heat treating the article to increase the grain size;

c. warm working the oversized portions of the article to final shape

whereby the warm-worked portions of the article have enhanced tensile properties and the hot-worked portions of the article have enhanced creep properties.

4,608,095

GETTERING

Dale E. Hill, Kirkwood, Mo., assignor to Monsanto Company, St. Louis, Mo.

Continuation of Ser. No. 466,249, Feb. 14, 1983, abandoned. This application Apr. 4, 1985, Ser. No. 719,780
Int. Cl.[4] H01L *21/324*
U.S. Cl. 148—33 17 Claims

1. A semiconductor substrate useful in electronic device manufacturing processes utilizing initial processing temperatures at 1025 C. or below and having capability for gettering defects, contaminants and impurities deleterious to the devices to a region away from the active device region, consisting essentially of a semiconductor material having an oxygen content less than about 34 ppma (ASTM F-121-79) and a 0.05

to 2.0 micron thick layer of polysilicon on the substrate backside from the device region.

4,608,096

GETTERING

Dale E. Hill, Kirkwood, Mo., assignor to Monsanto Company, St. Louis, Mo.

Continuation of Ser. No. 481,597, Apr. 4, 1983, abandoned. This application Jun. 28, 1985, Ser. No. 736,203

Int. Cl.[4] H01L *21/324*

U.S. Cl. 148—33 25 Claims

1. A semiconductor substrate with capability for gettering defects, contaminants and impurities deleterious to electronic devices to a region away from the active device region consisting essentially of a semiconductor material having a 0.05 to 5.0 microns thick layer on the backside of the substrate from the device region of polysilicon containing a dopant element in an amount of 0.1 to 40 weight percent of said layer.

4,608,097

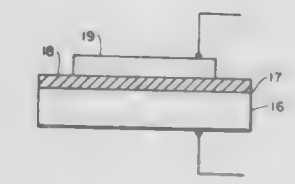
METHOD FOR PRODUCING AN ELECTRONICALLY PASSIVATED SURFACE ON CRYSTALLINE SILICON USING A FLUORINATION TREATMENT AND AN ORGANIC OVERLAYER

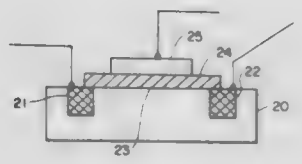
Bernard R. Weinberger, Plainsboro; Harry W. Deckman, Clinton, and Eli Yablonovitch, Scotch Plains, all of N.J., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

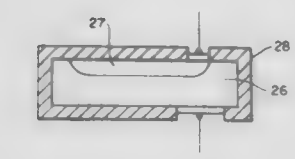
Filed Oct. 5, 1984, Ser. No. 658,357

Int. Cl.[4] H01L *21/02, 21/48*

U.S. Cl. 148—33.3 15 Claims







1. A method for producing an electronically passivated surface on silicon comprising:

a. surrounding said surface with an inert atmosphere,

b. exposing said surface to a fluorine containing compound,

c. maintaining said surface in an inert atmosphere, and

d. coating said surface with an air impermeable diffusion barrier in order to prevent degradation of said passivated surface.

4,608,098

COATED PRODUCT AND PROCESS

Thomas E. Hale, Warren, Mich., assignor to General Electric Co., Detroit, Mich.

Division of Ser. No. 573,867, Jan. 25, 1984, Pat. No. 4,501,786, which is a continuation of Ser. No. 331,367, Dec. 16, 1981, abandoned. This application Dec. 12, 1984, Ser. No. 680,913

Int. Cl.[4] C23C *8/10*

U.S. Cl. 148—6.3 16 Claims

1. The process of pretreating a hard metal or cemented carbide substrate for the reception of wear resistant oxide coatings, said substrate being provided with a surface layer of a carbide, a nitride or a carbonitride of titanium, zirconium, hafnium, vanadium, columbium, tantalum, chromium, molybdenum, or tungsten, said method comprising:

(a) treating the substrate and surface layer in a first atmosphere selected from carbide and oxycarbide forming atmospheres to form a bonding layer of metal selected from at least one of tantalum, niobium or vanadium on said substrate; and

(b) heating the coated substrate of (a) in a second, oxidizing atmosphere until at least portions of the surface are oxidized,

which steps (a) and (b) are carried out in a coating furnace held at a temperature of from about 800° C. to 1300° C.

4,608,099

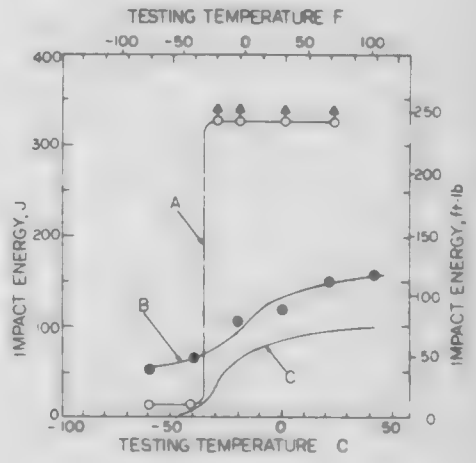
GENERAL PURPOSE MAINTENANCE-FREE CONSTRUCTIONAL STEEL OF SUPERIOR PROCESSABILITY

Ralph M. Davison, Arvada, Colo., and Paul J. Grobner, Ann Arbor, Mich., assignors to Amax Inc., Greenwich, Conn.

Filed Oct. 10, 1984, Ser. No. 659,463

Int. Cl.[4] C22C *38/22, 38/44*

U.S. Cl. 148—37 6 Claims



1. A dual phase steel of ferrite and martensite of 0.015–0.031% C, 11–12% Cr, 0.2–0.5% Mo, 1.5%max Ni, 1.5%max Mn, 0.8%max Si, 0.05%max Ti, 0.03%max N, 0.03%max P, 0.03%max S, with the balance Fe; wherein the composition is further limited such that the ferrite factor is maintained between about 8 and 13, the ferrite factor, FF, is defined by the formula:

$$FF = \%Cr + 6x\%Si + 8x\%Ti + 4x\%Mo + 2x\%Al - 2x\%Mn - 4x\%Ni - 40x(\%C + \%N).$$

4,608,100

METHOD OF PRODUCING THIN GAUGE ORIENTED SILICON STEEL

Frank A. Malagari, Jr., Freeport, Pa., assignor to Allegheny Ludlum Steel Corporation, Pittsburgh, Pa.

Filed Nov. 21, 1983, Ser. No. 553,731

Int. Cl.[4] H01F *1/04*

U.S. Cl. 148—111 6 Claims

1. A method for producing thin guage cube-on-edge grain-oriented silicon steel from hot-rolled band to fianl guage in two cold reduction steps, the method comprising:

cold working the hot-rolled band to an intermediate guage steel by a reduction of at least 72%;

annealing the intermediate guage to effect primary recrystallized grain structure;

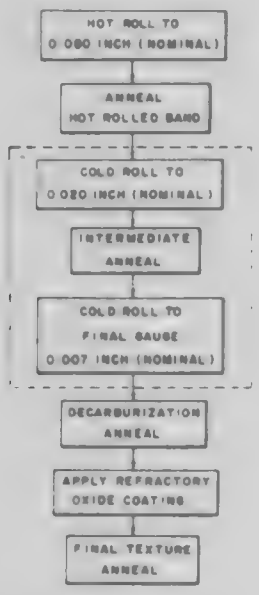
cold working the intermediate annealed gauge steel to a final guage of 0.0065 to 0.0085 inch by a cold reduction of between 55 and 76%;

then applying to the final guage steel a refractory coating; and

final texture annealing for time and temperature sufficient to develop secondary recrystallization.

5. A method for producing thin gauge cube-on-edge grain-oriented silicon steel from hot-rolled band to final gauge in two cold reduction steps, said steel being a mananese-sulfide-inhibited steel containing 2.5 to 4%, by weight, silicon, the method comprising:

cold rolling the hot-rolled band of about 0.06 to 0.10 inch to



an intermediate guage of from 0.019 to 0.022 inch by a reduction of at least 72%;

annealing the intermediate guage steel at temperatures of 1700° to 1750° F. in a nonxidizing atmosphere;

cold rolling the annealed intermediate guage steel to final gauge of 0.0065 to 0.0075 inch by a cold reduction of between 55 and 72%;

annealing the steel to effect decarburization;

then applying to the steel a refractory coating; and

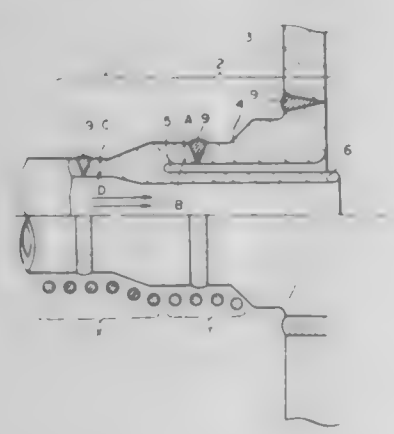
final texture annealing the final gauge steel for time and temperature to develop secondary recrystallization.

4,608,101

METHOD FOR HEAT TREATING PIPE WITH DOUBLE-PIPE SECTION

Tadahiro Umemoto, Yokohama, Japan, assignor to Ishikawajima-Harima Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 16, 1984, Ser. No. 671,976
Claims priority, application Japan, Dec. 27, 1983, 58-249698
Int. Cl.⁴ C21D *9/08*
U.S. Cl. 148—127 **1 Claim**



1. A method for heat treating a pipe in which a double-pipe section is connected with a single-pipe section and a ring-shaped space is defined in said double-pipe section, comprising the steps of: passing cooling water through said pipe while maintaining dead water in said ring-shaped space, first heating said single-pipe section so that a temperature difference between inner and outer wall surfaces of the pipe causes thermal stresses in excess of a yield point in different directions, thereafter heating said double-pipe section for a short time period so that thermal stresses in excess of a yield point are produced adjacent to inner and outer wall surfaces of said double-pipe section, stopping heating of the double-pipe section, and thereafter stopping heating of said single-pipe section with a time lag after stopping of the heating of said double-pipe section.

4,608,102

PRIMER COMPOSITION

Adalbert A. Krampen, Lewiston, Id.; Delbert O. Ells, Clarkston, Wash.; Robert K. Bjerke, and James P. Ward, both of Lewiston, Id., assignors to Omark Industries, Inc., Portland, Oreg.

Filed Nov. 14, 1984, Ser. No. 671,442
Int. Cl.⁴ C06B *25/34*
U.S. Cl. 149—92 **8 Claims**

1. A primer composition comprising:

at least one non-metallic percussion sensitive explosive material selected from the class consisting of diazo, triazole, and tetrazole compounds;

at least one fuel source;

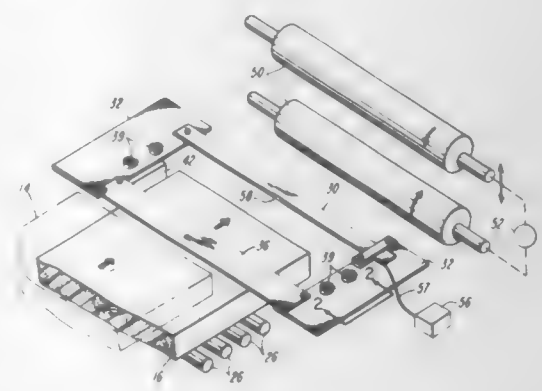
manganese dioxide, and a secondary oxidizer selected from the class consisting of strontium peroxide and zinc peroxide, said secondary oxidizer being present in amount not greater by weight than the manganese dioxide.

4,608,103

PRODUCTION OF FOAM CORE INSULATING PANELS

Donald F. Aldrich, Dayton, Ohio, assignor to Deraspan Corporation, Dayton, Ohio

Filed May 16, 1985, Ser. No. 734,866
Int. Cl.⁴ B29C *27/06*
U.S. Cl. 156—64 **9 Claims**



1. A method of producing a foam core insulating panel having a length substantially greater than its width and a width substantially greater than its thickness, comprising the steps of supporting two flat rigid foam boards in vertically spaced superposed horizontal relation with opposing inner side surfaces defining a space therebetween, positioning an elongated generally flat heating blade horizontally within the space defined between the opposing inner side surfaces of corresponding leading end portions of the foam boards and laterally across the width of the foam boards in spaced relation to each of the side surfaces, positioning a set of power driven horizontal pressure rolls above and below the heating blade and adjacent the vertically spaced end portions of the foam boards with the rolls spaced vertically to define a gap slightly less than the combined thicknesses of the foam boards, feeding the leading end portions of the foam boards horizontally into the gap, pressing the opposing inner side surfaces of the foam boards with the pressure rolls into contact with opposite sides of the heating blade to soften the side surfaces, continuing the feeding of the foam boards between the driven pressure rolls for pressing the heated and softened opposing inner side surfaces together and to obtain heat-fusing of the side surfaces to form one integral foam core panel assembly from the two rigid foam boards, placing the foam core panel assembly between facing

sheets of preselected material, and bonding the facing sheets to the opposite outer side surfaces of the foam core panel assembly.

3. A method as defined in claim 1 and including the steps of attaching a temperature sensing element to the heating blade between the opposing inner side surfaces of the foam boards, sensing the temperature of the heating blade with the sensing element while heating the opposing inner side surfaces of the foam boards, and controlling the temperature of the heating blade in response to the temperature sensed to obtain optimum welding of the opposing inner side surfaces of the foam boards.

4,608,104

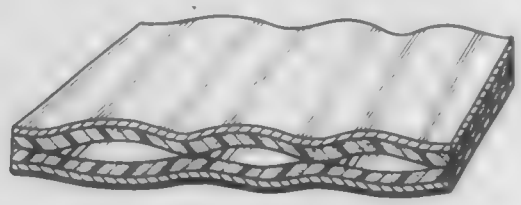
METHOD OF MAKING A THERMOFORMABLE LAMINATE STRUCTURE

James S. Holtrop, South Windsor, Conn., and Richard P. Maurer, Wilbraham, Mass., assignors to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 648,547, Sep. 7, 1984, Pat. No. 4,529,641, which is a continuation-in-part of Ser. No. 553,462, Nov. 17, 1983, Pat. No. 4,489,126. This application Jul. 13, 1985, Ser. No. 755,240

Int. Cl.[4] B32B *31/16, 5/32*

U.S. Cl. 156—78 3 Claims



1. A method of forming a laminate structure comprising at least two layers of foamed thermoplastic material having at least one cavity between said layers, said method comprising:

(a) providing at least two layers of foamed thermoplastic material, said layer having inner and outer surfaces and having a polymer-impregnated fabric bonded to at least one surface of each of said layers, wherein adhesive is applied in a registration pattern on the surface of one of said layers adjacent to another of said layers,

(b) providing a blow pin between said layers at a location devoid of adhesive,

(c) laminating said at least two layers of foamed thermoplastic material together,

(d) heating said layers to a thermoforming temperature, and

(e) thermoforming said layers while applying pressurized gas to said blow pin to expand the volume between said layers at locations devoid of adhesive.

2. The method of claim 1 further comprising cooling said laminate structure by introducing carbon dioxide through said blow pins.

3. The method of claim 2 wherein a foam material is injected through said blow pins into the expanded volume between said layers.

4,608,105

PROCESS FOR MANUFACTURING 3-D GLASSES

Stanton W. Alger, Monrovia, Calif., assignor to 3D Video Corporation, North Hollywood, Calif.

Filed Jul. 8, 1983, Ser. No. 512,166

Int. Cl.[4] B32B *31/10, 31/18*

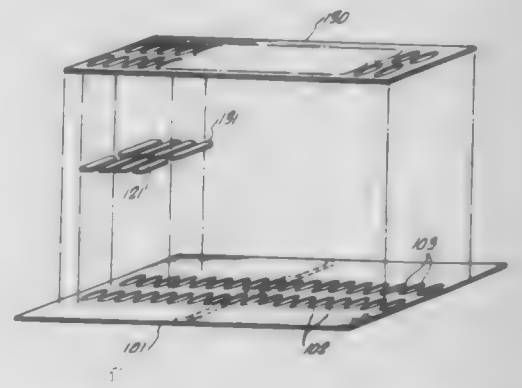
U.S. Cl. 156—108 13 Claims

1. An apparatus for manufacturing a plurality of 3-D glasses having a movable work surface, said apparatus comprising:

a turntable having the movable work surface which rotates substantially 90° between a first and a second work station;

a lens placement means for placing a plurality of eye lenses over a first plurality of eye openings formed in a strip of material having an adhesive surface such that each of the plurality of lenses has a border area which contacts the adhesive surface, said lens placement means being located at the first work station located on the turntable;

a frame placement means for placing a sheet of frame material having a second plurality of eye openings on top of the adhesive surface such that the plurality of eye lenses are held between the first plurality of eye openings and the second plurality of eye openings;



a press for laminating the sheet of frame material to the strip of material to form a composite sheet; and

a cutter for cutting a plurality of 3-D glasses from the composite sheet, the frame placement means, the press and said cutter being located at a second work station such that the movable work surface must move between the first and the second work station during manufacture of the plurality of 3-D glasses.

4,608,106

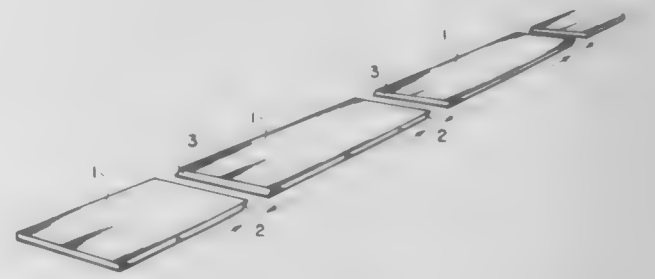
PROCEDURE FOR MANUFACTURING ELONGATED GLUED BEAMS

Pentti K. Lahtinen, 5220 Sunset Trail, Marietta, Ga. 30067

Filed Mar. 25, 1985, Ser. No. 715,273

Int. Cl.[4] B27D *1/10;* B32B *31/20*

U.S. Cl. 156—182 1 Claim



1. A method for manufacturing elongated glued beams from veneer strips, comprising

feeding a series of veneers to a scarfing line from veneer stacks using vacuum feeders;

scarfing the leading and trailing ends of each veneer in its grain direction with a scarfing saw to provide a consistent scarfing wedge ratio lying within the range of 1:10 to 1:6, and thereby providing a plurality of veneers having ends beveled to the same angle;

spreading glue on the beveled ends of the veneers, drying said glue and pre-heating said glue with infra red heaters;

controlling the movement of said veneers according to veneer quality and thickness, and to extract faulty sheets of veneer;

passing adjacent veneers arranged end to end to a press, positioning beveled overlapping veneer ends over a fixed press support element, and moving an upper movable element downwardly to effect pressing and laminating of said overlapping veneer ends and provide scarf-jointing thereof;

trimming one side of the resultant scarf-jointed veneer using a trimming saw;

cutting the scarf-jointed veneer sheets to desired lengths;

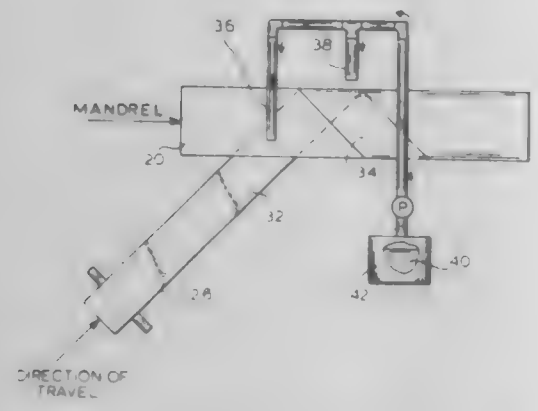
transferring the resultant scarf-jointed veneer sheets to a buffer station;
guiding a plurality of scarf-jointed veneers, in correct order, to a glueing machine;
spreading glue on the upper surface of a plurality of said scarf-jointed veneer sheets, and laying said scarf-jointed glued veneer sheets on a flexible caul in a vertically stacked position, using side shifter forks, to obtain a vertical stack of scarf-jointed glued veneer sheets with the scarf-joints thereof being vertically staggered from one another;
pre-pressing said vertical stack of scarf-jointed glued veneer sheets;
passing the pre-pressed stack to the end feeder of a press on a flexible caul;
pressing the pre-pressed stack to effect lamination and thereby form laminated veneer lumber planks; and
opening the press, extending pulling bars into the press and pulling the laminated veneer lumber planks out on the flexible caul.

4,608,107

HIGH TEMPERATURE PROBE LANCE COVER

Rocco Falcomato, Brooklyn, N.Y., assignor to Niemand Bros. Inc., Elmhurst, N.Y.

Continuation of Ser. No. 491,409, May 4, 1983, abandoned. This application Nov. 6, 1984, Ser. No. 669,050
Int. Cl.⁴ C21C *7/00*
U.S. Cl. 156—190 **1 Claim**



1. A method of continously fabricating high-temperture resistant tubes, which comprises;
forming on a mandrel a spirally wound tube of a protecting base of a high-temperature resistant, flame resistant material;
providing a web of ceramic paper having inner and outer surfaces, said paper being a fibrous material composed of a plurality of discrete ceramic fibers dispersed in the web configuration with a plurality of voids between the fibers;
coating said inner surface of the web with a liquid refractory cement forming composition consisting essentially of an aqueous colloidal suspension of silica; said silica having an average particle size of from 10–30 mv an comprising from 15 to 30 percent by weight of the aqueous suspension;
winding said web with the coated inner surface spirally over said wound tube while the wound tube is on the mandrel, in the same direction as the winding of the protective base with the coated inner surface disposed on the protective base;
coating the outer surface of the wound web of ceramic paper with said liquid refractory cement forming composition while it is winding on the protective base and the ceramic paper is supported on the mandrel;
whereby the coating of the inner surface and the coating of the outer surface penetrate and fill the voids between the fibers of the paper and anchor together the coatings of the inner and the outer surfaces;
covering the coated ceramic paper spirally wound on the mandrel over the spirally wound protective base with a protective covering of a high-temperature resistant, flame-resistant material by spirally winding the protective covering over the coated web of ceramic paper;
whereby there is obtained a tube structure;
drying the structure, whereby the refractory cement forming composition is converted to a rigid, reinforced, refractory cement, and
cutting the continuous fabrication into pre-determined lengths of high-temperature resistant tubes.

4,608,108

WET-END MOLDING METHOD AND MOLDED PRODUCT

John D. Goll, Largo, Fla., assignor to The Celotex Corporation, Tampa, Fla.

Continuation of Ser. No. 440,042, Nov. 8, 1982, abandoned. This application Jul. 12, 1985, Ser. No. 754,316
Int. Cl.⁴ D04H *3/08;* B31F *1/00;* D21F *13/00;* B29C *59/00*
U.S. Cl. 156—219 **14 Claims**

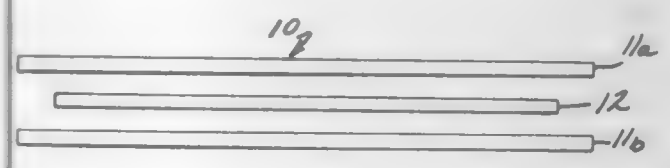
1. A method for producing a fibrous board having a decorative, textured surface comprising the steps of:
(a) forming an aqueous slurry of entangled mineral fibers;
(b) dewatering said slurry to form a wet mat;
(c) pressing said wet mat to consolidate said mat, said consolidated wet mat having from about 50 to 75% water;
(d) pressure molding said consolidated wet mat at a pressure of about 2 to 50 psi while it is still wet by a moulding means provided with a patterned surface layer to create a decorative textured surface on said consolidated wet mat; and
(e) drying said board.

4,608,109

METHOD OF MANUFACTURING HIGH POTENTIAL ELECTRETS

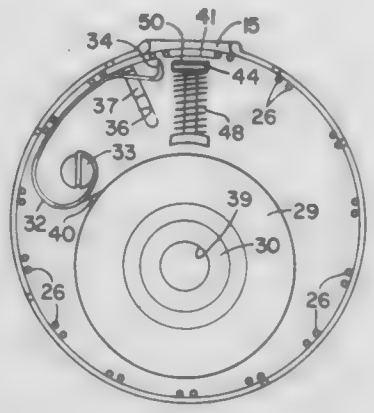
H. Wilson Pook, 120 Widmore Road, Bromley, Kent, England

Continuation-in-part of Ser. No. 379,648, May 19, 1982, Pat. No. 4,440,591. This application Feb. 27, 1984, Ser. No. 583,600
Claims priority, application United Kingdom, Mar. 7, 1983, 8306215
The portion of the term of this patent subsequent to Apr. 3, 2001, has been disclaimed.
Int. Cl.⁴ B32B *31/00, 31/20*
U.S. Cl. 156—247 **5 Claims**



1. A process for forming electrets comprising the steps of:
forming a stack of sheets of a first dielectric material interleaved between sheets of a second dielectric material;
pressing said stack between the faces of a press;
heating during said pressing said faces of said press and said sheets of said second dielectric material to the glass transition thereof whereby said heating and pressing causes plastic flow of said sheets of said second dielectric material relative to said sheets of said first dielectric material to produce electrical charges thereon;
cooling said sheets of material subsequent to the heating thereof; and
stripping off said sheets of said second dielectric material from said sheets of said first dielectric material.

4,608,110
PRESSURE SENSITIVE LABEL DISPENSER
Ward C. Smith, 16 Judith Ann Ct., Rahwah, N.J. 07430
Filed Feb. 19, 1985, Ser. No. 702,809
Int. Cl.[4] B32B *31/04*
U.S. Cl. 156—250
32 Claims



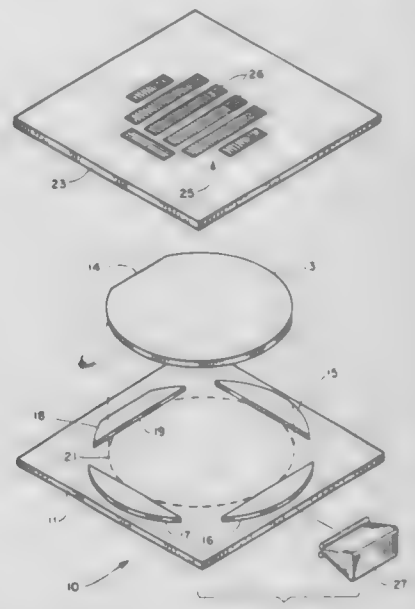
1. An applicator for dispensing adhesive tape onto a receiving surface, said applicator being of the type including
means supporting a tape supply reel, and
take-off reel means on which tape from said supply reel is temporarily adhered prior to being dispensed,
said applicator being characterized in that said means supporting said tape supply reel is located within said take-off reel.

4,608,111
BONDING METHOD EMPLOYING AN ADHESIVE WHICH CONTAINS IN AN AQUEOUS BASE AN EFFECTIVE AMOUNT OF A POLYVINYL ALCOHOL AND A LIGNIN SULFONATE
Robert M. Hume, III, Cottage Grove; Robert A. LaBrash, Roseville, and Michael J. Vander Giessen, Blaine, all of Minn., assignors to H. B. Fuller Company, St. Paul, Minn.
Division of Ser. No. 600,400, Apr. 16, 1984, Pat. No. 4,564,649.
This application Sep. 9, 1985, Ser. No. 773,456
Int. Cl.[4] C09J *3/28*
U.S. Cl. 156—306.6
4 Claims

1. A method of laminating a first sheet to a second sheet which comprises:
A. forming a non-bonded laminate by placing between said first sheet and said second sheet a thin film comprising (a) an ammonium or alkali metal lignin sulfonate composition; (b) a polyvinyl alcohol composition; and (c) cellulosic fiber; wherein there are about 1 to 8 parts by weight of the lignin sulfonate composition per each part by weight of the polyvinyl alcohol composition and the cellulosic fiber is present at a concentration of about 0.1 to 10 wt-% of the film; and
B. applying heat to the non-bonded laminate.

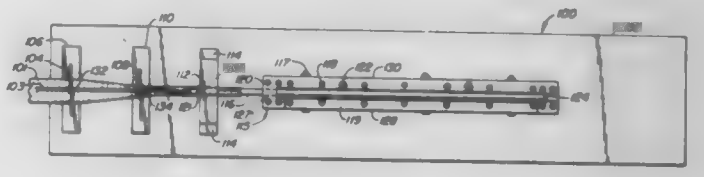
4,608,112
MASK ALIGNER FOR SOLAR CELL FABRICATION
Diane K. Hufford, Vance AFB, Okla., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.
Division of Ser. No. 610,911, May 16, 1984, Pat. No. 4,547,958.
This application Jul. 19, 1985, Ser. No. 756,548
Int. Cl.[4] C23F *1/02;* H01L *21/306;* B44C *1/22;* C03C *15/00*
U.S. Cl. 156—345
3 Claims

1. A device for accurately aligning a substrate having a substantially straight edge cleaved thereon along a predetermined crystallographic orientation of the material of said substrate in a fabrication process for a vertical junction solar cell using said substrate, said device comprising:
a. a base plate;
b. a recess in said base plate defining an opening for snugly receiving said substrate, said recess including a substantially straight portion for abutment with said cleaved straight edge of said substrate; and
c. a mask plate for covering said base plate and substrate,



said mask plate including a pattern thereon in predetermined configuration and orientation through which said substrate may be exposed in said fabrication process for said solar cell.

4,608,113
WATERPROOF QUICK MATCH AND APPARATUS AND METHOD OF FORMING SAME
Thomas E. Miller, 600 Center Ave., Grand Junction, Colo. 81501
Filed Sep. 14, 1981, Ser. No. 302,169
Int. Cl.[4] B65H *11/08*
U.S. Cl. 156—438
9 Claims



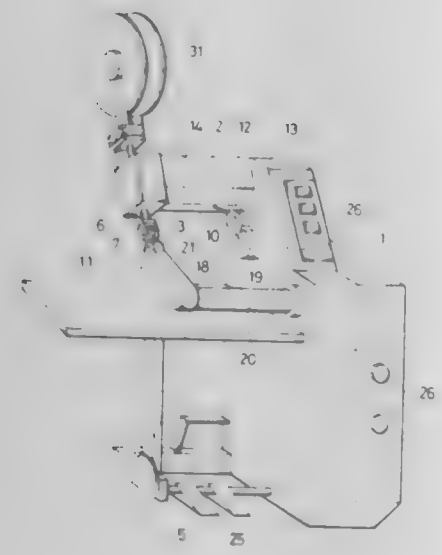
1. A superior quick match forming apparatus comprising:
a bed plate;
a first guide means with means connected to the bed plate and having means to support a continuous flexible elongated member;
a second guide means spaced away from the first guide with means connected to the bed plate having means to support a continuous flexible elongated member and means to support and curl a first and second longitudinal edge of a substantially flat continuous strip member toward each other;
an elongated member passage tube;
an elongated member passage tube hanging means further spaced away from the first guide means having means to suspend an end of the elongated member passage tube;
a strip member heat sealing means and elongated member passage tube means further comprising a pair of elongated block with means connected having a longitudinal recess bore concentric to the elongated member passage tube extending therethrough, surface covering members spaced apart and disposed on an upper surface of each of the respective blocks with means connected to the respective blocks, a vertically movable heat sealing means disposed between the surface covering members and extending into the recess bore of the blocks and removably contacting the elongated member passage tube and a heating unit with means connected to the heat sealing means.

4,608,114

SEAL TAPE STICKING DEVICE

Kouzo Nakao, Wakayama, Japan, assignor to Queen Light of Electronic Industries Ltd., Wakayama, Japan

Filed Feb. 1, 1985, Ser. No. 697,393
Claims priority, application Japan, May 15, 1984, 59-071687
Int. Cl.[4] B30B *3/04, 15/34*
U.S. Cl. 156—497 10 Claims



1. A device for applying seal tape to sheet-like material, wherein an adhesive tape is fed together with a portion of the material in a feed direction and pressed between a pair of opposed rollers, the device comprising:

a machine body;

a fixed arm projecting substantially horizontally from the machine body;

a common roller freely rotatably mounted at the distal end of the fixed arm, an operating position for other rollers being defined by operative engagement with the common roller, the material and the tape being pressed between rollers in the operating position;

a first movable arm extending generally across the feed direction and having a first positionable roller disposed at the distal end thereof, the first movable arm being pivotally mounted on the machine body for movement of the first roller between the operating position and a first stand-by position;

a second movable arm arranged generally along the feed direction and having a second positionable roller disposed at the distal end thereof, the second movable arm being pivotally mounted on the machine body for movement of the second roller between the operating position and a second stand-by position;

means for alternately moving the first and second arms to alternately move the first and second rollers into and out of the operating position and their respective stand-by positions, the first and second arms remaining substantially fixed in orientation relative to the feed direction throughout their alternating pivotal movement; and,

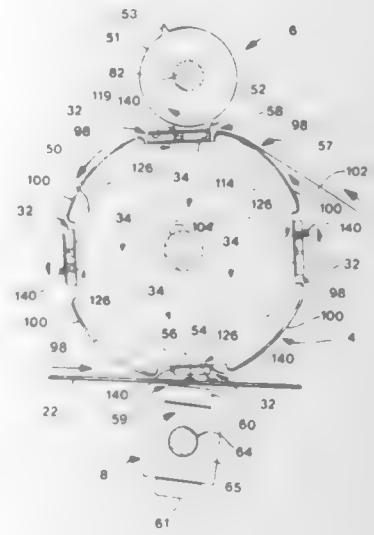
means for rotatably driving each of the first and second rollers when disposed in the operating position, whereby the seal tape can be applied to annular portions of the material when the first movable roller is in the operating position and can be applied to lengthwise portions of the material when the second movable roller is in the operating position.

4,608,115

REVOLVING TRANSFER ROLL

Carl G. Schroth, Kimberly, and Russell E. Thorson, Appleton, both of Wis., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Filed Apr. 23, 1984, Ser. No. 603,017
Int. Cl.[4] B32B *31/00*
U.S. Cl. 156—519 15 Claims



1. An apparatus for applying to a sheet of a first material, continuously moving in a first direction, at least one discrete length of a second material, comprising:

a revolvable roll;

feeding means for feeding at least one continuous ribbon of said second material into circumferential engagement with said revolvable roll;

cutting means, with at least one cutting blade, for cutting said continuous ribbon into said at least one discrete length while said ribbon is in engagement with said revolvable roll;

at least one rotatable platen means, disposed on and perpendicularly movable with respect to the plane of rotation, and revolvable with, said revolvable roll, for rotating said at least one discrete length from a first position to a second position;

first drive means, disposed within, and revolvable with, said revolvable roll;

a cutting surface, strikable by said cutting means with a force sufficient to cut said ribbon, disposed on, and rotatable with, said rotatable platen means;

means for transferring drive from said first drive means to said rotatable platen means in a plane parallel to the plane of said cutting surface; and

application means for transferring said at least one discrete length from said revolving roll to said sheet whereby said cutting force is not transmitted to said first drive means.

4,608,116

BASEBOARD EDGE TAPING TOOL

Keith Braselton, 2176 Allston Pl., Fairfield, Calif. 94533

Filed Jun. 20, 1985, Ser. No. 747,158
Int. Cl.[4] B32B *35/00*
U.S. Cl. 156—523 10 Claims

10. A masking tape applicator for applying a roll of masking tape to a subject surface, comprising:

a base having a flat bottom surface for resting on said subject surface;

a body rotatably mounted to said base, said body being rotatable between a first position and a second position;

a spool rotatably mounted to said body proximate a rear end of said body forming a holder for the roll of masking tape;

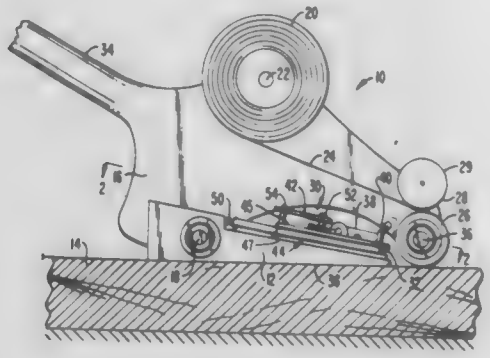
a handle extending from said rear end of said body;

a first roller rotatably mounted to said body proximate a front end of said body opposite said rear end, said first roller having an edge in approximately the same plane as

said bottom of said base when said body is in said first position, said first roller being movable upwardly and rearwardly as said body rotates from said first position to said second position;

a second roller rotatably mounted to said body adjacent said first roller for holding the masking tape against said first roller when said masking tape is extended from said spool across said first roller;

a blade housing movably mounted to said base and coupled



to said body, such that said blade housing extends horizontally forward away from said rear end of said body when said body is rotated from said first position to said second position, whereby said blade housing when extended contacts said portion of the masking tape extending from said first roller to said bottom surface of said base; and

a cutting blade enclosed in said housing and extendible from said housing to cut said portion of the masking tape after said blade housing contacts said portion of the masking tape.

4,608,117

MASKLESS GROWTH OF PATTERNED FILMS

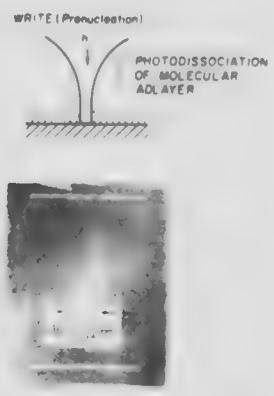
Daniel J. Ehrlich, Lexington; Thomas F. Deutsch, Cambridge, both of Mass.; Richard M. Osgood, Chappaqua, N.Y., and Howard Schlossberg, Annandale, Va., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

PCT No. PCT/US82/00745, § 371 Date Jul. 19, 1982, § 102(e) Date Jul. 19, 1982, PCT Pub. No. WO83/04269, PCT Pub. Date Dec. 8, 1983

PCT Filed Jun. 1, 1982, Ser. No. 403,752

Int. Cl.⁴ C30B *25/02*

U.S. Cl. 156—610 **23 Claims**



1. An apparatus for depositing a patterned film onto a substrate, the apparatus comprising:

a. a deposition chamber capable of receiving a substrate;

b. a beam source of energy;

c. substrate-supporting means for supporting the substrate in the chamber;

d. substrate-positioning means for positioning the substrate relative to the beam source;

e. coating means for introducing a dissociable fluid medium into said chamber and depositing therefrom an absorption layer of the dissociable fluid medium onto said substrate;

f. evacuating means for removing any excess amounts of said dissociable fluid medium from said chamber to render the chamber substantially free of said dissociable fluid medium after said absorption layer has been formed on said substrate;

g. focusing means for focusing the beam energy onto said substrate to dissociate portions of said absorption layer and thereby define prenucleation regions for film deposition; and

h. atom deposition means for introducing atoms into said chamber for selective deposition onto said prenucleated regions.

4,608,118

REACTIVE SPUTTER ETCHING OF METAL SILICATE STRUCTURES

Bernard J. Curtis, Gattikon, and Hans R. Brunner, Steinmaur, both of Switzerland, assignors to RCA Corporation, Princeton, N.J.

Filed Feb. 15, 1985, Ser. No. 702,338

Int. Cl.⁴ C23F *1/02*; B44C *1/22*; C03C *15/00, 25/06*

U.S. Cl. 156—643 **12 Claims**

1. A process of forming a patterned layer of a metal silicide on a substrate comprising:

(a) depositing the metal silicide on the substrate;

(b) providing a patterned layer of a resist material overlying the metal silicide layer; and

(c) anisotropically reactive sputter etching the exposed portion of the metal silicide layer with an etchant consisting essentially of silicon tetrachloride.

4,608,119

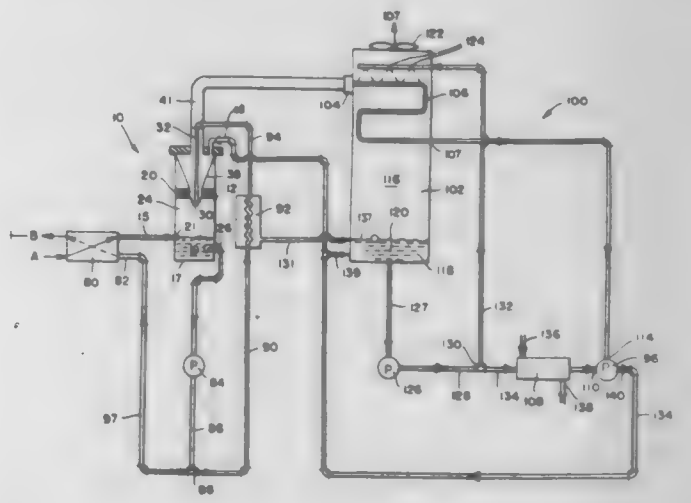
APPARATUS FOR CONCENTRATING AQUEOUS SOLUTIONS

Jack T. Rowland, Grand Island, N.Y., assignor to Niagara Blower Company, Buffalo, N.Y.

Division of Ser. No. 345,668, Feb. 4, 1982, abandoned, which is a continuation-in-part of Ser. No. 180,320, Aug. 22, 1980, abandoned. This application May 14, 1984, Ser. No. 609,596

Int. Cl.⁴ B01D *1/20, 3/10*

U.S. Cl. 159—3 **13 Claims**



7. An apparatus for concentrating an aqueous solution of a hygroscopic organic liquid having a boiling point higher than the boiling point of water without substantial loss of the organic liquid, comprising:

an airtight evacuated chamber;

means, external to said chamber, for preheating the solution to a temperature below its boiling point at a pre-determined positive pressure;

a pad of woven mesh positioned to define top and bottom cells within said chamber;

a spray nozzle positioned within said chamber for injecting said preheated solution downwardly into said bottom cell as an aerosol; means for maintaining said evacuated chamber at a pressure which would vaporize water from said aerosol to form a concentrated aerosol;

means for drawing said vaporized water through said pad to said top cell while the concentrated aerosol is coalesced into droplets in said pad, said droplets falling to the bottom of said bottom cell;

a continuously wetted reflux means positioned within said top cell for contacting said vaporized water to remove residual organic liquid therefrom; and

means for withdrawing the vaporized water from the top cell after contact with said reflux means.

11. An apparatus for concentrating an aqueous solution of a hygroscopic organic liquid having a boiling point higher than the boiling point of water without substantial loss of the organic liquid, comprising:

an evacuated chamber;

means, external to said chamber, for preheating the solution to a temperature below its boiling point at a pre-determined positive pressure;

means for injecting said preheated solution into the chamber as an aerosol whereby water is vaporized from said aerosol and a concentrated aerosol of the organic liquid is produced;

means for coalescing said concentrated aerosol into a concentrated organic solution;

means for carrying the vaporized water as dilute vapor from said chamber to a secondary recovery means for condensing said dilute vapor to a dilute aqueous organic solution and extracting water therefrom to form a secondary concentrated aqueous solution,

said secondary recovery means including an evaporative condenser comprising a conduit for containing said dilute vapor, means for moving a stream of air past the conduit to cool and condense said dilute vapor to said dilute aqueous organic solution and means for discharging said dilute aqueous organic solution.

4,608,120

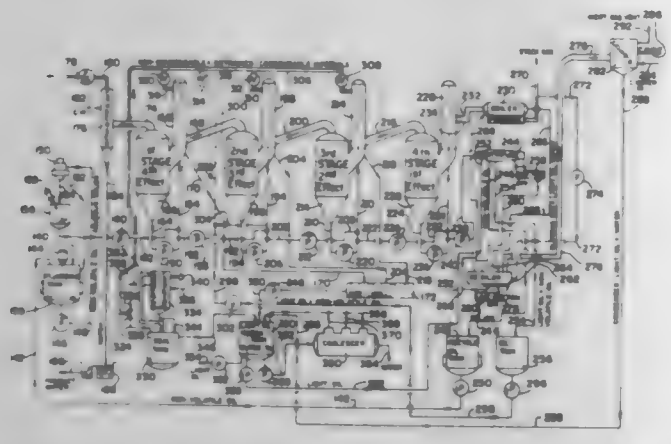
APPARATUS FOR REMOVING LIGHT OIL FROM SOLIDS

Charles Greenfield, Murray Hill; Robert E. Casparian, Boonton, and Anthony J. Bonanno, Parsippany, all of N.J., assignors to Hanover Research Corporation, East Hanover, N.J.

Division of Ser. No. 419,574, Sep. 17, 1982. This application Mar. 7, 1984, Ser. No. 587,133

Int. Cl.[4] B01D *1/14, 1/26*

U.S. Cl. 159—17.1 **8 Claims**



1. An apparatus for recovering clean water and substantially dry, fluidizing oil-free solids from aqueous solids dehydrated in a light fluidizing oil medium, comprising: a tank to receive a stream of said aqueous solids having a mixing mechanism, a light fluidizing oil reservoir, means for transmitting light fluidizing oil from said light oil reservoir to said tank, an evaporator, a conduit extending from said tank to said evaporator, a first condenser, a conduit extending from said evaporator to said first condenser, an oil-water separating means, a conduit extending from said first condenser to said oil-water separating means, means for separately withdrawing light oil and clean water from said oil-water separating means, a conduit extending from said withdrawing means to said light fluidizing oil reservoir, a liquid-solid separating means, a conduit extending from said evaporator to said liquid-solid separating means, a deoiler means, a conduit extending from said liquid-solid separating means to said deoiler means, a conduit extending from said liquid-solid separating means to said light fluidizing oil reservoir, a boiler-furnace having a boiler region and a heating region, a conduit extending from the boiler region of said boiler-furnace to said evaporator, a conduit extending from the heating region of said boiler-furnace to said deoiler means, a second condenser, a conduit extending from said deoiler means to said second condenser, and means connecting said second condenser with said light fluidizing oil reservoir.

3. An apparatus for recovering clean water and substantially dry, fluidizing oil-free solids from solids dehydrated in a light fluidizing oil medium comprising: a tank to receive a stream of said aqueous solids having a mixing mechanism, a light fluidizing oil reservoir, means for transmitting light fluidizing oil from said light oil reservoir to said tank, an evaporator, a conduit extending from said tank to said evaporator, a first condenser, a conduit extending from said evaporator to said first condenser, an oil-water separating means, a conduit extending from said first condenser to said oil-water separating means, means for separately withdrawing light oil and clean water from said oil-water separating means, a conduit extending from said withdrawing means to said light fluidizing oil reservoir, a liquid-solid separating means, a conduit extending from said evaporator to said liquid-solid separating means, a deoiler means, a conduit extending from said liquid-solid separating means to said deoiler means, a conduit extending from said liquid-solid separating means to said light fluidizing oil reservoir, a boiler-furnace having a boiler region and a heating region, a conduit extending from the boiler region of said boiler-furnace to said evaporator, a heat transfer device disposed within the heating region of said boiler-furnace, said heat transfer device having a first end and a second end, a conduit extending from the first end of said heat transfer device to said deoiler means, a second condenser, a conduit extending from said deoiler means to said second condenser, means connecting said second condenser with said light fluidizing oil reservoir, and a conduit extending from said second condenser to the second end of said heat transfer device.

4,608,121

PROCESS FOR CONTINUOUS DIGESTION OF FINELY-DIVIDED MATERIAL WITH HEAT CAPACITY FLOWS OF SUBSTANTIALLY THE SAME MAGNITUDE

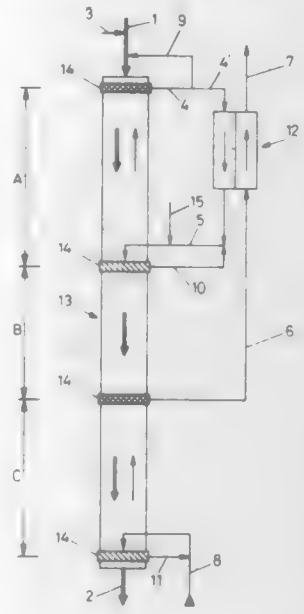
Per H. Östman, Jorvas, Finland, assignor to Ekono Oy, Helsinki, Finland

Filed Dec. 20, 1982, Ser. No. 450,905

Claims priority, application Finland, Dec. 31, 1981, 814229

Int. Cl.[4] D21C *7/10, 7/14*

U.S. Cl. 162—19 **4 Claims**



1. A process for continuous digestion at elevated tempera-

ture of finely-divided material by means of passing said finely-divided material through a heating zone, one or more digesting zones and a cooling zone in contact with a liquid phase, comprising feeding the finely-divided material into and withdrawing liquid phase from the inlet end of the heating zone in such relative quantities that their heat-capacity flows are of substantially the same magnitude,

mixing fresh digesting liquor and the finely-divided material before being fed into the inlet end of the heating zone and bringing at least a part of the liquid phase withdrawn from the inlet end of the heating zone into indirect counter-current heat-exchange contact with spent hot liquid phase withdrawn from the outlet end of the digesting zone in such relative quantities that the heat-capacity flows of the liquid phases are of substantially the same magnitude and returning said part of the withdrawn liquid phase to the outlet part of said heating zone,

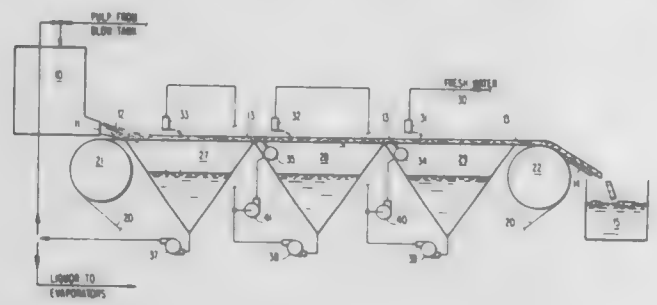
and feeding cold displacement liquid into the outlet end of the cooling zone in such a net quantity that its heat-capacity flow is substantially of the same magnitude as the heat-capacity flow of the digested material and the liquid content thereof withdrawn from the outlet end of the cooling zone.

4,608,122

METHOD FOR WASHING A PAPER FIBER ON A BELT WASHER USING A SONIC FREQUENCY DISTURBANCE

Edward P. Klein, Covington, Va., and Alfred H. Nissan, Scarsdale, N.Y., assignors to Westvaco Corporation, New York, N.Y.

Continuation of Ser. No. 474,691, Mar. 11, 1983, abandoned. This application Oct. 19, 1984, Ser. No. 662,802
Int. Cl.⁴ B01D *35/20;* D21C *9/02;* D21F *1/20*
U.S. Cl. 162—60 **4 Claims**



1. A method of operating a continuous belt washer for paper fiber suspended in a liquid liquor comprising the steps of:

A. depositing said fiber as a liquor suspended slurry onto the top side of an endless belt screen traveling along a direction and course which passes over a plurality of liquor receiving vessels distributed along the length of a fiber carrying portion of said belt, each vessel being defined by a pair of transversely extending compartment boundaries;

B. impressing a pressure differential across the fiber carrying portion of said belt screen between said compartment boundaries relative to an atmosphere above said belt supported slurry and said suspension liquor receiving vessels whereby a substantial portion of said liquor is induced to drain through said belt into said receiving vessels leaving said fiber supported on said belt as a loose, web mat having a first porous matrix of interstitial flow channels formed therein;

C. softly depositing onto the topside of said mat so as to avoid distrubance of said first matrix, at a first point located between compartment boundaries of a first vessel, a first displacement flow of wash liquor having a solids constituency of lower concentration than that of residual suspension liquor remaining in the flow channels of said first mat pore matrix;

D. rearranging said first pore matrix to form a second pore matrix within said mat along the bottom side thereof adjacent said belt with a line of sonic frequency disturbance extending substantially transversely of the belt traveling direction at a second point along said belt course located between compartment boundaries of a second vessel for opening preivously closed pore and flow channels whereby suspension liquor confined in small and obstructed flow channels in said first matrix is induced to drain more completely and uniformly; and,

E. at a third point located between the compartment boundaries of said second vessel but further along said belt course than said second point, softly depositing onto the topside of said mat so as to avoid disturbance of said second matrix, a second displacement flow of wash liquor having a solids constituency of lower concentration than that of residual suspension liquor remaining in the flow channels of said second pore matrix.

4,608,123

METHOD OF MINIMIZING UNTOWARD EFFECT OF CONTAMINANTS, SUCH AS PITCH, IN THE PAPERMAKING OPERATION

Robert J. Leahy, New Castle County, Del., assignor to Hercules Incorporated, Wilmington, Del.

Filed Feb. 20, 1985, Ser. No. 703,578
Int. Cl.⁴ D21H *5/12*
U.S. Cl. 162—146 **3 Claims**

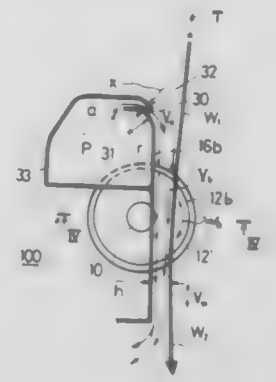
1. In the method of manufacturing paper from an aqueous dispersion of cellulosic pulp containing pitch and wherein there is incorporated in the cellulosic pulp, prior to sheet formation, a material to reduce the untoward effects of the pitch on the papermaking operation, the improvement which comprises adding to the cellulosic pulp, prior to sheet formation, a water-dispersible polyolefin pulp, the amount of polyolefin pulp employed being by weight (dry basis) from about 0.05% to about 0.25% based on the dry weight of the cellulosic pulp.

4,608,124

METHOD FOR CUTTING A LEAD-IN STRIP FROM A PAPER WEB IN A PAPER MACHINE

Pekka Mauranen, and Timo Vedenpää, both of Jyväskylä, Finland, assignors to Valmet Oy, Finland

Division of Ser. No. 488,664, Apr. 26, 1983, Pat. No. 4,566,944. This application Sep. 13, 1985, Ser. No. 776,126
Claims priority, application Finland, Apr. 27, 1982, 821446
Int. Cl.⁴ D21F *1/36*
U.S. Cl. 162—193 **10 Claims**



1. A method for forming a lead-in strip from a paper web in a multiple cylinder dryer section of a paper machine and for increasing the width of the lead-in strip by an oblique draw, and wherein a cutter for cutting the web are situated alongside a region of an unsupported draw of the web in the dryer section, the method comprising the steps of:

providing a guide surface in association with the web cutter, the guide surface being substantially parallel to the run of the web over at least the region of the unsupported web draw which passes alongside the web cutter;

directing a gas flow substantially parallel to the guide surface into a space between said guide and said web to

stabilize the run of the web over at least the region of the unsupported web draw which passes alongside the web cutter to stabilize the web run as it passes alongside the web cutter; and

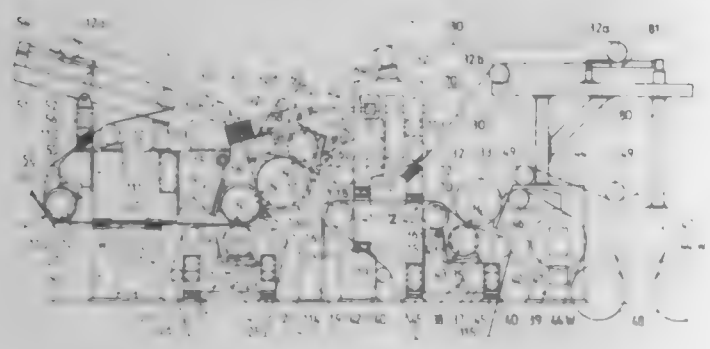
cutting the stabilized web as it passes the web cutter.

4,608,125

FRAME CONSTRUCTION IN A PAPER MACHINE PRESS SECTION FOR FACILITATING REPLACEMENT OF PRESS ROLLS AND FABRICS

Markku Autio, Jyväskylä, Finland, assignor to Valmet OY, Finland

Filed Apr. 25, 1985, Ser. No. 727,104
Claims priority, application Finland, Nov. 29, 1984, 844693
Int. Cl.[4] D21F *3/04;* D21G *9/00*
U.S. Cl. 162—273 15 Claims



1. In a paper machine press section having a compact press roll combination including a first upper press roll, a second lower press roll forming a first press nip with said upper press roll, and a third central press roll forming a second press nip with said upper press roll, said press section further having a first press fabric passing through said first and second press nips and a second press fabric passing through said first press nip, a web adapted to run between said press nips in a longitudinal machine direction, a frame construction on which said press rolls and fabrics are mounted, comprising:

a front frame situated before said roll combination in the direction of web run through the press section;

a rear frame separate from said front frame situated after said roll combination in the direction of web run through the press section;

a first intermediate frame situated above said roll combination and having a pair of longitudinal ends, said first intermediate frame being pivotally mounted on said rear frame at one of its longitudinal ends at a longitudinal side of said roll combination by a first pivot shaft having an axis transverse to the longitudinal machine direction;

first joint means for releasably attaching the other one of said longitudinal ends of said first intermediate frame to said front frame;

actuating means for pivoting said first intermediate frame around said pivot shaft between a closed position wherein said first intermediate frame substantially overlies said roll combination and an open position to create an open space above said roll combination,

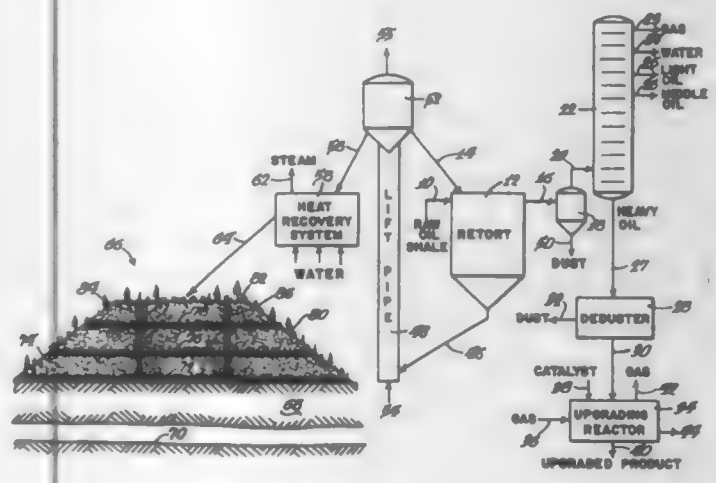
whereby at least one of press rolls and press fabrics can be removed and replaced through said open space when said first intermediate frame is in its open position.

4,608,126

RETORTING SYSTEM AND DISPOSAL SITE

George H. Watson, Naperville, Ill.; David B. McWhorter, Fort Collins, and Adrian Brown, Littleton, both of Colo., assignors to Amoco Corporation, Chicago, Ill. and Chevron U.S.A., Inc.

Filed Mar. 26, 1984, Ser. No. 593,713
The portion of the term of this patent subsequent to Jul. 16, 2002, has been disclaimed.
Int. Cl.[4] C10B *1/04*
U.S. Cl. 202—84 12 Claims



1. A disposal site built upon ground at a location in proximity to an oil shale retorting plant, comprising:

vegetation extending generally upwardly;

top soil supporting said vegetation;

a pile of tailings having a top beneath said top soil, said tailings selected from the group consisting of retorted, combusted, moisturized, and agglomerated oil shale, catalyst, and combinations thereof;

air flow means extending generally through said pile for vaporizing and discharging moisture in said pile into the atmosphere to substantially prevent leaching of said tailings into the ground and nearby natural bodies of water; and

said air flow means including a permeable base comprising a porous rocky overburden disposed upon and in fluid communication with the ground for supporting said pile of oil shale tailings and a substantially upright stack of rocks extending upwardly from said permeable base of rocky overburden through said top of said pile of oil shale tailings and said stack not being covered by said top soil or vegetation.

4,608,127

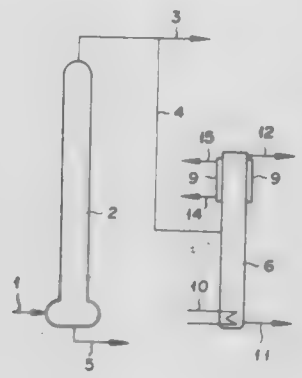
DIBENZOFURAN DISTILLATION AND CRYSTALLIZATION PROCESS

Kiyoshi Sakuma, Tadao Tomioka, Sunao Tabuchi, Kihachiro Ohta, and Masakazu Takeuchi, all of Kitakyushu, Japan, assignors to Nippon Steel Chemical Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 406,224, Aug. 9, 1982, abandoned. This application May 28, 1985, Ser. No. 741,268
Claims priority, application PCT Int'l Appl., Dec. 10, 1980, PCT/JP80/00303
Int. Cl.[4] C07D *307/91;* B01D *3/00, 9/00*
U.S. Cl. 203—48 12 Claims

1. A process for producing dibenzofuran of at least 95% purity, characterized by the steps of distilling a dibenzofuran-containing coal tar fraction predominantly composed of components boiling at temperatures in the range of 220° to 300° and thereby producing a dibenzofuran fraction having a dibenzofuran content of 40% to 90% by weight, a dibenzofuran-/acenaphthene molar ratio of not less than 1.3, and a fluorene/-dibenzofuran molar ratio of not more than 0.05, and subsequently subjecting said dibenzofuran fraction to continuous crystallization purification thereby separating and recovering dibenzofuran, wherein the continuous crystallization is effected by continuously feeding said dibenzofuran fraction into

a continuous crystallization column provided with a cooling zone at the top thereof for crystallizing dibenzofuran from the dibenzofuran fraction fed thereto, a heating zone at the bottom thereof for melting of the formed crystals as they sink to the bottom, and a refining zone in between said cooling and heating zones for enabling the formed crystals as they sink from said cooling zone to said heating zone to come into counter



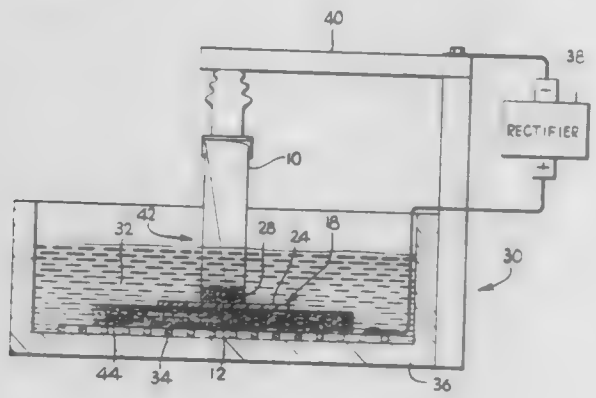
current contact with and to pass through and be washed by a mass of molten crystals along the path between said cooling and heating zones, wherein the temperature of the cooling zone is kept in the range of 20° to 70° C., and the temperature of the heating zone is kept in the range of 75° to 83° C., and wherein said dibenzofuran fraction is fed into said column between said cooling and heating zones, mother liquor is continuously withdrawn from said cooling zone, and molten crystals are continuously withdrawn from said heating zone at rates which maintain a mass of molten crystals in said column to wash the formed crystals as they sink to the bottom of said column.

4,608,128

METHOD FOR APPLYING ABRASIVE PARTICLES TO A SURFACE

Edward R. Farmer, Reading, and Allyn N. Stillman, Cincinnati, both of Ohio, assignors to General Electric Company, Cincinnati, Ohio

Filed Jul. 23, 1984, Ser. No. 633,741
Int. Cl.⁴ C25D *15/00*
U.S. Cl. 204—16 **2 Claims**



1. A method for applying preselected particles to a turbine engine blade tip comprising the steps of:

providing a tape and particle member;

(a) the tape of the member being electrically non-conductive and having pores large enough to allow passage therethrough of electrodeposition current and electrolyte solution but smaller than the size of abrasive particles on the tape;

(b) the tape having a porous adhesive layer of relatively low tack level on a tape surface; and

(c) the abrasive particles being carried by the adhesive through a first bond;

cleaning the blade tip;

immersing blade tip and the tape and particle member in an electrolyte solution in spaced apart relationship in an electrodeposition system;

moving the blade tip into contact with the particles carried by the tape while immersed in the electrolyte solution;

electrodepositioning a metallic coating through pores of the tape and adhesive onto the blade tip and about the abrasive particles to provide a second bond, between the metallic coating and the abrasive particles, stronger than the first bond; and

withdrawing to separate the blade tip from the tape and particle member at the first bond while immersed in the electrolyte solution.

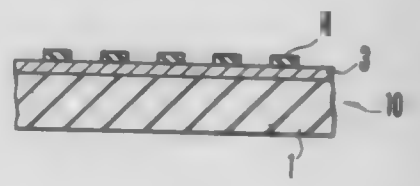
4,608,129

POLYMER FILM WITH CONDUCTIVE PATTERN AND METHOD OF MANUFACTURING THE SAME

Toshiaki Tamamura, Katsuta; Osamu Niwa, Mito; Makoto Hikita, Mito, and Akio Sugita, Mito, all of Japan, assignors to Nippon Telegraphy and Telephone, Tokyo, Japan

Filed May 21, 1985, Ser. No. 736,491
Claims priority, application Japan, May 22, 1984, 59-101676; Jun. 4, 1984, 59-113095; Jul. 27, 1984, 59-155605; Dec. 7, 1985, 59-257395

Int. Cl.⁴ B44C *1/04*
U.S. Cl. 204—18.1 **12 Claims**



1. A method of manufacturing a polymer film with a conductive pattern, comprising the steps of:

forming an insulating polymer film over a patterned electrode surface;

contacting said insulating polymer film with an electrolytic solution containing an aromatic compound to permit said aromatic compound to diffuse through said insulating polymer film to the interface between said insulating polymer film and said patterned electrode surface; and

applying an electric current across said insulating polymer film to polymerize said aromatic compound at said interface and thereby form an electrically conductive pattern of polymerized aromatic compound extending from said interface into the bulk of said insulating polymer film.

4,608,130

METHOD OF PRODUCING METALLIC CHROMIUM, TIN OR TIN-NICKEL, AND HYDRATED CHROMIUM OXIDE ELECTROPLATED STEEL

Nobuyoshi Shimizu; Terunori Fujimoto; Tsuneo Inui, and Masatoki Ishida, all of Yamaguchi, Japan, assignors to Toyo Kohan Co., Ltd., Tokyo, Japan

Filed May 8, 1984, Ser. No. 608,088
Int. Cl.⁴ C25D *5/12, 11/38*
U.S. Cl. 204—27 **9 Claims**

1. A process for continuously preparing a surface treated steel sheet consisting of a steel base having thereon three layers consisting of a bottom layer of metallic chromium, a middle layer of metallic tin or tin-nickel alloy and a top layer of hydrated chromium oxide, which process comprises:

(a) electrolytically chromium plating a steel base to form a layer of metallic chromium and hydrated chromium oxide thereon;

(b) electrolytically tin or tin-nickel alloy plating the chromium plated steel base with a tin or a tin-nickel plating solution under conditions sufficiently acidic to substantially dissolve said hydrated chromium oxide in said solution; and

(c) electrolytically forming a layer of hydrated chromium oxide on the tin or tin-nickel plated, chromium plated steel base of step (b).

4,608,131

PROCESS FOR THE ANODIC OXIDATION OF ALUMINUM AND USE THEREOF AS SUPPORT MATERIAL FOR OFFSET PRINTING PLATES

Michael Brenk, Wiesbaden, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt Am Main, Fed. Rep. of Germany

Filed Apr. 10, 1985, Ser. No. 721,753

Claims priority, application Fed. Rep. of Germany, Apr. 13, 1984, 3413899

Int. Cl.[4] C25D *5/44*

U.S. Cl. 204—33 15 Claims

1. A process for anodic oxidation of material selected from aluminum and aluminum alloys, comprising the steps of:

roughening the surface of the material by mechanical, chemical or electrochemical means,

placing the material in an aqueous electrolyte free from H_2SO_4 and containing from about 25 to about 500 grams per liter of H_3PO_4 and at least 5 grams per liter of Al^{+3} ions, said electrolyte being maintained at a temperature of from about 35° C. to about 95° C., and

anodically oxidizing the material at a current density of from about 1 A/dm^2 to about 30 A/dm^2 for a period of from about 5 to about 500 seconds, forming thereby an aluminum oxide layer on the surface of said material.

4,608,132

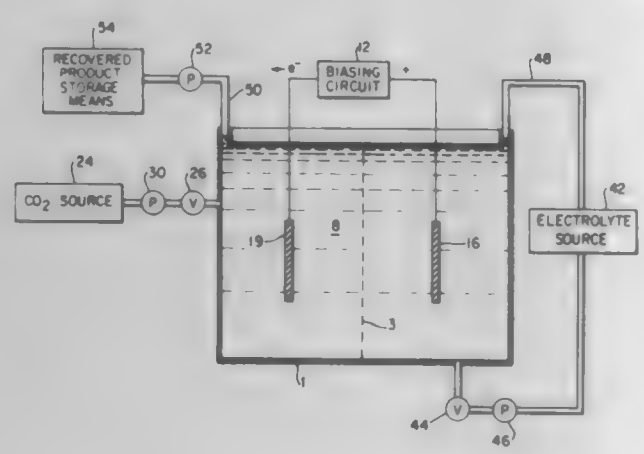
MEANS AND METHOD FOR THE ELECTROCHEMICAL REDUCTION OF CARBON DIOXIDE TO PROVIDE A PRODUCT

Anthony F. Sammells, Naperville, Ill., assignor to Texaco Inc., White Plains, N.Y.

Filed Jun. 6, 1985, Ser. No. 741,781

Int. Cl.[4] C25B *3/04*

U.S. Cl. 204—59 R 25 Claims



14. A method for electrochemically reducing carbon dioxide to provide a product comprising the steps of:

containing an electrolyte solution including a non-aqueous electrolyte dimethylformamide with a supporting electrolyte,

dividing the electrolyte into two portions with a membrane,

providing carbon dioxide to one portion of the electrolyte,

placing an n-Si cathode in the portion of the electrolyte means receiving the carbon dioxide,

placing an anode in the portion of the electrolyte not receiving the carbon dioxide, and

providing a direct current voltage to the cathode and to the anode, to cooperate in a reaction between the carbon dioxide and the electrolyte solution to provide a product.

4,608,133

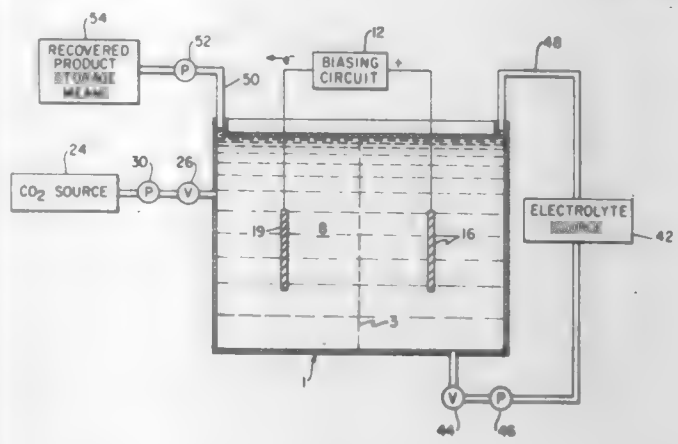
MEANS AND METHOD FOR THE ELECTROCHEMICAL REDUCTION OF CARBON DIOXIDE TO PROVIDE A PRODUCT

Abraham Morduchowitz, Monsey, N.Y., and Peter G. P. Ang, Naperville, Ill., assignors to Texaco Inc., White Plains, N.Y., a part interest

Filed Jun. 10, 1985, Ser. No. 743,123

Int. Cl.[4] C25B *3/00*

U.S. Cl. 204—59 R 48 Claims



25. A method for electrochemically reducing carbon dioxide to provide a product comprising the steps of:

contianing an electrolyte solution including a non-aqueous electrolyte with a supporting electrolyte,

dividing the electrolyte into two portions with a membrane,

providing carbon dioxide to one portion of the electrolyte,

placing a cathode in the portion of the electrolyte means receiving the carbon dioxide,

placing an anode in the portion of the electrolyte not receiving the carbon dioxide, and

providing a direct current voltage to the cathode and to the anode, to cooperate in a reaction between the carbon dioxide and the electrolyte solution to provide a product.

4,608,134

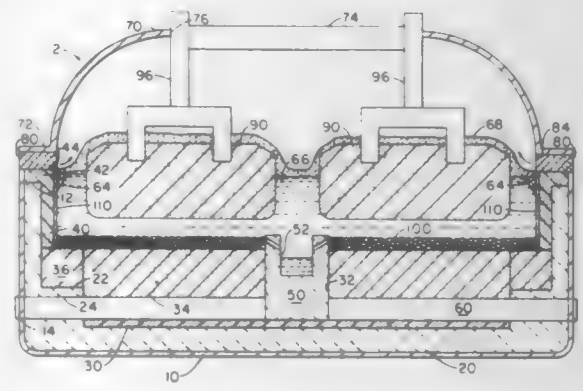
HALL CELL WITH INERT LINER

Melvin H. Brown, Freeport, Pa., assignor to Aluminum Company of America, Pittsburgh, Pa.

Filed Apr. 22, 1985, Ser. No. 725,622

Int. Cl.[4] C25C *3/08, 3/22*

U.S. Cl. 204—67 20 Claims



7. A method of efficiently operating a Hall cell for the production of aluminum by electrolytic reduction from a molten salt bath wherein a containment vessel lined with insulation contains a carbon cathode bottom wall and sidewall and at least one anode protruding into said cell depends from an anode support rod passing through a cover over said cell, the improved method comprising:

(a) lining the carbon bottom wall of said cell with a conductive material resistive to attack by said molten salt bath to reduce the anode-cathode spacing to lower the electric power consumption per unit of reduced aluminum while protecting said carbon bottom wall from attach by molten aluminum:

(b) lining said carbon sidewall with a conductive sidewall lining material resistive to attack by said molten salt bath; and

(c) selectively cooling an upper portion of said sidewall lining material adjacent the top of said molten salt bath to selectively form frozen bath on said sidewall lining adjacent the top of said molten bath to protect said sidewall lining exposed above said molten salt.

4,608,135

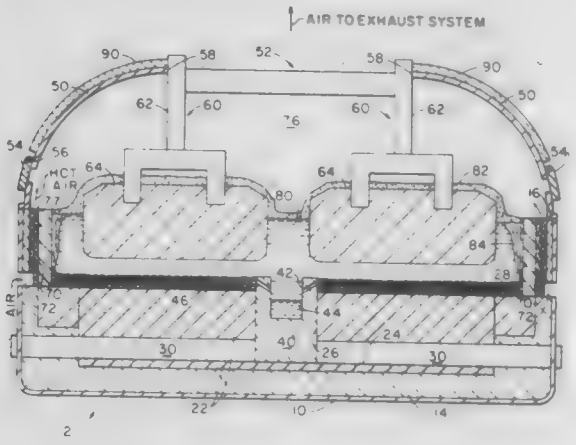
HALL CELL

Melvin H. Brown, Freeport, Pa., assignor to Aluminum Company of America, Pittsburgh, Pa.

Filed Apr. 22, 1985, Ser. No. 725,623

Int. Cl.[4] C25C *3/06, 3/08, 3/22*

U.S. Cl. 204—67 **11 Claims**



10. A method of efficiently operating a Hall cell for the electrolytic reduction of aluminum in a molten salt bath in a manner which consumes less electrical power while maintaining sufficient heat within said cell to prevent freeze-up of the cell and withdrawing sufficient heat through the sidewall of the cell to form a protective layer of frozen bath over the carbon sidewall which comprises:

(a) providing adjacent at least the bottom surface of an anode in said cell a cathodic layer of a material capable of withstanding attack by molten aluminum whereby the anode-cathode spacing may be reduced to lower the current consumed and heat generated by said cell;

(b) circulating air from outside the cell over the outer surface of a carbon sidewall lining in said cell through passageways formed in the sidewall of said cell between said carbon sidewall lining and an insulating layer provided within an outer shell of said cell to cool the sidewall sufficiently to permit formation of a protective layer of frozen bath over said carbon sidewall; and

(c) circulating said air from said passageways heated by contact with said carbon sidewall across an area in the upper portion of said cell above said molten salt bath defined by said molten salt bath and a cover over said cell attached to said outer shell of said cell;

whereby at least a portion of the heat removed through said carbon sidewall by said air is returned to said cell to conserve sufficient heat in said cell to permit efficient operation without cell freeze-up.

4,608,136

OXIDATION OF CARBONACEOUS MATERIAL AND ELECTRODEPOSITION OF A METAL AT THE CATHODE OF AN ELECTROLYTIC CELL

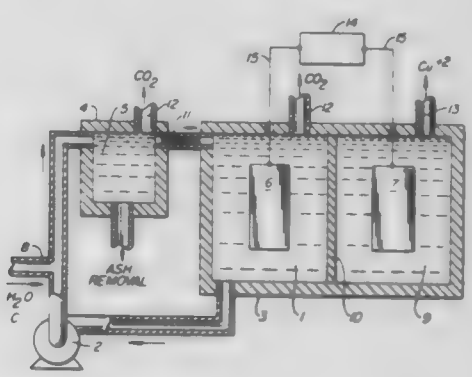
Ronald J. Vaughan, deceased, late of Orinda, Calif., and by Bank of America NT&SA, administrator, Walnut Creek, Calif., assignors to Chevron Research Company, San Francisco, Calif.

Continuation-in-part of Ser. No. 653,980, Sep. 21, 1984, abandoned, which is a continuation-in-part of Ser. No. 496,798, May 23, 1983, abandoned. This application Jul. 26, 1985, Ser. No. 759,538

The portion of the term of this patent subsequent to Jun. 21, 2000, has been disclaimed.

Int. Cl.[4] C25C *1/00*

U.S. Cl. 204—106 **11 Claims**



1. A method of electrowinning a metal from an aqueous acidic electrolyte solution containing ions of the metal at the cathode of an electrolytic cell by anode-assisted electrolysis comprising:

(a) passing an aqueous acidic electrolyte solution of pH 3 or less containing Fe^{+2} ions and ions of the metal to be deposited to an electrolytic cell comprising an anode and a cathode;

(b) passing a direct electric current through said solution thereby to deposit said metal on said cathode and to oxidize at least a portion of said Fe^{+2} ions to Fe^{+3} ions at the anode;

(c) passing said solution containing the Fe^{+3} ions from the cell;

(d) reducing the Fe^{+3} ion oxidation product in the aqueous acidic electrolyte solution to Fe^{+2} ions by contacting the same with a solid carbonaceous reducing agent containing less than 30% oxygen as carboxylic or carbonyl groups at a temperature in the range of from 120° C. to 350° C. and wherein the particle size of said solid carbonaceous reducing agent is from 1 to 150 microns; and

(e) recycling at least a portion of the aqueous acidic electrolyte containing the Fe^{+2} ions from step (d) to step (a); and with the proviso that the total iron concentration as either Fe^{+2} and/or Fe^{+3} in said aqueous acidic electrolyte is from about 0.04 to 0.5 molar.

4,608,137

PRODUCTION OF HYDROGEN AT THE CATHODE OF AN ELECTROLYTIC CELL

Ronald J. Vaughan, deceased, late of Orinda, and By Bank of America NT&SA, administrator, Walnut Creek, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Continuation-in-part of Ser. No. 496,799, May 23, 1983, abandoned. This application Sep. 21, 1984, Ser. No. 653,660

The portion of the term of this patent subsequent to Jun. 21, 2000, has been disclaimed.

Int. Cl.[4] C25B *1/02*

U.S. Cl. 204—129 **6 Claims**

1. A method of obtaining hydrogen comprising the steps:

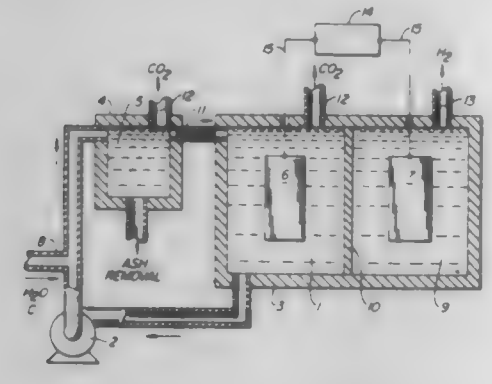
(a) passing an aqueous acidic electrolyte solution of pH 3 or

less containing Fe^{+2} ions to an electrolytic cell comprising an anode and a cathode;

(b) passing a direct electric current through said solution, thereby anodically oxidizing at least a portion of said Fe^{+2} ions to Fe^{+3} ions at the anode with generation of hydrogen at said cathode;

(c) passing said hydrogen and said Fe^{+3} ions from the cell;

(d) reducing the Fe^{+3} ion oxidation product in the aqueous acidic electrolyte solution to Fe^{+2} ions by contacting the



same with a solid carbonaceous reducing agent containing less than 30% oxygen as carboxylic or carbonyl groups at a temperature in the range of from 120° C. to 350° C. and wherein the particle size of said solid carbonaceous reducing agent is from 1 to 150 microns; and

(e) recycling at least a portion of the aqueous acidic electrolyte containing the Fe^{+2} ions from step (d) to step (a); and with the proviso that the total iron concentration as either Fe^{+2} and/or Fe^{+3} in said aqueous acidic electrolyte is from about 0.04 to 0.5 molar.

4,608,138

ELECTROLYTIC METHOD AND APPARATUS

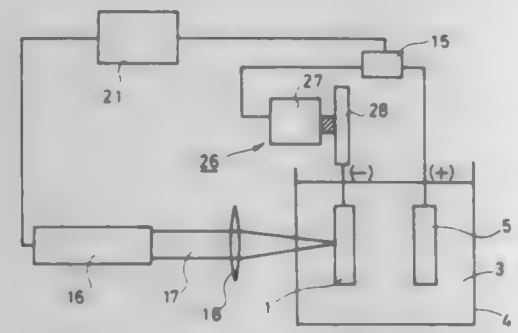
Minoru Kobayashi, Amagasaki, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 13, 1985, Ser. No. 701,219

Claims priority, application Japan, Feb. 16, 1984, 59-28199; Dec. 20, 1984, 59-268934

Int. Cl.[4] B23H *3/02*; C25D *17/06*; C25F *3/02*

U.S. Cl. 204—129.3 **11 Claims**



1. An electrolytic apparatus for applying voltage to a workpiece (1) and a counter electrode (5) immersed in an electrolyte (3) contained in a vessel (4) to thereby process said workpiece (1), said electrolytic apparatus comprising:

a voltage source (15, 15') for applying voltage between said workpiece (1) and said counter electrode (5) in the form of pulses whose polarity is periodically changed;

a beam generator (16) for irradiating a subsidiary energy beam (17) on a selected region of said workpiece (1) by generating said beam (17) in the form of periodic pulses;

a timing controller (21) for synchronizing the periods of said voltage pulses and said beam pulses; and

workpiece holder means (26) for controlling said voltage source (15') so that a voltage of reversed polarity with respect to that supplied during each beam pulse duration may be applied to said workpiece (1) on attachment of the same and then said voltage source (15') may start to generate said voltage pulses and be controlled by said timing controller (21) on setting of said workpiece (1) in place.

4,608,139

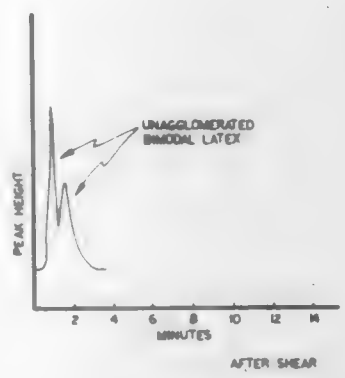
ELECTROCOATING PROCESS USING SHEAR STABLE CATIONIC LATEX

Gary P. Craun, Berea, and Kirk J. Abbey, Seville, both of Ohio, assignors to SCM Corporation, New York, N.Y.

Filed Jun. 21, 1985, Ser. No. 747,251

Int. Cl.[4] C25D *13/06*

U.S. Cl. 204—181.7 **8 Claims**



1. In an electrocoating process which comprises:

(a) providing an amine functional cationic latex by emulsion polymerizing ethylenically unsaturated monomers and amino group containing monomers in an aqueous medium in the presence of a surfactant, a polymerization initiator and an organic or inorganic acid sufficient to at least partially neutralize said amine functional latex;

(b) formulating an electrocoating paint by combining said neutralized cationic latex with a pigment grind and diluting with deionized water to non-volatile content of 3–30;

(c) electrocoating an electrically conductive substrate serving as a cathode by passing an electric current between said cathode and an anode in contact with said electrocoating paint; and

(d) curing said coated substrate;

the improvement which comprises stabilizing against shear forces either the latex or the paint formulated thereform by conducting the said emulsion polymerization in a solvent/water system containing from about 10 weight percent to about 50 weight percent water-miscible or water-soluble organic solvent selected from the group consisting of C_{1-12} lower alkanols, ketones, esters, ethers, glycols, and alkoxyalkanols and by conducting the polymerization in the presence of one or more latent crosslinking agents adapted to enhance cure by reaction with functional groups on said polymer latex.

4,608,140

ELECTRODIALYSIS APPARATUS AND PROCESS

Arthur L. Goldstein, Weston, Mass., assignor to Ionics, Incorporated, Watertown, Mass.

Filed Jun. 10, 1985, Ser. No. 743,219

Int. Cl.[4] C07K *3/14*; B01D *13/02, 13/01*

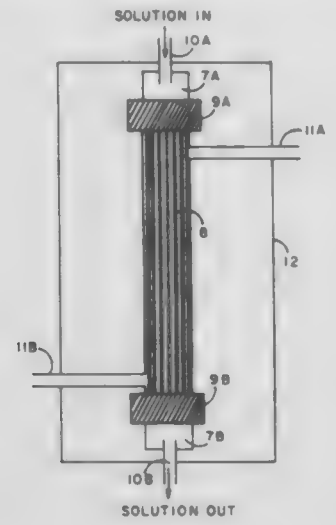
U.S. Cl. 204—182.3 **8 Claims**

5. A process for transferring electrolytes from a first solution located in depletion spaces of an electrodialysis apparatus to a second solution located in enriching spaces of said apparatus, said depletion and enriching spaces being separated from each other by electrolytically conducting barriers, the process comprising:

(a) introducing fluid under pressure into the bore of a fluid permeable tubule, said tubule being positioned in at least one of the depletion spaces of said apparatus to cause at least part of said introduced fluid to permeate said tubule and pass into said depletion space;

(b) applying a substantially direct electric current to such

apparatus to cause ions to migrate from said depletion space into said adjacently positioned enriching space; and



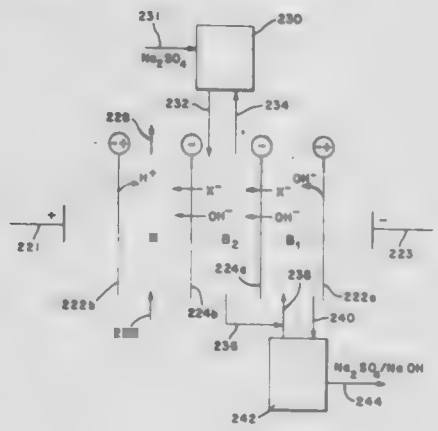
(c) withdrawing at least part of said first solution from said depletion spaces.

4,608,141

MULTICHAMBER TWO-COMPARTMENT ELECTRODIALYTIC WATER SPLITTER AND METHOD OF USING SAME FOR BASIFICATION OF AQUEOUS SOLUBLE SALTS

Frederick P. Chlanda, Rockaway, and Krishnamurthy N. Mani, Denville, both of N.J., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Filed Nov. 7, 1984, Ser. No. 669,450
Int. Cl.⁴ B01D *13/02*
U.S. Cl. 204—182.5 **18 Claims**



1. A method for generating a basified solution and an aqueous acid comprising the steps of:

(a) providing an electrodialytic water splitter comprising at least one unit cell disposed between an anode and a cathode, a unit cell having at least a first base compartment, a second base compartment and an acid compartment arranged such that the acid compartment and first base compartment are defined in part by a common first membrane and such that the first base compartment and the second base compartment are defined in part by a common second membrane;

(b) introducing a liquid comprising water to the acid compartment;

(c) introducing a liquid comprising an aqueous soluble salt to the first base compartment;

(d) withdrawing liquid from the first base compartment and transferring at least a portion of the liquid from the first base compartment to the second base compartment;

(e) passing direct current through said electrodialytic water splitter to produce a liquid comprising aqueous acid in said acid compartment, a liquid comprising aqueous soluble salt and a first concentration of hydroxyl ions in said first base compartment, and a liquid comprising aqueous soluble salt and a second concentration of hydroxyl ions in said second base compartment, said second concentration of hydroxyl ions being greater than said first concentration of hydroxyl ions;

(f) withdrawing the liquid comprising aqueous soluble salt and a second concentration of hydroxyl ions from said second base compartment.

4,608,142

METHOD OF MANUFACTURING MAGNETO-OPTIC RECORDING FILM

Manabu Gomi, Ichikawa, and Masanori Abe, Otaku, both of Japan, assignors to Nippon Sheet Glass Co., Ltd., Osaka, Japan

PCT No. PCT/JP84/00547, § 371 Date Sep. 17, 1985, § 102(e) Date Sep. 17, 1985, PCT Pub. No. WO85/02292, PCT Pub. Date May 23, 1985
PCT Filed Nov. 15, 1984, Ser. No. 763,789
Claims priority, application Japan, Nov. 17, 1983, 58-216750; Jan. 17, 1984, 59-6134; Mar. 23, 1984, 59-55787
Int. Cl.⁴ C23C *15/00*
U.S. Cl. 204—192 M **15 Claims**

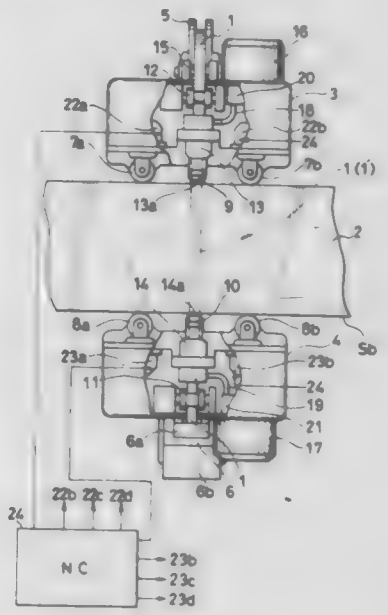
1. A method of manufacturing a magneto-optic recording film wherein a vertically magnetized film of a Bi-substituted rare-earth iron garnet is formed on a substrate, characterized in that a target consisting of an oxide containing at least Bi atoms, Fe atoms and rare-earth element atoms is sputtered, and the atoms constituting the oxide which are released from the target by sputtering are deposited on the substrate which is held at a temperature of 700° C. or lower, thereby forming the vertically magnetized film consisting of the Bi-substituted rare-earth iron garnet.

4,608,143

TW-ELECTROEROSION APPARATUS WITH WHEELED DRIVE CARRIAGES

Kiyoshi Inoue, Tokyo, Japan, assignor to Inoue-Japax Research Incorporated, Yokohamashi, Japan

Filed Oct. 17, 1984, Ser. No. 661,713
Claims priority, application Japan, Oct. 18, 1983, 58-193337; Nov. 9, 1983, 58-209209
Int. Cl.⁴ B23H *7/10, 7/26;* **B23K** *7/16*
U.S. Cl. 204—224 M **4 Claims**



1. An apparatus for machining a conductive workpiece by means of a continuous electroeroding electrode axially traveling continuously through the workpiece from one side thereof to the other side thereof, the apparatus comprising:

a first wheeled carriage disposed at said one side and carrying a storage of said continuous electrode to be gradually dispensed, the first carriage having a set of wheels in frictional engagement with a first surface disposed in said one side;

a second wheeled carriage disposed at said other side and

carrying a means for collecting the electrode traveling from the workpiece, the second carriage having a set of wheels in frictional engagement with a second surface disposed in said other side;

a frist and a second electrode guide means mounted on said first and said second wheeled carriage, respectively, for establishing therebetween a straight-line electrode path across the workpiece;

electrode feed means including a forward traction means mounted on said second wheeled carriage for advancing the electrode dispensed from said storage, axially along said straight-line path towards said collecting means and a backward traction means mounted on said first wheeled carriage for applying a braking traction to the advancing electrode to maintain it traveling forwards in alignment with said path while generating a tension force in the traveling electrode, acting on said wheels of the first and second carriages to force them against said first and second surfaces, respectively, thereby intensifying their respective frictional engagement therewith; and

machining feed means including a first and a second drive means mounted on said first and second carriages, respectively, for rotationally driving their respective sets of wheels in intensified frictional engagement with said surfaces so that said first and second carriages accurately roll over said first and second surfaces, respectively, so as to allow said straight-line path to move, leaving a programmed movement trajectory, relative to the workpiece to advance electroerosion along said trajectory in the workpiece.

4,608,144

ELECTRODE AND ELECTROLYTIC CELL

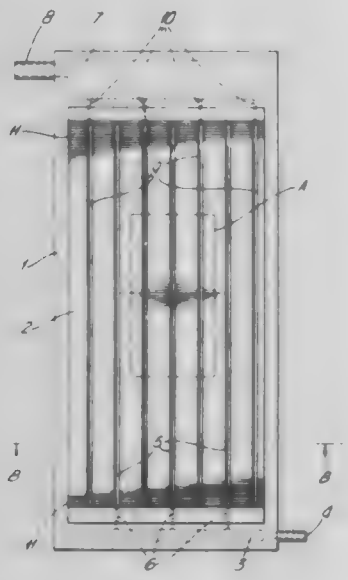
Brian J. Darweat, Cheshire, England, assignor to Imperial Chemical Industries PLC, London, England

Filed Mar. 11, 1985, Ser. No. 710,293

Claims priority, application United Kingdom, Mar. 27, 1984, 8407871

Int. Cl.⁴ C25B *9/00, 11/03, 11/04*

U.S. Cl. 204—257 **22 Claims**



15. An electrolytic cell, comprising:

at least one anode;

at least one cathode; and

a separator positioned between and separating from a said cathode each said anode which adjoins a respective said cathode;

at least one of said anode and cathode being provided as an electrode comprising:

a base member having on at least one face thereof a plurality of first major channels closed at one end and provided at the other end thereof with means for feeding liquors thereto;

a plurality of second major channels closed at one end and provided at the other end thereof with means for removing liquors therefrom; and

a plurality of minor channels of smaller cross-section than said major channels and positioned between said first major channels and second major channels and providing means for liquor to flow between said first major channels and said second major channels.

4,608,145

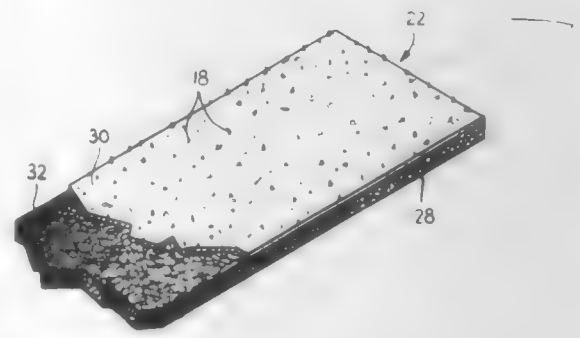
ELECTROPLATING TAPE

Norman P. Fairbanks, Cincinnati, Ohio, assignor to General Electric Company, Cincinnati, Ohio

Filed Jul. 23, 1984, Ser. No. 633,742

Int. Cl.⁴ C25D *17/00*

U.S. Cl. 204—279 **2 Claims**



1. A multisegment electrically non-conductive electroplating tape for carrying abrasive particles on a surface thereof; comprising:

a first electrically non-conductive tape segment,

(a) having pores large enough to allow passage therethrough of electrodeposition current and electrolyte solution but smaller than the size of abrasive particles to be retained on the first tape segment;

(b) a porous adhesive layer of relatively low tack level on a first segment operating surface; and

(c) abrasive particles carried on the first tape segment operating surface by the adhesive;

at least one second electrically non-conductive tape segment,

(a) being substantially impervious to electrolyte solution and electrodeposition current,

(b) including on a second segment operating surface intended to cooperate with the first segment operating surface an adhesive sufficiently strong to hold the second tape segment releasably at an article surface, and

(c) at least sharing an edge portion with the first tape segment.

4,608,146

HORIZONTAL ELECTROPHORESIS CELL FOR RAPID ASSEMBLY

William A. Penaluna, Pinole, Calif., assignor to Bio-Rad Laboratories, Inc., Richmond, Calif.

Filed Apr. 9, 1985, Ser. No. 721,269

Int. Cl.⁴ G01N *27/28*

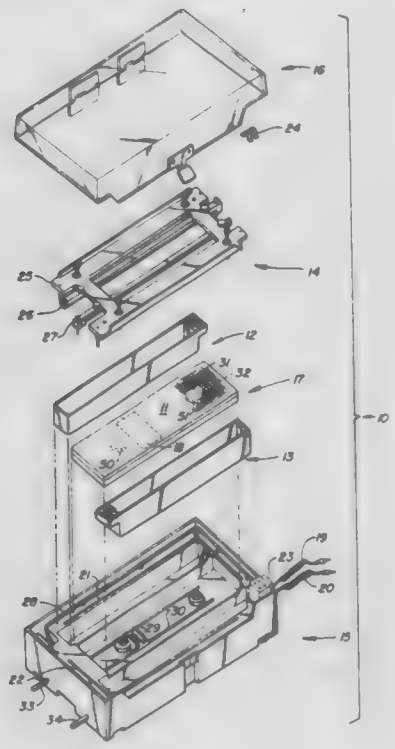
U.S. Cl. 204—299 R **30 Claims**

1. In an apparatus for electrophoresis across a horizontally disposed separation medium, said apparatus including a support surface capable of supporting said separation medium and having an opposing pair of side edges and an opposing pair of end edges, a pair of open receptacles capable of retaining buffer solutions, and a housing capable of retaining said support surface and one of said receptacles along each of said side edges, said housing having positive and negative terminals adapted for connection to a power supply, the improvement comprising:

a pair of first electrical contacts in said housing electrically connected to said positive and negative terminals, respectively; and

a pair of exposed leads, one said lead inside each said recepta-

cle, said leads electrically connected to a pair of second electrical contacts respectively;



one of said first and second pairs of electrical contacts being spring-loaded and adapted to compress against the other of said first and second pairs of electrical contacts when said receptacles are placed in said housing.

4,608,147

APPARATUS FOR THE ELECTRO-ELUTION AND COLLECTING OF ELECTRICALLY CHARGED MACROMOLECULES IN A TRAP

Andreas Clad, Freiburg, Fed. Rep. of Germany, assignor to Carl Schleicher & Schuell GmbH & Co. KG, Einbeck, Fed. Rep. of Germany

Filed Aug. 6, 1984, Ser. No. 637,922

Claims priority, application Fed. Rep. of Germany, Oct. 17, 1983, 3337669

Int. Cl.[4] B01D *13/02;* G01N *27/28*

U.S. Cl. 204—301 **18 Claims**



1. Apparatus for the electro-elution of electrically charged macromolecules, comprising a cuboid or plate-like body, said body having at least one elongate channel extending from one end to the opposite end of said body, said channel opening up at both ends of said body, said channel being open at least partially at the top of said body, an inner membrane disposed in at least one end portion of said body and extending generally transversely of the longitudinal axis of said channel, an outer membrane disposed in a position spaced from said inner membrane to define therebetween a section of said channel which forms a trap space, said outer membrane being permeable in the presence of an electric field to water and to small ions and molecules, and impervious to the macromolecules which are to be eluted, said inner membrane in the presence of an electric field being permeable to ions and molecules and therefore to the macromolecules to be eluted, the inner and outer membranes in the absence of an electric field being impermeable to water and buffers used with the apparatus, whereby macromolecules pass through said inner membrane into said trap space and are trapped in said trap space.

4,608,148

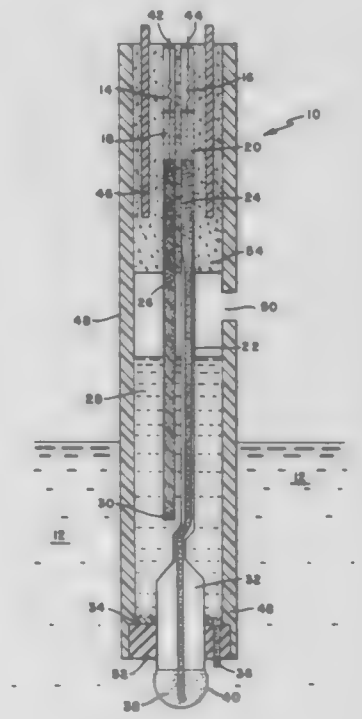
COMBINATION PH/REFERENCE ELECTRODE WITH IMPROVED TEMPERATURE RESPONSE

Dominick Frollini, Jr., Trafford; Dennis G. Falconer, Gibsonia, and Kenneth J. Kato, Export, all of Pa., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Continuation of Ser. No. 670,855, Nov. 13, 1984, abandoned. This application Jan. 31, 1986, Ser. No. 823,989

Int. Cl.[4] G01N *27/30*

U.S. Cl. 204—408 **10 Claims**



1. An electrode structure for pH measurements at a variety of temperatures within a temperature range which combines indicator and reference electrode functions, consisting of an outer annual space containing an electrochemical reference electrically connected to the sample solution through a secondary electrolyte and at least one junction, and an inner annular space containing a second electrochemical reference in contact with a pH fill buffer, the pH fill buffer being in contact with a sensing membrane formed at the end of the inner annular space, characterized by:

(a) the first and second electrochemical references being thermally insulated from the sensing membrane sufficiently to have matched thermal gradients when the temperature of the sample solution outside of the sensing membrane changes and being in thermal communication with each other;

(b) that portion of the pH fill buffer in contact with the inner surface of the sensing membrane being thermally insulated by salt crystals covering the interior of the sensing membrane from the remainder of the pH fill buffer so that the portion can rapidly equilibrate in temperature with the sample solution outside the sensing membrane;

(c) the pH fill buffer solution exhibiting substantially constant pH over a temperature range of −5° C. to 100° C.

4,608,149

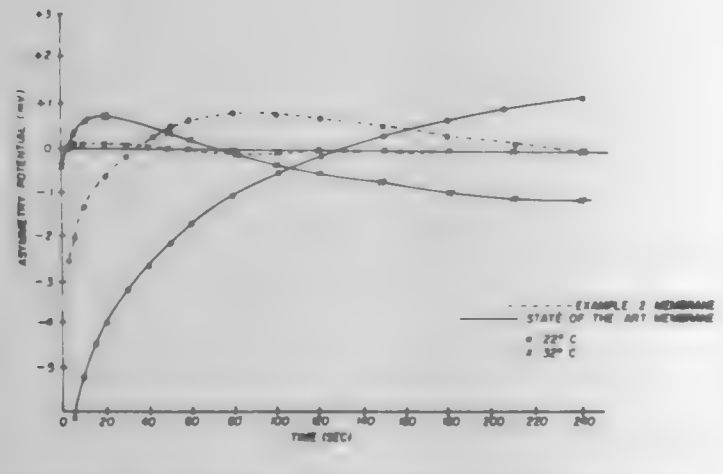
POTASSIUM ION-SELECTIVE COMPOSITIONS AND ELECTRODES CONTAINING SAME

Daniel S. Daniel, and Thomas R. Kissel, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation of Ser. No. 506,246, Jun. 20, 1983. This application Sep. 30, 1985, Ser. No. 781,364

Int. Cl.[4] G01N *27/46*

U.S. Cl. 204—418 16 Claims



1. A potassium ion-selective composition comprising valinomycin and diisodecyl phthalate.

4,608,150

PITCH MATERIAL FOR CARBONACEOUS BODY AND A METHOD FOR THE PREPARATION THEREOF

Masaaki Itoi; Masakatsu Ohta; Taizo Sugioka; Kunio Yoshihara, all of Sodegaura, and Hiroshi Nishitani, Kisarazu, all of Japan, assignors to Idemitsu Kosan Company Limited, Tokyo, Japan

Filed Mar. 11, 1985, Ser. No. 710,021

Claims priority, application Japan, Mar. 26, 1984, 59-56211

Int. Cl.[4] C10C *1/00, 3/00*

U.S. Cl. 208—22 8 Claims

1. A pitch material for carbonaceous body which is characterized by the parameters of:

(a) a content of the optically anisotropic phase in the range of at least 80%;

(b) a content of the pyridine-insoluble matter in the range from 30 to 70% by weight;

(c) a number average molecular weight in the range from 1000 to 1400; and

(d) a softening point in the range from 330° to 380° C.

4,608,151

PROCESS FOR PRODUCING HIGH QUALITY, HIGH MOLECULAR WEIGHT MICROCRYSTALLINE WAX DERIVED FROM UNDEWAXED BRIGHT STOCK

Stephen J. Miller, San Francisco, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Dec. 6, 1985, Ser. No. 806,079

Int. Cl.[4] C10G *73/08, 73/44*

U.S. Cl. 208—33 19 Claims

1. A process for preparing high molecular weight microcrystalline wax from a hydrocracked, undewaxed bright stock, comprising:

(a) contacting said bright stock with hydrogen in the presence of a catalyst having hydrodenitrification activity under conditions effective to reduce the nitrogen content of said stock to produce a substantially nitrogen-free product;

(b) contacting said substantially nitrogen-free product with hydrogen in the presence of a catalyst having hydrogenation activity under mild conditions to produce a wax-containing oil; and

(c) solvent dewaxing said wax-containing oil to produce high molecular weight microcrystalline wax.

4,608,152

HYDROVISBREAKING PROCESS FOR HYDROCARBON CONTAINING FEED STREAMS

Jerald A. Howell, and Simon G. Kukes, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Nov. 30, 1984, Ser. No. 677,134

Int. Cl.[4] C10G *45/04, 45/60, 47/02, 49/04*

U.S. Cl. 208—108 22 Claims

1. A process for hydrovisbreaking a hydrocarbon-containing feed stream comprising the steps of:

introducing a decomposable molybdenum additive selected from the group consisting of a mixture of a molybdenum dithiophosphate and a molybdenum carboxylate and a mixture of a molybdenum dithiocarbamate and a molybdenum carboxylate into said hydrocarbon-containing feed stream; and

contacting said hydrocarbon-containing feed stream containing said decomposable molybdenum additive under hydrovisbreaking conditions with hydrogen, wherein said contacting is carried out in the absence of a solid support for said decomposable molybdenum additive.

4,608,153

PROCESS FOR THE REMOVAL OF POLYNUCLEAR AROMATIC HYDROCARBON COMPOUNDS FROM ADMIXTURES OF LIQUID HYDROCARBON COMPOUNDS

Carl W. Hudson, and Glen P. Hamner, both of Baton Rouge, La., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Continuation-in-part of Ser. No. 635,729, Jul. 30, 1984, abandoned. This application Jul. 31, 1985, Ser. No. 760,961

Int. Cl.[4] C10G *45/46, 45/60, 47/12*

U.S. Cl. 208—112 27 Claims

1. A process for removing polynuclear aromatic hydrocarbons from a feed characterized as a molecular admixture of polynuclear aromatic hydrocarbon-containing hydrocarbons having a high end boiling point below about 540° C. (1004° F.) a sulfur level below about 5000 ppm, and nitrogen level below about 5000 ppm which comprises:

contacting said feed, in the presence of hydrogen, over a catalyst comprised of elemental iron and one or more alkali or alkaline-earth metals components at a temperature ranging from about 225° C. (437° F.) to about 430° C. (806° F.) and hydrogen partial pressure ranging from about 0 psig to about 1000 psig sufficient to hydrogenate and hydrocrack the polynuclear aromatic hydrocarbon molecules of the molecular hydrocarbon admixture without excessively hydrogenating and hydrocracking the non-polynuclear aromatic hydrocarbon molecules of said feed.

4,608,154

PROCESS FOR THE FLOTATION OF INSOL FROM SYLVINITE ORE

Simon Chan; Eli Slorstad; Henry D. A. Cormode, and Richard R. Tamosiunis, all of Saskatoon, Canada, assignors to Cominco Ltd., Vancouver, Canada

Filed Nov. 20, 1984, Ser. No. 673,253

Claims priority, application Canada, Nov. 22, 1983, 441,653

Int. Cl.[4] B03D *1/02*

U.S. Cl. 209—166 25 Claims

1. A process for the selective flotation of insol containing clays, dolomite, anhydrite and hematite from a sylvinite ore which process comprises the steps of pulping the ore; conditioning the ore pulp with an alkyl amine collector for insol chosen from the group consisting of primary alkyl amines, secondary alkyl amines, and primary ether alkyl amines, said alkyl amine collector for insol being added in an amount in the range of about 0.4 to 10 g collector per tonne of ore, and with a suitable flocculant added in an amount of at least about 5 g

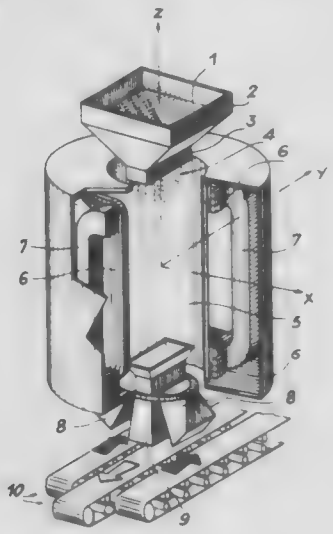
flocculant per tonne of ore; subjecting the conditioned ore pulp to froth flotation; and removing the flotated insol.

4,608,155

MAGNETIC SEPARATOR

Henri Desportes, Gif sur Yvette, and Joao Meyer, Paris, both of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Jul. 26, 1984, Ser. No. 634,570
Claims priority, application France, Aug. 3, 1983, 83 12797
Int. Cl.⁴ B03C *1/26*
U.S. Cl. 209—224 **5 Claims**



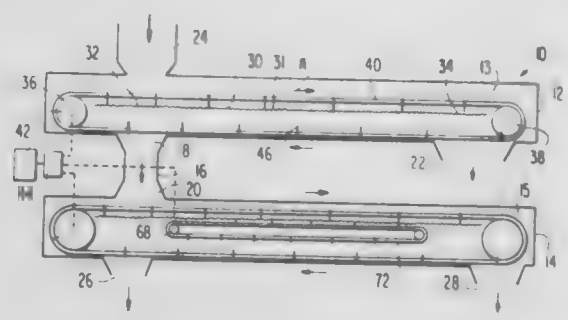
1. A magnetic separator for separating magnetic particles from non-magnetic particles comprising a vertically oriented separation chamber; an inlet for particles to be separated at the top of the chamber, means for collecting magnetic particles and non-magnetic particles at the bottom of the chamber; multiple magnetic field producing means for producing, in the separation chamber, a magnetic field comprising a quadrupole magnetic field configuration superimposed on a dipole magnetic field configuration thereby defining a magnetic field gradient in the horizontal plane.

4,608,156

MULTI-SCREEN GRAIN SEPARATOR

Arthur O. Reddish, Jr., 4121 S. 37th, Lincoln, Nebr. 68506

Filed Oct. 21, 1981, Ser. No. 313,709
Int. Cl.⁴ B07B *1/52*
U.S. Cl. 209—353 **15 Claims**



1. A separating apparatus for classifying particulate material according to size comprising:

a cleaning sub-housing defining a chamber enclosing a substantially horizontally extending cleaning screen, said sub-housing having a top wall disposed above said screen with an inlet located vertically above an upstream end of said cleaning screen, said sub-housing having a bottom wall disposed beneath said screen with a first outlet located beneath said upstream end and aligned with said inlet and said bottom wall having a second outlet located beneath a downstream end of said screen;

conveyor mounted paddle means for repeatedly sweeping particulate material along a top surface of said cleaning screen from said upstream end toward said downstream end;

conveyor mounted protrusion means for repeatedly sweeping a bottom surface of said cleaning screen from said upstream end toward said downstream end; and

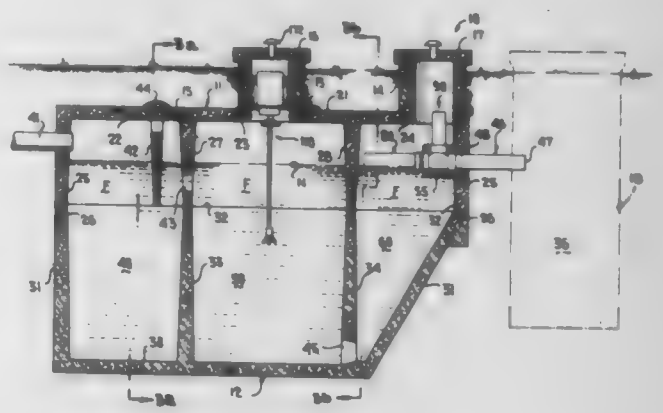
biasing means for biasing said protrusion means into continuous contact with said bottom surface of said cleaning screen comprising at least one compression spring compressed between a surface rigidly mounted within said sub-housing and a floating channel member confronting and extending parallel to said cleaning screen, whereby said at least one compression spring biases said floating channel member against a plurality of said protrusion means, pressing said protrusion means against the bottom surface of said cleaning screen, thereby freeing said cleaning screen of impurities which inadvertently become embedded therein.

4,608,157

WASTEWATER TREATMENT PLANT

Jan D. Graves, Norwalk, Ohio, assignor to Norwalk Wastewater Equipment Company, Norwalk, Ohio

Division of Ser. No. 388,246, Jun. 14, 1982, Pat. No. 4,505,813.
This application Mar. 11, 1985, Ser. No. 710,587
The portion of the term of this patent subsequent to Mar. 19, 2002, has been disclaimed.
Int. Cl.⁴ C02C *1/02*
U.S. Cl. 210—86 **18 Claims**



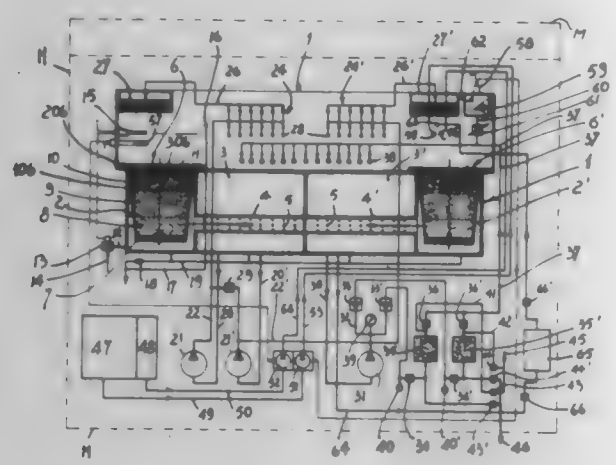
1. A wastewater treatment plant comprising means for defining a pretreatment chamber, means defining an inlet for introducing fluid into said pretreatment chamber, means for defining an aeration chamber, means for conducting fluid from said pretreatment into said aeration chamber, rotating means for aerating the fluid in said aeration chamber, means for defining a clarification chamber, means for conducting fluid from said aeration chamber into said clarification chamber, means defining an outlet for discharging the fluid from said clarification chamber, means for filtering the fluid discharging from said clarification chamber, said filtering means being constructed and arranged for increasing its filtering capacity in response to fluid level rise in said clarification chamber, and said rotating aerating means including means for responding to an inoperative condition of said filtering means and a corresponding rise in the fluid level in said aeration chamber for indicating fluid treatment malfunction.

4,608,158

FEEDING INSTALLATION FOR THE DAMPENING SOLUTION IN OFFSET PRINTING PROCESSES

Luigi Ghisalberti, Paladina, and Marco Fumagalli, Oggiono, both of Italy, assignors to Web Italia S.r.l., Villanova di Castenaso, Italy

Filed Apr. 11, 1985, Ser. No. 722,033
Claims priority, application Italy, Aug. 1, 1984, 12578 A/84
Int. Cl.[4] B01D *29/42*
U.S. Cl. 210—96.1 8 Claims



1. An installation for continuously feeding, renewing and conditioning the dampening solution in a lithographic printing process, characterized in that it comprises:

a tank (1) for containing the required amount of solution, said tank being connected through a solenoid valve (13) to a source (14) of sufficiently clean and softened water and being provided with a level-detecting probe (15) controlling said solenoid valve (13) to maintain the liquid in the tank at a constant level, said tank being also provided with an overflow outlet and with bottom drain outlets for complete emptying;

two softening-filtering units (6–4, 6′–4′) for the solution in the tank (1), said units being suitably integrated within said tank and adapted to operate on the solution being continuously circulated in said tank;

the first one of said softening-filtering units (6–4) being connected to the suction of at least one electro-pump (21) the delivery of which is connected to a plurality of ejectors (24—24′) or "jet-pumps" the suction opening (28) of which is connected to the discharge duct of the printer fountains to continuously discharge therefrom, for renewing purposes, the dampening solution, while the outlets of the various ejectors (24—24′) are connected to manifold ducts (26—26′) freely discharging into gravity filters (27—27′) which, in turn, will discharge into the tank containing the solution;

the second one of said softening-filtering units 6′–4′) being connected to the suction of at least one electro-pump (31) which, through at least one filter (35) preferably of the pressure type, delivers the dampening liquid to a plurality of injectors (38) having connected thereto the ducts feeding the solution to the fountains of the printing press;

containers (47–48) for the chemical additives to be mixed in the water, e.g. alcoholic and acid additives, said containers being provided with discharge ducts connected to respective electro-pumps (51–52) discharging into a high-turbulence area of the tank (1) containing the solution, said electro-pumps being preferably of small flowrate and of volumetric type and being controlled by respective circuits comprising probes (57–58) for detecting either directly or indirectly the pH and density of the dampening solution and which, through electronic processing and comparing devices, enable the selection of the desired values of pH and density and, through said electro-pump, permit said parameters to be maintained at the selected values;

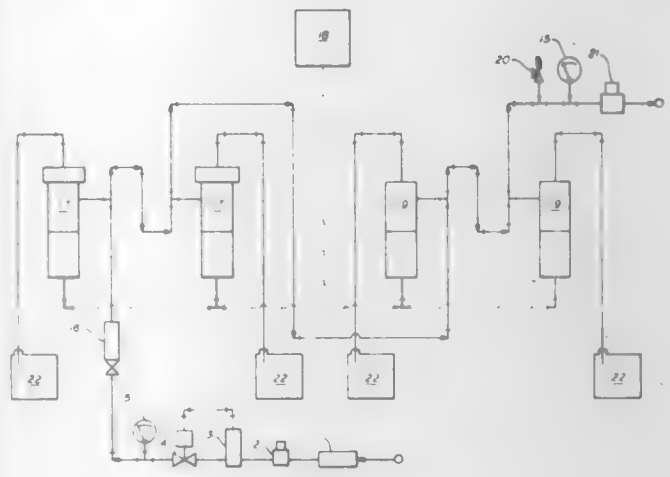
a circuit (63–64–65) which withdraws the solution from one of said softening-filtering groups and which suitably cools the solution to a thermostat-controlled value.

4,608,159

BOILER WATER/BOILER FEED WATER AUTOMATIC SAMPLER SYSTEM

Henry R. Collins, Jr., Livingston, Tex., assignor to Collins Products Company, Inc., Livingston, Tex.

Filed Apr. 23, 1984, Ser. No. 602,818
Int. Cl.[4] C02F *1/02*
U.S. Cl. 210—101 10 Claims



1. In a sampling system actuated by an external actuator means for continuously dispensing samples of boiler water or boiler feed water to respective sample stations for analysis as herein described, the combination comprising:

(a) source means supplying the sample water below a prescribed temperature and within a prescribed pressure range;

(b) flow regulating means including flow indicator means for providing the sample water at a prescribed flow rate to a plurality of sampler dispensing means;

(c) back pressure regulator means for supplying a prescribed back pressure to said sample water which is entering into said sample dispensing means;

(d) each said sampler dispensing means comprising:

(1) a piston and cylinder means supplying a prescribed volume of sample water to said sample station with each compressive stroke of the piston into the cylinder;

(2) driver means successively driving said piston into said cylinder at a rate prescribed by said external actuator; and

(3) said back pressure returning said piston as an intake stroke between each said compressive stroke.

4,608,160

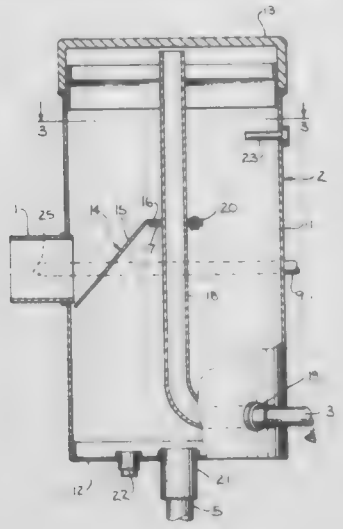
SYSTEM FOR SEPARATING LIQUIDS

Roger L. Zoch, McFarland, Wis., assignor to Nelson Industries, Inc., Stoughton, Wis.

Filed Nov. 5, 1984, Ser. No. 668,630
Int. Cl.[4] C02F *1/40*
U.S. Cl. 210—114 5 Claims

1. In a system for separating two immiscible liquids of different specific gravities, a vertically disposed generally cylindrical tank having an inlet to receive a mixture of a lighter liquid and a heavier liquid, first outlet means communicating with the lower portion of the tank for discharging the heavier liquid, second outlet means communicating with the upper portion of the tank for discharging said lighter liquid, separator means in said tank and comprising a single generally flat plate disposed in said tank in direct alignment with said inlet, said plate being inclined upwardly and away from said inlet and extending upwardly from a level beneath said inlet to a level above said inlet and toward said second outlet means, said plate having an upper edge extending generally chordwise of said tank and having a lower curved edge disposed generally contiguous to the inner surface of said tank, approximately one half of the cross sectional area of the tank throughout the entire height of the tank being unobstructed whereby said mixture entering the tank through said inlet is deflected upwardly by said plate and said lighter liquid is collected as a layer in the upper end of said

tank for discharge through said second outlet means and said heavier liquid flows downwardly through the unobstructed



cross sectional area of said tank for discharge through said first outlet means.

4,608,161

HEATABLE FUEL FILTER FOR DIESEL ENGINES

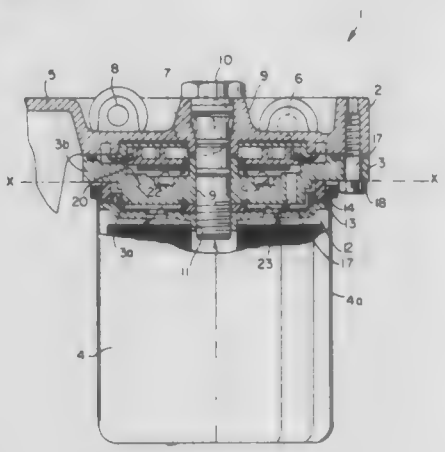
Gerd Niemeier, Stuttgart, Fed. Rep. of Germany, assignor to Daimler-Benz Aktiengesellschaft, Fed. Rep. of Germany

Filed Apr. 26, 1985, Ser. No. 727,431

Claims priority, application Fed. Rep. of Germany, Apr. 26, 1984, 3415522

Int. Cl.⁴ B01D *23/00*; F02M *31/00*

U.S. Cl. 210—149 **13 Claims**



1. A fuel filter for a motor vehicle engine, said fuel filter having heating element means positioned between filter head means and filter box means, said filter box means including: fuel collecting means for collecting and containing residual fuel remaining in said filter head means and said heating element means when said filter head means is detached from said filter, said fuel collecting means including means for preventing residual fuel from discharging to the surrounding area when said filter head means is detached from fuel filter.

4,608,162

ROTATING BIOLOGICAL CONTACTOR APPARATUS

Robert W. Hankes, Downington, Pa., and Lloyd H. Parker, Winona, Ohio, assignors to Crane Co., New York, N.Y.

Continuation of Ser. No. 291,723, Aug. 10, 1981, Pat. No. 4,444,658. This application Feb. 9, 1984, Ser. No. 579,141

The portion of the term of this patent subsequent to Apr. 24, 2001, has been disclaimed.

Int. Cl.⁴ C02F *3/08*

U.S. Cl. 210—150 **2 Claims**

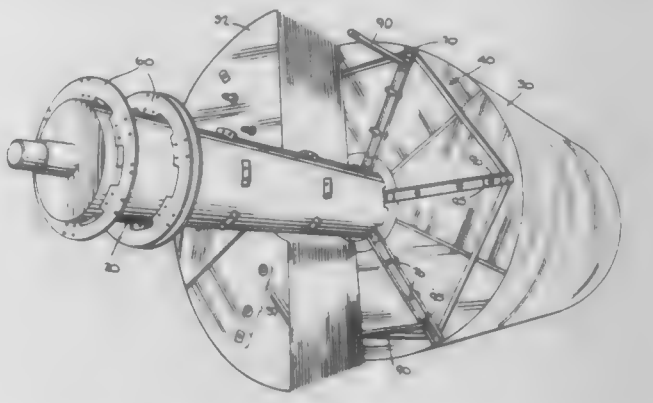
1. A biological water treatment apparatus, comprising:

a tank;

a shaft mounted for rotation in said tank and having a plurality of circumferential rows of bayonette lugs;

a plurality of contactor media packs;

a plurality of frames each supporting a separate one of said plurality of contactor media packs thereon, each frame including a circular collar adapted to fit about said shaft and to be removably secured to one of said plurality of circumferential rows of bayonette lugs, each collar having



an inner surface with a plurality of recesses substantially uniformly positioned in the inner surface, wherein the recesses of the collar and said shaft define flow passages along the shaft when a collar is secured to said shaft to provide for the relatively uniform flow of air therethrough; and

first means for securing each collar to the respective one row of bayonette lugs.

4,608,163

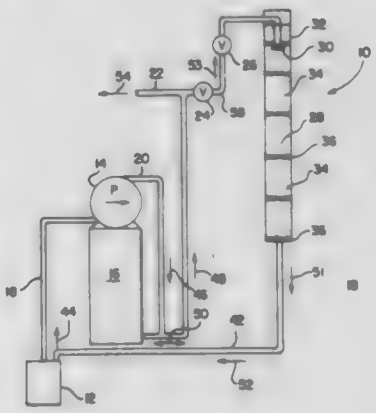
APPARATUS FOR PURIFICATION OF CONTAMINATED GROUNDWATER

Thomas L. Yohe, 1406 Morstein Rd., and Karl M. Kyriss, 1554 Mill Race La., both of West Chester, Pa. 19380

Division of Ser. No. 570,299, Jan. 13, 1984, Pat. No. 4,526,692. This application Apr. 3, 1985, Ser. No. 719,549

Int. Cl.⁴ C02F *1/74*

U.S. Cl. 210—150 **5 Claims**



1. In a domestic water supply system comprising a well having a well head, an improved water delivery and purification system comprising:

a water treatment unit, said water treatment unit comprising a packed column filled with filter material;

means providing a flow path for flow of water from the well through the well head, through the water treatment unit, and back to the well through said well head;

pumping means, located in said flow path, for pumping water through said flow path; and

a water service line connected between said flow path and a point of use;

said pumping means also serving to pump water from said flow path to the point of use.

4,608,164
MEMBRANE FILTER PLATE

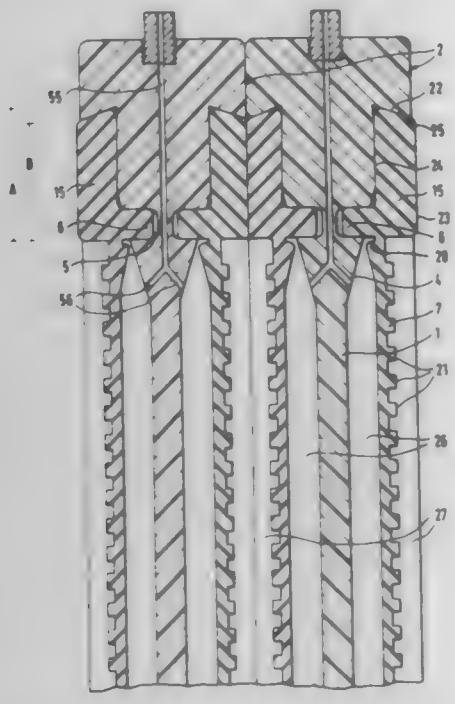
Werner Neu, Langenhagen, Fed. Rep. of Germany, assignor to Hansen-BTR GmbH, Hanover, Fed. Rep. of Germany

Filed Jan. 31, 1985, Ser. No. 697,072

Claims priority, application Fed. Rep. of Germany, Jan. 31, 1984, 3403163; Jun. 18, 1984, 3422574; Jul. 2, 1984, 3424325; Aug. 27, 1984, 3431401

Int. Cl.[4] B01D *25/12*

U.S. Cl. 210—231 21 Claims



1. A membrane filter press comprises a plurality of membranes of elastomeric material sandwiched between base plates,

each of said base plates having a central recess bounded by an inclined surface sloping up to a lower inner peripheral portion surrounded by a higher outer peripheral portion and having a circumferential groove adjacent the boundary between said inclined surface and said lower inner peripheral portion, and

each of said membranes being substantially planar non-cup-shaped in unstressed condition and having a marginal portion seating on said lower inner peripheral portion of said base plate and having a thickness slightly greater than the difference in height between said lower inner peripheral portion and said higher outer peripheral portion, and a circumferential rib received in said groove of said base plate,

surfaces of said higher outer peripheral portions of adjacent base plates seating on one another in compressed condition of said press and constitution sealing surfaces providing a pressure seal between adjacent base plates.

4,608,165
LIQUID SURFACE SKIMMING TROUGH ASSEMBLY

Sam Galper, Islington, Canada, assignor to Samdor Engineering Limited, Islington, Canada

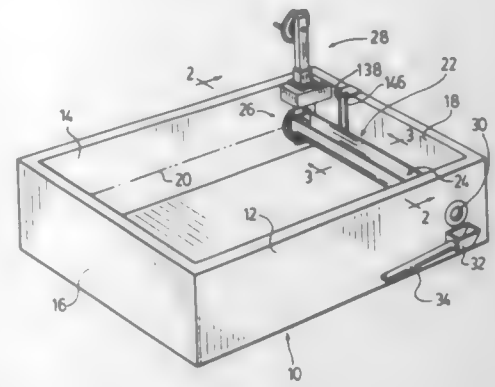
Filed Apr. 8, 1985, Ser. No. 721,041

Int. Cl.[4] E02B *15/04*

U.S. Cl. 210—232 24 Claims

1. A bearing assembly comprising means for mounting a skimming trough in an upper region of a tank for rotation in skimming a liquid layer from an upper region of tank contained liquid, said bearing assembly having a housing with an opening to receive a cylindrical bearing sleeve portion of a skimming trough, at least three spaced-apart rollers being mounted within said housing for contacting a cylindrical bearing sleeve portion of a skimming trough, each of said rollers being mounted in said housing to rotate about an axis which extends in a direction generally parallel to an axis of rotation for a skimming trough mounted in said bearing, said rollers being arranged about said housing opening relative to said axis of rotation of a skimming trough, said rollers being arranged in said housing to position at least one roller in the upper region of said housing when in sue on a skimming trough, said housing having a sealing means for sealing said rollers within a sealed cavity defined between said housing and a cylindrical bearing sleeve of a skimming trough mounted in said bearing assembly, and means associated with said housing for permitting insertion into said cavity of a substance for resisting migration through said sealing means of impurities from tank contained liquid.

23. A skimming trough comprising means for use in skimming a liquid layer from an upper region of a tank contained liquid, said trough being generally U-shaped in cross-section and extending appreciably in length to span supporting structures of a tank, said trough including an assembled plurality of extruded aluminum, alloy sections consisting of opposing bottom circular segments and opposing upright side wall sections, said circular segments being of identical cross-section and said upright side wall sections being of identical cross-section, said circular segments having edge portions adapted for connection to one another along trough lower portion and remaining edge portions adapted for connection to said trough side walls.



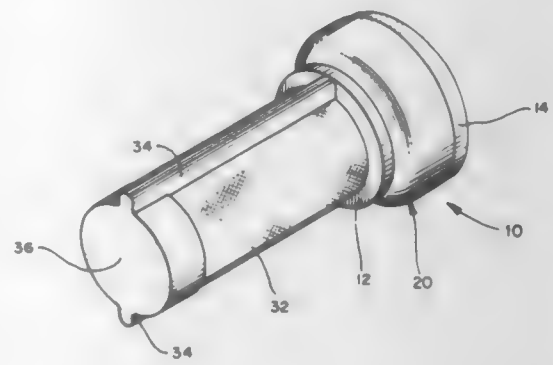
4,608,166
PRESS FIT FILTER

Thomas A. Cain, Woodstock, Ill., assignor to Filtertek, Inc., Hebron, Ill.

Filed Apr. 1, 1985, Ser. No. 718,726

Int. Cl.[4] B01D *25/02*

U.S. Cl. 210—232 16 Claims



6. In a press fit filter of the type having a base supporting filtration material, said base configured to fit within a fitment hole, the improvement comprising:

(a) a metal collar surrounding at least a portion of the base,

(b) said collar having

(i) a leading edge embedded in the base,

(ii) a rounded entry corner adjacent to the leading edge to provide a smooth metal surface in contact with an entrance corner and wall of the fitment hole, thereby preventing shearing of particles from the sides of the fitment hole during press fitting of the filter into the fitment hole, and

(iii) a plurality of tabs at the distal end of the collar embedded in the base sufficient for preventing the collar from

slipping apart from said base during temperature changes of the filter.

4,608,167

SKIMMING WEIRS

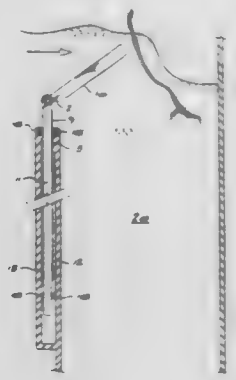
Johann N. Raubenheimer, Bedfordview, South Africa, assignor to Fahet NV, Curacao, Netherlands Antilles

Filed Aug. 27, 1985, Ser. No. 769,744

Claims priority, application South Africa, Nov. 2, 1984, 84/8586

Int. Cl.[4] E04H *3/20*

U.S. Cl. 210—242.1 2 Claims



1. A skimmer weir composed of buoyant upper flap and a lower flap, said two flaps being hinged together, means for guiding said lower flap for substantially vertical movement in a fixed path, stop means for limiting the upward movement of said lower flap, and means inhibiting upward movement of said lower flap once said upper flap bends under the flow of a stream of water.

4,608,168

DISTRIBUTION FILTER NOZZLES AND FILTERS INCORPORATING SAME

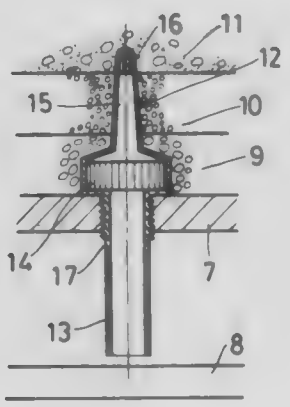
Richard P. Moore, Germiston, South Africa, assignor to Blue Circle Projects (Proprietary) Ltd., Johannesburg, South Africa

Filed Jun. 15, 1982, Ser. No. 388,526

Claims priority, application South Africa, Jun. 17, 1981, 81/4146

Int. Cl.[4] B01D *23/20*

U.S. Cl. 210—274 10 Claims



1. In a filter having at least two layers of particulate filter media with a first, fine filter media supported on a second, coarse lower layer, the improvement comprising: (a) at least one nozzle assembly communicating with at least one filter outlet passage, the nozzle assembly defining two vertically spaced sets of perforated nozzle surfaces a first, upper set of perforated nozzle surfaces extending into the first, fine filter media and defining first openings of a given size, and a second, lower set of perforated nozzle surfaces extending into the lower layer of coarse filter media and defining second openings of greater size than the first openings; (b) means for introducing liquid into the second, lower nozzle surface for backwashing said particulate filter media; and (c) means for introducing air into the first, upper nozzle surfaces, said means located at a higher level than said means for introducing liquid into the second, lower set of perforated nozzle surfaces.

4,608,169

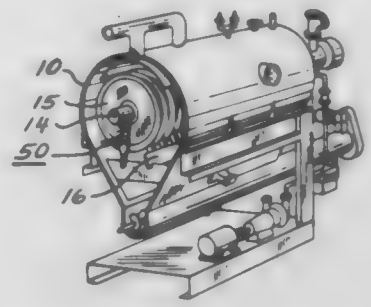
FILTER BRUSH

Kostas S. Arvanitakis, 14945 S. Dogwood Ave., Orland Park, Ill. 60462

Filed Jul. 15, 1985, Ser. No. 755,440

Int. Cl.[4] B01D *25/32*

U.S. Cl. 210—334 15 Claims



1. A brush assembly for cleaning expended filter cake from filter elements mounted on a filter tube through which a clarified liquid is passed after having solids materials removed therefrom upon passing unclarified liquid through the filter cake supported on the septum of the filter element, and for scrubbing the filter septum after removal of the expended filter cake, the brush assembly comprising

at least two parallel extending brush arms each of said brush arms having a first face positioned adjacent to each other and an opposed second face supporting brushing means for engaging a filter element,

brush arm support means secured to one end of each of said brush arms and adapted to be supported from a filter tube to position said brush arms between adjacent filter elements with each of said brushing means engaging one of the adjacent filter elements, and

spring biasing means supported between and engaging each one of said brush arm support means and each one of said brush arms for applying an outwardly directed separating force therebetween biasing said brushing means into engagement with an adjacent filter element with a force determined by the spring rate of said spring biasing means.

4,608,170

ANGULARLY ADJUSTABLE BREAKER VALVE-DISCHARGE ELBOW FOR ROTARY DRUM FILTERS

Richard W. LaValley, Vancouver, Wash., assignor to LaValley Industrial Plastics, Inc., Vancouver, Wash.

Continuation-in-part of Ser. No. 750,320, Jun. 28, 1985, which is a continuation-in-part of Ser. No. 737,824, May 24, 1985. This application Aug. 16, 1985, Ser. No. 766,768

Int. Cl.[4] B01D *33/06*

U.S. Cl. 210—404 21 Claims

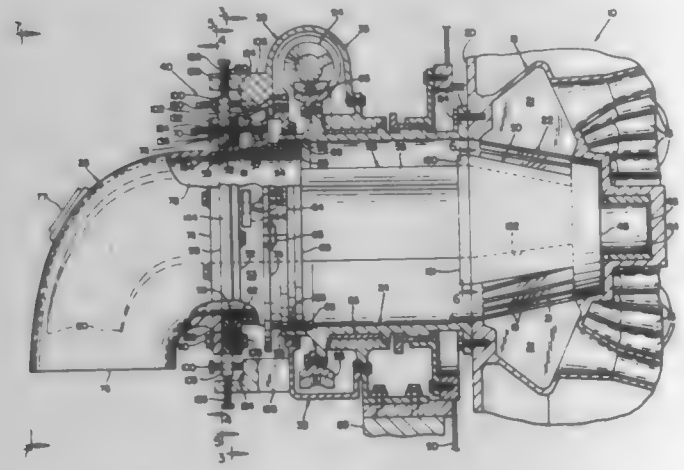
1. In a rotary drum filter of the type having a vacuum breaker valve housing within one end of the drum and stationary drum support means at the same end of the drum, a vacuum breaker valve-discharge elbow assembly comprising:

a stationary valve member, including a valve closure segment at an inlet end thereof for insertion in the valve housing of the drum and a valve discharge end including valve connecting means,

a discharge elbow defining a flow passage therethrough and including elbow inlet and outlet ends, said elbow inlet end including elbow connecting means,

a valve mounting means positioned between said valve connecting means and said elbow connecting means, said valve mounting means including first connecting means

for connecting said mounting means to the drum support means, second connecting means independent of said first connecting means for connecting said mounting means to the valve connecting means, and third connecting means independent of said first and second connecting means for connecting the mounting means to the elbow connecting means, whereby said elbow and said valve member are



independently mounted to said mounting means and supported by said mounting means from said drum support means,

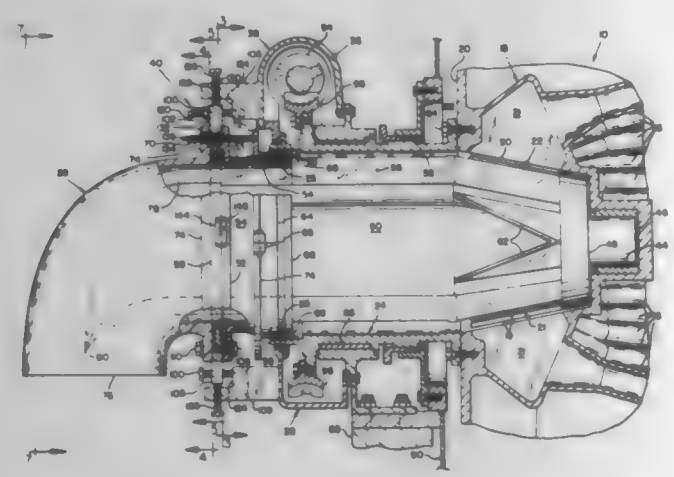
said valve connecting means comprising a clamping means in surrounding relationship to and separable from said valve member for clamping the valve member against said valve mounting means.

4,608,171

ADJUSTABLE MOUNTING FOR VALVE-DISCHARGE ELBOW OF ROTARY DRUM FILTERS

Richard W. LaValley, Vancouver, Wash., assignor to LaValley Industrial Plastics, Inc., Vancouver, Wash.

Continuation-in-part of Ser. No. 737,824, May 24, 1985. This application Jun. 28, 1985, Ser. No. 750,320
Int. Cl.⁴ B01D *33/06*
U.S. Cl. 210—404 **15 Claims**



1. In a rotary drum filter of the type having a vacuum breaker valve housing within one end of the drum and stationary drum support means at the same end of the drum, a vacuum breaker valve-discharge assembly comprising:

a stationary valve member, including a valve closure segment at an inlet end thereof for insertion in the valve housing of the drum and a valve discharge end including valve connecting means,

a discharge elbow defining a flow passage therethrough and including elbow inlet and outlet ends, said elbow inlet end including elbow connecting means,

a valve mounting means positioned between said valve connecting means and said elbow connecting means, said valve mounting means including first connecting means for connecting said mounting means to the drum support means, second connecting means independent of said first connecting means for connecting said mounting means to the valve connecting means, and third connecting means independent of said first and second connecting means for connecting the mounting means to the elbow connecting means, whereby said elbow and said valve member are indepently mounted to said mounting means and supported by said mounting means from said drum support means.

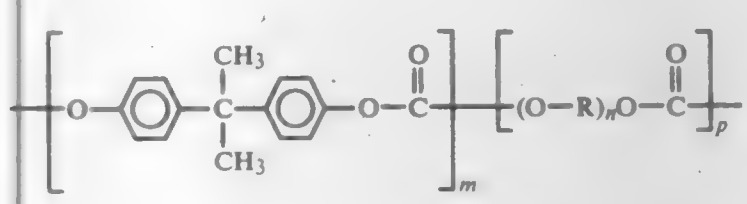
4,608,172

PLASMAPHERESIS MEMBRANE AND PROCESS FOR THE PREPARATION THEREOF

Hermann J. Goehl, Zimmern-Bisingen, and Reinhold J. Buck, Alleshausen, both of Fed. Rep. of Germany, assignors to Gambro Dialysatoren KG, Fed. Rep. of Germany

Continuation of Ser. No. 341,090, Jan. 20, 1982, abandoned, which is a continuation-in-part of Ser. No. 280,472, Jul. 6, 1981, abandoned. This application Nov. 6, 1984, Ser. No. 668,696
Claims priority, application Sweden, Jul. 25, 1980, 80053804
Int. Cl.⁴ B01D *13/00*
U.S. Cl. 210—500.2 **10 Claims**

1. A plasmapheresis membrane of a biocompatible hydrophilic polycarbonate polymer comprising a polycondensate of bisphenol A and polyalkylene oxide having the following general formula:



wherein R is selected from the group consisting of —CH_2C-H_2— and combinations of —$CH_2CH_2CH_2$— and —CH_2C-H_2—, m is from 40 to 100, n is from 10 to 155, and p is from 0.5 to 3, said membrane having a symmetrical, microporous regular pore structure comprising smoothly rounded pore openings substantially free of sharp edges, substantially all of said pores of said membrane having an average pore diameter of between 0.01 and 0.8μ, said membrane being permeable by molecules of up to about 3×10^6 Dalton, and having a porosity of greater than 65%, whereby said membrane is capable of providing a high filtration rate for plasma while simultaneously rejecting blood cells without substantially decreasing its permeability capacity and without causing hemolysis when used in such plasmapheresis processes.

4,608,173

FILTER

Koh Watanabe, Tokyo; Michihide Tokashiki, Saitama, and Sadao Wada, Shiki, all of Japan, assignors to Toa Nenryo Kogyo Kabushiki Kaisha, Tokyo, Japan

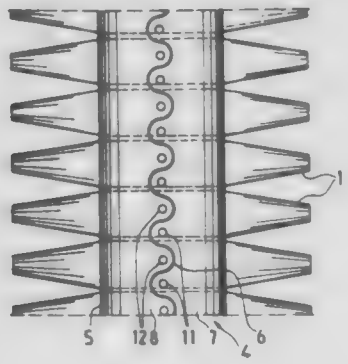
Continuation of Ser. No. 448,110, Dec. 9, 1982, abandoned. This application Jun. 7, 1985, Ser. No. 742,269
Claims priority, application Japan, Dec. 11, 1981, 56-198471
Int. Cl.⁴ B01D *39/08, 39/16*
U.S. Cl. 210—502.1 **6 Claims**

1. A filter for removing carbonaceous particles from oil, gas, or air which comprises a fabric composed of (a) a plurality of nonwoven fibers having a composition selected from the group consisting of polymers and cotton, and having a diameter between about 0.5 and 10 micrometers, and being randomly entangled to provide a filter media, and (b) a cationic polyacrylamide coating on said fibers for adsorbing and filtering said particles in said oil, gas, or air.

4,608,174
FEED AND ACCEPT DUCT SYSTEM FOR HYDROCYCLONES

Seppo Kokkonen; Antti Kuhasalo, both of Savonlinna; Erkki Savolainen, Haapakallio; Juha Titoff, Savonlinna; Jorma Vento, Savonlinna, and Pentti Vikiö , Savonlinna, all of Finland, assignors to Enso-Gutzeit Oy, Helsinki, Finland

Filed Mar. 20, 1985, Ser. No. 714,096
Claims priority, application Finland, Mar. 20, 1984, 841123
Int. Cl.[4] B04C *3/04*
U.S. Cl. 210—512.2 5 Claims

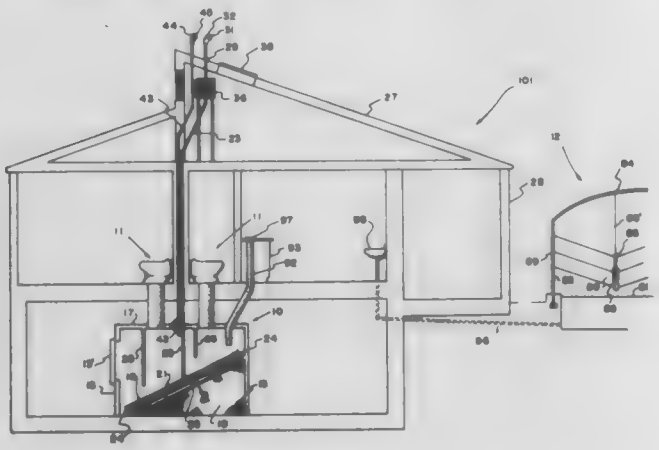


1. A feed and accept duct system for hydrocyclones, comprising a common feed duct, connected through connecting tubes to parallel hydrocyclones, and a common accept duct, to which said cyclones are similarly connected through connecting tubes, the connecting tubes of the feed and accept ducts leading to the different hydrocyclones being places so that the tubes are located substantially in parallel, and the feed and accept ducts being formed inside a common shell by dividing the space which it confines into two parallel ducts with a zigzag partition, and the ends of the connecting tubes being located at the folds produced by the bights of the partition, the partition thereby confining the feed duct connecting tubes to the feed duct side and the accept duct connecting tubes to the accept duct side.

4,608,175
INTEGRAL WASTE DISPOSAL SYSTEM

David A. Nuttle, Rte. 2, 137 White Oak Dr., Youngsville, N.C. 27596

Filed Jul. 6, 1984, Ser. No. 628,481
Int. Cl.[4] C02F *3/12, 9/00*
U.S. Cl. 210—532.2 17 Claims

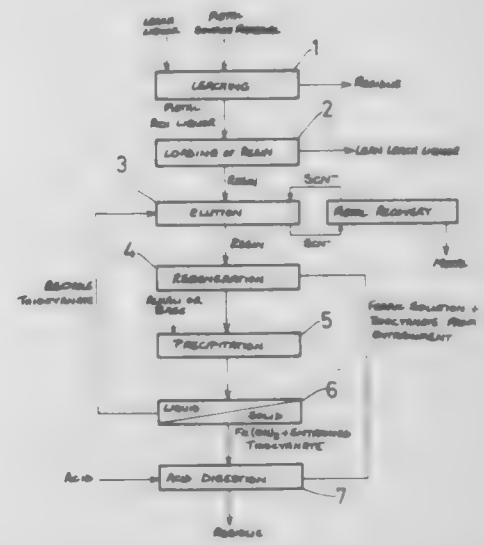


1. A system for disposal of household liquid and solid waste comprising: an aerobic biological decomposing tank for receiving and treating human and organic waste, said decomposing tank having waste inlet means for depositing said human and organic waste, aeration means including air inlet means, air exhaust means and blower means for causing a positive air flow through said decomposing tank, and access means for removal of ash resulting from the decomposition of said human and organic waste; and a solar evaporative distillation and collecting system for receiving and distilling waste water, said distillation system being independent of said decomposing tank and having at least one reservoir for receiving said waste water, a trough-like condensing surface having an extending lower apex over a substantial portion of said reservoir, and a water collection trough disposed below said apex of said condensing surface whereby a highly efficient, low cost system for disposal of household solid and liquid waste is provided.

4,608,176
REGENERATION OF THIOCYANATE RESINS

Christopher A. Fleming, Randburg, South Africa, assignor to Council for Mineral Technology, Johannesburg, South Africa

Filed Dec. 18, 1984, Ser. No. 683,131
Claims priority, application South Africa, Jan. 12, 1984, 84/0244
Int. Cl.[4] B01J *49/00*
U.S. Cl. 210—677 12 Claims



1. A method of eluting and regenerating a strong-base anion exchange resin comprising the steps of:

(a) Eluting the resin using a thiocyanate strip solution,

(b) Contacting the stripped resin which carries adsorbed thiocyanate with a regenerating solution containing ferric ions and anions suitable for replacing thiocyanate anions in the resin, the ferric ion concentration being from about 0.035 to 2.0 Molar, separating the resin and thiocyanate containing regenerating solution, treating such solution with an alkali or base to precipitate iron, and separating the iron precipitate from the remaining thiocyanate solution.

11. A process for the recovery of selected metal values from a leach solution containing such metals in complex anionic form, the process comprising the steps of adsorbing the complex anions on a strong base anion exchange resin, eluting the metal values using a thiocyanate strip solution, regenerating the resin by a process as claimed in claim 1 and recycling the resin to the adsorption stage.

4,608,177
EFFLUENT PRECIPITATION AND NEUTRALIZATION CHAMBER

Gunter Woog, 5435 Bauers Dr., West Bend, Wis. 53095

Filed Jan. 7, 1985, Ser. No. 689,434
Int. Cl.[4] C02F *1/52, 1/66*
U.S. Cl. 210—738 3 Claims

1. Apparatus for treating fluids prior to discharge thereof to a drain comprising:

a. a container having an opening;

b. cover means for removably covering and sealing the container opening;

c. inlet means in the cover means for conducting at least two different fluids into the container;

d. outlet means in the cover means for discharging the fluids from the container, mixing means fastened to the inside of the cover means for preliminarily mixing the fluids as they

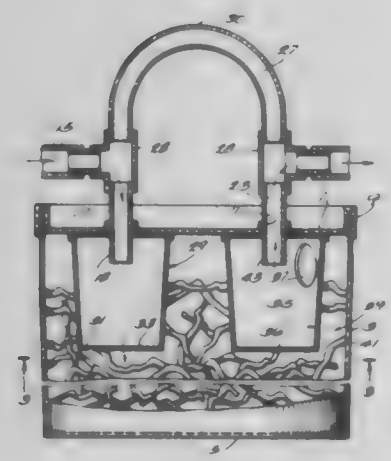
enter the container, the mixing means comprising a hollow vessel having wall means for surrounding the streams of fluid entering the container from the inlet means and for defining an opening therethrough to permit the partially mixed incoming fluids to pass from the hollow vessel to the inside of the container;

e. restrictor means within the container for providing tortuous paths to the flow of the fluids to promote intermixing thereof, the restrictor means comprising at least one long length of flexible ribbon folded and packed within the container;

f. outlet means in the cover means for discharging the fluids from the container; and

g. a hollow cylinder fastened to the inside of the cover means and having wall means for surrounding the outlet means, the wall means defining at least one port therethrough located near the cover means and remote from the inlet means to permit only fluid from the top of the container to be discharged through the outlet means,

so that the fluids introduced into the container are intermixed therein as they flow from the inlet means to the outlet means.



3. A method of treating spent photographic alkaline developer and acidic fixer that has been desilvered by exchanging silver dissolved therein with iron comprising the steps of:

a. providing a chamber having at least two inlet conduits, at least one outlet conduit, an effective length of foldable flexible ribbon, a first hollow vessel having an opening therethrough and surrounding the inlet conduits, and a second hollow vessel defining at least one port therethrough and surrounding the outlet conduit;

b. separately introducing the developer and fixer into the chamber by means of the inlet conduits;

c. intermixing the developer and fixer within the chamber by flowing said developer and fixer through said first hollow vessel and along a tortuous path provided by said ribbon to cause metallic iron particles to precipitate out of the fixer;

d. allowing the precipitated metallic particles to settle out of the fluid; and

e. discharging clear mixed fluids from the chamber through said second hollow vessel,

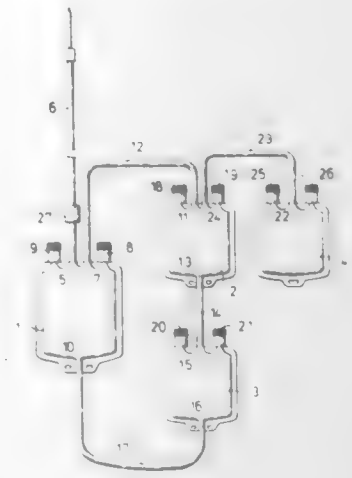
so that the developer and fixer are neutralized and the metallic particles are accumulated within the chamber prior to discharging the mixed developer and fixer into a drain.

4,608,178

METHOD OF SEPARATING BLOOD COMPONENTS

Anne S. Johansson, Vråkvägen 7A, S-752 52 Uppsala, and Claes F. Högman, Statarvägen 14, S-752 45 Uppsala, both of Sweden

Continuation of Ser. No. 423,244, Sep. 24, 1982, abandoned, which is a continuation of Ser. No. 133,868, Mar. 25, 1980, abandoned. This application Dec. 19, 1984, Ser. No. 683,566
Claims priority, application Sweden, Mar. 28, 1979, 7902761
Int. Cl.[4] B01D *21/26*
U.S. Cl. 210—744 **8 Claims**



1. A method of separating blood components contained in a blood sample, comprising the steps of:

(a) providing a primary blood bag for receiving the blood sample;

(b) providing at least two transfer blood bags and at least two conduits, a first of said at least two conduits connecting said primary bag with a first of said at least two transfer blood bags and a second of said at least two conduits connecting said primary bag with a second of said at least two transfer blood bags;

(c) collecting a blood sample in the primary blood bag having at least one top portion outlet connecting with the first of said at least two conduits and at least one bottom portion outlet connecting with the second of said at least two conduits;

(d) centrifugating said primary blood bag and said transfer blood bags for separating said blood sample into an upper layer containing blood plasma, a lower layer containing red blood cells, and an intermediate layer containing white blood cells; and

(e) squeezing said primary bag while said intermediate layer is in fluid contact with each of said upper and lower layers in said primary bag to thereby cause said upper layer to transfer from said primary bag through said at least one top portion outlet and the first of said at least two conduits to said first transfer bag and said lower layer to transfer from said primary bag through said at least one bottom portion outlet and the second of said at least two conduits to said second transfer bag so as to leave essentially only said intermediate layer in said primary blood bag.

4,608,179

CONTINUOUS PROCESS FOR THE DEWATERING OF PHOSPHATE SLIMES

Troy M. Deal, 277 Trismen Ter., Winter Park, Fla. 32789

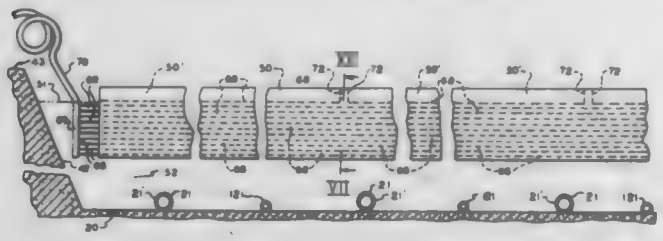
Continuation of Ser. No. 543,346, Oct. 19, 1983, abandoned. This application May 16, 1985, Ser. No. 734,487
Int. Cl.[4] B01D *13/02*
U.S. Cl. 210—748 **11 Claims**

1. In a closed loop system of dewatering fresh plant slimes produced during the processing of phosphate rock and the like to a solids content forming a stable landfill when mixed with sand tailings from the plant and the like wherein the processing plant receives phosphate rock from a mining cut, a method of balancing the rate of dewatering such slimes with the slimes

producing capacity of the plant comprising the following steps:

(a) directing the fresh slimes from the plant sequentially into two or more impoundments wherein natural dewatering of the slimes takes place,

(b) improving the rate of dewatering in said impoundments by electrokinetics to effect said balancing,



(c) removing the supernatant formed by dewatering,

(d) sequentially removing the dewatered slimes from said impoundments when a predetermined solids content has been obtained and mixing the removed dewatered slimes with sand tailings from the plant to form a mixture, and

(e) introducing said mixture into a mining cut to form a stable landfill.

4,608,180

SEPARATION PROCESS

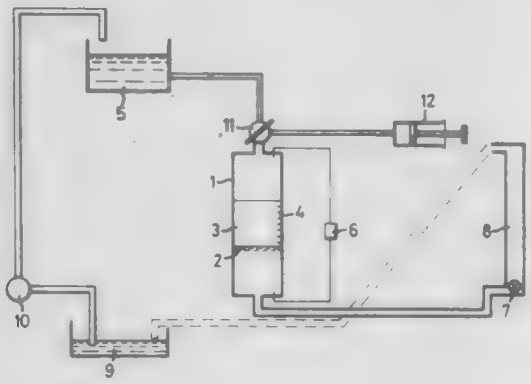
Colin G. Caro, Putney, England, assignor to The British Petroleum Company p.l.c., London, England

Continuation of Ser. No. 575,764, Feb. 1, 1984, abandoned. This application Jun. 18, 1985, Ser. No. 745,827

Claims priority, application United Kingdom, Feb. 3, 1983, 8302949

Int. Cl.[4] B01D *33/00*

U.S. Cl. 210—780 **17 Claims**



1. A process for separating suspended material from a fluid comprising

(i) steadily flowing a fluid containing suspended material through a porous matrix closely fitting within a flow line, the porous matrix being restrained at either the fluid inlet or the fluid outlet face

(ii) the porous matrix being fabricated from a material capable of elastic deformation and containing material which is chemically reactive with the suspended material

(iii) the fluid flow rate being sufficiently large so as to produce substantial non-uniform drag-induced deformation of the porous matrix, the deformation thereby creating a gradient of porosity in the porous matrix in the direction of fluid flow and

(iv) the gradient of porosity enabling the separation of at least a part of the suspended material within the porous matrix.

4,608,181

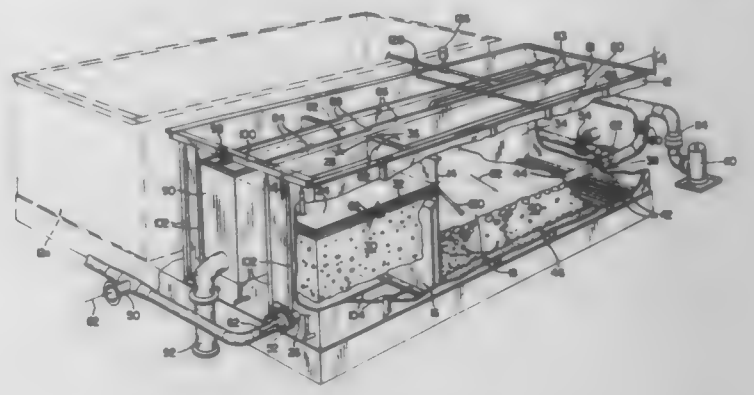
WATER FILTRATION APPARATUS HAVING UPFLOW BUOYANT MEDIA FILTER AND DOWNFLOW NONBUOYANT MEDIA FILTER

Andrew K. Hsiung; George F. Eaton, and Brian W. Hemphill, all of Corvallis, Oreg., assignors to Neptune Microfloc, Inc., Corvallis, Oreg.

Continuation of Ser. No. 478,991, Mar. 25, 1983, abandoned. This application May 8, 1985, Ser. No. 732,892

Int. Cl.[4] B01D *23/10*

U.S. Cl. 210—786 **24 Claims**



1. A filter apparatus comprising:

a hollow elongated upright tank;

an internal upright wall separating the interior of the tank into an upflow filter vessel and a downflow filter vessel,

said upflow filter vessel having an upflow filter inlet, an upflow filter outlet located above the upflow filter inlet, and defining an upflow passageway for liquid from the upflow inlet to the upflow outlet;

an amount of buoyant particulate filter media in the upflow filter vessel sufficient to form a buoyant filtration bed in the upflow passageway between the upflow inlet and upflow outlet,

said downflow filter vessel having a downflow filter inlet coupled to said upflow filter outlet, a downflow filter outlet located below the downflow filter inlet, and defining a downflow passageway for liquid from the downflow inlet to the downflow outlet;

an amount of nonbuoyant particulate filter media in the downflow filter vessel sufficient to form a nonbuoyant filtration bed in the downflow passageway between the downflow inlet and outlet,

said upflow filter vessel having an upflow filter vessel waste outlet at a first elevation which is above the elevation of the upflow filter outlet,

said downflow filter vessel having a downflow filter vessel waste outlet at a second elevation which is above the elevation of the upflow filter vessel waste outlet; and

drain means coupled to said upflow and downflow filter vessel waste outlets,

said drain means comprising a waste trough having upright first and second side walls and a base, said waste trough extending lengthwise within an upper region of said tank so as to position at least a portion of said trough within the upflow filter vessel and at least a portion of said trough within the downflow filter vessel, at least a portion of one of said side walls comprising a first spill over wall and being positioned within the upflow filter vessel at the first elevation so as to comprise the upflow filter vessel waste outlet, at least a portion of one of said side walls comprising a second spill over wall and being positioned within the downflow filter vessel at the second elevation so as to comprise the downflow filter vessel waste outlet.

23. A method of filtration of water comprising:

providing an upflow filter vessel that has

a. an upflow filter outlet, and

b. an upflow filter vessel distribution outlet at an elevation which is above the elevation of the upflow filter outlet;

forming a buoyant filtration bed by positioning an amount of buoyant particulate filter media in the upflow filter vessel;

providing a downflow filter vessel that has
a. a downflow filter inlet coupled to the upflow filter outlet,
b. a downflow filter outlet, and
c. a downflow vessel distribution outlet;
forming a nonbuoyant filtration bed by positioning an amount of nonbuoyant particulate filter media in the downflow filter vessel;
providing a distribution vessel which communicates with the distribution outlets;
cleaning an influent stream of water by flowing the water upwardly through the buoyant filtration bed and then flowing the water downwardly through the nonbuoyant filtration bed;
cleaning the upflow filter vessel by selectively closing the downflow filter outlet to maintain the level of liquid in the downflow filter vessel, expanding the buoyant filtration bed to release solids trapped in the buoyant filtration bed during filtration, and flowing buoyant filtration bed cleaning water upwardly through the buoyant filtration bed to carry the released solids away from the upflow filter vessel via the upflow filter vessel distribution outlet, and the distribution vessel;
cleaning the downflow filter vessel by selectively expanding the nonbuoyant filtration bed to release solids trapped in the nonbuoyant filtration bed during filtration, and flowing nonbuoyant filtration bed cleaning water upwardly through the nonbuoyant filtration bed to carry the released solids away from the downflow filter vessel via the downflow filter vessel distribution outlet, and the distribution vessel.

4,608,182

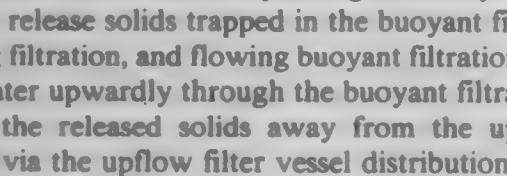
VINYL SULFONATE AMIDE COPOLYMER AND TERPOLYMER COMBINATIONS FOR CONTROL OF FILTRATION IN WATER-BASED DRILLING FLUIDS AT HIGH TEMPERATURE

Joseph J. Dickert, Jr., Yardley, Pa., and Israel J. Heilweil, Princeton, N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Jan. 9, 1985, Ser. No. 690,066
Int. Cl.⁴ C09K *7/02*
U.S. Cl. 252—8.512 **2 Claims**

1. A water-based clay drilling fluid containing from 0.25 lbs./bbl. to 6 lbs./bbl. of (A) a water-soluble first polymer consisting of a vinyl sulfonate amide terpolymer having a molecular weight of about 1 million to 2 million and consisting of a random distribution of units of the formulae

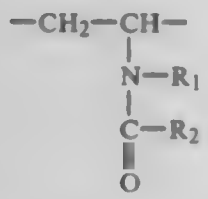
(a)



in a proportion of 35 wt. % to 70 wt. % of the weight of the terpolymer,

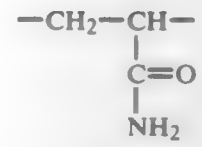
(b)

(a)



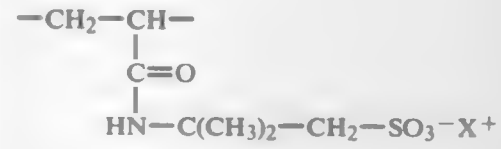
in a proportion of 15 wt. % to 35 wt. % of the weight of the terpolymer, and

(c)



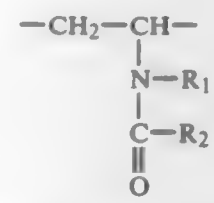
in a proportion of 10 wt. % to 30 wt. % of the weight of the terpolymer, wherein R_1 and R_2 are the same or different and each is hydrogen, methyl, or ethyl, and X^+ is a cation, and (B) from 0.25 lbs./bbl. to 6 lbs./bbl. of a water-soluble second polymer consisting of a vinyl sulfonate amide copolymer having a molecular weight of about 1 million to 2 million and consisting of a random distribution of units of the formulae

(a)



in a proportion of 60 wt. % to 80 wt. % of the weight of the copolymer, and

(b)



in a proportion of 20 wt. % to 40 wt. % of the weight of the copolymer, wherein R_1 and R_2 are the same or different and each is hydrogen, methyl, or ethyl and X^+ is a cation and wherein the weight ratio of said terpolymer to said copolymer is about 1:3.

4,608,183

SYNERGISTIC ANTIMICROBIAL OR BIOCIDAL MIXTURES INCLUDING ISOTHIAZOLONES

Harold W. Rossmoore, Oak Park, Mich., assignor to Board of Governors of Wayne State University, Detroit, Mich.

Filed Jan. 14, 1985, Ser. No. 691,431
Int. Cl.⁴ C10M *159/18*
U.S. Cl. 252—36 **23 Claims**

1. A concentrated composition which comprises in admixture:
(a) a heavy metal complex of a polyfunctional organic ligand(A); and
(b) an isothiazolone or isothiazolones (B), wherein the isothiazolone(s) (B) is present in an amount with the metal complex (A) which is less than is required for biocidal activity alone in a fluid which supports microbial growth, wherein the metal complex provides a metal ion in the fluid which is toxic to microbial growth with the isothiazolone(s) and wherein between 1.5 and 500 ppm of metal ion is provided in the fluid from the metal complex and wherein the microbial growth in the fluid is suppressed for over 50 hours in the presence of ferric ion.

4,608,184

PHENATE PROCESS AND COMPOSITION IMPROVEMENT

Yuehsiung Chang, Naperville, Ill., assignor to Amoco Corporation, Chicago, Ill.

Filed Jul. 12, 1985, Ser. No. 754,647
Int. Cl.⁴ C10M *125/22, 141/02*
U.S. Cl. 252—42.7 **15 Claims**

1. A process for making a lubricating oil additive composi-

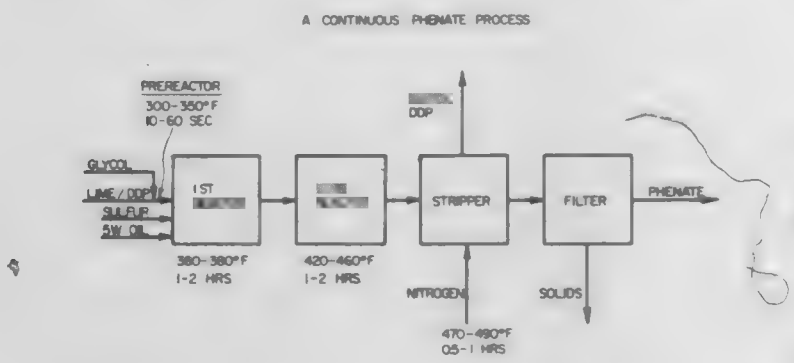
tion with improved dispersant and anti-oxidant capabilities which comprises:

(a) reacting a polyhydroxy compound with an alkaline earth metal compound in the presence of an alkylphenol at a temperature within the range of from about 300° F. to about 350° F. for a period of from 10 seconds to 60 seconds,

(b) adding elemental sulfur to the reaction mixture of (a),

(c) heating the reaction mixture of (b) at a temperature within the range of from about 360° F. to about 380° F. for a period of from about 1 to about 2 hours,

(d) heating the reaction mixture of (c) at a temperature



within the range of from about 420° F. to about 460° F. for a period of from about 1 to about 2 hours,

(e) nitrogen-stripping the reaction product of (d) at a temperature within the range of from about 470° F. to about 490° F.,

(f) filtering the nitrogen-stripped product of (e) whereby said finished product has an infrared absorbance ratio of less than 0.2 for A1660 cm^{-1}/A1600 cm^{-1} and also for A1080 cm^{-1}/A835 cm^{-1}.

2. The lubricating oil additive composition prepared by the process of claim 1 wherein infrared absorbance ratio of A1660 cm^{-1}/A1600 cm^{-1} is less than 0.2 and absorbance ratio of 1080 cm^{-1}/A835 cm^{-1} is also less than 0.2.

4,608,185

MODIFIED SUCCINIMIDES (VI)

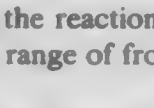
Thomas F. Buckley, Hercules, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Continuation-in-part of Ser. No. 722,911, Apr. 12, 1985, abandoned. This application Dec. 31, 1985, Ser. No. 815,431

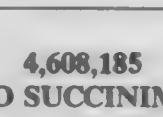
Int. Cl.⁴ C10M *133/16*

U.S. Cl. 252—51.5 A **28 Claims**

1. A polyamino alkenyl or alkyl succinimide wherein one or more of the nitrogens of the polyamino moiety is substituted with



wherein R_4 is selected from the group consisting of hydrocarbyl of from 1 to 30 carbon atoms, $—R_5(OH)_t$ wherein R_5 is hydrocarbyl of from 2 to 20 carbon atoms and t is an integer from 1 to 6 with the proviso that there is no hydroxy substitution on the hydrocarbyl carbon atom attaching the $—R_5(OH)_t$ group to the oxy atom of the



moiety and with the further proviso than when t is greater than one, the hydroxy groups are not attached to the same carbon atom and the number of carbon atoms in the R_5 group is minimally equal to t+1, and $—(R_7O)_sH$ wherein R_7 is alkylene of from 2 to 5 carbon atoms and s is an integer from 2 to 100.

4,608,186

MAGNETIC FLUID

Katsuhiko Wakayama, and Hiraku Harada, both of Tokyo, Japan, assignors to TDK Corporation, Tokyo, Japan

Filed Jul. 30, 1985, Ser. No. 760,469

Claims priority, application Japan, Jul. 30, 1984, 59-159930; Sep. 18, 1984, 59-194985

Int. Cl.⁴ C09K *5/00*

U.S. Cl. 252—62.52 **15 Claims**

1. A magnetic fluid comprising metal fine particles of cobalt, a surface-active agent, and a hydrocarbon medium,

the improvement wherein said surface-active agent is at least one member selected from the group consisting of polyglycerine fatty acid esters, sorbitan fatty acid esters, and mixtures thereof.

4,608,187

RUBBER TOUGHENED POLYVINYL ALCOHOL FILM COMPOSITIONS

Daniel M. Chang, Pleasanton, Calif., assignor to The Clorox Company, Oakland, Calif.

Filed Apr. 2, 1984, Ser. No. 595,980

Int. Cl.⁴ C11D *17/00*

U.S. Cl. 252—90 **19 Claims**



1. A sealed envelope comprising:

a self-supporting film, formed by a polymeric matrix comprising at least about 50 wt. % polyvinyl alcohol, and containing a plurality of microdomains dispersed therethroughout, the plurality of microdomains consisting essentially of a rubbery material which is at least partially incompatible with the polyvinyl alcohol and has a glass transition temperature of less than about 0° C., the microdomains being at least about 3 wt. % of the film.

4,608,188

DISHWASHING COMPOSITION

Edward J. Parker, Woodhaven, and Kenneth C. Scott, Grosse Ile, both of Mich., assignors to BASF Corporation, Wyandotte, Mich.

Filed Apr. 12, 1985, Ser. No. 722,457

Int. Cl.⁴ C11D *3/075, 3/395*

U.S. Cl. 252—99 **18 Claims**

1. A low phosphate machine dishwashing composition consisting essentially of:

(A) about 7 to 8 percent of a maleic acid-acrylic acid copolymer having an average molecular weight of about 10,000 to 70,000 and a maleic acid-acrylic acid monomer ratio of about 1:2 to 1:4 by weight,

(B) about 10 to 20 percent by weight of an alkaline condensed phosphate salt,

(C) about 2 to 4 percent by weight of a blend of nonionic surfactants consisting of:

(1) a nonionic surfactant having the formula:

$$Y[(EO)_m(A)_nH]_2$$

wherein EO represents oxyethylene groups which are present in the surfactant in the proportion of about 5 to about 60 percent by weight; Y represents the nucleus of an active hydrogen-containing organic compound having

about 2 to about 6 carbon atoms and 2 reactive hydrogen atoms; A represents a lower oxyalkylene selected from the group consisting of oxypropylene, oxybutylene, oxytetramethylene and mixtures thereof; m and n are integers individually selected such that the average total molecular weight of the polymer is about 500 to about 25,000 and

(2) a nonionic surfactant having the formula:

$$Y[(EO)_m(A)_nH]_3$$

wherein Y represents the nucleus of an active hydrogen-containing organic compound having about 2 to 6 aliphatic carbon atoms and 3 reactive hydrogen atoms, EO, A, m, n, molecular weight and percent oxyethylene groups are as defined above;

(D) about 20 to 40 percent of an alkaline carbonate compound the balance conventional machine dishwashing composition additives in normal amounts.

4,608,189

DETERGENTS AND LIQUID CLEANERS FREE OF INORGANIC BUILDERS

Karlheinz Koch, Haan; Ingo Wegener, and Brigitte Giesen, both of Düsseldorf, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Düsseldorf, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 512,514, Jul. 11, 1983, abandoned. This application May 8, 1985, Ser. No. 731,760

Claims priority, application Fed. Rep. of Germany, Sep. 2, 1982, 3232616

Int. Cl.[4] C11D *3/075, 9/00, 1/66, 9/22*

U.S. Cl. 252—174.22 **10 Claims**

1. A homogeneous aqueous liquid laundering and cleaning detergent composition, essentially free from inorganic builder salt consisting essentially of:

(a) from about 20 to about 40 wt. % of a mixture of nonionic surfactants of the formula:

$$RO—[CH_2—CH(CH_3)—O]_m—(CH_2—CH_2—O)_n—H \quad (I)$$

wherein R is a C_{10}–C_{20} aliphatic hydrocarbon group which is linear or methylated in the 2-position and can be saturated or unsaturated, or R represents a mixture of such groups; m is a number from 1 to 5; n is a number from 3 to 20; n>m; and wherein the mixture of nonionic surfactants is composed of the following components:

(i) from about 5 to about 9 parts by weight of at least one compound of the above Formula I wherein n=3 to 9,

(ii) from about 1 to about 5 parts by weight of at least one compound of the above Formula I wherein n=10 to 20, and

(iii) from 0 to about 6 parts by weight of a compound of the above Formula I wherein m=1 to 3 and n=9 to 11;

(b) from about 2 to about 25 wt. % based on fatty acid of at least one sodium, potassium monoalkanolamine, dialkanolamine or trialkanolamine soap of a C_{10}–C_{20} saturated or monounsaturated fatty acid;

(c) from about 0.001 to about 2 wt. % of at least one proteolytic enzyme; and

(d) from about 5 to about 25 wt. % of at least one monohydroxy or polyhydroxy alcohol having 2 to 4 carbon atoms;

wherein (a) and (b) taken together constitute from about 30 to about 50 wt. % of the detergent composition, and wherein a 1% aqueous solution of the detergent composition has a pH value in the range of from about 6.5 to about 9.

4,608,190

X-RAY IMAGE STORAGE PANEL COMPRISING ANION-DEFICIENT BAFCL:EU/BAFBR:EU PHOSPHORS

Lothar H. Brixner, West Chester, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 603,288, Apr. 23, 1984, abandoned. This application Oct. 15, 1985, Ser. No. 786,102

Int. Cl.[4] C09K *11/465*

U.S. Cl. 252—301.4 H **11 Claims**

1. Photostimulable, potassium-containing anion-deficient phosphor of the formula

$$Ba_{1-(a+b+c)}K_{(a+c)}Eu_bF_{1-a}X_{1-c}\phi_{(a+c)}$$

where

X=at least one of Cl and Br,

ϕ=anion deficiencies,

a=0 to about 0.05,

c=0 to about 0.05,

a+c=0.0005 to about 0.05, and

b=about 0.001 to about 0.02 exhibiting a photostimulable emission (A) of greater than 0.50 and a LAG to PEAK ratio of less than 0.005.

4,608,191

COMPOSITION AND METHOD FOR CORROSION INHIBITION

Yulin Wu, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Oct. 1, 1984, Ser. No. 655,797

Int. Cl.[4] C23F *11/16*

U.S. Cl. 252—391 **13 Claims**

1. A composition which forms a corrosion-inhibiting film when applied to a metal surface, the composition comprising the reaction product of:

(a) a first component selected from the groups consisting of

(1) a substrate bearing a vicinal epoxide group, and

(2) a substrate having at least one displaceable halogen; and

(b) a second component comprising a monomercaptan containing 2 to 8 carbon atoms and present in an amount such that the equivalent ratio of said first component to said second component is within the range of about 0.5 to about 11.0, wherein the reaction product of the first and second component is a beta hydroxy thioether or a beta alkoxy thioether; and

(c) a quaternary ammonium salt selected from the group consisting of a quaternized polyethoxylated amines and salts represented by the general formula:

$$(R_1)(R_2)(R_3)R_4)N^+X^-,$$

wherein R_1, R_2, R_3 and R_4 are individually selected from the group consisting of alkyl, alkenyl and aralkyl groups containing individually 1 to 18 carbon atoms such that the total number of carbon atoms does not exceed 40 and at least one of the groups contains at least 7 carbon atoms, and wherein X^- is selected from the group consisting of chloride, bromide, iodide, acetate, hydrogen sulfate, dihydrogen phosphate and alkenyl succinate;

(d) a hydrocarbon diluent; and

(e) methanol.

4,608,192

GRAPHITE INTERCALATES CONTAINING METAL-CHARGE TRANSFER SALTS

Sophia R. Su, Weston, Mass., assignor to GTE Laboratories Incorporated, Waltham, Mass.

Filed Jan. 16, 1984, Ser. No. 570,900
Int. Cl.[4] H01B *1/06*
U.S. Cl. 252—506 **6 Claims**

1. An intercalated graphite material in which the intercalant has the formula:

$$M^+R^-$$

wherein:
M^+ is selected from the group consisting of:
(a) cations of alkali metals;
(b) cuprous chloride (CuCl); and
(c) cupric chloride $CuCl_2$ and
R^- is an anion radical group of an organic acid selected from the group consisting of:
(a) 7,7,8,8-Tetracyanoquinomethane;
(b) Tetracyanoethylene;
(c) Tetrachloroethylene;
(d) 1,2,4,5 Tetracyanobenzene;
(e) Diphenylacetylene;
(f) 1,2 Dicyanobenzene; and
(g) 1,4 Dicyanobenzene.

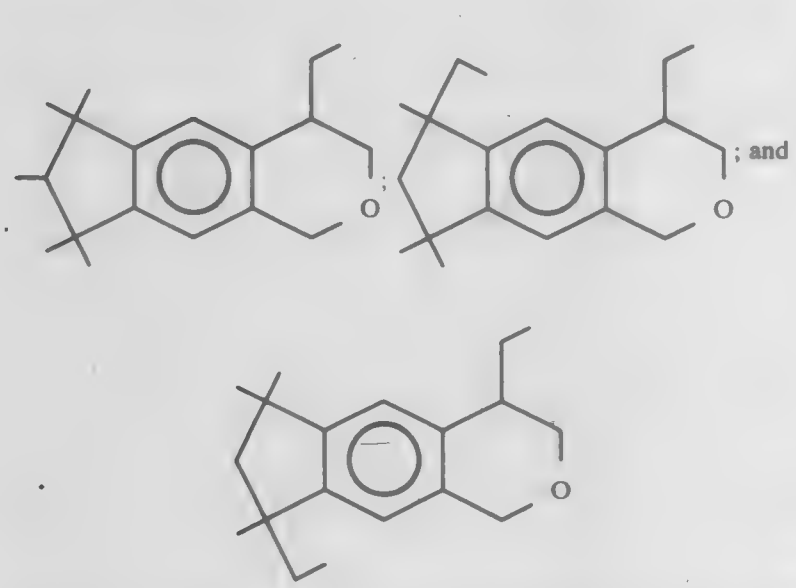
4,608,193

ISOCHROMAN DERIVATIVES AND ORGANOLEPTIC USES THEREOF

Mark A. Sprecker, Sea Bright; Wilhelmus J. Wiegers, Red Bank; Roger Greene, Oakhurst; Domenick Luccarelli, Jr., Neptune, and Marie Hanna, Hazlet, all of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

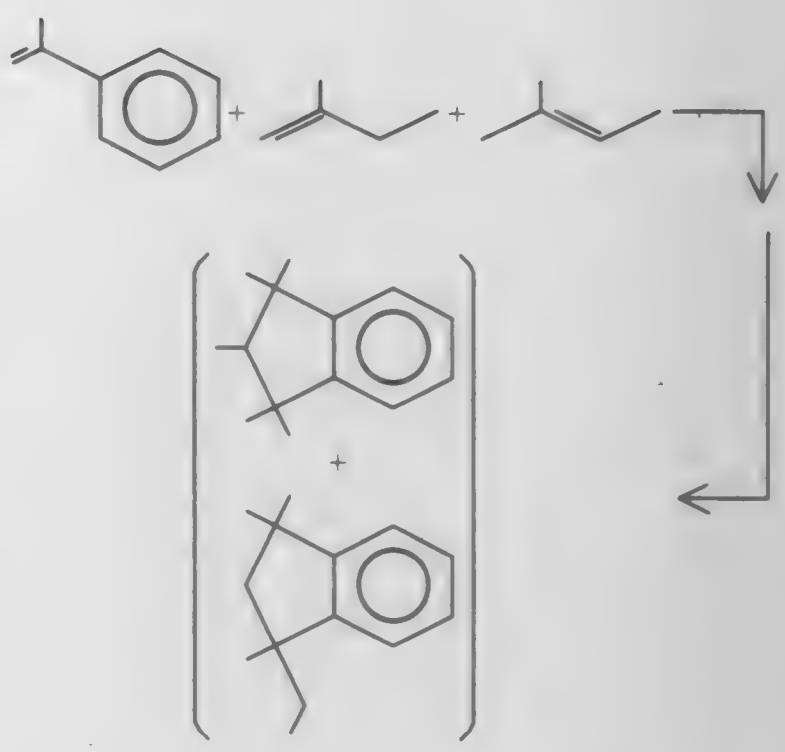
Continuation of Ser. No. 551,552, Nov. 14, 1983, which is a division of Ser. No. 430,951, Sep. 30, 1982, abandoned. This application Aug. 13, 1985, Ser. No. 765,212
Int. Cl.[4] A61K *7/46*
U.S. Cl. 252—522 R **2 Claims**

1. A process for augmenting or enhancing the aroma of a perfume composition, cologne or perfumed article comprising the step of adding to a perfume composition, cologne or perfumed article base an aroma augmenting or enhancing quantity of a product consisting essentially of compounds having the structures:

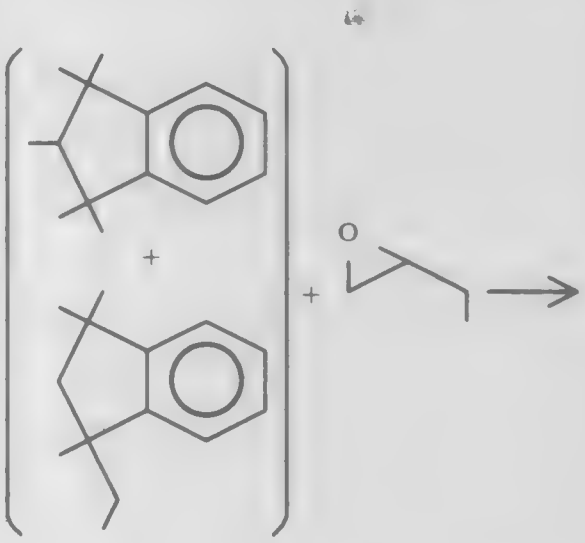


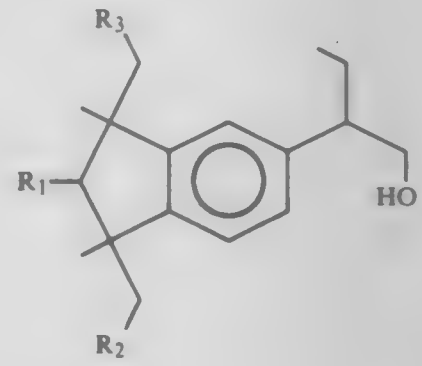
; and

produced according to the process comprising the step of (i) reacting isoamylene with alphamethyl styrene according to the reaction:

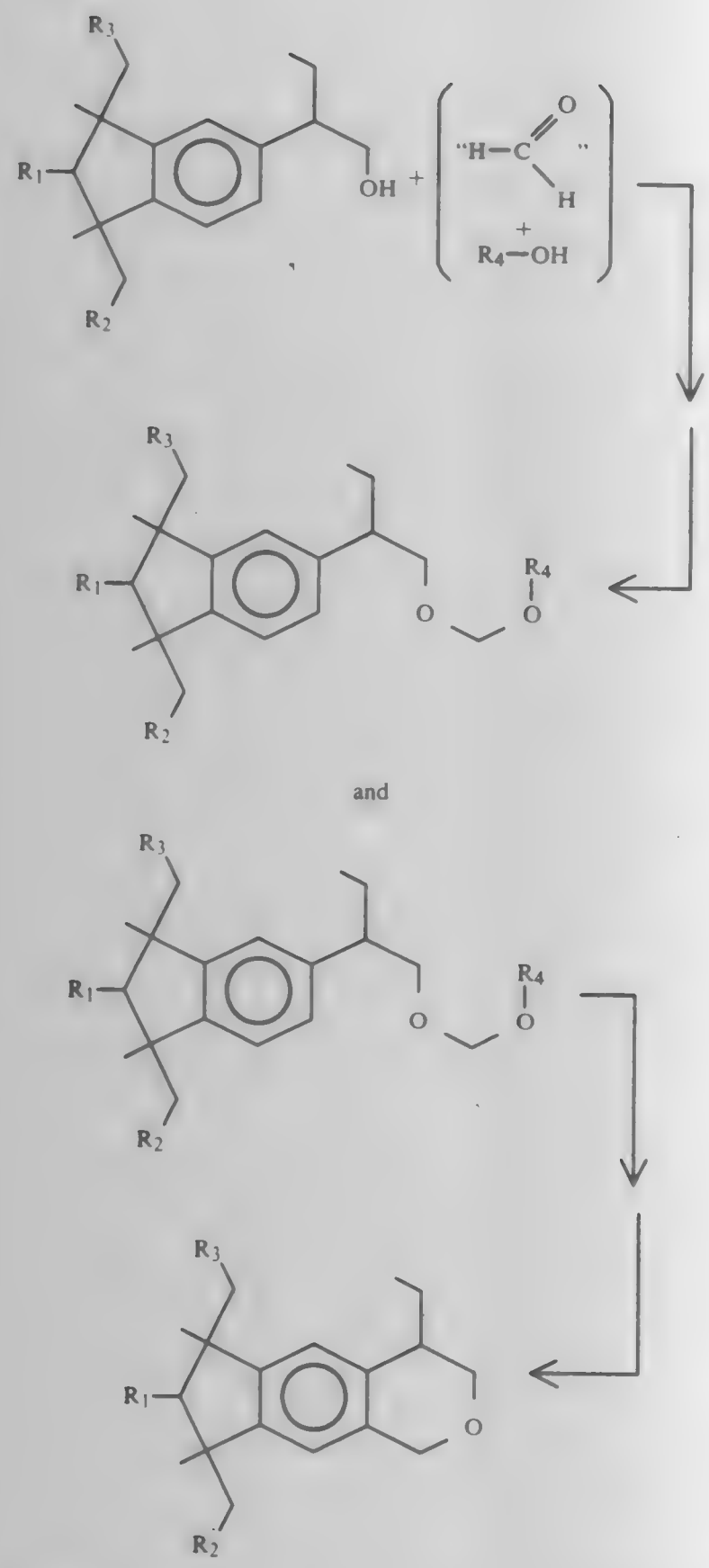


in the presence of a heterogeneous solid catalyst selected from the group consisting of acid clays and acid ion exchange resins, the mole ratio of isoamylene to alpha methyl styrene being 1:1 and 2:1; the ratio of catalyst to reactants being from 0.1% up to 8% of the total weight of alpha methyl styrene and isoamylene; the reaction temperature being between 75° C. and 250° C.; the reaction pressure being between 50 psig and 300 psig; (ii) reacting the resulting product with 1,2-butylene epoxide in the presence of a catalyst to produce a mixture consisting essentially of indane alkanols according to the reaction:





wherein in the resulting mixture one of R_1, R_2 and R_3 represents methyl and the other of R_1, R_2 and R_3 represent hydrogen; and (iii) reacting the resulting mixture consisting essentially of indane alkanols with formaldehyde or a formaldehyde source in the presence of a lower alkanol according to the reactions:



and

R_2

wherein R_4 represents C_1–C_6 lower alkyl; (iv) subjecting the resulting reaction product to fractional distillation and recovering the fractions boiling at 85°–130° C. at 3.0–5.0 mm/Hg. pressure and having a sweet, musky, caramel aroma.

4,608,194

OXOBICYCLONONANE DERIVATIVES, PROCESS FOR PRODUCING SAME AND ORGANOLEPTIC USES THEREOF

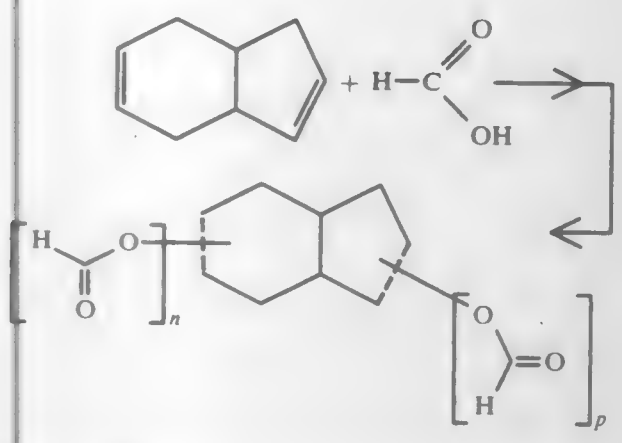
Richard M. Boden, Ocean, and John R. Helm, East Keansburg, both of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Filed Aug. 8, 1985, Ser. No. 763,569

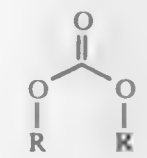
Int. Cl.[4] A61K *7/46*

U.S. Cl. 252—522 R **13 Claims**

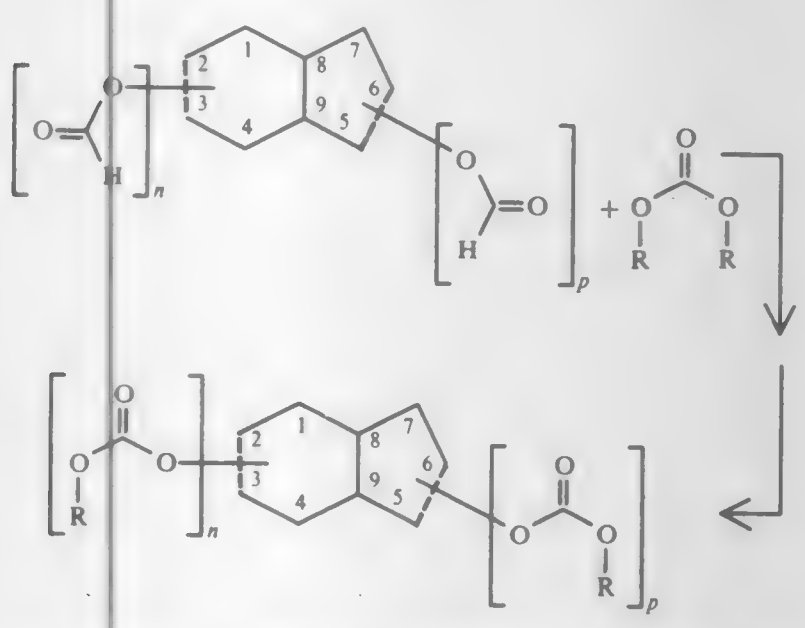
1. A product produced according to the process of reacting formic acid with bicyclononadiene to form a bicyclononenyl formate-containing mixture according to the reaction:



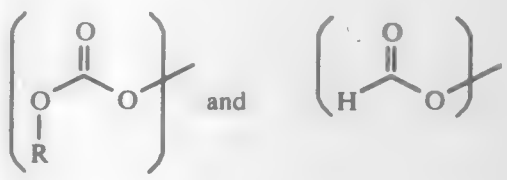
and then reacting the resulting bicyclononenyl formate-containing mixture with a dialkyl carbonate defined according to the structure:



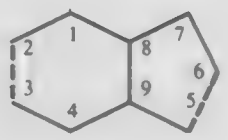
according to the reaction:



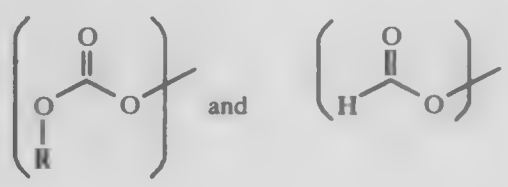
in the presence of an alkali metal alkoxide or aluminum isopropoxide catalyst at a temperature in the range of from 50° C. up to 90° C. wherein (a) in the compounds indicated by the structures having dashed lines such structures represent mixtures and in the mixtures in each of the compounds, one of the dashed lines represents a carbon-carbon double bond and the other of the dashed lines represents a carbon-carbon single bond; wherein N and P each represents 0 or 1; wherein R represents methyl or ethyl; with the provisos that when N is 0, P is 1 and when P is 0, N is 1; and when N is 1, the dashed line at the "2-3" position is a carbon-carbon single bond, the moieties:



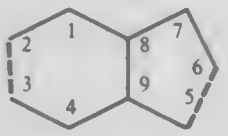
are bonded to the moiety:



at the "2" or "3" position and the dashed line at the "5-6" position is a carbon-carbon double bond; and when P is 1, the dashed line at the "5-6" position is a carbon-carbon single bond, the moieties:



are bonded to the moiety:



at the "5" or "6" position and the dashed line at the "2-3" position is a carbon-carbon double bond; (b) the mole ratio of formic acid:bicyclononadiene is from about 2:1 up to about 7:1; and (c) the mole ratio of dialkyl carbonate:bicyclononenyl formate is from about 2:1 up to about 4:1.

3. A process for augmenting or enhancing the aroma of a consumable material selected from the group consisting of perfume compositions, colognes and perfumed articles comprising the step of adding to said consumable material an aroma augmenting or enhancing quantity of the product defined according to claim 1.

4,608,195

PREPARING A TERTIARY HYDROXYL CARBOXALDEHYDE CONTAINING PERFUME COMPOSITION

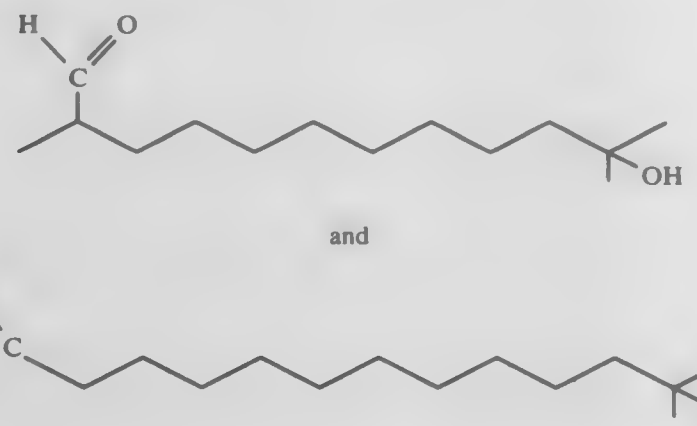
Futoshi Fujioka, Wanamassa; Richard M. Boden, Ocean, and William L. Schreiber, Jackson, all of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 656,660, Oct. 1, 1984, Pat. No. 4,576,739, which is a division of Ser. No. 511,965, Jul. 8, 1983, Pat. No. 4,491,537. This application Aug. 23, 1985, Ser. No. 768,839

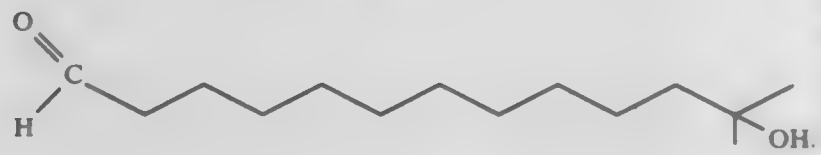
Int. Cl.⁴ A61K *7/46*

U.S. Cl. 252—522 R **1 Claim**

1. A process for augmenting or enhancing the aroma of a perfume composition comprising the step of intimately admixing with said perfume composition, an aroma augmenting or enhancing quantity of a mixture of compounds defined according to the structures:



and



4,608,196

PREPARING TERTIARY HYDROXYL CARBOXALDEHYDE CONTAINING PERFUME COMPOSITIONS

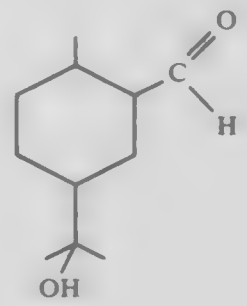
Futoshi Fujioka, Wanamassa; Richard M. Boden, Ocean, and William L. Schreiber, Jackson, all of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 656,660, Oct. 1, 1984, Pat. No. 4,576,739, which is a division of Ser. No. 511,965, Jul. 8, 1983, Pat. No. 4,491,537. This application Aug. 23, 1985, Ser. No. 768,840

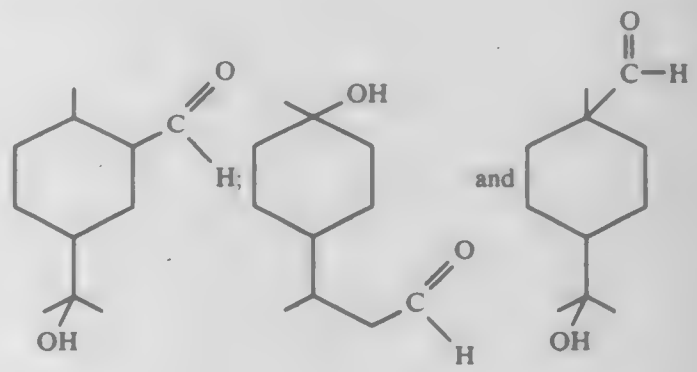
Int. Cl.⁴ A61K *7/46*

U.S. Cl. 252—522 R **2 Claims**

1. A process for augmenting or enhancing the aroma of a perfume composition comprising the step of intimately admixing with said perfume composition, an aroma augmenting or enhancing quantity of the compound having the structure:



2. A process for augmenting or enhancing the aroma of a perfume composition comprising the step of intimately admixing with said perfume composition, an aroma augmenting or enhancing quantity of a mixture of compounds having the structures:



4,608,197

ALKOXYLATED ETHER SULFATE ANIONIC SURFACTANTS FROM BRANCHED CHAIN PLASTICIZER ALCOHOLS

Haven S. Kesling, Jr., Drexel Hill, and Hyman D. Gillman, Spring City, both of Pa., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Filed Jun. 25, 1984, Ser. No. 624,323

Int. Cl.⁴ C11D *1/14;* **C07C** *141/02*

U.S. Cl. 252—551 **14 Claims**

1. A water-soluble, liquid alkoxylated ether sulfate anionic surfactant having the formula:

$$RO[CH_2CH(R')O]_mZ_nSO_3M—$$

wherein R is a branched chain hydrocarbon alkyl radical containing of from about 4 to 11 carbon atoms; R′ is a member selected from the group consisting of methyl and ethyl; m is an integer of from 6 to 12; Z is an oxyethylene group or a random mixture of oxyethylene groups and oxyalkylene groups present in the radical —$CH_2CH(R')O$—, the molar ratio of oxyethylene to oxyalkylene groups in said mixture being such that the total molar ratio of oxyethylene to oxyalkylene groups in said formula is from about 1:1 to 1:10; n is an integer of from 0 to 4; and M is hydrogen, an alkali metal, an alkaline earth metal;

ammonium or a primary, secondary, tertiary or quaternary alkyl ammonium or alkyolammonium ion.

4,608,198

FLAME RETARDANT FOR HALOGEN-CONTAINING VINYL RESINS

Yoshitane Watanabe, Tokyo; Keitaro Suzuki, Narashino, and Susumu Suda, Higashimatsuyama, all of Japan, assignors to Nissan Chemical Industries, Ltd., Tokyo, Japan

Filed Sep. 4, 1984, Ser. No. 647,038

Claims priority, application Japan, Sep. 10, 1983, 58-167335; Sep. 10, 1983, 58-167336

Int. Cl.[4] C09K *21/04*

U.S. Cl. 252—609 12 Claims

1. A dried flame retardant composition in powder form, said powder having a particle size of 0.2 to 10 microns, comprising, relative to 100 parts by weight of Sb_2O_5,

(A) 3 to 20 parts by weight of an alkali metal in terms of M_2O in which M represents an alkali metal atom;

(B) 1 to 25 parts by weight of an alkaline earth metal in terms of M'O in which M' represents an alkaline earth metal atom; and

(C) 0.4 to 3 parts be weight of a compound selected from phosphoric acid, an ammonium salt of phosphoric acid and an alkali metal salt of phosphoric acid in terms of P_2O_5.

4,608,199

BONE PROTEIN PURIFICATION PROCESS

Arnold Caplan, 1300 Oakridge Dr., Cleveland Heights, Ohio 44121, and Glenn T. Syftestad, 3660 Warrensville Center Rd. - #101, Shaker Heights, Ohio 44122

Filed Mar. 20, 1984, Ser. No. 591,505

Int. Cl.[4] C07K *15/06, 15/20, 3/20, 3/28*

U.S. Cl. 530—414 5 Claims

1. A process of purifying bone matrix proteins to obtain a cold-water-soluble 30 to 32k dalton protein capable of stimulating cartilage formation in mesenchymal-like cells comprising the steps of:

(a) preparing a guanadinium chloride extract of demineralized, defatted bone;

(b) dialyzing the guanidinium chloride soluble extract against decreasing ionic strength buffers down to water until it is substantially salt-free;

(c) separating the cold-water-soluble proteins from the cold-water-insoluble proteins present in the retentate;

(d) adsorbing the cold-water-soluble proteins in the retentate with an anionic exchanger at about pH 8.0 and desorbing by eluting with a substantially linear salt gradient;

(e) assaying fractions eluted by the salt gradient in undifferentiated mesenchymal-like cell cultures to identify fractions having the greatest chondrogenic activity;

(f) passing only those identified fractions having the greatest chondrogenic activity over a molecular sieve column;

(g) assaying fractions passed over the molecular sieve in undifferentiated mesenchymal-like cells to identify fractions having the greatest chondrogenic activity;

(h) repeating steps (f) and (g);

(i) passing only those identified protein fractions having the greatest chondrogenic activity over concanavalin—A coupled gel;

(j) collecting the unbound protein from step (i) in one fraction; and

(k) passing the unbound protein from step (j) over a molecular sieve column to isolate a single 30 to 32k dalton protein.

4,608,200

CHLORAMPHENICOL DERIVATIVES, ANTIGENS AND ANTIBODIES

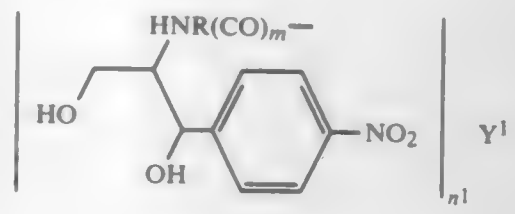
Pyare L. Khanna, San Jose; Evan S. Snyder, Mountain View, and Prithipal Singh, Sunnyvale, all of Calif., assignors to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Division of Ser. No. 306,569, Sep. 28, 1981, Pat. No. 4,489,157. This application Nov. 30, 1984, Ser. No. 676,379

Int. Cl.[4] A61K *31/04, 39/00;* C07C *79/46;* G01N *33/531*

U.S. Cl. 530—387 4 Claims

1. Antibodies prepared in response to an antigen of the formula:



wherein:

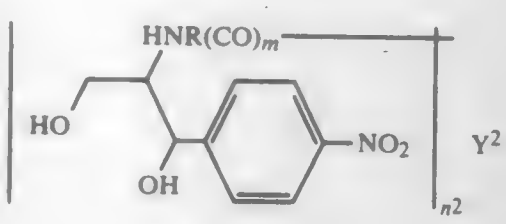
m is 0 or 1

R is a saturated aliphatic linking group of from 2 to 6 carbon atoms having from 0 to 1 oxo-carbonyl group at its terminus bonded to nitrogen;

Y^1 is a poly(amino acid); and

n^1 is a number from one to the molecular weight of Y^1 divided by 2000.

3. A compound of the formula:



wherein:

R is a saturated aliphatic linking group of from 2 to 8 carbon atoms wherein the atom at the terminus bonded to nitrogen is saturated;

Y^2 is hydrogen, hydroxyl, alkoxyl from 1 to 6 carbon atoms, or a group forming an acitvated ester cable of amide formation in an aqueous medium;

m is 1; and

n^2 is 1.

4,608,201

PROCESS FOR PREPARING LACTAM IMIDES

Gregory J. McCollum, Glenshaw, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed May 21, 1984, Ser. No. 612,213

Int. Cl.[4] C07D *201/02, 201/08*

U.S. Cl. 540—529 10 Claims

1. A process for preparing a lactam imide with comprises reacting together a lactam, a non-volatile carboxyl group-containing material, and an anhydride of a volatile carboxylic acid, with the proviso that an appreciable amount of non-volatile carboxyl group-containing material and volatile carboxylic acid which is generated as the anhydride reacts are both present in the reaction mixture at the same time.

4,608,202

PROCESS FOR THE PRODUCTION OF FATTY ACID ESTERS OF SHORT-CHAIN ALIPHATIC ALCOHOLS FROM FATS AND/OR OILS CONTAINING FREE FATTY ACIDS

Herbert Lepper, Duesseldorf-Benrath, and Lothar Friesenhagen, Duesseldorf, both of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Fed. Rep. of Germany

Filed Apr. 11, 1984, Ser. No. 599,090

Claims priority, application Fed. Rep. of Germany, May 30, 1983, 3319590

Int. Cl.[4] C11C *3/02*

U.S. Cl. 260—410.9 R 20 Claims

1. A process for the production of fatty acid esters of a C_{1-6} aliphatic monoalcohol by catalytic transesterification consisting essentially of the steps of

(a) subjecting natural fats and/or oils containing free fatty acids, as an oil phase, having an acid number of over 1, to preliminary esterification with a C_{1-6} aliphatic monoalcohol in the presence of at least one acidic esterification catalyst at an elevated temperature no higher than 120° C. and under a pressure no higher than 5 bars, in the presence of a liquid entraining agent substantially immiscible with said oil phase, said liquid entraining agent being an alcohol, liquid at 50° C., selected from the group consisting of alkanepolyols having from 2 to 6 carbon atoms and 2 to 6 hydroxyls, polyethylene glycols, ethylene glycol mono-C_{1-6}-alkyl ethers and diethylene, glycol mono-C_{1-6}-alkyl ethers, for a time sufficient to reduce the free fatty acid content of said oil phase to an acid number of 1 or below,

(b) separating the reaction product by phase separation into an entraining agent phase containing the acidic esterification catalyst and the water of reaction, and the treated oil phase,

(c) subjecting the separated treated oil phase to transesterification with a C_{1-6} aliphatic monoalcohol under conventional alkali-catalyzed transesterification conditions and recovering said fatty acid esters of C_{1-6} aliphatic monoalcohols and

(d) partially to wholly removing the water of reaction from said entraining agent phase and recycling said dried entraining agent phase containing the acidic esterification catalyst to a further preliminary esterification step.

4,608,203

PROCESS FOR PRODUCING SOYBEAN PROTEIN POWDER USING A FLUIDIZED BED

Takeshi Akasaka, Izumisano; Masahiko Terashima, Osaka; Hiroyuki Kawade, Izumi, and Hitoshi Taniguchi, Sennan, all of Japan, assignors to Fuji Oil Company, Ltd., Osaka, Japan

Filed Dec. 10, 1984, Ser. No. 680,295

Claims priority, application Japan, Dec. 10, 1983, 58-233199

Int. Cl.[4] A23J *1/14*

U.S. Cl. 530—378 13 Claims

1. A process for producing a soybean protein powder which comprises spraying droplets of an aqueous liquid onto a starting soybean protein powder material in an amount of 5 to 25% by weight based on the weight of the powder material to moisten and agglomerate particles of the powder material in a fluidized bed and drying the powder material simultaneously or subsequently.

4,608,204

PROCESS FOR THE PREPARATION OF A LOW VISCOSITY ALKYL TOLUENE OR ALKYL XYLENE SULFONATE

Henry Y. Lew, and Alan E. Straus, both of El Cerrito, Calif., assignors to Chevron Research Company, San Francisco, Calif.

Continuation-in-part of Ser. No. 625,923, Jun. 29, 1984, abandoned, which is a continuation of Ser. No. 546,807, Oct. 31, 1983, abandoned. This application Nov. 13, 1985, Ser. No. 797,588

Int. Cl.[4] C07C *143/24;* C09K *3/00*

U.S. Cl. 260—505 N 18 Claims

1. A process for the preparation of a low viscosity aqueous alkyl toluene or alkyl xylene sulfonate from the alkyl toluene or alkyl xylene sulfonic acid obtained by the sulfur trioxide sulfonation of alkyl toluene or alkyl xylene having an average molecular weight of about 300 to 365 and a straight or branched alkyl side chain ranging from about C_{12} to C_{24} which comprises neutralizing the alkyl toluene or alkyl xylene sulfonic acid with aqueous sodium hydroxide in the presence of sufficient sodium chloride to lower the viscosity of the aqueous sodium alkyl toluene or alkyl xylene sulfonate produced to less than about 600 cp, while maintaining a homogeneous mixture.

4,608,205

POLYANIONIC BENZENE UREAS

Ransom B. Conrow, Pearl River, and Seymour Bernstein, New City, both of N.Y., assignors to American Cyanamid Company, Stamford, Conn.

Continuation-in-part of Ser. No. 473,412, Mar. 9, 1983, abandoned, which is a continuation-in-part of Ser. No. 274,860, Jun. 18, 1981, abandoned. This application Sep. 24, 1984, Ser. No. 653,400

Int. Cl.[4] C07C *143/52, 143/54*

U.S. Cl. 260—506 2 Claims

1. The compound 4,4-ureylenebis(2-sulfobenzoic acid), disodium salt.

2. The compound 3,3-(carbonyldiimino)bis(6-hydroxy-5-sulfobenzoic acid), disodium salt.

4,608,206

FLUORINATED 3-KETOGLUTAROYL HALIDES

David C. England, Wilmington, and Edward G. Howard, Jr., Hockessin, both of Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 95,071, Nov. 16, 1979, Pat. No. 4,299,949. This application Jun. 26, 1981, Ser. No. 277,662

Int. Cl.[4] C07C *51/58, 55/40*

U.S. Cl. 260—544 F 2 Claims

1. The compound having the formula: $O{=}C(CF_2COX)_2$ where X is selected from the class consisting of F and Cl.

2. A process for the preparation of the compound $O{=}C(CF_2COF)_2$ which comprises reacting bis(2-methoxytetrafluoroethyl) ketone with sulfur trioxide, in the presence of methyl 2,2,3,3-tetrafluoro-3-methoxy propionate.

4,608,207

DIALKYL 2-ALKYLCARBONATOETHANEPHOSPHONATES

Hans-Josef Buysch, and Peter Mues, both of Krefeld, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

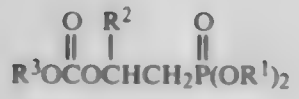
Filed May 4, 1984, Ser. No. 607,354

Claims priority, application Fed. Rep. of Germany, May 7, 1983, 3316888

Int. Cl.[4] C07F *9/40*

U.S. Cl. 558—179 1 Claim

1. Dialkyl 2-alkylcarbonatoethanephosphonate of the formula



wherein

R^1 and R^3 are identical or different and each represents an alkyl group of 1 to 4 carbon atoms, and

R^2 denotes hydrogen, an alkyl group of 1 to 4 carbon atoms or unsubstituted phenyl.

4,608,208

CONTROL VALVE DEVICE

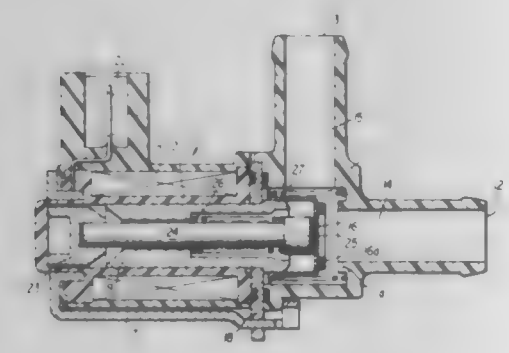
Kenji Yogo; Mamoru Nakamura, both of Toyota, and Shigeru Nishio, Kariya, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Aug. 23, 1985, Ser. No. 768,579

Claims priority, application Japan, Aug. 24, 1984, 59-177288

Int. Cl.[4] F02M *5/08*

U.S. Cl. 261—39 R 5 Claims



1. A control valve device for controlling fluid communication in a fluid passage in response to an input current signals from a switch device and changes in ambient temperature, said control device comprising;

a body member having an inlet port and an outlet port, said body having a fluid passage formed therein connecting said inlet port and said outlet port;

a valve member disposed in said fluid passage for controlling fluid communication in said fluid passage;

yoke means made of a magnetic material and fixedly secured on said body member;

an inner core disposed on a central axis in said yoke means;

a bobbin made of a nonmagnetic material and disposed on an outer periphery of said inner core;

a solenoid coil wound on said bobbin and forming a magnetic circuit with said yoke means and said inner core;

a plunger member positioned in said magnetic circuit and disposed on said central axis with said inner core wherein said plunger member is attracted by said inner core upon energization of said solenoid coil;

a shaft fixed in said plunger member at a first end and operatively associated with said valve member at an end opposite said first end;

a first spring supported by said body member at one end and biasing said valve member in a direction of a closed position thereof; and

a second spring supported by said body member at one end and biasing said valve member in a direction of an open position thereof wherein said second spring further comprises a shape memory alloy spring expandable so as to maintain a memorized shape at a predetermined temperature.

4,608,209

CARBURETER FOR INTERNAL COMBUSTION ENGINE

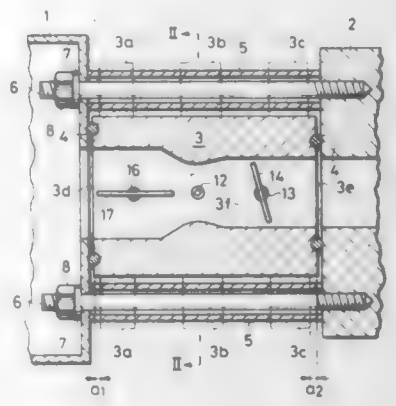
Shigeyoshi Nakamura, Odawara, Japan, assignor to Mikuni Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 29, 1985, Ser. No. 759,893

Claims priority, application Japan, Jul. 31, 1984, 59-116176[U]; Sep. 20, 1984, 59-141655[U]

Int. Cl.[4] F02M *17/40*

U.S. Cl. 261—64 E 11 Claims



1. A carbureter for an internal combustion engine and made of a soft material, comprising:

a body having a first end face to be coupled to a manifold pipe via an elastic sealing member, and a second end face to be coupled to an air cleaner via an elastic sealing member;

a suction bore formed through said body between said first end face and said second end face;

a throttle valve shaft rotatably supported within said body across said suction bore;

a choke valve shaft rotatably supported within said body across said suction bore;

a reinforcing member having a high rigidity and having a length greater than the distance between said first end face and said second end face but smaller than the length obtained by adding said distance to thickness of said sealing members of said carbureter body; and

a plurality of arms provided in a zig-zag fashion at intervals relative to each other and located on both sides of axial line of said reinforcing member to nip said reinforcing member elastically in its posture of being placed along said suction bore.

4,608,210

METHOD FOR PRODUCING PLASTICALLY BONDED PROPULSION POWDERS AND EXPLOSIVES

Dietmar Müller, Karlsruhe, and Hiltmar Schubert, Walzbachtal, both of Fed. Rep. of Germany, assignors to Fraunhofer Gesellschaft zur Forderung der angewandten Forschung e. V., Fed. Rep. of Germany

Filed Oct. 10, 1984, Ser. No. 659,247

Claims priority, application Fed. Rep. of Germany, Apr. 3, 1984, 3412410

Int. Cl.[4] C06B *21/00*

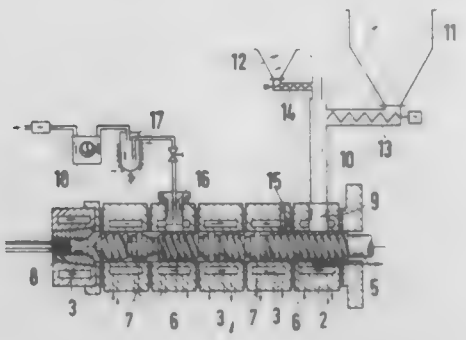
U.S. Cl. 264—3.2 7 Claims

1. A method of continuously extruding plastically bonded propulsion powder from crystalline explosives in an extruder of the type having screws rotating in a housing and wherein the housing has at least two openings provided in axially spaced relationship therein, one of the openings being provided to admit the plastic binder and the crystalline explosive material and another opening downstream thereof, said method comprising the steps of:

(a) introducing the plastic binder through said one opening to achieve a floating condition for the rotating screws wherein friction between the housing and the screws is minimized,

(b) after the screws have achieved this floating condition introducing the propulsive crystal and explosive material

so as to reduce the ratio of plastic binder to crystalline and explosive material and increase the content of crystalline and explosive material in the product,



(c) continuing to mix some plastic binder with the crystalline and explosive material in order to continuously provide this increased crystalline content of the product in a continuously operated extruder.

4,608,211

PROCESS FOR PREPARING LIPID VESICLES BY VAPORISATION OF SOLVENTS

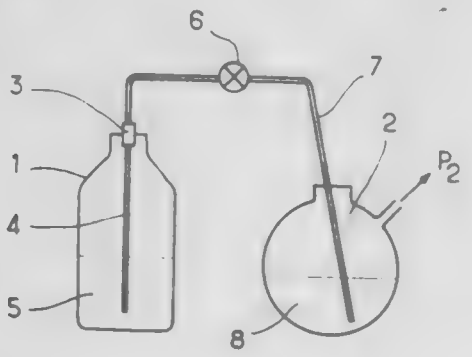
Rose-Marie Handjani; Alain Ribier, both of Paris, and Manlio M. Maurelli, Vaujours, all of France, assignors to L'Oreal, Paris, France

Filed Mar. 8, 1984, Ser. No. 587,653

Claims priority, application France, Mar. 22, 1983, 83 04674

Int. Cl.[4] B01J *13/02;* **A61K** *9/50, 9/64*

U.S. Cl. 264—4.6 **15 Claims**



1. Process for preparing unilamellar lipid vesicles having an average diameter of at least 1,000 Å, each of these vesicles consisting of a spheroidal lipid lamella containing a substance to be encapsulated, which process comprises dissolving one or more lipids intended to form the lamella of the vesicles in at least one water-insoluble solvent, conditioning the resulting lipid solution at a pressure P_1 and at a temperature θ_1, dissolving the substance to be encapsulated in water to obtain an aqueous phase, conditioning said aqueous phase at a pressure P_2 and a temperature θ_2, injecting the lipid solution into the aqueous phase at a low flow rate so as initially to form droplets and so that solvent of the lipid solution vaporises on coming into contact with the said aqueous phase, the pressure P_2 being less than P_1 and less than the vapour pressure of the solvent in the said droplets at the temperature θ_2.

4,608,212

METHOD FOR THE ELECTROSTATIC TREATMENT OF MONOFILAMENTS

Robert E. Isner, 222 Masling Ave., Tarrytown, N.Y. 10591

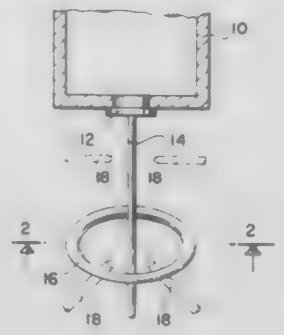
Continuation-in-part of Ser. No. 709,601, Jul. 29, 1976, abandoned. This application Feb. 16, 1984, Ser. No. 580,881

Int. Cl.[4] B06B *1/02;* **D01D** *5/253*

U.S. Cl. 264—24 **5 Claims**

2. In the formation of fibers wherein a continuous lineal monofilament is emitted in liquid state from a molten reservoir thereof into a gaseous environment, the steps of directing said liquid monofilament into surrounding flowing relation around an elongate needle-like electrode element dependent from the locus of liquid monofilament emission from said reservoir,

subjecting a portion of the surface of said continuous liquid mnofilament to a selectively directed transverse unidirectional electrostatic force field having one terminus at the



dependent terminal end of said needle-like electrode element and of a magnitude sufficient to effect a localized and radially outwardly directed deformation of such portion of the perimetric surface of said continuous flowing monofilament to produce a radially extending hair-like appendage thereon.

4,608,213

METHOD AND MOLD APPARATUS FOR MOLDING A PADDING MEMBER

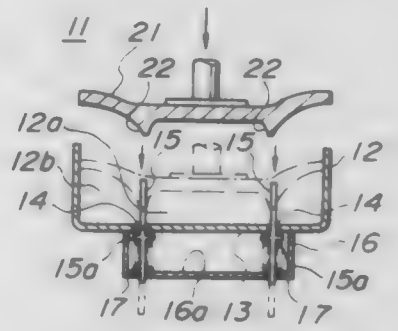
Masao Kurumizawa; Mitsuru Terui, both of Yokohama, and Nobuyasu Yamaguchi, Hamakita, all of Japan, assignors to Ikeda Bussan Co., Ltd., Yokohama and Nichiei Industry Co., Ltd., Hamakita, both of, Japan

Filed May 31, 1984, Ser. No. 615,532

Claims priority, application Japan, Nov. 4, 1983, 58-207234; Nov. 4, 1983, 58-207235

Int. Cl.[4] C08J *9/22;* **B29C** *43/20;* **B32B** *5/14, 5/16*

U.S. Cl. 264—45.1 **7 Claims**



1. A method of producing a padding member having side by side portions of different hardnesses integral with each other, comprising:

providing a lower mold half having partition wall means movably extending through the bottom of said lower mold half in a fluid-tight manner and spring urged to protrude upwardly into the interior of said lower mold half to form a plurality of cavities;

filling moldable materials of which the padding member is to be formed and having hardnesses different from each other into said cavities;

placing over said lower mold half an upper mold half having pressing members spaced from each other in the horizontal direction along lines corresponding to the upper edges of said partition wall means and projecting downwardly from said upper mold half at positions corresponding to said partition wall means and carrying out molding, said pressing members, during molding, pressing on said partition wall means for lowering said partition wall means while allowing the materials being molded to abut each other, whereby said materials in said cavities are integrally joined to each other during molding.

4,608,214

PROCESS FOR THE PRODUCTION OF OPTIONALLY CELLULAR MOLDINGS

Gerhard Ballé, Leverkusen; Reiner Paul, Muelheim, and Werner Rasshofer, Cologne, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Dec. 21, 1984, Ser. No. 685,187

Claims priority, application Fed. Rep. of Germany, Dec. 30, 1983, 3347573

Int. Cl.[4] C08J *9/34, 9/14;* C08G *18/14*

U.S. Cl. 264—45.5 10 Claims

1. A process for the production of an optionally cellular molding which is based on a polyurethane and/or polyurethane-urea and has an impervious surface, by reacting in a closed mold a reaction mixture comprising

(a) at least one organic polyisocyanate,

(b) at least one compound which has a molecular weight ranging from 400 to about 12,000 and at least two isocyanate-reactive groups and

(c) optionally at least one compound which has a molecular weight ranging from 32 to 399 and at least two isocyanate-reactive groups,

wherein said reaction mixture additionally comprises

(e1) a liquid and sedimentation-stable polymer dispersion obtained by the free radical addition polymerization or copolymerization of one or more olefinically unsaturated monomers in a compound corresponding to component (b), and optionally

(e2) at least one metal salt of a monocarboxylic acid having at least 8 carbon atoms

the polymer solids of component (e1) being present in a quantity of about 0.01 to 3 parts, by weight, based on 100 parts of component (b) and component (e2) being present in a quantity of up to about 2 parts by weight, based on 100 parts of component (b).

5. The process of claim 1 wherein said reaction mixture contains an organic blowing agent.

4,608,215

PREPARATION OF CERAMICS

Stephen T. Gonczy, Mount Prospect; Randy J. Lawson, Arlington Heights, and Bruce I. Rosen, Skokie, all of Ill., assignors to Allied Corporation, Morristown, N.J.

Filed Dec. 23, 1983, Ser. No. 565,077

Int. Cl.[4] C04B *35/14*

U.S. Cl. 264—56 13 Claims

1. A process for the preparation of a fully dense ceramic body which comprises admixing a hydrolyzed alcoholic solution of a siilcon alkoxide with an alcoholic solution of an alkyl magnesium compound at gelation conditions, drying the resultant gel at an elevated temperature to remove volatile compounds, pressing the resultant powder into a desired shape, sintering the powder at a temperature of from about 850° to 950° C. to form a densified ceramic, and recovering said ceramic.

4,608,216

METHOD FOR THE CASTING OF HOLLOW SLABS OUT OF CONCRETE

Jaakko O. Barsk, Tampere, Finland, assignor to Oy Partek Ab, Toijala, Finland

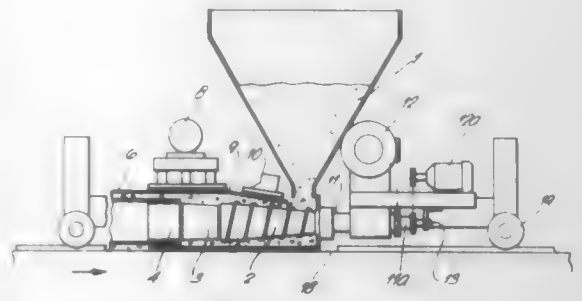
Filed May 4, 1984, Ser. No. 607,135

Claims priority, application Finland, May 9, 1983, 831606

Int. Cl.[4] B28B *1/08, 21/08*

U.S. Cl. 264—70 9 Claims

1. A method for casting hollow slabs out of concrete, in which concrete mix is extruded onto a base of a casting apparatus by means including at least one forming member for forming cavities in the slabs and the mix is compacted by moving said at least one forming member, wherein at least one end of said at least one forming member is moved along a predetermined path so that one point along a longitudinal axis of said at least one forming member maintains its position throughout movement of the member with respect to said longitudinal axis while another point longitudinally displaced along said longitudinal axis radially changes its position with respect to said longitudinal axis during movement of the forming member.



4,608,217

METHOD FOR THE PRODUCTION OF AN EAR PLUG

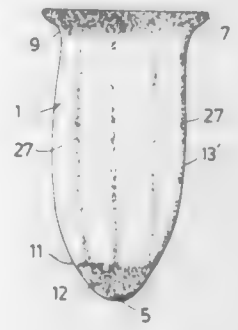
Kalman Csiki, Landskrona, Sweden, assignor to Gullfiber AB, Billesholm, Sweden

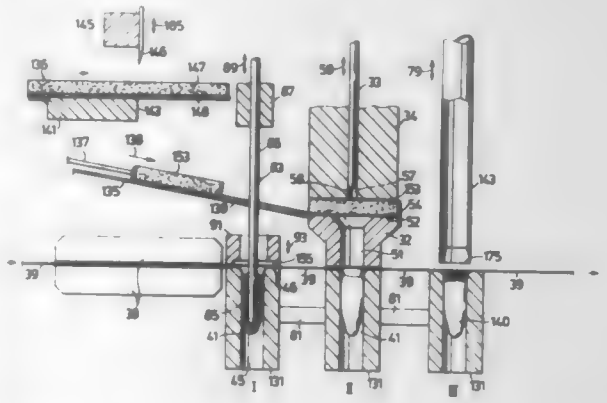
Division of Ser. No. 403,657, May 20, 1982, Pat. No. 4,498,469. This application Oct. 2, 1984, Ser. No. 656,899

Claims priority, application Sweden, Oct. 22, 1980, 8007422

Int. Cl.[4] B29C *63/04, 63/22*

U.S. Cl. 264—249 8 Claims





3. A method of producing an ear plug having an elongate body of elastic material surrounded by a sheath of flexible plastics material which is intended for insertion in the auditory meatus of an ear, said method comprising:

(a) positioning a thermoplastics film or foil over a forming hole;

(b) pushing a plunger die with the film or foil into the forming hole to deep drawn the film or foil into a sheath having a shape substantially corresponding to the shape of the ear plug;

(c) removing the plunger die from the forming hole; and

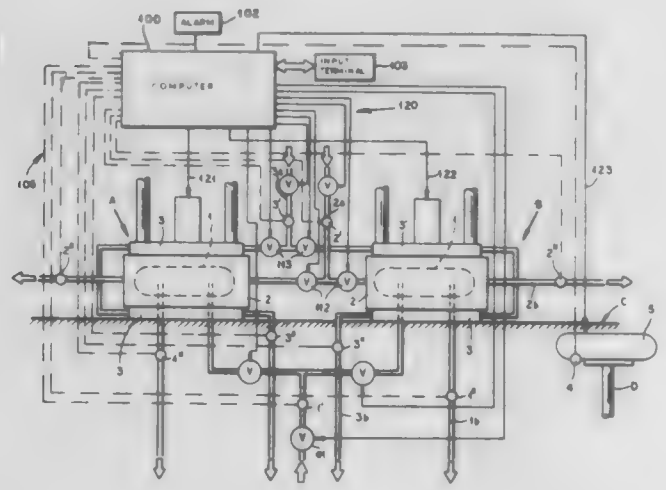
(d) inserting the elastic material into the sheath while said sheath is in the forming hole.

4,608,218

METHOD FOR THE VULCANIZATION OF PNEUMATIC TIRES

Karl-Heinz Rümmler, Hanover; Willi Sievers, Korbach; Karl-Henning Dette, Wulfsen; Lothar Köster, Hamburg, and Romeo Luscalu, Buxtehude, all of Fed. Rep. of Germany, assignors to Continental Gummi-Werke AG, Hanover and Fried. Krupp GmbH, Essen, both of, Fed. Rep. of Germany

Continuation of Ser. No. 619,032, Jun. 11, 1984, abandoned.
This application Oct. 8, 1985, Ser. No. 786,149
Claims priority, application Fed. Rep. of Germany, Jun. 10, 1983, 3320963
Int. Cl.[4] B29H *5/02*
U.S. Cl. 264—315
7 Claims



1. In a method of operating a tire-vulcanizing press in which a processed tire body is received in a vulcanizing form and a heating medium is delivered to said form to heat said body which requires a certain predetermined total heat quantity for a desired degree of vulcanization, the improvement which comprises the steps of:

determining the temperature of said body prior to vulcanization;

taking temperature measurements at intervals of 1 to 40 seconds of at least one temperature generated by said medium and related to the transfer to heat of said body and representing increments of heat transmitted to said body when related to a measurement of the temperature of said body prior to vulcanization;

continuously adding said measurements during the course of vulcanization;

comparing the summation of said measurements continuously with a value representing said total heat quantity;

terminating vulcanization by computer control upon the summation equalling said value; and

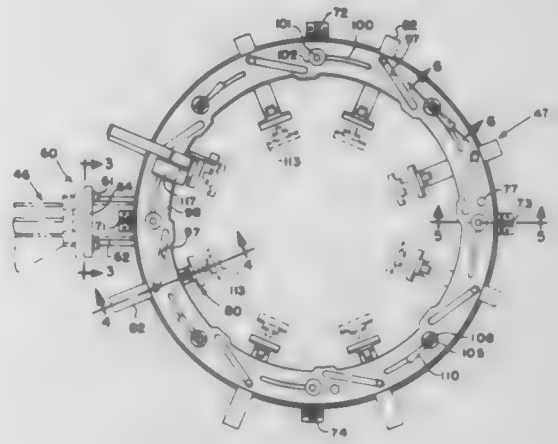
empirically determining and storing a plurality of values representing total heat quantities for a multiplicity of different bodies in dependence upon their respective compositions, tire type and geometric shape in the form of heat quantities required to bring the respective bodies to respective critical points by running test heatings of the different bodies of a variety of compositions and geometric shapes and interpolating between the results obtained by these test heatings, the increments of heat transmitted to said processed body being established relative to said measurements in accordance with the relationships defining heat transfer between said medium and the interior of each body to serve as basis values for said computer control of the vulcanization process.

4,608,219

TIRE PRESS, LOADER AND METHOD

Anand P. Singh, Youngstown; Thomas A. Crumbacher, Columbiana; Gary R. Naylor, Canfield, and Thomas R. Fagan, Jr., Atwater, all of Ohio, assignors to NRM Corporation, Columbiana, Ohio

Filed Jun. 11, 1985, Ser. No. 743,648
Int. Cl.[4] B29H *5/02*
U.S. Cl. 264—315
43 Claims



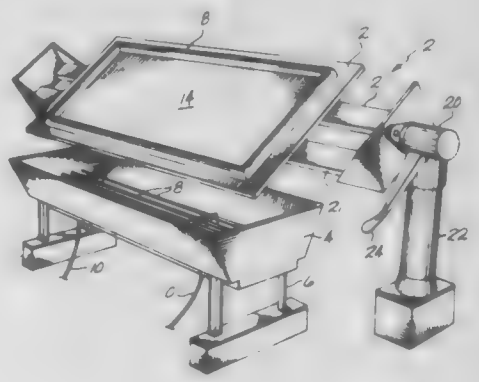
1. A tire curing press loader comprising a support ring, a series of chuck shoe assemblies mounted on said ring, each assembly including an actuator for the respective chuck shoe to grip or release a tire, and means mounting said chuck assemblies on said ring for uniform simultaneous expansion or contraction to accommodate tires of different sizes.

4,608,220

METHOD OF FORMING COMPOSITE MATERIAL ARTICLES

John E. Caldwell, Kent; Michael R. Chapman, Federal Way; Kenneth J. Goodwin, Seattle, and Patrick A. Lowery, Auburn, all of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Dec. 20, 1984, Ser. No. 684,245
Int. Cl.[4] B29C *43/10, 43/14, 43/20*
U.S. Cl. 264—510
18 Claims



1. A method of manufacturing an article from a plastic material, comprising:

providing male mold means having a male mold surface with a shape essentially identical to the desired shape of the inner surface of the completed article;

forming said material onto said mold means to conform said material to said shape, to accurately form the inner surface of the article;

providing a female mold having a female mold surface with a shape and dimensions essentially identical to the desired shape and dimensions of the outer surface of the completed article, and placing the female mold surface into contact with the formed material on the male mold means;

curing the formed material in the female mold, including exerting through flexible means essentially uniform pressure on the material to urge it against the female mold

surface, to accurately control the outer dimensions of the article; and

while placing the female mold surface into contact and curing the formed material, maintaining said shape of the inner surface of the article.

4,608,221

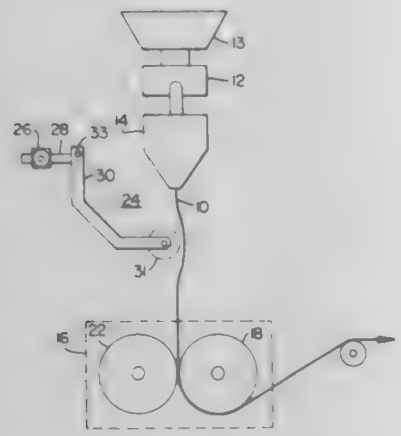
PROCESS FOR REDUCING DRAW RESONANCE IN POLYMERIC FILM

Stuart J. Kurtz, Martinsville; Ernest H. Roberts, Somerset, and Peter J. Lucchesi, Middlesex, all of N.J., assignors to Union Carbide Corporation, Danbury, Conn.

Filed Dec. 28, 1984, Ser. No. 687,250

Int. Cl.[4] B29C *47/88*

U.S. Cl. 264—556 **9 Claims**



1. A process for reducing draw resonance of a polymeric molten film susceptible to draw resonance under conditions which would cause draw resonance by extruding the film from a die and rapidly cooling said film in a rapid cooling zone containing a pressure roll and chill roll which comprises extruding said film from said die to said cooling zone, providing a tensioning device between said die and the nip of said pressure roll and chill roll, said tensioning device providing a substantially friction free surface with respect to said moving film, said tensioning device being responsive to tensioning variations of said moving film between said die and said cooling zone and being adapted to provide a substantially constant tension in said moving film.

4,608,222

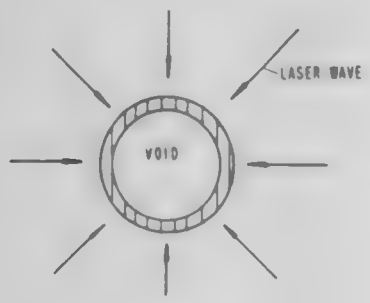
METHOD OF ACHIEVING THE CONTROLLED RELEASE OF THERMONUCLEAR ENERGY

Keith A. Brueckner, Ann Arbor, Mich., assignor to KMS Fusion, Inc., Ann Arbor, Mich.

Continuation-in-part of Ser. No. 116,707, Jan. 29, 1971, abandoned, which is a continuation-in-part of Ser. No. 65,754, Jul. 13, 1970, abandoned, which is a continuation-in-part of Ser. No. 866,778, Oct. 15, 1969, abandoned. This application Jul. 10, 1973, Ser. No. 377,508

Int. Cl.[4] G21B *1/00*

U.S. Cl. 376—104 **37 Claims**



1. A method of achieving the release of thermonuclear energy which comprises:

(a) preforming a minute closed hollow shell of solid fusion fuel material,

(b) establishing a laser light source to produce a converging wave coherent light energy in phase in time,

(c) directing a pulse of light energy from said source to said shell to create a surface heating and vaporization and an inwardly traveling shock wave to implode the shell to effect release of neutrons and a resultant thermonuclear condition, and

(d) utilizing the kinetic energy of the expanding D-T plasma as a source of thermal energy.

4,608,223

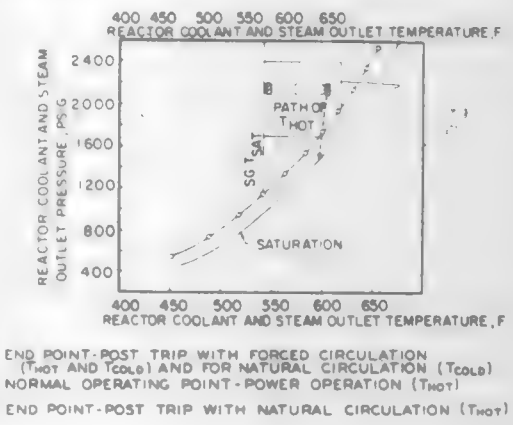
ABNORMAL TRANSIENT DISPLAY SYSTEM FOR NUCLEAR REACTOR OPERATION

Robert C. Twilley, Jr., Forest, Va., assignor to The Babcock & Wilcox Company, New Orleans, La.

Filed Mar. 1, 1982, Ser. No. 353,264

Int. Cl.[4] G21C *17/00*

U.S. Cl. 376—247 **8 Claims**



1. A system for monitoring abnormal transient conditions in a coolant fed pressurized water nuclear reactor installation comprising display means for providing a static display area formed from a pressure-temperature area which is bounded by a saturation curve and enclosing certain reactor operating perameters indicating that the nuclear steam supply system installation is within normal operating limits within this static display area and means for providing a dynamic display of reactor coolant hot leg temperature, said dynamic display being superimposed on said static display to indicate normal reactor operation so long as the dynamic display is within the static display area, and means for sequentially sampling said operating perameters permitting the continuous updating of said dynamic display.

4,608,224

NUCLEAR REACTOR COOLED BY A LIQUID METAL

Alain Brachet, Orsay, France, assignor to Service National Electricite de France, France

Continuation of Ser. No. 277,639, Jun. 26, 1981, abandoned. This application Nov. 29, 1983, Ser. No. 556,067

Claims priority, application France, Jul. 4, 1980, 80 14963

Int. Cl.[4] G21C *9/00, 15/18, 19/00*

U.S. Cl. 376—405 **11 Claims**

1. A nuclear reactor cooled by a liquid metal comprising:

a main vessel sealed by a sealing slab and containing liquid metal having a free level covered by inert gas,

a primary vessel housing a reactor core, positioned within the main vessel and defining in the latter a hot collector positioned above the reactor core and a cold collector formed by a space defined between the main vessel and the primary vessel,

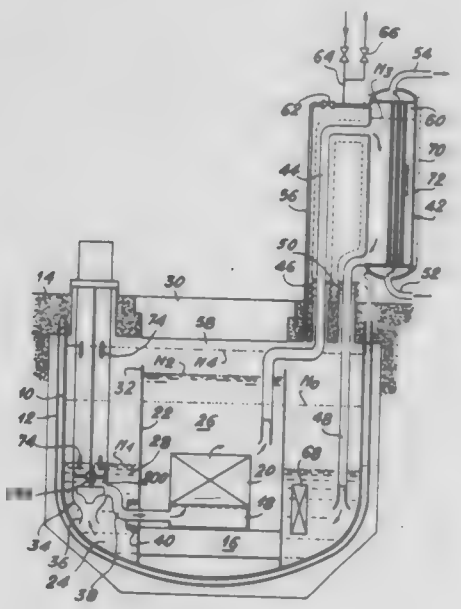
means for permitting the reactor to operate as an integrated-type reactor in the shut-down mode wherein the complete primary circuit is contained in the main vessel and as a loop-type reactor at other times wherein an intermediate heat exchanger and a primary pump are positioned outside the main vessel,

at least one intermedite heat exchanger positioned outside the main vessel and communicating with the hot collector

by at least one intake pipe and communicating with the cold collector by at least one outlet pipe, said intermediate heat exchanger being positioned at a level above a maximum value of the free level of liquid metal in the main vessel, the liquid metal normally contained in said intermediate heat exchanger having a free level covered by inert gas and,

at least one primary pump for circulating said liquid metal between the cold collector and the reactor core for circulating liquid metal to the intermediate heat exchanger through said intake and outlet pipes, said primary pump being immersed in the liquid metal of the cold collector,

pressurizing means for pressurizing the inert gas of the main vessel to a high value relative to the inert gas of the intermediate heat exchanger, actuation of said means controlling filling the intermediate heat exchanger and the intake and outlet pipes with liquid metal by counterpressure and giving a minimum value to the pressure at the free level of liquid metal in the main vessel, said pressurizing means being actuated under normal operating conditions of the reactor, said gas pressurizing means establishing a pressure difference between said inert gas convering said main vessel and said inert gas covering said heat exchanger free level which is substantially equal to the head of the liquid metal located between liquid metal level in the heat exchanger and a reference liquid metal level in the vessel,



gas pressurizing balancing means which includes at least one balancing pipe connecting the coverings of inert gas of the intermediate heat exchanger and of the main vessel for balancing pressure of the coverings of the inert gas of the main vessel and of the intermediate heat exchanger so that liquid metal in the intermediate heat exchanger is at the same pressure as liquid metal in the main vessel prior to actuation of said primary pump, operating means which includes one valve which is closed under normal operating conditions and which is opened under shut-down conditions for placing said gas pressurizing means in a closed configuration during operating conditions in which said inert gas coverings are separated for permitting circulation of liquid metal through the intermediate heat exchanger by said primary pump, and in an open configuration during shut-down conditions in which said inert gas coverings are in fluid communication for emptying the intermediate heat exchanger and the intake and outlet pipes by gravity into the main vessel and establishing a shut-down value to the free level of liquid metal in the main vessel, said shut-down level being above said reference level, and establishing fluid communication between the hot collector and the cold collector during shut-down conditions, said operating means being opened under shut-down operating conditions of the reactor,

at least one passage means in said primary vessel said passage means including an upper edge of said primary vessel located below said slab to define said passage means between said upper edge and said slab to be at a level above a maximum value of the free level of liquid metal in the main vessel during operating conditions and below a minimum value of the free level of liquid metal in the main vessel during shut-down conditions, for establishing in shut-down conditions and only during shut-down conditions, fluid communication between the hot collector and the cold collector which permits liquid metal to circulate through said passage means between sain hot collector and said cold collector within said main vessel, said minimum value being below said reference level, and

a shut-down heat exchanger means operable during reactor shut-down conditions and located in said cold collector below said minimum free level of liquid metal for removing power and for cooling the liquid metal contained within said main vessel, under said shut down operating conditions of said reactor for establishing a thermal siphon effect.

4,608,225

COMPOSITION FOR FIXING METAL POWDER MOLDING AT SINTERING

Takahumi Sakuramoto; Eishi Asoshina; Takashi Tominaga; Yukio Shimizu, all of Osaka; Tsuyoshi Morishita, Hiroshima; Sigemi Osaki, Hiroshima, and Noriyuki Sakai, Hiroshima, all of Japan, assignors to Nitto Electric Industrial Co. Ltd. and Mazda Motor Corporation, both of, Japan

Filed Apr. 26, 1985, Ser. No. 727,631
Claims priority, application Japan, Apr. 28, 1984, 59-86918
Int. Cl.[4] B22F *7/00*
U.S. Cl. 419—5 **5 Claims**

1. A process for sintering comprising the steps of providing a fixing composition layer comprising a thermosetting resin capable of providing an amount of residual carbon after sintering of at least 0.5% by weight on a metal base material,

providing a metal powder molding composition comprising a mixture of a metal powder and a synthetic resin-based binder on the fixing composition layer and

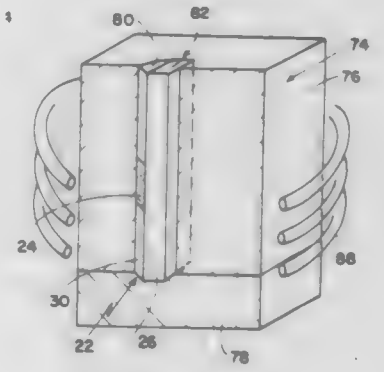
sintering the metal powder molding in a non-oxidizing atmosphere.

4,608,226

METHOD OF FORMING A DIAMOND TOOTH INSERT FOR A DRILL BIT AND A DIAMOND CUTTING ELEMENT FORMED THEREBY

Jean-Pierre Lauvinerie, Crespieres, and Annick LeFeuvre, Elancourt Maurepas, both of France, assignors to Norton Christensen, Inc., Salt Lake City, Utah

Filed Jun. 22, 1984, Ser. No. 623,352
Int. Cl.[4] B22F *7/00*
U.S. Cl. 419—5 **11 Claims**



1. An improvement in a method for manufacturing a drill bit, said improvement for forming a diamond cutting element for use in said drill bit, said improvement comprising the steps of:

degreasing a preformed integral diamond element;

maintaining said diamond element free of surface contamination; and

hot pressing a metallic matrix on a surface of said cleaned diamond element at less than 1400 degrees Centigrade, while said diamond element is maintained free from surface contamination,

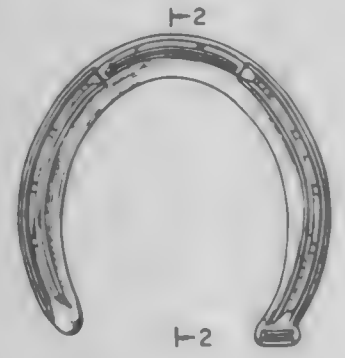
whereby a secure bond is established between said cleaned diamond element and said metallic matrix forming said cutting element.

4,608,227

SINTERED TITANIUM HORSESHOES

Mildred Preiss, 6 Nassau Dr., Great Neck, N.Y. 11021

Filed Sep. 9, 1985, Ser. No. 773,638
Int. Cl.[4] B22F *1/00*
U.S. Cl. 419—23 5 Claims



1. A process for fabricating horseshoes from titanium powder, which comprises:

a. preparing sponge (ESP) commercially pure titanium powder;

b. compacting said titanium powder into a horseshoe shaped cavity with a pressure of between 40 and 50 tons per square inch; and

c. sintering the compacted titanium powder: in a furnace having a surface lining selected from the group consisting of molybdenum and tungsten as follows and under the following conditions:

(1) temperature of 2300° F. to 2800° F.;

(2) time at temperature 3 to 4 hours;

(3) atmosphere being a vacuum; and

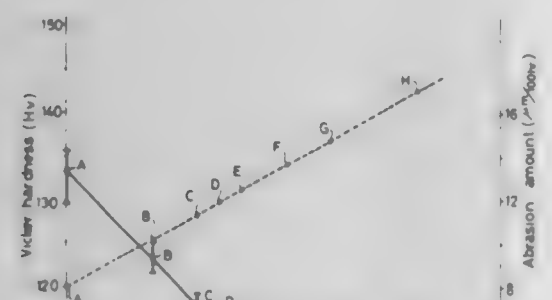
(4) cooling.

4,608,228

Ni-Fe MAGNETIC HEAD INCLUDING 1.5–2% Ta

Akihiro Makino, and Koichi Mukasa, both of Koide, Japan, assignors to Alps Electric Co., Ltd., Japan

Filed Dec. 19, 1983, Ser. No. 562,716
Claims priority, application Japan, Dec. 20, 1982, 57-222153
Int. Cl.[4] C22C *19/03*
U.S. Cl. 420—459 1 Claim



1. A magnetic head made of a Ni-based ternary alloy consisting only of nickel, iron and tantalum, in which the content of tantalum in the alloy is from about 1.5% to about 2% by weight.

4,608,229

PALLADIUM METAL BASE DENTAL ALLOY

Richard D. Lanam, Westfield, and Allen R. Robertson, Edison, both of N.J., assignors to Engelhard Corporation, Menlo Park, N.J.

Filed Sep. 12, 1984, Ser. No. 649,468
Int. Cl.[4] C22C *5/04*
U.S. Cl. 420—464 6 Claims

1. A castable dental alloy composition suitable for bonding with dental porcelain consisting essentially of about 60 to 85 percent by weight palladium, about 5 to 20 percent by weight copper, about 3 to about 15 percent by weight gallium, about 0.5 to about 2 percent by weight gold, about 3.2 to about 6 percent by weight indium, about 0.005 to about 0.02 percent by weight ruthenium, 0 to about 2 percent by weight tin and 0 to about 2 percent by weight nickel, wherein the sum of the concentrations of gold, indium, ruthenium, tin and nickel present in the alloy ranges from greater than 5.5 percent by weight to about 8.5 percent by weight.

4,608,230

Pb-Sn-Sb-Ag SOLDER ALLOY

Carl DiMartini, Piscataway, and John Lane, Westfield, both of N.J., assignors to Fry Metals, Inc., Altoona, Pa.

Filed Mar. 4, 1985, Ser. No. 708,075
Int. Cl.[4] C22C *11/06*
U.S. Cl. 420—566 3 Claims

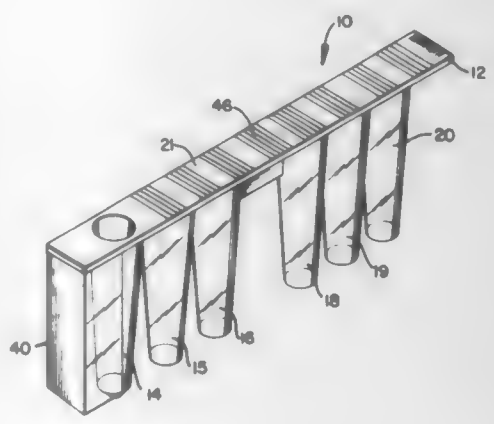
1. A solder alloy consisting essentially of 87.5%–96.5% lead, 3%–10% tin, 0.5%–2.0% antimony, and approximately 0.25% silver.

4,608,231

SELF-CONTAINED REAGENT PACKAGE DEVICE FOR AN ASSAY

Thomas R. Witty, Sandy, Utah; Robert E. Curry, Ramsey, N.J., and Roger E. Smith, Bountiful, Utah, assignors to Becton, Dickinson and Company, Franklin Lakes, N.J.

Continuation-in-part of Ser. No. 681,034, Dec. 12, 1984. This application Jun. 3, 1985, Ser. No. 740,593
Int. Cl.[4] G01N *33/53*
U.S. Cl. 422—61 17 Claims



1. A self-contained reagent package device useful in the performance of chemical and biological assays comprising:

a substantially planar support member;

a plurality of wells in said support member, all of said wells having open top ends for access thereto, and all but one of said wells being integrally formed as a unitary structure with and from the same material as said support member, said one well having its interior surfaces coated with an immunoreactive substance for carrying out the assay;

at least one of said integrally formed wells having a predetermined amount of reagent therein;

another of said integrally formed wells being empty so that the specimen to be assayed may be deposited therein; and

a protective cover sealed over the open ends of said wells to maintain the incorporated reagents in stable form prior to

use thereby providing a self-contained reagent package device.

4,608,232

GAS SENSOR

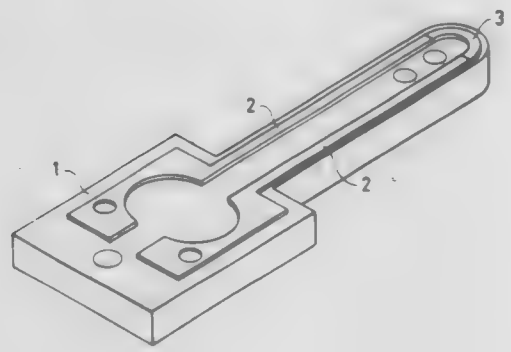
Naomasa Sunano, Akashi, and Naotatsu Asahi, Katsuta, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 19, 1982, Ser. No. 399,858

Claims priority, application Japan, Jul. 21, 1981, 56-114961; Feb. 1, 1982, 57-13261

Int. Cl.⁴ G01N *27/12*

U.S. Cl. 422—88 **12 Claims**



1. A gas sensor comprising:
an electrically insulating base;
electrodes formed on said base; and
a gas sensitive film being formed on the surface of said base at a portion, where the film detects a gas to be sensed and the film electrically contacts said electrodes;
said gas sensitive film being formed of a thermal-sprayed film of a semiconductor oxide having a perovskite structure with fine cracks therein by plasma spray coating powders of a perovskite structure oxide having a particle size equal to or smaller than 25 μm.

4,608,233

MIXING METHOD AND APPARATUS FOR PREPARING MULTI-COMPONENT PLASTIC MATERIALS ESPECIALLY POLYURETHANES

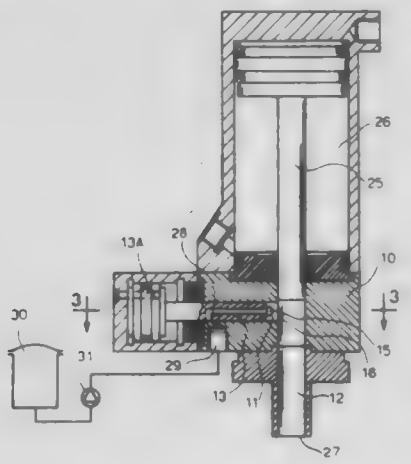
Carlo Fiorentini, Saronno, Italy, assignor to Afros S.p.A., Caronno Pertusella, Italy

Filed Apr. 4, 1983, Ser. No. 481,913

Claims priority, application Italy, Apr. 6, 1982, 20594 A/82

Int. Cl.⁴ C08F *299/06*; B01F *5/20*

U.S. Cl. 422—133 **11 Claims**



1. A method for uniformly mixing first and second chemically interactive main components and a colouring agent to produce a multi-component coloured plastic material, which method comprises the steps of:
disposing a control and cleaning member for movement along an axis of a mixing chamber toward and away from an output end of the mixing chamber;
moving the control member to a retracted position in which the control member opens first and second inlet apertures on sides of the mixing chamber that are opposite each other and connects a third inlet aperture, located adjacent the movable control member upstream from the mixing chamber, to a passage in the control member;
supplying the first and second chemically interactive main components under pressure to respective ones of the first and second inlet apertures of the mixing chamber so that the main components feed into the mixing chamber and collide with each other when the control member is moved to its retracted position;
supplying the colouring agent to the third inlet aperture under pressure, so that when the moveable control member is moved to its retracted position, the colouring agent feeds through the upstream third inlet aperture into the passage in the control member and into the mixing chamber at a position located essentially between the first and second inlet apertures in the mixing chamber, and along the axis of the mixing chamber toward the output end thereof, to mix the first and second chemically interactive main components and the colouring agent uniformly in the mixing chamber; and
moving the control member toward an advanced position adjacent the output end of the mixing chamber so that the control member closes the inlet apertures to interrupt the feeding of the first and second chemically interactive main components and the colouring agent through their respective inlet apertures after a mixing operation.

5. Apparatus for uniformly mixing first and second chemically interactive main components and a colouring agent to produce a multi-component coloured plastic material, which apparatus comprises:
a mixing head including a mixing chamber having an output end and having first and second inlet apertures that are opposite each other for the first and second chemically interactive main components;
a control and cleaning member mounted in the mixing head so that it has a reciprocable movement along an axis of the mixing chamber, the control and cleaning member including a colouring agent feed channels having at least a portion thereof extending longitudinally through the control and cleaning member and axially at one end into the mixing chamber essentially between the first and second inlet apertures in the mixing chamber when the control and cleaning member is in a retracted position;
a third inlet aperture in the mixing head adjacent the control and cleaning member and upstream from the mixing chamber;
means for supplying the first and second chemically interactive main components under pressure to their respective first and second inlet apertures in the mixing chamber so that they collide with each other;
means for supplying a colouring agent under pressure to the third inlet aperture in the mixing head; and
means for moving the control and cleaning member between an advanced position in which the control and cleaning member closes all of the inlet apertures to prevent the feeding of the first and second components and the colouring agent into the mixing chamber, and a retracted position for a component mixing operation in which the control and cleaning member opens the first and second inlet apertures and permits flow of the first and second chemically interactive components into the mixing chamber, and connects the other end of the feed channel in the control and cleaning member with the upstream third inlet aperture to permit flow of the colouring agent through the feed channel into the mixing chamber, the control and cleaning member, upon being moved from the retracted position toward the advanced position by the moving means, also closing all of the inlet apertures to interrupt flow of the first and second main components and the colouring agent into the mixing chamber.

11. Apparatus for uniformly mixing first and second chemically interactive main components and a colouring agent to

produce a multi-component coloured plastic material, which apparatus comprises:

a mixing head including an L-shaped mixing chamber having a first cylindrical mixing chamber portion and a second cylindrical mixing chamber portion larger than and angularly oriented to the first mixing chamber portion, the first mixing chamber portion having first and second lateral inlet apertures on sides thereof that are opposite to each other and having an output end opening into the second mixing chamber portion;

a first control member mounted in the mixing head so that it has a reciprocable movement along an axis of the first mixing chamber portion between an advanced position in which the control member prevents the feeding of first and second components and a colouring agent into the mixing chamber, and a retracted position for a component mixing operation, the first control member including a colouring agent feed channel having at least a portion thereof extending longitudinally through the control member and axially opening into the first mixing chamber portion, essentially between the first and second inlet apertures in the first mixing chamber portion when the first control member is in its retracted position;

a third inlet aperture in the mixing head adjacent the first control member and upstream from the first mixing chamber portion;

a second control member mounted in the mixing head so that it has a reciprocable movement in the second mixing chamber portion between an advanced position in which the second control member closes the output end of the first mixing chamber portion, and a retracted position in which the mixed material can be delivered from the output end of the first mixing chamber portion into the second mixing chamber portion;

means for supplying the first and second chemically interactive main components under pressure to their respective first and second inlet apertures in the first mixing chamber portion so that they collide with each other;

means for supplying the colouring agent under pressure to the third inlet aperture in the mixing head; and

respective moving means for moving the first and the second control members from their advanced positions to their retracted positions so that the first control member opens the first and second inlet apertures and connects the feed channel in the first control member with the upstream third inlet aperture to permit flow of the first and second chemically interactive main components and the colouring agent, respectively, into the mixing chamber, and so that the second control member opens the output end of the first mixing chamber portion;

the moving means for the first control member being also for moving the first control member toward its advanced position so that the control member closes all of the inlet apertures and thereby interrupts flow of the first and second main components and the colouring agent into the first mixing chamber portion.

4,608,234

DEVICE FOR TENSIONING A THIN PLATE

Jean-Jacques Aubert, St. Egreve; Alain Basset, Grenoble; Bernard Bechevet, Claix, and Claude Roulin, Grenoble, all of France, assignors to Commissariat a l'Energie Atomique, France

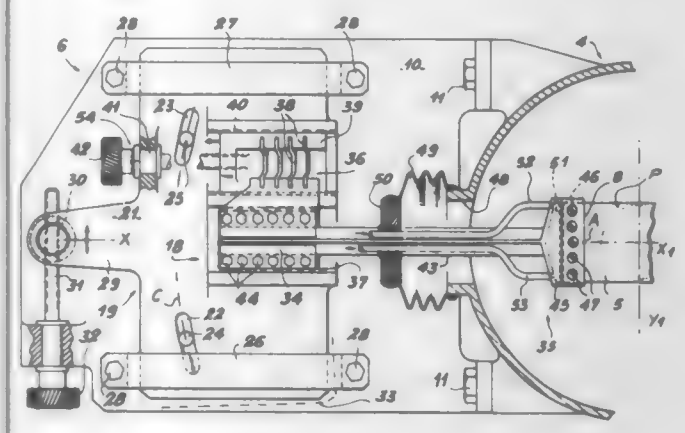
Filed Sep. 17, 1984, Ser. No. 651,528

Claims priority, application France, Sep. 20, 1983, 83 14921

Int. Cl.⁴ C30B *35/00*

U.S. Cl. 422—249 **7 Claims**

1. A device for tensioning a thin plate in a plane, said device comprising at least two assemblies, each assembly including a support member lying parallel to said plane, said support member supporting means for tensioning one end of the plate along a tension axis in said plane, said tensioning means comprising means for retaining said end and elastic means for exerting said tension, and said tensioning means being mounted on rotation means comprising a base member which is rotatable on said support member about a rotation axis which is perpendicular to



said plane, said assemblies being distributed about the periphery of the plate so as to maintain the plate in equilibrium under the tensions exerted by all of said tensioning means.

4,608,235

RECOVERY OF COBALT

Clarence D. Vanderpool; Richard A. Scheithauer, and Richard G. W. Gingerich, all of Towanda, Pa., assignors to GTE Products Corporation, Stamford, Conn.

Filed Mar. 21, 1985, Ser. No. 714,329

Int. Cl.⁴ C01G *51/00*

U.S. Cl. 423—53 **4 Claims**

1. A process for recovering cobalt from a stellite alloy containing cobalt, chromium, nickel and tungsten said process comprising:

(a) adding said alloy to fused sodium hydroxide at a temperature of from about 750° C. to about 1000° C. to form a reaction mixture, the amount of said sodium hydroxide being sufficient to subsequently form sodium chromate and tungstate and cobalt hydroxide and nickel, hydroxide;

(b) heating said reaction mixture at a temperature of from about 750° C. to about 1000° C. while introducing an oxidizing gas into said reaciton mixture to oxidize the metals contained therein and form a melt which consists essentially of said sodium salts and said hydroxides;

(c) cooling said melt;

(d) contacting the resulting cooled melt with water to form a solution containing the major portion of said sodium salts and a solid containing the major portion of said hydroxides;

(e) separating said solid from said solution;

(f) washing said solid with water to remove the remaining portion of said sodium salts; and

(g) separating the resulting washed solid from the resulting wash water.

4,608,236

PROCESS FOR THE PRODUCTION OF A SEED MIXTURE FOR FAUJASITE SYNTHESIS

Hans Strack, Alzenau, and Peter Kleinschmit, Hanau, both of Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Mar. 26, 1984, Ser. No. 593,164

Claims priority, application Fed. Rep. of Germany, Mar. 29, 1983, 3311339

Int. Cl.⁴ C01B *33/26*

U.S. Cl. 423—118 **12 Claims**

1. A process for the production of a seed mixture for faujasite synthesis, comprising reacting amorphous, synthetic sodium aluminum silicate, in the form of a powder or filter cake, with an Na_2O-supplying compound, selected from the group consisting of sodium hydroxide, sodium silicate and sodium aluminate, in an aqueous system at temperatures of 10° to 35° C. whereby a mixture is obtained having $Na_2O:Al_2O_3:SiO_2:H_2O$ in the ratio $(12\pm3):1:(15\pm3):(240\pm60)$ and allowing this mixture to age for at least 24 hours.

4,608,237

USE OF POLYMERS IN ALUMINA PRECIPITATION IN THE BAYER PROCESS OF BAUXITE BENEFICIATION

William J. Roe, Aurora, and Jacqueline L. Perisho, Oak Park, both of Ill., assignors to Nalco Chemical Company, Oak Brook, Ill.

Continuation-in-part of Ser. No. 726,544, Apr. 24, 1985, abandoned. This application Nov. 13, 1985, Ser. No. 797,717
Int. Cl.[4] C01F *7/04*
U.S. Cl. 423—122 11 Claims

1. A method of reducing the percent alumina trihydrate crystals smaller than 200 micron in diameter, which crystals are produced during crystallization of alumina trihydrate from pregnant Bayer Process liquors contaminated with sodium oxalate, which comprises adding to the pregnant Bayer Process liquors, after red mud separation and immediately prior to crystallization of alumina trihydrate, an effective amount of a high molecular weight polyacrylic acid having a weight average molecular weight of at least one million and containing at least 50 mole percent acrylic acid monomer.

4,608,238

PROCESS FOR TREATING PHOSPHO-GYPSUM WASTE PRODUCT FROM WET-ACID PROCESS OF MAKING PHOSPHORIC ACID

Eddie K. Wilson, Sr., 8294 Dogwood Rd., Germantown, Tenn. 38138, and Silvio J. Spigolon, 1800 Randolph Pl., No. 4, Memphis, Tenn. 38119

Filed Jul. 27, 1984, Ser. No. 634,965
The portion of the term of this patent subsequent to Jan. 26, 1999, has been disclaimed.
Int. Cl.[4] C01F *1/00, 5/10, 25/16*
U.S. Cl. 423—178 9 Claims

1. In a process for treating phospho-gypsum waste product which is produced in the manufacture of phosphoric acid by the wet-acid process in which suitable phosphate rock is treated with sulfuric acid to produce phosphoric acid and in which a mixture of phospho-gypsum waste product and carbonaceous material is heated to produce a mixture of gaseous SO_2, P_2O_5 containing materials and HF containing materials, the improvement which comprises heating the mixture of phospho-gypsum waste product and carbonaceous material first at a reducing temperature and then at an oxidizing temperature to produce HF containing materials, containing hydrogen and fluorine values, passing the HF containing materials through an H_2SO_4 scrubber to strip off the hydrogen values and subsequently washing the remainder with water to remove the fluorine values.

4,608,239

REMOVAL OF IRON PENTACARBONYL FROM GASEOUS STREAMS CONTAINING CARBON MONOXIDE

Thomas J. Devon, Longview, Tex., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 6, 1985, Ser. No. 805,638
Int. Cl.[4] B01D *47/00;* B01J *8/00;* C01B *00/00*
U.S. Cl. 423—210 6 Claims

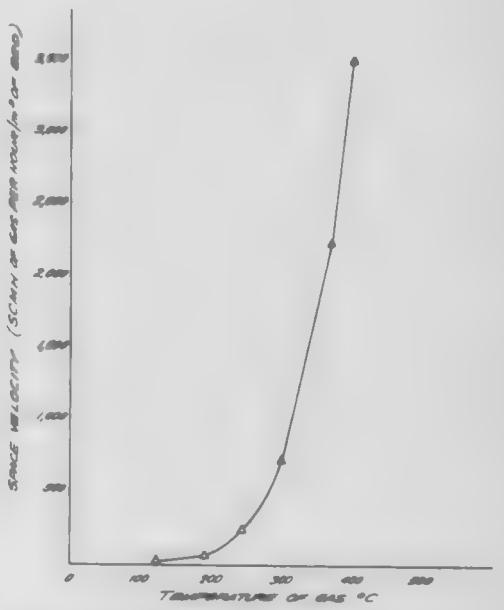
1. A process for removing iron pentacarbonyl from carbon monoxide feed gas, comprising contacting said gas with a removal agent comprising alkali metal hydroxide in association with a high boiling hydroxylic solvent to form a nonvolatile iron carbonylate salt, and separating said gas from said agent and said salt.

4,608,240

METHOD FOR THE DESULFURIZATION OF HYDROCARBON GAS

Juan A. Villarreal-Trevino, San Nicolás de los Garza; Eugenio Zendejas-Martinez, and Hector Lopez-Ramos, both of Monterrey, all of Mexico, assignors to Hylsa, S.A., Monterrey, Mexico

Filed Nov. 4, 1983, Ser. No. 549,228
Int. Cl.[4] B01D *53/34*
U.S. Cl. 423—230 20 Claims



1. A method for the desulfurization of sour natural gas containing sulfur contaminants naturally occurring in natural gas which comprises heating the sour natural gas to a desulfurization reaction temperature in the range of 250° C. to 450° C., contacting the heated sour natural gas with a bed of sponge iron to remove at least a portion of the sulfur contaminants to form a sweet natural gas.

4,608,241

PRODUCTION OF PHOSPHORUS AND PHOSPHORIC ACID

James C. Barber, Florence, Ala., assignor to James C. Barber and Associates, Inc., Florence, Ala.

Continuation-in-part of Ser. No. 503,099, Jun. 10, 1983, which is a division of Ser. No. 428,840, Sep. 30, 1982, Pat. No. 4,451,277, which is a continuation-in-part of Ser. No. 301,378, Sep. 11, 1981, Pat. No. 4,383,847, which is a division of Ser. No. 223,122, Jan. 7, 1981, Pat. No. 4,372,929. This application Apr. 29, 1985, Ser. No. 728,620
Int. Cl.[4] C01B *25/16*
U.S. Cl. 423—317 9 Claims

1. A process for treating phosphorus-containing waste, said process comprised of the following steps:

(a) distilling phosphorus-containing waste in a still to vaporize phosphorus and water and thereby separate the volatile materials from the non-volatile residue;

(b) adding purge gas to the still in step (a);

(c) collecting residue remaining in the still in step (a);

(d) agglomerating residue in step (c) by tumbling with a binder formed by reacting acidic phosphorus compounds with alkaline substances;

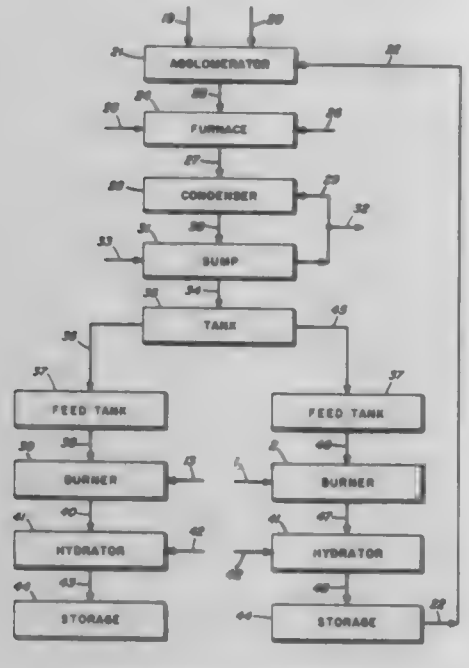
(e) condensing phosphorus and water is step (a) by contacting the gas mixture with water to separate condensable and non-condensable gases;

(f) bleeding off a portion of the water from step (e) and adding it to residue from step (c);

(g) smelting agglomerates formed in step (d) in submerged-arc electric furnace;

(h) condensing phosphorus from step (g) in a surface condenser;

(i) combining phosphorus from step (e) and step (h);



PROCESS FOR MAKING PHOSPHORIC ACID

(j) burning phosphorus in step (i) to form P_2O_5; and

(k) reacting P_2O_5 in step (j) with water to form phosphoric acid solution.

4,608,242

HYDROSILYL-MODIFIED POLYCARBOSILANE PRECURSORS FOR SILICON CARBIDE

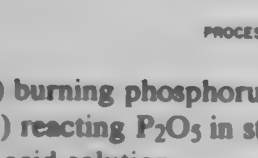
Curtis L. Schilling, Jr., Croton-on-Hudson, N.Y., and Thomas C. Williams, Ridgefield, Conn., assignors to Union Carbide Corporation, Danbury, Conn.

Division of Ser. No. 479,745, Mar. 28, 1983. This application Jun. 22, 1984, Ser. No. 623,556

Int. Cl.[4] C01B *31/36*

U.S. Cl. 423—345 3 Claims

1. A process for producing silicon carbide ceramic compositions which comprises a one-step, direct pyrolysis in an inert atmosphere of a branched hydrosilyl-modified polycarbonsilane comprising units of the formula



wherein R is a lower alkyl, a is 0 or 1, b is 0–3, c is 0–4, d is 0–4, and a+b+c+d totals 4, with the proviso that, in different units, a, b, c, d, and R may differ, but that, in at least one unit, a+d must total 1 or more and units of the formula



wherein R is defined as above, g is 1–2, e is 0–2, f is 1–3, and g+e+f totals 4.

4,608,243

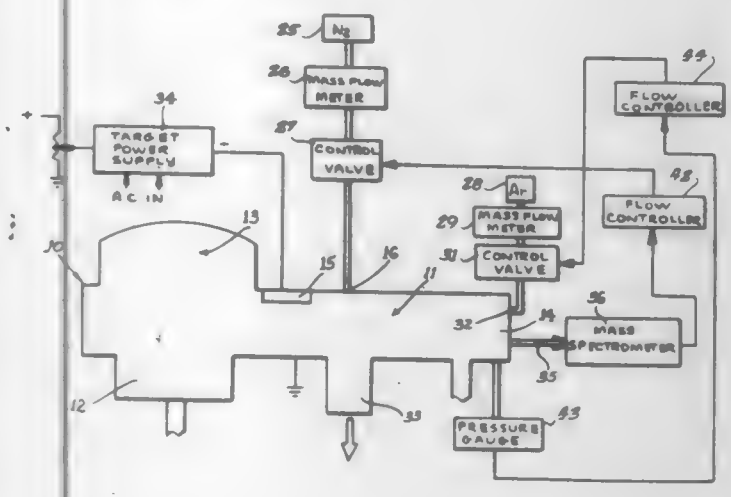
HIGH HARDNESS HAFNIUM NITRIDE

William D. Sproul, Palatine, Ill., assignor to Borg-Warner Corporation, Chicago, Ill.

Continuation of Ser. No. 481,952, Apr. 4, 1983, abandoned. This application Oct. 17, 1985, Ser. No. 788,313

Int. Cl.[4] C01B *31/34;* C23C *15/00*

U.S. Cl. 423—409 8 Claims



1. A high hardness hafnium nitride having a face centered cubic structure with a cell size of 4.55 to 4.58 A° and a hardness in the range of 2700 to 4200 kilograms per square millimeter for Vickers microindentation hardness.

4,608,244

ACETYLENE BLACK

Isao Sugihara; Akio Nishijima, and Michio Toriguchi, all of Omuta, Japan, assignors to Denki Kagaku Kogyo Kabushiki Kaisha, Japan

Filed Apr. 3, 1985, Ser. No. 719,463

Claims priority, application Japan, Apr. 5, 1984, 59-68276

Int. Cl.[4] C01B *31/02;* C09C *1/48*

U.S. Cl. 423—445 5 Claims

1. A method of producing granular acetylene black comprising the steps of

thermally decomposing acetylene gas to obtain acetylene black having a half-width of the 1355 cm^{-1} band in the Raman spectrum of not greater than 55 cm^{-1} and an iodine adsorption of not less than 95 mg/g;

stirring said acetylene black in a wetting agent consisting essentially of ion exchange water to granulate the same;

drying the granulated acetylene black at a temperature below 300° C.; and

selecting particles having a hardness of less than 5 g/particle.

3. An acetylene black product produced according to the process comprising the steps of

thermally decomposing acetylene gas to obtain acetylene black having a half-width of the 1355 cm^{-1} band in the Raman spectrum of not greater than 55 cm^{-1} and an iodine adsorption of not less than 95 mg/g;

stirring said acetylene black in a wetting agent consisting essentially of ion exchange water to granulate the same;

drying the granulated acetylene black at a temperature below 300° C.; and

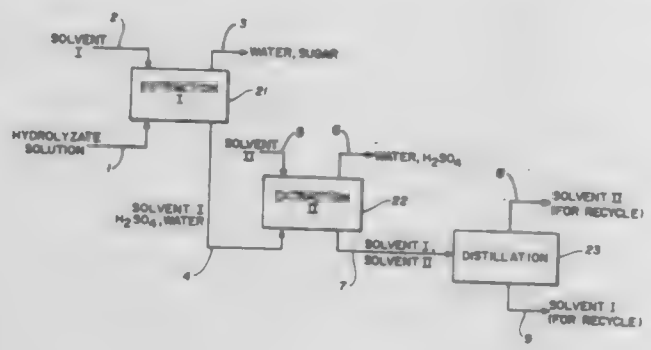
selecting particles having a hardness of less than 5 g/particle.

4,608,245

METHOD OF SEPARATION OF SUGARS AND CONCENTRATED SULFURIC ACID

James L. Gaddy, 964 Arlington Ter., and Edgar C. Clausen, 2425 Sharon St., both of Fayetteville, Ark. 72701

Filed Oct. 17, 1985, Ser. No. 788,397
Int. Cl.[4] C01B *17/74, 17/90;* C13K *1/02;* B01D *59/30*
U.S. Cl. 423—531 9 Claims



1. A method of recovering sulfuric acid from the crude product obtained from the acid hydrolysis of a cellulose-containing material, said method comprising the steps of:

contacting the crude product with a solvent comprising at least 50% of one or more of the C_4–C_7 alcohols and separating said product into a sulfuric acid enriched alcohol phase and a sulfuric acid depleted aqueous phase; and

separating the phases and recovering the sulfuric acid from the sulfuric acid enriched alcohol phase.

4,608,246

TESTING FOR A BLOOD GROUP IMMUNOLOGICAL REACTION

William L. Bayer, Jackson County, Mo.; Frederick V. Papp, Johnson County, Kans.; Malcolm L. Beck, Johnson County, Kans.; Lyle T. Sinor, Johnson County, Kans., and William M. Coenen, Johnson County, Kans., assignors to Immucor, Inc., Norcross, Ga.

Continuation-in-part of Ser. No. 474,129, Mar. 10, 1983, abandoned. This application Sep. 15, 1983, Ser. No. 532,464
Int. Cl.[4] G01N *33/555*
U.S. Cl. 424—11 21 Claims

1. A method of testing for a blood group antigen-antibody immunological reaction, said method comprising:

providing a solid surface capable of adsorbing blood grouping antibodies and supporting an immunological reaction;

contacting said surface with a known blood grouping antibody containing fluid whereby a layer of said antibodies is adsorbed on said surface;

activating an unknown blood sample by treating said sample with an effective quantity of a proteolytic enzyme characterized by the ability to modify red blood cells to enhance their serological activity; and

contacting said surface with said activated blood sample whereby any antigen specific to said antibody will undergo an immune reaction with said antibody and the resulting immunologically adhered red color on said surface will indicate the presence of specific antigens in said unknown blood sample.

20. A method of testing for a blood group immunological reaction, said method comprising the steps of:

providing a solid surface capable of adsorption of anti-human immunoglobulin and supporting an immunological reaction;

attaching to said surface a known antibody;

attaching directly to said antibody coated surface anti-human immunoglobulin;

contacting said surface with an unknown blood sample whereby any antibodies present in said unknown blood sample will undergo immunological reaction and adhere to said surface with the resulting adhered red color indicating the presence of said antibodies.

4,608,247

COMPOSITION FOR BACTERICIDAL TREATMENT OF WATER

Charles F. Heinig, Jr., Warwick, R.I., assignor to George J. LeMire, Cranston, R.I., a part interest

Filed Oct. 24, 1984, Ser. No. 664,205
Int. Cl.[4] A01N *25/26*
U.S. Cl. 424—16 7 Claims

1. A composition for the bactericidal treatment of a stream of water comprising:

a. a particulate silver yielding material comprising:

i. a carrier which has a particle size of between approximately 4 and 20 mesh, a surface area of greater than approximately 150 square inches per gram, and a Mohs scale hardness of greater than 2.5 and which is substantially insoluble in water having a pH of between 5 and 9;

ii. a layer of elemental silver on the surfaces of said carrier, said silver being between approximately 1% and 10% by weight of said silver yielding material; and

iii. the mechanical interaction between adjacent particles of said silver yielding material causing a release of elemental silver into said stream when it is passed therethrough;

b. a particulate filler material intermixed with said silver yielding material, said filler material being substantially insoluble in water having a pH of between 5 and 9, said filler material having a particle size of between approximately 4 and 20 mesh and a Mohs scale hardness of less than 2.5, the volumetric ratio of said filler material to said silver yielding material being between approximately 1:1 and 5:1; and

c. said filler material reducing the rate at which elemental silver is released from said composition to produce a controlled release of said elemental silver when said stream is passed therethrough.

4,608,248

PROCESS FOR TIME-CONTROLLED RELEASE OF ACTIVE INGREDIENTS

Adolf Knecht, Freiburg, and Helmut Augart, Waldkirch, both of Fed. Rep. of Germany, assignors to Warner-Lambert Company, Morris Plains, N.J.

Continuation of Ser. No. 795,756, Nov. 8, 1985, abandoned, which is a continuation of Ser. No. 391,020, Jun. 22, 1982, abandoned. This application Feb. 24, 1986, Ser. No. 833,430
Int. Cl.[4] A61K *9/22, 9/26*
U.S. Cl. 424—19 2 Claims

1. In a process for controlling the timed release of active material from a retarded active material composition containing polysoluble adjuvant materials which is melt granulated, pressed and tableted, wherein the improvement comprises increasing the rate of release of active material by homogeneously admixing therewith prior to melt-granulating methylcellulose or carboxymethylcellulose at an increasing viscosity of from 0.02 to 40 pa.s.

4,608,249

HYDROPHILIC THERAPEUTIC MATERIAL

Saburo Otsuka; Toshiyuki Yoshikawa; Shoichi Tokuda, and Yuusuke Ito, all of Osaka, Japan, assignors to Nitto Electric Industrial Co., Ltd. and Toa Eiyo Ltd., both of, Japan

Filed Nov. 2, 1982, Ser. No. 438,422
The portion of the term of this patent subsequent to Dec. 13, 2000, has been disclaimed.
Int. Cl.[4] A61L *15/03;* A61K *31/79;* C08F *220/12*
U.S. Cl. 424—28 13 Claims

1. A hydrophilic therapeutic material comprising a backing and a drug-containing patching layer formed thereon directly or indirectly, wherein said patching layer comprises a copolymer of 5 to 75% by weight of an acrylic or methacrylic ester having an ether group in the molecule and having a glass

transition temperature of from −10° C. to −70° C., 85 to 15% by weight of an alkyl acrylate or alkyl methacrylate, each alkyl group having from 4 to 13 carbon atoms, and 10 to 50% by weight of a functional monomer copolymerizable therewith.

4,608,250

QUATERNIZED POLYMERS; PROCESS FOR PREPARING THE SAME; AND COSMETIC COMPOSITIONS CONTAINING THE SAME

Bernard Jacquet, Antony, and Gérard Lang, Epinay sur Seine, both of France, assignors to Societe Anonyme dite: L'Oreal, Paris, France

Continuation-in-part of Ser. No. 101,562, Dec. 10, 1979, Pat. No. 4,381,919, which is a continuation-in-part of Ser. No. 899,467, Apr. 24, 1978, Pat. No. 4,197,865, which is a continuation of Ser. No. 702,924, Jul. 6, 1976, abandoned. This application May 2, 1983, Ser. No. 490,852

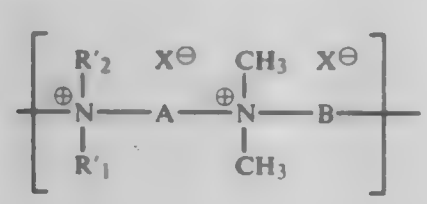
Claims priority, application Luxembourg, Jul. 4, 1975, 72901; Nov. 13, 1975, 73792

The portion of the term of this patent subsequent to Apr. 15, 1997, has been disclaimed.

Int. Cl.⁴ A61K *7/06, 7/09;* **A45D** *7/00*

U.S. Cl. 424—71 **2 Claims**

1. A process for the premanent waving of hair comprising in a first stage reducing the S—S bonds of the keratin of hair by applying to the hair a composition comprising a reducing agent present in an amount effective to reduce a sufficient number of S—S bonds of keratin of the hair and a quaternized polymer having recurring units of the formula

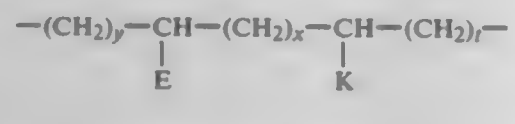


wherein

R'_2 is an aliphatic radical having a maximum of 20 carbon atoms,

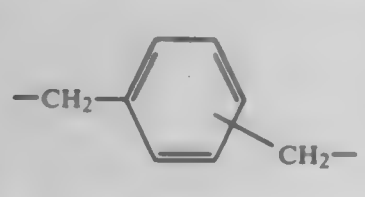
R'_1 is alkyl containing 2–20 carbon atoms, cycloalkyl having 5 or 6 carbon atoms or phenylalkyl wherein the alkyl moiety has 1–3 carbon atoms or R'_1 and R'_2 together represent a polymethylene radical having 4 to 5 carbon atoms or $—(CH_2)_2—O—(CH_2)_2—$,

A is a divalent group of the formula



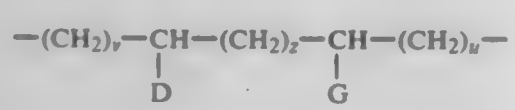
wherein x, y and t are whole numbers ranging from 0 to 11 such that the sum of x, y and t is greater than or equal to 0 and less than 18, and E and K represent hydrogen,

B represents a divalent group of the formula



(o-, m- or p-),

$—CH_2—CHOH—CH_2—$, $—(CH_2)_n—O—(CH_2)_n—$ or



wherein D and G represent hydrogen, v, z and u are whole numbers ranging from 0 to 11, with two of v, z and u simultaneously being capable of being 0, such that the sum of v, z and u is greater than or equal to 1 and lower than 18, and such that the sum of v, z and u is greater than 1 when the sum of x, y and t is equal to 0, and n is a whole number equal to 2 or 3, and

$X^\ominus$ is an anion derived from an organic or mineral acid,

said quaternized polymer being present in an amount between 0.25 and 10 percent by weight of said composition, and

in a second stage reforming said bonds by applying an oxidizing composition.

4,608,251

LHRH ANALOGUES USEFUL IN STIMULATING ANTI-LHRH ANTIBODIES AND VACCINES CONTAINING SUCH ANALOGUES

Abdus S. Mia, Fairless Hills, Pa., assignor to Pitman-Moore, Inc., Washington Crossing, N.J.

Filed Nov. 9, 1984, Ser. No. 670,469

Int. Cl.⁴ A61K *39/395, 37/24;* **C07K** *7/06*

U.S. Cl. 424—85 **29 Claims**

1. An immunogen vaccine which induces in a manmal production of antibodies against LHRH, which vaccine comprises a water in oil emulsion, the water phase comprising conjugate between a protein and a biologically effective amount of a peptide selected from the group consisting of:

Lys-Trp-Ser-Tyr-Gly-Leu-Arg-Pro-Gly-NH_2,

or

Cys-Lys-Trp-Ser-Tyr-Gly-Leu-Arg-Pro-Gly-NH_2,

or mixtures of

Lys-Trp-Ser-Tyr-Gly-Leu-Arg-Pro-Gly-NH_2,

and

Cys-Lys-Trp-Ser-Tyr-Gly-Leu-Arg-Pro-Gly-NH_2.

11. A method of inducing in a mammal the production of antibodies to LHRH which comprises administering to the mammal an immunogen vaccine which induces in the mammal production of antibodies against LHRH, which vaccine comprises a water in oil emulsion, the water phase comprising a conjugate between a protein and a biologically effective amount of a peptide selected from the group consisting of:

Lys-Trp-Ser-Tyr-Gly-Leu-Arg-Pro-Gly-NH_2,

or

Cys-Lys-Trp-Ser-Tyr-Gly-Leu-Arg-Pro-Gly-NH_2,

or mixtures of

Lys-Trp-Ser-Tyr-Gly-Leu-Arg-Pro-Gly-NH_2,

and

Cys-Lys-Trp-Ser-Tyr-Gly-Leu-Arg-Pro-Gly-NH_2.

4,608,252

CHLORAMPHENICOL DERIVATIVES ANTIGENS AND ANTIBODIES

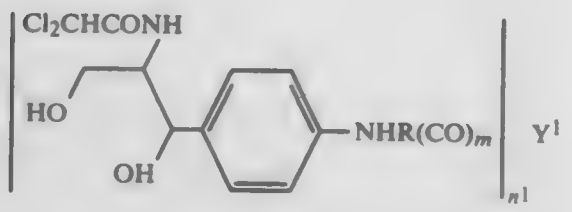
Pyare Khanna, San Jose; Evan S. Snyder, Mountain View, and Prithipal Singh, Sunnyvale, all of Calif., assignors to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Division of Ser. No. 676,689, Nov. 30, 1984, Pat. No. 4,544,765, which is a division of Ser. No. 256,761, Apr. 23, 1981, Pat. No. 4,489,156. This application Sep. 27, 1985, Ser. No. 781,075

Int. Cl.⁴ A61K *39/00;* **G01N** *53/00*

U.S. Cl. 424—85 **1 Claim**

1. Antibodies prepared in response to an antigen of the formula:



wherein:

R is a saturated aliphatic linking group of from 2 to 6 carbon atoms having from 0 to 1 oxo-carboxyl groups at its terminus bonded to nitrogen;

Y^1 is a poly(amino acid); and

n^1 is one to the molecular weight of Y^1 divided by 2000.

4,608,253

PROCESS FOR REMOVING IMMUNE COMPLEX IN BLOOD BY USE OF THE IMMOBILIZED PEPSIN

Haruo Ohnishi, Funabashi; Hiroshi Kosuzume, Yokohama; Yasuo Suzuki, Kawaguchi, and Ei Mochida, Tokyo, all of Japan, assignors to Mochida Pharmaceutical Co., Ltd., Tokyo, Japan

PCT No. PCT/JP82/00212, § 371 Date Nov. 15, 1983, § 102(e) Date Nov. 15, 1983, PCT Pub. No. WO83/04180, PCT Pub. Date Dec. 8, 1983

PCT Filed May 31, 1982, Ser. No. 556,709

Int. Cl.[4] A61K *37/54*

U.S. Cl. 424—94 20 Claims

1. A process for removing immune complexes from blood or plasma, comprising contacting blood or plasma containing immune complexes with a material comprising an effective agent immobilized on a pharmaceutically acceptable carrier, said agent being selected from the group consisting of pepsin and an enzyme derived from mammalian leukocytes, and recovering said blood or plasma freed of said immune complexes, said enzyme having the following properties:

(a) molecular weight of about 35,000 to 41,000;

(b) isoelectric point of pH 2.5 to 3.5;

(c) maximum absorption at 278 nm;

(d) positive ninhydrin reaction;

(e) readily soluble in water and insoluble in ether and chloroform; and

(f) white powdery appearance.

4,608,254

METHOD FOR THE PRODUCTION OF THERAPEUTICALLY ADMINISTRABLE PLASMA DERIVATIVES FILLED IN FINAL CONTAINERS

Anton Philapitsch, Ebenfurt, and Yendra Linnau, Vienna, both of Austria, assignors to Immuno Aktiengesellschaft fur chemisch-medizinische Produkte, Vienna, Austria

Filed Mar. 7, 1984, Ser. No. 587,223

Claims priority, application Austria, Mar. 16, 1983, 932/83

Int. Cl.[4] A61K *35/16*

U.S. Cl. 424—101 5 Claims

1. In a method for the production of therapeutically administrable plasma derivatives filled in final storage containers, which are free of prekallikrein activator, hypotensively active constituents and other undesired pharmacologically active substances, by stepwise enrichment of plasma protein and sterile filtration, said method comprising adding C_1-esterase inhibitor during the production process of said plasma derivatives to form a thermally stable PKKA/C_1INA complex, filling said plasma derivatives in final storage containers, and subjecting said plasma derivatives filled in final storage containers to a thermal virus inactivation treatment.

4,608,255

BIOCOMPATIBLE METHOD FOR IN SITU PRODUCTION OF FUNCTIONAL PLATELETS AND PRODUCT PRODUCED THEREBY LACKING IMMUNOGENICITY

Richard A. Kahn, St. Louis, and Glean E. Rodey, Chesterfield, both of Mo., assignors to American National Red Cross, Washington, D.C.

Filed Jan. 31, 1985, Ser. No. 696,657

Int. Cl.[4] A61K *35/14*

U.S. Cl. 424—101 7 Claims

1. An isolated, immunogen-free, transfusible platelet suspension in an enclosed, inert, biocompatible container permeable to ultraviolet radiation, said platelet suspension being biologically functional and having been rendered free of immunogenicity in situ by treatment with an effective amount of ultraviolet radiation external to and permeable through said container.

4. A method of in situ producing functional platelets lacking immunogenicity in a container containing platelets comprising collecting a platelet suspension in an inert, biocompatible, sterile, closed container made of a material suitable for passage of ultraviolet radiation therethrough and then irradiating said platelet suspension with an external source of ultraviolet radiation capable of penetrating through said container for a time and at a dosage level sufficient to inactivate immunogenic factors present in said suspension without affecting platelet function.

4,608,256

METHOD OF TREATING CACHEXIA

Chukei Komakine, 13-10, Azasugidaira, Taira, Iwaki-shi, Fukushima-ken, Japan

Continuation-in-part of Ser. No. 503,692, Jun. 13, 1983, abandoned. This application Mar. 29, 1985, Ser. No. 717,590

Claims priority, application Japan, Oct. 1, 1982, 57-170923

Int. Cl.[4] A61K *33/26*

U.S. Cl. 424—147 2 Claims

1. A method for treating humans afflicted with cachexia comprising orally administering to a human afflicted with cachexia an amount of an inorganic composition effective to treat said cachexia, said inorganic composition being prepared by mixing 8 parts by weight of crystalline ferrous sulfate heptahydrate with 1 to 2 parts by weight of flyash; heating the mixture for about one hour at a temperature of 65° to 85° C. to thereby cause granules of said mixture to shatter and to form an almost neutralized mixture; and mechanically pulverizing said shattered granules into a finely powdered inorganic composition.

4,608,257

COMPOSITION AND METHOD FOR TREATING HEAT STRESS

Robert G. Teeter, Stillwater, Okla., assignor to Board of Regents for Oklahoma State University, Stillwater, Okla.

Filed Jan. 3, 1984, Ser. No. 567,507

Int. Cl.[4] A61K *33/02, 33/14*

U.S. Cl. 424—166 18 Claims

1. A method of treating heat stress in poultry comprising the step of supplementing the diet of said poultry with from about 0.3 weight percent to about 3 weight percent of a hydrogen ion donor.

4,608,258

MEDICAMENT FOR TREATMENT OF DIARRHEA

Kiyoyuki Yamanaka, Moriguchi, Japan, assignor to Taiko Pharmaceutical Co., Ltd., Suita, Japan

Filed Aug. 17, 1983, Ser. No. 523,885

Int. Cl.[4] A61K *35/78*

U.S. Cl. 424—195.1 1 Claim

1. A diarrhea-treating medicament for treating various diseases with diarrhea comprising a diarrhea-treating effective

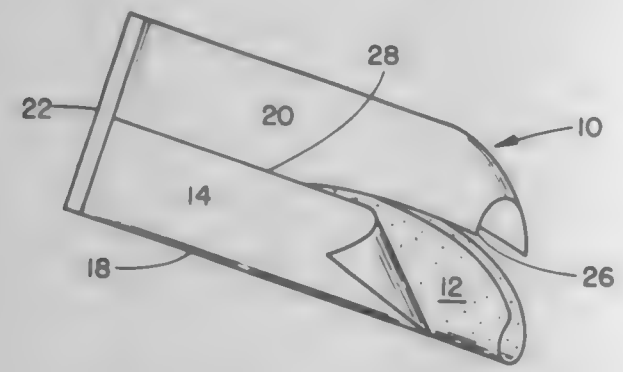
amount of creosote and a pharamceutically acceptable carrier, wherein the medicament is contained in a capsule.

4,608,259

POCKET WRAP

Jeffery J. Cortopassi, Santa Ana, Calif., assignor to Taco Bell, Irvine, Calif.

Continuation of Ser. No. 673,579, Nov. 21, 1984, abandoned.
This application Oct. 28, 1985, Ser. No. 793,445
Int. Cl.[4] B65D *30/00, 85/00*
U.S. Cl. 426—115 6 Claims



1. A simple and versatile pocket wrap for a comestible product which is frequently hand held during consumption, comprising:

a. a substantially rectangular pocket adapted to enclose a comestible product which is frequently hand held during consumption, formed by front and back sheets which are joined along both a first side edge and a bottom edge, and which are openable and detached along both a second side edge and a top edge, said open second side and top edges of the pocket enabling a comestible product to be conveniently inserted into the pocket, and also allowing the comestible product to extend from the pocket for consumption while still being wrapped therein and hand held by a consumer, with the length of the top and bottom edges generally defining the length of the rectangular pocket and the length of the first and second side edges generally defining the width of the rectangular pocket;

b. a substantially rectangular overwrap sheet formed integrally with said pocket back sheet along a fold line and extending upwardly from said pocket, said overwrap sheet having a length and width substantially equal to the length and width of the rectangular pocket and being designed to be folded downwardly along said fold line to substantially completely overlie said pocket front sheet after a comestible product is inserted into the pocket, thereby wrapping and packaging the comestible product in a manner suitable for take out, and also enabling the product to be consumed by being relocated in the pocket so as to extend from said open second side or top edge; and

c. said front and back sheets and said overwrap sheet being formed from one integral substantially rectangular sheet of paper with said front sheet, said back sheet and said overwrap sheet each comprising approximately one third of the area of the rectangular sheet, with the rectangular sheet being folded initially along said bottom edge joinder of said front and back sheets, and then folded a second time along said first side edge joinder of said front and back sheets and continuing up along said first side edge into the overwrap sheet, with a short inwardly extending tab being formed along said first side edge and extending from the overwrap sheet in which the tab is one sheet thick to the first side edge joinder of the front and back sheets where the tab is two sheets thick.

4,608,260

PROCESS FOR CONTROLLING THE COOKING PROCESS IN A STEAM PRESSURE COOKER

Wolfram K. Andre, Aichwald, Fed. Rep. of Germany, assignor to Kurt Wolf & Co. KG, Fed. Rep. of Germany

Filed Jun. 11, 1984, Ser. No. 619,317
Claims priority, application Fed. Rep. of Germany, Jun. 29, 1983, 3323399
Int. Cl.[4] A47J *27/62;* H05B *1/02*
U.S. Cl. 426—233 9 Claims

1. Process for adjusting a preset cooking time for a cooking process for cooking food materials in a steam pressure cooker heated by a heating means controlled by a control circuit in which the temperature of said steam pressure cooker and its food materials is detected at times during the cooking process and utilized by said control circuit to regulate the heat output of said heating means and in which a cooking time (tg) is preset by an adjustable timing means and adjusted by said control circuit dependent upon said food materials, comprising:

measuring the temperature of said cooker during a heating phase and determining a slope ($\Delta Tx/t$) of a temperature-time curve ($T=f(t)$) during said heating phase, said slope of said temperature-time curve characteristic of said cooking process and said food materials;

determining a time interval (tvx) based upon said slope ($\Delta Tx/t$), a function ($\Delta T/t=f(M)$) characteristic of a cooking system comprising said heating means, said steam pressure cooker, and a quantity of liquid food material (M) in equivalent water units (WE), and a function $tv=f(M)$ characteristic of said cooking system, said time interval (tvx) increasing as said slope ($\Delta Tx/t$) decreases;

shortening said preset cooking time (tg) by said time interval (tvx) to determine a shortened cooking time (tg'); and

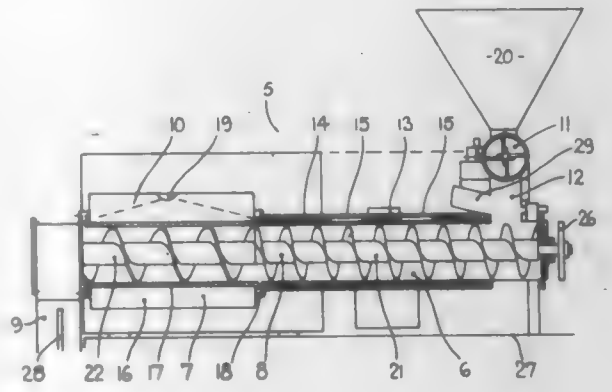
deactivating said heating means after said shortened cooking time (tg') has elapsed.

4,608,261

METHOD AND APPARATUS FOR PRODUCING A PUFFED FOODSTUFF

Ross A. MacKenzie, Auckland, New Zealand, assignor to New Zealand Government Property Corporation, Wellington, New Zealand

Filed Oct. 24, 1984, Ser. No. 664,430
Claims priority, application New Zealand, Nov. 4, 1983, 206150
Int. Cl.[4] A23L *1/18, 3/18*
U.S. Cl. 426—242 10 Claims



8. A method of producing a puffed foodstuff from a raw food material in particulate form, said method comprising the steps of: conveying the particulate raw food material by a screw-conveying means through a preheating chamber and subjecting the food material to preheating therein; subsequently conveying the preheated raw food material through a main processing chamber and subjecting the food material to further heating by microwave energy to puff the food material and delivering the resulting puffed foodstuff to an outlet, said screw-conveying means being of a material substantially transparent to micro-waves where the conveying means passes through the main processing chamber, the pitch of said screw-

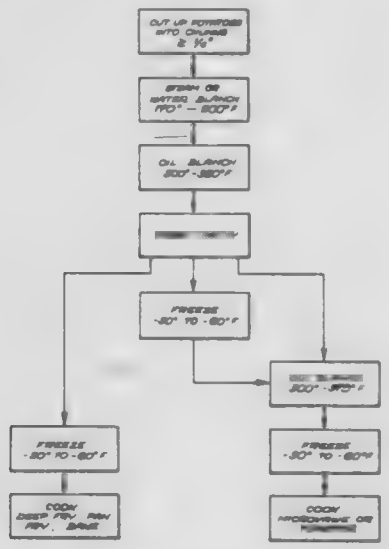
conveying means being wider where said conveying means passes through said main processing chamber than the pitch where the screw-conveying means passes through said preheating chamber.

4,608,262

METHOD OF MAKING FROZEN POTATO PATTIES AND THE PRODUCTS FORMED THEREBY

Sherry A. Galland, Caldwell, Id., assignor to J. R. Simplot Company, Boise, Id.

Filed Jan. 3, 1985, Ser. No. 688,574
Int. Cl.[4] A23L *1/217*
U.S. Cl. 426—243 23 Claims



1. A method of preparing a potato patty for freezing and storage comprising:
   a. cutting up potatoes into relatively large chunks having a predominant minimum dimension of not less than about ¼ inch;
   b. cooking the potato chunks in an aqueous media selected from the group consisting of steam and water;
   c. further cooking the potato chunks in oil;
   d. mixing the potato chunks cooked in oil with an aqueous solution of starch, gum or mixtures thereof; and
   e. then forming the mixture into a potato patty.

4,608,263

METHOD FOR MAKING FLAVORED DIPEPTIDE SWEETENED COMESTIBLE

Ralph M. Bergin, Wonder Lake; Emanuel E. Katz, Palatine, and Warren A. Widicus, Bartlett, all of Ill., assignors to The Quaker Oats Company, Chicago, Ill.

Filed Sep. 11, 1984, Ser. No. 649,554
Int. Cl.[4] A23L *1/164*
U.S. Cl. 426—303 30 Claims

1. A method for making a sweet, flavored ready-to-eat cereal comprising the steps of:
   (a) heating an edible fatty material having a Wiley Melting Point in the range of about 20° C. to 45° C. and an iodine value of less than about 40 to a temperature at which it is liquid;
   (b) dispersing a finely ground solid dipeptide sweetner in the range of about 25 microns to 500 microns in diameter into said heated fatty material unitl an amount of the dipeptide sweetener in the range of about 0.5% to 7.0% based on the weight of the fatty material has been dispersed into the heated fatty material;
   (c) dispersing an effective amount of an oil dispersible flavoring material containing a carbonyl flavoring compound into the heated fatty material;
   (d) applying the dispersion of dipeptide sweetener and flavoring material onto a ready-to-eat cereal base heated to a temperature of at least about 25° C. above the melting point of the edible fatty material and in a coating in a quantity sufficient to provide an amount of dipeptide sweetener on the cereal base in the range of about 0.05% to 0.5% based on the weight of the cereal base; and
   (e) cooling the sweetened, flavored ready-to-eat cereal base to a temperature at which the fatty material is solid.

4,608,264

PRETREATMENT OF FRIED FOOD PRODUCTS WITH OIL CONTAINING EMULSIFIERS

Lucy L. Fan, Irving, Tex., and Javier A. Arce, LaPaz, Bolivia, assignors to Frito-Lay, Inc., Dallas, Tex.

Continuation-in-part of Ser. No. 575,278, Jan. 30, 1984, abandoned. This application Sep. 24, 1984, Ser. No. 653,702
Int. Cl.[4] A23L *1/01, 1/217*
U.S. Cl. 426—438 15 Claims

1. A method for preparing fried starch-containing sliced or dough-based snack foods comprising washing starch-containing vegetable food pieces in a vegetable oil containing about 0.05–1% (w/v) of a food grade emulsifier, at a temperature below the gelatinization temperature of the surface starch, and then frying the washed pieces.

4,608,265

IMITATION CHEESE PRODUCTS CONTAINING HIGH AMYLOSE STARCH AS PARTIAL OR TOTAL CASEINATE REPLACEMENT

Gary A. Zwiercan, Knutsford, England; Norman L. Lacourse, Plainsboro, and Julianne M. Lenchin, Cranbury, both of N.J., assignors to National Starch and Chemical Corporation, Bridgewater, N.J.

Continuation-in-part of Ser. No. 480,058, Mar. 29, 1983, abandoned. This application Mar. 8, 1985, Ser. No. 709,946
The portion of the term of this patent subsequent to Feb. 12, 2002, has been disclaimed.
Int. Cl.[4] A23C *20/00*
U.S. Cl. 426—582 23 Claims

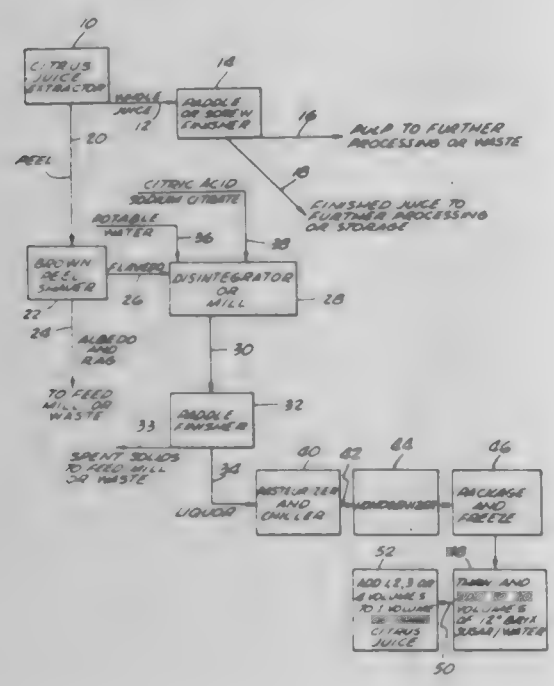
1. An imitation cheese product consisting essentially of water, an edible vegetable fat or vegetable oil, cheese additives, and at least one edible caseinate, wherein the improvement comprises the replacement of 25 to 50% of the caseinate by an edible pregelatinized modified starch having an amylose content of at least 40% by weight, the modified starch being selected from the group consisting of a derivatized starch, a converted starch, a converted and derivatized starch, and a crosslinked starch; the derivatized starch being prepared by treatment of the starch with up to about 25% propylene oxide, up to about 5% succinic anhydride, up to about 10% octenylsuccinic anhydride, a sufficient amount of acetic anhydride to provide a maximum of about 6% bound acetyl, or a sufficient amount of sodium or potassium orthophosphate, sodium or potassium tripolyphosphate, or a mixture thereof to provide a maximum of about 0.8% bound phosphate, calculated as phosphrous; the converted starch being selected from the group consisting of a fluidity starch prepared by acid- or enzyme-conversion of the starch, an oxidized starch prepared by treatment of the starch with less than about 5.5% active chlorine, and a dextrin having a calcium chloride water fluidity of less than about 50 prepared by pyrodextrinization of the starch; the starch being pregelatinized before or after modification of the starch by derivatization, conversion, derivatization and conversion, or crosslinking; the treatment percentages being by weight based on the starch; the cheese product containing the starch replacement being functionally equivalent to the cheese containing no caseinate replacement.

4,608,266

PROCESS FOR FORMING A CITRUS JUICE EXTENDER

Donald E. Epperson, Chino; Orvin B. Curley, Ontario, and Horton E. Swisher, Upland, all of Calif., assignors to Brown International Corporation, Covina, Calif.

Continuation of Ser. No. 499,346, May 31, 1983, abandoned.
This application Feb. 11, 1985, Ser. No. 700,061
Int. Cl.⁴ A23L *2/02*
U.S. Cl. 426—599 **9 Claims**



1. A process for forming a citrus extender substantially from natural components of citrus fruit, comprising the steps of:

separating flavedo from the peel of the citrus fruit by shaving in order to assure recovery and separation of the desirable components of the flavedo from the albedo, pulp and other components of the citrus fruit in order to recover substantially all of its essential oil, color and cloud-forming components from the flavedo.

comminuting the flavedo into particles suitable for being placed in colloidal suspension,

combining the comminuted flavedo with an acidifying agent and with a minimum amount of water just sufficient to maintain liquidity of the combination,

finishing the combination to remove solids and form a resultant finished liquor extender containing substantially all available essential oil, color and cloud forming components of the comminuted flavedo for enhancing natural color, flavor and cloud of a subsequently extended juice product, and

storing the extender for subsequent combination with a sweetener and water to thereupon form a diluted and sweetened extender suitable for blending with an initial juice to form a citrus extended juice product.

4,608,267

LECITHIN-CONTAINING FOOD PRODUCT

Christian E. Dutilh, Dordrecht, Netherlands, assignor to Thomas J. Lipton Inc., Englewood Cliffs, N.J.

Filed Nov. 27, 1984, Ser. No. 675,198
Claims priority, application United Kingdom, Nov. 29, 1983, 8331808
Int. Cl.⁴ A23J *7/02*
U.S. Cl. 426—662 **15 Claims**

1. A food product which includes lecithin finely distributed therein, which lecithin consists essentially of

at least 25% by weight of phosphatidyl choline,

0–20% by weight of phosphatidyl ethanolamine, and

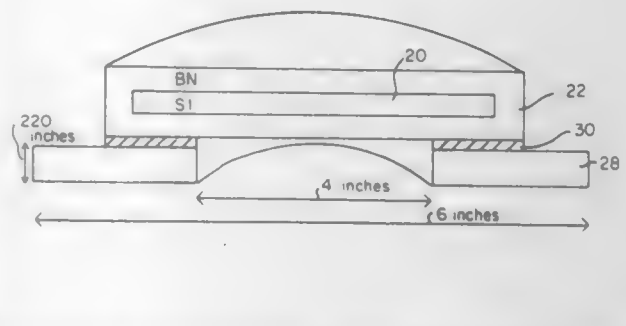
fatty acid residues, of which residues at least 10% by weight are unsaturated fatty acid residues, which product includes at least 5% by weight of phosphatidyl choline, calculated on the dry contents of the product, wherein the weight ratio of the phosphatidyl choline and phosphatidyl ethanolamine contents of the product is at least 3, the balance consisting of edible material.

4,608,268

PROCESS FOR MAKING A MASK USED IN X-RAY PHOTOLITHOGRAPHY

Alexander R. Shimkunas, Palo Alto, Calif., assignor to Micronix Corporation, Los Gatos, Calif.

Filed Jul. 23, 1985, Ser. No. 758,596
Int. Cl.⁴ B05B *5/00*
U.S. Cl. 427—8 **4 Claims**



4. A process for determining the displacement of a wafer due to bowing from a reference plane comprising the steps of:

placing an unbowed wafer in proximity to a capacitive probe, the distance between said capacitive probe and said wafer being determined in response to the capacitance measured by said capacitive probe;

forming a layer of material on one side of said wafer, the wafer bowing in response to said layer of material;

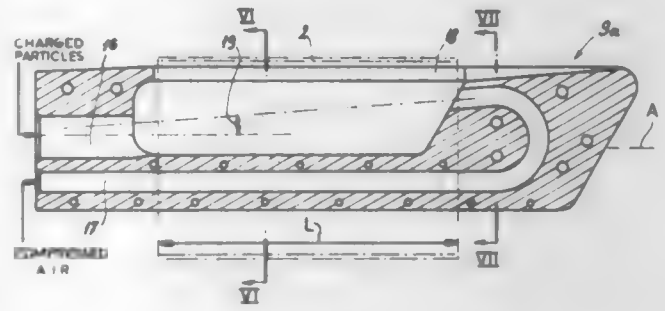
placing said wafer and said layer of material in proximity to said capacitive probe, the distance between said probe and said wafer being determined in response to the capacitance measured by said capacitive probe, the difference in the distance between said capacitive probe and said wafer when said wafer is bowed and when said wafer is unbowed representing displacement due to bowing.

4,608,269

ELECTROSTATIC STRIPING OF THREE-PART METAL-CAN SEAMS

Jean J. Celant, 20, route de Ste-Cecile, Serignan Du Cantat (Vaucluse), and Francois Bochaton, Cluny, both of France, assignors to W.C.C.E. World Can and Cap Engineering, Macon and Jean Jacques Celant, Serignan Du Cantat, both of, France

Filed Dec. 13, 1984, Ser. No. 681,496
Claims priority, application France, Dec. 15, 1983, 83 20419
Int. Cl.⁴ B05B *5/02, 7/14;* **B65D** *8/22*
U.S. Cl. 427—28 **14 Claims**



1. A method of striping a surface, the method comprising the steps of:

positioning a nozzle having an elongated groove adjacent the surface with the groove opening immediately along the region of the surface to be striped;

imparting to the surface surrounding the nozzle a predetermined potential level;

introducing a stream of dry particles into at least one end of the groove in a predetermined direction at least generally parallel to the groove and to the region to be striped;

charging the particles relative to the potential level of the surface being such that the particles are attracted to the surface; and

introducing a stream of air under pressure into the end of the groove opposite the one end of the groove in a direction generally opposite to the predetermined direction and thereby deflecting the particle stream transversely from the groove toward the region.

9. An apparatus for striping a surface, the apparatus comprising:

a nozzle having an elongated groove and positionable adjacent the surface with the groove opening immediately at the region of the surface to be striped;

means for imparting to the surface surrounding the nozzle a predetermined potential level;

means for introducing a stream of dry particles into at least one end of the groove in a direction at least generally parallel to the groove and to the region to be striped;

means for charging the particles relative to the potential level of the surface such that the particles are attracted to the surface; and

means for introducing a stream of air under pressure into the opposite end of the groove in generally the opposite direction and thereby deflecting the particle stream transversely from the groove toward the region.

4,608,270

ACYLAMINO SILICON COMPOUNDS, THEIR USE AND PREPARATION

Padmakumari J. Varaprath, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Filed Oct. 25, 1985, Ser. No. 791,484
Int. Cl.[4] B05D *3/06*
U.S. Cl. 427—35 35 Claims

1. An organosilicon compound containing at least one silicon-bonded acylamino-substituted hydrocarbon radical having the formula —QNAQ'NAZ, wherein Z denotes H or R, R denotes a monovalent hydrocarbon radical, Q and Q' denote divalent hydrocarbon radicals, A denotes an acyl radical having the formula

$$CH_2{=}\overset{|}{C}BCO,$$

and B denotes H or CH_3, any remaining silicon-bonded radicals therein being selected from the group consisting of organic radicals and divalent oxygen atoms linking silicon atoms.

4,608,271

METHOD FOR THE MANUFACTURE OF METAL SILICIDE LAYERS BY MEANS OF REDUCED PRESSURE GAS PHASE DEPOSITION

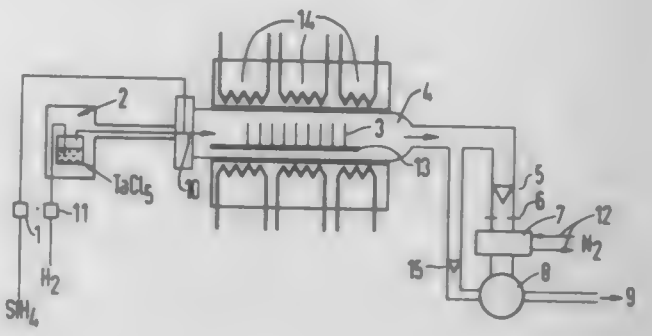
Konrad Hieber, Bernau; Manfred Stolz, Munich, and Claudia Wieczorek, Ottobrunn, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Mar. 22, 1985, Ser. No. 714,850
Claims priority, application Fed. Rep. of Germany, Apr. 6, 1984, 3413064
Int. Cl.[4] B05D *3/06*
U.S. Cl. 427—38 9 Claims

1. A method for the deposition of a silicide layer of a high melting metal onto a substrate of silicon and/or silicon dioxide which comprises:

pyrolytically decomposing gases including a decomposable silicon containing hydrogen compound, or a halogenated silane, and a metal halide to form a reaction mixture in a reaction zone,

depositing a metal silicide from said reaction mixture from the gas phase at reduced pressure, and



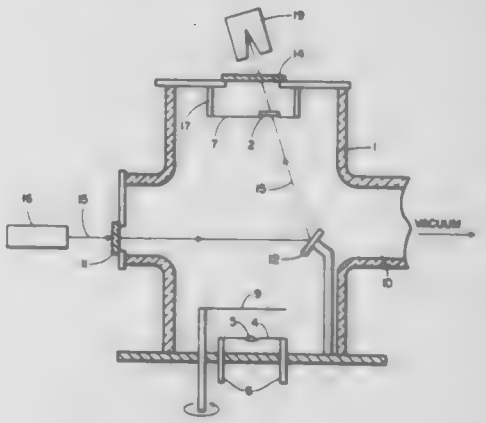
during the decomposition of the gases and deposition of the metal silicide, maintaining the gas pressure in the reaction zone in the range between 1.3×10^{-3} to 5×10^{-2} mbar by means of a turbomolecular pump.

4,608,272

METHOD OF REDUCING OPTICAL COATING ABSORPTANCE

James M. Rowe, Torrance; Paul Kraatz, and Samuel J. Holmes, both of Redondo Beach, all of Calif., assignors to Northrop Corporation, Hawthorne, Calif.

Filed Oct. 20, 1980, Ser. No. 198,602
Int. Cl.[4] B05D *3/06*
U.S. Cl. 427—53.1 9 Claims



1. The method of producing a low absorptance optical coating on an optical substrate, comprising vacuum depositing a thin film of optical coating material on a surface of a substrate while simultaneously irradiating said surface with a beam of light radiation having a wavelength corresponding to that at which the low absorptance is desired and having a power sufficient to cause the desired effect.

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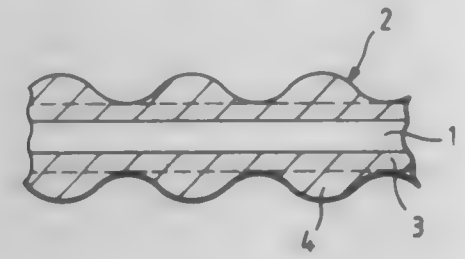
OPTICAL FIBRES

Roger J. Brambley, Great Dunmow, England, assignor to Standard Telephones and Cables Public Limited Company, London, England

Filed Jul. 3, 1985, Ser. No. 751,379
Claims priority, application United Kingdom, Aug. 2, 1984, 8419774
Int. Cl.[4] B05D *3/06, 3/02*
U.S. Cl. 427—54.1 6 Claims

1. A method of providing an optical fibre with a coating which varies in thickness along the length of the optical fibre, including steps of applying a first coating layer to the optical fibre, subsequently applying a layer of a liquid coating material to said first coating layer on the optical fibre, permitting the liquid coating material to form into beads on said first coating

layer on the optical fibre and curing the coating material whereby to maintain the beaded structure, said first coating



layer serving to ensure the presence of a minimum coating thickness on the optical fibre.

4,608,274

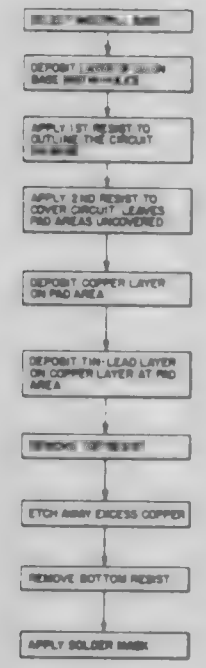
METHOD OF MANUFACTURING CIRCUIT BOARDS

Jack Wooten, Mountain View, Calif., assignor to Faultless PCBS, Redwood City, Calif.

Filed Aug. 6, 1982, Ser. No. 405,887

Int. Cl.⁴ B05D *3/06*

U.S. Cl. 427—96 **7 Claims**



1. In a process of manufacturing a circuit board the steps of selecting a base panel of insulative material, drilling holes through said panel at predetermined areas, depositing a layer of copper on both sides of said base panel and in the walls defining said holes, preparing a screen with a negative image of the desired circuit thereon for each side of said panel, screening a first resist onto each side of said panel to form a positive circuit image thereon, heating said panel to solidify the resist image, preparing a screen with a positive image of the pad areas for each side of the panel, screening a second resist onto each side of the panel to cover the positive circuit images thereon and to cover all other parts of the panel except the pad areas, heating the panel to solidify the resist, depositing a layer of copper on the panel at each pad area, depositing a tin/lead layer above the copper layer at each pad area, removing the top resist on each side of the panel while leaving the positive circuit images of first resist in place and exposing the panel around the positive circuit images, etching away the excess copper on said panel, and removing said bottom resist to expose the circuit outlined therebelow in copper on both sides of said panel.

4,608,275

OXIDIZING ACCELERATOR

Peter E. Kukanskis, Woodbury; John J. Grunwald, New Haven, and David Sawoska, Waterbury, all of Conn., assignors to MacDermid, Incorporated, Waterbury, Conn.

Continuation-in-part of Ser. No. 510,333, Jul. 1, 1983, abandoned. This application Mar. 18, 1985, Ser. No. 712,981

Int. Cl.⁴ C23C *18/30*

U.S. Cl. 427—98 **14 Claims**

1. In a method of electroless deposition of metal on a substrate surface, wherein the substrate surface is treated in a one-step catalyst activation process with a sol composition formed from palladium and tin compounds to deposit on said surface metal comprised of palladium, catalytically active to the electroless deposition of metal, protected by compounds comprised of stannous tin compounds; followed by treatment of said surface with an accelerator to eliminate the protective effect of said compounds comprised of stannous tin compounds; and then followed by immersion of said activated and accelerated substrate in an electroless metal depositing solution; the improvement comprising contacting said activated substrate with an accelerator comprised of an alkaline solution containing an oxidizing agent capable of oxidizing stannous tin to stannic tin, the amount of said oxidizing agent in said solution being sufficient to eliminate the protective effect of said compounds comprised of stannous tin compounds and increase the catalytic activity to electroless metal deposition of said deposited metal comprised of palladium on said substrate surface.

4,608,276

MANUFACTURING OPTICAL FIBRE

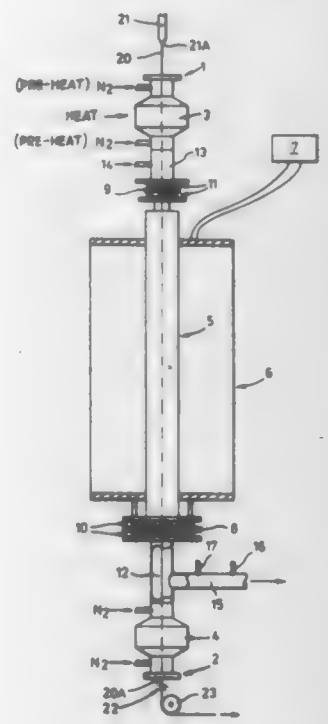
John C. Lamb, and Terence M. McHugh, both of Harlow, England, assignors to Standard Telephones and Cables Public Limited Company, London, England

Filed May 21, 1985, Ser. No. 736,327

Claims priority, application United Kingdom, Jun. 1, 1984, 8414054

Int. Cl.⁴ C03C *25/02*; B05D *5/06*

U.S. Cl. 427—163 **6 Claims**



1. A method of manufacturing an optical fibre comprising drawing the fibre through an on-line process chamber to physically and/or chemically change the surface of the fibre within the chamber, and sealing the atmosphere within the chamber at least at one end of the chamber by a seal into which a sealing gas is introduced and so controlled as to prevent the process gases escaping from the chamber without the fibre touching the walls of the seal and without vibrating the fibre.

4,608,277

ENCAPSULATED SALTS OF SPARING SOLUBILITY IN WATER, THEIR PREPARATION AND THEIR USE

Ulrich Greiner, Schöneck; Karl-Heinz Keil, Hanau-Mittelbuchen; Rüdolf Heinrich, and Konrad Albrecht, both of Kelkheim, all of Fed. Rep. of Germany, assignors to Casella Aktiengesellschaft, Frankfort am Main, Fed. Rep. of Germany

Division of Ser. No. 648,123, Sep. 6, 1984, Pat. No. 4,547,429.
This application Aug. 2, 1985, Ser. No. 761,909
Claims priority, application Fed. Rep. of Germany, Sep. 17, 1983, 3333654
Int. Cl.[4] B01J *13/02*
U.S. Cl. 427—213.3 8 Claims

1. In the process for the production of microcapsules of a solid substance being insoluble in water whereby a mixture of the substance to be microencapsulated and a polyurethane prepolymer containing free isocyanate groups is emulsified in water in the presence of a protective colloid and then reacting the polyurethane prepolymer of the mixture with a diamine or a polyamine with vigorous mixing, whereby from the polyurethane prepolymer and the diamine or polyamine a high molecular weight polyurethane is formed which encapsulates the substance to be encapsulated and the microcapsules formed are separated off,

the improvement comprises that the substance to be encapsulated is a salt of sparing solubility in water and the mixture contains the salt of sparing solubility in water and the polyurethane prepolymer in a weight relation of from 83:17 to 28:72 and that the polyurethane prepolymer contains 20 to 70 mole % of free isocyanate groups and that the polyurethane prepolymer is reacted with 10 to 100% of the equivalent amount of a diamine or a polyamine at temperatures of 0° to 80° C. and that the aqueous phase contains an electrolyte having a monovalent to trivalent cation selected from the first three groups of the periodic table, and from a monovalent to trivalent acid, in a concentration of 0.25% up to the saturation concentration, but not more than 50%.

4,608,278

SMALL PARTICULE FORMATION AND ENCAPSULATION

Sylvan G. Frank, Columbus, Ohio; Arne F. Brodin, Sodertalje, Sweden; Chih-Ming J. Chen, East Syracuse, N.Y., and Siriporn Panthuvanich, Columbus, Ohio, assignors to The Ohio State University Research Foundation, Columbus, Ohio

Continuation-in-part of Ser. No. 506,599, Jun. 22, 1983, abandoned. This application Jun. 15, 1984, Ser. No. 621,132
Int. Cl.[4] B01J *13/02*
U.S. Cl. 427—213.35 10 Claims

1. A process for encapsulating a weakly acidic organic compound whose solubility in water is greater at a first pH than at a second pH which process comprises:

(a) dissolving said compound in water in the presence of sufficient base to raise the pH to said first pH and at least 2 pH units above the pKa of the compound, together with an encapsulating material and an electrolyte which is effective, but present in an amount just insufficient to cause coacervation of the encapsulating material without interacting with it;

(b) stirring and titrating the solution with a titrant effective to reduce the pH of said solution to said second pH to cause the concurrent precipitation of the compound as small particles and formation of a coacervate of the encapsulating material; and

(c) gelling the encapsulating material.

3. A process according to claim 1, wherein the encapsulating material is selected from the group consisting of gelatin, methylcellulose, sodium carboxymethylcellulose, cellulose acetate phthalate, and polyvinylpyrrolidone.

4,608,279

GALVANIC CELLS HAVING ION EXCHANGE RESIN IN THEIR CATHODE MIX

Brooke Schumm, Jr., Bay Village, Ohio, assignor to Union Carbide Corporation, Danbury, Conn.

Filed Dec. 27, 1984, Ser. No. 686,750
Int. Cl.[4] H01M *6/06*
U.S. Cl. 429—224 11 Claims

1. A galvanic cell comprising

an anode;

an acidic electrolyte; and

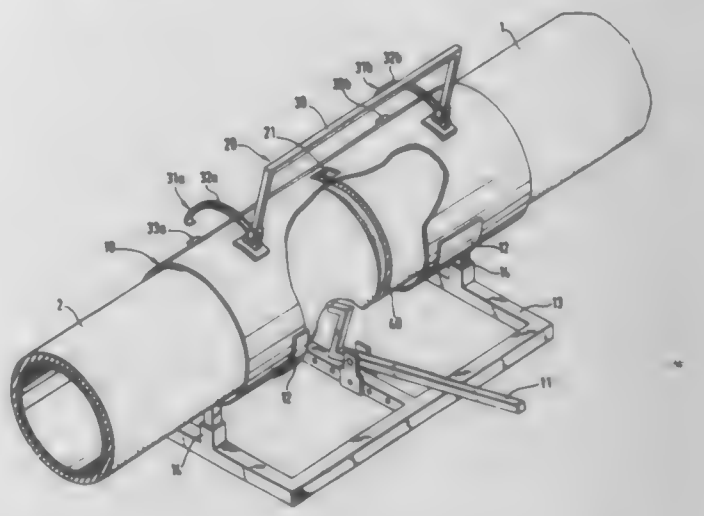
a wet cathode mix comprising electrolytic manganese dioxide and a conductive material in a ratio of greater than about 7:1 by weight, and an ion exchange resin in an amount between about 0.5 and 4.0 weight percent of said wet cathode mix.

4,608,280

POLYMER CONCRETE COMPOSITION, METHODS FOR LINING PIPES AND FOR FILLING GIRTHWELD CONCRETE CUTBACKS USING THE COMPOSITION

Richard M. Robinson, Strasbourg, France, and Gordon Svarc, Au, Switzerland, assignors to The Dow Chemical Company, Midland, Mich.

Filed Aug. 30, 1984, Ser. No. 645,584
Claims priority, application Fed. Rep. of Germany, Sep. 6, 1983, 3332080
Int. Cl.[4] C04B *26/18, 26/14;* C08F *299/02, 299/04*
U.S. Cl. 427—230 6 Claims



1. A polymer concrete composition which contains no transition metal compounds and comprises a vinyl ester or unsaturated polyester resin, a peroxy-containing free-radical initiator, an aminecontaining accelerator and a filler, the composition comprising from 10 to 35 weight percent of the vinyl ester resin or the unsaturated polyester resin, including any copolymerizable monomer, and from 65 to 90 weight percent of the filler, said weight percents being based on the total amount of vinyl ester or unsaturated polyester resin, including any copolymerizable monomer, and filler employed; and from 0.2 to 8 weight percent of the free-radical initiator and from 0.05 to 2 weight percent of the amine-containing accelerator, the amounts of free-radical initiator and amine-containing accelerator based on the total weight of the unsaturated polyester or vinyl ester, including any copolymerizable monomer contained in the resins.

4,608,281

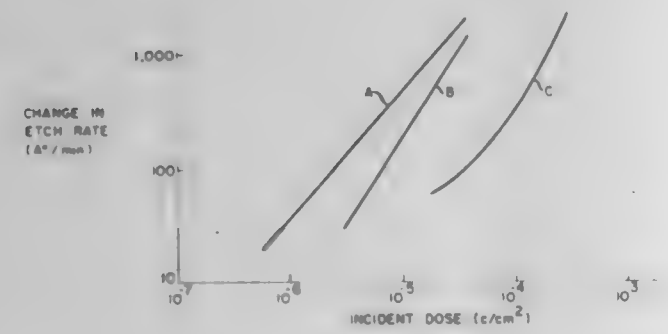
IMPROVEMENTS IN SENSITIVITY OF A POSITIVE POLYMER RESIST HAVING A GLASS TRANSITION TEMPERATURE THROUGH CONTROL OF A MOLECULAR WEIGHT DISTRIBUTION AND PREBAKED TEMPERATURE

Harry W. Deckman, Clinton, and John H. Dunsmuir, Annandale, both of N.J., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Continuation of Ser. No. 629,997, Jul. 12, 1984, abandoned, which is a continuation of Ser. No. 528,178, Aug. 31, 1983, abandoned, which is a continuation-in-part of Ser. No. 426,243, Sep. 28, 1982, abandoned. This application Jul. 31, 1985, Ser. No. 760,935

Int. Cl.[4] B05D *3/02*

U.S. Cl. 427—385.5 7 Claims



1. A method of increasing the sensitivity of a positive polymer resist having a glass transition temperature comprising:

A. obtaining a narrow molecular weight fraction positive polymer resist having $1 \leqq M_w/M_n < 1.5$ and $M_w < 500{,}000$ where M_w=weight-average molecular weight and M_n=number-average molecular weight, said resist dissolved in a solvent;

B. coating a substrate with said narrow fraction resist such that a portion of said solvent remains trapped in said coating; and

C. baking said narrow fraction resist coated substrate at a temperature below the glass transition temperature such that a portion of said solvent remains trapped in said coating.

4,608,282

FLUOROPOLYMER SURFACE LUBRICANT AND COATING

Harry V. Runge, Reston, Va., assignor to Fluorocarbon Technologies, Inc., Annapolis, Md.

Continuation-in-part of Ser. No. 722,724, Apr. 11, 1985. This application Apr. 11, 1985, Ser. No. 722,725

Int. Cl.[4] B05D *3/02;* C10M *105/52*

U.S. Cl. 427—385.5 28 Claims

24. A method of coating a surface with a thin film containing particles of a fluoropolymer comprising the steps of:

providing a dispersion comprising particles of a fluoropolymer and a carrier medium, which carrier medium comprises grease;

providing a solvent capable of diluting the dispersion and which is adapted to evaporate after application of the composition to the surface;

mixing the dispersion with the solvent to form a mixture such that said dispersion is well dispersed in said solvent; and

applying the mixture to a surface after which substantially all of the solvent evaporates thereby leaving a thin film containing the particles of a fluoropolymer on the surface.

4,608,283

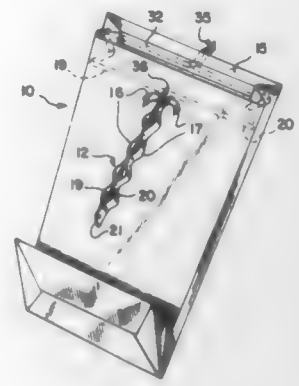
BAG WITH BOW

Ruth A. White, 550 Horton Ave., Tipp City, Ohio 45371

Filed Sep. 5, 1985, Ser. No. 772,810

Int. Cl.[4] D04D *7/10*

U.S. Cl. 428—4 3 Claims



1. In a gift package, the improvement comprising:

a bag with an open top,

means in said bag forming part of said top and defining draw string receiving portions which are proportioned to receive a ribbon therethrough in surrounding relation to said top,

a self-making ribbon type bow member having a pair of outside bow loop-forming ribbons and means defining an elongated inside operating ribbon member which may be pulled with respect to said outside ribbons to form a decorative bow by said outside ribbons, said inside ribbon member being threaded through said drawstring receiving portions of said bag and forming with respect to said bag a loop encircling said bag top with said outside ribbons positioned adjacent one side of said bag, said inside ribbon member having means defining a finger-gripping portion extending exteriorly of said bag on a side thereof remote from said outside ribbons, whereby pulling on said inside ribbon member at said finger-gripping portion causes said bag top to be closed by gathering action on said inside ribbon member and causes said outside ribbons to form a decorative bow closely adjacent an outer surface of said bag.

4,608,284

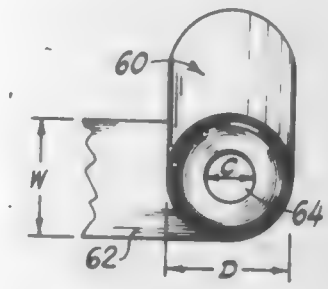
HEAT SHRINKABLE LABEL AND RELATED CONTAINER

John Roales, Hempstead, N.Y., assignor to Cellu-Craft Inc., New York, N.Y.

Filed Jan. 22, 1985, Ser. No. 693,191

Int. Cl.[4] B65D *1/12;* B32B *27/08*

U.S. Cl. 428—35 15 Claims



1. A label material comprising a lamination of first and second layers, said lamination having a determinable longitudinal direction, said first layer being of a material which is both dimensionally stable at room temperature and shrinkable at temperatures substantially elevated above room temperature, said first layer being of a material which is resistant to elongation at least in said longitudinal direction, the material of said second layer being moisture resistant, resistant to dimensional change at elevated said first layer being of bi-axially oriented

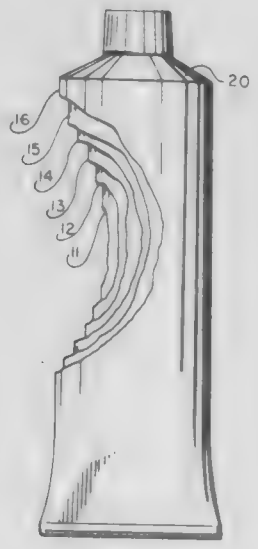
polystyrene having a thickness of 0.0005–0.003 inches. Said second layer being of non-oriented polypropylene having a thickness of 0.00025–0.002 inches.

4,608,285

LAMINATED SUBSTRATE AND COLLAPSIBLE DISPENSING CONTAINER MADE THEREFROM

Edward A. Tavss, Kendall Park, and David L. Carroll, Piscataway, both of N.J., assignors to Colgate-Palmolive Company, New York, N.Y.

Filed Dec. 29, 1983, Ser. No. 566,723
Int. Cl.[4] B65D *35/08*
U.S. Cl. 428—35 18 Claims



10. A collapsible paste dispensing container of layers of materials having low flavor absorption characteristics comprising a first innermost layer of an acetal polymer, a second layer of metal foil, a third layer of paper and an outermost fourth layer of an acetal polymer.

4,608,286

GAS BARRIER MULTILAYER PACKAGING MATERIAL HAVING EXCELLENT FLEXING ENDURANCE

Yasuo Motoishi, Kurashiki; Kenji Satoh, Tondabayashi, and Kyoichiro Ikari, Kurashiki, all of Japan, assignors to Kuraray Co., Ltd., Kurashiki, Japan

Filed Jan. 22, 1985, Ser. No. 693,126
Claims priority, application Japan, Jan. 31, 1984, 59-17485
Int. Cl.[4] B32B *27/30, 27/32*
U.S. Cl. 428—35 15 Claims

1. A gas barrier multilayer food packaging material having excellent flexing endurance suitable for use as an inner container in a bag-in-box or bag-in-carton assembly, which comprises an intermediate layer of a saponified product of an ethylene-vinyl acetate copolymer having a thickness of from 5–20μ, and surface layers of linear low-density polyethylene on both sides of said intermediate layer, each of said surface layers having a thickness of from 25–60μ, the layers being adhered to each other by an adhesive resin.

4,608,287

CONFORMABLE COVERING WITH HIGH COEFFICIENT OF FRICTION

Gérard Biotteau, Saint Pierre Montlimart, France, assignor to S.A.R.L. Manufacture Francaise des Chaussures Eram, Saint pierre Montlimart, France

Filed Jun. 7, 1983, Ser. No. 501,906
Claims priority, application France, Jun. 15, 1982, 82 10464
Int. Cl.[4] A61F *13/02*
U.S. Cl. 428—40 6 Claims

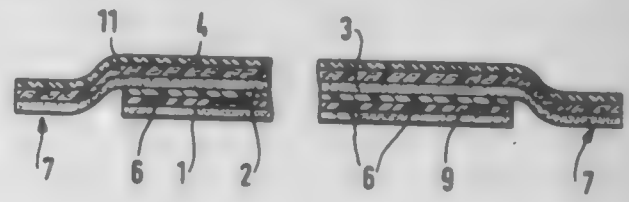
1. A conformable sheet covering with high coefficient of friction, comprising an upper layer formed of a fine powder at least partially imbedded in a curable resin layer bonded to a lower support layer, wherein the support layer is made of a thin sheet material having an elongation coefficient between 20 and 60% for a tensile force per linear centimeter less than 20N, a layer of contact adhesive on the back face of the support layer, and a pull off film protecting the adhesive layer, whereby the sheet can be stretched to conform to the contours of a three-dimensional surface and said adhesive will thereafter retain the sheet in the shape of said contours.

4,608,288

TAMPER PROOF LABEL OR SEAL

Heinz Spindler, Neu-Ulm, Fed. Rep. of Germany, assignor to Joachim Dudzik, Nürtingen and Winifred Dudzik, Neckartailfingen, both of, Fed. Rep. of Germany

Filed Aug. 21, 1984, Ser. No. 642,960
Int. Cl.[4] B32B *3/14*
U.S. Cl. 428—78 10 Claims



1. A label, comprising in combination
a transparent base foil having first and second surfaces, said first surface including at least one preselected area;
a first adhesive layer;
an intermediate layer interposed between said first surface of said base foil and said first adhesive layer, said preselected area constituting a region of decreased adhesion between said base foil and said intermediate layer, said intermediate layer adhering to a said first adhesive layer outside of said preselected area at a certain adhesion exceeding said decreased adhesion, and
a cover foil carrying a second adhesive layer, said second adhesive layer being applied to said second surface of said base foil so as to be aligned therewith in an initial position, said cover foil extending past said base foil so as to create a protective rim therebeyond, and being irreversibly deformable upon application of a force thereto,
whereby, upon even partial removal of said cover foil from said base foil, any subsequently attempted realignment of said cover foil with said base foil in an endeavor to achieve said initial aligned position is no longer feasible.

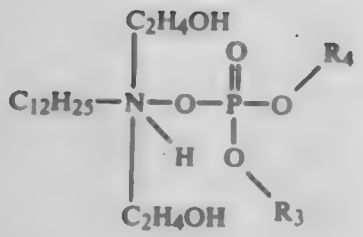
4,608,289

CARPET CONTAINING SANITIZING COMPOUNDS AND METHODS

Robert H. McIntosh, Greensboro, N.C., assignor to Interface Research Corporation, Atlanta, Ga.

Continuation of Ser. No. 523,734, Aug. 16, 1983, abandoned, which is a continuation of Ser. No. 226,006, Jan. 19, 1981, abandoned, which is a continuation of Ser. No. 149,555, May 13, 1980, abandoned, which is a continuation of Ser. No. 930,879, Aug. 4, 1978, abandoned. This application Mar. 8, 1984, Ser. No. 570,952
Int. Cl.[4] D03D *27/00*
U.S. Cl. 428—95 2 Claims

1. A self-sanitizing, carpet product including thermoplastic surface yarn and a backing coat, said carpet product having an upper portion, and said backing coat including as a homogeneously distributed additive therein, an alkyl phosphate of the formula:



where:

R_3=an alkyl group of up to 18 carbon atoms;

R_4=R_3

said alkyl phosphate being present in said backing coat at a concentration of between 0.01% and 10% by weight based on the weight of said backing coat, and said backing coat being selected from the group consisting of a polyvinyl chloride emulsion and a styrene butadiene resin; and

said backing coat and said surface yarn being constructed and arranged so that alkyl phosphate in said backing coat will migrate by capillary action from said backing coat toward said upper portion of said carpet product to inhibit the growth of microorganisms therein.

4,608,290

STABLE SELVAGE INTERMEDIATE FOR WEFT INSERTED WARP KNIT DRAPERIES

Julius R. Schnegg, Burlington, N.C., assignor to Burlington Industries, Inc., Greensboro, N.C.

Continuation-in-part of Ser. No. 661,072, Oct. 15, 1984. This application Oct. 18, 1985, Ser. No. 789,116

Int. Cl.⁴ B32B *3/08, 5/08, 5/12;* **D04B** *21/14*

U.S. Cl. 428—101 **20 Claims**

1. An intermediate fabric produced in the production of a decorative fabric, the intermediate fabric comprising:

a warp-wise dimensionally stable substrate having a first face;

weft yarns disposed on the first face of the substrate and extending parallel to each other;

stitching thread for holding the weft yarns on the first face;

said stitching thread in a central body section of the fabric, between opposite edges thereof in a direction perpendicular to the machine direction, being disposed in a dimensionally unstable, but aesthetic, basically zigzag configuration in the machine direction; and

said stitching thread in the selvage portions of said fabric, on opposite sides of the said central body section thereof, being disposed in a dimensionally stable configuration.

11. A method of making a dimensionally stable decorative fabric utilizing a weft-inserted warp knitting machine having three stitching bars, comprising the steps of:

(a) feeding a warp-wise stable substrate in the machine direction of a knitting machine;

(b) inserting weft yarn in a direction perpendicular to the moving direction of the substrate utilizing the knitting machine;

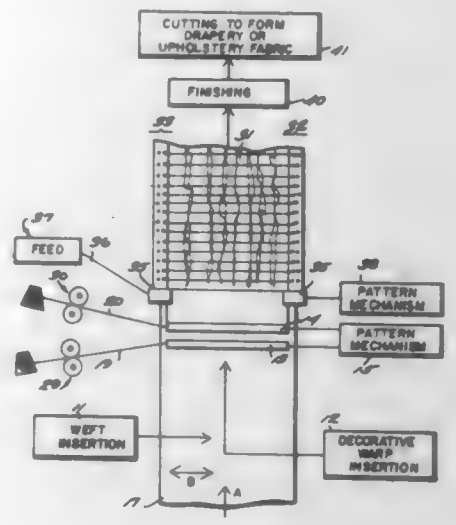
(c) feeding stitching thread to the first and second stitching bars;

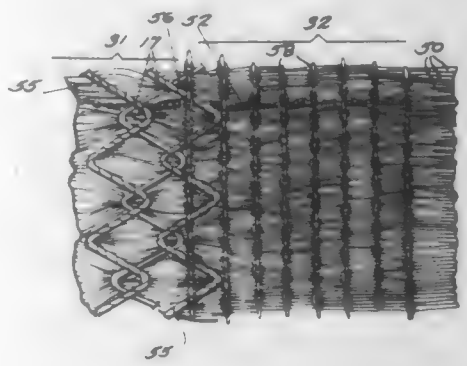
(c1) feeding stitching thread to the third stitching bar;

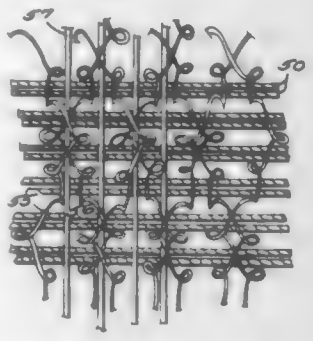
(d) in a central body portion of the substrate while stitching with the first and second stitching bars, to cause the stitching thread to hold the weft yarn in place on the substrate, moving the stitching bars in opposite directions in a basically zigzag form to create a dimensionally unstable but aesthetic pattern of stitching thread, in the machine direction of the fabric produced;

(d1) on selvage edge portions of the substrate in the machine direction, stitching with the third stitching bar while moving it in a pattern so as to create dimensionally stable stitching;

practicing steps (c1) and (d1) simultaneously with steps (c) and (d);







(e) finishing the fabric produced by steps (a)–(d1); and

(f) cutting the finished fabric to form desired fabric pieces.

4,608,291

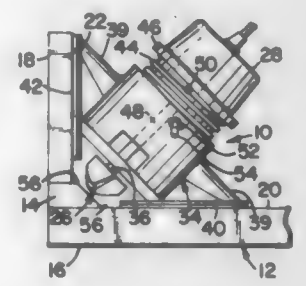
METHOD FOR MAKING A COUNTER TOP AND PRODUCT OF SAME

Gene G. Gove, Box 636, 1237 W. 13th, Hastings, Minn. 55033

Filed Dec. 12, 1983, Ser. No. 560,318

Int. Cl.⁴ B05D *5/12*

U.S. Cl. 428—119 **2 Claims**



1. A method for making a counter top comprising the steps of:

fastening a connecting slab having parallel upper and lower

sides between horizontal and vertical orthogonal slabs, said horizontal slab having a flat top surface and said vertical slab having a flat front surface; and

sliding a rotating shaping tool across said connecting slab to arcuately shape said connecting slab to tangentially meet the flat top surface and the flat front surface of said horizontal and vertical slabs.

2. A counter top prepared by a process comprising the steps of:

fastening a connecting slab having parallel upper and lower sides between horizontal and vertical orthogonal slabs, said horizontal slab having a flat top surface and said vertical slab having a flat front surface; and

sliding a rotating shaping tool across said connecting slab to arcuately shape said connecting slab to meet the flat top surface and the flat front surface of said horizontal and vertical surfaces.

4,608,292

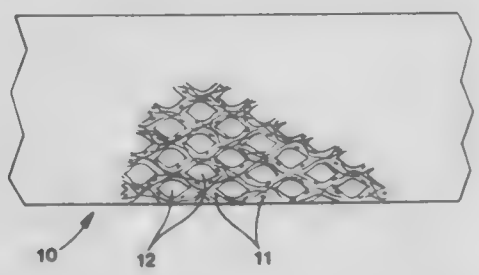
WEB WITH ENHANCED FLUID TRANSFER PROPERTIES AND METHOD OF MAKING SAME

Frederich O. Lassen, Winnebago County, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.

Filed Oct. 17, 1983, Ser. No. 542,332

Int. Cl.[4] B32B *3/10*

U.S. Cl. 428—131 4 Claims



1. An absorbent web comprising linear oriented absorbent fibers in thermoplastic material said web including a purality of spaced apertures extending downward through the web surface thereby increasing the available surface area for fluid absorption.

4,608,293

COMPOSITE SUBSTRATE FOR A THIN-FILM MAGNETIC HEAD

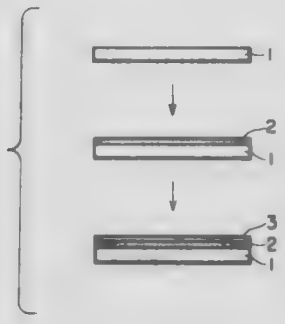
Toshiaki Wada, and Yoshiaki Katsuyama, both of Osaka, Japan, assignors to Sumitomo Special Metal Co., Ltd., Osaka, Japan

Filed Mar. 2, 1983, Ser. No. 471,491

Claims priority, application Japan, Jul. 27, 1982, 57-131834

Int. Cl.[4] G11B *7/12*

U.S. Cl. 428—141 5 Claims



1. A composite substrate for a thin-film magnetic head comprising a substrate made of a material selected from the group consisting of soft magnetic and non-magnetic materials and an insulating film on said substrate, said insulating film having a surface opposite to said substrate which has a surface roughness not greater than 50 Å and is stress-free, said composite substrate being made by (1) providing a substrate made of a material selected from the group consisting of soft magnetic and non-magnetic materials, (2) forming an insulating film on said substrate, said insulating film having a surface opposite to said substrate, (3) placing said substrate with insulating film therein in an aqueous suspension containing between 0.5 and 20% by weight of one or more polishing powders selected from the group consisting of MgO, SiO_2 and Al_2O_3, each polishing powder having a particle diameter of not greater than 0.1 micron, and (4) polishing the insulating film on said substrate using a rotating polisher to provide a surface roughness to said insulating film of not greater than 50 Å and a stress-free character and thus form said composite substrate.

4,608,294

PROCESS FOR OBTAINING AREAS OF DISTINCTIVE APPEARANCE ON SYNTHETIC COVERINGS AND THE PRODUCT DERIVED THEREFROM

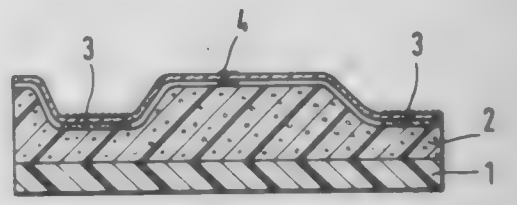
Jean-Francois Courtoy, Wiltz, and Daniel Marchal, Esch sur Alzette, both of Luxembourg, assignors to Eurofloor S.A., Luxembourg, Luxembourg

Filed Apr. 25, 1984, Ser. No. 603,843

Claims priority, application Luxembourg, Apr. 25, 1983, 84765; Aug. 11, 1983, 84957

Int. Cl.[4] B05D *3/06*

U.S. Cl. 428—141 36 Claims



1. A process of obtaining areas of distinctive appearance on a synthetic covering, the covering including a support layer, including the steps of:

depositing at least a first polymeric coating having at least one first polymerization initiator thereon onto a first selected area of said support layer;

depositing at least a second polymeric coating having at least one second polymerization initiator therein onto a second selected area of said support layer, said first and second polymerization initiators each being comprised of one of a combination of two initiators which decompose under different spectral conditions, said two initiators comprising two of the three initiators selected from the group consisting of thermal initiators, ultraviolet radiation initiators and ionic initiators, at least a portion of said second polymeric coating comprising a crosslinkable monomer;

pre-gelling said deposited coatings;

graining selected areas of said deposited coatings to form a matted surface;

polymerizing said first polymeric coating via said first initiator wherein said first polymeric coating is fixed to said support layer, and wherein said matted surface on said first polymeric coating is fixed thereon; and

gelling said second polymeric coating to cause fluidization of said second polymeric coating thereby smoothing said matted surface thereon.

4,608,295

PAPER SUPPORT

Henner Drum, Rhodt, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Oct. 11, 1984, Ser. No. 659,965

Claims priority, application Fed. Rep. of Germany, Oct. 12, 1983, 3337023

Int. Cl.[4] B32B *7/06, 27/10*

U.S. Cl. 428—202 14 Claims

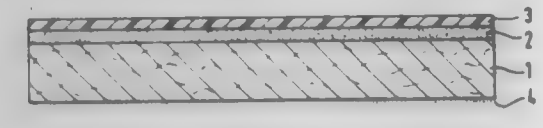
1. A paper support which is suitable for use as a base for

printed layers and/or varnish layers which are applied to one side of the support, in particular for slide-off decals, comprising:

a layer of an essentially aluminum ion-free paper;

a barrier layer applied to the obverse surface of said paper;

a release layer applied to said barrier layer; and



a covering coating comprising a fluoroalkylphosphate applied to the reverse surface of said paper.

2. A slide-off decal, comprising a varnish masking film containing an image applied to a paper support, wherein said support comprises a paper support as defined in claim 1.

4,608,296

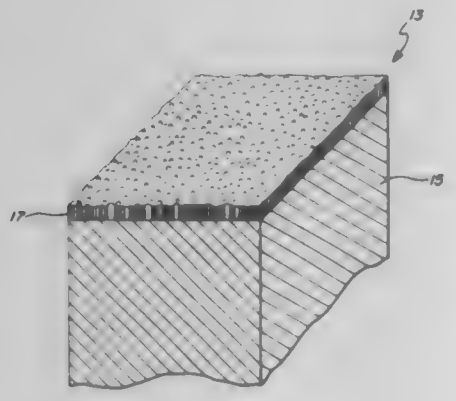
SUPERCONDUCTING FILMS AND DEVICES EXHIBITING AC TO DC CONVERSION

John E. Keem; Stanford R. Ovshinsky; Hossein Sadate-Akhavi, all of Bloomfield Hills; Juei-Teng Chen, Sterling Heights, and Alan M. Kadin, Troy, all of Mich., assignors to Energy Conversion Devices, Inc., Troy, Mich.

Filed Dec. 6, 1983, Ser. No. 558,616

Int. Cl.[4] H01L *39/22, 21/203*

U.S. Cl. 428—215 13 Claims



1. A superconducting film comprising:

a non-equilibrium structure providing local variations in superconducting transition temperature, said structure formed from at least two components, at least one of said components being a metallic material and at least one of said components being a non-metallic material, said structure including a plurality of regions exhibiting characteristic lengths in at least two directions through the structure of less than 500 Angstroms to provide AC to DC conversion of an RF AC signal imposed on the structure in the absence of a magnetic field applied thereto, said structure having an oxygen content throughout the structure of less than ten percent, said structure includes a microscopically inhomogeneous microstructure providing said characteristic length and said microstructure being a columnar microstructure.

9. A superconducting film comprising:

a non-equilibrium structure providing local variations in superconducting transition temperature, said structure formed from at least two components, at least one of said components being a metallic material and at least one of said components being a non-metallic material, said structure including a plurality of regions exhibiting characteristic lengths in only one direction through the structure of less than 500 Angstroms to provide AC to DC conversion of an RF AC signal imposed on the structure in the presence of a magnetic field applied thereto, said structure having an oxygen content throughout the structure of less than ten percent, and said structure being multilayer composite film providing said characteristic length.

4,608,297

MULTILAYER COMPOSITE SOFT MAGNETIC MATERIAL COMPRISING AMORPHOUS AND INSULATING LAYERS AND A METHOD FOR MANUFACTURING THE CORE OF A MAGNETIC HEAD AND A REACTOR

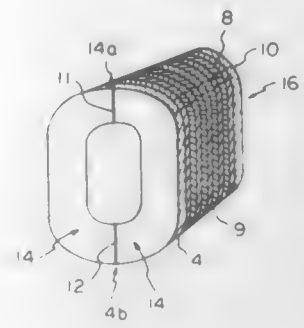
Yutaka Shimada; Hiroshi Kojima, both of Sendai, and Takashi Hasegawa, Fujisawa, all of Japan, assignors to Showa Denka Kabushiki Kaisha, Japan

Continuation of Ser. No. 468,794, Feb. 22, 1983, abandoned. This application May 17, 1985, Ser. No. 734,827

Claims priority, application Japan, Apr. 21, 1982, 57-65500; Dec. 24, 1982, 57-232984; Dec. 24, 1982, 57-232985

Int. Cl.[4] G11B *5/147;* B32B *9/00*

U.S. Cl. 428—215 5 Claims



1. A multilayer composite soft magnetic material comprising a non-magnetic base having provided thereon by sputtering a plurality of laminates, said plurality of laminates having an effective permeability (u_{eff}) between 10^3 and 10^4 at a frequency of between 20 KHz and 100 MHz, and an overall thickness of less than or equal to 100 microns,

wherein each of said laminates comprises an amorphous magnetic alloy layer and an insulating material layer,

wherein each of said amorphous magnetic layers exhibits virtually zero magnetostriction and consists of a composition expressed by $(TM)_{1-x}(M_I, M_{II})_x$, wherein TM consists essentially of greater than 90 and up to 100 atomic percent Co, and 0 to less than 10 atomic percent of at least one metallic element selected from the group consisting of Fe and Ni, M_I is least one element selected from the group consisting of Zr, Hf, and Y, M_{II} is at least one metallic element selected from the group consisting of Nb, Ta, Mo, and W, x is from 0.05 to 0.2, and the ratio $M_{II}/(M_I$ and $M_{II})$ is from 0.3 to 0.9,

wherein each of said insulating material layers consist of one member selected from the group consisting of SiO_2, Al_2O_3, ceramic material, and glass,

and, wherein the thickness of each of said amorphous magnetic alloy layers is 10 microns or less, and the thickness of each of said insulating material layers is from about 30 angstroms to about 500 angstroms.

4,608,298

WEATHER PROOF INSULATING TEXTILE FABRIC COMPOSITE

Harry J. Klaff, Owings Mills, Md., assignor to Rockland Industries, Baltimore, Md.

Filed Sep. 5, 1985, Ser. No. 772,849

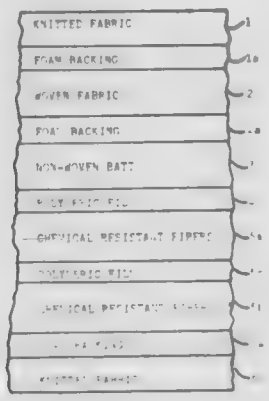
Int. Cl.[4] B32B *7/00*

U.S. Cl. 428—246 32 Claims

21. A weather resistant, vertically foldable, insulating, multilayered textile fabric composite comprising:

(1) a first outer layer composed of a knitted textile fabric having tightly interlaced synthetic textile yarns, which layer has water repellency properties;

(2) a second inter-layer next to said first layer composed of a non-woven batt of insulating textile fibers;
(3) a third inter-layer next to said second layer composed of an impervious synthetic polymeric film;
(4) a fourth inside layer next to said third layer composed of a textile fabric, which layer has water repellency properties;



said layers being stitched together by rows of stitches of synthetic textile yarns, which rows of stitches are at least horizontally disposed such that said composite is vertically foldable; and
wherein said composite has an insulating R value of at least 3 at a total composite thickness of at least less than 0.50 inch.

4,608,299

WATER-VAPOR-PERVIOUS, OPTIONALLY WATERPROOF, HEAT INSULATING MATERIAL

Haruo Nomi, Wake, Japan, assignor to Junkosha Company Ltd., Tokyo, Japan

Continuation of Ser. No. 711,231, Mar. 13, 1985. This application Jan. 31, 1986, Ser. No. 824,859
Claims priority, application Japan, Mar. 16, 1984, 59-45158
Int. Cl.⁴ B32B *5/16, 3/26*
U.S. Cl. 428—283 **1 Claim**

1. An improved water-vapor-pervious heat insulating material comprising a water-vapor-pervious insulating base material having a discontinuous layer of reflective particles adhered to a surface of said base material by a layer of non-porous resinous adhesive which is pervious to water vapor but impervious to liquid water, wherein said reflective particles are particles of aluminum and wherein said base material is porous, expanded polytetrafluoroethylene, and wherein the amount of said reflective particles is less than 10% by weight bases on said resinous adhesive.

4,608,300

FIBRE COMPOSITE MATERIALS IMPREGNATED WITH A CURABLE EPOXIDE RESIN MATRIX

Urs Gruber, Arlesheim, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Jun. 11, 1984, Ser. No. 619,751
Claims priority, application Switzerland, Jun. 21, 1983, 3390/83
Int. Cl.⁴ B32B *27/26;* **C08G** *59/56, 65/10*
U.S. Cl. 428—285 **8 Claims**

1. A fibre composite impregnated with a solvent-free epoxide resin matrix curable at a temperature less than 120° C. which contains
(a) a liquid epoxide resin or a liquid mixture of epoxide resins,
(b) an aliphatic or cycloaliphatic primary monoamine and-/or disecondary diamine and
(c) a tertiary amine epoxy curing agent or imidazole which cures by catalysis, there being present in the curable epoxide resin matrix, for 1 epoxide equivalent of the epoxide resin (a), 0.15 to 0.8 amine hydrogen equivalent of the amine component (b) and 0.01 to 0.1 mole of the tertiary amine (c).

8. A fibre composite system, in particular a fibre composite laminate, prepared from the fibre composite according to claim 1 and, if appropriate, other materials, by shaping and crosslinking the resin matrix.

4,608,301

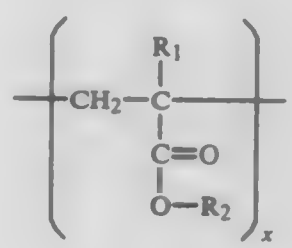
RADIOGRAPHIC INTENSIFYING SCREEN

Akio Ishizuka, Fujinomiya; Hisashi Yamazaki, and Kikuo Yamazaki, both of Kaisei, all of Japan, assignors to Fuji Photo Film Co., Ltd., Japan

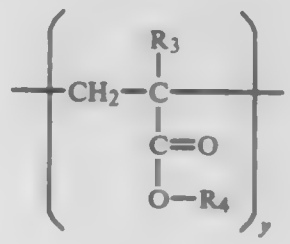
Filed Aug. 1, 1984, Ser. No. 636,595
Claims priority, application Japan, Aug. 2, 1983, 58-141457; Jul. 31, 1984, 59-163363
Int. Cl.⁴ B32B *5/16, 27/06;* **H01J** *1/68*
U.S. Cl. 428—328 **10 Claims**

1. A radiographic intensifying screen comprising a plastic film support and a phosphor layer provided thereon which comprises a binder and a phosphor dispersed therein, said binder containing a (meth)acrylic copolymer in the amount of 5–100% by weight, having repeating units represented by the formulas (I), (II) and (III):

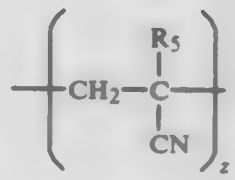
(I)



(II)



(III)



in which each of R_1, R_3 and R_5 is independently a hydrogen atom or an alkyl group; R_2 is a group selected from those consisting of an alkyl group, a cycloalkyl group, an aryl group, a heterocyclic group and an aralkyl group; R_4 is a hydrogn atom or an alkyl group, provided that R_4 is not identical to R_2; and x, y and z which represent molar percents are numbers satisfying the conditions of $5 \leqq x \leqq 99$, $1 \leqq y+z \leqq 95$ and $x+y+z \geqq 90$.

4,608,302

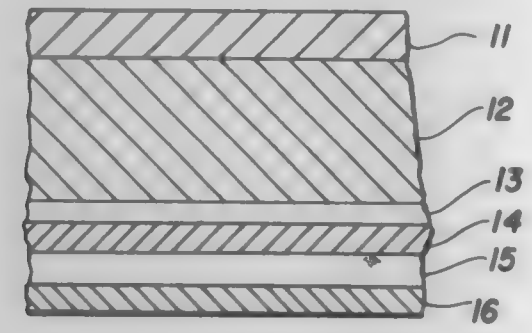
ORIENTED FILMS FROM PROPYLENE COPOLYMERS AND UNPLASTICIZED SARAN

Henry G. Schirmer, Spartanburg, S.C., assignor to W. R. Grace & Co., Cryovac Div., Duncan, S.C.

Filed Jan. 30, 1985, Ser. No. 696,287
Int. Cl.⁴ B65B *25/22;* **B32B** *27/08;* **B65D** *81/34*
U.S. Cl. 428—349 **7 Claims**

1. A heat-shrinkable thermoplastic film suitable for the packaging of food products comprising:
(a) a first, heat-sealable food contact layer comprising propylene homopolymer or copolymer;
(b) a second layer taken from the group consisting of propylene homopolymer, propylene copolymer, ethylene copolymer, butylene homopolymer, or blends thereof;

(c) a third or adhesive layer comprising a copolymer of ethylene;
(d) a fourth or barrier layer comprising a low viscosity unplasticized vinylidene chloride copolymer;



(e) a fifth or adhesive layer; and
(f) a sixth or optical clarity layer as in said first or second layer.

4,608,303

PRODUCTION OF ARTICLES FROM MINERALS

Denis G. H. Ballard, Chester; Colin S. Cundy, Frodsham; Graham R. Rideal, Chester, and David C. W. Morley, Preston, all of England, assignors to Imperial Chemical Industries PLC, London, England

Continuation-in-part of Ser. No. 116,150, Jan. 28, 1980, abandoned, which is a continuation of Ser. No. 22,078, Mar. 19, 1979, abandoned, which is a continuation of Ser. No. 831,913, Sep. 9, 1977, abandoned. This application Jun. 9, 1982, Ser. No. 386,670

Claims priority, application United Kingdom, Sep. 23, 1976, 39510/76; Dec. 9, 1976, 51425/76

Int. Cl.[4] B32B *19/00*

U.S. Cl. 428—357 22 Claims

1. A process for the production of shaped articles from vermiculite comprising the steps of:
(1) swelling, by contacting vermiculite ore with an aqueous solution of at least one salt of sodium, lithium, or an organosubstituted ammonium cation, followed by aqueous washing, so that the ore swells to at least twice its original volume,
(2) delamination of the swollen vermiculite, by subjecting the particles in the aqueous suspension from step (1) to a shearing action until a suspension containing vermiculite particles having dimensions less than 50 microns is produced,
(3) elimination from the suspension from step (2) of essentially all particles having a diameter larger than 50 microns and,
(4) formation of shaped articles from the resultant aqueous suspension by the removal of water from the suspension whilst the article is being shaped against a solid surface by deposition of vermiculite particles from the suspension.

4,608,304

GLASS FIBERS COATED WITH AQUEOUSLY DISPERSED COATING COMPOSITIONS

James W. Rosthauser, Imperial, Pa., assignor to Mobay Corporation, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 429,708, Sep. 30, 1982, Pat. No. 4,522,851. This application Feb. 8, 1985, Ser. No. 699,531

Claims priority, application European Pat. Off., Feb. 11, 1984, [illegible]

The portion of the term of this patent subsequent to Jun. 11, 2002, has been disclaimed.

Int. Cl.[4] D02G *3/00*

U.S. Cl. 428—378 6 Claims

1. A process for the production of coated glass fibers which comprises
(1) applying an aqueously dispersed, heat-curable coating composition comprising
(a) a water-dispersible epoxy resin component containing external and/or chemically incorporated non-ionic emulsifiers and
(b) a water-dispersible, blocked polyisocyanate component containing chemically incorporated anionic hydrophilic groups
in a weight ratio of component (a) to component (b) of about 1:10 to 10:1 to said glass fibers and
(2) curing the coated glass fibers at elevated temperature.

4,608,305

BINDER AND SHOEBOARD PRODUCTS CONTAINING THREE HEAT REACTIVE RESINS

Alphonse R. Presto, Holyoke, Mass., assignor to Texon, Inc., Farmington, Conn.

Filed Jun. 18, 1984, Ser. No. 621,936

Int. Cl.[4] C08L *33/08;* D06M *21/00*

U.S. Cl. 428—365 10 Claims

1. A binder for shoeboard material comprising a dispersion of three heat reactive copolymers including:
(a) from about 20 to about 45 percent by weight, based on the total weight of copolymers, of a copolymer which comprises:
(i) about 70 to about 80 percent by weight of ethyl acrylate,
(ii) about 7 to about 13 percent by weight of methyl methacrylate,
(iii) about 4 to about 8 percent by weight of acrylonitrile, and
(iv) about 0.5 to about 4 percent by weight of a functional monomer which comprises acrylamide, N alkylol acrylamide, methacrylic acid, derivatives of methacrylic acid or mixtures of these;
(b) from about 35 to about 65 percent by weight, based on the total weight of copolymers, of a copolymer which comprises:
(i) styrene and butadiene in approximately equivalent percentages by weight, and
(ii) N methylol acrylamide in an amount up to about 5 percent by weight; and
(c) from about 3 to about 18 percent by weight, based on the total weight of copolymers, of a copolymer which comprises:
(i) about 85 percent by weight styrene;
(ii) about 15 percent by weight butadiene; and
(iii) about 2 percent by weight of carboxylic acid and/or a derivative of carboxylic acid.

5. A shoeboard material comprising a fiberous sheet material impregnated with a binder comprising a dispersion of three heat reactive copolymers including:
(a) from about 20 to about 45 percent by weight, based on the total dry weight of copolymers, of a copolymer which comprises:
(i) about 70 to about 80 percent by weight of ethyl acrylate,
(ii) about 7 to about 13 percent by weight of methyl methacrylate,
(iii) about 4 to about 8 percent by weight of acrylonitrile, and
(iv) about 0.5 to about 4 percent by weight of a functional monomer which comprises acrylamide, N alkylol acrylamide, methacrylic acid, derivatives of methacrylic acid or mixtures of these;
(b) from about 35 to about 65 percent by weight, based on the total dry weight of copolymers, of a copolymer which comprises:
(i) styrene and butadiene in approximately equivalent percentages by weight, and
(ii) N methylol acrylamide in an amount up to about 5 percent by weight; and
(c) from about 3 to about 18 percent by weight, based on the

total dry weight of copolymers, of a copolymer which comprises:
(i) about 85 percent by weight styrene;
(ii) about 15 percent by weight butadiene; and
(iii) about 2 percent by weight of carboxylic acid and/or a derivative of carboxylic acid.

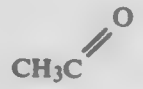
4,608,306

ANTI-TREEING ADDITIVES CONTAINING A POLYOLEFIN AND A SILOXANE HAVING AROMATIC ORGANIC GROUPS

Gary A. Vincent, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Continuation-in-part of Ser. No. 483,357, Apr. 8, 1983, abandoned. This application Jun. 19, 1984, Ser. No. 622,044
Int. Cl.[4] C08L *23/08;* B32B *25/20*
U.S. Cl. 428—391 10 Claims

1. A composition consisting essentially of a polyolefin and 1.0 to 5.0 weight percent, based on the total weight of the polyolefin, of an additive selected from
(i) cyclic siloxanes containing at least one aromatic group attached to silicon through a silicon-carbon bond;
(ii) liner siloxanes having the general formula $HO\{C_6H_5(CH_3)SiO\}_xH$ wherein x has a value of from 2 to 10,
(iii) linear siloxanes having the general formula $RO\{C_6H_5(CH_3)SiO\}_xR$ wherein x has a value of from 2 to 36 and R is selected from a group consisting of CH_3O— and



4,608,307

JEWELLING AND ORNAMENTAL MATERIAL AND PROCESS FOR PRODUCTION THEREOF

Yuji Nakano, Kameoka; Kazushi Kamiyama, and Tatuo Kobayashi, both of Kyoto, all of Japan, assignors to Kyocera Corporation, Tokyo, Japan

Filed Oct. 25, 1984, Ser. No. 664,710
Claims priority, application Japan, Oct. 26, 1983, 58-201345
Int. Cl.[4] B32B *3/22, 5/16*
U.S. Cl. 428—402 9 Claims

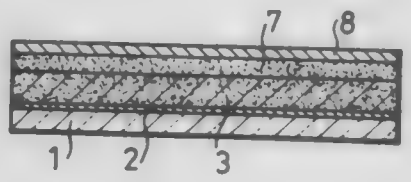
1. A jewelling and ornamental material comprising a calcined structure consisting essentially of many amorphous silica spheres regularly arranged in a three-dimensional array, said amorphous silica spheres having a particle diameter in the range of 150 to 400 mμ, and a zirconium compound filled in pores existing among the amorphous silica spheres, the amount of the zirconium compound being 0.005 to 8% by weight, as zirconium, based on the entire material.

4,608,308

DISPERSIVE TYPE ELECTROLUMINESCENT DEVICE AND METHOD FOR MANUFACTURING SAME

Masami Igarashi; Yoshinori Kato, and Yoshimi Kamijo, all of Furukawa, Japan, assignors to Alps Electric Co., Ltd., Japan

Filed Apr. 30, 1984, Ser. No. 605,596
Claims priority, application Japan, Apr. 28, 1983, 58-73722
Int. Cl.[4] H05B *33/12;* B32B *17/06*
U.S. Cl. 428—408 6 Claims



1. A dispersive type electroluminescent device comprising a fluorescent layer coated on a transparent electrode and an opposing electrode provided opposed to said transparent electrode with said fluorescent layer interposed therebetween, wherein said opposing electrode is composed of a laminated structure comprising a conductive layer formed on said fluorescent layer and a low resistance layer formed on said conductive layer, where said conductive layer is mainly composed of conductive fine particles, and a majority of said conductive fine particles are three-dimensionally in contact with each other forming a conductive path and enter the fine clearance at the surface of said fluorescent layer; and said conductive layer does not contain a synthetic resin binder.

6. A method of forming a dispersive type electroluminescent device comprising:
forming a transparent electrode on a transparent substrate;
forming a fluorescent layer on said transparent electrode; and
forming a conductive layer by depositing a liquid containing a dispersion of conductive fine particles in an organic liquid without any synthetic resin binder onto said fluorescent layer and drying up said liquid so that only said conductive fine particles are left to enter fine clearances in the surface of said fluorescent layer.

4,608,309

THERMAL ENERGY STORAGE SLURRY MATERIAL

Ih-Houng Loh, Cambridge; Robert E. Cohen, Jamaica Plain, and Raymond F. Baddour, Belmont, all of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Apr. 22, 1985, Ser. No. 725,617
Int. Cl.[4] B05D *3/04;* C08J *3/24*
U.S. Cl. 428—409 9 Claims

1. A thermal energy storage material comprising a slurry consisting essentially of substantially non-sticking particles of a polyolefin mixed with a fluid, said fluid being a chemically inert liquid at temperatures and pressures used for thermal energy storage, said particles having substantially the entire surface portions of substantially all of said particles crosslinked at a depth less than 1000 Angstroms to prevent fusing of said particles to each other at relatively high temperature utilized for thermal energy storage wherein the heat of fusion of said particles is substantially identical to said particles of polyolefin prior to surface crosslinking.

7. A process for preparing a thermal energy storage material comprising contacting non-sticking particles consisting essentially of a polyolefin with a relatively cold plasma gaseous medium for crosslinking substantially the entire surface portion of substantially all of said particles at a depth less than 1000 Angstroms and forming surface modified particles, said crosslinking being sufficient to prevent fusing of said particles to each other at relatively high temperatures utilized for thermal energy storage, said surface crosslinked particles having a heat of fusion substantially identical to said particles of polyolefin prior to surface modification, mixing said surface crosslinked particles with a fluid to form a slurry for thermal energy storage, said fluid being a chemically inert liquid at temperatures and pressures used for thermal energy storage.

4,608,310

POLYCARBONATE, LATEX COMPOSITIONS COMPRISING SUCH

Tsang J. Chen, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 20, 1983, Ser. No. 506,248
Int. Cl.[4] B32B *5/12*
U.S. Cl. 428—412 5 Claims

1. An element comprising a support bearing a layer of a polycarbonate having from about 0.1 to 30 mole percent of recurring units containing a carboxyl or tertiary amine acid addition salt component.

4,608,311

MULTILAYER POLYCARBONATE STRUCTURES

Harold F. Giles, Jr., Cheshire, and Robert P. Hirt, Jr., Lenox, both of Mass., assignors to General Electric Company, Mt. Vernon, Ind.

Filed Jan. 2, 1985, Ser. No. 688,196
Int. Cl.[4] B32B *27/08, 27/36*
U.S. Cl. 428—412 29 Claims

1. A multilayer structure consisting essentially of:
(i) at least one polycarbonate layer;
(ii) at least one olefin alcohol layer; and
(iii) at least one unmodified polyolefin layer; said layers being adhered together by means of tie layers disposed between said layers, said tie layers consisting essentially of a tie material selected from olefin vinyl ester copolymers and modified polyolefin copolymers.

4,608,312

ULTRAVIOLET RADIATION CURABLE SILICONE RELEASE COMPOSITIONS

Richard P. Eckberg, Saratoga Springs; Richard A. Striker, Troy, and Frank J. Modic, Schenectady, all of N.Y., assignors to General Electric Company, Waterford, N.Y.

Division of Ser. No. 527,299, Aug. 26, 1983, Pat. No. 4,558,147. This application Jul. 19, 1985, Ser. No. 757,105
Int. Cl.[4] B32B *27/08, 25/20;* C08G *77/28;* C08F *2/50*
U.S. Cl. 428—419 9 Claims

1. An ultraviolet radiation-curable silicone release composition comprising:
(A) an odor-free mercaptoalkoyalkylfunctional diorganopolysiloxane consisting essentially of units of the formula RR'SiO, wherein R is hydrogen or $C_{(1-8)}$ alkyl and R' is hydrogen, $C_{(1-8)}$ alkyl or a monovalent mercaptoalkoxyalkyl-functional organic radical of from 2 to 20 carbon atoms, said diorganopolysiloxane having up to about 50% by weight mercaptoalkoxyalkyl-functional groups and a viscosity of from about 50 to 10,000 centipoise at 25° C.;
(B) a polysiloxane consisting of from about 0.5 to 100 mole percent of vinyl-functional siloxane units of the formula $(CH_2{=}CH)R_nSiO_{3-n/2}$, where R is hydrogen or $C_{(1-8)}$ alkyl and n has a value of 0 to 2, inclusive, any non-vinyl-containing siloxane units having the formula $R^3{}_mSiO_{4-m/2}$, where R^3 is hydrogen or $C_{(1-8)}$ alkyl and m has a value of from 0 to 3, inclusive; and
(C) a catalytic amount of a photoinitiator.

4,608,313

ADVANCED EPOXY RESINS CROSSLINKED WITH POLYISOCYANATES

Richard A. Hickner, Lake Jackson; Kevin A. Owens, Katy, and Gwendolyn M. Grays, Sugarland, all of Tex., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 640,268, Aug. 13, 1984, abandoned, which is a continuation-in-part of Ser. No. 499,097, May 27, 1983, abandoned, which is a continuation-in-part of Ser. No. 393,969, Jun. 10, 1982, abandoned. This application Jun. 26, 1985, Ser. No. 750,629
Int. Cl.[4] C08G *3/58*
U.S. Cl. 428—414 21 Claims

1. A coating composition comprising
(I) an advanced epoxy resin composition prepared by reacting in the presence of a suitable catalyst
(A) a composition comprising
(1) at least one aliphatic diepoxide and
(2) optionally at least one aromatic diepoxide; with
(B) at least one compound having two aromatic hydroxyl groups per molecule and an average molecular weight of at least about 188; wherein
components (A-1) and (A-2) are employed in quantities such that from about 10 to about 100 percent of the epoxide equivalents contained in component (A) are 90 contributed by component (A-1); from about 0 to about percent of such epoxide equivalents are contributed by component (A-2) and wherein components (A) and (B) are present in a quantity which provides an advanced epoxy resin having an EEW of from about 350 to about 15,000;
(II) a curing quantity of at least one curing agent for component (I) selected from the group consisting of blocked and unblocked polyisocyanates; and
(III) at least one solvent in a sufficient quantity such that the coating composition including components (I), (II), (III) and any other desirable component has a suitable application viscosity.

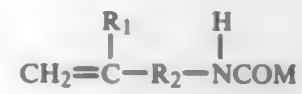
4,608,314

ACRYLIC AND ACRYLIC/EPOXY COPOLYMER COMPOSITIONS AS SELF-CURING CATHODIC ELECTROCOATING VEHICLES

Edward T. Turpin, Elyria, and David T. Thrane, Fairview Park, both of Ohio, assignors to SCM Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 677,872, Dec. 4, 1984, abandoned. This application Sep. 13, 1985, Ser. No. 775,865
Int. Cl.[4] C08G *18/80;* B32B *27/40;* A23L *1/00;* C25D *13/06*
U.S. Cl. 428—425.8 13 Claims

1. A self-curable amino cation-active aqueous acid-dispersible polymer composition containing amino, hydroxyl and blocked isocyanate functionality derived from the polymerization of:
(a) at least 5 weight percent of a polymerizable blocked monoisocyanate having the formula:



wherein R_1 is hydrogen or C_{1-3} lower alkyl group; R_2 is a diradical selected from the group consisting of phenylene, benzylene or α,α-dimethylbenzylene group; and M is an isocyanate blocking agent residue; said blocked monoisocyanate being copolymerized with
(b) 30 to 95 weight percent polymerizable vinyl comonomer comprising at least one member of the group consisting of acrylate and methacrylate esters, styrene, vinyl chloride, vinylidene chloride and vinyl acetate and wherein said acrylate or methacrylate esters are selected from alkyl, hydroxyalkyl, alkylaminoalkyl and dialkylaminoalkyl esters, wherein the weight percentages are based on the combined weights of A and B monomers and total 100 percent; and wherein said polymerization is optionally carried out in the presence of
(c) 60 to 300 weight percent of an amine-epoxy adduct comprising the reaction product of an epoxide and an organic amine having at least one primary or secondary group reactive with said epoxide; said percent (c) being based on total weights of (a) and (b) monomers; wherein the amine cation-activity is derived from monomer (b), amine-epoxy adduct (c) or combinations thereof sufficient to provide an amino-cation activity of from about 35 to 175 milliequivalents per 100 gram resin solids and to effect polymer solubilization or dispersion on partial or full acidification.

7. The process of coating a substrate which comprises
(a) providing a self-curing blocked-isocyanate polymer prepared by polymerizing at least 5 weight percent blocked meta-isopropenyl-α,α-dimethylbenzyl isocyanate polymerized alone or copolymerized with one or more vinyl unsaturated copolymerizable comonomers selected from the group consisting of styrene; and alkyl, hydroxyalkyl, aminoalkyl, alkylaminoalkyl or dialkylaminoalkyl acrylate or methacrylate esters; wherein
said polymerization or copolymerization is optionally conducted in the presence of 60 to 300 weight percent of an amine-epoxy adduct, based on the total weight of the blocked isocyanate and vinyl monomers,
said polymer having an amino nitrogen content sufficient to

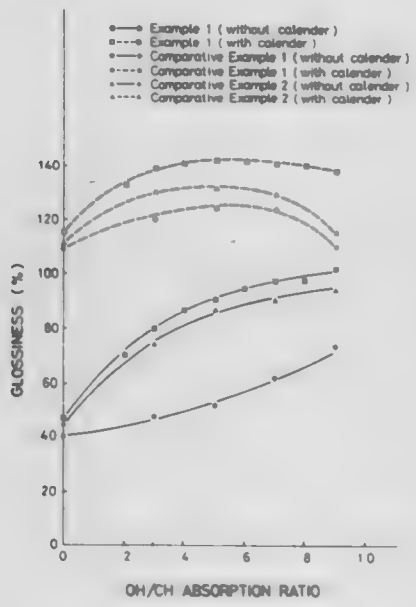
disperse or dissolve the polymer in water on acidification or partial acidification;
(b) applying said polymer as an acidified aqueous solution or dispersion to a substrate;
(c) curing the coated substrate.

4,608,315

MAGNETIC RECORDING MEDIUM

Kuniichi Yoda; Yuji Ishihara, both of Saku, and Hitoshi Azegami, Tobu, all of Japan, assignors to TDK Corporation, Tokyo, Japan

Filed Apr. 16, 1985, Ser. No. 723,788
Claims priority, application Japan, Apr. 19, 1984, 59-77573
Int. Cl.⁴ G11B *5/70*
U.S. Cl. 428—425.9 **6 Claims**



1. A magnetic recording medium comprising a resinous component in which magnetic particles are dispersed and a base to which the dispersion is solidly applied, said resinous component comprising a copolymer having an OH/CH absorption ratio according to the infrared absorption spectrum of 0.2 or more and made from
(A) vinyl chloride,
(B) vinylidene chloride,
(C) a vinyl alkylcarboxylate,
(D) an other monomer copolymerizable with vinyl chloride, and
(E) a saponified vinyl alkylcarboxylate,
and a rubbery binder.

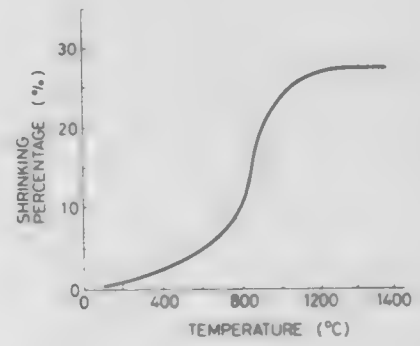
4. A magnetic recording medium comprising a resinous component in which magnetic particles are dispersed and a base to which the dispersion is solidly applied, said resinous component comprising a copolymer having an OH/CH absorption ratio according to the infrared absorption spectrum of 0.2 or more and made from
(A) vinyl chloride,
(B) vinylidene chloride,
(C) a vinyl alkylcarboxylate,
(D) an other monomer copolymerizable with vinyl chloride, and
(E) a saponified vinyl alkylcarboxylate, a rubbery binder, and a polyisocyanate.

4,608,316

CERAMIC WIRING BOARD AND PROCESS FOR PRODUCING THE SAME

Gyozo Toda, Hino; Tsuyoshi Fujita, Yokohama; Hiromi Tosaki, Yokohama, and Takashi Kuroki, Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 17, 1985, Ser. No. 776,879
Claims priority, application Japan, Oct. 1, 1984, 59-204163
Int. Cl.⁴ B32B *9/00*
U.S. Cl. 428—446 **5 Claims**



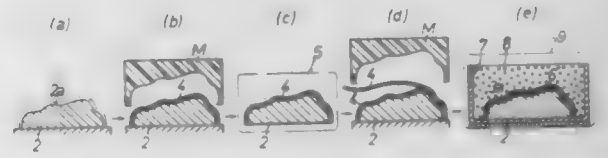
1. A ceramic wiring board comprising an insulating layer made of silica and having pores in said silica.

4,608,317

MATERIAL SHEET FOR METAL SINTERED BODY AND METHOD FOR MANUFACTURING THE SAME AND METHOD FOR MANUFACTURING METAL SINTERED BODY

Osamu Kobayashi, Tokyo; Hiroshi Sasaki, Hatoyama; Toshiki Kaneko, Kawagoe; Hideaki Ikeda, Iruma, and Yoshihisa Yamamura, Sayama, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 15, 1985, Ser. No. 723,030
Claims priority, application Japan, Apr. 17, 1984, 59-77117; Jun. 8, 1984, 59-117928; Jun. 19, 1984, 59-125484
Int. Cl.⁴ B22F *3/00*
U.S. Cl. 428—546 **26 Claims**



16. A material sheet for a metal sintered body comprising a metal powder mixture having a sintering property and a plastic binder including a thermoplastic synthetic resin excellent in anti-cracking property and a thermoplastic synthetic resin excellent in stacking property,
wherein said metal powder mixture having a sintering property comprises a mixed powder of 70 to 90 weight % of self-fluxing metal powder and 10 to 30 weight % of metal powder having a high melting point which is higher in melting point than said self-fluxing metal powder and to which said self-fluxing metal powder can be adhered.

4,608,318

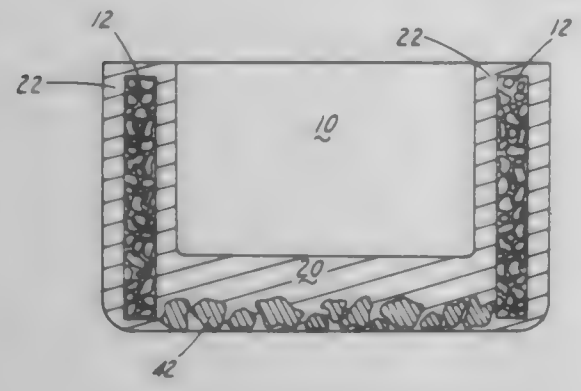
CASTING HAVING WEAR RESISTANT COMPACTS AND METHOD OF MANUFACTURE

Nicholas Makrides, Delmont, and Earle W. Stephenson, Latrobe, both of Pa., assignors to Kennametal Inc., Latrobe, Pa.

Continuation of Ser. No. 257,795, Apr. 27, 1981, abandoned. This application Apr. 17, 1984, Ser. No. 600,600
Int. Cl.⁴ B22F *7/08*
U.S. Cl. 428—553 **18 Claims**

1. A tough wear resistant body comprising: a penetration resistant component formed by powder metallurgy methods of

compaction and solid state diffusion bonding at temperatures between about 1900° F. and about 2250° F. and having cemented tungsten carbide particles with a size greater than 400 mesh, a stainless steel matrix, and wherein said particles are



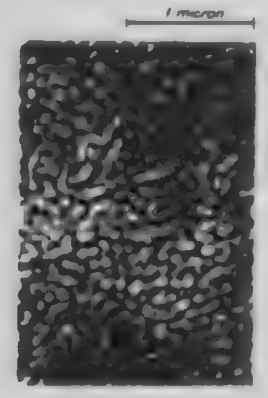
bonded to and located substantially within said stainless steel matrix; a second metallic matrix; and wherein said penetration resistant component is bonded to and embedded in said second metallic matrix.

4,608,319

EXTENDED SURFACE AREA AMORPHOUS METALLIC MATERIAL

Gerald A. Croopnick, Trabuco Cyn, and David M. Scrugga, San Juan Capistrano, both of Calif., assignors to Dresser Industries, Inc., Dallas, Tex.

Filed Sep. 10, 1984, Ser. No. 649,070
Int. Cl.[4] C22F *1/00*; C21D *9/00*; C23F *1/00*; B01J *32/00*
U.S. Cl. 428—613 13 Claims



1. A process for preparing an extended surface area, amorphous metallic article, comprising the steps of:

preparing a piece of a homogeneous, solid solution amorphous metallic alloy, the alloy having a composition associated with a eutectic reaction between at least two solid phases;

phase separating the homogeneous alloy at a temperature which is below the crystallization temperature of the composition and is also below the spinodal temperature of the composition, for a time sufficent to form two distinct yet interconnected solid phases within the piece, the solid phases each being internally continuous, amorphous and in communication with the surface of the piece; and

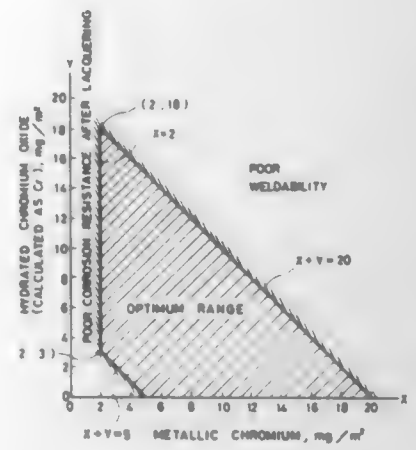
removing a portion of one solid phase, thereby exposing to the ambient environment an amount of surface of the remaining solid phase that is greater than the corresponding gross surface area of the piece, said step of removing to occur after said step of phase separating.

4,608,320

SURFACE-TREATED STEEL STRIPS ADAPTED FOR ELECTRIC RESISTANCE WELDING

Kazuo Mochizuki; Hisatada Nakakoji; Toshio Ichida; Toshio Irie; Hajime Ogata, and Kyoko Yamaji, all of Chiba, Japan, assignors to Kawasaki Steel Corporation, Kobe, Japan

Division of Ser. No. 628,265, Jul. 6, 1984, Pat. No. 4,561,943.
This application Jun. 5, 1985, Ser. No. 741,615
Int. Cl.[4] C25D *5/36*
U.S. Cl. 428—629 6 Claims



1. A surface-treated steel strip adapted for electric resistance welding, consisting essentially of

a steel strip,

a first layer of iron-nickel alloy formed on the steel strip and having a weight ratio of Ni/(Fe+Ni) in the range between 0.02 and 0.50 and a thickness of 10 to 5,000 angstroms,

a second layer of tin or iron-tin-nickel alloy formed on said first layer to a coating weight of 0.1 to 1 g/m^2 of tin, and

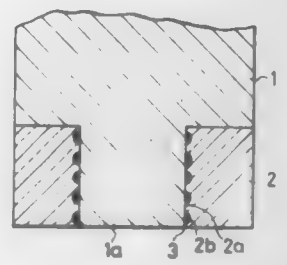
a third layer formed on said second layer and consisting essentially of metallic chromium and hydrated chromium oxide in a total amount of 5 to 20 mg/m^2 calculated as elemental chromium.

4,608,321

CERAMIC AND METAL COMPOSITE BODY

Yasushi Sato, and Hiroshi Matsui, both of Aichi, Japan, assignors to NGK Spark Plug Co., Ltd., Aichi, Japan

Filed Feb. 19, 1985, Ser. No. 702,736
Claims priority, application Japan, Feb. 20, 1984, 59-31245; Feb. 20, 1984, 59-31246
Int. Cl.[4] B22F *7/02*
U.S. Cl. 428—632 14 Claims



1. A ceramic and metal composite body comprising:

a ceramic member comprised of zirconia, said ceramic member including an outer peripheral surface having a plurality of indentations extensing within a portion of said outer peripheral surface;

a heat resistant metallic member contacting said outer peripheral surface of said ceramic member; and

a brazing material formed in said identations to bond said metallic member to said ceramic member.

4,608,322

NONAQUEOUS ELECTROCHEMICAL CELL

William G. Howard, St. Paul, and David R. Berberick, Maple Grove, both of Minn., assignors to Medtronic, Inc., Minneapolis, Minn.

Continuation-in-part of Ser. No. 537,308, Sep. 29, 1983, abandoned. This application Sep. 28, 1984, Ser. No. 656,061
Int. Cl.[4] H01M *4/36*
U.S. Cl. 429—105 23 Claims

1. A nonaqueous electrochemical cell comprising in operative relationship,

a. a cathode current collector:

b. an ionically conductive, liquid cathode-electrolyte solution; and

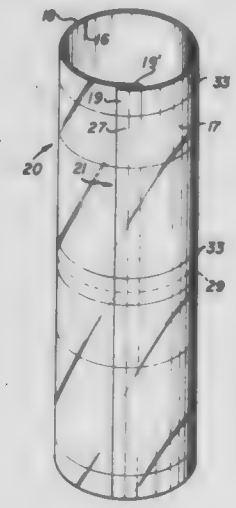
c. a active metal anode, the anode having on its surface which contacts the cathode-electrolyte a polyether film.

4,608,323

CELL JACKET

John F. Zaborney, Carmel, N.Y., assignor to Duracell Inc., Bethel, Conn.

Filed Mar. 7, 1985, Ser. No. 709,276
Int. Cl.[4] H01M *2/02*
U.S. Cl. 429—167 26 Claims



1. An electrochemical cell comprising a cell container having a decorative jacket thereon characterized in that said jacket is comprised of a metallic decoration, subject to degradation by a material placed within said cell container, with said metallic decoration being substantially completely enclosed between an outer transparent protective layer and an inner protective layer wherein said outer and inner protective layers are substantially resistant to degradation by said material and are substantially impervious thereto and wherein each of said inner and outer protective layers extends beyond the entire periphery of said metallic decoration and said extensions of said inner and outer protective layers are sealingly adhered to each other in an area substantially completely peripherally surrounding said metallic decoration whereby said metallic decoration is substantially completely enclosed by said inner and outer protective layers.

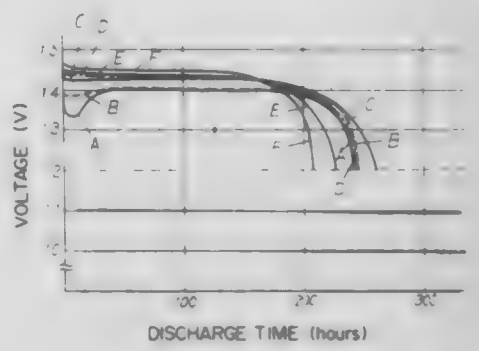
14. A decorative jacket, for an electrochemical cell, comprised of a metallic decoration, subject to degradation by a material placed within said cell, with said metallic decoration being substantially completely enclosed between an outer transparent protective layer and an inner protective layer, wherein said outer and inner protective layers are substantially resistant to degradation by said material and are substantially impervious thereto, and wherein each of said inner and outer protective layers extends beyond the entire periphery of said metallic decoration and said extensions of said inner and outer protective layers are sealingly adhered to each other in an area substantially completely peripherally surrounding said metallic decoration whereby said metallic decoration is substantially completely enclosed by said inner and outer protective layers.

4,608,324

ORGANIC ELECTROLYTE CELL

Takabumi Fujii, Suita, and Takashi Iijima, Hirakata, both of Japan, assignors to Matzushita Electric Industrial Co., Ltd., Osaka, Japan

PCT No. PCT/JP83/00400, § 371 Date Jul. 8, 1985, § 102(e) Date Jul. 8, 1985, PCT Pub. No. WO85/02297, PCT Pub. Date May 23, 1985
PCT Filed Nov. 10, 1983, Ser. No. 756,985
Int. Cl.[4] H01M *6/14*
U.S. Cl. 429—194 7 Claims



1. An organic electrolyte cell, which comprises a cathode using as an active material a mixture of copper oxide and chalcopyrite, an anode using as an active material lithium or a lithium base alloy, and an organic electrolyte comprising a salt dissolved in an organic solvent.

4,608,325

ANODE BINDERS FOR ELECTROCHEMICAL CELLS

Mohamed I. Ismail, Mississauga, Canada, assignor to Duracell Inc., Bethel, Conn.

Filed Oct. 6, 1983, Ser. No. 539,438
Int. Cl.[4] H01M *4/62, 4/42*
U.S. Cl. 429—217 1 Claim

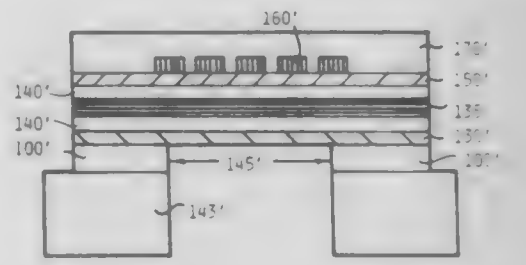
1. An electrochemical cell comprised of an alkaline electrolyte, a manganese dioxide cathode and a gelled anode comprised of mercury amalgamated zinc, a starch graft copolymer gelling agent and a liquid petrolatum binder in amounts between 0.02% to 0.2% by weight thereof.

4,608,326

SILICON CARBIDE FILM FOR X-RAY MASKS AND VACUUM WINDOWS

Armand P. Neukermans, Palo Alto; Kuo L. Chiang, Los Altos; Frederic N. Schwettmann, San Jose, and Donald R. Bradbury, Palo Alto, all of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Continuation of Ser. No. 579,640, Feb. 13, 1984, abandoned. This application Dec. 4, 1985, Ser. No. 804,331
Int. Cl.[4] G03F *9/00*
U.S. Cl. 430—5 8 Claims



1. An X-ray mask structure comprising:

a substrate;

a first intermediate amorphous layer composed substantially of an inorganic material over said substrate;

a first inorganic layer composed substantially of SiC over said first intermediate amorphous layer, so that the first

intermediate amorphous layer breaks the epitaxy between the substrate and the first inorganic layer;

a second intermediate amorphous layer composed substantially of an inorganic material over said first inorganic layer;

a second inorganic layer composed substantially of SiC over said second intermediate amorphous layer, the second intermediate amorphous layer breaking the epitaxy between the first inorganic layer and the second inorganic layer; and

a patterned layer of X-ray absorbing material over said second inorganic layer.

4,608,327

METHOD OF FORMING COMPOSITE IMAGES

Tateki Oka, Toyohashi, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Jul. 17, 1984, Ser. No. 631,834

Claims priority, application Japan, Jul. 21, 1983, 58-133678; Jul. 21, 1983, 58-133679

Int. Cl.[4] G03G *5/082*

U.S. Cl. 430—54 10 Claims

1. A method of forming composite images comprising:

a first step of charging and simultaneously exposing a composite photoresponsive member having a electroconductive base, a photoconductive layer and an insulation layer to a negative image;

a second step of irradiating said photoresponsive member with light,

a third step of charging said photoresponsive member with an alternating-current charging means to reduce the surface potential charged in the first step to approximately zero;

a fourth step of exposing said photoresponsive member to a positive image thereby forming a composite electrostatic latent image; and

a fifth step of developing said composite electrostatic latent image.

4,608,328

DONOR FOR TOUCHDOWN DEVELOPMENT

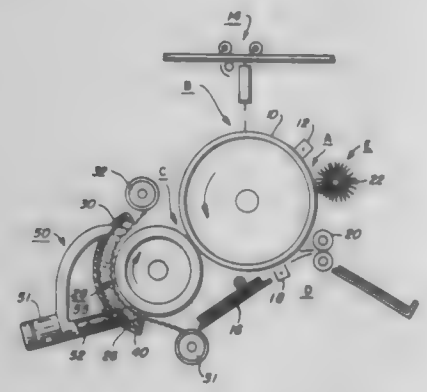
William M. Schwarz, Webster, N.Y., and John M. Pochan, Racine, Wis., assignors to Xerox Corporation, Stamford, Conn.

Filed May 2, 1985, Ser. No. 729,790

The portion of the term of this patent subsequent to Dec. 3, 2002, has been disclaimed.

Int. Cl.[4] G03G *13/08, 15/08*

U.S. Cl. 430—101 18 Claims



1. The method of developing a positively charged electrostatic latent image on an imaging surface comprising the steps of;

providing a reservoir for holding toner,

at least partially filling said reservoir with toner,

positioning a moveable donor member such that a portion of its surface extends into said reservoir of toner, and;

providing a webbed screen in contacting relationship with an area of the surface of said donor member that extends into said reservoir, moving said donor member relative to said screen so that toner pressing through said webbed screen is friction charged and a smooth toner layer is applied to said donor member,

said donor member having a surface comprising an active polymer having a basic amine moiety whereby when said donor member is moved, the roll contact between said toner, screen and donor member produces negatively charged toner particles; and

developing said electrostatic latent image with said charged toner particles.

4,608,329

IMAGEABLE TONER POWDER

Thomas C. Geisler, Cottage Grove, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jan. 8, 1985, Ser. No. 689,706

Int. Cl.[4] G03G *9/08, 9/16*

U.S. Cl. 430—110 16 Claims

1. A thermally imageable toner powder of particles comprising at least 50 weight percent of a supercoolable material, at least 0.01 weight percent of a colorant, up to 20 weight percent of a binder and up to 40 weight percent of an antifouling agent.

4,608,330

METHOD FOR PRODUCING MICROCAPSULES AND PHOTOSENSITIVE MICROCAPSULES PRODUCED THEREBY

Charles P. Marabella, Woodbury, Minn., assignor to The Mead Corporation, Dayton, Ohio

Continuation-in-part of Ser. No. 533,087, Sep. 19, 1983, abandoned. This application Mar. 27, 1985, Ser. No. 716,793

Int. Cl.[4] G03C *1/00, 1/40, 1/72;* B01J *13/02*

U.S. Cl. 430—138 22 Claims

1. A process for forming microcapsules having discrete capsule walls comprising the steps of forming an emulsion of an oily core material in a continuous aqueous phase containing methylated polygalacturonic acid as an emulsion stabilizer, and enwrapping particles of said oily core material in a formaldehyde condensation product produced by in situ condensation of an amine and formaldehyde.

4,608,331

PHOTOSENSITIVE PLATES WITH DIAZONIUM COMPOSITION LAYER AND POLYURETHANE PHOTOPOLYMER WITH UNSATURATION IN SIDE CHAIN OVERLAYER

Carl Bernstein, Deerfield; Konstantinos Arvanitis, Roselle, and Luigi Amariti, Bloomingdale, all of Ill., assignors to Witco Chemical Corporation, New York, N.Y.

Filed Nov. 16, 1984, Ser. No. 672,296

Int. Cl.[4] G03C *1/54, 1/70*

U.S. Cl. 430—156 10 Claims

1. A photopolymeric plate having a photosensitive coating thereon, comprising:

a plate base;

a layer of light sensitive diazonium composition over the plate base; and

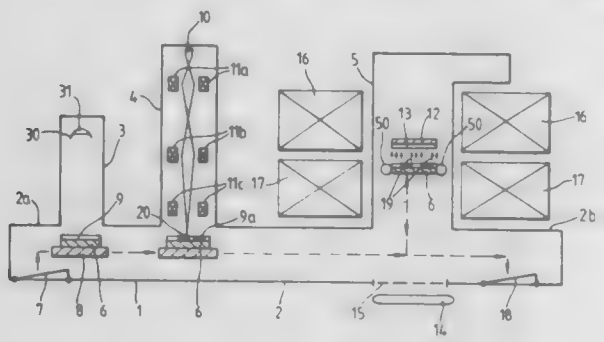
a polyurethane photopolymeric composition over the diazonium composition, said polyurethane photopolymeric composition including a polyurethane photopolymer with a polymeric backbone having recurring groups selected from the class consisting of urethane groups, urear groups, and combinations thereof, said photopolymer further having an alkyl group attached to and pendant to said backbone through an ether linkage, and said polymeric backbone has terminal groups selected from the class consisting of an —NCO group, a reaction product of an —NCO group and an amine, a reaction product of an —NCO group and an alcohol, and combination thereof.

4,608,332

ELECTRON LITHOGRAPHY MASK MANUFACTURE

Rodney Ward, Crawley, England, assignor to U.S. Philips Corporation, New York, N.Y.

Filed May 1, 1984, Ser. No. 606,089
Claims priority, application United Kingdom, May 25, 1983, 8314435
Int. Cl.[4] G03C *5/00*
U.S. Cl. 430—296 10 Claims



1. A method of lithographically defining a pattern in a layer of electron sensitive resist on a substrate comprising the steps of

defining a photoemissive pattern by selectively exposing a layer of photoemissive material on a transparent plate to radiation, said radiation causing local modification in electron emissive properties of said photoemissive material,

illuminating said photoemissive pattern on said transparent plate with electromagnetic radiation to form an electron emissive mask, said step of illuminating causing a patterned beam of electrons to be emitted from said photoemissive pattern, and

exposing a layer of electron sensitive resist on a substrate to said patterned beam of electrons.

4,608,333

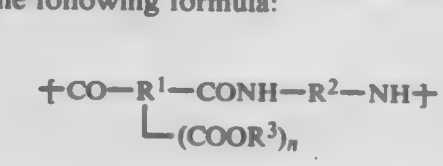
RADIATION SENSITIVE POLYMER COMPOSITION

Gentaro Ohbayashi, Kusatsu; Susumu Umemoto, Yokohama, and Hiroo Hiramoto, Otsu, all of Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Filed Feb. 10, 1984, Ser. No. 579,008
Claims priority, application Japan, Mar. 3, 1983, 58-34907; Aug. 19, 1983, 58-150296
Int. Cl.[4] G03C *1/70;* C08F *8/00, 2/46*
U.S. Cl. 430—281 23 Claims

1. A radiation-sensitive composition comprising:

(1) a polymer (I) containing repeating units (A) represented by the following formula:

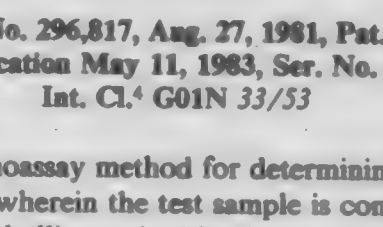


(A)

wherein R^1 is a trivalent or tetravalent aromatic or heteroaromatic residue having 6 to 30 carbon atoms, R^2 is a divalent aromatic or heteroaromatic residue having 6 to 30 carbon atoms, R^3 is a hydrogen atom or an ammonium ion, n is a integer of 1 or 2, and $COOR^3$ is located in an ortho or peri position with respect to the amide linkage,

(2) an organic compound (II) having a radiation-dimerizable or radiation-polymerizable olefinic double bond and an amino radical or a quaternary ammonium salt, and

(3) an aromatic secondary or tertiary amine compound (III) which is chemically inactive to actinic radiation, said amine compound (III) being at least one compound represented by the following formula:



wherein each of R^{11} and R^{12} independently represents a hydrogen atom, a lower alkyl group having 1 to 6 carbon atoms or a lower alkyl group having 1 to 6 carbon atoms which is substituted with a polar group, R^{13} is a lower alkyl group having 1 to 6 carbon atoms or a lower alkyl group having 1 to 6 carbon atoms which is substituted with a polar group, and Y is a hydrogen atom, a hydroxyl group, a nitro group, a lower alkoxy group or a halogen atom.

4,608,334

SILVER HALIDE COLOR LIGHT-SENSITIVE MATERIAL

Sadanobu Shuto; Munehisa Fujita, and Kazunori Hasebe, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation-in-part of Ser. No. 681,740, Dec. 14, 1984, abandoned. This application Sep. 12, 1985, Ser. No. 775,941
Claims priority, application Japan, Dec. 19, 1983, 58-239284
Int. Cl.[4] G03C *1/46, 1/08*
U.S. Cl. 430—505 19 Claims

1. A silver halide color light-sensitive material comprising a support having provided thereon at least two emulsion layers, each comprising at least one coupler, that are sensitive to the same color light but have different sensitivities, wherein a light-insensitive intermediate layer comprising gelatin is provided between any two of said emulsion layers that are adjacent to each other, and the higher sensitivity emulsion layer of said two emulsion layers has a smaller silver/coupler molar ratio than that of the lower sensitivity emulsion layer of said two emulsion layers.

4,608,335

ENZYMATIC UREA ASSAY

Piero Fossati, Lissone, Italy, assignor to Miles Italiana S.p.A., Milan, Italy

Filed Jun. 8, 1984, Ser. No. 618,831
Claims priority, application Italy, Aug. 8, 1983, 48827 A/83
Int. Cl.[4] C12Q *1/58, 1/48, 1/26*
U.S. Cl. 435—12 20 Claims

1. A composition for the enzymatic determination of urea in a fluid sample, which composition comprises urea amidolyase, pyruvate kinase, pyruvate oxidase, a divalent cation, a monovalent cation, phosphoenolpyruvate, thyamine pyrophosphate, adenosine triphosphate, bicarbonate, and a color indicator system.

4,608,336

#3B THEOPHYLLINE IMMUNOASSAY EMPLOYING 9-THEOPHYLLINE REAGENTS

Jeffrey L. Benovic, Durham, N.C.; Robert T. Buckler, Edwardsburg, Mich.; John F. Burd, Elkhart, Ind., and Thomas M. Li, Elkhart, Ind., assignors to Miles Laboratories, Inc., Elkhart, Ind.

Division of Ser. No. 296,817, Aug. 27, 1981, Pat. No. 4,533,493. This application May 11, 1983, Ser. No. 493,609
Int. Cl.[4] G01N *33/53*
U.S. Cl. 435—7 12 Claims

1. In an immunoassay method for determining theophylline in a test sample, wherein the test sample is combined with an antibody to theophylline and with a labeled form of theophylline or a binding analog of theophylline, and wherein the rela-

tive amount of the labeled reagent that becomes bound to the antibody is determined,

the improvement which comprises employing as the antibody to theophylline an antibody prepared against an immunogen comprising theophylline covalently linked at its 9-position to an immunogenic carrier material.

4,608,337

HUMAN HYBRIDOMAS AND THE PRODUCTION OF HUMAN MONOCLONAL ANTIBODIES BY HUMAN HYBRIDOMAS

Carlo M. Croce, Philadelphia, Pa., assignor to The Wistar Institute, Philadelphia, Pa.

Continuation of Ser. No. 204,832, Nov. 7, 1980, abandoned. This application May 17, 1983, Ser. No. 495,168

Int. Cl.⁴ C12P *21/00;* C12N *15/00, 5/00;* G01N *33/53*

U.S. Cl. 435—68 **20 Claims**

1. A composition comprising a stable, continuous human myeloma cell line which is capable of hybridization with antibody-producing cells of humans and other animals to form a stable, fused cell hybrid capable of producing said antibody, said cell line being a mutant of GM 1500 human B cells which is deficient in hypoxanthine phosphoribosyltransferase.

17. A fused cell hybrid of (a) a mutant of GM-1500 human myeloma cell line sensitive to hypoxanthine-aminopterin-thymidine medium and (b) an antibody-producing lymphocyte.

4,608,338

PROCESS FOR BIOCONVERSION-PRODUCT RECOVERY

Jih-Han Hsieh, Parsippany, N.J., assignor to Celanese Corporation, New York, N.Y.

Filed Jun. 10, 1982, Ser. No. 387,083

Int. Cl.⁴ C12P *7/44, 17/04, 7/50;* C12R *1/40*

U.S. Cl. 435—142 **14 Claims**

1. In a microbial bioconversion process in which a non-growth organic substrate in an aqueous fermentation medium is bio-oxidized by whole cells to an extracellular carboyxlic acid product having a solubility of less than about 1.0 weight percent in the aqueous fermentation medium, the improvement which comprises neutralizing the acidic pH conditions in the fermentation medium by the addition of ammonia during the bioconversion period, separating the microbial cells from the fermentation medium to provide a cell-free fermentation broth containing ammonium carboxylate product, adding sulfuric acid or phosphoric acid to the fermentation broth to precipitate the carboxylate product in the free carboxylic acid form, separating the carboxylic acid precipitate from the fermentation broth and treating the fermentation broth with a basic reagent selected from the group consisting of metal hydroxides, oxides and carbonate compounds which causes the precipitation of a water-insoluble metal salt, and separating the metal salt precipitate to provide a resultant fermentation broth for recycle which contains a water-soluble ammonium compound.

4,608,339

PROTOPLAST FUSION METHOD FOR HIGH-FREQUENCY DNA TRANSFECTION IN HUMAN CELLS

George H. Yoakum, 10244 Millstream Dr., Gaithersburg, Md. 20879; Curtis C. Harris, 8402 Thornden Ter., Bethesda, Md. 20817; Brent E. Korba, 8255 Stone Trail Ct., Laurel, Md. 20707, and John F. Lechner, 12908 Neola Rd., Wheaton, Md. 20906

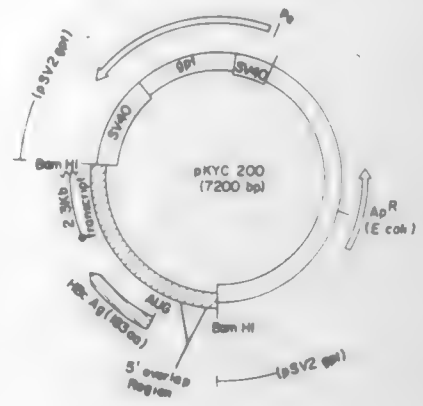
Filed Oct. 25, 1983, Ser. No. 545,257

Int. Cl.⁴ C12N *15/00, 5/00;* C12P *21/02*

U.S. Cl. 435—172.2 **7 Claims**

1. A process for stably transfecting a variety of human cell types with recombinant plasmids capable of replicating in *E. coli* comprising producing a stable protoplast containing a recombinant plasmid;

fusing said stable protoplast with human cells in the presence



of fusion grade PEG reagent previously treated with an ion exchange resin;

removing said PEG reagent by dilution;

and incubating an analyzing for said recombinant plasmid.

4,608,340

IMMOBILIZED AMINOACYLASE ENZYME

Bèla Szajàni, Tusnadi u. 26., 1125 Budapest; Jànosnè Kiss, Vajda u. 36/b, 6723 Szeged; Jòzsefnè Ivony, Mezo Imre u. 21-23, 1081 Budapest; Irèn Huber, Villanyi u. 86., 1118 Budapest; Làszlò Boros, Pauler u., 1013 Budapest, and Ivàn Darò czi, Dessewffy u. 28., 1066 Budapest, all of Hungary

Continuation of Ser. No. 494,072, May 12, 1983, abandoned, which is a division of Ser. No. 384,766, Jun. 3, 1982, Pat. No. 4,532,214. This application Nov. 27, 1984, Ser. No. 675,265

Int. Cl.⁴ C12N *11/08, 11/06, 9/78;* C07P *41/00*

U.S. Cl. 435—180 **2 Claims**

1. A process for the immobilization of an aminoacylase enzyme which comprises:

(a) subjecting copolymer beads consisting essentially of acrylamide and N,N¹-methylene-bis(acrylamide) and containing —$CONH_2$ groups to acidic or alkaline hydrolysis to convert about 50% of the —$CONH_2$ groups to carboxyl groups,

(b) treating the hydrolyzed copolymer from step (a) with a carbodiimide compound in water solution, or a carbodiimide compound which is disclosed in an organic solvent at a temperature below 0° C.,

(c) applying to the carbodiimide activated copolymer from step (b) a solution of aminoacylase enzyme having a pH of from 6.5 to 8.5, to immobilize said enzyme on said copolymer by covalent bonds, and

(d) washing the immobilized aminoacylase enzyme from step (c).

4,608,341

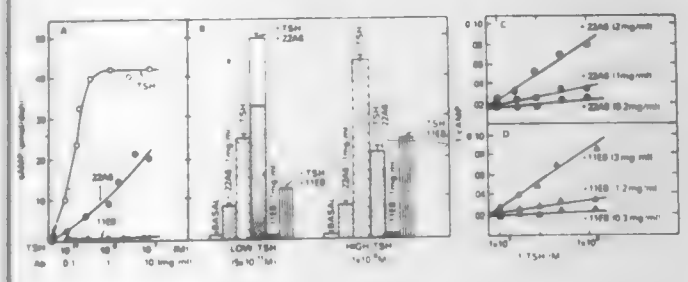
LIVING, FAST-GROWING THYROID CELL STRAIN, FRTL-5

Francesco S. Ambesi-Impiombato, Naples, Italy, assignor to Interthyr Research Foundation, Inc., Md.

Filed May 31, 1983, Ser. No. 499,250

Int. Cl.⁴ C12N *5/00;* C12R *1/91*

U.S. Cl. 435—240 **10 Claims**



1. A process for preparing a continuous, functional rat cell

strain, having the identifying characteristics of FRTL-5 ATCC CRL 8305 cell strain, comprising:

culturing a continuous, functional rat cell line FRTL in a medium comprising thyrotropin and calf serum to obtain FRTL-5 cells and cloning said FRTL-5 cells to obtain cells of an FRTL-5 strain having the identifying characteristics of FRTL-5 ATCC CRL 8305 cell strain.

10. A continuous, functional rat thyroid cell strain having the identifying characteristics of FRTL-5 ATCC CRL 8305 cell strain.

4,608,342

METHOD OF GROWING A CONFLUENT LAYER OF CELLS ON A POROUS OR SEMI-PERMEABLE SUBSTRATE AND APPARATUS FOR PRACTICING THE METHOD

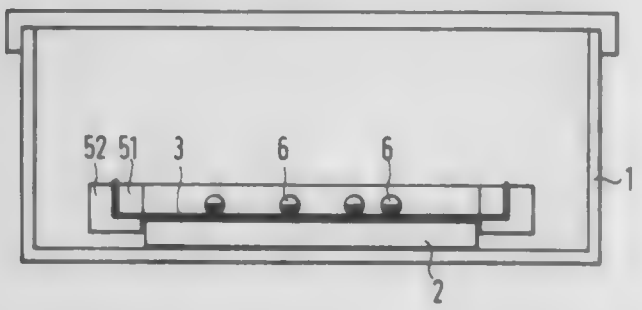
Stephan Nees, Waldwiesenstr. 30b, 8000 München 70, Fed. Rep. of Germany

Filed May 14, 1984, Ser. No. 609,841

Claims priority, application Fed. Rep. of Germany, May 13, 1983, 3317550

Int. Cl.[4] C12N *5/00;* C12M *3/00*

U.S. Cl. 435—240 13 Claims



1. A method for growing a confluent layer of cells on a substrate surface, comprising the steps of: providing a porous or semi-permeable substrate in the form of a tensioned, taut, planar substrate having exposed upper and lower surfaces and independently held in such configuration by a tensioning and holding device; providing a receptacle containing fluid nutrient medium for cell growth, said receptacle having a bottom surface and upstanding side walls about the periphery thereof; arranging within said receptacle a body of solid, plate material having a bottom surface in contact with the bottom surface of said receptacle and an upper solid, planar surface extending above the plane of the bottom surface of said receptacle; arranging said holding and tensioning device within said receptacle such that the lower surface of said substrate is in contact with the upper non-porous surface of said plate material and such that the substrate is surrounded by the fluid nutrient medium for cell growth; providing on the upper surface of said substrate a source of cells; and maintaining said arrangement under conditions, and for a time, effective to produce a confluent layer of cells on the upper surface of said substrate, whereby a region is created created between the mutually contacting surfaces of said substrate and said plate material and in said region substances synthesized by the cells in aid of their anchoring to said substrate and passing through the porous or semi-permeable substrate are enriched proximate to the cells and not substantially decomposed, modified or diluted by the surrounding nutrient medium.

4,608,343

BIOLOGICALLY PORE CULTURE OF *STREPTOMYCES MAJORCIENSIS* LABEDA

David P. Labeda, Monsey; Joseph J. Goodman, Spring Valley; Donald B. Borders, Suffern, all of N.Y.; Raymond T. Testa, Cedar Grove, N.J., and John H. E. J. Martin, deceased, late of New City, N.Y. (by Mary B. Martin, executrix), assignors to American Cyanamid Company, Stamford, Conn.

Division of Ser. No. 507,184, Jun. 23, 1983. This application May 30, 1985, Ser. No. 739,334

Int. Cl.[4] C12P *21/00, 13/00, 1/06*

U.S. Cl. 435—253 3 Claims

1. A biologically pure culture of the microorganism *Streptomyces majorciensis* Labeda, sp. nov., having the identifying characteristics of NRRL 15167, said culture being capable of producing the antibiotic LL-C08078α_1, LL-C08078α_2, LL-C08078α_3 or LL-C08078β in recoverable quantity upon fermentation in an aqueous nutrient medium containing assimilable sources of carbon, nitrogen and inorganic anion and cation salts.

4,608,344

METHOD FOR THE DETERMINATION OF SPECIES IN SOLUTION WITH AN OPTICAL WAVE-GUIDE

Timothy J. N. Carter, Halstead, United Kingdom; Claus Dähne, Onex, and John F. Place, Geneva, both of Switzerland, assignors to Battelle Memorial Institute, Carouge, Switzerland

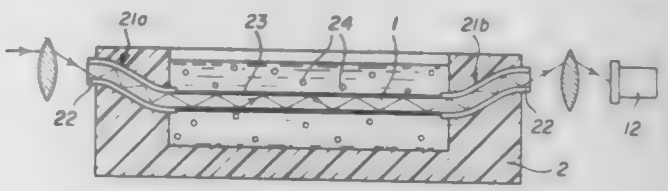
PCT No. PCT/EP82/00195, § 371 Date May 18, 1983, § 102(e) Date May 18, 1983, PCT Pub. No. WO83/01112, PCT Pub. Date Mar. 31, 1983

PCT Filed Sep. 8, 1982, Ser. No. 499,164

Claims priority, application European Pat. Off., Sep. 18, 1981, 81810385.5

Int. Cl.[4] G01N *31/06, 33/48*

U.S. Cl. 436—34 16 Claims



1. A method of determining the presence of an analyte in solution, which comprises the steps of:

(a) applying a film of a reactant to a surface of an optical waveguide having a refractive index n_1;

(b) injecting a light signal of a wave length λ into said waveguide at one end thereof and measuring at another end of said waveguide a light signal modification resulting from an evanescent light component associated with said signal in said waveguide, said light signal being internally reflected at an angle θ of internal reflection;

(c) contacting said film with a solution of an analyte in a liquid phase of refractive index n_2 less than n_1 whereby said analyte reacts with said reactant to form a layer of analyte-reactant product on said waveguide of a thickness less than λ; and

(d) controlling the depth of penetration dp of said evanescent light component associated with said signal in said waveguide in accordance with the relation

$$dp=\lambda/2\pi(sin^2\theta-(n_2/n_1)^2)^{\frac{1}{2}}$$

so that said depth of penetration dp substantially matches or exceeds the thickness of said analyte-reactant product layer and the measurement in step (b) takes place while the reaction occurs without interference from spurious signals from the liquid phase surrounding said layer.

4,608,345

COLORIMETRIC DETECTION OF ALCOHOLS IN GASOLINE

Nicholas Feldman, Woodbridge, and Jerome Panzer, Millburn, both of N.J., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Nov. 5, 1984, Ser. No. 668,575
Int. Cl.[4] G01N *31/00, 33/03, 33/26*
U.S. Cl. 436—60 14 Claims

1. A reliable, inexpensive method effectively usable even under field conditions by non-technically trained individuals comprising: detecting the presence of alcohol in hydrocarbon by contacting the hydrocarbon with a mixture including:

i. an alcohol soluble, hydrocarbon insoluble dye; and

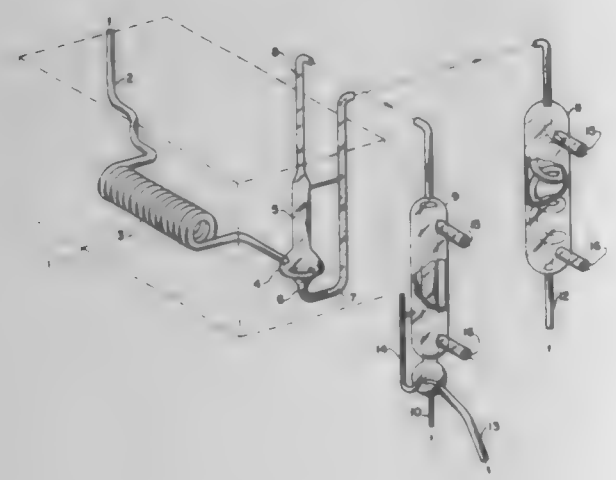
ii. a solid insoluble in hydrocarbon and alcohol, and causing the mixture to undergo a color change in the presence of alcohol.

4,608,346

METHOD FOR DETERMINING PHENOL USING A SIMPLE DISTILLATION APPARATUS

Anton E. Goodwin; Janet L. Marton; Robert M. Owens; Jackie W. Whisenhunt, and Roy D. Swain, all of Ponca City, Okla., assignors to Conoco Inc., Ponca City, Okla.

Division of Ser. No. 409,191, Aug. 18, 1982, Pat. No. 4,528,162.
This application Dec. 24, 1984, Ser. No. 686,104
Int. Cl.[4] B01D *3/06;* G01N *1/00*
U.S. Cl. 436—131 3 Claims



1. A method for determining phenol in liquid water samples comprising passing said samples through a simple distillation apparatus comprising:

(a) passing said samples as distilland through a closed conduit wherein said distilland is heated by heating means, the closed conduit being contained in a casing means and surrounded by heating means contained within said casing means, thereafter passing said distilland to

(b) a vapor draw means connected directly to said closed distilland conduit, said vapor draw means containing at least one expansion chamber substantially vertically disposed in and surrounded by said heating means, the lower portion of the lowest of said expansion chambers containing inert particulate means to increase surface area and condenser means connected to said vapor draw means, wherein the distilland enters said at least one expansion chamber and a large liquid/vapor phase interface is formed providing good heat transfer and substantially total phenol separation, wherein phenolic values are removed by said vapor draw means and condensed to form sample condensate by said condenser means and

(c) removing bottoms through a bottoms draw means disposed in said heating means and connected to a lower portion of the lowest expansion chamber of said vapor draw means, said bottoms draw means exiting substantially vertically from said lowest chamber and being substantially totally filled with said inert particulate means,

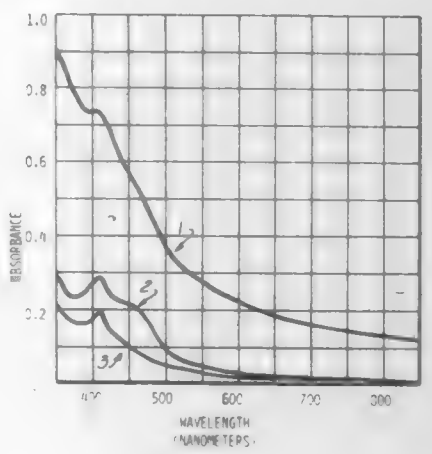
(d) collecting said sample condensate and analyzing said sample condensate for phenol content.

4,608,347

COMPOSITIONS, USES AND METHODS CREATING REVERSE MICELLES FOR THE CLARIFICATION OF BIOLOGICAL FLUIDS TO OBTAIN UNDISTORTED ASSAY OF ANALYTES FOLLOWING CLARIFICATION

Victor A. Bernstam, 2736 Gloucester Way, Ann Arbor, Mich. 48104

Filed Apr. 15, 1982, Ser. No. 368,593
Int. Cl.[4] G01N *1/00;* B01F *17/00*
U.S. Cl. 436—175 22 Claims



7. A method for removing turbidity in an aqueous lipid-containing specimen and separating the specimen into aqueous and non-aqueous phases without substantially denaturing labile analytes in the specimen otherwise denatured by organic solvents, the method comprising,

adding the specimen to a non-aqueous composition to form a mixture, the composition comprising a water-immiscible organic solvent and at least one principal surfactant selected from 3-[(C_6–C_{18} alkyl)dimethylammonio]-1-propanesulfonates, the solvent being selected to dissolve the surfactant and to be immiscible with the specimen, said composition in the mixture in sufficient amount to form reverse micelles in the mixture and to dissolve substantially all of the lipids present in the mixture,

thoroughly mixing the mixture of the composition and the specimen,

partitioning the mixture into a non-turbid aqueous phase and a physically separate non-aqueous phase, said physically separate non-aqueous phase containing the lipids, lipid solvent, surfactants and other non-polar substances, and

removing the physically separate non-aqueous phase thereby removing substantially all of the lipids, lipid solvent, surfactants and organic non-polar substances and thereby leaving said analyte containing aqueous phase substantially free of the composition.

16. A non-aqueous composition for partitioning an aqueous water miscible analyte and lipid-containing specimen,

the composition consisting of a water-immiscible organic solvent and at least one surfactant dissolved therein selected from the group consisting of sulfobetaine detergents consisting essentially of 3-[(C_6–C_{18} alkyl)dimethylammonio]-1-propanesulfonates, as principal components and organic solvent soluble surfactants and sulfhydryl group protecting agents both as minor additional components.

4,608,348

GLASS-CERAMICS CONTAINING CRISTOBALITE AND POTASSIUM FLUORRICHTERITE

George H. Beall, Big Flats; John E. Megles, Jr., Corning, and Linda R. Pinckney, Painted Post, all of N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed Nov. 4, 1985, Ser. No. 794,841
Int. Cl.[4] C03C *10/16, 3/112*
U.S. Cl. 501—3 3 Claims

1. A highly crystalline glass-ceramic article exhibiting great toughness, a modulus of rupture of at least 20,000 psi, and, in the form of bars having dimensions 5″×0.5″×0.1″, sagging during the crystallization heat treatment of no more than 0.2″ over a 4″ span, and wherein potassium fluorrichterite constitutes the predominant crystal phase, but wherein cristobalite is also present in an amount of at least 10% by volume, said glass-ceramic article having an overall composition consisting essentially, expressed in terms of weight percent on the oxide basis, of

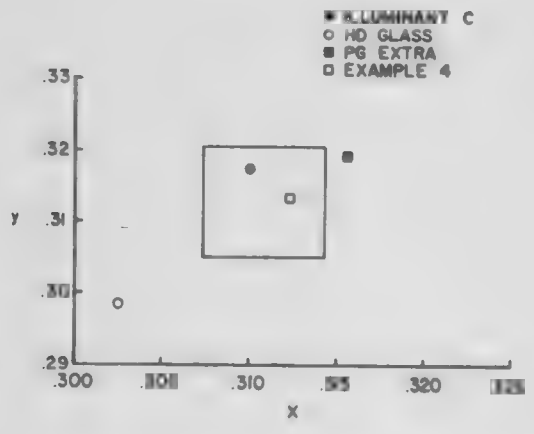
SiO_2	65–69	Na_2O	1.5–3.3
Al_2O_3	0.75–3.5	K_2O	4.2–6.0
MgO	13.5–17.5	BaO	0–2.5
CaO	3–4.8	P_2O_5	0–2.5
Li_2O	0.5–2.0	F	3.3–5.5

4,608,349

PHOTOCHROMIC GLASS COMPOSITIONS FOR LIGHTWEIGHT LENSES

David J. Kerko; David W. Morgan, and David L. Morse, all of Corning, N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed Nov. 28, 1985, Ser. No. 797,223
Int. Cl.[4] C03C *4/06, 3/118*
U.S. Cl. 501—13 4 Claims



1. A composition for a photochromic glass consisting essentially, in weight percent on the oxide basis of about:

SiO_2	54–58%
B_2O_3	18–22%
Al_2O_3	7–8%
Li_2O	3.75–4.5%
Na_2O	0–1%
K_2O	5.5–7.5%
TiO_2	0–2%
ZrO_2	2–4.5%
Ag	0.20–0.33%
Cl	0.30–0.50%
Br	0.04–0.12%
CuO	0.007–0.012%
PbO	0–0.08%
Sb_2O_3	0–0.20%

wherein the mole ratio Li_2O:Na_2O equals or exceeds 9:1.

4,608,350

PRECURSOR SOLUTIONS FOR BIOLOGICALLY ACTIVE GLASS

Edward G. Howard, Jr., Hockessin, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Oct. 27, 1983, Ser. No. 546,152
Int. Cl.[4] C03C *8/16*
U.S. Cl. 501—20 9 Claims

1. A stable, aqueous acid solution consisting essentially of precursors that correspond to the components of a biologically active glass, the precursors being convertible to the biologically active glass by heat, the precursor solution showing no substantial amount of precipitation in one hour, the biologically active glass consisting essentially of these components:
SiO_2, 40 to 62 weight percent;
Na_2O, 10 to 32 weight percent;
CaO, 10 to 32 weight percent;
CaF_2, 0 to 18 weight percent;
P_2O_5, 0.1 to 12 weight percent; and
B_2O_3, 0 to 20 weight percent;
provided that Na_2O and CaO, taken together, are at least about 30 weight percent.

4,608,351

LOW PBO-CONTAINING GLASS FOR ELECTRICAL DEVICES

Jean E. Boudot, and Jean P. Mazeau, both of Avon, France, assignors to Corning Glass Works, Corning, N.Y.

Filed Feb. 5, 1985, Ser. No. 698,408
Claims priority, application France, Mar. 9, 1984, 84 03635
Int. Cl.[4] C03C *3/105, 3/108*
U.S. Cl. 501—62 1 Claim

1. Glasses consisting essentially of the following approximate composition:
SiO_2 68.75 K_2O 7.2
Al_2O_3 2.4 BaO 8.8
Li_2O 1.0 PbO 3.3
Na_2O 8.3 Sb_2O_3 0.25

4,608,352

NEUTRON-ABSORBENT GLASSES CONTAINING GADOLINIUM AND PROCESS FOR THEIR PREPARATION

Yves Laurent, Cesson Sevigne, and Patrick Verdier, Acigne, both of France, assignors to Centre National de la Recherche Scientifique (CNRS), Paris, France

Filed Sep. 30, 1985, Ser. No. 781,809
Claims priority, application France, Oct. 2, 1984, 84 15103
Int. Cl.[4] C03C *3/062, 3/11*
U.S. Cl. 501—73 8 Claims

1. Neutron-absorbent oxide or oxynitride glasses incorporating silicon, aluminum, oxygen or oxygen and nitrogen, which additionally contain gadolinium in a proportion of approximately 5 to 15 atom %.

4,608,353

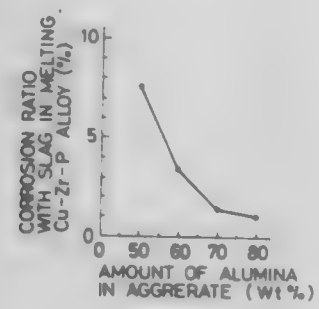
HIGH-ALUMINA REFRACTORY FOR USE IN NON-FERROUS METAL MELTING FURNACE

Hiroshi Nagayama, Katsuta, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 25, 1984, Ser. No. 603,670
Int. Cl.[4] C04B *35/10, 35/58*
U.S. Cl. 501—97 11 Claims

1. A high-alumina refractory for use in a non-ferrous metal melting furnace consisting of a mixture of 5 to 25% by weight of silicon nitride particles, 3 to 12% by weight of graphite particles which generate carbon monoxide by reaction with the melt of said non-ferrous metals and a balance of high-alumina aggregate particles containing at least 60% by weight of aluminum oxide; said high-alumina aggregate particles com-

prising coarse grains having a particle diameter of at least 1.2 mm, medium grains having a particle diameter ranging from



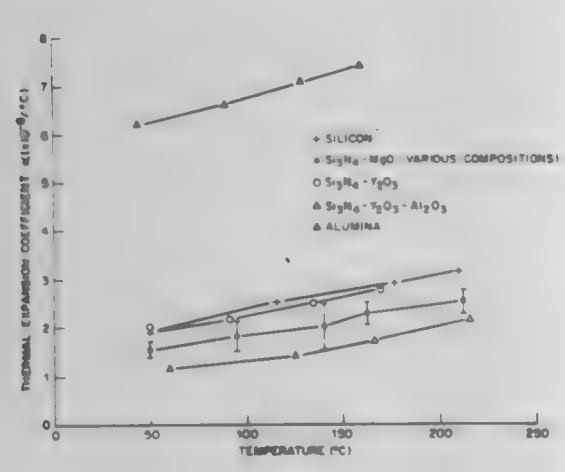
0.15 to 1.2 mm and fine grains having a particle diameter of smaller than 0.15 mm.

4,608,354

SILICON NITRIDE SUBSTRATE

Frank J. Avella, Andover, and Leslie J. Bowen, Concord, both of Mass., assignors to GTE Laboratories Incorporated, Waltham, Mass.

Filed Dec. 24, 1984, Ser. No. 685,644
Int. Cl.[4] C04B *35/58*
U.S. Cl. 501—97 **3 Claims**



2. A densified silicon nitride article consisting essentially from about 2 to about 15 w/o magnesia with the remainder being silicon nitride, said silicon nitride article having a dielectric constant less than 8, a dielectric loss tangent less than 0.005, a thermal conductivity greater than 50 W/mK, a thermal expansion coefficient from about 70 to about 90% of silicon, a modulus of rupture greater than 70,000 psi and an absolute density from about 3.12 g cm^{-3} to about 3.20 gm cm^{-3}, the densified silicon nitride article being made by the steps following:

Step 1—ball milling silicon nitride powder, from about 2 to about 15 w/o magnesium oxide, and an organic binder in an organic solvent to form a homogeneous slurry;

Step 2—drying the homogeneous slurry from step 1 in an inert atmosphere to form a dry powder;

Step 3—dry ball milling the product from step 2;

Step 4—compacting the product from step 3 to form a compact;

Step 5—heating the product from step 4 in air at a temperature and for a length of time sufficient to remove the organic binder to form a green compact having a density from about 59% to about 65% of theoretical density; and

Step 6—sintering the product from step 5 at a temperature equal to or greater than 1,650° C. in a nitrogen atmosphere and for a time sufficient to form a densified silicon nitride article having a density greater than 97.5% of theoretical.

3. A silicon nitride substrate for silicon microelectronic chips made from the densified silicon nitride article in accordance with claim 2.

4,608,355

HYDROCARBON CONVERSION CATALYST

Pochen Chu, West Deptford, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Aug. 10, 1983, Ser. No. 521,864
Int. Cl.[4] B01J *29/06, 20/12*
U.S. Cl. 502—68 **12 Claims**

1. A method of forming a calcined zeolite containing catalyst, which comprises treating the zeolite, having exchangeable sites, with a source of a Group IB metal cation in an amount sufficient to insure that at least 10 percent of the exchangeable sites are Group IB metal cation exchanged;

forming a composite of said exchanged zeolite with a clay matrixing material, in which the zeolite does not exceed about 50 percent by weight of the composite; and

calcining the composite at a temperature above 600° C., whereby the alpha value of the composite after calcination is greater than that of a calcined mixture of said clay matrixing material and the zeolite.

2. The method of claim 1, wherein said zeolite is ZSM-5, ZSM-11, ZSM-12, ZSM-20, ZSM-35, ZSM-39, zeolite X, zeolite Y, zeolite Beta or mordenite.

3. The method of claim 2, wherein said Group IB metal is copper or silver.

4,608,356

PREPARATION OF A REFORMING CATALYST

Waldeen C. Buss, Kensington, and Charles R. Wilson, San Francisco, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Filed Dec. 20, 1984, Ser. No. 684,316
Int. Cl.[4] B01J *29/06*
U.S. Cl. 502—66 **8 Claims**

6. A method of preparing a reforming catalyst comprising the steps of:

(a) mixing a type L zeolite with an inorganic oxide binder, wherein said inorganic oxide is selected from the group consisting of silica, alumina, and aluminosilicates;

(b) extruding said mixture to form an extrudate;

(c) drying and calcining said extrudate;

(d) ion exchanging said calcined extrudate with an aqueous solution of an alkaline earth metal selected from the group consisting of barium, strontium, and calcium;

(e) drying and calcining said ion exchanged extrudate;

(f) impregnating said calcined extrudate with an aqueous solution of a Group VIII metal and allowing said calcined extrudate to soak in said solution for less than three hours to form a catalyst;

(g) drying said catalyst; and

(h) calcining said dried catalyst with steam in air, wherein said air has at least 3% steam.

4,608,357

CATALYTIC CRACKING WITH MULLITE COMPOSITION PROMOTED COMBUSTION OF CARBON MONOXIDE

Lance D. Silverman, New York, N.Y., and Barry K. Speronello, River Edge, N.J., assignors to Engelhard Corporation, Menlo Park, N.J.

Filed Feb. 6, 1984, Ser. No. 577,092
Int. Cl.[4] B01J *20/16;* **C01B** *31/20*
U.S. Cl. 502—84 **11 Claims**

1. Porous mechanically and thermally stable microspheres consisting essentially of mullite obtained from caustic leached calcined clay, said bodies having palladium impregnated thereon.

4,608,358

CATALYST FOR THE ISOMERIZATION REACTION OF QUADRICYCLANES TO NORBORNADIENES

Zenichi Yoshida, and Sadao Miki, both of Kyoto, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Division of Ser. No. 580,262, Feb. 15, 1984, abandoned. This application Dec. 11, 1984, Ser. No. 680,530

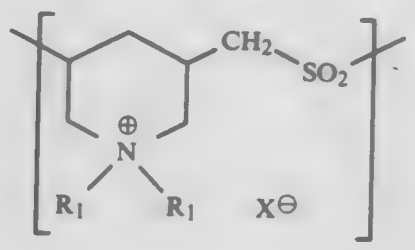
Claims priority, application Japan, Mar. 9, 1983, 58-39799; Mar. 9, 1983, 58-39800

Int. Cl.[4] B01J *21/08, 21/04, 21/16, 23/76*

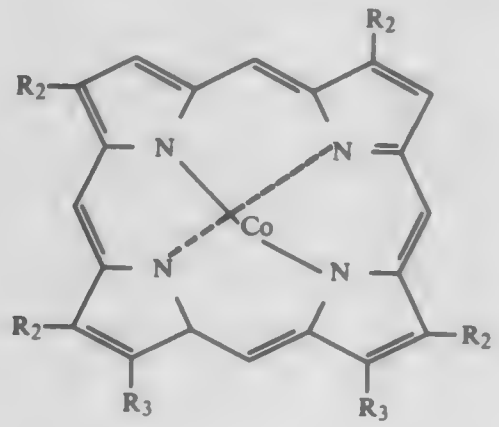
U.S. Cl. 502—164

1 Claim

1. A fixed catalyst for the isomerization of quadricyclanes to norbornadienes which is obtained by dipping an inorganic carrier selected from the group consisting of activated alumina, silica gel, and kaolin, into an aqueous solution of polyamine sulfone, comprising a repeating unit represented by the formula:



wherein R_1 represents a C_{1-3} alkyl and X represents a halogen atom, to be impregnated therewith and drying to form a modified inorganic carrier; dipping the formed modified inorganic carrier into an organic solvent having dissolved therein a porphyrin Co(II) complex represented by the formula:



wherein R_1 is defined above, R_2 represents a C_{1-3} alkyl group and R_3 represents a group of the formula $—C_nH_{2n}—COOH$, wherein n is 1 to 4, to be impregnated therewith; and removing the organic solvent whereby the prophyrin Co(II) complex is absorbed and fixed on said modified inorganic carrier.

4,608,359

IRON CARBIDE ON TITANIA SURFACE MODIFIED WITH GROUP VA OXIDES AS FISCHER-TROPSCH CATALYSTS

Israel E. Wachs, Bridgewater; Rocco A. Fiato, Scotch Plains, and Claudio C. Chersich, Englewood Cliffs, all of N.J., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Division of Ser. No. 626,068, Jun. 29, 1984, Pat. No. 4,559,365. This application Jul. 29, 1985, Ser. No. 759,669

Int. Cl.[4] B01J *27/22, 23/20, 21/06;* C07C *1/04*

U.S. Cl. 502—177

17 Claims

1. A catalyst comprising iron carbide supported on a surface modified titania support wherein said support comprises an oxide of a metal selected from the group consisting of niobium, vanadium, tantalum or mixture thereof supported on said titania wherein at least a portion of said supported oxide of niobium, vanadium, tantalum or mixture thereof is in a non-crystalline form, wherein the amount of said supported oxide ranges from about 0.5 to 25 weight percent metal oxide on the titania support based on the total support composition and wherein the catalyst contains at least about 2 milligrams of iron, calculated as Fe_2O_3, per square meter of support surface.

6. A process for producing a catalyst comprising iron carbide supported on a surface modified titania support wherein said support comprises an oxide of a metal selected from the group consisting of niobium, vanadium, tantalum or mixture thereof supported on titania wherein at least a portion of said supported oxide is in a non-crystalline form and wherein the amount of said oxide supported on said titania support ranges from about 0.5 to 25 wt. % metal oxide based on the total support composition, said process comprising the steps of:

(a) depositing iron on the surface modified titania support from a solution of iron precursor compound in an amount such that the final catalyst will contain supported iron in an amount of at least about 2 milligrams of iron, calculated as Fe_2O_3, per square meter of support surface;

(b) calcining the iron precursor supported on titania produced in step (a) at a temperature of from about 120° to 500° C. for a time sufficient to decompose said iron precursor material and convert at least a portion of said supported iron to Fe_2O_3; and

(c) contacting said calcined composite formed in step (b) with hydrogen at a temperature of from between about 150°–800° C. for a time sufficient to convert at least a portion thereof to a reduced composite; and

(d) contacting said reduced composite formed in (c) with CO at an elevated temperature of at least about 200° C. for a time sufficient to form said catalyst.

13. As a composition of matter, a composite produced by the steps of:

(a) depositing a precursor material of an oxide of a metal selected from the group consisting of niobium, tantalum, vanadium or mixture thereof on the surface of titania to form a precursor/titania composite;

(b) calcining the composite formed in step (a) above to convert the precursor to the oxide to form the surface modified titania support wherein said so-formed oxide is present on the surface of the titania in an amount of from about 0.5 to 25 wt. % based on the support composition;

(c) depositing iron on the surface modified titania support from a solution of iron precursor compound in an amount such that the final catalyst will contain supported iron in an amount of at least about 2 milligrams of iron, calculated as Fe_2O_3, per square meter of titania support surface;

(e) calcining the iron precursor supported on titania produced in step (a) at a temperature of from about 120° to 500° C. for a time sufficient to decompose said iron precursor material and convert at least a portion of said supported iron to Fe_2O_3;

(f) contacting said calcined composite formed in step (e) with hydrogen at a temperature of from between about 150°–800° C. for a time sufficient to convert at least a portion thereof to a reduced composite; and

(g) contacting said reduced composite formed in (f) with CO at an elevated temperature of at least about 200° C. for a time sufficient to form said catalyst.

4,608,360

DEHYDROGENATION CATALYST COMPOSITIONS AND METHOD OF PREPARING SAME

Hayim Abrevaya, Chicago, and Tamotsu Imai, Mount Prospect, both of Ill., assignors to UOP Inc., Des Plaines, Ill.

Filed Jul. 2, 1985, Ser. No. 751,340

Int. Cl.[4] B01J *23/58, 23/62, 27/08*

U.S. Cl. 502—226

19 Claims

1. A catalytic composite comprising a Group VIII noble metal component, a co-formed IVA metal component, an alkali metal or alkaline earth metal component and an alumina support having a surface area of from 5 to 150 m^2/g wherein less than about 18% of the total pore volume of the support is associated with pores having mean diameters of about 300 Angstroms or less and more than about 55% of the total pore

volume of the support is associated with pores having mean diameters of about 600 Angstroms or more.

4,608,361

CATALYST CARRIERS AND PROCESS FOR PREPARATION OF THE SAME

Nobutaka Kanamori, Tokyo, and Masaji Kurosawa, Chiba, both of Japan, assignors to Nichias Corporation; Honshu Paper Mfg. Co., Ltd., both of Tokyo and Sakai Chemical Industry Co., Ltd., Osaka, all of, Japan

Continuation of Ser. No. 248,027, Mar. 26, 1981, abandoned. This application Dec. 8, 1983, Ser. No. 559,310

Claims priority, application Japan, Mar. 26, 1980, 55-37495

Int. Cl.[4] B01J *32/00;* B28B *1/50;* D21F *11/02*

U.S. Cl. 502—232 24 Claims

1. A process for producing a sheet for a catalyst carrier for vapor-phase reactions, which comprises in combination the steps of:

mixing ceramic fibers, organic fibers, and an organic binder to form a slurry;

forming said slurry into a sheet of paper having a density of 0.2 to 0.4 gram per cubic centimeter;

impregnating said sheet of paper with a silicon compound selected from the group consisting of colloidal silica and ethyl silicate;

converting said silicon compound to silica gel by drying; and

heating said impregnated sheet at a temperature of up to about 1,000° C. to burn up said organic fibers and said organic binder.

15. A sheet for a catalyst carrier produced by a process according to claim 1.

4,608,362

CATALYST FOR THE PRODUCTION OF ALLYL ACETATE

Charles A. Drake, Nowata, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 663,266, Oct. 22, 1984, abandoned. This application Aug. 2, 1985, Ser. No. 761,982

Int. Cl.[4] B01J *21/00, 23/58, 23/64*

U.S. Cl. 502—243 6 Claims

1. A catalyst suitable for the acetoxylation of propylene consisting essentially of metals on a support said metals consisting essentially of potassium, bismuth, palladium, and a promoting amount of rubidium.

4,608,363

ACTIVATED ALUMINA CLAUS CATALYST HAVING INCREASED SODIUM OXIDE CONTENT

Kenneth P. Goodboy, Plum Borough, Pa., assignor to Aluminum Company of America, Pittsburgh, Pa.

Continuation of Ser. No. 362,383, Mar. 26, 1982, Pat. No. 4,568,664, which is a continuation of Ser. No. 170,638, Jul. 21, 1980, Pat. No. 4,364,858. This application Sep. 19, 1985, Ser. No. 777,519

The portion of the term of this patent subsequent to Feb. 4, 2003, has been disclaimed.

Int. Cl.[4] B01J *21/04, 23/04*

U.S. Cl. 502—330 6 Claims

1. An activated alumina catalyst containing sodium oxide for promoting the reaction of hydrogen sulfide and sulfur dioxide so that such compounds may be removed from gases, the catalyst having increased resistance to sulfate poisoning and increased catalytic activity, characterized by the catalyst having a specific surface area greater than 100 m^2/g (BET) and a sodium oxide content in an amount greater than 1.0 wt % (1100° C. calcined basis), the remainder being activated alumina.

4,608,364

PHARMACEUTICAL AGENT FOR THE TREATMENT OF DIABETES MELLITUS

Ulrich Grau, Hofheim am Taunus, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Jul. 20, 1984, Ser. No. 632,859

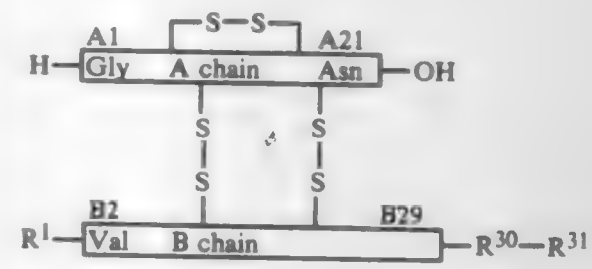
Claims priority, application Fed. Rep. of Germany, Jul. 22, 1983, 3326473

Int. Cl.[4] A61K *37/26*

U.S. Cl. 514—4 19 Claims

1. A pharmaceutical composition stable on storing and being suitable for the treatment of diabetes mellitus consisting of a physiologically acceptable excipient and an active compound combination, which contains, as the active compound combination,

(a) an insulin derivative of the formula I



(I)

in which

R^1 denotes H or H—Phe

R^{30} represents the radical of Ala, Thr or Ser and

R^{31} represents a physiologically acceptable organic group of basic character of the formula X_n—S which has up to 50 carbon atoms, in which

n is 0, 1, 2 or 3,

X represents identical or different radicals of naturally occurring neutral or basic α-amino acids and

S denotes OH or a physiologically acceptable group which blocks the carboxyl group but S being, if n is 0, a positively charged or protonatable basic radical or, if n is greater than 0, S can carry such a radical, or in which, if n is 2 or 3, the C-terminus X—S can also represent the homoserine-lapton radical

and which contains or does not contain a terminal carboxyl function or an ester or an amide thereof,

with an iso electric point between 5.8 and 8.5, and

(b) an insulin of the formula I in which R^1 denotes H or H—Phe, R^{30} represents Ala, Thr or Ser and R^{31} denotes OH, or

(b2) physiologically acceptable salts thereof, or

(b3) proinsulin or

(b4) C peptide or

(b5) a combination thereof, component (a) being present in an amount of at least 1% by weight.

4,608,365

TREATMENT OF NEUROLOGIC FUNCTIONS

W. King Engel, Los Angeles, Calif., assignor to University of Southern California, Los Angeles, Calif.

Filed Mar. 30, 1984, Ser. No. 595,214

Int. Cl.[4] A61K *37/43*

U.S. Cl. 514—18 36 Claims

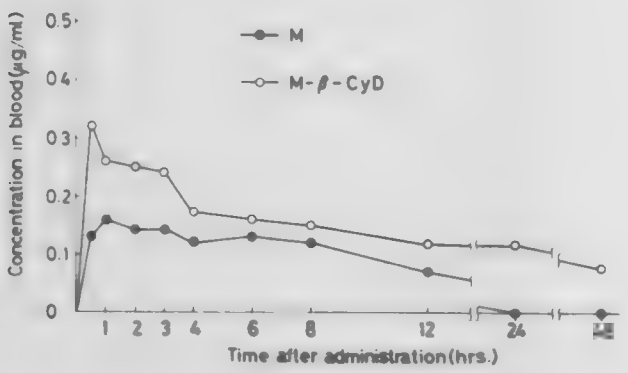
1. A method for improving a dysfunction of the lower motor neurons or upper motor neurons in a mammal, comprising the repeated administration to the mammal suffering from said dysfunction of a therapeutically-effective amount of TRH.

4,608,366

ORAL CYCLODEXTRIN AND MOBENZOXAMINE PREPARATION

Takahito Hasegawa, and Hideo Adachi, both of Takayama, Japan, assignors to Taiyo Pharmaceutical Industry Co., Ltd., Takayama, Japan

Filed May 30, 1985, Ser. No. 739,275
Claims priority, application Japan, Mar. 11, 1985, 60-47642
Int. Cl.[4] A61K *31/73*
U.S. Cl. 514—58 1 Claim



1. An orally administratable mobenzoxamine complex comprising a clathrate compound of mobenzoxamine or a salt thereof and cyclodextrin, wherein the ratio of mobenzoxamine or the salt thereof to cyclodextrin ranges from 1:1 to 1:4 by molar ratio.

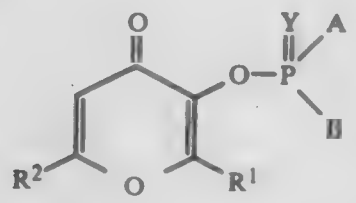
4,608,367

γ-PYRONE PHOSPHORIC ESTER DERIVATIVES AND INSECTICIDAL AND MITICIDAL COMPOSITIONS THEREOF

Yoshinori Endo, Naruto, and Hisashi Takao, Tokushima, both of Japan, assignors to Otsuka Kagaku Kabushiki Kaisha, Osaka, Japan

Filed Jul. 25, 1985, Ser. No. 758,735
Claims priority, application Japan, Jul. 31, 1984, 59-162078
Int. Cl.[4] A01N *57/02;* C07F *9/165, 9/24, 9/65*
U.S. Cl. 514—89 5 Claims

1. γ-Pyrone phosphoric ester derivative represented by the general formula



[I]

wherein R^1 is hydrogen, lower alkyl group, lower alkenyl group, cycloalkyl group or phenyl group, R^2 is hydrogen or lower alkyl group unsubstituted or substituted with halogen atom, A is $—SR^3$ or $—NR^4R^5$, B is OR^6, R^3 being lower alkyl group, cycloalkyl group or phenyl group, R^4 being hydrogen or lower alkyl group, R^5 being lower alkyl group, lower alkenyl group, cycloalkyl group, phenyl group or benzyl group, R^4 and R^5 may link to form piperidino or morpholino group, R^6 being lower alkyl group, cycloalkyl group or phenyl group, Y is oxygen or sulfur atom.

2. An insecticidal or miticidal composition comprising, as an effective component for agricultural and horticultural uses, γ-pyrone phosphoric ester derivative as claimed in claim 1, in association with an acceptable carrier or diluent.

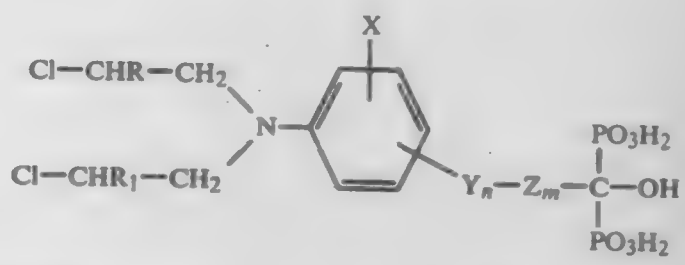
4,608,368

1-HYDROXY-1,1-DIPHOSPHONIC ACIDS AND CYTOSTATIC USE THEREOF

Helmut Blum, Duesseldorf; Wolfgang Greb, Duesseldorf-Kaiserswerth; Hinrich Moeller, Monheim; Dietrich Schmaehl, Heidelberg; Harald Schnegelberger, Leichlingen; Hannsjoerg Sinn, Wiesloch, and Franz Wingen, Heidelberg, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Fed. Rep. of Germany

Filed Jul. 10, 1985, Ser. No. 753,479
Claims priority, application Fed. Rep. of Germany, Jul. 13, 1984, 3425812
Int. Cl.[4] C07F *9/38;* A61K *31/135, 31/085, 31/10*
U.S. Cl. 514—107 11 Claims

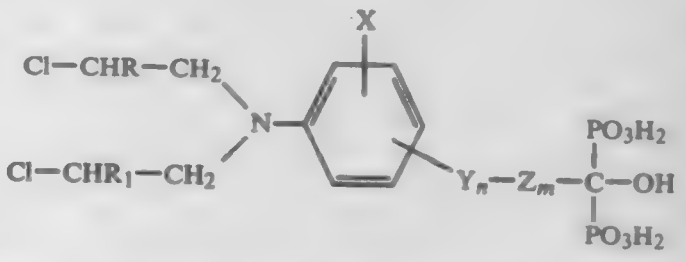
1. A 1-hydroxy-1,1-diphosphonic acid compound of the formula



(I)

wherein R and R_1 can be the same or different and are hydrogen or methyl, x is hydrogen, halogen, an amino group optionally substituted with a lower acyl group, a lower alkyl group optionally substituted with an amino group or a lower acyl substituted amino group, or a lower alkoxy group, Y is O, S or NH, Z is a straight or branched chain C_1–C_{10} alkylene group optionally substituted with an amino group or a lower acyl substituted amino group, m and n are the integers 0 or 1 with the proviso that when n is 1, m is also 1; and pharmaceutically acceptable acid or base addition salts thereof.

7. A method of inhibiting cell growth in a mammal comprising treating said mammal with a cell growth-inhibiting quantity of a 1-hydroxy-1,1-diphosphonic acid compound of the formula



(I)

wherein R and R_1 can be the same or different and are hydrogen or methyl, x is hydrogen, halogen, an amino group optionally substituted with a lower acyl group, a lower alkyl group optionally substituted with an amino group or a lower acyl substituted amino group, or a lower alkoxy group, Y is O, S or NH, Z is a straight or branched chain C_1–C_{10} alkylene group optionally substituted with an amino group or a lower acyl substituted amino group, m and n are the integers 0 or 1 with the proviso that when n is 1, m is also 1; or a pharmaceutically acceptable acid or base addition salt thereof.

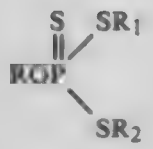
4,608,369

TRITHIOPHOSPHORIC ACID ESTER AS A SOIL PESTICIDE

Haruyasu Yamamoto, Takarazuka, and Takayuki Okabe, Nishinomiya, both of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Oct. 31, 1984, Ser. No. 666,324
Claims priority, application Japan, Nov. 4, 1983, 58-207786; Dec. 16, 1983, 58-238338
Int. Cl.[4] A01N *57/04;* C07F *9/165*
U.S. Cl. 514—144 5 Claims

1. A trithiophosphoric acid ester of the formula:



wherein R is lower alkyl, R_1 is methyl and R_2 is isobutyl.

4. A method for controlling soil pests which comprises applying a pesticidally effective amount of the trithiophosphoric acid ester according to claim 1 to the soil pests.

4,608,370

SKIN FORMULATION

Richard B. Aronsohn, 10571 Wyton Dr., Los Angeles, Calif. 90024

Filed Mar. 4, 1985, Ser. No. 707,862
Int. Cl.[4] A61K *7/48*
U.S. Cl. 514—159 4 Claims

1. A face treating composition effective when applied to the face to cause the epidermis to dry up and producing light peeling of dead surface skin, without any substantial irritating effect to the skin, which consists essentially of about 3 to about 7 parts salicylic acid, about 8 to about 12 parts resorcinol, about 8 to about 12 parts lactic acid and about 60 to about 90 parts ethyl alcohol, by weight.

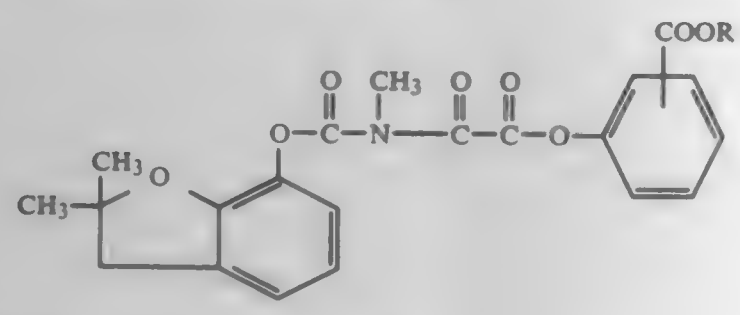
4,608,371

COMBATING INSECTS WITH CERTAIN 2,3-DIHYDRO-2,2-DIMETHYL-7-BENZOFURANYL N-OXALYL-N-METHYL CARBAMATES

Narayana M. Mallipudi, Lawrenceville, N.J., and John G. Hollingshaus, Yardley, Pa., assignors to American Cyanamid Company, Stamford, Conn.

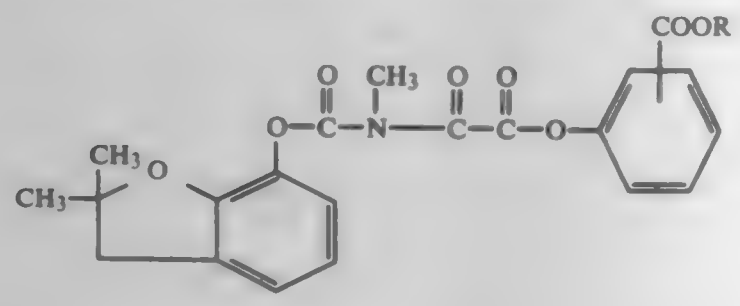
Filed Mar. 11, 1985, Ser. No. 710,796
Int. Cl.[4] A01N *47/22;* C07D *307/86*
U.S. Cl. 514—186 13 Claims

1. A compound having the formula



wherein R is H; C_1–C_4 lower alkyl, benzyl and salts of the free acid.

9. A method for controlling insects comprising applying to the insects, their habitat or food supply an insecticidally effective amount of a compound having the formula



wherein R is H; C_1–C_4 lower alkyl, benzyl and salts of the free acid.

4,608,372

PROCESS FOR PREPARING β′ FORM OF COPPER 8-HYDROXYQUINOLINE

Bernard Muller, St-Germain-en-Laye; René Piat, Bois-Guillaume; Cornelis Reusing, Oissel, and Jean-Paul Trajin, Rouen, all of France, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 572,606, Jan. 20, 1984, Pat. No. 4,517,362, which is a continuation of Ser. No. 393,219, Jun. 28, 1982, abandoned. This application Feb. 12, 1985, Ser. No. 700,855
Claims priority, application France, Jul. 6, 1981, 81 13249
Int. Cl.[4] C07D *215/30;* A01N *55/02*
U.S. Cl. 514—187 9 Claims

1. A stabilized composition comprising β′ form of copper 8-hydroxyquinoline and a hydration initiator selected from the group consisting of 8-hydroxyquinoline-5-sulfonic acid and salts thereof, halosub-stituted 8-hydroxyquinoline-5-sulfonic acid and salts thereof, and of 7-iodo-8-hydroxyquinoline-5-sulfonic acid and its salts.

2. A fungicidal composition which comprises an effective amount of β′ form of copper 8-hydroxyquinoline and a hydration inhibitor is selected from the group consisting of 8-hydroxyquinoline-5-sulfonic acid and salts thereof, halosubstituted 8-hydroxyquinoline-5-sulfonic acid and salts thereof, and of 7-iodo-8-hydroxyquinoline-5-sulfonic acid as its salts and an inert carrier material.

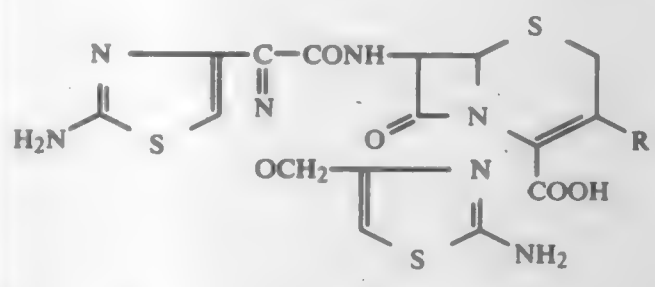
4,608,373

CEPHEM COMPOUNDS

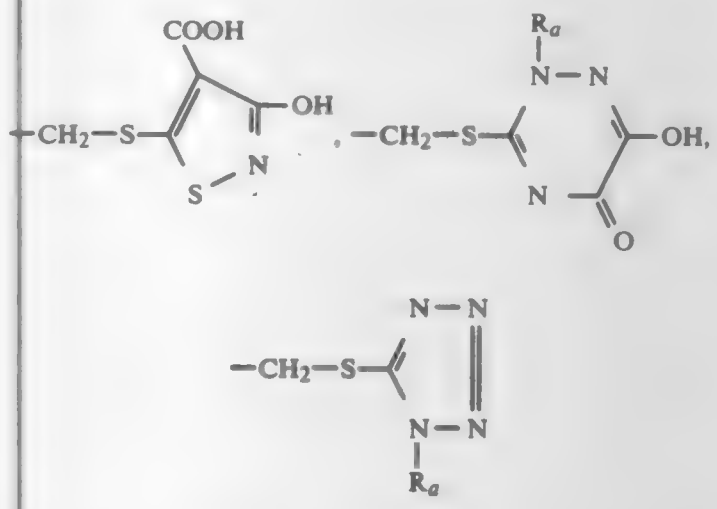
Tadao Shibanuma; Kohji Nakano; Noriaki Nagano; Yukiyasu Murakami, all of Saitama, and Ryuichiro Hara, Tokyo, all of Japan, assignors to Yamanouchi Pharmaceutical Co., Ltd., Tokyo, Japan

Filed Dec. 12, 1983, Ser. No. 560,412
Claims priority, application Japan, Dec. 13, 1982, 57-218208; Mar. 28, 1983, 58-52067; Mar. 28, 1983, 58-52068; Oct. 7, 1983, 58-188619; Oct. 11, 1983, 58-189555
Int. Cl.[4] C07D *501/34;* A61K *31/545*
U.S. Cl. 514—202 7 Claims

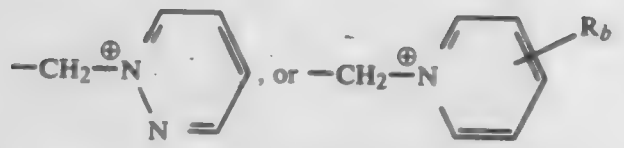
1. A cephem compound represented by the formula



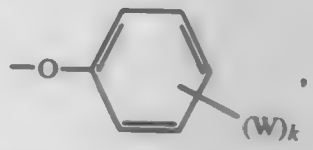
wherein R represents a lower alkyl group, which may be substituted by a lower acyloxy group, a lower alkylthio group,



(wherein R_a represents a hydrogen atom or a lower alkyl group),



-continued



[wherein R_b represents a hydrogen atom, $(CH_2)_mCOOH$, $(CH_2)_mOH$, $(CH_2)_mNH_2$, $(CH_2)_mSO_3H$, or CONH—R' (R' represents a hydrogen atom, a hydroxy group, or $(CH_2)_nCOOH$, m represents 0 or an integer of 1 to 3; and n represents an integer of 1 to 3)] and salts thereof.

k being 1, 2 or 3, W being each independently hydrogen, halogen, hydroxy, loweralkyl, trifluoromethyl, loweralkoxy, nitro, amino, diloweralkylamino, phenoxy, or benzyloxy, and Z being hydrogen, loweralkyl or halogen, or a pharmaceutically acceptable acid addition salt thereof.

4,608,374

11-SUBSTITUTED 5H,11H-PYRROLO[2,1-C][1,4]BENZOXAZEPINES AS ANTIPSYCHOTIC AND ANALGESIC AGENTS

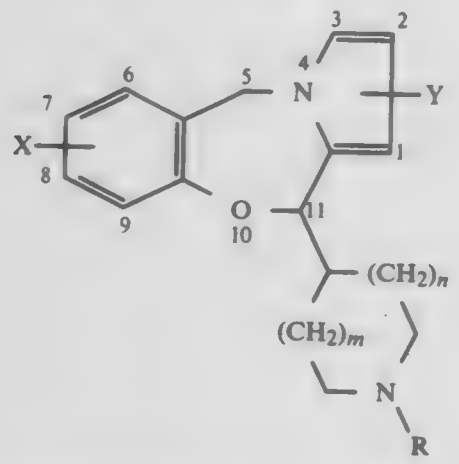
Richard C. Effland, Bridgewater; Larry Davis, Sergeantsville, and Kevin J. Kapples, Warren, all of N.J., assignors to Hoechst-Roussel Pharmaceuticals Inc., Somerville, N.J.

Filed Nov. 7, 1983, Ser. No. 549,098

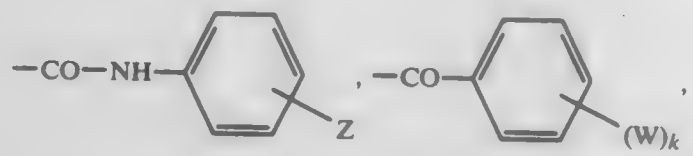
Int. Cl.[4] A61K *31/40*; C07D *498/04*, *401/06*, *403/06*

U.S. Cl. 514—211 **98 Claims**

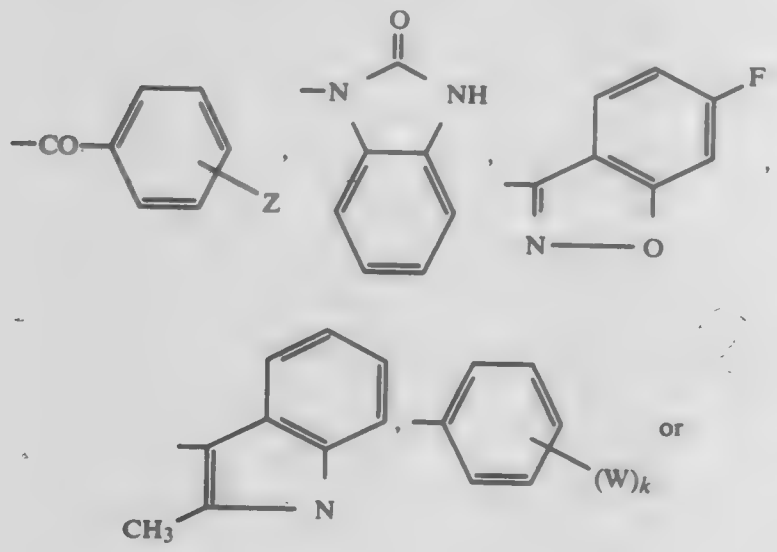
1. A compound of the formula



where m and n are each independently 0, 1 or 2 and m+n is 1 or 2, X and Y are each independently hydrogen, loweralkyl or halogen, and R is hydrogen, cyano, —C(NH$_2$)NOH,



unsubstituted loweralkyl, or substituted loweralkyl having one to three substituents each of which being independently cyano, hydroxy, cyclohexyl, furyl, thienyl,



4,608,375

QUINAZOLINONE DERIVATIVES, PROCESSES FOR THE PREPARATION THEREOF AND PHARMACEUTICAL COMPOSITION COMPRISING THE SAME

Ikuo Ueda, Uenohigashi, and Masayuki Kato, Minoo, both of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

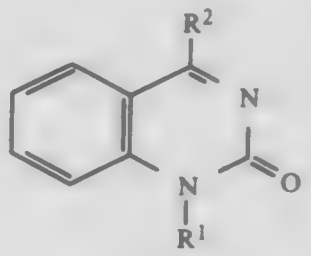
Filed Jun. 21, 1984, Ser. No. 622,881

Claims priority, application Japan, Jun. 27, 1983, 58-116732

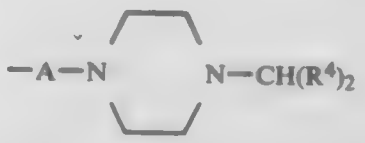
Int. Cl.[4] A61K *31/445*; C07D *239/82*, *403/12*

U.S. Cl. 514—218 **6 Claims**

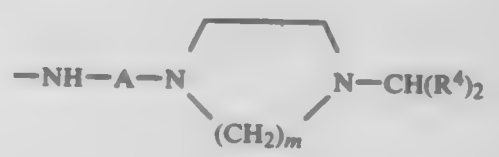
1. New quinazolinone derivatives of the formula:



wherein R^1 is lower alkyl or a group of the formula:



wherein A is lower alkylene and R^4 is aryl, R^2 is amino, lower alkylamino or a group of the formula:



wherein A and R^4 are each as defined above and m is an integer of 2 or 3, and pharmaceutically acceptable salts thereof.

5. An antiallergic pharmaceutical composition comprising an effective amount of a compound of claim 1 or a pharmaceutically acceptable salt thereof as an effective ingredient, in association with a pharmaceutically acceptable, substantially nontoxic carrier or excipient.

4,608,376

OPIATE AGONISTS AND ANTAGONISTS

Gavril W. Pasternak, New York, N.Y., assignor to Carolyn McGinnis, New York, N.Y.

Continuation-in-part of Ser. No. 312,018, Oct. 16, 1981, abandoned. This application Sep. 30, 1982, Ser. No. 430,630

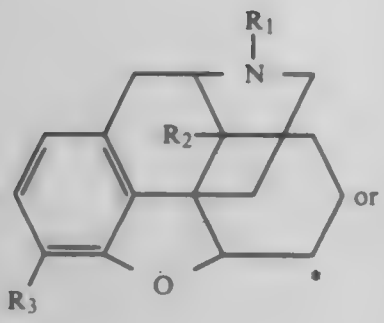
Int. Cl.[4] C07D *491/22*, *471/18*; A61K *31/485*

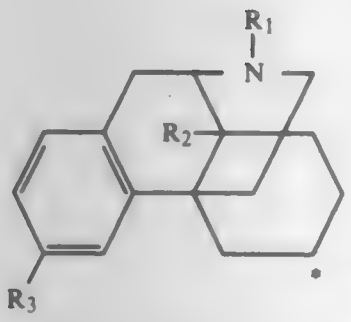
U.S. Cl. 514—282 **3 Claims**

1. Dihydromorphinone compound of the general formula

HDM=N—R

wherein

HDM is  or



R1 is alkyl with 1 to 10 carbon atoms or alkenyl of 2 to 10 carbon atoms,
R2 is OH or H,
R3 is OH,

R is $-N=R_4$, $-NH-R_5$, $-NHC(CH_2)_nCNHN=R_4$ or

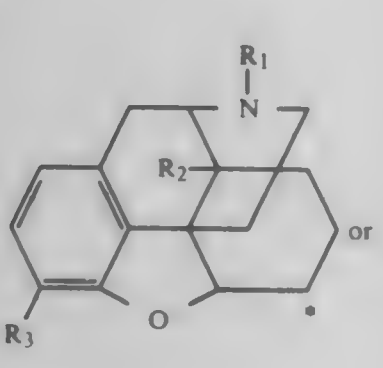
$-NHCCH=CHCNHN=R_4$,

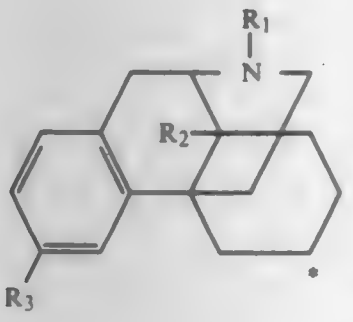
R4 is HDM, alkenylidene with 2 to 10 carbon atoms, or cycloalkenylidene of up to 6 carbon atoms,
R5 is phenyl, alkyl of 1 to 4 carbon atoms, alkenyl with 2 to 10 carbon atoms, cycloalkyl of up to 6 carbon atoms, or cycloalkenyl of up to 6 carbon atoms and
n is 1–10.

2. Method of controlling appetite comprising selectively and/or irreversibly blocking the mu1 opiate receptors by administering an effective amount of a dihydromorphinone compound of the formula

HDM=N—R

wherein

HDM is  or



R1 is alkyl with 1 to 10 carbon atoms or alkenyl of 2 to 10 carbon atoms,
R2 is OH or H
R3 is OH or OCH_3 and

R is $-N=R_4$, $-NH-R_5$, $-NHC(CH_2)_nCNHN=R_4$ or

$-NHCCH=CHCNHN=R_4$,

R4 is HDM, alkenylidene with 2 to 10 carbon atoms, or cycloalkenylidene of up to 6 carbon atoms,
R5 is phenyl, alkyl of 1 to 4 carbon atoms, alkenyl with 2 to 10 carbon atoms, cycloalkyl of up to 6 carbon atoms, or cycloalkenyl of up to 6 carbon atoms and
n is 1–10.

3. Method of reducing opiate dependency in an addict comprising administering an effective amount of the compound of claim 1.

4,608,377

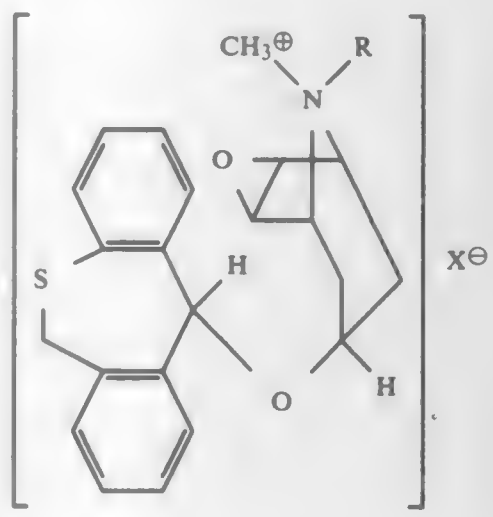
QUATERNARY 6,11-DIHYDRO-DIBENZO-[B,E]-THIEPINE-11-N-ALKYL-NORSCOPINE ETHERS HAVING SPASMOLYTIC ACTIVITY

Rolf Banholzer, Ingelheim, and Rudolf Bauer, Wiesbaden, both of Fed. Rep. of Germany, assignors to Boehringer Ingelheim KG, Ingelheim am Rhein, Fed. Rep. of Germany

Continuation of Ser. No. 471,353, Mar. 2, 1983, abandoned. This application Jun. 25, 1984, Ser. No. 623,963
Claims priority, application Fed. Rep. of Germany, Mar. 26, 1982, 3211185
Int. Cl.[4] C07D *491/08;* A61K *31/46*
U.S. Cl. 514—291 18 Claims

1. A compound of the formula

(I)



wherein
R is a linear or branched alkyl having from 1 to 10 carbon atoms and
$X^{(-)}$ is a non-toxic, pharmacologically acceptable anion.

18. A method of treating spasms or bronchospasms which comprises administering perorally, parenterally, or rectally to a host in need of such treatment an effective amount of a compound of claim 1.

4,608,378
TETRAHYDROISOXAZOLO[4.5-c]PYRIDINE DERIVATIVES USEFUL IN THE TREATMENT OF MALFUNCTIONS OF THE ACETYLCHOLINE OR MUSCARINIC SYSTEMS

Erik Falch, Vedbaek; Povl Krogsgaard-Larsen, Allerod; Per Sauerberg, Copenhagen-Valby; Anne V. Christensen, Farum, and Jens-Jorgen Larsen, Hillerod, all of Denmark, assignors to H. Lundbeck A/S, Copenhagen-Valby, Denmark

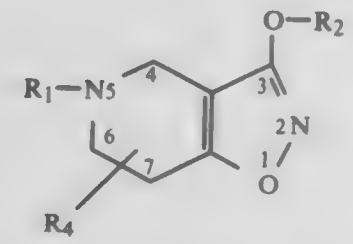
Filed May 18, 1984, Ser. No. 611,697

Claims priority, application United Kingdom, May 24, 1983, 8314391

Int. Cl.[4] A61K *31/44*; C07D *498/04*

U.S. Cl. 514—302 16 Claims

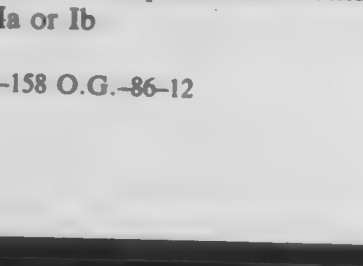
1. A tetrahydroisoxazolo 4,5-c pyridine derivative selected from those having the following formula:



I

wherein R_1 is hydrogen, C1–C6 alkyl or phenyl-lower alkyl, in which the phenyl group may be substituted with halogen, lower-alkyl, or lower-alkoxy; R_2 is C1–C6 alkyl, C1–C6 alkenyl, C1–C6 alkynyl, or phenyl-lower alkyl, in which the phenyl group may be substituted with halogen, lower-alkyl, or lower-alkoxy, and R_4 is hydrogen or C1–C6 alkyl, or a pharmaceutically-acceptable acid addition salt thereof, provided that R2 cannot be C1–C6 alkyl when both R1 and R4 are hydrogen.

14. Method for the treatment of a disorder, caused by malfunction of the acetycholine or muscarinic system, comprising the step of administering to a subject in need thereof a compound of the formula



I

wherein R_1 is hydrogen, C1–C6 alkyl or phenyl-lower alkyl, in which the phenyl group may be substituted with halogen, lower-alkyl, or lower-alkoxy; R_2 is C1–C6 alkyl, C1–C6 alkenyl, C1–C6 alkynyl, or phenyl-lower alkyl, in which the phenyl group may be substituted with halogen, lower-alkyl, or lower-alkoxy, and R_4 is hydrogen or C1–C6 alkyl, or a pharmaceutically-acceptable acid addition salt thereof, in an amount effective for alleviation of said disorder.

4,608,379
ANTIFUNGAL COMPOSITION AND METHOD EMPLOYING PYRIDINIUM COMPOUNDS

John T. A. Boyle, Cookham, England, assignor to John Wyeth & Brother Limited, Maidenhead, England

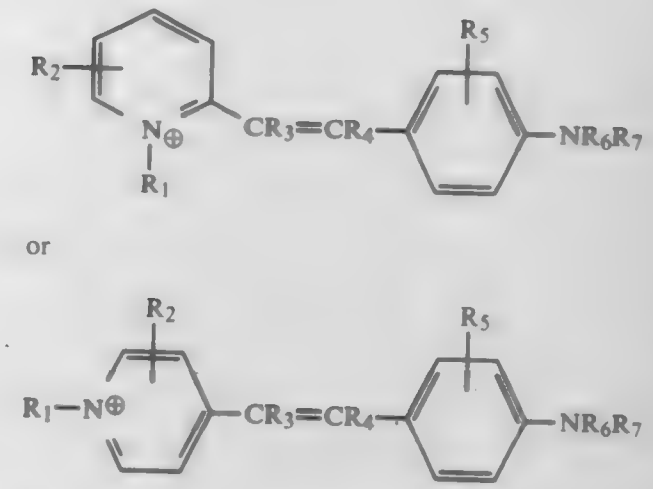
Filed Sep. 5, 1984, Ser. No. 647,577

Claims priority, application United Kingdom, Sep. 7, 1983, 8323949

Int. Cl.[4] A01N *43/40, 43/84*

U.S. Cl. 514—318 22 Claims

2. A method of treatment of a subject in need of anti-fungal therapy, which comprises administration of an effective amount of a compound that contains a cation having the formula Ia or Ib



(Ia)

or

(Ib)

I (in which R_1 is selected from alkyl containing 3 to 20 carbon atoms and phenyl lower alkyl; R_2 and R_5 are independently selected from hydrogen, lower alkyl, lower alkoxy, halogen and nitro; R_3 and R_4 are independently selected from hydrogen and lower alkyl; R_6 and R_7 when separate, are independently selected from lower alkyl and phenylloweralkyl; and R_6 and R_7, when joined together, represent a group selected from those having the formula II

$$—(CH_2)_2—A—(CH_2)_2— \quad (II)$$

(where A is selected from $—(CH_2)_n—$, O, S and NR_8 where n is selected from 0, 1 and 2 and R_8 is lower alkyl and their mono- and di- (lower alkyl) substitution products) and a pharmaceutically acceptable anion to the said subject.

4,608,380
SUBSTITUTED AMINOPYRIDONES HAVING HISTAMINE H_2-RECEPTOR BLOCKING ACTIVITY

Thomas H. Brown, Tewin, England, assignor to Smith Kline & French Laboratories Limited, Welwyn Garden City, England

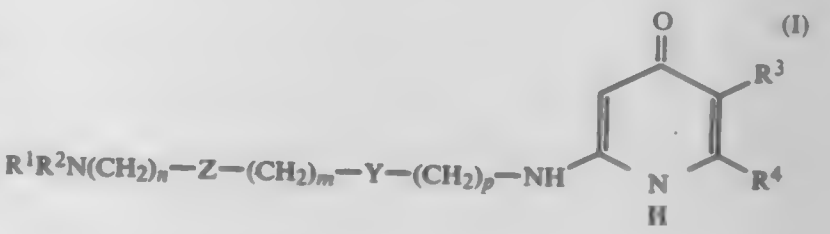
Filed Nov. 28, 1984, Ser. No. 675,661

Claims priority, application United Kingdom, Dec. 1, 1983, 8332091

Int. Cl.[4] C07D *211/86*; A61K *31/44, 31/445*

U.S. Cl. 514—318 21 Claims

1. A compound of the formula (I):



(I)

or a pharmaceutically acceptable salt thereof, wherein R^1 and R^2 together represent $—(CH_2)q—$ wherein q is 4 to 6, to form together with the nitrogen atom to which they are attached a 5–7 membered saturated ring, optionally substituted by C_{1-6}alkyl;

n is an integer from 1 to 6;

Z is 1,3-phenylene, 1,4-phenylene, 2,4-pyridyl (wherein the $R^1R^2N(CH_2)_n$ group is in the 4-position);

m is zero or one;

Y is oxygen, sulphur or methylene;

p is two, three or four; and

R^3 is hydrogen, C_{1-6}alkyl or aryl(C_{1-6})alkyl and R^4 is hydrogen or C_{1-6}alkyl.

16. A method of blocking histamine H_2-receptors which comprises administering to an animal an effective amount to block said receptors of a compound of claim 1.

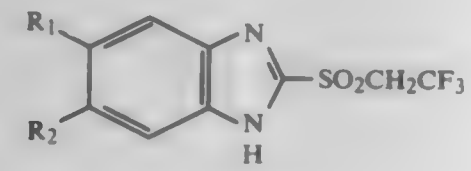
4,608,381

ANTIINFLAMMATORY 2-(TRIFLUOROETHYLSULFONYL)BENZIMIDAZOLES

Edward S. Lazer, Trumbull, Conn., assignor to Boehringer Ingelheim Pharmaceuticals, Inc., Ridgefield, Conn.

Filed May 30, 1985, Ser. No. 739,402
Int. Cl.[4] A61K *31/415;* C07D *235/28*
U.S. Cl. 514—395 34 Claims

1. A compound of the formula:



wherein R_1 and R_2 are each independently hydrogen, halogen or C_1–C_2 lower alkyl or a nontoxic, pharmaceutically acceptable salt thereof.

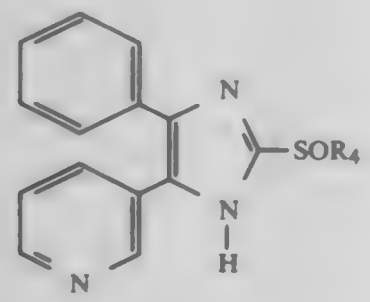
4,608,382

2-(SULPHINYL AND SULFONYL)-4(5)-PHENYL-5(4)-(3'-PYRIDYL)-IMIDAZOLS

Pier G. Ferrini, Binningen, and Richard Göschke, Bottmingen, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

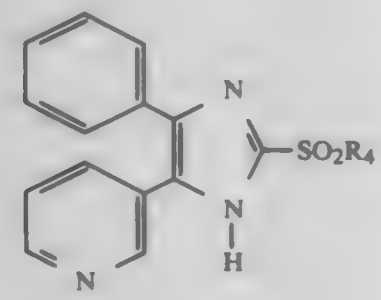
Continuation of Ser. No. 321,840, Nov. 16, 1981, Pat. No. 4,461,770, which is a continuation of Ser. No. 200,880, Oct. 27, 1980, abandoned, which is a continuation-in-part of Ser. No. 134,802, Mar. 28, 1980, abandoned, which is a continuation-in-part of Ser. No. 025,310, Mar. 30, 1979, abandoned, and a continuation-in-part of Ser. No. 186,038, May 11, 1980, abandoned. This application Mar. 9, 1984, Ser. No. 588,025
Claims priority, application Luxembourg, Apr. 11, 1978, 79412
Int. Cl.[4] A61K *31/44;* C07D *401/04*
U.S. Cl. 514—341 8 Claims

1. A compound selected from the group consisting of (i) a 2-sulfinyl-4(5)-phenyl-5(4)-(pyrid-3-yl)-imidazole of the formula:



wherein R_4 is methyl or ethyl;

(ii) a 2-sulfonyl-4(5)-phenyl-5(4)-(pyrid-3-yl)imidazole of the formula:



wherein R_4 is methyl or ethyl;

(iii) the N-oxides thereof; and

(iv) the pharmaceutically acceptable salts thereof.

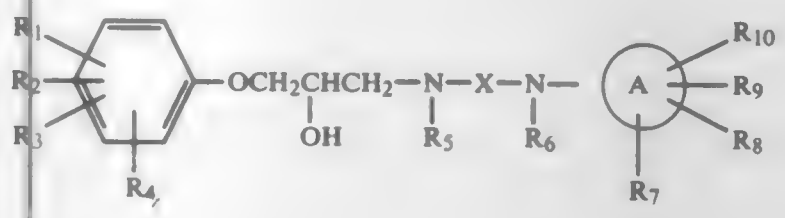
4,608,383

CARDIOACTIVE PYRAZOLE AND IMIDAZOLE ARYLOXYPROPANOLAMINES

Fritz Wiedemann, deceased, late of Weinheim-Lutzel (by Ingrid Wiedmann, heiress); Wolfgang Kampe, Heddesheim; Karl Dietmann, deceased, late of Mannheim (by Lieselotte Dietmann, heiress), and Gisbert Sponer, Laudenbach, all of Fed. Rep. of Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 273,543, Jun. 15, 1981, Pat. No. 4,438,128. This application Oct. 3, 1983, Ser. No. 538,693
Claims priority, application Fed. Rep. of Germany, Jun. 23, 1980, 3023369
Int. Cl.[4] A61K *31/415, 31/505;* C07D *231/38, 231/54, 239/42, 239/54, 233/88, 233/48*
U.S. Cl. 514—407 10 Claims

1. An aryloxypropanolamine of the formula



wherein

R_1, R_2, R_3 and R_4, which may be the same or different, are hydrogen or halogen atoms or lower alkyl, cyano, carboxamide, hydroxyl, lower acyloxy, lower alkoxy, lower alkenyloxy or aryl lower alkoxy radicals,

R_5 and R_6, which may be the same or different, are hydrogen atoms or lower alkyl radicals,

X is a straight or branched alkylene chain having 2 to 6 carbon atoms,

A is a pyrazole or imidazole group attached to the —X—NR_6— chain through a ring carbon atom or a partially hydrogenated pyrazole or imidazole group attached to the —X—NR_6— chain through a ring carbon atom but not a fully hydrogenated monocyclic and

R_7, R_8, R_9 and R_{10}, which may be the same or different are mono or divalent substituents selected from hydrogen, halogen, nitro, hydroxylamino, amino, lower acylamino, lower alkylamino, di-(lower alkyl)-amino, hydroxyethylamino, di-(hydroxyethyl)amino, hydroxyl, lower alkoxy, allyloxy, methoxy lower alkoxy, cyano, carboxamido, carboxy, methoxy lower alkoxycarbonyl, hydroxymethyl, lower alkoxymehtyl, halomethyl, aminomethyl, lower acylaminomethyl, di-(lower alkyl-aminomethyl, pyrrolidinomethyl, piperidinomethyl, di-(hydroxyethyl)-aminomethyl, morpholinomethyl, piperazinomethyl, 4-lower acylpiperazinomethyl, 4-lower alkyl-piperazinomethyl, lower alkyl, lower alkenyl, 2-cyanoethyl, 2-(lower alkoxycarbonyl)-ethyl, 2-carboxyethyl, 2-hydroxyethyl, phenyl lower alkyl and phenyl, the phenyl radicals being optionally substituted with 1 or 2 -hydroxyl or methoxy radicals, oxygen or sulphur, with the exception of mixed alkoxy and hydroxy substituents on the pyrazole, imidazole or phenyl groups or a pharmacologically compatible salt thereof.

9. A method of combating cardiac and circulatory diseases comprising administering to a patient suffering therefrom an amount effective therefor of a compound or salt according to claim 1.

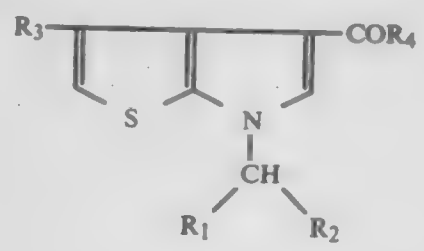
4,608,384

THIENO[2,3-B] PYRROLE COMPOUNDS AND ANALGESIC USE THEREOF

Michel Wierzbicki, Puteaux, and Jacques Buré, Neuilly sur Seine, both of France, assignors to Adir, S.A.R.L., Neuilly-sur-Seine, France

Filed Dec. 12, 1983, Ser. No. 560,419
Claims priority, application France, Dec. 16, 1982, 82 21090
Int. Cl.[4] C07D *495/04;* A61K *31/38*
U.S. Cl. 514—413 13 Claims

1. A compound selected from the group consisting of: thieno[2,3-b]pyrrole compounds of the formula:



(I)

in which

R_1 is selected from the group consisting of hydrogen, and straight and branched alkyl having from 1 to 5 carbon atoms inclusive

R_2 is selected from the group consisting of:

carboxy,

COOM in which M is selected from the group consisting of alkali metals, ammonium, mono-, di-, and tri- (C_1–C_5) alkylammonium and these radicals mono-substituted by hydroxy;

COOR in which R is selected from the group consisting of alkyl having from 1 to 5 carbon atoms inclusive

R_3 is selected from the group consisting of straight and branched alkyl having from 1 to 5 carbon atoms inclusive

R_4 is selected from the group consisting of and alkyl having from 1 to 5 carbon atoms inclusive phenyl, halophenyl, (C_1–C_5) alkylphenyl and (C_1–C_5)alkoxyphenyl.

13. A method for treating a living animal body afflicted with pain comprising the step of administering to the said living animal an effective analgesic amount of a compound of claim 1 which is effective for the alleviation of the said condition.

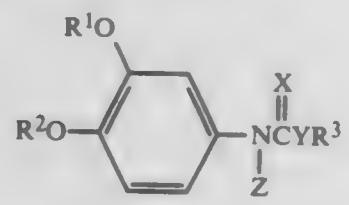
4,608,385

FUNGICIDAL N-PHENYLCARBAMATES

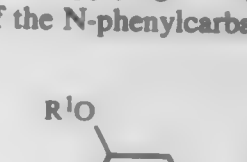
Hiroshi Noguchi, Toyonaka; Toshiro Kato, Takarazuka; Junya Takahashi, Nishinomiya; Yukio Ishiguri, Takarazuka; Shigeo Yamamoto, Ikeda, and Katsuzo Kamoshita, Osaka, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Oct. 22, 1982, Ser. No. 436,073
Claims priority, application Japan, Oct. 29, 1981, 56-174043; Jan. 19, 1982, 57-7257
Int. Cl.[4] C07C *155/02, 155/08;* A01N *47/10, 43/08*
U.S. Cl. 514—444 42 Claims

1. A fungicidal composition which comprises as an active ingredient a fungicidally effective amount of an N-phenylcarbamate of the formula:

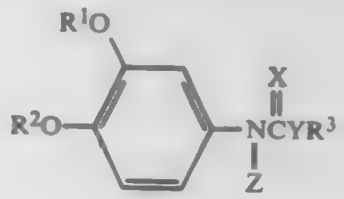


wherein R^1 and R^2 are, same or different, a lower alkyl group, a lower alkenyl group, a lower alkynyl group or a lower alkyl group substituted with at least one member selected from the group consisting of halogen, lower alkoxy and lower cycloalkyl; R^3 is a C_1–C_8 alkyl group, a C_3–C_8 alkenyl group, a C_3–C_8 alkynyl group, lower cycloalkyl group, a lower haloalkenyl group, a lower haloalkynyl group, a lower aralkyl group, a lower alkyl group substituted with at least one member selected from the group consisting of halogen, cyano, lower alkoxy, lower alkenyloxy, lower haloalkoxy, phenoxy, lower aralkyloxy and lower cycloalkyl, or a group of the formula:



in which m is 0, 1 or 2, n is 1, 2 or 3; X and Y are, same or different, an oxygen atom or a sulfur atom; and Z is a hydrogen atom, a lower alkyl group, a lower alkenyl group, a lower alkynyl group, a lower cycloalkyl group, a lower haloalkenyl group, a lower alkyl group substituted with at least one member selected from the group consisting of halogen, cyano, lower alkoxy and lower alkoxycarbonyl, or a group of the formula: —COR^4 or —SO_2R^4 in which R^4 is a lower alkyl group, a lower alkenyl group, a lower alkynyl group, a lower cycloalkyl group, a lower haloalkenyl group, a lower alkyl group substituted with at least one member selected from the group consisting of halogen, cyano, lower alkoxy, lower cycloalkyl and phenoxy (phenoxy being optionally substituted with at least one halogen and/or at least one alkyl), a phenyl group, a furyl group, a thienyl group, a phenyl group substituted with at least one member selected from the group consisting of halogen, cyano, nitro, trifluoromethyl, lower alkyl and lower alkoxy, or an aralkyl group (aralkyl being optionally substituted with at least one halogen and/or at least one alkyl), with the proviso that when R^1 is methyl, R^2 is neither methyl nor butyl, and an inert carrier or diluent.

17. A method for controlling plant pathogenic fungi which comprises applying a fungicidally effective amount of at least one of the N-phenylcarbamates of the formula:



wherein R^1, R^2, R^3, X, Y and Z are each as defined in claim 1, to plant pathogenic fungi.

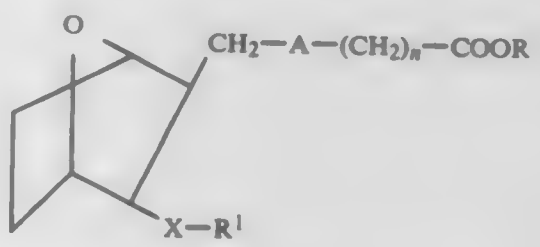
4,608,386

7-OXABICYCLOHEPTANE ETHERS USEFUL IN THE TREATMENT OF THROMBOTIC DISEASES

Steven E. Hall, Ewing Township, Mercer County, and Wen-Ching Han, Trenton, both of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Apr. 26, 1985, Ser. No. 727,965
Int. Cl.[4] A61K *31/335, 31/557;* C07D *307/00*
U.S. Cl. 514—469 14 Claims

1. A compound of the structure



including all stereoisomers thereof, wherein

A is —CH=CH— or —CH_2—CH_2—;

n is 0 to 8;

X is O or



wherein
q is 0, 1 or 2;
R is H, lower alkyl, alkali metal or tris(hydroxymethyl-)aminomethane; and
R^1 is lower alkyl, aryl, arylalkyl, cycloalkyl, cycloalkylalkyl, lower alkenyl containing 2 to 12 carbons or lower alkynyl containing 2 to 12 carbons, wherein lower alkyl or alkyl alone or as part of another group contains 1 to 12 carbons and is unsubstituted or is substituted with halo, hydroxy, alkylamino, alkylthio, CF_3, alkoxy, aryl, alkylaryl, haloaryl, cycloalkyl or alkylcycloalkyl;
aryl alone or as part of another group contains 6 to 10 carbons in the ring portion and is unsubstituted or is substituted with 1 or 2 lower alkyl groups, 1 or 2 halogens, aryl, 1 or 2 hydroxy groups, 1 or 2 lower alkoxy groups, 1 or 2 alkylamino groups or 1 or 2 alkylthio groups;
cycloalkyl alone or as part of another group contains 3 to 12 carbons and is unsubstituted or is substituted with 1 or 2 halogens, 1 or 2 lower alkyl groups and/or 1 or 2 lower alkoxy groups, 1 or 2 hydroxyl groups, 1 or 2 alkylamino groups, an aryl group, or 1 or 2 alkylthio groups; and
$(CH_2)_n$ may contain 1 or 2 lower alkyl or halo substituents.

14. A method of inhibiting platelet aggregation or inhibiting bronchoconstriction associated with asthma, which comprises administering to a mammalian host an effective amount of a compound as defined in claim **1** or a pharmaceutically acceptable salt thereof.

4,608,387

USE OF CYCLOPENTADIENYL METAL-ACIDO COMPLEXES FOR THE TREATMENT OF CANCER AND PHARMACEUTICAL COMPOSITIONS CONTAINING SAID COMPLEXES

Hartmut Köpf, and Petra Köpf-Maier, both of Bundesring 33, D-1000 Berlin 42, Fed. Rep. of Germany

Continuation of Ser. No. 135,442, Mar. 31, 1980, abandoned. This application Oct. 3, 1983, Ser. No. 538,539
Claims priority, application Fed. Rep. of Germany, Jun. 8, 1979, 2923334
Int. Cl.[4] A61K *31/28*
U.S. Cl. 514—492 **16 Claims**

1. A pharmaceutical composition, consisting essentially of: 0.01 to 95% by weight of a cyclopentadienyl metal-acido complex selected from the group consisting of $(C_5H_5)_2TiX_2$, $(C_5H_5)_2VX_2$, $(C_5H_5)_2MoX_2$, $(C_5H_5)_2NbX_2$, $(C_5H_5)_2TaX_2$, $(C_5H_5)_2WX_2$, $(C_5H_5)TiX_3$, $(C_5H_5)_2Ti(NCS)_2$, $(C_5H_5)TI(NCS)_3$, $(C_5H_5)(C_5H_4C_2H_5)TiX_2$, $[C_5H_4Ge(CH_3)_3]_2TiX_2$, $(CH_3)HC(C_5H_4)_2TiX_2$, $(CH_3)_2Ge(C_5H_4)_2TiX_2$, $(C_9H_7)_2TiX_2$, $[C_5H_3(CH_2)_4]_2TiX_2$, $[C_5H_3(CH_2)_4](C_5H_5)TiX_2$ and $[(C_5H_5)_2TiX]_20$ wherein each X, which may be the same or different, is a halogen atom; and a sterile non-toxic pharmaceutically acceptable vehicle therefor.

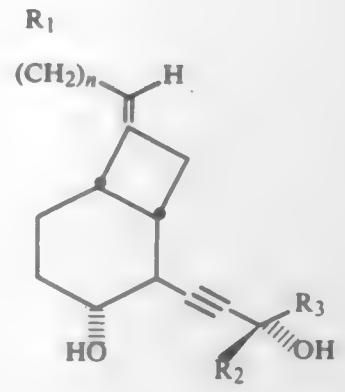
4,608,388

NOVEL [4,2,0]BICYCLOOCTANE DERIVATIVES WITH VALUABLE THERAPEUTIC PROPERTIES

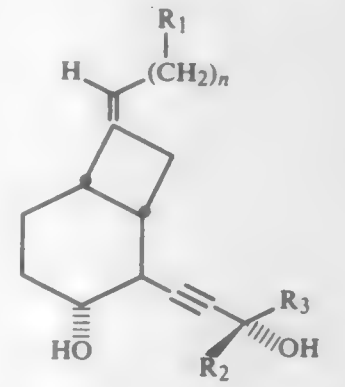
Arthur F. Kluge, Los Altos; Anthony L. Willis, Newark, and Counde O'Yang, Mountain View, all of Calif., assignors to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Filed Mar. 27, 1985, Ser. No. 716,872
Int. Cl.[4] C07C *69/74*
U.S. Cl. 514—510 **55 Claims**

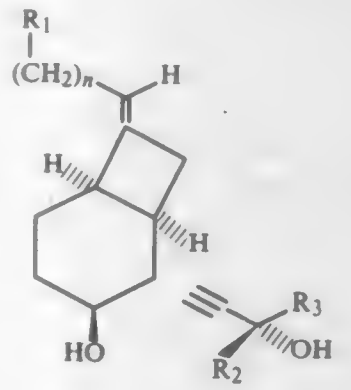
1. A compound of formula (1), (2) or (3)



(1)

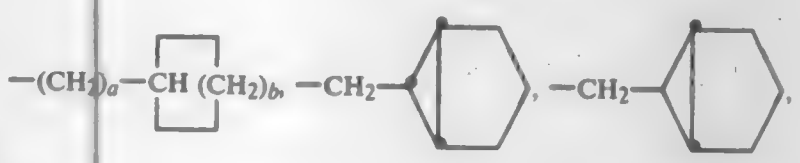


(2)



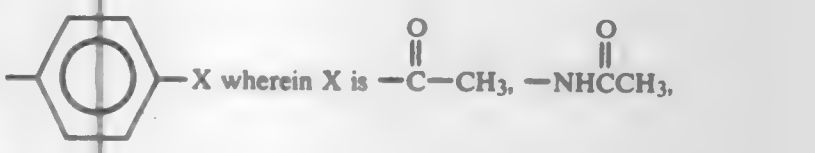
(3)

wherein:
n is 2 or 3;
R_1 is CH_2OH, CHO, CO_2R or CO_2H;
R_2 is hydrogen or methyl; and
R_3 is linear or branched alkyl having 5–10 carbon atoms,

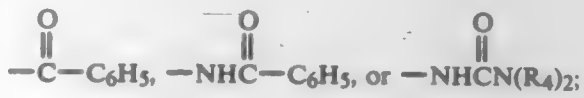


or $-(CH_2)_m-$phenyl

optionally substituted with lower alkyl, lower alkoxy, trifluoromethyl, or halogen,
in which
a is 0, 1 or 2;
b is 3–7;
m is 1 or 2; and
R is



X wherein X is $-\overset{O}{\overset{\|}{C}}-CH_3$, $-NH\overset{O}{\overset{\|}{C}}CH_3$,



in which each R_4 is independently hydrogen or lower alkyl having 1–6 carbon atoms,
and the pharmaceutically acceptable, non-toxic salts and esters thereof.

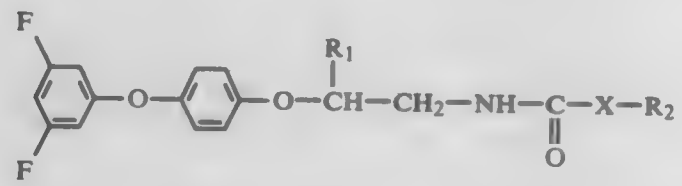
4,608,389

CARBAMATE COMPOUNDS AND THEIR USE AS INSECTICIDES

Hiroshi Kisida, Takarazuka; Makoto Hatakoshi, Mino, and Sumio Nishida, Takarazuka, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Aug. 10, 1984, Ser. No. 639,500
Claims priority, application Japan, Sep. 7, 1983, 58-165751
Int. Cl.[4] C07C *125/065;* A01N *47/12*
U.S. Cl. 514—539 15 Claims

1. A compound of the formula:



wherein R_1 is a hydrogen atom or a methyl group, R_2 is an ethyl group and X is an oxygen atom.

4. An insecticidal composition which comprises as an active ingredient an insecticidally effective amount of the compound according to claim 1, and an appropriate solid or liquid carrier(s) or diluent(s).

7. A method for controlling harmful insects which comprises applying an insecticidally effective amount of the compound according to claim 1 to the harmful insects.

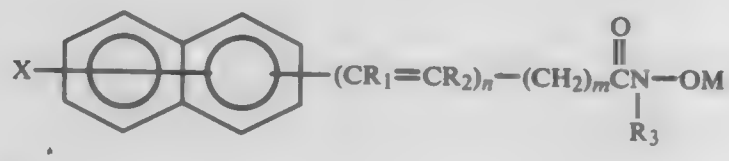
4,608,390

LIPOXYGENASE INHIBITING COMPOUNDS

James B. Summers, Jr., Libertyville, Ill., assignor to Abbott Laboratories, North Chicago, Ill.

Filed Apr. 26, 1985, Ser. No. 727,465
Int. Cl.[4] C07C *83/10;* A61K *31/185, 31/04*
U.S. Cl. 514—575 21 Claims

1. A compound of the formula



where

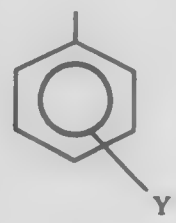
X is selected from hydrogen, C_1 to C_{22} alkyl or alkenyl, or an electron withdrawing group;

n is 1 and m=0, 1, 2 or 3;

R_1 and R_2 independently are hydrogen, C_1 to C_6 alkyl, an electron withdrawing group, or R_4;

R_3 is H, C_1 to C_6 alkyl or cycloalkyl, or R_4; and

R_4 independently at each occurrence, has the formula



where Y is hydrogen or an electron withdrawing group; and wherein M is a pharmaceutically acceptable cation.

9. A method of inhibiting lipoxygenase activity in a human or lower animal host in need of such treatment, comprising administering to the human or lower animal host a compound according to claim 1 in an amount effective to inhibit lipoxygenase activity in the host.

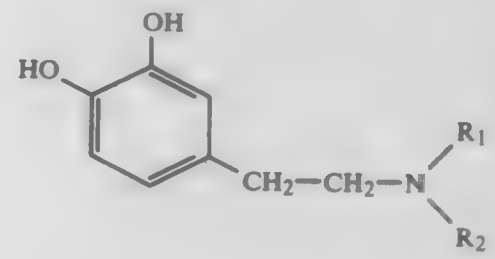
4,608,391

CATECHOLAMINE DERIVATIVES, A PROCESS FOR THEIR PREPARATION AND PHARMACEUTICAL COMPOSITIONS THEREOF

James Z. Ginos, and George C. Cotzias, both of New York, N.Y., assignors to Cornell Research Foundation Inc., Ithaca, N.Y.

Division of Ser. No. 812,854, Jul. 5, 1977, Pat. No. 4,181,738, which is a continuation of Ser. No. 746,026, Nov. 30, 1976, abandoned. This application Apr. 16, 1979, Ser. No. 30,578
Int. Cl.[4] A61K *31/135;* C07C *91/32*
U.S. Cl. 514—654 49 Claims

1. A method of treatment of physical or physiological and behavioural health disorders, which are caused by or connected with disturbances of the dopamine household in mammals comprising the step of administering to a mammal 0.1 to 500 mg/kg of a compound of the formula

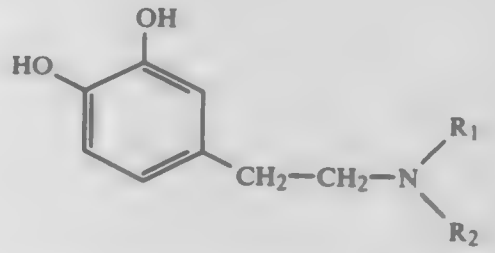


wherein

R_1 signifies a phenylalkyl group and

R_2 signifies an alkyl group, a cycloalkylalkyl group, a cycloalkyl group, or a phenylalkyl group, and the pharmaceutically acceptable salts thereof.

18. A compound of the formula



wherein R_1 and R_2 each are phenethyl, R_1 is phenethyl and R_2 is n-propyl, R_1 is o-chlorophenethyl and R_2 is methyl, R_1 is 4-(4-flourophenyl)butyl and R_2 is methyl, or R_1 is 10-(2-isopropylmethylphenyl)decyl and R_2 is methyl, and the pharmaceutically acceptable salts thereof.

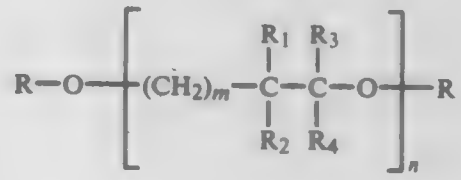
4,608,392

METHOD FOR PRODUCING A NON GREASY PROTECTIVE AND EMOLLIENT FILM ON THE SKIN

Bernard Jacquet, Antony, and Quintino Gaetani, Bondy, both of France, assignors to Societe Anonyme dite: L'Oreal, Paris, France

Filed Aug. 28, 1984, Ser. No. 645,156
Claims priority, application Luxembourg, Aug. 30, 1983, 84979
Int. Cl.[4] A61K *47/00*
U.S. Cl. 514—844 7 Claims

1. A cosmetic method for producing on the skin a matte film which is not greasy and for imparting a protective and emollient effect on the skin which comprises topically applying to the skin an effective amount of a cosmetic composition containing a fatty product, said fatty product being a polyether oligomer, having the formula



wherein
R represents linear or branched alkyl having 1–12 carbon atoms,
R_1, R_2, R_3 and R_4 each independently represent hydrogen or alkyl having 1–6 carbon atoms, wherein at least two of R_1, R_2, R_3 and R_4 represent hydrogen,
m is 1–4 and
n has an average value equal to or greater than 2, the number of carbon atoms in each repetitive unit being at least equal to 4,
said polyether oligomer having a molecular weight ranging from 200 to 5,000.

4,608,393

PROCESS FOR PRODUCING AN ION EXCHANGE MEMBRANE USING IRRADIATION BY IONIZING RADIATION FOLLOWED BY THERMAL POLYMERIZATION

Toshikatsu Hamano, Machida, Japan, assignor to Asahi Glass Company Ltd., Tokyo, Japan

Filed May 6, 1985, Ser. No. 730,481
Claims priority, application Japan, May 11, 1984, 59-92925; May 11, 1984, 59-92926
Int. Cl.[4] C08D *5/20*; C08F *8/00*
U.S. Cl. 521—27 2 Claims

1. A process for producing an ion exchange membrane comprising impregnating a base material with a polymerizable monomer material and polymerizing the monomer material, if necessary, followed by a reaction for introducing ion exchange groups, wherein said base material is made of an olefin polymer and/or a fluorinated olefin polymer, said polymerizable monomer material is a mixture comprising styrene, chloromethylstyrene and divinylbenzene as three essential components, and the polymerizable monomer material impregnated in the base material is firstly partially polymerized to the extent of from 10 percent to 80 percent by irradiation with ionizing radiation, and subsequently is completely polymerized by heating in the presence of a polymerization initiator.

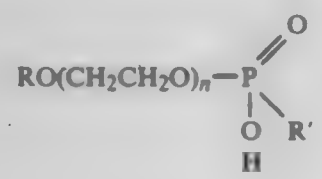
4,608,394

ANTI-STATIC STYRENE POLYMER PARTICLES BY IMPREGNATION

Alvin R. Ingram, West Chester, Pa., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Division of Ser. No. 791,479, Oct. 25, 1985. This application Jan. 13, 1986, Ser. No. 818,311
Int. Cl.[4] C08J *9/22*
U.S. Cl. 521—57 5 Claims

1. A composition comprising a styrene polymer containing dispersed throughout 3 to 20 weight percent of a blowing agent and coated on the surface thereof by 0.1 to 0.4 percent of a mixture of esters having general formula



wherein R may be alkaryl groups, branched alkyl groups having at least 7 carbon atoms, or normal alkyl groups having at least 10 carbon atoms; n may be a positive integer of from 1 to 33; and R′ may be $RO(CH_2CH_2O)_n$- or hydroxyl group.

4,608,395

SILICONE SPONGE RUBBER COMPOSITION

Mitsuo Hamada, and Kazuo Higuchi, both of Chiba, Japan, assignors to Toray Silicone Company, Ltd., Tokyo, Japan

Filed Sep. 16, 1985, Ser. No. 776,549
Claims priority, application Japan, Oct. 31, 1984, 59-229493
Int. Cl.[4] C08V *9/00*
U.S. Cl. 521—92 7 Claims

1. An organosiloxane composition exhibiting a useful pot life under ambient conditions and the ability to form cured sponge rubber when heated, said composition comprising
(A) 100 parts by weight of a polyorganosiloxane comprising units of the general formula

$$R_aSiO_{(4-a)/2}$$

and at least two units per molecule of the general formula

$$R^1_bR^2_cSiO_{(4-b-c)/2}$$

where R and R^1 represent monovalent hydrocarbon or substitued hydrocarbon radicals free of ethylenic unsaturation, R^2 represents an alkenyl radical, a represents an integer from 1 to 3, inclusive, b represents an integer from 0 to 2, inclusive, c is 1 or 2, and the sum of b and c is 1, 2 or 3;
(B) an organohydrogensiloxane comprising units of the general formula

$$R^3_dSiO_{(4-d)/2}$$

and at least two units per molecule of the general formula

$$R^4_eH_fSiO_{(4-e-f)/2}$$

where R^3 and R^4 are individually selected from the same group as R, d represents an integer from 1 to 3, inclusive, e represents an integer from 0 to 3, inclusive, f represents the integer 1, 2 or 3, the sum of e and f is 1, 2 or 3, and the concentration of (B) is equivalent to from 3 to 100 moles of silicon-bonded hydrogen atoms per mole of alkenyl radicals present in (A);
(C) from 0.1 to 50 parts by weight of an inorganic alkaline earth metal compound exhibiting a pH of at least 10.0;
(D) from 0.001 to 3 parts by weight of a platinum catalyst inhibitor; and
(E) an amount of a platinum-type catalyst sufficient to catalyze foaming and curing of said composition when heated.

4,608,396

METHOD OF PRODUCING ELASTOMERIC SILICONE FOAM

Therese M. Bauman; Chi-Long Lee, and James A. Rabe, all of Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

Division of Ser. No. 787,857, Oct. 16, 1985, Pat. No. 4,593,049. This application Feb. 3, 1986, Ser. No. 825,494
Int. Cl.[4] C08J *9/14*
U.S. Cl. 521—99 13 Claims

1. A foamable silicone composition comprising a composition obtained by mixing
(1) a vinyl containing polydiorganosiloxane having at least an average of about 2 vinyl radicals per molecule, the organic radicals being selected from the group consisting of alkyl radicals having from 1 to 6 carbon atoms per radical, phenyl, and vinyl,
(2) a hydroxylated polydiorganosiloxane having an average of from greater than 1 to 2.5 silicon-bonded hydroxyl radicals per molecule and having an average of at least one organic radical per silicon atom selected from the group consisting of alkyl radicals having from 1 to 6 carbon atoms per radical and phenyl,
(3) a platinum catalyst in an amount sufficient to give from 5

to 200 parts by weight platinum per one million parts by weight total mixture,

(4) an organohydrogensiloxane having an average of at least 3 silicon-bonded hydrogen atoms per molecule, an average of no more than one silicon-bonded hydrogen atom per silicon atom and organic radicals selected from the group consisting of alkyl radicals having from 1 to 6 carbon atoms per radical and phenyl,

(5) a profoamer consisting essentially of a resinous, benzene-soluble organosiloxane copolymer consisting essentially of $SiO_{4/2}$ units, silicon-bonded hydroxyl groups, $(CH_3)_3SiO_{1/2}$ units and fluorine-containing units selected from the group consisting of $R_aR'_bSiO_{(4-a-b)/2}$ and $R''[Si(R')_bO_{(3-b)/2}]_2$ and mixtures thereof, where R is a monovalent organic radical containing at least four perfluorinated carbon atoms and is bonded to the silicon atom of said fluorine-containing units by a sequence of at least two methylene units or by an oxygen atom that is, in turn, bonded to a sequence of at least two methylene units, R' is an alkyl radical containing from 1 to 3 carbon atoms, and R'' is a divalent organic radical containing at least four perfluorinated carbon atoms and is bonded to the silicon atom of said fluorine-containing units by means of a carbon or oxygen atom, a is 1 or 2, b is 0, 1 or 2 and the sum of a and b is 3 or less with the provision that when R and R'' represent fluorine-containing units bonded to silicon via an oxygen atom the organosiloxane copolymer optionally contains repeating units of the formula $GSiO_{3/2}$ where G represents the residue obtained by removal of the hydrogen atom from a hydroxyl group of a linear organic polymer containing an average of at least one terminal hydroxyl group per molecule and selected from the group consisting of polyethers, polyoxyalkylene glycols, homopolymers of ethylenically unsaturated alcohols and copolymers of ethylenically unsaturated : . .iols with ethylenically unsaturated hydrocarbons; the molar ratio of all units other than hydroxyl and $SiO_{4/2}$ units to $SiO_{4/2}$ units is from 0.7:1 to 1.1:1, inclusive, and the concentration of said fluorine-containing units and any $GSiO_{3/2}$ units is sufficient to

(a) impart a surface tension of less than 2.2×10^{-4} newtons per centimeter at 25° C. to a 10 percent by weight solution of (5) in a hydroxyl endblocked polydimethylsiloxane exhibiting a viscosity of 0.08 Pa.s at 25° C., and

(b) require the addition of from 0 to 100 percent by weight of xylene to said 10 percent by weight solution to achieve optical clarity and

(6) optionally, an amount of liquified blowing agent sufficient to form a foam following the release of a mixture containing said liquified blowing agent into an area under atmospheric pressure, the mixture containing this liquified blowing agent being confined under superatmospheric pressure, and

(7) optionally, an alcohol having from 1 to 12 carbon atoms, and

(8) optionally, flame retardant additives consisting essentially of non-flammable fibers and sulfur-free carbon black,

there being sufficient organohydrogen present to provide a molar ratio of silicon-bonded hydrogen atoms to the sum of vinyl radicals, silicone- bonded hydroxyl radicals, and carbon bonded hydroxyl radicals of 0.5:1 to 40:1 the mixture having a viscosity of less than 100 Pa's at 25° C.

4,608,397

FILLER-CONTAINING POLYURETHANE (UREA) COMPOSITIONS PREPARED FROM PREPOLYMERS REACTED WITH WATER IN THE PRESENCE OF LIGNITE OR PEAT

Artur Reischl, Leverkusen, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Nov. 16, 1984, Ser. No. 672,440

Claims priority, application Fed. Rep. of Germany, Jan. 26, 1984, 3402698

Int. Cl.[4] C08G *18/14*

U.S. Cl. 521—101

31 Claims

1. A process for the production of polyurethane(urea) compositions comprising reacting:

(A) at least one di- and/or polyfunctional isocyanate-terminated prepolymer having an isocyanate group content of from 2 to 12% by weight,

(B) from 0 to 50% by weight, based on the weight of (A) of an organic di- and/or polyisocyanate, with the mixture of (A) and (B) having an isocyanate group content of 30% by weight or less,

(C) water, with the quantity of water being in excess of that required to react with all the isocyanate groups of (A) and (B),

(D) from 0 to 50 equivalent percent, based on the total isocyanate equivalents in (A) and (B), of an organic di- and/or polyamine,

(E) from 0.1 to 95 percent by weight of lignite, the amount of component (E) being based of the total moisture-free weight of components (A), (B), (D) and (E), said polyurethane(urea) composition having a water absorbability of from 33 to 97% by weight.

4,608,398

FOAMABLE THERMOSETTING COMPOSITIONS AND METHODS OF COATING THEREWITH

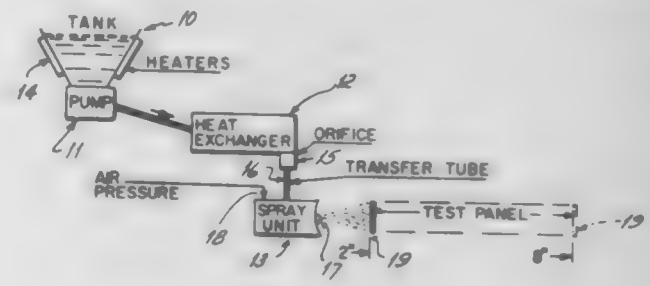
Walter H. Cobbs, Jr., Amherst, Ohio; Robert G. Shong, Houston, Tex., and William R. Rehman, Vermilion, Ohio, assignors to Nordson Corporation, Amherst, Ohio

Continuation-in-part of Ser. No. 327,025, Dec. 3, 1981, abandoned, which is a division of Ser. No. 161,135, Jun. 19, 1980, abandoned, which is a division of Ser. No. 842,265, Oct. 14, 1977, Pat. No. 4,247,581. This application Dec. 2, 1983, Ser. No. 557,639

Int. Cl.[4] C08J *9/00*

U.S. Cl. 521—113

6 Claims



1. A foamable thermosetting polyurethane resin composition comprising

a curable thermosetting polyurethane resin having a free hydroxyl group or carboxyl group,

a curing agent consisting of C_1–C_4 alkoxylated amine for reaction with said hydroxyl or carboxyl group, and

a liquid blowing agent consisting of a C_1–C_4 alkanol as the sole blowing agent which is also a by-product of the thermosetting reaction of said resin with said curing agent.

4,608,399

STABILIZER-CONTAINING REACTIVE COMPONENTS FOR PU-FOAMS, NEW STABILIZERS AND A PROCESS FOR PRODUCING THESE STABILIZERS

Hans-Josef Buysch, Krefeld; Hans-Walter Illger, Roesrath, and Karl H. Dörner, Pulheim, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

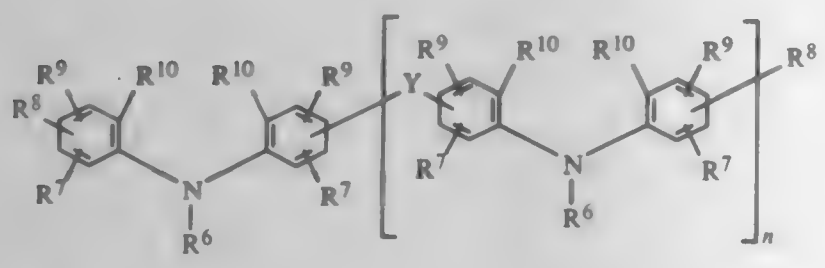
Division of Ser. No. 651,397, Sep. 17, 1984, Pat. No. 4,565,834, which is a continuation of Ser. No. 547,185, Oct. 31, 1983, abandoned, which is a division of Ser. No. 395,552, Jul. 6, 1982, Pat. No. 4,430,452. This application Oct. 18, 1985, Ser. No. 789,262

Claims priority, application Fed. Rep. of Germany, Jul. 14, 1981, 3127750

Int. Cl.[4] C08J *9/00*

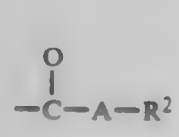
U.S. Cl. 521—129 3 Claims

1. Stabilizer-containing reactive components for the production of polyurethane foams with little or no tendency towards core discoloration based on polyisocyanates, polyols and, optionally, water, blowing agents, catalysts, other stabilizers and standard additives, characterized in that they contain as stabilizers monomeric and/or oligomeric derivatives of the diphenylamine series, including the phenothiazine series, in stabilizing quantities of from 0.02 to 5% by weight of compounds corresponding to the following general formula:

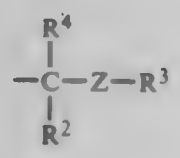


wherein

R^6 represents H or a C_1–C_{18}-alkyl; a C_5–C_{12} cycloalkyl or -cycloalkenyl; a C_7–C_{18}-aralkyl which may optionally be substituted by OH—, SH—, ether, thioether, carbonic ester, carbonamide and carboxyl groups or which may be interrupted by such groups other than OH, SH and COOH-groups and olefinic double bonds, a radical



or a radical of the formula



where

R^2, R^3 and R^4 are the same or different and represent a C_1–C_{12}-alkyl; a C_5–C_{12}-cycloalkyl or -cycloalkenyl; a C_7–C_{12}-aralkyl;

in addition to which R^2 represents optionally substituted aryl and, together with R^4 and the central C-atom, may form a 5- to 12-member aliphatic ring;

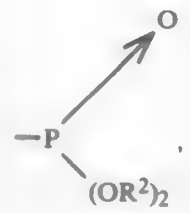
Z represents O, S, NH, NR^5 where $R^5 = R^2$,

or a radical of the formula CO—A—R^2, wherein A is a single bond,

S, O, NH or NR^2; both here and in the following,

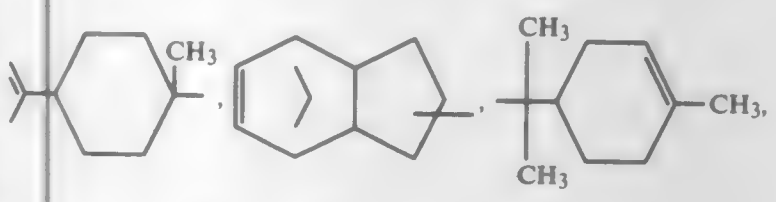
R^2 does not form a ring with R^4; or

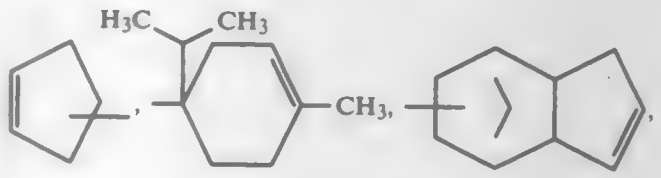
Z together with R^3 also represents the radical

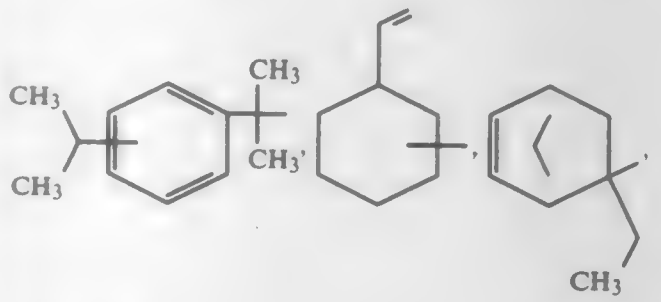


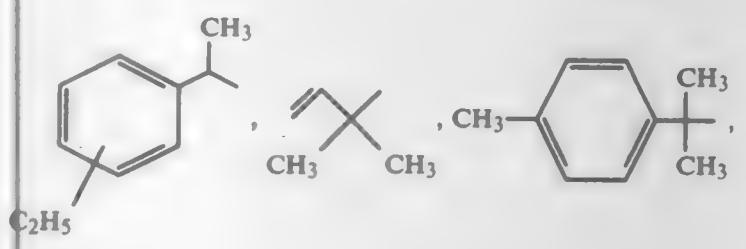
R^7, R^9 and R^{10} may be the same or different and represent H, CH_3 or C_2H_5,

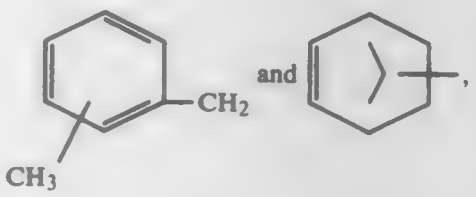
R^8 represents H, benzyl, styryl, α-methyl-styryl, tert.-butyl, tert.-amyl, isononyl, cyclohexyl, methyl cyclohexyl,



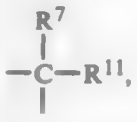




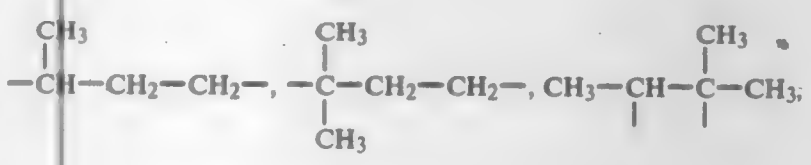


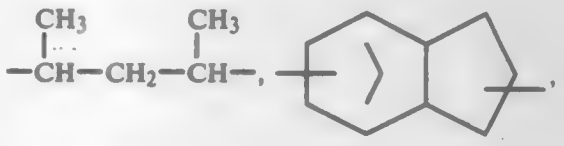


Y represents

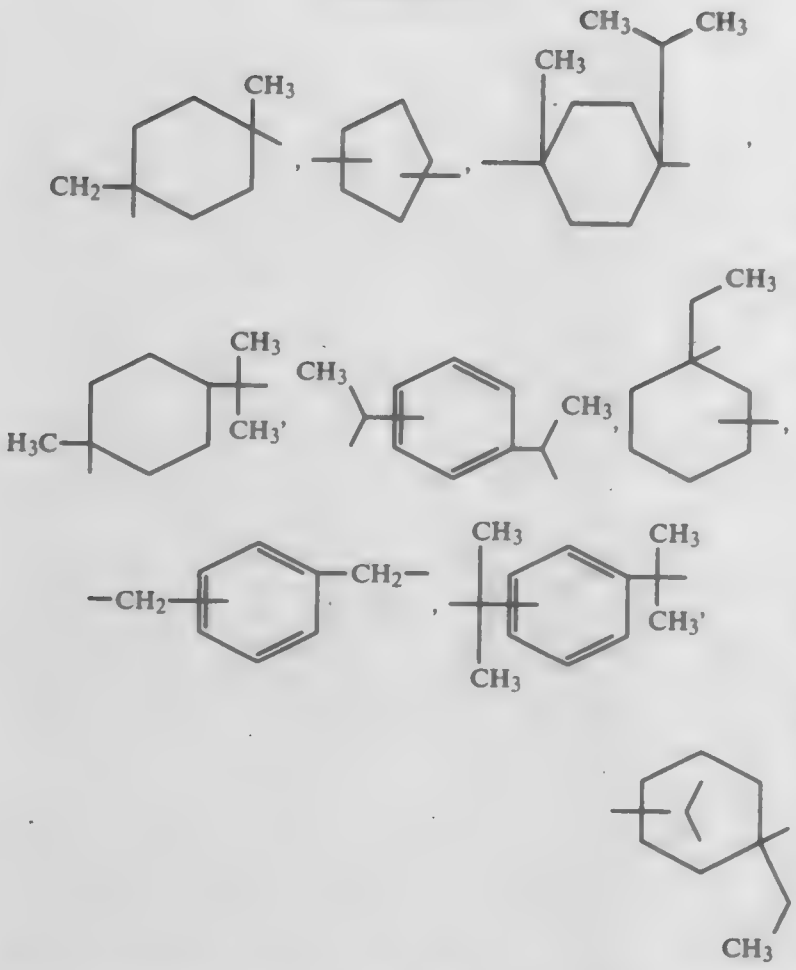


where R^7 is as defined above and R^{11} represents a C_1–C_7-alkyl; a cyclohexyl, a cyclohexenyl; an aryl; or





-continued



and, up to 60 mole percent may also be —S—, —CH_2—, —CH_2—S—CH_2— or —CH_2—O—CH_2—; and n is an integer of from 1 to 29.

4,608,400

NOVEL (METH)ACRYLATE AND RESIN COMPOSITION COMPRISING THE SAME

Minoru Yokoshima, Yamaguchi; Tetsuo Ohkubo, Ube, and Masayuki Kiyomoto, Yamaguchi, all of Japan, assignors to Nippon Kayaku Kabushiki Kaisha, Tokyo, Japan

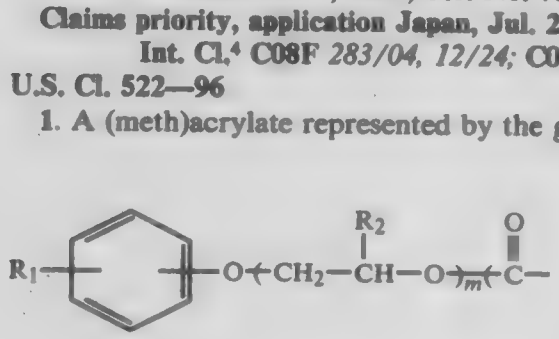
Filed Jul. 8, 1985, Ser. No. 752,586

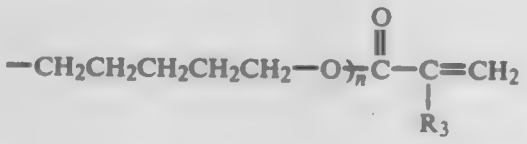
Claims priority, application Japan, Jul. 23, 1984, 59-151179

Int. Cl.⁴ C08F *283/04, 12/24;* **C07C** *69/66*

U.S. Cl. 522—96 **15 Claims**

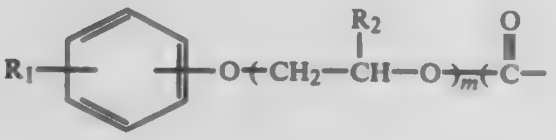
1. A (meth)acrylate represented by the general formula:



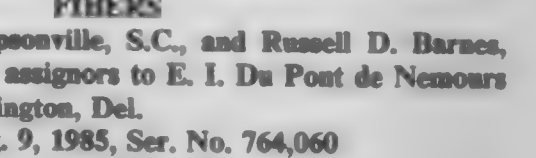


wherein R_1 stands for a hydrogen atom or an alkyl group having 1 to 12 carbon atoms; R_2 and R_3 each stand for a hydrogen atom or a methyl group; the mean value of m is 1 to 10 and the mean value of n is 1 to 10.

6. A resin composition comprising (A) a compound represented by the general formula:



-continued



wherein R_1 stands for a hydrogen atom or an alkyl group having 1 to 12 carbon atoms; R_2 and R_3 each stand for a hydrogen atom or a methyl group; the mean value of m is 1 to 10 and the mean value of n is 1 to 10,

(B) a polyurethane acrylate and (C) a photopolymerization initiator.

4,608,401

METHOD OF ENCAPSULATING FINELY DIVIDED SOLID PARTICLES

Robert W. Martin, South Charleston, W. Va., assignor to Union Carbide Corporation, Danbury, Conn.

Continuation-in-part of Ser. No. 583,818, Feb. 27, 1984, abandoned, which is a continuation-in-part of Ser. No. 516,859, Jul. 25, 1983, abandoned, which is a continuation-in-part of Ser. No. 414,392, Sep. 2, 1982, abandoned. This application Jul. 26, 1985, Ser. No. 758,850

Int. Cl.⁴ C08K *3/10, 9/10, 9/04, 2/20*

U.S. Cl. 523—205 **9 Claims**

1. The method of encapsulating in suspension in an aqueous medium discrete finely divided water-insoluble solid particles with a water-insoluble polymeric envelope which comprises the steps of:

suspending in an aqueous medium, under agitation milder than high shear mixing, (a) finely divided solid particles substantially free of ionic charges of such level that would cause flocculation upon subsequent initiation of addition polymerization and (b) a water-insoluble monomer capable of addition polymerization to form a water-insoluble polymer free of ionically charged groups, in the presence of (c) a water-soluble, non-ionic, surface-active stabilizing agent having a HLB number of at least about 13, the stabilizing agent being present in an amount sufficient to produce a generally stable suspension of the ultimately formed polymer encapsulated particles;

introducing an addition polymerization initiating agent which is not an anionic or cationic surface active or dispersing agent, and does not decompose to form same, in an amount sufficient to initiate addition polymerization of the monomer present; and, during or after the introduction of said initiating agent,

subjecting the resulting suspension to suspension polymerization conditions, while said suspension is maintained substantially free of anionic or cationic surface active or dispersing agents.

4,608,402

SURFACE TREATMENT OF PITCH-BASED CARBON FIBERS

Hugh E. Redick, Simpsonville, S.C., and Russell D. Barnes, Belews Creek, N.C., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Aug. 9, 1985, Ser. No. 764,060

Int. Cl.⁴ C08K *3/04*

U.S. Cl. 523—215 **6 Claims**

1. A process for improving the adhesion of a pitch-based carbon fiber for use in organic resin matrix composites comprising exposing the fiber at room temperature to a gaseous atmosphere containing from about 100 to 1000 parts per million of ozone for a period of at least 30 seconds.

5. A composite comprising an organic resin matrix reinforced with the fiber of claim 1.

4,608,403

METHOD FOR MAKING SYNTACTIC FOAM WITH IMPROVED PROCESSING CHARACTERISTICS USING A SILANE COUPLING AGENT IN COMBINATION WITH AN ALKYLPHENOL ALKOXYLATE

Kathy B. Sellstrom, Austin, Tex., assignor to Texaco Inc., White Plains, N.Y.

Filed Dec. 13, 1985, Ser. No. 808,718
Int. Cl.[4] C08J *9/32*
U.S. Cl. 523—218 5 Claims

1. In a method for making syntactic foams with improved processibility and lower cure times, including combining a vicinal polyepoxide having an epoxy equivalency of greater than 1.8, a hollow granular filler and a curing amount of a curing agent for the polyepoxide, the improvement which comprises:

combining with the above ingredients an effective amount of an alkylphenol alkoxylate and an effective amount of an aminosilane coupling agent.

4,608,404

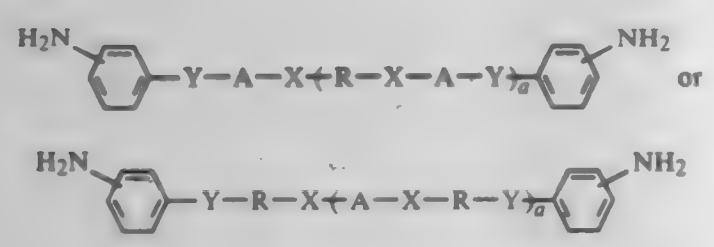
EPOXY COMPOSITIONS CONTAINING OLIGOMERIC DIAMINE HARDENERS AND HIGH STRENGTH COMPOSITES THEREFROM

Hugh C. Gardner, Somerville; George L. Brode, Bridgewater, and Robert J. Cotter, Bernardsville, all of N.J., assignors to Union Carbide Corporation, Danbury, Conn.

Continuation of Ser. No. 509,453, Jun. 30, 1983, abandoned.
This application May 2, 1985, Ser. No. 728,469
Int. Cl.[4] C08G *59/50*
U.S. Cl. 523—400 40 Claims

1. A composition comprising:

(a) a diamine hardener represented by the following general formulas:



(i) or (ii)

or mixtures thereof, wherein X is O, S, SO or SO_2, Y is O or S, A is the residuum of a dihalobenzenoid compound, R is the residuum of a dihydric phenol and a is 0.05 to 20, and

(b) an epoxy resin containing two or more 1,2-epoxide groups per molecule.

4,608,405

AQUEOUS BASED EPOXY RESIN CURING AGENTS

William J. DeGooyer, Louisville, Ky., assignor to Celanese Corporation, New York, N.Y.

Filed May 6, 1985, Ser. No. 730,906
Int. Cl.[4] C08G *63/00*
U.S. Cl. 523—404 22 Claims

1. An epoxy resin curing agent comprising a volatile acid salt of the reaction product of (a) an epoxy resin which comprises an essentially linear diepoxide prepared by reacting a diglycidyl ether of a dihydric phenol, a diglycidyl ether of an aliphatic dihydroxy polyether and a dihydric phenol, with (b) a primary containing polyamine, followed by reaction with (c) a monoepoxide, or monocarboxylic acid, wherein substantially all of the epoxy groups in said epoxy resin are reacted with the polyamine and wherein substantially at least all of the unreacted primary amine groups in the polyamine/epoxide reaction product are further reacted with the monoepoxide or the monocarboxylic acid.

4,608,406

STABLE AQUEOUS EPOXY RESIN DISPERSIONS

Paul R. Williams, Jr.; Russell V. Burt, and Ronald Golden, all of Louisville, Ky., assignors to Celanese Corporation, New York, N.Y.

Filed Apr. 18, 1985, Ser. No. 724,439
Int. Cl.[4] B05D *3/00;* C08L *63/02*
U.S. Cl. 523—424 11 Claims

1. A stable epoxy resin dispersion composition comprising:

(1) an aqueous medium; and

(2) between about 50 to about 70 weight percent of self-emulsifying epoxy resin having a molecular weight of about 1000 to 20,000 which resin is the addition reaction product of

(a) 40–90 parts by weight of a diglycidyl ether of a dihydric phenol,

(b) 5–35 parts by weight of a dihydric phenol,

(c) 2–15 parts by weight of a diglycidyl ether of a polyoxyalkylene glycol, and

(d) 2–15 parts by weight of an alkyl phenol-formaldehyde novolac resin wherein the alkyl group contains 4 to 12 carbon atoms.

4,608,407

PROCESS FOR THE PRODUCTION OF COMPRESSION-MOLDED MATERIALS CONTAINING POLYISOCYANATE BINDERS USING LATENT, HEAT ACTIVATABLE CATALYSTS

Dimitrios Kerimis, Cologne; Hanns P. Müller, Odenthal, and Manfred Kapps, Bergisch-Gladbach, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jul. 19, 1984, Ser. No. 632,341
Claims priority, application Fed. Rep. of Germany, Aug. 9, 1983, 3328662
Int. Cl.[4] B29J *5/00;* C08G *18/18;* C08L *97/02*
U.S. Cl. 524—14 12 Claims

1. In a process for the production of compression-molded materials by the compression molding of lignocellulose-containing materials mixed and/or impregnated with polyisocyanates as binder in the presence of catalysts, the improvemet wherein the catalysts used are latet, heat-activatable catalysts based on ammonium salts of the type which are obtained by reacting

(i) monofunctional or polyfunctional, tertiary amines with

(ii) alkyl esters of acids of phosphorus having alkylating properties, such that virtually all of the amine nitrogen atoms of component (i) have been alkylated by said ester.

4,608,408

PHENOL-HCHO-RESORCINOL RESINS FOR USE IN FORMING FAST CURING WOOD LAMINATING ADHESIVES

Richard T. Hood, Murrysville, and Raymond L. Bender, Bakerstown, both of Pa., assignors to Koppers Company, Inc., Pittsburgh, Pa.

Filed Apr. 24, 1985, Ser. No. 726,511
Int. Cl.[4] C08G *8/24*
U.S. Cl. 524—15 8 Claims

1. A method for making a soluble, fusible phenol-resorcinol-formaldehyde resin solution, which resin comprises about 50 to 95 moles phenol with about 5 to 50 moles resorcinol per 100 moles of total phenol and resorcinol and about 0.55 to 0.75 moles of formaldehyde for each mole total of phenol and resorcinol, said resin being prepared by the steps comprising:

(a) reacting said phenol and said formaldehyde at an initial pH of from about 8.5 to 9.2 in the presence of a sodium sulfite catalyst in an amount of about 0.04 to 0.09 mole per mole of formaldehyde;

(b) then heating the reaction mixture to reflux until the mixture has a viscosity of about u to v on the Gardner bubble test;

(c) then introducing resorcinol to the reaction mixture and continuing refluxing until the reaction mixture has a constant viscosity of about 30 to 100 Gardner seconds;
(d) then diluting the reaction mixture with a water miscible solvent to obtain a resin solution having a solids content of about 40 to 60 percent by weight and a viscosity of about 2.0 to 3.5 poise and adding an alkali metal carbonate material in the weight amount of about 4 to 8 percent of the weight of the reaction mixture present at the completion of step (c); and
(e) then, if the pH of resin solution formed in step (d) is less than about 7.5, adjusting the pH of said resin solution to at least about 7.5.

4,608,409

POLYACRYLATED OLIGOMERS IN ULTRAVIOLET CURABLE OPTICAL FIBER COATINGS

Clive J. Coady, Hanover Park; John J. Krajewski, Wheeling, and Timothy E. Bishop, Algonquin, all of Ill., assignors to DeSoto, Inc., Des Plaines, Ill.

Filed May 8, 1985, Ser. No. 731,888
Int. Cl.[4] C08L *75/04*
U.S. Cl. 524—199 14 Claims

1. An ultraviolet curing liquid coating composition which, when cured with ultraviolet light in the presence of an appropriate photoinitiator, provides a buffer coating for optical glass fiber consisting essentially of a linear polyacrylate-terminated polyurethane or polyurea oligomer in admixture with a liquid acrylate-functional material which does not increase the low temperature hardness and which provides the liquidity needed for coating application, said polyacrylate-terminated polyurethane or polyurea oligomer having a room temperature tensile modulus of at least 100 psi., and a tensile modulus at −60° C. which is less than 175,000 psi., when capped with 2-hydroxyethyl acrylate and cured with ultraviolet light, said oligomer being capped with a monohydric polyacrylate.

4,608,410

THERMOSET ACRYLIC LATICES FOR WOOD COATING

David A. Borovicka, Sr., Parma, Ohio, assignor to SCM Corporation, New York, N.Y.

Filed Sep. 7, 1984, Ser. No. 648,077
The portion of the term of this patent subsequent to Jun. 25, 2002, has been disclaimed.
Int. Cl.[4] C08L *61/24, 33/26;* C09D *3/52*
U.S. Cl. 524—512 3 Claims

1. In a process for producing a thermosetting low temperature curable composition containing a polymeric composition dispersed in water, the process steps comprising:

providing an aqueous mixture containing by weight between 5% and 60% of a glycoluril cross-linking agent cold blended with between 40% and 95% of an emulsion polymer; wherein said percentages total 100 percent and are based on the combined weights of cross-linking agent and latex polymer exclusive of water; wherein said emulsion polymer comprises polymerized ethylenically unsaturated monomers selected from between 0.5% and 10% alpha,-beta-ethylenically unsaturated carboxylic acid monomer, between 1% and 20% acrylamide or methacrylamide monomer, between 20% and 60% vinyl unsaturated hydrocarbon monomer, and the balance other ethylenically unsaturated monomer, wherein said emulsion polymer contains only reactive carboxyl or reactive amide groups for cross-linking with said glycoluril cross-linking agent.

4,608,411

GRAFTED ETHYLENE POLYMERS USABLE MORE ESPECIALLY AS ADDITIVES FOR INHIBITING THE DEPOSITION OF PARAFFINS IN CRUDE OILS AND COMPOSITIONS CONTAINING THE OILS AND SAID ADDITIVES

Gilles Meunier, Lescar; René Brouard, L'isle Adam; Bernard Damin, Oullins, and Denis Lopez, Toulouse, all of France, assignors to Societe Nationale Elf Aquitaine, Courbevoie, France

Filed Oct. 23, 1985, Ser. No. 790,358
Claims priority, application France, Oct. 25, 1985, 84 16349
Int. Cl.[4] C08L *51/00;* C08F *265/04, 263/04*
U.S. Cl. 524—533 16 Claims

1. A grafted copolymer additive for inhibiting the deposition of paraffins and improving the flow properties of crude oils which comprises a copolymer of ethylene with at least one ethylenically unsaturated monomer selected from the group consisting of:

vinyl esters of C_2 to C_{18} monocarboxylic acids,

C_1 to C_{12} alkyl esters of C_3 to C_{12} unsaturated monocarboxylic acids,

α,β-unsaturated dicarboxylic acids, C_1 to C_{12} alkyl diesters of α,β-unsaturated dicarboxylic acids and anhydrides of α,β-unsaturated dicarboxylic acids having grafted thereto a homopolymer or copolymer of an ester of an α,β-unsaturated monocarboxylic acid with at least one alkanol having a chain length of at least C_{12} and wherein at least 20% of said alkanol has a chain length of at least C_{22}, said ethylene copolymer being from about 50 to 95% by weight of the grafted copolymer.

4,608,412

SILICONE WATER-BASED ELASTOMERIC CAULKING MATERIAL

Alan L. Freiberg, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Filed May 24, 1985, Ser. No. 737,602
Int. Cl.[4] C08L *19/02, 83/14;* C08K *3/22*
U.S. Cl. 524—724 12 Claims

1. A silicone caulking material consisting essentially of the product obtained by mixing

(A) 100 parts by weight of an anionically stabilized, hydroxyl endblocked polydiorganosiloxane having a weight average molecular weight of above 50,000, the organic radicals being monovalent hydrocarbon radicals containing less than 7 carbon atoms or 2-(perfluoroalkyl)ethyl radicals having less than 7 carbon atoms per radical, present as an emulsion of dispersed particles in water, the emulsion having a pH of greater than 9 and a solids content of greater than 50 percent by weight,

(B) from 0.075 to 0.75 part by weight of dialkyltindi- carboxylate,

(C) from 0.2 to 5 parts by weight of alkyl orthosilicate of the formula $Si(OR')_4$ where R' is a lower alkyl radical of from 1 to 4 carbon atoms inclusive,

(D) from 50 to 200 parts by weight of inert, nonsiliceous filler, and

(E) from 0 to 10 parts by weight of 2-amino-2-methyl-1-propanol

to produce a material having a paste viscosity which can be used immediately upon mixing as a caulking material which forms a silicone elastomer upon removal of the water.

4,608,413

AQUEOUS POLYURETHANE STOVING LACQUERS AND THE USE THEREOF FOR THE PRODUCTION OF LACQUER FILMS AND COATINGS

Klaus Nachtkamp, Cologne; Jürgen Schwindt, Leverkusen; Karl-Ludwig Nobel, Cologne, and Hans-Georg Stahl, Oldenburg, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Dec. 7, 1984, Ser. No. 679,679

Claims priority, application Fed. Rep. of Germany, Dec. 15, 1983, 3345448

Int. Cl.[4] C08L *75/08, 75/06;* C08K *3/20;* C09D *3/72*

U.S. Cl. 524—591 6 Claims

1. An aqueous stoving lacquer containing pigments and/or filters wherein the binder comprises

(a) a polyether and/or polyester urethane prepolymer having blocked isocyanate groups, an average functionality (based on the blocked NCO groups) of from about 1.8 to 5, an average molecular weight of about 500 to 10,000, a content of blocked isocyanate groups (calculated as NCO) of about 2 to 15% by weight, a content of urethane groups (calculated as —NH—CO—O) of about 5 to 30% by weight and a content of chemically incorporated, at least partially neutralized carboxyl groups of about 10 to 180 milliequivalents per 100% grams of solids, and

(b) a polyether and/or polyester uretnane prepolymer having free alcoholic hydroxyl groups, an average hydroxyl functionality of about 1.8 to 5, an average molecular weight of about 500 to 10,000, a content of alcoholic hydroxyl groups of about 0.5 to 10% by weight, a content of urethane groups (calculated as —NH—CO—O—) of about 5 to 30% by weight and a content of chemically incorporated, at least partially neutralized carboxyl groups of about 10 to 180 milliequivalents per 100 grams of solids, wherein said binder is further characterized by

(i) components (a) and (b) being present in quantities corresponding to an equivalent ratio of blocked isocyanate groups to hydroxyl groups of about 0.6:1 to 2:1,

(ii) the total quantity of neutralized carboxyl groups being sufficient for the binder to be dispersible or soluble in water,

(iii) the polyether and polyester segments each being present in a total quantity of at least 10% by weight, based on the weight of said binder and

(iv) said polyether segments containing at most 10% by weight of ethylene oxide units, CH_2—CH_2—O.

4,608,414

THERMOPLASTIC RESIN COMPOSITION CONTAINING AN IMIDE POLYMER AND GRAFT COPOLYMER

Tomoyuki Kitsunai, Machida; Tetsuji Miura, Tokyo, and Norio Yagi, Atsugi, all of Japan, assignors to Denki Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 632,114, Jul. 18, 1984, abandoned. This application Nov. 22, 1985, Ser. No. 800,099

Claims priority, application Japan, Jul. 19, 1983, 58-131533

Int. Cl.[4] C08L *55/02, 25/08*

U.S. Cl. 525—71 10 Claims

1. A thermoplastic resin composition comprising:

(A) from 10 to 90 parts by weight of an imide-modified polymer having an imido group and obtained by reacting ammonia and/or a primary amine to a copolymer prepared by the polymerization of a monomer mixture comprising from 50 to 70% by weight of an aromatic vinyl monomer and from 30 to 50% by weight of an unsaturated dicarboxylic acid anhydride;

(B) from 10 to 90 parts by weight of a graft copolymer prepared by copolymerizing from 30 to 75% by weight of a mixture comprising from 40 to 80% by weight of a rubber-like polymer having a weight average particle size of from 0.3 to 0.6 μm and from 20 to 60% by weight of a rubber-like polymer having a weight average particle size of from 0.1 to 0.2 μm, with from 25 to 70% by weight of monomer mixture comprising from 55 to 75% by weight of an aromatic vinyl monomer and from 25 to 45% by weight of a vinyl cyanide monomer, said rubber-like polymer being a butadiene polymer or a butadiene copolymer containing at least 50% by weight of butadiene; and

(C) from 0 to 80 parts by weight of a copolymer prepared by polymerizing from 40 to 80% by weight of an aromatic vinyl monomer, from 0 to 40% by weight of a vinyl-cyanide monomer and from 0 to 40% by weight of a vinyl monomer copolymerizable therewith.

4,608,415

COMPOSITION OF MODIFIED CHLORINATED RESINS

Jun Nakajima, Kyoto, and Shiceki Morinaga, Osaka, both of Japan, assignors to Asahipen Corporation, Japan

Continuation of Ser. No. 254,038, Apr. 14, 1981, abandoned. This application Mar. 14, 1983, Ser. No. 474,959

Claims priority, application Japan, Apr. 15, 1980, 55-50142; Jul. 26, 1980, 55-102817

Int. Cl.[4] C08L *63/10, 91/00*

U.S. Cl. 525—111.5 2 Claims

1. A coating material which contains a modified chlorinated resin vehicle, comprising a chlorinated resin with chlorine content of less than 40 percent by weight selected from the group consisting of chlorinated polyethylene, chlorinated polypropylene and copolymers of chlorinated ethylene and chlorinated propylene reacted with a resin modified by fatty acid with a rate of conjugation of more than 30 percent in the presence of a catalyst while heating from 100° C.–200° C. under a stream of inert gas.

4,608,416

HEAT-CURABLE SURFACE-COATING AGENTS, AND THEIR USE

Eberhard Schupp, Schwetzingen; Werner Loch, Erpolzheim; Rolf Osterloh, Gruenstadt, and Klaas Ahlers, Muenster, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Division of Ser. No. 547,094, Oct. 31, 1983, Pat. No. 4,576,979. This application Mar. 13, 1985, Ser. No. 711,201

Claims priority, application Fed. Rep. of Germany, Mar. 30, 1983, 3311516

Int. Cl.[4] C08L *47/00, 75/00*

U.S. Cl. 525—130 3 Claims

1. A heat-curable surface coating agent which contains, as a binder, a mixture of (A) one or more polyadducts, polycondensates or other polymers having an average molecular weight M_n of from 500 to 10,000 and, per molecule, on average two or more OH or primary or secondary amino groups, or two or more OH and primary or secondary amino groups, or two or more OH and primary and secondary amino groups, with the proviso that component (A) is at least one compound selected from the group consisting of polyester resins including alkyd resins containing one or more monocarboxylic acids or glycidyl esters of branched carboxylic acids, a polydiene resin and a polydiene oil, and (B) a reaction product of (a) one or more polyisocyanates, (b) one or more secondary monoamines and (c) one or more polyalcohols having two or more hydroxyl groups, with the further proviso that component (A) is not a reaction product of epoxy resins with alcohols, mercaptans or amines.

4,608,417

COMPOSITIONS COMPRISING OLEFIN POLYMER BLENDS

Harold F. Giles, Jr., Cheshire, Mass., assignor to General Electric Company, Mt. Vernon, Ind.

Division of Ser. No. 630,870, Jul. 13, 1984, Pat. No. 4,567,105. This application Jul. 25, 1985, Ser. No. 758,746

Int. Cl.[4] C08L *69/00*

U.S. Cl. 525—148 7 Claims

3. A composition comprising a blend of

(a) a major amount of an aromatic polycarbonate and a polyolefin other than poly-(4-methylpentene-1); and

(b) a minor amount of an olefin acrylate polymer and poly-(4-methylpentene-1).

4,608,418

HOT MELT COMPOSITION AND PROCESS FOR FORMING THE SAME

Richard W. Czerwinski, and Larry D. Osterberger, both of Nashville, Tenn., assignors to Gensco Inc., Tenn.

Filed Feb. 22, 1985, Ser. No. 704,229

Int. Cl.[4] C08K *5/09;* C08G *5/12, 18/42*

U.S. Cl. 524—296 38 Claims

1. A thermoplastic hot melt composition comprising a polyurethane having at least one plasticizer reacted therein formed by heating a reaction mixture comprising at least one isocyanate having a functionality less than about 2.2, at least one long chain polyol, at least one chain extender and the at least one plasticizer at a temperature of at least about 330° F., wherein said components are present in amounts sufficient to meet the following formula:

$$(A+B+C)/D = 0.5 \text{ to about } 7.0$$

wherein:

A represents the equivalent weight of the long chain polyol x the moles thereof used;

B represents the equivalent weight of the chain extender x the moles thereof used;

C represents the equivalent weight of the isocyanate x the moles thereof used; and

D represents the grams of plasticizer.

4,608,419

CYCLIC IMINOETHER MODIFIED COPOLYMERS AS IMPROVED ADHESIVES

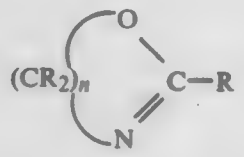
Linneaus C. Dorman, and Victor E. Meyer, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 551,789, Nov. 14, 1983, abandoned. This application Mar. 18, 1985, Ser. No. 712,820

Int. Cl.[4] C08F *8/00*

U.S. Cl. 525—329.9 13 Claims

1. A copolymer adhesive composition, comprising (i) a polymerizable olefin and (ii) an α,β-ethylenically unsaturated carboxylic acid, wherein at least a portion of the carboxyl groups present on said (ii) are converted to an ester/amide derivative by reacting said carboxyl groups with a cyclic iminoether compound characterized by the structural formula:



wherein the R groups are independently an alkyl, arylalkyl, aryl or H and n is 2 or 3, whereby said copolymer adhesive composition is not crosslinked.

4,608,420

PROCESS FOR THE PREPARATION OF ACYLURETHANES, AND THE USE THEREOF

Gerhard Brindöpke, Frankfurt am Main, and Gerhard Johannes, Taunusstein, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

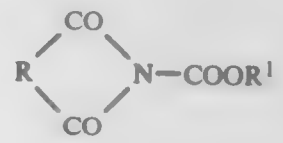
Filed Jun. 6, 1985, Ser. No. 741,876

Claims priority, application Fed. Rep. of Germany, Jun. 8, 1984, 3421293

Int. Cl.[4] C08F *8/30*

U.S. Cl. 525—375 14 Claims

1. A process for the preparation of an acylurethane by reacting a urethane with compounds containing hydroxyl groups, which comprises reacting a hydroxy compound (A) with a urethane (B) in the form of an imide of the formula



(I)

to give an acylurethane containing at least one grouping of the formula —CO—R—CO—NH—$COOR^1$ (II), in which formulae R denotes the hydrocarbon radical of an optionally α,β-ethylenically unsaturated, aliphatic, cycloaliphatic or aromatic dicarboxylic acid or endomethylene derivatives thereof, in each case having 2 to 10 carbon atoms, and R^1 denotes alkyl, alkoxy or alkoxyalkyl having in each case 1 to 16 carbon atoms in the alkyl group, cycloalkyl having 3 to 10 carbon atoms or benzyl.

4,608,421

SILICONE-POLYESTER POWDER COATING COMPOSITIONS

Ju-Chui Lin, Strongsville, Ohio, assignor to SCM Corporation, New York, N.Y.

Filed Jun. 17, 1985, Ser. No. 745,443

Int. Cl.[4] C08G *65/32*

U.S. Cl. 525—403 22 Claims

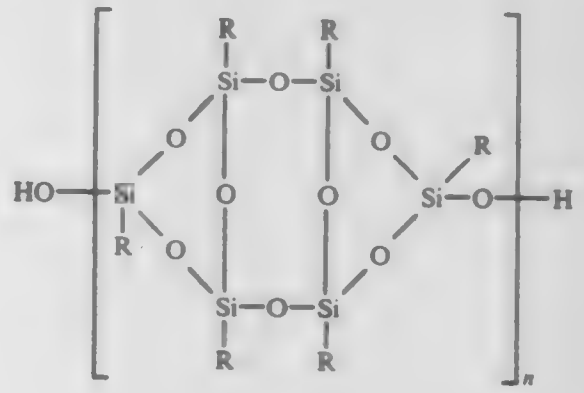
1. A siloxane-polyester, siloxane ether or siloxane-ether-polyester copolymer resin having an acid number of from about 0 to 20, a hydroxyl number from about 20 to about 180 and comprising the reaction product, totaling 100 percent of:

(a) 0 to 33 percent polyester precursor rigid organic diacid;

(d) 20 to 30 percent multifunctional glycol or polyol having at least two hydroxy functional groups;

(c) 0 to 8 percent trimellitic acid or anhydride; and

(d) 30 to 90 percent hydroxy-functional cyclic siloxane having at least two silanol groups per mole adapted to react with said multifunctional glycol and acid to provide a crystalline siloxane-polyester or siloxane-ether powder coating resin having a tack temperature of at least 50° C.; said siloxane having the structure:



where n is an integer from 1 to 10 and R independently represents lower alkyl and phenyl groups.

4,608,422

PREPARATION OF HYDROXYL-CONTAINING POLYMERS

Herbert Mueller, Frankenthal, Fed. Rep. of Germany, assignor to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Mar. 11, 1985, Ser. No. 710,026

Claims priority, application Fed. Rep. of Germany, Mar. 20, 1984, 3410069

Int. Cl.[4] C08F *8/04*

U.S. Cl. 525—410 4 Claims

1. In a process for the preparation of a hydroxyl-containing polymer by catalytic hydrogenation of an acyloxy-containing polymer, the improvement which comprises:

hydrogenating at from 180° to 280° C. and under a hydrogen pressure of from 200 to 300 bar a mixture containing

(a) an acyloxy-containing polytetrahydrofuran having a molecular weight of from 300 to 5,000,

(b) a strong base selected from the group consisting of the oxides, hydroxides and alcoholates of alkali and alkaline earth metals, and

(c) an alcohol having 1 to 5 carbon atoms, the concentration of the strong base in said mixture being from 0.001 to 1% by weight and the concentration of the alcohols in said mixture being from 5 to 70% by weight.

4,608,423

LINEAR ADDITION POLYESTER COPOLYMERS

Kirk J. Abbey, Seville, Ohio, assignor to SCM Corporation, New York, N.Y.

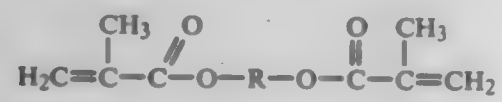
Continuation-in-part of Ser. No. 749,310, Jun. 20, 1985, abandoned. This application Jan. 27, 1986, Ser. No. 822,334

Int. Cl.[4] C08F *4/06*

U.S. Cl. 526—172 13 Claims

1. A process for preparing non-crosslinked polyester polymer having 2,2-dimethyl-4-methylene glutarate structural units in the polymer chain and a weight average molecular weight above about 2,000 which comprises

(a) providing a dimethacrylate ester of the formula:



wherein R is selected from the group consisting of an aliphatic chain containing between two and thirty carbon atoms; an aliphatic polyether residue containing between two and thirty carbon atoms; a diepoxide residue; and a low molecular weight hydroxyl-terminated polyester residue; wherein said dimethacrylate ester is the reaction product of about one mole of a diol or diepoxide with about 2 moles of methacrylic acid;

(b) polymerizing said dimethacrylate ester in the presence of at least 0.1% non-peroxide free radical initiator and in the presence of at least 0.01% Cobalt(II) catalyst complex for chain transfer to monomer.

4,608,424

LATEX COMPOSITIONS COMPRISING LOADABLE POLYMERIC PARTICLES

James W. Brown, Spencerport; Tsang J. Chen, Rochester, both of N.Y., and Michael A. Schen, Amherst, Mass., assignors to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 399,404, Jul. 19, 1982, Pat. No. 4,497,929. This application Oct. 12, 1984, Ser. No. 660,157

Int. Cl.[4] C08F *30/04*

U.S. Cl. 526—240 1 Claim

1. A polymeric composition selected from the group consisting of:

poly(n-butyl acrylate-co-tetrahydrofurfuryl methacrylate-co-sodium 2-acrylamido-2-methylpropanesulfonate);

poly(methyl acrylate-co-tetrahydrofurfuryl methacrylate-co-sodium 2-acrylamido-2-methylpropanesulfonate) and

poly(tetrahydrofurfuryl methacrylate-co-sodium 2-acrylamido-2-methylpropanesulfonate).

4,608,425

HIGH CHARGE DENSITY POLYMERIC COMPLEXES - VISCOSIFIERS FOR ACID, BASE AND SALT (AQUEOUS) SOLUTIONS

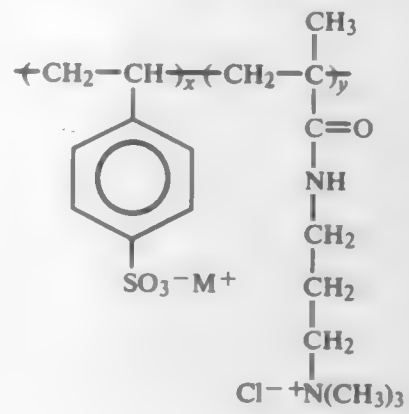
Dennis G. Peiffer, East Brunswick, and Robert D. Lundberg, Bridgewater, both of N.J., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Continuation-in-part of Ser. No. 688,237, Jan. 2, 1985, abandoned. This application Jun. 21, 1985, Ser. No. 747,427

Int. Cl.[4] C08F *20/60*

U.S. Cl. 526—241 10 Claims

1. A water soluble copolymer consisting of formula:



wherein x is about 1 to about 99 mole %, y is about 1 to about 99 mole %, and M is selected from the group consisting of amines and a metallic cation being selected from the group consisting of lead, iron, aluminum, Groups IA, IIA, IB and IIB of the Periodic Table of Elements, said copolymer being formed by a free radical copolymerization in a reaction solution and recovering said copolymer from said reaction solution.

4,608,426

BIS-MALEIMIDE RESIN COMPOSITION

Bruce A. Stern, Fallston, Md., assignor to American Cyanamid Company, Stamford, Conn.

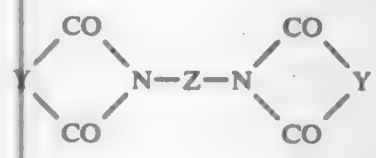
Filed Jan. 29, 1985, Ser. No. 695,989

Int. Cl.[4] C08G *69/00*

U.S. Cl. 528—170 11 Claims

1. A resin composition comprising:

(i) 40 to 95 percent by weight of a mixture of unsaturated N,N'-bis-imides of the formula:



where Y represents a divalent radical of at least 2 carbon

atoms and contains a carbon-carbon double bond and in major portion of the mixture, Z is the residue of at least one aromatic diamine and in the minor portion of the mixture Z is the residue of an aliphatic diamine;

(ii) 5 to 60 percent by weight of a heat-activatible cross-linking agent combination for said bis-imides (i), said combination comprising (1) 1 to 99 parts by weight of an arylene polyamine compound and (2) 99 to 1 parts by weight of an alkenyl phenol or an alkenylphenol ether; and

(iii) 0 to 5 percent by weight of an imidazole polymerization catalyst.

4,608,427

METHOD FOR MAKING PBO AND PBT POLYMERS

Wilfred Sweeny, and Stephanie L. Kwolek, both of Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jun. 20, 1985, Ser. No. 746,757
Int. Cl.[4] C08G *73/22, 75/32*
U.S. Cl. 528—179 **5 Claims**

1. A method for preparing polybenzobisthiazoles and polybenzobisoxazoles which comprises reacting in a polyphosphoric acid medium, and in substantially stoichiometric proportions, 2,5-diamino-1,4-benzenedithiol dihydrochloride or 4,6-diaminoresorcinol dihydrochloride with a diester of the group consisting of diethyl, di-n-propyl, diisopropyl or diisobutyl terephthalate, 4,4[1]-bibenzoate or 2,6-naphthoate.

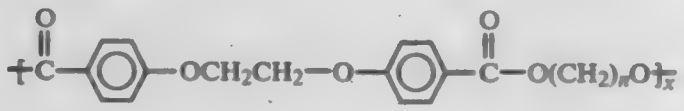
4,608,428

COPOLYMERS OF A 4,4'-(ETHYLENEDIOXY)BIS BENZOATE, AN ALKYLENE DIOL AND A (2-ALKENYL OR ALKYL) SUCCINIC ANHYDRIDE; AND SURGICAL DEVICES FORMED THEREFROM

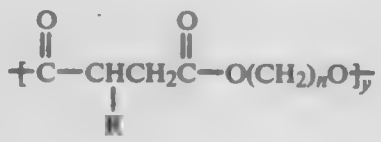
Shalaby W. Shalaby, Lebanon, and Dennis D. Jamiolkowski, Long Valley, both of N.J., assignors to Ethicon, Inc., Somerville, N.J.

Division of Ser. No. 401,494, Jul. 26, 1982, Pat. No. 4,511,706. This application Sep. 10, 1984, Ser. No. 648,446
Int. Cl.[4] C08G *63/66*
U.S. Cl. 528—192 **18 Claims**

1. A surgical device formed from a copolymer consisting essentially of a multiplicity of recurring A and B units having the following general formula:



A



B

wherein

x and y are numbers having average values such that the B units comprise from 1 to 55 weight percent of the copolymer and the A units comprise the remainder,

n is 2 to 8, and

R represents a linear or branched alkyl or alkenyl radical with a chain length of 4 to 30 carbon atoms, or a mixture of such radicals with different chain lengths.

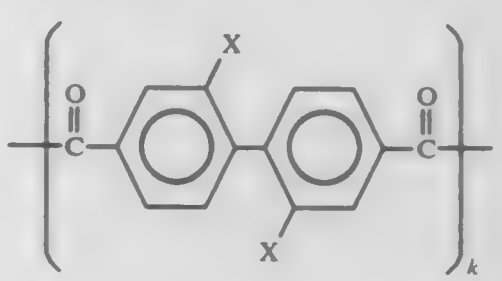
4,608,429

LOW-MELTING AROMATIC POLYESTERS WITH REPEATING 2,2'-SUBSTITUTED-BIPHENYLENE RADICALS

Howard G. Rogers, Weston, Mass.; Russell A. Gaudiana, Merrimack, N.H.; Richard A. Minns, and Roger F. Sinta, both of Arlington, Mass., assignors to Polaroid Corporation, Patent Dept., Cambridge, Mass.

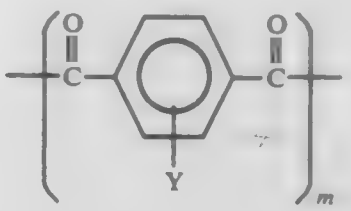
Filed Nov. 23, 1984, Ser. No. 674,515
Int. Cl.[4] C08G *63/18*
U.S. Cl. 528—194 **22 Claims**

1. A melt-processable polyester comprising repeating radicals of the formulas



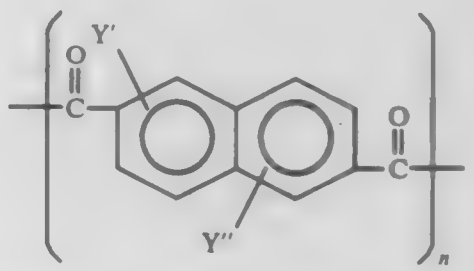
(I)

wherein X is a substituent other than hydrogen, and k represents the molar amount of the formula (I) radical in the polyester;



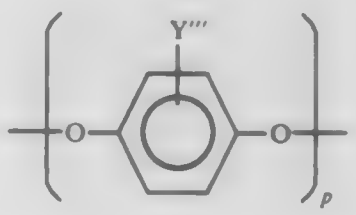
(II)

wherein Y is hydrogen or a substituent other than hydrogen, and m represents the molar amount of the formula (II) radical in the polyester;



(III)

wherein each of Y' and Y'' represents hydrogen or a substituent other than hydrogen, and n represents the molar amount of the formula (III) radical in the polyester; and



(IV)

wherein Y''' is hydrogen or a substituent other than hydrogen, and p represents the mole ratio of the formula (IV) radical in the polyester; the molar proportions of formula (I), (II), (III) and (IV) radicals conforming to the following relationships:

$$\frac{k}{k+m+n} = 0.2 \text{ to } 0.8;$$

$$\frac{m}{k+m+n} = 0 \text{ to } 0.8;$$

-continued

$$\frac{n}{k+m+n} = 0 \text{ to } 0.8;$$

$$\frac{m+n}{k+m+n} = 0.2 \text{ to } 0.8; \text{ and}$$

$$\frac{k}{k+m+n} + \frac{m+n}{k+m+n} = \frac{p}{k+m+n}.$$

4,608,430

POLYCARBONATE EXHIBITING IMPROVED HEAT RESISTANCE FROM DIPHENOL CONTAINING DISUBSTITUTED PHENYLENE RADICAL

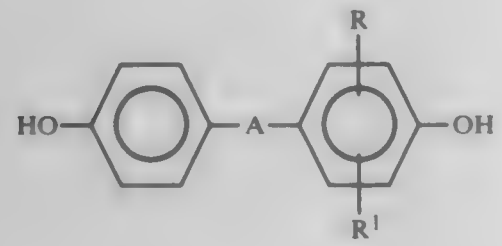
Victor Mark, Evansville, Ind., and John R. Campbell, Clifton Park, N.Y., assignors to General Electric Company, Mt. Vernon, Ind.

Filed Dec. 28, 1984, Ser. No. 687,147
Int. Cl.[4] C08G *63/62*
U.S. Cl. 528—196 **7 Claims**

1. Thermoplastic polycarbonate resin exhibiting improved heat resistance comprised of the reaction product of:

(i) a carbonate precursor; and

(ii) at least one dihydric phenol represented by the general formula



wherein:

R and R^1 are independently selected from alkyl radicals; and A is selected from divalent hydrocarbon radicals.

4,608,431

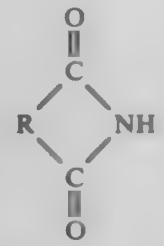
POLYIMIDE FROM UNSATURATED IMIDE, POLYAMINE AND ALDEHYDE

Dalip K. Kohli, Norwalk, Conn., assignor to American Cyanamid Co., Stamford, Conn.

Filed Jan. 29, 1985, Ser. No. 695,991
Int. Cl.[4] C08G *12/06, 12/26*
U.S. Cl. 528—246 **11 Claims**

1. A method for making a resinous polyimide which comprises contacting

(i) an unsaturated imide of the formula



wherein r is an aliphatically unsaturated hydrocarbon radical;

(ii) from about 0.5 to about 2 moles per mole of (i) of formaldehyde or a formaldehyde precursor; and

(iii) from about 0.5 to 2 moles per mole of (i) of an organic polyamine.

4,608,432

SELF-COMPATIBILIZING POLYESTER POLYOL BLENDS BASED ON POLYALKYLENE TEREPHTHALATE

George Magnus, Arlington Heights; Melvin Loeb, Northbrook; Robert J. Wood, Round Lake Park, and Brian Kelley, Round Lake Beach, all of Ill., assignors to Stepan Company, Northfield, Ill.

Filed Sep. 23, 1985, Ser. No. 779,169
Int. Cl.[4] C08G *63/04, 63/22*
U.S. Cl. 528—274 **31 Claims**

1. A process for preparing a low acid number selfcompatibilizing polyester polyol product blend based on polyalkylene terephthalate comprising the step of heating at a temperature ranging from about 180° to 240° C. a starting mixture which comprises on a 100 weight percent total basis:

(A) from about 15 to 80 weight percent of polyalkylene terephthalate;

(B) from about 8 to 80 weight percent of at least one low molecular weight aliphatic diol characterized by the generic formula:

$$HO—R^1—OH$$

where:

R^1 is a divalent radical selected from the group consisting of:

(a) alkylene radicals each containing from 2 through 6 carbon atoms,

(b) radicals of the formula:

$$—(R^3O)_n—R^3—$$

where:

R^3 is an alkylene radical containing from 2 through 3 carbon atoms, and n is an integer of from 1 through 3, and

(c) mixtures thereof, and

(C) from about 2 to 30 weight percent of at least one compatibilizer compound selected from the group consisting of hydrophobic compounds, nonionic surfactant compounds, and mixtures thereof, said hydrophobic compound being characterized by:

(1) having an equivalent weight of from about 130 to 900,

(2) containing from about 8 to 60 carbon atoms per molecule, and

(3) containing one radical per molecule, selected from the group consisting of carboxyl and hydroxyl, and

said nonionic surfactant compound being characterized by:

(1) containing from about 10 to 600 carbon atoms per molecule,

(2) containing at least one and not more than four hydroxyl radicals per molecule, and

(3) containing from about 4 to 270 radicals per molecule of the formula

$$—(R^3O)—$$

where:

R^3 is as above defined,

said heating being continued until a liquid reaction product is produced which is characterized by having:

(A) an hydroxyl number ranging from about 200 to 500,

(B) an acid number ranging from about 0.1 to 7,

(C) a saponification value ranging from about 130 to 400, and

(D) a viscosity ranging from about 200 to 50,000 centipoises at 25° C. measured using a Brookfield viscometer.

4,608,433

INERT MONOVALENT HYDROCARBON TERMINATED POLYSULFIDE POLYMERS

Victor E. Meyer, and Thomas E. Dergazarian, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

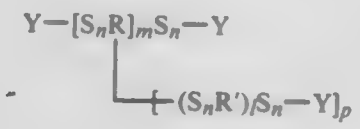
Continuation-in-part of Ser. No. 552,235, Nov. 16, 1983, abandoned, which is a continuation-in-part of Ser. No. 426,559, Sep. 29, 1982, Pat. No. 4,438,259, which is a continuation-in-part of Ser. No. 339,820, Jan. 18, 1982, abandoned. This application Jul. 24, 1985, Ser. No. 758,235

The portion of the term of this patent subsequent to Mar. 20, 2001, has been disclaimed.

Int. Cl.[4] C08G *75/14*

U.S. Cl. 528—388 14 Claims

1. A polysulfide polymer having a molecular weight from about 3,000 to about 100,000, as represented by the general structure



wherein R and R′ at each occurrence are independently polyvalent organic polyradicals with each valence residing on a carbon atom; each Y is a terminal substituent that is an inert monovalent hydrocarbon radical; l is zero or a positive integer; m is a positive integer; n is a number from about 2 to about 8; and p is zero or a positive integer which is the difference between the valence of R and two.

4,608,434

METAL CARBOXYLATE/ALCOHOL CURING CATALYST FOR POLYCYANATE ESTER OF POLYHYDRIC PHENOL

David A. Shimp, Prospect, Ky., assignor to Celanese Corporation, New York, N.Y.

Filed Oct. 21, 1985, Ser. No. 789,679

Int. Cl.[4] C08G *73/00*

U.S. Cl. 528—422 27 Claims

1. A curable composition comprising a polycyanate ester of a polyhydric phenol and a catalyst blend comprising a liquid solution of a metal carboxylate in a monohydric alcohol wherein the metal is a coordinating transition metal having 9 or more electrons in its next-to-outermost shell, wherein the carboxylate contains 4 to about 24 carbon atoms and wherein the monohydric alcohol is liquid at room temperature, has a boiling point greater than 160° C. at 760 mm Hg pressure and has a solubility of less than 10 percent by weight in water.

4,608,435

BENZO-1,4-QUINONES

Frederick H. Howell, Atherton, England, assignor to Ciba-Geigy AG, Basel, Switzerland

Filed Apr. 28, 1983, Ser. No. 489,360

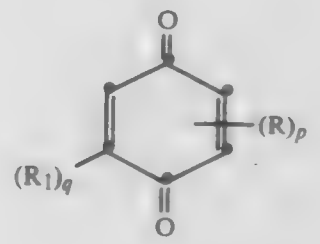
Claims priority, application United Kingdom, May 5, 1982, 8212970

The portion of the term of this patent subsequent to Nov. 20, 2001, has been disclaimed.

Int. Cl.[4] C07C *50/00*; C07D *265/32, 413/00*

U.S. Cl. 544—87 8 Claims

1. A benzo-1,4-quinone compound of the formula I

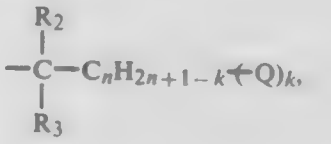


(I)

wherein

p is 1 or 2 and q is 0 or 1, provided that p+q is 1 or 2 and the R and R_1 substituents present are present in the 2- or 2- and 5-positions of the ring;

R is a radical of formula II



(II)

and

Q is a member selected from the group consisting of $—CO_2R_4$, $—CON(R_4)(R_5)$, $—OR_5$, $—OCOR_7$, $—N(R_8)(R_9)$, $—SO_2R_{12}$, —CN, Halogen, $—NO_2$ or $—COR_{13}$,

n is an integer from 1 to 20, and k is 1 or 2,

R_1 is C_1–C_8 straight or branched chain alkyl, or a radical of formula II as hereinbefore defined, and when R_1 is a radical of formula II, then R_1 and R may be the same or different;

R_2 and R_3 are the same or different and each is straight or branched chain alkyl having from 1 to 5 carbon atoms and, when Q is $—CO_2R_4$, either R_2 or R_3 is unsubstituted or is substituted by $—CO_2R_4$, the R_4 groups being independent, or R_2 or R_3 may be so linked to the radical C_nH_{2n+1-k} that there is formed a C_5–C_{12} cycloalkylene radical substituted by the group $—(CO_2R_4)_k$, the R_4 groups being independent, and

R_4 independently is H, a straight or branched chain alkyl having from 1 to 20 carbon atoms or such alkyl interrupted by 1 to 5 oxygen atoms, such groups being unsubstituted or substituted by a group $—OR_6$ wherein R_6 is C_3–C_{12} cycloalkyl, straight or branched C_3–C_{20} alkenyl, C_6–C_{10} aryl which is substituted or unsubstituted by 1 or 2 C_1–C_4-alkyl groups, or C_7–C_{13} aralkyl; or R_4 is a divalent straight- or branched alkylene group having 2 to 20 carbon atoms, a straight or branched chain alkenyl group having from 3 to 20 carbon atoms, a cycloalkyl group having from 3 to 12 carbon atoms, an aryl group having from 6 to 10 carbon atoms which is unsubstituted or substituted by a C_1–C_4 alkyl group; or an aralkyl group having from 7 to 13 carbon atoms, a 5- or 6-membered heterocyclic containing an oxygen atom selected from tetrahydrofuranyl and tetrahydropyranyl and which groups are unsubstituted or substituted by one or two C_1–C_4 straight or banched chain alkyl groups; or methyl substituted by a 5- or 6-membered heterocyclic containing an oxygen atom selected from furfuryl, tetrahydrofurfuryl or tetrahydropyran-2-yl-methyl and which groups are unsubstituted or substituted by one or two C_1–C_4 straight- or branched chain alkyl groups;

R_5 is hydrogen or a straight or branched chain alkyl group having from 1 to 20 carbon atoms, or R_4 and R_5 together with the nitrogen atom to which they are each bonded may form a saturated 5- or 6-membered heterocyclic ring selected from pyrrolidino, piperidino and morpholino, which groups are unsubstituted or substituted by one or two C_1–C_4 alkyl groups,

R_7 is H or a straight or branched chain alkyl group having from 1 to 20 carbon atoms, a straight or branched chain alkenyl having from 3 to 20 carbon atoms, a C_3–C_{12} cycloalkyl group, a C_7–C_{13} aralkyl group, or a C_6–C_{10} aryl

group which is unsubstituted or substituted by 1 or 2 C_{1-4}-alkyl groups,

R_8 is H or a straight or branched chain alkyl group having from 1 to 4 carbon atoms, and R_9 is H, a straight or branched chain alkyl group having 1 to 4 carbon atoms, or an acyl group of the formula $—COR_7$ wherein R_7 is as previously defined, or R_8 and R_9, together with the nitrogen atom to which they are each bonded, form a saturated 5- or 6-membered ring selected from pyrrolidino, piperidino and morpholino, which groups are unsubstituted or substituted by one or two C_1–C_4 alkyl groups, and when x is 1, and

R_{12} is —OH, —Cl or $—N(R_5)(R_7)$ wherein R_5 and R_7 are as previously defined, R_{13} is —H, a straight- or branched chain alkyl group having 1 to 20 carbon atoms or halogen, provided that, when R_{12} is —OH, then R_1 is a radical of formula II, or a salt thereof with an organic or inorganic acid or base.

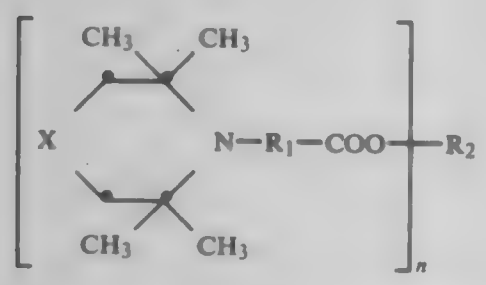
4,608,436

PIPERIDINE COMPOUNDS

Giuseppe Cantatore, Bitonto, and Valerio Borzatta, Bologna, both of Italy, assignors to Ciba-Geigy S.p.A., Origgio, Italy

Filed Apr. 9, 1985, Ser. No. 721,936
Claims priority, application Italy, Apr. 9, 1984, 20449 A/84
Int. Cl.[4] C07D *401/12, 401/14*
U.S. Cl. 546—188 5 Claims

1. A compound of the formula (I)

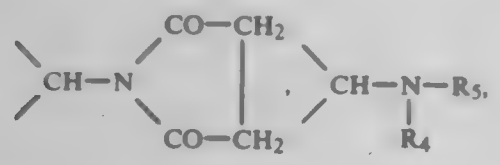


(I)

in which R_1 is C_1–C_{12}-alkylene, X is methylene, a group

$>CH—OR_3$,

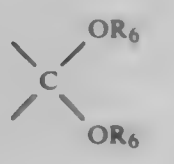
in which R_3 is hydrogen, C_1–C_{18}-alkyl, C_3–C_{12}-alkenyl, C_7–C_{18}-aralkyl or C_1–C_{12}-acyl, or X is a group



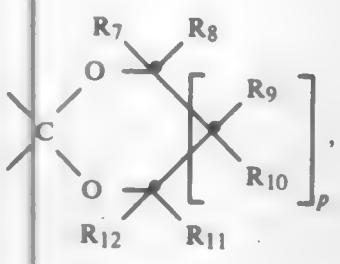
in which R_4 is hydrogen, C_1–C_{18}-alkyl, C_1–C_{18}-alkyl substituted by C_1–C_{18}-alkoxy or C_2–C_{18}-dialkylamino, or R_4 is C_5–C_{18}-cycloalkyl, C_3–C_{18}-alkenyl or C_7–C_{18}-aralkyl and R_5 is C_1–C_{12}-acyl or a group

$—COOR_6$

in which R_6 is C_1–C_{12}-alkyl or C_3–C_{12}-alkenyl, or X is a group

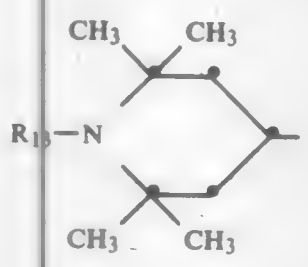


in which R_6 is as defined above or X is a group of the formula (II)

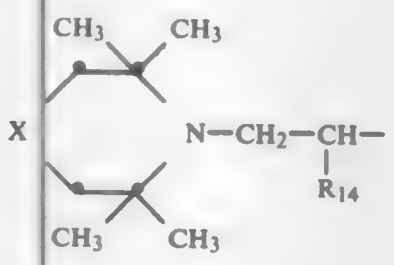


(II)

in which the radicals R_7–R_{12} can be identical or different and are hydrogen or C_1–C_4-alkyl and p is zero or 1, n is 1 or 2 and, if n=1, R_2 is a group of the formula (III) or (IV)

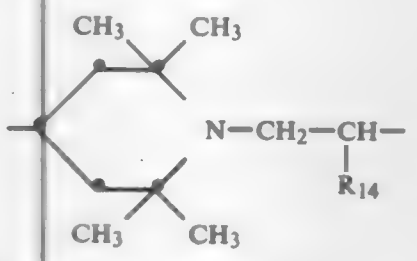


(III)



(IV)

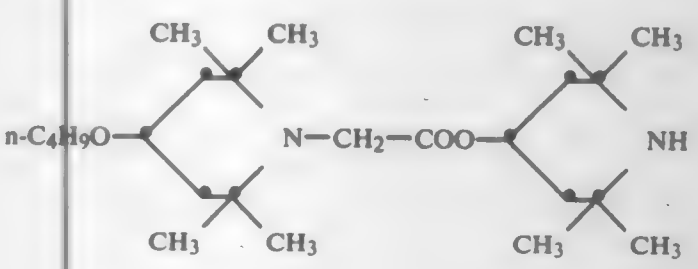
in which R_{13} is hydrogen, O·, cyanomethyl, C_1–C_{12}-alkyl, C_3–C_{12}-alkenyl or -alkynyl, C_7–C_{12}-aralkyl or C_1–C_{12}-acyl, X is as defined above and R_{14} is hydrogen, C_1–C_6-alkyl or C_6–C_{12}-aryl, or, if n=2, R_2 is a group of the formula (V)

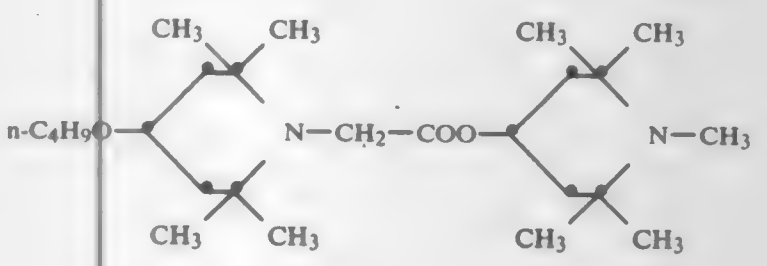


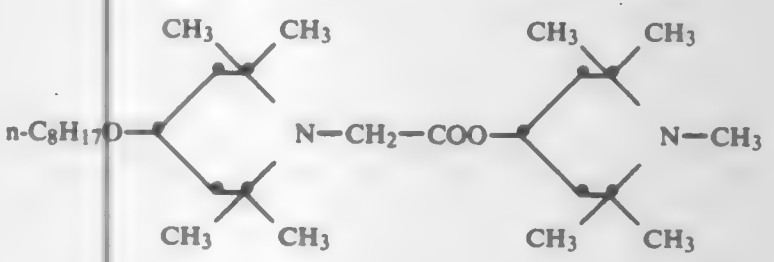
(V)

in which R_{14} is as defined above.

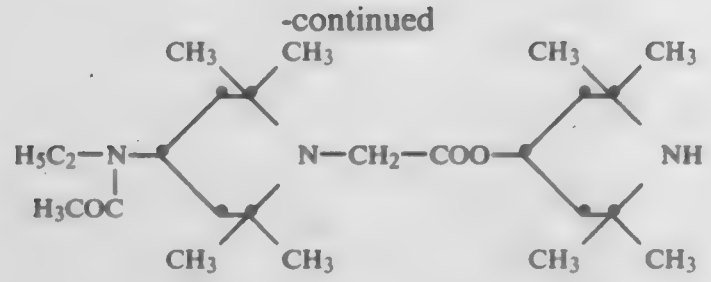
5. A compound according to claim 1 of the formulae



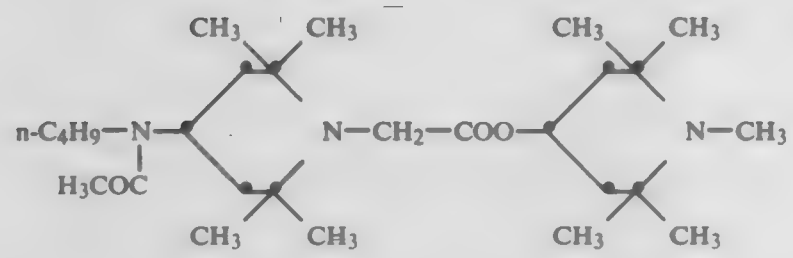




-continued



and



4,608,437

PREPARATION OF IMIDAZOLINYL BENZOIC ACIDS

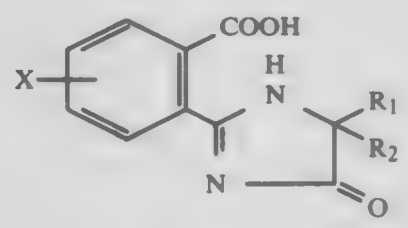
Marinus Los, Pennington, N.J., assignor to American Cyanamid Company, Stamford, Conn.

Division of Ser. No. 279,886, Jul. 2, 1981, Pat. No. 4,544,754, which is a division of Ser. No. 74,940, Sep. 13, 1979, Pat. No. 4,297,128, which is a division of Ser. No. 914,244, Jun. 9, 1978, Pat. No. 4,188,487, which is a continuation-in-part of Ser. No. 822,458, Aug. 8, 1977, abandoned. This application Jul. 25, 1985, Ser. No. 757,814

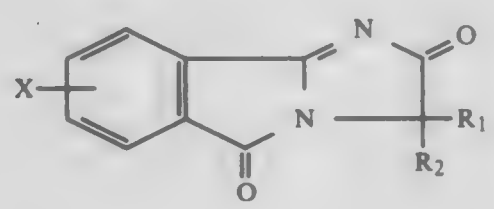
Int. Cl.[4] C07D *233/70*

U.S. Cl. 548—301 1 Claim

1. A method for the preparation of a compound of the formula:



wherein X is hydrogen, alkyl C_1–C_3, halogen or nitro; R_1 is alkyl C_1–C_4; R_2 is alkyl C_1–C_6, cycloalkyl C_3–C_6, alkenyl C_2–C_4, phenyl, halophenyl or benzyl or when R_1 and R_2 are taken together with the carbon to which they are attached they may represent cycloalkyl C_3–C_6 optionally substituted with methyl; or when R_1 and R_2 are not the same the optical isomers thereof, or the isomeric mixtures thereof; comprising reacting a compound having the formula:



where X, R_1 and R_2 are as described above, with an excess of concentrated hydrochloric acid such that the corresponding lactone hydrochloride is formed and reacting the lactone hydrochloride with one equivalent of base, whereby the desired imidazolinyl acid is obtained.

4,608,438

IMIDAZOLE DERIVATIVES

Katuyuki Ohtuka, Nagareyama; Kazuya Sasaki, Higashi-Kurume; Tadashi Arika, Kasukabe; Mamoru Yokoo, Kawagoe, and Kouji Amemiya, Kodaira, all of Japan, assignors to Kaken Pharmaceutical Co., Ltd., Tokyo, Japan

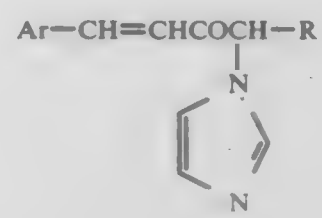
Filed Aug. 16, 1984, Ser. No. 641,198

Claims priority, application Japan, Sep. 13, 1983, 58-167560

Int. Cl.[4] C07D *233/60, 409/06, 405/06*

U.S. Cl. 548—341 7 Claims

1. An imidazole derivative represented by formula I or a biologically acceptable acid addition salt thereof:



(I)

where Ar is a phenyl group which may be substituted by alkyl having from 1 to 6 carbon atoms, alkoxy having from 1 to 4 carbon atoms, alkylamino having from 1 to 4 carbon atoms, alkoxy carbonyl having from 1 to 4 carbon atoms, phenyl, halogen or hydroxyl; a naphthyl group; a furyl group; or a thienyl group which may be substituted by halogen or alkyl having from 1 to 4 carbon atoms, and R is an alkyl group having from 1 to 10 carbon atoms; an alkenyl group having from 1 to 6 carbon atoms; or a phenylalkyl group which may be substituted by halogen.

4,608,439

PROCESS FOR PREPARING SUBSTITUTED ANTHRA[1,9-CD]PYRAZOL-6(2H)-ONES

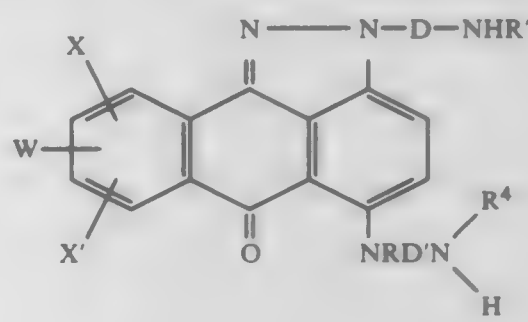
Judith L. Johnson, Ypsilanti, and Hollis D. Showalter, Ann Arbor, both of Mich., assignors to Warner-Lambert Company, Morris Plains, N.J.

Filed Apr. 26, 1985, Ser. No. 727,637

Int. Cl.[4] C07D *231/54*

U.S. Cl. 548—357 11 Claims

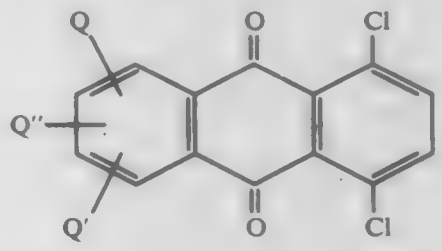
1. A process for the preparation of a substituted anthra[1,9-cd]pyrazol-6(2H)-one having the formula



V

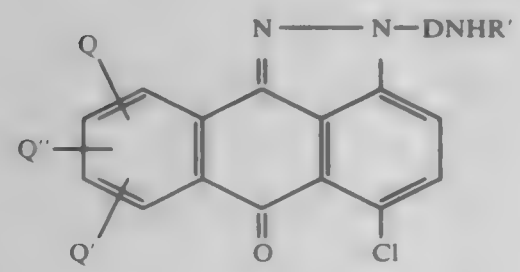
wherein X, X′, and W may be the same or different and are H or OH; R is H or alkyl of from one to six carbon atoms; D and D′ may be the same or different and are a straight or branched alkylene group of from two to eight carbon atoms, R_4 is H or an alkyl group of from one to eight carbon atoms, and R′ is an alkyl group of from two to eight atoms which may be substituted with OH which comprises:

(a) reacting a compound having the formula



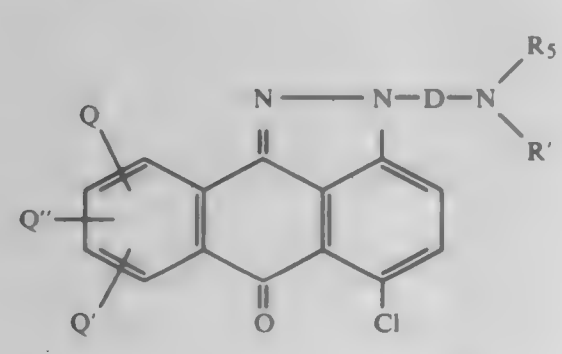
VI

with a hydrazine of formula $H_2NNHDNHR'$, wherein Q, Q', and Q'' may be the same or different and are H, benzyloxy, p-chlorobenzyloxy and p-methoxybenzyloxy, and D and R' are as defined above, to give a compound of formula



VII

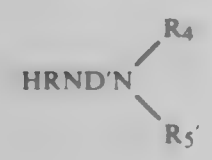
(b) reacting a compound of structural Formula VII with a benzyl halide in a suitable solvent and in the presence of an alkali carbonate to give a compound of formula



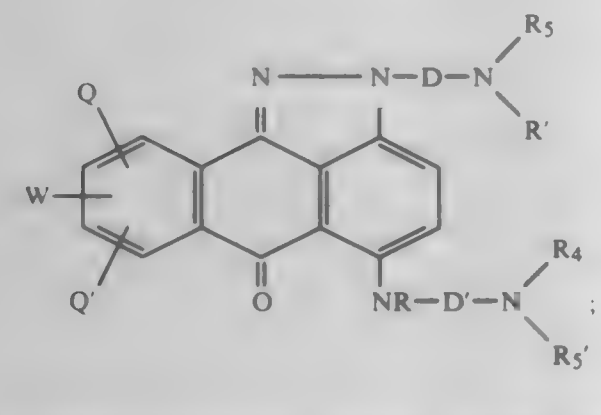
VIII

wherein Q, Q, Q'', D, and R' are defined above and R_5 is benzyl;

(c) reacting a compound of Formula VIII with a diamine of the formula



in which R_5' is H or benzyl in a suitable solvent to produce a compound of formula



IX

(d) removing the benzyl groups by catalytic means.

4,608,440

1,3,2-DIOXABORINANES

Gerald Saischek, Wels, and Hans Bodingbauer, Hellmonsödt, both of Austria, assignors to Chemie Linz Aktiengesellschaft, Linz, Austria

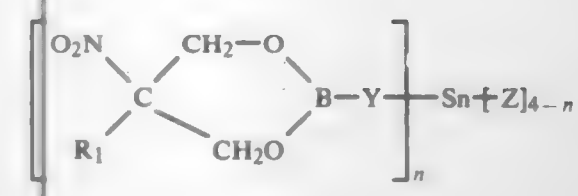
Filed Jan. 31, 1985, Ser. No. 696,760

Claims priority, application Fed. Rep. of Germany, Feb. 7, 1984, 3404253

Int. Cl.[4] C07F *7/22*

U.S. Cl. 556—7 **15 Claims**

1. A 1,3,2-dioxaborinane of the formula:



(I)

wherein R_1 is a straight-chain or branched alkyl group having 1 to 20 carbon atoms, a phenyl group or bromine, Y is a 1-oxy-2-thioethyl group, a 1-oxy-4-thiophenyl group or oxygen, each group Z independently of the others is a straight-chain or branched alkyl group having 1 to 20 carbon atoms, a cycloalkyl, bicycloalkyl or cycloalkylalkyl group, a phenyl group or a phenylalkyl group, and n is the number 1 or 2.

4,608,441

PROCESS FOR THE PREPARATION OF ARYLALKANOIC ACIDS BY OXIDATIVE REARRANGEMENT OF ARYLALKANONES

Attilio Citterio, Monza; Laura Tinucci, San Giuliano Milanese; Aldo Belli, Cornate d'Adda, and Lucio Filippini, Saronno, all of Italy, assignors to BLASCHIM S.p.A., Milan, Italy

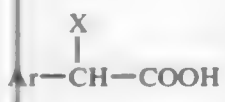
Filed Jul. 12, 1985, Ser. No. 754,538

Claims priority, application Italy, Jul. 13, 1984, 21803 A/84

Int. Cl.[4] C07C *65/11*; C07D *333/24*

U.S. Cl. 562—466 **16 Claims**

1. A process for preparing an arylalkanoic acid of the formula



(II)

wherein X is H or methyl, and Ar is optionally-substituted homocyclic or heterocyclic aryl; which comprises adding iodine to a mixture of an arylalkanone of the formula

(I)

wherein Ar and X have the meanings indicated above, and an excess of an orthoester, heating of the reaction mixture, adding an inorganic base and finally an acid.

4,608,442

PROCESS FOR PREPARING 4-HYDROXY-2-CYCLOPENTENONES

Masayoshi Minai, Moriyama, and Tadashi Katsura, Suita, both of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

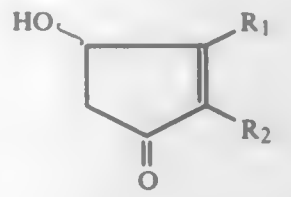
Filed Jul. 10, 1984, Ser. No. 629,488

Claims priority, application Japan, Jul. 22, 1983, 58-134867

Int. Cl.[4] C07C *45/65*

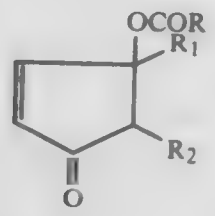
U.S. Cl. 568—346 **10 Claims**

1. A process for producing a compound of the formula:



(I)

wherein R_1 is a hydrogen atom, a C_{1-12} alkyl group or a C_{1-12} alkenyl group, and R_2 is a C_{1-12} alkyl, alkenyl or alkynyl group, which comprises treating a compound of the formula:



(II)

wherein R_1 and R_2 are each as defined above and R is a hydrogen atom or a C_{1-6} alkyl group, in a reaction medium comprising from 1 to 50 moles of water and from 0.2 to 50 moles of an inorganic or organic acid, each to one mole of compound (II).

4,608,443

METHOD FOR THE PREPARATION OF 1,4-BUTANDIAL

Juan Andrade, Kleinostheim; Günter Prescher, Hanau, both of Fed. Rep. of Germany, and Marc Samson, Lokeren, Belgium, assignors to Degussa Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Jan. 24, 1985, Ser. No. 694,372

Claims priority, application Fed. Rep. of Germany, Feb. 1, 1984, 3403427

Int. Cl.⁴ C07C *45/49*

U.S. Cl. 568—454 **6 Claims**

1. Method for the preparation of 1,4-butandial comprising reacting acrolein with an alkanol to form 3,3-dialkoxy-1-propene as a product, wherein the alkoxy group has from 1 to 6 carbon atoms,

contacting the said 3,3- dialkoxy-1-propene with a mixture of hydrogen and carbon monoxide as the synthesis gas and hydridotris-triphenylphosphine-rhodiumcarbonyl, and triphenylphosphine or triphenylphosphite thereby to carry out a hydroformylating reaction to obtain a hydroformylation product containing 4,4-dialkoxybutanal

distilling said hydroformylation product to thereby separate the 4,4-dialkoxybutanal therefrom and hydrolyzing said butanal to 1,4-butandial.

4,608,444

PROCESS AND ACCOMPANYING CATALYSTS FOR THE HYDROFORMYLATION OF FORMALDEHYDE TO GLYCOL-ALDEHYDE

Stephen E. Jacobson, Morristown, N.J., assignor to The Halcon SD Group, Inc., Montvale, N.J.

Continuation-in-part of Ser. No. 596,994, Apr. 5, 1984, Pat. No. 4,560,806, which is a continuation-in-part of Ser. No. 508,704, Jun. 28, 1983, abandoned. This application Mar. 1, 1985, Ser. No. 707,347

Int. Cl.⁴ C07C *45/49*

U.S. Cl. 568—462 **16 Claims**

1. A process for the preparation of glycol aldehyde comprising contacting formaldehyde, carbon monoxide and hydrogen in the presence of an organic solvent selected from the group consisting of effective polar and non-polar solvents and a metal catalyst complex, under superatmospheric pressures and elevated temperatures; the metal catalyst complex having the formula:

$$MX_w(CO)_x[P(R_1)_2R_2—NR_3R_4]_y[P(R_5)_3]_z$$

wherein

M is a metal selected from the group of rhodium, cobalt, ruthenium and mixtures thereof,

x is an anion selected from the group consisting of halides, pseudohalides, hydrides and deprotonated strong carboxylic acids;

P is phosphorus;

R_1 contains 1–20 carbon atoms and is selected from the group consisting of aromatic, aliphatic and mixed groups;

R_2 contains 1–20 carbon atoms and is selected from the group consisting of alkyl, aryl and alkaryl groups, and said groups are either unsubstituted, or substituted with oxygen, nitrogen and sulfur atoms;

R_3 and R_4 contain 1–100 carbon atoms and are selected from the group consisting of hydrogen, aliphatic, aromatic and mixed groups;

w ranges from 0–3,

x ranges from 1–5,

y ranges from 1–4,

z ranges from 0–3,

separating the glycol aldehyde from the reaction mixture.

4,608,445

OXYGENATED ALICYCLIC COMPOUNDS

Wolfgang K. Giersch, Bernex; Karl H. Schulte-Elte, Onex, and Günther Ohloff, Bernex, all of Switzerland, assignors to Firmenich SA, Geneva, Switzerland

Filed Nov. 23, 1982, Ser. No. 443,960

Claims priority, application Switzerland, Dec. 10, 1981, 7888/81

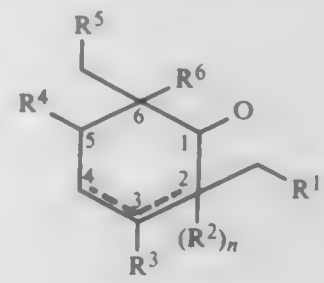
Int. Cl.⁴ C07C *43/184, 43/188*

U.S. Cl. 568—667 **2 Claims**

1. A compound of formula

$$X—CH_2—CH(OH)—CH_2—R \quad (I)$$

wherein symbol R represents a C_1–C_3 alkyl radical and X a substituted cyclohexyloxy group of formula



(II)

wherein index n stands for 0 or 1, the dashed lines indicated a single bond (n=1) or a double bond in position 2 (n=0) or 3 (n=1) and each of symbols R^1 to R^6 designates a hydrogen atom or a methyl radical.

4,608,446

PROCESS FOR THE PREPARATION OF LOW MOLECULAR WEIGHT POLYHYDROXYL COMPOUNDS

Edgar Möhring, Bergisch-Gladbach; Kuno Wagner, and Hanns P. Müller, both of Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 965,645, Dec. 1, 1978, abandoned. This application May 25, 1982, Ser. No. 382,049

Claims priority, application Fed. Rep. of Germany, Dec. 16, 1977, 2756270

Int. Cl.⁴ C07C *29/132, 29/136, 31/18*

U.S. Cl. 568—863 **9 Claims**

1. A process for producing low molecular weight, polyhydric alcohols by reducing formose in the presence of a metal catalyst comprising:

(a) introducing said metal catalyst into a reaction vessel;

(b) raising the temperature in said reaction vessel to from 80° to 220° C.;

(c) introducing hydrogen into said reaction vessel at a pressure of from 50 to 300 bars;

(d) adjusting the pH of a formose solution to between 7.5 and 12.5;

(e) introducing batch-wise into said reaction vessel said formose solution at a concentration of at least 20%, characterized in that the proportion of reducible groups determined as carbonyl groups, in the mixture inside said reaction vessel does not exceed 2% by weight, further characterized in that said formose solution is introduced in an

amount of from 3 to 30 times the amount of catalyst introduced;

(f) conducting a reduction reaction until the proportion of reducible groups, determined as carbonyl groups, falls below 0.15% by weight;

(g) removing reaction product from said reaction vessel in an amount equal to the amount of said formose solution introduced in step (e) and allowing said catalyst to remain in said reaction vessel;

(h) repeating steps (b) through (g) until the desired quantity of reaction product has been obtained.

4,608,447

PROCESS FOR THE PRODUCTION OF ALCOHOLS

Terry J. Mazanec, Solon; Gary V. Goeden, North Royalton, and John G. Frye, Jr., Solon, all of Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

Filed Mar. 1, 1985, Ser. No. 707,270

Int. Cl.[4] C07C *29/00, 31/08*

U.S. Cl. 568—902 **17 Claims**

1. A process for the conversion of methanol to alcohols containing at least two carbon atoms which process comprises reacting methanol with carbon monoxide and/or hydrogen at elevated temperature and superatmospheric pressure in the presence, of a catalyst consisting of (i) an oxide of Th and/or U and (ii) one or more alkali metals the latter being present in an amount of at least 1% by weight of alkali metal based on the total weight of the oxide and alkali metal.

4,608,448

PROCESS FOR PRODUCING 2,5-DICHLORO-P-XYLENE

Young-Jin Lee, South Charleston, W. Va., assignor to Union Carbide Corporation, Danbury, Conn.

Division of Ser. No. 948,656, Oct. 5, 1978, Pat. No. 4,334,112. This application Nov. 24, 1981, Ser. No. 324,622

Int. Cl.[4] C07C *17/12*

U.S. Cl. 570—109 **3 Claims**

1. A process for producing dichlorinated p-xylene having a high ratio of 2,5-dichloro-p-xylene to 2,3-dichloro-p-xylene isomers which comprises reacting 2-chloro-p-xylene and anhydrous ferric chloride at a temperature of from 25° C. to 150° C. and wherein said reaction is carried out with the reactants in contact with a catalytically effective amount of catalyst chosen from the group consisting of antimony halides, aluminum halides and combinations of antimony halides and aluminum halides with organic sulfur compounds characterized by the presence of divalent sulfur.

4,608,449

PROCESS FOR THE PRODUCTION OF ETHANE AND/OR ETHYLENE FROM METHANE

Manfred Baerns, Aeskulapweg 20, D-4630 Bochum, Fed. Rep. of Germany, and Wilhelm Hinsen, Ratingen, Fed. Rep. of Germany, assignors to Manfred Baerns, Bochum, Fed. Rep. of Germany

Filed Jun. 2, 1983, Ser. No. 500,407

Claims priority, application Fed. Rep. of Germany, Oct. 7, 1982, 3237079

Int. Cl.[4] C07C *2/00*

U.S. Cl. 585—500 **22 Claims**

1. In a process for the production of ethane and/or ethylene by heterogeneous catalytic reaction of methane and oxygen carried out in the presence of a suitable catalyst of the type exemplified by lead oxide, manganese oxide, antimony oxide, tin oxide, bismuth oxide, cadmium oxide, thallium oxide and indium oxide or mixtures thereof and optionally in the presence of a suitable catalyst carrier of the type exemplified by aluminum oxide (Al_2O_3), silica (SiO_2) and titania (TiO_2), the improvement comprising performing the reaction continuously at temperatures between 500° C. and 900° C. at oxygen partial pressures of less than 0.5 bar at the reactor entrance, wherein the ratio of the methane partial pressure to the oxygen partial pressure is greater than one.

4,608,450

TWO-STAGE MULTIFORMING OF OLEFINS TO TETRAMERS

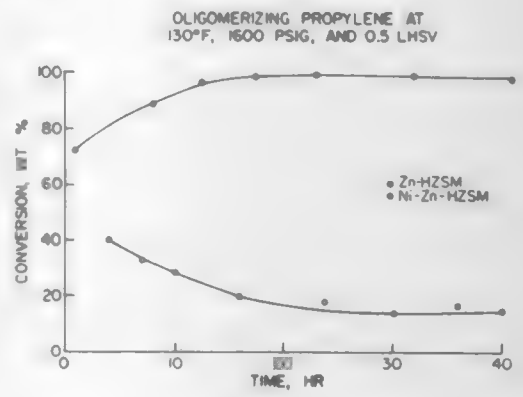
Stephen J. Miller, San Francisco, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Aug. 10, 1984, Ser. No. 639,978

The portion of the term of this patent subsequent to Nov. 8, 2000, has been disclaimed.

Int. Cl.[4] C07C *2/02*

U.S. Cl. 585—517 **10 Claims**



1. A process for preparing olefinic tetramer comprising:

(a) contacting in a first stage a C_3 or C_4 olefin stream or mixture thereof, in the liquid state with an Ni-HZSM-5 catalyst at a temperature of from about 80° to 200° F. and a pressure of about 400 to 1600 psig to produce a first effluent containing at least 70% by weight dimer of said C_3 or C_4 olefin; and

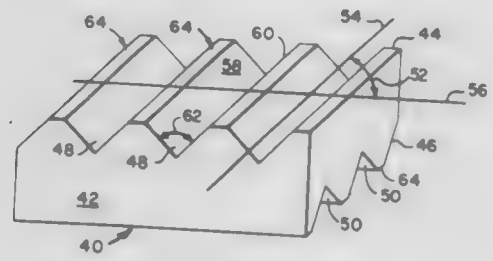
(b) contacting in a second stage the first effluent in the liquid state with a second Ni-HZSM-5 catalyst at a temperature of from about 250° to 450° F. and a pressure of 200 to 800 psig to produce a second effluent containing at least 60% tetramer of said C_3 or C_4 olefin or mixture thereof.

4,608,451

CROSS-GROOVED SOLAR CELL

Geoffrey A. Landis, Providence, R.I., assignor to Spire Corporation, Bedford, Mass.

Filed Jun. 11, 1984, Ser. No. 619,225
Int. Cl.[4] H01L *31/06*
U.S. Cl. 136—256
7 Claims



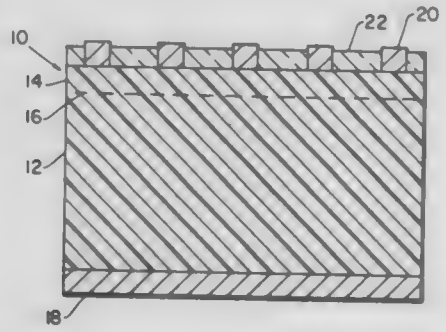
1. A solar cell of improved conversion efficiency due to path length (L) enhancement of incident radiation comprising:
(a) a thin semiconductor wafer having a front surface and an opposed back surface;
(b) both said front surface and said back surface provided with a plurality of spaced parallel grooves;
(c) the direction of said plurality of spaced parallel grooves provided on said front surface being at an angle with respect to the direction of said plurality of spaced parallel grooves provided on said back surface;
(d) respective contacts provided on the opposed grooved surfaces and having a single continuous p-n junction between said opposed grooved surfaces;
(e) said angle being at least about 10°;
(f) said thin semi-conductor wafer having a thickness from about five to about fifty microns;
(g) said plurality of spaced parallel grooves being formed with a spacing of from about two to about thirty microns, said spacing being less than said thickness of said wafers;
(h) said plurality of opposed grooved surfaces effecting multiple internal reflections of said incident radiation within said solar cell.

4,608,452

LITHIUM COUNTERDOPED SILICON SOLAR CELL

Irving Weinberg, Rocky River, and Henry W. Brandhorst, Jr., Berea, both of Ohio, assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Nov. 7, 1984, Ser. No. 669,140
Int. Cl.[4] H01L *31/06, 31/18*
U.S. Cl. 136—261
18 Claims



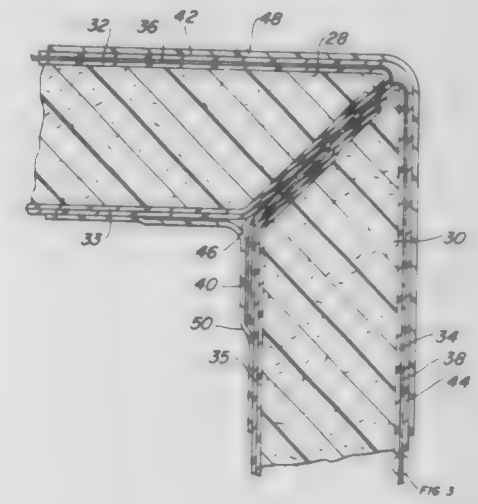
16. A radiation damage resistant solar cell comprising
a wafer of p-type boron doped silicon having lithium ions implanted therein in small enough quantities such that said wafer remains p-type after lithium addition, said wafer having
an n^+ region formed by phosphorus ions implanted therein adjacent to a surface of said wafer,
a first electrical contact on said surface adjacent to said n^+ region, and
a second electrical contact on an opposite surface of said wafer.

4,608,453

ELECTRO-MAGNETIC INTERFERENCE SHIELD

Richard B. Freeman, Wilmington, Del., assignor to The Budd Company, Troy, Mich.

Filed Aug. 20, 1984, Ser. No. 642,005
Int. Cl.[4] H05K *9/00*
U.S. Cl. 174—35 MS
7 Claims



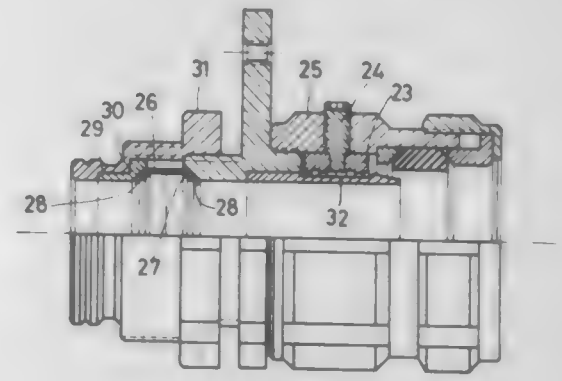
1. A shelter having electro-magnetic shielding comprising:
(a) a plurality of panels,
(b) a plurality of metallic sheets on the exterior surfaces of said panels and extending around the edges of said panels;
(c) layers of fibrous material on opposite sides of each of said plurality of metallic sheets;
(d) means for joining together and assembling said panels with said metallic sheets so that portions of said metallic sheets associated with adjacent panels extend beyond said panels inwardly into said shelter; and
(e) said portions of said metallic sheets being metallurgically joined to provide a continuous shield around said shelter.

4,608,454

TENSION RESISTING ELECTRICAL CABLE GLAND

Franz Lackinger, 9 Sligo Road, Kenmare, Krugersdorp, Transvaal Province, South Africa

Continuation-in-part of Ser. No. 543,888, Oct. 23, 1983, abandoned. This application Mar. 8, 1984, Ser. No. 560,833
Int. Cl.[4] H02G *3/06*
U.S. Cl. 174—65 SS
14 Claims



1. An electrical cable gland comprising a body having a passage therethrough, and an armour clamp assembly comprising at least two gripping dogs spaced apart about the circumference of the cable gland and being individually movable toward each other by screw threaded fasteners extending through a side wall of the cable gland in a roughly radial

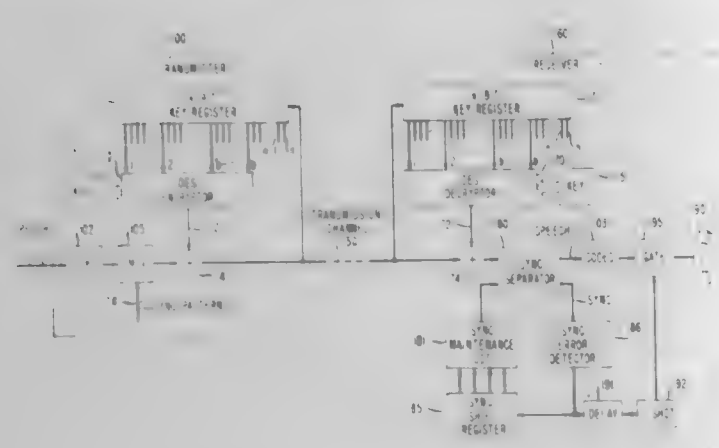
direction, with the gripping dogs being held captive but rotatable on the inner ends of the fasteners.

4,608,455

PROCESSING OF ENCRYPTED VOICE SIGNALS

Bruce E. McNair, Holmdel, N.J., assignor to Bell Telephone Laboratories, Incorporated, Holmdel, N.J.

Filed Apr. 5, 1982, Ser. No. 365,630
Int. Cl.[4] H04L *9/02*
U.S. Cl. 178—22.17 **11 Claims**



9. In an encryption system arranged to provide an encrypted version of a composite signal including speech and synchronization information, said encrypted version being formed by combining said composite signal, bit by bit, with a key stream signal formed by transforming a plurality of already encrypted bits stored in a first n-bit key register in accordance with a preselected multibit encryption key, apparatus for reducing the effects of an error burst occurring in a decrypted version of said signal as a result of a transmission error of one or more bits, comprising:

(a) means for forming said decrypted version by combining said encrypted version, bit by bit, with a key stream formed by transforming a plurality of most recently encrypted bits stored in a second n-bit key register in accordance with said preselected multibit encryption key,

(b) means responsive to said decrypted version forming means for separating said speech and synchronization information,

(c) means for monitoring said synchronization information to detect an erroneous pattern indicative of the occurrence of said error burst, and

(d) means for disabling application of said speech information to a utilization device for a period determined in response to said monitoring means.

4,608,456

DIGITAL AUDIO SCRAMBLING SYSTEM WITH ERROR CONDITIONING

Woo H. Paik; Jerrold A. Heller, both of San Diego, Calif., and Gordon K. Walker, Boxborough, Mass., assignors to M/A-COM Linkabit, Inc., San Diego, Calif.

Filed May 27, 1983, Ser. No. 498,824
Int. Cl.[4] H04M *1/70*
U.S. Cl. 179—1.5 S **24 Claims**

10. A system for scrambling an audio signal, comprising

means for converting an analog audio signal into a digital signal to provide a sequence of digital signal samples corresponding to the analog audio signal;

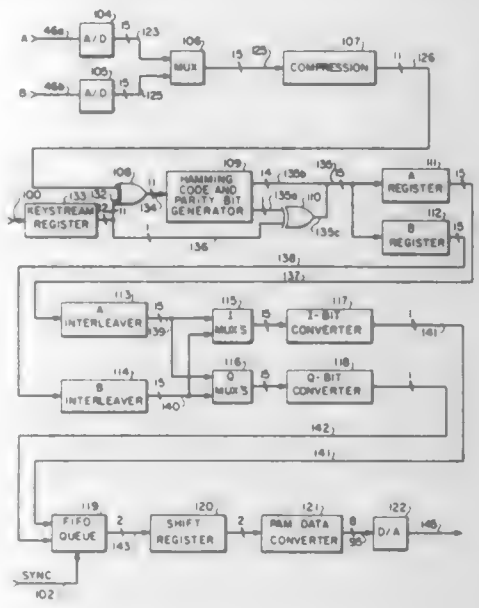
means for compressing each digital signal sample to provide compressed signal samples having a sign bit, a first given number of exponent bits and a second given number of mantissa bits;

means for interleaving bits from a plurality of successive samples; and

means for serializing the interleaved bits in order to separate the bits from any single sample by at least a predetermined duration associated with a given type of interference signal;

wherein the audio signal includes stereo audio components and the aforesaid means provide separate interleaved, compressed signal samples for the respective stereo audio components, the system further comprising

means for combining individual bits from the separate interleaved, compressed signal samples for the respective ste-



reo audio components to provide a series of two-bit digital words, wherein the exponent bits and the code bits occupy the bit position in the digital words having the lower error rate and the mantissa bits occupy the other bit position in the digital words; and

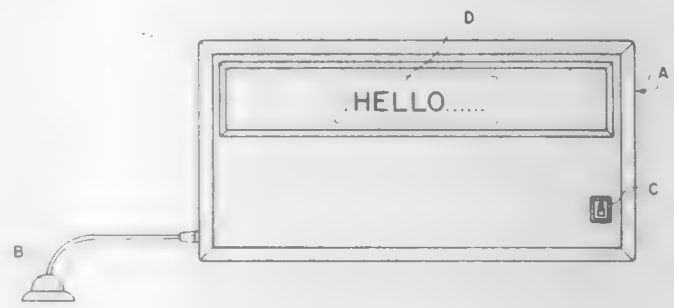
means for converting the digital words to an analog signal having a level related to the binary value of the digital words.

4,608,457

TELECOMMUNICATIONS DEVICE FOR THE HEARING IMPARED

Stephen L. Fowler, Box 156, Moore, S.C. 29369, and Allison T. Brown, Box 125, Simpsonville, S.C. 29681

Filed Apr. 11, 1984, Ser. No. 599,192
Int. Cl.[4] H04M *11/00*
U.S. Cl. 179—2 A **1 Claim**



1. A telephone assistance apparatus for the hearing impaired, comprising:

means responsive to a dual tone multifrequency output of a telephone receiver to produce an electrical signal indicative of said output;

automatic gain control circuitry to receive said signal to assure that the amplitude thereof is within a predetermined range;

a first amplifier communicating with said automatic gain control circuitry;

a comparator communicating with and receiving the amplified signal from said first amplifier to provide a high output voltage in response to said signal;

a visually perceivable light source communicating with said

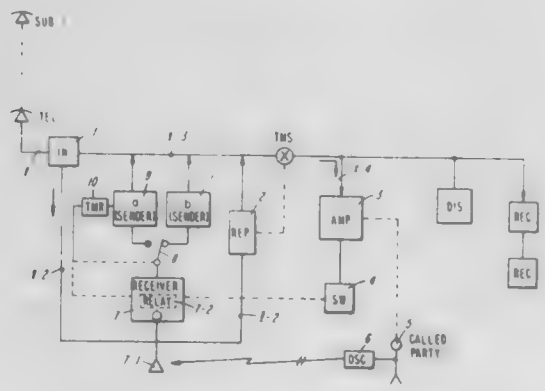
comparator and activated thereby in response to the amplified signal therefrom;
a tone decoder also communicating with said amplifier for receiving the amplified signal therefrom and converting said amplifier signal into a digital binary code corresponding to said dual tone multifrequency output;
random access memory for receiving and storing the digital binary code from said tone decoder;
a microprocessor communicating with said random access memory and said tone decoder to direct the action of said random access memory in accordance with preprogrammed instruction; and
a visual display screen for displaying alphabetic, numeric, and punctuation data from said random access memory in response to instructions from said microprocessor.

4,608,458

AUTOMATIC TELEPHONE ANSWERING APPARATUS

Kazuo Hashimoto, Tokyo, Japan, assignor to Hashimoto Corporation, Tokyo, Japan

Filed Feb. 1, 1984, Ser. No. 576,213
Claims priority, application Japan, Feb. 3, 1983, 58-16710
Int. Cl.[4] H04M *11/10*
U.S. Cl. 179—2 A **3 Claims**



1. An automatic telephone answering apparatus comprising:
means for detecting a telephone call from a calling telephone and in response engaging a loop circuit;
means for reproducing a first message after said loop circuit is engaged in order to announce a name of a called party and ask a caller's name;
a wireless transceiver carried by the called party;
means for amplifying and reproducing a caller's voice in the region of a called party telephone set to which said apparatus is connected when the caller gives his name in response to the first message;
means for receiving an acknowledgement signal from said transceiver to automatically reproduce a second message and transmit said second message to the calling telephone;
timer means for establishing time durations; and
means for reproducing a third message after a first time duration established by the timer has elapsed when the caller does not give his name in response to the first message.

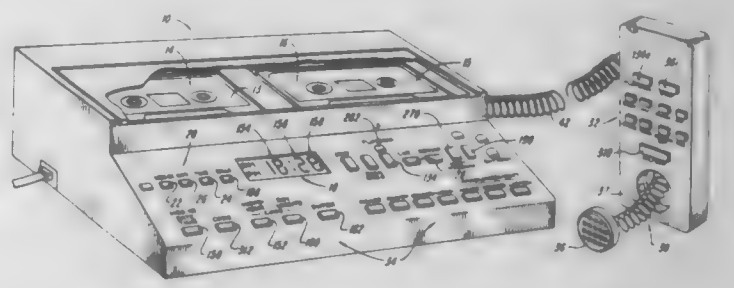
4,608,459

TELEPHONE ANSWERING DEVICE

Keiichi Nakamura, Tama, and Hideyuki Horiuchi, Tokyo, both of Japan, assignors to Tandy Corporation, Fort Worth, Tex.

Division of Ser. No. 324,154, Nov. 23, 1981, Pat. No. 4,469,919.
This application Aug. 24, 1984, Ser. No. 632,539
Claims priority, application Japan, Feb. 20, 1981, 56-23928; Feb. 20, 1981, 56-23929; Feb. 20, 1981, 56-23930; Feb. 20, 1981, 56-23931; Mar. 23, 1981, 56-41893; Mar. 23, 1981, 56-41894; Mar. 31, 1981, 56-47688
Int. Cl.[4] H04M *1/64*
U.S. Cl. 179—6.03 **17 Claims**

1. A telephone answering device for receiving incoming messages, comprising:
message counter means for assigning a unique message number to an incoming message and providing digital signals representative of the message number;
processor means;
recorder means having a recording medium which includes first and second tracks and means controlled by the processor means and responsive to the digital signals provided by the message counter means for recording signals representing an incoming message on the first track and the digital signals on the second track;
playback means controlled by the processor means, for playing back incoming messages recorded on the first track and for simultaneously reading back the digital



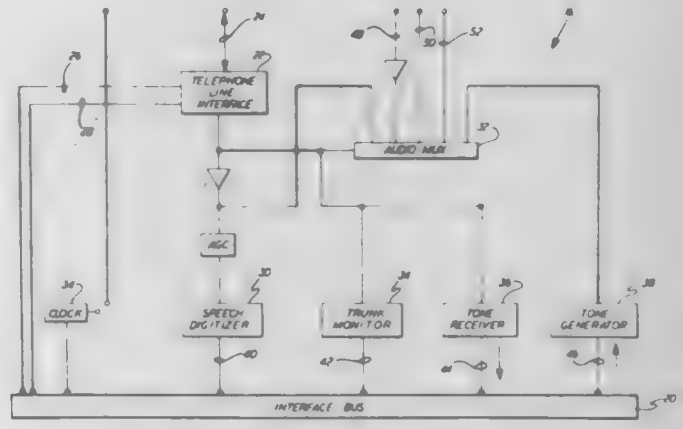
signals recorded on the second track and transmitting the digital signal to the processor means while the message recorded on the first track is being played back;
a user manipulable input for designating a selected message number;
means responsive to said selected message number, for controlling the playback means to automatically locate on the recording medium the beginning of the selected message recorded on the first track which corresponds to the selected message number; and
means for replaying the message corresponding to the selected message number.

4,608,460

COMPREHENSIVE AUTOMATIC DIRECTORY ASSISTANCE APPARATUS AND METHOD THEREOF

Nicholas J. R. Carter, Shelton; Walter Guilarte, Monroe; Ravindra T. Masand, Shelton; Terrance S. Martin, Stamford; Francisco A. Middleton, Newtown, and Santanu Das, Shelton, all of Conn., assignors to ITT Corporation, New York, N.Y.

Filed Sep. 17, 1984, Ser. No. 651,375
Int. Cl.[4] H04M *3/42*
U.S. Cl. 179—6.11 **18 Claims**



1. Apparatus for automatically providing comprehensive assistance to a calling subscriber of a communication system having a plurality of subscribers interconnected thereto; said apparatus comprising:
means for establishing a communication link with said calling subscriber, said establishing means being responsive to a conventional system call made by said subscriber;
means for accepting, via said communication link, a prespecified number of tonal inputs from said calling subscriber, said prespecified number being generally less than the length of a name of interest, each said tonal input being representative

of a letter corresponding to one letter of said name of interest to said calling subscriber, said accepting means also having default means associated therewith for automatically transferring said calling subscriber to an operator upon failure of said accepting means to receive said tonal inputs;

means for digitizing said tonal inputs;

a storage medium having a plurality of indices stored therein, each one of said plurality of indices being a digitized representation of said prespecified number of letters of the name of each said plurality of subscribers and having a unique identifier associated therewith, each identifier being representative of a different one of said plurality of subscribers whereby said unique identifiers associated with any one particular index can be accessed;

a scannable data file, said data file having a plurality of items stored therein, each of said plurality of items having an identifier portion and a speech digitized portion, said speech digitized portion including information for said calling subscriber;

a temporary storage medium;

a program controller for controlling said tonal input digitizing means for converting said tone inputs from said calling subscriber to a digitized index, searching said storage medium for all said identifiers associated with said index, retrieving from said data file each so identified item and storing said identified items in said temporary storage medium; and

means, responsive to said controller, for providing said subscriber with a vocal rendition of each one of said identified items stored in said temporary storage medium.

4,608,461

SUBSCRIBER CIRCUIT FOR A TELEPHONE NETWORK

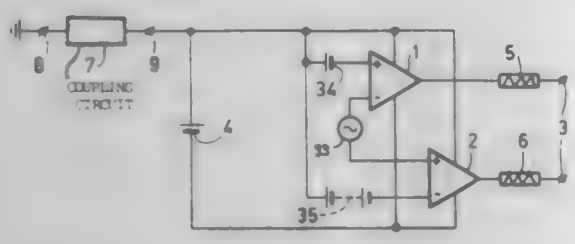
Aloysius J. Nijman, and Franciscus A. C. M. Schoofs, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 21, 1983, Ser. No. 459,858

Claims priority, application Netherlands, Nov. 12, 1982, 8204377

Int. Cl.[4] H04M *19/00*

U.S. Cl. 179—16 AA 3 Claims



1. A subscriber circuit for a telephone network, said subscriber circuit being connected to a pair of subscriber wires and comprising that portion of a subscriber's current path which is internal to a telephone central office, said internal portion of the subscriber's current path being conductively coupled to a point of fixed reference potential, characterized in that said internal portion of the subscriber's current path is connected to both of the subscriber wires and is conductively coupled to said point of fixed reference potential solely by a coupling circuit having only two coupling terminals, one of said coupling terminals being a subscriber's current path terminal which is connected by said internal portion of the subscriber's current path to each of the subscriber wires and the other of said coupling terminals being a reference terminal which is connected to said point of fixed reference potential; the impedance of said coupling circuit for direct current being low as compared with the impedance thereof for alternating current.

4,608,462

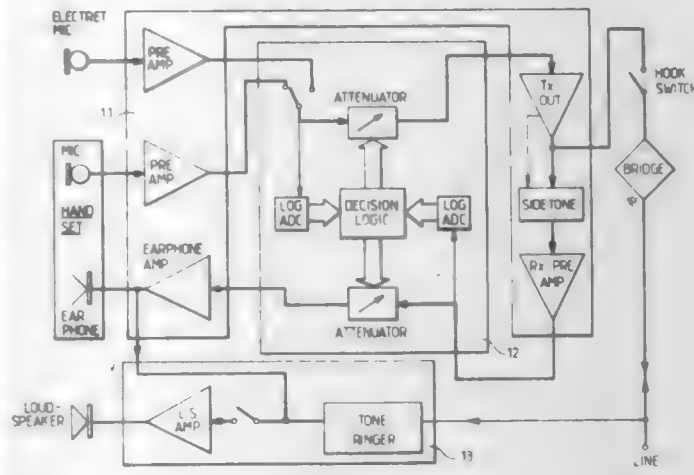
TELEPHONE INSTRUMENT CIRCUIT

Peter F. Blomley, Bishops Stortford; Kenneth A. Arton, Sawbridgeworth; Edward J. Whittaker, Bishops Stortford, and Andrew P. Lefevre, Dunmow, all of Great Britain, assignors to International Standard Electric Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 626,004, Jun. 29, 1984, abandoned. This application Oct. 19, 1984, Ser. No. 662,487

Int. Cl.[4] H04M *1/60*

U.S. Cl. 179—81 B 6 Claims



1. An integrated circuit for a telephone instrument, said circuit being adapted to provide a basic telephone requirement, comprising:

a transmit channel preamplifier and amplifier,

a receive channel preamplifier and amplifier, and

power supplies for operation of at least one ancillary circuit adapted to supply services other than said basic requirement, wherein one of said power supplies, for a first ancillary circuit incorporating an audio amplifier for loudspeaker operation, has means for disabling said audio amplifier under conditions where available line current falls below a predetermined value.

4,608,463

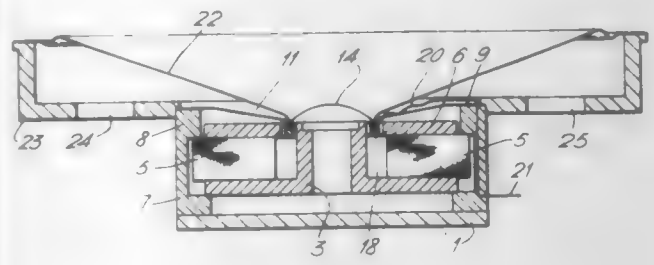
ELECTRO-ACOUSTIC TRANSDUCER

David A. Burgess, Harlow, and Malcolm R. King, Hertford, both of United Kingdom, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Jul. 19, 1984, Ser. No. 632,570

Int. Cl.[4] H04R *9/00, 9/04*

U.S. Cl. 179—115.5 R 6 Claims



1. An electro-acoustic transducer of the moving coil type, which includes a driven unit including a drive coil, and a magnet unit including a magnet and two pole-pieces so located as to define an annular air gap in which the coil is located, wherein the driven unit further includes a substantially circular central portion whose outer periphery is secured to the coil; and an outer portion whose inner periphery is secured to the coil and whose outer periphery is secured to a member of said transducer, which contains said magnet unit at a flat face of said member, wherein said member is substantially cylindrical, wherein a flat cup-like member of large diameter than said member is secured to said flat face, and wherein the driven unit also includes a cone whose inner periphery is secured to the

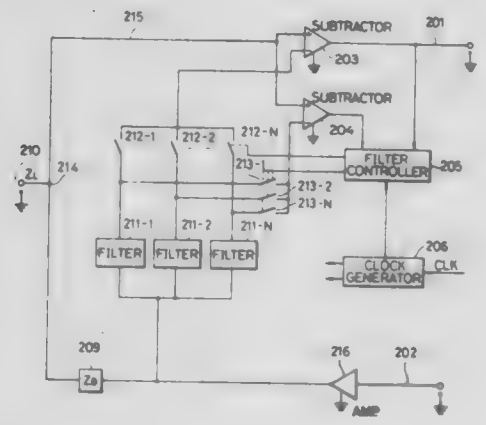
coil and whose outer periphery is secured to the outer rim of the cup-like member.

4,608,464

INTERFACE CIRCUIT INTERCONNECTING A BIDIRECTIONAL TWO-WIRE LINE WITH UNIDIRECTIONAL FOUR-WIRE LINES

Yuichi Morikawa, Mitaka; Hirohiko Sato, Iruma; Eiichi Amada, Kokubunji; Toshiro Suzuki, Hachiouji; Hirotoshi Shirasu, Yokohama, and Hiroshi Kuwahara, Kodaira, all of Japan, assignors to Nippon Telegraph & Telephone Public Corporation and Hitachi, Ltd., both of Tokyo, Japan

Continuation of Ser. No. 291,938, Aug. 11, 1981, abandoned.
This application May 1, 1984, Ser. No. 605,904
Claims priority, application Japan, Aug. 15, 1980, 55-111689
Int. Cl.[4] H04B *3/20, 1/58*
U.S. Cl. 179—170.2 **2 Claims**



1. An interface circuit for coupling a two-wire line with a four-wire line having a receiving line and a transmitting line to prevent a signal received from the receiving line from being transmitted to the transmitting line, comprising:

a buffer amplifier having an input coupled to said receiving line and an output coupled to said two-wire line through a terminal impedance;

a first and a second subtractor each of which has a first input coupled to said two-wire line and a second input, one of the subtractors having an output coupled to the transmitting line;

a group of filters to be selectively connected between said output of said buffer amplifier and said second input of said first and second subtractors;

filter selection means for selectively coupling a pair of filters from among said group of filters, respectively, to the second inputs of said first and second subtractors; and

filter controller means for comparing the outputs of said first and second subtractors and for controlling said filter selection means so as to finally select a filter to minimize the leakage of a signal from said four-wire receiving line to said four-wire transmitting line.

4,608,465

KEYBOARD

Yuji Harada, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 631,018, Jul. 17, 1984, abandoned, which is a continuation of Ser. No. 516,728, Jul. 25, 1983, abandoned. This application Jul. 2, 1985, Ser. No. 750,999
Claims priority, application Japan, Aug. 25, 1982, 57-146181
Int. Cl.[4] H01H *13/70*
U.S. Cl. 200—5 A **2 Claims**

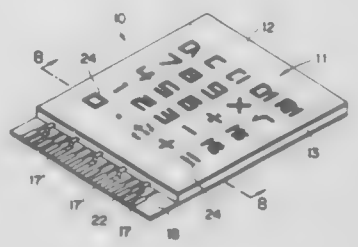
1. A keyboard switch comprising:

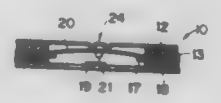
a printed circuit board including at least one stationary contact disposed on one surface thereof;

spacing means mounted on said one surface of said printed circuit board;

a movable contact mounted with said spacing means in spaced relation to an associated stationary contact for movement theretoward to make electrical connection therewith; and

a decoration sheet mounted on said spacing means with each said movable contact lying between said decoration sheet and said printed circuit board, said decoration sheet including an embossed key symbol indicia formed therein in association with each said movable contact so that a click operation takes place about said embossed key symbol indicia when a depressive force is applied thereto to move said associated movable contact into electrical connection with said associated stationary contact.



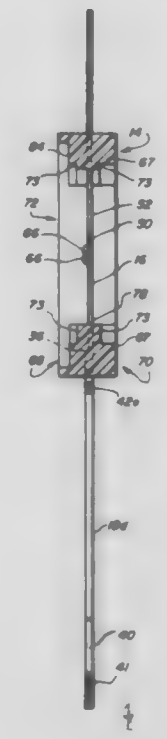


4,608,466

STATOR FOR SWITCH ASSEMBLY

James A. Bornhofen, Aurora, Ill., assignor to Standard Grigsby, Inc., Aurora, Ill.

Continuation of Ser. No. 508,134, Jun. 27, 1983, abandoned.
This application Sep. 19, 1985, Ser. No. 777,574
Int. Cl.[4] H01H *1/00, 19/00, 21/00*
U.S. Cl. 200—11 D **6 Claims**



1. A switch having a stator and a rotor, the improvement in the stator comprising:

a contact having a first sheet portion defined by a first, resilient, conductive material with a first edge to engage the rotor with spring pressure;

a terminal connector having a second sheet portion defined by a second material that is conductive and more rigid than the first material and a second edge; and

means joining the sheet portions of the contact and terminal connector together along a subtstantial length of said first and second edges to define a composite flat sheet consist-

ing of at least a part of the first sheet portion and at least a part of the second sheet portion,

said composite flat sheet being thinner than the combined thickness of the first and second sheet portions; and

carrier means supporting said composite flat sheet so that at least a part of the first sheet portion can flex as the rotor operates on the stator.

4,608,467

SWITCH DEVICE

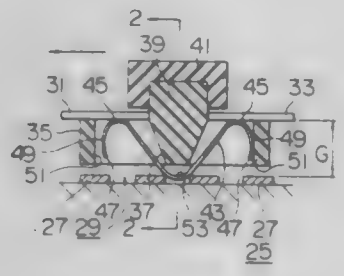
Yasuo Sota, Tsurugashima, Japan, assignor to Elmec Corporation, Tsurugashima, Japan

Filed Dec. 11, 1984, Ser. No. 680,542

Claims priority, application Japan, Dec. 14, 1983, 58-192743[U]

Int. Cl.⁴ H01H *1/00, 15/06*

U.S. Cl. 200—16 D **3 Claims**



1. In a switch device comprising a nonconductive board member having arranged thereon a row of fixed electric contacts spaced at regular intervals one from the other, a conductive plate arranged in a plane parallel to that of said nonconductive board member and spaced a fixed distance from said row of fixed contacts, a moveable electric contact formed by bending a conductive plate substantially in the shape of an inverted letter W incorporating therein a first curve portion at the center thereof, which curved portion engages said fixed contacts and second curves positioned, respectively, on opposite sides and outwardly of said first curve and resiliently held in contact with said conductive plates, said second curves ending in outer tips of said moveable contact, a holder resiliently containing said moveable contact without attachment of said moveable contact thereto, said moveable contact being arranged therein such that a one of said tips of said moveable contact engages said holder when said holder is moved in a given direction along said row of fixed contact, the other tip engaging said holder when the holder is moved in the opposite direction, said holder being disposed between said conductive plate and said row of fixed contacts and having means for moving along said row of fixed contacts, the improvement comprising:

third curved surfaces formed outwardly of said second curves of said moveable contact member and ending in said outer tips said third curved surfaces engaging, respectively, walls of said holder as said holder is moved in a one direction or the other.

4,608,468

HERMETICALLY SEALED IMPACT SWITCH

Monty W. Bai, Scottsdale, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 26, 1984, Ser. No. 686,360

Int. Cl.⁴ H01H *35/14;* **H01L** *41/08*

U.S. Cl. 200—61.45 R **1 Claim**

1. A hermetically sealed impact switch having an electrical input and an electrical output, said hermetically sealed impact switch comprising:

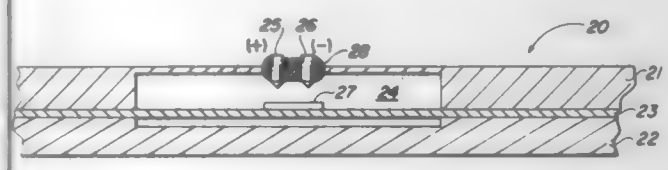
an insulative center plate having an opening disposed therethrough;

an insulative beam having a first end and a second end opposite said first end, said insulative beam being disposed in the opening of said insulative center plate and said first and second ends being coupled to said insulative center plate;

a conductive mass being coupled to said insulative beam;

an insulative top plate having a groove disposed therein, said insulative top plate being coupled to said insulative center plate such that the groove of said insulative top plate is disposed above the opening of said insulative center plate;

a first conductive contact pin being disposed through said insulative top plate and into the groove of said insulative top plate, said first conductive pin being coupled to one of



said electrical input and electrical output of said hermetically sealed impact switch; and

a second conductive contact pin being disposed through said insulative top plate and into said groove of said insulative top plate such that when said insulative beam flexes said first and second conductive contact pins are coupled by said conductive mass, said second conductive pin being coupled to a remaining one of said electrical input and electrical output of said hermetically sealed impact switch.

4,608,469

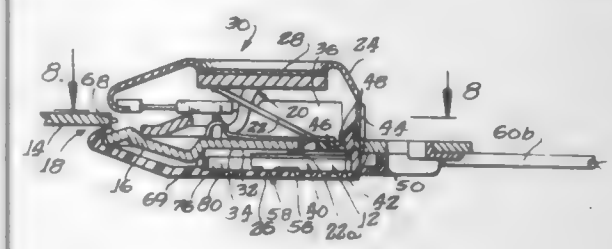
SAFETY BELT BUCKLE WITH SWITCH

Gerald A. Doty, Crown Point, Ind., assignor to Gateway Industries, Inc., Hazel Crest, Ill.

Filed Jan. 4, 1985, Ser. No. 688,692

Int. Cl.⁴ H01H *3/16*

U.S. Cl. 200—61.58 B **15 Claims**



1. In a safety belt buckle the combination comprising:

a buckle frame having an open forward end;

said buckle frame being channel shaped and having a central bottom web and a pair of upstanding sidewalls;

a tongue plate having a tip for insertion into the buckle frame;

latch means for removably latching the tongue plate tip within the buckle frame;

a bottom cover mounted substantially beneath the bottom web of said buckle frame and defining therewith an enclosed space between the web and defining therewith an enclosed space between the web of the buckle frame and the bottom cover;

a switch subassembly mounted in said enclosed space and interlocked with the bottom at a predetermined position on the bottom cover,

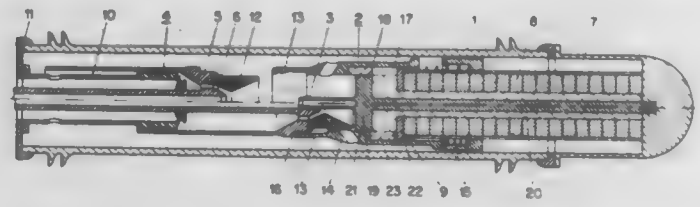
said switch subassembly including a housing and internal electrical switch contacts within the housing and with the housing substantially enclosing and covering the switch contacts from foreign matter, and

a switch actuator projecting from the switch housing upwardly through an opening in the bottom web and disposed adjacent the latch means so as to be actuated by the tongue plate tip upon insertion thereof into latching engagement with the latch means.

4,608,470
HIGH-VOLTAGE SWITCH

Walter Bischofberger, Niederweningen; Heinz Eichholzer, Thalwil; Werner Graber, Ennetbaden, and Jiri Talir, Baden, all of Switzerland, assignors to BBC Brown Boveri & Company Ltd., Switzerland

Filed Jan. 30, 1985, Ser. No. 696,265
Claims priority, application Switzerland, Feb. 6, 1984, 548/84
Int. Cl.[4] H01H *33/16*
U.S. Cl. 200—144 AP **19 Claims**



1. High-voltage switch comprising

a first electric connection and a second electric connection,

a fixed contact member (2) which contains two contact pieces, these being a rated-current contact which is electrically conductively connected to the first electric connection at least in the on position, and a fixed arcing contact (3),

a moving contact member (4) which is electrically conductively connected to the second electric connection and which contains two opposite contact pieces, these being a moving rated-current contact (5) and a moving arcing contact (6).

an insertion resistance (8) which is placed between the first electric connection and a resistance contact (9) and which is bridged in the course of the switching-on process, characterised in that

the rated-current contact of the fixed contact member (2) is constructed as a sliding rated-current contact (14) which can be displaced, with respect to the fixed arcing contact (3), by the moving contact member (4) in the course of the switching-on movement of the latter against the force of elastic means in a limited way in the switching-on direction from a basic position which is assumed at least in the off position, and

is electrically conductively connected to the fixed arcing contact (3) at least in the on position, and

is in electric contact, at least in the on position but not in the basic position, with a rated-current bridging contact (19) which is electrically conductively connected to the first electric connection,

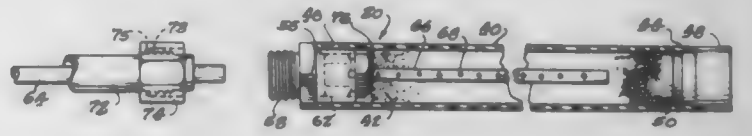
the resistance contact (9) is electrically conductively connected, during the switching-on process at least until the bridging, which occurs in the course of the latter, of the insertion resistance (8), at least to that contact piece of the fixed contact member (2) which is the first to be contacted by the corresponding opposite contact piece in the course of the switching-on movement of the moving contact member (4).

4,608,471
IMPEDER WITH AGGREGATE FERROMAGNETIC CORE

Lawrence P. Vollmuth, Wheaton, and Lucid L. Byrd, Palos Park, both of Ill., assignors to Allied Tube & Conduit Corporation, Harvey, Ill.

Filed Mar. 5, 1985, Ser. No. 708,262
Int. Cl.[4] H05B *6/02*
U.S. Cl. 219—8.5 **9 Claims**

1. A combination for use in a mill for roll-forming tubing including a feed station for supplying an elongated steel strip in flat form and a station where the strip is transversely bent from its generally planar condition causing the lateral edges of the strip to be brought together in abutting relationship, said combination comprising an induction coil disposed about the bent portion of said strip for inducing current flow through the location where said lateral edges are first brought into abutting relationship to heat said lateral edges to plasticity, a weld rolls station where the plasticized lateral edges are firmly pushed together to complete welding of the tube, and an impeder disposed extending inside said coil adjacent the location where said lateral edges are first brought into abutting relationship, said impeder comprising:



an outer shell made of strong, heat resistant material;

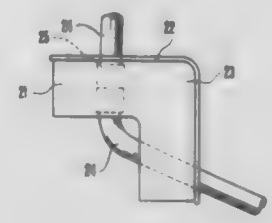
a core disposed inside said shell, said core being formed by loose ferrite particles with the major dimension of each of said ferrite particles being in the range of one-quarter inch to 600 mesh; and

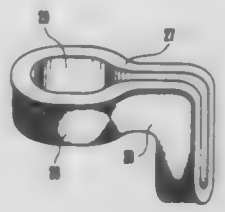
means for causing passage of a coolant through the core material.

4,608,472
METHOD OF AND APPARATUS FOR STERILIZING DEVICES

Yasuaki Kato, Hiroshima, Japan, assignor to Japan Medical Supply Co Ltd, Hiroshima, Japan

Filed Feb. 24, 1984, Ser. No. 583,328
Claims priority, application Japan, Mar. 14, 1983, 58-40818; Apr. 21, 1983, 58-58797; Aug. 30, 1983, 58-159951
Int. Cl.[4] H05B *6/64*
U.S. Cl. 219—10.43 **10 Claims**





1. A method of heat-sterilizing a device comprising the steps of:

disposing a conductor element near said device;

exposing said conductor element to a magnetic field generated by a coil connected to a high-frequency current, said coil being shaped generally as an ellipse bent at substantially a right angle, having a vertical and a horizontal side, one side being of an enlarged inside diameter compared with another side; and

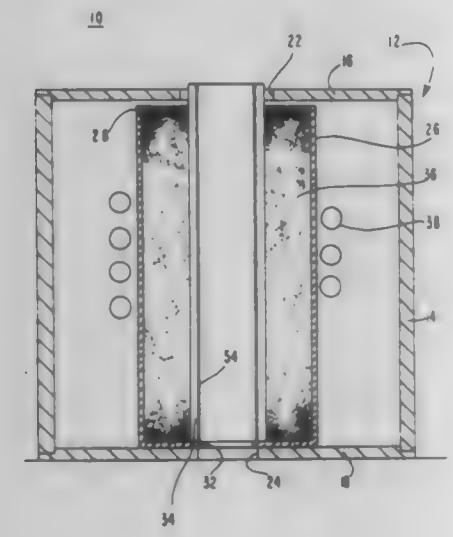
allowing an eddy current to be generated in said conductor element to responsively heat the conductor element and then allowing the generated heat to be transferred to the device thereby heat-sterilizing the device.

4,608,473

MODIFIED ZIRCONIA INDUCTION FURNACE

Un C. Paek, West Windsor Township, Mercer County, and Charles M. Schroeder, Jr., North Hanover Township, Burlington County, both of N.J., assignors to AT&T Technologies, Inc., Berkeley Heights, N.J.

Division of Ser. No. 383,066, May 28, 1982, Pat. No. 4,533,378.
This application Apr. 29, 1985, Ser. No. 727,998
The portion of the term of this patent subsequent to Oct. 29, 2002, has been disclaimed.
Int. Cl.[4] H05B *6/30*; C03B *27/02*; F27B *14/10*
U.S. Cl. 219—10.49 R 3 Claims



1. A furnace for heating a silica lightguide preform to an elevated temperature in order to draw a fiber therefrom, comprising:

a housing;

a tubular zirconium dioxide heating element located within said housing; and

a thin coating of silica on at least a portion of the inside surface of the tubular heating element.

4,608,474

NEGATIVE THERMAL EXPANSION METAL ELECTRICALLY CONNECTED TO MOTOR MEANS FOR MICROWAVE OVEN

Kenichi Kohka, Amagasaki, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Aug. 2, 1983, Ser. No. 519,700
Claims priority, application Japan, Aug. 4, 1982, 57-119023[U]
Int. Cl.[4] H05B *6/64*
U.S. Cl. 219—10.55 R 6 Claims

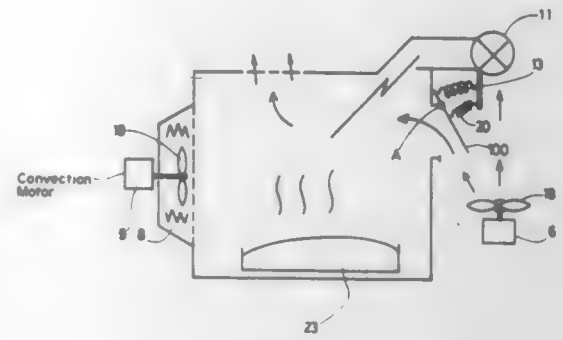
1. A high frequency heating apparatus comprising:

damper means for opening and closing an air intake port of a heating chamber, said damper means including a member made of a material such that the shape of the member alters upon heating or cooling thereof so that control of opening and closing said damper means can be effected by selected delivery of an electric heating current to said damper means;

an electric cooling blower motor including motor winding means for rotating a cooling fan which cools electrical components and said member;

means for deriving said electric heating current from current in said motor winding means; and

means for selectively applying said electric heating current to said member of said damper means;



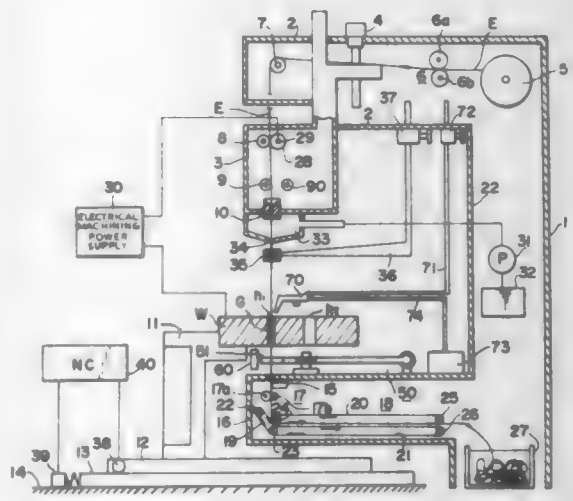
said cooling fan directing air on said member to accelerate the cooling thereof when no heating current is applied thereto.

4,608,475

METHOD OF AND APPARATUS FOR RESETTING A WIRE ELECTRODE IN AN OPERATING SETUP ON AN ELECTROEROSION MACHINE

Kiyoshi Inoue, Tokyo, Japan, assignor to Inoue-Japax Research Incorporated, Kanagawa, Japan

Continuation of Ser. No. 261,269, May 6, 1981, Pat. No. 4,513,191. This application Sep. 6, 1984, Ser. No. 648,292
Claims priority, application Japan, May 13, 1980, 55-62297; May 14, 1980, 55-62735
Int. Cl.[4] B23P *1/08*
U.S. Cl. 219—69 W 5 Claims



1. An apparatus for automatically resetting a wire electrode in an operating setup on an electroerosion machine including an electroerosion power supply for applying a machining electric current to the wire electrode, wire drive means for axially advancing the wire electrode extending in a continuous stretch from a supply side to a collection side and liquid supply means for furnishing a machining liquid to the wire electrode and a machining gap formed thereby with a workpiece, the apparatus comprising: (a) switch means associated with the power supply and the wire drive means for shutting off the supply of said machining electric current to said wire electrode and halting a machining axial advance of said wire electrode in said continuous stretch, thereby terminating a previous machining operation commenced with a given starting hole; (b)

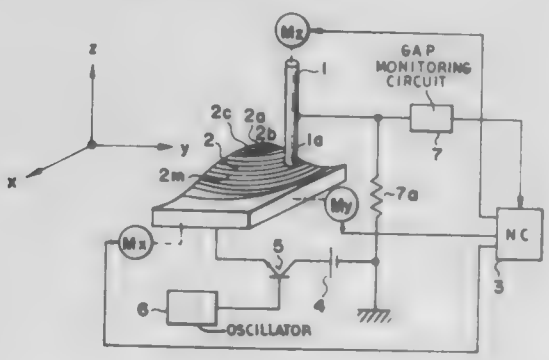
wire breaking means comprising (b1) grooving cutter means having at least two blade means disposed in a region adjacent to the workpiece and at one of the opposite sides thereof for forming said wire electrode in said region with at least two coplanar grooves substantially symmetrical about the center axis thereof and (b2) tension means for applying a tension to said wire electrode to break the latter at said grooves; (c) means for threading said wire electrode from one broken end portion thereof through a next starting hole preformed in a workpiece for machining a contour therein in the subsequent machining operation to reestablish the continuous stretch of said wire electrode between said supply side and said collection side and means for heating, prior to breaking, said wire electrode at least along said region to effect a hardening thereof.

4,608,476

RETRACTION CONTROL FOR 3D-PATH CONTROLLED GENERIC ELECTRODE ELECTROEROSION

Akihiko Shimizu, Kanagawa, Japan, assignor to Japax Incorporated, Kanagawa, Japan

Filed Sep. 22, 1983, Ser. No. 534,591
Int. Cl.[4] B23H *7/26, 7/14*
U.S. Cl. 219—69 M 11 Claims



1. A method of controlling a numerically 3D-path controlled generic-electrode electroerosion process wherein an axial electrode tool having an end portion of a generic electrode form is arranged to establish an electroerosive machining relationship with an electrically conductive workpiece across a machining gap defined between the end portion and the workpiece, and the electrode tool and the workpiece are relatively displaced generally translationally to advance said end portion effectively in the workpiece sequentially along successive two-dimensional feed paths programmed in respective sequential planes which are in mutually parallel relationship in a third dimensional direction or in the direction of the longitudinal axis of the electrode tool, while maintaining the electroerosive machining relationship between the advancing end portion and the workpiece to progressively develop in the latter a three-dimensional machined form corresponding to the cumulative effect of machining along said successive two-dimensional feed paths, the method comprising the steps of: while said electrode tool and end portion is advancing along each of said programmed two-dimensional paths in the corresponding plane,

(a) monitoring said machining gap to detect a defective condition therein and producing a control signal in response to said condition;

(b) in response to said control signal, retracting, from a position of said defective gap condition, said electrode tool and the workpiece relative to each other by a prescribed distance in a prescribed direction which is inclined to the axis of the electrode tool and substantially normal to a tangent plane to the developing three-dimensional form at said position and oblique to the respective two-dimensional path in progress; and

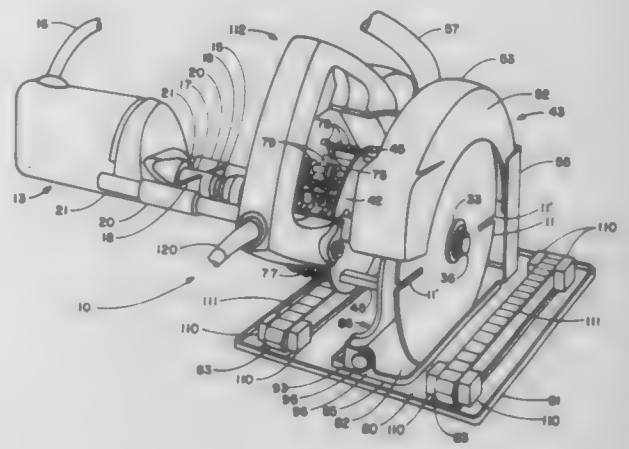
(c) returning said retracted electrode tool relative to said workpiece to restore said end portion to said position.

4,608,477

ELECTRIC ARC SAW APPARATUS

Paul R. Deichelbohrer, Richland, Wash., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Mar. 8, 1983, Ser. No. 473,180
Int. Cl.[4] B23K *37/02;* B23D *45/16*
U.S. Cl. 219—69 V 7 Claims



1. A portable hand-held electric arc saw apparatus comprising: a frame, means for mounting a rotatable shaft on said frame, an electrically conducting blade rigidly secured to said shaft and engagable with a workpiece of opposite polarity for generating an electric arc therebetween, electrically conducting means mounted on said frame for transmitting current to said blade and including a slip ring secured to said shaft, a plurality of brushes mounted on said frame and having inner ends engaging the periphery of said slip ring, a handle mounted on said frame for facilitating handling and guidance of said blade relative to said workpiece, a base member mounted on said frame and having a slot therein for accommodating said blade, means for adjustably mounting said blade for varying the extent of blade projection past said base member, mobile means projecting through said member and engagable with said workpiece for facilitating movement of said apparatus relative to said workpiece, and means for electrically insulating said mobile means from said base member.

4,608,478

WIRE ELECTRODE CLAMPING MECHANISM OF WIRE-CUT ELECTRIC DISCHARGE MACHINE

Toshiyuki Aso, and Yasuo Arakawa, both of Hino, Japan, assignors to Fanuc Ltd, Minamitsuru, Japan

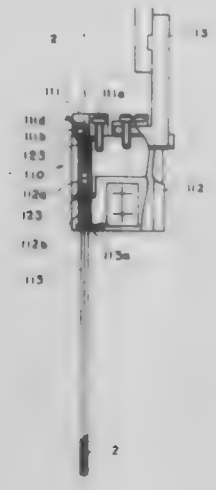
PCT No. PCT/JP84/00417, § 371 Date Apr. 29, 1985, § 102(e) Date Apr. 29, 1985, PCT Pub. No. WO85/01000, PCT Pub. Date Mar. 14, 1985
PCT Filed Aug. 30, 1984, Ser. No. 732,042
Claims priority, application Japan, Aug. 31, 1983, 58-159370
Int. Cl.[4] B23H *7/10*
U.S. Cl. 219—69 W 4 Claims

1. A wire electrode clamping mechanism of a wire-cut electric discharge machine, the clamping mechanism being mounted on a wire electrode pull-up mechanism, which pulls a wire electrode up to a position of feed rollers disposed above a workpiece, for clamping the wire electrode delivered by a wire electrode feed mechanism disposed below said workpiece, the wire electrode clamping mechanism comprising:

a wire guide pipe for guiding said wire electrode;

a pipe holder for accommodating an upper portion of said

wire guide pipe in such a manner that said wire guide pipe is capable of moving up and down; and



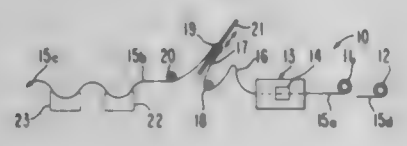
a clamping member disposed on an upper portion of said pipe holder and operated by movement of said wire guide pipe for clamping said wire electrode.

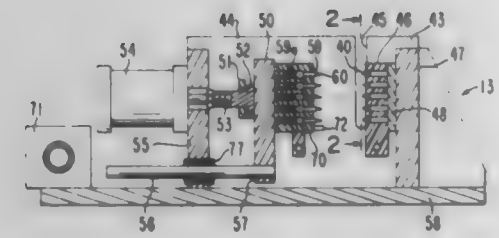
4,608,479

LEAD-FRAME SPLICER WELDER AND METHOD

Hooshang Jahani, Fremont, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed Jul. 25, 1984, Ser. No. 634,501
Int. Cl.⁴ B23K *11/10*
U.S. Cl. 219—87 **9 Claims**





1. A multiple spot welder comprising:

a base;

a slide means affixed to said base;

a first set of multiple electrodes fixedly connected to a first common bus bar and fixedly connected with respect to said base;

a second set of multiple electrodes fixedly connected to a second common bus bar;

a translating plate mounting said second set of electrodes and slidable with respect to said slide means; and

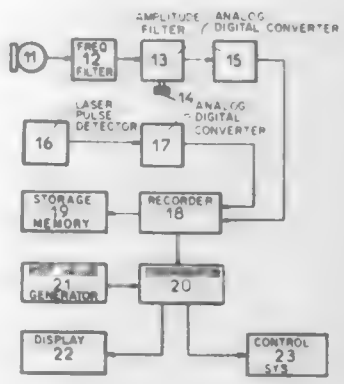
an actuator fixedly connected with respect to said base and including an actuator rod movable to move said translating plate along said slide means a distance sufficient to bring the second set of electrodes into aligned spaced juxtaposition with said first set of electrodes, each set of electrodes being in contact with opposite sides of a workpiece insertible in a gap between said sets of multiple electrodes.

4,608,480

PROCESS AND APPARATUS FOR LASER DRILLING

Henri Bizot, Paris; Géry-Charles J. Brasselet, Le Mee sur Seine; Jean-Paul Louis, Moissy Cramayel, and Georges Narcy, Melun, all of France, assignors to S.N.E.C.M.A., Evry, France

Filed Jun. 8, 1984, Ser. No. 618,811
Claims priority, application France, Jun. 15, 1983, 83 09858
Int. Cl.⁴ B23K *26/00*
U.S. Cl. 219—121 LK **15 Claims**



1. A process for laser drilling a plurality of holes completely through a work piece comprising the steps of:

(a) directing a pulsed laser beam onto the work piece so as to form a hole extending completely through the work piece;

(b) placing an acoustic sensing means in proximity to, but not in contact with the work piece;

(c) acoustically sensing the audible sound generated by the melting of the work piece caused by the laser beam pulse and converting the acoustic signal into a first electrical signal proportional to the audible sound;

(d) passing the first electrical signal through a frequency filter to filter out those frequencies below a predetermined value;

(e) passing the first electrical signal through an amplitude filter;

(f) adjusting a threshold value of the amplitude filter such that, when the hole extends completely through the work piece and is properly sized, the amplitude of the first electrical signal is below the threshold value;

(g) converting the first electrical signal into digital form by assigning a value of 1 to each laser pulse electrical signal above the threshold amplitude and a value of 0 to those below the threshold amplitude;

(h) generating a second electrical signal for each pulse of the laser beam;

(i) converting the second electrical signal into digital form;

(j) placing the first and second electrical signals in phase with each other and generating a first input signal;

(k) generating a second input signal corresponding to the number of digital pulses above the threshold amplitude necessary to properly form the hole completely through the work piece;

(l) comparing the first input signal to the second input signal;

(m) generating an output signal based upon the comparison of the first and second input signals;

(n) displaying the output signal so as to indicate the quality of the hole being formed; and,

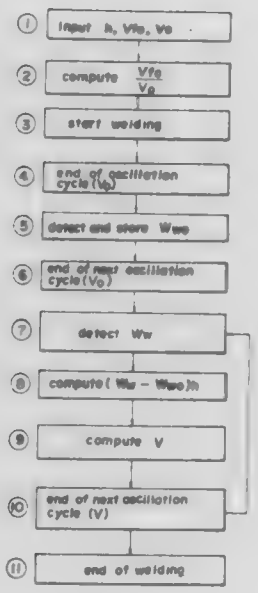
(o) controlling one of the operating parameters of the laser with the output signal.

4,608,481

METHOD OF AUTOMATICALLY CONTROLLING HEIGHT OF A WELD BEAD

Hirokazu Nomura; Yuji Sugitani, and Naohiro Tamaoki, all of Tsu, Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 27, 1985, Ser. No. 716,654
Claims priority, application Japan, May 28, 1984, 59-108150
Int. Cl.[4] B23K *9/12*
U.S. Cl. 219—125.12 3 Claims



1. In an arc welding method for effecting welding by reciprocatorily oscillating a welding electrode in a width direction within a groove of a pair of metals to be welded which comprises performing a control operation of varying a distance between a forward end of said electrode and a base metal surface by means for driving said welding electrode in an axial (Y-axis) direction so as to maintain a predetermined welding current or arc voltage and thereby always maintain an arc length constant, moving, simultaneously therewith, said electrode in a width (X-axis) direction of said groove and reversing the direction of said X-axis direction movement when said distance reaches a predetermined value, and thereafter repeating said operations such that the arc at said electrode forward end is caused to accurately follow said groove while being reprocatorily oscillated in the width direction within said groove and a height from said base metal surface or a root of said groove to each extremity of said reciprocating oscillation is always maintained uniform, a method of automatically controlling the height of a weld bead comprising the steps of:

detecting an oscillation width Wwo during a period of a preceding cycle of said oscillation and an oscillation width Ww during a period of a current cycle;

obtaining a welding speed V in accordance with said oscillation widths Wwo and Ww, a desired bead height h, a wire feed speed Vfo and a welding speed initial set value Vo

$$V = \frac{vfo}{\frac{Vfo}{Vo} + (Ww - Wwo)h};$$

executing said welding speed V during the next oscillation cycle; and

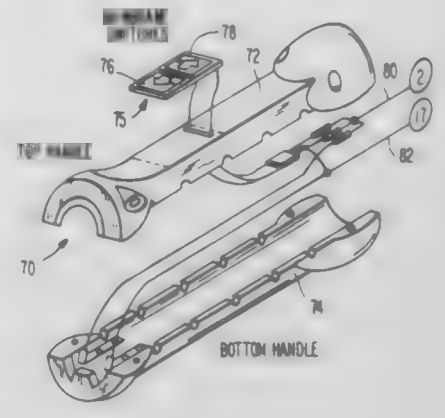
repeating thereafter said operations.

4,608,482

CONTROL FOR WELDING SYSTEM

Ron Cox, 2208 Victoria Street, Windsor, Ontario, Canada, and Elzi Pettovello, 6326 Appoline Dr., Dearborn, Mich. 48126

Continuation-in-part of Ser. No. 581,151, Feb. 17, 1984, Pat. No. 4,510,373. This application Apr. 8, 1985, Ser. No. 720,847
Int. Cl.[4] B23K *9/10*
U.S. Cl. 219—132 20 Claims



9. A welding control system for use in an arc welding assembly, comprising:

a controllable welding power supply for supplying power to a welding electrode and to a variable drive means for advancing the welding electrode;

control means producing a control signal;

control circuit means including a mircoprocessor responsive to said control signal for continuously and selectively increasing or decreasing the power supplied to the welding electrode and for simultaneously and continuously adjusting the speed at which said variable drive means advances the electrode in accordance with a predetermined power/speed relationship; and

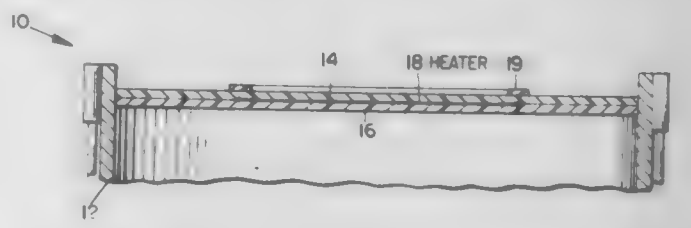
means for selecting one of a plurality of power/speed relationships whereby the power supplied to said electrode and the advancement speed of said electrode are adjustable by said control signal.

4,608,483

HEATER FOR A DRUM

Richard N. Arnold, 67 Shattuck St., Springfield, Mass. 01109-3065, and Haynie Harris, 515 Hancock St., Springfield, Mass. 01105

Filed Mar. 15, 1985, Ser. No. 712,417
Int. Cl.[4] H05B *3/26;* G10D *3/02*
U.S. Cl. 219—201 1 Claim



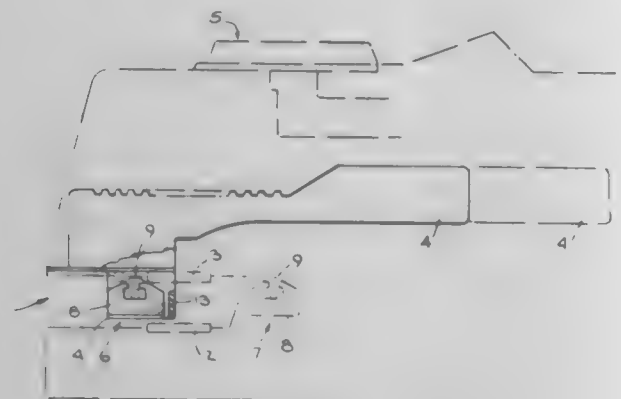
1. An electrically heated percussion drum comprising: a vertical annular wall, one end of the wall being closed by a pair of coplanar membranes secured at their adjacent circumferences to the annular wall, a heating element in the form of a wire loop disposed centrally and concentrically of and between the pair of membranes and a pair of terminals extending radially outwardly from each end of the wire loop and through the annular wall, a temperature control unit electrically connected to the outboard terminals of the heating element, and a conductor connecting the heating element and the temperature control unit to a source of electricity.

4,608,484

POSTAGE METER

Timothy R. Erwin, West Redding, Conn., assignor to Pitney Bowes Inc., Stamford, Conn.

Filed Feb. 14, 1985, Ser. No. 701,834
Int. Cl.[4] B41F *1/06*; G06F *1/106*
U.S. Cl. 235—101 16 Claims



1. A postage meter comprising a meter housing, an interior metering assembly and an inking station, said inking station comprising an inking means and synthetic constructed components adjacent said inking means, at least one of said components containing an ink capillary action block in the form of at least one groove, said at least one groove being located at a portion of a first component that is in face to face virtual contact with a second component, said at least one groove being of sufficient dimensions so as to prevent migration by capillary action of postage meter ink beyond its position in said component.

15. A method for preventing the capillary flow of ink through a space between at least two surfaces in virtual contact within a postage meter, the postage meter comprises a meter housing, an interior metering assembly and an inking station, the inking station including an inking means and synthetic constructed components adjacent the inking means, the components having at least two surfaces in virtual contact, the method comprising the step of providing in at least one of said surfaces at least one groove of sufficient dimensions so as to prevent migration by capillary action of said ink beyond said at least one groove in said surface.

4,608,485

AUTOMATIC TRANSFER TRANSACTION PROCESSING APPARATUS

Kenji Miura, Nagoya, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jul. 25, 1984, Ser. No. 634,266
Claims priority, application Japan, Jul. 25, 1983, 58-135414; Mar. 22, 1984, 59-53527
Int. Cl.[4] G06R *15/30*
U.S. Cl. 235—379 6 Claims

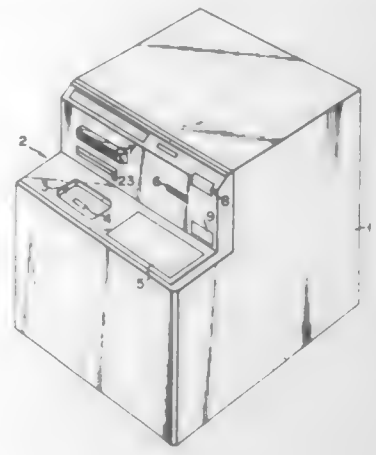
1. An automatic transfer transaction processing apparatus comprising:

input means for entering transfer information;

transfer transaction processing means for performing the transfer transaction process in accordance with the transfer information entered at said input means;

card-like medium issuing means for issuing a card-like medium having at least part of the transfer information entered at said input means when the transfer transaction process is finished; and

reading means for reading the card-like medium.

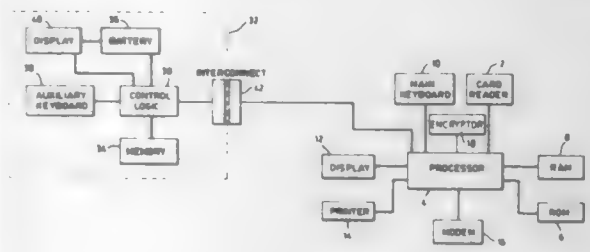


4,608,486

DATA ENTRY SYSTEM

Patrick Berstein, 209 Willowbrook Rd., Thornhill, Ontario, Canada (L3T 5L7); Jonathan Crinion, 325 Davenport Rd., Ste. 2, Toronto, Ontario, Canada (M5R 1K5); Robert J. Middlemiss, 3257 Chokecherry Crescent, Mississauga, Ontario, Canada (L5M 1B1), and Peter Oomen, 81 Irwin Crescent, Georgetown, Ontario, Canada L7G 1E7

Continuation-in-part of Ser. No. 455,044, Jan. 3, 1983, Pat. No. 4,532,416. This application Mar. 25, 1985, Ser. No. 715,620
Int. Cl.[4] G06K *5/00*
U.S. Cl. 235—380 15 Claims



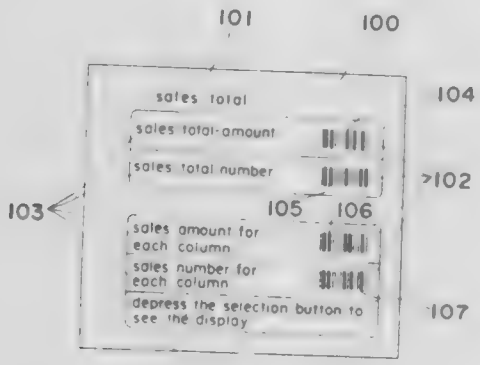
1. A transaction terminal comprising a reader to read data from suitably encoded credit cards, a main keyboard, a main display for displaying information including data entered through the keyboard, a printer, a data processor receiving data from said reader and at least one keyboard, and a program memory containing selectable programs for operating said terminal in a plurality of modes in which it receives data from said credit card reader, wherein the terminal further includes a portable keyboard detachable from the remainder of the terminal and operable when detached to receive a data entry required as part of a transaction at a point remote from the remainder of the terminal and operable to transfer it to the processor independently of the main keyboard and display when reunited with the remainder of the terminal, wherein the portable keyboard unit comprises a memory, a power supply, control logic operative to store keyboard entries in the memory, and an interface to transfer data from the memory to the remainder of the terminal when the keyboard unit is united with the remainder of the terminal, and wherein the portable keyboard unit further includes means to engage a credit card so as to present an encoded portion of the card for reading by said reader, and the unit is united with the terminal for transfer of data when a card is so presented.

4,608,487

INPUT UNIT OF AN AUTOMATIC VENDING MACHINE

Misao Awane; Seiji Hara, and Satoshi Kobayashi, all of Kitaadachi, Japan, assignors to Sanyo Electric Co., Ltd. and Tokyo Sanyo Electric Co., Ltd., both of, Japan

Filed Mar. 23, 1984, Ser. No. 592,410
Claims priority, application Japan, Mar. 31, 1983, 58-57611; Mar. 31, 1983, 58-57612; Apr. 6, 1983, 58-61117; Apr. 6, 1983, 58-61118; Apr. 6, 1983, 58-61120; Apr. 6, 1983, 58-61122
Int. Cl.[4] G06K *15/00*
U.S. Cl. 235—383
9 Claims



1. An input unit of an automatic vending machine comprising, in combination:

a bar sheet printed by given bar codes with selling prices to be set into an automatic vending machine;

a bar code reader of hand scanner type including a light emitting element adapted to sequentially apply its light on bars or spaces of said bar sheet through manual movement in accordance with the arrangement of the bars and spaces of said bar codes, and a photoelectric conversion element adapted to detect the light reflection amount from said light emitting element to output electric signals corresponding to the bar code;

means for converting the signals from said photoelectric conversion element into digital signals;

means for converting selling prices shown by said digital signals into codes recognizeable by the automatic vending machine; and

plurality of commodity selection switches corresponding to a plurality of selling columns, each of said commodity selection switches being adapted to select an applicable selling column for setting a sales price in a mode of said price setting.

4,608,488

DOCUMENT ISSUING APPARATUS

Nagayoshi Hirose, Tokyo; Sumiaki Kido, Yokohama, and Yoshiharu Fuzita, Ebina, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Aug. 15, 1983, Ser. No. 523,051
Claims priority, application Japan, Aug. 24, 1982, 57-146344
Int. Cl.[4] G07B *15/02*
U.S. Cl. 235—384
9 Claims

1. A commutation pass issuing apparatus comprising:

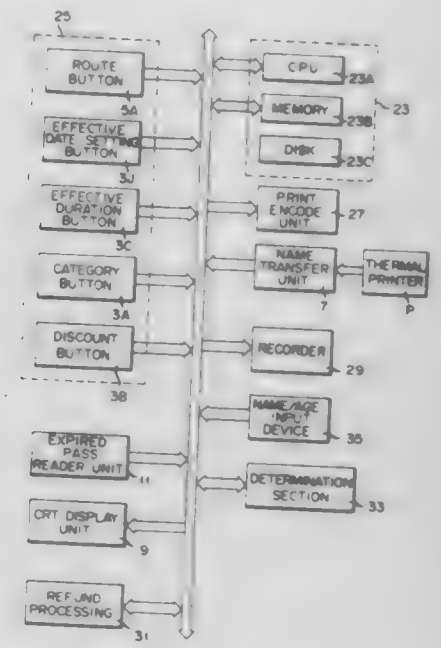
information reading means for reading information on a previously-issued commutation pass;

display means for displaying, from among the read-out information, every item necessary for issuing a new commutation pass;

changing means for changing those of the displayed items determined to need modification;

issuing means for issuing a new commutation pass in accordance with the changed items; and

control means for checking codes of the departure and destination stations printed in the previously-issued pass and controlling said changing means and issuing means in such a manner that a new pass is issued without any modification when the departure station is on the line of the pass issuing company and a new pass is issued with the



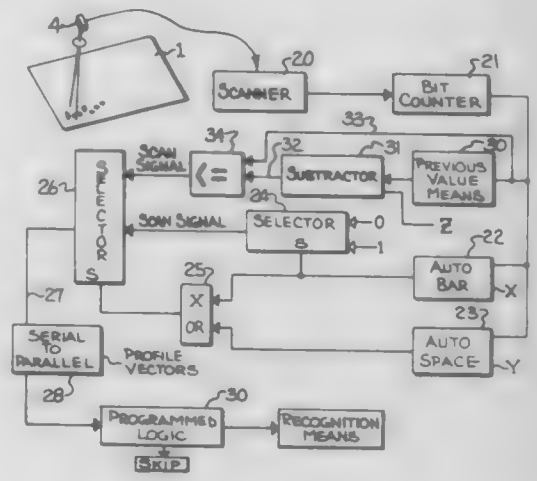
names of the departure, destination and way stations printed in the reverse order.

4,608,489

METHOD AND APPARATUS FOR DYNAMICALLY SEGMENTING A BAR CODE

David A. Ramsey; Clair F. Rohe, and Thomas E. Sawicki, all of Charlotte, N.C., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 4, 1984, Ser. No. 616,822
Int. Cl.[4] G06K *7/10*
U.S. Cl. 235—462
29 Claims



1. In a system for reading a two-dimensional bar code having bars located nominally at predetermined pitch increments, a method for processing bar image data comprising:

scanning the bar code at predetermined increments to produce scan lines of elements of image data of either a first or a second state to reflect either a bar image scan or a space image scan;

generating from the scan lines of image data a profile vector having elements representing the likelihood that each scan line of image data contains bar image data; and

transferring to recognition means only those scan lines of image data corresponding to generated profile vector elements meeting predetermined criteria representative of a bar image scan, and disregarding those scan lines of image data corresponding to generated profile vector elements not meeting the predetermined criteria.

4,608,490

FOCUS DETECTION METHOD UTILIZING SURFACE ACOUSTIC WAVE

Tatsuo Nagasaki, Musashino, and Junichi Nakamura, Hachioji, both of Japan, assignors to Olympus Optical Company Limited, Tokyo, Japan

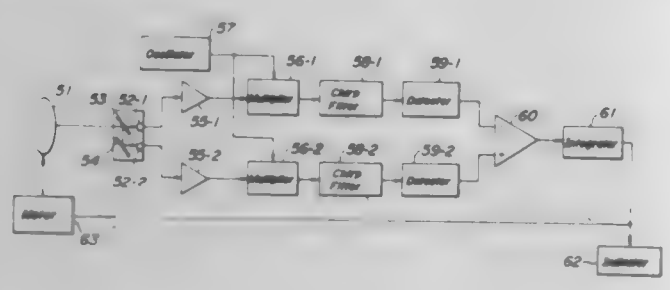
Filed Nov. 16, 1983, Ser. No. 552,426

Claims priority, application Japan, Nov. 22, 1982, 57-205026; Nov. 22, 1982, 57-205028; Nov. 22, 1982, 57-205029; Nov. 22, 1982, 57-205030

Int. Cl.[4] G01J *1/20*

U.S. Cl. 250—201

21 Claims



1. A method for detecting a focus condition of an imaging optical system comprising the steps of:

receiving at least a part of an image formed by an imaging optical system by means of at least one light receiving element array comprising a plurality of light receiving elements which produce element array output signals;

processing the element array output signals of said at least one light receiving element array in real time by means of at least one processing device including at least one surface acoustic wave device to produce a device output signal; and

detecting the focus condition of said imaging optical system from said device output signal.

4,608,491

ELECTRON BEAM INSTRUMENT

Yasushi Kokubo, Tokyo, Japan, assignor to Jeol Ltd., Tokyo, Japan

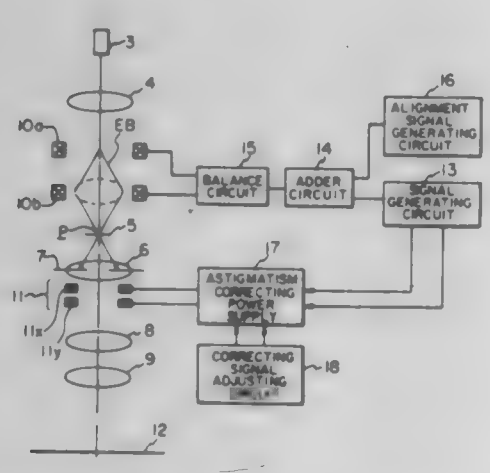
Filed Nov. 5, 1984, Ser. No. 668,096

Claims priority, application Japan, Nov. 11, 1983, 58-212186

Int. Cl.[4] G01N *23/00;* H01J *3/26*

U.S. Cl. 250—311

2 Claims



1. In an electron beam instrument comprising a column that can be evacuated, said column having an electron gun at one end and an imaging means at the other end, said gun for emitting an electron beam along an optical axis extending through the imaging means, a specimen support means along the optical axis intermediate the gun and imaging means, electron lens means for condensing the electron beam and focussing it upon a specimen in a specimen support means, electron objective lens means near the specimen support means and projector lens means between the specimen and display means

deflecting means disposed between the gun and an objective lens;

means for supplying deflection signals to the deflecting means to permit the electron beam to fall on one point on a specimen on the specimen stage at a selected tilt angle while rotating the direction in which the electron beam is tilted;

lens means between the specimen and imaging means for correcting the astigmatism of the objective lens; and

means for supplying astigmatism correcting signals synchronized with the rotation of the direction of the tilt to said means for correcting the astigmatism.

4,608,492

ULTRAVIOLET MONITOR SUNTAN ALARM WITH SELF TEST ROUTINES

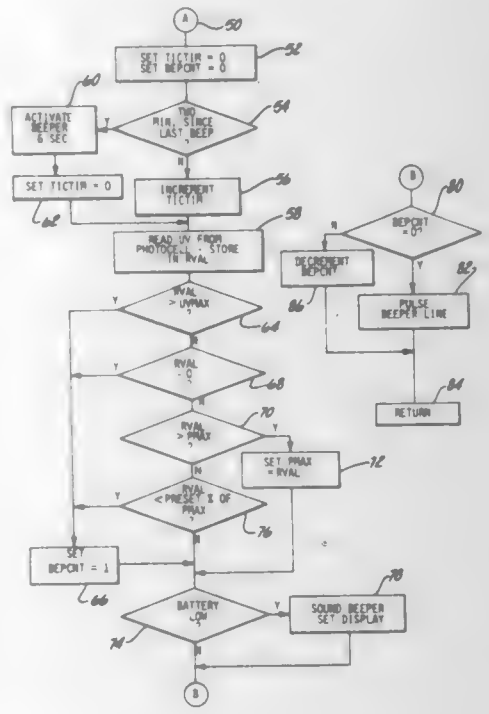
Robert E. Burnham, Plymouth, Mich., assignor to Teledyne Industries, Inc., Los Angeles, Calif.

Continuation-in-part of Ser. No. 496,062, May 19, 1983, Pat. No. 4,535,244. This application Apr. 9, 1984, Ser. No. 597,837

Int. Cl.[4] G01J *5/32*

U.S. Cl. 250—372

5 Claims



1 A photodosimeter comprising:

a housing having an opening,

electrical circuit means comprising means mounted beneath said opening for generating an output signal having a magnitude proportional to the intensity of ultraviolet radiation entering said housing opening,

means for repeatedly reading said output signals and for storing a cumulative value of said output signals,

means for determining and storing the maximum read value of said output signal,

an alarm,

means for activating said alarm when said cumulative value exceeds a preset value,

means for comparing a currently read output signal with the previously stored maximum read value of said output signal, and

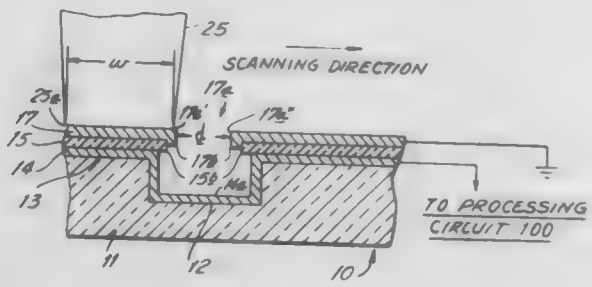
means responsive to said comparing means for activating said alarm when said output signal is between ten and thirty five percent of the previously determined maximum read value of said output signal from said generating means.

4,608,493

FARADAY CUP

Yoshinori Hayafuji, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed May 9, 1983, Ser. No. 492,801
Int. Cl.⁴ H01J *37/04*
U.S. Cl. 250—397 8 Claims



1. A method of controlling the generation and focus of an electron beam of generally strip-shaped cross section by a gun which includes anode, cathode and grid electrodes and focusing means operable for providing a focusing field, comprising the steps of:

effecting a relative displacement of said electron beam across Faraday cup means, which has an opening with a maximum dimension less than the width of said strip-shaped cross section, in a direction transverse to the length of said strip-shaped cross section, so that said electron beam bombards said Faraday cup means through said opening;

measuring the flow of current produced by said cup means in response to bombardment thereof by said electron beam; and

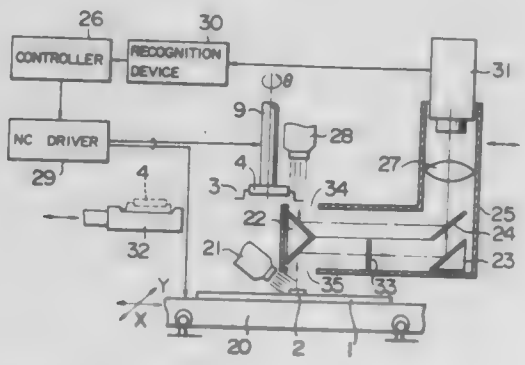
controlling at least one of said width and the current density and current distribution of said beam in accordance with said measured current flow.

4,608,494

COMPONENT ALIGNMENT APPARATUS

Mamoru Kobayashi; Hideaki Sasaki, both of Hadano, and Yasuhiko Hara, Machida, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 8, 1984, Ser. No. 669,437
Claims priority, application Japan, Nov. 11, 1983, 58-210870
Int. Cl.⁴ G01M *11/00;* G01N *21/64*
U.S. Cl. 250—461.1 5 Claims



1. An apparatus for aligning an electronic component with a conductor pattern on a printed board adapted for mounting the electronic component thereon, said apparatus comprising:

first illuminating means for illuminating said printed board to excite a substrate thereof to emit a fluorescent light;

second illuminating means for projecting an illuminating light to leads of said electronic component positioned above said pattern;

a detection head for admitting an image of said board pattern formed by said fluorescent light and an image of said leads formed by said lead illuminating light, said detection head including a first and second opening arranged to respectively detect said board pattern image and said lead image, mirror means arranged to transmit said fluorescent light and reflect said lead illuminating light and thereby align optical axes of said board pattern image and said lead image with the same axis, relecting mirror means arranged to respectively lead said fluorescent light and said lead illuminating light from said first and second openings into said mirror means, said reflecting mirror means having a good reflectance characteristic with respect to its associated light, and filter means inserted in an optical path of said fluorescent light for mainly transmitting said fluorescent light;

means for photographing said board pattern image and said lead image detected by said detection head;

means for recognizing said photographed board pattern image and lead image and computing the amounts of deviation in position therebetween; and

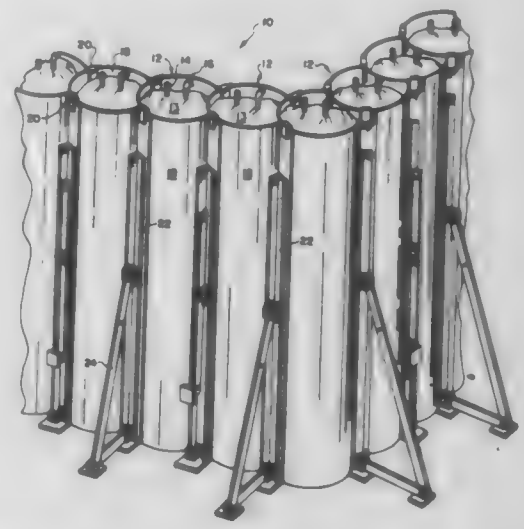
means for correcting the position of said leads relative to said board pattern in accordance with said amounts of deviation.

4,608,495

COLLAPSIBLE RADIATION ATTENUATION SYSTEM

Earl B. Jacobson, 510 S. Share Dr., Crystal Lake, Ill. 60014

Filed Nov. 21, 1983, Ser. No. 553,820
The portion of the term of this patent subsequent to Aug. 23, 2000, has been disclaimed.
Int. Cl.⁴ G21F *3/04*
U.S. Cl. 250—517.1 28 Claims



1. A collapsible radiation attenuation system comprising:

a plurality of radiation attenuation module means, each adapted to be substantially filled with a radiation attenuating fluid when positioned where desired;

each of said module means including outer collapsible skin means, skin securing means and bladder means;

each of said module means including means shaped to conform with a substantial portion of the adjacent module means when assembled for substantially eliminating any direct radiation paths between assembled module means; and

each of said module means including assembly means adapted for securing said module means to one another in any desired alignment.

4,608,496

STRAND BREAK DETECTOR

Johnny Rosen, Höllviksnäs, Sweden, assignor to Trelleborg AB, Trelleborg, Sweden

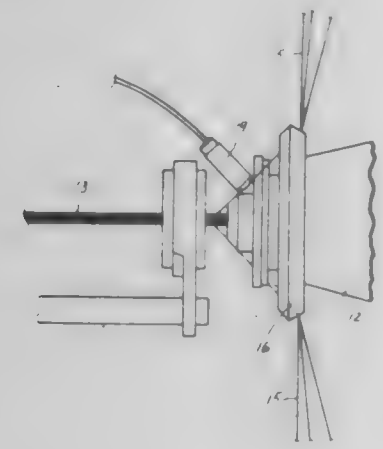
Filed Dec. 5, 1983, Ser. No. 558,185
Claims priority, application Sweden, Dec. 3, 1982, 8206907
Int. Cl.⁴ G01N *21/89, 21/86*
U.S. Cl. 250—561 8 Claims

1. Strand break detector for monitoring a number of longitudinally straightened strands extending along a number of pre-

determined paths to determine if a strand is broken or missing, comprising:

an optical transmitter with lightreceiving means disposed to provide relative movement between said transmitter and said strands with said movement in a direction generally transverse to said longitudinally straightened strands and said transmitter generating a signal for each strand passing said transmitter in a direction generally transverse to a longitudinal dimension of said strand;

an electronic circuit for receiving and processing the signal from the transmitter;



a shield arranged in front of the light-receiving means and forming an inlet for light to the light-receiving means; and

a slide surface on said shield disposed to engage in sliding contact strands approaching said inlet and guiding the strands engaging the slide surface past the light inlet as said transmitter and strands move relative to one another in a direction generally transverse to said longitudinally straightened strands with said slide surface disposed a distance from said light-receiving means to guide said strands past said inlet with strands separated from said light-receiving means by a preselected space.

4,608,497

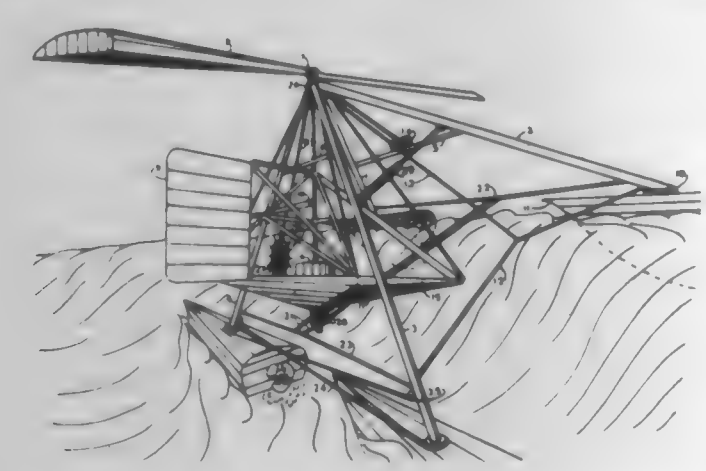
OCEAN WAVE ENERGY CONVERTING VESSEL

Peter F. Boyce, Delsea Dr., Delmont, N.J. 08314

Filed Apr. 3, 1985, Ser. No. 719,524

Int. Cl.[4] F03B *13/10, 13/12;* H02P *9/04*

U.S. Cl. 290—53 **5 Claims**



1. An ocean wave energy conversion system comprised of a four beam quadrapod supported by bouyant members from which is suspended a pendulum, said pendulum containing a vertical generator shaft and a generator, said generator shaft being splined and fitted with two racheted pulleys, said pulleys being looped, one clockwise and one counterclockwise with separate cables, said cables being attached at their ends to the bow and stern of the quadrapod, whereby said generator shaft will spin when the quadrapod rocks over waves and the pendulum tends towards the center of earth.

4,608,498

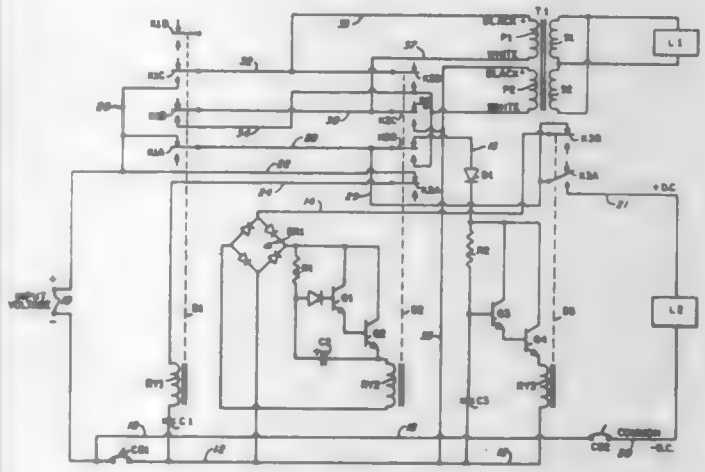
LOAD CONTROL CIRCUIT WITH DIFFERENT INPUT VOLTAGES

Lorenzo Falzarano, Belmont, and Carl Hewson, Marshfield, both of Mass., assignors to Brunswick Mfg. Co., North Quincy, Mass.

Filed Mar. 27, 1984, Ser. No. 593,865

Int. Cl.[4] H02M *1/10*

U.S. Cl. 307—22 **6 Claims**



1. A control circuit controlling operation of a DC load and comprising;

input terminal means that receive any one of a plurality of different input voltage signals including AC or DC signals,

control circuit means controlling operation of said DC load from said input voltage signal and including first means responsive only to said input DC voltage signal to control said load, second means responsive only to said input AC voltage signal for controlling said load,

said first means comprising a first electrical energizing means and said second means comprising a second electrical energizing means,

a transformer and means coupling the transformer to the input terminal means,

a rectifier coupled between the transformer and load,

means responsive to application of a DC input signal to energize said first electrical energizing means only to in turn energize said DC load directly,

and means responsive to application of an AC input signal to energize said second electrical energizing means only to in turn couple the AC signal via the transformer and rectifier to the DC load,

said means responsive to application of the DC and AC input signals being operated on a mutually exclusive basis,

said second means including one and another electrical energizing means, said one thereof having a delay means at the input thereof,

said one and another electrical energizing means being operated at different AC voltages.

4,608,499

POWER SYSTEM AND POWER GENERATION METHOD

Soren Rathmann, Horsens, Denmark, assignor to Silcon Elektronik A/S, Kolding, Denmark

Filed Feb. 1, 1984, Ser. No. 576,043

Claims priority, application Fed. Rep. of Germany, Feb. 1, 1983, 3303223

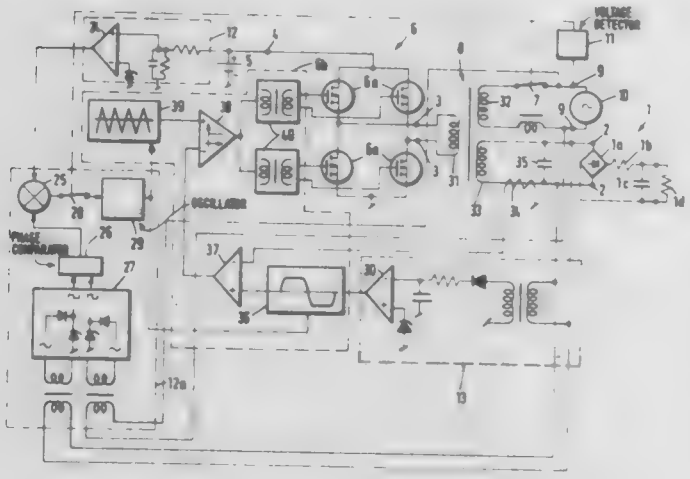
Int. Cl.[4] H02J *9/00*

U.S. Cl. 307—66 **39 Claims**

29. A power generating method comprising the steps of:

(a) generating an a-c output voltage having an at least approximately trapezoidal wave form, said wave form having a finite slope at substantially all absolute values of said output voltage smaller than the maximum amplitude of said wave form, and the absolute values of said slope at

substantially all absolute values of said output voltage other than said maximum amplitude being at least equal to the corresponding absolute values of the slope of a sinusoidal curve having the same maximum amplitude and period as said wave form, the generating step comprising maintaining a substantially constant mean value of said output voltage, and the generating step including forming a sinu-



soidal wave, clipping each half wave having an amplitude greater than a predetermined amplitude at said predetermined amplitude, and superimposing the clipped sinusoidal wave with the wave form of the output current corresponding to said output voltage to generate a control signal;

(b) rectifying said output voltage to obtain a d-c voltage; and

(c) developing power with said d-c voltage.

4,608,500

ELECTRIC POWER UNIT

Jiro Togawa, Tokyo, Japan, assignor to Nippon Chemi-Con Corporation, Tokyo, Japan

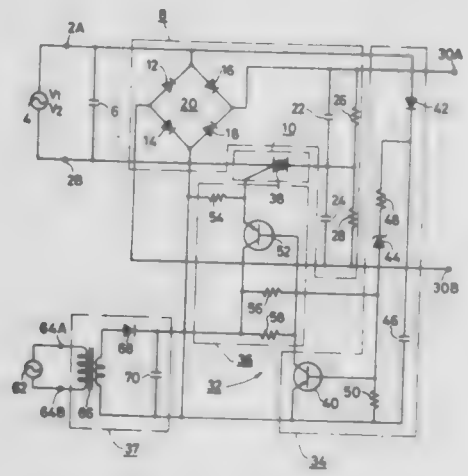
Filed Jul. 12, 1984, Ser. No. 630,052

Claims priority, application Japan, Jul. 27, 1983, 58-117618[U]

Int. Cl.⁴ H02M *7/19*

U.S. Cl. 307—72

6 Claims



5. An electric power unit comprising:

a bridge rectifier circuit having first and second input terminals coupled to a first AC source, output terminals of said bridge rectifier circuit being coupled to corresponding first and second output terminals;

a first capacitor having a first terminal coupled to said first output terminal;

a second capacitor having a first terminal coupled to a second terminal of said first capacitor and a second terminal coupled to said second output terminal;

a first resistor having a first terminal coupled to said first output terminal;

a second resistor having a first terminal coupled to a second terminal of said first resistor and a second terminal of said first capacitor and a second terminal coupled to said second output terminal;

a triode AC switch having a first main terminal coupled to said second input terminal and a second main terminal coupled to said second terminal of said first capacitor;

a first transistor having an emitter coupled to a control terminal of said triode AC switch;

a third resistor having a first terminal coupled to said second input terminal and a second terminal coupled to said emitter of said first transistor;

a fourth resistor coupled between a base and a collector of said first transistor;

a second transistor having a collector coupled to said base of said first transistor;

a fifth resistor coupled between said collector of said first transistor and a base of said second transistor;

a sixth resistor coupled between a base and an emitter of said second transistor;

a Zener diode having an anode coupled to said base of said second transistor;

a seventh resistor having a first terminal coupled to a cathode of said Zener diode;

a diode having an anode coupled to said first input terminal and a cathode coupled to a second terminal of said seventh resistor;

a third capacitor coupled between said cathode of said diode and said emitter of said second transistor; and

a DC power supply for providing a DC voltage between said collector of said first transistor and said emitter of said second transistor.

4,608,501

TRIPPING APPARATUS FOR AN OCCUPANT PROTECTION APPARATUS IN VEHICLES

Rudolf Andres, Sindelfingen; Hansjürgen Scholz, Waldenbuch; Heinz W. Knoll, Stuttgart; Luigi Brambilla, Boeblingen; Volker Petri, Aidlingen, and Alban Bossenmaier, Stuttgart, all of Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Fed. Rep. of Germany

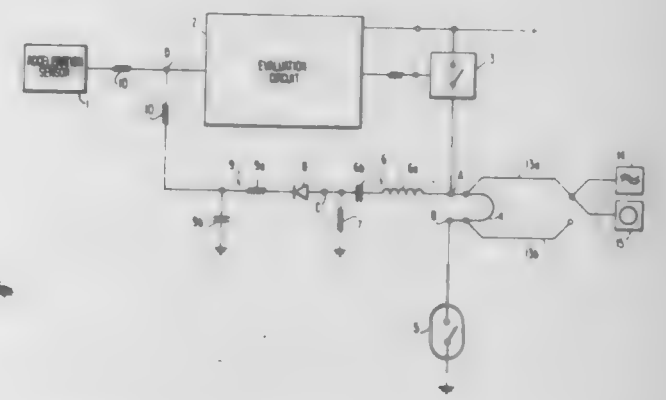
Filed Jan. 9, 1985, Ser. No. 689,850

Claims priority, application Fed. Rep. of Germany, Jan. 10, 1984, 3400533

Int. Cl.⁴ B62D *45/00*; B60R *21/02*

U.S. Cl. 307—105 B

3 Claims



1. A tripping apparatus in vehicles, particularly for an occupant protection apparatus in impact restraining systems, having an acceleration sensor, an evaluation circuit and a switching stage serially connected as input to a tripping element in series with an acceleration switch comprising

a test circuit comprising

a series arrangement of a filter tuned to a predetermined frequency, a rectifier and an integrator, and

an input circuit means comprising a test generator for introducing to the series arrangement, a test signal comprising an alternating voltage having said predetermined frequency,

the input circuit means being connected to a predetermined point of zero potential in the inactive condition, said point

being located between the switching stage and the tripping element, and

an output means of the test circuit connected to the input of the evaluation circuit, for producing an answering signal at the output of the test circuit.

4,608,502

I^2L GATE CIRCUIT ARRANGEMENT HAVING A SWITCHABLE CURRENT SOURCE

Eise C. Dijkmans, Eindhoven, Netherlands; Wilhelm Graffenberger, and Ernst A. Kilian, both of Hamburg, Fed. Rep. of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

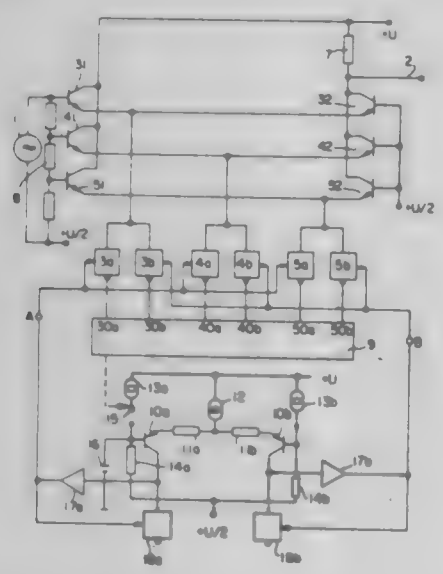
Filed Jun. 14, 1983, Ser. No. 504,199

Claims priority, application Fed. Rep. of Germany, Jun. 16, 1982, 3222607

Int. Cl.[4] H03K *17/56, 19/088*

U.S. Cl. 307—243

6 Claims



1. A circuit arrangement comprising a plurality of signal paths which are formed by active circuits and by means of which signals of different levels are applied to a common output, each signal path being activatable by a switchable current source, characterized in that:

(a) each current source is formed by at least one I^2L gate (3*a* to 5*b*);

(b) the I^2L gates are divided between a first group and a second group, the injector connections of the first group being connected to a first junction point (A) while the injector connections of the second group are connected to a second junction point (B);

(c) the control inputs of the I^2L gates (3*a* to 5*b*) are driven so that when a switch-over occurs from one signal path to another signal path, two I^2L gates, each of which is associated with one of the signal paths and with one of the groups (for example, 3*b*, 4*a*), can conduct current at least during a transition phase; and

(d) the junction points (A, B) are chosen so that the output currents of the two I^2L gates vary continuously and in the opposite sense during the transition phase.

4,608,503

APPARATUS FOR DRIVING FIRST AND SECOND DEVICES

Thomas H. Wong, Sunnyvale, and John W. Chu, Cupertino, both of Calif., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Oct. 25, 1982, Ser. No. 436,762

Int. Cl.[4] H03K *3/01, 17/86*

U.S. Cl. 307—270

9 Claims

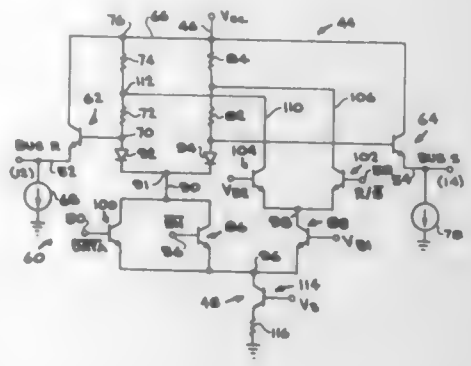
1. An apparatus for controlling a first device and a second device, comprising:

(a) a voltage input;

(b) a current source;

(c) a single data input for receiving an input signal; and

(d) means coupled between and powered by said voltage input and said current source for selectively driving the input signal at the first device or the second device, said selectively driving means having a first driver with a first output connectable to the first device, a second driver with a second output connectable to the second device;



(e) means for turning on either said first driver or said second driver whereby the input signal drives either the first device or second device, respectively; and

(f) means for disabling said first driver and said second driver.

4,608,504

INTERFACE CIRCUIT FOR INTERCONNECTING PERIPHERALS TO AN INFORMATION PROCESSING DEVICE

Hidehiko Yamamoto, Yamatokoriyama, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

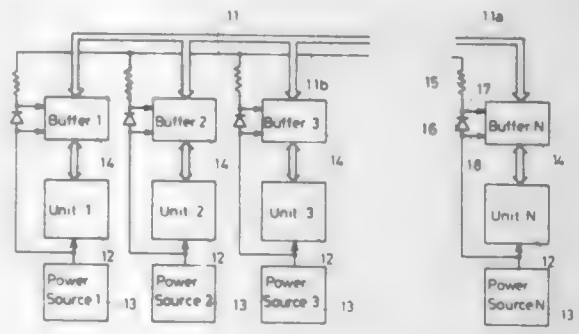
Filed Mar. 28, 1983, Ser. No. 479,433

Claims priority, application Japan, Jan. 20, 1983, 58-8121

Int. Cl.[4] G06F *11/20*

U.S. Cl. 307—442

3 Claims



1. An interface circuit for an information processing system comprising:

a data buss;

a plurality of information processing units;

a plurality of buffer circuits, each connecting an associated one of said information processing units to said data buss;

a plurality of power sources, each associated with and supplying power to one of said information processing units and its associated said buffer circuit;

a common power supply line interconnecting all of said plurality of power sources, said power supply line bidirectionally supplying power from any one of said plurality of power sources to all of said buffer circuits;

a plurality of buffer enable means, each associated with a said buffer circuit, for monitoring the associated said power source and enabling said buffer to transfer information between said data buss and said associated information processing unit when said associated power source is supplying power thereto;

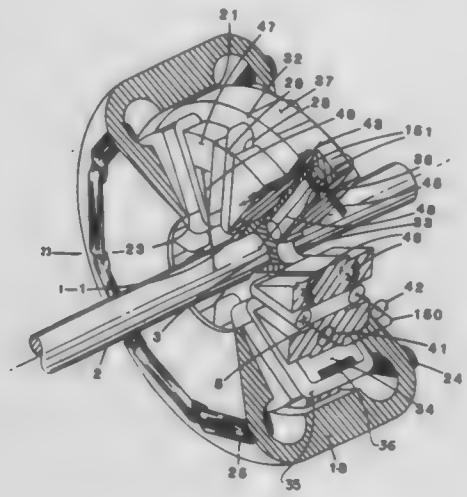
each said buffer circuit being thereby disabled when adequate power is not supplied to its said associated information processing unit by the associated said power source while remaining powered to thereby develop a high input impedance.

4,608,505

COMMUTATORLESS D.C. ELECTRIC MOTOR

Larry Schumacher, 18876 Tenderfoot Trail, Newhall, Calif. 91321

Filed Dec. 17, 1984, Ser. No. 682,890
Int. Cl.[4] H02K *1/26*
U.S. Cl. 310—267 25 Claims



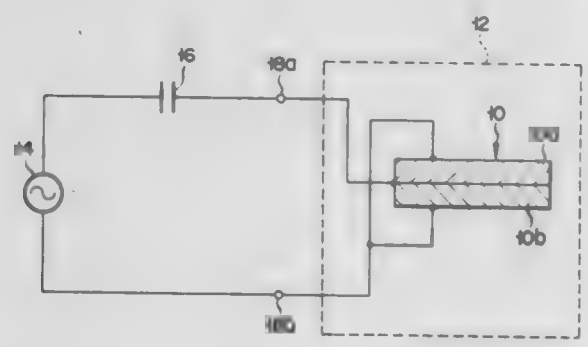
1. An electromotive apparatus comprising:
a case;
a rotatable motor shaft mounted in said case;
annular cylindrical armature means having planar sides;
annular magnetic field means circumjacent said cylindrical armature;
mounting means mounting said annular cylindrical armature means and said annular magnetic field means in said case so that one is rotatable on said motor shaft relative to the other;
said annular cylindrical armature means being constructed to have a plurality of axially planar substantially equally spaced radial extending slots;
a plurality of substantially non-magnetic cores, said non-magnetic cores being wound with wire and secured in said armature radial extending slots between said planar sides of said annular cylindrical armature;
said cores and windings having a length less than the axial length of said armature means so that said armature means extends beyond each wound core, a portion of said armature having radial extending slots adjacent to each of said cores and windings being wider than the thickness of said wound cores on either planar side of said armature means.

4,608,506

TEMPERATURE COMPENSATED DRIVE FOR A PIEZOELECTRIC DISPLACEMENT GENERATOR

Chiaki Tanuma, Tokyo, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Mar. 22, 1984, Ser. No. 592,542
Claims priority, application Japan, Mar. 31, 1983, 58-53772
Int. Cl.[4] H01L *41/08*
U.S. Cl. 310—315 14 Claims



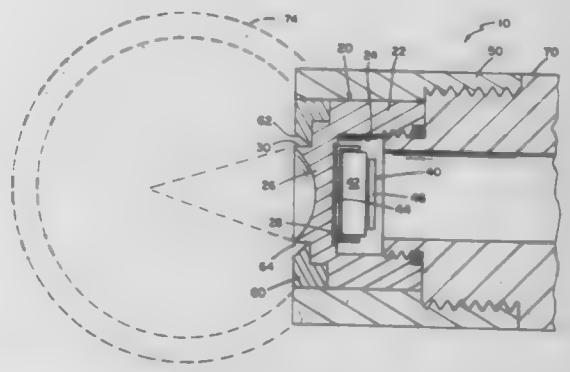
1. A device for generating periodical displacement to swing or vibrate a solid-state image sensor, said device comprising:
(a) a piezoelectric element adapted to be mechanically coupled to said image sensor and having an electrostatic capacitance with a predetermined temperature coefficient, said piezoelectric element receiving an AC drive voltage to generate, in response to the AC drive voltage, the periodical displacement which causes said image sensor to swing or vibrate continuously during its image sensing operation; and
(b) capacitor means, electrically connected in series with said piezoelectric element and having an electrostatic capacitance with a temperature coefficient whose sign is opposite to that of the predetermined temperature coefficient, and whose value is selected such that the AC drive voltage applied to said piezoelectric element when the electrostatic capacitance of said piezoelectric element changes with a change in ambient temperature compensates for a change in the vibration amplitude of the swinging image sensor caused by the change in ambient temperature, whereby said image sensor is allowed to swing at a uniform vibration amplitude irrespective of the ambient temperature.

4,608,507

DAMPING DEVICE FOR FOCUSED PIEZOELECTRIC TRANSDUCER

Werner G. Neubauer, Annandale, Va., and Jon J. Mingo, Providence, R.I., assignors to Micro Pure Systems, Inc., Warwick, R.I.

Filed Jun. 29, 1984, Ser. No. 626,452
Int. Cl.[4] H01L *41/08*
U.S. Cl. 310—335 5 Claims



1. An ultrasonic detection apparatus comprising:
a transducer for generating ultrasonic signals,
a lens unit having a lens,
said lens having a sidewall, said lens being arranged to focus the ultrasonic signals from said transducer, and
a damping ring,
said damping ring being adjacent to said lens unit and angled away from said lens sidwall forming a small opening therebetween, wherein stray noise or energy in sid lens unit enters said damping ring rather than returning to said transducer.

4,608,508

PIEZOELECTRIC IGNITER, ESPECIALLY FOR A CIGARETTE LIGHTER OR THE LIKE

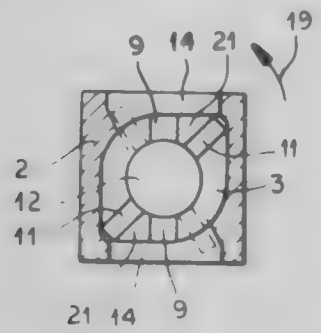
Taiji Ohnishi, Himeji, Japan, assignor to Intermatch S.A., Nyon, Switzerland and K.K. Piem Riken, Himeji, Japan

Filed Aug. 29, 1984, Ser. No. 645,603
Int. Cl.[4] H01L *41/08*
U.S. Cl. 310—339 6 Claims

1. A piezoelectric igniter comprising:
a sleeve formed with a pair of peripherally closed windows at opposite sides thereof and having a noncircular generally oval internal cross section having arcuate portions, said internal cross section having a major transverse dimension;
a casing shiftable relative to said sleeve and having an interior portion of noncircular outer cross section comple-

mentary to that of said sleeve and received therein, said casing being formed with a pair of diametrically opposite slots open at respective ends within said sleeve and provided adjacent said ends with respective notches;

at least one compression spring received in said sleeve; a hammer formed unitarily with a pair of diametrically opposite lugs projecting through said windows and biased by said spring toward said casing, said lugs being guided in said slots and engageable in said notches; and



a piezoelectric assembly disposed in said casing adapted to be impacted by said hammer upon release of said lugs from said notches by camming rotation of said hammer relative to said casing and said sleeve by an inclined edge of at least one of said windows, a further inclined edge of one of said windows camming said lugs into said notches, said major dimension being greater than the free end spacing of said lugs which is less than the distance between internal surfaces of said sleeve formed with said windows.

4,608,509

LENGTH POLARIZED, END ELECTRODED PIEZOELECTRIC RESONATOR

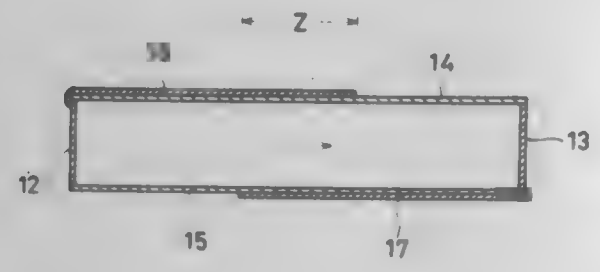
Takashi Yamamoto, Ro 118, Azayamazaki, Oshimizu-machi, Hakui-gun, Ishikawa, Japan (929-13); Houdo Kitajima, 5-3 Hakkin-cho, Takaoka-shi, Toyama, Japan (933), and Hiroyuki Takahashi, 8-40 Fushikikofu 3-chome, Takaoka-shi, Toyama, Japan (933-01)

Filed Nov. 27, 1984, Ser. No. 675,394

Claims priority, application Japan, Dec. 8, 1983, 58-232496

Int. Cl.⁴ H01L *41/08*

U.S. Cl. 310—357 **12 Claims**



1. A piezoelectric resonator which uses the longitudinal vibration mode, comprising:

a piezoelectric body polarized in a polarization direction, said piezoelectric body having lengthwise extending surfaces extending in said polarization direction between opposite ends, and opposite end surfaces at said opposite ends,

exciting electrodes formed on said opposite end surfaces,

insulating layers formed on at least portions of said lengthwise extending surfaces, and

a pair of take-out electrodes covering at least portions of said insulating layers and connected to said exciting electrodes.

4,608,510

PIEZOELECTRIC MICRO-RESONATEUR

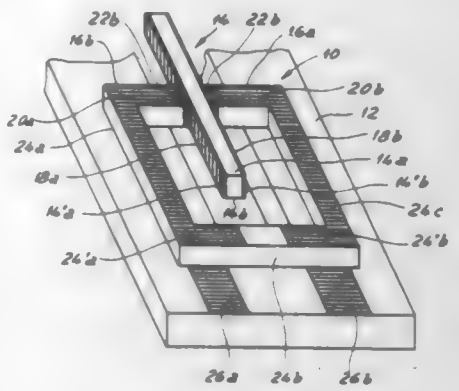
Rudolf J. Dinger, and Jean-Georges Michel, both of Neuchatel, Switzerland, assignors to Asulab S.A. - ESA 55, Switzerland

Filed Jan. 13, 1982, Ser. No. 339,152

Claims priority, application Switzerland, Jan. 15, 1981, 234/81

Int. Cl.⁴ H01L *41/08*

U.S. Cl. 310—361 **5 Claims**



1. A micro-resonator for vibrating in a main extension-compression mode, comprising a Z cut bar; and an integrated suspension assembly for said Z cut bar formed integral with said bar, said bar and suspension assembly being chemically cut from the same plate of piezoelectric material, said bar having a length, a width and a thickness respectively disposed substantially parallel to the Y, X and Z axes of said piezoelectric material, the width of the bar being smaller than the thickness of the bar; an electrode disposed on each side of said bar which extends parallel to the bar length and thickness, for exciting the vibration of the bar; and conducting connections provided on said suspension assembly and electrically connected to the electrodes.

4,608,511

ENERGY FILTER FOR A GEIGER-MüLLER TUBE

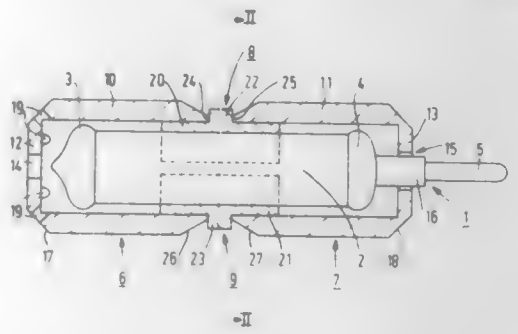
David Barclay, South Croydon, and Peter H. Burgess, Wantage, both of England, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 12, 1984, Ser. No. 570,116

Claims priority, application United Kingdom, Jan. 17, 1983, 8301155

Int. Cl.⁴ H01J *47/06, 5/18*

U.S. Cl. 313—93 **19 Claims**



1. A γ-ray energy filter for an elongated Geiger-Müller tube having a longitudinal axis, said filter comprising

two filter bodies each having an annular portion for coaxially surrounding the Geiger-Müller tube, said two filter bodies substantially absorbing γ-ray energy within a range of energies to be detected,

wherein said two filter bodies are spaced by a longitudinal gap from one another in the longitudinal direction to permit said rays to be in cident on part of said Geiger-Müller tube without substantial absorbtion, said annular portions of said two filter bodies extending in said longitudinal direction from said longitudinal gap,

said annular portions having surfaces at said longitudinal gaps extending away from one another in the same radial

sense at an angle to said longitudinal axis of less than 45° over a portion of the radial thickness of said annular portions,

wherein at least one of said filter bodies has a plurality of circumferentially spaced apertures extending through said at least one filter body, each of said plurality of apertures having an axis disposed at an inclination to said longitudinal axis at an angle differing from 0° and from 90°, and

wherein said two filter bodies are of an alloy consisting essentially of tin and lead with the proportion of lead being less than 95% but not substantially less than 40%.

4,608,512
LAMP AND REFLECTOR COMBINATION, PARTICULARLY FOR PROJECTORS

Peter Rakitsch, Ismaning, Fed. Rep. of Germany, assignor to Patent-Treuhand-Gesellschaft für elektrische Glühlampen mbH, Fed. Rep. of Germany

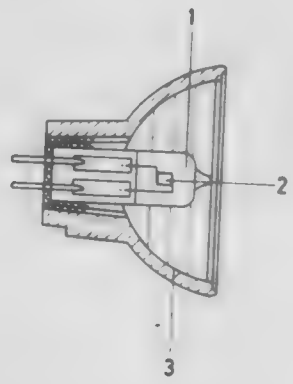
Continuation of Ser. No. 435,238, Oct. 19, 1982, abandoned. This application Jul. 18, 1985, Ser. No. 755,979

Claims priority, application Fed. Rep. of Germany, Nov. 4, 1981, 3143776

Int. Cl.⁴ H01K *1/50, 1/26*

U.S. Cl. 313—113

10 Claims



1. A lamp bulb and reflector combination for projectors, to project a beam of light on a film window of predetermined size, in a film window plane, having

a light source or bulb (1) with a filament (2);

and a generally ellipsoid-shaped reflector having a reflective surface which is substantially symmetrical about a central axis or centerline (CL) and is positioned to surround the light source, to reflect light therefrom and form said beam, wherein

the reflective surface (3) has a cross-sectional profile (P), in any selected plane incorporating said centerline (CL), which is not a continuous curve, but rather is formed of a sequence of surface or areal segments (F) having a common central axis or centerline (CL), each segment being in the form of a, circumferentially continuous truncated cone-shaped shell,

the reflective surfaces of the truncated cone-shaped shells formed by said segments each having in said cross-sectional profile, respectively, a different angle with respect to the axis or centerline (CL) of the reflector;

wherein each of the areal segments has, in cross section, a length (l), between points (A, B, C, D, E) along said profile where said segment meets adjacent segments, which is so dimensioned that the overall length of images of the projected filament (2) of the lamp in the plane of a film window perpendicular to said centerline (CL) is equal to or larger than the diagonal of the image field,

and wherein adjacent areal segments intersect, in the discontinuous reflector profile, in intersection circles which lie on a curve (K) forming a theoretical continuous reflector profile.

4,608,513
DUAL FILAMENT ION SOURCE WITH IMPROVED BEAM CHARACTERISTICS

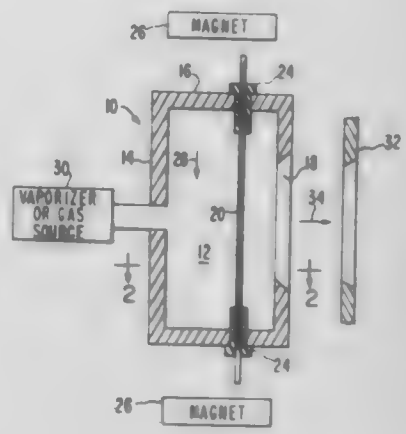
William B. Thompson, Rockport, Mass., assignor to Varian Associates, Inc., Palo Alto, Calif.

Filed Sep. 13, 1984, Ser. No. 650,014

Int. Cl.⁴ H05H *00/00*

U.S. Cl. 313—359.1

4 Claims



1. An ion source comprising:

a housing which defines an internal arc chamber and includes an extraction slit for extraction of an ion beam;

at least two filament electrodes for thermionic emission of electrons positioned in said arc chamber;

means for supplying electrical current through said filament electrodes for heating thereof in opposite directions such that, in the region of said extraction slit, the net magnetic field produced by said electrodes in a direction transverse to said ion beam is approximately zero;

means for biasing said housing at a more positive potential than said filament electrodes;

means for imposing a magnetic field on said arc chamber generally parallel to said filament electrodes; and

means for introducing an ionizable material into said arc chamber.

4,608,514
PHOTOCONDUCTIVE TARGET OF THE IMAGE PICKUP TUBE

Takao Kuwahata, Tokyo; Sohei Manabe, and Katsuhiro Goupei, both of Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

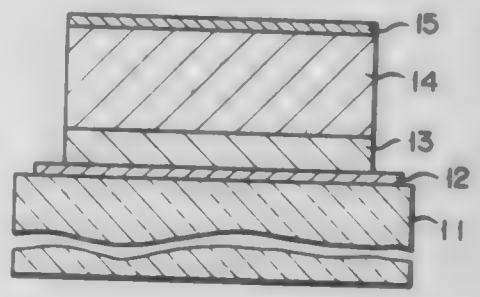
Filed Apr. 23, 1985, Ser. No. 726,316

Claims priority, application Japan, Apr. 25, 1984, 59-81984

Int. Cl.⁴ H01J *31/38*

U.S. Cl. 313—386

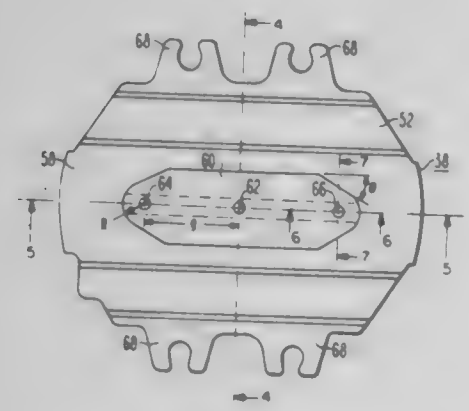
10 Claims



1. A photoconductive target of an image pickup tube, comprising a transparent substrate, a transparent conductive layer formed on said transparent substrate, a photoconductive layer formed on said transparent conductive layer and containing cadmium, tellurium and selenium as major components, and a high resistance layer formed on said photoconductive layer, wherein the film thickness of said photoconductive layer is more than 1,000 Å and less than 10,000 Å and a film thickness

of said high resistance layer falls within the range between 2 and 10 μm.

4,608,515
CATHODE-RAY TUBE HAVING A SCREEN GRID WITH ASYMMETRIC BEAM FOCUSING MEANS AND REFRACTION LENS MEANS FORMED THEREIN
Hsing-Yao Chen, West Hempfield Township, Lancaster County, Pa., assignor to RCA Corporation, Princeton, N.J.
Filed Apr. 30, 1985, Ser. No. 729,163
Int. Cl.[4] H01J *29/51*
U.S. Cl. 313—412 **5 Claims**



1. In a cathode-ray tube comprising an image screen and an inline electron gun for projecting three electron beams including a center beam and two outer beams along beam paths onto said screen, said gun comprising:

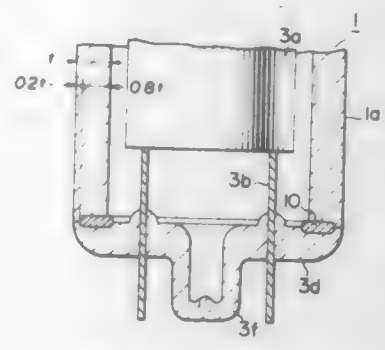
three cathodes for generating the electron beams,

a control grid, a screen grid, and a main electron lens arranged successively in alignment with said cathods for focusing said electron beams, said control grid, said screen grid, and said main electron lens each having three spaced-apart, aligned apertures comprising a center aperture and two outer apertures disposed in a plane for passing the electron beams, said screen grid having a functional grid region including the screen grid apertures, asymmetric beam focusing means for reducing flare distortion, and refraction lens means, the improvement wherein

said asymmetric beam focusing means comprises a transversely disposed rectangularly-shaped slot, said slot having a length greater than the spacing between the outer screen grid apertures and a width greater than the diameter of the screen grid apertures, and

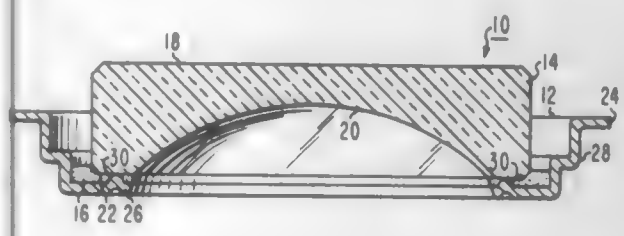
said refraction lens means comprises a transversely disposed recessed portion including a substantially rectangularly-shaped central part and substantially triangularly-shaped end parts, said recessed portion having a length, extending in the plane of said electron beams, substantially coextensive with the length of said slot, and a width, extending substantially orthogonal to said plane of said electron beams, substantially greater than the width of said slot, said recessed portion being surrounded by a peripheral rim which conforms to the shape of said recessed portion, the central part of said peripheral rim being remote from said center aperture and the triangularly-shaped end parts of said rim being in proximity to said outer apertures, thereby affecting the electrostatic field in the vicinity of the outer beam paths by tilting the field lines within said recessed portion.

4,608,516
ELECTRON TUBE HAVING GLASS-TO-METAL-TO-GLASS SEAL
Hiroshi Oki, Chiba, Japan, assignor to Hitachi, Ltd., Tokyo, Japan
Filed Feb. 11, 1981, Ser. No. 233,448
Claims priority, application Japan, Mar. 12, 1980, 58-30379
Int. Cl.[4] H01J *5/22, 29/90*
U.S. Cl. 313—477 R **2 Claims**



1. An electron tube comprising an envelope of glass material having its end open, and a stem of glass material having an electron gun assembly mounted thereon and a periphery portion sealed to said open end of said envelope, said electron gun assembly being accomodated within said envelope, wherein said open end of said envelope and said periphery portion of said stem are sealed to each other through a metallic ring member which is made of a metallic material having a thermal expansion coefficient close to the glass materials of said envelope and said stem, a portion of said metallic ring member between said open end of said envelope and said periphery end of said stem being coated with a layer of a low melting glass which is made of a glass material which is different from the glass materials of said envelope and said stem, the outer diameter of said metallic ring member being smaller than the outer diameter of a portion of said envelope in the vicinity of the sealed interface between said envelope and said stem, said metallic ring member including a cylindrical portion extending along the inner wall of said envelope and exposed in said envelope, said cylindrical portion of said metallic ring member being stepped.

4,608,517
FACEPLATE ASSEMBLY HAVING INTEGRAL GAUGING MEANS
David D. Neuer, Lancaster, Pa., assignor to RCA Corporation, Princeton, N.J.
Filed Jun. 28, 1984, Ser. No. 625,804
Int. Cl.[4] H01J *29/02, 40/02, 1/34*
U.S. Cl. 313—477 R **3 Claims**



1. In a faceplate assembly including a faceplate flange having a sealing surface, a faceplate member having a substantially flat sealing portion, and sealing means for sealing said faceplate member to said faceplate flange, the improvement comprising

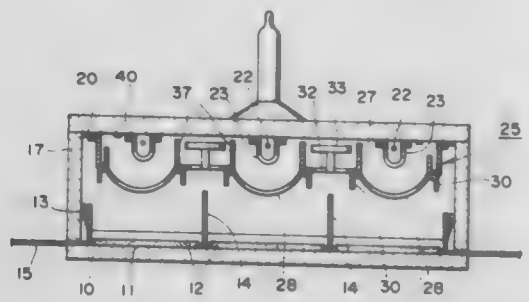
gauging means integral with said sealing surface of said faceplate flange and in contact with said substantially flat sealing portion of said faceplate member, said gauging means forming a plane substantially parallel to said sealing surface of said faceplate flange, whereby said faceplate member is sealed parallel to said faceplate flange and at a predetermined distance therefrom.

4,608,518

COLOR FLUORESCENT LUMINOUS TUBE

Tatsuo Fukuda, and Akiyoshi Ikenaga, both of Mobara, Japan, assignors to Futaba Denshi Kogyo K. K., Mobara, Japan

Filed May 28, 1985, Ser. No. 738,350
Claims priority, application Japan, May 28, 1984, 59-108092
Int. Cl.[4] H01J *29/94*
U.S. Cl. 313—481
18 Claims



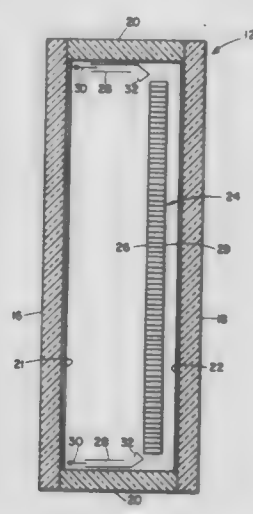
1. A color fluorescent luminous tube comprising:
a display plate;
an anode arranged on said display plate;
a plurality of luminous cells deposited on said anode, said luminous cells emitting different luminous colors from one another upon impingement of electrons thereupon;
a cathode filament stretched above each of said luminous cells to be opposite thereto;
a control grid arranged between each of said cathode filaments and said luminous cells;
a shield grid holder mounted between said control grids and said luminous cells, said shield grid holder being provided with windows and openings;
a shield grid mounted on each of said windows to be opposite to said luminous cell, control grid and cathode filament; and
a getter means for diffusing a getter material to form a getter film within said luminous tube, said getter means being arranged adjacent to each of said openings and lain in a plane substantially parallel to said cathode filament.

4,608,519

MIDDLE-INFRARED IMAGE INTENSIFIER

Christopher H. Tosswill, Sturbridge, Mass., assignor to Galileo Electro-Optics Corp., Sturbridge, Mass.

Filed Apr. 5, 1984, Ser. No. 596,935
Int. Cl.[4] H01J *43/06*
U.S. Cl. 313—528
8 Claims



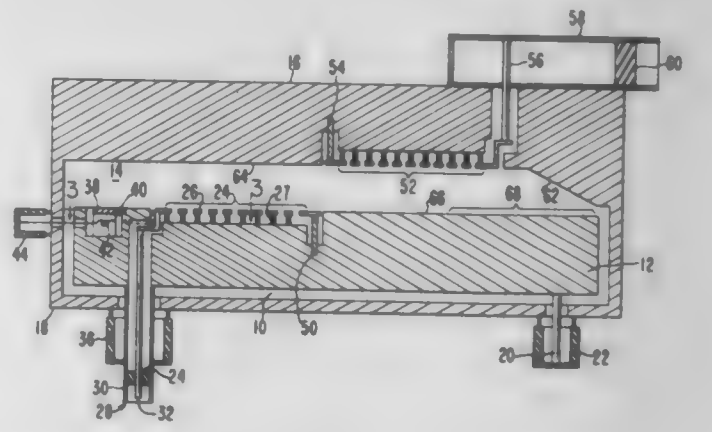
1. A middle-infrared image intensifier comprising
an image-forming microchannel plate having an input face for receiving a middle-infrared radiation image and an output face, said plate carrying, at entrances to channels of said microchannel plate at said input face, a photoconductor material that is activated by middle-infrared radiation incident on said input face,
an electron generator for flooding slow electrons to a region adjacent to said input face of said photoconductor,
an electron-sensitive light-emitting screen positioned to receive electrons from said output face of said microchannel plate, and
activating means for activating said microchannel plate to provide electrons to, and multiply electrons in, channels of said microchannel plate at which middle-infrared radiation is incident on photoconductor material at entrances thereof, to thereby provide a visible image on said screen of said middle-infrared radiation image.

4,608,520

CATHODE DRIVEN CROSSED-FIELD AMPLIFIER

Hunter L. McDowell, Concord, Mass., assignor to Varian Associates, Inc., Palo Alto, Calif.

Filed Jul. 29, 1983, Ser. No. 518,719
Int. Cl.[4] H01J *25/34*
U.S. Cl. 315—39.3
10 Claims



1. A crossed-field amplifier tube comprising:
an extended cathode, at least a section of an interaction surface being part of a wave-transmissive cathode slow-wave circuit, said wave-transmissive portion having a secondary emission ratio greater than unity,
means for coupling an input transmission line to an input end of said cathode slow-wave circuit,
an extended anode having an interaction surface facing said cathode interaction surface and spaced therefrom, at least a section of said anode interaction surface being part of a wave-transmissive anode slow-wave circuit,
at least a portion of said anode slow-wave circuit extending beyond said cathode slow-wave circuit in a direction of drift and at least a portion of said cathode slow-wave circuit extending beyond said anode slow-wave circuit in a direction opposite said drift,
means for coupling an output end of said anode slow-wave circuit to an output transmission line,
said cathode and anode being adapted for applying a DC electric field between said anode and said cathode and a DC magnetic field parallel to said interaction surfaces and perpendicular to their longitudinal extent,
said slow-wave circuits being adapted to transmit waves in the direction of drift of electrons in said DC fields.

4,608,521

DUAL SPIRAL LINE GENERATOR METHOD AND APPARATUS FOR STARTING LOW WATTAGE HIGH INTENSITY DISCHARGE LAMPS

Charles N. Fallier, Jr., Westford, and Joseph M. Proud, Wellesley Hills, both of Mass., assignors to GTE Laboratories Incorporated, Waltham, Mass.

Filed Dec. 27, 1984, Ser. No. 686,974
Int. Cl.[4] H01J *7/44, 13/46, 17/34, 19/78*
U.S. Cl. 315—47
4 Claims

1. A light source comprising:
(a) a high intensity discharge lamp including a discharge

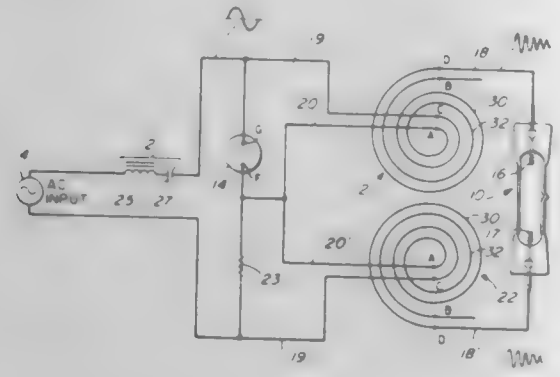
tube having electrodes sealed therein at opposite ends and an envelope enclosing a fill material which emits light during discharge;

(b) a ballast means for providing an output voltage equal to or substantially greater than the voltage into said ballast means, adapted to be conductively coupled to a source of AC voltage;

(c) a spark gap switch having first and second electrodes and a resistor coupled in series across the output terminals of said ballast means such that the first electrode of the spark gap means is conductively coupled to an output terminal of said ballast means;

(d) a starting circuit including:

(i) first and second spiral line pulse generators each including two conductors insulated from each other and formed together in a spiral configuration having a plurality of turns;



(ii) said first spiral line pulse generator having a first one of said conductors conductively coupled at a first end to the second electrode of said spark gap and a second end left non-conductively coupled, and the second one of said conductors having a first end conductively coupled to the first electrode of said spark gap, and a second end conductively coupled to a first one of the electrodes of the discharge lamp;

(iii) said second spiral line pulse generator having a first one of said conductors conductively coupled at a first end to the second electrode of said spark gap and at a second end left non-conductively coupled, and the second one of said conductors having a first end conductively coupled to a side of said resistor remote from the second electrode of the spark gap and a second end conductively coupled to a second one of the electrodes of the discharge lamp.

4,608,522

ELECTRONIC FLASH DEVICE

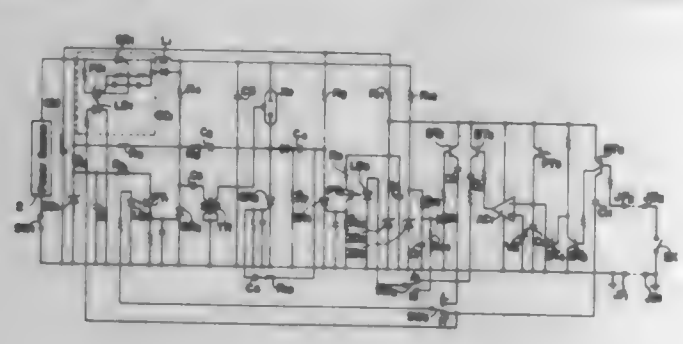
Yoshio Yuasa, Osaka; Kazuhiko Naruse, Nabari, and Masahito Inaba, Ikeda, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Jul. 5, 1983, Ser. No. 511,509

Claims priority, application Japan, Jul. 6, 1982, 57-118243; Sep. 18, 1982, 57-162831

Int. Cl.[4] H05B *41/32, 41/34*

U.S. Cl. 315—241 P **8 Claims**



1. An electronic flash device comprising:

a power source circuit for generating a high voltage;

a main capacitor connected with said power source circuit to be charged by the high voltage;

an auxiliary capacitor having a smaller capacity than said main capacitor;

a flash tube coupled with said main and auxiliary capacitors to be energized by the both;

a series connected switch element and inductance element connected in the electrical path through which the auxiliary capacitor is charged by said main capacitor and the main capacitor energizes the flash tube as well;

trigger means for triggering the firing of said flash tube;

control means for, in a first condition, simultaneously actuating said switching element and said trigger means, and at a second condition, actuating said trigger means after a delay from the actuation of said switching means; and

means for setting said control means selectively to one of said first and second condition.

4,608,523

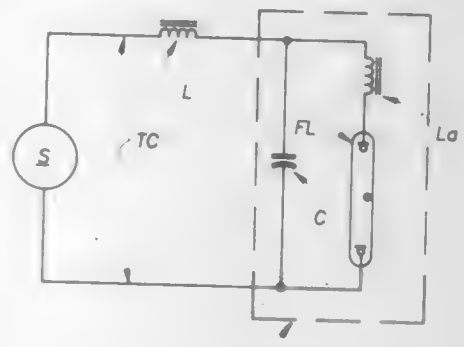
PHASE CORRECTION FOR SERIES-RESONANT BALLASTS

Ole K. Nilssen, Caesar Dr. RR. 5, Barrington, Ill. 60010

Filed Jan. 16, 1984, Ser. No. 570,969

Int. Cl.[4] H05B *37/00, 39/00, 41/14*

U.S. Cl. 315—244 **2 Claims**



PC2

1. A ballast means adapted to power a gas discharge lamp from a source of AC voltage, said source having a pair of output terminals, said ballast means comprising:

a first inductor means connected in series with a capacitor means, thereby to form a first series-circuit;

first connect means operable to permit connection of said first series-circuit across said pair of output terminals;

a second inductor means connected in series with said gas discharge lamp, thereby to form a second series-circuit; and

second connect means operable to connect said second series-circuit in parallel with said capacitor means;

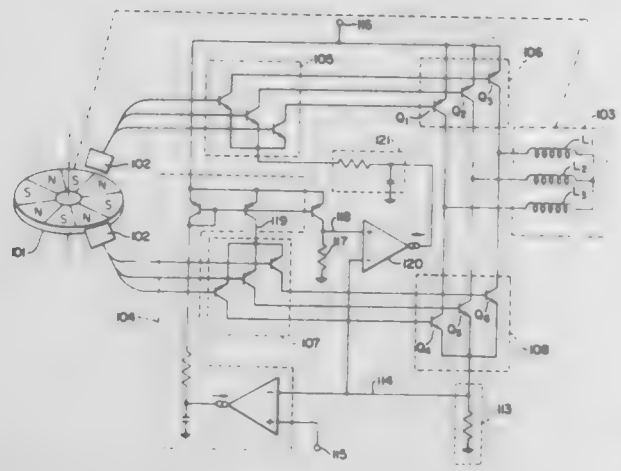
whereby, whenever only the first series-circuit is connected with the output terminals, power is drawn from the AC source at a power factor that is substantially the same as the power factor at which power is drawn from the AC source when said second series-circuit is connected in parallel with said capacitor means, the first series circuit having an unloaded Q factor, the first series circuit in combination with said second series circuit having a loaded Q factor, the unloaded Q factor being substantially larger than the loaded Q factor.

4,608,524

OUTPUT CIRCUIT AND BRUSHLESS MOTOR USING THE SAME

Nobuyoshi Yokobori, Osaka, Japan, assignor to Matrushita Electric Industrial Co., Ltd., Kadoma, Japan

Division of Ser. No. 569,762, Jan. 10, 1984, Pat. No. 4,535,276.
This application Apr. 29, 1985, Ser. No. 728,801
Claims priority, application Japan, Jan. 12, 1983, 58-3675; Jan. 24, 1983, 58-10405; Jan. 25, 1983, 58-10698; Jan. 26, 1983, 58-11858; Jan. 27, 1983, 58-12318; Jan. 28, 1983, 58-13054
Int. Cl.[4] H02P *6/02*
U.S. Cl. 318—254
17 Claims



1. A brushless motor comprising: a permanent magnet rotor multipole-magnetized; armature windings of plural phases and connected at one ends in common; a position detector for detecting the rotational positions of said rotor and armature windings; pairs of push-pull output transistors connected to phases of said aramture windings and equal in phase number to said phases of said armature windings; first current detecting means for detecting currents flowing in said armature windings; a first amplifier for amplifying a difference between the output signal of said first current detecting means and a switching means which switches the output of said first amplifier corresponding to the output of said position detector so that the exciting phase of each of said armature windings is energized by one of said pair of output transistors; a second current detecting means which outputs a signal corresponding to the base current of said one transistor; a second amplifier for amplifying a difference between the output signals of said first and second detecting means; and a second position signal switching means which energizes the exciting phases of said armature windings by the other of said pair of output transistors, whereby said second amplifier controls the conductive state of the other transistor so as to keep a constant ratio of the base current of said one transistor to a current flowing in said first current detecting means, thereby generating a torque corresponding to a torque command input.

4,608,525

CELLULAR TYPE ROBOT APPARATUS

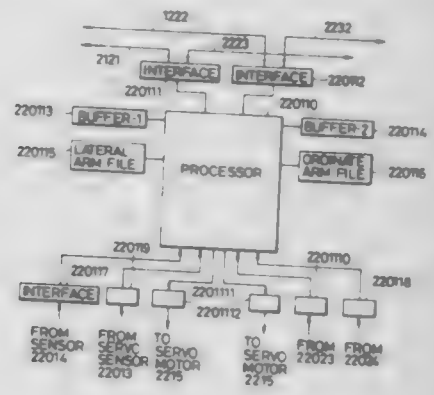
Kinji Mori, Yokohama; Shoji Miyamoto, Kawasaki, and Hirokazu Ihara, Machida, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 21, 1984, Ser. No. 623,087
Claims priority, application Japan, Jun. 22, 1983, 58-110925
Int. Cl.[4] G05B *19/42*
U.S. Cl. 318—568
16 Claims

1. A cellular type robot apparatus having a cellular type component part consisting of a plurality of intercoupled robot cells, said component part being capable of controlling its shape through coordinate but independent movements by said robot cells; and

an information transmission medium connecting each of said robot cells to other robot cells;

each of said robot cells including means for sending to other robot cells on said transmission medium information related to an operating status of said component part and means for independently determining and controlling the movements of its robot cell based on information received



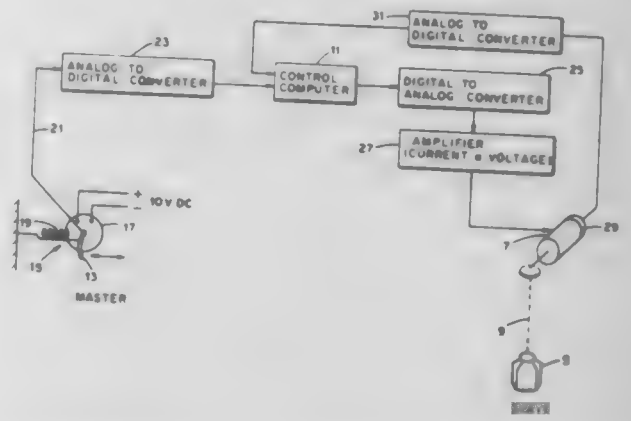
from said transmission medium, and at least one robot cell including means for detecting an operating status of said component part.

4,608,526

ELECTROMECHANICAL ACTUATOR FOR THE TONGS OF A SERVOMANIPULATOR

H. Lee Martin, and Stephen M. Killough, both of Knoxville, Tenn., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Apr. 19, 1985, Ser. No. 724,865
Int. Cl.[4] G05B *11/01*
U.S. Cl. 318—628
3 Claims



1. An electromechanical control system for controlling a pair of tongs in a servomanipulator system, copmrising:

a servo motor mechanically coupled to said pair of tongs for opening and closing said pair of tongs in response to a drive signal applied to said servo motor;

an actuator means including a spring biased trigger mechanism operable by an operator in which squeeze force applied by said operator to said trigger mechanism is resisted to produce an artificial force reflection to said operator for generating a control signal proportional to the displacement and squeeze force applied by said operator to said trigger mechanism;

an analog-to-digital converter connected to receive said control signal at an input thereof, a digital computer connected and programmed to generate a digital drive signal at an output thereof which is proportional to the rate of displacement of said trigger and the squeeze force applied by said operator; and

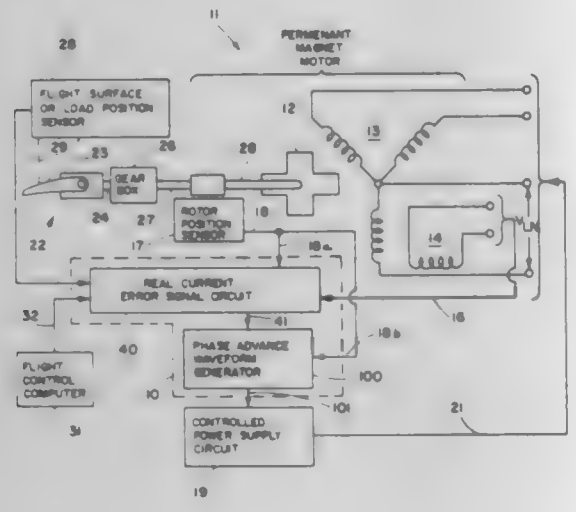
an analog-to-digital converter connected between the output of said computer and an input of said servo motor so that said pair of tongs are operated to open or close in corresponding response to the displacement of said trigger mechanism of said actuator means and maintain an applied force proportional to the operator squeeze force.

4,608,527

PHASE ADVANCE WAVEFORM GENERATOR FOR BRUSHLESS DC ACTUATOR SYSTEM CONTROLLER

Timothy F. Glennon, and Jayant G. Vaidya, both of Rockford, Ill., assignors to Sundstrand Corporation, Rockford, Ill.

Filed Dec. 20, 1982, Ser. No. 451,642
Int. Cl.[4] H02P 5/40
U.S. Cl. 318—685 3 Claims



1. A motor control circuit for a permanent magnet motor having a rotor, motor windings, motor winding current transformer means and a rotor speed/position sensing means,

a power supply means coupled across said motor windings, said power supply providing a motor voltage waveform to said motor windings,

a load to be positioned by said motor, a load position sensing means, said load drivingly coupled to said motor rotor,

command means to provide a load position command signal to command a load position, said motor control circuit including in combination:

load position error detecting means coupled to said load position sensing means and to said command means, said load position error detecting means providing a load position error signal which is a function of the difference between a load position sensed and a load position commanded by said load position command signal,

reference speed means receiving said load position error signal and providing a reference speed signal output having a magnitude and direction proportional to a rotor speed required for a load position commanded by said load position command signal,

speed signal summing means coupled to said rotor speed/position sensing means to receive a signal representative of said rotor speed, said signal summing means additionally coupled to said reference speed means to receive said reference speed signal output, said summing means thereby providing a speed error signal which is a function of the difference and direction between said sensed rotor speed and said reference speed signal,

means to receive said speed error signal and provide a real current reference signal having a magnitude and direction representative of the real current required for said motor to establish said load position commanded,

real current signal generating means coupled to said current transformer, said real current signal generating means providing a signal representative of the magnitude and direction of the real current present in said motor windings,

real current summing means coupled through said means to receive said speed error signal and to said speed signal summing means to receive said real current reference signal, said real current summing means additionally coupled to said real current signal generating means to receive said real current signal from said motor winding, said real current summing means providing a real current error signal which is a function of the difference between the magnitude and direction of said real reference current signal and said real current signal from said motor windings,

signal converting means for receiving said real current error signal and converting said real current error signal to an output signal representative of a phase angle that is proportional to said real current error signal,

a phase advance waveform generator coupled to receive respectively said output signal representative of said phase angle proportional to said real current error signal of said signal converting means and to said rotor position signal of said rotor speed and position sensing means,

said phase advance waveform generator providing a phase advanced power supply means control signal,

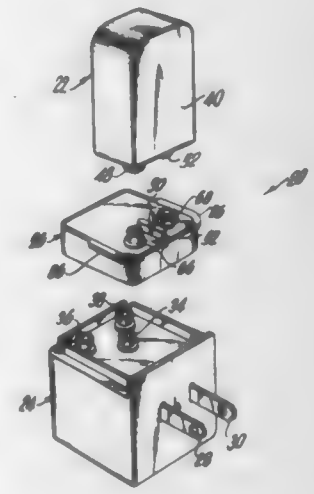
said control signal causing said motor voltage waveform to be advanced by an amount equal in phase to said phase angle of said signal converting means output signal to thereby efficiently effect a motor control that is responsive to load.

4,608,528

BATTERY CHARGER ADAPTER

Billy E. Stillwell, Gainesville, Fla., assignor to General Electric Company, Gainesville, Fla.

Filed Feb. 13, 1978, Ser. No. 877,281
Int. Cl.[4] H02J 7/00; H01M 2/10, 10/46
U.S. Cl. 320—2 21 Claims



1. In a battery charging system which includes a rechargeable battery having terminals and charging means having corresponding terminals adapted to contact said battery terminals, the improvement of a safety interface comprising:

index means on said charging means operative to prevent battery terminal contact with said charging means terminals when a battery is not equipped to mate with said index means; and

a battery housing, said index means including a fulcrum disposed among terminals of said charging means about which fulcrum said charging means can pivot relative to said housing, said housing having index receiving means to mate with said index means when said charger and battery terminals are connected whereby only a battery having said index receiving means may be connected to said charging means.

12. In a battery charging system which includes a rechargeable battery having terminals and charging means having corresponding terminals adapted to contact said battery terminals, the improvement of a safety interface comprising:

index means on said charging means operative to prevent battery terminal contact with said charging means terminals when a battery is not equipped to mate with said index means;

a battery housing, said index means extending from a surface of said charging means to contact said housing and to serve as a fulcrum about which said charging means can pivot realtive to said housing, said housing having index

receiving means to mate with said index means when said charger and battery terminals are connected whereby only a battery having said index receiving means may be connected to said charging means; and wherein

said charger means includes a charge source and an adapter, said index means being on said adapter.

20. In a battery charging system which includes a rechargeable battery having terminals, and charging means having corresponding terminals adapted to contact said battery terminals, the improvement of a safety interface comprising:

index means on said charging means operative to prevent battery terminal contact with said charging means terminals when a battery is not equipped to mate with said index means; and

a battery housing having index receiving means to mate with said index means when said charger and said battery terminals are connected whereby only a battery having said index receiving means may be connected to said charging means, a portion of said index means extending from said charging means to contact a surface of said battery housing upon a connection of said battery terminals and said charging means terminals to serve as a fulcrum about which said battery housing can be pivoted relative to said charging means.

4,608,529

CONSTANT VOLTAGE CIRCUITS

Andrew M. Mallinson, Salem, N.H., assignor to Ferranti plc, Gatley, England

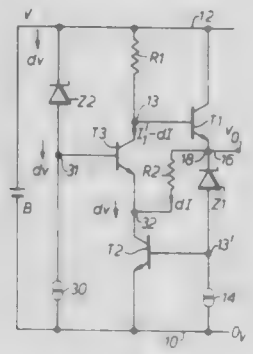
Filed Sep. 14, 1984, Ser. No. 650,644

Claims priority, application United Kingdom, Sep. 15, 1983, 8324751

Int. Cl.⁴ G05F *1/44*

U.S. Cl. 323—275

9 Claims



1. A constant voltage circuit comprising:

first and second rails connectable to a variable supply voltage source;

a first arm and a second arm connected in parallel between said rails;

said first arm including a first reference voltage means having first, second and intermediate terminals, said intermediate terminal having a different potential than said second terminal relative to said first terminal, and said first reference voltage means first terminal being connected to said first rail;

a circuit output line connected to said first reference voltage means second terminal;

said second arm including a first bipolar transistor having a pair of main terminals and a base terminal, said first bipolar transistor base terminal being connected to said first reference voltage means intermediate terminal, and one of said first bipolar transistor main terminals being connected to said first rail, and said second arm also including a first resistor coupling the other of said first bipolar transistor main terminals to said second rail, a first intermediate point in said second arm being defined intermediate said first resistor and said other of said first bipolar transistor main terminals;

a second resistor having a resistance value comparable to that of said first resistor and connected between said first intermediate point in said second arm and said output line; and

means for causing a potential which tracks the potential of said second rail to be applied to said first intermediate point in said second arm.

4,608,530

PROGRAMMABLE CURRENT MIRROR

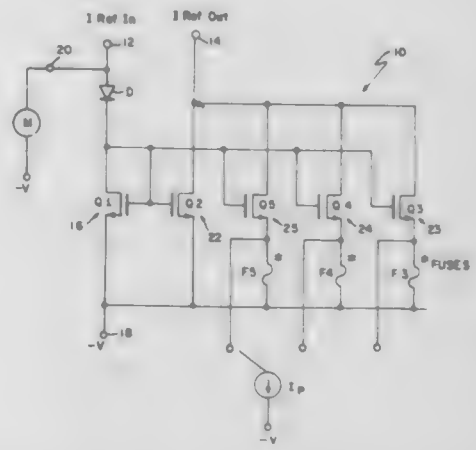
Kanti Bacrania, Palm Bay, Fla., assignor to Harris Corporation, Melbourne, Fla.

Filed Nov. 9, 1984, Ser. No. 669,788

Int. Cl.⁴ G05F *3/20*

U.S. Cl. 323—315

10 Claims



1. A programmable current mirror circuit comprising:

a controlling transistor having first and second terminals defining a current path and a control terminal, said first terminal being connected to a circuit input terminal, said second terminal being connected to a reference terminal and said control terminal being connected to said first terminal;

a primary controlled transistor having first and second terminals defining a current path and a control terminal, said first terminal being connected to a circuit output terminal, said second terminal being connected non-programmably to said reference terminal and said control terminal of said primary controlled transistor being connected to said control terminal of said controlling transistor; and

a plurality of secondary controlled transistors each having first and second terminals defining a current path and a control terminal, said first terminal being connected to said circuit output terminal, said control terminal of said secondary controlled transistor being connected to said control terminal of said primary controlled transistor and programmable means for selectively connecting said second terminal to said reference terminal to determine the match of current at said circuit input terminal and said circuit output terminal.

4,608,531

TEST SET FOR TESTING AS A UNIT AN AMPLIFIER SYSTEM HAVING SEVERAL MODULES

Michael L. Stephens, 834 CRS, MACMAA, Hurlburt Field, Fla. 32544

Filed May 3, 1983, Ser. No. 491,105

Int. Cl.⁴ G01R *15/12*

U.S. Cl. 324—73 R

2 Claims

1. A tester for an amplifier unit of an automatic flight control system of an aircraft, wherein the system includes input means comprising sensors and controls which directly or indirectly supply input signals to the amplifier unit, and output means comprising servomechanisms, with a flight director indicator having a plurality of indicators connected to indicate the output signals applied to the servomechanisms:

wherein said amplifier unit comprises several modules which plug into module receptacles on a common chassis, and

system receptacle means for receiving plug means connecting the amplifier unit into the system input means and output means, with chassis wiring interconnecting the module receptacles and system receptacle means, wherein the amplifier unit provides a plurality of functions with different modules, the output means having separate servomechanisms for the different functions, with at least some functions having more than one module;

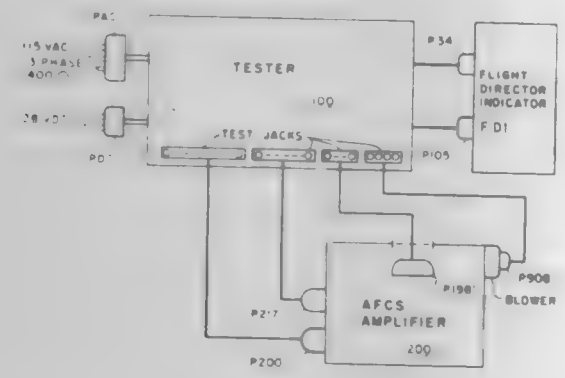
wherein said tester comprises:

a plurality of test jacks, wiring extending between the test jacks and a plurality of plugs comprising amplifier plug means for connection to said system receptacle means of an amplifier unit to be tested, and also indicator plug means for connection to a flight director indicator, each plug having a plurality of pins, the test jack being connected to individual pins of the amplifier plug means;

a plurality of impedance devices connected between a ground line and pins of the indicator plug means, the impedance devices also being connected to some of the test jacks and via said wiring to corresponding pins of the amplifier plug means to be connected in place of and simulate said servomechanisms;

a plurality of switches connected between a source of direct-current power and some of the test jacks for selectively providing power to the amplifier unit and to the flight director indicator to test different ones of said functions, and to simulate system input signals;

two identical signal sources with output test jacks, which permits jumper connections from the signal sources to test jacks of selected pins of the amplifier plug means to simu-



late system input signals, and permitting different signals to be jumpered to test jacks for separate inputs of the amplifier unit;

wherein each of said signal sources is an alternating current source comprising a transformer with a secondary winding having a grounded center tap, a potentiometer connected across the secondary winding with a moveable tap which when centered is at ground potential, movement of the tap in one direction provides output signals of one phase, and movement of the tap in the other direction provides output signals of the opposite phase, said signal sources each including a two-pole switch connected between its said secondary winding and its said potentiometer, with series resistors, to provide different output voltage ranges;

being so constructed and arranged that the amplifier unit may be tested as a unit the way it is used in the system, with indications on the flight director indicator, but independently of said system input means and output means, the amplifier unit along being removed from the aircraft for testing;

wherein said amplifier unit includes duplicate modules to provide dual channels for at least one function, with at least some of the input signals being also duplicated from said two sources and requiring duplicate output signals for the dual channels to indicate that both channels are operating normally;

wherein the tester is capable of providing the same input via jumpers from test jacks of the signal sources to test jacks for corresponding inputs of the duplicate modules for the dual channels so that the duplicate modules may be balanced, as indicated by the indicator means:

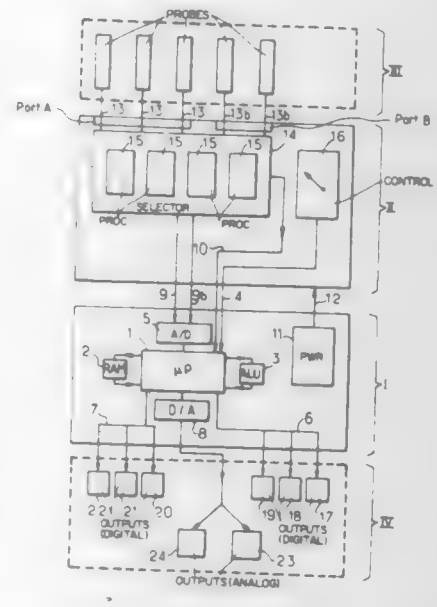
wherein at least one of the functions uses first and second modules, with the first module providing preprocessing for the second module, such that testing for the function is facilitated by having the modules tested together as a unit when simulated input signals are supplied to the first module and resulting output signals from the second module are monitored on the flight director indicator.

4,608,532

MULTI-PROBE METERING APPARATUS

Jean P. Ibar, Villiers S/Orge, France, and John R. Saffell, Farway Barton, Great Britain, assignors to Solomat S.A., Ballainvilliers, France

Filed Oct. 27, 1983, Ser. No. 545,983
Claims priority, application France, Dec. 3, 1982, 82 20364
Int. Cl.⁴ G01R *15/08, 15/10;* G01D *5/12*
U.S. Cl. 324—73 R
9 Claims



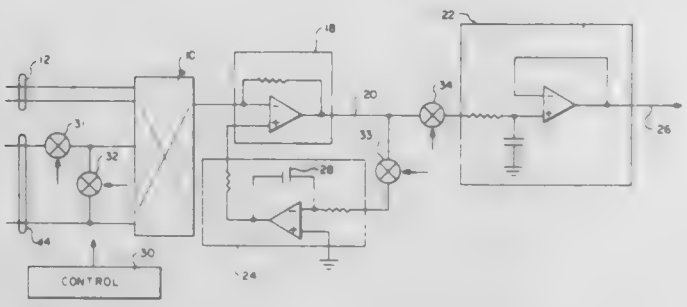
1. Multi-probe metering apparatus for measuring electrical magnitude or magnitudes associated with electrical magnitudes and for displaying the results or for transmitting them to users, the apparatus being characterised by a modular structure consisting of a central unit (I) comprising an input signal acquisition circuit providing signals for a memory processing circuit (**1, 2, 3**) supplying the display means and signal output means for users (**19, 24**) of at least one detachable module (II) establishing a link between the central unit (I) and a pick-up or pick-ups (III), the said module (II) being associated with one or a plurality of specific pick-ups (III), the said module (II) being itself connected (**4, 9, 10**) to the central unit (**1**) by electrical connections which are established at the same time as the mechanical connection is made between the module (II) and the central unit (I), each module (II) comprising processing circuits (**15**) linked to the pick-ups (III) which the module (II) is capable of accepting, and means (**16**, gate A, gate B) supplying the central unit (I) with information to identify the pick-up or pick-ups (III) with which the module (II) is associated in order to control within the central unit (I) the corresponding treatment of the signals provided by the pick-up(s) (III), each module having two input gates connected by two distinct routes to the central unit which receives and processes separately and independently the signals emanating from the two routes, after which it combines them.

4,608,533

AUTOMATIC COMPENSATION CIRCUIT FOR USE WITH ANALOG MULTIPLIER

Alan H. Starkie, San Jose, Calif., assignor to Electric Power Research Institute, Inc., Palo Alto, Calif.

Filed Jun. 22, 1983, Ser. No. 506,675
Int. Cl.[4] G06G *7/16*
U.S. Cl. 324—142 4 Claims



1. An automatic compensation circuit comprising

an analog multiplier connected to receive a first signal representing instantaneous voltage and a second signal representing instantaneous current for generating a third current signal representing the product of said first and second signals,

means for converting said third current signal to a fourth voltage signal, and

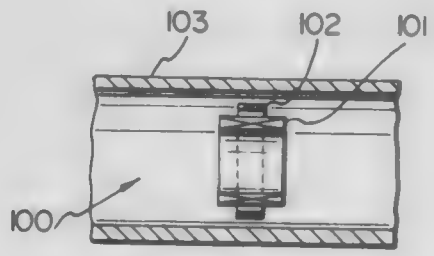
compensation means connected to said converting means for adjusting the output of said converting means to zero during zero crossing points of at least one of said first or second signals.

4,608,534

EDDY CURRENT PROBE FOR DETECTING LOCALIZED DEFECTS IN CYLINDRICAL COMPONENTS

Valentino Cecco, and Hugh W. Ghent, both of Deep River, Canada, assignors to Canadian Patents & Development Limited, Ottawa, Canada

Filed Jun. 16, 1983, Ser. No. 504,977
Claims priority, application Canada, Oct. 22, 1982, 414020
Int. Cl.[4] G01N *27/90;* G01R *33/12*
U.S. Cl. 324—238 6 Claims



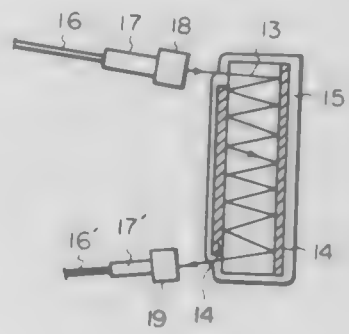
1. In an eddy current probe for internally or externally inspecting cylindrical components to detect a localized defect, a coil arrangement having two or more coils each having a predetermined axial length, connected in two arms of a four arm AC bridge detector circuit such that a least a first of the coils induces and senses eddy currents in a cylindrical component to be inspected, wherein the probe further includes a first thin cylindrical electrically conductive sleeve positioned coaxially with the first coil, so as to be located between the first coil and the cylindrical component, the sleeve being narrower than the axial length of the first coil and positioned symmetrically with respect to the axial length of the first coil to distort the induced eddy currents in phase and amplitude thereby generating a detected signal due to the localized defect in the cylindrical component that is distinct from detected noise signals.

4,608,535

MAGNETIC FIELD AND CURRENT MEASURING DEVICE USING A FARADAY CELL WITH A THIN ELECTRICALLY CONDUCTIVE FILM SUBSTANTIALLY COVERING THE FARADAY CELL

Kohji Tada; Yoshiki Kuhara; Masami Tatsumi, and Tsutomu Mitsui, all of Osaka, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Dec. 2, 1982, Ser. No. 446,395
Claims priority, application Japan, Dec. 7, 1981, 56-197350
Int. Cl.[4] G01R *33/02, 31/00;* G02B *5/30*
U.S. Cl. 324—244 3 Claims



1. A magnetic field and electric current measuring device which comprises:

a Faraday cell made of a material selected from the class consisting of bismuth silicon oxide ($Bi_{12}SiO_{20}$) and bismuth germanium oxide ($Bi_{12}GeO_{20}$),

an electrically conductive thin film applied to the outer surface of said Faraday cell and substantially completely surrounding said cell to provide an equipotential surface which prevents an electric field from acting upon the interior of said cell, and

means for passing polarized light back and forth at least once through said Faraday cell along the optic axis thereof,

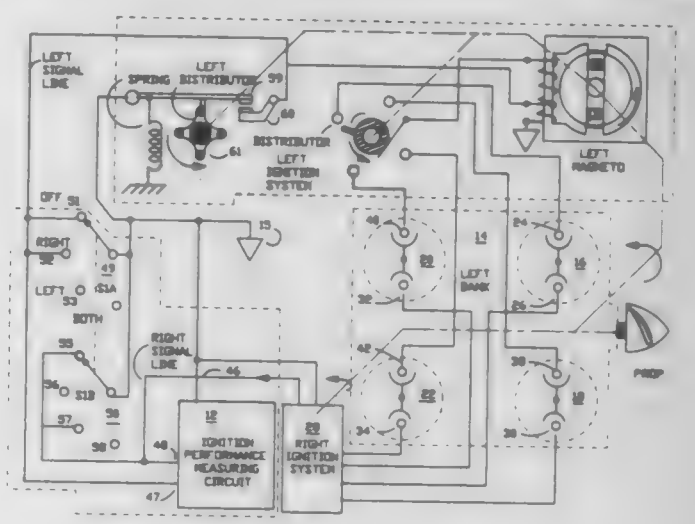
a magnetic field applied in the direction of the optic axis of said Faraday cell being measured based on an angle of rotation of the polarization plane of said polarized light.

4,608,536

IGNITION PERFORMANCE MEASURING CIRCUIT

Aaron R. Jacobs, 5821 Lakehaven Way, Yorba Linda, Calif. 92686, and John W. Gustafson, 2121 Valderas Dr., Apt. #64, Glendale, Calif. 91208

Filed Oct. 3, 1984, Ser. No. 657,389
Int. Cl.[4] F02P *17/00, 15/08*
U.S. Cl. 324—399 25 Claims



1. A dual ignition performance monitor circuit for use by an operator, the invention circuit being coupled to a reciprocating internal combustion engine having a predetermined number of cylinders, each cylinder having

a left and right spark plug,

a left ignition system providing ignition firing signals to each respective left spark plug in a predetermined sequence and a right ignition system providing ignition firing signals to each respective right spark plug in a predetermined sequence, said left ignition system having

a left signal line providing a left attenuated ignition signal and said right ignition system having

a right signal line providing a right attenuated ignition signal,

said attenuated left and right ignition signals forming a recurrent series of relatively concurrent left and right attenuated ignition signal pairs,

said ignition signal pairs corresponding in number to said predetermined number of cylinders,

each respective left and right attenuated ignition signal corresponding to the ignition firing signal applied to the respective engine spark plug in operation, said ignition performance monitor circuit comprising:

means for conditioning and scaling said left and right attenuated ignition signals and for providing respective left and right conditioned attenuated ignition signals;

first channel means having

first and second inputs, said first and second inputs being coupled respectively to said left and right conditioned attenuated ignition signals for measuring the relative peak amplitude of the algebraic difference between

relatively concurrent left and right conditioned attenuated ignition signals and for providing a repeating series of amplitude difference signals, each amplitude difference signal corresponding in sequence to

a respective ignition signal pair and corresponding in peak amplitude to the algebraic difference between the left and right conditioned attenuated ignition signals forming the respective ignition signal pair;

means responsive to said amplitude difference signals for conditioning said series of amplitude difference signals and for scaling and comparing said amplitude difference signal with

a predetermined amplitude reference signal and for providing an

ignition amplitude signal;

second channel means having first and second inputs coupled respectively to said left and right conditioned attenuated ignition signals for measuring the relative time difference between said left and right conditioned attenuated ignition signals, and for providing

a repeating series of phase difference signals, each phase difference signal corresponding to the time difference between relatively concurrent left and right conditioned attenuated ignition signals;

means responsive to said repeating series of phase difference signals for averaging and scaling said repeating series of phase difference signals and providing

a timing signal characterizing the averaged relative phase difference signal in relation to

a predetermined phase reference signal;

whereby, degradation in said dual ignition system is monitored by observing the magnitude of said ignition amplitude signal indicating the difference between the amplitude difference signal and said predetermined amplitude reference signal, and by observing the magnitude of said phase difference signal with respect to said predetermined phase reference signal.

4,608,537

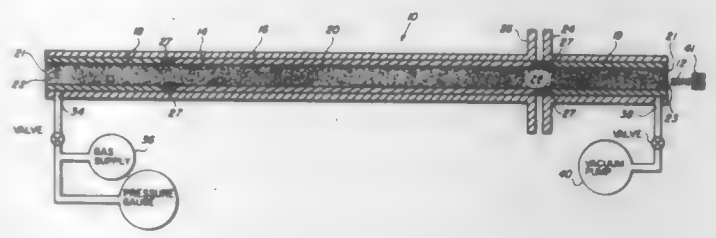
LOW PERTURBATION ELECTRON INJECTOR FOR CYCLIC ACCELERATORS

Frederick Mako, Fairfax Station, Va.; Wallace Manheimer, Silver Spring; Christos A. Kapetanokos, Bethesda, both of Md., and Frederick Sandel, Alexandria, Va., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jun. 14, 1984, Ser. No. 620,646

Int. Cl.[4] H05H *11/00, 7/08*

U.S. Cl. 328—237 **7 Claims**



1. An apparatus for conducting an electron beam through a high intensity section of an external magnetic field, said high intensity section having a first side and a second side and being disposed therebetween, comprising

a first region for conducting an electron beam through said high intensity external magnetic field, said first region being located in and running through the high intensity section of the external magnetic field from the first side to the second side thereof;

means for producing a tapered current density having a localized azimuthal magnetic field within said first region, said localized azimuthal field being greater than said external field's transverse component within the first region;

said tapered current density means located in the first region in such a way that the tapered current density begins on the first side and ends on the second side of the high intensity section of the external magnetic field, said tapered current density means being magnetically neutral outside the first region;

and means for injecting an electron beam into the first region so the electron beam will be axially conducted through the tapered current density means.

4,608,538

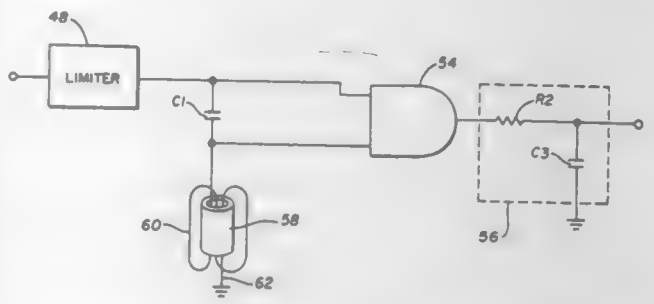
FM QUADRATURE DETECTOR WITH FERRITE BEAD TUNED CIRCUIT

Keith V. Anderson, Rural Meade County, S. Dak., assignor to Anderson Scientific, Black Hawk, S. Dak.

Filed Dec. 7, 1983, Ser. No. 558,920

Int. Cl.[4] H03D *3/00, 3/26*

U.S. Cl. 329—103 **8 Claims**



1. A quadrature detector circuit for demodulating frequency modulated information signals having a specified center frequency, comprising:

an input terminal for receiving said frequency modulated information signals;

means operably coupled to said terminal for splitting said signal into a reference portion and a variable portion;

first means for shifting the phase of said variable signal portion operably coupled to said splitting means, for shifting the phase of said variable signal portion relative to the

phase of said reference signal portion by a predetermined amount of phase shift;

second means for shifting the phase of said variable signal portion relative to said predetermined amount of phase shift in proportion to an amount of frequency change of said information signal relative to said center frequency; and

means operably coupled to said splitting means and said first and second shifting means for detecting coincidence between said reference signal portion and said variable signal portion,

said second phase shifting means comprising a ferrite bead and means operably coupling said bead to said first phase shifting means.

4,608,539

FM DETECTOR WITH INJECTION LOCKED DIVIDER INPUT CIRCUIT

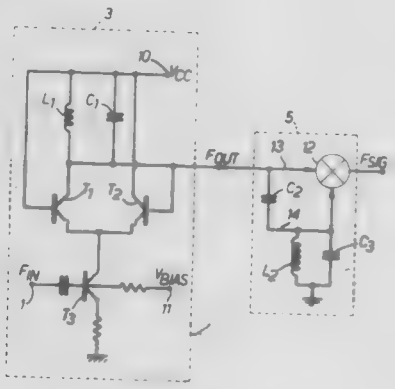
Rodney J. Lawton, Wiltshire, England, assignor to Plessey Overseas Limited, Ilford, England

Filed Nov. 16, 1984, Ser. No. 671,948

Claims priority, application United Kingdom, Nov. 18, 1983, 8330761; Aug. 17, 1984, 8421012

Int. Cl.[4] H03D *3/02*; H04B *1/16, 7/00*

U.S. Cl. 329—103 **4 Claims**



1. A frequency modulation (FM) detection arrangement comprising:

a frequency divider having a multiplier for providing a frequency divided signal in response to a radio signal having a modulating wave thereon received at a first input of said multiplier and in response to said frequency divided signal received, via a band-pass filter, at a second input of said multiplier; and

an FM detector coupled to said frequency divider and having a phase-sensitive detector for receiving said frequency divided signal via first and second signal paths and for providing a signal indicative of the information content of the modulating wave of said radio signal.

4,608,540

PHASE-SHIFT KEYING DEMODULATOR

Masahiro Tsuchiya, and Masaharu Mori, both of Tokyo, Japan, assignors to Clarion Co., Ltd., Tokyo, Japan

Filed Jun. 26, 1984, Ser. No. 624,638

Claims priority, application Japan, Jul. 4, 1983, 58-122171; Jul. 4, 1983, 58-122172

Int. Cl.[4] H03K *9/06*

U.S. Cl. 329—107 **4 Claims**

1. A PSK (phase-shift keying) demodulator which comprises:

an input terminal to which a PSK signal encoded by modulating the phase of a carrier with a digital signal is applied;

first reference signal oscillation means for generating a first reference signal having the same frequency as said carrier;

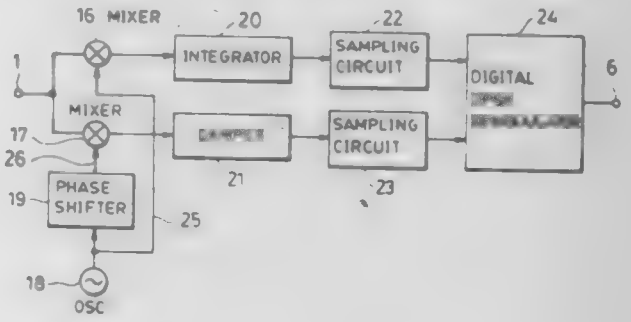
second reference signal oscillation means for generating a second reference signal having a 90 degree phase difference from said first reference signal;

first multiplication means for multiplying said PSK signal and said first reference signal;

second multiplication means for multiplying said PSK signal and said second reference signal;

first phase data extracting means for extracting a first low pass component from the multiplication output from said first multiplication means, said first low pass component representing carrier phase data;

second phase data extracting means for extracting a second low pass component from the multiplication output from said second multiplication means, said second low pass component representing carrier phase data; and



decoding means for demodulating said digital signal from said first and second low pass components, said decoding means including: A/D conversion means for converting each of said first and second low pass components from an analog to a digital signal; memory means for storing each said digital signal from said A/D conversion means for a time corresponding to one symbol; and discrimination means for comparing a digital signal supplied from said A/D conversion means one symbol later with a respective said digital signal stored in said memory means and discriminating whether said compared digital signals each have the same phase difference θ or have respective phase differences of θ and $\theta \pm 180°$.

4,608,541

ISOLATION AMPLIFIER

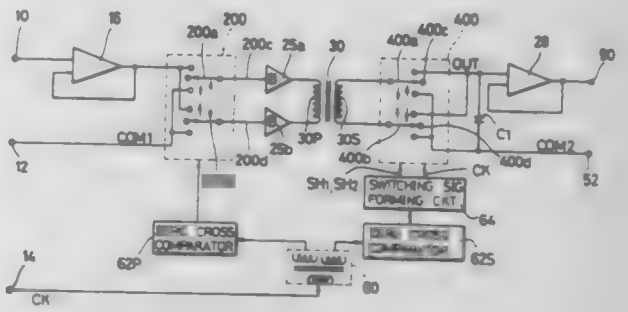
Ikuo Moriwaki, and Shinji Taniguchi, both of Tokyo, Japan, assignors to Analog Devices, KK, Tokyo, Japan

Filed May 21, 1985, Ser. No. 736,653

Claims priority, application Japan, Aug. 10, 1984, 59-168190; Oct. 8, 1984, 59-210670

Int. Cl.[4] H03F *3/38, 3/217*

U.S. Cl. 330—10 **13 Claims**



1. An isolation amplifier comprising:

an isolation transformer;

switching type balanced modulator means for delivering to the input of said isolation transformer a square wave carrier modulated by an input signal;

demodulator means for reproducing the input signal by inverting alternate ones of the positive and negative pulses from the output of said isolation transformer;

a holding capacitor coupled to the output of said demodulator means;

switch means interposed to prevent the demodulated output signal of said demodulator from being delivered to said

capacitor during each discontinuous gap between the edges of said positive and negative pulses; and

a pulse forming circuit connected to turn off said switch means and place said holding capacitor in a holding state during the period of such discontinuity to supply the charge previously stored therein.

4,608,542

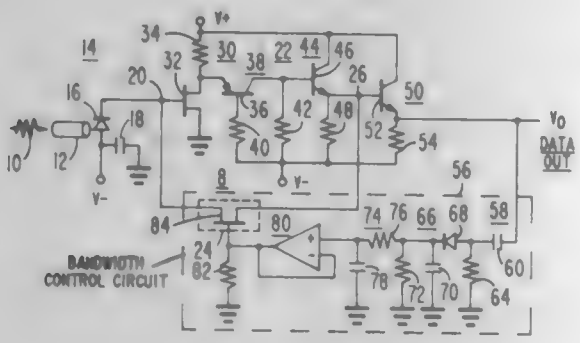
BANDWIDTH CONTROLLED DATA AMPLIFIER

Stefan A. Siegel, Mercer County, N.J., assignor to RCA Corporation, Princeton, N.J.

Filed Jun. 6, 1985, Ser. No. 741,874

Int. Cl.[4] H03G *3/30*; H03F *3/08*

U.S. Cl. 330—279 **11 Claims**



1. An amplifying arrangement for a data signal, comprising:

a voltage amplifier including signal input and signal output terminals and adapted for amplifying said data signal;

controllable feedback resistance means coupled between said signal input and signal output terminals of said amplifier to form a transimpedance amplifier;

differentiating means coupled to receive said data signal for generating a stream of differentiating pulses including a pulse in response to each transition of said data signal; and

control signal generating means coupled to said differentiating means and to said controllable feedback resistance means for generating a control signal for controlling said resistance means to reduce said resistance in response to increases in the number per unit time of said pulses and to increase said resistance in response to decreases in the number per unit time of said pulses whereby the resistance of said feedback means is responsive to the data rate of said data signal for selecting the bandwidth of said transimpedance amplifier.

4,608,543

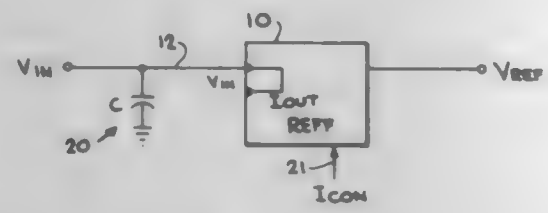
CONTROLLABLE EFFECTIVE RESISTANCE AND PHASE LOCK LOOP WITH CONTROLLABLE FILTER

Neil R. Adams, San Francisco, Calif., assignor to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Dec. 17, 1984, Ser. No. 682,384

Int. Cl.[4] H03L *7/06*; H03H *7/44*

U.S. Cl. 331—8 **16 Claims**



1. An apparatus comprising:

a differential pair of transistors, one of said transistors being base biased in response to an input voltage and the other of said transistors being base biased in response to a reference voltage, said differential pair of transistors providing an output current at an output node of said differential pair of transistors which is proportional to the difference between said reference voltage and said input voltage, said input voltage being supplied to an input node of said differential pair of transistors, the constant of proportionality being determinable by a selectable current source means;

said current source means comprising a first variable current source means, responsive to a control signal, for providing a first settable current at the collector of said one transistor and a second variable current source means, responsive to the control signal, for providing a second settable current at the emitters of said differential pair of transistors, both first and second said settable currents acting in conjunction to affect the magnitude of the output current; and

control means for supplying the control signal to said first and second variable current source means.

4,608,544

OSCILLATOR CIRCUIT

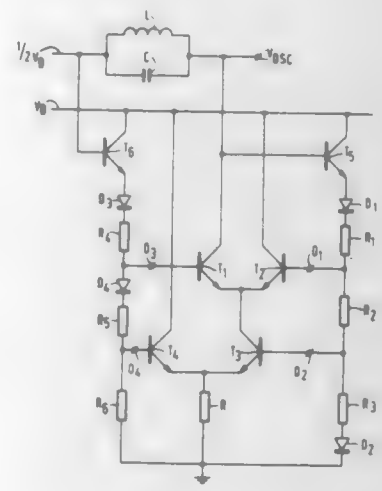
Ernst H. Nordholt, Berkel en Rodenrijs, and Cornelis A. M. Boon, Eindhoven, both of Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 27, 1984, Ser. No. 675,110

Claims priority, application Netherlands, Nov. 29, 1983, 8304085

Int. Cl.[4] H03L *5/00*

U.S. Cl. 331—109 **3 Claims**



1. An oscillator circuit comprising first and second transistors whose emitters are intercoupled and jointly connected to a variable current source, the first transistor being connected in a grounded-base connection, also comprising a parallel resonant circuit coupled to the collector of the first transistor, this collector being coupled to the base of the second transistor for a regenerative feedback of the circuit voltage, characterized in that said collector is also coupled to a control unit of the variable current source for an instantaneous variation of the current of the variable current source in dependence on the circuit voltage; and

wherein said variable current source comprises a third transistor whose collector is connected to the intercoupled emitters of the two first and second transistors and that the collector of the first transistor is coupled via an emitter follower to a first voltage divider a first output of which is connected to the base of the second transistor and a second output to the base of the third transistor.

4,608,545

MOVABLE CONTACT ARM ASSEMBLY FOR A CURRENT LIMITING CIRCUIT BREAKER

Andrew J. Kralik, Marysville, Ohio, assignor to Siemens-Allis, Inc., Atlanta, Ga.

Filed Sep. 24, 1985, Ser. No. 779,587

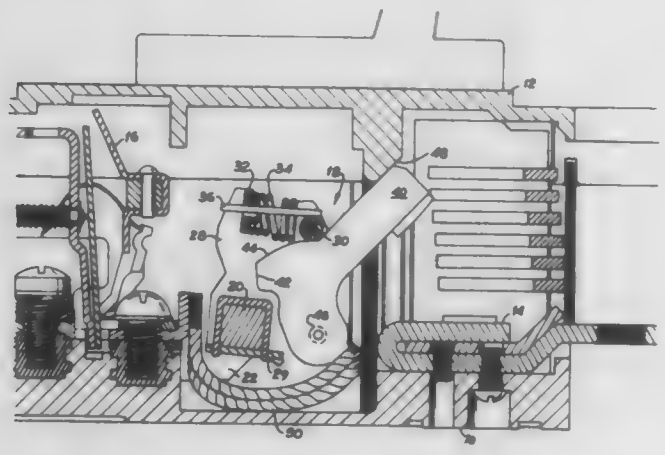
Int. Cl.[4] H01H *75/00, 77/00, 83/00*

U.S. Cl. 335—16 **15 Claims**

1. A movable contact arm assembly for a circuit breaker comprising:

a carrier having first and second guide plates with aligned roller guides and bracket supports;

a roller having a middle portion extending between the guide plates and end portions engaging the roller guides;
a bracket extending between the guide plates and engaging the bracket supports;
a spring positioned between the bracket and roller urging the roller along the roller guide; and



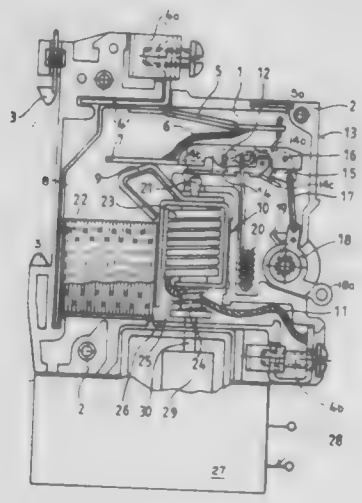
a contact arm having first and second cam surfaces and being positioned between the guide plates and pivotally connected thereto, said roller riding in said guide on said first and second cam surfaces, said roller moving from the first cam surface to the second cam surface as the contact arm moves from a closed position to an open position in response to preselected electromagnetic repulsion forces.

4,608,546

AUTOMATIC SWITCH WITH IMPACT-ARMATURE TRIPPING DEVICE

Joseph Westermeyer, Nuremberg, Fed. Rep. of Germany, assignor to Sursum Elektrizitatsgesellschaft Leyhausen GmbH & Co., Nuremberg, Fed. Rep. of Germany

Filed Oct. 23, 1984, Ser. No. 664,009
Claims priority, application Fed. Rep. of Germany, Oct. 29, 1983, 3339400
Int. Cl.⁴ H01H *83/00, 75/00*
U.S. Cl. 335—20 **11 Claims**



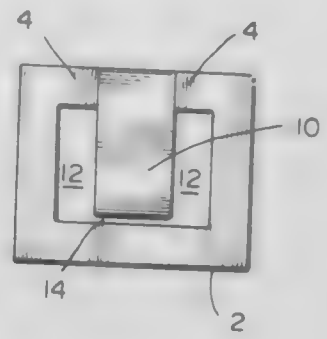
1. In an automatic switch including a narrow housing having a side wall, a movable contact element movable by a switch mechanism into contact with a fixed contact element to a closed position to be held in the closed position under force, and an impact-armature tripping means to release the closing force and open the switch contact elements having a coil, an impact armature core in the coil, an armature rod projecting forwardly toward the contacts, and a back side opposite to the side of the projecting rod disposed near and parallel to a region of the side wall, the improvement comprising:
the exterior of the side wall region parallel to the back side of the impact-armature tripping means is free of component parts of the automatic switch;
an axial bore hole in said armature core; and
an additional circuit-breaking device comprising,
an operating device,
a coupling rod operatively supported by said operating device to be activated thereby and projecting therefrom through said side wall region and into said axial bore hole in reciprocal sliding relationship therewith;
so that actuation of said coupling rod by said operating device moves said coupling rod through said axial bore hole to move the armature rod to open the switch contact elements.

4,608,547

CORE AND CORE LAMINATIONS FOR ELECTROMAGNETIC DEVICES

Gera Iron, Ein Hashofet, Israel, assignor to Electrical Accessories Ein Hashofet, Kibbutz Ein Hashofet, Israel

Filed May 15, 1985, Ser. No. 734,051
Claims priority, application Israel, May 22, 1984, 71888
Int. Cl.⁴ H01F *3/00*
U.S. Cl. 335—297 **5 Claims**



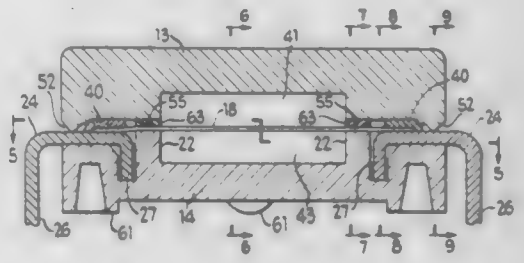
1. A core lamination for electromagnetic devices, comprising:
an open, substantially C-shaped frame having inwardly pointing end portions facing one another across a gap;
a central limb of a substantially rectangular shape, tightly insertable with its width into the gap between said end portions and, when thus inserted, defining within the space enclosed by said frame two window-like openings, each of which has a height-to-width ratio of about 3:1, wherein the shapes and relative dimensions of said open frame and said central limb are such that they are capable of interlocking and of fully tesselating a surface delimited by two parallel edges.

4,608,548

MINIATURE FUSE

John Borzoni, Des Plaines, Ill., assignor to Littelfuse, Inc., Des Plaines, Ill.

Filed Jan. 4, 1985, Ser. No. 688,956
Int. Cl.⁴ H01H *85/02*
U.S. Cl. 337—201 **22 Claims**



1. A miniature electrical fuse for use with a circuit voltage of at least 60 volts comprising:
a housing comprising an insulating base defining a cavity-forming depression thereon opening onto the top or inner side thereof and presenting a pair of insulating surfaces on

opposite sides of said depression and a cover enclosing the top of said base;

a pair of electrically conducting terminals mounted on said base beneath said cover, each terminal having a fuse wire-receiving inner end portion on said base and an outer end portion extending away from said base; and

a length of fuse wire extending generally along said insulating surfaces where it spans said depression and extends beyond the outer ends of said surfaces, said inner end portions of said terminals being disposed in planes below the outer ends of said insulating surfaces so as to be out of alignment therewith and so that the fuse wire tautly extends over the outer ends of said insulating surfaces and then makes connection to said inner end portions of said terminals.

4,608,549

HYDROGEN-SELECTIVE SENSOR AND MANUFACTURING METHOD THEREFOR

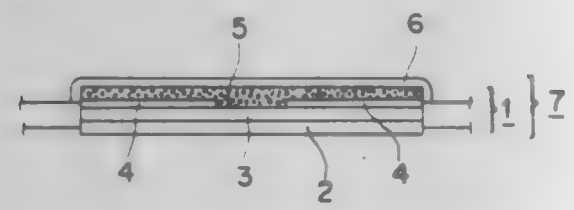
Kiyoshi Fukui, Wakayama, Japan, assignor to New Cosmos Electric Co. Ltd., Japan

Filed Dec. 22, 1983, Ser. No. 564,446

Claims priority, application Japan, Dec. 28, 1982, 57-227568

Int. Cl.⁴ H01L *7/00*; H01B *1/06*

U.S. Cl. 338—34 **6 Claims**



1. A hydrogen-selective gas sensor comprising a gas-sensing element composed of a semiconductor, and a thin layer inactive for oxidation of hydrogen and formed on a surface of said gas-sensing element so as to cover same, the thin layer being selected from the group consisting of silicon oxide, aluminum oxide and silicon nitride, and the semiconductor comprising a sintered piece of metal oxide selected from the group consisting of SnO_2, ZnO, Co_3O_4, WO_3, In_2O_3+Pt, α-Fe_2O_3 and $BaTiO_3+Np_2O_3$, wherein said thin layer has a diminished porosity to permit easy passage of hydrogen molecules, and to check passage of molecules of other gases greater than hydrogen molecules.

4,608,550

ELECTRIC SIGNAL TRANSMISSION SYSTEM ON A ROAD VEHICLE

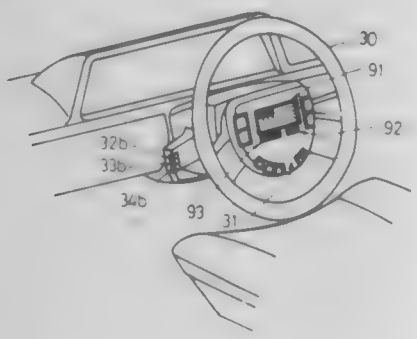
Kazuyuki Umebayashi, and Nobuyasu Suzumura, both of Tokyo, Japan, assignors to Aisin Seiki Kabushikikaisha, Japan

Filed Jul. 19, 1982, Ser. No. 399,582

Claims priority, application Japan, Aug. 25, 1981, 56-132926; Aug. 25, 1981, 56-132927; Aug. 26, 1981, 56-133579

Int. Cl.⁴ G08C *1/00*

U.S. Cl. 340—22 **11 Claims**



1. An electric signal transmission system between a control board on a steering wheel and an electric controller fixed to a road-vehicle, said road-vehicle including a road-vehicle power supply, said electric signal transmission system comprising:

a control board supporting mechanism mounted on a steering wheel adapted to support said control board in a stationary state relative to said road-vehicle irrespective of rotation of said steering wheel;

a plurality of input key switches, a modulation circuit, a transmitting control electronic device coupled to said modulation circuit for controlling transmission of information, and a first constant voltage power supply circuit (70) which are incorparated in said control board, said modulation circuit comprising a FSK modulation circuit (100) having a FSK modulator (102), an output cut-off gate (103) for controlling time divisional exchange and a coupling capacitor connected to a first electric line (SPL) for differentiating a FSK modulated binary signal and for transmitting the differentiated signal to said first electric line (SPL);

an electric controller disposed on the road-vehicle at a position mechanically remote from said steering wheel and including a demodulation circuit, a receiving control electronic device coupled to said demodulation circuit for controlling reception of said information, and a second constant voltage power supply circuit; and

an electric coupling means adapted to electrically couple said control board and said electric controller, said electric coupling means comprising: a first slip ring fixedly mounted to said control board; a high frequency interrupting coil (HCL1) for connecting said first constant voltage power supply circuit (70) to said first electric line (SPL), said first electric line being connected to said first slip ring; a second slip ring opposite said first slip ring, a second electric line (VPL) connected to said second slip ring with said demodulation circuit being coupled to said second electric line, and a second high frequency interrupting coil (HCL2) for coupling said second constant voltage power supply (120) and said road-vehicle power supply to said second electric line, and brushes brought into contact with both of said slip rings, whereby said slip rings conduct modulated communications between said modulation and demodulation circuits while simultaneously coupling said first and second constant voltage power supply circuits to said road-vehicle power supply.

4,608,551

SPEED ALARM SYSTEM FOR AUTOMOTIVE VEHICLE

Yuji Takeo, Toyokawa, and Tomohisa Yoshimi, Gamagoori, both of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Jul. 3, 1984, Ser. No. 627,617

Claims priority, application Japan, Jul. 5, 1983, 58-122079; May 1, 1984, 59-89120

Int. Cl.⁴ B60Q *1/00*

U.S. Cl. 340—53 **9 Claims**

1. A speed alarm system for an automotive vehicle, comprising:

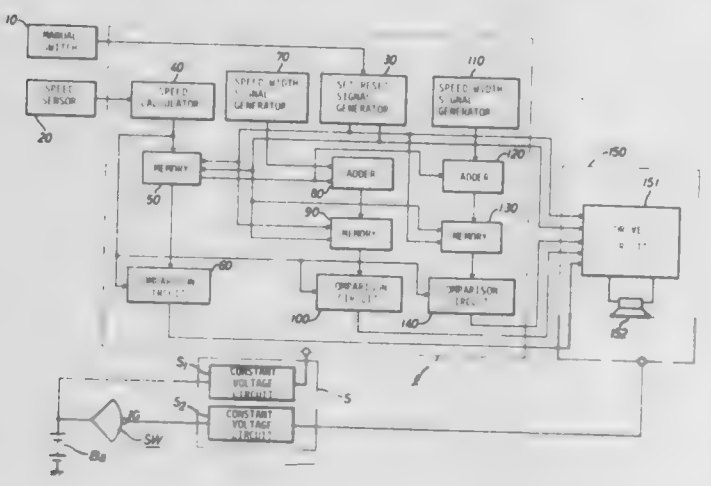
first means for producing a speed signal indicative of the actual speed of the vehicle;

processing means for: (1) producing a first command speed signal indicative of a first command speed, (2) producing a speed width signal indicative of a predetermined speed width, (3) adding a value of said speed width signal to a value of said first command speed signal to produce a second command speed signal indicative of a second command speed defined by the added value, (4) producing a first output signal when a value of said speed signal exceeds the first command speed, and for maintaining it for a first predetermined alarm time, (5) producing a second output signal when the value of said speed signal exceeds the second command speed, and for maintaining it for a second predetermined alarm time, (6) producing a first command speed display signal indicative of the first command speed when the value of said speed signal exceeds

the value of said first command speed signal and maintaining it until the value of said speed signal reaches the value of said second command speed signal or the value of said speed signal decreases below the value of said first command speed signal, (7) producing a second command speed display signal indicative of the second command speed when the value of said speed signal exceeds the value of said second command speed signal and maintaining said second command speed display signal while the value of said speed signal is maintained in a value larger than the value of said first command speed signal;

means responsive to said first and second output signals for generating first and second alarm sounds respectively; and

a single display means responsive to said first and second command speed display signals for producing different displays corresponding to said first and second command speeds, respectively.

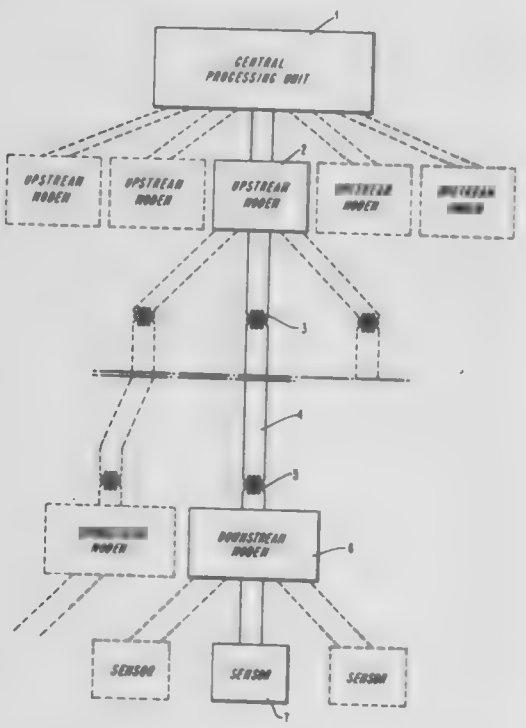


4,608,552

PROCESS AND DEVICE FOR THE REMOTE TRANSMISSION OF SIGNALS AND APPLICATION TO THE DETECTION AND/OR MEASUREMENT OF THE QUANITY OF COMBUSTIBLE GAS IN AN ATMOSPHERE

Maurice Boutonnat, Gouvieux, and Gérard Rose, Villers Saint Paul, both of France, assignors to Charbonnages de France, Paris, France

Filed Dec. 13, 1982, Ser. No. 449,153
Claims priority, application France, Dec. 14, 1981, 81 23272
Int. Cl.⁴ H04Q *9/00*; G08C *19/16*
U.S. Cl. 340—310 R **18 Claims**



1. A process for remotely transmitting data signals issued by at least one sensor from that sensor to a central station over a transmission line comprising the steps of:

(a) supplying to said transmission line an alternating current signal of approximately constant current intensity;

(b) coupling said sensor to said line to power said sensor using said alternating current signal on said line;

(c) employing said alternating current signal to transmit an interrogation signal from said central station to said sensor over said transmission line; and

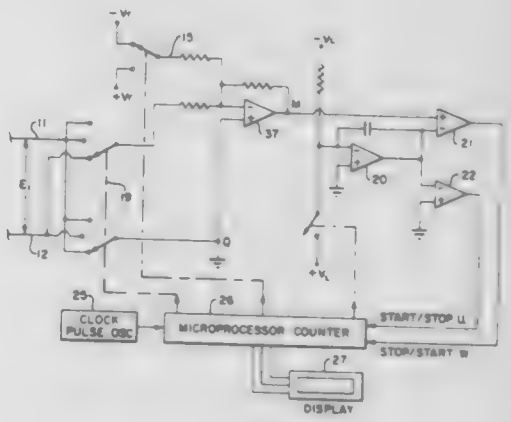
(d) employing said alternating current signal to transmit a multibit, digital data signal from said sensor to said central station over said transmission line is response to receipt of said interrogation signal by transmitting over said line a complete bit of digital information in a cycle of said alternating current signal by changing, over a complete cycle, the value of a load applied at said sensor to said transmission line at zero-cross over points of said alternating current signal.

4,608,553

ANALOG TO DIGITAL CONVERTER WITHOUT ZERO DRIFT

A. Neuman Ormond, 12020 E. Rivera Rd., Santa Fe Springs, Calif. 90670

Continuation-in-part of Ser. No. 262,555, May 11, 1981. This application Mar. 1, 1983, Ser. No. 471,180
Int. Cl.⁴ H03K *13/02*
U.S. Cl. 340—347 NT **1 Claim**



1. A system for converting an analog signal to a numerical digital count directly proportional to said analog signal without zero drift, including, in combination:

(a) a differential operational amplifier means;

(b) a source providing a reference voltage connected to said differential operational amplifier means;

(c) a first reversing switch connected to pass said analog signal to the differential operational amplifier means such that the analog signal is added to the reference voltage when said switch is in a first position to provide two first output voltage levels;

(d) a ramp voltage generating means;

(e) two cross-over detectors connected to receive said two first output voltage levels respectively and a first ramp voltage from said ramp voltage generating means to provide first start and stop signals at points in time when said first ramp voltage crosses over said two first output voltage levels;

(f) an oscillator for generating a series of clock pulses;

(g) means for effecting a first conversion including a counter for said clock pulses connected to receive said first start and stop signals from said cross-over detectors to provide a first numerical count of N1 pulses, throwing of said first reversing switch to a second position resulting in said analog signal being subtracted from said reference voltage to provide two second output voltage levels from said differential operational amplifier means and result in second start and stop signals from said cross-over detectors when a second ramp voltage from said ramp voltage

generator of the same slope as said first ramp voltage crosses over said two second output voltage levels, said second start and stop signals starting and stopping said counter to provide a second numerical count of N2 pulses; and,

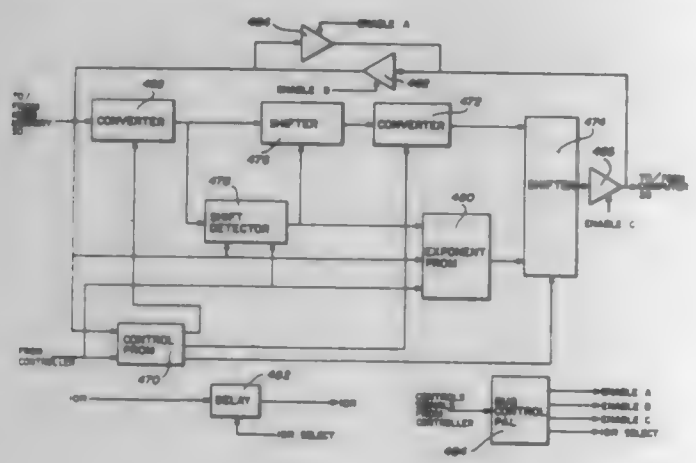
(h) means for dividing N1−N2 by N1+N2 to provide said numerical count, said differential operational amplifier means including an operational amplifier haveing a single ended input and ground terminals for receiving said analog signal and reference voltage signal, one of said first two output voltage levels constituting ground voltage level and the other the output from said operational amplifier when said analog signal is added to said reference voltage, and one of said second two output voltage levels constituting ground voltage level and the other the output level from said operational amplifier when said analog signal is subtracted from said reference voltage.

4,608,554

ASYNCHRONOUS PARALLEL FIXED POINT CONVERTER

Ron B. Blair, Louisville, Tex., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Sep. 14, 1982, Ser. No. 417,978
Int. Cl.[4] G06F *5/00*
U.S. Cl. 340—347 DD 5 Claims



1. In a high speed data processing system having a host computer wherein fixed point parallel digital data is converted to floating point parallel digital data, a software configurable electronic circuit comprising:

slave means connected to said host computer for receiving control signals;

means connected to said slave means for delaying a control signal a predetermined time;

receiver means connected to said computer for receiving fixed point parallel digital data;

shift means connected to said receiver means for shifting said fixed point parallel digital data asynchronously;

calculate means connected to said shift means for simultaneously calculating an exponent due to a shift in said parallel digital data; and

output means connected to said calculate means for providing an output of said shifted digital data with said exponent.

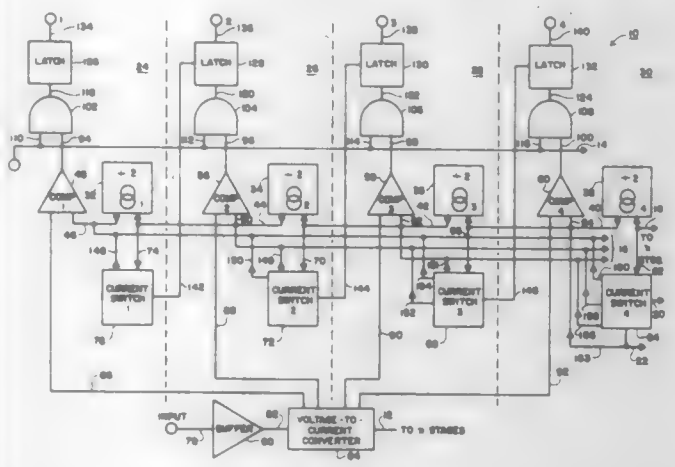
4,608,555

ANALOG TO DIGITAL FLASH CONVERTER

Werner H. Hoeft, 12746 Plymouth Dr., Saratoga, Calif. 95070

Filed Dec. 20, 1982, Ser. No. 450,929
Int. Cl.[4] H03M *1/36*
U.S. Cl. 340—347 AD 18 Claims

1. An analog to digital converter providing a multiple bit, parallel output arranged in more significant to less significant bits, comprising means for providing an analog input signal as a parallel input to each of a plurality of parallel converter stages, each of said stages converting said input to a bit of the output from said analog to digital converter, each of said converter stages other than a most significant stage including a comparator connected to receive the input from said analog signal providing means in equivalent form, means for providing a reference which is dependent on a state of more significant bit stages to the comparators of each of said converter stages, each dependent reference providing means having a divider connected to provide a first signal derived from the dependent reference of any next adjacent more significant bit converter stage having such a dependent reference to the comparator of its converter stage, and a switch, said dependent reference providing means also providing a second signal comprising the dependent reference of any next adjacent more significant bit converter stage having such a dependent reference to the switch, the switch of each converter stage being



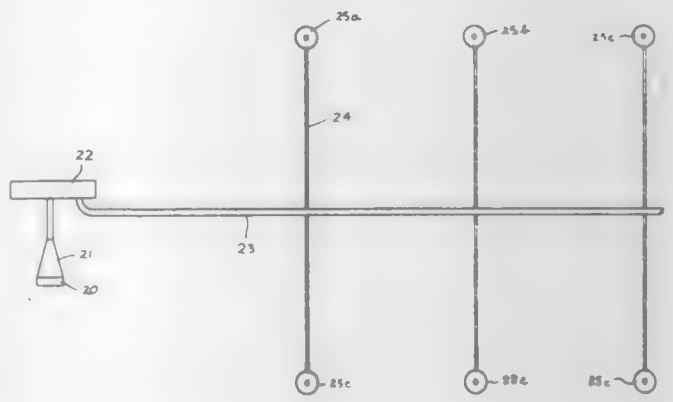
connected for selectively supplying the second signal to the comparator of its converter stage and to the comparators of any less significant bit converter stages, the divider of each converter stage further providing the first signal as an input to the divider of said dependent reference providing means of any next adjacent less significant bit converter stage, the comparator of each of said converter stages being connected to provide one output bit for said analog to digital converter and to control the switch of any next adjacent less significant bit converter stage for selectively supplying the second signal in that next adjacent less significant bit converter stage, said plurality of converter stages further being configured to carry out conversion of the analog input signal to a like plurality of parallel digital output bits from said converter simultaneously.

4,608,556

SMOKE DETECTION APPARATUS

Martin T. Cole, 29 Stafford Street, Huntingdale, Victoria, Australia

Filed Jul. 2, 1984, Ser. No. 626,706
Claims priority, application Australia, Jul. 4, 1983, PG0116
Int. Cl.[4] G08B *19/00*
U.S. Cl. 340—628 5 Claims



1. In a smoke detector system including a sampling pipe which is connected to an associated smoke detection device, the improvement comprising:

an aperatured housing adapted for connection to said pipe at

a point on said pipe remote from the connection of said pipe to said associated smoke detection device;

plug means in said housing for controlling flow of ambient gaseous atmosphere to said sampling pipe such that under normal ambient conditions ambient gaseous atmosphere is blocked from said sampling pipe;

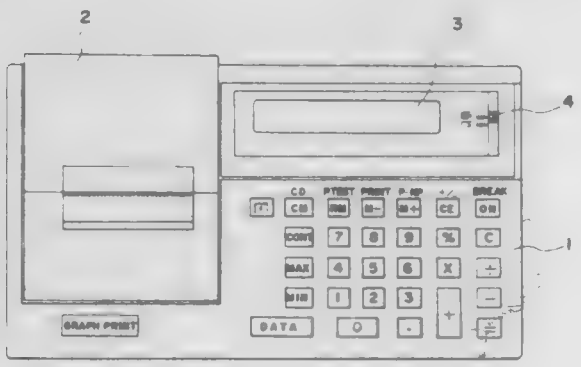
said plug means comprising a low melting point substance such that when the ambient temperature exceeds the melting temperature of said substance, said plug means becomes ineffective to block the flow of ambient gaseous atmosphere, and ambient gaseous atmosphere is admitted to said sampling pipe for exposure to said associated smoke detection device.

4,608,557

GRAPH-DRAWING MACHINE

Yasuhiro Nakanishi, Nara, and Toshio Nishimura, Joyo, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Sep. 2, 1983, Ser. No. 528,846
Claims priority, application Japan, Sep. 10, 1982, 57-158393
Int. Cl.[4] G09G *3/00*
U.S. Cl. 340—715 4 Claims



1. A graph drawing machine for producing a graph from inputted numerical data, comprising:

key input means for inputting numerical data and control commands;

control means responsive to said key input means for storing and processing the numerical data in preparation for producing a graph according to inputted control commands on a record medium, said control means including

first memory means for storing numerical data input by the key input means;

second memory means for storing control command programs and machine function programs;

preset means for designating a preset top and bottom margin for graphing the inputted numerical data on said record medium, said top and bottom margins corresponding to maximum and minimum values, respectively, of said numerical data;

graphing means responsive to the key input means and the preset means for producing a graph from the inputted numerical data in which numerical data exceeding the preset values are printed in numerical form outside of said margins and not graphed;

printer means responsive to said control means and said preset means for printing a graph and said numerical data exceeding said preset values on said record medium; and

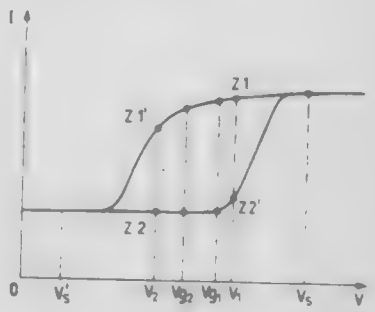
display means responsive to said key input means and said control means for displaying any of said numerical data.

4,608,558

ADDRESSING METHOD FOR A MULTIPLEXABLE, BISTABLE LIQUID CRYSTAL DISPLAY

Hermann Amstutz, Mellingen; Meinolph Kaufmann, Baden, and Terry J. Scheffer, Forch, all of Switzerland, assignors to BBC Brown, Boveri & Company, Limited, Baden, Switzerland

Filed Sep. 22, 1983, Ser. No. 534,715
Claims priority, application Fed. Rep. of Germany, Sep. 23, 1982, 3235143; European Pat. Off., May 24, 1983, 83105107.3; Sep. 14, 1983, 83201319.7
Int. Cl.[4] G09G *3/34*
U.S. Cl. 340—784 16 Claims



1. A method for addressing a multiplexable, bistable liquid crystal display having a plurality of liquid crystal display elements each of which can adopt a first optical state and a second state, comprising the steps of:

applying a writing voltage for a predetermined time period to at least one of said elements regardless of the optical state of said at least one of said elements;

applying a first driving voltage to said at least one of said elements after applying said writing voltage thereto when said at least one of said elements is to be put into or remain in the first optical state, said first driving voltage being greater than a first limiting voltage above which the second optical state spontaneously transforms into the first optical state; and

applying a second driving voltage to said at least one of said elements after applying said writing voltage thereto when said at least one of said elements is to be put in said second optical state, said second driving voltage being smaller than a second limiting voltage below which the first optical state spontaneously transforms into said second optical state, said second limiting voltage being less than or equal to said first limiting voltage;

wherein said writing voltage is selected to have a value outside a voltage range extending from said first driving voltage to said second driving voltage.

4,608,559

LOCAL MODULATED CARRIER DATA NETWORK WITH A COLLISION AVOIDANCE PROTOCOL

Michael S. Friedman, Irvine; Kenneth D. Thomas, Santa Ana, and Philip T. Chan, Fullerton, all of Calif., assignors to Computer Automation, Inc., Irvine, Calif.

Filed Aug. 19, 1982, Ser. No. 409,510
Int. Cl.[4] H04Q *9/00*
U.S. Cl. 340—825.5 43 Claims

1. An apparatus for detecting contentions for the transmission medium in a modulated carrier local data network having a plurality of transmitter and receiver modems, each modem comprising:

means for transmitting a non data bearing burst of energy, said burst being a sinusoidal radio frequency carrier having a fixed amplitude;

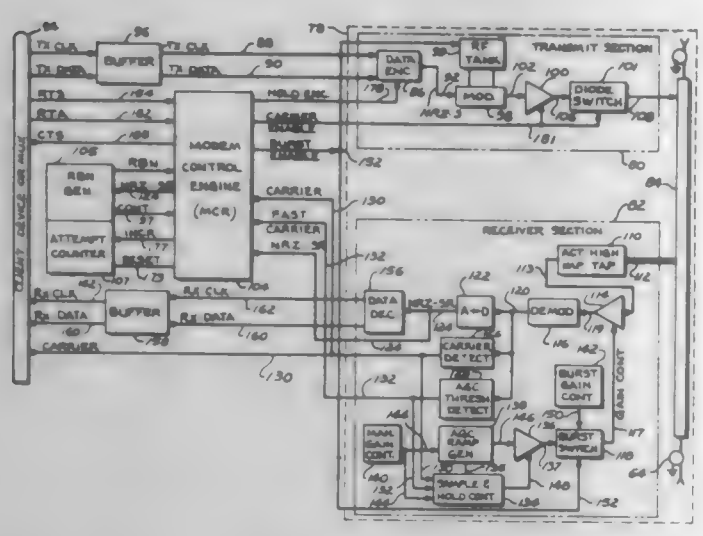
means for receiving signals on said transmission medium, said receiving means comprising:

a variable gain receiver coupled to said transmission medium to receive carrier energy and amplify it in accordance with said variable gain;

a demodulator for converting the received signal into a D.C.

signal which has an amplitude which varies with the amplitude of the output from said variable gain receiver;

a comparator means for comparing the output signal of said demodulator to a reference signal during said burst and for generating a contention signal when said D.C. signal achieves a predetermined relationship to said reference signal; and



a means for setting the gain of said variable gain receiver to a predetermined level during bursting such that the comparator means will not generate said contention signal unless interference beating with another carrier is causing the amplitude of the received signal to vary; and

means for preventing data transmission in response to detection by said receiving means of energy from any other modem while said burst is being transmitted.

4,608,560

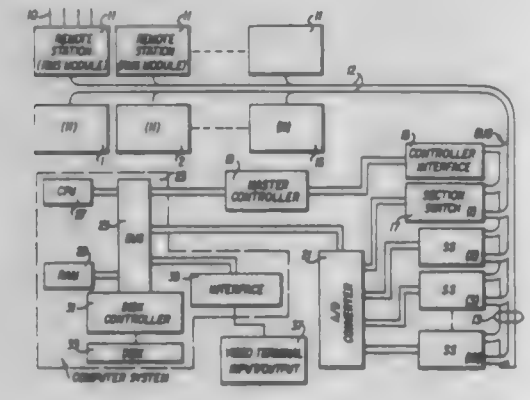
COMPUTER CONTROLLED ENERGY MONITORING SYSTEM

Marvin D. Allgood, Oxon Hill, Md., assignor to Adec, Inc., Oxon Hill, Md.

Division of Ser. No. 272,011, Jun. 9, 1981, Pat. No. 4,415,896. This application Oct. 5, 1983, Ser. No. 530,346

Int. Cl.⁴ H04Q *9/00*

U.S. Cl. 340—825.52 **15 Claims**



1. A remote station for selectively coupling one of a plurality of information channels to a central station comprising:

a first plurality of information channels;

a first communication channel for communicating with a central station;

means for detecting the presence of a clocking tone on said first communication channel and for providing a clocking signal upon the occurrence of each clocking tone;

means for presetting a predetermined remote station address;

means for counting said clocking signals and for providing an enable signal when the number of counted clock signals falls within a predetermined numerical range corresponding to said predetermined address;

means rendered operative by said enable signal and responsive to the counting of said clock signals by said counting means for selectively connecting a different one of said first plurality of information channels to said first communications channel upon the occurrence of each clocking signal which occurs while said enable signal is provided.

4,608,561

TIME DIVISION MULTIPLEXING LOAD CONTROL SYSTEM HAVING MANUAL SWITCH FOR DIRECTLY CONTROLLING LOADS

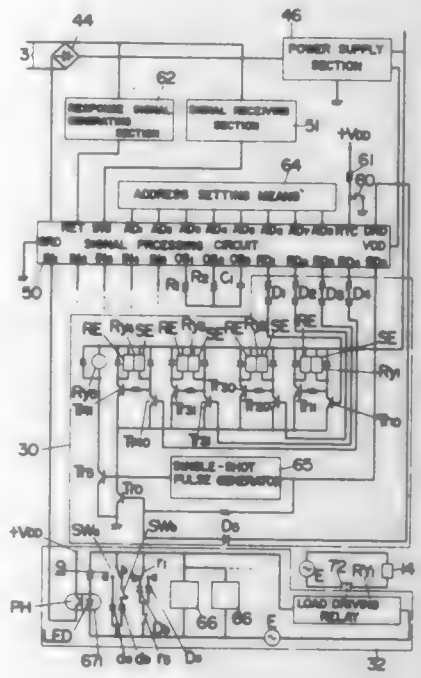
Yutaka Kojima; Toshiyuki Masuda, and Nobuo Hisamatsu, all of Mie, Japan, assignors to Matsushita Electric Works, Ltd., Osaka, Japan

Filed Sep. 12, 1983, Ser. No. 531,502

Claims priority, application Japan, Sep. 20, 1982, 57-163561

Int. Cl.⁴ H04Q *1/00*

U.S. Cl. 340—825.52 **2 Claims**



1. A time division multiplexing load control system, comprising:

a central controller unit for generating, based upon input data accepted through an incorporated input device, output data signals, each of which includes at least an address receiving a response signal; and

a plurality of terminal units connected to the central controller unit, said central controller unit transmitting said output data signals sequentially and periodically to respective ones of said terminal units, each terminal unit responding to a corresponding address signal which accompanies each control signal and receiving said control signal to be controlled thereby and transmitting a response signal to the central controller unit in accordance with the control signal and the response-waiting signal, said output data signals and response signals being transmitted as time division multiplexing signals between the central controller unit and each of the terminal units;

at least one of the terminal units being provided with one or more associated load-switching circuits defining the associated terminal unit as being connected to one or more loads, each load-switching circuit comprising:

a latch-in load driving relay having a main contact for connecting and disconnecting the load and having a first changeover contact, two first contact members which are connected in said load-switching circuit respectively between said first changeover contact and two first diodes of opposite polarity which alternatively conduct to allow current to flow in a respective direction in said load-switching circuit;

reversing switch means connected between an AC power source and the load driving relay and having a second changeover contact, two second fixed contact members which are connected in said load-switching circuit respec-

tively between said second changeover contact and two second diodes of opposite polarity for responding to the control signal from the central controller unit to alternatively cause the conduction of said two second diodes to allow current to flow in a respective direction in said load-switching circuit;

manual switch means connected in parallel with said reversing switch means for operating said load-switching circuit independently of the function of said reversing switch means; and

a photocoupler detecting means including a light emitting diode connected in parallel with said current reversing switch means for emitting light in response to the current flowing in one direction in said load-switching circuit, and a photodetector which detects the emission of light and transmits a response signal representative of such emission to the central controller unit;

said load driving relay being responsive to a forward current flow through either of the two first diodes to move said main contact for connecting and disconnecting the load and at the same time to move the first changeover contact from one position to another position;

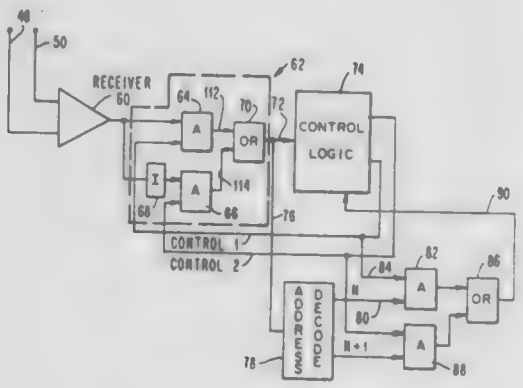
said reversing switch means futher including a normally open contact connected in series with said second changeover contact, both the normally open contact and the second changeover contact being controlled by said control signal from the central controller unit in such a way that the second changeover contact moves subsequent to the closing of the normally open contact and is kept latched in its last position, whereby said second changeover contact when moving to either of two positions thereof in response to the control signal causes a current to flow in either of two directions in said load-switching circuit through the first and second diodes which are arranged in the same direction until the first changeover contact is reversed by said current to prevent further current flow, said manual switch means further comprising a switch device for causing a current in the load-switching circuit to flow in a direction so as to actuate the load driving relay for turning on the load and for causing a current in the same circuit to flow in a opposite direction so as to actuate the load driving relay for turning off the load.___

4,608,562

ADDRESS PERSONALIZATION OF A REMOTELY ATTACHED DEVICE

Richard G. Minor, and Alexander Polischuk-Sawtschenko, both of Raleigh, N.C., assignors to International Business Machines Corp., Armonk, N.Y.

Filed Oct. 31, 1983, Ser. No. 546,771
Int. Cl.⁴ H04Q *9/00*
U.S. Cl. 340—825.59 **12 Claims**



1. A method for assigning unique addresses to identical devices connected by means of a serial communication link to a supervisory unit, said method comprising the following steps:

(a) generating a message;

(b) transmitting the message to each device with either a first or a second polarity;

(c) receiving the message at each of the identical devices;

(d) generating, in each device, a first control signal having a first polarity;

(e) combining the first control signal with the received message to form a first combined signal;

(f) reading the first combined signal; and

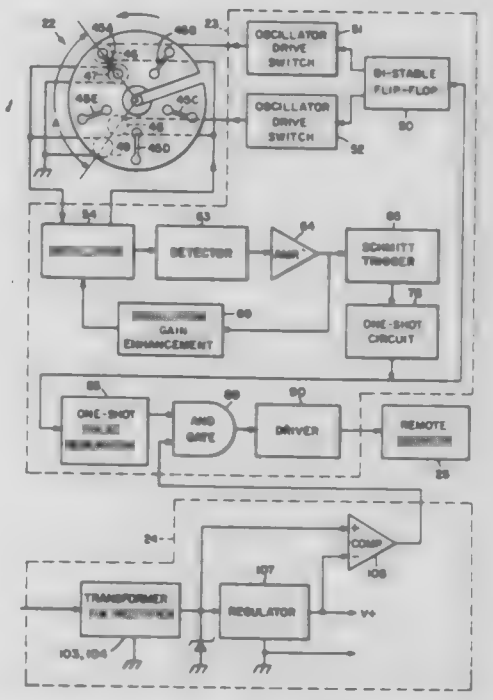
(g) assigning a first unique address to the devices capable of reading the first combined signal.

4,608,563

REMOTE MONITORING INDUCTION TELEMETERING SYSTEM

Gary R. Hoffman, Glen Arm, Md., assignor to General Services Engineering, Inc., Baltimore, Md.

Filed May 3, 1982, Ser. No. 374,626
Int. Cl.⁴ G08B *23/00*; G08C *18/06*
U.S. Cl. 340—870.02 **19 Claims**



4. In an apparatus having a rotating shaft, a means for monitoring the position of the shaft, comprising, in combination, a wheel mounted on the shaft for conjoint rotation therewith, the wheel having five radially-projecting closed slots formed therein, the slots being equiangularly spaced around the circumference of the wheel, two pairs of inductors fixedly mounted in juxtaposition to the wheel, each inductor pair comprising a "sending" inductor and a "receiving" inductor, the inductors in each pair being spaced apart from one another along a radial axis, the respective axes of the inductor pairs being so arranged that whenever one inductor pair is aligned circumferentially with one of the closed slots, the other inductor pair will be located substantially equidistantly between a pair of slots, means for alternately energizing the sending inductors in the respective pairs of inductors, sequentially, whereby the inductors in a respective pair of inductors will be coupled together whenever one of the slots in the wheel is substantially aligned circumferentially with one of the inductor pairs, thereby generating a total of ten signals for each complete revolution of the wheel, and means including a remote counter responsive to said signals.

4,608,564

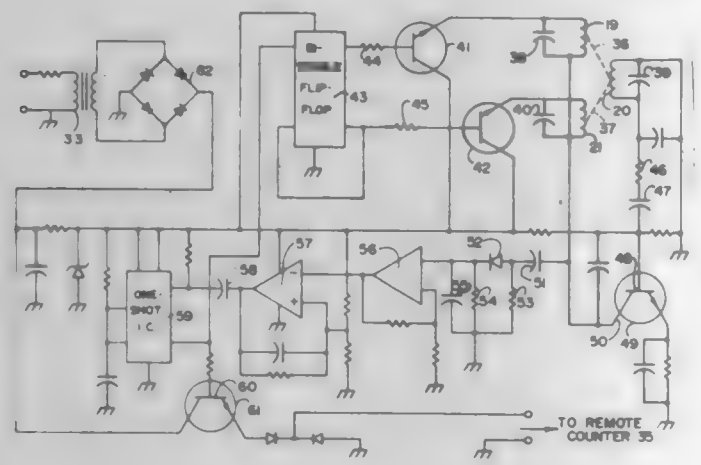
APPARATUS FOR THE REMOTE MONITORING OF METERS AND OTHER DEVICES

Gary R. Hoffman, Glen Arm, Md., assignor to General Services Engineering, Inc., Baltimore, Md.

Filed Nov. 8, 1982, Ser. No. 439,921
Int. Cl.⁴ G08S *23/00*
U.S. Cl. 340—870.02 **8 Claims**

2. In a meter having a panel provided with a plurality of dials, including a unit decade dial, and further having a rotating

shaft journaled in the panel concentrically within the unit decade dial, a remote monitoring apparatus comprising a disc made of a dielectric material and mounted on the shaft for conjoint rotation therewith, the disc being disposed forwardly of the panel, adjacent to the unit decade dial and substantially concentric thereto, an annular metallic rim mounted on the circumference of the disc, the rim having a plurality of spaced-apart arcuately-formed slotted apertures, a pair of inductors



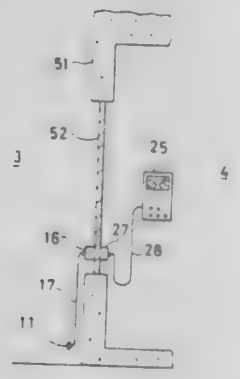
fixedly mounted on the meter radially of the rim, a third inductor fixedly mounted on the meter intermediately of the pair of inductors and common thereto, means for sequentially energizing one and the other of the pair of inductors, whereby a signal is generated in the third common inductor whenever one of the apertures in the rim bridges the third common inductor with one or the other inductors in the pair of inductors, circuit means responsive to the signal for generating a count, and means remote from the meter for registering the count.

4,608,565

INDOOR/OUTDOOR THERMOMETER WITH REMOTE SENSING UNIT

Tamaki Sakamoto, Kyoto, Japan, assignor to Omron Tateisi Electronics Co., Kyoto, Japan

Filed Apr. 30, 1985, Ser. No. 729,167
Claims priority, application Japan, May 1, 1984, 59-86228
Int. Cl.[4] G01K *3/06*; G08B *13/24*
U.S. Cl. 340—870.17 **1 Claim**



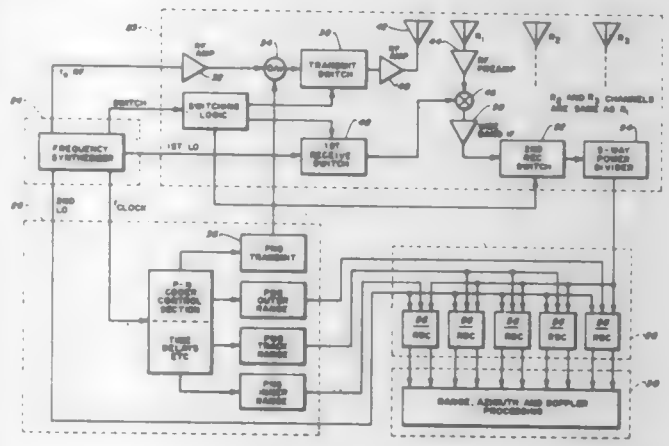
1. A thermometer comprising:
temperature detecting means, including a temperature sensor, for detecting temperature;
carrier wave generating means for generating high frequency waves;
modulating means for modulating carrier waves delivered from said carrier wave generating means with output signals from said temperature detecting means into modulated output signals;
transmitting means including an antenna for converting the output signals from said modulating means into waves;
receiving means including an antenna for receiving said waves from said transmitting antenna;
demodulating means for demodulating the carrier waves and output signals from said modulating means received by said receiving means;
an A/D converter connected to said demodulating means for converting the output from said demodulating means; and
displaying means for displaying the output from said A/D converter;
wherein said transmitting means and receiving means are disposed so as not to be in physical contact with each other and mounted on opposite sides of any one of a wall, partition and window so as to be located substantially adjacent each other.

4,608,566

FOLIAGE-PENETRATION SURVEILLANCE RADAR

David G. Ennis, and John M. Smith, both of Ridgecrest, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 16, 1981, Ser. No. 332,397
Int. Cl.[4] G01S *13/00*
U.S. Cl. 343—5 PD **4 Claims**



1. In a surveillance system of the type utilizing a radar system for the monitoring of moving objects within a perimeter of surveillance that includes trees and plants bearing foliage, the combination comprising:
transmitter means for transmitting a modulated RF signal to illuminate the area under surveillance,
receiver means for receiving reflections of said transmitted RF signal,
signal processing circuit means coupled to said receiver means for providing an output signal which indicates azimuthal direction of a detected target with respect to the radar site, said signal processing circuit means includes a first summing circuit for summing and sampling inbound signals and a second summing circuit for summing and sampling outbound signals and divider circuit means connected to each of said first and second summing circuits for dividing the sums by the number of samples taken which is proportional to the length of time the signal remains either positive or negative to prevent full cycle integration to remove clutter when the output signal is fluctuating back and forth between positive and negative polarities.

4,608,567

FAST ENVELOPE DETECTOR WITH BIAS COMPENSATION

Steve M. Bryant, Baltimore, and Lanier G. Cole, Crofton, both of Md., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jun. 22, 1984, Ser. No. 623,581
Int. Cl.[4] H03D *1/06*
U.S. Cl. 343—7 A **5 Claims**

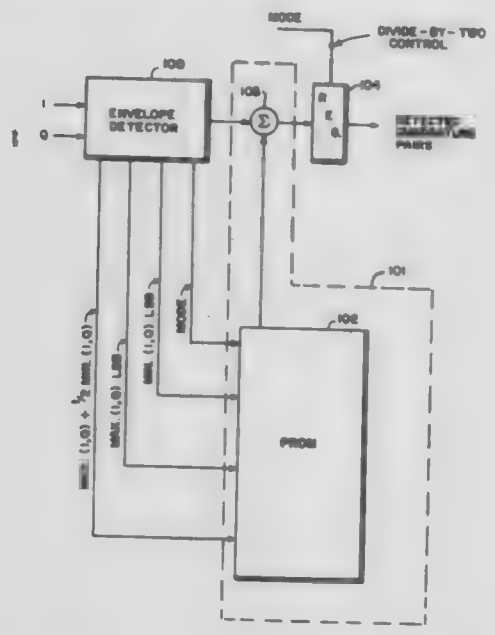
1. In combination with a host radar system receiving echo return signals, an envelope detection system with bias compensation comprising:
an envelope detector receiving said echo return signals from

said host radar system in the form of inphase and quadrature signal components and producing:

a first output signal being a biased envelope detection signal;

a second output signal being a mode select signal;

a third output signal indicating a minimum value of the inphase and quadrature signal component;



a fourth output signal indicating a maximum value of said inphase and quadrature signal component;

a fifth output signal equaling the sum of said fourth output signal plus one-half said third output signal; and

a bias compensation means receiving said first, second, third, fourth and fifth output signals from said envelope detector and producing an unbiased detection signal.

4,608,568

SPEED DETECTING DEVICE EMPLOYING A DOPPLER RADAR

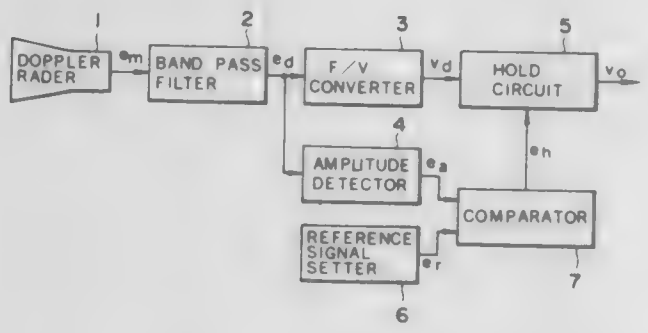
Akira Egawa, Hiratsuka, Japan, assignor to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Filed Sep. 29, 1982, Ser. No. 427,921

Claims priority, application Japan, Oct. 15, 1981, 56-164433; Oct. 19, 1981, 56-166869

Int. Cl.⁴ G01S *13/00, 13/58, 9/66*

U.S. Cl. 343—8 **12 Claims**



1. A speed detecting device having converting means for converting a Doppler signal obtained from a Doppler radar into a corresponding speed indicating signal, comprising:

reference signal setting means for setting a reference amplitude value;

amplitude detecting means for detecting the amplitude of said Doppler signal;

comparing means for comparing said reference amplitude value with the detected amplitude of said Doppler signal in order to identify as a comparison result those portions of said Doppler signal which are detected to be smaller in amplitude than said reference amplitude value; and

excluding means for excluding from said speed indicating signal corresponding to said Doppler signal those portions of said Doppler signal which are identified as said comparison result; and

wherein said setting means includes means for setting said reference amplitude value based on the relationship between a amplitude of the Doppler signal and the variance of a speed detection error.

4,608,569

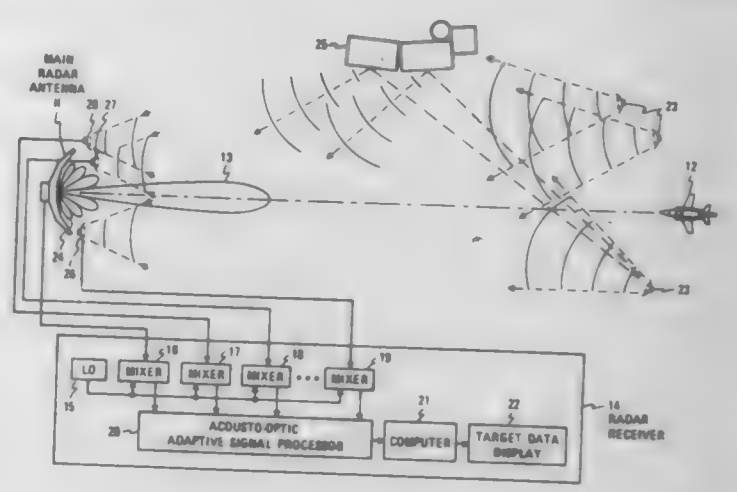
ADAPTIVE SIGNAL PROCESSOR FOR INTERFERENCE CANCELLATION

Frank R. Dickey, Jr., Dewitt, and William A. Penn, Baldwinsville, both of N.Y., assignors to General Electric Company, Syracuse, N.Y..

Filed Sep. 9, 1983, Ser. No. 530,626

Int. Cl.⁴ G01S *3/86*

U.S. Cl. 343—384 **15 Claims**



1. A processor for use in an echo ranging or communication system in which a signal is received by a directional main antenna with possible interference including multi-path signals, said main antenna signal after conversion to a modulation on a carrier of intermediate frequency being denoted m(t); and in which system at least one auxiliary, substantially less directional antenna (i) is provided for intercepting interference, said auxiliary antenna signal after conversion to a modulation on said carrier being denoted $a_i(t)$, said processor generating a predicted interference signal $\hat{m}(t)$, modulated on said carrier at an appropriate phase and amplitude for interference cancellation, and effecting said cancellation, said processor comprising:

A. an optical time integrating correlator for deriving at least one correlation function (or weight) $W_i(x)$, where x is proportional to time delay, by correlating a residual signal r(t), approximating said main signal with the interference therein cancelled with each auxiliary signal $a_i(t)$ comprising:

(1) a source of quasi-coherent optical radiation in the visible or near visible spectrum,

(2) a first modulator for modulating said optical radiation with said residual signal r(t), said signal (r(t)) being of prescribed phase and amplitude in relation to said carrier,

(3) acoustic wave light modulation means to which said modulated light output is coupled and to which said auxiliary signals ($a_i(t)$) are coupled to excite acoustic waves, said modulation means providing point by point multiplications between said optical and acoustic waves to form a first spatial pattern of products

$$a_i\left(t - \frac{x}{v_a}\right) \cdot r(t)$$

where

x is a coordinate measured in the direction of propagation of said acoustic waves, and

v_a is the acoustic velocity in said acoustic wave light modulation means,

said first pattern retaining prescribed phase and amplitude signal information as modulations on said carrier in a spatial format,

(4) time-integrating means coupled to the output of said acoustic wave light modulation means, having a time constant adequate for executing a time integral of each point of said first spatial pattern to obtain at least one complex correlation function W(x), as a second spatial pattern,

$$W(x) = \int_{T_o} a_i\left(t - \frac{x}{v_a}\right) \cdot r(t)\, dt$$

where

T_o is 1/e decay time of integration, and

x is the coordinate measured in the direction of propagation of said acoustic waves, transformed to said time integrating optical means,

said second spatial pattern retaining phase and amplitude signal information as modulations on said carrier in said spatial format;

B. a space-integrating optical correlator for correlating each auxiliary signal ($a_i(t)$) while it traverses an optical aperture as an acoustic wave with said second spatial pattern of correlation functions (or weights) $W_i(x)$ to derive the predicted interference signal $\hat{m}(t)$, comprising:

(1) acoustic wave light modulation means to which said optical output of said time-integrating optical means is coupled and to which said auxiliary signals $a_i(t)$ are coupled to excite acoustic waves, said modulation means providing point by point multiplications between said optical and acoustic waves to form a third spatial pattern of products

$$a_i\left(t - \frac{x}{v_a}\right) \cdot W(x)$$

where

x is the coordinate measured in the direction of propagation of said acoustic waves, said third pattern retaining prescribed phase and amplitude signal information, as modulations on said carrier in a spatial format,

(2) a space integrating optical detector to which said third spatial pattern is coupled, said optical detector having adequate bandwidth to accommodate said modulated spatial carrier, said optical detector producing an output $\hat{m}(t)$

$$\hat{m}(t) = \sum_i \int_{x\Delta} a_i\left(t - \frac{x}{v_a}\right) W(x)\, dx$$

where

$x\Delta$ is the interval of spatial integration in which said predicted interference signal is converted from said spatial modulation back to a temporal modulation on said carrier, said predicted interference signal ($\hat{m}(t)$) approximating the interference in said main signal in respect to phase and amplitude, and

C. cancellation means in an adaptive feedback path for obtaining said residual signal r(t) as a modulation on said carrier, comprising:

(1) a bandpass filter whose input is coupled to the output of said optical detector for restricting the predicted interference signal $\hat{m}(t)$ to the useful signal band about said carrier, and

(2) subtraction means having an input coupled to said bandpass filter for application of said predicted interference signal $\hat{m}(t)$, said main signal m(t) being coupled to said other input, said subtraction means obtaining the complex difference denoted r(t), between the main carrier-borne signal m(t) and said predicted interference signal $\hat{m}(t)$, said difference (r(t)) being coupled to the first modulator, as earlier recited, to complete a feedback loop in which said predicted interference signal $\hat{m}(t)$ is caused to adaptively converge toward equality with the noise present in said main signal, said convergence causing said residual signal r(t) to approach equality to the main signal without said interference.

4,608,570

AUTOMOTIVE WINDOW GLASS ANTENNA

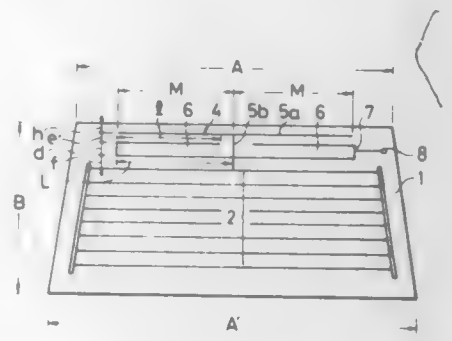
Hiroshi Inaba, and Kazuya Nishikawa, both of Mie, Japan, assignors to Central Glass Company, Limited, Yamaguchi, Japan

Filed Nov. 4, 1983, Ser. No. 548,799

Claims priority, application Japan, Nov. 18, 1982, 57-201025; Nov. 27, 1982, 57-206872; Apr. 25, 1983, 58-71418; May 14, 1983, 58-83515

Int. Cl.⁴ H01Q *1/02, 1/32*

U.S. Cl. 343—704 **14 Claims**



13. An automotive window glass antenna having an antenna formed on a window glass pane of an automobile, said window glass antenna having an antenna pattern comprising in combination a first main antenna possessing a horizontal part and a vertical part to form a T-shape, a second antenna operative to effect phase compensation, said second antenna being disposed on one side of said vertical part of said first antenna and connected thereto, a third antenna operative to effect impedance matching, said third antenna being disposed on the other side of said vertical part of said first antenna and connected thereto, said third antenna comprising a horizontal element one end of which is connected to said vertical part of said first antenna and the other end of which is connected to an additional element which is positioned between said horizontal part of said first antenna and said horizontal element of said third antenna, said additional element including at least one vertical part which is located between said horizontal part of said first antenna and said horizontal element of said third antenna and which is spaced from and extends parallel to said vertical part of said first antenna, the length of said vertical part of said additional element being less than the distance along said vertical part of said first antenna between said horizontal part of said first antenna and said horizontal element of said third antenna, and a feed point connected to said additional element of said third antenna for connection via said additional element to each of said third, second and first antennas, said second and third antennas being asymmetric with respect to the vertical part of the first antenna.

4,608,571

COLLAPSIBLE PARABOLIC REFLECTOR

Robert A. Luly, 449 S. Sierra Way, San Bernardino, Calif. 92406

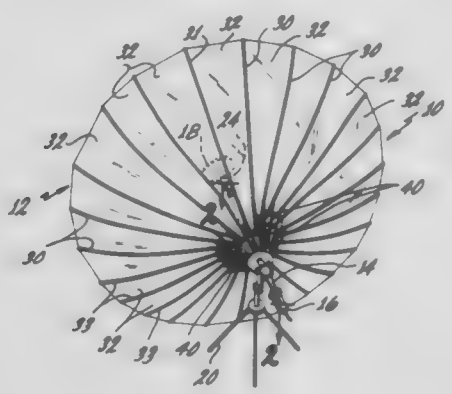
Filed Mar. 26, 1981, Ser. No. 247,922

Int. Cl.⁴ H01Q *15/20*

U.S. Cl. 343—781 P **22 Claims**

1. A reflector antenna comprising:

a wave guide having a front end and a rear end and being open at both ends to electromagnetic radiation;
a primary reflector at least partly supported by said wave guide for reflecting electromagnetic radiation towards said front end of said wave guide, said primary reflector including;
a pliable dish of substantially inelastic reflecting sheet material having a concave front surface and a convex rear surface;
a plurality of resiliently flexible normally straight spokes of tapering cross section mounted at their thicker ends to a central hub for pivotal movement between a folded axial position and a deployed radial position relative to said central hub, the cross-sectional taper of each spoke being such that the spoke is stressable to a particular curvature conforming to the curvature of said pliable dish;



means for attaching said plurality of radial spokes to said pliable dish such that said dish complies with the curvature of said spokes;
first means for simultaneously urging each of said radial spokes to aradially deployed postion; second means cooperating with said first means for stressing said spokes in said deployed position to said curvature thereby to conform with the curvature of said pliable dish, said stressed spikes thus deploying said dish to present a substantially smooth, concave front reflecting surface, said spokes being relieved of said stress in said folded position to thereby return to said normally straight condition;
lock means for releasably retaining said spokes in said stressed deployed position; and
a secondary reflector mounted to said front end of said wave guide for reflecting said radiation into said wave guide.

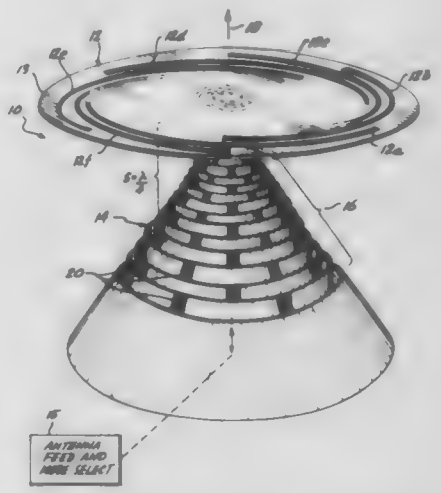
4,608,572

BROAD-BAND ANTENNA STRUCTURE HAVING FREQUENCY-INDEPENDENT, LOW-LOSS GROUND PLANE

Thomas L. Blakney, Bellevue; Douglas D. Connell, Seattle; Bernard J. Lamberty, Kent, and James R. Lee, Seattle, all of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Dec. 10, 1982, Ser. No. 448,511
Int. Cl.⁴ H01Q *1/48, 1/36*
U.S. Cl. 343—792.5 **27 Claims**

1. An antenna structure comprising:
a directional, frequency-repeating, broad-band driven element arranged around an axis of antenna directivity and having excitation characteristics that vary with the radius from said axis, said excitation characteristics concentrating relatively higher signal frequencies in regions of said element proximate said axis, and concentrating progressively lower signal frequencies in regions of increasing radius from said axis out to a perimeter of said element;
a matching broad-band reflective ground plane formed around said axis and so arranged with said element that signal energy is reflected by said ground plane back toward said element generally along said axis, said ground plane having an array of circumferential chokes proximate said axis and matching the relatively higher signal frequencies of excitation on said element in said regions thereof proximate said axis, and said chokes on said ground plane progressively increasing in size with increasing radius so as to match the progressively lower frequencies of excitation at regions of said element of corresponding radius out to said perimeter of said element, said cir-



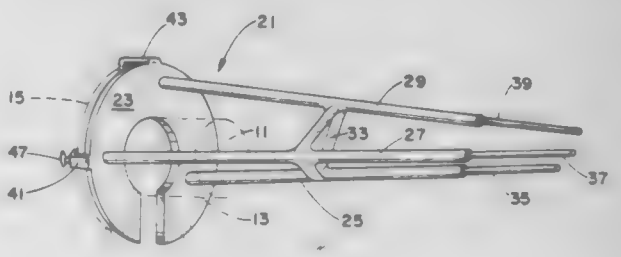
cumferential chokes limiting the inducement of radial currents on said ground plane; and
shunt means associated with said chokes for controlled shunting of radial currents on said ground plane.

4,608,573

FOCAL POINT POSITIONING TOOL

Dale Paullin, 1446 State Rte. 60, Ashland, Ohio 44805

Continuation of Ser. No. 586,342, Mar. 5, 1984, abandoned. This application Sep. 11, 1985, Ser. No. 774,991
Int. Cl.⁴ H01Q *9/06*
U.S. Cl. 343—894 **25 Claims**



1. A tool for indicating the position of a receiving device relative to the focus of a convergent reflector, said tool comprising:
attachment for attaching the tool to a receiving device mounted on a convergent reflector having a focus; and,
an indicating means comprising at least two converging legs extending from said attachment means toward said reflector, and an extension means slidably disposed with respect to each of said legs for extension to said reflector to indicate the position of said receiving device with respect to said focus.

4,608,574

BACKFIRE BIFILAR HELIX ANTENNA

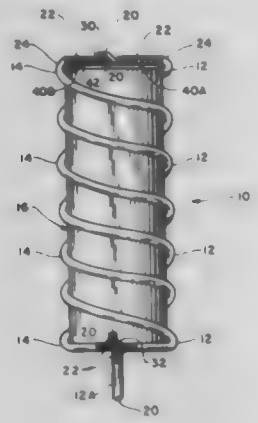
Carson W. Webster, Sykesville, and Robert K. Stilwell, Columbia, both of Md., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed May 16, 1984, Ser. No. 611,060
Int. Cl.⁴ H01Q *1/36*
U.S. Cl. 343—895 **8 Claims**

1. A backfire bifilar helix antenna having a pair of opposing spiral conductors for radiating or receiving a circularly polarized wave, comprising:
first and second coaxial cables helically wound in excess of one full turn in the same direction and having a predeter-

mined radius and constant pitch, said coaxial cables having a center conductor and a shield conductor, the shield conductors of said cables forming said pair of opposing spiral conductors;

infinite balun feed means for coupling signals of equal magnitude and 180° out of phase to one end of said first and second coaxial cables, said feed means including a transmission line comprising the center conductor and the



shield conductor of one of said coaxial cables, and wherein said center conductor of said transmission line is directly connected to the shield conductor of the other coaxial cable at said one end; and

means for adjusting the input impedance of the antenna to a predetermined value, said least mentioned means including identical tuned conductive surface layers directly connected to the shield conductors of said first and second coaxial cables at said one end.

4,608,575

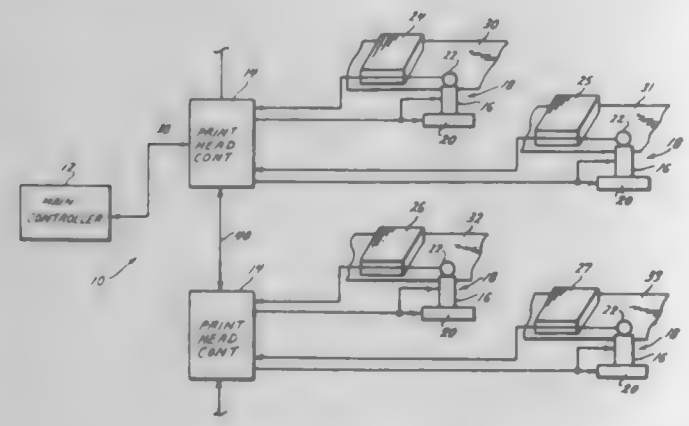
COMPUTER CONTROLLED MULTI-TASKING INK JET PRINTING SYSTEM

Eugene L. Morgan, Belleville, Ill., assignor to Printos Marsh Corporation, Belleville, Ill.

Continuation-in-part of Ser. No. 648,647, Sep. 7, 1984, abandoned. This application Oct. 26, 1984, Ser. No. 665,363

Int. Cl.⁴ G01D *15/18*

U.S. Cl. 346—33 R **36 Claims**



1. A computer controlled ink jet printing system for printing messages on objects such as cartons or the like as they move along conveyor lines past printing stations, there being a plurality of print stations, said print stations being spaced one from the other, and one or more conveyor lines, said system comprising a plurality of print heads, at least one per print station, each print head having ink control means for discharging ink onto the objects as they move therepast in accordance with a programmed message, at least one print head control, each such print head control having means to control print heads of a plurality of stations, each print head control having means for controlling each print head it controls independently of others it controls, whereby said print head control controls the messages, including the parameters of product delay, dot size, and character width, printed by one print head at one station independently of the messages, including said parameters, printed by another print head at another station, and a main controller linked to said print head control, said main controller further comprising a programmable microprocessor, means for selecting messages for printing by each print head, and means for communicating said selected messages to said print head control, whereby said print head control independently controls print heads at each of a plurality of print stations to print onto the objects the messages selected at the main controller.

4,608,576

MULTI-PEN PLOTTER-PRINTER

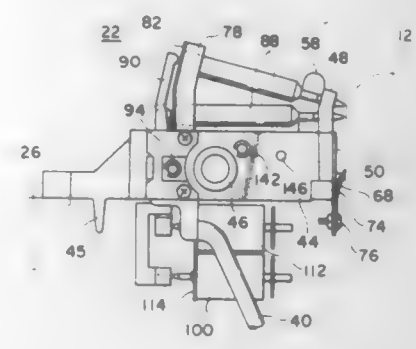
Ishio Shimashita, Hatano, and Yasuhiko Nishimura, Yokosuka, both of Japan, assignors to Ricoh Company, Ltd. and Ricoh Denshi Co., Ltd., both of Tokyo, Japan

Filed Jun. 5, 1984, Ser. No. 617,331

Claims priority, application Japan, Jun. 15, 1983, 58-91278 [U]; Jun. 15, 1983, 58–107344; Jun. 15, 1983, 58–107345

Int. Cl.⁴ G01D *9/28, 15/16*

U.S. Cl. 346—49 **17 Claims**



1. A plotter-printer comprising:

a platen;

a carriage main body supported to be movable along said platen;

driving means for driving to move said carriage main body along said platen in a reciprocating manner;

a plurality of writing utensils mounted on said carriage main body in a predetermined arrangement, each of said writing utensils being normally held at a retracted position where no printing takes place and capable of being located at an advanced position when actuated where printing is effected on a recording medium on said platen;

actuating means for actuating said writing utensils selectively thereby having a selected one of said writing utensils located at said advanced position;

control means for controlling a relative positional relation between said plurality of writing utensils and said actuating means thereby allowing said actuating means to actuate said selected one of said writing utensils in said predetermined arrangement; and

a guide shaft which extends in parallel with said platen and on which said carriage main body is slidably supported wherein said actuating means is supported by said carriage main body as being relatively movable with respect thereto whereby said control means causes said actuating means to be temporarily motionless with respect to said guide shaft while said carriage main body moves along said guide shaft thereby changing the relative positional relation between said writing utensils mounted on said carriage main body and said actuating means.

4,608,577

INK-BELT BUBBLE PROPULSION PRINTER

Kenichi Hori, Tokyo, Japan, assignor to Elm Co., Ltd., Tokyo, Japan

Filed Sep. 21, 1984, Ser. No. 653,870

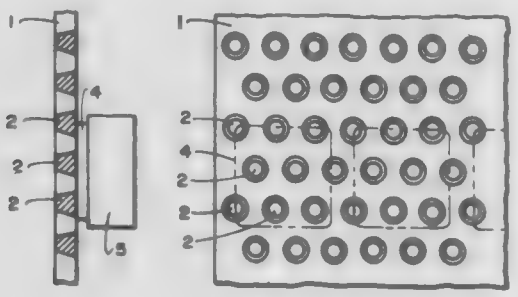
Claims priority, application Japan, Sep. 28, 1983, 58-178201

Int. Cl.⁴ G01D *15/16, 15/10*

U.S. Cl. 346—140 R **9 Claims**

1. A printing machine comprising in combination: a thin film having first and second surfaces connected by a plurality of

hole or recess portions therein and movably positioned; an ink supplying means for supplying ink to said hole or recess portions; a thermal head member having a plurality of thermal head elements in contact with said first surface of said film; a driving circuit selectively driving said thermal head elements of said thermal head member; a recording paper feeding mechanism to feed recording paper adjacent said second surface of



said film; said ink filling said hole or recess portions, said thermal head element being selectively driven by said driving circut when one thermal head element corresponds to a plurality of holes or recesses of said film, whereby said ink is sprouted from a plurality of holes or recesses of said film to said recording paper by bubble pressure caused by heat from said thermal head element.

4,608,578

BRAKED MEDIA TRANSPORT FOR LASER SCANNERS

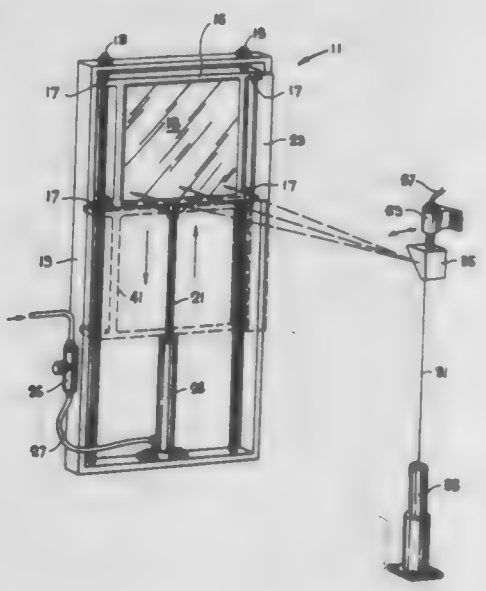
N. Balasubramanian, Saratoga, and Alan L. Helgesson, Mountain View, both of Calif., assignors to Matrix Instruments Inc., Orangeburg, N.Y.

Continuation-in-part of Ser. No. 551,266, Nov. 14, 1983, Pat. No. 4,505,578. This application Oct. 29, 1984, Ser. No. 665,746

The portion of the term of this patent subsequent to Mar. 19, 2002, has been disclaimed.

Int. Cl.⁴ G01D *15/14*

U.S. Cl. 346—160 **20 Claims**



1. Apparatus comprising; carriage for moving a data recording or storage member relative to a laser beam, the carriage mounted for motion propelled by accelerative force, with its motion braked by a brake having a variable braking element,

means for measuring carriage velocity and having an output signal representing said carriage velocity,

servo control means for comparing said output signal representing velocity to a reference signal in order to generate a velocity error signal, and

a carriage brake actuator connected to receive said velocity error signal and connected to the variable braking element of the transport brake, the actuator being responsive to the velocity error signal in changing the variable braking element to reduce the velocity error signal.

4,608,579

THERMOSENSITIVE RECORDING MATERIAL

Keishi Taniguchi, Shizuoka, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

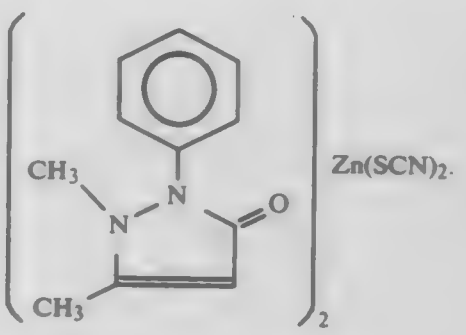
Filed May 22, 1985, Ser. No. 736,848

Claims priority, application Japan, May 25, 1984, 59-105781; May 31, 1984, 59-112006; Jun. 1, 1984, 59-112769; Sep. 11, 1984, 59-190225; Nov. 12, 1984, 59-237781; Mar. 1, 1985, 60-41722

Int. Cl.⁴ B41M *5/18*

U.S. Cl. 346—209 **10 Claims**

1. In a thermosensitive recording material comprising a colorless or light-colored coloring material, a color developer capable of inducing color formation in said colorless or light-colored coloring material upon application of heat thereto, and support means for supporting said coloring material and said color developer so that said color formation can be induced, the improvement wherein said coloring material is a leuco dye, and said color developer is a zinc thiocyanate antipyrine complex of the formula



4,608,580

HEAT-SENSITIVE RECORDING MATERIAL

Fukuji Ikeda, Takefu, and Toshiaki Takahashi, Sabae, both of Japan, assignors to Nikka Chemical Industry Company Ltd., Fukui, Japan

Filed Sep. 30, 1985, Ser. No. 781,949

Claims priority, application Japan, Oct. 8, 1984, 59-209768

Int. Cl.⁴ B41M *5/18*

U.S. Cl. 346—216 **3 Claims**

1. A heat-sensitive recording material comprising a support and, formed thereon, a heat-sensitive color-forming layer comprising a colorless or light-colored leuco dye as a color former and a phenolic compound as a color developer, wherein the color developer comprises 3,3′-diallyl-4,4′-dihydroxydiphenylsulfone as an effective ingredient.

4,608,581

SEMICONDUCTOR LIGHT EMITTER BASED ON GALLIUM NITRIDE AND PROCESS FOR MANUFACTURE THEREOF

Givi D. Bagratishvili, ulitsa Pavlova, 13, kv. 8; Rusudan B. Dzhanelidze, utlisa Belinskogo, 24; Vladimir V. Zorikov, ulitsa Klary Tsetkin, 137, kv. 13; Vissarion M. Mikhelashvili, Digomsky massiv, 6 kvartal, korpus 22a, kv. 28; Iosif E. Pekar, ulitsa Meunargia, 22; Rafael I. Chikovani, prospekt Vazha Pshavela, 51, 1 kvartal, 8 korpus, kv. 13; Manana A. Chkhaidze, ulitsa Ardeziani, 30; Svetlana Z. Akopova, ulitsa Tsutskiridze, 13, all of Tbilisi; Viktor B. Bogdanovich, ulitsa Uritskogo, 9, kv. 93; Sergei V. Svechnikov, ulitsa Vladimirskaya, 51/53, kv. 28, both of Kiev, and Revaz A. Charmakadze, prospekt Vazha Pshavela, 6 kvartal, korpus 24, kv. 22, Tbilisi, all of U.S.S.R.

PCT No. PCT/SU82/00002, § 371 Date Sep. 1, 1983, § 102(e) Date Sep. 1, 1983, PCT Pub. No. WO83/02685, PCT Pub. Date Aug. 4, 1983

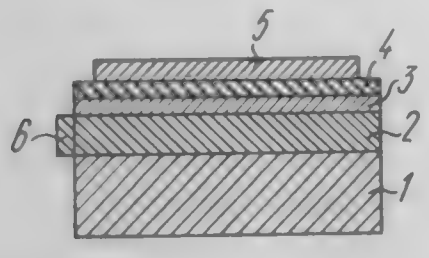
PCT Filed Feb. 2, 1982, Ser. No. 537,399

Int. Cl.⁴ H01L *33/00*

U.S. Cl. 357—17 **8 Claims**

1. A semiconductor light emitter based on gallium nitride

comprising a substrate of a single-crystalline material transparent within the visible range of spectrum, a layer of gallium nitride of n-type conductivity deposited on said single crystalline material, an overlapping layer of gallium nitride alloyed with acceptor dopes, and two metallic electrodes, one of which is supplied with a negative-polarity voltage and the other is supplied with a positive-polarity voltage, characterized by an insulating layer means for limiting the flow of large currents through low-ohmic regions of the layer of gallium nitride alloyed by acceptor dopes by providing complete insulation of the layer of gallium nitride alloyed by acceptor dopes low-ohmic regions of the layer of gallium nitride alloyed by acceptor, the insulating layer means including a layer of insulating material formed over the layer of gallium nitride alloyed by acceptor dopes.



4,608,582

SEMICONDUCTOR DEVICE HAVING NON-SATURATING I-V CHARACTERISTICS AND INTEGRATED CIRCUIT STRUCTURE INCLUDING SAME

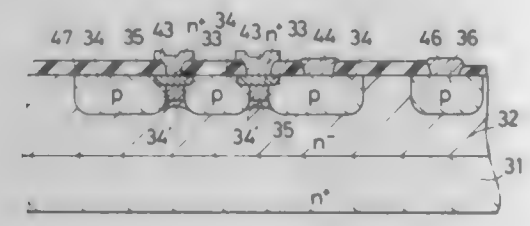
Jun-ichi Nishizawa, Sendai, Japan, assignor to Zaidan Hojin Handotai Kenkyu Shinkokai, Miyagi, Japan

Continuation of Ser. No. 220,122, Dec. 24, 1980, abandoned, which is a continuation of Ser. No. 873,903, Jan. 31, 1978, abandoned. This application Jul. 20, 1983, Ser. No. 515,462

Claims priority, application Japan, Feb. 2, 1977, 52-10460; Feb. 15, 1977, 52-15880; Feb. 18, 1977, 52-17327; Feb. 24, 1977, 52-19466

Int. Cl.⁴ H01L *29/80*

U.S. Cl. 357—22 **23 Claims**



1. In a semiconductor device of the type including:

a current channel region including at least first and second relatively low impurity concentration semiconductor regions of different impurity concentrations;

low resistivity carrier injecting and low resistivity carrier extracting semiconductor regions of a first conducitivity type; and

low resistivity controlling semiconductor regions of a second conductivity type opposite to said first conductivity type provided adjacent to said current channel region and adapted to be applied with a controlling voltage,

said first semiconductor region of said current channel region being of the second conductivity type, and said second semiconductor region of said current channel region being of the first conductivity type,

the improvement wherein:

said first semiconductor region of said current channel region has an impurity concentration higher than that of said second semiconductor region of said current channel region and a thickness smaller than that of said second semiconductor region, and

said device includes means, comprising said channel first region, for generating a depletion layer extending across said current channel region and having a predetermined thickness in the direction of carrier movement in response to zero controlling voltage such that the current channel region is completely depleted at zero controlling voltage, and providing a potential barrier in the current channel region for charge carriers moving from said carrier injecting semiconductor region, the height of the potential barrier being capacitively controllable at least by the voltage applied to said carrier extracting semiconductor region, in a main operative state of the semiconductor device.

4,608,583

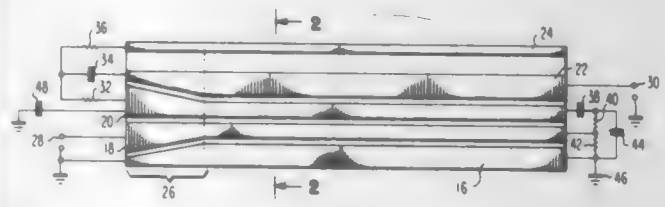
FET AMPLIFIER

Walter R. Curtice, Princeton Junction, N.J., assignor to RCA Corporation, Princeton, N.J.

Continuation of Ser. No. 497,158, May 23, 1983, abandoned. This application Oct. 2, 1985, Ser. No. 782,160

Int. Cl.⁴ H01L *29/80*

U.S. Cl. 357—22 **10 Claims**



1. A solid state transmission line, field effect transistor (FET) radio frequency amplifier, said amplifier having an input impedance and an output impedance, comprising:

a body of semiconductor material having at least one planar surface;

a layer of doped semiconductor material positioned on the planar surface;

a plurality of substantially parallel conductive lines formed on the layer of doped material;

the plurality of lines arranged on the doped semiconductor layer as radio frequency transmission lines with respect to each other to support at a given wavelength a wave travelling parallel to the longitudinal axes of said lines;

said lines having an input section and an output section and being arranged on said layer in spaced sequence, respectively, as a source line, a first rectifying gate line, a second rectifying gate line and a drain line of said FET;

said input section of said lines being formed into a tapered transmission line arranged to match the source impedance of an input signal to the input impedance of said amplifier;

a signal input means comprising two input terminals connected, respectively, to the first gate line and said source line of said tapered section, said source line being connected to ground;

a signal output means connected to said output section of said lines including two output terminals connected, respectively, to the drain line and ground of the output section of said lines; and

means for providing an RF ground connection to said second gate line for isolating RF signals on said drain line from RF signals on said first gate line.

4,608,584

VERTICAL TYPE MOS TRANSISTOR

Teruyoshi Mihara, Yokosuka, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Jun. 13, 1984, Ser. No. 620,290

Claims priority, application Japan, Jun. 13, 1983, 58-105544

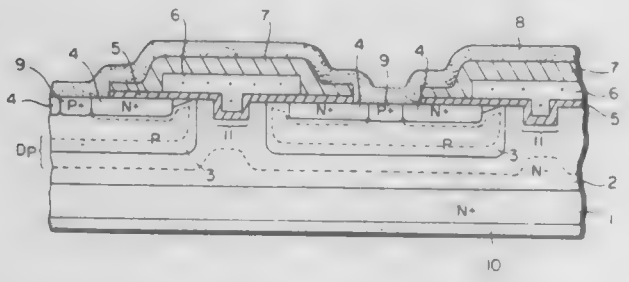
Int. Cl.⁴ H01L *29/78*

U.S. Cl. 357—23.4 **3 Claims**

1. A vertical type MOS transistor comprising:

a semiconductor substrate of a first conductivity type;

an upper region formed on the upper surface of the substrate in which are formed a source region of the first conductivity type, a well region of the second conductivity type opposite to the first conductivity type and a drain region of the first conductivity type, said source region, well region and drain region having portions thereof lying along a flat top surface of the upper region, the well region having a side perpendicular to said top surface and forming a channel region between the source and drain regions;



a stopper groove formed in the drain region spaced from and having no portion thereof in contact with the well region so that the flat top surface is interrupted by the groove;

a source electrode electrically connected to the source region;

a gate electrode formed on the channel region through an insulator film; and

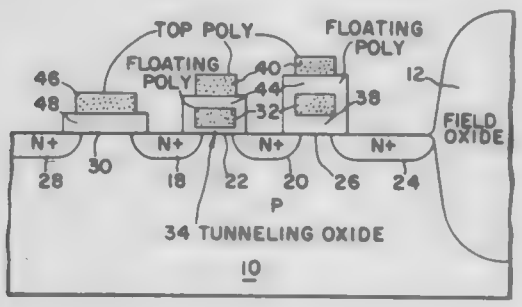
a drain electrode formed on the lower surface of the substrate.

4,608,585

ELECTRICALLY ERASABLE PROM CELL

Parviz Keshtbod, Los Altos, Calif., assignor to Signetics Corporation, Sunnyvale, Calif.

Filed Jul. 30, 1982, Ser. No. 403,694
Int. Cl.⁴ H01L *29/78*; G11C *11/50*
U.S. Cl. 357—23.5 **14 Claims**



1. A memory device comprising:

a body of semiconductive material of a first conductivity type;

first and second regions of a second conductivity type opposite to the first conductivity type located in the body along its upper surface laterally spaced apart by a first channel region;

a third region of the second conductivity type located in the body along the upper surface laterally spaced apart from the second region by a second channel region having a higher doping of the first conductivity type than underlying adjacent material of the body;

an electrically conductive floating gate overlying the channel regions;

a first electrically insulating layer separating the floating gate from the channel regions and having a portion which overlies part of the first channel region and is thinner than the remainder thereof;

an electrically conductive control gate overlying the floating gate; and

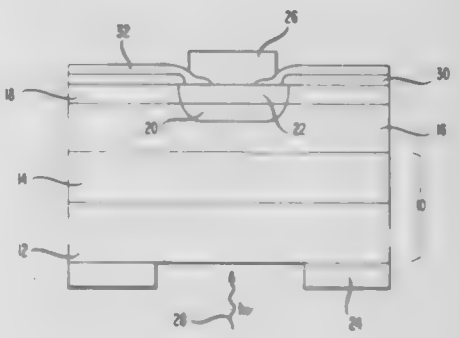
a second electrically insulating layer separating the control gate from the floating gate and being of greater thickness than the thin portion of the first insulating layer.

4,608,586

BACK-ILLUMINATED PHOTODIODE WITH A WIDE BANDGAP CAP LAYER

Ock-Ky Kim, Bridgewater, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed May 11, 1984, Ser. No. 609,317
Int. Cl.⁴ H01L *27/14*
U.S. Cl. 357—30 **11 Claims**



1. A back-illuminated photodiode comprising:

a semiconductor body of one conductivity type which is transparent to lightwaves to be detected,

a first electrical contact to said body adapted to permit said lightwaves to be incident on said body,

a light-absorbing layer of said one conductivity type formed on said body so as to absorb said lightwaves which are transmitted through said transparent body, thereby to generate electrons and holes in said light-absorbing layer,

a cap layer of said one conductivity type formed on the side of said light-absorbing layer remote from said body and having a wider bandgap than said light-absorbing layer,

a zone of opposite conductivity type extending through said cap layer and into said light-absorbing layer, thereby to form a junction for collecting said holes and electrons and generating a photocurrent, and

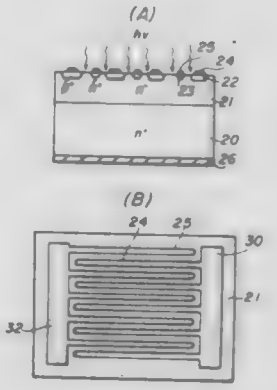
a second electrical contact to said zone.

4,608,587

SEMICONDUCTOR OPTOELECTRO TRANSDUCER

Jun-ichi Nishizawa, Sendai, Japan, assignor to "Semiconductor Research Foundation" , Japan

PCT No. PCT/JP82/00457, § 371 Date Jul. 29, 1983, § 102(e) Date Jul. 29, 1983, PCT Pub. No. WO83/02037, PCT Pub. Date Jun. 9, 1983
PCT Filed Nov. 30, 1982, Ser. No. 522,307
Int. Cl.⁴ H01L *27/14, 31/00*
U.S. Cl. 357—30 **2 Claims**



1. A semiconductor optoelectro transducer comprising:

a high-resistivity semiconductor region of a first conductivity type having an impurity concentration on the order of $1\times10^{14}\,cm^{-3}$ to $1\times10^{16}\,cm^{-3}$ and predetermined dimension constituting at least one current channel having two ends;

a pair of current electrode means comprising low-resistivity semiconductor regions of said first conductivity type and connected to said two ends of said current channel for receiving a main voltage from an external voltage source;

control electrode means formed adjacent and surrounding said current channel for controlling current between said current electrode means, said control electrode means including a low-resistivity semiconductor storage region of a second conductivity type opposite to said first conductivity type and having a low resistivity as compared to the resistivity of said high-resistivity region and formed adjacent said current channel, said control electrode means being capable of storing charge carriers of the second conductivity type and thereby varying a potential thereof to control current between said current electrode means;

a resistor connected to said control electrode means for controlling photosensitivity;

light receiving means formed in the area of said current channel for introducing external light at least into part of said semiconductor region; and

at least one depletion layer formed in said semiconductor region extending from said control means to selectively pinch off said current channel due to said impurity concentration and predetermined dimensions, and forming a potential barrier in said current channel having a height in accordance with the potential of one of said current electrode means;

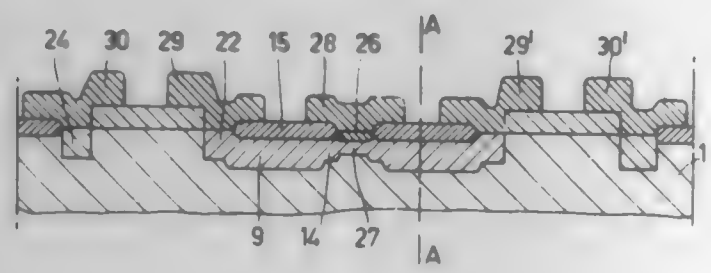
said current electrode means and said current channel being configured substantially perpendicular with respect to said semiconductor region.

4,608,588

SEMICONDUCTOR DEVICE MANUFACTURED BY USING A MULTILAYER MASK

Michel X. M. de Brebisson, and Marc Tessier, both of Caen, France, assignors to U.S. Philips Corporation, Tarrytown, N.Y.

Continuation of Ser. No. 361,957, Mar. 25, 1982, abandoned, which is a division of Ser. No. 139,932, Apr. 14, 1980, Pat. No. 4,368,573. This application Aug. 23, 1985, Ser. No. 768,190
Claims priority, application France, Apr. 20, 1979, 79 10086
Int. Cl.⁴ H01L *29/72*
U.S. Cl. 357—34 **7 Claims**



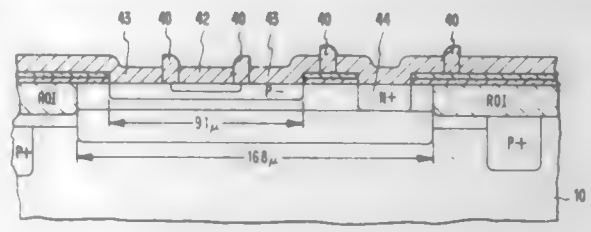
1. A semiconductor device in which an electrically insulating layer with a window therethrough lies along an upper surface of a first region of a semiconductor body wherein a second region of a first conductivity type extends to the upper surface within the window, a first zone of a second conductivity type opposite to the first conductivity type upwardly adjoins the insulating layer, a second zone of the second conductivity type upwardly adjoins the second region below the window, a third zone of the second conductivity type located apart from the second zone extends to the upper surface to serve as a contact zone, the zones and the insulating layer upwardly and laterally enclose the second region, and the first region excluding the zones and any oxidized portion thereof is of the first conductivity type, characterized in that a first segment of the first zone is continuous with the third zone and adjoins at least part of the lateral edge of the insulating layer located apart from the window and that a second segment of the first zone continuous with the first segment is continuous with the second zone, adjoins at least part of the lateral edge of the insulating layer located along the window, and has a sheet resistance much greater than that of the first segment.

4,608,589

SELF-ALIGNED METAL STRUCTURE FOR INTEGRATED CIRCUITS

George R. Goth, Poughkeepsie; Ingrid E. Magdo, Hopewell Junction, and Shashi D. Malaviya, Fishkill, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 167,184, Jul. 8, 1980, Pat. No. 4,400,865. This application Jul. 11, 1983, Ser. No. 499,004
The portion of the term of this patent subsequent to Dec. 11, 2001, has been disclaimed.
Int. Cl.⁴ H01L *29/72*
U.S. Cl. 357—34 **16 Claims**



1. A substantially planar, self-aligned integrated circuit structure comprising:

a silicon body having electrical devices therein with regions of said devices extending to the major surface of said body;

silicon dioxide regions within said body for isolating said electrical devices from one another;

a pattern of narrow dimensioned dielectric regions extending upward from said surface of said body, wherein the narrowest width dimension of said narrow dimensioned regions is less than about 1.5 micrometers; and

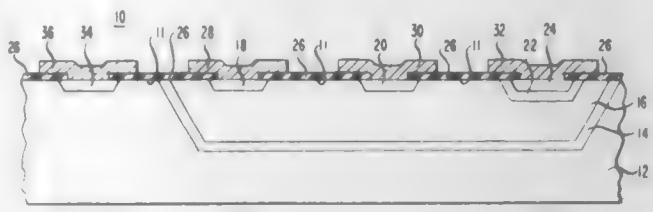
electrical contacts to said devices filling the spaces between said narrow dimensioned regions and which contacts are self-aligned to said narrow dimensioned regions and substantially planar with the tops of said narrow dimensioned regions.

4,608,590

HIGH VOLTAGE DIELECTRICALLY ISOLATED SOLID-STATE SWITCH

Adrian R. Hartman, New Providence, N.J.; Terence J. Riley, Wyomissing, Pa., and Peter W. Shackle, West Melborne, Fla., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Continuation of Ser. No. 248,192, Mar. 27, 1981, abandoned, Continuation-in-part of Ser. No. 107,774, Dec. 28, 1979, Continuation-in-part of Ser. No. 972,056, Dec. 20, 1978. This application Dec. 22, 1981, Ser. No. 333,461
Int. Cl.⁴ H01L *29/74*
U.S. Cl. 357—38 **7 Claims**



1. A switching element comprising a semiconductor body whose bulk is of one conductivity type and relatively high resistivity and which includes anode, gate, and cathode regions spaced apart and localized along a common planar surface of the body, each being of relatively low resistivity, the cathode and gate regions being of the opposite conductivity type as the bulk and the anode region being of the same conductivity type

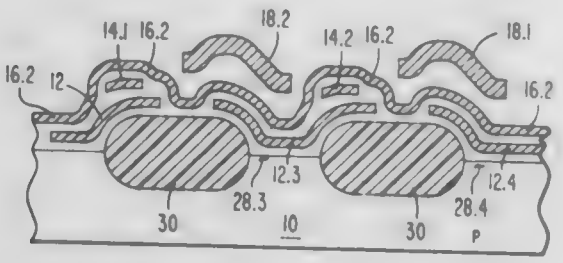
as the bulk, and separate cathode, anode, and gate electrodes, the parameters of the various portions of the switching element being such that with the anode region being forward biased with respect to the cathode region and the potential of the gate region being insufficient to essentially completely deplete a cross-sectional portion of the bulk of the semiconductor body between the anode and cathode regions there is facilitated a substantial current flow between the anode and cathode regions via the bulk, and with the anode region being forward biased with respect to the cathode region and the potential of the gate region being of sufficiently greater magnitude than that of the anode region to essentially completely deplete a cross-sectional portion of the bulk of the semiconductor body between the anode and cathode regions and to cause this portion of the bulk of the semiconductor body to be at a potential which is greater in magnitude than the anode region, there is facilitated an inhibiting or interrupting (cutting off) of current flow between the anode and cathode regions.

4,608,591

ELECTRICALLY ALTERABLE PROGRAMMABLE NONVOLATILE FLOATING GATE MEMORY DEVICE

Alfred C. Ipri, Princeton, and Roger G. Stewart, Neshanic Station, both of N.J., assignors to RCA Corporation, Princeton, N.J.

Filed Aug. 17, 1983, Ser. No. 523,921
Int. Cl.[4] H01L *29/34;* G11C *11/34*
U.S. Cl. 357—54 8 Claims



1. In an electrically alterable, nonvolatile floating gate memory device having a body of semiconductor material of a first conductivity type, a source region and a drain region of a second opposite conductivity type embedded in the body of semiconductor material and spaced one from the other to define a channel region, a conductive floating gate member insulated from the body of semiconductor material and having a portion thereof disposed over the channel region, a conductive word line, a conductive bit line and a conductive program line, the improvement which comprises:

the floating gate member and the word line being positioned over the semiconductor body with the floating gate member and the word line insulated from each other and substantially coincident with each other in one direction;

the bit line having a portion thereof in ohmic contact with the drain region and arranged to extend in a direction orthogonal with respect to the direction of the floating gate member and word line insulated therefrom; and

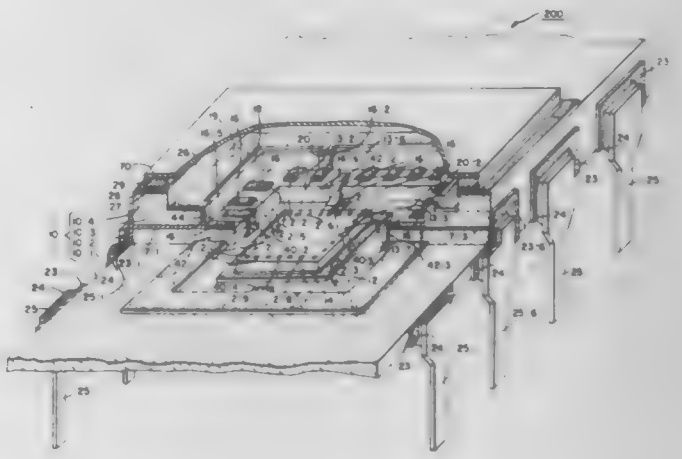
the program line being one in number and having a bidirectional conduction characteristic with respect to the floating gate member and arranged parallel to the bit line and extending in a direction orthogonal with respect to the direction of the floating gate memory and the word line.

4,608,592

SEMICONDUCTOR DEVICE PROVIDED WITH A PACKAGE FOR A SEMICONDUCTOR ELEMENT HAVING A PLURALITY OF ELECTRODES TO BE APPLIED WITH SUBSTANTIALLY SAME VOLTAGE

Takashi Miyamoto, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jul. 8, 1983, Ser. No. 511,935
Claims priority, application Japan, Jul. 9, 1982, 57-119306; Oct. 19, 1982, 57-183205
Int. Cl.[4] H01L *39/02;* H05K *5/00*
U.S. Cl. 357—80 13 Claims



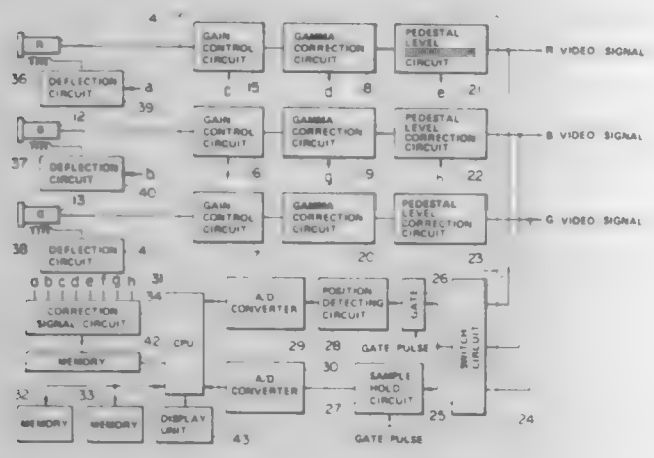
1. A semiconductor device comprising an insulating body constituted of first, second, third and fourth insulating sheets laminated into a unitary structure, said second insulating sheet having a first hole to provide a first horizontal surface on said first insulating sheet, said third insulating sheet having a second hole larger than said first hole to provide a second horizontal surface of an annular shape on said second insulating sheet, said fourth insulating sheet having a third hole larger than said second hole to provide a third horizontal surface of an annular shape on said third insulating sheet, a semiconductor chip mounted on said first horizontal surface and having a plurality of first electrodes supplied with the same voltage and a plurality of second electrodes, a plurality of first and second connection terminals made of metallized layers and formed on said second horizontal surface separately from each other, means for connecting said first electrodes of said semiconductor chip to said first connection terminals, means for connecting said second electrodes of said semiconductor chip to said second terminals, a first metallized wiring layer and a plurality of second metallized wiring layers buried in said insulating body, one end of said first metallized wiring layer being connected to one of said first connection terminals and one end of each of said second metallized wiring layers being respectively connected to said second connection terminals, the other ends of said first and second metallized wiring layers extending to an exposed surface of said insulating body, a first external lead attached to the other end of said first metallized wiring layer, a plurality of second external leads attached to the respective other ends of said second metallized wiring layers, a conductive layer formed on said third horizontal surface and extending along said third horizontal surface to provide an annular conductive layer, a plurality of conductive paths connecting said first connection terminals to said annular conductive layer, and a lid attached to said insulating body and closing said first, second and third holes thereby to provide a sealed space containing said semiconductor chip therein.

4,608,593

COLOR TELEVISION CAMERA APPARATUS WITH SELF-DIAGNOSIS FUNCTION

Yoshimori Miyaji, Tokyo; Hirokazu Fujiki, Asakusabashi, and Fumio Takahashi, Tama, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Nov. 9, 1983, Ser. No. 550,044
Claims priority, application Japan, Nov. 30, 1982, 57-209623
Int. Cl.⁴ H04N *5/225, 17/02*
U.S. Cl. 358—10 **10 Claims**



1. A color television camera apparatus with self-diagnosis function comprising:

detecting means for detecting adjustment data with respect to predetermined adjustment items from a video signal corresponding to a pattern on a test chart;

arithmetic operation means for calculating correcting data on the basis of the comparison of said adjustment data with reference data;

adjusting means for adjusting said video signal based on said correcting data;

variation data supplying means for supplying variation data;

modifying means for modifying said correcting data by said variation data to produce modified data;

supplying means for supplying said modified data to said adjusting means;

calculating means for calculating the difference between the video signal adjusted by said correcting data and the video signal adjusted by said modified data; and

judging means for judging whether said difference calculated by said calculating means falls within a predetermined allowable range.

4,608,594

TELEVISION RECEIVER USING NON-INTERLACED SCANNING FORMAT WITH MOTION COMPENSATION

Warren H. Nicholson, Mercer County, N.J., assignor to RCA Corporation, Princeton, N.J.

Filed May 25, 1984, Ser. No. 614,310
Int. Cl.⁴ H04N *9/78, 11/00*
U.S. Cl. 358—11 **11 Claims**

1. A television apparatus for generating from an incoming television signal first and second enhanced video signals such that the video lines thereof provide picture information for display in a non-interlaced television display, to form a picture frame, said apparatus comprising:

a first comb filter responsive to said incoming television signal for producing a first luminance signal and a first vertical detail signal, each derived from said incoming television signal;

a delay element for delaying said incoming television signal by substantially one field time thereof;

a second comb filter responsive to said field delayed television signal for producing a field delayed second luminance signal and a field delayed second vertical detail signal, eahc derived from said field delayed television signal;

a source for providing a motion indicating signal;

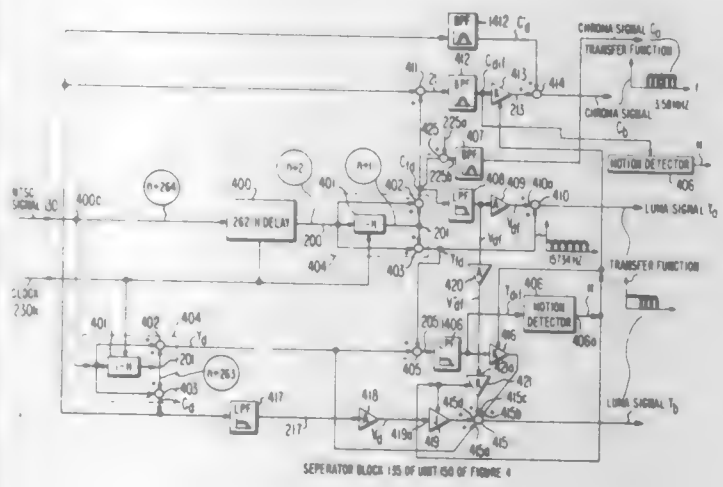
first combining means coupled to said first comb filter, to said second comb filter and to said source for combining portions of said first and second vertical detail signals and said motion indicating signal with said first luminance signal as a function of said motion indicating signal for generating said first enhanced video signal;

second combining means coupled to said second comb filter for combining said second vertical detail signal with said second luminance signal for generating said second enhanced video signal; and

means for displaying said first and second enhanced video signals in a non-interlaced television display.

10. Television apparatus, comprising:

filter means having an input for receiving a composite video input signal and having three outputs for providing, respectively, a first line-comb filtered luminance signal, a second line-comb filtered and field-delayed luminance signal, and a motion indicating signal;



first output signal forming means coupled to said filter means for selectively combining said motion signal with said first luminance signal as a function of said motion signal to form a first processed luminance output signal;

second output signal forming means coupled to said filter means for processing said second luminance signal to form a second processed luminance output signal; and

display means coupled to said output means for displaying said processed output signal in progressive scan fashion; and wherein

said first output signal forming means includes motion detector means responsive to said motion indicating signal for controlling the relative proportions of said motion indicating signal that are combined with said first luminance signal such that the proportion of said motion indicating signal increases for increases in magnitude of said motion indicating signal.

4,608,595

WHITE BALANCE CORRECTION FOR NEGATIVE-TO-POSITIVE CONVERSION

Yoshiaki Nakayama, Tokyo, and Masafumi Inuiya, Kaisei, both of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Apr. 16, 1984, Ser. No. 600,819
Claims priority, application Japan, Apr. 19, 1983, 58-67749
Int. Cl.⁴ H04N *9/73*
U.S. Cl. 358—29 **2 Claims**

2. Negative-to-positive conversion apparatus for television signals, wherein an image recorded on a negative is picked up to be converted into a color composite video signal representative of a positive image associated therewith, comprising:

imaging means for picking up an image recorded on a negative to develop video signals representative of the negative image in the form of three color components;

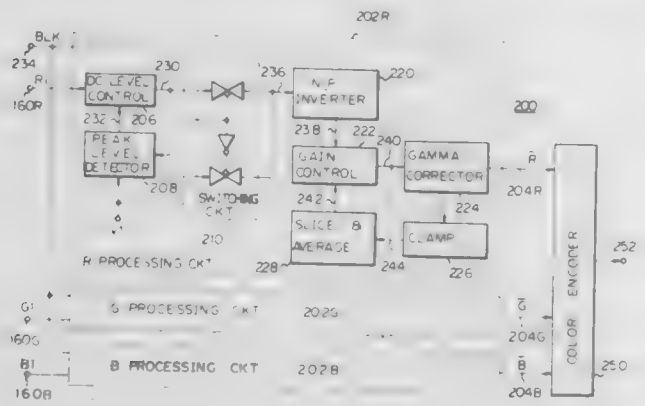
three processing means interconnected to said imaging means for processing respective ones of the three separated color signals; and

encoder means interconnected to said three processing means for combining output signals from said processing means to produce a color composite video signal representative of a positive image associated with the negative image;

each of said processing means including;

inversion means for inverting associated ones of the separated color signals;

maintaining means interconnected to said inversion means



for maintaining extreme values of a resultant inverted video signal at a first predetermined level; and

variable gain amplifier means for amplifying an output signal of said inversion means, said variable gain amplifier means varying a gain thereof in response to an integrated average value of portions of the inverted and maintained signal which are higher than a second predetermined level,

whereby said encoder means produces the color composite video signal with its luminance adjusted and white balance corrected.

4,608,596

SYSTEM FOR COLORIZING VIDEO WITH BOTH PSEUDO-COLORS AND SELECTED COLORS

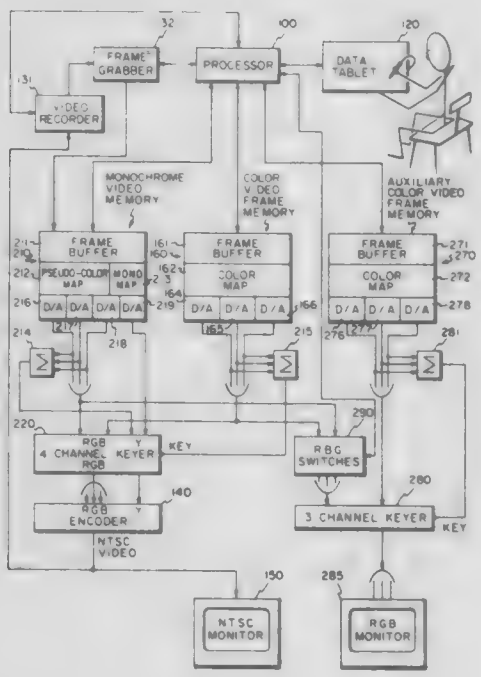
Lance Williams, Westbury, and Jules Bloomenthal, Glen Cove, both of N.Y., assignors to New York Institute of Technology, Old Westbury, N.Y.

Filed Sep. 9, 1983, Ser. No. 530,656

Int. Cl.⁴ H04N *1/46, 9/43, 9/74*

U.S. Cl. 358—81

11 Claims



1. A system for forming frames of color video signals, comprising:

means for deriving a monochrome video signal representative of a video frame;

a monochrome video frame buffer for storing said monochrome video signal;

a pseudo-color look-up memory responsive to the output of said monochrome video frame for generating a plurality of pseudo-color component signals;

means for deriving a luminance signal from the output of said monochrome video frame buffer;

means for generating operator-selected color component signals for operator-selected regions of pixels of a video frame;

a color video frame memory for storing said operator-selected color component signals for each pixel in the regions selected by the operator for colorization;

a video color encoder having a luminance input and a plurality of color component inputs, and an encoded color video output;

means responsive to color component signals output from said color video frame memory for generating a keying control signal;

a multichannel keying means, under control of said keying control signal, for receiving said pseudo-color component signals and the operator-selected color component signals and for selecting for coupling to the color component inputs of said video color encoder either said pseudo-color component signals or said operator-selected color component signals;

means for applying said luminance signal to the luminance input of said encoder; and

means for recording the output of said encoder.

4,608,597

METHOD FOR THE SURVEYANCE OF AN OBJECT SPACE

Walter Jaeger, Cureglia, Switzerland, assignor to GX-Holding AG, Basel, Switzerland

PCT No. PCT/CH83/00119, § 371 Date Jun. 29, 1984, § 102(e) Date Jun. 29, 1984, PCT Pub. No. WO84/01872, PCT Pub. Date May 10, 1984

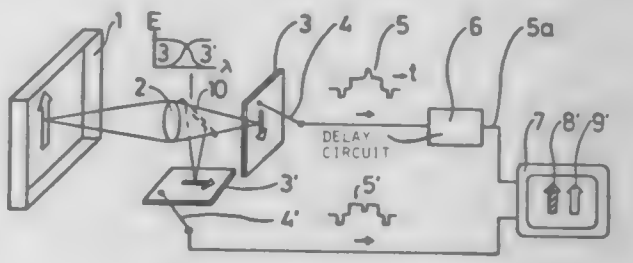
PCT Filed Oct. 27, 1983, Ser. No. 629,543

Claims priority, application Switzerland, Nov. 2, 1982, 6357/82

Int. Cl.⁴ H04N *7/18*

U.S. Cl. 358—113

8 Claims

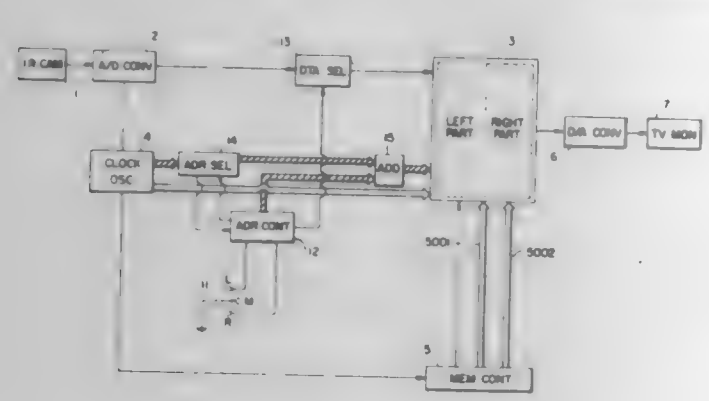


1. A method of monitoring a target space, characterised by projecting thermal infrared radiation of the target space by means of an infrared lens on to at least one infrared sensitive detector, forming an electrical signal sequence by constant scanning and passing this signal sequence in a specific colour directly to a colour TV and delayed and in another colour to the same monitor as an image of the object.

4,608,598
THERMAL IMAGING APPARATUS

Yoshishige Murakami, Yokohama; Takeshi Inoue, and Atsushi Tanaka, both of Sagamihara, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Jun. 28, 1984, Ser. No. 625,683
Claims priority, application Japan, Jun. 29, 1983, 58-117253
Int. Cl.[4] H04N 7/18
U.S. Cl. 358—113
10 Claims



1. An imaging apparatus comprising

sensing means for providing image data of an observed object by scanning an instantaneous sensing field at a first speed across a total sensing field which includes said observed object,

a display means including a screen for displaying, at a second speed that is different from said first speed, a sensed image of said observed object according to said image data,

a digital semiconductor memory device for writing into respective memory elements at said first speed said image data from said sensing means, and for reading out data stored in said memory device at said second speed to said display means,

means for selectively determining said total sensing field of said sensing means so that said observed object is in a predetermined limited part of said total sensing field,

means for writing a limited part of said image data, corresponding to said limited part of said total sensing field, into a respective limited region of said memory device, and

means for subsequently writing at least one further one of said limited part of said image data, each corresponding to a respective sensed image of said object in said limited part of said total sensing field at a respective different time, at said first speed, into respective regions of said memory device, while maintaining the previously written at least one limited part of said image data, each said limited part of said image data corresponding to a respective thermal image to be simultaneously displayed, in respective limited parts of said memory device,

wherein a plurality of said sensed images corresponding to said plurality of said limited image data are read out from said memory device at said second speed for simultaneous display on said screen.

4,608,599
INFRARED IMAGE PICKUP IMAGE

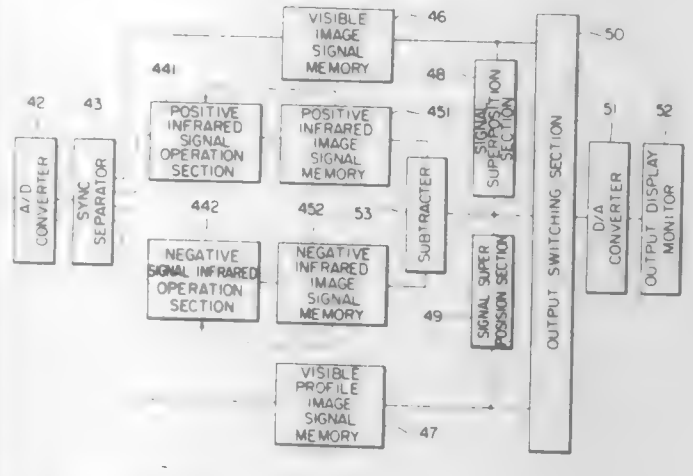
Akira Kaneko, Tokyo; Teruo Fumoto, Kanagawa, and Jun Nishida, Tokyo, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jul. 27, 1984, Ser. No. 635,293
Claims priority, application Japan, Jul. 28, 1983, 58-138022; Aug. 29, 1983, 58-158347; Aug. 31, 1983, 58-159420
Int. Cl.[4] H04N 7/18
U.S. Cl. 358—113
17 Claims

1. An infrared image pickup device comprising:

means for photographing an object to obtain one of at least an infrared image signal, a visible image signal and a visible profile image signal from an image pickup section in a time-division manner,

means for separating the visible image signal and visible profile signal, and

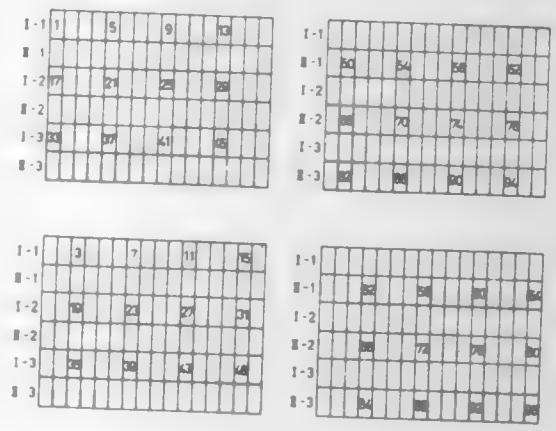


means for simultaneously displaying at least one of the visible image and visible profile image on at least one display monitor in a superposed manner or in a separate manner with the infrared image signal.

4,608,600
DIGITAL VIDEO SIGNAL TRANSMITTING APPARATUS

Hiroyuki Sugiyama, Isehara, Japan, assignor to Victor Company of Japan, Ltd., Kanagawa, Japan

Filed Apr. 16, 1984, Ser. No. 600,497
Claims priority, application Japan, Apr. 22, 1983, 58-71144
Int. Cl.[4] H04N 7/12
U.S. Cl. 358—138
6 Claims



1. A digital video signal transmitting apparatus comprising:

picture element data forming means for obtaining picture element data by subjecting an analog video signal to a digital pulse modulation;

transmitting picture element data producing means for successively producing for every one field period, picture element data which are located at different picture element positions in a picture for each one field period and amount to ¼ the number of picture element data amounting to one field, among the picture element data which are successively obtained from said picture element data forming means in each one field period among first, second, third, and fourth field periods;

transmitting means for transmitting through a transmission path a digital video signal in which the transmitting picture element data from said transmitting picture element data producing means are time-sequentially multiplexed;

a memory circuit into which said digital video signal obtained through said transmission path is written;

comparator means supplied with each of the picture element data making up said digital video signal as an input picture element data and supplied with one of said reproduced picture element data located at the same picture element position as said input picture element data, for comparing values of said input picture element data and said one of said reproduced picture element data so as to detect a

difference therebetween and for producing a detection signal indicative of said difference;

control circuit means for controlling a write-in to said memory circuit responsive to said detection signal from said comparator means, said control circuit means causing write-in of said input picture element data at the same write-in address in said memory circuit as said one of said reproduced picture element data when said detection signal indicates said difference to be essentially zero, and said control circuit means causing write-in of said input picture element data at the same write-in address as said one of said reproduced picture element data and at write-in addresses of the reproduced picture element data which are located in a vicinity of the picture element position of said input picture element data in the picture and amount to a number depending on said difference when said detection signal indicates said difference to be not essentially zero;

reproduced picture element data forming means for obtaining reproduced picture element data corresponding to one frame which are to be reproduced, by successively reading out the picture element data which amount to one field and were written into said memory circuit in said first through fourth field periods; and

reproduced analog video signal forming means for forming a reproduced analog video signal from the reproduced picture element data obtained from said reproduced picture element data forming means.

4,608,601

VIDEO RESPONSE TESTING APPARATUS

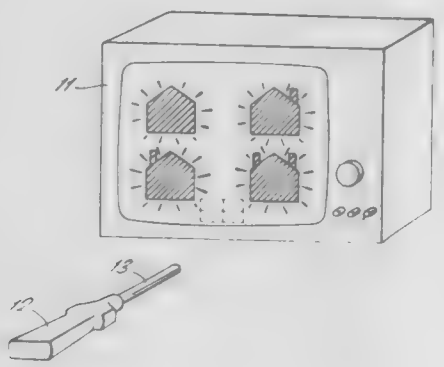
Peter K. Shreck, Truro, and John Dudding, Falmouth, both of United Kingdom, assignors to The Moving Picture Company Inc., Wilmett, Ill.

Filed Jul. 11, 1983, Ser. No. 512,490

Claims priority, application United Kingdom, Jul. 12, 1982, 8220181

Int. Cl.⁴ H04N *7/04, 7/08*

U.S. Cl. 358—146 **10 Claims**



1. Video response testing apparatus comprising video display apparatus including a display screen and for displaying video pictures on the screen, a generator for generating video signals, including a luminance signal, for display by the display apparatus of corresponding video pictures, the generator including picture area defining means for defining at least one selected area of the video picture represented by the video signals, modulation means responsive to the picture area defining means and arranged for modulating the luminance signal of the video signals, to alternately raise and lower the luminance level represented by the luminance signal in said at least one selected area without destroying the original luminance signal spacial variations across said area, whereby the original picture content in said area represented by said original luminance signal spacial variations is not destroyed, encoding means controlling the modulation means to raise and lower said luminance level in accordance with a desired binary code, the rate of alternate raising and lowering of said luminance level and the selection of code formats being such as to make the code visually undecipherable when viewed on the display screen, and a sensing probe including a photo sensitive element, the probe being positionable to enable the element to respond to variations in picture brightness in said selected area on the display screen and including decoding circuitry arranged to decode the binary code represented by said variations to provide decoded data.

4,608,602

CIRCUIT FOR GENERATING A CONTROL SIGNAL FOR THE FIELD DEFLECTION IN A PICTURE DISPLAY DEVICE

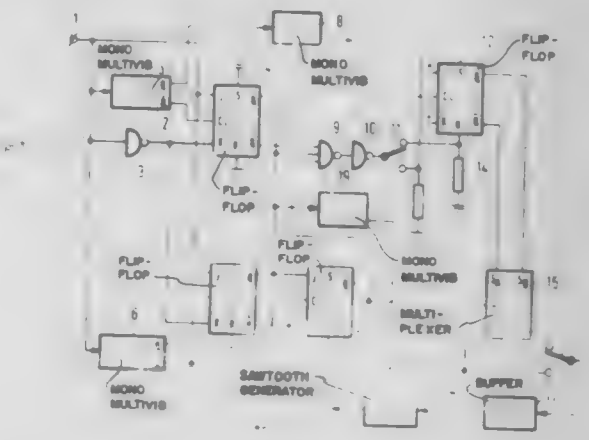
Timothy R. Grantham-Hill, Breda, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Sep. 10, 1984, Ser. No. 649,093

Claims priority, application Netherlands, Sep. 30, 1983, 8303347

Int. Cl.⁴ H04N *5/04, 5/10*

U.S. Cl. 358—148 **5 Claims**



1. A circuit for generating a control signal for field deflection in a picture display device, comprising an input for receiving a composite synchronizing signal intended for controlling the display of an interlaced picture, a field identification circuit connected to the synchronizing signal input for producing a first field signal on receipt of a first field and a second field signal on receipt of a subsequent second field, the second field signal deviating from the first field signal, and an address generator coupled to the field identification circuit for generating signals for controlling the transfer of the control signal, formed by said first and second field signals, for the field deflection, characterized in that the circuit further comprises a signal selection circuit coupled to the field identification circuit and the address generator for receiving said first and second field signals and for setting the sequence in which the first and second field signals occur in said control signal appearing at an output thereof.

4,608,603

MICROPROCESSOR DRIVEN VIDEO GENERATOR

Brion Johnson, Quincy, Ill., assignor to Harris Corporation, Melbourne, Fla.

Filed Jul. 18, 1983, Ser. No. 514,872

Int. Cl.⁴ H04N *5/45*

U.S. Cl. 358—183 **18 Claims**

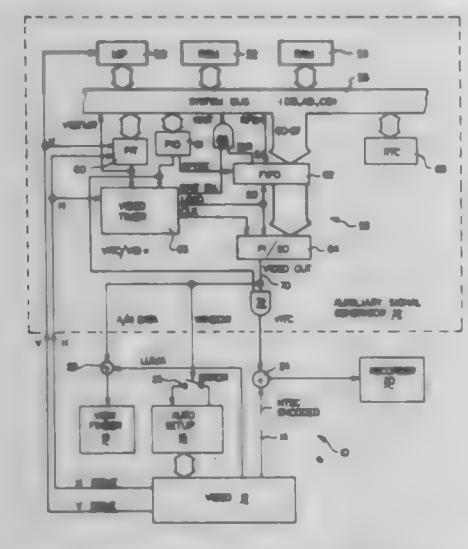
1. Apparatus for use in conjunction with a television camera which generates a video-related signal and which includes adjustment circuitry for adjusting camera operation in accordance with said video-related signal, comprising:

gate means for gating said video-related signal to said adjustment circuitry, said gate means being controlled by a window signal so as to gate only selected portions of said video-related signal to said camera adjustment circuitry, and

window signal generating means for generating said window signal, said window signal generating means comprising memory means for storing said window signal, means for reading said stored window signal from said memory means in synchronism with said video-related signal, and

means for applying the resulting window signal to said gate means;

said memory means comprises a digital memory for storing a bit pattern representative of said window signal, and wherein said reading means comprises means for reading out said bit pattern in bit serial fashion and in synchronism



with said video-related signal so as to thereby generate a serial stream of binary bits representing said window signal;

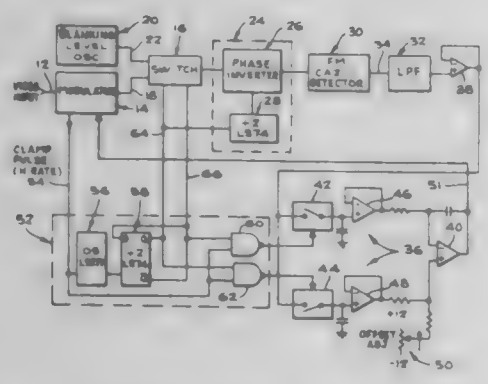
said reading means comprises means for receiving words from said memory means in parallel, and means coupled to said receiving means for converting said parallel words into said serial stream of binary bits.

4,608,604

CIRCUIT FOR REDUCING AFC OFFSET ERROR

Martin A. Lilley, Fremont, Calif., assignor to Ampex Corporation, Redwood City, Calif.

Filed Apr. 8, 1983, Ser. No. 483,325
Int. Cl.[4] H04N *5/21, 5/44*
U.S. Cl. 358—188 14 Claims



1. A circuit for reducing offset errors in a modulated RF signal detected by FM detector means, comprising:

means for supplying a blanking level signal;

switching means for combining the blanking level and the modulated RF signals to define a switched RF signal;

means coupled to the switching means for selectively inverting the phase of the switched RF signal at a selected rate; and

means for integrating the subsequent detected signal from the FM detector means at a second selected rate to define an output signal with minimal offset errors.

4,608,605

IMAGE SENSING APPARATUS

Tadashi Okino, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

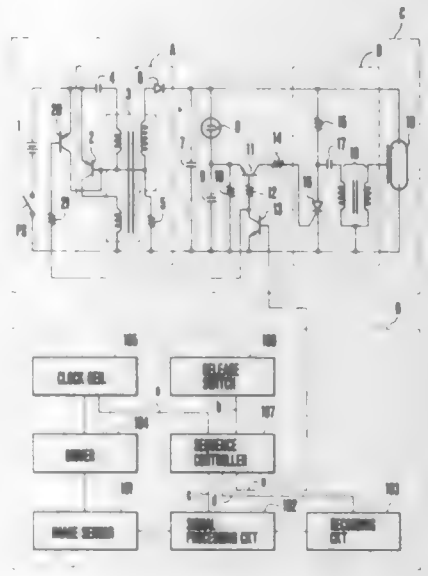
Filed Dec. 5, 1984, Ser. No. 678,223
Claims priority, application Japan, Dec. 6, 1983, 58-230269; Dec. 20, 1983, 58-241235
Int. Cl.[4] H04N *5/30*
U.S. Cl. 358—209 21 Claims

1. An image sensing apparatus, comprising:

illuminating means including electric energy accumulating means, said illuminating means being arranged to illuminate an object to be photographed with an electric energy accumulated by said electric energy accumulating means;

charging means for charging said electric energy accumulating means;

image sensing means arranged to convert an image of said object illuminated by said illuminating means into an electrical signal;



signal processing means for processing the output of said image sensing means; and

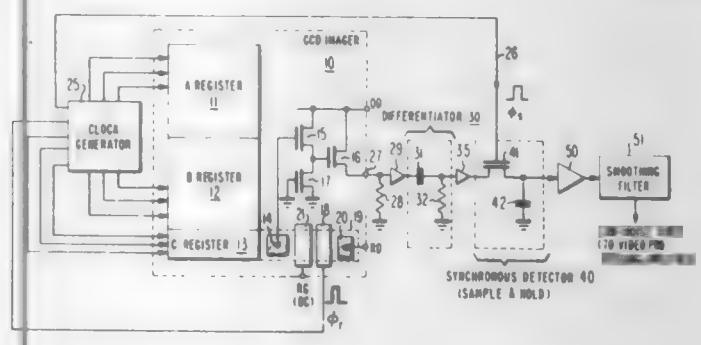
control means arranged to bring the operation of said charging means to a stop in relation to the processing operation of said signal processing means performed on the output of said image sensing means which corresponds to the image of said object illuminated by said illuminating means.

4,608,606

CCD FLOATING-ELEMENT OUTPUT STAGES PROVIDING LOW RESET NOISE WITH SINGLE SAMPLING

Peter A. Levine, West Windsor Township, Mercer County, N.J., assignor to RCA Corporation, Princeton, N.J.

Continuation of Ser. No. 590,044, Mar. 15, 1984. This application Dec. 30, 1985, Ser. No. 815,662
Int. Cl.[4] H04N *5/34*
U.S. Cl. 358—213 11 Claims



1. In combination:

a charge coupled device operable as a shift register having a charge transfer channel,

a succession of clocked gate electrodes across said charge transfer channel,

a floating element for sensing charge in a portion of sid charge transfer channel following said succession of clocked gate electrodes,

an electrometer stage having said floating element at an input connection thereof and supplying with attendant flicker noise output signal samples at an output connection thereof responsive to the charge sensed by said floating element,

means responsive to reset pulses for clamping said floating element to a prescribed potential for the duration of each reset pulse,

a drain in said charge transfer channel following said floating element, and

means for introducing charge packets under selected ones of said clocked gate electrodes;

means for applying clocking signals to said clocked gate electrodes at a clocking frequency, or rate, in appropriate phases to transfer charge packets through said charge transfer channel towards said drain following said floating element;

a differentiation with respect to time circuit having an input connection from the output connection of said electrometer stage and having an output connection for supplying response to the output signal samples from said electrometer stage, in which response at least the lower frequencies of the baseband spectrum of output signal below a corner frequency are suppressed to reduce flicker noise arising in said electrometer stage;

a synchronous detector having an input signal connection to the output connection of said differentiation circuit, having a carrier signal connection, and having an output connection from which synchronously detected signal is supplied;

means for applying pulses at said clocking frequency to said carrier signal connection of said synchronous detector; and

means for reducing reset noise in the synchronously detected signal which means includes

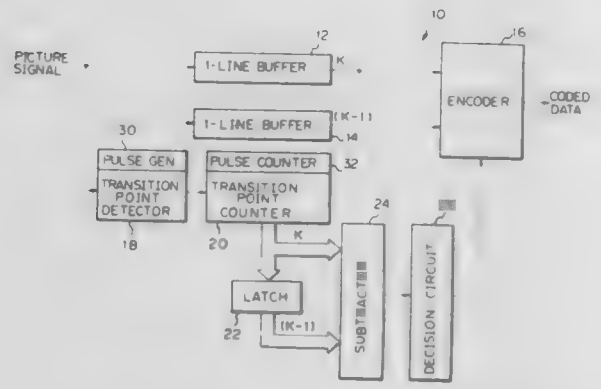
means for applying reset pulses to said means for clamping, application being at times preceding each admission of charge under said floating element for sensing, which times are each substantially as long as the reciprocal of said corner frequency in radians per unit of time.

4,608,607

DATA COMPRESSION DEVICE FOR PICTURE PROCESSING APPARATUS

Eiichi Adachi, Atsugi, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Jun. 4, 1984, Ser. No. 617,207
Claims priority, application Japan, Jun. 15, 1983, 58-105772
Int. Cl.[4] H04N *1/44*
U.S. Cl. 358—260
9 Claims



1. A data compression device for redundancy reduction coding picture signals, comprising:

(a) transition point detector means for detecting transition points of picture signals associated with two adjacent scanning lines;

(b) transition point counter means for counting the detected transition points of the picture signals;

(c) calculator means for producing an absolute value of a difference between the counted numbers of transition points of the respective picture signals;

(d) decision means for comparing said calculated absolute value with a predetermined value to select an adequate coding mode; and

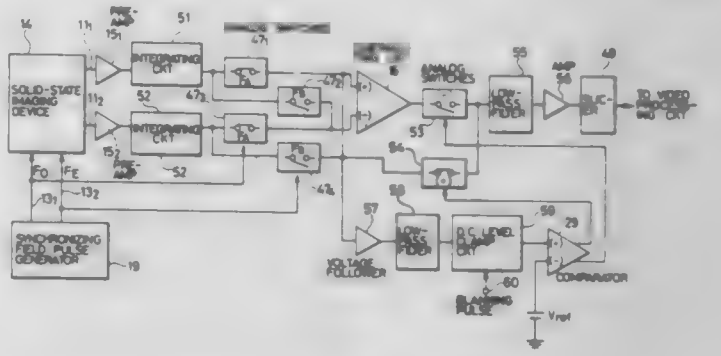
(e) encoder means for selectively performing a one-dimensional mode coding operation and a two-dimensional mode coding operation in response to a result of the selection by said decision means.

4,608,608

SOLID-STATE IMAGING SYSTEM WITH SMEAR SUPPRESSION CIRCUITS

Shigeki Nishizawa, and Tetsurou Izawa, both of Mobara, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 29, 1984, Ser. No. 676,312
Claims priority, application Japan, Nov. 30, 1983, 58-224118; May 18, 1984, 59-98694
Int. Cl.[4] H04N *3/14*
U.S. Cl. 358—213
6 Claims



1. An imaging system comprising:

a photo-electric converter;

a subtracter for subtracting a noise component from the sum of signal and noise components;

a comparator for detecting whether said sum of signal and noise components exceeds a predetermined value; and

a control circuit for preventing the overaction of the subtraction of said noise component from said sum signal and noise components in response to the output of said comparator.

4,608,609

APPARATUS FOR RECORDING A COLOR VIDEO SIGNAL

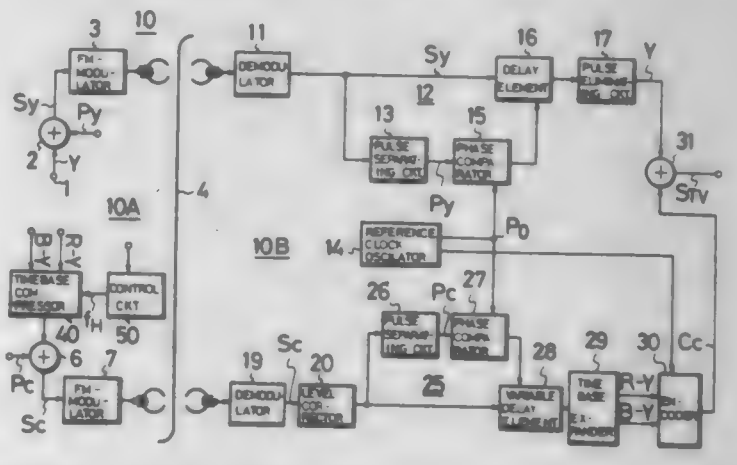
Masayuki Takano, and Kenji Nakamura, both of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Aug. 19, 1983, Ser. No. 524,558
Claims priority, application Japan, Aug. 20, 1982, 57-145100
Int. Cl.[4] H04N *5/782*
U.S. Cl. 358—320
6 Claims

1. Apparatus for recording a color video signal having a horizontal frequency f_H in which a luminance signal and a chrominance signal are recorded on separate channels and at least two chrominance component signals are compressed in timebase and arranged alternately and sequentially for recording on the track as said chrominance signal; said apparatus comprising:

clock signal generating means for generating a write clock signal having a frequency $N \cdot f_H$ and a read clock signal having a frequency $m \cdot N \cdot f_H$, where N and m are integers;

timebase compressing means for writing said chrominance component signals in response to said write clock signal and reading them out in response to said read clock signal, whereby the timebases of said chrominance component signals are compressed to 1/m; and



switching means for alternately selecting said chrominance component signals with the timebases compressed by said

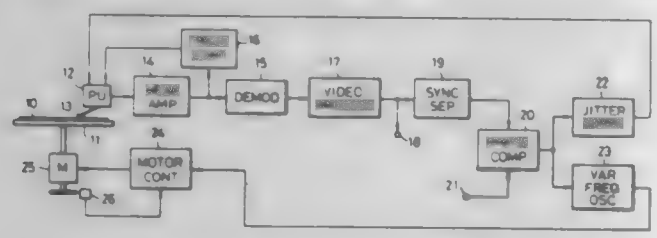
timebase compressing means ane arranging said chrominance component signals alternately.

4,608,610

JITTER COMPENSATION SYSTEM IN ROTARY RECORDING MEDIUM REPRODUCING APPARATUS

Kazuo Tatsuguchi, Sagamihara, Japan, assignor to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Aug. 21, 1981, Ser. No. 295,232
Claims priority, application Japan, Aug. 22, 1980, 55-115377; Aug. 22, 1980, 55-115378
Int. Cl.[4] H04N *9/44*
U.S. Cl. 358—324 6 Claims



1. A jitter compensation system in a reproducing apparatus having a motor for rotating a rotary medium with video signals recorded thereon, and a reproducing transducer including an element for reproducing said recorded video signal from said rotary recording medium, said jitter compensation system comprising:

separation means for separating a horizontal synchronizing signal having a first phase from the video signal reproduced by said reproducing transducer;

means for supplying a first reference signal having a second phase;

phase comparing means for comparing the phases of said separated horizontal synchronizing signal and the first reference signal to produce a first phase comparison error signal;

means for displacing the reproducing element of said reproducing transducer along a relative scanning direction with respect to said rotary recording medium, in response to the output error signal of said phase comparing means;

variable frequency oscillating means responsive to the first phase comparison error signal of said phase comparing means, for controlling the output oscillation frequency, said variable frequency oscillating means producing a second reference signal;

detection means for detecting the rotational phase of said motor; and

control means for comparing phases of outputs of said variable frequency oscillating means and said detection means and for producing a second phase comparison error signal, to control the rotation of said motor responsive to said second phase comparison error signal.

4,608,611

COLOR VIDEO SIGNAL RECORDING AND/OR REPRODUCING SYSTEM USING OVERLAP RECORDING OF FM LUMINANCE SIGNAL OVER FREQUENCY CONVERTED CARRIER CHROMINANCE SIGNAL

Yoshihiko Ota, Yokohama, Japan, assignor to Victor Company of Japan, Japan

Filed Oct. 31, 1983, Ser. No. 547,105
Claims priority, application Japan, Nov. 2, 1982, 57-192955
Int. Cl.[4] H04N *9/80*
U.S. Cl. 358—328 6 Claims

1. A color video signal recording system comprising:

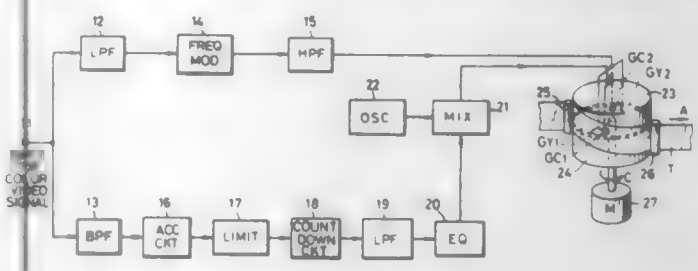
separating means for separating a luminance signal and a carrier chrominance signal from an input color video signal;

frequency modulating means for frequency-modulating a carrier by the luminance signal which is separated in said separating means, and for producing a frequency modulated luminance signal;

frequency converting means for frequency-converting the carrier chrominance signal which is separated in said separating means into a frequency range which is lower than a band occupied by said frequency modulated luminance signal, and for producing a low-band converted carrier chrominance signal;

a first pair of head gaps mounted on a rotary body in a rotational plane of said rotary body, said first pair of head gaps having mutually different azimuth angles, each of said first pair of head gaps having a first track width;

a second pair of head gaps mounted on said rotary body in the same rotational plane of said rotary body, said second pair of head gaps having mutually different azimuth angles but respectively having the same azimuth angles as the first pair of head gaps, each of said second pair of head gaps being mounted at locations lagging each of said first pair of head gaps by a predetermined distance along a rotating direction of said rotary body, each of said second pair of head gaps having a second track width which is



larger than said first track width, a pair of head assemblies being respectively formed by two head gaps of the same azimuth angle amoung the first and second pairs of head gaps, said pair of head assemblies being mounted diametrically on said rotary body; and

recording means for carrying out recording with respect to a recording medium which is caused to travel in a state where said recording medium is wrapped around a peripheral surface of said rotary body,

said recording means first recording said low-band converted carrier chrominance signal from said frequency converting means on a first track by one of said first pair of head gaps and thereafter recording said frequency modulated luminance signal from said frequency modulating means on a second track by one of said second pair of head gaps,

said second track having a track width which is larger than a track width of said first track and being formed over said first track is an overlapping manner with a track pitch which is at least larger than the track width of said first track,

said second track width of said second pair of head gaps being selected to a value which is equal to or larger than said track pitch,

said predetermined distance being selected equal to a length of said recording medium which is required to record a signal corresponding to an integral multiple of a horizontal scanning period.

4,608,612

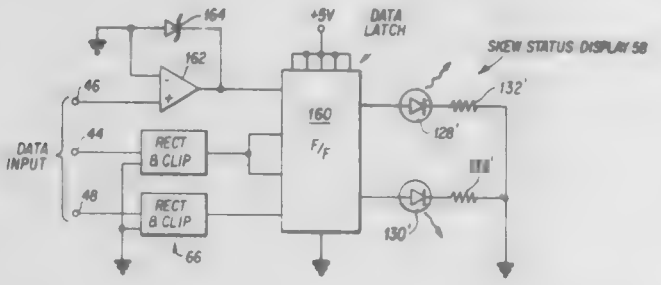
CONDITION MONITORING SYSTEM FOR MAGNETIC TAPE UNIT

Earl H. Rayfield, 4649 Glanmire Dr., Virgina Beach, Va. 23464

Filed Feb. 26, 1985, Ser. No. 705,642
Int. Cl.[4] G11B *20/20*
U.S. Cl. 360—26 17 Claims

1. In combination with a magnetic tape unit having at least three read heads aligned in a direction transverse to a path of travel of a tape from which data bits are read on parallel tracks to produce corresponding outputs transmitted by separate data channels, a condition monitoring system including means connected to one of the data channels for converting the output thereof into a reference signal, logic means connected to the data channels for detecting time displacement of the outputs in the two other of the data channels relative to the reference

signal in said one of the data channels and skew indicating means connected to the logic means for registering the outputs in said data channels, the improvement comprising means for selecting said two other of said data channels from from which the outputs are opposite in direction relative to the reference



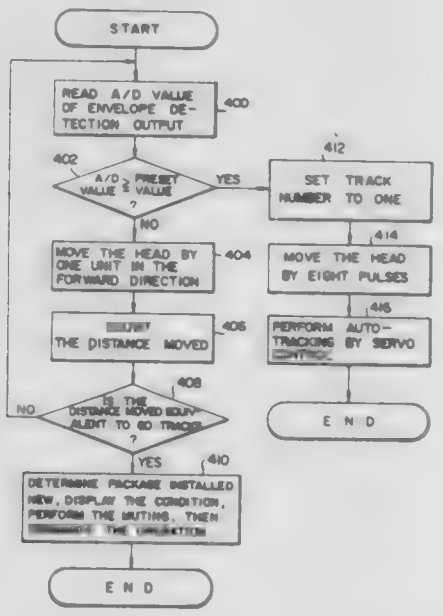
signal and means responsive to said detection of time displacement for limiting registration of the outputs to one of the data channels reflecting angular misalignment of the heads relative to one of the heads from which the reference signal is derived.

4,608,613

TRACKING APPARATUS FOR ROTARY MAGNETIC RECORDING MEDIUM

Izumi Miyake, Kaisei, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed May 31, 1985, Ser. No. 739,665
Claims priority, application Japan, May 31, 1984, 59-109584
Int. Cl.[4] G11B *5/55*
U.S. Cl. 360—78
8 Claims



1. A tracking apparatus for a rotary magnetic recording medium comprising:

magnetic head means for sensing signals from a plurality of tracks which are formed on the rotary magnetic recording medium in such a manner that the front end of recording operation continues positionally to the last end thereof;

head moving means for movably supporting said magnetic head means;

control means for controlling said head moving means to move said magnetic head means onto a desired one of said plurality of tracks so as to perform a tracking operation; and

first detector means for detecting an envelope of signals sensed by said magnetic head means;

said control means, in order to cause said head moving means to move said magnetic head means from a reference position to a track next to the reference position monitoring a level of said envelope detected by said first detector means each time said head means has traveled a first predetermined distance;

said control means further controls said head moving means, so that when the envelope level monitored exceeds a predetermined value, said control means moves said magnetic head means from the position at which said predetermined value is detected by a second predetermined distance;

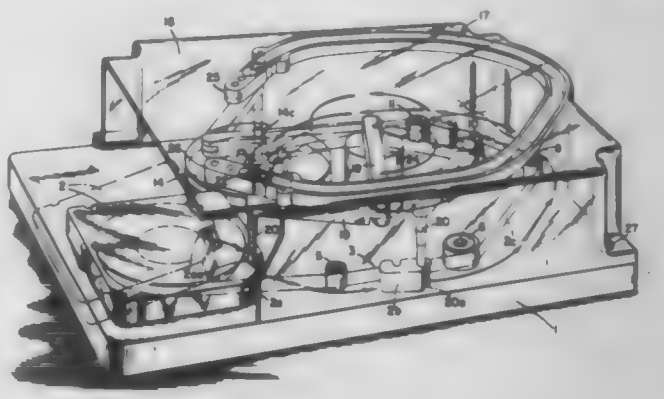
wherein said second predetermined distance is set to substantially correspond to a distance between a peak position of an envelope waveform of signals recorded on the magnetic recording medium and a position at which said predetermined value is detected.

4,608,614

APPARATUS FOR THREADING MAGNETIC TAPE IN A MAGNETIC TAPE TRANSPORT

Helfried O. Rinkleib, and William J. Rueger, Tucson, both of Ariz., assignors to International Business Machines Corp., Armonk, N.Y.

Filed Jun. 24, 1983, Ser. No. 507,629
Int. Cl.[4] G11B *15/00, 15/32*
U.S. Cl. 360—95
3 Claims



1. A tape drive providing a tape path including a READ/-WRITE transducer assembly for processing data on a tape comprising:

a base member;

a takeup reel supported for rotation on said base member at the end of said tape path, said takeup reel having a central hub including a slot extending through said takeup reel axis of rotation for receiving a leader block;

a cover member enclosing said base member, said cover member having an opening for inserting along said base member a magnetic tape cartridge, said cartridge including along a leading edge thereof a frontal opening exposing a leader block;

a curved cam track located on said cover member facing said base, said cam track beginning at a first end over said cartridge and substantially following said tape path to a second end over said takeup reel;

first and second nests terminating respective ends of said cam track, said nests having track extension portions connected by hinge means to said track ends which permits said second nest to be angularly adjusted with respect to said takeup reel rotational axis to accurately position the leader block in the takeup reel slot, and permitting said first nest to be angularly adjusted with respect to said cartridge frontal opening, said nests including means for fixing each nest in a respective angular position;

a longitudinal leader block engaging member having at one end a cam follower for riding in said cam track, and at the remaining end a tapered point for engaging a cutout in said leader block;

an arm including first and second pivotally connected linkage members, the first of said linkage members connected to be rotated about an axis interior to said curved cam track, the second of said linkage members connected to said leader block engaging member; and

a drive means for rotating said first linkage member in first and second opposite rotational directions;

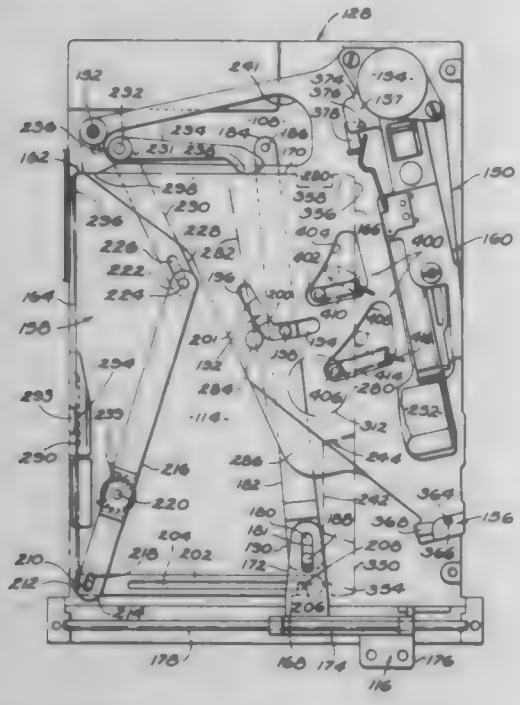
whereby rotation of said first arm linkage member in a first direction forces said cam follower into said first nest engaging said tapered point into said leader block cutout, and rotation of said first arm linkage member in a second direction threads said leader block over said tape path into said takeup reel slot in a position determined by said second nest.

4,608,615

HALF HEIGHT DATA CARTRIDGE TAPE DRIVE

Mark Zeavin, 27 E. Las Flores Dr., Altadena, Calif. 91001

Filed Apr. 30, 1984, Ser. No. 605,715
Int. Cl.[4] G11B *21/02, 15/00*
U.S. Cl. 360—96.5 57 Claims



1. A data cartridge tape drive for receiving a cartridge, the cartridge having a magnetic tape therein and a front edgewall with a door in the front edgewall of the cartridge, said door being selectively openable to allow access to the magnetic tape therein for writing and reading onto the magnetic tape, the cartridge further having a side edgewall, the cartridge tape drive comprising:

a housing with a baseplate extending generally along a first plane and having a cartridge insertion port for receiving the cartridge thereunto, side edgewall first, the cartridge thereafter remaining substantially stationary until removed through the carriage insertion port;

a deck mounted to the baseplate and pivotal in a plane generally parallel to the first plane between an engaged position and a disengaged position the deck positioned for engaging and aligning the substantially stationary cartridge upon pivotal movement into the engaged position;

a magnetic head fixedly mounted on the deck for pivotal movement therewith;

an engagement level coupled to the deck for movement of the deck between the engaged and disengaged positions in response to movement of the engagement lever, the magnetic head being brought into data communicating relationship to the magnetic tape in the cartridge when the deck is pivoted into the engaged position.

4,608,616

TAPE CASSETTE HAVING A LOCK MECHANISM FOR LOCKING A TAPE PROTECTING LID

Yoshiaki Wakui, Tokyo, and Hiroyuki Umeda, Yokohama, both of Japan, assignors to Victor Company of Japan, Ltd., Japan

Filed Dec. 2, 1983, Ser. No. 557,279
Claims priority, application Japan, Dec. 8, 1982, 57-185541[U]; Dec. 13, 1982, 57-188352[U]; Dec. 13, 1982, 57-188353[U]
Int. Cl.[4] G11B *23/02, 15/32;* B65D *45/16*
U.S. Cl. 360—132 5 Claims

1. (Amended) A tape cassette comprising:

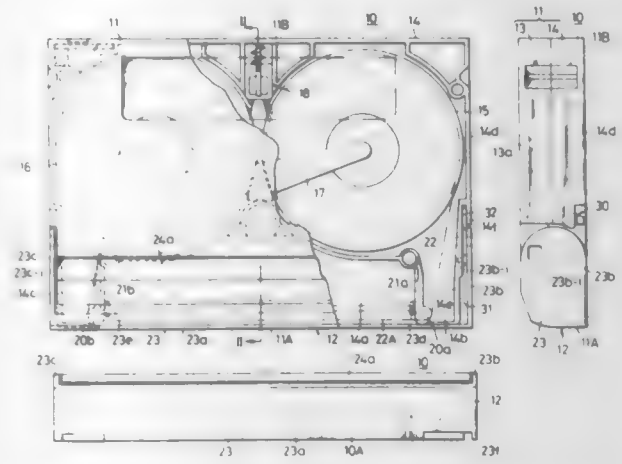
a cassette case made up from an upper half and a lower half which are connected together, said cassette case having a pair of side wall portions which are provided on a side wall of said upper half;

a tape accommodated within said cassette case, said tape being in a predetermined tape path along the front of said cassette case when the tape cassette is not in use;

a tape protecting lid located at the front of said cassette case, said tape protecting lid being closed to cover said tape in said predetermined tape path when the tape cassette is not in use, and being open so as not to interfere with an operation in which said tape is drawn out of said cassette case when the tape cassette is in use; and

a lock mechanism for locking said tape protecting lid in its closed position when the tape cassette is not in use, said lock mechanism comprising a locking member which is rotatable about a pin, said pin being disposed across said pair of side wall portions,

said locking member being made from a synthetic resin, and unitarily comprising an engaging part which engages with an engaging part of said tape protecting lid when the latter is in its closed position so as to restrict the rotation of said tape protecting lid toward an opening direction, a lock releasing arm portion which forms part of said locking member so that a lock release member of a recording and/or reproducing apparatus releases the engagement between said engaging part of said lock mecha-



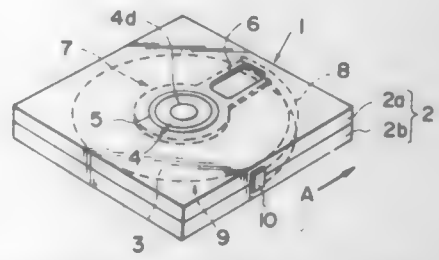
nism and said engaging part of said tape protecting lid when the tape cassette is loaded into the recording and/or reproducing apparatus, a resilient arm portion which is in engagement with a part of the side wall of said upper half, said resilient arm portion undergoing resilient deformation and urging said engaging part of said lock mechanism in a direction so as to engage with said engaging part of said tape protecting lid when said tape protecting lid is closed and restricting the rotational position of said locking member with respect to said upper half when said upper half is connected to said lower half, and a projecting portion which engages with an overhanging sidewall portion of said lower half when said upper half is connected to said lower half, and temporarily connects said upper and lower halves in place with respect to each other so that said upper and lower halves do not separate.

4,608,617

MAGNETIC RECORDING DISK CARTRIDGE

Kengo Oishi, and Tuyoshi Ono, both of Odawara, Japan, assignors to Fuji Photo Film Co., Ltd., Odawara, Japan

Filed Aug. 9, 1983, Ser. No. 521,544
Claims priority, application Japan, Aug. 18, 1982, 57-124627[U]
Int. Cl.[4] B11B *23/02*
U.S. Cl. 360—133 3 Claims



1. A magnetic recording disk cartridge comprising a recording disk having a circular flexible recording medium and a hub, having an axis and a peripheral surface, secured to the central portion of the recording medium, and a casing, having a base

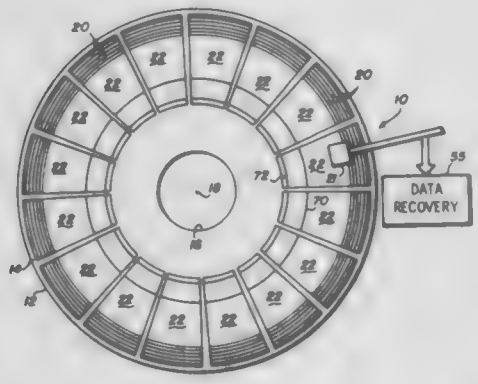
wall, in which the recording disk is accommodated, the casing being provided with a hub opening, at the center of the base wall, for permitting means for rotating the recording disk to have access to the hub and a magnetic head receiving opening extending radially outwardly from the hub opening for giving a magnetic head access to the recording medium, in which said hub is provided with a plurality of axially extending engaging grooves on the peripheral surface thereof, said base wall of the casing is provided with a plurality of projecting walls spaced from each other along the periphery of the hub opening to surround the hub, said projecting walls being disposed substantially perpendicularly to said base wall, said projecting walls having an inner perimeter and an outer perimeter, and a hub locking device is provided in the casing to releasably lock the hub to prevent rotation of the recording disk and to close the magnetic head receiving opening when the cartridge is not in use, the hub locking device comprising a hub locking member having an annular bearing portion which slidably engages the outer perimeter of said projecting walls, said locking member being rotatable about the outer perimeter of said projecting walls, a shutter portion integrally extending from the bearing portion and an engaging portion formed integrally with the bearing portion to resiliently project toward the hub, and an operating member for swinging the hub locking member about the central axis of the hub between an operative position in which said shutter portion closes the magnetic head receiving opening and said engaging portion projects toward the hub through the space between the adjacent walls and within the inner perimeter of said projecting walls to engage with the engaging grooves of the hub, and an inopertive position in which said shutter portion is retracted from the magnetic head receiving opening to open it and said engaging portion is disengaged from the engaging grooves of the hub whereby the disk is free to rotate about said axis.

4,608,618

DIGITAL ALIGNMENT DIAGNOSTIC DISK

Ronald M. Sturtevant-Stuart, San Francisco, Calif., assignor to Verbatim Corporation, Sunnyvale, Calif.

Filed Oct. 25, 1984, Ser. No. 664,580
Int. Cl.[4] G11B *5/58, 21/10*
U.S. Cl. 360—135 **7 Claims**



1. In an alignment disk comprising a disk substrate, a magnetic recording layer overlaying said disk substrate and suitable for recording a plurality of separate tracks, the improvement comprising:

a plurality of spiral tracks recorded on said magnetic recording layer for testing a plurality of parameters of a transducer head of a disk drive, each of said spiral tracks including a continuous series of individual address blocks containing unique identifying information and extending across at least two ANSI standard format recording tracks, said address blocks being radially spaced in increments less than one half of a standard ANSI track width, said plurality of spiral tracks including;

a spiral alignment track for checking alignment of a transducer head;

a clamping spiral track, including a plurality of address blocks, which are arrayed about at least two ANSI standard track locations so as to cross each track at least twice, said clamping spiral address blocks being radially spaced relative to each other to a greater degree than said spiral alignment address blocks; and

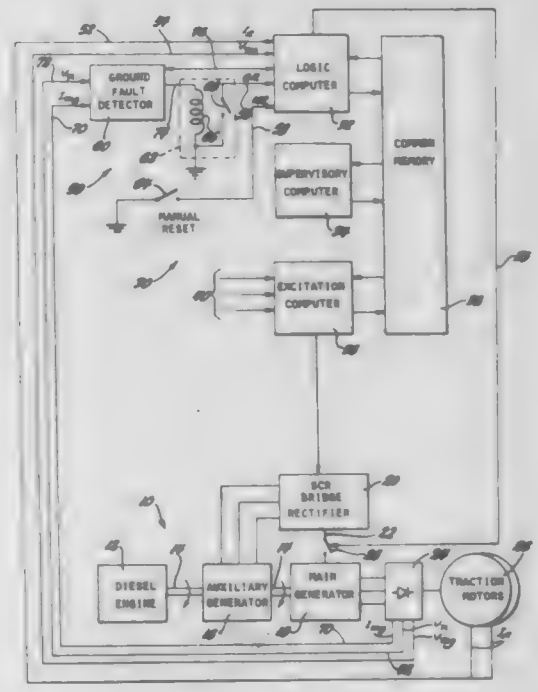
a bordered spiral track including a first spiral arrangement of address blocks extending radially inwards towards a disk center and crossing at least two ANSI standard track locations, and further including a pair of border tracks, arrayed on either side of said first spiral track of address blocks, said border spiral tracks including address blocks containing information adapted to interfere with a reading of a plurality of data encoded onto said center spiral track whereby a disk drive electronic data recovery circuit may be analyzed.

4,608,619

GROUND FAULT VOLTAGE LIMITING FOR A LOCOMOTIVE ELECTRIC TRACTION MOTOR

Michael O. Bomer, Country Club Hills, and Richard F. Chudoba, Downers Grove, both of Ill., assignors to General Motors Corporation, Detroit, Mich.

Filed Mar. 18, 1985, Ser. No. 712,783
Int. Cl.[4] H02H *7/08*
U.S. Cl. 361—31 **10 Claims**



1. For a locomotive system wherein operating voltage is supplied to the locomotive traction motor in accordance with operator demand up to a voltage limit having a maximum value determined in relation to the motor design limits, and wherein the motor voltage supply is temporarily interrupted in response to the sensing of a motor ground fault and permanently interrupted after a number of such temporary interruptions, apparatus for preventing a permanent interruption of motor voltage due to moisture induced ground faulting, comprising:

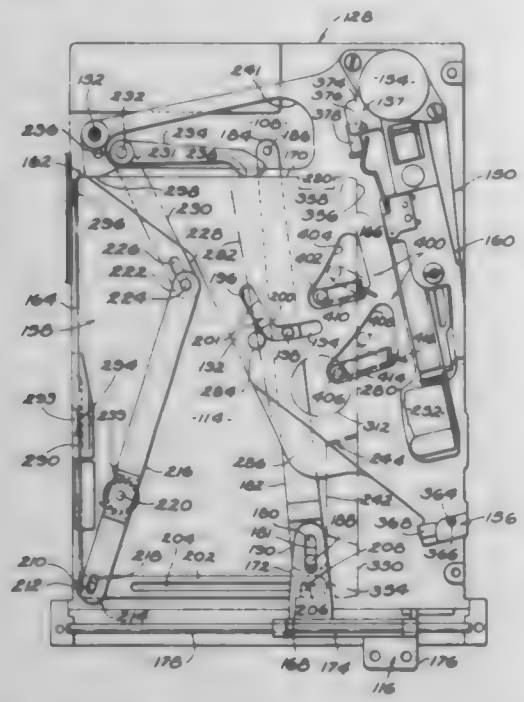
limit setting means effective in response to each sensing of a ground fault for reducing said voltage limit to a level determined in relation to the voltage supplied to said motor just prior to the occurrence of the ground fault, and further effective following each of said temporary interruptions of motor voltage supply for incrementing the voltage limit toward said maximum value whenever the motor is continuously operated for a second predetermined time interval with no ground faults, whereby when the sensed ground fault is moisture induced, the voltage limit reductions permit continued motor operation following the temporary interruption of motor voltage, and the voltage limit is returned to said maximum value as the heat generated by such continued motor operation dries the moisture which induced the ground fault.

4,608,615

HALF HEIGHT DATA CARTRIDGE TAPE DRIVE

Mark Zeavin, 27 E. Las Flores Dr., Altadena, Calif. 91001

Filed Apr. 30, 1984, Ser. No. 605,715
Int. Cl.[4] G11B *21/02, 15/00*
U.S. Cl. 360—96.5 57 Claims



1. A data cartridge tape drive for receiving a cartridge, the cartridge having a magnetic tape therein and a front edgewall with a door in the front edgewall of the cartridge, said door being selectively openable to allow access to the magnetic tape therein for writing and reading onto the magnetic tape, the cartridge further having a side edgewall, the cartridge tape drive comprising:

a housing with a baseplate extending generally along a first plane and having a cartridge insertion port for receiving the cartridge thereunto, side edgewall first, the cartridge thereafter remaining substantially stationary until removed through the carriage insertion port;

a deck mounted to the baseplate and pivotal in a plane generally parallel to the first plane between an engaged position and a disengaged position the deck positioned for engaging and aligning the substantially stationary cartridge upon pivotal movement into the engaged position;

a magnetic head fixedly mounted on the deck for pivotal movement therewith;

an engagement level coupled to the deck for movement of the deck between the engaged and disengaged positions in response to movement of the engagement lever, the magnetic head being brought into data communicating relationship to the magnetic tape in the cartridge when the deck is pivoted into the engaged position.

4,608,616

TAPE CASSETTE HAVING A LOCK MECHANISM FOR LOCKING A TAPE PROTECTING LID

Yoshiaki Wakui, Tokyo, and Hiroyuki Umeda, Yokohama, both of Japan, assignors to Victor Company of Japan, Ltd., Japan

Filed Dec. 2, 1983, Ser. No. 557,279
Claims priority, application Japan, Dec. 8, 1982, 57-185541[U]; Dec. 13, 1982, 57-188352[U]; Dec. 13, 1982, 57-188353[U]
Int. Cl.[4] G11B *23/02, 15/32;* B65D *45/16*
U.S. Cl. 360—132 5 Claims

1. (Amended) A tape cassette comprising:

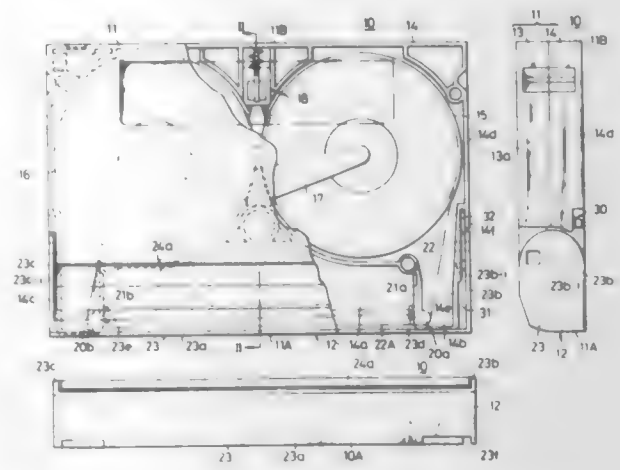
a cassette case made up from an upper half and a lower half which are connected together, said cassette case having a pair of side wall portions which are provided on a side wall of said upper half;

a tape accommodated within said cassette case, said tape being in a predetermined tape path along the front of said cassette case when the tape cassette is not in use;

a tape protecting lid located at the front of said cassette case, said tape protecting lid being closed to cover said tape in said predetermined tape path when the tape cassette is not in use, and being open so as not to interfere with an operation in which said tape is drawn out of said cassette case when the tape cassette is in use; and

a lock mechanism for locking said tape protecting lid in its closed position when the tape cassette is not in use, said lock mechanism comprising a locking member which is rotatable about a pin, said pin being disposed across said pair of side wall portions,

said locking member being made from a synthetic resin, and unitarily comprising an engaging part which engages with an engaging part of said tape protecting lid when the latter is in its closed position so as to restrict the rotation of said tape protecting lid toward an opening direction, a lock releasing arm portion which forms part of said locking member so that a lock release member of a recording and/or reproducing apparatus releases the engagement between said engaging part of said lock mecha-



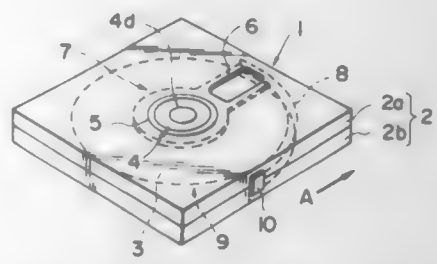
nism and said engaging part of said tape protecting lid when the tape cassette is loaded into the recording and/or reproducing apparatus, a resilient arm portion which is in engagement with a part of the side wall of said upper half, said resilient arm portion undergoing resilient deformation and urging said engaging part of said lock mechanism in a direction so as to engage with said engaging part of said tape protecting lid when said tape protecting lid is closed and restricting the rotational position of said locking member with respect to said upper half when said upper half is connected to said lower half, and a projecting portion which engages with an overhanging sidewall portion of said lower half when said upper half is connected to said lower half, and temporarily connects said upper and lower halves in place with respect to each other so that said upper and lower halves do not separate.

4,608,617

MAGNETIC RECORDING DISK CARTRIDGE

Kengo Oishi, and Tuyoshi Ono, both of Odawara, Japan, assignors to Fuji Photo Film Co., Ltd., Odawara, Japan

Filed Aug. 9, 1983, Ser. No. 521,544
Claims priority, application Japan, Aug. 18, 1982, 57-124627[U]
Int. Cl.[4] B11B *23/02*
U.S. Cl. 360—133 3 Claims



1. A magnetic recording disk cartridge comprising a recording disk having a circular flexible recording medium and a hub, having an axis and a peripheral surface, secured to the central portion of the recording medium, and a casing, having a base

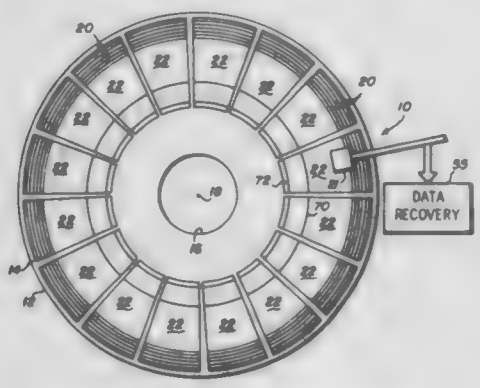
wall, in which the recording disk is accommodated, the casing being provided with a hub opening, at the center of the base wall, for permitting means for rotating the recording disk to have access to the hub and a magnetic head receiving opening extending radially outwardly from the hub opening for giving a magnetic head access to the recording medium, in which said hub is provided with a plurality of axially extending engaging grooves on the peripheral surface thereof, said base wall of the casing is provided with a plurality of projecting walls spaced from each other along the periphery of the hub opening to surround the hub, said projecting walls being disposed substantially perpendicularly to said base wall, said projecting walls having an inner perimeter and an outer perimeter, and a hub locking device is provided in the casing to releasably lock the hub to prevent rotation of the recording disk and to close the magnetic head receiving opening when the cartridge is not in use, the hub locking device comprising a hub locking member having an annular bearing portion which slidably engages the outer perimeter of said projecting walls, said locking member being rotatable about the outer perimeter of said projecting walls, a shutter portion integrally extending from the bearing portion and an engaging portion formed integrally with the bearing portion to resiliently project toward the hub, and an operating member for swinging the hub locking member about the central axis of the hub between an operative position in which said shutter portion closes the magnetic head receiving opening and said engaging portion projects toward the hub through the space between the adjacent walls and within the inner perimeter of said projecting walls to engage with the engaging grooves of the hub, and an inopertive position in which said shutter portion is retracted from the magnetic head receiving opening to open it and said engaging portion is disengaged from the engaging grooves of the hub whereby the disk is free to rotate about said axis.

4,608,618

DIGITAL ALIGNMENT DIAGNOSTIC DISK

Ronald M. Sturtevant-Stuart, San Francisco, Calif., assignor to Verbatim Corporation, Sunnyvale, Calif.

Filed Oct. 25, 1984, Ser. No. 664,580
Int. Cl.⁴ G11B *5/58, 21/10*
U.S. Cl. 360—135 **7 Claims**



1. In an alignment disk comprising a disk substrate, a magnetic recording layer overlaying said disk substrate and suitable for recording a plurality of separate tracks, the improvement comprising:

a plurality of spiral tracks recorded on said magnetic recording layer for testing a plurality of parameters of a transducer head of a disk drive, each of said spiral tracks including a continuous series of individual address blocks containing unique identifying information and extending across at least two ANSI standard format recording tracks, said address blocks being radially spaced in increments less than one half of a standard ANSI track width, said plurality of spiral tracks including;

a spiral alignment track for checking alignment of a transducer head;

a clamping spiral track, including a plurality of address blocks, which are arrayed about at least two ANSI standard track locations so as to cross each track at least twice, said clamping spiral address blocks being radially spaced relative to each other to a greater degree than said spiral alignment address blocks; and

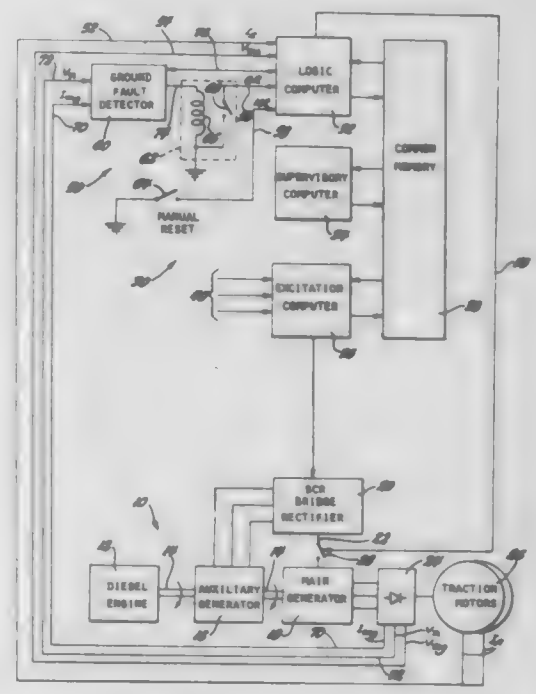
a bordered spiral track including a first spiral arrangement of address blocks extending radially inwards towards a disk center and crossing at least two ANSI standard track locations, and further including a pair of border tracks, arrayed on either side of said first spiral track of address blocks, said border spiral tracks including address blocks containing information adapted to interfere with a reading of a plurality of data encoded onto said center spiral track whereby a disk drive electronic data recovery circuit may be analyzed.

4,608,619

GROUND FAULT VOLTAGE LIMITING FOR A LOCOMOTIVE ELECTRIC TRACTION MOTOR

Michael O. Bomer, Country Club Hills, and Richard F. Chudoba, Downers Grove, both of Ill., assignors to General Motors Corporation, Detroit, Mich.

Filed Mar. 18, 1985, Ser. No. 712,783
Int. Cl.⁴ H02H *7/08*
U.S. Cl. 361—31 **10 Claims**



1. For a locomotive system wherein operating voltage is supplied to the locomotive traction motor in accordance with operator demand up to a voltage limit having a maximum value determined in relation to the motor design limits, and wherein the motor voltage supply is temporarily interrupted in response to the sensing of a motor ground fault and permanently interrupted after a number of such temporary interruptions, apparatus for preventing a permanent interruption of motor voltage due to moisture induced ground faulting, comprising:

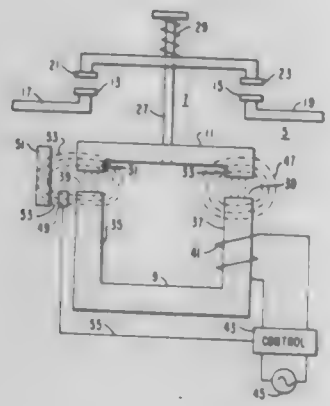
limit setting means effective in response to each sensing of a ground fault for reducing said voltage limit to a level determined in relation to the voltage supplied to said motor just prior to the occurrence of the ground fault, and further effective following each of said temporary interruptions of motor voltage supply for incrementing the voltage limit toward said maximum value whenever the motor is continuously operated for a second predetermined time interval with no ground faults, whereby when the sensed ground fault is moisture induced, the voltage limit reductions permit continued motor operation following the temporary interruption of motor voltage, and the voltage limit is returned to said maximum value as the heat generated by such continued motor operation dries the moisture which induced the ground fault.

4,608,620

MAGNETIC SENSOR FOR ARMATURE AND STATOR

George Hines, Pittsburgh, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Nov. 14, 1985, Ser. No. 798,257
Int. Cl.[4] H01H *47/22*
U.S. Cl. 361—154 5 Claims



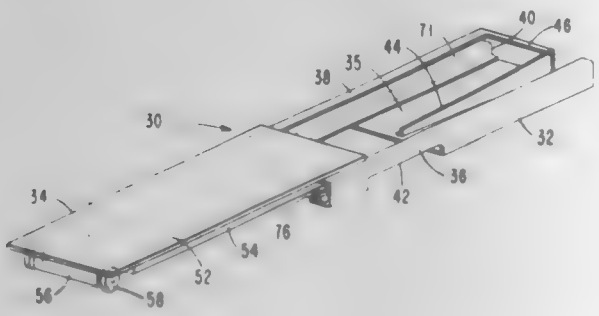
1. A magnetic sensing device comprising:
a stator having an energizing coil for inducing a magnetic field;
an armature movable between open and closed positions of the stator and forming a gap between the armature and stator when in the open position;
shunt means spaced from the armature and stator for transferring a magnetic field therebetween;
a magnetic sensing device between the shunt means and one of the stator and armature for monitoring the magnetic field and for producing a resulting voltage; and
control means responsive to the voltage produced by the device for controlling the power applied to the coil, so as to reduce power to the coil in response to a reduced magnetic field when the gap is closed.

4,608,621

TRANSPORT APPARATUS FOR ELECTRICAL EQUIPMENT

Warren W. Porter, Escondido, Calif., assignor to NCR Corporation, Dayton, Ohio

Filed Feb. 14, 1985, Ser. No. 701,845
Int. Cl.[4] H02B *1/20*
U.S. Cl. 361—428 5 Claims



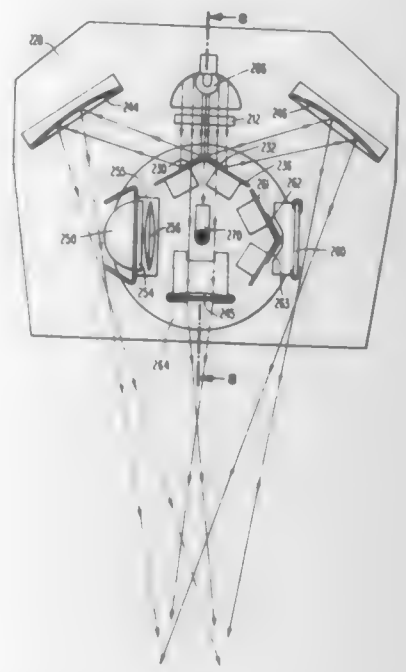
1. In the assembly of housing members each containing electrical equipment and positioned in a side-by-side arrangement in which electrical cables interconnecting the electrical equipment extend adjacent the bottom surfaces of the housing members, an apparatus movably supporting a housing member comprising;
a first elongated support member which includes a pair of side wall portions each having a cut-out portion positioned along the lower edge of the side wall portions in which are located electrical cables interconnecting the housing members of the assembly and extending in a direction transverse to the longitudinal axis of the first support member, said side wall portions each include a roller support surface extending in a longitudinal direction along the upper edge of the side wall portions of the support members;
and a second elongated support member supporting a housing member, said second support member includes a pair of roller members secured to one end of the second support member and a pair of cam roller members located at the opposite end of the second support member and positioned on said roller support surfaces enabling the second support member to slide on said first support member whereby the housing member supported on said second support member is moved in a direction enabling the housing member to be removed from the assembly without engaging the cables located in said cut-out portion and interconnecting other housing members of the assembly.

4,608,622

MULTI-FUNCTION LIGHT SOURCE

Donald I. Gonser, York, Pa., assignor to Dentsply Research & Development Corp., Milford, Del.

Continuation-in-part of Ser. No. 566,235, Dec. 28, 1983, Pat. No. 4,516,195. This application Dec. 14, 1984, Ser. No. 681,324
Int. Cl.[4] F21V *7/04*
U.S. Cl. 362—32 17 Claims



1. Light apparatus, having a light source generating light directed substantially along an axis, including:
delivery means mounted for movement relative to said light source and having a plurality of operative positions selectable for delivering light to a given target by a selected one of a plurality of delivery modes due to said movement, including beam means for deriving at least one beam mode of light from said source and delivering said beam of light to said given target, and light pipe means for collecting light from said source and delivering said collected light to said given target, and
selecting means for operatively selecting the mode of operation of said delivery means so as to cause it to deliver at least one of said modes of light.

4,608,623

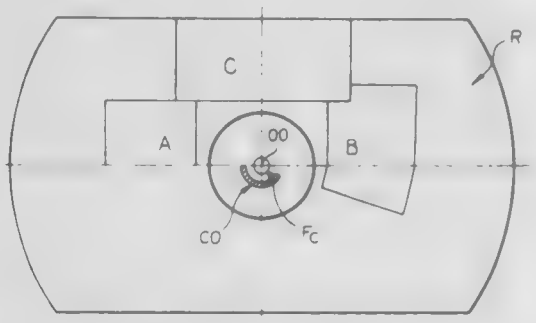
AUTOMOBILE HEADLAMP WITH INCLINED FRONT GLASS

Marc Stephano, Livry Gargan, France, assignor to Cibie Projecteurs, Bobigny, France

Filed Mar. 2, 1984, Ser. No. 585,822
Claims priority, application France, Mar. 8, 1983, 83 03764
Int. Cl.[4] F21M *3/18;* F21V *5/02*
U.S. Cl. 362—80 11 Claims

1. A headlamp of an automobile, comprising at least one light source, at least one reflector co-operating with the light source in order to reflect a beam of light rays substantially

parallel to an optical axis and an imaginary central vertical plane containing said axis, an inclined front glass located in the path of said light rays, the glass being formed, in certain critical zones, with prism elements arranged to disperse laterally the light rays, said prism elements being inclined by an angle α with respect to said central vertical plane, whereby the vertical



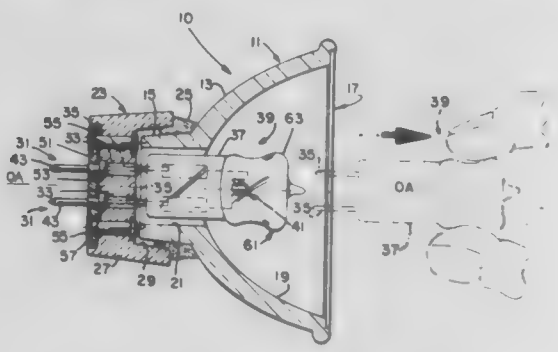
deflection effect caused by the inclination of the glass is compensated, the active surface of each prism element being defined by the intersection of a prism surface having an angle β at its apex and a part-cylindrical rib whose axis is parallel to the inclination α of said prism element, whereby the vertically compensated light rays are merged together.

4,608,624

PROJECTION LAMP UNIT WITH SEPARABLE LAMP CAPSULE

Ronald G. Blaisdell, Saugus, and Harold L. Hough, Beverly, both of Mass., assignors to GTE Products Corporation, Stamford, Conn.

Filed Jan. 22, 1985, Ser. No. 693,566
Int. Cl.[4] H01R *33/00*
U.S. Cl. 362—226 **10 Claims**



1. A projection lamp unit comprising:

a reflector having a concave reflecting portion defining a forward opening and a rear, neck portion defining a rear opening therein;

a socket member fixedly secured to said reflector relative to said rear opening within said rear neck portion thereof;

first and second electrical contacts, each of said contacts including a female receiving portion spacedly positioned within said socket member and having an aperture therein and a male pin portion extending from said socket; and

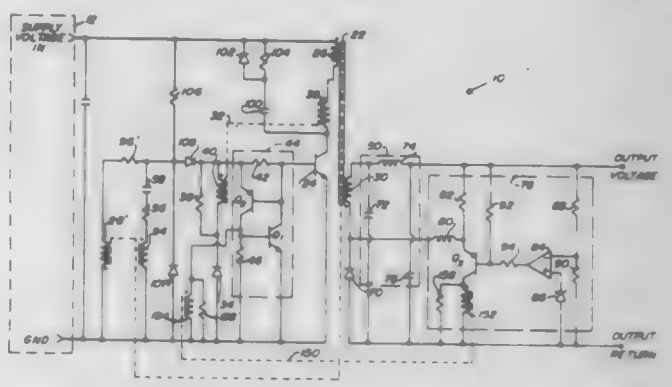
a lamp removably positioned within said socket member through said forward opening of said reflector, said lamp including an envelope for being located substantially within said concave reflecting portion of said reflector when said lamp is fully inserted within said socket member, said envelope including a sealed end portion and a protruding rim portion to enable said envelope to be manually grasped and removed from said socket member through said forward opening of said reflector, and first and second pins projecting from said sealed end portion of said envelope, said first and second pins being located within said apertures within said female receiving portions of said first and second contacts, respectively, in a substantially frictional manner to provide positive electrical connection between said contacts and said pins and alignment of said envelope relative to said concave reflecting portion when said lamp occupies said fully inserted position within said socket member.

4,608,625

CURRENT DRIVEN FLYBACK POWER SUPPLY

Elliot Josephson, Los Altos, and Frederick S. Parker, Ben Lomand, both of Calif., assignors to Astec Components, Ltd., Santa Clara, Calif.

Filed Apr. 27, 1983, Ser. No. 489,263
Int. Cl.[4] H02M *3/335*
U.S. Cl. 363—21 **7 Claims**



1. A flyback power supply for developing an output DC voltage from a source of DC, said power supply comprising:

a power transformer including a primary winding and a secondary winding;

current switch means for periodically coupling a primary current during a first interval of time through said primary winding from said source, whereby energy is stored in said transformer during said first interval, said primary current having an increasing amplitude during each said interval;

means for developing a drive current whose amplitude is a function of said primary current and for coupling said drive current to said current switch means, said current switch means being responsive to said drive current for enabling said current switch means to remain on;

pulse-width modulation means for developing a feedback pulse at a point in time after said current switch means turns on as a function of the deviation of said output voltage from a predetermined voltage;

electrical switch means for turning off said current switch means in response to said feedback pulse, said energy stored in said transformer being transferred out through said secondary winding when said current switch means is off during a second interval of time;

means responsive to said energy transferred out through said secondary winding during each said second interval for developing said output DC voltage;

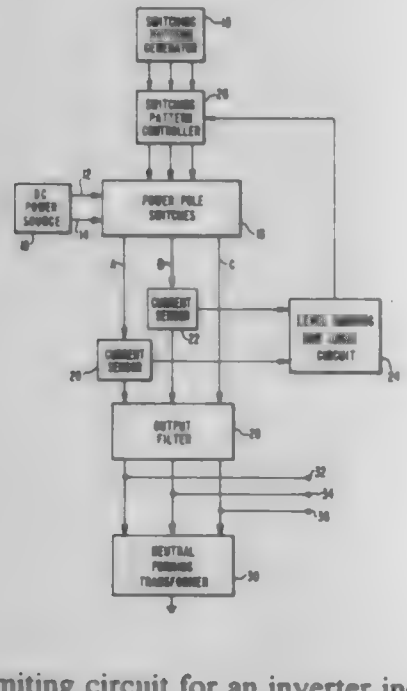
means for developing a first current pulse when all of said stored energy has been transferred out through said secondary winding, said first current pulse being applied to said current switch means to initiate coupling of said primary current through said primary winding, said current pulse developing means including a feedback winding of said power transformer and a capacitor in series with said feedback winding, said feedback winding applying a voltage to said capacitor when said stored energy has been transferred out through said secondary winding to charge said capacitor, said capacitor emitting said current pulse while being charged by said voltage; and

a first resistor coupled between said secondary winding and said capacitor for charging said capacitor during said second interval of time, said current pulse developing means developing a second current pulse for application to said current switch means at a selected point during said second interval when said capacitor has been charged to a voltage sufficient to turn on said current switch means.

4,608,626
ELECTRICAL INVERTER WITH MINORITY POLE CURRENT LIMITING

David A. Fox, Shawnee Township, Gallatin County, and Donal E. Baker, American Township, Allen County, both of Ohio, assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Nov. 9, 1984, Ser. No. 670,420
Int. Cl.[4] H02H *7/122*
U.S. Cl. 363—56 8 Claims



1. A current limiting circuit for an inverter including three output power poles which are capable of being alternatively switched between a first DC voltage level and a second DC voltage level, wherein each of said power poles is connected to an output phase conductor, said current limiter circuit comprising:

means for producing a signal representative of the current magnitude in each output phase conductor;

means for comparing each signal with a reference voltage level;

means for generating a switching waveform pattern for each of said power poles;

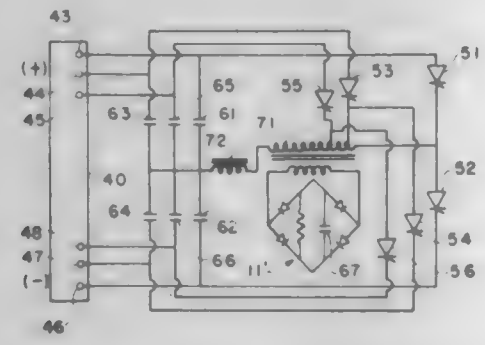
means for determining the DC voltage level of the minority power pole; and

means for altering said switching waveform patterns, when one of said signals exceeds the reference voltage level, such that all switching waveform patterns cause their associated power poles to switch to the DC voltage level of the minority power pole.

4,608,627
NON-DISSIPATIVE CURRENT DISTRIBUTION CIRCUIT FOR MAGNETOHYDRODYNAMIC GENERATOR ELECTRODES

James F. Holt, Medway, Ohio, assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jun. 20, 1985, Ser. No. 746,902
Int. Cl.[4] H02M *3/315, 3/337*
U.S. Cl. 363—131 44 Claims



1. A converter circuit for a power source delivering output current through more than one pair of electrodes, said circuit providing predetermined current distribution among said electrode pairs, comprising:

a. a pair of capacitors of respective predetermined sizes connected in series circuit relationship and first and second controlled rectifiers connected in series circuit relationship from each positive to each negative electrode of each electrode pair, each pair of said rectifiers connected in parallel relationship to each corresponding capacitor pair, said first rectifiers configured to conduct alternately with said second rectifiers;

b. inductor means having first and second ends and connected at said first end to the juncture of each said capacitor pair;

c. a transformer having first and second windings, said first winding having first and second ends and connected at said first end thereof to the juncture of one said first and second rectifier pair, and at said second end thereof to said second end of said inductor means;

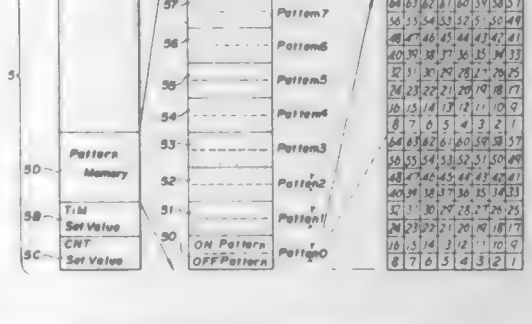
d. said first winding having a plurality of taps intermediate said first and second ends thereof, each of said taps connected to the juncture of one of the remainder of said rectifier pairs; and

e. said second winding having means for connection to a load.

4,608,628
PROGRAMMABLE CONTROLLER

Yashitane Saito, Kameoka; Tetsuo Doi, Kyoto, and Kiyoto Hirase, Nagaokakyo, all of Japan, assignors to Omron Tateisi Electronics Co., Kyoto, Japan

Filed Jun. 21, 1983, Ser. No. 506,376
Claims priority, application Japan, Jun. 21, 1982, 57-106531
Int. Cl.[4] G05B *19/02, 23/02*
U.S. Cl. 364—141 2 Claims



1. A programmable controller, comprising:

means for cyclically executing a user program;

means for storing a plurality of status patterns, each of said status patterns having an assigned discrimination number and a plurality of binary digit positions corresponding to input and output data associated with execution of said user program, each of said digit positions being settable to an ON, OFF, EITHER ON or EITHER OFF state;

means for determining the acutal status of input and output data and for comparing whether the actual status of said input and output data bears a predetermined correspondence to one of said stored status patterns, said comparison being performed for every cycle of operation of said user program; and

means for displaying, when said predetermined correspondence exits, the discrimination number of a status pattern which bears said predetermined correspondence to said actual status of input and output data.

4,608,629

MULTIPROCESSOR MEMORY SYSTEM EMPLOYING DATA TRANSFER SYSTEM

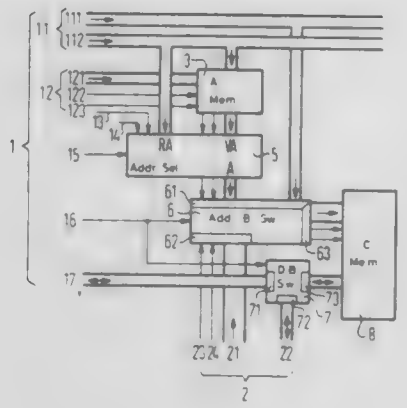
Klaus Nagel, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Continuation of Ser. No. 61,272, Jul. 27, 1979, abandoned. This application Jul. 13, 1984, Ser. No. 629,757

Claims priority, application Fed. Rep. of Germany, Sep. 28, 1978, 2842288

Int. Cl.[4] G06F *9/36*

U.S. Cl. 364—200 6 Claims



1. A memory system employing an address bus carrying real address words (RAW), said address bus consisting of two subbuses, a first said sub-bus carrying a real memory part address (RPA) and a second said sub-base carrying a real local address (RLA); a memory having a plurality of memory parts of the same memory size, said memory parts being addressed by said real memory part addresses (RPA) and locations within each of such parts being addressed by said real local addresses (RLA); assembly means connected to said address bus for assembling addresses and connected to said memory for accessing said memory locations, said assembly means comprising an address selector and an address bus selection switch, an associative memory connected to said first said sub-bus and adapted to store a plurality of memory part addresses (PA), and to present said stored memory part addresses (PA) to an output of said associative memory; said address selector having a first input connected to said first sub-bus and a second input connected to the output of said associative memory, said address selector being adapted to supply either of said first and second inputs to its output, said address bus selector switch for selecting between addresses supplied from the address selector or from a processor bus and having a first input connected to the output of said address selector, and a second input connected to said second sub-bus, and an output connected to the address inputs of said memory; said address selector being connected to a control signal and responsive thereto for selecting either its said first or its second input for connection to said address bus switch; and said address selector being connected to said control signal and responsive thereto for supplying to said address bus switch either of its first and second inputs, whereby said memory is accessed either with said real address word (RAW) from said first and second sub-buses of said address bus or with an address word made up of the memory part addresses (PA) produced by said associative memory and said real local address (RLA) from said second sub-bus of said address bus.

4,608,630

METHOD AND APPARATUS FOR TRANSMITTING DATA WORDS ASYNCHRONOUSLY FROM ONE MICROPROCESSOR TO ANOTHER IN FORM OF TIMING INTERVALS

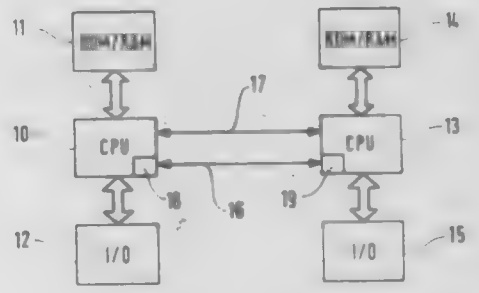
Bernd Schott, Ludwigsburg, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Sep. 3, 1981, Ser. No. 298,943

Claims priority, application Fed. Rep. of Germany, Sep. 23, 1980, 3035804

Int. Cl.[4] H04J *3/02;* H03K *5/26*

U.S. Cl. 364—200 13 Claims



1. Apparatus for transmitting data from a first microprocessor system (**10, 11, 12**) to a second microprocessor system (**13, 14, 15**),

in which the data are in form of data units represented by numbers, comprising

means (**18**), in said first system (**10, 11, 12**) for receiving and converting a number representing a data unit to be transmitted to a corresponding gating time interval and generating a signal having a time duration, with respect to a predetermined time base, corresponding to said gating time interval, whereby said gating time interval, and hence said time duration, will be representative of the number to be transmitted;

means (**16**) for transmitting to said second microprocessor system said signal having said time duration and defining said gating time interval;

means (**19**) in said second microprocessor system (**13, 14, 15**) connected to receive said signal having said time duration, for determining said time interval, with respect to said time base, and for reconverting said signal back to the number constituting said data unit; and

a control line (**17**) interconnected between said first and second microprocessor system for signalling said data transmission.

4,608,631

MODULAR COMPUTER SYSTEM

Jack J. Stiffler, Concord; Richard A. Karp, Bedford; James M. Nolan, Jr.; Michael J. Budwey, both of Holliston, and David A. Wallace, Chelmsford, all of Mass., assignors to Sequoia Systems, Inc., Marlborough, Mass.

Continuation of Ser. No. 414,961, Sep. 3, 1982, Pat. No. 4,484,273. This application Nov. 19, 1984, Ser. No. 672,799

Int. Cl.[4] G06F *15/16*

U.S. Cl. 364—200 24 Claims

1. A computer system comprising,

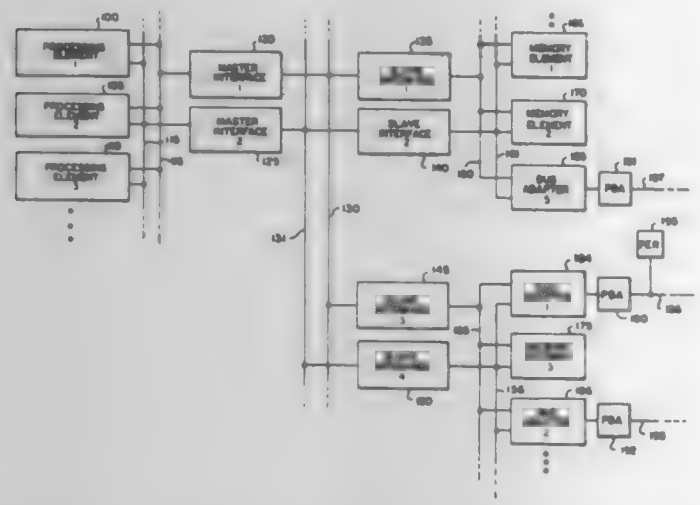
a plurality of processing elements for simultaneously performing data processing calculations for a plurality of data processing tasks, each of said processing elements performing data processing calculations for one data processing task independently from other data processing elements, said processing element generating request signals;

a common memory area having a plurality of storage locations, each of said plurality of storage locations being accessible by all of said processing elements;

a system bus for transferring signals between said processing elements and said memory area;

at least one processor bus connected to at least one of said plurality of processing elements; and

first arbitration means responsive to request signals generated from at least one of said processing elements for



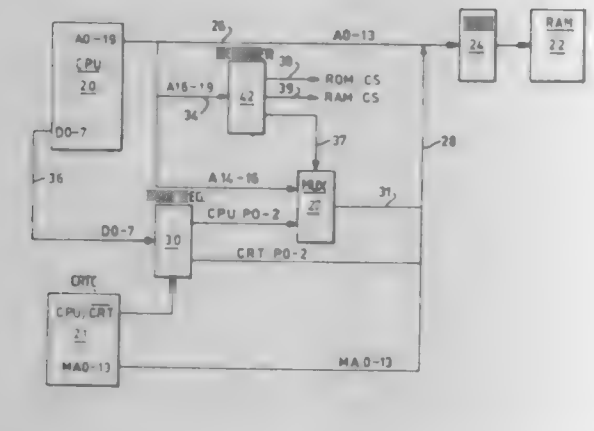
selectively transferring signals between said processor bus and said system bus.

4,608,632

MEMORY PAGING SYSTEM IN A MICROCOMPUTER

David A. Kummer, Boca Raton, Fla., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 12, 1983, Ser. No. 522,892
Int. Cl.[4] G06Z *12/06;* G09G *1/14*
U.S. Cl. 364—200 4 Claims



1. A memory paging system in a microcomputer including a main random access memory (RAM), a central processor unit (CPU) having a data output and an address output, and a CRT controller (CRTC) for digital display control having an address output and a control output line carrying signals selectively defining CPU and CRTC address modes, said paging system providing fixed number groups of high order address bits to define fixed size pages within the RAM and including;

a page register system coupled to the data output of the CPU to receive therefrom and register a page bit data set comprising a CPU page address bit group and a CRTC page address bit group;

means coupling said control output line of the CRTC to a select input of the page register system to select and output the registered CPU page address bit group when said control output line carries a CPU mode signal and the registered CRTC page bit group when said output line carries a CRTC mode signal;

RAM address means coupled to the address output of the CPU, the address output of the CRTC and the output of the page register system for addressing said RAM with a combination of the CPU page address bit group from the page register system and lower order address bits from the address output of the CPU for CPU access to the RAM, and a combination of the CRTC page address bit group from the page register system and lower order address bits from the address output of the CRTC for CRTC access to the RAM, whereby both the CPU and the CRTC can access any page in the RAM in accordance with the values of the page address bit groups;

decoder means coupled to said CPU address output for decoding an address from the CPU in a first range of addresses outside addresses of locations in the RAM to generate a signal on a first output line; and

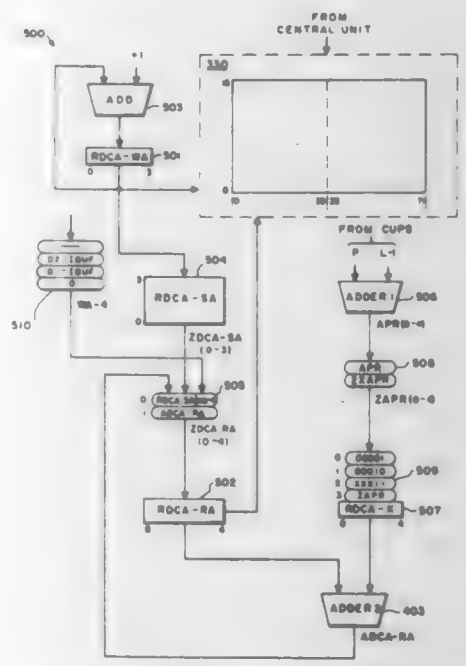
multiplexer means having a first input connected to receive said CPU page address bit group from the page register system, a second input connected to receive address bits, corresponding in order with said page address bits, from the CPU, a control input coupled to said first output line, and an output coupled to said RAM address means, said multiplexer means being switched by said signal on said first output line from a first condition in which it passes said CPU page address bit group to said RAM address means to a second condition in which it passes said address bits from the CPU to said RAM address means.

4,608,633

METHOD FOR DECREASING EXECUTION TIME OF NUMERIC INSTRUCTIONS

Donald C. Boothroyd, Phoenix; John E. Wilhite; Robert W. Norman, Jr., both of Glendale, and Howard J. Keller, Scottsdale, all of Ariz., assignors to Honeywell Information Systems Inc., Phoenix, Ariz.

Filed Apr. 1, 1983, Ser. No. 481,202
Int. Cl.[4] G06F *9/34*
U.S. Cl. 364—200 1 Claim



1. A method of obtaining first and second operand data strings from a memory unit, wherein said first and second operand data strings are utilized in executing an instruction, and wherein said first and second operand data strings each includes at least one operand data word, each operand data word having a predefined format such that a predetermined group of bits of said operand data word defines a digit, said digit being a sign character or a numeric character, and wherein the first operand data word of each of said operand data strings contains a most significant digit, and the last operand data word of each of said operand data strings contains a least significant digit, said method comprising the steps of:

(a) loading said operand data words of said first and second operand data strings in a pre-established order in said memory unit; and

(b) fetching said operand data words, in sequential order from said memory unit, such that the operand data words of the first and second operand data strings having the most significant digit are fetched first, the remainder of said first operand data words are fetched next, and the remainder of the second operand data words are fetched in a reverse direction, such that the operand data word having the least significant digit is fetched first, thereby

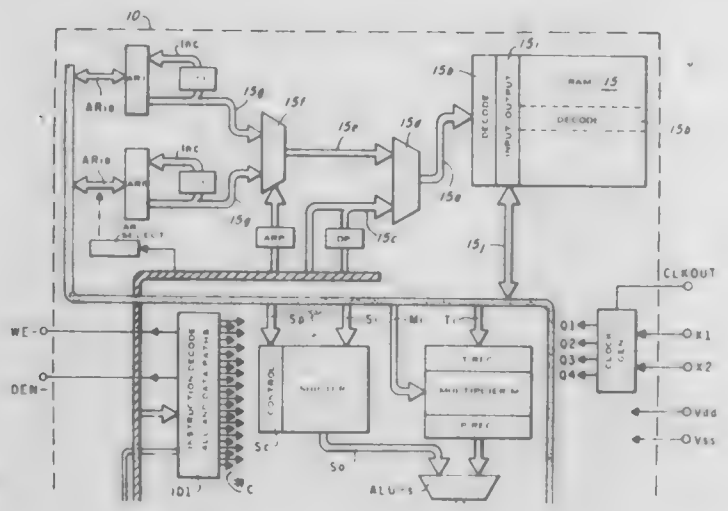
allowing a predetermined arithmetic operation designated by an arithmetic instruction to begin on the first and second operand data strings while the second operand data words are being fetched.

4,608,634

MICROCOMPUTER WITH OFFSET IN STORE-ACCUMULATOR OPERATIONS

Edward R. Caudel; Surendar S. Magar, and Wanda K. Gass, all of Houston, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Feb. 22, 1982, Ser. No. 350,956
Int. Cl.[4] G06F *9/00, 13/00*
U.S. Cl. 364—200 11 Claims



1. A microcomputer device comprising:

an arithmetic/logic unit having first and second data inputs and data output;

a data memory having an address input and having data input/output means;

data bus means coupled to the first data input of the arithmetic/logic unit and coupled to the data input/output means of the data memory;

program memory means having an address input and having an instruction output, the program memory storing instruction words;

program address means connected to the address input of the program memory means;

control means for generating control signals in response to instruction words, the control signals defining operation of the arithmetic/logic unit and transfer to and from the data bus means;

program bus means coupled to receive instruction words from said instruction output for transfer to said control means, said program bus means coupled to said program address means;

shifter means coupling said data output of the arithmetic/-logic unit to said data bus means and operative to shift the data a selected number of bits in transferring data from said data output to the data bus means, said shift being in response to said control signals generated from an instruction word via said control means; and

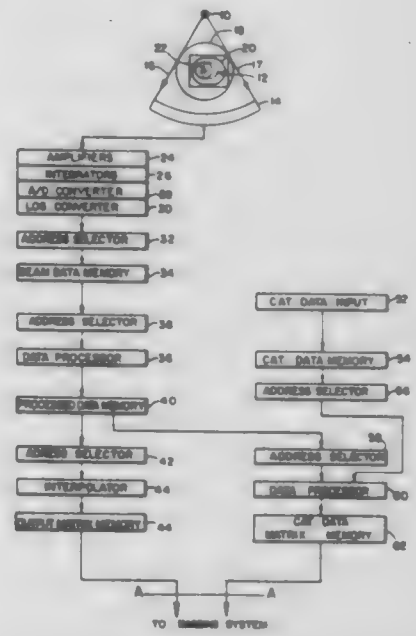
wherein the data output of the arithmetic/logic unit is coupled only to an accumulator and an output of accumulator is coupled to the data bus means via said shifter and to said second input of the arithmetic/logic unit directly without passing through the shifter.

4,608,635

METHOD AND APPARATUS FOR TOMOGRAPHIC DIAGNOSIS

Jewell L. Osterholm, Radnor, Pa., assignor to Thomas Jefferson University, Philadelphia, Pa.

Continuation of Ser. No. 404,898, Aug. 3, 1982, Pat. No. 4,532,591. This application May 23, 1985, Ser. No. 737,239
The portion of the term of this patent subsequent to Jul. 30, 2002, has been disclaimed.
Int. Cl.[4] G06F *15/42*
U.S. Cl. 364—414 8 Claims



1. In a medical imaging apparatus comprising scanning means for scanning a portion of the central nervous system to produce signals corresponding to the tissue of various regions of the scanned system to be imaged, and imaging means coupled to the scanning means for generating an image representing the scanned tissue of various regions of the central nervous system, the improvement comprising:

memory means for storing and generating signals representing a predetermined electrophysiological condition of the central nervous system at various regions thereof including the spectrum of components in an electroencephalographic signal;

detector means for detecting signals representing the actual electrophysiological condition of the central nervous system at various regions thereof including means for spectrally analyzing the components of the detected electroencephalographic signal for the various regions;

comparison means coupled to said memory means and said director means for comparing the directed signals with the stored signals for said various regions of said central nervous system and for generating signals representing the deviation of the detected signals in one of the regions from said stored signals for said one of the regions; and

display means coupled to said comparison means and the imaging means for visually indicating said one of the regions representing said deviation on said image.

4,608,636

SLEW RATE FILTER FOR LOGGING CABLE SIGNAL PICK-OFF

Richard A. Beals, Houston, Tex., assignor to Halliburton Company, Duncan, Okla.

Filed Feb. 23, 1984, Ser. No. 582,973
Int. Cl.[4] G06F *15/20;* G01V *1/00*
U.S. Cl. 364—422 9 Claims

1. In a well logging system including a fluid tight body member or sonde sized and adapted for passage in a well borehole and supported downhole on an armored well logging cable and said sonde a pulse source connected to a pulse transmitting conductor in said logging cable, a surface located data output system connected to said conductor and comprising:

(a) first and second amplifier means of similar construction, said first and second amplifier means both being operably connected to said transmitting conductor in said logging cable to receive a signal from the logging cable wherein electrical noise obscures the signal on the cable conductor;

(b) said first and second amplifier means being operable at adjustable slew rates under control of slew rate control currents provided to said first and second amplifier means,



and wherein first and second current sources are respectively connected to said first and second amplifier means to provide slew rate control currents thereto; and

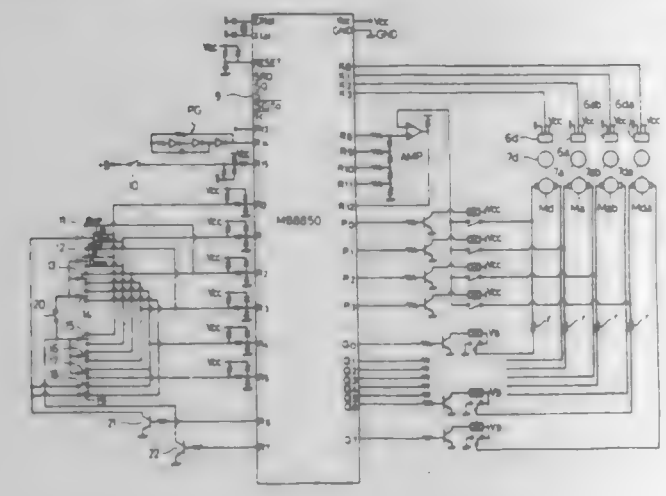
(c) summing means connected to the outputs of said first and second amplifier means, said summing means summing the output signals provided by said first and second amplifier means to form a differential signal therefrom, wherein said differential signal includes a signal of interest with reduced noise as a function of changes in the slew rate of said first and second amplifier means.

4,608,637

CONTROL DEVICE FOR DRIVING ROAD-VEHICLE ELECTRIC-POWERED EQUIPMENT

Teiji Okuyama, Toyota, and Hiroshi Noutomi, Yokohama, both of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Aichi, Japan

Filed Sep. 30, 1983, Ser. No. 537,619
Claims priority, application Japan, Sep. 30, 1982, 57-172964
Int. Cl.[4] G06F *15/20;* G06D *3/20*
U.S. Cl. 364—424 **8 Claims**



1. A control device for driving road-vehicle electric-powered equpment comprising:

a supporting means for supporting said equipment in a movable manner;

an electric-powered driving mechanism for driving said equipment;

an electric driver for actuating an electric motor in said electric-powered driving mechanism;

a switch means for instructing driving of said electric-powered driving mechanism; and

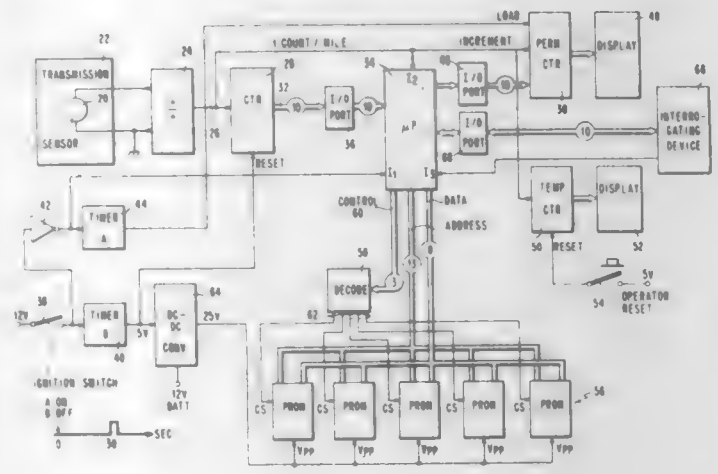
an electronic control device for reading a time-serial signal pattern generated in accordance with plural successive opening/closing operations of said switch means, and for actuating and controlling the electric motor in accordance with said opening/closing pattern.

4,608,638

APPARATUS FOR ACCUMULATING AND PERMANENTLY STORING STATISTICAL INFORMATION

Constantine Tsikos, Pennsauken, N.J., assignor to Siemens Corporate Research & Support Inc., Iselin, N.J.

Filed Oct. 21, 1983, Ser. No. 544,162
Int. Cl.[4] G06F *15/20, 13/00*
U.S. Cl. 364—424 **6 Claims**



1. Apparatus for monitoring usage to provide statistical data on historial usage of equipment being monitored said apparatus comprising:

(a) a non-volatile memory including:

(1) a plurality of electrical inputs;

(2) a plurality of bit storage locations organized into a plurality of groups with each location in a group associated with one type of event, all of the bits stored in said locations being originally set to the same, first logical state; and

(b) memory control means, responsive to electrical signals applied to said electrical inputs, for setting said bits in selected ones of said bit locations to their opposite, second logical state, said memory control means for changing the state of each bit only once so that the bits set to their second state are substantially permanently stored; said memory control means including logic means for defining the usage in terms of predetermined events wherein each predetermined event has attributes which categorize the type of usage to occur to the normal operation of the equipment being monitored, connected to said electrical inputs of said memory, and said logic means applying electrical signals to said electrical inputs in response to the occurrence of an event, said logic means including:

(1) first means for determining both the occurrence of an event and the type of such event;

(2) second means, responsive to said first means, for selecting a bit location associated with the type of event determined by said first means in which the stored bit is in said first state; and

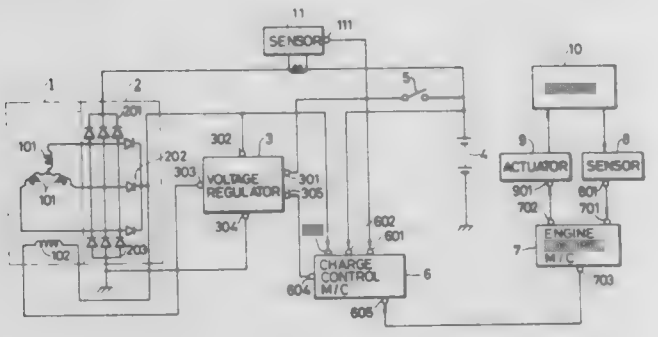
(3) third means, responsive to said second means and connected to said electrical inputs, for producing and applying to said electrical inputs electrical signals which set the bit at the selected bit location to its second state to indicate the occurrence of said predetermined event

whereby the apparatus provides current ongoing and permanent cumulative information about the frequency of occurrence of each predetermined event indicated by the number of bits which have been set to its second state in said selected bit location.

4,608,639
CHARGE CONTROL MICROCOMPUTER DEVICE FOR VEHICLE

Mitsuharu Morishita, and Shinichi Kouge, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed May 17, 1983, Ser. No. 495,542
Claims priority, application Japan, May 18, 1982, 57-85208
Int. Cl.⁴ H02J *7/14;* G06F *15/56*
U.S. Cl. 364—424 **3 Claims**

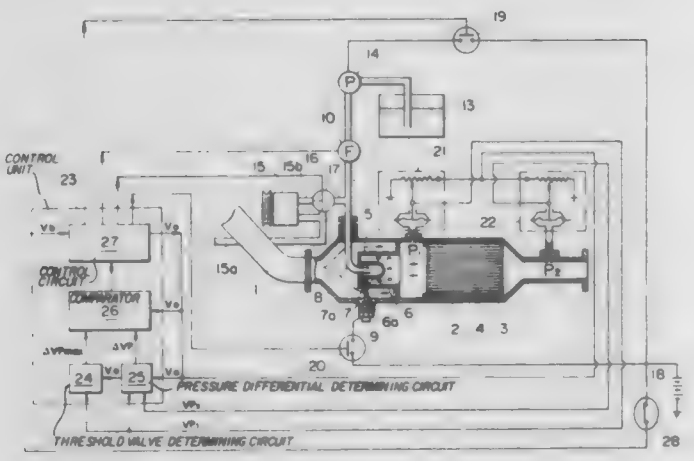


1. A charge control microcomputer device for a vehicle, comprising:
an AC generator driven by an engine for generating an output current, said generator having armature coils and a field coil;
a battery charged by a rectified output of said generator and generating a terminal voltage;
a voltage regulator for controlling a current flowing in said field coil, to control an output voltage of said generator to a predetermined value;
an engine controlling microcomputer for receiving engine parameter data from said engine, to control the operation of said engine;
a charge control microcomputer for processing input data including data on at least one engine parameter output from said engine controlling microcomputer, and charge system data including at least one of battery terminal voltage data, generator voltage data and generator output current data, to provide a reference voltage for said voltage regulator.

4,608,640
TRAP REGENERATIVE DEVICE CONTROL APPARATUS

Motohiro Shinzawa, Yokosuka, and Yoji Hasegawa, Yokohama, both of Japan, assignors to Nissan Motor Company, Limited, Japan

Filed Jan. 9, 1984, Ser. No. 569,481
Claims priority, application Japan, Jan. 10, 1983, 58-1127; Jan. 14, 1983, 58-3524
Int. Cl.⁴ F01N *3/28;* B01D *46/42*
U.S. Cl. 364—431.03 **28 Claims**

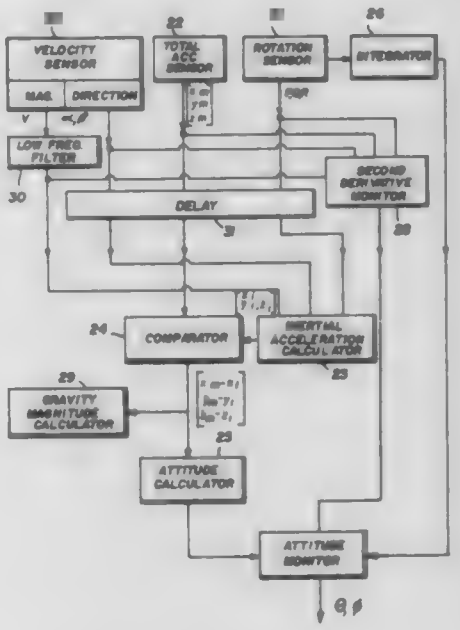


1. An apparatus for use in an internal combustion engine having an exhaust conduit for discharging exhaust particles together with exhaust gases to the atmosphere, and a trap located in said exhaust conduit for collecting exhaust particles, said apparatus comprising:
regenerative means operable to regenerate said trap;
sources for deriving signals indicative of a first condition representative of the presence (P1) on the inlet side of said trap and a second condition representative of the pressure (P2) on the outlet side of said trap; and
a control means responsive to the signals indicative of the first and second conditions for detecting a regeneration requirement to operate said regenerative means for a predetermined time period, said control means including:
means for calculating a pressure differential (ΔP) across said trap as a function of the values of the signals indicative of the first and second conditions;
means for calculating a threshold value (ΔPmax) based upon the value of the signal indicative of the first condition; and
means for detecting a regeneration requirement when the calculated pressure differential (ΔP) reaches the calculate threshold value (ΔPmax).

4,608,641
NAVIGATIONAL AID

Reginald J. Snell, Warton, England, assignor to British Aerospace Public Limited Company, London, England

Filed Aug. 3, 1982, Ser. No. 404,901
Claims priority, application United Kingdom, Aug. 7, 1981, 8124243; Feb. 5, 1982, 8203334
Int. Cl.⁴ G05D *1/10*
U.S. Cl. 364—434 **11 Claims**



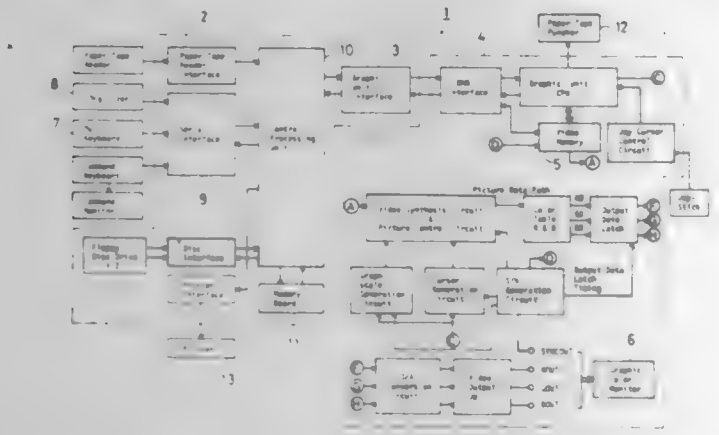
2. A method of determining the attitude of a body operating in a gravitational field comprising:
measuring the total acceleration acting on the body in relation to a coordinate system fixed with respect to said body;
calculating the total inertial component of the total acceleration in relation to said coordinate system;
comparing said measured total acceleration with said total inertial component, thereby to generate data representative of the orientation of the gravitational component of acceleration in relation to said coordinate system; and
processing said data to determine the attitude of said body.

4,606,642

APPARATUS FOR RECORDING PATTERN INFORMATION AND PRODUCING A KNITTING CONTROL PROGRAM

Masahiro Shima, Wakayama, Japan, assignor to Shima Idea Center Co., Ltd., Wakayama, Japan

Filed Aug. 31, 1984, Ser. No. 646,296
Claims priority, application Japan, Sep. 27, 1983, 58-179729
Int. Cl.[4] G05B *19/00;* D04B *7/24*
U.S. Cl. 364—470 1 Claim



1. An apparatus for recording pattern information, comprising display means for pattern information which, when pattern information on a fabric to be knitted on a V-bed flat knitting machine, is entered thereinto in terms of units of pattern information one unit representing one or two stitches formed on one pair of opposed needles, front and back, in coded color or color code for each respective unit pattern information and according to a color code table, display

in coded colors on a graphic color monitor individual units of patterns information for each wale of stitches and individual units of pattern information for each course of stitches, with said information units for each wale arranged in dots on one of X and Y coordinates axes and said information units for each course arranged in dots on the other coordinate axis, each unit pattern information being represented by one dot, pattern information storage means for storing pattern information input into said display means, interpreter means for reading the pattern information stored in said storage means in the sequence of knitting and for translating the pattern information for each course of stitches into pattern data and control data for a required number of knitting courses and write means for writing said pattern data and control data for each knitting course onto a desired recording medium.

4,606,643

AUTOMATIC TOOL GRINDING MACHINE WITH COMPUTERIZED CONTROL

Charles T. Breitenstein, Elk Grove Village, and Allen R. Holecek, Rockton, both of Ill., assignors to Spiral Step Tool Company, Elk Grove Village, Ill.

Filed Aug. 18, 1983, Ser. No. 524,443
Int. Cl.[4] G06F *15/46;* B24B *19/08*
U.S. Cl. 364—474 4 Claims

1. An automatic tool grinding machine, comprising

holding means for holding a generally cylindrical tool to be ground,

first and second drive means for translating said holding means along rectangularly related x and y axes defining an x-y plane,

said holding means including means for holding the generally cylindrical tool along a tool axis which is parallel with said x-y plane,

third drive means connected to said holding means for producing rotation of the tool about the tool axis,

a first grinding unit comprising a first grinding motor and grinding wheel,

said first and second drive means being operative to feed the tool relative to said grinding wheel;

fourth drive means for translating said grinding motor and wheel along a fixed z axis substantially perpendicular to said x-y plane for feeding said wheel into the tool,

fifth drive means for swinging said grinding motor and wheel about the z axis to a desired angle relative to the tool,

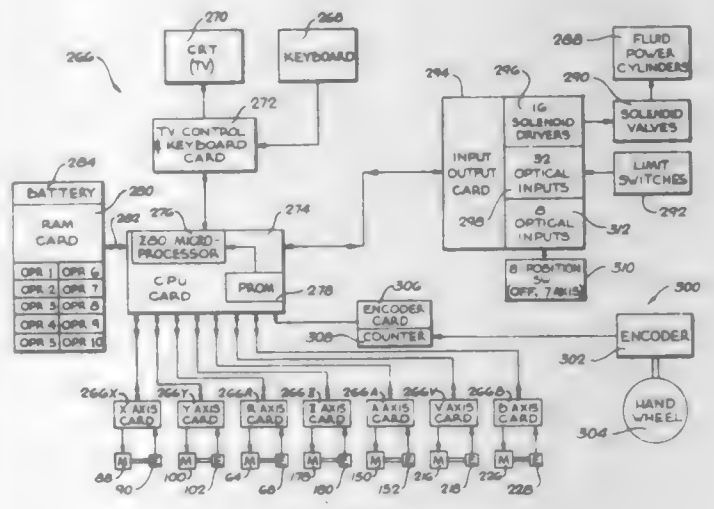
at least a second grinding unit including a second grinding motor and wheel,

sixth drive means for feeding said second grinding motor and wheel along a fixed v axis substantially perpendicular to said x-y plane,

the v axis being substantially parallel with the z axis but substantially spaced apart therefrom,

each of said drive means comprising a servomotor and an encoder for precisely positioning said drive means and for indicating the position of said drive means,

swivel means for swiveling said holding means about a swivel axis substantially perpendicular to said x-y plane between a first position with the tool axis substantially



parallel with the x axis and a second position with the tool axis substantially parallel with the y axis for presenting the tool to said first and second grinding wheels in the respective first and second positions,

a keyboard including keys for entering dimensional values and parameters for said various drive means,

a memory for storing said dimensional values and parameters,

a TV tube for displaying said dimensional values and parameters,

means for bringing up a series of questionnaire pages on the TV tube calling for all of the dimensional values and parameters needed to program the machine,

means for producing a cursor on the TV tube to indicate the question which is presently being considered,

whereby the operator responds to each question and enters the dimensional values and parameters called for which are then stored in the memory and displayed on the TV tube opposite the respective questions,

and control means for putting said drive means through a cycle of operations using the dimensional values and parameters stored in the memory.

4,608,644

TOOL LIFE, OFFSET, AND SELECTION SUPERVISION METHOD

Nobuyuki Kiya, Tokyo, Japan, assignor to Fanuc Ltd, Minamitsuru, Japan

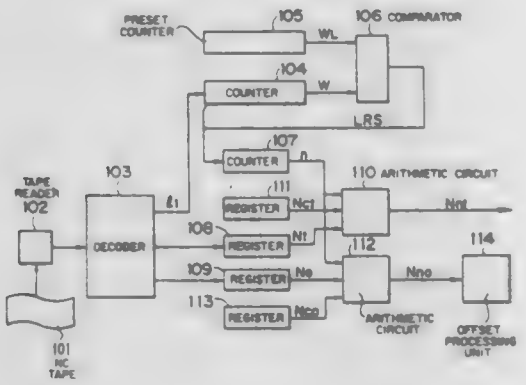
PCT No. PCT/JP83/00330, § 371 Date May 17, 1984, § 102(e) Date May 17, 1984, PCT Pub. No. WO84/01534, PCT Pub. Date Apr. 26, 1984

PCT Filed Oct. 6, 1983, Ser. No. 616,827

Claims priority, application Japan, Oct. 7, 1982, 57-176692

Int. Cl.[4] G05B *19/403;* B23Q *15/16*

U.S. Cl. 364—474 10 Claims



1. A tool life supervision method in which the life of a tool is monitored and machining is performed by automatically using another tool when a former tool has reached the end of its life, the method comprising the steps of:

(a) setting in memory means a number W_L of parts to be machined, which number conforms to tool life, and setting in the memory means a tool selection number correction value Nct;

(b) inserting at an end of an NC machining program at least an instruction or symbol which indicates the end of the program;

(c) detecting and counting the number of times W the instruction or symbol indicating the end of a program is detected;

(d) monitoring whether the counted value W coincides with a preset number W_L of parts to be machined and;

(e) counting the number of times n coincidence is achieved and performing the following operation to determine a tool selection number:

$$Nt + Nct \cdot n$$

wherein NT represents a tool selection number indicated by a tool selection instruction in the NC machining program; and

(f) selecting a tool by employing the result of the aforesaid operation as an actual tool selection number.

4,608,645

NUMERICAL CONTROL SYSTEM FOR A MACHINE TOOL WITH A TOOL DIMENSION COMPENSATION FUNCTION

Kuniyuki Niwa, and Yoshiyuki Fujimura, both of Kariya, Japan, assignors to Toyoda Koki Kabushiki Kaisha, Kariya, Japan

Filed May 11, 1984, Ser. No. 609,218

Claims priority, application Japan, May 17, 1983, 58-87162

Int. Cl.[4] G06F *15/46;* G05B *23/02*

U.S. Cl. 364—474 9 Claims

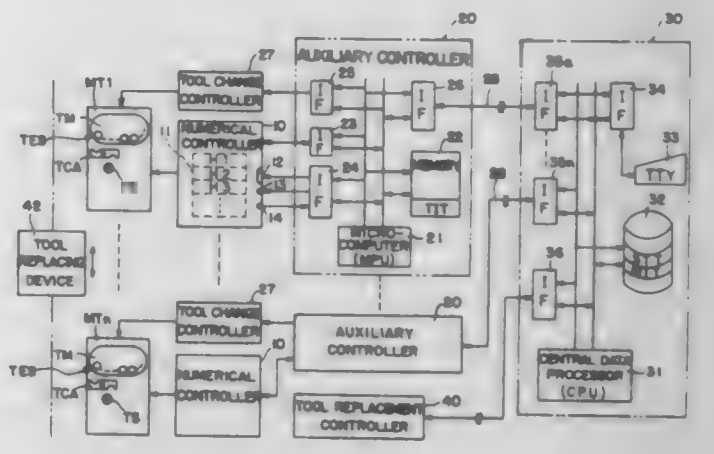
7. A numerical control system for a machine tool with a tool magazine for removably storing a plurality of primary tools which are to be selectively attached to a tool spindle, said system comprising:

a numerical controller coupled to said machine tool for controlling said machine tool in accordance with a numerical control program, said numerical controller including first memory means for storing at least one tool dimension data, said numerical controller being capable of modifying, based upon said at least one tool dimension data, a feed movement of said machine tool which is performed in accordance with a program block of said numerical control program; and

system control means coupled to said numerical controller and including:

(a) second memory means for storing first and second tool dimension data being respectively associated with first and second spare tools, said first spare tool being scheduled to be used in place of one of said primary tools being stored in said tool magazine, said second spare tool being scheduled to be used in place of said first spare tool;

(b) data read-out means for reading out a corresponding one of said first and second tool dimension data from



said second memory means so as to enable said corresponding one of said first and second tool dimension data to be supplied to said numerical controller when any of said first and second spare tools is used on said tool spindle; and

(c) data transfer means for transferring said first tool dimension data read out from said data readout means to said numerical controller when said first spare tool is used on said tool spindle in place of said one of said primary tools and for transferring said second tool dimension data read-out from said data read-out means to said numerical controller when said second spare tool is used on said tool spindle in place of said first spare tool.

4,608,646

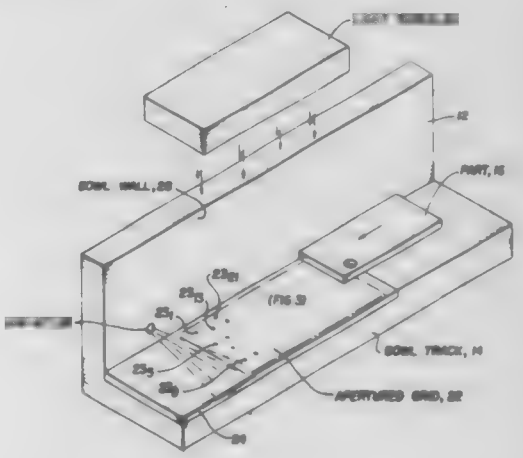
PROGRAMMABLE PARTS FEEDER

Jerry L. Goodrich, State College, Pa., and William L. Devlin, Evans, Colo., assignors to Programmable Orienting Systems, Inc., Port Mathilda, Pa.

Filed Oct. 25, 1984, Ser. No. 664,852

Int. Cl.[4] B65G *43/08, 47/24;* G05B *19/00*

U.S. Cl. 364—478 24 Claims



1. A programmable parts feeding system for feeding parts from a mixed batch in a programmed sequence comprising:

means for moving parts along a predetermined travel path;

means for rejecting a wrong or improperly oriented part from said travel path;

part silhouette recognizer means in said travel path and including a source of radiation, an apertured grid having a hole pattern which is operable to determine both part orientation and identification of a mixed batch of parts traveling along said travel path, and radiation sensing means coupled to said hole pattern for sensing the shadow image information of a part located on or traversing said grid;

controller means operable in accordance with a stored program and having memory means for storing part information therein, said controller means being coupled to said radiation sensing means and said rejecting means, and further including means for implementing a plurality of user selectable operational modes including an image mode for sensing the respective images of a plurality of properly oriented different types of parts to be fed out of the feeding system as well as assigning each part type a number and a portion of said memory means and thereafter storing sensed part image information of each part type at a respective portion of said memory means, a sequence mode for programming a predetermined positional sequence of different types of parts desired from said mixed batch followed by storing a part number sequence in said memory means, and a run mode to thereafter compare the sensed image information of parts traversing said grid with the stored image information of a desired part type in the order of said sequence to deactivate said rejecting means when a predetermined image match occurs during part feeding to permit a predetermined sequence of parts to be fed out of the parts feeding system in a programmed order and

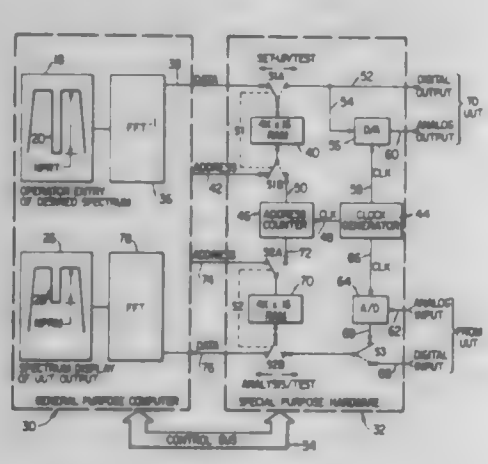
means for reactivating said rejecting means after the passage of the required properly oriented part past said rejecting means.

4,608,647

METHOD AND APPARATUS FOR DETERMINING THE NOISE POWER RATIO (NPR) OF A UNIT UNDER TEST

Thomas E. White, Richardson, and Brooks C. Fowler, Dallas, both of Tex., assignors to E-Systems, Inc., Dallas, Tex.

Filed Oct. 24, 1983, Ser. No. 544,494
Int. Cl.[4] G01R *29/26*; G06F *15/332*
U.S. Cl. 364—481 **18 Claims**



1. A method for determining the noise power ratio of a unit under test utilizing a general purpose digital computer, comprising the steps of:

prompting an operator to input to the computer various parameters which define a desired test spectrum;

generating a frequency domain representation signal of said desired test spectrum, said spectrum having a notch of predetermined depth;

transforming said frequency domain representation signal into an input signal sequence defining a time domain representation thereof;

applying said input signal sequence to said unit under test;

receiving an output signal sequence from said unit under test defining a time domain representation of a measured test spectrum;

transforming said output signal sequence into a frequency domain representation signal having a notch of measured depth; and

calculating said noise power ratio in dB of said unit under test by taking the ratio of the notch depths of frequency domain representation signals for said desired and measured test spectrums.

10. A test apparatus for use in determining the noise power ratio of a unit under test, comprising:

means for producing a frequency domain representation signal of a desired test spectrum, said spectrum having a notch of predetermined depth;

first means for transforming said frequency domain representation signal to an input signal sequence defining a time domain representation thereof;

means for applying said input signal sequence to said unit under test;

means for receiving an output signal sequence from said unit under test defining a time domain representation of a measured test spectrum;

second means for transforming said output signal sequence into a frequency domain representation signal having a notch of measured depth; and

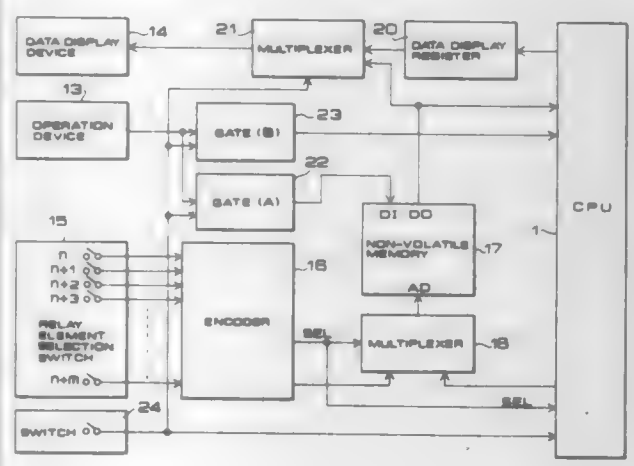
means for calculating the noise power ratio of said unit under test by taking the ratio of the notch depths of the frequency domain representation signal for said desired and measured test spectrums.

4,608,648

DATA DISPLAY SYSTEM

Kenji Oogaki, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 9, 1984, Ser. No. 598,062
Int. Cl.[4] G01R *31/08*
U.S. Cl. 364—483 **2 Claims**



1. A data display system for power line systems having a digital data display device for displaying selectively computational data used in a computational process carried out by a central processing unit in a digital protective relay and setting values stored in a memory for use as reference criteria in the computational process by said central processing unit, said system comprising:

an operation device for specifying numeric codes in correspondence to said computational data and addresses of said memory storing said setting values;

selection switch means for specifying one of said setting values stored in said memory;

gate circuit means adapted to pass the output of said operation device selectively to said central processing unit or said memory;

a display selection switch for controlling operation of said gate circuit means;

a multiplexer adapted to pass selectively one of computational data from said central processing unit or a setting

value from said memory under control of said display selection switch;

said selection switch means comprising switches equal in number to the number of said setting values;

an encoder circuit which receives the outputs of said switches;

a second multiplexer which receives a selection signal produced by said encoder circuit in response to an ON-state of any one of said switches and, during a period of receiving the selection signal, passes only the output of said encoder circuit to said memory;

said gate circuit means comprising a first gate circuit which passes the output of said operation device to said memory when said display selection switch is set in a first state and blocks the output when said display selection switch is set in a second state, and a second gate circuit which passes the output of said operation device to said central processing unit when said display selection switch is set in the second state and blocks the output when said display selection switch is set in the first state; and

a data display register connected between said central processing unit and said multiplexer;

whereby computational data specfied by the setting on the operation device is displayed on said display device to allow display of computational data without the need for a special maintenance operation to monitor the process of said central processing unit.

4,608,649

DIFFERENTIAL CASCODE VOLTAGE SWITCH (DCVS) MASTER SLICE FOR HIGH EFFICIENCY/CUSTOM DENSITY PHYSICAL DESIGN

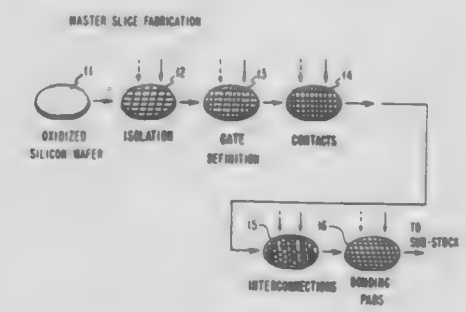
James W. Davis, Boca Raton; Victor S. Moore, Gainesville, and Nandor G. Thoma, Boca Raton, all of Fla., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 27, 1983, Ser. No. 508,451

The portion of the term of this patent subsequent to Aug. 19, 2003, has been disclaimed.

Int. Cl.⁴ H03K *19/094, 19/173*

U.S. Cl. 364—491 **2 Claims**



1. A method of fabricating a master slice wafer for stockpiling in a substock awaiting further steps in defining a completed functional product incorporating Differential Cascode Voltage Switch (DCVS) circuits, comprising:

(1) locating a silicon wafer; and

(2) processing said wafer to establish an isolation region, a source/drain diffusion region, and a polysilicon gate region thereon, whereby the vertical structures of all the active components on the wafer is complete, the processing steps being controlled to produce a completed masterslice comprised of two general areas of microblocks including an input/output cell perimeter and a DCVS logic array of MOS transistors arranged into device rails including associated power rails, the microblocks including said MOS transistors being cascoded into binary decision trees for developing logic signals and setting current levels.

4,608,650

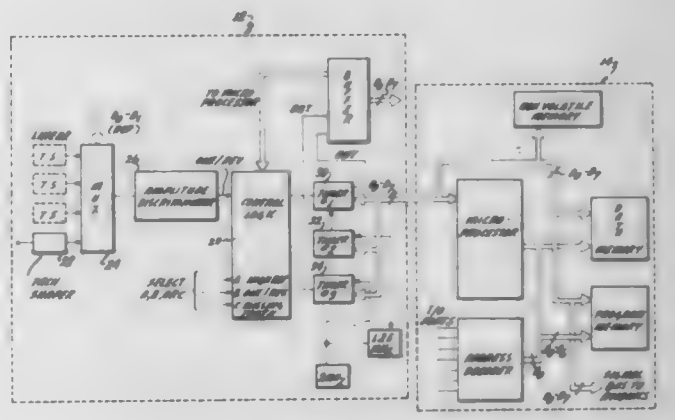
IMBALANCE MEASURING SYSTEM AND METHOD

Nikul S. Kapadia, El Toro, Calif., assignor to Becton Dickinson and Company, San Juan Capistrano, Calif.

Filed Aug. 9, 1983, Ser. No. 521,725

Int. Cl.⁴ G01N *29/04*

U.S. Cl. 364—508 **10 Claims**



1. Apparatus to enable the balancing of the rotating component of complex machinery comprising:

(a) transducer means for detecting and singalling an imbalance condition in the rotating component;

(b) signalling means coupled to the rotating component for signalling frequency of rotation;

(c) sampling means coupled to said signlling means for generating a predetermined number of sampling pulses during each revolution of the rotating machinery;

(d) data acquisition means, coupled to said transducer means and said sampling means, operative in response to said sampling pulses for providing said predetermined number of data samples each revolution;

(e) analog to digital converting means for providing transducer signals in digital form;

(f) digital filtering means responsive to applied digitized data samples for creating signals representative of the magnitude of a parameter of imbalance of the rotating component; and

(g) storage and comparison means for recording the signals dreated in said digital filtering means for determining the signal of greatest magnitude and its time of occurrence;

wherein an imbalanced rotating component can be monitored during operation to determine the magnitude of the imbalance.

4,608,651

CONTROL SYSTEM FOR DIRECT TEACHING/PLAYBACK TYPE ROBOTS

Tsudoi Murakami; Shoji Nasu; Yasuhide Nagahama, all of Kobe; Hironosuke Kada, Kanagawa; Teruyoshi Sekino, Kanagawa; Hirokazu Murayama, Kanagawa; Yoshiaki Muneyane, Kanagawa; Goro Tuda, Kobe, and Osamu Mizuguchi, Higashimachi, all of Japan, assignors to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan

Filed Jun. 1, 1983, Ser. No. 499,880

Claims priority, application Japan, Oct. 28, 1982, 57-190092; Oct. 28, 1982, 57-164528[U]; Oct. 28, 1982, 57-190093; Nov. 9, 1982, 57-170694[U]; Nov. 26, 1982, 57-208092

Int. Cl.⁴ G09C *00/00;* **G05B** *19/18;* **B25J** *11/00;* **F16D** *21/04*

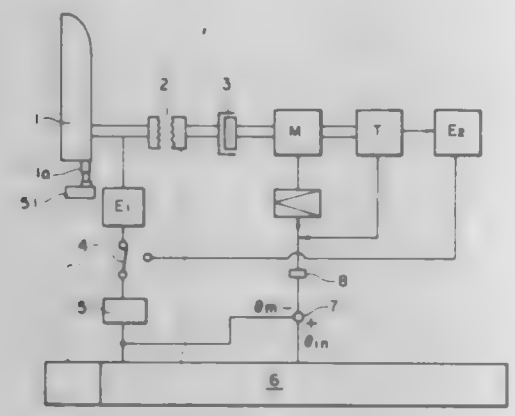
U.S. Cl. 364—513 **17 Claims**

1. A control system for a direct teaching/playback robot, including a transmission having a low spring constant member

connected to a drive source for driving a robot element through a frictional coupling means, and a drive source control means for controlling said drive source, said control system comprising:

first position detecting means provided between said robot element and said frictional coupling means for detecting a rotational position of said robot element and for producing output data indicative of said rotational position of said robot element at an output terminal;

second position detecting means connected to said drive



source for detecting the rotational position of said drive source and for producing output data indicative of the rotational position of said drive source at an output terminal; and

switch means for selectively connecting the output terminals of said first and second position detecting means to said drive source control means in teaching and playback modes of operation, respectively, such that delays or error caused by torsional deformation of the transmission are eliminated upon switching between said teaching and playback modes of operation.

4,608,652

METHOD OF DISPLAYING A LOGIC SIGNAL

Hidemi Yokokawa, Tokyo, and Miyuki Fukuzawa, Kanagawa, both of Japan, assignors to Sony/Tektronix Corporation, Tokyo, Japan

Filed Dec. 10, 1982, Ser. No. 448,544
Claims priority, application Japan, Feb. 16, 1982, 57-23065
Int. Cl.⁴ G06F *15/626, 5/00*
U.S. Cl. 364—521 **5 Claims**

1. A method of compressing a first binary bit sequence, the method comprising the steps of:

comparing a first and a second bit of said first sequence;

generating an output bit of a state matching said first bit if said first and second bits are of a similar state and generating an output bit of a first state if said first and said second bits are of differing states;

comparing each successive bit of said first sequence, except said first and second bits thereof, to its preceding bit; and

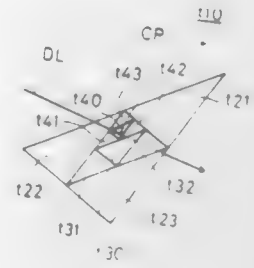
generating an output bit of a state matching said preceding bit whenever any said successive bit and its preceding bit are of a similar state, and generating an output bit differing in state from a last generated output bit whenever any said successive bit and its preceding bit are of differing states, said output bits comprising a second binary bit sequence having one less bit than said first sequence.

4,608,653

FORM CREATING SYSTEM

Ryozo Setoguchi, 50, Minamisomeshimachi, Sendai, Miyagi, Japan

Filed Oct. 10, 1984, Ser. No. 659,406
Claims priority, application Japan, Mar. 30, 1984, 59-63006; Apr. 18, 1984, 59-78123
Int. Cl.⁴ G06F *15/626*
U.S. Cl. 364—522 **17 Claims**



1. A form creating system comprising:

straight line setting means for setting up a straight line passing through a desired point and having a desired direction;

surface-to-be-detected setting means for setting up a surface to be detected which has a desired shape and from which an intersection point position is to be detected;

surface division means for dividing a predetermined surface into a predetermined number of surfaces; and,

intersection-point-containing-surface detection means for detecting an intersection point containing surface that contains an intersection point of said straight line and said surface to be detected, out of said predetermined number of surfaces divided by said surface division means,

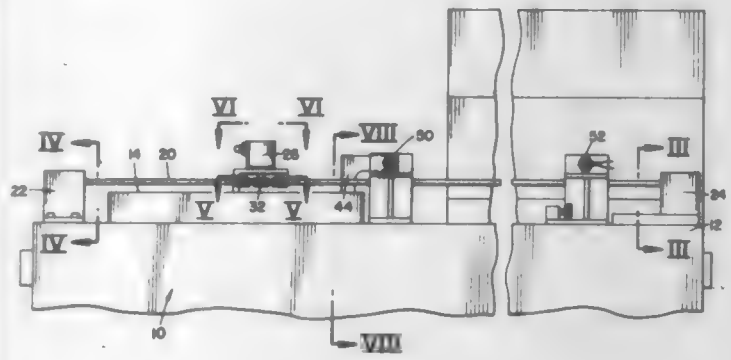
characterized in that said surface to be detected is divided into a predetermined number of surfaces by said surface division means, said intersection point containing surface is detected from these divided surfaces, and said intersection point containing surface is again divided into a predetermined number of surfaces, said intersection point containing surface is detected from these divided surfaces, and these division/detection operations are repeated to detect said intersection point of said straight line and said surface to be detected.

4,608,654

LINEAR POSITION INDICATOR

Helmut Schafsteller, Ambler, Pa., assignor to The Warner & Swasey Company, Cleveland, Ohio

Filed Dec. 13, 1983, Ser. No. 561,014
Int. Cl.⁴ G06F *15/46;* G05B *11/18*
U.S. Cl. 364—559 **14 Claims**



1. A position indicator for indicating the relative position of two members relatively movable for a predetermined distance in a predetermined direction comprising:

a length of chain secured at both ends to one of said member to be extended to lie along said predetermined direction for said predetermined distance;

an encoder secured for movement with the other of said members, said encoder having a rotatable input shaft and

including means providing output position information signals in response to rotation of the input shaft;

a sprocket, connected to said rotatable input shaft, and having peripheral teeth positioned to engage each portion of said length of chain successively to rotate said input shaft during relative movement of the two movable members in said predetermined direction.

4,608,655

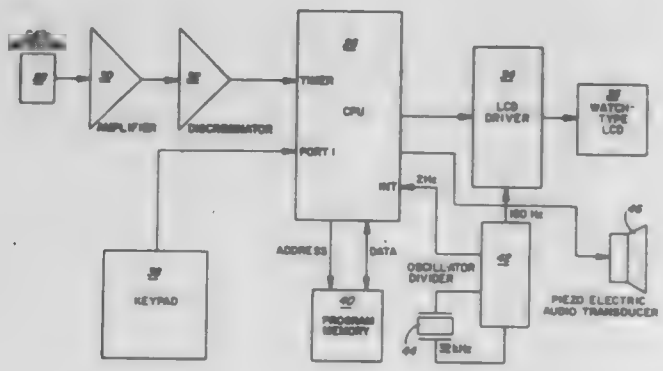
WRISTWATCH DOSIMETER

Michael A. Wolf; David A. Waechter, and C. John Umbarger, all of Los Alamos, N. Mex., assignors to The Regents of the University of California, Berkeley, Calif.

Continuation of Ser. No. 369,305, Apr. 16, 1982, abandoned. This application Feb. 22, 1985, Ser. No. 704,900

Int. Cl.⁴ G01T *1/16*

U.S. Cl. 364—569 **11 Claims**



1. A wristwatch dosimeter comprising:

a digital wristwatch housing having a window for a numerical display and detector aperture means;

a watch-type LCD or LED display disposed at said housing window;

means within said housing for performing watch functions communicating with said display;

CdTe detector means disposed in said housing behind said detector aperture means;

means for storing predetermined safety limits of radiation field and exposure;

microprocessor means connected to said detector means for accumulating and storing radiation field and exposure parameters;

microprocessor means for comparing said parameters with said stored predetermined safety limits; and

means for alerting a user of an unsafe condition by alarm when said parameters exceed said safety limits.

4,608,656

ROAD MAP DISPLAY SYSTEM WITH INDICATION OF A VEHICLE POSITION

Haruto Tanaka; Kiyoshi Yamaki, and Hidetaka Suzuki, all of Yokosuka, Japan, assignors to Nissan Motor Company, Limited, Japan

Filed Apr. 2, 1982, Ser. No. 365,105

Claims priority, application Japan, Apr. 13, 1981, 56-54363

Int. Cl.⁴ G01C *21/00;* G06F *15/50*

U.S. Cl. 364—449 **13 Claims**

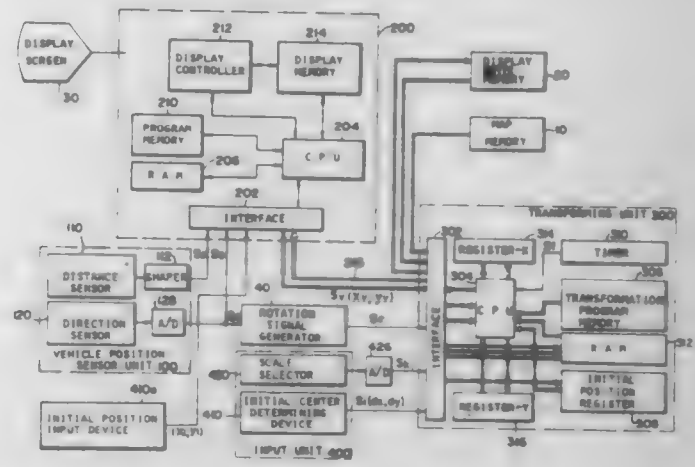
1. A road map display system for an automotive vehicle comprising:

a first memory storing road map data, said road map data defined on a first coordinate system;

a sensor detecting displacement of the vehicle from a starting point and producing a first signal representative of vehicle orientation and position with respect to said first coordinate system;

a scale selector responsive to said first signal for monitoring vehicle position and adjusting the scale of the map when the vehicle is within a predetermined distance of a preselected point on the map, said selector producing a second signal representative of the selected scale;

means for transforming said map data in said first memory in response to said first and second signals for producing map data defined on a second coordinate system and for



centering said transformed map data about said vehicle position;

a second memory for storing said transformed map data; and

a display unit for displaying at least part of the contents of said second memory and having on said second coordinate system a mark representing the position of the vehicle.

4,608,657

METHOD AND APPARATUS FOR TESTING PROBE CALIBRATION

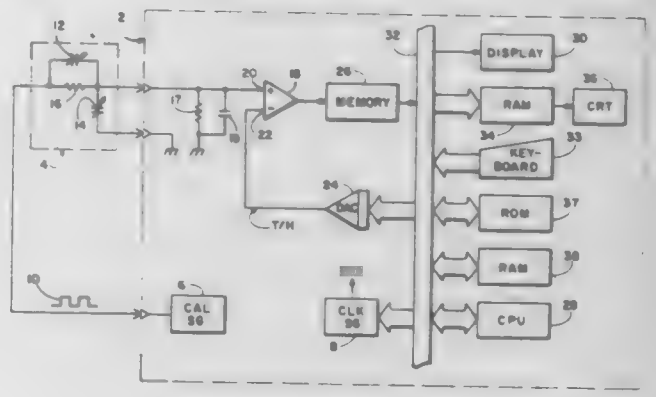
Teruo Manome, Kanagawa; Yasuhiko Miki, Tokyo; Kentaro Takita, Tokyo, and Minoru Fukuta, Tokyo, all of Japan, assignors to Sony/Tektronix Corporation, Tokyo, Japan

Filed Nov. 1, 1982, Ser. No. 438,101

Claims priority, application Japan, Nov. 17, 1981, 56-184095

Int. Cl.⁴ G06F *15/20;* G01R *35/00*

U.S. Cl. 364—571 **22 Claims**



7. A probe calibration testing apparatus, comprising:

means for generating a square-wave signal to be applied to a probe;

means for generating a variable reference level;

means for comparing an output signal from said probe with the reference level and for producing an output signal indicating whether or not the probe output signal exceeds the reference level; and

control means for controlling said reference level to a level within a selected range of a peak level of the probe output signal, and for determining whether said probe is calibrated by repeatedly sampling the output signal from said comparison means.

22. A method of testing calibration of a probe comprising the steps of:

applying a square-wave signal to the probe to generate a probe output signal, each cycle of said square-wave signal having a high voltage portion and a low voltage portion;

generating a reference voltage level lower than the lowest magnitude of said probe output signal during a given

portion of each cycle thereof generated in response to the low voltage portion of each corresponding cycle of said square-wave signal;

successively increasing said reference level by a selected amount and comparing said probe output signal magnitude with each successively increased reference level during said given portion of said output signal generated in response to said low voltage sqaure-wave cycle portion until said probe output signal magnitude is less than said reference level for at least a part of its said given portion; and

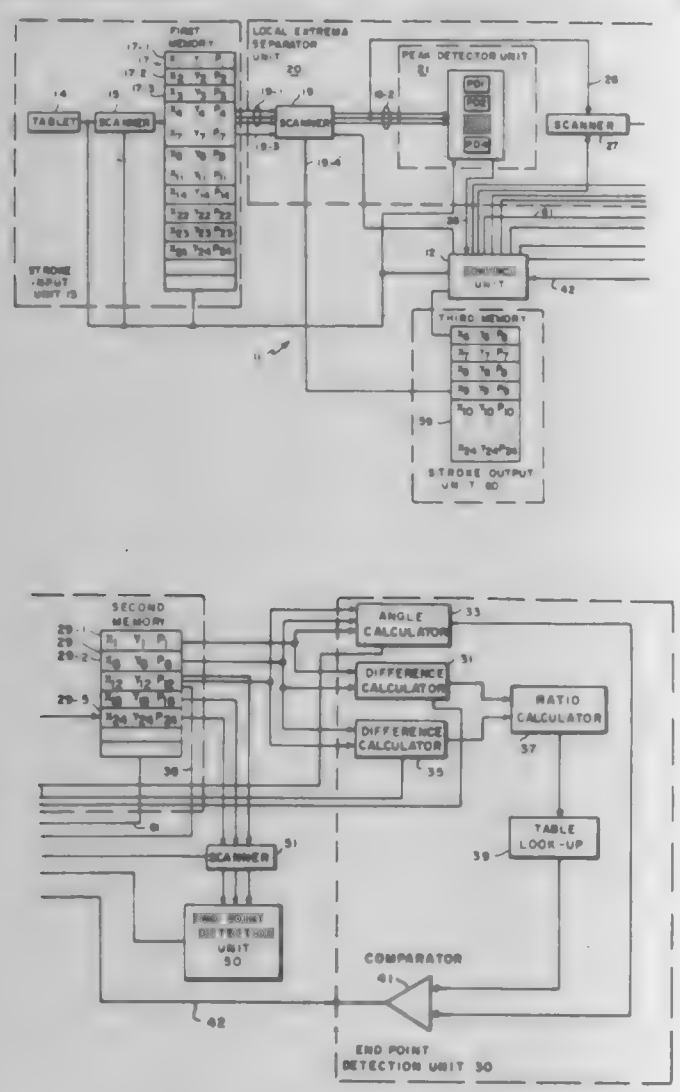
determining said probe to be calibrated if said probe output signal magnitude is less than said reference level during substantially all of its said given portion.

4,608,658

METHOD AND APPARATUS FOR REMOVING NOISE AT THE ENDS OF A STROKE CAUSED BY RETRACING

Jean R. Ward, Arlington, Mass., assignor to Pencept, Inc., Waltham, Mass.

Filed Apr. 13, 1984, Ser. No. 599,989
Int. Cl.[4] G08C *25/00*
U.S. Cl. 364—574 **8 Claims**



1. A method of processing a first series of signals representing a stroke of a writing instrument on a writing surface to remove signals at the start of the stroke caused by retracing, said first series of signals corresponding to the X and Y coordinates of a series of points along the length of travel of the stroke, the method comprising:

a. comparing said signals in said first series relative to each other to form a second series of signals, said second series of signals comprising only signals corresponding to local extrema points of said stroke,

b. measuring the size of the angle defined by the first three local extrema points in said second series

c. determining a reference angle which is related to the distances from the first local extrema point to the second local extrema point and from the second local extrema point to the third local extrema point,

d. comparing the measured angle with the reference angle, and

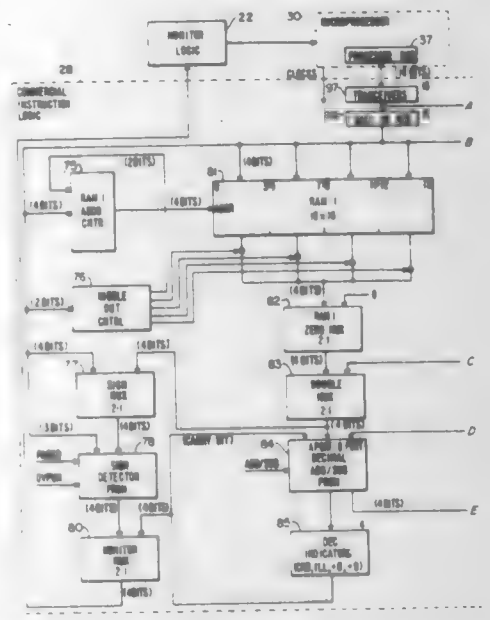
e. removing all signals in said first series corresponding to points before and second local extrema point if the measured angle is less than the reference angle.

4,608,659

ARITHMETIC LOGIC UNIT WITH OUTPUTS INDICATING INVALID COMPUTATION RESULTS CAUSED BY INVALID OPERANDS

John J. Bradley, Framingham; Theodore R. Staplin, Jr.; Ming T. Miu, both of Chelmsford; Thomas C. O'Brien, Ashland; George M. O'Har, Chelmsford; Melinda A. Widen, Arlington, and Brian L. Stoffers, No. Billerica, all of Mass., assignors to Honeywell Information Systems Inc., Waltham, Mass.

Filed Sep. 30, 1983, Ser. No. 537,991
Int. Cl.[4] G06F *11/10*
U.S. Cl. 364—737 **6 Claims**



1. An arithmetic logic unit for use in a processor comprising, a memory having an address input accepting information bits which include two groups of bits each representing an operand and a bitindicating a mathematical function to be performed using the two operands, said memory having an output from which are read computation result bits from said memory indicating the result of the indicated mathematical operation involving the two operands, and including a first invalid computation result bit indicating if the result of the indicated mathematical operation read from said memory is invalid because the input information bits representing one or both of the operands do not represent a valid numerical digit,

first means for selecting the ones of the information bits representing a first operand to be applied to the address input of said memory,

second means for selecting the ones of the information bits representing a second operand to be applied to the address input of said memory, and

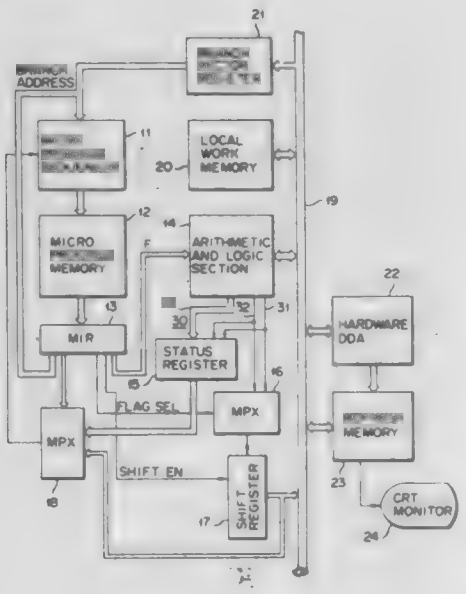
storage means for storing the first invalid computation result bit read out onto the output of said memory, said first invalid computation result bit indicating to said processor that the result of the mathematical operation output from said memory is invalid because the information bits on the address input of said memory and indicating one or both of said operands do not represent a valid numerical digit.

4,608,660

DATA PROCESSING SYSTEM WITH CONDITION DATA SETTING FUNCTION

Kouki Hasebe, Tokyo, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Jan. 25, 1984, Ser. No. 573,715
Claims priority, application Japan, Jan. 28, 1983, 58-12528
Int. Cl.[4] G05F *7/50*
U.S. Cl. 364—768 8 Claims



1. A data processing system with a condition data setting function, comprising:

a microprogram memory for storing microprograms consisting of micro-instructions including a plurality of specific subtraction micro-instructions for obtaining condition data consisting of a combination of bits respectively representing the sign of the results of each of a plurality of subtraction operations;

a micro-instruction register into which a micro-instruction read out from said microprogram memory is loaded;

an arithmetic and logic section which performs an arithmetic operation, in accordance with the specific subraction micro-instruction loaded in said micro-instruction register, and which outputs status data including a carry flag and a sign flag; and

a multiplexer for selecting one of said carry flag and sign flag, in response to a specific bit of the specific subtraction micro-instruction received from said micro-instruction register; and

serial-to-parallel converting means for receiving the output from said multiplexer, as one of the bits of said condition data, and shifting the data already stored, thereby holding the condition data which has been obtained from the specific subtraction micro-instructions.

4,608,661

PROGRAMMABLE SEQUENCE CONTROLLER

Junichi Sasaki, Numazu, Japan, assignor to Toshiba Kikai Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 440,313, Nov. 9, 1982, abandoned. This application Nov. 15, 1985, Ser. No. 798,156
Claims priority, application Japan, Nov. 16, 1981, 56-182188
Int. Cl.[4] G06F *9/00, 11/00;* G05B *15/08*
U.S. Cl. 364—900 5 Claims

1. A sequence controller including means for connection to at least one other sequence controller comprising:

a central processing unit for generating an inner definition signal related to a status of said sequence controller;

first memory means for storing a system program for said sequence controller;

second memory means for storing a sequence program;

third memory means for storing data required for performing said sequence program;

first control means for receiving an input signal from an input element;

second control means for transmitting an output signal to an output element;

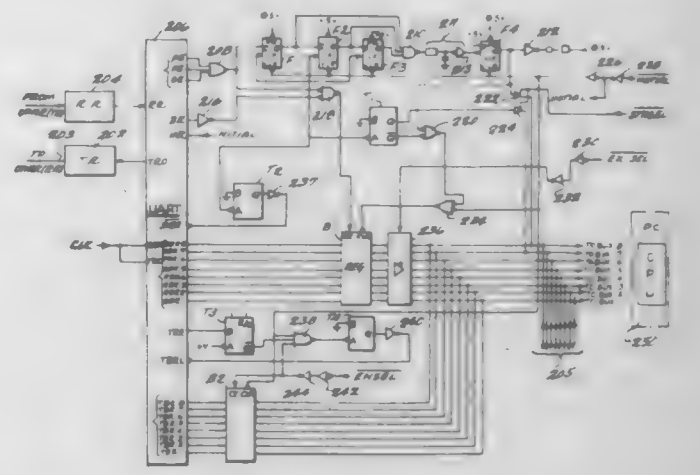
bus means for interconnecting said central processing unit, said first memory means, said second memory means, said third memory means and said first and second control means;

transmitting means for transmitting said inner definition signal related to a status of said sequence controller to said at least one other sequence controller; and

receiving means for receiving an outer definition signal related to a status of said at least one other sequence controller from said at least one other sequence controller;

said inner and outer definition signals being stored at predetermined addresses in said third memory means;

universal asynchronous receiver transmitter (UART) connected to both of said receiving and transmitting means for converting said outer definition signal to parallel mode data and for converting said inner definition signal sup-



plied from said central processing unit to serial mode data, said UART executing a parity check, format check and overrun check concerning said outer definition signal arrived at said UART, and generating an error detection signal representing a detection of at least one of a parity check error (PE), a format error (PE) and a overrun error (OE), and generating a data ready signal (DR);

a first buffer register for receiving said parallel mode data of said outer definition signal from said UART;

a second buffer register for receiving parallel mode data of said inner definition signal through said bus means from said central processing unit, said first and second buffer registers being connected to said UART;

gate means for allowing said outer definition signal in said first buffer register to transmit to said third memory means through said bus means; and

data clear means for clearing a content of the first buffer register in response to said error detection signal being consecutively generated for a predetermined number of times.

4,608,662

METHOD FOR EDITING DOCUMENT

Shigeru Watanabe, Yokohama; Hiroshi Kinukawa, Sagamihara; Kenjiro Mori, Yokohama; Kenji Koichi; Shinji Kimura, both of Kawasaki; Makoto Yamanouchi, Owariasahi, and Yasuo Yajima, Kawasaki, all of Japan, assignors to Hitachi, Ltd. and Hitachi Microcomputer Engineering Ltd., both of Tokyo, Japan

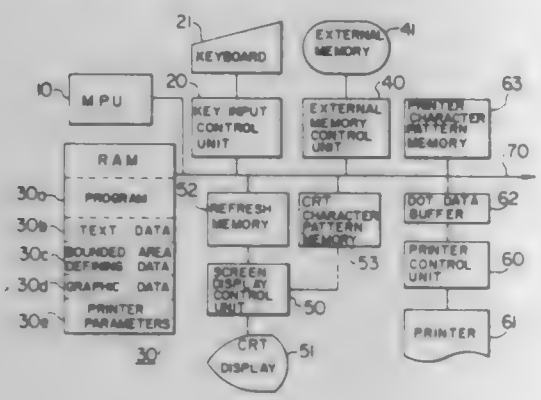
Continuation of Ser. No. 317,841, Nov. 3, 1981. This application Mar. 6, 1984, Ser. No. 586,826
Claims priority, application Japan, Nov. 7, 1980, 55-155860
Int. Cl.[4] G06F *9/00*
U.S. Cl. 364—900 9 Claims

1. A method for editing a page of a document containing a synthesis of a multi-line text sentence having a predetermined line pitch and character pitch and a desired graphic figure by

using a document editing apparatus including an output unit and a display unit having a display screen, in which the line pitch and the character pitch of the text sentence displayed on each line of said display unit are different from the character line pitch and the character pitch of the text sentence produced on each line by said output unit, said method comprising:

a first step of designating a first area on said display unit for accommodating a desired graphic figure within the same page;

a second step of determining coordinates of the designated first area and providing a layout of the text sentence so that the text sentence will appear in an area of the display screen of said display unit outside said first area;



a third step of displaying on the display screen of said display unit the text sentence whose layout is provided in said second step;

a fourth step of converting said first area into a second area having a size which is defined on the basis of the relationship between the line pitch and the character pitch in said display unit and the line pitch and the character pitch in said output unit, respectively;

a fifth step of forming in the second area a desired graphic figure having longitudinal and lateral dimensions such that the entire figure can be included within the second area; and

a sixth step of outputting from said output unit the graphic figure formed in said fifth step together with the text sentence whose layout is provided in said second step.

4,608,663

COMPUTER NETWORK FOR USING A COMMON PERIPHERAL DEVICE

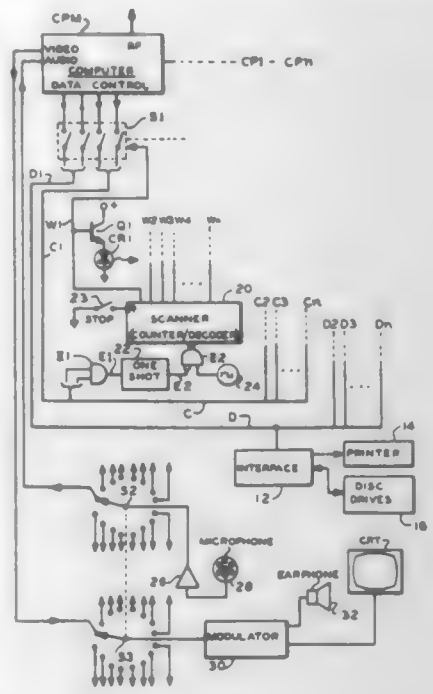
William E. Gordon, Short Hills, N.J., assignor to Wolsten's Computer Devices, Inc., East Orange, N.J.

Filed Aug. 31, 1983, Ser. No. 528,253
Int. Cl.⁴ G06F *13/22*
U.S. Cl. 364—900 **10 Claims**

1. A non-random network for connecting a common peripheral device to one of a plurlity of computers, each having a request line for providing a request signal, comprising:

a plurality of switching means each coupled to said common peripheral device and to a corresponding one of said computers, each of said switching means being operable in response to a select signal being applied thereto to transfer data between its corresponding one of said computers and said common peripheral device; and

scanning means coupled to said plurality of switching means for enabling them in a predetermined order to transfer said data by sequentially applying to them said select signal, said scanning means being coupled to said request line of each of said computers and being responsive to the presence thereupon of said request signal, said scanning means being operable to cease sequencing and to continue applying said select signal to a chosen one of said plurality of switching means that is coupled to a selected one of said computers in response to the request signal from said selected one of said computers, the select signal applied to the chosen one of said plurality of switching means being terminated in response to termination of the request signal from the selected one of said computers, after terminating the select signal said scanning means being operable to restore the select signal to the same one of said switching



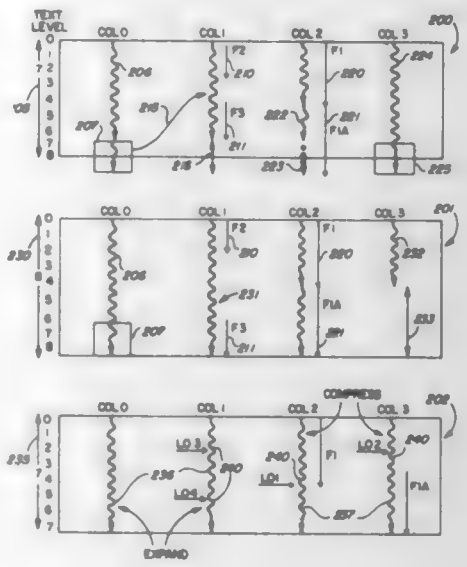
means only after each of the other ones of said switching means has had temporarily applied to it by said scanning means said select signal.

4,608,664

AUTOMATICALLY BALANCING AND VERTICALLY JUSTIFYING A PLURALITY OF TEXT/GRAPHICS-COLUMNS

Geoffrey M. Bartlett, Ridgefield, Conn.; James P. Hofmeister, Tucson, Ariz.; Derald D. Nye, Tucson, Ariz., and Edward J. Pring, Tucson, Ariz., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 23, 1983, Ser. No. 469,180
Int. Cl.⁴ G06F *3/12, 15/626*
U.S. Cl. 364—900 **12 Claims**



11. In a document preparation system having means for receiving unformatted text data, a programmed processor coupled to said receiving means for formatting said received unformatted text data and output means coupled to said programmed processor for receiving formatted text data for visually presenting said document, said programmed processor having a control memory storing program indicia for enabling the programmed processor to automatically format said unformatted text data without interactive terminal input from an operator;

the improvement including, in combination:

first program indicia in said control memory for enabling said programmed processor to electrically indicate a num-

ber of columns to present text data on a given logical page and the depths of said columns, and indicating a shortest and longest one of said columns;

second program indicia in said control memory for enabling said programmed processor to examine said unformatted text data formattable in said columns of said logical page and to initially select a single depth for all of said columns for said logical page, said single depth being intermediate in depth of the depths of the shortest and longest ones of said columns;

third program indicia in said control memory for enabling said programmed processor to adjust the depths of all of said columns of said logical page to said single depth by compressing the depths of said columns longer than said single depth and expanding the depths of said columns shorter than said single depth; and

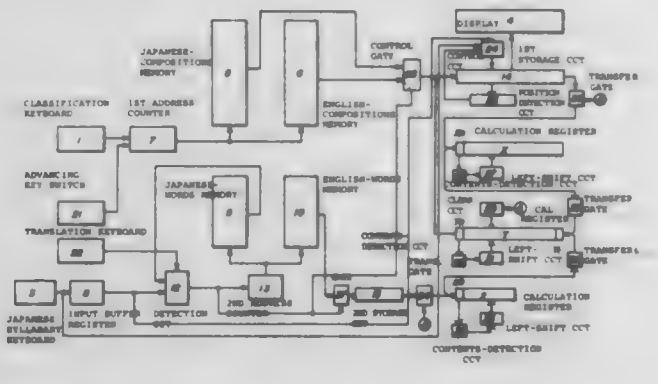
fourth program indicia in said third program indicia for enabling said programmed processor while adjusting the depths of said columns on said given logical page to examine skips, blank lines, lead outs and interline spacings as separate classes, respectively, of vertical space for vertical justification in each said column being vertically justified and to assign a priority of adjustment to each said class of vertical space such that each class is a priority class of adjustment and enabling said programmed processor to vertically adjust all areas in a given column within a given priority class of adjustment such that all areas so classified will be vertically adjusted in depth before any areas in a class of a lower priority.

4,608,665

SENTENCE MODIFIABLE ELECTRONIC DICTIONARY AND LANGUAGE INTERPRETER

Kunio Yoshida, 2541-10, Hari Tsuge-mura, Yamabe-gun, Nara-ken, Japan

Continuation of Ser. No. 117,003, Jan. 30, 1980, abandoned. This application Jan. 15, 1982, Ser. No. 339,727
Int. Cl.[4] G06F *9/00*
U.S. Cl. 364—900 8 Claims



1. An electronic dictionary and language interpreter device wherein a first word or words represented in a first language are entered to obtain a second word or words represented in a second language equivalent to the first word or words, comprising:

first means for generating a sentence written in either the first language or the second language, said first means including first memory means for storing a plurality of sentences in the first language, the sentences each having provision therein for inserting at least one selected word to be thereby completed, second memory means for storing a like plurality of sentences in the second language, each sentence in the second language being a translation of sentences in the first language stored in the first memory means, and first selecting means for selecting an equivalent one of the sentences stored in said first and second memory means and for generating the selected sentence in response thereto;

second means for generating one or more words written in the corresponding first language or second language, respectively, the one or more words being capable of being added to the selected sentence to form a complete sentence, said second means including third memory means for storing a plurality of words in said first language, fourth memory means for storing a like plurality of words in said second language, each word in the second language being a translation of a word in the first language stored in the third memory means, and second selecting means for selecting one or more of the equivalent words stored in the third and fourth memory means and for generating the selected words in response thereto; and

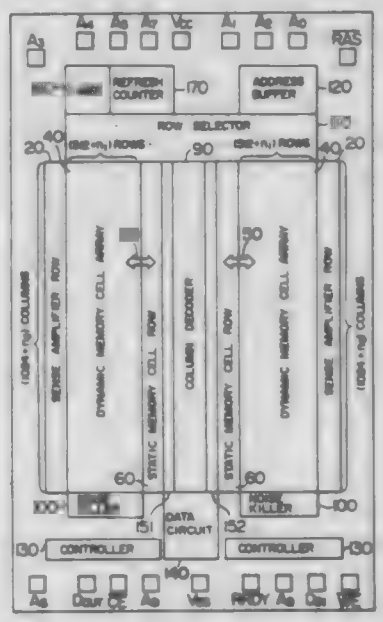
adding means for adding the one or more words developed from the second means for generating into the selected sentence generated from the first means for generating thereby obtaining a complete sentence.

4,608,666

SEMICONDUCTOR MEMORY

Yukimasa Uchida, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Apr. 20, 1984, Ser. No. 602,449
Claims priority, application Japan, Jun. 24, 1983, 58-113924
Int. Cl.[4] G11C *13/00*
U.S. Cl. 365—182 4 Claims



2. In a semiconductor memory comprising a dynamic memory cell array wherein dynamic memory cells for storing information therein are arranged in row and column directions in a matrix manner, word lines commonly connected in the row direction to said dynamic memory cells in said dynamic memory cell array, bit lines commonly connected in the column direction to said dynamic memory cells in said dynamic memory cell array, and a sense amplifier row having sense amplifiers for sense-amplifying a potential difference between paired bit lines,

the improvement comprising:

a static memory cell row having static memory cells corresponding to said dynamic memory cells located in the row direction in said dynamic memory cell array;

transfer gate means for transferring information between said static memory cells in said static memory cell row and the corresponding dynamic memory cells;

row selection means for selecting a word line of a dynamic memory cell row of a desired row address in said dynamic memory cell array; and

column selection means for selecting a static memory cell of a desired column address in said static memory cell row,

thereby transferring the information of said dynamic memory cell row commonly connected to said word line selected by said row selection means to said static memory cell row with said transfer gate means, effecting a read/-write operation with respect to the static memory cell of said desired column address through a data line connected

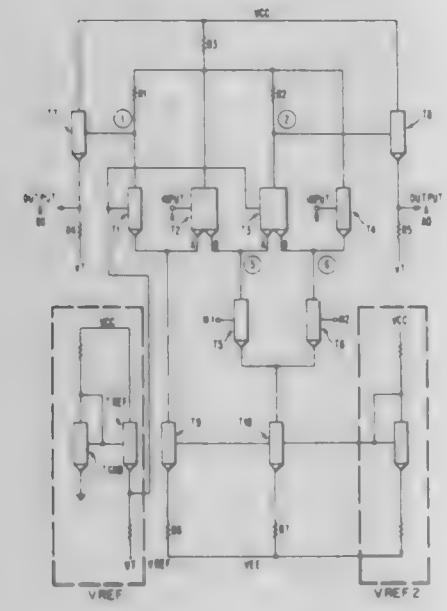
by said column selection means, transferring the information of said static memory cell row, to which said read/-write operation has been effected, to said dynamic memory cell row commonly connected to the word line selected by said row selection means with said transfer gate means, and rewriting the information to said dynamic memory cell row.

4,608,667

DUAL MODE LOGIC CIRCUIT FOR A MEMORY ARRAY

Robert L. Barry, Pleasant Valley, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed May 18, 1984, Ser. No. 611,564
Int. Cl.[4] G11C *7/00;* H03K *19/086*
U.S. Cl. 365—189 12 Claims



1. A dual mode circuit provided by cascode collector dotted current switch circuit means; said cascode collector dotted current switch circuit means comprising:

first current switch circuit means adapted to receive a first binary input (A);

second current switch circuit means interconnected with said first current switch circuit means, said second current switch circuit means being adapted to receive a second binary input (B);

third current switch circuit means interconnected with said first and second current switch circuit means, said third current switch circuit means being adapted to receive binary inputs M1 and M2, where M1 is the binary complement of M2; and

first and second output means connected to said first and second current switch circuit means, said first and second output means respectively rendering a binary output A0 and a binary output B0, whereby when input M1 is high compared to input M2 outputs A0 and B0 are solely controlled by input A and when input M2 is high compared to M1, input B will control output B0 and input A will control output A0.

4,608,668

SEMICONDUCTOR DEVICE

Juh-ichi Ohno, Yokohama, and Satoshi Konishi, Tokyo, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Continuation of Ser. No. 409,613, Aug. 19, 1982, abandoned.
This application Aug. 6, 1985, Ser. No. 763,088
Claims priority, application Japan, Sep. 3, 1981, 56-138829; Apr. 12, 1982, 57-60537
Int. Cl.[4] G11C *11/42;* H01L *21/82*
U.S. Cl. 365—200 14 Claims

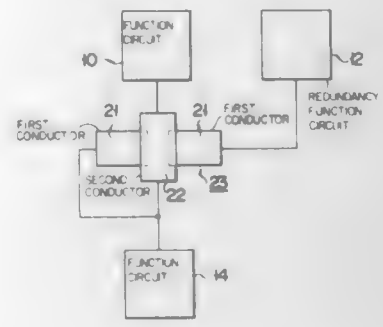
1. A semiconductor device capable of structural modification responsive to the output of a radiating means, comprising:

a plurality of circuit means; and

switching means for electrically connecting a first pair of said circuit means and simultaneously disconnecting a second pair of said circuit means, said switching means including:

a semiconductor substrate of a first conductivity type;

a plurality of first conductor means each having a pair of first semiconductor regions of the second conductivity type which are formed at a predetermined interval in the surface region of said semiconductor region of the first conductivity type which is formed between said first semiconductor regions, said first conductor means being electrically nonconductive in an initial state, the pair of first semiconductor regions of one of said first conductor means being connected to said first pair of said circuit means;



a plurality of insulating means formed on at least the second semiconductor regions, respectively; and

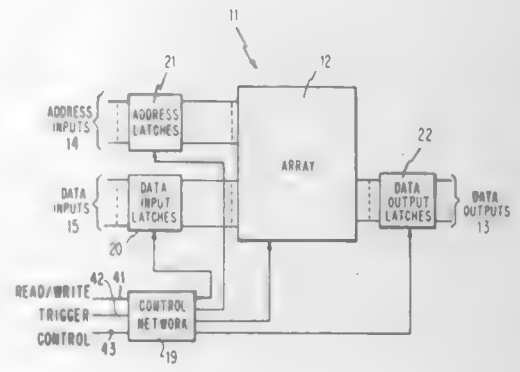
a plurality of second conductor means formed on said insulating means, extending across said first conductor means and being electrically conductive in the initial state, each of said plurality of second conductor means and the corresponding second semiconductor region being formed to receive the output of said radiating means so as to electrically disconnect each of said plurality of second conductor means thereby simultaneously electrically connecting said first semiconductor regions arranged at the ends of said second semiconductor region, one of said second conductor means being connected to said second pair of said circuit means, each of said first and second conductor means being arranged between a corresponding pair of said circuit means.

4,608,669

SELF CONTAINED ARRAY TIMING

Walter S. Klara, Hopewell Junction; Theodore W. Kwap, Brewster; Victor Marcello, Stormville, and Robert A. Rasmussen, LeGrangeville, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 18, 1984, Ser. No. 611,817
Int. Cl.[4] G11C *7/00*
U.S. Cl. 365—201 7 Claims



1. A process for testing a read/write memory array embedded within an integrated circuit device, said integrated circuit device including, a READ/WRITE memory array, address latch circuit means having an output connected to said READ/WRITE memory array, data input latch circuit means

having an output connected to said READ/WRITE memory array, data output latch circuit means having an input connected to said READ/WRITE memory array, timing control network circuit means, said timing control network circuit means having a trigger signal chip input, a READ/WRITE control chip input and first, second, third and fourth outputs, said first, second, third and fourth outputs of said timing control network circuit means being respectively connected to said address latch circuit means, said data input latch circuit means, said READ/WRITE memory array and said output latch circuit means, said process comprising the following steps:

(a) select the WRITE mode for the array by conditioning the READ/WRITE control chip input of the timing control network;

(b) place the desired memory address on address input lines of the address latch circuit means;

(c) place the desired data bits on data input lines of the data input latch circuit means; and,

(d) provide a trigger signal from off chip to the trigger signal chip input of the timing control network

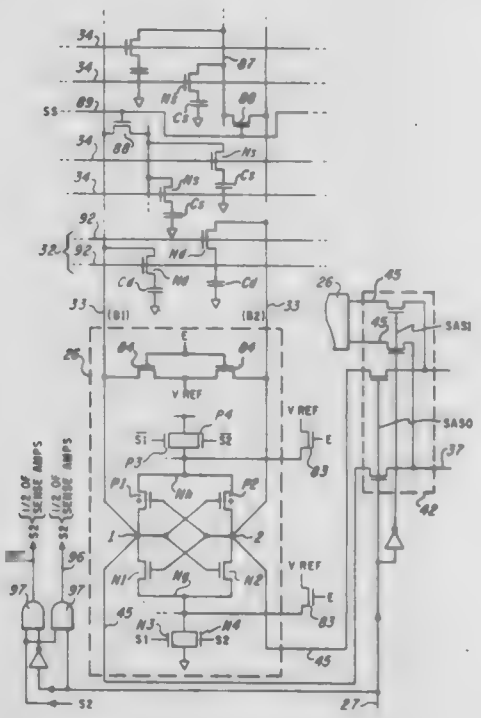
whereby the WRITE timing sequence for the memory array will be automatically generated by the timing control network and the desired data will be written into the memory array at the desired address.

4,608,670

CMOS SENSE AMPLIFIER WITH N-CHANNEL SENSING

Charvaka Duvvury, Missouri City, and Adin E. Hyslop, Houston, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Aug. 2, 1984, Ser. No. 636,939
Int. Cl.[4] G11C *7/00*
U.S. Cl. 365—205 **15 Claims**



1. A sense amplifier circuit for a memory device, comprising:

a pair of bit lines, and a plurality of memory cells connected to each of said bit lines,

a cross-coupled latch circuit including a first pair of N-channel transistors and a second pair of P-channel transistors, each transistor having a source-to-drain path and a gate, the source-to-drain paths of the first pair of N-channel transistors connected between a pair of sense nodes and grounding means, the source-to-drain paths of the second pair of P-channel transistors connected between said sense nodes and a voltage supply node,

said grounding means including a third pair of N-channel transistors, each said transistor of the third pair having a source-to-drain path and a gate, said voltage supply node being connected to a positive voltage supply by a source-to-drain path of a second P-channel transistor,

coupling means separately connecting said pair of sense nodes to said pair of bit lines,

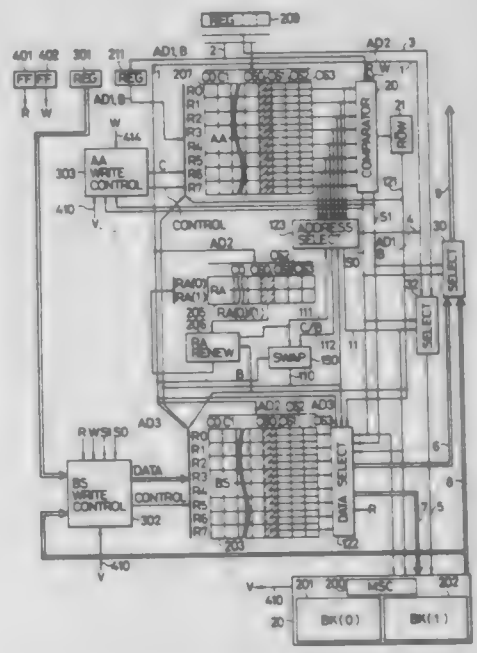
and control means activating said gate of one of third pair of transistors at a first time in an active cycle when said memory cells are activated for coupling to said bit lines, and then activating said gate of the other of said third pair at a second time when said grounding means is activated, while maintaining said voltage supply node at zero voltage, then activating after said first time in said operating cycle the gate of said second P-channel transistor.

4,608,671

BUFFER STORAGE INCLUDING A SWAPPING CIRCUIT

Tsuguo Shimizu, Sayama; Kenichi Wada, Zama; Yooichi Shintani, Kokubunji, and Akira Yamaoka, Hadano, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed May 2, 1983, Ser. No. 490,518
Claims priority, application Japan, Apr. 30, 1982, 57-71211
Int. Cl.[4] G11C *8/00*
U.S. Cl. 365—230 **4 Claims**



1. A buffer storage system comprising:

first storage means having a plurality of addressable storage locations for storing data signals;

buffer storage means having a plurality of addressable storage locations and being connected to said first storage means for storing at least some of the data signals stored by said first storage means;

first means for holding signal pairs including an address signal and a control signal, each signal pair corresponding to the data stored in a respective one of the storage locations of said buffer storage means, said address signal designating an address of a storage location within said first storage means from which or into which the corresponding data signal was fetched or is to be stored, and said control signal having a first or second value depending upon whether or not the corresponding data signal needs to be stored into said first storage means when the data signal is to be replaced in said buffer storage means by a new data signal;

second means for indicating plural candidate replacement locations within said buffer storage means so that any one of said plural replacement locations can be used as a storage location for a new data signal, including means for changing said indicated candidate replacement locations according to a predetermined replacement algorithm in response to an applied read or write request;

third means connected to respond to said plural indicated candidate replacement locations provided by said second

means for reading out of said first means signal pairs each consisting of an address signal and a control signal respectively corresponding to said indicated candidate replacement locations;

fourth means connected to said second and third means for selecting one of said candidate replacement locations for which the control signal held by said first means has the second value;

fifth means connected to said buffer storage means and responsive to an applied read request for reading out of said first storage means a data signal requested by said read request to supply said read out data signal and for writing said read out data signal into said selected candidate replacement location of said buffer storage means without writing a data signal already stored therein into said first storage means; and

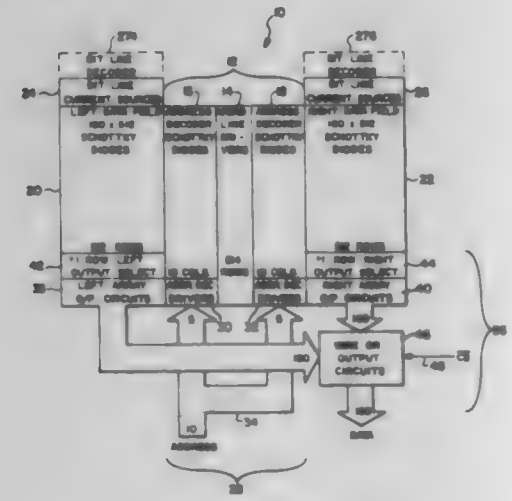
sixth means responsive to said selection of said candidate replacement location for writing into said first means a signal pair consisting of the address signal accompanying said said request and a control signal having the second value as a signal pair for the selected candidate replacement location.

4,608,672

SEMICONDUCTOR MEMORY

Peter C. T. Roberts, Plymouth, and Tho T. Vu, Fridley, both of Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Jul. 14, 1983, Ser. No. 513,872
Int. Cl.[4] G11C *8/00*
U.S. Cl. 365—230 4 Claims



1. An electronic device, comprising:

first, second and third sets of Schottky diodea;

first, second, third and fourth sets of electrical current conductive paths wherein said first set of Schottky diodes and said first and said second sets of electrical conductive paths are capable of storing data in digital form, and said second set of Schottky diodes and said second and third sets of electrical conductive paths are capable of storing data in digital form;

a plurality of ISL gates wherein said ISL gates, said third set of Schottky diodes and said third and fourth sets of conductive paths are adapted to allow the extraction of at least some of said stored data in response to particular electrical signals impressed onto said third and fourth sets of electrical conductive paths, wherein each of said ISL gates includes an n-p-n transistor and only one of said electrically conductive paths of said second set of electrically conductive paths is directly electrically connected to the collector of said n-p-n transistor at a first node and only one of said electrically conductive paths of said fourth set of electrically conductive paths is directly electrically connected to the base of said n-p-n transistors at a second node; and

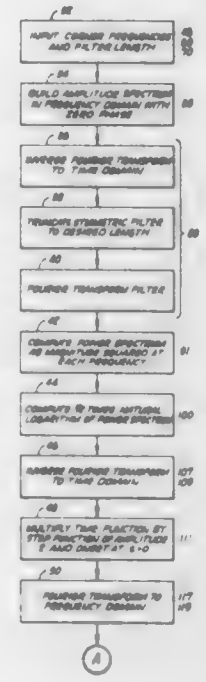
means for impressing said particular electrical signals onto said third or fourth electrical current conductive paths.

4,608,673

MINIMUM PHASE BANDPASS FILTERING OF SEISMIC SIGNALS

Gregory D. Lazear, Ponca City, Okla., assignor to Conoco Inc., Ponca City, Okla.

Filed May 11, 1983, Ser. No. 493,502
Int. Cl.[4] G01V *1/28*
U.S. Cl. 367—43 9 Claims



1. A method of filtering crosscorrelated seismic data comprising:

constructing a selected bandpass filter operator in the frequency domain having zero phase;

transforming said bandpass filter operator and obtaining a minimum phase spectrum, and forming a frequency domain filter operator with the same amplitude spectrum but minimum phase;

again transforming said frequency domain filter operator to the time domain to form said minimum phase bandpass filter operator; and

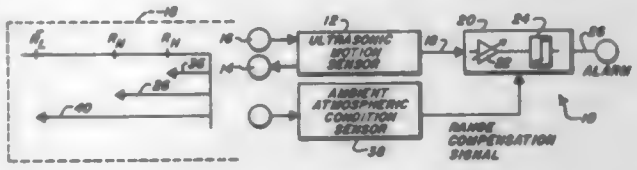
convolving said minimum phase bandpass filter operator with said crosscorrelated seismic data to define the data first arrival time.

4,608,674

CONSTANT RANGE ULTRASONIC MOTION DETECTOR

John K. Guscott, Lynnfield, Mass., assignor to American District Telegraph Company, New York, N.Y.

Filed Aug. 6, 1982, Ser. No. 406,020
Int. Cl.[4] G08B *13/16, 29/00*
U.S. Cl. 367—93 22 Claims



1. An intrusion detection system, comprising:

an ultrasonic motion detector for providing an alarm signal in response to object motion within a range that varies from nominal range with the variation between ambient atmospheric condition and nominal atmospheric condition of the atmospheric sound propagation medium;

an ambient atmospheric condition sensor for providing sen-

sor signals which respectively depend upon at least two distinct ambient atmospheric conditions of the atmospheric sound propagation medium;

means responsive to said sensor signals for combining said sensor signals to provide a range compensation signal which depends on the difference between nominal and ambient atmospheric conditions; and

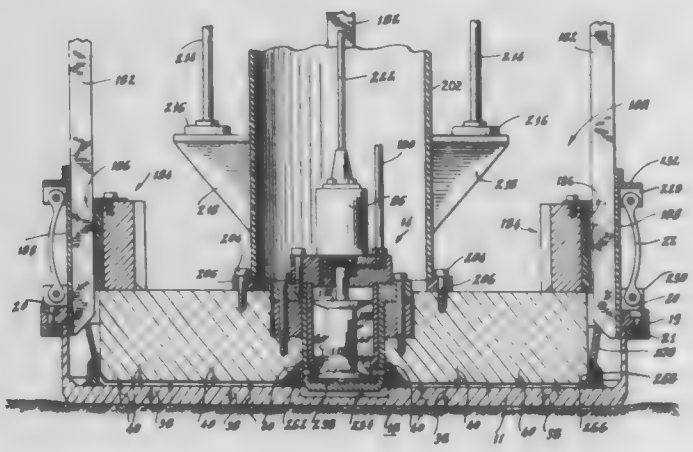
means for applying said range compensation signal to said ultrasonic motion detector to adapt said effective range to said nominal range.

4,608,675

LAND SEISMIC SOURCE METHOD AND APPARATUS

Stephen V. Chelminski, West Redding, Conn., assignor to Bolt Technology Corporation, Norwalk, Conn.

Continuation-in-part of Ser. No. 57,211, Jul. 11, 1979, abandoned. This application Jun. 29, 1981, Ser. No. 278,669
Int. Cl.[4] G01V *1/04*
U.S. Cl. 367—189 5 Claims



1. A land seismic source for transmitting powerful seismic impulses into the earth comprising:

an air gun housed in a container means having a top and a bottom adapted to be charged with high pressure compressed air through the top of said container and discharged through the bottom of said container,

a ground contact plate mounted below said air gun, said ground plate being intended to be positioned in intimate contact with the earth which is to receive the seismic impulse imparted thereto by said source,

said plate having a large area upper surface,

a reaction mass encircling said air gun,

said reaction mass having a large area lower surface and initially being positioned with its lower surface in face-to-face contact with the upper surface of said ground plate over 90% of the upper surface of said ground plate forming an interface region therebetween,

said air gun having discharge ports in the bottom of said container communicating with said interface region in which said reaction mass is initially in at least 90% contact with said ground plate,

mounting means for movably mounting said ground plate relative to said reaction mass, and

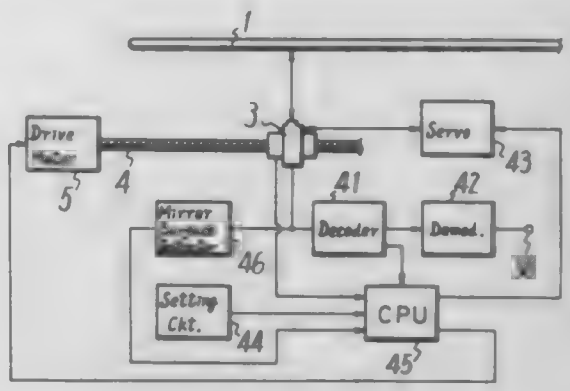
means for firing said air gun for discharging said high pressure compressed air radially outwardly from said discharge ports of said encircled air gun into said interface region between the lower surface of said reaction mass and the upper surface of said ground plate for separating said ground plate from said reaction mass thereby driving said ground plate downwardly for transmitting a powerful seismic impulse into the earth.

4,608,676

APPARATUS FOR OPTICALLY REPRODUCING AN INFORMATION SIGNAL FROM A RECORD DISK

Tadao Yoshida, Kawasaki, and Yoshiaki Haneda, Tokyo, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 382,298, May 26, 1982, abandoned. This application Mar. 26, 1985, Ser. No. 715,780
Claims priority, application Japan, May 28, 1981, 56-81532
Int. Cl.[4] G11B *21/08*
U.S. Cl. 369—32 6 Claims



1. A method of moving pick-up means of an optical reproducing apparatus to a position corresponding to a desired address of a record disk wherein said record disk is rotated at a constant linear velocity with respect to said pick-up means, said record disk having information and address signals recorded in an information area thereon, comprising the steps of:

producing a desired address signal corresponding to said desired address;

generating address signals by the steps of at least generating address signal for radially partitioning said information area into two radially equal successive first subdivisions, partitioning each of said radially successive first subdivisions into two radially equal successive second subdivisions, and partitioning each of said radially successive second subdivisions into two radially equal successive third subdivisions;

moving said pick-up means to a first intermediate position between an adjacent two of said radially successive first subdivisions at a speed faster than normal reproducing speed;

reproducing the address signal at said first intermediate position of said pick-up means between said adjacent two first subdivisions;

comparing said address signal reproduced at said first intermediate position with said desired address signal;

further moving said pick-up means at a speed faster than said normal reproducing speed in a direction and by an amount determined by said comparing step to a second intermediate position which is between an adjacent two of said radially successive second subdivisions located within one of the radially successive first subdivisions between which said pick-up means was last positioned; and

repeating the steps of reproducing, comparing and further moving until said pick-up means is moved to said position corresponding to said desired address.

4,608,677

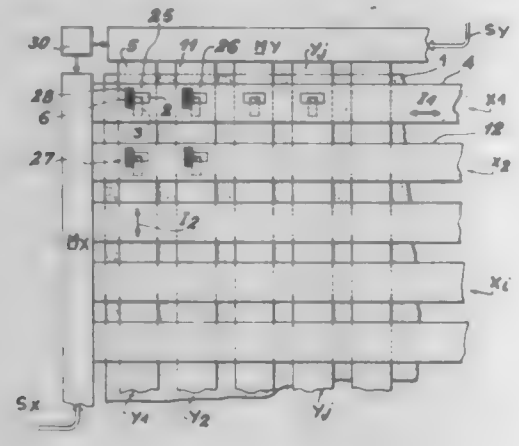
MAGNETIC BUBBLE STORE

Jean-Marc Fedeli, St. Egreve, and Hubert Jouve, Biviers, both of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Apr. 4, 1984, Ser. No. 596,701
Claims priority, application France, Apr. 8, 1983, 83 05791
Int. Cl.[4] G11C *19/08*
U.S. Cl. 365—19 6 Claims

1. Magnetic bubble store incorporating a magnetic garnet layer (1), in which can be formed magnetic bubbles localized respectively by cells, each cell having a pair of localization windows (2, 3) respectively cut from conductive strips (4, 5) of

a pair of conductive strips, said strips being insulated from one another and from the garnet and can be respectively traversed by currents (I_1, I_2) for displacing the bubble possibly located in said cell, as well as means (21) for detecting each bubble, the strips of the pair of strips having directions (X, Y) perpendicular to one another, the currents (I_1, I_2) in said strips being



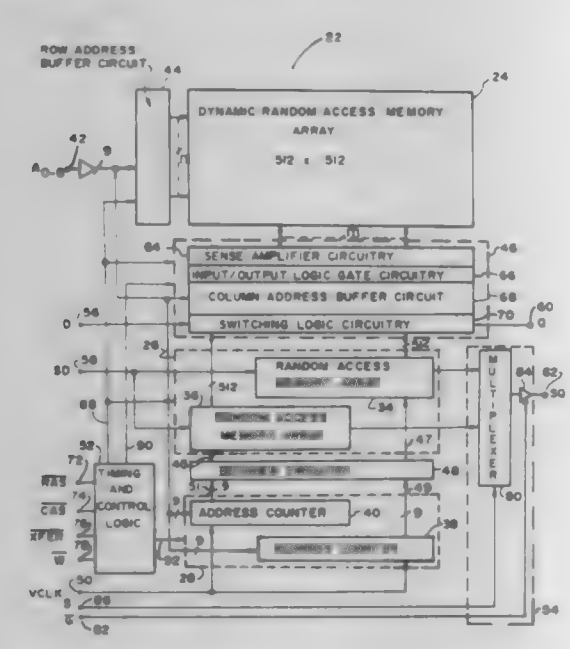
respectively parallel to said directions (X, Y) characterized in that the windows (2, 3) of each pair are rectangular and perpendicular to one another, one of the windows (3) having only at an extremity a surface portion (7) common to the other window (2), in the vicinity of the median part of said other window (2).

4,608,678

SEMICONDUCTOR MEMORY DEVICE FOR SERIAL SCAN APPLICATIONS

N. Bruce Threewitt, Fremont, Calif., assignor to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Dec. 23, 1983, Ser. No. 564,969
Int. Cl.[4] G11C *13/00*
U.S. Cl. 365—189 13 Claims



6. An improved semiconductor memory device for use in serial scan applications, said semiconductor memory device having a random access data input terminal, a serial data input terminal, a random access data output terminal, and a serial data output terminal, said semiconductor memory device further comprising:

(a) a plurality of address input terminals for receiving address codes indicating cell locations within said semiconductor memory device;

(b) a row address buffer circuit coupled to said address input terminals, said row address buffer circuit disposed for storing and decoding row address codes received from said address input terminals;

(c) a main memory means for storing data;

(d) a secondary memory means for storing data transferred from, or to be transferred to, said main memory means;

(e) addressing means having a plurality of input terminals coupled to the address input terminals, and having a timing signal input terminal, and further having a plurality of output terminals, said addressing means disposed for providing said secondary memory means with a start address within the main memory means, said start address indicating a predetermined bit position within the main memory means at which a transfer of data is to begin, so as to allow said transfer of data to begin at any desirable predetermined bit-position in the secondary memory means;

(f) logic circuit means for controlling the timing and switching of said semiconductor memory device, said logic circuit means for controlling the timing and switching of said semiconductor memory device having a first output terminal coupled to said row address buffer circuit, said first output terminal also being coupled to said secondary memory means and being further coupled to said addressing means, said logic circuit means for controlling the timing and switching of said semiconductor memory device also having a second output terminal; and

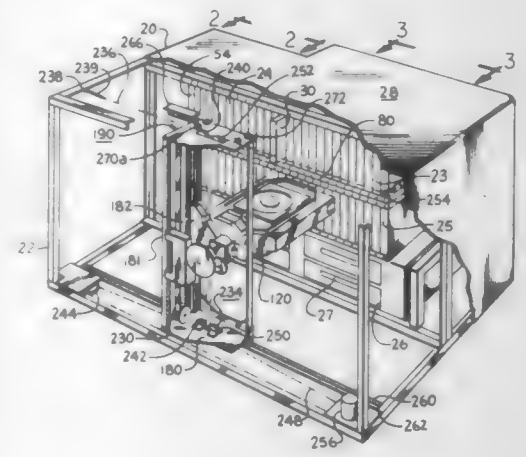
(g) means for enabling the output of serial data from said semiconductor device, said means for enabling the output of serial data being coupled to the serial data output terminal.

4,608,679

OPTICAL STORAGE AND RETRIEVAL DEVICE

Michael Rudy, Huntington Beach; Paul Cary, and Arthur A. Roth, both of Santa Ana, all of Calif., assignors to Filenet Corporation, Costa Mesa, Calif.

Filed Jul. 11, 1984, Ser. No. 629,693
Int. Cl.[4] G11B *5/48, 17/00*
U.S. Cl. 369—36 25 Claims



1. A method of moving video disk cartridges, the cartridges being contained in a plurality of containing apertures, an alignment target being placed adjacent to, and associated with a number of said apertures, said cartridges having an engaging aperture at an edge of said cartridge, comprising:

locating the position of each of said alignment targets with respect to a reference position to locate the position of each of said containing apertures associated with said alignment targets;

storing information locating said alignment target positions in a computer;

positioning a rotatable transport carriage at the alignment target position stored in said computer memory for a first of said containing apertures, said first aperture containing a cartridge therein;

verifying the alignment of said rotatable transport carriage by sensing said alignment target adjacent said first aperture, and if not sensed, incrementally repositioning said rotatable transport carriage and sensing for said alignment target until said target is sensed and the alignment of said rotatable transport carriage is verified;

extending an engaging member from said rotatable transport carriage;

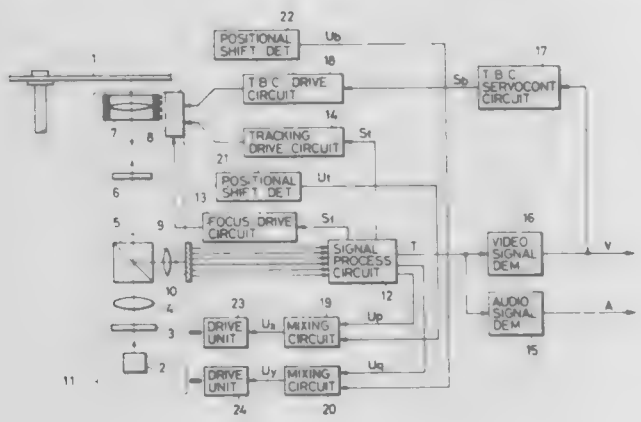
engaging said engaging aperture with said engaging member;
retracting said engaging member and the engaged cartridge into said rotatable transport carriage;
detecting when said engaging member and the engaged cartridge are retracted into said rotatable transport carriage a predetermined distance;
containing said cartridge in said rotatable transport carriage during transportation and rotation of said rotatable transport carriage and cartridge;
transporting and rotating said rotatable transport carriage and cartridge to the position of a second alignment target as stored in said computer;
verifying the alignment of said rotatable transport carriage by sensing said second alignment target, and if such verification is not sensed, incrementally repositioning said rotatable transport carriage and sensing for said alignment target, said repositioning and sensing being repeated until the location of said alignment target is verified; and
extending said cartridge from said rotatable transport carriage.

4,608,680

OPTICAL DISC PLAYER WITH TILT CORRECTION

Hajime Yano, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Feb. 8, 1984, Ser. No. 577,989
Claims priority, application Japan, Feb. 10, 1983, 58-19732
Int. Cl.[4] G11B *7/00*
U.S. Cl. 369—44 11 Claims



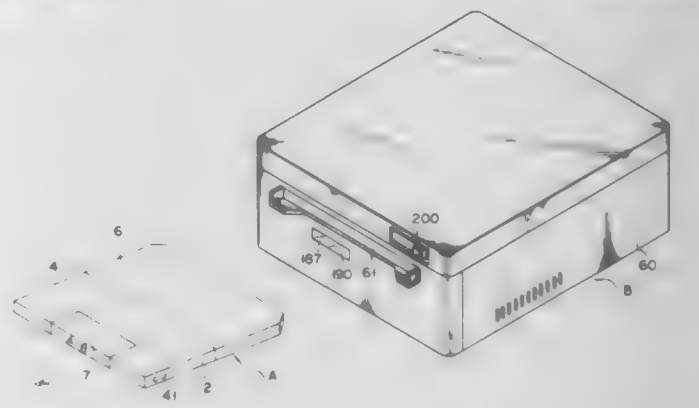
1. An optical disc player for reproducing optically an information signal recorded in a record track formed on a recording surface of a disc, comprising:
light source means for generating a light beam,
optical means including an object lens for directing said light beam to the recording surface of the disc and allowing a reflected light beam from the recording surface of the disc to pass therethrough,
photodetecting means for receiving said reflected light beam through said object lens to produce in response thereto a detected output from which said information signal can be obtained, and
control means comprising first detecting means for producing a first signal varying in response to variations of a position where said light beam impinges on the recording surface of the disc, second detecting means responsive to the detected output of said photodetecting means for producing a second signal varying in response to variations of a position on said photodetecting means whereat said reflected light beam is received, and mixing means for mixing said first and second signals so as to cancel a component of said second signal which results from the variations of the position where said light beam impinges on the recording surface of the disc and thereby to produce a third signal with which an inclination of an optical axis of said light beam relative to a line perpendicular to said recording surface of the disc at a point where said light beam is incident upon the recording surface of the disc can be detected.

4,608,681

CARTRIDGE LOADING APPARATUS

Masao Shiosaki, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Nov. 23, 1984, Ser. No. 674,299
Claims priority, application Japan, Nov. 26, 1983, 58-222706
Int. Cl.[4] G11B *25/04;* B65D *85/02*
U.S. Cl. 369—77.2 20 Claims



1. An apparatus for loading a cartridge which cartridge encloses an information recording disk therein, includes first and second cases each adapted for opposed sliding movement selectively between open and closed positions of said cartridge along a plane substantially coinciding with that of said disk, and is adapted to be in a closed state to completely enclose and seal the disk when the first and second cases are by said sliding movement brought into contact with each other and in an opened state to expose an area of the disk between the first and second cases when the first and second cases are by said sliding movement separated from each other,
said apparatus comprising:
a housing having a port at one side of said housing for receiving and discharging the cartridge therethrough;
cartridge handling means, disposed in said housing, for receiving the cartridge from said port in the closed state, for opening the cartridge by separating by said sliding movement the first and second cases from each other to expose the area of said information recording disk, for closing the cartridge by bringing by said sliding movement the first and second cases into contact with each other, and for ejecting at least part of said closed cartridge outside of said housing through said port; and
disk holding means, disposed in said housing, for holding the disk after the opening of said cartridge by said cartridge handling means.

4,608,682

OPTICAL TIME-DIVISION SWITCHING SYSTEM EMPLOYING OPTICAL BISTABLE DEVICES

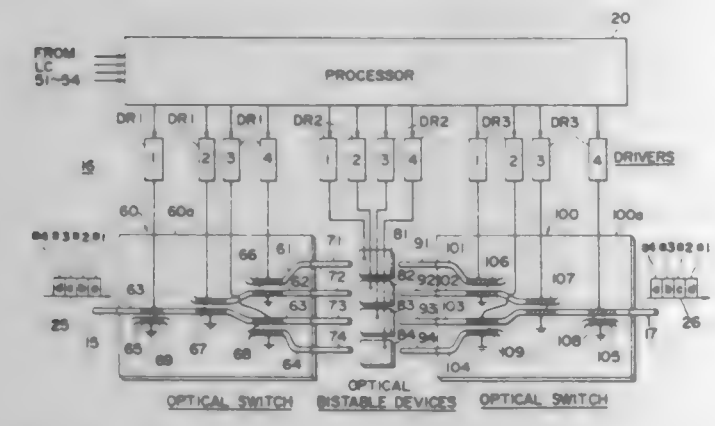
Kunio Nagashima, and Michikazu Kondo, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Nov. 29, 1983, Ser. No. 555,927
Claims priority, application Japan, Nov. 29, 1982, 57-208873; Dec. 10, 1982, 57-216708
Int. Cl.[4] H04B *9/00;* H04J *3/00*
U.S. Cl. 370—4 6 Claims

1. An optical switching system having control means for generating a switching instruction in response to a selection signal from a plurality oflines or trunks, means for multiplexing signals from said lines or trunks onto different time slots and applying the multiplexed signals to a common incoming optical medium, and means for demultiplexing said multiplexed signals from a common outgoing optical medium and applying the demultiplexed signals to said lines or trunks, said system comprising:

a plurality of optical bistable devices each having a hysteretic relationship between an optical input supplied thereto and an optical output delivered therefrom, each of said bistable devices being capable of assuming a high optical output state in response to the simultaneous presence of energy and an optical input supplied thereto and maintaining said high optical output state in the exclusive presence of said energy and capable of assuming a low optical output state in response to the simultaneous absence of said energy and said optical input;

first optical switching means responsive to said switching instruction for selectively switching said multiplexed signals from said common incoming optical medium to



said optical bistable devices as said optical input to individually store said signals therein;

second optical switching means responsive to said switching instruction for selectively switching said stored signals from said optical bistable device to said outgoing optical medium; and

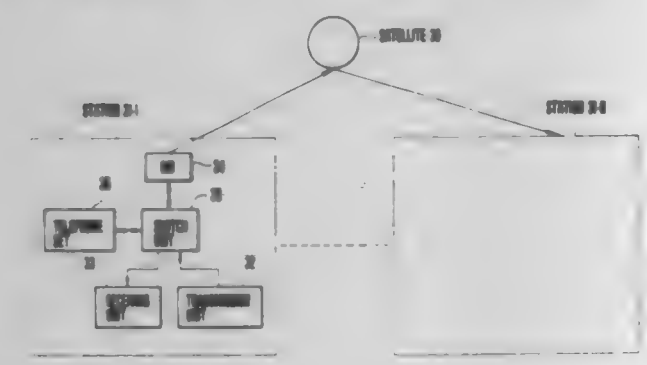
means for coupling said energy from an external source to said bistable devices in response to said switching instruction to cuase said bistable devices to assume said high optical output state to store said signals and decoupling said energy from bistable devices in response to said switching instruction to cause said bistable devices to assume said low optical output state to erase said stored signals.

4,608,683

TEST APPARATUS FOR DIGITAL SPEECH INTERPOLATOR FOR USE IN TIME DIVISION MULTIPLE ACCESS SCHEME

Seiichiro Shigaki, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jun. 25, 1984, Ser. No. 623,870
Claims priority, application Japan, Jun. 25, 1983, 58-113626
Int. Cl.[4] H04J *1/16, 3/14;* G01R *31/28;* G06F *11/00*
U.S. Cl. 370—13 6 Claims



1. An apparatus for testing the operation of a digital speech interpolator provided in a transmitting station and a receiving station in a time division multiple access scheme (DSI/TDMA), said apparatus comprising a transmitting unit and a receiving unit, said transmitting unit at the transmitting station comprising:

first means for generating a pseudo random code for each one of a plurality of channels;

second means for generating a channel identifying signal;

third means for generating a fixed signal having a level lower than a detectable level of a tone detector of said digital speech interpolator (DSI) on the transmitting station;

fourth means responsive to said second means for generating a pseudo tone burst signal for each channel;

fifth means connected to said first means and being supplied with said pseudo random code, connected to said second means and being supplied with said channel identifying signal, connected to said third means and being supplied with said fixed signal, and connected to said fourth means and being controlled by said pseudo tome burst signal, for generating and supplying a time division multiplex signal to said DSI at the transmitting station; and

said receiving unit at the receiving station comprising:

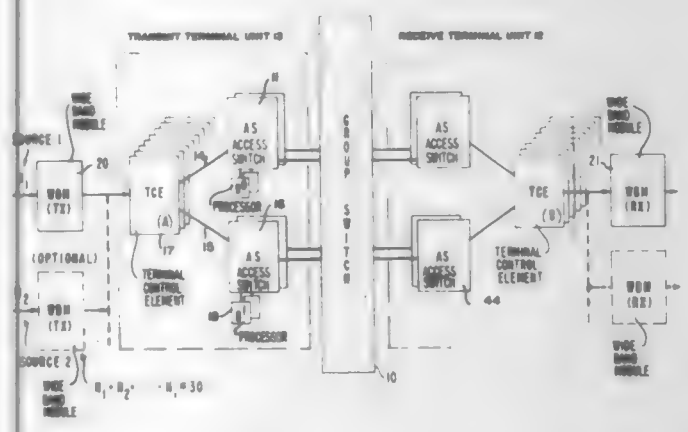
means supplied with said signal sent form said DSI at the transmitting station for detecting said pseudo random code, said channel identifying signal and said fixed signal.

4,608,684

DIGITAL SWITCHING SYSTEMS EMPLOYING MULTI-CHANNEL FRAME ASSOCIATION APPARATUS

Daniel C. Upp, Southbury, Conn., assignor to ITT Corporation, New York, N.Y.

Filed Mar. 26, 1984, Ser. No. 593,342
Int. Cl.[4] H04Q *11/04*
U.S. Cl. 370—58 27 Claims



1. In a digital switching system of the type having a main switch, where a plurality of data lines are coupled to said main switch via a line unit with said switch controlled for making connections between pairs of said data lines, where each connection between data lines may take a different path via said main switch and each path is of a given limited bandwidth and where each different path may be associated with a different transit time delay and due to such time delays multi-path connections cannot be made to increase said limited bandwidth with said data transmitted in separate channels each of a given word length and where a given number of channels constitute a frame, the combination therewith of multi-channel frame association apparatus for allowing multi-channel linking paths to increase the bandwidth of said system by compensating for said different time delays, comprising:

first means associated with each of said lines to form a wide-band word format for transmission through said main switch to a receiving line, with a first given number of bits of said word indicative of data to be transmitted and with a second number of bits indicative of a tagging number manifesting a frame number for each of said words,

second means for indexing said tagging number contained in said second number of bits during each frame,

decoder means located at each line and operative when said line is receiving data to decode said second given number of bits to provide a frame number for said word,

memory means coupled to said decoder means for storing said data associated with said words according to said frame number as decoded, said memory means including

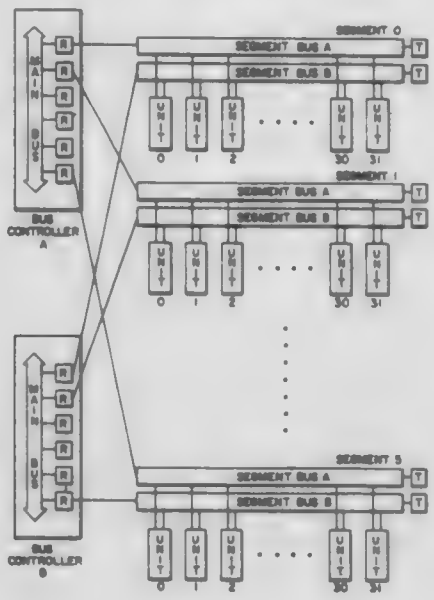
logic means operative to reassemble each word according to said frame number being the same, whereby common data can be transmitted over N given paths of said system according to said tagging number to allow a plurality of words with the same tagging signal to be reassembled at said lines receiving said data and independent of the delays of said N given paths to thereby provide an increase in bandwidth of N times said limited bandwidth, where N is a positive integer.

4,608,685

PACKET AND CIRCUIT SWITCHED COMMUNICATIONS NETWORK

Prem C. Jain, Fremont, and Frederick Enns, Menlo Park, both of Calif., assignors to Northern Telecom Limited, Montreal, Canada

Filed Apr. 30, 1984, Ser. No. 605,721
Int. Cl.[4] H04J *3/02*
U.S. Cl. 370—85 14 Claims



1. A telecommunications switching network comprising:
a plurality of units including a call controller unit;
a first data bus comprising a group of data leads being connected in parallel to each of the units, said data leads being commonly available for signal transmission of call control signals between the call controller unit and others of said plurality of units, and for signal transmission of communications signals between said others of said plurality of units; and
a first bus controller means connected to each of the units for arbitrating access to the data leads by the units, so that only one of said units may transmit signals at any one instant in time.

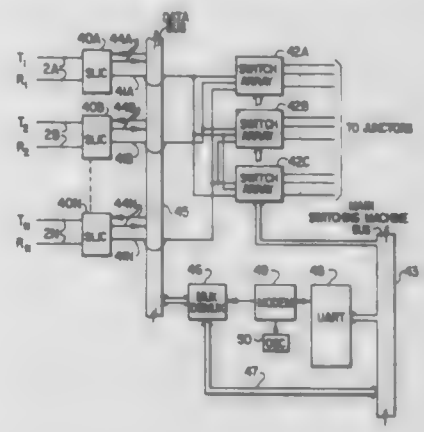
4,608,686

TWO WIRE VOICE AND DATA SUBSCRIBER LOOP

John A. Barsellotti, Kanata, Canada, assignor to Mitel Corporation, Ontario, Canada

Filed Sep. 23, 1982, Ser. No. 422,188
Claims priority, application Canada, Feb. 22, 1982, 396694
Int. Cl.[4] H04J *1/00, 1/14;* H04M *11/00*
U.S. Cl. 370—69.1 27 Claims

1. A bidirectional two wire combined voice and data transmission system comprising:
(a) a telephone switching exchange including voice signal switching means and a bus system to which a switching exchange controller is connected, the voice signal switching means having a defined audio frequency transmission bandwidth,
(b) one or more subscribers' sets for generating audio frequency analog signals for transmission to the switching exchange,
(c) means associated with each subscriber's set for generating serial digital signals for transmission to said switching exhcange,
(d) means for amplitude modulating a carrier signal with said digital signals, the carrier signal being at a frequency higher than the upper limit of said defined bandwidth, and at least twice the highest frequency of said analog signals,
(e) means for combining the modulated digital signals and said analog signals,
(f) one or more two wire subscribers' lines interconnecting the subscribers' sets and said switching exchange,



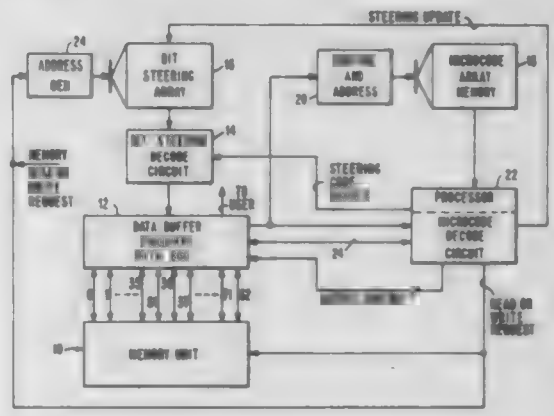
(g) means for applying the combined signals to one end of each of the subscribers' lines,
(h) means for receiving the combined signals at the switching exchange, including multiplexing and demodulating means for reconstructing the digital signals, and applying them to said bus system, and including means for filtering the analog signals and applying them to the voice signal switching means.

4,608,687

BIT STEERING APPARATUS AND METHOD FOR CORRECTING ERRORS IN STORED DATA, STORING THE ADDRESS OF THE CORRECTED DATA AND USING THE ADDRESS TO MAINTAIN A CORRECT DATA CONDITION

Patrick F. Dutton, Endicott, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 13, 1983, Ser. No. 531,793
Int. Cl.[4] G06F *11/20*
U.S. Cl. 371—10 9 Claims



1. A system for correcting errors in stored data and for maintaining the correct condition of said data including a memory unit means responsive to a memory unit means read or write request signal for storing data and corrected data, said data being stored in a plurality of memory chips, said corrected data being stored in a plurality of spare memory chips, and error detection and correction means connected to the memory unit means for detecting the existence of errors in said data stored in said plurality of memory chips and for correcting the erroneous data stored in said memory chips, comprising:
error identity recording means connected to and physically separate from said memory unit means, connected to said

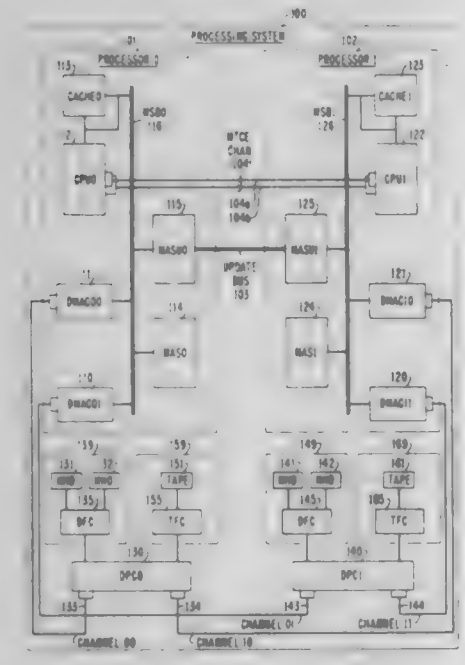
error detection and correction means and responsive to said memory unit means read or write request signal energizing said memory unit means for storing a plurality of addresses therein indicative of a corresponding plurality of locations within said memory unit means wherein said erroneous data is stored.

4,608,688

PROCESSING SYSTEM TOLERANT OF LOSS OF ACCESS TO SECONDARY STORAGE

Robert C. Hansen, Wheaton; Calvin J. Richardson, Naperville, and David A. Schmitt, Glen Ellyn, all of Ill., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Dec. 27, 1983, Ser. No. 566,021
Int. Cl.[4] G06F *11/16*
U.S. Cl. 371—11 38 Claims



1. In a processing system that includes

a plurality of secondary memory means each storing a replica of information for use by the processing system, including designated information,

main memory means for storing selected portions of the information, and

means for transferring portions of the information between the main memory means and the secondary memory means,

a method of protecting at least some system operating capability against loss of information transfer of secondary capability between the main memory means and the plurality memory means, comprising the steps of:

detecting loss of information transfer capability between the main memory means and all but at least one of the secondary memory means;

in response storing all designated information in the main memory means; and

preventing removal of the designated information from the main memory means while permitting information transfer between the main memory means and the at least one secondary memory means and prior to loss of information transfer capability between the main memory means and the at least one secondary memory means;

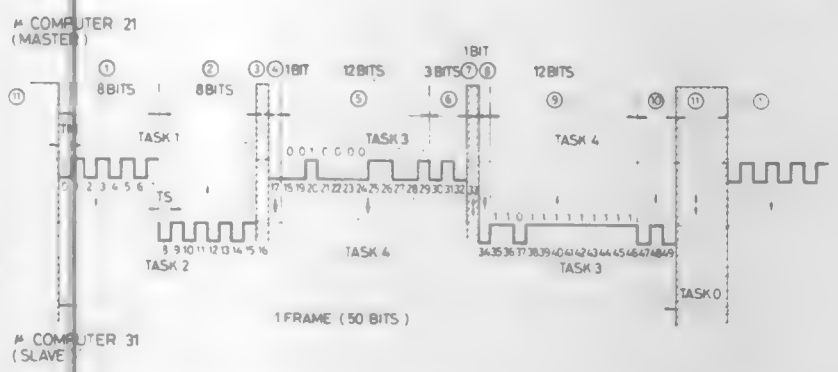
whereby the designated information remains available to the process system in the main memory means upon loss of information transfer capability between the main memory means and the plurality of secondary memory means.

4,608,689

DATA PROCESSING AND TRANSFER APPARATUS

Yukio Sato, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 29, 1982, Ser. No. 444,984
Claims priority, application Japan, Dec. 4, 1981, 56-194449; Dec. 11, 1981, 56-198382; Dec. 11, 1981, 56-198385
Int. Cl.[4] G06F *11/10*
U.S. Cl. 371—15 34 Claims



1. A data transfer apparatus adapted to transfer data to another apparatus, comprising:

a computer for processing data;

communication means for transmitting the data processed by said computer to said other apparatus in a plurality of predetermined conditions of data transmission;

means associated with said other apparatus and being operable prior to the transmission of the processed data by way of said communication means to said other apparatus, for discriminating a data processing characteristic of said other apparatus, said characteristic being associated with data transmission; and

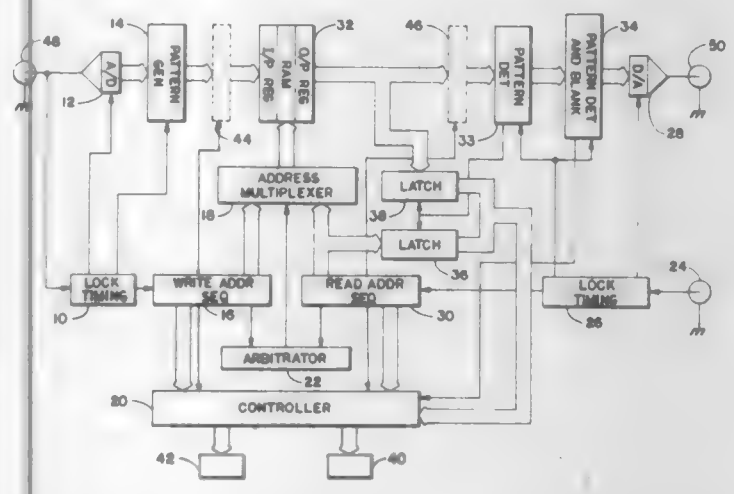
means associated with said communication means for selecting one of the plural data transmission conditions in accordance with the data processing characteristic discriminated by said discriminating means to enable data transmission among the apparatus.

4,608,690

DETECTING IMPROPER OPERATION OF A DIGITAL DATA PROCESSING APPARATUS

John L. Judge, Hillsboro, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Continuation of Ser. No. 444,766, Nov. 26, 1982, abandoned. This application Jun. 10, 1985, Ser. No. 743,266
Int. Cl.[4] G11C *29/00;* G06F *11/00*
U.S. Cl. 371—21 7 Claims



6. In combination, digital memory apparatus operating to receive a digital signal having a succession of sequences of p digital words, where p is an even number and greater than zero, and test apparatus for determining whether the memory apparatus is operating properly, the memory apparatus comprising a memory device having first through mth separately addressable memory locations (where m is greater than p and

is not an integral multiple of p) each memory location storing a digital word having n binary digits, input means for receiving a succession of sequences of p digital input words and writing the succession of sequences of p digital words into the memory device sequentially and repeatedly, and output means for reading digital words from the memory device sequentially and repeatedly, and the test apparatus comprising means operating during normal operation of the memory apparatus for modifying the succession of sequences of p digital input words received by the input means by replacing the qth word of each sequence by a predetermined digital test word having n binary digits, so that the modified sequences are written into the memory device sequentially and repeatedly, and comparison means for determining whether the word read out of the memory device as the qth word of each sequence is identical to the predetermined digital test word.

4,608,691

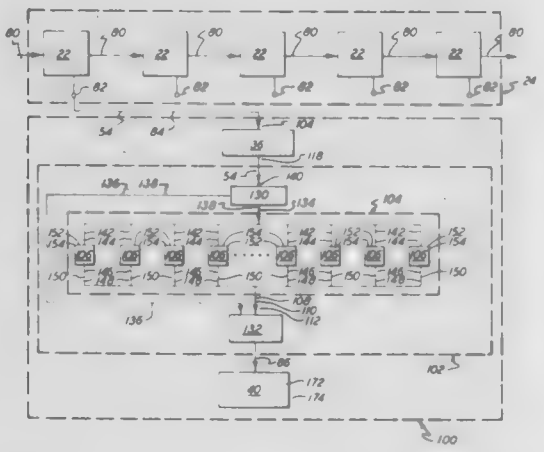
SIGNATURE ANALYZER CARD

James Lynch, San Jose, Calif., assignor to The Singer Company, Binghamton, N.Y.

— **Filed Mar. 19, 1984, Ser. No. 591,090**

Int. Cl.[4] G01R *31/28*

U.S. Cl. 371—25 **31 Claims**



1. A signature analyzer card comprising, in combination:

an input buffer connected to an input data bus in electrical communication with a circuit card under test, said input buffer for serially receiving from said input data bus a first plurality of words and for providing a plurality of buffer output words, each of said first plurality of words and each of said plurality of buffer output words being sixteen bits wide, said first plurality of words representing a plurality of binary data located within said circuit card under test;

a cycle redundancy check generator connected to the input buffer and including a plurality of cycle redundancy circuits, each of said cycle redundancy circuits receiving one bit of each of said words of said plurality of buffer output words through an input lead, each bit of each buffer output word forming one bit of one of a plurality of serial binary bit streams, the logical state of each of said cycle redundancy circuits being dependent upon the logical value of each bit of each of said serial binary bit stream transmitted to each of said plurality of cycle redundancy circuits for providing a plurality of compressed serial binary bits on an output lead of each of the cycle redundancy circuits forming an output signature transmitted to a signature bus, said output signature having fewer binary words than said first plurality of words received on said input data bus;

a control block electrically connected to the cycle redundancy check generator for providing a plurality of timing control signals to the signature analyzer card;

an in strobe multiplexer electrically connected to the control block for selecting a first of said plurality of timing control signals, said first timing control signal being comprised of four binary bits and being transmitted to a multiplexer decoder for decoding said four binary bits and for providing a plurality of in strobe signals for enabling said plurality of binary data onto said input data bus; and

an output multiplexer connected to said signature bus and to a bypass bus, said signature bus transporting said output signature from the cycle redundancy check generator to the output multiplexer and said bypass bus transporting said plurality of buffer output words from the input buffer to the output multiplexer, the output multiplexer for selecting the signature bus for transmitting said output signature to a diagnostic computer for comparison with a first expected logical character stored in said diagnostic computer when a signature analyzer control signal is a logical one and the output multiplexer for selecting the bypass bus for transmitting said plurality of buffer output words to said diagnostic computer for comparison with a second expected logical character stored in said diagnostic computer when said signature analyzer control signal is a logical zero, said first expected logical character having fewer binary words than said second expected logical character, said comparison with said first and said second expected logical characters for verifying the accuracy of said plurality of binary data and for isolating a failure to said circuit card under test.

4,608,692

ERROR CORRECTION CIRCUIT

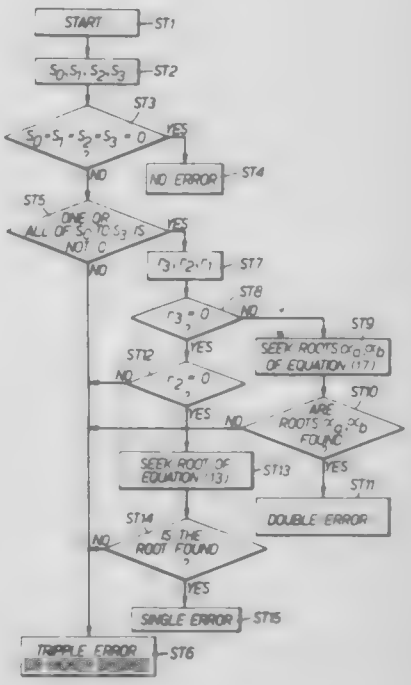
Masahide Nagumo, Kawasaki; Tadashi Kojima, and Jun Inagawa, both of Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Japan

Filed Sep. 6, 1984, Ser. No. 647,919

Claims priority, application Japan, Sep. 6, 1983, 58-163675; Sep. 6, 1983, 58-163678

Int. Cl.[4] G06F *11/10*

U.S. Cl. 371—37 **2 Claims**



1. An error correction circuit for detecting and correcting a plurality of errors in codewords made up of k data and n−k inspection symbols in the playback data from a recorded medium each symbol made up of m binary bits of information using a Reed-Solomon code for error detection and correction so that the error location polynomial $\sigma(x)=x^e+\sigma_1 x^{-1}+\ldots+\sigma_e$ where e is the number of errors and the coefficients σ_1 to σ_e of the error location polynomial $\sigma(x)$ are related to the error syndromes S_i generated by the error correction circuit by the equation:

$$S_{i+e}+\sigma_1 S_{i+e-1}+\ldots\sigma_{e-1}S_{i+1}+\sigma_3 S_i=0$$

where the syndromes S_{i+e} to S_i are field elements α^i of the Galois field GF(2^m), the error correction circuit comprising:

means for generating syndromes S_0, S_1, S_2 and S_3 from the codewords;

means for effecting the following three calculations on the basis of the syndromes S_0, S_1, S_2 and S_3 generated by said syndrome generating means:

$$S_2S_0+S_1^2=r_3$$

$$S_3S_0+S_1S_2=r_2$$

$$S_3S_1+S_2^2=r_1$$

where r_3, r_2 and r_1 represent the values of the respective calculations;

means for judging whether the condition $r_3\neq 0$ or $r_3=0$;

a first processing means for finding error locations by determining the roots of the following equation as the error location polynomial, when the condition $r_3\neq 0$ is confirmed in said judging means:

$$r_3x^2+r_2x+r_1=0$$

where x represents the error locations; and

a second processing means for finding error location by determining the root of the following equation as the error location polynomial, when the condition $r_3=0$ is confirmed in said judging means under the condition of $r_2=0$:

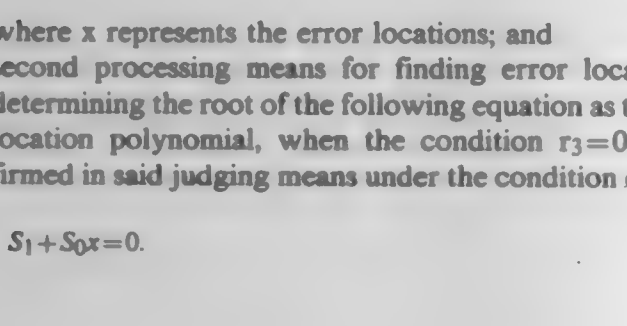
$$S_1+S_0x=0.$$

4,608,693

FAULT DETECTION ARRANGEMENT FOR A DIGITAL CONFERENCING SYSTEM

Lawrence Baranyai, Howell, and John R. Colton, Freehold, both of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed May 7, 1984, Ser. No. 607,829
Int. Cl.[4] G06F *11/10*
U.S. Cl. 371—49 14 Claims



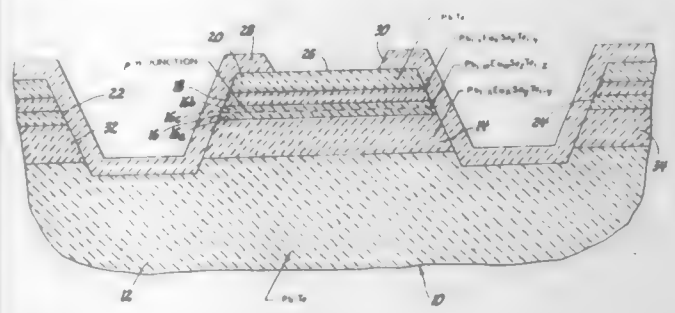
1. A signal processing system for a plurality of input data words, each of said plurality of input data words being accompanied by a parity check bit, comprising means for carrying out a binary arithmetic addition operation of said plurality of data words wherein carry bits are generated as a result of a modulo-2 addition of said plurality of data words, first parity means receiving the summed data output of the addition means and forming a first parity bit therefrom, second parity means receiving said generated carry bits of the addition operation and the parity bits of said input data words and serving to generate a second parity bit therefrom, and means for comparing said first and second parity bits to provide an error signal when said first and second parity bits differ.

4,608,694

LEAD-EUROPIUM SELENIDE-TELLURIDE HETEROJUNCTION SEMICONDUCTOR LASER

Dale L. Partin, Sterling Heights, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Dec. 27, 1983, Ser. No. 565,397
Int. Cl.[4] H01S *3/19;* H01L *33/00*
U.S. Cl. 372—44 6 Claims



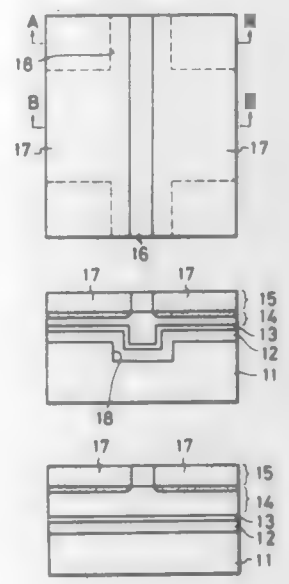
1. In a double heterojunction semiconductor lead salt infrared diode laser, the improvement wherein a semiconductive monocrystalline lead salt active region layer of given energy band gap, index of refraction, crystal structure and lattice constant is sandwiched between two semiconductive monocrystalline lead salt layers of mutually opposite conductivity type containing europium and selenium and having an energy band gap significantly higher than, an index of refraction significantly lower than, a crystal structure the same as, and a lattice constant substantially equal to said active region layer, effective to increase laser performance by providing lattice matching among said layers as well as providing at least carrier confinement with respect to said active region layer.

4,608,695

LASER DEVICE FORMED WITH A STRIPE LIGHT EMISSION REGION

Tatsuji Oda, Atsugi; Takayoshi Mamine, Kawasaki, and Osamu Yoneyama, Hiratsuka, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Sep. 26, 1983, Ser. No. 535,788
Claims priority, application Japan, Sep. 30, 1982, 57-172202
Int. Cl.[4] H01S *3/19*
U.S. Cl. 372—45 1 Claim



1. A semiconductor laser device having a resonant cavity and having a semiconductor substrate with a first electrode on its one major surface in which a first cladding layer, an active layer, a second cladding layer, a capping layer and a second electrode are formed on another major surface of said semiconductor substrate and a heterojunction is formed between said active layer and said first and second cladding layers respectively, comprising:

(a) a stripe emission region formed in said active layer;

(b) a concave or convex portion of said laser formed in said active layer at least on one light end of said light emission region for a range of approximately the width of said light emission region; and

(c) a flat portion formed on said active layer and having a portion inside of the end portion of said light emission region and having a width which is wider than that of said light emission region.

4,608,696

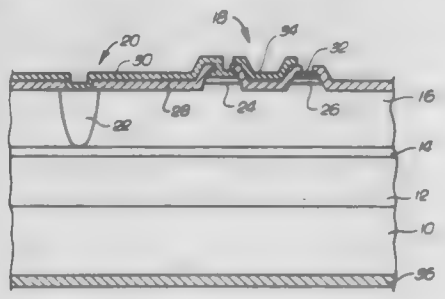
INTEGRATED LASER AND FIELD EFFECT TRANSISTOR

Hsiang-Yi D. Law, Agoura, and Edward A. Rezek, Redondo Beach, both of Calif., assignors to TRW Inc., Redondo Beach, Calif.

Continuation of Ser. No. 502,073, Jun. 8, 1983, abandoned. This application Jun. 22, 1983, Ser. No. 506,684

Int. Cl.⁴ H01S *3/19*

U.S. Cl. 372—50 **22 Claims**



1. A monolithic laser and electronic device, comprising:

a substrate;

a semiconductor laser formed on said substrate; and

a metal-insulator-semiconductor field-effect transistor (MISFET) also formed on said substrate and having one electrical terminal in common with a terminal of said semiconductor laser; wherein

said substrate is of a Group III-V compound heavily doped with an impurity of a particular polarity type;

said device further includes a laser active layer of a Group III-V compound formed on said substrate, and a MISFET channel region of a Group III-V compound formed over said laser active layer and doped with an impurity of the opposite polarity of said substrate;

said semiconductor laser includes a diffused region formed in said MISFET channel region by selective diffusion of a material of the same polarity type as said laser active layer, and an ohmic contact region formed over said diffused region; and

said MISFET includes source and drain regions formed over said MISFET active layer, one of said source and drain regions being electrically connected to said ohmic contact region of said semiconductor laser, and an insulated gate terminal disposed between said source and drain regions; and wherein said MISFET is operated in an inversion mode; and wherein said semiconductor laser is disposed at least in part below the level of the MISFET, thereby facilitating the use of planar fabrication techniques.

4,608,697

SPECTRAL CONTROL ARRANGEMENT FOR COUPLED CAVITY LASER

Larry A. Coldren, Holmdel, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Continuation-in-part of Ser. No. 483,513, Apr. 11, 1983, abandoned. This application Jun. 16, 1983, Ser. No. 504,829

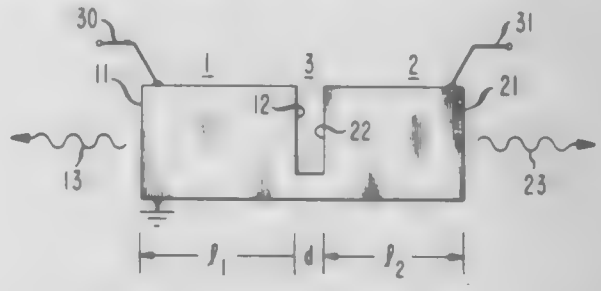
Int. Cl.⁴ H01S *3/19*

U.S. Cl. 372—50 **36 Claims**

1. A semiconductor device comprised of

a first heterostructure section including first and second mirror facets, a plurality of semiconductor layers capable of generating a light output signal in response to an applied electrical signal, and first electrode means connected to the heterostructure section for receiving electrical signals applied to the plurality of semiconductor layers, and

control means responsive to the light output signal, said control means being optically coupled to the first heterostructure section through the first mirror facet and connected to the first electrode means, for generating an optical control signal mutually and optically coupled with the first mirror facet of the first heterostructure section and for generating a first electrical control signal which is supplied to the first electrode means, so that the light output signal exhibits substantially a single longitudinal mode.



4,608,698

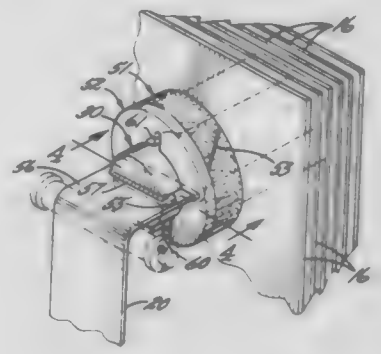
ELECTRIC HEAT TREATING FURNACE WITH QUICKLY SERVICEABLE HEATING ASSEMBLY COMPONENTS

Craig A. Moller, Loves Park, and Eric H. Wolter, Cherry Valley, both of Ill., assignors to Abar Ipsen Industries, Feasterville, Pa.

Filed Sep. 10, 1984, Ser. No. 648,493

Int. Cl.⁴ H05B *3/08*

U.S. Cl. 373—130 **9 Claims**



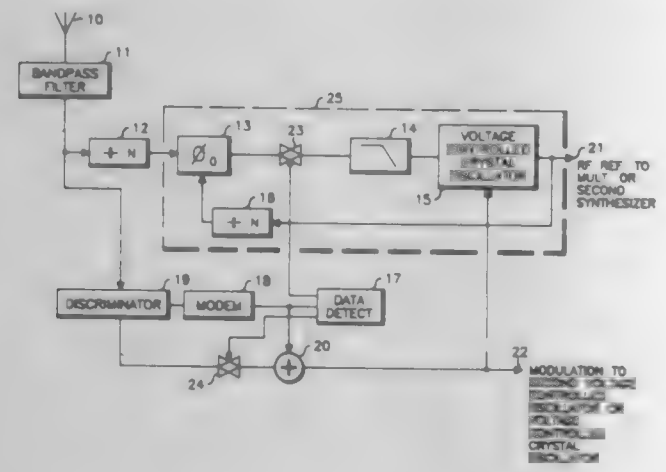
1. An electric heat treating furnace comprising wall means defining a work chamber, an electric resistance heating element disposed within said chamber and operable when energized to heat workpieces disposed in said chamber, means located outside of said chamber for energizing said heating element, and a rigid conductor extending slidably through said wall means and connecting said heating element electrically to said energizing means, said conductor having an inner end portion connected to an end of said heating element, the improvement in said furnace comprising, a retaining washer encircling the inner end portion of said conductor and located between the end of said heating element and said wall means, and an insulating washer encircling the inner end portion of said conductor and engaging said retaining washer, said retaining washer and said insulating washer each being formed with a substantially radially extending slit and each being movable into and out of encircling relationship with the inner end portion of said conductor from within said chamber without taking said conductor out of said wall means and without disconnecting said conductor from said heating element.

4,608,699

SIMULCAST TRANSMISSION SYSTEM

Percy P. Batlivala, Arlington Heights, and Christopher N. Kurby, Elmhurst, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 27, 1982, Ser. No. 453,846
Int. Cl.[4] H04L *27/10*
U.S. Cl. 375—5 **11 Claims**



1. An improved simulcast transmission system having a master transmitter and a plurality of phase-locked remote receiver and simulcast transmitter units wherein a transmitted carrier signal provides a reference signal for the simulcast transmitters used at the remote transmitter sites to distribute a simulcast signal, comprising:

means for receiving a carrier signal;

phase-locked loop means including a first electronic switch means for phase locking to the received carrier signal and providing a phase-locked reference signal to said remote simulcast transmitters, wherein said first electronic switch means opens the phase-locked loop in response to a signal;

discriminator means coupled to said receiving means for recovering a base-band signal of audio and encoded data;

modem means coupled to said discriminator means to recover the data signal from said modem means comprising the base-band signal;

data detector means coupled to said modem means and said first electronic switch means, to sense the presence of data, and activate or deactivate said first electronic switch;

a second electronic switch means coupled to said discriminator means and responsive to said data detector means to block the audio signal in the presence of data; and

summing network means coupled to said modem means and to said second electronic switch means for providing a modulation signal to the remote transmitters comprising the combined audio and data signals.

4,608,700

SERIAL MULTI-DROP DATA LINK

James L. Kirtley, Jr., Brookline, Mass., Thomas L. Sterling, Palm Bay, Fla., and Ronald D. Williams, Charlottesville, Va., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

PCT No. PCT/US81/00986, § 371 Date Jul. 29, 1982, § 102(e) Date Jul. 29, 1982
PCT Filed Jul. 23, 1981, Ser. No. 417,763
Int. Cl.[4] H04B *3/00*
U.S. Cl. 375—36 **15 Claims**

1. An asychronous digital data link for establishing communications among a plurality of components associated with the link, the link comprising at least two serial paths, a data path used for communicating data and a control path used for transmission of link access request signals, and a plurality of ports, each port connected to an associated component and each port comprising:

(a) a data receiver connected to the data path and the associated component to receive data from the data path and convey such data to the associated component;

(b) a data transmitter connected to the data path and the associated component to convey data from the component and transmit the data to the data path when activated;

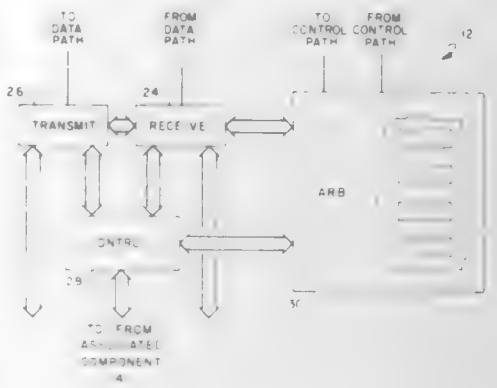
(c) means connected to the link for generating an end of function signal indicating the end of a data communication;

(d) means connected to the link for detecting an end of function signal;

(e) a control transmitter connected to the control path for generating access request signals of at least one priority class on request of the associated component;

(f) an arbitration unit connected to the control path consisting of

(i) at least one register means for maintaining the number of pending bus access requests, and



(ii) means for incrementing and decrementing said register means, in response to access request signals and end of function signals; and

(g) a control unit connected to the arbitration unit, data receiver, data transmitter, control transmitter and associated component, the unit comprising:

(i) enabling means connected to the register means of the arbitration unit for indicating to the associated component that, no other component has a pending request of higher priority and that, within its request signal class, no other component has an earlier request for bus access, and

(ii) conveying means responsive to the enabling means for conveying data from the component to the transmitter for transmission to the data path.

4,608,701

COMMUNICATION RECEIVING UNIT FOR THE SUPPRESSION OF NOISE AND INTERFERENCE SIGNALS

Bernhardus W. A. Burgers, Haaksbergen, and Adrianus Johannes P. T. Razenberg, Hengelo, both of Netherlands, assignors to Hollandse Signaalapparaten B.V., GD Hengelo, Netherlands

Filed Sep. 19, 1984, Ser. No. 652,367
Claims priority, application Netherlands, Sep. 22, 1983, 8303253
Int. Cl.[4] H04B *15/00;* H04K *1/00*
U.S. Cl. 375—1 **7 Claims**

1. An adaptive communication receiving unit suitable for the suppression of noise and jamming signals, said receiving unit comprising:

a plurality of antenna elements;

a network of adaptive weighting filters connected to said antenna elements;

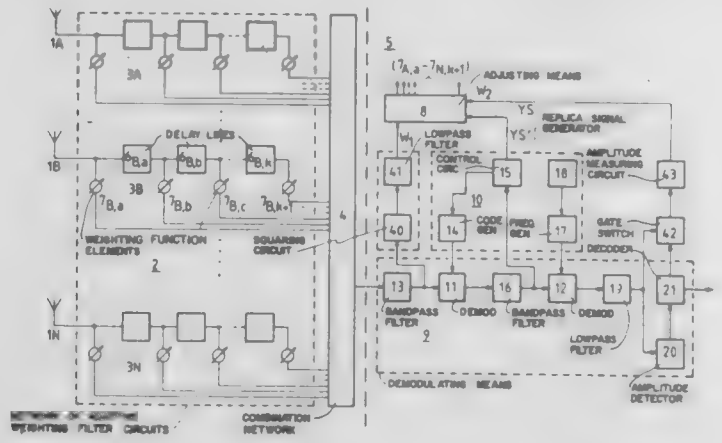
a combination circuit cnnected to said network;

a detector connected to the combination circuit and provided with means for generating a replica (d) of an information-supplying carrier signal present in a signal received by the antenna elements and with means for demodulating a signal (y) of the combination circuit to the

information-related frequency band on the basis of the replica (d); and

adjusting means for generating adjustment signals for the adaptive weighting filters,

characterised in that the detector comprises first means for determining, for the adjusting means, a value (W_1) proportional to a time average of the power concerning the signal (y) produced by the combination circuit and relating to at least a portion of a predefined transmitter frequency band; that the detector comprises second means for determining, for the



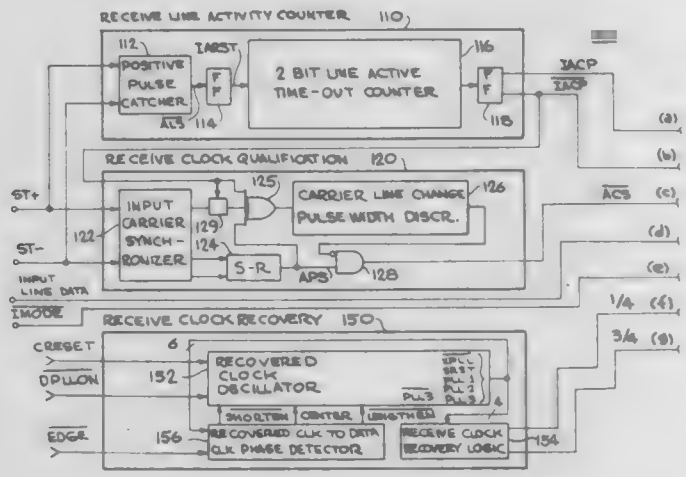
adjusting means, a value (W_2) proportional to a time average of the cross correlation concerning the signal (y) and the replica (d) and relating to at least a portion of the predefined transmitter frequency band; and that the adjusting means is designed for generating, upon the supply of adjusting signals to the weighting filters, modified adjusting signals on the basis of the time-averaged values (W_1 and W_2) resulting therefrom to adjust the weighting filters corresponding with an extreme value of a function $f(W_1,W_2)$ containing the two values W_1 and W_2.

4,608,702

METHOD FOR DIGITAL CLOCK RECOVERY FROM MANCHESTER-ENCODED SIGNALS

Frederic J. Hirzel, Cupertino, Calif., and Roy J. Levy, Ashland, Oreg., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Dec. 21, 1984, Ser. No. 684,919
Int. Cl.[4] H04L *7/02*
U.S. Cl. 375—110 **3 Claims**



1. A method of recovering the clock from Manchester-encoded signals on a pair of signal lines said Manchester-encoded signals being a serial Manchester-encoded stream having an inter-bit period T, comprising the steps of:

a. generating a recovered-clock signal having a period of approximately T;

b. detecting "zero-crossing" when the signed voltage differential on said pair of signal lines becomes zero;

c. comparing the occurrence of the "zero-crossing" of the received signals with the occurrence of the "mid-point" T/2 of the period of the most-recently-generated recovered-clock signal;

d. generating a recovered-clock signal having a period shorter than, equal to, or greater than the period of the most-recently-generated recovered-clock signal depending on whether the comparison step (c) indicated the occurrence of said "zero-crossing" to be before, coincident with, or after, respectively, said "mid-point" T/2 occurrence of said most-recently-generated recovered-clock signal; and

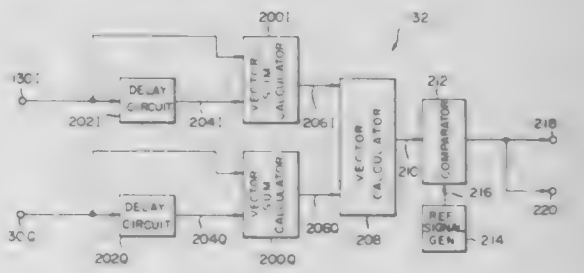
e. repeating steps (b), (c) and (d) on the next-received serial signal.

4,608,703

SYNCHRONIZATION DETECTION SYSTEM FOR DATA TRANSMISSION

Mitsuru Kaga, Hatano, and Shigetaka Tanaka, Atsugi, both of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed May 9, 1984, Ser. No. 608,625
Claims priority, application Japan, May 12, 1983, 58-81665; May 13, 1983, 58-82474; May 13, 1983, 58-82475; Jun. 6, 1983, 58-99448
Int. Cl.[4] H04L *7/04, 23/02*
U.S. Cl. 375—114 **8 Claims**



1. A system for detecting synchronization in data transmission which, in a training sequence for receiving a two-dimensionally modulated signal by way of a demodulator, detects a point of transition from an alternating symbol sequence of two different symbol elements to a pseudorandom symbol sequence, said system comprising:

calculator means for calculating a vector sum of two signals in a signal space which are time-serially remote from each other by a period of two symbol elements;

comparator means for comparing said vector sum with a predetermined threshold value; and

detector means for detecting said point of transition in terms of a decrease of the vector sum beyond said threshold value.

4,608,704

METHOD AND APPARATUS FOR COUNTING SHEETS WHICH MAY BE FED IN SKEWED AND/OR OVERLAPPING FASHION

William Sherman, III, Medford; Francis C. Larkin, Trenton, both of N.J., and Stephen J. Horvath, Bensalem, Pa., assignors to Brandt, Incorporated, Watertown, Wis.

Filed Nov. 10, 1982, Ser. No. 440,584
Int. Cl.[4] G06M *7/06*
U.S. Cl. 377—8 **8 Claims**

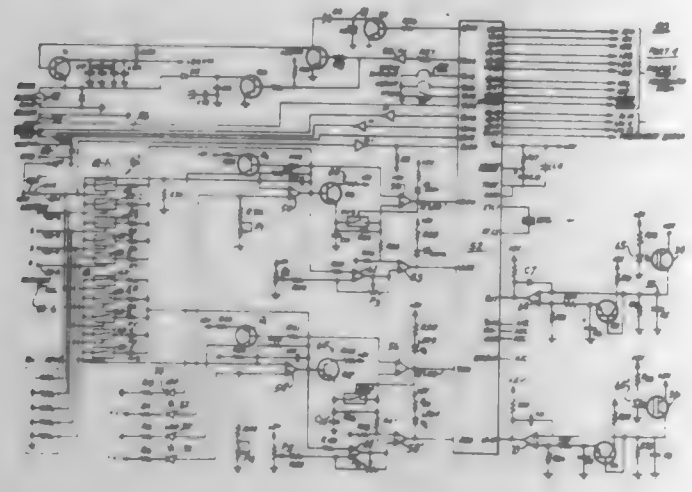
3. Apparatus for handling and counting sheets comprising:

means for receiving sheets from an input stack and delivering said sheets in single spaced-apart fashion towards an output location;

counting means for counting the sheets as they move towards the output locations;

means for displaying the count developed by said counting means responsive to a local display request;

means for coupling the display signal to a remote counting and display apparatus;



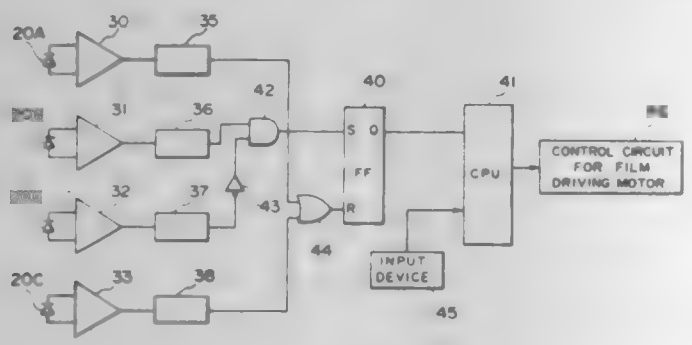
means responsive to a remote display request for blanking said display means and applying display signals to said coupling means.

4,608,705

INFORMATION RETRIEVAL APPARATUS CAPABLE OF STOPPING AN INFORMATION BEARING MEDIUM ACCURATELY AT A DESIRED LOCATION

Kano Tanaka, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 27, 1984, Ser. No. 583,836
Claims priority, application Japan, Mar. 1, 1983, 58-33971; Jan. 25, 1984, 59-11446
Int. Cl.[4] G06K *7/10*
U.S. Cl. 377—18 8 Claims



1. Apparatus for retrieving desired information from an information bearing medium making use of marks provided thereon, comprising:

means for feeding said information bearing medium;

at least three detection means for detecting the marks on said information bearing medium, said at least three mark-detecting means being arranged at determined intervals in the direction in which said information bearing medium is fed;

memory means which assumes a first state when a mark on said information bearing medium is detected by the first mark-detecting means lying on the most-upstream side or by the second mark detecting means lying on the most-downstream side as viewed in the feeding direction of said information bearing medium and which assumes a second state when the mark is detected by the third mark detecting means lying between said first and second mark-detecting means;

means for counting output signals generated when said memory means assumes said second state; and

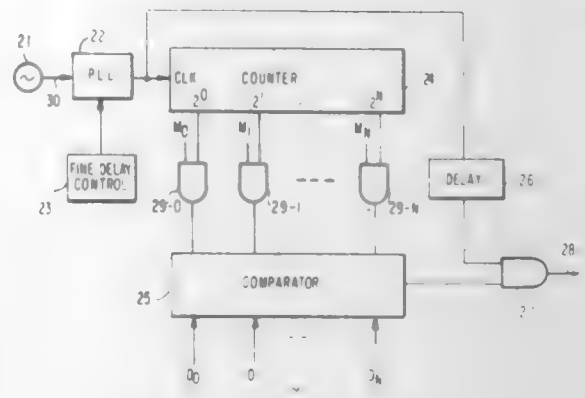
control means for controlling said feeding means in accordance with the counter content of said counting means.

4,608,706

HIGH-SPEED PROGRAMMABLE TIMING GENERATOR

Yihua E. Chang, Poughkeepsie; Lawrence J. Grasso, Pleasant Valley; Algirdas J. Gruodis, and Carroll E. Morgan, both of Wappingers Falls, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 11, 1983, Ser. No. 512,856
Int. Cl.[4] H03K *27/00*
U.S. Cl. 377—39 6 Claims



1. A programmable timing generator comprising;

means for producing a continuously cycling count;

means for comparing said count with a phase control digital word; and

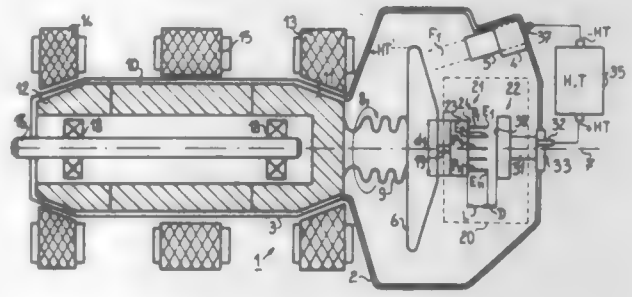
means for selectively inhibiting a predetermined and variable number of the higher ordered bits of said comparing means such that only those bits of said count and said digital word below a predetermined bit position corresponding to said number are compared.

4,608,707

ROTATING ANODE X-RAY TUBE PROVIDED WITH A CHARGE FLOW DEVICE

Emile Gabbay, Paris, and André Plessis, Clamart, both of France, assignors to Thomson-CGR, Paris, France

Filed Jun. 22, 1984, Ser. No. 623,714
Claims priority, application France, Jul. 6, 1983, 83 11260
Int. Cl.[4] H01J *35/04*
U.S. Cl. 378—132 10 Claims



1. A rotating anode X-ray tube provided with a charge flow device mass for generating the anode current of the tube, the latter being of the type having magnetic bearings, said device means being provided with an electron emitter electrically connected to a rotating anode and an electron collector electrically connected to a high voltage positive pole of the tube, wherein the emitter, coupled in rotation to the rotating anode, comprises at least one part having a tapered end, constituting an electron emissive zone where electrons are emitted said electrons being trapped by the collector, said collector being maintained in a fixed position, said device means establishing the anode current between the emitter and the collector without material contact between the latter and without requiring heating of the emitter.

4,608,708

PATTERN MATCHING SYSTEM

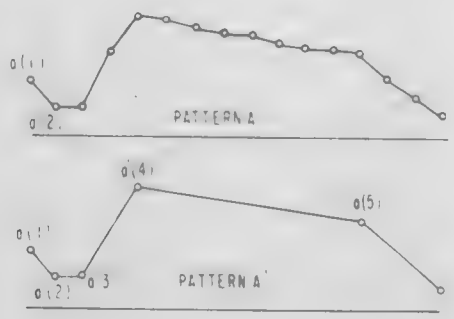
Takao Watanabe, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Dec. 23, 1982, Ser. No. 452,490

Claims priority, application Japan, Dec. 24, 1981, 56-215666; Dec. 24, 1981, 56-215667

Int. Cl.[4] G10L *5/00*

U.S. Cl. 381—43 2 Claims



1. A pattern matching system for comparing two patterns A and B, said system comprising:

first memory means (1) for storing a series of representative vectors {a(1), - - - , a(k), - - - a(k)} and a series of extraction points {P(1), - - - , P(k), - - - , P(k)}, said series {a(1), - - - , a(k), - - - a(k)} indicating connecting points of a compressed pattern which is obtained by approximating said pattern A in a piecewise straight line approximation, said series {P(1), - - - , P(k), - - - , P(k)} indicating said connecting points;

second memory means (2) for storing the second pattern B {b(1), . . . , b(l), . . . b(L)} expressed as a series of feature vectors;

distance calculating means (3) for calculating a distance d(l,k) between a segment connecting representative vectors a(k) and a(k−1) and the feature vector b(l) in accordance with a control address (l,k);

weighting coefficient calculating means (4) for calculating a weighting coefficient depending on a distance $\Delta P(k)=P(k)-P(k-1)$;

weighted distance calculating means (5) for calculating a weighted distance defined by said distance d(l, k) and said weighting coefficient; and

matching means (6) for calculating a composite distance between said patterns A and B by considering said weighted distance through shifting said control address signal (l, k) from k=1, . . . , K to l=1 . . . , L, said composite distance being a measure of similarity between patterns A and B.

4,608,709

METHOD AND APPARATUS FOR GAUGING CONTAINERS

Robert C. Hedler, Toledo, Ohio; Robert D. Kohler, Temperance, Mich., and John H. Dunlap, Wickliffe, Ohio, assignors to Owens-Illinois, Inc., Toledo, Ohio

Continuation of Ser. No. 473,285, Mar. 8, 1983, abandoned. This application Sep. 4, 1985, Ser. No. 773,087

Int. Cl.[4] G06K *9/00*

U.S. Cl. 382—1 28 Claims

1. Apparatus for inspecting the finish of a container comprising:

means for rotating a container;

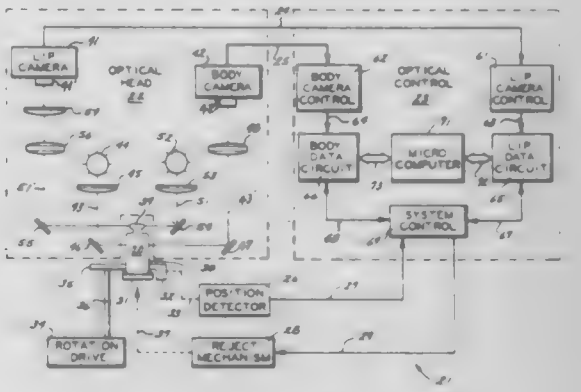
means for illuminating the finish of said container as it rotates to provide an image containing the shadow of said finish;

means for scanning said image as the container rotates to provide a first series of measurements of outer diameter of said finish;

means for averaging each said measurement in said first series with at least one preceding measurement in said first series to obtain a second series of average outer diameter measurements;

first comparing means for comparing each said average outer diameter measurement in said second series with preceding average outer diameter measurements in said second series to identify a minimum outer diameter measurement;

second comparing means for comparing each said average



outer diameter measurement with preceding average diameter measurements in said second series to identify a maximum outer diameter measurement;

means for comparing each of said minimum and maximum outer diameter measurements with associated preselected minimum and maximum values; and

means for providing a signal when one of said minimum and maximum outer diameter measurements is not between its associated preselected minimum and maximum values.

4,608,710

APPARATUS FOR RECEIVING SATELLITE BROADCASTS

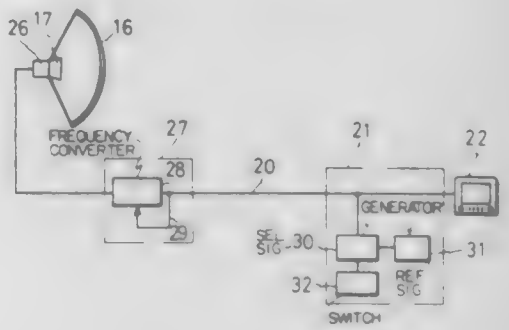
Toshihiro Sugiura, Aichi, Japan, assignor to Masprodenkoh Kabushikikaisha, Japan

Continuation of Ser. No. 509,101, Jun. 29, 1983, abandoned. This application May 3, 1985, Ser. No. 729,900

Claims priority, application Japan, Jul. 15, 1982, 57-123491

Int. Cl.[4] H04B *1/26;* H04H *1/02*

U.S. Cl. 455—4 5 Claims



1. An apparatus for receiving sattelite broadcasts comprising

a station selector for indoor use which is provided with an input terminal for connection thereto to one end of a transmission line and an output terminal for connection thereto of a television receiver and is adapted to deliver a selected intermediate-frequency signal, which is delivered to said input terminal thereof from said one end of the transmission line, to said television receiver, and

a frequency-conversion device for outdoor use which is provided with an input terminal for connection thereto to a receiving antenna and an output terminal for connection thereto to the other end of said transmission line and is adapted to transform selected one of those broadcast signals in multiple channels which are supplied to said input terminal thereof by said antenna into said selected intermediate-frequency signal and to deliver the same to said transmission line from said output terminal thereof,

said station selector including:

(a) a reference-signal generator for production of a frequency-stabilized reference signal;

(b) a selection-signal generator adapted to receive said reference signal, to form a station-selecting signal of a frequency equal to a multiple of the frequency of said reference signal and further to deliver said station-selecting signal to said transmission line from said input terminal of said station selector; and

(c) a selector switch operably connected to said selection-signal generator for choosing said multiple; and said frequency-conversion device including:

(d) a first oscillator for generating a frequency-conversion signal of a frequency controlled by an input thereto;

(e) a frequency divider adapted to receive said frequency-conversion signal and to produce a signal of a frequency equal to a submultiple of the frequency of said frequency-conversion signal;

(f) a first phase comparator adapted to compare the phase of a first input thereof supplied by said frequency divider with the phase of said station-selecting signal applied as a second input thereof, to produce a control output dependent on the difference between the input phases of said first phase comparator and further to apply said control output as said input of said first oscillator;

(g) a mixer adapted to mix the broadcast signals in multiple channels delivered by said antenna as a first input thereof through said input terminal of said frequency-conversion device with said frequency-conversion signal supplied by said first oscillator as a second input thereof, thereby producing intermediate-frequency signals; and

(h) a band-pass filter adapted to pass only one of said intermediate-frequency signals that has a prescribed intermediate frequency and to deliver said one intermediate-frequency signal as said selected intermediate-frequency signal; and

(i) said control output of said first phase comparator controlling the output frequency of said first oscillator so that any difference between said submultiple of said output frequency of said first oscillator and said station-selecting signal is compensated for.

4,608,711

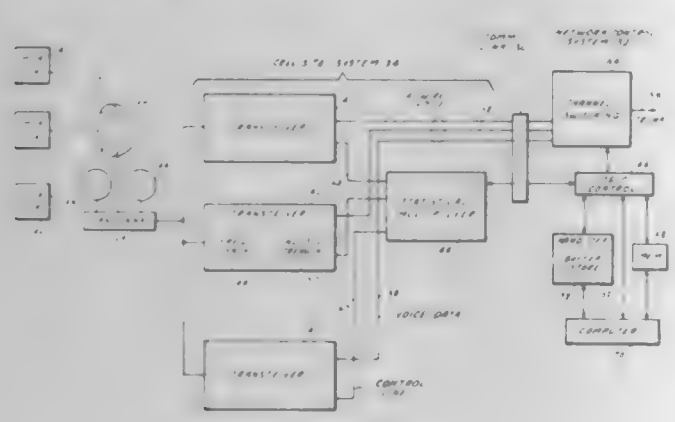
CELLULAR MOBILE RADIO HAND-OFF UTILIZING VOICE CHANNEL

Stuart O. Goldman, Columbus, Ohio, assignor to ITT Corporation, New York, N.Y.

Filed Jun. 21, 1984, Ser. No. 622,941

Int. Cl.⁴ H04Q *7/04*; H04B *7/00*

U.S. Cl. 455—33 **6 Claims**



1. In a cellular mobile communication system wherein mobile stations having transceivers can communicate with each other, the system being arranged in a set of cells wherein each cell has a cell station for communication with individual ones of said mobile stations, there being a set of communication channels assigned to each of said cells, each of said channels being available for use in carrying a communication of one of said mobile stations, the set of channels assigned to one of said cells differing from the set of channels assigned to a second of said cells contiguous said one cell, the cell station in each of said cells having receivers each tuned to respective ones of the channels assigned to the cell for receiving signals of the mobile stations within the cell, a cluster of said cells having a network control system through which said cell stations communicate with each other, said network control system operating in conjunction with hand-off apparatus for handing off a mobile station from a first of said cells to a second of said cells as the mobile station travels from the first cell to the second cell, said hand-off apparatus being responsive to the strength or quality of signals of a mobile station monitored in a group of cells contiguous said first cell; the improvement wherein

each of said cell-station receivers comprises means for tuning the receiver to a channel of a contiguous cell, thereby providing an idle channel to monitor the signal of a mobile station in a contiguous cell; and wherein said hand-off apparatus comprises:

means for activating the tuning means in one of said receivers in each of a plurality of said cells for reception of a channel assigned to another of said cells, thereby to provide measurement signals indicating the signal strength or quality of a mobile station in said another cell;

means for storing the measurement signal of a group of cells contiguous said another cell;

means coupled to the storing means for comparing the measurement signals and for selecting the best of the measurement signals; and

means for designating the cell associated with the best measurement signal to receive a hand-off of the transceiver.

4,608,712

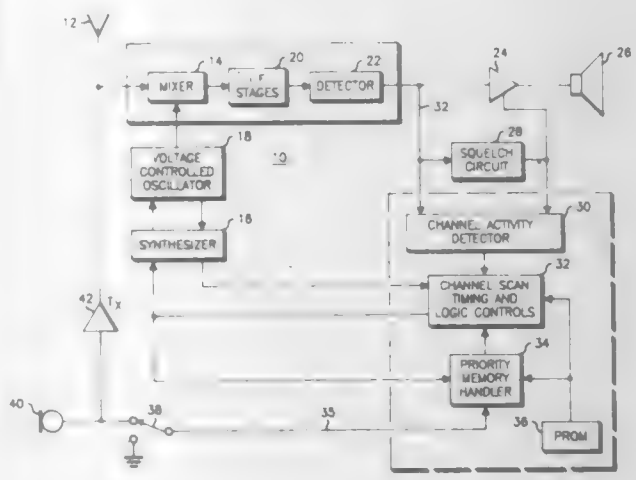
SPONTANEOUS CHANNEL CONTINUITY SCANNING RADIO

Chris S. Fedde, Palatine, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 571,040, Mar. 2, 1984, abandoned, which is a continuation of Ser. No. 356,876, Mar. 10, 1982, Pat. No. 4,484,357. This application May 9, 1985, Ser. No. 732,906

Int. Cl.⁴ H03J *7/18*

U.S. Cl. 455—166 **5 Claims**



1. A method for modifying a channel scan sequence in response to generation of a control signal in a scanning radio for receiving signals on a number of channels and having scanning circuitry for monitoring individual ones of the predetermined channels including priority channel monitoring circuitry, wherein data respresenting at least one channel is stored and designated as a priority channel, comprising the steps of:

displacing, in response to generation of the control signal, said stored data identifying at least one channel designated as a priority channel;

assigning, for a temporary period, a channel monitored by the scanning circuitry, to a priority designation in response to generation of the control signal; and

automatically restoring the displaced data after the temporary period expires.

4,608,713

FREQUENCY CONVERTER

Yasufumi Shiomi, Suita, and Yoshikazu Yoshimura, Takatsuki, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

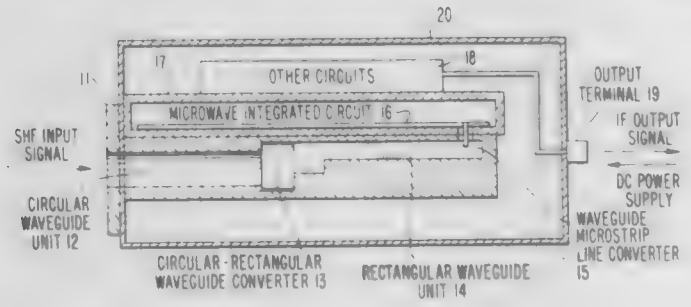
PCT No. PCT/JP84/00004, § 371 Date Aug. 29, 1984, § 102(e) Date Aug. 29, 1984, PCT Pub. No. WO84/03008, PCT Pub. Date Aug. 2, 1984

PCT Filed Jan. 13, 1984, Ser. No. 642,350

Claims priority, application Japan, Jan. 20, 1983, 58-8429; Feb. 18, 1983, 58-26532

Int. Cl.[4] H04B *1/26*

U.S. Cl. 455—325 **4 Claims**



1. A frequency converter comprising:

an unobstructed circular waveguide unit through one end of which received signals are fed thereto and conveying signals in the TE11 mode at an output end;

a rectangular waveguide unit having a rectangular waveguide-microstrip line converter unit in its output end and conveying signals in the TE10 mode;

a circular-rectangular waveguide converter unit connecting the output end of said circular waveguide unit and an input end of said rectangular waveguide unit to convert the mode of transmission of signals from the TE11 mode in the circular waveguide unit to a principal transmission mode TE10 in the rectangular waveguide unit; and

a microwave integrated circuit extending in the direction of and on the H-wall side of said circular-rectangular waveguide converter unit and said rectangular waveguide unit and connected to said rectangular waveguide-microstrip line converter unit for processing the received signals and delivering the received signals as signals of an intermediate frequency;

said circular waveguide unit having a diameter to provide a cutoff frequency of said circular waveguide unit to be lower than the frequency of the received signals and higher than a local oscillation frequency for causing said circular waveguide unit to function as a high pass filter, and the axis of said rectangular waveguide unit being offset relative to that of said circular waveguide unit in the direction parallel to the shorter side of said rectangular waveguide unit and toward the H-wall along which said microwave integrated circuit is positioned.

4,608,714

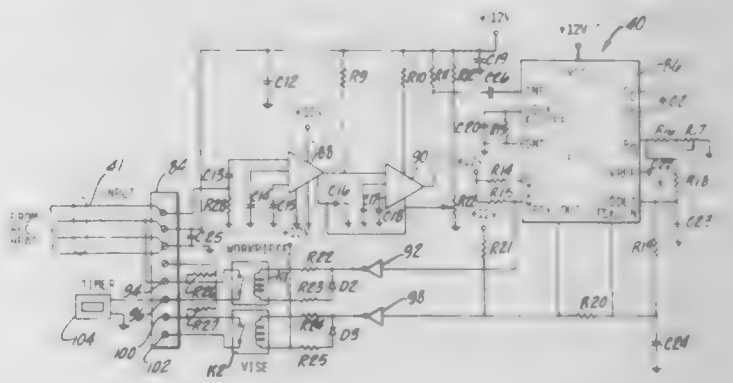
LOW BATTERY DETECTOR FOR A MACHINE SYSTEM USING INFRARED TELEMETRY

Richard O. Juengel, Romeo, Mich., assignor to GTE Valeron Corporation, Troy, Mich.

Division of Ser. No. 414,734, Sep. 3, 1982, Pat. No. 4,545,106, which is a continuation-in-part of Ser. No. 259,257, Apr. 30, 1981, Pat. No. 4,401,945. This application May 1, 1985, Ser. No. 729,418

Int. Cl.[4] H04B *9/00*

U.S. Cl. 455—603 **7 Claims**



1. A data communication system for a machine system comprising:

a transmitter having a battery for selectively supplying power to electrical components adapted to transmit a plurality of different infrared signals each associated with a given event related to operations on a workpiece;

remote receiver means for detecting the presence of any of the infrared signals transmitted from the transmitter; and

timer means coupled to said receiver means and energized by the detected presence of any of the received infrared signals, operative to display to the user an indication of battery usage in the transmitter.

DESIGN PATENTS

GRANTED AUG. 26, 1986

ERRATA

For CLASS	See PATENT NO.
D05–063	285,379

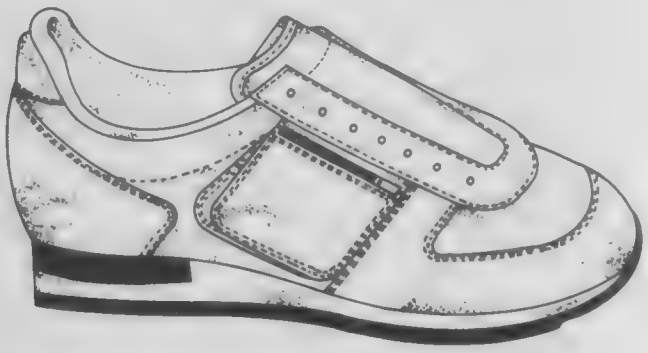
DESIGNS

AUGUST 26, 1986

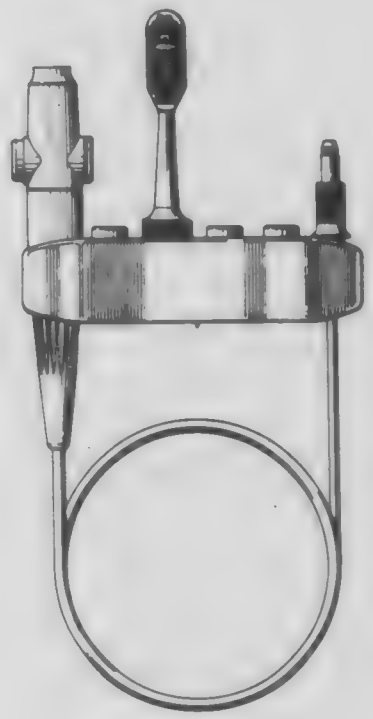
285,260
SLIPPER
Brooke G. Keith, West Trenton, N.J., assignor to Commonwealth Toy & Novelty Co., Inc., New York, N.Y.
Filed Mar. 26, 1984, Ser. No. 593,128
Term of patent 14 years
U.S. Cl. D2—279



285,261
PURSE POCKETED SHOE
Robert J. Gamm, St. Louis, Mo., assignor to Kangaroos U.S.A., Inc., St. Louis, Mo.
Filed May 26, 1983, Ser. No. 498,492
Term of patent 14 years
U.S. Cl. D2—309



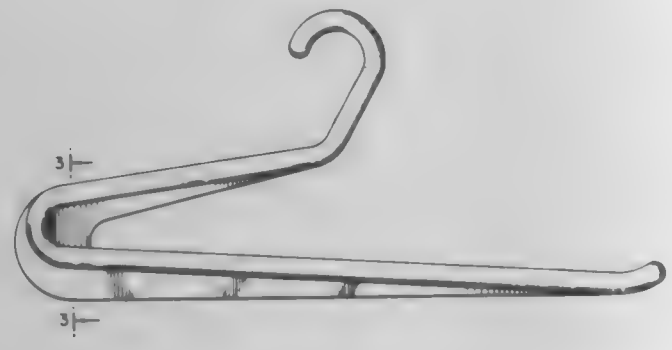
285,262
TOOTHBRUSH ASSEMBLY
Ronald Herzfeld, Germering, Fed. Rep. of Germany, assignor to Thorwarth & Grebe OHG, Fed. Rep. of Germany
Filed Jul. 11, 1984, Ser. No. 629,872
Claims priority, application Fed. Rep. of Germany, Mar. 17, 1984, 13843; Apr. 24, 1984, 14003
Term of patent 14 years
U.S. Cl. D4—101



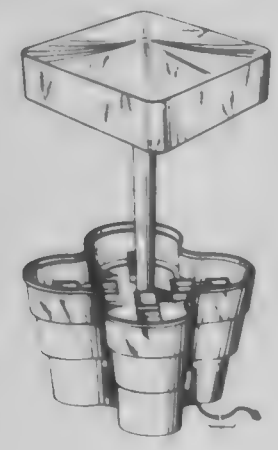
285,263
HANDLE FOR TOOTHBRUSH OR FLOSSING AID
Percy H. Hill, Silver Lake, N.H., assignor to Stratford Laboratories, Englewood Cliffs, N.J.
Filed Mar. 5, 1984, Ser. No. 586,044
Term of patent 14 years
U.S. Cl. D4—104



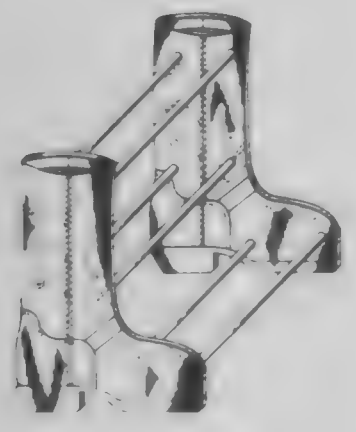
285,264
HANGER
Peter R. Miale, 3 Mindy Ct., Locust Valley, N.Y. 11560
Filed Apr. 30, 1984, Ser. No. 605,305
Term of patent 14 years
U.S. Cl. D6—327



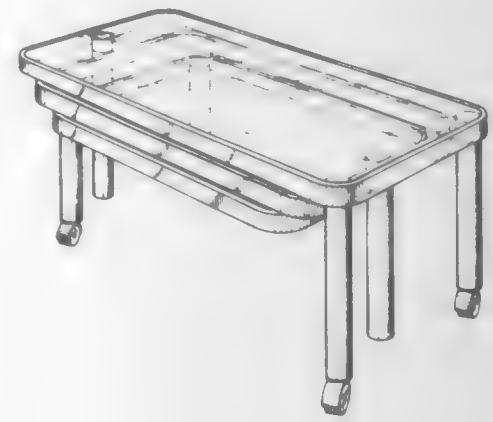
285,265
DISPLAY STAND FOR FLOWERS
Rene J. T. M. Pas, Kapellenbergiaan 44, Rozendaal (Gld.), Netherlands
Filed Apr. 20, 1984, Ser. No. 602,658
Term of patent 14 years
U.S. Cl. D6—405



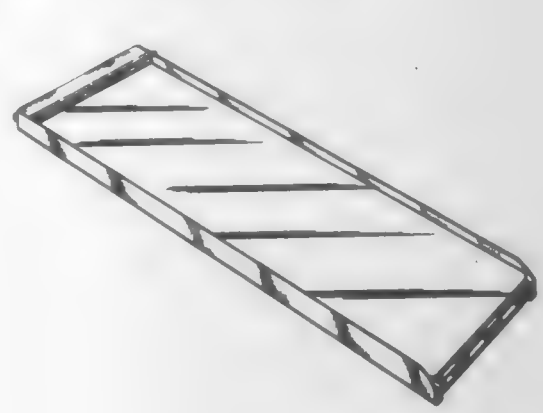
285,266
SHOE RACK
Robert L. Bowsher, 212 - 19th Ave., Moline, Ill. 61265
Filed Feb. 21, 1984, Ser. No. 582,001
Term of patent 14 years
U.S. Cl. D6—412

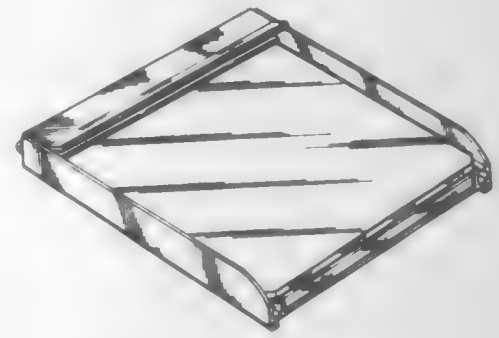


285,267
TABLE
Richard D. Berry, Jr., Hickory, N.C., assignor to Design Institute America, Inc., Montpelier, Ohio
Filed Jul. 11, 1983, Ser. No. 512,336
The portion of the term of this patent subsequent to Jun. 24, 2000, has been disclaimed.
Term of patent 14 years
U.S. Cl. D6—430

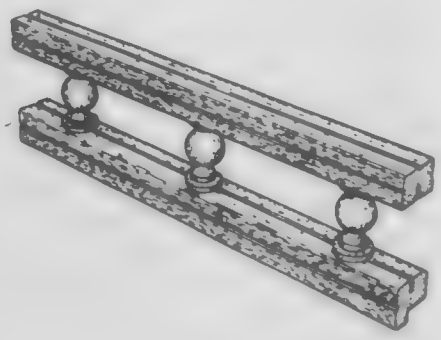


285,268
DISPLAY CASE
William J. Scheid, 179 Birkdale Rd., Scarborough, Ontario, Canada (M1P 3R9), and Brian G. Nugent, 47 Braemar Dr., Bramalea, Ontario, Canada L6T 2L5
Filed Aug. 2, 1983, Ser. No. 519,722
Term of patent 14 years
U.S. Cl. D6—470

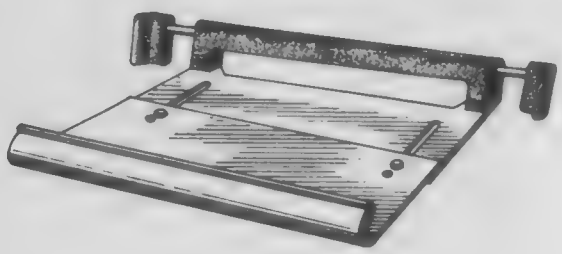




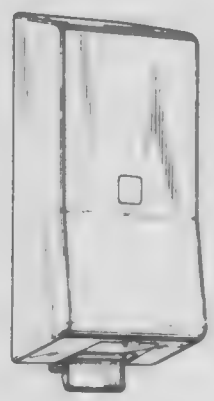
285,269
FURNITURE RAIL OR SIMILAR ARTICLE
Carroll W. Cope, Marion, Va., assignor to DG Shelter Products, Marion, Va.
Filed Feb. 14, 1984, Ser. No. 580,005
Term of patent 14 years
U.S. Cl. D6—491



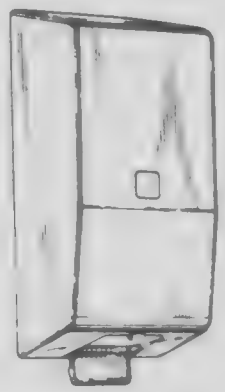
285,270
UNIVERSAL KEYBOARD MOUNT
Bruce R. Hannah, Cold Spring, N.Y.; William I. Stephens, East Greenville, Pa.; George Wilmot, New Canaan, Conn., and Eric J. Armstrong, Pennsburg, Pa., assignors to Knoll International, Inc., New York, N.Y.
Continuation-in-part of Ser. No. 494,808, May 16, 1983. This application Jan. 30, 1984, Ser. No. 574,908
Term of patent 14 years
U.S. Cl. D6—511



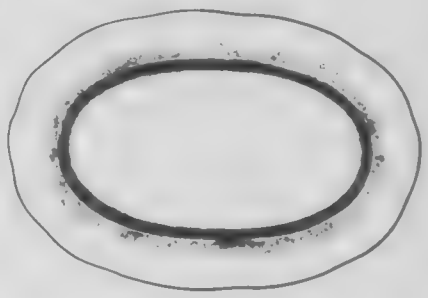
285,271
LIQUID SOAP DISPENSER
Gerrit K. Bunschoten, Oud Zuilen; Gerardus J. van der Vlies, Heusden, and Joost van Berne, Dongen, all of Netherlands, assignors to Lever Brothers Company, New York, N.Y.
Filed Aug. 17, 1984, Ser. No. 641,661
Claims priority, application United Kingdom, Feb. 21, 1984, 841018023
Term of patent 14 years
U.S. Cl. D6—545

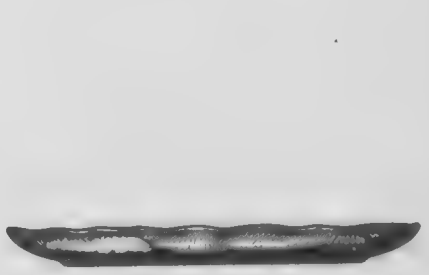


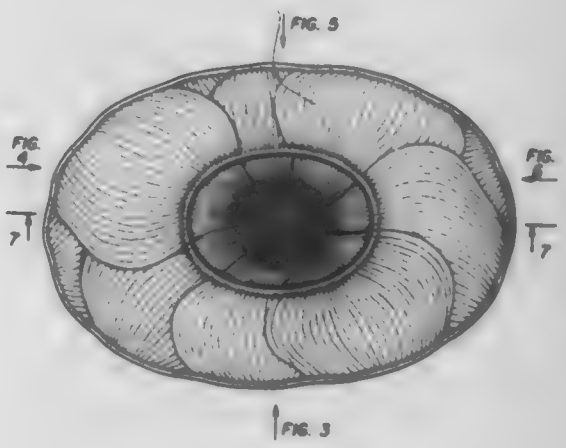
285,272
LIQUID SOAP DISPENSER
Gerrit K. Bunschoten, Oud Zuilen; Gerardus J. van der Vlies, Heusden, and Joost van Berne, Dongen, all of Netherlands, assignors to Lever Brothers Company, New York, N.Y.
Filed Aug. 17, 1984, Ser. No. 641,662
Claims priority, application United Kingdom, Feb. 21, 1984, 841018022
Term of patent 14 years
U.S. Cl. D6—545



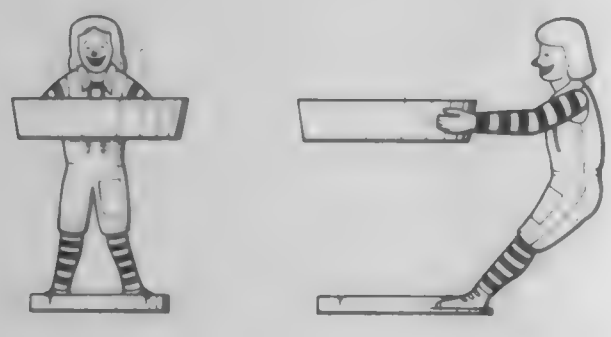
285,273
GRAVY BOAT STAND
Larry R. Lazlo, New York, N.Y., assignor to American Commercial Incorporated, Secaucus, N.J.
Filed Jul. 27, 1983, Ser. No. 517,797
Term of patent 14 years
U.S. Cl. D7—1



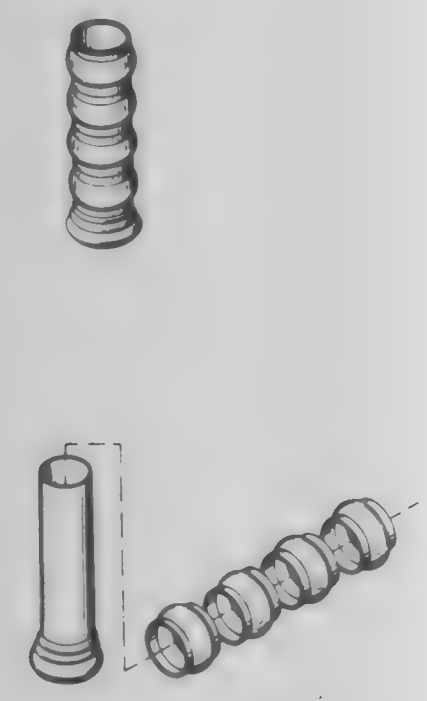




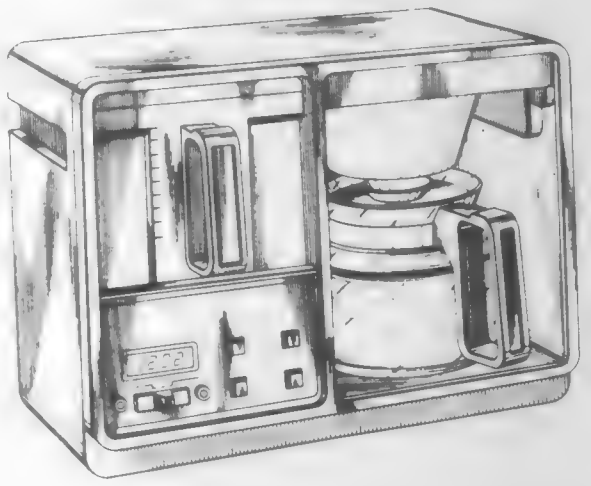
285,274
CUP HOLDER
Robert A. DeMars, 7932 Maestro Ave., Canoga Park, Calif. 91304
Filed Jan. 30, 1984, Ser. No. 574,740
Term of patent 14 years
U.S. Cl. D7—70



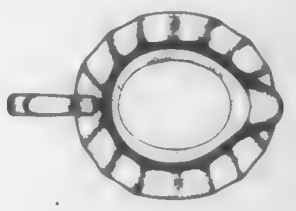
285,275
COMBINED NAPKIN RINGS AND HOLDER SET
Hilda S. Pollitz, Redondo Beach, Calif., assignor to Teleflora, Inc., Los Angeles, Calif.
Filed Sep. 23, 1983, Ser. No. 535,266
Term of patent 14 years
U.S. Cl. D7—72



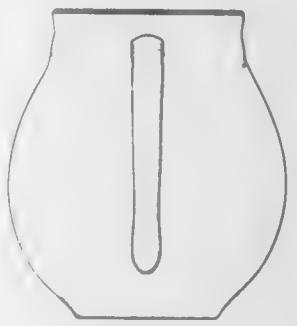
285,276
DRIP COFFEEMAKER OR SIMILAR ARTICLE
Theodore G. Daher, Stratford, Conn., assignor to Black & Decker, Inc., Del.
Filed Aug. 29, 1983, Ser. No. 527,035
Term of patent 14 years
U.S. Cl. D7—309



285,277
CREAM PITCHER
Toschio Murai, Tajimi, Japan, assignor to American Commercial, Incorporated, Secaucus, N.J.
Filed Jul. 28, 1983, Ser. No. 518,086
Term of patent 14 years
U.S. Cl. D7—319







285,278
INSULATED JUG

Anso Zimmermann, Bad Hersfeld, Fed. Rep. of Germany, assignor to Rotpunkt Dr. Anso Zimmermann, Niederaula, Fed. Rep. of Germany

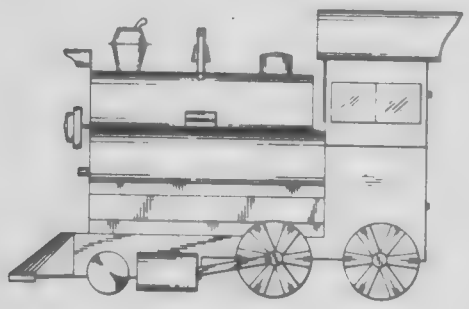
Filed Jan. 25, 1984, Ser. No. 573,646
Claims priority, application Fed. Rep. of Germany, Aug. 25, 1983, MR 200
Term of patent 14 years
U.S. Cl. D7—321



285,279
BARBECUE

Alfred A. Arevalo, and Mario M. Arevalo, both of 233 Westminster, San Antonio, Tex. 78228

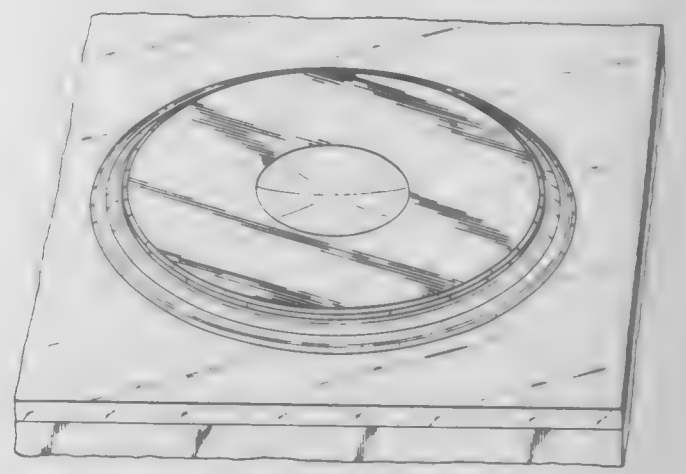
Filed Jul. 9, 1984, Ser. No. 629,091
Term of patent 14 years
U.S. Cl. D7—334



285,280
COMBINED ELECTRIC HOTPLATE AND MOUNTING SURFACE THEREFOR

Karl Fischer, and Felix Schreder, both of Oberderdingen, Fed. Rep. of Germany, assignors to E.G.O. Elektro-Gerate Blanc u. Fischer, Fed. Rep. of Germany

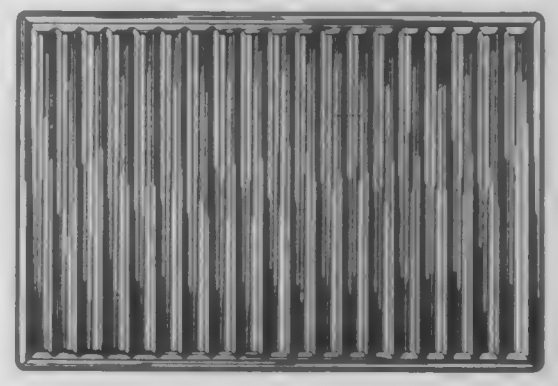
Filed May 27, 1983, Ser. No. 498,652
Claims priority, application Fed. Rep. of Germany, Dec. 2, 1982, MR II/122BR
Term of patent 14 years
U.S. Cl. D7—346



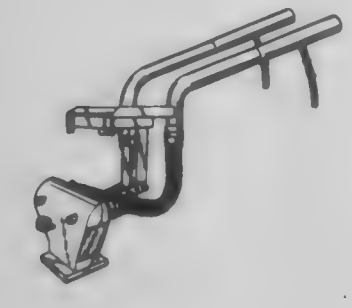
285,281
GRILL

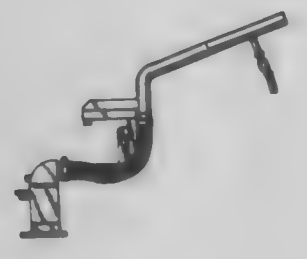
Donald E. Sable, II, 12322 Greenlea Chase West, Oklahoma City, Okla. 73170

Filed Jun. 15, 1984, Ser. No. 621,365
Term of patent 14 years
U.S. Cl. D7—363

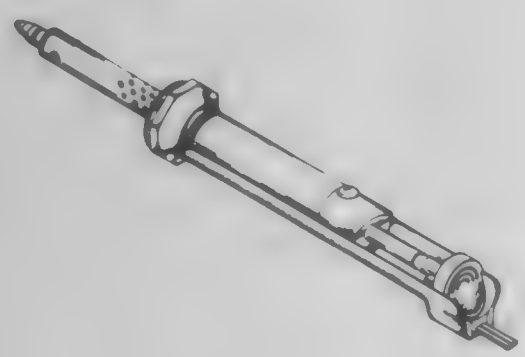


285,282
FOG APPLICATOR FOR PESTICIDE AND HERBICIDE CHEMICAL DISPERSION
Dan Ariaz, 7575 Tamra Dr., Reno, Nev. 89506, and Vance Robison, P.O. Box 2315, Sparks, Nev. 89432
Filed Jan. 24, 1983, Ser. No. 460,440
Term of patent 14 years
U.S. Cl. D8—2





285,283
MULTI-PURPOSE SOLDERING GUN
Tsan-Hsiung Cheng, No. 3, La. 31, Nan Lin St., Tainan City, Taiwan (700)
Filed Jul. 18, 1983, Ser. No. 514,628
Claims priority, application Taiwan, Feb. 1, 1983, 7230481
Term of patent 14 years
U.S. Cl. D8—30





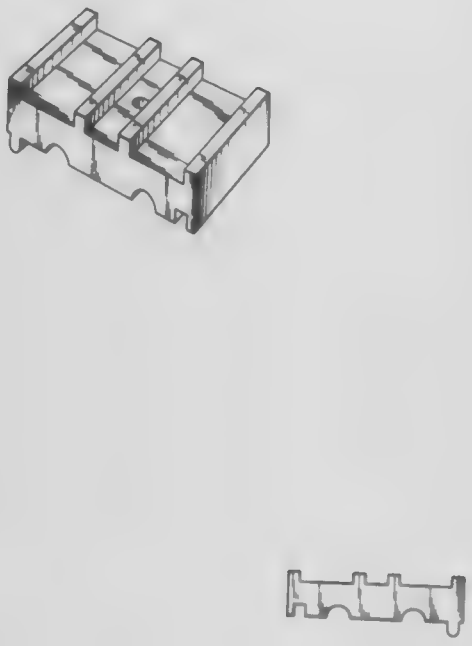
285,284
HAMMER
Stefan Blomqvist, Sunne, Sweden, assignor to Sunnex Equipment AB, Sunne, Sweden
Filed Jan. 24, 1983, Ser. No. 460,392
Claims priority, application Sweden, Jul. 26, 1982, 82-1888
Term of patent 14 years
U.S. Cl. D8—77



285,285
GLASS CUTTER
Hiroshi Soyama, Ibaragi, Japan, assignor to Mitsuboshi Diamond Kogyo Kabushiki Kaisha, Settsu, Japan
Filed Nov. 14, 1983, Ser. No. 551,740
Term of patent 14 years
U.S. Cl. D8—98

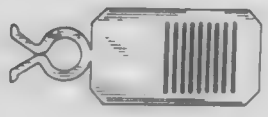


285,286
CABLE MOUNTING BLOCK
Stephen N. Sharpe, Hightstown Borough, Mercer County, N.J., assignor to The Idea Works, Inc., Pequannock, N.J.
Filed Feb. 27, 1984, Ser. No. 583,594
Term of patent 14 years
U.S. Cl. D8—356

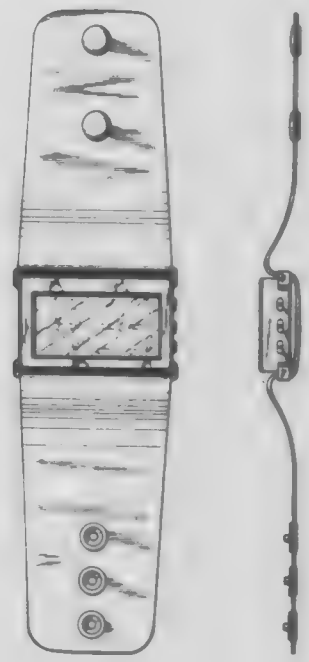


285,287
BREAD BAG CLIP
Stanley E. Tannar, 4933 Cliff Dr., Delta, British Columbia, Canada V4M 2C2
Filed Jul. 22, 1983, Ser. No. 516,097
Term of patent 14 years
U.S. Cl. D9—434

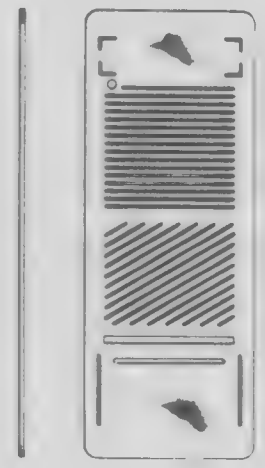




285,288
WRIST WATCH
Jacky Chau, Hong Kong, Hong Kong, assignor to Big Time Inc., West Hempstead, N.Y.
Filed Jul. 1, 1985, Ser. No. 750,918
Term of patent 14 years
U.S. Cl. D10—32



285,289
TEMPLATE FOR LINING, SHADING AND THE LIKE
Sheldon G. Wimmer, 77 N. 200 East, and Keith O. Sandbloom, 16 S. 100 West, both of Alpine, Utah 84043
Filed Aug. 1, 1983, Ser. No. 519,004
Term of patent 14 years
U.S. Cl. D10—64

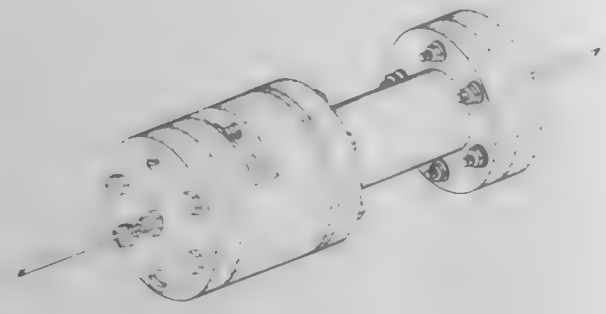


285,290

MODULAR PREPARATIVE HIGH PRESSURE LIQUID CHROMATOGRAPHY COLUMN

Yehuda Shalon; Tadmor Shalon, and Danny D. Meyer, all of St. Louis County, Mo., assignors to Hp Chemicals, Inc., St. Louis, Mo.

Filed May 9, 1983, Ser. No. 492,802
Term of patent 14 years
U.S. Cl. D10—81

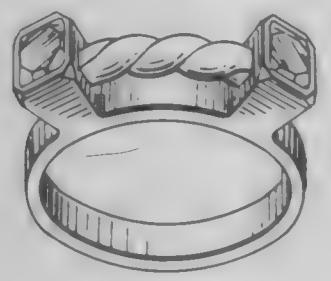


285,291

RING

Nicholas Brescia, Yonkers, N.Y., assignor to Master Sales/-Management Corp., Yonkers, N.Y.

Filed Apr. 20, 1984, Ser. No. 602,351
Term of patent 14 years
U.S. Cl. D11—34



285,292

RING

Gianni Bulgari, Rome, Italy, assignor to Partecipazioni Bulgari S.p.A., Rome, Italy

Filed May 23, 1984, Ser. No. 613,369
Claims priority, application Italy, Dec. 9, 1983, 36320/83[U]
Term of patent 14 years
U.S. Cl. D11—37



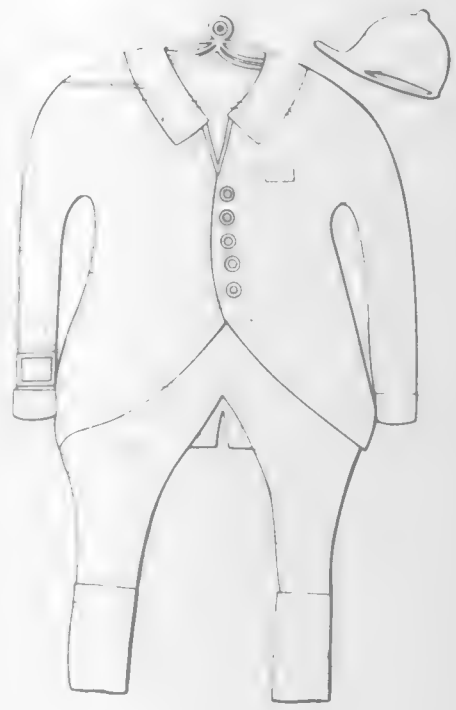


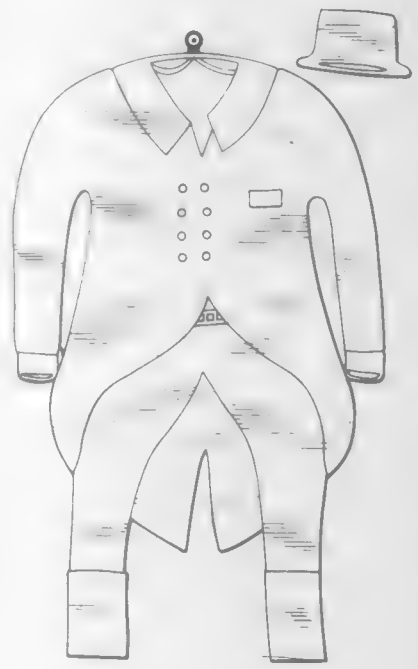
285,293

HANGING ORNAMENT

Brigitte Breyer-Lindner, Habichtstr. 34, D-8025 Unterhaching, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 268,010, May 28, 1981, abandoned. This application Aug. 18, 1983, Ser. No. 525,251
Claims priority, application Fed. Rep. of Germany, Dec. 2, 1980, 11 AR 5012/80
Term of patent 14 years
U.S. Cl. D11—125

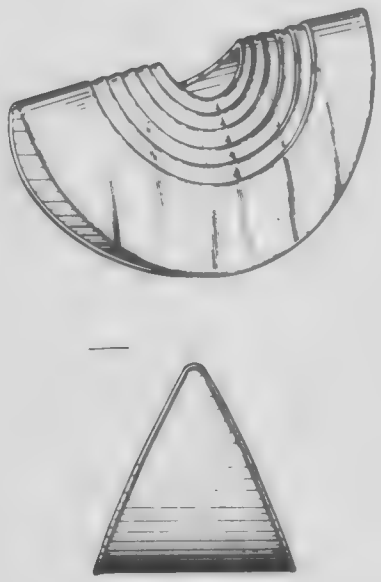




285,294
VASE

Ambrogio Pozzi, Gallarate, Italy, assignor to Rosenthal Akt. Rechtsabteilung, Fed. Rep. of Germany

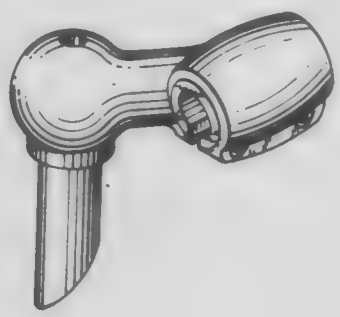
Filed Aug. 23, 1984, Ser. No. 643,662
Claims priority, application Fed. Rep. of Germany, Feb. 23, 1984, 7368
Term of patent 14 years
U.S. Cl. D11—143



285,295
BICYCLE HANDLEBAR STEM

John S. Kirkpatrick, Brooklyn, N.Y., assignor to Ross Bicycles Inc., Rockaway Beach, N.Y.

Filed Nov. 25, 1985, Ser. No. 806,201
Term of patent 14 years
U.S. Cl. D12—118



285,296
BICYCLE TIRE TREAD

Susumu Kazusa; Harunori Okamoto, and Eiji Fukuchi, all of Kagawa, Japan, assignors to Mistuboshi Belting Ltd., Kobe, Japan

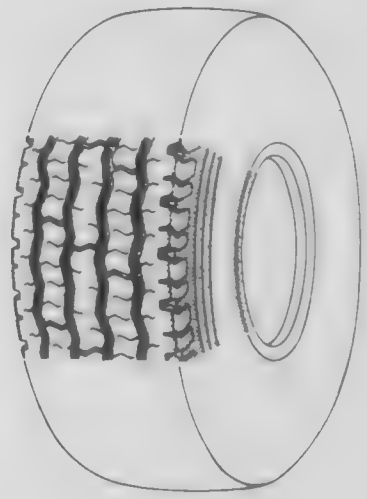
Filed Mar. 20, 1984, Ser. No. 591,431
Claims priority, application Japan, Sep. 20, 1983, 58-41211; Fed. Rep. of Germany, Apr. 24, 1984, 14003
Term of patent 14 years
U.S. Cl. D12—136



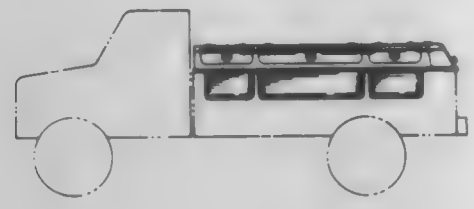
285,297
TIRE

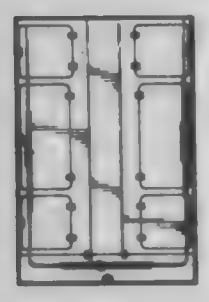
Miroslav Manestar, and Richard J. Skerl, both of Barberton, Ohio, assignors to The B. F. Goodrich Company, Akron, Ohio

Filed Mar. 30, 1984, Ser. No. 595,018
Term of patent 14 years
U.S. Cl. D12—146

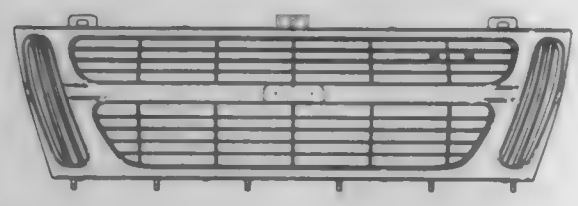


285,298
TRUCK COVER OR SIMILAR ARTICLE
Billy C. Fly, Phoenix, Ariz., assignor to Eke Chapin, Phoenix, Ariz.
Filed Feb. 7, 1984, Ser. No. 577,806
Term of patent 14 years
U.S. Cl. D12—156

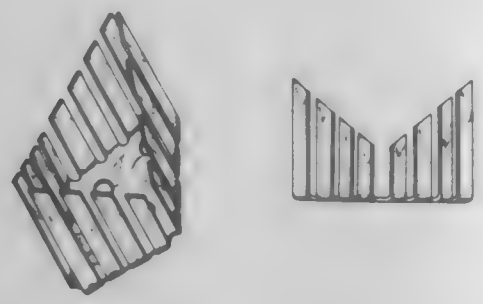




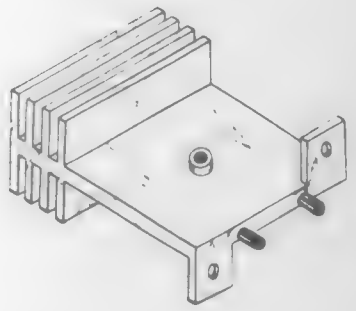
285,299
FRONT RADIATOR GRILLE FOR AN AUTOMOBILE
Geoffrey P. Wardle, Coundon Coventry, England, and Björn E. A. Envall, Vänersborg, Sweden, assignors to Saab-Scania Aktiebolag, Trollhattan, Sweden
Filed Feb. 7, 1984, Ser. No. 577,743
Claims priority, application Sweden, Aug. 8, 1983, 83-2019
Term of patent 14 years
U.S. Cl. D12—163



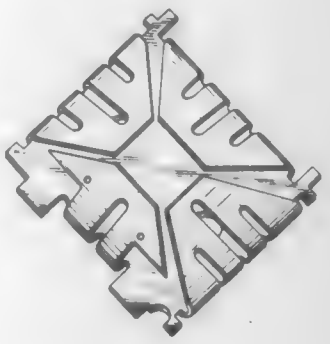
285,300
THERMALLY-EFFICIENT HEAT SINK FOR ELECTRONIC DEVICES
Kenneth R. St.Jacques, Gilford, N.H., assignor to Aavid Engineering, Inc., Laconia, N.H.
Filed Feb. 13, 1984, Ser. No. 579,280
Term of patent 14 years
U.S. Cl. D13—23



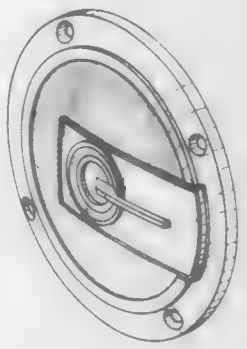
285,301
PINNED HEAT-SINK EXTRUSION FOR CIRCUIT-BOARD MOUNTING
Philip A. Johnson, Exeter, N.H., assignor to Aavid Engineering, Inc., Laconia, N.H.
Filed Apr. 23, 1984, Ser. No. 602,666
Term of patent 14 years
U.S. Cl. D13—23



285,302
LEADLESS INTEGRATED-CIRCUIT CHIP-CARRIER HEAT SINK
Alfred F. McCarthy, Belmount, N.H., assignor to Aavid Engineering, Inc., Laconia, N.H.
Filed Oct. 24, 1984, Ser. No. 664,253
Term of patent 14 years
U.S. Cl. D13—23



285,303
LOUDSPEAKER PANEL
Petrus H. J. van de Ven, Valkenswaard, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Dec. 15, 1983, Ser. No. 561,762
Claims priority, application United Kingdom, Jun. 29, 1983, 1.013.834
Term of patent 14 years
U.S. Cl. D14—39



285,304

KEY TELEPHONE SET

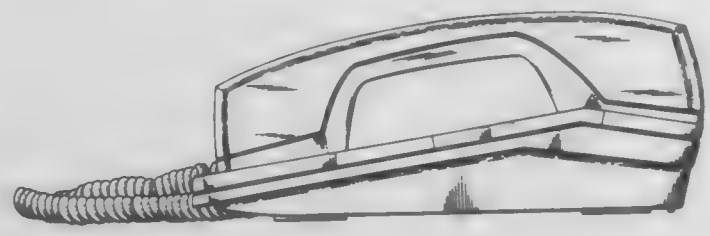
Hiroshi Inaba, Kawasaki, Japan, assignor to Nitsuko Limited, Kawasaki, Japan

Filed Jan. 26, 1983, Ser. No. 461,102

Claims priority, application Japan, Jul. 28, 1982, 57-33788

Term of patent 14 years

U.S. Cl. D14—58





285,305

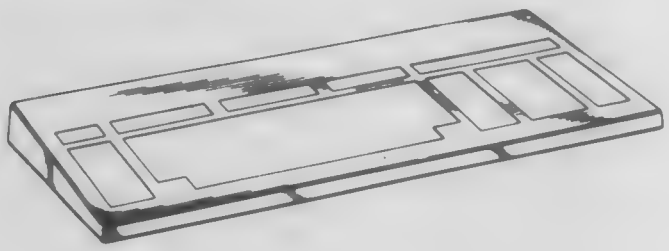
KEYBOARD HOUSING

James G. Liuzzo, St. Charles; William J. Proetta, Elburn, both of Ill.; Gordon E. Sylvester, Jamaica, N.Y., and Alvin R. Tilley, Redbank, N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed May 4, 1984, Ser. No. 606,947

Term of patent 14 years

U.S. Cl. D14—100



285,306

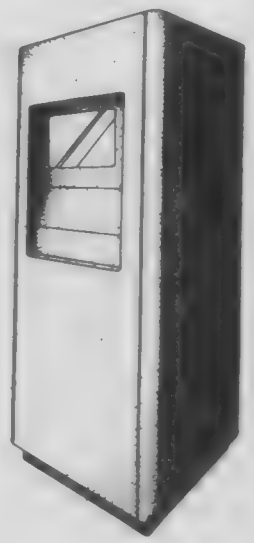
PUBLIC ACCESS DATA PROCESSOR CONTROLLED INFORMATION TERMINAL

Richard M. Joffe, Palisades Park; Oskar Loosme, Lincroft, both of N.J., and Gordon E. Sylvester, Jamaica, N.Y., assignors to AT&T Information Systems Inc., Morristown, N.J.

Filed Aug. 15, 1985, Ser. No. 765,637

Term of patent 14 years

U.S. Cl. D14—102



285,307

COMPUTER PROGRAM CARTRIDGE

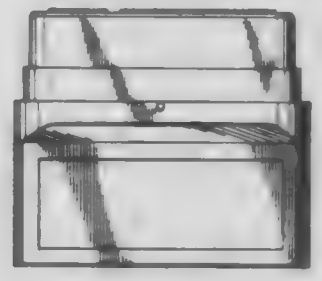
Roger W. Clarke, Ottery St. Mary, England, assignor to Sinclair Research Limited, Cambridge, England

Filed Mar. 26, 1984, Ser. No. 593,514

Claims priority, application United Kingdom, Sep. 27, 1983, 1015346

Term of patent 14 years

U.S. Cl. D14—114



285,308

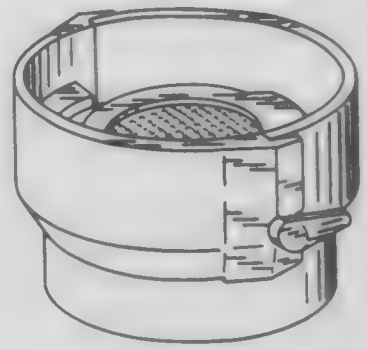
CATALYTIC CONVERTER

Peter S. Albertsen, Warwick, R.I., assignor to Na-Tec Incorporated, East Greenwich, R.I.

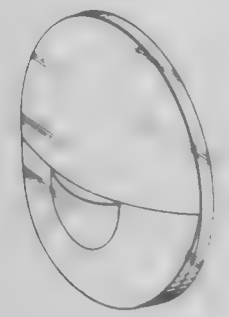
Filed Apr. 1, 1983, Ser. No. 481,340

Term of patent 14 years

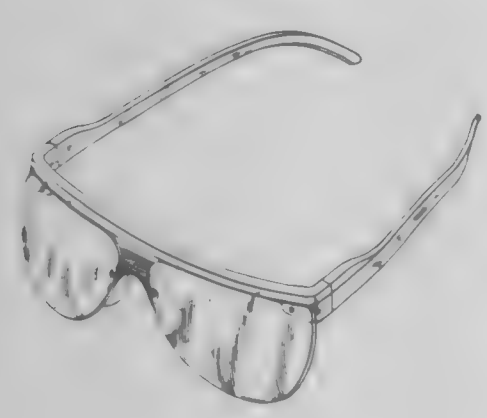
U.S. Cl. D15—5



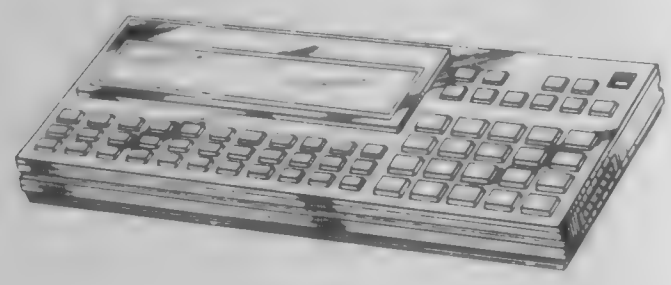
285,309
LENS FOR EYE GLASSES
Irving Ripa, P.O. Box 77932, Los Angeles, Calif. 90007
Filed Sep. 1, 1983, Ser. No. 528,626
Term of patent 14 years
U.S. Cl. D16—101



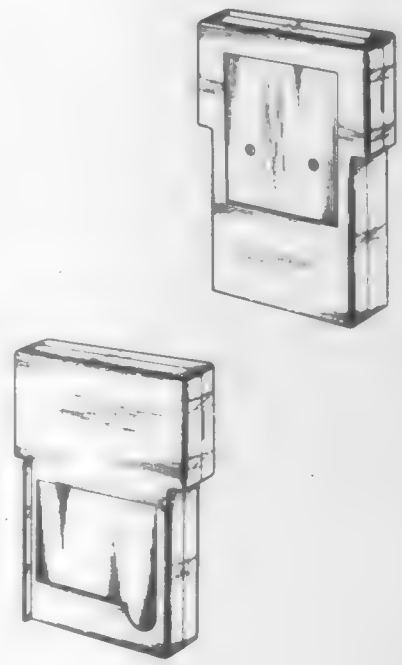
285,310
PAIR OF SPECTACLES
Daniel Rocha, Lowell, Mass., assignor to Foster Grant Corporation, Leominster, Mass.
Filed May 18, 1984, Ser. No. 611,065
Term of patent 14 years
U.S. Cl. D16—116



285,311
ELECTRONIC CALCULATOR
Masaji Sawada, Osaka, Japan, assignor to Sharp Corporation, Osaka, Japan
Filed Sep. 28, 1984, Ser. No. 655,889
Claims priority, application Japan, Mar. 29, 1984, 59-12856
Term of patent 14 years
U.S. Cl. D18—7



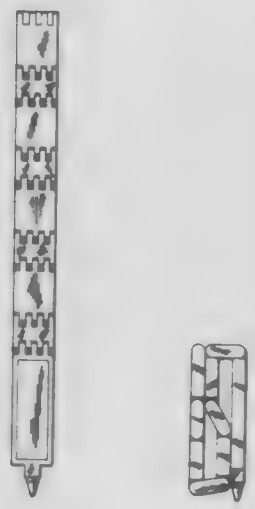
285,312
CARTRIDGE FOR A TYPEWRITER
Jack H. Jennings, and Peter J. Mendel, both of Lexington, Ky., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Nov. 29, 1984, Ser. No. 676,348
Term of patent 14 years
U.S. Cl. D18—12



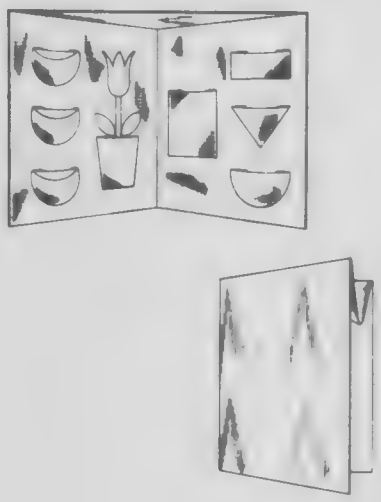
285,313
BOOK SPINE
Michael E. Maune, St. Louis, Mo., assignor to Enduro Binders, Inc., Syracuse, N.Y.
Filed Apr. 11, 1983, Ser. No. 483,643
Term of patent 14 years
U.S. Cl. D19—32



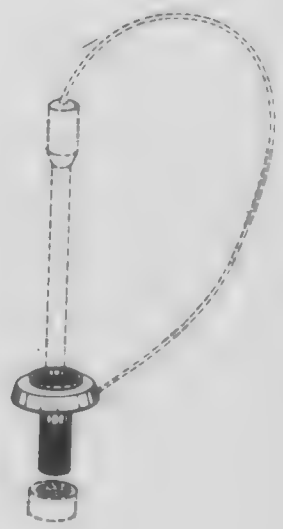
285,314
ARTICULATED BALL POINT PEN
Agrippino Galoppo, Grugliasco, Italy, assignor to Paim s.n.c. di Casole Patrizia & C., Grugliasco, Italy
Filed Mar. 20, 1984, Ser. No. 591,390
Claims priority, application Italy, Oct. 21, 1983, 53844/83[U]
Term of patent 14 years
U.S. Cl. D19—42



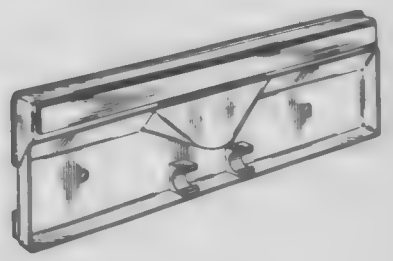
285,315
EDUCATIONAL STORAGE UNIT FOR A CHILD OR THE LIKE
Barbara Kosi, 5201 Carriageway Dr., Rolling Meadows, Ill. 60008, and Pamela Gertig, 1882 Jamestown Cir., Hoffman Estates, Ill. 60195
Filed Sep. 26, 1983, Ser. No. 535,649
Term of patent 14 years
U.S. Cl. D19—59



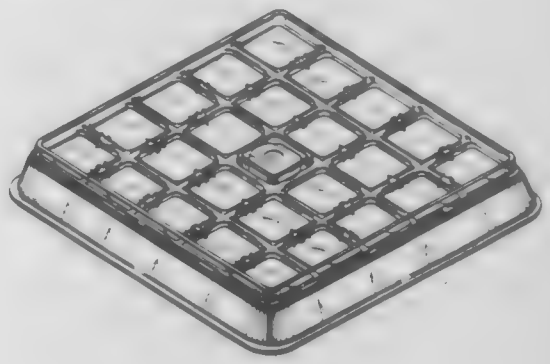
285,316
PEN HOLDER BASE
Richard F. Mahoney, 809 Pleasant St., and Kenneth L. Swartz, 149 Judson St., both of Raynham, Mass. 02767
Filed Mar. 30, 1984, Ser. No. 595,546
Term of patent 14 years
U.S. Cl. D19—99



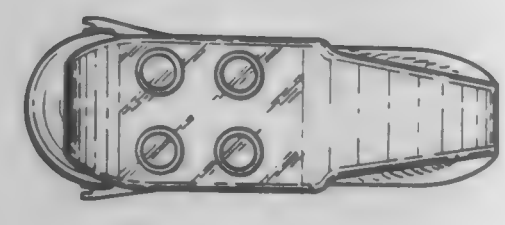
285,317
SET OF HANGER MOUNTING PIECES FOR ATTACHMENT TO A DISPLAY BOARD OR SIMILAR ARTICLE
Houston F. James, 8350 Moberly La., Dallas, Tex. 75227
Filed Oct. 31, 1983, Ser. No. 547,042
Term of patent 14 years
U.S. Cl. D20—43



285,318
GAME BOARD OR SIMILAR ARTICLE
George F. Propson, Racine, Wis., assignor to Western Publishing Company, Inc., Racine, Wis.
Filed Feb. 16, 1984, Ser. No. 581,003
Term of patent 14 years
U.S. Cl. D21—17



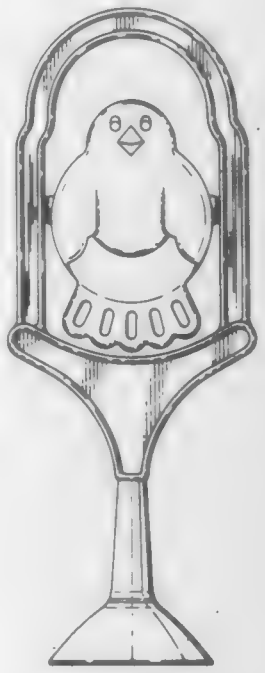
285,319
RATTLE
Jacob Nielsen, Copenhagen, Denmark, assignor to Interlego AG, Baar, Switzerland
Filed Dec. 15, 1983, Ser. No. 561,736
Term of patent 14 years
U.S. Cl. D21—65



285,320
RATTLE
Harry S. Thomson, Richmond; David M. Raffo, and John A. Pape, both of Hitchin, all of England, assignors to Hestair Kiddicraft Limited, Surrey, England
Filed Feb. 1, 1984, Ser. No. 575,852
Claims priority, application United Kingdom, Nov. 9, 1983, 1016176
Term of patent 14 years
U.S. Cl. D21—65



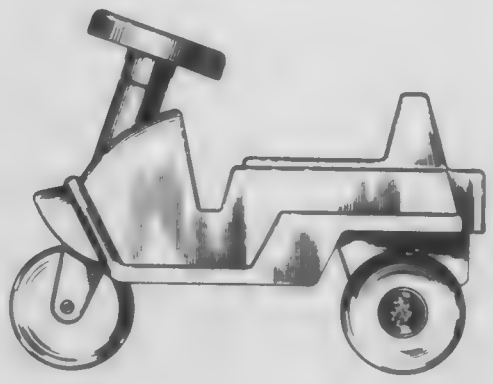
285,321
SUCTION TOY
Harry S. Thomson, Richmond; David M. Raffo, and John A. Pape, both of Hitchin, all of England, assignors to Hestair Kiddicraft Limited, Surrey, England
Filed Dec. 26, 1984, Ser. No. 686,294
Claims priority, application United Kingdom, Sep. 3, 1984, 1021845
Term of patent 14 years
U.S. Cl. D21—65



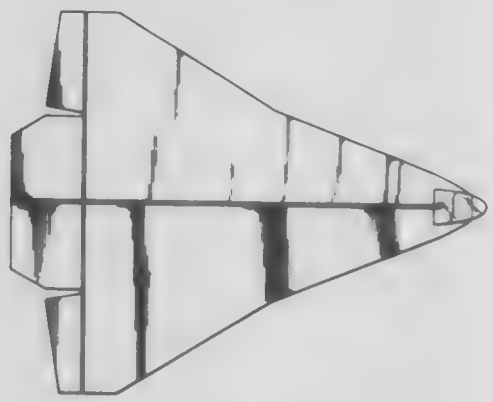
285,322
TOY WAGON
Mel Appel, Livingston, N.J., assignor to The Mel Appel Company, Short Hills, N.J.
Filed Nov. 2, 1983, Ser. No. 548,202
Term of patent 14 years
U.S. Cl. D21—71



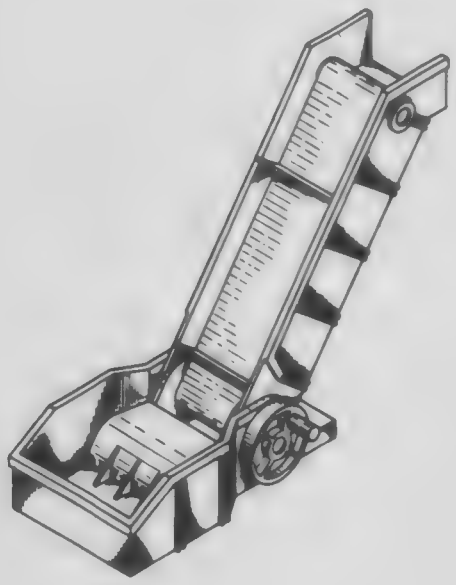
285,323
TOY GOLF CART
Mel Appel, Livingston, N.J., assignor to The Mel Appel Company, Short Hills, N.J.
Filed Dec. 12, 1983, Ser. No. 560,398
Term of patent 14 years
U.S. Cl. D21—80



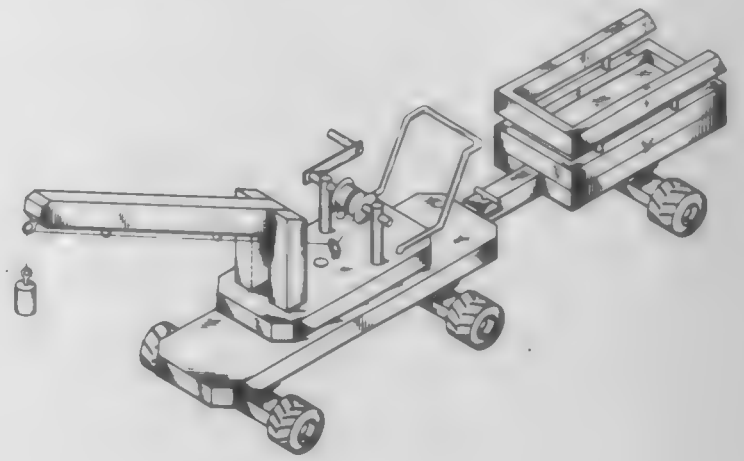
285,324
TOY GLIDER
Thomas G. Barker, Wakefield, Mass., assignor to Paul K. Guillow, Inc., Wakefield, Mass.
Filed Mar. 12, 1984, Ser. No. 588,248
Term of patent 14 years
U.S. Cl. D21—89



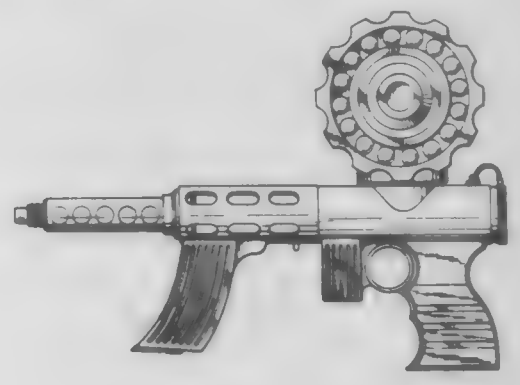
285,325
TOY CONSTRUCTION PIECE SIMULATING A SLIDE
Ib H. Berggreen, Vedbaek, Denmark, assignor to Interlego A.G., Baar, Switzerland
Filed Nov. 30, 1984, Ser. No. 676,672
Term of patent 14 years
U.S. Cl. D21—108



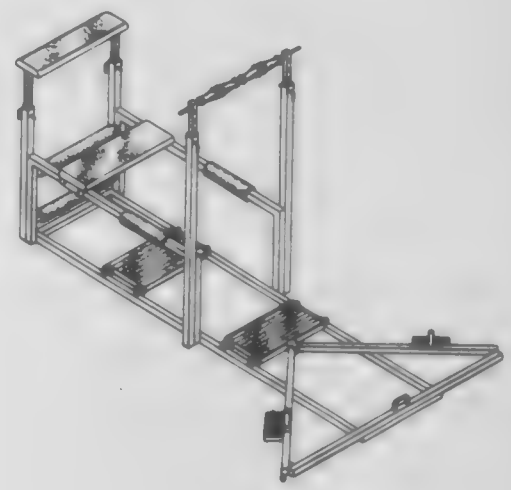
285,326
COMBINED CRANE AND TRAILER TOY
Gary E. Clark, Sikeston, Mo., assignor to G. Weber Gilmore, Sikeston and Richard G. Heywood, Kirkwood, both of, Mo., part interest to each
Filed Apr. 2, 1984, Ser. No. 596,039
Term of patent 14 years
U.S. Cl. D21—132



285,327
TOY GUN
Hiroshi Yano, Moriguchi, Japan, assignor to Sekiden Kaihatsu Shoji Kabushiki Kaisha, Moriguchi, Japan
Filed Jul. 9, 1984, Ser. No. 629,075
Claims priority, application Japan, Jan. 7, 1984, 59-125
Term of patent 14 years
U.S. Cl. D21—147



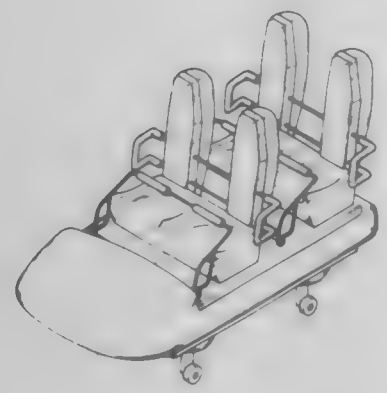
285,328
FRAME FOR PHYSICAL EXERCISER
David L. Cardiff, Sr., P.O. Box 2554, Arnold, Calif. 95223
Filed May 29, 1984, Ser. No. 614,983
Term of patent 14 years
U.S. Cl. D21—191



285,329
HAND GRIP EXERCISER
Walter W. Boettger, Jr., P.O. Box 257, Chester Heights, Pa. 19017
Filed Apr. 12, 1984, Ser. No. 599,489
Term of patent 14 years
U.S. Cl. D21—198



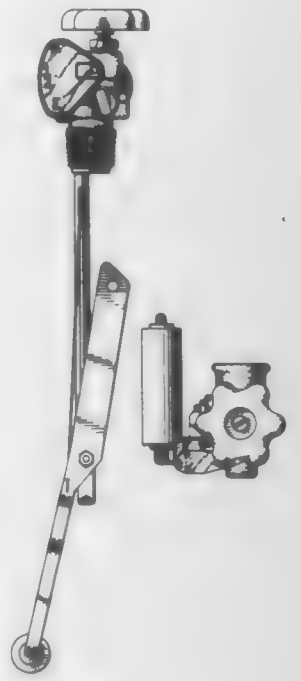
285,330
VEHICLE FOR A ROLLER COASTER
Masaaki Okamoto, Osaka, Japan, assignor to Meisho Tokushu Sangyo Co., Ltd., Osaka, Japan
Filed Dec. 29, 1983, Ser. No. 566,690
Term of patent 14 years
U.S. Cl. D21—242



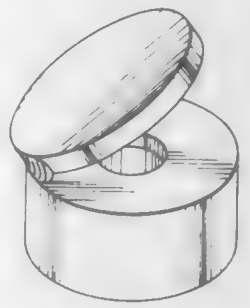
285,331
REVOLVER BARREL WITH INTEGRATED RECOIL REDUCER
Vito Cellini, 3115 Old Ranch Rd., San Antonio, Tex. 78217
Filed May 21, 1984, Ser. No. 612,397
Term of patent 14 years
U.S. Cl. D22—108



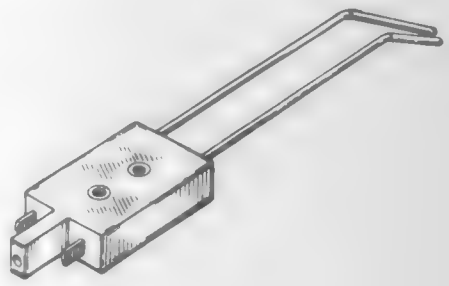
285,332
GAUGE VALVE
Joseph C. Trinkwalder, North Tonawanda, N.Y., assignor to Sherwood Selpac Corp., Lockport, N.Y.
Filed Nov. 21, 1983, Ser. No. 553,987
Term of patent 14 years
U.S. Cl. D23—21



285,333
FIRE EXTINGUISHER DISCHARGE NOZZLE
William A. Enk, 1213 Horizon, Blue Springs, Mo. 64015
Filed Jun. 15, 1983, Ser. No. 504,620
Term of patent 14 years
U.S. Cl. D23—34



285,334
GAS FLAME IGNITER
Robert H. Johnson, 517 N. Bush, Anaheim, Calif. 92802
Filed Dec. 27, 1983, Ser. No. 565,877
Term of patent 14 years
U.S. Cl. D23—90.1



285,335
OILSTOVE

Nobuyuki Kojima; Youichi Sekigawa, both of Kamo, and Makoto Kobiyama, Niigata, all of Japan, assignors to Toshiba Heating Appliances Co., Ltd., Kamo, Japan

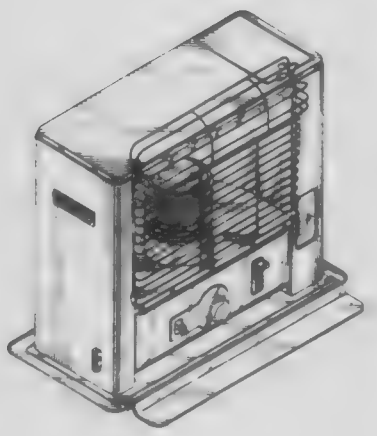
Filed Dec. 1, 1983, Ser. No. 557,110

Claims priority, application Japan, Sep. 8, 1983, 58-38904; Sep. 8, 1983, 58-38905

The portion of the term of this patent subsequent to May 6, 2000, has been disclaimed.

Term of patent 14 years

U.S. Cl. D23—122



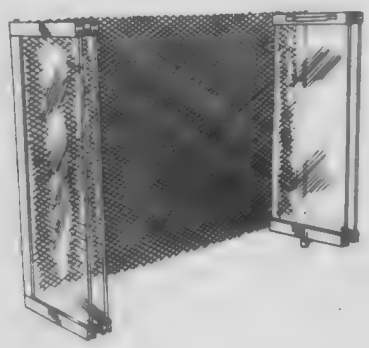
285,336
PICTURE WINDOW FIREPLACE SCREEN

Carl J. Demrick, Birmingham, Mich., and Ronald D. Hussey, Brampton, Canada, assignors to Shepherd Products Limited, Markham, Canada

Filed Feb. 10, 1983, Ser. No. 465,644

Term of patent 14 years

U.S. Cl. D23—138.3



285,337
DENTAL BLAST CABINET

Lawrence S. Klaas, Brookfield, Wis., assignor to Ruemelin Manufacturing Co., Milwaukee, Wis.

Filed May 7, 1984, Ser. No. 607,442

Term of patent 14 years

U.S. Cl. D24—4



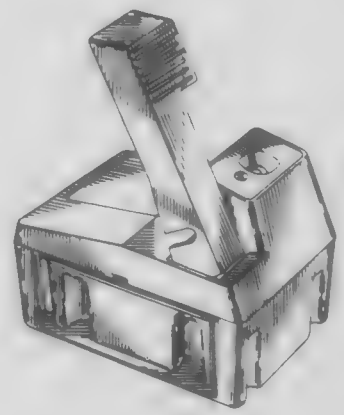
285,338
NEEDLE AND SYRINGE DESTRUCTOR

Michael J. Szablak, and Glen E. Tomblin, both of Winchester, Va., assignors to Rubbermaid Commercial Products Inc., Winchester, Va.

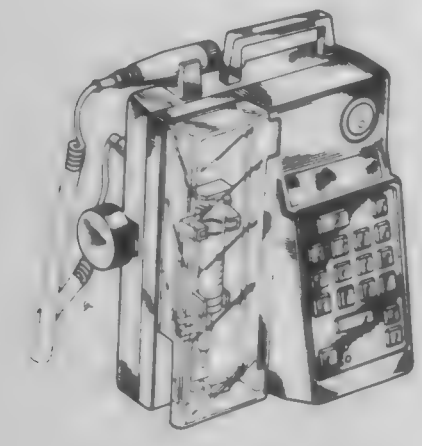
Filed Oct. 24, 1983, Ser. No. 544,623

Term of patent 14 years

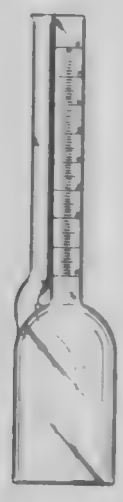
U.S. Cl. D24—8



285,339
PROGRAMMABLE INFUSION AND INJECTION UNIT OR THE LIKE
Anders Tamsen, Sveddvägen 5B, S-752 52 Uppsala, Sweden
Filed Mar. 8, 1983, Ser. No. 472,885
Claims priority, application Sweden, Sep. 10, 1982, 82-2171
Term of patent 14 years
U.S. Cl. D24—17



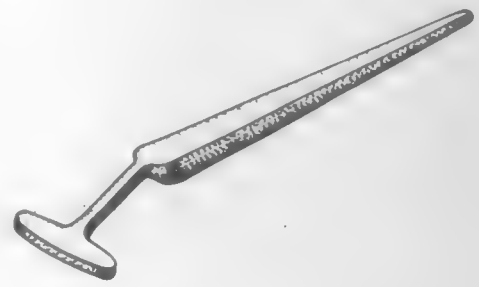
285,340
MILKFAT TESTER OR THE LIKE
Donald T. Nevin, Kingwood, Tex., assignor to Forcoven Products, Inc., Kingwood, Tex.
Filed Nov. 28, 1983, Ser. No. 555,540
Term of patent 14 years
U.S. Cl. D24—17



285,341
TONGUE CLEANER
Clifford J. Audette, 74 Highland St., Worcester, Mass. 01609
Filed Nov. 29, 1984, Ser. No. 647,222
Term of patent 14 years
U.S. Cl. D24—23



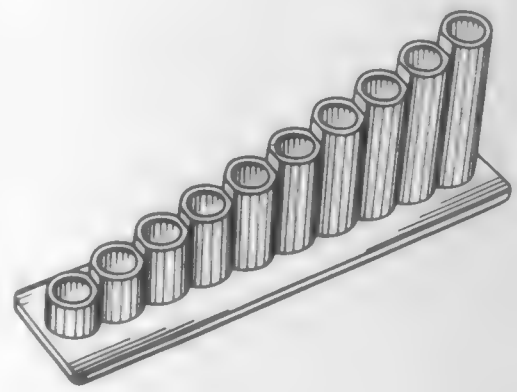
285,342
TONGUE CLEANER
Clifford J. Audette, 74 Highland St., Worcester, Mass. 01609
Filed Nov. 29, 1984, Ser. No. 647,224
Term of patent 14 years
U.S. Cl. D24—23



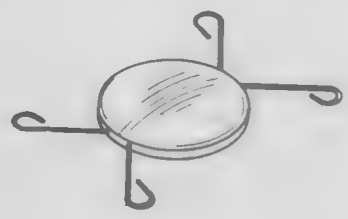
285,343
BONEPLUG DRILL BIT
Herminio Duarte-Martins, Jr., Sundsvall, Sweden, assignor to Ulla Anette Duarte-Martins, Sundsvall, Sweden
Filed Jul. 29, 1983, Ser. No. 518,368
Term of patent 14 years
U.S. Cl. D24—28



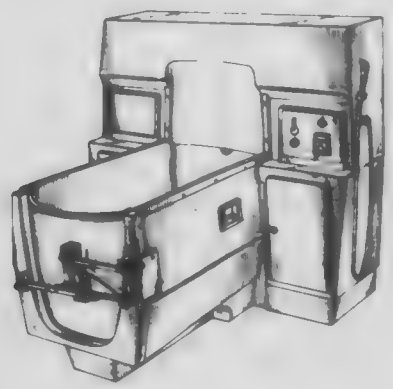
285,344
DOSAGE DEVICE FOR SYRINGES
James B. Olson, Torsdagsvägen 40, S-863 00 Sundsbruk, Sweden
Filed Jun. 30, 1983, Ser. No. 509,298
Claims priority, application Sweden, Jan. 10, 1983, 83-0053
Term of patent 14 years
U.S. Cl. D24—31



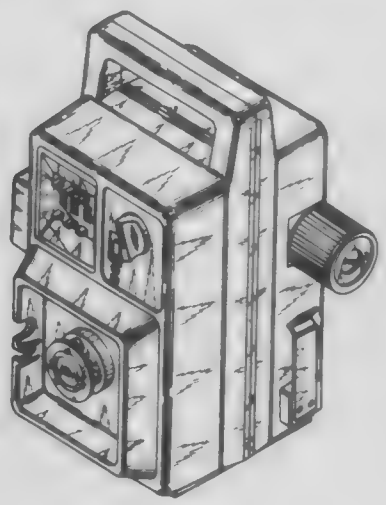
285,345
INTRAOCULAR LENS WITH TEARDROP SHAPED RESILIENT SUPPORT MEANS
Dennis D. Shepard, 1414 E. Main St., Santa Maria, Calif. 93454
Filed Apr. 12, 1982, Ser. No. 367,295
The portion of the term of this patent subsequent to Aug. 19, 2000, has been disclaimed.
Term of patent 14 years
U.S. Cl. D24—33



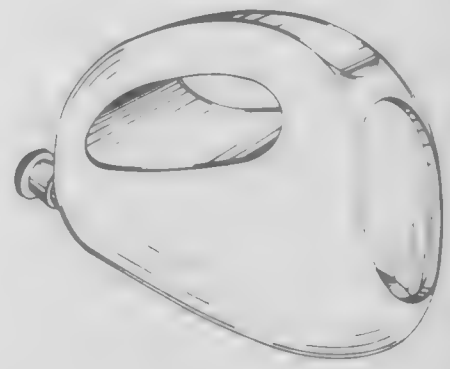
285,346
BATHING TUB
Adrian P. Sween, Rte. 3, Box 214B, Little Falls, Minn. 56345
Filed Nov. 17, 1983, Ser. No. 552,673
Term of patent 14 years
U.S. Cl. D24—38



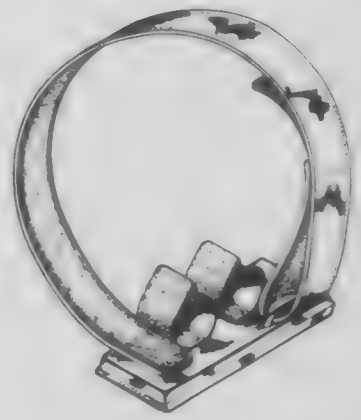
285,347
ROTARY PERISTALTIC PUMP FOR INTRAVENOUS DELIVERY OF MEDICAL SOLUTIONS TO PATIENTS
Denis H. Nelson, Poway, and Gary W. Kozlow, Solana Beach, both of Calif., assignors to Warner-Lambert Company, Morris Plains, N.J.
Filed Sep. 28, 1983, Ser. No. 536,587
Term of patent 14 years
U.S. Cl. D24—51



285,348
URINAL
Gerald L. Matthews, 6104 Barr Ave., Orlando, Fla. 32809
Filed May 21, 1984, Ser. No. 612,634
Term of patent 14 years
U.S. Cl. D24—54



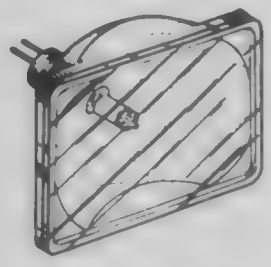
285,349
PEDIATRIC LUMBAR PUNCTURE IMMOBILIZER
William R. Nesbitt, 6967 Blue Oak La., Loomis, Calif. 95650
Filed Jan. 16, 1984, Ser. No. 571,031
Term of patent 14 years
U.S. Cl. D24—64



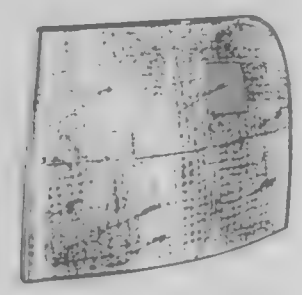
285,350
SWIMMING POOL
George P. Sullivan, Seattle, Wash., assignor to San Juan Pools, Inc., Hemet, Calif.
Filed May 26, 1981, Ser. No. 266,960
The portion of the term of this patent subsequent to Jul. 26, 1997, has been disclaimed.
Term of patent 14 years
U.S. Cl. D25—2



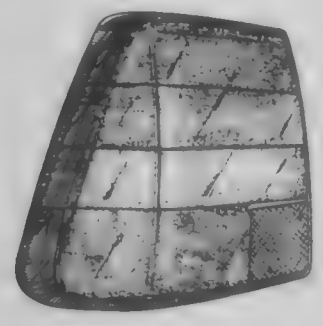
285,351
LAMP-REFLECTOR MODULE FOR USE IN A MOTOR VEHICLE HEADLIGHTING SYSTEM
George J. English, Reading, and Robert E. Levin, So. Hamilton, both of Mass., assignors to GTE Products Corporation, Stamford, Conn.
Filed Apr. 10, 1984, Ser. No. 598,605
Term of patent 14 years
U.S. Cl. D26—28



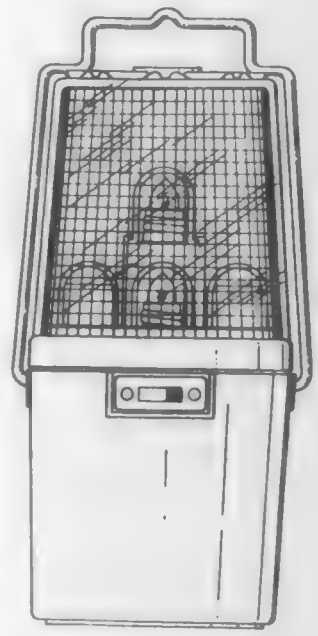
285,352
SIGNAL LIGHT FOR AN AUTOMOBILE
Björn E. A. Envall, Vänersborg, Sweden, assignor to Saab-Scania Aktiebolag, Trollhattan, Sweden
Filed Apr. 24, 1984, Ser. No. 603,953
Claims priority, application Sweden, Oct. 26, 1983, 83-2772
Term of patent 14 years
U.S. Cl. D26—35



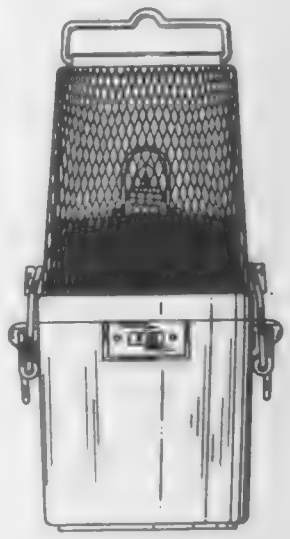
285,353
REAR LIGHT FOR AN AUTOMOBILE
Björn E. A. Envall, Vänersborg, Sweden, assignor to Saab-Scania Aktiebolag, Trollhattan, Sweden
Filed Apr. 24, 1984, Ser. No. 603,954
Claims priority, application Sweden, Oct. 26, 1983, 83-2772
Term of patent 14 years
U.S. Cl. D26—35



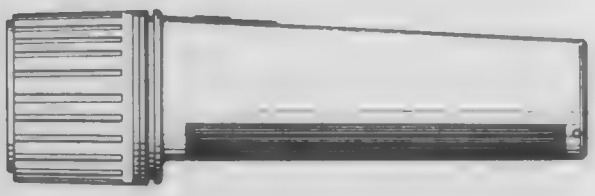
285,354
TRANSISTORIZED MULTI-PURPOSE PORTABLE LAMP
John S. Yuen, Kowloon, Hong Kong, assignor to John Manufacturing Limited, Kowloon, Hong Kong
Filed Apr. 11, 1983, Ser. No. 483,534
Claims priority, application United Kingdom, Oct. 11, 1982, 1 009 180
Term of patent 14 years
U.S. Cl. D26—41



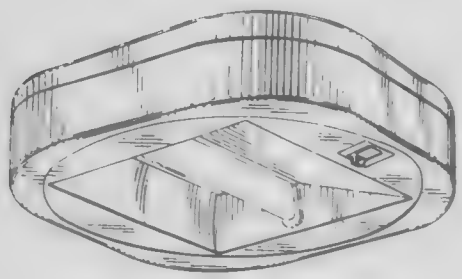
285,355
TRANSISTORIZED MULTI-PURPOSE PORTABLE LAMP
John S. Yuen, Kowloon, Hong Kong, assignor to John Manufacturing Limited, Kowloon, Hong Kong
Filed May 18, 1983, Ser. No. 495,770
Claims priority, application United Kingdom, Nov. 22, 1982, 1 009 834
Term of patent 14 years
U.S. Cl. D26—41



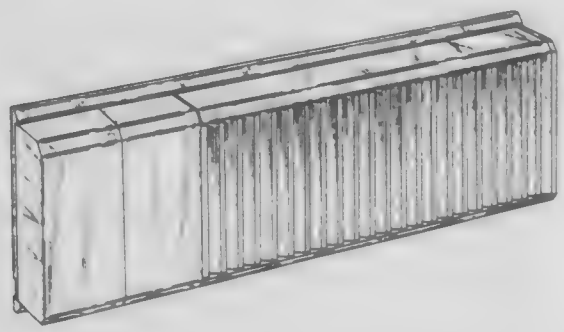
285,356
FLASHLIGHT
John F. Schosser, New Fairfield; Roger F. Gleason, Stratford, both of Conn.; Charles M. Dole, Purdys, N.Y.; Max Us, Bridgeport, Conn.; John D. Howard, Brewster, N.Y., and Peter D. Spaine, Stratford, Conn., assignors to Duracell Inc., Bethel, Conn.
Filed Feb. 8, 1983, Ser. No. 464,822
Term of patent 14 years
U.S. Cl. D26—49



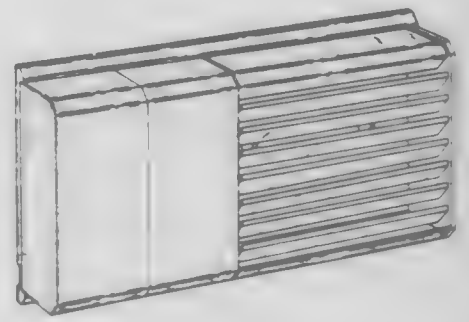
285,357
TASK LIGHTING FIXTURE
John C. Pritchett, 4777 Enders Rd., Manlius, N.Y. 13104
Filed Nov. 22, 1983, Ser. No. 554,352
Term of patent 14 years
U.S. Cl. D26—61



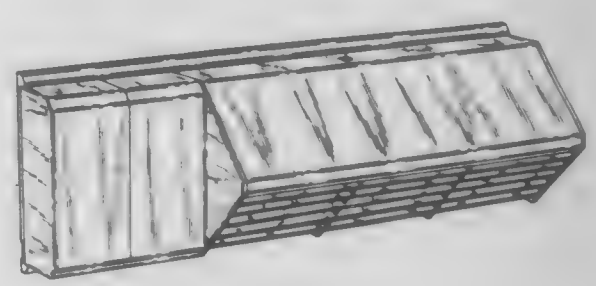
285,358
LIGHTING FIXTURE
Stefanus F. W. Joosten, and Evert Oosterheerd, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.
Filed Feb. 13, 1984, Ser. No. 579,736
Claims priority, application Benelux, Aug. 25, 1983, 58173-02
The portion of the term of this patent subsequent to Aug. 26, 2000, has been disclaimed.
Term of patent 14 years
U.S. Cl. D26—77



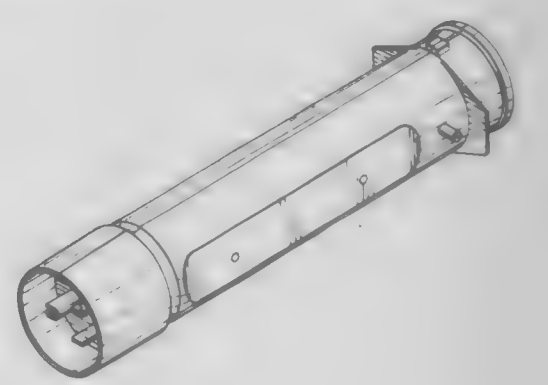
285,359
LIGHTING FIXTURE
Stefanus F. W. Joosten, and Evert Oosterheerd, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.
Filed Feb. 13, 1984, Ser. No. 579,829
Claims priority, application Benelux, Aug. 25, 1983, 58173-01
The portion of the term of this patent subsequent to Aug. 26, 2000, has been disclaimed.
Term of patent 14 years
U.S. Cl. D26—77



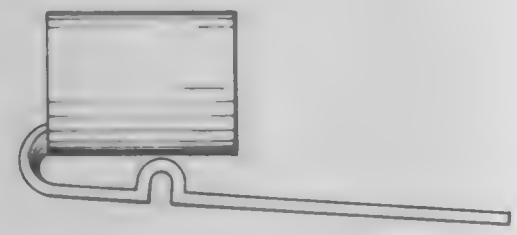
285,360
LIGHTING FIXTURE
Stefanus F. W. Joosten, and Evert Oosterheerd, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.
Filed Feb. 13, 1984, Ser. No. 579,637
Claims priority, application Benelux, Aug. 25, 1983, 58173-03
Term of patent 14 years
U.S. Cl. D26—85



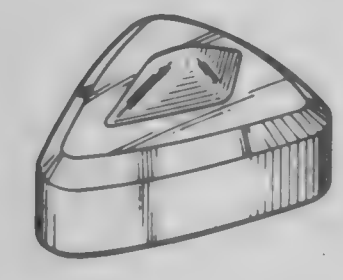
285,361
TROUBLE LIGHT HANDLE ATTACHMENT
Albert Marcucci, 1493 Kenmuir Ave., Mississauga, Ontario, Canada L5G 4B6
Filed Oct. 3, 1983, Ser. No. 538,675
Claims priority, application Canada, Jul. 11, 1983, 11-07-83-1
Term of patent 14 years
U.S. Cl. D26—138



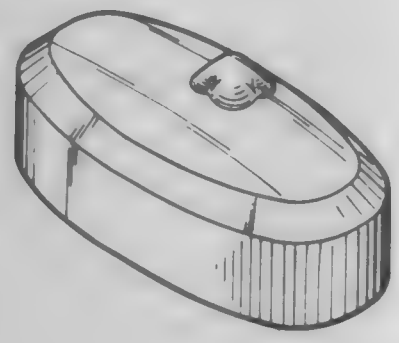
285,362
CIGARETTE HOLDER
Frank L. Boone, 3248 Banning Rd., and David Henlein, 3675 Hubble Rd., both of Cincinnati, Ohio 45239
Filed Jun. 4, 1984, Ser. No. 617,130
Term of patent 14 years
U.S. Cl. D27—2



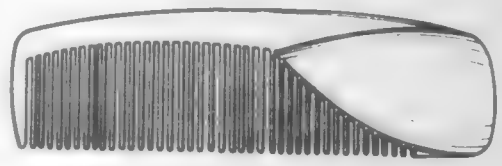
285,363
PHARMACEUTICAL TABLET
Geoffrey D. Tovey, Harpenden, England, assignor to Smith Kline & French Laboratories Limited, Welwyn Garden City, England
Filed Dec. 28, 1984, Ser. No. 687,226
Term of patent 14 years
U.S. Cl. D28—2



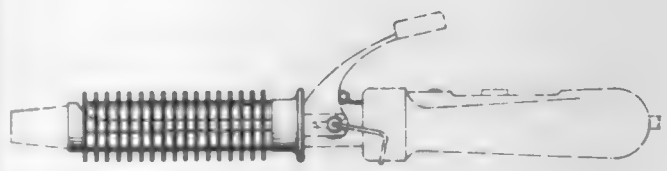
285,364
PHARMACEUTICAL TABLET
Geoffrey D. Tovey, Harpenden, England, assignor to Smith Kline & French Laboratories Limited, Welwyn Garden City, England
Filed Dec. 28, 1984, Ser. No. 687,321
Term of patent 14 years
U.S. Cl. D28—2



285,365
COMBINED COMB AND SHOEHORN
Albert J. DeFlorio, 3704 Lake Oakland Shores, Drayton Plains, Mich. 48020
Filed Jun. 29, 1984, Ser. No. 626,035
Term of patent 14 years
U.S. Cl. D28—25



285,366
HAIR CURLING IRON ATTACHMENT OR SIMILAR ARTICLE
Gerald J. Rubin, 6827 Market St., El Paso, Tex. 79915
Filed Feb. 28, 1984, Ser. No. 584,338
Term of patent 14 years
U.S. Cl. D28—35



285,367

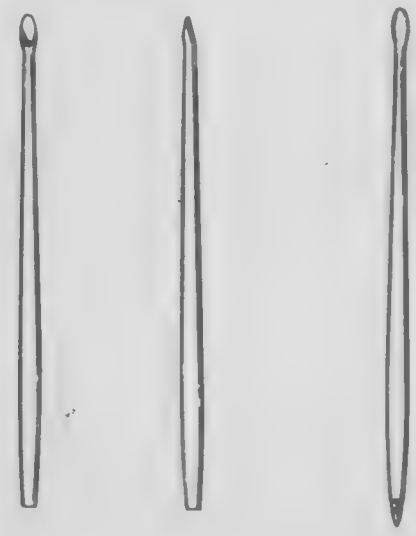
COMBINED COSMETIC APPLICATOR AND CLEANUP TOOL

Millie C. Lindner, 700 A Rosewood Ct., Pittsburgh, Pa. 15236

Filed Aug. 23, 1984, Ser. No. 643,627

Term of patent 14 years

U.S. Cl. D28—57



285,368

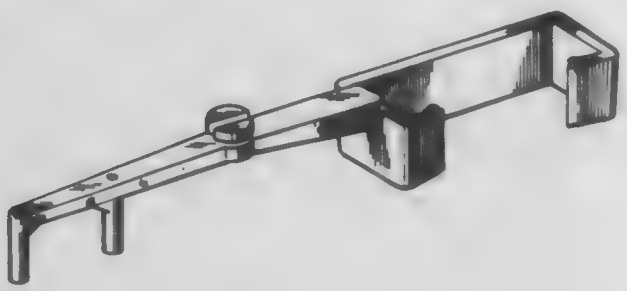
DENTAL FLOSSING TOOL

Marius J. Morin, Westlake Village, and Jack C. Munro, Thousand Oaks, both of Calif., assignors to Associated Medical Systems, Inc., Agoura Hills, Calif.

Filed Oct. 28, 1983, Ser. No. 546,322

Term of patent 14 years

U.S. Cl. D28—64



285,369

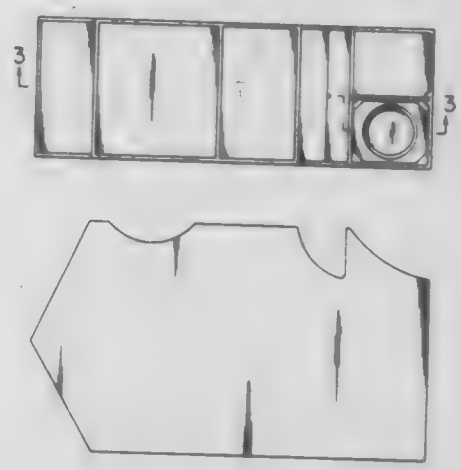
STORAGE DEVICE FOR A HAIR DRYER AND RELATED ARTICLES

Howard Sussman, 3101 NW. 25th Ave., Pompano Beach, Fla. 33060

Filed Aug. 20, 1984, Ser. No. 642,395

Term of patent 14 years

U.S. Cl. D28—73



285,370

BOX FOR COSMETIC PRODUCTS OR THE LIKE

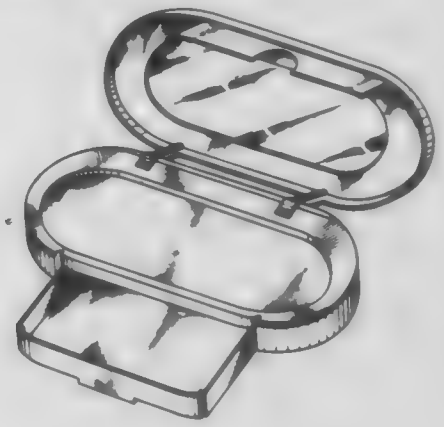
Alain Chevassus, Sceaux, France, assignor to Lefebure Isolants Reunis, Rungis, France

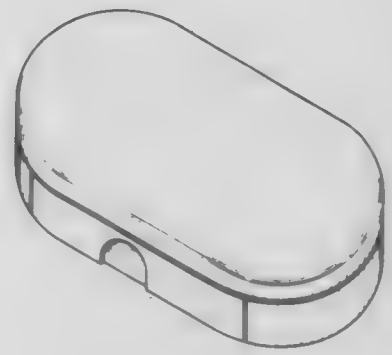
Filed Nov. 22, 1983, Ser. No. 554,226

Claims priority, application Hague, May 24, 1983, DM/002528

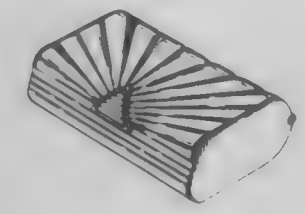
Term of patent 14 years

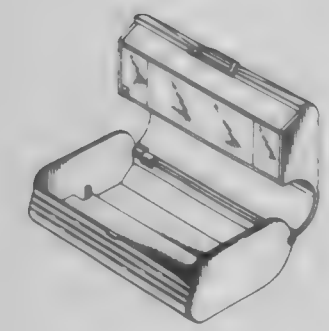
U.S. Cl. D28—76



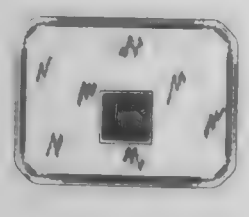


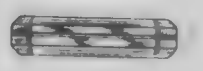
285,371
COSMETIC CONTAINER WITH LIGHTED MIRROR
Wing K. Tong, Kowloon, Hong Kong, assignor to Mou Ki Industrial Limited, Kowloon, Hong Kong
Filed Aug. 9, 1984, Ser. No. 639,110
Claims priority, application United Kingdom, Jun. 18, 1984, 1020359
Term of patent 14 years
U.S. Cl. D28—78



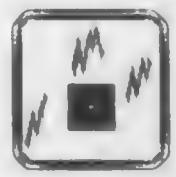


285,372
BLUSH COMPACT
Theodore Simonetti, New York, N.Y., and Elaine P. Spakowski, Little Falls, N.J., assignors to L'Oreal, France
Filed Sep. 24, 1984, Ser. No. 653,937
Term of patent 14 years
U.S. Cl. D28—83



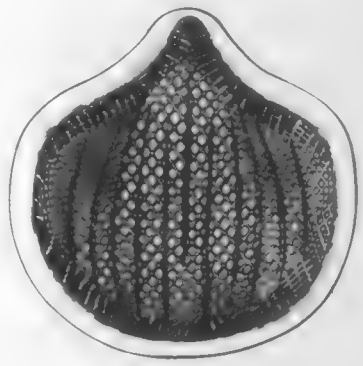


285,373
PRESSED POWDER COMPACT
Theodore Simonetti, New York, N.Y., and Elaine P. Spakowski, Little Falls, N.J., assignors to L'Oreal, S.A., France
Filed Nov. 1, 1984, Ser. No. 667,214
Term of patent 14 years
U.S. Cl. D28—83

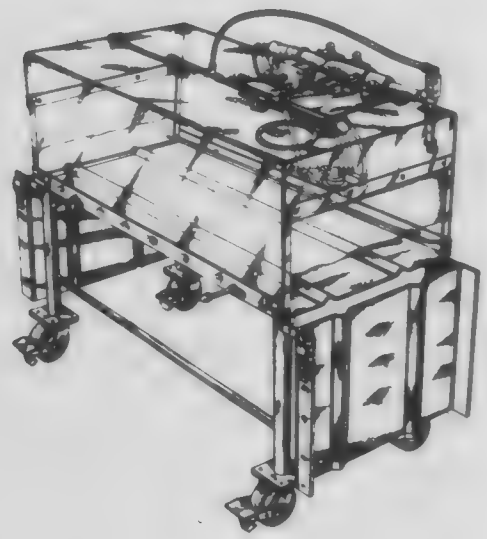




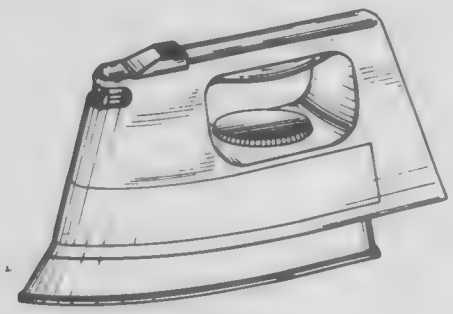
285,374
FACE MASK
Otto L. Huber, Beverly Hills, and Mark Magidson, Los Angeles, both of Calif., assignors to Moldex/Metric Products, Inc., Culver City, Calif.
Filed Nov. 21, 1983, Ser. No. 553,492
Term of patent 14 years
U.S. Cl. D29—8



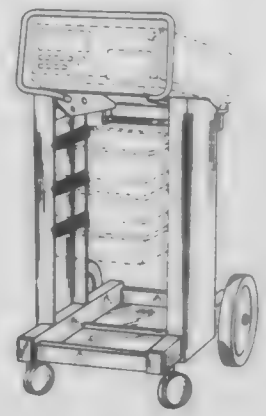
285,375
POULTRY VACCINATION UNIT
James L. Hutchins, Old Bridge, N.J., assignor to Schering Corporation, Kenilworth, N.J.
Continuation of Ser. No. 537,146, Sep. 29, 1983. This application Dec. 20, 1983, Ser. No. 563,431
Term of patent 14 years
U.S. Cl. D30—99



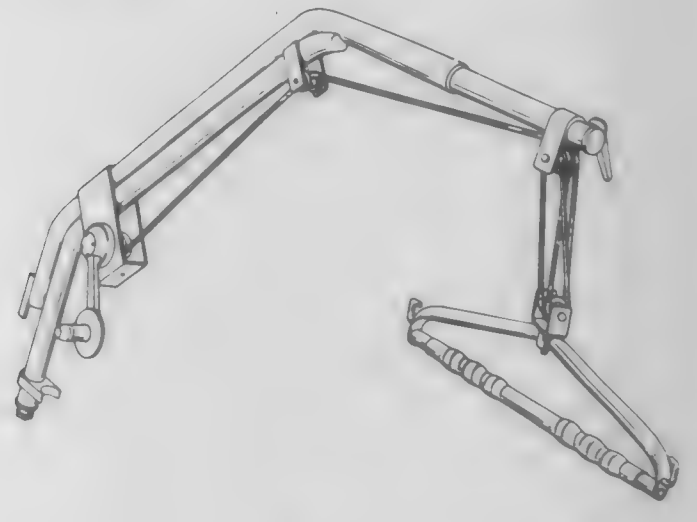
285,376
STEAM IRON
Franz A. Stutzer, and Michael Knochner, both of Offenbach am Main, Fed. Rep. of Germany, assignors to Rowenta-Werke, GmbH, Fed. Rep. of Germany
Filed Aug. 2, 1984, Ser. No. 636,973
Claims priority, application Fed. Rep. of Germany, Feb. 4, 1984, 5 MR 10507
Term of patent 14 years
U.S. Cl. D32—70



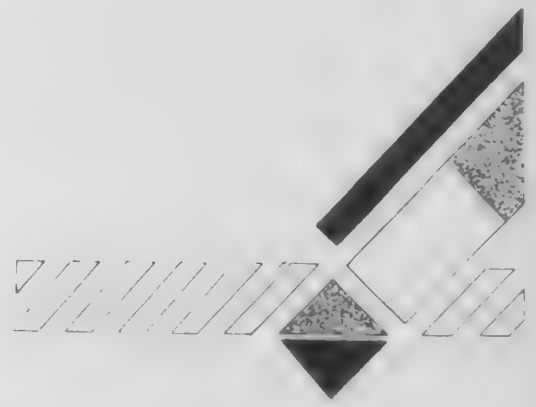
285,377
CART
Howard M. C. Tanner, Salt Lake City, Utah, assignor to HGM, Inc., Salt Lake City, Utah
Filed Mar. 31, 1983, Ser. No. 480,732
Term of patent 14 years
U.S. Cl. D34—21



285,378
HOIST FOR USE WITH A HOSPITAL BED
Margareta E. B. Norell, Huddinge, Sweden, assignor to Landstingens Inkopscentral, LIC, Ekonomisk Forening, Solna, Sweden
Filed Dec. 21, 1983, Ser. No. 564,468
Term of patent 14 years
U.S. Cl. D34—33



285,379
FABRIC PATTERN
Dietrich Metzger, Coburg, Fed. Rep. of Germany, assignor to adidas Sportschuhfabriken Adi Dassler Stiftung & Co. KG, Herzogenaurach, Fed. Rep. of Germany
Filed Sep. 21, 1984, Ser. No. 652,967
Claims priority, application Fed. Rep. of Germany, Apr. 6, 1984, MR 8062
Term of patent 14 years
U.S. Cl. D5—63



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TO WHOM

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NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

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Twilley, Robert C., Jr., 4,608,223, Cl. 376-247.000.

Bachenheimer, Bernard O.; Antoci, Frank J.; Carver, Edward L., Jr.; Pellegrino, Ernest N.; and Seltenreich, Richard C., to Allied Corporation. Particle analysis system. 4,607,526, Cl. 73-432.0PS.

Bacrania, Kanti, to Harris Corporation. Programmable current mirror. 4,608,530, Cl. 323-315.000.

Baddour, Raymond F.: *See—*
Loh, Ih-Houng; Cohen, Robert E.; and Baddour, Raymond F., 4,608,309, Cl. 428-409.000.

Baerns, Manfred; and Hinsen, Wilhelm, to Baerns, Manfred. Process for the production of ethane and/or ethylene from methane. 4,608,449, Cl. 585-500.000.

Baggio, Guerrino: *See—*
Bissi, Maurizio; Cocco, Andrea; and Baggio, Guerrino, 4,607,854, Cl. 277-152.000.

Bagnaresi, Bruno: *See—*
Manservisi, Renato; and Bagnaresi, Bruno, 4,607,475, Cl. 53-150.000.

Bagratishvili, Givi D.; Dzhanelidze, Rusudan B.; Zorikov, Vladimir V.; Mikhelashvili, Vissarion M.; Pekar, Iosif E.; Chikovani, Rafael I.; Chkhaidze, Manana A.; Akopova, Svetlana Z.; Bogdanovich, Viktor B.; Svechnikov, Sergei V.; and Charmakadze, Revaz A. Semiconductor light emitter based on gallium nitride and process for manufacture thereof. 4,608,581, Cl. 357-17.000.

Bai, Monty W., to Motorola, Inc. Hermetically sealed impact switch. 4,608,468, Cl. 200-61.45R.

Baker, Donal E.: *See—*
Fox, David A.; and Baker, Donal E., 4,608,626, Cl. 363-56.000.

Baker Perkins Holdings PLC: *See—*
Lawson, Robert; Mason, Malcolm J.; and Maris, Peter I., 4,607,536, Cl. 73-863.910.

Balasubramanian, N.; and Helgesson, Alan L., to Matrix Instruments Inc. Braked media transport for laser scanners. 4,608,578, Cl. 346-160.000.

Ballard, Denis G. H.; Cundy, Colin S.; Rideal, Graham R.; and Morley, David C. W., to Imperial Chemical Industries PLC. Production of articles from minerals. 4,608,303, Cl. 428-357.000.

Balle, Gerhard; Paul, Reiner; and Rasshofer, Werner, to Bayer Aktiengesellschaft. Process for the production of optionally cellular moldings. 4,608,214, Cl. 264-45.500.

Bally Midway Mfg. Co.: *See—*
Romine, Edward L.; and Byczek, Roger W., 4,607,899, Cl. 339-19.000.

Banholzer, Rolf; and Bauer, Rudolf, to Boehringer Ingelheim KG. Quaternary 6,11-dihydro-dibenzo-[b,e]-thiepine-11-N-alkylnorscopine ethers having spasmolytic activity. 4,608,377, Cl. 514-291.000.

Bank of America NT&SA, administrator: *See—*
Vaughan, Ronald J., deceased; and Bank of America NT&SA, administrator, 4,608,136, Cl. 204-106.000.
Vaughan, Ronald J., deceased; and Bank of America NT&SA, administrator, 4,608,137, Cl. 204-129.000.

Baranyai, Lawrence; and Colton, John R., to AT&T Bell Laboratories. Fault detection arrangement for a digital conferencing system. 4,608,693, Cl. 371-49.000.

Barber, James C., to James C. Barber and Associates, Inc. Production of phosphorus and phosphoric acid. 4,608,241, Cl. 423-317.000.

Barclay, David; and Burgess, Peter H., to U.S. Philips Corporation. Energy filter for a Geiger-Muller tube. 4,608,511, Cl. 313-93.000.

Barclay, Randel L. Solid waste comminution machine. 4,607,800, Cl. 241-159.000.

Barnes, Russell D.: *See—*
Redick, Hugh E.; and Barnes, Russell D., 4,608,402, Cl. 523-215.000.

Baron, Walter J.; and Cleaver, Laird C., to Water Services of America, Inc. Basket retainer for heat exchanger tube cleaning element. 4,607,686, Cl. 165-95.000.

Barrett, Ronald A. Method and apparatus for dental restoration using light curable restoratives. 4,608,021, Cl. 433-229.000.

Barry, Robert L., to International Business Machines Corporation. Dual mode logic circuit for a memory array. 4,608,667, Cl. 365-189.000.

Barsellotti, John A., to Mitel Corporation. Two wire voice and data subscriber loop. 4,608,686, Cl. 370-69.100.

Barsk, Jaakko O., to Oy Partek Ab. Method for the casting of hollow slabs out of concrete. 4,608,216, Cl. 264-70.000.

Bartlett, Geoffrey M.; Hofmeister, James P.; Nye, Derald D.; and Pring, Edward J., to International Business Machines Corporation. Automatically balancing and vertically justifying a plurality of text/graphics-columns. 4,608,664, Cl. 364-900.000.

BASF Aktiengesellschaft: *See—*
Acker, Rolf-Dieter; Karl, Rudolf; and Wuerzer, Bruno, 4,608,078, Cl. 71-88.000.
Mueller, Herbert, 4,608,422, Cl. 525-410.000.
Schupp, Eberhard; Loch, Werner; Osterloh, Rolf; and Ahlers, Klaas, 4,608,416, Cl. 525-130.000.

BASF Corporation: *See—*
Parker, Edward J.; and Scott, Kenneth C., 4,608,188, Cl. 252-99.000.

Basset, Alain: *See—*
Aubert, Jean-Jacques; Basset, Alain; Bechevet, Bernard; and Roulin, Claude, 4,608,234, Cl. 422-249.000.

Batlivala, Percy P.; and Kurby, Christopher N., to Motorola, Inc. Simulcast transmission system. 4,608,699, Cl. 375-5.000.

Battelle Memorial Institute: *See—*
Carter, Timothy J. N.; Dahne, Claus; and Place, John F., 4,608,344, Cl. 436-34.000.

Bauer, Heinz; and Belloni, Aldo, to Linde Aktiengesellschaft. Recovery of C_{3+} hydrocarbons. 4,608,068, Cl. 62-18.000.

Bauer, Rudolf: *See—*
Banholzer, Rolf; and Bauer, Rudolf, 4,608,377, Cl. 514-291.000.

Bauman, Jack. Unitary insert support frame for the handle of an examining device. 4,607,623, Cl. 128-11.000.

Bauman, Therese M.; Lee, Chi-Long; and Rabe, James A., to Dow Corning Corporation. Method of producing elastomeric silicone foam. 4,608,396, Cl. 521-99.000.

Baxter Travenol Laboratories, Inc.: *See—*
Aalto, William R.; and Sertic, James L., 4,607,671, Cl. 141-329.000.
Harvey, Roger W.; Davis, Ralph; Lueders, Arthur; and Schnell, William J., 4,607,868, Cl. 285-332.000.

Bayer Aktiengesellschaft: *See—*
Balle, Gerhard; Paul, Reiner; and Rasshofer, Werner, 4,608,214, Cl. 264-45.500.
Buysch, Hans-Josef; and Mues, Peter, 4,608,207, Cl. 558-179.000.
Buysch, Hans-Josef; Illger, Hans-Walter; and Dorner, Karl H., 4,608,399, Cl. 521-129.000.
Kerimis, Dimitrios; Muller, Hanns P.; and Kapps, Manfred, 4,608,407, Cl. 524-14.000.
Mohring, Edgar; Wagner, Kuno; and Muller, Hanns P., 4,608,446, Cl. 568-863.000.
Nachtkamp, Klaus; Schwindt, Jurgen; Nobel, Karl-Ludwig; and Stahl, Hans-Georg, 4,608,413, Cl. 524-591.000.
Reischl, Artur, 4,608,397, Cl. 521-101.000.

Bayer, William L.; Plapp, Frederick V.; Beck, Malcolm L.; Sinor, Lyle T.; and Coenen, William M., to Immucor, Inc. Testing for a blood group immunological reaction. 4,608,246, Cl. 424-11.000.

BBC Brown, Boveri & Company, Limited: *See—*
Amstutz, Hermann; Kaufmann, Meinolph; and Scheffer, Terry J., 4,608,558, Cl. 340-784.000.
Bischofberger, Walter; Eichholzer, Heinz; Graber, Werner; and Talir, Jiri, 4,608,470, Cl. 200-144.0AP.
Hartmann, Max; and Rollier, Michel, 4,607,971, Cl. 403-2.000.

Beall, George H.; Megles, John E., Jr.; and Pinckney, Linda R., to Corning Glass Works. Glass-ceramics containing cristobalite and potassium fluorrichterite. 4,608,348, Cl. 501-3.000.

Beals, Richard A., to Halliburton Company. Slew rate filter for logging cable signal pick-off. 4,608,636, Cl. 364-422.000.

Bechevet, Bernard: *See—*
Aubert, Jean-Jacques; Basset, Alain; Bechevet, Bernard; and Roulin, Claude, 4,608,234, Cl. 422-249.000.

Beck, Charles L. Agricultural apparatus with an automatic positioning mechanism and method. 4,607,716, Cl. 180-131.000.

Beck, Malcolm L.: *See—*
Bayer, William L.; Plapp, Frederick V.; Beck, Malcolm L.; Sinor, Lyle T.; and Coenen, William M., 4,608,246, Cl. 424-11.000.

Becker, Hans; and Landes, Herwig, to Linde Aktiengesellschaft. Separation of higher boiling impurities from liquefied gases. 4,608,069, Cl. 62-26.000.

Beckman Instruments, Inc.: *See—*
Wright, Herschel E.; Wedemeyer, Robert C.; and Giebeler, Robert H., Jr., 4,607,551, Cl. 83-54.000.

Becton Dickinson and Company: *See—*
Kapadia, Nikul S., 4,608,650, Cl. 364-508.000.

Witty, Thomas R.; Curry, Robert E.; and Smith, Roger E., 4,608,231, Cl. 422-61.000.

Belanger, Inc.: *See*—
Belanger, James A., 4,607,965, Cl. 384-299.000.

Belanger, James A., to Belanger, Inc. Composite bearing with metal housing having a bore, with a tubular plastic insert therein. 4,607,965, Cl. 384-299.000.

Bell, Floyd R.; and McKay, Thomas H. Endotracheal tube/stethoscope combination. 4,607,643, Cl. 128-715.000.

Bell, Gilbert C.; and Stanhope, Harry W., to Celanese Corporation. Process for spiral wrapping reinforcement filaments. 4,607,481, Cl. 57-3.000.

Bell & Howell Company: *See*—
Svyatsky, Eduard; Rabindran, K. George; and Faber, Thomas J., 4,607,833, Cl. 271-10.000.

Bell Telephone Laboratories, Incorporated: *See*—
McNair, Bruce E., 4,608,455, Cl. 178-22.170.

Belli, Aldo: *See*—
Citterio, Attilio; Tinucci, Laura; Belli, Aldo; and Filippini, Lucio, 4,608,441, Cl. 562-466.000.

Bellofatto, Richard C., to Bellofatto, Richard C. Air and sea navigational instrument simulation and instructional aid. 4,608,022, Cl. 434-243.000.

Belloni, Aldo: *See*—
Bauer, Heinz; and Belloni, Aldo, 4,608,068, Cl. 62-18.000.

Beloit Corporation: *See*—
Silar, Steven J., 4,607,552, Cl. 83-71.000.

Belyanin, Vladimir V.: *See*—
Obidin, Valery Y.; Zueva, Olga A.; Inochkin, Vladimir M.; Zhavoronkov, Andrei V.; Voinich, Leonid K.; Polushin, Jury V.; Zakhodyakin, Petr A.; Rodionova, Zinaida I.; Judchits, Nikolai N.; Belyanin, Vladimir V.; Yarkin, Andrei A.; Kalmykov, Vyacheslav N.; Ageechkin, Mikhail M.; and Arakelyants, Sergei M., 4,608,004, Cl. 418-206.000.

Bendall, Brian; and Flannery, Stephan W., to Meynell Valves Limited. Mixing valve. 4,607,788, Cl. 236-12.200.

Bender, Raymond L.: *See*—
Hood, Richard T.; and Bender, Raymond L., 4,608,408, Cl. 524-15.000.

Bennitt, Robert A., to Ingersoll-Rand Company. Uni-directional-flow, fluid valve assembly. 4,607,660, Cl. 137-512.100.

Benovic, Jeffrey L.; Buckler, Robert T.; Burd, John F.; and Li, Thomas M., to Miles Laboratories, Inc. #3B theophylline immunoassay employing 9-theophylline reagents. 4,608,336, Cl. 435-7.000.

Berbalk, Hermann, to Oerlikon-Boehringer GmbH. Turning machine for machining crankshafts. 4,607,550, Cl. 82-9.000.

Berberick, David R.: *See*—
Howard, William G.; and Berberick, David R., 4,608,322, Cl. 429-105.000.

Berger, Hans S.: *See*—
Amici, Francis R.; Berger, Hans S.; Mercurio, Domenic G.; McNett, John P.; and Piazza, Pietro, 4,608,025, Cl. 446-298.000.

Berggren, Anders; Rohman, Hakan; and Ostrup, Leif. Surgical instrument for performing anastomosis with the aid of ring-like fastening elements and the fastening elements for performing anastomosis. 4,607,637, Cl. 128-334.00C.

Bergin, Ralph M.; Katz, Emanuel E.; and Widicus, Warren A., to Quaker Oats Company, The. Method for making flavored dipeptide sweetened comestible. 4,608,263, Cl. 426-303.000.

Bergmann, Ewald; Kurz, Otto; and Dommer, Hans-Martin, to L. Schuler GmbH. Punch. 4,607,557, Cl. 83-687.000.

Bergmeister, Josef J. Can tab opener. 4,607,407, Cl. 7-156.000.

Bernstam, Victor A. Compositions, uses and methods creating reverse micelles for the clarification of biological fluids to obtain undistorted assay of analytes following clarification. 4,608,347, Cl. 436-175.000.

Bernstein, Carl; Arvanitis, Konstantinos; and Amariti, Luigi, to Witco Chemical Corporation. Photosensitive plates with diazonium composition layer and polyurethane photopolymer with unsaturation in side chain overlayer. 4,608,331, Cl. 430-156.000.

Bernstein, Seymour: *See*—
Conrow, Ransom B.; and Bernstein, Seymour, 4,608,205, Cl. 260-506.000.

Bersch, Friedrich. Apparatus for cleaning pipelines for beverages and the like. 4,607,410, Cl. 15-3.510.

Bersche, Joe C. Knot tying apparatus. 4,607,869, Cl. 289-17.000.

Berstein, Patrick; Crinion, Jonathan; Middlemiss, Robert J.; and Oomen, Peter. Data entry system. 4,608,486, Cl. 235-380.000.

Bianchi, Edward A.: *See*—
Adlon, Daniel T.; Bianchi, Edward A.; College, Neil F.; and Reuss, George D., 4,607,554, Cl. 83-277.000.

Biber, Klaus: *See*—
Gartner, Hartmut; Biber, Klaus; and Greve, Peter, 4,607,919, Cl. 350-507.000.

Biela, John A.: *See*—
Ettlinger, Ralph; and Biela, John A., 4,607,795, Cl. 239-530.000.

Biermann, Kurt; Steppat, Gerhard; and Wehmeyer, Bodo, to Durkoppwerke GmbH. Cutting device in a sewing machine for cutting at least one thread chain or a sewn-on tape. 4,607,583, Cl. 112-130.000.

Bihl, Paul R.: *See*—
Ferdows, Houshang; Krug, Martin; and Bihl, Paul R., 4,607,497, Cl. 62-179.000.

Bio-Rad Laboratories, Inc.: *See*—
Penaluna, William A., 4,608,146, Cl. 204-299.00R.

Biotteau, Gerard, to S.A.R.L. Manufacture Francaise des Chaussures Eram. Conformable covering with high coefficient of friction. 4,608,287, Cl. 428-40.000.

Bischofberger, Walter; Eichholzer, Heinz; Graber, Werner; and Talir, Jiri, to BBC Brown Boveri & Company Ltd. High-voltage switch. 4,608,470, Cl. 200-144.0AP.

Bishop, Timothy E.: *See*—
Coady, Clive J.; Krajewski, John J.; and Bishop, Timothy E., 4,608,409, Cl. 524-199.000.

Bissi, Maurizio; Cocco, Andrea; and Baggio, Guerrino, to Simmel S.p.A. Oil seal for lubricated track chain joints, particularly for track type vehicles. 4,607,854, Cl. 277-152.000.

Bixler, Donald E.: *See*—
Wagner, David L. R.; and Bixler, Donald E., 4,607,655, Cl. 135-95.000.

Bizot, Henri; Brasselet, Gery-Charles J.; Louis, Jean-Paul; and Narcy, Georges, to S.N.E.C.M.A. Process and apparatus for laser drilling. 4,608,480, Cl. 219-121.0LK.

Bjerke, Robert K.: *See*—
Krampen, Adalbert A.; Ells, Delbert O.; Bjerke, Robert K.; and Ward, James P., 4,608,102, Cl. 149-92.000.

Blackburn, John: *See*—
De Haan, Frans W.; and Blackburn, John, 4,607,812, Cl. 244-129.500.

Blair, Ron B., to Mobil Oil Corporation. Asynchronous parallel fixed point converter. 4,608,554, Cl. 340-347.0DD.

Blaisdell, Ronald G.; and Hough, Harold L., to GTE Products Corporation. Projection lamp unit with separable lamp capsule. 4,608,624, Cl. 362-226.000.

Blakney, Thomas L.; Connell, Douglas D.; Lamberty, Bernard J.; and Lee, James R., to Boeing Company, The. Broad-band antenna structure having frequency-independent, low-loss ground plane. 4,608,572, Cl. 343-792.500.

BLASCHIM S.p.A.: *See*—
Citterio, Attilio; Tinucci, Laura; Belli, Aldo; and Filippini, Lucio, 4,608,441, Cl. 562-466.000.

Bleeks, Thomas W.: *See*—
Sullivan, Thomas E.; and Bleeks, Thomas W., 4,608,091, Cl. 134-3.000.

Blenninger, Ernst: *See*—
Seidel, Albert; Neuking, Hartmut; and Blenninger, Ernst, 4,607,490, Cl. 62-51.000.

Blomley, Peter F.; Arton, Kenneth A.; Whittaker, Edward J.; and Lefevre, Andrew P., to International Standard Electric Corporation. Telephone instrument circuit. 4,608,462, Cl. 179-81.00B.

Bloomenthal, Jules: *See*—
Williams, Lance; and Bloomenthal, Jules, 4,608,596, Cl. 358-81.000.

Blue Circle Projects (Proprietary) Ltd.: *See*—
Moore, Richard P., 4,608,168, Cl. 210-274.000.

Bluem, Gary R.; Goodin, John W.; and Hickey, Larry G., to North States Industries, Inc. Adjustable gate for doorways. 4,607,455, Cl. 49-55.000.

Blum, Helmut; Greb, Wolfgang; Moeller, Hinrich; Schmaehl, Dietrich; Schnegelberger, Harald; Sinn, Hannsjoerg; and Wingen, Franz, to Henkel Kommanditgesellschaft auf Aktien. 1-hydroxy-1,1-diphosphonic acids and cytostatic use thereof. 4,608,368, Cl. 514-107.000.

Boals, Wayne S. Automatic control system for water heaters. 4,607,615, Cl. 126-362.000.

Board of Governors of Wayne State University: *See*—
Rossmoore, Harold W., 4,608,183, Cl. 252-36.000.

Board of Regents for Oklahoma State Univ.: *See*—
Teeter, Robert G., 4,608,257, Cl. 424-166.000.

BOC Group plc, The: *See*—
Clapham, Thomas R., 4,607,634, Cl. 128-203.250.
Marshall, John, 4,608,067, Cl. 62-9.000.

Bochaton, Francois: *See*—
Celant, Jean J.; and Bochaton, Francois, 4,608,269, Cl. 427-28.000.

Boden, Richard M.; and Helm, John R., to International Flavors & Fragrances Inc. Oxobicyclononane derivatives, process for producing same and organoleptic uses thereof. 4,608,194, Cl. 252-522.00R.

Boden, Richard M.: *See*—
Fujioka, Futoshi; Boden, Richard M.; and Schreiber, William L., 4,608,195, Cl. 252-522.00R.
Fujioka, Futoshi; Boden, Richard M.; and Schreiber, William L., 4,608,196, Cl. 252-522.00R.

Bodenmiller, Anton: *See*—
Schmidt, Helmut; Bodenmiller, Anton; and Straka, Alfred, 4,607,413, Cl. 15-301.000.

Bodin, Francois; Jouade , Pierre; and Le Guillant, Daniel, to Hutchinson. Hydraulic antivibration support. 4,607,828, Cl. 267-140.100.

Bodingbauer, Hans: *See*—
Seischek, Gerald; and Bodingbauer, Hans, 4,608,440, Cl. 556-7.000.

Boehringer Ingelheim KG: *See*—
Banholzer, Rolf; and Bauer, Rudolf, 4,608,377, Cl. 514-291.000.

Boehringer Ingelheim Pharmaceuticals, Inc.: *See*—
Lazer, Edward S., 4,608,381, Cl. 514-395.000.

Boehringer Mannheim GmbH: *See*—
Wiedemann, Fritz, deceased; Kampe, Wolfgang; Dietmann, Karl, deceased; and Sponer, Gisbert, 4,608,383, Cl. 514-407.000.

Boeing Company, The: *See*—
Blakney, Thomas L.; Connell, Douglas D.; Lamberty, Bernard J.; and Lee, James R., 4,608,572, Cl. 343-792.500.
Caldwell, John E.; Chapman, Michael R.; Goodwin, Kenneth J.; and Lowery, Patrick A., 4,608,220, Cl. 264-510.000.

Boetzkes, Klaus. Sealing cap having frangible means. 4,607,759, Cl. 220-266.000.

Bogdanovich, Viktor B.: *See—*
Bagratishvili, Givi D.; Dzhanelidze, Rusudan B.; Zorikov, Vladimir V.; Mikhelashvili, Vissarion M.; Pekar, Iosif E.; Chikovani, Rafael I.; Chkhaidze, Manana A.; Akopova, Svetlana Z.; Bogdanovich, Viktor B.; Svechnikov, Sergei V.; and Charmakadze, Revaz A., 4,608,581, Cl. 357-17.000.

Bogursky, Robert, to Burndy Corporation. Electrical connector requiring low mating force. 4,607,907, Cl. 339-258.00P.

Boisen, Bradford P., to Slope Indicator Company, The. Temperature compensated extensometer. 4,607,435, Cl. 33-125.00B.

Boliden Aktiebolag: *See—*
Holmstrom, Sven A.; and Johansson, Leif, 4,608,083, Cl. 75-83.000.

Bolt Technology Corporation: *See—*
Chelminski, Stephen V., 4,608,675, Cl. 367-189.000.

Bolton, Theodore S.; and Whitwell, Robert J., to Carrier Corporation. Method and apparatus for assembly of a room air conditioner housing. 4,607,499, Cl. 62-262.000.

Bolton, Theodore S.; and Leech, Brad G., to Carrier Corporation. Grille mounting for a room air conditioner. 4,607,500, Cl. 62-262.000.

Bomer, Michael O.; and Chudoba, Richard F., to General Motors Corporation. Ground fault voltage limiting for a locomotive electric traction motor. 4,608,619, Cl. 361-31.000.

Bonanno, Anthony J.: *See—*
Greenfield, Charles; Casparian, Robert E.; and Bonanno, Anthony J., 4,608,120, Cl. 159-17.100.

Boon, Cornelis A. M.: *See—*
Nordholt, Ernst H.; and Boon, Cornelis A. M., 4,608,544, Cl. 331-109.000.

Boothroyd, Donald C.; Wilhite, John E.; Norman, Robert W., Jr.; and Keller, Howard J., to Honeywell Information Systems Inc. Method for decreasing execution time of numeric instructions. 4,608,633, Cl. 364-200.000.

Bopp & Reuther GmbH: *See—*
David, Walfried, 4,607,821, Cl. 251-329.000.

Borders, Donald B.: *See—*
Labeda, David P.; Goodman, Joseph J.; Borders, Donald B.; Testa, Raymond T.; and Martin, John H. E. J., deceased, 4,608,343, Cl. 435-253.000.

Borg-Warner Corporation: *See—*
Sproul, William D., 4,608,243, Cl. 423-409.000.

Bornhofen, James A., to Standard Grigsby, Inc. Stator for switch assembly. 4,608,466, Cl. 200-11.00D.

Borodulin, German; Persidsky, Maxim; and Shkolnik, Alexander. Expandable urethral bougie comprising bendable rods with reciprocating driver. 4,607,626, Cl. 128-43.000.

Boros, Laszlo : *See—*
Szajani, Bela; Kiss, Janosne ; Ivony, Jozsefne ; Huber, Iren; Boros, Laszlo ; and Daroczi, Ivan, 4,608,340, Cl. 435-180.000.

Borovicka, David A., Sr., to SCM Corporation. Thermoset acrylic latices for wood coating. 4,608,410, Cl. 524-512.000.

Borovtsev, Anatoly I.: *See—*
Shilkov, Vladimir A.; Shilkov, Andrei V.; Kuzmin, Petr D.; Metrikin, Vladimir S.; Chumichev, Vladimir A.; Borovtsev, Anatoly I.; and Dubenkov, Nikolai I., 4,607,980, Cl. 404-133.000.

Borroughs Tool & Equipment Corporation: *See—*
Okamuro, James A., 4,607,535, Cl. 73-862.470.

Borzatta, Valerio: *See—*
Cantatore, Giuseppe; and Borzatta, Valerio, 4,608,436, Cl. 546-188.000.

Borzoni, John, to Littelfuse, Inc. Miniature fuse. 4,608,548, Cl. 337-201.000.

Bossenmaier, Alban: *See—*
Andres, Rudolf; Scholz, Hansjurgen; Knoll, Heinz W.; Brambilla, Luigi; Petri, Volker; and Bossenmaier, Alban, 4,608,501, Cl. 307-105.00B.

Bottomore, David; and Gibson, Colin F., to Glidevale Building & Products Limited. Ventilator for use in a roof structure. 4,607,566, Cl. 98-37.000.

Boudot, Jean E.; and Mazeau, Jean P., to Corning Glass Works. Low PbO-containing glass for electrical devices. 4,608,351, Cl. 501-62.000.

Boutonnat, Maurice; and Rose, Gerard, to Charbonnages de France. Process and device for the remote transmission of signals and application to the detection and/or measurement of the quanity of combustible gas in an atmosphere. 4,608,552, Cl. 340-310.00R.

Bowditch, Philip N., to Charles Stark Draper Laboratory, Inc., The. System for folding limp material segments. 4,607,584, Cl. 112-147.000.

Bowen, Leslie J.: *See—*
Avella, Frank J.; and Bowen, Leslie J., 4,608,354, Cl. 501-97.000.

Bowman, William W., to Hoffman Controls Corporation. Proportional motor drive control. 4,607,789, Cl. 236-49.000.

Boyce, Peter F. Ocean wave energy converting vessel. 4,608,497, Cl. 290-53.000.

Boyle, John T. A., to John Wyeth & Brother Limited. Antifungal composition and method employing pyridinium compounds. 4,608,379, Cl. 514-318.000.

Bozine, Nicholas, to Burroughs Corporation. Repair tool for defective wrapped wire electrical connections. 4,607,669, Cl. 140-124.000.

Brachear, Howard. Fishing jug. 4,607,449, Cl. 43-43.110.

Brachet, Alain, to Service National Electricite de France. Nuclear reactor cooled by a liquid metal. 4,608,224, Cl. 376-405.000.

Bradbury, Donald R.: *See—*
Neukermans, Armand P.; Chiang, Kuo L.; Schwettmann, Frederic N.; and Bradbury, Donald R., 4,608,326, Cl. 430-5.000.

Bradley, John J.; Staplin, Theodore R., Jr.; Miu, Ming T.; O'Brien, Thomas C.; O'Har, George M.; Widen, Melinda A.; and Stoffers, Brian L., to Honeywell Information Systems Inc. Arithmetic logic unit with outputs indicating invalid computation results caused by invalid operands. 4,608,659, Cl. 364-737.000.

Brambilla, Luigi: *See—*
Andres, Rudolf; Scholz, Hansjurgen; Knoll, Heinz W.; Brambilla, Luigi; Petri, Volker; and Bossenmaier, Alban, 4,608,501, Cl. 307-105.00B.

Brambley, Roger J., to Standard Telephones and Cables Public Limited Company. Optical fibres. 4,608,273, Cl. 427-54.100.

Brand-Rex Company: *See—*
Vaden, James L., 4,607,905, Cl. 339-176.00M.

Brandhorst, Henry W., Jr.: *See—*
Weinberg, Irving; and Brandhorst, Henry W., Jr., 4,608,452, Cl. 136-261.000.

Brandt, Incorporated: *See—*
Sherman, William, III; Larkin, Francis C.; and Horvath, Stephen J., 4,608,704, Cl. 377-8.000.
Taipale, Dale L.; and Winkelman, John H., 4,607,649, Cl. 133-3.00C.

Braselton, Keith. Baseboard edge taping tool. 4,608,116, Cl. 156-523.000.

Brasselet, Gery-Charles J.: *See—*
Bizot, Henri; Brasselet, Gery-Charles J.; Louis, Jean-Paul; and Narcy, Georges, 4,608,480, Cl. 219-121.0LK.

Brasted, Lee K.; and Uppencamp, George L., to Shell Oil Company. Method and apparatus for installation of an offshore platform. 4,607,982, Cl. 405-204.000.

Breitenstein, Charles T.; and Holecek, Allen R., to Spiral Step Tool Company. Automatic tool grinding machine with computerized control. 4,608,643, Cl. 364-474.000.

Brenk, Michael, to Hoechst Aktiengesellschaft. Process for the anodic oxidation of aluminum and use thereof as support material for offset printing plates. 4,608,131, Cl. 204-33.000.

Brennan, Cynthia B.; and Brennan, Louis G., to Aller-Screen, Inc. Skin testing device with funnel loading. 4,607,632, Cl. 128-743.000.

Brennan, Louis G.: *See—*
Brennan, Cynthia B.; and Brennan, Louis G., 4,607,632, Cl. 128-743.000.

Brewer, Harold L.: *See—*
Maw, Bryan W.; and Brewer, Harold L., 4,607,452, Cl. 47-1.00R.

Bridges, Charles D., to Combustion Engineering, Inc. Non-orienting, multiple ported, cylindrical pressure transfer device. 4,607,691, Cl. 166-88.000.

Brief, John D. Apparatus for casting a net. 4,607,448, Cl. 43-8.000.

Brindopke, Gerhard; and Johannes, Gerhard, to Hoechst Aktiengesellschaft. Process for the preparation of acylurethanes, and the use thereof. 4,608,420, Cl. 525-375.000.

Brinkmann, Arnfried; and Lehners, Ernst, to Fahrleitungsbau GmbH. Safety ladder. 4,607,725, Cl. 182-189.000.

Brinkmann, Heinz: *See—*
Enikolopow, Nikolai S.; Wolfson, Stanislaw A.; Nepomnjaschtschie, Anatolie I.; Nikolskie, Wadim G.; Teleschow, Wiktor A.; Filmakowa, Lidia A.; Brinkmann, Heinz; Pantzer, Eckart; and Uhland, Eberhard, 4,607,797, Cl. 241-23.000.

Briolle, Emile; Hicter, Jean-Marie; and Mateos, Adolfo, to Aluminum Pechiney. Ladle for the chlorination of aluminium alloys, for removing magnesium. 4,607,825, Cl. 266-215.000.

Britax-Kolb GmbH & Co.: *See—*
Burghardt, Wilfried; Ernst, Hans-Hellmut; and Mayer, Josef, 4,607,805, Cl. 242-107.40A.

British Aerospace PLC: *See—*
Mansbridge, Martin H.; and Norton, John, 4,607,783, Cl. 228-265.000.

British Aerospace Public Limited Company: *See—*
Snell, Reginald J., 4,608,641, Cl. 364-434.000.

British-American Tobacco Company Limited: *See—*
Dashley, Frederick J.; and Dittrich, David J., 4,607,647, Cl. 131-365.000.

British Hydromechanics Research Association, The: *See—*
Miller, Donald S., 4,607,702, Cl. 169-25.000.

British Petroleum Company p.l.c., The: *See—*
Caro, Colin G., 4,608,180, Cl. 210-780.000.

Brixner, Lothar H., to Du Pont de Nemours, E. I., and Company. X-ray image storage panel comprising anion-deficient BaFCl:Eu/BaFBr:Eu phosphors. 4,608,190, Cl. 252-301.40H.

Brocklehurst, Charles E., to Opelika Manufacturing Corporation. Automatic towel aligning, cutting and hemming system. 4,607,582, Cl. 112-121.120.

Brode, George L.: *See—*
Gardner, Hugh C.; Brode, George L.; and Cotter, Robert J., 4,608,404, Cl. 523-400.000.

Brodin, Arne F.: *See—*
Frank, Sylvan G.; Brodin, Arne F.; Chen, Chih-Ming J.; and Panthuvanich, Siriporn, 4,608,278, Cl. 427-213.350.

Broemer, Heinz: *See—*
Reck, Ralf; Broemer, Heinz; Deutscher, Klaus; and Franek, Henning, 4,608,051, Cl. 623-10.000.

Brother Kogyo Kabushiki Kaisha: *See—*
Hirata, Yoshikatsu; and Ishikawa, Shigeo, 4,607,967, Cl. 400-175.000.
Ueno, Hideo; Kuno, Hiroshi; and Hamabe, Yoshifumi, 4,607,966, Cl. 400-63.000.

Brothers, Michael V.; and Schaeffer, Bruce W., to Cooper Industries, Inc. Wand and wand extension. 4,607,974, Cl. 403-24.000.

Brouard, Rene : *See—*
Meunier, Gilles; Brouard, Rene ; Damin, Bernard; and Lopez, Denis, 4,608,411, Cl. 524-533.000.

Brown, Adrian: *See—*
Watson, George H.; McWhorter, David B.; and Brown, Adrian, 4,608,126, Cl. 202-84.000.

Brown, Allison T.: *See—*
Fowler, Stephen L.; and Brown, Allison T., 4,608,457, Cl. 179-2.00A.

Brown International Corporation: *See—*
Epperson, Donald E.; Curley, Orvin B.; and Swisher, Horton E., 4,608,266, Cl. 426-599.000.

Brown, James W.; Chen, Tsang J.; and Schen, Michael A., to Eastman Kodak Company. Latex compositions comprising loadable polymeric particles. 4,608,424, Cl. 526-240.000.

Brown, Melvin H., to Aluminum Company of America. Hall cell with inert liner. 4,608,134, Cl. 204-67.000.

Brown, Melvin H., to Aluminum Company of America. Hall cell. 4,608,135, Cl. 204-67.000.

Brown, Stephen A., to Dowty Mining Equipment Limited. Shield supports suitable for use in mines. 4,607,986, Cl. 405-296.000.

Brown, Thomas H., to Smith Kline & French Laboratories Limited. Substituted aminopyridones having histamine H_2-receptor blocking activity. 4,608,380, Cl. 514-318.000.

Brueckner, Keith A., to KMS Fusion, Inc. Method of achieving the controlled release of thermonuclear energy. 4,608,222, Cl. 376-104.000.

Brum, Roger D.: *See—*
Smith, David H.; and Brum, Roger D., 4,607,849, Cl. 273-348.100.

Brunner, Hans R.: *See—*
Curtis, Bernard J.; and Brunner, Hans R., 4,608,118, Cl. 156-643.000.

Brunswick Mfg. Co.: *See—*
Falzarano, Lorenzo; and Hewson, Carl, 4,608,498, Cl. 307-22.000.

Bryant, Steve M.; and Cole, Lanier G., to United States of America, Air Force. Fast envelope detector with bias compensation. 4,608,567, Cl. 343-7.00A.

Bryda, Roland. Variable-path surface transport system utilizing an angle comparator with a control guideway or externally supplied data for lateral offset, and method. 4,607,575, Cl. 104-304.000.

Bryson, Thomas A.: *See—*
Rice, James S.; Eavenson, Barry; Eavenson, Garry; and Bryson, Thomas A., 4,607,611, Cl. 126-121.000.

Buchegger, Rudolf; and Hirschmanner, Franz, to Voest-Alpine Aktiengesellschaft. Coiler-furnace unit. 4,608,014, Cl. 432-59.000.

Bucher-Guyer AG Maschinenfabrik: *See—*
Hauser, Hans-Ulrich, 4,607,570, Cl. 100-116.000.

Buck, Reinhold J.: *See—*
Goehl, Hermann J.; and Buck, Reinhold J., 4,608,172, Cl. 210-500.200.

Buckler, Robert T.: *See—*
Benovic, Jeffrey L.; Buckler, Robert T.; Burd, John F.; and Li, Thomas M., 4,608,336, Cl. 435-7.000.

Buckley, Thomas F., to Chevron Research Company. Modified succinimides (VI). 4,608,185, Cl. 252-51.50A.

Budd Company, The: *See—*
Freeman, Richard B., 4,608,453, Cl. 174-35.0MS.

Budwey, Michael J.: *See—*
Stiffler, Jack J.; Karp, Richard A.; Nolan, James M., Jr.; Budwey, Michael J.; and Wallace, David A., 4,608,631, Cl. 364-200.000.

Buente, Stephen M.; and Clark, David P., to Eaton Corporation. Roller follower hydraulic tappet. 4,607,599, Cl. 123-90.500.

Burd, John F.: *See—*
Benovic, Jeffrey L.; Buckler, Robert T.; Burd, John F.; and Li, Thomas M., 4,608,336, Cl. 435-7.000.

Bure, Jacques: *See—*
Wierzbicki, Michel; and Bure, Jacques, 4,608,384, Cl. 514-413.000.

Burgers, Bernhardus W. A.; and Razenberg, Adrianus Johannes P. T., to Hollandse Signaalapparaten B.V. Communication receiving unit for the suppression of noise and interference signals. 4,608,701, Cl. 375-1.000.

Burgess, David A.; and King, Malcolm R., to International Standard Electric Corporation. Electro-acoustic transducer. 4,608,463, Cl. 179-115.50R.

Burgess, Peter H.: *See—*
Barclay, David; and Burgess, Peter H., 4,608,511, Cl. 313-93.000.

Burghardt, Wilfried; Ernst, Hans-Hellmut; and Mayer, Josef, to Britax-Kolb GmbH & Co. Safety belt emergency locking retractor. 4,607,805, Cl. 242-107.40A.

Burlington Industries, Inc.: *See—*
Schnegg, Julius R., 4,608,290, Cl. 428-101.000.

Burndy Corporation: *See—*
Bogursky, Robert, 4,607,907, Cl. 339-258.00P.

Burnham, Robert E., to Teledyne Industries, Inc. Ultraviolet monitor suntan alarm with self test routines. 4,608,492, Cl. 250-372.000.

Burns, Carmen D., to National Semiconductor Corporation. Non-impact thermocompression gang bonding method. 4,607,779, Cl. 228-106.000.

Burns, William K.; and Villarruel, Carl A., to United States of America, Navy. In-line optical fiber polarizer. 4,607,912, Cl. 350-96.300.

Burroughs Corporation: *See—*
Bozine, Nicholas, 4,607,669, Cl. 140-124.000.
Mitchell, John W., Jr., 4,607,685, Cl. 165-80.300.

Burt, Russell V.: *See—*
Williams, Paul R., Jr.; Burt, Russell V.; and Golden, Ronald, 4,608,406, Cl. 523-424.000.

Busot, J. Carlos; and Hill, Peter W., to University of South Florida, The. Rheotactic shrimp harvester. 4,607,595, Cl. 119-2.000.

Buss, Waldeen C.; and Wilson, Charles R., to Chevron Research Company. Preparation of a reforming catalyst. 4,608,356, Cl. 502-66.000.

Buysch, Hans-Josef; and Mues, Peter, to Bayer Aktiengesellschaft. Dialkyl 2-alkylcarbonatoethanephosphonates. 4,608,207, Cl. 558-179.000.

Buysch, Hans-Josef; Illger, Hans-Walter; and Dorner, Karl H., to Bayer Aktiengesellschaft. Stabilizer-containing reactive components for pu-foams, new stabilizers and a process for producing these stabilizers. 4,608,399, Cl. 521-129.000.

Byczek, Roger W.: *See—*
Romine, Edward L.; and Byczek, Roger W., 4,607,899, Cl. 339-19.000.

Byer, Robert L.: *See—*
Nightingale, John L.; Fejer, Martin M.; and Byer, Robert L., 4,607,776, Cl. 226-171.000.

Byers, Thomas L. Photographic image precision reproportioning system. 4,607,952, Cl. 355-84.000.

Byrd, Lucid L.: *See—*
Vollmuth, Lawrence P.; and Byrd, Lucid L., 4,608,471, Cl. 219-8.500.

Cadwell, George H., Jr., to Flanders Filters, Inc. Clean room adapted for variable work area configurations. 4,608,066, Cl. 55-385.00A.

Cain, Thomas A., to Filtertek, Inc. Press fit filter. 4,608,166, Cl. 210-232.000.

Calabrese, Thomas A. Foldable combination seat and portable container. 4,607,784, Cl. 229-27.000.

Caldwell, John E.; Chapman, Michael R.; Goodwin, Kenneth J.; and Lowery, Patrick A., to Boeing Company, The. Method of forming composite material articles. 4,608,220, Cl. 264-510.000.

Campbell, John R.: *See—*
Mark, Victor; and Campbell, John R., 4,608,430, Cl. 528-196.000.

Canadian Patents & Development Limited: *See—*
Cecco, Valentino; and Ghent, Hugh W., 4,608,534, Cl. 324-238.000.

Canfield, Douglas M.: *See—*
Ford, James; and Canfield, Douglas M., 4,608,073, Cl. 65-163.000.

Canon Kabushiki Kaisha: *See—*
Aihara, Yoshihiko, 4,607,931, Cl. 354-400.000.
Egawa, Akira; Kodaira, Takanori; and Namai, Akihiro, 4,607,932, Cl. 354-468.000.
Harada, Yuji, 4,608,465, Cl. 200-5.00A.
Honda, Haruhisa, 4,607,941, Cl. 355-3.00R.
Hosoi, Atsushi; Nakahata, Kimio; Tajima, Hatsuo; Egami, Hidemi; Kan, Fumitaka; and Nakamura, Shunji, 4,607,938, Cl. 355-3.0DD.
Kurokawa, Takashi, 4,608,063, Cl. 55-208.000.
Naito, Masataka, 4,607,948, Cl. 355-24.000.
Okino, Tadashi, 4,608,605, Cl. 358-209.000.
Sato, Yukio, 4,608,689, Cl. 371-15.000.
Tanaka, Kano, 4,608,705, Cl. 377-18.000.

Cantatore, Giuseppe; and Borzatta, Valerio, to Ciba-Geigy S.p.A. Piperidine compounds. 4,608,436, Cl. 546-188.000.

Caplan, Arnold; and Syftestad, Glenn T. Bone protein purification process. 4,608,199, Cl. 530-414.000.

Caputo, Carlo: *See—*
Shanaan, Gad; Jospe, Jack; Jospe, Joe; and Caputo, Carlo, 4,607,510, Cl. 70-95.000.

Cardenas, Carlos: *See—*
D'Alessandro, Robert; Cardenas, Carlos; and Kaye, Gordon E., 4,607,904, Cl. 339-108.00R.

Carena, Ugo, to Ing. C. Olivetti & C., S.p.A. Paper pressing device for printing machines. 4,607,968, Cl. 400-637.200.

Carl Schleicher & Schuell GmbH & Co. KG: *See—*
Clad, Andreas, 4,608,147, Cl. 204-301.000.

Carl-Zeiss-Stiftung, Heidenheim/Brenz: *See—*
Gartner, Hartmut; Biber, Klaus; and Greve, Peter, 4,607,919, Cl. 350-507.000.

Carney, Joseph H.; and Lozano, Rudy. Plumbing test plug apparatus. 4,607,664, Cl. 138-89.000.

Caro, Colin G., to British Petroleum Company p.l.c., The. Separation process. 4,608,180, Cl. 210-780.000.

Carrier Corporation: *See—*
Bolton, Theodore S.; and Whitwell, Robert J., 4,607,499, Cl. 62-262.000.
Bolton, Theodore S.; and Leech, Brad G., 4,607,500, Cl. 62-262.000.

Carroll, David L.: *See—*
Tavss, Edward A.; and Carroll, David L., 4,608,285, Cl. 428-35.000.

Carter, Mark C. Quick erection collapsible shelter. 4,607,656, Cl. 135-110.000.

Carter, Nicholas J. R.; Guilarte, Walter; Masand, Ravindra T.; Martin, Terrance S.; Middleton, Francisco A.; and Das, Santanu, to ITT Corporation. Comprehensive automatic directory assistance apparatus and method thereof. 4,608,460, Cl. 179-6.110.

Carter, Timothy J. N.; Dahne, Claus; and Place, John F., to Battelle Memorial Institute. Method for the determination of species in solution with an optical wave-guide. 4,608,344, Cl. 436-34.000.

Caruolo, Antonio B.: *See—*
Zemek, Thomas G.; Caruolo, Antonio B.; Roberts, Stephanie A.; Dunn, James K.; and Spearen, John, 4,607,421, Cl. 29-157.10R.

Carver, Edward L., Jr.: *See—*
Bachenheimer, Bernard O.; Antoci, Frank J.; Carver, Edward L., Jr.; Pellegrino, Ernest N.; and Seltenreich, Richard C., 4,607,526, Cl. 73-432.0PS.

Cary, Paul: *See—*
Rudy, Michael; Cary, Paul; and Roth, Arthur A., 4,608,679, Cl. 369-36.000.

Casella Aktiengesellschaft: *See—*
Greiner, Ulrich; Keil, Karl-Heinz; Heinrich, Rudolf; and Albrecht, Konrad, 4,608,277, Cl. 427-213.300.

Casparian, Robert E.: *See—*
Greenfield, Charles; Casparian, Robert E.; and Bonanno, Anthony J., 4,608,120, Cl. 159-17.100.

Cassidy, Bruce A., to Republic Corporation. Apparatus and method for mine application. 4,607,984, Cl. 405-261.000.

Casso Solar Corporation: *See—*
Ford, James; and Canfield, Douglas M., 4,608,073, Cl. 65-163.000.

Castellarin, Silvano, to Gretag San Marco S.p.A. Device for transferring the film holders in a film developer. 4,607,930, Cl. 354-322.000.

Caudel, Edward R.; Magar, Surendar S.; and Gass, Wanda K., to Texas Instruments Incorporated. Microcomputer with offset in store-accumulator operations. 4,608,634, Cl. 364-200.000.

Cecco, Valentino; and Ghent, Hugh W., to Canadian Patents & Development Limited. Eddy current probe for detecting localized defects in cylindrical components. 4,608,534, Cl. 324-238.000.

Celanese Corporation: *See—*
Bell, Gilbert C.; and Stanhope, Harry W., 4,607,481, Cl. 57-3.000.
DeGooyer, William J., 4,608,405, Cl. 523-404.000.
Hsieh, Jih-Han, 4,608,338, Cl. 435-142.000.
Shimp, David A., 4,608,434, Cl. 528-422.000.
Williams, Paul R., Jr.; Burt, Russell V.; and Golden, Ronald, 4,608,406, Cl. 523-424.000.

Celant, Jean J.; and Bochaton, Francois, to W.C.C.E. World Can and Cap Engineering; and Celant, Jean Jacques. Electrostatic striping of three-part metal-can seams. 4,608,269, Cl. 427-28.000.

Celant, Jean Jacques: *See—*
Celant, Jean J.; and Bochaton, Francois, 4,608,269, Cl. 427-28.000.

Cellu-Craft Inc.: *See—*
Roales, John, 4,608,284, Cl. 428-35.000.

Celotex Corporation, The: *See—*
Goll, John D., 4,608,108, Cl. 156-219.000.

Central Glass Company, Limited: *See—*
Inaba, Hiroshi; and Nishikawa, Kazuya, 4,608,570, Cl. 343-704.000.

Centre National de la Recherche Scientifique (CNRS): *See—*
Laurent, Yves; and Verdier, Patrick, 4,608,352, Cl. 501-73.000.

Centre Stephanois de Recherches Mecaniques Hydromecanique et Frottement: *See—*
Tremoureux, Yves; and Reynaud, Jean-Luc, 4,608,092, Cl. 148-6.110.

Cerbone, Adam C., to Combustion Engineering, Inc. Compression pin load tester. 4,607,534, Cl. 73-862.010.

Chaki, Takao, to Clarion Co., Ltd. Pushbutton tuner. 4,607,537, Cl. 74-10.330.

Champigny, Marcel J.: *See—*
Fraser, Gerald M.; and Champigny, Marcel J., 4,607,658, Cl. 137-393.000.

Champion International Corporation: *See—*
Lai, Michael M., 4,608,065, Cl. 55-269.000.

Chan, Philip T.: *See—*
Friedman, Michael S.; Thomas, Kenneth D.; and Chan, Philip T., 4,608,559, Cl. 340-825.500.

Chan, Simon; Slorstad, Eli; Cormode, Henry D. A.; and Tamosiunis, Richard R., to Cominco Ltd. Process for the flotation of insol from sylvinite ore. 4,608,154, Cl. 209-166.000.

Chang, Daniel M., to Clorox Company, The. Rubber toughened polyvinyl alcohol film compositions. 4,608,187, Cl. 252-90.000.

Chang, Yihua E.; Grasso, Lawrence J.; Gruodis, Algirdas J.; and Morgan, Carroll E., to International Business Machines Corporation. High-speed programmable timing generator. 4,608,706, Cl. 377-39.000.

Chang, Yuehsiung, to Amoco Corporation. Phenate process and composition improvement. 4,608,184, Cl. 252-42.700.

Chao, Edmund Y. S.: *See—*
Morrey, Bernard F.; and Chao, Edmund Y. S., 4,608,055, Cl. 623-23.000.

Chapman, Michael R.: *See—*
Caldwell, John E.; Chapman, Michael R.; Goodwin, Kenneth J.; and Lowery, Patrick A., 4,608,220, Cl. 264-510.000.

Charbonnages de France: *See—*
Boutonnat, Maurice; and Rose, Gerard, 4,608,552, Cl. 340-310.00R.

Charles Stark Draper Laboratory, Inc., The: *See—*
Bowditch, Philip N., 4,607,584, Cl. 112-147.000.

Charmakadze, Revaz A.: *See—*
Bagratishvili, Givi D.; Dzhanelidze, Rusudan B.; Zorikov, Vladimir V.; Mikhelashvili, Vissarion M.; Pekar, Iosif E.; Chikovani, Rafael I.; Chkhaidze, Manana A.; Akopova, Svetlana Z.; Bogdanovich, Viktor B.; Svechnikov, Sergei V.; and Charmakadze, Revaz A., 4,608,581, Cl. 357-17.000.

Chelminski, Stephen V., to Bolt Technology Corporation. Land seismic source method and apparatus. 4,608,675, Cl. 367-189.000.

Chemie Linz Aktiengesellschaft: *See—*
Saischek, Gerald; and Bodingbauer, Hans, 4,608,440, Cl. 556-7.000.

Chen, Chih-Ming J.: *See—*
Frank, Sylvan G.; Brodin, Arne F.; Chen, Chih-Ming J.; and Panthuvanich, Siriporn, 4,608,278, Cl. 427-213.350.

Chen, Hsing-Yao, to RCA Corporation. Cathode-ray tube having a screen grid with asymmetric beam focusing means and refraction lens means formed therein. 4,608,515, Cl. 313-412.000.

Chen, Juei-Teng: *See—*
Keem, John E.; Ovshinsky, Stanford R.; Sadate-Akhavi, Hossein; Chen, Juei-Teng; and Kadin, Alan M., 4,608,296, Cl. 428-215.000.

Chen, Tsang J., to Eastman Kodak Company. Polycarbonate, latex compositions comprising such. 4,608,310, Cl. 428-412.000.

Chen, Tsang J.: *See—*
Brown, James W.; Chen, Tsang J.; and Schen, Michael A., 4,608,424, Cl. 526-240.000.

Chersich, Claudio C.: *See—*
Wachs, Israel E.; Fiato, Rocco A.; and Chersich, Claudio C., 4,608,359, Cl. 502-177.000.

Chevron Research Company: *See—*
Buckley, Thomas F., 4,608,185, Cl. 252-51.50A.
Buss, Waldeen C.; and Wilson, Charles R., 4,608,356, Cl. 502-66.000.
Duerksen, John H.; Wall, Robert G.; and Knight, Jack D., 4,607,700, Cl. 166-303.000.
Laxo, Darryl E., 4,607,397, Cl. 2-410.000.
Lew, Henry Y.; and Straus, Alan E., 4,608,204, Cl. 260-505.00N.
Miller, Stephen J., 4,608,151, Cl. 208-33.000.
Miller, Stephen J., 4,608,450, Cl. 585-517.000.
Vaughan, Ronald J., deceased; and Bank of America NT&SA, administrator, 4,608,136, Cl. 204-106.000.
Vaughan, Ronald J., deceased; and Bank of America NT&SA, administrator, 4,608,137, Cl. 204-129.000.

Chevron U.S.A., Inc.: *See—*
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Chiang, Kuo L.: *See—*
Neukermans, Armand P.; Chiang, Kuo L.; Schwettmann, Frederic N.; and Bradbury, Donald R., 4,608,326, Cl. 430-5.000.

Chikovani, Rafael I.: *See—*
Bagratishvili, Givi D.; Dzhanelidze, Rusudan B.; Zorikov, Vladimir V.; Mikhelashvili, Vissarion M.; Pekar, Iosif E.; Chikovani, Rafael I.; Chkhaidze, Manana A.; Akopova, Svetlana Z.; Bogdanovich, Viktor B.; Svechnikov, Sergei V.; and Charmakadze, Revaz A., 4,608,581, Cl. 357-17.000.

Chkhaidze, Manana A.: *See—*
Bagratishvili, Givi D.; Dzhanelidze, Rusudan B.; Zorikov, Vladimir V.; Mikhelashvili, Vissarion M.; Pekar, Iosif E.; Chikovani, Rafael I.; Chkhaidze, Manana A.; Akopova, Svetlana Z.; Bogdanovich, Viktor B.; Svechnikov, Sergei V.; and Charmakadze, Revaz A., 4,608,581, Cl. 357-17.000.

Chlanda, Frederick P.; and Mani, Krishnamurthy N., to Allied Corporation. Multichamber two-compartment electrodialytic water splitter and method of using same for basification of aqueous soluble salts. 4,608,141, Cl. 204-182.500.

Choate, Paul V., to N I Industries. Temperature compensating front sight. 4,607,445, Cl. 42-100.000.

Chodosh, Edward, to Chodosh, Wayne. Heat treatment of fabrics and other sheet material. 4,607,770, Cl. 223-28.000.

Chodosh, Wayne: *See—*
Chodosh, Edward, 4,607,770, Cl. 223-28.000.

Chow, Edward Y., to Schlumberger Technology Corporation. Temperature compensation for pressure gauges. 4,607,530, Cl. 73-708.000.

Choyce, David P. Apparatus and method for improving eyesight. 4,607,617, Cl. 128-1.00R.

Christensen, Anne V.: *See—*
Falch, Erik; Krogsgaard-Larsen, Povl; Sauerberg, Per; Christensen, Anne V.; and Larsen, Jens-Jorgen, 4,608,378, Cl. 514-302.000.

Christine, William C., to Trinity Foundation. Fluent product extraction system. 4,607,764, Cl. 222-207.000.

Chrysler Corporation: *See—*
Durand, Remie P., 4,607,901, Cl. 339-59.00L.
Heling, Dennis H., 4,607,884, Cl. 297-341.000.

Chu, John W.: *See—*
Wong, Thomas H.; and Chu, John W., 4,608,503, Cl. 307-270.000.

Chu, Pochen, to Mobil Oil Corporation. Hydrocarbon conversion catalyst. 4,608,355, Cl. 502-68.000.

Chudoba, Richard F.: *See—*
Bomer, Michael O.; and Chudoba, Richard F., 4,608,619, Cl. 361-31.000.

Chumichev, Vladimir A.: *See—*
Shilkov, Vladimir A.; Shilkov, Andrei V.; Kuzmin, Petr D.; Metrikin, Vladimir S.; Chumichev, Vladimir A.; Borovtsev, Anatoly I.; and Dubenkov, Nikolai I., 4,607,980, Cl. 404-133.000.

Chung, W. Reginald. Game and apparatus therefor. 4,607,847, Cl. 273-264.000.

Ciba-Geigy AG: *See—*
Howell, Frederick H., 4,608,435, Cl. 544-87.000.

Ciba-Geigy Corporation: *See—*
Ferrini, Pier G.; and Goschke, Richard, 4,608,382, Cl. 514-341.000.
Gruber, Urs, 4,608,300, Cl. 428-285.000.

Ciba-Geigy S.p.A.: *See—*
Cantatore, Giuseppe; and Borzatta, Valerio, 4,608,436, Cl. 546-188.000.

Cibie Projecteurs: *See—*
Stephano, Marc, 4,608,623, Cl. 362-80.000.

Ciccia, Lawrence P.: *See—*
Elliott, Richard M.; Holland, Larry L.; Gilligan, Thomas J., III; Martin, John F.; and Ciccia, Lawrence P., 4,607,741, Cl. 198-345.000.

Ciesielski, Mark: *See—*
Reighard, Robert P.; Kinner, Samuel D.; and Ciesielski, Mark, 4,607,898, Cl. 339-3.00S.

Cipelletti, Alberto, to Cipelletti, Ditta Alberto. Apparatus for the pasteurization of alimentary mixtures. 4,607,494, Cl. 62-62.000.

Cipelletti, Ditta Alberto: *See—*
Cipelletti, Alberto, 4,607,494, Cl. 62-62.000.

Citterio, Attilio; Tinucci, Laura; Belli, Aldo; and Filippini, Lucio, to BLASCHIM S.p.A. Process for the preparation of arylalkanoic acids by oxidative rearrangement of arylalkanones. 4,608,441, Cl. 561-466.000.

Clad, Andreas, to Carl Schleicher & Schuell GmbH & Co. KG. Apparatus for the electro-elution and collecting of electrically charged macromolecules in a trap. 4,608,147, Cl. 204-301.000.

Clapham, Thomas R., to BOC Group plc, The. Anaesthetic vaporizer. 4,607,634, Cl. 128-203.250.

Clarion Co., Ltd.: *See*—
Chaki, Takao, 4,607,537, Cl. 74-10.330.
Tsuchiya, Masahiro; and Mori, Masaharu, 4,608,540, Cl. 329-107.000.

Clark, David P.: *See*—
Buente, Stephen M.; and Clark, David P., 4,607,599, Cl. 123-90.500.

Claudio, Rubbini: *See*—
Ghedini, Luigi; Claudio, Rubbini; and Mauro, Grillini, 4,608,018, Cl. 433-88.000.

Clausen, Edgar C.: *See*—
Gaddy, James L.; and Clausen, Edgar C., 4,608,245, Cl. 423-531.000.

Clauss, Ulrich, to Markisen, Claus. Roll-up awning construction. 4,607,676, Cl. 160-74.000.

Clay, Truman R. Automobile tire-spanning beam outside calipers. 4,607,436, Cl. 33-143.00D.

Cleaver, Laird C.: *See*—
Baron, Walter J.; and Cleaver, Laird C., 4,607,686, Cl. 165-95.000.

Clegg, John E. Canada balsam wafers. 4,607,920, Cl. 350-536.000.

Clorox Company, The: *See*—
Chang, Daniel M., 4,608,187, Cl. 252-90.000.

Close, Rodney J.: *See*—
Mills, David; Kington, Alan D.; and Close, Rodney J., 4,607,680, Cl. 164-134.000.

Coady, Clive J.; Krajewski, John J.; and Bishop, Timothy E., to DeSoto, Inc. Polyacrylated oligomers in ultraviolet curable optical fiber coatings. 4,608,409, Cl. 524-199.000.

Cobbs, Walter H., Jr.; Shong, Robert G.; and Rehman, William R., to Nordson Corporation. Foamable thermosetting compositions and methods of coating therewith. 4,608,398, Cl. 521-113.000.

Cocco, Andrea: *See*—
Bissi, Maurizio; Cocco, Andrea; and Baggio, Guerrino, 4,607,854, Cl. 277-152.000.

Coenen, William M.: *See*—
Bayer, William L.; Plapp, Frederick V.; Beck, Malcolm L.; Sinor, Lyle T.; and Coenen, William M., 4,608,246, Cl. 424-11.000.

Cohen, Robert E.: *See*—
Loh, Ih-Houng; Cohen, Robert E.; and Baddour, Raymond F., 4,608,309, Cl. 428-409.000.

Coldren, Larry A., to AT&T Bell Laboratories. Spectral control arrangement for coupled cavity laser. 4,608,697, Cl. 372-50.000.

Cole, Edward F., to United Technologies Corporation. Centrifugal main fuel pump. 4,607,486, Cl. 60-734.000.

Cole, George S. Valve with resilient tubes having constricted portions. 4,607,659, Cl. 137-454.200.

Cole, Lanier G.: *See*—
Bryant, Steve M.; and Cole, Lanier G., 4,608,567, Cl. 343-7.00A.

Cole, Martin T. Light absorbers. 4,607,915, Cl. 350-321.000.

Cole, Martin T. Smoke detection apparatus. 4,608,556, Cl. 340-628.000.

Coleco Industries, Inc.: *See*—
Amici, Francis R.; Berger, Hans S.; Mercurio, Domenic G.; McNett, John P.; and Piazza, Pietro, 4,608,025, Cl. 446-298.000.

Colgate-Palmolive Company: *See*—
Tavss, Edward A.; and Carroll, David L., 4,608,285, Cl. 428-35.000.

College, Neil F.: *See*—
Adlon, Daniel T.; Bianchi, Edward A.; College, Neil F.; and Reuss, George D., 4,607,554, Cl. 83-277.000.

Collina, Giancarlo, to Honeywell Information Systems Italia. Printer with sheet front loader. 4,607,969, Cl. 400-642.000.

Collins, Henry R., Jr., to Collins Products Company, Inc. Boiler water/boiler feed water automatic sampler system. 4,608,159, Cl. 210-101.000.

Collins, Leslie M., to Minnesota Mining and Manufacturing Company. Wear-resistant capstan for belt driven cartridge. 4,607,808, Cl. 242-192.000.

Collins Products Company, Inc.: *See*—
Collins, Henry R., Jr., 4,608,159, Cl: 210-101.000.

Colton, John R.: *See*—
Baranyai, Lawrence; and Colton, John R., 4,608,693, Cl. 371-49.000.

Combustion Engineering, Inc.: *See*—
Bridges, Charles D., 4,607,691, Cl. 166-88.000.
Cerbone, Adam C., 4,607,534, Cl. 73-862.010.

Comeau, Paul E., to Kenney Manufacturing Company. Mounting for blind. 4,607,677, Cl. 160-84.00R.

Cominco Ltd.: *See*—
Chan, Simon; Slorstad, Eli; Cormode, Henry D. A.; and Tamosiunis, Richard R., 4,608,154, Cl. 209-166.000.

Commissariat a l'Energie Atomique: *See*—
Aubert, Jean-Jacques; Basset, Alain; Bechevet, Bernard; and Roulin, Claude, 4,608,234, Cl. 422-249.000.
Desportes, Henri; and Meyer, Joao, 4,608,155, Cl. 209-224.000.
Fedeli, Jean-Marc; and Jouve, Hubert, 4,608,677, Cl. 365-19.000.

Compagnie des Transmissions Mechaniques Sedis: *See*—
Kohler, Bernard, 4,607,601, Cl. 123-90.310.

Completion Tool Company: *See*—
Wood, Edward T., 4,607,698, Cl. 166-285.000.

Compton, David J.; Nix, Richard A.; and Leigh-Monstevens, Keith V., to Automotive Products plc. Modular prefilled hydraulic control apparatus. 4,607,670, Cl. 141-1.000.

Computer Automation, Inc.: *See*—
Friedman, Michael S.; Thomas, Kenneth D.; and Chan, Philip T., 4,608,559, Cl. 340-825.500.

Comstock, Todd M. Candle apparatus. 4,608,011, Cl. 431-324.000.

Conax Buffalo Corporation: *See*—
Rhodes, Geoffrey M., 4,607,911, Cl. 350-96.200.

Concrete Systems, Inc.: *See*—
Ecker, Fred L., 4,607,470, Cl. 52-226.000.

Connell, Douglas D.: *See*—
Blakney, Thomas L.; Connell, Douglas D.; Lamberty, Bernard J.; and Lee, James R., 4,608,572, Cl. 343-792.500.

Conoco Inc.: *See*—
Goodwin, Anton E.; Marton, Janet L.; Owens, Robert M.; Whisenhunt, Jackie W.; and Swain, Roy D., 4,608,346, Cl. 436-131.000.
Lazear, Gregory D., 4,608,673, Cl. 367-43.000.

Conrow, Ransom B.; and Bernstein, Seymour, to American Cyanamid Company. Polyanionic benzene ureas. 4,608,205, Cl. 260-506.000.

Construction Specialties, Inc.: *See*—
Olsen, Robert W., 4,607,471, Cl. 52-509.000.

Contact Systems, Inc.: *See*—
Mims, Bruce L., 4,607,782, Cl. 228-180.200.

Container Products Corporation: *See*—
Hughes, Joel, 4,608,062, Cl. 55-186.000.

Continental Gummi-Werke AG: *See*—
Rummler, Karl-Heinz; Sievers, Willi; Dette, Karl-Henning; Koster, Lothar; and Luscalu, Romeo, 4,608,218, Cl. 264-315.000.

Continental White Cap, Inc.: *See*—
Lecinski, Frank H., 4,607,757, Cl. 215-246.000.
Taber, James M.; and Kras, Stephen J., 4,607,768, Cl. 222-556.000.

Converse Inc.: *See*—
Roberts, Leslie E.; and Davis, Sumner F., 4,607,440, Cl. 36-114.000.

Coon, Timothy W. Power unit for self-unloading wagon. 4,607,735, Cl. 192-11.000.

Cooper, Charles F., to Morgan Thermic Limited. Gas burner. 4,608,012, Cl. 431-328.000.

Cooper Industries, Inc.: *See*—
Brothers, Michael V.; and Schaeffer, Bruce W., 4,607,974, Cl. 403-24.000.

Corbett, James O., to Electron Machine Corporation, The. Stock consistency transmitter. 4,607,955, Cl. 356-342.000.

Cordis Corporation: *See*—
Pohndorf, Peter J., 4,607,644, Cl. 128-785.000.
Stinnette, Russell A., 4,607,746, Cl. 206-53.000.

Cormode, Henry D. A.: *See*—
Chan, Simon; Slorstad, Eli; Cormode, Henry D. A.; and Tamosiunis, Richard R., 4,608,154, Cl. 209-166.000.

Cornell Research Foundation Inc.: *See*—
Ginos, James Z.; and Cotzias, George C., 4,608,391, Cl. 514-654.000.

Corning Glass Works: *See*—
Beall, George H.; Megles, John E., Jr.; and Pinckney, Linda R., 4,608,348, Cl. 501-3.000.
Boudot, Jean E.; and Mazeau, Jean P., 4,608,351, Cl. 501-62.000.
Kerko, David J.; Morgan, David W.; and Morse, David L., 4,608,349, Cl. 501-13.000.

Corrigan, John J., to Morehouse Industries, Inc. Control for slurry processing system. 4,608,029, Cl. 474-11.000.

Cortese, Richard; and Theeuwes, Felix, to ALZA Corporation. Dispensing device with drug delivery patterns. 4,608,048, Cl. 604-890.000.

Cortopassi, Jeffery J., to Taco Bell. Pocket wrap. 4,608,259, Cl. 426-115.000.

Cotter, Robert J.: *See*—
Gardner, Hugh C.; Brode, George L.; and Cotter, Robert J., 4,608,404, Cl. 523-400.000.

Cotzias, George C.: *See*—
Ginos, James Z.; and Cotzias, George C., 4,608,391, Cl. 514-654.000.

Council for Mineral Technology: *See*—
Fleming, Christopher A., 4,608,176, Cl. 210-677.000.

Courtman, Murray G., to Gibson, Brent William. Container. 4,607,756, Cl. 215-6.000.

Courtoy, Jean-Francois; and Marchal, Daniel, to Eurofloor S.A. Process for obtaining areas of distinctive appearance on synthetic coverings and the product derived therefrom. 4,608,294, Cl. 428-141.000.

Cox, Ron; and Pettovello, Elzi. Control for welding system. 4,608,482, Cl. 219-132.000.

CPC Products Corp.: *See*—
Newton, Jean M.; and Smith, William N., 4,608,026, Cl. 446-330.000.

Craig, Bonnie. Coverall garment with concealed seat panel. 4,607,396, Cl. 2-79.000.

Craig, Todd A.; and Jachetta, John J., to Union Carbide Corporation. Herbicidal cycloalkenyl acetamides. 4,608,082, Cl. 71-118.000.

Crainich, Lawrence, to Design Standards Corporation. Surgical staples. 4,607,638, Cl. 128-335.000.

Crane Co.: *See*—
Hankes, Robert W.; and Parker, Lloyd H., 4,608,162, Cl. 210-150.000.

Crann, Gary P.; and Abbey, Kirk J., to SCM Corporation. Electrocoating process using shear stable cationic latex. 4,608,139, Cl. 204-181.700.

Crinion, Jonathan: *See—*
Berstein, Patrick; Crinion, Jonathan; Middlemiss, Robert J.; and Oomen, Peter, 4,608,486, Cl. 235-380.000.
Crisman Sand Company, Inc.: *See—*
Scofield, Hartzell D., 4,607,427, Cl. 29-432.000.
Crisp, Edward T., Jr.; and Davidson, Willard M., Jr. Door security device. 4,607,870, Cl. 292-338.000.
Croce, Carlo M., to Wistar Institute, The. Human hybridomas and the production of human monoclonal antibodies by human hybridomas. 4,608,337, Cl. 435-68.000.
Croley, Thomas E., to Willamette Industries. Fiberboard flat with joined strengthened corners for setting up into an angular tray and the set-up tray. 4,607,785, Cl. 229-41.00B.
Croopnick, Gerald A.; and Scruggs, David M., to Dresser Industries, Inc. Extended surface area amorphous metallic material. 4,608,319, Cl. 428-613.000.
Crumbacher, Thomas A.: *See—*
Singh, Anand P.; Crumbacher, Thomas A.; Naylor, Gary R.; and Fagan, Thomas R., Jr., 4,608,219, Cl. 264-315.000.
Cselt Centro Studi e Laboratori Telecomunicazioni S.p.A.: *See—*
Roba, Giacomo, 4,608,070, Cl. 65-3.120.
Csiki, Kalman, to Gullfiber AB. Method for the production of an ear plug. 4,608,217, Cl. 264-249.000.
Cummens, Joseph R.: *See—*
Schafer, Thomas B.; Sindelar, William, deceased; and Cummens, Joseph R., 4,607,516, Cl. 72-405.000.
Cundy, Colin S.: *See—*
Ballard, Denis G. H.; Cundy, Colin S.; Rideal, Graham R.; and Morley, David C. W., 4,608,303, Cl. 428-357.000.
Curley, Edward, to Sunshine Biscuits, Inc. Conveying apparatus for crackers and related objects. 4,607,742, Cl. 198-398.000.
Curley, Orvin B.: *See—*
Epperson, Donald E.; Curley, Orvin B.; and Swisher, Horton E., 4,608,266, Cl. 426-599.000.
Currie, Bobby R. Mobile stone crusher. 4,607,799, Cl. 241-101.700.
Curry, Robert E.: *See—*
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Curtice, Walter R., to RCA Corporation. FET amplifier. 4,608,583, Cl. 357-22.000.
Curtis, Bernard J.; and Brunner, Hans R., to RCA Corporation. Reactive sputter etching of metal silicate structures. 4,608,118, Cl. 156-643.000.
Cusher, Nelson A.: *See—*
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Czerwinski, Richard W.; and Osterberger, Larry D., to Gensco Inc. Hot melt composition and process for forming the same. 4,608,418, Cl. 524-296.000.
Dahne, Claus: *See—*
Carter, Timothy J. N.; Dahne, Claus; and Place, John F., 4,608,344, Cl. 436-34.000.
Dai Nippon Insatsu Kabushiki Kaisha: *See—*
Takeuchi, Hideo; Kobayashi, Michiaki; and Shibasaki, Makoto, 4,607,571, Cl. 101-365.000.
Daido Kogyo Co., Ltd.: *See—*
Dono, Junichi, 4,608,036, Cl. 474-201.000.
Daihatsu Motor Co.: *See—*
Kouketsu, Eiji; and Tsumagari, Masato, 4,607,864, Cl. 280-808.000.
Daiho Construction Co., Ltd.: *See—*
Hagimoto, Hakumi; Kashima, Yutaka; Kondo, Norio; and Inoue, Masumi, 4,607,889, Cl. 299-33.000.
Daimler-Benz Aktiengesellschaft: *See—*
Andres, Rudolf; Scholz, Hansjurgen; Knoll, Heinz W.; Brambilla, Luigi; Petri, Volker; and Bossenmaier, Alban, 4,608,501, Cl. 307-105.00B.
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Stahle, Werner; Weller, Karl-Heinz; and Stolz, Albert, 4,607,564, Cl. 98-2.000.
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Miyasaka, Eiji, 4,607,836, Cl. 271-272.000.
D'Alessandro, Robert; Cardenas, Carlos; and Kaye, Gordon E., to Duracell Inc. Battery terminal connector and handle. 4,607,904, Cl. 339-108.00R.
Dam, Naim, to Introtek Corporation. Method and apparatus for detecting discontinuities in a fluid stream. 4,607,520, Cl. 73-19.000.
Damico, Frank M., to Detroit Edge Tool Company. Machine slide bearing assembly. 4,607,893, Cl. 384-45.000.
Damin, Bernard: *See—*
Meunier, Gilles; Brouard, Rene ; Damin, Bernard; and Lopez, Denis, 4,608,411, Cl. 524-533.000.
Dandge, Dileep K.: *See—*
Heller, John P.; and Dandge, Dileep K., 4,607,696, Cl. 166-275.000.
Daniel, Daniel S.; and Kissel, Thomas R., to Eastman Kodak Company. Potassium ion-selective compositions and electrodes containing same. 4,608,149, Cl. 204-418.000.
Danly Machine Corporation: *See—*
Schafer, Thomas B.; Sindelar, William, deceased; and Cummens, Joseph R., 4,607,516, Cl. 72-405.000.
Dantzig, Jonathan A.; and Tyler, Derek E., to Alumax, Inc. Mold for use in metal or metal alloy casting systems. 4,607,682, Cl. 164-418.000.
Daoust, Real. Exercising apparatus for use by hockey players to practice their slap and wrist-shots. 4,607,842, Cl. 273-1.00B.
Daroczi, Ivan: *See—*
Szajani, Bela; Kiss, Janosne ; Ivony, Jozsefne ; Huber, Iren; Boros, Laszlo ; and Daroczi, Ivan, 4,608,340, Cl. 435-180.000.
Darwent, Brian J., to Imperial Chemical Industries PLC. Electrode and electrolytic cell. 4,608,144, Cl. 204-257.000.
Das, Santanu: *See—*
Carter, Nicholas J. R.; Guilarte, Walter; Masand, Ravindra T.; Martin, Terrance S.; Middleton, Francisco A.; and Das, Santanu, 4,608,460, Cl. 179-6.110.
Dashefsky, Joseph H. Patella support brace. 4,607,628, Cl. 128-80.00C.
Dashley, Frederick J.; and Dittrich, David J., to British-American Tobacco Company Limited. Smoking articles. 4,607,647, Cl. 131-365.000.
Dastin, Richard M., to Xerox Corporation. Adjustable sheet guide. 4,607,834, Cl. 271-171.000.
David, Walfried, to Bopp & Reuther GmbH. Shutoff valve. 4,607,821, Cl. 251-329.000.
Davidson, Willard M., Jr.: *See—*
Crisp, Edward T., Jr.; and Davidson, Willard M., Jr., 4,607,870, Cl. 292-338.000.
Davis, James W.; Moore, Victor S.; and Thoma, Nandor G., to International Business Machines Corporation. Differential cascode voltage switch (DCVS) master slice for high efficiency/custom density physical design. 4,608,649, Cl. 364-491.000.
Davis, Larry: *See—*
Effland, Richard C.; Davis, Larry; and Kapples, Kevin J., 4,608,374, Cl. 514-211.000.
Davis, Marshall E.; and Sung, Rodney L., to Texaco Inc. Clear stable motor fuel composition. 4,608,057, Cl. 44-51.000.
Davis, Ralph: *See—*
Harvey, Roger W.; Davis, Ralph; Lueders, Arthur; and Schnell, William J., 4,607,868, Cl. 285-332.000.
Davis, Richard J.; and Skandunas, Vince J. Ladder extension. 4,607,726, Cl. 182-204.000.
Davis, Robert D., Jr., to Ryerson & Haynes, Inc. Combination automobile folding tool. 4,607,406, Cl. 7-100.000.
Davis, Sumner F.: *See—*
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Davison, Ralph M.; and Grobner, Paul J., to Amax Inc. General purpose maintenance-free constructional steel of superior processability. 4,608,099, Cl. 148-37.000.
Deal, Troy M. Continuous process for the dewatering of phosphate slimes. 4,608,179, Cl. 210-748.000.
de Brebisson, Michel X. M.; and Tessier, Marc, to U.S. Philips Corporation. Semiconductor device manufactured by using a multilayer mask. 4,608,588, Cl. 357-34.000.
Deckman, Harry W.; and Dunsmuir, John H., to Exxon Research and Engineering Co. Improvements in sensitivity of a positive polymer resist having a glass transition temperature through control of a molecular weight distribution and prebaked temperature. 4,608,281, Cl. 427-385.500.
Deckman, Harry W.: *See—*
Weinberger, Bernard R.; Deckman, Harry W.; and Yablonovitch, Eli, 4,608,097, Cl. 148-33.300.
Deep Ocean Engineering Incorporated: *See—*
Hawkes, Graham S., 4,607,998, Cl. 414-735.000.
Deere & Company: *See—*
Landphair, Donald K.; and Salley, Gordon L., 4,607,708, Cl. 172-776.000.
Paisley, Daniel J., 4,607,730, Cl. 188-170.000.
Shellhouse, Wayne L.; and VanAuwelaer, James M., 4,607,707, Cl. 172-764.000.
DeFrange, Eugene R. Wall and rafter layout tool. 4,607,438, Cl. 33-451.000.
DeGooyer, William J., to Celanese Corporation. Aqueous based epoxy resin curing agents. 4,608,405, Cl. 523-404.000.
Degussa Aktiengesellschaft: *See—*
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Strack, Hans; and Kleinschmit, Peter, 4,608,236, Cl. 423-118.000.
De Haan, Frans W.; and Blackburn, John, to Fokker B.V. Hinge mechanism for an aircraft door. 4,607,812, Cl. 244-129.500.
Deichelbohrer, Paul R., to United States of America, Energy. Electric arc saw apparatus. 4,608,477, Cl. 219-69.00V.
DeKalb-Pfizer Genetics: *See—*
Troyer, A. Forrest, 4,607,453, Cl. 47-58.000.
del Fierro, Jose M. Q. Head restraint for child's seat. 4,607,885, Cl. 297-397.000.
DeLisle, David S.; and Marino, James P. Hat brim press. 4,607,769, Cl. 223-12.000.
Delu-Luftkissentransportgeratetechnik GmbH: *See—*
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Demus, Wolfgang; and Katterloher, Reinhard, to Max-Planck-Gesellschaft. Linear adjusting device. 4,607,492, Cl. 62-55.500.
Denki Kagaku Kogyo Kabushiki Kaisha: *See—*
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Dento-Med Industries Incorporated: *See—*
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Dentsply Research & Development Corp.: *See—*
Gonser, Donald I., 4,608,622, Cl. 362-32.000.
Deram, Georges E.; and Panczyk, Maurice A., to Poclain. Mobile machine comprising a stabilizing device. 4,607,862, Cl. 280-765.100.

Deraspan Corporation: *See—*
Aldrich, Donald F., 4,608,103, Cl. 156-64.000.
Dergazarian, Thomas E.: *See—*
Meyer, Victor E.; and Dergazarian, Thomas E., 4,608,433, Cl. 528-388.000.
DeRisi, Joseph. Fireplace furnace. 4,607,612, Cl. 126-121.000.
Design Standards Corporation: *See—*
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Desmarais & Frere Ltd: *See—*
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Desmarais, Gerard; and Desmarais, Claude, to Desmarais & Frere Ltd. Slide mount. 4,607,442, Cl. 40-152.000.
DeSoto, Inc.: *See—*
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Desportes, Henri; and Meyer, Joao, to Commissariat a l'Energie Atomique. Magnetic separator. 4,608,155, Cl. 209-224.000.
Detroit Edge Tool Company: *See—*
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Dette, Karl-Henning: *See—*
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Ehrlich, Daniel J.; Deutsch, Thomas F.; Osgood, Richard M.; and Schlossberg, Howard, 4,608,117, Cl. 156-610.000.
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Kallergis, Michael, 4,607,528, Cl. 73-602.000.
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Reck, Ralf; Broemer, Heinz; Deutscher, Klaus; and Franek, Henning, 4,608,051, Cl. 623-10.000.
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Devlin, William L.: *See—*
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Dickey, Frank R., Jr.; and Penn, William A., to General Electric Company. Adaptive signal processor for interference cancellation. 4,608,569, Cl. 343-384.000.
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Gaysert, Gerhard; and Gotz, Dieter, 4,608,013, Cl. 431-1.000.
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DiMartini, Carl; and Lane, John, to Fry Metals, Inc. Pb-Sn-Sb-Ag solder alloy. 4,608,230, Cl. 420-566.000.
Dinger, Rudolf J.; and Michel, Jean-Georges, to Asulab S.A. - ESA 55. Piezoelectric micro-resonateur. 4,608,510, Cl. 310-361.000.
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Dashley, Frederick J.; and Dittrich, David J., 4,607,647, Cl. 131-365.000.
Dodge, Paul D., to Tennant Company. Membrane remover/etchant. 4,608,086, Cl. 106-12.000.
Dodge, Peter W. Throttle and brake control apparatus. 4,607,733, Cl. 192-3.00S.
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Dono, Junichi, to Daido Kogyo Co., Ltd. Chain V-belt. 4,608,036, Cl. 474-201.000.
Dorina Nahmaschinen GmbH: *See—*
Meier, Gunter, 4,607,585, Cl. 112-454.000.
Dorman, Linneaus C.; and Meyer, Victor E., to Dow Chemical Company, The. Cyclic iminoether modified copolymers as improved adhesives. 4,608,419, Cl. 525-329.900.
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Doty, Gerald A., to Gateway Industries, Inc. Safety belt buckle with switch. 4,608,469, Cl. 200-61.58B.
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Dorman, Linneaus C.; and Meyer, Victor E., 4,608,419, Cl. 525-329.900.
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Bauman, Therese M.; Lee, Chi-Long; and Rabe, James A., 4,608,396, Cl. 521-99.000.
Freiberg, Alan L., 4,608,412, Cl. 524-724.000.
Varaprath, Padmakumari J., 4,608,270, Cl. 427-35.000.
Vincent, Gary A., 4,608,306, Cl. 428-391.000.
Dowty Mining Equipment Limited: *See—*
Brown, Stephen A., 4,607,986, Cl. 405-296.000.
Drake, Charles A., to Phillips Petroleum Company. Catalyst for the production of allyl acetate. 4,608,362, Cl. 502-243.000.
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Croopnick, Gerald A.; and Scruggs, David M., 4,608,319, Cl. 428-613.000.
Dries, Edgar: *See—*
Welschof, Hans-Heinrich; and Dries, Edgar, 4,608,028, Cl. 464-145.000.
Drum, Henner, to Hoechst Aktiengesellschaft. Paper support. 4,608,295, Cl. 428-202.000.
Drummond, Graham J.: *See—*
Rugis, John W.; and Drummond, Graham J., 4,607,719, Cl. 180-272.000.
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Rugis, John W.; and Drummond, Graham J., 4,607,719, Cl. 180-272.000.
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Shilkov, Vladimir A.; Shilkov, Andrei V.; Kuzmin, Petr D.; Metrikin, Vladimir S.; Chumichev, Vladimir A.; Borovtsev, Anatoly I.; and Dubenkov, Nikolai I., 4,607,980, Cl. 404-133.000.
Duda, Henry J., to Randall Equipment Company. Awning latch assembly. 4,607,654, Cl. 135-89.000.
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Shreck, Peter K.; and Dudding, John, 4,608,601, Cl. 358-146.000.
Dudzik, Joachim: *See—*
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Spindler, Heinz, 4,608,288, Cl. 428-78.000.
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Dunker, Friedrich W.; and Ossenberg-Engels, Walter, to Rump, Joh. Moritz. Hand needle for knitting or crochet. 4,607,505, Cl. 66-117.000.
Dunlap, John H.: *See—*
Hedler, Robert C.; Kohler, Robert D.; and Dunlap, John H., 4,608,709, Cl. 382-1.000.
Dunn, James K.: *See—*
Zemek, Thomas G.; Caruolo, Antonio B.; Roberts, Stephanie A.; Dunn, James K.; and Spearen, John, 4,607,421, Cl. 29-157.10R.
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Deckman, Harry W.; and Dunsmuir, John H., 4,608,281, Cl. 427-385.500.
Dunstan, Trebilcock: *See—*
Arthur, Jonathan R. F.; and Dunstan, Trebilcock, 4,607,532, Cl. 73-819.000.
Du Pont de Nemours, E. I., and Company: *See—*
Brixner, Lothar H., 4,608,190, Cl. 252-301.40H.
England, David C.; and Howard, Edward G., Jr., 4,608,206, Cl. 260-544.00F.
Gale, David M.; and Shin, Hyunkook, 4,608,089, Cl. 106-90.000.
Howard, Edward G., Jr., 4,608,350, Cl. 501-20.000.
Redick, Hugh E.; and Barnes, Russell D., 4,608,402, Cl. 523-215.000.
Sweeny, Wilfred; and Kwolek, Stephanie L., 4,608,427, Cl. 528-179.000.
Duracell Inc.: *See—*
D'Alessandro, Robert; Cardenas, Carlos; and Kaye, Gordon E., 4,607,904, Cl. 339-108.00R.
Ismail, Mohamed I., 4,608,325, Cl. 429-217.000.
Zaborney, John F., 4,608,323, Cl. 429-167.000.
Durand, Remie P., to Chrysler Corporation. Mold fill wall for snap-in terminal retention. 4,607,901, Cl. 339-59.00L.
Durkoppwerke GmbH: *See—*
Biermann, Kurt; Steppat, Gerhard; and Wehmeyer, Bodo, 4,607,583, Cl. 112-130.000.
Dutilh, Christian E., to Thomas J. Lipton Inc. Lecithin-containing food product. 4,608,267, Cl. 426-662.000.
Dutton, Patrick F., to International Business Machines Corporation. Bit steering apparatus and method for correcting errors in stored data, storing the address of the corrected data and using the address to maintain a correct data condition. 4,608,687, Cl. 371-10.000.
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E. R. Squibb & Sons, Inc.: *See—*
Hall, Steven E.; and Han, Wen-Ching, 4,608,386, Cl. 514-469.000.

E-Systems, Inc.: *See—*
White, Thomas E.; and Fowler, Brooks C., 4,608,647, Cl. 364-481.000.

Eagle Electric Mfg. Co., Inc.: *See—*
Munroe, Ronald G., 4,607,906, Cl. 339-192.00R.

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Brown, James W.; Chen, Tsang J.; and Schen, Michael A., 4,608,424, Cl. 526-240.000.
Chen, Tsang J., 4,608,310, Cl. 428-412.000.
Daniel, Daniel S.; and Kissel, Thomas R., 4,608,149, Cl. 204-418.000.
Devon, Thomas J., 4,608,239, Cl. 423-210.000.
Kindt, Robert J.; and Peffer, Robert M., 4,607,935, Cl. 355-3.0TR.
Rushing, Allen J., 4,607,944, Cl. 355-14.00D.

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Pomaville, Ronald C.; and Landane, Jack, 4,607,678, Cl. 160-332.000.

Eaton Corporation: *See—*
Buente, Stephen M.; and Clark, David P., 4,607,599, Cl. 123-90.500.

Eaton, George F.: *See—*
Hsiung, Andrew K.; Eaton, George F.; and Hemphill, Brian W., 4,608,181, Cl. 210-786.000.

Eavenson, Barry: *See—*
Rice, James S.; Eavenson, Barry; Eavenson, Garry; and Bryson, Thomas A., 4,607,611, Cl. 126-121.000.

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Eberle, Robert A. Shower head which uniformly dispenses liquid additives. 4,607,793, Cl. 239-318.000.

Ebihara, Yoshiyuki, to Etona Company, Limited. Stapler. 4,607,777, Cl. 227-120.000.

Ebner, Heinz; Koch, Gabriele I.; Lauckner, Joachim; Lutz, Felix; Seibold, Gerhard; and Wessel, Gerhard, to International Standard Electric Corporation. Electro-optical device. 4,607,917, Cl. 350-392.000.

Eckberg, Richard P.; Striker, Richard A.; and Modic, Frank J., to General Electric Company. Ultraviolet radiation curable silicone release compositions. 4,608,312, Cl. 428-419.000.

Ecker, Fred L., to Concrete Systems, Inc. Pre-stressed construction element. 4,607,470, Cl. 52-226.000.

Edmondson, Wayne L.: *See—*
Pendolino, Eugene F.; Edmondson, Wayne L.; and O'Neill, Michael L., 4,607,891, Cl. 299-92.000.

Effland, Richard C.; Davis, Larry; and Kapples, Kevin J., to Hoechst-Roussel Pharmaceuticals Inc. 11-substituted 5H,11H-pyrrolo[2,1-c][1,4]benzoxazepines as antipsychotic and analgesic agents. 4,608,374, Cl. 514-211.000.

Egami, Hidemi: *See—*
Hosoi, Atsushi; Nakahata, Kimio; Tajima, Hatsuo; Egami, Hidemi; Kan, Fumitaka; and Nakamura, Shunji, 4,607,938, Cl. 355-3.0DD.

Egawa, Akira; Kodaira, Takanori; and Namai, Akihiro, to Canon Kabushiki Kaisha. Battery checking device. 4,607,932, Cl. 354-468.000.

Egawa, Akira, to Kabushiki Kaisha Komatsu Seisakusho. Speed detecting device employing a Doppler radar. 4,608,568, Cl. 343-8.000.

Eggers, Alfred G., to Westinghouse Electric Corp. Unipak tie-down system. 4,607,990, Cl. 410-2.000.

Ehlus, Dennis W.; and Williams, Patrick J., to Paper Converting Machine Company. Apparatus for handling flat, flexible web products. 4,607,473, Cl. 53-54.000.

Ehrlich, Daniel J.; Deutsch, Thomas F.; Osgood, Richard M.; and Schlossberg, Howard, to Massachusetts Institute of Technology. Maskless growth of patterned films. 4,608,117, Cl. 156-610.000.

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Bischofberger, Walter; Eichholzer, Heinz; Graber, Werner; and Talir, Jiri, 4,608,470, Cl. 200-144.0AP.

Eidling, Karl, to Siemens Aktiengesellschaft. Arrangement for stripping solid and stranded wires. 4,607,545, Cl. 81-9.510.

Eigenmann, Ludwig. Method and equipment for improving horizontal marking strips. 4,607,978, Cl. 404-73.000.

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Ostman, Per H., 4,608,121, Cl. 162-19.000.

Elam, Ormand K. Method and apparatus to rotate moving overlapping stacked boxes. 4,607,743, Cl. 198-415.000.

Electric Power Research Institute, Inc.: *See—*
Starkie, Alan H., 4,608,533, Cl. 324-142.000.

Electrical Accessories Ein Hashofet: *See—*
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Electro-Space Fabricators, Inc.: *See—*
Straccia, William J., Sr.; and Smous, Dale L., 4,607,751, Cl. 211-41.000.

Electron Machine Corporation, The: *See—*
Corbett, James O., 4,607,955, Cl. 356-342.000.

Elkhart Door Corporation: *See—*
Haines, Richard K., 4,607,816, Cl. 248-208.000.

Elliott, Richard M.; Holland, Larry L.; Gilligan, Thomas J., III; Martin, John F.; and Ciccia, Lawrence P., to USM Corporation. Adjustable alignment mechanism for a power reinforcing machine. 4,607,741, Cl. 198-345.000.

Ellis, Linda N.; and Spector, George. Jet stream water bed. 4,607,405, Cl. 5-451.000.

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Krampen, Adalbert A.; Ells, Delbert O.; Bjerke, Robert K.; and Ward, James P., 4,608,102, Cl. 149-92.000.

Elm Co., Ltd.: *See—*
Hori, Kenichi, 4,608,577, Cl. 346-140.00R.

Elmec Corporation: *See—*
Sota, Yasuo, 4,608,467, Cl. 200-16.00D.

Emhart Industries, Inc.: *See—*
Fenton, Frank A., 4,608,072, Cl. 65-79.000.
Trahan, Albert J.; and Vajda, Vladimir, 4,608,075, Cl. 65-362.000.

Endo, Yoshinori; and Takao, Hisashi, to Otsuka Kagaku Kabushiki Kaisha. γ-Pyrone phosphoric ester derivatives and insecticidal and miticidal compositions thereof. 4,608,367, Cl. 514-89.000.

Energy Absorption Systems, Inc.: *See—*
Krage, William G.; and Denman, Owen S., 4,607,824, Cl. 256-13.100.

Energy Conversion Devices, Inc.: *See—*
Keem, John E.; Ovshinsky, Stanford R.; Sadate-Akhavi, Hossein; Chen, Juei-Teng; and Kadin, Alan M., 4,608,296, Cl. 428-215.000.

Engel, W. King, to University of Southern California. Treatment of neurologic functions. 4,608,365, Cl. 514-18.000.

Engelbrecht & Lemmerbrock GmbH & Co.: *See—*
Johanning, Hermann, 4,607,957, Cl. 366-156.000.

Engelhard Corporation: *See—*
Lanam, Richard D.; and Robertson, Allen R., 4,608,229, Cl. 420-464.000.
Silverman, Lance D.; and Speronello, Barry K., 4,608,357, Cl. 502-84.000.

England, David C.; and Howard, Edward G., Jr., to Du Pont de Nemours, E. I., and Company. Fluorinated 3-ketoglutaroyl halides. 4,608,206, Cl. 260-544.00F.

Enikolopov, Nikolai S.; Nepomnyaschy, Anatoly I.; Filmakova, Lidia A.; Krasnokutsky, Valentin P.; Kurakin, Leonid I.; Akopian, Elena L.; Markarian, Khristofor A.; Negmatov, Saibdzhan S.; Matkarimov, Suleiman K.; Polivanov, Yury A.; Sherstnev, Pavel P.; and Pavlov, Vilitary B., to Nauchno-Proizvodstvennoe Obiedinenie "Norplast". Method of making powder from rubber and vulcanization products. 4,607,796, Cl. 241-3.000.

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Enns, Frederick: *See—*
Jain, Prem C.; and Enns, Frederick, 4,608,685, Cl. 370-85.000.

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Thureson, Gary R.; and Gladden, Ernest L., 4,607,573, Cl. 102-275.800.

Ensing, Hendrik; and Peulen, Jacobus H. M., to Oce-Nederland B.V. Contact fixing and cleaning method and apparatus. 4,607,947, Cl. 355-15.000.

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Kokkonen, Seppo; Kuhasalo, Antti; Savolainen, Erkki; Titoff, Juha; Vento, Jorma; and Vikio , Pentti, 4,608,174, Cl. 210-512.200.

Entac Company, Limited: *See—*
Nozawa, Yoshikuni, 4,607,803, Cl. 242-1.10R.

Enthone, Incorporated: *See—*
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Environmental Research Institute of Michigan: *See—*
Fienup, James R., 4,607,914, Cl. 350-320.000.

Epperson, Donald E.; Curley, Orvin B.; and Swisher, Horton E., to Brown International Corporation. Process for forming a citrus juice extender. 4,608,266, Cl. 426-599.000.

Erhard, Raymond, to SMID S.A. Guiding system for the carriage of a circular sawing machine. 4,607,555, Cl. 83-471.200.

Erlichman, Max. Protective sleeve device. 4,607,866, Cl. 285-45.000.

Ernst, Hans-Hellmut: *See—*
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Ernst Leitz Wetzlar GmbH: *See—*
Reck, Ralf; Broemer, Heinz; Deutscher, Klaus; and Franek, Henning, 4,608,051, Cl. 623-10.000.

Erwin, Timothy R., to Pitney Bowes Inc. Postage meter. 4,608,484, Cl. 235-101.000.

Es swein S.A.: *See—*
Didier, Laurent; and Geay, Jean C., 4,607,408, Cl. 8-159.000.

Esmil Hubert B.V.: *See—*
Rijpkema, Jan; and Uittenbogaart, Gustaaf A., 4,608,006, Cl. 425-347.000.

Esposito, Christopher, to Four Seasons Solar Products Corporation. Greenhouse construction provided with special ridge for ventilation. 4,607,567, Cl. 98-42.120.

Ethicon, Inc.: *See*—
Kula, John; and Mikaza, Anthony S., Jr., 4,607,636, Cl. 128-334.00R.
Shalaby, Shalaby W.; and Jamiolkowski, Dennis D., 4,608,428, Cl. 528-192.000.

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Ebihara, Yoshiyuki, 4,607,777, Cl. 227-120.000.

Ettlinger, Ralph; and Biela, John A., to Amco Corporation. Spray head assembly. 4,607,795, Cl. 239-530.000.

Eudier, Michel; and Youssef, Hassan, to Alliages Frittes Metafram. Self-lubricating sintered bearing and process for the production thereof. 4,608,085, Cl. 75-247.000.

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Courtoy, Jean-Francois; and Marchal, Daniel, 4,608,294, Cl. 428-141.000.

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Stephens, David J., 4,607,699, Cl. 166-303.000.

Exxon Research and Engineering Co.: *See*—
Deckman, Harry W.; and Dunsmuir, John H., 4,608,281, Cl. 427-385.500.
Feldman, Nicholas; and Panzer, Jerome, 4,608,345, Cl. 436-60.000.
Hudson, Carl W.; and Hamner, Glen P., 4,608,153, Cl. 208-112.000.
Peiffer, Dennis G.; and Lundberg, Robert D., 4,608,425, Cl. 526-241.000.
Wachs, Israel E.; Fiato, Rocco A.; and Chersich, Claudio C., 4,608,359, Cl. 502-177.000.
Weinberger, Bernard R.; Deckman, Harry W.; and Yablonovitch, Eli, 4,608,097, Cl. 148-33.300.

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Svyatsky, Eduard; Rabindran, K. George; and Faber, Thomas J., 4,607,833, Cl. 271-10.000.

FAG Kugelfischer Georg Schafer (KGaA): *See*—
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Singh, Anand P.; Crumbacher, Thomas A.; Naylor, Gary R.; and Fagan, Thomas R., Jr., 4,608,219, Cl. 264-315.000.

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Raubenheimer, Johann N., 4,608,167, Cl. 210-242.100.

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Brinkmann, Arnfried; and Lehners, Ernst, 4,607,725, Cl. 182-189.000.

Fairbanks, Norman P., to General Electric Company. Electroplating tape. 4,608,145, Cl. 204-279.000.

Falch, Erik; Krogsgaard-Larsen, Povl; Sauerberg, Per; Christensen, Anne V.; and Larsen, Jens-Jorgen, to H. Lundbeck A/S. Tetrahydroisoxazolo[4,5-c]pyridine derivatives useful in the treatment of malfunctions of the acetylcholine or muscarinic systems. 4,608,378, Cl. 514-302.000.

Falcomato, Rocco, to Niemand Bros. Inc. High temperature probe lance cover. 4,608,107, Cl. 156-190.000.

Falconer, Dennis G.: *See*—
Frollini, Dominick, Jr.; Falconer, Dennis G.; and Kato, Kenneth J., 4,608,148, Cl. 204-408.000.

Fallier, Charles N., Jr.; and Proud, Joseph M., to GTE Laboratories Incorporated. Dual spiral line generator method and apparatus for starting low wattage high intensity discharge lamps. 4,608,521, Cl. 315-47.000.

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Fan, Lucy L.; and Arce, Javier A., to Frito-Lay, Inc. Pretreatment of fried food products with oil containing emulsifiers. 4,608,264, Cl. 426-438.000.

Fanuc Ltd: *See*—
Aso, Toshiyuki; and Arakawa, Yasuo, 4,608,478, Cl. 219-69.00W.
Kiya, Nobuyuki, 4,608,644, Cl. 364-474.000.

Farkas, Bela: *See*—
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Farmer, Edward R.; and Stillman, Allyn N., to General Electric Company. Method for applying abrasive particles to a surface. 4,608,128, Cl. 204-16.000.

Farris, Jimmy L. Vacuum exposure registry apparatus. 4,607,953, Cl. 355-91.000.

Faulconer, Mark, to U.S.D. Corp. Strap and retainer for a divers mask. 4,607,398, Cl. 2-452.000.

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Fedde, Chris S., to Motorola, Inc. Spontaneous channel continuity scanning radio. 4,608,712, Cl. 455-166.000.

Fedeli, Jean-Marc; and Jouve, Hubert, to Commissariat a l'Energie Atomique. Magnetic bubble store. 4,608,677, Cl. 365-19.000.

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Nightingale, John L.; Fejer, Martin M.; and Byer, Robert L., 4,607,776, Cl. 226-171.000.

Feld, Sam H.: *See*—
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Fenton, Frank A., to Emhart Industries, Inc. Method and apparatus for transferring articles of glassware from a blow station to conveyor means. 4,608,072, Cl. 65-79.000.

Ferdows, Houshang; Krug, Martin; and Bihl, Paul R., to Suetrak U.S.A. Roof-mounted air conditioner system having modular evaporator and condensor units. 4,607,497, Cl. 62-179.000.

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Mallinson, Andrew M., 4,608,529, Cl. 323-275.000.

Ferri, Edward T., Jr.; and Seaborn, Paul E., to Seaborn Development, Inc. Envelope folding system. 4,608,039, Cl. 493-164.000.

Ferrini, Pier G.; and Goschke, Richard, to Ciba-Geigy Corporation. 2-(Sulphinyl and sulfonyl)-4(5)-phenyl-5(4)-(3'-pyridyl)-imidazols. 4,608,382, Cl. 514-341.000.

Fiato, Rocco A.: *See*—
Wachs, Israel E.; Fiato, Rocco A.; and Chersich, Claudio C., 4,608,359, Cl. 502-177.000.

Fichter, Peter K., to Polaroid Corporation. Apparatus for processing and/or projecting transparency film assemblages. 4,607,926, Cl. 354-78.000.

Fienup, James R., to Environmental Research Institute of Michigan. Optical system design techniques using holographic optical element. 4,607,914, Cl. 350-320.000.

Fileset Corporation: *See*—
Rudy, Michael; Cary, Paul; and Roth, Arthur A., 4,608,679, Cl. 369-36.000.

Filippini, Lucio: *See*—
Citterio, Attilio; Tinucci, Laura; Belli, Aldo; and Filippini, Lucio, 4,608,441, Cl. 562-466.000.

Filmakova, Lidia A.: *See*—
Enikolopov, Nikolai S.; Nepomnyaschy, Anatoly I.; Filmakova, Lidia A.; Krasnokutsky, Valentin P.; Kurakin, Leonid I.; Akopian, Elena L.; Markarian, Khristofor A.; Negmatov, Saibdzhan S.; Matkarimov, Suleiman K.; Polivanov, Yury A.; Sherstnev, Pavel P.; and Pavlov, Vilitary B., 4,607,796, Cl. 241-3.000.

Filmakowa, Lidia A.: *See*—
Enikolopow, Nikolai S.; Wolfson, Stanislaw A.; Nepomnjaschtschie, Anatolie I.; Nikolskie, Wadim G.; Teleschow, Wiktor A.; Filmakowa, Lidia A.; Brinkmann, Heinz; Pantzer, Eckart; and Uhland, Eberhard, 4,607,797, Cl. 241-23.000.

Filtertek, Inc.: *See*—
Cain, Thomas A., 4,608,166, Cl. 210-232.000.

Finzer, Heinz; and Kessler, Wolfgang, to Heinz Finzer KG. Stamping and bending tool assembly. 4,607,517, Cl. 72-449.000.

Fiorentini, Carlo, to Afros S.p.A. Mixing method and apparatus for preparing multi-component plastic materials especially polyurethanes. 4,608,233, Cl. 422-133.000.

Firmenich SA: *See*—
Giersch, Wolfgang K.; Schulte-Elte, Karl H.; and Ohloff, Gunther, 4,608,445, Cl. 568-667.000.

Flanders Filters, Inc.: *See*—
Cadwell, George H., Jr., 4,608,066, Cl. 55-385.00A.

Flannery, Stephan W.: *See*—
Bendall, Brian; and Flannery, Stephan W., 4,607,788, Cl. 236-12.200.

Fleming, Christopher A., to Council for Mineral Technology. Regeneration of thiocyanate resins. 4,608,176, Cl. 210-677.000.

Fleming, William F., III, to RJR Archer, Inc. Method of and apparatus for abrading mechanically perforated cigarette filter tipping paper. 4,608,037, Cl. 493-22.000.

Flourocarbon Technologies, Inc.: *See*—
Runge, Harry V., 4,608,282, Cl. 427-385.500.

Focke & Co.: *See*—
Focke, Heinz, 4,607,748, Cl. 206-254.000.

Focke, Heinz, to Focke & Co. Shoulder box for cigarettes or the like. 4,607,748, Cl. 206-254.000.

Fokker B.V.: *See*—
De Haan, Frans W.; and Blackburn, John, 4,607,812, Cl. 244-129.500.

Force Control Industries, Inc.: *See*—
Kelley, Reginald D., 4,607,736, Cl. 192-18.00A.

Ford Aerospace & Communications Corporation: *See*—
Frazer, Alson C., 4,607,810, Cl. 244-329.000.

Ford, James; and Canfield, Douglas M., to Casso Solar Corporation. Roller conveyor for a glass furnace. 4,608,073, Cl. 65-163.000.

Ford Motor Company: *See*—
Stockton, Thomas R.; and Morris, Frederick J., 4,608,032, Cl. 474-28.000.

Foreman, James D. M.: *See*—
Whittlestone, Walter G.; Wenham, Douglas L.; and Foreman, James D. M., 4,607,596, Cl. 119-14.020.

Fossati, Piero, to Miles Italiana S.p.A. Enzymatic urea assay. 4,608,335, Cl. 435-12.000.

Foster, C. Tom. Portable illumination display sign. 4,607,444, Cl. 40-550.000.

Foster Wheeler Energy Corporation: *See*—
Seshamani, Venkatraman, 4,607,690, Cl. 165-145.000.

Four Seasons Solar Products Corporation: *See*—
Esposito, Christopher, 4,607,567, Cl. 98-42.120.

Fowler, Brooks C.: *See*—
White, Thomas E.; and Fowler, Brooks C., 4,608,647, Cl. 364-481.000.

Fowler, Stephen L.; and Brown, Allison T. Telecommunications device for the hearing impared. 4,608,457, Cl. 179-2.00A.

Fox, David A.; and Baker, Donal E., to Westinghouse Electric Corp. Electrical inverter with minority pole current limiting. 4,608,626, Cl. 363-56.000.

Fraige, Richard. Waterbed float with antiwave hanging baffle and collapse-retarding fiber insert. 4,607,404, Cl. 5-450.000.

Francis, John G. R. Saw guide with cut location indicator. 4,607,434, Cl. 33-42.000.

Franek, Henning: *See*—
Reck, Ralf; Broemer, Heinz; Deutscher, Klaus; and Franek, Henning, 4,608,051, Cl. 623-10.000.

Frank, Sylvan G.; Brodin, Arne F.; Chen, Chih-Ming J.; and Panthuvanich, Siriporn, to Ohio State University Research Foundation, The. Small particule formation and encapsulation. 4,608,278, Cl. 427-213.350.

Fraser, Gerald M.; and Champigny, Marcel J. Water level control device. 4,607,658, Cl. 137-393.000.

Fraunhofer Gesellschaft zur Forderung der angewandten Forschung e. V.: *See*—
Muller, Dietmar; and Schubert, Hiltmar, 4,608,210, Cl. 264-3.200.

Frazer, Alson C., to Ford Aerospace & Communications Corporation. Passive constraint for aerodynamic surfaces. 4,607,810, Cl. 244-329.000.

Freeman, Richard B., to Budd Company, The. Electro-magnetic interference shield. 4,608,453, Cl. 174-35.0MS.

Freiberg, Alan L., to Dow Corning Corporation. Silicone water-based elastomeric caulking material. 4,608,412, Cl. 524-724.000.

Fretwell, Donald W. Applicator for impressing brands or medicaments on animals. 4,608,045, Cl. 604-311.000.

Fried. Krupp GmbH: *See*—
Rummler, Karl-Heinz; Sievers, Willi; Dette, Karl-Henning; Koster, Lothar; and Luscalu, Romeo, 4,608,218, Cl. 264-315.000.

Friedman, Michael S.; Thomas, Kenneth D.; and Chan, Philip T., to Computer Automation, Inc. Local modulated carrier data network with a collision avoidance protocol. 4,608,559, Cl. 340-825.500.

Friesenhagen, Lothar: *See*—
Lepper, Herbert; and Friesenhagen, Lothar, 4,608,202, Cl. 260-410.90R.

Frimer, Itzchak. Firearm rest. 4,607,561, Cl. 89-37.040.

Fritch, Charles D.; and McAdams, John B., to Fritch, Charles D. Fiber optic ocular endoscope. 4,607,622, Cl. 128-6.000.

Frito-Lay, Inc.: *See*—
Fan, Lucy L.; and Arce, Javier A., 4,608,264, Cl. 426-438.000.

Frollini, Dominick, Jr.; Falconer, Dennis G.; and Kato, Kenneth J., to Allied Corporation. Combination pH/reference electrode with improved temperature response. 4,608,148, Cl. 204-408.000.

Fry, Emanuel D., to Tecumseh Products Company. Compressor mounted suction accumulator. 4,607,503, Cl. 62-503.000.

Fry Metals, Inc.: *See*—
DiMartini, Carl; and Lane, John, 4,608,230, Cl. 420-566.000.

Frye, John G., Jr.: *See*—
Mazanec, Terry J.; Goeden, Gary V.; and Frye, John G., Jr., 4,608,447, Cl. 568-902.000.

Fubini, Guido: *See*—
Turci, Edmondo; and Fubini, Guido, 4,607,815, Cl. 244-161.000.

Fuji Kiko Company, Limited: *See*—
Kinoshita, Satoshi; and Yamamoto, Yoshimi, 4,607,540, Cl. 74-493.000.

Fuji Oil Company, Ltd.: *See*—
Akasaka, Takeshi; Terashima, Masahiko; Kawade, Hiroyuki; and Taniguchi, Hitoshi, 4,608,203, Cl. 530-378.000.

Fuji Photo Film Co., Ltd.: *See*—
Ishizuka, Akio; Yamazaki, Hisashi; and Yamazaki, Kikuo, 4,608,301, Cl. 428-328.000.
Miyake, Izumi, 4,608,613, Cl. 360-78.000.
Nakayama, Yoshiaki; and Inuiya, Masafumi, 4,608,595, Cl. 358-29.000.
Oishi, Kengo; and Ono, Tuyoshi, 4,608,617, Cl. 360-133.000.
Shuto, Sadanobu; Fujita, Munehisa; and Hasebe, Kazunori, 4,608,334, Cl. 430-505.000.
Umemura, Shizuo; and Kitamoto, Tatsuji, 4,608,093, Cl. 148-6.350.

Fujii, Isao; and Narasaka, Shin, to Honda Giken Kogyo Kabushiki Kaisha. Seal arrangement for vane type air pumps. 4,608,003, Cl. 418-137.000.

Fujii, Takabumi; and Iijima, Takashi, to Matsushita Electric Industrial Co., Ltd. Organic electrolyte cell. 4,608,324, Cl. 429-194.000.

Fujiki, Hirokazu: *See*—
Miyaji, Yoshimori; Fujiki, Hirokazu; and Takahashi, Fumio, 4,608,593, Cl. 358-10.000.

Fujimoto, Kiyokatsu; Shibuya, Kazunobu; and Urata, Tetsukazu, to Toyo Sanso Co., Ltd. Method of and apparatus for disintegrating lumps of boiled rice while cooling and freezing. 4,607,495, Cl. 62-63.000.

Fujimoto, Terunori: *See*—
Shimizu, Nobuyoshi; Fujimoto, Terunori; Inui, Tsuneo; and Ishida, Masatoki, 4,608,130, Cl. 204-27.000.

Fujimura, Yoshiyuki: *See*—
Niwa, Kuniyuki; and Fujimura, Yoshiyuki, 4,608,645, Cl. 364-474.000.

Fujioka, Futoshi; Boden, Richard M.; and Schreiber, William L., to International Flavors & Fragrances Inc. Preparing a tertiary hydroxyl carboxaldehyde containing perfume composition. 4,608,195, Cl. 252-522.00R.

Fujioka, Futoshi; Boden, Richard M.; and Schreiber, William L., to International Flavors & Fragrances Inc. Preparing tertiary hydroxyl carboxaldehyde containing perfume compositions. 4,608,196, Cl. 252-522.00R.

Fujisawa Pharmaceutical Co., Ltd.: *See*—
Ueda, Ikuo; and Kato, Masayuki, 4,608,375, Cl. 514-218.000.

Fujita, Munehisa: *See*—
Shuto, Sadanobu; Fujita, Munehisa; and Hasebe, Kazunori, 4,608,334, Cl. 430-505.000.

Fujita, Tsuyoshi: *See*—
Toda, Gyozo; Fujita, Tsuyoshi; Tosaki, Hiromi; and Kuroki, Takashi, 4,608,316, Cl. 428-446.000.

Fujitsu Limited: *See*—
Murakami, Yoshishige; Inoue, Takeshi; and Tanaka, Atsushi, 4,608,598, Cl. 358-113.000.

Fujitsu Ten Limited: *See*—
Takahashi, Minoru; Fukuda, Teruo; Isobe, Toshiaki; and Kobashi, Mamoru, 4,607,523, Cl. 73-116.000.

Fujiwara, Katsuyoshi: *See*—
Uchiyama, Hiroaki; Ibuchi, Yoshiaki; and Fujiwara, Katsuyoshi, 4,607,946, Cl. 355-14.00R.

Fukazawa, Yoshimitsu: *See*—
Sugimoto, Tamio; Fukazawa, Yoshimitsu; and Yamaguchi, Kunio, 4,608,001, Cl. 418-55.000.

Fukuda, Tatsuo; and Ikenaga, Akiyoshi, to Futaba Denshi Kogyo K. K. Color fluorescent luminous tube. 4,608,518, Cl. 313-481.000.

Fukuda, Teruo: *See*—
Takahashi, Minoru; Fukuda, Teruo; Isobe, Toshiaki; and Kobashi, Mamoru, 4,607,523, Cl. 73-116.000.

Fukui, Kiyoshi, to New Cosmos Electric Co. Ltd. Hydrogen-selective sensor and manufacturing method therefor. 4,608,549, Cl. 338-34.000.

Fukumoto, Ryoichi: *See*—
Shiraishi, Daiichi; Iwasaki, Eiji; and Fukumoto, Ryoichi, 4,607,456, Cl. 49-352.000.

Fukuroi, Takeo, to Nippon Notion Kogyo Co., Ltd. Button for garment. 4,607,415, Cl. 24-94.000.

Fukushima, Toshitaka, to Seiko Instruments & Electronics Ltd. Electronic sphygmomanometer. 4,607,641, Cl. 128-680.000.

Fukuta, Minoru: *See*—
Manome, Teruo; Miki, Yasuhiko; Takita, Kentaro; and Fukuta, Minoru, 4,608,657, Cl. 364-571.000.

Fukuyama, Masaru: *See*—
Saito, Tomoo; Tanimoto, Mitsutoshi; Yasuda, Masayoshi; Ijuin, Yasuharu; Hikita, Akio; Morikawa, Naotake; Uehara, Hiromichi; and Fukuyama, Masaru, 4,607,521, Cl. 73-23.000.

Fukuzawa, Miyuki: *See*—
Yokokawa, Hidemi; and Fukuzawa, Miyuki, 4,608,652, Cl. 364-521.000.

Fullerton, Graeme D., to Ainsworth Nominees Pty. Ltd. Poker machine with improved security after power failure. 4,607,844, Cl. 273-143.00R.

Fulton, Cyrus B., Jr. Method and apparatus for stretch wrapping unstable loads. 4,607,476, Cl. 53-399.000.

Fumagalli, Marco: *See*—
Ghisalberti, Luigi; and Fumagalli, Marco, 4,608,158, Cl. 210-96.100.

Fumoto, Teruo: *See*—
Kaneko, Akira; Fumoto, Teruo; and Nishida, Jun, 4,608,599, Cl. 358-113.000.

Fundatech S.A.: *See*—
Spits, Marc, 4,607,630, Cl. 128-127.000.

Futaba Denshi Kogyo K. K.: *See*—
Fukuda, Tatsuo; and Ikenaga, Akiyoshi, 4,608,518, Cl. 313-481.000.

Fuzita, Yoshiharu: *See*—
Hirose, Nagayoshi; Kido, Sumiaki; and Fuzita, Yoshiharu, 4,608,488, Cl. 235-384.000.

Gabbay, Emile; and Plessis, Andre , to Thomson-CGR. Rotating anode X-ray tube provided with a charge flow device. 4,608,707, Cl. 378-132.000.

Gaddy, James L.; and Clausen, Edgar C. Method of separation of sugars and concentrated sulfuric acid. 4,608,245, Cl. 423-531.000.

Gaetani, Quintino: *See*—
Jacquet, Bernard; and Gaetani, Quintino, 4,608,392, Cl. 514-844.000.

Gala, Jeffrey A. Isometric exercise apparatus. 4,607,841, Cl. 272-125.000.

Gale, David M.; and Shin, Hyunkook, to Du Pont de Nemours, E. I., and Company. Cement matrix composites and method of making same. 4,608,089, Cl. 106-90.000.

Galileo Electro-Optics Corp.: *See*—
Tosswill, Christopher H., 4,608,519, Cl. 313-528.000.

Galland, Sherry A., to J. R. Simplot Company. Method of making frozen potato patties and the products formed thereby. 4,608,262, Cl. 426-243.000.

Gallo, William. Slide number identifiers. 4,607,845, Cl. 273-148.00R.

Galper, Sam, to Samdor Engineering Limited. Liquid surface skimming trough assembly. 4,608,165, Cl. 210-232.000.

Gambro Dialysatoren KG: *See*—
Goehl, Hermann J.; and Buck, Reinhold J., 4,608,172, Cl. 210-500.200.

Gantner, Phillip E. Hydronic room heating device. 4,607,791, Cl. 237-71.000.

Gardent, Maurice: *See*—
Karinthi, Pierre; Gardent, Maurice; Regnier, Colette; and Tuccella, Jean, 4,607,488, Cl. 62-45.000.

Gardner, Hugh C.; Brode, George L.; and Cotter, Robert J., to Union Carbide Corporation. Epoxy compositions containing oligomeric diamine hardeners and high strength composites therefrom. 4,608,404, Cl. 523-400.000.

Garr, Ernest J. Wrapping table assembly. 4,607,774, Cl. 225-47.000.

Gartner, Hartmut; Biber, Klaus; and Greve, Peter, to Carl-Zeiss-Stiftung, Heidenheim/Brenz. Manipulator for use with a surgical microscope. 4,607,919, Cl. 350-507.000.
Gass, Wanda K.: *See—*
Caudel, Edward R.; Magar, Surendar S.; and Gass, Wanda K., 4,608,634, Cl. 364-200.000.
Gastebled, Yves. Knockdown picnic table. 4,607,880, Cl. 297-157.000.
Gates, George: *See—*
Hancock, Dennis, 4,607,772, Cl. 224-30.00A.
Gateway Industries, Inc.: *See—*
Doty, Gerald A., 4,608,469, Cl. 200-61.58B.
Gaudiana, Russell A.: *See—*
Rogers, Howard G.; Gaudiana, Russell A.; Minns, Richard A.; and Sinta, Roger F., 4,608,429, Cl. 528-194.000.
Gay, Pierre. Line-type foliage trimmer with automatic feed. 4,607,431, Cl. 30-276.000.
Gaysert, Gerhard; and Gotz, Dieter, to Die Firma J. Eberspacher. Ultrasonic atomizing burner. 4,608,013, Cl. 431-1.000.
Geay, Jean C.: *See—*
Didier, Laurent; and Geay, Jean C., 4,607,408, Cl. 8-159.000.
Geisler, Thomas C., to Minnesota Mining and Manufacturing Company. Imageable toner powder. 4,608,329, Cl. 430-110.000.
Geisthoff, Hubert, to Jean Walterscheid GmbH. Angular torque transmission mechanism. 4,607,538, Cl. 74-417.000.
Genco, Louis V.: *See—*
Task, Harry L.; and Genco, Louis V., 4,607,923, Cl. 351-239.000.
General Binding Corporation: *See—*
Scharer, Roger M., 4,607,993, Cl. 412-40.000.
General Electric Company: *See—*
Dickey, Frank R., Jr.; and Penn, William A., 4,608,569, Cl. 343-384.000.
Eckberg, Richard P.; Striker, Richard A.; and Modic, Frank J., 4,608,312, Cl. 428-419.000.
Fairbanks, Norman P., 4,608,145, Cl. 204-279.000.
Farmer, Edward R.; and Stillman, Allyn N., 4,608,128, Cl. 204-16.000.
Giles, Harold F., Jr.; and Hirt, Robert P., Jr., 4,608,311, Cl. 428-412.000.
Giles, Harold F., Jr., 4,608,417, Cl. 525-148.000.
Hale, Thomas E., 4,608,098, Cl. 148-6.300.
Hirschkron, Robert, 4,607,657, Cl. 137-15.100.
Mark, Victor; and Campbell, John R., 4,608,430, Cl. 528-196.000.
Stillwell, Billy E., 4,608,528, Cl. 320-2.000.
General Motors Corporation: *See—*
Bomer, Michael O.; and Chudoba, Richard F., 4,608,619, Cl. 361-31.000.
Eisenberg, Sidney W.; and Johnson, Gregory J., 4,607,861, Cl. 280-702.000.
Partin, Dale L., 4,608,694, Cl. 372-44.000.
Shelton, Alan J., 4,607,877, Cl. 296-191.000.
Vahabzadeh, Hamid, 4,608,031, Cl. 474-17.000.
General Services Engineering, Inc.: *See—*
Hoffman, Gary R., 4,608,563, Cl. 340-870.020.
Hoffman, Gary R., 4,608,564, Cl. 340-870.020.
General Signal Corporation: *See—*
Turner, Michael D.; and Roch, Jacques, 4,607,525, Cl. 73-37.500.
Gensco Inc.: *See—*
Czerwinski, Richard W.; and Osterberger, Larry D., 4,608,418, Cl. 524-296.000.
Georgopoulos, George, to Levolor Lorentzen, Inc. Installation bracket for venetian blind head rail. 4,607,818, Cl. 248-544.000.
GESTRA Aktiengesellschaft: *See—*
Wessels, Lur; and Tetzner, Johannes, 4,607,661, Cl. 137-512.100.
Gewerkschaft Eisenhutte Westfalia: *See—*
Merten, Gerhard; Steinkuhl, Bernd; and Hauschopp, Alois, 4,607,890, Cl. 299-43.000.
Ghedini, Luigi; Claudio, Rubbini; and Mauro, Grillini. Apparatus for cleaning in particular teeth. 4,608,018, Cl. 433-88.000.
Ghent, Hugh W.: *See—*
Cecco, Valentino; and Ghent, Hugh W., 4,608,534, Cl. 324-238.000.
Ghisalberti, Luigi; and Fumagalli, Marco, to Web Italia S.r.l. Feeding installation for the dampening solution in offset printing processes. 4,608,158, Cl. 210-96.100.
Gibson, Brent William: *See—*
Courtman, Murray G., 4,607,756, Cl. 215-6.000.
Gibson, Carroll A., to Texfi Industries, Inc. Apparatus for severing inserted filling yarns. 4,607,667, Cl. 139-429.000.
Gibson, Colin F.: *See—*
Bottomore, David; and Gibson, Colin F., 4,607,566, Cl. 98-37.000.
Gibson, James D. M., to Wool Development International Ltd. Fluid dispensing apparatus. 4,607,589, Cl. 118-201.000.
Giebeler, Robert H., Jr.: *See—*
Wright, Herschel E.; Wedemeyer, Robert C.; and Giebeler, Robert H., Jr., 4,607,551, Cl. 83-54.000.
Giersch, Wolfgang K.; Schulte-Elte, Karl H.; and Ohloff, Gunther, to Firmenich SA. Oxygenated alicyclic compounds. 4,608,445, Cl. 568-667.000.
Giesen, Brigitte: *See—*
Koch, Karlheinz; Wegener, Ingo; and Giesen, Brigitte, 4,608,189, Cl. 252-174.220.
Giles, Harold F., Jr.; and Hirt, Robert P., Jr., to General Electric Company. Multilayer polycarbonate structures. 4,608,311, Cl. 428-412.000.
Giles, Harold F., Jr., to General Electric Company. Compositions comprising olefin polymer blends. 4,608,417, Cl. 525-148.000.
Gilligan, Thomas J., III: *See—*
Elliott, Richard M.; Holland, Larry L.; Gilligan, Thomas J., III; Martin, John F.; and Ciccia, Lawrence P., 4,607,741, Cl. 198-345.000.
Gillman, Hyman D.: *See—*
Kesling, Haven S., Jr.; and Gillman, Hyman D., 4,608,197, Cl. 252-551.000.
Gingerich, Richard G. W.: *See—*
Vanderpool, Clarence D.; Scheithauer, Richard A.; and Gingerich, Richard G. W., 4,608,235, Cl. 423-53.000.
Ginos, James Z.; and Cotzias, George C., to Cornell Research Foundation, Inc. Catecholamine derivatives, a process for their preparation and pharmaceutical compositions thereof. 4,608,391, Cl. 514-654.000.
Girard Transmissions: *See—*
Stevens, Georges, 4,608,033, Cl. 474-39.000.
Giroux, Gilles. Rubber band slitting machine. 4,607,558, Cl. 83-879.000.
Gladden, Ernest L.: *See—*
Thureson, Gary R.; and Gladden, Ernest L., 4,607,573, Cl. 102-275.800.
Gladon, Richard J.; and Koranski, David S., to Iowa State University Research Foundation, Inc. Aminooxyacetic acid (AOA) as a plant growth inhibitor. 4,608,076, Cl. 71-76.000.
Glavnoe Spetsializirovannoe Konstruktorskoe Bjuro po Mashinam Uborki Zernovykh Kultur i Samokhodnykh Shassi: *See—*
Yarmashev, Jury N.; Zapandi, Vladimir A.; and Tkachev, Valentin N., 4,607,480, Cl. 130-27.00T.
Gleason, Curtis A.: *See—*
Tanagho, Emil A.; Schmidt, Richard A.; Gleason, Curtis A.; and Lue, Tom F., 4,607,639, Cl. 128-419.00E.
Glennon, Timothy F.; and Vaidya, Jayant G., to Sundstrand Corporation. Phase advance waveform generator for brushless DC actuator system controller. 4,608,527, Cl. 318-685.000.
Glidevale Building & Products Limited: *See—*
Bottomore, David; and Gibson, Colin F., 4,607,566, Cl. 98-37.000.
Glory Kogyo Kabushiki Kaisha: *See—*
Abe, Masahiro, 4,607,832, Cl. 271-10.000.
Goeden, Gary V.: *See—*
Mazanec, Terry J.; Goeden, Gary V.; and Frye, John G., Jr., 4,608,447, Cl. 568-902.000.
Goehl, Hermann J.; and Buck, Reinhold J., to Gambro Dialysatoren KG. Plasmapheresis membrane and process for the preparation thereof. 4,608,172, Cl. 210-500.200.
Goldberg Brothers, Inc.: *See—*
Urlik, Randall G., 4,607,804, Cl. 242-67.400.
Golden, Ronald: *See—*
Williams, Paul R., Jr.; Burt, Russell V.; and Golden, Ronald, 4,608,406, Cl. 523-424.000.
Goldman, Stuart O., to ITT Corporation. Cellular mobile radio handoff utilizing voice channel. 4,608,711, Cl. 455-33.000.
Goldstein, Arthur L., to Ionics, Incorporated. Electrodialysis apparatus and process. 4,608,140, Cl. 204-182.300.
Goll, John D., to Celotex Corporation, The. Wet-end molding method and molded product. 4,608,108, Cl. 156-219.000.
Gomi, Manabu; and Abe, Masanori, to Nippon Sheet Glass Co., Ltd. Method of manufacturing magneto-optic recording film. 4,608,142, Cl. 204-192.00M.
Goncay, Stephen T.; Lawson, Randy J.; and Rosen, Bruce I., to Allied Corporation. Preparation of ceramics. 4,608,215, Cl. 264-56.000.
Gonpei, Katsuhiro: *See—*
Kuwahata, Takao; Manabe, Sohei; and Gonpei, Katsuhiro, 4,608,514, Cl. 313-386.000.
Gonser, Donald I., to Dentsply Research & Development Corp. Multifunction light source. 4,608,622, Cl. 362-32.000.
Goodboy, Kenneth P., to Aluminum Company of America. Activated alumina Claus catalyst having increased sodium oxide content. 4,608,363, Cl. 502-330.000.
Goodfellow, Glenn B., to UTI Corporation. Kinetic energy penetrator. 4,607,515, Cl. 72-358.000.
Goodin, John W.: *See—*
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Ferrini, Pier G.; and Goschke, Richard, 4,608,382, Cl. 514-341.000.

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Gove, Gene G. Method for making a counter top and product of same. 4,608,291, Cl. 428-119.000.

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Dijkmans, Eise C.; Graffenberger, Wilhelm; and Kilian, Ernst A., 4,608,502, Cl. 307-243.000.

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Stevens, Kenneth V., 4,607,758, Cl. 220-23.830.

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Greene, Roger: *See—*
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Klamer, Reuben B.; and Greenwood, Donald, 4,608,027, Cl. 446-457.000.

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Gartner, Hartmut; Biber, Klaus; and Greve, Peter, 4,607,919, Cl. 350-507.000.

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GTE Laboratories Incorporated: *See—*
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Sanford, Norman A.; Miniscalco, William J.; and Lempicki, Alexander, 4,607,916, Cl. 350-376.000.
Su, Sophia R., 4,608,192, Cl. 252-506.000.

GTE Products Corporation: *See—*
Blaisdell, Ronald G.; and Hough, Harold L., 4,608,624, Cl. 362-226.000.
Scheithauer, Richard A.; Miller, Michael J.; Vanderpool, Clarence D.; and MacInnis, Martin B., 4,608,084, Cl. 75-101.00R.
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Juengel, Richard O., 4,608,714, Cl. 455-603.000.

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Carter, Nicholas J. R.; Guilarte, Walter; Masand, Ravindra T.; Martin, Terrance S.; Middleton, Francisco A.; and Das, Santanu, 4,608,460, Cl. 179-6.110.

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Gundersen, Dag H. Z., to Vetco Offshoe Industries, Inc. Tree control manifold. 4,607,701, Cl. 166-368.000.

Guscott, John K., to American District Telegraph Company. Constant range ultrasonic motion detector. 4,608,674, Cl. 367-93.000.

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GX-Holding AG: *See—*
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H. Lundbeck A/S: *See—*
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Haferli, Hans: *See—*
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Hafke, Carl: *See—*
Kupfer, Hans; and Hafke, Carl, 4,608,059, Cl. 48-197.00R.

Hafner, Otto P. Means for interlocking overlapping sheet material. 4,607,418, Cl. 29-21.100.

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Hagio, Tsuyoshi: *See—*
Miyazaki, Kenji; Ogawa, Ichitaro; Yoshida, Hisayoshi; Kobayashi, Kazuo; Hagio, Tsuyoshi; Ueno, Hidetoshi; and Akiyama, Shigeru, 4,607,959, Cl. 366-343.000.

Hagiwara, Michiaki: *See—*
Hamashima, Tatsuo; Tsubata, Hisayasu; and Hagiwara, Michiaki, 4,607,683, Cl. 164-463.000.

Haines, Richard K., to Elkhart Door Corporation. Window blind fittings. 4,607,816, Cl. 248-208.000.

Hakamada, Haruo; Amano, Tadashi; and Kamiyama, Hiromitsu, to Konishiroku Photo Industry Co., Ltd. Photographic print making method. 4,607,949, Cl. 355-40.000.

Halcon SD Group, Inc., The: *See—*
Jacobson, Stephen E., 4,608,444, Cl. 568-462.000.

Hale, Thomas E., to General Electric Co. Coated product and process. 4,608,098, Cl. 148-6.300.

Hall, Steven E.; and Han, Wen-Ching, to E. R. Squibb & Sons, Inc. 7-oxabicycloheptane ethers useful in the treatment of thrombotic diseases. 4,608,386, Cl. 514-469.000.

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Beals, Richard A., 4,608,636, Cl. 364-422.000.

Hama, Tomio; and Yamazaki, Kiyoyasu, to Nihon Pisuko Kabushiki Kaisha. Three-way change-over valve. 4,607,662, Cl. 137-625.650.

Hamabe, Yoshifumi: *See—*
Ueno, Hideo; Kuno, Hiroshi; and Hamabe, Yoshifumi, 4,607,966, Cl. 400-63.000.

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Hamano, Toshikatsu, to Asahi Glass Company Ltd. Process for producing an ion exchange membrane using irradiation by ionizing radiation followed by thermal polymerization. 4,608,393, Cl. 521-27.000.

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Hamner, Glen P.: *See—*
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Han, Wen-Ching: *See—*
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Handa, Ryoji: *See—*
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Handjani, Rose-Marie; Ribier, Alain; and Maurelli, Manlio M., to L'Oreal. Process for preparing lipid vesicles by vaporisation of solvents. 4,608,211, Cl. 264-4.600.

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Haneda, Yoshiaki: *See—*
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Hanger Hole Punches, Inc.: *See—*
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Hankes, Robert W.; and Parker, Lloyd H., to Crane Co. Rotating biological contactor apparatus. 4,608,162, Cl. 210-150.000.

Hanna, Marie: *See—*
Sprecker, Mark A.; Wiegers, Wilhelmus J.; Greene, Roger; Luccarelli, Domenick, Jr.; and Hanna, Marie, 4,608,193, Cl. 252-522.00R.

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Hans, Rudiger; and Kotzab, Werner, to SKF Kugellagerfabriken GmbH. Hydraulically operating release arrangement, especially for a vehicle clutch. 4,607,737, Cl. 192-88.00A.

Hansen-BTR GmbH: *See—*
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Hansen, Robert C.; Richardson, Calvin J.; and Schmitt, David A., to AT&T Bell Laboratories. Processing system tolerant of loss of access to secondary storage. 4,608,688, Cl. 371-11.000.

Hanssen, Carl-Otto, to Molnlycke AB. Arrangement in surgical sheets. 4,607,631, Cl. 128-132.00D.

Hara, Ryuichiro: *See—*
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Hara, Seiji: *See—*
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Hara, Yasuhiko: *See—*
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Harada, Hiraku: *See—*
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Harada, Kunihiko, to Achilles Corporation. Laminated sheet and a method for producing the same. 4,607,439, Cl. 36-45.000.

Harada, Yuji, to Canon Kabushiki Kaisha. Keyboard. 4,608,465, Cl. 200-5.00A.

Hardt, Heinz, to Viennatone Gesellschaft m.b.H. Hearing aid. 4,607,720, Cl. 181-135.000.

Harper, James J. Weight training device. 4,607,840, Cl. 272-117.000.

Harris Corporation: *See—*
Bacrania, Kanti, 4,608,530, Cl. 323-315.000.
Johnson, Brion, 4,608,603, Cl. 358-183.000.

Harris, Curtis C.: *See—*
Yoakum, George H.; Harris, Curtis C.; Korba, Brent E.; and Lechner, John F., 4,608,339, Cl. 435-172.200.

Harris, Haynie: *See—*
Arnold, Richard N.; and Harris, Haynie, 4,608,483, Cl. 219-201.000.

Harrison, George W., to Team, Inc. Seal for water proofing a utility line conduit and a method of forming the seal. 4,607,469, Cl. 52-220.000.

Hartman, Adrian R.; Riley, Terence J.; and Shackle, Peter W., to AT&T Bell Laboratories. High voltage dielectrically isolated solid-state switch. 4,608,590, Cl. 357-38.000.

Hartmann, Max; and Rollier, Michel, to BBC Brown, Boveri & Company, Limited. Shaft coupling. 4,607,971, Cl. 403-2.000.

Hartzell, John C., to Hanger Hole Punches, Inc. Self-clearing punch with removable blade. 4,607,553, Cl. 83-164.000.

Harvey, Phillip R. Pulverizing mill. 4,607,801, Cl. 241-199.100.

Harvey, Roger W.; Davis, Ralph; Lueders, Arthur; and Schnell, William J., to Baxter Travenol Laboratories, Inc. Universal connector. 4,607,868, Cl. 285-332.000.

Hasebe, Kazunori: *See—*
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Hasebe, Kouki, to Tokyo Shibaura Denki Kabushiki Kaisha. Data processing system with condition data setting function. 4,608,660, Cl. 364-768.000.

Hasegawa, Hitoshi: *See—*
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Hasegawa, Takahito; and Adachi, Hideo, to Taiyo Pharmaceutical Industry Co., Ltd. Oral cyclodextrin and mobenzoxamine preparation. 4,608,366, Cl. 514-58.000.

Hasegawa, Takashi: *See—*
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Hashimoto Corporation: *See—*
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Hashimoto, Kazuo, to Hashimoto Corporation. Automatic telephone answering apparatus. 4,608,458, Cl. 179-2.00A.

Hashimoto, Shinichi: *See—*
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Haskel, Inc.: *See—*
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Hatakoshi, Makoto: *See—*
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Hauni-Werke Korber & Co. KG: *See—*
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Hauschopp, Alois: *See—*
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Hauser, Hans-Ulrich, to Bucher-Guyer AG Maschinenfabrik. Compression extractor. 4,607,570, Cl. 100-116.000.

Hawkes, Graham S., to Deep Ocean Engineering Incorporated. Electromechanical manipulator assembly. 4,607,998, Cl. 414-735.000.

Hayafuji, Yoshinori, to Sony Corporation. Faraday cup. 4,608,493, Cl. 250-397.000.

Hayase, Isao; and Kishi, Atsuo, to Hitachi, Ltd. Rotary vane compressor with hook-like suction passage. 4,608,002, Cl. 418-86.000.

Hayashi, Keizo; and Hasegawa, Hitoshi, to Toyoda Gosei Co., Ltd. Clamping device. 4,608,005, Cl. 425-192.00R.

Haybuster Manufacturing, Inc.: *See—*
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Hedler, Robert C.; Kohler, Robert D.; and Dunlap, John H., to Owens-Illinois, Inc. Method and apparatus for gauging containers. 4,608,709, Cl. 382-1.000.

Heerema Engineering Service BV: *See—*
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Hehl, Karl. Parts discharge conveyor for injection molding machine. 4,608,008, Cl. 425-542.000.

Heilweil, Israel J.: *See—*
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Helgesson, Alan L.: *See—*
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Heling, Dennis H., to Chrysler Corporation. Vehicle easy entry seat latching mechanism. 4,607,884, Cl. 297-341.000.

Heller, Jerrold A.: *See—*
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Heller, John P.; and Dandge, Dileep K., to New Mexico Tech. Research Foundation. Topical viscosity control for light hydrocarbon displacing fluids in petroleum recovery and in fracturing fluids for well stimulation. 4,607,696, Cl. 166-275.000.

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Hemphill, Brian W.: *See—*
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Koch, Karlheinz; Wegener, Ingo; and Giesen, Brigitte, 4,608,189, Cl. 252-174.220.
Lepper, Herbert; and Friesenhagen, Lothar, 4,608,202, Cl. 260-410.90R.

Hennick, Donald C. Detachable joint for modular furniture. 4,607,972, Cl. 403-8.000.

Hercules Incorporated: *See—*
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Hermann Berstorff Maschinenbau GmbH: *See—*
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Hermanson, Terry. Collapsible umbrella with circular rim. 4,607,653, Cl. 135-20.00M.

Herner, Peter L. Snow removing device. 4,607,872, Cl. 294-54.500.

Herrli AG: *See—*
Salm, Franz; Zangerle, Eduard; and Muriset, Jean-Fracois, 4,607,988, Cl. 407-114.000.

Hesterberg, Detlef; and Hesterberg, Dietrich. Sales display case. 4,607,895, Cl. 312-126.000.

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Hesterberg, Detlef; and Hesterberg, Dietrich, 4,607,895, Cl. 312-126.000.

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Hewson, Carl: *See—*
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Heyden, Eugene L. Apparatus for intubation. 4,607,635, Cl. 128-207.150.

Hickey, Larry G.: *See—*
Bluem, Gary R.; Goodin, John W.; and Hickey, Larry G., 4,607,455, Cl. 49-55.000.

Hickner, Richard A.; Owens, Kevin A.; and Grays, Gwendolyn M., to Dow Chemical Company, The. Advanced epoxy resins crosslinked with polyisocyanates. 4,608,313, Cl. 428-414.000.

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Hieber, Konrad; Stolz, Manfred; and Wieczorek, Claudia, to Siemens Aktiengesellschaft. Method for the manufacture of metal silicide layers by means of reduced pressure gas phase deposition. 4,608,271, Cl. 427-38.000.

Higashi, Masato: *See*—
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Higashino, Toshihiro; Mitsunaga, Hirofumi; Nakanishi, Takahiro; and Taya, Yoshihiro, to Kuraco Limited. Grease extractor. 4,607,614, Cl. 126-299.00E.
Higuchi, Kazuo: *See*—
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Hill, George R.; and Jordan, Larry C., to Jim Walter Resources, Inc. Extensible line brattice. 4,607,568, Cl. 98-50.000.
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Hillberg, Julian T. Safety apparatus for roofers. 4,607,724, Cl. 182-3.000.
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Hinchcliffe, Dennis; Labbe, Francis A. M.; and Molins, Desmond W., to Molins PLC. Cigarette packing machines. 4,607,477, Cl. 53-444.000.
Hines, George, to Westinghouse Electric Corp. Magnetic sensor for armature and stator. 4,608,620, Cl. 361-154.000.
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Baerns, Manfred; and Hinsen, Wilhelm, 4,608,449, Cl. 585-500.000.
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Ohbayashi, Gentaro; Umemoto, Susumu; and Hiramoto, Hiroo, 4,608,333, Cl. 430-281.000.
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Saito, Yashitane; Doi, Tetsuo; and Hirase, Kiyoto, 4,608,628, Cl. 364-141.000.
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Hirobe, Junichi: *See*—
Yoshioka, Masahiro; Murakami, Masahiro; Irie, Yoichiro; Nakanishi, Tsugio; Tsutsui, Eiji; Iwao, Noriyuki; Hirobe, Junichi; and Wakikaido, Takahiro, 4,607,943, Cl. 355-14.00R.
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Hirschkron, Robert, to General Electric Company. Aircraft engine inlet. 4,607,657, Cl. 137-15.100.
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Buchegger, Rudolf; and Hirschmanner, Franz, 4,608,014, Cl. 432-59.000.
Hirt, Robert P., Jr.: *See*—
Giles, Harold F., Jr.; and Hirt, Robert P., Jr., 4,608,311, Cl. 428-412.000.
Hirzel, Frederic J.; and Levy, Roy J., to Advanced Micro Devices, Inc. Method for digital clock recovery from Manchester-encoded signals. 4,608,702, Cl. 375-110.000.
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Osaka, Haruya; Kimura, Hiroshi; Hisajima, Masahiko; Shigemura, Yutaka; Kaminaga, Seiji; Satonaka, Shinobu; and Ishito, Mitsuya, 4,607,954, Cl. 355-14.00D.
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Kojima, Yutaka; Masuda, Toshiyuki; and Hisamatsu, Nobuo, 4,608,561, Cl. 340-825.520.
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Hayase, Isao; and Kishi, Atsuo, 4,608,002, Cl. 418-86.000.
Kobayashi, Mamoru; Sasaki, Hideaki; and Hara, Yasuhiko, 4,608,494, Cl. 250-461.100.
Mori, Kinji; Miyamoto, Shoji; and Ihara, Hirokazu, 4,608,525, Cl. 318-568.000.
Morikawa, Yuichi; Sato, Hirohiko; Amada, Eiichi; Suzuki, Toshiro; Shirasu, Hirotoshi; and Kuwahara, Hiroshi, 4,608,464, Cl. 179-170.200.
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Shimizu, Tsuguo; Wada, Kenichi; Shintani, Yooichi; and Yamaoka, Akira, 4,608,671, Cl. 365-230.000.
Sunano, Naomasa; and Asahi, Naotatsu, 4,608,232, Cl. 422-88.000.
Toda, Gyozo; Fujita, Tsuyoshi; Tosaki, Hiromi; and Kuroki, Takashi, 4,608,316, Cl. 428-446.000.
Watanabe, Shigeru; Kinukawa, Hiroshi; Mori, Kenjiro; Koichi, Kenji; Kimura, Shinji; Yamanouchi, Makoto; and Yajima, Yasuo, 4,608,662, Cl. 364-900.000.
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Van Kampen, Craig L.; and Hockert, Eric N., 4,608,052, Cl. 623-22.000.
Hodges, William D., to Machines Chambon S.A. Stacking and collecting apparatus. 4,607,995, Cl. 414-46.000.
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Brenk, Michael, 4,608,131, Cl. 204-33.000.
Brindopke, Gerhard; and Johannes, Gerhard, 4,608,420, Cl. 525-375.000.
Drum, Henner, 4,608,295, Cl. 428-202.000.
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Effland, Richard C.; Davis, Larry; and Kapples, Kevin J., 4,608,374, Cl. 514-211.000.
Hoeft, Werner H. Analog to digital flash converter. 4,608,555, Cl. 340-347.0AD.
Hoffman Controls Corporation: *See*—
Bowman, William W., 4,607,789, Cl. 236-49.000.
Hoffman, Gary R., to General Services Engineering, Inc. Remote monitoring induction telemetering system. 4,608,563, Cl. 340-870.020.
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Muller, Bernard; Piat, Rene ; Rensing, Cornelis; and Trajin, Jean-Paul, 4,608,372, Cl. 514-187.000.
Hofmann, Hans: *See*—
Meyer, Albert; Hofmann, Hans; and Haferli, Hans, 4,607,563, Cl. 89-132.000.
Hofmeister, James P.: *See*—
Bartlett, Geoffrey M.; Hofmeister, James P.; Nye, Derald D.; and Pring, Edward J., 4,608,664, Cl. 364-900.000.
Hogman, Claes F.: *See*—
Johansson, Anne S.; and Hogman, Claes F., 4,608,178, Cl. 210-744.000.
Hoh, Joseph C., to United States of America, Energy. Accordian-folded boot shield for flexible swivel connection. 4,607,852, Cl. 277-1.000.
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Breitenstein, Charles T.; and Holecek, Allen R., 4,608,643, Cl. 364-474.000.
Holland, Larry L.: *See*—
Elliott, Richard M.; Holland, Larry L.; Gilligan, Thomas J., III; Martin, John F.; and Ciccia, Lawrence P., 4,607,741, Cl. 198-345.000.
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Burgers, Bernhardus W. A.; and Razenberg, Adrianus Johannes P. T., 4,608,701, Cl. 375-1.000.
Hollingshaus, John G.: *See*—
Mallipudi, Narayana M.; and Hollingshaus, John G., 4,608,371, Cl. 514-186.000.
Holmes, Samuel J.: *See*—
Rowe, James M.; Kraatz, Paul; and Holmes, Samuel J., 4,608,272, Cl. 427-53.100.
Holmstrom, Sven A.; and Johansson, Leif, to Boliden Aktiebolag. Method for recovering the valuable metal content of contaminated copper raw material. 4,608,083, Cl. 75-83.000.
Holt, James F., to United States of America, Air Force. Non-dissipative current distribution circuit for magnetohydrodynamic generator electrodes. 4,608,627, Cl. 363-131.000.
Holtrop, James S.; and Maurer, Richard P., to Monsanto Company. Method of making a thermoformable laminate structure. 4,608,104, Cl. 156-78.000.
Honda Giken Kogyo Kabushiki Kaisha: *See*—
Fujii, Isao; and Narasaka, Shin, 4,608,003, Cl. 418-137.000.
Hoshino, Teruaki; Iimori, Isao; and Kamiji, Koichi, 4,607,903, Cl. 339-63.00R.
Itoh, Takanobu, 4,607,878, Cl. 296-199.000.
Kobayashi, Osamu; Sasaki, Hiroshi; Kaneko, Toshiki; Ikeda, Hideaki; and Yamamura, Yoshihisa, 4,608,317, Cl. 428-546.000.
Nagataki, Motoi; and Inagaki, Takashi, 4,607,718, Cl. 180-226.000.
Honda, Haruhisa, to Canon Kabushiki Kaisha. Process unit and image forming apparatus using such unit. 4,607,941, Cl. 355-3.00R.
Honeywell Inc.: *See*—
Roberts, Peter C. T.; and Vu, Tho T., 4,608,672, Cl. 365-230.000.
Honeywell Information Systems Inc.: *See*—
Boothroyd, Donald C.; Wilhite, John E.; Norman, Robert W., Jr.; and Keller, Howard J., 4,608,633, Cl. 364-200.000.
Bradley, John J.; Staplin, Theodore R., Jr.; Miu, Ming T.; O'Brien, Thomas C.; O'Har, George M.; Widen, Melinda A.; and Stoffers, Brian L., 4,608,659, Cl. 364-737.000.
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Collina, Giancarlo, 4,607,969, Cl. 400-642.000.
Honma, Yoshiaki, to Tokyo Juki Industrial Co., Ltd. Tape marking and cutting apparatus. 4,607,587, Cl. 118-37.000.
Honshu Paper Mfg. Co., Ltd.: *See*—
Kanamori, Nobutaka; and Kurosawa, Masaji, 4,608,361, Cl. 502-232.000.

Hood, Richard T.; and Bender, Raymond L., to Koppers Company, Inc. Phenol-HCHO-resorcinol resins for use in forming fast curing wood laminating adhesives. 4,608,408, Cl. 524-15.000.

Hoover Universal, Inc.: *See*—
Vail, Curtis F., 4,607,887, Cl. 297-452.000.

Hopkins, Graham K. Leaf excluder for rain water guttering. 4,607,465, Cl. 52-12.000.

Hori, Kenichi, to Elm Co., Ltd. Ink-belt bubble propulsion printer. 4,608,577, Cl. 346-140.00R.

Horiuchi, Hideyuki: *See*—
Nakamura, Keiichi; and Horiuchi, Hideyuki, 4,608,459, Cl. 179-6.030.

Horvath, Stephen J.: *See*—
Sherman, William, III; Larkin, Francis C.; and Horvath, Stephen J., 4,608,704, Cl. 377-8.000.

Horwood, Norman. Control of jets of liquid. 4,607,794, Cl. 239-455.000.

Hoshino, Teruaki; Iimori, Isao; and Kamiji, Koichi, to Japan Aviation Electronics Industry Limited; and Honda Giken Kogyo Kabushiki Kaisha. Connector assembly. 4,607,903, Cl. 339-63.00R.

Hosino, Syouji: *See*—
Yokokawa, Kiyoshi; Koya, Kazuo; and Hosino, Syouji, 4,608,071, Cl. 65-13.000.

Hosoda, Jun: *See*—
Ohshima, Iwao; Narita, Takeshi; Handa, Ryoji; and Hosoda, Jun, 4,607,958, Cl. 366-192.000.

Hosoi, Atsushi; Nakahata, Kimio; Tajima, Hatsuo; Egami, Hidemi; Kan, Fumitaka; and Nakamura, Shunji, to Canon Kabushiki Kaisha. Method and apparatus for forming a thin layer of developer. 4,607,938, Cl. 355-3.0DD.

Houdaille Industries, Inc.: *See*—
Jansen, George A., 4,607,867, Cl. 285-242.000.

Hough, Harold L.: *See*—
Blaisdell, Ronald G.; and Hough, Harold L., 4,608,624, Cl. 362-226.000.

Hough, Wilfred H., to Nottingham-Spirk Design Inc. Coin bank with flipping action and sorting. 4,607,648, Cl. 133-3.00D.

Houston Industries, Incorporated: *See*—
Menger, William M., 4,608,058, Cl. 48-73.000.

Howard, Edward G., Jr., to Du Pont de Nemours, E. I., and Company. Precursor solutions for biologically active glass. 4,608,350, Cl. 501-20.000.

Howard, Edward G., Jr.: *See*—
England, David C.; and Howard, Edward G., Jr., 4,608,206, Cl. 260-544.00F.

Howard, William G.; and Berberick, David R., to Medtronic, Inc. Nonaqueous electrochemical cell. 4,608,322, Cl. 429-105.000.

Howell, Frederick H., to Ciba-Geigy AG. Benzo-1,4-quinones. 4,608,435, Cl. 544-87.000.

Howell, Jerald A.; and Kukes, Simon G., to Phillips Petroleum Company. Hydrovisbreaking process for hydrocarbon containing feed streams. 4,608,152, Cl. 208-108.000.

Hsieh, Jih-Han, to Celanese Corporation. Process for bioconversion-product recovery. 4,608,338, Cl. 435-142.000.

Hsiung, Andrew K.; Eaton, George F.; and Hemphill, Brian W., to Neptune Microfloc, Inc. Water filtration apparatus having upflow buoyant media filter and downflow nonbuoyant media filter. 4,608,181, Cl. 210-786.000.

Huber, Iren: *See*—
Szajani, Bela; Kiss, Janosne ; Ivony, Jozsefne ; Huber, Iren; Boros, Laszlo ; and Daroczi, Ivan, 4,608,340, Cl. 435-180.000.

Hudson, Carl W.; and Hamner, Glen P., to Exxon Research and Engineering Co. Process for the removal of polynuclear aromatic hydrocarbon compounds from admixtures of liquid hydrocarbon compounds. 4,608,153, Cl. 208-112.000.

Hufford, Diane K., to United States of America, Air Force. Mask aligner for solar cell fabrication. 4,608,112, Cl. 156-345.000.

Hughes, David W., to Vetco Offshore Industries, Inc. Connector, ratcheting type. 4,607,865, Cl. 285-18.000.

Hughes, Joel, to Container Products Corporation. Contaminated air/-water recovery apparatus. 4,608,062, Cl. 55-186.000.

Hullen, Helmut: *See*—
Knoth, Werner-Dieter; Hullen, Helmut; and Kopatz, Klaus, 4,608,074, Cl. 65-164.000.

Hume, Robert M., III; LaBrash, Robert A.; and Vander Giessen, Michael J., to H. B. Fuller Company. Bonding method employing an adhesive which contains in an aqueous base an effective amount of a polyvinyl alcohol and a lignin sulfonate. 4,608,111, Cl. 156-306.600.

Humphrey Instruments Incorporated: *See*—
Humphrey, William E., 4,607,922, Cl. 351-208.000.

Humphrey, William E., to Humphrey Instruments Incorporated. Method for aligning an eye examination instrument with the eye under examination. 4,607,922, Cl. 351-208.000.

Hutchinson: *See*—
Bodin, Francois; Jouade , Pierre; and Le Guillant, Daniel, 4,607,828, Cl. 267-140.100.

Hylerstedt, Erik: *See*—
Nordqvist, Percy; and Hylerstedt, Erik, 4,608,044, Cl. 604-290.000.

Hylsa, S.A.: *See*—
Villarreal-Trevino, Juan A.; Zendejas-Martinez, Eugenio; and Lopez-Ramos, Hector, 4,608,240, Cl. 423-230.000.

Hyslop, Adin E.: *See*—
Duvvury, Charvaka; and Hyslop, Adin E., 4,608,670, Cl. 365-205.000.

Ibar, Jean P.; and Saffell, John R., to Solomat S.A. Multi-probe metering apparatus. 4,608,532, Cl. 324-73.00R.

Ibuchi, Yoshiaki: *See*—
Uchiyama, Hiroaki; Ibuchi, Yoshiaki; and Fujiwara, Katsuyoshi, 4,607,946, Cl. 355-14.00R.

Ichida, Toshio: *See*—
Mochizuki, Kazuo; Nakakoji, Hisatada; Ichida, Toshio; Irie, Toshio; Ogata, Hajime; and Yamaji, Kyoko, 4,608,320, Cl. 428-629.000.

Ide, Fumito; Sogo, Toshiyuki; Matsuyama, Kouzou; and Hashimoto, Shinichi, to Kabushiki Kaisha Toshiba. Image forming apparatus. 4,607,945, Cl. 355-14.00R.

Ideal Security Inc.: *See*—
Shanaan, Gad; Jospe, Jack; Jospe, Joe; and Caputo, Carlo, 4,607,510, Cl. 70-95.000.

Idemitsu Kosan Company Limited: *See*—
Itoi, Masaaki; Ohta, Masakatsu; Sugioka, Taizo; Yoshihara, Kunio; and Nishitani, Hiroshi, 4,608,150, Cl. 208-22.000.

IDN Inventions & Development of Novelties AG: *See*—
Ackeret, Peter, 4,607,894, Cl. 312-15.000.

Igarashi, Masami; Kato, Yoshinori; and Kamijo, Yoshimi, to Alps Electric Co., Ltd. Dispersive type electroluminescent device and method for manufacturing same. 4,608,308, Cl. 428-408.000.

Ihara, Hirokazu: *See*—
Mori, Kinji; Miyamoto, Shoji; and Ihara, Hirokazu, 4,608,525, Cl. 318-568.000.

Iijima, Takashi: *See*—
Fujii, Takabumi; and Iijima, Takashi, 4,608,324, Cl. 429-194.000.

Iimori, Isao: *See*—
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Ijuin, Yasuharu: *See*—
Saito, Tomoo; Tanimoto, Mitsutoshi; Yasuda, Masayoshi; Ijuin, Yasuharu; Hikita, Akio; Morikawa, Naotake; Uehara, Hiromichi; and Fukuyama, Masaru, 4,607,521, Cl. 73-23.000.

Ikari, Kyoichiro: *See*—
Motoishi, Yasuo; Satoh, Kenji; and Ikari, Kyoichiro, 4,608,286, Cl. 428-35.000.

Ikeda Bussan Co., Ltd.: *See*—
Kurumizawa, Masao; Terui, Mitsuru; and Yamaguchi, Nobuyasu, 4,608,213, Cl. 264-45.100.

Ikeda, Fukuji; and Takahashi, Toshiaki, to Nikka Chemical Industry Company Ltd. Heat-sensitive recording material. 4,608,580, Cl. 346-216.000.

Ikeda, Hideaki: *See*—
Kobayashi, Osamu; Sasaki, Hiroshi; Kaneko, Toshiki; Ikeda, Hideaki; and Yamamura, Yoshihisa, 4,608,317, Cl. 428-546.000.

Ikenaga, Akiyoshi: *See*—
Fukuda, Tatsuo; and Ikenaga, Akiyoshi, 4,608,518, Cl. 313-481.000.

Ikeoka, Naoaki; and Nakano, Akihiko, to Kabushiki Kaisha Komatsu Seisakusho. Drive mechanism for a mechanical press. 4,607,732, Cl. 192-12.00R.

Illger, Hans-Walter: *See*—
Buysch, Hans-Josef; Illger, Hans-Walter; and Dorner, Karl H., 4,608,399, Cl. 521-129.000.

Illinois Tool Works Inc.: *See*—
Peek, Brian R.; and Sutenbach, Paul M., 4,607,976, Cl. 403-77.000.

Imai, Tamotsu: *See*—
Abrevaya, Hayim; and Imai, Tamotsu, 4,608,360, Cl. 502-226.000.

Immucor, Inc.: *See*—
Bayer, William L.; Plapp, Frederick V.; Beck, Malcolm L.; Sinor, Lyle T.; and Coenen, William M., 4,608,246, Cl. 424-11.000.

Immuno Aktiengesellschaft fur chemisch-medizinische Produkte: *See*—
Philapitsch, Anton; and Linnau, Yendra, 4,608,254, Cl. 424-101.000.

Imperial Chemical Industries PLC: *See*—
Ballard, Denis G. H.; Cundy, Colin S.; Rideal, Graham R.; and Morley, David C. W., 4,608,303, Cl. 428-357.000.
Darwent, Brian J., 4,608,144, Cl. 204-257.000.

IN-PAK s.r.l.: *See*—
Valenti, Dante, 4,607,750, Cl. 206-443.000.

Inaba, Hiroshi; and Nishikawa, Kazuya, to Central Glass Company, Limited. Automotive window glass antenna. 4,608,570, Cl. 343-704.000.

Inaba, Masahito: *See*—
Yuasa, Yoshio; Naruse, Kazuhiko; and Inaba, Masahito, 4,608,522, Cl. 315-241.00P.

Inagaki, Takashi: *See*—
Nagataki, Motoi; and Inagaki, Takashi, 4,607,718, Cl. 180-226.000.

Inagawa, Jun: *See*—
Nagumo, Masahide; Kojima, Tadashi; and Inagawa, Jun, 4,608,692, Cl. 371-37.000.

Ing. C. Olivetti & C., S.p.A.: *See*—
Carena, Ugo, 4,607,968, Cl. 400-637.200.

Ingersoll-Rand Company: *See*—
Bennitt, Robert A., 4,607,660, Cl. 137-512.100.

Ingram, Alvin R., to Atlantic Richfield Company. Anti-static styrene polymer particles by impregnation. 4,608,394, Cl. 521-57.000.

Innovative Surgical Products, Inc.: *See*—
Wright, George M.; and Talcott, Thomas D., 4,608,050, Cl. 623-6.000.

Inochkin, Vladimir M.: *See*—
Obidin, Valery Y.; Zueva, Olga A.; Inochkin, Vladimir M.; Zhavoronkov, Andrei V.; Voinich, Leonid K.; Polushin, Jury V.; Zakhodyakin, Petr A.; Rodionova, Zinaida I.; Judchits, Nikolai N.; Belyanin, Vladimir V.; Yarkin, Andrei A.; Kalmykov, Vyacheslav N.; Ageechkin, Mikhail M.; and Arakelyants, Sergei M., 4,608,004, Cl. 418-206.000.

Inoue, Hirochika; Yoshida, Ken-ich; Kida, Yasushi; and Takemoto, Akira, to Sumitomo Electric Industries Ltd. Positioning mechanism. 4,607,578, Cl. 108-145.000.

Inoue-Japax Research Incorporated: *See*—
Inoue, Kiyoshi, 4,608,143, Cl. 204-224.00M.
Inoue, Kiyoshi, 4,608,475, Cl. 219-69.00W.

Inoue, Kiyoshi, to Inoue-Japax Research Incorporated. TW-electroerosion apparatus with wheeled drive carriages. 4,608,143, Cl. 204-224.00M.

Inoue, Kiyoshi, to Inoue-Japax Research Incorporated. Method of and apparatus for resetting a wire electrode in an operating setup on an electroerosion machine. 4,608,475, Cl. 219-69.00W.

Inoue, Masumi: *See*—
Hagimoto, Hakumi; Kashima, Yutaka; Kondo, Norio; and Inoue, Masumi, 4,607,889, Cl. 299-33.000.

Inoue, Takeshi: *See*—
Murakami, Yoshishige; Inoue, Takeshi; and Tanaka, Atsushi, 4,608,598, Cl. 358-113.000.

Interface Research Corporation: *See*—
McIntosh, Robert H., 4,608,289, Cl. 428-95.000.

Intermatch S.A.: *See*—
Ohnishi, Taiji, 4,608,508, Cl. 310-339.000.

International Business Machines Corporation: *See*—
Barry, Robert L., 4,608,667, Cl. 365-189.000.
Bartlett, Geoffrey M.; Hofmeister, James P.; Nye, Derald D.; and Pring, Edward J., 4,608,664, Cl. 364-900.000.
Chang, Yihua E.; Grasso, Lawrence J.; Gruodis, Algirdas J.; and Morgan, Carroll E., 4,608,706, Cl. 377-39.000.
Davis, James W.; Moore, Victor S.; and Thoma, Nandor G., 4,608,649, Cl. 364-491.000.
Dutton, Patrick F., 4,608,687, Cl. 371-10.000.
Goth, George R.; Magdo, Ingrid E.; and Malaviya, Shashi D., 4,608,589, Cl. 357-34.000.
Klara, Walter S.; Kwap, Theodore W.; Marcello, Victor; and Rasmussen, Robert A., 4,608,669, Cl. 365-201.000.
Kummer, David A., 4,608,632, Cl. 364-200.000.
Minor, Richard G.; and Polischuk-Sawtschenko, Alexander, 4,608,562, Cl. 340-825.590.
Ramsey, David A.; Rohe, Clair F.; and Sawicki, Thomas E., 4,608,489, Cl. 235-462.000.
Rinkleib, Helfried O.; and Rueger, William J., 4,608,614, Cl. 360-95.000.

International Flavors & Fragrances Inc.: *See*—
Boden, Richard M.; and Helm, John R., 4,608,194, Cl. 252-522.00R.
Fujioka, Futoshi; Boden, Richard M.; and Schreiber, William L., 4,608,195, Cl. 252-522.00R.
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Sprecker, Mark A.; Wiegers, Wilhelmus J.; Greene, Roger; Luccarelli, Domenick, Jr.; and Hanna, Marie, 4,608,193, Cl. 252-522.00R.

International Safety Containers of Minnesota, Inc.: *See*—
LeSage, Richard; Reshanov, Eugene N.; and Schlemmer, Richard A., 4,607,857, Cl. 280-47.260.

International Standard Electric Corporation: *See*—
Blomley, Peter F.; Arton, Kenneth A.; Whittaker, Edward J.; and Lefevre, Andrew P., 4,608,462, Cl. 179-81.00B.
Burgess, David A.; and King, Malcolm R., 4,608,463, Cl. 179-115.50R.
Ebner, Heinz; Koch, Gabriele I.; Lauckner, Joachim; Lutz, Felix; Seibold, Gerhard; and Wessel, Gerhard, 4,607,917, Cl. 350-392.000.

Interthyr Research Foundation, Inc.: *See*—
Ambesi-Impiombato, Francesco S., 4,608,341, Cl. 435-240.000.

Introtek Corporation: *See*—
Dam, Naim, 4,607,520, Cl. 73-19.000.

Inui, Tsuneo: *See*—
Shimizu, Nobuyoshi; Fujimoto, Terunori; Inui, Tsuneo; and Ishida, Masatoki, 4,608,130, Cl. 204-27.000.

Inuiya, Masafumi: *See*—
Nakayama, Yoshiaki; and Inuiya, Masafumi, 4,608,595, Cl. 358-29.000.

Inuzuka, Takeshi: *See*—
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Ionics, Incorporated: *See*—
Goldstein, Arthur L., 4,608,140, Cl. 204-182.300.

Iowa State University Research Foundation, Inc.: *See*—
Gladon, Richard J.; and Koranski, David S., 4,608,076, Cl. 71-76.000.

Ipri, Alfred C.; and Stewart, Roger G., to RCA Corporation. Electrically alterable programmable nonvolatile floating gate memory device. 4,608,591, Cl. 357-54.000.

Irie, Toshio: *See*—
Mochizuki, Kazuo; Nakakoji, Hisatada; Ichida, Toshio; Irie, Toshio; Ogata, Hajime; and Yamaji, Kyoko, 4,608,320, Cl. 428-629.000.

Irie, Yoichiro: *See*—
Yoshioka, Masahiro; Murakami, Masahiro; Irie, Yoichiro; Nakanishi, Tsugio; Tsutsui, Eiji; Iwao, Noriyuki; Hirobe, Junichi; and Wakikaido, Takahiro, 4,607,943, Cl. 355-14.00R.

Iron, Gera, to Electrical Accessories Ein Hashofet. Core and core laminations for electromagnetic devices. 4,608,547, Cl. 335-297.000.

Ishida, Haruhiko: *See*—
Kohyama, Mitsuaki; Kasai, Toshihiro; and Ishida, Haruhiko, 4,607,934, Cl. 355-3.00R.

Ishida, Masatoki: *See*—
Shimizu, Nobuyoshi; Fujimoto, Terunori; Inui, Tsuneo; and Ishida, Masatoki, 4,608,130, Cl. 204-27.000.

Ishida Scales Mfg. Co., Ltd.: *See*—
Nishi, Hitoshi; Izumi, Asahiro; and Nishiyama, Sadanobu, 4,607,713, Cl. 177-25.000.

Ishida, Takao; and Nakatomi, Yoshitsugu, to Kabushiki Kaisha Toshiba. Optical deflector. 4,607,908, Cl. 350-6.800.

Ishidoshiro, Hiroshi: *See*—
Sando, Yoshikazu; and Ishidoshiro, Hiroshi, 4,607,508, Cl. 68-22.00R.

Ishiguri, Yukio: *See*—
Noguchi, Hiroshi; Kato, Toshiro; Takahashi, Junya; Ishiguri, Yukio; Yamamoto, Shigeo; and Kamoshita, Katsuzo, 4,608,385, Cl. 514-444.000.

Ishihara, Atsushi; and Yoshimaru, Tomohisa, to Tokyo Shibaura Denki Kabushiki Kaisha. Position detecting apparatus. 4,607,956, Cl. 356-375.000.

Ishihara, Yuji: *See*—
Yoda, Kuniichi; Ishihara, Yuji; and Azegami, Hitoshi, 4,608,315, Cl. 428-425.900.

Ishii, Kenjiro; Aragaki, Masaharu; Kato, Osami; and Higashi, Masato, to Minolta Camera Kabushiki Kaisha. Mark detection apparatus for a micro-roll film. 4,607,950, Cl. 355-41.000.

Ishikawa, Shigeo: *See*—
Hirata, Yoshikatsu; and Ishikawa, Shigeo, 4,607,967, Cl. 400-175.000.

Ishikawa, Takuma: *See*—
Matsuyama, Yoshihiro; and Ishikawa, Takuma, 4,607,838, Cl. 271-293.000.

Ishikawajima-Harima Jukogyo Kabushiki Kaisha: *See*—
Umemoto, Tadahiro, 4,608,101, Cl. 148-127.000.

Ishimaru, Hajime; Miyamoto, Masao; and Komaki, Shojiro. Cooling trap for vacuum. 4,607,491, Cl. 62-55.500.

Ishito, Mitsuya: *See*—
Osaka, Haruya; Kimura, Hiroshi; Hisajima, Masahiko; Shigemura, Yutaka; Kaminaga, Seiji; Satonaka, Shinobu; and Ishito, Mitsuya, 4,607,954, Cl. 355-14.00D.

Ishizuka, Akio; Yamazaki, Hisashi; and Yamazaki, Kikuo, to Fuji Photo Film Co., Ltd. Radiographic intensifying screen. 4,608,301, Cl. 428-328.000.

Ismail, Mohamed I., to Duracell Inc. Anode binders for electrochemical cells. 4,608,325, Cl. 429-217.000.

Isner, Robert E. Method for the electrostatic treatment of monofilaments. 4,608,212, Cl. 264-24.000.

Isobe, Toshiaki: *See*—
Takahashi, Minoru; Fukuda, Teruo; Isobe, Toshiaki; and Kobashi, Mamoru, 4,607,523, Cl. 73-116.000.

Ito, Mikio: *See*—
Someya, Shinzo; Akahira, Rokuro; Nonaka, Yuji; Nakanishi, Akira; and Ito, Mikio, 4,608,081, Cl. 71-94.000.

Ito, Toshimitsu: *See*—
Kobayashi, Nobuyuki; Ito, Toshimitsu; and Norota, Kazuhiko, 4,607,603, Cl. 123-492.000.

Ito, Yuusuke: *See*—
Otsuka, Saburo; Yoshikawa, Toshiyuki; Tokuda, Shoichi; and Ito, Yuusuke, 4,608,249, Cl. 424-28.000.

Itoh, Takanobu, to Honda Giken Kogyo Kabushiki Kaisha. Body structure for automobiles. 4,607,878, Cl. 296-199.000.

Itoi, Masaaki; Ohta, Masakatsu; Sugioka, Taizo; Yoshihara, Kunio; and Nishitani, Hiroshi, to Idemitsu Kosan Company Limited. Pitch material for carbonaceous body and a method for the preparation thereof. 4,608,150, Cl. 208-22.000.

ITT Corporation: *See*—
Carter, Nicholas J. R.; Guilarte, Walter; Masand, Ravindra T.; Martin, Terrance S.; Middleton, Francisco A.; and Das, Santanu, 4,608,460, Cl. 179-6.110.
Goldman, Stuart O., 4,608,711, Cl. 455-33.000.
Upp, Daniel C., 4,608,684, Cl. 370-58.000.

Ivony, Jozsefne : *See*—
Szajani, Bela; Kiss, Janosne ; Ivony, Jozsefne ; Huber, Iren; Boros, Laszlo ; and Daroczi, Ivan, 4,608,340, Cl. 435-180.000.

Iwao, Noriyuki: *See*—
Yoshioka, Masahiro; Murakami, Masahiro; Irie, Yoichiro; Nakanishi, Tsugio; Tsutsui, Eiji; Iwao, Noriyuki; Hirobe, Junichi; and Wakikaido, Takahiro, 4,607,943, Cl. 355-14.00R.

Iwasaki, Eiji: *See*—
Shiraishi, Daiichi; Iwasaki, Eiji; and Fukumoto, Ryoichi, 4,607,456, Cl. 49-352.000.

Izawa, Tetsurou: *See*—
Nishizawa, Shigeki; and Izawa, Tetsurou, 4,608,608, Cl. 358-213.000.

Izumi, Asahiro: *See*—
Nishi, Hitoshi; Izumi, Asahiro; and Nishiyama, Sadanobu, 4,607,713, Cl. 177-25.000.

Izumiyama, Hiroo: *See*—
Ohara, Shumpei; Sagara, Noriyasu; Izumiyama, Hiroo; and Arai, Yoshinobu, 4,607,687, Cl. 165-104.190.

J. R. Simplot Company: *See*—
Galland, Sherry A., 4,608,262, Cl. 426-243.000.

Jachetta, John J.: *See*—
Craig, Todd A.; and Jachetta, John J., 4,608,082, Cl. 71-118.000.

Jacob, Lewis E., to American Envelope Co. Easy open envelope. 4,607,749, Cl. 206-610.000.

Jacobs, Aaron R.; and Gustafson, John W. Ignition performance measuring circuit. 4,608,536, Cl. 324-399.000.

Jacobson, Earl B. Collapsible radiation attenuation system. 4,608,495, Cl. 250-517.100.

Jacobson, Stephen E., to Halcon SD Group, Inc., The. Process and accompanying catalysts for the hydroformylation of formaldehyde to glycol-aldehyde. 4,608,444, Cl. 568-462.000.

Jacobsson, Kurt A. G., to Aktiebolaget IRO. Yarn feeding device. 4,607,506, Cl. 66-125.00R.

Jacobsson, Kurt A. G., to Aktiebolaget IRO. Yarn-feeding apparatus for a circular knitting machine. 4,607,507, Cl. 66-132.00T.

Jacobsson, Paul, to Tellus Maskin AB. Transport arrangement especially for lining material. 4,607,994, Cl. 414-10.000.

Jacoby, John E.: *See*—
Tsai, Mei-Yuan; Jacoby, John E.; and Laemmle, Joseph T., 4,607,679, Cl. 164-5.000.

Jacquet, Bernard; and Lang, Gerard, to Societe Anonyme dite: L'Oreal. Quaternized polymers; process for preparing the same; and cosmetic compositions containing the same. 4,608,250, Cl. 424-71.000.

Jacquet, Bernard; and Gaetani, Quintino, to Societe Anonyme dite: L'Oreal. Method for producing a non greasy protective and emollient film on the skin. 4,608,392, Cl. 514-844.000.

Jaeger, Walter, to GX-Holding AG. Method for the surveyance of an object space. 4,608,597, Cl. 358-113.000.

Jahani, Hooshang, to National Semiconductor Corporation. Lead-frame splicer welder and method. 4,608,479, Cl. 219-87.000.

Jain, Prem C.; and Enns, Frederick, to Northern Telecom Limited. Packet and circuit switched communications network. 4,608,685, Cl. 370-85.000.

James C. Barber and Associates, Inc.: *See*—
Barber, James C., 4,608,241, Cl. 423-317.000.

Jamiolkowski, Dennis D.: *See*—
Shalaby, Shalaby W.; and Jamiolkowski, Dennis D., 4,608,428, Cl. 528-192.000.

Janos, Edward: *See*—
Siecke, Albert E.; and Janos, Edward, 4,607,483, Cl. 57-334.000.

Jansen, George A., to Houdaille Industries, Inc. Apparatus for securing a hose to a fitting. 4,607,867, Cl. 285-242.000.

Jansen, Gerardus L. M., to U.S. Philips Corporation. Electrodynamic device for translating a lens system. 4,607,913, Cl. 350-247.000.

Janssen, Alexander P. Visible index pocket constructions. 4,607,443, Cl. 40-405.000.

Janutta, Reinhard; Uhlig, Uwe; and Redeker, Werner, to Hauni-Werke Korber & Co. KG. Apparatus for dressing grinding wheels. 4,607,607, Cl. 125-11.0CD.

Japan Aviation Electronics Industry Limited: *See*—
Hoshino, Teruaki; Iimori, Isao; and Kamiji, Koichi, 4,607,903, Cl. 339-63.00R.

Japan Medical Supply Co Ltd: *See*—
Kato, Yasuaki, 4,608,472, Cl. 219-10.430.

Japan Tobacco Inc.: *See*—
Okumoto, Yutaka; Kobayashi, Hideki; Shiote, Kanjo; and Arakawa, Toyomi, 4,607,645, Cl. 131-109.100.

Japax Incorporated: *See*—
Shimizu, Akihiko, 4,608,476, Cl. 219-69.00M.

Jarecki, Frank E. Insect trap. 4,607,451, Cl. 43-139.000.

Jarvis, Sidney H., to LRC Products Limited. Sorting articles from bulk. 4,607,474, Cl. 53-117.000.

Jean Walterscheid GmbH: *See*—
Geisthoff, Hubert, 4,607,538, Cl. 74-417.000.

Jefferson, Valerie. Heating pad and massager. 4,607,624, Cl. 128-24.200.

Jelbart, John E. Mobile grain auger. 4,607,740, Cl. 198-320.000.

Jeol Ltd.: *See*—
Kokubo, Yasushi, 4,608,491, Cl. 250-311.000.

Jeswine, William W., to Jeswine, William W. Parachute assembly. 4,607,813, Cl. 244-145.000.

Jewell, Robert M., Jr. Tool for cutting, stripping and connecting electric wire. 4,607,544, Cl. 81-9.400.

Jim Walter Resources, Inc.: *See*—
Hill, George R.; and Jordan, Larry C., 4,607,568, Cl. 98-50.000.

Jochum, Vincent F. Grease zerk ram. 4,607,727, Cl. 184-38.100.

Johannes, Gerhard: *See*—
Brindopke, Gerhard; and Johannes, Gerhard, 4,608,420, Cl. 525-375.000.

Johanning, Hermann, to Engelbrecht & Lemmerbrock GmbH & Co. Plant for the continuous preparation of floated fodder. 4,607,957, Cl. 366-156.000.

Johansson, Anne S.; and Hogman, Claes F. Method of separating blood components. 4,608,178, Cl. 210-744.000.

Johansson, Leif: *See*—
Holmstrom, Sven A.; and Johansson, Leif, 4,608,083, Cl. 75-83.000.

John Brown Inc.: *See*—
Whiteside, Robert C.; and Arends, Albert W., 4,608,009, Cl. 425-590.000.

John Wyeth & Brother Limited: *See*—
Boyle, John T. A., 4,608,379, Cl. 514-318.000.

Johnson, Alfred L., to United States of America, Air Force. Thermal regenerator. 4,607,424, Cl. 29-157.30R.

Johnson, Brion, to Harris Corporation. Microprocessor driven video generator. 4,608,603, Cl. 358-183.000.

Johnson, Gregory J.: *See*—
Eisenberg, Sidney W.; and Johnson, Gregory J., 4,607,861, Cl. 280-702.000.

Johnson & Johnson Products, Inc.: *See*—
Lauritzen, Nels J., 4,607,633, Cl. 128-156.000.

Johnson, Judith L.; and Showalter, Hollis D., to Warner-Lambert Company. Process for preparing substituted anthra[1,9-cd]pyrazol-6(2H)-ones. 4,608,439, Cl. 548-357.000.

Jones, J. Paul, to Med-Tech Associates. Escapement device. 4,607,766, Cl. 222-386.500.

Jordan, Larry C.: *See*—
Hill, George R.; and Jordan, Larry C., 4,607,568, Cl. 98-50.000.

Josephson, Elliot; and Parker, Frederick S., to Astec Components, Ltd. Current driven flyback power supply. 4,608,625, Cl. 363-21.000.

Jospe, Jack: *See*—
Shanaan, Gad; Jospe, Jack; Jospe, Joe; and Caputo, Carlo, 4,607,510, Cl. 70-95.000.

Jospe, Joe: *See*—
Shanaan, Gad; Jospe, Jack; Jospe, Joe; and Caputo, Carlo, 4,607,510, Cl. 70-95.000.

Jouade , Pierre: *See*—
Bodin, Francois; Jouade , Pierre; and Le Guillant, Daniel, 4,607,828, Cl. 267-140.100.

Jouve, Hubert: *See*—
Fedeli, Jean-Marc; and Jouve, Hubert, 4,608,677, Cl. 365-19.000.

Joy Manufacturing Company: *See*—
Pendolino, Eugene F.; Edmondson, Wayne L.; and O'Neill, Michael L., 4,607,891, Cl. 299-92.000.

Judchits, Nikolai N.: *See*—
Obidin, Valery Y.; Zueva, Olga A.; Inochkin, Vladimir M.; Zhavoronkov, Andrei V.; Voinich, Leonid K.; Polushin, Jury V.; Zakhodyakin, Petr A.; Rodionova, Zinaida I.; Judchits, Nikolai N.; Belyanin, Vladimir V.; Yarkin, Andrei A.; Kalmykov, Vyacheslav N.; Ageechkin, Mikhail M.; and Arakelyants, Sergei M., 4,608,004, Cl. 418-206.000.

Judge, John L., to Tektronix, Inc. Detecting improper operation of a digital data processing apparatus. 4,608,690, Cl. 371-21.000.

Juengel, Richard O., to GTE Valeron Corporation. Low battery detector for a machine system using infrared telemetry. 4,608,714, Cl. 455-603.000.

Junkosha Company Ltd.: *See*—
Nomi, Haruo, 4,608,299, Cl. 428-283.000.

Kabushiki Kaisha Kobe Seiko Sho: *See*—
Murakami, Tsudoi; Nasu, Shoji; Nagahama, Yasuhide; Kada, Hironosuke; Sekino, Teruyoshi; Murayama, Hirokazu; Munezane, Yoshiaki; Tuda, Goro; and Mizuguchi, Osamu, 4,608,651, Cl. 364-513.000.

Kabushiki Kaisha Komatsu Seisakusho: *See*—
Egawa, Akira, 4,608,568, Cl. 343-8.000.
Ikeoka, Naoaki; and Nakano, Akihiko, 4,607,732, Cl. 192-12.00R.

Kabushiki Kaisha Nipponcoinco: *See*—
Kobayashi, Osamu; Yukimoto, Koji; and Mikami, Mitsugu, 4,607,650, Cl. 133-5.00R.

Kabushiki Kaisha Tokai-Rika-Denki-Seisakusho: *See*—
Kouketsu, Eiji; and Tsumagari, Masato, 4,607,864, Cl. 280-808.000.

Kabushiki Kaisha Tominaga Jyushikogyosho: *See*—
Tominaga, Kazutoshi, 4,608,000, Cl. 417-413.000.

Kabushiki Kaisha Toshiba: *See*—
Ide, Fumito; Sogo, Toshiyuki; Matsuyama, Kouzou; and Hashimoto, Shinichi, 4,607,945, Cl. 355-14.00R.
Ishida, Takao; and Nakatomi, Yoshitsugu, 4,607,908, Cl. 350-6.800.
Kohyama, Mitsuaki; Kasai, Toshihiro; and Ishida, Haruhiko, 4,607,934, Cl. 355-3.00R.
Kuwahata, Takao; Manabe, Sohei; and Gonpei, Katsuhiro, 4,608,514, Cl. 313-386.000.
Miura, Kenji, 4,608,485, Cl. 235-379.000.
Nagumo, Masahide; Kojima, Tadashi; and Inagawa, Jun, 4,608,692, Cl. 371-37.000.
Shiosaki, Masao, 4,608,681, Cl. 369-77.200.
Sukenobu, Satoru, 4,607,493, Cl. 62-55.500.

Kabushiki Kaisha Toyoda Jidoshokki Seisakusho: *See*—
Asano, Masakazu, 4,607,997, Cl. 414-667.000.

K.K. Piem Riken: *See*—
Ohnishi, Taiji, 4,608,508, Cl. 310-339.000.

Kada, Hironosuke: *See*—
Murakami, Tsudoi; Nasu, Shoji; Nagahama, Yasuhide; Kada, Hironosuke; Sekino, Teruyoshi; Murayama, Hirokazu; Munezane, Yoshiaki; Tuda, Goro; and Mizuguchi, Osamu, 4,608,651, Cl. 364-513.000.

Kadin, Alan M.: *See*—
Keem, John E.; Ovshinsky, Stanford R.; Sadate-Akhavi, Hossein; Chen, Juei-Teng; and Kadin, Alan M., 4,608,296, Cl. 428-215.000.

Kaga, Mitsuru; and Tanaka, Shigetaka, to Ricoh Company, Ltd. Synchronization detection system for data transmission. 4,608,703, Cl. 375-114.000.

Kagarise, Herbert N.: *See*—
Patitsas, George P.; and Kagarise, Herbert N., 4,607,675, Cl. 152-521.000.

Kahn, Richard A.; and Rodey, Glenn E., to American National Red Cross. Biocompatible method for in situ production of functional platelets and product produced thereby lacking immunogenicity. 4,608,255, Cl. 424-101.000.

Kaiser, Bernhard, to Kienzle Apparate GmbH. Coin activated timer mechanism. 4,607,739, Cl. 194-227.000.

Kaiser, Dennis G.; and Kaiser, Robert D., to AmCan, Inc. Enclosed mousetrap having improved trap mechanism. 4,607,450, Cl. 43-83.000.

Kaiser, Robert D.: *See*—
Kaiser, Dennis G.; and Kaiser, Robert D., 4,607,450, Cl. 43-83.000.

Kajima Keneetus Kabushiki Kaisha: *See*—
Ohara, Shumpei; Sagara, Noriyasu; Izumiyama, Hiroo; and Arai, Yoshinobu, 4,607,687, Cl. 165-104.190.

Kaken Pharmaceutical Co., Ltd.: *See—*
Ohtuka, Katuyuki; Sasaki, Kazuya; Arika, Tadashi; Yokoo, Mamoru; and Amemiya, Kouji, 4,608,438, Cl. 548-341.000.

Kallergis, Michael, to Deutsche Forschungs- und Versuchsanstalt fur Luft- und Raumfahrt e.V. Method of determining a clean propeller pressure signal from a propeller/engine exhaust combined signal measured in flight with a microphone arranged on a propeller-driven aircraft. 4,607,528, Cl. 73-602.000.

Kalmykov, Vyacheslav N.: *See—*
Obidin, Valery Y.; Zueva, Olga A.; Inochkin, Vladimir M.; Zhavoronkov, Andrei V.; Voinich, Leonid K.; Polushin, Jury V.; Zakhodyakin, Petr A.; Rodionova, Zinaida I.; Judchits, Nikolai N.; Belyanin, Vladimir V.; Yarkin, Andrei A.; Kalmykov, Vyacheslav N.; Ageechkin, Mikhail M.; and Arakelyants, Sergei M., 4,608,004, Cl. 418-206.000.

Kaltenbach & Voight GmbH & Co.: *See—*
Schmidt, Helmut; Bodenmiller, Anton; and Straka, Alfred, 4,607,413, Cl. 15-301.000.

Kamata, Yoshikiyo, to Kioritz Corporation. Suction device for two-cylinder internal combustion engine. 4,607,598, Cl. 123-56.0BC.

Kamigaichi, Hideyuki; Kurachi, Kazuto; Asano, Nobuyoshi; and Hanada, Tatsuo, to Adek Corporation. In-pipe inspection system. 4,607,925, Cl. 354-63.000.

Kamiji, Koichi: *See—*
Hoshino, Teruaki; Iimori, Isao; and Kamiji, Koichi, 4,607,903, Cl. 339-63.00R.

Kamijo, Yoshimi: *See—*
Igarashi, Masami; Kato, Yoshinori; and Kamijo, Yoshimi, 4,608,308, Cl. 428-408.000.

Kaminaga, Seiji: *See—*
Osaka, Haruya; Kimura, Hiroshi; Hisajima, Masahiko; Shigemura, Yutaka; Kaminaga, Seiji; Satonaka, Shinobu; and Ishito, Mitsuya, 4,607,954, Cl. 355-14.00D.

Kamiyama, Hiromitsu: *See—*
Hakamada, Haruo; Amano, Tadashi; and Kamiyama, Hiromitsu, 4,607,949, Cl. 355-40.000.

Kamiyama, Kazushi: *See—*
Nakano, Yuji; Kamiyama, Kazushi; and Kobayashi, Tatuo, 4,608,307, Cl. 428-402.000.

Kamoshita, Katsuzo: *See—*
Noguchi, Hiroshi; Kato, Toshiro; Takahashi, Junya; Ishiguri, Yukio; Yamamoto, Shigeo; and Kamoshita, Katsuzo, 4,608,385, Cl. 514-444.000.

Kampe, Wolfgang: *See—*
Wiedemann, Fritz, deceased; Kampe, Wolfgang; Dietmann, Karl, deceased; and Sponer, Gisbert, 4,608,383, Cl. 514-407.000.

Kan, Fumitaka: *See—*
Hosoi, Atsushi; Nakahata, Kimio; Tajima, Hatsuo; Egami, Hidemi; Kan, Fumitaka; and Nakamura, Shunji, 4,607,938, Cl. 355-3.0DD.

Kanamori, Nobutaka; and Kurosawa, Masaji, to Nichias Corporation; Honshu Paper Mfg. Co., Ltd.; and Sakai Chemical Industry Co., Ltd. Catalyst carriers and process for preparation of the same. 4,608,361, Cl. 502-232.000.

Kaneko, Akira; Fumoto, Teruo; and Nishida, Jun, to Matsushita Electric Industrial Co., Ltd. Infrared image pickup image. 4,608,599, Cl. 358-113.000.

Kaneko, Toshiki: *See—*
Kobayashi, Osamu; Sasaki, Hiroshi; Kaneko, Toshiki; Ikeda, Hideaki; and Yamamura, Yoshihisa, 4,608,317, Cl. 428-546.000.

Kanesho Company Limited: *See—*
Someya, Shinzo; Akahira, Rokuro; Nonaka, Yuji; Nakanishi, Akira; and Ito, Mikio, 4,608,081, Cl. 71-94.000.

Kangas, Roy J.: *See—*
Kangas, Vernon W.; Kangas, Roy J.; and Matson, Edsel D., 4,607,672, Cl. 144-2.00R.

Kangas, Vernon W.; Kangas, Roy J.; and Matson, Edsel D., to United States of America, Agriculture. Multi-product wood processor. 4,607,672, Cl. 144-2.00R.

Kanno, Katsuo: *See—*
Hishimuma, Sumio; and Kanno, Katsuo, 4,607,409, Cl. 8-152.000.

Kanoh, Junichi; and Aoki, Kongoh, to Aisin Seiki Kabushiki Kaisha. Oil separator for internal combustion engine. 4,607,604, Cl. 123-572.000.

Kapadia, Nikul S., to Becton Dickinson and Company. Imbalance measuring system and method. 4,608,650, Cl. 364-508.000.

Kapetanokos, Christos A.: *See—*
Mako, Frederick; Manheimer, Wallace; Kapetanokos, Christos A.; and Sandel, Frederick, 4,608,537, Cl. 328-237.000.

Kapples, Kevin J.: *See—*
Effland, Richard C.; Davis, Larry; and Kapples, Kevin J., 4,608,374, Cl. 514-211.000.

Kapps, Manfred: *See—*
Kerimis, Dimitrios; Muller, Hanns P.; and Kapps, Manfred, 4,608,407, Cl. 524-14.000.

Karinthi, Pierre; Gardent, Maurice; Regnier, Colette; and Tuccella, Jean, to L'Air Liquide, Societe Anonyme Pour l'Etude et l'Exploitation des Procedes Georges Claude. Ground congelation process and installation. 4,607,488, Cl. 62-45.000.

Karl, Rudolf: *See—*
Acker, Rolf-Dieter; Karl, Rudolf; and Wuerzer, Bruno, 4,608,078, Cl. 71-88.000.

Karp, Richard A.: *See—*
Stiffler, Jack J.; Karp, Richard A.; Nolan, James M., Jr.; Budwey, Michael J.; and Wallace, David A., 4,608,631, Cl. 364-200.000.

Kasai, Toshihiro: *See—*
Kohyama, Mitsuaki; Kasai, Toshihiro; and Ishida, Haruhiko, 4,607,934, Cl. 355-3.00R.

Kashima, Yutaka: *See—*
Hagimoto, Hakumi; Kashima, Yutaka; Kondo, Norio; and Inoue, Masumi, 4,607,889, Cl. 299-33.000.

Kato, Kenneth J.: *See—*
Frollini, Dominick, Jr.; Falconer, Dennis G.; and Kato, Kenneth J., 4,608,148, Cl. 204-408.000.

Kato, Masayuki: *See—*
Ueda, Ikuo; and Kato, Masayuki, 4,608,375, Cl. 514-218.000.

Kato, Osami: *See—*
Ishii, Kenjiro; Aragaki, Masaharu; Kato, Osami; and Higashi, Masato, 4,607,950, Cl. 355-41.000.

Kato, Toshiro: *See—*
Noguchi, Hiroshi; Kato, Toshiro; Takahashi, Junya; Ishiguri, Yukio; Yamamoto, Shigeo; and Kamoshita, Katsuzo, 4,608,385, Cl. 514-444.000.

Kato, Yasuaki, to Japan Medical Supply Co Ltd. Method of and apparatus for sterilizing devices. 4,608,472, Cl. 219-10.430.

Kato, Yoshinori: *See—*
Igarashi, Masami; Kato, Yoshinori; and Kamijo, Yoshimi, 4,608,308, Cl. 428-408.000.

Katsura, Tadashi: *See—*
Minai, Masayoshi; and Katsura, Tadashi, 4,608,442, Cl. 568-346.000.

Katsuyama, Yoshiaki: *See—*
Wada, Toshiaki; and Katsuyama, Yoshiaki, 4,608,293, Cl. 428-141.000.

Katterloher, Reinhard: *See—*
Demus, Wolfgang; and Katterloher, Reinhard, 4,607,492, Cl. 62-55.500.

Katz, Emanuel E.: *See—*
Bergin, Ralph M.; Katz, Emanuel E.; and Widicus, Warren A., 4,608,263, Cl. 426-303.000.

Kaufmann, Meinolph: *See—*
Amstutz, Hermann; Kaufmann, Meinolph; and Scheffer, Terry J., 4,608,558, Cl. 340-784.000.

Kawade, Hiroyuki: *See—*
Akasaka, Takeshi; Terashima, Masahiko; Kawade, Hiroyuki; and Taniguchi, Hitoshi, 4,608,203, Cl. 530-378.000.

Kawakami, Yoshinobu: *See—*
Miyakawa, Nobuhiro; Higashiguchi, Teruaki; Yano, Koji; Yamamoto, Kazuo; and Kawakami, Yoshinobu, 4,607,936, Cl. 355-3.0DR.

Kawasaki Steel Corporation: *See—*
Mochizuki, Kazuo; Nakakoji, Hisatada; Ichida, Toshio; Irie, Toshio; Ogata, Hajime; and Yamaji, Kyoko, 4,608,320, Cl. 428-629.000.

Kaye, Gordon E.: *See—*
D'Alessandro, Robert; Cardenas, Carlos; and Kaye, Gordon E., 4,607,904, Cl. 339-108.00OR.

Kazaoka, Kenichi; and Okazaki, Hiroshi, to Aisin Seiki Kabushiki Kaisha. Seat for vehicles. 4,607,827, Cl. 267-107.000.

Keating, Richard. Infrared burner assembly for a griddle. 4,607,609, Cl. 126-39.00J.

Keem, John E.; Ovshinsky, Stanford R.; Sadate-Akhavi, Hossein; Chen, Juei-Teng; and Kadin, Alan M., to Energy Conversion Devices, Inc. Superconducting films and devices exhibiting AC to DC conversion. 4,608,296, Cl. 428-215.000.

Keil, Karl-Heinz: *See—*
Greiner, Ulrich; Keil, Karl-Heinz; Heinrich, Rudolf; and Albrecht, Konrad, 4,608,277, Cl. 427-213.300.

Keller, Arnold, to Waldemar Link GmbH & Co. Femoral hip prosthesis. 4,608,053, Cl. 623-23.000.

Keller, Howard J.: *See—*
Boothroyd, Donald C.; Wilhite, John E.; Norman, Robert W., Jr.; and Keller, Howard J., 4,608,633, Cl. 364-200.000.

Kelley, Brian: *See—*
Magnus, George; Loeb, Melvin; Wood, Robert J.; and Kelley, Brian, 4,608,432, Cl. 528-274.000.

Kelley, Reginald D., to Force Control Industries, Inc. Multiple speed drive system. 4,607,736, Cl. 192-18.00A.

Kelly, John W., to Haskel, Inc. Swaging method and apparatus for axially extended expansion of tubes. 4,607,426, Cl. 29-421.00R.

Kelman, Charles D. Intraocular lens and method of inserting an intraocular lens into an eye. 4,608,049, Cl. 623-6.000.

Kennametal Inc.: *See—*
Makrides, Nicholas; and Stephenson, Earle W., 4,608,318, Cl. 428-553.000.

Kenney Manufacturing Company: *See—*
Comeau, Paul E., 4,607,677, Cl. 160-84.00R.

Kepes, Josef. Power rake. 4,607,704, Cl. 172-42.000.

Keresztessy nee Badi, Maria; Paka nee Kas, Eleonora; Gyongyossy, Lajos; Farkas, Bela; and Paku, Sandor, to Szegvari Haziipari Szovetkezet. Plastic deformable composition and process for the preparation thereof. 4,608,090, Cl. 106-272.000.

Kerimis, Dimitrios; Muller, Hanns P.; and Kapps, Manfred, to Bayer Aktiengesellschaft. Process for the production of compression-molded materials containing polyisocyanate binders using latent, heat activatable catalysts. 4,608,407, Cl. 524-14.000.

Kerko, David J.; Morgan, David W.; and Morse, David L., to Corning Glass Works. Photochromic glass compositions for lightweight lenses. 4,608,349, Cl. 501-13.000.

Keshtbod, Parviz, to Signetics Corporation. Electrically erasable PROM cell. 4,608,585, Cl. 357-23.500.

Kesling, Haven S., Jr.; and Gillman, Hyman D., to Atlantic Richfield Company. Alkoxylated ether sulfate anionic surfactants from branched chain plasticizer alcohols. 4,608,197, Cl. 252-551.000.

Kessler, Wolfgang: *See—*
Finzer, Heinz; and Kessler, Wolfgang, 4,607,517, Cl. 72-449.000.

Khanna, Pyare; Snyder, Evan S.; and Singh, Prithipal, to Syntex (U.S.A.) Inc. Chloramphenicol derivatives antigens and antibodies. 4,608,252, Cl. 424-85.000.

Khanna, Pyare L.; Snyder, Evan S.; and Singh, Prithipal, to Syntex (U.S.A.) Inc. Chloramphenicol derivatives, antigens and antibodies. 4,608,200, Cl. 530-387.000.

Kice, John E., to Kice Metal Products Co., Inc. Multiple lift pneumatic conveying air velocity control apparatus and method for controlling the pneumatic velocity in a multiple lift pneumatic conveying air velocity control apparatus. 4,607,987, Cl. 406-14.000.

Kice Metal Products Co., Inc.: *See—*
Kice, John E., 4,607,987, Cl. 406-14.000.

Kida, Yasushi: *See—*
Inoue, Hirochika; Yoshida, Ken-ich; Kida, Yasushi; and Takemoto, Akira, 4,607,578, Cl. 108-145.000.

Kido, Sumiaki: *See—*
Hirose, Nagayoshi; Kido, Sumiaki; and Fuzita, Yoshiharu, 4,608,488, Cl. 235-384.000.

Kienzle Apparate GmbH: *See—*
Kaiser, Bernhard, 4,607,739, Cl. 194-227.000.

Kilian, Ernst A.: *See—*
Dijkmans, Eise C.; Graffenberger, Wilhelm; and Kilian, Ernst A., 4,608,502, Cl. 307-243.000.

Killough, Stephen M.: *See—*
Martin, H. Lee; and Killough, Stephen M., 4,608,526, Cl. 318-628.000.

Kim, Ock-Ky, to AT&T Bell Laboratories. Back-illuminated photodiode with a wide bandgap cap layer. 4,608,586, Cl. 357-30.000.

Kimberly-Clark Corporation: *See—*
Lassen, Frederich O., 4,608,292, Cl. 428-131.000.
Schroth, Carl G.; and Thorson, Russell E., 4,608,115, Cl. 156-519.000.

Kimura, Hiroshi: *See—*
Osaka, Haruya; Kimura, Hiroshi; Hisajima, Masahiko; Shigemura, Yutaka; Kaminaga, Seiji; Satonaka, Shinobu; and Ishito, Mitsuya, 4,607,954, Cl. 355-14.00D.
Watashi, Masahiro; Kimura, Hiroshi; Shibata, Kiyoshi; Hisajima, Masahiko; and Yamamoto, Kiyonori, 4,607,734, Cl. 192-67.00R.

Kimura, Shinji: *See—*
Watanabe, Shigeru; Kinukawa, Hiroshi; Mori, Kenjiro; Koichi, Kenji; Kimura, Shinji; Yamanouchi, Makoto; and Yajima, Yasuo, 4,608,662, Cl. 364-900.000.

Kindt, Robert J.; and Peffer, Robert M., to Eastman Kodak Company. Roller transfer apparatus. 4,607,935, Cl. 355-3.0TR.

King, Malcolm R.: *See—*
Burgess, David A.; and King, Malcolm R., 4,608,463, Cl. 179-115.50R.

Kington, Alan D.: *See—*
Mills, David; Kington, Alan D.; and Close, Rodney J., 4,607,680, Cl. 164-134.000.

Kinion, Stephen R. Vehicle wheel alignment device. 4,607,519, Cl. 72-457.000.

Kinner, Samuel D.: *See—*
Reighard, Robert P.; Kinner, Samuel D.; and Ciesielski, Mark, 4,607,898, Cl. 339-3.00S.

Kinoshita, Satoshi; and Yamamoto, Yoshimi, to Fuji Kiko Company, Limited. Adjustable automotive steering column with adjustable tilt and top-position lock. 4,607,540, Cl. 74-493.000.

Kinukawa, Hiroshi: *See—*
Watanabe, Shigeru; Kinukawa, Hiroshi; Mori, Kenjiro; Koichi, Kenji; Kimura, Shinji; Yamanouchi, Makoto; and Yajima, Yasuo, 4,608,662, Cl. 364-900.000.

Kioritz Corporation: *See—*
Kamata, Yoshikiyo, 4,607,598, Cl. 123-56.0BC.

Kirkman, Chester M. Tool for hanging baskets. 4,607,871, Cl. 294-19.100.

Kirtley, James L., Jr.; Sterling, Thomas L.; and Williams, Ronald D., to Massachusetts Institute of Technology. Serial multi-drop data link. 4,608,700, Cl. 375-36.000.

Kishi, Atsuo: *See—*
Hayase, Isao; and Kishi, Atsuo, 4,608,002, Cl. 418-86.000.

Kisida, Hiroši; Hatakoshi, Makoto; and Nishida, Sumio, to Sumitomo Chemical Company, Limited. Carbamate compounds and their use as insecticides. 4,608,389, Cl. 514-539.000.

Kiss, Janosne : *See—*
Szajani, Bela; Kiss, Janosne ; Ivony, Jozsefne ; Huber, Iren; Boros, Laszlo ; and Daroczi, Ivan, 4,608,340, Cl. 435-180.000.

Kissel, Thomas R.: *See—*
Daniel, Daniel S.; and Kissel, Thomas R., 4,608,149, Cl. 204-418.000.

Kitajima, Houdo: *See—*
Yamamoto, Takashi; Kitajima, Houdo; and Takahashi, Hiroyuki, 4,608,509, Cl. 310-357.000.

Kitamoto, Tatsuji: *See—*
Umemura, Shizuo; and Kitamoto, Tatsuji, 4,608,093, Cl. 148-6.350.

Kitamura, Koichiro, to Kitamura Machinery Co., Ltd. Machine tool. 4,607,989, Cl. 409-232.000.

Kitamura Machinery Co., Ltd.: *See—*
Kitamura, Koichiro, 4,607,989, Cl. 409-232.000.

Kitsunai, Tomoyuki; Miura, Tetsuji; and Yagi, Norio, to Denki Kagaku Kogyo Kabushiki Kaisha. Thermoplastic resin composition containing an imide polymer and graft copolymer. 4,608,414, Cl. 525-71.000.

Kiya, Nobuyuki, to Fanuc Ltd. Tool life, offset, and selection supervision method. 4,608,644, Cl. 364-474.000.

Kiyomoto, Masayuki: *See—*
Yokoshima, Minoru; Ohkubo, Tetsuo; and Kiyomoto, Masayuki, 4,608,400, Cl. 522-96.000.

Klaff, Harry J., to Rockland Industries. Weather proof insulating textile fabric composite. 4,608,298, Cl. 428-246.000.

Klamer, Reuben B.; and Greenwood, Donald. Soft propellable toy. 4,608,027, Cl. 446-457.000.

Klara, Walter S.; Kwap, Theodore W.; Marcello, Victor; and Rasmussen, Robert A., to International Business Machines Corporation. Self contained array timing. 4,608,669, Cl. 365-201.000.

Klein, Edward P.; and Nissan, Alfred H., to Westvaco Corporation. Method for washing a paper fiber on a belt washer using a sonic frequency disturbance. 4,608,122, Cl. 162-60.000.

Kleinschmit, Peter: *See—*
Strack, Hans; and Kleinschmit, Peter, 4,608,236, Cl. 423-118.000.

Klingler, Knud: *See—*
Michels, Hartwig; and Klingler, Knud, 4,607,715, Cl. 180-118.000.

Kluge, Arthur F.; Willis, Anthony L.; and O'Yang, Counde, to Syntex (U.S.A.) Inc. Novel [4,2,0]bicyclooctane derivatives with valuable therapeutic properties. 4,608,388, Cl. 514-510.000.

KMS Fusion, Inc.: *See—*
Brueckner, Keith A., 4,608,222, Cl. 376-104.000.

Knecht, Adolf; and Augart, Helmut, to Warner-Lambert Company. Process for time-controlled release of active ingredients. 4,608,248, Cl. 424-19.000.

Knelson, Benjamin V. Centrifugal separator. 4,608,040, Cl. 494-27.000.

Knight, Jack D.: *See—*
Duerksen, John H.; Wall, Robert G.; and Knight, Jack D., 4,607,700, Cl. 166-303.000.

Knoll, Heinz W.: *See—*
Andres, Rudolf; Scholz, Hansjurgen; Knoll, Heinz W.; Brambilla, Luigi; Petri, Volker; and Bossenmaier, Alban, 4,608,501, Cl. 307-105.00B.

Knorr-Bremse AG: *See—*
Staltmeir, Josef; and Wosegien, Bernd, 4,607,729, Cl. 188-153.00R.

Knoth, Werner-Dieter; Hullen, Helmut; and Kopatz, Klaus, to VEBA-GLAS AG. Gob distributor. 4,608,074, Cl. 65-164.000.

Knudson, Mark M. Snow ski machine. 4,607,839, Cl. 272-97.000.

Kobashi, Mamoru: *See—*
Takahashi, Minoru; Fukuda, Teruo; Isobe, Toshiaki; and Kobashi, Mamoru, 4,607,523, Cl. 73-116.000.

Kobayashi, Hideki: *See—*
Okumoto, Yutaka; Kobayashi, Hideki; Shiote, Kanjo; and Arakawa, Toyomi, 4,607,645, Cl. 131-109.100.

Kobayashi, Kazuo: *See—*
Miyazaki, Kenji; Ogawa, Ichitaro; Yoshida, Hisayoshi; Kobayashi, Kazuo; Hagio, Tsuyoshi; Ueno, Hidetoshi; and Akiyama, Shigeru, 4,607,959, Cl. 366-343.000.

Kobayashi, Kinzo, to Tokico Ltd. Pad spring for disc brake and having restricting portion. 4,607,728, Cl. 188-73.380.

Kobayashi, Mamoru; Sasaki, Hideaki; and Hara, Yasuhiko, to Hitachi, Ltd. Component alignment apparatus. 4,608,494, Cl. 250-461.100.

Kobayashi, Michiaki: *See—*
Takeuchi, Hideo; Kobayashi, Michiaki; and Shibasaki, Makoto, 4,607,571, Cl. 101-365.000.

Kobayashi, Minoru, to Mitsubishi Denki Kabushiki Kaisha. Electrolytic method and apparatus. 4,608,138, Cl. 204-129.300.

Kobayashi, Nobuyuki; Ito, Toshimitsu; and Norota, Kazuhiko, to Toyota Jidosha Kabushiki Kaisha. Fuel injection system employing the second time differential of pressure or air flow rate. 4,607,603, Cl. 123-492.000.

Kobayashi, Osamu; Yukimoto, Koji; and Mikami, Mitsugu, to Kabushiki Kaisha Nipponcoinco. Coin dispensing apparatus. 4,607,650, Cl. 133-5.00R.

Kobayashi, Osamu; Sasaki, Hiroshi; Kaneko, Toshiki; Ikeda, Hideaki; and Yamamura, Yoshihisa, to Honda Giken Kogyo Kabushiki Kaisha. Material sheet for metal sintered body and method for manufacturing the same and method for manufacturing metal sintered body. 4,608,317, Cl. 428-546.000.

Kobayashi, Satoshi: *See—*
Awane, Misao; Hara, Seiji; and Kobayashi, Satoshi, 4,608,487, Cl. 235-383.000.

Kobayashi, Tatuo: *See—*
Nakano, Yuji; Kamiyama, Kazushi; and Kobayashi, Tatuo, 4,608,307, Cl. 428-402.000.

Koch, Earl E., to New Holland Inc. Lateral transport trailer. 4,607,996, Cl. 414-537.000.

Koch, Gabriele I.: *See—*
Ebner, Heinz; Koch, Gabriele I.; Lauckner, Joachim; Lutz, Felix; Seibold, Gerhard; and Wessel, Gerhard, 4,607,917, Cl. 350-392.000.

Koch, Karlheinz; Wegener, Ingo; and Giesen, Brigitte, to Henkel Kommanditgesellschaft auf Aktien. Detergents and liquid cleaners free of inorganic builders. 4,608,189, Cl. 252-174.220.

Kodaira, Takanori: *See—*
Egawa, Akira; Kodaira, Takanori; and Namai, Akihiro, 4,607,932, Cl. 354-468.000.

Kohka, Kenichi, to Sharp Kabushiki Kaisha. Negative thermal expansion metal electrically connected to motor means for microwave oven. 4,608,474, Cl. 219-10.55R.

Kohler, Bernard, to Compagnie des Transmissions Mechaniques Sedis. Detachable timing gear cassette unit for an explosion or internal combustion engine. 4,607,601, Cl. 123-90.310.

Kohler, Gustav; Kohler, Mikael; and Kohler, Ulf. Alternator apparatus. 4,607,419, Cl. 29-24.500.

Kohler, Mikael: *See*—
Kohler, Gustav; Kohler, Mikael; and Kohler, Ulf, 4,607,419, Cl. 29-24.500.

Kohler, Robert D.: *See*—
Hedler, Robert C.; Kohler, Robert D.; and Dunlap, John H., 4,608,709, Cl. 382-1.000.

Kohler, Ulf: *See*—
Kohler, Gustav; Kohler, Mikael; and Kohler, Ulf, 4,607,419, Cl. 29-24.500.

Kohli, Dalip K., to American Cyanamid Co. Polyimide from unsaturated imide, polyamine and aldehyde. 4,608,431, Cl. 528-246.000.

Kohyama, Mitsuaki; Kasai, Toshihiro; and Ishida, Haruhiko, to Kabushiki Kaisha Toshiba. Electrophotography using a photosensitive drum with multi-photosensitive layers sensitive to different wave lengths. 4,607,934, Cl. 355-3.00R.

Koichi, Kenji: *See*—
Watanabe, Shigeru; Kinukawa, Hiroshi; Mori, Kenjiro; Koichi, Kenji; Kimura, Shinji; Yamanouchi, Makoto; and Yajima, Yasuo, 4,608,662, Cl. 364-900.000.

Koike, Yujiro. Method of hydroponically growing plant sprouts and apparatus therefor. 4,607,454, Cl. 47-63.000.

Kojima, Hiroshi: *See*—
Shimada, Yutaka; Kojima, Hiroshi; and Hasegawa, Takashi, 4,608,297, Cl. 428-215.000.

Kojima, Tadashi: *See*—
Nagumo, Masahide; Kojima, Tadashi; and Inagawa, Jun, 4,608,692, Cl. 371-37.000.

Kojima, Yutaka; Masuda, Toshiyuki; and Hisamatsu, Nobuo, to Matsushita Electric Works, Ltd. Time division multiplexing load control system having manual switch for directly controlling loads. 4,608,561, Cl. 340-825.520.

Kokkonen, Seppo; Kuhasalo, Antti; Savolainen, Erkki; Titoff, Juha; Vento, Jorma; and Vikio , Pentti, to Enso-Gutzeit Oy. Feed and accept duct system for hydrocyclones. 4,608,174, Cl. 210-512.200.

Kokubo, Yasushi, to Jeol Ltd. Electron beam instrument. 4,608,491, Cl. 250-311.000.

Komaki, Shojiro: *See*—
Ishimaru, Hajime; Miyamoto, Masao; and Komaki, Shojiro, 4,607,491, Cl. 62-55.500.

Komakine, Chukei. Method of treating cachexia. 4,608,256, Cl. 424-147.000.

Komurasaki, Satoshi, to Mitsubishi Denki Kabushiki Kaisha. Ignition timing control apparatus for internal combustion engine. 4,607,602, Cl. 123-425.000.

Kondo, Michikazu: *See*—
Nagashima, Kunio; and Kondo, Michikazu, 4,608,682, Cl. 370-4.000.

Kondo, Norio: *See*—
Hagimoto, Hakumi; Kashima, Yutaka; Kondo, Norio; and Inoue, Masumi, 4,607,889, Cl. 299-33.000.

Konishi, Satoshi: *See*—
Ohno, Jun-ichi; and Konishi, Satoshi, 4,608,668, Cl. 365-200.000.

Konishiroku Photo Industry Co., Ltd.: *See*—
Hakamada, Haruo; Amano, Tadashi; and Kamiyama, Hiromitsu, 4,607,949, Cl. 355-40.000.
Haneda, Satoshi; and Hiratsuka, Seiichi, 4,607,933, Cl. 355-3.0DD.

Kopatz, Klaus: *See*—
Knoth, Werner-Dieter; Hullen, Helmut; and Kopatz, Klaus, 4,608,074, Cl. 65-164.000.

Kopecky, Ivyl D., to Haybuster Manufacturing, Inc. Furrow opener for seeder. 4,607,581, Cl. 111-73.000.

Kopf, Hartmut; and Kopf-Maier, Petra. Use of cyclopentadienyl metal-acido complexes for the treatment of cancer and pharmaceutical compositions containing said complexes. 4,608,387, Cl. 514-492.000.

Kopf-Maier, Petra: *See*—
Kopf, Hartmut; and Kopf-Maier, Petra, 4,608,387, Cl. 514-492.000.

Koppers Company, Inc.: *See*—
Hood, Richard T.; and Bender, Raymond L., 4,608,408, Cl. 524-15.000.

Koranski, David S.: *See*—
Gladon, Richard J.; and Koranski, David S., 4,608,076, Cl. 71-76.000.

Korba, Brent E.: *See*—
Yoakum, George H.; Harris, Curtis C.; Korba, Brent E.; and Lechner, John F., 4,608,339, Cl. 435-172.200.

Kosonocky, Walter F., to RCA Corporation. Method of making a charge-coupled device image sensor. 4,607,429, Cl. 29-572.000.

Koster, Lothar: *See*—
Rummler, Karl-Heinz; Sievers, Willi; Dette, Karl-Henning; Koster, Lothar; and Luscalu, Romeo, 4,608,218, Cl. 264-315.000.

Kosuzume, Hiroshi: *See*—
Ohnishi, Haruo; Kosuzume, Hiroshi; Suzuki, Yasuo; and Mochida, Ei, 4,608,253, Cl. 424-94.000.

Kotzab, Werner: *See*—
Hans, Rudiger; and Kotzab, Werner, 4,607,737, Cl. 192-88.00A.

Kouge, Shinichi: *See*—
Morishita, Mitsuharu; and Kouge, Shinichi, 4,608,639, Cl. 364-424.000.

Kouketsu, Eiji; and Tsumagari, Masato, to Kabushiki Kaisha Tokai-Rika-Denki-Seisakusho; and Daihatsu Motor Co. Webbing support device. 4,607,864, Cl. 280-808.000.

Koya, Kazuo: *See*—
Yokokawa, Kiyoshi; Koya, Kazuo; and Hosino, Syouji, 4,608,071, Cl. 65-13.000.

Koyama, Haruo; and Nishino, Toshio, to Mita Industrial Co., Ltd. Electrostatic copying apparatus. 4,607,942, Cl. 355-3.0SH.

Kraatz, Paul: *See*—
Rowe, James M.; Kraatz, Paul; and Holmes, Samuel J., 4,608,272, Cl. 427-53.100.

Kraftwerk Union Aktiengesellschaft: *See*—
Schabert, Hans-Peter; Heller, Max; Laurer, Erwin; and Leinweber, Hans, 4,607,822, Cl. 251-334.000.

Krage, William G.; and Denman, Owen S., to Energy Absorption Systems, Inc. Guardrail end terminal. 4,607,824, Cl. 256-13.100.

Krajewski, John J.: *See*—
Coady, Clive J.; Krajewski, John J.; and Bishop, Timothy E., 4,608,409, Cl. 524-199.000.

Kralik, Andrew J., to Siemens-Allis, Inc. Movable contact arm assembly for a current limiting circuit breaker. 4,608,545, Cl. 335-16.000.

Kramer, James H.; and Orndorff, Roy L., Jr., to B. F. Goodrich Company, The. Water lubricated bearing. 4,607,964, Cl. 384-98.000.

Krampen, Adalbert A.; Ells, Delbert O.; Bjerke, Robert K.; and Ward, James P., to Omark Industries, Inc. Primer composition. 4,608,102, Cl. 149-92.000.

Kranjec, Stan. Panel mounting arrangement. 4,607,576, Cl. 108-110.000.

Kras, Stephen J.: *See*—
Taber, James M.; and Kras, Stephen J., 4,607,768, Cl. 222-556.000.

Krasnokutsky, Valentin P.: *See*—
Enikolopov, Nikolai S.; Nepomnyaschy, Anatoly I.; Filmakova, Lidia A.; Krasnokutsky, Valentin P.; Kurakin, Leonid I.; Akopian, Elena L.; Markarian, Khristofor A.; Negmatov, Saibdzhan S.; Matkarimov, Suleiman K.; Polivanov, Yury A.; Sherstnev, Pavel P.; and Pavlov, Vilitary B., 4,607,796, Cl. 241-3.000.

Krause, Dieter, to Siemens Aktiengesellschaft. Device for cutting glass fibers. 4,607,775, Cl. 225-96.500.

Krempel, Fritz, to Mauser-Werke Oberndorf GmbH. Exchangeable turning head, particularly a face turning head. 4,607,549, Cl. 82-2.00E.

Kreuzberg, Heinz: *See*—
Tinnes, Bernhard; and Kreuzberg, Heinz, 4,607,681, Cl. 164-453.000.

Krogsgaard-Larsen, Povl: *See*—
Falch, Erik; Krogsgaard-Larsen, Povl; Sauerberg, Per; Christensen, Anne V.; and Larsen, Jens-Jorgen, 4,608,378, Cl. 514-302.000.

Krongold, Martin A., to MG Industries. Method and apparatus for producing cold gas at a desired temperature. 4,607,489, Cl. 62-49.000.

Krug, Martin: *See*—
Ferdows, Houshang; Krug, Martin; and Bihl, Paul R., 4,607,497, Cl. 62-179.000.

Kuhara, Yoshiki: *See*—
Tada, Kohji; Kuhara, Yoshiki; Tatsumi, Masami; and Mitsui, Tsutomu, 4,608,535, Cl. 324-244.000.

Kuhasalo, Antti: *See*—
Kokkonen, Seppo; Kuhasalo, Antti; Savolainen, Erkki; Titoff, Juha; Vento, Jorma; and Vikio , Pentti, 4,608,174, Cl. 210-512.200.

Kukanskis, Peter E.; Grunwald, John J.; and Sawoska, David, to MacDermid, Incorporated. Oxidizing accelerator. 4,608,275, Cl. 427-98.000.

Kukes, Simon G.: *See*—
Howell, Jerald A.; and Kukes, Simon G., 4,608,152, Cl. 208-108.000.

Kula, John; and Miksza, Anthony S., Jr., to Ethicon, Inc. Surgical instrument for applying fasteners having tissue locking means for maintaining the tissue in the instrument while applying the fasteners (case I). 4,607,636, Cl. 128-334.00R.

Kulkarni, Sudhir S.: *See*—
Kulprathipanja, Santi; and Kulkarni, Sudhir S., 4,608,060, Cl. 55-16.000.

Kulprathipanja, Santi; and Kulkarni, Sudhir S., to UOP Inc. Separation of polar gases from nonpolar gases. 4,608,060, Cl. 55-16.000.

Kumabe, Junichiro; and Kumabe, Masaru, to Kumabe, Masaru. Tool for exodontia. 4,608,019, Cl. 433-118.000.

Kumabe, Masaru: *See*—
Kumabe, Junichiro; and Kumabe, Masaru, 4,608,019, Cl. 433-118.000.

Kummer, David A., to International Business Machines Corporation. Memory paging system in a microcomputer. 4,608,632, Cl. 364-200.000.

Kuno, Hiroshi: *See*—
Ueno, Hideo; Kuno, Hiroshi; and Hamabe, Yoshifumi, 4,607,966, Cl. 400-63.000.

Kupfer, Hans; and Hafke, Carl, to Metallgesellschaft Aktiengesellschaft. Method of operating a reactor for gasifying solid fuels. 4,608,059, Cl. 48-197.00R.

Kurachi, Kazuto: *See*—
Kamigaichi, Hideyuki; Kurachi, Kazuto; Asano, Nobuyoshi; and Hanada, Tatsuo, 4,607,925, Cl. 354-63.000.

Kuraco Limited: *See*—
Higashino, Toshihiro; Mitsunaga, Hirofumi; Nakanishi, Takahiro; and Taya, Yoshihiro, 4,607,614, Cl. 126-299.00E.

Kurakin, Leonid I.: *See*—
Enikolopov, Nikolai S.; Nepomnyaschy, Anatoly I.; Filmakova, Lidia A.; Krasnokutsky, Valentin P.; Kurakin, Leonid I.; Akopian, Elena L.; Markarian, Khristofor A.; Negmatov,

Saibdzhan S.; Matkarimov, Suleiman K.; Polivanov, Yury A.; Sherstnev, Pavel P.; and Pavlov, Vilitary B., 4,607,796, Cl. 241-3.000.

Kuraray Co., Ltd.: *See*—
Motoishi, Yasuo; Satoh, Kenji; and Ikari, Kyoichiro, 4,608,286, Cl. 428-35.000.

Kurby, Christopher N.: *See*—
Batlivala, Percy P.; and Kurby, Christopher N., 4,608,699, Cl. 375-5.000.

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Kurokawa, Takashi, to Canon Kabushiki Kaisha. Exhaust system for chemical vapor deposition apparatus. 4,608,063, Cl. 55-208.000.

Kuroki, Takashi: *See*—
Toda, Gyozo; Fujita, Tsuyoshi; Tosaki, Hiromi; and Kuroki, Takashi, 4,608,316, Cl. 428-446.000.

Kurosawa, Masaji: *See*—
Kanamori, Nobutaka; and Kurosawa, Masaji, 4,608,361, Cl. 502-232.000.

Kurt Wolf & Co. KG: *See*—
Andre, Wolfram K., 4,608,260, Cl. 426-233.000.

Kurtz, Stuart J.; Roberts, Ernest H.; and Lucchesi, Peter J., to Union Carbide Corporation. Process for reducing draw resonance in polymeric film. 4,608,221, Cl. 264-556.000.

Kurumizawa, Masao; Terui, Mitsuru; and Yamaguchi, Nobuyasu, to Ikeda Busaan Co., Ltd.; and Nichiei Industry Co., Ltd. Method and mold apparatus for molding a padding member. 4,608,213, Cl. 264-45.100.

Kurz, Otto: *See*—
Bergmann, Ewald; Kurz, Otto; and Dommer, Hans-Martin, 4,607,557, Cl. 83-687.000.

Kuwahara, Hiroshi: *See*—
Morikawa, Yuichi; Sato, Hirohiko; Amada, Eiichi; Suzuki, Toshiro; Shirasu, Hirotoshi; and Kuwahara, Hiroshi, 4,608,464, Cl. 179-170.200.

Kuwahata, Takao; Manabe, Sohei; and Gonpei, Katsuhiro, to Kabushiki Kaisha Toshiba. Photoconductive target of the image pickup tube. 4,608,514, Cl. 313-386.000.

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Shilkov, Vladimir A.; Shilkov, Andrei V.; Kuzmin, Petr D.; Metrikin, Vladimir S.; Chumichev, Vladimir A.; Borovtsev, Anatoly I.; and Dubenkov, Nikolai I., 4,607,980, Cl. 404-133.000.

Kwap, Theodore W.: *See*—
Klara, Walter S.; Kwap, Theodore W.; Marcello, Victor; and Rasmussen, Robert A., 4,608,669, Cl. 365-201.000.

Kwolek, Stephanie L.: *See*—
Sweeny, Wilfred; and Kwolek, Stephanie L., 4,608,427, Cl. 528-179.000.

Kyocera Corporation: *See*—
Nakano, Yuji; Kamiyama, Kazushi; and Kobayashi, Tatuo, 4,608,307, Cl. 428-402.000.

Kyriss, Karl M.: *See*—
Yohe, Thomas L.; and Kyriss, Karl M., 4,608,163, Cl. 210-150.000.

L. Schuler GmbH: *See*—
Bergmann, Ewald; Kurz, Otto; and Dommer, Hans-Martin, 4,607,557, Cl. 83-687.000.

Labbe, Francis A. M.: *See*—
Hinchcliffe, Dennis; Labbe, Francis A. M.; and Molins, Desmond W., 4,607,477, Cl. 53-444.000.

Labeda, David P.; Goodman, Joseph J.; Borders, Donald B.; Testa, Raymond T.; and Martin, John H. E. J., deceased (by Martin, Mary B., executrix), to American Cyanamid Company. Biologically pore culture of *Streptomyces majorciensis* Labeda. 4,608,343, Cl. 435-253.000.

LaBrash, Robert A.: *See*—
Hume, Robert M., III; LaBrash, Robert A.; and Vander Giessen, Michael J., 4,608,111, Cl. 156-306.600.

Lackinger, Franz. Tension resisting electrical cable gland. 4,608,454, Cl. 174-65.0SS.

Lacourse, Norman L.: *See*—
Zwiercan, Gary A.; Lacourse, Norman L.; and Lenchin, Julianne M., 4,608,265, Cl. 426-582.000.

Laemmle, Joseph T.: *See*—
Tsai, Mei-Yuan; Jacoby, John E.; and Laemmle, Joseph T., 4,607,679, Cl. 164-5.000.

Lahtinen, Pentti K. Procedure for manufacturing elongated glued beams. 4,608,106, Cl. 156-182.000.

Lai, Michael M., to Champion International Corporation. Moisture removal for stack gas monitor. 4,608,065, Cl. 55-269.000.

L'Air Liquide, Societe Anonyme Pour l'Etude et l'Exploitation des Procedes Georges Claude: *See*—
Karinthi, Pierre; Gardent, Maurice; Regnier, Colette; and Tuccella, Jean, 4,607,488, Cl. 62-45.000.

Lamb, John G.; and McHugh, Terence M., to Standard Telephones and Cables Public Limited Company. Manufacturing optical fibre. 4,608,276, Cl. 427-163.000.

Lamberty, Bernard J.: *See*—
Blakney, Thomas L.; Connell, Douglas D.; Lamberty, Bernard J.; and Lee, James R., 4,608,572, Cl. 343-792.500.

Lamort, Jean-Pierre J., to E et M Lamort. Turbines for fiber separation. 4,607,802, Cl. 241-46.00B.

Lanam, Richard D.; and Robertson, Allen R., to Engelhard Corporation. Palladium metal base dental alloy. 4,608,229, Cl. 420-464.000.

Landane, Jack: *See*—
Pomaville, Ronald C.; and Landane, Jack, 4,607,678, Cl. 160-332.000.

Landes, Herwig: *See*—
Becker, Hans; and Landes, Herwig, 4,608,069, Cl. 62-26.000.

Landis, Geoffrey A., to Spire Corporation. Cross-grooved solar cell. 4,608,451, Cl. 136-256.000.

Landphair, Donald K.; and Salley, Gordon L., to Deere & Company. Foldable frame flexing hinge. 4,607,708, Cl. 172-776.000.

Landstingens Inkopscentral LIC: *See*—
Schroder, Mats, 4,608,054, Cl. 623-39.000.

Lane, John: *See*—
DiMartini, Carl; and Lane, John, 4,608,230, Cl. 420-566.000.

Lane, William C. De-watering pump. 4,607,999, Cl. 417-118.000.

Lang, Gerard: *See*—
Jacquet, Bernard; and Lang, Gerard, 4,608,250, Cl. 424-71.000.

Larkin, Francis C.: *See*—
Sherman, William, III; Larkin, Francis C.; and Horvath, Stephen J., 4,608,704, Cl. 377-8.000.

Larkin, Mark E., to Abbott Laboratories. I.V. fluid storage and mixing system. 4,608,043, Cl. 604-87.000.

Larsen, Jens-Jorgen: *See*—
Falch, Erik; Krogsgaard-Larsen, Povl; Sauerberg, Per; Christensen, Anne V.; and Larsen, Jens-Jorgen, 4,608,378, Cl. 514-302.000.

Larsson, Lars E., to Santrade Limited. Rock drill bit. 4,607,712, Cl. 175-410.000.

Lassen, Frederich O., to Kimberly-Clark Corporation. Web with enhanced fluid transfer properties and method of making same. 4,608,292, Cl. 428-131.000.

Laszlo, Kalman. Method of making removable dentures. 4,608,020, Cl. 433-213.000.

Lauckner, Joachim: *See*—
Ebner, Heinz; Koch, Gabriele I.; Lauckner, Joachim; Lutz, Felix; Seibold, Gerhard; and Wessel, Gerhard, 4,607,917, Cl. 350-392.000.

Laurent, Yves; and Verdier, Patrick, to Centre National de la Recherche Scientifique (CNRS). Neutron-absorbent glasses containing gadolinium and process for their preparation. 4,608,352, Cl. 501-73.000.

Laurer, Erwin: *See*—
Schabert, Hans-Peter; Heller, Max; Laurer, Erwin; and Leinweber, Hans, 4,607,822, Cl. 251-334.000.

Lauritzen, Nels J., to Johnson & Johnson Products, Inc. Unitary adhesive bandage and package. 4,607,633, Cl. 128-156.000.

Lauvinerie, Jean-Pierre; and LeFeuvre, Annick, to Norton Christensen, Inc. Method of forming a diamond tooth insert for a drill bit and a diamond cutting element formed thereby. 4,608,226, Cl. 419-5.000.

LaValley Industrial Plastics, Inc.: *See*—
LaValley, Richard W., 4,608,170, Cl. 210-404.000.
LaValley, Richard W., 4,608,171, Cl. 210-404.000.

LaValley, Richard W., to LaValley Industrial Plastics, Inc. Angularly adjustable breaker valve-discharge elbow for rotary drum filters. 4,608,170, Cl. 210-404.000.

LaValley, Richard W., to LaValley Industrial Plastics, Inc. Adjustable mounting for valve-discharge elbow of rotary drum filters. 4,608,171, Cl. 210-404.000.

Law, Hsiang-Yi D.; and Rezek, Edward A., to TRW Inc. Integrated laser and field effect transistor. 4,608,696, Cl. 372-50.000.

Lawson, Randy J.: *See*—
Gonczy, Stephen T.; Lawson, Randy J.; and Rosen, Bruce I., 4,608,215, Cl. 264-56.000.

Lawson, Robert; Mason, Malcolm J.; and Maris, Peter I., to Baker Perkins Holdings PLC. Apparatus for sampling similar laminar articles. 4,607,536, Cl. 73-863.910.

Lawton, Rodney J., to Plessey Overseas Limited. FM detector with injection locked divider input circuit. 4,608,539, Cl. 329-103.000.

Laxo, Darryl E., to Chevron Research Company. Portable hard hat. 4,607,397, Cl. 2-410.000.

Lazear, Gregory D., to Conoco Inc. Minimum phase bandpass filtering of seismic signals. 4,608,673, Cl. 367-43.000.

Lazer, Edward S., to Boehringer Ingelheim Pharmaceuticals, Inc. Antiinflammatory 2-(trifluoroethylsulfonyl)benzimidazoles. 4,608,381, Cl. 514-395.000.

Leahy, Robert J., to Hercules Incorporated. Method of minimizing untoward effect of contaminants, such as pitch, in the papermaking operation. 4,608,123, Cl. 162-146.000.

Leber, Leland C.; and Swigert, David, to Teledyne Industries, Inc. Solenoid-actuated hygienic appliance. 4,607,627, Cl. 128-66.000.

LeBlanc, James C. Armored vehicle drive train. 4,607,562, Cl. 89-40.030.

Lechner, John F.: *See*—
Yoakum, George H.; Harris, Curtis C.; Korba, Brent E.; and Lechner, John F., 4,608,339, Cl. 435-172.200.

Lecinski, Frank H., to Continental White Cap, Inc. Anti-spin interference fit of press-seal insert and method of assembly. 4,607,757, Cl. 215-246.000.

Lee, Chi-Long: *See*—
Bauman, Therese M.; Lee, Chi-Long; and Rabe, James A., 4,608,396, Cl. 521-99.000.

Lee, James R.: *See*—
Blakney, Thomas L.; Connell, Douglas D.; Lamberty, Bernard J.; and Lee, James R., 4,608,572, Cl. 343-792.500.

Lee, Roger K., to United States of America, Air Force. Very high speed lap with negative lift effect. 4,607,458, Cl. 51-119.000.

Lee, Young-Jin, to Union Carbide Corporation. Process for producing 2,5-dichloro-p-xylene. 4,608,448, Cl. 570-109.000.

Leech, Brad G.: *See—*
Bolton, Theodore S.; and Leech, Brad G., 4,607,500, Cl. 62-262.000.
LeFeuvre, Annick: *See—*
Lauvinerie, Jean-Pierre; and LeFeuvre, Annick, 4,608,226, Cl. 419-5.000.
Lefèvre, Andrew P.: *See—*
Blomley, Peter F.; Arton, Kenneth A.; Whittaker, Edward J.; and Lefevre, Andrew P., 4,608,462, Cl. 179-81.00B.
Le Guillant, Daniel: *See—*
Bodin, Francois; Jouade , Pierre; and Le Guillant, Daniel, 4,607,828, Cl. 267-140.100.
Lehmann, Klaus. Roof cladding or similar building element allowing heat exchange with the environment and usable particularly as a solar energy collector. 4,607,616, Cl. 126-445.000.
Lehners, Ernst: *See—*
Brinkmann, Arnfried; and Lehners, Ernst, 4,607,725, Cl. 182-189.000.
Leichtfried, Friedrich: *See—*
Wittmann, Heinz; Leichtfried, Friedrich; Szabo, Emilie; and Szasz, Tibor, 4,607,859, Cl. 280-632.000.
Leigh-Monstevens, Keith V.: *See—*
Compton, David J.; Nix, Richard A.; and Leigh-Monstevens, Keith V., 4,607,670, Cl. 141-1.000.
Leinweber, Hans: *See—*
Schabert, Hans-Peter; Heller, Max; Laurer, Erwin; and Leinweber, Hans, 4,607,822, Cl. 251-334.000.
Leland Stanford, Junior University, The Board of Trustees of The: *See—*
Nightingale, John L.; Fejer, Martin M.; and Byer, Robert L., 4,607,776, Cl. 226-171.000.
LeMire, George J.: *See—*
Heinig, Charles F., Jr., 4,608,247, Cl. 424-16.000.
Lempicki, Alexander: *See—*
Sanford, Norman A.; Miniscalco, William J.; and Lempicki, Alexander, 4,607,916, Cl. 350-376.000.
Lenchin, Julianne M.: *See—*
Zwiercan, Gary A.; Lacourse, Norman L.; and Lenchin, Julianne M., 4,608,265, Cl. 426-582.000.
Leonardo, Stephen V. Overbed table. 4,607,577, Cl. 108-144.000.
Lepper, Herbert; and Friesenhagen, Lothar, to Henkel Kommanditgesellschaft auf Aktien. Process for the production of fatty acid esters of short-chain aliphatic alcohols from fats and/or oils containing free fatty acids. 4,608,202, Cl. 260-410.90R.
Lerman, Max. Dynamic post-operative hip abduction brace. 4,607,629, Cl. 128-80.00A.
LeSage, Richard; Reshanov, Eugene N.; and Schlemmer, Richard A., to International Safety Containers of Minnesota, Inc. Hot fat transporting container. 4,607,857, Cl. 280-47.260.
Levine, Peter A., to RCA Corporation. CCD floating-element output stages providing low reset noise with single sampling. 4,608,606, Cl. 358-213.000.
Levolor Lorentzen, Inc.: *See—*
Georgopoulos, George, 4,607,818, Cl. 248-544.000.
Levy, Roy J.: *See—*
Hirzel, Frederic J.; and Levy, Roy J., 4,608,702, Cl. 375-110.000.
Lew, Henry Y.; and Straus, Alan E., to Chevron Research Company. Process for the preparation of a low viscosity alkyl toluene or alkyl xylene sulfonate. 4,608,204, Cl. 260-505.00N.
Lewis, John C., Jr., to Tucel Industries, Inc. Molded brush block with integral squeegee. 4,607,411, Cl. 15-117.000.
Li, Thomas M.: *See—*
Benovic, Jeffrey L.; Buckler, Robert T.; Burd, John F.; and Li, Thomas M., 4,608,336, Cl. 435-7.000.
Lilley, Martin A., to Ampex Corporation. Circuit for reducing AFC offset error. 4,608,604, Cl. 358-188.000.
Lilly, A. Clifton, Jr.; Merritt, Henry B.; and Owens, Cassandra D., to Philip Morris Incorporated. Process for modifying the smoke flavor characteristics of tobacco. 4,607,646, Cl. 131-309.000.
Lin, Ju-Chui, to SCM Corporation. Silicone-polyester powder coating compositions. 4,608,421, Cl. 525-403.000.
Linde Aktiengesellschaft: *See—*
Bauer, Heinz; and Belloni, Aldo, 4,608,068, Cl. 62-18.000.
Becker, Hans; and Landes, Herwig, 4,608,069, Cl. 62-26.000.
Linden, Gunther, to Svenska Tobaks AB. Apparatus for packaging given quantities of snuff. 4,607,479, Cl. 53-530.000.
Linnau, Yendra: *See—*
Philapitsch, Anton; and Linnau, Yendra, 4,608,254, Cl. 424-101.000.
Littelfuse, Inc.: *See—*
Borzoni, John, 4,608,548, Cl. 337-201.000.
Lo, Kun N. Fixing device for a fishing rod. 4,607,975, Cl. 403-24.000.
Loch, Werner: *See—*
Schupp, Eberhard; Loch, Werner; Osterloh, Rolf; and Ahlers, Klaas, 4,608,416, Cl. 525-130.000.
Lockett, Beverly: *See—*
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Loeb, Melvin: *See—*
Magnus, George; Loeb, Melvin; Wood, Robert J.; and Kelley, Brian, 4,608,432, Cl. 528-274.000.
Loh, Ih-Houng; Cohen, Robert E.; and Baddour, Raymond F., to Massachusetts Institute of Technology. Thermal energy storage slurry material. 4,608,309, Cl. 428-409.000.
Lohr & Bromkamp GmbH: *See—*
Welschof, Hans-Heinrich; and Dries, Edgar, 4,608,028, Cl. 464-145.000.
Lokken, Oddvin, to Dento-Med Industries Incorporated. Denture adherent powder. 4,608,088, Cl. 106-35.000.
Lopez, Denis: *See—*
Meunier, Gilles; Brouard, Rene ; Damin, Bernard; and Lopez, Denis, 4,608,411, Cl. 524-533.000.
Lopez-Ramos, Hector: *See—*
Villarreal-Trevino, Juan A.; Zendejas-Martinez, Eugenio; and Lopez-Ramos, Hector, 4,608,240, Cl. 423-230.000.
L'Oreal: *See—*
Handjani, Rose-Marie; Ribier, Alain; and Maurelli, Manlio M., 4,608,211, Cl. 264-4.600.
Los, Marinus, to American Cyanamid Company. Imidazolidinones, and imidazolidienthiones, process and intermediates for the preparation thereof, and use of said compounds as herbicidal agents. 4,608,079, Cl. 71-92.000.
Los, Marinus, to American Cyanamid Company. Preparation of imidazolinyl benzoic acids. 4,608,437, Cl. 548-301.000.
Louis, Jean-Paul: *See—*
Bizot, Henri; Brasselet, Gery-Charles J.; Louis, Jean-Paul; and Narcy, Georges, 4,608,480, Cl. 219-121.0LK.
Lowery, Patrick A.: *See—*
Caldwell, John E.; Chapman, Michael R.; Goodwin, Kenneth J.; and Lowery, Patrick A., 4,608,220, Cl. 264-510.000.
Lozano, Rudy: *See—*
Carney, Joseph H.; and Lozano, Rudy, 4,607,664, Cl. 138-89.000.
LRC Products Limited: *See—*
Jarvis, Sidney H., 4,607,474, Cl. 53-117.000.
Luccarelli, Domenick, Jr.: *See—*
Sprecker, Mark A.; Wiegers, Wilhelmus J.; Greene, Roger; Luccarelli, Domenick, Jr.; and Hanna, Marie, 4,608,193, Cl. 252-522.00R.
Lucchesi, Peter J.: *See—*
Kurtz, Stuart J.; Roberts, Ernest H.; and Lucchesi, Peter J., 4,608,221, Cl. 264-556.000.
Lue, Tom F.: *See—*
Tanagho, Emil A.; Schmidt, Richard A.; Gleason, Curtis A.; and Lue, Tom F., 4,607,639, Cl. 128-419.00E.
Lueders, Arthur: *See—*
Harvey, Roger W.; Davis, Ralph; Lueders, Arthur; and Schnell, William J., 4,607,868, Cl. 285-332.000.
Luly, Robert A. Collapsible parabolic reflector. 4,608,571, Cl. 343-781.00P.
Lundberg, Robert D.: *See—*
Peiffer, Dennis G.; and Lundberg, Robert D., 4,608,425, Cl. 526-241.000.
Luscalu, Romeo: *See—*
Rummler, Karl-Heinz; Sievers, Willi; Dette, Karl-Henning; Koster, Lothar; and Luscalu, Romeo, 4,608,218, Cl. 264-315.000.
Lutz, Felix: *See—*
Ebner, Heinz; Koch, Gabriele I.; Lauckner, Joachim; Lutz, Felix; Seibold, Gerhard; and Wessel, Gerhard, 4,607,917, Cl. 350-392.000.
Lynch, James, to Singer Company, The. Signature analyzer card. 4,608,691, Cl. 371-25.000.
M/A-COM Linkabit, Inc.: *See—*
Paik, Woo H.; Heller, Jerrold A.; and Walker, Gordon K., 4,608,456, Cl. 179-1.50S.
M.A.N. Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft: *See—*
Uttenthaler, Josef, 4,607,714, Cl. 180-68.100.
MacDermid, Incorporated: *See—*
Kukanskis, Peter E.; Grunwald, John J.; and Sawoska, David, 4,608,275, Cl. 427-98.000.
Machii, Katsumasa: *See—*
Matsushita, Takenobu, 4,607,985, Cl. 405-284.000.
Machines Chambon S.A.: *See—*
Hodges, William D., 4,607,995, Cl. 414-46.000.
MacInnis, Martin B.: *See—*
Scheithauer, Richard A.; Miller, Michael J.; Vanderpool, Clarence D.; and MacInnis, Martin B., 4,608,084, Cl. 75-101.00R.
MacKenzie, Ross A., to New Zealand Government Property Corporation. Method and apparatus for producing a puffed foodstuff. 4,608,261, Cl. 426-242.000.
Magar, Surendar S.: *See—*
Caudel, Edward R.; Magar, Surendar S.; and Gass, Wanda K., 4,608,634, Cl. 364-200.000.
Magdo, Ingrid E.: *See—*
Goth, George R.; Magdo, Ingrid E.; and Malaviya, Shashi D., 4,608,589, Cl. 357-34.000.
Maglecic, Steven C. Apparatus for packaging bulk materials composed of elongated pieces. 4,607,478, Cl. 53-502.000.
Magnus, George; Loeb, Melvin; Wood, Robert J.; and Kelley, Brian, to Stepan Company. Self-compatibilizing polyester polyol blends based on polyalkylene terephthalate. 4,608,432, Cl. 528-274.000.
Maguire, Helen A.: *See—*
Maguire, Hugh P.; and Maguire, Helen A., 4,607,848, Cl. 273-269.000.
Maguire, Hugh P.; and Maguire, Helen A. Word game involving the use of mosaic score and strategy boards. 4,607,848, Cl. 273-269.000.
Mah, Frederick. Digital bottle opener. 4,607,543, Cl. 81-3.090.
Makino, Akihiro; and Mukasa, Koichi, to Alps Electric Co., Ltd. Ni-Fe magnetic head including 1.5-2% Ta. 4,608,228, Cl. 420-459.000.
Mako, Frederick; Manheimer, Wallace; Kapetanokos, Christos A.; and Sandel, Frederick, to United States of America, Navy. Low perturbation electron injector for cyclic accelerators. 4,608,537, Cl. 328-237.000.

Makrides, Nicholas; and Stephenson, Earle W., to Kennametal Inc. Casting having wear resistant compacts and method of manufacture. 4,608,318, Cl. 428-553.000.

Malagari, Frank A., Jr., to Allegheny Ludlum Steel Corporation. Method of producing thin gauge oriented silicon steel. 4,608,100, Cl. 148-111.000.

Malaviya, Shashi D.: *See*—
Goth, George R.; Magdo, Ingrid E.; and Malaviya, Shashi D., 4,608,589, Cl. 357-34.000.

Mallinson, Andrew M., to Ferranti plc. Constant voltage circuits. 4,608,529, Cl. 323-275.000.

Mallipudi, Narayana M.; and Hollingshaus, John G., to American Cyanamid Company. Combating insects with certain 2,3-dihydro-2,2-dimethyl-7-benzofuranyl N-oxalyl-N-methyl carbamates. 4,608,371, Cl. 514-186.000.

Mamine, Takayoshi: *See*—
Oda, Tatsuji; Mamine, Takayoshi; and Yoneyama, Osamu, 4,608,695, Cl. 372-45.000.

Manabe, Sohei: *See*—
Kuwahata, Takao; Manabe, Sohei; and Gonpei, Katsuhiro, 4,608,514, Cl. 313-386.000.

Manheimer, Wallace: *See*—
Mako, Frederick; Manheimer, Wallace; Kapetanokos, Christos A.; and Sandel, Frederick, 4,608,537, Cl. 328-237.000.

Mani, Krishnamurthy N.: *See*—
Chlanda, Frederick P.; and Mani, Krishnamurthy N., 4,608,141, Cl. 204-182.500.

Manome, Teruo; Miki, Yasuhiko; Takita, Kentaro; and Fukuta, Minoru, to Sony/Tektronix Corporation. Method and apparatus for testing probe calibration. 4,608,657, Cl. 364-571.000.

Mansbridge, Martin H.; and Norton, John, to British Aerospace PLC. Stiffened panel with apertures. 4,607,783, Cl. 228-265.000.

Manservisi, Renato; and Bagnaresi, Bruno, to SASIB S.p.A. Device for forming groups of cigarettes in packaging machines. 4,607,475, Cl. 53-150.000.

Marabella, Charles P., to Mead Corporation, The. Method for producing microcapsules and photosensitive microcapsules produced thereby. 4,608,330, Cl. 430-138.000.

Marcello, Victor: *See*—
Klara, Walter S.; Kwap, Theodore W.; Marcello, Victor; and Rasmussen, Robert A., 4,608,669, Cl. 365-201.000.

Marchal, Daniel: *See*—
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Marco Manufacturing, Inc.: *See*—
Williams, Samuel B., 4,607,665, Cl. 138-148.000.

Marino, James P.: *See*—
DeLisle, David S.; and Marino, James P., 4,607,769, Cl. 223-12.000.

Maris, Peter I.: *See*—
Lawson, Robert; Mason, Malcolm J.; and Maris, Peter I., 4,607,536, Cl. 73-863.910.

Mark, Victor; and Campbell, John R., to General Electric Company. Polycarbonate exhibiting improved heat resistance from diphenol containing disubstituted phenylene radical. 4,608,430, Cl. 528-196.000.

Markarian, Khristofor A.: *See*—
Enikolopov, Nikolai S.; Nepomnyaschy, Anatoly I.; Filmakova, Lidia A.; Krasnokutsky, Valentin P.; Kurakin, Leonid I.; Akopian, Elena L.; Markarian, Khristofor A.; Negmatov, Saibdzhan S.; Matkarimov, Suleiman K.; Polivanov, Yury A.; Sherstnev, Pavel P.; and Pavlov, Vilitary B., 4,607,796, Cl. 241-3.000.

Markisen, Claus: *See*—
Clauss, Ulrich, 4,607,676, Cl. 160-74.000.

Marshall, John, to BOC Group, plc, The. Permanent gas refrigeration method. 4,608,067, Cl. 62-9.000.

Martin, H. Lee; and Killough, Stephen M., to United States of America, Energy. Electromechanical actuator for the tongs of a servomanipulator. 4,608,526, Cl. 318-628.000.

Martin, John F.: *See*—
Elliott, Richard M.; Holland, Larry L.; Gilligan, Thomas J., III; Martin, John F.; and Ciccia, Lawrence P., 4,607,741, Cl. 198-345.000.

Martin, John H. E. J., deceased: *See*—
Labeda, David P.; Goodman, Joseph J.; Borders, Donald B.; Testa, Raymond T.; and Martin, John H. E. J., deceased, 4,608,343, Cl. 435-253.000.

Martin, Mary B., executrix: *See*—
Labeda, David P.; Goodman, Joseph J.; Borders, Donald B.; Testa, Raymond T.; and Martin, John H. E. J., deceased, 4,608,343, Cl. 435-253.000.

Martin, Robert W., to Union Carbide Corporation. Method of encapsulating finely divided solid particles. 4,608,401, Cl. 523-205.000.

Martin, Terrance S.: *See*—
Carter, Nicholas J. R.; Guilarte, Walter; Masand, Ravindra T.; Martin, Terrance S.; Middleton, Francisco A.; and Das, Santanu, 4,608,460, Cl. 179-6.110.

Marton, Janet L.: *See*—
Goodwin, Anton E.; Marton, Janet L.; Owens, Robert M.; Whisenhunt, Jackie W.; and Swain, Roy D., 4,608,346, Cl. 436-131.000.

Martus, Donald G. Stripped hex head drive socket. 4,607,547, Cl. 81-53.200.

Masand, Ravindra T.: *See*—
Carter, Nicholas J. R.; Guilarte, Walter; Masand, Ravindra T.; Martin, Terrance S.; Middleton, Francisco A.; and Das, Santanu, 4,608,460, Cl. 179-6.110.

Mason, Malcolm J.: *See*—
Lawson, Robert; Mason, Malcolm J.; and Maris, Peter I., 4,607,536, Cl. 73-863.910.

Mason, Thomas A. Vehicle mounted long article carrying utility bracket with adjustable cross bar. 4,607,773, Cl. 224-42.45R.

Masprodenkoh Kabushikikaisha: *See*—
Sugiura, Toshihiro, 4,608,710, Cl. 455-4.000.

Massachusetts Institute of Technology: *See*—
Ehrlich, Daniel J.; Deutsch, Thomas F.; Osgood, Richard M.; and Schlossberg, Howard, 4,608,117, Cl. 156-610.000.
Kirtley, James L., Jr.; Sterling, Thomas L.; and Williams, Ronald D., 4,608,700, Cl. 375-36.000.
Loh, Ih-Houng; Cohen, Robert E.; and Baddour, Raymond F., 4,608,309, Cl. 428-409.000.

Massion, Philippe A. J., to S.P.R.L. LAMA P.V.B.A. Presentation device for textile products and the like. 4,607,771, Cl. 223-91.000.

Masuda, Toshiyuki: *See*—
Kojima, Yutaka; Masuda, Toshiyuki; and Hisamatsu, Nobuo, 4,608,561, Cl. 340-825.520.

Mateos, Adolfo: *See*—
Briolle, Emile; Hicter, Jean-Marie; and Mateos, Adolfo, 4,607,825, Cl. 266-215.000.

Mathis, Ernst: *See*—
Zwiener, Rûdolf; Mathis, Ernst; Thalmann, Theo; and Rohrich, Siegfried, 4,607,666, Cl. 139-115.000.

Matkarimov, Suleiman K.: *See*—
Enikolopov, Nikolai S.; Nepomnyaschy, Anatoly I.; Filmakova, Lidia A.; Krasnokutsky, Valentin P.; Kurakin, Leonid I.; Akopian, Elena L.; Markarian, Khristofor A.; Negmatov, Saibdzhan S.; Matkarimov, Suleiman K.; Polivanov, Yury A.; Sherstnev, Pavel P.; and Pavlov, Vilitary B., 4,607,796, Cl. 241-3.000.

Matrix Instruments Inc.: *See*—
Balasubramanian, N.; and Helgesson, Alan L., 4,608,578, Cl. 346-160.000.

Matson, Edsel D.: *See*—
Kangas, Vernon W.; Kangas, Roy J.; and Matson, Edsel D., 4,607,672, Cl. 144-2.00R.

Matsui, Hiroshi: *See*—
Satô, Yasushi; and Matsui, Hiroshi, 4,608,321, Cl. 428-632.000.

Matsuki, Hiroshi; and Sumiyoshi, Takao, to Suga Test Instruments Co., Ltd. Cycle sequence time/temperature controller. 4,607,790, Cl. 236-94.000.

Matsushita Electric Industrial Co., Ltd.: *See*—
Fujii, Takabumi; and Iijima, Takashi, 4,608,324, Cl. 429-194.000.
Kaneko, Akira; Fumoto, Teruo; and Nishida, Jun, 4,608,599, Cl. 358-113.000.
Shiomi, Yasufumi; and Yoshimura, Yoshikazu, 4,608,713, Cl. 455-325.000.
Sugawara, Norio; and Nawa, Motoyuki, 4,607,565, Cl. 98-40.240.
Yokobori, Nobuyoshi, 4,608,524, Cl. 318-254.000.

Matsushita Electric Works, Ltd.: *See*—
Kojima, Yutaka; Masuda, Toshiyuki; and Hisamatsu, Nobuo, 4,608,561, Cl. 340-825.520.

Matsushita, Takenobu, to Nozawa, Taizo; and Machii, Katsumasa, part interest to each. Block construction for preventing outflow of ballasts. 4,607,985, Cl. 405-284.000.

Matsuyama, Kouzou: *See*—
Ide, Fumito; Sogo, Toshiyuki; Matsuyama, Kouzou; and Hashimoto, Shinichi, 4,607,945, Cl. 355-14.00R.

Matsuyama, Yoshihiro; and Ishikawa, Takuma, to Minolta Camera Kabushiki Kaisha. Sheet sorter. 4,607,838, Cl. 271-293.000.

Matthews International Corporation: *See*—
Hancovsky, John P., 4,607,417, Cl. 27-1.000.

Mattingly, William B., to Personal Products Company. Sanitary napkin attachment means. 4,608,047, Cl. 604-387.000.

Mauranen, Pekka; and Vedenpaa, Timo, to Valmet Oy. Method for cutting a lead-in strip from a paper web in a paper machine. 4,608,124, Cl. 162-193.000.

Maurelli, Manlio M.: *See*—
Hantjani, Rose-Marie; Ribier, Alain; and Maurelli, Manlio M., 4,608,211, Cl. 264-4.600.

Maurer, Richard P.: *See*—
Holtrop, James S.; and Maurer, Richard P., 4,608,104, Cl. 156-78.000.

Mauritz, Bernd; and Uhlig, Raimer, to Hilti Aktiengesellschaft. Expansion dowel assembly with a spherically shaped spreader. 4,607,992, Cl. 411-45.000.

Mauro, Grillini: *See*—
Ghedini, Luigi; Claudio, Rubbini; and Mauro, Grillini, 4,608,018, Cl. 433-88.000.

Mauser-Werke Oberndorf GmbH: *See*—
Krempel, Fritz, 4,607,549, Cl. 82-2.00E.

Maw, Bryan W.; and Brewer, Harold L., to University of Georgia Research Foundation, Inc., The. Seedling detector and ferret. 4,607,452, Cl. 47-1.00R.

Max-Planck-Gesellschaft: *See*—
Demus, Wolfgang; and Katterloher, Reinhard, 4,607,492, Cl. 62-55.500.

Mayer, Josef: *See*—
Burghardt, Wilfried; Ernst, Hans-Hellmut; and Mayer, Josef, 4,607,805, Cl. 242-107.40A.

Mayo Foundation: *See*—
Morrey, Bernard F.; and Chao, Edmund Y. S., 4,608,055, Cl. 623-23.000.

Mazanec, Terry J.; Goeden, Gary V.; and Frye, John G., Jr., to Standard Oil Company, The. Process for the production of alcohols. 4,608,447, Cl. 568-902.000.

Mazda Motor Corporation: *See*—
Sakuramoto, Takahumi; Asoshina, Eishi; Tominaga, Takashi; Shimizu, Yukio; Morishita, Tsuyoshi; Osaki, Sigemi; and Sakai, Noriyuki, 4,608,225, Cl. 419-5.000.

Mazeau, Jean P.: *See*—
Boudot, Jean E.; and Mazeau, Jean P., 4,608,351, Cl. 501-62.000.

Mazhar, Mike S. Truck headrest. 4,607,886, Cl. 297-410.000.

McAdams, John B.: *See*—
Fritch, Charles D.; and McAdams, John B., 4,607,622, Cl. 128-6.000.

McCollum, Gregory J., to PPG Industries, Inc. Process for preparing lactam imides. 4,608,201, Cl. 540-529.000.

McCord, Wilfred M., Jr., to Vermont American Corporation. Dovetail fixture. 4,607,673, Cl. 144-144.50R.

McCusker, LeRoy H. Athletic/industrial brassiere with protective inserts. 4,607,640, Cl. 128-425.000.

McDowell, Hunter L., to Varian Associates, Inc. Cathode driven crossed-field amplifier. 4,608,520, Cl. 315-39.300.

McGinnis, Carolyn: *See*—
Pasternak, Gavril W., 4,608,376, Cl. 514-282.000.

McGirr, Kermit L. Detachable sunscreen for vehicle windows. 4,607,875, Cl. 296-97.00D.

McGurk, Joseph E.: *See*—
Wright, Steven F.; and McGurk, Joseph E., 4,607,761, Cl. 221-25.000.

McHugh, Terence M.: *See*—
Lamb, John G.; and McHugh, Terence M., 4,608,276, Cl. 427-163.000.

McIntosh, Bruce D.: *See*—
Nusbaumer, Kay T.; and McIntosh, Bruce D., 4,607,873, Cl. 294-88.000.

McIntosh, Robert H., to Interface Research Corporation. Carpet containing sanitizing compounds and methods. 4,608,289, Cl. 428-95.000.

McKay, Thomas H.: *See*—
Bell, Floyd R.; and McKay, Thomas H., 4,607,643, Cl. 128-715.000.

McKenzie, Thomas J. Electric wire connector. 4,607,902, Cl. 339-61.00R.

McNair, Bruce E., to Bell Telephone Laboratories, Incorporated. Processing of encrypted voice signals. 4,608,455, Cl. 178-22.170.

McNett, John P.: *See*—
Amici, Francis R.; Berger, Hans S.; Mercurio, Domenic G.; McNett, John P.; and Piazza, Pietro, 4,608,025, Cl. 446-298.000.

McSorley, Harry J., Sr.; and Anthimides, Sophokles. Adjustable level. 4,607,437, Cl. 33-374.000.

McWhorter, David B.: *See*—
Watson, George H.; McWhorter, David B.; and Brown, Adrian, 4,608,126, Cl. 202-84.000.

Mead Corporation, The: *See*—
Marabella, Charles P., 4,608,330, Cl. 430-138.000.

Med-Tech Associates: *See*—
Jones, J. Paul, 4,607,766, Cl. 222-386.500.

Medtronic, Inc.: *See*—
Howard, William G.; and Berberick, David R., 4,608,322, Cl. 429-105.000.

Meek, Jan; Uittenbogaard, Maurice; and Michelsen, Finn C., to Heerema Engineering Service BV. Method of constructing an offshore tower structure. 4,607,983, Cl. 405-204.000.

Meeker, David M., to American Envelope Company. Mark locator. 4,607,433, Cl. 33-1.0BB.

Megles, John E., Jr.: *See*—
Beall, George H.; Megles, John E., Jr.; and Pinckney, Linda R., 4,608,348, Cl. 501-3.000.

Meier, Gunter, to Dorina Nahmaschinen GmbH. Sewing machine having a program carrier. 4,607,585, Cl. 112-454.000.

Meline, Harry R.; and Meyer, Richard A., to MTS Systems Corporation. Torsional-axial extensometer with additional restraint to limit unnecessary movements. 4,607,531, Cl. 73-794.000.

Menger, William M., to Houston Industries, Incorporated. Steam supply system for superposed turine and process chamber, such as coal gasification. 4,608,058, Cl. 48-73.000.

Mercurio, Domenic G.: *See*—
Amici, Francis R.; Berger, Hans S.; Mercurio, Domenic G.; McNett, John P.; and Piazza, Pietro, 4,608,025, Cl. 446-298.000.

Merline Industries, Inc.: *See*—
Yealy, Carl F., 4,607,806, Cl. 242-117.000.

Merrick, Bruce C. Seat caddy for spectator seating. 4,607,881, Cl. 297-192.000.

Merritt, George W.: *See*—
Raftis, Spiros G.; and Merritt, George W., 4,607,663, Cl. 137-846.000.

Merritt, Henry B.: *See*—
Lilly, A. Clifton, Jr.; Merritt, Henry B.; and Owens, Cassandra D., 4,607,646, Cl. 131-309.000.

Merten, Gerhard; Steinkuhl, Bernd; and Hauschopp, Alois, to Gewerkschaft Eisenhutte Westfalia. Guides for mineral mining machines. 4,607,890, Cl. 299-43.000.

Messerschmitt-Boelkow-Blohm Gesellschaft mit beschraenkter Haftung: *See*—
Schneider, Horst; and Hermann, Joachim, 4,607,560, Cl. 89-16.000.

Messerschmitt-Bolkow-Blohm GmbH: *See*—
Seidel, Albert; Neuking, Hartmut; and Blenninger, Ernst, 4,607,490, Cl. 62-51.000.

Metacon AG: *See*—
Tinnes, Bernhard; and Kreuzberg, Heinz, 4,607,681, Cl. 164-453.000.

Metallgesellschaft Aktiengesellschaft: *See*—
Kupfer, Hans; and Hafke, Carl, 4,608,059, Cl. 48-197.00R.

Metex Corporation: *See*—
Usher, Peter P., 4,607,851, Cl. 277-1.000.

Metrikin, Vladimir S.: *See*—
Shilkov, Vladimir A.; Shilkov, Andrei V.; Kuzmin, Petr D.; Metrikin, Vladimir S.; Chumichev, Vladimir A.; Borovtsev, Anatoly I.; and Dubenkov, Nikolai I., 4,607,980, Cl. 404-133.000.

Meunier, Gilles; Brouard, Rene ; Damin, Bernard; and Lopez, Denis, to Societe Nationale Elf Aquitaine. Grafted ethylene polymers usable more especially as additives for inhibiting the deposition of paraffins in crude oils and compositions containing the oils and said additives. 4,608,411, Cl. 524-533.000.

Meyer, Albert; Hofmann, Hans; and Haferli, Hans, to Werkzeugmaschinenfabrik Oerlikon-Buhrle AG. Firing mechanism for an automatic firing weapon. 4,607,563, Cl. 89-132.000.

Meyer, Joao: *See*—
Desportes, Henri; and Meyer, Joao, 4,608,155, Cl. 209-224.000.

Meyer, Richard A.: *See*—
Meline, Harry R.; and Meyer, Richard A., 4,607,531, Cl. 73-794.000.

Meyer, Victor E.; and Dergazarian, Thomas E., to Dow Chemical Company, The. Inert monovalent hydrocarbon terminated polysulfide polymers. 4,608,433, Cl. 528-388.000.

Meyer, Victor E.: *See*—
Dorman, Linneaus C.; and Meyer, Victor E., 4,608,419, Cl. 525-329.900.

Meynell Valves Limited: *See*—
Bendall, Brian; and Flannery, Stephan W., 4,607,788, Cl. 236-12.200.

MG Industries: *See*—
Krongold, Martin A., 4,607,489, Cl. 62-49.000.

Mia, Abdus S., to Pitman-Moore, Inc. LHRH analogues useful in stimulating anti-LHRH antibodies and vaccines containing such analogues. 4,608,251, Cl. 424-85.000.

Michael, Kenneth L.: *See*—
Wiard, Maxwell R.; and Michael, Kenneth L., 4,607,684, Cl. 165-70.000.

Michel, Jean-Georges: *See*—
Dinger, Rudolf J.; and Michel, Jean-Georges, 4,608,510, Cl. 310-361.000.

Michels, Hartwig; and Klingler, Knud, to Delu-Luftkissentransportgeratetechnik GmbH. Proportional pneumatic control system for aircushions. 4,607,715, Cl. 180-118.000.

Michelsen, Finn C.: *See*—
Meek, Jan; Uittenbogaard, Maurice; and Michelsen, Finn C., 4,607,983, Cl. 405-204.000.

Micro Pure Systems, Inc.: *See*—
Neubauer, Werner G.; and Mingo, Jon J., 4,608,507, Cl. 310-335.000.

Micron Co., Ltd.: *See*—
Sadohara, Tsuyoshi, 4,608,017, Cl. 433-81.000.

Micronix Corporation: *See*—
Shimkunas, Alexander R., 4,608,268, Cl. 427-8.000.

Middlemiss, Robert J.: *See*—
Berstein, Patrick; Crinion, Jonathan; Middlemiss, Robert J.; and Oomen, Peter, 4,608,486, Cl. 235-380.000.

Middleton, Francisco A.: *See*—
Carter, Nicholas J. R.; Guilarte, Walter; Masand, Ravindra T.; Martin, Terrance S.; Middleton, Francisco A.; and Das, Santanu, 4,608,460, Cl. 179-6.110.

Mihara, Teruyoshi, to Nissan Motor Co., Ltd. Vertical type MOS transistor. 4,608,584, Cl. 357-23.400.

Mikami, Mitsugu: *See*—
Kobayashi, Osamu; Yukimoto, Koji; and Mikami, Mitsugu, 4,607,650, Cl. 133-5.00R.

Mikhelashvili, Vissarion M.: *See*—
Bagratishvili, Givi D.; Dzhanelidze, Rusudan B.; Zorikov, Vladimir V.; Mikhelashvili, Vissarion M.; Pekar, Iosif E.; Chikovani, Rafael I.; Chkhaidze, Manana A.; Akopova, Svetlana Z.; Bogdanovich, Viktor B.; Svechnikov, Sergei V.; and Charmakadze, Revaz A., 4,608,581, Cl. 357-17.000.

Miki, Sadao: *See*—
Yoshida, Zenichi; and Miki, Sadao, 4,608,358, Cl. 502-164.000.

Miki, Yasuhiko: *See*—
Manome, Teruo; Miki, Yasuhiko; Takita, Kentaro; and Fukuta, Minoru, 4,608,657, Cl. 364-571.000.

Miksza, Anthony S., Jr.: *See*—
Kula, John; and Miksza, Anthony S., Jr., 4,607,636, Cl. 128-334.00R.

Mikuni Kogyo Kabushiki Kaisha: *See*—
Nakamura, Shigeyoshi, 4,608,209, Cl. 261-64.00E.

Milbar Corporation: *See*—
Anderson, J. Edward C., 4,607,548, Cl. 81-427.000.

Miles Italiana S.p.A.: *See*—
Fossati, Piero, 4,608,335, Cl. 435-12.000.

Miles Laboratories, Inc.: *See*—
Benovic, Jeffrey L.; Buckler, Robert T.; Burd, John F.; and Li, Thomas M., 4,608,336, Cl. 435-7.000.

Miller, Donald S., to British Hydromechanics Research Association, The. Fire monitors. 4,607,702, Cl. 169-25.000.

Miller, Irvin E., to V-Tech, Inc. Wet mount microscopic examination slide II. 4,607,921, Cl. 350-536.000.

Miller, John A.; and Athey, Roy L., to United Technologies Corporation. Method of producing turbine disks. 4,608,094, Cl. 148-11.50N.

Miller, Michael J.: *See*—
Scheithauer, Richard A.; Miller, Michael J.; Vanderpool, Clarence D.; and MacInnis, Martin B., 4,608,084, Cl. 75-101.00R.

Miller, Stephen J., to Chevron Research Company. Process for producing high quality, high molecular weight microcrystalline wax derived from undewaxed bright stock. 4,608,151, Cl. 208-33.000.

Miller, Stephen J., to Chevron Research Company. Two-stage multiforming of olefins to tetramers. 4,608,450, Cl. 585-517.000.

Miller, Thomas E. Waterproof quick match and apparatus and method of forming same. 4,608,113, Cl. 156-438.000.

Mills, David; Kington, Alan D.; and Close, Rodney J., to Rolls-Royce Limited. Method and mould for casting metal articles. 4,607,680, Cl. 164-134.000.

Mims, Bruce L., to Contact Systems, Inc. Method and apparatus for soldering electrical components to circuit boards. 4,607,782, Cl. 228-180.200.

Minai, Masayoshi; and Katsura, Tadashi, to Sumitomo Chemical Company, Limited. Process for preparing 4-hydroxy-2-cyclopentenones. 4,608,442, Cl. 568-346.000.

Minami, Koji, to Sanyo Electric Co., Ltd. Electrostatic recording apparatus. 4,607,937, Cl. 355-3.00R.

Mingo, Jon J.: *See*—
Neubauer, Werner G.; and Mingo, Jon J., 4,608,507, Cl. 310-335.000.

Miniscalco, William J.: *See*—
Sanford, Norman A.; Miniscalco, William J.; and Lempicki, Alexander, 4,607,916, Cl. 350-376.000.

Minnesota Mining and Manufacturing Company: *See*—
Collins, Leslie M., 4,607,808, Cl. 242-192.000.
Geisler, Thomas C., 4,608,329, Cl. 430-110.000.
Schwartz, Thomas W., 4,607,464, Cl. 51-362.000.
Van Kampen, Craig L.; and Hockert, Eric N., 4,608,052, Cl. 623-22.000.

Minns, Richard A.: *See*—
Rogers, Howard G.; Gaudiana, Russell A.; Minns, Richard A.; and Sinta, Roger F., 4,608,429, Cl. 528-194.000.

Minolta Camera Kabushiki Kaisha: *See*—
Ishii, Kenjiro; Aragaki, Masaharu; Kato, Osami; and Higashi, Masato, 4,607,950, Cl. 355-41.000.
Matsuyama, Yoshihiro; and Ishikawa, Takuma, 4,607,838, Cl. 271-293.000.
Oka, Tateki, 4,608,327, Cl. 430-54.000.
Yuasa, Yoshio; Naruse, Kazuhiko; and Inaba, Masahito, 4,608,522, Cl. 315-241.00P.

Minor, Richard G.; and Polischuk-Sawtschenko, Alexander, to International Business Machines Corp., Address personalization of a remotely attached device. 4,608,562, Cl. 340-825.590.

Mita Industrial Co., Ltd.: *See*—
Koyama, Haruo; and Nishino, Toshio, 4,607,942, Cl. 355-3.0SH.
Miyakawa, Nobuhiro; Higashiguchi, Teruaki; Yano, Koji; Yamamoto, Kazuo; and Kawakami, Yoshinobu, 4,607,936, Cl. 355-3.0DR.
Watashi, Masahiro; Kimura, Hiroshi; Shibata, Kiyoshi; Hisajima, Masahiko; and Yamamoto, Kiyonori, 4,607,734, Cl. 192-67.00R.
Yoshioka, Masahiro; Murakami, Masahiro; Irie, Yoichiro; Nakanishi, Tsugio; Tsutsui, Eiji; Iwao, Noriyuki; Hirobe, Junichi; and Wakikaido, Takahiro, 4,607,943, Cl. 355-14.00R.

Mita Kogyo Kabushiki Kaisha: *See*—
Osaka, Haruya; Kimura, Hiroshi; Hisajima, Masahiko; Shigemura, Yutaka; Kaminaga, Seiji; Satonaka, Shinobu; and Ishito, Mitsuya, 4,607,954, Cl. 355-14.00D.

Mitchell, John W., Jr., to Burroughs Corporation. Heat sink for integrated circuit package. 4,607,685, Cl. 165-80.300.

Mitel Corporation: *See*—
Barsellotti, John A., 4,608,686, Cl. 370-69.100.

Mitsubishi Denki Kabushiki Kaisha: *See*—
Kobayashi, Minoru, 4,608,138, Cl. 204-129.300.
Komurasaki, Satoshi, 4,607,602, Cl. 123-425.000.
Morishita, Mitsuharu; and Kouge, Shinichi, 4,608,639, Cl. 364-424.000.
Oogaki, Kenji, 4,608,648, Cl. 364-483.000.
Tanaka, Hideharu; Sekiya, Matsuo; and Uchikawa, Fusaoki, 4,607,721, Cl. 181-249.000.
Tanaka, Hideharu; Sekiya, Matsuo; and Uchikawa, Fusoaki, 4,607,722, Cl. 181-252.000.

Mitsubishi Jukogyo Kabushiki Kaisha: *See*—
Sugimoto, Tamio; Fukazawa, Yoshimitsu; and Yamaguchi, Kunio, 4,608,001, Cl. 418-55.000.

Mitsui, Tsutomu: *See*—
Tada, Kohji; Kuhara, Yoshiki; Tatsumi, Masami; and Mitsui, Tsutomu, 4,608,535, Cl. 324-244.000.

Mitsunaga, Hirofumi: *See*—
Higashino, Toshihiro; Mitsunaga, Hirofumi; Nakanishi, Takahiro; and Taya, Yoshihiro, 4,607,614, Cl. 126-299.00E.

Miu, Ming T.: *See*—
Bradley, John J.; Staplin, Theodore R., Jr.; Miu, Ming T.; O'Brien, Thomas C.; O'Har, George M.; Widen, Melinda A.; and Stoffers, Brian L., 4,608,659, Cl. 364-737.000.

Miura, Kenji, to Kabushiki Kaisha Toshiba. Automatic transfer transaction processing apparatus. 4,608,485, Cl. 235-379.000.

Miura, Masakatsu; and Inuzuka, Takeshi, to Aisin-Warner Kabushiki Kaisha. Automatic transmission. 4,607,541, Cl. 74-758.000.

Miura, Tetsuji: *See*—
Kitsunai, Tomoyuki; Miura, Tetsuji; and Yagi, Norio, 4,608,414, Cl. 525-71.000.

Miyaji, Yoshimori; Fujiki, Hirokazu; and Takahashi, Fumio, to Tokyo Shibaura Denki Kabushiki Kaisha. Color television camera apparatus with self-diagnosis function. 4,608,593, Cl. 358-10.000.

Miyakawa, Nobuhiro; Higashiguchi, Teruaki; Yano, Koji; Yamamoto, Kazuo; and Kawakami, Yoshinobu, to Mita Industrial Co., Ltd. Electrophotographic apparatus comprising photosensitive layer of amorphous silicon type photoconductor. 4,607,936, Cl. 355-3.0DR.

Miyake, Izumi, to Fuji Photo Film Co., Ltd. Tracking apparatus for rotary magnetic recording medium. 4,608,613, Cl. 360-78.000.

Miyamoto, Masao: *See*—
Ishimaru, Hajime; Miyamoto, Masao; and Komaki, Shojiro, 4,607,491, Cl. 62-55.500.

Miyamoto, Shoji: *See*—
Mori, Kinji; Miyamoto, Shoji; and Ihara, Hirokazu, 4,608,525, Cl. 318-568.000.

Miyamoto, Takashi, to NEC Corporation. Semiconductor device provided with a package for a semiconductor element having a plurality of electrodes to be applied with substantially same voltage. 4,608,592, Cl. 357-80.000.

Miyasaka, Eiji, to Dainippon Screen Mfg. Co., Ltd. Copying machine. 4,607,836, Cl. 271-272.000.

Miyazaki, Kenji; Ogawa, Ichitaro; Yoshida, Hisayoshi; Kobayashi, Kazuo; Hagio, Tsuyoshi; Ueno, Hidetoshi; and Akiyama, Shigeru, to Agency of Industrial Science and Technology. Vaned stirrer for use in high temperature atmosphere. 4,607,959, Cl. 366-343.000.

Mizuguchi, Osamu: *See*—
Murakami, Tsudoi; Nasu, Shoji; Nagahama, Yasuhide; Kada, Hironosuke; Sekino, Teruyoshi; Murayama, Hirokazu; Munezane, Yoshiaki; Tuda, Goro; and Mizuguchi, Osamu, 4,608,651, Cl. 364-513.000.

Mobay Corporation: *See*—
Rosthauser, James W., 4,608,304, Cl. 428-378.000.

Mobil Oil Corporation: *See*—
Blair, Ron B., 4,608,554, Cl. 340-347.0DD.
Chu, Pochen, 4,608,355, Cl. 502-68.000.
Dickert, Joseph J., Jr.; and Heilweil, Israel J., 4,608,182, Cl. 252-8.512.
Weber, Stevan L., 4,607,695, Cl. 166-272.000.

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Wright, Steven F.; and McGurk, Joseph E., 4,607,761, Cl. 221-25.000.

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Hinchcliffe, Dennis; Labbe, Francis A. M.; and Molins, Desmond W., 4,607,477, Cl. 53-444.000.

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Hanssen, Carl-Otto, 4,607,631, Cl. 128-132.00D.
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Monarch Marking Systems, Inc.: *See*—
Pou, Frederick M.; and Straub, Richard L., 4,607,572, Cl. 101-426.000.

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Morehouse Industries, Inc.: *See—*
Corrigan, John J., 4,608,029, Cl. 474-11.000.
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Morgan Construction Company: *See—*
Shore, Terence M., 4,607,511, Cl. 72-16.000.
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Morgan Thermic Limited: *See—*
Cooper, Charles F., 4,608,012, Cl. 431-328.000.
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Mori, Kinji; Miyamoto, Shoji; and Ihara, Hirokazu, to Hitachi, Ltd. Cellular type robot apparatus. 4,608,525, Cl. 318-568.000.
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Morse, John B., to Polaroid Corporation. Photographic film assemblage having premounted film frames. 4,607,927, Cl. 354-182.000.
Morse, John B.; and Wright, Joseph H., to Polaroid Corporation. Self purging processing liquid applicator. 4,607,929, Cl. 354-318.000.
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Payne, Roger E.; and Weeks, James B., 4,607,892, Cl. 305-56.000.
Motorola, Inc.: *See—*
Bai, Monty W., 4,608,468, Cl. 200-61.45R.
Batlivala, Percy P.; and Kurby, Christopher N., 4,608,699, Cl. 375-5.000.
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Muller, Patrick, to Automotive Products plc. Friction clutch cover assemblies. 4,607,738, Cl. 192-109.00R.
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Murakami, Masahiro: *See—*
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Murakami, Yoshishige; Inoue, Takeshi; and Tanaka, Atsushi, to Fujitsu Limited. Thermal imaging apparatus. 4,608,598, Cl. 358-113.000.
Murakami, Yukiyasu: *See—*
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Murphy, Glenn M. Egg-frying utensil. 4,607,569, Cl. 99-426.000.
Mushardt, Heinrich, to Hauni-Werke Korber & Co. KG. Grinding machine with a reciprocable column for work supporting devices. 4,607,460, Cl. 51-165.0TP.
N I Industries: *See—*
Choate, Paul V., 4,607,445, Cl. 42-100.000.
Nachtkamp, Klaus; Schwindt, Jurgen; Nobel, Karl-Ludwig; and Stahl, Hans-Georg, to Bayer Aktiengeaellschaft. Aqueous polyurethane stoving lacquers and the use thereof for the production of lacquer films and coatings. 4,608,413, Cl. 524-591.000.
Nagahama, Yasuhide: *See—*
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Nagano, Noriaki: *See—*
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Nagao, Toshiaki; and Sukimoto, Yasuyuki, to Omron Tateisi Electronics, Co. Object temperature control device. 4,607,962, Cl. 374-103.000.
Nagasaki, Tatsuo; and Nakamura, Junichi, to Olympus Optical Company Limited. Focus detection method utilizing surface acoustic wave. 4,608,490, Cl. 250-201.000.
Nagashima, Hideyuki: *See—*
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Nagashima, Kunio; and Kondo, Michikazu, to NEC Corporation. Optical time-division switching system employing optical bistable devices. 4,608,682, Cl. 370-4.000.
Nagataki, Motoi; and Inagaki, Takashi, to Honda Giken Kogyo Kabushiki Kaisha. Motorcycle. 4,607,718, Cl. 180-226.000.
Nagaura, Yoshiaki. Method of holding and polishing a workpiece. 4,607,496, Cl. 62-64.000.
Nagayama, Hiroshi, to Hitachi, Ltd. High-alumina refractory for use in non-ferrous metal melting furnace. 4,608,353, Cl. 501-97.000.
Nagel, Klaus, to Siemens Aktiengesellschaft. Multiprocessor memory system employing data transfer system. 4,608,629, Cl. 364-200.000.
Nagumo, Masahide; Kojima, Tadashi; and Inagawa, Jun, to Kabushiki Kaisha Toshiba. Error correction circuit. 4,608,692, Cl. 371-37.000.
Naito, Masataka, to Canon Kabushiki Kaisha. Duplex recording method and apparatus for producing duplex printing from simplex original. 4,607,948, Cl. 355-24.000.
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Nakajima, Jun; and Morinaga, Shiceki, to Asahipen Corporation. Composition of modified chlorinated resins. 4,608,415, Cl. 525-111.500.

Nakakoji, Hisatada: *See*—
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Nakamura, Keiichi; and Horiuchi, Hideyuki, to Tandy Corporation. Telephone answering device. 4,608,459, Cl. 179-6.030.
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Nakamura, Shigeyoshi, to Mikuni Kogyo Kabushiki Kaisha. Carbureter for internal combustion engine. 4,608,209, Cl. 261-64.00E.
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Nakanishi, Akira: *See*—
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Nakanishi, Yasuhiro; and Nishimura, Toshio, to Sharp Kabushiki Kaisha. Graph-drawing machine. 4,608,557, Cl. 340-715.000.
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Nakano, Yuji; Kamiyama, Kazushi; and Kobayashi, Tatuo, to Kyocera Corporation. Jewelling and ornamental material and process for production thereof. 4,608,307, Cl. 428-402.000.
Nakao, Kouzo, to Queen Light of Electronic Industries Ltd. Seal tape sticking device. 4,608,114, Cl. 156-497.000.
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Nakayama, Yoshiaki; and Inuiya, Masafumi, to Fuji Photo Film Co., Ltd. White balance correction for negative-to-positive conversion. 4,608,595, Cl. 358-29.000.
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Nangeroni, Robert J., to Polaroid Corporation. Pliant shield for protecting photographic processing liquid from ambient atmosphere. 4,607,928, Cl. 354-304.000.
Napadow, Stanley C., to Protectaire Systems Co. Multi-wash spray booth and method of capturing air borne particles. 4,608,064, Cl. 55-238.000.
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Neefe, Charles W.; and Proctor, Don R. Method for preloading bearings for a spin casting apparatus. 4,607,428, Cl. 29-436.000.
Neeb, Stephan. Method of growing a confluent layer of cells on a porous or semi-permeable substrate and apparatus for practicing the method. 4,608,342, Cl. 435-240.000.
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Neu, Werner, to Hansen-BTR GmbH. Membrane filter plate. 4,608,164, Cl. 210-231.000.
Neubauer, Werner G.; and Mingo, Jon J., to Micro Pure Systems, Inc. Damping device for focused piezoelectric transducer. 4,608,507, Cl. 310-335.000.
Neuer, David D., to RCA Corporation. Faceplate assembly having integral gauging means. 4,608,517, Cl. 313-477.00R.
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Rowland, Jack T., 4,608,119, Cl. 159-3.000.
Nichias Corporation: *See*—
Kanamori, Nobutaka; and Kurosawa, Masaji, 4,608,361, Cl. 502-232.000.
Nichiei Industry Co., Ltd.: *See*—
Kurumizawa, Masao; Terui, Mitsuru; and Yamaguchi, Nobuyasu, 4,608,213, Cl. 264-45.100.
Nicholson, Warren H., to RCA Corporation. Television receiver using non-interlaced scanning format with motion compensation. 4,608,594, Cl. 358-11.000.
Nicol, Stuart, to Scottish & Newcastle Breweries PLC. Sealing cap for use in internal cleaning of can fillers. 4,607,853, Cl. 277-12.000.

Nielsen, Frese. Device for treatment of wounds in body tissue of patients by exposure to jets of gas. 4,608,041, Cl. 604-23.000.
Niemand Bros. Inc.: *See*—
Falcomato, Rocco, 4,608,107, Cl. 156-190.000.
Niemeier, Gerd, to Daimler-Benz Aktiengesellschaft. Heatable fuel filter for diesel engines. 4,608,161, Cl. 210-149.000.
Nightingale, John L.; Fejer, Martin M.; and Byer, Robert L., to Leland Stanford, Junior University, The Board of Trustees of The. Apparatus for translating crystal fibers. 4,607,776, Cl. 226-171.000.
Nihon Pisuko Kabushiki Kaisha: *See*—
Hama, Tomio; and Yamazaki, Kiyoyasu, 4,607,662, Cl. 137-625.650.
Nijman, Aloysius J.; and Schoofs, Franciscus A. C. M., to U.S. Philips Corporation. Subscriber circuit for a telephone network. 4,608,461, Cl. 179-16.0AA.
Nikka Chemical Industry Company Ltd.: *See*—
Ikeda, Fukuji; and Takahashi, Toshiaki, 4,608,580, Cl. 346-216.000.
Nikolskie, Wadim G.: *See*—
Enikolopow, Nikolai S.; Wolfson, Stanislaw A.; Nepomnjaschtschie, Anatolie I.; Nikolskie, Wadim G.; Teleschow, Wiktor A.; Filmakowa, Lidia A.; Brinkmann, Heinz; Pantzer, Eckart; and Uhland, Eberhard, 4,607,797, Cl. 241-23.000.
Nilssen, Ole K. Phase correction for series-resonant ballasts. 4,608,523, Cl. 315-244.000.
Nippert Company, The: *See*—
Nippert, Russell A., 4,607,514, Cl. 72-354.000.
Nippert, Russell A., to Nippert Company, The. Method of forming a metal part having an annular flange. 4,607,514, Cl. 72-354.000.
Nippon Chemi-Con Corporation: *See*—
Togawa, Jiro, 4,608,500, Cl. 307-72.000.
Nippon Electric Co., Ltd.: *See*—
Watanabe, Takao, 4,608,708, Cl. 381-43.000.
Nippon Kayaku Kabushiki Kaisha: *See*—
Yokoshima, Minoru; Ohkubo, Tetsuo; and Kiyomoto, Masayuki, 4,608,400, Cl. 522-96.000.
Nippon Kokan Kabushiki Kaisha: *See*—
Nomura, Hirokazu; Sugitani, Yuji; and Tamaoki, Naohiro, 4,608,481, Cl. 219-125.120.
Nippon Notion Kogyo Co., Ltd.: *See*—
Fukuroi, Takeo, 4,607,415, Cl. 24-94.000.
Nippon Sheet Glass Co., Ltd.: *See*—
Gomi, Manabu; and Abe, Masanori, 4,608,142, Cl. 204-192.00M.
Nippon Telegraph & Telephone Public Corporation: *See*—
Morikawa, Yuichi; Sato, Hirohiko; Amada, Eiichi; Suzuki, Toshiro; Shirasu, Hirotoshi; and Kuwahara, Hiroshi, 4,608,464, Cl. 179-170.200.
Nippon Telegraphy and Telephone: *See*—
Tamamura, Toshiaki; Niwa, Osamu; Hikita, Makoto; and Sugita, Akio, 4,608,129, Cl. 204-18.100.
Nippondenso Co., Ltd.: *See*—
Takeo, Yuji; and Yoshimi, Tomohisa, 4,608,551, Cl. 340-53.000.
Nishi, Hitoshi; Izumi, Asahiro; and Nishiyama, Sadanobu, to Ishida Scales Mfg. Co., Ltd. Distributing table construction for use in combinational weighing apparatus. 4,607,713, Cl. 177-25.000.
Nishida, Jun: *See*—
Kaneko, Akira; Fumoto, Teruo; and Nishida, Jun, 4,608,599, Cl. 358-113.000.
Nishida, Sumio: *See*—
Kisida, Hirosi; Hatakoshi, Makoto; and Nishida, Sumio, 4,608,389, Cl. 514-539.000.
Nishijima, Akio: *See*—
Sugihara, Isao; Nishijima, Akio; and Toriguchi, Michio, 4,608,244, Cl. 423-445.000.
Nishikawa, Kazuya: *See*—
Inaba, Hiroshi; and Nishikawa, Kazuya, 4,608,570, Cl. 343-704.000.
Nishimura, Toshio: *See*—
Nakanishi, Yasuhiro; and Nishimura, Toshio, 4,608,557, Cl. 340-715.000.
Nishimura, Yasuhiko: *See*—
Shimashita, Ishio; and Nishimura, Yasuhiko, 4,608,576, Cl. 346-49.000.
Nishino, Toshio: *See*—
Koyama, Haruo; and Nishino, Toshio, 4,607,942, Cl. 355-3.0SH.
Nishio, Shigeru: *See*—
Yogo, Kenji; Nakamura, Mamoru; and Nishio, Shigeru, 4,608,208, Cl. 261-39.00R.
Nishitani, Hiroshi: *See*—
Itoi, Masaaki; Ohta, Masakatsu; Sugioka, Taizo; Yoshihara, Kunio; and Nishitani, Hiroshi, 4,608,150, Cl. 208-22.000.
Nishiyama, Sadanobu: *See*—
Nishi, Hitoshi; Izumi, Asahiro; and Nishiyama, Sadanobu, 4,607,713, Cl. 177-25.000.
Nishizawa, Jun-ichi, to Zaidan Hojin Handotai Kenkyu Shinkokai. Semiconductor device having non-saturating I-V characteristics and integrated circuit structure including same. 4,608,582, Cl. 357-22.000.
Nishizawa, Jun-ichi, to "Semiconductor Research Foundation" . Semiconductor optoelectro transducer. 4,608,587, Cl. 357-30.000.
Nishizawa, Shigeki; and Izawa, Tetsurou, to Hitachi, Ltd. Solid-state imaging system with smear suppression circuits. 4,608,608, Cl. 358-213.000.
Nissan, Alfred H.: *See*—
Klein, Edward P.; and Nissan, Alfred H., 4,608,122, Cl. 162-60.000.
Nissan Chemical Industries, Ltd.: *See*—
Watanabe, Yoshitane; Suzuki, Keitaro; and Suda, Susumu, 4,608,198, Cl. 252-609.000.
Nissan Motor Co., Ltd.: *See*—
Arima, Sumitsugu; Tsuda, Hiroshi; and Nagashima, Hideyuki, 4,607,539, Cl. 74-492.000.
Mihara, Teruyoshi, 4,608,584, Cl. 357-23.400.
Nakayama, Masafumi, 4,607,717, Cl. 180-141.000.
Shinzawa, Motohiro; and Hasegawa, Yoji, 4,608,640, Cl. 364-431.030.
Sugano, Kazuhiko, 4,607,542, Cl. 74-869.000.
Sugano, Kazuhiko, 4,607,731, Cl. 192-3.290.
Tanaka, Haruto; Yamaki, Kiyoshi; and Suzuki, Hidetaka, 4,608,656, Cl. 364-449.000.
Nissen, Rudolf F. Rotating gate valve. 4,607,820, Cl. 251-251.000.
Nitto Electric Industrial Co., Ltd.: *See*—
Otsuka, Saburo; Yoshikawa, Toshiyuki; Tokuda, Shoichi; and Ito, Yuusuke, 4,608,249, Cl. 424-28.000.
Sakuramoto, Takahumi; Asoshina, Eishi; Tominaga, Takashi; Shimizu, Yukio; Morishita, Tsuyoshi; Osaki, Sigemi; and Sakai, Noriyuki, 4,608,225, Cl. 419-5.000.
Nitto Kagaku Kogyo Kabushiki Kaisha: *See*—
Ohshima, Iwao; Narita, Takeshi; Handa, Ryoji; and Hosoda, Jun, 4,607,958, Cl. 366-192.000.
Niwa, Kuniyuki; and Fujimura, Yoshiyuki, to Toyoda Koki Kabushiki Kaisha. Numerical control system for a machine tool with a tool dimension compensation function. 4,608,645, Cl. 364-474.000.
Niwa, Osamu: *See*—
Tamamura, Toshiaki; Niwa, Osamu; Hikita, Makoto; and Sugita, Akio, 4,608,129, Cl. 204-18.100.
Nix, Richard A.: *See*—
Compton, David J.; Nix, Richard A.; and Leigh-Monstevens, Keith V., 4,607,670, Cl. 141-1.000.
Nobel, Karl-Ludwig: *See*—
Nachtkamp, Klaus; Schwindt, Jurgen; Nobel, Karl-Ludwig; and Stahl, Hans-Georg, 4,608,413, Cl. 524-591.000.
Noble, Peggy. Cover system. 4,607,674, Cl. 150-52.00R.
Noguchi, Hiroshi; Kato, Toshiro; Takahashi, Junya; Ishiguri, Yukio; Yamamoto, Shigeo; and Kamoshita, Katsuzo, to Sumitomo Chemical Company, Limited. Fungicidal N-phenylcarbamates. 4,608,385, Cl. 514-444.000.
Noh, Akihiko; Saijo, Yoshiaki; Sato, Shinichi; and Tanaka, Ichiro, to Tokyo Shibaura Denki Kabushiki Kaisha. Automatic set-up system. 4,607,651, Cl. 134-62.000.
Nolan, James M., Jr.: *See*—
Stiffler, Jack J.; Karp, Richard A.; Nolan, James M., Jr.; Budwey, Michael J.; and Wallace, David A., 4,608,631, Cl. 364-200.000.
Nomi, Haruo, to Junkosha Company Ltd. Water-vapor-pervious, optionally waterproof, heat insulating material. 4,608,299, Cl. 428-283.000.
Nomura, Hirokazu; Sugitani, Yuji; and Tamaoki, Naohiro, to Nippon Kokan Kabushiki Kaisha. Method of automatically controlling height of a weld bead. 4,608,481, Cl. 219-125.120.
Nonaka, Yuji: *See*—
Someya, Shinzo; Akahira, Rokuro; Nonaka, Yuji; Nakanishi, Akira; and Ito, Mikio, 4,608,081, Cl. 71-94.000.
Nordholt, Ernst H.; and Boon, Cornelis A. M., to U.S. Philips Corporation. Oscillator circuit. 4,608,544, Cl. 331-109.000.
Nordqvist, Percy; and Hylerstedt, Erik, to Molnlycke AB. Compress for treatment of wounds. 4,608,044, Cl. 604-290.000.
Nordson Corporation: *See*—
Cobbs, Walter H., Jr.; Shong, Robert G.; and Rehman, William R., 4,608,398, Cl. 521-113.000.
Norman, Robert W., Jr.: *See*—
Boothroyd, Donald C.; Wilhite, John E.; Norman, Robert W., Jr.; and Keller, Howard J., 4,608,633, Cl. 364-200.000.
Norota, Kazuhiko: *See*—
Kobayashi, Nobuyuki; Ito, Toshimitsu; and Norota, Kazuhiko, 4,607,603, Cl. 123-492.000.
North States Industries, Inc.: *See*—
Bluem, Gary R.; Goodin, John W.; and Hickey, Larry G., 4,607,455, Cl. 49-55.000.
Northern Telecom Limited: *See*—
Jain, Prem C.; and Enns, Frederick, 4,608,685, Cl. 370-85.000.
Northrop Corporation: *See*—
Rowe, James M.; Kraatz, Paul; and Holmes, Samuel J., 4,608,272, Cl. 427-53.100.
Norton Christensen, Inc.: *See*—
Lauvinerie, Jean-Pierre; and LeFeuvre, Annick, 4,608,226, Cl. 419-5.000.
Radford, Steven R., 4,607,710, Cl. 175-249.000.
Norton, John: *See*—
Mansbridge, Martin H.; and Norton, John, 4,607,783, Cl. 228-265.000.
Norton, R. Scott. Stone digging attachment for front end loader attachment of a tractor. 4,607,441, Cl. 37-2.00R.
Norwalk Wastewater Equipment Company: *See*—
Graves, Jan D., 4,608,157, Cl. 210-86.000.
Nottingham-Spirk Design Inc.: *See*—
Hough, Wilfred H., 4,607,648, Cl. 133-3.00D.
Noutomi, Hiroshi: *See*—
Okuyama, Teiji; and Noutomi, Hiroshi, 4,608,637, Cl. 364-424.000.
Nozawa, Taizo: *See*—
Matsushita, Takenobu, 4,607,985, Cl. 405-284.000.
Nozawa, Yoshikuni, to Entac Company, Limited. Rotor/stator winding and method and apparatus for producing same. 4,607,803, Cl. 242-1.10R.

NPO Norplast: *See*—
Enikolopow, Nikolai S.; Wolfson, Stanislaw A.; Nepomnjaschtschie, Anatolie I.; Nikolskie, Wadim G.; Teleschow, Wiktor A.; Filmakowa, Lidia A.; Brinkmann, Heinz; Pantzer, Eckart; and Uhland, Eberhard, 4,607,797, Cl. 241-23.000.

NRM Corporation: *See*—
Singh, Anand P.; Crumbacher, Thomas A.; Naylor, Gary R.; and Fagan, Thomas R., Jr., 4,608,219, Cl. 264-315.000.

NSK-Warner K.K.: *See*—
Yokote, Yoshihiro, 4,607,863, Cl. 280-804.000.

Nusbaumer, Kay T.; and McIntosh, Bruce D., to PHD, Inc. Gripper apparatus. 4,607,873, Cl. 294-88.000.

Nuttle, David A. Integral waste disposal system. 4,608,175, Cl. 210-532.200.

Nye, Derald D.: *See*—
Bartlett, Geoffrey M.; Hofmeister, James P.; Nye, Derald D.; and Pring, Edward J., 4,608,664, Cl. 364-900.000.

Oakley, David J.; and Feld, Sam H., to United States of America, Energy. Welding fixture for nuclear fuel pin cladding assemblies. 4,607,778, Cl. 228-2.500.

Oakley, W. Ray: *See*—
Trent, Robert H.; and Oakley, W. Ray, 4,607,888, Cl. 299-2.000.

Obidin, Valery Y.; Zueva, Olga A.; Inochkin, Vladimir M.; Zhavoronkov, Andrei V.; Voinich, Leonid K.; Polushin, Jury V.; Zakhodyakin, Petr A.; Rodionova, Zinaida I.; Judchits, Nikolai N.; Belyanin, Vladimir V.; Yarkin, Andrei A.; Kalmykov, Vyacheslav N.; Ageechkin, Mikhail M.; and Arakelyants, Sergei M., to Nauchno-Proizvodstvennoe Obiedinenie Stroitelnogo I Dorozhnogo Mashinostroenia. Power steering assembly. 4,608,004, Cl. 418-206.000.

O'Brien, Thomas C.: *See*—
Bradley, John J.; Staplin, Theodore R., Jr.; Miu, Ming T.; O'Brien, Thomas C.; O'Har, George M.; Widen, Melinda A.; and Stoffers, Brian L., 4,608,659, Cl. 364-737.000.

Oce-Nederland B.V.: *See*—
Ensing, Hendrik; and Peulen, Jacobus H. M., 4,607,947, Cl. 355-15.000.

Oda, Tatsuji; Mamine, Takayoshi; and Yoneyama, Osamu, to Sony Corporation. Laser device formed with a stripe light emission region. 4,608,695, Cl. 372-45.000.

Odlin, Kenneth F. Lamp crushing machine. 4,607,798, Cl. 241-99.000.

Oerlikon-Boehringer GmbH: *See*—
Berbalk, Hermann, 4,607,550, Cl. 82-9.000.

Ogata, Hajime: *See*—
Mochizuki, Kazuo; Nakakoji, Hisatada; Ichida, Toshio; Irie, Toshio; Ogata, Hajime; and Yamaji, Kyoko, 4,608,320, Cl. 428-629.000.

Ogata, Yasuzi, to Olympus Optical Co., Ltd. Zoom lens system. 4,607,918, Cl. 350-426.000.

Ogawa, Ichitaro: *See*—
Miyazaki, Kenji; Ogawa, Ichitaro; Yoshida, Hisayoshi; Kobayashi, Kazuo; Hagio, Tsuyoshi; Ueno, Hidetoshi; and Akiyama, Shigeru, 4,607,959, Cl. 366-343.000.

O'Har, George M.: *See*—
Bradley, John J.; Staplin, Theodore R., Jr.; Miu, Ming T.; O'Brien, Thomas C.; O'Har, George M.; Widen, Melinda A.; and Stoffers, Brian L., 4,608,659, Cl. 364-737.000.

Ohara, Shumpei; Sagara, Noriyasu; Izumiyama, Hiroo; and Arai, Yoshinobu, to Kajima Keneetus Kabushiki Kaisha. Heat storage device. 4,607,687, Cl. 165-104.190.

Ohbayashi, Gentaro; Umemoto, Susumu; and Hiramoto, Hiroo, to Toray Industries, Inc. Radiation sensitive polymer composition. 4,608,333, Cl. 430-281.000.

Ohio State University Research Foundation, The: *See*—
Frank, Sylvan G.; Brodin, Arne F.; Chen, Chih-Ming J.; and Panthuvanich, Siriporn, 4,608,278, Cl. 427-213.350.

Ohkubo, Tetsuo: *See*—
Yokoshima, Minoru; Ohkubo, Tetsuo; and Kiyomoto, Masayuki, 4,608,400, Cl. 522-96.000.

Ohloff, Gunther: *See*—
Giersch, Wolfgang K.; Schulte-Elte, Karl H.; and Ohloff, Gunther, 4,608,445, Cl. 568-667.000.

Ohnishi, Haruo; Kosuzume, Hiroshi; Suzuki, Yasuo; and Mochida, Ei, to Mochida Pharmaceutical Co., Ltd. Process for removing immune complex in blood by use of the immobilized pepsin. 4,608,253, Cl. 424-94.000.

Ohnishi, Taiji, to Intermatch S.A.; and K.K. Piem Riken. Piezoelectric igniter, especially for a cigarette lighter or the like. 4,608,508, Cl. 310-339.000.

Ohno, Jun-ichi; and Konishi, Satoshi, to Tokyo Shibaura Denki Kabushiki Kaisha. Semiconductor device. 4,608,668, Cl. 365-200.000.

Ohshima, Iwao; Narita, Takeshi; Handa, Ryoji; and Hosoda, Jun, to Nitto Kagaku Kogyo Kabushiki Kaisha. Apparatus for stirring hydrogel particles of water-soluble polymer. 4,607,958, Cl. 366-192.000.

Ohta, Kihachiro: *See*—
Sakuma, Kiyoshi; Tomioka, Tadao; Tabuchi, Sunao; Ohta, Kihachiro; and Takeuchi, Masakazu, 4,608,127, Cl. 203-48.000.

Ohta, Masakatsu: *See*—
Itoi, Masaaki; Ohta, Masakatsu; Sugioka, Taizo; Yoshihara, Kunio; and Nishitani, Hiroshi, 4,608,150, Cl. 208-22.000.

Ohtuka, Katuyuki; Sasaki, Kazuya; Arika, Tadashi; Yokoo, Mamoru; and Amemiya, Kouji, to Kaken Pharmaceutical Co., Ltd. Imidazole derivatives. 4,608,438, Cl. 548-341.000.

Oishi, Kengo; and Ono, Tuyoshi, to Fuji Photo Film Co., Ltd. Magnetic recording disk cartridge. 4,608,617, Cl. 360-133.000.

Oka, Tateki, to Minolta Camera Kabushiki Kaisha. Method of forming composite images. 4,608,327, Cl. 430-54.000.

Okabe, Takayuki: *See*—
Yamamoto, Haruyasu; and Okabe, Takayuki, 4,608,369, Cl. 514-144.000.

Okamuro, James A., to Borroughs Tool & Equipment Corporation. Gauge for measuring the tension in an elongate element. 4,607,535, Cl. 73-862.470.

Okazaki, Hiroshi: *See*—
Kazaoka, Kenichi; and Okazaki, Hiroshi, 4,607,827, Cl. 267-107.000.

Okazaki, Masaki, to Sanshin Kogyo Kabushiki Kaisha. Exhaust system for outboard motors. 4,607,723, Cl. 181-272.000.

Oki, Hiroshi, to Hitachi, Ltd. Electron tube having glass-to-metal-to-glass seal. 4,608,516, Cl. 313-477.00R.

Okino, Tadashi, to Canon Kabushiki Kaisha. Image sensing apparatus. 4,608,605, Cl. 358-209.000.

Okumoto, Yutaka; Kobayashi, Hideki; Shiote, Kanjo; and Arakawa, Toyomi, to Japan Tobacco Inc. Shredded tobacco supplying device for cigarette making machine. 4,607,645, Cl. 131-109.100.

Okuyama, Teiji; and Noutomi, Hiroshi, to Aisin Seiki Kabushiki Kaisha. Control device for driving road-vehicle electric-powered equipment. 4,608,637, Cl. 364-424.000.

Olds, Kerry J.: *See*—
Stants, Richard O.; and Olds, Kerry J., 4,607,588, Cl. 118-52.000.

Olsen, Robert W., to Construction Specialties, Inc. Panel wall system. 4,607,471, Cl. 52-509.000.

Olympus Optical Company Limited: *See*—
Nagasaki, Tatsuo; and Nakamura, Junichi, 4,608,490, Cl. 250-201.000.
Ogata, Yasuzi, 4,607,918, Cl. 350-426.000.

Omark Industries, Inc.: *See*—
Krampen, Adalbert A.; Ells, Delbert O.; Bjerke, Robert K.; and Ward, James P., 4,608,102, Cl. 149-92.000.

Omron Tateisi Electronics, Co.: *See*—
Nagao, Toshiaki; and Sukimoto, Yasuyuki, 4,607,962, Cl. 374-103.000.
Saito, Yashitane; Doi, Tetsuo; and Hirase, Kiyoto, 4,608,628, Cl. 364-141.000.
Sakamoto, Tamaki, 4,608,565, Cl. 340-870.170.

O'Neill, Michael L.: *See*—
Pendolino, Eugene F.; Edmondson, Wayne L.; and O'Neill, Michael L., 4,607,891, Cl. 299-92.000.

Ono, Tuyoshi: *See*—
Oishi, Kengo; and Ono, Tuyoshi, 4,608,617, Cl. 360-133.000.

Oogaki, Kenji, to Mitsubishi Denki Kabushiki Kaisha. Data display system. 4,608,648, Cl. 364-483.000.

Oomen, Peter: *See*—
Berstein, Patrick; Crinion, Jonathan; Middlemiss, Robert J.; and Oomen, Peter, 4,608,486, Cl. 235-380.000.

Opelika Manufacturing Corporation: *See*—
Brocklehurst, Charles E., 4,607,582, Cl. 112-121.120.

Opsvik, Peter. Chair with saddle shaped seat and members externally transversely therefrom. 4,607,882, Cl. 297-195.000.

O'Riley, Henry M. Lighted sport article for hand tossing. 4,607,850, Cl. 273-424.000.

Ormond, A. Neuman. Analog to digital converter without zero drift. 4,608,553, Cl. 340-347.0NT.

Orndorff, Roy L., Jr.: *See*—
Kramer, James H.; and Orndorff, Roy L., Jr., 4,607,964, Cl. 384-98.000.

Osaka, Haruya; Kimura, Hiroshi; Hisajima, Masahiko; Shigemura, Yutaka; Kaminaga, Seiji; Satonaka, Shinobu; and Ishito, Mitsuya, to Mita Kogyo Kabushiki Kaisha. Automatic developing bias control device. 4,607,954, Cl. 355-14.00D.

Osaki, Sigemi: *See*—
Sakuramoto, Takahumi; Asoshina, Eishi; Tominaga, Takashi; Shimizu, Yukio; Morishita, Tsuyoshi; Osaki, Sigemi; and Sakai, Noriyuki, 4,608,225, Cl. 419-5.000.

Osgood, Richard M.: *See*—
Ehrlich, Daniel J.; Deutsch, Thomas F.; Osgood, Richard M.; and Schlossberg, Howard, 4,608,117, Cl. 156-610.000.

Ossenberg-Engels, Walter: *See*—
Dunker, Friedrich W.; and Ossenberg-Engels, Walter, 4,607,505, Cl. 66-117.000.

Osterberger, Larry D.: *See*—
Czerwinski, Richard W.; and Osterberger, Larry D., 4,608,418, Cl. 524-296.000.

Osterholm, Jewell L., to Thomas Jefferson University. Method and apparatus for tomographic diagnosis. 4,608,635, Cl. 364-414.000.

Osterloh, Rolf: *See*—
Schupp, Eberhard; Loch, Werner; Osterloh, Rolf; and Ahlers, Klaas, 4,608,416, Cl. 525-130.000.

Ostman, Per H., to Ekono Oy. Process for continuous digestion of finely-divided material with heat capacity flows of substantially the same magnitude. 4,608,121, Cl. 162-19.000.

Ostrup, Leif: *See*—
Berggren, Anders; Rohman, Hakan; and Ostrup, Leif, 4,607,637, Cl. 128-334.00C.

Ota, Yoshihiko, to Victor Company of Japan. Color video signal recording and/or reproducing system using overlap recording of FM luminance signal over frequency converted carrier chrominance signal. 4,608,611, Cl. 358-328.000.

Otoshima, Hiroo, to Murata Kikai Kabushiki Kaisha. Fluid yarn splicing device. 4,607,482, Cl. 57-22.000.

Otsuka Kagaku Kabushiki Kaisha: *See*—
Endo, Yoshinori; and Takao, Hisashi, 4,608,367, Cl. 514-89.000.

Otsuka, Saburo; Yoshikawa, Toshiyuki; Tokuda, Shoichi; and Ito, Yuusuke, to Nitto Electric Industrial Co., Ltd.; and Toa Eiyo Litd. Hydrophilic therapeutic material. 4,608,249, Cl. 424-28.000.

Ovshinsky, Stanford R.: *See—*
Keem, John E.; Ovshinsky, Stanford R.; Sadate-Akhavi, Hossein; Chen, Juei-Teng; and Kadin, Alan M., 4,608,296, Cl. 428-215.000.

Owens, Cassandra D.: *See—*
Lilly, A. Clifton, Jr.; Merritt, Henry B.; and Owens, Cassandra D., 4,607,646, Cl. 131-309.000.

Owens-Illinois, Inc.: *See—*
Hedler, Robert C.; Kohler, Robert D.; and Dunlap, John H., 4,608,709, Cl. 382-1.000.

Owens, Kevin A.: *See—*
Hickner, Richard A.; Owens, Kevin A.; and Grays, Gwendolyn M., 4,608,313, Cl. 428-414.000.

Owens, Robert M.: *See—*
Goodwin, Anton E.; Marton, Janet L.; Owens, Robert M.; Whisenhunt, Jackie W.; and Swain, Roy D., 4,608,346, Cl. 436-131.000.

Oy Partek Ab: *See—*
Barsk, Jaakko O., 4,608,216, Cl. 264-70.000.

O'Yang, Counde: *See—*
Kluge, Arthur F.; Willis, Anthony L.; and O'Yang, Counde, 4,608,388, Cl. 514-510.000.

Ozeki, Toshiaki: *See—*
Mochida, Yoshio; Ozeki, Toshiaki; Satoh, Kenji; and Yuasa, Yoshitaka, 4,607,689, Cl. 165-110.000.

Paek, Un C.; and Schroeder, Charles M., Jr., to AT&T Technologies, Inc. Modified zirconia induction furnace. 4,608,473, Cl. 219-10.49R.

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Ramsey, David A.; Rohe, Clair F.; and Sawicki, Thomas E., 4,608,489, Cl. 235-462.000.

Rohm, Gunter H. Hammer drill chuck. 4,607,855, Cl. 279-62.000.

Rohman, Hakan: *See—*
Berggren, Anders; Rohman, Hakan; and Ostrup, Leif, 4,607,637, Cl. 128-334.00C.

Rohrich, Siegfried: *See—*
Zwiener, Rudolf; Mathis, Ernst; Thalmann, Theo; and Rohrich, Siegfried, 4,607,666, Cl. 139-115.000.

Rollier, Michel: *See—*
Hartmann, Max; and Rollier, Michel, 4,607,971, Cl. 403-2.000.

Rolls-Royce Limited: *See—*
Mills, David; Kington, Alan D.; and Close, Rodney J., 4,607,680, Cl. 164-134.000.

Romine, Edward L.; and Byczek, Roger W., to Bally Midway Mfg. Co. Shunt connector and method of forming. 4,607,899, Cl. 339-19.000.

Ron, Moshe, to Technion Research and Development Foundation Ltd. Apparatus for preparing improved porous metal-hydride compacts. 4,607,826, Cl. 266-251.000.

Rose, Gerard: *See—*
Boutonnat, Maurice; and Rose, Gerard, 4,608,552, Cl. 340-310.00R.

Rosen, Bruce I.: *See—*
Gonczy, Stephen T.; Lawson, Randy J.; and Rosen, Bruce I., 4,608,215, Cl. 264-56.000.

Rosen, Johnny, to Trelleborg AB. Strand break detector. 4,608,496, Cl. 250-561.000.

Rossmoore, Harold W., to Board of Governors of Wayne State University. Synergistic antimicrobial or biocidal mixtures including isothiazolones. 4,608,183, Cl. 252-36.000.

Rosthauser, James W., to Mobay Corporation. Glass fibers coated with aqueously dispersed coating compositions. 4,608,304, Cl. 428-378.000.

Roth, Arthur A.: *See—*
Rudy, Michael; Cary, Paul; and Roth, Arthur A., 4,608,679, Cl. 369-36.000.

Roulin, Claude: *See—*
Aubert, Jean-Jacques; Basset, Alain; Bechevet, Bernard; and Roulin, Claude, 4,608,234, Cl. 422-249.000.

Rousseau, Yves J. Propulsion unit for hang glider type aircraft, and aircraft fitted with the propulsion unit. 4,607,811, Cl. 244-13.000.

Roux, Paul M. M. Underground room such as notably a cellar. 4,607,467, Cl. 52-169.600.

Rowe, James M.; Kraatz, Paul; and Holmes, Samuel J., to Northrop Corporation. Method of reducing optical coating absorptance. 4,608,272, Cl. 427-53.100.

Rowland, Jack T., to Niagara Blower Company. Apparatus for concentrating aqueous solutions. 4,608,119, Cl. 159-3.000.

Rudy, Michael; Cary, Paul; and Roth, Arthur A., to Filenet Corporation. Optical storage and retrieval device. 4,608,679, Cl. 369-36.000.

Rueger, William J.: *See—*
Rinkleib, Helfried O.; and Rueger, William J., 4,608,614, Cl. 360-95.000.

Rugis, John W.; and Drummond, Graham J., to Drummond and Relph Limited. Alcohol detection device. 4,607,719, Cl. 180-272.000.

Rummler, Karl-Heinz; Sievers, Willi; Dette, Karl-Henning; Koster, Lothar; and Luscalu, Romeo, to Continental Gummi-Werke AG; and Fried. Krupp GmbH. Method for the vulcanization of pneumatic tires. 4,608,218, Cl. 264-315.000.

Rump, Joh. Moritz: *See—*
Dunker, Friedrich W.; and Ossenberg-Engels, Walter, 4,607,505, Cl. 66-117.000.

Runge, Harry V., to Flourocarbon Technologies, Inc. Fluoropolymer surface lubricant and coating. 4,608,282, Cl. 427-385.500.

Ruscitti, Tommaso, to S.A.R. S.p.A. Manually operated pump for the delivery under pressure of liquid substances. 4,607,765, Cl. 222-321.000.

Rushing, Allen J., to Eastman Kodak Company. Apparatus for controlling toner replenishment in electrographic copier. 4,607,944, Cl. 355-14.00D.

Russell, Frank S., to Sleeper & Hartley Corp. Wire working machine. 4,607,513, Cl. 72-137.000.

Rutten, Leon L. Projectile distributor for centrifugal launcher. 4,607,605, Cl. 124-6.000.

Ryerson & Haynes, Inc.: *See—*
Davis, Robert D., Jr., 4,607,406, Cl. 7-100.000.

S.A.R.L. Manufacture Francaise des Chaussures Eram: *See—*
Biotteau, Gerard, 4,608,287, Cl. 428-40.000.

S.A.R. S.p.A.: *See—*
Ruscitti, Tommaso, 4,607,765, Cl. 222-321.000.

S.N.E.C.M.A.: *See—*
Bizot, Henri; Brasselet, Gery-Charles J.; Louis, Jean-Paul; and Narcy, Georges, 4,608,480, Cl. 219-121.0LK.

S.P.R.L. LAMA P.V.B.A.: *See—*
Massion, Philippe A. J., 4,607,771, Cl. 223-91.000.

Sadate-Akhavi, Hossein: *See—*
Keem, John E.; Ovshinsky, Stanford R.; Sadate-Akhavi, Hossein; Chen, Juei-Teng; and Kadin, Alan M., 4,608,296, Cl. 428-215.000.

Sadohara, Tsuyoshi, to Micron Co., Ltd. Endodontic irrigating instrument. 4,608,017, Cl. 433-81.000.

Saffell, John R.: *See—*
Ibar, Jean P.; and Saffell, John R., 4,608,532, Cl. 324-73.00R.

Sagami Chemical Research Center: *See—*
Saito, Tomoo; Tanimoto, Mitsutoshi; Yasuda, Masayoshi; Ijuin, Yasuharu; Hikita, Akio; Morikawa, Naotake; Uehara, Hiromichi; and Fukuyama, Masaru, 4,607,521, Cl. 73-23.000.

Sagara, Noriyasu: *See—*
Ohara, Shumpei; Sagara, Noriyasu; Izumiyama, Hiroo; and Arai, Yoshinobu, 4,607,687, Cl. 165-104.190.

Sah, Ramesh. Well plug quality testing. 4,607,694, Cl. 166-250.000.

Saijo, Yoshiaki: *See—*
Noh, Akihiko; Saijo, Yoshiaki; Sato, Shinichi; and Tanaka, Ichiro, 4,607,651, Cl. 134-62.000.

Saischek, Gerald; and Bodingbauer, Hans, to Chemie Linz Aktiengesellschaft. 1,3,2-dioxaborinanes. 4,608,440, Cl. 556-7.000.

Saito, Takeshi, to Ricoh Company, Ltd. Removable developing unit for an electrostatic recording apparatus. 4,607,939, Cl. 355-3.0DD.

Saito, Tomoo; Tanimoto, Mitsutoshi; Yasuda, Masayoshi; Ijuin, Yasuharu; Hikita, Akio; Morikawa, Naotake; Uehara, Hiromichi; and Fukuyama, Masaru, to Sagami Chemical Research Center. Method of improving response characteristics of gas sensor using microwave spectrometer. 4,607,521, Cl. 73-23.000.

Saito, Yashitane; Doi, Tetsuo; and Hirase, Kiyoto, to Omron Tateisi Electronics Co. Programmable controller. 4,608,628, Cl. 364-141.000.

Sakai Chemical Industry Co., Ltd.: *See—*
Kanamori, Nobutaka; and Kurosawa, Masaji, 4,608,361, Cl. 502-232.000.

Sakai, Minoru: *See—*
Seike, Noboru; Teranishi, Masatoshi; and Sakai, Minoru, 4,607,619, Cl. 128-4.000.

Sakai, Noriyuki: *See—*
Sakuramoto, Takahumi; Asoshina, Eishi; Tominaga, Takashi; Shimizu, Yukio; Morishita, Tsuyoshi; Osaki, Sigemi; and Sakai, Noriyuki, 4,608,225, Cl. 419-5.000.

Sakamoto, Tamaki, to Omron Tateisi Electronics Co. Indoor/outdoor thermometer with remote sensing unit. 4,608,565, Cl. 340-870.170.

Sakuma, Kiyoshi; Tomioka, Tadao; Tabuchi, Sunao; Ohta, Kihachiro; and Takeuchi, Masakazu. Dibenzofuran distillation and crystallization process. 4,608,127, Cl. 203-48.000.

Sakuramoto, Takahumi; Asoshina, Eishi; Tominaga, Takashi; Shimizu, Yukio; Morishita, Tsuyoshi; Osaki, Sigemi; and Sakai, Noriyuki, to Nitto Electric Industrial Co. Ltd.; and Mazda Motor Corporation. Composition for fixing metal powder molding at sintering. 4,608,225, Cl. 419-5.000.

Saleeba, Wallace T. Combination cart and boat boarding steps. 4,607,856, Cl. 280-47.180.

Salley, Gordon L.: *See—*
Landphair, Donald K.; and Salley, Gordon L., 4,607,708, Cl. 172-776.000.

Salm, Franz; Zangerle, Eduard; and Muriset, Jean-Fracois, to Herrli AG. Reversible cutting bit. 4,607,988, Cl. 407-114.000.

Samdor Engineering Limited: *See—*
Galper, Sam, 4,608,165, Cl. 210-232.000.

Sammells, Anthony F., to Texaco Inc. Means and method for the electrochemical reduction of carbon dioxide to provide a product. 4,608,132, Cl. 204-59.00R.

Samson, Marc: *See—*
Andrade, Juan; Prescher, Gunter; and Samson, Marc, 4,608,443, Cl. 568-454.000.

Sandco, Inc.: *See—*
Pierce, Bobby L., 4,607,837, Cl. 271-273.000.

Sandel, Frederick: *See—*
Mako, Frederick; Manheimer, Wallace; Kapetanokos, Christos A.; and Sandel, Frederick, 4,608,537, Cl. 328-237.000.

Sando Iron Works, Ltd.: *See—*
Sando, Yoshikazu; and Ishidoshiro, Hiroshi, 4,607,508, Cl. 68-22.00R..

Sando, Yoshikazu; and Ishidoshiro, Hiroshi, to Sando Iron Works, Ltd. Apparatus for applying treating solution to a cloth in continuous treatment of the cloth. 4,607,508, Cl. 68-22.00R.

Sanford, Norman A., to Polaroid Corporation. Method for modulating a carrier wave. 4,607,909, Cl. 350-96.140.

Sanford, Norman A.; Miniscalco, William J.; and Lempicki, Alexander, to GTE Laboratories Incorporated. Apparatus for controlling the rotation of the plane of linear polarization of linearly polarized radiant energy traversing an element of chromium chalcogenide spinel magnetic semiconductor with elliptically polarized radiant energy. 4,607,916, Cl. 350-376.000.

Sanshin Kogyo Kabushiki Kaisha: *See—*
Okazaki, Masaki, 4,607,723, Cl. 181-272.000.

Santoni & C. S.p.A.: *See—*
Vincoli, Armando, 4,607,504, Cl. 66-24.000.

Santrade Limited: *See—*
Larsson, Lars E., 4,607,712, Cl. 175-410.000.

Sanyo Electric Co., Ltd.: *See—*
Awane, Misao; Hara, Seiji; and Kobayashi, Satoshi, 4,608,487, Cl. 235-383.000.
Minami, Koji, 4,607,937, Cl. 355-3.00R.

Sasaki, Hideaki: *See—*
Kobayashi, Mamoru; Sasaki, Hideaki; and Hara, Yasuhiko, 4,608,494, Cl. 250-461.100.

Sasaki, Hiroshi: *See—*
Kobayashi, Osamu; Sasaki, Hiroshi; Kaneko, Toshiki; Ikeda, Hideaki; and Yamamura, Yoshihisa, 4,608,317, Cl. 428-546.000.

Sasaki, Junichi, to Toshiba Kikai Kabushiki Kaisha. Programmable sequence controller. 4,608,661, Cl. 364-900.000.

Sasaki, Kazuya: *See—*
Ohtuka, Katuyuki; Sasaki, Kazuya; Arika, Tadashi; Yokoo, Mamoru; and Amemiya, Kouji, 4,608,438, Cl. 548-341.000.

SASIB S.p.A.: *See—*
Manservisi, Renato; and Bagnaresi, Bruno, 4,607,475, Cl. 53-150.000.

Sato, Hirohiko: *See—*
Morikawa, Yuichi; Sato, Hirohiko; Amada, Eiichi; Suzuki, Toshiro; Shirasu, Hirotoshi; and Kuwahara, Hiroshi, 4,608,464, Cl. 179-170.200.

Sato, Ryo: *See—*
Haga, Toru; Nagano, Eiki; Sato, Ryo; and Yoshida, Ryo, 4,608,080, Cl. 71-92.000.

Sato, Shinichi: *See—*
Noh, Akihiko; Saijo, Yoshiaki; Sato, Shinichi; and Tanaka, Ichiro, 4,607,651, Cl. 134-62.000.

Sato, Yasushi; and Matsui, Hiroshi, to NGK Spark Plug Co., Ltd. Ceramic and metal composite body. 4,608,321, Cl. 428-632.000.

Sato, Yukio, to Canon Kabushiki Kaisha. Data processing and transfer apparatus. 4,608,689, Cl. 371-15.000.

Satoh, Kenji: *See—*
Mochida, Yoshio; Ozeki, Toshiaki; Satoh, Kenji; and Yuasa, Yoshitaka, 4,607,689, Cl. 165-110.000.
Motoishi, Yasuo; Satoh, Kenji; and Ikari, Kyoichiro, 4,608,286, Cl. 428-35.000.

Satonaka, Shinobu: *See—*
Osaka, Haruya; Kimura, Hiroshi; Hisajima, Masahiko; Shigemura, Yutaka; Kaminaga, Seiji; Satonaka, Shinobu; and Ishito, Mitsuya, 4,607,954, Cl. 355-14.00D.

Sauerberg, Per: *See—*
Falch, Erik; Krogsgaard-Larsen, Povl; Sauerberg, Per; Christensen, Anne V.; and Larsen, Jens-Jorgen, 4,608,378, Cl. 514-302.000.

Savolainen, Erkki: *See—*
Kokkonen, Seppo; Kuhasalo, Antti; Savolainen, Erkki; Titoff, Juha; Vento, Jorma; and Vikio , Pentti, 4,608,174, Cl. 210-512.200.

Sawicki, Thomas E.: *See—*
Ramsey, David A.; Rohe, Clair F.; and Sawicki, Thomas E., 4,608,489, Cl. 235-462.000.

Sawoska, David: *See—*
Kukanskis, Peter E.; Grunwald, John J.; and Sawoska, David, 4,608,275, Cl. 427-98.000.

Scaramucci, John P. Method for locking a bonnet to a valve body. 4,607,422, Cl. 29-157.10R.

Schaar, John, to Grand Slam Archery. Bow mounted quiver. 4,607,606, Cl. 124-89.000.

Schabert, Hans-Peter; Heller, Max; Laurer, Erwin; and Leinweber, Hans, to Kraftwerk Union Aktiengesellschaft. Shutoff valve with a conical valve seat. 4,607,822, Cl. 251-334.000.

Schaeffer, Bruce W.: *See—*
Brothers, Michael V.; and Schaeffer, Bruce W., 4,607,974, Cl. 403-24.000.

Schafer, Thomas B.; Sindelar, William, deceased (by Sindelar, Dorothy, legal representative); and Cummens, Joseph R., to Danly Machine Corporation. Transfer feed press with improved transfer feed system. 4,607,516, Cl. 72-405.000.

Schafsteller, Helmut, to Warner & Swasey Company, The. Linear position indicator. 4,608,654, Cl. 364-559.000.

Scharer, Roger M., to General Binding Corporation. Combined punch and binding machine with thickness gauge and back gauge plate adjustment. 4,607,993, Cl. 412-40.000.

Scheffer, Terry J.: *See—*
Amstutz, Hermann; Kaufmann, Meinolph; and Scheffer, Terry J., 4,608,558, Cl. 340-784.000.

Scheithauer, Richard A.; Miller, Michael J.; Vanderpool, Clarence D.; and MacInnis, Martin B., to GTE Products Corporation. Recovery of cobalt and chromium. 4,608,084, Cl. 75-101.00R.

Scheithauer, Richard A.: *See—*
Vanderpool, Clarence D.; Scheithauer, Richard A.; and Gingerich, Richard G. W., 4,608,235, Cl. 423-53.000.

Schen, Michael A.: *See—*
Brown, James W.; Chen, Tsang J.; and Schen, Michael A., 4,608,424, Cl. 526-240.000.

Schenck, Robert R. Dynamic traction device. 4,607,625, Cl. 128-26.000.

Scheuring, Melvin W. Muzzle loader. 4,607,446, Cl. 42-90.000.

Schilling, Curtis L., Jr.; and Williams, Thomas C., to Union Carbide Corporation. Hydrosilyl-modified polycarbosilane precursors for silicon carbide. 4,608,242, Cl. 423-345.000.

Schirmer, Henry G., to W. R. Grace & Co., Cryovac Div. Oriented films from propylene copolymers and unplasticized saran. 4,608,302, Cl. 428-349.000.

Schlemmer, Richard A.: *See—*
LeSage, Richard; Reshanov, Eugene N.; and Schlemmer, Richard A., 4,607,857, Cl. 280-47.260.

Schloesberg, Howard: *See—*
Ehrlich, Daniel J.; Deutsch, Thomas F.; Osgood, Richard M.; and Schloesberg, Howard, 4,608,117, Cl. 156-610.000.

Schlumberger Technology Corporation: *See—*
Chow, Edward Y., 4,607,530, Cl. 73-708.000.
Richardson, Neil W., 4,607,693, Cl. 166-242.000.

Schmaehl, Dietrich: *See—*
Blum, Helmut; Greb, Wolfgang; Moeller, Hinrich; Schmaehl, Dietrich; Schnegelberger, Harald; Sinn, Hannajoerg; and Wingen, Franz, 4,608,368, Cl. 514-107.000.

Schmidt, Helmut; Bodenmiller, Anton; and Straka, Alfred, to Kaltenbach & Voight GmbH & Co. Work station with suctioning device. 4,607,413, Cl. 15-301.000.

Schmidt, Richard A.: *See*—
Tanagho, Emil A.; Schmidt, Richard A.; Gleason, Curtis A.; and Lue, Tom F., 4,607,639, Cl. 128-419.00E.

Schmitt, David A.: *See*—
Hansen, Robert C.; Richardson, Calvin J.; and Schmitt, David A., 4,608,688, Cl. 371-11.000.

Schnegelberger, Harald: *See*—
Blum, Helmut; Greb, Wolfgang; Moeller, Hinrich; Schmaehl, Dietrich; Schnegelberger, Harald; Sinn, Hannsjoerg; and Wingen, Franz, 4,608,368, Cl. 514-107.000.

Schnegg, Julius R., to Burlington Industries, Inc. Stable selvage intermediate for weft inserted warp knit draperies. 4,608,290, Cl. 428-101.000.

Schneider, Horst; and Hermann, Joachim, to Messerschmitt-Boelkow-Blohm Gesellschaft mit beschraenkter Haftung. Apparatus for dynamically supporting a high stress structure. 4,607,560, Cl. 89-16.000.

Schnell, William J.: *See*—
Harvey, Roger W.; Davis, Ralph; Lueders, Arthur; and Schnell, William J., 4,607,868, Cl. 285-332.000.

Scholz, Hansjurgen: *See*—
Andres, Rudolf; Scholz, Hansjurgen; Knoll, Heinz W.; Brambilla, Luigi; Petri, Volker; and Bossenmaier, Alban, 4,608,501, Cl. 307-105.00B.

Schoofs, Franciscus A. C. M.: *See*—
Nijman, Aloysius J.; and Schoofs, Franciscus A. C. M., 4,608,461, Cl. 179-16.0AA.

Schott, Bernd, to Robert Bosch GmbH. Method and apparatus for transmitting data words asynchronously from one microprocessor to another in form of timing intervals. 4,608,630, Cl. 364-200.000.

Schreiber, William L.: *See*—
Fujioka, Futoshi; Boden, Richard M.; and Schreiber, William L., 4,608,195, Cl. 252-522.00R.
Fujioka, Futoshi; Boden, Richard M.; and Schreiber, William L., 4,608,196, Cl. 252-522.00R.

Schroder, Mats, to Landstingens Inkopscentral LIC. Adjustable connection for connecting adjoining parts of an artificial limb. 4,608,054, Cl. 623-39.000.

Schroeder, Charles M., Jr.: *See*—
Paek, Un C.; and Schroeder, Charles M., Jr., 4,608,473, Cl. 219-10.49R.

Schroth, Carl G.; and Thorson, Russell E., to Kimberly-Clark Corporation. Revolving transfer roll. 4,608,115, Cl. 156-519.000.

Schubert, Hans A.; and Schulze, Klaus, to SMS HasenClever Maschinenfabrik GmbH. Forging press of underfloor design. 4,607,518, Cl. 72-453.120.

Schubert, Hiltmar: *See*—
Muller, Dietmar; and Schubert, Hiltmar, 4,608,210, Cl. 264-3.200.

Schulte-Elte, Karl H.: *See*—
Giersch, Wolfgang K.; Schulte-Elte, Karl H.; and Ohloff, Gunther, 4,608,445, Cl. 568-667.000.

Schulze, Klaus: *See*—
Schubert, Hans A.; and Schulze, Klaus, 4,607,518, Cl. 72-453.120.

Schumacher, Larry. Commutatorless d.c. electric motor. 4,608,505, Cl. 310-267.000.

Schumann, Roland, to Veb Kombinat Polygraph "Werner Lamberz" Leipzig. Lengthwise folding arrangement with vertically adjustable conical tip folding mandrel. 4,607,830, Cl. 270-41.000.

Schumm, Brooke, Jr., to Union Carbide Corporation. Galvanic cells having ion exchange resin in their cathode mix. 4,608,279, Cl. 429-224.000.

Schupp, Eberhard; Loch, Werner; Osterloh, Rolf; and Ahlers, Klaas, to BASF Aktiengesellschaft. Heat-curable surface-coating agents, and their use. 4,608,416, Cl. 525-130.000.

Schuster, Friedrich, to FAG Kugelfischer Georg Schafer (KGaA). Friction rotor for the false-twisting of synthetic threads. 4,607,484, Cl. 57-337.000.

Schwabische Huttenwerke GmbH: *See*—
Vomhoff, Erich, 4,607,420, Cl. 29-113.00R.

Schwartz, C. Bruce. Videoendoscopic support stand. 4,607,897, Cl. 312-209.000.

Schwartz, Thomas W., to Minnesota Mining and Manufacturing Company. Coated abrasive back up pad. 4,607,464, Cl. 51-362.000.

Schwarz, Hildegard: *See*—
Stadler, Johann; and Schwarz, Hildegard, 4,607,767, Cl. 222-504.000.

Schwarz, William M.; and Pochan, John M., to Xerox Corporation. Donor for touchdown development. 4,608,328, Cl. 430-101.000.

Schwede, John G. Process for promoting and regulating plant growth with caulerpin. 4,608,077, Cl. 71-77.000.

Schwettmann, Frederic N.: *See*—
Neukermans, Armand P.; Chiang, Kuo L.; Schwettmann, Frederic N.; and Bradbury, Donald R., 4,608,326, Cl. 430-5.000.

Schwindt, Jurgen: *See*—
Nachtkamp, Klaus; Schwindt, Jurgen; Nobel, Karl-Ludwig; and Stahl, Hans-Georg, 4,608,413, Cl. 524-591.000.

Scientific Software-Intercomp, Inc.: *See*—
Gringarten, Alain C., 4,607,524, Cl. 73-152.000.

SCM Corporation: *See*—
Abbey, Kirk J., 4,608,423, Cl. 526-172.000.
Borovicka, David A., Sr., 4,608,410, Cl. 524-512.000.
Craun, Gary P.; and Abbey, Kirk J., 4,608,139, Cl. 204-181.700.
Lin, Ju-Chui, 4,608,421, Cl. 525-403.000.
Turpin, Edward T.; and Thrane, David T., 4,608,314, Cl. 428-425.800.

Scofield, Hartzell D., to Crisman Sand Company, Inc. Runner covers. 4,607,427, Cl. 29-432.000.

Scott, Kenneth C.: *See*—
Parker, Edward J.; and Scott, Kenneth C., 4,608,188, Cl. 252-99.000.

Scottish & Newcastle Breweries PLC: *See*—
Nicol, Stuart, 4,607,853, Cl. 277-12.000.

Scruggs, David M.: *See*—
Croopnick, Gerald A.; and Scruggs, David M., 4,608,319, Cl. 428-613.000.

Scudder, Ted: *See*—
Heusinkveld, Paul, 4,607,970, Cl. 402-20.000.

Seaborn Development, Inc.: *See*—
Ferri, Edward T., Jr.; and Seaborn, Paul E., 4,608,039, Cl. 493-164.000.

Seaborn, Paul E.: *See*—
Ferri, Edward T., Jr.; and Seaborn, Paul E., 4,608,039, Cl. 493-164.000.

Seachman, Ned J.; and Taillie, Joseph P., to Xerox Corporation. Compensating platen for dual mode image input terminals. 4,607,951, Cl. 355-51.000.

Sears, Lawrence M. Method and apparatus for sensing rotation of a dial arm of a utility meter. 4,607,527, Cl. 73-432.00A.

SEB S.A.: *See*—
Deville, Jean-Pierre, 4,607,512, Cl. 72-46.000.

Seibold, Gerhard: *See*—
Ebner, Heinz; Koch, Gabriele I.; Lauckner, Joachim; Lutz, Felix; Seibold, Gerhard; and Wessel, Gerhard, 4,607,917, Cl. 350-392.000.

Seidel, Albert; Neuking, Hartmut; and Blenninger, Ernst, to Messerschmitt-Bolkow-Blohm GmbH. Helium II phase separator. 4,607,490, Cl. 62-51.000.

Seike, Noboru; Teranishi, Masatoshi; and Sakai, Minoru, to Snow Brand Milk Products, Co., Ltd. Locking mechanism for an endoscope. 4,607,619, Cl. 128-4.000.

Seiko Instruments & Electronics Ltd.: *See*—
Fukushima, Toshitaka, 4,607,641, Cl. 128-680.000.

Sekino, Teruyoshi: *See*—
Murakami, Tsudoi; Nasu, Shoji; Nagahama, Yasuhide; Kada, Hironosuke; Sekino, Teruyoshi; Murayama, Hirokazu; Munezane, Yoshiaki; Tuda, Goro; and Mizuguchi, Osamu, 4,608,651, Cl. 364-513.000.

Sekiya, Matsuo: *See*—
Tanaka, Hideharu; Sekiya, Matsuo; and Uchikawa, Fusaoki, 4,607,721, Cl. 181-249.000.
Tanaka, Hideharu; Sekiya, Matsuo; and Uchikawa, Fusaoki, 4,607,722, Cl. 181-252.000.

Sellstrom, Kathy B., to Texaco Inc. Method for making syntactic foam with improved processing characteristics using a silane coupling agent in combination with an alkylphenol alkoxylate. 4,608,403, Cl. 523-218.000.

Seltenreich, Richard C.: *See*—
Bachenheimer, Bernard O.; Antoci, Frank J.; Carver, Edward L., Jr.; Pellegrino, Ernest N.; and Seltenreich, Richard C., 4,607,526, Cl. 73-432.0PS.

"Semiconductor Research Foundation" : *See*—
Nishizawa, Jun-ichi, 4,608,587, Cl. 357-30.000.

Senkingwerk GmbH: *See*—
Stoll, Karl-Heinz, 4,607,509, Cl. 68-27.000.

Seo, Kiyokazu: *See*—
Mori, Katsunori; Shimoda, Takuji; and Seo, Kiyokazu, 4,607,879, Cl. 296-201.000.

Sequoia Systems, Inc.: *See*—
Stiffler, Jack J.; Karp, Richard A.; Nolan, James M., Jr.; Budwey, Michael J.; and Wallace, David A., 4,608,631, Cl. 364-200.000.

Sertic, James L.: *See*—
Aalto, William R.; and Sertic, James L., 4,607,671, Cl. 141-329.000.

Service National Electricite de France: *See*—
Brachet, Alain, 4,608,224, Cl. 376-405.000.

Seshamani, Venkatraman, to Foster Wheeler Energy Corporation. Tube and support system for a heat exchanger. 4,607,690, Cl. 165-145.000.

Setoguchi, Ryozo. Form creating system. 4,608,653, Cl. 364-522.000.

Sevigny, Charles P. Bird feeder. 4,607,597, Cl. 119-51.00R.

Shackle, Peter W.: *See*—
Hartman, Adrian R.; Riley, Terence J.; and Shackle, Peter W., 4,608,590, Cl. 357-38.000.

Shalaby, Shalaby W.; and Jamiolkowski, Dennis D., to Ethicon, Inc. Copolymers of a 4,4'-(ethylenedioxy)bis benzoate, an alkylene diol and a (2-alkenyl or alkyl) succinic anhydride; and surgical devices formed therefrom. 4,608,428, Cl. 528-192.000.

Shanaan, Gad; Jospe, Jack; Jospe, Joe; and Caputo, Carlo, to Ideal Security Inc. Lock mechanism for closure members. 4,607,510, Cl. 70-95.000.

Sharp, Bruce R. Storage tanks having secondary containment means. 4,607,522, Cl. 73-49.200.

Sharp Kabushiki Kaisha: *See*—
Kohka, Kenichi, 4,608,474, Cl. 219-10.55R.
Nakanishi, Yasuhiro; and Nishimura, Toshio, 4,608,557, Cl. 340-715.000.
Uchiyama, Hiroaki; Ibuchi, Yoshiaki; and Fujiwara, Katsuyoshi, 4,607,946, Cl. 355-14.00R.
Yamamoto, Hidehiko, 4,608,504, Cl. 307-442.000.

Shell Oil Company: *See*—
Brasted, Lee K.; and Uppencamp, George L., 4,607,982, Cl. 405-204.000.
Zijsling, Djurre H., 4,607,711, Cl. 175-329.000.
Sheller-Globe Corporation: *See*—
Reighard, Robert P.; Kinner, Samuel D.; and Ciesielski, Mark, 4,607,898, Cl. 339-3.00S.
Shellhouse, Wayne L.; and VanAuwelaer, James M., to Deere & Company. Chisel plow landside. 4,607,707, Cl. 172-764.000.
Shelton, Alan J., to General Motors Corporation. Vehicle body panel arrangement. 4,607,877, Cl. 296-191.000.
Sherman, William, III; Larkin, Francis C.; and Horvath, Stephen J., to Brandt, Incorporated. Method and apparatus for counting sheets which may be fed in skewed and/or overlapping fashion. 4,608,704, Cl. 377-8.000.
Sherrow, Lionel. Paint brush cleaning rack. 4,607,752, Cl. 211-65.000.
Sherstnev, Pavel P.: *See*—
Enikolopov, Nikolai S.; Nepomnyaschy, Anatoly I.; Filmakova, Lidia A.; Krasnokutsky, Valentin P.; Kurakin, Leonid I.; Akopian, Elena L.; Markarian, Khristofor A.; Negmatov, Saibdzhan S.; Matkarimov, Suleiman K.; Polivanov, Yury A.; Sherstnev, Pavel P.; and Pavlov, Vilitary B., 4,607,796, Cl. 241-3.000.
Shewchuk, James G. Door and door jamb arrangement. 4,607,457, Cl. 49-400.000.
Shibanuma, Tadao; Nakano, Kohji; Nagano, Noriaki; Murakami, Yukiyasu; and Hara, Ryuichiro, to Yamanouchi Pharmaceutical Co., Ltd. Cephem compounds. 4,608,373, Cl. 514-202.000.
Shibasaki, Makoto: *See*—
Takeuchi, Hideo; Kobayashi, Michiaki; and Shibasaki, Makoto, 4,607,571, Cl. 101-365.000.
Shibata, Kiyoshi: *See*—
Watashi, Masahiro; Kimura, Hiroshi; Shibata, Kiyoshi; Hisajima, Masahiko; and Yamamoto, Kiyonori, 4,607,734, Cl. 192-67.00R.
Shibuya, Kazunobu: *See*—
Fujimoto, Kiyokatsu; Shibuya, Kazunobu; and Urata, Tetsukazu, 4,607,495, Cl. 62-63.000.
Shigaki, Seiichiro, to NEC Corporation. Test apparatus for digital speech interpolator for use in time division multiple access scheme. 4,608,683, Cl. 370-13.000.
Shigemura, Yutaka: *See*—
Osaka, Haruya; Kimura, Hiroshi; Hisajima, Masahiko; Shigemura, Yutaka; Kaminaga, Seiji; Satonaka, Shinobu; and Ishito, Mitsuya, 4,607,954, Cl. 355-14.00D.
Shilkov, Andrei V.: *See*—
Shilkov, Vladimir A.; Shilkov, Andrei V.; Kuzmin, Petr D.; Metrikin, Vladimir S.; Chumichev, Vladimir A.; Borovtsev, Anatoly I.; and Dubenkov, Nikolai I., 4,607,980, Cl. 404-133.000.
Shilkov, Vladimir A.; Shilkov, Andrei V.; Kuzmin, Petr D.; Metrikin, Vladimir S.; Chumichev, Vladimir A.; Borovtsev, Anatoly I.; and Dubenkov, Nikolai I., to Spetsialnoe Konstruktorskoe Bjuro "Stroimekhanizatsia". Apparatus for compacting soil, concrete and like materials. 4,607,980, Cl. 404-133.000.
Shima Idea Center Co., Ltd.: *See*—
Shima, Masahiro, 4,608,642, Cl. 364-470.000.
Shima, Masahiro, to Shima Idea Center Co., Ltd. Apparatus for recording pattern information and producing a knitting control program. 4,608,642, Cl. 364-470.000.
Shimada, Yutaka; Kojima, Hiroshi; and Hasegawa, Takashi, to Showa Denka Kabushiki Kaisha. Multilayer composite soft magnetic material comprising amorphous and insulating layers and a method for manufacturing the core of a magnetic head and a reactor. 4,608,297, Cl. 428-215.000.
Shimashita, Ishio; and Nishimura, Yasuhiko, to Ricoh Company, Ltd.; and Ricoh Denshi Co., Ltd. Multi-pen plotter-printer. 4,608,576, Cl. 346-49.000.
Shimizu, Akihiko, to Japax Incorporated. Retraction control for 3D-path controlled generic electrode electroerosion. 4,608,476, Cl. 219-69.00M.
Shimizu, Nobuyoshi; Fujimoto, Terunori; Inui, Tsuneo; and Ishida, Masatoki, to Toyo Kohan Co., Ltd. Method of producing metallic chromium, tin or tin-nickel, and hydrated chromium oxide electroplated steel. 4,608,130, Cl. 204-27.000.
Shimizu, Tsuguo; Wada, Kenichi; Shintani, Yooichi; and Yamaoka, Akira, to Hitachi, Ltd. Buffer storage including a swapping circuit. 4,608,671, Cl. 365-230.000.
Shimizu, Yukio: *See*—
Sakuramoto, Takahumi; Asoshina, Eishi; Tominaga, Takashi; Shimizu, Yukio; Morishita, Tsuyoshi; Osaki, Sigemi; and Sakai, Noriyuki, 4,608,225, Cl. 419-5.000.
Shimkunas, Alexander R., to Micronix Corporation. Process for making a mask used in x-ray photolithography. 4,608,268, Cl. 427-8.000.
Shimoda, Takuji: *See*—
Mori, Katsunori; Shimoda, Takuji; and Seo, Kiyokazu, 4,607,879, Cl. 296-201.000.
Shimp, David A., to Celanese Corporation. Metal carboxylate/alcohol curing catalyst for polycyanate ester of polyhydric phenol. 4,608,434, Cl. 528-422.000.
Shin-Etsu Chemical Co., Ltd.: *See*—
Yokokawa, Kiyoshi; Koya, Kazuo; and Hosino, Syouji, 4,608,071, Cl. 65-13.000.
Shin, Hyunkook: *See*—
Gale, David M.; and Shin, Hyunkook, 4,608,089, Cl. 106-90.000.
Shinagawa Refractories Co., Ltd.: *See*—
Yoshino, Shigeo; Zenbutsu, Tadashi; and Asami, Hajime, 4,608,087, Cl. 106-18.120.
Shintani, Yooichi: *See*—
Shimizu, Tsuguo; Wada, Kenichi; Shintani, Yooichi; and Yamaoka, Akira, 4,608,671, Cl. 365-230.000.
Shinzawa, Motohiro; and Hasegawa, Yoji, to Nissan Motor Company, Limited. Trap regenerative device control apparatus. 4,608,640, Cl. 364-431.030.
Shiomi, Yasufumi; and Yoshimura, Yoshikazu, to Matsushita Electric Industrial Co., Ltd. Frequency converter. 4,608,713, Cl. 455-325.000.
Shiotaki, Masao, to Kabushiki Kaisha Toshiba. Cartridge loading apparatus. 4,608,681, Cl. 369-77.200.
Shiote, Kanjo: *See*—
Okumoto, Yutaka; Kobayashi, Hideki; Shiote, Kanjo; and Arakawa, Toyomi, 4,607,645, Cl. 131-109.100.
Shiraishi, Daiichi; Iwasaki, Eiji; and Fukumoto, Ryoichi, to Toyota Jidosha Kabushiki Kaisha; and Aisin Seiki Co., Ltd. Door window regulator. 4,607,456, Cl. 49-352.000.
Shirasu, Hirotoshi: *See*—
Morikawa, Yuichi; Sato, Hirohiko; Amada, Eiichi; Suzuki, Toshiro; Shirasu, Hirotoshi; and Kuwahara, Hiroshi, 4,608,464, Cl. 179-170.200.
Shkolnik, Alexander: *See*—
Borodulin, German; Persidsky, Maxim; and Shkolnik, Alexander, 4,607,626, Cl. 128-43.000.
Shong, Robert G.: *See*—
Cobbs, Walter H., Jr.; Shong, Robert G.; and Rehman, William R., 4,608,398, Cl. 521-113.000.
Short, Terence M., to Morgan Construction Company. Tension prefinishing with sizing stands. 4,607,511, Cl. 72-16.000.
Showa Denka Kabushiki Kaisha: *See*—
Shimada, Yutaka; Kojima, Hiroshi; and Hasegawa, Takashi, 4,608,297, Cl. 428-215.000.
Showalter, Hollis D.: *See*—
Johnson, Judith L.; and Showalter, Hollis D., 4,608,439, Cl. 548-357.000.
Shreck, Peter K.; and Dudding, John, to Moving Picture Company Inc., The. Video response testing apparatus. 4,608,601, Cl. 358-146.000.
Shuto, Sadanobu; Fujita, Munehisa; and Hasebe, Kazunori, to Fuji Photo Film Co., Ltd. Silver halide color light-sensitive material. 4,608,334, Cl. 430-505.000.
Shwayder, Warren M. Method of manufacturing an adjustable mounting snow plow skid shoes. 4,607,781, Cl. 228-175.000.
Siecke, Albert E.; and Janos, Edward, to Warner-Lambert Company. Method and apparatus for twisting and advancing strand material. 4,607,483, Cl. 57-334.000.
Siegel, Stefan A., to RCA Corporation. Bandwidth controlled data amplifier. 4,608,542, Cl. 330-279.000.
Siemens Aktiengesellschaft: *See*—
Eidling, Karl, 4,607,545, Cl. 81-9.510.
Hieber, Konrad; Stolz, Manfred; and Wieczorek, Claudia, 4,608,271, Cl. 427-38.000.
Krause, Dieter, 4,607,775, Cl. 225-96.500.
Nagel, Klaus, 4,608,629, Cl. 364-200.000.
Siemens-Allis, Inc.: *See*—
Kralik, Andrew J., 4,608,545, Cl. 335-16.000.
Siemens Corporate Research & Support Inc.: *See*—
Tsikos, Constantine, 4,608,638, Cl. 364-424.000.
Sievers, Willi: *See*—
Rummler, Karl-Heinz; Sievers, Willi; Dette, Karl-Henning; Koster, Lothar; and Luscalu, Romeo, 4,608,218, Cl. 264-315.000.
Siewert, Robert L.: *See*—
Varnelis, Edmund K.; and Siewert, Robert L., 4,607,977, Cl. 403-154.000.
Signetics Corporation: *See*—
Keshtbod, Parviz, 4,608,585, Cl. 357-23.500.
Signoretti, Edward J. Automatic bowling position indicator. 4,607,843, Cl. 273-54.00C.
Silar, Steven J., to Beloit Corporation. Apparatus for automatically controlling the position of a plurality of slitters. 4,607,552, Cl. 83-71.000.
Silcon Elektronik A/S: *See*—
Rathmann, Soren, 4,608,499, Cl. 307-66.000.
Silverman, Lance D.; and Speronello, Barry K., to Engelhard Corporation. Catalytic cracking with mullite composition promoted combustion of carbon monoxide. 4,608,357, Cl. 502-84.000.
Simmel S.p.A.: *See*—
Bissi, Maurizio; Cocco, Andrea; and Baggio, Guerrino, 4,607,854, Cl. 277-152.000.
Sindelar, Dorothy, legal representative: *See*—
Schafer, Thomas B.; Sindelar, William, deceased; and Cummens, Joseph R., 4,607,516, Cl. 72-405.000.
Sindelar, William, deceased: *See*—
Schafer, Thomas B.; Sindelar, William, deceased; and Cummens, Joseph R., 4,607,516, Cl. 72-405.000.
Sineni, Charles F.; and Sineni, Debra A. Toilet paper holder and dispenser. 4,607,809, Cl. 242-55.300.
Sineni, Debra A.: *See*—
Sineni, Charles F.; and Sineni, Debra A., 4,607,809, Cl. 242-55.300.
Singer Company, The: *See*—
Lynch, James, 4,608,691, Cl. 371-25.000.
Singh, Anand P.; Crumbacher, Thomas A.; Naylor, Gary R.; and Fagan, Thomas R., Jr., to NRM Corporation. Tire press, loader and method. 4,608,219, Cl. 264-315.000.
Singh, Prithipal: *See*—
Khanna, Pyare; Snyder, Evan S.; and Singh, Prithipal, 4,608,252, Cl. 424-85.000.

Khanna, Pyare L.; Snyder, Evan S.; and Singh, Prithipal, 4,608,200, Cl. 530-387.000.

Sinn, Hannsjoerg: *See—*
Blum, Helmut; Greb, Wolfgang; Moeller, Hinrich; Schmaehl, Dietrich; Schnegelberger, Harald; Sinn, Hannsjoerg; and Wingen, Franz, 4,608,368, Cl. 514-107.000.

Sinor, Lyle T.: *See—*
Bayer, William L.; Plapp, Frederick V.; Beck, Malcolm L.; Sinor, Lyle T.; and Coenen, William M., 4,608,246, Cl. 424-11.000.

Sinta, Roger F.: *See—*
Rogers, Howard G.; Gaudiana, Russell A.; Minns, Richard A.; and Sinta, Roger F., 4,608,429, Cl. 528-194.000.

Sisson, Terrell W. Mirrored bed canopy. 4,607,401, Cl. 5-414.000.

Six, Jorg, to Paul Hellermann GmbH. Device for tying an elongate object, for example a cable trunk. 4,607,414, Cl. 24-16.0PB.

Skandunas, Vince J.: *See—*
Davis, Richard J.; and Skandunas, Vince J., 4,607,726, Cl. 182-204.000.

SKF Kugellagerfabriken GmbH: *See—*
Hans, Rudiger; and Kotzab, Werner, 4,607,737, Cl. 192-88.00A.

Ski-Ace Pty. Limited: *See—*
Williams, Frederick W., 4,608,023, Cl. 441-68.000.

Skolnick, Joel B. Book with puppet. 4,608,024, Cl. 446-148.000.

Sleep, Robert E., Jr. Method for manufacturing a disassembleable core heat exchanger. 4,607,423, Cl. 29-157.30R.

Sleeper & Hartley Corp.: *See—*
Russell, Frank S., 4,607,513, Cl. 72-137.000.

Slinsky, Albert. Adjustment means for a drill bit sharpening device. 4,607,463, Cl. 51-219.00R.

Slope Indicator Company, The: *See—*
Boisen, Bradford P., 4,607,435, Cl. 33-125.00B.

Slorstad, Eli: *See—*
Chan, Simon; Slorstad, Eli; Cormode, Henry D. A.; and Tamosiunis, Richard R., 4,608,154, Cl. 209-166.000.

SMID S.A.: *See—*
Erhard, Raymond, 4,607,555, Cl. 83-471.200.

Smigel, Irwin E. Method for selecting the coloration of a bonding composite for a discolored tooth. 4,608,015, Cl. 433-26.000.

Smith, David H.; and Brum, Roger D., to Southwest Aerospace Corporation. Jet exhaust simulator. 4,607,849, Cl. 273-348.100.

Smith, John M.: *See—*
Ennis, David G.; and Smith, John M., 4,608,566, Cl. 343-5.0PD.

Smith Kline & French Laboratories Limited: *See—*
Brown, Thomas H., 4,608,380, Cl. 514-318.000.

Smith, Roger E.: *See—*
Witty, Thomas R.; Curry, Robert E.; and Smith, Roger E., 4,608,231, Cl. 422-61.000.

Smith, Ward C. Pressure sensitive label dispenser. 4,608,110, Cl. 156-250.000.

Smith, William N.: *See—*
Newton, Jean M.; and Smith, William N., 4,608,026, Cl. 446-330.000.

Smous, Dale L.: *See—*
Straccia, William J., Sr.; and Smous, Dale L., 4,607,751, Cl. 211-41.000.

SMS HasenClever Maschinenfabrik GmbH: *See—*
Schubert, Hans A.; and Schulze, Klaus, 4,607,518, Cl. 72-453.120.

Snell, Reginald J., to British Aerospace Public Limited Company. Navigational aid. 4,608,641, Cl. 364-434.000.

Snow Brand Milk Products, Co., Ltd.: *See—*
Seike, Noboru; Teranishi, Masatoshi; and Sakai, Minoru, 4,607,619, Cl. 128-4.000.

Snyder, Evan S.: *See—*
Khanna, Pyare; Snyder, Evan S.; and Singh, Prithipal, 4,608,252, Cl. 424-85.000.
Khanna, Pyare L.; Snyder, Evan S.; and Singh, Prithipal, 4,608,200, Cl. 530-387.000.

Societe Anonyme dite: L'Oreal: *See—*
Jacquet, Bernard; and Lang, Gerard, 4,608,250, Cl. 424-71.000.
Jacquet, Bernard; and Gaetani, Quintino, 4,608,392, Cl. 514-844.000.

Societe Europeenne des Produits Refractaires: *See—*
Urffer, Daniel, 4,607,697, Cl. 166-280.000.

Societe Nationale Elf Aquitaine: *See—*
Meunier, Gilles; Brouard, Rene ; Damin, Bernard; and Lopez, Denis, 4,608,411, Cl. 524-533.000.

Societe Nationale Industrielle Aerospatiale: *See—*
Philipoussi, Jean-Pierre, 4,607,780, Cl. 228-118.000.

Sogo, Toshiyuki: *See—*
Ide, Fumito; Sogo, Toshiyuki; Matsuyama, Kouzou; and Hashimoto, Shinichi, 4,607,945, Cl. 355-14.00R.

Solomat S.A.: *See—*
Ibar, Jean P.; and Saffell, John R., 4,608,532, Cl. 324-73.00R.

Someya, Shinzo; Akahira, Rokuro; Nonaka, Yuji; Nakanishi, Akira; and Ito, Mikio, to Kanesho Company Limited; and Toyo Soda Manufacturing Company Limited. Herbicidal 2-[4-(4-cyanophenoxy)-phenoxy]-alkanoic acid amides. 4,608,081, Cl. 71-94.000.

Sony Corporation: *See—*
Hayafuji, Yoshinori, 4,608,493, Cl. 250-397.000.
Oda, Tatsuji; Mamine, Takayoshi; and Yoneyama, Osamu, 4,608,695, Cl. 372-45.000.
Takano, Masayuki; and Nakamura, Kenji, 4,608,609, Cl. 358-320.000.
Yano, Hajime, 4,608,680, Cl. 369-44.000.
Yoshida, Tadao; and Haneda, Yoshiaki, 4,608,676, Cl. 369-32.000.

Sony/Tektronix Corporation: *See—*
Manome, Teruo; Miki, Yasuhiko; Takita, Kentaro; and Fukuta, Minoru, 4,608,657, Cl. 364-571.000.
Yokokawa, Hidemi; and Fukuzawa, Miyuki, 4,608,652, Cl. 364-521.000.

Sorensen, Wilfred B. Autogenous solar water heater. 4,607,688, Cl. 165-104.220.

Sota, Yasuo, to Elmec Corporation. Switch device. 4,608,467, Cl. 200-16.00D.

Southwest Aerospace Corporation: *See—*
Smith, David H.; and Brum, Roger D., 4,607,849, Cl. 273-348.100.

Spacesaver Corporation: *See—*
Peterman, Robert J., 4,607,896, Cl. 312-201.000.

Spearen, John: *See—*
Zemek, Thomas G.; Caruolo, Antonio B.; Roberts, Stephanie A.; Dunn, James K.; and Spearen, John, 4,607,421, Cl. 29-157.10R.

Spector, George: *See—*
Ellis, Linda N.; and Spector, George, 4,607,405, Cl. 5-451.000.

Spectrum CVD, Inc.: *See—*
Stitz, Robert W., 4,607,591, Cl. 118-666.000.

Speronello, Barry K.: *See—*
Silverman, Lance D.; and Speronello, Barry K., 4,608,357, Cl. 502-84.000.

Spetsialnoe Konstruktorskoe Bjuro "Stroimekhanizatsia": *See—*
Shilkov, Vladimir A.; Shilkov, Andrei V.; Kuzmin, Petr D.; Metrikin, Vladimir S.; Chumichev, Vladimir A.; Borovtsev, Anatoly I.; and Dubenkov, Nikolai I., 4,607,980, Cl. 404-133.000.

Spigolon, Silvio J.: *See—*
Wilson, Eddie K., Sr.; and Spigolon, Silvio J., 4,608;238, Cl. 423-178.000.

Spils, Richard W. High pressure radial flow valve. 4,607,819, Cl. 251-121.000.

Spindler, Heinz, to Dudzik, Joachim; and Dudzik, Winifred. Tamper proof label or seal. 4,608,288, Cl. 428-78.000.

Spiral Step Tool Company: *See—*
Breitenstein, Charles T.; and Holecek, Allen R., 4,608,643, Cl. 364-474.000.

Spire Corporation: *See—*
Landis, Geoffrey A., 4,608,451, Cl. 136-256.000.

Spits, Marc, to Fundatech S.A. Intravaginal contraceptive device. 4,607,630, Cl. 128-127.000.

Sponer, Gisbert: *See—*
Wiedemann, Fritz, deceased; Kampe, Wolfgang; Dietmann, Karl, deceased; and Sponer, Gisbert, 4,608,383, Cl. 514-407.000.

Sprecker, Mark A.; Wiegers, Wilhelmus J.; Greene, Roger; Luccarelli, Domenick, Jr.; and Hanna, Marie, to International Flavors & Fragrances Inc. Isochroman derivatives and organoleptic uses thereof. 4,608,193, Cl. 252-522.00R.

Sproul, William D., to Borg-Warner Corporation. High hardness hafnium nitride. 4,608,243, Cl. 423-409.000.

Stadler, Johann; and Schwarz, Hildegard, to Voest-Alpine Aktiengesellschaft. Closure device for the discharge opening of an autoclave. 4,607,767, Cl. 222-504.000.

Stahl, Hans-Georg: *See—*
Nachtkamp, Klaus; Schwindt, Jurgen; Nobel, Karl-Ludwig; and Stahl, Hans-Georg, 4,608,413, Cl. 524-591.000.

Stahle, Werner; Weller, Karl-Heinz; and Stolz, Albert, to Daimler-Benz Aktiengesellschaft. Blower housing arrangement. 4,607,564, Cl. 98-2.000.

Stahlecker, Fritz, to Stahlecker, Fritz; and Stahlecker, Hans. Feed arrangement for an open-end friction spinning machine. 4,607,485, Cl. 57-401.000.

Stahlecker, Hans: *See—*
Stahlecker, Fritz, 4,607,485, Cl. 57-401.000.

Staltmeir, Josef; and Wosegien, Bernd, to Knorr-Bremse AG. Brake unit for rail vehicles. 4,607,729, Cl. 188-153.00R.

Standard Grigsby, Inc.: *See—*
Bornhofen, James A., 4,608,466, Cl. 200-11.00D.

Standard Oil Company, The: *See—*
Mazanec, Terry J.; Goeden, Gary V.; and Frye, John G., Jr., 4,608,447, Cl. 568-902.000.

Standard Telephones and Cables Public Limited Company: *See—*
Brambley, Roger J., 4,608,273, Cl. 427-54.100.
Lamb, John G.; and McHugh, Terence M., 4,608,276, Cl. 427-163.000.

Stanhope, Harry W.: *See—*
Bell, Gilbert C.; and Stanhope, Harry W., 4,607,481, Cl. 57-3.000.

Stants, Richard O.; and Olds, Kerry J. Parts coating apparatus and method. 4,607,588, Cl. 118-52.000.

Staplin, Theodore R., Jr.: *See—*
Bradley, John J.; Staplin, Theodore R., Jr.; Miu, Ming T.; O'Brien, Thomas C.; O'Har, George M.; Widen, Melinda A.; and Stoffers, Brian L., 4,608,659, Cl. 364-737.000.

Starkie, Alan H., to Electric Power Research Institute, Inc. Automatic compensation circuit for use with analog multiplier. 4,608,533, Cl. 324-142.000.

Steigerwald, Franz: *See—*
Zulauf, Karlheinz; and Steigerwald, Franz, 4,607,762, Cl. 222-48.000.

Steiner, Andi. Packaging for a product as well as use of the same. 4,607,747, Cl. 206-232.000.

Steinkuhl, Bernd: *See—*
Merten, Gerhard; Steinkuhl, Bernd; and Hauschopp, Alois, 4,607,890, Cl. 299-43.000.

Stenild, Eddie L. Apparatus for dispersing a dye over securities in a closed space at attempts at burglary. 4,607,579, Cl. 109-25.000.

Stepan Company: *See*—
Magnus, George; Loeb, Melvin; Wood, Robert J.; and Kelley, Brian, 4,608,432, Cl. 528-274.000.
Stephano, Marc, to Cibie Projecteurs. Automobile headlamp with inclined front glass. 4,608,623, Cl. 362-80.000.
Stephens, David J., to Exxon Production Research Co. Method for treating a tar sand reservoir to enhance petroleum production by cyclic steam stimulation. 4,607,699, Cl. 166-303.000.
Stephens, Michael L. Test set for testing as a unit an amplifier system having several modules. 4,608,531, Cl. 324-73.00R.
Stephenson, Earle W.: *See*—
Makrides, Nicholas; and Stephenson, Earle W., 4,608,318, Cl. 428-553.000.
Steppat, Gerhard: *See*—
Biermann, Kurt; Steppat, Gerhard; and Wehmeyer, Bodo, 4,607,583, Cl. 112-130.000.
Sterling, Thomas L.: *See*—
Kirtley, James L., Jr.; Sterling, Thomas L.; and Williams, Ronald D., 4,608,700, Cl. 375-36.000.
Stern, Bruce A., to American Cyanamid Company. Bis-maleimide resin composition. 4,608,426, Cl. 528-170.000.
Stevens, Georges, to Girard Transmissions. Belt speed variator. 4,608,033, Cl. 474-39.000.
Stevens, Kenneth V., to Grainware Company. Serving tray. 4,607,758, Cl. 220-23.830.
Stevin Construction Inc.: *See*—
van Klinken, Peter G., 4,607,981, Cl. 405-52.000.
Stewart, Roger G.: *See*—
Ipri, Alfred C.; and Stewart, Roger G., 4,608,591, Cl. 357-54.000.
Stiffler, Jack J.; Karp, Richard A.; Nolan, James M., Jr.; Budwey, Michael J.; and Wallace, David A., to Sequoia Systems, Inc. Modular computer system. 4,608,631, Cl. 364-200.000.
Stillman, Allyn N.: *See*—
Farmer, Edward R.; and Stillman, Allyn N., 4,608,128, Cl. 204-16.000.
Stillwell, Billy E., to General Electric Company. Battery charger adapter. 4,608,528, Cl. 320-2.000.
Stilwell, Robert K.: *See*—
Webster, Carson W.; and Stilwell, Robert K., 4,608,574, Cl. 343-895.000.
Stinnette, Russell A., to Cordis Corporation. Packaging tube. 4,607,746, Cl. 206-53.000.
Stitz, Robert W., to Spectrum CVD, Inc. CVD heater control circuit. 4,607,591, Cl. 118-666.000.
Stockton, Thomas R.; and Morris, Frederick J., to Ford Motor Company. Infinitely variable belt drive with low friction seals for the primary and secondary sheaves. 4,608,032, Cl. 474-28.000.
Stoffers, Brian L.: *See*—
Bradley, John J.; Staplin, Theodore R., Jr.; Miu, Ming T.; O'Brien, Thomas C.; O'Har, George M.; Widen, Melinda A.; and Stoffers, Brian L., 4,608,659, Cl. 364-737.000.
Stoll, Karl-Heinz, to Senkingwerk GmbH. Counterflow cycling washing machine. 4,607,509, Cl. 68-27.000.
Stolz, Albert: *See*—
Stahle, Werner; Weller, Karl-Heinz; and Stolz, Albert, 4,607,564, Cl. 98-2.000.
Stolz, Manfred: *See*—
Hieber, Konrad; Stolz, Manfred; and Wieczorek, Claudia, 4,608,271, Cl. 427-38.000.
Storz, Karl. Medical gripping instrument. 4,607,620, Cl. 128-4.000.
Straccia, William J., Sr.; and Smous, Dale L., to Electro-Space Fabricators, Inc. Antivibration guides for securing printed circuit cards. 4,607,751, Cl. 211-41.000.
Strack, Hans; and Kleinschmit, Peter, to Degussa Aktiengesellschaft. Process for the production of a seed mixture for faujasite synthesis. 4,608,236, Cl. 423-118.000.
Straka, Alfred: *See*—
Schmidt, Helmut; Bodenmiller, Anton; and Straka, Alfred, 4,607,413, Cl. 15-301.000.
Straub, Richard L.: *See*—
Pou, Frederick M.; and Straub, Richard L., 4,607,572, Cl. 101-426.000.
Straus, Alan E.: *See*—
Lew, Henry Y.; and Straus, Alan E., 4,608,204, Cl. 260-505.00N.
Striker, Richard A.: *See*—
Eckberg, Richard P.; Striker, Richard A.; and Modic, Frank J., 4,608,312, Cl. 428-419.000.
Sturtevant-Stuart, Ronald M., to Verbatim Corporation. Digital alignment diagnostic disk. 4,608,618, Cl. 360-135.000.
Su, Sophia R., to GTE Laboratories Incorporated. Graphite intercalates containing metal-charge transfer salts. 4,608,192, Cl. 252-506.000.
Suda, Susumu: *See*—
Watanabe, Yoshitane; Suzuki, Keitaro; and Suda, Susumu, 4,608,198, Cl. 252-609.000.
Suetrak U.S.A.: *See*—
Ferdows, Houshang; Krug, Martin; and Bihl, Paul R., 4,607,497, Cl. 62-179.000.
Suga Test Instruments Co., Ltd.: *See*—
Matsuki, Hiroshi; and Sumiyoshi, Takao, 4,607,790, Cl. 236-94.000.
Sugano, Kazuhiko, to Nissan Motor Co., Ltd. Hydraulic control system for automatic transmission with shockless 4-3 and 4-2 shiftings. 4,607,542, Cl. 74-869.000.
Sugano, Kazuhiko, to Nissan Motor Co., Ltd. Hydraulic control system for automatic transmission having torque converter with lock-up mechanism. 4,607,731, Cl. 192-3.290.
Sugawara, Norio; and Nawa, Motoyuki, to Matsushita Electric Industrial Co., Ltd. Flow deflecting assembly. 4,607,565, Cl. 98-40.240.
Sugihara, Isao; Nishijima, Akio; and Toriguchi, Michio, to Denki Kagaku Kogyo Kabushiki Kaisha. Acetylene black. 4,608,244, Cl. 423-445.000.
Sugimoto, Tamio; Fukazawa, Yoshimitsu; and Yamaguchi, Kunio, to Mitsubishi Jukogyo Kabushiki Kaisha. Scroll type fluid machine with angular adjustment means. 4,608,001, Cl. 418-55.000.
Sugioka, Taizo: *See*—
Itoi, Masaaki; Ohta, Masakatsu; Sugioka, Taizo; Yoshihara, Kunio; and Nishitani, Hiroshi, 4,608,150, Cl. 208-22.000.
Sugita, Akio: *See*—
Tamamura, Toshiaki; Niwa, Osamu; Hikita, Makoto; and Sugita, Akio, 4,608,129, Cl. 204-18.100.
Sugitani, Yuji: *See*—
Nomura, Hirokazu; Sugitani, Yuji; and Tamaoki, Naohiro, 4,608,481, Cl. 219-125.120.
Sugiura, Toshihiro, to Masprodenkoh Kabushikikaisha. Apparatus for receiving satellite broadcasts. 4,608,710, Cl. 455-4.000.
Sugiyama, Hiroyuki, to Victor Company of Japan, Ltd. Digital video signal transmitting apparatus. 4,608,600, Cl. 358-138.000.
Sukenobu, Satoru, to Kabushiki Kaisha Toshiba. Cryosorption pump. 4,607,493, Cl. 62-55.500.
Sukimoto, Yasuyuki: *See*—
Nagao, Toshiaki; and Sukimoto, Yasuyuki, 4,607,962, Cl. 374-103.000.
Sullivan, Thomas E.; and Bleeks, Thomas W., to Enthone, Incorporated. Peroxide selective stripping compositions and method. 4,608,091, Cl. 134-3.000.
Sumitomo Chemical Company, Limited: *See*—
Haga, Toru; Nagano, Eiki; Sato, Ryo; and Yoshida, Ryo, 4,608,080, Cl. 71-92.000.
Kisida, Hirosi; Hatakoshi, Makoto; and Nishida, Sumio, 4,608,389, Cl. 514-539.000.
Minai, Masayoshi; and Katsura, Tadashi, 4,608,442, Cl. 568-346.000.
Noguchi, Hiroshi; Kato, Toshiro; Takahashi, Junya; Ishiguri, Yukio; Yamamoto, Shigeo; and Kamoshita, Katsuzo, 4,608,385, Cl. 514-444.000.
Yamamoto, Haruyasu; and Okabe, Takayuki, 4,608,369, Cl. 514-144.000.
Yoshida, Zenichi; and Miki, Sadao, 4,608,358, Cl. 502-164.000.
Sumitomo Electric Industries Ltd.: *See*—
Inoue, Hirochika; Yoshida, Ken-ich; Kida, Yasushi; and Takemoto, Akira, 4,607,578, Cl. 108-145.000.
Tada, Kohji; Kuhara, Yoshiki; Tatsumi, Masami; and Mitsui, Tsutomu, 4,608,535, Cl. 324-244.000.
Sumitomo Special Metal Co., Ltd.: *See*—
Wada, Toshiaki; and Katsuyama, Yoshiaki, 4,608,293, Cl. 428-141.000.
Sumiyoshi, Takao: *See*—
Matsuki, Hiroshi; and Sumiyoshi, Takao, 4,607,790, Cl. 236-94.000.
Summers, James B., Jr., to Abbott Laboratories. Lipoxygenase inhibiting compounds. 4,608,390, Cl. 514-575.000.
Sunano, Naomasa; and Asahi, Naotatsu, to Hitachi, Ltd. Gas sensor. 4,608,232, Cl. 422-88.000.
Sundstrand Corporation: *See*—
Glennon, Timothy F.; and Vaidya, Jayant G., 4,608,527, Cl. 318-685.000.
Sung, Rodney L.: *See*—
Davis, Marshall E.; and Sung, Rodney L., 4,608,057, Cl. 44-51.000.
Sunshine Biscuits, Inc.: *See*—
Cirley, Edward, 4,607,742, Cl. 198-398.000.
Sursum Elektrizitatsgesellschaft Leyhausen GmbH & Co.: *See*—
Westermeyer, Joseph, 4,608,546, Cl. 335-20.000.
Suska, Charles R. Clamping apparatus. 4,607,829, Cl. 269-88.000.
Sutenbach, Paul M.: *See*—
Peek, Brian R.; and Sutenbach, Paul M., 4,607,976, Cl. 403-77.000.
Suzuki, Hidetaka: *See*—
Tanaka, Haruto; Yamaki, Kiyoshi; and Suzuki, Hidetaka, 4,608,656, Cl. 364-449.000.
Suzuki, Keitaro: *See*—
Watanabe, Yoshitane; Suzuki, Keitaro; and Suda, Susumu, 4,608,198, Cl. 252-609.000.
Suzuki, Toshiro: *See*—
Morikawa, Yuichi; Sato, Hirohiko; Amada, Eiichi; Suzuki, Toshiro; Shirasu, Hirotoshi; and Kuwahara, Hiroshi, 4,608,464, Cl. 179-170.200.
Suzuki, Yasuo: *See*—
Ohnishi, Haruo; Kosuzume, Hiroshi; Suzuki, Yasuo; and Mochida, Ei, 4,608,253, Cl. 424-94.000.
Suzumura, Nobuyasu: *See*—
Umebayashi, Kazuyuki; and Suzumura, Nobuyasu, 4,608,550, Cl. 340-22.000.
Svarc, Gordon: *See*—
Robinson, Richard M.; and Svarc, Gordon, 4,608,280, Cl. 427-230.000.
Svechnikov, Sergei V.: *See*—
Bagratishvili, Givi D.; Dzhanelidze, Rusudan B.; Zorikov, Vladimir V.; Mikhelashvili, Vissarion M.; Pekar, Iosif E.; Chikovani, Rafael I.; Chkhaidze, Manana A.; Akopova, Svetlana Z.; Bogdanovich, Viktor B.; Svechnikov, Sergei V.; and Charmakadze, Revaz A., 4,608,581, Cl. 357-17.000.
Svenska Tobaks AB: *See*—
Linden, Gunther, 4,607,479, Cl. 53-530.000.

Svyatsky, Eduard; Rabindran, K. George; and Faber, Thomas J., to Bell & Howell Company. Demand document feeder. 4,607,833, Cl. 271-10.000.

Swain, Roy D.: *See—*
Goodwin, Anton E.; Marton, Janet L.; Owens, Robert M.; Whisenhunt, Jackie W.; and Swain, Roy D., 4,608,346, Cl. 436-131.000.

Sweeny, Wilfred; and Kwolek, Stephanie L., to Du Pont de Nemours, E. I., and Company. Method for making PBO and PBT polymers. 4,608,427, Cl. 528-179.000.

Swigert, David: *See—*
Leber, Leland C.; and Swigert, David, 4,607,627, Cl. 128-66.000.

Swisher, Horton E.: *See—*
Epperson, Donald E.; Curley, Orvin B.; and Swisher, Horton E., 4,608,266, Cl. 426-599.000.

Swiss Aluminium Ltd.: *See—*
Wulff, Gunther, 4,607,960, Cl. 374-7.000.

Syftestad, Glenn T.: *See—*
Caplan, Arnold; and Syftestad, Glenn T., 4,608,199, Cl. 530-414.000.

Syntex (U.S.A.) Inc.: *See—*
Khanna, Pyare; Snyder, Evan S.; and Singh, Prithipal, 4,608,252, Cl. 424-85.000.
Khanna, Pyare L.; Snyder, Evan S.; and Singh, Prithipal, 4,608,200, Cl. 530-387.000.
Kluge, Arthur F.; Willis, Anthony L.; and O'Yang, Counde, 4,608,388, Cl. 514-510.000.

Szabo, Emilie: *See—*
Wittmann, Heinz; Leichtfried, Friedrich; Szabo, Emilie; and Szasz, Tibor, 4,607,859, Cl. 280-632.000.

Szajani, Bela; Kiss, Janosne ; Ivony, Jozsefne ; Huber, Iren; Boros, Laszlo ; and Daroczi, Ivan. Immobilized aminoacylase enzyme. 4,608,340, Cl. 435-180.000.

Szasz, Tibor: *See—*
Wittmann, Heinz; Leichtfried, Friedrich; Szabo, Emilie; and Szasz, Tibor, 4,607,859, Cl. 280-632.000.

Szegvari Haziipari Szovetkezet: *See—*
Keresztessy nee Badi, Maria; Paka nee Kas, Eleonora; Gyongyossy, Lajos; Farkas, Bela; and Paku, Sandor, 4,608,090, Cl. 106-272.000.

Taber, James M.; and Kras, Stephen J., to Continental White Cap, Inc. Dispensing closure with latch mechanism. 4,607,768, Cl. 222-556.000.

Tabuchi, Sunao: *See—*
Sakuma, Kiyoshi; Tomioka, Tadao; Tabuchi, Sunao; Ohta, Kihachiro; and Takeuchi, Masakazu, 4,608,127, Cl. 203-48.000.

Taco Bell: *See—*
Cortopassi, Jeffery J., 4,608,259, Cl. 426-115.000.

Tada, Kohji; Kuhara, Yoshiki; Tatsumi, Masami; and Mitsui, Tsutomu, to Sumitomo Electric Industries, Ltd. Magnetic field and current measuring device using a Faraday cell with a thin electrically conductive film substantially covering the Faraday cell. 4,608,535, Cl. 324-244.000.

Taiko Pharmaceutical Co., Ltd.: *See—*
Yamanaka, Kiyoyuki, 4,608,258, Cl. 424-195.100.

Taillie, Joseph P.: *See—*
Seachman, Ned J.; and Taillie, Joseph P., 4,607,951, Cl. 355-51.000.

Taipale, Dale L.; and Winkelman, John H., to Brandt, Inc. Coin sorter. 4,607,649, Cl. 133-3.00C.

Taiyo Pharmaceutical Industry Co., Ltd.: *See—*
Hasegawa, Takahito; and Adachi, Hideo, 4,608,366, Cl. 514-58.000.

Tajima, Hatsuo: *See—*
Hosoi, Atsushi; Nakahata, Kimio; Tajima, Hatsuo; Egami, Hidemi; Kan, Fumitaka; and Nakamura, Shunji, 4,607,938, Cl. 355-3.0DD.

Takahashi, Fumio: *See—*
Miyaji, Yoshimori; Fujiki, Hirokazu; and Takahashi, Fumio, 4,608,593, Cl. 358-10.000.

Takahashi, Hiroyuki: *See—*
Yamamoto, Takashi; Kitajima, Houdo; and Takahashi, Hiroyuki, 4,608,509, Cl. 310-357.000.

Takahashi, Junya: *See—*
Noguchi, Hiroshi; Kato, Toshiro; Takahashi, Junya; Ishiguri, Yukio; Yamamoto, Shigeo; and Kamoshita, Katsuzo, 4,608,385, Cl. 514-444.000.

Takahashi, Minoru; Fukuda, Teruo; Isobe, Toshiaki; and Kobashi, Mamoru, to Fujitsu Ten Limited; and Toyota Jidosha Kabushiki Kaisha. Crank angle detecting apparatus for an internal combustion engine. 4,607,523, Cl. 73-116.000.

Takahashi, Toshiaki: *See—*
Ikeda, Fukuji; and Takahashi, Toshiaki, 4,608,580, Cl. 346-216.000.

Takano, Masayuki; and Nakamura, Kenji, to Sony Corporation. Apparatus for recording a color video signal. 4,608,609, Cl. 358-320.000.

Takao, Hisashi: *See—*
Endo, Yoshinori; and Takao, Hisashi, 4,608,367, Cl. 514-89.000.

Takemoto, Akira: *See—*
Inoue, Hirochika; Yoshida, Ken-ich; Kida, Yasushi; and Takemoto, Akira, 4,607,578, Cl. 108-145.000.

Takeo, Yuji; and Yoshimi, Tomohisa, to Nippondenso Co., Ltd. Speed alarm system for automotive vehicle. 4,608,551, Cl. 340-53.000.

Takeuchi, Hideo; Kobayashi, Michiaki; and Shibasaki, Makoto, to Dai Nippon Insatsu Kabushiki Kaisha. Method for adjusting an ink fountain in a printing press and ink fountains. 4,607,571, Cl. 101-365.000.

Takeuchi, Masakazu: *See—*
Sakuma, Kiyoshi; Tomioka, Tadao; Tabuchi, Sunao; Ohta, Kihachiro; and Takeuchi, Masakazu, 4,608,127, Cl. 203-48.000.

Takita, Kentaro: *See—*
Manome, Teruo; Miki, Yasuhiko; Takita, Kentaro; and Fukuta, Minoru, 4,608,657, Cl. 364-571.000.

Takizawa, Toshiaki: *See—*
Tanikawa, Koichi; and Takizawa, Toshiaki, 4,607,416, Cl. 24-389.000.

Talcott, Thomas D.: *See—*
Wright, George M.; and Talcott, Thomas D., 4,608,050, Cl. 623-6.000.

Talir, Jiri: *See—*
Bischofberger, Walter; Eichholzer, Heinz; Graber, Werner; and Talir, Jiri, 4,608,470, Cl. 200-144.0AP.

Tamamura, Toshiaki; Niwa, Osamu; Hikita, Makoto; and Sugita, Akio, to Nippon Telegraphy and Telephone. Polymer film with conductive pattern and method of manufacturing the same. 4,608,129, Cl. 204-18.100.

Tamaoki, Naohiro: *See—*
Nomura, Hirokazu; Sugitani, Yuji; and Tamaoki, Naohiro, 4,608,481, Cl. 219-125.120.

Tamosiunis, Richard R.: *See—*
Chan, Simon; Slorstad, Eli; Cormode, Henry D. A.; and Tamosiunis, Richard R., 4,608,154, Cl. 209-166.000.

Tanagho, Emil A.; Schmidt, Richard A.; Gleason, Curtis A.; and Lue, Tom F., to University of California, Regents of the. Method and system for controlling bladder evacuation. 4,607,639, Cl. 128-419.00E.

Tanaka, Atsushi: *See—*
Murakami, Yoshishige; Inoue, Takeshi; and Tanaka, Atsushi, 4,608,598, Cl. 358-113.000.

Tanaka, Haruto; Yamaki, Kiyoshi; and Suzuki, Hidetaka, to Nissan Motor Company, Limited. Road map display system with indication of a vehicle position. 4,608,656, Cl. 364-449.000.

Tanaka, Hideharu; Sekiya, Matsuo; and Uchikawa, Fusaoki, to Mitsubishi Denki Kabushiki Kaisha. Muffler for exhaust gas from an internal combustion engine. 4,607,721, Cl. 181-249.000.

Tanaka, Hideharu; Sekiya, Matsuo; and Uchikawa, Fusoaki, to Mitsubishi Denki Kabushiki Kaisha. Muffler for exhaust gas from an internal combustion engine. 4,607,722, Cl. 181-252.000.

Tanaka, Ichiro: *See—*
Noh, Akihiko; Saijo, Yoshiaki; Sato, Shinichi; and Tanaka, Ichiro, 4,607,651, Cl. 134-62.000.

Tanaka, Kano, to Canon Kabushiki Kaisha. Information retrieval apparatus capable of stopping an information bearing medium accurately at a desired location. 4,608,705, Cl. 377-18.000.

Tanaka, Shigetaka: *See—*
Kaga, Mitsuru; and Tanaka, Shigetaka, 4,608,703, Cl. 375-114.000.

Tanaka, Yoshiro: *See—*
Kuroda, Masato; Tanaka, Yoshiro; and Wada, Norikazu, 4,607,533, Cl. 73-861.120.

Tandy Corporation: *See—*
Nakamura, Keiichi; and Horiuchi, Hideyuki, 4,608,459, Cl. 179-6.030.

Taniguchi, Hitoshi: *See—*
Akasaka, Takeshi; Terashima, Masahiko; Kawade, Hiroyuki; and Taniguchi, Hitoshi, 4,608,203, Cl. 530-378.000.

Taniguchi, Keishi, to Ricoh Company, Ltd. Thermosensitive recording material. 4,608,579, Cl. 346-209.000.

Taniguchi, Shinji: *See—*
Moriwaki, Ikuo; and Taniguchi, Shinji, 4,608,541, Cl. 330-10.000.

Tanikawa, Koichi; and Takizawa, Toshiaki, to Yoshida Kogyo K.K. Fluid-tight slide fastener. 4,607,416, Cl. 24-389.000.

Tanimoto, Mitsutoshi: *See—*
Saito, Tomoo; Tanimoto, Mitsutoshi; Yasuda, Masayoshi; Ijuin, Yasuharu; Hikita, Akio; Morikawa, Naotake; Uehara, Hiromichi; and Fukuyama, Masaru, 4,607,521, Cl. 73-23.000.

Tanuma, Chiaki, to Tokyo Shibaura Denki Kabushiki Kaisha. Temperature compensated drive for a piezoelectric displacement generator. 4,608,506, Cl. 310-315.000.

Taquino, Weldon P. Preloaded compression absorber cell for boat bumpers. 4,607,586, Cl. 114-219.000.

Task, Harry L.; and Genco, Louis V. Contrast sensitivity function measurement chart and method. 4,607,923, Cl. 351-239.000.

Tatsuguchi, Kazuo, to Victor Company of Japan, Ltd. Jitter compensation system in rotary recording medium reproducing apparatus. 4,608,610, Cl. 358-324.000.

Tatsumi, Masami: *See—*
Tada, Kohji; Kuhara, Yoshiki; Tatsumi, Masami; and Mitsui, Tsutomu, 4,608,535, Cl. 324-244.000.

Tavss, Edward A.; and Carroll, David L., to Colgate-Palmolive Company. Laminated substrate and collapsible dispensing container made therefrom. 4,608,285, Cl. 428-35.000.

Taya, Yoshihiro: *See—*
Higashino, Toshihiro; Mitsunaga, Hirofumi; Nakanishi, Takahiro; and Taya, Yoshihiro, 4,607,614, Cl. 126-299.00E.

TDK Corporation: *See—*
Wakayama, Katsuhiko; and Harada, Hiraku, 4,608,186, Cl. 252-62.520.
Yoda, Kuniichi; Ishihara, Yuji; and Azegami, Hitoshi, 4,608,315, Cl. 428-425.900.

Team, Inc.: *See—*
Harrison, George W., 4,607,469, Cl. 52-220.000.

Tebben, John A. Row crop cultivator including disk and setting indicator therefor. 4,607,705, Cl. 172-430.000.

Technion Research and Development Foundation Ltd: *See—*
Ron, Moshe, 4,607,826, Cl. 266-251.000.

Tecumseh Products Company: *See*—
Fry, Emanuel D., 4,607,503, Cl. 62-503.000.
Teeter, Robert G., to Board of Regents for Oklahoma State Univ. Composition and method for treating heat stress. 4,608,257, Cl. 424-166.000.
Tektronix, Inc.: *See*—
Judge, John L., 4,608,690, Cl. 371-21.000.
Teledyne Industries, Inc.: *See*—
Burnham, Robert E., 4,608,492, Cl. 250-372.000.
Leber, Leland C.; and Swigert, David, 4,607,627, Cl. 128-66.000.
Telefonaktiebolaget LM Ericsson: *See*—
Thurenius, Ake G. H., 4,607,910, Cl. 350-96.200.
Teleschow, Wiktor A.: *See*—
Enikolopow, Nikolai S.; Wolfson, Stanislaw A.; Nepomnjaschtschie, Anatolie I.; Nikolskie, Wadim G.; Teleschow, Wiktor A.; Filmakowa, Lidia A.; Brinkmann, Heinz; Pantzer, Eckart; and Uhland, Eberhard, 4,607,797, Cl. 241-23.000.
Tellus Maskin AB: *See*—
Jacobsson, Paul, 4,607,994, Cl. 414-10.000.
Tennant Company: *See*—
Dodge, Paul D., 4,608,086, Cl. 106-12.000.
Teranishi, Masatoshi: *See*—
Seike, Noboru; Teranishi, Masatoshi; and Sakai, Minoru, 4,607,619, Cl. 128-4.000.
Terasawa, Akinobu, to Yoshida Kogyo K. K. Curved slide fastener chain and method for producing curved slide fastener. 4,607,425, Cl. 29-408.000.
Terashima, Masahiko: *See*—
Akasaka, Takeshi; Terashima, Masahiko; Kawade, Hiroyuki; and Taniguchi, Hitoshi, 4,608,203, Cl. 530-378.000.
Terui, Mitsuru: *See*—
Kurumizawa, Masao; Terui, Mitsuru; and Yamaguchi, Nobuyasu, 4,608,213, Cl. 264-45.100.
Tessier, Marc: *See*—
de Brebisson, Michel X. M.; and Tessier, Marc, 4,608,588, Cl. 357-34.000.
Testa, Raymond T.: *See*—
Labeda, David P.; Goodman, Joseph J.; Borders, Donald B.; Testa, Raymond T.; and Martin, John H. E. J., deceased, 4,608,343, Cl. 435-253.000.
Tetzner, Johannes: *See*—
Wessels, Lur; and Tetzner, Johannes, 4,607,661, Cl. 137-512.100.
Texaco Inc.: *See*—
Davis, Marshall E.; and Sung, Rodney L., 4,608,057, Cl. 44-51.000.
Morduchowitz, Abraham; and Ang, Peter G. P., 4,608,133, Cl. 204-59.00R.
Sammells, Anthony F., 4,608,132, Cl. 204-59.00R.
Sellstrom, Kathy B., 4,608,403, Cl. 523-218.000.
Texas Instruments Incorporated: *See*—
Caudel, Edward R.; Magar, Surendar S.; and Gass, Wanda K., 4,608,634, Cl. 364-200.000.
Duvvury, Charvaka; and Hyslop, Adin, E., 4,608,670, Cl. 365-205.000.
Texfi Industries, Inc.: *See*—
Gibson, Carroll A., 4,607,667, Cl. 139-429.000.
Texon, Inc.: *See*—
Presto, Alphonse R., 4,608,305, Cl. 428-365.000.
Thacker, Craig E., to Raetec Industries, Inc. Animal litter. 4,607,594, Cl. 119-1.000.
Thalmann, Theo: *See*—
Zwiener, Rudolf; Mathis, Ernst; Thalmann, Theo; and Rohrich, Siegfried, 4,607,666, Cl. 139-115.000.
Theeuwes, Felix: *See*—
Cortese, Richard; and Theeuwes, Felix, 4,608,048, Cl. 604-890.000.
Thirion deBriel, Jacques, to Valeo. Centrifugally operated variable speed drive pulley. 4,608,030, Cl. 474-13.000.
Tholander, Lars H. G., to Aktiebolaget IRO. Weft yarn storing, feeding and measuring device for jet weaving machines. 4,607,668, Cl. 139-452.000.
Thoma, Nandor G.: *See*—
Davis, James W.; Moore, Victor S.; and Thoma, Nandor G., 4,608,649, Cl. 364-491.000.
Thomas J. Lipton Inc.: *See*—
Dutilh, Christian E., 4,608,267, Cl. 426-662.000.
Thomas Jefferson University: *See*—
Osterholm, Jewell L., 4,608,635, Cl. 364-414.000.
Thomas, Kenneth D.: *See*—
Friedman, Michael S.; Thomas, Kenneth D.; and Chan, Philip T., 4,608,559, Cl. 340-825.500.
Thomas, Roy E. Apparatus for removing truck brake drum. 4,607,823, Cl. 254-134.000.
Thompson, William B., to Varian Associates, Inc. Dual filament ion source with improved beam characteristics. 4,608,513, Cl. 313-359.100.
Thomson-CGR: *See*—
Gabbay, Emile; and Plessis, Andre , 4,608,707, Cl. 378-132.000.
Thorson, Russell E.: *See*—
Schroth, Carl G.; and Thorson, Russell E., 4,608,115, Cl. 156-519.000.
Thrane, David T.: *See*—
Turpin, Edward T.; and Thrane, David T., 4,608,314, Cl. 428-425.800.
Threewitt, N. Bruce, to Advanced Micro Devices, Inc. Semiconductor memory device for serial scan applications. 4,608,678, Cl. 365-189.000.
Thurenius, Ake G. H., to Telefonaktiebolaget LM Ericsson. Optical fiber switch having a movable fiber secured to a slide which is indirectly moved by a magnetic armature. 4,607,910, Cl. 350-96.200.
Thureson, Gary R.; and Gladden, Ernest L., to Ensign-Bickford Industries, Inc. Laminated fuse and manufacturing process therefor. 4,607,573, Cl. 102-275.800.
Tilston, John R., to United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the. Combustion chamber wall cooling. 4,607,487, Cl. 60-752.000.
Tinnes, Bernhard; and Kreuzberg, Heinz, to Metacon AG. Process and apparatus for controlling a continuous casting plant. 4,607,681, Cl. 164-453.000.
Tinucci, Laura: *See*—
Citterio, Attilio; Tinucci, Laura; Belli, Aldo; and Filippini, Lucio, 4,608,441, Cl. 562-466.000.
Titoff, Juha: *See*—
Kokkonen, Seppo; Kuhasalo, Antti; Savolainen, Erkki; Titoff, Juha; Vento, Jorma; and Vikio , Pentti, 4,608,174, Cl. 210-512.200.
Tkachev, Valentin N.: *See*—
Yarmashev, Jury N.; Zapandi, Vladimir A.; and Tkachev, Valentin N., 4,607,480, Cl. 130-27.00T.
TMC Corporation: *See*—
Wittmann, Heinz; Leichtfried, Friedrich; Szabo, Emilie; and Szasz, Tibor, 4,607,859, Cl. 280-632.000.
Toa Eiyo Litd.: *See*—
Otsuka, Saburo; Yoshikawa, Toshiyuki; Tokuda, Shoichi; and Ito, Yuusuke, 4,608,249, Cl. 424-28.000.
Toa Nenryo Kogyo Kabushiki Kaisha: *See*—
Watanabe, Koh; Tokashiki, Michihide; and Wada, Sadao, 4,608,173, Cl. 210-502.100.
Toda, Gyozo; Fujita, Tsuyoshi; Tosaki, Hiromi; and Kuroki, Takashi, to Hitachi, Ltd. Ceramic wiring board and process for producing the same. 4,608,316, Cl. 428-446.000.
Togawa, Jiro, to Nippon Chemi-Con Corporation. Electric power unit. 4,608,500, Cl. 307-72.000.
Tokashiki, Michihide: *See*—
Watanabe, Koh; Tokashiki, Michihide; and Wada, Sadao, 4,608,173, Cl. 210-502.100.
Tokico Ltd.: *See*—
Kobayashi, Kinzo, 4,607,728, Cl. 188-73.380.
Tokuda, Shoichi: *See*—
Otsuka, Saburo; Yoshikawa, Toshiyuki; Tokuda, Shoichi; and Ito, Yuusuke, 4,608,249, Cl. 424-28.000.
Tokyo Juki Industrial Co., Ltd.: *See*—
Honma, Yoshiaki, 4,607,587, Cl. 118-37.000.
Tokyo Sanyo Electric Co., Ltd.: *See*—
Awane, Misao; Hara, Seiji; and Kobayashi, Satoshi, 4,608,487, Cl. 235-383.000.
Tokyo Shibaura Denki Kabushiki Kaisha: *See*—
Hasebe, Kouki, 4,608,660, Cl. 364-768.000.
Hirose, Nagayoshi; Kido, Sumiaki; and Fuzita, Yoshiharu, 4,608,488, Cl. 235-384.000.
Ishihara, Atsushi; and Yoshimaru, Tomohisa, 4,607,956, Cl. 356-375.000.
Miyaji, Yoshimori; Fujiki, Hirokazu; and Takahashi, Fumio, 4,608,593, Cl. 358-10.000.
Mochida, Yoshio; Ozeki, Toshiaki; Satoh, Kenji; and Yuasa, Yoshitaka, 4,607,689, Cl. 165-110.000.
Noh, Akihiko; Saijo, Yoshiaki; Sato, Shinichi; and Tanaka, Ichiro, 4,607,651, Cl. 134-62.000.
Onno, Jun-ichi; and Konishi, Satoshi, 4,608,668, Cl. 365-200.000.
Tanuma, Chiaki, 4,608,506, Cl. 310-315.000.
Uchida, Yukimasa, 4,608,666, Cl. 365-182.000.
Toldi, George. Wok adapter. 4,607,613, Cl. 126-215.000.
Tomac, Zeljko. Device for cooling containers, for instance beverage bottles or beverage cans, arranged in a wrapping. 4,607,502, Cl. 62-294.000.
Tominaga, Kazutoshi, to Kabushiki Kaisha Tominaga Jyushikogyosho. Air pump. 4,608,000, Cl. 417-413.000.
Tominaga, Takashi: *See*—
Sakuramoto, Takahumi; Asoshina, Eishi; Tominaga, Takashi; Shimizu, Yukio; Morishita, Tsuyoshi; Osaki, Sigemi; and Sakai, Noriyuki, 4,608,225, Cl. 419-5.000.
Tomioka, Tadao: *See*—
Sakuma, Kiyoshi; Tomioka, Tadao; Tabuchi, Sunao; Ohta, Kihachiro; and Takeuchi, Masakazu, 4,608,127, Cl. 203-48.000.
Toray Industries, Inc.: *See*—
Hishimuma, Sumio; and Kanno, Katsuo, 4,607,409, Cl. 8-152.000.
Obbayashi, Gentaro; Umemoto, Susumu; and Hiramoto, Hiroo, 4,608,333, Cl. 430-281.000.
Toray Silicone Company, Ltd.: *See*—
Hamada, Mitsuo; and Higuchi, Kazuo, 4,608,395, Cl. 521-92.000.
Toriguchi, Michio: *See*—
Sugihara, Isao; Nishijima, Akio; and Toriguchi, Michio, 4,608,244, Cl. 423-445.000.
Tosaki, Hiromi: *See*—
Toda, Gyozo; Fujita, Tsuyoshi; Tosaki, Hiromi; and Kuroki, Takashi, 4,608,316, Cl. 428-446.000.
Toshiba Kikai Kabushiki Kaisha: *See*—
Sasaki, Junichi, 4,608,661, Cl. 364-900.000.
Tosswill, Christopher H., to Galileo Electro-Optics Corp. Middle-infrared image intensifier. 4,608,519, Cl. 313-528.000.
Towfigh, Keivan. Flat folded female urinary aid. 4,608,046, Cl. 604-329.000.

Toyo Kohan Co., Ltd.: *See—*
Shimizu, Nobuyoshi; Fujimoto, Terunori; Inui, Tsuneo; and Ishida, Masatoki, 4,608,130, Cl. 204-27.000.
Toyo Sanso Co., Ltd.: *See—*
Fujimoto, Kiyokatsu; Shibuya, Kazunobu; and Urata, Tetsukazu, 4,607,495, Cl. 62-63.000.
Toyo Soda Manufacturing Company Limited: *See—*
Someya, Shinzo; Akahira, Rokuro; Nonaka, Yuji; Nakanishi, Akira; and Ito, Mikio, 4,608,081, Cl. 71-94.000.
Toyoda Gosei Co., Ltd.: *See—*
Hayashi, Keizo; and Hasegawa, Hitoshi, 4,608,005, Cl. 425-192.00R.
Toyoda Koki Kabushiki Kaisha: *See—*
Niwa, Kuniyuki; and Fujimura, Yoshiyuki, 4,608,645, Cl. 364-474.000.
Toyota Jidosha Kabushiki Kaisha: *See—*
Kobayashi, Nobuyuki; Ito, Toshimitsu; and Norota, Kazuhiko, 4,607,603, Cl. 123-492.000.
Mori, Katsunori; Shimoda, Takuji; and Seo, Kiyokazu, 4,607,879, Cl. 296-201.000.
Shiraishi, Daiichi; Iwasaki, Eiji; and Fukumoto, Ryoichi, 4,607,456, Cl. 49-352.000.
Takahashi, Minoru; Fukuda, Teruo; Isobe, Toshiaki; and Kobashi, Mamoru, 4,607,523, Cl. 73-116.000.
Yoshizaki, Kouji, 4,607,600, Cl. 123-90.160.
Toyotomi Kogyo Co., Ltd.: *See—*
Nakamura, Kazuharu; and Nakanishi, Yutaka, 4,608,010, Cl. 431-88.000.
Trahan, Albert J.; and Vajda, Vladimir, to Emhart Industries, Inc. Plunger mechanism for use in a glassware forming machine. 4,608,075, Cl. 65-362.000.
Trajin, Jean-Paul: *See—*
Muller, Bernard; Piat, Rene ; Rensing, Cornelis; and Trajin, Jean-Paul, 4,608,372, Cl. 514-187.000.
Trelleborg AB: *See—*
Rosen, Johnny, 4,608,496, Cl. 250-561.000.
Tremoureux, Yves; and Reynaud, Jean-Luc, to Centre Stephanois de Recherches Mecaniques Hydromecanique et Frottement. Process for improving the corrosion resistance of ferrous metal parts. 4,608,092, Cl. 148-6.110.
Trent, Robert H.; and Oakley, W. Ray, to New Tech Oil, Inc. Method of recovering hydrocarbon using mining assisted methods. 4,607,888, Cl. 299-2.000.
Trimmer Machine Co., Inc.: *See—*
Raybuck, William B., 4,607,831, Cl. 270-58.000.
Trinity Foundation: *See—*
Christine, William C., 4,607,764, Cl. 222-207.000.
Troyer, A. Forrest, to DeKalb-Pfizer Genetics. Hybrid corn plants with improved standability. 4,607,453, Cl. 47-58.000.
Trumpf GmbH & Co.: *See—*
Walser, Hans-Heinrich, 4,607,709, Cl. 173-170.000.
TRW Inc.: *See—*
Law, Hsiang-Yi D.; and Rezek, Edward A., 4,608,696, Cl. 372-50.000.
Tsai, Mei-Yuan; Jacoby, John E.; and Laemmle, Joseph T., to Aluminum Company of America. Providing oligomer moisture barrier in direct chill casting of aluminum-lithium alloy. 4,607,679, Cl. 164-5.000.
Tseo, Gus: *See—*
Vanderveen, Timothy W.; and Tseo, Gus, 4,608,042, Cl. 604-81.000.
Tsikos, Constantine, to Siemens Corporate Research & Support Inc. Apparatus for accumulating and permanently storing statistical information. 4,608,638, Cl. 364-424.000.
Tsubata, Hisayasu: *See—*
Hamashima, Tatsuo; Tsubata, Hisayasu; and Hagiwara, Michiaki, 4,607,683, Cl. 164-463.000.
Tsuchiya, Masahiro; and Mori, Masaharu, to Clarion Co., Ltd. Phase-shift keying demodulator. 4,608,540, Cl. 329-107.000.
Tsuda, Hiroshi: *See—*
Arima, Sumitsugu; Tsuda, Hiroshi; and Nagashima, Hideyuki, 4,607,539, Cl. 74-492.000.
Tsumagari, Masato: *See—*
Kouketsu, Eiji; and Tsumagari, Masato, 4,607,864, Cl. 280-808.000.
Tsutsui, Eiji: *See—*
Yoshioka, Masahiro; Murakami, Masahiro; Irie, Yoichiro; Nakanishi, Tsugio; Tsutsui, Eiji; Iwao, Noriyuki; Hirobe, Junichi; and Wakikaido, Takahiro, 4,607,943, Cl. 355-14.00R.
Tuccella, Jean: *See—*
Karinthi, Pierre; Gardent, Maurice; Regnier, Colette; and Tuccella, Jean, 4,607,488, Cl. 62-45.000.
Tucel Industries, Inc.: *See—*
Lewis, John C., Jr., 4,607,411, Cl. 15-117.000.
Tuda, Goro: *See—*
Murakami, Tsudoi; Nasu, Shoji; Nagahama, Yasuhide; Kada, Hironosuke; Sekino, Teruyoshi; Murayama, Hirokazu; Munezane, Yoshiaki; Tuda, Goro; and Mizuguchi, Osamu, 4,608,651, Cl. 364-513.000.
Turci, Edmondo; and Fubini, Guido, to Aeritalia Societa Aerospaziale Italiana p.A. Docking system for space modules. 4,607,815, Cl. 244-161.000.
Turner, Michael D.; and Roch, Jacques, to General Signal Corporation. Height measuring system. 4,607,525, Cl. 73-37.500.
Turpin, Edward T.; and Thrane, David T., to SCM Corporation. Acrylic and acrylic/epoxy copolymer compositions as self-curing cathodic electrocoating vehicles. 4,608,314, Cl. 428-425.800.
Twilley, Robert C., Jr., to Babcock & Wilcox Company, The. Abnormal transient display system for nuclear reactor operation. 4,608,223, Cl. 376-247.000.
Tyler, Derek E.: *See—*
Dantzig, Jonathan A.; and Tyler, Derek E., 4,607,682, Cl. 164-418.000.
Tzu-Chun, Huang Y. Reclining mechanism for easy chair. 4,607,883, Cl. 297-317.000.
U.S.D. Corp: *See—*
Faulconer, Mark, 4,607,398, Cl. 2-452.000.
Uchida, Yukimasa, to Tokyo Shibaura Denki Kabushiki Kaisha. Semiconductor memory. 4,608,666, Cl. 365-182.000.
Uchikawa, Fusaoki: *See—*
Tanaka, Hideharu; Sekiya, Matsuo; and Uchikawa, Fusaoki, 4,607,721, Cl. 181-249.000.
Uchikawa, Fusoaki: *See—*
Tanaka, Hideharu; Sekiya, Matsuo; and Uchikawa, Fusoaki, 4,607,722, Cl. 181-252.000.
Uchiyama, Hiroaki; Ibuchi, Yoshiaki; and Fujiwara, Katsuyoshi, to Sharp Kabushiki Kaisha. Automatic dual electrophotographic copying machine. 4,607,946, Cl. 355-14.00R.
Ueda, Ikuo; and Kato, Masayuki, to Fujisawa Pharmaceutical Co., Ltd. Quinazolinone derivatives, processes for the preparation thereof and pharmaceutical composition comprising the same. 4,608,375, Cl. 514-218.000.
Uehara, Hiromichi: *See—*
Saito, Tomoo; Tanimoto, Mitsutoshi; Yasuda, Masayoshi; Ijuin, Yasuharu; Hikita, Akio; Morikawa, Naotake; Uehara, Hiromichi; and Fukuyama, Masaru, 4,607,521, Cl. 73-23.000.
Ueno, Hideo; Kuno, Hiroshi; and Hamabe, Yoshifumi, to Brother Kogyo Kabushiki Kaisha. Electronic typewriter equipped with text memory which saves format data while deleting a line. 4,607,966, Cl. 400-63.000.
Ueno, Hidetoshi: *See—*
Miyazaki, Kenji; Ogawa, Ichitaro; Yoshida, Hisayoshi; Kobayashi, Kazuo; Hagio, Tsuyoshi; Ueno, Hidetoshi; and Akiyama, Shigeru, 4,607,959, Cl. 366-343.000.
Uhland, Eberhard: *See—*
Enikolopow, Nikolai S.; Wolfson, Stanislaw A.; Nepomnjaschtschie, Anatolie I.; Nikolskie, Wadim G.; Teleschow, Wiktor A.; Filmakowa, Lidia A.; Brinkmann, Heinz; Pantzer, Eckart; and Uhland, Eberhard, 4,607,797, Cl. 241-23.000.
Uhlig, Raimer: *See—*
Mauritz, Bernd; and Uhlig, Raimer, 4,607,992, Cl. 411-45.000.
Uhlig, Uwe: *See—*
Janutta, Reinhard; Uhlig, Uwe; and Redeker, Werner, 4,607,607, Cl. 125-11.0CD.
Uittenbogaard, Maurice: *See—*
Meek, Jan; Uittenbogaard, Maurice; and Michelsen, Finn C., 4,607,983, Cl. 405-204.000.
Uittenbogaart, Gustaaf A.: *See—*
Rijpkema, Jan; and Uittenbogaart, Gustaaf A., 4,608,006, Cl. 425-347.000.
Ullman, Fred E.: *See—*
Virta, Arthur W.; and Ullman, Fred E., 4,608,038, Cl. 493-29.000.
Ulrickson, Michael A., to United States of America, Energy. Multichannel infrared thermometer. 4,607,963, Cl. 374-131.000.
Umbarger, C. John: *See—*
Wolf, Michael A.; Waechter, David A.; and Umbarger, C. John, 4,608,655, Cl. 364-569.000.
Umebayashi, Kazuyuki; and Suzumura, Nobuyasu, to Aisin Seiki Kabushikikaisha. Electric signal transmission system on a road vehicle. 4,608,550, Cl. 340-22.000.
Umeda, Hiroyuki: *See—*
Wakui, Yoshiaki; and Umeda, Hiroyuki, 4,608,616, Cl. 360-132.000.
Umemoto, Susumu: *See—*
Ohbayashi, Gentaro; Umemoto, Susumu; and Hiramoto, Hiroo, 4,608,333, Cl. 430-281.000.
Umemoto, Tadahiro, to Ishikawajima-Harima Jukogyo Kabushiki Kaisha. Method for heat treating pipe with double-pipe section. 4,608,101, Cl. 148-127.000.
Umemura, Shizuo; and Kitamoto, Tatsuji, to Fuji Photo Film Co., Ltd. Ferromagnetic particles with stable magnetic characteristics and method of preparing same. 4,608,093, Cl. 148-6.350.
Union Carbide Corporation: *See—*
Craig, Todd A.; and Jachetta, John J., 4,608,082, Cl. 71-118.000.
Gardner, Hugh C.; Brode, George L.; and Cotter, Robert J., 4,608,404, Cl. 523-400.000.
Kurtz, Stuart J.; Roberts, Ernest H.; and Lucchesi, Peter J., 4,608,221, Cl. 264-556.000.
Lee, Young-Jin, 4,608,448, Cl. 570-109.000.
Martin, Robert W., 4,608,401, Cl. 523-205.000.
Schilling, Curtis L., Jr.; and Williams, Thomas C., 4,608,242, Cl. 423-345.000.
Schumm, Brooke, Jr., 4,608,279, Cl. 429-224.000.
Volles, Warren K.; and Cusher, Nelson A., 4,608,061, Cl. 55-26.000.
United Aircraft Products, Inc.: *See—*
Wiard, Maxwell R.; and Michael, Kenneth L., 4,607,684, Cl. 165-70.000.
United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the: *See—*
Tilston, John R., 4,607,487, Cl. 60-752.000.
United States of America
Agriculture: *See—*

Kangas, Vernon W.; Kangas, Roy J.; and Matson, Edsel D., 4,607,672, Cl. 144-2.00R.

Air Force: *See*—
Bryant, Steve M.; and Cole, Lanier G., 4,608,567, Cl. 343-7.00A.
Holt, James F., 4,608,627, Cl. 363-131.000.
Hufford, Diane K., 4,608,112, Cl. 156-345.000.
Johnson, Alfred L., 4,607,424, Cl. 29-157.30R.
Lee, Roger K., 4,607,458, Cl. 51-119.000.
Webster, Carson W.; and Stilwell, Robert K., 4,608,574, Cl. 343-895.000.

Energy: *See*—
Deichelbohrer, Paul R., 4,608,477, Cl. 219-69.00V.
Hoh, Joseph C., 4,607,852, Cl. 277-1.000.
Martin, H. Lee; and Killough, Stephen M., 4,608,526, Cl. 318-628.000.
Oakley, David J.; and Feld, Sam H., 4,607,778, Cl. 228-2.500.
Ulrickson, Michael A., 4,607,963, Cl. 374-131.000.

National Aeronautics and Space Administration: *See*—
Weinberg, Irving; and Brandhorst, Henry W., Jr., 4,608,452, Cl. 136-261.000.

Navy: *See*—
Burns, William K.; and Villarruel, Carl A., 4,607,912, Cl. 350-96.300.
Ennis, David G.; and Smith, John M., 4,608,566, Cl. 343-5.0PD.
Mako, Frederick; Manheimer, Wallace; Kapetanokos, Christos A.; and Sandel, Frederick, 4,608,537, Cl. 328-237.000.

U.S. Philips Corporation: *See*—
Barclay, David; and Burgess, Peter H., 4,608,511, Cl. 313-93.000.
de Brebisson, Michel X. M.; and Tessier, Marc, 4,608,588, Cl. 357-34.000.
Dijkmans, Eise C.; Graffenberger, Wilhelm; and Kilian, Ernst A., 4,608,502, Cl. 307-243.000.
Grantham-Hill, Timothy R., 4,608,602, Cl. 358-148.000.
Jansen, Gerardus L. M., 4,607,913, Cl. 350-247.000.
Nijman, Aloysius J.; and Schoofs, Franciscus A. C. M., 4,608,461, Cl. 179-16.0AA.
Nordholt, Ernst H.; and Boon, Cornelis A. M., 4,608,544, Cl. 331-109.000.
Van Hemel, Gilbert O. E., 4,607,593, Cl. 118-719.000.
Ward, Rodney, 4,608,332, Cl. 430-296.000.

United Technologies Corporation: *See*—
Cole, Edward F., 4,607,486, Cl. 60-734.000.
Miller, John A.; and Athey, Roy L., 4,608,094, Cl. 148-11.50N.
Zemek, Thomas G.; Caruolo, Antonio B.; Roberts, Stephanie A.; Dunn, James K.; and Spearen, John, 4,607,421, Cl. 29-157.10R.

Unitika Ltd.: *See*—
Hamashima, Tatsuo; Tsubata, Hisayasu; and Hagiwara, Michiaki, 4,607,683, Cl. 164-463.000.

University College London: *See*—
Arthur, Jonathan R. F.; and Dunstan, Trebilcock, 4,607,532, Cl. 73-819.000.

University of California, Regents of the: *See*—
Tanagho, Emil A.; Schmidt, Richard A.; Gleason, Curtis A.; and Lue, Tom F., 4,607,639, Cl. 128-419.00E.
Wolf, Michael A.; Waechter, David A.; and Umbarger, C. John, 4,608,655, Cl. 364-569.000.

University of Georgia Research Foundation, Inc., The: *See*—
Maw, Bryan W.; and Brewer, Harold L., 4,607,452, Cl. 47-1.00R.

University of South Florida, The: *See*—
Busot, J. Carloe; and Hill, Peter W., 4,607,595, Cl. 119-2.000.

University of Southern California: *See*—
Engel, W. King, 4,608,365, Cl. 514-18.000.

University of Waterloo: *See*—
Wynnyckyj, John R.; and Rhodes, Edward, 4,607,961, Cl. 374-30.000.

UOP Inc.: *See*—
Abrevaya, Hayim; and Imai, Tamotsu, 4,608,360, Cl. 502-226.000.
Kulprathipanja, Santi; and Kulkarni, Sudhir S., 4,608,060, Cl. 55-16.000.

Upp, Daniel C., to ITT Corporation. Digital switching systems employing multi-channel frame association apparatus. 4,608,684, Cl. 370-58.000.

Uppencamp, George L.: *See*—
Brasted, Lee K.; and Uppencamp, George L., 4,607,982, Cl. 405-204.000.

Urata, Tetsukazu: *See*—
Fujimoto, Kiyokatsu; Shibuya, Kazunobu; and Urata, Tetsukazu, 4,607,495, Cl. 62-63.000.

Urffer, Daniel, to Societe Europeenne des Produits Refractaires. Propping agent based on zirconia and silica for deep geological fractures. 4,607,697, Cl. 166-280.000.

Urlik, Randall G., to Goldberg Brothers, Inc. Film winding and rewinding apparatus. 4,607,804, Cl. 242-67.400.

Usher, Peter P., to Metex Corporation. Method of making composite wire mesh seal. 4,607,851, Cl. 277-1.000.

USM Corporation: *See*—
Elliott, Richard M.; Holland, Larry L.; Gilligan, Thomas J., III; Martin, John F.; and Ciccia, Lawrence P., 4,607,741, Cl. 198-345.000.

UTI Corporation: *See*—
Goodfellow, Glenn B., 4,607,515, Cl. 72-358.000.

Uttenthaler, Josef, to M.A.N. Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft. Radiator-fan system, particularly for buses having rear-mounted engines. 4,607,714, Cl. 180-68.100.

V-Tech, Inc.: *See*—
Miller, Irvin E., 4,607,921, Cl. 350-536.000.

Vaden, James L., to Brand-Rex Company. Modular plug. 4,607,905, Cl. 339-176.00M.

Vahabzadeh, Hamid, to General Motors Corporation. Control system for a continuously variable transmission. 4,608,031, Cl. 474-17.000.

Vaidya, Jayant G.: *See*—
Glennon, Timothy F.; and Vaidya, Jayant G., 4,608,527, Cl. 318-685.000.

Vail, Curtis F., to Hoover Universal, Inc. Encapsulated bolster. 4,607,887, Cl. 297-452.000.

Vajda, Vladimir: *See*—
Trahan, Albert J.; and Vajda, Vladimir, 4,608,075, Cl. 65-362.000.

Valenti, Dante, to IN-PAK s.r.l. Container for receiving various articles, in particular cylindrical articles. 4,607,750, Cl. 206-443.000.

Valeo: *See*—
Thirion deBriel, Jacques, 4,608,030, Cl. 474-13.000.

Valmet OY: *See*—
Autio, Markku, 4,608,125, Cl. 162-273.000.
Mauranen, Pekka; and Vedenpaa, Timo, 4,608,124, Cl. 162-193.000.

VanAuwelaer, James M.: *See*—
Shellhouse, Wayne L.; and VanAuwelaer, James M., 4,607,707, Cl. 172-764.000.

Vance, Dennis W., to Vivid Systems Incorporated. Video projector focus adjustment mechanism. 4,607,924, Cl. 353-101.000.

Vander Giessen, Michael J.: *See*—
Hume, Robert M., III; LaBrash, Robert A.; and Vander Giessen, Michael J., 4,608,111, Cl. 156-306.600.

Vanderpool, Clarence D.; Scheithauer, Richard A.; and Gingerich, Richard G. W., to GTE Products Corporation. Recovery of cobalt. 4,608,235, Cl. 423-53.000.

Vanderpool, Clarence D.: *See*—
Scheithauer, Richard A.; Miller, Michael J.; Vanderpool, Clarence D.; and MacInnis, Martin B., 4,608,084, Cl. 75-101.00R.

Vanderveen, Timothy W.; and Tseo, Gus, to Warner-Lambert Company. Apparatus for sequential infusion of medical solutions. 4,608,042, Cl. 604-81.000.

Van Hemel, Gilbert O. E., to U.S. Philips Corporation. Apparatus for processing articles in a controlled environment. 4,607,593, Cl. 118-719.000.

Van Kampen, Craig L.; and Hockert, Eric N., to Minnesota Mining and Manufacturing Company. Implant with attachment surface. 4,608,052, Cl. 623-22.000.

van Klinken, Peter G., to Stevin Construction Inc. Method for constructing a screen that obstructs the flow of subsoil water. 4,607,981, Cl. 405-52.000.

Vanlier, Kenneth E. Condensing and collecting vapors emanating from a land surface. 4,607,501, Cl. 62-288.000.

Vaidyanath, Padmakumari J., to Dow Corning Corporation. Acylamino silicon compounds, their use and preparation. 4,608,270, Cl. 427-35.000.

Varian Associates, Inc.: *See*—
McDowell, Hunter L., 4,608,520, Cl. 315-39.300.
Thompson, William B., 4,608,513, Cl. 313-359.100.

Varnelis, Edmund K.; and Siewert, Robert L. Pivot joint. 4,607,977, Cl. 403-154.000.

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Wolf, Morris A. Merchandising display system and method. 4,607,754, Cl. 211-183.000.
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Yamamoto, Hidehiko, to Sharp Kabushiki Kaisha. Interface circuit for interconnecting peripherals to an information processing device. 4,608,504, Cl. 307-442.000.

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Miyakawa, Nobuhiro; Higashiguchi, Teruaki; Yano, Koji; Yamamoto, Kazuo; and Kawakami, Yoshinobu, 4,607,936, Cl. 355-3.0DR.

Yamamoto, Kiyonori: *See*—
Watashi, Masahiro; Kimura, Hiroshi; Shibata, Kiyoshi; Hisajima, Masahiko; and Yamamoto, Kiyonori, 4,607,734, Cl. 192-67.00R.

Yamamoto, Shigeo: *See*—
Noguchi, Hiroshi; Kato, Toshiro; Takahashi, Junya; Ishiguri, Yukio; Yamamoto, Shigeo; and Kamoshita, Katsuzo, 4,608,385, Cl. 514-444.000.

Yamamoto, Takashi; Kitajima, Houdo; and Takahashi, Hiroyuki. Length polarized, end electroded piezoelectric resonator. 4,608,509, Cl. 310-357.000.

Yamamoto, Yoshimi: *See*—
Kinoshita, Satoshi; and Yamamoto, Yoshimi, 4,607,540, Cl. 74-493.000.

Yamamura, Yoshihisa: *See*—
Kobayashi, Osamu; Sasaki, Hiroshi; Kaneko, Toshiki; Ikeda, Hideaki; and Yamamura, Yoshihisa, 4,608,317, Cl. 428-546.000.

Yamanaka, Kiyoyuki, to Taiko Pharmaceutical Co., Ltd. Medicament for treatment of diarrhea. 4,608,258, Cl. 424-195.100.

Yamanouchi, Makoto: *See*—
Watanabe, Shigeru; Kinukawa, Hiroshi; Mori, Kenjiro; Koichi, Kenji; Kimura, Shinji; Yamanouchi, Makoto; and Yajima, Yasuo, 4,608,662, Cl. 364-900.000.

Yamanouchi Pharmaceutical Co., Ltd.: *See*—
Shibanuma, Tadao; Nakano, Kohji; Nagano, Noriaki; Murakami, Yukiyasu; and Hara, Ryuichiro, 4,608,373, Cl. 514-202.000.

Yamaoka, Akira: *See*—
Shimizu, Tsuguo; Wada, Kenichi; Shintani, Yooichi; and Yamaoka, Akira, 4,608,671, Cl. 365-230.000.

Yamatake-Honeywell: *See*—
Kuroda, Masato; Tanaka, Yoshiro; and Wada, Norikazu, 4,607,533, Cl. 73-861.120.

Yamazaki, Hisashi: *See*—
Ishizuka, Akio; Yamazaki, Hisashi; and Yamazaki, Kikuo, 4,608,301, Cl. 428-328.000.

Yamazaki, Kikuo: *See*—
Ishizuka, Akio; Yamazaki, Hisashi; and Yamazaki, Kikuo, 4,608,301, Cl. 428-328.000.

Yamazaki, Kiyoyasu: *See*—
Hama, Tomio; and Yamazaki, Kiyoyasu, 4,607,662, Cl. 137-625.650.

Yano, Hajime, to Sony Corporation. Optical disc player with tilt correction. 4,608,680, Cl. 369-44.000.

Yano, Koji: *See*—
Miyakawa, Nobuhiro; Higashiguchi, Teruaki; Yano, Koji; Yamamoto, Kazuo; and Kawakami, Yoshinobu, 4,607,936, Cl. 355-3.0DR.

Yarkin, Andrei A.: *See*—
Obidin, Valery Y.; Zueva, Olga A.; Inochkin, Vladimir M.; Zhavoronkov, Andrei V.; Voinich, Leonid K.; Polushin, Jury V.; Zakhodyakin, Petr A.; Rodionova, Zinaida I.; Judchits, Nikolai N.; Belyanin, Vladimir V.; Yarkin, Andrei A.; Kalmykov, Vyacheslav N.; Ageechkin, Mikhail M.; and Arakelyants, Sergei M., 4,608,004, Cl. 418-206.000.

Yarmashev, Jury N.; Zapandi, Vladimir A.; and Tkachev, Valentin N., to Glavnoe Spetsializirovannoe Konstruktorskoe Bjuro po Mashinam Uborki Zernovykh Kultur i Samokhodnykh Shassi. Axial-flow combine. 4,607,480, Cl. 130-27.00T.

Yasuda, Masayoshi: *See*—
Saito, Tomoo; Tanimoto, Mitsutoshi; Yasuda, Masayoshi; Ijuin, Yasuharu; Hikita, Akio; Morikawa, Naotake; Uehara, Hiromichi; and Fukuyama, Masaru, 4,607,521, Cl. 73-23.000.

Yealy, Carl F., to Merline Industries, Inc. Cable reel with reinforcing flanges. 4,607,806, Cl. 242-117.000.

Yoakum, George H.; Harris, Curtis C.; Korba, Brent E.; and Lechner, John F. Protoplast fusion method for high-frequency DNA transfection in human cells. 4,608,339, Cl. 435-172.200.

Yoda, Kuniichi; Ishihara, Yuji; and Azegami, Hitoshi, to TDK Corporation. Magnetic recording medium. 4,608,315, Cl. 428-425.900.

Yogo, Kenji; Nakamura, Mamoru; and Nishio, Shigeru, to Aisin Seiki Kabushiki Kaisha. Control valve device. 4,608,208, Cl. 261-39.00R.

Yohe, Thomas L.; and Kyriss, Karl M. Apparatus for purification of contaminated groundwater. 4,608,163, Cl. 210-150.000.

Yokobori, Nobuyoshi, to Matsushita Electric Industrial Co., Ltd. Output circuit and brushless motor using the same. 4,608,524, Cl. 318-254.000.

Yokokawa, Hidemi; and Fukuzawa, Miyuki, to Sony/Tektronix Corporation. Method of displaying a logic signal. 4,608,652, Cl. 364-521.000.

Yokokawa, Kiyoshi; Koya, Kazuo; and Hosino, Syouji, to Shin-Etsu Chemical Co., Ltd. Method for reducing diameter of a glass rod or tube by drawing. 4,608,071, Cl. 65-13.000.

Yokoo, Mamoru: *See*—
Ohtuka, Katuyuki; Sasaki, Kazuya; Arika, Tadashi; Yokoo, Mamoru; and Amemiya, Kouji, 4,608,438, Cl. 548-341.000.

Yokoshima, Minoru; Ohkubo, Tetsuo; and Kiyomoto, Masayuki, to Nippon Kayaku Kabushiki Kaisha. Novel (meth)acrylate and resin composition comprising the same. 4,608,400, Cl. 522-96.000.

Yokote, Yoshihiro, to NSK-Warner K.K. Passive seat belt system. 4,607,863, Cl. 280-804.000.

Yoneyama, Osamu: *See*—
Oda, Tatsuji; Mamine, Takayoshi; and Yoneyama, Osamu, 4,608,695, Cl. 372-45.000.

Yoshida, Hisayoshi: *See*—
Miyazaki, Kenji; Ogawa, Ichitaro; Yoshida, Hisayoshi; Kobayashi, Kazuo; Hagio, Tsuyoshi; Ueno, Hidetoshi; and Akiyama, Shigeru, 4,607,959, Cl. 366-343.000.

Yoshida, Ken-ich: *See*—
Inoue, Hirochika; Yoshida, Ken-ich; Kida, Yasushi; and Takemoto, Akira, 4,607,578, Cl. 108-145.000.

Yoshida Kogyo K. K.: *See*—
Terasawa, Akinobu, 4,607,425, Cl. 29-408.000.

Yoshida Kogyo K.K.: *See*—
Tanikawa, Koichi; and Takizawa, Toshiaki, 4,607,416, Cl. 24-389.000.

Yoshida, Kunio. Sentence modifiable electronic dictionary and language interpreter. 4,608,665, Cl. 364-900.000.

Yoshida, Ryo: *See*—
Haga, Toru; Nagano, Eiki; Sato, Ryo; and Yoshida, Ryo, 4,608,080, Cl. 71-92.000.

Yoshida, Tadao; and Haneda, Yoshiaki, to Sony Corporation. Apparatus for optically reproducing an information signal from a record disk. 4,608,676, Cl. 369-32.000.

Yoshida, Zenichi; and Miki, Sadao, to Sumitomo Chemical Company, Limited. Catalyst for the isomerization reaction of quadricyclanes to norbornadienes. 4,608,358, Cl. 502-164.000.

Yoshihara, Kunio: *See*—
Itoi, Masaaki; Ohta, Masakatsu; Sugioka, Taizo; Yoshihara, Kunio; and Nishitani, Hiroshi, 4,608,150, Cl. 208-22.000.

Yoshikawa, Toshiyuki: *See*—
Otsuka, Saburo; Yoshikawa, Toshiyuki; Tokuda, Shoichi; and Ito, Yuusuke, 4,608,249, Cl. 424-28.000.

Yoshimaru, Tomohisa: *See*—
Ishihara, Atsushi; and Yoshimaru, Tomohisa, 4,607,956, Cl. 356-375.000.

Yoshimi, Tomohisa: *See*—
Takeo, Yuji; and Yoshimi, Tomohisa, 4,608,551, Cl. 340-53.000.

Yoshimura, Yoshikazu: *See*—
Shiomi, Yasufumi; and Yoshimura, Yoshikazu, 4,608,713, Cl. 455-325.000.

Yoshino, Shigeo; Zenbutsu, Tadashi; and Asami, Hajime, to Shinagawa Refractories Co., Ltd. Heat-resistant inorganic composition. 4,608,087, Cl. 106-18.120.

Yoshioka, Masahiro; Murakami, Masahiro; Irie, Yoichiro; Nakanishi, Tsugio; Tsutsui, Eiji; Iwao, Noriyuki; Hirobe, Junichi; and Wakikaido, Takahiro, to Mita Industrial Co., Ltd. Control circuit for an electrostatic copying apparatus. 4,607,943, Cl. 355-14.00R.

Yoshizaki, Kouji, to Toyota Jidosha Kabushiki Kaisha. Valve actuating apparatus in internal combustion engine. 4,607,600, Cl. 123-90.160.

Young, Chapman, III. Oscillating pulsed jet generator. 4,607,792, Cl. 239-101.000.

Young, Steven J., to Westinghouse Electric Corp. Method and apparatus for high density wire harness manufacture. 4,607,430, Cl. 29-868.000.

Youssef, Hassan: *See*—
Eudier, Michel; and Youssef, Hassan, 4,608,085, Cl. 75-247.000.

Yovanofski, Trayan. Automatic pool water regulator apparatus. 4,607,399, Cl. 4-508.000.

Yuasa, Yoshio; Naruse, Kazuhiko; and Inaba, Masahito, to Minolta Camera Kabushiki Kaisha. Electronic flash device. 4,608,522, Cl. 315-241.00P.

Yuasa, Yoshitaka: *See*—
Mochida, Yoshio; Ozeki, Toshiaki; Satoh, Kenji; and Yuasa, Yoshitaka, 4,607,689, Cl. 165-110.000.

Yukimoto, Koji: *See*—
Kobayashi, Osamu; Yukimoto, Koji; and Mikami, Mitsugu, 4,607,650, Cl. 133-5.00R.

Yung, Simon K. C. Contact lens cleaning apparatus. 4,607,652, Cl. 134-184.000.

Zaborney, John F., to Duracell Inc. Cell jacket. 4,608,323, Cl. 429-167.000.

Zaidan Hojin Handotai Kenkyu Shinkokai: *See*—
Nishizawa, Jun-ichi, 4,608,582, Cl. 357-22.000.

Zakhodyakin, Petr A.: *See*—
Obidin, Valery Y.; Zueva, Olga A.; Inochkin, Vladimir M.; Zhavoronkov, Andrei V.; Voinich, Leonid K.; Polushin, Jury V.; Zakhodyakin, Petr A.; Rodionova, Zinaida I.; Judchits, Nikolai N.; Belyanin, Vladimir V.; Yarkin, Andrei A.; Kalmykov, Vyacheslav N.; Ageechkin, Mikhail M.; and Arakelyants, Sergei M., 4,608,004, Cl. 418-206.000.

Zangerle, Eduard: *See*—
Salm, Franz; Zangerle, Eduard; and Muriset, Jean-Fracois, 4,607,988, Cl. 407-114.000.

Zapandi, Vladimir A.: *See*—
Yaganshev, Jury N.; Zapandi, Vladimir A.; and Tkachev, Valentin N., 4,607,480, Cl. 130-27.00T.

Zeavin, Mark. Half height data cartridge tape drive. 4,608,615, Cl. 360-96.500.

Zeisel, Manfred. Dental model in conjunction with a base plate for making a dental model. 4,608,016, Cl. 433-74.000.

Zeinek, Thomas G.; Caruolo, Antonio B.; Roberts, Stephanie A.; Dunn, James K.; and Spearen, John, to United Technologies Corporation. Method and apparatus for determining spring preloading in a fluid handling device. 4,607,421, Cl. 29-157.10R.

Zenbutsu, Tadashi: *See*—
Yoshino, Shigeo; Zenbutsu, Tadashi; and Asami, Hajime, 4,608,087, Cl. 106-18.120.

Zendejas-Martinez, Eugenio: *See*—
Villarreal-Trevino, Juan A.; Zendejas-Martinez, Eugenio; and Lopez-Ramos, Hector, 4,608,240, Cl. 423-230.000.

Zhavoronkov, Andrei V.: *See*—
Obidin, Valery Y.; Zueva, Olga A.; Inochkin, Vladimir M.; Zhavoronkov, Andrei V.; Voinich, Leonid K.; Polushin, Jury V.; Zakhodyakin, Petr A.; Rodionova, Zinaida I.; Judchits, Nikolai N.; Belyanin, Vladimir V.; Yarkin, Andrei A.; Kalmykov, Vyacheslav N.; Ageechkin, Mikhail M.; and Arakelyants, Sergei M., 4,608,004, Cl. 418-206.000.

Zijsling, Djurre H., to Shell Oil Company. Rotary drill bit with cutting elements having a thin abrasive front layer. 4,607,711, Cl. 175-329.000.

Zimmermann, Hans G. Downdraft stove with tubular grating. 4,607,610, Cl. 126-76.000.

Zoch, Roger L., to Nelson Industries, Inc. System for separating liquids. 4,608,160, Cl. 210-114.000.

Zorikov, Vladimir V.: *See*—
Bagratishvili, Givi D.; Dzhanelidze, Rusudan B.; Zorikov, Vladimir V.; Mikhelashvili, Vissarion M.; Pekar, Iosif E.; Chikovani, Rafael I.; Chkhaidze, Manana A.; Akopova, Svetlana Z.; Bogdanovich, Viktor B.; Svechnikov, Sergei V.; and Charmakadze, Revaz A., 4,608,581, Cl. 357-17.000.

Zueva, Olga A.: *See*—
Obidin, Valery Y.; Zueva, Olga A.; Inochkin, Vladimir M.; Zhavoronkov, Andrei V.; Voinich, Leonid K.; Polushin, Jury V.; Zakhodyakin, Petr A.; Rodionova, Zinaida I.; Judchits, Nikolai N.; Belyanin, Vladimir V.; Yarkin, Andrei A.; Kalmykov, Vyacheslav N.; Ageechkin, Mikhail M.; and Arakelyants, Sergei M., 4,608,004, Cl. 418-206.000.

Zulauf, Karlheinz; and Steigerwald, Franz, to Wella AG. Bottle with dosing device. 4,607,762, Cl. 222-48.000.

Zwart, Klaas. Wireline jar. 4,607,692, Cl. 166-178.000.

Zwiener, Rudolf; Mathis, Ernst; Thalmann, Theo; and Rohrich, Siegfried, to Aktiengesellschaft Adolph Saurer. Apparatus for controlling the warp thread tension by positional displacement of a back rest on a loom. 4,607,666, Cl. 139-115.000.

Zwiercan, Gary A.; Lacourse, Norman L.; and Lenchin, Julianne M., to National Starch and Chemical Corporation. Imitation cheese products containing high amylose starch as partial or total caseinate replacement. 4,608,265, Cl. 426-582.000.

3D Video Corporation: *See*—
Alger, Stanton W., 4,608,105, Cl. 156-108.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 26TH DAY OF AUGUST, 1986

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Bonerb, Timothy C.; and Bonerb, Vincent C. Bin for free flowing material. Re. 32,232, Cl. 222-95.000.

Bonerb, Vincent C.: *See*—
Bonerb, Timothy C.; and Bonerb, Vincent C., Re. 32,232, Cl. 222-95.000.

Brimacombe, J. Keith; and Hoefele, Enrique O., to Canadian Liquid Air Ltd. Non-ferrous metal treatment. Re. 32,234, Cl. 75-76.000.

Builders Concrete, Inc.: *See*—
Sluys, Wesley W., Re. 32,229, Cl. 114-267.000.

Canadian Liquid Air Ltd.: *See*—
Brimacombe, J. Keith; and Hoefele, Enrique O., Re. 32,234, Cl. 75-76.000.

DAGMA Deutsche Automaten-und Getrakemaschinen-Gesellschaft mit beschrankter Haftung & Co.: *See*—
Kuckens, Alexander; and Kohl, Horst, Re. 32,231, Cl. 222-81.000.

Forsberg, John H., to Lubrizol Corporation, The. Magnesium-containing complexes, method for their preparation, and compositions containing the same. Re. 32,235, Cl. 252-33.000.

Hoefele, Enrique O.: *See*—
Brimacombe, J. Keith; and Hoefele, Enrique O., Re. 32,234, Cl. 75-76.000.

International Business Machines Corporation: *See*—
Scheuerlein, Roy E., Re. 32,236, Cl. 365-149.000.

Kohl, Horst: *See*—
Kuckens, Alexander; and Kohl, Horst, Re. 32,231, Cl. 222-81.000.

Kuckens, Alexander; and Kohl, Horst, to DAGMA Deutsche Automaten-und Getrakemaschinen-Gesellschaft mit beschrankter Haftung & Co. Container for metered dispensing of liquid. Re. 32,231, Cl. 222-81.000.

Lubrizol Corporation, The: *See*—
Forsberg, John H., Re. 32,235, Cl. 252-33.000.

Nissan Motor Co., Ltd.: *See*—
Satoh, Seikoh; and Suzuki, Tadashi, Re. 32,230, Cl. 138-126.000.

Peletz, Harold, to Santa Rosa Cast Products Co. Precast concrete catch basin with form for gutter inlet. Re. 32,233, Cl. 404-5.000.

Santa Rosa Cast Products Co.: *See*—
Peletz, Harold, Re. 32,233, Cl. 404-5.000.

Satoh, Seikoh; and Suzuki, Tadashi, to Nissan Motor Co., Ltd. Rubber hose for automotive fuel line. Re. 32,230, Cl. 138-126.000.

Scheuerlein, Roy E., to International Business Machines Corporation. One device field effect transistor (FET) AC stable random access memory (RAM) array. Re. 32,236, Cl. 365-149.000.

Sluys, Wesley W., to Builders Concrete, Inc. Utility distribution system for marine floats. Re. 32,229, Cl. 114-267.000.

Suzuki, Tadashi: *See*—
Satoh, Seikoh; and Suzuki, Tadashi, Re. 32,230, Cl. 138-126.000.

LIST OF DESIGN PATENTEES

Aavid Engineering, Inc.: *See*—
Johnson, Philip A., 285,301, Cl. D13-23.000.
McCarthy, Alfred F., 285,302, Cl. D13-23.000.
St.Jacques, Kenneth R., 285,300, Cl. D13-23.000.

adidas Sportschuhfabriken Adi Dassler Stiftung & Co. KG: *See*—
Metzger, Dietrich, 285,379, Cl. D5-63.000.

Albertsen, Peter S., to Nu-Tec Incorporated. Catalytic converter. 285,308, 8-26-86, Cl. D15-5.000.

American Commercial Incorporated: *See*—
Laslo, Larry R., 285,273, Cl. D7-1.000.
Murai, Toschio, 285,277, Cl. D7-319.000.

Appel, Mel, to Mel Appel Company, The. Toy wagon. 285,322, 8-26-86, Cl. D21-71.000.

Appel, Mel, to Mel Appel Company, The. Toy golf cart. 285,323, 8-26-86, Cl. D21-80.000.

Arevalo, Alfred A.; and Arevalo, Mario M. Barbecue. 285,279, 8-26-86, Cl. D7-334.000.

Arevalo, Mario M.: *See*—
Arevalo, Alfred A.; and Arevalo, Mario M., 285,279, Cl. D7-334.000.

Ariaz, Dan; and Robison, Vance. Fog applicator for pesticide and herbicide chemical dispersion. 285,282, 8-26-86, Cl. D8-2.000.

Armstrong, Eric J.: *See*—
Hannah, Bruce R.; Stephens, William I.; Wilmot, George; and Armstrong, Eric J., 285,270, Cl. D6-511.000.

Associated Medical Systems, Inc.: *See*—
Morin, Marius J.; and Munro, Jack C., 285,368, Cl. D28-64.000.

AT&T Bell Laboratories: *See*—
Liuzzo, James G.; Proetta, William J.; Sylvester, Gordon E.; and Tilley, Alvin R., 285,305, Cl. D14-100.000.

AT&T Information Systems Inc.: *See*—
Joffe, Richard M.; Loosme, Oskar; and Sylvester, Gordon E., 285,306, Cl. D14-102.000.

Audette, Clifford J. Tongue cleaner. 285,341, 8-26-86, Cl. D24-23.000.

Audette, Clifford J. Tongue cleaner. 285,342, 8-26-86, Cl. D24-23.000.

B. F. Goodrich Company, The: *See*—
Manestar, Miroslav; and Skerl, Richard J., 285,297, Cl. D12-146.000.

Barker, Thomas G., to Paul K. Guillow, Inc. Toy glider. 285,324, 8-26-86, Cl. D21-89.000.

Berggreen, Ib H., to Interlego A.G. Toy construction piece simulating a slide. 285,325, 8-26-86, Cl. D21-108.000.

Berry, Richard D., Jr., to Design Institute America, Inc. Table. 285,267, 8-26-86, Cl. D6-430.000.

Big Time Inc.: *See*—
Chau, Jacky, 285,288, Cl. D10-32.000.

Black & Decker, Inc.: *See*—
Daher, Theodore G., 285,276, Cl. D7-309.000.

Blomqvist, Stefan, to Sunnex Equipment AB. Hammer. 285,284, 8-26-86, Cl. D8-77.000.

Boettger, Walter W., Jr. Hand grip exerciser. 285,329, 8-26-86, Cl. D21-198.000.

Boone, Frank L.; and Henlein, David. Cigarette holder. 285,362, 8-26-86, Cl. D27-2.000.

Bowsher, Robert L. Shoe rack. 285,266, 8-26-86, Cl. D6-412.000.

Brescia, Nicholas, to Master Sales/Management Corp. Ring. 285,291, 8-26-86, Cl. D11-34.000.

Breyer-Lindner, Brigitte. Hanging ornament. 285,293, 8-26-86, Cl. D11-125.000.

Bulgari, Gianni, to Partecipazioni Bulgari S.p.A. Ring. 285,292, 8-26-86, Cl. D11-37.000.

Bunschoten, Gerrit K.; van der Vlies, Gerardus J.; and van Berne, Joost, to Lever Brothers Company. Liquid soap dispenser. 285,271, 8-26-86, Cl. D6-545.000.

Bunschoten, Gerrit K.; van der Vlies, Gerardus J.; and van Berne, Joost, to Lever Brothers Company. Liquid soap dispenser. 285,272, 8-26-86, Cl. D6-545.000.

Cardiff, David L., Sr. Frame for physical exerciser. 285,328, 8-26-86, Cl. D21-191.000.

Cellini, Vito. Revolver barrel with integrated recoil reducer. 285,331, 8-26-86, Cl. D22-108.000.

Chapin, Eke: *See*—
Fly, Billy C., 285,298, Cl. D12-156.000.

Chau, Jacky, to Big Time Inc. Wrist watch. 285,288, 8-26-86, Cl. D10-32.000.

Cheng, Tsan-Hsiung. Multi-purpose soldering gun. 285,283, 8-26-86, Cl. D8-30.000.

Chevassus, Alain, to Lefebure Isolants Reunis. Box for cosmetic products or the like. 285,370, 8-26-86, Cl. D28-76.000.

Clark, Gary E., to Gilmore, G. Weber; and Heywood, Richard O.; part interest to each. Combined crane and trailer toy. 285,326, 8-26-86, Cl. D21-132.000.

Clarke, Roger W., to Sinclair Research Limited. Computer program cartridge. 285,307, 8-26-86, Cl. D14-114.000.

Commonwealth Toy & Novelty Co., Inc.: *See*—
Keith, Brooke G., 285,260, Cl. D2-279.000.

Cope, Carroll W., to DG Shelter Products. Furniture rail or similar article. 285,269, 8-26-86, Cl. D6-491.000.

Daher, Theodore G., to Black & Decker, Inc. Drip coffeemaker or similar article. 285,276, 8-26-86, Cl. D7-309.000.

DeFlorio, Albert J. Combined comb and shoehorn. 285,365, 8-26-86, Cl. D28-25.000.

DeMars, Robert A. Cup holder. 285,274, 8-26-86, Cl. D7-70.000.

Demrick, Carl J.; and Hussey, Ronald D., to Shepherd Products Limited. Picture window fireplace screen. 285,336, 8-26-86, Cl. D23-138.300.

Design Institute America, Inc.: *See*—
Berry, Richard D., Jr., 285,267, Cl. D6-430.000.

DG Shelter Products: *See*—
Cope, Carroll W., 285,269, Cl. D6-491.000.

Dole, Charles M.: *See*—
Schosser, John F.; Gleason, Roger F.; Dole, Charles M.; Us, Max; Howard, John D.; and Spaine, Peter D., 285,356, Cl. D26-49.000.
Duarte-Martins, Herminio, Jr., to Duarte-Martins, Ulla Anette. Bone-plug drill bit. 285,343, 8-26-86, Cl. D24-28.000.
Duarte-Martins, Ulla Anette: *See*—
Duarte-Martins, Herminio, Jr., 285,343, Cl. D24-28.000.
Duracell Inc.: *See*—
Schosser, John F.; Gleason, Roger F.; Dole, Charles M.; Us, Max; Howard, John D.; and Spaine, Peter D., 285,356, Cl. D26-49.000.
E.G.O. Elektro-Gerate Blanc u. Fischer: *See*—
Fischer, Karl; and Schreder, Felix, 285,280, Cl. D7-346.000.
Enduro Binders, Inc.: *See*—
Maune, Michael E., 285,313, Cl. D19-32.000.
English, George J.; and Levin, Robert E., to GTE Products Corporation. Lamp-reflector module for use in a motor vehicle headlighting system. 285,351, 8-26-86, Cl. D26-28.000.
Enk, William A. Fire extinguisher discharge nozzle. 285,333, 8-26-86, Cl. D23-34.000.
Envall, Bjorn E. A., to Saab-Scania Aktiebolag. Signal light for an automobile. 285,352, 8-26-86, Cl. D26-35.000.
Envall, Bjorn E. A., to Saab-Scania Aktiebolag. Rear light for an automobile. 285,353, 8-26-86, Cl. D26-35.000.
Envall, Bjorn E. A.: *See*—
Wardle, Geoffrey P.; and Envall, Bjorn E. A., 285,299, Cl. D12-163.000.
Fischer, Karl; and Schreder, Felix, to E.G.O. Elektro-Gerate Blanc u. Fischer. Combined electric hotplate and mounting surface therefor. 285,280, 8-26-86, Cl. D7-346.000.
Fly, Billy C., to Chapin, Eke. Truck cover or similar article. 285,298, 8-26-86, Cl. D12-156.000.
Forcoven Products, Inc.: *See*—
Nevin, Donald T., 285,340, Cl. D24-17.000.
Foster Grant Corporation: *See*—
Rocha, Daniel, 285,310, Cl. D16-116.000.
Fukuchi, Eiji: *See*—
Kazusa, Susumu; Okamoto, Harunori; and Fukuchi, Eiji, 285,296, Cl. D12-136.000.
Galoppo, Agrippino, to Paim s.n.c. di Casole Patrizia & C. Articulated ball point pen. 285,314, 8-26-86, Cl. D19-42.000.
Gamm, Robert J., to Kangaroos U.S.A., Inc. Purse pocketed shoe. 285,261, 8-26-86, Cl. D2-309.000.
Gertig, Pamela: *See*—
Kosi, Barbara; and Gertig, Pamela, 285,315, Cl. D19-59.000.
Gilmore, G. Weber: *See*—
Clark, Gary E., 285,326, Cl. D21-132.000.
Gleason, Roger F.: *See*—
Schosser, John F.; Gleason, Roger F.; Dole, Charles M.; Us, Max; Howard, John D.; and Spaine, Peter D., 285,356, Cl. D26-49.000.
GTE Products Corporation: *See*—
English, George J.; and Levin, Robert E., 285,351, Cl. D26-28.000.
Hannah, Bruce R.; Stephens, William I.; Wilmot, George; and Armstrong, Eric J., to Knoll International, Inc. Universal keyboard mount. 285,270, 8-26-86, Cl. D6-511.000.
Henlein, David: *See*—
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Herzfeld, Ronald, to Thorwarth & Grebe OHG. Toothbrush assembly. 285,262, 8-26-86, Cl. D4-101.000.
Hestair Kiddicraft Limited: *See*—
Thomson, Harry S.; Raffo, David M.; and Pape, John A., 285,320, Cl. D21-65.000.
Thomson, Harry S.; Raffo, David M.; and Pape, John A., 285,321, Cl. D21-65.000.
Heywood, Richard G.: *See*—
Clark, Gary E., 285,326, Cl. D21-132.000.
HGM, Inc.: *See*—
Tanner, Howard M. C., 285,377, Cl. D34-21.000.
Hill, Percy H., to Stratford Laboratories. Handle for toothbrush or flossing aid. 285,263, 8-26-86, Cl. D4-104.000.
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Schosser, John F.; Gleason, Roger F.; Dole, Charles M.; Us, Max; Howard, John D.; and Spaine, Peter D., 285,356, Cl. D26-49.000.
Hp Chemicals, Inc.: *See*—
Shalon, Yehuda; Shalon, Tadmor; and Meyer, Danny D., 285,290, Cl. D10-81.000.
Huber, Otto L.; and Magidson, Mark, to Moldex/Metric Products, Inc. Face mask. 285,374, 8-26-86, Cl. D29-8.000.
Hussey, Ronald D.: *See*—
Demrick, Carl J.; and Hussey, Ronald D., 285,336, Cl. D23-138.300.
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Sharpe, Stephen N., 285,286, Cl. D8-356.000.
Inaba, Hiroshi, to Nitsuko Limited. Key telephone set. 285,304, 8-26-86, Cl. D14-58.000.
Interlego AG: *See*—
Nielsen, Jacob, 285,319, Cl. D21-65.000.
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International Business Machines Corporation: *See*—
Jennings, Jack H.; and Mendel, Peter J., 285,312, Cl. D18-12.000.
James, Houston F. Set of hanger mounting pieces for attachment to a display board or similar article. 285,317, 8-26-86, Cl. D20-43.000.
Jennings, Jack H.; and Mendel, Peter J., to International Business Machines Corporation. Cartridge for a typewriter. 285,312, 8-26-86, Cl. D18-12.000.
Joffe, Richard M.; Loosme, Oskar; and Sylvester, Gordon E., to AT&T Information Systems Inc. Public access data processor controlled information terminal. 285,306, 8-26-86, Cl. D14-102.000.
John Manufacturing Limited: *See*—
Yuen, John S., 285,354, Cl. D26-41.000.
Yuen, John S., 285,355, Cl. D26-41.000.
Johnson, Philip A., to Aavid Engineering, Inc. Pinned heat-sink extrusion for circuit-board mounting. 285,301, 8-26-86, Cl. D13-23.000.
Johnson, Robert H. Gas flame igniter. 285,334, 8-26-86, Cl. D23-90.100.
Joosten, Stefanus F. W.; and Oosterheerd, Evert, to U.S. Philips Corporation. Lighting fixture. 285,358, 8-26-86, Cl. D26-77.000.
Joosten, Stefanus F. W.; and Oosterheerd, Evert, to U.S. Philips Corporation. Lighting fixture. 285,359, 8-26-86, Cl. D26-77.000.
Joosten, Stefanus F. W.; and Oosterheerd, Evert, to U.S. Philips Corporation. Lighting fixture. 285,360, 8-26-86, Cl. D26-85.000.
Kangaroos U.S.A., Inc.: *See*—
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Kazusa, Susumu; Okamoto, Harunori; and Fukuchi, Eiji, to Mistuboshi Belting Ltd. Bicycle tire tread. 285,296, 8-26-86, Cl. D12-136.000.
Keith, Brooke G., to Commonwealth Toy & Novelty Co., Inc. Slipper. 285,260, 8-26-86, Cl. D2-279.000.
Kirkpatrick, John S., to Ross Bicycles Inc. Bicycle handlebar stem. 285,295, 8-26-86, Cl. D12-118.000.
Klaas, Lawrence S., to Ruemelin Manufacturing Co. Dental blast cabinet. 285,337, 8-26-86, Cl. D24-4.000.
Knochner, Michael: *See*—
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Knoll International, Inc.: *See*—
Hannah, Bruce R.; Stephens, William I.; Wilmot, George; and Armstrong, Eric J., 285,270, Cl. D6-511.000.
Kobiyama, Makoto: *See*—
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Kojima, Nobuyuki; Sekigawa, Youichi; and Kobiyama, Makoto, to Toshiba Heating Appliances Co., Ltd. Oilstove. 285,335, 8-26-86, Cl. D23-122.000.
Kosi, Barbara; and Gertig, Pamela. Educational storage unit for a child or the like. 285,315, 8-26-86, Cl. D19-59.000.
Kozlow, Gary W.: *See*—
Nelson, Denis H.; and Kozlow, Gary W., 285,347, Cl. D24-51.000.
Landstingens Inkopscentral, LIC, Ekonomisk Forening: *See*—
Norell, Margareta E. B., 285,378, Cl. D34-33.000.
Lasko, Larry R., to American Commercial Incorporated. Gravy boat stand. 285,273, 8-26-86, Cl. D7-1.000.
Lefebure Isolants Reunis: *See*—
Chevassus, Alain, 285,370, Cl. D28-76.000.
Lever Brothers Company: *See*—
Bunschoten, Gerrit K.; van der Vlies, Gerardus J.; and van Berne, Joost, 285,271, Cl. D6-545.000.
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Levin, Robert E.: *See*—
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Lindner, Millie C. Combined cosmetic applicator and cleanup tool. 285,367, 8-26-86, Cl. D28-57.000.
Liuzzo, James G.; Proetta, William J.; Sylvester, Gordon E.; and Tilley, Alvin R., to AT&T Bell Laboratories. Keyboard housing. 285,305, 8-26-86, Cl. D14-100.000.
Loosme, Oskar: *See*—
Joffe, Richard M.; Loosme, Oskar; and Sylvester, Gordon E., 285,306, Cl. D14-102.000.
L'Oreal: *See*—
Simonetti, Theodore; and Spakowski, Elaine P., 285,372, Cl. D28-83.000.
L'Oreal, S.A.: *See*—
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Magidson, Mark: *See*—
Huber, Otto L.; and Magidson, Mark, 285,374, Cl. D29-8.000.
Mahoney, Richard F.; and Swartz, Kenneth L. Pen holder base. 285,316, 8-26-86, Cl. D19-99.000.
Manestar, Miroslav; and Skerl, Richard J., to B. F. Goodrich Company, The. Tire. 285,297, 8-26-86, Cl. D12-146.000.
Marcucci, Albert. Trouble light handle attachment. 285,361, 8-26-86, Cl. D26-138.000.
Master Sales/Management Corp.: *See*—
Brescia, Nicholas, 285,291, Cl. D11-34.000.
Matthews, Gerald L. Urinal. 285,348, 8-26-86, Cl. D24-54.000.
Maune, Michael E., to Enduro Binders, Inc. Book spine. 285,313, 8-26-86, Cl. D19-32.000.
McCarthy, Alfred F., to Aavid Engineering, Inc. Leadless integrated-circuit chip-carrier heat sink. 285,302, 8-26-86, Cl. D13-23.000.
Meisho Tokushu Sangyo Co., Ltd.: *See*—
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Mel Appel Company, The: *See*—
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Meyer, Danny D.: *See—*
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Miale, Peter R. Hanger. 285,264, 8-26-86, Cl. D6-327.000.
Mistuboshi Belting Ltd.: *See—*
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Mitsuboshi Diamond Kogyo Kabushiki Kaisha: *See—*
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Moldex/Metric Products, Inc.: *See—*
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Morin, Marius J.; and Munro, Jack C., to Associated Medical Systems, Inc. Dental flossing tool. 285,368, 8-26-86, Cl. D28-64.000.
Mou Ki Industrial Limited: *See—*
Tong, Wing K., 285,371, Cl. D28-78.000.
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Murai, Toschio, to American Commercial, Incorporated. Cream pitcher. 285,277, 8-26-86, Cl. D7-319.000.
Nelson, Denis H.; and Kozlow, Gary W., to Warner-Lambert Company. Rotary peristaltic pump for intravenous delivery of medical solutions to patients. 285,347, 8-26-86, Cl. D24-51.000.
Nesbitt, William R. Pediatric lumbar puncture immobilizer. 285,349, 8-26-86, Cl. D24-64.000.
Nevin, Donald T., to Forcoven Products, Inc. Milkfat tester or the like. 285,340, 8-26-86, Cl. D24-17.000.
Nielsen, Jacob, to Interlego AG. Rattle. 285,319, 8-26-86, Cl. D21-65.000.
Nitsuko Limited: *See—*
Inaba, Hiroshi, 285,304, Cl. D14-58.000.
Norell, Margareta E. B., to Landstingens Inkopscentral, LIC, Ekonomisk Forening. Hoist for use with a hospital bed. 285,378, 8-26-86, Cl. D34-33.000.
Nu-Tec Incorporated: *See—*
Albertsen, Peter S., 285,308, Cl. D15-5.000.
Nugent, Brian G.: *See—*
Scheid, William J.; and Nugent, Brian G., 285,268, Cl. D6-470.000.
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Okamoto, Masaaki, to Meisho Tokushu Sangyo Co., Ltd. Vehicle for a roller coaster. 285,330, 8-26-86, Cl. D21-242.000.
Olson, James B. Dosage device for syringes. 285,344, 8-26-86, Cl. D24-31.000.
Oosterheerd, Evert: *See—*
Joosten, Stefanus F. W.; and Oosterheerd, Evert, 285,358, Cl. D26-77.000.
Joosten, Stefanus F. W.; and Oosterheerd, Evert, 285,359, Cl. D26-77.000.
Joosten, Stefanus F. W.; and Oosterheerd, Evert, 285,360, Cl. D26-85.000.
Paim s.n.c. di Casole Patrizia & C.: *See—*
Galoppo, Agrippino, 285,314, Cl. D19-42.000.
Pape, John A.: *See—*
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Partecipazioni Bulgari S.p.A.: *See—*
Bulgari, Gianni, 285,292, Cl. D11-37.000.
Pas, Rene J. T. M. Display stand for flowers. 285,265, 8-26-86, Cl. D6-405.000.
Paul K. Guillow, Inc.: *See—*
Barker, Thomas G., 285,324, Cl. D21-89.000.
Pollitz, Hilda S., to Teleflora, Inc. Combined napkin rings and holder set. 285,275, 8-26-86, Cl. D7-72.000.
Pozzi, Ambrogio, to Rosenthal Akt. Rechtsabteilung. Vase. 285,294, 8-26-86, Cl. D11-143.000.
Pritchett, John C. Task lighting fixture. 285,357, 8-26-86, Cl. D26-61.000.
Proetta, William J.: *See—*
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Propson, George F., to Western Publishing Company, Inc. Game board or similar article. 285,318, 8-26-86, Cl. D21-17.000.
Raffo, David M.: *See—*
Thomson, Harry S.; Raffo, David M.; and Pape, John A., 285,320, Cl. D21-65.000.
Thomson, Harry S.; Raffo, David M.; and Pape, John A., 285,321, Cl. D21-65.000.
Rips, Irving. Lens for eye glasses. 285,309, 8-26-86, Cl. D16-101.000.
Robison, Vance: *See—*
Ariaz, Dan; and Robison, Vance, 285,282, Cl. D8-2.000.
Rocha, Daniel, to Foster Grant Corporation. Pair of spectacles. 285,310, 8-26-86, Cl. D16-116.000.
Rosenthal Akt. Rechtsabteilung: *See—*
Pozzi, Ambrogio, 285,294, Cl. D11-143.000.
Ross Bicycles Inc.: *See—*
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Rotpunkt Dr. Anso Zimmermann: *See—*
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Rowenta-Werke, GmbH: *See—*
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Rubbermaid Commercial Products Inc.: *See—*
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Rubin, Gerald J. Hair curling iron attachment or similar article. 285,366, 8-26-86, Cl. D28-35.000.
Ruemelin Manufacturing Co.: *See—*
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Saab-Scania Aktiebolag: *See—*
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Envall, Bjorn E. A., 285,353, Cl. D26-35.000.
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Sable, Donald E., II. Grill. 285,281, 8-26-86, Cl. D7-363.000.
St.Jacques, Kenneth R., to Aavid Engineering, Inc. Thermally-efficient heat sink for electronic devices. 285,300, 8-26-86, Cl. D13-23.000.
San Juan Pools, Inc.: *See—*
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Sawada, Masaji, to Sharp Corporation. Electronic calculator. 285,311, 8-26-86, Cl. D18-7.000.
Scheid, William J.; and Nugent, Brian G. Display case. 285,268, 8-26-86, Cl. D6-470.000.
Schering Corporation: *See—*
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Schosser, John F.; Gleason, Roger F.; Dole, Charles M.; Us, Max; Howard, John D.; and Spaine, Peter D., to Duracell Inc. Flashlight. 285,356, 8-26-86, Cl. D26-49.000.
Schreder, Felix: *See—*
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Sekiden Kaihatsu Shoji Kabushiki Kaisha: *See—*
Yano, Hiroshi, 285,327, Cl. D21-147.000.
Sekigawa, Youichi: *See—*
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Shalon, Tadmor: *See—*
Shalon, Yehuda; Shalon, Tadmor; and Meyer, Danny D., 285,290, Cl. D10-81.000.
Shalon, Yehuda; Shalon, Tadmor; and Meyer, Danny D., to Hp Chemicals, Inc. Modular preparative high pressure liquid chromatography column. 285,290, 8-26-86, Cl. D10-81.000.
Sharp Corporation: *See—*
Sawada, Masaji, 285,311, Cl. D18-7.000.
Sharpe, Stephen N., to Idea Works, Inc., The. Cable mounting block. 285,286, 8-26-86, Cl. D8-356.000.
Shepard, Dennis D. Intraocular lens with teardrop shaped resilient support means. 285,345, 8-26-86, Cl. D24-33.000.
Shepherd Products Limited: *See—*
Demrick, Carl J.; and Hussey, Ronald D., 285,336, Cl. D23-138.300.
Sherwood Selpac Corp.: *See—*
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Simonetti, Theodore; and Spakowski, Elaine P., to L'Oreal. Blush compact. 285,372, 8-26-86, Cl. D28-83.000.
Simonetti, Theodore; and Spakowski, Elaine P., to L'Oreal, S.A. Pressed powder compact. 285,373, 8-26-86, Cl. D28-83.000.
Sinclair Research Limited: *See—*
Clarke, Roger W., 285,307, Cl. D14-114.000.
Skerl, Richard J.: *See—*
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Tovey, Geoffrey D., 285,364, Cl. D28-2.000.
Soyama, Hiroshi, to Mitsuboshi Diamond Kogyo Kabushiki Kaisha. Glass cutter. 285,285, 8-26-86, Cl. D8-98.000.
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Stephens, William I.: *See—*
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Stratford Laboratories: *See—*
Hill, Percy H., 285,263, Cl. D4-104.000.
Stutzer, Franz A.; and Knochner, Michael, to Rowenta-Werke, GmbH. Steam iron. 285,376, 8-26-86, Cl. D32-70.000.
Sullivan, George P., to San Juan Pools, Inc. Swimming pool. 285,350, 8-26-86, Cl. D25-2.000.
Sunnex Equipment AB: *See—*
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Sussman, Howard. Storage device for a hair dryer and related articles. 285,369, 8-26-86, Cl. D28-73.000.
Swartz, Kenneth L.: *See—*
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Sween, Adrian P. Bathing tub. 285,346, 8-26-86, Cl. D24-38.000.
Sylvester, Gordon E.: *See—*
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Szablak, Michael J.; and Tomblin, Glen E., to Rubbermaid Commercial Products Inc. Needle and syringe destructor. 285,338, 8-26-86, Cl. D24-8.000.

Tamsen, Anders. Programmable infusion and injection unit or the like. 285,339, 8-26-86, Cl. D24-17.000.

Tannar, Stanley E. Bread bag clip. 285,287, 8-26-86, Cl. D9-434.000.

Tanner, Howard M. C., to HGM, Inc. Cart. 285,377, 8-26-86, Cl. D34-21.000.

Teleflora, Inc.: *See—*
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Thomson, Harry S.; Raffo, David M.; and Pape, John A., to Hestair Kiddicraft Limited. Rattle. 285,320, 8-26-86, Cl. D21-65.000.

Thomson, Harry S.; Raffo, David M.; and Pape, John A., to Hestair Kiddicraft Limited. Suction toy. 285,321, 8-26-86, Cl. D21-65.000.

Thorwarth & Grebe OHG: *See—*
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Tilley, Alvin R.: *See—*
Liuzzo, James G.; Proetta, William J.; Sylvester, Gordon E.; and Tilley, Alvin R., 285,305, Cl. D14-100.000.

Tomblin, Glen E.: *See—*
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Tong, Wing K., to Mou Ki Industrial Limited. Cosmetic container with lighted mirror. 285,371, 8-26-86, Cl. D28-78.000.

Toshiba Heating Appliances Co., Ltd.: *See—*
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Tovey, Geoffrey D., to Smith Kline & French Laboratories Limited. Pharmaceutical tablet. 285,363, 8-26-86, Cl. D28-2.000.

Tovey, Geoffrey D., to Smith Kline & French Laboratories Limited. Pharmaceutical tablet. 285,364, 8-26-86, Cl. D28-2.000.

Trinkwalder, Joseph C., to Sherwood Selpac Corp. Gauge valve. 285,332, 8-26-86, Cl. D23-21.000.

U.S. Philips Corporation: *See—*
Joosten, Stefanus F. W.; and Oosterheerd, Evert, 285,358, Cl. D26-77.000.
Joosten, Stefanus F. W.; and Oosterheerd, Evert, 285,359, Cl. D26-77.000.
Joosten, Stefanus F. W.; and Oosterheerd, Evert, 285,360, Cl. D26-85.000.
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van Berne, Joost: *See—*
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van der Vlies, Gerardus J.: *See—*
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van de Ven, Petrus H. J., to U.S. Philips Corporation. Loudspeaker panel. 285,303, 8-26-86, Cl. D14-39.000.

Wardle, Geoffrey P.; and Envall, Bjorn E. A., to Saab-Scania Aktiebolag. Front radiator grille for an automobile. 285,299, 8-26-86, Cl. D12-163.000.

Warner-Lambert Company: *See—*
Nelson, Denis H.; and Kozlow, Gary W., 285,347, Cl. D24-51.000.

Western Publishing Company, Inc.: *See—*
Propson, George F., 285,318, Cl. D21-17.000.

Wilmot, George: *See—*
Hannah, Bruce R.; Stephens, William I.; Wilmot, George; and Armstrong, Eric J., 285,270, Cl. D6-511.000.

Wimmer, Sheldon G.; and Sandbloom, Keith O. Template for lining, shading and the like. 285,289, 8-26-86, Cl. D10-64.000.

Yano, Hiroshi, to Sekiden Kaihatsu Shoji Kabushiki Kaisha. Toy gun. 285,327, 8-26-86, Cl. D21-147.000.

Yuen, John S., to John Manufacturing Limited. Transistorized multi-purpose portable lamp. 285,354, 8-26-86, Cl. D26-41.000.

Yuen, John S., to John Manufacturing Limited. Transistorized multi-purpose portable lamp. 285,355, 8-26-86, Cl. D26-41.000.

Zimmermann, Anso, to Rotpunkt Dr. Anso Zimmermann. Insulated jug. 285,278, 8-26-86, Cl. D7-321.000.

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Barberet, Nicole; and Ducloux, Yves, to Laboratoire de Physiologie Vegetale de la Londe. Carnation named Lonseva. 5,787, 8-26-86, Cl. 71.000.

Barberet, Nicole; and Ducloux, Yves, to Laboratoire de Physiologie Vegetale de la Londe. Carnation named Londrino. 5,788, 8-26-86, Cl. 71.000.

Barberet, Nicole; and Ducloux, Yves, to Laboratoire de Physiologie Vegetale de la Londe. Carnation named Londaison. 5,789, 8-26-86, Cl. 71.000.

Ducloux, Yves: *See—*
Barberet, Nicole; and Ducloux, Yves, 5,787, Cl. 71.000.
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CLASSIFICATION OF PATENTS

ISSUED AUGUST 26, 1986

NOTE.—First number, class; second number, subclass; third number, patent number

CLASS 2

79	4,607,396
410	4,607,397
452	4,607,398

CLASS 4

508	4,607,399
541	4,607,400

CLASS 5

414	4,607,401
425	4,607,402
449	4,607,403
450	4,607,404
451	4,607,405

CLASS 7

100	4,607,406
156	4,607,407

CLASS 8

152	4,607,409
159	4,607,408
506	4,608,056

CLASS 15

3.51	4,607,410
117	4,607,411
230.18	4,607,412
301	4,607,413

CLASS 24

16 FB	4,607,414
94	4,607,415
389	4,607,416

CLASS 27

1	4,607,417

CLASS 29

21.1	4,607,418
24.5	4,607,419
113 R	4,607,420
157.1 R	4,607,421
	4,607,422
157.3 R	4,607,423
	4,607,424
408	4,607,425
421 R	4,607,426
432	4,607,427
436	4,607,428
572	4,607,429
868	4,607,430

CLASS 30

276	4,607,431
294	4,607,432

CLASS 33

1 BB	4,607,433
42	4,607,434
125 B	4,607,435
143 D	4,607,436
374	4,607,437
451	4,607,438

CLASS 36

45	4,607,439
114	4,607,440

CLASS 37

2 R	4,607,441

CLASS 40

152	4,607,442
405	4,607,443
550	4,607,444

CLASS 42

90	4,607,446
100	4,607,445

CLASS 43

3	4,607,447
8	4,607,448
43.11	4,607,449
83	4,607,450
139	4,607,451

CLASS 44

51	4,608,057

CLASS 47

1 R	4,607,452
58	4,607,453
63	4,607,454

CLASS 48

73	4,608,058
197 R	4,608,059

CLASS 49

55	4,607,455
352	4,607,456
400	4,607,457

CLASS 51

102	4,607,459
119	4,607,458
165 TP	4,607,460
165.8	4,607,461
213	4,607,462
219 R	4,607,463
362	4,607,464

CLASS 52

12	4,607,465
144	4,607,466
169.6	4,607,467
172	4,607,468
220	4,607,469
226	4,607,470
509	4,607,471
698	4,607,472

CLASS 53

54	4,607,473
117	4,607,474
150	4,607,475
399	4,607,476
444	4,607,477
502	4,607,478
530	4,607,479

CLASS 55

16	4,608,060
26	4,608,061
186	4,608,062
208	4,608,063
238	4,608,064
269	4,608,065
385 A	4,608,066

CLASS 57

3	4,607,481
22	4,607,482
334	4,607,483
337	4,607,484
401	4,607,485

CLASS 60

734	4,607,486
752	4,607,487

CLASS 62

9	4,608,067
18	4,608,068
26	4,608,069
45	4,607,488
49	4,607,489
51 —	4,607,490
55.5	4,607,491
	4,607,492
	4,607,493
62	4,607,494
63	4,607,495
64	4,607,496
179	4,607,497
185	4,607,498
262	4,607,499
	4,607,500
288	4,607,501
294	4,607,502
503	4,607,503

CLASS 65

3.12	4,608,070
13	4,608,071
79	4,608,072
163	4,608,073
164	4,608,074
362 —	4,608,075

CLASS 66

24	4,607,504
117	4,607,505
125 R	4,607,506
132 T	4,607,507

CLASS 68

22 R	4,607,508
27	4,607,509

CLASS 70

95	4,607,510

CLASS 71

76	4,608,076
77	4,608,077
88	4,608,078
92	4,608,079
	4,608,080
94	4,608,081
118	4,608,082

CLASS 72

16	4,607,511
46	4,607,512
137	4,607,513
354	4,607,514
358	4,607,515
405	4,607,516
449	4,607,517
453.12	4,607,518
457	4,607,519

CLASS 73

19	4,607,520
23	4,607,521
37.5	4,607,525
49.2	4,607,522
116	4,607,523
152	4,607,524
432 A	4,607,527
432 PS	4,607,526
602	4,607,528
660	4,607,529
708	4,607,530
794	4,607,531
819	4,607,532
861.12	4,607,533
862.01	4,607,534
862.47	4,607,535
863.91	4,607,536

CLASS 74

10.33	4,607,537
417	4,607,538
492	4,607,539
493	4,607,540
758	4,607,541
869	4,607,542

CLASS 75

76	Re.32,234
83	4,608,083
101 R	4,608,084
247	4,608,085

CLASS 81

3.09	4,607,543
9.4	4,607,544
9.51	4,607,545
53.2	4,607,547
57.39	4,607,546
427	4,607,548

CLASS 82

2 E	4,607,549
9	4,607,550

CLASS 83

54	4,607,551
71	4,607,552
164	4,607,553
277	4,607,554
471.2	4,607,555
511	4,607,556
687	4,607,557
879	4,607,558

CLASS 84

275	4,607,559

CLASS 89

16	4,607,560
37.04	4,607,561
40.03	4,607,562
132	4,607,563

CLASS 98

I	4,607,564
37	4,607,566
40.24	4,607,565
42.12	4,607,567
50	4,607,568

CLASS 99

426	4,607,569

CLASS 100

116	4,607,570

CLASS 101

365	4,607,571
426	4,607,572

CLASS 102

275.8	4,607,573

CLASS 104

126	4,607,574
304	4,607,575

CLASS 106

12	4,608,086
18.12	4,608,087
35	4,608,088
90	4,608,089
272	4,608,090

CLASS 108

110	4,607,576
144	4,607,577
145	4,607,578

CLASS 109

25	4,607,579

CLASS 111

1	4,607,580
73	4,607,581

CLASS 112

121.12	4,607,582
130	4,607,583
147	4,607,584
434	4,607,585

CLASS 114

219	4,607,586
267	Re.32,229

CLASS 118

37	4,607,587
52	4,607,588
201	4,607,589
314	4,607,590
666	4,607,591
689	4,607,592
719	4,607,593

CLASS 119

1	4,607,594
2	4,607,595
14.02	4,607,596
51 R	4,607,597

CLASS 123

56 BC	4,607,598
90.16	4,607,600
90.31	4,607,601
90.5	4,607,599
425	4,607,602
492	4,607,603
572	4,607,604

CLASS 124

6	4,607,605
85	4,607,606

CLASS 125

11 CD	4,607,607

CLASS 126

30	4,607,608
39 J	4,607,609
76	4,607,610
121	4,607,611
	4,607,612
215	4,607,613
299 E	4,607,614
362	4,607,615
445	4,607,616

CLASS 128

1 R	4,607,617
	4,607,618
4	4,607,619
	4,607,620
6	4,607,621
	4,607,622
11	4,607,623
24.2	4,607,624
26	4,607,625
43	4,607,626
66	4,607,627
80 A	4,607,629
80 C	4,607,628
127	4,607,630
132 D	4,607,631
156	4,607,633
203.25	4,607,634
207.15	4,607,635
334 C	4,607,637
334 R	4,607,636
335	4,607,638
419 E	4,607,639
425	4,607,640
663	4,607,642
680	4,607,641
715	4,607,643
743	4,607,632
785	4,607,644

CLASS 130

27 T	4,607,480

CLASS 131

109.1	4,607,645
309	4,607,646
365	4,607,647

CLASS 133

3 C	4,607,649
3 D	4,607,648
5 R	4,607,650

CLASS 134

3	4,608,091
62	4,607,651
184	4,607,652

CLASS 135

20 M	4,607,653
89	4,607,654
95	4,607,655
110	4,607,656

CLASS 136

256	4,608,451
261	4,608,452

CLASS 137

15.1	4,607,657
393	4,607,658
454.2	4,607,659
512.1	4,607,660
	4,607,661
625.65	4,607,662
846	4,607,663

CLASS 138

—	4,607,664
126	Re.32,230
148	4,607,665

CLASS 139

115	4,607,666
429	4,607,667
452	4,607,668

CLASS 140

124	4,607,669

CLASS 141

1	4,607,670
329	4,607,671

CLASS 144

2 R	4,607,672
144.5 R	4,607,673

CLASS 148

6.11	4,608,092
6.3	4,608,098
6.35	4,608,093
11.5 N	4,608,094
33	4,608,095
	4,608,096
33.3	4,608,097
37	4,608,099
111	4,608,100
127	4,608,101

CLASS 149

92	4,608,102

CLASS 150

52 R	4,607,674

CLASS 152

521	4,607,675

CLASS 156

64	4,608,103
78	4,608,104
108	4,608,105
182	4,608,106
190	4,608,107
219	4,608,108
247	4,608,109
250	4,608,110
306.6	4,608,111
345	4,608,112
638	4,608,113
497	4,608,114
519	4,608,115
523	4,608,116
610	4,608,117
643	4,608,118

CLASS 159

3	4,608,119
17.1	4,608,120

CLASS 160

74	4,607,676
84 R	4,607,677
332	4,607,678

CLASS 162

19	4,608,121
80	4,608,122
146	4,608,123
193	4,608,124
273	4,608,125

CLASS 164

5	4,607,679
134	4,607,680
418	4,607,682
453	4,607,681
463	4,607,683

CLASS 165

70	4,607,684
80.3	4,607,685
95	4,607,686
104.19	4,607,687
104.22	4,607,688
110	4,607,689
145	4,607,690

CLASS 166

88	4,607,691
178	4,607,692
242	4,607,693
250	4,607,694
272	4,607,695
275	4,607,696
280	4,607,697
288	4,607,698
303	4,607,699
	4,607,700
368	4,607,701

CLASS 169

25	4,607,702

CLASS 171

1	4,607,703

CLASS 172

42	4,607,704
430	4,607,705
599	4,607,706
764	4,607,707
776	4,607,708

CLASS 173

170	4,607,709

CLASS 174

35 MS	4,608,453
65 SS	4,608,454

CLASS 175
249 4,607,710
329 4,607,711
410 4,607,712

CLASS 177
25 4,607,713

CLASS 178
22.17 4,608,455

CLASS 179
1.5 S 4,608,456
2 A 4,608,457
4,608,458
8.03 4,608,459
6.11 4,608,460
16 AA 4,608,461
81 B 4,608,462
115.5 R 4,608,463
170.2 4,608,464

CLASS 180
68.1 4,607,714
118 4,607,715
131 4,607,716
141 4,607,717
226 4,607,718
272 4,607,719

CLASS 181
135 4,607,720
249 4,607,721
252 4,607,722
272 4,607,723

CLASS 182
3 4,607,724
189 4,607,725
204 4,607,726

CLASS 184
38.1 4,607,727

CLASS 188
73.38 4,607,728
153 R 4,607,729
170 4,607,730

CLASS 192
3 S 4,607,733
3.29 4,607,731
11 4,607,735
12 R 4,607,732
18 A 4,607,736
67 R 4,607,734
88 A 4,607,737
109 R 4,607,738

CLASS 194
227 4,607,739

CLASS 198
320 4,607,740
345 4,607,741
398 4,607,742
415 4,607,743
861 4,607,744
706 4,607,745

CLASS 200
5 A 4,608,465
11 D 4,608,466
16 D 4,608,467
61.45 R 4,608,468
61.58 B 4,608,469
144 AP 4,608,470

CLASS 202
84 4,608,126

CLASS 203
48 4,608,127

CLASS 204
16 4,608,128
16.1 4,608,129
27 4,608,130
33 4,608,131
59 R 4,608,132
4,608,133
67 4,608,134
4,608,135
106 4,608,136
129 4,608,137
129.3 4,608,138
181.7 4,608,139
182.3 4,608,140
182.5 4,608,141
192 M 4,608,142
224 M 4,608,143
257 4,608,144
278 4,608,145
299 R 4,608,146
301 4,608,147
408 4,608,148
418 4,608,149

CLASS 206
53 4,607,746
232 4,607,747
254 4,607,748
443 4,607,750
610 4,607,749

CLASS 208
22 4,608,150
33 4,608,151
108 4,608,152
112 4,608,153

CLASS 209
166 4,608,154
224 4,608,155
353 4,608,156

CLASS 210
86 4,608,157
96.1 4,608,158
101 4,608,159
114 4,608,160
149 4,608,161
150 4,608,162
4,608,163
231 4,608,164
232 4,608,165
4,608,166
242.1 4,608,167
274 4,608,168
334 4,608,169
404 4,608,170
4,608,171
500.2 4,608,172
502.1 4,608,173
512.2 4,608,174
532.2 4,608,175
677 4,608,176
738 4,608,177
744 4,608,178
748 4,608,179
780 4,608,180
786 4,608,181

CLASS 211
41 4,607,751
65 4,607,752
87 4,607,753
183 4,607,754

CLASS 215
1 A 4,607,755
6 4,607,756
246 4,607,757

CLASS 219
8.5 4,608,471
10.43 4,608,472
10.49 R 4,608,473
10.55 R 4,608,474
69 M 4,608,476
69 V 4,608,477
69 W 4,608,475
4,608,478
87 4,608,479
121 LK 4,608,480
125.12 4,608,481
132 4,608,482
201 4,608,483

CLASS 220
23.83 4,607,758
266 4,607,759
314 4,607,760

CLASS 221
25 4,607,761

CLASS 222
48 4,607,762
81 Re.32,231
95 Re.32,232
102 4,607,763
207 4,607,764
321 4,607,765
386.5 4,607,766
504 4,607,767
556 4,607,768

CLASS 223
12 4,607,769
28 4,607,770
91 4,607,771

CLASS 234
30 A 4,607,772
42.45 R 4,607,773

CLASS 225
47 4,607,774
96.5 4,607,775

CLASS 226
171 4,607,776

CLASS 227
120 4,607,777

CLASS 228
2.5 4,607,778
106 4,607,779
118 4,607,780
175 4,607,781
180.2 4,607,782
265 4,607,783

CLASS 229
27 4,607,784
41 B 4,607,785
45 R 4,607,786

CLASS 235
101 4,608,484
379 4,608,485
380 4,608,486
383 4,608,487
384 4,608,488
462 4,608,489

CLASS 236
11 4,607,787
12.2 4,607,788
49 4,607,789
94 4,607,790

CLASS 237
71 4,607,791

CLASS 239
101 4,607,792
318 4,607,793
455 4,607,794
530 4,607,795

CLASS 241
3 4,607,796
23 4,607,797
46 B 4,607,802
99 4,607,798
101.7 4,607,799
159 4,607,800
199.1 4,607,801

CLASS 242
1.1 R 4,607,803
55.3 4,607,809
67.4 4,607,804
107.4 A 4,607,805
117 4,607,806
192 4,607,808

CLASS 244
13 4,607,811
129.5 4,607,812
145 4,607,813
147 4,607,814
161 4,607,815
329 4,607,810

CLASS 248
208 4,607,816
459 4,607,817
544 4,607,818

CLASS 250
201 4,608,490
311 4,608,491
372 4,608,492
397 4,608,493
461.1 4,608,494
517.1 4,608,495
561 4,608,496

CLASS 251
121 4,607,819
251 4,607,820
329 4,607,821
334 4,607,822

CLASS 252
8.512 4,608,182
33 Re.32,235
36 4,608,183
42.7 4,608,184
51.5 A 4,608,185
62.52 4,608,186
90 4,608,187
99 4,608,188
174.22 4,608,189
301.4 H 4,608,190
391 4,608,191
506 4,608,192
522 R 4,608,193
4,608,194
4,608,195
4,608,196
551 4,608,197
609 4,608,198

CLASS 254
134 4,607,823

CLASS 256
13.1 4,607,824

CLASS 260
410.9 R 4,608,202
505 N 4,608,204
506 4,608,205
344 F 4,608,206

CLASS 261
39 R 4,608,208
64 E 4,608,209

CLASS 264
3.2 4,608,210
4.6 4,608,211
24 4,608,212
45.1 4,608,213
45.5 4,608,214
4,608,215
70 4,608,216
249 4,608,217
315 4,608,218
4,608,219
510 4,608,220
556 4,608,221

CLASS 266
215 4,607,825
251 4,607,826

CLASS 267
107 4,607,827
140 I 4,607,828

CLASS 269
88 4,607,829

CLASS 270
41 4,607,830
58 4,607,831

CLASS 271
10 4,607,832
4,607,833
171 4,607,834
227 4,607,835
272 4,607,836
273 4,607,837
293 4,607,838

CLASS 272
97 4,607,839
117 4,607,840
125 4,607,841

CLASS 273
1 B 4,607,842
54 C 4,607,843
143 R 4,607,844
148 R 4,607,845
171 4,607,846
264 4,607,847
269 4,607,848
348 I 4,607,849
424 4,607,850

CLASS 277
1 4,607,851
4,607,852
12 4,607,853
152 4,607,854

CLASS 279
62 4,607,855

CLASS 280
47.18 4,607,856
47.26 4,607,857
491 E 4,607,858
632 4,607,859
650 4,607,860
702 4,607,861
765 I 4,607,862
804 4,607,863
808 4,607,864

CLASS 285
18 4,607,865
45 4,607,866
242 4,607,867
332 4,607,868

CLASS 289
17 4,607,869

CLASS 290
53 4,608,497

CLASS 292
338 4,607,870

CLASS 294
19.1 4,607,871
54.5 4,607,872
88 4,607,873

CLASS 296
1 S 4,607,874
97 D 4,607,875
100 4,607,876
191 4,607,877
199 4,607,878
201 4,607,879

CLASS 297
157 4,607,880
192 4,607,881
195 4,607,882
317 4,607,883
341 4,607,884
397 4,607,885
410 4,607,886
452 4,607,887

CLASS 299
2 4,607,888
33 4,607,889
43 4,607,890
92 4,607,891

CLASS 305
56 4,607,892

CLASS 307
22 4,608,498
66 4,608,499
72 4,608,500
105 B 4,608,501
243 4,608,502
270 4,608,503
442 4,608,504

CLASS 310
267 4,608,505
315 4,608,506
335 4,608,507
339 4,608,508
357 4,608,509
361 4,608,510

CLASS 312
15 4,607,894
126 4,607,895
201 4,607,896
209 4,607,897

CLASS 313
93 4,608,511
113 4,608,512
359.1 4,608,513
386 4,608,514
412 4,608,515
477 R 4,608,516
4,608,517
481 4,608,518
528 4,608,519

CLASS 315
39.3 4,608,520
47 4,608,521
241 P 4,608,522
244 4,608,523

CLASS 318
254 4,608,524
568 4,608,525
628 4,608,526
685 4,608,527

CLASS 320
2 4,608,528

CLASS 323
275 4,608,529
315 4,608,530

CLASS 324
73 R 4,608,531
4,608,532
142 4,608,533
238 4,608,534
244 4,608,535
399 4,608,536

CLASS 328
237 4,608,537

CLASS 329
103 4,608,538
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107 4,608,540

CLASS 330
10 4,608,541
279 4,608,542

CLASS 331
1 4,608,543
109 4,608,544

CLASS 335
16 4,608,545
20 4,608,546
297 4,608,547

CLASS 337
201 4,608,548

CLASS 338
34 4,608,549

CLASS 339
3 S 4,607,898
19 4,607,899
37 4,607,900
59 L 4,607,901
61 R 4,607,902
63 R 4,607,903
108 R 4,607,904
176 M 4,607,905
192 R 4,607,906
258 P 4,607,907

CLASS 340
22 4,608,550
53 4,608,551
310 R 4,608,552
347 AD 4,608,555
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825.5 4,608,559
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825.59 4,608,562
870.02 4,608,563
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870.17 4,608,565

CLASS 343
5 PD 4,608,566
7 A 4,608,567
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	309	285,261		346	285,280	D13—	23	285,300			285,320			285,340		83	285,360
D4—	101	285,262		363	285,281			285,301			285,321		23	285,341		138	285,361
	104	285,263	D8—	2	285,282			285,302		71	285,322			285,342	D27—	1	285,362
D5—	63	285,379		30	285,283	D14—	39	285,303		80	285,323		28	285,343	D28—		285,363
D6—	327	285,264		77	285,284		58	285,304		89	285,324		31	285,344			285,364
	405	285,265		98	285,285		100	285,305		108	285,325		33	285,345		25	285,365
	412	285,266		356	285,286		102	285,306		132	285,326		38	285,346		35	285,366
	430	285,267	D9—	434	285,287		114	285,307		147	285,327		51	285,347		57	285,367
	470	285,268	D10—	32	285,288	D15—	1	285,308		191	285,328		54	285,348		64	285,368
	491	285,269		84	285,289	D16—	101	285,309		198	285,329		64	285,349		73	285,369
	511	285,270		81	285,290		116	285,310		242	285,330	D25—	2	285,350		76	285,370
	545	285,271	D11—	34	285,291	D18—	7	285,311	D22—	108	285,331	D26—	28	285,351		78	285,371
		285,272		37	285,292		12	285,312	D23—	21	285,332		35	285,352		83	285,372
D7—	1	285,273		125	285,293	D19—	32	285,313		34	285,333			285,353			285,373
	70	285,274		143	285,294		42	285,314		90.1	285,334		41	285,354	D29—	1	285,374
	72	285,275	D12—	118	285,295		59	285,315		122	285,335			285,355	D30—	88	285,375
	309	285,276		136	285,296		99	285,316		138.3	285,336		44	285,356	D32—	70	285,376
	319	285,277		146	285,297	D20—	43	285,317	D24—	4	285,337		61	285,357	D34—	21	285,377
	321	285,278		156	285,298	D21—	17	285,318		8	285,338		77	285,358		33	285,378

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